Type of the Paper (Article)

Comparative genome-wide analysis underscores the rapid expansion of cytochrome P450s for secondary metabolism in the mycoparasite Pezizomycetes

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Supplementary dataset 1

P450s, P450 fragments/pseudo, and no-hit proteins were identified in the study. Each protein sequence is represented by its protein ID (from the JGI Mycocosm), assigned name, species name, and species code.

P450s

>270051|jgi|CYP5531A10|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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ASGVASKTKDGGKRLVQSLPYWIPGFRHFWSIISGGEIWLNGVRESAIDSIVAYNAFGAKHNIILNDTLAEGSCLSQLSQ
KQVDLQVPRTVQWTILRNAFGIPSTVEAQYFDKESEIDNTITINIYKEIQPLLSSTLHLLSESLPDFVTFNSSIVDQMQW
ERVADVELTDGTSEAECSLFTLINEFCCNAILPPIIGAQFTEAYQLLATDLATFNTRYWAMALGLPRLTPLQGLPGAALS
QKRLLQNLRRMFGELSSPPVKRVPDDDESVSGEETDADVLTPVTKLNDLFKQHDLPLDARASIMLQVLHEIIAEVVPLVF
WSLLHIHASGSEVEQDTPVEKIRQETKVWAQALQPPSIHPLFPSPPAIVFEKVLEKIRGSTNALLSSCINETRRLYTCST
TTYKLESPITLTDPSIPNEEWELEANTYIDIGLSQSLLNSSASIFPDPKVYKPDRFTTLPCPIALNTTSGPFIQALTATI
LTGIIQLWNLTPAPKKSFFDHMQEARAEAKAGAAALTGEQKAAQSSQAKDKTGQDGKAKWVIPRAVDGASVKVPRGDVRV
RIRRREGLPAGRGDVRRF*

>527781|jgi|CYP5295D2|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MLASQLLQLSWVAIAASTIGVLSLFILCFPLLRTDRRLYKIPGPRLNYFVGLGISLPPDTLTKFRKWAGQYGEIYRVQVG
WHHWVVLNSPEAVKMVFDKQSVSTSSKLPMPMSDVVVGGMRMPSMSYGPKWRAYRQLCHQILTAKAVNSFIPYQTLEIAR
LLHDLATKNTDDSAFYKDIHRMLFSTLMRAVYGRSTESVNDEDLKYTEQSAKLLSKIQQPGYYIEDVIPPLANLPTWAQP
SYRKAARDAEWVLWVKMRMWNRLKEQFTTASAPPCYAKQMIESDFRQQSLKEEDLAWIAGGLVDAGSATSTATFHNLILY
LAAFPEVQETAAAEINRVIGDSRKPAMADITQLPYVWACIKEVLRICPMPPWAIRHFTDADIVYKDMIIPKGTAVVCNTV
ALHFEPEKYPDPMIFRPERYINHTKFAGDYAAMSDPQARDHFTFGAGRRVCPGTRLAESNLALMLANVLWAFNIQPPLNG
EKGKATIDVSDDAFEPYPLRHAKPFKARFVPRNEQRLKMVLDEGKEAQQT*

>529766|jgi|CYP6001A27|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MSTGVQDAKAAWDGHVDTRTGIAPPKPMEPSELAKLRDSVGSKFSSFAKLMGAASAALPQTGDGSKLTPDEDPSLLEKAE
GVLRDMSHLRLENIQTLIEAQKQKISGEPTDDKTYFMEGLIKTAAALPDGSKMRDAVTHKFLEQLWNDLEHPPQSYLGTK
YQYRAADGSNNSLIHPQLGAAGTPYARTVKPVQMQTPARPDPGVVFDSIMTRKHAELHPNRISSMLFYLASIIIHDCFRT
SHEDFSVSMTSSYLDLSPLYGSNQYEQDQMRTKVDGKIKPDCFSEVRLLFFPPGVGAMLIMFNRFHNYVVENLALINEQN
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NVPIGVGNQVSAEFNLVYRWHSTVSDRDEKWTQEMWDGMFGEGRDPKTVGKYEFLAVLNKVYEKTDKDPSKREFAGLERA
ENGTLPDQALVDILVSSIEDCANSFGPNRVPSIFRAIEILGIEQARSWHLGSLNEFRKYFDLEPHKSFEDITSDKYVQEQ
LKHLYDHPDKVEIYPGIVVEDAKQPMAPGSGLCPGYTTSRAVLSDAVALVRGDRFYTKDYNASTLTNWGYTIADSDLDID
NGCVFYKLFLRAFPNHFKQNSVYAHYPLTIPSAMQEALKDLKKDKLYDFSKPKLAHTVHVVKEYKLATDILKDQEVFKVV
TGTAIEYLMGPSSRDFMLSGDTLTNASSRTMIFKALYTPDWEEDVRSFYAAKTKDLLRQKSAHIADFNQVDIIRDVGNLA
HVHFCAEMFMLPLKTVERPHGIFTEAELYLILSSIFALIFFDVDPAGSFPLHIKARKATQLLGSIVEKNVDAISKFGWLH
AVTKAIWPEDTALKGYGIHMIQRLLDSGMPVDKLVWGHLFSTAGSMVSNQGQLFAQTLEFYLLGAGKQYWPEIQKLANDQ
GDASWDKLMHYVMEGGRLNGETAVTRHVARATSLDSNTPYNQADEIFINLRAASHDANVFPDPLTVRLDRPLDAYIHLGH
GPHECLGAPMVRVILTTMIREVARLKNLRPAPGPQGKIHKVEKGGGKDEFPFHAYLTEMQDRYFAFPCALKVVWDV*

>536491|jgi|CYP504B18|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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VYQIQLGNEPVIVVNSAEAARKIFGGNSQALSSRPVFWTFHKVLSNTAGTTIGTSPFNDSLKRRRKGAASALNKPSIATY
IDHLDLETKEFVKDGFESGKAGTVGINPMPMIERLSLSLALTLNWGTRMGSRHDPMFHEICDVEAAISKFRSTTGNLQDY
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AGSTIYLNAWACNMDPQVWADPNDFRPERWLTSPDAPLFTYGLGYRMCAGSLLANRELYLVFLRTLASFEIVADSEVDTH
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>540849|jgi|CYP51F1|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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SYVTIITQEVEDFVKRHKAFKGQKGTFDVPKVMAELTIYTASHSLQGEEIRNSFDSKFAELYHDLDMGFSPINFMLSWAP
LPHNRARDNARETMIKLYSDIVRKRRAGNTKKDSHDMIWHLMDCKYKDGTQVPEHEIAGIMIALLMAGQHSSSSTIAWIV
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SSPGFSAQLDTHFVNPALWDPHRWDAGQHNYEDADNADDEKIDYGWGVVSKGTNSPYLPFGAGRHRCIGEQFAYLQLQTI
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>543870|jgi|CYP5536A2|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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NPDGDWVDLRRRALTYFDEYMRLNGTKTFKLAELTQYITLKMSLCYLFDDAHEALKSDSQFDDVRYISQRINQLWIKSKQ
NHPEEGECLSWKDETKLHNALRRVTFNIPTVGIGGFTDDTTTVDPEIPSQNPMNLLLPAYETMWRVVIRCFLEVQHRGAQ
NKTIWASVLTSYLNDLENPNSMRNNAFHKPTETNNGYIRPVEIIKEALRLYPPTRRVHRLFDDKEVKADIESCHRQEILC
GHDPDVFRPERWQTLCSEARQAWYDKQGGTQKELKEKLRSEEEKLGYMPFAYFCAADHPNTKEFASKMIALLVAVLCKGL
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>544584|jgi|CYP65BR8|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MSSTPLREHSAVGKLFHTLSISQVLALVAALLIVRFSVRAICRIWFHPLSKFPGPKLRAATRIPSHIEVWKGNKHHRFAA
LHRRYGHVVRVNHDELSWTEPNAWKDIYGHGTKGTPGSAPHKHWLRYGQTMNGSPNLIQARDVDHNRQRKIFTPAFSDRA
LKQQESLFIKYTNQLVSKLKEGIEDNPTKSFDMVRMFNFTTFDIMGDLTFGEPLHMLSNAEYDPWVSIIFSSIKIGSRLR
IMVYYHWIWRAFKLITPKGSNRKRYSHFQHSVTRVTKRLEKGRATEGIDLWDFVLAQKEGKGLTRGEMDSNASLFMIAGT
ETTATLLSGLLYKLLEKPVCMTKLVEEIRGAFSSSDDMTIEQLASLPYFAACIKEALRLYPPVPLGLPRVTPENGSTVCG
QFIPPNTICMIPQYAMYTHPENFRNPLQFLPERWLGDPAYEDDQRQCLQPFSVGSRDCVGKNLAYHEMRLVMAKVLYAFD
FELEPESEKWTEQETYILWQKKPLMCKLKAARYTHKAQHTHE*

>545545|jgi|CYP677A8|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MHDSGILAALLPAAFATVVVYGIYTTVYNVLFHPLAKFPGPPMARATVYWKAYVECIQHRSFCHVLGELHAQYGPVVRVG
PNELHFANPTAYHDIYKNKNRWDKEARLYKSFNEDRSSFGFLTYAEAKNRRDVLSRSFSQAAIEGSEGLCVQMTNELCAA
FARQSKAGGVDLHFAFKCMAMDMIMTLCFGKPIHAVDAPDFKAPIVVAMDASSPIFIRFKYSDLYKNMILKCPPALSRML
SPETAGLVDLQELLRRQINDLCDDPEKLKQLPHNNTIYHRLMDAKAYRDNTVPSPDSLYEEAQALMFAGADTVGNTLMVG
THRLLQHPEKMHKLKTELLKAWPVLSEREPRLRDLEGLPYLNAVIKESLRLSSGVVSGLLRIVPPNGAIIAGVVTPPGTI
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>547627|jgi|CYP5093A22|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MALELILKRPLYVWLSLFVAIPIVTFIHDVWLWLRMPPGPTPLPFIGNKNQLPKTKPWIKFQEWSKTYGPIFTIWIGRKP
TIVISDPIIAAELMEKRSTKYSSRPRMVAMGEILWDGASILVQPYGKEWSTRRKLLHQALTPKALTLYKPIQTAEASRLC
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ALVTHPEALQAAHSELDAVIGHDRSPNFDDEKDLPYLRALVKEVLRWRPVAVLGGTPHASTEDDRYKGYYIPAGTTVLGN
SWAINLNEEYYPNPHHFDPTRFLKGALSDKSRAPTALTGKAHPAKAGHSSFGWGRRICPGAGLAENSLVIALAKILWAYD
VLPIKGVTYDTFAYTEGFNIRPLKFECEISIRSEAHRQVLLDDLRNAESVLERFTPFGE*

>549784|jgi|CYP530A45|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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DLFFDHIRRYTNSLTTQMIFGFRTTSIDDPKLKQLFHGFEKFSNVVGTQTAALLDLFPILRRLPDMVLPLRRYAKELHKK
ELELYVGHWLDVKKAIKEKTARPSFCIDLVRAQDAEGFSDLLAGYVSGSLLEAGSDTTAATLVGFVQAMLLFPNVAKAAQ
EELDRVCGDEFPTLDDMPDLPYIRGLIKESLRWMPTDILGVPHAVIRDDEYMGYTIPKGAGVMWNVWAVHMDPKRHPDPR
RFDPARYAHDNQTAAEAANNADASKRDHFVFGAGRRLCQGMHIAERSLFLAIARMLWAFDLRLALDADGNEVKPDADDLT
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>550972|jgi|CYP545A15|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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FVIISDEAIAEEILVKKAKVYSDRPEIKSLFDAKSTFGSMEYLPLMGKNQYWARQRKFTHAALIEGINAQYWGLMEFEAK
RWMARLIENPDDFAFSLEDMCSKVMSKLVWDDDSLSVPLTPSAWGLLTQMSPAGPITNVLTPLWDWLPEPINPWKLRERK
RHDTQQAFFMENYQRTRKLMETGRQGPCYTRSYLETAQKSNLSGDYEASCVLGMLALVGIFTVAGPLYYFLIAMVHHPEW
QRKCQEEIDVVCRGLPPTIADMPNLPILRACIKETMRWKPTVPTGVAHEAEADDWFRGYFIPKGTRILPLDWAFVRNPTK
YPDPDSYRPERWLETGWPTFQEPLTKYPTIVGMSSFGWGQRQCLGMSVTRDETVTGCGALMWAFNLKRKVNPTTGNEIEV
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>553437|jgi|CYP68A2|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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KPFRVLADVGEVTILPPEYAHQIRNDERFSFTKAAYRWFYAHLPGMEGFEAGTNETHLMKLIARHQLTHQLTKVTKPVSD
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LPNCTAARGLVKQTRDIITPVLQKRRGMKAQAAATGDKVVFNDAISWLEAVAEEKSVRYDPACAQLSLSTAALHSTTDFF
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TLVSAHRHWDEAFYKNPHSFDGYRFFNMRQQPGLENKSQLVSATVDHMGFGFGLHACPGRFFASEEIKITLAHMLMNYDL
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>556447|jgi|CYP561K2|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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VDGDPGWEDVFSFRRNGKEDFQRDPHFFDTSINGEDPGSSIFFTDRAGHSRQRRILSHAFSQSAMYEQEPLIKKYVDLFI
LRMSEHAAAGKAMDIHNFTTFDIIGDLTFGESFDCLSKSEMHPWVAVIFASVRASDLVTFFKSYMITRPFINALLGKKLA
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EIFQKLVDEVRPKFTSDDEITMKSTADLKYVFACIEESLRMFPPVLVLPPRLSPGDFIGDYFIPKNTKVSLHQYATYHSP
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>557094|jgi|CYP62X1|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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>34771|jgi|CYP535F4)[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1

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VAPNHLITSDSEFWAGINAVRSQYQRAPWYYHAARFEPGKDNVFTECDNDRHDARRKKMTAGYSGKENPSLEPSIDEHVK
ELVDLVRKYAAPAASTKPSTPMDLAKKIPYFTLDVISHVGLGEPFGDLLADKDQKGYLQASEEGLKIGNTAFAMGIGWLR
NTPIIGPAISPSEKDETGYGRLMAEARKIVDARRSRSTEGKSDMLASFIRNGVSGDDLFQEAFEQILAGSDTTAAAIRVI
LLYIITHPRVYKNLQAEIDDAVKSGAAPTSSIVPDAECRKLPYLGAVIREGMRVYPPVVNLFSRVTPPSGDVVTISGTEH
HIPGGTLIGYSAWSMHRNNTALYGSDASSFRPERWLGVSDAEHLAKMIKTNDMIFGYGRWVCLGRNVALIEIHKCVFELF
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>583619|jgi|CYP586L5|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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ILLQRLFYVLSVHPKCLAKIRAEHDTVFGEKNPGEVFLANPEGTVKALTYTSACIKEALRLWPPGASARMSHNGLKVRTS
EGQEVCLDECVIYLCQHIIHRDPKVYGETANDFVPERWVGNINTSSDTKDEDGLATGASQIPISAWRAFERGPRNCIGQE
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>584474|jgi|CYP5483C1|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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IVDGNKLPFLKACFLESIRWRPIAPTAIPHYTTQDDTYNGYSIPAGTIVIMNTWALHHDKRQYDRPEDFNPMRFIDSKFG
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>587345|jgi|CYP65CC7|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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SDKALRDQEQLVQQYVDLLIHRLDEHAVEKKHVDIMRWYNYTTFDVICDLTFGEPLYCLRDSVEHKWIQLVLSSVKAFGL
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>597801|jgi|CYP62E7|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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AVSNIKTDARQRTADVYNWWMLLASDVSAHLAFGESFRMLEMGHANQFIRVLKTLVMGAGIMVELPLLRLLRFVPITAVQ
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>80040|jgi|CYP617G21|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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LNQTYKTIFSSNRGAQLVQLFLGMLPHWLAVALPLKQNDEIGKAISTIKGTARKLIADKREKLVKGKAKEVDILSVAMES
GGFTDEDLVNQLMTFLAAGHETTASAMSWAVYFLCKYPDTQARLREEVRAQLDLVGEISSSEIDRLPYLNAFLNETIRIF
PPVPLTLREAAHDTTIQGHFIPARTTVIICPWAVNTSEQLWGPDAKEFRPERWLGAGRANTGGAESNYAITTFLHGPRSC
IGKQFAMAEFACLVAALVGKFEMEFENGDWELKIQGGITARPKGGLNVRLRDVEEQKEKV*

>242775|jgi|CYP5103B2|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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EVDAAMRQYLPSCDDWTELDINRKLIDIVTRISGRVFVGPELCQDPEYLDIGANYTIYLMDAIRAIKRLRPWQKPFLAHR
LPEMKKLRAIEKRAAEQLRPIVKERLEAEKNDPNWQKPEDMMQWLINRNAGAIPADEIAHVQLGLIFAAIHTTTTTATNI
LYTLAVTPECMDPLREEIRNAMNENGGQLTSKALQQMLKLDSYMKEVIRVHALSVSSFMRRVVKGITLSNGQYLPPGVMI
EVPGDAVYSDEAFYPSPNTFDPWRSSDIRQSGTPTDHARNQFVTTNETNLLFGYGRHACPGRFFAANEIKLILARLILDY
EIKMPNGESERYANIEIGRSIIPAPGKTIMLKRVEI*

>321822|jgi|CYP65BT2|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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RLHETYGEVVRISPDELSFIHPNAWRDIYGLGSKEDKGSAPPKAWGKYRNSPNGAYHLLNMPDPVQHARQRKIFLPAFSN
RALTQQSPLFLRYANQLVSILKSGGVEGAQFDLIRVFNFTTFDIMGDLTFGESLHMLDNAEYDPWVKAIFQNFKRGAQLG
LLYNYYPLVAGVFQAVMHKKVAQAQYAHLNFATSRVTKRLEKGRTSEGVDLWDLIFKQEEKGKAGLTRDEMDVNAGLFMI
AGTETTATVLSGLMYLLCLHPASLAKLVKEVRSAFPSSDDITMESAVGLPYLNACIKEGMRMYPPVPIGLPHLTPPEGST
ICGHYVPPGTTVAAPHWPMYYSDTIFRDPKSFVPERWTGDERYARDERAAFQPFSVGPRDCLGKNMAYHEMRLLLSKVIF
HFDFELGPESDGDWFDQESYTLWQKKPLLIKVKTATGA*

>438038|jgi|CYP6004A23|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MPSQLRSLLGTIRRKPTQASDGRSSEAASGLKSTEKTSIGHDLKSLGVKNAKFALEAITTLASGEPLDDKDLLLENGVQM
LQGLPLNSGLSAKVSDGFIAMLWNDLPHPSPTHAGPTTRYRRHDGGGNNPHNPEMGKAGTPYARNVPPMKAKGPNLPDVE
DVYEALLKRDGPFRPHPSGLNRLFFSFATIVIHECFQTSRTDPWVNETSSYVDLSTLYGNTEKEQVRVRTYHNGEIHADS
IASERIMMMPPGVVAVLLMFSRNHNHIAESLLSINEDGKYKPWDSLDEAGKKWQDNDIFQLTRNINVGFFASVVLRDYVA
AILNTPRANSEWSLDLGKEIKQGGTRLERGTGSHVSVEFAVLYHWHAALSAADEKWMEDILRSVFPDLHSVDDVTIEMFH

KVMMTHGHALMEKLPRQWEFGGLKRGADGQFNDAELAELIKSCTEEPAHEFGAHGTPASLKVVDLMGQLQAREMFNVCTL
NEFRRYLNLKPYETFEDWCMDKETARAAELLYGHIENMELYPGLMAECTKPAMPGSGVCPGQTTGRGILDDAVALVRGDR
YLSYDFNANTLTQWGAALLAETVPGAYGGVFPKLLFQGLPGGFTGTSPYVLLPFYTPDAAKGILKGNKVLDKYDLKRPLN
DNSIVSVQTQAGCKKVFEDRESFVVMYQAAIRNCTAGHDFMIGWDEAKKHDERSNILHKIFFEEGFEDNVTKFFSATVRQ
LIEKNSLKGAKGRSSIDIVRDVTNIAPILWLAERFALPLKTKEQPRGVMSIHEAFTAYLVLFMYQSFNIMPVNEWKLREG
AMKAAAPLRSIFETHLKTQTGRMEGLVDWMAKGSAFEVGPHADRIYHAMADTKLPIGDLVGDCIGMGAPVAGNMTQQASL
LVDLYLSPGYEKYKARIVELAHMDPATSDRELQGFVYEGMRHVGVVPGLPRVATRDITVEDGVHGPVHIKKGRTVLIATS
KAAMDPVAFPNPEMLDPHRPFRDYTLLGHGLHFCFGARLVGPALAATLREVFKLKNIRRAPGKQGKFTKTEHKLAGVSMR
HYLDANSRESPIPTSLRLHYDDETVSNGANGVNGVNGVNGNLSNGHTNAGGDNAYGNAYTIAP*

>441048|jgi|CYP539A56|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MITLTSNNIPLSYILLGATVLYIAYGALATFRKNARINQLGARAPIRKSYLPWGLDLAYDIIANALQDEVYEMWVGMFAK
FAGPGRYTVEASLGERMILTADPENIKAILATQFKDYGKGESFRKDWHAFLGNGIFTTDGQLWHNSRQLIRPQFVKDRLS
DIEIFEEHVQVMITKIGQGQEIDTLDMMFRYTLDAATHFLLGHSVDSLQNPQTRFADAFGNAQRVQSMVARVGPLNWLIP
RKRMGFYDSIKTVNEFVDKFIEQALALSPKELEEKTNHDQGYTFLHAIAAYTRDRHMLRDQLVSVLLAGRDTTACTLSWV
IYHLSMEPQITAKLRQEIIDTVGLDRTPTYQDLKEMKYLQHILNETLRLYPVVPYNVRFSLVDTTLPVGGGADGLQPIGV
PKDTPIGYSTLVMQRRADIYPPPSTGFPAIEKFVPERWDNWTPKSWTYVPFNGGPRICIGQQFALTEMGYTLVRLFQRYE
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>449417|jgi|CYP534H10|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MVLTLVFSALAAAIVYFLGNTYRKLLRNVALAKSSGLPVVVMPWNAFSIFWLSTFFLWTPLLRKFLPASYQGLWVDLLDP
EWGHRIGHLPYKKLGKDVFLLASPTIIHCFVADAEAMTQITTRRTDFPKPLQMYRALDIYGKNLVSTEGADWRMHRKLAA
PSFGEKNNELVFTESLHHAKSLIGLWTGVDGRGNQTVVEPSSGAMNFALYVISSAGFDVRVVWPHEEGLPAAERKSEGKS
MFVGSEVPPGHQMNYRQALSELLHNIMLTLIIPPRFLSKSPIVAHREVAKALGEWGQYMDELYELKKTQVASGDAKGGMD
LFEALIRGSGILDEKTINLQKSDLLGNAFVLMLAGHETTANTLHFSLIYLAMHSASQRRLQEDIEGNTEGKPVEAWTYDE
HFPKFFGSMTAAVMNETLRLMQPVVNIPKSTAPGRPQQITLDGEHYTIPGGCHIFLNCAIHRNPRYWPAPSDALEAEKDE
DVNRFRPERWLTKTKISDDFIDISYDDEELRGPSGEDTSSQLFKPVKGSYIPFSDGFRSCIGRRFAQVEILAVLAVIFSQ
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>459242|jgi|CYP530C2|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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VLNTWQAVRDLVEQRGAIYSSRPSIPLCDIVLPKSENPGLSVYGELWRKQRKALVEFLGGDRTDRMKPVQDAESTQMIYD
MMNTPANFEHHVDRSFGGIILATVFGQRGKTNEAGSKIAMFFETEEEWSTALGPTAYPPTSSFPFLKRVPEWLTPWKGWK
TRAVRIKKKQNQIYHSLLDETRERLKQGKGEECFMSQCLKVQDKQWYDDTYLAYLGGVLLEGGAETSASATMVFLMAMAA
FPDVAREAQEEVDRVCGALRIPGGDDIGRLPYVRACMLELLRWRPITPLAVPHTTTADDDYGALTIPNGADILINAWMIN
NDESFYESPEKFNPSRYMNNEYGCASTVDLEANKGRRVNYTFGAGRRVCPGQRFADNSMMLHFAKVLWAFDINATGSLPI
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>459775|jgi|CYP5104C3|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
IISIAIPLLVIYIARTFLLDPLSRIPGPLSARFSRIWMVQHSIAGDMHTTMIALPKKHGKLVRTAPKEVSISDPTAIKII
YGAGTKFRKSDWYSVWQGHRKFDLFGGRDEKVHGQHRRLISSIYSLDQLRKLEGGVDTAISFFIDKLENGSSVDMSEWAQ
LFAFDIIGEVTFSKPFGFLAAGKDDGSFKAIDEALVSATWIGQVLWLCWWHDRLMPVIGNWLGVNNRNGNLRQFAAKECE
ARKGRKSERNDILTSLFAVKEAKPQEFDDKSLLSMASSNIFAGSDTTGISIGAVMYNIFKHPRCKQRLLEEIEETVQKKG
LDARKNMTFEAGFAMPYLQACIYEALRIHPAVGMSLPRVVPKDGFEIKGGYLPGGVSANPWVIHRQKEIFGNDCETFRAE
RWLERDRGQLDCFFLAFGSGARMCLGRNLSWIEMTKLVPSILMRFDVELADKSKDPMQHCWQVSHNLT*

>459917|jgi|CYP5526A4|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MNVYVTIGFIVGIFAYAGLQLMLHLTQDKREPCILESRVPFLDSAIGIMNHRANYLAKLKAQYKASIHTIRMPFQRLYIV
HTPHLIQIIQNKANASTFVPNLLDFGMMFSGLKKESKVTLAGAFGLNGNAFTKSVHKHLLPGASLLATTSNAVEKLCASL
PNNLDNSSTQGLLELVRHELTMALTGAVYGPENPYNDSKIEASWYDFVPGINHLLYSPFPNLTARAALRARDRVIGAFQK
YFETGGHHYAMAMIPEMYEANISHGLASDEAAKMEMATSLAMLSSGSNTAFWLLYQIFSDCSALHTIRQELLEVSTKEET
SGGPQCRVLSLNLIRDECPTMSAMLNETLRYHSSVINIKQVQHDTTFANQYLLKKDAIVMIPGQSIHHEKDIWGPSADYF
DHLRFLDPASRRNLSSTSAFRPFGAGASMCPGRHFSMNVICSLVAMIVLQYNIMPSDGKWRAPTKCNADLWNAMPKPDRD
LAVRIVKKVESEDVQWRFVWAEEV*

>468286|jgi|CYP5402A2|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MAFSTASIAVVGLLVALCFYLASVMSIKVDAREPPVIYPRIPFFGHIVGMLTEGPLYHRKLGDRYKYPIFTLPMLNGRSY
VVTEPTLAVAVQRASSTLDFDELVVEMTPRLVGLGMETKALLADKTAKEEGRTRMVTKAHSIVTPPLAAHQISVISEKQL
AHFSGFANGIKDGQEAGLYKLVTTEVVAASMYSFYGPQNPFAVDPDLINKYWDWDDGSIGYAMQFFPKITARKAYYAMEA
CVKGWIEYTKDGRHSQAQPFLRDRMKMHYDEGISLEEHARLEMGISLGFNSNASVTSFWVINNVFSDAKLLQEIREEIYA
NAFEAPGTIYYSRIKDACPLLNSVWRETMRIIAPMVSARIVLEDILLADTYLLRKGNIVQIAGTVMHSDTDIWGPDASSF
NARRFFHSTNGTKSGAGGSKAGTVHPAAYRSFGGGTSLCPGRHFAQMEITSLAAVMTLGFDMLPEQGRGWNPPKDEKRFP
LVVMKPTRDVKVSLRRRKGWEDVEWDLRW*

>476522|jgi|CYP504A28|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MTIPIYIACVAVLGFFLYKLLYGTDTPHIKGLPEVPGLPLFGSLYELGTDHAKVAQGWVKKYGPVFQVRMGNRRIVFANS
FDSVRHLWITNQSALISRPTLHTFHTVVSSSQGFTIGTSPWDESCKNRRKAAATALNRPAVQSYMPLIDLESTVSIKELL
LDSKGGELDLDPRAYWQRYALNTSLTLNYGYRIDGNKDAPLLKEIVEVERGVGNFRSTSNNWQDYVPLLRLFPSQSNEAI
KFRERRDVYMDRLLNTLQDKIEKGIDKPCITGNIIKDPEAKLSRAELKSICLTMVSAGLDTVPGNLIMGIAYLSTPAGQK
IQQRAYSEILKAYPNNDAWERCLAEEKIPYITALYKEILRYWSVIPICLPRTSIKDVEWNGVPIPAGTTFYMNAYAADYD
DAHFSRPARFDPERYLHVPDGAGTPHYAYGAGSRMCVGSHLANRELYTAFVRLISAFVFEPPVDKRDEPVMDCLEANSIP
TSLTMEPKYFKVGFKPRNRNLLDKWLRESEERTRDLM*

>481046|jgi|CYP61A1|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MAANASFVSPTADAKVAHMMTQLDGSGMLGAFFSGFSMWRALLTLVALAVAYDQFMYVYRKGSIVGPSWKAPFIGPFLDS
VNPDFTKYYAKWASGPLSCVSVFHKFVVIASTRDMARKIFNSPAFVKPCVVDAAYKLLRPENWVFLDGRAHVDYRKGLNS
LFTRQALEQYLPGQEEIYHRYFKRWVNLSQVENKGKHVPWMQEFRFLITAVSCRTFVGHYCSDEAVKKIADDYYLITAAL

ELVNFPIILPFTKSWYGKKSADMVLEEFSKCAAKAKVRMAAGGKKECILDFWVDNMIQSDKYRKRVEAGEKVDSSEKPTT
VIRWFSDIEISMTIFTFLFASQDATSSAATWLFQIMADRPEFLDKVREENIQARNGDIHAPLSLDAIEKLQWTRAVVKET
LRYRPPVIMVPYLAKKDFPVTPEYTVPKGSMVIPTTYMALHDAEAYPNPDSFEPERWITGTADQQTKNWLVFGTGPHYCL
GQTYAQANLMLMIGKASMMLDWNHKVTDKSEVIKVFATIFPMVS*

>490050|jgi|CYP548A15|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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LGPNLLSVNTPTGLKTIYGFRSNVRKGSFYEAFPSTPAAVSVHSAIDKMQHARKRRVMSHAFSDSAIKSLDKYILANVRV
GCELLGKRTNPAVSEKRIDDKGWNDQWNAANWCEWLVFDIMGDLVFGKAFGMLESPRNRFATQLVGNAAHRHLICGTHLT
IHNWHLDKLFFRKIAGQRAQYMQYSKAQAMERTKLGLDVDRKDFFYYLLNAKDPETGAGFSMNELWGESNLLIIAGSDTT
STAMAGTFFYLAHNPTALSKLCNELRSKFTDVEEIVTGPKLSSCAFLRACIDETMRMTPPVAGALPRQVLAGGMDIDGHH
IPAGIDVGVPIYAIHHNPACFPRPSDYLPERWLSDPSANPLHSRLPDAQAAFNPFSIGPRGCIGKGLAYVELTVTIARVL
YLFDIRLVPGSTLGAGGKDLEPGREMASEYQIMDVFASKKDGPMVQFRPRE*

>495024|jgi|CYP5053C25|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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ELSRKYNTPLITYWIGRNPTVWINDAWTASELLDKRAGIYCSRPRMLVFAELGSGQNNLVNMYTTTKAQRERFRIQRKLM
HQGVGIQQVKKYRHFQNDESKVVAYHLLTKPENYVAHFERYATSVVSIIGFGRRVGNPKDPIITEVIAVMHRAADLNVPG
KTFPMLMETFPALARVPTEYAPWKHGLGSKRKSHRGHDFFYSLAHEANEKPEHEDCYAKVLFKEQKKYDLGNKEISALAG
NLFGAGSDTSSSTLITAVLAMRAFPETLIPAWKELDRVVGSDRSPSFDDDANLPYVHAFVKEVFRWRSVAIIGGQPHAPT
QDDYYNGYLIPKSTWVQGNVWAIHHNEREFPEPDRFNPNRFLKDHPDARPFPGERGYMTFGWGRRVCSGQALAEQGTWLM
IARLLWGFKFGPALDEQGKPKPVDIFDYTNGLNMRPQTFEVSIEPRSERVRQAIIREGEQALTDLAPYEGETKYRMSTFY
TK*

>497902|jgi|CYP552B13|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MSSIYAVPFTTDASILCTRNVLGLVGVWIVYKVFQALYNVSPFHPLSGIPGPKLAAATYWPEFYHDVVRFGCYSKEIRKM
HETYGPLVRINPNEVHCSDITFADEIYAVGGRKRDKPLHQINGSALGQAGFGTVSHDLHRSRRAPLAKFFSRSMIARLEP
EIHILVQKLCSKLLSQSGDNEAFDITMAYSCFTSDAISGYSFGSSFGLLDQKGWFPNFREPTAALLRPVFVFRFFPILKA
AAGLGKYMVDYMPESIAMFVRTLQIDMPTRVRQAKADLDAGITYDRPTIFASLLQSDLELLDKEPQRLADEAAAVIGAGT
ETTSWALSVMTYHLLTKPELLAKLTAELRTVITDPQHLPDWTVLESLPYLGAVIQEGLRLSYGVSSRTARIPTEENLIYR
GEWNKKPVEHVIPQGYAVGMSAVITHHDERTFPDSYAFAPERWLDENNQRRKHVERSMLAFSKGSRGCLGMNLALCELHL
CLAGLVLRVIPHMRLQDTTEEDLAYDHDMFIPMTKHDRGVRVTIE*

>498502|jgi|CYP547E8|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MANTASVFFGTTLIEAVVATFFFPGVFPTGPLASFFVVFLLCNSSFFVVYTLVIHPYFLSPLRHLPEGRGFRPLVGHELG
FSKRPAGSPHLKLMKEVDNDGLIMFRGYFHTNKLLVTTPAALADVLVHKSYDVEKPPWTRAFLRKFLGDGLLTAEGEEHK
HTRKHITPAFHFRNIKELYPVFWSKSIDFCEAIRAALQETGDDVLEIGHYATQVTLDIIGLAGLGRDIGSLRNSEDELIK
NYEEILEPTSEKAVYFLLHLIFSEKLIKMLPWKVNERVRVTTANLKAICADFVAQKRSKMKLESQESGDILSIMIRSNNF
SDANLVDQLLTFLAAGHETTSSALTWSSYLLSKHPAAQTRLREEIHKNIPDPSVLSNATTDIVSLLEGMPYLNAVCNEVL
RLFPTVPITARITIRDTMIAGQFVPKDTVLMIIPWAINRNPKLWGPDSEEFVPERWIDQTGRATMSGGAGSNYSFLTFLH
GPRSCIGERFARAELRSLLAALVGFFELQMADPNEEIVVGGTITSKPMNGMKLKLNPVDWGC*

>508766|jgi|CYP5401A7|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MAPMFHSVQIAHSKPIAALLALATHYVLHIGEWDNEFHVFLGIWTVAFGGLAAAEYMHDPRVTSIGVAVKVSSVTAIVYF
SVLTTSIILHRAFFHRLRRIPGPFLARISKFYSVFAGVLPNFQYYKKTESLFEEYQTDVIRTGPREVTIYCVDAVPLIHG
SMSRCRKGPWYASAAHVGAASTHTARDKEEHRRRRKSWDYAFNAKALREYAPRLDRHALTLMSRLKEQARLPSIRITDWF
NFYSFDVMGDVGFSRSFGMMEKGEEDPMIKLLHDSLSPMSIFNHINWALNLATRTEAGAKALVDHIDWTGKVLQERAKNI
PKENDVFSWLLDPMTSKVTPELNADSRLLVVAGSDTTAATFAWLAYELCKSPQIQAKLRKSIDAIAPSKPHLNVEDVANC
AYLDGVINETLRLHPAVPSGVQRETPPEGLTLPNGIYIPGRIIVWMPVHSIQRDPRYFAQPLCFLPERWTAEMPEGVMDK
RAFMPFSTGAYNCVGQKFAMMELRSVTANLMRLFEMEFAAGEDGTEILEKSRDCFTTNVGKLDVKLTPRYRS*

>509154|jgi|CYP526P4|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MLEHLKTHKTLTDWMLAYHTRHQSPIVQIFTNIFGRPWVVISDYREAQDILMRRSKEFDKPDLISDIFYGISPKFHAGQT
TDDAWRHQRKLIQDLVTPAFLNEVAAPQLHHNFMDLINMWLEKMRLGKGRPFAVKHDIYETALEAIWAAIFGLDDISTVT
RNQIKLLSSQMDFPIPSSLDKEVVFPRATAPPAFRAVLEITDGIEAVIKSPFPRLTGFFQRYTPAGRKNHAEKKSFIAKE
IAKAKKRIIESGVKETKVTNAVDHMLRRENAAAERVGRLPDYSSQMLADELFGLLIAGHDTTSTTLLWALKFLAANQSMQ
IKLRAELRSALFDANSESRIPTAHEIASCQNHYLDACIEEINRVSCTGSVPSRNTITDAVVLGHVIPKGTRVCFLGQGHG
ILEPAFPVPESLHSERYRQVGDERVGSWDLKDMKKFDPERWLVHDPATTTDVYDSTAGPHIAFGGGLRGCFGKKLAYLEL
RMAIVLMVWNFVLEEVPEEYGSWEAVDMLTHSPIMCYVKLSKA*

>509927|jgi|CYP68B2|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MPSYDSIVYLSCSSEFSFILFFTCISVLIGFVIALRYNRETVFSTLPVVNKPILGSLFAIVAQWKFIDQSKALVEAGQKH
HPGKPFRLWTDWGEVLMLTPNYAHKIRNDPRLSFTKAVSFDGHANIPGFETVKLISNGDNLIQLVARKQLTRHLTAVIRP
LSSVTEEALIKNLGQSSEWIEVNLKSAILDIIARLSSRIYFGELLYQNEEWLSVVKNYASLFFTASTDLRKIPWIFRPFA
HWFVPSCQAIRHERSNARRILRPYLDQRKSLKENARLAHTSPPKFEDAIEWAETEAKNNGSTYDPATFQLTLSLLAIHTT
YDLLEMCMIDLARSPGCVEDLRNEILNVLRKEGWTKHALYNMKLLDSAIKESQRLKPGSITSMRRYATSDIHLDGGIVLR
KGGRLNVLTLHRSPDLYSSPDTYDPYRFYNMRSLPGKENWAQLVSTSVEHMGFGHGEHSCPGRFFAANEIKVALAHILVK
YDWKLQDETGLKTETKGMIEKAGGKVKILVRRRANTDRVVDAI*

>509926|jgi|CYP503T1|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MSIVTRVASLESFLPRSSYPMGWIAWAWIIWSIAITLVSFWGRRATVKAPVVGHRGVFEPTWLLRLRFIRGSRSILQNGY
DEFKDSIFKIRKLGTDILMLPSERIEELRSITHDKESSVEPFMHDFAGELTSGMAFLNSDLQNRVLQQKLVPALGLITRI
MKTELDSAILKEMPACEDWAEVAITPILTSIVARISARVFLGEDGPHNHEWLTTTAQYTENLFKTGMLLRMVPTIIRPPV
AHLLKPYRQLRRNRKAAHRIIGSIVQSRRAAETEQGVRYEKPTDILQWMTDMAVGKETDPADLAQRMLILSLSSIHTTAL
TMTQALYDLIAFPQFIAPIEAEVTQALQQNHGWNKATLNQFRKLDSLLKESQRFNPIFLITFNRILHQQVIFSDNTILYP
GTRIAVPAYSMLHDQKKVPGPTSPSKFDPFRYSRLREDPTHPENAQKYQFAMVDTHNMAFGFGKHACPGRAYASDEIKMI
LARMLLDYEWAFPNGQERPKNFTVDTDMYPDRSAKVLVRKRRASKENPISM*

>511396|jgi|CYP570D8|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MLTITTATLAIGVLGASLLALLAHAASQWRRLAHVPGPRFAALSKGWMVKEALKGRQPISFKQVNDKYGSLARVGPNELI
TDDPDVLRRMMAARSEYTRGHWYNAMKFDPTRDNLFSMRDEIAHTKLRSKMAAGYSGKENESMEGSIDLLIATFVHLIES
KYISTTENYRPMDFGEKASFFTLDVISELAFGQPFGYLENDHDVYDYLKITKTFIPIMMVLGDVPSLADLLQSRFLRGLL
PSESDKLGFGAFIGIAKKVVAQRFGRDAKSHPDMLGSFIRHGLTQEEASGEALLQVVAGSDTSAGALRTVMLNLLTNPTA
YSKLRNEIAHGIAKGKISSPIKDSEARQLPYLQAVIKEGLRLMPPASGAFFKTVPPTGDTIDGKFIPGGTQIGSSPLGIH
CSKKTFGPDADHFRPERWIEASPEKFAYMSSTVDLIFHYGKYQCLGKSVALMEFNKIFVELLRRFNFSIARPEQPTKLKN
AGIWLMEDFWLRCDHLEV*

>511528|jgi|CYP559H9|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MIYEETASYLTLPTFVGAIAMYLLVVTLHHTLDAPQPPTSIPWQGYGKGWIAGVRNFFALSKGKEWLETGYEKYSKKGNI
FVLPATLGMQAEVVVPRSQMRWLLDQPDSVISTSEAHFDILQGDYSFVEPIILRDPYHEHVIHKNLVRNLNAVISQTAEE
VPASVEAIYGTDTENYQNFDVMESFFRMIPRLINRMMIGPVLCREQKYLDSVYSFTKDVIRTQMFMLFFPKVFHPVLGRL
LGMFSTYHYWVSSRFTLPLIKKRLEDIKKKDAGDPDYATWKEPSDFVTWSYRTAQAEGRFDEMRPVRIAERILPINFAAI
HTTSLTCFETITRILSAEPSVLESLREEAHRIYHEEGGWTKQGLSRMHRMDSTIRESQRVSPIALTFVQRKIIAKDGITT
PEGVHLKYGTLLTCPWWPLAFDEELHEEGATEFDAFRYSRAKEEYDAMTPEEKEKANALKLRQSGIVTTSDCHLPFGHGR
HACPGRFFVSHELKMIFAHLLLNYDFKHLAAKPEKMWIVRFQVPLPVNIEFKRRKTTWQPVV*

>511802|jgi|CYP532A37|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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VLSFADPRAIKAIYGLNKGVSKSDFYPVQGAVSKGKPLLSLFSTTDEEFHAKYRRCVNNAFAMSSLVNYEPLVSSTLTYW
LDKTDEVFANTGKSCDFSQWLQFFAFDVIGDLTWSKRLGFIEGNKDVDNIIGFLGKFFDYVAPVGQMPILDRLLWKNPIS
LLAQRIGLDKRIHPVTLFALNRSNERASQVEKIKQFGLSDDEKANPRGIDLLSKFAQASHDHPFMDDDRILSTCASMVFA
GSETTAISLSAIFYFLVKHPHAYTKLMQELDEAAADGRIAARPSRTLSWPEAQNLPYLDAVIQESFRLHPAPGLLLERVV
PPQGMYILSDFIPGGTVVGCNAWVVHRRAQVFGHDVDAFRPERWLDGPSATMKRSLLQFGAGARTCIGKNISLLEMYKLV
PSFLRRFDVRLEHPARDWTTHNAWFVAQRGFVVRFTPRT*

>511815|jgi|CYP620E47|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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IIINDARLALEVLRDRQQAHAARPHMVFSSDMIGWNNTLAMSQYTDTFKKHRTNIAKVAGSTTSLNVLNRVQEEESVHFL
LNVLESPEKLFDHIKKEAGAVILRITYGYTPEPKGKDVLVDMAVKTMSDFSDATIPGKWPVDIIPCLRYLPDWMPGTSFK
RTARTMSAQLQRTTERPYAFVKQQMRQNKHKPSFLSQAIENLGSDPDMERIHKWSASSMYLGGADTTVSALMTFFLAMTL
FPDVQAKAQEELDRVVGENLPLSSDRDRLPYIWAVVQETHRWHPVAPMALPHAATKDDVVMGYRIPKGALLLPNNWWFTH
DPAVYPDPMAFRPERFIESPSHKAEPDPRTWTFGYGRRVCPGRYVADNALFLTIAQSLAVFKVEKLVENGQVVEPELRFE
PGIVSHPVSYRTSIVPRSEGHRERIRRAEFEYPCEESDAEALKSMKW*

>512326|jgi|CYP5042B8|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MYAIETPYYPFWGLFLVLCSSCAVLFQFLRPTDKKWSTKKWVMPPTPPGVPVLGNLLQMMQARRRGAVSFIDWLASLKQY
GELVTLHMGSQTWVILNSDRVVTELIAKRGKITNERPHMPIASDLISNGNRIVIRQEKEWREGRRVMHQLLSGSNLKVYA
RMQELESVDMLRGYLREPKLWYSHNYRYATSVLYRIIMGYPLNKTKAELDDYQRVTMEFFTSINRSWVDFFPELSKLPHF
LQPWRRFWTDMGAFHHQIIGEWWKPIKTAVTNGTAPPSFVRDVLLHPEIKYTGTNEEAMYLAASIMAAGGDNTRMSINIF
VMAMVTRPEVQKQGRDEVDRLCTDGESLRLPCMSDLSEMPYVASMIKEVMRWRPTVPIVPPHQLTENLQFEGYSFPAGTS
FVINSIGLSSEFENAQEFQPERWIDGSEARTARNFWAFGGGRRTCVGSKVAEQALFIAFARLLYCFELVPIGSLDDKKLN
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>515220|jgi|CYP5439D1|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MMSLQKTFIFWAFYPELAIILTLIIVPVATYYGSRSSFQRRTRGKRVGKVPPTIPYYVPGIFHAFSLASIGPQKYFAQLL
KKYDSRDPFCVRAGPQPLVVVRDLKHVKTVLSALQAVTPAASRLEHFDKIYGSPRAALDLYANEGINMAEGSTLQHAHVT
VTQKHLTGMSLSANIETYMTILSCSLNDKMFQVGSWTQIEDSWSFLRQVITRCHLTWLFGKDIFKQYPNIFKDYWEFVDA
FEGFFPGLPRYWVPGAASQVRERLLQGIGRWLKVNHSGSDFARIIESDPVWDELKGLKFLQERDEALAQIKCMDVRARAA
EMLSIIHETTSALVPCVTWSLLELARRPEFAKRLTISVSRYSPSSGATYNINDITNMPFMESLLAETVRLRTAPIEVYIT
HKGLVLDDNWRVLKEVPIVTLLHDLALHSQESTNLQSKTVGKPLEEFWPERFSQKSKSNKLESNSEGGLRDVAGLDRQDS
NFDRGQPPLLGREYLPAAHAATMAIFLNEFELQLCDPELFDAALPPPRELAFGILKPVDKVEVRIRKRNTSSTK*

>516184|jgi|CYP56B4|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MASSLSLVFIAAFGVFFAAFSFFVYLFTPPRHFPKNIPTIPFYYALLPLFLDVDQAENYKKYLKDPLAKYGAVKVFFGGQ
WNILVTKPSYISEVLKHEDIYAKSGNQVKIPHSVIAEYTGENIISAHGEKWKLYHNVIKPALQADQDPEEIWKNSRLLNE
MFLDEQKKAGNGGVPLYTPLHRYCLANLSEVLYGSSFETMQRMDSPLHMIQMKIKPIIFAPIFLNFPFLDYLPLKVRKLG
RVYVAQFRKTLRTAITRGHEHHSCNENDKRSVACRLIGSHREGLLTQKDLDDNLVSTFLAGHENPQLVIMSLMYLVGAHP
EIQEQLRKEIDTVFPPHAPAHYEPLYNELHELPVLTAVLYEAIRMFPPISQLINRRTSASISLGNKIQLPAGVYVGYNAY
STNRDTEFWGDDADEFKPSRWGTNLEDINHLYRRANSKGAYISFHGGKRACLGQKWAIQQLRITLVQLVRGLKWRVDETW
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>521896|jgi|CYP5128B8|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MPILELVVGITKAYPTTTAIIAPLFLLCLRSIYRVFLHPLSHIPGPVVPKITSLWLYYHAYIGDEASTIRKLHARYGAYV
RVSPNEVDIGDADAIQAIYVSKGGFPKADCYANFDIDGHKTIFSTTDHEHRAARAKAVMPLFSTKALRDNENAIRACVDR
MIERLKLESQDTKPVNVLNLTRSLAVDAVSTHLFRENYNGVSEKGPNLSVSAFVDAFVAVGRFFYLPTMVFVWLEWAITK
WQADRETDDSMMIVDKFVSNLVANTTSKSTTYPGRLLAAGISDSEVKAQCKDLVFAGTDSTGMNLAIIMRSLTLYPEKYD
KLKEEVNNNTPRGSDAQDVQALPYLNAIVREALRISMANPTRLPHVVPVGGWTFRGIRFPAGSLVGCSGHELHFNSAVFP
QPTKFVPERWLEATEEMSKNWFAFGAGSRACIARNLATLELQLATEKLARSNVLDGSKAVQEHVEIYEWFNSKVKGEKIE
LVWNRS*
>522618|jgi|CYP53A29|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MSLINYLLTPYTLLFLPVLYYLLPYLRNWQIRSIPAPFPAAFTNLWLIAQCRRGKRFLAVHAAHAKYGKLVRIQPHHVSI
ADADAIPQIYGHGNGFLKSEYYDAFVSIRRGLFNTRDRAEHTRKRKTVSHTFSAKSVGQFEQYIHHNLEELQKQWDMRAD
QKKGGWYQMDALNWFNYLAFDVIGDLAFGAPFGMLAKGQDVAEVTQLSGETTYAPAIQVLNRRGEVSGTIGCYPYIKPYA
KYLPDPFFSQGMKAIQDLAGIAIARVNARLEKPSDRVDLLARLMEGRDESGQKLAKEELTAEALTQLIAGSDTTSNTSCA

LLYHCLTHPHVVRKLQAELDNALPDIHGVPTFAAVRDLPYLDAVVKETLRIHSTSSLGLPRIIPPGPGITLLGHHFPQGT
VLSVPAYTIHHSKEIWGHDADTFRPERWEMVTEQQKAAFIPFSYGPRACVGRNVAEMELALIVGTVFRRYEFELRQGEME
TREGFLRKPLGLQVGMRKRSEARK*

>524989|jgi|CYP578L8|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MHSVRWRAVENATLRDAHARLGPIICLGPEEVSVNCVRGGIREVYAGGFEKASSARGGYNWYAFFSNYRGVDNMFSMGCN
KAHSLRKRMISNIYSKSVVTKSPVLLAQTTTIMYDRFLPYLETAYRKDAGVLNIYTLLSAATMDIVTGYIFGLKASSNLI
DKADQLVWFLDLYNSRRSYNFWPQEFPVFSSFVEKWLGYKFTPAFVSEANEEIESWTARMCEGAGLVVAQGVVEPADTPV
VYQQLYTALAKEAKNSDVEEVELASLLASEVLDHLAAGFDTSGITLTYAVYELSKHEAIQTRLQSELRTLTPPLVPSSTP
ALPDPKAIDALPLLHAVIWETLRLHSAIPGPQPRFTPPQGCRLGPEEDLYYVPGGVRVSASAGLLHANEEVYEHAYAWRP
ERWLELEQLDEEKRKDMESRWFWAFGSGGRMCVGSHLAVYQMKYIVAALYSNYSTSFLDNTGIEQIDSYTAPPKSDKLMI
RLEKLPRVSVVD*

>589316|jgi|CYP543C12|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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KDHGPIYQVNLAGHNHVWISSDQIAKDLLSKKAAIYSDRPHIPALIDDNRTSAQYLPLLSRNNGHTRQRKFANIIMRESE
MAKFHRYPEIESTRMLVELMDEPDRYNHALESFVSRVTCRLAWGHSEASDELKQRARELLIGVSPTGALPNKLPFLMALP
DWMSPAKAWERRRAKTERTWFRTMQAQVQKEIEDKTAAPSWMKIFLDGRSKWGFKSDLEGAYAVGMHGIAGALTVAAPMQ
TFCLAMIHYPQYLPMLQEELDCVCGDRPPVSEDRPNLPFLRAIIRECIRWRPPVPTGIPHYLIQDDEYNGYHIPKGSTMH
PLEWAISRDPEMYPDPDTFNPLRWMEPKYPTYQEPLTKFPTIINSSQFGYGRRTCQGQTVADEDLLIGIGSIAWMFNISQ
KTEDGSSPQTTDLKIAHAIGMNEKASISNEELNAGINTATNATMEEKILSNFEYPGSVPANKSTSTTPKPSEPAYKPLEW
GDISQKPADPTLDYSILLIAKPIPFAFNLQPRDATRASHIRKQFAQGVERGEYTENREYWGANQGRDKPLGWSKPRSASS
SAIQMSATSHQTSHLDAPKIVIPPARASSVATMFGFQFTASPTQVASYLFGVALFSISFLVFLNSSVSFVITQRIGQSRN
VGDAVGTLGFADELVALVACPAWGLLSDRVGVRSVAVLGYTIVGVALWVLVQAKNVYPELLLARILFSLGGSATATMVTA
VLPAMTFIQVAERDPRSPTRRTNGTSHAVAASISSELTITPARFRSSSREPAIGTSAKKDTSASTSQLAGLVGMFTGCGA
LVALLVFLPLPTQFQDAGETPAKAVADAFYVVGAIAILVALGCFFGLRSLPGEEGKGWKRLASKSDDKEADTRSTRDLIL
IYPRLFWQSVRLGFTSPNIGLGYVGGFVARASSVAISLFIPLFTNHYFLQTGRCSVNPSNPSDIKSACPEAYKLAAMLTG
VSQLIALISAPFFGYLSGRFPKYNIPLLTAAVAGIAGYSWFGSLKSPDYKSEDGTGAIFFIVALLGISQIGAIVCSLALL
GRGINDDEVKPSDINYATDAGNSMHHPSAGATPPSSAPITPVDEDAPLLPQLRTRNASPPGIQSYNHIKGSIAGTYSLLG
GSGILLLTKAGGALFDSAGPGSPFYMMAAFNALLLVVGLALSGWQTAQRWMLRRGEL*

>460683|jgi|CYP505A26|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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QMFYRAETAKYWEDVELMRKTSLEVIKTRRESPTEKKDLLNGMLHGVDPKTGEKMSDESIVDNLITFLIAGHETTSGLLS
FTFYYLLKTPAAYEKAQQEVDKSIGKGPITVDHLTKLPFLNAVLRESLRLSPTAPSISLTAKEDTVLDGKYPVKAGSPLA
ALLPMIHRDPVAYGEDAEEFRPERMLDEEFERRNKQFPNCWKPFGTGMRACIGRPFAWQEALLVLALLLQNFNFTMEDAS
YQLQIKQTLTMKPKDFHMRAHLRNGVSATSLERALLSASVNESPPVKGGQEVRKEKAPKGKPIAIYYGSNTGTCEALANR
LASDAVNHGFRADVVDRLDAVRDNVPIDKPVVIVTASYEGQPADNAAHFVNWIGTLKEKELENVSYAVFGCGHRDWAKTF
LRIPKYLDSTLEQRGATKLVTMGSTDAAQGDIFTDFETWEDQTLWPALREKYGSSEVEGEGSLEATLDVEISTPRSTILR
QDVHEARVEEVKVLSGSGVGEKRHIEISLPSDMSYSAGDYLAILPLNPNENIRRATKYFGLSWDSMLTISSAGPTTLPTD
TPISAIDVFGAYVELAQPASKRNILSLVDATRDETTRNELIRLADSAFTEEITTKRVSVLDLLERFPEVHLPLGVFLKMQ
PPMRVRQYSISSSPLWNANNVTLTYAVVNQPALSGQGRYVGVATNYLRDLKAGDKLHVSVRPSHAAFHLPKDPATPIIMI
ASGTGLAPFRGFIQERAAQIAAGRRLAPALLFYGCHAADTDLLYSDLLARWQDLGAVSLRYAFSRAPGESQGCKYVQDRI
YHEREEIIELFDKGAKLFVCGSRGVGEGVQECLIRIAKEKVKKEEGREADDQKAREWFEGLRNERFATDVFA*

>509833|jgi|CYP584E30|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
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KTYWTRAVTLPIIATCEPENVKTILSLKFKDYSFGNRKTAFGPLLGHGIFNADGERWANSRHMLRPNFTRDQVADIDAFE
RHVKLMLKHIPRDGSTVDLQELFFRLTIDTATEFLFMHSTNSLRMVGQEDEHNEDVIFGKAFNYAQEDITTRLRFGIFDR
FRKNERGEEAIQICHRYIDRFVDDALKFRRELDEEKRTGTSKDDKYYFIQEVAKQTTDKKRIRDELINILLAGRDTTASL
LSNMYFQFSKKPEIYAKLREEVASLDGRAPTYEELRNLKYLKYCLNESLRTHPVVPGNSRFAIRDTVLPLGGGPDGQRPL
FVPKGTMVGYSPYSMHRRKDLYGSDADEYKPERWESLRPNWEYLPFNGGPRICLGQQYALTEASYVTVRLVQEFSQIESR
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>6309|jgi|CYP50238A1|[Caulochytrium protostelioides ATCC 52028 single-cell v1.0]Caupr_SCcomb
MQFVRYRRSDWFALPGDFEWPLIGNFIQMYGPAKESRQFKYISPAFRRFGPIFRFRAFGTRLVFLADPEAAKIVFTSKAY
HKGPELQQAFVGINQYGLPVLPDGATWKRHRRNCQPAFSPASLRLAFAAANKHVDHLSHSLRKAAQATGQGTVVMNLKRI
TRSILTDVMGDVLLSHSFGRTKTLFDANGQPVNEEDDRDEILDVKRLFAPVAVRMVTPSWMWRLKLIEKGEMVIPRGYYR
HHAQAENSEETAPRDMVKSLAPDATHDMLDRLIETEAFDDEELIDEIFAFMLAGHDTTASALLFLIFELASNTPVRERLL
REIAEVVSPDVGAAASHSQMTYEHLSRLPYLDCVIKELFRVHPVTRDIVRTVREPTVLMGYKLPVGTTISVQTADLNMDP
RVWKNPKTFDPDRFADGAPLQQKTIVFGIGQHVCIGEKMAIVELKAAVVALLRQFTFRVIPGQDIVPINSITTTLVNGLM
VEITPL*

>233|jgi|CYP5203D1|[Caulochytrium protostelioides ATCC 52028 v1.0]Caupr1
TVEPKNVAYVLKDNYDNFVKGGTFKTSLGELLGEGIFVSDGEVHRQQRKTTAGIFTGNTFRGVITDGLFEELDLLIGLMD
RWSASGEAFDFSKVMHALTMNLFGKVGFRRDFRLLERFPEEIPFTSAFDDAVRIVSCRFSNPLFRLTEWWSGEGERLRDN
IRTIDAFAYDCIAEHRARHRPHAQASHRDLLDMFMACRNPDRTPWSDVQLRDMLLNTIIAGRDTTAQALAWAMYELLRHP
AVAAKMRAEARACLAPGQYPTFDMIKALPYTNAVFNETLRLHSIVPANMKEAVNACVLPSGDHVPKGGRVAFHPYTMGRS
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SLTLPMKD

>14950|jgi|CYP50238A1|[Caulochytrium protostelioides ATCC 52028 v1.0]Caupr1
MQFVRYRRSDWFALPGDFEWPLIGNFIQMYGPAKESRQFKYISPAFRRFGPIFRFRAFGTRLVFLADPEAAKIVFTSKAY
HKGPELQQAFVGINQYGLPVLPDGATWKRHRRNCQPAFSPASLRLAFAAANKHVDHLSHSLRKAAQATGQGTVVMNLKRI
TRSILTDVMGDVLLSHSFGRTKTLFDANGQPVNEEDDRDEILDVKRLFAPVAVRMVTPSWMWRLKLIEKGEMVIPRGYYR
HHAQAENSEETAPRDMVKSLAPDATHDMLDRLIETEAFDDEELIDEIFAFMLAGHDTTASALLFLIFELASNTPVRERLL

REIAEVVSPDVGAAASHSQMTYEHLSRLPYLDCVIKELFRVHPVTRDIVRTVREPTVLMGYKLPVGTTISVQTADLNMDP
RVWKNPKTFDPDRFADGAPLQQKTIVFGIGQHVCIGEKMAIVELKAAVVALLRQFTFRVIPGQDIVPINSITTTLVNGLM
VEITPL*

>28598|jgi|CYP51212A1|[Caulochytrium protostelioides ATCC 52028 v1.0]Caupr1
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SKRLIRCLERWGRETPASELGFFLSCWHGWIPFSRNFVIPTDAAFFNAILSAQAAPFLVKGSAYDVAKPLLGNGLLRTHG
DQWKRHRRLVEPAFRPSYLKRTTHFIEHAIQDVLMRWRAAPQTYQRTPFDVQREMMRLTLSVICRTAFRLHDIESANPGS
EPIYTAFDQINGQISDLANYGALYNRVVFPVINTRAFLRLRHRLGLVNAPLQHASRAALAAQQSGTPVPVEEATSLLHTI
ASIDPVTQLPRMSRTQMLDEMRTLLWAGHDTTGNTLAWLCYLTALHPAKAAALRAEIAAQFPDRGTPDYDGLERMPLLNG
WIRETLRMYPPAVYARRVAKDVTVMDRFLPRGLEIFLVPTLLHHNPRYFERPSEFLPERWLKPEEGGIALHMTPSAYVPF
SVGPRNCVGMRLANLEMRWVLVRLLQHMEFVIPEGQPLPESQFLITLRPHDINVMVRPIEPAA*

>110|jgi|CYP65CJ2|[Clonostachys rosea IK726]Cloros1
MVSLVNLATETPGPSLASLLGLCCILLVGYGASIAIYNVFFHPLRRFPGPKLWATSPLPAALNIARGRPHKKILELHKQY
GDVVRVGPNELACAHDDAWKEICGHLKHGQPENGKDPKWTNEDMDQSLISARRERHGPLRRILAHAFSARAMVEQQPFIN
EYIDLFMQRLRENGDNGTKPLNLTKWYEWATFDIIGDLAFGESFGCLRDSKSHPWVNILFSSMKSIPLMQVMRALPFSSV
FFPCFLFCFGGEVMRNRQTSIDFSRETLKKRIGLGMIRPDFVDAMLNNGQMSEREMIDTSVLLTTAGSETTATTLVATSY
FLCSHPDVLAKLTAEVRSAFKREAEIDIHSVQNLTYMLAVLKESMRVYPPVAIAMTRQTPACGTEINGQYVAGGASVGIW
QYSVYHNPSKFLYPDSFIPDRWLDDEQFANDHKDLHQPFSYGPRNCIGMNLAYTEMRLILARIIWNFDMKMAPESEGWID
DQKVLFFWDKPPLNVHLIPRFED*

>126|jgi|CYP5055A5|[Clonostachys rosea IK726]Cloros1
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KYGSVIRVGPNELSFADPGAVRAIYNSDVFIKEESFYRAKRIFHEDFLLSYRDPKAHKQRRKLLSRGFSQASMNEFEPNI
DTKITAMLDHWTTKTAYGNAIDVFSWVHWLGFDTVYHLMFDVDPGCVKYGRSHEVMPYFYAWKPTYMFKEFLPVLERWGV
LVPGYVGNCFRGVNKWKKYAMNVIQDCRATGVNTPFLRQVISSPTDLKDPDPSASLTNSQIAEECMGGMFGGSGTTATTF
IYILWGCLQKPEVTRRLQEELRAAFPDRDAVPDYRVCTALPLLQAVINETLRRYPTIIATLPRTAIQDTVVANVAVPKGT
IVGIQNYTIHLNEEAFPNAEEWDPDRWLAKEGEEQRREAWVPFSVGPRKCIGINLAQMELSKLTAAFFRRFDASIDSSMT
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>182|jgi|CYP621B2|[Clonostachys rosea IK726]Cloros1
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IIVLNSVQAARDLMDKRGANFADRPRFVLFEVMGWGITLTFLRWSPRFKLHRKLLQQSFTQSACKAYRPIQIDEARRASR
AILRNPDNWELLLRQFSTAVVLQIGFGIDIQEKDDPYIRMSIDVEEATGEGGVPAASLVDFFPSLRYLPNFISGMSKLLS
PLVHARRTRASIQNLHDAPWDKIEPSMRASKVTRPSFMLTHFGRYLENEAKGVPNEATIDDLKGAAGAISIAGGNTTWST
IIVCVLNLILHPEVQQKARAEMEDVIGTDENGDLLRLPEFEDRAQLKFLEYTIQETTRWAPLSPLGVPHATITDESYKGY
HIPAGSVVYANAWAMSRDEKVYSSADDFIPERYAPVSEGGYGEPLPDGPFGFGRRVCPGQYLALSGVYIIIATMIATMDM
KCPVNEDGNEVKPKVSFSNGLSGVPDNFGCLITPRSERAKVLLGMA*

>206|jgi|CYP504F8[Clonostachys rosea IK726]Cloros1
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EQYRLWSLKYGDVFQVQLGERTAVIVNSAAAARSLFLGQREAMNSRPLFYVLHGKVQGGSAVTSIGTSPWSDSCKKRRKV
GATAMNKVAVDSYQPTINAESRGFIADLLAASLSNEDHIVDFRDSVRKYAMNLVLTLNYGTRVENIKQLRGDTIFAEMVL
VESEISRLRNVSQNYENYIPLLRPIGKILSWVGVRDDKYLAEIGKRRVGYHKALLENLRSEVAAGTDKPCIQGNVLKDPE
SKGLSEGELLSVSLSMMAGADTSQPTVGWALLLLSQRQDLQQKAYDAIVETDASILSAADVSTFKVEYVDAFTKEVGRYY
TALKLGLPRATHDELEANWNGATIPSKTLVFLNAWACSQDPVLFPEPLIFSPERWINAGSTATTHLHQYAFGIGGRMCIA
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>243|jgi|CYP5291B1[Clonostachys rosea IK726]Cloros1
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PIPFIDSYVAAIRFLLNPVKLVKEGLAKSKNGMFRIATLQGEYVVVTDRRKVAEYIKAPDSVLNMQEGSNDQQQIPYTMG
YGVGYRTYHTSVVRGVVTKELGINTPKMLDEATLALDDLIGSPEDYTPIGLYDTLAMTVARVSSRVYVGTEFCRNQEYLK
NAADYAQAVVISAEILRILPEFMKSFVTQLLPVMKYRRNGAKFLHQYIQDRLDGKVDEDGQKPHDLVQWLIDAAPPVEKT
VPQLAERVMALNVASIHTTTMVFSGALYSLAMEPERYLEPLRQEVLDNLEDNEITPAMLGKLHKMDSFLRESGRFNNAGL
LAMQRNVKREFRFSDGTVLPPGSKVGASSLILHRDPEVYDDPEIFDGFRFVGSKYQDSKETLVVNTTNNYHVFGHGRHPC
PGRFFAVHEIKLIFCLLLLKYDIKLAPGDVPHGIYIATMAIPDTGLKVQFRARKE*

>292|jgi|CYP548BH1|[Clonostachys rosea IK726]Cloros1
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ESAFQTIYNSDRVTKSHVYRAAQQHADQFNIFNVRDRGMHRAKRRLIGQVVSEKSMRSFEPVMLQQIDVLLQKLMKASAS
SAPVNITPTVRQLGIDIVGHLGFGYNLKMQTEETNHWLMNAFYLGDWRINVCMQWPLLTWIRPEVISGLMPNSIRARLFD
LLDTMIKARLSQKIDSKHDLLGVIAGSMGNEFKSLRQQELWTEALFFFPAGGETTATAISAAFFYLSRNRECYKKLADEI
RSSFLSGSEIRQGPQLASCRYLRAVIDESLRMCPSVPGVLWRELVTGDDGTEPFIVDGHVIPKGTQFGVHIFSLHHNEEI
FPRPFEFRPERWLEAKDEEARKAMDRGFAAFSTGSRGCAGKPMGYLECSLVLAKTLWYFDFEKVSDLGGGVLGLPGIRGR
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>339|jgi|CYP562A2|[Clonostachys rosea IK726]Cloros1
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RITPDTLSYTCSQAWPDVYGLKQSQRRGNLPKDPKFYINPPGAIETISTANDANHRRLRRLQAHAFSEKALSLQESYLQR
YTDQFVLCLRNEAKRSNGVVDVVKFVNFLTTDLIGDLSFGETFGGLDTGKVHPWLENLFTTLKTFTFMREILRLPSFIVG
AAMACIPKAMREHRSAAVSFGAEAAKRRIERGSDKPDFMSYILRHQDEQEKGMSQAEIEMASITFIVAGSETTATMISGT
VYLLLCNPSILRKLTSVIRADFRTQSDLTNVNLQQHEYLNAVLKEGLRLYPPAPDTLIRTTANKSAIIAGRVVPPHTSLT
MNVWAAHRDSANFNKPLEFVPERWMRNAPPEFDNDDKAVFKPFSVGPRDCIGKNLAWAEMRMILAKLVLSIDLISLQPDS
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>395|jgi|CYP532A36|[Clonostachys rosea IK726]Cloros1

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KLFLDQTEKLFAARDVPCNFTEWLQFYAFDVIGEITYGKRHGFVAQNEDVDGIVEYLGKLFLYVAPVGQIPFLDKLLLKN
PIYLFLSNLKIIDSTFPVARFAVARMRERLDGTSSQLSSPKPVAGTQRMDLLSKFIAAKEARPEFMTDRLVQTMAVSMAF
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VPEPGVEITGHYVKGGTIVGCSAWVIHRRPEIFGEDVDDYRPERWLVEDGLEDEERARMEEKIKKMNANMVQFGMGSRTC
IGKNISLLEVYKLVPSLLRRFDIRFEDPKDEWHLTNAWFVKQSNFFVRFSSRIDKANDVA*

>498|jgi|CYP586T2|[Clonostachys rosea IK726]Cloros1
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PPVFLIDLRPISYPMAVVADHTVAEQISRPSKDFQYSVPKSPPNPSVGALIGPFSMLNHQNESWKIIRRRFNPGFSPNHL
MTLLPCIIDKSMLFLNRLDQHAEADDVFRLTDLTTGLTFDIIGAVAMDVDLEAQEPDASRLGDFIRIFNELIQTHANDNF
HLPWWLTPFVYMTRRRLGKLVTERLQAIVRAKFAELKSGSPDGQSSRTILALSLQDIDHLSPAVLDETCDQLKTFLFAGH
DTTSILIDWAVYELSRTPRALKAVQAEVTALLGPNSHNPGVVRAKLLSPGGEHIIHQMTYISAVIRECLRLHPPAGTVRM
TMRKSKSTCVVTTSCGDYCLDGAWIYLNHSLIHRDRAVFGDTADDFWPERWLAQGGQRHTGGSPTSDESVFTAAPGAFPQ
SAWRPFERGPRNCIGQELANIEARIAIAMLANRYAFTKVGLGELDLDSRGRPEVGDNGQYKVKSELYSTIQITAKPVDGM
LVKVALALPAT*

>668|jgi|CYP68AV1|[Clonostachys rosea IK726]Cloros1
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LLTQAAQVWTEVVARDRVLDIVARVSSRIYLGDEVCRNARWLAITKLYTTHFFSAATKLRMYPHIVRHLVHWFIPECKLL
RSQFNDAQKILQPIINYRRDLRRAALATGEPVPEFGDALGWVEREATAKSVDCNPSIFQLLLSTVSINTTADLLEQCMLS
IAQHPEIINPLREEIRDVLRHSGWSKSSLSDMKLLDSVIKESQRLKPTSIAAMRRRVEEDVTLSNGVTLKRGTRVYVDAS
RMWDPSLHHHPEQWDGYRFLRLRSIPGRERMAQLASTSPDHLAFGHGEHACPGRFLAISVIKIVLCHLVLKYDWMLSPGT
DVKPVTNGILAVASPTARLLIRRRRGTAGVPGVIE*

>669|jgi|CYP576A5|[Clonostachys rosea IK726]Cloros1
MEINIPLSQVTRVLAILSVTLVSVLILQYLYGVFRALKSPLRHIPGPWYSPFTTIHLRYGFATGKIWKLVEQSHKAYGPI
VRLGPRQVWISDKEAMKQILLKVDLPKVAMYAEISRDRHSPGLFGEIRPMPHKRLKRFLSPAFTVSYVDNLDVFFAKTIR
SLLDKYRANVSLVDPARSGYEVDLMDDLHNVALDIGFGQTNPDGEIEDGVDEKVWKSIPRSIFDGLIYIKRFLRAMGLDV
KFDWPKEMIVEGLTAMAQAIDAVVQKRHKSADFARPDLLQHLVDEGQKPDTLTTMNTRDIVDQMSEVLLAGSETTSGTTA
CLFLELARNPGVRARLLETLPVLDMNDDIVTSKSVRNEPQFKYLEACIKETLRLHPIASEMGRRTGDQWVKLVGYDLPPH
TVVSASYRDLHRNEQYFPQALRFWPERFLPDGERGEAPPADLDAYYPFSAGKHSCIGINFAWAEMRMIAANLLSRFDVVE
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>707|jgi|CYP547B6|[Clonostachys rosea IK726]Cloros1
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HRALIIKGRPSGDLFLDLSKQYPDQDMITLNVLRDQICIMNPRLLADLLVHNCYDFAKPKRISSFLRHILGDGLIIVEGD
QHKFLRKSSTPAFHFRHIKELYPMMWARGEVLAKALNKDITTNGSPVIELSTWASKVTLDIIGIAGLGQKFDAVEKKKDP
LAGIYEALLEPTREKLVFAMLSLALGLPFVRLIPWKMNDLFNYLTGSLNDICRPMIREKRVAITEKEDDHSDILSLLIKS
NNFSDEALKDQLLTFLAAGHETTASALTWACYLLTKNSEIQQKLREEVTEAFPEDIGNIPSVDLAGILEQLPYLNGIMHE
TLRLYPTVPMTMRQALCDTRIGDQFIPKGTDIIVSIWYINRSPKIWGPNAAEFLPERWITDGKPNTNGGAASNYDFLTFL
HGPRSCIGQGFAKAEMRCLLAVMVRSFSWTLAMDDALVMPRGVITIKPENGMHLELTPLEDKT*

>713|jgi|CYP607D2|[Clonostachys rosea IK726]Cloros1
MIMISSTQYLVFFAVCGFGLATWRLLGRKDSVYESSSKIWTKLDIAGDTFAQKMVSLKAIIRSCPITSVPELANDGYLKF
NRALGRPFALPTPWVRSGALMILPPSKIPLLLRPDKTNEATWINLHGLVENVQLPYVVADPDVYLNVLQFEVVRRKMQSR
DMSRLAPTTAEELELSFKDIWGVDKEWKEINGWEGCGRIIARSSQRMLFGLPLSRDPALLETSRQYATSLLVGGAIINCI
PLSVRWLLGPLVALRAKYYQAKFVKILLPVVEERIRIWEADKNSGPEDFLQWMIPICASEGSSQLEPRRIALRLVSILIP
LIYAICFVFAHCVFDILGSPDSAEVLAGLEDECRRVSSQPGGLASSENINQLFRADSALRESMRMSGVSVTNLFRDVLSG
ELDVGDGLRVGPGVRMAFPTQNIHLDPENYENPLQFDAFRFSRKFESEKEAIGERELATTTTPTFLPFSYGRHACPGRYF
AVQVMKQALAYLVLHYDVELVGGPAKRMALGNTMVPAVNTQMRIKQKE*

>721|jgi|CYP552L1|[Clonostachys rosea IK726]Cloros1
MASIALSSLPLDGLVATLTPMNILRLLGLYLAYKLALGLYNISPLHPLYNFPGPRLAAMSFIYELYYDLILVGRYSHEIK
RMHETYGMSHFLNQLLGPIVRINPEELHCNDPDFAEEIAPASTARVRDRHKHFLKSFPGPAKVATATTQEHELHRLRKNA
VSRFFSRAQMLRLEPEVHAMAQKMCDKILMYAGKGPVEMIHVFGCFTGDTISQYAYGKPFGLLDQDGWLPNLKPALEAIS
RTQYLFRFVPVLSHLVAFAPYLGKFMGDDVAGLMKYMHETIPDLIIKAKRDPAKGRIFTELLESSLPEEEKTLFRLSGEG
FSLIGAGTESPANTLIVITYFLLTRPEITARLTEDLKGINPRELSWCELEQQPYLNAVIYEGLRLSYGMSSRLALVPRNE
NLYYQNGDYQYVVPRGTAIGMSASIAHHDENVFPNSYEFVPERWIDAQGQKNKALEKYMTCFGRGTRQCLGMNLAFCELY
LVVAAMVLRSIPCMEIYDTKWDDIAYDYDMLTPQPKKGARGLRVTIT*

>750|jgi|CYP609T1|[Clonostachys rosea IK726]Cloros1
MSDLITGLARPQIVGTIICTVLVAIGSALFHQVLTRTPLPSNAPKQWTKNDWPIVGAWRFYKRRRDMYLEAQRSTKTGNF
SFYVGKKLIVGLSGSEGKKTFFDNRELSISQGNADLLTGVPAPESNEFYQLFTKILTTLLKTTNLVSVLDHFKADSRRAF
DSLIAAPCARRGQDWGVMNPFDFMQRLIYQLTVRATGAREVAEDPKLLESTLRMISEFEGRASHAKIYFPWLPTINYMIQ
MLNGIKMYMIFDKIIKDRKKSGKTVDDPFQRLMDDGLSVQDTVAFEIAALVAGLINSTIHAAYLPIYWATNSEWKARIKE
EVDGVIAKYRTSEAQSPADVLDTLSLEQWETEFKFIDLSLRESIRLGQPGTAFRKNTTNKNIPIGNTEEVIPPDAYVAYL
VDNTGLSEDIYLDPLTFNPRRFEENVTEEMKQPHSYLGWGSGRHICLGMRLAKLEVSMVNAYLVSRFDFELSDEHGNSRS
EPLAPINRNLHQFNRPAEPVYLRYRSRVFSDHRYNRGPVVPHVAGDV*

>958|jgi|CYP6611B1|[Clonostachys rosea IK726]Cloros1
MYSVAEKLVNETQLTSAGLLCALVMLLTTSGFLYSLVEPRRLAKHIILEKEIPSARERREYFFSQPRDLLIKGYQRFREE
IWGIESSAGVRLQLPIGFLDELKSHSALSFEKFISSEGMLDYTGVGGLSDDAVHKFKSKFNPTVGAYVPELHDIVKVQMD
KLFHKHEDWTEVNINDGIMEMVSILSARVFTGTEASQNVEWLELGPSYVTNVLVYIEALKRWPKVLRPLVIFFFPQRQLI
LRQWEQAKEFLSSTIAKHKLQQQQINDPPSLMDYFIDDDRINLEDMVRLQMAIVVAGIHTTSASLTQLLYDLAAYPEGIP
ELRKEIKHLYEENGRVLNKKALSELKKLDSWMKESQRFRAPDLTTFQRLAVDSLTLSNGLYIPRGTKMELPTTAIQVDDR

LYEKPQVFDGLRFYEGRQKKGNENKHLYISTGKLDLAWGYGRHACPGRFIADVEIKLVMAEFLLRFDIRNPAGQPRHPDL
EFESNLLPDPKKTVMLKIAKQH*

>988|jgi|CYP584AA2|[Clonostachys rosea IK726]Cloros1
MAFSLILVGGLAAVYLFYHVTCLLLLWRRRWQMARKAGCKPPRKLPQIDPFLGTDVVLQNLGAAKKYGFLDLLKKRHAAN
GLTFTTNTYFRTTINTCDPDVIRSVLALQFHDFGMGPLRRNSASPLLGKGIFTTDGDIWAHQRGLIRPAFAKLQFNEFPL
LAMHTDEFLGVIKRHNYELDLQQLFFRSVLDSNTLYLFGESIGLMHDNATDAATTLHHALDYAQQGTILRLRLGNLMFAH
RDKKFRDSCKTVHSYAQKFVDQALEFRRKNAHLPVEKWEHPRNPNGIQTYIFLQELAKETDDPILLRDQVVNMILAARDT
TAGLLSFTVFMLARFPEVWKKTRADVLENYCEPLTYDALNSMTYLRYVIQEILRLFPPISTNSRMANKDTVIPVGGGPDG
KSPLFVAKNHVVTYSTFVMHRRKEFFGEDADEFRPERWETLRTSWEYLPFNGGPRICPGQKFALAEATYTIARMAKAYKE
IISLDDTDWREQLTLSLTLNNGVHCRLVPDDQ*

>1048|jgi|CYP5078K1|[Clonostachys rosea IK726]Cloros1
MTLPDTHIATLTAPGDGLMNLGMRDSAFLPAIDTMGILAGSPLSELAKLYETYGAPHLLYIAIGAVFLYTLSHKYASHLR
AIPGPYWAGYTGLWRAWQVYKGDFQHQSIALHQKYGPLVRIGPNQISIADSSAIKIIYGVNGGFTKTAFYPIQEGRFEKK
RLINVFAARDESFHARIKRPIGHVYSMAALTDLEFKIDHVSKLFMDKLKEHERNNKNIDLGEWLQWYAFDVIGNLTFSKT
LGFVEQSRDIDDMIATLGNFFVYAAVIGQIPYLHKVLVGNPLLPYIMPAIESFNPAVNFAVKCMKESKENVEEGRDDFLI
RFQKMVKAGSKGGHNGGAFEDADIVNHTSTNVLAGSDTTAIALRAIIHNLITNPLCYNKLQSELDEWDAAGKLSDPIQES
EARRLPFLQAVLKEAMRIHPSVGLIMERHVPKGGTTISGTFIPEGTIVGINPWVVARDKRIYGEDADIFRPERWLEADEE
QLKEMERSSLVFGAGSRSCIGKHISMMEMSKIIPQMFREFDITLVTPQKDLQTIDYWFAVQRGLVCDGLR*

>1055|jgi|CYP55A32|[Clonostachys rosea IK726]Cloros1
MATEIAPRFPFQRASALEPPAEYALLRAREPVSRVTLFDGSQAWLAVKYEDVCKISTDTRLSKERTRPGFPELSAGGKAA
AKKKPTFVDMDSPAHMNQRGMVEPFFVKEKIEAMKPYIQRTIDGLLDSMIAKGCADPIDLVENFALPVPSYIIYTILGVP
FADLEYLTAQNAIRSNGSATAQEASLANQELLDYLAKLVDQRLEEPQNDLISKLVVEQLRNSHIEKSDAVQIAFLLLVAG
NATMVNMINLGVVVLMQHPEHYEALKADPSLVPGFVQELCRYHTGSSLAMKRVAKVDIELGGKTIRAGEGIIAANASANR
DESIFPNPDEFDIRRDFAGHDALGFGFGPHRCIAEHLAIAELELVFATLFRRLPNLKVSIPTEELECSPRHKDVGILKLP
VVW*

>1192|jgi|CYP5866B3|[Clonostachys rosea IK726]Cloros1
MKQDFNLPDIFYLDLWPLGPCFLLLTSPDAAAIPTTASNFPMPDVVTKSFDGNVGTTFIEATNGPLWKYLMQQLAPGLNP
AAVKTFSHSIIDHARALHGRLEHYADMAQIINIQSVLGEYPFQVVATVFFGERLSEQAYKDTTRMVNLMLIKNSAGALIN
PVTKWRWKKDLDSCLSRLEGEIKDLVYARYAALQEHQGECAATKTPTLLDRMLLPRVQSQQPLDNTHLKLILENAKGFIV
AGYGTAVDTSTYIWMLLSAFPEVLTKLREEHDRIFHPDFDRTLVMLHENPKRIRNLHYTTAIIHETLRLFLIGMTARQAP
PDLTMLEHKGAKYPLLKDHLLGIMTQSIHYDPEVFEDPKRFRPERFLCEDRPVLRNAYRPFERGLVDHEPAKEPLFTHTD
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>1198|jgi|CYP5866B3|[Clonostachys rosea IK726]Cloros1
MGFYTRKLPPAAYLHFAITQMKQDFGLPDIFYLDLWPFGPCLLLLTSPDAAAIPTTANNFPMPDVVTNSFDGNVGTTFIE
ATNGPLWKYLMHQLTPGLNSTAVKTFSNSIIDYARALYDRLEQCAEIAQPVEIQHDPVYRFFGEKLSEQAYKDTAHMVDL
MLTKNSVGALINPVTNWRWKQEMNECLWRLEGEIQARVNARHAELQEQQDKAANTRAPTLLDRMLLPRVQSQLPLDSSHM
KLILENAKGFIIAGYGTTTATSTYIWMLLSTHLEVLRKLREEHDRAFDSDFERTFELLQENPSLIKSLHYTTTVIHETLR
LFPIGMTARQAPPNLTMLEHKGVKYLLLKNHLLGIMTQSIHYDPEVFEDPKRFRPNRFLDGDQSVPRNAYRPFERGVRAC
IGQALAMDELKISLLMLARWFEFELVDHESAKEPLFAHTDLDTKLGKHAFQVHAFTAMPGGSVKMMIRLARLPK*

>1475|jgi|CYP59F3|[Clonostachys rosea IK726]Cloros1
MPNVKLLTGHLLTIKTISESFPSNTVMHNVFWEISKQFPHGFFYIDLWPFARTTLVITTPSGAAQVEAFDLAVPDSIVHP
IETITGGPSLLTMRIGPQWKRQRRALSSGFSASSMMALAPAVAEEVAAFRLLLLDRCSAGTSDVFQLEELTLRLTFDVIG
VVTFGTKLHCQTTNNELARAMRRQIEWTTFTAMNPLQRYLSLRPLVHWINGRRIDKYIAVEIEKRFQECLNTQIDKDLDT
QRYPSTISLLLDDMMQQDEGVKNLDTYKESLKKTMTAQLRAYLFGGHDTTSSTLLYCYYLLSAHPDVLEKVMAEHDSVFG
DGTASREHDLICENPNRLNQLPYTLAVIKEVLRIFPPAASMREGRPGADVIDEQGRVYPTEGCNVWSLTLAIHHNPKYWA
DPEDFNPDRWLVGPEDPLHPVKGAWIPFQHGPKNCLGQPLAILELKICLVMTLREFCITPAYEEWDVRHPRRGNKTINGN
RAYQAEKGGGGAHPADGLPVRVTLRKR*

>1538|jgi|CYP5816C4|[Clonostachys rosea IK726]Cloros1
MDATMLRTFVLGASAVTVIFIWRKLYPKPYPGIPYVEASAQRISGDIPHLMEAMKLTDEATNSMFAISTQKLGTPIAQVL
FPGFARPLITVDDPIEVEDIVVRRQKEFDKSPMAVQIFEPMFPHGSLSQFTTPKLKEQKRLWADVMKVDFLRKAAGPKIY
TAMLEVLELWHIKASSIYEEKPFSVIDDFKNATLDVIWASLVGNESGIMRFEIEKLKEQIASGKGKDGIKMKAPPSAAIK
DEVAYVEHAIAKNARTPMPTWAQKLETYTPRYRKFRSTISSKISQAMKDSVRRYERLQAGALEDDAFDTCMMDLVLRRQI
LEAKKKGEAPTDPTKDQYMLDEMFIMLVGGHDSTANSLAWFLRFMELYPSVQKDLRTEVEAAFPQSKTPSLDQILDTNIP
YLDAVCEESLRLAGTSKGNLRQAVIDTEILGCRIPKGAEVLLNLHINHPLLPVDDLKRSPSSKAAIDKHGYRLSDTITSS
LSLFDPTRWLTRDQSTDSDVFNPYAVPSLAFGGGIRGCFGRKLATMEFRIAVVLLILNFEFLELPQELKSMLASEAIFRQ
PQKPFVRVKVL*

>1629|jgi|CYP649B2|[Clonostachys rosea IK726]Cloros1
MQRRLTPRIPLLIPRMERTVARAFDKHFPSVDEWVEIQPSKILGPVLARAAAEALVGPEFSHDPTWVDISTHYTEAVSYF
DTVLTSGIVPKVFATAAALRILPTWMQRAVAPLLPTLRAVRRYLVRAKRLLAPRISNLIRRSDDFHDADDSPDETNMLAW
LAGQDRGKDRDPNAIAQALVLLSLALVHTTLLRVVGVLYDVTAAGHDLRRELLDEIYVAGMADGGWGPEAYGRLRKMDSV
MRESQRLSPPTVIGMKRVFVRAHTFADGTHVPAGAYACMAIHAIENDEAHTPDADRFDGLRSFRTWEEEREKQMAGEGKA
SAINSSSGNPFLFETPTPTSLNFGYGRTACPGRFFASHAIKMVLVKLFCDYEF*

>1667|jgi|CYP5816C5|[Clonostachys rosea IK726]Cloros1
MTAYNSFSDNAPFSTIREPVPQKLAFMPSEMENTTLIYALLGICSVILAIAVSRVAYPRPYPGIPYNIKSASRITGDIPD
LVPVISSTNEFSNSIFAITTQKLGSPIAQFLFPGMQKPLIILEDPREIEDIFLRRNKEFDKAPMTINIFQPMFPKGSLAQ
YTTPELRAQKRLWADVMTAGFLHRATAPRIHKAALELVELWRLKATTTCTNKPFTVLDDILNTTLDAIWSSVLGDEAGTI
DYSIKKLQSELNGKPQDFNPPRGTFIREEVDYISNTISQVSNTPAPKLAAKVVTYTPRYRKFRRTITREISSLMKAAVEK
FQELELESLDNSDADQCMMDQVLRRQVLQAKKGNNALVDPTKDQTMLDELFVLLVGGHDSTANALTWFIRFMEAYPSVQT

QLRKALNNAFPGNKVPSAEEITHSDIPYLDAAIEEGFRLAGVAKASLRQALVDTSILGCPIPKGAEIIMNYHINRQPVPV
DESKRSETCRANVVKTGDGLQGRAGFDLAFGGGYRGCVGRKLATLEFRILITLLVLNFEFVDLPEGMKNMAATEKVFRQP
EKPFAKLKVL*

>1707|jgi|CYP620AD1|[Clonostachys rosea IK726]Cloros1
MTVSDPATWLAILAGLALSLFLWFWKSAKSTPPLPPGPRPLPLVGNILDLPPKGEPDHLFWLKHRDKYGPVSSVTVMGGT
IVILNDKDAAFELMEKMAIKNSSRPHMEFCFGMCGYNRFATGMPYDDTLRRHRKLIHQYIGTSASVIALRKVQEREISRT
LLRLLETPERLIEHVRTQVGATVIELTYGYSMETKQPDPVLQLVSRWVDIFCATVIPGKWLVDLFPFMKHLPSWFPGAGF
QDIARRWRKEVFAAADVPFQFAKIQWENNSNRPSFVSYSLDRAGDDIDPELESDINLSAANLYGAASDTTVSTLSFAYLA
LIKHPDILRKAQKEIDEVVGSERLPTFEDRAKLVYLESVIKEAYRWHPTAPIGVAHKSDADQIFRGFFIPKDSILLPNAW
WYAHDPNRYHEPERFNPERFLAPYNEPDPKEYVFGIGRRICPGKTFADANIWLTIAQTIAVFDVLKAVDEHGVPVEPIVQ
PITELVTHPAKFPFQIKPRSQKHEEMIRRIAQPSASEKSDLELLEQLGVLNK*

>1797|jgi|CYP50004A2|[Clonostachys rosea IK726]Cloros1
MGNILGYLTTMGLFQQLFWIFSLTIAILVLTYHVFFVIYYPSNLPRVGADKGNSWSAMRKQFNTDCLSFLNEVYENYSKK
GKSVLIPVFGPHDEVILPPSSLAWLCRQPDNVLSSLDAQIDSIQPHHSLGNKFAYDPWGGMLIKTDLNSAIETVCAVLND
ELSAAFSACFGDDYDNWKEVDLFPACWVIGGRATLRFTLGDSPEGRRLCADEGFVQSCYDVLDGMLDTAGAMASSLKIFR
PFLGPWASRAMPAKLRDLSGRIEPLYQERMRILRDQLTEKDSKPQDLIQMMLQYAVNERPKEADSLDDIAKRLALSNFGT
MHQTILTLHNLILNIIDSDTEFDTVSILRDEVTSVLGQGNDTTSVQWTKSKVAAMVRTDSVARETLRVNSFIGRTVQRLV
VAPSGITTPDGIQLQRGTMVSILAHQSQTDEDYFKDSLKFDPFRFSREREAAADEVTGQPGLSHLSLVSTSAKYLPFSHG
RHACPGRFLVDFELKMIMAYAVKNYDLEFPEQYGGKRPPNSWFSGFGIPPLDAKIRVRRKKCD*

>1861|jgi|CYP5080AB1|[Clonostachys rosea IK726]Cloros1
MSLMSMTRHRPLAQCYAFDVIGNITYSERFGVLDAGEDTHGILAALDHTLLYGTMVGLYAKFHPLIYRLAQYIPGSGASA
RGFLMNLVRARMQKRSKERTEKPKVSDAEQRGTDKPQDFVDKISEASEKNPQNVTPYHVFMMGFGNVVAGSDTTGTSLSA
VLFYLTSSPRCLQALRAEIENCQDDSGNKPPTFEHLQKLPYLQAVIKESLCMHPATGLQMWRTVPKGGAEIQGVFFPENS
VVGLNSWTAHYDEKVFDKPHEFRPERWLPNVGYSAERLKAMESYYIPVSTWSPVLNSSRFCLILIVGMGSRTCIGRHIST
LEMIKLIPQMEFDFELQETSSSMRARNHWFVKPDNLKMRVRLRSHT*

>1862|jgi|CYP5080AB1|[Clonostachys rosea IK726]Cloros1
MHAGFSLWLMLALALCVRLQDIWRTCISRLRSIPGPFLARFTRLWFLYKSYHGSFHLENIEMHMNYGPIVRLAPNLYSIS
APDKTHKKQLPEIGMIRSLEAPRPKDIHSFRRPRYYEPYVDECAEIFKQRFHETVSRARPGSGGLSSTSAIGAMLCFRFL
DAGEDTHGILAALDHTLLYGTMVGLYAKFHPLIYRLAQYIPGSGASARGFLMNLVRARMQKRSKERTEKPKVSDAEQRGT
DKPQDFVDKISEASEKNPQNVTPYHVFMMGFGNVVAGSDTTGTSLSAVLFYLTSSPRCLQALRAEIENCQDDSGNKPPTF
EHLQKLPYLQAVIKESLCMHPATGLQMWRTVPKGGAEIQGVFFPENSVVGLNSWTAHYDEKVFDKPHEFRPERWLPNRRK
TEGNGIILYPIGMGSRTCIGRHISTLEMIKLIPQMEFDFELQETSSSMRARNHWFVKPDNLKMRVRLRSHT*

>2027|jgi|CYP5321A2|[Clonostachys rosea IK726]Cloros1
MFRELSPVFLAACGTIIGFSYITLNILYRLLAHPLNKYPGPFVAKISSLFGAFHACNTDLHVKTMKDHDQYGSVVRHGPN
KLVFNTTGALRDIYRNDHITKSKSYLASQRAPGVFNLFNAIDPRLHQQKRKLAGRFLNKKSIDAFEPVMVQQIDIFIQQL
GAHSVNGPINMTSQTKYLAIDIMGHLLFEYPLNLQTEATHRHMMYSRASFFFNVAFQIPSFVDLGIRNLQSLWSMFSRKR
YVETLEEIIRSRLSQGQHVKNELQFLSAKMTMPQDDQEWIDDAKTEALWHMLAGSDTTSTLLSALCFYLSRNPRCYQRLC
LEVRSTFKQDVEIRGGPLLASCTYLRACIDEALRMTPPLPGTLWREELARDSTEPLIVDGHLIPKGTQVGVNTYAILHNK
DYFPDPFTFKPERWLEGSDEANKDAFAPFSLGSRGCLGKSMAYLEASLTMAKMLLAFDFTEIPDMQSNSKGDGKALGAQH
PNVFHVRDSFAAIHDGPFLNFRQVGL*

>2044|jgi|CYP62B7|[Clonostachys rosea IK726]Cloros1
MGLTDAASLPFLVGALIILTAIYAVFLAMKSPLRNIPGPWYNRFTSIVLKGYILAGRRIHYVDFLHRKYGTVVRLSPDEV
AISDLEAFSQIHKIGSGFIKSAWYDKLRFGREPGIFFMRNPHEHAVRRRLFARAFSNGSLLAHWEPEIRQKAELAVIKIK
EDAQAGSADILKWWTLMATDVIAHLSFGESFCMLELGKFSKQTPYIDAIQAALLCGVVRNELSWIYPILRHLPLKSIGNI
MNADSIVFDHGALAVGNMRSANDGLSTANLFSQMLSLADGQEKTGITDIAVRTEAGNLIVAGSDTTAVTLTYLIWAVLKQ
PHLQAALELEIGDLSPDLASEELKNAPLLNSVIEETLRLYGAAPGALPRVVPKKGLSVCGYFIPSGIVVSTQAYTLHRDP
TVFQDAHKFDGYRFIDKSQITAVQKTAMSPFGAGSRICIGLHLAWMELRLGAALFFRECRGAKLNHEMNDEMMEMDNRFL
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>2240|jgi|CYP65FX1|[Clonostachys rosea IK726]Cloros1
MASSILTAGPMNPAVLIVVAVLSAVIFCCVTFIWNLYFHPLSKFPGPKIAAVSHLWYAYVMHRGVAPIEMSKLHKRYGPV
VRVAPDELSFSSAVAVKEIYGYQKGGRPELVKDKKYHKFVSEPILINADREYHGILRKLLSHGFSESGLRAQEAVIQEHV
SMLMLRLREHGHEGQVAVDVTRWYNCIYLHGFEYVLHWPHAYPLINLAYGQSFGCLASSSIHPYIELVLHLVKLASTKQV
MERLPTIMKIPYALWRVPKDVRAKVAEMKALSNAKVNYRMENPPPIPDFMAKLVEAHREGKMTFNQLVGNSNVILGAGSE
TTATALAGLTFLLMTHPHALNKLTRELREQFSSAEEITAVAVNKCKYLLAIIEEGLRVYPPSPATHPRYTPPGGITIDDN
FVPGNMAVGVTILAACVHEDNFMDGDKFIPERWTGEDSRFDGDNKQGSQPFSYGPRNCAGRNLAYLELKLIIASLVWHFD
LENCHEGDWMDQKIYMVWQKGPLMVKLKPVKRS*

>2354|jgi|CYP65V13|[Clonostachys rosea IK726]Cloros1
IFAYITAYLAYNAWFNPLRKYPGPLFMRATRLGYLYKAFKGTLPFDMLDLHKKYGPVVRIAPNELAFADPAAWNDIQGHR
TKGQLEFEKAQLFYRPIDTMEIDIISADRTEHGLLRRTLSHGFSDKSLREQQPLIQGYIDKLIERLHENSNGGSNTIDIM
AWYNFTTFDIIGDLAFGEPFGCLDSSDYHPWVRIIFQMARAGVVLQALGYYPSLKNFLLSLVPDSVREQNQQHEELTNEK
LRRRMELGAERPDLIEGLLRKKDEWGLTMSRLSSNAGKLIIGGSETTATLLSGVTYYLAMNPAALEKVTNEVRSTFKTED
EIDFNSVNNLTYMLACLNEALRMYPPVPVGLPRVAPKGGANVCGHYVPEGTVVGIHQWALYHNDKFFKDPFNFHPERFLG
DNAFESDVREAFQPFHVGPRNCIGKNLAYVEMRTILARVLFNFDMRPTDATSGWEKQRVFNLWEKPPLPVYLTSVKRS*

>2550|jgi|CYP526K6|[Clonostachys rosea IK726]Cloros1
MFTVSSSEATAIAVGIAIVAMYMAYRAILPKPLPNIPYNQDAAGKLFGDVPEMMGYVMRTKRIFVRQDDQPFTRLSPLPA
LYSRLIMPMSEQCWLTSLTTRHQSPIVQAFIKPGGLPWVVVTDPFESQDILLRRIREFDRSDFFGELINGILPEQHIQFI
STDPRFKNNRNLINHLMAPTFIKEVSAPEVYMAANSLVKLWKLKSNMAHGRPFSAHQDITFALLDSIFASSFGLKESESN
TIQRIKALESWEAEISSNADETVSFPEGHVPEIFSAVLTLANSVTDTQLSPAPVLTSWVIRKFPYMRKAKAIKDQYIRNK

VEESIELINEGQTKAKSALHSVLLRERDVAAKEGRPPEYRKRAIADEFFGFMTAGHDTTATTIAWGVKLLTDNQSVQSRL
RDDLRAAFPQAAREGRDLAYSELMDAHIPFLDATVDEILRHANTIAFVTRQALQDTTVLGRHIPKGTNVFLMANGPGYLE
PNMKHSDEARSPGARKTAKSVLTGTWRDDDIALFRPERWLDTDPDTGAEVYNSMAGPSLAFGLGLRGCFGRKLAMNVLKI
HFSLIVWHFELLPTPAELGGYEAVQKFAREPTQCYIRLKEVVV*

>2567|jgi|CYP5845C1|[Clonostachys rosea IK726]Cloros1
MNTVYGITTKFYKSSFYDPSTPYDEEGIVPDPFILKDKTTHSRMKRNAANAYSLSSVVQLETYVDEVEDKLFKILDREAE
NPENIIAFDHYLHAFAMDAVFMISFGKSLNILENGDEHKVMACFDIIMPYMATIGQMPWLHKFLVGNPFMAKLILGDMTF
ETGLMKIASSQVEEFKKNLDQRSEEGPCTFTERLLLNQKSNPDSITERELITHALGNITAGGDTTSITLRSIFYFSLRNK
ESYHRLCHEVRSNCSLPVTHSSAQKLPYLNAVIKEALRLHPPMPIMLGRTVPKGGAEICGHYIREGTEVGIPSYVLHRDP
AIFTDPDAWKPERWLEAETDKDRLASMNRAFFAFGAGPHTCSGRHISMMEIVKLVPSLLLKYDFELAFPTRPWTFRVSML
APQKGVNVTIKKRG*

>2614|jgi|CYP537D7|[Clonostachys rosea IK726]Cloros1
MALLTLPVLLAAAALLCVVALVRKLYSPLARIPGPKLSLFSSIQLRYHELHGRRTAFVHSMHRRYGTAVRLGPNEVSFAS
ASALKEIYMSKGSGYDKTEFYDLFRQFGLSTMFSDKKKEPLLTGCVFFQHSKRRRILADRYANSNIMREDSLHGIQQRSQ
NFVTRIKESPKQELDIYLHLHNYAFDCVTHHLFHPHGSNSLLDKTDEEIMCEVSFDNSLVRRLMIFYNPTFGHFLGKMGL
FGAQRAIPRAQALVKKAVKQENSASFTLVGALQDGKGSLDSTQIASECMDHMVAGIETTGDALCFLMWQLSQPAYVGLQD
RLRAELRENAHMSIHELPFLDAVVKEGLRVFPSIPMSLPRCVPVGGAIVDGDWLPEGTTVSCQPFSMHRMDESVFPAPDN
FNPDRWLEEKRNADRNRLFFSFSAGGRACIGRHLATAEMKTLLRDIYGQFRSTPADEMTADMTMDDQIFTTRPKGQKCLL
KFTVVE*

>2649|jgi|CYP630B29|[Clonostachys rosea IK726]Cloros1
MNAVAGFTDLGFMYEATKGFRSKRLSELHQKYPVIRIGPNSLSFRGIQAIKDIYGHGTGCTKDIFYSTLAGTHFHLADVV
DKAEHARKRKVLSAAYALKNLEGWEHKVADKAEKFIRACDAACTAPLKSGLNPDPTDLTFCYRKYTNFFTLEAIADIGLS
EQLGFMEKGSDACTAERMDGTLYTVPGARAALHEGSIAQTCTVWAYPWYKWNIYITKLLSKRYRDMWELSDNWGDLVYHR
ATKRLARYEAGEKLDDFFQALMEDKNGQPHNLDWGEIVAEISIMMNAGSDTTAIALVNVMYQLIKNPEVLKKLRDEVDTV
LDEDEVVAPYEKVKHLPYLRAVLDESLRLAPPSSFGLPRRTPAEGCSVGTEYIPGDTTVSISAYVAHRDEKVFEDPETFQ
PERWLGEKARELQAGFVAFSAGARGCIGRNISYLEQTVLLASVVHRYEMALPSKSWLPEVREGTNLLMKEMPVKVWRRDR
V*

>2945|jgi|CYP5044A6|[Clonostachys rosea IK726]Cloros1
MQLVVLLVLAIGAALGVVKLARSYIRLAGIPGPWLAAHTDLWRFRAQNSQGYAGRLVQLHRQYGKLLRIGPNHVTVSDPN
AVSIVYSMNPVWRKGPSYYGATTVSQGRVLPSIIAMEEAQHTAVRRTVGRAFATTSLLDYESYIDHSAAEFVRVVGKLES
ADIGLWLQFFAMDVLMRIGFSETPGFMQKGGDVDGILGAVIDRFDHWGRWGAMPTLDYVFNKGPLASMLKGKTDSPLARV
GAAKFHARKTALNPPDLADLCQKFLEGRAKHPDALNHDEILGIILSTIGAGADTTAGTLTYTLFFLAKHPHCREKLQAEI
DAGLQDGTLSNPPKWGEVYKLPYLEAVLKESMRIFPIASWGLDRIVPEGGVTLAGTFIPPGTVVACQIDAIHRDTEVYGL
DSEDFRPERWIEADEEQKRRMDRAFLAFSSGKRVCTGVHIAWLEMKKTLPLIMMNFNLELLHPDQDLSKGIRVSAVKYPP
PVWVKVVKRQDGPVPS*

>2948|jgi|CYP5044A6|[Clonostachys rosea IK726]Cloros1
MQLVVLLVLAIGAALGVVKLARSYIRLAGIPGPWLAAHTDLWRFRAQNSQGYAGRLVQLHRQYGKLLRIGPNHVTVSDPN
AVSIVYSMNPVWRKGPSYYGATTVSQGRVLPSIIAMEEAQHTAVRRTVGRAFATTSLLDYESYIDHSAAEFVRVVGKLES
ADIGLWLQFFAMDVLMRIGFSETPGFMQKGGDVDGILGAVIDRFDHWGRWGAMPTLDYVFNKGPLASMLKGKTDSPLARV
GAAKFHARKTALNPPDLADLCQKFLEGRAKHPDALNHDEILGIILSTIGAGADTTAGTLTYTLFFLAKHPHCREKLQAEI
DAGLQDGTLSNPPKWGEVYKLPYLEAVLKESMRIFPIASWGLDRIVPEGGVTLAGTFIPPGTVVACQIDAIHRDTEVYGL
DSEDFRPERWIEADEEQKRRMDRAFLAFSSGKRVCTGVHIAWLEMKKTLPLIMMNFNLELLHPDQDLSKGIRVSAVKYPP
PVWVKVVKRQDGPVPS*

>2974|jgi|CYP5044A6|[Clonostachys rosea IK726]Cloros1
MQLVVLLVLAIGAALGVVKLARSYIRLAGIPGPWLAAHTDLWRFRAQNSQGYAGRLVQLHRQYGKLLRIGPNHVTVSDPN
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ADIGLWLQFFAMDVLMRIGFSETPGFMQKGGDVDGILGAVIDRFDHWGRWGAMPTLDYVFNKGPLASMLKGKTDSPLARV
GAAKFHARKTALNPPDLADLCQKFLEGRAKHPDALNHDEILGIILSTIGAGADTTAGTLTYTLFFLAKHPHCREKLQAEI
DAGLQDGTLSNPPKWGEVYKLPYLEAVLKESMRIFPIASWGLDRIVPEGGVTLAGTFIPPGTVVACQIDAIHRDTEVYGL
DSEDFRPERWIEADEEQKRRMDRAFLAFSSGKRVCTGVHIAWLEMKKTLPLIMMNFNLELLHPDQDLSKGIRVSAVKYPP
PVWVKVVKRQDGPVPS*

>2975|jgi|CYP5044A6|[Clonostachys rosea IK726]Cloros1
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ADIGLWLQFFAMDVLMRIGFSETPGFMQKGGDVDGILGAVIDRFDHWGRWGAMPTLDYVFNKGPLASMLKGKTDSPLARV
GAAKFHARKTALNPPDLADLCQKFLEGRAKHPDALNHDEILGIILSTIGAGADTTAGTLTYTLFFLAKHPHCREKLQAEI
DAGLQDGTLSNPPKWGEVYKLPYLEAVLKESMRIFPIASWGLDRIVPEGGVTLAGTFIPPGTVVACQIDAIHRDTEVYGL
DSEDFRPERWIEADEEQKRRMDRAFLAFSSGKRVCTGVHIAWLEMKKTLPLIMMNFNLELLHPDQDLSKGIRVSAVKYPR
RFG*

>3039|jgi|CYP531A9|[Clonostachys rosea IK726]Cloros1
MASHADLLHIFLRDWKVHIRPVLLISVISVVCVWFVRQLASPLNKYPGPPLAAWTNWYRFYLVLTGKYHLKIKEFHEKYG
PVVRIGPNTLDLDYPELTKTIYSIDDSWLKTDFYHGNSIKVNGKIVYTMFSIPSNEENQIMKRPIAKHYSPGAVLALEPL
LDGVMGQLCDELDQRFVKTPTGSKPCDLGAWIAYCIWDLIGAASFSRDFGFMAHGADFDGTIGIADKALDYFAAIGQMPF
LDFLLDKNPIYRLGPPSLGNIQRVALERIAARVQGKDRDYNPAVPDYLHHFLEARKENPELVDDGMLLGYLFINLVAGAD
TTALSIRAVIYFLLKNPKAYERVKKEIRGAKLGRVAKYHEAKALPYLEAVIRETMRLHPGVSMLLERYVPAGGLKLPDGS
LVPPQTSVGLNAYVTHRNKDIYGPDADEYKPERWLRAAGESEEAYQQRLKVYLKYDFTFGAGPRICLGRHVAVIKTYKLV
ATLISNYDIELDHPDREWKIHCGWFLRQYGIICNLKKVQ*

>3171|jgi|CYP5387A3|[Clonostachys rosea IK726]Cloros1

MSTPLRNMLQQEALSVVLARPWISTGIFIPLIILLIDYLNYYRLRKRLGNIPVVGDASYLWRRLRWTETDASFQKVFQKG
YDTFSKKAKPFAFWGQNEDFVIILPPGSCEDVKNVGPEKLSFLQAVEDLAANEPFAAFLTIWHLVNIVSASYLVGPEFSD
NAEYLQAIEYYCITVPAFIYGYFWVPAPLRRLYWYLSPQGFKIRACKAKLKAFVAPKIRQVIKTWQEEGQVSGSYTLLGA
MLELKAQRGQIKQDPKAMTNAELERQVDIFSDEMIFTGFDSAGPVACMVTQLVFEAMRDKDLTRALRDEIEAALAANNGE
WNTQVLTSVPKLDSFTRESLRVNGPTLLSVSRTVMEPMELKSGLRLKRGNIISNASWLIHNDEDHYKQAHEFDPYRFYDE
KTNKVTTKVTTASSSFLGYGYGAQMCPGRHLGIRMSQILFAKLLMQYNGEFENARAGKPPNIVTSGQVLPPYHTKVIMKH
RKA*

>3178|jgi|CYP613K2|[Clonostachys rosea IK726]Cloros1
MLTEVIEQVPIERMLLLAAAMLIVLCAVSSRLALTITGKPRVKSLISSKSLPGPRFKFPNGQGTEKFFGGRNAARRWRHE
YGSIYSIWAGLKREIVLSTPEQVQEFYRDSHLHIKAADNNSGWLFAELLGSCVGVVSQNRWKRVRRPFEHPFSRTSALTR
PRTFIHEARDFLSVLNPNNEIRTINTSNDLKYCPFFMVASIFFGVHTQAQRNQLQQLGPPREELFRRAFMGSMNRYGIAK
YFPGSALSLLRQFQGQWETFVKEAYERAIDTGDGSIVPLWEAVNRGDMSMQELLQTLDESLFANLDVTAHAVSWNVIRIA
YHRDIQRKVREEIRRHNESDKAYEEYMCRDDTLIAACVLETSRLHPVLPFSNPEAAEENKTVGDYIIPRRTDVIVDTHAI
NIDNPHWKDATTFDPHRHLGQKDSSRRYNMWRFGFGPRQCLGKNVADIILRIILAELLDKYEIELMEAEEVADVKLQPDS
WIGLPDGIVKMVPMIV*

>3182|jgi|CYP5046B1|[Clonostachys rosea IK726]Cloros1
MAGLLLFTLPATACLLLFIALKRWARDGRLKHLPPGPKGLPFIGNMLDMADTDKMIQKSKDWADEYGEIFYTKVGLSNFV
WLSSPKVVRELMDKKGSIYSSRPPSVMINTVSNGERLNFLPYGHKWRTIRNILHSALNLETSSTYKPVQDFESKQAVWEI
LHAKDDWEFSDINRRYSTSTIMTITYGLRVPNLQHRLYQDILKIVRHFSLATAPGEWIVDMVPMLADIVPQFLLQNWKTV
AQKWYQEDAEIYLGLYNKLMSDIKSGTAPDCFIKDMAREKLKKNPISDTTAAFAAGALIEAGSDATTTALNNVVLACLLY
PEIVAGAHEELDRVVGQDRMPDFSDEPNLPYIRGIAKETLRWRASTKIGPAHATTQDDWYNGYFIPKGTGVVLNWWAIHM
DEKRWKDPERFDPTRYLEDTLTEAESMAQPNPDLRDHFTFGAGRRNCPGVHIAHNSLFINIARIFWAFDIRKSKDKNGNE
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>3186|jgi|CYP5845E1|[Clonostachys rosea IK726]Cloros1
MTCVHVLQENVLRAVNMAQLTEYFWTTTVTSTLVNYWTIILVLLVIYYFTATIFSRGLHRIPGPFLRIVSPIPRLWSVYK
GFSHEDDSALHERYGPIVRLGPNLVSVNSADELNTIYGISTLFYKSRFYSLAEGFDEEGLIPDPFVTTDKAMHSRLRRGA
ANAYSLNSMVQLEAFVDPVTERLVNKLKEEYATRKKIVDLGQFVQQYAMDAICALTYGKDLNHIEKGDYLGFFKTSFIIN
SYMGIFGQIPWIHRFLLASSFIAPFILGPESNEKIIKLAKEEIAGDRLRSEGKDESLDRPSTFLQRLLLNQRRNPQSINE
REIMAHCFNNIAAGSDTTAISIRTILFNTLKHPRVHQLLRKEIREAFPAFGLESEFVSFRKTSKLPYLGAVIMEGIRLHP
SVGLLLARVVPEPGETICGHFLRPGVEVGINPWLLQRNAEVFPNPDDFYPDRWLPENTSQERLILMKKGWIPFGHGAHTC
SGRWISWMMIHKLVATLILLFDMDLVDGGKNYTFQNYWLTPQRGLYISLTSASP*

>3231|jgi|CYP6929C1|[Clonostachys rosea IK726]Cloros1
MAGYALMLAAVAIAVYAAYRLLLPKPIPGIPYNEAASRSILGDIPTMLSEGKEATLTWMISQASKRPGPLFQFFLNPFDK
PFVLLTDYRESRDILLRRKEWDRSDWSIDILGGQLAKHHINMKTGTAWKAHRRLLQDLMSPSFLNEVAAPNIYHSAEGLV
QLWKEKARVAEDRSFSTETDVYYAALDAVLDFGFGNSFPHRAIPHQQKLIGTMDTNNTASLSKDSEMVEFEKAPIHETLE
SMLLISDAIGAVADTGMVKLAWWWRNRQPAERKAHGIRDTLVKEQVFKAKDRLLRENGEANNKIKSAIDLMVNREKIFAE
KDGRQPVFWSDDIRDEILGFVVAGHDTTSTTLLWAVKYLTDSPDAQKKLRDALRSTHSNSYAEGRPPTYREISSANCGYL
EAFIEESLRLANTVPILERQCDKDTVILGHHLPKGTTLLLATNGPSITETGRQIDENLRSESSRLSAKERDLREWSSHNP
SAFFPERWLEKNTDSDELSFNPQAGPTLPFGLGLRGCVGRKLAYLELRLMVTLLVWNFEFKPTPARLSGYEPVDGLTHKP
RTSYVRLQSLEQ*

>3330|jgi|CYP630A5|[Clonostachys rosea IK726]Cloros1
MFILPYAALAVVLFATFARIVIYPIVKYFLDAKGLRKHPNYSWFSPFTDFAHCYLSSTGSRSINLFLEHERRNEPVLRIG
PNAIAFNHPDAIKDIYGHRTKCTKDKKESILAGTHRNLFDVVDKAEHGRKRKLLSAAFAIKNLEKWEFKVHYTAKRLVKA
FDERCTSPLKPGQTPAPEDLTVDFNHWINLWTIEAINYIALSSKLTFLDTGTDEWTAERPDGTQYKARYRFAQNNAAIVK
SVWCWDYDLWPWTAWLTKVIPSKWNQHWKNSSAWGDVCYHQASERLRRYKAGEELDDFFTCLMEDKGGAPNFLEWGEIVA
ETSAIIDAGAETTAIALTNILELLIRHPQHLATLREELASVFDEDEVVASYDKVKDLPFLRACLDEGLRITPPTSSGLPR
RTPPEGTSIMGQWIPGDTSVSMTIYGAHHDARIYPEPNVFNPHRWMDVEERKRMEPYFMPFSAGARGCIGRNISYLEQIV
ILATVVHRYDFALPNAAFKGWRFEAFNLICGPLPIKIWMRDQARPAINSEVGTH*

>3381|jgi|CYP620D4|[Clonostachys rosea IK726]Cloros1
MFSSSLWPLWDLAVPVLVYFINRIFLLRDDRYRLPPGPPGLPLVGNIRDLPPAGVPEFLHWMKHKDTYGPISSVTIMGMT
LIIGYNKTFRFYRKLLHQELGTLTSAAQFRGIQELEMKRQLIRTLRAPDKLLDHYRTSAAATILKMAYGYTLEPHKPDYL
VELADRVLGEFSQAAVPMSWLVDILPFLQYLPKWTPGANFITKSRIMRRRLETAAELPFRLVQRQMTARNHQPSYVSKLI
KHFTPSDGDSSNLDAADEDAIMWTAMSLYGAASDMTVITLTAFTAAMILYPDVQRKAQDEIDRVVGFGKLPTFEDRDKLP
YVNALIKEAARWWPITPLGFPHVVDHDFDYNDFRIPKGATILPSVYWFLHDPQVYHEPETFEPERFLAPRNEPDPASDVF
GYGRRICPGRFFADSSLYINIVQSLSMFDFRHAVGDDGKEVSISLEPQPGILTHPNKFQYLITPRSRQHVDLINQLEVDT
PWEPSDAEHLQSAAIQ*

>3625|jgi|CYP5904B1|[Clonostachys rosea IK726]Cloros1
MPSDINSTCLQIQGLVNFNYTSYRYVIWHLLSLSFNFYYVLRSVGGAAGSAFLLLTAKYIYRLLLSPLSCFPGPRFAACS
KLFEAYHVLIKNDWLDMLEALHHEHGSVVRIGPNELHFSDHQFCLQHHKRPDLYKCDNYYGILSYLLGGFADPAHHKTRK
AILQPLFSGRTLADFSDSGASAHLDTLVDRLSESSHATGYLKTQDLKAVHDSTRAFSAIDLATVLRSMPPIKMVFNCVPS
LRCFSPLGWIDQVIAPSPSEPGLANSWTIANPNQKISNNLKLIKSNSVHEKGQKSVLAMLSQQLPEEHILIHALAQAVFI
GNESLLSNLTVLLHHLIKNPDCIRRIRAELDELDVGLYGHRIWRDPKVIRLKYLTSLSFTLKLLEHDPTLYPEPLKFKPE
RWLETNPDSAAMKRSSVTFGTGTRTCLGQFIAHQVLRRTVAALVYNFSMTFADELSDEMGGYTYLNTYPKKGHEGYLKLH
FPPRFSP*

>3626|jgi|CYP5816C6|[Clonostachys rosea IK726]Cloros1
MLSYILTALLAALVVGMWRWLRPKPYAGIPYNKESAGRILGDVPLLAPLIVQTKEFSGSITATTTRRLGSPVAQLLFPNI
RKPLIVVEDAREIEDIILRRTKEFDKAPTTVDIVLPLFPHGTVSQYTTPELKAQKRLWSDGMTTSFLQRAAAPNIRTATL
DLLELWSLKATSIYQGRPFEVLEDFQSTALDTIWAAVVGEPPGIVRYEVTKLQSRVAGKTDIGELEAPRGMFLRDAVAYI
AHAIATNSNSPIPAWASRLETWMPRFRCFRATMSREIGTAVAKCVDRYQRLGKGMLDNDECDTCMMDLVLRRQIAQAQKA

QRPMLDPTKDQRMQDEMLTMLVGGYDSTADALSWFVRFMETYPGVQTELRSALRSAFPDTNHPSVQSMLAADIPYLDAVC
EECLRLGGIVKATMRQALVDTEILGFPIPKGAELFLNYHINLPPIPVPESKRSRGSRAAVAKMGDGLNEKAGQNLDVFEP
RRWLVKDEKTGNDRFNPFTIPALPFGGGPRGCFGRKLAVLELRMVVQLLILNLEFLELPAEYKGHGAVEKIFRGPDKSFV
RIKVL*

>3702|jgi|CYP5332A2|[Clonostachys rosea IK726]Cloros1
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YVGSALSFVWDNAGFLRQATRYGGRLISSRISFLGFEIFAFQDRQTVAKVWKQTSLSSPISIFVYAMKYFFEIPENVLSV
YRADTSGPFPKPHKDTNIPPQARVDHITHYGFLQALSGPRWLPTTKRCMNALVSRLEEKGFSEEWTEFEDMSEFFKEWVG
ASLIESLFGPSMLRINPTFVKNIWVFDEGIPWLARGVPSFLRPSIYKARRAAIAQIRNWYLYAREHFDESYISSDGDGDP
FWGSWLMRYRQKNLLPAEKHNDEVLSKLDLGLAWGVVGNTTPTSTLFAFHIFKDPTLLSRVRDEIETSFGNQDLLDMNPS
ELIKQPLLSSAYAEILRLFIDVFFMVTSAHKDVPLGSYHLPKGRIALINSGISHKDDSFWNTRNGEHPVTSFWADRFLID
PSDPLSGPISPGVYKPPSREDPDGDNGSKAPYFSLKGTEGSWFPYGGGHSICPGRVLAKSAVLFVSVLLARDYDIEPLVE
RIETTNWRCGLGAEQIKHAIPFRIRKRRR*

>3780|jgi|CYP504F5|[Clonostachys rosea IK726]Cloros1
MTALSIIQDAVLHQRNLFIAALIAPVTVLVVYLLRNELIRYQSRIKHLPGPTGWPIVGNLFQVRSFGQYSELSIAKLPAE
TYRQWAVKYGPVFQIQLGNTTAVVVNSVEAAKKLFIGERHAWNSRPTFYVFHKKVSKTVTSIGTSPWDDSCKRRRKLAAG
ALNRPRVESYSPILNLESREFLRDVYLASEANDGAIDFRSPVRHFALNLSLTLNYGTRVSSVKSLSEDPLLAEIIYVESE
ISKLRDTSKNYTNYIPLLRYWEPIAGFFRLTANPKDHAGSIGRRRLEYNDVLLNRLKDEVERGVDRPCIQGAVLRDPESA
TLTREELISVSLSMMAGADSNQPTMAWAILLLAHRQDIQEKAYNAIKDAGILDLPSDNYASSKVEYIDALTKEISRFFVV
LKLALPKATYSDATWGQATIPANTLVFLNSWACTRDTTAFREPDVFAPERWLPDAPDAAAHQYAFGIGGRMCVASLLAHK
ALYTVFLHLIAKFRILPADGETAEAIDPLAGLKGFTFVGTPRGFRARFVPRDGEKLKAWLDSQKLWALQD*

>3786|jgi|CYP526AF1|[Clonostachys rosea IK726]Cloros1
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RAPLSQVFVLPFRRPTVIVTDYSAVVDILARRSREFDRGQRIREIVGLIAPEFHFTMETKEEGFKAHKELVRDLMTPRFL
NEVSSPRIYDAFAALVHLWHEKSTKAMGQPFCASHDLYMTTLDSICSVAFGLDESKRSLTREIDHVRSLPMPPASPAPGP
QVSPVISDAAPVEFSRPEPNPEIEALLDIPEMLSISQKSGFPWIAQRLALLRPKHARAMRNRQSLIDTQTENSLKRLFAG
GEKEMQCALDWMLWREMGKAKKEERAPDFHSPVIRDETFGFLLGGHDTSATVLSWWVKYMAEHPHVQARLRAELRNGHSV
AMMEGRWPAMEGIISTHIPYLEAVVQETLRCASIVTLISRTTTQDAQVLGYHIPKDTSILLSLTGPGLTEPSLDVPTTPN
LGTKPSTSQTNSPPPWDNADVHLFRPERWLKADEEKGIEVFDSRAGPILAFSTGPRGCFGRRLGEMQLKTAVTLLIWNFE
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>3883|jgi|CYP5042G1|[Clonostachys rosea IK726]Cloros1
MVTTHLGSKLWVVLNSNRLAHELYAKHGKVTNGRPPMPIVNDLLSQGRRSVMLPIDGWAERRRVMHQLLSGTAMTKYAEY
QAEESVVLLANYLRKPQEWYAHNARYANSVIYRITFGEKPKEGGNLMTDVTKAQFLFLLNAPPYNFWDCFPGLVELPKFL
QWWRGTFERAGKFTHDAYFEYYSPIKRNILEGKAPQSFARDVLLGQAKYQGSDTDKMFLTMQLVEAGSDTTRLAINIAIL
AAVRWPEKFLKARADLDRVCGADAARLPDFGDEESLPYINAFAKEILRWRRIFVWTPEHTLTENLEFEGYYFPRGTSFVI
NHASISENPDYFEDPLSFKPERWLDGNETDLAAGSWQFGGGRRLCVGYKLAQKSIFINLSRLFYCFNFEEREPFDDKSIQ
HFTMGEPFPINVKARGEKWTALIERAA*

>3983|jgi|CYP6611C1|[Clonostachys rosea IK726]Cloros1
MMQIDEVLLDFENGYRRSLPIQDIRYDTVTIVVEIQNSKDALEKGVPGHKFVGSLTTIAAMKIPENLTALQNDAPSRNAL
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RLVLPLRYLDELKSHPAINFADSISRHALIEHTGLGGPPAAAVHIFKAKLNPSLSEYLPIFHDIIKRELPLAFPQNQDWT
ETHIFERMLRIVSVMSARAFYSAEGSKDEHWLELSQAYVSTVLDYLQKLKRWPEFSLPLVKFFLPERAKVIQQWNQAHAH
LSKTLEAKASGKQDSPPSLLDHLISGRKVTVDEMIHTQMAFVVAGIHTTAAGLTQFLYDLAVRSEDIPELREEIRQVYAG
CEGAFTKKSLGELKKLDSWMRESQRLCLSVSTTFQRIATKRFRLSEGLYIPKGTRLEVAATSVHVDEAFYENPEVFDGQR
SFKPRQGQSQAMKHQYISTGKTDLRWGYGRHACPGRFLADAEMKMLLSELLLHFDVKNPEGQGRHANIAFDNNVMPDPTK
TVMVKSVKGW*

>4029|jgi|CYP552K1|[Clonostachys rosea IK726]Cloros1
MSSILGLEVVWAYISLSNALLVLALWLGHRVALALYNISPLHPLYSIPGPKLAAASYLYEAWYDLIKVRRYSWEIKAMHE
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PEVHELAQKMCNKLLRLTESGQIMNVADPFNCFTADTISQYCFGESFGFLDRPDFERSFKKAFQTIVNTSHVFRHIPILR
HLIGLMPAIGPYLGSDIAFMVESMTKTIPNHIIRAQQQKSVSSPRIFTEIMNSPIPEEEKTIYRLSGEGWSLVTAGSETT
ASTLCAITYFLLSQPEKLARLREELKDEDPHKLSWVQLEKYPYLHGVVFEALRVALGIPVRTTRIAREEDLVYNNRGFNY
VIPRGSTIGMSAFINHNNEEIFPDPDKYEPERWITAQGKPDYGMEKYIMSFSKGSRQCIGMNLAFCEIYLATAVMALRVL
PHLKLHDTVYEDIKYHHDAIIPQPKKGARGVRVKAVDAHTH*

>4225|jgi|CYP550G1|[Clonostachys rosea IK726]Cloros1
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FTAFYKALTTAVERGFVNETASNIAIQEANIPRRIFSLLSFSENPKYQHGWEKNANVKVHPDCVEVDLDAILKDFGGYTS
IPMLYGQDFLKRHPTLLDDFWLFDAFALPFKAIGIPEWVPIRPYQNALAARRRLQDALIGLYRRIDQYANGTPIDYDAKM
DDIGQVAIERHRLFAQYNIPISDRGKFELGTLWAQNANTQPLIFWFILFAYSTPGLVEELRSEVCGFVPPLTGSSRTDDD
SIDVAGLRNKCPLLKSVFLETFRVVSQPTSMRYISQPMSVFDGQHHRHLQAGTWISVPHGGTQQDPSVFVNPTSFQPRRF
IKRDGKTGDASVGYGRLKPWGVGAGMCKGRVLAEKQVLATVACCIMMWDIEPVNQDGWKLPGMIPTTAVMRPSHGRSYDN
E*
>4246|jgi|CYP540C6|[Clonostachys rosea IK726]Cloros1
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PPGPRALPVVGNHYELYPDPLGNYDRLFARLGPVIKTTNMGTTIYITNDAEISRHVLREGEFFTKTTSDPSHPLFYMREQ
TALFTCDSESPAFPLAHKFVPPALSPRAIAHYGPLIQDAARGVFNVFDEMSDRALACNIYQYMFKLAGQLVFRVMIGKDL
QHFQELNTPPTLAIRLFGEYLKLMKKTSLRPQWHGYLPFGEPARLRVVRNLLFSTIETEMDNATAKGAEPLALSDPMSPI
KAVCVADFLARARDTDGQGLPRDILLGNTVVLLGAGFTTTSSLLSWAIYSLVKYPGNQQRLLQELVDHGADGERKWSHDE
LHAMKFMDCFVKETMRLHSPSFQTGRNAKTDVVLPGGYLIPKGSIVIPCFPTIHKNPAYWDNPTRFEPDRWLDPTVATTA
TRKGTYSPFAAGARGCVGFNLATMQVKMVLAELVYRYEFEDASTEPVIYDPEFLVVRPLNFYASPIRRTEWPTRTKATE*

>4293|jgi|CYP504B10|[Clonostachys rosea IK726]Cloros1
MTIANFILSTAGRYRDDPAQSLLVTLLCAPLVYILVNELVRKNARLQMKGPAGLPLIGHLWDIRVNAAEKYREWSRKYGE
VYQIQLGNIPVVVVNSASAARAIFGQNAQALSSRPEFYTFHKVLSDTAGTTIGTSPYSDSLKRRRKGAASALNRPSVATY
VPHLEVETRDFIKELYDYGDAGNTPVDPMPMIQRLSLSLALTLNWGTRLKSQKDNLFGEITHVEEEISKFRSTTGNLQDY
IPILRLNPFNFHSSKAREMRNRRDKYLTDLNDALDERIANGTYKPCIQANVILDKEAKLNKEELTSISLTMLSGGLDTVT
TQVAWFCSLLSQRPDVQEKAIKEIRKFYAEDEPMCDENDDQKCEYVVALVKEALRYYCVLRLALPRASIKDIVFQGNFIP
KGTIVFLNAWACNMDPVVWSDPEVFRPERWLEQPDAPLFTYGVGYRMCAGSLLANRELYLVFMRLLNSFRIEKFDEIDCH
PITGNADPTSLVALPPRFKARFVPRHPAALKKAVSQGA*

>4334|jgi|CYP5042G1|[Clonostachys rosea IK726]Cloros1
MVTTHLGSKLWVVLNSNRLAHELYAKHGKVTNGRPPMPIVNDLLSQGRRSVMLPIDGWAERRRVMHQLLSGTAMTKYAEY
QAEESVVLLANYLRKPQEWYAHNARYANSVIYRITFGEKPKEGGNLMTDVTKAQFLFLLNAPPYNFWDCFPGLVELPKFL
QWWRGTFERAGKFTHDAYFEYYSPIKRNILEGKAPQSFARDVLLGQAKYQGSDTDKMFLTMQLVEAGSDTTRLAINIAIL
AAVRWPEKFLKARADLDRVCGADAARLPDFGDEESLPYINAFAKEILRWRRIFVWTPEHTLTENLEFEGYYFPRGTSFVI
NHASISENPDYFEDPLSFKPERWLDGNETDLAAGSWQFGGGRRLCVGYKLAQKSIFINLSRLFYCFNFEEREPFDDKSIQ
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>4338|jgi|CYP5042G1|[Clonostachys rosea IK726]Cloros1
MPSHFNHHLSEASYFWAQTSAMQAFVTAASVWSLLSYSEYTNCSRLSINSQHRPGRNGSYHLARADYHIWEICFFTAHEI
AKYGEMVTTHLGSKLWVVLNSNRLAHELYAKHGKVTNGRPPMPIVNDLLSQGRRSVMLPIDGWAERRRVMHQLLSGTAMT
KYAEYQAEESVVLLANYLRKPQEWYAHNARYANSVIYRTFAKGGREPNDRRYKAQFLFLLNAPPYNFWDCFPGLVELPKF
LQWWRGTFERAGKFTHDAYFEYYSPIKRNILEGKAPQSFARDVLLGQAKYQGSDTDKIRSRSDTTRLAINIAILAAVRWP
EKFLKARADLDRVCGADAARLPDFGDEESLPYINAFAKEILRWRRIFVWTPEHTLTENLEFEGYYFPRGTSFVINHASIS
ENPDYFEDP*

>4359|jgi|CYP586U1|[Clonostachys rosea IK726]Cloros1
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LRPINAPVVVITDYTTAEQVTRTTSLQPTSLPKTTLAYLEPLLGSTSILVSHGSEWKALRKQFNPGFSPQHLMTLLPSIL
KQSKPLMNHLDNLVAGNTDFSLVEYLTNLTFDIIGSLVIDTDLCAQSEPGKRGELIQLFNEMMRTYSDEKSSLPWWIIPF
KARKRSLVGARMNELIQDLIRRKHAEQQQRGLNSERTSRSIMALSPQDTKELSSELVSTICDQIKTFLMAGHDTTSTSLA
WIIYELSRTPRALSAVRTELNELLGSDSDLKVVTSKLLSTDGPHFVRGMKYISAVIKETLRLHPPAGTARFGPPGDGFKV
RTPEGDEYCLDGLTVYICQPLVHRDKSVFGETAGEFRPERWLDGAVDGNTEGNFPAGAWRPFERGPRNCIGQEFANIELR
VIIALIIRRYDFTKVGLGETSLDENGHPTLLPSGQYAVESEVYNTRQVTGKPVDGMRMKVKFASQTSG*

>4550|jgi|CYP5043C3|[Clonostachys rosea IK726]Cloros1
MALSIQHVAWLGLFAVLVWVIQILYVSLRPGLRDLPGPWLARYTPLWRIMFVFSGKAPEGYRKLHAKHGKMVRTAPKVSD
FYCSFDVMYQGEFMSSMFTTRSPEEHKALKRPVAQKFSMTSLKTLEYLVDPCNEIFTASMKEMQGQVVDLGVWVQWYAFD
VIGAITFSKRFGFMEYREDVKDVLSGIDLGLRLGGILGQVPMLNRFSLGSKTFRNVLSHLSLPDPIDIVTKMVLEAIKSY
DAQTYTTDNRADFLAYFRQQQKSTGEVMPDKELMNHLTNNLLAGSDTTGISLRAVFYYLIRNPESYKKLQKEIDELDDAG
KLSPVISYAESLQMDYLQLCLKEAMRMHPGVQYPLERVAPRGGATINGHFLPEGTIVGVNAAVIHRDRQIFGQDADEFRP
ERWLCDEEKAKVMDRHLLTFGAGARTCIGKNISIMEMGKLVPQILRQFDLEWASDEPDWKVETFWFAKQTGLLVRFRERF
RNSPASLEKATL*

>4566|jgi|CYP609S1|[Clonostachys rosea IK726]Cloros1
MWAIVLTGLALLLHLLTTRKSLSYAVPKLWKPDDLPILGAWRFYTHREEMYRTAQRSTKTGNFSFFVGKKHVVGVSGPEG
RRTFFDSKDLDLGEGFNDLFAGLPAQPGGDDFDRFLKKTLATLLKSENLNKNIGMLATDARRACEALAAAPVSDSHPEWR
IMNPFDSMFRLVYQLTIRTIGAREIADDTELLNHTLSIFEQFESRTSTLKLFFPWLPTPNHILRMFNGARLYKIFSDIIK
SREKNEKPVDDALQHILDTGASISDVISFEIGSLFAGLINTGLHASYLPAHCADNPEWKAKVQAEVDGVIAKYRSTPEQS
PAMVLSSLSVEQWESEFPLIDLSLRESIRVGMPGAGLRKNIGPRDIPIGNTGEVIPKGSYAVYVFNDVHKNPDIYTECHK
FDPSRYFHDRAEDKKTNHTYLGWGSGRHPCLGMRFAKLEMVLCNAYFFAMFDFEPSEKDGSLRTEPVPPVDVKLLQIRKP
DDPIFIRYKPRVY*

>4582|jgi|CYP630B4|[Clonostachys rosea IK726]Cloros1
MYAEIVVVVTTTALIGYFILFPIIKYFRDAKALRRYPNFHPLAGITNIPFMIEAHRGFRSDLLYKLHKTHPVIRTGPNSL
SYGSPDAIKDIYGHGTKCTKGEFYETLAGTHFHLADVVDKLDHQRKRRALSAAYALKNLENWEFKVADKTERFVKAADKA
CTAPLKKGFRPDAADLTFDYRAFTNFFTLDAIADIGLSERLGFLDQGHDRVKAERMDGSIHYVNYREALYSTARAQSILA
WSEKWYNFSVEVSKWVSPDFRKWWRLNENWNDIVYHRATQRLKRYEAGERLPDFFQAIMDHNDANDSGIEWGEVVAEVSI
MMNAGSDTTAIAMNNVMFWLLKNPKCMAKLREEVDAVLDADEVIAPYDKVKHLPYLRACLDESLRITPPTTFGLPRRTPP
EGCNILGDFIPADTTVSISAWVSHRDPKIFPEPESYIPERWLGEKGKDLQPYFISFSAGARGCIGRNISYLEQTVLLASV
VHRYELALPHPDWEPKRQEAMNLGPGPMPVKLWRRDLGESEFKEKQ*

>4651|jgi|CYP532Z1|[Clonostachys rosea IK726]Cloros1
MALANLLQQLVPIWPMLLWLVMAASIFHVTYRKIATGLAKYPGPFWASITDTWRLFMVLRGRPQEEQRELHNHYGDVVRL
GPRTLSFANPQAVTDIYSGKNRMRKSEFYSVQRGIRAGRSISTIFSTTDEDAHKRLRRGASNAYALTTLLQFEPFVDSTT
SVLLAEIRKRWADKSGAEGICDVSIWLQYYAFDVIGELTFSKRMGFLEQGHDVGGIIEAIDKGLDYAGPVGQVPWIDYLL
RRNPIKLLAGRWGLLSTTLTHVAFGAEQIRQRKDQLGDKIREPVADVRPRDFLSRFLESHYVDNSISEDQVMSLTQANIN
AGSDTTAISLRTIFYHVLKVPGCYEKLMGELVAAEASNQFTDLDTRLVSWNEAQKLPYLDAVVKESLRIFPAVGLSMERV
VPHKGAVIAGNFVPGGTIVGCNPWVINYRKDVFGDDADHFRPERWVEATPDELSRMKKYFLTFGMGSHTCIGKNISYLEI
YKVVAAVLRNFTVSLHIPYLTLILQFGEEPAFKSAY*

>4666|jgi|CYP6563B1|[Clonostachys rosea IK726]Cloros1
MYIGAFMPVMQTMFQTELLATLPKDNNWKTVKIYHILFHLVCKSAARSLLGEAAAENPRWLRVQTDYIGTAISYIQALKK
WPKSFRPFVYRYVEGYSTLRKQWNEGRAIVADFLAKKKANNWEPLQQPPSFFDIVASTNRDMSVDEHLSLQITFFVAGVH
TSAATSTQALFDAAVNADCISQVRKEIQQLHASCGGVIERQHLSQLPKLDSFIKEVLRFSSPDLATFVRKSSQDVTLSNG
FHIPSGTTLEVATGAIAMDPEVFDDPKVFDALRFWKKRQVENESVKHQFTSVSPRDLEWGYGRHACPGRYMAEVTIKLIM
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>4671|jgi|CYP5259C1|[Clonostachys rosea IK726]Cloros1
MGLFTQSIVSSKIAIWGFTIIGVLFLFQLVSATLWKNNLPPSPKGYPLVGNLPEIVKAGGLFYKTMTRWAQEHGEVMRLV
LGPNSEYIINSDRACQAVFTANSAATSERPFWHVGQKYFTNYQSMDLLDASNPRWKLQRKVTLQNLTSVQRLDNLFPFLY
HETLKFIHEVAVDPDAGTEKQTQLFESLGRYVYSTFTSQLFGLEIPKTKSKASEYIWASGIDEITTTISGVYLADIFTWL
DYLPLGLKPWAKKGITRFNADVDFVESRMAHAKELFDRGEAADSFLTRIFSDMDKAGITPSDGAYFALKLVIAASDTSRI
SSWVFLEQMVMNPEIQAKARKIIDEAVGDRLPVWEDVERIPYVRYLMKETWRMRPPVGNGLGHRTKIDIKYNGYVIPANS
TIRPNIWAIGRDPERHPNPDVFKPERWEGDVSTSQESGNYADNTKRDHFAFGVGRRFCPGVQVADRSFAVAIMRFLWSFD
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>4678|jgi|CYP5052B5|[Clonostachys rosea IK726]Cloros1
MRLLEKHSLVSLLAGALVLLWILYQAYLFISFRQKYSFPNLVPGGLPFFGNMFQIPTDTAERRLYFHGLAKKYGEIFTLK
VGSNYLMFINSQRVANEILDKRGARYISRQNLPMPGDVASGGKRVVFMPYGNLWKWERKLIHEIIGPGNRNVFAPLQDTE
SRTLLYDYLTQPDLWHQAHARYASSLIMSMVYGRRTKLGDPNVDRIIDTNNEIMKMFEPGSSLIDAFPFLAYIPLPRSIQ
PWRWWGDSVFEASKRNFIEEYEGLAEREAQGKNVTCFMSEFKRLGRDKALDYESTVFLGGSLIEAGSDTTRVALNQLMAG
AALFPDWIQRARKDLDDICGANAERLPTASDITNLPYVKAISKEVLRWNISLPEIPHSLIEDDSFEGFNIPAGTSVMWNS
WGLHMSSSEYEQPERFWPERFMNDDVDKPIKGHLAFGTGRRVCPGWTIASNSLHLLIARVVYCFDFHQVSGHPIPVGKPF
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>4688|jgi|CYP57B6|[Clonostachys rosea IK726]Cloros1
MALLRGLEDSPITQAILLQLQHLGLKKLALGFFLAPASLVFAYYLAALFYSLFFSPLRKIPGPLLARMTRWWEYQVVKNG
KSNLEFIRLHRQYGPVVRIGPNRYSLSQPKDVKKIYELGGKYIKTDFYKPLLSPVVDEQNIFAIQDNNLHKERRRKISPM
YTMSSMVSYEPAVDEMTNICIDKLYQFANERRLVDIPHFVQYYAFDVIGAITFNKSFDMMKNEADKTGMIEGIRGGNDFL
AFWGIVPSMVPWVIGITKALGLDSKTSILLSYTLKQINDHRNMNAKPTIKNTKKYDTFLKKVLDLEKEGRLKQPNLLDAC
GSNIGAGSDTTAVTLSSALYYLYMNPEKLEKLRHEIDQKAKQGTISDPLTFQEAQDMPYLQAVIKETLRIHPAVGTILPR
VVPQGGMELSGIYFPEGTEVGVNAWVLHYDEEIYGPDPKVFRPERWLEGERTSIMDSMMFAFGAGARTCIGRNISLLELT
KVVPQIVRKFDMVIEDADKPLDTFCAWFVYPNYNGRFKVRETKASA*

>4776|jgi|CYP65S12|[Clonostachys rosea IK726]Cloros1
MELSRGLSLYLAFGAGVLFVLWTIVRSLYLVFFHPLSKIPGPVLYTLTDLPYLYHIAKGTWPHVLRSLHEKYGPAVRYTP
GDVSFTTADAWKTIYDHKTLANKNFSKDPRFYGASIHSDDPHIINANREDHKRMRRLISHAFSEKALRGQEAIMKQYVDL
FITKMSEHAKSGQQLDIVKWFNFTTFDLIGDLSFGQPFGCLESGGYHPWVSMIFDDVQFSSLSQILKRHPMLKYLTKLFM
PSELIKRSKEHFKLTKETTLNRVESGNMEREDFMSYILRHSGEKGLSRGEMVENAGILIIAGSETTATLLSGTTFHLLKN
RESYDKLTKEIRSTFQSEEEMTLLRVNELPFMIATLNEGFRMYPPVPIGLPRLAPSGGEFIDGYWVPEGTSVSVSQLSSY
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WSLWSKGELNVKLTEVAR*

>4876|jgi|CYP6819A1|[Clonostachys rosea IK726]Cloros1
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GAQEVRNDFGARGTQHIENLLAGDGTKRFNPRFDEHLATNVADLASPDDGWKEYPDLKTVLDIGINRSFIDTLCGPRLLS
VNPTFLEDWRCVHDNITLIFLGVPRFLFPRLIGARDRCLHAIQEWTEWATSNFHPDSIAEDGSDPYWGHEFFRERTAMYI
EVDKFPSKSIAAHNLGLLWGGTANPTPAAFWAVWEICRDPELLRLVREEATDCLLPSSSDALKFDMEKLLRKPVLQAVFA
ETLRLRVHGIIPRKTPQEGVNVRGSLIPKHTLFFINSTTQHMDPNVWCMGTAKDHPPEEFWPGRFLLEEKTSKGHFVYSI
SGKSGAWVPFGGGSHMCPGRFLARRIITGCMAHFVTRYDCEFLSEKAASGSLGMSLKTFGLGTLHPSEKVPFRIKLRDTW
YNNS*

>5018|jgi|CYP5866B1|[Clonostachys rosea IK726]Cloros1
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TALKTYYHDIVDHARALHGRLQQYRDRAQTVDMQLELGKYPFQVLATVFFGESLSEQAYKDTTRMVDLMLTKNSAGALLN
PLVRWHWRREMDKSLVRLEGEIEARICARYAVLQEQKGETATAKAPTLLDRMLLPRVKERLPIDSNYMKLVLENAKGFIV
AGYGTTTDTSTYIWMLLSVFPDVVRKLREEHDRIFDIDFDRTFELLHKNPSLLNSLPYTTAVIHETLRLFPIGMVARQAP
PDLRMLEHKGTRYPLLKNHLLGIMTQSIHYDPEVFEDPKRFWPDRFLNADRPIPRNAYRPFERGVRACIGQSLAMDEMKI
SLVMISRWLDFELVDHQPAKEPLFTHTDLDMKLGKHAFQVHAFTAMPAGSVKMRVRHTGQRSLLPTFPNSFN*

>5060|jgi|CYP617A18|[Clonostachys rosea IK726]Cloros1
MDLRDCGPFLVRIIGFFVLVLVSYAIYRVVYNIFFHPLRDWPGPRWAAATDFFKLWILHTKQAHTLGIKYHARYGPVVRA
APNLLAVDDPRLLPLIYHRRANKTDVYTTGVLGDLAPPFQTIDWKDHARKRKRVASSFLLSNLVKLEGQVDARIMEWTGA
LASRFADASKSMDFAAWSQWFAYDTICQLSFGEPLGFVREARDVFNLIKNFHDMAPFAAVVGALPWLCAPVLQSPITKWL
FMPRPGDSSGTGKIMAFRDALLEDRLRDPDRHHDGSFLDNIIAAKNEDGTPITIEEVKTECFVLMVAASDTTAAFFCGFV
RYVLQTPSVYEKLMAEIDDFQARGLLSDPVPTFEEIKALPYFEACHRETLRYQPSTPMIIPRYVSDGGLELYGRHVPAGT
EIGANPYVVHRNKEVFGEDADCFNPERWLKDPDTAREMDKCILTWGYGPRICLGKNIALLETYKLLIQVNLQL*

>5163|jgi|CYP669B2|[Clonostachys rosea IK726]Cloros1
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ISVYRLFFHRLRSFPGPRLSAVTKLWHMWKCRTAKNHLVLDSWRHYGPFVRTGPNEITIYHPAGVEYLNAPQNSNTRSDW
YDLLYPTVGVFSRDPAIHVARAKVWNKATSPAAMKEYVHRISDHIMKFETAISALGGKPTVVNDLIYDMSFDIIADIGFG
ATDMNSREGANAVGNALTIIGQTIPGPWITRLALSLCPGVWRLPYWMNLFGYTIGIVEKRMKTKPDGLDVASFLIEDTQR
EDADKISHEALLGDSGVMFIAGSTTGPIFILILYCLARFPENMDKIREELRGVDYNDVNALAALPHLNGAINETMRLFPA
GPTFGSRQTPPEGLDCDGVYIPGNVKIFAPRWSIGRLEEAFEDPHNFIPERWYSKPELVKDKRAHAPFSLGRYTCSGKRI
AQAQLRLTLAVLLTKYKISFPPGIDEMSAEKEMEDQLTPLPGDLELVFEELKV*

>5201|jgi|CYP5843A3|[Clonostachys rosea IK726]Cloros1
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TANLIVLQSPEVLHELLSKRAAYYSGRPYSYISVEHVFGEHRDKHILNVQNDSYLRRWRTAAAYLVGKNSSQGMMPMQEA
TSATLARNLLKSTPSETLRELKKWALATPLLAVCGQRLEKRDPDFADQFFSIQKVWLELLEPGKAPPVDAFSFLRWVPER
FALWKSNARMVRKFMLESYFSYLETTLKSRNDAKEKGGGPQRRFRSVLSRIMEDEEAEREKPNAKATFSHDELAYVGGGL

IDAAVDTTWATLSSFVLYMAACPDAQAKAHDEISRVSPNQPPGGDVIERIPYIRACLLEILRLCPAAPNGIPRVVSRKDN
YKGFRIPKGATVVTNFWGMQRSPDDYDRPNEFLPERYLSHPLGLKTGAQETAAKRATYTFGAGRRICPGDQFAQNSVLVA
MSKLLWAYSIVPTEKAPLDLDVETAFHPGLILGPEPFKVDFVLRDAAREEAVLRDYDEAQAVLGGFGL*

>5265|jgi|CYP530A46|[Clonostachys rosea IK726]Cloros1|
MANDLIVTFVLSLSVLFCLFKVGGVGSRASNLPPGPPTLPLLGNLHLVRLTSIYLDLGITNSNRCLFFDHMFNCKNGPKN
TGNCHTARIRSITLTSRSDRPIYSLVLGTKVMIVLSSDDAVADVLVKKSGNYSDRPDMFIGQKIASGNLRLVVMRYGNNW
RMIHRMIHNIMNIKAAVTYVPYQDLENKFLLEGLLDTPADFLAHIRRFTYSLSTQMIFGYRCVNNKDPNLLQLFESFEKW
GKLAGSSSAQIADLFPVLQKLPDFITPNVSYAKKLFEIERKNYVGHWMKSKKALDSGKGLRHPGIRKLLINRFLQPCFCN
DIYRVQSQEGFSDDAAGYISGSLLEAGSDTTASTLYGFIQAALVWPEVQQRAQEEIDQVVGPSRLPTIDDYENLPYIRCC
IKESLRWMPTVILGVPHAAIKEDTYNGYVIPQGATVVNNVWAIHMDPERSENPRVFNPERFKGDDTSLYQSAVGNTKNRD
NFVFGAGRRLCQGIHIAEQSLFLGISRLMWAFNFERPVDAKGVPIQYDIEDLVGGITVQPSDYPAIIKPRSPEKAQIIRD
SVEECKQFLDPDTLQWKKVPEGMAFSTWMPDIAQD*

>5278|jgi|CYP5090G1|[Clonostachys rosea IK726]Cloros1
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RQEPFAITLFGSTLYIVANPQHTVEVYKSNHSLSFDEFAEELVRTNGYSKWAAKTSYTDLPKDKAGFPNPKGTSFGGLIR
QMHIHQLYPGDRLRVIEDQFLDWYDRNLQLKSIQTGSMVHSSNGNDTTVPLMAWVSDYVTRAGEAAYFGDSLGSIDPDLA
QAFLEFDDLSWQVLYRYPAFLSGRMRSARRRMMQAFSKYLAIPQEERTNSVWLLKAMEDEARGIGIHDQDIAVLYFNIYW
LINTNTRKIAFWMLAFLLHCDASLIEPIHAEIDGAFQGDTLTNLTYIYQSCPTLDRVWHESLRLCSNAASVRLIRSDTTI
GGKRMLTGNRIMIPYRQLHFDGRVYGADPDNFHPERFDKAKGGGDPTKGPSWRPFGGGNTLCTGRYIARRSTLIFVALIL
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>5309|jgi|CYP663Q2|[Clonostachys rosea IK726]Cloros1
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LESRQLMYDLLMNAGGKGTDVHGFIERTTASTIFALFYGFRIKDAEAPELVDALLLDQEFSQFVQLGAYLVDVFPVLNIL
PGPLAPWKAKAEAHHQRQRKLHIGNLNRGLKEPGWTFAKQLHKTVQEENLPISFDELAFELGTLLDAALDGTVETLNWFL
LAIITQNNGFVKRAQSDLDRVVGRSRLPTFGDIPNLPYISALLEEALRWRPVGAGGVPHATKVESVYQGYRIPAGSIVVP
NHWGITRDEATFGPDTDSFIPERWMDGDRLKELPVAGFGYGRRTCPGRFFARNMLLISFSRLLWAFNISAGQTDDGTPDH
PDPEAFIDGLVTRPSPFKTKFEPRDQNARDIITGQGDTFGEDLSVLLSKIGEQLVKRR*

>5392|jgi|CYP630G1|[Clonostachys rosea IK726]Cloros1
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VSFSDPVAIKDIYGHGSPVTKDTFYDNVAGSHRHLADVSDKHDHSRKRRVLAAAYSQAGLESWEHIVFSRTRALVDQYDK
ACISPEYHSSPHAIPSTSDPNKTKGYINHRQWMNIFAQDAICQIGMSADLHMLEKGTDTITIEAHNGKKITVGYRASLWG
GHKIQRNFAWSHDWYKRMAKLTSWHPGWAHNKNYDAMVYYLTRKRLERYNKGEKLDDFFTYLFEDKYGNPNMYPMGELAA
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ITPPQGLSVMGYWIPGRTTVHCSTYTIHRNPKIFVEPLAYKPERWLGEDGKDLQQHFLTFSAGARGCIGRNITYMEQTIV
LASLIFRFDFSLMSDDWVLEQEESFTCSPSDFPIRVRRRDFENLKA*

>5500|jgi|CYP5042G1|[Clonostachys rosea IK726]Cloros1
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QWWRGTFERAGKFTHDAYFEYYSPIKRNILEGKAPQSFARDVLLGQAKYQGSDTDKMFLTMQLVEAGSDTTRLAINIAIL
AAVRWPEKFLKARADLDRVCGADAARLPDFGDEESLPYINAFAKEILRWRRIFVWTPEHTLTENLEFEGYYFPRGTSFVI
NHASISENPDYFEDPLSFKPERWLDGNETDLAAGSWQFGGGRRLCVGYKLAQKSIFINLSRLFYCFNFEEREPFDDKSIQ
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>5502|jgi|CYP633E1|[Clonostachys rosea IK726]Cloros1
MIIKIPSFAKIMATTSIKSLAAMRKIRDISWNALIYTIQQWDPATISLYLCIGTFLIFVYCRSCFGSRLDPREPRAVQPR
LPWIGHIIGLIRHRVDYFDILKKKKPMAIATLPILNGKIYAIWSPSLVQSALRNKDLTFDIFGIEFAENVFGLNKETMSI
IRGTGSIEESLVSKMMSAIKPTMTGQNLHRMNAEALKYIGSCINNIGGEGLNVPNAYRWLRELMTLATAEAIYGVENPFM
KDPTLLNALWEFDANLNTLVLGFLPNIIARAAIRNRNKVQEALMKYYEAGMDQKADVAEITKVRAKVSRESGVKNDEMAR
LEMALIFVATTNSIPTAYWLLTNIWLRPNIVDRIRAEVAQLAQISNRADNKGRDLTLRISQLEDRCPLLASSYREAVRLG
NQVLGTRRVMKDTVLTDADGTSYLLRAGVNVIWSAKLMHRAADVWGDCSDTFIADRFLAGKAGGIDMERKRRVSYLPFGG
GKHLCPGRNFAFAEILGFMSALVLGFEVVGLNSSNVRMETGAIGEGVVKPPADGQGGAITIRRRKGWEDVNWLFVC*

>5918|jgi|CYP532J5|[Clonostachys rosea IK726]Cloros1
MSLPVLLWAIFALATLHLVLNYFATGVSRVPGPFLAKLSNLYRLVNVSRGDNQVSLENLHRKYGDNVRFGPRVVSIRNPK
DVNQVYGIKSHYIKSPFYAVQQQMANGKPTQTLFTTLNEDFHAKIKRPIASAYSMTTLQSYEPLVNRTIQSLFEQLDQRF
GTTGASCPLFDWLQFYAFDVIGQVTCSTSLGFVEQGRDIEGIMHTLGTSMDYHAIVGQLPWLDKVLKKNPVWAWFASPTG
PVASFARDRLYVRLQEMKRSEGGGTAPGNGDFVDRFLQAKETHPAVVDDQQVFSYMVTNIFAGSDTTAISLRAIVYYTVK
HPRVYAKLMEELIQAQAEGRLSQLATWRESQALPYFDSVVKESLRLHPAVGMILERIVPSEGLQLECGTLLPAGTIVGAS
PWILHRDPSVYGEDAAIFRPERWLPYVDEDGETYSARLKSMNGNNMTFGKGHRTCIGKNISLLEIYKMLPSFFLKYDVNL
VDPTAEWKLQDSWFVRQEGVEFYLRPRNQDLLKSM*

>5935|jgi|CYP68AW1|[Clonostachys rosea IK726]Cloros1
MSSAAAAQPTISAWGETFPLVDPGAKLAIPTCIALILGVATFIRAIRGIKTSKIPLLNPPKGFDLTNWDARKNFGRRSGE
LMQEGLTKYKGQMFKVMTESGEITIVPSALANDIRNEPNLSFMKAIAEDFHSHLPGFEAFGGGTRSDALIQTMARKQLTK
SLMYMLTVFVDKVTEPLSEETNFATGLHFGKSPEWKAFTIYPEILDIVARISSRVFLGPAVCRNQDWLDITKSYTLEAFS
AATSLREYPNWLRNLVHWFHPGCTALRVKGAKAKEIITPVIEERRKAREESAARGEPPTFYNDAIEWLEEESKGVSYDAA
VTQLSLSMAAIHTTSDLLTETLLRLARRPGLVEELRKEITDVLQAEGWKKTSLYNMKLLDSVIKESQRLRPISMVSMTRK
AVGDVKLPNGNIIPKGARTAILTDKHWDSGIYANADEFDPYRFQRQRGTETDNTAHLVSTGPASLGFGHGQHACPGRFFA
ANEIKVALCHLIVKYDWKVADDATPEPEPLRYSFSLQVDPSAQLYVRRRPTAGLDIDSI*

>5936|jgi|CYP65S9|[Clonostachys rosea IK726]Cloros1

MSIIWLVVLIIPVYFVVIGIYNAYFHPLARVPGPKLYMFTQIPYNYHSIKGEWNSVLKELHDQYGPIVRFDINRVSLTTA
DAFKTIYGHKNDADKTFNKDPSQYRAKQVASHIINANHEDHKRMRRLISHAFSDKALRNQEPVVQSYVDKLMGRLSEASD
RNETVDLVRWYNFTTFDLIGDLAFGQSFQCLDSGNYHPWVRMIFENIKSFTYLMVARRLGFEGLAPYITPAHLAKSAREH
AELTKETARKRIATKDTEREDFMSYILRHNDEKGMSEDEIIENSNILIIAGSETTATLLSGASFYLLKNPDKMEKVVQEV
RSSFASEADITIQSVSQLSYMIAVLQEAFRMYPPVPSILPRVCPKGGEYLEGYWLPENTTVGVPQWAAFQSARNFRNPSS
FVPERWLDDPEYSGDQKAVVQPFSMGPRNCVGKNLAYAEMRLIFARLLWTYDIELMPESENWNDQKIFALWEKKELKVKL
TKRVGLPEQTA*

>6048|jgi|CYP535D16|[Clonostachys rosea IK726]Cloros1
MGILSVLHAHWLALVVVSFGLYIIQTCVVYFRLRKVKGPWLTGISGWPHSLAILSERCHEWYEEANKKYGPIVRVAPNLL
VTSSPKVWAHINTHPGYRRSPWFYQACRVGYRQDNVFSCTDEDIHSRKRKQMVAGYSGRENLEMEISIDEQVQELVDLLR
SRYLSTQEAIVPVDLAQKVHYFTLDVISSIGQGDTFGLLRTDFDVDDYLKSSHEGMKMFNASLALGFSWLAHAPVIGAFI
SPRRTDKRGIGIIMDMCFSQVDKRLAEPNDKRSDMLASFIRHGLKGEELRIESVEQFIAGSDTTSAGLRSALLHVITNPR
VYKKLQKEANEAVRGGIVPKAGEGIITSNQAKRLPYLQAVVRETLRVWPPVAVLFSRDVPRGGDTVEIESGENVHLPGGV
SIGYSAHGMHRNEEIYGTDAKAFRPERWFESDTAKLAVMLRTNDLIFGHGRFQCLGKVVAQMELSKLLFEIVRKFDIALI
DPTKPWKARNYMGLFVISDMWVQVMERVEQVEY*

>6092|jgi|CYP68D6|[Clonostachys rosea IK726]Cloros1
MTLSNSSAHHLPASSALISSLDLPTLSFFLATAVFVVLFSRVRRSRDTIPILNPKKKFELTAHRVKKLFLTNGNAMVDSW
FNANPHKPARLHADFGEVTILPPNLTNEIRNDERFNFSKWTLNAFHGHTPGFEGFREGGHDSRILQNVIIKDITKSLNQI
TEPLAEETALAVSDVLPSDKEWHTIPIRSTIAHIVARVSSRVFLGTEICRNKRWLEITLRYTVDAFMAAGNLRLWPAPLR
PLVHWFMPSCQKLRSEVAEAKEIITPVLEDRRLKKKQAQQGQVKYEAPDDAIEWVERAANGESYDPVSIQLILSVAAIHT
TSDLVTQVMIRLAQNPEILEPLRNEIQTTLKQDGWRKTSLYNMKLLDSVIKESQRIKPIGNVVMRRVASEDVTLSDGTRV
SKDSTIAVTSRRLWDKTIYAEPDKWDGYRFYNMRSDPDKQASAQLVATSDKFLAWGHGKHACPGRFFASNEVKIILIHLL
MNYDWELPEGASTAIHNVGLAMTMDPALELRIKEREVPIEI*

>6117|jgi|CYP504F6|[Clonostachys rosea IK726]Cloros1
MSLASQFHHSLRVLGLGYGLALLLLLIPTSFLFIYILVNEFVRYSTRIPNLPGPRGYPLLGSLPSLRGKIPAEEYRQWAK
RYGNVFQLQLGNTTTVVVNSAAAARDFFISQRNATNGRPRFYVLHSKVQKGNAVTSIGTSEWDHSCKRRRKVAATALNKT
SVESYLPILNLESRAFLNDLLAASKGGTQSSTNVLDVCQKFALNLSLTLSYGTRVEDVKDLHNNILLSEILYIEEMITKY
RDVSGNYLNYIPLLRPFSSAAELLGFSKGEKLMADIGKRRYAYHALLQKNLRGEIDLGVDKPCIQGNVLKDPDSKGLTEG
ELLSISMSMMAGSDTTKRSLLWGMQLLANRQDIQQKAYQSIIEAGDNISSAPDVAHTRIDYIEALTKEIGRFFVVLRLAL
PKATHGHVNWSGASIPPKTLLFLNTWACSRDTDVFADADVFDPERWLEGEDVHRHQFAFGMGGRMCVASHVASKALYTVF
LHLVAHFRVLPAGDACNPTTWDPLEGLLSKGNHQAAPAFTHVRLVPRNLETTKKMLSVKS*

>6178|jgi|CYP5328D5|[Clonostachys rosea IK726]Cloros1
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LWEIEDRAKSHQEMGPAFILVTPDRNWLYIADPDTINEVFRRRTDFPRCVELTEVLDVFGPSIATAEGARWKVQRKIVTS
CFTEPTNEIVWSESLWLAKDMLQYWTSKPSLATTARDCRTLSLNVLSRAGFGKSFKFEGQEEQTSSSETYQGSLQMILEN
CFLIFAFGTKALGNPWLPEKLNKVHKACEAFQNYMTTMYEEAKGADNSTSKNFIASLVRASQREDEHALTEKELYGNMFT
FNFAGHDTTAHTFTFALYFLAAHPDVQAWINEEIREVFKDEDCSYTQSQEQSLNVGGGKTVVIPPNTMVLPSYAAIQSEP
DHWGNDPLVWRPSRWIEPTSDSISRPGSEELINWRKGTFLGWSDGARDCPGRKFSQVEFVATMATLFRDWRVDPVLEHGE
TLESAQERVKKLIETDSGPVLLLQMLHPERAPLKWTRWKAE*

>6277|jgi|CYP541A13|[Clonostachys rosea IK726]Cloros1
MFTPIPQPKPLPIVGNLFDIKASNTWASLKKLAETHGEIFQVKILGRTIVFIAGANLAEEICDEKRFRKLVSGPIIQIRA
AVHDSLFTAFHHEESWGIAHRIIAPKLSPQTMPDHFYEMRDITAELVQQWKDLGSNNTITLVEQLNRLNLEATAYTLYGT
RLDGLKGPAHPMLQAMEDSTSEAVQRPTRPGIVNWLLHGSKFKKSIATMRKFAADVVEERKKNPTDRQDLLAAMMNHKDP
ETGKPLTDSQVIDEIVTMPIGSSTAPCTITSIVYYLLKNPSVIDAARQEIDSVVGDGDFRFEHLEQLKYVEGVVREGLRL
GNPAPGFNIEPIPSDDKKPILLGGGKYEVAHNQALILVLSGVNRDPALFEDPLTFKPERMMGDSFAKLPKAATRWFGNGK
RECIGKHYAWQWLVQTTAQLLREVDFEQVDPHYDVEKAGMDGWFNVRPIGYQVRVKSRVF*

>6283|jgi|CYP584AY1|[Clonostachys rosea IK726]Cloros1
MYGRWPDIVMILFILIFARIAIRCTLYWRMMKREGCQASCKKAYVRDPFIGLDFAYDRLFHGSPARNLKGSLEMYKRLGS
TYTVNRLTTQTIYTCDVGNIKHLLATRFDDYKLPAVRVSVMGDLLGPGIFTLNGHSWSSARSLLRPALKKERLYGLSNIL
ERHIQSMLGQISSQGGSLDLQPLFFSLTMDVATEFLMGYSTNMLNNPDGSAQQFVDDYMVCSTEAARKMTLGPLQFLRFN
SAAKQSKARVFKHIDDYIEKCLKRTETGNSTVEQSNLLQELSGAIKDRKMLRDQVLHILLASRDTTASLLSNLFFVLARM
PDVYAKLRSEIVAVVGDSVPDFGQLKELQYLGWCINESLRLHPVIPSNAREAAKDTVLPVGGGPEGDSPLFVRRGTIVLY
HVYSMHRDPAVYGRDVEEFRPERWNGLRPGWAFLPFSGGPRVCIGQQMALMESYHIVVRLVQAFERLEPTDYQPWRELFA
LATTCENGVHVKLHKA*

>6428|jgi|CYP570E4|[Clonostachys rosea IK726]Cloros1
MMSLWTAQRIQPQRQLLVWTSLGLLTAFIVQQIRQWYRLRHIPGPRLAGWSILWQLSGALSGRYHEILNEVAEEYGPLVR
IGPNELLSTDPEVIRRISGVRSRYQKGRFYDSGKVTPGVDTVVSMRDEEKHKAMRAKMWAGYAGRASEGSSFEPGMDRQV
LNFMDLLERKYISTAERTIPVDLAQKTQFFALDAIGDISMGTPFGYLTKDEDLFDYNEINRTSLPVMNVVSVLPWLTDIV
HQWPFRLALPKDGDNVGFGRLMSIATQLVDARLDPQSDPMQDMLQAHINSGMSREELIQQVFIFIIAGANSSSQALRMIF
LALVTNPTTYNALCAEIREASATVSSPISWAETQSLPYLKAVVQEGFRMWPPVGGLGFKTVPPEGDNIAGYFIPGGTDVG
QGFHGVGRSKSVWGQDANVFRPERWLIADQEELRSMQAAVDTHFGAGKYSCLGKPIALMELHKAVFELLRRYDLGLIDPE
KPIKVESSIFHMASDFWVKLTKRSN*

>6871|jgi|CYP628J3|[Clonostachys rosea IK726]Cloros1
MGIMCVLVSCLQLLYPSATVISSHYQGPSELSITDPAAVEAIYGTHSPTVKGPWYTLLEPRYPLFMARDKEEHARRRKVW
DQGFSTKALLGYDSRITKAIDELLQVIDRDHNQPINITKWFDFFVFDVMEDLAFNKNSNMIRHGEDSYIFQTIRTDMFNI
AFFAHLPWLLPFLKRTPVLNWNYIKFWNWIQNQINERRKNEPDQPDIFSWLLNNYDQGKKTRKDDWNLHGDAQLIVIAGS
DSVAATLTHIFYELAYDANLTKTLQDALDALPSLENSNLINVELLDAVINETLRLHPPVPSGTQRVTPPGGLRIGSNQIP
GNTIVQVPSYTVFRDPRNFERPTEFLPDRWTEHKELIKNKSVFIPFNMGPYACVGKRLALMEIRRVTAEILTRYDITVAP
GYEKGSFLGKKQDTFTVVSGPLPLIFTPRTP*

>6915|jgi|CYP620AA2|[Clonostachys rosea IK726]Cloros1
MDIIPYLAAIGALLLPVVIQKLYRKLSLPRLPPGPPAIPFLGSVFDLPKGDIPDFEHWLQYREKYGPIFSLNVMGQTIVV
IHDKQVALALLEKKSLINSSRPWMEFAGGLVGFVKFTSAVPYNETLRLHRKFMHQQMGTKTIAASFRKDQENEVSWMLQN
IMDQPEGLIDHLHRAAGSFIIKLTYGYSIDVSRPDPVQRLVMRMVSIFNESAQPGVWAVDMFPALHYLPDWFPGTSFKKV
GGAWREEVMAAAEKPYQFVKMQMRTGSHQPSYVSKALEQCGEDPSATYEAAVKFSAGAMYGGGSDTTVSTLSFLFLAMVK
FPDILRKVQEEIDRVVGRDRLPQFEDRPNLPYVEAVVKEAFRWHPVAGMGVPHASDEDQIYNGYLIPKGAILLASVHGMA
HDPETYHDPDSFLPERYGEPYNEPDPKEIVFGFGRRICPGRYFADSMVYLAAVQTLAAFDIVKTTNEQGQEIDPPVKVLP
GVISHPADFPFKITPRSEKSKSLISANVAPRQGAMSDAKIFEQNGFME*

>7156|jgi|CYP548BL1|[Clonostachys rosea IK726]Cloros1
MAWTGVVGVVGTYFLYLLIAWLFLIFSRRFFFHPFKSIPGPFLAKVTNLYGGIQAIRRRGHLASYENHVRFGSVVRYGPN
RLIFNTITAINDIYANPLVTKSEVYVLTRMTPLGNVFDTPEVDEHRRKRKIISQPISEKAMRDFEPTMAEQIDTFIQQLR
ESCRLSEPINMTKRLEYLGGDVVGHLGFGYPLKMQTEETNQWLMWGLSFVNVRVNIYMQFPKLAFIEPALKILGSKIRNK
YRSIIGKMIVNRTSMPKDAKRDLYAYAADSMKGGTSLINSELWAEAFFFVVAGGATSATAMAALFFYLTRYPRVYEKLNE
EIRTHFQSGEDIHSGKALRDCVYLRACIDEALRMSPPAPGMLWREKIPPKKLPDGSIEDPPLVVDGHVIPGGSQVAVNIY
ALHHNEEYFSDPFQFIPERWLTAEGRDSSSLMRRAFAPFGVGGRSCAGKAVAYLEISLTMAKTLYYFDLEIAPGPQGQIG
AGTVGRNDGRGRKDEFQLYDVFTSLHDGPVLKLKERQQAAGE*

>7306|jgi|CYP504A51|[Clonostachys rosea IK726]Cloros1
MDTAHFPYAQSRLLEYVGFREAATFALVVILLTTLIKETNKTDIPKIKNLPEIPGVPLFGSLFLLGRHHARNCARLAKDY
GDVFQARLGNRRFIYANSFESVKELWIKNQSALISRPKFWTFHEVVSETQGVFTLGTSPWNDSVKRARKAAATALNRQAV
QTYLPFIDLESTTSINELFRNLKLDKNIDPNGYFQRFSLNISLTLNYGIRLDGTVRDHLLNEVVTVERELGNIRGIAHNW
QDYVPLLRLWPGFKKQAIKFRGRRDDYILSFFEQLKERIAKGTDNPCIAGNVLKDPEAKLADNELKSICLTMVAAGLDTL
PGNINMTIAYLSSEHGQEIQEQLHKELIKAHAGEDPWHACLVEEKSEYMRSFVKEVLRYWSTLNLSFNRQSTKPITYKGA
TIPSGTPFLLNMWAANHDPEHFTRPMDFLPERFMGIDEVGAGTQHFGYGAGTRMCAGAHLANRELYAIFSRLVLAFHIRA
TDDVKSRPILDTIECNSVPTSMVTQPKPFKVKFVPRDEKKLDTWITESFKATEYL*

>7400|jgi|CYP5047A5|[Clonostachys rosea IK726]Cloros1
MQWLVLNKNVWITVGILLAAGVYRKTQPPLIVLATGLTRIRRFREWAKEYGSIFSLKFGPTNIIVLCDRKAIHSLLDKKG
AIYSDRPTSYVGKLLTQGDHIALEQMDPIWREKRKVISHNFSPKNLDEKHFLVQDAEASVLLSDLLDSPKNFFNHVRRYT
ASSASVLAFGHRGPTFDSFWGHVVYDVMDRWTEAMEAGANPPVDEYPILKLIPMRFARWKRRAVSAGKVFDEMWGKARQI
VDERRAKGDQRECIIDRLLDDYDRKGWPMSQHAFNNLVGEVVEGAADTTAAQILTLILAFATHPHVQTKAREQIDRVCPP
TKPPKFSDFNDIPYINQIVKEGMRWRPVVWRIFCNKAVVKRAVTGLPHRVREDDWYEGMLIPKDSTLFVPVWALHHTEDL
FKDHDTFDPDRYTAHPKLANDYAGSPEWANRDNLHHYGYGAGRRLCPGIHFAERNMWRIAAKLLWAYEFSEPVDPVTGKT
VPLDTHAYNAGILQAPLPFNVQIKPRSEQHIATIRKDLISSLDFLKSWD*

>7505|jgi|CYP65S15|[Clonostachys rosea IK726]Cloros1
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YGPVVGYTYNDVSFTSATAFKTIYGHNAGGDRNFEKDVRVYSKERPQSNIVNAGNEDHRRMRRLISHAFSEKALANQEEV
IKQYVDLFIGRLLVRAKSGEVVDLVAWYNFATFDLIGDLAFGQSFGCLDTEAYHPWVRMIFDTLKILVYKDIAKRLNLSS
LIPYLVPAKLKKSTKEHYELSTQTAMKRLETKNMDREDFMSYFLRYNDERGMSAPELADNANILIIAGSETTATLLSGTT
FLLLKNPEKYRKVAEEIRTSFQSEDEITISRVNQLSYMLATFSEGFRMCPPVPTPLPRAVPKEGDFVDGYFLPENYASDE
KSVLQPFSLGPRNCIGKNLAYAEMRPLLARLLWNFDIKIMPDSLDWNKQKVYTLWEKGSLNVKLTKVERNSA*

>7650|jgi|CYP5075EX|[Clonostachys rosea IK726]Cloros1
MGWQLTVGGALLGLGGLWISYCLLLLVSNYRKARTMGLPIRIIPISHTNPFWTVVDRHVLAIIKRLPFGLGDNNFTRYNF
RGWELDDGCRSHDEMGDAFVMVTPGRNWLYIANPEALTEVFRRRADFHRCVELTEILDVFGPSIATAKGQRWRMQRKITA
SCFNEPTNEIVWREALWLAKDMLHYWSTKSSLTSAADDCRTLSLHVLSRASFGKSFKFEGHEERGTTGISASYKNSLQTI
LENCVVIMALGTKTIAKPWMPKRIQKIHEAWVTFRKYMTDLYEEEKKAFSEGHTGGGNLMKSLVRASHEETKIGTGLTEA
EIYGNIFAFNFAGHDTTAHSFTFAIYFLAANPDVQAWIREEIQEVLGENDEEWSYTQDFPRLKRCLAVLMETIRLYTPVP
VAKWTDQQAQILEIGDKVVHIPPETMIIPAYVALHTQPENWGSDAVDWRPSRWVTSTSIPSTLDEEELITPRRGSFLGWS
DGSRDCVGRKFSQVEFVATLARLFLDWRVDPVPLGEENMENARERVKTLIKTDSRMVLLLQMLHPERAPLRWTKITDSAT
DVRRSY*

>7901|jgi|CYP616B1|[Clonostachys rosea IK726]Cloros1
KLPGPKDNNFIFGQCKKFLKAAWVPYLYQEWSRRWPESPFIHFLGLFNSEYLIINSVQAYQEVLQTKNSSFSKPALTRKA
ATVVIGDGLPFAEGDLHRRRKGVLLMESLLWKASLDLIGIKALGVDLNHVESDDSQLHTLVGETMKQSLSGHIIHYLSSY
LPLRRLLPIEMNNNFLSSCAQIRELIWAHVRDCRCQINSGTKTGTPNAIRLMMEQEPLWNDEEIVEYILNLLILGHDTTS
CSLVWAVSILSRDPKHQDRIRKEIEGLGLDPEGLGYEQIERLRFLDNFIREVLRTHCPVAYVPREAIEDVEIAGVHIPKG
TVIHPCPGVINLHPQVWGPTASEFDPDRWDNLQGAAANAYAFETFHNGPRVCIGKQLSIVEMKVMLIKMVTKFRIEAIDE
QVHIELASPSFTLRPKEKLRVRLVDIM*

>7967|jgi|CYP65BB16|[Clonostachys rosea IK726]Cloros1
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IAERVYGSKMVLVVEQMQCVTIWMIKACILLMYHRLTMSLKQNLAVKIVAGYTLGSFILMEILYLGVWCRPFTEYWAVPP
ASTQCSAATNHLITNAVFNLSSDIMIILIPMPVFLKSTLGIKKKAVLCGIFAVGLFTILSAILSKYYSFNQPFGVDWTYW
YIRESSTAIITANLPLTWSLLQKCFGLKSFKDYSNPYSNQNTNSRFRSTTYGRQSNKRGGTRSASQERITNVPLKIYQKR
EVQVTNAPVSPTRIESSEESLPLPDQLRTTVHVRGGNASSHNEETASERYTPTGCQIEFWIMAALDLASSGVVSLPLLAS
SLALVGIAYLLLIAIYRLYFHPLSKYPGPFLNRISPLPLSIALLRGRLPFYVKHIHDRYGPVVRLTPTELSFNSERSWKD
IYGSRPGHANFHKDPIHVGSVQAVPGAVTITMANDADHARQRRALSHAFSTKALLEQESLITSYIDALRDVANQHAREGR
VCNLADWLSYTTFDIIGHLSLGEPFGCLASSDLRFWVGLISESIKAGAVEQAARRLAITGSWMQKLLLRLLAPPELRQQR
VRHLEYSREKILKRIAAPGRNNTHRDFLHYLLRQGDKENLNQDEIIVNGALFIIAGSETTGSFMTGLFNHLLRPENRRAY
EKLRDEIRGAFTRDEDITFERLSKLPWLGAVLEEGLRIFPSAPIGFTRQVPLGGDSVDGEVIPGGTTVSTCMWAATHAPE
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VFTNWIKMPLNVRLIPRKME*

>7973|jgi|CYP5269A6|[Clonostachys rosea IK726]Cloros1
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FVRIGPNHVSINNPGAIPQIYGHRTGFTKGPFYDAFVQVTPVVFNVRSVEEHVRKRKYINASFSSRALLDFEPYMDREIL
GWKRKLFGMLQENKANLDFVVWTNFLAFDVVASFAFGSPFGFVETGKDPDGLIQIIDARGEFMNATGSLSPILRPLMRYH
PFDSFWRQGYKARAGLESIGREAYQRRKSSTGNRKDLMSYLLAATDPSTKKSIDEDEIIAESISFIVGGSDTTSSTMTNF
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VRPIHWHKMKSRSAVC*

>8130|jgi|CYP5777B2|[Clonostachys rosea IK726]Cloros1
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ERHITKSLHYWLDILMRLLSNLSKTETEFDFQELMGRFLFCIFLRIAFHEDELALDILSDKPESLNSIPKYVEAFDKSTH
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FLIAGRDTTTYSIAWLMKEIFHDDNKHLDAVSKIRVEASEIIADGGYLEYANTSKMQFTHAMWDETSRLNTVSPAGQMEA
AEDDVLPAVPELNMLPRKIKKGDIVSYQNYVLSRMPEVWGDDAGEFKPERWFDEDGKNMSFSPFKYHSWNAGPRSCLGRP
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>8134|jgi|CYP567AB1|[Clonostachys rosea IK726]Cloros1
MIDILPLQGSPVVNVAVALVCITLTYQVVMCFYNYFFHPLAKYPGPKLAAISELWLSKRWAFTLLDASKKYGDVIRIAPN
ELFFTSFEAFKEIYGHTNHSKGRKPFLKSEFYDNPDEMSPLGAERDPVRHRETRKMLAHSFSESALTQQVQFIMSHIDLF
MKQIEKYGSHEKGIQVDEWFNWLTFDIIGDLAFGESFHAVEKVKSNPAVTALMNVLFTGSVVNIFRRMPYLWPLAPFMLP
ISKLQKERKLHQEFARELIVKRIAKGNDRADFFGHLLGDEKTRLSEEFLRTNASSLLIAGSETTATALSGMTYYLLERPE
CLRALQDEVRGAFQSDDEINETSTRDLVYVDDVIKEALRIFIPLPINVPRVIVSGHQYTLGHSDRYFADPEEFHPERWLP
STHKLYSRRYGDDNLDASKPFLIGPRTCLGKNLAYLEMRIILSKLIFFFEWEALDELGVGKKVDWSRDVRVQFLWSKPDM
RVRYTRRNF*

>8148|jgi|CYP620C9|[Clonostachys rosea IK726]Cloros1
MPSYRPLGSNTAITGPRLIEINPDFIGAFWKYQIYAEKLAFGMPEWMNADGIRARETVRAMCEKWYQVSDERFDWGAEMS
DVAFEENFGSRLSRELCRWGKRFDFSSESMGSLYCLLFFGLNSNMIFMTIWYLIEVLKNPDLLCSAKEAMASCFVEDDSG
SQKLDPQKLASNPLLQSIYIEVLRMHVSINITRTLKDPAVIGGYPLAAGAVIQAPSHVAHLDEETWGSDGHPASEFWGER
HLKTTEAVGSDGKRTEKKEFSLGNRSGSFLPYGGGVDICPGRHLAKTQIILASAMFLTKFDIKFLGWVNPDGSPSKLPVG
DDYSYAGAHALPPAGDMKLKWRRVA*

>8225|jgi|CYP65S11|[Clonostachys rosea IK726]Cloros1
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HKRYGPVVRYGPNDVAFTSAEAFKKIYGSKLATERTFEKDPRMYKKRRPESHILNANNEDHRRFRKLLSHAFSEKALREQ
GDIIQHYVDMFISQLTDQVRAGNTIDMVSWFNFATFDLIGDLAFGQSFGGLDNGNYHPWVKMIFENMKVMPFKEASIRLN
LTFAMSYLTPDHLKKSADEHYQLSKSTTVKRIESNNLERADFMSYILRYNDEKGMSVLEMAENAAIIIMAGSETTATLLS
GTVFHLLSNPPKYHKLTQEIRCEFDSEEEITLARVNKLSYLIAVFNEAMRVYPPVPMGLARLVPTGGEIIDGYCLPEKTC
VAVPHWTAFRTSHNFKDPELFVPERWLDDPRYKDDSKAALQPFSLGPRNCIGKNLAYAEMRLLLVRLLWKFDLEMLPGGE
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>8248|jgi|CYP620AB1|[Clonostachys rosea IK726]Cloros1
MGQTIVVLHDRNLAVELLDKGGAKNSSRPWLEFGWRMCGFGQFTIGQPYGDTLRLHRKLILQHIGSKQAVALTQSLLERE
VGRTLVRMLEFPDNLFKNIEIQGAAIILKLTYGYDINTKIDDPLLFVVRRMLDRLGAAVMPGGWLVDAFPILRHIPAWCP
GASFKQTAIGWNREVLEAVNIPFQFVKRQLGDNSCQPSYVSSLLSKTEDEKLNPEYENSIKYSAVALFSGGADTTYSTLL
FLYLALVKYPGVVAKAQEEIDRVIGPNRLPTFADQDQLPYIDGIIKEAYRWQSVVPQGLAHSSDEDQVFQGYFIPKGAAV
IANTFPYTRHTRVYHDPEAFLPERYMAPYNELDPKEYVFGLGRRICPARIFADQSLFLTIAQTIAVFNINKAVDSQGVEI
DPILEVQPGIVAHPKEYPYRLTPRSEAHALLIRSNLPAGVKDGQDHLLLKKYDLNPDR*

>8422|jgi|CYP570D9|[Clonostachys rosea IK726]Cloros1
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LVRIGPNELVTDDPEVLRRMNSLRGAYERGPWYDAMRFDPTRDNLFCMRDGEAHAKLRNKMTAGYAGKENESMEATIEHE
IAKLVDLIETKYISSASDYRPMNFGQKGQFFTLDVISHLAFGHAFGYLQTDDDVYDYIKITTSFIPIMMILSNIPALARM
LQSPMLRGLLPKESDKLGFGAFIGVAKSVVAKRFGPHAVPQSDMLGSFIRNGLTQEEASGEALLQVVAGSDTSATTIRIV
ILHLLTNVNAYRKLQAEIDTGIAAGTISSPITNAEARKLPYLQAVIKEGLRIKPPAGGAFFKTVPPGGDTIDGKFIPGGT
QLGVSPLSIHHSKKMFGEDAEMFRPERWLEAKGDKLEEMSSTVDLVFHSGKWQCLGKTVALMEFNKIFVELLRRFDFQIA
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>8456|jgi|CYP544E1|[Clonostachys rosea IK726]Cloros1
MDLSHHLALSAVFIILLFISDKLSSWIDAPKITRHGIALRKAPDTLPFLGNGIKFIQPRQKLFDWFTKCIHRYGREALLI
TVPSLPPGVIISDPANLDFVFKNEPIFQKGTFFKARLNDLFGNGIVNSDGDQWKRQRKVGVQLLAGANMNIVTSHELPAI
LGKTIRHLTEKADAAEMVDLDASILEITTQLISKMVYGVELQSQDSFTQAFDYSAGVVSERFQNPLWRLTEVFSSSRFQR
ALKLIKTRGAQLVSHSLLAKDSDPCFGSTDLRRASQGFLQGLRKALGSDDLVAESALNFLSAGRDTTAQALSWTFYLLMR
HPHVVRKIRELMGTSFPHHSPSQSSHGEPSQEAVAYITAVFYETIRLYPPIPFEIKQAQSDVLLPDGTLLPSKSIVVWCT
WAMNRSKHTWGEDAAEFHPERWLVDGRMRYREAAEFPVFQGGPRLCLGKKMAEMVAVQVILELVSLFNFSPAYEGEKVSR
NHLTLPMEGGLSVYVEKL*

>8500|jgi|CYP620AC1|[Clonostachys rosea IK726]Cloros1
MSNLLPALAVVALLVGSFVWLSASQKPKGKLPPGPKPAALMGNVKDMPPPGEPEFLFWHKHKALYGPVSSVTVFGQSFVL
IHGRREARDLLEKTSMKTSDRPAATFVSEICGYENTVVGHKYDKTFRHYRKLLHQELGTKSKAARYQNIQELEARRMLLR
VRDDSAKLLEHYKTAVGATILKLAYGYTIEPHKADPLVSLNERVMQQFILAVTPMSWAVDLFPALRYLPDGFPGASFKAK
GKEWSECLRTIVHTPFRFVQSEMTSNKNYQECYISKLLQNPDGDEKGAGPVTLSPEVERDIVWSAGSLYAAGVDTQALTL
AGFTLAMIRFPEVQRKAQEEIDRVIGTHRLPSFEDREKLPYVQAVFLEALRWWAVLPLGIPHVATEAFEYEGMFIPKGSF
LIANIWSLMHDPETYADPEAFDPDRFLEPRNEPDPSPEAFGYGRRICPGRLLAESTVWVNIASLLATYNISHALDKDGKK
ISVDHVKPSAGTTNTPSDFQFKITPRSEVHQELIQRFEVENPWDDSSASRIKMTSK*

>8582|jgi|CYP5095P1|[Clonostachys rosea IK726]Cloros1
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QKYGPIVRINPEELHIDDPDYYDMIYATGKPYDKMQYFLDRLNMPLSSFATAGSDLHKTRRAAIAPFFSKQRVSAYNYLI
QDIVDHLSHRLSAEYTGTGKVLNLAQMWGAMTSDIITDVVFARPMGYINCPDFDSQFTTAVCDMLFTSHIRAHFPIFLTA
MNTLPSWLVKILAPAVKPVIEYEEMLELQIKDILDGRNEEAKLSSHKTVFHDILSSNLPPCELTAGRLQNEAMSVVAAGV
ETTRWALTVGCYHILANIGIEQRLRSELEHAIPDPNRMISVPELEKLPYLTAFIQERKLIQSGLRMAYGLCQRLPRINPR
SPWQYADYTIPPGTPVSMDAYHMHNNESVFPECQTFKPERWLNNPVGPNGTTPLGHYMVAFSKGTRMCIGMNMAYSELYI
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>8630|jgi|CYP671C5|[Clonostachys rosea IK726]Cloros1
MESALQLALRSSWQATAGVSALLAVLSHHVVFRPYEIDGAAWELVFGYIGSCVALFFLYILVAGYSFLTAVGRTLLVSSS
YNVTLLISILVYRAFFHRLRGFPGPFNARLSRFYAFSKVAKTVRGCEDVQKLHEQYGDFVRIVSDEVAQTLTDLCKGPRE
ISINRPGAIRPIYEPPTRTTRSPWYAQVSNDVTKISINSTRVLKVHKQRKKGWERGLGSRAMAVYEPRVASKVDSLLDRL
AAHAGNPIDMTKYIMFFGFDVMGDIGLSKDFHMVEREVEDPAIQGVHESMFAIGVFGTVPWLLSMLGKIPGAAGGYNKYT
KWCHDELQEKRQILLSEMASLKDQEPRDIMTWLLKAKEQGDPCAPPGDLAIEEDARLLIIAGSDTVASAITNALFYLTKN
QTVYKTLQATLAKEFPGGDSEWTYEKARNIPYLDWVIQETLRLRPSVPGGLARVTPPEGLMVDGTFIPGDTVTSVPTYTI
QRDERYWPDALSFKPERWEGLSTEKAPWLPFTRGQWACSGRAVAMMEMRMVLGRIALHYDLSFPPPVTPETAEFVFQDTF
TQTLPPLPLVFTPRND*

>8735|jgi|CYP5843A2|[Clonostachys rosea IK726]Cloros1
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LVILHNPQTVHQLFSKRAAHYSGRPYSYIPNEHVFCQHADKHIVYLQNTPYLRKWRAAAAYLIGTSGLKQVVPMQEATAA
TLAKQLLNTTPSETLDYLKQWALATPLLAIAGQRLEERGKAFSDRFFKAQKLWLELLEPGNAPPVDMVPMLRWIPERFAS
WKTDARYVRDYMFEEYASYLESAQKLSGKGGVATPGQNKPTRFRCLMTKILEDGLEEEKDKSGKLGFSSDQLAYLGGGLL
DAAVDTTWASMMSLVLYLAAYPDVQQKAYVEVTRISPDQSPGGDGLGDLPYIGACLAEILRLCPPTPSGLPHILDRDDIV
DGYRIPKGTAVLANVWSMQRNPDDYDQPDEFIPERYLNHPLGLRKGADDTHKRATYTFGAGRRLCPGEAFAQNAIIIAIA
KLLWSFKIEPAGPLDLNYETGFHTGLVMGPEPYKVNFVLRDPKRRDDILRDYDVCQTVLAGFGL*

>8747|jgi|CYP5127A6|[Clonostachys rosea IK726]Cloros1
MLASVALSKIPIFKFILAVVNYCRNCRAHPAQSNRQPFEIHAPDNRYVFVSSPDHIKEVDQAPDTVLSLHAATKQMLQPM
YTMQNFNWFDRRGIDGVGFVRAIRTLLTNNLPQILPDLSAIIGSRLEEMGDSYPTVNGTKQYPVYPAVVKLVVLSNAVSF
FDKHLAKNDGFMVSAWEFIEETVICAEIIRVLPKFIRPVIGSILGHRLAAQDVIYNTLLPIAEQRVVERDLKAIGQVVPE
HADCIQWILDTSPRQNPWSAKRVVHELMAIWFGSVHTTVTFAIHDLCLYPEYVEPLRAELRAEFTAFERTGKGLPLLDSF
IRESARLSPVEARELFHPYHLSLIAKEKAIIRQIANLPILSESTRRSALQPFTFSNGLKLEVGDWACTPVRAIMQDPEYY
PNPLRFNGFRFVEPSF*

>8979|jgi|CYP504F9P|[Clonostachys rosea IK726]Cloros1
MDIYAPELATHLTLSHARNIRMAEELLSWVEFVVADAVMKFNSQEPWQVVVSIDKRGCLEDSLVNEFVRYSTRIPNLPGP
RGYPLLGSLPSLRGKIPAEEYRQWAKRYGNVFQLQLGTRQLLSSTALLRPGISSYRNVTRQMDVPVLCLHSKVQKGNAVT
SIGTSEWDHSCKRRRKVAATALNKTSVESYCQYDAPYKPVHFSNDLLAASKGGTQSSTNVLDVCQKFALNLSLTLSYGTR
VEDVKDLHNNILLSEILSAAELLGFSKGEKLMADIGEAAICLSCLLQKNLRGEIDLGVDKPCIQGNVLKDPDSKGLTEGE
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KDHSAAVKNTTLIPLTSKWTPENVHNLYRYTEYPADIQPARDHLLWMNPDKNELYRWEGDHPAVIRYKTEQITAWSHPPG
KDGAPASCDGLGLLFGGYTTVNTVKDNRNLIFEGVLIYNMTESTWGRGINRTMDLDSPKTGDGQAICIEGLLDSPMALVL
GGSWKDEKYSPQWNNLTHVTLYDPISEMWYDQQTIGAEPVPRNGFCAVGAKSQTATYEIFIFAGNGPSSGVEKICILSLP
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KNSSTDTTQTMPAPTMTDSTNSDSDTNKSRNIGLIVGGVVGGVAFLALLVAGLWFLKRRRAPENLPIPSNDEQHESKPSY
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>8984|jgi|CYP504F7|[Clonostachys rosea IK726]Cloros1
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RYGNVFQLQLGNTTTVVVNSAAAARDFFISQRNATNGRPRFYVLHSKVQKGNAVTSIGTSEWDHSCKRRRKVAATALNKT
SVESYLPILNLESRAFLNDLLAASKGGTQSSTNVLDVCQKFALNLSLTLSYGTRVEDVKDLHNNILLSEILYIEEMITKY
RDVSGNYLNYIPLLRPFSSAAELLGFSKGEKLMADIGKRRYAYHALLQKNLRGEIDLGVDKPCIQGNVLKDPDSKGLTEG
ELLSISMSMMAGSDTTKRSLLWGMQLLANRQDIQQKAYQSIIEAGDNISSAPDVAHTRIDYIEALTKEIGRFFVVLRLAL
PKATHGHVNWSGASIPPKTLLFLNTWACSRDTDVFADADVFDPERWLEGEDVHRHQFAFGMGGRMCVASHVASKALYTVF
LHLVAHFRVLPAGDACNPTTWDPLEGLLSKGNHQAAPAFTHVRLVPRNLETTKKMLSVKS*

>9146|jgi|CYP6712A2|[Clonostachys rosea IK726]Cloros1
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GPIIRISPSDLHVGDPEFYDILYPSATSGRRANKPPSLTKFFGLDDSLFSTMDHDIHRKRRAALLPYFSPTYARRLQPIF
QERLNVMLERLVSFKDTDVAVNANCMFAAFSRGETPELGGKLEQVTNIGPLVDIMENLAFGQCTHRLGMYKPVPGLQNQP
SIDVNNPEHPSFDPSERDASLSGAQSFHIMKRVPWLNDIMMSLPETLARRVSPSLGSYMRQKHETRKLVAQLSTTSDDEW
NGKEMPIFRGVLNSPKLPPQEKTVERVSQDAQMLLMAGTLTMASNLEHSIYWVVDNPDVLRKMKEELKTAMPTIDDVPNV
RLSSLEGLDYLTAVVKESVRLIYGNSTPHFRYDPDGPLVYKEEETEKSWVIPANTPVGMTSVLLHHNELHFPNSNKFDPE
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>9162|jgi|CYP537A17|[Clonostachys rosea IK726]Cloros1
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VSGIESRALEFTRQCEEASGSSVDIYMKLHSYACDGVTHNLFHPFGSNCLQNEEDRIMMHQATNDNSLQSRLLQHHYPVI
YTYMSRIIDLFLEPRATPLANAFINEKSNATDPAPFTLLSRLQEKIGSDLDVTDIAAECQDHMVAGIDTTGDALCFLMWQ
LSQPESAHIMQDLQKELRANRDTNFDKLPFLDAVVQEGLRCFPAIPMSLPRHVPQDGRNIDGYFIPQGTIVSSQAYSVNR
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ISSRPLGQNCLLKFVPIAED*

>9220|jgi|CYP65S14|[Clonostachys rosea IK726]Cloros1
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APGDVSFINGDAWKIIYGHKNGTVGNFHKDTRFFPRRIPGKPNILTADESDHKRIRRHLSHAFSEKALRGQESIMQEYVN
LLIRKLSDEVERGAAVDMVKWYNFTTFDLIGDLAFGEPFGSLESGGYHPWVAMIFDIVKMTSRLYILKRIPGLISLTPLF
IPWKLLKDAQHHYELCERTAAKRIETGNTDREDFMSYMLRHNDEKGISTPEILETSKAVILAGSETTATLLSGCTYQMLS
NRHVYERLVKEIRSTFNSPEEITMSSVANLEYTAAVLNESLRIYPPVPGGMGRFVPEEGTIIVGYWIPGKTIVSIPHWAA
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>9357|jgi|CYP623B9|[Clonostachys rosea IK726]Cloros1
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LKQGKPVVIPGMGFRKEVLLPPSMIRWVLVQPASRLNVPHAMAEMDQAKFTLGHDGPILDSWQGLLVKTELNRVLEAICA
SLNDELGRAFDKHFGDDEENWVEFRLRETISRAIAQANSRFTVGLPLCRDPEYLKTVLDINDGLLANGGLICGLPNVLQP
LFGPIIGISLQQHISKVKRWLIPLWRERVAIARAEEKDDGNTNAPLDHVQMMVKFALKERPEEINDHELIVRRICAQNFG
AVHQTTLQVCNLLLDILGSDVEYDTINALRKESDTILGTEDDSDRSKGQWTKARVNSMILADSVSRETLRLHAFANRAMM
RKVMVDGVTTPEGYNLPKGTLVSFLSYPVQTDNDVYPDALKYVPFRFVEKRDEGAPVTFVTTSSEYLPFGHGKHACPGRF
LVDFELKMIVAHVLRNYDIKFPAEYEGKRPPNEWITEASFPPNGVRICVRKRKKP*

>9555|jgi|CYP5329A3|[Clonostachys rosea IK726]Cloros1
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DMEARLTVDAMFYCNLYSFDNITRLAYGPELCAHSIDDENCEERTILAGWKEVEVWNNLAYIVPTAHRITRAVLTHTRGD
PDFLSAEERLADWNMDKIMASQRDPGKIVPGSLLHQLSHSKTPEGEPYPVSWIAAEMLDNIHAAQTTVALALTFLLWDLA
CKPGWQDRVRTELLSLPINEGDGLPSFDSIMACRLLDACFRESGRLHPLSSGRAERVVPATKAYSGIVLPAGTLVSTSTL
SIHYRPDVFPDPHKFKPDRWLEADGATLQAMESCYMPFGYGARLCLGKAFAVAEIKQLVAGILLEFSVRRDQQSETTTDW
TMEQLGTQNAMPRGQRCDLGFHKLTEREWAGMDGSET*

>9999|jgi|CYP552M1|[Clonostachys rosea IK726]Cloros1
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VRINPNELHCNDPAFVDVVYAACNQRRNKSPQYIYGYPASLQMSTEGSLDHDHHRRRSAAMSKCFSRSSISQIEHLVHLN
AQKLCDKILARQNSAPFAVVQAYSCFTADVISHYCFGDSDCYLDQDDWEPNFRTLVDNFERNLHIFRHIPGLATLVERVP
LILTNLFSTEMKTIAINFKVSIPRRVRRAMDLSHVSVGKVPTILSALLSSNLPPPEKTLRRLTGEAVSLMAGGTESTSAT
LVLLTFHLLSNPNHHKRLHAEISAIATDPTQLPDWKALEKLNFFSAVILECLRLLPGVSGRSPRIATHEDLIYEAKLFSS
ADSLAPSLTYTIPRGFPVSISTYILHTNETIFPNAKDFVPDRWLDENGNIIRELERYLLSFSRGSRQCIGRQLALCELYI
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>10316|jgi|CYP532H10|[Clonostachys rosea IK726]Cloros1
MLLFEVLLGHMWLAGAGVIGAILARLAYNKYGHGISQLPGPFMASITDFWRLFVVWGRRPDITHAALHRRYGHFVRLGPN
AVSVSDPSAVREIYGLASGFKKSEFYTVQQTLSKGKPLFTLFTSTDEKFHAKLRRAVSSAYAMSTLVQFESYVDSTTTAF
FQQIDARFLNAAEPCDLGKWLQYYAFDVIGELTYSKRLGFLDGGNDVGGIISSIEWMLDYASVVGQMPALDKLFLKNPFR
LLLSKFGLIGSSTPMVEFARERFSERVNLDTGEEKALANMEGSSTRQDFLSRFLRAHDKDPDFIPHQRVLALTVANIFAG
SDTTAISLRTIFYFLLKHPKELERLLGELDEQKRTGGFKRTDGLVDWEEVRDLPVLGAVIKEALRIHPAAGLTLERITPP
EGVQVSGKFIPGGTIIGCNAWVLHRDASVFGQDAEQFRPLRWIEATSEQRRLMESCLFTFGAGSRTCIGKNISYLEMYKL
VPALLMRYQLRLPEENWEWTLHNAWFIKQTNFHVYFKARQVI*

>11179|jgi|CYP51F1|[Clonostachys rosea IK726]Cloros1
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TVAVGPAGNDFILNGKLKDVNAEEIYTVLTTPVFGKDVVYDCPNAKLMEQKKFMKIALTTEAFRSYVPIISGEVQSYFKK
NADFKPKTGIIDIPKKMAEITIFTASHALQGSAVRSRFDETLAALYHDLDMGFTPINFMLHWAPLPWNRKRDYAQRTVAS
IYMDIIKDRRANGDDHEEHDMMKHLMNSTYKNGTPVPDHEVAHMMIALLMAGQHSSSSTSSWIMLRLAQNPEIMEELLQE
QIRVLGADLPPLQYEDLAKLPLNQAIIKETLRIHAPIHSIMRAVKQPMPVPGTKYVIPPSHVLLAAPGVSASDPQYFPSP
DAWDPHRWEADSPNAPSIVRNGAVEEEEKIDYGYGLVSKGAGSPYLPFGAGRHRCIGEQFANVQLQTIVAETVRAFKFSN
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>11431|jgi|CYP639A4|[Clonostachys rosea IK726]Cloros1
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IEHRDLQTLLSGSSLNVMTNNFIRLYKKIIETDARFAKGDWVEIDNLYTWMRDDIAHAALESFCGEKFLELSPTFMEDFW
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AAALDLGLIWALNANAIPAALWMLLNILVDPDLKDRVITEISPAFEEGSLSLDLEKLCSGPLLNSIYCETLRLRVAAPVG
RTSTIPDLKFGRWQLKEDVCMLSTSWYGGRDPDFWNTGRTLPDGSVEHPVDTFWAERFLRYPDDPASGPVRKQGASAMTS
RDTGKRTADDDRKARAVTDGTQGYWYPYGGGLNMCPGRHFAKQELMVSVALVLRAYEIDIVDLESAAKVKPNMEYFPFGT
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>11432|jgi|CYP65S13|[Clonostachys rosea IK726]Cloros1
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DVSFTTADSWKTIYGHKTSQNKTFHKDLRVYRETISGNSHIIIAPHEDHKRMRRLISHAFSEKALRGQESIMKKYVDLLI
SKTRENAKNGKTIDIVAWYNFTTFDLIGDLAFGEPFGCLEAGGYHPWVSMIFDVLRIASLGQVVRRYTFLAPLRSLIIPK
WVREKGKEHYQLTQQTALKRVELGKTDREDFMSYILRHNDEKGLTKGELVENASVLIIAGSETTATQLSGTTYHLLTNPS
IYNRLTEEIRSTFESEDEITLARVNDLQYMHAVFEEGFRMYPPVPTGLPRITPPEGEFIEGYWIPGKTSVSVSQYSSYHN
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>11461|jgi|CYP6929B1|[Clonostachys rosea IK726]Cloros1
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CQVFLRPFSKPFVLISDYREAQDIMLRRKEWDRSDYTIEIFSGQAPGHHINQKTGPVWKAHRRLLQDLMLPGFLKDVAAP
NIYASTLNLVRLWSNKERLARGRPFSAENDIFYAALDSVLEFSFGQAFPHRAVPPQLRQVETMTAYDVASTTASTTEQGV
VEFVRGPLHETIQATLHASNTTGELMDSPCPRLHWWFKSKMPSEARHIRIRNAFLREQVDMAQERLNMETNLHDERWVKS
AVDLMMMRERISAQKEGRQPVYWSPAIRDEIIGFVVAGHDTSSTTMLWGLKFLSDNQLAQDRLRAALHQAHWAAAAEGRI
PTAHEITSTHIPYLNAVIEEILRLANTLPILDRQTNTDTTLFGHHIPKDTILLMLNRGPSFTEPGFQVDERLRSASCQTS
KSPVGLRQWSPDGMDKFMPERWLRTEPDGSLTFDSTSGPSLPFGLGTRGCFGRRLGYMELRIMVTLLVWEFKMGQCSSEL
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>11500|jgi|CYP551G1|[Clonostachys rosea IK726]Cloros1
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KIYGPILRVNPYELSVDDGSFYDTVYVSGGIRQTEEFNYFVQGLDLGNTFFATKDHKLHRQRRRPVEPYFSRAGVTKLEP
IMSECVQKLSDRYDNFEGTGKISRVDHAMQALTGDIIRRVCIGDGEDYLDDEDFSPGWHDLMHSIALCIPVFVVFPWVIH
FLKFIPEKALVWIAPHTQAFNTYREMATKHIEDTKKEDPSKIDLDGAKIGSKPTLFRYLIHKSDLSEEDKDTHRLANEAQ
SLLGAGSVTTARTATVCIYYLLKCPEIRARVQEEIKEFVADWPEKAPTFSDLEKLTYLQAVIKEALRVSYGSLHRLSRIS
PHEPLQYKEWTIPPGVPVGMNAYYMHTDAEIYPEPFKFDPDRWLDNVTPEMKRNFVPFTRGSRLAYAEISLVLAVLFRPG
GPKFRLYETDETDIGSLHDYIIPIGRFGSKGARIIFD*

>11548|jgi|CYP5845A2|[Clonostachys rosea IK726]Cloros1
MHPRRDRRRRNCCSLSIPTEKSVDMSVSQELLNFIYVYWKWMFPLFGVAYLVSNRFQKGLYRVPGPWLNSFSTLPRMWSV
YKGKHHLEDLELHARYGKVVRVAPNLVLVSDTSEINQIYGINTQFIKSPFYDLSAVYDNEGLVPDTFVLRQNKALHSRMK
RNAANAYSVNGLMQFEPWIDPVIVKLLSIFDRHAASGTAFDMGDMLKRFAMDAVCSLTFGSDFNYLEKGDEMKFLKSMSL
FTAYMSIFGHVAWLHPILLGNPYIARIVSGGDSSNDAMLEISSHELGKFRESPPAEGDAMTFLSRLALNQSTNPKLITDR
EILTHAFGNISAGSDTTAIAMGSVIYHLLVNRAAYDRLADEIRSQLSLPVGFQEANALPYLKAVVQEAMRMHPSVGQVLG
RIVPPAGATVGGFKIGAGAEVGMSPWVLHRDPEVFPDPDSFKPERWILGEGVRDEEHLRQMNRSFFSFGHGTHTCTGKHI
SLMEVTKLIPTLLLRYDLELAEVGQTLKFNNWWFTQHHDLRAKITRR*

>11960|jgi|CYP61A1|[Clonostachys rosea IK726]Cloros1
MNANTTSSAFTSVLAQTKMAGMAISPNMEFLFGTLTAPNIWTVLLTVVAMCVIYDQVSYIANKGSIAGPSWKMPFIGPFL
DSMDPRFEGYYNKWLSGPLSCVSVFHKFVVIASTRDLARKTLNSPSYVKPTVVDVAPKLLGHDNWVFLDGKPHTEFRKGL
NNLFTRKALAKYLPGQEQVYKDYFARFARLTEENGGNPLPFMSEFREIMCAVSLRSFVGYYISDEAIKNIADDYYLITAA
LELVNFPIILPYSKAWYGKKAADMVLTEFTKCAAKSKVRMAAGGDVTCIMDAWIDIMIKSQRWREAEETGESTANLEKPQ
PMIRMFNDYEIAQTVFTFLFASQDATSSAVTWLFQIMAQRPDVLDKVREENMKVRNGDIHAELTMEQLEGLKYTRAVIRE
LLRYRPPVLMVPYVVKKPFPITDSYTVPKGSMLIPTTYMALHDPEVYENPDYFDPERYYSGDAEEKGAKNYLVFGVGPHY
CLGQLYAQLNLALCLGKASVQLDWQHHATPRSEEIKVFATIFPMVWFRLVENEFMCFISDSCSFRMIAPLHSRGGVGRRE
AGEKPDRSGPATACPIDENNDHLI*

>12131|jgi|CYP539A57|[Clonostachys rosea IK726]Cloros1
MAIVETVAEHLTVKSVVGFLAAALFLRYVVLRVNEHIRIKRLGKYGFRVPSYLPFGLDVLYVAVIETMKSRNLEHWRDGF
FLKYNVWTVEARVLDKRVVFTADPENIKAILATQFHDFGKGEPFHKEWSDFLGDSIFTTDGEQWHASRQLIRPQFTRDRV
SDLHCFESHMKILFRAIDNCGPLSSHDQEVKPGSGNGRVFDISDLFFRYTLDVTTEFLLGKDTMSLSTPQNEFADAFNEV
QRVQNIIARAAFFRKVIPKPSYWAGLETMNRFVNIYIERTLRLSPEELEKHNKSDKGYTFLHALAGFTRDRKVLRDQLVA
ILLAGRDTTASTLSWAIYELARHPEAVKKLRAEILSTMGKDGLPTYEYLKNMPYLKAVVNETLRLYPIVPFNVRLALKDT
TIPRGGGPDGTEPIAVLKDTPIAYSPLIMQRREEFYPPVSEKFADPKVFSPERWENWYPKPHYYIPFNSGPRICIGQQFA
LTETSYVLSRLFQRFERVTSHMEELDGGVPRLKTDITLGPAQGVMVSLWDAKD*

>12397|jgi|CYP573A27|[Clonostachys rosea IK726]Cloros1
MAILTFGNLCVLPAAYLLWIVAYQVIYYKFFHPLSAFPGSFWGSVTRLWIAWHSIKQDECEVFDRLHKKHGPVIRITPTM
LLVSDSTKLPTIYARHANKSKHYITGSFGEDESVFNMQDSSVHARFRKIIAAPYSFSNVRKMEPLIDEQVQRWIAKLEEK
FAGTQEKFDFAPWAVYMAYDVISSVGFGAPVGFIEQGDDIEGLIRAFHDGMVVFGLMARLHPLVNWVKSTFLGKYMVATP
EQNSGIGTMMRFRDRLIEQRLKDLESGAYDGRADLLQTQVTPALFIDARDEEGKPLDLNYIKAEILLVLLAGSDTTGTSF
QALMLHLFSNPEAYEKLMAEIDAATRNNKLSFTPQYDEVVASCPYYMACIKESLRLNPPAVTVIPRTVPKGGMELFGRFV
PEGMEIAGSAWLMNRDANLYGPDANVFRPERWLDADQAREYQKYSLTFGYGQRVCLGKDIAMMELYKAPLQFLRTFQPEI
ANKEQPARYVVPGGIAFFKDMWMTIRKRPQAV*

>12429|jgi|CYP5080A16|[Clonostachys rosea IK726]Cloros1
MELSVPVLVLLFALLVTLGRVLCIAPLRSPLRTVRGPFFARFTDGWYFWQVWKGSFQHVNQELHKKYGSIVRYGPNRYSF
DDPEAAKIIYGLGSHFPKSSWYSTWASPGSWAIFSDQSIKRHNQNRKLYQATYSMSSLVHYEPFVDSCIDIFTERLSEMS
ESGLLVDIRHWFQCYAFDVIGLITYAKRLGFLDQGDDIGGVIGALEEHLGYATLVGIFPSLHQYLFSIKNYLAGSQGSGR
AYVLKFTNERIREAQVIPKPVETEESSVAMEDFLTKFLAKHAANADLFTNYHVLAGCTSNMVAGSDTTAISLSAVLYYLL
KNPHCLFRLREEIDGLAVQSDPSKFPTFKESQQMPYLQAVIKEALRLHPATGLPLERVVPEGGATISGRFFPEGTIVGIN
TWVAHRNTHVFGEDAEQFCPERWLIDDNDKLSIMNRYYLPFGLGSRTCIGRHVSMLEMSKLIPRLVRDWDFQLDTSLHSK
EWRTLNYWFVKPLDFKVGIKRRQLVKVLNSKE*

>12610|jgi|CYP630B28|[Clonostachys rosea IK726]Cloros1
MAVVPPAGLATVLLAPYTVVLVGLTFTFFFLWPLIVYFRDAKSLRKFPNMTTFSGMYNLPFLILAHKGNRSLHLAKLHKD
YPILRTGPNSLSFGRVSAIKDIYGHGTPCTKDEQYLVGAGSHFHLADVVDKSEHARKRKVLSAAYALKNLERWEFKVADK
VQRMIAQIDKLCTAPPQKDEIEPASEDVKVDVRTWFNFFSLDAIVDIGLSARLGLIDQGHDMTTALRKDGTTFQTSLRDC
LYPTARKQSWLIWSYDYYNVLDKLSNIVPSYNKMQKAADGWEAIVLYQSAQRLERYRKGEKLDDFFQALMEDKNGKAQNL
DWGEIVAEINIMMNAGSVTTAIALANILYQLILHPEIMAKLRAELDGALEPEEVVAPYDKVKHLPYLRACLDESLRLWPP
TPHGLPRKTPAEGLSVMGHYIPGNTTVSMSALVAHRDETVYPNSDKFIPDRFLGEDGKNLQSSFITFSAGARGCIGRNIS
YLEQAVLLASVVHRYDFSMPKSFEIQREETMNHLLGPLPLKAWRRDLGAK*

>12614|jgi|CYP53A67|[Clonostachys rosea IK726]Cloros1
MALLNLLTSPWLAVAGLVSLLGYFFILPYFTTNAALRGIPGPSIAPFSNLWLLWTCRRGKRYAIVHETHKKLGPIVRIAP
NHVSVADADAVNTIYGHGNGFLKSDFYDAFVSIRRGLFNTRDRAEHTRKRKLVSHIFAPKSVVEFEPYVRQNLEEFTRQW
DARIKNTSQRDGSAHLDCLSWFNYLAFDTIADLAFGKPFGMLSSGADIAEVRTSPTGPSIYAPAVEIINRRGEVSATLGC
LPWLKPYARWLPDPFFYKGLEAVERLAGIAVARVSDRLQNPPDIDRQDLLARLIKGKDDNGEPLGREELTAEALTQLIAG

SDTTSNSSCALLYHVVRTPGVLQKLQQEIDQVVSDDVEVPSYDQVKSLPYLEQVINETLRHHSTSGIGLPRQVPPQSPGV
HIQGHYFGPGTVLSVPAYTIHHSKEIWGPDADDFNPDRWENLTADQKKAFIPFSHGPRSCVGRNLAEVQMKLIAATWVKR
YGVELRQDIMETREGFLRKPLGLKIKIMRR*

>12798|jgi|CYP5128M1|[Clonostachys rosea IK726]Cloros1
MAIQQLLVEASQAPVHYWVAALLAPFLACTLGMFIYRLGPLHPFAKIPGPVLNRITYAPLVWHSYKGDEAQYVHKLHQRY
GNTVRIAPSSVDFTEVAALKGIYLEKGGFYKSRYYNNFDIDGHASIFSNTDLASRAARAKVVLPLFSITSVKAGYKPFKD
SLRRYLKGFKDEKKTGRVNVLDLARAMSIDAVTEYLFGIRYGAFKDEEESGASTSVKATCEPKMSASNVVDNFISTSRLW
YLSVWLYNIADKLDGMIYPNPGAEVSTEIVNEYADRVIAAAQEEITQEKDKSQLTFPARLLCAGISPEETRSHCKDIIFA
GTDTIGMNLATVCFMLAKYPRVYYRLYGEVSGAEIEKEEDIQVLPYLNAVVKEGLRMSMTNPCRLPREVPERGWTYKETY
YPPGTIVSCSAYEMHFSAEMFEKPFEFIPERWDSATDDMNKSMMAFGLGNRQCIARGMSMLDMHDVVYHLVKEDVLRGAK
PVRERIEILEGFSSKVVEGHVDLVWDN*

>12914|jgi|CYP65R4|[Clonostachys rosea IK726]Cloros1
MANLLVLLGAMLAIYLVGSAIISLKFSPLSDIPGPWTCAVSRIPYWLVLLRGEDVQWMKELHDQYGPVIRFGPTDVSYTT
AQAWSDIHGPKVTEKAQEFSVQPINGVPSMLTTNTENHTRVRRLFSPAFSERALKQQEPLFRKYASLLIHKIAEVGEEGK
KPVEFTQLLNFTTFDVMAELCFGENLNLLAKNEYSPWVRSIFESLKMLPVASMINYYPILNALFTRFEPKSVTQQRVTHC
KHSEERVNRRLKAGSEKPDIWNLVLAAEEGKGLTLEEMHSNSELFMLAGSETTATLLGGCLYNLLMNPDKMKILREELDD
RIKTEDDITFERTAEMKYLNACLKEALRIYPPVPIGSPRVVPQGGQQVMGKWIPAETRVSVHHWSTYHSEANFKNANTYA
PERWLRTDPIYTGDALEAHQPFGFGSRNCLGQNMAMHEMRLLLATILFKYDLELSDESRDWSAQKAFALWIKKPLLIRAT
PKV*

>12981|jgi|CYP528A18|[Clonostachys rosea IK726]Cloros1
MEEIVLVRNLLSWVWFFVKSFFIYPLVSTLILILTIAAYRLFFNPFSSVPGPRLAAISSVWYAVQIRNGQAVSLGRSLHR
KYGPVVRVGPNELWFNTKTAFKAIYSNGSGFEKSDFYLGTTLSKPVVDWKLQVHSVDSLDLLSERDMKRYRMQRRLIGPV
YRPANVARHEASIDRALGQVLSRFREMNGREFDLKEWVHITVVECLGASVLSWSPGMLKKNTDWATSTHSYQGWRRKAVF
GIFPLAAKLQLRYRSFGRIFGNAWNLTFQPPPNFRAFFPDVNKRVSKRIKAFHRGEKGCQDLAEDLIQLHRDKPEFSDSY
LRKMIITNFGAGHETMASTVISLITMLGLYPNVYARLVIELRQHFGDGTASWASASSLPYLQAVIKESQRLNPVVSMSPP
RKVPSPGLCLDGYHIPAGATLGCNPIALHRNEDICGPNPDLFDPERWLKDDGRAKEMEMHSLSWGGGARTCPGRHLAEMM
VWKIVAGIVMAFEIEVIVPPEREMPSYFLSMMTGVKARLYTIDQGKFN*

>13008|jgi|CYP5080B8|[Clonostachys rosea IK726]Cloros1
MQIILLLGLVGVACAVYFILSNLFAPLRNVPGPFLARFTNIWYLFQVHRGHVERKNCELHETYGPVVRYGPKRYSFNSPE
AIKTIYGHSTQFAKSSFYDAFMVPGVWNLFTERNIKFHASLRREFQATYSMSNLVNFEPYVDQCARLFDQRLHEVSAAGV
TIDIGHWMQCYALDVISQITFAERLGTLDSGNDIGGVMKSLEDSFYYGSTVGIYGYIHPYLFAAISFLDRLTVHGNGQGF
WYVLKLAQEKINAYKAKPAAIYEKSDDGSEEFVSKFMKQNAANPERFTTDHILTGCSMNIGTGSDTTGISLSAVLYYLLK
NPGCMDKLRGEITAFGKDGKLSESPTYKQSQDMPYLQAVLKEALRLHPAVGQPLERIVPEGGATVDGKYFAQGTIVGVNC
WAAHRNKAVWGQDADEFKPDRWLTPDTDKLSTMNRSWIPFGVGSRTCIGRHISMLEMCKLVARIIRDFDFELADGLQADW
KTTAYWFVKPSNFRVRVRTRSTVP*

>13065|jgi|CYP65S10|[Clonostachys rosea IK726]Cloros1
MALLHQPDQLMAASSVAVVVSIVILSIGLYNLGSAIYRVTFHPLAKVPGPKLYAISQLPYLYHLVRGDWTAVLKDFHDYY
GPVVRFAPKDVSFTTDDALKKIYGHKTVESDTFEKDLRMYRQNRPVRSIITSDNEGHRRMRRLIAHAFSEKALRNQQQVL
DHYIESFIRGLTERSRQGVDVDIVAWYNFATFDLIGDLAFGKSFGCLENGDYHPWVRKIFDGVKFIAYGQAMTRLGLKRW
ATVLAPPSSRKSAEQHMEFSRRTALARIDSGNTVREDFMSYILRHNDDEKGMSKLEITENSATLILAGSETTATLLSGAT
FLLLKNRDKYETLTKEIRSAFQSAEDITLSKVNQLEYLLAVLNESLRMYPPVPIGLPRLAPATGEFMEGFWIPANTSVSV
PHWSAYRSAGNFREPDSFVPERWLNDPLYASDVKSILQPFSYGPRNCIGKNLAYAEMRLILTHLLWKFDLELDPGCNSWN
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>13151|jgi|CYP65FY2|[Clonostachys rosea IK726]Cloros1
QDPFNMIVNFAAIFGKVGALFPWPWLIVGLVVVGLGSVPVYNLFFHPLRKIPGPKSYAATRIPYTRTITSGHMHTKVLEM
HKKYGDIVRISPDEVSVIGENVWDELVGHRKLGSPENGKDPHIFGVVAKHSVLNANREDHARQRRTLSHGFSALMIEAQE
PIISSYVDLLLQRLKENSDNGKNALELTSWYNWTTFDIIGDLAFGESFRCLQDSDYHPWVSLIFKRIRSNSVVISARRWG
WLSKVVLAFLDQSGSYAIAAHARLVDEKLRARASMDTTRPDYYHAMTFQEDDKKFSPAELRDNASTLIIAGSETTATTLS
GVTYLLAKHPEVLHKLAQEVRTSFQHEDEITIRGVQKLNYMLAVLNEALRMYPPVPGALPRIMNPNGGFINGHWVPGGTV
IGIHHYAFYRNPNFYQLPDSFIPERWQDDLQFHSDAKKAFQPFSFGPRNCIGKNLAYAEMRLILARIIWNFDIHLAVDSD
GWIERSQVFTLWSKPDLNVYLVPVVRE*

>13200|jgi|CYP611B6|[Clonostachys rosea IK726]Cloros1
MGYIVTDPTVLTAAVAVVSLAYFLLRGGHDPREPPLAPKSIPIIGHVVGLSRRGFNYYVDLSERTDTPIFTMSLPGQKMY
VVTKPELVQVIQKQHKTLAFPPIEAKFAATVCGASPEAQAILAKNVNGDEGDFGLSMDSYAAMRAALKPGPELDDMNRSM
LLEIVKALDQLEPAKGESRKLEMYGWLRGAITLATTRSVYGPMNPYNDKAIADAFWEFESGLMSILVGVLPSITARKAIA
ARTKVSKAFEEYYNKGGVEMGSAYAKNRYQSEADNNLSLEDIARFEVGGSIAVLVNTAPAAFWTIILLYSQPDLLNDIRK
EVDACTETRTDEMGSVTKALNITTLKEACPLLLSAYQEVLRYCSMGTSVREVMEDTYLGSFLLKKGAMVQMPSRVIHQDA
SLWGTNVKEFNPRRFLREEKKNRPGDACFRAFGGGKTLCPGRHFATNEILAVVAVFISRLDITPASGSWNLPTTDNTNIA
ATVMEPDHDIEIQVKARQGYEGVKWVVSLHNSEKIFALVTEDNMEEE*

>13310|jgi|CYP538A9|[Clonostachys rosea IK726]Cloros1
MISEASYLAVKTLSAIYILTCAVHRFLPDPAARQLGPLTPYLLPWVAFALVPVFLYTGNKHFWLRSNRVYKTKPGNVYPH
RDPILGVDWMISASKGLKAYNLLETWDDLFASIGNSFWHLAFGKWILLTNEPENLKVLLSTQFESWPIGGVRQTTTVITL
GPHAIFSVNGKEWQQGRALIKPSFVRNQVADLECQDRHVERFIQKIPRDGSSVDLQKLLYLMTMDSATDFMFGYSTEMLL
NPTKETSEFTQAFDHALYVSASRARLGWISYLIPDKKLDHSVRTCQRFIDRYVAKASADEKLKERPYLFLHELLQSGASM
EHIRDQLLAIIIGGRDTSASTLSALFWTLARRPDIVKKIQDEIASLDGQKPTWEDLKSFKYVNMALKETLRLWAPVVTNM
RCAAKDTVLPKGGGADGQSPLFVPKGTAVRWSLHSLHRRKDIFGEDAHEFRPERWETLRTSWEYLPFSGGPRTCIGQQFA
LTQMAYVVVRVFQTFETVEPKDERPMLHTLSTTTSLLNGCHVSFKAS*

>13393|jgi|CYP504A23|[Clonostachys rosea IK726]Cloros1

MSYQVIGIAIVAVLFLLIRLLNTTDIPKIKGLPEIPGLPILGNLWHLGTDHARVAQKWAQKYGPVFQTRLGNKRVIFVNS
YESVRHFWITHQSALISRPTFHTFHSVVSSSQGFTIGTSPWDDSCKARRKAAATALNRPSTQSYMPILDLESTVSIKELA
ADCKGGAVDVDPSPYFARFALNTSLTLNYGIRIDGNINNEMLQEITQVERGVSNFRSTSNNWQDYVPIMRLWNKQNTEAE
SFRLRRDAYLTKLLNELKGQIAAGIDKPCITGNILKDPEAKLNEAEIKSICLTMVSAGLDTVPVNLVMGLAFLSSPEGQA
VQARALEEIEKVYPDGEAWEKCLIEEKVPYVTALVKETLRFWTVIPICLPRTSIKDIPYEGAVIPAGTTFFMNAYAADYD
EQRFKDPYKFIPERFLNDTESGTPHYAYGAGSRMCAGSHLANRELYTAYIRLITAFEIHSARNPADRPIIDAIECSSNPT
ALTTDPKLFKIGLKIRSESRLKEWIAAAEARTRLPPKLSFRTLLYLFVMSNQISNLRPLTTYVTGHSPMNGTAIFQETRP
AVWTSPDNESMGFNVVYTTSEFPVSFDNDNDIAKHDALMGTGNLGLVNPKGTVCRIVDFAPDNKPVMHRTQSLDYGVVIS
GTLELELDAGEKRLLYPGDVAVQRGTIHSWYNPSQTEWARMLFVLQDSEPVMVNGQPLKEDLGEASGSIPPSGNSN*

>13734|jgi|CYP621C9|[Clonostachys rosea IK726]Cloros1
MTAESFSKALVLFAIVVFVFLFALTRRKKSLLSLPPGPPGEPVLGHLRIIPTDNPEYAYMEWSKEYGSDILSFNVLGQTV
VVLNSVRVASDLLDKRGANYCDRPRFVLFEVMGWVKTLTFLRWGPAFRMHRRILQQGFQKRNIVQYRPLQEREAAVMLSG
FLEKPSEWENVMRRFATAVVLGIGFGIKIDRDSDRFIQIATDASYALGHGGAPGGTPVDFFPILRNLPMLFHDRSLKFAR
DWRFAIQNLHDKPYEAVLESHERTQSLIQTLLDQRQGQLEEGEAPELSVDDIKGAAAAVYAAGQDTTWSTLIVFILNMVL
HPEIQDKAQHMLDEVVGRERLPTFDDREKLPYLDYIVQETLRWCPVSPVGVPHRSLEDDLYEGYFIPAGSLVYANARAMT
HDSRVYSNVDEFDPDRFLPTAEGGRGEPLPAGQFGFGRRVCVGKHLAEANVWIVIASMLSTMRIERARDDAGRELEPQVE
LTNGLTSHPKKFPCRIVPRDGRSKSAIDLRLCSART*

>13842|jgi|CYP6196C1|[Clonostachys rosea IK726]Cloros1
MLILSQVTPSVFYAALISSLNTDLYYTRLISYDRKYTGNNHEVFGVQTVDRKLYIVTDPQDVSAVFRDTASLGFDGYLNE
LLISFGFTKEAIKKIWHKPSDDDEKMISETINPERMNFIHLAEDIFKRQLLSGEKMDRIRDDIMSTLHQSIQWRQLDFCT
KSSNGNGRQISLYSLCRFTMVEAATRSLFGSHLHNLDPDIVENMLSFGDHAWQVIFRLPTFLNLDVTAPRKKLMDALRVF
VQLPESQRSEQAWAIKNVLDASDSFDIDFESRASVLLLMYWAANANEHNIAFWVIAHILYDENLLELVKKETEAAWPNGT
LDINYLSANCPHLEAAFNEALRCYGGAVISRKVLRKTIIGNKELQPGHAIIMPSRQLHMNESAWGYDAREFDHTRFLKNR
SLDRHPAFRPFGGGVTYCPGRVLAKQQVYGMVAILFRRFDMKLAMGGNGMKPQFPRLDDTTPRLGIADPAKGMDVLVDMW
EK*
>13977|jgi|CYP586T1|[Clonostachys rosea IK726]Cloros1
MFLLNMGHGFTAVVLTSVFITATYLYINLSEKRLKQFAHLPQPKVSLLWGHLKLFDEYTKHAIITEIHKDIGSPPFFILD
MRPINPPTVVIANYELAEQLSKPSKGFPYSVHKAPTTVRMIPLVGSKAIFFHQNESWKGVRKRFNQGFAPAHLMTLLPGI
LEKTVPFLNHLDERARIGKPFRLSDLTTNLTFDIIGTVAMDVDMEAQKGDASQQGEFVRRFKELIKTYADDKLFLPWWLI
PLTEIKRRRLSVFINRRLREIVDAKLKTLNSAPLTGRSRTILTLALQDVEHITPEILEETYDQLKAFLLAGHDTTSVLID
WSIYELSRTPHALRAVQEEITTLFGSDAQDPRAICARLSSSAGAELVHQMTYISAVIRETLRLHPPAGSMRMTMPNSGST
CIVSTPQGEYCLDGTWMYINHTIIHRDRAVFGETAEEFRPERWLVGGGSKGTGDDESLFMASAGAFPPGAWRPFERGPRN
CIGQELANIEARIAITILAHKYKFSKVGLGESDLDEKGQPMLDNKGQYKTKSELYSVSCCIPPSAII*

>14034|jgi|CYP548A33|[Clonostachys rosea IK726]Cloros1
MALHVLSLLGVVLGAGVVYSLTLAIYRIFFHPLSKYPGPLIAKLTDGYQLYHAYRGDRHLEFWRLHEKYGPIVRFGPNSI
TFKSNTALKDIYGFKSNVRKAEFYNAFAHPVANTHNTRDKAVHSRKRRVMSQAFSDSAMKGMERFILANIRAFCEQVGSL
SDASADSKGWTVPRNMSHWCNYLAMDILGDLCYGKAFHMVESPVNRFALDLVEAATTRHLICGTMPIINTLKIDKFLFPH
IAAGRAKYMAYSKSQLTERTKMGEDSDRRDFFYYLLKARDPETGQGFSTPELWAESNLLIIAGSDTTSTAMAATLFYLVR
NEHALRKVVEEVRSKFNDVEEIVQGQALTSCTYLRACIDEAMRLSPSVGGIVPREVLPGGITIDGHVIPEGVVVGVPHYT
IHHNADYYPSPFRFNPERWIVDANSVVDGVKTTEADVHRAQSAFCPFSVGPRGCIGKGLAYHEMTTTLARTIYTFDIRKA
VGVKDPGEGSPRLEYGRHRESEYQLVDIFTSGKNGPMVEFRKAEKA*

>14106|jgi|CYP673C10|[Clonostachys rosea IK726]Cloros1
MSIFFVLSNGPGLYGIVAAVLVEVLVSYIVYQRFFHPLASYPGPFLASITDLWQVFQFLSLDQPYHLTKLHAKYGQFVRY
GPDKLSITAEEAVPLIYQRGGRNMPKTEFYDAYGAKIPNVFGMRDENRMYLTSQQMHSIRRRHMSHSFSMSYIKGMEQYL
DENMAILCDKVARFAKTGEVFDLKKMLHYYVIDVLGELAFSQSFGIQITDDGSRVPPVVEHSLLSAVTGAWPAMTSTLRK
WLPVVPHPSLKALFKGRADCAALASQCVQRRLKDLEGVAEDAKDQRKDILTNLILATHPDTGERLAQHDLEAEAFGFIIA
GTHTTSATATLLFHHLLHAPDIMSKCVAEIDQNLGPLEGNPAYSVTEAETSLPFVRQCVRENFRLTPVFTMPLARRVMAP
EGIVIAGHHIKQGTSVAICNHSFHHNPLIWGEDHNVFNPDRWEVPEIAQRARHLMHFGLGGRQCVGKTVAQTNIYKLVST
LLRRFDFQLADSEERERAAKGEFVGKLPEMISVGISDLKHPLMVRARVRDMAEP*

>14113|jgi|CYP5333E1|[Clonostachys rosea IK726]Cloros1
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LASVRNKYPKGTFSLSVLWQTHTVIYRPSWVATLMSQPQSVASDAWAQESLMRSNFGLKSRHTEIYRKVLPELNAQFKYI
LSDSSLSEATKITSINLRNRIGELVTFNPFPADQSDWERLAASDVVEDSPSGKIYADLDLLELVRNFVAQTANSGLFGSD
FVDNFPDFATLLWEYDRGVPKLAMKLSWWYPDSTLYRAMLARRRLLRYLREFHRELENYFEGHEPSVEWSDINNVGTLVK
QRAMVFRKHKVPIEARASCDLALLWALNARTSTLVFWMIYEISQDPILLAQIHEEIAPHVDAVHPRNEFGPGVWLAPEIK
TLDVEALVQNCPLLNAAYVETMRVYSCAWSVKYMEQDLVLKEKDSGDSCMLLKGTYAHVPHDTHHNDPRYFESPKEWQAK
RHLKESVDPKGAKSVSVDMGSIRPHEGQLVLSEGGPFAVRELLMFTSAIISMYDFHPVGEEGPWKTVRTVNRGPTKMPAP
KCKVWVRRRKLRREK*

>14397|jgi|CYP68AW2|[Clonostachys rosea IK726]Cloros1
MNTSYSLIYNFPINLNYHFQFSKDTPSMTSLAVVEPTLQAQRESFSLPIHDATYLLVRGSVALVLGVILFMNIHGDSKVS
SIPLINQAKGLDIANWGWRWRFAFYAEELLQKGMALYKDRPFKLMTDSGEIIVLPSNLVSTIGSEDRLLLRESVAEDFHA
HLPGFEVFAAAARYDQLGQSVVRKRLTRSLNKITEPLSQEVSFATELRLGNGKEWKKVYIYKEILDIVARSSSRVFLGPE
ICRNEDWLDITKRYTSEAFIGSAILRAFPNWFRNVAHWVIPQCRNLRWMAPKAREIITPFIEERRRLRAESLAKGEEPEK
FDDAIDWFEDESNGAPYDAAIAQLGLSMAAIHTTSDLLTETLLRLARRPELVEELRSEVIQELRKDGWKKTSLYNMKLLD
SVIKESQRLRPISMVSMVRKAVEDVPLPTGEVIPKGHRTVVLTDQHRSAELFTNPDVFDGHRFVRQRACPETENTAHFVS
TTSSSLGFGHGKHACPGRFFAANELKVILCHLLVKYDWKVGPNAPAEPEPLKYSFALQADPWAQLYLKRRDRDGLDIDAI
*
>14531|jgi|CYP609U1|[Clonostachys rosea IK726]Cloros1
MIMEGTSLSHTGDFGFYIGKKHVISVSSLAGRRTIYENRSLNFPAGFVELLAGIPSIGEPAKEQSWHRQFNKIVCQLTRK
EVLARRLPVWFLDIQTACREFASQPPVPGSKGWRVINPFDSLYLLVYKLTIRVVGSTDIVDDPEILRRTLGIFDTFERSS
SVLGFVFPWLITGSHLTRLFYGIRLYYLLAGNITKRQTGQTRKDDALQHLLDQGSSFEEVIKFQMCALWAGVLTTGTVGS

WAPILLASHPHWLAKCQEEIQAVVAKHRANSTQRTNDVLGTLQSSDWESDFPVMQACLQETLRLVIPGTVFRKNTSGAAI
PIGSTGQVVPNGSFLAFLIDHVHMNPSFYPDPSNFDPGRYLDDASHKTIEPHTFVGFGSGCHPCTKKC*

>14532|jgi|CYP5816C3|[Clonostachys rosea IK726]Cloros1
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FLFPGIRKPLIILEDPREIEDLLLRRNKEFDKAPMALDIFQPMFPKASLAQYTTPELKAQKRLWADVMTAEFLHKATAPR
IHKATLELVELWRLRVSVSNDKPFTIDEDLQNTTLDAIWVSILGDEAGIIDHSIQKLRSEIDGSIPFDATPPRGGFLREE
VRYISDTIARISNTPSPKWAGKIETYTPRYQRFRSTVTREISLLMAAAIERFQDLDVETLNSGDADRCMLDLVLRRLVLQ
SRKNNNAPLADPTKDQNMLDELFIMLVGGHDSTANALCWFVRFMEAYPAAQSELRTVLRAAFPGPEPPSAQAIIETNVPY
LDAVVEEGFRLAGAAKGNLRQAIVDTSILGYHIPKGAEIFMNYHITRPPAPVDESKRSDSCRAVVAKHGDGLRGRAGYDL
DKFEPRRYLVTDPDTGKETFNHYAIPSLAFGGGYRGCAVRQELTSVGRKLATLEFRIFVVLLILNLEFTDLPEEMRSMAA
TEKIFRQPAMPFARVKVL*

>14661|jgi|CYP620C8|[Clonostachys rosea IK726]Cloros1
MENLTPLLVGLIVLSLTIWGQFLRRNATSNLPPGPRPLPLFGNIRDLPAPGIPQYQHWIKFKDMYGPISSVSILGQPMIL
LHDKKAVRDLLEQTSLKTSLRPSSIFANNCGFGNFLPFRQYNETFRWHRKLVHQQIGTKVMAARFNDVQDVESRRFLLRV
LKTPEDLLKHFKTEASAIVLKITYGYAIESRTHDPLVSLIERMMDNMSLALVPLSWIVDILPIINRLPEGFPGTSFKTQA
REWNQVNQAVTDVPFEFVRRQLAAGTHRTSYVSQLIEKHGLSKNGELKLTLEEENAIKQTAAILYGGGADTTVSTLSSFV
LAMVLFPDVQQKAQQEIDEVIGNERLPDFSDRHQLPYVNALVSETLRWLPVTPIGTPHVTDDEIMYNGFRIPKGTYLLPS
IWWFLHDPETYASPSDFDPDRYLEPRNEPEPTTESFGYGRRICPGRFLATESLFITVSRILAAFQISKAIDEDGEEMEAT
LEPTAGLICHPKPFPYRIEPRTEKYAELILSVEREHPWESSDAESLKL*

>14689|jgi|CYP548E15|[Clonostachys rosea IK726]Cloros1
MFLTSAIGNLSYLGVSALLATLLGGYAVSTVVYRLFFHPLAKYPGPFWCKISGWPAHYHTAKQNRHVWLWSLQQQYGPTF
RYTPDKLSVNTATGLKEIYNPKANVGKGDYYGVYPRSPEAVTTWNTTSKETHNRKRRVMNNAFSDKALRNAEPFVHANLN
RWCDLIKGEIDKNGGEWSGSLNMADWTAHLIFDILGDLCFGKSFDMKEHDSKLRYVPDLMIEFMAVTHPIAFSPIAAIWV
WLKPRGLNSLLTLALPPALADWAGFVQKCFEERAKIEEEIKAQDKPESEIRKDFFHYLISATDPNTGKPSYGSSELFGES
ESLIIAGSDTTATSTAAATFYLVRNPDVQDRLAAEVRQAFPSVADIKGGDVLQKQCKYLQAFIKETLRMSPPTPADMPRE
VGPGGVSIDGDFVPQGVVLSTCAFCLHHSKDLYDEPFTFRPERWIVGEKGSTVESVARADSGYMPFSAGPRSCPGKNLAY
LEMSVVIAKLVHQFELRQDPKSDNLGGGSPDNIEGRREVDQYQLYDIFVSRRFGPVVQFKRRA*

>14724|jgi|CYP684F3|[Clonostachys rosea IK726]Cloros1
MIALYEQAPLCIGGAALVIVIVTYTWQVLKSPVSRVPGPWHSKWTSLASKYQFLVGKEAYYVHSLHQKYGPIVRIGPNEV
DISDVQAVQTIYAIKSEYSKTEWYNHLTSLPVRNLFDATDFEYHRRHRRLLGANMTESSLKAFLPIIVPKVDLAILRMRE
EMKTRGAVDVWKWWLFMATDIIGELTFGESFQTLEQGRKSAYTEQLELVAPLSAMRSIFPNLATIIKALPIPIFRQAVEG
TKKLRQYSMDSLSRHQRLVNSDPTRAKQSLFTKLYKAVDENELTFEELLAEAQGYIVAGSDTTANTLTYLVWSVARRPDI
KATLLSELRQLPRDYRESDLRQLPYLSDVIEETLRMYSAVPGGLQRRVPVGGAELAGHWLPTGTTVSAQSYTMHRDPFVF
PNPDDFDPSRWREPTKAMLDASMPYGRGSRVCIGKHLAYMELRLATARFFLAFPEVSVSAKEGMTDEDMVAKVFFLLFPQ
GKRCLLEF*

>15068|jgi|CYP531D10|[Clonostachys rosea IK726]Cloros1
MALSAIPPVYVLYGIVAVGAVKVVYELFFSPLSHIPGPFLAKFTDLYRSGLTHMGHVDYHKRRWHQKWGLAVRVGPNAIS
ISDPDMIKVIYTTKNPWRKSDMYRPNDVVVNGQRIQNIFNTQDAHFHSKYTRPIGGFWTMSKILDLEPVMDETLSELLAN
VDRRFASTGDVCMLEDWISYYAWDAAANVSFGDEGRDVGSIIAESTAGLKYFAPVSQLPFLDELLDKNPIWRVGPRPLVN
GFMYTVRILAEYHQQGEARRKPVDLFIDRYNGLKAQYDFVDDAQVTNWLMLNVLAGGDSTSGAMRSVAYHVLKAPSGGIE
LPDGRFVPERTKMGINPCVVTRDRGLFGDDADTFRPERWLRVKGEETEAEYTRRVRRMHEATDFMYGHGTRVCMGKHLAK
VEMYKLFATLFAAYDIKLTDPDHEWKYHNSWFMYHSDIPCTITRRKKA*

>15338|jgi|CYP5054A6|[Clonostachys rosea IK726]Cloros1
MIANIGHSLNGPIAFLALVLVIVASFLVYLNFFYVDIPKIDGIPEIPNGELLAGHLYQLGADHATTAENWSREYRWPVFQ
VRMGRRRAIFLNSFESAREWLVKNSTATVDRPWFYTFHGVVSATSAATIGTSPWNERTKKQRRVVGSFTTGPAMARARPM
IDMESSAVIASLYRDTKKGQQEVVPHVYLKRLALNMMLKFCYGTRMNSVTNPLLLQILEDATTIARSFRSTNSNPQDFIP
HLRYLAKSERTATALEVRARRDNWLNSMLDKVKLALKPSESDKKPIAEMLLEDNTEGLTQTDKDAVDIKTILGGLMSGGF
ETVFSTAIITIGLLSTPEGQILQQEAYDDLMSAYNSPEEAFRDCISEEKSPYIAGVVKESLRFYPPLKILPARQTFKEFE
YNGAKIPIGVLVYTNTQAVNHDKSSYGPDADKFRPRRWINKDYNVPAPYHFAFGAGGRMCTAVNFSNRVLYAIYARLILS
FRITESQTNPANTHYIHYKRDPTESNSIASEFKVRFTPRERDVLERCLTQSGERLADFNVGEDSEPLL*

>15354|jgi|CYP663Q1|[Clonostachys rosea IK726]Cloros1
MALTASIVAAAALGLITVYFVRRLVTTPSLPLPPGPPALPVIGNVHQVPKTFAWRQFAEWRKQYGSIYHLNVFGQHVIVL
TTSQAAHDLLAKRGATFSDRPKMFVAQELALKNMNVLLMDYDERFKVRQRLEATVLGQNASSKYLEFQSIESKQLMYDLL
MNAGGKGTNIHGFLERTTASTIFALFYGFRIKDSEAPELVNAMQLDDEFSEFVQLGAFLVDTFPALNILPGPLAPWKAKA
EAHHQRQRKLHIGNLNRGLKAPGWTFTKQLHQTVQEENLPISFDELAFEFGTLVDASLDGTVETLNWFIISIITQDNGFV
AKAKQELDRVVGRNRLPTLDDMPHLPYISALLEEVLRWRAVGAGGVPHFTKVESEYQGYRIPANSVVVANHWAVTREEAV
FGPDTDSFVPERWMDGDKLKILPVAGFGYGRRTCPGRFFARNMIWVSMARLLWAFDITAGRLEDGELTVVDADGCTDGLV
MRALPYKASFEPRDENAREVIMKDGDTYGEDLPAILSKIGEQLNKKK*

>15504|jgi|CYP5053A10|[Clonostachys rosea IK726]Cloros1
MKLLQQLLEQVQVQLLNGCLPVLVLAVTLGAPVAWILGDYCRILWIRRKMPPGPFPLPLVGNFYDIPKSKPWIEWEKWSD
VYQSTMITLWNGRRPIIVCNDIWSISDLLEKRAAIYSSRPHFVVMGDMMNMSKTNQVCQVYGDAWRLHRRLTHTIVGSQA
VRNYRTDQSNESKVLMRDLLQHPEGFEQAIERYSCSVVSILGWGRRIDRMNDVVAQVAMGFMEGVNYVIPGLYIMEAVPW
LAKLPAWIYPLPSAIYNGTNHMHRYFAALCKEAATSEKQDNFSKRLVAAQDEHGLSDEDISSLTANMIGGGVDTTTSTTL
TLILAMCVFPEVQKKAQEELDAVVGYGRYPDWSDEDSLPYIRAVVNEALRWRTVTILGGIPHAPIRDDEYKGYLIPKDTA
ITGNMWAIHRNPRDFPEPDVFRPERFLGGLEMPYPNKRGHNAFGWGRRQCSGQPLAEQGLFITVARLLWAYNIQPGLDEK
GQPVELDIFAYTESENTRPEPFKARFTPRSKETEQIILGDAEEAREALRYLDGDTKITMASVAR*

>15554|jgi|CYP54J1|[Clonostachys rosea IK726]Cloros1
MSSTNNTSTVFAAAGAAAAGVNDHWPAIVASSVFIAFTLIAQYFFKVDPLAGIPVVGQGGKASRRRQFVKQGGAWKLHHE

GYQKFKDGLFRIITARETESIIISPKFLGELRKLPDDVLSFNASVTESLQSKYTGVKADLPHVTETVKTSLTPALPRLNP
EIHSEVVDSMRLELPQSSTWTDINLNSKLLRIVAMASGRIFVGPELCRDEGYLDAAINYTIDLMIAVHVVAFMPVWLRPI
LGPIIPPVRKVHRRVKEADEFLRPVVTARREAEKLPGYKKPDDMLQWIMNSQDKFGVKDDKELAFNQLGVSFAAIHTTTM
TTTNSLYTLAAMPEIAPMLREDVQQALAASDGVFTSLAMQNMKKLDSFLREVLRYYPISTTSFQRKVLKPFTLSNGTTIP
AGIIIEIPAAGVSGDPSIFPDPEVFDALRFYKLRQSKSKAESGAKAAETVANSQFVSVSASSLTFGYGKHACPGRFFAAN
EIKMILATILLHYDIKLPDGVTERYPNLEMGAQSLPDPKKLISIRKRENVAP*

>15558|jgi|CYP65AW2|[Clonostachys rosea IK726]Cloros1
MRSLIEEWWRQSTLSSWLIILSGLGFSYIAGFAVYNVFFHRLRKYPGPKLWSASHIPFTIMWMSGTGHKKMLELHEKYGD
IVRIAPNQLSFGYPEAWEGMMGHRKRGQDENGKDPDFWIGDDNLTLVGSDRERHGRLRKILSHGFSAQAMMEQQPIFQRY
ASLLSQRLKDASKEGKSLEITSWYNWTTFDMAGDLIFGEPFGCLEKSQYHPWVKLIFMHIKGIAISTAVIRFPFGSKLIG
LFMPKSVARDIETHSEFTKAQVAKRMAYQNPRPDFMESMIKAHNKDQASYKEVLANAHNLIVGSSETTATTLAGATYLLA
SHKEVLLKLQEELSQHFSSEDEIDLISVQKLEYMFAVLHEALRIYPPVPAAIPRKTPAEGSMIGNEYVPPNTILGIWQWP
LNHNPKFFKDPDSFVPERWLGDPRYDSDKKGAFQPFSVGPRNCIGKKLILAKMIWNFDIELDPRSENWLEKNVLYFLWDK
PELYVRLITRTAIQLGEGDPVAT*

>15579|jgi|CYP65GC1|[Clonostachys rosea IK726]Cloros1
MAVANILAEDPSSYTRLIVWAALLIATIAVPTAFVIIYNIYLSPLSSYPGPKASAVTSIPYLKALVSGKSCEYVYELHKK
YGDVVRISPNELSYTSSQAWKDIHTHRPGQAYPDKEPAFYVHPPNGVPSLFSSNNLYHTRLRRPLAHAFSEKALRDQDPL
IKIYIDTLVEGLRDKATKGEAVDACAWLNWTTFDLMGELSFGEPFDCLKKQRFDPWVEIIFDTVRATAIMGGLRRYPGLQ
TLIEFFVPAAQKELPARHQKMTDDKVARRLANTTDRQDFMTPLLKNKGHQEPLTTAELSSEMFSVIVAGSETTATALSAT
LYFLARNRDKLKKLQEEIRGAFKSEDEINMLSTNSLEYTTAVLEESMRVYPPVPIGMPRVIPKGGLTVLDKHLPAGTIVS
VHQYSSNHSPKYWKDPESFVPERWMGDPNYADDDRRIFQPFSTGARNCIGQNLAYAEMRSILARLMYNFDVMLDDENHNW
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>15697|jgi|CYP628P1|[Clonostachys rosea IK726]Cloros1
MLHIFIGSRIAAFLAGMACHLFIFRCGEWDTMTWKIILSTFSLYFGAITVLATLPLLDEPPFSVYRSANVVTTLGLLAVL
GVFASMALYRGLFHRLSAFPGPFLARFSNFYITYLSIKRSHLYEEVEQLHQEHGDFVRIGPSELSIADPEAVMAIHGPKS
TCAKGPWYTINNPMISLQMIRSKPQHVQRRRIWDRGFSAKALRDYEPRVIDYAEQLLSHLAATEGNPVNVTDWFNFYSFD
VMGDLAWGKSFGMLRGGVKHHFMNSLHEFMATVGAFGHLVWLLDVLKGIPVLNRDSKSFWGWIQSQVTGRKSMTPDRPDV
FSWLLEDHNSKQPTFQDELLLTGDAALIAVAGSDTTASSLTCLFYELCRQPDIITRLQNEIDEVYAGPDTVDSVSLSKLP
FLNAVINETLRLHPPVPSGVQRVTPPEGLQIGKHFIPGSTIVQVPTHTMCRDERNFASPNDFIPERWTTNPELVKNSAAF
VPFSVGRYSCIGKHLGLMEIRHVVSTILRKYVVEFAPGVSAEAFLDGKQDNFTLALAPLMIVFSNRN*

>15910|jgi|CYP628P1|[Clonostachys rosea IK726]Cloros1
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KTWIFLNSHRVVSEIIGKRGSVTNTRSPMPIASGLVSRDGRSLILPQETWTERRRVMHGLLSGSALKQYGEWQELESTQM
MAEYLFQPEKWYKHHYRYANSVVHRIVLGERLAKSTQELADLQNCVTFFVGSIGSSIIDWFPELARLPKVLQFWRGHWQS
LGDWNYRVYNSWWAPIKTQVDEGTAPPSFVRDVLLNEDTRYKGDDQDCMYLAMQLIEAGSDTTREALNIMVMAMLEYPEP
FLKARAEIDHVCGYGKDARLPVLADMDNLRFICAIAKEVLRWRPIFVLTPDHVASQDIDFEGYRFPVGTSFVINEVAVGS
ECENPGAFDPDRWMNGHETDISHGLWQFGGGRRICVGYRLAQRSLFINIARLIQCVDFKADGPYNPKILNLESTDEPFPV
KATIRSDGYDHLILTEATRAGVLDSAKLDRDG*

>17568|jgi|CYP61A1|[Clonostachys rosea IK726]Cloros1
MAANTSFASPLAGVSGTLFPIPPQIEGIFDTISSFGFWPIAFSVLALLVAYDQISYLLNKGSIVGPAFKEPFIGPFLQSV
NPKFEEYYAKWKSGPLSCVSVFHKFVVIASTRDMARKVFNSPGFVKPCVVDVAHKLLGDDNWVFLDGKAHVDFRKGLNGL
FTRRALQSYLPGQEDLYNRYFDRFLRVTKEADNKPVPFMSEFREIMCAVSLRTFCGHYISDESVKKIADDYYLITEALEL
VNFPIILPFTKTWYGKKASDMVLAEFSKASAKSKARLAAGGEPNCIMDAWIKNMLLSKKWTEADAKGLPTENIEKPSPLL
REFSDYEIAQTIFTFLFASQDATSSAATWLFQIMAQRPDVLDRVREENLKVRNGDIHAAVDLDQLESMTYTRAVIRELLR
YRPPVLMVPYEVKKPFPITDSYTVPKGAMIIPTTYLALRDPEVYDNPDVFDPERYYTGDAEAKGVKNFLVFGTGPHVCLG
QHYAQLNLVLFVGKASLLLDWKHHPTPLSEEIKVFATIFPKDDCPLTFQERKW*

>17609|jgi|CYP532AA1|[Clonostachys rosea IK726]Cloros1
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IPKIYGVGRGFTKSAFYDAFSQHKRGKRIPALFSLRDEELHSSILRPVAQAYWLSALLNYEALVDTVIKTLLDALDERFA
IPEDRDLRQGMACDIGQWLQFCMTIRSLVRSFFICLGPWNLKSTRKLTGTVACDAITAITFGQPMGLLQSGEDMSDFIQR
LDKAIDADAPVSTFSHRISQGDNDGKFLVALLTLKILHQISQMPWMGYLKKKNPLNRFFAKDSNFTVSFVEDRIRERRGH
LALSGERDAHRLEDLLDKYISAEKSYDIVDDGLVRSYAMSTVASGSDSISIPLRSVIYLVLRNPNVYEKVTHEVRNAGLQ
SPTQFRDVLESLPYLGAVIKEALRLHPPVGLGLERTVPDTGLQLKNQPLIPSGTQVSVCAWVVHLDHEIFGHDSGDFVPE
RWLRADEETYTEYTERLARMQRFDFSFGHGSRTCIGKNMSLILLYKVLASLFMELDMVSTGEKWMTRNSWFVKQWNVKVH
LRRRREGSKIE*

>17716|jgi|CYP5404B2|[Clonostachys rosea IK726]Cloros1
MASLDCHARAFFKDFNEAIDYGRNYFGGSDTPFSVTVGGVQIYICCAPEDVARLYRNTTTISYQHVVEDMYRGIGFTGSA
FNKMFHIDPSAKHNIGMSHPLPPCHMIVEYHRRQLKSGEPTDELLQNRVRPGIDRRLQGVVEGTSFSIIGSSGCETTVSL
LKLCTDLFLHSAATAYLGQKIWHVNPKFLDYFEVWERESWKYMFKMPAFMSRDMIWARDGIINTFAKYLSIPAEARSDCS
DFVRSVEVMLRDVGLAEQDMAKVFLLYFWAILGNVYKAAFWTMAHIVYDETLSKSIRAELLPAYREGRVDTSYLFQCPLL
ESLINEVLRLAVATALLRDVISPTTLRDVTIPPGSKVPYRQLHRNQDVWGTEPLVLDPARFQNNPKLLSSKSFRPFGGGQ
TLCPGRVLAKQSIKYTVASLLMRFDLEIDVEMTRKAVGGDGSKPNFTQMDSTKPSPVASLPVQGQDVYLGLKEKGHSK*

>17730|jgi|CYP5377A4|[Clonostachys rosea IK726]Cloros1
MALTSLPWVSVGRSVTWSHLLPAFAALGTAYFIGRAIYNLYFHPLSKYPGPKLGAVTDLWWAYASTTGRYPWIIEDILNT
YGDVVRIAPNELVFITPQAAKDIYLAQEKNLELFVQVGYDALDTGDGGISGETNPVRHREIAKKLAPAFSTRNLRAKEAA
IHKHIDLFVNRMKDFGGEEKGADMRRWVEWLGLDLSADMTYCIDMGHLRDMKDSVLVRSTFKLNMFILMSQIVRKFRLLT
PLAYLTIPPAVWFDMLELLKLNTDDVQARLKKRHNIEHLDYFEQLVPVNQPIPQDQKEIYHLQNVAWQLLLASWQPLANQ
FYSLILLLLKEPDAYATLVKEVREEFPDYEAIKLDSIESLKYLQSCANESFRLHQETTDGLPRISPGAMVDGTYIPQGVG
PSSIPKPTNLPRH*

>17765|jgi|CYP633D1|[Clonostachys rosea IK726]Cloros1
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CSVPLFGSITYVMWDSNLIQSAFRNKDLSFVPFIVYVPREVDQGGVPEKDQDTNLRLEFAKAMTEGMARDRISQMNGTAL
KYITKELGAFGGEESVIDNAYVWVRNLMTVATTEALYGSANPLRAQPSLVYDLWRFDEDLPTLLLGLFPSYTAPEGLEAR
HRLEHALGEYYHNKKDANSDVSAVTHQRANVIRKFVTTGRTIGVHELALLHVSTSNSIPTLFWFFAHIVTRPALVERIRD
ELMRMVGDDAGGTVTINLDVLTEECPLIVSCYREAIRISNGAVSSREVLADTTIQDGEGRSYLLKAGNSVRIPLDHLHKD
TEAWGHDFAQFSSDRFLQADAAKAKLRRTSYAPFGGGKHLCPGRNFAFGENLGFMVSFILSFDVAPQDGNWETFMPPAMD
KCTAADAVCKPAHNGAGFGIRIKRREGWESTTWKFTSGGVDLLNL*

>17811|jgi|CYP59C6|[Clonostachys rosea IK726]Cloros1
MAWLTLASTIGAVLATTVGYIVQATFRHRRKIYKLRKQGIARWSWIFGHLLVLQKYVDGIPPDAAVAFAMRNLSKEFADT
ELFLMDVWPVYPALYMCFGPEAIHEICVKYNLPKTEQADKFMHPVAGGPSLLSMNGGQWKYWRSLFNPGFSSGAMLDNVP
HIVDSVLVFRQKLFDMVGKGFFSLDELTTRLTMEIILKVSLDHDSNYQQSDHVLATALGRIIAVHSFWNPFILMNPLRPI
IQKYNGRIMDKYIRGELDKRFQEAKLEGTGGSTSNKSVIALALKAYFKENEDIDIQKQDKIDPVFAQYATSQIRVFLFAG
NDTTASMMVYVYHRLSKHPKWLAKLRQEHDEVFGSAPADAADRIKESPSLLNKCPLTLAVIKETMRLHAPAGTMRWGAPG
TFITDLQGNLQPMDDSVGANILHQALHLNPRVWPRADEFLPERFLVGPEDPLYPVDAAYRPFEAGPRNCIGQTLVWNELK
VAVILTCRELEIRDAYADFDAKREREMGWFARVRRRLFGGPIRTLHGDRAYQSDSGGLHPVDGYPCYVSRVEAS*

>17991|jgi|CYP548BJ1|[Clonostachys rosea IK726]Cloros1
MDAATNLHSDDPDSVWTHVTNLLPKLVAFLAIYVTTVCVYRVFFHPLARFPGPALAKISNLHAAYYAWQGTIRDDTLRCH
EKYGKHVRYAPDRVLFNSAQALSDIYSHRANTIKSKTYLMLAHQAANSLTMRDKVLHGKRRRVVSQAFSEATMRSFEPKI
VEKIQRLCDTITKSLGVDGWSETKDMGRYSDYLAFDIMADVVFSAQYNTVENEKFRYVIGAIADHNVRLGVIAQAPELSI
KALQRPMFRQAMKARDRFVKFIRILLGIRLKNKTKQRDIFSYIQDAKDPDTGKGLDFTELSTETATMIVAGSDTTSTALA
AVLHYVGHSPICYDEVMKEVRSRFNSLDEIRMGPTLNSCVYLRACIDEALRMAPPAGGTLWREVDQGGAVIDGIPIPAGY
DVGVAVHSLHHNPTYFPKPWSYDPNRWVRSSIDNSASEETMSAAYNPFGAGPRSCIGKPLALHELMLTLATLFFQFDFSP
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>18006|jgi|CYP5090H2|[Clonostachys rosea IK726]Cloros1
MEVETTGILGRWWRQLLNGIFQQHTTLWAFSILLLVTWAAWRVIRFTLTPKWHPEEPPEVPYLIPGQCRSAIHVVTRQQL
GNIRTPFAFTIIGAKFYVISDAKHAAEVDKNTSTLSFEEFVLDFLRNTGLSESAIQACYFQKLANGAVDFPNTAEDPIGL
LIHQMHMHELYPGEKQKALVARFLHSFNRDLRIDQIRAAGSPREDRPGVKEVNVSLYKWCAHFFTRAGGYAYFGDDLSRI
DPDFADAFYTFDELSWQINYRIPEPFSKDMRAAKNHLHRSLKKYIMAPKSERSEQTWLLQGAEAGLRAMGVQEDDIATLF
LTMYMTINTNTRRTTFWMLAFLLHNPSLIETIRQETAQAFEGGELVNHEHLVDHSLCPHLEAVWLETLRLISNGSAVRCV
NEDTVVGDMLFRKGNKVIIPYRLLHMNENAYQQDPEQFIPNRFLEKENRTRGGYWRPFGGGKTLCTGRFVAEQSIKACIC
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>18007|jgi|CYP5327C1|[Clonostachys rosea IK726]Cloros1
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INETSLISAVEKHTKVFSFAAIEAKAMGNLLGMSEEAKATLREDPVAEDGHFMTFHKAFRPAVSPGLGLDSMIMASARTM
AASLNRTIQGGQIQVDLFKWVEHEVLLATTDAEFGPGNPFRDPEFEAAWYVFEPCVPIIASNICPRLLAGRALAAREYLY
RGFFQYLNDGRLEEASAGFHARFGHSKQAGFSLEDIARGEIGAVLAILNNAIAAGFWMLYHIFTNPALLEECRREVAKAV
TVDGDTKTIDLSIIESSCPTLHSTFHEVLRYRGVGTLLIRRVLEDHKLGNRYFLKKGGLVLMPNAVQHFNRDIWGDRVNE
FQYQRFNRSADENTKRYNPTAFRAFGGGSLLCPGRHFAIMENLAFVSLTILSFDIEPATGGAWAKPKTGRSLGLGVARIF
VMPENNFAVNLSPREGGNQQWRFVLPRQ*

>18009|jgi|CYP5816C1|[Clonostachys rosea IK726]Cloros1
MDNTLIYGLAGVSSVLIVAMIWRALYPKPYPGIPYNEEAANRILGDIPDLMAVINETQEFSHALFAVTTQKLGVPIAQIL
FPGVRKPLVIVEDPREIEDIVLRRNREFDKAPMGVDAFQPMFPHSTVSQFTTPELKAQKRLWADVMSTEFLRKTAASNMH
QSTLEMLDLWRLKASTIYKDKPFNTADDFANATLDVIWIALVGETAGLTKFEIEKLQNEVDGKSIEHLDLPRGAFVKEEI
HYVAEAITRNSNSPSPKWAQRLEMLTPRYRKFRATVTHEINLAMRKALDRFERLEVGSLEDGEEDTCMMDLVLRRRVMEA
RKANREMTDPSKDENILDEMFTMLVGGHDSTSSALTWFVKFMEAYPVAQTELRAKLREAFPGPELPSAQEILVTNVPYLD
AACEEGFRLAGVTKANLRQAVVDTQILGCPIPKGTEIFMNFHINHTPAPADETKRTAGAKAAVAKNGNGFESRAGRDLGN
FEPRRWLVQDETTGKETFNPTALPSLAFGGGYRGCTGRKLAYMEFRIVVTLIILSFEFLELPEELKTFSCKERIFRRPNT
PHAKLKIM*

>18035|jgi|CYP5794B2|[Clonostachys rosea IK726]Cloros1|
MDSLAPSSSKISWLWVLTHIVAPGLVLSGLYRYFTDPLRRVPGPFIAKFTGAWMLYIDLSGQRSATVHRLHKIYGPAVRV
GPSEVCFASPTALKEIYEANSKYLKAPVYDSLGFRSTFTTRNRDEYRGMKKRIVPSFNSTSISEIEPIVHRQLDLLVKSF
DKRVDQPLNVLPWFRMLALGVVGEGFADDSFGGLENEKLPELLNHIDEVFPVLWTRWMFPLTTAILEYIPIKSIQSFLQA
APKFKKYCSNAYEKYLASHNPSEHHDLIARMVNEQKELQKKGEILPFHVTDDGIVQELTNLMFAGTDTTGTTLTYLFWEL
ARHPEWILRLREEINEALQGRDTFNYHEISELPILEAVIQEILRVRPAGPAGLQRLTPAEGAIVDGVALPGRVIISCQAM
SSQRDPTIFEDPNRFNPQRWLDGERNGNADTMREQILVFGKGARACLGRRLATMELKCAAAIVTRRYNVKIGSPTTDSDM
EMTDHFVLIPKGGKCLLELSRA*

>18054|jgi|CYP5845A3|[Clonostachys rosea IK726]Cloros1
MIQDTLDFVTSRWAYVLLAVLATRSLYNYFQRGLWKVPGPFIRGITSIPRVLSAYHGNSHNDDISLHRKYGKIVRLGPNL
LSIADPAEINQIYGIGTKFIKSRFYELSSAYDDEGLVPDTFVLTDKALHTRMKKNAANAYSTNGLIQMESWIEPVTERLV
RKLRRQAGQPVDIACLLKDYAMDAVFAVTFGRDFNYVEEGDVLKMYGVLETVSDYMAVIGQVPWMHKFLLARPLVARLVF
GEGGGDKEMFQLAISEIEAAKKKQSEDGPLTFLQRLLLNQAKNPASINDREIMTHAFGNIAAGSDTTAIALRSVFFHVLK
HPHVYEKLSEEFSTLTTPVSFTDANKLPYFGAVIQESLRMHPSVGMMLARLVPAEGAEICGHKLPGGTEVGINPWVLHRD
PEVFTDPDSFRPERWLPTETNEAHLRAMNRCFFTFGHGAHTCSGRWISLMEIKKIVPTLLINFDMKLVKESEYGFKNRWF
TPQHGLWVEMTPKL*

>18061|jgi|CYP5845D1|[Clonostachys rosea IK726]Cloros1
MAGSGVLRMLSALTTGKLQLNIPVLPVFVILCVLLSCHFIINRYHKDLHRVPGPFLNSISTVPRIWSVYRSRSHADDMKL
HQKYGKIVRLAPRIISVSSTAAVEQLYGISTKFVKSEFFKLGAFTNDKGDPVTERLLRILDRHAEAGIMCDFGDVLKNYA

MDAIFAISFGQDMNYLEKGDHLRLYRVLDIFTSYMAIFGQVPWCHKFLLKNPRFAEWVAGNNTSQLQMMDLAIRETQSSF
FKPPSEGPENFVQLLVNNHRKSPSTISIDEIHGNALGNISAGSDTTATALRAAIYLLLKNPTAYQTLCKEVRDNLQLPVS
FKEACKLPYLSACIKEALRMHPPVGMLLGRQPPKGGKVVAGFHIPEGIEIGINPMILHHDSEVFPDPYTYNPARWLKTES
NQEYLKQMNRCLIAFGHGRHICSGQHISTVKMTNLIATLFIRYDLKLANGGRNYRFKNLWFMTQSGLEVMFSMR*

>18229|jgi|CYP578D4|[Clonostachys rosea IK726]Cloros1
MLLSPAVLVLGISLSAALVLYNFVIYPAFISPLSKIPAPHWSCHVAPFWLWWAKYFHHENRLVHENHLAKGEALRLSPGL
LSLNGFERALKPVYLGGFPKTEFYFRGFAIYGTDNIFTFEDNATHSSRKRIISNTFSKSFVLSSPTAQGSLKDVLFGRLL
PILHSAAQTGKPVEVLELSYSYSMDSFVQWQFGRRFGSNLVENLDERRLYLDGFFAAAPYTFWQYEFPLVNRLLKSIGMI
PAKVDTSFQNIEDWNIEKCDGAYQLLKSGEKLSEEDTPVVFSQAAKMMSSMKSSDNEEGYANRLAIASDMFAHNSAAHET
SGNTLAYAYYELSRHPEVQRKLREELLTLDPPLKFPQAPGEFSLPAAKDVDALPYLEAVIMETLRLYPSVPGGQPRLVPR
QCSLGGHDNIPAGTVVQCYAYALHRTPEIFPDPERWNPDRWIDASKEQLSEMRRYFWAFGSGGRMCIGSNFAWFSMKHNV
GSVYTNFTTTIHDHGDMTLIDAYLAGPKGHRLEIKFERVQE*

>18319|jgi|CYP65S16|[Clonostachys rosea IK726]Cloros1
MVILCVFPLIIVFLLSGLYNIYLHPLAKVPGPKLYAFTAIPHLYHMIKGDWHMVLKKLHDQYGPVVRFCPISVSFTCADA
FKHIYGHKKAEEKPYEKDETFYVRPRSTENISFTSTAGHRRHRRLISHAFSAKALSSQEHILKQYCGSFVSNLEKYSKQQ
GGSVDIVRWFNFVTFDLIGDLAFGESFGCMDQGGYHPWIHIMFSSIKFMIYNYVLCRLNLQRVVPLLLPASIKKGAEEHH
RFARETSMRRMDAGIKDRPDFMSYILRYNDHRGLTPEEIFENANFLVVAGSETTASLLSGLVFYLLKHPDIYDKLVNEIR
SAFNSQEEISLDGVGRLDYMLAVLKEGLRICPPVPMELPRRVPKGGDVISDYWLPENTRVGVSHFAAFTSPSNFRDPDSF
APERWLNDPRYADDKKDAHNPFSLGPRNCIGQHLAYAEMRLLLACLLWNFDLESASHDYEKWADQQVYATWQKQDLNVRL
VRVARG*

>18348|jgi|CYP584BA1|[Clonostachys rosea IK726]Cloros1
MLSLLGRLNWPFLVLWAAVALFGVCIDRYRRSLKFGKLRGCETSHKQALVRDPFIGLDFIHERVIRGLSGRRLLDCIEKF
QQYGSTYSVDRLTYQVVQTCDPQNLKQILATGFHDFELPSSRVSVMGELLGSGIFTLDGDLWSHARAILRPSLMKHKMDR
LPSIIEHHVQQFLTHIPRQGEEVDLQPLFFELTMDIATEFLMGYSSNMLDPSRKREKEQQFFDDYMLCSEEAIKKMSYGP
LRLFRLNLAATKAKKRVFKYMDEYIEECFYRQDGTLPRTDEQNAFQEIAGAVTDRQSLRDQLLHFLLASRDTTASLLSNL
FFVLAKNPETYARLRSEVLSKVACENPTFSDLRDIEYLRCPSTTSRYPLERPRSHATLPRGGGADGKSPLFLRKGAVVLY
NVFSMHRDPAIFGDRVEEFVPERWAGLRPGWGFLPFSGGPRVCVGQQFALVETYYVVARIVQTFERLESKDPREWVELPG
LAMTCRNGNKVGLYEA*

>18556|jgi|CYP5377D1|[Clonostachys rosea IK726]Cloros1
MIGLFPNLGALAAAATENRSTIFTVLLGAIPVYATLRCFYLLYLHPLSRFPGPRIAAVSNTWYAYHWLSGKWPWAVENVL
REYGDVVRIAPNELVFFTPQAFRDIYQSTQKGLETFVKSDFQNRGDDLGGVVWEEDPVRHRAVAKQLAPLFTARHIRSME
PVISKHIDYFIKRLREVGSDGVDICEWSHWYNMDLAADISWNEETHQMRDGFVTEKRSVYLDVLLGFNKFATVLQVFKRF
PLIKPLQYCFLPISKISSIAQIEAAVKNGVLQRIERRGTLEHPDYFDCILPGEKPLPANKKESYLIGSLALQVMFANFSA
LSDWLYGTIYLLTDDEGQECYKELVAEIRGTFESFDDINATALASLPYLQACLEESLRLIPGGLHTGLPRLSPGATVDGH
YVPKGTHVQSSIFAYSRSPRYFHEAKKFRPQRWLPPTHKLYDPAFKNDVLRGASPFSLGPRACSGRETGWVQGRFVVAKL
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>18620|jgi|CYP53A69|[Clonostachys rosea IK726]Cloros1
MAIILILSPWVLLVAGIAFLPVYYIIIPYFWTYRHLRGIPAPFPAQFTSLWLMSISREGKRSEYIDALHRRLGPVVRIQP
NHVSIADDKAINLIYGHGNGSLKSAWYDTFRSIGYSVFNTRDRAQHSHKRRIVAHTFAPRSVRQMEPCFAQNLKFLIEKW
DGIAKDGAKRDGYADLDCRRWINFFAFDVIGDIIFGSPFGMLQAGADLAESRTTREGPSTLLPAVKHLSHRSEIAATLGA
IPELKPYAQYIPDPYFRKGLEGVKNFTGVAIARVKDRWESPKQPEDRRDLLSLLQEGSDGKGDAFGFEELTAEALTLLIA
GSDTTNNTFCAVMNHLAANPHALSRLQEEVDTALPTDVIVPTHDMVKNLPYLNSVINETLRQHSTIGLGLPRDVPPDSEG
IYFRGHYFPAGTTLSVPIYTIHHSEEIWGQDALEYRPERWDNATAQQKNAFIPFSTGPRACLGRNLVEMELKILAATWAK
RYDVCMRQAQPEISEGLTRRQITMNIGIRRR*

>18677|jgi|CYP504E1|[Clonostachys rosea IK726]Cloros1
MIMDSKAESILALYQHRLNGFIGNENAGPLFTAVGVILFSYLLYQVAFATDIPHIKGLPEIPGAVPIFGHLLSLGEDHAS
SCEKWWRQYNQSVFQIKLGNTRAVVVNSFDDCKKMLLGNQNAVIDRPKLYTFHGVISSTQGFTIGSSPWDESCKNKRKAA
GTALGRPALRRYYPMFDLESYSILRDMKKDSNNGNIEIDIRPYIQRYALNTTLTLCYGIRMDGVYDELLREILYVGSAIS
LLRSASENLQDYVPFLRYLPTNTKNSRSKELRERRDAYLNLLLDKVRAMIKEGTDKPCISSAILKDEETKLTGVEVSSIC
LSLVSGGFETIPGTLTSCIGSLSTKEGQEWQDRAYADIKRYYPDVRDAWTSCYVEEKVPYINAIVKEAGRYYTVSSMSLP
RKTVQEVNWNGAIIPPKTMILINAQAGNHDVDHFGPDAGKFDPERWLKSLDPPTEAEMDGLGHLSFGTGSRACSGQFIAS
RMLYSALVRILSSYKIVASEEMPPNTDYVEYNQFKTALVAIPREFKVKLIPRDTDLTAECLFDAEERTREHYKE*

>18730|jgi|CYP5579B1|[Clonostachys rosea IK726]Cloros1
MGSPTLLTVVAAAAVHCVVSPLPEVSLEQYVVPYLLGNLILCSYLWKEGLPTVDIIFSFTTINACFIFTSVILTITRRLF
FSPLAKFPGPKLAAISGFWNANEGRLGRASRTRKALHDQFQSDIIRIGPNELSVNRVDAIERLYGKDYKRGTFTPVFNIS
GGDNLVTQRDNQLHSVWRRMCHVNKAVRLLHEKAGNPVECGKFLDALTFDVISDVAFSQDTKFQDGAGDRSLIDGIHIFV
PMIPICRYLPEPPAGRKFSEYRGQVLAARKSLKGQPNDIFAHLEVPDASTGIRMRPIDLKQHILFMMIVGAHSVGTTLTR
TLAVLASQPHVQSSIRQELNEVFHGEGSAPVETIRKLKYLDCVVREALRMFAPVTDGTPVIVPKGGITLESGSFIPGGTQ
VWVGQYVIMFNEEYFPRPHEFLPERWMSLGDEGYGKEGELVKDRRAWIPFGYGFHSCGGRALAIEELKQILLRFVMEFDI
RFVEHEDMPFQYEHWADSWKDYFLAMIDEIELRFVPR*

>19028|jgi|CYP5044A6|[Clonostachys rosea IK726]Cloros1
MQLVVLLVLAIGAALGVVKLARSYIRLAGIPGPWLAAHTDLWRFRAQNSQGYAGRLVQLHRQYGKLLRIGPNHVTVSDPN
AVSIVYSMNPVWRKGPSYYGATTVSQGRVLPSIIAMEEAQHTAVRRTVGRAFATTSLLDYESYIDHSAAEFVRVVGKLES
ADIGLWLQFFAMDVLMRIGFSETPGFMQKGGDVDGILGAVIDRFDHWGRWGAMPTLDYVFNKGPLASMLKGKTDSPLARV
GAAKFHARKTALNPPDLADLCQKFLEGRAKHPDALNHDEILGIILSTIGAGADTTAGTLTYTLFFLAKHPHCREKLQAEI
DAGLQDGTLSNPPKWGEVYKLPYLEAVLKESMRIFPIASWGLDRIVPEGGVTLAGTFIPPGTVVACQIDAIHRDTEVYGL
DSEDFRPERWIEADEEQKRRMDRAFLAFSSGKRVCTGVHIAWLEMKKTLPLIMMNFNLELLHPDQDLSKGIRVSAVKYPP
PVWVKVVKRQDGPVPS*

>19130|jgi|CYP5080A18|[Clonostachys rosea IK726]Cloros1
MLPLALGGVSLVLYALLSIVRSLFSSTRAVPGPFLARFSNLWYTKRVYVGKFETENCELHKTYGPIVRYGPNRFSFDDPE
ATKIIFGHGTQFAKSSWYDAWGIPGVWNLFNERHIKTHAHHRRLFQSTYSMSSLVHYEPYVDECADLFSQRLLEISEAGI
AIDMAHWFQCYAFDVIGQITYAERLGFLDKGEDIAGFIKALDQSFPYSALVGIFPSLHPTLFGLANYIEGNSGVGTQYVS
NLTQKKIDQHKAEPKVIPVDGDHAEPFVSKYLRQHTDDPARFTKFHILTGCSSNMIAGSDTTAISLSATLYYLLKTPRCL
EKLRTEILEFQEQGRLSKSPTFKESQDMPYLQAVIKEALRMHPATGLPLERVVPEGGATISGTFFPEGTIVSVNTWVQHR
NRGVFGEDADTFNPERWLSNDAERVSLMNRYWMPFGLGSRTCIGRHISMLEMCKLIPRIVRDFDFQLDGSIATSNVSWKT
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>19512|jgi|CYP51F2|[Clonostachys rosea IK726]Cloros1
MDSFIKIAGVAVAATVLLIIGNAIRQLLPRSKSEPPAVFHWIPIVGNAISYGMDPPTFFRQNREKYGDIFSFTLFNMKLM
CYFGIDGNEFILNGKVADLNAEEVYGPLTVPVFGKDVIYDCPNAKLMQQKKFVKFALTQQALEGAVPIIEKEVTDYIKTT
PGLKGQAGTLDISKAMAEVNIFTASRAIQGEEIRSRLSRDYAKVYNDLDNGLQPVNFLMPWFPFPHNRKRDLAHIHMRNL
YLEVIEKRRKQGPEAEHDMIWNLLNCKYKDGTPVPDKEIAHMMITMLLGGQHSSSSSSSWMLLHIASRPEVGKALYQEQV
DNLSKDGKLQPLTYADLDKLPLLKNVVRETLRTHSSIHSVMRKVTRTLEVPGTPYVLHPGTVMLSSPLVTQLSDEHFPNA
AEWNPSRWESKEEKKVEGDGEKEAAKEEEEESDLTLAKGARSAYLPFGAGRHRCIGEKFAYLNLEVIVATFVRHFHLSNV
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>19575|jgi|CYP649B1|[Clonostachys rosea IK726]Cloros1
MDSLDGTVTKSWVLVLAVAALAIFSFITNSTTVSQGNDPPIPKAGPYRVLPRAVLSLLYSVNAVKLLQSAYEKVLYHPRR
NTQGKDLLIRKLQFKKSAFLVIRNDGEITVLPQSLLEELAAIPVSVANPQAALERDLLGHFTGVDLILENRLHHWIVQRR
LTPKLPLLTPRMEKAVTESFDKLFPKGDEWVEFQPYQIIGRVSARVAADAMVGPAFCTNEAWLDIAFNYTENLFRTIVVL
RTVPNWMQRFLAPLLPSYWHGQKYLKSAKNLLGPKISQLMEQNDLGLWEPKDDNADDANLMSWLSSMTKGKDRDPDTISH
VLVLVALASVHTTLLRMVNVLYDVTAAGSALRDELQEEIMAAVDDGWSAQSYDRLQKLDSVLRESQRMSPPTMLGLKRLF
QKSHTFSDGTHVKAGSYVCMPIHAIENDPQHTPNPQEFDGLRSFRARAEQENSANIDKAAIKEFLFSTPTKTILGFGYGR
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>19577|jgi|CYP648F1|[Clonostachys rosea IK726]Cloros1
MERSVFSNRSDDDHALLPPSIGWDWHYTAALLAASIIIYATLSLLRSSKSYDSLPVANKLFPFEPSFFSRIRWALWAQQI
IRDADKKAQGRPYKLARGDSELVILPARLIPELNRYGVDVLDSRKSHAFTLLGHLTGMEVVEHTSYHVRMLQGSITPALP
ELLHSMAKRISGALKEEFPQSDQWTIMKPLPASVRCFSEGIALVLYGSKMVENPRLVELTYTLTRNVFVVAFAMRCVPSC
LNRYLAWLLPAKWRMHQDWKALSDFVIPEVQRRKTMILEGKEEHSPDLITWMVQSGRTELERDPQVLATLCGSVAAGSTY
SIANFVCRALSDLTSNPEVLKAVRTEILAKNTEIGGRWDTAALADLPCLESAMKETARLAPGTLIVYSRAVKQDCVIGGV
PLKKGQFMTVSGPGRAMDPNIYEDPTTYKGLRFCADDKIKEHSVKPFRSVDTDILTWGAGKWACPGRYIADMAAKILLIQ
LIDAYEFSFVGGVPLKHDAIHEFLFFHPDNKMQVRRRKDAVGISL*

>19698|jgi|CYP6722A2|[Clonostachys rosea IK726]Cloros1
MFLAQVADALHVHHFGLLLLVSAFAAILYRHLQPRPFPIHIPLIREKPDAQHFSIWTRIAFHLNCSSLYSEIWHKFSKKG
KAVAVPTLGLRNEVFLPHSSLPWALSQPLRVLGMWEAFNEHFQLVHSLGDEKYMTDTWPHLLSRHTLTHEMDDHLMDIHE
EVKAAIDTYLGHDTENWETLNLLQTVRMIIAQTGTRFTLGMPFCRDQSYLHTIKDTVDSIVINAGATGFFPAPIRSFLGP
IVCWPTHRKIDHLAKKFYDMEFKSRLQDISSDNPDQKLDLVQKMLRHARKHRPEELAVEQMTRRVCMSNLAFIYLASFTT
TNLFSNLLASDPQYDTVAVLREEAAQFLATEPDPRKLWRRENTNKLVHADSLMKETLRLNSVPTRALARQVMVDGVVTDA
GVPLPKGTIISFVAQPMHTDPDKYVNPLHLDPFRFNRLREEETSKEKDGPAREVGGEGDPNSFLSTAKLLAFGRGKNSCP
GRYLMDYQMKMLLAYLVLNYDVKLADEHQNQRPPSRWILEFMFPSGETKFQFRRRKNAPSWGAKSDT*

>19775|jgi|CYP532H9|[Clonostachys rosea IK726]Cloros1
MILEHLGFGSLKILGLALLAGLLFRGVFNKYGHGLHNIPGPWIAGFSDLWRLFLVRRRHAQEEHIALHQKYGPIVRLGPR
VVSIADPDAIKTIYSPSAGWSKSQFYPVQQALAKGKRLETMFNTANDRYHAKLRRSVSNSYAMSTLVAFEPFVDSTSIEF
LKQLKTRFVDKPGEDGICDFGAWLQFYAFDVIGELTFSKRLGFVEKGADVDNIIRDLESFLDYVSWDYANSMNHLKVGQI
PFLDNLLIKNPLKLWAAQSGLINTSAPVAQFARKHITERQNDESLGEEKSRRGDFLNRFKEARAKDPDFITEQLVLALTV
ANMFAGSDTTGITMRAVFYFLLKNPSTMNSLLAEISEKSKAGGFSREDGLPQWEEVRDMPYLGAVINESLRCHPAVGLTL
ERMVPANGVKLAGYFLPGGTIAGCSAWVLHQSTDVYGKDAADFRPERWLEATTEQRRKMNNTLFSFGAGARTCIGKNISL
LELYKLVPAILRRFELELAHPEASWKTHNAWFVRQREFYVRLKERKQIL*

>19782|jgi|CYP50260B1|[Clonostachys rosea IK726]Cloros1
MTVNLSLVLTLWFTGFLVYRLFFHPLAGIPGPFICKITGLWRTYRYFNMTWHDDIVNLHRAYGPVVRIAPNEASIVDAGA
QKKLYSHGSKARKTSWYDTWSTSVPVPVFFSETDTKIHGALRRRVSAAFSMSSILKYEKYVQSCLDVCYGKIRKHAEAGR
IIDMSEWTHMLTFDIVGELTFGQALGQMETETDLDDVRKTNTSDIYWAGNLGHMWLQSRWVNNLVVEWLNAGSPAARFSA
WVFEKVIMRKEGRDGSDREDMLSHFLKMKPLGTNKALEDIEVVVESANVVGAGADTTAIGMRSCLYFILQNPSVYQRLQK
EIDDYYVSANLQQPISFQQTQELPYLKSVIAEATRLYPSIVYQLLRHVPDGGMEVNGHFLPAGTPVGMSPIAANRDKAIW
GEDADVFLPERWLEDPERSTYLESYNMTYGGHGSRACIGRNLALVSTD*

>19830|jgi|CYP65S8|[Clonostachys rosea IK726]Cloros1
LPLYIVGRGIYYAYFHSLAKIPGPKLYIFSELPYYYYLLKGDWHQQLKLLHDQYGPVVGYTYNDVSFTSATAFKTIYGHN
AGGDRNFEKDVRVYSKERPQSNIVNAGNEDHRRMRRLISHAFSEKALANQEEVIKQYVDLFIGRLLVRAKSGEVVDLVAW
YNFATFDLIGDLAFGQSFGCLDTEAYHPWVRMIFDTLKILVYKDIAKRLNLSSLIPYLVPAKLKKSTKEHYELSTQTAMK
RLETKNMDREDFMSYFLRYNDERGMSAPELADNANILIIAGSETTATLLSGTTFLLLKNPEKYRKVAEEIRTSFQSEDEI
TISRVNQLSYMLATFSEGFRMCPPVPTPLPRAVPKEGDFVDGYFLPENYASDEKSVLQPFSLGPRNCIGKNLAYAEMRPL
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>19896|jgi|CYP6834A1|[Clonostachys rosea IK726]Cloros1
MPVPYVAPAVALLSSPSTVACAIVLATSTLAFRRLRSPFPGPRLLKLTSIPLQYHELTGSREAFVEALHQKFGPLVQVAP
RHVSANDLNGLRDISVVSQRLDRPDPLPAFHNYGKENLVSTVRGDVHHERRKPLRSMYSAKMAASKEVTDVTLRAARDML
LLASPIGKKSPGGGAVVEIRELLRPALYDAMSFIVYGPNSRLNLVNDQAQRTAMEVDTEFQVARMSSAAGAMMFLLPRIT
LWLRRCGLAPGAMDGTTPSRLFSDRIGREALEALKRTDEKGGGGDGYQSLMGRLYAHFRANGPTAAVPSEEYILSDSLDQ
FWAGVSTTADGLAPLFRRLSLPENRTLQQRLRSEIRAAIAESGVSSAAGLTAERLKRLPLLNAVIRETLRIHPPIPFSME
RKIVNEQGLIVHGQLIPAGWQVSAEVMAMQRKESVFDDAGRWVPDRGSKDVVADMKGHFLAFGSGSRMCLGMNVAWGVMR

AFVAVIYGEMQTSIVQDHVEGVGGHRSGEKDPETSADGVAGWLEERQKTIRIHLQEAAGEQ*

>20205|jgi|CYP550H1|[Clonostachys rosea IK726]Cloros1
MPDIEVYGLLSAAAIGCVLVAATSLILRYGQTSSTGPSLPPTIMLEAGLAADRYSSSIIFSVIRFTLRRLHALLSIHHEI
VPDVSHIEKVFFKQNEAFDIHPMSTSMLRRIFGCDFRGIARDEYIEMVDGFMKIVARDFPMSQPLQPLFIGGISGANFSE
NTDLQHPWEQLANTKVLRLNPAYPKHVVEADLESLLRGLSFHISIPLLYGHDYIDRNPLALWDWDCFGGQTALLALGVPT
WVPIPSFRRGIAARDRLVDSISSVYRRTKQYRNGEAVDYGADMTDVSETALDRYKVYDRHGLSAENIGHIEFSLLWAQNK
NTQQLLFWYIFYIYSVPGLLDSLRQELASSGVLSISADDPPRITRLDIGALGKQCPLLTSTFLESFRVTEESIMFRRVTE
RLTLDDGKDQYQLRPGSWLFVSTALTRHDSSIYPRPLEFLPDRFVEGSTASYRTLRPWGLGLTMCKGRTFAEKKVLAVAA
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>20392|jgi|CYP68AX1|[Clonostachys rosea IK726]Cloros1
MAYWIAAGAQAIDSQQWSSTLFAVLIAAAAYLLLPQKKSDLPYLNRPTKLDLFGRKARHNFASNARSLMAEGRRLCKGTP
YRLFTDLGALIVIPSQSVDDIRNEPSLSFMEFFVDNFHPDIPGFDGFKFGGRKDELLHRTINKKLTKYLSPCDGNNAGID
CAGILTSISWRRALPEPRLAKSYSINTSMAGDLLRQYPKWLRPFACNFIPQCRELQKQVANARKVLDPILRSREEERRAA
LDNGDPEPRYNDTIQWLVDESQGSSYDPVGAQLGFSVVATHTTTDLITETMIRLCERPELIEDLIQEIEDVLKVEGWTKT
ALFNMKRLDSVIKEAQRLKPLTSATMNRKATKRVTLPGGLVLEKGDRCMSDLGSMMDSSIYPNPGEYDGYRFFRMRDDPS
AGSKAHLVSTSSAHLGFGHGKHTCPGRFFAANEVKLLLCHLLYKYEWKLGPGYTHKITEFGLALFPDGQAQILYRRRQNL
AVNIDSL*

>20406|jgi|CYP628R1|[Clonostachys rosea IK726]Cloros1
MPLFGSELSDQSLYGTAFSVGVLVHLSVFRLGEWDGVPGRIAAFFAAVYAISSVASIYALSEDYGGASVVLMNVSALFLT
LLLGLFASMLIYRTGFHRLRLFPGPRLARISSIYATRMAMKRLKYFDEVDQLHKLYGDFVRIGPNHLSVAHPAAVQAVHS
SSSRCLKGPWYNTQLPAVSLLTSRDPHEHARRRKTWDNGLSFKAIRTYEANIAKCTLQLISNVEASLGRNIDMSHHFTLY
TFDVMGTLAFAKDFKMLESKELHPIFKFLHESMLSVVIFGHAMWFLTFLNNIPGLASPMKRLNAWADQQIEDQISDKPDT
PNVFSWLLRDYMMLPNPTPQHRMNLQADASLIVVAGSDTTASTLTCLLFELTKHPDVYRKLQNEVDAHLSDSKELQNDSL
IGMEYLQACIDESMRMHPIVPGGVQRHTPPQGLRVGDTFIPGDVIIQVPMHTVNYDERSFPQAGQFIPERWTSRPDLVTD
DSCFTPFLAGKYSCPGKQLALLEVRQVIYEIARRYDISFFEPKTRLSFPEDIIDGFSLHCPKLELVFSSRSTH*

>20467|jgi|CYP5039A3|[Clonostachys rosea IK726]Cloros1
MLSVGLFAGLFVLYWVWTAIYRLYLSPLAKIPGPKIAALTTWYCAYHDIIRGGQYIWVVEEMHRKYGPIVRTMPGVVHVN
DPAFIEKLYTLAPNVRRERGWPVLNMFGNDKAMLPTRDHDLHRRRRAVISRYFSQQNVRRLVPFINDTLGDLLERFDKWA
EAGDVIKVSMPYRAATKDVIQSYAFGEGEKCLSMPDCNAGFFAIIETNRLVHISVHLPAMMAVVNNLPAKVAKALIPTVG
TFIQFLDSLTVTIEGIRNSKEDPERRTIFHEILHSDVTDQEKSTSRMVDEAMILAIAGADTTAATLEVLTYHVLSDKEIF
KRLRAELDQAIPDPTQFPDPVKLDNLPFLNALIEETLRLYPSATHRQDRLAPDEDLVYEYPDGRSVTIPRGTVVGMTAML
VNRSPLWYENPDEFRPERYLENPKSFKRMLTFSKGARQCLGINLAYQELQTFTAGIFRKYGPYDPKLKKQSGPTLELHET
TLEDVKTHADYVTPGLRPGSKGVQVRIRRD*

>20566|jgi|CYP620AA1|[Clonostachys rosea IK726]Cloros1
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IVTLNDKQIAVDILDKKSLKTSSRPWLEFGFGLCGFEDYTGALAYNETFRLHRKLMHQHMGTKTIVEGFREAQRFEVLRM
LRLILNEPSKLLDHLELKRRSFTDSLSSATGSSIIKVTYGYSIDTTRRDPVLDLVTRMMAIFNKAASPGTWLVDVVPALK
YLPDWFPGTGFKRAVLAAAEKPFHFVRRQMAGNRHRKSYVSSALEHAKDLDDSAYQSALKFSAAALYGGGSDTTVSTLSF
FYLAMILYPEVLQKAHEEIEKVVGSDRLPNFDDRPNLPYVEDIVKEMYRWQPVVPISLPHRSDEDLVYMGYLIPRGAIIQ
TNLHLFARDSSVYHDPEVFKPERYDAPYNEPDPKDFVFGFGRRICPGRNFADSFLYLAIARSLAAFQISKEVDSEGHEVE
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>20568|jgi|CYP5443C3|[Clonostachys rosea IK726]Cloros1
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FYIDLWPLAVPQIVITDPDIAMQVLTVNPFPKHPQIEVFLQPFTGKGSIAASNGDRWKYNHRMVGGGFTASHIKSMITMI
SEEGFTFHNRFKEMAERGDAIALEEETSKAIFDVVGKIVFGFSLEAQKTGSPLLEDLRATIDPATAVLSSFNPIARYKSW
RKLRDIRKRVHDSLSAEIRKRDAIMKDEKELPSRRKAKSIMDRIILDRMQDEPNAPLNQEFLDDVITNLKALLLGGHGTT
TSTFTFAIMFLSLHSDILARLRQEHDEIFDPEFETTIEIINSDPSRTNKLDLTNAVIKETLRFYPIGFTIRSAPTGVQFI
VHNGNKWPVAHGAMVIPSAHSTQMDASLWKDPNCFRPDRFLGEEGASQHRFAWRPFERGPRACIAQDLAMDELRVMLLLV
IRWYDFELVNEAQNKKPRVGFMDLDERIGDLAFQVVGMEAKPNKAMRFKVRPSGRS*

>20630|jgi|CYP5046B2|[Clonostachys rosea IK726]Cloros1
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FESKQVMYEFLHAKDDMAFYDINRRYSASVIMTVTYGHRVADWNDRYIKKIYEVLEHFTLMSEPGAWLVDALPSLASLPS
WMVQNWWKIGREWFEYDRQVYLGFYLDLVKQIQNGTAPDCVIQDFYESGLEKKGINDEQAAYAAGGLVEAGSESTSTVIN
AWILACQIYPHIIESAQEELDRVVGNDRMPGFEDEDNLPYIRAMVKETLRFWPITKPGMNHATTEDDWYNGYFIPKRSVV
MLNWWAIHYDEKRWDNPDEFDPTRYLDDKYTTAESVNLADGNARDHFAYGAGRRICSGMHLAQNSLYINMARTLWGFNIK
CGKDENGVPIKPALKTEPGFLMVPARFHAVLEPRSQKHADIIEKAWQEAEPMGVLIQRKKAH*

>20633|jgi|CYP5936B1|[Clonostachys rosea IK726]Cloros1
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FQLVDFYPSLRILYKVLPGWVLPSKRKLQNLQKLENRVFYDLLGKAKERLEAGEAHPSFIRDMLMDQDHDRLDDRQIANN
AAHGFGAAMDTSANTLVGFVKAMVMFPDVQAKGQEEIDAVIGGDRLPQWDDRDRLPYIRGIVEETFRWAPSPISAAVPHA
AKEEDVYNGMVIPKGSMMMINVWTLNHDRFPNARDFDPTRYAPETTLVENNSISQDSPRRMHFTFGAGRRVCPGFHVAER
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IKASFK*

>21032|jgi|CYP61A6|[Clonostachys rosea IK726]Cloros1
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PFVQALYPKFTEYLAQWASGPLSCVSVFHKFVVLASDRDIAHKVFKSPTFTKPCLVPVAEQIIGETAWVFLNGKAHTEYR
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VKELLRYRPPVIFVPYTATKAFPVTPDYTVPKGAMIIPSCYPALHDPTVYPDPDTFDPERWISGDADSKTKNWLVFGAGA
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>21041|jgi|CYP5090H1|[Clonostachys rosea IK726]Cloros1
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FPNPSEDPIGVLVRHMHVHQLHPGDNQKNVEKRFLHSFDRDLQIDRIRNSTVISNDAVEISLYKWCGDFFTRAGEYAYFG
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DIATLFLTIYLTINTNTRRAAFWMLTFLLYNPHLIEAVLGETKAAFDAGKLIDPAYLSNHELCPQLESIWLETLRATSTG
ASVRCVNKDTIIGGRLLRQGNKILIPSRLLHLDGDAWGKSTREFRPKRFLSKKNSARGGSWRPFGGGSTLCTGRFVAEHM
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>21044|jgi|CYP5816C2|[Clonostachys rosea IK726]Cloros1
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IELLEYWQLKAATVYKDQAFNVHVDFQRATLDAIWVATMGEEPGLIRYEMNKLQYQLEGKSQEELDKLPLPKGMFLRDEV
RYIGDAVERNTNSPLPKWAAKLETFRPRYRQFRAVVTKELTQVMTKAIDRFERLELHALEADESDTCMMDFVLRRKVIEA
RKAQKPMADLTKDQELLDEMFVMLVGGHDSTANVLAWFTKFMEAYPVVQNELRLQLRTAFPGPHLPSVQEILTTSIPYLD
GVCEEGFRLAGVAKANFRQATVDTQILGYPIPKGTEIFLNFHMDTTPAPVDDSKRTASYKIATAKHGDLLQSNAGRDLNR
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>21163|jgi|CYP578E3|[Clonostachys rosea IK726]Cloros1
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HETSGDTLCYLFYELSRRPDLQDKLREELRSLSPPLHYPSTPDDNGESLPDSKAVDQLPFLDAVLQETLRLWVAVPGGQP
RVTPEPSCSLAGYDNIPPGVRVQSSGFAIHRDPNVFPEPNEWIPERWLNQTPEKLSEMRRWFWAWGSGGAMCIGSNIAIH
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>579|jgi|CYP505AN1|[Clonostachys rosea IK726]Cloros1
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>6146|jgi|CYP65FY1|[Clonostachys rosea IK726]Cloros1
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RGSTQPDLWNLVVTDEGEKKLSLQEMYNNADVFMLAGTETTATLLSGLTFYLLTNPEKMRILVAEIRGAFSSAEEMLFDR
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>13845|jgi|CYP5075J1|[Clonostachys rosea IK726]Cloros1
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RRAIAIANDDSFSTKTWPYKTGTTVPYPYQPRPLSDVVFENTVAWTKCYGYKVGQGVHQRQNNVTFRDGTVYAAGVGIGI
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>14556|jgi|CYP6001C45|[Clonostachys rosea IK726]Cloros1

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TDQRDPNKNNTSSYLDLAPLYGNTQEEQDSIRTFKSGHLKPDCFADKRLIGNPPGVCILLIMFNRFHNYVATNLAEINED
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RKAGTTGLYREAAGNDTILEDDGRQVNIKTGDKVFISFADAANDAAHFPQPERIDPSRPRDSYIHYSAGPHAGLGRDISQ
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>15716|jgi|CYP6003A5|[Clonostachys rosea IK726]Cloros1
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NGRFTLSCPDGSSPEDKAKAVAKQDHDLFNTARLIVGGLYINICLHDYLRAITNTHHSKSDWTLDPRVEIDSKQFDSDGV
PRGVGNQVSVEFNLLYRFHSCISKKDERWINNFFLKLFPGRNPDDLQHVSWGDLGQALMAFEQSIPKDPSVRTFDGLQRQ
GDGTFKNEDLARILQEAMDDPAGIFGARMVPKALKIVEVLGINQARKWQVASLNEFREFFGLKKYDKFSEINSNVEIAGI
LEKLYTDPDMVELYPGLMVEDSKPSRDPGCGICPTYTVGRAILSDAITLVRSDRFNTLDYNVANLTSWGYNEVQQDPKTL
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IPVSTRLLADLFYMDLRSDENPDGLVGTAELYKHLLNIRIWGACNNDPGQAWNRRRRAQEGTQFIANSTRKLVDEVVTHR
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NIGPFSHGQHGCLGKQIALTFVTGMIKLVADLKDLRPAPGQMGQVKSIQVGSDKAYLNDSWSYLSFDPSTWKLHFDGRGK
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>19683|jgi|CYP505A71|[Clonostachys rosea IK726]Cloros1
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RETLRLTSTIGIFAVTPIEDTVVGNKYFVKKDQPMLTLVSKLHQDASVYGDDAMEFHPERMMDENFNRLNKEFPNCWKPF
GNGKRSCIGRPFAWQEALLIMAMLLQNFNFVMKPGYTLSHKQTLTVKPNGFTMRPILRDGLTPTTLERRLAGSLPETNDP
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GHFVSWIQSLKDEEQALKGVSYAVFGCGHSDWVSTYQRIPKLVNSRLAALGAKQLTPLGATDVSTGATFTDFEGWEDGLL
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>12908|jgi|CYP505S3|[Clonostachys rosea IK726]Cloros1
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>13745|jgi|CYP505A73|[Clonostachys rosea IK726]Cloros1
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FGNGMRGCIGRPFAWQEALLVMAMLLQNFNFVMEPGFTGAIKQTLTIKPKDMYMRAILRDGLTPTTLEKRLAGRDGAEKA
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HIGVATSYLDSLYANDIIHVAVRPSHAAFSMPTKPESTPAIYIAAGSGLAPFRGFIQERATMLSHNSTRKLAPADDLYRE
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>18163|jgi|CYP6666B1|[Clonostachys rosea IK726]Cloros1
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>20485|jgi|CYP505A74|[Clonostachys rosea IK726]Cloros1
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>1920|jgi|CYP6477A1|[Dimargaris cristalligena RSA 468 single-cell v1.0]DimcrSC1
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HFHCEL

>3637|jgi|CYP6477B1|[Dimargaris cristalligena RSA 468 single-cell v1.0]DimcrSC1
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>4573|jgi|CYP51208B1|[Dimargaris cristalligena RSA 468 single-cell v1.0]DimcrSC1
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>13861|jgi|CYP51215A1|[Dimargaris cristalligena RSA 468 single-cell v1.0]DimcrSC1
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HCIGRR*

>16070|jgi|CYP6477A1|[Dimargaris cristalligena RSA 468 single-cell v1.0]DimcrSC1
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>20155|jgi|CYP51209A1|[Dimargaris cristalligena RSA 468 single-cell v1.0]DimcrSC1
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>20267|jgi|CYP51209A1|[Dimargaris cristalligena RSA 468 single-cell v1.0]DimcrSC1
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>21637|jgi|CYP51F29|[Dimargaris cristalligena RSA 468 single-cell v1.0]DimcrSC1
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NLPLESYRKRDAAHIALKSIYLDILKNRSESSTPSQGVDIINHLMTCTYKNGQVLSHYEIASIMIALLMAGQHTSSATTA
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>23862|jgi|CYP51208A1|[Dimargaris cristalligena RSA 468 single-cell v1.0]DimcrSC1
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PAGGRVLFNHYLPAGTEVGGAAAAYHIGPEWSDPMVFNPDRFLGVAGEKSYPRVYTFSLGPRQCLGRALAFREISLILVT
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>24560|jgi|CYP6477A1|[Dimargaris cristalligena RSA 468 single-cell v1.0]DimcrSC1
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>40831|jgi|CYP51213A1|[Dimargaris cristalligena RSA 468 single-cell v1.0]DimcrSC1
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>5336|jgi|CYP5205E1|[Dimargaris cristalligena RSA 468 single-cell v1.0]DimcrSC1
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>12|jgi|CYP504A23 |[Escovopsis weberi CC031208-10]Escweb1
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>82|jgi|CYP649C1|[Escovopsis weberi CC031208-10]Escweb1
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>88|jgi|CYP5049C1|[Escovopsis weberi CC031208-10]Escweb1

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>1135|jgi|CYP537A10|[Escovopsis weberi CC031208-10]Escweb1
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>1416|jgi|CYP53A66|[Escovopsis weberi CC031208-10]Escweb1
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>1484|jgi|CYP51207A1|[Escovopsis weberi CC031208-10]Escweb1
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>2434|jgi|CYP5071H1|[Escovopsis weberi CC031208-10]Escweb1
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>2503|jgi|CYP5322C1|[Escovopsis weberi CC031208-10]Escweb1
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>3167|jgi|CYP539K4|[Escovopsis weberi CC031208-10]Escweb1
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>3761|jgi|CYP539K4||[Escovopsis weberi CC031208-10]Escweb1
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>3787|jgi|CYP526N5|[Escovopsis weberi CC031208-10]Escweb1
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>3804|jgi|CYP5333D1|[Escovopsis weberi CC031208-10]Escweb1
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PIELHTRDPSAFPDPNEWRPERHVKETVNAQGEKVLTADMGSIRLYGGGAKMCKGRSYAVREILLYVAVILSFYDIVPIK
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>4129|jgi|CYP609R1|[Escovopsis weberi CC031208-10]Escweb1
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>4331|jgi|CYP542D1|[Escovopsis weberi CC031208-10]Escweb1
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>4600|jgi|CYP5108F1|[Escovopsis weberi CC031208-10]Escweb1
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>4730|jgi|CYP528A19|[Escovopsis weberi CC031208-10]Escweb1
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AANVPYTRAAIREAMRLHPVISMSLPRAAPDGGVLLHGHWIPGGTTMGCNPVALHRDQGIVGPDPDAYDPDRWLDAGAQG
HRTMERYSLNWGGGARTCPGRNLAEMIVYKAVPALLSRFDVEVSVPREDEMPSYFLSMMTGVKARFLPLGETQL*

>4982|jgi|CYP5046B1|[Escovopsis weberi CC031208-10]Escweb1
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ASGGGDDDGKGPDDWAFNDINRRYSTSTIMAITYGRRIPSLDDPLYHDILKIVRHFSLATAPGGWMIDTLPMLADVVPEF
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LNWWAIHMDEKRWKDPERFDPTRYLDDPLTEAESMAQSDPKLRDHFTFGAGRRNCPGVHIAHNSLFINIARIFWAFDMRK
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>4985|jgi|CYP5387A2|[Escovopsis weberi CC031208-10]Escweb1
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VHLYFWIPSPLRRAFWHLSPQGARIRAVIRRLKRFIVPELRRVVEEWRQTQGPRTESEAGYTLMGAMLDLKEERGQITRD
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FTRETLRFNGPTLFSVTRSVIQPMQLKSGLSLRPGTIISAPSWLIHNDEDNYARAGEFNPYRFYDEATNTATTKATTASN
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>5109|jgi|CYP538A10|[Escovopsis weberi CC031208-10]Escweb1
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>5583|jgi|CYP65GA1|[Escovopsis weberi CC031208-10]Escweb1
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>5798|jgi|CYP51F1|[Escovopsis weberi CC031208-10]Escweb1
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RSYIPIISDEVKSYFRKHVAFKGASGIADITKHMAEITIFTASHSLQGSAIRNKFDESLATLYHDLDMGFSPINFVFHWA
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LSSPLVTGSDPSYFPNPELWDPHRWLPGSPNAPTVVRDEEEEEKIDYGYGIVSKGSASPYLPFGAGRHRCIGEQFANVQL
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>5846|jgi|CYP617A20|[Escovopsis weberi CC031208-10]Escweb1
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>6123|jgi|CYP618B1|[Escovopsis weberi CC031208-10]Escweb1
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>6286|jgi|CYP61A1|[Escovopsis weberi CC031208-10]Escweb1
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>6415|jgi|CYP551H1|[Escovopsis weberi CC031208-10]Escweb1
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>6529|jgi|CYP534R1|[Escovopsis weberi CC031208-10]Escweb1
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GWRGRDTNEHLFRPERGSYIPFADGPRACLGRRVAQVELVAALAVIFREYSVELAVDDCMGEGEGEGGGMTDKDKEMEEA
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>6667|jgi|CYP584D6|[Escovopsis weberi CC031208-10]Escweb1
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>6672|jgi|CYP541A12|[Escovopsis weberi CC031208-10]Escweb1
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>6849|jgi|CYP698D1|[Escovopsis weberi CC031208-10]Escweb1
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>6850|jgi|CYP653E3|[Escovopsis weberi CC031208-10]Escweb1
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>1006|jgi|CYP6003A6|[Escovopsis weberi CC031208-10]Escweb1
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>2040|jgi|CYP6001C44|[Escovopsis weberi CC031208-10]Escweb1
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DALLLGYALEGVRMAGAFGLETVAAGTDTVAEDDGRRVNVNAGDRVYVSFAAAGMDPARFPSPERVDPRRPVDAYVQVCA
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>6271|jgi|CYP505A72|[Escovopsis weberi CC031208-10]Escweb1
MAEIVPIPEPPRMPFIGHLGEFTSEPIKDLTRLADTYGPIYRLHLGKGSNVFVSSQALVNEVCDEKRFKKCVMTVLGQVR
NGVHDGLFTAFDEEANWAKAHRILIPAFGPLSIRGMFDEMHDIASQLCMKWARHGPLNPINASEDFTRLALDTLALCAMD
YRFNSFYHEEMHPFIAAMGDFLGECGARNRRPAIVPEFMYRAANQKFWNDIKIMRDTADAVVEARKKTPNNRKDLLTAML
AGVDPTDGTKLDDSNITDQLITFLIAGHETTSALLSFGMWNLLKNPVAYQKVQQEVDDVVGREPVRVEHLSKLPYITAVL
RETLRVTPSITAITVEAREETLLAGKYFVAKAEPVTLLLSCSQMDPLVFGEDAAEFKPERMLDDNFNRLNEEFPNCWKPF
GNGKRACIGRPFAWQEALLCMVLLFQSFTFSLDDPNYQLLTAQTLTVKPKDFYMRAELRHNMTPTELESRIAGKSVPGTP
QLEKGLSDLSVTSAGPRKPMAVFYGSNSGTCEALAQRVASNAPNHGFDVTEIAPLDAARGRLPKDRPVVIVTSSYEGQPP
ANATHFVNWIESLHEKELEGVAYAVFGCGHHDWVRTFHRIPKLVDSTLTELGGEQLAPLGLTDAAERDMFSDFETWEDES
LWPALAAKYGTSDNADASGGGLTVEISQPRKTTLRQDVEEALVLSTKTLTGQSDSVKNHIEIQLPTGMSYRAGDYLAVLP
INPKQSVSRVFRRFNLSWDAFIKIGSSQPTTLPTGTALPAADVLGAYVELNQPATKKNILTLAEATEEADVVKALESLAG
DKYRQEISLKRVSVLDLLEKYPSIELPLATYLAMLPPIRVTLTYSVLERPHLSGSGQHVGVSSNFLSSLNAGERLHVAVR
PSAAFHLPSDAEKIPLICVAAGSGLAPFRGFIQERAVMIAAGRKLAPALLFFGCRSPGAEDLYADEFARWESLGAVSVRR
AYSRASDQSFGCKYVQDRMLHDSEDIYKLWKEGARLYVCGSEGVSKGVDDACVQIVAETGKRDLGREVSTEEAKKWFEEN
RNERYMIDVFD*

>525767|jgi|CYP5891B1|[Naematelia encephela UCDFST 68-887.2 v1.0]Treen1
MFFSFLLLLPLALVLRRLFYHLRPTETYGGVQRPPFLPDWIPWVGVALSMAGGDSFFCNVQKKYGPCVRLTAMGDTRIFI
TSPALITYIYKNPKAFVFEYKRRSIQSLVFGMTHTVAFSQAMSDRLFPDHHRALQLVNIGELIQKYTTQLEELVLSKVDE
ADGAEVDLFEMVYEIIYTASAKAFFTPSFPARTTFKPFIAFDRAFPILNLARLPITMRSQAISAREKILTMLEEWWETTT
ELDRAAMAPAVCVQWEIAKDEGWSKRDWATVLLAETWALEANAPFAGLWTVIEVLRRPQVLASLRAEVSSTISKLDPPEI
STLMHLSQPELITLLPLLNLALQETLRVHSSSFSIRVAEYDTTFPAAVCEGRELSVKKGEEIICVTRPGNIDTTGAWGTD
AEIWDTERWIGDDADDEKGKARGPMFPFGGGSSMCEGRHFASAEILSFLAIFIATIDVQVVRDTIKADFTRIGLGVMQPK
GELRVKMRRRQGESKVAA*

>552749|jgi|CYP5216A4|[Naematelia encephela UCDFST 68-887.2 v1.0]Treen1
MKGAAFLLPALFRILVLPILIVQPILRFLPDLTLFRLVAYLLSFALVYAVRGRLDVWSTSRQASAQGAADVPLVNGRWPF
NLDIVRDWAKSGSEDEVARMMFLLGRQYGSTYNTRVIGENQILSTDPKVFKHALVDDSNNFVKGKKFKDRAEGFLGDGIF
NSDGERWKFHRTLLRPFFHPSHVSHKLFIPFIQRFLNNLPSGEEACDIQARFRQLALETALMWMTGTDIGDPSSKGSAEW
EQSKNDLGWALVEAQRVVGRRVKIGTVWPLLELGYDPLARPMQVIRTFFAPLITAAVSRRDQQVQDSLRAGDEVHLIDRL
IEATEDMKLVEDQLINVLLASRDTTSSLLTFCTYALALYPDVADRLRGEVRSVVIGDVNKGAIRECRLCRGFINETLRLF
PPVPLNIRRTLRPSLLRTSAAGPPLFMPANTSIILAFILMQRDQAVWGENALDFDIDRWLKGGLDIKESEGFMSWNAGPR
MCLGQPFALTLVHTFLILLFRHLDSLGSDRGENESSGSFQLQLAVDAQPAETRMPESWKGKEGDGRARDGRDRVWIMGDV
ILTVKGGLWVRLAQAAKL*

>553062|jgi|CYP5894A1|[Naematelia encephela UCDFST 68-887.2 v1.0]Treen1
MVAVYLAFAVVILWFGRRWILSLLTPRSIPGIPAYPDPVPVLGDIPRLAASMKATNGFIGFMDKVAKDLGPIAQVRISFL
NTMVVVTDYQSIDNILTKQTQHCDRDSHTIKAFRTILPRALISLPTNDMWKHHRRIIGTAMTSKYLSLTTPRANESVKEL
VNLWRRKASVCEGRAWAAEGDMESAALDAICGMAFGHSWGIIPSYSSQLVEGEYPTGINGEVVFDTVRPELAESTWAIFN
SLPTTSSFPYILHKIRTLSPTYRRHARRLDRFLDAKLADSRARAESVGAEVAVDVADNTLDLMTARQLRGDDWMPDDEMK
DEVFQYLVAGTETSGCTLAWWLKYMTNHPEVQRKLRKHMLEKLPEMQDRPPKFEDLNATNTPYLEAVVHETLRLSRTAGG
YSREVTQDVTVLGKVIPKGCTIIIPTVTGLEDRSTPVYGPDPNALGSDSVDPDDIAERMDASLEVLRPGSAKRKVGFWKP
GSGFNFDPERWLNEQGHFDINAGPSLPFSAGQRGCFGKNLAMLELRFFISQLNQTFFFAPVSDALNSFDMYQTVTTHPRQ
CFIRPVSWDSDL*

>566522|jgi|CYP61A1|[Naematelia encephela UCDFST 68-887.2 v1.0]Treen1
MNKFGASHTILRPTSVDLTTSKAWGLDGLSKAKFTFDGKTTAATVLTLIISLLIIEQIVYRTKKSYLPGDKWTIPIIGKF
ADSLNPTLSNYKSQWNSGPLSAVSVFNIFIVIGSSNEMARKILNSPNHAEPCLVQSAPKVLLPENWVFLHGKPHADYRKA
LNVLFTKQALSTYLPIQEKIYREYFQKWMNDPAPHKPYMMEMRDLNMETSLSVFIGPYVTEEQKKEINVKYWLITLSLEL
VNFPFAFPGTKIYNAIQARKLVMRYLTSASAQSKKRMADPSNEPECLLDHWTRAMVQSRAGGNVDGDGEQARLLSREYSD
HEIGMVVLSFLFASQDAMSSAIVYAFQLAADNPDKLAKIREEQYRIRGNDLSAPLTLDLLDDMVYTRATIKEVLRLYPPV
IMVPYTAKKPFPVSPDYTVPKGSMIIPAFWNSLHDETVYPEPDSFQPERWLPQPDGSEPLADGSPQNYLVWGSGPHKCIG
GQYASMHLAAALGTASVLMDWDHERTALSDEVKVIAAIFPKDEFRVKFTPRAPPA*

>585694|jgi|CYP5393B1|[Naematelia encephela UCDFST 68-887.2 v1.0]Treen1
MEQLNEHLTRSNIYALVGLLAATYFGNWILGYIHVHWQVRGLPKIHSGIEYFESGLRGQLPHIPFIVPVKQYTLDKPWKK
YADVGCDLIALTQVTTSYPVYISSNPAVAQQISQAPMRFNKAVHDFRYRALDIFGKQIVSTSSGPEHKRHKAVVRGCFGE
EVMENAWNKIVDALQIMLREEGVEDGGVLKGVRDVMVKTTLLVFGKSGFGIDIPWHIPHTNGSILPFPEALHSVEDSLAA
QLLLPQWFMTYSPSSYLRRCAKAQRSLVFHIKQMIASRQAKLTAEHAALDKNEKVKPPTDLLGALVASQIDVQRDQGMEK
GLSESEIVGNIFIFSIAGHETTAYNLTWALAFLALYPDVQEKLYEEVNSVTGGELPTYRDVKALPLCLATIYEALRLRDI
VMTLTKVATEDTLLPYTKWDPSSPTPSTVTHHTHTIKKGSYIVTDTPAAELNPFFWTDPHKFDPTRHLGEPQGPFVGFSM
GTRQCIGKRFAEVEQVAFISHFVKHFKILLIQQPGETWEMTKERMLHATQELTYTPANFDLKLEKRI*

>152747|jgi|CYP5767A2|[Naematelia encephela UCDFST 68-887.2 v1.0]Treen1
MSSLTWGQYLYIGGVFVAAIVLHRLRKRASLLRIPGPRSANWLLGNEWEIYNNVAGRVWNRWIDLYGPVVLYKNAFFNGY
TVLLADPIAVKSLLSDGPDGYTWHKPPFNRQTNERLLGRGVIWAEGDDHRVQRRLLSPAFSPTSTRLVSDAFWETADNLK
SVLQRQIDLDPARTARVNAADLMSRAALDVIGLAGFEHKFHAVLSASREAVSITDGLHQALGAPPGWRMFLTLNLAKSFP
FIFNHAPLKAIQNQRASKASIDIVAYKVLADAKKSLLEKDGKSILSILLQESQKGGEKLSEKEIVDNFSTMITAGHETTG
ITLSLILYELSRNQPFQDLLRKELFAVGGGQLSFDDLQSGKATHLDAVIKEVLRVYPANIRIIRRAETDQVLPLSQPLPS
AKERAGDTQLLIPANTDVVIPLAAINTLKSIWGPDAHLFKPERWLEKDGIPETVKVLPQGYERIFTFVSGPRACLGMRFA
LAEMRVLLSQILSSYIFTPIDDANIPLDIVSPAQIMIRAQDPTRGIYGVPLRVREVKN*

>460805|jgi|CYP5889B1|[Naematelia encephela UCDFST 68-887.2 v1.0]Treen1
LVGPSSGHILYGYQQELLRSPHGSLQSAWFARYGPTLRYRGMFRQSVILTMDPTAVRYVHQHSEIFLQPQSTIKFAQENQ
GPSLIGVEGPDHKRQRRAIAPSFGPAQIRHMTPLLLDKAYELSNKLAGMIGQVDMVKVIHQLTVDVIGLAAFDYDFGAMH
SDGNELLDAWKRMMMGNHESRLVAMLQRAGVPLARFKKTERSESLEKASDMMKRIGQRLIEDKRRSLQAEIGEDIKKADL
VEGDLITNILRANVASDVRDNQKMSDEEVLAQIPLFLFAGNTTVAVTLTWAVGLLAKYPAIAAALRQEVRAVDSFRPDWD
TLDSLPYLDAFVRELLRVHPAAPTLFRVASTATTVPLGQAVRGRDGCLMDHITIQRGDTIHIDYGRMNLDPNIWGPDAAI
FDPERFLQKDYQTEAIQTFGGGARHCIGARFAVAEIKATLFVLARELTFGEIESRPQFTKFGGYVAHVFYCLHIKPRLGP
TESWRKGGNAAHSLQDAMKAIVDRPCLPSMMVRYRAGSSRATAECQMGKTAIFSCTQALRGRLVGT*

>520702|jgi|CYP5139B7|[Naematelia encephela UCDFST 68-887.2 v1.0]Treen1
MSFLSSFPVFPVYGSVITTYLAGVALALFGLWFYFWPYGEWTLPFRNVQGPESSSFLWGVLAQVIKEEPMKPHARWLEAY
GPTIRYRVFFGKHRLLSIDPTAISYMLSHPDLFPKPERTRHEMAKILGEGVLIAEGDDHRRQRKLLNPSFSASAIRGMVP
IFYDKAYELRDKLQAIIDGDSNVLPSPTPAREGDEEVKGGKKIDVMQFLGQATLDVIGVAGFDYDFKALSEPKNELAEAY
RQMFTSGQSITPMAIFQAFVPGMDKIPTERVRTVSRSKAITERIGRKLLRDKKDAVRKAHADGLEKGDDIGKDLLSILVR
ANMASDLKPDQRLTDDEVLAQITTFMLAGNETSSTALTWILYLLSQNPQVQKKIREECASVADERPSIESLQALPYMDAV
VRESLRVCPPAPGTIRQTTADCIVPLSIPIKGRDGSTITSVHLPKGMQVFLPIMLVNTSTVIWGPDAAEFKPERHLAPLE
GVRDVPGTWGNLLTFLGGARNCIGYRFALAEIKAILFVLIRNFEFEELNSKPVVERKASIVMRPRIVGEEAAGLQMPLMV
KVLST*
>523016|jgi|CYP51F1|[Naematelia encephela UCDFST 68-887.2 v1.0]Treen1
MTVALGPKGNNLSLGGKVSQVSAEDAYTHLTTPVFGKGVVYDCPNDLLMQQKKFIKHGLTTEALSSYAPLMYKEATDFFE
HELGLTPATPGPKKLEALKIMSELIILTAGRSLQGKEVRASLNARFASLYEDLDGGFTPLNFMFPNLPLPSYRRRDRAQK
EMSDFYLDIIRKRREGETEPEHDMISVLSGCVYRDGTPLTDRDVSHMMIAILMAGQHTSSATSSWILLHLAHRPDVVEAL
YEEQKKLFGNQDGTFREVTYESTKQMTLMEAIIRETLRLHAPIHSIYRKVLSDIPVPASLSSPSESSAYVIPEGHFIVAA
PGVSQMDPLIWPDAKTWNPYRWLDEKGVAASAKEQYSGATSEQVDYGFGQVSKGTESPYQPFGAGRHR*

>512990|jgi|CYP5889C1|[Naematelia encephela UCDFST 68-887.2 v1.0]Treen1
MTMMKLSLSQLTNVIHNVSWSCIWLYNLSVICMGLVVIIASIVWREWTIAHYNLQGPPSTHWFYGNLQALLNAPTGTLQA
RWISEYGPVFAFTSIFRRPEIMITDPHTIGYIYNHPERFDRAISAKKILRYLTGHSVIAVDEPDHRRMRKAILPSFAPAH
IKELMPIFFQKTYELKDRLLDRLSDDRAEVDATKYISETTVDIVGLGGFSYDFEALSSEGNELLQAWTKLRDGIMTRNWV
SMLQFAGVPGANWFGYFTKRQKGARAARDAMFSVGERLVQEKKRLVLAETRGEIKKVDVQGMDLLTVLVRANMASDVRSE
QHLSDDELISQIPLFLLAGNATTTMALTWSLVVLAKNAQIQDELRADCMSLANEQPSLDQLNSLPYLEAFIRELLRVYPS
TPAQVRVVTKDEVLPLSTPVRSREGRMMDVVHVKKGTGLTLALFNVHMSTELFGPDAAEFRPERWLDPGMNEKVKKIPGM
WANLLTFGGGDRSCIGFRFAIAEMKAVLFTLIRHMAFEETEEKPEVVRVGGLGISRPVIPGRDDIPIVIRRLA*

>1743|jgi|CYP50140B1|[Piptocephalis cylindrospora RSA 2659 single-cell v3.0]Pipcy3_1
GRLAHIFFGENILFSNGHDWQFFRRTCTPAFKHGWNLQVFEQTIQRLIDQWNKLGSEPISVGPWFERYALDSLGLSIFTT
EFGSILDANSPFAVLYRTIMENILRFKYLLFNKLDFRANPYRKPIYDMVDDFDRLFYGLIQERREAKARGDVLPRDLLTS
FLEEHKSVDEAGAKILRVMTDKELRDNLSAFILAGHDTAMVSLSTAMYLLGMDQSVQSKARQAVLEAIGGSEGAETLMHI
PYLDAVIRETLRLYPPAARLMERTTTKDVMMPSGDLLPKGTHVIGNLYAIHRDPAVWGEDVEEYKPERHLTPDGQEMTSA

SSNSFVAFASGPRTCLGMTFAMAEMRVALARL

>7586|jgi|CYP6641A1|[Piptocephalis cylindrospora RSA 2659 single-cell v3.0]Pipcy3_1
MLKEIVQVLLGIGFLRLTHSIYKARRPGRPGPPGYPIFGNLLQLGTKPHLLMAKWAKKYGDIYYLRMGFIDWMVVSTPEA
MHDILSRQGLTFASRPHQVILGDILTSKASGVTTSPYGPDWNYKRRFFTTTFNKVNVQSHQDTLLYESRDLIRQLMASSE
EHGSHGFSARRHHQSYALNIILTMAYGTRFSSHKDPLCQTQLQLNDELFRMIGPKYCLIDFLPFLRPFLPHLERDAWDLH
QTLYGFLGDHFDQYCEEADTVNARIPNTLSKLLLESVRKGDLTREHALILLAETFAAGLDTSSASFTWLSLLLVTHMDVQ
KKAQEEVDRIVGRDRMPTHDDLPNLPYLRCILLESMRFRGPAQFSLPRATAEDTVYRGVTIRKGTWIMPSLYAANRVFSH
LEDQDVFRPERWESNPKTLTEEVSGKQSTRVNWNFGAGRRVCPGLYLSDLSLSLAVANLVWSFTVQAGDGEQIDLEEMED
GTNTPPPHWRLQYTPRGDHVKTMLETEGSITRADTVKAH*

>8480|jgi|CYP6641B1|[Piptocephalis cylindrospora RSA 2659 single-cell v3.0]Pipcy3_1
MIYLPWQPIASAGLAWFIYKIYKARTPERPGPPGIPFLGNLLEIGPLPHIPFTKWAQKYGDVFFLKMGPLEWMIINSPEA
LHEVLSRRGATFASRPHQTMLSDVASEGRDGIVGLSYGPVWKMARRVFTTVFSKSSVQAYEPILTHEARSLCRALIEDNR
VHGSKGFSTRFHHQWHSFNVIISVCFGFRVNSYTDSLCQLQLKINHQLFQALDPKYYLADFLPFLRPFSMKKKREMKKVM
DNTLDFSKRLYDRYKENKERIDAKIPTNMCKYIQELQDAGELRERNVYLLLGETFAAGLDTASTSLTWLSLILATRPDVQ
KKAHDELDRIVGRNRLPTQEDIDSLPYIRCILQESVRVRGPSPLGLTRTCLEDSEYRGMLVRKGTWIIPNVHATHSVYSH
LDDPTSFVPERWESNPKSLVEETMGKQGTREIWTFGGGRRVCPGLHLANASLIQALTHILWSFTLVPGDGVNIDLDEMEE
GLTNLPLEQMVRYIPRGEHVEPLLSADRQVSLADTLSNE*

>11824|jgi|CYP6641C1|[Piptocephalis cylindrospora RSA 2659 single-cell v3.0]Pipcy3_1
MGLGVAYFSHALYKARHPTLPGPPGIPLFGNLLQIGKNPHRILTHWARKYGDVYFLNLGWVKWMVIMTPDAMNDVFVRKS
RYFSDRPNQTMLSQILTHESSGMVTVPYGPDYKVRRRIFTSAMSKPVVRSYNDFLISEARHMCRSIYTDSAKHGSYGMSP
HHNHQWYAINLVLSMTFGIRLGSKDDHLCGEFQRLNDLFFAMSGPSSCMIDFFPFLSPFLRGQKAEAAKVRESIVGFMHE
HFERFLAHREKVISKVPTVLARYVAESLEAGEINEKTAHILLMEAFEAGLDTTSVALSWMSMLLACNPHVQAKAREEMDR
VVGRDRMPTPEDLASLPYIRCVIQESLRMRGPARISPARACSEDMEYRGMHVPKGTWVMASLQGVMTDFSTVDEPYKFRP
ERWEPESLSLSEEATRKQSDRVSWAFGGGRRVCPGLYLAETSLTLTLASLIWSFEIGWGEGEVFDIEEMEDGLTNCPASR
RLTYTPRGDFVKTGLFRGESSPVETI*

>18459|jgi|CYP50056A2|[Piptocephalis cylindrospora RSA 2659 single-cell v3.0]Pipcy3_1
MSHLLPSSFESLSSLFPPTLAYFDAAGCLTAAAAGLLGYLAYLIHGHYRIKRPGPRGLPIIGNLHQISEFPHLSFSKWTK
MYGDVYFVKMGSADCMSSEALSAMAIVVFWAPPHNEKWKHNRKLFTTAFSKRAVKGYGPIIDAEARQMLKEIHAVAGASP
EGADFRNYTSYFTLNVLLGATFGERMDSVNDPLAQDIFQVSQDVFRNTGTSTNLVDFLPALRPLLYPTVRHIHKMQEKRV
GTIRALIKNLRARLNDPSIEVPECMGKYILEAQDEGIIDEMDVIALIGDTEAAGTDTTATFLHVMLLTLAKYPEIQKRAQ
AEVDRVIGRDRLPTAEDYAELPYVQCLIREQWRFRPIGYLNIPHAAREDFYFRGNLIRKGTWIITCYYEEQMNPDVYPDP
TTYKPERWLDSVHRTICEETIGSQEKRSTWLFGEGRRVCPGMILAEAELSNAITHFLWAFNVTPGTGEEIDLSIHESGLT
NQARRHRLHFSPRFPEVLSML*

>18575|jgi|CYP6641A2|[Piptocephalis cylindrospora RSA 2659 single-cell v3.0]Pipcy3_1
MIQGLIQVVLGIGFLGLTHALYRARQPNRPGPPGYPIFGNLLQMGSRPLVRMSEWAKKYGGVYYLRMGFIDWMVVSTPEA
MHDVLSKQGATFASRPHQLVLGDILSNGGHGVVAAPYGPRWNANRRFFTSALSKLSVQSYEDSLLHESRHLCRNLMVDME
RHGGAGFPIHRHHQAYAFNIILTMSYGVRYASAEHPRCAEQLQVNDDIFQMIGPKYFIVDLLPFLRCFLPHLERNARKLH
ATMYGFIRERFAQFCQEEEDINARIPNTMCKYLAAAVRKGELAEDDAHVTLGEAFAAGLDNSSSSLTWLTLALAAHVDVQ
KKAQEEMDRVVGRDRMPTQNDLPNLPYLRCILQEATRFRGPAQVLFPRATTEDTVYQGVTIRKGTWVMPSIYAAHHVFSH
LEDPDVFRPERWESNPKTLMEEVMGKQSTRVNWNFGTGRRVCPGLYLADISLSLTLAQAIWCFTIKPGEGESVCLETMGN
GTNISPPNWRIRYIPRGDYVKDMLQTEDSSTRARTLE*

>18942|jgi|CYP6641D1|[Piptocephalis cylindrospora RSA 2659 single-cell v3.0]Pipcy3_1
MSPRPYLLFSKWAEQYGDVFYLKMGQADWMVLSSPEAIHDILVKHGTTFSHRPYQEIPAEILTKGCQGVLNANYGSGWRS
RRKILSLSTSKAAVRGYMGFLTHEGRELCKVLYKESQENGPSGFSIRNIALWHSLNVTLSVTYGTRIQSHLDPRVQQHSN
STEEAFNFGIPEAYPADLLSFLWPFFGHKRREAQRFFEKEFKIQHTNFTHYLENRGKVDAGIPTTICKHLADAIKAQEFT
TLQAYILLGETMVAGLHTTSLSLTWIVHILATRLDVQERVHAEMDRVIGKSRLPTITDVDDMPYFRCVLQECLRFRGPSQ
FLLPRTNIEDIEHQGVLIKKGTWIISNIHAIHGVGSRQESAEEFRPERWETNPKTLSEEAMGKQGERESWTFGGGRRVCA
GLHLAEADLYLATLHILWAFHLRAGDGETIDLDEVEDGLINPPPHRRIQYIPRSPDIHDLLMMDDSSSPAENL*

>18414|jgi|CYP50140A2|[Piptocephalis cylindrospora RSA 2659 single-cell v3.0]Pipcy3_1
MDSIPSEFTILASIIGCGLGWAWWKWARCPSALQHLPCIPTLHNLYCQFTGVGFDDRYEITGRAIHSKHKLTREWQPPLG
WCVHVNDMTGFKFMSDQHTIFSKVLLNDVLRGTLAHQWLGYNVLFSNGAEWHFFRKTATPAFKVQWDLTKIVGTSETLLN
IWSRKEGEVIDLMHWIPRYTLDTLGQIIFTHDFGGLTQEHSPFGRLHSSIMSEVLKMRYFFFTFADRPWNPWRRKTFQDI
EEFDQRFSAIINDRRAKQARGEPIPRDLLGSFLEGQKITNESGEKGVRVMTDREMRDNMNIFFMAGHDTGTTTISRLIYL
LGQKLDVQDKVRSCVLEALANDDDIPRASHDIPFLDAVIKEFLRLYPATGRLPERLTTEDVVMPCGQFLPKGTCVIGNMW
AVNRDPKTFGEDAEVFRPERQLSPGPNGKQVPLTTFGLGPRSCIGQRLALAEIRIILMMLVRAFTWVSIENSTGKPVLGV
PYLIHPKHIKIVVTRREQAAA*

>269|jgi|CYP50390A1|[Rozella allomycis CSF55]Roza11_1
MKEAAMLKYPNSPEDHVVLINFFGKWLLAIENPKLCKIVLSNSEVFYKYAYAGLQEGTLSGDLMGANILSESGPNWKRHR
KIFNPVFVKNWDTMTFGLKTKQLLNQWDSLIENKKSINVTEWMPRITLDIFGLEVLGIDLNAIKENTDMYIKYQRMMELF
NDFILLHLPFVYKHFNFLSRVKNAKEAINDFNKIIYDIIEDKKSRKEKVADGDLLDRFIMASESEVGGLSIKELRDSVLI
TLIAGHDTTSTSLICTLYNLAKYPDVQDKARREIELVMKSNDKRAIPSYDEQKEFYYLSAILKETMRLYPSLSSLPLRIA
TKDFKLGNIDLPKGTLVTISVMAMHHNKSHYENPDQFIPERFYDEEQNKLKCPMENLNDYKWLPFSGGGRSCIGMQFAII
EQRILTAMILRNYRIELSDELKQSEIPFAKNPILHPLDVNLRFIKI*

>955|jgi|CYP50267A1|[Rozella allomycis CSF55]Roza11_1
MAVIILTAIAASAIYAFIFFRFFYKRRLPAEIPGPKGLPFFGVAFEINPENFSQKLESWAWGYGPMYKIKLFGQETLIIS
DMEVVQYILKNRPQKYTRGDKVPQVFEGLHTMGVFSNEGSEWKDARQLVTPSFAPNRLASMNNIFAKHICALKHEFSDFT

KNANEIVDQFLIKKADFNEKRLHDPCPLFQNAALKIIIESAFAYGQEDLLPPSLLNEMGLVFKVTGDRLFGGFPLWMFYK
TKEDRKVEKIIKRIYSIIDVVIKSYVEKKGDKNVLNRTLMESLLQTQREANFDSKVPKMTIEQMKGNIMQVMIAGYETTS
STLMWILYFLIKYPEVQRKIQEEADLVLGDRSSLTEEKISDLKQEEFPYITNVIKETMRLKSVAPFFQASNIEDEVLHGH
HIPAGTDIALLTRVASLRACPTENAFEFNPERWNIDDEDIHKKQMNSFMGFGGGTRICPGRHLAMLELTLMIAVVISDYD
IKPFPLPPSYPPTTELTHFTTIAKDFYVLPKRRE*

>555|jgi|CYP50412A1|[Rozella allomycis CSF55]Rozal1_1
MLGKLRHEAINNMVEADFIHLVTKMMKAEKLAGYAAKIIVPEAQRFIKSAESNFDSGTLEDTLDTFYNLISRIAIKVFGG
YTCKDHDEWVEQLIKWMRETDLENMVRESPLHLVAPWYPPLKQKRAEKYLALRKLIVEIAGEYCLDAKTERVDYDIVFGM
IHSVIFAAVSNQYVVISLYLINLSQYPEWKVRIENELEPLINYLKDNDLANVEQLPLNIIDNTPLLEAGVLETIRMNSFG
FAPRLVEEDTEVPLFEHENIIIPKNSIVFTSHGLVHLDGNINKNPDIFNPERFIENGKCIGSITASHRGTFLGFGAGRHP
CTGMKFAMLQIKLVTSLIMSHWDIKFDAECANETQMVEEININYFLQFFDFLINGLAFGLLDLETGSTYDPINDELTKEN
LNQIEFIDISRLFLMFFKIGFNSYGGPVGQIGLLYNEFVKERKWMDKNQFNRVFNFLQLLPGCESIGLCGHLGYLRRGKK
GAIIAAFAYILPGLLLMATFSYISLNHQNFLMDSKFVQNAFDSIMAVVAALALKSSLEIFFDNIEIIRTSKFISIQSMVK
AIFETNPAYIIISGGIYQYLFSKTKSFWLKFCLLLFFIFDMWFFFLSLVVELPILSPTPTGFIYQSEYAYLNLYISGFLS
ALICIGGFSSILNAYQNEVVSVNQWMAVSKPKLPKGNSFLSEKTGDLELEVDFLQSRLGSIKDLLEKERQLSKNWTTKGP
IYSHAKQILQSHKIALKSLQRSQSSQSQASFKSNLGRGAGDEFEKPIENEIKSKVKEINSYRPKSTKDMVGTNDEVYDEA
ESHRSFQEALNNWRESRKGKDVITKKMFHFEGSNETIDSKEIVDESTQTRNLTKERVDEIEKMFSERSTSSLSYLEKIHY
LKHN*

>5140|jgi|CYP51205A1|[Rozella allomycis CSF55]Rozal1_1
MIPIMVLAERAWIIDDPRLLDELTAKPETFGKLCNKGIMSELRKIGGDGLFTSADHEENWGMAHRILIPAFSQKALRVYI
PEMCRQAKKLLDALCKGSSQTDVDVPKWMTKITIETISMCGFSYAFHGLDKEEDDPFVKAMGYCLEEVQLNSMRTKIGQF
INRKRQEQFDHSMKYVESVVKNVIEERRKSGVKVDPNQPRDFLDIMLSEGLRMYPSAGAYAKDVLKDDSLGGVPVKENDF
VAVSVYAMHFNTTYWGDDAEKFNPDRFNPEEEAKRHPSAYSPFGSGPRACLGAQFALLEARIILAYIYYHLHVSASPNAV
PRLIQKTAFKPERLYLRFKKRTTPNIRNASPFTAPSRTSTPVTRERSEVVLTNGTPDDQIVSLASVSGGMPVVNILYGSN
MGTCEEMASNFANHLRKSGANVEVRSLDNWNDLEDTKLAIIITSTYNGLPPDNAKKFDQNIKNLLLKSESKMKKLRTFQA
FPKYVDKSLYSLGGIRIMPKGEGNVDDGCDIEKHFSDWQEEFWKTVKTIYNFVPSKTPIEELMGEQVNIMPLTQDQLNGL
EIMNPCPLSSAKLHKIEKIKELQSKESSFRTLHVELALQQNQKYSTGDHFGIVAPNSKKDVLLVLNNLILPESIHA*

>14855|jgi|CYP5941B1|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
MPVFSTLLGSLADIVLDWQFAGVTLGALVVGRIIYDEFFSPIANVPGVRPHFFGKFLPVYHLIRGNYNNYSAALSERYGK
IYRLGKNKVGTTDLETIKLLYSSTRFNKSELYRSFEFHRDNIFSTRNVAFHRKLKRMMAPAFSSLAVAEMEPLVHRAGIA
PLVQRLNAHADDGQTFDIMAVLHYATLDVIGEVAFGESFHTLTVKPGEKAHPILHWIDDICYLGLLREGLGVLCNPWLFP
RHFESERLLIDFSRSVIEKRKAETAANADKPKERVDDVLQRMLDSEDPETGEKMDVDQMIAETIIQLIAGTDTTALTVTW
ALHLLHDHPETCRLLQKELAEAFPDRNQHFVHNDLKSLPYLNATIWETLRFRPVGGASQRTIPKGGAVICGHYFPEGYII
HPATPAVHRLPEIFGEDAREFRPGRWLDSSPDQLKLMRQFILTFSLGARSCLGQTLAWIELRLILATIVRRFSFAVPAGA
ETDMTPLFLFTVKPRGNCYNVQLTHNDV*

>26348|jgi|CYP5941J1|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
MDKPLSKPVCLHASAACVTALQSACTVGMPALLSLPAWSWADVLVASTVVYVIWQVRIVHFPPYLLANETNHIQLIKHEI
QSPLSKIPGPRPVVLASLVYRLNRYVGDDRANVIAIHKKYGPIVRTGRGSVWVSDVDMIRKILGSHNYNKTYYYDAFRFD
GDNLFATRDVAYHRVQKRLMLPAYTPSALGNLEPLLYEMGVRRLADVIREHAVAGEAIDLLDLFHCMTFDIIGEVAFGKS
FNLLDQGEKKHPIIKWMYATTAHGVKKNLLGPLYHPSLFPKNIEAMDKLREFAMNALAERKAMPDCKRQDTLQQLITAVD
EETGATMSDRDIIAEIILLMIAGTDTTAITLTWTMHFLLEHPEAMQRLLAEIKAAYPDAGTKTEHDTIQSMPYLEAVLRE
SMRLRPIVPQGLSRVVPEEGLTLGGYYLPAGTLVYSSIQTMHLNPEVFPDPTAFKPERWLTSPDQLEIMKRHWVTFSVGP
RACIGRK*

>26921|jgi|CYP5941F1|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
MFSLLFDWWPVIAAALAAWLIAKIVQNDVMSPLAKIPGPWCFLQRRFDMVIGIVCEDAPHRFLRQYHKYGPIFRLDSDSV
IVADVEAVRLLHSSNRFRKAEHYKAMEFHQDNIFSTRDVDYHRKMIRVVGPTFSNSSINGMEAMIYETGVEKLLDKVEKF
ATSSDTFDILQYITYMTLDIIGKVVFDSSFDLLLAEKVEEAEPPVIKWLREVSALGMLRYVLGPLCNRWVFPSHFASDKS
LIEFARNAVRKCEEKAGQAAQESTQKTILYQLIKAEDPETGERLTEDQLIAESVIQIMAGTDTVALTTTWTLHLLLENPH
TYQLLVKELCVALPDRNARVTHSQLKSLPYLNAVLYESMRILPVTASGNPKQMPPGGETICGHHIPEKYVVYPMTYIVHR
MKEVYGPDPEEFRPGRWIDASAEQLDLMRRMFLGFSLGSRACVGQTLAWVELRLALATLLRRFDFHVPDDAKVDMTPVLQ
FTLRPRARQFLVKAEPRAM*

>26996|jgi|CYP6319A2|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
MSQLVEGLLGQWRNGSIAGSIVDSPAILAAVAFIAGAYYYSSRPRANEPPRVGYTIPVVGHGIEFAKNPAQFFAKCTEQY
GETFSMLMFGRWITVIGRSEIRNVMRAPDNQFSFTDGAIEMLDTVYMFGDTLPGNRFHVTLLRRNLAKQLDQLAVRMVGR
AGIAYRASIGAADKPVQLDDIGMFIDDVVARMMSTCLTDNEDIYNNDEVLRMMRTVARDVARTTLFKRMFPLSISRLLTR
QVTAMSKNLKVADEIIAPEVAERRRLAKELGDAYNEPHDMLNWINNAKDDNGDYYDPIAVARRSIQIAFASVTTTSNFCT
HFIYDIASYPEYRKKLQEEQDELVHLYGEEITPEALQKMRFMDACIRESLRLNSSASK*

>27000|jgi|CYP6319B1|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
MDQIIGRSQALVQSSGSLSTAVLKALLTSGALWAVWAIYKNRPKSSEPPRAHYSIPFIGHGLQLVRNPIALLNECSEKYG
DTFSILVFGQWITVIGPSNVREVMRSPDDKLSFSDAVNHIIDIGFCFGDSTPLDRFHVAPMRKHLGKNLERFVPRLCEAV
EAAFSTHAPVSATTGTCIKEVTAFAYRAIARTTSACMFENKEFQESDEVRKMLFTVSVDATFFSSLKRMLPYFIACWKAR
SKTRIFQNLQLADEMFTPEVKRRRAEAERLGSDYVPPYDIMQWIIDHRDKNGEPYSDHDVGRRMLQVGFASMLATANFTT
HLLFDIAGYPHIQEMLQREQDDIIKRFGSTITMEAVKEMHYLDACVRETLRLNGDPTNSFRLAMSDVTLSNGYFIPKGRL
CSIHGYSIHSVPDVYGTNPRAYNPAQHLKGGSGGGAPKSTFTSESFVVFGIGSHTCPGRFLATLEMKIVAIHALRNYSFR
TLSGKRPANAPRNGMTMAPVDEPILFVPRSNVQ*

>27057|jgi|CYP5941A2|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
MVTVSDPNVMRAACTSTKYTKSKVYDAFHFYQENIFSTRNVEFHKKLKRIISPVFSATSVAELEPLISKVGVELLAKRID
AYAAAEETFDISALLHYTTLDIIGAVSFGGSFNTLVERPNEEPHPVIHWINDITMLGVLKDTMGLLCSRWTFPKYFRSEK
RMVEFTRNAILKRMEKAAEDKDDGLVEDGGKDVLLRLIESEDPETGEKLDIDQLIAESIVQLTLHLLHDHPAVCRKLFDE

LKQAIPDVAQVVHHDQVKGLPYLNAVIYESMRMRPVAGGSIREVPAGGIEIDGHHIPEGYTLVPALWAIHTATDVFGADA
EHFRPERWLEASAEELKRMKQSFFGFSMGSRACLGQNLAWMELRLLLSTLVRRFEFTVPAGEEADMTPLSRFTSQPKGGC
YRVRAMYRSD*

>27088|jgi|CYP51F30|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
MMEQLLSTALVGMRSTTQLLAASWPATLFTALVGWIIGGYLYRSIRRPNPSEPPMVNYWIPFIGSMVSFGMNPVQFLQKN
REIYGDYYTFLMFGRRMTYCLGVDGNNAFFNARLADANAEEAYASLTVPVFGEGVVYDVPNHMLMDQKRFAKGGLTADAF
RLYVPIIVKEVEDYFARWHEPSGVGNIHEAMAQCIVNTATHCLMGREIRAMMDDTVAQLYEDMDKGFTPLNFLFPSLPLP
AYRRRDRAHAKMSALFQSIIDARRASTDAPPDDMMTALMNSHYKDGRRMSDKEVGNLMIALLMAGQHTSSATTTWAILYL
ADRPALVEALREEQRKCLGDDLATPIAYEHLRDMRLLDAVVRETLRLRPPIVTAMRKVMRPMTVAGGKYVVPAGHYLGSS
PALTQLDPTYFKEPLQFEPTRWLDNNSATADEEETAGDQVDYGFGTIKLSGARNPYLPFGAGRHRCIGESFAYVQIKTIL
ATMLRLFDLAPGPKGFPEMDFTSLVVLPAKPAQITYRRRQ*

>27090|jgi|CYP5941G1|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
MASASANIKYVAAVCGLLLLAKAIYRDFFSPASKVPGLPFLTFLQARWIYNTVTGNYVRHQYAMFKRYGRIVRLTPTEIG
LSDPDAIKAMLTSPKFRKTDAYANFQFHGDNIFSTQDVALHRKLKRMIGPVFSPSSVAEVEPLVREAGVKRLAARIAEYA
EAGATFNIMELFLYTSCVRCSGADPLQDVIGEVAFGGTFNTLLCKPGEKPHPVIHWINDITYLGILLPLRLWRQFTRSVI
KKRLQENSDQADRGEHRNGYVKDVLQRMLESKDELTGSTFDIDELISQSIAMLVGGTDTTAVTLTWGMHLLCNNPKVARA
LKEELMAAFPDPDQTILHEDTKHLTYLNATIYEILRLYTVATGSQRVTPPEGAVICDIFIPGGYVISPIVEAVHQNTAIY
GKDPRAFNPRRWIDVEPDQLFNMRQSLLSFSMGSRACIGQKTDMTPTSLFILKPYDEKLLVRAVSNVD*

>27187|jgi|CYP5941E1|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
MLAFYDTLLAIAWNWPWMIVAGGACLFIKILADELWSPIARVPGVRPALLARLLTLYHMATGSFTAYTVSMSRRYGKLYR
LSSNAVATTDVDAIRLIYSSTRFKKPECYRYFAFHRDSLLSTRDIEHHRRLLLLSQKRLVGPVFSTTSITELEPLVYRAG
AAAMAKRVAQYADAGQPFDAMALSRLATLDVIGEVAFGGSFESLAMAQDEGSHPVFRWMNDMTHLGVLKQVFGRLCQPWI
MPRHFASERMLVEFTRSVVQGRMAAIASDHPTTRDHAAKDVLQRLIEAVDPATGDRLDVDQIIAESIVQLTLHLLMEHPD
VYHRLERELLAAIPDRDQAISHATVRHLPLLNAVLYESMRLRPVGSASQRVVPSGGMVIAGVYLPPGLVVHPITSGVHLL
PEIFGDDAECFRPDRWLAATPEQLRGMRQCLLTFSLGARACIGRSLAWMELRLMLSVLVRRFVLSIPPCTKTDMTPVQRF
GLKPRGGRLDVLAVHRTK*

>29227|jgi|CYP6653A1|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
MIDTDTLCSLQAVDVLSALQRVFRLLGRKLFDPSFVAMLLMLLWLVKAIQHRNQTSLRTVPGPFLAPFTRLFPIVNIFTG
THFQRYLSWHERYGPIVRTGPRSVSVSDPDAMRQIYGSHAFRKTRMYDTFQLLGNNVFGTRDPAFHRTRKRLIAPVYNQT
TLNRVEGLIWRSGVQTLMDKLEGVARSGRVANLFREFMYMTFDVTGETVFGRSFGLTKEGSHPILQWMADFSRMSMLRVL
LPLLYRVQLPWLFGRLYESEKKLYAFTKTALEQRKLVASPRRDALQQLIEATDDETGARLTDDEMIPEMLVQMVAGTDTT
SITLSWCVHLLLQYPDAYRRLRAEIDAALPERDMPIAYAAVSKLPFLDAVLHETLRLFPPVSDGLPRQVPKSGATVGGHH
LPPGTTVFCSAYALHRSSALWDRPNDFVPDRWLVSSEQIADMKRAFIPFSFGPRACLGRNLAWMELKLTISALVRRFDIK
HEQGGCMDPIYKFMLTPKDHRVDVRLYPRS*

>1879|jgi|CYP6479A2|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
KLTSPLRNIPGPWHSAFSSLWYKSKLAQGSQLLAVTELHQKLGPLVRVAPNMVSVGDVDAVRTIHSTHRFTKGPLYDCFR
FANADNVFATRHADFYKARKRLTAPAFTSTAVSEMESIILDAGINSLLRRLERHADGKQEINMFKLFSFMTFDAIGEIAF
GKSFNLLEEEDHPLLGWMHSTLMLGIYVRILYAYVFGQTAAPIIFPKHVAAERSLVDFTVEAIRRRRNDRSRTDALQKLL
DAEDEDTGARLRENDLATETIVQLIAGTDTTSTALTWALYRLLDRPECMRLLQEELDGAFPDKNASITHADVRDLPYLNA
VINETLRVHPVAAGDAQRVVPAEGVQLCGQFIPGGTIVIPQMYVLHHLEAHWSDPFAFKPERWLVSPERMHEMKRAFIPF
SMGVRACIGRNLAWLELRTGLAAIVRRF

>5652|jgi|CYP51F30|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
QLRKPDPSLPPMVDYWIPFIGSMVTFGINPIKFLQDNRAKYGDHFTFLMFGRRMTYCLGPDGNNTVFNAKLADVSAEEAY
ASLTVPVFGEGVVYDVPNHVLMDQKRFVKGGFTPDAFRSYVPIIIKEVEDYFARACANPVLATSTLSCWDKEEGIGDIHD
ALAHCIINTATHCLMGKEIRSMMDETVAGLYEDMDKGFTPLNFLFPSLPLPSFRRRDRAHEKMSALFKSIIDERRATGSS
PGDMMDVLMNQHYKDGRPMSDKEAGNLMIALLMAGQHTSSTTTTWAMLYLAANPSIVDDLMKEQRRILGDDLSTPLAFEH
LREMKLLDSVVRETLRLRPPILTVIRKVMRPVSVAGGKYKVPEGHYLGASAILTQLDEACFKEAHRFIPARWLNTEDDED
TDSKDDAVDYG

>6668|jgi|CYP6653B1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
YLTPLAKLPGPRSSWLSSFIIYYEMLFEPTKDQTKKLHQRYGPIVRTGPKMVSVANPDMARTIYMSYRFPKSPNYNAFKF
HGDNIFATQYKKLITPAYSQAAVASLESLVHEAGVTRLVNRLRKCADAGESLDLMHTLQLMTFDVIGEIAFGRSFGMLET
GTAHPIIEWIGDTTNLGMAVSIPSSLRISSSKYASHLHIVCNRVLICCMRQFARDAVRTRREQKNTTRRDTLQRLLEAVD
EETGDRLTEDELISEAIVQIIAGTDTTATTMTWIMYLLHQSPDCLDRLRAEINAAAPDLNVPITHTVVRELPYLNAVISE
SQRLRPIVPHGLVRNVPNEGITLGGYHIPEGTTVAASIIVMQEDESVFPDATVFKPERWLGKEDEVAAMKRSFMPFLVGP
RACTGRVLAMMEMRLTIAELIR

>15552|jgi|CYP51210A1_Thamnocephalis|[Thamnocephalis sphaerospora RSA 1356 single-cell
v1.0]Thasp1
IYNLFLSPLRSVPGPLLAKLTTAYDTYLRLCGQSPFIRRRLHEQYGPVVRLGECAMARRDIVACKQLMRAAISTTGPNQL
SVGTADALRVVLHDEGFRKSEAFFLRVRHTNPFRLVGPSFAPRELIKHESLIWRVGAGELMEKLEIYASSGDVIDIHGQF
RFLATDVISALLYGRCFHMLRVGEQEPLFRLLRLNLVYRMIVRTRADWYAKRALLTGPTEIGHAHFLQRHIDAARDTAAA
AAATGQKVILHQLIEARDPDTDIGLTDEEITAEMVVISVAAIDTTQDIMTWTIDFMLHHPECRKQLVAELDAAYPDRNTE
IRYQDRHQFPYLEACVLEAFRMKSPTPNGMLRNTPAGGRRVCGVHVPAGTMVDPDGYSSHYDAQLWKDPDMYRPERFLGA
GAVEARKQLFHFGAGPRTCAGQTLAMMEVVHTLAALFRRFDVVLAGERPRPIHQIFLNPHHNELGVRVTVRA*

>16135|jgi|CYP6315B3|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
QIVGLLTSPLASLPGPWYTKFTGFAHILAAARQKSWSHLLELHDTYGPIVRLGPDTISVVDAKDVRTVLATHKFRKGRLY
EGSYFGGEPNVIATRDPSFHRMRKKMVAPVFSNVYLQNMEPIMHEVGLNKLFKVIEARGASNTPMDLMGLLMHMTLDVMG
ALAFGGSFNMLDTDSHPVTDWMHGTAMLSVGVSSRASSQASNSFAQYTMNMVEKRRQMKNPPKDILQTLVEAVDDETGLP
HTPFSIASEIIVLMMAGSGTSSITLSWTMICLLQRPEYMKRLVAEIDEAFPSIDETITHAKVQNLPFLNAVLHETLRFRS

PAATETPRVAPAEGATLSGFFIPGDTEIVVTPLAIMCSKTNFDKPDQYLPDRWFEETDSIKEMKSSFLAFSSGVRACLGR
NLAWLELRVTLASLVRKFEFTLVPGQDLNPTTRHILEPVEGKVMVTAVKRTA*

>18496|jgi|CYP6653A2_Thamnocephalis|[Thamnocephalis sphaerospora RSA 1356 single-cell
v1.0]Thasp1
MAVLLFAYWLSGAIKRKSSTTLRYIPGPWLAPFSRIFSIINIFTCKQVHRYRNWHETYGPMVRVGPRSVSVTDPAAVRQI
YGSHAFRKTRMYDAFVVLGENVFGSRDPEFHKRRKRLVAPAYGQTTLAAIEPLIWRAGVESLMEKLERQAAAGQVSNLFQ
EFMFMTFDVVGEVAFGRSFDMLRRDGHPILKWLEDFSRMNMFRIMFPFLQRVRLPWLFGHWYESERRLYAFTRDAVERRK
REKQPRRDALQMLLEAVDEDTGDSMTDAEIMPEMLVQIVAGTDTTSITLSWCVYLLSQHPEIYAKLREEIDAVLPEREAT
VSYATVNKLPWLDAVLNETLRLYPAVADGLPRSVPKGGAELGGHHLPGGTVVFCSAYAMHRSSALWDEPESFRPERWFAP
AEKLAEMKKAFIPFSAGPRACLGRSLAWLELKLALSTLVRRFEFEHVPGARMEPIYKFMLTPMDHHVDMRLRPRT*

>19775|jgi|CYP532H9|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MALESLLGLETILVLLFTYALYNVIDRTLMSPLRSVPGPWYCAISAIFYKRHTKKGTQLEWIQGLHEIYGPVVRIAPRTV
NVCDVDAAYIIHSSHKFVKGQSYAAFNFTGVPNIFSTSDPDVAKTRRKLVLPMFTRSAINEMDEMVMLAGIRPLLLLLEK
RAESGSTADLYKLFHYMTFNVIGDIVFGRNFGLLKDGTSSDNMITWMNGMRILHARVCAQRTGVQLYAICMLTSSITRPD
ACSWSASKQAIRIRRSTENPRADSLQRYLTAMEEEKVERMTDAEIAGDMLMQLSAGSGTTAKCLTWTIYLLSRTPDVRAR
LLQELQEAVPDNGTEIRHAMVRDLPYLNAVIDESLRVYPVGSGGAPRVVPKGGVELCGKYVPGGTTVLARQYLINHSKEI
WKDPATFRPERWLTQDSVHLEKMRRAFFPFSMGVRACVGRELAKMEIRVVVATLVRRFNIEVLPENDMTPICSVTVLPRG
GSLVSRLTKRTE*

>21179|jgi|CYP51F1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
GARNPYLPFGAGRHRCIGESFAYVQIKTILATLLRTFEISEGPKGFPDMDFTSLIVMPTKPAQIRYRRRQL*

>22317|jgi|CYP5941D4|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MSAAAGLLDWRFAGLAVGALFLAKIAREELFSPLARVPGMRPALYSWLYLGVGLLNGTYLQKFLAMYERYGPIFRIDSET
VAVCDPEAVLQIFGSPRYAKGSGYDAFSFHRENLFSTRDIDYHRRQKRLMSPVFSVTAIATMEPLVRKVGIDRVVEHVNA
HAKAGTVFNIVGLLHRMSLDVIGEVAFGKSFDTLLEDFDGEAPQIIRWINNITALGIVFSRETIRRRRATENEQGDRPKD
VLQRLIEARDPDSGNTLSEDQLIAESIIQLIGGTETTAYTLTWAIHLLLEHPHCMEQLVHELCQELPDRDEPAKHAQLSE
LPYLNAVLYETLRLRPPSPDGTQRVSPPGGVHICGYYIPEGYNIQAATHGVHHSTKIYGAAVESFKPERWIESSPEQIAT
MRQSFVSFSAGSRACIGRALAWMELRLTLATLVRRYAFHVPEGVENDMGQVFDFVLKPRGGKLRIAATLRAE*

>22657|jgi|CYP6315A4|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MWHIFESLNTSVCTVLLLGGAYATYKVARMLTAPLAAVPGPWHSKITSAAYFYALLRGKTFSYLTEQHRIYGPVIRLDSV
SITDANAVRTVLSTHRFRKGRLYKVAKFGGGHSKKMIAPAFSNVAMINLEPIIMDVGINKIVKVLEKKGAGGAPVDLFKT
LMCMTLDVTCAVALGGSFNMLEADNHPITSWVHGILVLALTRHMFGEKPAELMLPNRREAKNAPKDVLQSLIEAVDDNTG
EGLASSDIVSEIITLLLAGSDSTATALSWSIILLSDHPECMKRLVAELDEAFPSIDEPITHNKVAGLTYLNAVLHEVLRQ
RSPSSIDLPRVTPNGGATLGGHFIPGETEIIISPYAVTNDARNFERPLEFDPSRWLVSSEMVSEMKHIYIPFSMGARACL
GQNLAWLEMRLALATILRKFTFKILPGQNLQPVLRLVLQPSDARMMVTAIRRTS*

>24543|jgi|CYP6383A5|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MSLVSLLSLETALALSGVYVLYSVIAGKLMSPLRNVPGPWYCALSGLPYKLYASKGVHLEWMQRLHETYGLVVRIAPGVV
SVRDVDTAHAIYSTHKFLKGPFYSSFDVTGVPNIFSTRDPGVSKIRRKLTIPMFTGAAVEEMDEMIMSAGIRPLLRRLRK
HAEAGDSVNLMQLFHYMTFDVVGDILFGRNFNLMEDDNGGDNAIAWLSGMCKIGIYASVGDMQAEAEYSFGPLANKWFMP
KLAECERKLTNIAGDMIMQLFAGTDTTATCCTWTTYLLSITPHARHRLLQELKEAIPDVNTEITHSMVRDLPYLNAVINE
SFRLRPVAGGSSHRLIPKGGVVFCNTYIAENLWDEPMAYKPERWLIEDEERLGKMRRTLFPFSMGVRACIGRDLAWMELR
VALASLFRYFEPEVLPGDDMTPIFNLVIGPRGKALTARLTQRTE*

>25210|jgi|CYP5941C3|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MSMLWLDGLASVVLTKEFALVAAVAWVLGKLVRQEYLSPLAKIPGIRPAVLSEALFVRALLKQDFNEYQRQLHDKYGPVV
RIGRNSVSIADPSALRVLYATPRFQKSAQFAVFQVPVDNSFSTRDNELHKKLRRLVAPTFSLSAVLDIEPRIAGAGVDKL
LERVAKCADAGDTFDLMAFFYHMTLDVIGAISFGRSFGLQEGSGSDIPQWIEHVMSICMLFTRDVINTRRADSGQYNDVL
QRLIDAVDEETGDRLSDEQLISESILQLTTHLLLVNPDCMQRLYEELKSAIPDPSTNICHADVKDLPYLNGVIHESLRMR
PVPATGSERTISKGGAHIAGYYLPEGCNVNASMGSIHSLESIFPNAASFKPERWIGNNEQVAEMKHALLTFSMGHRACIG
RK*
>25640|jgi|CYP6383A7|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MLFEVIVAAEAALVLAALYVVYSFTVNKVLSPLRTVPGPWYCALGGLYYQLKMAKGIQLPWIQRLHEKYGPVVRVAPNVI
SMRDVDAAHTIFATHRFIKGPIYHGFDLTGSENIFSARDPAFFKIRKKLAVPMFTRTAVEEMDDMIMAAGITPLMARLDR
HAEAGDAIDIMGLFHYMTFDVIGDIAFGRNFNLIEDDNNGDNMVTWLAGTAQLGIYKLALGPLANQWLMPKLFECQRKII
DFTVESVRIRRATPSTRPDSLNKFLVAMKDEKIEQLSDMDIAGDILLQLMAGTDSTATCCAWTIYRLKNEPEVYARLLAE
LREAIPDINMCITHAMVRNLPYLTAVINESLRIYPVAGGDPHRVVPKGGVEFCGKYLPAGTVVMASQQMLNYWDKIWDEP
TAFRPERWLIKDEERLNEMKRAFYPFSMGVRSCIGRDLAWMEMHVTLASVLRRYEVEILPNNDMEPVFNLVVLPRGHALN
VKLVRRAD*

>26473|jgi|CYP50337A1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MAIYAFDILWQPAWGNLSAGHLFAGVTAIYIAYLSFGRRKKVNSLYNEPPMVPYKWPFFGHAFEFEECGVRFLDQCREKY
GSTFNIYMFGQTTTVIGTDLAAEALKASDSQLSVHDAANDEIHEHPDIVTMMRAIPDDIAASIVAYEMFPIKWLARLMLP
NTAAIDRHYQTIEKLIVPEIHRRRRASTRNDNVHPVDVLQFLINFCDKSGKSYTLNELPGKLMYFIHTLTENVSFSALHF
LYDVAGRPEIRARLYREQQKVVAKHGTAFTIEALSDMQYMDACMRETLRMHVHALGTVRKARRMHTFSNGLSVPAGRRCM
LHTQATNFNPEVYDSPSEYMPDRHLGKPGVHSTAIGPAYLIFGLGRHACPGRYYATAQMKMFVAWLLRRYDLTTRSGGRP
ENKTQNGLYSPVEEPIVFTLRHT*

>28111|jgi|CYP50196A2|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MQLIVPEALSKFWQSLPLDKFLQSLKPLEELARRTTPKQAVAALVLAYAAHFAVFRVIFAPLRHIRGPAYTRFSNLPFIS
SVKNGRQIYDYCEARKKYGKVARMGANIVSVVDPAALKIIYNSHNFRKGAVYDALDWFGPNIFSARDPEFHKQRRRAVYP
SYSPAAVNAMEPVLYETGPRALAAYIEQYAEAGQVFDIMQELQLMRIDEVGATTFGQKFDLIHQRTHPLLGWVTQTLHLG
MLQMWFPLLRRIPVPQIFSSHYRSRANLRAFVVSTIEQRRRVMEKKRDTLQVLLDAQDTDGQKLLGEQELVSELAIQLVV

GNFPVSLTLLWTINQLLENPDTLKQLMYELDHALPDPNNITDNKLVHLPYLDAVIRESMRHRPVMAEGLPRVVPKGGCQI
SGQFIPEGTVVFVSAYALHHEEELWHDPETFRPERWLGPAEQVNEIKKAYIPFSTGVRSCAGQRFAWMLMRLTLATLLRR
FTFEAMPNQNMKPAMAVFMVPAGGKYMVRATKRA*

>28112|jgi|CYP50196A1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MQLALPEAVDKFWRHLPLDRLWQKLKLLEQLARRATPRQAIAALVLAYAAHFAICRVLLAPLRHIRGSALSRITNLPFIL
SVTNGRQLREYCEARRKYGKVARLGANIVSVVDPAALKIIYNSHNFRKSAVYDALDWFGPNIFSARDPEFHKQRRRAVYQ
SYSPAFVNAMEPILYETGPRALASRICRYAEEGVVFDIMQELQLMRIDEIGTTTFGQHFNLVHKREHPLLEWVSKTLKLG
IVHMWFPLLRLIPVPQAFSSHYRARASLHNFVATAIEQRCHAITKNRDTLQVLIDAQGVEGERLLTEQELVSELAVQLVI
SNFQVSLTALWTINLLLENPDTLKQLVYELDHALPDPNNITDNKLVHLPYLDAVIRESTRHRPVVADGLPRVVPKGGCQI
SGEYIPGNTVVFVSAYALHHEEELWHDPETFRPERWLGPVEQVNEIKKYYIPFSTGVRSCAGQRFAWMLLRLTLATLLRR
FTFEALSDQDMTPAMAILMMPAGGEYMVRATKRA*

>28537|jgi|CYP6383B1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MLEALAVYVGASVLVYVAIIIYRHKVRSQLRHVPGPWYCALSSLPYMVLFALGIQLEWLRRLHDQYGPLVRVAPDILSAR
SVEAARTILGTHKFVKGAMYNNCAFTGHPNLLSVTEPVLYKAKHRMIAPMFSKVAIDEMESIVIAAGAEPLVERLQRHAD
TGDIVNVHQLFCYMAFDVVSDVVFGRNIRLLEDDNGGDNMLTWTLSMLLLQLAQIPLGERVASWIFPRLAIQRKKVIKFG
LDAIRERLGTETVRVDALQRFLAAARPSVGEEVAAPAATSELELAGELILQLQAGTDTTANCCTWTIHALLEHPKALERL
RAELDAAIPDASAPITHKMLKDLAYLNAVLNESLRLYPTATADAHRVVPESGAKLCGHFLPAKINVFASQYLLNRWEQLW
PQPDAFQPERWLVEDEVLNEQKHAFFPFSTGARACVGRHLAQLELRVAIASLVRRFNLERVPGDDMTPRCIFALTPRGQA
LNIRVTHRH*

>29102|jgi|CYP6383A3|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MLLKLLLSWEIVPILLVAYTIYRIIINTVVSPLRKIPGPWYCMLSETIYTTQVARGTQLQWMQQLHEKYGPMVRVAPGIV
SVRDVDAAHAILSSQKFVKGPVYEIFNVTGHPNIFSARNPATAKARRKLALPMFTRSALKEMDDMIMSAGVRPLLKRLER
HAEAGDTINIMQLFFFMTFNVMGDIALNRNFNMMEDDDIGNRIVAQINDTIQLCIYTYAFGPLANKWMFPRLHESKRQGI
EFFLKAIRARRAIENPRPDSLNRYLTAIKEEKLDNLTEMDMAGDILVQFIGGTDTTAISCAWTIYLLSGTPDVYSRLLQE
IREAVPDINTEIRHAMVCDLPYLNAVINEALRIYPVGGGDIHRVVPKGGAELCGKYLPENTIVMAPQYALNHWDKIWDEP
NAFRPERWLTTDSARLDEMKRAFFPFSTGTRACVGRELAWMELRVTLASLIRRFEVEVVRGNDMTPVFSLVVGPRGHALQ
CRLTKRTEEPMQPAVVAS*

>29234|jgi|CYP5941D1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MSFGICASVVSALFDWHTAGLLAGVLFLAKIIRGELYSPLARLPGIRPGFLGKFHLNYAIVANRYLHDYIWLHERYGHIV
RVGNDTVLLRDPQSVRQVLGSTAFPKGSFYRSLEIHRDNIFATRDASFHRRQRRLMSPIFSVTSIASMEQLVQTSGIERM
VERVAEHATTGATFDIMELLLCMALDVIGEVSFGKSFGSLQATQSSRASEILQLFDDTTKLGIIATTVGPLCQPWLLPGF
FRSERRLVEFARDAIKQRLGSKKDQRGRPRDVLQRLIDAEDPVTGEKLTEDQLIAESIVQLIGGTETTGLALTWTLHYLL
ENPLTMMRLAEELQQALPDRDRPVEYAQAKDLPYLNAVLYEALRLRPPGSTTFRETPPGGADLCGHYIPEGCSLIISFYC
IHRLPEVFGEDADHFRPERWIDSSPEQLSYMRQMFFAFSAGARACIGRNLAWMELRLALATLVRRYAFHVPDGVENDMAI
YPKFTLLPRGGQLRLAATLRAK*

>29507|jgi|CYP6653B2|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MLSVGGVLLAILAGVLLRKFAIQEYLTPLAKLPGLRPSWLSNWIFYYDMLFRPHISLPAEQHQQHGPIVRMGQRVVSIGC
PDMFRTVYASYRFPKSEEYSAFRVVGVTLFSTQDTEDHRRRKKLIAPAYSQVAISDLEPLIHKTGTANLLELLHKHADAN
EPVDMMHALRLMTFDVIGEIAFGRSFDMLTTGNNHPITKWIEDHIRLSIVKYMLGPVFMLLMPKEKLDSRAKFAKFAEEA
VRKRREQPNTNRKDTLQRLLEAVDEETGDRLSESELVGEAIGQIVAGTETTASAIMALHLLYQSPERVEHLRAEVTAAAP
DLSAPITHAAVRNLPYLDAVISESQRLRPVSAYGAPRVVPKGGVNLGGYFIPEKTVIKTCFKAIHTNESVFSDAMTFNPE
RWMIDESKLAAMRSSLIPFHIGPRACIGRALAMMEMRLTIAEVVRRFALDTPPHLMTDMTPMYRTTCLPVGKKWLVLPRC
IE*
>29695|jgi|CYP51206A1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MSLLVSVFGFAIVAFVAVRLTRRRSANEPPVVGGNWPILGHAVYLALHPSEFIAKCREEYGDIFTLATPGRYITIICSDK
AREIIRLPDRKSSFHHATDELMRVNSLFGNIFEPGSYHFPLIRTRLTAMIDELNLVMNREMRRIIARFLEQHAGKSCIPG
AIVGQDSYTDSAHCLDHDSIPDIRAFVEAVISETVGIALVGEQCAKDSALLDSCRHLAHDFTTVMSASEFLPSFIAKRAP
AIMRHRNNFFRVIIPEVLRRREMMDNLPEQFKRPADFLQVLVESRSKDGDLRAPEDIALRLMHSVFASVHTTVMTCTQTL
CDVVGRQTVRERLEQEQIDYAKVNGSVTTRAALDDMPFLDAVVRESMRFSNLSFNVVRRAMTDITLRDGTFIPEGRVCAV
SAHGVNCDYKAYGETHNAYLPERHLESPIAKASSAGPAYVIFGGGSHVCPGRFFAINQIKLLVSILLREYEIRTESGKRP
KNVSHLIDVVPLPEKVIMKRRAMPLA*

>30221|jgi|CYP6315B1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MYGLLELSGASTEILLVAAGALVAYKVAKALNAPLAHVPGPWYSRFTELVHTVSIAQGKAWSDVIELHRTYGPIVRLGPN
RISVTDVASLETVLGANGFHKGEIYQAFIFARQNNIVSTSDPVAHKRLKKMMAPVFSTVSVQKLEPLILDVGVQKVVNIL
EKSSADGTPVDMFKLMMHMTLDIISTIAFGGSFNLLESESVPIMGWLHSTTMLGIGRTLFGNTLAPMIFRKYQREYEMFI
EHTIDMIERRRKQKDPPKDILQALIEAVDEDTGMGLSTEEIASNAFILMGVILLLTHPECMKCLVSEIDEAIPSIGEPIT
HAKVQNLPYLNAILQETLRLRCPAGVDLPRKVSPQGANLCNLFIPGGTEITLLYNTIMQDERNFDNPNTFAPDRWLASPE
EVSETKRAFLPFSAGPRVCLGRALAWMELRVTMATLLRKFEFELVPNQDLRPVSRLALEPADGKAMVMVTKRTV*

>30222|jgi|CYP6315B2|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MWSLFESYGISTEALLAVAGVFAAYQVVKGLTGPLAHVPGPWHTKFTRLAHLIGVARASVWWDVVELHRIYGPIVRLGPN
SLSVTDPKSLDIVLSTHDFRKGELYQSFRFAGEHNVASTRDPELHKTLKKMVAPVFSTVSMQNLEPLILELGVQRAVNYL
EKNGANGAPVDLLKTMMHMTLDVIGAIAFGGPFNLLDVESVPVTEWLHGITMLGICRLVFDATLAPLIFRKFHREEREFV
QAIDMIEKRRKMLNPPKDILQALIEAVDEDTGTSLSTEAIASHIIVLLVAGSDTTALTVTWTIVLLLQNPHCMKRLVEEI
DEAIPSLDEPITHAKIQSLMYLNAVLTETLRLRSPAALELPRVVPPKGVTLNNLFIPGGAEVNVMITTIMQDERNFERPT
EYDPERWLGPSEQVNELKRAWVPFSAGPRVCLGRAMAWVEMRVTLVTLLRKFEFALVPGQDLTPKSRLGLEPASGKAMVT
LSKRTA*

>30382|jgi|CYP5941H1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MIFDGSFWLTVFLAWLAYKIITQEFLSPLSKLPGIRPVILSEFLINLSVLRGDMGFYIADLHRKYGPIVRLNEKDVSVID
IDAIRTLGTNTKYLKSANYDSFQVHTDSIFSTRDPDFHRMLKRLIAPAFSLSSIASMESIVADVGVRRLARRISEHAKAN

ETFDLMAYLHYMAFDLTGEISMGQSFGILDQQEHPIIHWIEDVTVLCVIRFVIGRLCQPWLLPGFFKSQQSVVDFARSAI
ISRKTSSTSRADVLQRLMDATDPETGARLSEDQLIAESIVQFVAGTETTALTLTWTMHYLLSRPECIEKLFDELEQAIPD
LTTDVTYDSVKDLLYLEAVLTESMRLCPVAAAGNQRAIPEGGMTVGQYHVPEGYQVIPAVIALQRRDDIFPNPDAFEPER
WLGPAAQVAEMKRAYMPFSLGTRACIGRNLAWVEMKMTLATLVRRYHFTVPEDAKSDMTPMFRFTYKPKGGKLLVQATPR
VQ*
>30508|jgi|CYP5941D2|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MSSDVIASLVSILFDWHTVGLAVGALFLSKIVRDEIFSPLARLPGMRPAFLGGLYANSGFVTGKYQQNFAAWHKRYGRIY
RVDENMIFLSDPGCALQLLGSSTYPKGPIYQSLEFHQDNIFSTRDPVFHKRQHRLMSPVFSAKSIGDMESLVRESGVDGM
IERVAEYADSGSTFDILELLLCMTLDVIGEVSFGKSFGALSKKQGENGTNILHWIDDTAALGLLKYGLGSLCQPWLMPGL
FNSERRLVEFARNAIQRRRSIEAGQDGRPRDVLQRLLDAEDSETGEKLTDDQLIAESMVQLTLNFLMENPRCMEILYEEL
QQALPDRDRPVEYAQVKNLPYLNAVLHEAMRMRPPAIVTFRETPPGGLELCGHFIPEKCAVYISIYGIHHLPEVYGEDAD
YFRPERWIDSSPEQLTRMRQMFLAFSMGSRACIGRNLAWMELRMALATLLRRYTFHIPDGVKNDMEMLLKFALRPRGGQL
RVMATARAD*

>31593|jgi|CYP6315A1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MWSLLELSVAVAETLLMLVCAYAAYRMVGLLVAPLASVPGPWHTRITGAVHFAALLRGTSWAYVAELHRIYGPIVRLGPN
TISITDANAVRLVMSSHRFRKSDIYRVAQFGGESNIVTERDPVLHKSRKKIIAPAFSSVAMASLEPIILDVGINKLVAAI
EAQSAGGASVDLRKLLVGMTLDVMGAVAFGSSFDMLGAATHPITSWVYEALIFAFGRFVFGNKLAALLLPKHKRGETALV
QYATRMIERRRRLEHPPQDVLQSLISAIDKNTGQGLPSAHVGGSATTSTTLVWAMILLFERPECMARLVAEIVEASPQID
EPITHAKVYRLPYLNAVLREVLRMRSPTSTGLPRVTPRGGTVLCNLLIPGGTDIIVSPYAVNNDIRNYEMPSLFNPDRWL
VASKSGSETSRIDMSFSTGVRACLGQNLAWLELRVALATLLRKFKFELLPGQDLRPKLLVLLQPADAKLVVTVSRRDS*

>31598|jgi|CYP6383A1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MFTRSALNEMDEMIMTAGIRPLLQQSEKHAKIGDTIDLYKLFHYVTFASTQLTDDIIGDIVFGRNFGLLEDDKRGDNMAL
WMNSMRLLHMRMYALGPLASKWIMPKLHECHRKAVEFTYEAIRIRRSTENPRADSLQRYLTAMEEEKVERMTDAEIAGDM
LMQLSAGSGTTAKCLTWTIYLLSRTPDVRARLLQELQEAVPDNDTEIRHAMVRDLPYLNAVIDESLRVYPVGSGGAHRVV
PKGGVELCGKYLPDGTMVTASQYSVNRSKDIWEDPIMFKPERWLTQDSVRREEMRRAFFPFSMGVRACVGRELAWMELRV
VVASLIRRFDIEVLSENDMTPVCYVSISPRGFALTSRLVKRTD*

>31775|jgi|CYP5941D3|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MSSDVIASLVSILFDWHTVGLAVGALFLSKIVRDEIFSPLARLPGMRPAFLGGLYANSGFVTGKYQQNFAAWHKRYGRIY
RVDENMIFLSDPGCALQLLGSSTYPKGPIYQSLEFHQDNIFSTRDPVFHKRQHRLMSPVFSAKSIGDMESLVRESGVDGM
IERVAEYADSGSTFDILELLLCMTLDVIGEVSFGKSFGALSKKQGENGTNILHWIDDTAALGLLKYGLGSLCQPWLMPGL
FNSERRLVEFARNAIQRRRSIEAGQDGRPRDVLQRLLDAEDSETGEKLTDDQLIAESMVQLIGGTETTALTLTWQDTQFL
DGEPAVYGDPVKNLPYLNAVLHEAMRMRPPAIVTFRETPPGGLELCGHFIPEKCAVYISIYGIHHLPEVYGEDADYFRPE
RWIDSSPEQLTRMRQMFLAFSMGSRACIGRNLAWMELRMALATLLRRYTFHIPDGVKNDMEMLLKFALRPRGGQLRVMAT
ARAD*
>31834|jgi|CYP6383A6|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MALELLTAVELLLTLLVVYVLYCIVANTVISPLRHVPGPWYYAVSKVFYIAHLASGLHSQWIRDLHKKYGSTVRVAPNIV
SIRDVDAIHAIFASHKFTKGPIYSAFDVTGTPNVFSERDPAAARIRRKLAIPMFTRSAIKDMDEMIMSSGIRPLFNQLEE
HADAGDTTNLLQLFQCAMLGIIGYIASGRDFNLLKDKSTSEKLLIWIRDTLQLCIYQYAVGPLANKWLLPRLHESKRRGI
EFVLEAIRVRRATENPRPDSFSRYMAAIQEEKIEHITDLEIAGDMIAQVTIYLLSLAPDVHARLLQELREAVPDINTEIR
HKMVCSMPYLDAVINESLRIYPVGGENTHRLVPKGGLELDGKYLPEGTAVMITQHMTNHWDKFWDEPAAFRPERWLDSDS
ARLSEMKRAFFPFSTGVRACVGRELAWMNLRVTLASLVRRFEVEVIPGADMTPIFNLSIGPRGNTLNCRLRKRTE*

>32065|jgi|CYP6315A3|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MWDSSGSPSIATTAVLLLTAVYTVYSIAKLLKAPLASVPGPWYTKFTRLEYFISLLRGRSFSYLTELHRTYGPIVRLGPD
DVSITDSGAVRTVLATHRFRKGKLYKVANDPVFHKSRKKMIAPAFSNAAMNNMEPMILDVGITKLVSVLEKKCAEGGPID
LFRLLLCMTLDVTSMVSLGGSVNMLESDDHPITSWVHGTLVLSISRHMIGDKLSRLFLPKYVRDEAGLISYSLNMIESRR
KMKNPPQDVLQALVDAVDEDTGESFSSADIVTEVITLLIAGSDSTATALSWTTVFLFEHPECMKRLVAELDEAFPSIDET
ITHSKVIGLPYLNAVLYEVLRIYPPSSFDLPRVTPEGGATLGSHFIPGGAEVIVSPYAVSHDARNYERPSEFNPDRWLTS
PEMVSEMKRIYMPFSMGPRSCLGQSLAWLELRVALASLMRKFTFELLPGQNLKPVLRFILWPIDGKVMVRASKRTS*

>32160|jgi|CYP5941C1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MAEATLLWLDNLVSVVFTKEFILAVAVAWMVGGVLYHEYLSPLAKIPGPRPVVLSEYILLSTVYRQHFDEYIRSMHAKYG
PVVRLAPKLVSIADPDAMSTFYNTPRFPKSALYAAFHNPTENIFSTQNIELHKKLRRLIAPSFSMSAVLAIEPLIVDAGT
DKLSKRIAMHAERGDTFDLMAFLHHMTFDVIGAVSFGQSFGLQTGGDRAIINWIEDLLAMGILKLGLRRLFHPRFFPQLT
GSTEKLVNFTRKVIYARRISGAKHNDILQRFIEAVDEETGDGLSEDQLIAESIIQLIAGTDTTAVTLTWTMHLLLENPNC
MQRLYEELKDAIPDPDTEIHYADVKSLPYLDGVLHESLRMRPVSAAGSGRTVPEGGAYIAGHFIPEGTEISTSIITIHGL
ESIFPNADLFKPERWLGANEQVSEMKRSLLTFAMGPRGCVGRNLAWFELRLTLATLVRQFAFDVPSGMKVDMTPAQRFIS
KPKDGKLLVRAAKRAV*

>32185|jgi|CYP6383A2|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MAFESLLSPETALALLAAGILYSTVSNLVLSPLRKVPGPWYCAISGLFYKGLAAKGTHLEWIQGLHEVYGPIVRVAPGVV
NVRDVDAAYTLHSTHKYVKGPSYTILEFTGGPNIFSASDPHIAKTRRKLAMPMFTRTALDEMDEMIMSAGVRPLLRRLDR
HAKAGDTINLYTLFHYMTFDVIGDIVFGRSFNLMEDDNNGDNIIAWLGGMSQLGIYVRKYAFGSLANKWLMPSLHECQRK
ALEFTLEAIHTRQKIKNPRPDSLQRYLTAIKEEKVEHMTEMEIAGDMLMQLVAGSDTTGNSCVWTMYLLSRAPDVYARLV
RELQEAIPDGNAEIRHSMVRDLPYLNAVISESLRIYPTGGRGAHRLVPKGGLELCDQYLPEGTIVMATQYMINRCSKIWD
EPAAFRPERWLSEDSVRLDEMKRAFFPFSMGVRSCVGRDLAWMELRVTLASVIRRFQVEISPDDDMFPICSLTIQPRGHA
LTGRLTRRLE*

>32300|jgi|CYP5941C4|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MTELWLSNFAEIVLTKEFALAAVAVWLVGKLVYSEFFSPLAKLPGLRPAILSDLKVTLGLIRRDAIELQHGLHQKYGPIL
RIGTNVVSVADPKAMRAILVQHRFNKSVNFDAFRFHADNIFSTQDLELHKKLRRLIAPSFSMSAILEIEPIVKAAGTDVL
MARVDKHAESGDTINLMDFLQQMTFDVIGAVSLGQSFGLQNSANTDVIGWMEDIIILGFMKIALGPLFHLRLFPKLCESQ
RNIIEFARTAVRARRESSSKSNDILQRLLDAFDEETGEKLSEDQVIAECIIQLSGGTDTTAVTLVWAMHLLLENPKCMEK
LQAELRQAIPDPDTDISYADVKDLPYLDGVLHETLRLRPVSAAGSERTVSKGGAEIAGYYLPEGTYVISSMVDIHTVDDI

FPEPYAFSPERWDASNHLLADMKQALLTFSMGPRACIGRNLAWLELRLTLAMLLRRFDFVVPDGTVVNMEPELRFSYKPK
DGKLLVRATRRAA*

>32302|jgi|CYP6479B1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MGLSALLTTESVLVLAASYCAYTYISNKVVSPLRKVPGRWYNAVSSIPYNILLMRGEQLEYVDQLHREYGPVVRVTPDII
SVADADVAHEVYRTHKFAKGPIYDGFDLAGGPNLFSMRNLGDGLSEFKLRKRLMAPAFTLSALPNLEPMVERAGTLPLLR
ALDKYAESGETANMMNLFMRATFSVMGEVSFGKSFNLIEQDHPILEWMAGMLELSVLKFAVGPLAIEKLFPHLFQCHKNT
IEFALKAIKERRERKDARPDALQRYLDATDVGPGEVAPLSELDVVGEVLVQMVAGTDTAASTLSWAVHRLLAKPETLERL
QAELDEVIPSPDTHITHDMVANLPYLNAVLSETLRVHPVGAGEPQRCVPEGGFTVGGYFLPAGTILMPGQYPLHHLDKVW
PEPFEFKPERWLVGSEELHEMKRHFFPFSMGVRACVGRHLAWMELRVMLASIVRRYDMARVPGDDMTPKYQLVVRPRGEQ
VSITLQRRTC*

>32602|jgi|CYP5941C2|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MAEATLILPDSLVDIVFTKEFVLAAVIAWILGGVLYHEYISPLSKIPGPRLIVFHEYILLSTVFRQCFDAYVHELHKKYG
PVVRLGATTVSVADPDSMHAFYNTHRFQKSVSYEAFHNPTENIFSTRNIELHKRLRRLIAPVFSMSAVLAIEPLIIDAGT
DKLSERISVHAERGDTFDLMAFLYHMTFDVIGAVSFGQSFGLQTGGDHTIIKWIEDSLAIGILKMGLKGLFRPLFFPQLI
RSMNKLDEFTRKVINARRASGVKHNDILQRLLDTVDEETGHGLSDDQLVAESITQLIAGTDTTAVTLTWTMHLLLENPAC
MQRLYKELQEAIPDPNTKIHYVDVKSLPYLDGVLHESLRMRPVSAAGSGRTVAKGGVYMAGYYIPEGVELSTSIVAVHAL
ESIFPDAGLFKPERWLGNNDQVSEMKRSLLTFAMGPRGCVGRNLAWFELRLTLATLVRQFAFEVPAGAELNMSPAQGFIS
KPKDGKLLVRAIKHTA*

>32679|jgi|CYP6383A4|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MALESLISLETVLLLSATYVLYTFVSNKILSPLRDVPGPWLYSLSSIFYMWRVVRGTHLGWLHDLHEKHGPIVRVTPDTV
NVRDIDAAHAVHLTHKFIKGPMHASFDITGKENLFSARDPKISKARRKLALPMFTRIAVEEMDEMIMSSGIRPLLSRLER
HAEASDTINIMRLFNYMTFDVISDIAFGRSFNLLEDDNDGDNIVKWLNGLCQLCVCKHAFGPLANKWLMPGLYECKRKSI
NVALDAVRARRATNNPRPDSLNRYLAAVKDEKADEMTDLDIAADMVVQMVGGTDTTAVCCTWTVYLLSRTPDVHARLLQE
LCKVVPDINTEITHAMVHDLPYLNAVINESLRIYPVAGADAPRAVPKGGAELCGKYLPEGTVIMGMQYMTNRWSELWDEP
EAFKPERWLIEDEARLEAMKHAFHPFSIGVRACVGRELAWMELRVALASVVRRFAIDVVPGDDMTPAFNLIVAPRGHTLT
CRLEKRAS*

>32873|jgi|CYP6315A2|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MWSLFEFSSAGMEVVLLLAGVYTVYKAVDLLMAPLASIPGPWHTKLTGASRLIALLRGTSGDHAVDLHRTYGPIVRLDPT
AVSVTDAGAVRSVLATHRFRKSEWYRVVQFGGERNVLSERDPVQYKSRKKMIAPAFSNVSMLSLEPIIMEAGVDRMISVI
ETKCVKEEPVDLFKLLMHMTLDVTGAVAFGGSFNMLSADAHPITSWLHGVMMLAVGRYMAGSRFSSLLLPGYARDETELI
QHAVKMINQRRELRHPPTDILQSLIEAVDEDTGEGLSTTQLASEIITLLAMILLFEYPECLQRLLSELDESFPSLKEPVT
HSKVINLPYLNAVLHETLRLRPPVSANLPRTVPPEGAVLCGQFVPGGTDIIISPYAVANDARNYAHPSIFNPDRWLVGSE
LASEMKQAYIPFSMGARACLGQNLAWLELRVTLAAILRRFTFELVPGQDLRPKVRALLEPAGAKLIVVVSKRTS*

>33380|jgi|CYP51211A1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MDIDISSVLAPAAALIVGYIGIEVTRRLSLSPLRTVPGPFLAKLTSAHESYYLITGRSGLYLHELHKKHGSPNSVSIIDP
DSLKKVYSEPGYRKSTLFRMFDNPVPSVFSTCDPDVHRRKRRTMAPSLNTASILRSEDLIWNSGPSALVSKLGQLAKEGS
PVNICKLFHCMTLDVIFDLAFNRQMKLIEKDDHEIFWRIKRGHLYRVFKVCFPIFYRWEPRWLTSWGSDSAKYVDDLCTK
AVQDARKRTPEQQRNDLIGSLIHAVDPDTGVGMGDEELVSETFTVLIGGSDTVSASMTWVVELVESHPLVKQRLLAEIDA
VYPDPTTRPRIADKSRLPYLEAVVLEMWRIMSIVPSGMYRVVPEGGRTLCGHFLPAGTMINPCVYGSHRSAQFWPRAEEF
VPERWLEPGAEANKQKLMQFGLGPRTCFGRSLAQSEIFLTIAAVYRNFEFTLVDGRPQAYHELFLAPKNSILRARVYRRQ
DNGTVDAQTCVTAK*

>36021|jgi|CYP5139B2|[Tremella mesenterica Fries v1.0]Treme1
MKSSDVFRTLSAALSQRELSLADITLYALGTSCVALLGAYLYLWPYRAYTLPFKNLQGPEPDSWFFGSMRRIIKEPPLAP
HQAWLETYGPTYRYRLFFGSWRFFTADPLALSYILNHSDSFPKTGMARREMETILGRGVLIAEGEDHKRQRKVLNPSFSL
TAVRGMLPIFYDSAYELRDKLQGLIEDPNAMASPTPAKEEDKVEGGKKVDVMKYLGQATIDVIGKAGFDYDFQALKAPTN
ELADAYRSLFSTSMTITPMAILQALFPVFKKLPTKRMRVASEAIRTTKRIGMRLLEEKKQAVRKAHSEGLEKGTDIGRDL
LSILVKANMASDLKPEQRMSDSEVLAQITTFMLAGNETSATALSWICYVLSMHQDVQDRLREEVTSVSDDRPSFETLTQL
PYMDKVIREVLRLYPPAPSTVRQAEEATTLPLSKPVKGRDGKMIDHVNLPKGCVIFVPIMCINISTDVWGSDASTFNPDR
YDNLPSSSNQVPGVWGNLLTFLGGTRNCIGYRFALAEIKAILFVLIRSMKFEELPSKPQFEKKAAIVMRSRVIGEEDAGY
QLPLLVKLLSQ*

>38441|jgi|CYP51F1|[Tremella mesenterica Fries v1.0]Treme1
MSLSIASVPWAPQWLLSLPSPLLVLLGIIGFPTLIIFLNVFRQLVLPRDKNLPPVVFHYIPWFGSAAYYGEDPYKFYFEC
REKYGDVFTFVLLGRNITVALGPKGNNLSLGGKTTQVSAEEAYKHVTTPVFGKGVVYDCPNEMLMQQKKFIKNGLSTEAL
ASYPPLINAECEHYFEKELGFSPTSPGPKTIEVFKIMSQLIILSASRTLQGKEVRESLDSKFAEYFHDLDGGFTPLNFMF
PNLPLPSYRKRDKAQKSMSDFYLNIMQKRREGATDVNGSFDMLAALQGCVYRNGVPLTDRDIAHMMIAILMAGQHTSSAT
SSWALLHLAHRPDVADALYEEQKTLFGNPDGSFRPVEYGDEKRMTLMNSIIRETLRIHAPIHSIYRKVISPMPVPASLSA
PSESATYIIPKNYYIVAAPGVSAMDPRIWKDANVWEPFRWSDEKGTAAMALNEYTTGGEKMDYGFGQVSKGTESPYQPFG
AGRHRCVGEAFAYVQLSVIIAYIIRNYSLRLETPDGLFPKTNYRTMIVLPLNGLMSLTKRKQEV*

>40696|jgi|CYP61A1|[Tremella mesenterica Fries v1.0]Treme1
MNVVSHTIVRPTSVDLAGLTTWGLEGLTKTNWKFDTKTTAATILTAIISLLILEQLVYRSKKAQLPGARWTIPIIGKFAD
SLNPTMANYKAQWNSGPLSAVSVFNIFIVIGSSNEMARKILNSPTYAGPCLVQSAKKVLLPENWVFLHGKVHADYRKALN
VLFTKTALSIYLPIQERIYRSHFAQWVSDTSPAKPYMMIMRDLNMDTSLSVFLGPYLTEAQKIELNQKYWDITVALELVN
FPFAWPGTKVYNAIQARKLVMRDLEAASAESKRRMADPNSEPQCLLDAWIKAMIDSRHGDDNVQGEEGEQQRLLSREYSD
HEIAMVVLSFLFASQDAMSSALVYAFQLTADHPEVLEKIREEQYRVRGNDVDASLTLELVDDMVYTRAVIKEVLRLMPPV
IMVPYTTTRPFAITPDYTVPKGAMLIPAFWNSLHDETVYPEPDGFKPERWLPNPDGSAPLADSKPQNYLVWGSGPHKCIG
GQYASMHLAATLGTASVLMDWEHERTKDSDEIQVIAAIFPKDGMKLKFHPRVAPS*

>60431|jgi|CYP5393A1|[Tremella mesenterica Fries v1.0]Treme1
MNSFQQVFDRWQTNKETFSSKNAWLAAEIVLATCMVLWLYRYVQLFQQVRGLYTIHSLIEVLEAPHRTKIPHIPVLIPTR

KYTLQDPWKKYKTAKSDLIAYTQATTPGYAVYSISNPQVVQKVLADVLSFGKPVESMGYKQLNVFGKQLVSTQSGPEHRR
HRSVVKGCFSEEVMRTVWDRSIESLDTMLSTEKVEDGGVLEHVREAMYKLTLLVIGAAGFGLKFPWSIPTTEGGSHQTNW
GNGKGEAYDVVTFHEALHLVEYHLVAELLVPVWILENFPLPSVRRLGNAQRSLRHHFKTMIATRRDALQAEQAGLGPQEK
IKSPSDLLGAIVASQMDIEAEEKARGGKGTSKAGLTSEEQMGNVWIFIFAGHETSGQTLTFTLGHLAMYPEWQEKIFQEI
EEVCQGSHPTYRDMNNLPSVLACVYETLRLRDLISLNQKLALKDTVLPYTTWDDLGQITNHTHTIKKGSHVLVDFAASGQ
NPFFYRDPHRWDPSRWYGEEGNKNRSHLFNFSAGPRACIGRRFAEVEMTAILSTLIKKVKFEPVRQKGETDEQMYDRMTQ
GHEVFLLTPNSFPLKFTKRQGA*

>60432|jgi|CYP5393A2|[Tremella mesenterica Fries v1.0]Treme1
MDMKHLRSIGSEIWAKIGQHDWTKEDAWMTVGIGFGTYIFIWFFRYLKVHYRVRGLKKINSAIEVFEAGHRWNLPHIPFL
LPAKDFTLKEPWKMQKRRRHSSSQEEYEHAKSDLIAYTQATTPGYAVYSTSNPQVAQKISTNVLTFGKPIHVFRYRAINI
FGLQLTSTQSGPEHRRHRNVVKGCFGEEVMMTAWDKAVECLGDMYVAEGLEDGGVLDNVRLAMYKLTLLIIGAAGFGVKF
PWKVPETHGEILPFYEALHLVEVNITAELLVPLWLLENFPLSSVRRLGKAQRSLVHHFKNMIETRRAVLKAEQEGLNPGE
KIKPPSDLLGAIVASQMSVEAEEKLRGGSRQVGLTAEEQVATVWIFILAGHETSGNMLAFTLGYLSVYPEWQEKIFKEIE
EACHGAYPTYREVNNMPSILACVFESLRLRDLAMTLPKLAMEDTSIPYTTWDDHGNTTHHIHPIKKGDHIVIDGPAVGHN
PFFWRDTQTWDPTRWFGGEGVINKNLSISFSAGQRQCIGKRFAEVEMTAVLASIVKKFRFEPIRNKDETDEELKLRMTDG
YEVLTLTPNNFSIRFIKREGV*

>69516|jgi|CYP5215B1|[Tremella mesenterica Fries v1.0]Treme1
MTIPIRIPSLGEVVLLVGTYVGLRFLHYVVWRPLTSPFRQLRAPPGGNGWMGHYPLLVDYYFIQGLDEWVTKLGKTFQIN
GLLWVNPRLVTIDPRAISHIFGNTSLYVKPERLRLLLGRYMANGLIPAEGERHRLQRKVVQRLFSRQGLKDMTEGIQKKV
EQLRDTIADLCSDLTLSPPYTRDDLMMNLPETYRIIDIYDLTLRCFYDVIGQTTLGYDFDCVAEWNGQGGKIYEKYEKMM
QPYNGMYSWDQHLRIILPLLNKIWPSENLRRVNAGMGPLKALAKKRVAERKREMAEGNDSKDQKDLISVMLRANLANPPD
QQLTEDEIIGQLATFQFAGSDTSAGTVAFCLWQLALQPEFQSRLRAECLAYGDKLPFENIDDLPYLNAVMMEALRCNPSI
PGTLRQATQNDIIPLASPIINTDGKPITEVRIRKGQFVSF*

>72868|jgi|CYP5216B2|[Tremella mesenterica Fries v1.0]Treme1
MTSWILLLGIVIIPLIFLRRWLSLRHDLQSAARLGARPIPVVKGKWPLNFDVVLSWTRWSQDEVGRMLFELEKKYGTTFN
TRTLGEDQIISSDPIVLRHVFMTGFDNFVKGPKFHTRTRGYLGDGIFNTDGSTWHSHRTTLRPFFRAERIRPELFEPIID
KFLLSLPTAASLTPDHPVPHKDIITASPPFTMPNEHSASLADSKTTFNGNTTKAFDMQALLGRLTLQIALLWLTGEDISS
NLSDNDNSSVLPRAPEWRQALSELPTALKQAQEIVAFRLKIGWPWRLLELGRSPLRKPMKTVHAFFRPLIDEAYLRQSGT
SLLDALVHQEGMSKEKVQDQLINVLLAARDTTTVLLTCCTYLSLLQPHLQDVLCEEIRQYDKRHSFDHSQDEDSEYKNEH
DTGDNQGSTRHLDYSENHESEMGYSREGYVEEVKMTRTALKELTKCRAFIDETLRLFPPVPINVRRAVNDCVIPTSQGPM
FMKGGTTIILCPLLMQRSSDYWEDPLDFKLDRWARPEETNPSSVQNPASKPTHMQRDVVEKQSKNQRKETDGNVNREKRQ
KEEQSYMPWNVGPRTCLGQNMAIAVSMTFLVKWIRYLHRMKEEGVELVLAESPTALRTGKGGEDDGDGKIPGWWFIHGAG
RLRDGRDKVWMTSNMTLNVKVSSSASPPYFL*

>18232|jgi|CYP5394A1|[Tremella mesenterica Fries v1.0]Treme1
MYPSGLSQIFISIAVTVTGWLFRSFDDFRGPFDPLPIIGHLHKTVRGRQFFFEWVLDGTR
YHKEKDWLLNVMGARTLLIKGPLWRAHRTAANHLFASPKTIAHIVDHVLPRNKHVLTSAL
SHAADQNVVVDAQQVMTTWLNAGFGDLAFGASSGEIHAKFSRAWTAASRPVIRRFITPFW
RMKERFQSYGLQIQKDIATARGACHDLVTRTRQAIKEEEIGIQPPRDDGSGMVIRTLLES
DYTFTEEELEDASLGFMFAGDDTTSHGLAWALYAMLRYPSYLPRLQAEIDSLPLELSSNT
ELSSHLPLLEAFISESLRLHPPTAVILSECTASQPVVMPGGAVIKPGDRIYMLPWIMARC
RSIWGEDAEVFRPERWMEGGKRKSAYEFPVFFAGPRNCPGQQLGRSEMIYTLTVVLREFE
FEAAWPMDPKDEAGKKCMEYGITSGVLGGLPVKIKRRKSGKTA*

>2645|jgi|CYP5091C3|[Trichoderma arundinaceum IBT 40837]Triaru1
MSVITDINPLALKLSTLLARREHLLEAILLVVVLVVAQFQWTRQATSYVFRRIQGLLYLVWGPELIDRAYDKAQGKTFKV
STPSNDHLLITSTDLIRELIDAPLQQLSLHAVAKEILQPKHTMYGFEWQDQRGVEGTGFVRALRSLLTSHLPKFQPDLER
IVKDALETELKDIQPDGFAHANIFPMMKRLVTRVNCFIFFGEELSQNAEFTAAALEFPQAVIFAAEFLRITPGFARPLVA
SIATNRHRAAKTLYRYLVPIVEQRLAARDLQPEEATPTDCMQWLIDTSPRKNPWTPARMVDLCRHPEHIEPLQEEAREFF
HAQDSPRDVDRLLLLDSFIKESVRCSNSDASKLYMTRPNGTEEGIPPYSDALVTCRRKALVSYTFRDGSSINKGDWACVP
QRAMMQDSTRYRDPQTFDGFRFARANAQLRQRKQSADVPDQKESNLTDASPDWPIWGFGNTACPGRFYASLVTKLVLIRL
LDDWECKMLDPEAPRARTWRSSMVPRASTIVMFRKKQI*

>263|jgi|CYP5609B1|[Trichoderma arundinaceum IBT 40837]Triaru1
MHDIYGHGAGLLKDSWYDGGAGEFRHMADARNKTEHQVKRKKLAHVFSQRIIATFEPVILNTTATLLAQIDKHIAEGSPI
NIRRYLNYYTIDLFSELLYGNTLGCLERGNDTVDAQTKDFKIYKVPLIKSLHDATHINTLLGFEARLLPLTKRIFAYHPY
KTAGTNWDNIIYHNTKRRLQDEASNDNNDLFSNLLRNNRGEDLNLPVGEILAECSVMMNAGTDTTTAALTSAIFLLYRHP
RVLAKLRQELDSVTGQASEVPTYECVSSLPYLRACVEESLRIRPASSFGLPRVVPPGGRTIAGQYIPEGVTVSVPTYTLL
RNPDCFEEAETFNPDRWINSDSETREKMNTAHFPFSLGPRACIGRNIAYFEQLLVISALVKLFDFDFVDDEMQGLDIVER
FNSNPGELCLWPRRRIIEMIED*

>274|jgi|CYP605A3|[Trichoderma arundinaceum IBT 40837]Triaru1
MLEDAAIKYPSRPFRINAFGTYYVVFPSKQFDEIKRLPEWQASSLEYLREAFHATWSGIPRHSDEMMKAVSVDLARAIPS
LVHERQQDCASSCETAIGRCPEWKEITVYSTSQKIVVSTNSSAFVGRDLGTSSKWISHVDRLPMAVAIPSIIVSLLPRFL
RPLIKPLLFAPAIYTRYMLGRLLGPVIKEDIEEYKASMIDKRVLVDPQEKGKVALTSWLLRRYPSTLKNVSDKLMEDYIN
ISFESTTSTAGTLFFLLTELAADPILMDTLREEIKAVAPGGILPLTHLNELRKMDSVMRESTRVNPFSHIILWRRVMKPL
KLSIGPELPPGTNICVDAHHINFSPDLWERPEEFDGLRHYRARQKPGNEQRFKFANLGSDAPGWGDGSQACPGRLFADNT
LKIILTHILMNYDFKFRPGETKPKKGSMPNGSMYPDMGAKLLFRERKH*

>329|jgi|CYP65DF2|[Trichoderma arundinaceum IBT 40837]Triaru1
MESFFMRFIENYDVSTTTGMLLASGTFFIIVLSYYLGKIIHQVYFHPLSRIPGPKLAAATRLVYARNHLKGDLVRWLFTL

HEKYGDVVRIAPDEVSFICDVWQDIYGFHTGEKAAKGKYLKDRRWFAEPYNETWSILQADADAHSRMRRVIAPAFSDKAL
REQDSLIQGYVGLFIQRLHEQGETEAKGKVDIVRWYNYFTFDIIADMTFGEPFYCLRDSDYHPWVEMVFTSVRAITLNSV
IRRYPLLQSIAKRFAPKNLLEMRRNFNMFVFDRVTKRLAMETAKPDLMTQIVNHPKEQLTKDEIDSNANITLVAGSETTA
SLLSGCTYLLLKNPDKLRKLTDEIRGTFNNSSEVTVAAVNELPYLNAVLTEALRIYPPNASGFMRIVPGSGDFLAGYWIP
GGTAVSISQWPANHSSRNFLEPETFAPERFLGDARFDNDNKNILNPFSFGPRNCLGKALLLDFDLELVDPTQNWFDQKIF
TLWEKLPLMVKLNPVRSFDG*

>333|jgi|CYP548W6|[Trichoderma arundinaceum IBT 40837]Triaru1
MELTRVGAIALSPLIAVTITVGHFIPNEDYLSDHVRYAPNRLIFNTGPALRDIHGHGAKVVKFKNYEILSRQAANLLTIR
DKALHAKRRRVLSQAFSENNLRLFEPKILERVNRFLNLLRSGQNSVPFKQDGWSEPIDMAHAFNNLAFDVMTAVSFDTDF
DTLHNPEYRYAMKAIEDSNVRLGVLLQAPELSIGNIDNKLFPESLIGRKKFVKFIRMILGKRLSATKTSSKDIFSFLQQC
KDPETGKELTTAELSTETATFIVAGADTSSTSMAAVSHYLTGSSSSYRRAAEEVRRVFSSSEEICMGAKLNSCAYLRACI
DESLRLSPPGGSPLWREVETGGAIIDGNFIPENCEVGVGIYSIHHSSVYYPDPFSYEPERWYRPEASKLMREESSRLPYM
PFSVGPRSCIGKPLAIAQIMIVFARLLWDFDFRRADSELGWEEHDMKPTEYALKDHLTAWKEGPVLRFKPRN*

>558|jgi|CYP540B34|[Trichoderma arundinaceum IBT 40837]Triaru1
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PGPKGLPYLGNFFEIYPDHLGNHQRLFEHYGPIIKTNNMGRVTYQTNDPNIAAIAFAESDFFTKKINEGHPLYALKTPAA
GVFLGDTDTEEWKVAHKFLPPALGPKAVRHYAPTMQKTVEDASKVFDALDEQGEAWNVYQYMLKLGSQAVGKLTLGLDFN
HFSSPDAPVHEMVHLIAEVLSLNKKVTSKGDWYSNLPFGDPKRLRDVKSRVEEMVEESIQRAARGGVEDLPLQDAALKAT
NMVDYAIRATDNKGEKLPKSSLVWALVVATGAGFTTTSSLLSWLIYGLVTYPGMQERLLQELVDSDFNEDTQITSDYTDR
LLFQDKYIKETQRKHNPSFQPGRTAKTDLILPGGYKIPKDAVMIPALHHIHNNPEIWSDPAKFDPDRWDTEAVKNRPKGS
YIPFAAGPRMCIGFNFALQEIKVFLPKLIYRYKFTREGDATVEYDPMFQLIRPNNLYVRAERRVKWRLKSESTTF*

>593|jgi|CYP548BK1|[Trichoderma arundinaceum IBT 40837]Triaru1
MDISASIQWDIVIVLSILVSAIWTLSVCVYRLTLHPLAKYPGPTLAKLTNFYAAYHAFRGDLHLDMWKVHQRYGKFVRYG
PNRILVNSERGLHDIYGYRKNIQKSKGYLPILPAPGAWSVHTAIDKGMHGHKRRVISQGLSDECIKAFETTYLVHLRRFM
NKILGENTVVDTEGWTEAINMTPICNHFTFDVMGEFGFGKAFDMLEKPDNHFIIHAIAASNMRTSIYCQFLALSNLKLEK
ILYPRGSAMRKKFLDLTREFAEQRVSGGKESKNDLFRFVVDAKDPETGQGFSMSELWAESKFLIVAGSDTSSTVLATLFF
YLTRYHEVEQKLFQELRTTFSSLEEIRLGTKLLSCTYLRACVDEAMRMNPPAGGAMWREVDSNGAFIDGDFVGPGFDVGT
SMYAIHHNEEYYPDSYIYKPERWIESDTNPTKAVQVARNCLNPFSLGPRGCIGRSLALMEIRVALARVVWAFEMKKPEGS
LSRVGEGIPGAKNGRHRVNEFQLIDHLTSDKDGPFIQFRRRRI*

>948|jgi|CYP680E1|[Trichoderma arundinaceum IBT 40837]Triaru1
MITPFFSRKSVLEVEDMVWDKAHKLCDIMESELKNCTPEKPLDAYKAVRAVAIDVITEYAYARCWNMLDVEGFGNWYPEA
IRSVQTMFPWLQAFPTLNPIFALIPESFKIFIFPAYKRWNDSLKAVRVAVKEVRRELAASIRPPRRTIIHDLIDPPAEVF
SGSKQGEPLSDAAVFADAVNVTGAGTETTGATKERAMFEVMSNPAVYKALTKELRDTFPDPKDMRLPALEKLPYLTGTIK
EALSITPLTRVLLVRLNPGVPGRLPRVVPPDGATFNGFDLAPGTVVSMSAWDMHNYPEVFPNPEVFDPTRWMGPADEVHL
RERYLVAFSRGSRGCVGQNLAMCELYCTLAAVFHRFDDLQVSADFTHADMEMTELVLGYHPRKNRFRILKKSAAGSQS*

>954|jgi|CYP5044A5|[Trichoderma arundinaceum IBT 40837]Triaru1
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IPIVYSTNPTWPKGPSYYSAAPVSKNRAVPTIISMSEAQHTAVRKSVGRAFTTNSLLDYENSIEATAEELIEVLKKHKTT
DVGQWLQFFAMDMLIRIAFSDSIGLLDKGQDIDGILSAVMARFDHWGQWGAVPTADYIVNKSRLATALRRFSDSPLARVS
QSMLEARKRDANKQVYKDLCSKFLEGQAKYPQLVKQDEILGIIMSTIGAGADTTAGTLTYTLYFLSKYPAARERLLQEIQ
DSLKAGTLSSTPKWVEVNRMPYLDAVLRESMRILPVVSWGLDRVVPSAGVTIAGEFIPGGTIVGCQIDAIHQDEGVFGRD
ASEFRPERWLEASEEQRRQMDRAFLSFSAGKRTCTGVHIAWLEMKKTLPLMLMNFELDLVDPDQDIREGIRISAVKYPPP
VMMKVTPRSIIG*

>965|jgi|CYP552J1|[Trichoderma arundinaceum IBT 40837]Triaru1
MIERIGSVSLWEGALYAALLYGVYIVGMSMYRLTLHPLASFPGPKLAAVSYLYEIWYDMILGGRYTSQIGKLHKIYGPVV
RINPDELHCNDPKFLDTLYPSGVKNREKVMHWINAFPSNLHEAMTFTRDHQLHRKRRATLIKFFSRSRILKLQDTIQVRV
HKLCDKLLASRGQGELGAVKVYSTFATDIISDYLYGWSFNFLDKAGWDANYLASMEMLESMAFINRHIPFVRDLQPHIPP
WAVRPFSSDMSKAMQDMMVNIPNEIDRIKGLDNKDLEKQRETVFSSMLQSDLPASEKSTERLAADAAVLLNAGTDTTARA
LSVLTFYLLDQPMICDKVRTELKTVVEDPTQLPPWEALEKLPYLSSVILEGIRLSHGVTGRMPRIAPDEDMVYKGVWNSS
DVTYVIPRGWAIGTSSPLIHTHESIFPQPLEFIPERWLDEKKQRRRDLESYIMSFGKGSRICLGMQLAHCQLYIAVSALV
LRVMPHMELYKTTKEDAEYDHDGILARPRPGSKGGATYSDSPFGGLAFTVNQVT*

>978|jgi|CYP548A14|[Trichoderma arundinaceum IBT 40837]Triaru1
MQSLSVQHAAAWLGLLLGGGVFYLFAFVVYRIFFHPLAKYPGPLIAKLTDGYQLYHAWKGDRHLQFWRLHQKYGKVVRYG
PNSLSFSTNQSLKDIYGFKSNVRKAEFYDSFAHPVANTHNTRDKEIHARKRRVLSHAFAEGAMKEMQRYILNNVRTFCEQ
IGLQDGTTDSKGWTQPRNMAHWCNYLAMDILGDLSYGKAFHMLESPDNRFALDLVEAATTRHLLCGTMPIVNSLKLDKIM
FPKLAAGRARYMAYSKAQLTERTKLGEETDRRDFFYYLLKARDPETGQGFSTPELWGESNLLIIAGSDTTSTAMASTLFY
LTRNSHALKKVTDEIRGKFNDVEEIVQGPTLASCTYLRACIDEAMRMSPSVGGILPREVLSGGITIDGEVIPEGIVVGTP
HYNLHHNEEYYPQPFTYAPERWINGAVNPATKRNTTVEDVATAQSAFCPFSVGPRGCIGKGLAYVEMTLTLARAIYLYDM
RRAVGVADPSEGRSDLEWGRHRPEEFQLADIFTSAKKGPVVEFRLAGKA*

>1084|jgi|CYP561P1|[Trichoderma arundinaceum IBT 40837]Triaru1
MSLYSYSKDHGSTSESPYGLTPYQLLAYWLCVSINRIWFHPLSKFPGPRLYSILSFPHLYYNYVKGTWVRNMPQLHQEYG
PIVRIGPNHLSLDGSVAWPQVFAHRGGGKAEFEKLPDFFYPDHGLSIISAPREVHRRMRRQMGHAFSDAALIEQESIITS
YVDLLMKRLNERVEESQTFNIIDLFNFTTFDIIGDLVFADPFHSLKNNDYHPWVLSIFNGVRGNAFNRFCRAYPPLRFFT
ERFTLRDFGTSLETRQLARSKAMARMELGAEPRDGRRDFMTYMMRKTRDGEQGMSDTEILANSPTLVVAGSETTATALSG
LFFFLSTNPEAYNALMAEIRSSFANQEDITMRSTATLEYLHACIEETLRMYPPVAEVPPRVSPGDFIDGKFVPAGTRISV
YQWVTFRSPANFTDPDCFRPERWLGPTHPRHDAKFVNDNKSAFKPFSHGSRDCIGKNLAYAEMRLIISRILYQFDYAIAQ
GQSNWQREQRAFMIWDKGPLRVNLMLRKNHQSLSSYI*

>1420|jgi|CYP5391A1_Trichoderma|[Trichoderma arundinaceum IBT 40837]Triaru1

MVELFDIWESMLHYFLPGSLIVDYLPFLERLPERLQPWIQAANTIRGRETVVHNAFLRTLKKQLEAGTQPYCFGVDVLKL
QEKSGFDDELTLDILKGIIVVGSETTSSMMQSIFKVLAMNSEAQKNAQEELDQIVGSSRLPTWEDAPNLPYVRALIKELH
RWSPLFAMGVPHASTQEIDYRGHTIPRGTIVMPNVHALVRDPERYDDPDNFRPERFLGDDLDAFTSAKQSDFHKRDHINY
GWGRRLCQGIHVAENSLYMQVSRLLWAFDIRPQPGEPPLDLSDKDANFQTDIDGFIKKPKPFHVLITPRSNAAVQVLLHN
AEEAKTDLPDADTVELSI*

>1468|jgi|CYP526AD1|[Trichoderma arundinaceum IBT 40837]Triaru1
MIILILVVLSVIYLTYRSLYPKPIPGIPHNVAAARSWLGDIPNMIREIASTPDLDFQEWCALQTEKLKSPLCQVFLSPFS
KPLLLLADFDEARDLALRRTDDFDRGDFVSDSFGAFGNFHARMDTGPQFKANRRWLQDLMTPSFLNGFVAPSTYALVQQL
VELWRNKARLAGDKPFSADADLDRVNFDIMMRLFFGEHFGSSSIDSQMRLLSGGKAPNTGLHGEAAFPEAPIHQVFYALH
DAGRTVTQIMTSLWPKLTLRWIPWTAGYRRIQSAKKLLVREQVPKAIERVRSGEKSAGIDYILSREQAAAKQEDRKPEFD
NEMIINEFFGIAYAGMDTTEANISWALKFMTNNSNVQDNLRRALHSAYPSAVKENRLPTIEEFLRTSSVPYLDALLEETL
RLHPVLSARDAARDTEILGHHIPKGSTVLLLPNGPSFLSPPFSIDESLRSPTTRVVKPSSRWNETDIRSFNPERWLVRNP
QGDIEFDATAGPQSAFGHGPRACWGRREAYLRMKIALTLLVWNFDFLEVSESLGSMSALPVFVHKPKQVFVRLRPRV*

>1519|jgi|CYP5818A1|[Trichoderma arundinaceum IBT 40837]Triaru1
MSGSPENILEQGHNYKDLELNLTFWRRVSVLGHLPILRVLLELFPFLRQYNFWILRLPTENSSNTVGFPVHIGSSLFRQL
LHRIDSIESPSFENGQDLIEQLMAIHTKKPEFSLDYARGIAGSAMAAGHDTTSSSLVSILCRICTNPDLQRRVEQECRDE
GVITAFEDRPSTITSACVKEAMRLHHVTNFSLSRVSPRNGLHLHGYLFPEGTVLGCNPTTFARNVNLFGPDAREFKPDRW
LGNDEDHIKTMERYSLLFGGQSRSCPGQNLARLILGLVVPRLFRTFDIQVKVPEGGFDNYPPQFWTMLKGSGIKFTPRHN
QH*
>1717|jgi|CYP5076G1|[Trichoderma arundinaceum IBT 40837]Triaru1
MPVPYLVAAASLSGVATHLLYFKRGEHHLDGHRYVLAAIASFLVLAVLGRSPVFLDTTGTDWESAISLSTKLHGCFFLGL
YSSLITYRLFFHPLNKFPGPVGARISTFWFSYHIRSLDAWRKIAALHDQYGPYVRVGPTELSIRDPKAVMVLHGPASKCE
KGPNYDLTKPMTSLHMFRDKSLHSVRRRVWSQAFSDRALRGYEQRMQEYRDMLFDRIVASNGQPIDMAKWFRFYSFDIMG
DLAFGKSFNMLGTSRNHWAIDLLDAGVWPLALQLPIWLLRLGMCIPFLASDWWKFVGFCRDRLLARMKCEPDVPDIMSTL
LGPLGGREPSKEETDLLIGDAQLIIGAGSHTTAASMASVLYELAKHPQHFEKLRQELVPFVHGSQVEAAQDDLARLEHLN
AVIYETLRLHPPVPTTIYRLTPQEGVMIDDIHIPGGMGVMCPQYSIGRSEAVYSKANSFAPERWYQFPDMIKDKEAFAPF
STGPYGCIGKRLALMDICQTISRLVWTFDIAFAPGEDGASFERDAIDAFMMTFGELKLSLKLREVPLVSVQL*

>1790|jgi|CYP65BQ7|[Trichoderma arundinaceum IBT 40837]Triaru1
MISRLTKETQGLLYVTYIVVYNLFFHPLRKFPGPKLWAIHYGFYARLELSGQGHRRMLQMHQKYGPVIRVSPNHLTFCHP
DALNDLSGHRKPGQLENGKEEARSLSAPHSIIGASRQDHTRLRKSMANGFSQQAMLDQQPLILTYVEKLFEKLKEASSRG
ESIDAVAWYNYTTFDIIGDLAFGEPFGCLRESTYHPWVDLIFKSLKAIAFDSAFRRMGILYNILLMLTPKSTMSKFQEHK
ELSEEKVRKRLSMKTDRKDFMASMVARKGKDELSFQELSVNAGILIIAGSETTATALSAATYYLGLNPEPLRKLCDEVRS
AFTTEEEIDLISVGRLNYMLAVLNEAMRLHAPVPAPTPRTINEHGDTLGGYFVPPGTDIDIWYWTMFHHPDYWVQAEDFI
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>1819|jgi|CYP61A6|[Trichoderma arundinaceum IBT 40837]Triaru1
MATIVQGSMPVSVESITNATQHGVSEQTDGLLSMYRFASSWQIAVTAFLMLIAYDQLLYIKQKGSIVGPMFKIPLMGPFL
QAIYPKFDAYLAQWASGPLSCVSVFHNGTEPNLFIVQEKVYSEYFNRFVEASKANGGKPTRFMGLFREINCALSCRTFFG
DYISQEAVKRIADDFYLITDALDLVNVPLSIYIPFTKCWRGKRTADTVLAEFTKCAAACKANMALGAQPTCIVDQWVLHM
FESKKYNDDIAAGIVGVEKPTNLIREFSDEEIAQTLFTFLFASQDASSSATTWLFQILAQRPDVLDRLREENLAARGGDR
FRPFDLDMLESLPYTNAVIKELLRYRPPVIFVPYLATKSFPVTPDYTVPKNALIIPSCYPALHDPVAYPNPDVFDPERWI
TGDAESKTKNWLVFGAGAHDCLARKYVPLTMAAMIGKAALEIDWVHHATSRSEEIRVFATLFPMIV*

>2064|jgi|CYP504A23|[Trichoderma arundinaceum IBT 40837]Triaru1
MIPNFVYRTRHEWFAKVGESFLLVSPGRLVLLTDNAETIRTITLKREQFPKWTAVYSILRQFGENVLTTEGSIWRMHRKV
TSASFNERNAALVFREAIAQTQGMLRMWTGPSGGTRKEPLVTLQQDTMKLALNIISYVGFSIRLLWPGETHDATTDPKLV
KYGSHVPSDGHKLSFTDTMEILLEYLLLLLIVPRWILRLFPFEKIKKAVLSYDEYVSYMNELLDEKIEDARKGEHSEGMD
LMGQLAKSCFGTDNKDATLTREEIIGNAFIMFVAGHETTANAIHFTLIFLATNPEAQRRIQKDVDDILGGQDPKDWDYDS
LVNPMTASMMGAAMYETLRLVPAVTEIPKTVVSDESFLMDGTKYILPKNTGISLVTVSAHANPRYWPTRPSKITPGKSNI
LDYAPERWFQTMDKERSQGNEDVAGADSEDFGGFQGPDTSAQLFKPERGAYIPFSDGARSCLGRRIAVVEIIAALAVIFR
SYSIELAVDEWASPDQVDQMSQGEKARIYKKAQDKSRWTVGQATTRLTLNLHGGEHVPVRIVKRGEEKFVNWVDKDSILD
GTLGPGPGSRYYKQQHRARLGKQQAGRLLRALAAAHSSRHQKANPLVGDGFRISGAIAPFVSGHVDRLDSPARSSHVRRP
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>2227|jgi|CYP5333B1|[Trichoderma arundinaceum IBT 40837]Triaru1
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VNMRSRFPEGIFSLKLAGKMHHFVYKPSLVAALLNLQRPAVEEQMLANRLLESTFGLNKKDQAIYNKIFPEALAQYKHLG
SEPGLSEVTNVALSQVKQNIINLVTFSPNPMDQTEWEKMADVDVIEGGTKGGPFTEVDLMELTRNFVATTVIPSIYGTDF
VENFPELWKWMWIYNESFVLLATGVPAWVPWPRLQRGKLARRRILTYLYEFNEAVEKHMNGEEIDPKWQNLDNVSKLVKG
RIELYRQHGVSLEGRAALDLALLWASVANSNSLIPWMLFELYRDPVLLEQVREEIAPYVKAVQPENEFGSAVWVPPVLED
VDVAGLITKCPLLKASYVETLRVYSGGWAMKLMYHDTVLEGKGKGGESYFLKKGTYAHVPQELHQFDPQYFPNPTEWQAE
RHIRETVDESGKKILSADLGTLRPYGGGLKMCKGRQFALREMLLYTAAIITFYDMQPPKGSSWSVPQTRQLVANKHPKKP
FKVWIKRRELPAQGGDNENI*

>2321|jgi|CYP655A7|[Trichoderma arundinaceum IBT 40837]Triaru1
MDLIQWFARLLIVTISVFIVRFLIERADYDTKRKARGCGEIPKYPHWDPFFGLDVVLGMAKSLKNHYFLDWLNWVHKNKP
KTFLVNFVGTRFIWTIESENMKSMSAFTWKDFGVGPMRRNNKATHPFADVGVNTVDGKDWEHARFLIKPFFMREKYTDTK
RLEKHVDRLFTHFPEEDGEVFDMQPLIQRWFLDVVTHLLFGESLDSLIHAERANICWAMVDVLRGLRLRLQWYKYLFLFK
HQAWLDAVSVVHKYVNGHIDRTYAEMKEVDDLKSRGVQAEVERTDLLWYMATHLKDKEELRSQMCLIFVPNNDTTSIFIS
HILWNLARHPDVYAKCREEVISHGKSELTFEALRNMKYLNNILNETHRLYPNGVTQVRKCIKDTVLPVGGGPDGKEPIYV
REGDVVQVNKNVLHRDPDIWGLDYADFNPDRWTDLRPMWNFVPFGGGPRRCPAQMLVTSEASYVIARIMQKYKRIESRDP
SPKKIVRDCAS*

>2329|jgi|CYP5049B1|[Trichoderma arundinaceum IBT 40837]Triaru1

MSEEFLAPILGPNVIATANGAIWKRLHNAMAPAFSWSNIRNLTTVLVDEISLFRDGLDKYAKTGEVFSAEELSAKLIFDV
IGRVVFNFRLHAQTTPSPYLRDLREMLELAHGQTDLIASYNPIARVTTWWRRRKVLGRLHALILGKFIIMLLSKAPNARD
KLRQEHNDVFGKDLNDTIKSLLNAPERLQDLPYTEAVIKETLRLFPVGFGIREAPAGSQVTFQEKTFAIDGHQAIALNAH
DVHYNTEFFPDTCIFLPERWLDTNGGVPRSHFRSFGRGKRACLGQPLAMNELKVIMVMLMRDYEFECAGLKPNSKPRVSH
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>2346|jgi|CYP526M3|[Trichoderma arundinaceum IBT 40837]Triaru1
MWALKASQAAGRPFSAYEDIHYVALDIILAAAFGIQLEDSTTQKQYEFLQLQPFLTGSSNSKNDPVSYDRIPVSKSRAAL
IKVTGTVVVGYKSPFPRLHHWILRHTIWREAFALKEEFITHEIQNSVERLTSENKQGKRMRCAMDMMLQREIGYARKEGR
KPDINAPRMRDELFGYVATGHDTSSTTLSWIMKLLTDNSSSQAKLRRQLHTAYPEANAEKRQPTVMEIIEKPAPFLDAFL
EECLRLAKTIPTILREALVDVNILGHSVPKGTGIIIYSHGPGGQLEPGFDILETARSNTSQDSKDRVGEWNPDDISYFQP
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PKQCYVRLRQLL*

>2646|jgi|CYP5090A2|[Trichoderma arundinaceum IBT 40837]Triaru1
MLLNTLGSQVRLAFDALPEGAQDNIGLAIGAIALTSVWLFWRLWRFTVLPWMYPDDPEELPYWIPSHGQAFFNNSNALLS
RARAYFGNTNDPFAVTLAGSKIYVITKSKDVAEAYRNTDTLSFNEFVQAMMRACGNTEFCVQAMYTPLPTDKDGFANPHG
KPLATLARQMHIHQLYPGDRLDFLENSFLEWFDVRMNLEQLHKVCPYAIRSTDVDIVLPLMEWCSDFFTRAGQRAYFGDA
LGNLDPTLTKTFIIFDELSWQVLYQYPDFLASEMKGARDTIQRALKKYIQLPQSQRTGDAWFTKAMENEMRALNITEDDI
ATMLVTIYWGINTNTRKAAFWLLSYILHAPSLIQVIRDETKAAFSEDGKIDLEYLHHSCPQLNAMWNETIRMSAYSASVR
FITEDTVIGGKLLRKGNRLMIPYRQLHFDQGIFGKTAESFDHERFLKNVNLTQSNNWRPFGGGNTMCPGRYVAKRSVLLF
IAMLLQRFDIEMDGYQPIPAAEEGKPVLGIMSIKENEDLRVRLTSRKVKA*

>2797|jgi|CYP619N1|[Trichoderma arundinaceum IBT 40837]Triaru1
MFMSADERWKLRRKLYFQMLQETKCNEDHMRLVEAETAQLIHDIAIQPESIMFHPGRMSNSITMSMVYGIRTPRYDTPHY
VKLQAIMTELSSIGEIGATPPVDLLSILKYLPGKLWGNWKTRAVNLRQAIINLHSPLVDEVLQRREKIGKSDTFLDGVFD
RQDKLQLTRNEIDIMCGNLLEGGTDTIATTLLSLCQIMATYPDLVAEAQSEIDSVLDEYTLPSWEHYKKLPMVSMIVKEI
IRWRPPAPSAFPHALASDDEIDGMKIPKGSTVVLNIWGMHHDPARYPNPENFDPFRFKNQTEPASVYTNSGHDKRDHFGY
GAGRRICPGIHLAERALFLGAARILWAFTIKHKVDGNGKQVPIDLEPATAYRDGFLNQCRPFEVDIKVRSEKRGEAIVAA
AKKAEVEIFSAYS*

>2861|jgi|CYP61A1|[Trichoderma arundinaceum IBT 40837]Triaru1
MDAFNATRASSVFTSVLANSKYVGANIPPQLDYVIETISNAGVWTWLFTILALCVVYDQSSIVGPAWKEPFIGPFLQSVN
PKFEEYYAKWKSGPLSCVSVFHKFVVIASTRDMARKVLNSPAYVKPCVVDAAYKLLGEDNWVFLDGKPHVDFRKGLNGLF
TRKALESYLPGQEEVYKTYFKRFLDITKENGGKPVPFMPEFRELMCAVSCRTFVGHYISDEAVKKIADDYYLITAALELV
NFPIILPFTKTWYGKKAADMVLAEFAKCAAKSKVRMAAGGDVTCIMDAWILQMVQSERWREAEEKGLSTEGMVKPAPMLR
MFRDYEISQTVFTFLFASQDATSSAATWLFQIAAQRPDVLDRVREENIKVRNGDPNAELNMDQLESLTYTRAVVRELLRY
RPPVLMVPYKVKKPFPITDTYTVPKGSMLIPTTYMALHDPDVYENPDYFDPERYYSGDAEVKGAKNYLVFGTGAHYCLGQ
VYAQLNLALMLGKASVQMDWTHHATPLSEEIKVFATIFPKDDCPLTFEARK*

>3105|jgi|CYP5392A1|[Trichoderma arundinaceum IBT 40837]Triaru1
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PDIFTGHQVILPSEHLPWLMKQPASVLSQRESNNEFLAAKHTFLNCVAANDSEWTFVVNLIKDITKELNNKTSDVIEEIQ
AALEDLWGNDTSDWKQVDLLDACLELMSRIVSRMYVGLPLCRDPTYLASSTHFAKFILVEALLAQLTPRPLRPLLGPLLA
QYDWIQFKRMDRCVNPIIRERAKRFGQMADEKQDPDQPSDLLSRLMQEAYRRNDDPCRSQSHSTKLLAILNWAAIQVQGI
TIENALIDIAHAPQSAEIQNQLRAEAAAADSAESSVRWTRAEVAKLPRMDSVLTESFRLWGFAHGIIKVVVAKDGVDLPT
GEHIPYGAKVGIGSYGLHHDEEVYPGESPFTFDPFRFLDEKVEAQTTGLKFASTSDTYLAFSHGRYACAGRFFANHLLKL
LLSQIVLRYDIKPDSNPRPQNPWFSYVSPPPIGYKLSLRRRKE*

>3106|jgi|CYP587E4|[Trichoderma arundinaceum IBT 40837]Triaru1
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QAWTRGRNNEALRKALLGRVEAIIKSPHLADAISKKKTILNIALSRTLAENGGKTPDQQSVDAILANLKLFLFAGHDTTS
STICWMFKLLQDNRDCLSKLRTELDSVLGKDPHQAASLLRDSPQLLNSLAYTNGVIKETLRFYPLASTVRQGEKDFFLSI
PGSDLRYPTEGTAIHDVPSVIQLDEAVWPRAHEFLPERWITSEGHPMHPNKDAWRPFSMGPRNCIGQELAMVEIKLVAAL
VCREFDIQESWEKWDLKQGSLGPKETVGGERLYGCGQTVQHPKDGMPVHVRRRLP*

>3189|jgi|CYP5387A1|[Trichoderma arundinaceum IBT 40837]Triaru1
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DTFSKKLKPWAYWGQHDDFIVVLPPGTCDELKNADPGQMSFLQAVEDSYHFRLHTNILGRSHIDAVRQSVNKNMHQEPFA
GFLQVWHLVHIIAASFLIGPHFSRNPEYMAYIEDYCLNVPHFVHLYFWVPSPLRRLFWYLSPAGIRVRKVIRKLKTFIVP
EIRHTISNWRITGRTPDKYTLLGAMLDVKEERGLIKRDATAMSRAEEERQIGVFSDEVVFTAFDSAGPVGCLVTQLLFES
IRDQNLTEALRAEISAALADNGGEWSVQAVSSLPRLESFTRETLRVNGPTLFSVTRSVLKPYQLKSGLGLRPGSIISSPS
WMIHNDEDNYPQAKRFNPYRFYDEATNTATIKATTASNIFLAYGYGSQMCPGRYLGVRMSQIIFAKMLMRYDAAFEGEER
KKPENIVMPGQVLPSYYTRIVLRPRDQE*

>3193|jgi|CYP5412E1|[Trichoderma arundinaceum IBT 40837]Triaru1
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HYAFKALASDLITFYSFDQCMNILDEPDFGKANFDATDDFFFLTHLGKVFPWLMGLFTTAPNWIIRILFPNMYEMRARRN
WWSDAVQDIKNSPDPQRIKRTIFEGILSSKLPDSDKTDARMAGEAQLVVFAGEGTTAWTMNAALYQILADPIVCKKLRTE
LTTLTSTTDGIPSLTEAETLPYLSAVIQETIRIHPGVMSRQIRVSPDVPIVYTNKATGKVLSVPPGTVYSMSPLDIHMNA
KYFEDPYEFRPERWIENPGLSKYFIGFGRGSRNCLGMALARRELAITLATIFLKYDLYNGQDGPTMELYNTLRERDIDAH
SEFIAPFPAPGSKGLQVKFRN*

>3194|jgi|CYP526AC1|[Trichoderma arundinaceum IBT 40837]Triaru1
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MVEHIKATDGTFVTYLRSVMDRLNSPVVQVFMFPFGKPLVLLGDFAEAQDMLIRREQEFERSATLGDLLIGILPSHHVHL
PTNQQWKAQRLLVRDLMTPSFLHNVAGPVLYNTASDLIELWRAKARIADGRPFDAHEDIYHFALDAMSGFTFGHGFDYST

VKPTSDAIHALDAAAQKALKSGAKERPISFPHGKLPDVMWAFIELTELVAYLLGNPFPHLTWAYVLRKPASRKAYKIKEK
YIRGELKSAVKRVSESNGEKPTSAVDYIISREKSLSEKAGRKPDYFSRVIVDEVFGIVYTGHETTSTMLSWAVKFLADNP
KAQSTLREALYSQFADARAAGRPPTVEEITSKQVPWLEATIEESLRCSATAPTIDRMALVDTQILGYRIPKGTVVSQPCS
GPSITAPAFEIDEALRSPTSLVARRQGVVPPNWNREGISLWNPERWLVKHADGQLEFNPKAGPQVAFGLGTRGCYGKRLT
YVESRILLTLLVWNFELLQCAPEISRYTAKMTTANAPRDCFIHLRELGNTS*

>3200|jgi|CYP5039D1|[Trichoderma arundinaceum IBT 40837]Triaru1
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YGPIVRVNPHEVQVFDPEFIDILYTSNSQRRNKYKWTGRSILLPESLVATEPHDLHRKRRAALSPFFSKTSIRRLEEPIQ
ETLAAILGRMKTASKSVEMMPMSLIYKAATSDIITKYAFGNSTEYVNREDYNVGFFEAVDANFGMAWPMTYIAWLGPLMN
SIPPSIMGIVYPGLKSLWQMHHQWTKQIKEINASKSHHDGQHSTIFHGIMSSNLPPSEKEPARLRQEAQLVILAGQDTTA
YTLSAITYELLANPDKLAKLKEELVTALPDPDTVPTLAVVEKLPYLNAVIQEGLRVHPGALVRMTRVAPDNELIYQDKAS
GKKWIIPKNTPITMTALSVQMNETIFPNPRKFEPERWLENPRLDRYMLTFSKGSRICLGFHLAYSELYIILAGLFRKYDL
YDGTGRQKTPTLDLYDTLRERDIDAHKKLPST*

>3205|jgi|CYP5336B6|[Trichoderma arundinaceum IBT 40837]Triaru1
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PIIRISPYELHVDDPTFFEQLYRHDGRWDKYAWATNGFGAPGATIYTSDHYLHKARRSVVNPFFSKAKVAKRQDDLRRHI
VKLCNRLSGFAKSKEIVNLGAAITALTRDIINDFIFYKAYNCLDHEDFDVITTNAGQNFGFMWRVGKHIPWFTPLLKSIP
HSLIMKFTDESMHKFFDNLYETMNDIKELMTSADSSNPDPNAPRTIINAILESKLSPADKEFDRVFEEVSMMAGAGFETT
AGALRLILFHVYSNPEILKKLRAELLAAGLSLPDNLELKSLEQLPYITAVIMEGMRLFPAVATRMAHVAPDRDIFYNEWR
IPEGTPVGMTLILMHTDERMFQDPQTFQPERWTDPENRKRVEKAYAPFSKGTRICLGMHVAWADIYLVLAALVLKFDFDY
QGATAADFEVASDEFAIGTRGKGVLNAIVTSVDG*

>3507|jgi|CYP621C3|[Trichoderma arundinaceum IBT 40837]Triaru1
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VLGQSVIVLNSVRAAIDLLDKRGANYCDRPRFVLFEVMGWHKTLTFLRWGPSFRMHRRILQRSFQKSNIGQYRPLQEREA
VVMLRGILDRPAAWETILRRFSTAIALGIGFGIKIKTDTDPFVQVAADASYALGHGGAPAGTPVDFFPLFKFLPSLFHDR
SLKFANQWKFAIVNLRDKPYEAILASKARIQSLVREMLDQQQGQIKQGRAPEISEEDIKGAGAAVFAAGQDTTWSTLVVF
ILNMVLHPRVQSKAQRILDQVVGRDRLPTFDDRQNLQYIDFIVQETLRWCPVSPMGVPHRSLKDDVYGGYFIPAGSFVYA
NARAMTHDETVYKNPDAFDPDRYYSLEEGGRGEPLPNGQFGFGRRICVGKHFAEATVWIVVAVMLSTMSIERERDANGAE
IIPVVELTNGLTSHPKSFPCLIRPRDEKSIAIIQDAEL*

>3593|jgi|CYP53A46|[Trichoderma arundinaceum IBT 40837]Triaru1
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NHVSIADDDAIQAIYGHGNGFLKSNFYDAFVSIRRGLFNTRDRNEHTRKRKMVSHTFSTKSISQFEPYIHVNLETFVKQM
DNLVETSTHKGQNGQKEARIDCLPWFNYLAFDVIGDLAFGAPFGMLEKGVDLAEVRAAPDSPPIYAPAIEILNRRGEVSA
TLGCFPAIKPYARYLPDPFYSNGLTAVQNLAGIAIACVKRRIDNPPDVERKDLLARLMEGRDDKGEPLGREELTAEALTQ
LIAGSDTTSNSSCALLNYVVRAPGVLDKLQAELDAAIPNGVDVPTYDMVRDLPYLAAVINETLRHHSTSGIGLPRQIPAD
SPGVTVCGEFFPGGTVLSVPTYTIHHSTEIWGPDAEEFKPERWENVTPRQKEAFIPFSYGPRACVGRNVAEMEMKLIAAT
WARRYSAKVLQGPMLTREGFLRKPLGLDIALYKR*

>3735|jgi|CYP540B37|[Trichoderma arundinaceum IBT 40837]Triaru1
MAALFYLLGDHSSTAREFEIAELSDFDDLQDLVASHFSIVEPHSECLALKSGTRNGLTYIFATLGVGLISDNRHLTSVAD
VLAADGPIAISIDGSAVREIPGPKCLPYLGNYTQIYPDHLGNHQRLFDKYGGLFAVTSLGVKWHYTNDPNLANIFFTESE
FFTKKVIPGHPLHPFNLENAGIFFGSTDSENWRITHKFLPPALGPKAVKHYAPKMQLTVEDAFKVFDQLDENEEAWNVFP
YMLKLASQAITKLILGMNVQHFTSVDAPFDEMVIKIIELLELTKKVSAYGTWYGNLPFGDPKKLRNHLSRVRALLDQSIK
EAKKGEEDLELQEAALQAENVVDFCIRARDNKGNKMNEDQVTLGLTAVTGAGFSTTAAMLSWLIYGLVFYDGMQERLLQE
LIDNDWDENTQVTPELTQKLTFLDKYVKETQRRHNSSFQPARTAKTDMILPGGYRMAKDSIVIIALHHIHTNSKHWDSPA
RFDPDRWDTEEVKNRVAGSYQPFGSGARSCIGFNLALQEVKIFLPKLLYRYKFTLAKVGETVEYDPNQVVIKPNNLYVRA
ERRVRWPAKSE*

>3742|jgi|CYP570E3|[Trichoderma arundinaceum IBT 40837]Triaru1
MPSMSIYLSNACLILFVAFVARQIYCWQRLRHIPGPASAAWTIWWQLSSALSGRYHERLKEAADTYGPLVRIGPNQLLSI
DPDVLRRMSAVRSGYTKGKFYASGKIVPGVDNVVSLRDPAKHKEMRALMAPGFSGKANEGFSFEAAMDRQLLSFINLLER
KYVSSGSDIRPFDMAEKTQFFALDAIGDISLGQPFGYLDKDEDLYQYNEINTTSLPLMNVISVMPSLANLVHTWPLRLLL
PKEGDRVGFGRLMRFARSYVETRLDPETPRAHDMMQAHIDNGMSKNDLIQQVFLSIIAGSNSSAHALRMTLLSLITSPPA
YNALIEEIRRASPTVSNPITWAQTQSLPYLQAVVREGLRMWPPVGGLGFKTVPPEGDYLNGYFVPGGTEIGQGFHGVGRS
KAVWGPDADVFRPERWLVAREDRLKEMINAVDTHFGYGKYSCLGKPIALMELHKAVFELVRRFNFCVMNPETPIKTTASI
FLFASDFWVTLTKRTL*

>3758|jgi|CYP65EV1|[Trichoderma arundinaceum IBT 40837]Triaru1
MTLSVAALIIGGTYVLSRIIYNLCFHALSKYPGPVANRVSILPKVYHLISGSLPYHVTELHQRYGPVVRIAPNELAFTDP
RAWRDIYARKLIEGRYELAHDMAFYKPTNQPHDSILSSNRQEHDNIRKLLSPGFSDRAMKAQEPTIGRYVNMLIQRLQEN
CIDMNGNPKVINMRDWLAFCTFDMIGDLAFGSDFGCLQNGGYHPWVALIAGSVRDLATLQALKMLGVVRFVRYVMLKLSL
GTKALKMHVELTKLKTEERVKLGDKRDDFLNGLIQDGMSPELLRENGSLLILAGSETTATLLTGILYLLAKHDNVLERLK
SEVRGEFASASEMTLSNMSRLPYMLAVLKEGLRCYPPVAGNSPRLVPPAGTNIAGCLVPGGTVVGIWQWAMYHDPTHFDD
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WEKPSLYMYLTPR*

>3842|jgi|CYP684L1|[Trichoderma arundinaceum IBT 40837]Triaru1
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TEVHRRMRRLLSSSMSETSLQTAIPQIQSRIDFSIKRIGEEMQRRGASDVIKWFLFLTTDVIGELSFGDSFRTLEIGEKS
SYTKDLENLAYIGAVRSAFPKFVALADYLPIPYFRRPRQSAKNMASYADESITRYRNLLDSDPTSVKWTLFTKVFQDNGK
ENLTPKELRANASTYIVAGTDTTAVTLTYLVWSVCRDPKVKARLLEELRALPDDFDSSHLRDQSYLNQVIDETLRLYSGI
QSALPRFVPEGGDDIGGYWLPGGTVVCTQAYSMHRNSHVFPEPDEFDPSRWASPTKDMKDSFMPFGSGARICIGLHLARM

ELRYAAARFFLTYPEAKVSTLEGFSDKDMMPKVFFFVEPTAKRCLIQRS*

>3844|jgi|CYP606F1|[Trichoderma arundinaceum IBT 40837]Triaru1
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FEDMVLLPASDTQFVTDQPESVLSMHESVMHRLQTDYTCMDPKLIHNPVHIDLITTTLTKQIGNLVPDIVDETKFAFEKY
WGKPDEFTEICVYDTIRRIIGLATNRVLVGTPICRDPALLDTAVAYAKDLPPISRSLRLFWKPIRPLVAPYLTRPLRIHT
AKFEKILLPEIKRRLMDYETRVAYPETKSVTQERNDFLEWSIEQAKTSGDPYLWQPETLAGRIHRLNNAAIHTSSFSVTG
AVLDLAASRPEYIDELREEISTVLAEHDGEWNKQALAKMEKLDSVFRESVRLNSFVTVGLNRVVTAKGGVTTPSGVHIPK
GASICVPSYAVLQDSSIYEDAQTFKPFRFAEARNEEGLDYVQRARKAFATTSTDYLVFGHGRNACPGRFFAANELKLILA
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>3951|jgi|CYP5094C1|[Trichoderma arundinaceum IBT 40837]Triaru1
MSGTQSFLDELFIAAKLPELQGRLREVSSPQLIVAFILTPIIYGITLVIYRLYFHPLARFPGPKLAAATKWYEFYFDIMK
APGGQFFKEMERMHDVYGPIVRINPHEIHVRDHHFLETLYTPSTHKRDKYPPSAKAIGLNQCSQGTVDHDLHRQRRGANI
KMFSKQAINNARPMFLELLKDMTAVLEGSLATGDAVEAHALFLGFATDATYRYLFDTQSGYLKDMKKSAEWKHSLEVSVS
ASPLTKQFPWIPGMMLSGPKFIQDFLVWLKPEIGGLFDNHKLMSKIVDEYFVAKSIGKDGSNQKDSEKRLKPKTILHAVD
QSNLPPIEKTHERLRQEGLIMLFAGSDTTSQALAMMLYQLATHPDVKEKLKEEINNEANGSSELPDVRVLERLPWLRAVV
RESLRIRSIVTSRFPLVAHEPMKYGNWVIPAGTPVSMSQADCLHSEEVYPDAMSFKPERWFEATDDQNKAFVPFSKGTRN
CIGMEFAYDEMHMITATIATRFEFELYDTTWDRDVKFVRDCLTGAQDPSSKGIRFKITADNKRFVF*

>4202|jgi|CYP561J3|[Trichoderma arundinaceum IBT 40837]Triaru1
MDSLFAYAKTPHLVLPRVQSLIHEAVDDWNTTTIIQLLSIVAGLLITHRITTVIHNIWFHPLSKFPGPTHMAAFYFPYLY
RNMVSGQMHKTIEKLHRKYGPIVRVGPDHLAVDGSIGWPQVFERKTNKAEYEKVPGFYFEGDTIGLLSAPKDVHRRQRRQ
LNHAFSDAALRDQEVIINKYLDLLMQRLTERSNTGESLNIVDWMNFITFDIIGHLTYSESFHCLENNGYHPWVLQLFAGV
RGQSYRRFLSSYPLLFEIVKAFNLNSSVKAGDDQKYYLAERATERKKLGGYAIEGYRDFMSYMLKQNQDGYFGFNWKETL
AVIPAIITAGSETTASTMSALMFLLGTCPKVYEKLVEEIRSSFALEHEITLTSTRQLEYLHACLEETLRFYPPASETPPR
TCPGDTIAGRYVPAGTKISLYQRATYNSPEHFAEPDSYIPERWLPESHPLYNPKFKDDNHAVFKPFSFGSRDCIGKNLAY
SELRMITSRLLHRFDFELLPGQEDWQRSQRTFLVWEKGPLNIKLKCRDLS*

>4227|jgi|CYP504A23|[Trichoderma arundinaceum IBT 40837]Triaru1
MAYQILGIAIIATVFVVLRVLSATDTPKVKGVPEIPGIPIFGNLLQLGVDHARVARKWASKYGPVFQARLGNRRIIFVNS
YEAVKHFWITHQSSLISRPTFHTFHSVVSSSQGFTIGTSPWDESCKRRRKAAATALNRPAVQSYMPILDLESTVSIKELL
NDCKDGSYDVDPSPYMARFALNTSLTLNYGFRIDGNINDELLTEITHVEREISNFRSTSNNWQDYIPLLRIFGKMNTKAE
EYRLRRDKYLTDMLHDLKERIANGTDRPCITGNVLKDPEAKLNEAELKSICLTMVSAGLDTVPGNIIMGMAYLSTEDGQN
IQAKALKAIEEAYPNGDSWEKCLVEEKVPYVTALVKETLRFWTVIPICLPRTNIKDIPYEGSVIPAGTTFFMNAYAADYD
DARFKLPDQFIPERFLEDKEIGTPHYAYGAGSRMCAGSHLANRELYTAYIRLITSFQIVSTKDPSQAPIIHPIECNSMPT
SLTTDPKPFKVGLKPRNEAKLREWIAAAEERTKDL*

>4364|jgi|CYP5336B7|[Trichoderma arundinaceum IBT 40837]Triaru1
MARLGPIIRISPYELHINDPSFFNQVYCYNGRWDKSDFTVNGFSEPGATIFTANHHIHRARRAVLNPYFSKARVAAHQDV
IRKYVTKLCGRLSGSADSKKITNVGAAITAAARDISNDYILGKHHNALDSEHFETDVALGFAEQSNGVAWRVGKFAPWFI
RMFKAIPLEFVAKFTNDIMKRFIGVYLQTMRDTRDIMDTVNSSKKDPSASRTLIDNILESELPPSDKTFERVFVDTFTVA
AAGFETTGNVLRLILFHTYTKPEILEKVRAELNTAGVDSPTNLDLKVLEQLPYLTAVIEEGLRLSPGIATRMGRIAPDRD
IFYEKWRIPAGTPFGMTQILMHTDESLYPDPQSFNPERWIDLQLRKKAEKAYAPFSRGTRMCLGAQYVSLHRFFASQRFS
LKK*
>4391|jgi|CYP5386A1|[Trichoderma arundinaceum IBT 40837]Triaru1
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ADIHEWVYTSLGPGEYVNALSCEAAQELCLQLHAVISSLHGASDVFAPVDLLTWVRHMVTVGTARYLFGPHNPIAEDPDL
EHAFWAFDHGLGGLLINILPSLTASKAYGGRERLSIAFRKYLEAGHLDSAASIVRGRARIEKEYGMSVDMTARSALSFLF
AGIVNTTTTTFWVILRIFADENLLAKARHEIRQALELSSQRTGSDSLSIGVVKETCTTLSAVYRESLRVGSENFSVRMIK
EDTMLADRYFLKKGAVVQISGGAIHANSTIWGQDVDKFNPDRFLKEKGKGDGFHPAAFRGFGGGKTLCPGRDFATNEILM
FVAMIVHGVDLLAPGGGSITVPEKNDRVLPVHILEPKGRDRPKVIIKPRAEEAEVLSRLKVAI*

>5035|jgi|CYP530A40|[Trichoderma arundinaceum IBT 40837]Triaru1
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LSGSQSAAVLDLYPIARILPDFLFPQLKSGTAKPCCSIDLLNTQKELGFSDVLACYLSGSLLQAGSETTAIILIGFFQAM
LVFPEVAKEAQEEIDRVCGDRMPDLNDVPDLPYIRACMKESMRWMPATALGVPHAVTQDDSYLGYHIPKDAGLILNVWAI
HNDPKRHPDPRRYNPTRWADDNQNSAQAAVNPDPSKRDHFVFGAGRRLCQGMHIADRSLFLAISRTLWAFDLKRPMDEET
GKEITPDVDNIKDGLFICPMPFEADIVPRSQSRAAAVKKEWDNVAGLLDDNMQWKSVPEGLKWKDYEPLDDKNEYSLETV
I*
>5134|jgi|CYP671D3|[Trichoderma arundinaceum IBT 40837]Triaru1
MAVLLGRGIIAALNSSWQAAAGVSLAAGVVSHHLVFRPFEIDGYAWHLVFTYFGAAALLIVSHVQLADYQLVSALLRVLL
VASAYNVGTVTSILVYRAFFHPLRQYPGPFWARLSRFYALGKLIESRQPYGNIQKLHQQYGDIVRVGPRELSINCPSAIH
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IGAVPWLLYMIAKIPGLTSYNRFYMWCNQQLRDKRMALTSEKQIFGAHEPRDVMSWLFKAMNEESTRVPLTEAAIQEDAR
LLILAGSLSLLANNPRIYQRLQAELQKQFPGGITDWTYEKAKTILYVDHVIYETLRLRPSVPAGLSREVPPQGLTIDGEF
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RNAESLSAEQARAILTYLCDDSSISTKMRSYAKELKGYTAPKAICVQCDLVFDPKNNIYKDCCYHSGEMEVDDEGDFWAD
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EGEQNEPDKKRKRLD*

>5205|jgi|CYP671C2|[Trichoderma arundinaceum IBT 40837]Triaru1
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KKAWEKGLGFRALDVYAPRIKAKVDLLLSKIAEHSGQSIDMTEYAMFFGFDVMGDIDFHMLESESEHPAIRGVHQSMLAI
GVLGTVPWLLSMISKVPGAAASFSRFTKWCHQQLQEKRKVAIETAMLKDQEPRDIVSWLLKALNEGKSSAPPGEIAIQED
ARLLIIAGRLYFLARNPNSYQKLREAVEERFPGGMSAWIYEKNIPYVDYVIQETLRLKPSVPGGLPRMVPHRGLMIDDIF

IPGSTIVAVPTYTIQRDPRFWPDAHSFKPERWENLSTEKSPWIPFTRGQWACPGRNLAMMELRMVLSCIALQYDISFGER
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>5281|jgi|CYP539A31|[Trichoderma arundinaceum IBT 40837]Triaru1
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RRNLMPAFAFRHIKDLYPLFWDKAREVTEAMTRECGNDGQAQMEVSEWASRVTLDIIGVAGLGKDFNAIQDETNDLVQTY
QFLFKPKPPAKFLVFLATVVPTWLLHRLPLKRNQAINEAANTIKDVCRDLIREKKGKMMANKERTDVDILSVAIESGQFT
DENLIDQLMTFLAAGHETTSTALTWAIYFLCCFPEMQTRLRSEIRERLPSTDDAGARITSLDIDHMPYLNAVCNEVLRYF
SPVPITVRETAYDTTIQGVPVRKGIRVVLAPFAVNVDPKLWGSDAADFNPDRWLSADGQSDDSNKKAASGGAVSNYAFMT
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>5457|jgi|CYP5302B2|[Trichoderma arundinaceum IBT 40837]Triaru1
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LDELNYNLLKNYEPRFNNLAQGGKPQKMMFWAWTRQEISEASMASAYGPDNPVAREPTLVADFWTFDATSASLMMPFPSI
FARKGHLARWRFINGFVDYAVRGAYKDAATLIKVRAKESLARGIAIDQYGQMESNFAPGLLSNTVPSIFWLISRVFEDPA
LLVEIRAEIDQCIEEREGNKRALNVAKLQTQCPLFASVFFETLRTVSPLNNYRYVREDTVITNNKTNESYLLKKGNLVQL
ASTVLHARPSVWGKDADSFNSRRFLPVVNRARAGPGMDGKPIDPATPFRDANGKMHSGSFRPFGGGIHLCPGRFFAQTGV
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>5676|jgi|CYP5128C1|[Trichoderma arundinaceum IBT 40837]Triaru1
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VRIAPNEIDISDGAALHPIYVENGGFIKSSIYSNFDIDGFPTLFSGLDHTHRAVRAKAVAPLFAQQTIANSRAVIQKIID
TTIVELERRKSLAAGRPVDIYNLFRAMAMDVMTKYLVGECFNGVGSENLSAGAFIDYFAAVGRFYNLPGRIFGFVHNWAA
KLHKNKASITTSNNIVQQFAAKVVDDSIAQGEQETYQGRLLSAKISREESIAQVTDIMFAGTDGEARILAVFCWYLVQAP
DKYTFTCKEIIDNPGVESRSLPYLSGGVKEACRLALANPTRLPRIVSTNGLTVPGFPTIPAGTSVGIGAYELHFNPDVFP
SPHDFLPERWLEPTPEMLRDSFYFGKGPRQCIARNFASTILWWAAEALLRSRVLDGAKPVKDELQVIEWFNIQEVGGKIE
LFWPQYDAEKN*

>5804|jgi|CYP5391C3|[Trichoderma arundinaceum IBT 40837]Triaru1
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ILKHQKKEGFGDDVTIGLLNGIILAGADTTTTMMQSFFKVIAMNPEAQQRAQEELDQVVGPSRLPTWEDEPNLPYVRAVI
KELHRYCSLLTIGVWHVASEEFTYQGCRIPNETLIMPNVGTLHRDPERYDDADKFMPERYLGDDLSAYNSSKQPDYLKRD
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>5875|jgi|CYP51F1|[Trichoderma arundinaceum IBT 40837]Triaru1
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RAKYGDVFTFILLGKKTTVAVGPAGNDFILNGKLKDVNAEEIYTVLTTPVFGRDVVYDCPNAKLMEQKKFMKIALTTEAF
RSYVPIISHEVTSYFKREPSFKGKSGIVDIPKKMAEITIFTASHALQGSLIRNKFDESLADLYHDLDMGFTSVNFVLHWA
PLPWNRKRDHAQRTVAKIYMDTIKERRALGDDDKELDIMKHLMTSVYKNGVAVPDHEIAHMMIALLMAGQHSSSSTSSWI
MLRLAQNPQVVEDLYQEQVRALGADLPPLQYEDFAKLPLCQGIVKETLRLHAPIHSILRAVKQPMPVPGTKYVIPPSHTL
LAAPGVSGSDPTYFPHPFEWDPYRWLPGSPNAPLMAARNEEEEEKIDYGYGIVSKGAASPYLPFGAGRHRCIGEHFANLQ
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>6155|jgi|CYP5057C1|[Trichoderma arundinaceum IBT 40837]Triaru1
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PPHSPVKMGVNGIKVRSIGGITYVYYTNTTRLCFCRVPVDNRITPSGEVEVLARGFIPPDEAAGTLFEAFASSNSGTGEH
AASQSSPGVLISGFMPDDFCFDKNGASYVTTHPTNMVFKISPDNSNAVKVAGGLASWEVAAATACTFGRSANDENVLYIS
TAGANVIPIDGQTEPAKILFEMKLNMPFQLEFKTLNNSKDFSYARILVLGLIGVFIFKLHQKYGSLVRIGPREVSISDWK
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WERRSRALVDGFMSLTEKEDGYLLSPLLTATDGFLGRRLNYDEFLDEAMGVMFAGSGTTSTTLTYLLYALSRPGHKQFQE
KLHEELIQIPKNEDMSVIRTLPYLNAVIKETMRLYPTIISSLPRVLEESLVVDGYLIPVGTVVNMQNYVHHRDPTVYPEP
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>6405|jgi|CYP6001C27|[Trichoderma arundinaceum IBT 40837]Triaru1
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SSYLDLAPLYGHSQDAQNSVRTFKDGMLKPDAFADKRLLGMPPGVCIILVMFNRVHNYVAANMAAINEGNRFPKPSPNLE
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LCYRWHSCISEMDDEWIHAFYDDLLGENYGTMDMRTLMIAVRKFAMGMPKDPADCVFGGFTRGPDGRFDDDDLVNCIATA
IEQPGGSFGARNVPRIMKPVEMLGIIRGRKWHLAGLNEFRKHFGLKAYETFEDINSDPQVADALRNLYQHPDYVELYPGI
VAEEAKTPMVPGVGIAPTYTISRVVLSDAVSLVRGDRHYTTDYNPLYLTNWGYKEVEYDLKVNHGCVFYKLFIRAFPNHF
KQDSVYAHYPMVIPQENRKILTSLNRVHRFSFERPRASAPRIEITTFGGFKQILTNEDKYRVQWQEGLEILSGHSGRYMQ
TNDHKTLESLLYKDDWRNSVRAFYAKTAKKLLAEKSYNIMGKKHIDVIRDFGNTAHTHYAAQIFNIPLKTQENPKGVFSE
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STGPDTIVEDDGRRVNINQGDRVSASFVSGARDPSQFPNPESIDPRRPLASYIQFGAGTHSALGKEASQIALVELFRAIF
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>6541|jgi|CYP620B14|[Trichoderma arundinaceum IBT 40837]Triaru1
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IIHDKDVAAELLDKTSLKISSRPQFHFANMCGYDNMMTLMDYTDLFRRHRKFIHQQLGTKALVSRFNNVQDLESKRYLMR
VMKNPGNLFQHIRTEAGAIILKIIYDYTIEPSGFDPLVRLIEDVMTNFSHVMIPFTWMVDIFPALKYLPDWFPGTGFKKT
AREWKAITEASAYIPYDFVKKQMNKGTYQPSYVSELVEAYGTGNAMEIDDESKEVIAWTAEMIFAGASDTTVSTLMAFVM
AMILYPNVQQRAQEEIDRVVGPDRLPGFEDRINLPYVNALIKEMLRWYPIVPVTTAHKSDSEVFLRGYRIPKGSYALVNV
WWLTHDPKTYPDPMVLDPDRFLEPRNEPDPAGIFGYGRRACPGRLFAQENLFITISRTLAAFKISNAVDGSGKPIDVHVR
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>6582|jgi|CYP620B13|[Trichoderma arundinaceum IBT 40837]Triaru1
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GTGFKQTARKWKSANEAVTSSPYNFVQKQMEMGIHQHQSYVSELIKTYGNGDGTGVSEEDAEVIRMTATAMYGGGADTTV
STIMAFTIAMMLFPNVQRKAQEEIDRVVGSDRLPDYKDRENLPYVDALVKEAIRYFPVVPIATAHRTEEEIFIRGYRIPQ
SSFILASIWCLLHDPEVYQDPLVFDPERFLEPRNEPDPADDVFGYGRRVCPGRYLATESLFLTLARLLAAFTISKGVDEN
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>6797|jgi|CYP5389A1|[Trichoderma arundinaceum IBT 40837]Triaru1
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HALAPGPGVNHPSQVCSNVVAEAVNAFGADWTTKDLFLWLRDVITLGTANGLYGPNSPVALDQSLIEDIWTFDENQLRLS
WGILPNLVAPSGVRTLVKISQAFQEFVRKGNDEFASDAVKSSIATARKMDVSADDYSRIEVFNVSVATVNTVPTAVAMIQ
NILANTDLLKALRKELEAILTTKETFQGLQAELDIGRAEIDCPLLHACYQEALRIGSTPTCNRAVLEDVVLTDPDTGREI
LFKKGWRVSIPTFLLHNRDTFWGGDAESFRPEKFLPGGFATDGKGKVRTQGFVPYGGGAHLCPGRHLAKMEILASSALVI
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>6798|jgi|CYP5390A1|[Trichoderma arundinaceum IBT 40837]Triaru1
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EPWGFPLARWQRTVPNTVSGFYRVFLGPFDYLVPKSSHALTAIMTQPYLFHKPAAVREGLVESLGVGLVAAEGSVHKRQK
KLLTPIFGMGRNRRLVPQMWAKAIILVDKIQEIIAESGSLSTVLHMHPLTMAATLDVIGVTTLGVDFDSVTRPDQPILQA
YQRVFPSLENQTSTQKFFGATLPAIVSPHLLFKLPLKPIQEFHQGMTFLQNFCLSQIRQKRREIESDKNDNADTREKDIL
SAIIASGLEDENEILSHILTILAAGHESTAITLAWAIFKLAQFPDVQDKLRNEVLAAIKNVQQGGLTLDEVNSLAYLRCF
LMEVFRLYPAFPAMMREAAHKTTIGDLEIPKGKQIMVSPYAVNRSRELWGDDADMFRVERWEESYSGGAKTSQAFLTFSS
GPRICIGKDFATLSLKVFLTVLISRFRFEEAIPGWHPVIQKGTSLKPQGLKVKVSLL*

>6799|jgi|CYP584S1|[Trichoderma arundinaceum IBT 40837]Triaru1
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LVRPHLGKDQVEDLSRLEGHIQNLFKRLPKDGSTVDLQELFFRLTFDNVVELLLNEKVSTLSCQPGSHLHKVIEAFDNVG
NLVNRRAALGPLLRFYRDTEMNATCKILHDFVDRIVEKAYFKWKAQTDRKSPYSFLESILDSTDDLVKVRFEVLGLLLAG
RDTAASVMSNLLFVLAQRPDIWKQLQAEVECLEGRKPTYDDMKDLKYFRHVIDETLRLYPPVPGLFRAANRTTILPRGGG
IDGRSPVLVPKGTVISCSTFSLHRREDVYGPDAQEFRPERWDNLNVRWEFLPFSAGPKVCMGQTYAYAEMIYVVSRIVQE
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>6807|jgi|CYP65A4|[Trichoderma arundinaceum IBT 40837]Triaru1
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IRGYVDQLMEGLKKHGGNGTRPIDMVRWFNYATFDIIGDLSFGEPFGCLESSHYDPWIQLIFTSIKNIVFLGTIKHFRIF
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AAYFLGLHPEAQAKLAHEVRSTFKSADDITITSVQHLSYMLAVLDEVMRLYPPVVGGLPRLTAEGGAVIAGQYVPENTFV
EVWQWPLFHNPNYWEQPEVFIPERWLGDPKFANDKRDAFQPFSTGPRNCVGKNLAYSEMRMILARVILDYDIKLADGTEG
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>6932|jgi|CYP642C1|[Trichoderma arundinaceum IBT 40837]Triaru1
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AVLNSARPTLSINVFPRKVLVTDPSMESTLSRHTSETSLANVIFLIGRRVFDLSDSTINTIGGYDPRPIHVGEFSSASNA
RALVGQVSAAARQRLQSQPDVQETELGPWLFKLTSSSVASALWGPESPWVVDDEFQTQFMEISGSQMTLLRPFSKYTAQP
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GRVVKEARDPSILDAEGNIDVARIRESFPFLAACLYETLRLHMTAIPRLAKTDLDIAGPNGQPIHLRSGDLIYLAMSSFN
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>6957|jgi|CYP6002A9|[Trichoderma arundinaceum IBT 40837]Triaru1
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PGVCALMVTFNRFHNYVVQELAIINERGRFSPPAGITEDDPEYTKAQLKRDNDLFQTGRLITCGLYVNIILGDYLRTILN
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>6966|jgi|CYP570C9|[Trichoderma arundinaceum IBT 40837]Triaru1

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GIAKDVAAERFKSDVKDERDMLGSFIRHGLTQKESESEILLQIAAGSDTTASAIRSTMLHMCSNPDILRKLREEIAAADI
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ETK*
>6998|jgi|CYP5335B1|[Trichoderma arundinaceum IBT 40837]Triaru1
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LYSQRSIDRLVPKLHQCLMMAGEQMFTSSGKGSAANMTSILRTLSADMILHIIFSQDISLSDYEGYHPFLESCDVLMRYT
WMMLNYPLVAMVLGIIPGTGFAKLTNAFNEFMKLIINDDSNVKIGNSIKKKFIPYPLEDIFNFVAGGSDTTSYTTACALF
HVLSSPDVLSKLVKELDEASQFIREEFDYKKIQNLPYLNAIINETLRISSPVPGCNPRVVPKGGTTLDSIYLPAGTKD*

>6999|jgi|CYP5335B1|[Trichoderma arundinaceum IBT 40837]Triaru1
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NEKYNEVVWAESISQAGDMIHYWLSRPSVQSTADDLRALSLGVLAKAGFGKSFKFEGHEETSPSNPAASYKDSLQLILEN
CVLLIAMGPKFFTNMPWLPFKWRQLGEAVSAFQKSMTDMYESEKRKLAESETGDSVRRTFLSSLAKASLDAKDGEGLTER
EIYGNIFVINFAGHDTVSHVFTFAVYFLASNPEVQDWLSEELHHVLGDKPPHEWNYTTDFPRLKRCLAVLYESMRLYTPV
PVTKWTQDKAQHLNVGNKTILIPPNTMVCLAYSSLQTDPRWWGSDSDLTWRPSRFISNAVGSDDKSSVAQREAADLDAEQF
LQPRRGTFIGWSEGTRDCPGRKFSQVEFVATMASIFRDWRVDPARFQGETVEGARERVLRLIETESGMVLLVQMLHPEKA
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>7285|jgi|CYP5080B6|[Trichoderma arundinaceum IBT 40837]Triaru1
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GEEYVQMLRKLGGKTSSFGSFGIIAFGDAASICLEHYHIMDNNPDFKLRLLIAYYPTAIPDPKGRFPNNISALVHLIAGK
DIGITKQTQMIGIQGKRRTTRRTIQPGIGTGGLLHLAYPSYTYQAQLGFAEHDLEEYDIICADLAWSRSLSAARRAFGQT
VDFEHVWEENVQGGIGVNELQEFYSRYFGNPKSLKLILLSRTIGADQIVDEIHVRFKHTQEMPWILPGVPATQKRVQILV
VSIVTLRGGKLYHEHVYWDQASVLLQIGALDPNVLPEAARKIGINKMPIVGSEAASRVLKGWDPEEEGEADNELISGWHD
DDVDEPLNGNAVGDDCDDKRVALGRFEHENIELHRKYGPVVRLAPNMYSIDLPEAVNAVYGIGSKLPKSEWYDGWKLPSP
DAWTMFPDKDIKRHAQTRRVFQGLYSMSSLISYEKYVDECADVLLNRLCICSKSREPIDMGHWFQCYAFDVIGNITFSKP
FGFLDRGEDVSGLLQALDKVIAYSTLIGIFSSLHPYVFAVTNFFGIGGAAGRTYLARYVKERIRQRKAEKYTMEEKLTAH
VDGSPEDFLEKIMIKNKDAPSKVTDYHVFMMSMSNIVAGSDTTAISLSAILYYLLKYPTVMEKLREEVDQSTTSGGFTGA
HLSFKASLEMPYWQAVMKEALRLHPATGLPLWRTVTEGGLELNGQFFPEGTTIGLNTWTAHYNETVFGKDAAVFRPERWL
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A*

>7296|jgi|CYP548AA1|[Trichoderma arundinaceum IBT 40837]Triaru1
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KLEGEHGWSSGKDMSYAVAFCIADIMGSVTFGRTWNVQRDPKYRHFVKDLPNGVAGIHLVGHMQSLFFGNMHKFLFKELI
VGVGNLMSVSRSFALWRLEQKSMPHRDIWAALLASRDPKTGEAFSTEELISEASLFIIGGTDGMITATTSTLFYLLHNPR
TLERLTREIREAFPLSADDIGKKASAVKCPIRFASAELQRIAYLPACIDEAMRISPPVPSILPRVVGTGGMTVDGEYFPA
GVNLGIPHYSMHHDEDNFAQPLTYAPERWFPEERERGLKDGSVPVSGKESAKMLPAVGQSYGFTPFGAGRGSCIGKYLAY
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>7376|jgi|CYP602B6|[Trichoderma arundinaceum IBT 40837]Triaru1
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DQVYQIKATEGIQAMIPPKFIAELKGLPEDVLSATEAVADALQTKYTKFSAGHNGDMLSLLVRTRLTQNLAELIPQLKCE
LEHYIGTEFPACDDWTAVKWQPFALLGIARLSGRAFVGPWLNREEQWMKVTIDFAIDVFMSVIKLQLFPEWARPVAQYAI
SDLRKIRRDMDVAKSLLKPLLEERIRDMEISDFHDPPNDLMQWLIEALPEEEKADVQTHAQLQLILAAASIHTTNNLLFE
CMADLAAHPEIQTVLREEAYQILEAEGGWARKESMAKLKRLDSFMREVQRLRGNITASFIRKVMKPIDLSDGTHLPAGTR
VLAPQAGVSMDEQFFHNPEEFDALRFYNMRQESAEASNRWQFTSLNDTNLNFGAGKHACPGRFFAGNQIKLILAFFLINY
DVRLKEGDKRPEPMAMVMTKGPSPNAEFEFRRRELAN*

>7563|jgi|CYP574C1|[Trichoderma arundinaceum IBT 40837]Triaru1
MRYELLCITSASGGVLSHLLYFIHGHKAIQAPKILAFYLIAVCLLWTRFIYLQGALQGAIHAGTISVFYFVGLFSSITIY
RIFFHRLRHFPGPFAAKLTKFYGPYTARDGKLHVKHIALFEKYGSIVRVGPNELIILSIDAQQKIHGAGSKCSKRDTVYE
VVHYEGCPNLDSILNREEHRWRRQIWDRAFNSKALESYEGYAREVVYEWLEKLACVKDQPINTSLYSLLVPFENMGRMGF
SINFGSIKAGKEDPMLHYLEETLGAIGRLGAMWWPIALMNAIGGSSDHIEFQKLACKMVDKREKYADDAHEDILKYLLQD
HHAKAPKAMHDHNMLYSDAQALMVGGTDTIAAALAFAFYHMARDPSIQKKLRSELEPLYGRTVTGEFANLDLGEADAGYL
NAVINETMRLDNPTCSNGPRMTPPEGLEVDGSKYFKEPDSFIPERWTTRPDLVIDKRAYHPFLLGPYNCVGKRLAIIVLR
FVLAYTVWYYDFKFAPGEDGTAIYRDAVNQQILKAGKLECVFSQRS*

>7827|jgi|CYP559C3|[Trichoderma arundinaceum IBT 40837]Triaru1
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PFVVPAPLSRPSEVVMPRNQISWMMDQPDHVLSTYDAHNAMLYSEYNFLGRRLAYDPFPNRVMHKYLARHLSTVIPNVDD
EIQHAVDTSLGDDTENWKSVKLWDLWLEIVPHVTNRLLIGPEICRNKQFIDGMVNFTNDVVRNGLLLQLLPKVLHPIFGR
LFSISNHLHWRSANVSAQPVIQKRLNAMLKKAAGDSEFKDYTPPEDFITWSIRQALVEEKTFELDPVVLSKRLLPIEFAA
IHTTVLTGQLWMQDLLTSDPETGILDILRAEINANKPKSGHWTKAAISNLVRLDSSIRESQRVSNFAVTMIERKVVSDNG
LHNPDLGWTLPKGSFVTVNLEGTHHDMDLYENPESYDPLRYSRIREAWDAKSDEEKKNEPEEGTRIRGLGMVTTSPQHLA
FGHGRHACPGRFFVAHELKLIMIHLLLNYDVKLADKIPEKQWIGGTIMPHLKAEIQIRRKKVQV*

>7852|jgi|CYP5388A1|[Trichoderma arundinaceum IBT 40837]Triaru1
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GPRLFLPRKFAHELKPFKRHEASGMKALADRHLGHYTTIDHESDVMLGAIKIDLNRNLGNFVGDVEQEVAHCFETSFPPC
EDLHETLLRIVAQASARIFVGYPMCRNEEWLECSTKFALDVMTGGEKLKLWHPLLRPFAQYWIPEMTRIRGDHQRALDLL

MPELKKRAAEAKGPEATPRQDMIEWMQQRAKKLGDKSFDSKEMANLQMLTATAAIHTTRLAIIHALYDIAARPEYKEPLR
AEILEVTKDTNGVLQKQHLTQMKKLDSFMKESQRHSPPSVATYQRKAMIPINLSNGFHIPAGTIVQCNTNILDETPTTWG
EAHAFDGFRFYRLRENPEDANKFQFASPSYDSMQFGFGNDACPGRFFASNQIKIILSYILSRYDIKFEDNIKGRPKNFMF
EVNVLADPTVKVLFKRL*

>7956|jgi|CYP58M8|[Trichoderma arundinaceum IBT 40837]Triaru1
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HVSDPAFYDEIYASSSRRRDKDVKFVATYALPVSMVATVDHDHHRFRRGILKDFFSRRAVMELSESVNERVQKLMQRLER
SRIDQSIICLDDAFTALTTDVVTSYCCGKHWSFIEDDGFRVDLRKATADAIEFSHITRFVPWLVYAMSYLSPQVMSIILP
GKAALFRFLESFLEYGKAGSQLDKRRSMVATLADPSLPPKERSYYRLRDETFAILAAGTETTSRVLTVASYYYAMDSTVR
ATLQAELKQLMPTPDSTPTWLELEQLPYLTAFIYESLRLAYGVTGRLPRVAPTETLRYGDYVIPPGTPMSSAAYIVHRDT
TVFPDPDAFRPERWIEAAQKGENLKSLAHMELYLAVSQFARRFNVHLHNTEPEDMRIVRDMTVGYTRRGGLKVYAQLSPV
DE*

>8040|jgi|CYP5268A8|[Trichoderma arundinaceum IBT 40837]Triaru1
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NVREILEVVHTVERVASPGVYLVDIFPILLWLPKWLAPFKREGDRLHRRELNLFRRNLDDVRADIAKGNQTPSFSKSWLE
KEQLAGLANDEAAYVIGTMFEAGAGTTTSAMLSFVLAMVHHPEWQRRLHQEIDAVVGNSRLPNFDDIPRLPTVRAIVKET
LRWRPVTAGGLPHQLIKDDIYQGIFLQAGTSIHPNQWAIHRDPTLYPDPESFRPERWLEPSWPSYREPLTQFPNLQNFSA
FGFGRRICPGQSIAERSLNIVVARIGWGCTVSKIKDVEVPLYDYTTGFNVQPKKFHFSLEPRGTHALKLLSEAV*

>8054|jgi|CYP52X5|[Trichoderma arundinaceum IBT 40837]Triaru1
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VSDLNLEEEHVKTLMTVLNRRVRVDGWTDFVDLQPLFFRLTLDSATEFLFGESVNSQLEEDQPRPDEDVSFAYAFDKAQY
TLSIGARLGPNYWMVHVPEFHRMVKKVHEFVDYFVQKALTQGSSEKKLLNEEKYVFLNALAKETQDPEELRSQLLNILLA
GRDTTASTLGWFFYTMADPRYASVFRRLRATILEEFGTYSHPKEITFEKMKSCQYLQWSLNECLRLYPAVPMNVRTAQVD
TTLPTGGGVDGQSPIYVRKGQDVGYSVHLMHRRKDIWGPDAEIFKPERWETRRPGWDFLPFNGGPRICIGQQFALTEVGY
VVIRMMQRIDSIDGSQVGPIRHGLTLTNCPGEGVNVKLHFAE*

>8095|jgi|CYP55A26|[Trichoderma arundinaceum IBT 40837]Triaru1
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KAKATFVDMDPPDHMRQRSMVQPFFKADYVKELQPYIQKTVDNLLGVLKAKGCADGPVDLVKEFALPVPSYIIYTILGVP
FDDLDYLTRQNAIRTNGSSTAREASSANRGLLDYLTDLVDQRIQEPKDDLISRLVVDQVNPGVIEKADAVQIAFLLLVAG
NATMVNMIALHSKQLAQLKADPSLASAFVEELCRYHTASALAIRRTAKVDIEIGGQSANRDEDIFMNPDEFDMNREWPAE
DPLGFGYGDHRCIAETLAKAELSTVFSTLFRELPNLRLAVPISRINFTPLHKDVGIEDLPVIF*

>8132|jgi|CYP55A26|[Trichoderma arundinaceum IBT 40837]Triaru1
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LWPGYKTNAIKYRTLRDEYILSFYGQLTENIANGTDNPCIAGNVLKDPEAKLSEREFKSICLSMVAAGLDTLPGNINMTT
AYLSSPHGHEIQERAYEEIINSYPNQDPWDACVSEEKCEYMTSFVKEVLRFWSTLNMCFPRTSVKDIIYNGVKIPSGTTF
LMNMWAANHDSEQFKSPMEFIPERFMGISANGAGTQHFGYGAGTRICAGSHLANRQLYIVFTRLILAFRVRETASVKDRP
ILDSIECNAVPTSMVTQPKPFKVKFVPRNIEQLESWIQSSLERTAHLQK*

>8448|jgi|CYP58A4|[Trichoderma arundinaceum IBT 40837]Triaru1
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IVRVNAREVHVKDTSYYNTIYTAGARKTNKDPATVGAFDVPTATAATVDHDLHRARRGYLNPYFSKRAVAGLEPTIHERI
TKLLSRFDQHRKDDQVLSLDGAFSALTADVITARFYGEHKDYLDVPDFHFVVRDGFQGLSRVYHLGRFLPSVVGALKGLP
KFLIRIIFPPIAELLTMREEIEAGGIDEFTKSKSSGIKSSVLVGALSDPHIPPQERTVARMLDEGTVFLFAGTETTSRTL
GITMFYLLSNPDILNKLREELKSLPPSDDNMHSLGQLENLPYLTGVVHEGLRLSFGPISRSSRVATHEALQYKEHTIPAG
TPVSQSTYFVHTDTEIFPDPWEFKPERWIKAAEDGVALKKYITNFSQGSRQCIGYSMSFAEMFLTLSRIIPAFDLELYDT
TKADIDMTHARIVGYPKKVPGKTESLGELRVKVIKKL*

>8451|jgi|CYP65T9|[Trichoderma arundinaceum IBT 40837]Triaru1
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EVSFITEQAWRDIYDHRPNQLERFILSTTRRPDIFDANEIDHARYRKAMLPAFSPKGLQEQEPIVRGYIDTFIERLREVS
ATGESTDMVKWYNFTTFDIIGDLAFGESFGGLRNREYHFTISFTFEAFKLLSYLEAGAAYPLLLKILMAFTPQSLIEARD
KKEEHAETTVRKRLDNRALHGRGDFMDYLLRNRGEKQGLNDKELVANASTLITAGSETTATILSGITYWLLQTPNVLQKV
TEEVRSAFQSEADITFTSATSQLPYMLACFQEAFRHYPPVPTGMPRVTPSHGITKISGYDISPNTKVSVHQLAAYSHPDN
FHRPREFVPERWLPDAKTNPSSPWYNDRRETVQPFNVGPRNCVGRNLAEQEIRVMLARVLWNFDLELAPESKNWTDQKTH
FLWEKGALMCKLHDRFASK*

>8470|jgi|CYP537A10|[Trichoderma arundinaceum IBT 40837]Triaru1
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WEALKEIYCSGGSGYDKTEFYDLFKIYGRRQIQPMHHCSSHLNIEQHAKRKRILADRYANSNIMKSASVVGVQERSSKFV
RRCVSSPGGATDIFVNRLISHYVPTLHRLFSRVLYLFAKPRETPLADDYVLETSQLSGTAPFTLMSRFEEKTGDLDYIDK
AAECLDHMAAGIDTTGDGLCFLMWELSQPRSLGFQHKLADELLKNPGIPSDRLPFLDAVVNEGLRCFPPIPMSLPRYVPQ
GGRSIDGFWLPEKTIVSCQAYSVHRFNSDIFPDGDAFNPDRWLELEGDADRRRLQFAFSNGGRGCVGKHLALIEMKTLLR
DVYSKYSTTPHESMQEEAMAMADQLISARPLGQKCLLRFHALDTLPMDLQCPAFQALKPEIRPSLATAVLQNPERHHERL
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SSGHIAPKY*

>8628|jgi|CYP51F2|[Trichoderma arundinaceum IBT 40837]Triaru1
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RIDMLRFWKHGDIFTFILLGKKITCYFGINGNDFILNGSHEDLNAEEVYAPLTTPVFGSDVVYDCPNSKLMEQKKFVKFG
LTQRALECHVPLIEQEVVNYIGSETSFLGKSGTIDVSKSLAEITIFTAARALQGDEVREKLTTEFATLYHDLDMGFQPIN
FLMPWAPLPHNRKRDAAHSKMRTIYMDIIESRRRSRLKDGSDMIWNLMNCNYKSGTPVPDKEIAHIMITLLMAGQHTSSS

ASSWIILHLASRPDITEQLYQEQVQKLGNNGQLSPLQYSDLNKLPLLNNVVKETLRVHSSIHSVMRKVKRPIEVPGTPYV
ITTDKVLLASPLITALSNEFFPNAKKWDPHRWGGQEVEGGIRDVSISKGAKSPYLPFGAGRHRCIGEKFAYLNLSVIVAT
IVRNFRLFLPNEDKILPQTDYSSLFSRPKQPALVRWERRYHEGNKPS*

>9050|jgi|CYP550C2|[Trichoderma arundinaceum IBT 40837]Triaru1
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LSQEISTEFMAINRKLTQIIERYFVNDAAATASIQTADIPGKVAQLLSFSSDVKKQHQWERSGSIRVLSTDAIGQPGAVE
ADLESLMRDFGACVSIPRLYGQDFLDRNQNLLEDFWKFDNNAFSLLIIGVPTWAPIKSFKEGLAARTRLHDALEGFYTRL
SQYRHGLAVDFDADMRDVSGAAMERSQFLEERGVPIRAGAELELGTFWGLNANMQPMVFWLLLYIYSTPGLLDALREEVR
PCLSLSVATYPPQITTFDFSRLSHECPLLKSSLFEAFRLVEEPTSLRYVSKHMTVPDGSYEHKFKPGTWLSAPHALLQSD
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TGVKRPQQAVRVIIKRRAFK*

>9581|jgi|CYP5094A4|[Trichoderma arundinaceum IBT 40837]Triaru1
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VRDPLWLDTLYAPNPTQRDKYPPAARMAGLPLGSHGTIEHDLHRKRRVANAPLFSKRAIISDGQNLIREHVKELIGIFEQ
HFVENKPIQLDTVLLAFTTDTLYHYAFDKESGLMSDPKAAQSWRNAMVSVGAATPFIKQFPWIIKIVRTLPHTVLAYFLP
DVSRLLGVHKTMTSLVAEYIATREDRPHLAEKTVEGDSKVKTSLERPPTLFHSIERSALPPHEKNAFRLQQEGTTMLFAG
SETTARLLAHTMFHLLDNPYIVLNIRKELWEVMGDDKQIPDLKILEKLPWLTASIRESLRLRAATTSRLPLVSKTALTYQ
DWVIPGNTPVSMSHPDILHDPTIYPEPLRFIPERWFNPTERANRSFVAFGKGTRMCQGMDFANAEMYITIATLFLRFDLE
LFETYRGRDIDYVRDCFLAEASLQSQGIRVKVIANTGNI*

>9612|jgi|CYP620S3|[Trichoderma arundinaceum IBT 40837]Triaru1
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DKEIAQDILEKKSLTSSGRPVFHFANCCGYTDVITLQQLGKQFKSERKAMHQTLGTKTLVSKYADVQEKEVGRMLLRTLK
TPEKIFDHLETEADAFILKIIYDYTVDPHGRDPLVGLIQRSVTNFARVAVPFARLVEFIPALQRLPDGFPGTGFKEEAKH
YREEIRVGVDVPFNFVRKQMSSRNRTNSYVASLVQDYLGDSDELSSADARTIKWSAAALHAGAAETTVSTLLCFLLAMIK
FPEAQRRAQEEVDRVTGGARLPVLSDREKMPFIEAMVTETLRWLPIVPLGIVHTASEDITYKGYDIPKGAYIFPEVWRFM
QDPSVYPDPKKFDPERFLEPRNEPDPRWAVFGFGRRVCPGRYLADSALFLNLAYLVAVFDIGKATDEQGNEIEPKIEVAR
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>9928|jgi|CYP539A31|[Trichoderma arundinaceum IBT 40837]Triaru1
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CFTADPENIKAMLATQFHDFGKGERFHEEWSDFLGDSIFTTDGAQWHNSRQLIRPQFTRDRVSDLHCFESHIQTLFKAMA
NGGPLQGENQAVDLSSANGRRIDACDLFFRYTLDVATDFLLGNDVKSLSTPKQDFAESFNDVQRIQNILVRVSRLRWLIP
KRAYFAGLRVINHFVNHFIQRALRMSPDELAAHTKSDKDYTFLHELASFTRDPKMLRDQIVAVLLAGRDTTASTLSWAIY
ELSRHPQAVTRLRNEILETVGEDRLPTYDHLKNMPYLKAVLNETLRLYPVVPFNVRVALKDTTLPRGGGPDGSEPLPVLK
DTPIGYSTLVMQRRPDLYPPASETFADPGVFSPERWAVWHPKPHDYIPFNAGPRICIGQQFALTEMSYTLCRLFQRFERV
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>9944|jgi|CYP539K1|[Trichoderma arundinaceum IBT 40837]Triaru1
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DSLPSGKRTFAEFSLTGSKRVLITRDPEQIKAILATKFSHFGHGPMWHKLWRPFLGDGIFGVDGQIWHDSRSMIRPMFVR
DRLHNLVIFDSCTSRLLSKIPSAGITVDLKELFYRWSLDTTTEFLLGENVHSLDFPDNEVFNAMHVAQRIQIPIAPLIPK
GEYYRAIRKIEEFIEPAIARTLAIPPAQLEELSKSDKEFSFLHSIARYTRDPKVIRDQIMSVLLAGRDTTAATLSWAMYE
LSNYPNIWAKLRKEVLNELGPRATPTYEALKDLTYLKNILNETLRLHPAAPLNMRQALETTTVPGRPGEADIVLLKGDSV
TINTLGMHTCADLYPPVSDRFADPKIFSPERWEHWTPKPWTYAPFSGGPRMCAGQNFALTEMAFCLVRLAQQFERIEYRG
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>10020|jgi|CYP609C1|[Trichoderma arundinaceum IBT 40837]Triaru1
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YYGSYPIIALSGEAARTAYFTTRGLDLNAGFRKLFSAGPDIDHLLGCNMSAYFVALFKRLTGRDYLVHCIPYLTKDAHAS
FTAVDTSVPMDPFLVLYDLIYKMTHRTVGCHDVAEDPVLQEKTMRYYEKVDRSSAMEVMFPSLPTPTKLSKLWAGAKLHM
LFGDIIKERRRTGRRKEDTMQILMDKGESDLLSSAFIIGALFAGLINTGVQSAWILSYLAYNSEWYAKIQGEVDAAVAKH
RTSDDQTPVDVLQSLTLEDWEAEFPFLDLGVRESIRLNLMGASIRQNTSGKDIVLGDTGVVVPKDAFAVYHVADIHLNDS
VYTDPMRWDPGRYLPEREEDKKDQHGYIGWGTGLHPCLGMRIAKLELFVSTAVFFATFNFKAVDKNGNTRTEPLPGYDNN
ALAAKRILGMMYLKCERRF*

>10072|jgi|CYP5189D1|[Trichoderma arundinaceum IBT 40837]Triaru1
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LENGLDLPVADRVYFQIGLDRANSAEHAKGFVLQNHNVWLRYLSGEPLDDLMQLFTRHFHQVLEQHLDMNTRGWQTVDLY
QVLRKVIFDTSVLTFFGPRLAQIWGPTMWKDFCLFNDATYIGVRTNLAYVLQPRAGRGRERMLRAFEQWLTHHSEGDWPD
KDKYWNEEWGAKMNWERDHLARQFGLSLRGRATMQASFLFAIVLNAAPMSSWFTWVAASNSDRLAKCRAESSKFLRPSKS
SRLDHELDIDATQMRGSNFMQALWKEALRIGTAASPARVVMEDTELEGYVVRKGSVILMPTALLHHSDLFPRADQVDTER
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RVL*

>10086|jgi|CYP551A4|[Trichoderma arundinaceum IBT 40837]Triaru1
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RVNPNELSIHDPDFYNEIYVTESKRRTNSYDVFCKGIDFDGSHLLTTDHDLHKKRRKPLEGFFSRKGITQLQPMLAEVAL
HLESRFRELEGKNTVIRLDHAFSAFSGDIIGRICLGTGDRGSHGDRFLDDPNFASDWYNVIHTIVRSIPLFTGFPQIIQV
LSLLPENFLLWRALQQIRLANSDQSKKDANDISIFRHIANSDMPEEERTEERLAKEAQVLLGGGTASTARTIGFASYYIL
SRPELRSRLEAELKEPMANWPQQVPTWAELEHLPLLQAIIKESLRLSYGVMHRLPRVFPDQPIQYKDYVIPIGAPVGMSA
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AHDFLIPLPKLSTKGVRALIR*

>10087|jgi|CYP65U9|[Trichoderma arundinaceum IBT 40837]Triaru1
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LHRKYGPILRIAPDEVTFAHEDAWRDIFQLRKDHRPFLKDLIWWKSQPGMPDSLLSAIDPKPHARIRSLLAPGFTPRALK
EQEHILHFYANLLVERIRERVNGEPESGAIIDVVPWFNFIAFDIFGDLGFGESFNCLQDSMYHPWIALLFNSVKAASFVA
AARFYPIVERILLMCIPPSLRKMQMDHYQQIVDKVDRRLNFELERPDIMSHVMRGTERHELPPGTVYTTFMVLTTAGSET
TATALSGTLNYLVNNTDKLENLTREIRGAFQEENDINLEALRKLPYLNAVLNEGLRLCPPIPWVLPRRVPEGGDTVCGTW
LPGGCMGQTPVSIQAYAMNRDPAKFHLATSFIPERWLSEARTNPESPFFHDRLQAVQPFSDGPRACLGQHLAWAEMRLIL
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>10174|jgi|CYP65EP1|[Trichoderma arundinaceum IBT 40837]Triaru1
MLSSDHTQYALALWLTPVVLYVLYAWLKVITGAFFGPLSKIPGPKLWAISRLPRMYMEWQGEEAAGVAALHKKYGPVVRL
APNEVSFAGGAQAWKDIYGYRKNVGQEKHPYRSPASYWPPANGAPSMIQAIRDEDHQRLRKSLAVSFSEKSMKQMEPRVK
GWARLLQTKLAERGDAAVDMVELFRCAGKAKLLEIVCRAKVFSFDRDDLQMLRNGRLSDYVHAAFSGIRTVIRLRVLSTY
NSFTRWLVRDCFFQSAFVRKAAMENLRYSADRVDRRLQEPVRDPPDLWTKPLTGIDGKMSLDEYHSTAQLLMTAGTDTTA
IGLSGTLYYLLTKPDCLAKVTDEVRSAFSSMDDVTYETLAQQKYLDAALQEGLRLYPPVPTGAPRVTPMPGWSIGGYWIP
GGVNVHAPHYATSRLPAHFTAPESFHPERWLGDEKFQNDRLDAVQPFSYGPQNCLGQAFAMNEMRLFMAAVLLQFDLQLC
EDPRAWLDQRVFSMWETKPLMCVATKRS*

>10221|jgi|CYP541A2|[Trichoderma arundinaceum IBT 40837]Triaru1
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AVHDALFTAYDDEPNWGIAHRIIFPTLRPDAMGARFREMRDLATELLNNWRGLGDNDKISLVEQLNRLNLESTTYVLFGK
RLNGLAGPPHPMLKAMEDSTSEAMKRPTRPGVLNWLVYGRKFKSSIKTMREYAADVVQYRKENPTDRQDTLTAMMNTPDP
ETGKTLTDTQVIDEIVSMPIGSSTAPCLLTYAIYYLHHHPEVIVKAREELDRVIGDGEFELEHLEQLEYVQGIMRESLRL
SSAAPGFNIEPRPKEGDKSPVLLGGGKYQIAYNQPMIIVLQGVNRDPAVFEDPLAFKPERMVGEAYEKLPAGAKKWFGNG
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>10227|jgi|CYP584D5|[Trichoderma arundinaceum IBT 40837]Triaru1
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ASGFNDFKLPRLRVNAMMGLLGSGIFTLNGHSWSHARGILRPCFAKQNKESIIDMLENHFQALLRRIPIDGSAIDLQPLF
FWLTMDFATDFLMGHSTHVLDRASSHVKEKQFVDDYLTCSTEIVRKMQLGPLQIFSINFAAMRARSRVFQYIDDFISASL
DRKQENGTKNVGCNVLQGLSAVTTDRKQLRDQILHILVASRDTTACLLSNLFFVLSRKQHIYARLRREVLSIAGNKPATS
NQLNSMEYLKWCVQESLRLHPVIPTNAREASKDTVLPYGGGEDGNSPLLIKKGNLVMYNIYAMHRDARVFGPDPEEFVPE
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CQV*

>327|jgi|CYP5196E2|[Trichoderma arundinaceum IBT 40837]Triaru1
MNMSSVEPIFAFVGGIATHLLYFKHGERHAYPWRYVFLLLTGSASIWSVKWYRMQLPILTASCQTIVLTTLYLSGLMLSL
VIYRLFFNPLNKFPGPYVARLTKLYFVYINAQSGLHGHHVLHILHKQYGPYVRIGPNDLSIVDPEGMPVVLGPNSKCRKS
EWYGQDMPYISTNTTRDRKLHDRRRRILTPAFTDKFLRGYMMRTQKFNELLIARIDDHEGKPMNVTKWFHLHGFDVMGDL
VFNKSFNMLQSGETHWAIKLLEDGTHIQGYAFPPWLYRVFATLPGMGSGYRRFVQLCIDQLDERMKLQGKTTHMDMIEPL
ITHFQSLSPEDQKNALPMLQGDSRMLIVGGSDSSSTTLIHMFYRFCTEPGLAQRVRDEVAPMVSNINQIQYQDIRDAQLL
HGCIKETLRMHYPAPSGFFRKTPKEGIHIGDVFIPADTVIQNPPYIVGQDENVYERCNEFIPERWYSRPEMVKRMDAYSP
FLAGSEACIGKPLAYQMLSVLASQILLQFDVAFAPGEDGTTLVQESRDFSMLNVAELNLVFTRRSGE*

>3187|jgi|CYP5046B1|[Trichoderma arundinaceum IBT 40837]Triaru1
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FIWLSSAAAVKDLMDKRGSIYSSRAASPMINMVSNQERVNFLPNGDKWRTIGNILHSALNLETSSTYKPVQDFESKRAVW
EILQAKGDTEISDINRRCSTNILKIVRHFSLATAPGGRIIDTLPMLTDIVPQFLLQNWKTVARQWYEQDSQTYLRMYNKL
LRDIEAGTTPDCFLEDLAREKLQKNPFSDVTAAFATGALIEAGRDATTTALNNVILACLLYPEVVAGAHEELDRVVGSDR
IPDFSDEPRLPYIRGIAKETRGWRPSNKIGTCHSTTQDDWHKGYFIPKGAVAVLHWWAIHMDEGRWKDPHRFDPSRYLQD
PLTEAESMAQADAKLRDHFTFGAGRRNCPGVHIAHNSLFTNIARLFWAFNIQKSVDENGDAIEPSTAAQPGLLLTPARFP
CKFEARSEKHAALIEQTWSDAQKQGLVWWKEKQSKNLLGPLNAERLTTLQANESLPDKNEKVWELISQTVNMADRIVKLL
QPPAIQLAETYLGMLKGEAARRYFHEITLSAVVTHDIPDVLSSGPLSTDTLAQRSGLQPLRLKQVMRVLRNNGIFEYEPD
SDTYSNNDASALLQKDHWTQWHRWVSLYGDEFYDAAKGIPEAIKAEEARSAAQITYGTDKNIFTYFAEQGLQEKFHKALG
AGATAQAPGMLADYNWKELGDAVVCDIGGGGGDFITALLRDNPRMRGALLEMGPVIEMVKPKYDIAKGAFADVADRMVEL
HSGDFLTKIPSYEVYTMKWCLHNWTDSDVVKVLRNVRRAIKISPLSRMVVIESVLAEGRSSRVERFGDLTMMSTTNGLER
TEAEWVRLARQAGWVVKAITPLRHAWAAAIDLRPFYAISM*

>2935|jgi|CYP505P1|[Trichoderma arundinaceum IBT 40837]Triaru1
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LDTLALCTMGYRFNSFHNGAVMHPFVDSMVRTLKEASVQATLPGFVNSFRKKSWRRYEKDTAYMRKLCRDIIQKRKDQKD
PESRDLLGALLEGRDSKTGEGLSDDSIIDNMITFLIAGHETTSGLLSFAFYYLLANPRTMEKARQEVDEVSGGEPITVQH
LSKLPYLTAVLKETLRLQPTAPGFILSAPKDEVIGGKYLIPANVPVAVLLHIVHMDKAVYGDDATEFKPERMLDENFNKL
PPNSWKPFGNGMRGCIGRAFATQEALLIVAMLLQNFTFEMADPKYKLKIKETLTVKPDNFSMRAKLRRGGSATDFQRELH
SVGSSGVKSSLTPSMTSTQTSGENKKPLTILFGSNSGTCEALAYRLASDAALHGFYARTIAPMNAARNNLPKSEPVIILA
ASYDGLPSDNAAEFFDWLGTAEKNSLEGVSYTVFGCGHRDWVATFQRIPILIDDLLRKAGAERFANRGLADSAVMDVFVE
LEKWSTDAVWPAISQTEGAGDKSGEGRLINSLLKVDFSQPRQLRQYSQLIEATVTESRNLTTASAIGKKVHLDIQLPPGV
SYHPGDHLLVLPANPMRNVKRVLSRFHLTWDTIVRASGDESVRIPIETSMTAYELLCSYFELSQPATPRDIRVLAAAAED
DATKQLLNNLATTSYSRDIQENKVSLLDLLEKFPEIPIALGTFLTLLPSLRLRTYSISSSPSWTPNRATLTLSVLEEPAT
QPKSERFLGVASNYLAGLTPGDLIHVATRSVKGIFQMPNDLSKIPIIMIAAGAGFAPFRGFIQERAYQQRNGVQLAPAAL
FFGCRSSHDDIYRSELDDFETYGVVRVFRAYSREDVGTKLNTKKGYVQDSLLAERQAFLQLWNAGAKVYVCGSVRMASGV
KDVVMKLVYTAGQKDILNGFTPEEFFKKFEKTRYAAEIFT*

>4385|jgi|CYP505AB2|[Trichoderma arundinaceum IBT 40837]Triaru1
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MDEYAPIFKMDLGMTYPRVFVGSRELVNEMADDSRFIKFTHRLHQEMRAVFGDGLFSAESTSKAWGKAHRLLVPALGPIG
LSKMFDDMQDIAAQLVLKWDRFGPEHEIELIDDMSRLTFDTIGLCAYGYRFNEFYNEEPHPFQKQLKESIVESGRRANRP

DLLNQFYYYKDEEHRQENIVQMRQLCSKIIQDRIDNPKPDANDLLNVMIHGVDKETGETMGFENVIYQIPTLLGGGYETT
SSTLCFIWYFMCSNPETLRKAQQEVDDIVGQGVLKYDMLRNLKYLDACMKEALRMQHPVSLLTRFATRDTVLGGKYFIKK
GQMVSGIWRHFHRDPKVWGADADQFRPERMLDAEFQKMPPNSWKPFGDGLRACIGRGFAEQEILISMAMVLQRFNVEKVD
PDYDLQLTGQMGVKPVDFKIRVRRREGRSLTVGIPGGVSSQQPEKAPQSSVQTRRQKKTDESNIADILGPTTKKPISVFW
GGNQGTCESLVQSLTRSAPEFGLDVVEIRDLDSAVDSLPTDRPSVIITPSYEGRPPYNAKKFVDWIEKKAAAGDKLPDGV
KFTIFGAGNSDWVHTFHRIPKLIDEKLEQLGAERIFEIGFTNVKRDLMGPWDVWCEKLCLSLSGTTKQEHPDRVGVDLHI
ESNKANTVVPVLEAEQMELGVVVANREIADTSAGPAKRHVDVRLPVGSKYRSGDYLVVQGRNADDIVFRVIKRFGLGAED
LMSVQSSKKDFLPAEPMAVEHFLRSKVELAVPITKRQVATLASWADDGTEEYLKLKKMYEDETYQQLLDKRFSIIDVLEE
VPKLRLPFGVYVDLLLPLTPRVYSISSSPLDPTSSSGSEGGLIASVTFDVFETPALSGHGVFRGVVSSYLANRVPGDSIP
CLIRPTKVPFQLPSDASTPIIMLAAGSGIAPMRAFLQERAALKRATGASLGPALLFFGCRHPEKDYIYRSEIEAWEKEGI
VEVVPCFSKPDGEHGRYVPDALWEQRERVWDMFQGGGKVYVCGSAGRLGRSSAETWRQIWKENTGKNETEAFEWFDQIKN
EQYISDVY*

>8870|jgi|CYP505A25|[Trichoderma arundinaceum IBT 40837]Triaru1
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EGAGDGLFTAHSNEPIWGKAHRVLTPAFGPLPIREMFDEMKDISSQLSLKWARHGPHAPIAVSDDFTKLALDTIALCSMD
FRFNSYYQDKMHPFVQAMGDFLIESGRRNRRPGFAPNFLYRAANEKFYKDIAILKDTANAVVAARRKNPSDRKDLLGAML
SGVDPQTGEKLSDSNITDQLITFLIAGHETTSGMLSFAFYHLLKNPFAYRKVQEEVDAVLGRGPAKVEHVSKLPYINAVL
RETLRLSAAIPAFTVEAIEDTLIGGKYLVHKGEPISCLLGKAHLDPTVYGEDATDFKPERMLDDNFARLNREFPNCWKPF
GNGKRGCIGRGFAIQEAVLCMALLFQNFNFSFDDPNYQLEIASTLTIKPKDFYMRASLRHGMTPTELEHRLAGTGFSEDH
HADKKTAGAASSKESQKPLAVYYGSNSGTCEALAQRVAADASSHGFRVTDLAPLDSANQNLPKDHPVVIVTASYEGQPPS
NAAHFVSWIESLKGNELDGVSYAVFGCGHHDWVQTFHRIPKLVDSTLEQRGATRLVPLATTDAADRDMFSDFETWEDESL
WPALKEKYGAGAVSIEGVGSGLIVDVSLPRKSTLRQDVEEAIVTDVRTLTESGSIKNHIEVQLPTGKTYRSGDYLAVLPF
NPKGTISRVFRRFKLSWDAVLTIHSDQPTTLPTDTPISANDVLRAYVELSQPATKRNISVLIEAAQNEHLKAELEKLSGE
NYQQEIGAKRVSILDLLERFPSLELPFDSYLAMLPPMRVRQYSISSSPLADPSKLTLTYSVLEQPALSGQGSHFGVATHF
LASLTPGERLHVAVRQSKAFHLPSDAENTPLIFVGTGSGLAPFRGFVQERAAMIAAGRKVAPALLFYGCRSPDMDDLYAA
EFERWERLGAVEIRKAYSRASDKSLGCKYVQHRMTHDREDIYKLWDQGAKVLVCGSRDVGKAVEAVCVQLVKEKAEAQGK
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>2816|jgi|CYP535D10|[Trichoderma arundinaceum IBT 40837]Triaru1
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ITSSPDVWAHVNNKPGYKRSDWYYTACRIEYQRDNVFTQTDNKKHESRRKQMAPGYSGRENLDLEHSIDQRLQEFLDLIR
SKYVSTSTEIVPVDMARKVQYFTLDVISGVGLGKTFGMLQSDSDVEGYAKSSEEGLHIANYSLALSLSWIAQAPFIGRFI
APSPEDSKGFGKMMATCFRYVNERVANPTDKRSDMLASFIRHGIEGDALRSEALEQIVAGSDTTSSGIRCALLHIMTNPR
VYAKLQKEIAEAVRDGKAPEDGLITHSQAKQLPYLQATIREALRVWPPVANIFPRDIPPEGDTVRVDGKDVFLPGGACIG
CSVVAMQHSTEVFGSDAKAFRPERWFEEDKDKLALMLRTSEMIFGYGKYQCLGKAVAQIELGKFVFEVLRNFDIALINPA
KPWVALNHLGLFTISDMWLQVTERRAVDVDWPNLVPGTFNFPNGSTPREHDNAAGRPHHHVDSADKGVIGPGHRQQAKSH
HRRGPDVRQCLVKRRLFRPSSCPAWAAGGSVQRSGGRAGADAAIRAACCSRCPGGICGAMLAGSRLSTGKSSQETAPRRE
EEAGGSGNELRRDANIGAPLFQTALLALVLATISTPVIHALFILFGAPFLDHALPTLLCAAHFSLLGIFPVIYARGVDSQ
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DE*

>2823|jgi|CYP618A4|[Trichoderma arundinaceum IBT 40837]Triaru1
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PGPNDLYLEWVRKWPDAPFIRHLNWGNSEVLLVNNLEAAREVLQTHAYSFVKPSFFLKLVGEMMGIGILFSVGEQHKQMR
RIMAGPLSKPSVRKMLPIFQDKARELSATFDEAIEGEDKGVVEASAHATIVESLFSRTAFKVISTALLSREISEFRSKSS
PLTFEQCYKGILTPPLLGKLITFINPFIPLRWLPIEANLAFIRANTALRAMLSELIQERVLQVQQKEKSGRSDEQTGKKD
FLTIMIEANLAEKKGVSEKFLVDTIIQCVSAGHETTAGALTWTTYALTQNPEIQKRLREEILSAQQKQPELDAATIDSLP
YLNNVVSESLRVYSPTLLAPWEAGEDLVIAGVAIPKGTTVTTIPAMIHYNPSVWGADVEVFNPDRWDTVSGAVANPFSIE
AFINGPRTCPGRALALLEIKTVLAEMVSNFYLEAVDTDVQFEHPTLTLKPKGGLRVRCDGEKPLCGTCQSHGLTCHYEPA
RPTRRQKYWDRDYVQALEDQVRLLSASLQQAKGGNSPDSQPSPGTAAKLLPYGPKLLKALRDFGSMKWADIIGRDGRPVL
AGPGRFSVFSNSLLPTFEDASRPSAPKPAPSHETFIAEMASNLSLKQHLKTYFLENVNPYYKFVDPIWLNFSDMFPHNDT
ALQLLYGALFAAAAYSSPMASREIADAFMAYAESLVQQCYLEHLCLPVLQALLIMAWYKHMLLDTAKGHLYHYIKQQDRS
VNDVATIRTFWSLYFLDRYTSGFDNSSPPEKQAVYAKANSAMLAFRKQIDKRLYISRNMKPHKTQVVFWISYHSSLINLQ
RPLLNPTDPGMIHNIPTAFRSSTASAMAITRLLKSLQASDEVQYLPPFIIYHIFRAALVHGLNLIAVEEMGDKRMSSGNF
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>3114|jgi|CYP539B7|[Trichoderma arundinaceum IBT 40837]Triaru1
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PHAVEFTIVGHRSILTADPEHIKALLTTNFTHFGKGTKFHRTWEPFLGDSIFTTDGQLWHQSRNLIRPMFVTQKVRDLDI
LERWSDVMISKLPPSGQTVDMCDFFYRMTLDAITDYLLGHSVESLENPNGKFTKAFTEVQRAQMLIAILAPFRRFIPQAE
YRRGIKILEEFIEPFIKATLALTPEQLENISKSDREFTFLHHIALFSRDPKVIRDQIMAVLLAGRDTTAATLSWTMYELS
NYPEIWRKLRSRVLERVGPDAAPTYEDIKDLTCLTHALYETLRLYPAIPYNVRTCRQPDIATLKGDHIVYSTIAMQRRKD
LYPPVSETFADPAIYSPERWEHWTPKPWQFVPFNGGPRICIGQNFAMTEMAFTLVRLLQKYERIEYRGDWAAQYLKADIV
GCPGQGVPIALYEAKQRSKTSHAISHKFHIARKGASSHLIAIMRERITYFHPQDAGIDPSQLKIQDTQVQGPATEAVREH
KITLTLPELPSELAGLLRDLEELHLRWATSASYNTLEPFSSRLSPGLHVSYTPLKEDQDPEKLCTALQAFGRVDCSSPET
YINLSDGRREGSPALFFYHDVEKLDGLAKRLAPVVCSGPTAAECRKQLQELKDAVSLDISYDSTSESVKIQALWPLQKRD
ISVPASPKGRTEVGILGRDAPPGMEAHEIGVSGVLTVIGEQKEPSPALFSFAARHRTASGSFTSQFQEPTGLHPTLQLSL
STTAPPLDDDAECAPYAYLTLPKVIFADRYQLADELFLASKNLTATKYVSEPVDLEAPAYTTKTWGSNVLLQLAPPGDSA
QAEDWTVEVPLHLRYLKPTPTGKEEAGIPYPVVFWACESQQDVAYGVSPFDRVNLGYDGLFSPSTTFWHVNPKPEAGGRL
VNSISVPVVADGASQWVGIGTAVAVGLGFIWILLQLVGGYSKSGHGAATAKAEESKKKK*

>17040|jgi|CYP620B7|[Trichoderma asperelloides T203 v1.0]Triasper1
MSNLIIVQGIVAALAFIIYRLFFRKKQTLLPLPPGPKPLPILGNINDLPPPGVPEFEHWLPFKDKYGPISSVNVLGQTMV
ILHDSDAVTELLEKTSMKTSARAQLFFATEMCGFGEFLPAMPYDDEFRQHRKYIHQQLGTKPLAARFSDIQDVESKRLLL
RVLNDPQNFMEHLKAEASAIILKITYGYTIEPLNPDPLVKLIEDVMSNLSAAFVPMSWPVDIIPALRHLPDWFPGTGFKQ
TARKWRAINEAVVSTPYHFVRKQMELGIHQEQSYVSGLIRTYGNEDGSGVSPEDMKIIQLTATSMYGGGADTTVSTLMTF

TIAMILFPDVQRKAQEEIDRVVGSGRLPEYEDRDNLPYTDAIAKEALRFFPVVPVGTAHKTEEELFFRGYRIPKDSYILP
SIWWFLHDPKVYHEPDSFDPARYLEPRNEPDPLGDAFGYGRRVCPGRYLATESLYLTIARLLAAFTIEKAEDKNGKPIDV
EFKSTPGLVNHPQEFAYSIKPRNEKYASLIRKVERDHPWEESDAVHLEGDLIEEYKANCKAQAKK*

>22045|jgi|CYP548A14|[Trichoderma asperelloides T203 v1.0]Triasper1
MLQSFSLQHALAWLGILLGGGVFYVFAIITYRIFFHPLAKYPGPVIAKVTDAYQLYYAWRGDRHLQFWRLHQKYGKIVRF
GPNSLSFSTSQSLQDIYGFKANVRKSEFYDSFAHPVHNTHNTRDKAAHARKRRVLSHAFSESAMKDMQRFILNNVRLFCE
QLGIEDGGADSKGWTQPRKMDDWCNYLAIDVLGDLCYGKSFRMLESEDNRFALDLVEAATTRHLVCGTMPIVNSLKLDKY
MFPALAAGRARFMAYSKAQLTERTKLGEDADRRDFFWYLLKARDPETGEGFTTPELWAESNLLIIAGSDTTSTAMAATLF
YLTRNPAAMKKVTEEIRGKFNDVEEIVQGPALSSCTYLKACIDEAMRMSPSVGGIPPREVMAGGATIDGEVLPEGTVVGT
AHYNIHHNEAYYPQSFTYIPERWVAGDMNPITGKPTTKEEVERAHSAFVAWSLGPRGCIGKAMAYVEMTLSLGRAIYLYD
MRRAIGVKDISEGNPDLEYGRHRVDEFQLRDIFTSGKCGPLVEFRRAQKA*

>24961|jgi|CYP570E3|[Trichoderma asperelloides T203 v1.0]Triasper1
MSLMTIYLYSILLITLVTFAARRIYFWQRLRHIPGPTTAAWTIWWQLSNALSGRYHERLKEAADTYGPLVRIGPNQLLST
DPEVLRRMSAVRSGYTKGKFYASGKIVPGVDNVVSLRDPAKHKEMRALMAPGFSGKANEGYSFEAAMNRQLLSFIDQLER
KYVTSGSDVRPFDMAEKTQFFALDAIGDISLGQPFGYLDKDEDLYQYNEINTTSLPLMNVVSVMPALANIVHTWPLRLLL
PKEGDQVGFGRLMRFARGYVDTRLDPKTPRAQDMMQAHIDSGMSKNDLIQQVFLSIIAGSNSSAHALRMTLLSIITSPPA
YNALIDEIRRASPAVSSPITWAQAQTLPYLQAVIREGLRMWPPVGGLGFKTVPPEGDHVNGYFVPGGTEIGQGFHGVGRS
KAVWGPDADVFRPERWLDATGDRLKEMTDAVDTHFGYGKYSCLGKPIAMMELHKAVFELVRRFDFCVVNPESPIKTTASI
FLFASDFWVTLTKRNL*

>43910|jgi|CYP528A8|[Trichoderma asperelloides T203 v1.0]Triasper1
MEMGSGLIWNAACVLGSGICLLLLSVVSIALYRLFFHPLARVPGPKLAAISNVWHAYHARNGGMLELACTLHRKYGEVVR
VGPDELWFNSMEAFDKIYSSTKGFEKSDFYLATSLILPKIDFFLRPYFADSLDLLSERDMKRYRLQRRLIGRVYQISNVI
KFEAAVDGVINQVITRLKALDGAELDLKEWMHIIAVECLGASVLSWSPGLIKAGTDWGSSGHSYLAWRRKSVMGLFPTLT
KLTMGTNLFEWVFRDVWNLKFPAPPNFRSFFPDVGKRISRRIKSALNPNAGKDRRIDLMADLIQLHKDKPEFTEVYLRKM
GMTNFGAGHDTMASTLTAIFTMIGTHGEVQKKVTEEIRSAENPSSYAGAVQLQYTRAASREAMRLHPALTMSLSRRVPDN
GLHIHGHFIPGGTTVGCNPAALHRNADIVTGTNPEAYDPDRWLGGDSLDVRPMERYSLNWGGGPRTCPGKNLAEMVVYKV
VSALLEQFDVEVVAPLQIGQPSYYMSMITGAKARFLPVPPPMAGETSKRTG*

>55291|jgi|CYP61A1|[Trichoderma asperelloides T203 v1.0]Triasper1
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PFLQSMDPKFEEYYAKWLSGPLSCVSVFHKFVVIASTRDMARKVLNSPMYVKPCVVDVAHKLLGKDNWVFLDGKLHVDFR
KGLNGLFTRKALADYLPGQEEVYKAYFKRFLDITKENDGKPVPFMPEFRELMCAVSCRTFVGHYISDEAIKKIADDYYLI
TAALELVNFPIILPYTKTWYGKKAADMVLAEFAKCAAKAKVRMAAGGEVTCIMDAWILVMIQSERWREAEAKGLPTDDLV
KPSPMVRMFGDYEISQTVFTFLFASQDATSSAATWLFQVTAQRPDVLDRIREENLKVRNGDINAELNMDQLESLTYTRAA
VRELLRYRPPVLMVPYLVKKPFPITDTYTVPKGSMLIPTTYMALHDPEVYPNPDYYDPERYFSGDAEVKGAKNYLVFGTG
PHYCLGQLYAQLNLALMIGKASVQMNWTHHATPLSEEIKVFATIFPKDDCPLTFEARK*

>123301|jgi|CYP65BM5|[Trichoderma asperelloides T203 v1.0]Triasper1
MLLAAEALFFNLPPGLALVLWLIIIGIVYLISIPIYNVWFHPLRKYPGPRLWAATRIPYTRMIFSGMSHRKILELHQRYG
DIVRVAPDELAYCNGAAWNDIMGHRKRGQGENGKDPIFWKTQQHSVISADRENHTRMRRTLAHGFSAQAMLDQQPLIQGY
VDMLINRLRESCDDGNRPMEMTSWYNWTTFDIIGDLAFGEPFGCLQNSDYHPWVSLVFQRIRGGAINNALRRFPFGERLI
QFLIPKEARKKFHAHFQLTQEKVNKRLADTNPRPDFMEVMTKREGDMKFSYPELVDNASLLIIAGSETTATTLSGVTYML
LTHQEILQKTIDEVRSSFSSEAEIDLLSVQKLGYMMAVLQETLRMYPPVPATIPRKAQPGGDMICGQYVPENTILGIWQW
PTYHSERNFTLPDSFIPERWLGDARFSNDCQEALQPFSYGPRNCIGKNLAYAEMRLILAKILWNFDISLHPDSKNWYEEH
KAYTLWQKPDLNIYIKPRVIA*

>123559|jgi|CYP534C4|[Trichoderma asperelloides T203 v1.0]Triasper1
MALIPVAIAVLVAYQIISSALRLQHHINEAKRSGLPYIVLPCSPFWIGWQVTHKLWIPLIKLLPKSWWDGWLDIMNPNFV
YRTRHEWFAKIGESFFLVSPGRLMLLTDNAETIRTITLKREQFPKWTAVYNILRQFGENVLTTESSIWRMHRKVTSPSFN
EKNAALVFREAIAQTQGMLRMWAGPDGNTRKEPLVSLQRDTMRLALNIISYVGFGMRLLWPGETHAAGTDPKLLKYGSHN
PSAGHQLSFTDTMEFLLEHLLILLVFPRWILKLLPFEKIKKAVLSYDEYVKYMNELLDEKIEDARKGDHIEGMDLMGQLA
KSCFGTDNKDATLTREEIISNAFIMFVAGHETTANTIHFTLIFLAMNPDAQRKIQKDIDDILQGQDPKDWDYDSLVNPMT
ASMIGAAMHETMRLMSPVVVIPKVTYSDQPLVMDGNKYVIPKDTGISLVTISAHVNPRYWPTRPSKITPGKSNILDYVPE
RWFQSLDKDSSAGSEDVAGADSEDFGGFQGSDINAQLFRPERGSYIPFSDGARSCLGRRIAVVEMMAALAVIFRSYSVEL
AVDEWASPEQVDQMSREERARIYKKAQDKSRWTVGQATTRLTLNLHDGQYVPVRIVKRGEEKFVDWVDRE*

>124664|jgi|CYP53A46|[Trichoderma asperelloides T203 v1.0]Triasper1
MALIENVLSPWTLVALGGLLVVSYLYQFLVTYAPLRRFPAPFPAQFSNLWLLSVCRRGDRYDTVDKLHKKMGKFVRIQPN
HVSIADDEAINAVYGHGNGFLKADFYDAFVSIQRGLFNTRNRAQHTRKRKMVSHTFSAKSIVQFEPYIHQNLENFVKQLD
RLVDTSQFKGKDGKKEAHFDCLPWFNFIAFDVIGDLAFGAPFGMLEKGVDLAEVRPSPDSPPIYAPAIEILNRRGEVSAA
LGCFPALKPYAKYLPDPFFSQGLAAVENLAGIAVACVKRRLDNPPDVERKDLLARLMEGRDDKGEPLGRQELTAEALTQL
IAGSDTTSNSSCALMNYVARNPRVLEKLQAELDDAIPQGVDVPTFEMVRDLPYLTAVINETLRHHSPSGIGLPREIPSDS
PGVTICGEFFTAGTVLSVPTYTIHHSKEIWGPDADDFKPERWDNATQRQKDAFIPFSYGPRACVGRNVAEMEMKLIASTW
ARRYGAKVLQGPMETKEGFLRKPLGLDIALYRR*

>124842|jgi|CYP504A23|[Trichoderma asperelloides T203 v1.0]Triasper1
MAYQVLGIAIIAIIFVLFKSLNATDAPKIKGIPEIPGVPIFGNLLQLGVDHARVAQKWATKYGPVFQARLGNRRILFVNS
YEAVKHFWITHQSSLISRPTFHTFHSVVSSSQGFTIGTSPWDESCKRRRKAAATALNRPAVQSYMPILDLESTVSVKELL
NDCMNGSQDVDPSPYMARFALNTSLTLNYGFRIDGNINDELLAEITHVEREISNFRSTSNNWQDYIPLLRIFGKKNSKAE
EYRVRRDKYLTDMLNDLKERIANGTDKPCITGNVLKDPEAKLNEAELKSICLTMVSAGLDTVPGNIVMGMAYLSTKEGQA
IQTKALQAIQEVYPNGDAWEKCLVEEKVPYVTALVKETLRFWTVIPICLPRTNIKDIPYKDSVVPAGTVFFMNAYAADYD
ESRYKLPDQFIPERFLEDTEIGTPHYAYGAGSRICAGFHLANRELYTAYIRLITSFQIVPSDDPSQAPIIDPIECNSMPT
SLTTDPKPFKIGLKPRNEAKTREWIAAAEERTKDL*

>126004|jgi|CYP535D11|[Trichoderma asperelloides T203 v1.0]Triasper1
MVGPIARVAPNILVTSSPDVWTHVNNSPGYKRSEWYYSACRIEYRRDNVFSQSDNTKHDNRRKQLAPGYSGRENLDIEDS
IDQCLRDFLNLVKSKYISTTAKVVPMDLARKVQFFTLDVISAVGTGKTFGMLQRDADVENFLQSSEEGLRIANFAAALGF
SWIAQAPFIGRFIAPSAEDSKGFGRLMAACFRHVDERLENPTDKKSDMLASFIRHGVLGDDLRSEALEQIVAGSDTTASG
IRCTLLHIITNPRVYAKLQKEIDQAVRESKAPRDGFITHSEAKQLPYLQATIREAMRVWPPVANIFSRDIPPGGDTVNID
GKDVFLPGGAYIGYSALAMHRSTEIYGEDAKAFRPERWFEDDKDRLATMLRTNELIFGYGKWQCLGKDVARIELEKVVFE
LLRNFDIALINPTKPWTALNNLGLFTISDMWVQVMERGSA*

>129517|jgi|CYP65U10|[Trichoderma asperelloides T203 v1.0]Triasper1
MTTAWGWQISPFSWLTTTALTLLTYAVLRIIFNLFLHPLSNIPGPVTWKVSRLPFIWGLLRGTLVHDIERLHRKYGPILR
ISPNDVTFAHEDATRDILAFRKDRQPFLKDPTWWKANPGMPDSMISIIEPKQHARIRNLLAPGFTQRALKEQEDILHFYV
NLLVERIRELVTKEPETGAVIDVVRWFNFTTFDIFGDLGYGESFNCLQDSKYHPWVALLFNSVKAVSFVAAARLYPVVER
ILFMCIPPSLREMQKNHCQLISDKVNRRMNFELERPDIMSHVMQGAERQRLPQTTIDTTFMVLTIAGSETTATALSGTLN
YLINNTDKFDILKREIHQAFPEENDINLDALRKLPYLNAVINEGLRLCPPVPWIIPRKVPEGGGTVCGTWLPGGTSVSIQ
AYTLNRDPELFHLATSFIPERWLSDARTNPESPFFHDRLQAVQPFSEGPVSCMGQHLALAEIRLIFSKLLWSFDFEVLED
RKKKWEDMRTFLIVEKKAIEMRVTRRAAA*

>129981|jgi|CYP602B6|[Trichoderma asperelloides T203 v1.0]Triasper1
MDPQSNSTSFPWAAESSALSAYWTPRTGYYLTIFTVLLSVWLFLRSNPESSKLCVPLYKTSKLKWIFDAESQIVKSYKQF
QDQVYQIKATEGIQAIIPPKFIAEIKGLPEDILSATEAVADALQTKYTKFSPGHNGEMLSLLVRTRLTQNLAELIPQLKS
ELEHYIGTEFPACDDWTPVKWQPFALRGIARLSGRAFVGPWLNREEQWLKVTIDFAIDVFMSVIKLQFFPEWFRPIAQYA
VSDLRKIRKDIDIAKSLLKPLLEERIRDMEISACHEPPNDLMQWLIEALPEEEKADVDTHALLQLILAAASIHTTNNLLF
ECMADLADHPEIQQELREEAYQILEAENGWARKESMTKLKKLDSFMREVQRLRGNVTSFIRKVIKPIDLSDGTHLPAGTR
VLAPQAGISIDEQFFHNPTELDPLRFYHMRQESAEASNRWQFTSLNDTNLNFGAGKHACPGRFFAGNEIKLILAFFLINY
DVRLKKGDKRPQPMALVMTKGPNPNTEFEFRRRQLAN*

>130662|jgi|CYP541A2|[Trichoderma asperelloides T203 v1.0]Triasper1
MASPTPIPKPPGVPLLGNIFDVNPSNTWDSLRKLSDQYGEIFQIKVLGKTLVFVASVALAEELCDEKRFRKYVGGPIVEI
RAAVHDALFTAYDNEPSWGIAHRIIYPQLKSEVVSTHFREMRNLAGELFHTWKNLGGSNTISPLDQLNRLNLETNTYVFF
GKRLNGLTGPPHPMIQAMEDSTSEAMKRPTRPGLLNWLVYGRKFKSSNKAMREYASELVQYRNENPTDRQDMLSIMMTTP
DPETGKALTPSQVIDEIVSMPIGSSTAPCLLVYAIYYLQRNPEVVVKAREELDRVIGAGEFEFDHLGQLKYVEGIMRESL
RLSSVAPGFNIEPRPREGDKSPVLLGGGKYQIAHNQPMIIVLQGVNRDPTVFEEPLAFRPERMVGEAFDKLPAGAKKWFG
NGKRECIGKQYALQWSLIILAMLIREFDFEPVSPEYQLEEDGWFNTRPVDFSARVKARAKATY*

>131027|jgi|CYP5333B1|[Trichoderma asperelloides T203 v1.0]Triasper1
MASVEALYSDLMSRVNETHQSIAVAVIATFLVLLFTTKALSGSPTTVAANGNQKIPSSPSYWLPFLGHALSMAFGKDSFL
AGMRSRFPEGIFSLKMAGRMHHFIYKPSLAAALLNLQRPAEDEQMLANRLLESTFGVSKKDQAIYNKIFPEALAQYKHLS
SEPGLSEVTSVALSQVKQNIINLVTFSPNPMDQMEWEKLADVDIIEENAKEGPITQVDLMELTRNFVSITVIPAIYGTDF
VENFPEIWKLIWVYNESFVLLATGIPAWVPWPRLQRGKLARRRVLAMLYEFEEAMDRHLNGEENDPKWQNLDNVSKLVKG
RIELFRKHGVSLEGRAAFDLALLWASVANSNALIPWMLFELYRDPVLLEQVREEIAPYVNAVQPENEFGSAVWVPPVLED
IDIDGLITKCPLLKASYIETLRVYSGGWAMKLMYHDTVLEERGKGGESFLLKKGTYAHIPQELHQFDPQYFSNPTEWQAE
RHIRETVDESGKKVLTADMGTLRPYGGGLKMCKGRQFALREMLLYTAAIITFYDMQPPRGGSWGEPQTRKLVANRHPKKP
LKVWIKRRGQLAEGEEKEDR*

>131491|jgi|CYP617U2|[Trichoderma asperelloides T203 v1.0]Triasper1
MILETDRIREWTKTIPNKGLLRYYMAGNLERILVVGPKALNEILVTKVYEFPKPESLRLKLLRFTGNGILLAEGDEHKLQ
RRGLLPSFSYRHIKNLYPIFWEKAVEMADAIEKQQPPRSNGTVVQISDWAGRVTLDMIGLAAIGRDFNAVHDPATEFHQQ
YDKLRMRPSTWTRILILISMLTIGFKGFFRLPTKWNRESMAAANYIRAYARQIVEDKKETSQGGEDDAQEKDIASLAMAS
GAFSEENMVDQMITMLVAGHETVAASLQWAVYALGKHAEMQTLLREEIRTHFASSSNITAAQVDSLSYLNAFCNEVLRFY
PPVPSTVREANIDTSLAGMFIPKGTSLLILPGATNLDKDRWGSDAEEFSPDRWLGDGRANSGGADSNLANLTFLAGPRGC
IGQSFAKSELLCLVAVLVGRFRVELEDPDKKLEINRSISATPKDGVMARLIHLEGWRGK*

>132397|jgi|CYP52X6|[Trichoderma asperelloides T203 v1.0]Triasper1
MDPRNIQTILALKFKDFGLGVNRTENFEPLLGHGIFASNGKYWEHSRALLRPQFNRGQVSDLSLEEDHVRAFMTVLDRHV
KPDGWTSLVDLQPLFFRLTLDSATEFLFGESVNSQLVDHQPSSDDDVNFAYAFDRAQYTLSIGARLGPNYKLAHTSEFTR
MVKSVHDFVDYFVQKALAEGASEKKSADEGRYVFLKALAKDTQDPEELRSELLNILLAGRDTTASTLGFFFYTMADPRYS
HIYRRLRTIILEEFGTYSNPKEITFEKMKSCQYLQWCLNECLRLYPAVPMNVRTAQVDTTLPVGGGKDGQSPIFVRKGQD
IGYSVFLMHRRKDIWGPDAEIFKPERWETRRPGWDYLPFNGGPRICIGQQFALTETGYVVIRLMQRIDSIDGSQAGPVSH
GLTLINSPGEGVNVKLHFAE*

>134021|jgi|CYP548AA1|[Trichoderma asperelloides T203 v1.0]Triasper1
MAFHVVPACIFASSFVALAVLSYFHLQQPQSLLWYSQTGVLILVEWILSNLVYRLAFHPLSKYPGPLFAALSDWYTVYWI
ADGGRHLEFDKQHKKYGKFVRFGPNRLSINSAQASRDLHNVNSNTFKADAYSSFKRFFGAEMSLTTVDHKAHAFRRRVNM
TAITPTAVKEFEDQVTPHVDEFIDIISEGVGSKKEGEHGWSSGKDMCFYVSFCIADIMGSMTFGRTWNVQRDPKYRHFVK
DLPNGVAGIHLVGHMQSLFFCNLHKLLFKQLIVGVGNLMSVSRSFALWRLEQTSMPYRDIWAALLASRDPKTGESFSTEE
LISEASLFIIGGTDGMITATTSTLFYLTHNPRTLERLTREIREAFPLSPEDIGKKASEIKCPIRFASAELQSVKYLPACI
DEAMRLSPPVPSILPRVVGPGGMEVDGEYFPAGVNLGIPHYCMHHSEENFAQPLTYAPERWFPEERERGLKDGSVPVSGK
ESVKMQPAVGLAHGFTPFGAGRSGCIGKHLAYQEMSIVLARLIWLFDIRLDPSSNLGEGVGDAKEGRECRSEFQLYDRFV
SSQNGPMLQFRYREELAA*

>134518|jgi|CYP617A8|[Trichoderma asperelloides T203 v1.0]Triasper1
MALKLLTTVALVGGAGWTYTTQEAWSRGSFIKAATGIWLVELFLYAIYELFLYPNFFSPLRHVPTAPGGHWLLGHGKQVM
AAKPGAPLREWVTTVPNEGLIRYYWLFNRERLIVTSPKALGEVLVTNNYAFRKPENVRSLLGRLLGYGLLLAEGDEHRHQ
RRNLMPAFAFRHIKELYPLFWDKARESVQAMMKECGQEGQTEMEVSEWASRVTLDIIGVAGLGKDFNSIQDENSDLVQTY
GYLFKPRPPAKFLIVLATLVPSWLIYRLPLKRNRLVNEAARKIRAMCRDVIREKKEKMIANKERTDVDILSVAIESGQFS
DENLVDQLMTFLAAGHETTSTALTWAIYFLCCFPEIQTRLRNEIRERLPSTDNAGAKLTSQDIDRMPYLHAVCSEVLRFF
SPVPVTIREASYDTTIQNVPVREGTRIVLAPSAVNVDPKLWGADALEFNPERWISKNRDSEESNKRAASGGADSNYSFMT

FLHGPRSCIGLTFATGEFACLLAAWIGRFEFELVNKDELDMDKMDIKGNVTARPAKGLHVKARVVPGY*

>136410|jgi|CYP51F1|[Trichoderma asperelloides T203 v1.0]Triasper1
MGIIQDAAGHPLAQLYFQQGIGAQIAIGVAGVIALSVFINVIQQLLFRNPTDPPLVFHWFPFIGSTVIYGMDPPKFFRDN
RAKYGDVFTFVLLGKKTTVAVGPAGNDFILNGKLKDVNAEDIYTVLTTPVFGRDVVYDCPNAKLMEQKKFMKIALTTEAF
RSYVPIISHEVTSYFKRTAAFKGKSGTVDIPKKMAEITIFTASHALQGSRIRNKFDESLADLYHDLDMGFTSINFVLHWA
PLPWNRKRDHAQRTIAKIYMDTIKERKALGDEDNELDIMKHLMTSVYKNGTPVPDHEIAHMMIALLMAGQHSSSSTSSWI
MLRLAQNPKVVEDLYQEQINALGADLPPLQYEDLAKLPLNQAIVKETLRLHAPIHSIMRAVKQPMPVPGTKYVIPPTHVL
LAAPGVSGSDPSYFPNPFEWDPYRWLPGSPNAPLIAARNEEEEEKIDYGYGIVSKGAASPYLPFGAGRHRCIGEQFANLQ
LQTIIVETVRMFKLSNVDGSDKIVGTDYASLFSRPLEPAEIRWERRD*

>137175|jgi|CYP5866A1|[Trichoderma asperelloides T203 v1.0]Triasper1
MSIDKLWLLAAGSITAVAYFAVRLVHHRLKYRDLPCPPHSMLWGHLKVFGKYVKSFPQGAYIQPTITQLKIDYNLPDIFY
LDLWPLGPQFMILAAPEACAIPTTENTFDQHDVVTDFFNRGVGTGFIEATNGALWKHLHRTLAPGLTPSIVKGYYPTIVE
EAVAIRRRFWGIAKSGEVADIRHELGHFPFNVMGKVLLDETLSVQIYEDICAAFDAQTAVNRTDNPFTKWRLGKDVRRKW
KSIETALEPKIRARFTALQQQDVVPTKSGATSLLDRMMLSEVQNGRSLGQDLMQLMLDNAKGLLLAGFGTTADTSTYILM
LLSAFPEALQKLREEHDRVFDKDHDKTVQMLQEQPGLIRSLPYTTAVINETLRMFNAGLSIRVGPSAMPTMEYKGRSYPL
KDQVVAISQHAMHCDSKYFDEPKLFKPDRFMSEEPSFPRNAYRPFEKGLRSCLGQPLAMDEMKIMLVMVARSFDFELRDH
NPSDKPKYSFTDLDTKLGDHAIQHWAYTAGPAGKVMMKVTERSTAN*

>138100|jgi|CYP55A26|[Trichoderma asperelloides T203 v1.0]Triasper1
MRLIAKLLPFPRLVRSAPSQKYIRTIASMATDAPNFPFRRASGLEPPAEFSQLRASNPVSRVKLFDGSLAWLVTKYKDVV
TVATDNRLSKIRTRPGFPELAPGGKEAAKAKPTFVDMDPPDHMHQRRMVEPFFAAQHIKELQPYIQKTVDDILNAMKSKG
CSSGPVDLVKEFALPIPSYIIYTILGVPFHDLEYLTQQNAIRTNGSSTAREASAANQGLLDYLANLVDQRMQDPKDDLIS
KLVIEQVKPGVIEKADAVQIAFLLLVAGNATMVNMITLGVVTLFQHPEQLQQLKADPSLAPAFVKELCRYHTASALAIKR
TAKVDIEIGGKLIKANEGIIASNQSANRDEDVFTDADKFNMNRQWPAEDPLGFGYGDHRCIAEGLANAELSAVFSTIFRE
LPNLRLAVPIDKINYTPLDRDVGIEDLPVLF*

>151784|jgi|CYP620S4|[Trichoderma asperelloides T203 v1.0]Triasper1
MASTILIQTFIALISFIVYWQLLRKPKKNLPPGPKGVPLIGNIFDLPPDGTPDFVHWRSITDKYGPIASIKFMGQPLILI
ASKEDALEILEKKCSTSSTRPNFEFGNYTGFGGIVSIRKHGKEFKFHRKLMHKGFGTKLLVNRYADIQELHAGLLVQDTL
KTPENIIKHLENHANAVMLKVLYGYNINPHGDDPLIQLNDRVNIKFFHAVDAFGRLVEYLPAMKRLPNGFPGTKFKAEAG
EQYPHIQAWGEVPYRFTRKQMASDKGMDSYVAKLVREYSGDTKEPNEADEHAIMWSAAGLQVGGAETTVTTITGFILGAI
MFPEVQKKAQEEVDRVTRGTRMPVFTDREQMPFIDAMVSEALRWFTLTPMGFPHALSEDTTYKGYDLPKGAYLSWASWDF
CHDPSVYKDPYKFDPERFLEPRNEPNPKWTVFGFGRRICPGRHLADAALFVNMASLVAFFDFRKKVDEQGNVLEPKLAID
PVRSAVSKPAAFPFKVTPRSERHVELLKALEKNYVVEESDAGLLGELPR*

>152634|jgi|CYP618A4|[Trichoderma asperelloides T203 v1.0]Triasper1
MESLVVTLASCAGVVLLLQYDYTTAPVAAGFGVAFFVLGTIVHKIARALIYPFYISKLRNVPGPKDNQFLVGQAIRLLKS
VGPNELYLEWVRKWPDAPFIRHLSWGNSEVLLVNNLEAAREVLQVHAYSFVKPSFFVKLVGEMMGTGLLFGVGEQHRQLR
RITAGPLAKPNVRKMLPIFQDKAKELSDILDKAIEGEDRGVVEVEALFNRAAFKIISTALLNRDISNFRSKNSPLTFEQC
YKGILDQPLLGKLITFINPFIPLRWLPIEANLAFIRANTAMRSMLAELIQERVKEVRLQQSEKKEKSSQSDEKPEKKDFL
TNMIEANLSERKGVSEQVLIDTVIQCVSAGHETTAGALTWTTYALIKYPEIQKRLRKEIVSTQQKQPELSAATIDSIPYL
NNVVSESLRVYSPSLLAPWEAGEDLVIAGVAIPKGTTVTTIPAMIHYNPSVWGADVNVFNPDRWDAVTGAVANPFSIEAF
INGPRTCPGRALALLEIKTILVEMLSNFSLEAVNGADVEFSHPTLTLKPKGGLNIRARRLPLCGNCQAHQFVCHYESARP
ARRQKYWDRDYVQALEDQVRMLSASLEQSRDAGILKSSPQAYQLSPSEAASRLPYGPKTLKALSDFSTMKWAAIIGQDGV
PVLAGPGRFSIFSKTQLPTFENESQPLRVPKPPPPTETFLLEIESNLSLKQHLKAHFLENLNPFYKFVDPIWLNFSDLFP
HNDTALQLLYSALFGAAAYSSPMTSREMAETFISYAESLVQKCYLEHLCLPVLQALIILAWYKHMQLDSAKGNLYHYATR
RDHTANEITTIRTFWSLYFLDRYTAGFDSASSAEKQAIFAKANSEMLKFRKQIDKRLYISRSTKAHRVQVVFWISYHSVL
TNLQRPLLNPFDPSMAHNIPAVFRSSTASATAIARLLRALQATDEIKYLPPFVVQHILRCSLVHGLSCLAIEESGGQRAS
SGNFWLCFRVLGELSIVWKELSEGTMPFALMATRNWGFQQDVVSGIGEADKEKYSADDGNDDVDYGTGLGMSDDFFGAVG
ITDFAL*

>152717|jgi|CYP642C1|[Trichoderma asperelloides T203 v1.0]Triasper1
MNRLDVIPSSTSHLGVVEPVFTEPHVSFPFPYHFLLLLLLIAPLLHTYRGRKGYSEKPLSVKIIKTISWLRYKLYSFVYN
AILNCARPVLSINIFPRKIVVTDPSMESVLSRHTSETSLANVIFLIGRRVFGLSDSTIEAIGGYDPRPIHVGEFSSASNA
RALLATMAETTGQKLQSQPDVQETELGPWLFKLTSSAVASALWGPESPWVVDEEFQNQFMELSGSQMTLLRPFSKYTAKA
AHKARTFIIDRLQASHANNRASRVRQIAHRINAVVMSDPEWESNKDYFNVELLTSLGLMVTPSTMAVWMIRHLLLRPDLF
DRVIKEARNPNALDEEGNIDLTRIRESFPFLAACLYETLRLHMTAIPRVAKADFDVTVPNSQPIQLKSGDLIYLAMSSFN
RNIETWGPDASTFSPERLLNNSGNLSASMVRKLRVFGVAGNLCPGRKVGFETILYVVASVLRDFDIENPRGESDLYPEPR
TEDGFGIGFERCANDINIRLRRVA*

>153711|jgi|CYP65BQ2|[Trichoderma asperelloides T203 v1.0]Triasper1
MHPAVAGMSFFLGPKLWALHYGFYARLELSGEGHRRMLRMHMKYGPVIRVSPNHLAFCHPDAMNDLSSHRKPGQLENGKD
ESRSLSVPHSIIGASRTDHSRMRKSMTNGFSQQSMISQQPLIKVYIDKLFEKLEETSVKGEKIDAVAWYNYTTFDIIGDL
AFGEPFGCLQESTYHPWVDLIFKSIKGIAFDSSFRRMGYLHDILMLLIPKSMKDKFEEHKKLSEEKVMKRLKTETDRKDF
IASMISKKGKDELSFQELTVNAGILVIGGSETTATVLSAATYFLGSNPKPLKKLCDEVRSVFNSEEEIDLFSVGRLNYML
AVLDEAMRLHAPVPATTPRTINEQGDTIAGYYVPAGTNIDIWYWTMFHYPEYWTQAEDFIPERWLGDPRFEHDKRKLFTP
FSVGPRNCIGKNLAYAEMRLILAKLIWNYDIELAEESVDWDKRCRCYILYEKGPLYIYLKPRQG*

>153932|jgi|CYP503D3|[Trichoderma asperelloides T203 v1.0]Triasper1
MEPLLKYPLKLSSAAKQVGLIPSLFALGALFLALRFSVTSKTENGIPVAGQASIFEPKWLLRLRFIRGSRSIIKQGYEKY
RDLYIVRRWTSDVVIIGKHKYLEEIRAKTKDSVRSVEPFLLDLAGDYFKQGQAFLESDLQNRVLHQKLTPNIESLTPIMK
SELEFALKQELPDIKAEDWVEVDPARVFARTIARIVARIWIGPDECRNEDWLVATTDFTENVFITGFILRFVPRFLRPVI
GPWLPTYRSIVKSSADARRIVAGLARKRSPAKEKTDDYVKGDDVLQWTMDMANDKELEENNLAERILTLSLAAIHTTALT
MAQALFDLCAHPENIDTLREELTDVLDTEGEWNKKGIDRLNKLDSLLKESQRFNSVFLLTFNRFLSVPVTLSNGVHLPAR
TRIAVPQYAMLNDPANVPGGNPDAYDPWRYSRLRSSEPSNSKKHLFAMTDSTHMAFGYGKYACPGRFFVANEIKMTLSHL

LLRYDWKFPKGRGRPQNFTIDDNIYPDPSARVLMRRRAVSAKEEELLGF*

>154359|jgi|CYP548J2|[Trichoderma asperelloides T203 v1.0]Triasper1
MGYIVYQLYFHPLAKYPGPLWAKLSGSRRGYHAWVGDLHYDMWKCHQKYDIYSHGKNMQKSLPYLVMVHNTPSTFTLIDK
KEHAWKKRILSQKFSDSAIRSYEPKVLTLVDRLCDVLCPRPSENDSGESAIPETKSVWSEPFNMATWCDNLFFDLMTTVV
FGECFDLIRSPWYRYVPEALARSNQRVSVIVQWPMIAFRRLDKKLFKDSVHGRKEFLRFVHNLVTDRLTRGAGKGDVFSG
LLDALDPTTGNKLSRDEIVAESILMIVAGSDTSSTLLSSIFFYLAKDPQKKERLVKEIRSCFPTRDDIHLGEKLNSCRYL
QACISECLRLAPPVASAPFREVSTGGAVVDGHYLPAGANVGTGIYSIQHNEQYFPHPFEFIPERWLEKENPYGINQTEAH
VPFSIGPRACLGKSLAVTEVSLLMAYICWMLDFEIAESLKDVGGGTKNGRHGRHRPGEYQLYDHITSARNGPWIKFRRRG
LEF*

>156709|jgi|CYP5080B6|[Trichoderma asperelloides T203 v1.0]Triasper1
MNLNTAELIKAAVPEAEGRNARIISQNVSDNRDPNFLSSDFPRNPPKLYITAESDEFDAVTFAEWQAEGFDVEYLPMGNG
GDEYLQKLRGLRGNQTISAFETFGIIAYGDAAAICLKHYHIMDNNPDFKLRLLVAYYPTEIPDPKGRFPNNITALVHFIA
GEDVGVTKQTQMVGIQGKKRTSRRTIQPGIGTGGLLQLAYPSYTYQAQAGFAEHDLDEYNMICADLAWSRSLATARRAFA
QTVDLEQVWEENVQEFYSQYFGNPKSLKLTLISRTIGADRIVDEIHVRFKHTQEMPWILPGVPATQKIVRILVVSIVTLR
GGKLYHEHVYWDQASVLVQIGALDPDVVPETARKIGIKKLPIVGSAAASRVLKGWDPEQEGEADNELIPGWHDDDEGENE
GENEGENGEASNKIVGNGNDADKIGELAQGGFERENIALHRKYGPIVRLAPNMFSIDLPESVNTIYGIGSKLPKSEWYDG
WKHPSPDAWTLFPDRDIKRHAQTRRVFQGLYSMSSLVSYEKYVDECADILLNRMSICSKSREPINMGHWFQCYAFDVIGN
ITFSKPFGFLDRGKDVSGIMRALNKVFAYSTLIGIYPSLHPYIYSVTSFLGIGGAAGRSYLIRYVKERILQRKNEREITE
EKEKGQSYGLPQDFLEKILVKNKDAPSKVTDYHVFMMSMSNIIAGSDTTAISLSAILYHLLKYPDVMSKLRDEVDQSING
ADHIHLSFKESLEMPYWQAVMKEALRLHPATGLPLWRNVTEGGLHLNGQFFPEGTTIGINTWTAHYNEDIFGKDAAVFRP
ERWLEAEKEGGDRISQMNAYYFPFGLGSRTCIGRHISYLEMSKLVPLLIRNFDFELRDQENEWKTTNYWFVKQDNFDVTV
RPRAAM*

>157509|jgi|CYP5818A1|[Trichoderma asperelloides T203 v1.0]Triasper1
MPLALHCSSTEWVTIFITCAFLIIPVPTYRLLFHPLAVLPGPKLAALSSWWQIRKIIAGKPYELALHDRYGPIVRTAPNE
VVINILFLIKLNLIDFDAESSTSLDKGPWYDMMRYQLIRRSAGPAFTASNLKRFKPKVIEVMQKVCERLHRLNGEEVDTS
EWMHIIVLENILEQGHNHGDLELNLTFWRRTSVLGHLPTLRVLLDIIPMLRKHIFQILDLPTSYSSQGIGLPAHIGPSLF
KQLLHRISSIENPSFENGRDLIEQLLAIHIDKPKFDLDYARGIAGSCVAAGHDTTGSSLVSILCRICTSPDLQRRVEQEC
RGERVPVGFEDRPSTITSACVREAMRLHHVTNFSLSRVAPRDGLQLHGYFLPEGTVLGCNPTTFARNTDLFGPDAREFKP
ERWLSGDEDHIKTMERYNLLFGGQSRSCPGQNLAKLIISSVVPRLFRNFDIQVKVPGGGFDNYPPQFWTMLSGSKIRFVS
R*

>157934|jgi|CYP58M7|[Trichoderma asperelloides T203 v1.0]Triasper1
MLGDLLRLWVVITALGAYISIRTIYRLYFHPLSHIPGPKLAACTHLYEFYYNVILSGKYLFEMEKMHQQYGPIIRINPRE
VHINDPTFYDEIYASSSRKREKDPKFVPTYALPGSMVAAVSHELHHLRRGILKDFFSRRSVLELSDMINERVQALMQRLE
GFRIAQATVSIDDAFSALSSDVITSYCCGKHWGFIEDPDFRNDVRKATADAAAFTHISRFFPWLVTLSTFLSPRTLSILM
PGKAGLFGFLESFLEYAQKGASTGKRNSMLAKLADPSIPPQERSFHRQRDEAFGIIGAGTETTATVLTIAFYHLARDNTV
REKLQAELKQLMPTPDSTPTWIELERLPYLDAFISESLRIGSPVLGRYTRVAPTETLTYKNYVIPPGTPMSSASYFIHKD
ATIFPDPDAFRPERWIEAAEKGQNLKKHLVSFTKGSRNCIGINLAYMELFLTVAAFVRRFNLELVDTTPDDLRVVREFLV
GFTKNGNVKVIGKLSLVDE*

>159287|jgi|CYP537A10|[Trichoderma asperelloides T203 v1.0]Triasper1
MLLLSPVVLLAAAALLATIQLIRCLRSPLSKIPGPTVSKFTTLVLKWKEIHAQRTTYVHQLHLQYGPVVRIAPNEVSFTS
WEALKEIYCSGGSGYDKTEFYDLFKIYGRRTMFTTLDKAGHAKRKRILADRYANSNVMKSASVTGVQERSSKFLRRCVSS
PGGVADIFVTLHAYACDCITHHLFHPHGTDCITNKDDEEMMHQVAADDSLQNRLISHYVPTLYRLFSKVLYIFAKPRETP
LADDFVLETSQISGPASFTLMSRFEEKSSDLDYIDKAAECLDHMAAGIDTTGDGLCFLLWELSQPRSLGFQRKLADELHQ
NPGLPLDRLPYLDAVVNEGLRCFPPIPMSLPRYVPQGGRSVDNFWMPEQTIVSCQAYSVHRLNSDVFPDGDRFNPDRWLE
QDGDADRRRMQFAFSNGGRGCVGKQ*

>159593|jgi|CYP548W5|[Trichoderma asperelloides T203 v1.0]Triasper1
MDFKAIDLGRLHFPADLPALQIWVKKIGGPLVATVASLLLYGLYVLVYRAFFHPLAKYPGPFLAKFTNLYSAYHAWKGDI
HLDMHRCHQKYGEYLRYAPNRLIINNVNALYDIYGHGSKVKKYKNYRVLAQQAPNTLTLSNKVQHARRRRVVAQAFSETS
LRRFEPKVQSVLERFCQHLRNAANDAEGGWTSARDISKDFNYLAFDTMTTVSFDSDFDTIRNPENRYPIGALEESNIRLG
VLLQESKLTSFNLDKYLFPASIIARNQFVGFLRKLLKKRLQAVGISDGKDIFSFLKDCKDPDTGAELSPIELSTETALLV
VAGSDTTSASMAGVAHYLTGSSSTYRKAAEEVRTTFSSLDEIVFGPKLNSCAYLRAVIDETLRMSPPGGAALWREVERGG
ALIDGTYVPEGTDVAVGIYSIHHHESYYKDPLKFDPERWFRPVNEDGTARADSARQPYMPFSIGSRSCVGKPLALAQIML
TFARLLWEFDLRRADNEPGWELKDIKPVEYKFRDHVSARKDGPVVCFKPRSS*

>159870|jgi|CYP5042A6|[Trichoderma asperelloides T203 v1.0]Triasper1
MHFHCFFTVPACLVEYFKPVGKRKGQSGIKPRLPAGPAGVPLFGCLLTLKNVREDPDRQELKDLAKFGEMTTLHLGSKTW
ILLNSQRVVSEIIAKRGNATNTRSPMPIASGIVSHHRRSLLLPQEQWKEPRRVMHSLLNGTALKQYGEWQQQESAQMLAE
YLFQPKRWYKHNYRYANSVVHRIVLGERLVKSTKELSDLQDVVTYFVGSIGSSIIDWFPELARLPRFLQVWRPHWDQLAE
WNYNVYKSWWYPVRKQIEDGTAPPSFVRDVLLHPDTKYSGDDEDAMYLALQLIEAGSDTTREALNIMIMASLEYPHVFKK
ARDEIDRVCGTGNDARYPTLDDMDDLRYICAMSKEVLRWKPIFILTPDHTSSEDIDFEGYHFPAGVGFVINEVVVGNECE
NPDEFIPERWMDGHETDITHGLWQFGGGRRICIGYRVAQRSLFLNIARLIQCFDFQPNGPYNPKFLNLESTDEPFPVKVD
LRHETYRQLIIDEATRAGVLEDAKLARDIL*

>160106|jgi|CYP5789A1|[Trichoderma asperelloides T203 v1.0]Triasper1
MFIFVLLFGGVALWQAGTVIYYLWFSSLAKIPGPKLAASTLLYEFYYEVICSGKYTRQIEKMHEKYGPIVRISPYEVHIK
DPDFCLEAFSPVKKLDKYGWWYRVFGGPGATVSTEHHHVHRSRRATFKNFLSPVAVRDFVPTIVEKVKQAGLIMSHHAHM
GKPLNMSNLYRCIAADTVSAYALPASLNMLDSDDLGEEFQSGLRLFFEAATTMRFLGFLQPLMMIMPDLIFKRLLTDPAR
SLIKLIRTIQKPADIEKSRPCLLDRIKRNNYRENGDFRERLLQEAEQFIVAGTETTGYALSVTTFYILQNADIQKMIRQE
LIDAKISINDDLEISSLQNLPYLSAVITEGLRFAHGVGSRLPRVNKSSDVQYHQWLIPAGVPISMTSRLHHEDPQLFPEP
LTFRPDRWLQPDSKRLKKYLSPFGLGSRICPGMHLAFYEIYIAIAYIFTHFGVENSGTTKDDLISAHDLGAPFPKRDSKG
LQVTLQLRQTQPLSKQ*

>160664|jgi|CYP65EU1|[Trichoderma asperelloides T203 v1.0]Triasper1
MAVLIPQSPLEWCLFATILSFFYIVSFLFYNIFLHPLRRFPGPLINRASVLPKLYFLSRGRLVYHVKDVHTQYGSVVRIA
PNELSFTDPQAWEDIFIRQPPGIARNPHGHALAPDMAFYNPFNDLPPSIISSSDEAHHHLRKKLSPGFSDRAMKAQEPLI
GSYVDLLIRRLREHSTDATGRPQSVNMRDWIAYATFDIIGSLTFGEDFGCLEGSGYHPWIALVLGSFKGRVKIQIFKALG
ILAPANWIMRQLGVGYKARKMHFELVLSKTKKRIAMGTDRSDFLDTLVRDGMSMDGLKRNATLLVNAGSETTATLLTGTL
YLLAVHPDVLQKLVAEVRGRFQRREDITLTSVAGLTYMLAVLDEALRIYPPDGVSSPRLVPAGGHEIAGSFVPGGTRVGI
WQWAIYRDERLFLEPSRFDPDRFYNKGDEKSRYAGDRLDAVNAFLVGQRSCIGRNLAYAEMRLILARLMWEFDLSIDESS
RNWMDGQENFELWVKPDLNIHLKTVDRGQ*

>161979|jgi|CYP671C2|[Trichoderma asperelloides T203 v1.0]Triasper1
MASGLSHALVVALQSSLQATASVSLLAGIVSHHLVFRPFEIDGYAWQLFFTYFTAFFVLIVGNVYAAGYSAILALVRALL
VTTAYNTGVIASILIYRAFFHPLKRFPGPFLAKQSRFYAMNNAAKRVKAYEDIQNLHKEYGDIVRVGASSLYVLAILSYK
CYEPSLMFIVGPRELSINRPSAIRVIYEHPTRTTRSPWYAQVSNDVTKISLNSTRVLKVHKLRKKAWERGFGFRALAVYA
PRVKAKVDLLLSKIAEHSGRPIDMTEYAMFFGFDVMGDIGFSKDFHMLESGSEHPAIKGVHESMLAIGVLGTAPWLLSMI
SKVPGAAAGFSRFTTWCHQQLQEKRKVVADEMAMFKDQDPQDVISWLIKAFNEGDSSAPPGEMAMQEDARLLIITGSDTT
SAVITNALYFLARNLACYRQLQAAVEEQFPKGINDWTFERSIPYVDYVIQETLRLKPSVPGGLPRVVPPQGLMIDNDFIP
GGTVIAVPTYTIQRDPRFWHDAHVFEPKRWENLSTEKAPWIPFTRGQWACPGRNFAMMEIRMVISRIALQYNIAIAEEDL
GERFDKEAKDTFTLTLPPLRLVFSPK*

>162614|jgi|CYP5334C1|[Trichoderma asperelloides T203 v1.0]Triasper1
MISQLYETSPGLLAVGVALSLATVVVFTFRLWGEFVGNAILSTFNGGVLSTGRAAPGPKWQWPNGQFADKFLNGAARSEE
WRKYGPVYRIWAGPKPEIVLTTPEDLKVFHTDSDKHFKPKDGNFGWFFDQVLGRCVGLLSLDEWKNMRRVVDPSFTHGAT
VKRISVTEADAKSFVENLHTISNEGAEVAKTKGRFTVPAMAAFMKFPFIFTAEVVYGNMSEAEKEELWAIAEKRQALLPF
FFKGSFYRTSYLKWFDRPAYNQLQEFLNSWAEFNTRMARSRREQALPVPIVKYWDEYLQGNITLEQVTHTLDEMLFANLD
VTTHVLTWAITLIADHEGAKKELREEIEAHKDNLQEYITNVNTHLHRCYYESLRLRPIAVFSIGESAPSVKNFRGIHVKP
NTMVLVDTYAINVRNPFWGPNSEEYDPSRFKNVKSTDLRYNLFVFGFGYRKCLGQYLAGHMVKAILVHLFSQYEAVIIDG
RKGKSDYDIDKTTWVPVADVTVELTKLQ*

>163329|jgi|CYP61A6|[Trichoderma asperelloides T203 v1.0]Triasper1
MATILESGIPATVQEITNDTQHGVSSKAGGVLSTYLPDSNWQIAVTALLILIAYDQCLYIKQKGSIAGPMFKIPLMGPFL
QAIYPKFDAYLAQWASGPLSCVSVFHKFVVLASDRDLAHKVFKSPTFTRPCLVPMAIEIMRPTAWVFLNGKAHAEFRRGL
TGLFTNKALSRYLPVQEKVYGDYFKKFVQASKENKGKPTVFMGWFREINCALSCRTFFGDYISQEAVKRIADDFYLVTDA
LDLVNVPLSIYIPFTKCWRGKRTADAVLAEFTKAAAACKTNMASGARPTCIVDQWVEHMYESTKYNEAIAAGAEGIEKPT
NLIREFTPEEIAQTLFTFLFASQDASSSATTWLFQILAQRPDVLDRLREENLAVRGGDKNRPFELGMFESMTYTHAVIKE
VLRYRPPVIFVPYLATKAFPVTPNYTVPKNAMIVPSCYPALHDPVAYPNPDVFDPERWITGDAETKTKNWLVFGAGAHDC
IARRYVPLTLAHMIGKASLEIDWVHHATSRSEEIRVFATLFPMDECPLVFTKRE*

>164233|jgi|CYP65AS4|[Trichoderma asperelloides T203 v1.0]Triasper1
MTNLIVRMNSFMNLDVLPTGFNSKLGFFYAAILAVLVTITYYTTLVIYNVYFHPLSKFPGPRARAATEWPYFLSMINGTG
PQDMLEMHEKYGPIVRVSPGELAFCSPAAFKDIYGRRKDGPPELAKDKKYYSGMGEPTLLNSDDMAYHSYLRKLLSPSFS
DFSLRKQEAVIQDYLKILMRKLEKHSQDYDDGADLLQWFNFFVFDVIGYLTYGETFDCLNSNELHTWIKLIPPLGKFYAF
YQAVARLPIWLKYPTLVLGMPRGLLSDVKTLGQISETKVKQRLSITAKIPDLMGKLIEEYNVGKMTMNQLKSNASFLIGA
GSETLVTMFTLGSHVTLTDCVYYLLMNPHTLSKLTNEIRGRFSTADEITMVNVNQCKYLQAVIDETLRIVAPSPATHPRY
TPPGGIDIDGIFVPGGMAVGVPILAACRSSLNFHNPTKFAPERWTGEDPLYVNDARDAAQVFSYGPRDCLGRNLAYVEMR
LVMASLVWHFDLERRFQEDWVDQKVYMVWVKSPLMVKLKPVRC*

>164241|jgi|CYP5134H1|[Trichoderma asperelloides T203 v1.0]Triasper1
MSFLAQKCQELNSPMIQVFMRPFGRPWVIMCDGREAQDIMSRRGREFDRGDMFRDFFAAIIPHQQSVLPTNDQWRHNRRL
VADTMSVPFLNNVATYRVYENTIDLIDLWRQKLRLAPKHAFDVYKDVQYCTVDTIWAATFGSSLGISKSQADYLSNLDHI
ALPPDSKKAVAEIPEGEFPEGWHTLTTIVRSFEIPMNSPLGRHHHWFAIKFYPSYRRAMASRNRLIGSKIKQAWNTFGRG
DAADEDKLRCAVDLVVQREVALAKKQGRTPDRESKFLFDEMAGFLQAGFETTSSTLNWGVKYLTQYQDVQKKLRASLRAT
HKAAFDKGEQPGAEEIAKARDVYLEAFIDEVMRHSGILSSNIRKATEDVEVLGYRIPKGTDLWMLTNGPSFHSPAFPIDE
QKRSMTSREYKGDTERWSTHEDLEVFRPERWLKKESDQGSENGRITFDARAAPLQTFGAGIRGCFGKRLAYLEQRVIYTL
MVWNFEFQSIPESMGDFGANDILTHTPKYVRVMLTEAK*

>164239|jgi|CYP5200C1|[Trichoderma asperelloides T203 v1.0]Triasper1
MIYRVYSCLTRNRPYVGIPIAQIEQKGIHFLIQLFLPGLSWMISPQEVLANGKAISKTTDGIYQLRASGGYKIVLPRRYA
EEIRNNEYMTFGGSCKKDFHSTQPGFEAMLEGLREDGLVIDAVHKLVQNLGVILPSMIDEADFSITKWFGDKEDEWRTFK
LNDAAVDIVARIVTRATIGIDFARNEEWIRISRDHAVSTFISSVILHQVPALLRPFLVWIIPECRKLRKQVADSKRLLAP
KVRAIEKELRDGRKRPTTADVFTWLLDVAKGRHINFVLAQMSISEASIHSTSEMLTRMIIQCCKTPELVNDLREEIARVL
EEEGGWSKAAPYKMKLVDSFMREISRHQPMGIAGMLRDVRRDVKLSNGVVLPAGGLVMVEDDGLVDPDVNPHPESFDARR
YLHLRQQPNGEARHQFVTTSPDNLLFGLGNNQCPGRQFASNEIKIMFSFMLLRYDWRFPPGFTLPSPVYFESRVAAPITM
VQCRRRQEVKDLLKVKIAA*

>164253|jgi|CYP5791A1|[Trichoderma asperelloides T203 v1.0]Triasper1
MMTQSLESFKTINLSGIWLIAAAIYIVSFIIYRLYFHPLSGIPGPRLAAITSWYETYYDLFKTPSGQYWNKLDELHKEYG
PIIRINPDEIQIHDPEFYSQIYAGGATKRHRYARSVSGNGSPGSMASAVSHDLHRLRRSSLNPFFSRSAVLRLEERIQSR
VRILCERLSSFLQRGEIVDMSVAMTSLTLDIITEYSFGESWNLMDSDDLSYNFIKVMRGGFETLQVRKLFNSAIRLVPPS
ILAWSSPNMKVFLEFKDVLPYSRLLPEEEIETQRLADEALVLITAGSETTSRALATIIYHVLRNPHILSNLRQELDAAIP
DANMEVPYLALEALPYLSATIRESLRISALVPNRSLLTADEPLQYKQWSLKPGTAFCMNTSKYLLDASIYNNPTMFDPER
WLGDTQRTQKLLHHFAPFSKGHRGCIGMNLAYAELYLVSAYIIRRFDMRLYDVIRERDVDTVRDAFIGLPSIESKGVRVE
IIRKRN*

>164786|jgi|CYP5134A2|[Trichoderma asperelloides T203 v1.0]Triasper1
MAALSALGRLLPVPTLSFQFLGLLSAFFFIVGYLIRLALLPRPIPGIPYKKSSAKKIAGNGFEMLAWKQKHGEMFGYLSQ
LALELNAPIFQIFVHPLGKPWVVIADNRESNDIMARRTSRDFDRSIFLGDLMSSLSPEFHFHMPTGERWKSHRKLVSDTM

SPAFLSVVAGPQMWKSSMKAIELWQTKARLAEGRPFAIIEDLRKAAYEIIWTTTMGFETGVMKAQSELLSSLPKFEKLPH
KDQEIVFPVATDPPIFKAGMALNDTLQDGIQSLVPTLYLFLAYNAVPSLRAARNLRNRMIESEIKKAVERFANKTDLEWE
DSSNMRRYMKSAMDMVIARELQYARKEGRTPEPLSRIIQDELFSFMLAGNEVYTVILWTLKFLTAHQDVQTRLREELHVQ
LKQALDTGATPSSSEIIAAKLPYLDAVMEESLRCGEITQTNIRTSQRDVVILGHHVPKHTEVLMLNNGPGVFLPALDVDE
SLRSETSRGAVEKVGEWESKGMRNFDPNRWLVSDDQGQISFNPSAGARHSFGAGPRGCFGRKWAMLEVRIMVSLIIWKFR
LEEIPAALASFKPKPGLAHRPEMAYVRLNAL*

>164847|jgi|CYP539K1|[Trichoderma asperelloides T203 v1.0]Triasper1
MLAITVLVWLRHLASDIIIRRAGGARAPVLADNLLSASKLYYEIGKSQYHNRLVDWCTGQLDSLPTGNRTFAEFSLTGAK
RVLITRDPEQIKAILATNFSHFGHGPMWHKLWHPFLGDGIFGVDGQLWHDSRSMIRPIFSKDRLRNLAIFDACTDKLLSK
IPSSGSTVDLKDLFYRWSLDTTTEFLLGENAGSLDFPDNKVLNAIHTVQRMQMYIFVLNPIAPLIPKGEYYRAIKIIEEF
IEPIIVRTLAICPTQLQQLSKSDLEFSFLHSIAIYTRDPKLIRDQIMSVLFAGRDTTAATLSWAMYELSNYPQMWAKLRK
EILNKLGPQAAPTYEILKNLTYLKNVLNETLRLHPATPLNMRQALETTTVPGRPGEADIVLLKGDSVTINVLGMHTCVDL
YPPTSEKFADLKIFSPERWEHWTPKPWTYIPFSGGPRICIGQNFAMTEMAFCLVRLAQQYESIEYRGDWAAQKLQVDLIG
TPALGVPMALYKPGEATDPSFKYHIN*

>164876|jgi|CYP5829A2|[Trichoderma asperelloides T203 v1.0]Triasper1
MHLIHPLDLSSIKQFTGMRHLSLMAVFHIAVGPAMGLVPASEKFLTDPDTGAFKRGLSRLFNDELRSLQNLHKYAFQLEK
KIDGYWRQNFATQEVSINIGLESWIFDILSRSMGAVFWGEQGPFEDKLFRQHLKLFIQNLETLRNSITFLIPSELRSARE
YVRKKIAQSTFDEAYGGEDVTLFKRLALLYDSLEIPPECFSDCHLVAIVGLMSNVINIISWALCHILANLELRDALVEEL
KRLVDTSSSPYLIIDADRIRNNCPLLVATWYELLRVYGDSPVARGVQKDSLFDGKYRLEKGSIIITPIHLHNFDKNIWGE
YTGSFQPHRFLQNGKSVDAELVKHLNVFGLPGMHQCPGRYLGSTMTLAFLGKLLLEFDITPVPDDALGKGNIPKRKETML
GLPAISKDPKVNMRRRRGIEGVRVAFDNVKPGW*

>164886|jgi|CYP677F1|[Trichoderma asperelloides T203 v1.0]Triasper1
MSPMSLFLVGLALGAFWGFCQVLYNVFFHPLRKFPGPLLAGATSGWKAYKEVIKLKTGSFVFLKYDQAKERREVLLPIFS
KKAIQNLEHLVWRNATRLASSITKANATQSSIDLLFAFRSYTLDTIMCFTFGNCVNALEAPEFRDPLILAMDASLGALPV
LKNFPLIRNLIYAVPPGLVMRILPDAKRLAPRLYQVRDLIQQQLQVVLQCPSKLDSVSHQTIFHRMLDPQAYRRKSVPNM
TSLHDEGFTLIFAGANTVADTLLMGHWHTMRNPELLAQLRQELVTVWPSLDTEPTLKDLEALPLLTATIKESLRFIPSGV
SLTRVVPPGGAVISGKHIPGGAAVGMAILHVHQSAEVWGDDVLDFRPERWLEDGKKETSWGSGHKKDLDHWLVPFSRGPR
MCFGINLAWAELYIAFATMIRRFDLAIDGTTPEDMEWRECIAAYYPRRHLHAWCHPALS*

>165036|jgi|CYP5095Q1|[Trichoderma asperelloides T203 v1.0]Triasper1
MFILILLILVVIVPLATIGYRPRRGCQGAPTVPFYISFYEAWRGTGQVTFYNNHLRRHLEIHGLVNLWNTGRWSVLVTKP
EYVAHVFRNERVIAKGGLYRQMPSTTASHLFGVNIIDSTGELWKHFTKIMKPGIQQKHNPAALYITANKLLALIDKLQQQ
ASTGRGIIINDIMERWSMDVYGQYFLDADLCCLDGKARAQQAFQNVVRTFPHRLLLQFPLLEYISMFLLPSRRHALSMAD
ELAEAVLEATATHPLREKGSTEIESSRSEKLVYRLQRARDTGQLTDFHYRSNMKLMFMAGHENSKALLVSSLLEIAQRTN
VQERLYQEIIASDAEDSELKNLPYLTAVIYEALRLYPTLIQFTDREALEPVCLGDGITIPQGTLVGWNAYGIHTDPNSWG
NDALEFKPERWGSDVHSINRLVRTYQNRGMFIGFGAWSRACIGADFALLQMRVTISQILRHFSIQKDPSYQLVLNDVSLT
LFLPKCVPFQRS*

>165126|jgi|CYP530A34|[Trichoderma asperelloides T203 v1.0]Triasper1
MDIPIYLYILCVAILFGAIRKLNRIGRRPADFPPGPPTLPILGNIHQLPKSQGHLQFQKWAQEYGPVYSLILGTQVLIVL
SNDVAIKELLDKRGGIHSDRLEMYIGQTLCSGGYRFLMLGYGDNWRTFRRLGHQLLNVQSSKAYVPYQILESKQLLREIL
DRPDLILESLRRYSNSLSTHMIYGWRTVRHDDPRLLQVFKGFNDVGKITQTGTSAFLDFFPILRWLPEFLTPMKRQAKEL
HKKEMDMYLNLWLEAKQSYKSGTYKDCICVSLAQQQDKNGFTDEQAAYVAGSFLEAGSDTTSSTLYGFIQAMILFPEVQR
KAQAEIDRVIGPDRLPTLDDEDNLPYIRGCVKESLRWMPTALLAGVPHASNREDQYMGYRIPAGAGLVNNVYTIHMDPQR
YPDPRAFKPERFEGDMASAADSALNPDPSKRDHYVFGSGRRICLGIHVAERSLFIAISRMLWAFDFLPELDPSGNPILPD
PNKLTEGLSVLPEKFGVQIIPRDEARARKIMDESMEIMMQ*

>165211|jgi|CYP584D5|[Trichoderma asperelloides T203 v1.0]Triasper1
MSSLLATRCLILCLFFLLATYTFHYIHHQIHQRQVSRAKGCKDAQSKAPVKDRFIGFDFIYDCLFTKPIDKYLDYTYKTF
RQLGSTYVCQRWTWEATYTCDSRNIKHILASGFDDFKLPRLRVNAMMGLLGSGIFTLNGHLWSHARAVLRPCFAKQNKED
MVNMLETHFQALLRRIPLDGTTLDLQPLFFWLTMDFATNFLMGHSTHVLDRASSHAKEKQFVDDYLTCSTEIVRKMQLGP
LQMFSFNFAAMKARSRVFRYIDEFISASLDKEREHDEAANSGLNVLQGLAALTTDRKQLRDQILHILVASRDTTACLLSN
LFFVLSRKPHIYEKLRYEVLSIVGTEPATSNQLSSMEYLKWCVQESLRLHPVIPTNAREAAKDTILPYGGGKDGNSPLLI
KKGNLVMYNIYAMHRDTDIFGPDPEEFVPERWNGLRPGWGYLPFNGGPRICIGQKFALLETHYLVSRMVQTFETIKANED
TEWIELYALATTCKDGVNVSLKRS*

>165263|jgi|CYP5386A1|[Trichoderma asperelloides T203 v1.0]Triasper1
MALFDIGVWPINLATVTTVTAGFLALSFVFRYTSGKKVHPSEPIVIQPWVPLIGHLMGMALHGGRYIKQLGLSYPEEPIL
TLPVPGSRIYVVTEPSLAASIQRNTKTLSMSPLLPEITQRVLGLDERTYHVIGQNLDPEPGEPRGFFADIHDWVYTSLGP
GEYVNTLSCEAAQELCLQLRERIGLLDKATDASQPINLLAWTRHIVTVGTAKYLFGPYNPIAEDPDLEHAFWAFDHGLAG
LLIGILPSVIAPKAYSGREKLSAAFRRYLEAGHLDSASSIVKGRARIEKEYGMSTDMTARSALSFLFAGIVNTTTTTFWT
VLQIFADARLLAEARQEIHQALELSSQRTGPGSLSIGIVKEICTTLAAVYKESLRTGSENFSVRMIKEDTMLADRYFLKK
GAVVQISGGVIHASRSIWGQDAEDFNPDRFLKEKSRGDGFHPAAFRGFGGGKTLCPGRDFATNEILMFAAMIIHTVDLVA
PGGGSISVPKKNDRVMPVHILEPKYFPEVILRPRVEEAATLGWLRVVM*

>165348|jgi|CYP526N3|[Trichoderma asperelloides T203 v1.0]Triasper1
MTFFCVDSNAYPLLAVGLVIAFTVYAVYQAALPKPLPGIPYNPKSAQRFFGDVPLFKKAKYRRQWLWNQPREHGGPVSQV
FLFPFRRPTVLVTDYREVVDICSRRSREFDRGTRNKECIGVVAPNFHFTMQTADPQLQFNKKLIRDLMAPKFLKEASAPQ
IYEKAIALIALWKLKAFKGYGRPFSVSNDLYSATLDMICAVAFGMEDTSSALQHEISHVQTISPTFPNVKGEPACFPPAP
VTPELEGLFNIPEMVSIAQASPFPSFSQTLALLNPKHARAHWNRKTLIMRQTDRSLQRLTLAGLPECKSALDQLLWREMN
AAKAAGRLPDYYSPVIRDELLGYLLGGHDSTAATLCWWVKYMSTYQSVQIRFRNALRQAHLDAYQTSRLPTIEEIGNIPV
PYLDAVMEETLRCASIATLIVRTSTCDTQILGYQIPKGTDIMMSLTGPSITEPALPIREMSRSLESQESKDKVHAWQEDV
SQFKPERWLKLVKNTDSEEEEVFDPRAGPSLAFSAGPRQCFGKKLAYMKLRVVMTLLIWSFEFQQLDQSLNGPDIIEKLV
NLPKDCYVKLVGA*

>165732|jgi|CYP540B34|[Trichoderma asperelloides T203 v1.0]Triasper1
MAIQQFYLLGEPATATTAIEIDSNLDFDGLKHLVASYFAIVEPNGIGFQCQENVLQEVSDISSAAGPVAISIDGHAVRDV
PGPRGLPYIGNFLEIYPDHLGNHQRLFEHYGPIIKTINMGRTVYQTNDPEIATIAFAESDFFTKKLTEDHPLYALKTPAA
GVFLGDTDTEEWKIAHKFLPPALGPKAVRHYAPTMQKTVEDATKVFDELDEQGEAWNVYQYMLKLGSQAVGKLTLGIDFN
HFASPDAPLHEMILLIAEVLSLNKKVASKGSWYSNLPFGDPQRLKDVKHRIEDMIEESIQAAASGGVEDLPLQDAALKAA
NMVDYAVRATDNKGEKLPKSSLVWALMVATGAGFTTTSSLLSWLIYGLVTYPGMQERLLQELVDNDFSEDSLLTSDYTDR
LVFQDKYIKEMQRKHNPSFQPGRTAKTDLILPGGYKMPKDSVIIPALHHIHNNPKLWSDPAKFDPDRWDTEEVKNRPKGA
YMPFAAGPRMCIGFNFALQEIKVFLPKLIYRYKFTQEGDTAVEYDPMFQLIRPNNLYVRAERRVKWPPKSKATTSKASS*

>166256|jgi|CYP551C7|[Trichoderma asperelloides T203 v1.0]Triasper1
MDLSQVQVYLPKDNVQLAAIAAFGFGTVYLLSLAIYRLFISPLAKFPGPKLAALTSWYELYYDVVKQGQYLWEIEKMHDK
YGPIVRINPFELSIKDSNYYDEVYVVGSVRQTDRYEAFTEGLVDFDGAHLATVGHELHRKRRAPLDPYFSKAGISKLEPM
VWDLTDKLMQRFESFKGTGHIVRLDHALTAFSGDVINRLCIDDPPNLIDDADFSPWWFDIFHGIAVMLPTFMCVPWFTRL
LRHIPQSVLAILDPKAQKFNELKLLCDDHIKVAKREAASGESKNSFKIGSRPTVFRHIVNCNLPVSELSDDRLSKEAQVM
IGAGTMTTAGTMNFLTYYVMSDPAIRDRLQDELAPVMADYPEKKPTWAELEALPYFQAIIKESLRLSYGTMHRRPRVSPK
VPLQYREWVIPAGVPVGMSAYFAHRDPVNFPDPDKFLPERWMDNVTPGMRQNFVPFSKGSRHCLGMHLAYCEINFVIAAL
FRPGGLNFQMFNTTEADVKPVHDMIVPLPKIGTKGVRVTFN*

>166889|jgi|CYP574C1|[Trichoderma asperelloides T203 v1.0]Triasper1
MRPEMLAVASASGGVLSHLVYFIHGHRSMEAPKIAGFYIVAVCLLWMRCIYLQGAVYGASTAAIISASYFLGLFTSIIVY
RIFFHRLRRFPGPFAAKITKLYGPYLALDRKPHLHWSKLFDKYGDIIRIGPNELMALSIDAQQKIHGAGSPCSKQNSAYE
SVNYNGHPNLDTILNHKDHRWRRQIWDKAFSTKSLEIYERNAREVVYEWLEKLKSLQGQPINTSLYSTLIPFENMGRMGF
SASFGSVKAGKEDPMLHYLEVTLGTLAKLGLIWWPIALMNAIGGSNDLIKFQKLACQMVDRRKEQADDEHEDIMKCFLED
YHSKEPKAMHHIDDIYADAQAVMIGGTDTIAAALAFAFYYMARDPTVQDKLRSELQPLFGRTVPGEFTNLDLIEAQAPYL
NAVINETMRVDNPTCANGPRITPPGGLEIDGVLIPGEALVYVPINSMHRSAKYFKEPDSFIPERWTTRPDLVIDKRAYHP
FLLGPYNCVGKRLAMIVIRFTIAYTVWNYDFKFAPGEDGTSIHRDMINQAILKAGGLQCVFNKRA*

>166920|jgi|CYP530A8|[Trichoderma asperelloides T203 v1.0]Triasper1
MGVVTADMPRAWAVLGLMASTLLLWQLSKIGRRPSNYPPGPPTLPLIGNLHQMPKKHTHLQFQKWAEEYGPVYSLMLGPR
VAIVLSSDVAVKDLLDKRNSIYSGRPELYMGQDIMSGGLRPLFMGNVPVWRMVRKLAHGILNVKISRTYVPYQDLEVRAM
LMGLLDNPKDFLNHIRRYTTSLTTQMAFGYRTPASDDEDLLGMFENFDELSQIAGSQSGAILDLYPIARSLPDFLLPIRK
AGKEYHKREMKLFMKHFLNARKQLKSGNAKPCCAIDLLNAQKELGFSDELACYMGGSLLQAGSETTAIILVGFFEAMLVY
PEVAKEAQAEIDRVCGDRMPDLNDVPDMPYIRACMKESMRWMPATALGVPHAVTQDDSYMGYHIPKDAAVFLNVWAIHND
PKRHPDPRKYDPSRWAGDNQNSAQSAVTGDPTKRDHFVFGAGRRLCQGMHIADRSLFLAMSRTLWAFDLKRPIDEKTGRE
IIPDVDDIQDGLFISPAPFKASIVPRSESRAAAVRKEWENMVELLDEDLQWKIVPEGLKWRDYEPLDENEDLLEALS*

>167100|jgi|CYP584R1|[Trichoderma asperelloides T203 v1.0]Triasper1
MDLSQIALALYTGGIFYCLFKFISYRISSSKKQREFSQQHGCEPIQIKYPHKDPFYGIDLLISNFKAFTKHRFLETVTKR
HDEVGETYQLNMLGTVGIMTRDHEIIKTVLSTRFKDYNLQEERKKALHPLMGAGIFSSDGAAWTHSRALLRPQFARKQLM
DLSMLETHVKRLMNVIVDGKEIELQELVLRFTMDMATDFLLGESTNSLLEEQHDYHSKLKGFKESIQYAQDRIATHIALG
RLAILKPDPKFQHHVQVVHKFVDELVHDALRGNSSDSKALPYVLLRAIIEDTQDPIQIRNEILNILVAGRDTTASLIANI
FFMLSTRPQMWSMLRNEVAQFQNEPPTFDNISQCRYIRYTINESLRLYPPVPVNSRVAICDTVLPRGGGLEGKSPLFIPK
GTPIVYNVFGLHRKQEVYGADAEEFNPSRWKSLLLSWEFLPFNGGPRICIGQQFAIMEASYVLIRFLQEFETIESRDSRP
WQENIALTTSSLNGVRVSLNRSK*

>167492|jgi|CYP584R1|[Trichoderma asperelloides T203 v1.0]Triasper1
MLHTIFPPHGATYEQATLLGVVLCLLTALVRYLPNRSVKYAPGPKPLPLLGNIIYFSKMLKNLPVEVPLMAKRFGGTCMM
WMGSKPILMIHKLEDAHELLSKRGALTASRPRKNIFMEHVWPKILPFSPAGEEMRFFRRIYTDILGPKQSLQVRKYQDYE
TIVSLAAFCETPDDYESGFSTSVIFSAVYGARVSRLTHPLMVELQDVWTEILHNAQPGSLIIDWLPFLEKLPLRFQPWVK
RADSLHARDCAVHMAFLNLLRRQIEAGIEPVCFGVNAIAHQKQEGFDDDLLLGILTAIIVAGSESTASMMQSFIKIMAMN
PEIQQRAQQELDRVVGPSRLPTWEDQPNLPYTRALIKELHRYSPILTFSFPHLSTDEFVYQGYTIPKNTLLLPCADNLTR
DRTRYDDVKAFQPERFLGDDLEAHLSARQSDFRKRDHVNYGFGRRMCPGIQVAENSLFIQISRFLWAFDTMPKPGAPPLD
MTDTEEQLTRKPKPFKVNIAPRSDAILQVIHQTAKESHTDIPDIDSIKMDG*

>168493|jgi|CYP539A31|[Trichoderma asperelloides T203 v1.0]Triasper1
MALIEALLEHVSIKKLSIALVGIGAFLMTISRIREHRRIKRLGNYGPSLQSRLPFALDFIYYGIRSTIAHKNMELWRDVF
FSNSWTCEMRILNQRVCFTADPENIKAMLATQFHDFGKGEQFHREWAPFLGDSIFTTDGMQWHNSRQLIRPQFTRDRVSD
LHCFESHIQTLFKTMANGGPLEGENQAVDLGRADGRRMDIRDLFFRYTLDVATDFLLGSDVKSLTTPKQEFAEAFNEVQR
VQNILARAYKLQPLIPKKSYYDGLKVMNHFVNHFIERALRLSPEELAAHTKSDKDYTFLHELASFTRDPKVLRDQIVAVL
LAGRDTTASVLSWAIYELGRHPHAVARLRGEILDTVGEDRLPTYDHLKNMPYLKAVLNETLRLYPAVPFNVRVALKDTTL
PRGGGPDGSEPLPVLKDTPVGYSTLVMQRRADLYPPVSDTFADPSVFSPERWAAWHPKPHDYIPFNAGPRICIGQQFALT
EMSYTLCRIFQRFERVQSFMHEIDGGDPLLKSDIVLSPGQGVHVAFWEPRKET*

>169060|jgi|CYP65A6|[Trichoderma asperelloides T203 v1.0]Triasper1
MALLTLSNSVFDSIIKSLILLPLLAILLGLAYAFCITIYNLVFHPLREYPGPWLWAASDIPYSLVSISGNAHKIMLQIHI
KYGPVVRVGPNTVFYSHPDASKEIRGHRKGNRVEHLKDPHLHSGNQSNAIGASRENHVRYRRSLAYGFSHQAMLNQEPII
NKYVDTLLTELKTQCTNQEKVDVVRWYNYTTFDIIGDLAFGEPFYCLEKSDYHPWVALIFSGVKNLSFISVCSKYGALGM
ILALLFVPKDLPAKGREHRRLSVEKTRRRLDSGSSRPDFMTALTKTRGSAEVLTFEELVSNASLLIAAGSETTATALSAA
TYYLGLYPETFRKLADEIRSSFLSEKDINLTSVQHLNYLKAVIDEAMRLFPAAPGTQPRIISPGGDVIVGRYVPAGTIVG
VWQWVNHHNPAHFCDAESFIPERWLGDGRFENDKRDAFMPFSVGPRNCIGHNLAYAEMRLILAKVVWNFDIDLAEESIGW
DVKSKVYMLWEKGPIYVQFTKRKGI*

>169116|jgi|CYP65A8|[Trichoderma asperelloides T203 v1.0]Triasper1
MGILIDHGGFNSVSLSQLAWGLPLAALALGLGYTAWLCIYNLYFHPLRRFPGPKFSAMSFIPYSLILTGGDGHHKVLDLH
LKYGPIVRVAPNFLLFSHPDAVNDIRGHRKFGQPEHGKDPIRRMPNVHNIIGANREDHTRYRRSLAHGFSHQAMLDQEPI
IGAYVDQLMDRLKRDCGNGTQQIDMVRWFNFTTFDIIGDLSFGESFDCLNNSNYHPWVQLIFQSIKNLVFMAAIRYFQLS

PKFITTFLNKFALPSDVAGRFAENFRLSAMKVQKRLDSGSDRPDFMASMTAKRNGSALSFEELTSNAVILIIAGSETTAT
ALSAAAYYLGLYPEIQAKLAQEVRSNFNKPEEITITSVQHLSYMLAVLDESMRVFPPVPGGLPRYTAKGGGMIAGEFVPE
NTHVDVWQWPLYHNPNYWTQVEDFIPERWLGDPKFKDDKRDGFQPFSAGPRNCIGKNLAYAEMRLILARVILEYDITLAE
GTKGWDKRSKSYTLWEKGAVNVYLTPRKVE*

>169405|jgi|CYP5392A1|[Trichoderma asperelloides T203 v1.0]Triasper1
MVTFLDSLPWLAAVGLLGSLYYLWYRIFSYQGIPKSLAFANSDGSLFSRARSSLGSVFEVNTLLWAGYRDHSKEGRPYIL
PDIFTGHHVILPSEHLQWLLKQPENVLSQRESNNEFLAAKHTFLNCVAADDNEWKFVVNLIKTITSQLNNQTDDAIDEIH
AALDDLWGNDTKNWKQVDLFDVSLELVSRVVSRIFVGLPLCREPTYLASSTKFAKFILIEALLAQLTPKPLRPLLAPFLA
HYDWIQFRRMDRCVNPIIRERMEKFGKMAEEKPDADQPNDLLSRLMKESFRRNDDPRRSQSQTTKLLAVLNWAAIQVQGI
TLENTLIDIAHSPQSAEIQHQLREEALIADSAEPSVRWTRVQVAKMLKLDSVLTESLRLWGFSHGVIKVVVAKEGVDLPT
GEHIPYGAKVGVGSYGLHHDEEIYSGESPFTFDPFRFLNEKAEAQQSGTKFASTSGTYMAFSHGKYACVGRFFANHILKL
LLSQITLRYDIKPDKCPRPQNPVSQHILA*

>170103|jgi|CYP684L1|[Trichoderma asperelloides T203 v1.0]Triasper1
MDDLLNVVLARICIVGVITVAGLAFLIFYALRDPLSKIPGPWYTKWTSVVIKYHWLKGNRASYQHGLHQKYGPVVRLAPN
EVSVTDIEAVKKIYNARETFRKSSWYQDLTVSSENVFNTSRTELHRRLRRLLSGSMSETSLAAVAPQVQNTIDLMIKRVG
EEMENRGAADVMKWFLFMTTDIIGELSFGDSFRTLEIGEHTGYTKDLAELGYLGAVRSAFPTLIALAKYVPIPYFRRPLR
GTKNMSRYADESIARYRNLLDSDPTSVKWTLFTKVFQGQGKEEGLSPVELRGNASAYIVAGSDSTAVSFTYLVWSVCRDP
KVKAALLAELRTLPSDFSISDLRDMSYLNAVIDETLRLYSGIQSALPRRVPKSGDNIAGYWLPGGTTVCAQAYSMHRSPD
VFPNPDVFDPSRWDMPTKEMKDSFMPFGRGSRICIGLHLARMELRYGAARFFLTFPEAKVSSLEGMSDMDMVPKVFFFTE
PKAKRCLIQRQ*

>170154|jgi|CYP620B10|[Trichoderma asperelloides T203 v1.0]Triasper1
MFVSIIFGVVTLMGFIIYHQFFRKKDALLSLPPGPKALPIIGNLLDLPPAGTPDFQHWFKFKDLYGPLSSISVLGKTMVI
FHDKQAAYEVMNKMSLKTSSRPKTIFAYEMCGFENYTSGRSYDATFRLHRKLMHQQAGTKLLAARFNEIQDVESRHLLQR
ILDDPENLIKHFKTEAGAIILKIVYGYSIDPHEADPLVELVEKMMENFSIAMTPLGNLVDIIPALQHLPSGFPGTSFKNT
AQKMKKINLDTVNIPYTFVEQQMANGTHRSSFVSSLIERYRSDKSNVGKLHQDNEEAIKWVAGILYGGGADTTASALSAF
ALAMVLFPEVQKKAQEEIDNVIGTTPNRLPHFEDEERLPYISAVAKELLRWFSVVPISTPHMADEEIVYGGYRIPKGSFL
LLSSWWFHHDSQTYPDPSRFSPERFLEPRNEPHPDEAFGWGRRICPGRYISSDNLFITIARLLATFNIAKTADEKGRLIE
PRVEYMPGLVSRPANFPYTITVRSQKHEELIRSTEVDHPWEKSDADFLVFDRDQKPTGEKIKRSQ*

>170771|jgi|CYP5168G1|[Trichoderma asperelloides T203 v1.0]Triasper1
MEALELCRAHREALLIVVGFLSGVVIHVTIFIWSEWHLQAAQIFLQFCALYIASPILANVLQGSLAGEIFHAIVTWGYGY
LAGLVTSILVYRTVLHPLTRAGYPGPWYAKVTKIWHVWAARNSKNHLVLDSLYKKYGAFVRTGPSEITVFHPDVFMAVDG
PRSECAKAEWYDIIHPSMSLVTTRYKPLHAARRREWNSGFTTKALLEHEAKILKYVDKLDQCIEVDAKSGKVTDMRNLLL
WFGFDIMGEFVFSKSFGMLETRKWHHIIVRLQRALSLLGPLTPVPWLVHIAFDLAPRVSVLKEWFDIIAWCQSQMRDRLA
HGSSNQSQDLAYYLMEKDSEDREAFESDKFLWAAGDSLLAIVAGSEPTAVALIAVLCELGKHPEHADQIYEELKDVDVLD
LKTLVNLPHLNAVIKEALRLHPALLTGGNRKTSASGLTIGGRFIPPHTTIVAPRYTIGRLEDCFERASEFIPERWTTRPE
MVLNPAAYAPFGTGHHSCLGKTLALDTMKFVLARILKNYRFRAAPGDNNLSALETVRDQFTSNPGTLKLQFEIRTSTR*

>171349|jgi|CYP5127C3|[Trichoderma asperelloides T203 v1.0]Triasper1
MIQEAYEKADGNPFWIEAPENRYLVVSSWDHIKEIDAASEDVLSLQAAAKEILQPRYTMQNFNWFDRKGADGMPLVRTLR
TLLTNHLPDILPDLRRTMSVLLDRAQSSQPVVNVFPIIIEAISLTNAAAFFGRELIHDKKFMAAATGFIEQTLLAAEAIR
VLPKAIAPFIGGMIAKNLGSGKVIYEALIPIAEERLEERARKQLGHVVPEHHDCIQWVMECSPRSKPWSAERIVHELMAL
WFGSVHITSTTACFALHHLCLHPEYIEPLREEIESTGWAQFEQSGGEAFPLLDSFMKESARINPVESVSSRRMALKPFKL
SDGSRVEAGEWICTAARGMMLDARYYTAPQEFQGFRFVDPSVLEKKFPSHPDGVASQLQGTPSNFTDIGDWQLWGTGRSA
CPGRFYATAVMKTLLALFITKYDMQLEEKAATRYFAWRTFIYPYASTKVILHPRATL*

>171749|jgi|CYP609C1|[Trichoderma asperelloides T203 v1.0]Triasper1
MVSVVATILSPQNWSASTLLLVATIAIFLFVRLSKRADFHSGASWTDRGVPFIGSLPFFSRRGDFLREGKERSANGHFNF
FFGPYPIVAISGEAGRAAYLTSRGLDLSAGFKKLFSAGPDVDSILGRNMATYFVALFKRLTGKEHLVKCLPYLNKDAHDT
FSAIDTSVPMDPFRVVHDLICKMTHRTVGCHDVAEDPVLRAKTMKYYDMLDSSSAMSIMFPWLPTPTKINKLWGGGKLHM
LFVNIIKERRRTGRRAEDTVQILMDKGESDMVNAAFVIGALFAGLINTAVQAAWILCYLAYDPIWYDKVQAEVDAAVAKY
RTSEDQTPADVLQTLTVEIWESEFPSLDLGVQDSIRLNLMGASMRQNISGKDIVLGDTGVIIPKNAFAVYNIADVHMDET
LYKNPGKWDPGRYLSERGEDKKQQHGYIGWGSGLHPCLGMRIAKMELFVSTATFVAMFNYKAVDKHGNPRTEPLPGYNCN
DLQARRMTDTIYLKCESRF*

>172100|jgi|CYP5320A1|[Trichoderma asperelloides T203 v1.0]Triasper1
MNFNDDTFGSSATSLASLAVVIFVILFLYCFYVRELTPLRNVPGPFFASISPLWLIIRQRTFQRPWIDLDLHKKYGPIVR
VSPNEVIVSSTKSRHVIYGPTSKFPKGDWYIATGSAGWSDGDELDFLSELDMDKYRLQRRLVGPAYTDNFMRQIEGNLDN
ILERNIAIMIQRAGRIEDIDHVANFLASDCLQVATFGESKGLLEAGVDDGSIELTMRLWGYMHWVGYVPRLHRAKKWFNM
IVKPKLRIILAMLPSLLTQKTTIHSEPASQKTEHVFIWMRKRIRDRFDSFASEKLPMKATDIATRLLQIHAEKPALKPHW
VSEMLGTNFGAGVETTAITISSFLDFVISHPGCQEKIQREIDGARAAGELSKIPKLTEIESLPYLSACLNESKRLHPAVG
SPLQRVVPHGGMELEGKWLPAGTAIGINPWVMGRNKSLFGADADAFRPERWFEMSPEQLKACEANSMFFGVGVRSCPGKH
LAQAILNKVLPLLLMELCWSHAQPGASRPIRSAFMTRLHKVNVQWKKRKVVRTMVQETPQMPAKPPSRDTVSATDRSERN
LSPIPRHLTESLPEATKSCSLPQTEASLKDEDVPIVCA*

>56873|jgi|CYP6001C27|[Trichoderma asperelloides T203 v1.0]Triasper1
MNSNGAAANGNHAIIDYPSGPVAKAKKTKPVKNGGLMQLYRASRRPLPSEMGDGTYKKVVNRPTLMQDLSTITFSDLKTL
KAIILSKLKGETQSDDKTMIMEKTIQLVAALPNGSKRQEVLTNMFIDELWYSLDHPPLLYMGDQFRFRQADGSNNNPLMP
KLGAAGTPYSRSVRPGVVPLGALPDPEAIYESLMARDKFIKNPNNVSSILWYWATIIIHDLFWTNERDANINDSSSYLDL
APLYGHSQDAQNTVRTFKDGMLKPDTFADKRLLGMPPGVCVILIMFNRFHNYIAANLAAINEGNRFAKPSSDLQGDAATA
AWKKYDEELFQTARLVTSGLYINITLVDYVRNIINLNRVDTEWTLDPRQEAGTDVGTAKGSERGVGNSVSAEFNICYRWH
SCISEMDDQWMHHFYDELLGENYGTMDMRMFMTAVRKFAMSINKDPSDCVFGGYTRGPDGRFDDDDLVDCISTAIEQPGG
SFGARNIPRIMKPVEMLGIIRGRKWNLAGLNEFRKHFGLKAYETFEEINSDPQVADALRNLYQHPDYVELYPGMVAEEAK
TPMVPGVGIAPTYTISRVVLSDAVSLVRGDRHYTTDYNPKYLTHWGYKEVAYDLKVNHGCVFYKLFIRAFPNHFKQDSVY

AHYPMVIPQENRKILTSLNRVHRFSFERPRAAAPRVEVTSFGGFSQVLSNADKYNVQWQQGLEILTGRSGRYMQASDRKT
LESLLYKGDWKNVVKDFYAKTAEKLLAEKSYTIMGKKHIDVVRDLGNTAHTHYAAQIFNIPLKTQENPKGVFSEQELYAA
LAAIFTTLFLDVDPVKSFPLRQKSKEIADALGASIETTVKYTKSLGLRLFTGNTKNDPLSTAGVNAVKGLAKSGLDAHDI
AWGLILPTAAATVPSQGRLFAQALDWYLSTEGAPYVNDIHTLANQEPSPEVDSLLLGFAMEGVRMAGAFSLHQVSTGTDT
ITEDDGRKVKVNQGDKVFASFVSGARDATQFPNPETVDPRRPLESYIQFGAGTHTAVGKEVSQIALVELFRAIFKKEGLR
KVVGPQGELKKVARQGGLSEYLTEDWGTLSPFPLSMKVTWNN*

>120092|jgi|CYP505G8|[Trichoderma asperelloides T203 v1.0]Triasper1
MTEVIPTPSGYPILGNVLDIDPEHPHDSLARMASTYGPIFRLRLPRDRIFVANYGLAQELFDEKRFQKSVSGSLQQVRNA
LHDGLFTAYPGEHNWEIAHRTLMPAFGPLSIGGMFSEMQDIISQMVVKWARFGPDTPIDVPDDFTRLTLDSIALCAMGTR
FNSFYHESQHPFVRAMVGVLTESFIRSRRPPLTNVLFQTQEKQYREDIEELETVAKQLLNDRRTNPTSKKDLLNAMILNK
DPKTGESLDDDTIIRNMITFLIAGHETTAGLLSFLFYELLQNPEAYRKAQEEVDTVIGSGNITLSHMSKLPYIEACLRET
LRLHPTAPAFTLQAKGDQILDERFLVKDGECVQVLLAQFHRDPEVWGPDAEEFKPSRMMDEAFGKLPPNAWKPFGNGIRA
CIGRPFAWQESLLAVASLLQAFQFTKSNPSYQLQIQTTLTIKPKDFFMRARLRDPGFLDHVTVGPTSQLAKASETSSKPN
QTHSQSNLPPLLVLFGSNTGTCEALAQSLASSAEEHGFAAQVKSLDTVTGDLPQEVPVVIITASYEGQPPDNAAHFVEWL
TAANNPEVKNVRYAVFGVGNKEWRSTYQKVPTVIDDALANNGGKRITNRAAADVTQGNIFDVFDDWQDQKFWPQLSDASG
NTSGSQEPGTKELKIQVNVKARSSLLRQDVQTGEVTEARLLTKPGAPRKRHIGIRLPTGLTYRAGDYLAVLPLNPPEVVR
RVMKRFGLPWDTTITIDQMTTTSLPTGKPLVLYDVLASMVELGQPVTARSVSALAKSIPELNLKDELERRAAEEDFQKLN
VTLLDVLEDYPSATFSLGQFLAAIPPMRMRQYSISSTPLDRQSECSLTYTVIDAPSKGSRQGHRFFGVASSYLERLSVGD
QLHISLRPSRTGFHLPTDDRTPIIMACAGTGLAPFHAFIAERAIKKAGGKEVGEALLFYGCNHPEEDDLYREEFDAWQQS
GVVDVRRAYTFKPEASNGCKFVQDRIWFDRQDTARFFQQGAKIYICGAGIVGSGVEDAMARIRMETTGVEEEVARDWVQK
LKGERFWADVFA*

>125980|jgi|CYP505A21|[Trichoderma asperelloides T203 v1.0]Triasper1
MAETVPIPEPPGLPLIGNLGEFTSSPLNDLMRLSDTYGEIFRVRFGSRPMVYVTSNELVNEICNEKKFHKSLQSAIRIIR
EGVHDGLFTAHDDEPNWGKAHRVLTPAFGPLSIRGMFDEMHDISTQLCMKFARHGPQSPIHVSDNFTRLALDTLALCAMD
YRFNSFYHEEMHPFVLAMGDFLTEAGRRQRRPAFAPNFLYRAANEKFYSDIAILRRTADEVIVNRKNNPSDRKDLLNAML
NNADPTTGEKLSDENITDQLITFLIAGHETTSGLLSFAFYHLLKNPSAYQKVQQEIDQVIGRERIEVQHVSKLSYTASVL
RETLRLSSGIPAFTVEAYEDTFLAGKYLVRKGEPVAALLAKAHLDPVVYGEDALEFKPERMSEENFERLNKEFPNCWKPF
GNGKRACIGRPFAWQEALLCMAMLFQNFNFTLADSSYKLTIQQTLTIKPKDFYIRASLRHDMTPTELEQALAGKAVDFKR
HAQAAKDVKTAADSTKGKPLAVYYGSNSGTCEAMAQRVASDAPRHGFQASTVAPLDAANQNLPEDRPVIIVTASYEGQPP
SNAALFVSWIESLAGNEMKNVSYAVFGCGHHDWIQTFQRIPKLVDSTLDKLGGNRLLPIATTDAANRDMFSDFETWEDES
LWPTLQEKYGAEDNADATGEGITVDITTPRKATLRQDVEEAVVLSNTTLTRSGSTKKHIEIQLPTGMTYRAGDYLAVLPF
NPKTTVSRAFKRFHLSWDAMLKISSDRPTSLPTDVPISAADVLRAYVELSQPATRKNIQALAEATQDTDTIKQLQNLAGD
NYQEMITAKRVSIIDLLEEFPAVSLPFGAFLGMLPPMRVRQYSISSSPLVDSSKVTLTYSVLEQPALSGLGPYFGVASNY
LSSLTAGERLHVAVRPSQGFHLPGDAENTPLICIAAGTGLAPFRGFIEERAAMAMANRKIAPALLFFGCRSPEQDDLYSE
EFAKWEGLGAVDVRHAYSRSCGDSEDCKYVQHRIIHDHEDIVRLWQSGAKVYVCGSKDVGKAVEEVFIGMIKEAHKKKFD
KDLSTEEAKAWFDKQRNGRYWTDVFD*

>130798|jgi|CYP505A25|[Trichoderma asperelloides T203 v1.0]Triasper1
MAEAVPIPEPPGLPLLGNLGEFSQQPTNDLIRLANTYGEIYRLHLGTRPAVFVNTQALVNEVCDEKRFQKSVSSVLRIVR
EGVHDGLFTAHSDEPNWGRAHRVLVPAFGPLPIRDMFDEMEDIAKQLSLRWARHGPHHPIPVSEDFTRLALDTIALCSMN
YRFNSYYQEKMHPFVQAMADFLAECSRRNRRPGFAPNFLYRAANEKFFNDIAIMRDTANAVVAERKQNPSDRKDLLAAML
EGVDPQTGEKLTDASVTDQLITFLIAGHETTAGTLSFAFYNLLKNPTAYRKVQEEVDQVIGREPPKVEHISKLPYISAVL
RETLRLSAAIPAFTVEALEDTLIGGKYLVHKGEPITCLLAKSHLDPLVYGEDANEFKPERMLDAEFARLQAAFPNSWKPF
GNGKRGCIGRGFALQEATLAVAMLFQNFNFTLDDPNYQLEIVASLTIRPKDFFMRASLRHGMTATELERKLGGKGAAGEH
HADAKAAGGATQGSQKPLAVYYGSNSGTCEALAQRVATDALSHGFKVTDLAPLDFANQNLPKDRPVVIVTASYEGQPPSN
AAHFVSWIESLKGNELEGVSYAVFGCGHHDWVQTFHRIPKLVDSTLEERGATRLVPLATTDAADRDMFSDFEAWEDESLW
PALKEKYGAAADSTDGVGGGLVVDVSLPRKSTLRQDVEEAVVASAKTLTASGPAKNHIEVQLPTGMTYRSGDYLAVLPFN
PKDTVSRVFRRFKLSWDAVLTIHSDGPTTLPTDTPISANDVLRAYVELSQPATKRNISVLIDVTQDEELKAKLEKLAGDD
YQQEISAKRISVLDLLERFPSLELPLDSYLAMLPPMRVRQYSISSSPLADPSRLTLTYSVLEQPSLSGQGSHFGVATHFL
ASLNPGERFHVAVRQSKVFHLPTDAENTPLILIGVGSGLAPFRGFIQERAAMIAAGRKVAPALLFYGCRSPDIDDLYAEE
FERWEKLGAVEMRKAYSRATDKSFGCKYVQHRMAHDREDLYKLWDQGAKVFVCGSRDVGKAVEAVCVQLVKEKGEADGID
VTEERAQAWWDKQRNERYLTDVFD*

>161539|jgi|CYP505P1|[Trichoderma asperelloides T203 v1.0]Triasper1
MQKMGYAQRLKTKLKGQNGDNVLDPGINKAVESPQRRESKRETKAVNGFNIVEIPKPKGLPVIGILHKIDFEYPLASLLE
IIEPLGPICQFSIGGELFIFVQSAELVTELCDESRFHKIVAAELDKLRYVVHDGLFTAKNDERNWAIAHRILMPVFGTIK
IRDMFPEMKDLAQQLCLKWARYGEDYVIDVTSDFTRLALDTIGLCAMGYRFNSFHNEVMMHPFVHSMVRILKESSTQASL
PQFVNSVRKRSWHRYEKDTAYMRELCRKIIQERKQQKGSEYHDLLGALLEGRDRDTGEGLSDDSIIDNMITFLIAGHETT
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NVSVTVILSLLHQEKAVYGDDASEFKPERMLDENFNKLPPNAWKPFGNGMRGCIGRAFATQEALLIIAMLLQNFVFEMAD
PTYELQIRETLTIKPENFKLKAKLRRGGNATDLQSELQSSGTKTKGVRTDSAVSITSAQADKKDKKPLTILFGSNSGTCE
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QLRQYSQLVQATVTETRSLTTESAIGKKMHLGIQLPPGVSYHPGDHLLVLPVNPPRDVKRVLSRFHLAWDTVVRASGDES
VHIPVETSMTAHELLSSYFELSQPATPRDIRVLAAAATEQKTRHLLSSLATASYAEGIHENRVSLLDLLEEFPDIPLAFG
TFIALLPSLRLRTYSISSSPSWEPNHASLTFSVLDEPPTPPRSKSFLGVASNYLANSTPGDLIHVATRPVKSIFQMPTDA
SKVPVIMVAAGAGLAPFMGFVQERASQQRNGTELAPAALFFGCRSSHDDLYHHELDCFEDSGAVQVFRAYSREDAGSKPN
TRKGYIQDALLAEKQAFLRLWNAGAKIYVCGGVRMASGVKEAVMKLVYMAEQDAASKSFTPQEWFKRFEKTRYAAEIFT*

>155945|jgi|CYP539B7|[Trichoderma asperelloides T203 v1.0]Triasper1
MLQHLSWLIPASASSLAIATLCAFASFWIIERLVTDYRLSKVDGVRASILAGNPITSFFFFFKGAYMHSQNRLLEYYFSM
FDSADPSCPSAVEITIIGRRSIVTIDPEHIKAVLATNFTHFGKGERFHSTWEPFLGDSIFTTDGQLWQQSRTLIRPMFLK
QKIRDMDIVERWSDVMISKIPPSGQTVDISDLFYRMTLDATTDYLLGHSVESLENPKGEFSKAFTYVQRKQMLLTLLAPV
RSFIPKGEYKRGIKVLEAFIQPFIEATLALVPEELEKISKSDKEFTFLHQIALFSRDPKVIRDQIMAVLLAGRDTTAATL
SWALYELSNYPETWHKLRSHVLQKVGPDAVPTYDDIKDLTYLTHTLYETMRLYPAVPFNIRTCRQPDIATLKGDHIIYST

LAMQRRKELYPPVSETFADPAIFSPERWDHWTPKPWQFVPFNGGPRICIGQNFAMTEMAFMMIRLLQKYERIEYRGDWAA
QYLKADIVGCPGQGVPIALYEAEKRTMRERITYFHRPGAAVDPKQLEIKDTKVQGPATEAVREHKITLTLPELPSELAGL
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FYNELEKLDGFAKRLGPVVCSGPTASDCKKQLQDLKDAASLDISYDSTSDSVKIQALWPLQQREISVPASPKGRTEVGIL
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AYFTFPKVIFADRYQLADELFLASKNLTATKYVSEPVDLEAPAYTTKPWGSNVLLELAPPKDSAAAGTWTVEVPLHLRYL
KPTPTGKEEAGIPYPVVFWACDSGEDISYAVNPFDRVNLGYDGLFSPSTKFWHVSPKPEAGDRLINNINVPVVTEGASQW
VGVGTAAAVAVGFVWVLLKLVGGYAKAGHSTPTKKAGDSKKKQ*

>28069|jgi|CYP620S4|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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ASKEDALELLEKKCSTSSTRPNFEFGNYAGFGGIVSIIKHGKEFKFHRKLMHKGLGTKLLVSKYADTQEQHAGLLVQDTL
KTPENVIKHLENHANAVMLKLLYGYNINPHGDDPLIQLNDRVNIKFFQAVDAFGRLVEYLPGMKRLPDGFPGTKFKADAG
EHYAHVQAWGEEPYRFTRKQMANDKGMDSYVAKLVREYIGDTKEPNEADEHAIIWSAAGLQVGGAETTVTTITGFVLGAI
MFPEVQRKAQEEVDRVTGGTRMPIIADREQMPFINAIVSEALRWFPIIPMGFPHALSEDTSYKGYDLPKGSYLVWANWDF
CHDPSVYKDPYKFDPERFLEPRNEPNPKWTVFGFGRRICPGRHLADTALFLNIASLVAFFDFTKKVDEQGNVLEPKLAFD
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>30553|jgi|CYP671C2|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MASGLSHALVVALQSSLQATTTVSLLAGIVSHHLVFRPFEIDGYAWQLFFTYFTAFFVLIVGNVYAAGYSATLALVRALL
VTTAYNTGVIASILIYRAFFHPLRRFPGPFLAKLSRFYAMDNAAKRVKAYEDIQNLHKEYGDIVRVGPRELSINRPSAIR
AIYEHPTRTTRSPWYAQVSNDVTKISLNSTRDLKVHKLRKKAWERGFGFRALAVYAPRVRAKIDLLLSKIAEHSGRPIDM
TEYAMFFGFDVMGDVGFSKDFHMLESGSEHPAIKGVHESMLAIGVLGTAPWLLSMISKVPGAAAGFSRFTTWCHQQLQEK
RKVVADEMAMFKDQDPRDVISWLIKAFNEGDSSAPPGEMAMQEDARLLIITGSDTTSAVITNALYFLARNPDCYRQLQVA
VEEQFPRGVNDWTYERSIPYVDYVIQETLRLKPSVPGGLPRVVPPQGLMIDNDFIPGGTVIAVPTYTIQRDPRFWHDAHV
FEPKRWENLSTENAPWIPFTRGQWACPGRNFAMMEIRMVISRIALQYTIAIAEEDLGKRFDKEVKDTFTLTLPPLRLVFS
PK*

>40789|jgi|CYP5095Q1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MFILILLILVIIIPLATIGYRPRRGCRGAPTVPFYISFYEAWQGTGQVTFYNNHLRRHLEIHGLVNLWNTGRWSVLVTKP
EYVAHVFRNERVIAKGGLYRQMPSTTPSHLFGVNIIDSTGELWKHFTRIMKPGIQQKHNPAALYTTANKLLALIDKLQQQ
ASTGRGIIINDIMERWSMDVYGQYFLDADLCCLDGKARAQQAFQNVVRTFPHRLLLQFPLLEYISMFLLPSRRHAWSMAD
ELAEAVLEATAAHPLREKGLTEIESSRSEKLVYRLQRARDSGQLTDFHYRSNMKLMFMAGHENSKALLVSSLLEIAQRTN
VQERLYQEIVASDAEDSELKDLPYLTAVIYEALRLYPTLIQFTDREALEPVCLGDGITIPQGTLVGWNAYGIHTDPNSWG
NDALEFKPERWGSDVQTINRLVRTYQNRGMFIGFGAWSRACIGADFALLQMRVTISEILRRFSIQKDPSYQLVLNDVAAL
EPEECQLIFTHRRKEKCESQIIGLK*

>51693|jgi|CYP602B6|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MDPQSNSTSFPWAAESSALSAYWTPRTGYYLTILTVLLSVWLFLRSNPESSKLCVPFYKTSKLKWIFDAESQIVKSYKQF
QDQVYQIKATEGIQAIIPPKFIAEIKGLPEDVLSATEAVADALQTKYTKFSPGHNGEMLSLLVRTRLTQNLAELIPQLKS
ELEHYIGTEFPACDDWTPVKWQPFALRGIARLSGRAFVGPWLNREEQWLKVTIDFAIDVFMSVIKLQFFPEWFRPIAQYA
VSDLRKIRKDIDIAKSLLKPLLEERIRDMEISACHEPPNDLMQWLIEALPEEEKADVDTHALLQLILAAASIHTTNNLLF
ECMADLADHPEIQQELREEAYQILEAENGWARKESMTKLKKLDSFMREVQRLRGNVTSFIRKVIKPIDLSDGTHLPAGTR
VLAPQAGISIDEQFFHNPTELDPLRFYHMRQESAEASNRWQFTSLNDTNLNFGAGKHACPGRFFAGNEIKLILAFFLINY
DIRLKKGDKRPQPMALVMTKGPNPNTEFEFRRRQLAN*

>52858|jgi|CYP5391C4|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MLLTNFQSHGATYEQATLLGVVLCLLTALVRYLPTQSVKYAPGPKPLPLLGNIIYFSKMLKNLPVEVPLMAKRFGGTCMM
WMGSKPILMIHSLEDAHELLSKRGALTASRPRKNIFTEHVWPKILPFSPAGEEMRFFRRIYTDILGVKQSLQVRKYQNYE
SIISLAAFCETPDDYESHTSRFSTSVIFSAVYGARVSRLTHPIMVELQDVWTEILRNVQPGRLIIDWLPFLEKLPLRFQP
WVKRADSLHARDCAVHMAFLNLLRKQIEAGIEPVCFGVNAIAHQKQEGFDDDLLLGILTAIIVAGSESTASMMQSFIKIM
AMNPETQQKAQQELDRVVGPSRLPTWEDQPNLPYTRALIKELHRYSPILTFSFPHLSTDEFVYQGYTIPKDTLLLPCADN
LTRDRTRYDDAKAFQPERFLGDDLEAHLSARQNDFRKRDHVNYGFGRRMCPGMPLFPTPLLSFILSS*

>57192|jgi|CYP617U3|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MAPWTIMAMGTAVFSIRLAPEYSIKQSYFWTTAALVAISVFCQFIYRCILYPEYFSPLRHIPTPEGRSWFRGNSTSMVLE
TDRIREWTKTIPNKGLLRYYMAGNLERILVVGPKALNEILVTKVYEFPKPESLRLKLLRFTGNGILLAEGDEHKLQRRGL
LPSFSYRHIKNLYPIFWEKAVEMADAIEKQKPIRSNGTVVQISDWAGRVTLDMIGLAAIGRDFNAVHDPATEFHRQYDKL
RMRPSTWTRILILISMLTIGFKAFFRLPTKWNRESMAAANYIRAYARQIVEDKKETSQGVEDDAQEKDIASLAMASGAFS
DENMVDQMITMLVAGHETVAASLQWAVYALGKHAEMQTLLREEIRTHLASSSNIIAAQVDSLSYLNAFCNEVLRFYPPVP
STVREANIDTSLAGIFIPKGTSLLILPGATNLDKDRWGSDAEEFSPDRWLGDGRANSGGADSNLANLTFLAGPRGCIGQS
FAKSELLCLVAVLVGRFRVELEDPDKKLEINRSISATPKDGVMARLIPLEGWRVK*

>57351|jgi|CYP50330A1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MHNFSVAARASTAGASSLRETFRLNNPFTNGSEDLRKAYRQALIKAFAKTNGDAWDAIARSVSASVQNLILSENVPDGST
ILRANVMEISRSATLVAVLKALFDIDHIPRSTLAYICSEIHRLTVWKKNMNAASSKLGAAPEAFVQNMNRLISCLCGVFS
EAKEKNGLAQLLLCTVSGTPETFNPLDLVMPAFEVPWRAVFYTLLAVLQDRPSRVDELLSLRDCSARQRPSPQAKAVVFE
SLRLYPPIRRMRVSRKANAQRTFNTGGTSDVDRTIDAEAILRDSKYWGPAAAEWKPSRFLHSDGDLDSSVLSQSNGWIPF
AAGGMKCPASGGFSVRLTIVVAGEVLRQLFPRHDQLQWHLEGPQWDLSSAEGHLLRAGRDEYTHVDIVARSNRLQAADV*

>58239|jgi|CYP642C1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MNRLDVIPSSASHLGVVEPVFTEPHVSFPFPYHFLLLLLLIAPLLHTYRGRKGYSEKPLSVKIVKTISWLRYKLYSFVYN
AILNCARPVLSINIFPRKIVVTDPSMESVLSRHTSETSLANVIFLIGRRVFGLSDSTIEAIGGYDPRPIHVGEFSSASNA

RALLATMAETTGQKLQSQPDVQETELGPWLFKLTSSAVASALWGPESPWVVDEEFQNQFMELSGSQMTLLRPFSKYTAKA
AHKARTFIIDRLQASHANNRASRVRQIAHRINAVVMSDPEWESNKDYFKVELLTSLGLMVTPSTMAVWMIRHLLLRPDLF
DRVIKEARNPNALDEEGNIDLTRIRESFPFLAACLYETLRLHMTAIPRVAKADFDVAVPNSQPIQLKSGDLIYLAMSSFN
RNTETWGPDASTFSPERLLNNSGNLSASMVRKLRVFGVAGNLCPGRKVGFETILYVVASVLRGFDIENPRGESELYPEPR
TEDGFGIGFERCANDINIRLRRVA*

>58387|jgi|CYP535D11|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MDEFARIPGYFVLLIGGLLVYFITGRITAWARLRSFRGPFLTNFTNWPHRKALLQQRCHEFYGEVCEKYGPIARVAPNIL
VTSSPDVWTHVNNSPGYKRSEWYYSACRIEYRRDNVFSQSDNAKHDNRRKQLAPGYSGRENLDIEDSIDQRLRDFLDLVK
SKYVSTTAKVVPMDLARKVQFFTLDVISAVGTGKTFGMLQRDADVENFLQSSEEGLRIANFAAALGFSWIAQAPFIGRFI
APSAEDSKGFGRLMAACFRHVDERLQNPTDKKSDMLASFIRHGVLGDDLRSEALEQIVAGSDTTASGIRCTLLHVITNPR
VYAKLQKEIDEAVRDGKAPQDGFITHSVAKQLPYLQATIREAMRVWPPVANIFSRDIPPGGDTVNIDGKDIFLPGGAYIG
YSALAMHRSTEIYGEDAKAFRPERWFEDDKDKLATMLRTNELIFGYGKWQCLGKDVARIELEKVVFELLRNFDIAILNPT
KPWTALNNLGLFTISDMWVQVMERGSG*

>59072|jgi|CYP65A8|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MGILIDHGGFNAVSLSQLAWGLPLAALALGLGYTAWLCIYNLYFHPLRRFPGPKLSAMSFIPYSLILTGGDGHHKVLDLH
LKYGPIVRVAPNFLLFSHPDAVNDIRGHRKFGQPEHGKDPIRRMPNVHNIIGANREDHTRYRRSLAHGFSHQAMLDQEPI
IGAYVDQLMDRLKRDCGNGTQQIDMVRWFNFTTFDIIGDLSFGESFDCLNNSNYHPWVQLIFQSIKNLVFMAAIRYFQLS
PKFITTFLNKFALPSDIAGRFAENFRLSAMKVQKRLDSGSDRPDFMASMTAKRNGSALSFEELTSNAVILIIAGSETTAT
ALSAAAYYLGLYPEIQAKLAQEVRSNFNRPEEITITSVQHLSYMLAVLDESMRVFPPVPGGLPRYTAKGGGMIAGEFVPE
NTHVDVWQWPLYHNPNYWTQVEDFIPERWLGDPKFKDDKRDGFQPFSAGPRNCIGKNLAYAEMRLILARVILEYDITLAE
GTKGWDKRTKSYTLWEKGAVNVYLTPRKVE*

>60730|jgi|CYP570E3|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MSLMTIYLYSILLITLVTFAARRIYFWQRLRHIPGPTTAAWTIWWQLSNALSGRYHERLKEAADTYGPLVRIGPNQLLST
DPEVLRRMSAVRSGYTKGKFYASGKIVPGVDNVVSLRDPAKHKEMRALMAPGFSGKANEGYSFEAAMNRQLLSFIDLLER
KYVTSGSDVRPFDMAEKTQFFALDAIGDISLGQPFGYLDKDEDLYQYNEINTTSLPLMNVVSVMPALANIVHTWPLRLLL
PKEGDQVGFGRLMRFARGYVDTRLDPKTPRAQDMMQAHIDSGMSKNDLIQQVFLSIIAGSNSSAHALRMTLLSIITSPPA
YNSLIDEIRRASPAVSSPITWAQAQTLPYLQAVIREGLRMWPPVGGLGFKTVPPEGDHVNGYFVPGGTEIGQGFHGVGRS
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FLFASDFWVTLTKRNL*

>61095|jgi|CYP65AS3|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MTNLIVRMNSFMNSDLLPTGFNSKFGFVYIAILAVLVTITYYTTLVIYNVYFHPLSKFPGPRARAATEWPYFLSMVNGTG
PQDMLEMHEKYGPIVRVSPGELAFCSPAAFKDIYGRRKDGPPELAKDKKYYSGMGEPTLLNSDDMAYHSYLRKLLSPSFS
DFSLRKQEAVIQDYLKILMRKLEKHSQDYDGGADLLQWFNFFVFDVIGYLTYGETFDCLNSNELHTWIKLIPPLGKFYAF
YQAVARLPIWLKYPTLVLGMPRGLLSDVKTLGQISETKVKQRLSITATIPDLMGKLIEEYNVGKMTMHQLKSNASFLIGA
GSETLVTMFTHCVYYLLMNPHTLSKLTSEIRGRFSTADEITMVNVNQCKYLQAVIDETLRIVAPSPATHPRYTPPGGIDI
DGVFVPGGMAVGVPILAACRSSLNFHNPTKFVPERWTGEDPLYVNDARDAAQVFSYGPRDCLGRNLAYVEMRLVMASFVW
HFDLERRFPEDWVDQKVYMVWVKSPLMVKLKPVRC*

>62710|jgi|CYP609C1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MVSVVATILSPQNWSASTLLLVATVAIFLFVRLSKRADFHSGASWTDRGVPFIGSLPFFSRRGDFLREGKERSANGHFNF
FFGPYPIVAISGEAARAAYFTTRGLDLSAGFKKLFSAGPDVDSILGRNMATYFVALFKRLTGKEHLVNCLPYLNKDAYDT
YSAIDTSAPMDPFLVVHDLICKMTHRTVGCHDVAEDPVLRAKTMKYYDMLDSSSAMSIMFPWLPTPTKMNKLWGGGKLHM
LFLNIIKERRRTGRRAEDTVQILMDKGETDMVNAAFIIGALFAGLINTAVQAAWILCYLAYDPIWYAKVQAEVDAAVAKY
RTSEGQTPADVLQTLSVEIWESEFPSLDLGVQDSIRLNLMGASMRQNISGKDIVLGDTGVIIPKNAFAVYNISDVHMNET
LYKNPGRWDPGRYLSERGEDKKQQHGYIGWGSGLHPCLGMRIAKMELFVSTATFVAMFNYKAVDKHGNPRTEPLPGYNCN
DLQPRRMTDTIYLKCESRF*

>63192|jgi|CYP51204A1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MLQDIFTLQEWSTLQLIFGLATALLLAKSFFNAIYAENSFKYAESKLHGAVAPKLTPSHGIFGWRDLSALFNPKQLFPIT
TLPSRHDMYGDTFATRYLNKEILFTSNPLNIKELLTNRHGYFDTTEMRQRGLSEINWHPFSNDRHFDMHRLVVGYIAKNI
KDLSAKIDHLIIQSLADICNESFPVSKKKEIEITELSNQIVIHFINYMALGEEKELELVGNSDARPAFISHFISFFRPLL
SGLGMTVFMPPYIVSLLFPSIAKKKQITRKLFLSMAGMVGLQNKDQATHSLGSTFANHFQQETITSDQLFNFYAAATQGT
LGSMQIGLALLAQNQAAQDKLRRIVRSTFPSTESITEQALLQCQYLQWIINEALRLHPVVSLTTRIALRDCTLPAGGGPN
HSQPVIVRKGQQIIASYTHLHRRQDVWGPDSNNFVPERWNEENSKTFLPFAYGPSTCPGSRIGRLTTSIWLVRLMQQFDS
IESCMNETDSNREPKLRMGYTVTLTLKKTRLMFTHRSN*

>64158|jgi|CYP5789A1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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DADFCVEAFSSVKKLDKYGWWYRVFGGPGATVSTEHHDVHKSRRATFKNFLSPVVVRDFVPTIVEKVKQAGLIMSHHAHM
GKPLCMSNLYRCIAADTVSAYALPASLNMLDSDDLGEEFQSGLRLFFEAATTMRFLGFLQPLMMMMPDLIFKRLLTGPAR
SLIKLIRTIQKPADIEKSRPCLLDRIKTNNYRENGDFRERLLQEAEQFIVAGTETTGYALSVTTFYILQNADIQKMLRQE
LIDAEISLNDDIDIISLQNLSYLSAVITEGLRFAHGVGSRLPRVNKSSDVQYHQWRIPAGVPISMTSRLHHEDPQLFPEP
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LQVTLQLR*

>68077|jgi|CYP548W5|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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HLDMHRCHQKYGEYLRYAPNRLIINNVNALYDIYGHGSKVKKYKNYRVLAQQAPNTLTLSNKVQHARRRRVVAQAFSETS
LRRFEPKVQSVLERFCQHLRNAANDKSAEGGWTSARDISKDFNYLAFDTMTTVSFDSDFDTIRNPENRYPIGALEESNIR
LGVLLQESKLTSFNLDKYLFPASIIARNQFVGFLRKLLKKRLQAVGISDGKDIFSFLKDCKDPDTGAELSPIELSTETAL
LVVAGSDTTSASMAGVAHYLTGSSSTYRKAAEEVRTTFSSLDEIVFGPKLNSCAYLRAVIDETLRMSPPGGAALWREVER
GGALIDGTYVPEGTDVAVGIYSIHHHESYYKDPLKFDPERWFRPVNEDGTARADSARQPYMPFSIGSRSCVGKPLALAQI
MLTFARLLWEFDLRRADNEPGWELKDIKPVEYKFRDHVSARKDGPVVCFKPRSS*

>68713|jgi|CYP684L1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MNDLLNVVLARIYIVGVITVAGLAFLIFYALRDPLSKVPGPWYTKWTSVISMTGPVIRPTPNEVSVTNIEAAKKIYNARE
TFRKTSWLLSDSMSETSLVAVTPQVQTTIDLMIKRDGKEMENRGVADVMKWFLFMTTDIIGELSFGDSFRTLEIGEHTAY
TKDLAELGYLGAVHSAFPTLIALAKYVPIPYFKRPLRGTKNMNRYAHQSIARYRNLLDSDPTSVKWTLFTKVFQGQGKEE
DLNPVELRGHASAYIVAGSDSTAVTFTYLVWFVCRDPKVKAALLAELRTLPAEFSISDVRDMSYLNSFALPRWVPESGDN
IAGYWLPGGTTVCAQAYSMHRGTDVFPNPDVFDPSRWYMPTKEMKDSFMHFGRGSRICIGLHLALMELRYGAARFFLTFP
EAKVSSLEGMSDKDMAPKVFCFTEPKAKRCLIQRQ*

>69940|jgi|CYP65GD1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MEQFQTVKFAADRLVAPFCILLASYVCYLLSLVVYNAYFHPLARFPGPFWWGATPIPYVWHQLNGRLPFVFSELHAKHGD
VVRVLPYMLSFRDANAWRDIYQIRPKRKLLTKDPYVMSPGSEGAYNIITSFDPAEHARFRERLNPGFSTRAFRGQELMVM
THVDELIEKLRAKCSSEEAQDMVKWPALLYFDIVADLIFGKNLGNVEGEHPHPWLDGLFGSTMRLITYFNAARQFPHLTP
FLKLFFPKDLMDQQVKHAAFTRDSVDERMQLKEGKASNSHDFMSYILPYDEATTHMSMAEIRSTYGTLMIAGSENVSTTA
SFTIYHLLKNPDALRKATEEVRQSCKRDEDITFTSIGGMKYLSGVVNESMRLNPAAPTTQSRVVPKGGVAVSGNLVPEGA
RVGAPPYCINHHAEFFKDPESFLPERWTDDPRFSSDQPQVFHPFQLGPRACAGKSIALAEIQLLIAKILFHFDISLDKSC
AEWSKDMKIFHLWQLRPLLVHFSIRQG*

>70140|jgi|CYP65A6|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MALLTLSNSVFGSIIKSFILLPLLAILLGLAYAFCITIYNLFFHPLREYPGPWLWAASDIPYSLVSISGNAHKIMLQIHI
KYGPVVRVGPNTVFYSHPDASKEIRGHRKGNRVEHLKDPHLHSGNQSNAIGASRENHVRYRRSLAYGFSHQAMLDQEPII
NKYVDTLLTELKTQCANQEKVDVVRWYNYTTFDIIGDLAFGEPFYCLEKSDYHPWVALIFSGVKNLSFISVCSKYGTLGM
ILALLFVPKDLPAKGREHRRLSVEKTRRRLDSGSSRPDFMTALTTTRGSTEELTFEELVSNASLLIAAGSETTATALSAT
TYYLGLYPETFRKLADEIRSSFRSEKDIKLTSVQHLNYLKAVIDEAMRLFPAAPGTQPRIISPGGDVIVGRYVPAGTIVG
VWQWVNHHNPAHFCDAESFIPERWFGDARFENDKRDAFMPFSVGPRNCIGHNLAYAEMRLILAKVVWNFDIDLAEESIGW
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>71439|jgi|CYP548J3|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MDPTSSLTQTVVAKAHEAVGLAASLLDTISDPKLLSLQDAVSNTSEAYSSVQSPYWDWILSTILKMWHLYAPKVLEVAAR
VSPPWFISIPLLLLSVPLIGYIIYQLYFHPLAKYPGPLWAKLSGSRRGYHAWLGDLHYDMWKCHQKYDIYSHGKNMQKSL
PYLVMVHNTPSTFTLIDKKEHAWKKRILSQKFSDSAIRSYEPKVLTLVDRLCDVLCPRPSENDSGESAIPQTKSVWSEPF
NMATWCDNLFFDLMTTVVFGECFDLIRSPWYRYVPEALARSNQRVSVIVQWPMIAFRRLDKKLFKDSVHGRKEFLRFVHN
LVTDRLTRGAGKGDVFSGLLDALDPTTGNKLSRDEIVAESILMIVAGSDTSSTLLSSIFFYLAKDPQKKERLVKEIRSCF
PTRDDIHLGEKLNSCRYLQACISECLRLAPPVASAPFREVSPGGAVVDGHYLPAGANVGTGIYSIQHNEQYFPHPFEFIP
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DHITSARNGPWIKFRRRGLEF*

>71534|jgi|CYP61A6|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MATILESGIPATVEVVTNGTQHGISSKASGVLSTYLPDSNWQIAVTALLILIAYDQFLYIKQKGSIAGPMFKIPLMGPFL
QAIYPKFDAYLAQWASGPLSCVSVFHKFVVLASDRDLAHKVFKSPTFTRPCLVPMAIEIMRPTAWVFLNGKAHAEFRRGL
TGLFTNKALSRYLPVQEKVYGDYFKKFVQASKENKGKPTVFMGWFREINCALSCRTFFGDYISQEAVKRIADDFYLVTDA
LDLVNVPLSIYIPFTKCWRGKRTADAVLAEFTKAAAACKSNMASGARPTCIVDQWVEHMYESTKYNEAIAAGAEGIEKPT
NLIREFTPEEIAQTLFTFLFASQDASSSATTWLFQILAQRPDVLDRLREENLAVRGGDKNRPFELGMFESMIYTHAVIKE
VLRYRPPVIFVPYLATKAFPVTPNYTVPKNAMIVPSCYPALHDPVAYPNPDVFDPERWITGDAETKTKNWLVFGAGAHDC
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>71932|jgi|CYP5866A1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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GVGTGFIEATNGALWKHLHRTLAPGLTPSIVKGYYPTIVEQAVAIRRRFGGIAKSGEVADIRHELGHFPFNVMGKVLLDE
TLSAQIYKDICAAFDAQTAVNCTDNPFTKWRLGKDVRRKWKRIETALEPKIRARFTALQQQDVASTKSSATSLLDRMMLS
EVQNGRSLGQDLMQLILDNAKGLLLAGFGTTADTSTYILMLLSAFPEALQKLREEHDRVFDKDHDKSVQMLQEQPGLIRN
LAYTTAVINETLRMFNAGLSIRVGPSTMPTMEYKGRSYPLKDQVVAISQHAMHCDSKYFDEPKLFKPERFLSEEPSFPRN
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ERSAAN*
>72517|jgi|CYP574C1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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RIFFHRLRRFPGPFAAKVTKLYGPYTALDRKPHLHWSKLFDKYGDIIRIGPNELMALSIDAQQKIHGAGSPCSKQNSAYE
SVNYKGHPNLDTILNHKDHRWRRQIWDKAFSTKSLETYERNAREVVYEWLEKLKSLQGQPINTSLYSTLIPFENMGRMGF
SASFGSIKAGKEDDMLHYLEVTLGTLAKLGLLWWPIALMNAIGGSNDLIKFQKLACQMVDRRGEQADDEHEDIMKYFLED
YHSKEPKTMHHIDDIYSDAQAVMTGGTDTIAAVLSFAFYYIARDPTVQDKLRSELQPLFGRTAPGEFTNHDLGEAAAPYL
NAVINETMRVDNPTCANGPRMMPPEGLEIDGVLIPGETLVYVPINSMHRSAKYFKEPDSFIPERWTTRPDLVIDKRAFHP
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>72698|jgi|CYP537A10|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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PGGVADIFVTLHAYACDCITHHLFHPHGTDCITNKDDEEMMHQVAADDSLQNRLISHYVPTLYRLFSKVLYIFAKPRETP
LADDFVLETSQISGPASFTLMSRFEEKSSDLDYIDKAAECLDHMAAGIDTTGDGLCFLLWELSQPRSLGFQRKLADELHQ
NPGIPLDRLPYLDAVVNEGLRCFPPIPMSLPRYVPQGGRSVDNFWLPEQTIVSCQAYSVHRLNSDVFPDGDRFNPDRWLE
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NSQ*

>74377|jgi|CYP5818A1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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MKLNLTDFSAESSASQDKGPWYDMMRYQLIRRSAGPAFTASNLKRFKPKVIEVMQRVCERLHRLNGEEVDTSEWMHIIVL
ECLTSITWSGSPEDILEQGHNYGDLELNLTFWRRTSVLGHLPTLCVLLDVMPMLRKYVFQILGLPTSYSSQGIGLPAHVG
PSLFKQLLHRISSIENPSFENGRDLIEQLLAIHIDKPKFNLDYARGIAGSCVAAGHDTTGSSLVSILCRICASPDLQRRV

EQECRGERVPVGFEDRPSTITSACVREAMRLHHVTNISLPRVAPRDGLQLHGYFFPEGTVLGCNPTTFARNTDLFGPDAR
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RFVPR*

>87455|jgi|CYP548A14|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MLQSFSLQHALAWLGILLGGGVFYVFAIITYRIFFHPLAKYPGPVIAKVTDAYQLYYAWRGDRHLQFWRLHQKYGKIVRF
GPNSLSFSTSQSLQDIYGFKANVRKSEFYDSFAHPVHNTHNTRDKAVHARKRRVLSHAFSESAMKDMQRFILNNVRLFCE
QLGIEDGGADSKGWTQPRKMDDWCNYLAIDVLGDLCYGKSFRMLESEDNRFALDLVEAATTRHLVCGTMPIVNSLKLDKY
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YLTRNPAAMKKVTEEIRGKFNDVEEIVQGPALSSCTYLKACIDEAMRMSPSVGGIPPREVMAGGATIDGEVLPEGTVVGT
AHYNIHHNEAYYPQSFTYIPERWVAGDMNPITGKPTTKEEVERAHSAFVAWSLGPRGCIGKAMAYVEMTLSLGRAIYLYD
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>92063|jgi|CYP5168G1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MEALELCRAHREALLIVVGFLSGIVIHVTIFIWSEWHLQAAQIFLQFCALYIASPILANVLQGSLAGEIFHAIVTWGYGY
LAGLVTSILVYRTVLHPLTRAGYPGPWYAKVTKIWHVWAARNSKNHLVLDGLYKKYGAFVRTGPSEITIFHPDVFMAVDG
PRSECAKAEWYDIIHPSMSLVTTRYKPLHAARRREWNSGFTTKALLEHEVKILKYVDKLDQCIEVDAKSGKVTDMRNLLL
WFGFDIMGEFVFSKSFGMLETRKWHHIIVRLQRALSLLGPLTPVPWLVHIAFDLAPRVSVLKEWFDIIAWCQSQMRDRLA
HGSSNQSQDLAYYLMEKDSEDQGAFESDKFLWAAGDSLLAIVAGSEPTAVALIAVLCELGKHPEHTDQIYEELKDVDVLD
LKTLVNLPHLNAVIKEALRLHPALLTGGNRKTSASGLTIGGRFIPPHTTIVAPRYTIGRLEDCFERASEFIPERWTTRPE
MVLNPAAYAPFGTGHHSCLGKTLALDTMKFVLARILKNYCFRAAPGDNNLSALETVRDQFTSNPGTLKLQFEIRTTPR*

>132072|jgi|CYP5333B1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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FSLKMAGRMHHFIYKPSLAAALLNLQRPAEDEQMLANRLLESTFGVSKKDQAIYNKIFPEALAQYKHLSSEPGLSEVTSV
ALSQVKQNIINLVTFSPNPMDQMEWEKLADVDIIEENAKEGPITQVDLMELTRNFVSITVIPAIYGTDFVENFPEIWKLI
WVYNESFVLLATGIPAWVPWPRLQRGKLARRVLAMLYEFEEVMDRHLNGEENDPKWQNLDNVSKLVKGRIELFRKHGVS
LEGRAAFDLALLWASVANSNALIPWMLFELYRDPVLLEQVREEIAPYVNAVQPENEFGSAVWVPPVLEDIDIDGLITKCP
LLKASYIETLRVYSGGWAMKLMYHDTVLEERGKGGESFLLKKGTYAHIPQELHQFDPQYFSNPTEWQAERHIRETVDESG
KKVLTADMGTLRPYGGGLKMCKGRQFALREMLLYTAAIITFYDMQPPRGGSWGEPQTRKLVANRHPKKPLKVWIKRRGQL
AEGEEKEDR*

>133784|jgi|CYP5333B1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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CCCPLIALRAFKSTIRKIMASPTPIPKPPGVPLLGNIFDVNPSNTWDSLRELSDQYGEIFQIKVLGKTLVFVASVALAEE
LCDEKRFRKYVGGPIVEIRAAVHDALFTAYDNEASWGIAHRIIYPQLKSEVVSTHFREMRNLAGELFHTWKNLGGSNTIS
PLDQLNRLNLETNTYVFFGKRLNGLTGPPHPMIQAMEDSTSEAMKRPTRPRLLNWLVYGRKFKSSNKAMREYASELVQYR
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FDHLGQLKYVEGIMRESLRLSSVAPGFNIEPRPREGDKSPVLLGGGKYQIAHNQPMIIVLQGVNRDPTVFEEPLAFRPER
MVGEAFDNLPAGAKKWFGNGKRECIGKQYALQWSLIILAMLIREFDFEPVSPEYHLEEDGWFNTRPVDFSVRVKARAKAT
Y*
>135300|jgi|CYP61A1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MEAVNATRASSVLTSVLANSKYVSANIPPQLDYVIDTISTAGPWTWLFTILALCVAYDQISYLLNKGSIVGPAFKTPFIG
PFLQSMDPKFEEYYAKWLSGPLSCVSVFHKFVVIASTRDMARKVLNSPMYVKPCVVDVAHKLLGKDNWVFLDGKLHVDFR
KGLNGLFTRKALADYLPGQEEVYKAYFKRFLDITKENDGKPVPFMPEFRELMCAVSCRTFVGHYISDEAIKKIADDYYLI
TAALELVNFPIILPYTKTWYGKKAADMVLAEFAKCAAKAKVRMAAGGEVTCIMDAWILVMIQSERWREAEAKGLPTEDLV
KPSPMVRMFGDYEISQTVFTFLFASQDATSSAATWLFQVTAQRPDVLDRIREENLKVRNGDINAELNMDQLESLTYTRAA
VRELLRYRPPVLMVPYLVKKPFPITDTYTVPKGSMLIPTTYMALHDPEVYPNPDYYDPERYFSGDAEVKGAKNYLVFGTG
PHYCLGQLYAQLNLALMIGKASVQMNWTHHATPLSEEIKVFATIFPKDDCPLTFEARK*

>136021|jgi|CYP55A26|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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KAKPTFVDMDPPDHMHQRRMVEPFFAAQHIKELQPYIQKTVDDILNAMKSKGCSSGPVDLVKEFALPIPSYIIYTILGVP
FHDLEYLTQQNAIRTNGSSTAREASAANQGLLDYLANLVDQRMQDPKDDLISKLVIEQVKPGVIEKADAVQIAFLLLVAG
NATMVNMITLGVVTLFQHPEQLQQLKADPSLAPAFVKELCRYHTASALAIKRTAKVDIEIGGKLIKANEGIIASNQSANR
DEDIFTDADTFNMNRQWPAEDPLGFGYGDHRCIAEGLANAELSAVFSTIFRELPNLRLALPIDKINYTPLDRDVGIEDLP
VLF*
>137162|jgi|CYP5334C1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MISQLYETSPGLLAVGVALSLATMVVFTFRLWGEFVGNAILSTFNGGVLSTGRAAPGPKWQWPNGQFADKFLNGAARSEE
WRKYGPVYRIWAGPKPEIVLTTPEDLKVFHTDSDKHFKPKDGNFGWFFDQVLGRCVGLLSLDEWKNMRRVVDPSFTHGAT
VKRISVTEADAKSFVENLHTISNEGAEVAKAKGRFTVPAMAAFMKFPFIFTAEVVYGNMNEAEKEELWAIAEKRQALLPF
FFKGSFYRTSYLKWFDRPAYNQLQEFLNSWAEFNTRMARSRREQALPVPIVKYWDEYLQGNITLEQVTHTLDEMLFANLD
VTTHVLTWAITLIADHEGAKKELREEIEAHKDNLQEYITNVNTHLHRCYYESLRLRPIAVFSIGESAPSVKNFRGIHVKP
NTMVLVDTYAINVRNPFWGPNSEEYDPSRFKNVKSTDLRYNLFVFGFGYRKCLGQYLAGHMVKAILVHLFSQYEAVIIDG
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>137339|jgi|CYP540B34|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MAIQHFFLLGEPATATRAIEIDSNLDFDGLKHLVASYFAIVNPSGIGFQSQENALQEVSDVSSVEGPVAISIDGHAVRDV
PGPKGLPYIGNFLEIYPDHLGNHQRLFERYGPVIKTITMGRTVYQTNDPDIATIAFAESDFFTKKLTEDHPLYALRTPAA
GIFLGDTDTEEWRIAHKFLPPALGPKAVRHYAPTMQKTIEDAIKVFDELDEQGESWNAYQYMLKLGSQAVGKLTLGINFN
HFASPDAPLHEMTLLIAELLSLNKKVTSKGNWYSNLPFGDPQRLKEVKRRIEEMVEESIQAAARGGVEDLPLQDAALKAA
NMVDYAIRATDNKGEKLPKSSLVWALIVATAAGFTTTSSLLSWLLYGLVTYPGMQERLLQELVDNDFDEEALLTSDYTDR
LVFQDKYIKEMQRKHNPSFQPGRTAKTDLILPGGYKMPKDSVIIPALHHIHNNPQIWSDPAKFDPDRWDTEEVKNRPKGS
YLPFAVGSRMCIGFNFALQEVKVFLPKLIYRYKFTQEGDTAVEYDPMFQLIRPNNLYLRAERRVKWPPKSKATTSNASS*

>139185|jgi|CYP620B10|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MFVALIFGVVTLISFIIYHQFFRKKYALLSLPPGPKALPIIGNLLDLPPAGTPDFQHWFKFKDLYGPLSSVTVLGQTMVI

FHDKQAAYEVMNKMSLKTSSRPKTVFAYELCGFENYTSGRSYDATFRLHRKLMHQQAGTKLLAARFNEIQDVESGHLLQR
ILDDPENLIKHFKTEAGAIILKIVYGYSIDPHEADPLVELVEKMMENFSAAMTPMGNLVDIIPALQHLPNGFPGTAFKNT
AQKMKKVNLDTVNIPYTFVEQQMANGTHHSSFVSGLIERYKDDKSNVGKLHQDNEEAIKWVAGILYGGGADTTASALSAF
ALAMVLFPEVQKKAQEEIDNVIGTTPNRLPQFEDEERLPYISAVAKELLRWFSVVPISTPHMADEEIIYGAYRIPKGSFL
LLSSWWFHHDSQTYPDPFRFSPERFLEPRNEPHPDETFGWGRRICPGRYISNDNLFITIARLLATFNITKTTDEKGRLIE
PRVEYMPGLVSRPANFPYAIAARSQKHAELIRSIEVNHPWEKSDADFLVFDRDQQPADEKIKYS*

>147033|jgi|CYP65BQ2|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MGFIQDSNFSLKPSVALPLLAVLSGLLYIAYTVIYNLFFHPLKKFPGPKLWALHYGFYARLELSGEGHRRMLRMHMKYGP
VIRVSPNHLAFCHPDAMNDLSSHRKPGQLENGKDESRSLSVPHSIIGASRTDHSRMRKSMANGFSQQSMISQQPLIKVYI
DKLFEKLEETSVKGEKIDAVAWYNYTTFDIIGDLAFGEPFGCLQESTYHPWVDLIFKSIKGIAFDSSFRRMGYLHDILML
LTPKSMKDKFEEHKKLSEEKVMKRLKTETDRKDFIASMISKKGKDELSFQELTVNAGILVIGGSETTATVLSAATYFLGA
NPEPLKKLYDEVRSAFNSEEEIDLFSVGRLNYMLAVLDEAMRLHAPVPATTPRTINEQGDTIAGYYVPPGTNIDIWYWTM
FHHAEYWTHAEDFIPERWLGDLRFEHDKRQIFTPFSVGPRNCIGKNLAYAEMRLILAKLIWNYDIELAEESVDWDKRCRC
YILYEKGPLYIYLKPRQG*

>147445|jgi|CYP5134A2|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MAALSALGRLLTVPTLSFQFLGLLTAFFLISGYLIRLALLPRPIPGIPYKKSCAKKIAGNGFEMLAWKQKHGEMFGYLSQ
LALELNAPIFQIFVHPLGKPWVVIADNRESNDIMARRTSRDFDRSIFLGDLMSSLSPEFHFHMPTGERWKSHRKLVSDTM
SPAFLSVVAGPQMWKSSMKAIELWQTKARLAEGRPFAIIEDLRKAAYEIIWTTTMGFETGVMKAQSDLLSSLPKFEKLPH
KDQEIVFPVATDPPIFKAGMALNDTLQDGIQSLVPTLYLFLAYNAVPSLRAARNLRNRMIESEIKKAVERFANKTDLEWE
DSSNMRRYMKSAMDMVIARELQYARKEGRTPEPLSRIIQDELFSFMLAGNEVYTVILWTLKFLTAHQDVQTRLREELHVQ
LKQALDTGATPSSSEIIAAKLPYLDAVMEESLRCGEITQTNIRTSQRDVVILGHHVPKHTEVLMLNNGPGVFLPPLDVDE
SLRSETSRGAVEKVGEWESKGMRNFDPNRWLVSDDQGQISFNPSAGARHSFGAGPRGCFGRKWAMLEVRIMVSLIIWKFR
LEEIPAALASFKPKPGLAHRPEMAYVRLNAL*

>148485|jgi|CYP5127C3|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MIQEAYEKADGNPFWIEAPENRYLVVSSWDHIKEIDAASEDVLSLQAAAKEILQPRYTMQNFNWFDRKGADGMPLVRTLR
TLLTNHLPDILPDLRRSMSVLLDRAQSPQPVVNGSYISPVFPIIIEAISLTNAAAFFGSELSHDKKFMAGAIGFIEQTLL
AAEAIRVLPKAIAPFIGGMIARNLGSGKTIYDALIPIAEERLEERARKKLGHVVPEHHDCIQWVMECSPRSKPWSAERIV
HELMALWFGSVHITSTTACFALHHLCLHPEYIEPLRDEIESTGWAQFEQSGGKTFPLLDSFMKESARINPVESVSSRRMA
LKPFELSDGSRVEAGEWICTAARGMMLDARYYTAPQEFQGFRFVDPSVLEKKFPSHPGVVASQLQGTPSNFTDIGDWQLW
GTGRSACPGRFYATAVMKTLLALFITKYDMQLEEKAATRYFAWRTFIYPYASTKMILRPRAAL*

>148887|jgi|CYP53A46|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MALIENLLSPWTLVALGGLVVVSYLYQFLVTYAPLRRFPAPFPAQFSNLWLLNVCRRGDRYDTVDKLHKKMGKFVRIQPN
HVSIADDEAINAVYGHGNGFLKSEFYDAFVSIQRGLFNTRNRVQHTRKRKMVSHTFSAKSIVQFEPYIHQNLENFVKQLD
RLVDTSQFKGKDGKKEAHFDCLPWFNFIAFDVIGDLAFGAPFGMLEKGVDLAEVRPSPDSPPIYAPAIEILNRRGEVSAA
LGCFPALKPYAKYLPDPFFSQGLAAVENLAGIAVACVKRRLDNPPDVERKDLLARLMEGRDDKGEPLGRQELTAEALTQL
IAGSDTTSNSSCALMNYVARNPRVLEKLQAELDAAIPQGVDVPTFDMVRDLPYLTAVINETLRHHSPSGIGLPREIPSDS
PGVTICGEFFTAGTVLSVPTYTIHHSKEIWGPDADDFKPERWDSATQRQKDAFIPFSYGPRACVGRNVAEMEMKLIASTW
ARRYGAKVLQGPMETKEGFLRKPLGLDIALYRR*

>149245|jgi|CYP5791A1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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IIRINPDEIQIHDPEFYNQIYAGGSTKRHRYARSVSGNGSPGSMASAVSHDLHRLRRSSLNPFFSRAAVLRLEERIQSRV
RILCERLSSFLQRGEIVDMSVAMTSLTLDIITEYSFGESWNLMDNDDLSYNFIKVMRGGFETLQVRKLFNSAIQLVPPSI
LAWSSLNMKVFLEFKYRCFETCRLIKIAHNDTKANSTTRQTQINLFTEALDRLPEEEIETQRLADEALVLITAGSETTSR
ALATLIYHVLRNPHILANLRQELDTAIPNANMEVPYLTLEALPYLTATIRESLRVSALVPNRSLLTADEPLQYKQWSLKP
GTAFCMNTSKYLLDASIYSNPTMFDPERWLGDTRRTQKLLHHFAPFSKGHRGCIGMNLAYAELYLVSAYIIRRFDMRLYD
VIRERDVDTVRDAFIGLPSIESKGVRVEMIRKRN*

>149507|jgi|CYP5200C1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MIYRVYSCLTRNRPYVGIPIAQIEQKGIHFLIQLFLPGLSWMISPQEVLAKGKAISKTTDGIYQLRASGGYKIVLPRRYA
EEIRNNEYMTFGGSCKKDFHSTQPGFEAMLEGLREDRLVIDAVHKLVQNLGVILPSMIDEANFSITKWFGDKEDEWRTFK
LNDAAVDIVARIVTRATIGIDFARNEEWIRISRDHAVSTFISSVILHQVPALLRPVLVWIIPECRKLRKQVADSKRLLAP
KVRAIEEGLRDGRKRPATANVFTWLMDVAKGRHINFVLAQMSISEASIHSTSEMLTRMIIQCCKTPELVNDLREEIARVL
EEEGGWSKAAPYKMKLLDSFMREISRHQPMGIAGMLRDVRRDVKLSNGVVLPAGGLVMVEDDGVVDPDVNPHPETFDARR
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VQCRRRQEAKDLLKVKIAA*

>151411|jgi|CYP530A34|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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SNDVAIKELLDKRGGIHSDRLEMYIGQTLCSGGYRFLMLGYGDNWRTFRRLGHQLLNVQSSKAYVPYQILESKQLLREIL
DRPDLILESLRRYSNSLSTHMIYGWRTVRHDDPRLLQVFKGFNDVGKITQTGTSAFLDFFPILRWLPEFLTPMKRQAKEL
HKKEMDMYLNLWLEAKQSYKSGTYKDCICVSLAQQQDKNGFTDEQAAYVAGSFLEAGSDTTSSTLYGFIQAMILFPEVQR
KAQAEIDRVIGPDRLPTLDDEDNLPYIRGCVKESLRWMPTALLAGVPHASNREDQYMGYRIPAGAGLVNNVYTIHMDPQR
YPDPRAFKPERFEGDMASAADSALNPDPSKRDHYVFGSGRRICLGIHVAERSLFIAISRMLWAFDFLPELDPSGNPILPD
PNKLTEGLSVLPEKFGVQIIPRDEARARKIMDESMEIMMQ*

>156154|jgi|CYP534C4|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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YRTRHEWFAKVGESFFLVSPGRLMLLTDNAETIRTITLKREQFPKWTAVYNILRQFGENVLTTESSIWRMHRKVTSPSFN
EKNAALVFREAIAQTQGMLRMWAGPEGNTRKEPLVSLQRDTMRLALNIISYVGFGMRLLWPGETHAAGTDPKLLKYGSHK
PSAGHQLSFTDTMEFLLEHLLILLVFPRWILKLLPFEKIKKAVLSYDEYVKYMNELLDEKIEDARKGDHIEGMDLMGQLA
KSCFGTDNKDATLTREEIISNAFIMFVAGHETTANTIHFTLIFLAMNPDAQRKIQKDIDDILQGQDPKDWDYDSLVNPMT
ASMIGAAMHETMRLMSPVVVIPKVTYSDQPLVMDGNKYVIPKDTGISLVTISAHVNPRYWPTRPSKITPGKSNILDYVPE

RWFQSLDKDSSAGSEDVAGADSEDFGGFQGSDINAQLFRPERGSYIPFSDGARSCLGRRIAVVEMMAALAVIFRSYSVEL
AVDEWASQEQVDQMSREERARIYRKAQDTSRWTVGQATTRLTLNLHDGQYVPVRIVKRGEEKFVDWVDRE*

>156434|jgi|CYP65BM5|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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DIVRVAPDELAYCNGAAWNDIMGHRKRGQGENGKDPIFWRTQQHSVISADRENHTRMRRTLAHGFSAQAMLDQQPLIQGY
VDMLINRLRETCDDGNQPMEMTSWYNWTTFDIIGDLAFGEPFGCLQNSDYHPWVSLVFQRIRGGAINNALRRFPFGERLI
QFLIPKEARKKFHAHFQLTQEKVNKRLADTNPRPDFMEVMTKREGDMKFSYPELVDNASLLIIAGSETTATTLSGVTYML
LTHQEILQKTIDEVRSSFSSEAEIDLLSVQKLGYMMAVLQETLRMYPPVPATIPRKAQPGGDMICGQYVPENTILGIWQW
PTYHSEKNFTLPDSFIPERWLGDARFSNDCQEALQPFSYGPRNCIGKNLAYAEMRLILAKILWNFDISLHPDSKNWYEEH
KAYTLWQKPDLNIYIKPRVIV*

>162586|jgi|CYP5386A1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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LTLPVPGSRIYVVTEPSLAASVQRNTKTLSMSPLLPEITQRVLGLDERTYHVIGQNLDPEPGEPRGFFADIHDWVYTSLG
PGEYVNTLSCEAAQELCLQLRERIGLLDKAIDAPQPINLLAWTRHMVTVGTAKYLFGPHNPIAEDPDLEHAFWAFDHGLA
GLLIGILPSVIAPKAYSGREKLSAAFRRYLDAGHLESASSIVQGRARIEKEYGMSTDMTARSALSFLFAGIVNTTTTTFW
TVLRIFADATLLAEARQEIRRALELSSQRTGPGSLSIGIVKEICTTLAAVYKESLRTGSENFSVRMIKEDTMLADRYFLK
KGAVVQISGGVIHANRSIWGQDAEDFNPDRFLKEKSRGDGFHPAAFRGFGGGKTLCPGRDFATNEILMFAAMIIHAVDLA
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>166901|jgi|CYP548AA1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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AEGGRHLEFDKQHKKYGKFVRFGPNRLSINSAQASRDLHNVNSNTFKADAYSSFKRFFGAEMSLTTVDHKAHAFRRRVNM
TAITPTAVKEFEDQVTPHVDEFIDIISEGVGSKKEGEHGWSSGKDMCFYVSFCIADIMGSMTFGRTWNVQRDPKYRHFVK
DLPNGVAGIHLVGHMQSLFFCNLHKLLFKQLIVGVGNLMSVSRSFALWRLEQTSMPYRDIWAALLASRDPKTGESFSTEE
LISEASLFIIGGTDGMITATTSTLFYLTHNPRTLERLTREIREAFPLSPEDIGKKASEIKCPIRFASAELQSVKYLPACI
DEAMRLSPPVPSILPRVVGPGGMEVDGEYFPAGVNLGIPHYCMHHSEENFAQPLTYAPERWFHEERERGLKDGSVPVSGK
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>171662|jgi|CYP51F1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MGIIQDAAGHPLAQLYFQQGIGAQIAIGVAGFVALSVFVNVIQQLLFRNPTDPPLVFHWFPFIGSTVIYGMDPPKFFRDN
RAKYGDVFTFVLLGKKTTVAVGPAGNDFILNGKLKDVNAEDIYTVLTTPVFGRDVVYDCPNAKLMEQKKFMKIALTTEAF
RSYVPIISHEVTSYFKRTAAFKGKSGIVDIPKKMAEITIFTASHALQGSRIRNKFDESLADLYHDLDMGFTSINFVLHWA
PLPWNRKRDQAQRTIAKIYMDTIKERKALGDEDNELDIMKHLMTSVYKNGTPVPDHEIAHMMIALLMAGQHSSSSTSSWI
MLRLAQNPKVVEDLYQEQINALGADLPPLQYEDLAKLPLNQAIVKETLRLHAPIHSIMRAVKQPMPVPGTKYVIPPTHVL
LAAPGVSGSDPNYFPNPFEWDPYRWLPGSPNAPLIAARNEEEEEKIDYGYGIVSKGAASPYLPFGAGRHRCIGEQFANLQ
LQTIIVETVRMFKLSNVDGSDKIVGTDYASLFSRPLEPAEIRWERRD*

>174741|jgi|CYP58M7|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MLGDLLRLWVVITALGAYISIRTIYRLYFHPLSHIPGPKLAACSHLYEFYYNVILSGKYLFEMEKMHQQYGPIIRINPRE
VHINDPTFYDEIYASSSRKREKDPKFVPTYALPGSMVAAVSHELHHLRRGILKDFFSRRSVLELSEMINERVQALMKRLE
GFRIAQSTVSIDDAFSALSSDVITSYCCGKHWGFIEDPDFRNDVRKATADAASFTHISRFFPWLVTLSTFLSPRTLSILM
PGKAGLFGFLESFLEYAQKGASTGKRKSMLATLADPSIPPQERSFHRQRDEAFGIIGAGTETTATVLTVAFYHLARDKTV
RDKLQTELKQLMPTPDSTPTWIELERLPYLDAFISESLRIGSPILGRYTRVAPTETLTYKNYVIPPGTPMSSASYFIHKD
ATIFPDPDAFRPERWIEAAEKGQNLKKHLVSFTKGSRNCIGINLAYMELFLTVAAFVRRFNLELVDTTPDDVRVVREFLV
GFTKNGNVKVNGKLSLVDE*

>175388|jgi|CYP5134H1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MPFPSQITVLVASVIVAAAILLYRAALPKPIPGIPYDEKSATRLLGDVPRALSHYKNTGEMMSFLAQKCQELNSPMIQVF
MRPFGRPWVIMCDGREAQDIMSRRGREFDRGDMFRDFFAAIIPHQQSVLPTNDQWRHNRRLVADTMSVPFLNNVATYRVY
ENTIDLIDLWRQKLRLAPKHAFDVYKDVQYCTVDTIWAATFGSSLGISKSQADYLSNLDHIALPPDSKKTVAEIPEGEFP
EGWHTLTTIVRSFEIPMNSPLGRHHHWFAIKFYPSYRRAMASRNRLIGSKIEQAWNTFGRGDAADEDKLRCAVDLVVQRE
VTLAKKQGRAPDRESKFLFDEMAGFLQAGFETTSSTLNWGVKYLTQYQDVQKKLRASLRATHKAAFDKGEQPGAEEIAKA
RDVYLEAFIDEVMRHSGILSSNIRKATEDVEVLGYRIPKGTDLWMLTNGPSFHSPAFPIDEQKRSTSSREYKGDTERWST
HEDLEVFRPERWLKKESDQGAENGGITFDARAAPLQTFGAGIRGCFGKRLAYLEQRVIYTLMVWNFEFQSIPESMGDFGA
NDILTHTPKYVRVMLAEAK*

>177358|jgi|CYP539B7|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MSCAFASFWIIERLVTDYRLSKVDGVRASILGGNPITSFFFFFKGAYMHSQNRLLEYYFSMFDSADPSCPSAVEITIMGR
RSIVTIDPEHIKAVLATNFTHFGKGERFHSTWEPFLGDSIFTTDGQLWQQSRTLIRPMFLKQKIRDMDIVERWSDVMISK
IPASGQTVDISDLFYRMTLDATTDYLLGHSVESLENPKGEFSKAFTYVQRKQMLLTLLAPVRSFIPKGEYKRGIKVLEAF
IQPFIEATLALVPEELEKISKSDKEFTFLHQIALFSRDPKVIRDQIMAVLLAGRDTTAATLSWALYELSNYPETWYKLRS
HVLQKVGPDAVPTYEDIKDLTYLTHTLYETMRLYPAVPFNIRTCLENSTLPGQPGQPDIATLKGDHIIYSTLAMQRHKEL
YPPVSETFADPAIFSPERWDHWTPKPWQFVPFNGGPRICIGQNFAMTEMAFMMIRLLQKYERIEYRGDWAAQYLKADIVG
CPGQGVPIALYEAEKRY*

>178916|jgi|CYP504A23|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MAYQVLGIAIIAIIFVLLKSLNATDAPKIKGIPEIPGVPIFGNLLQLGVDHARVAQKWATKYGPVFQARLGNRRILFVNS
YETVKHFWITHQSSLISRPTFHTFHSVVSSSQGFTIGTSPWDESCKRRRKAAATALNRPAVQSYMPILDLESTVSVKELL
NDCMNGSRDVDPSPYMARFALNTSLTLNYGFRIDGNINDELLAEITHVEREISNFRSTSNNWQDYIPLLRIFGKKNSKAE
EYRVRRDKYLTDMLNDLKERIANGTDKPCITGNVLKDPEAKLNEAELKSICLTMVSAGLDTVPGNIVMGMAYLSTKEGQA
IQAKALQAIQDVYPNGDAWEKCLIEEKVPYVTALVKETLRFWTVIPICLPRTNIKDIPYKDSVVPAGTVFFMNAYAADYD
ESRYKLPDQFIPERFIEDTEIGTPHYAYGAGSRICAGFHLANRELYTAYIRLITSFQIVPSDDPSQAPIIDPIECNSMPT
SLTTDPKPFKIGLKPRNEAKTREWIAAAEERTKDL*

>179596|jgi|CYP620B7|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MSNLIIAQGIVAALAFIIYRLFFRKKQTLLPLPPGPKPLPILGNINDLPPPGVPEFEHWLPFKDKYGPISSVNVLGQTMV
ILHDSDAVTELLEKTSMKTSARAQLFFATEMCGFGEFLPAMPYDDEFRQHRKYIHQQLGTKPLAARFSDIQDVESKRLLL
RVLNDPQNFMEHLKAEASAIILKITYGYTIEPLNPDPLVKLIEDVMSNLSAAFVPMSWPVDIIPALRHLPDWFPGTGFKQ
TARKWRAINEAVVSTPYHFVRKQMELGIHQEQSYVSGLIRTYGNEDGSGVSPEDMKIIQLTATSMYGGGADTTVSTLMTF
TIAMILFPDVQRKAQEEIDRVVGSGRLPEYEDRDNLPYTDAIAKEALRFFPVVPVGTAHKTEEELFFRGYRIPKDSYILP
SIWWFLHDPNVYHEPDSFDPARYLEPRNEPDPLGDAFGYGRRVCPGRYLATESLYLTIARLLAAFTIEKAVDENGKPIDV
EFKSTPGLVNHPQKFAYSIKPRNEKYASLIRKVERDHPWEESDAVHLEGDLIEEYKANCKAQAKKYH*

>186119|jgi|CYP5076G1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MSAPYSVVVAALGGVATHLLYLKRGEHHRHALRYVLAAAASFLGVSVFGWSPTFVDAPGTDWVSAIGLSAKVHGCFFLGL
YSSLITYRLFFHPLNKFPGPVGARISTVWLMYHFRGLDGWQRVAALHDKYGPYVRIGPSELSVRDPKAVNAFHGPNSKCR
KDPHYDMTLPMTSLHIFRDKAQHDRRRRVWSQAFGDQALRGYEKRMLKYRDMLFDKIAASDGQPMNMSKWFHFYSFDVMG
DLAFGKPFNMLETSQNHRAIDMLEAGFLPLAIHLPVWLLVLGMSIPALSKDWFEFVDFCRDRYQVRMKHEPDIPDIMSTL
LKPLEGREPTTEEADLLTGDSQLVITAGSHTTAASLTSITRLLAKHPEHITKLRQELAPFAHDSQIIATQDEMARLEHLN
AVINESLRLYPPVPTTLYRQTPSEGIMIDDVHIPGSMSVIAPQYAIGRNEAVYAEADSFIPERWYKFPDMIKNKDAFAPF
STGPYGCIAKRMALMDIRQVIARLVWTFDFGFAPGEDGVAFEKNGVDAFIMTFGEVNLTFKRREAK*

>194119|jgi|CYP618A4|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MESLVVALASCAGVVLLLQYNYTEAPVAAGFGVAFFVLGTTVHKIVRALIYPFYISKLRNVPGPKDNQFLVGQAIRLLKA
AGPNELYLEWVRKWPDAPFIRHLSWGNSEVLLVNNLEAAREVLQTHAYSFVKPSFFVKLVGEMMGTGLLFGVGEQHRQLR
RITAGPLAKPNVRKMLPIFQDKAKEVSDILDKAIEGEDKGVVEVEYLFNRAAFKIISTALLNRDISNFRSKNSPLTFEQC
YKGILDQPLLGKLITFINPFIPLRWLPIEANLAFIRANTAMRSMLAELIQERVEEVRLQQSEKKEKSSQNDEKTEKKDFL
TNMIEANLSERKGVSEQVLIDTVIQCVSAGHETTAGALTWTTYALIKYPEIQKRLREEIVSTQQKQPELSAATIDSIHYL
NNVVSESLRVYSPSLLAPWEAGEDLVIAGVAIPKGTTVTTIPAMIHYNPSVWGADVNVFNPDRWDAVTGAVANPFSIEAF
INGPRTCPGRALALLEIKTILVEMLSNFSLEAVNDVDVEFSHPTLTLKPKGGLNVRARRL*

>195933|jgi|CYP5080B6|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MLTLKYAVLTSLVLIFARCLFIIAKSFSSSTRHLPGPFWARFTRLWYFKRVALGGFERENIVLHRKHGPIVRLAPNMFSI
DLPESVNTIYGIGSKLPKSEWYDGWKHPSPDAWTLFPDKDIKRHAQTRRVFQGLYSMSSLVSYEKYVDECADILLNRMSI
CSKSREPINMGHWFQCYAFDVIGNITFSKPFGFLNRGEDVSSIMRALNKVFAYSTLIGIYPSLHPYIYSVTSFLGIGGAA
GRSYLIRYVKERILQRKNEREIKEEKDRGQAHGLPEDFLEKIMVKNKDAPSKVTDYHVFMMSMSNIIAGSDTTAISLSAI
LYHLLKYPDVMSKLRDEVDQSTNGVGHVHLSFKESLEMPYWQAVMKEALRLHPATGLPLWRNVTEGGLHLNGQFFPEGTT
IGINTWTAHYNEDVFGKDATVFRPERWLEAEKEGGDRISRMNAYYFPFGLGSRTCIGRHISYLEMSKLIPLLIRNFDFEL
QDQENEWKTTNYWFVKQDNFDVTVRPRVAM*

>197224|jgi|CYP617A8|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MALKLLTTVALVGGAGWTYITREAWSRGPFIKAATGIWLAELFLYAIYELFLYPKFFSPLRHVPTAPGGHWLLGHGKQVM
AAKPGAPLREWVTTVPNEGLIRYYWLFNRERLIVTSPKALGEVLVTNNYAFRKPENVRSLLGRLLGYGLLLAEGDEHRHQ
RRNLMPAFAFRHIKELYPLFWDKARESVQAMMKECGQEGQTEMEVSEWASRVTLDIIGVAGLGKDFNSIQDENSDLVQTY
GYLFKPRPPAKFLIVLATLVPSWLIYRLPLKRNRLVNEAARKIRAMCRDVIREKKEKMIANKERTDVDILSVAIESGQFS
DDNLVDQLMTFLAAGHETTSTALTWAIYFLCCFPEIQTRLRDEIRERLPSTDNAGAKLTSQDIDRMPYLHAVCSEVLRFF
SPVPVTIREASYDTTIQNVPVREGTRIVLAPSAVNVDPKLWGADALEFNPERWISKNKDSEESNKRAASGGADSNYSFMT
FLHGPRSCIGLTFATGEFACLLAAWIGRFEFELVNKDELDMDKMDIKGNVTARPAKGLHVKARAVPGY*

>198082|jgi|CYP528A8|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MGSGLIWNAACVLGSGICLLLLSIVSIALYRLFFHPLARVPGPKLAAISNIWHAYHARNGGMFELACTLHQKYGEVVRVG
PDELWFNSMEAFDKIYSSTKGFEKSDFYLATSLILPKIDCFLRPHFVDSLDLLSERDMKRYRLQRRLIGRVYQTSNVIKF
EAAVDGVINQVITRLKALDGAELDLKEWMHIIAVECLGASVLSWAPGLLKTGTDWGSSGHSYLAWRRKSVMGLFPTLTKL
TMGTNLFEWVFRDVWNLKFPAPPNFRSFFPDVGKRISRRIKSALNPNAGKDRRIDLMADLIQLHKDKPEFTEVYLRKMGM
TNFGAGHDTMASTLTAIFTMIGTHDDVQKKVTEEIRSAKNPLSYAGAVQLQYTRAASREAMRLHPALTMSLSRRVPDNGL
HMHGHFIPGGTTVGCNPAALHRNADIVTGSNPEAYDPDRWLGGDPLDVRPMERYSLNWGGGPRTCPGKNLAEMVVYKVVS
ALFEQFDVEVVAPLQIGQPSYYMSMITGAKARFLPVPPPMAGEISKRTG*

>200670|jgi|CYP65U10|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MMTAWGWQISPFSWLTTTALTLLTYAALRIIFNLFLHPLSNIPGPVTWKVSRLPFIWGLLRGTLVHDIERLHRKYGPILR
ISPNDVTFAHEDATRDILAFRKDRQPFLKDPTWWKANPGMPDSMISIIEPKQHARIRNLLAPGFTQRALKEQEDILHFYV
NLLVERIRELVTKEPETGAVIDVVRWFNFTTFDIFGDLGYGESFNCLQDSKYHPWVALLFNSVKAVSFVAAARLYPVVER
ILFMCIPPSLREMQRNHCQLISDKVNRRMNFELERPDIMSHVIQGAERQRLPQTTVDTTFMVLTIAGSETTATALSGTLN
YLVNNTDKLDILKREIRQAFPEENDINLDALRKLPYLNAVINEGLRLCPPVPWIIPRKVPEGGGTVCGTWLPARTSVSIQ
AYTLNRDPEHFHLATSFIPERWLPDARTDTESPFFHDRLQAVQPFSEGPVSCMGQHLALAEIRLIFSKLLWSFDFEVLED
RKKKWEDMRTFLIVEKKPIEMRAKLRATA*

>200792|jgi|CYP503D3|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MEPLLKYPLKLSSAAKQVGLIPSLFALGALFLALRFSVISKTENGIPVAGQASIFEPKWLLRLRFIRGSRSIIKQGYEKY
RDLYIVRRWTSDVVIIGKHKYLEEIRAKTKDSVRSVEPFLLDLAGDYFKQGQAFLESDLQNRVLHQKLTPNIESLTPIMK
SELEFALKQELPDIKAEDWVEVDPARVFARTIARIVARIWIGPDECRNEDWLVATTDFTENVFITGFILRFVPRFLRPVI
GPWLPTYRSIVKSSADARRIVAGLARKRSPAKEKTDDYVKGDDVLQWTMDMANDKELEENNLAERILTLSLAAIHTTALT
MAQALFDLCAHPENIDTLREELTDVLDTEGEWSKKGIDRLNKLDSLLKESQRFNSVFLLTFNRFLSVPVTLSNGVHLPAR
TRIAVPQYAMLNDPANVPGGNPEAYDPWRYSRLRSSEPSNSKKHLFAMTDSTHMAFGYGKYACPGRFFVANEIKMTLSHL
LLRYDWKFPKGRGRPQNFTIDDNIYPDPSARVLMRRRAVSAKEEELLGF*

>201072|jgi|CYP530A8|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MASTLLLWQLSKIGRRPSNYPPGPPTLPLIGNLHQMPKKHTHLQFQKWAEEYGPVYSLMLGPRVAIVLSSDVAVKDLLDK
RNSIYSGRPELYMGQDIMSGGLRPLFMGNVPVWRMVRKLAHGILNVKISRTYVPYQDLEVRAMLVGLLDNPKDFLNHIRR
YTTSLTTQMAFGYRTAASDDEDLLGMFENFDELSQIAGSQSGAILDLYPIARSLPDFLLPIRKAGKEYHKREMKLFMKHF
LNARKQLKSGNAKPCCAIDLLNAQKELGFSDELACYMGGSLLQAGSETTAIILVGFFEAMLVYPEVAKEAQAEIDRVCGD

RMPDLNDVPDMPYIRACMKESMRWMPATALGVPHAVTQDDSYMGYHIPKDAAVFLNVWAIHNDPKRHPDPRKYDPSRWAG
DNQNSAQSAVTGDPTKRDHFVFGAGRRLCQGMHIADRSLFLAMSRTLWAFDLKRPIDEKTGREIIPDVDDIQDGLFISPA
PFKANIVPRSESRAAAVRKEWEMENCSGRPQMERL*

>205582|jgi|CYP5320A1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MYFNNDTFGSSATSLTSLAVVSFVILSLYCFYVRELTPLRNVPGPFFASISPLWLITRQRTFQRPWVDLDLHKKYGPIVR
VSPNEVIVSSTKSRHVIYGPTSKFPKGDWYIATGSAGWGDGDELDFLSELDMDKYRLQRRLVGPAYTDNFMRQIEGNLDK
ILERNIDIMIQRAGRIEDIDHVANFLASDCLQVATFGESKGLLEAGVDDGSIELTMRLWGYMHWVGYVPRLHRARKWFNI
IVKPKLRIILAMLPSLLTQKATIHSKPASQMTEHVFIWMRKRIRDRFDSFASENLPTQATDIATRLLQIHAEKPALKPHW
VSEMLGTNFGAGVETTAIAISSFLDFVISYPGCQEKIQKEIDEARAAGELSKIPKQTEIESLPYLSACLNESKRLHPAVG
SPLQRVVPHGGMELEGKWLPAGTAIGINPWVMGRNKSLFGADADTFRPERWFEMSPEQQKACEANSMFFGVGVRSCPGKH
LAQAILNKVLPLLLMELCWSHAQPGASRPIRSAFMTRLHKVNVQWKKRKVVRTMVHETPQETSAETPSQNTISASDRSGR
NVNPIRRHLTESLPEATKNRSLPQTEASLKDADEPIVCA*

>334617|jgi|CYP5578C1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MLTLKFLSLAGVTLWVFYVGYVGFRRRESWKFVFKGRVMIGERAKASGNTPFSLPVFGYGERMHIVSTEQHWNDLKGADI
AHLSLHSWVKSFIQPQYSLLDQWPDTRDQEGMPIIRAIRTMSSNLPSLRPQLLEIFQHDLDMTIQNSPKSGGFAEMTLMA
TLEYMMVRINCFFILGIDAANDVKLVKSGIAATKEIAIIGEAVRVMPSILAFLVAKLVKGKNLNQRYVRDTMMRLVNARR
AIKRNALKTLSDPATVLEAFVDSSPDEWSTSEIVHHLNILFTTTTLSLGGVATQFLKDLYYHTTFHTQLIDEIQGSQIMP
STSRTKQTSLLEGVLMESMRTHCFQATAVHRTAIRPFTFSDGYTVPAGESVQFYQAGVHFDEKRYSEPETFDPTRFQGGL
RSVTDVGMEWPFWGVGKNSCPGRFYFTYAVRLLAAYLLTEFDCKLKSPVLPNFHVGESSIPSEKVVLLVKRKEQKLFE*

>448781|jgi|CYP539K1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MAFSLLCLPSHTLTIFICLIPAITVLVWLRHLASDIVIKRAGGARAPVLAGNLLSASKLYYEIGKSQYHNRLVDWCTGQL
DSLPPGKRTFAEFSLTGAKRVLITREPEQIKAILATNFSNFGHGPMWHKLWHPFLGDGIFGVDGQLWHDSRSMIRPIFSK
DRLRNLAIFDTCTDKLLSKIPSSGGTVDLKDLFYRWSLDTTTEFLLGENAGSLDFPDNKVFNAIHTVQRMQMYIFVLNPI
APLIPKGEYYRAIKRIEEFIEPIIARTLAICPTQLQQLSKSDLEFSFLHSIAIYTRDPKLIRDQIMSVLFAGRDTTAATL
SWAMYELSNYPHMWAKLRKEILNKLGPQAAPTYEVLKNLTYLKKVLNETLRLHPATPLNMRQALETTTIPGRPGEADIVL
LKGDSVTINVLGMHTCVDLYPPTSEKFADLKIFSPERWEHWTPKPWTYIPFSGGPRICIGQNFALTEMAFCLVRLAQQYE
RIEYRGDWAAQKLQVDLIGTPALGVPMALYKPGEVPDPSFKYHIN*

>454396|jgi|CYP5392A1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MATFLDSLPWLAAVGLLGSLYYLWYRIFSYQGIPKSLAFANSDGSLFSRARSSLGSVFEVNTLLWAGYRDHSKKGRAYIL
PDIFTGHHVILPSEHLQWLLKQPENVLSQRESNNEFLAAKHTFLNCVAADDNEWKFVVNLIKTMTSQLNNQTEDAIDEIH
AALDDLWGNDTKNWKQVDLFDVSLELVSRVVSRIFVGLPLCREPTYLASSTKFAKFILIEALLAQLTPKPLRPLLAPFLA
HYDWIQFRRMDRCVNPVIRERTEKFGKMAEEKPDADQPNDLLSRLMKESFRRNDDPRRSQSQTTKLLAVLNWAAIQVQGI
TLENTLIDIAHSPQSAEIQHQLREEALIADSAEPSVRWTRVQVAKMLKLDSVLTESLRLWGFSHGVIKVVVAKEGVDLPT
GEHIPYGAKVGVGSYGLHHDEEIYSGESPFTFDPFRFLNEKAEAQQSGTKFASTSGTYMAFSHGKYACVGRFFANHILKL
LLSQITLRYDIKPDKSPRPQNPWFSYVSPPPIGYKISVRRREE*

>61269|jgi|CYP65EU1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MAVLIPQSPLEWCLFATMLSFLYIISFLFYNIFLHPLRRFPGPLINRASVLPKLYFLSRGRLVYHVKDVHTQYGPVVRIA
PNELSFTDPQAWEDIFIRQPPGIARNPHGHALAPDMAFYNPFNDLPPSIISSSDEAHHHLRKKLSPGFSDRAMKAQEPLI
GSYVDLLIRRLREHSTDATGRPQSVNMRDWIAYATFDIIGSLTFGEDFGCLEGSGYHPWIALVLGSFKGRVKIQIFKALG
ILAPANWIMRQLGVGYKARKMHFELVLSKTKKRIAMGTDRSDFLDTLVRDGMSMDGLKRNATLLVNAGSETTATLLTGTL
FLLAMHPDVLQKLVAEVRGRFQRRDDITLTSVAGLTYMLAVLDEALRIYPPDGVSSPRLVPAGGHEIAGSFVPGGTRVGI
WQWAIYRDERLFLEPSRFDPDRFYNKGDEKSRYAGDRLDAVNAFLVGQRSCIGRNLAYAEMRLILARLMWEFDMSIDESS
RNWMDGQENFELWVKPDLNIHLKTVDRGQ*

>65956|jgi|CYP6001C27|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MNSNRAAANGNHAIVDYPSGPVAKAKKTKPVKHGGLMQLYRASRRPLPSEMGDGTYKKVVNRPTLMQDLSTITFADLKTL
KAIILSKLKGETQSDDKTMIMEKTIQLVAALPNGSKRQEVLTNMFIDELWYSLDHPPLLYMGDEFRFRQADGSNNNPLMP
KLGAAGTPYSRSVRPGVVPLGALPDPEAIYESLMARDKFIKNPNNVSSILWYWATIIIHDLFWTNERDANINDSSSYLDL
APLYGHSQDAQNTVRTFKDGMLKPDTFADKRLLGMPPGVCVILIMFNRFHNYIAANLAAINEGNRFAKPSSDLQGDAATA
AWKKYDEELFQTARLVTSGLYINITLVDYVRNIINLNRVDTEWTLDPRQEAGTDVGTTKGSERGVGNSVSAEFNICYRWH
SCISEMDDQWMHHFYDELLGENYGTMDMRMFMTAVRKFAMSMNKDPADCVFGGYTRGPDGRFDDDDLVDCISTAIEQPGG
SFGARNIPRIMKPVEMLGIIRGRKWNLAGLNEFRKHFGLKAYETFEEINSDPQVADALRNLYQHPDYVELYPGMVAEEAK
TPMVPGVGIAPTYTISRVVLSDAVSLVRGDRHYTTDYNPKYLTHWGYKEVAYDLKVNHGCVFYKLFIRAFPNHFKQDSVY
AHYPMVIPQENRKILTSLNRVHRFSFERPRAAAPRVEVTSFGGFNHVFSNTDKYNVQWQQGLEILTGRSGRYMQASDRKT
LESLLYKGDWKNVVKAFYAKTAEKLLAEKSYTIMGKKHIDVVRDLGNTAHTHYAAQIFNIPLKTQENPKGVFSEQELYAA
LAAIFTTLFLDVDPVKSFPLRQKTKEIADALGASIETTVKYTKSLGLRLFTGNTKNDPLSTAGVNAVKGLAKSGLDAHDI
AWGLILPTAAAAVPSQGRLFAQALDWYLSTEGAPYVNDIHTLANQEPSPEVDSLLLGFAMEGVRMAGAFSLHQVSTGTDT
ITEDDGRKVKVNQGDKVFVSFVSGARDPHQFPNPETVDPRRPLESYIQFGAGTHTAVGNEVSQIALVELFRAIFKKQGLK
KVVGPQGELKKVARQGGLSEYLTEDWGTLSPFPLSMKVTWNN*

>65994|jgi|CYP526N3|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MCIAVHVSTHAALPKPLPGIPYNSKSAQRFFGDVPFFKKAKYRRQWLWNQPREHGVPVSQVFLFPFRRPTVLVTDYREVV
DICSRRSKEFDRGTRNKECIGVVAPNFHFTMQTADPQLQFHKKLIRDLMAPKFLKEASAPQIYEKAIALIALWKLKAFKG
YGRPFSVSSDLYSATLDMICAVAFGMEDTSSALQHEISHVQNISPTFPNVEGAPACFPPAPVTPELEGLFNIPEMVSIAQ
ASPFPSFSQTLALLNPKHARAHWNRKTLIMRQTDRSLQRLTLAGLPECRSALDQLLWREMNAAKAVGRLPDYYSPVIRDE
LLGYLLGGHDSTAATLCWWVKYMSTYQSVQIRLRDALRQAHLDAYQTSRLPTIDEICDTSVPYLDAVMEETLRYASIATL
IVRTSTCDTQILGYQIPKGTDIMMSLTGPSITEPALPIREMSRSLESQESKDKVHPWDEDVSQFKPERWLKLVKNTNSDE
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>66368|jgi|CYP584D5|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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LFFVLSRKPHIYEKLRYEVVSIAGTKPATSNQLNSMEYLKWCVQESLRLHPVIPTNAREASKDTILPHGGGKDGNSPLLV
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>128673|jgi|CYP539A31|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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>152540|jgi|CYP584R1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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>201383|jgi|CYP52X6|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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>58401|jgi|CYP505A21|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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RETLRLSSGIPAFTVEAYEDTFLAGKYLVRKGEPVTVLLAKAHLDPVVYGEDALEFKPERMSEENFERLNKEFPNCWKPF
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>88406|jgi|CYP505P1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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VSVIVLLSLLHQEKAIYGEDASEFKPERMLDENFNKLPPNAWKPFGNGMRGCIGRAFATQEALLIIAMLLQNFVFEMADP
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LAYRLASDAALHGFYARTIAPMNAACNNLPKSEPMIILAASYDGSPSDNAVEFFEWLNKVEPDSLKGVSYTVFGCGHRDW
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LRQYSQLVQATVTESRSLTTESAIGKKMHLGIQLPPGASYHPGDHLLVLPANPPRDVKRVLSRFHLAWDTVVRASGDESV
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FVALLPPLRLRTYSISSSPSWEPNHASLTFSVLDEPPTPPRSKSFLGVASNYLANSTPGDLIHVATRPVKSIFQMPTDLS
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>359213|jgi|CYP505A25|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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PALKEKYGAAADSTEGVGGGLVVDVSLPRKSTLRQDVEEAIVTSAKTLTASGPAKNHIEVQLPTGMTYRSGDYLAVLPFN
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>38322|jgi|CYP559C3|[Trichoderma atroviride v2.0]Triat2
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RLLGIANYIHWRSADAVVQPLVQQRLNAMLKQANGHAEFQDYVPPEDFVTWTIRQALAENKTFELDPVVLSKRLLPVEFA
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>79360|jgi|CYP5091C2|[Trichoderma atroviride v2.0]Triat2
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>31375|jgi|CYP540A12|[Trichoderma atroviride v2.0]Triat2
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KLSFLDKFVKETQRLHNPAFQPARTVKTDVIVPGGYRLKPDSVVVCALYSLHTNPNHWHDPSQFDPDRWDTAEVKGRHRA
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>32157|jgi|CYP5789A1|[Trichoderma atroviride v2.0]Triat2
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LVDAQISLNEDDLDITVLQNLPYLSAIITEGLRFAHGVGSRLPRVNKTGDVQYRQWRIPAGVPVSMTSRLHHEDPQLFPE
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>36693|jgi|CYP5076G1|[Trichoderma atroviride v2.0]Triat2
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>43598|jgi|CYP61A6|[Trichoderma atroviride v2.0]Triat2
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LDLVNVPLSIYIPFTKCWRGKRTADAVLAEFTKAAAACKANMASGARPTCIVDQWVEHMFESQKYNEAIAAGAEGIEKPT
NLIREFSPEEIAQTLFTFLFAAQDASSSATTWLFQIMAQRPDVLDRLREENLAVRGGDKNRPFELGMFESMTYTHAVVKE
VLRYRPPVIFVPYLATKAFPITPNYTVPKNAMIVPTCYPALHDPVAYPSPDVFDPERWITGDAESKTKNWLVFGAGAHDC
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>46333|jgi|CYP53A46|[Trichoderma atroviride v2.0]Triat2
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PGIAICGEFFTAGTVLSVPTYTIHHSKEIWGPDADDYKPERWENATQRQKDAFIPFSYGPRACVGRNVAEMEMKLIASTW
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>48253|jgi|CYP51F2|[Trichoderma atroviride v2.0]Triat2
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ASFLGKSGTMDVSKSLAEITIFTAARALQGDEVREKLTAEFATLYHDLDMGFQPINFLMPWAPLPHNRKRDAAHSKMRAI
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FSRPKQPAMIGWERRHHEHNGLP*

>51470|jgi|CYP5043F1|[Trichoderma atroviride v2.0]Triat2
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SGHYLPEGTVVGIHAWVIHHDPSIFGEDHEDFRPERWIENSAEKLKNMEKCFLAFGAGSRVCLGIHLSMMEMGKLIPAIL
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>54776|jgi|CYP620B7|[Trichoderma atroviride v2.0]Triat2
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>78045|jgi|CYP534C4|[Trichoderma atroviride v2.0]Triat2
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PSVGHQLSFPDTMEFLLERLLVLLIFPRWILQLLPFEKIKKAVLAYDEYVKYMNELLDEKIEDARKGDHIEGMDLMGQLA
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>80521|jgi|CYP570E3|[Trichoderma atroviride v2.0]Triat2
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FLFASDFWVTMTKRDL*

>81147|jgi|CYP5791A1|[Trichoderma atroviride v2.0]Triat2
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SGFLERKEIIDISVAMTSLTLDIITEYSFGESWNLMDRDDLSYDFIKVMRGGFETLQIRKLFNSVIKLIPPSVLAWSSPD
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KRK*
>83818|jgi|CYP65A8|[Trichoderma atroviride v2.0]Triat2
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>84128|jgi|CYP5334C1|[Trichoderma atroviride v2.0]Triat2
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>87663|jgi|CYP539K1|[Trichoderma atroviride v2.0]Triat2
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>90002|jgi|CYP65BQ2|[Trichoderma atroviride v2.0]Triat2
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>129185|jgi|CYP618A4|[Trichoderma atroviride v2.0]Triat2
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>129592|jgi|CYP617A8|[Trichoderma atroviride v2.0]Triat2
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>131274|jgi|CYP541A2|[Trichoderma atroviride v2.0]Triat2
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DKSPVLLGGGKYQIAHNQPMIIVLQGVNRDPAVFEEPMVFKPERMMGEAFENLPAGAKKWFGNGKRECIGKQYALQWSHI
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>132911|jgi|CYP504A23|[Trichoderma atroviride v2.0]Triat2
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>134328|jgi|CYP540B34|[Trichoderma atroviride v2.0]Triat2
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GVFLGDTETEEWKIAHKFLPPALGPKAVRHYAPTMQKTVEDATKVFDELDKQGEAWNVYQYMIKLGSQAVGKLTLGIDFN
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>150753|jgi|CYP5333B1|[Trichoderma atroviride v2.0]Triat2
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>152285|jgi|CYP620B10|[Trichoderma atroviride v2.0]Triat2
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>153160|jgi|CYP5168G1|[Trichoderma atroviride v2.0]Triat2
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>156885|jgi|CYP602B6|[Trichoderma atroviride v2.0]Triat2
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>174966|jgi|CYP5391C1|[Trichoderma atroviride v2.0]Triat2
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>183029|jgi|CYP609C1|[Trichoderma atroviride v2.0]Triat2
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>210572|jgi|CYP65A6|[Trichoderma atroviride v2.0]Triat2
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>214400|jgi|CYP5268A8|[Trichoderma atroviride v2.0]Triat2
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DDMPRLPTVRAIVKETLRWRPVTAGGVPHQLIKDDVYEGVFLPAGTSIHANQWAIHRDAALYPDAENFRPERWLEPCWPT
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>214420|jgi|CYP65BQ3|[Trichoderma atroviride v2.0]Triat2
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>216490|jgi|CYP539B7|[Trichoderma atroviride v2.0]Triat2
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>217804|jgi|CYP671C2|[Trichoderma atroviride v2.0]Triat2
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>231723|jgi|CYP535D11|[Trichoderma atroviride v2.0]Triat2
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>252691|jgi|CYP5866A1|[Trichoderma atroviride v2.0]Triat2
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>254651|jgi|CYP51F1|[Trichoderma atroviride v2.0]Triat2
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>263459|jgi|CYP530A38|[Trichoderma atroviride v2.0]Triat2
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DHQNSAQSAVTGDPTKRDHYVFGAGRRLCQGMHIADRSLFLAMSRTLWAFDLKRPIDEKTGREIIPDVDDIQDGLFISPA
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>263486|jgi|CYP532R1|[Trichoderma atroviride v2.0]Triat2
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>269658|jgi|CYP620S2|[Trichoderma atroviride v2.0]Triat2
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REHNRNAQVYVEEPYQFARRQMASRKDTKSFVAKLVKEYAAGAGEPNEADEHAIKWSAAGLQVGGSETTVTVTRTFILAA
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KNYPAEEGDARLLGELPLQ*

>281311|jgi|CYP5818A1|[Trichoderma atroviride v2.0]Triat2
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QDSPVGG*

>283940|jgi|CYP528A8|[Trichoderma atroviride v2.0]Triat2
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>288687|jgi|CYP5080B6|[Trichoderma atroviride v2.0]Triat2
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FDVIGNITFSKPFGFLDRGEDVSGILQALNKVFAYSTLIGIFPSLHPYIYAVTSALGIGGAAGRTFLIRYVKERILQRKI
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>291412|jgi|CYP537A10|[Trichoderma atroviride v2.0]Triat2
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PGGVADIFVTLHAYACDCITHHLFHPHGTDCITNKQDEEMMHQVAADDSLQNRLISHYVPTLYRLFSKLLYVFVKPRETP
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NPGAPLDRLPYLDAVINEGLRCFPPIPMSLPRYVPPGGRSIDNFWLPEQTIVSCQAYSVHRINSDVFPDGDRFNPDRWLE
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HSHQAGV*

>292211|jgi|CYP684L1|[Trichoderma atroviride v2.0]Triat2
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EEMERRGAADVIKWFLFMATDVIGELSFGDSFRTLEIGEHSDYTKDLAELGYLGAVRSAFPTLIAMAKYLPISYFRRPLR
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KVKAVLLAELRALPDNFTIADLRDMSYLNAVIDETMRLYSGIQSALPRWVPESGDNIAGYWLPSGTTVCAQAYSMHRNPD
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>293815|jgi|CYP622C1|[Trichoderma atroviride v2.0]Triat2
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>295125|jgi|CYP65BM5|[Trichoderma atroviride v2.0]Triat2
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LTHPEILQKVKDEVRSSFSNEAEIDLLSVQKLSYMMAVLQETLRVYPPVPATIPRKAQPGGDMICGQYVPENTILGIWQW
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>296774|jgi|CYP642C1|[Trichoderma atroviride v2.0]Triat2
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>298475|jgi|CYP61A1|[Trichoderma atroviride v2.0]Triat2
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PFLQSMDPKFEEYYAKWLSGPLSCVSVFHKFVVIASTRDMARKVLNSPMYVKPCVVDVAHKLLGKDNWVFLDGKLHVDFR
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>299407|jgi|CYP548AA1|[Trichoderma atroviride v2.0]Triat2
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AEGGRHLEFDKQHKKFGKFVRFGPNRLSINSAKASRDLHNVNSNTFKADAYSSFKRFFGAEMSLTTVDHKAHAFRRRVNM
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>300299|jgi|CYP548A14|[Trichoderma atroviride v2.0]Triat2
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>302452|jgi|CYP65U10|[Trichoderma atroviride v2.0]Triat2
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NLLVERIRELASKEPENGAIIDVVRWFNFTTFDIFGDLGYGESFNCLQDSKYHPWVALLFKSVKAVSFIAAARLYPVIER
ILFMCIPPSLREMQKNHCQLISDKVHRRLNFELERPDLMSHVIQGAERQRLPQSTIDTTFMVLTIAGSETTATALSGTLN
YLINNTDKLEILKREIHEAFPEENDISLDALRKLPYLNAVINEGLRLCPPVPWIIPRKVPEGGETVCGTWLPGGTSVSVQ
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>188027|jgi|CYP5392A1|[Trichoderma atroviride v2.0]Triat2
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PDIFTGHHVILPPEQLQWLLKQPDNVLSQRESNNEFLAAKHTFLNCVAADDHEWTFTVNLIKTMTTQLNNQTDDALDEIH
AALDDLWGNDTSNWKQVDLFDVCLMLVSRVVSRIFVGLPLCRNPTYLASSTKFAKFILVEALLAQLTPKPLRPLLAPFLA

QYDWIQFKRMDRCVNPVIRERAERFGKMAEEKPHPDQPNDLLSRLMKESFSRNDDPRRSQSQTTKLLAVLNWAAIQVQGI
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>238001|jgi|CYP5386A1|[Trichoderma atroviride v2.0]Triat2
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GAVVQISGGVIHANRSIWGQDAEDFNPNRFLKEKSRSDGFHPAAFRGFGGGKTLCPGRDFATNEILMFAAMIIHAVDLVA
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>304119|jgi|CYP65DT2|[Trichoderma atroviride v2.0]Triat2
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GYEWVLRPILKMLNKYRREHNRLCMEKLERRCQLNMERPDFIEGLLQKAKEWNLDMRQIMQNSSNLIIAGSETTATALAG
ITYLLLKNPEIFQRVVDEVRQAYSSEDEITLLSVNNLPLMLACINESLRLYPPVALGLPRTVPQGGAMVAGEYVPQGVTV
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>313069|jgi|CYP5127C3|[Trichoderma atroviride v2.0]Triat2
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HELMALWFGSVHITSTTACIALHHLCLHSEYIEPLRNEIESTGWAQFEQSGGKAFPLLDSFMKESARINPVESVSSRRMA
LKPFELSDGTRVEAGEWICAAARGMMLDARYYTAPHEFQGFRFVDPSILKTQLADDIVSQVQGTPSNFTDIGDWQLWGTG
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>319887|jgi|CYP530A34|[Trichoderma atroviride v2.0]Triat2
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KAQEEIDRVIGSDRLPTLDDEDSLPYIRGCVKESLRWMPTALLAGVPHASNREDEYLGYRIPAGAGLVNNVYTIHMDPQR
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>37212|jgi|CYP584D5|[Trichoderma atroviride v2.0]Triat2
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>37750|jgi|CYP65EU1|[Trichoderma atroviride v2.0]Triat2
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>45536|jgi|CYP584R1|[Trichoderma atroviride v2.0]Triat2
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>50047|jgi|CYP505P1|[Trichoderma atroviride v2.0]Triat2
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FINSLRKRSQHRFEKDTAYMRGLCRKIIQERKQQKGSDFHDLLGALLEGRDPNTGEGLDDDSIIDNMITFLIAGHETTAG
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YELQIRETLTIKPENFKIKAKLRRGGNATDFQSELQSLGTQAKGVRSDSAVSMSSAHTDKGDKKPLTILYGSNSGTCEAL
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>88322|jgi|CYP6003A3|[Trichoderma atroviride v2.0]Triat2
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LYRFHACISLKDERWINNFFLKLFPGRNADDLANVSWADLGQALMTFEQSTPKDPSLRTFDGLERQADGRFKDEDLVRIL
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PGLMAEDIKPARNTGCGICPTYTVGRAVLSDAVTLVRSDRFNTIDYTPANLTNWGYNEVQYDPKTLGGSMLYKLIQRGVP
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VSWYMLAGDSARNFEHRAKWTKVMSELPDLQKAMTDLIAHEGKKLIQSAAFNLQQGLDQIDLIRDVAIPLNARFLGDLFY
FDLKSEDNKTGVLNNVELYRHLLNIRLWGVNNNDPGQAWNRRRHAQESAKVIIDTTRKLVDEVKSRSSNFFGHHTIPSVN
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YVMEAQRLTSSQRCMRVAKQPIELEGKTIQPGNYVVLMLGEAGRNPAEVPNADKFDATRKPNAVSAFSYGQHDCFGRHMA
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>130690|jgi|CYP539A31|[Trichoderma atroviride v2.0]Triat2
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FANSWTCEMRILNQRVCFTADPENIKAMLATQFHDFGKGEQFHREWAPFLGDSIFTTDGMQWHNSRQLIRPQFTRDRVSD
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VQNILARAYKLQPLIPKKSYHDGLKVMNHFVNHFIQRALRMSPEELAAHTKSDKDYTFLHELASFTRDPKVLRDQIVAVL
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>194962|jgi|CYP574C1|[Trichoderma atroviride v2.0]Triat2
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SLQGQPINTSLYSALIPFDNMGRMGFSVNFGSIKAGKENPMLHYLEVTLGTLAKLGMIWWPIALLQAFGSSNDHINFQKL
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LEPLFGRTVSGEFTNLDLGEAEAPYLNAVINETMRVDNPTCANGPRMTPPEGLEIDGVFIPGETLLFVPIYSMHTSAKYF
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GPLQCVFNKRA*

>239723|jgi|CYP52X6|[Trichoderma atroviride v2.0]Triat2
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>293435|jgi|CYP526N3|[Trichoderma atroviride v2.0]Triat2
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FLFPFRRPTVLVTDYREVVDICSRRSKEFDRGNRNKECIGVVAPNFHFTMQTADPRLQFHKKLIRDLMAPKFLKEASAPQ
IYDKAIALIALWKLKAFKSYGRPFSVGNDLYSATLDMICAVAFGMDDTSSALQHEISHIQAINPTFPDIKGEPACFSSAP
VTPELEGLFNIPEMVSIAQASPFPSLSQALALLNPKHARAHWNRKTLIMRQTDKSLQKLTLGGPLECKSALDQLLWREMN
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PYLDAVMEETLRYASVATLIVRMSTCDTQILGYQIPKGTDIMMSLTGPSITEPALPIREMSRSLESQESKDKVLPWEEDV
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>302580|jgi|CYP58M7|[Trichoderma atroviride v2.0]Triat2
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HISDPTFYDEIYASSSRKREKDPQFVPTYALPGSMVACVSHELHHLRRGILKDFFSRRSVLELSEMMNERVQALMKRLDG
FRIAQATVPIDDAFSALTSDVITSYCCGKHWGFIEDPDFRNDVRLATADAASFTHVSRFFPWLVTLSTHLSPRTLSILMP
GKAGLFEFLESFLEYARKGIATGKRKSMLATLADPSIPPQERTFHRQRDEAFGIIGAGTETTATVLTVAFYHLARDNAVR
DKLQAELKQLMPTPDSTPTWIELERLPYLDAFISESLRMGSPVLGRYTRVAPTETLTYKNYVIPPGTPMSSASYFVHKDE
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FTNKGSMKVKGRLTLVDDE*

>293464|jgi|CYP6001C27|[Trichoderma atroviride v2.0]Triat2
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DKFIKNPNNVSSILWYWATIIIHDLFWTNERDANINDSSSYLDLAPLYGHSQESQNTVRTFKDGMLKPDAFADKRLLGMP
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NRVDAEWTLDPRQEAGTDVGTSKGSERGVGNSVSAEFNICYRWHSCISEMDEEWMHNFYDELLGEDLGTMDMRKLMMALH
KYMMSIPKDPADCVFGGYTRGPDGRFDDDDLVDCISTAIEQPGGSFGARNVPRILKPIEMLGIIRGRKWNLAGLNEFRKH
FGLKSYDTFEEINSDPQVADALRNLYQHPDYVELYPGMVAEEAKTPMVPGVGIAPTYTISRVVLSDAVSLVRGDRHYTTD
YNPKYLTHWGFKEVAYDLKVNHGCVFYKLFIRAFPNHFKQDSVYAHYPMVIPQENRKILTSLNRVHRFSFERPRAAAPRV
EVTSIGGFKHVFSNADKYNVQWKEGLEILTGRSGRYMQASDRKTLESLLYKDNWRNVVKAFYATTAEKLLAEKSYTIMGK
KHIDVVRDLGNTAHTHYAAQIFNIPLKTQENPKGVFSEQELYAALAAIFTTIFLDIDPVESFPLRQKTKEIADALGASIE
TTVKYTKSFGLRLFTGSTKNDPLSTAGVNAVKGLAKSGLNAHDIAWGLIIPTAAAAVPSQGRLFAQALDWYLSTEGAPYV
DDIHVLANQEPSPEVDSLLLGFAMEGVRMAGAFSLHHVSTGTDTITEDDGRRVNVNQGDKVFASFVSGARDPTQFPNPET
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KVTWDN*

>295844|jgi|CYP548W5|[Trichoderma atroviride v2.0]Triat2
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IYRCHQKHGEYLRYAPNRLLVNNVNALYDVYGHGSKVKKYKNYRVLAQQAPNTLTLSNKVQHARRRRVVAQAFSETSLRR
FEPKVQSVLERFCQNLRRAANESTEKGWTSPRDISKDFNYLAFDTMTTVSFDSDFDTIRNPENRYPIGALEESNVRLGVL
LQESKLTSFNLDKYLFPASIIGRNQFVGFLRKLLKKRLQAVGLSDGKDIFSFLKDCKDPDTGAELTPIELSTETALLVVA
GSDTTSASMSGVAHYLTGSSDTYRKAAEEVRTTFSSLDEIVFGPKLNSCAYLRAVIDETLRMSPPGGAALWREVETGGAL
IDGTYVPEGTDVAVGIYSIHHHDSYWKEPLKFDPDRWFRPVNEDGTVRAATARQPYMPFSIGSRSCVGKPLALAQIMLTF
ARLLWEFDLRRADNEPGWEKKDITPIEYKFRDHVSARKDGPVVCFKPRSS*

>91168|jgi|CYP505A25|[Trichoderma atroviride v2.0]Triat2
MAEAVPIPEPPGLPLLGNLGEFSQQPTNDLIRLANTYGDIYRLHLGTRPVVFVNTQALVNEVCDEKRFQKSLSSVLRIVR
EGVHDGLFTAHTDEPNWGRAHRVLVPAFGPMPIRDMFDEMEDIAKQLSLRWARHGPNHPIPVSEDFTRLALDTIALCSMN
YRFNSYYQEKMHPFVQAMADFLAESSRRNRRPGFAPNFLYRAANEKFFNDIAIMRDTANEVVAERKRNPSDRKDLLAAML
EGVDPQTGEKLTDSSVTDQLITFLIAGHETTAGTLSFAFYNLLKNPVAYRKVQEEVDTIIGREAPKVEHISKLPYISAVL
RETLRLSAAIPAFTVEALEDTLIGGKYLVHKGEPITCLLAKSHLDPLVYGDDANDFKPERMLDAEFARLQAAFPNSWKPF
GNGKRGCIGRGFALQEATLAMAMLFQNFNFTLDDPNYQLEIVASLTIRPKDFFMRASLRHEMTPTELERKLGGKGAAGDH
HADAKAAGGAAQGSQKPLAVYYGSNSGTCEALAQRVATDALSHGFKVTDLAPMDFANQKLPKDRAVVIITASYEGQPPSN
AAHFVSWIESLKGNELEGVSYAVFGCGHHDWVQTFHRIPKIVDSTMEERGATRLVPLATTDAADRDMFSDFEAWEDESLW
PALKEKYGAAADSAEGVGGGLVVDVSFPRKSTLRQDVEEALVINAKTLTASGPAKNHIEVQLPTGMTYRSGDYLAVLPLN
PEDTTARVFRRFKLSWDAVLTIHSEAATSLPTNTPISARDVFGAYVELSQPATKRNISVLIELAQDEELKAKLEKLAGDD
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FERWEKLGAVEMRKAYSRATDKSLGCQYVQHRMAHDREELYKLWDQGAKVFVCGSRDVGKAVEAVCVQLVKERGEADGKD
VTEERAQAWWDKQRNERYLTDVFD*

>3909|jgi|CYP526AG1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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LASVKDLDAPLIQLFLKPFKKPLLILCDVRETRNIMLHRKDFDRSSNTADKVKGIAPDHHLRLRTNDVWRSHRRLVQDLV
TPSFLHNVAGPQLKAKVAEGKPFEAGTDMSHAALDAVMSFAFGERFTETATRPSLELMEGLGEESLRRIKETGSLTTPIQ
FSTAPVPDILQAITDLSETIGQVRGAMPPSLAWALIMRKPYVKRATRIKEEYFTRELKHAVSLLDDSDAGKEWSAVHHMI
LRERSFAQKEGRQPEYFSRVMFDEIFGSCILPGHDTTSTTMKWTLKILADNPQSQHRLRDTLQASFAAAKQEARNPTIQE
ITITNIPFLDAVLEELQRCCPTTLVLDRQAVVDTELLGHHIPKDTVVICLTNGPSMVEPGFAVDEASRRRADQPVKKLGP
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>5917|jgi|CYP5094A3|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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DEYGPIVRINPHEIHIRDPSFVDTLYATNPTKRDKYLPTSEIAGLSSGSNGTVDHDLHRRRRMANSRMFSKRAVAGVQEL
IRGHIKELTQVFERKVGSSEPIELQTTFLAYTTDVVYHYMFNRDAGLQKDCSKAQSWRHSMVAVSQAIPFCRQFPWLNAK
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LMQEGLIVLFAGSDTISRLLSHTIYHLLDNPELLDKVRKEILDAAGDCKDLPDVKVLETLPWLAASVRESLRLRAAVTSR
LPLVSRKDLVYENWVIPAGIPVSMSHPDILHNEEIYPEASKFKPERWFNATEQQNKMFIPFGRGSRMCTGMDFAYTELYM
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>21500|jgi|CYP548AA1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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YTVYWIYDGGRHLELDKQHKRYGKHVRFGPNRLSINSAQASKDLHDVRKKTNKADAYASFKRFFGAEMSLTTVDHKEHTF
RRAVNQAAITPAAVKEFEGQVTPHVDDFIDIIAEGAGSKSQGEEGWSFGKDMSYAVAFCLADIMGSVTFGRTWNAQRDPQ
FRHFIKDLPNGVAGIHLVGHMQSLFFGNLHKLLFKELITGVGNLMKVSRSFALWRLEQESMPNRDIWAALLAAREPKTGR
KFTTEELISEASLFIIGGTDGMITSTTATLFYLTHNPRTLERVTREIREAYPLKAEDIGKKGLDVKCPIRFASAELQAIE
YLTACIDEAMRLSPPVASILPREVGPDGLMVDGEYFPPGVNLGIPHYSMHHSGDNFAEPLKYAPERWIPEERKRGAEDGS
VPVSGKEPATMKAAAGHTDGFTPFGAGRSSCIGKYLAYQEMSIVLARMLWLFDIRLDPSSNLGEGVGDDLEGRGCRNEFQ
LYDRFVSSQKGPMLQFRFREELTA*

>1084382|jgi|CYP539B7|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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FTDASPSCPHAVETTILGVRSIMTIDPEHVKTVLTTNFSHFGKGPRFHRTWEPFLGDSIFTTDGRQWQQSRNLIRPMFVT
QRVRDLDILERWTDVLISKLPGSGQTVDVCDLFYRMTLDAITDYLLGQSVESLDNPNGEFSKAFTQVQRKQMLLTILQPF
RRFIPKGDYTNGIKVLEAFIQPFIEATLALTPEQLETISKSDREFTFLHHMALFSRDPKVIRDQLMAVLLAGRDTTAATL
SWTMYELSNYPDIWHTLRSRVLERVGPHAAPTYEDIKDLTCLTHALNETLRLYPAVPYNVRSCLQDSTLPGKPGQPDIAV
LKGDHVLYST

>54905|jgi|CYP559C3|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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AFIVRAPLSRPSEVVIPRDQLAWLFNLPDEILSTYDAHNAILYSQYNFLGRRLAYDPFPNRVMHKYLARHLSTVIPNVDD
EIQHAVDTALGKDTDNWKSIKLWNLWLDIVPHVTNRLLIGPEVCRNKQFLHGMINFTNDVVRNGLLLSLLPKVLHPIFGR
LFSISNYIHWRSSNTQAQPVIQRRLSAMMKKAAGDEEYKDYTPPEDFITWLIRQALLDQKTFELDPIVISRRLLPIEFAA
IHTTVLTGQLWMQDLLTSDPETGILDILRAEITANKPSSGPWTKAAISKLVRLDSSIRESQRVSNFAATLIERTVVAQDG
LHNPDLGWTLPKGSFVTVNLEGTHHDPDLYADPHSYDPLRYSRLREAWDAKSDEEKKRDAEEGAKIRGLGMVTTSAQHLA
FGHGRHACPGRFFVAHELKLIMAHILLNYDIKLVGKLPEKQFLGGTCLPPLKAEIQVRRKKAQA*

>59297|jgi|CYP609C1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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FRKLFSAGPDIDHMLGRNLGAYFIVLFKRLTSKEHLASCLPRLINDAEAAYSAIDTSVAPMDPFVVLWNVLYKMTHRTVG
CTEVAEDPALQEQTIRYYEKLDKTSALQVMFPWLPTPTRLYKLWAGAKLHMLFADIIKDRRRTGRKAQDTMQILMDKGES
DLLTSAFIIGALFAGLINTAVQAAWILCYLAYDPIWYAKVREEVDSVVAKYRTSEEQTPVDVLRGLSLEAWESEFPCIDL
GVRDSIRLNLMGASIRQNTSGKDIEIGDTGVVVPKDAFAVYSVADIHMDEAVYRDPLKWDPARYLPDRAEDKKKQHGYIG
WGTGLHPCLGMRIAKLELFVSTAIFFAMFDFKVVDKNGNPTTKPLPRYNQNALSAKRMVDTVFFKCERRF*

>1113692|jgi|CYP618A4|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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AGPNDLYLEWVRQWPDAPFIRYLSFGNAEVLLVNSLEAAREVLQTHGNSFVKPAFFEKLVGEMMGTGVLFSVGEQHKKLR
RIMAGPLSKPNVRKMLPLFKDKARELSASFDEAIAGESKGVVEIEALFSRTAFKVISTALLSRDITDFRSRSSPLSFEEC
YKGILTPPTLLGKLITFVNPFVPLRWLPIEANLAFIRANTALRGMLTELVQERVAQVKQDNKEGGDNKKKKDFLTDMIEA
NLAESKGVSDQMLVDVIIQGVSAGHETTAGALTWTVHALTRHPHMQKRLRDEILAAQQRQPDLDAATIDSLPYLNSVVSE
SLRVYSPTLLAPWEAGQDLVIAGVAIPKGTTVTTIPAMVHLNPSIWGADDVDEFNPDRWDAAAGPVANPFAIEAFLNGPR
TCPGRALALLEMKTVLVEVVGNFELEAAREGEVEVENPSLTLKPKGGLWIRLKRL*

>1114039|jgi|CYP528A8|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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VGPNELCLKGSTKGFEKTDFYLATSLNTPKIDACLRPHFADSLDLLSERDMKRYRLQRRLIGRVYQTANVVKFEAAVDDV
IKQVIARLEALNGAEIDLKEWMHIIAVECLGASVLSWSPGLLKAGTDWGSSAHSYLGWRRKSVMGLFPTLTKLTFRSNSL
EWIFRDVWNLKYPASSKFRSFFPDVGKRISRRMSALKPNAPKDNRADLMADLIQLHKDKPDFTVNYLRKMAMTNFGAGHE
TLASTLTSIFTMVGTHDDVQRRVRQEIRSATDASSYAGTLQLQYLRAAAREAMRLHPVLSMSLPRRVPDAGLHVHGYFIP
GGTTVGCNPVALHRNADVVTGSDPEAYDPDRWLGGESSGTRLMERYSLNWGGGPRICPGKNLAEMVVYKVISALFERFNV
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>1117703|jgi|CYP5181B3|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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TAPFFSEKTLRRVFVQSVSAAKILLAALLRPDAHRSLRTLSARVSLNTLSQTLSFSQALHGLLQNFGAVFIVPHWLLRLS
PFRSLQHAAACYSELGSYMDQLKRAREATISEKTASTASSDEDLLDMLVQAATSSDVQEKPVLLSNAQVIGQIFLFMFAG
HEANANLLLSIILLLACHPDVQTAMQRDLDRLLGQTSPDAWSYDDNYAPLMHGAVGAVINETLRLFTVIPVLPKCVPPGG
PWLSITVKGQRHPLPPNTIAFVNTSATHRHPKHWPKRPAHPAAQEKCSSSWREIRNDPRQRPYAAADFDPWRWLDAGESA
QEATQAGSTTNFLKPRPGTFIPFSDGGRGCLGKRFALVEVCAMVATLFKTHSVELVTDHEQGFNEEEEAWLEARRRATLA
LSEGTKFDTSLRVARAVPIRFVPRSN*

>1117735|jgi|CYP5412F1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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SFLDVIYPSRGKKINKPDVRRLEPIVKQQIEQIFRRMEDSAKRQEVVKMHHLFKACASDIITLYAFGDSFSFLHQPDYGR
GYFDACDQLNTMTHVFGNFPWLRILASSAPDWAMKKLLPSMSEFLDKKEWWIGKIREIRGSVDPKLAQNTILGGILNSTL
PAEDKTDARVASEAQLVVLAGEGTTALALTTSLYHLLANPDILQRLRDELMEAVPERNRLPTASEVGGLPYLNAIINEAI
RLHPGVMHRQVRVCPSETIVYKDQSSGAEYCLPPGTCYSISPLTSHMNSSVFKDPYEFCPQRWIETPEISRAFMGFSKGS
RGCVGMGLARHEMTLVLASLFLKYDVYSGQSGPTLELFDTIRSRDIDANRDYIVPLPAKGSLGLRVKIRN*

>1120614|jgi|CYP58M5|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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VHISDPDFYDEIYASSSRKRNKDPKYVPTYALPGSMVSSVSQEEHRFRRGILKDFFSRRSVAELSDSVNERVQKLMRRLE
ADSLNGTIVSLDDAFSALTSDIITAYCCGKDWDFVEDENFRSDIRNAAENAIEFTHISRFVPWLVYAMSALSPRQLALIM
PGKAKLFEFLESFLEYGLRESHVDKRKTMVATLADPSIPEKERDYYRLRDETFALLAAGTETTGRVSTIAAFYLANDSRV
REKLQAELKQAMPTLDARPTWVELEQLPYLNAFINESLRLGYGITARLPRVAPHEALQYKEYVIPPGTPVSSSTYFIHGN
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GVTRRGGVKVYAKLSRVDE*

>1120797|jgi|CYP551A4|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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KYGPIVRVNPDELSIHDPEFYNEVYVTESKRRTESYDVFCKGIDFDGSHLLTTDHDLHRKRRKPMEGFFSRKGITRLQPM
LAEVALHLESRFRELEGTNSVIRLDHAFSAFSGDIIGRICLGTDDRGSHGDRFLDSQDFASDWYDVIHAIVRSIPLFTGF
PQIIQILSLLPESLLLKIYPKGQMFNIFRQRALEQIRIANRDKSEKDANDISIFRHIANSDMPVEERTEERLAKEAQVLL
GGGTASTARTIGFASYYILSRPELRSKLEAELREPMANWPQQVPTWAELEQLPLLQGIIKESLRLSYGVMHRLPRVFPDQ
PLQYKDWVIPIGVPVGMSAYLMHSDPQVYPNPGEFIPERWIHDVTPAMHRSYVPFCRGSRNCLGMNLAMAEMSLILAVLY
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>1120935|jgi|CYP65U4|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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IAPNEVTFAHEDAWRDIFQLRKDHQPFLKDPIWWKSQPGMPESLLSAIDPKRHARIRSLLAPGFTPKALKEQEHILHFYV
NLLVERFRERASKGPKSGAVVDVVPWFNFIAFDIFGDLGFGESFNCLQDSKYHPWIALLFNSVKAASFVAAARFYPIVQR
LLMMCIPQSLRKMQRDHYQQIVDKVDRRLNFELERPDIMSHVIRGTERRELPPGTIHTTFMVLTTAGSETTATALSGTLN
YLVNNPDKLGALTREIRGAFEAEGDIDLDSLRKLPYLNAVLNEGLRLCPPIPWVLPRVVHEGGDTVCGTWLPGGTPVSIQ
AYSMNRDPANFHAATSFEPERWLPASRTDPASPFFHDRLQVVQPFSDGPRACLGQHLAWAEMRLIMTKLLWTFDFGVVED
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>1121511|jgi|CYP65BQ1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MAFLTEKQVLLYVTYTVVYNLFFHPLRHFPGPKLWAIHHAFYVRLELSGEGHKLLIPLHQKYGSVVRVGPDHLSFCHPDA
MNDLSGHRKANQPENGKEKNRVILLPGSIIGANREDHARLRKSMANGFSNQAMVDQQPLIMAYVEKLFAILDEECAKGEK
IDMVQRYNWTTFDIIGDLAFGEPFGCLEHSTYHPWVAMIFDSVKNVAIDSSFRRIPLLYKVLVMLTPKAMLNKLKEHNEL
SEQKTRKRLDAVTDRKDFMAAMTSRTGKDLTLQELVANAALLIIAGSETTAAALTAATYYLCRNPVPLKKLCDEVRSSFT
SEDEIDLLSVSRLNYMLAILDEALRLHPPVPGSMPRTINEKGDVIAGHWVPPGTNIDIWYWTMFHYPDFWTQPEDFIPER
WLGDPRFANDQKQIFTPFSVGPRVCIGKNLAYAEMRLILAKLIWRYDIELLDESIGWDVKSKVYIGYQKPPLYIRLKPRA
QKV*

>1122049|jgi|CYP550C1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MATDSVRDAFASSGGHDASTPASVYLLSLVALLIASAFTYSRLQKSKREVEVDFPPSFIWRKKGSLFGLTSRHRILHNLE
NIDRVFTKSPHILSADVLGLRLGIRVFGARLTKETGDKFLIINRKLTQIIERYFVNDASATASIQSADVPGKVARLLSFS
SDAQKQHQWERSAAIKVLSTNSDGHSGAVEADLELLMRDFGACVSIPRLYGQDFLDRNPHLLEDFWKFDNNAFPLLIIGV
PTWAPIKSFREALAARTRLHDALEGFYIRLNQYKSGQKVDFDADMSDVSVAAMERNNCLEEHGLSVRARAELELGTFWGL
NANMQPMVFWLLLYAYSTPGLVDELRKEVSSCITVDTATYPPQITAFDFSRLSHECPLLKSSLFETFRLVEDPTSLRYVS
KPMTVADGTLEHHFKPGTWLSAPHALLQSDPSIFPEPEKFIPDRFIETDKETGHRVARYGRLKPWGSGSAVCKGRTFAEK
EVMGIVACFITLWDMENAEGSWKLPGMIPGTGVKRPQKPIRVLLKHRTLE*

>1122117|jgi|CYP61A6|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MPLSVESSTNATQHRASGLVESLWSSYSATSNWQLAITALLVLVAYDQYLYISRKGSIAGPKFKIPLIGPFLQAIYPKFD
AYLAQWASGPLSCVSVFHKFVVLASDRDLAHKVFKSPTFVRPCLVPMAINIMRPTAWVFLNGKAHAEFRRGLTGLFTNKA
LSTYLPVQEKVYADYFNRFIEHSKSHGGKPTKFMGWFREINCALSCRTFFGDYISQEAVKRIADDFYLITDALELVNIPL
SIHIPFTKCWRGKRTADAVLAEFTKCAAACKLNMASGAQPTCIVDQWVQHMFESKRYNEAVAAGVEGLEKPTNLIREFSD
EEIAQTLFTFLFASQDASSSATTWLFQILAQRPDVLDRLRAENLAARGGDKNRPFELEMLESLTYTNAVVKELLRYRPPV
IFVPYLALKPFPVTPDYTVPKNAMIIPSCYPALHDPAVYPNPDVFDPERWITGDAESKTKNWLVFGAGAHDCLARRYVPL
TMAAMIGKASLELDWVHHATERSEEIRVFATLFPMDECPLVFTKRE*

>1122457|jgi|CYP5104A5|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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HRRYGSVVRIGPNQLSVGDPEAFRTIYRVSGAFAKSSSFAVLQGSRPFDLAGERNEKIHAAQRRLVARPYSMESVVHLEP
QVDRVLDDLLVKFDAFALSPRPIDLGNWFQLFAFDVIGAVSFSKPFGFVAQGTDEGMFGRIERTFSSTGWLMYAPWVFKF
HQKFILPVFGNFLAANDRNGYFFEVAKSEVQDRRDKGGNDKDIVGQLFQTARTKPQLDDVSISFMMTSNVFAGSDTTAIG
LRSIFLNILKHPRVLAKLRAELDERKEAGQLSNPVTFQEAEACPYLQAVIYEALRVFSPVGANPDREVPKEGMTICGKFV
PGGTVVGCNPWVIHHAPEIWGSDYEEFKPERWLGENASHLSKKSQQRFFFTFGGGTRTCIGKNISWLEMDKLVSTLLMRY
NFELVDEANITEVCRSVFIFRACCVQ*

>1122862|jgi|CYP65A3|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MGLLSQPIGVSSIINLVISLPLLAVTLGLAYILCVAIYNLFFHPLSGYPGPWLWAVSDIPYSLVSVSGDAHKRMLQIHMQ
YGPVVRVGPNTVFYSHPDATKEIRGHRKGNKAEHLKDPHLHSGNQSNVIGANRANHVRYRRSLAYGFSHQAMLDQEPIIN
KYIDTLLTELKKQSTKHEKIDIVRWYNYTTFDIIGDLAFGEPFYCLEKSDFHPWVALIFSGVKNLSFISVCSKHGKLGKI
LARLLVPKDLPAKGREHRRLSIEKVRRRLDSGSSRPDFMTAMMTTRGSSEELTFNELVSNSSLLIAAGSETTATALSAAT
YYLGLYPEIFAKLAAEVRSAFSSEKAISLTSVQHLTYLQAVIDEAMRLFPSAPGTQPRIISPGGDMIVGKYVPEGTVVGV
WQWVNHHNPAYFHDAESFIPERWLGDTRFESDKRDAFMPFSVGPRNCIGRNLAYLEMRLILARMVWNFDIKLAEESVGWD
TRSKVYMLWEKGPIYVYLTRREGD*

>1123009|jgi|CYP671C2|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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VSNAYNAGVVVSSLTYRAFFHPLNRFPGPFMAKLSRFYAMRNAAKSLKAFEDIQRLHETYGDIVRVGARELSINRASAIG
VIYETPTRTTRSPWYAQVSNDVTKISLNSTRVLKVHKLRKKIWERGLGFRALAVYAPRIKTKVDLLLAKIAEHSGRPIDV
TEYSMFFAFDVMGEIGFSKDFHMLESETEHPAIKGVHESMLAIGVLGTVPWLLSMISKVPGAAAGFSRFTTWCHQQLQEK
PTLKDQGPRDIISWLIKAVTEGDPSAPPGEMAIQEDARLLIIAGSDTTSAALANALYYLASNPRTYRRLQASLRDQFPGG
VIDWSYEKNIPYLDYVINETLRLKPSVPGGLPRVTPPEGLMIDDEFIPGGTVMAVPTFTVQRDPRFWADANAFKPERWEG
LSTEKSPWIPFTRGQWACPGRNLAMMEMRMVLSRIALRYNVSFADEDAAKRFDADVMDTFTLTLPPLHLVFTPI*

>1123072|jgi|CYP5386A1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MALFDVETWSINSATVIIGLLTLSLALRYTSGRKLHPSEPTVVQPWIPIIGHLLGMVVHGGRYIKRLGLCYPQEPILTLP
VPGSRIYVVTEPSLAASVQRNTKTLSMSPLLPEITKRVLGLDKTTYHVISQNLDPEPGEPRGFLADIHDWVYTSFGPGEY
VNTISREAAQELCFQLQETVGATGPVAGTVDLLAWVRHMVTVGTAKAFFGPHNPIAEEPGLAQDFWAFDHGLGGLLIGVF
PSLTASKAYAGRERLTAAFCKYFEAGHLEEATLIVRGRARIEKEYGMSTDMTARSALSFLFAGIVNATTTFWVVLRTFA
NEGLLAQVRQEICQALEVSSQRSGPDSLSIAVVKETCRTLYAVYRECLRVGSENFTVRMIKEDTMLADRYFLKKGAVVQI
SGGAIHGRSTIWGQDVDEFNPGRFLKEKGKGDGFHPAAFRGFGGGKTLCPGREFATNEILAFAAMIIHGVDWVAPGGGSL
SVPEKNDRVMPVHILEPATAAEGIVHPRAEEVKMLSRLKVVM*

>1124521|jgi|CYP534C4|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MALVPIAAAVLVAYGIITYVVNLRFYVKEAKRSGLPYVVTPCNPFWLPWQVSHKLWVPIIKLFPKSWWDGWLEIMIPNFA
YRTRHEWFAKLGESFLVASPGGLLMMTDNAETIRTVTLKREQFPKWTAAYTILKQFGENVLTTEGSVWRMHRKVTSASFN
ERNAALVFREAIKQTQGMLRMWTGPSGATRKEPLRSLQHDTMKLALNIISYVGFGMRLLWPGETHPAGTDPKIVKYGSHE
PTDGHQLSFTDTMEILLHYLLLLLIVPRWILKMLPFENIKKAVLSYDEYISYMNELLDEKIEEARKGEHVEGMDLMGQLA
KSSFGTETKEATLTREEIIGNAFIMFVAGHETTANSIHFTMIHLATHPEAQRAMQKDIDDILGDKDPQDWDYDSLVNQMT
ASMIGAAMYETLRLVPPVSEIPKKISPDADQSLVMDGARYVLPRNTGISLATVSTHVNPRYWPTRPSKITPGASNILDFC
PERWFQKTAKDKERDGGGGGNESVAGADSEDFGGFQGSDINAQLFKPERGSYIPFSDGARSCLGRRIAVVEIIAALAVIF
RSYSVELAVDEWASPGEVEAMGREERAAVYRRAQDKSRWTVGQASTRLTLNLQDGMHVPVRIVKRGEEKFVDWMD*

>1125262|jgi|CYP620S1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MIFIADKDAAQEILEKKSAVSSGRPIMPFANYCGFAKFTNMYQLEKRFTAQRKAMHKAIGTKAMVTKYAEMQEREAGRLL
VRTLDECDKIVKHFETEAGAVILKIVYGYTINPRGPDPLVILIDRMMANFSRACVPFARLVDFIPALKWLPDGFPGTGFK

AEAAQYGREIRAVVNEPYKFARKQLAEHNFTGSYVTRLVQEYAGDEGELSEEDAYTIKWSAATLYAGGADTTVSVLISFI
LAMTMFPEVQRKAQEEVDRVTGGTRLPVLADREQMPYVEAMVSEALRWCYILPMGVPHALSEDMTYKGYDLPKGAYILPA
LWDFLHDASVYTNPDDFAPERFLAPRNEPDPRWAAFGFGRRICPGRFLADSSLFLNLASLVAVFNIDKEIDEKGNVMEPK
LEFEAGLIAKPKAFPFKITPRSERHAELIRGFEREHPWEESNAAQLGELPLPSHLSH*

>1126145|jgi|CYP65A4|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MGVLLASDASGVVTPVKLSVALPLAVVALSFGYFVWSCIYNVFFHPLSKFPGPKLAAISRIPYSRILLNGVGHRAVLDLH
IKYGPIVRVAPDFLSFSHPDAMNDIRGHRKAGQPEHRKDPFRQELNVHNIIGADRHAHTRFRRALANGFSHQAMLDQEPI
ISDYVEQLMESLEKQSEGGSKPVDMVRWFNYTTFDIIGDLAFGEPFGCLQSSKYDPWIQLLFESVKALVWLGALKHFEMI
PRWVIKYVMPKGLQEKYAENQRLSTMKVQKRLETGSNRPDFITSMTAKRNGECLTFEELTANASILIIAGSETTATALSA
VAYFLSLHPEVQAKLAQEVRSTFSSPQEITITSVQHLTYMLAVIDEAMRLYPPVVAGLTRLISEGGAIVAGEYVPEGTYA
EVWQWPLFHNPNYWKQPEEFIPERWLGDPRFASDKREAFQPFSTGPRNCVGKNLAYSEMRLILARVIMQYDLKAAEGTEG
WDSRSKAFTLWDKGPVNVYMIPRKTE*

>1126184|jgi|CYP602B6|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MYQQSNSTPFQPAAGAPSLFASWTPRASYYVATFVVLLVAWLLRPKSQACKLGVPFYGASKLKWIFDAESQIVASYNKFR
DQVYQIKATEGFQAMIPPRFISELKGLPEDVLSSTEAVADALQTKYTKFSPGHNGDMLSLLVRTRLTQNLVELIPQLKSE
LESYIATEFPPCEDWTPVKWQPFALRGIARLSGRAFVGPSLNRDEQWMEVTIKFAIDVFMSVIKLQLFPEWARPVAQYVV
SDLRRIRRDIDTAKYLLKPLLQERIRDMEISSFHDPPNDLMQWLIEALPEEEKADVQTHAELQLILAAASIHTTNNLLFE
CMADLALHPEVQAELREEAYQILEVEGGWARKESMAKLKKLDSFMREVQRLHGNITSFIRKVLKPIDLSDGTHLPAGTRV
LAPQAGISIDEQFYHSPEEFDALRFYNMRQQSAEASNRWQFTSLCDTNLNFGAGKHACPGRFFAGNEIKLVLAFFLIHYE
VRLKKGDQRPKPMAMVMTKGPDANAEFEFRRRQLAV*

>1127143|jgi|CYP504A23|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MAYQILGIAIIAAVFVVLKILNATDTPKIRGIPEIPGVPLFGNLLQLGVDHARVAKEWVSKYGPVFQARLGNRRILFVNS
YDAVKYFWITHQSSLISRPTFHTFHSVVSSSQGFTIGTSPWDESCKRRRKAAATALNRPAVQSYMPILDLESTVSIKELL
NDCRDGLQDVDPSPYMARFALNTSLTLNYGFRIDGNVNDDLLAEITHVEREISNFRSTSNNWQDYIPLLRMFSKTNTKAE
EYRLRRDKYLTDMLNDLKERIANGTDKPCITGNILKDPEARLNEAELKSICLTMVSAGLDTVPGNIIMGMAYLSTDHGQS
IQARALEAIQQVYPNGDAWEKCLVEEKVPYVTALVKETLRFWTVIPICLPRMNISDIPYEGSVIPAGTTFFMNAYAADFD
EARFKLPDQFIPERFLEDKEIGTPHYAYGAGSRMCAGSHLANRELYTAYIRLITSFRIVPTKEPNQAPVIHPIDCNATPT
SLTTDPKPFKIGLKPRDEAKLRQWIAEAEERTKDL*

>1127234|jgi|CYP584R1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
METGHIAFTLYVGVVVFCLFKFISHRIDRAARQKRLSREHDCQPIHVKYPHKDPILGIDIFIRNVKAVSKHNFLETVTKR
HEEVGETYQLNMLGTVGIMTRDEEIIKTVLSTRFKDYNLHEERKKALNPLLGQGIFSSDGLSWAHSRSLLRPQFARSQLM
DLSMLESHVSCLMSLIPNGKEIELQELLLRFTMDMATDFLFGESTNSLLADRDGYHSKLDGFAESVQYAQDRIAIHMALG
KWALLKPDPKFKHHVRVVHKFVDELVHKALHGNDPDTKTQPYILLRALVEDTQDPIRIRDEVINILIAGRDTTASLISNV
FFLLSKRPGLWSMLRNEVLTQFKDQPPAFEDIPQCKYIRYTINESLRLFPPVPVNSRVANCDTVLPRGGGVDGKSPLFIP
KGTPVIYNVFGLHRRQDVYGSDVEEFKPSRWESLRLSWEFLPFNGGPRICIGQQFALIEASYVLIRFLQCFETVESKDER
PWQEKIALTVSNRNGVRVSFTRT*

>1127469|jgi|CYP53A46=oldCYP539A13X|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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HISIADDEAINLVYGHSNGFLNEFYDAFVSIRRGLFNTRDRAEHTRKRKMVSHTFSAKNITQFEPYIHANLELFVQQLDR
LVDTSPHTDEKGRKEAHFDCLPWFNYLAFDVIGDLAFGAPFGMLEKGVDLAEVRDAPDSPPIYAPAIEILNRRGEVSATL
GCFPAIKPYAKYLPDPFYSNGLAAVQNLAGIAIACVKRRIDNPPEIERKDLLARLMEGRDEKGQPLGREELTAEALTQLI
AGSDTTSNSSCALLNYVARTPGVLEKMQAELDAAIPKDVDVPTYDMVRDLPYLAAVINETLRHHSTSGIGLPRQVPPDSP
GVTICGEFFAAGTVLSVPTYTIHHSTDIWGPDAEEFKPERWLSVTQRQKDAFIPFSHGPRACVGRNVAEMEMKLIAATWA
RRYGAKVLQGPMLTREGFLRKPLGLDIALYKR*

>1127518|jgi|CYP561J1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MDSVLTNAKGPHLAVPRVQGLVQEILEELTQKSGLQLLGIFAGMFITWRVGVAFYNVWFHPLSKFPGPTHMAAFYLPYMY
DSFICGNMHNTIRKLHQKYGPIVRVGPDHLAVDGSVGWPEVYGHKAGQEEFGKVPGFLFQEDTTALIAAPKDKHRRQRRQ
LAHAFSDSALRDQESVMKRYVDLLMRRFADRADTGESFNVIKWFDFTTFDIIGHLYHSEPFHCLENNGYHPWVSAFFNGF
RGDSYRRFLSQFPLAHEIVKRLRVISDLNSSTDNRDYIVEKAQARIKQGDCAIEGYRDFVSFMLKKNRDGEFGFLVPEIL
ASSPLIITAGSETTSSTLSALVFYLGSNPVAYKRLAEEIRSAFSDEEEITLNSTQQLEYLHACIEEVLRVYPPVPETPPR
QSPGGTIDGKWVPQGMATYHNPDHWAEPDSYLPERWLPKSHPLYDDKFAADNRATFKPFSYGPRDCIGKNLAYSEMRLIL
SRLLFGFDFDLAPGQEGWHDALRTFLVWERMPLNIYLKKRTTAA*

>1128267|jgi|CYP620B4|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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VLLFDEDVVTEVLEKGSVKTAGRPMMPFAAMCGHDRFFALLQYADRFRLYRKVVHQQLGTKQLAAQYADIQDVESKRFLW
RVLRDPDHLFQHIKTEAAAIILKITYGYTIELEKPDPLVGLIERVMAGFSDAVVPFSWAVDIIPALAYLPDWFPGAGFKR
IAREQRAIMDASADIPYNFVLKQMSNGTNQESFVSRLVTAYRNEGKPADDMIFDHIKWVAQNVYAGGADTTVSSLTSFIL
GMVLHPDVQQKAQEEIDRVVGLDRLPSDSDRENLPYVDGVAIEDMVVRGYRIPKGAYLLPAIWWLLHDPERYPEPMRFAP
ERYMEPRNEPDPACHAFGYGRRVCPGRFLAQDNLFTTIARTLAVFTIGKAVRDGRPVDVEWKHTPGLIDHPVEFPYSIVP
RSEKHAEMIRRVEVEHPWKGSSIAEALQGVQTV*

>1128974|jgi|CYP5789A3|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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DPDFCIEEFSPVKKLDKYGWWYRVFGGPGSTISTEDYRLHKARRATFQNFLSPRVIRGFVPTIIDKLKQASLVMDRHAQT
GCLLNLSSIYRCMAADVVSAYVLPQSLNLLQSSDLGQGFQSSLRFFFEAATAMRYLGFLEPLMAIIPPSIFDAMLSDPAK
GLIKLVKTLEGYVDDIIQGKKNPQTSRTCLLERININHRDENENFRDRLLQEAEQFIVAGSETTGHTLSVITFYIIQEAE
IQGKLREELANAGVVFDEDLEIAKLQTLPYLSAVITEGLRFSHGVGSRLPRINKSREVQFKQWRIPAGVPISMTSRLHHE
DARLFPEPHSFRPDRWLQPESRSLKKYLSPFGHGSRICPGMHLALYEIYITIAHILLKFEIKNCGTISADLVSVHDLGAP
FPKHDSKGLQVKLEARNS*

>1129069|jgi|CYP541A2|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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AVHDSLFTAYDDEPSWGIAHRVIYPKLSPDATKGHFEEMRDLATELFNTWRGLGDKNTISPVEQFNRLNLESTTYVLFGK
RLNTLIGPPHPELQAMEDSTSEAMKRPTRPGVLNWLLYGRKFDSSIKVMRDYAADLVKYRRENPTDRQDVLAAMMNTSDP
ETGKKLTDSQVIDEIITMPIGSSTAPCLVSWAMYFLQKNPETIVRAREELDRVIGDGEFELEHLERLEYVQGIMRESLRL
SSAAPGFNIEPRPKEGDKSPVLLGGGKYQVAHNQAMIIILHGVNRDPAVFDDPLAFKPERMIGEAFENLPAAAKKWFGNG
KRVCIGRYYALQWSLVVLAKLIREFDFELADPEYKPELDGWFNVRPIGFYVKVKPRAT*

>1130241|jgi|CYP5390A1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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EPWGMPLARWQLTVPPTASGFYRVFLGPFDYLIPKSSQAVSTIMSQPYLYHKPAAVRDGLVESLGVGLVAAEGSVHKKQK
KLLTPIFGMSRNRRLVPQMWTKALTLATKIQELVAETGSKSAVLNMHPLTMAATLDVIGVTTLGVDFDSVTRPDQPILQA
YQRVFPSFENQSAVEKFFGATLPAIISPHLLFKLPFKPIREFHQGMTALQDFCLTQIRQKRQQIEEAEDGSDEIREKDIL
SAIIAAGLEDESEILSHILTVLAAGHESTAITLAWAIFKLAQHPDVQDKLRAEVFAATRSANPEGLTLENISSMKYLRCF
LMEVLRLYPAFPAMMREAAHDTRVGDLLIPKGKQIMVSPYAVNRSQELWGDDADEFKVERWEDSYSGGAKTSQAFLTFSS
GPRVCIGKDFATLSLKVFLTVLVSKLKFEEAIPGWHPVIQKGTSLKPQGLKVKVSLL*

>1130370|jgi|CYP5389A1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MESHTAILLPGSNNLTERPAKHTSVYLGLSLLLVCVVWRYLKFPRHDPREPPIVKPSIPLIGHFIGFYKHGVTYLDRMRH
CTSWPAYTLSVIGHKTYIVTSPGLSHAALKSKSLSMDPLIANVSSMILGLSEESGHYFGLDHAGLYKDTVALRERREEFS
RSLAPGPGANLPAQICSNVVAEAVNAFGNDWVSRDLFVWVRDVVTLGTANGLYGPKSPMAVDNSLIQDIWTFDENQLRLS
WGILPRLVAPTGVRTVSRISQGFRNFIRNGNIEFASEAIKSGIAKALDMKMSIEDCCRIEVFKISVATVNTVPTTVAMIQ
NILADRALLQVLRKQLAAILTVHENPAGRKAELDIGRVEAECPLLHACYQEALRIGSTPTCNRVVLEDVVLTDPDAGREI
LFKKGWRVCIPTFLLHNRASFWGGDAETFGPEKFLPGGVGTDNHGKVRTQGFVPYGGGAHLCPGRHLAKKEILASCALVI
MALDFNAENRFAAQNYASSTGAKKPIRLENV*

>1131500|jgi|CYP53A46=oldCYP539A13X|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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DAFVSIRRGLFNTRDRAEHTRKRKMVSHTFSAKNITQFEPYIHANLELFVRQLDRLVDTSPHTDGQGRKEARFDCLPWFN
YLAFDVIGDLAFGAPFGMLEKGVDLAEVRDAPDSPPIYAPAIEILNRRGEVSATLGCFPALKPYAKYLPDPFYSNGLAAV
QNLAGIAIACVKRRIDNPPEIERKDLLARLMEGRDEKGQPLGREELTAEALTQLIAGSDTTSNSSCALLNYVARTPGVLA
KMQAELDAAIPKEVDVPTYDMVRDLPYLAAVINETLRHHSTSGIGLPRQIPPDSPGVSICGEFFTAGTVLSVPTYTIHHS
TDIWGPDAEEFKPERWLSVTQRQKDAFIPFSHGPRACVGRNVAEMEMKLIAATWARRYGARVLQGPMLTREGFLRKPLGL
DIALYKR*

>1135254|jgi|CYP51F1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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RAKYGDVFTFILLGKKTTVAVGPAGNDFILNGKLKDANAEEIYSVLTTPVFGRDVVYDCPNAKLMEQKKFMKIALTTEAF
RSYVPIISHEVISYFKRDPDFKGKSGIVDIPKKMAEITIFTASHALQGSLIRSKFDETLADLYHDLDMGFTSINFVLHWA
PLPWNRKRDHAQRTVAKIYMDTIKERRALGDQDKELDILKHLMTSKYKDGTPVPDHEIAHMMIALLMAGQHSSSSTSSWI
MLRLAQYPNIVEDLYQEQIRVLGADLPPLQYEHLAKLPLCQAIVKETLRLNAPIHSIMRKVKQPMPVPGTKYVIPTSHVL
LAAPGVSGSDPNYFPNPELWDPYRWLPGSPNAPLLARNDEEEEKIDYGYGIVSKGAASPYLPFGAGRHRCIGEHFANLQL
QTIVCEVVRLFKLSNVDGSNNIVGTDYASLFSRPLEPAKIRWERRD*

>1135276|jgi|CYP617A8|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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KPKPPAKLLVFLAALVPTWLLYRLPLERNREVDAAAATIRAVCRDLIRDKKQKMMANKERTDVDILSVALESGQFTDENL
VDQLMTFLAAGHETTATAMTWAIYFLCCSPEIQTRLRNEVRERLPSTDDVGATITSLDIDRMPYLNAVCSEVLRYFSPVP
MTVREAAHDTTIQGVRVPKGIRVSLSPFAVNVDPKLWGPDAGQFNPDRWISADGLSDESNRKAASGGAVSNYAFMTFLHG
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>1136540|jgi|CYP5392A1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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PDIFTGHQVILPPENLQWLMKQPAAILSQRESNNEFLAAKHTFLNCVAADDNEWVFVVNLIKDITKELNNKTNDVIEEIQ
VALEDLWGNDTTSWKQIELLDVCLELMSRIVSRMYVGLPLCRDQTYLSSSTHFAKFILVEALLAQLTPKPLRPLLGPLLA
QYDWMQFKRMDRCVNPVIRERARRFGKMEDGEKKDPDQPSDLLSRLMQEAYRRNDDPCRSQSHSSKLLAILNWAAIQVQG
ITLENALIDIAHTPQSVEIQNKLREEALAADAADPAVRWTRAEVAKLPKMDSVMTESLRLWGFAHGIIKVVVAKEGVDLP
TGEHIPYGAKIGIGSYGLHHDAEVYPGESPFAFDPFRFLDEKAEAQTTGLKFAATSDTYLAFSHGRYACAGRFFANHLLK
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>1136678|jgi|CYP548A14|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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PNSLSFSTNQSLKDIYGFKSNVRKAEFYNSFAHPVANTHNTRDKDVHARKRRVLSHAFSESAMKEMQRYILNNIRTFCEQ
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FPKLAAGRARYMAYSKAQLTERTKLGEETDRRDFFYYLLKARDPETGQGFSTPELWGESNLLIIAGSDTTSTAMASTLFY
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HYNIHHNEAYYPQPFMYAPERWINGAVNPATKRTTTADDVAEAQSAFCPFSIGPRGCIGKGLAYVEMTLTLARALYLYDM
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>1157010|jgi|CYP642C1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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HVGEFSSASNVRALLAQVSATANQKLQCQPDVQETELGPWLFKLTSSSVASALWGPESPWVVDEEFQTQFMEISGSQMTL
LRPFSKYTAQAAHKARAFIIDRLRSFHFKNRDSRLRQIAHRINAVVLSDPDWESNKDYFNVELLTSLGLLVTPSSMAVWM
IRHLLLRPDLFDRVVKEARDPKNLDAEGNIDVARIRESFPFLAACLYETLRLHMTAIPRLAKADFDIAVPNSQPIHLMSG
DLIYLAMSSFNRDAATWGSDANIFSPEKFLTNSGSLSASMVRKLRVFGVAGNLCPGRKLGFETILFVVANLLRDFDIENP
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>1158929|jgi|CYP503C2|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MANTTLPLSTNHSAFPLSSLEELTSPWALIALVGGLYMLSSIFAQIFGYKYPIFGISSQLEPIVVSNFRFFRRAEDILNE
GYQACKGKIFQFRRADTDMLVLPYKYVEDIRKLPNSVASPTVAHVHNLMGSSTNMHIILRSNLHFRTLQLKLTPNLNSLT
RPMQEEVNFAVEKELTESEDEWVTIKPYHTILDFVARVSARIFLGKPLCRDPEWLEVSTQFTENVFVSLVFLRLFPMWTH
GFLNWFMPSSYKGTAYVRKAKKLLVPEINRRRSLEAQGHVFAEEEKHNLLSWMMEIATPSESDASALAHLEVVMSLASIH
TSQMNAVHCLYDLLAHPEFLEPIREEIRAVVAEAGPWMTWSKPQFSRLRRLDSFMRESQRFNPPTLLSMHRVMLHDAKLS
DGTVLPRGAHISMPVNSIQNDPEVTPEPERFDGFRYYNLRQNEGQGHLHQFSTTQDRILNFGHGPNACPGRFFASLEIKI
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>1161960|jgi|CYP61A1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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GPFLQSMDPKFEEYYAKWKSGPLSCVSVFHKFVVIASTRDMARKVLNSPAYVKPCVVDAAYKLLGEDNWVFLDGKPHVDF
RKGLNGLFTRKALECYLPGQEEVYKTYFKRFLDVTKANGGKPVPFMPEFRELMCAVSCRTFVGHYISDEAVKKIADDYYL
ITAALELVNFPIILPYTKTWYGKKAADMVLAEFAKCAAKSKVRMAAGGDVTCIMDGWILQMIQSERWREAEEKGLSTEGL
VKPAPMLRMFRDYEISQTIFTFLFASQDATSSAATWLFQVTAQRPDVLDRVREENLKVRNGDPYAELNMDQLESLTYTRA
VVRELLRYRPPVLMVPYKVKKPFPITENYTVPKGAMLIPTTYMALHDPDVYENPDYFDPERYYSGDAETKGAKNYLVFGT
GAHYCLGQVYAQLNLALMLGKASVQMNWTHHATPLSEEIKVFATIFPKDDCPLTFEERK*

>1164692|jgi|CYP627A6|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MDAVDWSSIQNSLTPTRVALAGVFVVFILPRIFGFLKAFFSPIQKIPGPFLNKVTSWPFTLSVLRGASHHFTDRLHEKYG
PIVVLAPDMISVSDHAEVKRIIQTQDWHKSEAVYGNFRQDPERPTLIAFTDKSAYSVRKRMISSMFGMRYIRSMQPLMLE
CISAAVDKLDALCGGDQPAEVDMQHLIQSLAVDIIGVTTFGQSFKVVQNGSHPLPDQIKKALKLAGVLMLVPWIRKIPFL
PARDPYVDKFTSDAVENRRAILKTSNKQDLLQKLVEAGDDAKGSTFRRSDIQDEAVILLTAGSETTANAEIFTLIMLTKH
KDKMAKLVAEVDEWYPPSDPDKIVDCEYSFTGMTYLQACIDETMRLVPGQATGSPRECLKEEKVLGYSIPKGTTVFPSTQ
NVHMDEKVWPHATEFLPERWLDIYAKGKTNEVPFWPFSAGSRVCIGKHFALQEMHLTLVSLFRRFEFEYVPGQDETTVFR
VAQQLEAPRYMIKVKRRSF*

>1166899|jgi|CYP5333B1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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LRDQFSEGIFSLKMAGKMHHFIYKPSLAAALFNLHRPAAEEQMLANRLLGSTFGVSKKDAAIYNTIFPEALALYKHLSSE
PGLSEVTNAAVSQVKQTINSFVTFSPNPMDQTEWERVADVDVIEESGPDGPITQVDLMELTRNYVATTAIPGIYGTDFVE
NFPDLWKWMWIYNEAFVLMATGVPAWVPWPRLQRGKLARRRLLGYLYEFNEAMEQHMDGQETDPKWQNLDNVSELVRSRI
ALFREHGVSLDGRASFDLALLWASVANSNPLIPWMLYELYRDPVLLEQVREEIGPYVRAVQPKNEFGDAVWVPPVLEDVD
VDGLITKCPLLKASYIETMRVYACGWAMKLMYSDTVLEEKGKGGASYLLKKGTYAHVPQELHHFDPKYFSNPTEWQAERH
IRETVDESGNKVLTAELGTMRPYGGGLKMCKGRQFALREMLLYTAAIITFYDVQPPKGGPWPVPKTRKLVANKHPKKPLK
VWIKRRRLPTEGEVR*

>1166945|jgi|CYP526N1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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SQIFMFPFRAPTVVVSDYREVVDILARRSKEFDRGTRTKECIGFVAPSFHFTMETSDPRFKSNKKLIRDLMTPKFLNNVS
APRIYDKALALVTLWKLKASKAHGRPFFATEDLYSATLDMICVAAFGMENAKSALRQEIAHVQATNPTFPDSEDGPAEFP
SAPTIPELDALFDGPKMVSIAQGSPFPYIAQFLALLTPQHARAHWNRKTLIMGQIDRSLQRLIQHGAEGCESALDHLLLR
EMNAAKEADRLPDYYSSTIRDEILGYLVAGHDTSAATLSWWVKYMAAYQSVQARLRDALRQAHFEAYRDSRFPTMKEICD
SPVPYLDAVIEETLRHSAVAALIVRTSTCDTQILGYHIPKGTDILLALAGPSMTEPALPVPESDRSPESQESRDQIPYWG
DDVTEYKPERWLKQVKNADGSDEEVFDPYAGPTLAFSAGPRQCFGKRLAYMKLRTVMTLLMWNFEFQPLLEELNTPDLIE
ILVNLPEDCYVKLAKA*

>1169219|jgi|CYP5388A1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MTLSGLLEDVQSLPVLAWMSPALTAVAVVLVAFLSGYKNSPKGFNVPTLGEDSTDPNALKMRYVHEADFKNTIFQVLTPD
GPRLFLPRKFANELKPFKRHEASGMKALADRHLGHYTTIDHESDVMLGAIKIDLNRNLGLFVGDVDREVKVCFEQHFPPC
EDWTPVDLHETLLRIVAQASARIFVGYPMCRNEEWLECSTKFALDVMTGGEKLKLWHPWLRPFAQYWIPEMRQIRGDHQR
ALDLLMPELKKRAAEATAIDAVPRQDMIEWMQQRARKIGDKSFNYKELANLQMLTATAAIHTTRLAIIHALYDIAAHPEY
IEPLRQEIQEVTNNGSLQKQHLTQMKKLDSFMKESQRHSPPSVATYQRKVMIPVKLSNGFQIPAGTVVQCNTNILDETPS
AWGDAHAFDGFRFYRLRENPEDANKFQFASPSYDSMQFGFGNDACPGRFFASNQIKIVLSHILSSYDIKFDDSVKGRPKN
FMFEVNVLADPTVKVLFKKLR*

>1169569|jgi|CYP5127C3|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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AKEILQPRYTMQNFNWFDKKGVDGTPLVRTLRTLLTNHLPDILPDARRSISALLDNMLESRPFANGSYTSPLFPMVIEAI
AFTNATAFFGNNLSRDKAFMTAAMSFIEQTLITAEVVRLLPSAVAPLIGNFMAKKLASGKILYNALIPIAEERLGEKARK
NLGQAVPEHHDCIQWVMESSPRAKPWSAERIVHELMALWFGSVHITSTTACFALHDLCIHPEYIEPIRHEIESTGWAQFE
KAGGKSFPLLDSFMKESARLNPVESVSSRRMALKPFKLSDGSRIEPGEWICTAPRGMMSDARYYADPLQFQGFRFVDPKL
LDKQLSAVSGHRVPQEAPSSFTDVNDWQLWGTGRSACPGRFYATAVMKTLLALFVTKYDMQLEDPKAARYFAWRTFIYPY
ASTKVILRPRASCM*

>1171084|jgi|CYP5080B6|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MLTFKLAILACGLLVVARFLLSFVKSFTSPTRHVPGPLLARFTRLWYFRRVAVGRFEHENIQLHRQYGPIVRLAPNMYSI
DIPEAVNTVYGIGSKLPKSEWYDGWKHPSPDAWTIFPDKDIKRHAQTRRVFQGLYSMSSLVSYEKYVDECADVLLSRLSL
FSKSKEPINMGHWFQCYAFDVIGNITFSKPFGFLDRGEDVSGLLQALQKVLAYSTLVGIYSSLHPYIFAVTNFFGMGGAA
GRTYLAGYVRERIRQRKAEQTKKVKRVHTDGSPEDFLEKIMIKNKDAPSKVTDYHVFMMSMSNIIAGSDTTAISLSAILY
YLIQYPNAMRKVREEAALIFDTDAHLSFKQSLEMPYWQAVMKEALRLHPATGLPLWRTAAEGGIELNGQFFPEGTTIGLN
TWTAHYNKDVFGDDVAEFRPERWLEAEEEGGHRIAQMNAYYLPVSHPTVDMFRQG*

>1171610|jgi|CYP671D4|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MMRCAKKYCPAGVAFLAGIASHHLVFRPYEIDVYVWQLIFLYVTAVATLFASCVHIGGYRVATALLWTLSIANVYNSSVI
GSILVYRAFFHPLRRFPGPFSARLSRFYAMHKMLQSRKGYEDIQRLHDKYGDIVRVGPRELSINRLSAIRALYGAHAQTT
RPPWYSQTTRHAAKSSLENTRDVVMHKLRKKVWERALGSRALEVYEPRVQAKVDLLLSKIAAAKSNPVDVTKYFMYFSFD

VMADVGFSKNFRMLESTNYHPAIKGVHQTMSFIGILATVPWLIYMIGSVPGVTTFNRFSMWCHDEVNEKRKTLAISKERE
PQDVMSWLLKAMNEKDPSAPPSEKAVEEDARLLIIAGSDTSAGVLANALYLLARNPHCYQQLQAEVQKRFPGGISEWIYA
KAKAIPYIDHVIHETLRLRPTVPGGMPRAVPSQGIFIDGDFIPGETIAAVPTYTIQRDERYWADPLTFRPERWKGCATDG
GAWMAFSRGPWTCPGRQLAMMEMRMVLSRIALQFDVGFALGGGEGFERDTVDNVSMTLPELSLVFTPR*

>1171858|jgi|CYP574C1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MRYELLGIASASAGLLSHLLYFIHGHKATQAPQILVFYLIAECFLYARSIHLLGALQGYLTASVISLCYFLALFTSIVIY
RVFFHRLRHFPGPFWAKVTKFYSPWIAWDGKLHEKHAEFFEKYGDVVRIAPNELIFLSIDTQQKLHAATTRCSKRESVYE
VLHYEGHLSLETLLSRDEHRRRRQIWDKAFNTKALESYEAYAREVVYEWLEKMATLQGQPVNTSLYSLLIPFENMGRMGF
SHNFGSIQKGVEDPMLHYLEVTLGSVGKLGAMYWPIALLNAVGGSSDHVAFQRLSCGMVDKREQVANEEQEDIMKYLLQD
YRAKEPKAFRHHNMLYSDSQALMVGGTDTIGAVLSFIFYYTARDPAIQKRLHDELEPLYGRTMSGEFTNRDLSEAEAPYL
NAIINETMRMNNPTCSNGPRVTPPEGLEIDGVFIPGKVAVYSPIHANHRSAKFFKEPDTFIPERWTTRPDLVIDKRAYHP
FLLGPHSCVGKRIALIVIRLVVAYTVWYYEYEFAPGEDGVAILRDSVNGQILKAGKLECVFRQRT*

>1171862|jgi|CYP65BM2|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MLLSPEALTFSLRPEAAVALWLVILGAVYLVSIPIYNIWFHPLRKYPGPRLWAATQIPFVRMMFSGNSHLKMLELHKTYG
DVVRIAPDQLAFSDGTAWQDIMGHRKRGQGENGKDPVFWKANKHSVIAADRENHTRMRRTLAHGFSAHSMMEQQPLIQGY
VDLLIRKLRENCADGSKPVEMTSWYNYTTFDVIGDLAFGEPFGCLENSDYHPWVSLIFDRIRLSSISTALRRLPFGETLI
QLILTKEERKRFQAHFELTQQKVNKRLELPSPRPDFMEVMTKREGDQKFTLPELWDNASLLIIAGSETTATTLSGVTFFL
LTHPEVLEKVKNEVRSSFTSEAEIDLISVNKLGYMLAVLQETLRMYPPVPGAIPRRAQPGGDVICGEYVPENTILGIWQW
PMYHLDTNFTLPDSFIPERWLGDARFSSDPKDVLQPFSFGPRNCIGKNLAYAEMRLILAKIMWNFDLSLHPDSKDWMQGH
HAFSLWQKPDLNVYIKPRVMQ*

>1171880|jgi|CYP530A15|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MAYLQVVLGLGAVSILLWQLSRIGRRPSNYPPGPPTLPLIGNLHQMPTKNAHLQFQKWAQEYGPVYSLMLGTKVAIVLSS
DVAVKDLLDKRSSIYSGRPELYMGQEIMSGGYRPLFMGNNSVWKMTRKLAHGVLSVKVSRTYVPYQDLEVKAMLMGLLET
PGEFLNHIRRYTTSLTTQMAFGYRTPESDDKNLLEMFENFEELSKLTGSQSAAILDLYPIARLLPDFLLPVRRLGKGYYK
REKELFMKHFINARNQLKSGTAKPCCAIDLLRAQKEYGFSDELGCYLSGSLLQAGSETTAIILIGFFQAMLVFPEVAKEA
QAEIDRICGDRMPDLNDFLDLPYIRACMKESLRWMPATALGVPHAVIQDDSYMGYHIPKDAGIIMNVWAIHNDPKRHPDP
RRYNPARWAGDNQNSAQAAVNPDPSKRDHFVFGAGRRLCQGMHIADRSLFLAIACTLWAFDLKRQVDKQTGHEIIPDVDN
IKDGIFISPMPFVADIVPRSESRAAAVKEEWGKVAGLLDEHMQWKTVPEGLKWKDYEPLDDENEDLLQSLS*

>1172081|jgi|CYP5391A1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MLSPVILPQGAISRASILGLILCITTALLNRFLRGGKAKKYPAGPKPWPIIGNMFIFKGLVYDTEATLAWLAKNFGDKVM
LWLFSKPFLIVDKLEDAKELMDKRGAIFSDRPKPSNFVERVWPCLLPIKPLGEEYRIVRRIYNDLLGPKQSQGVRKYQDY
ESRMLMRDLYHNPEKFQVITQRYSMSVIFSAVYGVRIGRLDYPVIKELFTVTDTMANYILPGSLLIDYLPFLQKLPECFQ
PWLKFADSMHERESRFHNGFLNVLKEQIEAGTASYCFGIDVLELQKKNDLSDEFTLDILKGVIAAGSETTSSMLQSIFKA
MAMNPEAQRKAQEELDRVVGPSRLPHWDDAPNLPYIRALIKELHRWMPLFILGVPHASTEEVVYRGFTLPQKTLIMPHVY
RLSRDPDVYEDPDAFAPERFLGDDLDSYASAKQGDFRKRDHVNYGWGRRLCQGIQVAENSIFMQVSRLLWAYNLAPLPGE
PLRLDDKLRKLPS*

>1172756|jgi|CYP5046B1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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MINKVSNEERLNFLPYGEKWRTLRNILHSALNLETSSSYKPVQDFESKQALWEILHAKDDMEFNDINRRYSTSTIMTITY
GQRVPHLSDPLYQDILKIVRHFSLATAPGGWMIDTLPMLADIVPEWLLQNWKTVARQWYEEDSRIYLRMYHKLMDDIRNG
TAPDCFLKDMAREKIPKSLISDVTAAFAAGALIEAGSDATTTALNNVILACLLYPEVVAGAHEELDRVVGSDRMPDFSDE
PNLPYIRGVAKETLRWRASTKIGTCHSTTQDDWYKGFFIPKGAVIVLNWWAIHMDESRWRDPQRFDPTRYVADPLTEAES
MAQADANLRDHFTFGAGRRNCPGVHIAHNSLFINIARLFWAFDISKSVDADGNEIEPSTEAQPGFLLTPVKFPCRLEARS
ERHAAIIERTWEEAQRE*

>1173421|jgi|CYP570C9|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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LDFWQVTQKYGTIARVGLNDLVTDDPAFVKHMCNVKTEYRRSTWYDGMRFNPASNNCLSTRDEIAHSALRSKMAAGYAGR
DVDDIEPKIDNNIREFMRLLASYSDTETPVDLGRKVQYFTLDVISDLAYGAPFGFVETDTDVYEYIKTTEKNLPMVMVVT
VFPWLLTLLNSPILKGLLPSTKDRLGFGRIMSIASEVAAERFKPDVKDERDMLASFIRHGLTQTESRSEILLQIAAGSDT
TASAIRSTILQLCSNHEILHKLRREIASANIAGDIISDSEAKRLPYLQAVIKEGLRIFPPIAGLMSKEVPPHGDTWNGVF
IPGGTRVGYSIWAITRRKDIWGADALEFRPERWLDNAPEKVKEMESTLDLIFSYGRWLCLGRTIALIELNKVFVEVCFSF
PFVRKDGFR*

>1184855|jgi|CYP526M1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MAQTGEYWVLRPWRIPTSVTIILAGICLFAYYLYVRHFPKPIPGDIPYNTQSARRLWGDTLEIRRYQKMGNFRQFFHDHN
AKLHSPISQVFMFPYPKPFVLVTDFREAHDILSKRHREFDRSKRNADIFGVIGEDFHLAMQSRDPRFKGNKELLRDLMTP
AFLNEVSAVHIYNIATVLVDMWALKAAQAQGHPFSAHEDLHYVALDIILAAAFGIPLEESVTQKQYEFLQLQPPATPPPN
SKDEPVAYNRTPVPKSRISLIEVTGSVVVAYKSPFPRLHHWLLRKTIWRRTFAEKEAFITNEINKSVERLSSENKQKSRM
RCAMDMMLLRELGQAKKESRTPNVNAPRIRDELFGYVATGHDTSSTTLSWITKMLADNASSQAKLRRQLHVAFAEAHAEK
RQPTVMEIIEKPAPFLDAFLEECLRLTKTIPSILRETLTDTTILGHAVPKGTGIMIYNHGPGGQLESGFDIPESVRSSTS
QDSKDRVGEWNKDDIGQFRPERWLHEKPGAQGDGGGEGEFNGLEYNAYAGPFLTFGGGPRGCFGKKLAYMELRIVLAMLV
WNFVFEACPAELSSYEGIDTATVVPKQCYVRLKQLI*

>1185009|jgi|CYP587E1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MKWLVDNCPSWIPDLQRPPPVLYLDIWPVFPDIMMMVFDGRLSAQFTQTRSLPKHRITRTFLEPLTDNLDMTSADGKQSK
VWRSRFNPSFSPRNITMLIPELIDEIVVFKELLAGMAGPNGQWGDVFQLEERTTNLTFDVILRATIKVLGLNHILGIKRW
PWDSITRARNNAALRSALLGHVENAIKSSPRPAGANTETNNKKTILNIALSRTLAETGCATPDKEEIEAVLANLKLFLFA
GHDTTSSTICWMFKLLQDNPECLTKLRAELDDVLGQDPSQATNLLRDSPQLLNSLAYTTGVVKETLRFYPLASTVRQGEK
DFSLTLPGCGVRYPTEGTAIHDVPSVIQLDEAVWPRANEFLPERWMAPQGDPLHPDKDAWRPFSMGPRNCIGQELAMVEI
KLVAALVCRDFDVREAWAEWDAKRGGVVKKEMVGGERLYGCGQTVQHPKDGMPVCVRRLG*

>1185672|jgi|CYP526K3|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MAVTISSGGIWIVGIVFLALYMTYRRILPKPIPDIPYNKNAAAKVFGDVPEMMGYVMRTRRIFQCWLTSLTTRLQSPIVQ
AFIKPGGLPWVVVTDPFESQDILLRRIKEFDRSEFFGELINGILPEQHIQFISTDPRFKNNRNLINHLMAPTFIREVSAP
EVYMAASALMKLWKVKCTMAQGRPFSAHQDVTFAALDSIFASSFGLAEDGTNTIQRIQALNSFEPMVPDDVNEPVAFPEG
HTPEVFSAVLTLANSVTDTQLSPAPVLTSWVIRKFPYMRKAKSIKDKYIRDKVEESVRLIEKDASIKPKSALHSVLLRER
DVATKEGRQPDYRKGAIADEFFGFMTAGHDTSATTIAWGLKMLTDNPAAQSRLRNALRSAFRTAVQEKRDLTYAELRNSQ
VPYLDATVEEILRHSNTIAFVVRQAQQDTTVLGRHIPKGTNVFLMANGPGYLEPNMKLADEARSPGARQTAKSALTVAWS
DDDIDMFLPERWLETDPDTGAEMFNIMAGPSLAFGLGLRGCFGRKLALQVLKIHFALIVWNFELLPIPEKLGGYEAVQKF
AREPTQCYIRLKEIDL*

>1185937|jgi|CYP537A10|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MLLLSPIVLLGAAALLLAVHLVQRLRSPLREIPGPAVSRLTSLGLKWKEIKALRTVYIHQLHQQYGPVVRIAPNEVSFTS
WEALKEIYCSGGSGYDKTEFYDLFKIYGRRTMFTTLNKADHAKRKRILADRYANSNIMKSASVAGVQERSSKFVRRCVSS
PGGVSDIFVNRLISHYAPALHRLFSKVLYFFAKPRETPLADDYVLETSQLSGAAPFTLMSRFDEKTGDLDYIDKAAECLD
HMAAGIDTTGDGLCFLMWELSQPRSLAFQRKLADELRANPETPFDRLPYLDAVVNEGLRCFPPIPMSLPRYVPRGGRSID
GFWLPEKTIVSCQAYSVHRLNSDVFPDGDRFNPDRWLEPQGDADRRRLQFAFSNGGRGCVGKHLALIEMKTLLRDVYSRY
STTPHESMEEEAMAMSDQLISARPLGQKCLLRFRALEEVDGEQHEVKA*

>1192903|jgi|CYP6001C27|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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RQEKLTNVFIDELWYSLDHPPLLYMGDQFRFRQADGSNNNPLMPKLGASGTPYSRSCRPGVLPLGAMPDPEAIFEGIMAR
DKFIKNPNNVSSILWYWATIIIHDLFWTNEKDSNINDSSSYLDLSPLYGHSQESQNSVRTFKDGMLKPDTFADKRLLGMP
PGVCTLLVMFNRVHNHVAANLAAINEANRFTKPSPSLQGDAATAAWKKYDEELFQTARLVTSGLYINITLVDYVRNIINL
NRVDTEWTLDPRQEAGVDVGTAKGSERGVGNCVSAEFNLCYRWHSCISEMDEEWIHAFYDDLLGDNYGTMDMRTLMIAVH
KFARALPKDPADCVFGGFTRGADGRFDDDDLVNCIATAIEQPGGSFGARNVPRIMKPVEMLGIIRGRKWHLAGLNEFRKH
FGLKGYETFEDINSDPRVADALRNLYQHPDHVELYPGIVAEEAKTPMVPGVGIAPTYTISRVVLSDAVALVRGDRHYTTD
YNPIYLTNWGYKEVEYDLKVNHGCVFYKLFIRAFPNHFKHDSVYAHYPMVIPQENRKILSSLGRVHRFSFERPRAAAPRV
DITTFGGFKQVVLDSQDKYRVQWQEGLEMLSGRPGRYMQPSDRKTLESLLYKDDWRNAVRGFYAKTAEALLADKAYTIMG
KKHIDIVRDFGNAAHTRFAAHVFNIPLKTRENPKGVFSEHELYTSLAAVYTTIFLDIDPVKSFPLRQKSKEAADVLGAAI
ETAVKYTKSFGLRLFTGNTNKDALSTAGVNAVKALAKSGLSAHDIAWGLILPTATAIVPSEGRLFAQSLDFYLSPEGSPY
IDDLHALAAQEPSPESDALLLGFAMEGVRLAGAFGLHQVSTGTDTIVEDDGRRVNVSQGDRVFASFASAARDPAQFPNPD
AVDPRRPLDSYIHFGAGTHGSALAKEVSQIALTELFRAVFRRQGLRRAAGPQGELRKVPREGGHCEYLTEDWGTLTPFPM
SMKVAWDN*

>145021|jgi|CYP531G1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MDNSSVPHSRWATNILQVDESTFLRPLVLFVLVPTATFVLWHVVAYLTSPLKKYPGPVLASFTNLYRMYHAYRGDMHLIS
KKLHDEYGPIVRMGPNYLDLDYSSLIKVCFDTQGVWRKTEWHGVSGAMVEGKLYFNIFSEVRPEEHARIKKPIARYFSAA
GVAPLEPHVDAVLAALCGVIDQRFAGDEIFGPSFDFSEWMLFYAMDVVAKTTWSQTVGYIEKGHDFDGTLSVSDKAYDYL
VTIGMNPVLDKFLDKNPIMRIGPPSFGTVTGICLGHLMARMKGEDGHDQSKPDFLDHYLEAQQQNPEVVDIYRILSYMLV
NVAAGADTTAASLRSIFYLSLKHPAVYDRLRSEIVAAKFSQLPVPYAESRQLPYLEAVCRECFRYLPGNCFAQERYVPNG
GLQLPDGSLVPTGTAIGFNAYVLHRNKEVWGADAEDFRPERWLQADGETADEFKSRLQHLNNMDLSFSAGSRKCIGMNLG
KMEVSKTVATLITLFEFELADPRREWKVHNSLIPRASDIIMKVKRRSGTSEQIGQLSSHY*

>1198131|jgi|CYP5128C1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MAVNATAAAHLLASLNPLSIGLSVLSIVLLKALHGLTTDRLRHIPGPFIARLTPIWYWYIVWTGIECRALAALHKKYGPV
IRIAPNEIDICDGAAVPPIYIDNGGFPKHPAYRNFDIDGFPTIFSATDNAHRAVRAKAVAPLFAQQAINNGKPAMQGIID
ATLSELGRRKSLAEGRPVDLLDLFRCMAMDVMTKYLVGECFNSVGSERLSATGFVDSFAAAGRFFYLPSWFFSAVDYFAS
KLDKNRVLIATSVDTVHRFAGKVVDDSIAQGEKATYQGRLLKAGISREETIAQIVDIMFAGTDGIARILAVFCWHMAQAP
DKYDRAFEEIVQNPDTDARSLPYLSGAVKEAARLALANPTRLARIVPSGGLKVPGLPTIPAGTSVGIGAYALHLSPEVFP
TPYEFLPERWLECTPEMLRDSFYFGRGPRQCIARNFASAIVWWAAEALVRNRVLDGAEPVQEKIEIVEWFNSKQVGDNIE
LSWP*

>153888|jgi|CYP535D5|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MESVAGIPGSVVLLAGGLISLFVVGRILQFARLRSFKGPFLTNFTNFPHRRALFRQKAHEYYAEVCEQYARVAPNLLITS
DPDVWIHVNNKPGYKRSDWYYTACRIEYQRDNVFSQTDNKKHEQRRKQMAPGYSGRENLDLEISVDQCLQEFIDLIRSKY
VSTEAKIVPVDMAKKVQFFALDVISGVGLGKTFGMLKSDTDVESYLQSAEEGLRIANFSLAIGLSWIAQARFLGRFIAPS
PKDKNGFGKMMATCFRYVDEREASSTDKRSDMLASFIRHGIHGADLKTEALEQIVAGSDTTSSAIRIIFLHIITNPRVYA
KLQKEIDEAVRDGRAPREGIITHSQTKQLPYLQATIREAMRVMPPVANIFSRDIPPQGDTVRVKGQDVFLPGGANIGYSA
YAMHRSHEIYGDDAKAFRPERWFEEDQDKLAVMLRTNELIFGHGKYQCLGKPVAQVEIGKVVFELLRYFDIAIMHPDKPW
EAENALGLFHIKDMWVQVLERGA*

>157201|jgi|CYP570E3|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MPLMTVNLSAICLILLFAFLARRIYLWQRLRHIPGPPSAAWTIWWQLSGAMSGRYHERLKEAADTYGPLVRIGPNHLLSV
DPDVLRHMSAVRSGYTKGKFYASGKIVPGVDNVVSLRDPAKHKEMRALMTPGFSGKANEGFSFEAALDRQLLSFINLLER
KYVSSGPDVRPFDMAEKTQFFALDAIGDISLGQPFGYLDKDQDLYQYNKINATSLPVMNVVSVMPALASLVHTWPLRLML
PKEGDQVGFGRLMHFARSYVERRLDPKTPRAHDMMQAHIDNGMTKNDLIQQVLLSIIAGSNSSAHALRMTLLSLITNPPA
YTALLTEIRSHTATTTSPLISWSQTQTLPYLRAVVSEGLRMWPPVAGLGFKTVPPEGDLINGYFVPGGTEIGQGFHGVGR
AKAVWGADADVFRPERWLRAEGVGLRKMTNAVDTHFGHGKYSCLGKQIALMELHKAVFELVRRFDFCIVNPEAPIKTTAS
IFLFASDFWVTITKREL*

>61695|jgi|CYP584S1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MMYIHILTLLIFAYWIIKRAAASTKERRFARQTACQPCPRLPQGERIIGYSLFRQDAAIARQGRSLQAAQDRFRLFGDTF
SGVILGQFFISTIDSENAKALLSSQFGGFDSGKKSLFGPFLGDSILTTDGAPWKHSRSLVRPHIGRRQVEDFSKLESCVQ
NFFACLPDDGSTVDLQHLFFRLTFDNVVQLLLNENVSTLNCQPGTHLHRVIEAFDSVGDLINRRATLGPLLRFYRDNAMS
GACEILHDFVDQIIEKAYRKRKAAKGSNPPDSFLDSILDSTDDLVKIRYEVLGLLLAGRDTAAVTMSTLFFILARRPDIW
KKLQREVDCLGGRKPTYNDIKGLKYLRQLIDETLRLYPPVPVLFRAANLTTILPRGGGVDRKSPVLVPKGTVISCSTFGL
HRRQDVYGRDAEDFRPERWESLNAHWNFLPFSAGPKMCLGQTYAYAKMAYIVSRIAQQFERVEKRSNEPWAEKWSITLMN

ASGTKVGMIPKSAKV*

>1123812|jgi|CYP539A14|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MGFLEALAHYVSVKAFVLVTVALWMARIAINRIREHRKIKSIGNYGHTLQPRLPFGLDFIYYGVRSTIAHKNLELWRDIF
FGGASSSPSPSYTCEMRILNERVVLTADPENVKAMLATQFHDFGKGPNFNREWAELLGDSIFTTDGAQWHDSRQLLRPQF
TRVRLSDLHCFEAHIQALFKAMANGGPLNGENQEVDLSGADGRRLDISELFYRYTLDVATDFLLGSDVKSLSTPKHDIAD
AFAEAQRLQNIMVRASRLRWLTPKGAYRAHIRTIDTFVNGFIQRALRMSPDELAARSDGSSSNKGGYTFLHALAGFTRDP
KVLRDQILAVLIAGRDTTAATMSWAIYELSRHPHAVRRLRTEILETVGPYDDGNRLPTYEHLKNMPYLRAVLNETLRLYP
AVPFNLRVALKDTTLPRGGGPDGAEPLPVLKGTRIGYSTLVMHRRPDLYPPASEAFADPAVFSPERWAVWHPRPHDYIPF
NAGPRICIGQQLALTEMSYTLCRIFQRFERVQSFMAEIDGGNPLLKSDIILSPGHGVHVAFWEAKKGTN*

>1129017|jgi|CYP584D5|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MSPLLESQYLLLYFFIPLLPISYVLRSICSQVHQYRVSRTKGCRDAQSKAPVKDPFIGLDFIWDCLFAKPVEKYLDSTYR
TFQQLGNTYVCRRWTWEAVYTCDSRNIKHVLASGFDDFKLPGLRVNAMTGMLGSGIFTLNGHSWSHARGVLRPCFAKQNK
ESIVNMLETHFQALLRRIPSDGTAVIDLQPLFFWLTMDFATDFLMGHSTHVLNRASSHAKEKQFVDDYLTCSTEIVRKMQ
LGPLQMFSVNFAAMRARSRVFQYIDDFISASLDTVREDDESLNAGCNVLQGLAAVTTDRKQLRDQILHILVASRDTTACL
LSNLFFVLARKPHIYEKLRREVVSIAGVEPATSTQLNNMEYLKWCVQESLRLHPVIPTNAREASRDTALPYGGGEDGNSP
LFVKKGNLVMYNIYAMHRDAHVFGPDPEEFVPERWNGLRPGWGYLPFNGGPRICIGQKFALLETHYLVSRMVQTFETMSA
SGDAEWVELYALATTCKDGVNVSLKRS*

>1131140|jgi|CYP655C3|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MLLYEYVNSLGGSHTVTLAALGVSVLVVLFTRLFSEGTKGAEAGCKPVTRVRQWEPFFGLDMVYSQLQALKRNYYLDWLR
NLHKGKPKTFAITFMGVKQICTIEGENLKAIQATNFKDFGLEPMRRKTKGAMPFADKGISTTDGKNWEFARFLVKPFFYR
EVYASIDRIDPYVQKFFALLPEEDGVTFDIQPLIQRWFLDLTSEFIFGKTMDSMTYPDRANITWTMLDVLRGGRLRIQMY
KFLWAFNWNWWLKAVYEVHDFVNVHIRSTYKELEEREQRIKDGLPVGPERVDLLWYMATHVRDEEELRSQLCLVFVPNND
TTSIFISNCIWHLARDPEAWQKLRKEVLDYGDQPITFESLRSMPYLNGVLNETHRLTPNNIVQVRACLNDSVLPLGGGPD
GKSPLYVNKGDLVSVTKTVMYRDPDVWGPDVDVFRPERFFGLRGNWNFLPFGGGPRRCPAQMMVQTESAYMLFQLAKRYS
SLECRDPEPYTAVMRIGPSNINGVKIAFYK*

>1167220|jgi|CYP538A4|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MSVLVGELAALLGCALTATYTLWSALERIALVATNQHLLPPAYSRHASLGLALLLLPVLLVLRKRHHYLHGTRVHSGCQP
AAVYPHLDPVLGLDFLRISVKALKEYRLLALWDDVLTARNGTFWYNALGSWMLITSEPDNVKALLSTRFDDWPMKSLRQR
VSVLALGPHSIFAVNGAEWHRARALIRPSFVRNQIADLECTDRHVDNFLARLPRDGARFDVDRLLYHFTMDVSTDFMFGY
STSLLTSPTKEALDFMTAFDYLLTTSTNRARLGWLALLRPDRRFDEYVQTTQRFVDRHVAQALAQEKEKERPYVFFNEII
KSGASHRQVRDQLFSLILGGRDTSASTMASLFWVLARRPDVWSRLRREVALLEGRKPTWEELKNLKYLNMVLKETLRLYA
PVASNMRTAERDTILPKGGGPDGQSPLFVPRGTDCRYSTYSLHRRKDVWGPDADEFRPERWETHRPGWEYIPFSGGPRIC
IGQQFALTQMLYLVARVLQTFRHVRPGDDEPLRHQVGSTISMVGGCWIHLTPVAAE*

>1172736|jgi|CYP52X4|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MSGYDPTGIADVVYGVDASHKKIFPIYAQANFERVAKKYGRPVGTLRVRAPFFRDTLVTTDPQNIQTMLALKFKDFGLGV
NRTDNFEPLLGHGIFATNGKQWEYSRALLRPQFIRGQVSDLDLEEKHVKALMTVLNRHVGPNGWTDLVDLQPLFFRLTLD
SATEFLFGESVNSQLETGESGAEKDGSFANAFDRAQYTLSIGSRLGPNYWIVHRPEFHRMVKQVHEFVDYFVQKALHQGA
SEKPVNEDKYVFLNALAKETQDPVELRSQLLNILLAGRDTTASTLGWFFFTMADPRYASVFRKLRAVILDEFGTYSNPKE
ITFENMKGCQYLQWCLNEILRLYPAVPMNVRTAQVDTTLPTGGGLDGQSPIFVPKGQDVGYSVHLMHRRKDIWGPDAEIF
KPERWLTRRPGWDYLPFNGGPRICIGQQFALTEVGYVVIRLMQRIDSIDGSQVGPVRHGLTLTNCPGEGVKVRLHFAE*

>1172765|jgi|CYP613K1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MLWSVVNRLSPSQTLAITGLVALLLLCIVGILVRDAQRKFSALFGRITPFPGPSFCFPNGQGTEKFFSGRDAAKRWKARY
GSIYSIWSGHKREVVITKPEHVQAFYKDSHTHVKASDNNSGWLFGELLGSCVGVVSQKRWVRVRTPFEHHFTRPAASQRC
SLFIDEARTFLQSLNKKEESIVHVTDDLKYCPFFMVASIFFGPLTTGQRNEMYRIGPLREDLFRHAFSGGVNRYAFAKYL
PGSALPKLREFQALWEGFVKNAYNGAGSSSGSAIASLWEAVEHGDISKEELLQTLDESLFANLDVTAHALSWSIIRVAHH
ISLQNEIRQEIQDNHRSEQEYEDYLRRDNTLLAACILEASRLHPILPFSNPEAAPTDKIVGGHKIAHGTDVIVDAYAINV
DNPYWENSTKFNPCRHLGQKDQARRYNMWRFGFGPRQCLGKNVADIILRVIIAEILRCYQMDVVGTRGMDEIELQADSWI
GLPDCKVKLTPLAATPTSSD*

>1172759|jgi|CYP5387A1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MTGHEGLRPKGKIPKYRTSCDNCQTAKVKCGHEKPSCRRCSVHRVDCVYSLSRRMGRPRAKRVAANDPNQRQPSTSEPNE
NETAKAASPEDAAADTRPPRTPVAETCIAEAEQPGEPSASDAGQIPENWVPLFGDLGQLNASEGIDGLENSEQQDDDPME
FLSAESPMELGDMASFTGMPSFLDSLSGSLEPQATTSAVPAELFGPQEILSFALPNTGTGDDANAFVPTQQRQESSSEPC
TCRHSTKSSRRESRSVPSNKDESGHLSSLPSAMFLEASYSPQEVSSCSPSNTSQPSDASPSVQASCDGSSELSWRKTRVM
LRQGHCNCMDTITERIASLKAEQQSPCSMPMDCVLMLEKEVQESLCLLHKCKNCRLDSFVHLLALVSVRMMLDILQKTAR
SEFIARPKSTSDNSNEGIALCIGAYKVPSRVRCRFLRKTLQARFHKLAALVEERERLVTGKKQDSFSKSASLLLDSYASI
EGGEQVTAGQLQPAITMEPSHLHNMTARSLLVDKLQNAWERPFVAAAISILIPVISVVFFDWLNYQQQRRRLGNIPIVGD
APYLWKRLRWTENEADLKGVIQRGYDTFSKKLKPWAYWGQHDDFILVLPPGTCDEVKNADLSQMSFLQAVEDSYHFRLHT
NILGRSHVDAVRQSVNKNMNQEPFAGFLQIWHLVHLVAASFLIGPHFSRNPEYMAYIEDYCLNVPHFVHLYFWVPAPLRR
LFWYFSPWGFRVRRVIRHLKSFIIPEIRRTITTWRLTERDYSPDKYTLLRAMLDLKEERGQITREATAMTRREEERQINI
FSDEVVFTAFDSAGPVACLVTQLLFESIRDPSLTEALRAEIAKALAENGGEWSVQMMSSLPRLESFTRETLRVDGPTLFS
VTRSILKPFQLKSGLVLRPGNIISSPSWMIHNDEDNYPNAKEFNPYRFYDETTNTVTTKATTASNTFLAYGYGSQMCPGR
YLGVRMTQIIFAKLLMRYDATFEGGRRTKPENIVMPGQVLPSYYSKIVLKLRQEEKI*

>1189453|jgi|CYP539K1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MWLPSLYPSSYTLIAGISFVSILTLLVKLRHLASDIKIKRLGGARAPILAGNLLSASKLYYEIGKNQYNNQLVDWCTRQL
DKLPLGRRTFAEFSLTGSKRVLITRDPDQIKAILATNFSSFGHGPMWHKLWRPFLGDGIFGVDGQLWHDSRSMIRPMFAR
DRLRNLAIFDACTGRLLRKIPSAGVAVDLKDLFYRWALDTTTEFLLGENVNSLDFPDTDVFKAMHVAQRIQMYIFVLNPI
APLIPKGDYHRAIRRIEEFIEPAIARALAIPHAQLEELSKSDMDFTFLHSIARYTRDPKVIRDQIMSVILAGRDTTAATL
SWAMYELSHYPEIWAKLRAEVLATLGNQATPTYETLKDLKFVRNILNETLRLHPAAPLNMRQALETTTIPGRPGEADVVL
LKGDSVTINTLGMHTCAELYPPASETFADPRIFSPERWEHWTPKPWTYLPFSGGPRICVGQNFALTEMAFCLVRLAQRFE

SIEYRGDWAAQKLQADIIGTPALGIPMALYEPGEKLDVPFKYGVY*

>1158563|jgi|CYP505P1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MKAAKDTNLVEIPKVKGYPVVGILPHIDLSSPLFSLIELLQPYGPIVQFSIGGELNIFAHSVELLNELCDEKRFHKEIKQ
ELEKLRHVVHDGLFTAKHGEPNWAIARGILAPIFGTIKIREMFPGMKDVAEQLCLKWARFGPEYVIDVTSDFTRLTLDTL
ALCTMGYRFNSFHNGTVMHPFVLSMIRALKESTMQAAMPGVINSLRKRSWHRFEKDTAYMRELCREIIQRRKAETEMNTN
DLLGALLQGRDPKTGEGLSEDSIIDNMITFLIAGHETTSGLLSFAFYYMLAYPETMKKARQEVDEVSQGTPITVEHLSRL
PYLNAILRETLRLQPTAPGFFLVADEDQIIGGKYFIPAKVPIGILLHLVHQDKAVYGDDAAEFKPERMLDENFNKLPPNC
WKPFGNGMRGCIGRAFATQEALLITSMLLQNFTFEMADPTYKLKVKETLTIKPDDNFRMKAKLRRGGTATDFQRELYSVG
STQDAKTSLAPSTSNLSQAGDGNKKPLTILFGSNSGTCEALAYRLASDATLHGYYARTIAPLNAACNNLPKAEPVIILAA
SYDGLPSDNAEEFFDWLNKVEKDSLNGVSYAVFGCGHRDWVATFQRIPILIDDLLQRAGAERFAARGLADSAVMDLFVEL
EKWTAESIWPAIAQTEGGGERDDDGEGRLITSLLKVDFSQPRQLKQYSHLVEASVTDSRTLTTASAIGKKVHIEIQLPSN
QSYRPGDHLLVLPVNPMKTVKRVLSRFHLTWDTIVRASGNDSVRIPADTSMTALELLSSYFELSQPATPRDIRVLAAAAE
NEATKQTLMDLATSSYVENIQEKRTSLLDLLERFPEIPMALGTYLTLLPSLRLRTYSISSSPSWNPGHATLTLSVLEEPG
TTDGGEHFLGVASNHLAGLTRGDLLHVATRPVKGIFRMPADLSKVPIIMIAAGSGLAPFRGFIQERAIQQRNGVKLAPAA
LFFGCRSSHDDLYRSELDEFESSGVIRVFRAYSREDVGANPNARKGYVQDSMTAEKNAFIQLWNAGAKVYVCGSVRMASQ
VKDLVTKLVYAAETTGASKQFTPQEWFKRFEKTRYAAEIFT*

>1181242|jgi|CYP505A25|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MAETVPIPEPPGLPLLGNLGEFSQNPISDIIRLADTYGEIYRLHMGTRPAVFVSTQALVNECCDEKRFQKSLSSVLRIVR
EGVHDGLFTAHSDEPNWGKAHRILTPAFGPLPIRDMFDEMHDISSQLALKMARHGPHEPIHVSDEFTKLALDTIALCSMN
YRFNSYYQEKMHPFVQAMSDFLAECSRRNRRPGFAPNFLYRAANEKFFNDIAIMRDTANAVVEARKKNPSDRKDLLGAML
NATDPLTGEKLSDANITDQLITFLIAGHETTSGMMSFAFYHLLKNPDAYRKVQEEVDQVLGRGPAKVDHVSKLTYIQAVL
RETLRVTAAIPAFSVEAIEDTIIGGKYLVHKGEPISLVLAKSHLDPLVFGEDANEFKPERMLDAEFARLNRDFPNCWKPF
GNGKRGCIGRGFAWNEAVIAMAILFQNFNFTLDDPNYQLEVAASLTIKPKDFFMRAQLRHGMTATELEQRLVGKGVPEEH
HRADKKGVAEASSKGSQKPLAVYYGSNSGTCEALAQRVATDANSHGFKVTDLAPLDTAHQNLPKDRPVVIVTASYEGLPP
SNATHFVNWIENLKDNELDGVSYAVFGCGHHDWVQTFHRIPKLVDSTLEQHGASRLIPLATTDAADSDMFSDFETWEDEA
LWPALKEKYGAAAGSSEGSAGGFIVDVSLPRKSTLRQDVEEALVTDAKTLTTSGPAKRHIEIRLPTGMTYRSGDYLAVLP
FNPPDTVARVFRRFQLSWDAVLTIHSDQPTTLPTETPISANDVLRAYVELSQPATKRNISVLAESTQDEQLKAQLEKLSG
DDYQQEIGAKRVSVIDLLERFPSLNLPLDSYLAMLPPMRVRQYSISSSPLADPSKLTLTYSVLEQPALSGQGSHFGVATH
FLASLSAGEKLHVAVRQSKAFHLPSDAENTPLIFIGTGSGVAPFRGFVQERAAMIAAGRKVAPALLFYGCREPGVDDLYA
DEFERWEKLGAVEMRRAYSRTPEKSQGCKYVQHRMSHDREDLYRLWDQGAKVLVCGSRDVGKAVEAVCVQLVQERASARG
SEVTEEKARAWWDKQRNERYVTDVFD*

>370|jgi|CYP538A12|[Trichoderma gamsii T6085]Trigam1
MVSLVASILSPQNWSPSVLLLAATVAIFAVVRLSKRADFHSGAKWTDRGVPILGSLPFYTRRGEFLREGKERSANGHFNF
FFGPYPIVAISGEAARSAYFTTRGLDLSAGFKKLFSAGPDVDSLLGRNMATYFVTLFKRLTGKDHLATCLPYLNKDAHDT
LSAIDTSVPMDPFVILHDLICKMTHRTVGCHDVAEDAELRAKTMKYYDMLDTSSAFSIMFPWLPTPTKMYKLWGGGKLHM
LFLNLIQERRRTGRRAEDTMQILMDKGESDMVTAAVSILLPHVRFGG*

>4044|jgi|CYP5091C5|[Trichoderma gamsii T6085]Trigam1
MSTIIQIGFLAQKLTTLMTSKGLVLEVTLLTAILILAQVQWITNAISYVIRRIQGFGYLIWGPDLIDGAYRKAHGKPFKI
STPANDHLLVTSLDLIMELVEAPRQRLSLHAVAKEILQPKYTMHGFEWQDRRGVEGTGFVRALRSLLTSHLQDFQPDLER
LVRDCLEMEFRNIRSDGFAHVALFPVMKRLVTKVNCFVFFGEELSQNAEFTAAALEFPQDVIFAAEFLSITPSFMRPRSV
YYMHVYLVSYKTTDHVMALLVTCRRKALSSYTFHDGSTLSKGDWVCIPQQAMLQDGTRYKDAHIFDGFRFARANAQLQQL
QQLQPCAEVPDQKASRLTHVSPDWPIWGLGNMSCPGRFYASLVMKLVLIRILDDWECKMPHPEAPRTKTWRSSTVPRDDT
IVMFRKKLP*

>123|jgi|CYP622C1|[Trichoderma gamsii T6085]Trigam1
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VITTLGSRVILPARFADWVKNCKDLDHVQLVADEYFAHYPGFDGNGVVVDPSRMMINVTKTKLNQNWRKSITMSISSPRL
TSTYEWSSKDGNWRPVPWGQDVARYIGRMSSAVFVGAELARDAQWQHLILTYTINLFNGVRALRTWPRFTRMFIHWFLPE
CRTCRKQLALARQLLQPVLMKRREAINEAINDGQPPPMFDDTIAYIEEIAAGRPFDPAATQLAFAIAAMHTTTELLKQTL
VDICLHPELINPLRNEAKDAIAQHGWTTAGMFQMQLMDSVIKESQRMKPGSLVNLERKALKDVTLPDGSLLPKGTNVAVD
TANMWNADIYKDPAVYDGYRFYNIRKAGGSASNAAQLVSVNSDFIAFGLGPSVCPGRFMVANELKAALATILMQYDVRLP
QGKRPQIMYYGFEMLSDPTTVIEVKRRTD*

>841|jgi|CYP61A1|[Trichoderma gamsii T6085]Trigam1
MEAVNATGASSVFTSVLANSKYVSANIPPQLDYVIETISTAGPWTWLFTIIALCVAYDQISYLLNKGSIVGPAFKTPFIG
PFLQSMDPKFEEYYAKWLSGPLSCVSVFHKFVVIASTRDMARKVLNSPMYVKPCVVDVAHKLLGKDNWVFLDGKLHVDFR
KGLNGLFTRKALADYLPGQEEVYKAYFKRFLDITKENGGKPVPFMPEFRELMCAVSCRTFVGHYISDEAIKKIADDYYLI
TAALELVNFPIILPYTKTWYGKKAADMVLAEFAKCAAKAKVRMAAGGEVTCIMDAWILVMIQSERWREAEAKGLPTEDLV
KPSPMVRMFGDYEISQTVFTFLFASQDATSSAATWLFQVTAQRPDVLDRIREENLKVRNGDINADLNMDQLESLTYTRAA
VRELLRYRPPVLMVPYLVKKPFPITDTYTVPKGSMLIPTTYMALHDPEVYPNPDYYDPERYFSGDAEVKGAKNYLVFGTG
PHYCLGQLYAQLNLALMIGKASVQMNWTHHATPLSEEIKVFATIFPKDDCPLTFEARN*

>872|jgi|CYP5386A1|[Trichoderma gamsii T6085]Trigam1
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TLPVPGSRIYVVTEPSLAASVQRNTKTLSMSPLLPEITQRVLGLDERTYNVIGTNLDPEPGEPRGFFADIHDWVYTSLGP
GEYVNKLSCEAAQELCLQLRERIGSLDKAADAPQPIDILVWTRHMVTVGTAKYLFGPHNPIAEDPDLEHAFWAFDHGLAG
LLIGILPSVIAPKAYSGREKLSAAFCRYLEAGHLDSASLIARGRARIEKEYGMSTDMTARSALSFLFAGIVNTTTTTFWS
ILRIFADAKLLAETRQEIRQALELSSQRTGPDSLSIGVVKETCPTLVAVYRESLRIGSENFSVRMIKEDTMLADRYFLKK
GAVVQISGGVIHANRSIWGQDAEEFNPGRFLKEKSRSDGFHPAAFRGFGGGKTLCPGRDFATNEILMFAAMIIHAVDLVA
PGGGSISVPKKNDRVMPVHILEPKYFPEVIVKPRAEEAERHGSSIGPSSSREHSASTPGFESSKLPAMYSMALDELQELE
SEPLCPRIAARLLVNNCQLLDGRDDETILTDSGRAARDFVDSYAASLAICDLERGSFAIPPVCSKFQESTLARIAPQTKP
QLHVTTAEIDDCLEGLAQSDSAWNTWVSYHHKTLRFCEAARADNEKDQNVRVHQRLVDILARLTTQLEEEMGERFRSLNQ
MFQEVETATANLKPQMNDLKNGFTELDTFFREQIVQKVQRSTDFINHGLEDARNLQILLAMLVDATQTQNHDLVSSHESA

LQEATQRITTEVDIILSALAAAVTSSTSLHREIEVSQSIAAAVALRQEKIETNMKRLEGLADSLLVQHEGHQERLVHAQQ
TASNLIDILDSASSSATTLRTSIYNSLGLGSWWPYIFCPLTSLVVGSYGLPPSATRNLMLVSLGEVAGFGVSIAKQYGRD
LHTAFTSNKKMPVRANSTIAPDEDIFSYNDLANKEAWRLRFNKNV*

>1163|jgi|CYP61A6|[Trichoderma gamsii T6085]Trigam1
MATIIESGLPATVEVFTNGTQNDVPSQASGILSAYLPSSNWQIAVTALLILIAYDQSATIADILIVSYIKQKGSIAGPMF
KILFMGPFLQAIYPKFDAYLKQFASGPLSCVSVFHKFVVLATDRDLAHKVFKSPTFTRPCLVPMAIEIMRPTAWVFLNGK
AHAEFRRGLTGLFTNKALSTYLPVQEKVYGDYFKKFVQASKENKGKPDVFMGWFREINCALSCRTFFGDYISQEAVKRIA
DDFYLVTDALDLVNVPLSIYIPFTKCWRGKRTADAVLAEFTKAAAACKANMASGASPTCIVDQWVEHMYESKKYNEALAA
GAEGLEKPTNLIREFSLEEIAQTLFTFLFAAQDASSSATIWLFQILADRPDVLDRLREENLAVRGGDKTRPFELGMFESM
TYTHAVIKEVLRYRPPVIFVPYLATKAFPVTPNYTVPKNAMIIPSCYPALHDPVAYPSPDVFDPERWITGDAETKTKNWL
VFGAGAHDCIARRYVPLTLAHMIGKASLEVDWVHHTTPRSEEIRVFATLFPMVC*

>1183|jgi|CYP53A46|[Trichoderma gamsii T6085]Trigam1
MALIENLLSPWTLVALGGLLVASYLYDFLVTYAPLRRFPAPFPAQFSNLWLLSVCRRGNRYATVDKMHKKMGKFVRIQPN
HVSIADDEAINAVYGHGNGFLKAEFYDAFVSIQRGLFNTRDRIQHTRKRKMVSHTFSAKSIVQFEPYIHQNLENFVKQLD
RLVDTSQFQDKDGKKEARFDCLPWFNFIAFDVIGDLAFGAPFGMLEKGVDLAEVRGSPDSPPIYAPAIEILNRRGEVSAT
LGCFPALKPYAKYLPDPFFSQGLAAVENLAGIAVACVKRRLDNPPDVERKDLLARLMEGRDDKGEPLGRQELTAEALTQL
IAGSDTTSNSSCALMDFVARNPRVMEKLQAELDAAIPHGVDVPTYDMVRDLPYLAAVINETLRHHSPSGIGLPRQIPADS
PGVAICGEFFTAGTVLSVPTYTIHHSKEIWGPDADDFKPERWENATQRQKDAFIPFSYGPRACVGRNVAEMEMKLIASTW
ARRYGAKILQGPMETKEGFLRKPLGLDIALYRR*

>1227|jgi|CYP65BQ2|[Trichoderma gamsii T6085]Trigam1
MGLIQDSNTSLKPSVALPLLAVISGLLYITYTVIYNLFFHPLRKFPGPKLWALHYGFYARLELSGEGHRRMVRMHMKYGP
VIRVAPNHLAFCHPDAMNDLSSHRKPGQLENGKEESRSLSVPHSIIGASRTDHTRMRKAMTNGFSQQSMISQQPLIKVYI
DKLFEKFKEASKKGDKIDAVAWYNYTTFDIVGDLAFGEPFGCLQESTYHPWVDLIFKSIKGIAFDSSFRRMGYLHAILMS
LIPKSMKDKFEQHKKLSEEKVLKRLKSDTDRKDFIASMASRKGKDELTLQELAVNAGILVIGGSETTATALSAATYFLGT
NQEPLKKLCEEVRSAFNNEAEIDLFSVGRLNYMLAVLDETMRLHAPVPATTPRTINELGDTIAGYYVPPGTNIDIWYWTM
FHYPEYWTQAEDFIPERWLGDSRFEHDKRQIFTPFSVGPRNCIGKNLAYAEMRLILAKLIWNFDIEIAEESIDWDKKCGC
YILYEKGPLYVYLKPRKNN*

>1421|jgi|CYP642C1|[Trichoderma gamsii T6085]Trigam1
MNVIPSSTSHLGVVGPVFTEPHVSSPFPYHFLLLLVLMAPLVHTYRGRKNYNQKPLSVKIIKLLSWLRYKLYSFVYNAIL
NCANPVLSINIFPRKIVVTDPSMESALSRHTSETSLANVIFLIGRRVFGLSDSSIQAIGGYDPRPVHVGEFSSASNARAL
LAAMAETTGQKLQSQPDVQETELGPWLFKLTSSAVASALWGPESPWVVDEEFQNQFMELSGSQMTLLRPFSKYTAQAAHK
AREFIINRLQAAHANNRASRVRQIAHRINAVVMSDPEWESNKDYFNVELLTSLGLMVTPSTMAVWMIRHLLLRPDLFDRV
IKEARNPDALDEEGNIDLVRIRESFPFLAACLYETLRLHMTAIPRVAKADFDVAVPNSQPIHLKSGDLIYLAMSSFNRNT
ESWGPDASTFSPERLLNNAGNLSASMVRKLRVFGVAGNLCPGRKVGLETILYVVASVLREFDIENPRGESEQYPEPRTED
GFGIGFERCANDINIRLRRVA*

>1666|jgi|CYP58M7|[Trichoderma gamsii T6085]Trigam1
MMEDMLRLWVAIAALGAYISIKAIYRLYFHPLSHIPGPKLAACSHLYEFYYNVILSGKFLFEMERMHQKYVRINPREVHI
SDPAFYDEIYASSSRKREKDPQFVPTYALPGSMVACVSHETHHFRRGLLKDFFSRRSVLELSDMMNERVQALMKRLDGYR
IAQSTVSIDDAVSALTSDVITSYCCGKHWGFIEDPDFRNDVRLATADAASFTHISRFFPWLVTLSTFLSPRTLSILMPGK
AGLFGFLESFLEYAQKGIEIPGKRKSMLATLADPSIPPQERTFHRQRDEAFGIIGAGTETTATVLTVAFYHLARNNAVRD
KLQAELKQLMPTPDSTPTWIELERLPYLDAFISESLRIGSPVLGRYTRVAPAETLTYKNYVIPPGVSVKRLITSPLISDA
TIFPDPDAFRPERWIEAAERGQNLKKHLVSFTKGSRNCIGIK*

>1670|jgi|CYP5127C3|[Trichoderma gamsii T6085]Trigam1
MPTSSNKYGYSLSSAKSGTLAYMPSLFAAVKQRFDAWMFLFRGPSMIQEAYVKAEGNPFWIQAPENRYLVVSSWEHIKEI
DAASEDVLSLQAAAKEILQPRYTMQNFNWLDKKGADGMPLIRTLRTLLTNHLPDILPDVRRSMSVLLDRTQDSRPIVNGS
YTSPVFPIIIEAISVTNAAAFFGSELSRDKKFMAAAIGFIEQTLLAAEAIRVLPKAIAPFIGNMIAKNLGSGKAIYDALI
PIAEERLEERAQKKLGHVVPEYTACIALHHLCLHPEYVEPLRNEIESTGWAQFEQSGGKAFPLLDSFMKESARINPVESV
SSRRMALKPFKLSDGTRIEAGEWICTAARGMMLDARYYTAPQEFQGFRFVDSSILKNKLAGEFVSQVQGTPSNFTDIGDW
QLWGTGRSACPGRFYATAVMKTLLALFITKYDMQLEEKATARYFAWPCKELRRQTLPATMFEQFAWRHIVPLFVASATTF
GGLWPFWAPRDAMLEFGLPARIADSPTAQPVMVVSSARTTALGLLMFIFYQQGKFADVDIVMSVMGAYLGVADGYVCWKE
GMPDKAVFRCVSGMVIAGCGMVGLTEGF*

>1986|jgi|CYP55A26|[Trichoderma gamsii T6085]Trigam1
MATDAPSFPFRRASGLEPPAEFARLRATDPVSRVKLFDGSLAWLVTKYKDVITVATDERLSKIRTRPGFPELGAGGKQAA
KAKPTFVDMDPPDHMHQRSMVESLFSAEHVKGMQPYIQKTVDDLLAALKAKGCSDGPVDLIKEFALPVPSYIIYTILGVP
FHDLEYLTQQNAIRTNGSSTAREASAANQGLLGYLTRLVDQRIQEPKDDLISKLVVEQVNLGIIEKADAVQIAFLLLVAG
NATMVNMIALGVVTLFQHPEQLAQLKADPSLAPAFVEELCRYHTASALAIKRTAKVDIEIGGKLIKANEGIIASNQSANR
DADIFENPDEFNMNRQWPNEDPLGFGYGDHRCIAETLAKTELSIVFSTIFKELPNLELSVPINKINFTPLHKDVGIEDLP
VVF*

>2086|jgi|CYP5392A1|[Trichoderma gamsii T6085]Trigam1
MATILNFLPWLAAISLLGSLYYLWYRIFSYQGIPKTLAFANSDGSLLSRARSSLSSVFGVNSLLLAGYRDHSRKGRPYIL
PDVFTGHHVILPAEQLQWLLKQPDNVLSQRESNNEFLAAKHTFLNCVAADDQEWTFVVSLIKTMTSQLNNQTDDAVDEIH
AALDDLWGNDTTDWKQVDLFDVCLALVSRVVSRIFVGLPLCRNPTYLASSTKFAKFILIEALLAQLTPKPLRPLLAPFLA
KYDWIQFKRLDRCVNPVIRERAARFGKMTDEKPDPDQPNDLLSRLMKESFSRNDDPCRSQSHTTKLLAVLNWAAIQVQGI
TLENTLIDIAHSPQSAEIQRQLREEALTADGADPSVRWTRVQVSKMLRLDSVFTESLRLWGFSHGVIKVVVAKEGVDLPT
GEHIPYGGKIGIGSYGVHHDEEVYPGESPFTFDPFRFLNEKAEKQQLGTKFASTSPNYLAFSHGKYACVGRFFANHILKL
LLSQILLRYDIKPDETPRPQNPVSHAYLDLTH*

>2219|jgi|CYP539K1|[Trichoderma gamsii T6085]Trigam1
MVLYLIGLIPIITALVWLRHRVSDIIIRRAGGARAPVLAGNLLSASKLYYEIGKNQYHNRLVDWCTSQLDSLPPGKRTFA

EFSLTGSKRVLITRDPEQIKAILATKFPDFGHGPMWHKLWYPFLGDGIFGVDGQLWHDSRGMIRPMFSKDRLRNLAIFDA
CTDKLVSKIPSSGATVDLKDLFYRWSLDTTTEFLLGENAGSLEFPIAPLVPKGDYYRGIKRIEQFIEPIIARTLAICPTR
LQELSKSYMEFSFLHSIALYTRDPKLIRDQIMSVLFAGRDTTAATLSWAMYELSNYPVMWTKLRKEILHKLGPQATPTYE
ILKDLTYLKNVLNETLRLHPAVPLNMRQVLETTTIPGRSGEADIVLLKGDSVTINVLGMHTCADLYPPTSEHFADLKIFS
PERWEHWTPKPWTYIPFSGGPRICIGQNFALTEMAFCLVRLAQQYEKIEYRGDWTAQKLQVDLIGTPALGVSLALYKPGE
EQDSLSKHHID*

>2385|jgi|CYP51F1|[Trichoderma gamsii T6085]Trigam1
MGIIQDAAGHPLAQLYFQQSIGAQIAIGVVGFVALSVFVNVMQQLLFRNPTDPPLVFHWFPFIGSTVIYGMDPPKFFRDN
REKYGDVFTFVLLGKKTTVAVGPTGNDFILNGKLKDVNAEDIYTVLTTPVFGRDVVYDCPNAKLMEQKKFMKIALTTEAF
RSYVPIISHEVTSYFKRTAAFKGKSGTVDIPKKMAEITIFTASHALQGRLIRNKFDESLADLYHDLDMGFTSINFVLHWA
PLPWNRKRDHAQRTIAKIYMDTIKERKALGDADTELDIMKHLMTSVYKNGTAVPDHEIAHMMIALLMAGQHSSSSTSSWI
MLRLAQNPKVVEDLYQEQINALGADLPPLQYDDLAKLPLNQAIVKETLRLHAPIHSIMRAVKQPMPVPGTKYVIPTTHTL
LAAPGVSGSDPSYFPNPFEWDPYRWLPGSANAPLIAARNEEEEEKIDYGYGIVSKGAASPYLPFGAGRHRCIGEQFANLQ
LQTIIVETVRLFKLSNVDGSDKIVGTDYASLFSRPLEPAEIRWERRD*

>3288|jgi|CYP65DT2|[Trichoderma gamsii T6085]Trigam1
MNEDRENHARLRKQLGLGFSERSMRDQEPIIGGYVNLLIQRLHEYCIDRDSMDPITGQQAKRPMDMTAWYAWTTFDIIGD
LAFGEPFGCLERAKYDPWVAAIGKAVRFSPIILGAKLLGYEWVLRPMLKMLNKYRREHNRLCMEKLERRCQLNMQRPDFI
EGLLQKAKEWNLDMRQIMQNSSNLIIAGSETTATALAGITYLLLKNPEIFQRVVDEVRQAYNSEDEITLLSVNNLPLMLA
CINESLRLYPPVALGLPRTVPQGGAIVAGEYVPQGMTVSTWHWAIYHSERLWTDPFAFRPERFMNDPKYAGDKLDALQPF
SIGPRNCLGRNLAYAEMKLILARIIYNFDIQLVDEGHDWIKQDTYILWDKGPLPVYLTPIKGPRQM*

>3291|jgi|CYP5043F1|[Trichoderma gamsii T6085]Trigam1
MQSSVDGCTKLLLDKLHEFADKQEVVDIGPWLQWYAFDVIGAITFSQRFGCLESGSDVGGLISGIEDALKYVGVVGQLPE
LHPWLIGNAKLITTIQKLVPGVSPVPNIIKIIESQIKKYDLEGKYYQSKKEDFLAYYMGDSVTGKARMDHDDLVGHCLGS
VFAGSDTTAIALRAIFYYLLRNPRAYAKLMAEIDNGISAGHVSELATLDNSMKMPYLQACMKEGMRLHPIVGQVLERCVP
KGGDYLSGHYLPEGTIVGIHAWVIHHDPNIFGEDHEDFRPERWIENSTEKLKTMEQCFLAFGAGSRVCLGIHLSMMEMGK
LIPAILHNFQLEWAYPEKDWKLETVWFTKQTDLFVRLKTRQKTDAEA*

>3466|jgi|CYP51F2|[Trichoderma gamsii T6085]Trigam1
MGWLLSFVVWLLEALGAIVAINLLRQALPRNKQEPPTVFHLFPFIGNAVSYGINPPKFFEKCQAKHGDIFTFVLLGKKIT
CYFGIDGNDFILNGSHDDLNAEEIYSPLTTPVFGSDVVYDCPNSKLMEQKKFVKFGLTQRALECHVPLIEQEVVNYIGSE
ISFLGKSGKMDVSKSMAEITIFTAARALQGYEVREKLTAEFATLYHDLDMGFQPINFLMPWAPLPHNRKRDAAHSKMRAI
YMNIIENRRKIGLKDGSDMIWSLMNCNYKNGSPVPDKEIAHIMITLLMAGQHTSSSASSWIILHLASRPDITEQLYQEQV
QNLGHNGRLSPLQYADLSKLPLLHNVVKETLRVHSSIHSVMRKVKRPIEVPGTPYVITPDKVLLSSPLVTALSNEFFPNA
QKWDPHRWKSLERETDTSDESIFRGARSPYLPFGAGRHRCIGEKFAYLNLSVIVATMVRNFRFFLPNEDKNLPQTDYSSL
FSRPKQPAMIGWERRHQDDNGLP*

>3524|jgi|CYP504A23|[Trichoderma gamsii T6085]Trigam1
MAYQVLGIAIIAVIFAIYRSLNATDAPKIKGIPEIPGVPLFGNLLQLGVDHARVAQKWATKYGPVFQARLGNRRILFVNS
YETVKHFWITHQSSLISRPTFHTFHSVVSSSQGFTIGTSPWDESCKRRRKAAATALNRPAVQSYMPILDLESTVSIKELL
NDCMNGSQDVDPSPYMARFALNTSLTLNYGFRIDGNIDNELLAEITHVEREISNFRSTSNNWQDYIPLLRVFGKVNSKAE
EYRVRRDKYLTDMLNDLKERIANGTDKPCITGNVLKDPEAKLNEAELKSICLTMVSAGLDTVPGNIVMGMAYLSTKEGQA
IQAKALQAIQEVYPDGDAWEKCLVEEKVPYVTALVKETLRFWTVIPICLPRTNIKDIPWKDSVVPAGTVFFMNAYAADYD
ESRYKLPYQFIPERFLEDTEIGTPHYAYGAGSRICAGFHLANRELYTAYIRLITSFQIVPSDDPSQAPVIDAIECNSMPT
SLTTDPKPFKVGLRPRNEAKTREWIAAAEERTKDLIGIGHVI*

>3650|jgi|CYP5866A1|[Trichoderma gamsii T6085]Trigam1
MPATFDDLGPFETHWRSVISELKADYDLPDVFYIDLWPLGPQFIFCVSPEACAIPTTENTFDMHEEVAKFLRGSVGASFI
EGTNGPLWKHLHQTLAPGLTPSVIRGNHGSIIEQAATLRHRFSEIAKSGKVTDIRHELGYYPFQVMVKILLNETLNTQIY
DDVKSAIDLQGEINATNNPFAKWRFGREAKRLWKRIETAIEPKIRARFTALQQQDVAPTKSSVTCLLDRMMLSEVQSGHS
LGNNTMRIMLDKYGGPLSESSIVHYILMLLSVFPDALQKLREEHDRIFDKDHDKTVQMLQEQPGLINNLAYTTAVVNETL
RLFTVGFSVRAAPSGMPTMEYKGRSYPLKDHLVSISQQTMHYNPKYFDEPTLFKPERFISAEPSFPRNAYRPFEKGLRSC
LGQPLAMDEMKILLVMVARWFDFELREHNPSDKPKYSYTDLDTKLGDHAIQSWAFTAGPAGRVMMKVTER*

>3899|jgi|CYP563A3|[Trichoderma gamsii T6085]Trigam1
MLTQMLSMTSVASTTSVLLIIGLVIRIIQNRILHPLRSAPGPWFNSLSELPAAIALVKGDQHLYYRSLHEKYGLVVRVSP
NELSFIGTDAREEIYGFRASASKKKKKDQHCPFANFRIMQKGALLMEKSPIFLGAVGNVDGETGVSLALDKEHTRQRKAL
GYLFTNSALAKLEDILQIHAHKLVAVLEKGASENQAMNVSDWYTYLAFDMMGDLCFAEPFGCLDQASATEWSTSVINVFV
AATWTQGIRRISGVGTWLERLITWLLVPQKAASWRSIHLNNSREKTVRRLQDPNREHTDFMYQILNNESRSLLSKTEIQL
NMALFISAGTDTTATALVGWTYFICTHPNVYKRLTAEIRSAFMANEDVKWEKVKKLAYLEATLNEALRLFPPSPASQQRV
VPPGGATIAGLYVPAGTTVAVPPWVSTHSHVNFVEPDAFIPERWLAEDPKFQGDRLNASLPFGTGPRVCIGKNLANLEMR
LIASKMLCNFDLELDIGDYRMANQQWGLNGQMMPMKVYHSMTKLPLWIKVKRVNS*

>3942|jgi|CYP5076G1|[Trichoderma gamsii T6085]Trigam1
MPAPYMNVVAALGGVATHLLYLNRGEHHRHALRYVLAATASFSAVFMLNWSPIFNSTPGTDWLSAIILSAKGHGCFFLGL
YSSLVTYRLFFHPLNKFPGPVFARISTLWLIYRFRGLDGWKQVAALHDKYGPYVRIGPSELSVRDPKAVNAFHGLNSKCR
KDPHYDMTLPMTSLHIFRDKAQHDRRRRVWSQAFGDQALKGYEQRMRKYRDMLFDKIAASVGQPMNMAKWFHFYSFDVMG
DLAFGKPFDMLETSHNHRAIEMLEAGFVPLGLHLPVWLLVLGMSIPALSKDWFEFVDFCRDRYQARMKHEPDVPDIMSAL
LKPLEGREPTTEEADLLTGDSQLVITAGSHTTAASLTSITRLLAKHPQHITKLRQELAPFVRDSQIIATQDEMARLEHLN
AVINESLRLYPPVPTTVYRQTPSEGIMIDDVYIPGSMSVISPQYAIGRNEDVYTDANSFIPERWYQFPDMIKVKDAFAPF
STGPYGCIAKRMALMDIRQVIARLVWTFDFDFAPGEDGATFEKGVDAFIMTFGEVNMTFKRREA*

>4099|jgi|CYP5333B1|[Trichoderma gamsii T6085]Trigam1
MASVEALWSNLILRLNDIELNETHQSIAVAAIATFLVLLFTTKALSGSPTTTTTANGNQKIPSSPSYWLPFLGHALSMVF
GKDSFLAGMRSRFPEGIFSLKMAGKMHHFVYKPSLAAALLNLQRPAEEEQMLANRLLGSTFGVSKKDQAIYNKIFPEALA

QWKHLSSEPGLSEVTNVTLSQVKQNIINLVTFSPNPMDQTEWEKLADVDVIEENGKGGPITQVDLTELSRNFVAITVIPA
IYGTDFVENFPEIWKWMWIYNESFVLLATGVPAWVPWPRLQRGKLARRRVLAMLYEFNEAMDRHLNGEENDPKWQNLDNV
SRLVKGRIELFRKHGVSLEGRAAFDLALLWASVANSNALIPWMLFELYRDPVLLEQVREEIAPYVNAVQPENEFGSAVWV
PPVLEDVDIDGLITKCPLLKASYIETLRVYSGGWAMKLMYHDTVLEERGKGGESFLLKKGTYAHIPQELHQFDPQYFSNP
TEWQAERHIRETVDENGKKSLTADMGTLRPYGGGLKMCKGRQFALREILLYTAAIITFYDMQAPKGGPWSEPQTRKLVAN
RHPKKPLKVWIKRRGQVTKDEGKEES*

>4240|jgi|CYP528A8|[Trichoderma gamsii T6085]Trigam1
MEAFDKIYSSTKGYDKSDFYLATSLIMPKIDRLLRPHFVDSLDLLSERDMKRYRLQRRLIGRVYQTANVTKFEAAVNDVI
KQVIMRLKDLDGAEIDLKEWMHIIAVECLGACVLSWSPGLLKAGTDWGSSGHSYLAWRRKSVMGLFPTMTKLTMCTNLFE
WVFRDVWNLKYTAPPNFRSFFPDVGKRISRRIKTAMNPKAHKDRRLDLMADLIQLHKDKPEFTEVYLRKMAMTNFGAGHD
TMASTLTAIFTMIGTHNDVQKKVTEEIRGANDPLSYAGAAQLQYTRAASREAMRLHPALTMSLSRRVPDNGLYIHGHFIP
GGTTVGCNPAALHRNANIVTGSDPEAYNPDRWLSGDALDVRLMERYSLNWGGGPRTCPGKNLAEMVVYKVVSALFERFDV
EVVAPAQIGQPSYYMSMITGAKARFLPVTPLMDEQGSKRIG*

>4439|jgi|CYP620B10|[Trichoderma gamsii T6085]Trigam1
MFVTLVVGIFAFIGFIIYRQFFRKKDDLLSLPPGPRALPIIGNLLDLPPTGTPEFQHWLPFKDLYGPLSSVTVLGQTMVI
IHDKQAADDIMNKMSHKTSSRPNAVFASELCGFDKFTSGRPYDATFRLHRKVMHQQAGTKLLAMGFNTVQDVESRHLLQR
ILDDPDNLVKHYRTLAGAIILKIIYGYSINPHAADPLVEMIEKMMDNLSIAITPMRNLVDIFPALQHLPNGFPGTAFKNT
AQEMKRINLDTVRIPYKFVRQQMANGTHRPSFVSNLIERYSSDKSNDARLDHDTEDAIKWAAAIMYGGGADTTMSALSVF
TLAMILFPEVQKKAQEEIDSVIGANPSRLPTFEDEERLPYVSAAAKELLRWFTAAPITTPHMSDEEIIYSGYRIPKGTIL
LVAAWWFSHDPQTYSDPSRFSPERFLEPRNEPEPIEAFGWGRRICPGRFISNDNLFIAIARLLATFNITKATDEEGNFIE
PKLEYITGVVAHPKSFPYAIAVRSQKHEELIRSAEVDYPWEKSDADLLVFDGGEKPTDQNLKFPY*

>4728|jgi|CYP5268A8|[Trichoderma gamsii T6085]Trigam1
MAIVSSLAGLCLAAIISAFVFRYSSSYSVSGVRIPLGSKLPRGPKGVPILGNLPQVPLTHSWLKFKEWAGQYGPLYSLSL
AGNRHVVVSTERIANDLLRGRGNIYSSRPYLPMSSGLLSHNLRPVLLPYNDLWRKGRKLMHSLASESVAPAYEPVQLRES
FRLLKDLLADPNNYETWFERLSAGVVLQLAYGKTVETGDEPIVRDILEVVHTLERVISPGAYLVDTFPALMWLPKWLAPF
KREGDRLHKRELNLFRKNIEDVRAEIANGDQTPSFCRSWLEKEPSFGLNTDEAAYVIGTMFEAGAGTTAAALMSFMLAMV
HHPEWQRRLQQEIDAVVGNSRLPNFDDIPRLPTVRAIVKETLRWRPVTAGGVPHQLIKDDVYEGVFLPAGTSIHPNQWAI
HRDPSLYPDPENFRPERWLEPSWPTYREPLTQFPNLQNFSAFGFGRRICPGQAIAERSLNIAAARVGWGCTVSKMKGVEV
PLYDYTAGLNVQPKRFLFELEARGDHIMRLLRENV*

>4743|jgi|CYP65BQ3|[Trichoderma gamsii T6085]Trigam1
MVGVHQKYGPVVRVAPGHLAFCHPDAVHDLAGHRKSGQLENPKDAFRYLTSNGSLVGAERENHSRMRKSLTNGFSQRAML
EQQPLITVYIDMLFDRLRAFHVNQETFDIVSWFNYTAFDIVGDLAFGEPFGCLQQSTYHPWVAFLFGCIKNMAFDSAFRR
MGFLHKILVMLTPKSILTKFKEHNELSAQKVHKRLSINTERKDFIASMLSKSGKDALTFDEICANASVLILAGSETTATA
LCSATYYLGLNPGPFKRLCDEVRSTFKTEEEIDILSVGRLEYMPAVLNEAMRIHPGAPGTAPRTINENGDIIAGYFVPPG
THVDIWFWTAFHFPAYWTQPEEFIPERWLGDSRFENDRKEIFTPFSVGPRGCIAKSLAFTEMRLIMARLVWNYDIEIAEE
SIGWAKRCKCYIAFEKGPLYIRLKPRQ*

>4750|jgi|CYP5818A1|[Trichoderma gamsii T6085]Trigam1
MAFIVQAASTQWIAILITCVLSLVFVATYRLLFHPLAALPGPKLAAISPWWQIRKIIVAKPYELALHDRYGPVVRTAPNE
VVCNSKEAFDAIYKSSTPLDKGPWYEGTRLSSGVLDLFIRRHHIDGCHLLAETDMARYQLIRRSGGPAFTASNLKRYEPK
VVEAMQRVCERLNRLNGEEVETSEWMHITILECLTSISWSGSPDNILEQGHDWGDLELNVAFWRRTTVLGHLPTLRVLLD
LFPMLKKYAFGILGLPTNHSRDGIGLPAHIAPSLIGQLVHRCTSIENPSFENGQDLMEQLLAIHAKRPDFGVGYARGMAG
SSVAAGHDTTGASLVSILCRICTNPDLQKRVEQECRGERMPLAFEDRPSTVTSACVREAMRLQHVTNISLSRVAPRNGLH
LHGHFFPEGTVLGVNPTSFARNRDLFGPDAGEFKPERWLSGDENHLRTLERYNLLFGGQSRSCPGQNLARLIIGLVVPRL
FRNFDIQVKVPEGGFDNYPPQFWTMLSGSKIKFIPRQDSK*

>4874|jgi|CYP537A10|[Trichoderma gamsii T6085]Trigam1
MLLLSPIVLLATAALLAAIQLIRCVRSPLSKIPGPTISKFTSLFFKWKEIHAQRTAYVHQLHLQYGPVVRIAPNEVSFTS
WEALKEIYCSGGSGYDKTEFYDLFKIYGRRTMFTTLDKAGHAKRKRILADRYANSNVVKSASVAGVQERSSKFLRRCVSS
PGGVADIFVNRLISHYVPTLYRLFSKVLYIFVKPRETPLADDYVLETSQISGPASFTLMSRFEEKSSDLDYIDKAAECLD
HMAAGIDTTGDGLCFLLWELSQPRSLGFQRKLADELHRNPEAPLDRLPYLDAVINEGLRCFPPIPMSLPRYVPQGGRSID
NFWLPEQTIVSCQAYSVHRLNSEVFPDGDRFNPDRWLEQEGDADRRRMQFAFSNGGRGCVGKHLALIEMKTLLRDIYSSY
STTPHKSMKVEDMAMSDQLISSRPQAQKCLLHFHPLDCALVDIHVGGTCASYVGTSIY*

>4889|jgi|CYP671C2|[Trichoderma gamsii T6085]Trigam1
MASRPSHILVAALQSSAQVTAAVSLLAGVVSHHLVFRPFEIDGYAWQIFSTYLITFFVLIIGNVYFAGYGVILALARALL
IATAYNAGVVSRPFLAKISRFYAMNNAARQVQAYKDVQNLHKQYGDIVRVGPRELSINRPSAIKIIYEHPTRTTRSPWYA
QVSNDVTKISLNSTRILKVHKLRKKAWERGFGFRALAVYAPRVKAKVDLLLSKIAEHGGCPIDMTEYAMFFGFDVMGDIG
FSKDFHMLESGSEHPAIKGVHDSMLAIGVLGTAPWLLSMISKVPGAAAGFSRFTAWCHQQLQEKRKVVAHEGAMFKDRDP
RDVISWLIKAFNEGDSSAPPGEMAMQEDARLLIITGRLYFLAKNPDSYRQLQAAVEEQFPTGANDWTYEKSIPYVDYVIQ
ETLRLKPSVPGGLPRVAPPQGLMIDDDFIPGGTVISVPTYTIQRDPRFWSDAHDFRPERWEKLSTEKAPWIPFARGQWAC
PGRNFAMMELRMVISRIALEYSIAIAEEDLGERFDKEAKDTFTLTLPPLRFLFSPK*

>5051|jgi|CYP602B6|[Trichoderma gamsii T6085]Trigam1
MDSQSNSTSFESSSLSAYWTPRTGYYLTILTVLLSVWLFLRSKPESSKLCVPFYKTSKLKWIFDAESQIVKSYKQFQDQV
YQIKATEGTQAIIPPKFIAEIKGLPEDTLSATEAVADALQTKYTNFTPGHNGDMLSLLLKSELEHYIGTEFPACDDWTPV
KWQPFALRGIARLSGRAFVGPWLNREEQWLKVTIDFAIDVFMSVIKLQIFPEWFRPIAQYAVSDLRKIRKDVNIAKSLLK
PLLEERIRDMEISSCHEPPNDLMQWLIEALPQEEKADVDVHARLQLILAAASIHTTNNLLFECMADLADHPEIQEELREE
AYQILEVENGWARKESMTKLKKLDSFMREVQRLRGNVTSFIRKVIKPIDLSDGTHLPAGTRVLAPQAGISIDDQFFPNPT
ELDPLRFYHMRQESAEASNRWQFTSLNDTNLNFGAGKHACPGRFFAGNEIKLILAFFLINYDVRLKEGDKRPQPMALVMT
KGPNPNTEFEFRRRQLAN*

>5435|jgi|CYP526AD2|[Trichoderma gamsii T6085]Trigam1

MIVITLAVLGAIYLVYRAICPKPIPGIPYNASAIRSPLGDVPGMIRDITSTPGLYFNDWCAKQSQKLNSPLCQVFLTPFS
KPILLLADYDEALDIGSRRTDDFDRGTFMADSFAAFGNFHTRMPTGPEFKASRRWLQDLMAPSFLNGFVAPTTYALVSRL
VELWRTKARLAGDKPFSAGTDLDRANFDIMARFFFGEHFGRSSIDAQIELLSDEKAPEVGPRGEAVFPEGAIDSVFYTLH
DAGRTVTQMMTSLWPKLTLHWIPWTAGYRRIQATKRQLTRDQVQKSIKRVRAGEKSAGIDYMLSRELAVAEQEGREPDFY
NDMIMAEFLGIAYAGMDTTEANISWALKFVIKHPKVQENLRHALHSAYPLAVQENRLPTVAEFLRSTSIPYLDALIEETI
RLHPVLSTRDAIRDTEILGHHVPKGTTVFLLPNGPSFLSPPFPIAENKRSSTTRVVKPSKKWNETDMASFNPERWLVRNA
QRDVEFDSTAGPQSGFGHGPRACWGKREAYLRMRIALTLLVWSFDFLEVPESMSSMVARPVFVHTPEEIFIRPRPRV*

>5439|jgi|CYP65BM5|[Trichoderma gamsii T6085]Trigam1
MLLAAEALGFALPPGVALVLWLIIIGIVYLVSIPIYNVWFHPLRKYPGPRLWAATRIPYTRMIFSGMSHRKILELHHRYG
DIVRVAPDELAYCNSDAWNDIMGHRKRGQGENGKDPIFWKTQQHSIISANRENHTRMRRTLAHGFSAQAMMDQQPLIQGY
VDMLISGLRKNCDDGKRPVEMTSWYNWTTFDIIGDLAFGEPFGCLQNSDYHPWVSLVFQRVRGGAINNALRRFPFGENLI
QLLIPKEARKKFHMYFQITQEKVNKRLANTSPRADFMEVMARKEGDMKFSYPELLDNASLLIIAGSETTATTLSGATYML
LTHPEILQKVKDEVRSSFSSEAEIDLLSVQKLSYMMAVLQETLRMYPPVPATIPRKAQPGGDMICGQYVPENTILGIWQW
PMYHNAKHFTLPDSFIPERWLGDARFSNDCHEALQAFSYGPRNCIGKNLAYAEMRLILSKILWNFDISLHPDSTNWYEEH
EVYTFWKKPNLNVYIKPRVVV*

>5497|jgi|CYP65U10|[Trichoderma gamsii T6085]Trigam1
MTTALGWQISPFSWLTTTALTLLTYAALRIIFNLFLHPLSKIPGPITWKVSRLPFIWALLRGTLVHDVERLHRKYGPILR
ISPNDVTFAHEDAIRDILAFRKDRLPFLKDLTWWKANPGMPDSMISIIDPKQHARIRNLLAPGFTPCALKEQEDILHLYV
NLLVERIRELAGKEPESGAVIDVVRWFNFTTFDIFGDLGYGESFNCLQESKYHPWVALLFKSVKAVSFIAAARLYPVIER
ILFMCIPPSLREMQKNHCQLISDKVNRRMNFELERPDLMSHVIQGAERQKLPQSTIDTTFMVLTIAGSETTATALSGTLN
YLVNNTDKLEILKSEIHEAFPAENDISLDALRQLPYLNAVINEGLRLCPPVPWIIPRKVPEGGETVCGTWLPGGTSVSVQ
AYTLNRDPEHYHLPTSFHPERWLPDARTNPDSPFFHDRLEALQPFSEGRESCLGQHLALAEIRLIFSKLLWSFDFEALED
RKIKWEDMRTFLIVEKKAIEMRAKLRATA*

>5597|jgi|CYP65EU1|[Trichoderma gamsii T6085]Trigam1
MPLRHHTLIRVHSLFPLLQSFPSSPSGKLIYHIEDLHKRYGPVVRIAPNELSFTDPQAWEDIFIRQPPGIAKTSHSHALA
PDMAFYNPFGDLPPSVISSDDEAHHHLRKKLVPGFSDRAMKEQEPLIGSYVDLLIRRLRENSTDATGRPQSVNMRDWIAY
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GTNRSDFMDTLIKDGMSIDGLKRNATLLVNAGSETTATLLTGAVFLLATHEDVLKKLVAEVRGRFQRPEDMTLSSVASLT
YMLAVLDEALRVYPPDAVSSPRLVPAGGHEIAGSFVPGGTRVGIWQWAMYRDERLFLEPSRFDPDRFYNKGDEKSKYAGD
RLDAVNAFLLGQRSCIGRNLAYAEMRLILARLIWEFDMEIDQKSENWMHGQENFELGQ*

>6093|jgi|CYP559C3|[Trichoderma gamsii T6085]Trigam1
MAISELLGSMTSSQVWSFGALLLVVTFIIDLVNDFASHPPSHIPSMGKSGKLNAFLDSFRAITKYNQWVKDGYSKFGKHG
FPFQVPQPLSRHSEIVLPRSQASWMIDQPDHILSTYDAHNATLYTRYNFLGRRLAHDPFPNRVLQKHLARHLPAIIPNVD
EETQLVVGTMFGDDTENWKSFTLWKLWMEIVPRVINRLLVGPELCRNKQFVDNMTNVSNDVVRNMLILQLLPKILHPVVG
RLLGIANYIHWRSADAVAQPLLQERLNAMLKQANGHVEFQDYVPPEDFVTWTIRQALAEKKTFELDPVVLSKRLLPVEFA
AIHTTVLTGQLWMQDLLSSEPESGILDILRAEIIANKPKSGPWTKAALSNLVRLDSSIRESQRLSNFLATVIERKVVSEN
GVYNPDLDLTFPKGSYVVLNLEGTHHCEDLYENAESYDPLRYSRMREAWDAKSDEEKRNEPEEGTRMRGLGMVTTSPQHL
AFGHGRHACPARFFVSHEFKLILATIILDYDIKMTSKKPERQWIGRSVIPSRKTEIQIRKRKA*

>6375|jgi|CYP534C4|[Trichoderma gamsii T6085]Trigam1
MALIPIAIAALVAYQVISYALRLRFHINEAKRSGLPYIVLRASTNIHPPASLHGPLIMRPNFVYTTRHEWFAKVGETFFL
VSPGRLMLLTDNAETIRTITLKREQFPKWTAVYNILRQFGENVLTTESSIWRMHRKVTSPSFNERNAALVFREAIVQTQG
MLRMWTGPEGNTRKEPLNSLQRDTMRLALNIISYVGFGMRLLWPGATHAPGTDPKLLKYGSHEPSVGHELSFTDTMEFLL
ERLLVLLLFPRWFLQLLPFEKIKKAVLAYDEYVKYMNELLDEKIEDARKGDHIEGMDLMGQLAKSCFGTDNKDATLSREE
IISNAFIMFVAGHETTANTIHFTLIFLAMNPEAQRKIQQDIDNITQGQDPKDWDYESLVNPMTASMIGAAMHETMRLMSP
VVVIPKTTYSDQPLVMDGDKYVIPKNTGISLVTISAHVNPRYWPTRPSKVTPGKSNILDYVPERWFQSMDKDSSAGSEDV
AGADSEDFGGFQGSDINAQLFRPERGSYVPFSDGARSCLGRRIAVVEMMAALAVIFRSYSVELAVDEWAAPAQVDQMSRG
ERARIYKKAQDKSRWTVGQATSRLTLNLHDGQYVPVRIVKRGEEKFVDWVDKE*

>6569|jgi|CYP684L1|[Trichoderma gamsii T6085]Trigam1
MDDLLDFVLARIYLVGAVVVAALAYSDKLTFYSLRDPLSKVPGPWYTKWTSVVIKFHWLKGNRAMKIANIKFIMAGPVVR
LGPNEVAVTNIEAVKKIYNARETFRKTSWYKDLSVTSENVFNTNRTELHRRLRRLLSGSMSETSLAAVAPQIQRTVDLMI
KRVGEEMERRGAADVIKWFLFMATDVIGELSFGDSFRTLEIGEHSEYTKDLAELGYLGAVRSAFPTLIAMAKYMPISYFR
RPLRGTKNMIRYADESIARYRNLLDSDPTSVKWTLFTKVFKDQGKEEGLSPVELRGNASAYIVAGSDSTAVTLTYLVWSV
CRDPKVKAALLAELQTLPDDFTIANLRGMSYLNAVIDETMRLYSGIQSALPRWVPESGDNIAGYWLPGGTTVCAQAYSMH
RNPEVFPKPNVFDPSRWEMPTKDMKDSFMPFGSGARICIGLHLARMELRYGAARFFLTFPEAKVSALEGMNDGDMVPKVF
FFTEPKAKRCLIQRQ*

>6687|jgi|CYP539B7|[Trichoderma gamsii T6085]Trigam1
MLQNLSWLIPASAGSLAIATSCTIASFWIIERLVTDYRLSKVDGVRASILAGNPITSFFFFFKGAYMHSQNRLLEYYFSM
FENADPSCPNAVEISIIGRRSIITIDPEHIKAVLASNFTHFGKGDRFHSTWEPFLGDSIFTTDGQLWQQSRTLIRPMFLK
QKIRDMEIIERWSDVMISKIPPSGHTVDISDLFYRMTLDATTDYLLGHSVESLENPRGEFSKAFTYVQRKQMTLTLLAPL
RRFIPKGEYNRGIKVLEAFIQPFIEATLALIPEELEKISKSDKEFTFLHQIALFSRDPKVIRDQIMAVLLAGRDTTAATL
SWALYELSNYPATWQKLRNHVLQKVGPDAAPTYEDIKDLTYLTHTLYETMRLYPAVPFNIRTCLENSTLPGMPGQPDIAT
LKGDHIIYSTLAMQRRKELYPPVSETFADPAIFSPERWEHWTPKPWQFVPFNGGPRICIGQNFAMTEMAFMMIRLLQKYE
RIEYRGDWAAQYLKADIVGCPGQGVPIALYEAEKRY*

>6914|jgi|CYP539A31|[Trichoderma gamsii T6085]Trigam1
MDVITKENPRLMYEAALDFIYYGIRSTIAHKNMELWRDVFFSNSWTCEMRILNQRVAFTADPENIKAMLATQFHDFGKGE
QFHREWAPFLGDSIFTTDGMQWHNSRQLIRPQFTRDRVSDLHCFEAHIQTLFRTMANGGPLEGENQVIDLDRADGRRMDI
RDLFFRYTLDVATDFLLGSDVKSLTTPKQEFAEAFNEVQRVQNILARAYKLQPFIPKKSYYDGLKVMNRFVNHFIQRALR
MSPEELAAHTKSDKDYTFLHELASFTRDPKVLRDQIVAVLLAGRDTTASALSWAIYELGRHPHAVARLRAEILETIGQDR
LPTYDHLKNMPYLRAVLNETLRLYPSVPFNVRVALKDTTLPRGGGPDGSEPLPVLKDTPVGYSTLVMQRRPDLYPPVSEA

FADPSIFSPERWAAWHPKPHDYIPFNAGPRICIGQQFALTEMGYTLCRIFQRFERVQSFMHEIDGGDPLLKSDIVLSPGQ
GVHVAFWEPKKEA*

>7261|jgi|CYP548AA1|[Trichoderma gamsii T6085]Trigam1
MAFHVVPACIFASGCLGLAILSYFHLQQPHSLLWYSQTGAIILFEWVLSNLVYRLVFHPLSKYPGPLFAALTDWYTVYWI
AEGGRHLEFDKQHKKFGKFVRFGPNRLSINSAKASRDLHNVNSNTFKADAYSSFKRFFGAEMSLTTVDHKAHAFRRRVNM
TAITPAAVKEFEDQVTPHVDEFIDIISEGVGSKVEGEHGWSSGKDMCWYVSFCIADIMGSMTFGRTWNVQRDPKYRHFVK
DLPNGVAGIHLVGHMQSLFFCNLHKLLFNQLIVGVGNLMSVSRSFALWRLEQTSMPHRDIWAALLASRDPKTGEGFSTEE
LISEASLFIIGGTDGMITATTSTLFYLTHNPRTLERLTREIREAFPLSPEDVGKKASEVECPIQFASAELQSVRYLPACI
DEAMRLSPPVPSILPRVVGPGGMEVDGEYFPAGVNLGVPHYCMHHSEENFAQPLTYAPERWFPEERERGLKDGSVPVSGK
ESVKMLPAVGLSHGFTPFGAGRSGCIGKHLAYQEMSIVLARLIWLFDIRLDPSSNLGEGVGDAKEGRECRSEFQLYDRFV
SSQNGPMLQFRYREELTA*

>7544|jgi|CYP532R1|[Trichoderma gamsii T6085]Trigam1
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RIGFIESGGDIEGIMHQIEMQLGHQNTVGQMPWLDCFWAKNPIKLWLGRMGILHERDSIVVRFAARKLKERYEALKSGTS
PPTTDFLDRFVQAGIKDPELMTEQEILSLTLVNIFAGGDTTAIALSATFYFLLKNPSTLEKLMAELHESPPSGDNGIMSY
SEARKLPYLKAVIQEGLRMFPGIGNPLERVVPPQGLEVCGHFLPGGTIVGTSAWPLHSKESIFGANPREFRPERWIEASE
SQISLMNSAMFAFGMGGRSCVGQNISLLEIYKVVPTILWKYKLAFANPTAEWTTSNRWFIYQKNFFVTLEHRV*

>7559|jgi|CYP574C1|[Trichoderma gamsii T6085]Trigam1
MGRMGFSASFGSIKAGKENPMLQYLEVTLGTLAKLGLIWWPIALLQTFGGSKDHINFQKLACQMVDKRREQATDEHEDIM
KYFLQDYNSKEPKAMHHIDVIYSDAQAVMTGGTDTIAAALSFVFYYMARDSTVRDKLRSELQSLFGRTVSGEFTNLDLGE
AEAPYLNAVINETMRMDNPTCANGPRMTPPEGLEIDGVFIPGETLIFVPIHSMHTSAKYFKEPNSFIPERWTTRPELIID
KRAFHPFLLGPYNCVGRRLAMIVLRFTIAYTVWNYDFKFAPGEDGTSIHRDMVNQAILKAGPLQCVFNKRS*

>7576|jgi|CYP530A38|[Trichoderma gamsii T6085]Trigam1
MGVVTADMPRAWAVLGLMASTLLLWQLSKIGRRPSNYPPGPPTLPLIGNLHLMPKKHAHLQFQKWAEEYGPVYSIMFGPR
VAIVLSSDVAVKDLLDKRNSIYSGRPEMYMGQDIMSGGLRPLFMGNVPVWRMVRKLAHGILNVKISRTYVPYQDLEVKAM
LMGFLDNPNNFLNHIRRYTTSLTTQMAFGFRTAASDDEDLLSMFENFDELSQIATNKAGAILDLYPIARSLPDFLLPIRK
AGKEYHKREMKLFMKHFLNARKQLKSGNAKPCCAIDLLNAQKELGFSDELACYMGGSLLQAGSETTAIILVGFFEAMLVY
PEVAKEAQAEIDRVCGDRMPDLNDVPDMPYIRACMKESMRWMPATALGVPHAVTQDDSYMGYHIPKDSAVFLNVWAIQND
PERHPDPRKYDPSRWAGDHQNSAQSAVTGDPTKRDHYVFGAGRRLCQGMHIADRSLFLAMSRTLWAFDLKRPIDEKTGRE
IIPDVDDIQDGLFISPAPFKANIVPRSESRAAAVRKEWESMAELLDEDLQWKIVPEGLKWRDYEPLDENEDLLEALS*

>8208|jgi|CYP50330A1|[Trichoderma gamsii T6085]Trigam1
MHNFSAAARASTAGAATLRTVFRINNPFSNGSEDLRKAYRQALTKTFAKTDGDAWDAIARAVSVSVRNMILSETGPDGST
ILRANIMEISRTASMVAVLRALFNIDNVPGPTLAYICSEIHRLGVWKKNMDMASSNPCAVPQVFVQNMNRLVSCLRDVFS
EAKEKNDLARLLLCSVSGTPEAFNPLDLIIPAFEAPWRAVLYSLLAVLQDRPSAVDELLSLRDCPARQRPSPQAKAVVYE
SLRLYPPVRRMRVSQKAKALQVFSTGGISDVDRTIDAEAILRDPKYWGPTAAEWKPTRFLRTDGEIDSSILSPNMAWIPF
AAGGMKCPSAGGFSIRLTAVVAGEVLRQLFPRHGQMQWHLEGPQWDLSSASGRLLRPGRDEYTHVDVVTRSDRLQAAGTR
HVGTD*

>8209|jgi|CYP540B34|[Trichoderma gamsii T6085]Trigam1
MAIQQFYLLGESETATTAIDIESNLDFDGLKHLVASYFAVVEPNGVGFQFQEHALQEVSDISSAAGPVAVSIDGKAVREV
PGPKGLPYVGNFLEIYPDHLGNHQRLFEHYGPIIKTVNMGRTVYQTNDPEIATIAFAESEFFTKKLTEDHPLYALKTPAA
GVFLGDTDTEEWKVAHKFLPPALGPKAVRHYAPTMQKTVEDATKVFDELDEQGEAWNVYQYMIKLGSQAVGKLTLGIDFE
HFASPDTPLHEMILLIAEVLTLNKKVSSKGSWYSNLPFGDPKRLKDVKHRIEEMIEESIQAAARGGVEDLPLQDAALKAS
NMVDYAVRATDNKGEKLPKSSIVWALIVATGAGFTTTSSLLSWLIYGLVTYPGMQERLLQELVDNDFDEDSLLTSDYTDR
LVFQDKYIKEMQRKHNPSYQPGRTAKTDLILPGGYKLPKDSVIIPALHHIHNNPKLWSDPARFDPDRWDTEEVKNRPKGA
YMPFAAGPRMCIGFNFALQEIKVFLPKLIYRYKFTQEGDAAVEYDPMFQLIRPNNLYVRAERRVKWPPKSNAATPSASS*

>8305|jgi|CYP5334C1|[Trichoderma gamsii T6085]Trigam1
MIFQLYESSPGLLAVGVVLSLATVAVLTIRIWGDFVGNAILSTFNGGVLSTGRAAPGPKWQWPNGQFADKFLNGAARSEE
WRKYGPVYRVWAGPKPEIVLTTPEDLKVFHTDSDKHTKPLDGNFGWFFDKVLGRCVGLLSLDEWKNMRRVVDPSFTHGAS
VKRISVTESDARAFVENLHTISNEGAEIAKTKGRFTVPAMAAFMKFPFIFTAEVVYGNMTEAEKEELWAIAEKRQALLPF
FFKGSFYRTSYLKWFDRPAYNQLQEFLDSWAEFNTRMARSRREQGLPLPIVTYWDEYLQGNITLEQVTHTLDEMLFANLD
VTTHVLTWAITLVADHENVKKELREEIEAHKDNLQEYITNVNTHLHRCYYESLRLRPIAVFSIGESAPSVKNFRGIHVKP
NTMVLVDTYAINVRNPFWGPNSEEYDPNRFRNLKSTDLRYNLFVFGFGYRKCLGQYLAGHMVKAILVHLFSQYDVKIIDG
RKGKADYDIDKTTWVPVADVTVELTKLQ*

>8307|jgi|CYP548W5|[Trichoderma gamsii T6085]Trigam1
MHGKATSIWIYIAAIKNMVSEYLRYAPNRLLINNVNALYDVYGHGSKVKKYKNYRVLAQQAPNTLTLSNKVQHARRRRVV
AQAFSETSLRRFEPKVQSVLERFCQHLRSAANESTEKGWTSPRDISKDFNYLAFDTMTTVSFSSDFDTIRNPENRYPIGA
LEESNVRLGVLLQESKLTSFNLDQYLFPASIVGRNQFVGFLRKLLKKRLQDVGLSDGKDIFAFLKDCKDPDTGAELSPKE
LSTETALFVVAGSDTTSASMAGVAHYLTGSSSTYRKAAEEVRTTFSSLDEIVFGPKLNSCAYLRAVIDETLRMSPPGGAA
LWREVETGGALIDGTYVPEGTDVAVGIYSIHHHDSYYKEPLKFDPERWFRPVNEDGTARADTARQPYMPFSIGSRSCVGK
PLALAQIMLTFARLLWEFDLRRADNEPGWEEKDITPIEYKFRDHVSARKDGPVVCFKPRSS*

>8563|jgi|CYP620B7|[Trichoderma gamsii T6085]Trigam1
MSNILILQGIVVALGFIIYRLFFRKKDTLLPLPPGPKPLPVLGNINDLPPPGVPEFQHWLPFKDKYGPVSSVSVLGQTMV
ILHDADAVQELLEKTSLKTSARAQLFFASEMCGFAAFLPAMPYDDEFRQHRKYIHQQLGTKTLAARFSDIQDVESKRLLL
RILNDPENLIEHIKAEASAIILKITYGYTIEPLTPDPLVKLIEDVMSNLSAAFVPMSWSVDIIPALRHLPDWFPGTGFKQ
TARKWKAINEAVVSTPYHFVRKQMEMGIHQEQSYVSGLIRTYGNEDGSGVSPEDMKIIQLTATSMYGGGADTTVSTLMTF
IIAMIKFPDVQRKAQEEIDRVVGSGRLPGYEDRDNLPYTDAIAKEALRYFPVVPVGTAHKTEEELFFRGYRIPKDSYILP
SIWWFLHDPKVYHEPEEFDPARYLEPRNEPDPLGDAFGYGRRVCPGRYLATESLYLTIARLLAAFTIERAVDENGKPIDV
EFKHSPGLVDHPHLFSYSIRPRNQKFAGLVRKVERDHPWEESDAAHLKGDLIEEYKANCKALAKKEA*

>9125|jgi|CYP584D5|[Trichoderma gamsii T6085]Trigam1
MSSLLDSRYLIFCLFSLLVTYTLRHISHQIHQRKVSQAKGCKDAQSKAPVRDRFIGLDFIYDCLFTKPIDKYLDYTYKTF
QQLGSTYVCQRWTWEATYTCDSRNIKHILASGFDEFKLPRLRVNAMMGLLGSGIFTLNGQSWSHARAVLRPCFAKQNKED
MISMLETHFQALLKRISLGGDTVDLQPLFFWLTMDFATDFLMGHSTHVLDRASSHAKEKQFVDDYLACSTEIVRKMQLGP
LQIFSFNFGAMRARSRVFKYIDDFINVSLDKERDDDEATNSGLNVLQGLAALTTDRKQLRDQILHILVASRDTTACLLSN
LFFVLSRKPHVYERLRREVFAIAGTEPATSNQLNGMEYLKWCVQESLRLHPVIPTNAREASKDTILPYGGGEDGNSPLLI
KKGNLVMYNIYAMHRDTEIFGPDTEEFVPERWNGLRPGWGYLPFNGGPRICIGQKFALLETHYLVSRMVQTFETITTNED
TEWVELYALATTCKDGVNVSLNRA*

>9131|jgi|CYP541A2|[Trichoderma gamsii T6085]Trigam1
MASPTPIPRPPGVPLLGNIFDVKPGNTWDSLRKLSDQYGEIFQIKVLGKTLVFVASVALAEELCDEKRFRKYVGGPIVEI
RAAVHDALFTAYDDEASWGIAHRIIYPQLKPEAVSTHFREMRNLAGELFHNWKSLGGSHVISPLDQLNRLNLETNTYVFF
GKRLNGLTGPAHPMLQAMEDSTSEAMKRPTRPGLLNWLVYGRKFKSSNKAMREYAEELVQFRNDNPTERQDMLSIMMTTP
DPETGKTLTPSQVIDEIVSMPIGSSTAPCLLVYSLYYLLQNPEVVAKAREEMDRVIGAGEFEFDHLGQLKYVEAIMRESL
RLSSVAPGFNIEPRPKEGDKSPVLLGGGKYQIAHNQPMIIVLQGVNRDPAVFEEPMVFKPERMMGEAFDNLPAGAKKWFG
NGKRECIGKQYALQWSHIMLAMLIRELDFEPASPEYQLEEDGWFNTRPIDFLVRVRARAKATY*

>9261|jgi|CYP548A14|[Trichoderma gamsii T6085]Trigam1
MLQSFSLQHVLAWLGILLGGGVFYVFAIITYRIFFHPLAKYPGPLIAKVTDAYQLYYAWRGDRHLQFWRLHQKYGKTVRF
GPNSLSFSTNQSLQDIYGFKANVRKSEFYDSFAHPVHNTHNTRDKGVHARKRRVLSHAFSESAMKDMQRFILNNVRLFCE
QIGIEDGGADSKGWTQPRKMDDWCNYLAIDVLGDLCYGKSFRMLESEDNRFALGLVEAATTRHLVCGTMPIVNNLGLDKY
MFPALAAGRARFMAYSKAQLTERTKLGEDADRRDFFWYLLKARDPETGEGFTTPELWAESNLLIIAGSDTTSTAMAATLF
YLTRNPAAMKKVVEEIRGKFNDVEEIVQGPALSSCSYLKACIDEAMRMSPSVGGIPPREVMAGGATIDGEVLPEGTVVGT
AHYNIHHNEAYYPQSFTYVPERWVAGDMNPITGKPTTKEEVERAHSAFVAWSLGPRGCIGKAMAYVEMTLSLGRAIYLYD
MRRAVGVQDISEGHPDLEFGRHRETEFQLRDIFTSGKCGPLVEFRRAEKA*

>9436|jgi|CYP5391C6|[Trichoderma gamsii T6085]Trigam1
MILTLLPLYKATFEQATLFGVVICLFTALLSYLPTRPVKYFPGPKPWPFLGNFIYYYKVLHNLPVELPQMAKDFGGICMV
WMGRKPNLLIHKLEDAHEILTKSQEVRKYQDYETKMALVAFCELPDDYVAHITRFAMSVIFSAIYGTRIGRLDHPVMVEL
YDVWETDLHNVRPGHLIIDWLPILEKLPLRLQPWVKLADSLHERETAVNKAFLKSLRKRIETGTVPACFAIDAMAHQRKQ
GFDDDVLVDLLAGLVVTGSETTATMMQSFIKLIAMHPEAQQKAQQELDRVVGPRRLPAWEDQPNLPYVRALIKELHRFSP
ITSFAVPHASTEEIMYRGNTIPDNTVILPCLDNLHRDPARYDDAESFRPERFLGDDLEALVSARQRDYRKRDHVNYGFGR
RMCPGIQVAENSLFMQVSRYLWAFNITPKPGEPPLDMADWQELFSRKPKPFKVNITPRSDAILQVIQQTAKEARTDIPDV
DSIEMDN*

>9480|jgi|CYP570E3|[Trichoderma gamsii T6085]Trigam1
MPLMTIYLYSILLITFFTFTARRIYHWQRLRHIPGPASAAWTIWWQLSNALSGRYHERLKQAADTYGPLVRIGPNQLLST
DPEVLRRMSAVRSGYTKGKFYASGKIVPGVDNVVSLRDPAKHKEMRALMAPGFSGKANEGYSFEAAMNRQLLSFIDLLER
KYVSSGSDVRPFDMAEKTQFFALDAIGDISLGQPFGYLDKDEDLYQYNEINTTSLPLMNVVSVMPALANIVHTWPLRLLL
PKEGDQVGFGRLMRFARGYVDTRLDPKTPRAQDMMQAHIDSGMSKNDLIQQVFLSIIAGSNSSAHALRMTLLSLITSPPA
YNALIDEIRRASPTVSSPITWAQAQTLPYLQAVIREGLRMWPPVGGLGFKTVPPEGDHINGLFVPGGTEIGQGFHGVGRS
KAVWGPDADVFRPERWLNAPEDRLKEMTDAVDTHFGYGKYSCLGKPIAMMELHKAVFELLSDSSYDALTSAW*

>9493|jgi|CYP5168G1|[Trichoderma gamsii T6085]Trigam1
MEALELCRAHREALLIAVGILSGVVIHVTIFIKSEWHLQAPHIFLQFCALYIASPILANILQASLAGDIFHGITTWAYGY
LAGLVTSILVYRTILHPLTTAGYPGPWYAKVSKIWHVWAARNSKNHLVLDELHKKYGAFVRTGPAEITVFHPDVFMAVDG
PRSECAKAEWYDIIHPSMSLVTTRYKPLHAARRREWNSGFTTKALLEHEAKILKYVDKLDQCIEADAKSGKITDMRNLLL
WFGFDIMGEFVFSKSFGMLETQKWHHIIVRLQRALSLLGPMTPLPWLVHIAFDLAPRVSVLKDWFDIIAWCQSQMRDRLI
NGSSNQSQDLAYYLMEKDAEGRDAFESEKFLWAAGDSLLAIVAGSEPTAVALIAVLCELGKHPEHTDQIYEELKDVDALD
LKTLVTLPHLNAVIKESLRLHPALLTGGNRKTSDTGLTIGGRFIPPHTTIVAPRYTIGRLEDCFEQASEFIPERWTTRPE
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>9626|jgi|CYP5928B1|[Trichoderma gamsii T6085]Trigam1
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SKMYIVSSPQLLQAVHRNKAFSMDPLQIAFAEKMVGFGPNLAHVMRHVPTDGSVTWLQDQHKPYDLLAPGPALYKMNVCV
LESLFGVLNQVDASFETKTLYLWLRETFTIATTKALFGLDNPLINNPSLHDDLWEYETAQQQLLLTPFPSILVRKGYMAR
RRLQESLRKYFRNGSDENSDVSMVVKQRATTNRRWGLPIDDVADHEVGLLFVAVTNAIPTMFWMVVYIFRDPRLVADLQE
ELSKVVSEARGEDGKTREFTLDVSTFSTACPLLNSVYREVMRLTNRQMNTRTILNDVMLNYTPKDGGEPRKYLLRKDVSV
LMPSMTLNFAEETWGKDSHLFEPRRFMNLSREQERLKRRAANPFGGGKHLCPGRHFAYAEILGTVAALVLGFDIETPEGD
RLSVPRLNNNLSEAVAKPLQEDQQAYINENSAPQYLPKYLGLYINRLFHKPMDSFYQEIISPINGRAITKVAFAGKEDTV
LALEAADKAFNSWRAVSTLERCKIMRKVAQIVRDHAEELAALDAWNIGSPISIMRAEVEYSAINFDLFAGLAPAVTGETN
RLTDDIFHYTIQEPLGVVARIIPYNHPVLGMAIKIVTPLVMGNTVIIKVSEQAPLSAFRLMEIVSDLFPPGVINILAGGR
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>9631|jgi|CYP620S2|[Trichoderma gamsii T6085]Trigam1
MASTILYQALIALISFAIYHQLFRSKKKNLPPGPKGLPIVGNVLDLPPKGVPDYIHWKSVTDKYGPIASVTIMGRHLIFI
ADKQDAQEILDKKSSASSGRPAFEFSKYSGFGKMIPIHQQTREFKVHRKFMHKGLGTKLIVSKHADILELHTGLLLQDTL
KAPEQILRHLEIHADAVMLRILYGYNTSPHGDDPLVKLSDHVVANFFRACDAFGRLIEYLPAVKWLPDGLPGTAFKAEAR
QHNRNASVYAEEPYQFARRQLASHKNTTSFIARLIQEHTTDAGELNEADAHAIKWSAAGLQVGGSETTVTVTRTFILAAI
MFPEIQQKAREEVDRVTGGTRLPVLADQEQMPYISAIFAEALRFFPTAPLGFPHAMSEDMTYKGYDLPKGSILLPEIFEF
CHDPSIYRDPYKFDPDRFLEPRNEPSPFWTVFGFGRRICPGRHLADATLFLNIACLVAFFDLSKIVDEQGNVMEPKVELD
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>9846|jgi|CYP618A4|[Trichoderma gamsii T6085]Trigam1
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RIMVGPLSKPNVRKMLPIFQDKAKELSDILDKAIEGEDRGVVEVESLFNRTAFKVISTALLGRDITNFRSKSSQLTFEQS
YKGILDPPFLGKLIMFINPFIPLRWLPVEANLAFIRANTSMRTMLAELIQERVQQMRLQQSDEKPEKKDFLTNMIEANFS
EGKGVSEQVLIDTVVQCISAGHETTAGTLTWITYALIRYPEIQKRLRQEIVSAQQKQPELSAAAIDSIPYLNNVVSESLR
LYSPALSAPWETGEDVVIAGVAIPKGTTVTTITAMIHYNPSIWGEDVNVFNPDRWDAVTGAVANPFAIEAFINGPRTCPG
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>10068|jgi|CYP65A8|[Trichoderma gamsii T6085]Trigam1
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LKYGPIVRVAPNFLSFNHPDALNDMRGHRKAGQPEHGKDPIRRVPNVHNIIGANREDHSRFRRSLAHGFSHQAMLEQEPI
IGGYIDQLMDRLKRDCGNGTQQIDMVRWFNFTTFDIIGDLSFGEPFDCLQNSDYHPWVSLIFQSVKNLVFMAAIRYFQIA
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AAYYLGLHPEVQAKLAQEVRSNFKSAEDVNITSVQHLSYMLAVLDESMRIFPPVPGGLPRYTAKGGGMIAGEFIPESAHV
DVWQWPMYHNPNYWTQVEDFIPERWLGDPKFKDDKRDAFQPFSTGPRNCIGKNLAYAEMRLILARVILEYDITLAEGTEG
WDKRGRSYTLWEKGEVNVYLTPRKVE*

>10094|jgi|CYP5080B6|[Trichoderma gamsii T6085]Trigam1
MLTLRFVVLTGLFLLLARLLFIIAKSFSSSTRHLPGPFWARFTRLWYFKRVALGGFERENIALHRKHGPIVRLAPNMFSI
DSPESVNTIYGIGSKLPKSDWYDGWKHPSPDAWTLFPDKDIKRHAQTRRVFQGLYSMSSLVSYEKYVDECADILLNRMSI
CSKRREPINMGHWFQCYAFDVIGNITFSKPFGFLDRGEDVSGILQALNKVFAYSTLIGIFPSLHPYIYAVTSALGIGGAA
GRTYLIRYVKELILQRKTERDLKDEKGIGNAHGMPEDFLEKLMVKNKDAPAKVTDYHVFMMSMSNIIAGSDTTAISLSAI
LYHLLKYPDVMSKLRDEIDQSTNEAGQVHLSFKESLEMPYWQAVMKEALRLHPATGLPLWRDVTEGGLHLNGQFFPEGTT
IGINTWTAHYNEDVFGTDAAVFRPERWLEAEKEGGDRLAQMNAYYFPFGLGSRTCIGRHISYLEMSKLIPLLIRNFDFEL
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>10105|jgi|CYP65A6|[Trichoderma gamsii T6085]Trigam1
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DQEPIINRYINTLLTELKARCANHEKVDVVRWYNYTTFDIIGDLAFGEPFYCLEKSDYYPWVALIFSGVKNMSFISVCSK
FGKLGMLLALLFVPKDLPAKGREHRRLSIEKTRRRLDSGSSRPDFMTALTTTRGSAEELSFEELVSNASLLIAAGSETTA
TALSAATYYLGIYPETFKKLAAEIRSAFRLEEDITLTSVQHLNYLQGVIDEAMRLYPAAPGTQPRIISPGGDVIVGKYVP
AGTIVGVWQWVNHHNPAHFRDAESFIPERWLGDARFENDIRDVFMPFSVGPRNCIGHNLAYAEMRLILAKVVWNFDIELS
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>10292|jgi|CYP5791A1|[Trichoderma gamsii T6085]Trigam1
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IIRINPNEVQIHDPEFYTQIYAGGPNKRNRYARSVSGNGSPGSMASAVSHDLHRLRRSSLNPFFSKAAVLRLEERIQSRV
RILCERFSGFLERKEIVDVSVAMTSLTLDIITEYSFGESWNLMDRDDLSYDFIKVMRGGFETLQIRKLFNSVINLIPPKA
LDRLPKEETETQRLADEALVLITAGSETTSRALATIIYHVLENPDICTKLQQELDIAIPDATMEVSYSTLEALPYLTATI
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>1191|jgi|CYP526K3|[Trichoderma gamsii T6085]Trigam1
MALTISSGGAWVVGIVCVALYMAYRRILPKPIPDIPHNKDAAAKMFGDVPEMMGYVMRTQRIFSRRMQIANIPIVQAFIK
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AANALMKLWKIKCTIAKGRPFSAHHDVTFSALDSIFASSFGLLEDETNTIQRIKALDNFEPVFPDDVDEPFAFPEGHTPD
IFSAVLTLANSVTDTQLSPAPVLTSWVIRKFPYMRKAKSIKDKYIRDKVEESVRLIEKDPTIKPKSALHSVLLRERDVAT
KEGRQPDYRKGAIADEFFGFMMAGHDTSATTIAWGVKMLTDNPAAQSRLRDALRSAFPAAVQEKRDLTYAELSNAQIPYL
DATVEEILRHSNTIAFVVRQAQQDATVLGRHIPKGTNVFLMANGPGYLEPNMRLADEARSPGARQTARSALTRAWSDDDI
DRFLPERWLETDPDTGAEVFNTMAGPSLAFGLGLRGCFGRKLALQVLKIHFALIVWNFDMLPIPEKLGGYEAVQRFAREP
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>2331|jgi|CYP617A8|[Trichoderma gamsii T6085]Trigam1
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RRNLMPAFAFRHIKELYPLFWDKARESVQAMMKECGQEGQTDMEISEWASRVTLDIIGVAGLGKDFNSIQDENSDLVQTY
GYLFKPRPPAKFLIMLATLVPSWLIYRLPLKRNREVNDAARKIRAMCRDVIREKKEKMIANKERTDVDILSVALESGQFS
DENLVDQLMTFLAAGHETTATALTWAIYFLCCHPEMQTRLRAEVRERLPSTDDAGAKLASQDIDRMPYLHAVCSEVLRFF
SPVPVTIREASYNTTIQNVPVREGTRIVLAPTAVNVDPKLWGADALEFDPERWISKNKDSEESNRRAASGGADSNYSFMT
FLHGPRSCIGLTFATGEFACLLAAWIGRFEFELVNKEEMDMEKLDIKGNVTARPVKGLHVKARAVPGY*

>3535|jgi|CYP584R1|[Trichoderma gamsii T6085]Trigam1
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GKEIELQELVLRFTMDMATDFLLGESTNSLLQEQHDYHSKLKGFKDSIQYAQDRIATHIALGGLAILKPDPKFQQHVDVV
HKFVDDLVHDALRGNSSDSKSLPYVLLRAIIEDTQDPIRIRNEILNILVAGRDTTAGLIANVFLMLSTRPQLWAMLRDEV
AQFQNQPPTFDNISECRYIRYTINESLRLYPPVPVNSRVAICDTVLPRGGGLEGKSPLFIPKGTPVVYNVYGLHRKQEVY
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LKRSK*

>4116|jgi|CYP6001C27|[Trichoderma gamsii T6085]Trigam1
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DSSSYLDLAPLYGHSQEMQNTIRTFKDGMLKPDAFADKRLLGMPPGVCVLLVMFNRFHNYIATNLAAINEGNRFAKPPSH
LQGDAAAAAWKKYDEELFQTARLVTSGLYINITLVDYVRNIINLNRVDTEWTLDPRQEAGTDVGTTKGSERGVGNSVSAE
FNICYRWHSCISEMDEEWMHNFYDELLGEDLGTMDMRKLMMALHKYMMSIPKDPADCVFGGYTRGTDGRFDDDDLVDCIS
TAIEQPGGSFGARNVPRILKPIEMLGIIRGRKWNLAGLNEFRKHFGLKSYDTFEEINSDPQVADSLRNLYQHPDYVELYP
GMVAEEAKTPMVPGVGIAPTYTISRVVLSDAVSLVRGDRHYTTDYNPQYLTHWGFNEVAYDLKVNHGCVFYKLFIRAFPN
HFKQDSVYAHYPMVIPQENRKILTSLNRVHRFSFERPRAATPGVEVTSIGGFKHVFSNADKYNIQWKEGLEILTGRNGRY
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SEQELYAALAAIFTTIFLDIDPVKSFPLRQKTKEVADALGASIETTIKYTKSFGLRLFTGSTKDDPLSTAGVNAVKGLAK
SGLNAHDIAWGLILPTAAATVPSQGRLFAQALDWYLSTEGAPYVDDIHILANQEPSPEVDSLLLGFAMEGVRMAGAFSMH
QVSTGTDTITEDDGRRVNVNQGDKVFASFVSGARDPTHFPNPETVDPHRPLESYIQFGAGTHTAVGKEVSQLALVELFRA
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>4146|jgi|CYP526N3|[Trichoderma gamsii T6085]Trigam1
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FLFPFFRRPTVLVTDYREVVDICSRRSKEFDRGNRNKECIGVVAPNFHFTMQTADPRLQFHKKLIRDLMTPKFLKEASAPQ
IYEKATALIALWKLKAFKSYGRPFSVGNDLYSATLDMICAVAFGMDDTSSALQHEISHIQSINPTFPIVKGEPACFSSAP
VTPELEGLFNIPEMVSIAQASPFPSLSQTLALLNPKHARAHWNRKTLIMRQTDKSLQKLTLGGSSECKSALDQLLWREMN
AAKMAGRLPNYYSPVIRDELLGYLLGGHDSTAATLCWWVKYISAYQSVQTRLRDALRQAHVDAYQTSRLPTIDEICDASI
PYLDAVMEETLRYASVATLIVRMSTCDTQILGYQIPKGTDIMMSLTGPSITEPGLPIREMSRSLESQESKDKVLPWEEDI
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>4906|jgi|CYP52X6|[Trichoderma gamsii T6085]Trigam1
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KYGRTMGTFRFQSPFFRETLVTIEPRNIQTILALKFKDFGLGINRTDNFEPLLGHGIFASNGKYWEHSRALLRPQFNRGQ
VSDLSLEEDHVRAFMTVLDRHVGPDGWTSLVDLQPLFFRLTLDSATEFLFGESVNSQLEDHQPNSDDDVGFAYAFDKAQY
TLAIGARLGPHYKYSHTSEFKRMVKSVHDFVDYFVQKALAEGASEKWSTDEGRYVFLKALAKDTQDPEELRSELLNILLA
GRDTTASTLGFFFYTMADPRYSHIYQRLRTIILDEFGTYSNPREITFEKMKSCQYLQWCLNEILRLYPAVPMNVRTAQVD
TTLPVGGGKDGQSPIFVTKGQDVAYSVYLMHRRKDLWGPDAEYFKPERWEARRPGWEYLPFNGGPRICIGQQFALTELGY
VVVRLMQRIDSIDGSQAGPVSHGLTLINSPGEGVNLKLHFVE*

>857|jgi|CYP505A25|[Trichoderma gamsii T6085]Trigam1
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EGVHDGLFTAHTDEPNWGRAHRVLVPAFGPMPIRDMFDEMEDIAKQLSLRWARHGPNHPIPVSEDFTRLALDTIALCSMN
YRFNSYYQEKMHPFVQAMSDFLAESSRRNRRPGFAPNFLYRAANEKFFNDIAIMRDTANEVVAERKRNPSDRKDLLAAML
EGVDPQTGEKLTDSSVTDQLITFLIAGHETTAGTLSFAFYNLLKNPVAYRKVQEEVDTIIGREAPKVEHISKLPYISAVL
RETLRLSAAIPAFTVEALEDTLIGGKYLVHKGEPITCLLAKSHLDPLVYGEDANDFKPERMLDAEFARLQAAFPNSWKPF
GNGKRGCIGRGFALQEATLAMAMLFQNFNFTLDDPNYQLEIVASLTIRPKDFFMRASLRHEMTPTALERKLGGKGAAGDH
HADTKAAGGAAQGSQKPLAVYYGSNSGTCEALAQRVATDALSHGFKVTDLAPMDFANQKLPKDRPVVIITASYEGQPPSN
AAHFVSWIESLKGNELEDVSYAVFGCGHHDWVQTFHRIPKLVDSTMEERGATRLVPLATTDAADRDMFSDFEAWEDESLW
PALKEKYGAAADSAEGVGGGLVVDVSFPRKSTLRQDVEEALVINAKTLTASGPAKNHIEVQLPTGMTYRSGDYLAVLPLN
PEDTTARVFRRFKLSWDAVLTIHSEAATSLPTNTPISARDVFGAYVELSQPATKRNISVLIELAQDEELKAKLEKLAGDD
YQEEIGAKRISVLDLLERFPSLELPLDSYLAMLPPMRVRQYSISSSPLADPSKLTLTYSVLEQPSLSGQGSHFGVATHFL
ASLTPGERFHVAVRQSKAFHLPTDAENTPLILIGVGSGLAPFRGFVQERAAMIAAGRKVAPALLFYGCRSPDVDDLYAEE
FERWEKLGAVEMRKAYSRDTDKSLGCKYVQHRMAHDREELYKLWDQGAKVFVCGSRDVGKAVEAVCVQLVKERGEADGKD
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>2009|jgi|CYP505P1|[Trichoderma gamsii T6085]Trigam1
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PLGPICQFSIGGELFIFVASAELVTELCDESRFHKVVAAELDKLRYVVHDGLFTARNDERNWQVAHRILMPVFGTIKIRD
MFPEMKDLAQQLCLKWARYGEEYVIDVTSDFTRLALDTIALCSMGYRFNSFHNGVVLHPFVHSMVRILKESSTQASLPHF
VNSLRKRSQHRYEKDTAYMRGLCRKIIQERKQQKGSQFHDLLSALLDGRDPNTGEGLDDDSIIDNMITFLIAGHETTAGL
LSFTFYYLLTNPRALEKARQEVDEVTGGEPITVQHLSKLPYLNAALKETLRLQPTAPGFILGSDKDEVIGGKYLIPANVS
VTVILSLLHQEKGVYGEDAAEFKPERMLDESFNKLPPNSWKPFGNGMRGCIGRAFATQEALLIIAMLLQNFVLEMADPAY
ELQIRETLTIKPENFRVKAKLRRGGNATDFQSELQSLGTQAKGVRSDSAVSMSSAQADKGDKKPLTILYGSNSGTCEALA
YRLASDAALHGFYARKIAPMNAACNDLPKSEPVIILAASYDGSPSDNAVEFFEWLNKAEPESLKGVSYTVFGCGHRDWVA
TFQRIPILIDDLLEKAGADRFADRGLADAAVMDLFVELEKWTTDVVWPAISQNEGGRDDDGETRLINSLLKLEVSQPRQL
RQYSQLVQATVTESRSLTTEAALGKKMHLDMKLPPGVSYHPGDHLLVLPVNPPRDVKRVLSRFRLAWDTVVRASGEQYAH
IPVETSMTAHELLSSYFELSQPATPRDIRVLAAAATDQKTKHLLSNLATASYAEGIHENRVSLLDLLEEFADIPLAFGTF
IALLPSLRLRTYSISSSPSWEPNHASLTFSILDEPPTPPRTKSFLGVASNYLANLTPGDLIHVATRPVKNIFQMPADVSK
VPIIMVAAGAGVAPFRGFIQERASQQQNGTELAPAALFFGCRSSDDDLYHHELDYFEDSGVVQVFRAYSREEDAGSQPST
RKGYVQESLLAEKQAFLRLWNAGAKIYVCGGVRMASGVKEAVMKLVYMAEQDATSKSFTPQEWFKRFEKARYAAEIFAA*

>9837|jgi|CYP535D11|[Trichoderma gamsii T6085]Trigam1
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SWIAQAPFIGRFVAPSAEDSKGFGRLMAACFRHVDERLQNPTDKKSDMLASFIRHGVIGDDLRSEALEQIVAGSDTTASG
IRCTLLHVITNPRVYAKLQKEIDEAVQNGKTPQDGFITHAEAKQLPYLQATIREAMRVWPPVANIFSRDVPPGGDTVNVD
GKDVFLPGGAYIGYSALAMHRSTEIYGDDAKAFRPERWFEEDKDKLATMLRTNELVFGYGKWQCLGKDVARMELEKVVFE
LLRNFDLALINPTKPWTALNNLGLFTISDMWVQSRDRDFTKPCLGTASISQTAQSPETTIMPLVDPITMSSALAKDASAQ
ATDSKPKATIAAVPTFNNALSKGVSFGRVAVLLGLLAAQFNELVAQPALTLQSAVPVVAVVQVAYVVLCLPAAGSQQAKG
VKKPRPGEKKKPEAAGTSSLVTALLALVLTTITTPVIHALFILFGAPLLDHFLETFLCAAHFALLGVFPIIYARGVDNQA
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>38|jgi|CYP5391A3|[Trichoderma guizhouense NJAU 4742]Trigui1
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QPWLWSAKAIRRREDACHTGFLTVLKKQIEAGTESYCFGIDVLNMQKKMGLDDRLTLDILKGIIDVGSETTSSMMQSIIK
VLAMNPEAQKKAQEELDRVVGPSRLPTWEDSPSLPYIRALIKELHRFAPLLYIGVPHASTEEITYKGFTVPKTTFLLPNA
WALSRDPERYQDPDTFAPERFLGDDLDSYTSAKLGDYLKRDHINYGWGRRLCQGIHLAENSLYMQVSRVLWAFDIATIPG
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>420|jgi|CYP528A8|[Trichoderma guizhouense NJAU 4742]Trigui1

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YLGWRRKSVMGLFPTLTKLTMRSNLFEWIFRDVWDLKYVATPNFRSFFPDVGKRISRRIKTNLKPNAPKDNRADLLADLI
QLHRDKSDFTENYLRKMAVTNFGAGHETMASTLTSIFTMIGTHDDVQKRVRQEIQDAMDASSYAGTTQLQYTRAAIRETM
RLHPVLSMSLPRRVPDMGSHIHGYFIPGGTTVGCNPVALHRNANVVIGPDPDVYNPDRWLSGETLDIRLMDRYSLNWGGG
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>664|jgi|CYP559C3|[Trichoderma guizhouense NJAU 4742]Trigui1
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EIQHAINTTLGNDTENWKSFKLWNLWLEIVPHVTNRLLIGPEICRNKQFIDGMVNFTNDVVRNGFLLQVIPKVLHPIFGR
IFGMFNYLHWRSANAPAQPIIEKRLNAMLKKAAGDPEYKDFTPPEDFITWLIRQALADGKTFELDPIVISKRLLPIEFAA
IHTTVLTGQLWMQDLLTSDPETGILDILRAEINANKPESGPWTKAAISNLVRLDSSIRESQRVSNFAVTMIERKVVADNG
LYNPELGWTLPKGSFVTVNLEGTHHDQDLYKDPHSYNPLRYSQVREAWDAKSDEEKKSEPEEGTRIRGLGMVTTSPQHLA
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>724|jgi|CYP5388A1|[Trichoderma guizhouense NJAU 4742]Trigui1
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PRKFANELKPFKRHEASGMKALADRHLGHYTTIDHESDVMLGAIKIDLNRNLGLFVGDVEQEVAHCFKTKFPSCEEWTPV
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EIREVTRDTNGVLQKQHLTQMRKLDSFMKESQRHSPPSVATYQRKAMIPIDLSNGFHIPKGTIVQCNTNILDETPAAWGA
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VNVLADPTVKVLFKKL*

>809|jgi|CYP561P2|[Trichoderma guizhouense NJAU 4742]Trigui1
MPPTTNTSFVMSVMENISHVPVKDAAGLSLFLIFVYCLSISIYRLWFHPLARFPGPSLLSVSYFPFMYTYSIRGKWMRRA
ERLHVQYGPIVRVGPNHLAVDGSVAWTEIYANRGAGKSEYPKPRGFFFNGDETSILAAPRDVHRRLRRHLSHAFSESALV
EQEGIIASYIDLLMARLSERAGKGSKINIVDWLNFAAFDIIGDLTFADSFDSLRNSGYHPWVRNIFKNIQAASYTWFATN
YPPLQTVMRTFTSNETVKISQYNQQLAVEKALARMSLGPEPADGRRDFMTYMLRKTRTGEEGMTQEEILATAPVLVTAGS
ETTATLLSGFFFYLPSNPTAYWRLTEEIRSTFNSEDDINMRSASSLPYLQACLEEALRIYPPAAETPWRVSPGDMLLDQF
VPAGTHISVSQWATYRNPKYFKDASSYVPERWSYKIVIVTEHGEVEQKFLESATQRNGTL*

>831|jgi|CYP504B10|[Trichoderma guizhouense NJAU 4742]Trigui1
MLSSAASAVLLERILRDSMQHLLIGALSLPIIYVLVNEFIRKTAKIPHMNGPKGLPLLGNIWDIRVNAAEKYRQWAKQYG
DVYQIMLGNIPVVVVNSASAAKSVFGSNAQTLSSRPELYTFHKVLSDTAGTTIGTSPYSDSLKRRRKGAASALNRPSVAT
YVPHLEVESRDFIKELFDYGNAGQTPVDPMPMIQRLSLSLALTLNWGTRLKTQKDDLFGEITHVEEEISKFRSTTGNLQD
YIPILRLNPINFHSSKAREMRDRRDRYLTNLNNALDERIAAGTHQPCIQANVILDKETKLSKDELTSISLTMLSGGLDTV
TTQVAWFVALLSQHPEIQEKAIVAIRKHYGEDQPMCDENDDQKCAYVVALVKEALRYYTVLRLALPRASVKDLPYQGTVI
PKGTMVFLNAWACNMDEKVWTDPEVFRPERWLEQPDAPLFTYGVGYRMCAGSLLANRELYLVFIRLLNSFYIKKYDDVDC
HPVTGNADPKSLVALPPRFKSYFVPRNDTALRAAVEKAS*

>917|jgi|CYP550C3|[Trichoderma guizhouense NJAU 4742]Trigui1
MADSIVRDAFASIRGQDAPLSATSYLVLLAALLVASTWVYSRFQKNEPKNDFPPWVPLEIGVSSALIQVGGTASNIFSLI
SRGKGSLFGLTSRHQILHNLDNIDRVFTKGPHILSADVLGLRLGIRVFGANLTQDVCQKFMAINRKLTQIIERYFVNEAS
ATSSIQAAHIPEKVAQLLSFSSDAKKQHQWERCASLRVISADSKGQPGAVEADLELLMRDFGACVSIPRLYGQDFLDRNH
NLLEDFWKFDNNAFPLLVIGVPTWAPIKSFKEALAARTRLHDALEGFYNRLNQHKHGLAVDFDADMSDVSAAAMERNNCL
AEHGVPMRARAELELGTFWGLNANMQPMVFWLLLYIHSTPGLLDELREEVSSCVSLSTATNPPQITAFDFSRLSHECPLL
KSCLFETFRLVEEPTSIRYVSKPLTVPDGNIEHHFKPGTWLSAPHALLQSDPSIFPEPDKFIPDRFIEADKETGARVARY
GKLKPWGSGSGVCKGRTFAEKEVMGIVACFITLWDMDNAEGSWKLPSMIPGTGVKRPQKAIRVVIKRRSFA*

>981|jgi|CYP61A6|[Trichoderma guizhouense NJAU 4742]Trigui1
MATIVEGSLPLSVETTANVTQHGASKLAGGFLSSYSGWQIAITALLSLVVYDQLLYLWQKGSIAGPAFKIPIMGPFLQAI
HPKFEAYLVQWASGPLSCVSVFHKFVVLASDRDLAHKVFKSPTFVRPCLVPMAINIMRPTAWVFLNGKAHAEFRRGLTGL
FTNRALSTYLPVQEKVYSDYFDRFVEHSKANGGKPTKFMGWFREINCALSCRTFFGDYISQEAVKRIADDFYLVTDALEL
VNIPLSIHIPGTKCWRGKRTADAVLAEFTRCAAACKANMASGAQATCIVDQWVQHMYESKKYNEDIAAGKEGIEKPTNLI
REFTDEEIAQTLFTFLFASQDASSSATTWLFQILAQRPDVLDRLRAENLAARGGDKNRPFELEMFESLTYTNAVIKELLR
YRPPVIFVPYLATKAFPVTPDYTVPKNAMIIPSCYPALHDPVAYPNPDTFDPERWITGDAETKTKNWLVFGAGAHDCLAR
RYVPLTMAAMIGKAALELDWVHHATPRSEEIRVFATLFPMDECPLVFTKRE*

>1087|jgi|CYP61A1|[Trichoderma guizhouense NJAU 4742]Trigui1
MDALNATRASSVLTSVLANSKYVSANIPPQVDYVIDTIAAAGPWTWFFTILAICVVYDQVSYLMNKGSIVGPAWKQPFIG
PFLQSMDPKFEEYYAKWLSGPLSCVSVFHKFVVIASTRDMARKVLNSPAYVKPCVVDAAYKLLGEDNWVFLDGKPHVDFR
KGLNGLFTRKALESYLPGQEEVYKVYFKRFLDITKENGGKPVPFMPEFRELMCAVSCRTFVGHYISDEAVKKIADDYYLI
TAALELVNFPIILPYTKTWYGKKAADMVLAEFAKCAAKSKVRMAAGGDVTCIMDAWILQMIQSERWREAEEKGLSTEGMV
KPAPMLRMFRDYEISQTVFTFLFASQDATSSAATWLFQIAAQRPDVLDRVREENLKVRNGDAYAELNMDQLESLTYTRAV
VRELLRYRPPVLMVPYKVKKPFPITDKYTVPKGAMLIPTTYMALHDPDVYENPDYFDPERYYSGDAEVKGAKNYLVFGTG
AHYCLGQVYAQLNLALMLGKASVQMNWTHHATPLSEEIKVFATIFPKDDCPLTFEERK*

>1638|jgi|CYP5811A1|[Trichoderma guizhouense NJAU 4742]Trigui1
MTNYQYNSISHRIVLTSIMTSHFSTSMMATYILAIGIFLFILYTIFSRQKLPRNIPRIPIWVTIYDTYYGTSRVNFYNRY
VRDQAEKHGAVIIWHLGRWSVHITKPEYLMQMFRDEASFAKGGSYMKVPWGVLGQLFGQNVIDSTGHIWKQQRNILLPAI
KRQFNIAYMKQKSSELRAILWQDRETQDKDCTIGINIEDHVQHWALSICCKYFMGINLESVPDIDNRLTRVLTARKKRFM
GGITMLFPTLQRFPWLFPSDRRAFRLVKEFEEIVVEIGKLGPDSESDTDDNTIKGRLNSARRDGDISEFQYRSNMKQLLL
AGFEDIESVLLSALVIIAKNPVIQSTLHAELASLVPTTYSLEDLDRLPVLLTVILETFRLYPPFPSLTNRYTTQDTLLGD
NINLPAGTWVGWNAYAVQTDARIWGSDALKFRPSRWGEDIDSINAMFRAQQAKAVFIPFSTRSRTCLGVSFTLMQLKIVL
YELLNELEWGICNDGAPTLRQIYPQGKIAPNSPMTAKRFNNFRGR*

>1859|jgi|CYP620B15|[Trichoderma guizhouense NJAU 4742]Trigui1
MASLVVGQVALVLVAFLLYQLIFRNKSKFPLPPGPKPLPIVGNIRDLPPPGTPDFRHWLPFKEKYGPISSVTLLGRTLVI
IQDKEAAVEYLEKNSSKTSSRPQFEFANMCGYGTMLAFMDYTDLFRQHRKFVHHQFGTTALVSRFNGVQEIESKRFLMRI
FKEPESLFQHIKTEAAATILKIVYGYNVEPFGADPLVRIINDVMENASRAMLPFKKPVEIFPALKGLPDWMPGAGFKRLA
REWLALTDASAYIPYNHVKKQMENGTHQPSYVSELIQTHGKGKNMEPDEDTKEAIVRTAQMLFTGGADTTVAAIMAFVLA
MIHHPEVQEKAQEELDRVVGTDRLPTYEDRPNLPYINAFMKEMLRWFTVAPVNTAHKNDEEIIFRGYRIPKGSYTVASNW
WFLHDPKTYANPMAFDPDRYLAPRNEPDPTGMFGYGRRICPGRFFAQENLFITVSQTLAVFKITHAVDENGKPIEAVLKH
TPGLIDHPQEFPYSIAPRNEKCVELLKRLEVESPWEESNAEDLEWGSFTKYQEEHRRSVAERRSKVSN*

>2021|jgi|CYP570C9|[Trichoderma guizhouense NJAU 4742]Trigui1
MLSHTAQLAHRVSSFVDHVGSFFSAISPVSVALFALVVIVGWFVSSSTWQYYRLRHFDGPLLAKISNLWLFKSVDSGRSY
LDFWEVTQKYGTIARVGLNDLVTDDPIFVKHMCNVKTEYRRSSWYDGMRFNPTSNNCLSTRDEAAHSALRSKMAAGYAGR
DVDNIESKMDNNVRAFMDLLSRYADRKAPVDLGRKVQYFTLDCISDIAYGAPFGFVETDTDVYEYIETTEKNLPMVMVVT
VFPWLLKLLNNPILKGLLPSAKDKLGFGRIMSIARDVAAERFKPDVKAERDMLGSFIRHGLTQTESESEILLQIAAGSDT
TASAIRSTMLELCANPEILRKLRQEIASANIASDVITDSEAKVLPYLQAVIKEGFRIFPPIAGLMSKEVPPQGDTWNGLF
IPGGTRVGYSIWAITRRQDVWGEDALKFRPERWLNISSDKLKEMESTLDLIFSYGRWLCLGKSIALIELNKVFVELIRRF
DFTLCDPDKPYKIFNHGVFAQSQIWMDVTRTKKTQ*

>2050|jgi|CYP5049A4|[Trichoderma guizhouense NJAU 4742]Trigui1
MEVFKIISSLAAGHPVAFALWSLVSAFAFQVLQRGYRHRRFYRNLPGPPHSALWGHLKVLGEVSATIPQNSHPQAYYTEI
ARKYNLEGIFYLDLWPIADSSVVLTDPTLMEEVTVRNPLPQHTMAEAFLSPIIGPNVIATVNGPVWKRLHNAMAPAFSWS
HIRTLTAVMVDECALYRAALAKYAKSGEVFSVEELSARLIFDAIGRVVFNFRLHAQTADSPYLNDLRELVDLAHNQTDLV
ASYNPIARVAKWWKKRKVLGRLHPLILGKIKDRLDLLLNEGITPSRKDPSSILDLMLREHILQSESSGGAKTAKQISLSD
TDTQLLLTNIKGLLLGGHGTTTDSLCYILMLLSQAPTALRKMRQEHDDVFGKDFDGTVELLLDTPAKLQDLPYTDAIIKE
SLRLFPVGFTVREADAGAKLTVQGKRYPIDRHQGVVLNGHDIHYNSGFFPNHTEFRPERWLDSEEGVPRSYFRTFGRGPR
ACLGQNLAMNELKVILLMIVRDFVFECAGLEPNAKPKTSYTNLDTIFGDIIFQELGIEARPRGGMMMTVKRNI*

>2244|jgi|CYP6332A1|[Trichoderma guizhouense NJAU 4742]Trigui1
MMLNEYSVVLPVVILCVSLYLAFRKQLSLPVVGRLTSPGLFGFWFPGVVANILNTREVLEKGYRKVCLWLRDKICVRICA
YWFVLQYSLNDKAFFIPQLEANNILIPPAWIKAYKRAPTSDLNLDGAIEDNLQIKYLLGPQIRQNSYHIEWTRDSLTPLM
PSILDWLHEEITDCLDQVLGKDNHDFQKVKIFPFSLSLNCRIAARIVVGKPLCRDVKFQYLCEQHSQLLVVLSMILKFLP
DWCKPLVVRMSPLRGVQRQIIDLVRPLVLESYRKLKQSDRDPKGTATEPPEGEQQSLMDSLVRTAVSRTPNLTAEENIVH
EITMRFLSILFLFSGSPTLTVANMVLDLVSEPRELYSDALRSEIASVIEKYGGRWTLENLKELDLTDSFIKESMRLRPAA
FTIAGRKVINPKGYTLPDNSATVPFGSYLTLPMYAIHHDQNHYPPRTGDGSDFDGFRFKGTEDNEAVPLVGSSETFLSWG
AGRHICPGRFASAAILKMCLAELIRKCDFKPRNRISDVTFANIYVPSKTLTVEMRRLNSE*

>2347|jgi|CYP65EP1|[Trichoderma guizhouense NJAU 4742]Trigui1
MFSSDSTQSVSALTLWLTPVVLYVVYAWLKVITGAFFGPLSKIPGPKLWALSRIPRMYMEWQGEEAHGVLALHKKYGPVV
RLAPNEVSFAGGFQDWKDIYGYRKNIGQEKHPHRSSASYWPAANGVPSMIQAMRDDEHARLRKSLAVSFSEKSMREMEPR
VKSWARLLQTKLAERGDAAVDMVELFRCATFDAMGDLALGDDLQMLRNGRLSDYVHAAFSGIRTIIRLRVLSTYNSFTRW
LVKDCFLQSAFVKKAAMENLRYSADRMDRRLQDPARDPPDLWTKPLTGIDGKMSLDEYHSTAQLLMTAGTDTTAIGLTGT
LYFLLTNPDCLAKVTDEVRSAFSSMDDLNYEALAQLKYLDAALNEGLRLYPPVPTGAPRVTPFPGWSIGGYWIPGGVNVG
VPHYATSRFPAHFTDPDSFHPERWLGDEKFQNDRLDAVQPFNYGPQNCLGQAFAEHEMRLFMAAVLLQFDLKLGEGHRDW
FDQRVFSMWETKPLMCVATKVN*

>2350|jgi|CYP5189D1|[Trichoderma guizhouense NJAU 4742]Trigui1
MATMSDAWVGLPWAVQLIATCFVLIATVLITTYVNSLSHSWPAAAGKGHEPPIAPYWLPGIQHLAAFLRNPARIFRTTQA
KYKDSPFTLLMGGVKFHVFGSPSTAIHVFARSRTFAYEPVTMSMLENGLNLPVADRVHFQIGLDRANSKENEKGFVLQNH
NVWLRYLSGEPLDDLMQLFTREFHQVLEQYVDMKTRDWQTVDLYEVLRKVIFDTSVITFFGPRLAQIWGPTMWEDFCLFN
NATYIGVRTNLAYVLQPRAGRARERMLRAFEEWLKHQSEGDWPDEDKYWNEGWGAKMNWERDGLARQFGLSLRGRATMQA
SFLFAIVLNAAPMSSWFTWVAASDSDRLAKCRAESLKFLRPSKSSRFDHELEIDAAQLRGNNFMQTLWKEALRIGTAASP
ARVVMEDTELEGYVVRKGSVVLMPTALLHHSDLFPRSDQVDTERWTGEDAMVQQRSKSIRTFGGGMGMCSGRHAAEQELI
GLVSKIITLFDIEFEDSWKNKFHFDPRSLGIMHPAGPVMVRLKRREL*

>2379|jgi|CYP535D10|[Trichoderma guizhouense NJAU 4742]Trigui1
MEGIAGIPGSVLLLAGGLIGFFIIGRIVTYARLRSFKGPFLSNFTNLPHRKALFQQRCQEWYGEICEKYGPIARIAPNVL
ITSDPDVWIHVNNKPGYKRSEWYYTACRIEYRRDNVFTQTDNKKHEARRKQMAPGYSGRENPDLEQSIDQRLHEFIDLIR
SKYVSTSGNIVPVDMAKKVQFFTLDVISGVGLGKTFGMLQSDSDVENYLQSSEEGLHIANFGLAFSLSWITQARFLGKFI
APSPEDSKGFGRMMATCFRYVNERVENPTDKRSDMLASFIRHGISGDELRSEALEQIVAGSDTTATGIRCTLLHIITNPR
VYAKLQKEIDEAIRDGKAPQDDLITHSQAKQLPYLQATIREAMRVWPPVANVFSRDIPPEGDTVKVKGEDVFLPGGACIG
YSALAMHHSTEIYGPDAKAFRPERWFEEDKDKLALMLRTNELIFGHGKFQCLGKAVAQIEIGKVVFEIFRNFDMALINPT
KPWVALNSLGLFTISDMWVQVMERHA*

>2510|jgi|CYP642C1|[Trichoderma guizhouense NJAU 4742]Trigui1
MRYQVYSFVYNAVLNLARPTLSINIFPRKVLVTDPSMESILSRHTSETSLANVIFLIGRRVFDLSNETINAIGSYDPRPV
HVGEFSSASNARALVGQVSTAANKRLQSQPDVQETELGPWLFKLTSSSVASALWGPESPWVVDDEFQTAFMEISGSQMTL
LRPFSKYTAQAAHKARALIISKLKSFHFNNRDSRLRQIAHRINAVALSDTEWESNKDYFNVELLTSLGLLVTPSSMAVWM
IRHLLMRPDLLARVVKEARNPDILDAEGRIDVARIRESFPFLAACLYETLRLHMTAIPRLAKTDLDIAVPNSQPIHLKNG
DLIYLAMSSFNKDAQTWGSDASTFSPDKFLTNAGSLSASMVRKLRVFGVAGNLCPGRKVGFETILFVVANVLRDFDIENP
RGEDVAYPEPRTEDGFGIGFERCANEITVRLRRVA*

>2775|jgi|CYP540B35|[Trichoderma guizhouense NJAU 4742]Trigui1
MSTLFHLLGEQPSTAIEFEVSASLDFDDLQDLVASHFAIVEPRGVGFVSDDQFLTSVADVLAADGPIAISIDGGAVREIP
GPKGLPYLGNFTQIYPDHLGNHQRLFETYGKLFAVTTFGTTWNYTNDPNLTNIFFTESEFFTKGVIDGHPLHAFNLGDAG
IFFGSTDTESWRANHKFFPPALGPKAVKHYAPKLQDTIEDAFSVFDQLDKDGEAWNVFPYMLKLTSQAIVKLVLGMQVRH
FASPDTPLDEIVSMIIEILMLARKVNRYGSWYGSLPFGDPQKLRNVTKMIRERLDKKMEEVENAKVGAKELELQDAALEA

DNLIDFAVRARDSKGNRLSKDHASLGVTVIAGAGFSTTAALLSWLIYGLVFYEGMQDRILQELVDNDWNEDTVATPELTH
NLKFLDKYIKETQRRHNGSFQPGRTAKTDLILPGGYKMKKDSLVILALHHLHTNSKQWDSPLRFDPDRWDTEEVKNRTAG
SFQPFGSGARGCIGFNLALEEVKIFLPKLVYRYKFTLAKMDEAVQYDPNQVVIKPDNLYVRAERRVRWPAKSE*

>2782|jgi|CYP570E3|[Trichoderma guizhouense NJAU 4742]Trigui1
MPPLTIYLSNFCLIFLVAFLARRVYCWQRLRHVPGPTIAGWTIWWQLSNALSGRYHERLKEAADTYGPLVRIGPNQLLST
DPEVLRRMSAVRSGYTKGKFYSSGKIVPGVDNVVSLRDPAKHREMRALMAPGFAGKANEGFSFEAAMDRQLLSFISLLER
KYVSSGSNVRPVDMAEKTQFFALDAIGDISLGQPFGYLEKDQDLYQYNEINTTSLPMMNVVSVWPSLANLVHTWPLRLLL
PKEGDQVGFGRLMHFARNYVETRLDPKTPRAHDMMQAHIDNGMTKNDLIQQVFLSIIAGSNSSAHALRMTLLSLITSPPA
YNSLMDEIRHASPTVSSPITWAQTQSLPYLQAVIREGLRMWPPVGGLGFKTVPPEGDYLNGYFVPGGTEIGQGFHGVGRS
KAVWGPDADVFRPERWLVAEGDVLKDMINAVDTHFGYGKYSCLGKPIAMMELHKAVFELVRHFDFCIMNPETPIKTTASI
FLFASDFWVTLTERNL*

>2823|jgi|CYP618A4|[Trichoderma guizhouense NJAU 4742]Trigui1
MQYASIAAAVAAAVVAYLISTFIYNIAFHPLRSYPGPLLWRATGLFKCYHFLKGDMPFVVRELHVRYGSVVRIAPGELAF
SDTQAFKDIYVHKMVKWKGMYGFKPEHVQDLANVTDPVHHAFLRRHMAAGFSETALRNQESILVQHVDLLINQLRERGGG
GKVPQDMRDWFMWLTFDITGMLSFGAEFGGLRYAKSAEWVATLTDNVRVLMAMSALFGYVGATTRSILTYIFMSGLIPSV
AAHTQRTKDMLRERMDRKGAYDDRDYIIDGLININDHRVESNAVMLIMAGSETTSTALTATLFALLQAPEKMARLTKEVR
STFSRDEDITMASTLDKLPYLMACINESLRWYPPSVSGLARVVPNGGAKISGHYVPEGTIVAAWTWSVTRDPRYFADAYG
FHPERWLPGEDERFANDELDASPPFSVGPRSCMGKNLAMAEMRLTLARMIYNFDVTLSTPFDGDWFKGQKAYLVWDKPSV
LVNCTPVGES*

>2840|jgi|CYP5057C2|[Trichoderma guizhouense NJAU 4742]Trigui1
MTNKEEHAARRKISASPYSLQSMTRLEPMIRLKADNLARRLLEISSSATTGTVNAFLMCGLFSLEVVCKAGFGKDFPFED
TKDLTELLEAMDGSAFTFILDGLLPWLRPTGFAHKVPFVGEPYQRRRQWEQKSRALLREFLQLPDKDEGYLISPYLSSVD
SFLGRKLNHEEFVEEAMGIMFAGSGTTSTTLTYLLYALSRPGYEAIQARLRAELEDGGESVSELRKLPYLNAVIKETFRL
YPTIISSLPRVLNEPMKVHDIDLPVGTVVNMQNFVHHRDPAVFPDPDLFNPERWLNPHADMESALTPFSLGRRACIGLNL
AWDELYIAVSSVFRNLELRLGEEMTEADMELEDRFNIAPVGHKLMLEVSKAKKLS*

>2919|jgi|CYP5127C3|[Trichoderma guizhouense NJAU 4742]Trigui1
MVIEAIALTNAAAFFGKDLACNKEFMSAAMNFIEQTLITAEVVRVLPSAIAPFIGNLLAKKLGAGKILYDSLIPIAEERL
EEKARKRLGQTVPEHHDCVQWVMECSPRSKPWSADRIVHELMALWFGSVHITSTTACFALHHLCIHSEYIEPLRNEIEST
GWANFDKSGGKAFPLLDSFMKESARVNPVESVSSRRMALKPFELSDGSRIEPGEWICTAPRGMMADARYYADPQKFQGFR
FVDPNLLDKKVSGISGDGVSQETPSKFTDITDWQLWGTGRSACPGRFYATAVMKTLLALFITKYDMQLEDPKAARYFAWR
TFVYPFASTKVVLRPRSAV*

>2929|jgi|CYP58M6|[Trichoderma guizhouense NJAU 4742]Trigui1
MENLLRLWVALAGLGVYLSLRTVYRLYFHPLAHIPGPKLTACSHLYEFYYNVIRPGQFLFKIEEMHKQYGPIVRINPREV
HVSDPDFYDEIYASSSRRRDKDPAYVPTYALPGSMVAAVSHEKHRFRRGILKDFFSRRSVAELSDSVNERVQKLMTRLEV
ARMNQTIISLDDAFSAMTSDIVTAYCCGKDWDFIEDENFRSDVRNAAENAIEFTHISRFVPWLVYAMSALSPRMMAKIMP
GKAKLFEFLEAFLEYGKNEAYSGKRKTMVATLADPSIPEKERDYYRLRDETFGLLAAGTETTARVLTAASFYLANDARVR
ETLQAELKQAMPTLDSRPTWGELEQLPYLSAFINECLRLAYGITARLPRVAPNEALQYKEYTIPPGTPVSSSTYFIHGNA
SVFPEPATFRPERWIEAAERGDNLKRYLVTFNRGTRGCIGINLAYLELFLTVAHFARRFNLELHDTVQEDLRIVRDMTMG
LTRRGGIKVYARLLPVE*

>3093|jgi|CYP5386A1|[Trichoderma guizhouense NJAU 4742]Trigui1
MVTVGTGKFLFGPNNPISEEPDLEHDFWAFDHGLGGLLIGILPSLTAPKAYKGRERLTAAFRKYLEAGHLDSASLIVKGR
ARIEKEYGMDIDMTARSALSFLFAGIVNATTTTFWVVLRIFADQQLLNQVRQEIRHALELSSQRSGLDSLSIGVVKETCK
TLFAVYRESLRVGSENFSVRLIKEDTMLADRYFLKKGAVVQISGGAIHARSTIWGQDVDEFNPGRFLKEKGKSDGFHPAA
FRGFGGGKTLCPGRDFATNEILLFAAMIIHTVDIVAPDGGTVGVPEKDDRIMPVHILEPVTNPKVIIKPRVDDAGILSQL
KAVM*

>3203|jgi|CYP620B18|[Trichoderma guizhouense NJAU 4742]Trigui1
MSNFVIAQGIIVLIGVLVYSLFFRKKRGTLLPLPPGPKPLPILGNIRDGPPPGVPEFEHWLTFKDKYGPINSMSVLGQTV
VLLHDKEDAVELLEKMSLKTASRPQLNFMRMCGYDRWLSGMNYNDQHRLFRKLIHRQLGTKILSSQYGDTQNVESKRFLL
RILMDPLHLFKHIKTQTASTILKLTYGYSAELHNPDPMIELISKVTANVSQVVIPFAWPVDLFPFLSHLPEWFPGGGFKR
TVREWRGLLDASADIPYAFAKQQMEKGSPQSSYVPKLINSLKADGKEIDEEFDEAIRWTAAVMFAGGADTTVSTIKTFLL
GMVLNPVVQRKAQEEIDRVVGTDRLPEASDEENLPYVGGVIKEALRIFPVIPMGVPHEAAEDIVFRGYLIPKGSFLRPCV
WWYLHDPKTYANPSRYDPERYLEPRNEPDPMEAFGYGRRVCPGRFLAHEGLFITISRMLAVFTISKAMHEGKPVNFEPKH
VTDGGLDHPEEFPFSIAPRSEKHAEMIRRVEVDHPWEGGSAGAIQGNALFDKFKAQCDAGISTY*

>3395|jgi|CYP620B19|[Trichoderma guizhouense NJAU 4742]Trigui1
MFVMLQVAAGIVALIGLLVYHQYFRKKNVLLSLPPGPKGLPILGNILDLPPPEIPEFQHWLKFKDLYGPISSITALGQTL
VIIHDRQVASDIMNKMSLKTSNRPTQVFAFELCGFQKFTSGRQYDADFRLQRKFMHQQAGTKTIAAQFNGVQDVESRRLL
KRAMDDPKNLIKHFRTEAAAIILKTVYGYSIEQHAVDPLTKLIETMMTNLSQALNPSPRLVDMIPALKHLPDWFPGTAFK
KTAREWNKVNHEAANIPYSFVKRQMANGTNRPSFVSGLIERYSTKTGILDNDDEDAIKWTAGILYGAGSDTTVAVLTAFI
LAMTLFPEVQKRAQEEIDNLIGTFPTRLPQFDDRERLKYTSAILKEAFRWFTIVPITTTHATAEDFTYNGYRIPKGALLL
PSVWWMHHDPQTYPDPFRFSPERFLEPRNEPDLSELFGYGRRICPGRYMADDSIFITMVRLLATFNISKAVDEQGVLMEP
RVEQLPGLVSHPASFPFSITVRSEKHEELIKSIEVDHPWEKSDADLLESGYDLTAYK*

>3849|jgi|CYP55A26|[Trichoderma guizhouense NJAU 4742]Trigui1
MATDAPSFPFRRASGMEPPAEFARLRAVDPVSRVKLFDGSLAWLVTKYKDVITVATDERLSKIRTRPGFPELGAGGKEAA
KAKPTFVDMDPPDHMHQRSMVESIFSADHIKELQPYIQKTVDDLLGSLKAKGCADGPVDLIKEFALPVPSYIIYTILGVP
FHDLEYLTQQNAIRTNGSSTAREASAANQGLLDYLAKLVDQRIQEPKDDLISKLVVEQVKPGNIERADAVQIAFLLLVAG
NATMVNMIALGVVTLFQHPDQLAQLKADPSLAPAFVEELCRYHTASALAIKRTAKVDIEIGGKLIKANEGIIASNQSANR
DADIFANPDEFNMNRKWPNEDALGFGYGDHRCIAETLAKTELATVFSTLFKELPNLELSVPISKIDFTPLHKDVGIENLP
VVF*

>4550|jgi|CYP540B34|[Trichoderma guizhouense NJAU 4742]Trigui1
MAVQQFYLLGEPITSAREIDISSNLDLDGLKHLVASYFAIVEPNGIEFQVQESALQEVSDITSVTGPVAISIDGHAVRDP
PGPKGLPYLGNFFEIYPDHLGNHQRLFQHYGPVIKTTNMGRVVYQTNDPNIALIAFNESDFFTKKINESHPLYALKTPAA
GVFLGDTDTEEWKVAHKFLPPALGPKAVRHYAPTMQKTVEDASKVFDALDEQGEAWNVYQYMLKLGSQAVGKLTLGLDFN
HFSSPDAPVHEMVHLIAEVLSLNKKVTSKGDWYSSLPFGDPKRLKDVKHRVEEMVEESIQRAARGGVEDLPLQDAAIEAS
NMVDYAIRAIDNKGEKLPKSSLVWALVVATGAGFTTTSSLLSWLIYGLVTYPGMQERLLQELIDNDFTEETQITSDYTDR
LVFQDKYIKEMQRKHNPSFQPGRTAKTDLILPGGYKIPKDAVVIPALHHIHHNPELWSNPEKFDPDRWDTDEVKNRPKGS
YMPFAAGGRMCIGFNFALQEIKVFLPKLIYRYKFTREGDATVEYDPMFQLIRPNNLYVRAERRVKWPPKSGAASPKSTAA
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>4595|jgi|CYP540B36|[Trichoderma guizhouense NJAU 4742]Trigui1
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STGVEDLNLQDAALQSQNLVDYCLRARDLKGNRLTWDQFVPALVVLTGAGFVTSAALLSWMIYALVTNEGMQERLLQELI
DHDWDDNIQVTGDLVNELKFLNNFIKETQRTHNPSFQPARTALVDMILPGGFRLAKDSIVVADLHHIHKNPHIWDNAEKF
DPDRWDTEKVKNRPAGSYQPFASGPRSCIGFNFALQEVKIVLSKLLYRYRFSLAETGTVEYNPYYLLIKPNNLYVRAERR
FKWPQKTSAKTDPLAE*

>4634|jgi|CYP5609B1|[Trichoderma guizhouense NJAU 4742]Trigui1
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PAAMNDIYGHGAGLLKDPWYDGGAGEFRHMADARIKTEHQAKRKKLAHVFAQKNIESLEPVILDATATLVSQIDKHIAQN
KAINIRRYLNYYTIDLFAELLYGRSLGCLERGDDIVEAQTKDAKVYKAHMIRSLHDATHMNTILGYEAHLLPLTKTLFAR
HPYMKAGANWDNIIYHNTTKRLQDAESGEEKKDLFSNLLRNNKGESLDLPMGEILAECSVMMNAGTDTTTAALTNTIFLL
YKHPRVLAKLRQELDSAIGSSADIPNYASVSSLPYLRACIEESLRIRPASSYGLPRVVPAGGRVIAGQYIREGVTVSVPT
YTLLRNTDCFKDAESFNPDRWIESDKATRDRMNTAHFPFSVGPRACIGRNIAYFEQLLVISSIVRFFDFTFVDGESQELA
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>4819|jgi|CYP5391C2|[Trichoderma guizhouense NJAU 4742]Trigui1
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HPILLELFTIWEKMLRYMQPGSLIIDYLPFLEKLPLRFQPWVQLADSLAARQYAIHMAFLKMLRKQIEAGVEPVCFGADM
LERQKQQGFDDKVAIGILSGMILLGGESSASMMISFIKVMAMHPDAQKKAQQELDRVVGPSRLPTWEDQENLPYIRALIK
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INYGFGRRLCQGT*

>5228|jgi|CYP534C4|[Trichoderma guizhouense NJAU 4742]Trigui1
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YRTRHDWFAKLGESFLVVSPNRLVMMTDNAETIRTITLKREQFPKWTAVYNILRMFGENVLTTEGSVWRMHRKVTSASFN
ERNAALVFREAIAQTQGMLRMWTGPTGTRTEPLKSLQHDTMKLALNIISYVGFGMRLLWPGESHPAGTDPKIVKYGSHEP
SDGHQLSFTDTMEILLHYLLLLLIIPRWILRLIPSKKVKKAVLSYDEYESYMNELLDEKIEEARKGEHAEGMDLMGQLAK
SCFGTDNKDATLTREEIIGNAFIMFVAGHETTANAIHFTIIYLATHPEAQRRMQKDIDDILGNQDPKDWDYDSLVNPMTA
SMIGAAMYETLRLVPAVSEIPKKISPDADESFVMDGTRYVIPKDTGISLVTVSTHVNPRYWPTRPSKITPGKSNILDYDP
SRWFLTKEKQDGQGSESVAGADSEDFGGFQGSDINAQLFKPERGSYIPFSDGARSCLGRRIAVVEIIAALAVIFRSYSIE
LAVDEWATQEQVDKMSREERTQVYKKAQDKSLWTVGQASTRLTLNLHDGMHVPVRIVKRGEEKFVDWVDKE*

>5281|jgi|CYP539A31|[Trichoderma guizhouense NJAU 4742]Trigui1
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FSQFWTIEMRVLNERVCFTADPENIKAVLATQFQDFGKGKRFHDEWYDFLGDSIFTIDGAPWHDTRQLLRPQFSRDRVSD
LYCFEKHVQVLFKAIANGGPLDWETQLVDLSRADGRRVDIKGLFFRFTLDASADFLLGTDFKSLTNPQHTLMNSFNEVQR
IQNIMVRTPLMGWFISKEPFYSGIRDIENLVYPIIQRVLSMTPDQLAAHTKSDRDYTLLHELAGFTRDPKLIRDQIFAIL
LAGRDTTASTLSFAMYELSRHPEVVTRLRSEILATVGTHQLPTYEHLKEMSYLRAVLNETLRLYPPVPFNVRVALKDTTL
PRGGGPDGTLPLSVPQNTRVGYSTLVMQRRPDLYPPISETFADPAVFSPERWAVWHPRPHEFIPFNAGPRFCLGQQFALT
EMGYTLCRIFQRFDRVQGFMHEIDGGELQLKTDIVLTPAQGVHVAFWEAKNDQ*

>5437|jgi|CYP539A31|[Trichoderma guizhouense NJAU 4742]Trigui1
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ELCMIFLDFFIIDKKRICGLTKHMRIAQNTEFTSAALEFPQTVVFTAELLRTTPEFMRPMIASIATNRHKAAKTLYRYLV
PIVKERLAIRGLQSKEMAPTDCMQWLIDTSPRKNPWTPARMVGEIMAVWFGSTSTYAIQDLCLHPEYVEPLRIEIRDCFH
VKNSPRDVESLPLLDSFIKESVRSSNSDAITCRRKALVSYTFQDGSSIKKGDWACIPQRAMMQDSTRYRDPQTFDGFRFA
HDNAQHQQHKQSTEIPGQKESKFTDATLDWPIWGLGNAACPGRFYASLVTKLILIRILEDWECKILDPEAPRSMTWRSSI
VPRSSTIIMFRKRHI*

>5517|jgi|CYP5333B1|[Trichoderma guizhouense NJAU 4742]Trigui1
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MRSRFTDGIFSLKMGGKMHHFIYKPSLAAALLNLHRPAAEEQMLANRLLGSTFGVSKKDAAIYNKIFPEALALYKYLSSE
PGLSEITGGALSQVKQTINSYVTFNSNPMDQTEWEKMADVDVIEEGDKGVPTTQVDLMELTRNYVATTAIPAIYGTDFVE
NFPELWKWMWIYNEAFVLLAMSVPSWIPWPRLQRGKLARRRLLAFLYEFNEAMDKHMDGEEVDPKWQNLDNVSQLVKSRI
ELFRQHGVSLDGRASFDLALLWASVANSNPLISWMLFELYRDPVLLEQVREEIAPYVKAVQPKNEFGSAVWVPPVLEDMD
IDGLITKCPLLKASYIETMRVYSCGWAMKMMYSDTVLEARGKGGESFLLKKGTYAHVPQELHQFDPQYFSNPTEWQAERH
VRETVDESGNKVLTAELGTMRPYGGGIKMCKGRQFALREMLLYAAAIITFYDMQPPKGGSWSEPQTRKLVANKHPKKPLK
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>5536|jgi|CYP6001C27|[Trichoderma guizhouense NJAU 4742]Trigui1
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KLGAAGTPYSRSVHPSVVPLGALPDPEAIFESIMARDKFIKNPNNVSSILWYWATIIIHDLFWTNERDPNINDSSSYLDL
APLYGHSQDAQDSVRTFKDGMLKPDTFADKRLLGMPPGVCIILVMFNRVHNYVAANMAAINEGNRFAKPSPTLQGDAATA
AWKKYDEELFQTARLVTSGLYINITLVDYVRNIINLNRVDTEWTLDPRQEAGVDVGTTKGSERGVGNSVSAEFNLCYRWH
SCISEMDDEWIHAFYDDLLGENYGTMDMRTLMIAIRKFAMGMPKDPADCVFGGFTRGPDGRFDDDDLVNCIATAIEQPGG

SFGARNVPRIMKPVEMLGIIRGRKWHLTGLNEFRKHFGLKAYATFEDINSDPQVADALRNLYQHPDYVELYPGIVAEEAK
SPMVPGVGIAPTYTISRVVLSDAVSLVRGDRHYTTDYNPRYLTNWGYKEVEYDLKVNHGCVFHKLFIRAFPNHFKQDSVY
AHYPMVIPQENRKILTSLNRVHRFSFERPRASAPRVDITTFGGFKQVIANEDKYRVQWQEGLEILSGHAGRYMQANDRKT
LESVLYKDNWRSAVKAFYAKTAETLLAQKSYTIMNKKHIDIVRDFGNTAHTHYAAQIFNIPLKTQENPKGVFSEHELYAS
LAAIFTTIFLDIDPVKSFSLRQKTKEAADALGESLETTIKYTKSFGLRLFTGNTSNDPLSNAGVNAVKALAKSGMSPHDI
AWGLILPTAAAIVPTQGRLFAQALDWYLSSEGAAYVDDLHILASQEPSPESDALLLGFAMEGVRMAGAFGLHQVSTGPDI
ITEDDGRKISVNQGDKVFASFVSGARDATQFPNPESVDPRRPLESYIQFGAGTHRVLDKEASQIALVELFRAIFKKQGLK
RVAGPQGELKKVPRQGGHCEYLTEDWGTLTPFPVSMKVTWDN*

>5569|jgi|CYP526N2|[Trichoderma guizhouense NJAU 4742]Trigui1
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SALRHEIAHVQSTNPTFSAMEDGPVYFSQARAIPELEALLDIPKMVSIAQASPFPTFAQFLALLKPKHARAQWNRRALVK
RQIDRSLPRLTSAGAEGCRSALDQLLWREMNAAKEADRLPDYYSPAIRDEILGYLLGGHDTTAASLSWWVKFMSTYQSVQ
ARLRDALRQAHSDAYRDSRFPTMEEICGTSIPYLDAVMEEALRCGSVATLIARTATCDTQILGYPIPKGADVILTVTGPS
LTEPALPIPESLRSPESQESKDRVPCWEDDVSEFKPERWLKADSHLLGWA*

>5776|jgi|CYP548A14|[Trichoderma guizhouense NJAU 4742]Trigui1
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PNSLSFSTQQSLKDIYGFKSNVRKAEFYNSFAHPVANTHNTRDKEVHARKRRVLSHAFSESAMKEMQRYILNNVRTFCEQ
IGLQDGNAESKGWTQPRNMAHWCNYLAMDILGDLSYGKAFHMLESPDNRFALDLVEAATTRHLLCGTMPIVDKLKFDKIM
FPKLAAGRARYMAYSKGQLTERTKLGEETDRRDFFYYLLKARDPETGQGFSTPELWGESNLLIIAGSDTTSTAMASTLFY
LTRNPHAMQKVVDEIRGKFSDVEEIVQGPTLASCTYLRACIDEAMRMSPSVGGILPREVLPGGITIDGHFVPAGIVVGTP
HYNIHHNEEYYPQPFTYAPERWIKDAINPATKRESTVEDVSQAQAAFCPFSIGPRGCIGKGLAYVEMTLTLARAIYLYDM
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>5867|jgi|CYP587E1|[Trichoderma guizhouense NJAU 4742]Trigui1
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NITMLIPELIDEIMVFKDLLGKMAGPSGQWGDVFQLEERTTNLTFDVILRATMDERLHEQINTWGSPLKQALISQIRLMS
KVLGVNRILGIKRWPWEAWTRQRNNEALRKALLGRVETIIKSPHLADAVSEKKTILNIALSRTLAETGGEAPDQRSVDAI
LANLKLFLFAGHDTTSSTICWMFKLLQDNPDCLSKLREELNSVLGEDFIQAASLLRDSPQLLNNLMYTNGVVKEALRFYP
LASTVRQGERDFFLTVPGSDMRYPTEGTAIHDVPSVIQLDEYVWPRANEFLPERWIAAQGDPMHPNKDAWRPFSMGPRNC
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>5870|jgi|CYP5392A1|[Trichoderma guizhouense NJAU 4742]Trigui1
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PDIFTGHQVILPPENLPWLMKQPANVLSQRESNNEFLAAKHTFLNCVAAEDSEWTFVVNLIKDITKELNNKTNDVIEEIQ
AALEDLWGNDTTNWTQVELLDVCLELMSRIVSRMYVGLPLCRDPKYLASSTHFAKFILVEALLAQLTPKPLRPLLGPLLA
QYDWMQFKRMDRCVNPIIQERARRCGRMDNEEKKDPDQPSDLLSRLMQEAYRRNDDPCRSQSHSSKLLAILNWAAIQVQG
ITLENVLIDIAHSPQSASIQDQLREEATNADNADPSSRWTRAEVAKLPKMDSVMTESLRLWGFAHGIIKVVVAKDGVDLP
TGEHIPYGAKIGIGSYGLHHDAEVYPGESPFSFDPFRFLDEKTEAQTTGLKFAATSDTYLAFSHGRYACAGRFFANHLLK
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>5903|jgi|CYP541A2|[Trichoderma guizhouense NJAU 4742]Trigui1
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RLNGLTGPPHPMLQAMEDSTSEAMKRPTRPGLFNWLLYGRKFKSSIKAMRDYAADVVKYRQENPTDRQDTLAAIMNTPDP
ETGKTLTDSQVIDEIVSMPIGSSTAPCLLAYAIYILQKNPEAIVKAREELDRVIGNGEFELEHLEQLVYVQGIMRESLRL
SSAAPGFNIEPRPTTEGDKSPVLLAGGKYEVAHNQAMIIVLHGVNRDPAVFEDPLAFKPERMMGEAFDNLPAGAKKWFGN
GKRVCIGRYYALQWTLVVLAKLIKEFDFELADSEYKLEMDGWFNIRPIDFYVKVKPRAL*

>5909|jgi|CYP584D5|[Trichoderma guizhouense NJAU 4742]Trigui1
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FQQLGATYAYKRWTWEAVYTCDSRNIKHVLASGFDDFKLPRLRVNAMMGLLGSGIFTLNGHSWSHARGVLRPCFAKQNKE
SIVNMLETHFQALLRRIPNDKATIDLQPLFFWLTMDFATDFLMGHSTRVLDRASSHAKEKQFVDDYLTCSTEIVRKMQLG
PLQMFSINFAAMRARSRVFRYIDDFIDASLDEKDESESTNTGCNVLQCLSAVTTDRKQLRDQILHILVASRDTTACLLSN
LFFVLAKKPHIYDKLRREVISIAGVEPATDHQLSSMEYLKWCVQESLRLHPVIPTNAREASRDTVLPYGGGEDGNSPLLI
KKGNLVMYNIYAMHRDARIFGPDPEEFVPERWNGLRPGWNYLPFNGGPRICIGQKFALLETYYLVSRMVQTFETMSAFDD
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>6099|jgi|CYP620B6|[Trichoderma guizhouense NJAU 4742]Trigui1
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TLKDPKNFFEHIKTEASAIMLRITYGYVIEPLKQDPLIQLMQDVMTNLSSAFLPLYWATDFVPAIRHLPDWFPGTGFKQT
ARKWKSINDAVTKTPYDFVQKQMENGIYQQISYVSEHIKAHGHGDGTGVSEEDSSNIALTATDMYGGGADTTVSTIMAFT
LAMILFPEVQKKAQEEIDRVVGSDRLPGYEDQDNLPYTTAVAKEALRYFSIVPIGTAHRAEEEITFRGYRIPKGSFILPS
IWWFSHDPEVYKNPLVFEPERFLAPRNEPDPGDEAFGYGRRVCPGRYLATESIYITVVRLLAAFTITKGVDANGKEIDVE
CKQTPGLISHPVKFSYGIKPRNKKIENLIRKVEVDHPWEKSDAEFLEGDVMEEYKQEVKKNQQVS*

>6193|jgi|CYP537A10|[Trichoderma guizhouense NJAU 4742]Trigui1
MLLLSPITLLAAATLLFAIHLIRRLTSPLSKIPGPTVSKFTSLVLKWKEIKALRTVYIHQLHQQYGPVVRIAPNEVSFTS
WEALKEIYCSGGSGYDKTEFYDLFKIYGRRTMFTTLNKADHAKRKRILADRYANSNVMKSASVTGVQERSSKFVRRCTSA
PGGVSDIFMALHAYACDCITHHLFHPYGTDCITKKEDEEMMHQVAADDSLQNRLISHYAPTLHRLFSRVLYLFAKPRETP
LADDYVLETSQLSGTASFTLMSRFDEKTGDLDYIDKAAECLDHMAAGIDTTGDGLCFLLWELSQPRSLGIQRKLAEELRA
NPETPFDKLPFLDAVVCEGLRCFPPIPMSLPRYVPQGGRSIDGFWMPEKTVVSCQAYSVHRLNSEIFPDGDVFDPERWLE
LEGDADRRRIQFAFSNGGRGCVGKHLALIEMKTLLRDVYSNYSTTPHESMQEEAMAMSDQLISARPLGQKCLLRFHPLDV
DGEKVKM*

>6229|jgi|CYP5387A1|[Trichoderma guizhouense NJAU 4742]Trigui1
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DFILVLPPGACDEVKNADISQMSFLQAVEDEPFAGFLELWHLVHTVAASFLIGPHFASNPEYMSYIEDYCLNVPGFVHQY
FWVPAPLRKMFWYLSPAGSRVRKVLKKLKFFIIPEIKRTIEIWRTIGRSDAEYTLLGAMLDLKEERGMIKRDPAAMSSEE
EKRQIDIFSDEVIFTAFDSAGPVVCLVTQLLYESIRDERLTEALRAEISTALANKNGEWSVQMMSSLPRLESFTRETLRV
NGPTLFSVTRSVLKPFQLKSGLTLRPGNIITSPSWMIHRDEDNYPKAHEFDPYRFYDETTNTTTTKATTASNTFLAYGYG
SQMCPGRYLGVRMTQIIFAKLLMRYDALFEGGKRVKPENIVMPGQVLPSYYAKIVLKLRDEAKTQTHE*

>6232|jgi|CYP5046B1|[Trichoderma guizhouense NJAU 4742]Trigui1
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WRTLRNILHSALNLETTSTYKPVQDFESKQAVWEILHAKDDTAFSDINRRYSTSTIMTITYGQPVPSLSDPLYQDILKIV
RHFSLATAPGGWMIDTLPMLADIVPEFLLQNWKTVARQWYKEDSQIYLRMYHTLMDKVKNGTAPDCFLKDFAREKLEKSL
ISDVTAAFAAGALIEAGSDATTTALNNVILACLLYPEIVAGAHEELDRVVGSDRMPDFNDEPNLPYIRGIAKETLRWRAS
TKIGTCHSTTQDDWYKGHFIPKGAVIVLNWWAIHMDETRWKDPQRFDPTRYLNDSLTEAESMAQADANLRDHFTFGAGRR
NCPGVHIAHNSLFINIARLFWAFNIRKSTDENGNPIEPSTAAQPGFLLTPVKFPARFEVRSEKHAAIIEQTWSEAQKQ*

>6256|jgi|CYP52X5|[Trichoderma guizhouense NJAU 4742]Trigui1
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KHGRTVGTLRVKAPLFRDTLVTIDPQNIQTILALKFKDFGLGVNRTENFEPLLGHGIFATNGKQWEHSRALLRPQFIRGQ
VSDLNLEEEHVKSLMTVLNRQVGPDGWTDLVDLLPLFFRLTLDSATEFLFGESVNSQLDQVHPTSEKDGNFAFAFDKAQY
NLSIGARLGPNYWVVHTPEFKRMVKRVHAYVDYFVQKALVQGEKMPVNEDKYVFLNALAKETRDPEELRSQLLNILLAGR
DTTASTLGWFFYTMADPAYEPVFRRLRAIILEEFGTYSNPKEITFEKMKGCQYLQWCLNECLRLYPAVPMNVRTAQVDTT
LPIGGGPDGQSPIFVPKGQDVGYSVHLMHRRKDIWGPDAEVFKPERWETRRPGWDYLPFNGGPRICIGQQFALTEVGYVV
IRLMQRIDNIDGSQVGPIKHGLTLTNCPGEGVNVKLHFAE*

>6391|jgi|CYP5168G1|[Trichoderma guizhouense NJAU 4742]Trigui1
MDFYYANEQAILTAVGALSGIIAHNAVYIRGEWHVQAPQVTIQLFALYAGCPVLAQTLKDTTVAGFLQGVIFWSYGYLPG
LIASILLYRVFFHPLTRAGFRGPWYARCTKIWHMWAARGSKNHHVLNDIHKKYGSFVRTGPAEITVFHPDVFMAVDGPRS
ECVKSEWYDILHPGQALVTARNKSVHAIRRREWNAGFTTKALAEHEAKILKYVDKLDQCIEQDAKLQKVTNMRDLLLWFG
FDIMGDFVFSKSFGMLENQQWHHIIVRLQRALSLLGPFSSVPWLIQVGFNLAPRVSVLKDWFDTVAWCQSQMRDRLENGS
SSQSQDLSYYLMEKDSEGHGFSENEKWHWAAGDSLLAIVAGSEPTAVALIAVFCELGKHPEHAEKIHEEVKNVDVTDLKT
LVNLPHLNAVMKESLRLHPALLTGGNRKTTEFGLTIGDQFIPPNTTIVAPRYTIGRLESCFEKASEFVPERWTTRPEMVR
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>6409|jgi|CYP574C1|[Trichoderma guizhouense NJAU 4742]Trigui1
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KYILQDHHAKEPKGFHHHDLLYADAQVIMVAGTDTIGATLSFAFYHLARDPALRQKLLTELEPLYGRTLTGEFSNHDLSD
AEAPYLNAIINETMRLDNPTCSNGGRLTPPEGLEVDGIFIPGEVVVYTPTHAIQRSAKYFKDPDNFIPERWTTRPDLIID
KRAYLPFSCGSHSCVGKKVAILVLRMILAYTVWYYDFEFAPGEDGLAIHRDAIDASILKPGKLECVFSQRT*

>6438|jgi|CYP530A37|[Trichoderma guizhouense NJAU 4742]Trigui1
MPKKNAHLQFQKWAEEYGPVYSLMLGTKVAIVLSSDVAVKDLLDKRSSIYSGRPELYMGQEIMSGGYRPLFMGNNSVWRM
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LTGSQSAAILDLFPIARSLPDFLVPVRRQGRKYHEREKRLFMRHFLNAREQLRSGTSKSCCAIDLLRTQKEYGFSDELAC
YLSGSLLQAGSETTAIILTGFFQAMLVFPEVAKEAQAEIDRVCGDRMPDLNDYPDLAYIRACMKESLRWMPATALGVPHA
VTQDDWYMGYHIPKDAGLILNVWAIHNDPKRHPDPRRYNPARWAGDDQNSAQAAVNPDPTKRDHFVFGAGRRLCQGMHIA
DRSIFLAMSRTLWAFDLKRPVDREMGDEIIPDVDNIKDGLFISPIPFSADITPRSQSRAAAVKQEWNNVAELLDDEMQWK
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>6493|jgi|CYP53A46|[Trichoderma guizhouense NJAU 4742]Trigui1
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RLVDTSQFKGQDGKKEARIDCLPWFNYLAFDVIGDLAFGAPFGMLEKGVDLAEVRDAPDSPPIYAPAIEILNRRGEVSAT
LGCFPALKPYAKYLPDPFYSNGLAAIQNLAGIAIACVKRRIDNPPDVERKDLLARLMEGRDDKGEPLGREELTAEALTQL
IAGSDTTSNSSCALLNYVVRTPGVLDKMQAELDAAIPKGVDVPTFEMVRDLPYLAAVINETLRHHSTSGIGLPRQVPPES
PGVTICGEFFTAGTVLSVPTYTMHHSTEIWGPDAEDFNPDRWANVTQRQKDAFIPFSHGPRACVGRNVAEMEMKLIAATW
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>6628|jgi|CYP655B4|[Trichoderma guizhouense NJAU 4742]Trigui1
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PFTDRLFSLLPTDGETFDIQPLLSRWFLDATTSFLFGRSRDSLIKAENKDVMLAIFDIVRGASARRSMGPLKYLFRDAKW
HESIQFAHNYLNDHIDQALDELKARNQNPEKFTAESDRTDLLWSLVQQLNDRILLRDQLAALWIPGMESTSILVSNILFF
LSRHPRVWKRLQSEVNAIGQEGLTYNTLRNMQYMTWVINETQRVFPAGVSMTRVAGKDTTLPRGGGADGQQPVFCAKGDL
VVCNRYLLHRDPEFWGEDAAEFRPERWDGIRPFWNFVPFGGGPRICPANVMAVTEAAYFVARFCQKYKSIESRDDRPFTP
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>6649|jgi|CYP504A23|[Trichoderma guizhouense NJAU 4742]Trigui1
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YDAVKHFWITHQSSLISRPTFHTFHSVVSSSQGFTIGTSPWDESCKRRRKAAATALNRPAVQSYMPILDLESMMSIKELL
NDCMGGSQDVDPSPYMSRFALNTSLTLNYGFRIEGNVTSELLTEITHVEREISNFRSTSNNWQDYIPLMRMFGKTNTKAE
EYRLRRDKYLGDMLNDLKDRIAQGTDKPCITGNILKDPEAKLNEAELKSICLTMVSAGLDTVPGNIIMGMAYLSTEHGQS
IQAKALEAIQEVYPNGDAWEKCLVEEKVPYITALVKETLRFWTVIPICLPRVNIKDIPYEGAIVPAGTTFFMNAYAADYD
DNRFKLPDQFLPERFLEDKEIGTPHYAYGAGSRMCAGSHLANRELYTAYIRLITSFQITPTKDSTEAPVIHPIDCNGTPT
SLTTDPKPFKIGLKPRDEAKTRQWIAEAEERTKHL*

>6665|jgi|CYP5268C1|[Trichoderma guizhouense NJAU 4742]Trigui1
MVSSITTALAVILLVFATYLLKRSNKSVMPPGTRSPPGPVGKPIIGSMLDIPPVHSWFKFKELTDQYGPITKITIAGQDH
VLLGTEQVANDLLRERGSIYSDRPTFHAANIMTRGLIPLLLRYGDVWRTQRSFFHHVMSTKAAAGYASELEIEATRMARD
LIRDPSDYENFFERYSGGIILRLAFGVRIESGRDPRCQSSLKAVHDLERVASPAQYLVDLLPAMKFLPEFLAPWKTELKK
LRTEHETFFHGMLDGAKRDSSGGKGIKSWANVWLSNKGQWSLDDLTAAHMFGGLLEAGSGTSGSTLMSFCLLMTRTGQLE
ILQQELDRVVGAGRVPTIADLPQLPTVRAFAKEVLRFYPVTAGGAPHMLTKDDVYKGYFFKAGTFFHANQWAIHRDPEQY
PDPESFNPQRWLDPKYPTYREPLTQYPNLVNYTCFGSGRRICPGQHVAELSVFLGIAMIAWGCNISKAKDDAGQDITPPF
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>6895|jgi|CYP617A8|[Trichoderma guizhouense NJAU 4742]Trigui1
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LAAKPAVLFREWALNIPNDGLIRYYWLLNRERLLITSPKALAEVLVTNNYAFQKPENVRSMLGRVLGYGVLLAEGDEHKR
QRRNLMPAFAFRHIKDLYPVFWDKAREVVQAMTTECGKLGEAEFEAGEWASRVTLDIIGVAGLGRDFHAIQDDNSDIVQT
YKFLFKPRPPAKFLVFLATLVPTWLLQRLPLERNRAIDGAAQKIKSVCRDLIREKREKMMAHKGRTDVDILSVAIESGQF
TDENLVDQLMTFLAAGHETTSTALTWAIYELARSPEMQTRLRNEIREKLPSTDDADAKITSLDIDHMPYLNAVCNESLRF
FSPVPMTIREAAHDTTIQGVPVKKGTRLTISPYAVNADPKLWGSDASQFNPDRWIAAEGVSDESNKRAASGGAESNYAFL
SFLHGPRSCIGMGFAKGEFACLLAAWIGRFEFELVNKEEMDLDKIDIRGGVTAKPANGLFVKAKVVPGY*

>6945|jgi|CYP51F1|[Trichoderma guizhouense NJAU 4742]Trigui1
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RAKYGDVFTFVLLGKKTTVAVGPAGNDFILNGKLKDVNAEEIYSVLTTPVFGRDVVYDCPNAKLMEQKKFMKIALTTEAF
KSYVPIISHEVTSYFKRDPAFKGKSGIVDIPKKMAEITIFTASHALQGSLIRSKFDESLADLYHDLDMGFTSINFVLHWA
PLPWNRKRDHAQRTVAKIYMDTIKERRALGEDDKELDILKHLMKSVYKNGTPVPDHEIAHMMIALLMAGQHSSSSTSSWI
MLRLAQYPQVVEDLYQEQVKALGADLPPLQYEDFAKLPLNQAIVKETLRLNAPIHSIMRKVKQPMPVPGTKYVVPSSHVL
LAAPGVSGSDPTYFPNPDKWDPYRWLPGSPNAPLMAQNNDEEEKIDYGYGIVSKGAASPYLPFGAGRHRCIGEHFANLQL
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>7417|jgi|CYP538A4|[Trichoderma guizhouense NJAU 4742]Trigui1
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YPHRDPILGLDILRISVKALKEYKLLLELWDKLLNTYNGTYWFSSTGKWMLITSEPENFKTLLSTKFEDWPMKSLRQQVSI
LTLGPYSIFAVNGPEWQHTRAMIRPSFVRNQIADLECTDRHVENFLARLPRDGSKFDIDKLLYHFTMDVSTDFMFGYSTS
ILTSPTKESLEFMTAFDYLLTTSTNRARLGWVALLKPDKKFDEYVKITQQFVDHHVSQALAQEKMERPYIFMNEIIKSGA
SHREVRDQLLSLILGGRDTSASTMSSLFWVLARRPDVLKKLREEIAELEGRKPTWEELKNLKYLNMVLKETLRLYAAVAS
NMRTAERDTILPKGGGPDGQSPLFVPKGTDCRFTTYSLHRRKDYWGDDADEFRPERWETHRPGWEYIPFSGGPRICIGQQ
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>7453|jgi|CYP548AA1|[Trichoderma guizhouense NJAU 4742]Trigui1
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AEGGRHLELDKQHKKHGKFVRFGPNRLSINSAKASRDLHDVNSNTFKADAYGSFKRFFGAEMSLTTVDHKAHAFRRRVNM
TAITPAAIKEFEDQVTPHLDEFISIIGEGTGSKLQGEHGWSPGKDMSYAVAFCIADIMGSVTFGRTWNVQRDPKYRHFVK
DLPNGVAGIHLVGHMQSLFFCNLHKVLFKELIVGVGNLMSVSRSFALWRLEQSSMPYRDIWQALIASRDPKTGNAFSTEE
LISEASLFIIGGTDGMITATTSTLFYLTHNPRTLERLTHEIREAFPLSPEDVGKKGSNVKCPIRFASAELQRIAYLPACI
DEAMRMSPPVPSILPRVVGPGGLTVDGEYFPAGVNLGIPHYSMHHSEDNFAEPLTYAPERWFPEERTKGLKDGSVPVSGK
ESPKMRPAVGQAYGFTPFGGGRSSCIGKYLAYQEMSIVLARLIWLFDIRLDPSSNMGEGIGDAREGRECKTEFQLYDRFV
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>7629|jgi|CYP684L1|[Trichoderma guizhouense NJAU 4742]Trigui1
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FNTTRVEVHRRLRRLLSGAMSETSLQIAIPQVQSKVDLAIQRMGEEMESRGAADVIKWFLFMATDIIGELSFGDSFRTLE
IGEKSGYIKDLENLGFLGAVRSAFPTLISMAKYLPIPFFTRPLQATKNMIRYSEESIARYRNLLDSDPTSVKWTLFTKVF
KDTDKDALTPVELRANASGYIVAGSDSTAVTLTYLVWSVCRNPTVRAALLKELRTLPDDFNASHLRDLSYLNQVIDETLR
LYSGIQSSLPRYVPEGGDDVAGYWLPGGTSICAQAYSMHRIPSVFPNPDVFDPSRWASPTREMKDSFMPFGNGSRICIGL
HLARIELRYATARFFLTYPEAKVSTREGFCDEDMVPKVFFFEEPKAKRCLIQRC*

>7680|jgi|CYP620B7|[Trichoderma guizhouense NJAU 4742]Trigui1
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SLSDPENYSTIYHVGTKYGKPDAYYHVFQAPGSFFTAADNREHAKRRAPVNPFFSRKGVLELEPVVQEKAKVLLSKLRKD
LDRASETPGGFVELQDLYSAISIDVASDYSFDDCYNTLEKERYGRDFSDMVLGLLTSFWFFMQFKTIEALALSLPTWVSS
ALSPALKEYNKLVKGVRQNITNVKTQTLSQREKSQKRSIFHELLSADPNRTVDDMTDIALSIVVAAAAATSNTLGILSYN
VISNPDIYRRLRAELLEAYPDDAQEMKWITLEKLPYLTAVIKESLRLAYGVIGRLPRVVPAGGATFNGYFLPAGTTVGMS
SWMMHRTTSAFPDPDKFDPERWLDPEGSSKQHKYLVAFGKDSRQCIGMPLAYCELYVTVASVFRNFADLEIRGTKPSDLV
FNDYFSGYHPATATPLRVARRESK*

>7834|jgi|CYP671C2|[Trichoderma guizhouense NJAU 4742]Trigui1
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KKVWERGLSFRALAVYAPRIQAKVDLLLSKLANHCGRPIDMTEYAMFFGFDVMGDIGFSKDFHMLELESEHLAIKGVHES
MLAIGVLGTVPWLLSMISKVPGAAASFSRFTTWCHRELQKKREIVASEAAALKDQDPRDIISWLLKALNEGDPSAPPGEI
AIQEDARLLIIAGSDTTSAALSNALYYLASNPKSYQRLQAAIKEEFPGGINDWTYDRNVPYLDYVIQETLRLKPSVPGGL
PRVTPPQGLMIDDDFIPGDTVVAVPTYTVQRDARFWSDADAFKPERWENLSTEKSPWIPFTRGQWACPGRNLAMMELRMA
LSHIALRYSISFAHADASKTFDSGVMDTFTLTLPPLHLIFTPL*

>7864|jgi|CYP51F2|[Trichoderma guizhouense NJAU 4742]Trigui1
MDGPLSFIILIFGSFGALVAINLLRQALPQNRKEPPTVFHIVPLLGNAVSYGMDPPAFFARCRAKYGDVFTFILLGKKIT
CYFGIDGNDFILNGKQEDLNAEEIYSPLTTPVFGSDVVYDCPNSKLMEQKKFVKFGLTQRALECHVPLIEQEVVNYIGTE
PSFQGQSGTFDVSKCLAEITIFTASRALQGQEVRDKLTAEFATLYHDLDMGFQPINFLMPWAPLPQNRKRDAAHATMRTI
YMDIIESRRRSGLKEGSDMIWNLMNCTYKNGTPVPDKEIAHMMITLLMAGQHTSSSASSWTILRLASRPDIAEQLYEEQL
SKLGRGGRLAPLQYSDLNELPLLRNVVRETLRVHSSIHSVMRKVKRPIEVPGTSYVITPDKVLLASPLVTALSDEFFPDA

TEWNPHRWEHREMDESAKTDMEEPFISKGTRSPYLPFGAGRHRCIGEKFAYVNLSVIVATMVRSFRFYLSDEGKAVPKTD
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>7885|jgi|CYP563A3|[Trichoderma guizhouense NJAU 4742]Trigui1
MLMQMLSVTSVASTFSVLFIIGLVIRILQNRIFHPLRSVPGPWLNSLSELPAAIALVKGDQHLYYRSLHEKYGLVVRVSP
NELSFITTEAREEIYGFRKGGLLMEKSPIFLGAVGNVNGETGVSLALNKEHTRQRKALGYLFTNSALAKLENILKIHVQK
LVSVLEKGLSEKQAVNVSDWYTYLAFDIMGDLCFAEPFGCLDQASATEWSTSVINVFVAATWTQGIRRISGVGTWLERLM
TWLLVPGKAASWRSIHLNNSCEKTVRRLQDPNREHTDFMYHILNSESKSLLSKTEIQLNMALFISAGTDTTATALVGWTY
YICTHPDVYKRLTAEIRNAFTANDDIDWDKVRKLAYLEATLNEALRLFPPSPASQQRVVPSGGASIAGYYVPAGTTVAVP
PWVSTHSPVNFSDPDTFKPERWLGENAKFLGDHLNASLPFGTGPRVCIGKNLAYLEMRLIAATILWNFDIELDRNDHEAV
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>7898|jgi|CYP504A50|[Trichoderma guizhouense NJAU 4742]Trigui1
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FDGVKELWIKNQAALISRPTFWTFHNVVSKTQGVYTLGTSPWNESVKRARKAAATALNRQAVQTYLPFIDLESTTSINEL
VQNIKNGYDVDPNGYFQRFSLNISLTLCYGIRIDGTVRDHTLNEVVQVERELGNIRGIAHNWQDYVPLLRLWPGFKTNAI
KFRSRRDEYILDFYEQLKQRIAAGTDNPCIAGNVLKNPEAKLEDNELKSICLTMVAAGLDTLPGNINMTIAYLSSPHGQE
IQDHMYEEILKAYPNEDPWDACLTEERCEFVVSFIKEVLRFWSTLNLSFNRQSIRDITYKGATIPAGTPFLMNMWAANHD
PKQFHHPMDFIPDRFVGVSEAGQGTQHYGYGAGTRMCAGAHLANRELYVIFIRLVLAFHIRETIHVKDRPILDTIECNSV
PTSMVTQPKPFKVRFIPRNQQQLEKWIASSKEKTAYL*

>7909|jgi|CYP61A6|[Trichoderma guizhouense NJAU 4742]Trigui1
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HLAMQTRDPRFKGNKELVRDLMTPAFLNEVSAVHIYDIATVLVDMWAYKTAEAAGRPFSAYEDLHYVALDIILAAAFGIP
LEQSTTQKQYEFLQLQPSQIKSASSKDDPVTYSRTPIHESRTALMKVTGTVVVGYKSPFPGLHHWILRNTIWRRDFALKE
EFITDEINKGVERLTSGNTQENRMRCAMDMMLLREFGYAKKEGRKPNTNAPRMRDELFGYVATGHDTSSTTLSWITKFLA
DNQSAQAKLRRQLRTAFAEAHAEKRQPTVMEIIDKPAPFLDAFLEECLRITKTIPTILREAMTDTTILGHPVPKGTGIMI
YNHGPGGQLKSGVNIPEAVRSDTSQSSKDRVGEWSADDISSFRPERWLQRTAGAGPAGEGDAEFEGIEYNANAGPFLTFG
GGPRGCFGKKLAYMEIRIVLAMLVWNFEFQPCPAELSSYEGVDTATVVPKQCYVRLKQLL*

>7913|jgi|CYP5789A2|[Trichoderma guizhouense NJAU 4742]Trigui1
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TIVEKLKGASAIMDRYVRTGNVLNLSNVYRCMAADVVSAYVLPTSLNLLESDDLGEEFQSSLRFFFETATSMRYLGFMEP
IITIIPSIIFNAMLTQPAKALIRLVRKLEACVDDVIQKGPDMDKSGLCLLERINNNNKHEKDEMFRERLLQEAEQFIVAG
SETTGHTLAVTTFYILQDKNVQEKLRRELINADIVFDGNLEITKLQALPYLSAVITEGLRFSHGVGSRLPRINRSSEVQY
KQWKIPAGVPISMTSRLHHEDARLFPEPYKFSPERWLQADSKNLKKYLSPFGHGSRICPGMHLAIYEINIAIAYIFTHYT
VINSNTTEDDLVSKHDLGAPFPKQDSKGLQVTLQARVAE*

>8501|jgi|CYP5104A5|[Trichoderma guizhouense NJAU 4742]Trigui1
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SSRPIDIGTWFQLFAFDVIGAISFSKPFGFVALANDDGILTRIERSLGNTAWLMHVPWLFNFHQKYILPVFGNFLRANDR
NDYFFNFAKSEVQGRRDKGGIDNDLVGQLFQAAHSKMELNDLVISFMMTSNVFAGSDTTSAALRGIFLNLLRHPRVLSKL
RAELEEQRAAGHLSSIVTFQEAEASPYLQAVMHEAMRVFSPVGFNPDRDVPKEGMTINGIFVPGGTVVGSNAWVIHRVPE
VWGADFEQFRPERWLERESSSELSENCISMRCYLEKH*

>8502|jgi|CYP5094A3|[Trichoderma guizhouense NJAU 4742]Trigui1
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DKYGPIVRVNPDEIHIRDPSFLDTLYATNPTKRDKYPPSAELAAHGTVDHDMHRRRRMANSRMFSKRAVASAQELIHGHI
KELTEAFEKKVGSSEPIEMQTTFLAYTTDVIYHYMFNKDVGFQKDWSKAQSWRHSMEAVAQATPFCKQFPWLNGKLLMLP
EWILDILVAKLQPDIAGLLATHKLMGKIAAEYVMHRSTDKSKLEFEEDEKNVKPLTIFHSIDRSALPKEEKTGLRLMQEG
LTVLYAGGETGSRLLAHTIYHLLDNPEILEKVRKEILDAAGDSKDLPDVKVLESLPWLAASVRESLRLRATVKSRLPLVS
KNELIYKDWVIPAGTPVSMSQPDILHNDEIYPEALKFKPERWFNATEQQNKMFIPFGKGTRMCIGADFAYIEVYMSLSAL
ITRFDLELYDTTWERDVAYTRDCFLGEASRDSPGIRVKVLADNKRWFAD*

>8982|jgi|CYP671D2|[Trichoderma guizhouense NJAU 4742]Trigui1
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LQTALVATTYTVGVFTSIFVYRAFFHPLQKFPGPFWARVSRFYAMGQMIQSRKGYEDIQKLHQKYGDIVRVGPRELSINR
PSAIRSLYGAHAQTSRPPWYSQTSRHPSKSSLINTRDSAAHKLRKKIWEKALGSRALDVYESRVQSKVELLLSKIEETNG
NPVDMTKYFMYFSFDVMADVGFSKNFNMLESTNIHPAIKGVHDTMWFIGLLTTIPWMLYMVGSTPGLNSLSRFSIWCHEQ
LNEKRQVLASEKEKEPQDVMSWLLKAMDNRDPAAPPSERAVQEDSRLLIIAGSDTTSGILTSAFHLLLTNPHTYERLLAE
VQKQFPGGISDWTYEKAKAIPYLDWIVYESLRLRPTAAAGMPRDLPPQGIMLDGEFIPGGTIASVPPYTIQRDPRYWDEP
LAFRPERWENCSTDSVPWIAFSRGTWSCPGRGLAMMECRMVLSRIFLQYDVTLPLEMGGDTFEEDTIDNVAMVAPALYLS
FTPR*

>8999|jgi|CYP609C1|[Trichoderma guizhouense NJAU 4742]Trigui1
MVSLVATLASPRDWPASALLLAATLVISLLVRLLRRPGLPSGASSTEWGVPFIGSLNFFTKRGDFLREGTKRSPNGYFNF
YYGSYPIVALSGEKARSAYFNTRGLDLSAGFRKLFSAGPDIDHMLGCNMSAYFIVLFKKLTGKEHLATCLPYLNKDARDA
FSAIDTSVPMDPFVVLYDLLYKFTHRTVGCHDVAEDPMLQEKTMRLYEKLDKTAAIQVMFPWLPTPTKLNKLWAGAKLHM
LFGDIIRERRKSGRKAEDVMQYLMDKGESDLLSSAFIIGALFAGLINTGVQSAWILCYLAHDPVWYAKVRAEVDAAVEKY
RTSDDQTPVDVLAGLSLEAWESEFPCIDFGVRDSIRLNLMGASIRQNTSGKDIVLGDTGVVVPNQAFAVYHVSDIHMDEA
IYKDPLKWDPGRYFPERGEDKKRQHGYIGWGTGLHPCLGMRIAKLELFVSTATFFAMFDFKAVDKNGNPATGPLPSYDSN
ALAAKRMIDTVYFKCDRRF*

>9078|jgi|CYP531G1|[Trichoderma guizhouense NJAU 4742]Trigui1
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KKLHDKYGPVVRMGPNYIDVDYPSLIKTCFDFGGVWRKTDWHGVSGAMVEGKLYYNIFSECNPEEHARIKKPIAKYWSAP
GVAPMEPHVDSVISTLCRALDQRFAGDEAFGKTFDFAEWMLFFGMDAVAKTTWSEAVGYLEKGHDFDGTLNVSDRAYDYL

VTVGMNPIFDKFLDKNPIMRFGPPSFGTVTGICLGHLMARMKGEDGHDQSKPDFLDRYLEAQQQNPEVVDIYRILSYMLV
NVAAGADTTAASLRSIFYLSLKHPAVFRRLRDEIVNAKFSQLPVPYAESRQLPYLEAVSRECFRYMPGNCFAQERYVPSG
GLALPDGSVVPAGTALGFNAYVLHRNKEVWGDDAEEFRPERWLQADNETEEEYKNRIQQLNNVDLSFGAGSRKCIGMNLG
KMEVSKTVATLITLFDFELEDPKKEWKVHNSLIPRASEIMIKMKKRPGAGQQISDMSSHY*

>9152|jgi|CYP602B6|[Trichoderma guizhouense NJAU 4742]Trigui1
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DQVYQIKATEGIQAMIPPRFIAELKGLPEDILSATEAVADALQTKYTKFSPGHNGDMLSLLVRTRLTQNLVELIPQLKVE
LEHYIGTEFPSCDDWTPVKWQPFALRGIARLSGRAFVGPFLNRDEQWMEVSINFAINVFMSVIKLQFFPEWARPVAQYAV
SDLRKIRRDIDTAKSMLKPLLEERIRDMEISTFHEPPNDLMQWLIEALPEEEKADVQTHAELQLILAAASIHTTNNLLFE
CMADLASHPEVQAELREEAYQILELENGWARKESMAKLKKLDSFMREVQRLRGNITSFIRKVLKPIDLSDGTHLPAGTRV
LAPQAGISVDEQFFHNPEEFDALRFYHMRQESAEASNRWQFTSLNDTNLNFGAGKHACPGRFFAGNEIKLILAFFLINYD
VRLKKGDERPKPMAMVMTKGPDAKAEFEFKRRQLAN*

>9274|jgi|CYP620S1|[Trichoderma guizhouense NJAU 4742]Trigui1
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EREAGRLLLRTLKDPQKIVKHFETEAGAIILKIVYGYTVNPHGPDPLVGLIDRMMANFSRASVPFTRLVEFIPALKWLPD
GFPGTGFKAEANQYGKEIRAVINEPYKFVRKQMIDHNITGSYVARLVQEFTGDADEPSETDAYTIKWSAAALYGGGADTT
VSTLIGFILAMTMFPEVQRKTQEEIDRVTGGTRIPVLADMDQMPYVAAMVSEALRWCPILPMGVPHAMAEDMTYKGYDLP
KGAYIFPSIWSFTHDPSVYADPDTFAPERFLAPRNEPDPRWTVFGFGRRVCPGRYLADSSLFLNLAYLVAVFDISKATDE
HGNIIEPKLDFEAGIIAKPKPFPFKITPRSEKHAELIRSIEKEHPWEESDASLLGELPPPSH*

>9362|jgi|CYP65A7|[Trichoderma guizhouense NJAU 4742]Trigui1
MGILISNDAGKVVIPVKLSLALPLAVIVFGFGYFVWLCIYNLYFHPLSKFPGPKLSAISRFPYSRLLISGEGHRDVLDLH
LKYGPIVRIAPDFLSFSHPDAMNDIRGHRKAGQPEHRKDPIRQELHVTNIIGANRADHTRFRRSLANGFSHQAMLDQEPI
IRDYVEELMKSLEKNGANGTQPIDMVRWFNYATFDIIGDLAFGESFGCLQNSTYDPWVQLIFNSVKNLVYIGALKHLKIV
PKRLLKFILPYTMPKGVSNKYAENQRLSAMKVKKRLETGSNRPDFMTSMTTKRNGESLTFEELTSNASILIIAGSETTAT
ALSAAAYYLGLFPEVQAKLAQEVRTTFNNAEDITITSVQHLTYMLAVLDEVMRMYPPVVSGLPRLTAEGGAMIAGEYVPE
DTIVEVWQWPLFHNPNYWTQPDDFIPERWLGDPKFANDRRECFQPFSTGPRNCIGKNLAYSEMRLILARVIMEYDIKLAE
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>9406|jgi|CYP5080B6|[Trichoderma guizhouense NJAU 4742]Trigui1
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RLSISSKSREPINMGHWFQCYAFDVIGNITFSKPFGFLDRGEDVSGLLQALHKVMAYSTLIGIYASLHPYVFAVTKFFGI
GGAAGRMYLAGYVKERIRQRKAEKEMSEEKAISHADGSPEDFLEKIMIKNKDAPSKVTDYHVFMMSMSNIIAGSDTTAIS
LSAILYYLLKYPDVMRKLREEVDQSTSAGDHLSFKESLEMPYWQAVMKEALRLHPATGLPLWRTVTEGGLELNGQFFPEG
TTIGLNTWTAHYNEDVFGRDAAAFRPERWLEAEKEGGDRVAQMNAYYLPFGLGSRTCIGRHISYLEMSKLIPLLIKNFDF
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>9470|jgi|CYP5080B6|[Trichoderma guizhouense NJAU 4742]Trigui1
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PLVLARDHPELAKDGVLYIDLWPISYQMLAVFHPDMMAQFCQENSQLKHEQVRWEFYPLTKNKDLVTTDGAQWKRWRSVF
NPGFSTQNIMSLVPSFVEEVLVFKRYLEGIATTGEVVALETQGMKATCDIIGRAVLGKSLGIQTTPDNPLFKALKENIAW
LIPEWAPRQWGKMINPLRRLSMWRNNAIMRRELRSLIEEQYKNSGHIEGPKTIVNLAIRTYVKENGQTSMGDVIDPEFVD
ATIEHIKMFLFAGHDTTASTLSFAYYSLHENPEIMAKVRAEHDAVFGADPSQAAYMISKTPALLNQLPLTLAVVRETLRM
YPPVGSVRAGSPDYFLTNPETGRQYPTDNLMMFSCSYAMQRDATYWADPDTFNPERWLTKDGEPAQLRKNTWRPFELGPR
SCIGQELAMTELKLILALTLRELDIVPMYAPTGERFFGALMYQAHVSGELTAHPKGGMPVIVKKRVLS*

>9655|jgi|CYP65FW1|[Trichoderma guizhouense NJAU 4742]Trigui1
MRKLHSKYGPVVRYGPNELSYMDGSGAAWKAIHGHERGGREFPKAREWFVAPYNGVYGINSAPAHEDHRRFRQVFAPAFS
ERALKRQEPIFQKNIDQLLSSLSQTSADGQSVNMVELYQFTAFDIMGHLTFGEPLGLLQSNRYSKWVESVFDSIKVIPIA
QIIQYYGILDFAFKLLEPQSIKEMKYNHFKHSADRVDKRLERKSDEADIWSLVLDADLDKQLTLEEMHCHGDVFMLAGSE
TIGTTLSGVTYYLLRNEEKLSLLLREIRAKFRSQEEISFQSAAELVYLNACIKEALRLYPPVPVGVPRVVPSHASGMNMP
GGPVPGGTRVSVHHYATYRNPDNFRDPDSFVPERWLNDPVYSGDNRECWRPFAFGPRDCLGQNMAMRETQLILARLLFKF
NIEICDGVEGASDWDEQNAYVLWEKKPLLCRLTLASGHMSSPEED*

>9657|jgi|CYP526K3|[Trichoderma guizhouense NJAU 4742]Trigui1
MAVITSSGGVYVVAIVCVVLYTAYRRILPKPIPDIPYNKDAAAKLFGDVPEMMGYVMRTQRIFCWLTSLTTRLQSPIVQA
FIKPGGLPWVVVTDPFESQDILLRRIKEFDRSEFFGELINGILPEQHIQFISSDPRFKNNRNLINHLMAPTFIREISAPE
VYMAASTLMKLWKIKCNMAKGRPFSAHHDVTFATLDSIFASSFGLLESETNTIQRIKALDSFEPVFPDDVDEPVTFPEGH
TPEIFSAVLTLANSVTDTQLSPAPVLTSWVIRKFPYMIKAKAIKDKYIEDKVEESVQLIEKDPSIKPKSALHSVLLRERD
VAIKEGRTPDYRKGAIADEFFGFMTAGHDTSATTIAWGVKMLTDNPAAQSRLRDELRSAFPAAVQEKRDLTYAELSNAQV
PYLDATVEEILRHSNTIAFVVRQAQQDTTVLGRTIPKGTNVFLMANGPGYLEPNMKLTDEARSPGARQTAKSALSRAWSD
DDIAKFVPERWLETDPDTGAEVFNTMAGPSLAFGMGLRGCFGRKLALQVLKIHFALIVWNFELLPIPEKLGGYDAVQKFA
REPTKCFIRLKEIEL*

>9813|jgi|CYP539K1|[Trichoderma guizhouense NJAU 4742]Trigui1
MVASFGLAFVAILTVLVWLRHLASDIKIRKLGGVRAPILAGNLLSASKLYYEIGRNQYNNNLVAWCTAQLDNLPPGKRTF
AEFSLTGSKRVLITRDPEQIKAILATNVSSFGHGPMWHKLWRPFLGDGIFAVDGQLWHDSRAMIKPMFVRDRLRNLAIFD
TCTNKLLTKIPSAGVTVDLKDLFYRWSMDTTTEFLLGENVNSLDFPDNDVLNAMHVAQRIQMFIFVLNPIAPLIPKGDYH
RAIRKIEEFIEPAIARTLAIPQVRLEELSKLDMEFSFLHSIARYTRDPKVIRDQIMSVLLAGRDTTAATMSWAMYELSNY
PKLWARLRREVLNELGSHGTPTYEALKDLTYVKNILNETLRLHPAAPLNMRSVLETTTIPGRPGEPGVVLLKGDSVTINT
LGMHMYADLYPPVSDTFADPRIFSPERWEHWTPKPWTYAPFSGGPRICAGQNFALTEMAFCLVRLAQRFESIEYRGDWAA
QRLRADIIGTPALGVHVALYELGERPDLRFKH*

>9895|jgi|CYP540A12|[Trichoderma guizhouense NJAU 4742]Trigui1

MASKNFFLVGDDVSTAQSIPVSPTYGPDELKRAVARHFHIVQPSGVSFHTSYGSINTVSDVLDANEPIGIRIDSQAVREP
DGPEGLPIVGSFYEIFPDHLGNHTRLFRQYGGLIKTTNMGKTNYLTDDPEIAAVALNESIYFSKKINEDHPLWGVKDNIA
TFVGDTETETWRLSHKFLPTSMGPKAVRHYAPLIQETVRRSFAVFDAFAESGRSWNAYQYMVKLASETIGKVILGQNFGH
LANADAPFHPIPLSILTMFQLNKRVASRGAWYQNLPFGDPKKLRETHKLCYALIEGIVSDIETSDTAMPKMPMAEAALKA
SNLVEYLIKGTDEKGETFPRSMIVPNIVMLTSAGFTTTASLLSWLIYSVTEHPGNQERLLQELVNNGISETTEWSVDLVS
KLSFLDKFVKETQRLHNPAFQPARTAKTDVIVPGGYRLKADSVVVCALHSLHTNPNHWHDPSQFDPDRWDTAEVKGRHRG
MYLPFATGPRGCIGFNFALLEAKIIFSELIYRYEFIRDGSENVQYDPEFQLVRPLNLYVSVRRRTNLSTK*

>10030|jgi|CYP65U9|[Trichoderma guizhouense NJAU 4742]Trigui1
MVASWGWPVTASEWLSTTALTLTTYNVLRIVYNLCFHPLSKIPGPVAWRASRLPFIWSLLRGTIVHDFERLHRQYGPIIR
IAPDEVTFAHEDAYKDIFQLRKDHPQFLKDLVWWKTQPGMADSLLSAIDPKHHARIRGLLAPGFTPRALKEQEHILHFYV
NLLVERIRERVNETPESGAVIDMVPWFNFTAFDIFGDLGFGESFNCLQDSKYHPWIALLFNSVKAASYVAAARFYPIVER
LLMMCIPPSLRKMQRDHYQQIVDKVDRRLNFELERPDIMSHVIRGTERRELPEGTVHTTFMVLTTAGSETTATALSGTLN
YLVNNPDKLETLVKEIRGTFQQESDIDLDALRKLPYLNAVLNEGLRLCPPVPWILPRRVPEGGDTVCGTWLPGGTPVSIQ
AYTMNRDPAYFHSATSFVPERWLSDSRTDQESPFFHDRLQVVQPFSDGPRACLGQHLAWAELRLILSKLIWVFDFEVVED
RKMRWEDLRTFLLVEKKPIEVRARLRDSTASVA*

>10031|jgi|CYP551A4|[Trichoderma guizhouense NJAU 4742]Trigui1
MEALLSQPIAATALVATVLFSVIYNVYLVIYRLWFSPLAKFPGPKFAAASFWYEFYYDYWLDGKYLFEVEKMHKKYGPIV
RVNPDELSIHDPEFYNEIYVTESKRRTNSYDVFCKGIDFDGSHLLTADHDLHRKRRKPMEGFFSRKGITQLQPMLAEVAL
HLESRFRELEGKNAVIRLDHAFSAFSGDIIGRICLGTGDRGSHGDRFLDTPDFASDWYDIIHAIVRSIPLFTGFPQIIQV
LSLLPENLLLWVYPKGQMFNIFRQRALQQIRLANSEQSKGEDSGISIFRHIANSDMPEEERTEERLAKEAQVLLGGGTAS
TARTIGFASFYILSRPELRSKLEAELKGPMANWPEQVPTWAELEQLPLLQGIIKESLRLSYGVMHRLPRVFPDQAIQYKD
FVIPPGIPVGMSAYFMHSDPEVYPNPGEFIPERWVHDVKPAMHRSYVPFCRGSRNCLGMNLAMAEMSLILAVLYRSNGPK
LELYETDESDVKQAHDFLIPLPKLSTKGVRALIR*

>10225|jgi|CYP655A7|[Trichoderma guizhouense NJAU 4742]Trigui1
MALQSWGVNLLIGAVAFWLFRGIVEKVQWDRKRRAKQCGEIPSYPHWDPFFGLDVVLGMAKSLKNHYFLDWLNWVHKNRP
KTFLVNFVGTRFIWTIEPENMKSMSAFTWKSFGVGPMRRNNKATHPFADIGVNTVDGKEWEFARFLIKPFFMREKYTDTK
RLEKHVDRLFSLLPEEDGVTVDVQPLIQRWFLDVVTFLLFGESLDSLVYPDRAQICWAMVDVLRGLRLRLQWYKYLFLFK
HQNWLDAVSVVHKYVDSHITKTYQEMEQIDELKSKGVDVKDERTDLLWWMARNLKDREELRSQMCLIFVPNNDTTSIFIS
HIIWNLARHPDIYAKCREEVLAYGDGELTFEALRGMKYLNGILNETHRLYPNGVTQVRKCLEDTVLPTGGGPDGKQPIYV
RKGDVVQVNKNVLHRDPEIWGDDVLEFNPDRWRELRPMWNFVPFGGGPRRCPAQMLVTAEASYVIARIARRYARIESRDP
SPYVGVMRVGPSSKTGVKIALYRA*

>10228|jgi|CYP685C1|[Trichoderma guizhouense NJAU 4742]Trigui1
MIRNGQSRELVITQPDHLKDFYKNDTQHHPKPVNLNMGAYFGRILGHAVGVQAGERWKIIRKYFDPEFAFRVTVAAMPRT
LDLVNQWADQLVQHSTPSSKPAVSKSFTTDVQSVGKFLPFKIVSQQLYGQVFNEEFFSKLLEMNSLHEEILHDVLLNQRL
TSKFWNLLPSKASRRMEEYNRRWKKFNLDAVALARKQNLDCPLERIYRGVDQNNELEELEFLHTVDEILYTNVEISAAVL
KTLFTRLAEDQAFQQSLRSEITFQTASKDSDLAKYVAKTDSLLNFLVMESMRHTPAFWFSLPECTAVAKTIGGYQVPANT
AVVIDSGRLNKEAVTWGADGQVFRPERFKEIPQSKCRYGFMKFGAGGASGRCLGKHVADITFKLTIIAVLKKFSLETPKD
EILAATPAAVTFSPN*

>10235|jgi|CYP630C2|[Trichoderma guizhouense NJAU 4742]Trigui1
MIVYLLSVALLLLILEPLFTYYWDSKKLRRFPNASLLSGISDIGYILKRYRGFRSKEIHENHQEHPVVRVGPNTLSFSTP
DAIRAIYGHNTPCLKGGTYVTAAGTHPSLLDVVDKQEHARKRRILSHAFATRNLEQWEFKVTDKVQKLVAQFDLLCHDKE
EAVVDFRMWSNLFTIEAIADIALSHHLGCLSQGSDLVTINTQDGEKAVNYIDCLHSGRRATSMLIWSTKWFLSWRFVLKK
LPGFFQTQWHKGQGFDEMVRYLVQQRLRRHENGEQLEDFVGCLFQDKHGDARNLEIAEIEAEVATLLDAGSDTTAISLTH
AMYFLMKNPSALSRLREELRVALDGSQEIAKYATVKNLPYLHACINESLRLLPPVAFGLNRMTPPEGLVIDDTWIPGNTL
VGVPAYTAHRSRLFSNSEQYQPERWLEDSIKETQGTFIPFSTGARGCIGRNISYIEQTVLLATLVQRYDLSLVDPEGKLD
HEEAFNLWPGPLPLKIRRRENC*

>10336|jgi|CYP65BM4|[Trichoderma guizhouense NJAU 4742]Trigui1
MGFVYLISIPIYNVWFHPLRKYPGPRLWAATRIPYARMIFSGKSHRKILELHQTYGDVVRVAPDELAYIDGTAWNDIMGH
RKRGQGENGKDPVFWKSQQHSVISADRENHTRMRRTLAHGFSAQAMMDQQPLIQGYVDMLISRLRDNCADGTRPLEMTSW
YNWATFDIIGDLAFGEPFGCLENSDYHPWVSLLFTRIRTSAANNVLRRFPFGEKLIQLLVSKQDRQKFQEHYQLTQEKVN
KRLAETNPRADFMEVMTKREGAMKFSYPELLDNASLLIIAGSETTATTLSGVTYLLLTHPEVLQKTTDEVRSSFSNESEI
DLLSVQKLNYMMAALQETLRMYPPVPTAIPRKAQPGGDVICGQYVPENTVLGIWQWPMYHNAKNFTLPDSYIPERWLGDA
RFSSDPQDVLQAFSFGPRNCIGKNLAYAEMRLILAKILWNFDISLHPDSKEWLQDNRAFTLWQKPDLNIYIKPREIS*

>10397|jgi|CYP5389A1|[Trichoderma guizhouense NJAU 4742]Trigui1
MRHHTSWPAYTLSVMGHKTYVVTTPGLSHAALKSKSMSMEPLIAYVAPKMLGLSKDAGHHFGIDHTGFYNGSPALRERRE
EFSHALAPGPGVNLPGQMCSDVVAEAVNAFDAEWTTRDFYQWLRDVITLGTANGLYGPKSPVALDKSIIEDIWTFDENQL
RMSWGFLPNLIAPTGVRTLNKISKAFEQFFQSGNESFASDAVKLGIATARKMDVTIEDYSRIEVFNVSVATVNTVPTAVA
MIQNILANSNLLQALRKELESVLTVKETPDGRQAELDIGRAETECPLLHACYQEALRIGSTPTCNRAVLEDVVLTDPDTG
REVLFKKGWRVSIPTFLLHNRDTFWGGDAETFGPEKFLPGGIATDSKGKVKTQGFVPYGGGAHLCPGRHLAKMEILASGA
LVIMALDCEAENGFVTQNYAVNAGAKKPIGLDNVKMRRRPGWEDVEWKVKI*

>10398|jgi|CYP5390A1|[Trichoderma guizhouense NJAU 4742]Trigui1
MGVQSLLALAVAIGVTSYLKLHGASYTAILLGLLVSTVAQLAISLAFSSLIYRWFISPTKSLPHPRDTPFILGNLIPFLS
EPWGFPLVRWQRTVPTTTSGFYRVFLGPFDYLIPKSSQAVTTVMTQPYLFHKPAAVRDGLVESLGVGLVAAEGSVHKRQK
KLLTPIFGMSRNRRLVPQMWAKALILADKMQELVTKFDGNSDILFMHPLTMAATLDVIGVTTLGVDFDSVTRPDQPILKA
YQRVFPSFENQSATEKFFGATLPAIISPHLLFKLPLKPIQEFHQGMTFLQDFCLAQIRQKKQEIEDDKNDNIDVREKDIL
SAIIASGLEDESEILSHILTILAAGHESTAITLAWAIFKLAQHPNVQAKLRAELQAATRKTEGKEMSLDEINSLTYLRCF
LMEVFRLYPAFPAMMREAGNGTLVGDLHIPKGKQIMVSPYAVNRSQELWGDDADEFRVERWEESYSGGAKSSQAFLTFSS
GPRICIGKDFATLSLKVFLVVLVSRFRFEEAIPGWHPIIQKGTSLKPQGLKVKVTLL*

>10399|jgi|CYP584S1|[Trichoderma guizhouense NJAU 4742]Trigui1
MGQFFISTIDPENVKALLSSQFSDFDSGKKGLFGPFIGDSMLTTDGALWKHSRALVRPHLGKGQVEDLSKLEGHIQNLLA
CLPNDGTTVDLQQLFFRLTFDNVVELLLDKKVSTLNCQPGSHLHKVVEAFENVGNLVNRRAALGPLLLFYRDTEMNATCK
ILHDFVDDIIEKAYLKRKTQKDRKSPNSFLDSILDSTDDLVKIRFEVLGLLLAGRDTAASVMSNLLFVLARRPDIWQKLQ
TEIEYLQERKPTYDDLRGLKYLRQVIDETMRLYPPVPGLFRAANRTTILPRGGGHDGRSPVLVPKGTVISCSTFSLQRHE
DVFGPDAQEFRPERWDSLNPHWEFLPFSAGPRVCMGQT*

>10510|jgi|CYP5128C1|[Trichoderma guizhouense NJAU 4742]Trigui1
MATAGTNSALLVTTLSPVSIGVAVISILLLKVLYGLSTDRLRHIPGPFIARLTPIWYWYLTWKGIECTVITALHKKYGPV
VRIAPNEIDISDGAAVNPIYVDNGGFRKIAGYRNFDINGFPTIFSVTDHAHRAVRAKAVSPLFAQQAIANSKPAIQKIID
VTIVELCYRRSMAAGNPVDLLNLFRSMAMDALTQYLIGECFNSVGTERLSATGFVDNFAAGGRFFYLPSWLFSFIDSWAA
KLDKNKAMITTSTDIVQEFAAKVVNDSITQGEKETYQGRLLNASLSREETIAQVMDIMFAGTDGVARILAVFCWHLAQAP
DKLERIYEEIMQNPSVDARSLPYLSGAVKEACRLALANPTRLPRVVPSGGLNVPGLPIIPSGTNVGIGAYSLHFNPKVFP
NPYEFVPERWLECTPEMLRDSFHFGKGPRQCIARNFASAIVWWASEVLVRSCVLDGARPVVEKIEIVEWFNSKQVGDNIE
LSWA*

>10557|jgi|CYP673E1|[Trichoderma guizhouense NJAU 4742]Trigui1
MSHSFSMATLLKFEGRFGKHLHRLFSNIEQQPEGQVFDLKESVARYAYDVISDLAFEKDLNTQGNPEANELPPIPDHILI
GTMYGMVESLLPYSIRIGNKLPIPSLQKLLQSRKLLSQKASQYVNDAIEDHKAGEKETLLDNLLEAKDPSTGAPLTPAEV
SSEAFAFLVAGAHTTSATLGLLFYHLLHNRYAAEKLTEELNANVPLYNDGGKEISYSGLESKLPYTMACIKESFRITPVF
TMPLPRLVTDPNGVDINGFHIPQGTAVSMISQALHHDPQFWGGDHDQYIPERWLEDAISFNEIMPFGIGHRACIGRNIAS
INILKVLCALWRNFEIIPVDKYEKLEINSLGVDEKKGPLLCTVRKRQM*

>10615|jgi|CYP663P1|[Trichoderma guizhouense NJAU 4742]Trigui1
MILLPVAVAFLLCLWIFHKIRSTKGKRLPPGPRQLPLIGNLHQAPQNNPWRTYQQWSTLYGPIFRLQYGLNTVIILGNYE
AAHDLLDKRSNIYSSRPRSVMGGENVSKGMRTLLMPYGQQWRTHQRLQASYLNIRVSQTYRELQDVESKQLLCELLVPGV
DFSDRYHRYSSSLIFALAYGRRLETGSEPEVKAIDKVMENFLYAARVGTWIVDSLPFLNYLPNLLAPWKVHGDQVHEFES
SLYMGNMRRGKRTKSWNWSKQVSEMKESNGMTEKELAYDVGIIYEAGSDTTTMALEVFTLAMILNPDVMKKAQKEIDENA
KGLPSFEDKDNLPYVDALIKETLRWRPVSAGGIPHAVTQDDEYMGFHIPKGATVIGNHWSIHLDKDVYKDPHSFRPDRWI
EDPTLPLAPFGFGRRVCTGQHIARNSLFINIARILWAFDINYAYEENEDGEKRCEVDPWAFTQGFNSRPLPFRAFFTLRS
EEKATVIREEWDAADKDLDQILTRIRSSQRTR*

>10668|jgi|CYP65BQ2|[Trichoderma guizhouense NJAU 4742]Trigui1
MAIFLDNPVAAISLKSVVLLPLLAVISGLLYIAYTAIYNLFFHPLRKFPGPKLWALHYGFYARLELSGEGHRRMLQIHQK
YGPIVRVAPDHLAICHPDGMNNLSGHRKPGQLENGKEYVRTESNPGTIIGADRQDHTRMRKSMANAFSQQAMLDQQPLIV
SYVDKLFENLERFAAKGEVFDAVAWYNYTTFDIVGDLAFGEPFGCLQESTFHPWVELVFKSLKNIAFDSSFRRMGLLYNL
LVMLTPKSVMSKFIEHRELSEQKVRKRLNTKTDRKDFMACMTSRKGKDELTFQELTANASILIMAGSETTATALSAATYY
LGLHPEPLKKLCDEVRSAFQSEDEIDLVSVGRLDYMLAVLNEAMRLHSPVPATTPRTINEMGDTIGGQFIPPGTHIDIWY
WTLFHNPEYWVQVEEFIPERWLGDARFENDKKQIFTPFSVGPRGCIGKNLAYAEMRLIMARLIWNYDIELLDESIGWDKR
CEVYIVYNKGPLYIRLKPRK*

>10826|jgi|CYP5129A3|[Trichoderma guizhouense NJAU 4742]Trigui1
MGPVTTIFSSLDTDYRDLRAKAVAPLFSTARLRNASLHGGVIQECVSEFVTQLASLKADCKTNHAKLDILDQCARLSLDV
VTGYLLNEPYGGLAEHQQLPMEKRRNAKLSINPFIFAIVGFSRFSLLPNWLFKFMYSLYSRFSFSEEVGRCFVSMDSFAR
RLVSQTLEVDPAKRQDSYQTRLLAAGITPAETEVQCQAVVFAGSDSTAVKLATILFHLVQNQDCLRRLKEELQAAETEDE
GVALQEQPYLLAVIKEGLRVGMANPTRMTRVVPSKGMLVGDVYIPPGTIVGVAPYIVHHDPAVFPDPFAFRPERWLEGGR
DNGLKRPNMDRSLLMFGAGLRACIGRNLAQKQLTETIKAVVKSSVLEGARTCQKRIELVEWFNAEIKGHTLDIEWP*

>10827|jgi|CYP552E2|[Trichoderma guizhouense NJAU 4742]Trigui1
MKPGPVVRINPEELHFDDIAFVDEIYAGGGRKRDKQQHFLNFVAGPIVSSMFATLDHDHHRIRRSAMNKFFSRAQILKLE
SNIRELVDQLCDKMIRLGKQNGDPLDVTTSYSCFTSDVISGYCFGEPFGFISQETWYPNFREPLGAILGTTYVFRFFPPL
KILTNIAPLFAKYMREDIAKMLAESNERMPARVRKAKQEHESGKLQDRASIFAAILGSSLPDEEKTDYRLGGEGFSMISA
GTETTAWTLTVITFYLLNQPETLERLTKELQDADAINLTWVALENLPYLSAVITEGLRLSYGVTARIPRIASKENLIYQG
QFNGHEVKYVIPSGTPMGMSNAINHHNEEVYPDSNVFRPERWLDIEEAQRRRMEISLTSFSKGSRVCLGMK*

>10829|jgi|CYP631C7|[Trichoderma guizhouense NJAU 4742]Trigui1
MNKTLVTAINASAELFSSFRDDFNGAQLLWLAVVATIAVIFVHLFQTWWSLRHIPGPFLASLTNLQRVWWVRTGRAHLYH
QAVHAKYGDIVRIGPHMVSVSNPEAIQTIYPIRSGFPKSDFYSALRPYSSERGSMLLVFNTQDEQMHKRLKSPIAPLFSL
SNTVTFEGLVDDVLACLSEQLDKRFVDTTEILDFGKWVQYFAFDVMGTMSFSKRYGFLDQGRDDEGMLDAIFNYMKTAAP
MTQIPWLDPWFYKNKIVHSFRRTPGMSILGVVSKAIRERLDGNDDDAGTQTSGKDFLSRFLEIHRANPDLPPWASTAWTF
SNVIAGSDSVGSVMRTILWYVQSKLDQSDNLVTHPDTLQALQRELDAANLSRPYPKWNEVRDLEYLDACVQEAVRIHPPF
ALPFERVVPVGGVNVMGKYLPEGVFVGGNPYVVNRHKPTFGENVEDWSPERWLGGEGHKKKLEQSILTFGAGRRVCLGKY
IGLFEVKKLIPFLILNYEASCHVPKCWNIGAATDRELQIQIIDPKALTVENGFFFKQEGFNCRIKKRKQSSTD*

>10866|jgi|CYP65DT2|[Trichoderma guizhouense NJAU 4742]Trigui1
MNETKEKHARLRKQLALGFSERSMRDQEPIIGNYVDLLIKRLHEHCIDGDKLDPITGEKAKRELNMTAWYAWTTFDIIGD
LAFGEPFGCLERAKYDPWVAAIGKAVRFSPVILGAKLLGYEWALRPLLSMLNKYRREHNRLCMEKLQRRMAMSAERPDLI
EGLLQKAKDWDMDVRQVMQNSSNLIIAGSETTATGLAGITYLLLKNPDALQKVVQEVRSSFSSEDEITLLSVNNLPFMFA
CINEALRLYPPVALGLPRIVPREGAVIAGQFVPQGMTVSTWHWAIYHSERLWAKPFEFHPERFLHDPSFANDRLDALQPF
SVGPRNCLGRNLAYAEMRLILARILFNFDLKLVNEEEDWMDQATFILWEKGPLNIYLTPVKK*

>10957|jgi|CYP627A6|[Trichoderma guizhouense NJAU 4742]Trigui1
MDAVDWSSIQDSLTPTRVALAGLFVVFAIPRILGLLKALFSPLRRVPGPFLNKITSWPFTISVLNGASHRFTDDLHKRYG
PIVALAPDMISVSDDAEVKKIIQTQDWHKSEAVYGNFRQDPERPTLIAFTDKSSYGVRKRMISSMFGIRYIRSMQPLMLD
CINVAIDKLEKQCNVKPVEVDMQNLIQSLAVDIIGITTFGQSFNVVKNGSHPLPDQIKKALKLAGLLMLVPWIRHIPFLP
ARDPYVDKFTSDAVENRRAILKNSNKQDLLQKLVEAGDDSEGSIFRRSDIQDEAIILLTAGSETTANAELFTLIMLTKNK
DKMAKLVAEVDQWYPPSDLEKAVDCEYSFLGMTYLQACIDETMRLVPGQATGSPRECLKDEKILGYTIPKGTTVFPSTQN

VHMNEKVWPSANEFLPERWLDIYASGKTNEVAFWPFSAGSRVCIGKHFALQEMHMTLVSLFRRFEFEYIPEQDETTVFRV
AQQLQAHRYMIKVKRRSF*

>847|jgi|CYP505M2|[Trichoderma guizhouense NJAU 4742]Trigui1
MTTSKNSNIPQPRTIPLLGNIPDINLEYPLGSLLHLADKYGPIYKLSIGGTKLVILSSYEFVNEVCDDNRFKKSIQGDLE
ELRAVVHDGLFTSSGEEEENWGIAHRVLMSAFGPMSIRGMFDDMHEVSSQLTLKWARYGSSTPISVGEDFTRLTLDTVAL
CSMGFRFNSYYRDDMHPFIKAMYAVLKAAGDRNMRVLPSILHKSADRKFESNIAILRTTAGQVLAARQKAPDATGNPKDL
LNAMINGVDPKTGRKMTEQSIIDNLITFLVAGHETTAATLSFTMYQLVTNPDVYRKVQAEIDHVVGSGPIMIDHVGKLKY
LSAVIRETLRFNAPISAFAREATKDETIGGKYRVKAGEQLVCLLAKSHLDPKVYGDTANEFVPERMMDDNFNRLMKEFPH
CWSPFGTGLRSCIGRPFAWQEMILALAMLMQNFNFVMDNPSYSLIVQETLTIKPKDFKIRAIPRGGLMPFQLEARLAGAF
SGKTQGPLATSDQQSPSNLSASPLNSVAKVSGGTKLTILYGSDAGTCEFMAQRLANDASSHGFKATVDTLDAGREALPTD
GPIVIITSSYEGQPPHNAGHFVDWIQNMDGNKLGNVAYAVYGCGHSDWVKSYHRIPQLVDATLEKLGARRIVSMGTTNAK
DRDMFSDFECWEDELLWPAIEKQFGGSTENDKSPLSGLSVSFSTPRASTLRQDTREGFVVAARTLVTSKSLSKKKHLEVK
LPSDITYVTGDYLAVLPHNPKETVLRAIRRFNLAWDSHIVITASEPTTLPTDASIPISSLLTSYVELGQPATKRNVLSLY
LIAEDGKSKQNLYHLATDAYETEVRLKRVSILDIAERFPDLLIPFNHFLLLLPPMRVRKYSISSSPLSDPTTATLTYSVI
DSPALSGNGQYIGVTSSYLSSLAPGDRLQVSIRAGQGGFRMPADSSKTPIICIATGTGIAPFRAFIEERSIILKSRRSLA
PAVLFYGCRNPLDDDLYYDEFCTWEAAGAVTVFRSYSRQPEASHGCKYVQDRIWHERQNVTQLWDSNAKIYVCGSNVMAD
GVRETLIRILSNKLETKGVPMEKKEAMEWFERITSERYAIDVFD*

>1104|jgi|CYP505A25|[Trichoderma guizhouense NJAU 4742]Trigui1
MADSVPIPEPPGLPFLGNLGEFSANPIEDIVRLSNTYGEIYRLHMGSRPVVFISTQALVNEVCDEKRFQKSLSSVLRVVR
EGVHDGLFTAHSDEPNWGKAHRVLTPAFGPLPIRDMFDEMHDISSQLALKLARHGPHKPIHVSDEFTKLALDTIALCSMD
YRFNSYYKDKMHPFVQAMGDFLAECGRRNRRPGFAPNFLYRAANEKFYNDIAILRDTANAVVEARRKNPSDRKDLLGAML
NGVDPQTGEKLSDANITDQLITFLIAGHETTSGTLSFAFYHLLKNPSAYRKVQEEADAVLGKGPAKVEHVSKLVYIQAVL
RETLRLSAAIPAFSVEALEDTLIGGKYLVHKGEPITCVLAKSHLDPVVYGDDANDFKPERMLDDEFARLNREFPNCWKPF
GNGKRGCIGRGFAWNEAVIAMAILFQNFNFSLDDPNYQLEIASSLTIKPKDFFMRATLRDGMTPTELEQRLAGKGVVEEH
HADKKAASAASSKGPQNPLAVYYGSNSGTCEALAQRVATDAASHGFKVTDLAPLDSANQNLPKDRPVIIVTASYEGLAPS
NAAHFVSWIENLKGNEVEGVSYAVFGCGHHDWVQTFHRIPKLVDSTLAEHGATRLIPLATTDAANRDMFSDFETWEDESL
WPALKEKYGATAASTDGSAGGLIVDVSLPRKSTLRQDVEEALVTSTKTLTTSGSTKNHIEVRLPTGMTYRSGDYLAVLPF
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EFERWEKLGAVEMRKAYSRASDKSFGCKYVQHRMSHDREDLFKLWDQGAKVLVCGSRDVGKAVEAVCVELVQEKAKADGK
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>3781|jgi|CYP505P1|[Trichoderma guizhouense NJAU 4742]Trigui1
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LLHMVHQDKAVYGEDVAEFKPERMLDENFNKLPPNSWKPFGNGMRGCIGRAFATQEALLIVAMLLQNFTFEMADPGYKLK
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SLRLRTYSISSSPSWNSSRATLTLSVLDEPATTEGSERFLGVASNHLAGLTPGDLIHVATRPVKGIFQMPTDLSKAPTIM
IAAGAGLAPFRGFIQERAYQQQNGAQLAPAALFFGCRSSHDDLYRDELEAFESSGVVRVFRAYSREDVGSKPNTRKGYVQ
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>2389|jgi|CYP618A6|[Trichoderma guizhouense NJAU 4742]Trigui1
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YRAVLVPPLLGKLITFLNPFIPLRWLPIEANRAFIRANTALRGMLTELVEERVQQVQQDKKSGQSDEKADTKDFLTKLIE
ANLAEKKGVSDQMLVDLIIQGVSAGHETTAGALTWTVYALIKYPDMQKRLREEILAAQHKQPDLDAATIDSLPYLNNIIN
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GELEGEVV*

>8219|jgi|CYP539B7|[Trichoderma guizhouense NJAU 4742]Trigui1
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AVEAVREHKITLTLPELPSEIAGLLRDLDQLQLRWATPASYNTLEPFSSRISPGLHVSYTPIKEDHDPEKLCTALQAFGR
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LWPLQKREISVPASPKGRTEVGILRIGDAPGMEAHEVGVSGVLAVIGETKTPSPTMFAFAARHRAAPGSFTSKFQQPTGL
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>217|jgi|CYP65BM5|[Trichoderma hamatum GD12]Triham1
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RGGAINNALRRFPFGERLIQFLIPKEARRKFQEYFQITQEKVNKRLADTTPRPDFMEVMTKKEGDMKFSYPELVDNASIL
IIAGSETTATTLSGVTYMLLSHPEILQKTLDEVRSSFSSEAEIDLLSVQKLSYMMAVLQETLRMYPPVAASMPRRAQPGG
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>319|jgi|CYP534C4|[Trichoderma hamatum GD12]Triham1
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LDYVPERWFQSLEKDSSAGSEDVAGADSEDFGGFQGSDINAQLFRPERGSYIPFSDGARSCLGRRIAVVEMMAALAVIFR
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>353|jgi|CYP5076G1|[Trichoderma hamatum GD12]Triham1
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AVINESFRLYPPVPTTVYRQTPSEGIMIDDVHIPGSMSVISPQYAIGRNEAIYAEADSFIPERWYQFPDMIKNKDAFAPF
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>421|jgi|CYP5095Q1|[Trichoderma hamatum GD12]Triham1
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NVQERLYQEIVASDSQYSELKNLPYLTAVIYESLRLYPTLVQFTDREALEPVCLGNGITIPQGTLVGWNSYGIHTDPNSW
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>497|jgi|CYP548AA1|[Trichoderma hamatum GD12]Triham1
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TAITPTAVKEFEDQVTPHVNEFIDIISEGVGSKVEGEHGWSSGKDMCFYVSFCIADIMGSMTFGRTWNVQRDPKYRHFVK
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>514|jgi|CYP570E3|[Trichoderma hamatum GD12]Triham1
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KYVTSGSDVRPFDMAEKTQFFALDAIGDISLGQPFGYLDKDEDLYQYNEINTTSLPLMNVVSVMPALANIVHTWPLRLLL
PKEGDQVGFGRLMRFARGYVDTRLDPKTPRAQDMMQAHIDSGMSKNDLIQQVFLSIVGNSIAGSNSSAHALRMTLLSIIT
SPPAYNALIDEIRRVSPTVSSPITWAQAQTLPYLQAVIREGLRMWPPVGGLGFKTVPPEGDHINGYFVPGGTEIGQGFHG
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>527|jgi|CYP5168G1|[Trichoderma hamatum GD12]Triham1
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>874|jgi|CYP65A8|[Trichoderma hamatum GD12]Triham1
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ITGYVDQLMDRLKRDCGNGTQQIDIVRWFNFTTFDIIGDLSFGESFDCLKNSDYHPWVELIFQSIKNLVYMAAIRYFQLS
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NTHVDVWQWPMYHNPNYWAQVEEFIPERWLGDPKFKDDKRDVFQPFSVGPRNCIGKNLAYAEMRLILARVILEYDIKLAE
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>1000|jgi|CYP65EU1|[Trichoderma hamatum GD12]Triham1
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PNELSFTDPQAWEDIFIRQPPGIAKTSHSHALAPDMAFYNPFNDQPPSIISSSDEAHHHLRKKLVPGFSDRAMKAQEPLI
GSYVDLLIRRLRENSTDATGRPQNVNMRDWIAYATFDIIGSLTFGEDFGCLEGSGYHPWIALVLGSFKGRVKIQIFKALG
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YLLAMHPDILQKLVAEVRGRFQRREDITLSSVASLTYMLAVLDEALRIYPPDGVSSPRLVPAGGHEIAGWFVPGGTRVGI
WQWAINRDERLFLEPSRFDPDRFYNKGDEKSRYAGDRIDAVNAFLMGQRSCIGRNLAYAEMRLILARLVWEFDISIDESS
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>1055|jgi|CYP535J3|[Trichoderma hamatum GD12]Triham1
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SGNELRSEILDAIVIGSFGPCHVICAALLLVTTNPYVYSKLCREIDNAVRDGKAPPTDKGIITFAQTRQLPYLQATIRET
LRFMPPIIGLFPRDVPPGGDVVTINNKPIFLPGGTCIGRSVYSMVRSKEIYGDDANTFRPERWFEPDSAKLANMVRVNEM
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>1253|jgi|CYP584D5|[Trichoderma hamatum GD12]Triham1
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LQMFSFNFAAMRARSRVFQYIDDFINTSLDREREDDGATSSGCNVLQGLAAVTSDRKQLRDQILHILVASRDTTACLLSN
LFFVLSKKPQIYEKLRHEILAVAGKEPATSNQLNSMEYLKWCVQESLRLHPVIPTNAREASKDTILPYGGGKDGNSPLLI
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>1260|jgi|CYP541A2|[Trichoderma hamatum GD12]Triham1
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>1669|jgi|CYP618A4|[Trichoderma hamatum GD12]Triham1
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NNVLSESLRVYSPTLLAPWEAGEDLVIAGVAIPKGTTVTTIPAMIHYNPSVWGADVNVFNPDRWDAVSGAVANPFAIESF
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>1718|jgi|CYP532R1|[Trichoderma hamatum GD12]Triham1
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NKRFVNPETGPIVFDFSRWLNLFAFDAIGELSFSERIGFLESGGDMEGIMHQVEMQLGHQNTVGQMPWLDGFWAKNPIKL
WLGRMGILQERDSIVVRFAARKIKERYEALGSGTSPCTTDFLDRFLQAGLKDPDLMTQQEILSLTLVNVFAGGDTTAIAL
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>2035|jgi|CYP55A26|[Trichoderma hamatum GD12]Triham1
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>2064|jgi|CYP504A23|[Trichoderma hamatum GD12]Triham1
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NDCRNGSQDVDPSPYMARFALNTSLTLNYGFRIDGNINDELLAEITHVEREISNFRSTSNNWQDYIPLMRVFGKKNSKAE
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>2073|jgi|CYP584R1|[Trichoderma hamatum GD12]Triham1
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NSSDSKALPYVLLRAIIEDTQDPIQIRNEILNILVAGRDTTASLIANIFFMLSTRPQMWSMLRDEVAQFQNQPPTFDNIS
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>2104|jgi|CYP617A8|[Trichoderma hamatum GD12]Triham1
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GYLFKPRPPAKFLIIMATLVPSWLIYRLPLKRNRLVNEAARKIRGMCRDVIREKKEKMIANKERTDVDILSVAIESGQFS
DENLVDQLMTFLAAGHETTSTALTWAIYFLCCYPEIQTRLRDEIRERLPSTDDAGAKLTSQDIDRMPYLHAVCSEVLRFF
SPVPVTIRETTHNTTIQNVPVPEGTRIVLAPAAVNVDPKLWGADAGAFDPERWISKNKDSEESNKRAASGGADSNYSFMT
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>2361|jgi|CYP642C1|[Trichoderma hamatum GD12]Triham1
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AILNCAIPVLSINIFPRKIVVTDPSMESVLSRHTSETSLANVIFLIGRRVFGLRDSTIQAIGGYDPRPIHVGEFSSASNA
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>2556|jgi|CYP51F1|[Trichoderma hamatum GD12]Triham1
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RSYVPIISHEVTSYFKRTAAFKGKSGTVDIPQKMAEITIFTASHALQGSRIRNKFDESLADLYHDLDMGFTSINFVLHWA
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>2641|jgi|CYP51F1|[Trichoderma hamatum GD12]Triham1
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GRTYLINYVKERILQRKTEREIKEDKGIGKSHGMPDDFLEKLMVKNKDAPSKVTNYHVFMMSLSNIIAGSDTTAISLSAI
LYYLLKYPDVMSKLRDEIDQSANGAGSNIHLSFKESLEMPYWQAVMKEALRLHPATGLPLWRDVTEGGLHLDGQFFPKGT
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>2826|jgi|CYP528A8|[Trichoderma hamatum GD12]Triham1
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GLHIHGHFIPGGTTVGCNPAALHRNANIVIGTDPEAYNPDRWLSGDSLDVRPMERYSLNWGGGPRTCPGKNLAEMVVYKV
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>3119|jgi|CYP5866A2|[Trichoderma hamatum GD12]Triham1
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FDKDHNKTVQMLWEQPGLIRSLVYTTAVINETLRMFNVGMTVRAAPSNMYFDEPKLFKPERFLAEPSWPHHAYRPFEKGL
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>3156|jgi|CYP5091C8|[Trichoderma hamatum GD12]Triham1
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GSTVNKGDWVCVPQRAMMQDGTRYKDPHIFDGFRFARANAKIQQREPCAEVPDQKESRLTHVSPDWPIWGLGNMSCPGRF
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>3364|jgi|CYP65U10|[Trichoderma hamatum GD12]Triham1
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>3675|jgi|CYP539K1|[Trichoderma hamatum GD12]Triham1
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>4050|jgi|CYP530A8|[Trichoderma hamatum GD12]Triham1
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PKRHPDPRKYDPSRWAGDDQNSAQSAVTGNPTKRDHFVFGAGRRLCQGMHIADRSLFLAMSRTLWAFDLKRPIDEKTGRE
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>4264|jgi|CYP526N3|[Trichoderma hamatum GD12]Triham1
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FLFPFRRPTVLVTDYREVVDICSRRPKEFDRGNRNKECIGVVAPNFHFAMQTADPQLQFHKKLIRDLMAPNFLKLVSAPQ
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>4996|jgi|CYP563A3|[Trichoderma hamatum GD12]Triham1
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YFICTHPNVYKRLTAEIRDAFTVNDDIRWDEVRKLRYLEATLNEALRLFPPSPASQQRVVPLGGATISGYYVPAGTTVAV
PPWVSTHSNVNFIEPDTFRPERWLGEDAEFQDDHLNASLPFGTGPRVCIGKNLANLEMRLIASKILWNFDIELDGSNYKT
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>5079|jgi|CYP5039A4|[Trichoderma hamatum GD12]Triham1
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TTASTLAAIMYHMLADCNALTRLKAELEAVMPDPQQLPEASKLDKLPYLNAIIHEALRLYPGATHRQERAAPDEDLVYKD
AKSGRTFVIPAGMGFGMAAPIVNRNPAIYRRPNEFLPDRYIENPQLARYLISFSKGARQCLGMHLAYQEMQMLIAGIFRQ
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>5161|jgi|CYP5866A1|[Trichoderma hamatum GD12]Triham1
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>5168|jgi|CYP620B10|[Trichoderma hamatum GD12]Triham1
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ALAMVLFPEVQKKAQEEIDNIIGTTPNRLPQFEDRERLPYVSAVAKELLRWFSVVPISTPHTADEEITYGGYRIPKGSFL
LLSSWWLHHDPQTYPDPSCFSPERFLEPRNEPDPDETFGWGRRICPGRYISNDNVFITIARLLATFNITKAVDEKGRFME
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>5184|jgi|CYP5818A1|[Trichoderma hamatum GD12]Triham1
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>5860|jgi|CYP65A6|[Trichoderma hamatum GD12]Triham1
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ILALLFVPKDLPAKGREHRRLSIEKTRRRLDSGSSRPDFMTALTTTRGSAEELTFEELVSNASLLIAAGSETTATALSAA
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VWQWVNHHNPAHFREAESFIPERWLGDARFENDKRDAFMPFSVGPRNCIGHNLAYAEMRLILAKVVWNFDIELAEESIGW
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>6292|jgi|CYP58M6|[Trichoderma hamatum GD12]Triham1
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KDFFSRRSVAELSNSVNERVQKLMTRLEVARINQIIVSLDDAFSALSSDIITAYCCGKDWDFIEDKNFRSDIRNAAENAI
EVTHISRFIPWLVYAMSALSPRTMAMIMPGKEKLFELLEAFLEYGKMESHMGKRKTMVATLADPSIPAKERDYYRLRDET
FGLLAAGAEKTARVLTAASFYLANDRRVRETLQAELKQAMPTLDNRPTWAELEQLPYLNAFINESLRLAYGITARLPRVA
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>6364|jgi|CYP5334C1|[Trichoderma hamatum GD12]Triham1

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VTTHVLTWAITLIADHENVKKELREEIEAHKDNLQEYITNVNTHLHRCYYESLRLRPIAVFSIGESAPTVKDFRGIHVKP
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>6366|jgi|CYP548W5|[Trichoderma hamatum GD12]Triham1
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LRRFEPKVQSVLERFCQYVRSAANVATEKGWTSPRDISKDFNYLAFDTMTTVSFDSDFDTIRNPENRYPIGALEESNIRL
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>6546|jgi|CYP5392A1|[Trichoderma hamatum GD12]Triham1
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>6980|jgi|CYP5333B1|[Trichoderma hamatum GD12]Triham1
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RIELFRQHGVSLEGRAAFDLALLWASVANSNALIPWMLFELYRDPVLLEQVREEIAPYVNAVQPENEFGSAVWVPPVLEG
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>7068|jgi|CYP53A46|[Trichoderma hamatum GD12]Triham1
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PGVTICGEFFTAGTVLSVPTYTIHHSKEIWGPDADEFRPERWENATQRQKDAFIPFSYGPRACVGRNVAEMEMRLIASTW
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>7340|jgi|CYP548A14|[Trichoderma hamatum GD12]Triham1
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>7420|jgi|CYP540B34|[Trichoderma hamatum GD12]Triham1
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LVFQDKYIKEMQRKHNPSFQPGRTAKTDLILPGGYKMPKDSVIIPALHHIHNNPKLWSDPAKFDPDRWDTEEVKNRPKGA
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>7587|jgi|CYP58M7|[Trichoderma hamatum GD12]Triham1
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>7592|jgi|CYP5127C3|[Trichoderma hamatum GD12]Triham1
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>7680|jgi|CYP620B7|[Trichoderma hamatum GD12]Triham1
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>7809|jgi|CYP61A6|[Trichoderma hamatum GD12]Triham1
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>7839|jgi|CYP65BQ2|[Trichoderma hamatum GD12]Triham1
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>8217|jgi|CYP61A1|[Trichoderma hamatum GD12]Triham1
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>8250|jgi|CYP5386A1|[Trichoderma hamatum GD12]Triham1
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>8511|jgi|CYP574C1|[Trichoderma hamatum GD12]Triham1
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>9059|jgi|CYP537A10|[Trichoderma hamatum GD12]Triham1
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>9073|jgi|CYP671C2|[Trichoderma hamatum GD12]Triham1
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>9148|jgi|CYP602B6|[Trichoderma hamatum GD12]Triham1
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>9197|jgi|CYP530A37|[Trichoderma hamatum GD12]Triham1
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>9279|jgi|CYP609C1|[Trichoderma hamatum GD12]Triham1
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>9441|jgi|CYP5387A1|[Trichoderma hamatum GD12]Triham1
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>9458|jgi|CYP52X6|[Trichoderma hamatum GD12]Triham1
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>9810|jgi|CYP5391C5|[Trichoderma hamatum GD12]Triham1
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>10030|jgi|CYP65U9|[Trichoderma hamatum GD12]Triham1
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>10164|jgi|CYP526K3|[Trichoderma hamatum GD12]Triham1
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>1410|jgi|CYP539A31|[Trichoderma hamatum GD12]Triham1
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>6963|jgi|CYP6001C27|[Trichoderma hamatum GD12]Triham1
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>7322|jgi|CYP6002A8|[Trichoderma hamatum GD12]Triham1
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>1224|jgi|CYP505A21|[Trichoderma hamatum GD12]Triham1
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>6902|jgi|CYP505P1|[Trichoderma hamatum GD12]Triham1
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VTVILSLLHQEKAVYGEDAAEFKPERMLEENYNKLPPNSWKPFGNGMRGCIGRAFATQEALLIIALLLQNFVFEMADPAY
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ALAYRLASDAALHGFYARKIAPMNAACNDLPKSEPVIILAASYDGSPSDNAVEFFEWLNKAEPESLKGVSYTVFGCGHRD
WVATFQRIPILIDDLLEKAGADRFADRGLADAAVMDLFVEMEKWTTDVVWPAISQTEGGDDGESRLINSLLKVEVSQPRQ
LKQYSQLVQATVTESRSLTTESAIGKKMHLDIKLPPGVSYHPGDHLLVLPVNPPRDVKRVLSRFHLAWDTVVRASSDQSV
HIPVETSMTAHELLSSYFELSQPATPRDIRVLAAAATEQKTKHLLSNLATASYAEGIHENRVSLLDLLEEFPDIPLAFGT
FIALLPSLRLRTYSISSSPSWEPNHASLSFSILDEPPVPPRSKSFLGVASNYLANLTPGDLIHVATRPVKNIFQMPADAS
KVPVIMIAAGTGVAPFMGFIQERASQQQNGAELAPAALFFGCRSSHDDLYHHELDYFEDSGVVQVFRAYSREDAGSKSNT
RKGYVQDSLLAEKQTFLRLWDAGAKIYVCGGVRMASGVKEAVMKLVYMAEQDTASKSFTLQEWFKRFEKTRYAAEIFT*

>8233|jgi|CYP505A25|[Trichoderma hamatum GD12]Triham1
MAETVPIPEPPGLPLLGNLGEFSQQPTNDLVRLANTYGEIYRLHMGTRPAVFVSTQALVNEVCDEKRFKKSLGSVLRIVR
EGVHDGLFTAHSDEPNWGRAHRVLTPAFGPLPIRDMFDEMEDIAKQLSLRWARHGPHHPIPVSEDFTRLALDTIALCSMN
YRFNSYYQEKMHPFVQAMSDFLAESSRRNRRPPFAPNFLYRAANEKFFNDIAIMRDTANAVVAERKQNPSDRKDLLAAML
EGVDPQTGEKLTDSSVTDQLITFLIAGHETTAGTLSFAFYNLLKNPVAYRKVQEEVDEVIGRDAPKVEHISKLPYISAVL
RETLRISAAIPAFSVEALEDTIIGGKYLVHKGEPIACLLAKSHLDPLVYGEDANEFKPERMLDAEFARLQAAFPNSWKPF
GNGKRGCIGRGFALQEATLALAMLFQNFNFTLDDPNYQLEIVASLTIRPKDFFMRASLRHGMTPTELERKLGGKGAAGDH
HADAKAAGGASQGPQKPLAVYYGSNSGTCEALAQRVATDALSHGFKVTDLAPLDFANQNLPKDRPVVIITASYEGQPPSN
AAHFVSWIESLKGNELEGVSYAVFGCGHHDWVQTFHRIPKLVDSTLEERGATRLVPLATTDAADRDMFSDFEAWEDESLW
PALKEKYGASAGSTEGAGGGLVVEVSLPRKSALRQDVEEAIVTNAKTLTASGPAKNHIEVQLPTGMTYRSGDYLAVLPFN
PKDTVSRVFRRFKLSWDAVLTIHSDGPTTLPTNSPISANDVLRAYVELSQPATKRNISVLIELAQDEELKAKLEKLAGDD
YQQEIGAKRISILDLLERFPSLELPLDSYLAMLPPMRVRQYSISSSPLADPSKLTLTYSVLEQPSLSGQGSHFGVATHFL
ASLNPGERFHVAVRQSKVFHLPTDAENTPLILIGVGSGLAPFRGFIQERAAMIAAGRKVAPALLFYGCRSPDIDDLYAEE
FERWEKLGAVEMRKAYSRATDKSFGCKYVQHRMAHDREDLYKLWDQGARVFVCGSRDVGKAVEAVCVQLVKERGEADGKD
VTEERAQAWWDRQRNERYLTDVFD*

>1679|jgi|CYP535D15|[Trichoderma hamatum GD12]Triham1
MDLARKVQFFTLDVISAVGTGKTFGMLQRDADVEDFLQSSEEGLQIANFAAALGFSWIAQAPFIGRFIAPSAKDSKGFGR

LMAACFRHVDERLKNPTDKKSDMLASFIRHGVVGDELRSEALEQIVAGSDTTASGIRCTLLHVITNPRVYAKLQKEIDEA
VRDGTAPQDGFITHSNAKQLTYLQATIREAMRVWPPVANIFSRDIPPGGDTVNVNGKDVFLPGGAYIGYSALAMHRSTEI
YGDDAKVFRPERWFEDDKDKLAHMLRTNELVFGYGKWQCLGKDVARIELEKVVFELLRNFDIALINPTKPWVALNNLGLF
TISDMWVQVMEREAGGTPHVTWIFTKPYLGSFHFPNSSVAENTIMPLVDPITMSSALAKGSPAQATDSKPKAAIAAVPTF
NNALSKGVSFGRVAVLLGLLAAQFNELVAQPALTLQTAVPVVAVVQVAYVVLCLPAAGSQQAKVAKKSRPGEKKKPEAAG
TSSVVTALLAIILTTISTPVIHALFVLFGAPLLDHVLETFLCAAHFALLGVFPIIYARGVDNQSLIAVAGVSAPLDETLG
GLLGAVLGAWLGAVPIPLDWDRDWQRWPVTIVCGLYAGSLLGSWLSGTVFYGKRIGGTAAPAAKDE*

>8298|jgi|CYP539B7|[Trichoderma hamatum GD12]Triham1
MLQNLSWLIPASAGSLAIAMPCAIASFWIIERLVTEYRLSKVNGVRASILAGNPITSFFFFFKGAYMHSQNRLLEYYFSM
FANADPSCPNAVEITIVGRRSIMTIDPEHIKTVLATNFTQFGKGERFHSTWEPFLGDSIFTTDGQLWQQSRTLIRPMFLK
QKIRDMDIIERWSDVMISKIPPSGQTVDISDLFYRMTLDAITDYLLGHSVESLENPKGEFSRAFTHVQRKQMTLTLLAPV
RRFIPKGDYKSGIKILEAFIQPFIEATLALVPEELEKISKSDKEFTFLHQIALFSRDPKVIRDQILAVLLAGRDTTAATL
SWALYELSNYPATWHKLRNHVLQKVGPDAAPTYEDIKDLTYLTHTLYETMRLYPAVPFNIRTCRQPDIATLKGDHIIYST
LAMQRRKDLYPPVSDTFADPAIFSPERWDHWTPKPWQFVPFNGGPRICIGQNFAMTEMAFMRLHRIIVSAIIMRERITYF
HPPGAAIDPKELQIQVTKVQGPATEAVREHKITLTLPELPTELATLLRDVQDLHLRWATSASYETLEPFSSRVSPGLHVS
FTPLKKDYDPEKLCTALQAFGRLDCSSEEVYLSLGDEKQKEPSTLFFYNELEKLDGFAKRLGPVVCSGPTASECKKQLQD
LKDAVSLDISYDSTSDSVKVQALWPLQKREISVPASPKGRTEVGILGIDAPPNMEAHQIGASGVLTVIGEHKEPSPVIFA
FEARHRTASGSFTSKFQQPTGLHPTLQLSLSGAAPPTDGEAECAPYAYFTFPKVIFADRYQLADELFLASKNLTATKYVS
EPVDLEAPAYTTKPWGSNVLLELAPPKDSAAAETWTAEVPLHLRYLKPTPTGKEEAGIPYPVVFWACDSGEDISYAVNPF
DRVNLGYDSLFSPSTKFWHVSPKPEAGGRLINNINVPVVTEGASQWVGVGTAAAVAVGFIWLLFRLVGGYAKSGHSTVKE
KAGDGKKKQ*

>552903|jgi|CYP5091C4|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MSVIIDTVILTFKLAAPVIYKEKLLGVTFLVAVLLVSQFRQIRTATSFLVRRIHGVLYLFSGPELIDRAYNRAQGKPFKV
STPSNDHLFITSTSLIKELINAPSQHLSLHAVAKERQILQPKYTMCGFEVQDHHGIEGTGYVRALRSLLTSHLPKFQPHL
EVIVKNALLSGLRDVQPDGFAYAKIFPLMKTLVTRVNCFVFFGEELSQNTEFTTAALDFPQDVAFAAEFLRITPEFMRPL
VASIATNRHKAATTIYRYLVPIIEQRFAVKGLRSNEATPMDCMQWLINNSPRKDPWTPAKMVGEIMAVWFGSVHQLAMIR
DCFHAEDSPRDVERLPLLDSFIKESVRNSNFDAITCRRNALVPYTFQDGSSLNKGDWACIPQRAIMQDSSRYGDPQTFDG
FRFAHDNAQHQQHKQSTEIPRQKESKFTDATLDWPIWGLGNAACPGRFYASLVTKLILIRILEDWECKILEPEAPRSMSW
RSSIVPRSSTIITFRKKHP*

>5|jgi|CYP552E2|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MGVPAVLGILNGFLTQTNLIGLAGLWIAYYILWALYNISPFHPLSHIPGPKLAAATFLYEAWYDLILHGRYTHEIKRMHE
IYGPVVRINPEELHFDDIAFVDEIYAGGGRKRDKQQHFLNFVAGPIVSSMFATLDHDHHRIRRSAMNKFFSRAQILKLES
NIRELVDQLCDKMIRLGEQNGDPLDVTTSYSCFTSDVISGYCFGEPFGFISQETWYPNFREPLGAILGTTYVFRFFPPLK
ILTNIAPLFAKLMREDIAKMLAESNERMPARIRKAKQEHESGKLQDRGSIFAAILGSSLPDEEKTDYRLGGEGFSMISAG
TETTAWTLTVITFYLLNQPETLERLTKELQDADAINLTWVALENLPYLSAVITEGLRLSYGVTARIPRIASKENLIYQGQ
FNGHEVKYVIPSGTPMGMSNAINHHNEEVFPDSNVFKPERWLDIEEAQRRRMESSLTSFSKGSRVCLGMNLAYCNLFLSV
VALTLRVFPRTKLYETSVDDVKYDYDLFVPMPKKESKGVRVVIN*

>625|jgi|CYP5811A1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MGIYILAIGAIFLILYATCYPYKLPRNIPRIPIWITLYDTFYGTSRVSFYNKYVRRLAEKHGAVIIWHLGKWSVHITKPE
YLMQMFCDDTTFAKGGSYARVPWGPLAQLFGENIIDTTGQVWKKQRKILQPAIKRQFDIAYMKQTSSELRANLWQQHEVQ
DKGCVIEIDIDNHVQHWALSICSKYFMGINLENVPDIANRLARVLTDQKKGLMGGITMVFPILQRFPWLFPSNRRAFRLV
KEFEEVVLEISKLKADDTSSADGNLIRNRLNVALEDGAISDFHYRSNMKQLLLAGFEEVESVLLSTVMLLAKNPQIQSAL
RAEMSSSVPVQYSFEDLDKLPLLLAVILETLRLHPPFPSLTNRYTTRPVLLGGNISLPAGIWIGWNAYAVHTDTQIWGSD
ALEFRPNRWGKDVSSIYGMFRVQQAKAMFIPFSTRSRTCLGVSFALMQLKIVLYELFSELEWSICNDNMTTLRKGPLVNP
SQCKFTLKRTRQLVP*

>525301|jgi|CYP550C3|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MADSIIRDAFASIRGQDASLSATSYLVLLAVFFVASTWVYSRFQKNEPKDDFPPSLISRGKGSLFGLTSRHQILHNLDNI
DRVFTKGPHILSADVLGLRLGIRVFGANLTQDVCQKFMAINRKLTQIIERYFVNEASATASIQAAHIPEKVAQLLSFSSD
AKKQHQWERCASLRVISAGSKEQPDAVEADLELLMRDFGACVSIPRLYGQDFLDRNHNLLEDFWKFDNNAFPLLVIGVPT
WAPIKSFKEALAARTRLHDALEGFYNRINQHKRGLAVDFDADMSDVSAAAMERNNFLAEHDVPMRARAELELGTFWGLNA
NMQPMVFWLLLYIHSTPGLLDELREEVSSCISLSTATYPPQITAFDFSRLSHECPLLKSCLFETFRLVEEPTSIRYVSKP
LTVPDGNIEHHFKPGTWLSAPHALLQSDPSIFPEPDKFIPDRFIETDKETGARVARYGKLKPWGSGSGVCKGRTFAEKEV
MGIVACFITLWDMDNAEGSWKLPSMIPGTGVKRPQKAIRVVIKRRSFV*

>525860|jgi|CYP673F1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MTLGLADGIFGWCAVALCLIWLVPTYIIYQRYFHPLAKFPGEFAASITDFTKASYFCSLSIDKKILSLHEKYGPVVRISP
NELSFWDPEALSAIFKSGGRAMTKSSFFDGFTTFDPNLFGNRNEEACPNRIHALRRRQMAHSFSTASLISMEEIFDRHVM
QMRDKLDRYAKSGEKLNLKKIIAFYAYDVLGELAFDTQFESQVKDDESNLPPINDHIFLGCLYGSLPSLLPYSMKLSGFL
PIPWLQTLNRSRQSIRNTVARCVSTMFGETLENDEKKSNTLLSQLMKAKDPETGKKLTVTEISSEAFGFLVAGSHTTSGT
LTLLFYHLLHDSEIYSQVVEEMRRELPLLEQGAYPYTGLEAKLPYTTACMRENFRHTPVFTMPLTRQVMSQGGTVIAGTE
IPAGTNVSITNHALHHNPSIWGPDCDEYKPSRWLRDGYAKENLKYLMPFGAGHRMCIGRNIAMANMLKVVSVVLRNYELE
AVDKDEPLKVVTVGIGEKEGPLWCRIKKMSC*

>2418|jgi|CYP539K1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MVVSFGLAFVTILTVLVWLRHLASDIRIRKLGGVRAPILAGNLLSASKLYYEIGRNQYNNNLVAWCTAQLDNLPPGKRTF
AEFSLTGSKRVLITRDPEQIKAILATNISSFGHGPMWHKLWRPFLGDGIFAVDGQLWHDSRAMIKPMFVRDRLRNLAIFD
ACTNKLLSKIPSAGVTVDLKDLFYRWSMDTTTEFLLGENVNSLDFPDNDVLNAMHVAQRIQMFIFVLNPITPLIPKGDYH
RAIRKLEEFIEPAIARTLAIPQARLEELSKLDMEFSFLHSIARYTRDPKVIRDQIMSVLLAGRDTTAATMSWAMYELSNY
PKLWARLRREVLNELGSYGTPTYEALKDLTYVKNILNETLRLHPAAPLNMRSVLETTTIPGRPGEPGVVLLKGDSVTINT
LGMHMYADLYPPVSDTFADPRIFSPERWEHWTPKPWTYAPFSGGPRICAGQNFALTEMAFCLVRLAQRFESIEYRGDWAA
QRLRADIIGTPALGVHVALYEPGERPDLRFKH*

>5267|jgi|CYP6332A1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MIGVWVIECVDIITILGVGDRHQGEHPSQQEIKAYKRAPTSDLNLDGAIEDNLQIRYLLGPQIRQNSYHIEWTRDSLTPL
MPSILDWLHEEVADSLDQALGKDNHDFQKVKIFPFSLSLNCRIAARIVVGKPLCRDVKFQHLCEQHSQLLVVLSMILKLL
PAWCKPLVVRMSPIRGIQRQITDLVRPLVLVSYRKLKQGDQDSKGTASEPPEEQSLMDSLVRTAVSRTPSLTAEEDIVHE
ITMRFLSILFLFSGSPTLTVANMVLDLVSEPRELYFDALHSVITSVVEKYGGRWTLENIKELDLTDSFIKESMRLRPAAF
TIAGRKVINPQGYTLPDNSATVPFGSYLTLPMYAIHHDPNHYPPRTEDGSEFDGFRFKATENNEAVPLVGSSETFLSWGA
GRHICPGRFASAAILKMCLAELIQKCDFKPRNRISDVTFANIYVPSKTLTVEMRRRNSA*

>6778|jgi|CYP574C1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MRYELLGVASASAGVLSHLLYFIHGHKAMQAPRTFVFYLMAECLLFVRCFYLQGAFQGTLSATTISLSYFLGLFTSIAVY
RLFFHRLRRFPGPLAAKLTKFYGPYKARGGKSHIHFVELFEKYGDVVRTAPNELIVLSTDAQQKVFGVGTRCSKENTSYE
SVAYKGFQNLEAATNREEHRKRRQIWDKAFSTKALESYETYARETVYEWLGKLASLQGQPVNTSLYSLLIPFENMGRMGF
SINFGSIQKGKEDIMLHYLEETLGMIAKLGTMWWPIALINAIGGSGDHIEFEKLACRMVDQREKQADDENEDIMKYILQD
HHSKVPKGFHHHDLLYADAQVIMVAGTDTIGATLSFAFYHLARDPALRQKLLTELEPLYGRTLTGEFSNHDLSDADAPYL
NAIINETMRLDNPTCSNGGRLTPPEGLEVDGIFIPGEVVVYTPTHAIQRSAKYFKDPNSFIPERWTTRPDLIIDKRAYLP
FSCGSHSCVGKKVAILVLRMILAYTVWYYDFEFAPGEDGLAIHRDAIDASILKPGKLECVFSQRT*

>6870|jgi|CYP53A46|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MALIEYALSPWAIVALAGALVASYLYQYFVTYAPLRRFAAPFPAQFSNLWLLSVCRRGDRYATVDKLHKKLGKFVRIQPN
HVSIADDEAINLVYGHSNGFLKSEFYDAFVSIRRGLFNTRDRAEHTRKRKMVSHTFSVKSIVQFEPYIHQNLELFVKQMD
RLVDTSQFKGQDGKKEARIDCLPWFNYLAFDVIGDLAFGAPFGMLEKGVDLAEVRDAPDSPPIYAPAIEILNRRGEVSAT
LGCFPALKPYAKYLPDPFYSNGLAAIQNLAGIAIACVKRRIDNPPDVERKDLLARLMEGRDDKGEPLGREELTAEALTQL
IAGSDTTSNSSCALLNYVVRTPGVLDKMQAELDAAIPKGVDVPTFEMVRDLPYLAAVINETLRHHSTSGIGLPRQVPPES
PGVTICGEFFTAGTVLSVPTYTMHHSTEIWGPDAEDFNPDRWANVTQRQKDAFIPFSHGPRACVGRNVAEMEMKLIAATW
ARRYGAKVLQGPMETREGFLRKPLGLDIALYKR*

>7362|jgi|CYP5189D1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MATMSDVWVGLPWAVQWAVQLIATCFVLIATVLITTYLNSLSHSWPVAAGKGHEPPIAPYWLPGIQHLAAFLLNPARTFR
KTQSKYKDSPYTLLMGGVKFHVFGSPSAATHVFARSRTFAYEPVTMSMLENGLDLPVADRVHFQIGLDRANSAENEKGFV
LQNHNVWLRYLSGEPLDDLMQLFTRQFHQVLEQHLDMKTRGWQTVDLYQVLRKVIFDTSVLTFFGPRLAPIWGPTMWEDF
CLFNDATYIGVRTNLAYVLQPRAGRARERMLRAFEQWLTHQSEGDWPDKNKYWNEEWGAKMNWERDGLARQFGLSLRGRA
TMQASFLFAIVLNAAPMSSWFTWVAASDSDRLAKCRAESLKFLRPSKSPRFDHELDIDATGLRGNNFMQTLWKEALRIGT
AASPARVVMEDTELEGYVVRKGSVVLMPTALLHHSDLFPRSDQVDTERWTGEDAIVQQRSKSIRTFGGGMGMCSGRHAAE
QELIGLVSKLITLFDIEFEDSWKNKFHFDPRSLGIMHPEGPLIVRLKRREL*

>8034|jgi|CYP539B7|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MLQSLQALVPGQAWSLLIIVPCLVVSFGIIERLVVNYRLSKVNGVRASNLAGNPVTAFYHFFKAGYMHANNRMLENFLNM
FKDADPTCPHAVEMTIFGRRSILTIDPEHIKGLLTTNFTHFGKGEMFHRTWEPFLGDSIFTTDGQLWQQSRNLIRPMFIK
QKIRDLDILERWNDVLISKLPPSGQTVDICDLFYRMTLDAITDYLLGSSVDSLDNPNGKFTTAFTKVQHTQMLLAILAPF
RRFIPKAEYYKGIKVLEEFIQPFIDATLTLTPEQLESISKSDKEFTFLHNMALFSRDPKVIRDQIMAVLLAGRDTTAATL
SWTIYELSNYPEIWRKLRSRVLETVGPEAAPTYEHLKDLTCLTHALYETLRLYPAVPFNVRTCLEDSTLLGKPGQPDIAT
LKGDHILYSTLAMQRVKDFYPPVSDKFADPAIYSPERWEHWTPKPWQFVPFNGGPRICIGQNFAMTEMAFTLVRLLQRYE
RIEYRGDWAAQYLKADIVGCPGQGVPIALYEAKQRY*

>532775|jgi|CYP680G1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MAIPLVLFLPLLLVTWAVVVATYRLTFHPLARIPGPKLAAITQFYQTFYSYYNNQSRFYQKVESLHAKYGPVVRITPDEI
SLSDPENYSTIYHVGTKYGKPDAYYHVFQAPGSFFTAADNREHAKRRAPVNPFFSRKGVLELEPVVQEKAKILLSKLRKD
LDQASKTPGGFVELQDLYSAISIDVASDYSFDDCYNTLEKEGYGRDFSDMVLGLLTSFWFFMQFKTIEALALSLPTWISS
ALSPALKEYNKLVKGVRQNITNVKTQTLSQREKSQKRSIFHELLLADPNRTVDDMTDIALSIVVAAAAATSNTLGILSYN
VINNPDIYHRLRAELLEAYPDDTQEMKWITLEKLPYLTAVIKESLRLAYGVIGRLPRVVPAGGANFNGYFLPAGTTVGMS
SWMMHRSTSAFPDPDKFDPERWLDPEGSSKQHKYLVAFGKDSRQCIGMPLAYCELYVTVATVFRNFTDLEIRGTKPSDLV
FNDYFSGYHPATATPLRVARREST*

>532822|jgi|CYP684L1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MKDVYRVLLAPNYLFGAVAVVGLLYLLGHYIRDPLSQVPGPWYTKWTSLVIKYHWLKGNRAQYQHELHLKYGPLVRLTPN
EVSVTNIEAVKKIYNARETYRKTSWYGDLSVTTENLFNTTRVEVHRRLRRLLSGAMSETSLQIAIPQVQSKVDLAIQRMG
EEMESRGAADVIKWFLFMATDIIGELSFGDSFRTLEIGEKSGYTKDLENLGFLGAVRSAFPTLISMAKYLPIPFFTRPLQ
ATRNMIRYSEESIARYRNLLDSDPTSVKWTLFTKVFKDTDKDALTPVELRANASGYIVAGSDSTAVTLTYLVWSVCRNPT
VRAALLEELRTLPNDFNASHLRDLSYLNQVIDETLRLYSGIQSSLPRYVPEGGDDVAGYWLPGGTSICAQAYSMHRIPSV
FPNPDVFDPSRWASPTREMKDSFMPFGNGSRICIGLHLARIELRYATARFFLTFSEAKVSTLEGFCDEDMVPKVFFFEEP
KAKRCLMQRC*

>9617|jgi|CYP685C1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MVNATWAQGLDVAGLFTEQKYSSSVLLIIFASIVHLIFLRRPSVIRDKDGKPIKELKANARVMKFALSAELSKQGRELAG
DAPYMIHNGQSRELVITQPDHLKDFYKNDTQHHPKPANLNMGAYFGRILGHAVGVQAGERWKIIRKYFDPEFAFRVTVEA
MPRTLDLVNQWADQLVQHSVPSSKSEASKSFITDVQSVGKFLPFKIVSQQLYGQVFNEEFFSKLLEMNSLHEEILHDVLL
NQRLTSKFWNLLPSKASRRMDEYNRRWKKLNLDAVSLARKQSLDCPLERIYRGVDQNNELEELEFLHTVDEILYTNVEIS
AAVLKTLFTRLAEDQAFQQSLRSEIISQTASKDSDLAKYVAKTDSLLNFLVMESMRHTPAFWFSLPECTAVAKTIGGYQV
PANTAVVIDSGRLNKEAVTWGGDGNDFRPERFKEIPQSKCRYGFMKFGAGGASGRCLGKHVADITFKLTVIAVLKKFSLE
TPKDEILAATPATVTFSPN*

>9985|jgi|CYP61A6|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MATIVEGSLPLSVETTANVTQHGASKLAGGFLSSYSGWQIAITAFLSLIVYDQLLYLWQKGSIAGPAFKIPIMGPFLQAI
HPKFEAYLAQWASGPLSCVSVFHKFVVLASDRDLAHKVFKSPTFVRPCLVPMAINIMRPTAWVFLNGKAHAEFRRGLTGL
FTNRALSTYLPVQEKVYSDYFDRFVEHSKANGRKPTKFMGWFREINCALSCRTFFGDYISQEAVKRIADDFYLVTDALEL
VNIPLSIHIPGTKCWRGKRTADAVLAEFTRCAAACKANMASGAQATCIVDQWVQHMYESKKYNEDIAAGKEGIEKPTNLI
REFTDEEIAQTLFTFLFASQDASSSATTWLFQVLAQRPDVLDRLRAENLAARGGDKNKPFELEMFESLTYTNAVIKELLR

YRPPVIFVPYLATKAFPVTPDYTVPKNAMIIPSCYPALHDPVAYPNPDTFDPERWITGDAETKTKNWLVFGAGAHDCLAR
RYVPLTMAAMIGKAALELDWVHHATPRSEEIRVFATLFPMDECPLVFTKRE*

>535230|jgi|CYP65A7|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MGILISNDAAKAVIPVKLSLALPLAVIVFGFGYFVWLCIYNLYFHPLSKFPGPKLSAISRFPYSRLLISGEGHRDVLDLH
LKYGPIVRIAPDFLSFSHPDAMNDIRGHRKAGQPEHRKDPIRQELHVTNIIGANRADHTRFRRSLANGFSHQAMLDQEPI
IRDYVEELMKSLEKNGANGTQPIDMVRWFNYATFDIIGDLAFGESFGCLQSSTYDPWVQLIFNSVKNLVYIGALKHLHIV
PRRLLKFILPYTMPKGLSNKYAENQRLSAMKVKKRLETGSNRPDFMTSMTTKRNGESLTFEELTSNASILIIAGSETTAT
ALSAAAYYLGLFPEVQAKLAQEVRTTFNSAEDITITSVQHLTYMLAVLDEVMRMYPPAPGGLPRLTAEGGAMIAGEYVPE
DTVVEVWQWPLFHNPNYWTQPDDFIPERWLGDPKFANDRRECFQPFSTGPRNCIGKNLAYSEMRLILARVIMQYDIKLAE
GTEGWDDRSKAYSLWEKGPVNVYMIPRKVE*

>11741|jgi|CYP5794B1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MDSLPAETLNINWLWVLAYLIGPGLLLVEFYRYFTDPLRNVPGPFIAKLTAAWMLYIDLSGQRSNTIHNLHKKYGPIVRV
SPSEVCFASPAALMEIYGAHSKYPKAAVYDCLGFKSTFTTRNRDEYRVMKKRIIPSFSPAAVAEIEPTVHRQLALLIKCF
DKRLNDPLDVLPWFRMLALGVVGQSFVDDSFGGLQKEELPDLLNHIDEVFPVLWVKWMFPLTTTILQYVPLNSIQKFLDS
PARFKKYCGSAYETYLASHDPVEHHDLIARMVTEKRSLERSNESIPRHLTDTGIVEELTNLVFAGTDTTSNTLAYLFWEL
SHQPEWQFRLREEVQQAVGLERESFSYSEISELPVLDAVIMEILRLRPAGPAGLLRLAPEGGAVIDGVAIPAYTTISCQA
LTSQRDPTIFSDPDRFDPQRWIDGKKHGTADRMRDQLLVFGKGTRTCLGRRIAIMELKSTLAVLTRRYNFEVGSLTTDDD
MEMTDHFVLIPKGGRCLLRLTKA*

>540491|jgi|CYP532Y1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MLQDIVILLKEKFLYAIPFIILGWCLHIRYRHGFNKYRGPLLASFTDYWRYRYTRVHRDEIPSVALHAKYGDIVRAGPQK
LSFANPEALKDIYSINRGYVKSEFYWVAASVSKGTPLPSLFSNLNESFHAQLRRCVNNAFALSTLVQYEPLVDTTVHLFL
RQLNKRFAGKQGTEGVIDFPTWLQYYAFDVIGELTYSSRHGFLESGQDVDGIIAYLDKYMSYLVLVGQMPILDKIFWKNP
FFMWLSRHGLYDDTFPAVPFAVKAMRQRTDSDRKPSDTNGVPDLLSKFLNAKELHPDVVGDKEVLAMALSMIFAGSETTA
ISLSAVFYYLLKNPRCLSKLLEEIDTELPSDDSDEPFSSVKFADANKLKYLDACVKEAFRMHPAPAFDMERVVPPNGSTI
CGEFIPGGTIVSCNAWVIHKNKGIFGEDVDVYRPERWLEDDQRVKVMNSTLFHFGQGARTCIGKNISTLEVYKVVPSILK
RFQYQVTLNDPEQDWKIKNATFVKPSHFDVRISLRQKKH*

>541147|jgi|CYP65FW1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MAWLDLPSLYSNPALGTVSASHALIAITFFGVSYWVLSAVYSVTLHPLSRFPGPWYTSLSCIPFWISAISGRQVQWMQKL
HSKYGPVVRYGPNELSYMDGSGAAWKAIHGHERGGREFPKAREWFVAPYNGVYGINSAPAHEDHRRFRQVFAPAFSERAL
KRQEPIFQKNIDQLLSSLSQTSADGQSVNMVELYQFTAFDIMGHLTFGEPLGLLQSNRYSKWVEAVFHSIKVIPIAQIIQ
YYGILDFAFKLLEPQSIKEMKYNHFKHSADRVDKRLQRKSDEADIWSLVLDADLDKQLTLEEMHCHGDVFMLAGSETIGT
TLSGVTYYLLRNEEKLGLLLREIRAKFRSQEEISFQSAAELVYLNACIKEALRLYPPVPVGVPRVVPSHASGMNMPGGPV
PGGTRVSVHHYATYHNPDNFRDPDSFVPERWLNDPAYSGDNRECWRPFAFGPRDCLGQNMAMRETQLILARLLFKFNIEI
CDGLEGTSDWDEQNAYVLWEKKPLMCRLTLASGHMSSPEED*

>17527|jgi|CYP51F1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MGILQDALSHPTAQLYFEQSVGAQVAIGVAGFLAVVVFLNVVQQLLFKNPSDPPMVFHWFPIIGSTVIYGMDPPKFFKDN
RAKYGDVFTFVLLGKKTTVAVGPAGNDFILNGKLKDVNAEEIYSVLTTPVFGRDVVYDCPNAKLMEQKKFMKIALTTEAF
KSYVPIISHEVTSYFKRDPAFKGKSGIVDIPKKMAEITIFTASHALQGSLIRSKFDESLADLYHDLDMGFTSINFVLHWA
PLPWNRKRDHAQRTVAKIYMDTIKERRALGDDDKELDMLKHLMKSVYKNGTPVPDHEIAHMMIALLMAGQHSSSSTSSWI
MLHLAQYPQVVEDLYQEQVKALGADLPPLQYEDFAKLPLNQAIVKETLRLNAPIHSIMRKVKQPMPVPGTKYVVPPSHVL
LAAPGVSGSDPTYFPNPDKWDPYRWLPGSPNAPLMARNDEEEEKIDYGYGIVSKGAASPYLPFGAGRHRCIGEHFANLQL
QTIIAETVRMFKLSNVDGSNNIVGTDYASLFSRPLEPAKIRWERRD*

>542207|jgi|CYP630C2|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MLVYLLSVAVLLLILEPLFTYYWDSKKLRRFPNASFLSGISDVGYILQRYRGFRSKEIHESHLQHLVVRVGPNSLSFSTP
DAIRAIYGHSTPCLKGGTYVTAAGTHPSLLDVVDKQEHARKRRILSHAFATRNLEQWEFKVTDKVQKLVAQFDLLCHDKQ
EAIVDFRMWSNLFTIEAIADIALSHHLGCLTQGSDLVTITTKDGEKAVNYIDCLHSGRRATSMLIWSTKWFSSLRFVSKR
LPGFFQTQWHKGQGFDEMVRYLVQQRLRRHENGEQLEDFVGCLFQDKHGDARNLEIAEIEAEVATLLDAGSDTTAISLTH
AMYFLMKTPAALSRLRDELRVALDGSQEIAKYATVKNLPYLYACINESLRLLPPVAFGLNRMTPPEGLMIDGTWIPGNTL
VGVPAYTAIEQYQPERWLEDGIKETQGTFIPFSTGARGCIGRNISYIEQTVLLATLVQRYDLSLVDPEGNLDHEEAFNLW
PGPLPLKIRRRENC*

>543425|jgi|CYP5055A6|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MIAISICSYTLFCVIYNLFFHPLRRFPGPLLAKVSGAWARVQNFYGRKAHKIHEAHIHYGPVVRIGPNMLSFSDPSALRD
IYTSKAFVKEGGFYRAKRIYHEEHLLSFTDPEAHSQRRKLLSRGFSQTAMRDFEPKVASKIYTVLDQWAKIASTSDSAVD
IFRWTHMLGFDTVYHLMFDVDPGTVKTGVESEVMQYMRAWKLIYIYKEFVPLLENWGIYVPGYIGSYFRKVHAWKKMAIG
IVNSCRANGTKTAFLSRVLETGDEKSRPLLTDSILAEECMSGMFGGSGTTANTFVYLVWATAQQPDVIQRLQEELDKCFP
DTSTISDYLTCNKLPYLNAVIYETMRLYPSTIAILPRTAIENTTVANIPIPKGTIVGTQNYTTHRCEDVFPQADKFIPER
WLVDDLTPLREAFTPFSLGPRKCIGLNLAEMELRILTASFFRRLNVSLDSSMKMEDMVQYDTFNAAPVGAKLLVHLVERK
*

>19263|jgi|CYP531G1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MDNNSVPNSAQGTGLLQNGPAMLVKPAVIFMILPVATYVFWSFISYLISPLKKYPGPFLASYTNFYRMYYAYRGNMHLLT
KKLHDKYGPVVRMGPNYIDVDYPSLIKTCFDFGGVWRKTDWHGVSGAMVEGKLYYNIFSECNPEEHARIKKPIAKYWSAP
GVAPMEPHVDSVISTLCRALDQRFAGDEAFGKTFDFAEWMLFFGMDAVAKTTWSEAVGYLEKGHDFDGTLNVSDRAYDYL
VTVGMNPIFDKFLDKNPIMRFGPPSFGTVTGICLGHLMARMKGEDGHDQSKPDFLDRYLEAQQQNPEVVDIYRILSYMLV
NVAAGADTTAASLRSIFYLSLKHPAVFRRLRDEIVNAKFSQLPVPYTESRQLPYLEAVSRECFRYLPGNCFAQERYVPSG
GLALPDGSVVPAGTALGFNAYVLHRNKEVWGEDAEEFRPERWLQADNETEEEYKNRIQQLNNVDLSFGAGSRKCIGMNLG
KMEVSKTVATLITLFDFELEDPKKEWKVHNSLIPRASEIMIKMKKRPGAGQQISDMSSHY*

>21965|jgi|CYP5444C1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MELSQLLASLACIAVSYGVVQLANEWRRVRRVKMRTVDLPVLNLTGNDYAGAERAYTENLGGLLREGYEKYKHGFYQLFS

PTGFLVIASADYVQEISQLPEGTLDFHGATQRRMIGDYNWLQVGDTLLAHTILTDVVRQLGNLLPVLQEEIEYCFQNVLP
PCQATWTPGNIQKLAPRLIAIIMGRVFVGPDLNRNKEWVDNVIQFVDDVFAAGWKIKAYSHFARPFAARFLVAETRRVQN
QKAMARRLLVPILRDRLASLNEPGAEKHLDLLQWLVVNNAKSPHPKTLENLAELALVAYVGSTHTAATTLTNILLDIAAR
PNDLEVLRNEISTINLEATGLDLKQSFYINHTSKLDSYMKESQRLNPAFLMTFSRIVRKTFTLSNGLTFPAGTHFIVPAS
RISLDPEVWENPQEFDGFRFSDLRAKTPENIHKYQFTGTSPQAMHFGYGRNACPGRFFASTTIKVFVAHLLTNYDIKLST
KERPPNDATGSQNSVPQDAEILFRSRQ*

>549495|jgi|CYP5268C1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MVSLITTALAVTTLTFAIYILNRSNKTVMPPGTRSPPGPVGKPIIGSMLDIPPVHSWFKFKELTDQYGPITMITIAGQDH
VLLGTEQVANDLLRECGSIYSDRPTFHAANMMTRGLIPLLLRYGDVWRTQRSFFHHVMSTKAAAGYAPELELEATRMARD
FIRNPSDYENFFERYSGGIILRLAFGVRIESGRDPRCQSSLKAVHDLECVASPAQYLVDLLPAMKFLPEFLAPWKTELKK
LRNEHETFFRSMLDGAKRDNSGGKGIKSWVNVWLSNTAHMFGGLLEAGSGTSGSTLMSFCLLMTRTGQLGVLQQELDRVV
GAGRVPTIADLPQLPTVRAFAKEVLRFYPVTAGGAPHMLTKDDVYKGFFFKAGTFFHANQWAIHRDPEQYPDPESFNPQR
WLDPKYPTYKEPLTQYPNLVNYTCFGSGRRICPGQHVAELSVFLGIAMIAWGCNISKAKDDAGQDITPPYYDFNIGFNVQ
PNKFLFKLEPRSKQRIDVLEMA*

>551634|jgi|CYP504B10|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MLSSAASAVLLERILRDSVQHLFIGALSLPIIYVLVNEIIRKNAKIPHMNGPKGLPLLGNIWDIRVNAAEKYRQWAKQYG
DVYQIMLGNIPVVVVNSASAAKSVFGSNAQTLSSRPELYTFHKVLSDTAGTTIGTSPYSDSLKRRRKGAASALNRPSVAT
YVPHLEVESRDFIKELFDYGNAGQTPVDPMPMIQRLSLSLALTLNWGTRLKTQKDDLFGEITHVEEEISKFRSTTGNLQD
YIPILRLNPINFHSSKAREMRDRRDKYLTNLNNALDERIAAGTHQPCIQANVILDKEAKLSKDELTSISLTMLSGGLDTV
TTQVAWFVALLSQHPEIQEKAIVAIRKHYGEDQPMCDENDDQKCAYVVALVKEALRYYTVLRLALPRASVKDLPYQGTVI
PKGTMVFLNAWACNMDENLWTDPEVFRPERWLEQPDAPLFTYGVGYRMCAGSLLANRELYLVFIRLLNSFYIKKYDDVDC
HPVTGNADPKSLVALPPRFKSYFVPRNDTALRAAVEKSS*

>554415|jgi|CYP50369A1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MPNIENTPSLVHLRAMSGYKIVVAALFGAAIWLIRLLIRERSPKLDFPVMGSASDSEFSQAVLKGFEKANSPFIIPANPQ
LVILPMSMYMESKAHPAADVSAETNERFMGHWTRVQNTEIYSAIRQDLSKNLNIVLPLIQDETKYAFKELNIQSEWTSVN
INSAMLRMIALISGRVFVGSPLSRSEEWLDASINYTRALSKVQDDYLGLGPVLSNIAAPFLSSYIPDAHKTATRVGEDQM
IVSAAMAILDLASRPQYIGELREEVETVVAEEGEQNEDGNIYLGKAAFAKMKKLDSFIKESQRFNSLAFVTPAYKLLSNA
TFSNGIKLPKGTRITFPHQGLASENNLEAGNAGPDVFDGFRYARLRELPGLESKHQAASTGLNQIQMCPRSKDNLTFGHG
PHACPGRFFAIYEVKNLLVELLLHFDFRLAGTGDDRGQEAIRPANVAHKISNMPNPGAILEVRVRRA*

>40927|jgi|CYP5129A3|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
VAALALLSVILYRLYFHPLKHIPGPLLARTSSIFLYVISYLGLEARVLRHYHKVYDTKVLRVAPNSVSVSDGASIHTIYV
AGGGFAKDARYANFNMGPVTTIFSSLDTDYRDLRAKAVAPLFSTARLRTASLHGGVIHECVSEFVTQLASLKADCKTNHA
KLDILDQCARLSLDVVTGYLLNEPYGGLAEHQQLPMEKRRDAKLSINPFIFAIVGFSRFSLLPNWLFKFMYSLYSRFSFS
EEVGRCFASMDSFARRLVSQTLEVDPAKRQDSYQTRLLAAGITPSETEVQCQAVVFAGSDSTAVKLATILFHLVQNQDCL
RRLKEELQAAETEDEGLALQEQPYLLAVIKEGLRVGMANPTRMTRVVPAKGMLVGDVYIPPGTIVGVAPYIVHHDPAVFP
DPFAFRPERWLEGGRDNGLKRPNMDRSLLMFGAGLRACIGRNLAQKQLTETIKAVVKSS

>72529|jgi|CYP570C9|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MLSHTAQLAHRVWSYVDRVGSFFSVISPVSVALFASVVIVAWFVSSSTWQYYRLRHFDGPLLAKISNLWLFRSVDSGRSY
LDFWEVTQKYGTIARVGLNDLVTDDPVFVKHMCNVKTEYRRSSWYDGMRFNPTSNNCLSTRDEAAHSALRSKMAAGYAGR
DVDNIESKMDNNVRAFMGLLGRYADKKAPVDLGRKVQYFTLDCISDIAYGAPFGFVETDTDVYEYIETTEKNLPMVMVVT
VFPWLLRLLNSPILKGLLPSAKDKLAFGRIMSIARDVAAERFKPDVKAERDMLGSFIRHGLTQTESESEILLQIAAGSDT
TASAIRSTMLELCANPEILRKLRQEIASANIAGDVITDSEAKVLPYLQAVIKEGFRIFPPIAGLMSKEVPPQGDTWNGVF
IPGGTRVGYSIWAITRRQDVWGEDALKFRPERWLNISSDKLKEMESTLDLIFSYGRWLCLGKSIALIELNKVFVEVRFRV
ALRKLTANCVFVSHSSSGDSTLRCAIRISLTRYSTTASLPNHKSGWMSQEQKRRNEDMFIVGMME*

>72794|jgi|CYP61A1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MDALNATRASSVLTSVLANSKYVSANIPPQVDYVIDTIAAAGPWTWFFTILAICVVYDQVSYLMNKGSIVGPAWKQPFIG
PFLQSMDPKFEEYYAKWLSGPLSCVSVFHKFVVIASTRDMARKVLNSPAYVKPCVVDAAYKLLGEDNWVFLDGKPHVDFR
KGLNGLFTRKALESYLPGQEEVYKVYFKRFLDITKENGGKPVPFMPEFRELMCAVSCRTFVGHYISDEAVKKIADDYYLI
TAALELVNFPIILPYTKTWYGKKAADMVLAEFAKCAAKSKVRMAAGGDVTCIMDAWILQMIQSERWREAEEKGLSTEGMV
KPAPMLRMFRDYEISQTVFTFLFASQDATSSAATWLFQIAAQRPDVLDRVREENLKVRNGDAYAELNMDQLESLTYTRAV
VRELLRYRPPVLMVPYKVKKPFPITDKYTVPKGAMLIPTTYMALHDPDVYENPDYFDPERYYSGDAEVKGAKNYLVFGTG
AHYCLGQVYAQLNLALMLGKASVQMNWTHHATPLSEEIKVFATIFPKDDCPLTFEERK*

>77198|jgi|CYP540A12|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MASKNFFLVGDDVSTAQSILVSPTYGPDELKRAVARHFHIVQPSGVSFYVSYSSINTVSDILDATEPIGIRIDNQAVREP
DGPEGLPIVGSFYEIFPDHLGNHTRLFRQYGGLIKTTNMGKTNYLTDDPGIAAVALNESIYFSKKINEDHPLWGVKDNIA
TFVGDTETETWRLSHKFLPTSMGPKAVRHYAPLIQETVRRSFAVFDAFAESGRSWNAYQYMVKLASETIGKVILGQNFGH
LANADAPFHPIPLSILTMFQLNKRVASRGAWYQNLPFGDPKKLRETHKLCYALIEGIVSDIETSDTAMPKMPMAEAALKA
SNLVEYLIKGTDEKGETFPRSMIVPNIVMLTSAGFTTTASLLSWLIYSVTEHPGNQERLLQELVNNGISETTEWSVDLVS
KLSFLDKFVKETQRLHNPAFQPARTAKTDVIVPGGYRLKADSVVVCALHSLHTNPNHWHDPSQFDPDRWDTAEVKGRHRA
MYLPFATGPRGCIGFNFALLEAKIIFSELIYRYEFIRDGSENVQYDPEFQLVRPLNLYVSVRRRANLSTK*

>79629|jgi|CYP540B34|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MAVQQFYLLGEPITSAREIDISSNLDLDGLKHLVASYFAIVEPNGIEFQVQESALQEVSDITSITGPVAISIDGHAVRDP
PGPKGLPYLGNFFEIYPDHLGNHQRLFQHYGPVIKTTNMGRVVYQTNDPDIALIAFNESDFFTKKINESHPLYALKTPAA
GVFLGDTDTEEWKVAHKFLPPALGPKAVRHYAPTMQKTVEDASKVFDALDEQGEAWNVYQYMLKLGSQAVGKLTLGLDFN
HFSSPDAPVHEMVHLIAEVLSLNKKVTSKGDWYSSLPFGDPKRLKDVKHRVEEMVEESIQRAARGGVEDLPLQDAAIEAS
NMVDYAIRAIDNKGEKLPKSSLVWALIVATGAGFTTTSSLLSWLIYGLVTYPGMQERLLQELIDNDFTEETQITSDYTDR
LVFQDKYIKEMQRKHNPSFQPGRTAKTDLILPGGYKIPKDAVVIPALHHIHHNPELWSNPEKFDPDRWDTDEVKNRPKGS
YMPFAAGGRMCIGFNFALQEIKVFLPKLIYRYKFTREGDTTVEYDPMFQLIRPNNLYVRAERRVKWPPKSGAASPKSTSA
*

>80766|jgi|CYP620B19|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MLQVAAGIVALIGLLVYHQYFGKKNVLLSLPPGPKGLPILGNILDLPPPEIPEFQHWLKF
KDLYGPISSITVLGQTLVII
HDRQVANDIMNKMSLKTSNRPTSVFAFELCGFQKFTSGRQYDADFRLQRKFMHQQAGTKTIAAQFNGVQDVESRRLLKRT
MDDPKNLIKHFRTEAAAIILKTVYGYSIEQHAVDPLTKLIETMMTNLSQALNPSPRLVDMISALKHLPDWFPGTAFKEIA
RQWNKVNHDAVNIPYSFVKRQMANGTNRPSFVSGLIERYSTKTGILDNDDEDAIKWTAGILYGAGSDTTVAVLTAFILAM
TLFPEVQKRAQEEIDNLIGTSPTRLPQFDDQERLKYTSAIVKEAFRWFTIVPITTTHATAEDITYNGYRIPKGTLLLPSV
WWIHHDPQTYPDPFRFSPERFLEPRNEPDLSELFGYGRRICPGRYMADDSLFITMARLLATFNISKAVDEQGVLMEPRVE
QLPGLVSHPASFPFSITVRSEKHEELIKSIEVDHPWEKSDADLLESEQDLTAYK*

>81578|jgi|CYP55A26|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MATDAPSFPFRRASGMEPPAEFARLRAVDPVSRVKLFDGSLAWLVTKYKDVITVATDERLSKVRTRPGFPELGAGGKEAA
KAKPTFVDMDPPDHMHQRSMVESIFSVDHIKEMQPYIQKTVDDLLGVLKAKGCADGPVDLIKEFALPVPSYIIYTILGVP
FHDLEYLTQQNAIRTNGSSTAREASAANQGLLDYLAKLVDQRIQEPKDDLISKLVVEQVKPGNIERADAVQIAFLLLVAG
NATMVNMIALGVVTLFQHPDQLAQLKADPSLAPAFVEELCRYHTASALAIKRTAKVDIEIGGKLIKANEGIIASNQSANR
DADIFANPDEFNMNRKWPNEDALGFGYGDHRCIAETLAKTELATVFSTLFKELPNLELSVPISKINFTPLHKDVGIEDLP
VVF*
>82328|jgi|CYP548A14|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MLSLSNQHPVAWLGLLLAAGALYLFSFVVYRVFFHPLAKYPGPFIAKLTDGYQLYHAWKGDRHLQFWRLHQKYGKVVRYG
PNSLSFSTQQSLKDIYGFKSNVRKAEFYNSFAHPVANTHNTRDKEVHARKRRVLSHAFSESAMKEMQRYILNNVRTFCEQ
IGLQDGNAESKGWTQPRNMAHWCNYLAMDILGDLSYGKAFHMLESPDNRFALDLVEAATTRHLLCGTMPIVDKLKFDKIM
FPKLAAGRARYMAYSKAQLTERTKLGEETDRRDFFYYLLKARDPETGQGFSTPELWGESNLLIIAGSDTTSTAMASTLFY
LTRNPHAMQKVVDEIRGKFSDVEEIVQGPTLASCTYLRACIDEAMRMSPSVGGILPREVLPGGITIDGHFVPAGIVVGTP
HYNIHHNEEYYPQPFTYAPERWIKDAINPATKRVSTVEDVSQAQAAFCPFSIGPRGCIGKGLAYVEMTLTLARAFYLYDM
RRAIGVADPSEGRADLEWGRHRPEEFQLADIFTSAKKGPIVEFKLAEKY*

>82518|jgi|CYP5333B1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MASVEALWSDLTSRLDERQQSIAVAVIATFLVLILTTKAITGSSTTVDASGKHKIPASPSYWLPFLGHAFSMAQGGFLAS
MRNRFTDGIFSLKMGGKMHHFIYKPSLAAALLNLHRPASEEQMLANRLLGSTFGVSKKDAAIYNKIFPEALALYKYLSSE
PGLSEITGGALSQVKQTINSYVTFSPNPMDQTEWEKMADVDVIEEGDKGVPTTQVDLMELTRNYVATTAIPAIYGTDFVE
NFPELWKWMWIYNEAFVLLAMSVPSWIPWPRLQRGKLARRRLLAFLYEFNEAMDKHMDGEEVDPKWQNLDNVSQLVKSRI
ALFREHGVSLDGRASFDLALLWASVANSNPLIPWMLFELYRDPVLLEQVREEIAPYVRAVQPKNEFGSAVWVPPVLEDMD
IDGLITKCPLLKASYIETMRVYSCGWALKMMYSDTVLEARGKGGESFLLKKGTYAHVPQELHQFDPQYFSNPTEWQAERH
VRETVDESGNKVLTAELGTMRPYGGGIKMCKGRQFALREMLLYAAAIITFYDMQPPKGGSWSEPQTRKLVANKHPKKPLK
VWIKRRGLPVEGGEKRR*

>82620|jgi|CYP541A2|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MTTPIPKPPGVPLLGNIFDVKPSNTWDSLRKLSEKYGEIFQIKVLGQTIVFVASVALAEELCDEKRFRKFVGGPVVEIRA
AVHDALFVAYDDEPSWGIHHRIIFPTLRPDAVGAHFGEMRDLATELLNNWRGLGEQNKISPVEQLNRLNLETNTSIFYGK
RLNGLAGPPHPMIQAMEDSTSEAMKRPTRPGLFNWLLYGRKFKSSIKTMRDYAADLVKYRQENPTDRQDMLATLMNTPDP
ETGKTLTDSQVIDEIVTMPIGSSTAPCLLAYAIYILQKNPEAIVKAREELDRVIGNGEFELEHLEQLVYVQGIMRESLRL
SSAAPGFNIEPRPTTEGDKSPVLLAGGKYEVAHNQAMIIVLHGVNRDPAVFEDPLAFKPERMMGEAFDNLPAGAKKWFGN
GKRVCIGRYYALQWSLVLLAKMIKEFDFELVDPEYKLEMDGWFNIRPIDFYVKVKPRAL*

>84681|jgi|CYP535D10|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MEGIAGIPGSVLLLAGGLISFFVIGRIVTYARLRSFKGPFLSNFTNLPHRKALFQQRCQEWYGEICEKYGPIARIAPNVL
ITSDPDVWIHVNNKPGYKRSEWYYTACRIEYRRDNVFTQTDNRKHEARRKQMAPGYSGRENPDLEQSIDERLHEFIDLIR
SKYVSTSGNVVPVDMAKKVQFFTLDVISGVGLGKTFGMLQSDSDVENYLQSSEEGLHIANFGLAFSLSWITQARFLGKFI
APSPDDSKGFGRMMATCFRYVNERVANPTDKRSDMLASFIRHGISGDELRSEALEQIVAGSDTTATGIRCTLLHIITNPR
VYAKLQKEIDEAIRDGKAPQDELITHSQAKQLPYLQATIREAMRVWPPVANVFSRDIPPEGDTVKVKGEDVFLPGGACIG
YSALAMHHSTEIYGPDAKAFRPERWFEEDKDKLALMLRTNELIFGYGKFQCLGKAVAQIEIGKVVFEIFRNFDMALINPT
KPWVALNSLGLFTISDMWVQVMERHA*

>85336|jgi|CYP618A4|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MESLSVALVSLASVVLVLRQTDATVPLAATFGLVVYVVGTVVLKLGKALIYPFYISKLRHLPGPKDNQFLVGQGIRLLKA
AGPNDLYLEWVRKWPDAPFIRHLSFGNSEVLLVNSLEAAREVLQTHAYSFVKPSFFVKLVGEIVGIGILFSVGDQHRQLR
RITAGPLSKPSVRKMLPIFKDKARELSVEFDTAIGEDKNGVVEVEALMNRTAFKVISTALLSRDISEFRSSSSPLSFEEC
YRAVLVPPLLGKLITFLNPFIPLRWLPIEANRAFIRANNALRGMLTELVEERVQQVQQDKKSGQSDEKADTKDFLTKLIE
ANLAEKKGVSDQMLVDLIIQGVSAGHETTAGALTWTVYSLIKYPDMQKRLREEILSAQQKQPDLDAATIDGLPYLNNIIS
ESLRVYSPTLMAPWEAGEDVVIAGVLIPKGTTVTTIPAMVHLNPAIWGADVDVFNPDRWDSTTGAAANPFASESFINGPR
TCPGRALALLEIKTVLVEMMSNFSLEAVDVDVGFEHPTLTLKPKGGLHVRVQRL*

>86064|jgi|CYP642C1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MRYQVYSFVYNAVLNCARPTLSINIFPRKVLVTDPSMESILSRHTSETSLANVIFLIGRRVFDLSNETINAIGSYDPRPV
HVGEFSSASNARALVGQVSTAANKRLQSQPDVQETELGPWLFKLTSSSVASALWGPESPWVVDDEFQTAFMEISGSQMTL
LRPFSKYTAQAAHKARALIISKLKSFHFNNRDSRLRQIAHRINAVALSDTEWESNKDYFNVELLTSLGLLVTPSSMAVWM
IRHLLMRPDLLARVVKEARNPDILDAEGRIDVARIRESFPFLAACLYETLRLHMTAIPRLAKTDLDIAVPNSQPIHLKNG
DLIYLAMSSFNKDEQTWGSDASTFSPDKFLTNAGSLSASMVRKLRVFGVAGNLCPGRKVGFDTILFVVANVLRDFDIENP
RGEDVAYPEPRTEDGFGIGFERCANEITVRLRRVV*

>87286|jgi|CYP673E1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MASYSTTLLPLVLLSCSLVWLLLWIFVHPLRKIPGPFWARRTSLWKVYHVYRRDLAFAIQRAHEKYGPVIRIGPNHVNFQ
TRDAIGPIYKAGSSMPKTKFYDAFTALHPNLFSTRDEEFHKMRRRQMSHSFSMATLLKFEGRFGKHLHRLFANIEQQPEG
QVFDLKESVARYAYDVISDLAFEKDLNTQSNPEANELPPIPDHILIGTMYGMVASLLPYSIRIGNKLPIPSLQKLLQSRK
LLSQKASEYVNDAIEDHKAGEKETLLDNLLEAKDPSTGAPLTPAEVSSEAFAFLVAGAHTTSATLGLLFYHLLHNRYAAE
KLTEELNANVPLYNEGGKEVSYSGLESKLPYTMACIKESFRITPVFTMPLPRLVTDPNGVDINGFHIPQGTAVSMISQAL

HHDPQFWGGDHDQYIPERWLEDAISFNEIMPFGIGHRACIGRNIASINILKVLCALWRNFEIIPVDKYEKLEINSLGVDE
KKGPLLCTARKRQM*

>87842|jgi|CYP663P1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MILLPVAVAFLLCLWIFHKIRSTKGKRLLPGPRQLPLIGNLHQAPQNNPWRTYQQWSTIYGPIFRLQYGLNTVIILGDYE
VAHDLLDKRSNIYSSRPRSVMGGENVSKGMRTLLMPYGQQWRTHQRLQASCLNIRVSQTYRELQDVESKQLLCELLVPGV
DFSDRYHRYSSSLIFALAYGRRLETGSEPEIQAIDKVMENFLYAARVGTWIVDSLPFLNYLPNCLAPWKIHGDQVHEFES
SLYMGNMRHGKRSKSWNWSKQVSEMKESTGMTEKELAYDVGIIYEAGSDTTTMALEVFTLAMILNPDVMKKAQKEIDENS
KGFPCFEDKDNLPYVDAVIKETLRWRPVSAGGIPHAVTQDDEYMGFHIPKGATVIGNHWSIHLDKDVYKDPHSFRPDRWI
EDPTLPLTPFGFGRRVCTGQHIARNSLFINIARILWAFNINYAYEENEDGEKRCEVDPWAFTQGFNSRPLPFRASFTLRS
EEKATVIREEWDAADKDLDQILTRIRSSQRTR*

>89154|jgi|CYP530A37|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MPKPWVVFGLGALTLLFWRLCRIGRRPKNYPPGPPTLPLIGNLHQMPKKNAHLQFQKWAEEYGPVYSLMLGTKVAIVLSS
DVAVKDLLDKRSSIYSGRPELYMGQEIMSGGYRPLFMGNNSVWRMVRKLAHSLLNIKVSRTYVPYQDLEVRAMLMGLLES
PKDFLNHIRRYTTSLTTQMAFGYRTPASDDKNLLEMFENFDELSRLTGSQSAAILDLFPIARILPDFLVPVRRLGRKYHE
REKRLFMKHFLNAREQLRSGTSKPCCAIDLLRTQKEYGFSDESACYLSGSLLQAGSETTAIILTGFFQAMLVFPEVAKEA
QAEIDRVCGDRLPDLNDYPDLPYIRACMKESLRWMPATALGVPHAVTQDDWYLGYYIPKDAGLILNVWAIHNDPKRHPDP
RRYNPARWAGDNQNSAQAAVNPDPTKRDHFVFGAGRRLCQGMHIADRSLFLAMSRTLWAFDLKRPVDKETGHEIMPDVDN
IKDGLFISPMPFSADIAPRSQSRAAAVKREWNNVAELLDDEMQWKTVPEGLKWKDYEPLDGENEDSLESLS*

>91080|jgi|CYP671C2|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MALQASWELSALVSLLAGVASHHLIFRPFEIDGYAWQILFIFLGSVFIFVIACIQLAGYGVILALCRVSLIATAYSSGAA
ISIFMYRAFFHPLNRFPGPFLAKISRFYAMNNAAKNIKAFEDIRSLHKKYGDIVRVGPRELSINRPSAISVIYEPPTRTT
RSPWYAQVSNDVTKISLNSTRVLKVHKLRKKVWERGLSFRALAVYAPRIQAKVDLLLSKIANHCGRSIDMTEYAMFFGFD
VMGDIGFSKDFHMLELESEHLAIKGVHESMLAIGVLGTVPWLLSMISKVPGAAASFSRFTTWCHRELQKKPAALKDQDPR
DIISWLLKALNEGDPSAPPGEIAIQEDARLLIIAGSDTTSAALSNALYYLASNPNSYQRLQAAIKEEFPGGISDWTYDKN
IPYLDYVIQETLRLKPSVPGGLPRVTPPQGLMIDDDFIPGGTVIAVPTYTVQRDARFWSDADTFKPERWENLSTEKSPWI
PFTRGQWACPGRNLAMMELRMALSHIALRYSMSLAHADASKSFDNGVMDTFTLTLPPLHLIFTPL*

>92731|jgi|CYP621C3|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MRKRLGPLPPGPPGELFLGHLRIIPTAYPEYFYMRLSQEYKSDILSFNVLGQPVIVLNSVQVATDLLLDKRGANYCDRPRF
VLFEVMGWHKTLTFLRWGSSFRLHRRILQRGFQKSNIGQYRYLQEREAIALLGGIMDKPAEWEMVLRRFSTAIALGVGFG
IKIETDTDPFIQIAEDASYALGHGGAPAGTPVDFFPLSRYLPSCLHDRSLKFANQWRFPITNLRDKPYETIMASSTRVQS
LVQDMIDQRESQVQQGQSPDISEEDIKGAGAAVFAAAQDTTWSTLVVFILSMVLHPEVQSKAQRLLDQVVGRDRLPTFDD
RLNLQYIDFIVKETFRWSPVSPMGVPHRSLKDDIYRGYLIPAGSFVYANTRAMTHDEKVYTNPDDFDPDRYFPLDEGGRG
EPLPNGQFGFGRRICVGQHFAEATIWLVVAVMLSTMSIERVKDASGAEIMPVVELTSGLTSHPKSFPCLIRPRDEKSGVV
IRDAKS*

>93338|jgi|CYP609C1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MVSLVATLASPRDWPASALLLAATLVISLLVRLLRRPGLPSGASFTEWGVPFIGSLNFFTKRGDFLREGTKRSPNGYFNF
YYGSYPIVALSGEKARSAYFNTRGLDLSAGFRKLFSAGPDIDHMLGCNMSAYFIVLFKKLTGKEHLATCLPYLNKDARDA
FSAIDTSVPMDPFVVLYDLLYKFTHRTVGCHDVAEDPVLQEKTMRLYEKLDKTAAIQVMFPWLPTPTKLNKLWAGAKLHM
LFGDIIRERRKSGRKAEDVMQYLMDKGESDLLSSAFIIGALFAGLINTGVQSAWILCYLAYDPVWYAKVRVEVDAAVEKY
RTSDDQTPVDVLAGLSLEAWESEFPCIDFGVRDSIRLNLMGASIRQNTSGKDIVLGDTGVVVPNQAFAVYHVSDIHMDEA
IYKNPLKWDPGRYFPERGEDKKRQHGYIGWGTGLHPCLGMRIAKLELFVSTATFFAMFDFKAVDKNGNLATGPLPSYDSN
ALAAKRMIDTVYFKCDRRF*

>94359|jgi|CYP5388A1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MAFSELLADMESFPTLAWVSPALTAVAVILVALFSGYRKSPKGFNVPTLGEDSQMRYVQEADFKNTIFQVLTPDGPRLFL
PRKFANELKPFKRHEASGMKALADRHLGHYTTIDHESDVMLGAIKIDLNRNLGLFVGDVEQEVSHCFKTNFPSCEEWTPV
DLHETLLRIVAQASARIFVGYPMCRNDEWLECSTKFALDVMTGGEKLKLWHPWLRPFAQYWIPEMRRIRGDHQRALDLLM
PELKKRAAETRQPDEPPRQDMIQWMQQRAQKLGDKSFDYKELANLQMLTATAAIHTTRLAIIHALYDIAARPEYIAPLRE
EIREVTRDTNGILQKQHLTQMRKLDSFMKESQRHSPPSVATYQRKAMIPIDLSNGFHIPKGTIVQCNTNILDETPAAWGE
PHAFDGFRFYRLRENPEDTNRFQFASPSYDSMQFGFGNDACPGRFFASNQIKIILSYILSNYDIKFEDSVKGRPKNFMFE
VNVLADPTVKVLFKKL*

>94499|jgi|CYP528A8|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MGSGLIWASIWALCYGIGLLLLSISTIVFYRLFLHPLSRAPGPRLAAVSNIWHAYHARNGRMFELGRTLHQKYGEVVRVG
PNELWFNSPEAFDKIYSSTKGFEKTDFYLATSLNTPKIDCFLRPHFVDSLDLLSERDMKRYRLQRRLIGRVYQTANVAKF
EAAVDDVIKQAIARLETLDGAEIDLKEWMHIIAVECLGASVISWSPGLLKAGTDWGSSAHSYLGWRRKSVMGLFPTLTKL
TMRSNLFEWIFRDVWDLKYVATPNFRSFFPDVGKRISRRIKSTLKPNAPKDNRADLLADLIQLHKDKPDFTESYLRKMAV
TNFGAGHETMASTLTSIFTMIGTNDGVQKRVKQEIRDAVDSLSYVGTNQLQYTRAAIREAMRLHPVLSMSLPRRVPDMGS
HIHGYFIPGGTTVGCNPVALHRNANVVIGPDPDAYNPDRWLGGEIFDIRLMDRYSLNWGGGPRTCPGKNLAEMVVYKVVS
ALFERFDVEVATPPEIGQPSYFLSMMTGVKARFLSVAPQTAGKDCL*

>95024|jgi|CYP526K3|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MAVITSSGGVYVVAIVCVVLYTAYRRILPKPIPDIPYNKDAAAKLFGDVPEMMGYVMRTQRIFCWLTSLTTRLQSPIVQA
FIKPGGLPWVVVTDPFESQDILLRRIKEFDRSEFFGELINGILPEQHIQFISSDPRFKNNRNLINHLMAPTFIREISAPE
VYMAASTLMKLWKIKCNMAKGRPFSAHHDVTFATLDSIFASSFGLLESETNTIQRIKALDSFEPVFPDDVDEPVAFPEGH
TPEIFSAVLTLANSVTDTQLSPAPVLTSWVIRKFPYMIKAKSIKDKYIEDKVEESVRLIEKDPSIKPKSALHSVLLRERD
VAIKEGRKPDYRKGAIADEFFGFMTAGHDTSATTIAWGVKMLTDNPAAQSRLRDELRSAFPAAVREKRDLTYAELSNAQV
PYLDATVEEILRHSNTIAFVVRQAQQDTTVLGRNIPKGTNVFLMANGPGYLEPNMKLTDEARSPGARQTAKSALTRAWSD
DDISKFVPERWLETDPDTGAEVFNTMAGPSLAFGMGLRGCFGRKLALQVLKIHFALIVWNFELLPIPEKLGGYDAVQKFA
REPTKCFIRLKEIEL*

>96587|jgi|CYP5390A1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1

MGVQSLLALVVAVGVTSYLKLHGASYTAILLGLLASTVAQLAISLVFSSLIYRWFISPTKSLPHPKDTPFILGNLIPFLS
EPWGFPLVRWQRTVPTTTSGFYRVFLGPFDYLIPKSSQAVTTVMTQPYLFHKPAAVRDGLVESLGVGLVAAEGSVHKRQK
KLLTPIFGMSRNRRLVPQMWAKALILADKMQELVTKFDGNSDILFMHPLTMAATLDVIGVTTLGVDFDSVTRPDQPILKA
YQRVFPSFENQTATEKFFGATLPAIISPHLLFKLPLKPIQEFHQGMTFLQDFCLAQIRQKKQEIEDDKNDNIDVREKDIL
SAIIASGLEDESEILSHILTILAAGHESTAITLAWAIFKLAQHPIIQDKLRAELLAATRNMKGKEMTLDEINSLTYLRCF
LMEVFRLYPAFPAMMREAGNGTLVGDLHIPKGKQIMVSPYAVNRSQELWGDDADEFRVERWEESYSGGAKSSQAFLTFSS
GPRICIGKDFATLSLKVFLAVLVSKFRFEEAIPGWHPIIQKGTSLKPQGLKVKVTLL*

>96951|jgi|CYP5389A1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MDIHTTSSSLPLDNLTGEATRHSSVYVGLGFCVLLALWHYFDVSGHDPREPPIVKPSIPLIGHFVGFYRYGVSYMDRMRH
HTSWPAYTLSVMGHKTYVVTTPGLSHAALKSKSMSMEPLIAYVAPKMLGLSKDAGHHFGIDHTGFYNGSPALRERREEFG
HALAPGPGVNLPGQMCSDVVAEAVNAFDAEWATRDFYQWLRDVITLGTANGLYGPRSPVALDKSIIEDIWTFDENQLRLS
WGFLPNLIAPTGVRTLNKISKAFEQFFQSGNESFASDAVKLGITTARKMDVSIEDYSRIEVFNVSVATVNTVPTAVAMIQ
NILANSNLLQALRKELESVLTVKETPDGRQAELDIGRAETECPLLHACYQEALRIGSTPTCNRAVLEDVVLTDPDTGREV
LFKKGWRVSIPTFLLHNRDTFWGGDAETFGPEKFLPGGIATDSKGKVKTQGFVPYGGGAHLCPGRHLAKMEILASGALVI
MALDCEAENGFVTQNYALNAGAKKPIGLDNVKMRRRPGWEDVEWKVKI*

>99195|jgi|CYP51F2|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MDGPLSFIVLIFGAFGVLVAINLLRQALPQNRKEPPTVFHIVPLLGNAVSYGMDPPAFFARCRAKYGDVFTFILLGKKIT
CYFGIDGNDFILNGKQEDLNAEEIYSPLTTPVFGSDVVYDCPNSKLMEQKKFVKFGLTQRALECHVPLIEQEVVNYIGTE
PSFQGQSGTIDVSKCLAEITIFTASRALQGQEVRDKLTAEFATLYHDLDMGFQPINFLMPWAPLPQNRKRDAAHATMRAI
YMDIIESRRRSGLKEGSDMIWNLMNCTYKNGTPVPDKEIAHMMITLLMAGQHTSSSASSWTILRLASRPDIAEQLYEEQL
SNLGRGGRLAPLQYSDLNELPLLRNVVRETLRVHSSIHSDMRKVKRPIEVPGTGYVITPDKVLLASPLVTALSDEFFPNA
TEWDPHRWEHREMDENAKTDMEEPFISRGTRSPYLPFGAGRHRCIGEKFAYVNLSVIVATMVRSFRFYLSDEGKAVPKTD
YSSLFSRPMQPALVCWERRRQVVDGWPSL*

>99367|jgi|CYP504A50|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MHPFTPFFVIAAIVAIAIRWMNKTDIPKIKNLPELPGVPLFGSLFLLGKHHARNCARLAKTYGDVFQVRLGNRRFIYANS
FDGVKELWIKNQAALISRPTFWTFHNVVSKTQGVYTLGTSPWNESVKRARKAAATALNRQAVQTYLPFIDLESTTSINEL
VQNIKNGYDVDPNGYFQRFSLNISLTLCYGIRIDGTVRDHTLNEVVQVERELGNIRGIAHNWQDYVPLLRLWPGFKTNAI
KFRSRRDEYILDFYEQLKQRIAAGTDNPCIAGNVLKNPEAKLEDNELKSICLTMVAAGLDTLPGNINMTIAYLSSPHGQE
IQDHMYEEILKAYPNEDPWDACLTEERCEFVVSFIKEVLRFWSTLNLSFNRQSIRDITYKGAVIPAGTPFLMNMWAANHD
PKQFHHPMDFIPDRFVGVSEAGQGTQHYGYGAGTRMCAGAHLANRELYAIFIRLVLAFHIRETTHVKDRPILDTIECNSV
PTSMVTQPKPFKVRFIPRNQQQLEKWIASSKEKTAYL*

>99423|jgi|CYP526M2|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MTEASRGGLFGSWGISPSLPIALVAICVLLYRLYIRHFPKPIPGNIPYNILSARRLIGDSLDIRRYQKTGDFRRFFHDHN
TKLNTSISQVFMFPYPKPFVLLTDFRESYDILSKRHRDFDRSKRNADIFGTIGTNFHLAMQTRDPRFKGNKELVRDLMTP
AFLNEVSAVHIYDIATVLVDMWSYKVAQAAGRPFSAYEDLHYVALDIILAAAFGIPLEQSTTQKQYEFLQLQSSKIKSAG
SKADPVTYDRTPIAESRTALMKVTGTVVVGYKSPFPRLHHWILRNTIWRRDFALKEAFITDEINKGVERLTSENSQENRM
RCAMDMMLLRELGYAKKEGRKPNINAPRMRDELFGYVATGHDTSSTTLSWITKFLADNQSAQAKLRRQLRTAFAEAHAEK
RQPTVMEIIEKPAPFLDAFLEECLRMTKTIPTILREALTDVTILGHLVPKGTSIMMYNHGPGGQLESGFNIPEAVRSETS
QSSKDRVGEWNPDDISRFLPERWLQRTAEAKSDGEGDAEFEGIEYNANSGPFLTFGGGPRGCFGRKLAYMELRIVMAMLV
WNFEFQPCPAELSSYEGIDAATVVPKQCYVRLKQLL*

>99853|jgi|CYP58M6|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MEDLLRLWVALAGLGVYLSLRTVYRLYFHPLAHIPGPKLTACSHLYEFYYNVIRPGQFLFKIEEMHKQYGPIVRINPREV
HVSDPDFYDEIYASSSRRRDKDPKYVPTYALPGSMVAAVSHEQHRFRRGILKDFFSRRSVAELSDSVNERVQKLMTRLEV
ARINQTIISLDDAFSALTSDIVTAYCCGKDWDFIEDENFRSDVRNAAENAIEFTHISRFVPWLVYAMSALSPQMMAKVMP
GKAKLFEFLEAFLEYGKNEAYVGKRKTMVATLADPSIPEKERDYYRLRDETFGLLAAGTETTARVLTAASFYLANDPRVR
ETIQAELKQAMPTLDSRPTWAELEQLPYLSAFINECLRLAYGITARLPRVAPTEALQYKEYTIPPGTPVSSSTYFIHGNA
SVFPEPATFRPERWIEAAERGDNLKRYLVTFNRGTRGCIGINLAYLELFLTIAHFARRFNLELHDTVQEDLRIVRDMTMG
VTRRGGIKVYARLLPVE*

>100004|jgi|CYP5127C3|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MQGLLSVAKKRINAWLFLFRGPSMIQEEYDKSNGSPFWIQAPENRYLVVSSWDQIKEIDAAPEDVLSLQAAAKEILQPRY
TMQNFNWFDKKGVDGTPLVRTLRTLLTNHLPDILPDARRSMSALFDSILESHSMVNGSYTTPLFPMVIEAIALTNAAAFF
GRDLACNKEFMSAAMNFIEQTLITAEVVRVLPSAIAPFIGNLLAKKLGAGKILYDSLIPIAEERLEEKARKSLGQTVPEH
HDCVQWVMECSPRSKPWSADRIVHELMALWFGSVHITSTTACFALHHLCIHSEYIEPLRNEIESTGWANFDKSGGKAFPL
LDSFMKESARMNPVESVSSSRRMALKPFELSDSSRIEPGEWICTAPRGMMADARYYADPQKFQGFRFVDPDLLDKKVSGIS
GDGVPQETPSKFTDIADWQLWGTGRSACPGRFYATAVMKTLLALFITKYDMQLEDPKAARYFAWRTFIYPFTSTKVVLHP
RSAA*

>101234|jgi|CYP620B6|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MSNFILAQISIVLVFVVYRLFFRKKQDLLPLPPGPKPLPLVGNINDLPPPGVPEFEHWLTFKDKYGPVSSVTVLGQTMVI
LHDKAAVIELLEKSSLKTSGRPVFFFGAEMCGYGGFMPTMQYTDLYRQHRKFIHQQMGTKILASRFNDVQDIESKRLLLR
TLKDPKNFFEHIKTEASAIMLRITYGYVIEPLNQDPLIQLMQDVMTNLSSAFLPLYWVTDFVPAIRHLPDWFPGTGFKQT
ARKWKSINDAVTKTPYDFVQKQMENGIYQQTSYVSEHIKAHGHGDGTGVSEEDSSNIALTATDMYGGGADTTVSTIMAFT
LAMILFPEVQKTAQEEIDRVVGSDRLPGYEDQDNLPYTTAVAKEALRYFSIVPIGTAHRAEEEISFRGYRIPKGSFILPS
IWWFSHDPEVYKNPLVFEPERFLEPRNEPDPGDEAFGYGRRVCPGRYLATESIYITVVRLLAAFTITKGVDANGKEIDVE
CKQTPGLISHPVKFSYGIKPRNKKIEDLIRKVEVDHPWEKSDAEFLEGDVMEEYKQEVKKKQQVS*

>103675|jgi|CYP620B15|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MASLVVGQAAIVLIGFLLYQLFFRNKSKFPLPPGPKPLPIVGNIRDLPPPGTPDFRHWLPFKEKYGPISSVTLLGRTLVI
IQDKEAAVEYLEKNSSKTSSRPQFEFANMCGYGAMLAFMDYTDLFRQHRKFVHHQFGTTALVSRFNGVQEIESKRFLMRI
FKEPESLFQHIKTEAAATILKIVYGYNVEPFGADPLVRIINDVMENASRAMLPFKKPVEIFPALKRLPDWMPGAGFKRLA
REWLALTDASAYIPYNHVKKQMENGTYQPSYVSELIQTHGKGKNMEPDEDTKEAIVRTAQMLFTGGADTTVAAIMAFVLA

MIHHPDVQEKAQEELDRVVGTDRLPTYEDRPNLPYINAFMKEMLRWFTVAPVNTAHKNDEEIIFRGYRIPKGSYTVASNW
WFLHDPKTYANPMAFDPDRYLAPRNEPDPTGMFGYGRRICPGRFFAQENLFITVSQTLAVFKITHAVDENGKPIEAVLKH
TPGLIDHPQEFPYSIAPRNDKCVELLKRLEVESPWEESNAEDLEWGSFTKYQEEHRRSVAERRSKVSN*

>105629|jgi|CYP5078B7|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MLQAITRYGLFLALIGAAAYFFRIRYRKGLQDIPGPFWASILSFDRVITTASGKQQHKHLQYHNTYGPFVRVGPNHVSIS
RGEFITQIYGIGNAYPKSEFYSVFDAVTPHGVRFPTLFSIRDEKAHKSLKRPVASAFSMTSLVELEPLTDICIEILISKL
NRKKGQSVDFGTWLHWYAFDVITSLTFSTRQGFMETETDVDGIINAIEGRLVYNSIIGQVPFLHKFLLGNNFIAACAQAV
PLLAKLNTVRSIVKFAASQLEKRSMGKSLPSNDQNHDLLDRFRRVRDSEEVITNGDLLNHAASNVFAGSDTTAISLRSMF
YYLCKNKRCYEKLREEIDNMDKEGSLSSPITFGEASRMPYLQACMKEAMRLHPAVGQMLERVVPEQGAQFGQHWLPSGTI
VGINPWVVSRERTVYGEDVDDFRPERWLDATPEAAKYMQRNFLAFGSGGRSCLGKNISLLEMSKLVPQLLRRFDIELSSP
MTDWTLNTYWFVKQTDLFCNIKKRPTMEQS*

>105846|jgi|CYP552B14|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MTILQSTVLTFGLWALYKFLQAIYNITLHPLAGFPGPVLAGASYWYEGYFDLILWGRYTSEIARMHEKYGPIVRINPDEL
HCSDPHYIDEIFAIGTRKRNKPAHQLRSATFSTFGTADHNLHKIRRASLTKFFSKLRITKLEPEVHKAVHLLCEKLLGFA
DKKEPFDLTSAYSCFTSDVIAKYCFGENLGFLQQDGIEPNFRRAIYSVLNTTYVFRFIPWVKPLALTVPYIAKYLSEDVR
MLAETLNITIPKWIKETKVEMDTGIIREQETIFASLFQSNLPDEEKTVARFAGETAALFGAGTETTSWTLAVITYYLLTR
PKILKKLTEELRTIVKDPKSLPPWSTLEKLPYLNAVMTEGLRLSYGVSARTARIATEEDLVYHGMWTPKGSKASGTLDYV
IPRGMAIGMISVIMHHDEDIFPDSHSFIPERWLVKGKQRRDMERSLFVFGKGSRQCLGMNLAYCELYLALTALIFQVYPH
MQLYETTVKDVTYDHDLLVPVAKGNGVKVVIT*

>107123|jgi|CYP5391C2|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MSLTVISLPDGGVKLATLFGIVLCFLTALFHCRTSRAVKYFPGPKPWPLVGNLPYFSKVLKNMPVEIPLLAKRFGGICML
WMGSLPTLVINNLRDADELLYKNGALTSNRPKKNIFMERVMPHYIGTSEIGDELRFFRRIYTDLLAFKQSQRVKKYQNYE
SISMLNALCEDPDSFESHLTRGGMSVIFSAVYGVRLSRLDHPILLELFAIWGKMLRYMQPGSLIIDYLPFLEMLPLRFQP
WVHLADSLASRQHAIHMTFLKMLRKQIGAGVEPVCFGADMLERQKQQGFDDKVAIGILSGMILLGGESTASMMNSFIKVM
AMYPEAQKKAQQELDKVIGPSRLPTWQDQENLPYVRALIKELHRYSPILSFGAPHASTEEITYKGCTIPDATLILPSTDN
LHHDPLRYDNADKFQPERFLGDELDAFASAKHPDYLKRDHINYGFGRRLCQGIYVAENSLFIQVSRYLWAFNITPRAGEP
PLSMADIMETMNRKPKPFKVDITPRSDAVLQVVRQSAEEACTDIPDVDDIDIDMID*

>110783|jgi|CYP540B36|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MISSSFHLLGEQPSTSRQITFPSDFSFADLQELVASHFAIVDSNDVGFIHQNIELTSVNEVRAATDPVAISISGKSVRDI
PGPGGLPFVGSFFEVYPDHLGNHQRLFNKYGSLFVTTNMGSRIHHTNDPRLANLFFTESPFFSKKIIPNHPIHPLGMPEA
GLFFGDTDSEAWRITHKFLPPALGPKAVRHYAPAMQKTAEESFNVFDKLDQDGEAWNVFPYMMKIGSQAVGRLVFGMDFN
HFASVDAPLHEFVLKLAHNVELSKRVSSFGSWYANMPFGDPKKLRDNMHEIQRMIFETSKNASTGIEDLNLQDAALQSQN
LVDYCLRARDLKGNRLTWDQFVPALVVLTGAGFVTSAALLSWMIYALVTNEGVQERLLQELIDHDWDDNIQVTGDLVNEL
KFLNNFIKETQRTHNPSFQPARTALVDMILPGGYRLAKDSIVVADLHHIHKNPHIWDNAEKFDPDRWDTEKVKNRPAGSY
QPFASGPRSCIGFNFALQEVKIVLSKLLYRYRFSLAETGTVEYNPYYLLIKPSNLYVRAERRFKWPQKTCARTDPLTD*

>111097|jgi|CYP5386A1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MAIFDIEAWPINLTTITVSLLTLAFVLRYTSGKKLHPSEPTVVQPWVPLIGHLLGMATQGGRYIKRLGLSYSDEPILTLP
VPGSRIYVVTEPSLAASVQRNTKALSMSPLLPEITKRVLGLDEKTCRVIGQNLDPEPGEPRGFFADIHDWVYSSFGPGEY
VNTLSCEAAQELCYQLLQEIKASNDAGHVSKPVDLLAWIRHMVTVGTGKFLFGPNNPISEEPDLEHDFWAFDHGLGGLLI
GILPSLTAPKAYKGRERLTAGFRKYLEAGHLDSASLIVKGRARIEKEYGMDIDMTARSALSFLFAGIVNATTTFWVVLR
IFADQQLLNQVRQEIRQALKLSSQRSGPDSLSIGVVKETCKTLFAVYRESLRVGSENFSVRLIKEDTMLADRYFLKKGAV
VQISGGAIHARSTIWGQDVDEFNPGRFLKEKGKSDGFHPAAFRGFGGGKTLCPGRDFATNEILLFAAMIIHAVEIVAPDG
GTVAVPEKDDRIMPVHILEPVTNPKVIIKPRVDDAEILSQLKAVM*

>114691|jgi|CYP5090A2|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MILAWQVILAFDALVENSRDNLFLVVSGIALMSGWLVWRLWRFTVCPQIYPDDPQELPYCIPSHAPAFFNNSNTLLTKAR
AYFGNTNEPFALTIAGSKIYVITKPKDVASAYRNTETLSFNEFVQALMRAWGNTESCIQAMYTPLPKDKGGFANPQGKPL
ATLARQIHIHQLFPGDGLDFLENSFLEWFDVRMNIRKLHAVCPYALKSTDVDIVLPLMEWCSDFFTRAGQRAYFGDELDQ
IDVTLAKEFVIYDELSWQVLYQFPDFLTREMKRSKDVIQRALKKYIQLAQSQRSGEAWFTKVMENEMRALDISEDDIATM
FMAIYWAINTSTRKAAFWLLTYILHAPSLIEVIREETKAAFNDDGNINLEHLHNQCPQLNAMWNETIRMSSYAASVRFIT
KDTIIGGKVLRKGNRLMIPFRQLHFDRGVFGETADSFDHERFLKKATLTQSNNWKPFGGGNTMCPGRHMAKRSVLLFVAM
LLHRFDVEMDGYQPIPAAEEGKPVLGIMSIKGTDDLRVRLTTRKAKA*

>119460|jgi|CYP5391A1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MLSLLVSNKGAITQASILGVLLCLATALFSRSLRKASPAKKYPAGPKGWPVIGNLFLFPDVSAGNDKTLTSMAKEFTGLC
MLWLFSRPVLIVTKLRDAKELMDKRGAIFSDRPPLNIVVKKIWPNMLPIKPSGEGFRFLRRVYIDLLGPQTSLAVRKYQE
YESRMMLRDLYNTPEAFRAHTERFSTSVIFSAVYGVRVTRLDYPIMRELFDILTRAADSVLPGRVLVDYVPILERLPEFL
QPWLWSANSLRRREDALHAGFLAVLKKQIETGAESYCFGIDVLKLQKKKGLDDRLTIDILKGIIDVGSETTSSMMQSIIK
VLAMHPEAQKKAQEELDRVVGPSRLPTWEDSSSLPYIRALIKELHRFAPLLYIGVPHASTEEISYKGLTIPKTILLPNAF
ALSRDPERYADPDAFAPERFLGDDLDAFTSAKQGDFLKRDHINYGWGRRLCQGIHLAENSLYMQVSRVLWAFDIATIPGE
PPLNIHEKDGGFIKKPKAFRVSITPRSDEAVQVLLQSAEEAVTELPDADTVEMSF*

>121329|jgi|CYP548AA1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MAFHIIPACAFASICLGLATLSYFHLQQPRNVLWYTQAAAIVFFEWFFSNLVYKLAFHPLAKYPGPLIASLTDWYTVYWI
AEGGRHLELHKQHKRHGKFVRFGPNRLSINSAKASRDLHDVNSNTFKADAYGSFKRFFGAEMSLTTVDHKAHAFRRRVNM
TAITPAAVKEFEDQVTPHLDEFISIIGEGAGSKPQGEHGWSPGKDMSYAVAFCIADIMGSVTFGRTWNVQRDPQYRHFVK
DLPNGVAGIHLVGHMQSLFFCNLHKVLFKELIVGVGNLMSVSRSFALWRLEQPSMPYRDIWQALLASRDPKTGNAFSTEE
LISEASLFIIGGTDGMITATTSTLFYLTHNPRTLERLTREIREAFPLSPEDMGNKGSNVKCPIRFASAELQRIEYLPACI
DEAMRMSPPVPSILPRVVGPGGLTVDGDYFPAGVNLGIPHYSMHHSEDNFAEPLTYAPERWFLEERTKGLKDGSVPVSGK
ESPKMRPAVGQAYGFTPFGGGRSSCIGKYLAYQEMSIVLARLIWLFDIRLDPSSNMGEGIGDAREGRECKTEFQLYDRFV
SSQKGPMLQFRYREELAA*

>122903|jgi|CYP671D2|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MTQPLELEGLGGALFPPVPSLWQVTVGLSLIAGVVSHQVVFRPVEIDTLLWRLLFIYITALAAIAGGYVRIGGYQIVAAV
LQTALVATTYTVGVFTSIFVYRAFFHPLQKFPGPFWARVSRFYAMGKMIHSRKGYEDIQKLHQKYGDIVRVGPRELSINR
PSAIRSLYGAHAQTSRPPWYSQTSRHPNKSSLINTRDSAAHKLRKKIWEKALGSRALDVYESRVQAKVELLLSKIEETNG
IPVDMTKYFMYFSFDVMADVGFSKNFNMLESTSIHPAIKGVHDTMWFIGLLTTIPWMLYMVGSTPGLNSLSRFSIWCHEQ
LNEKRNVLSGEKEKEPQDVMSWLLKAMDNGDPAAPPSERAVQEDSRLLIIAGSDTTSGILTSAFHLLLTNPHTYERLLAE
VQKQFPGGISDWTYEKAKAIPYLDWIVYESLRLRPTAAAGMPRDLPPQGIMLDGEFIPGGTIASVPPYTIQRDPRYWDEP
LAFRPERWENCSTDSVPWIAFSRGTWSCPGRGLAMMECRMVLSRIFLQYDVTLPLGMGGDTFEEDTIDNVAMVAPALYLS
FTPR*

>125634|jgi|CYP65BM4|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MLLTAESLLFSLRPGVALVLWAVILGFVYLISIPIYNVWFHPLRKYPGPRLWAATRIPYARMIFSGKSHRKILELHQIYG
DVVRVAPDELAYIDGTAWNDIMGHRKRGQGENGKDPVFWKSQQHSVISADRENHTRMRRTLAHGFSAQAMMDQQPLIQGY
VDMLISRLRDNCADGTRPLEMTSWYNWATFDIIGDLAFGEPFGCLENSDYHPWVSLLFTRIRTSAANNVLRRFPFGEKLI
QLLVSKQDRQKFQEHYQLTQEKVNKRLAETNPRADFMDVMTKREGAMKFSYPELLDNASLLIIAGSETTATTLSGVTYLL
LTHPDVLQKTTDEVRSSFSNESEIDLLSVQKLNYMMAALQETLRMYPPVPTAIPRKAQPGGDVICGQYVPENTVLGIWQW
PMYHNAKNFTLPDSYIPERWLGDARFSSDPQDVLQAFSFGPRNCIGKNLAYAEMRLILAKILWNFDISLHPDSKDWLQDN
RAFTLWQKPDLNIYIKPKEIS*

>126750|jgi|CYP65BQ2|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MAILLDNPVAAISLKSVVLLPLSAVILGLLYIAYTAIYNLFFHPLRKFPGPKLWALHYGFYARLELSGEGHRRMLQMHQK
YGPIVRVAPDHLAICHPDGMNNLSGHRKPGQLENGKEYVRTESNPGTIIGANRQDHTRMRKSMANAFSQQAMLDQQPLIV
SYVDKLFENLERFAAKGEVFDAVAWYNYTTFDIVGDLAFGEPFGCLQESTFHPWVELVFKSLKNIAFDSAFRRMGFLYNL
LVMLTPKSVMTKFIEHRELSEQKVRKRLNTKTDRKDFMACMTSRKGKDELTFQELTANASILIMAGSETTATALSAATYY
LGLHPEPLKKLCDEVRSAFQSEDEIDLVSVGRLDYMLAVLNEAMRLHSPVPATTPRTINEMGDTIGGQFIPPGTHIDIWY
WTLFHNPEYWVQVEEFIPERWLGDTRFESDKKQIFTPFSVGPRGCIGKNLAYAEMRLIMARLIWNYDIELLDESVGWDKR
CEVYIVYNKGPLYIRLKPRK*

>128101|jgi|CYP5057C2|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MEEGYQVALASIASGATFRLYVFLAVAVLGCPLFLKVVQRLLVSPLRDVPGPKNAALFPWTITIATFKWQRAQKLLQLHK
DYGPLVRIGPNEVSISDWRYYRAIYSSNKASSKEPTFYLPIVFVDQHNIFAMTNKEEHAARRKISASPYSLQSMTRLEPM
IRSKADNLARRLLEISSSATTGTVNAFLMCGLFSLEVVCKAGFGKDFPFEDTTDLTELLEAMDGSAFTFILDGLLPWLRP
TGFAHKIPFVGESYQRRRQWEQKSRALLREFLQLPDKDEGYLISPYLSSVDGFLGRKLNHEEFVEEAMGIMFAGSGTTST
TLTYLLYALSRPGYETIQTHLRAELEDGGESVSELRKLPYLNAVIKETFRLYPTIISSLPRVLKEPMKVHDIDLPVGTVV
NMQNFVHHRDPAVFPDPELFNPERWLNPHADMESALTPFSLGRRACIGLNLAWDELYIAVSSVFRNLELRLGEEMTEADM
ELEDRFNIAPVGHKLMLKVSKAEKLS*

>129876|jgi|CYP5049A4|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MEVFKTISSLAASHPVAFALWSLMSAFAFQVLQRGYRHRRFYRNLPGPPHSALWGHLKVLGEVSATIPQNSHPQAYYTEI
ARKYNLKGIFYLDLWPIADSSVVLTDPMLMEEVTVRNPLPQHTMSEAFLSPIIGPNVIATVNGPIWKRLHNAMAPAFSWS
HIRTLTAVMVDECALYRAALAKYAKSGEVFSVEELSARLIFDVIGRVVFNFRLHAQTADSPYLNDLRELVDLAHNQTDLV
ASYNPIARVAKWWKKRKVLGRLHPLILGKIKDRLNLLLNEGITPSRKDPSSILDLMLREHILQSESSSGAKTTKQITLSY
TDTQLLLTNIKGLLLGGHGTTTDSLCYIFMLLSHAPTALKKMRQEHDDVFGKDFDGTVKSLLDAPAKLQDLPYTDAIIKE
SLRLFPVGFTVREADAGAKLTVQGRSYPIDKHQGIVLNGHDPHYNSDFFPNHTEFRPERWLDSEEGVPRSYFRTFGRGPR
ACLGQNLAMNELKVILLMVVRDFEFECAGLEPNAKPKTSYTNLDTVFGDIIFQELGIEARPRGGMMMTVKRND*

>481072|jgi|CYP5392A1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MSTILALLPWLAAVGLLGGIYYVWYRVFSYQGIPTSLAFANSDGSFFSRGRASLGSVFEVNTLLWAGHRDYSKKGRPYIL
PDIFTGHQVILPPENLPWLMKQPANVLSQRESNNEFLAAKHTFLNCVAADDNEWTFVVNLIKDITKELNNKTNDVIEEIQ
AALEDLWGNDTTNWTQVELLDVCLELMSRIVSRMYVGLPLCRDPTYLASSTHFAKFILVEALLAQLTPKPLRPLLGPLLA
QYDWMQFKRMDRCVNPIIRERARRFGRMDNEEKKDPDQPSDLLSRLMQEAYRRNDDPCRSQSHSSKLLAILNWAAIQVQG
ITLENVLIDIAHSPQSASIQDQLREEATNADNADPSSRWTRAEVAKLPKMDSVMTESLRLWGFAHGIIKVVVAKDGVDLP
TGEHIPCGAKIGIGSYGLHHDAEVYPGESPFSFDPFRFLDEKTEAQTTGLKFAATSDTYLAFSHGRYACAGRFFANHLLK
LLLSQIVMRYDIKPDADPRPQNPWFSYVSPPPIGYKLTVRRRKQ*

>483190|jgi|CYP5046B1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MLDMADTDKMMTLAKQWADEYGDVFYTKVGLQHFIWLSSPTAVKDLMDKRGAIYSSRAASPMINLVSNEERLNFLPYGEK
WRTLRNILHSALNLETTSTYKPVQDFESKQAVWEILHAKDDTEFSDINRRYSTSTIMTITYGQPVPSLSDPLYQDILKIV
RHFSLATAPGGWMIDTLPMLADIVPEFLLQNWKTVARQWYKEDSQIYLRMYHTLMDKVKSGTAPDCFLKDFAREKLEKSL
ISDVTAAFAAGALIEAGSDATTTALNNVILACLLYPEIVAGAHEELDRVVGSDRMPDFNDEPNLPYIRGIAKETLRWRAS
TKIGTCHSTTQDDWYKGHFIPKGAVIVLNWWAIHMDETRWKDPQRFDPTRYLDDSLTEAESMSQADANLRDHFTFGAGRR
NCPGVHIAHNSLFINVARLFWAFNIRKSTDENGDPIEPSTAAQPGFLLTPVKFPARFEARSEKHAAIIKQTWSEAQKQ*

>483618|jgi|CYP504A23|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MAYQILGIAIIAAVFVVLKILNATDTPKVKGIPEIPGIPVFGNLLQLGVDHARVAKKWASKYGPVFQARLGNRRIVFVNS
YDAVKHFWITHQSSLISRPTFHTFHSVVSSSQGFTIGTSPWDESCKRRRKAAATALNRPAVQSYMPILDLESMMSIKELL
NDCMGGSQDVDPSPYMSRFALNTSLTLNYGFRIEGNVTSELLTEITHVEREISNFRSTSNNWQDYIPLMRMFGKTNTKAE
EYRLRRDKYLGDMLNDLKDRIAQGTDKPCITGNILKDPEAKLNEAELKSICLTMVSAGLDTVPGNIIMGMAYLSTQHGQS
IQAKALEAIQEVYPNGDAWEKCLVEEKVPYITALVKETLRFWTVIPICLPRVNIKDIPYEGSVVPAGTTFFMNAYAADYD
DARFKLPEQFLPERFLEDKEIGTPHYAYGAGSRMCAGSHLANRELYTAYIRLITSFEITPTKDSTQAPVIHPIDCNGTPT
SLTTDPKPFKIGLKPRDEAKTRQWIAEAEERTKHL*

>485626|jgi|CYP559C3|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MAIPELLGSVTSSQLWSFGALFLILSFIVDFASHPQYPSQIPVMGKGHGMLNALLDSFRYLTNYHRWVSDGYVKFGKKGL
PFVVRSPLSRPSEVVIPRNQIGWMMDQPDHILSTYDAHNAVLYSEYNFLGRRLAYDPFPNRVMHKYIARHLSTVIPNVDD
EIQHAINTTLGNDTENWKSFKLWNLWLEIVPHVTNRLLIGPEICRNRQFIDGMVNFTNDVVRNGFLLQVIPKVLHPIFGR
IFGMFNYLHWRSANAPAQPIIEKRLNAMLKKAAGDPEYKDFTPPEDFITWLIRQALADGKAFELDPIVISKRLLPIEFAA

IHTTVLTGQLWMQDLLTSDPETGILDILRAEIDAHKPESGPWTKAAISNLVRLDSSIRESQRVSNFAVTMIERKVVADNG
LYNPELGWTLPKGSFVTVNLEGTHHDQDLYKDPHSYNPLRYSQVREAWDAKSDEEKKSEPEEGTRIRGLGMVTTSPQHLA
FGHGRHACPGRFFVAHELKLIMIHILLNYDIKLVGKVPEKQWIGGTIIPHLKAEIQVRRKKVSA*

>488675|jgi|CYP631C6|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MNKTLVTAINASAELFSRPFLASITNLQRVWWVRTGRAHLYHQAVHAKYGDIVRIGPHMVSVSNPEAIQTIYPIRSGFPK
SDFYSALRPYSSERGSMLLVFNTQDEQMHKRLKSPIAPLFSLSNTVTFEGLVDDVLACLSEQLDKRFVDTMEILDFGKWV
QYFAFDVMGTMSFSKRYGFLDQGRDDEGMLDAIFNYMKTAAPMTQIPWLDPWFYKNKIVHSFRRTPGMSILGVVSKAIRE
RLDGNDDAGTQSSGKDFLSRFLEIHRANPDLPPWASTAWTFSNVIAGSDSVGSVMRTILWRLIFLADNLVTHPDTLQALQ
RELDAANLSRPYPKWNEVRDLEYLDACVQEAVRIHPPFALPFERVVPVGGVNVMGKYLPEGVFVGSNPYVVNRHKPTFGE
NVEDWSPERWLGGEGHKKKLEQSILTFGAGRRVCLGKYIGLFEVKKLIPFLILNYEIQIIDPKALTVENGFFFKQEGFNC
RITKREQSSTD*

>490220|jgi|CYP5094A3|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MEQLKAHLGKPTLSTEQKLLVLVGLPVLYIVGLAVYRLYFHPLAKFPGPKLAAATKWYEFYHDIIKGQGGQYFVRVSEMH
DKYGPIVRVNPDEIHIRDPSFLDTLYATNPTKRDKYPPSAEMAGLTYGTHGTVDHDMHRRRRMANSRMFSKRAVASAQEL
IHGHIKELTEAFERKVGSSESIEMQTTFLAYTTDVIYHYMFNKDVGLQKDWSKAQSWRHSMEAVAQATPFCKQFPWLNGK
LLMLPEWILNILVAKLQPDIAGLLATHKLMGRIAAEYVAHRNTDKGKLEFEEDEKNIKPLTIFHSIDRSALPKEEKTSLR
LMQEGLTVLYAGGETGSRLLAHTIYHLLDNPEILEKVRKEILDAAGDSKELPDVKVLESLPWLTASVRESLRLRATVKSR
LPLVSKKELIYKDWVIPAGTPVSMSQPDILHNDEIYPEALKFKPERWFNATEQQNKMFIPFGKGTRMCIGADFAYIELYM
SLSALITRFDLELYDTTWERDVEYTRDCFLGEASRDSPGIRVKVLADNKRWFAD*

>490219|jgi|CYP5104A5|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MVSPWTLTIYACMNELIPTTWFSAFPGPFAAKFTKIWRAYATYRGQWHREIVELHRQYGNVVRIGPNELSVGDPEAFRTI
YRVNGAFVKSACYAVLQGSRPFDLTGERNEKIHSAQRRLVARPYSMESVVHLERQVTHLIDDLLIKFDTFASSSRSIDIG
NWFQLFAFDVIGAVSFTKPFGFVAKANDDGMLTRIERSLGNTAWLMHVPWLFNFHQKYILPVFGNFLRANDRNNFFFKFA
KSEVQDRRDKGGNDNNLVGQLFQAAHSRAELNDLVISFMMASNVFAGSDTTSLALRGIFLNLLRHPHILSKLRAEMEERR
AAGCLSSTVTFQEAEACPYLQAIMHEALRVFSPVGFNPDRDVPKDGMMINGIFVPGGTVVGSNAWVIHRMPEVWGADFEE
FRPERWLERESSGELSEKRISTR*

>492896|jgi|CYP620B16|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MSNFAIAQGIIVLIGVLVYSLFFRKKREVLLPLPPGPKPLPILGNIRDVPAPGEPEYEYWLTLKDKYGPINSTTILGQTQ
VFIYDREAITELLEKSSLKTASRPQMDFLDLCGYDRWLSIMRYNTQHKFFRKIIHQQIGTKLLSTQYIDIQDVESKRFLL
RALLDPTHLFGHAKTEGASIILKLTYGYSSELYKPDPLVELIQEVLRNASLVMVPLSWAVDIFPVLSYLPGWFPGAGFKR
IAREWRALLDASADIPYEFTEQQMRKGSYQSSYTSKLINSFKKDGREIDEETLEAIKWTASIMFAAGAETTVSTVISFFL
GMVLHPDVQLKAQEEIDRVVGSDRLPEASDEENLPYVRGVVMEALRTFPVLPMGIAHEAAEDIVFRGYRIPKGAYIRPCI
WWYFHDPKTYADPSRYDPARYLEPRNEPEPMDAFGYGRRVCPGRFVAQETLFLTISRTLAAFTISKAMHNGKPVDFVPQH
APGGLDHPQDFPYSIVPRSEKHAELVRRVEVDHPWEGSNVGDIQGNALFDRYKARCDAGIGSY*

>493712|jgi|CYP5794A1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MKARWSRFWLIWIDMSGRRSKTIHELHQKYGSVVRIGPREVSFSSRQAMKDLYGSGNKFMKGPTEHRSRQKRIAHVFAPA
SIAAVEPLVKEQVQKLLHFRIFALDVVGSVFFGQSFGGLDNEAPPKILYDLDEVFPSLLIEWQFAAIRSLLLAIPHKPMQ
HFLRIASEFYDKYGTEKFNEYIARHGRSGDRIDLLTKLIAGSKDYGPLDDNEIVNETTNLFFAGTDTTSNTFTYMFYELA
KHPQWQKQLQAELDEAVLEEVPEYKHVMNLRVLDAVIHETLRFHPAAPASLQRLAPSEGGAVVDGIAIPQNFDPGRWLSA
SEDHLNVMHEYILVWGKGQRACLGKPMAYMELKVGTAALIGKFSVEIGSVTIDDDMEMTDHFALVPKGKRCILRLKERS*

>495469|jgi|CYP540B35|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MSTLFHLLGEQPSTAIEFEVSASLDFDDLQDLVASHFAIVEPRGVGFVSHDQYLTLVADVLASDGPIAISIDGGPVREIP
GPKGLPYLGNFTQIYPDHLGNHQRLFETYGKLFAVTTFGTTWNYTNDPNLTNIFFTESEFFTKGVIDGHPLHAFNLGDAG
IFFGSTDTDSWRANHKFFPPALGPKAVKHYAPKLQDTIEDAFSVFDQLDEGGEAWNVFPYMLKLTSQAIVKLVLGMQVRH
FASPDTPLDEIVSMIIEILMLARKVNRYGSWYGSLPFGDPQKLRNVTKMIRERLDKKMEEVENAKVGAKKLELQDAALEA
DNLIDFAVRARDSKGNRLSKDHASLGVTVIAGAGFSTTAALLSWLIYGLVFYEGMQDRILQELIDNDWNEDTVATPELTH
NLKFLDKYIKETQRRHNGSFQPGRTAKTDLILPGGYKMKKDSLVILALHHLHTNSKQWDSPLRFDPDRWDTEEVKNRPAG
SFQPFGSGARGCIGFNLALEEVKIFLPKLVYRYRFTLAKMDEAVQYDPNQVVIKPDNLYVRAERRARWPAKSE*

>495634|jgi|CYP5128C1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MATAATNSTLIVTTLSPVSIGVAVISILLLKFLYGLSTDRLGHIPGPFIARLTPIWYWYLTWKGIECTVITALHKKYGPA
VRIAPNEVDISDGAAVNPIYVDNGGFRKIAGYRNFDINGFPTIFSVTDHTHRAVRAKAVSPLFAQQAITNSKPAMQKIID
ATLVELQRRRSLVAGRPVDLLNLFRSMAMDALTEYLIGECFNSVGTERLSATAFVDNFAAGGRFFYLPSWLFSFVDSWAA
KFDKNKQLITTSTDIVQEFAAKVVDGSIAQGEKETYQGRLLNANLSREEAISQVMDIMFAGTDGVARILAVFCWHLAQAP
DTLERIYKEIMQNPGVDARSLPYLSGAVKEACRLALANPTRLPRVVPPGGLNVPGLPTIPAGTSVGIGAYSLHFNSQVFP
KPYEFVPERWLECTPEMLRDSFHFGKGPRQCIARNFASAIVWWASEALVRSRVLDGARPVVEKIEIVEWFNSKQVGDNIE
LRWV*
>497344|jgi|CYP65A6|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MALISMSLSAFGSIMKSLALLPLLALLLGLGYTFCNVIYNLFLHPLRKYPGLWLWAVSDIPYSLVSISGNAHKTMLQMHI
KYGPVVRVGPNTIFYSHPDASKEIRGHRKGNRVEHLKDPHLHSGNQSNVIGANRENHIRYRKSLAHGFSHQAMLDQEPVI
HKYIDKLVTALKTQCANQEKVDVVRWYNYTTFDIIGDLAFGEPFYCLEKSDYHPWVALIFSGVKNISFISVCSKHGALGM
MLALLLMPKDLLAKGTEHRRLSIEKTRRRLDSGSSRPDFMTAMTTTRGSAEELTFNELASSASLLIAAGSETTATALSAA
TYYLGLYPETFGKLAAEVRSAFRSEEEIKLTNLQHLNYLQAVIDEAMRLFPSAPGTQPRIISPGGDTIVGRYVPAGTIVG
VWKWVNHHNPAHFHEAESFIPERWLGDAHFENDKKDAFMPFSVGPRNCIGRNLAYAEMRLILARMVWNFDIKLSEESIGW
DMKSKVYMLWEKGPIYVHLTKRQEI*

>498331|jgi|CYP602B6|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MYRQSNSTPFPSAVEATSLFTSWTPRTSYYAAIFVMLLAAWLLRPKSQRNKLSVPFYGASKLKWIFDAESQVVASYSKFR
DQVYQIKATEGIQAMIPPRFIAELKGLPEDILSATEAVADALQTKYTKFSPGHNGDMLSLLVRTRLTQNLVELIPQLKVE
LEHYIGTEFPSCEDWTPVKWQPFALRGIARLSGRAFVGPFLNRDEQWMKVSINFAINVFMSVIKLQFFPEWARPVAQYAV
SDLRKIRRDIDAAKSMLKPLLEERIRDMEISTFHEPPNDLMQWLIEALPEEEKADVQTHAELQLILAAASIHTTNNLLFE

CMADLASHPEVQAELREEAYQILEVENRWARKESMAKLKKLDSFMREVQRLRGNITSFIRKVLKPIDLSDGTHLPAGTRV
LAPQAGISVDGQFFPNPEEFDALRFYHMRQESAEASNRWQFTSLNDTNLNFGAGKHACPGRFFAGNEIKLILAFFLINYD
VRLKKGDERPKPMAMVMTKGPDAKAEFEFRRRQLAN*

>499678|jgi|CYP62Y1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MFGSLSLLFSAVAGLILLSILISTVKKVSFVLTSPLRALPGPRVSLWTNLVLKRAVVTGTRIHYIHALHQKYGPIVRISP
NEVSVADPQSVQAIHKINSGYTKSPWYVEVAPFGRPILFSMSDSKAHGTRRKLFARAFSKTYLKQNYEKTVHEMTRQVVM
KIQNEAKQKGSACVLRWWTFMATDISALLMFGDSFHAIERGQVNEYIRILQSNMKGSGIAAELPWWIPPLLKCIPVEGIR
ELFRGNDILIKYGLEARRKSKAAGNDKSIFSAVNKEAQTEGGRLDETDVQYESQGLLVAGSDTTAVTMTYLVWAVLSHPQ
WQAKLEQEVAELRPDFSEEDLEKLPVLNGIIEETLRLYGAAPGGLPRIVPKGGAHMMGHYIPAGTTVTTQAFTLHRDSNL
FRNPERFDPSRWQLSDDLEDTGAVSRITDAAKAVYSPFGLGARVCLGVHLARMEMRLATTEFFRACRGARLAHSVTDESM
AMENHFLIAPKSHKCEIVLQE*

>500097|jgi|CYP620S1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MANTFIIQALIALVGFLVYHQVFRKSKKNLPPGPKGLPLIGNILDLPSKSTPDHEHWKSINDKYGPIASVTTSSGRPVLQ
FANYCGFGEFISLHQLEKRFTSQRKVMHKAIGTKVLATKYAEIQEREAGRLLLRTLKDPQKIVKHFETEAGAIILKIVYG
YTVNPHGSDPLVGLIDRMMANFSRASVPFTRLVEFIPALKWLPDGFPGTGFKAEANQYGKEIRAVINEPYKFVRKQMIDH
NLTGSYVARLVQECIDDADEPSEADAYTIKWSAAALYGGGADTTVSTLIGFILAMTMFPEAQRKAQEEIDRVTGGTRIPV
LADMDRMPYVAAMVSEALRWCPILPMGVPHAMAEDMTYKGYDLPKGAYIFPSIWSFTHDPAVYADPDTFAPERFLSPRNE
PDPRWTVFGFGRRVCPGRYLADSSLFLNLAYLVAVFDISKATDEQGNAIEPKLDFEAGIIAKPKPFPFKITPRSKRHVEL
IRNIEKEHPWEESDASLLGELPPPSH*

>500603|jgi|CYP5262A5|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MWYFYNYSSQIAILAMGMVISWHLRHVPGPLLSKITKMHLAMYDFSYSRNDQILEWHHQYGPIICIAPNEVSVATLEATK
EIYSATQRWPKSNYFDNFKGYNRRSIFATKSHEEHRAKRKLTSKFYQASNIYTVPAIEQHIQERSQTVLRQIRPGTQVDI
YSLTDCYALDIITFLVLGPHHCTQSVENVCLERQILMDLKHLQFVGPLRLRCPIFCDYASKLLDTLSPGLAYLQAEDRLA
SWCQQRISAAMKDPDFDNSRSLLQHILANLQNVRPKLSTDHLYVEAEILDNINAAEATVAVTATYLQKIRKELNALAVQE
NGLISFADVNSQVPSLEACLREVYRLHPASSGRSERLVPKGGRTLSNIYLPEGTIVTNSVAALHRDENIFPNPDHFLPER
WLEGDEEMLNRRLNQLIPFGYGGRVCLGKALATIEIKLLIAGLYRKYKTVMTESSTHASMRQCSTHDAVPWGLQCVIECQ
LVDDDQQE*

>500906|jgi|CYP5789A2|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MFLLIILLCGLCLWQLGQACYHLWLSPLSHIPGPKWAAISLLYEFYYEVICSGQYTREIENMHRIYGPIVRVNPYEVHIK
DPDFCIEHFSPVKKLDKYGWWYRVFGGPWSTISTEDHHVHKTRRGTFQNFLAPRMVRGFVPTIVEKLKGASAIMDRHVRT
GNVLNLSNVYRCMAADVVSAYVLPTSLNLLESDDLGEEFQSSLRFFFETATSMRYLGFMEPIITIIPSIIFNAMLTQPAK
ALIRLVRKLEACVDDVIQKGPDMDKSGLCLLERINNNEHEKDEMFRERLLQEAEQFIVAGSETTGHTLAVTTFYILQYKN
VQEKLLQELINADIVFDGNLEITKLQALPYLSAVITEGLRFSHGVGSRLPRINKSSEVQYKQWRIPAGVPISMTSRLHHE
DARLFPEPYKFSPDRWLQADSKNLKKYLSPFGHGSRICPGMHLAIYEINIAIAYIFTHYTVINFDTTEADLVSKHDLGAP
FPKQDSKGLQVTLRARVTE*

>501206|jgi|CYP561P2|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MPPTTNTSFMMSVMESISHVPIKDAAGLSLFLIFVYCLSISIYRLWFHPLARFPGPSLLSVSYFPFMYTYSIRGKWMRTA
ERLHVQYGPIVRVGPNHLAVDGSVAWTEIYANRGAGKSEYPKPRGFFFNGDETSILAAPRDVHRRLRRHLSHAFSESALV
EQEGIIASYIDLLMARLSERAGKGSKINIVDWLNFAAFDIIGDLTFADSFDSLRNSGYHPWVRNIFKNIQAASYTWFATN
YPPLQTVMRTFTSNETVKISQYNQQLAVEKALARMSLGPEPADGRRDFMTYMLRKTRTGEEGMTQEEILATAPVLVTAGS
ETTATLLSGFFFYLPSNPTAYWRLTEEIRSTFNSEDDINMRSASSLPYLQACLEEALRIYPPAAETPWRVSPGDMLLDQF
VPAGTHISVSQWATYRNPKYFKDASSYVPERWLLPAHPHYDAQFNNDNKSAFKPFSHGPRDCIGKNLAYAEMRLIVARFL
FRFDYELCPEQSGWHHDQRSFTVWAKGPLYLAVHLRE*

>501866|jgi|CYP65GB1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MQYASIAAAVATAVVAYLISTFIYNIAFHPLRSYPGPLLWRATGLFKCYHFLKGDMPFVVRELHVRYGSVVRIAPGELAF
SDTQAFKDIYVHKMVKWKGMYGFKPEHVQDLANVTDPAHHAFLRRHMAAGFSETALRNQESILVQHVDLLINQLRERGGG
GKVPQDMRDWFMWLTFDITGMLSFGAEFGGLRYAKSAEWVATLTDNVRVLMAMSALFGYVGATTRSILTYIFMSGLIPSV
AAHTQRTKDMLRERMDRKGAYDDRDYIIDGLININDHRVESNAVMLIMAGSETTSTALTATLFALLQAPEKMARLTKEVR
STFSRDEDITMASTLDKLPYLMACINESLRWYPPSVSGLARVVPNGGAKISGHYVPEGTIVAAWTWSVTRDPRYFADAYG
FHPERWLPGEDERFANDELDASPPFSVGPRSCMGKNLAMAEMRLTLARMIYNFDVTLSTPFDGDWFKGQKAYLVWDKPSV
LVNCTPVGES*

>504688|jgi|CYP534C4|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
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YRTRHDWFAKLGESFLVVSPNRLVMMTDNAETIRTITLKREQFPKWTAVYNILRMFGENVLTTEGSVWRMHRKVTSASFN
ERNAALVFREAIAQTQGMLRMWTGPTGTRTEPLKSLQRDTMKLALNIISYVGFGMRLLWPGEAHPAGTEPKIVKYGSHEP
SDGHQLSFTDTMEILLHYLLLLLIIPRWILRLIPSKKVKKAVLSYDEYVSYMNELLDEKIEEARKGEHAEGMDLMGQLAK
SCFGTDNKDATLTREEIIGNAFIMFVAGHETTANAIHFTIIYLATHPEAQRRMQKDIDDILGNQDPKDWDYDSLVNPMTA
SMIGAAMYETLRLVPAVSEIPKKISPDADESFVMDGTRYVIPKDTGISLVTVSTHVNPRYWPTRPSKITPGKSNILDYDP
SRWFLTKEKLNGQGSEVVAGADSEDFGGFQGSDINAQLFKPERGSYIPFSDGARSCLGRRIAVVEIIAALAVIFRSYSIE
LAVDEWATPEQVDKMSRDERAEVYKKAQDKSLWTVGQASTRLTLNLHDGMHVPVRIVKRGEEKFVDWVDKE*

>507008|jgi|CYP551A4|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MEALLSQPIATTALVATVLFSAIYNVYLVIYRLWFSPLAKFPGPKFAAASFWYEFYYDYWLDGKYLFEVEKMHKKYGPIV
RVNPDELSIHDPEFYNEIYVTESKRRTNSYDVFCKGIDFDGSHLLTADHDLHRKRRKPMEGFFSRKGITQLQPMLAEVAL
HLESRFRELEGKNAVIRLDHAFSAFSGDIIGRICLGTGDRGSHGDRFLDTPDFASDWYDIIHAIVRSIPLFTGFPQIIQV
LSLLPESLLLWVYPKGQMFNIFRQRALQQIRLANSEQSKGEDSGISIFRHIANSDMPEEERTEERLAKEAQVLLGGGTAS
TARTIGFASFYILSRPELRSKLEAELKGPMANWPEQVPTWAELEQLPLLQGIIKESLRLSYGVMHRLPRVFPDQAIQYKD
FVIPPGIPVGMSAYFMHSDPEVYPNPGEFIPERWVHDVKPAMHRSYVPFCRGSRNCLGMNLAMAEMSLILAVLYRSNGPK
LELYETDESDVKQAHDFLIPLPKLSTKGVRALIR*

>507225|jgi|CYP587E1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MKWLVDNCNQWIPDLKRPPPVLYLDIWPVFPDVMMMVFDGSMSAQFTQARSLPKHHITRTFLEPLTDNLDMTSADGSQSK
VWRSRFNPSFSPRNITMLIPELIDEIMVFKDLLGKMAGPSGQWGDVFQLEERTTSLTFDVILRATMDERLHEQINAQGSP
LKQALISQIRLMSKVLGVNRILGIKRWPWEAWTRQRNNEALRKALLGRVEAIIKSPHLADAVSEKKTILNIALSRTLAET
GGETPDQRSVDAILANLKLFLFAGHDTTSSTICWMFKLLQDNPNCLAKLREELNSVLGEDVTQAASLLRDSPQLLNNLVY
TNGVVKEALRFYPLASTVRQGERDFFLAVSGSDMRYPTEGTAIHDVPSVIQLDEHVWPRANEFLPERWIAAQGDPMHPNK
DAWRPFSMGPRNCIGQELAMVEIKLVAALVCREFDIQEAWDKWDMKQGSMKPKETVDGQRLYGCGQTVQHPKDGMPVHVR
RLYA*

>509526|jgi|CYP5168G1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MEAMDFYYANQQAILTAVGALSGIIAHNAVYIRGEWHVQAPQITIQLFALYVGCPVLAQTLKDTAVAGFLQGVIFWSYGY
LPGLIASILLYRVFFHPLTRAGFRGPWYARCTKIWHMWAARGSKNHHVLNDIHKKYGSFVRTGPAEITVFHPDVFMAVDG
PRSECVKSEWYDILHPGQALVTARNKSVHAIRRREWNSGFTTKALAEHEAKILKYVDKLDQCIEQDAKLQKVTNMRDLLL
WFGFDIMGDFVFSKSFGMLENQQWHHIIVRLQRALSLLGPFSSVPWLIQVGFNLAPRVSVLKDWFDTVAWCQSQMRDRLE
NGSSSQSQDLSYYLMEKDSEGHGFSENEKWHWAAGDSLLAIVAGSEPTAVALIAVFCELGKHPEHAEKIHEEVKNVDVTD
LKTLVNLPHLNAVMKESLRLHPALLTGGNRKTTEFGLTIGDQFIPPNTTIVAPRYTIGRLESCFEKASEFVPERWTTRPE
MVRNAAAYAPFGTGHHSCLGKTLALDTMKYVLARILKNYRFRAAPGDDSLSALETVKDQFTSNPGTLKLQFERRHATD*

>513297|jgi|CYP5080B6|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MYSIDIPEAVNTVYGIGSKLPKSEWYDGWKHPSPDAWTMFPDKDIKRHAQTRRVFQGLYSMSSLVSYEKYVDECADVLVN
RLSIYSKSRESINMGHWFQCYAFDVIGNITFSKPFGFLDRGEDVSGLLQALHKVMAYSTLIGIFASLHPYVFAVTNFFGI
GGAAGRMYLAGYVKERIRQRKAEKEISEEKAISHADGSPEDFLEKIMIKNKDAPSKVTDYHVFMMSMSNIIAGSDTTAIS
LSAILYYLLKYPEVMRKLREEVDQSTSAGDHLSFKESLEMPYWQAVMKEALRLHPATGLPLWRTVTEGGLELNGQFFPEG
TTIGLNTWTAHYNEDVFGRDAAAFRPERWLEAEKEGGERIGQMNAYYLPFGLGSRTCIGRHISYLEMSKLIPLLIKNFDF
ELQDRQRDWKTTNYWFVKPNNFDVTVKARTAV*

>513415|jgi|CYP537A10|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MLLLSPITLLAAATLLFAIHLIRRLTSPLSKIPGPAVSKFTSLVLKWKEIKALRTVYIHQLHQQYGPVVRIAPNEVSFTS
WEALKEIYCSGGSGYDKTEFYDLFKIYGRRTMFTTLNKADHAKRKRILADRYANSNVMKSASVTGVQERSSKFVRRCTSA
SGGVSDIFIALHAYACDCITHHLFHPYGTDCITKKEDEEMMHQVAADDSLQNRLISHYAPTLHRLFSRVLYLFAKPRETP
LADDYVLETSQLSGTASFTLMSRFDEKTGDLDYIDKAAECLDHMAAGIDTTGDGLCFLLWELSQPRSLGIQRKLAEELRA
NPETPFDKLPFLDAVVCEGLRCFPPIPMSLPRYVPQGGRSIDGFWLPEKTVVSCQAYSVHRLNSEIFPDGDVFNPERWLE
LEGDADRRRIQFAFSNGGRGCVGKQ*

>513506|jgi|CYP563A3|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MLAQMLSVTSVASTFSVLFLIGFVVRILQYRVFHPLRSVPGPWLNSLSELPAAIALVRGDQHLYYRSLHEKYGLVVRVSP
NELSFITTEAREEIYGFRKGGLLMEKSPIFLGAVGNVNGETGVSLALNKEHTRQRKALGYLFSNSALAKLEDILKIHVQK
LVSVLEKAASEKQAVNVSDWYTYLAFDMMGDLCFAEPFGCLDQASATEWSTSVINVFVAATWTQGIRRISGVGTWLERLM
TWLLVPAKAASWRSIHLNNSCEKTASRLQDTNREHTDFMYHILNNESKSLLSRTEIQLNMALFISAGTDTTATALVGWTY
YICTHPDVYKRLTAEIRNAFTANDEIKWDNVRKLTYLEATLNEALRLFPPSPASQQRVVPSGGATIAGYYVPAGTTVAVP
PWVSTHSPVNFRDPDTFKPERWPGEDAEFLDDHLNASLPFGTGPRVCIGKNLAYLEMRLIAATILWNFDIELDRNDHEAV
NRQWGLDGQMRPMKVYHSMTKLPLWIRLKGVNP*

>514484|jgi|CYP65DT2|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MDWFSFGYVAKVAFGSLVFFETVQIIYNIYFHPLRHIPGPWLFRAKRLFYVIRFNQGRLSYDVHKWHALYGPIVRIAPDE
LAFEDPDAFKDIYGRRPDDEMAKPDRSYHLIGEARSIMNETKEKHARLRKQLALGFSERSMRDQEPIIGNYVDLLIKRLH
EHCIDGDKLDPITGEKAKKELNMTAWYAWTTFDIIGDLAFGEPFGCLERAKYDPWVAAIGKAVRFSPVILGAKLLGYEWA
LRPLLSMLNKYRREHNRLCMEKLQRRMAMSAERPDLIEGLLQKAKDWDMDVRQVMQNSSNLIIAGSETTATGLAGITYLL
LKNPDALQKVVQEVRSSFSSEDEITLLSVNNLPFMFACINEALRLYPPVALGLPRIVPREGAVIAGQFVPQGMTVSTWHW
AIYHSERLWAKPFEFHPERFMHDPSFANDRLEALQPFSVGPRNCLGRNLAYAEMRLILARILFNFDLKLVNEEEDWMDQC
TFILWEKGPLNVFLTPVTK*

>520506|jgi|CYP570E3|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MPPLTIYLSNFCLIFLVAFLARQVCCWQRLRHIPGPTIAGWTIWWQLSNALSGRYHEHLKEAADTYGPLVRIGPNQLLST
GPEALRRMSAVRSGYTKGKFYASGKIIPGVDNVVSLRDPAKHREMRALMTPGANEGFSFEAAMDRQLLSFISLLERKYVS
SGSDVRPVDMAEKTQFFALDAIGDISLGQPFGYLEKDQDLYQYNEINTTSLPMMNVVSVMPSLANLVHMWPLRLLLPKEG
DQVGFGRLMHFARRYVETRFDPKTPRAHDMMQAHIDNGMTKNDLIQQVFLSIIAGSNSSAHALRMTLLSLITSPPAYSAL
IDEIRRASSTVSSPITWSQTQSLPYLQAVIREGLRMWPPVGGLGFKTVPPEGDYLNGYFVPGGTEIGQGFHGVGRSKTVW
GPDANVFRPERWLVAQGDGLKDMINAVDTHFGYGKYSCLGKPIALMELHKAVFELVRRFDFCVMNPETPIKTTASIFLFA
SDFWVTLTKRNL*

>521249|jgi|CYP613K1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MLSHLVNQLSDYHILILLLLFIALLIFSLSVQRFSRIKSFPGPSFRFPNGQGTEKFFSGRNAARRWRKDYGSIYSIWSGFK
REVVITKPEHVQAFYKDSHNHIKASDNNAGWLFGELLGSCVGVVSQKRWVRVRAPFEHHFTRPASLQRTLLLLNEARVFL
QSMNKDNNSTTINVTDDLKYCPFFMVASIFFGPLSAAQRHEIYTIGPLREALFRDAFSGGINRYAFAKYLPGSAMPKLRE
FQRRWEDFVKRSHDEATFSSGGAIVSLLEAVERGGLSKEELLQTLDESLFANLDVTAHALSWAMLRIAHHTITQNDVRQE
IGANSHSEEEYEEYLRQDNTLLAACILESSRLHPILPFSNPESALTDKTVGDFKILRNTDVIVDSYAINIDNAYWEDSTV
FNPHRHLGQRDQSRRYNMWRFGFGPRQCLGKNVADIILRVIVAEMVRCYRIDIIGKGGIDGIELQADSWIGLPDCMVKLT
PHTE*
>521979|jgi|CYP65EP1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MLSSDLTQSALALWLTPVVLYVVYAWIKVITGAFFGPLSKIPGPKLWAISRIPRMYMEWQGEEAHGVLALHKKYGPVVRL
APNEVSFTGGFQDWKDIYGYRKNMGQEKHPHRSSASYWPPANGAPSMIQAMRDEEHARLRKSLAVSFSEKSMKQMEPRVK
GWARLLQTKLAERGDAAVDMVELFRCATFDAMGDLALGDDLQMLRNGRLSDYVHAAFSGIRTIIRLRVLSTYNSFTRWLV
KDCFLQSAFVRKAAMENLRYSADRMDRRLQDPARDPPDLWTKPLTGIDGKMSLDEYHSTAQLLMTAGTDTTAIGLTGTLY
FLLTNPDCLAKVTDEVRSAFSSMDDVTYESLAQLKYLDATLQEGLRLYPPVPTGAPRVTPFPGWSIGGYWIPGGVNVHVP
HYATSRFPAHFTNPDSFHPERWLGDEKFQNDRLDAVQPFNYGPQNCLGQAFAMNEMRLFMAAVLLQFDLQLGEDHRDWFD
QRVFSMWETKPLMCVATKTS*

>524443|jgi|CYP584S1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MYYYYYLLLLGLAYWAVQRLILSLEQRKFARKNGCQPCQRIPQKERLIGYGLYRQEVTLAREGRSLQEAQNRFQLFGDTF
SGVVMGQFFISTIDPENVKALLSSQFSDFDSGKKGLFGPFIGDSMLTTDGALWKHSRALVRPHLGKGQVEDLSKLEGHIQ
NLLTCLPKDGSTVDLQQLFFRLTFDNVVELFLDKKVSTLNCQPGSRLHKVVEAFENVGNLVNRRAALGPLLLFYRDTEMN
ATCKILHDFVDDIIEKAYLKRKTRKDHKSLNSFLDSILDSTDDLVKIRFEVLGLLLAGRDTAASVMSNLFFVLARRPDIW
QKLQGEIEYLEQRKPTYDDLRGLKYLRQVIDETMRLYPPVPGLFRAANRTTILPRGGGHDGRSPVLVPKGTVISCSTFSL
QRREDVFGPDAQEFRPERWDSLNPHWEFLPFSVGPRVCMGQTYAYAEMIYILSRMLQEFQQVEKRSEKPWVEKWSITLLN
GSGTKVGLIPKTRAIE*

>2330|jgi|CYP539A31|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MGFIELLLEKFSLSRFFLTTVGLWTAVFIVGRIREHQKIKSLGSYGPSLKPLLPFGLDFIYYGARATFRQQTFALWREVL
FSQFWTIEMRVLNERVCFTADPENIKAVLATQFQDFGKGKRFHDEWYDFLGDSIFTIDGAPWHDTRQLLRPQFSRDRVSD
LYCFEKHVQVLFKAIANGGPLDWETQLVDLSRADGRRVDIKDLFFRFTLDASADFLLGTDFKSLTNPQHTLMNSFNEVQR
IQNIMVRTPLMGWFISKEPFYSGIRDIENLVYPIIQRVLSMTPDQLAAHTKSDRDYTLLHELAGFTRDPKLIRDQIFAIL
LAGRDTTASTLSFAMYELSRHPEVVTRLRSEILATVGTHQLPTYEHLKEMSYLRAVLNETLRLYPPVPFNVRVALKDTTL
PRGGGPDGTLPLSVPQNTRVGYSTLVMQRRPDLYPPISETFADPAIFSPDRWAVWHPRPHEFIPFNAGPRFCLGQQFALT
EMGYTLCRIFQRFDRVQSFMHEIDGGELQLKTDIVLTPAQGVHVAFWEAKNKE*

>16202|jgi|CYP526N2|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MAWLWILIEGSIALILIYTLYLAALPRPLPGIPYNHESAKRLFGDIPLMKSVRYRRQWVWSQPREHGSPVSQVFLFPFRT
PTIIVSDYREVMDICSRRSKEFDRGIRNKELLGVVTPNFHFAMPTADPQFKFNKKLVRDLMTPKFLNKVSAPPVYEKATA
LVALWNLKAFKAHGGPFEAGNDFYSATLDMICGVAFGMEDTKSALRHEIAHVQSTNPTFPTMEDGPVYFSQARAIPELEA
LLDIPKMVSIAQASPFPTFSQFLALLKPKHARAQWNRRALVKRQIDRSLPRLTSAGAEGCKSALDQLLWREMNAAKEADR
LPDYYSPAIRDEILGYLLGGHDTTAASLSWWVKFMSTYQSVQARLRDALRQAHSDAYRDSRFPTMEEICGTSVPYLDAVM
EEALRCGSVATLIARTATCDTQILGYPIPKGADVILTVTGPSLTEPALPIPESLRSPESQESKDRVPSWEDDVSEFKPER
WLKLVKSADGSKEEEVFDPNAGPTLIFSAGPRQCFGKRLAYMKLRTVMTLLIWNFEFQLLDGSLNSPDIHECFVNLPKDC
YVKLAKV*

>81893|jgi|CYP505P1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MKSVKDPNLVEIPKPKGLPVIGNLHNIDLDSPLFSLIELIEPLGPICQLTFGSELNIFVSSIELLNELCDESRFHKIVTA
ELEKLRYVVHDALFTARNEERNWEIAHRILMPVFGTIKIREMFPEMKDLAQQLCLKWARYGEEYVIDVTADFTRLTLDTL
ALCTMGFRFNSFHNGSVLHPFVDSMVRTLKEASVQAALPGFIQSFRKRSWRRYEKDTAFMRKLCQDIIDKRKGKTDPDSH
DLLAALLGGRDPKTGEGLSDDSIIDNMLTFLIAGHETTSGLLSFALYYLLANPQTMEKARQEVDEVSQGSPIAVEHLSKL
PYLNAVLKETLRLQPTAPGFILAADKDEIIGGKYLIPANVPIGVLLHMVHQDKAVYGEDVAEFKPERMLDENFNKLPPNS
WKPFGNGMRGCIGRAFATQEALLIVAMLLQNFTFEMADPGYKLKVKETLTVKPDNFRMRAKLRRGGTATEFQRELQSVGS
VTAKTSSTPSVVSAQAAGGDKKPLTILYGSNSGTCEALAYRLASDATLHGFHARKIAPLNAARDSLPKSEPVIILAASYD
GLPSDNAEEFFDWLNTAEKDSLKGVSYAVFGCGHRDWVATFQRIPILIDDLLQKAGAERFATRGLADSAVMDLFVELEKW
TTDSVWPAISQKDGKADNDGEGQLINSLLKVEFSEPRQLQQYSQLVEATVMESRSLTTPSAIGQKVHIDIQLPLGVSYHP
GDHLLVLPVNPMRNVKRVLSRFHLTWDTIVRASGNDSVRIPVETAMTVHELLSSYFELAQPATPRDIRVLAAAAEDEATK
TLLNNLANTSYLEDIQEKKTSLLDLLEKFPEIPIGFGTYLTLLPSLRLRTYSISSSPSWNSSRATLTLSVLDEPGTTDGS
ERFLGVASNHLAGLTPGDLIHVATRPVKGIFQMPTDLSKAPTIMIAAGTGLAPFRGFIQERAYQQQNGVQLAPAALFFGC
RSSHDDLYRDELDAFESSGVVRVFRAYSREDVGSKPNTRRGYVQDSMQAEKDAFVQLWNAGAKIYVCGSVRMASQVKDLV
ANLVYTAGPMEAEREFTPQEWFKRFEKTRYAAEIFT*

>84345|jgi|CYP6001C27|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MQLYRASRRPLPNKTGDGTYQVVKNRPSLMQDLSTITFQDLKTLKAIITAKLKGETQSDDKTMIMEKTIQLVAALPGGSK
RQEQLTNMFIDELWYSLEHPPLLYMGDQFRFRQADGSNNNPIMPKLGAAGTPYSRSVHPSVVPLGALPDPEAIFESIMAR
DKFIKNPNNVSSILWYWATIIIHDLFWTNERDPNINDSSSYLDLAPLYGHSQDAQNSVRTFKDGMLKPDTFADKRLLGMP
PGVCIILVMFNRVHNYVAANMAAINEGNRFAKPSPTLQGDAATAAWKKYDEELFQTARLVTSGLYINITLVDYVRNIINL
NRVDTEWTLDPRQEAGVDVGTTKGSERGVGNSVSAEFNLCYRWHSCISEMDDEWIHAFYDDLLGENYGTMDMRTLMIAIR
KFAMGMPKDPADCVFGGFTRGADGRFDDDDLVNCIATAIEQPGGSFGARNVPRIMKPVEMLGIIRGRKWHLTGLNEFRKH
FGLKAYATFEDINSDPQVADALRNLYQHPDYVELYPGIVAEEAKSPMVPGVGIAPTYTISRVVLSDAVSLVRGDRHYTTD
YNPRYLTNWGYKEVEYDLKVNHGCVFHKLFIRAFPNHFKQDSVYAHYPMVIPQENRKILTSLNRVHRFSFERPRAAAPRV
DITTFGGFKQVIANEDKYRVQWQEGLEILSGHTGRYMQANDRKTLESVLYKDNWRSAVKAFYAKTAETLLANKSYTIMGK
KHIDIVRDFGNTAHTHYAAQIFNIPLKTQENPKGVFSEHELYASLAAIFTTIFLDIDPVKSFSLRQKIKEAADALGESLE
TTIKYTKSFGLRLFTGNTSNDPLSTAGVNAVKALAKSGMSPHDIAWGLILPTAAAIVPTQGRLFAQALDWYLSSEGAAYV
DDLHILASQEPSPESDALLLGFAMEGVRMAGAFGLHQVSTGPDIITEDDGRKISVNQGDKVFASFVSGARDATQFPNPDT
VDPRRRPLESYIQFGAGTHRALDKEVSQIALVELFRAIFKKQGLKRVAGPQGELKKVPRQGGHCEYLSEDWGTLTPFPVSM
KVTWDN*

>88158|jgi|CYP617A8|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MLATAVLGGAGWTYLGEDAWSRASFVQAAAVLLLAQVFVYHGIWSLFVYPFWFSPLRHLPTASGGHWLLGHGKKILAAKP
AVLFREWALNIPNDGLIRYYWLLNRERLLITSPKALAEVLVTNNYAFQKPENVRSMLGRVLGYGVLLAEGDEHKRQRRNL
MPAFAFRHIKDLYPVFWDKAREVVQAMTTECGKLGEAEFEAGEWASRVTLDIIGVAGLGRDFHAIQDDNSDIVQTYKFLF
KPRPPAKFLVFLATLVPTWLLQRLPLERNRAIDGAAQKIKSVCRDLIREKREKMMAHKGRTDVDILSVAIESGQFTDENL
VDQLMTFLAAGHETTSTALTWAIYELSRSPEMQTRLRNEIREKLPSTDDAEAKITSLDIDHMPYLNAVCNESLRFFSPVP
MTIREAAHDTTIQGVPVKKGTRLTISPYAVNADPKLWGSDASQFNPDRWISAEGVSDESNKRAASGGAESNYAFLSFLHG
PRSCIGMGFAKGEFACLLAAWIGRFEFELVNKEEMDLDKIDIRGGVTAKPANGLYVKAKVVPGY*

>96879|jgi|CYP655A7|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MALQSWGVNLLIGAVAFWLFRGIVEKIQWDRKRRAKQCGEIPSYPHWDPFFGLDVVLGMAKSLKNHYFLDWLNWVHKNRP
KTFLVNFVGTRFIWTIEPENMKSMSAFTWKSFGVGPMRRNNKATHPFADIGVNTVDGKEWEFARFLIKPFFMREKYTDTK
RLEKHVDRLFSLLPEEDGVTVDVQPLIQRWFLDVVTFLLFGESLDSLVYPDRAQICWAMVDVLRGLRLRLQWYKYLFLFK
HQNWLDAVSVVHKYVDSHITKTYQEMEQIDELKSKGVDIKDERTDLLWWMARNLKDREELRSQMCLIFVPNNDTTSIFIS
HIIWNLARHPDIYAKCREEVLAYGDGELTFEALRGMKYLNGILNETHRLYPNGVTQVRKCLEDTVLPTGGGPDGKQPIYV
RKGDVVQVNKNVLHRDPEIWGDDVLEFNPDRWRELRPMWNFVPFGGGPRRCPAQMLVTAEASYVIARIARRYARIESRDP

SPYVGVMRVGPSSKTGVKIALYRA*

>145803|jgi|CYP52X5|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MQLSLAAGIAAAALAFVYVLNLILESFRYRARSRELGCKPPVWMSGYDPTGITDIVLGVDASRKKRFPIHAAENFGREDK
KHGRTVGTLRVKAPLFRDTLVTIDPQNIQTILALKFKDFGLGVNRTENFEPLLGHGIFATNGKQWEHSRALLRPQFIRGQ
VSDLNLEEEHVKSLMTVLNRQVGPDGWTDLVDLLPLFFRLTLDSATEFLFGESVNSQLDQVHPTSEKDGNFAFAFDKAQY
NLSIGARLGPNYWVVHTPEFKRMVKRVHAYVDYFVQKALVQGEKMPVNEDKYVFLNALAKETRDPEELRSQLLNILLAGR
DTTASTLGWFFYTMADPAYEPVFRRLRAIILEEFGTYSNPKEITFEKMKGCQYLQWCLNECLRLYPAVPMNVRTAQVDTT
LPIGGGPDGQSPIFVPKGQDVGYSVHLMHRRKDIWGPDAEVFKPERWETRRPGWDYLPFNGGPRICIGQQFALTEVGYVV
IRLMQRIDNIDGSQVGPIKHGLTLTNCPGEGVNVKLHFAE*

>493937|jgi|CYP584D5|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MLYSFILLLFSYTFHCIYKQARQHNLSRSKGCKDAQSKAPVKDPFIGFDFIYDCLFAKPVEKYLDSTYKTFQQLGATYAY
KRWTWEAVYTCDSRNIKHVLASGFDDFKLPRLRVNAMMGLLGSGIFTLNGHSWSHARGVLRPCFAKQNKESVVNMLETHF
QALLRRIPNDKATIDLQPLFFWLTMDFATDFLMGHSTHVLDRASSHAKEKQFVDDYLTCSTEIVRKMQLGPLQMFSINFA
AMRARSRVFRYIDDFIDASLDTKDESESTNMGCNVLQCLSAVTTDRKQLRDQILHILVASRDTTACLLSNLFFVLAKKPH
IYDKLRREVVSIAGVEPATDHQLNSMEYLKWCVQESLRLHPVIPTNAREASRDTVLPYGGGEDGNSPLLIKKGNLVMYNI
YAMHRDARIFGPDPEEFVPERWNGLRPGWNYLPFNGGPRICIGQKFALLETYYLVSRMVQTFETMSAVDDSEWIELYALA
TTCKDGVKVSLTRSN*

>499695|jgi|CYP538A4|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MSLIVSEIAAFVGAALAGTYIAWSVLERIVLVAANEHLTPFASYASLGVAIVLVPVFALLRRNHHYLRGTRVNGCKLANV
YPHRDPILGLDILRISVKALKEYKLLELWDKLLNTYNGTYWFSSTGKWMLITSEPENFKTLLSTRFEDWPMKSLRQQVSI
LTLGPYSIFAVNGPEWQHTRAMIRPSFVRNQIADLECTDRHVENFLARLPRDGSKFDIDRLLYHFTMDVSTDFMFGYSTS
ILTSPTKESLEFMTAFDYLLTTSTNRARLGWLALLKPDKKFDEYVKITQQFVDHHVSQALAQEKMERPYIFMNEIIKSGA
SHREVRDQLLSLILGGRDTSASTMSSLFWVLARRPDVLKKLREEIAELEGRKPTWEELKNLKYLNMVLKETLRLYAAVAS
NMRTAERDTVLPKGGGPDGQSPLFVPKGTDCRFTTYSLHRRKDYWGDDADEFRPERWETHRPGWEYIPFSGGPRICIGQQ
FALTQMLYLITRVLQTFGDVQPGDDKPMLHQIGSTISMVNGCWVRLTPVDKTAMSSGGPSQSSNLPVEPSQHTKDPPFQH
QKWRHDLHPEAVAGLHRARLHDPIPTARARRLQPIAVVAMIRALRRVLDPGRDQSLRLVAMAETEAEVVTEAVSVVEIVA
HPAKVLPREPPRLWWRDCQRM*

>507006|jgi|CYP65U9|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MVAAWGWPVTASEWLSTTALTLTTYNVLRIVYNLYFHPLSKIPGPVAWRASRLPFIWSLLRGTIVHDFERLHRQYGPIIR
IAPDEVTFAHEDAYKDIFQLRKDHPQFLKDLVWWKTQPGMADSLLSAIDPKHHARIRGLLAPGFTPRALKEQEHILHFYV
NLLVERIRERVNETPESGAVIDMVPWFNFTAFDIFGDLGFGESFNCLQDSKYHPWIALLFNSVKAASYVAAARFYPIVER
LLMMCIPPSLRKMQRDHYQQIVDKVDRRLNFELERPDIMSHVIRGTERRELPEGTVHTTFMVLTTAGSETTATALSGTLN
YLVNNPDKLETLVREIRGTFQQESDIDLDALRKLPYLNAVLNEGLRLCPPVPWILPRRVPEGGDTVCGTWLPGGTPVSIQ
AYTMNRDPAYFHSATSFIPERWLSDSRTDQESPFFHDRLQVVQPFSDGPRACLGLHLAWAELRLILSKLIWVFDFEVVED
RKMRWEDLRTFLLVEKKPIEVRARLRDSTASVA*

>514418|jgi|CYP6002A8|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MDTSGQDRLQQKGGVFPNLLKILGEAQRDLLSQSTRIVPDLKLLSSIKDVITAGGQINDRKYLVENIIQVAASLPNTSIL
RGDLNAAFIGTLWRNLQHPPMSYLGDEFRYRTADGSNNNITYPKLGAAGSHYARSVAPQRPKPLNLPDPSVIFDSLMARK
KPMKEHPTKVSSSLFHFATLIIHDLFRTDEIDSTRLKNSSYLDLSPLYGNNEDEQKKVRTFKDGLLKKDTFAESRLLSQP
PGVCALVIVFNRFHNYVVQELATINEQGRFSIPTGIAENDPRYGQAQLKRDNDLFQTGRLITCGLYVNVILNDYLRTILN
LNRNPVNSDWKLDPREDFDNVFDMEGTPRGIGNQVSIEFNMIYRWHSAISAQDEKWTNDLFHKIFGADVNIDDLPIDTFL
RGIRKWTKAIPQDPEKWTFCGLERNSDGSFPDEQLVEIVQDATESVAGAFGAQNVPAILKVVEMYGIEQGREWGLASLNE
LRQFFKLEPYSSFADVTTDPSIAEALEALYGHPDNIELYPGLLAEDAKKPMVPGSGLCPGFTTSFAILSDAVALVRGDRF
YTVDYNPSNLTSFGFNEASSDYDVAGGGVMYKLLMRAFPGWYRANSVFALYPFTTPEGNKEIFDKLGTLHGLDFNKPTFI
GLPKPITTWQGVVNALENQAQFRVPWGPHTFQLIHHDYMLSSDTPANAQQRTKVQKCLYSPENGLEQVKQFYEQVTANLI
RQNSRRIGGSYQIDVVKDIGNIAHATFVGHFFSFPLKSNGEGSDYYTEETLADALRNLFGYVFLDLDTTKSFKNRIVAAK
ETKRMGEVMQEVVTNIKSRHFPSLRQLFHTNSANTLGSYGEQLVERLLHAGQSVDETVWTIIPTAAAASATQAQGWAQMI
DLYLSDDYYSHWTDIRKLALSNEPEAFEKLKKYALEGFRLSTPAFGLIRITNGDKVEVQDGSAVVSVSTGDTIFTDFITA
GRDPSKFPDPDQIKLDRPDELYIHHGWGPHACLGRAIVTVAAASMLRVCARLNNFRRAPGPAGEMQSKTVNGAFKVYLSE
DGSKWGPFPTNKKVIFERLEQS*

>145743|jgi|CYP5387A4|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MAGTDGGVRQRGKPPKYRTSCDNCQTAKVKCGHEKPSCRRCSVHRVDCVYSLSRRMGRPRAKKVVADEPNRRLPTSTEST
ETEIPKPATPDTEIEDAELTTHLAESSAMEAEPSDPQAAVPGQVPEPWAPLLGDLGQLNETEAINKLNQTPQPENDSIEF
LSTESPMELVEITAFDGMPSFLDDMSSSLQPQTSASAIPVGLFDPHDMLSFALPAMNAKSDANDSLSMQQPEPSLAREPC
MCQHSTTSSGNNVILVLSNKDQPNGLLQYSSTSFQDASCSPRDEFSESSSNTSQPSDSSSSLHTSRESSSELSWRTTQVT
LVHTQCDCMETISKRIASLKLEQQSSSFMPIDCVLMLEKEVEESLAHLHQCKNCRLDSILHLLALISVRMMLDILQKTAR
SEFVSRPKSVPDSPSDDIALCIGNFKVPSRVRFRFLRKALQARFHGLVALIEERERLVTGKKQDSFSKSASSLLGDISRG
LRTIMGWIELCTTESFLWNPFIEAFTMWQNDLLSMEKTILRYLLQRAVENPVATTAVVVGSSILLILFFDWLNYQKQRKR
LGNIPVVGDAPYLWKRLRWTENESNLNGVLQRGYDTFSKKLKPWAYWGQHDDFILVLPPGASDEVKNADISQMSFLQAVE
DSYHFRLHTNILGRAHVDAVRQSVNKNMTREPFAGFLELWHLVHMVAASFLIGPHFASNSEYMSYIEDYCLNVPGFVHQY
FWVPAPLRKMFWHLSPAGSRVRKVIKKLKFFIIPEFLRRTIEIWRTIGRSDAEYTLLGAMLDLKEERGMIKRDPTAMSSEE
EERQIDIFSDEVIFTAFDSAGPVVCLVTQLLYESIRDEKLTETLRAEISTALAANNGEWSVQMMSSLPRLESFTRETLRV
NGPTLFSVTRSVLKPFQLKSGLTLRPGNIITSPSWMIHRDEDNYPKAHEFDPYRFYDETTNTATTKATTASNTFLAYGYG
SQMCPGRYLGVRMTQIIFAKLLMRYDALFEGDKRAKPDNIVMPGQVLPSYYAKIVLKLRDEAKTQTHE*

>527177|jgi|CYP505A25|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MADSVPIPEPPGLPFLGNLGEFSANPIEDIVRLSNTYGEIYRLHMGSRPVVFISTQALVNEVCDEKRFQKSLSSVLRVVR
EGVHDGLFTAHSDEPNWGKAHRVLTPAFGPLPIRDMFDEMHDISSQLALKLARHGPHKPIHVSDEFTKLALDTIALCSMD
YRFNSYYKDKMHPFVQAMGDFLAECGRRNRRPGFAPNFLYRAANEKFYNDIAILRDTANAVVEARRKNPSDRKDLLGAML
NGVDPQTGEKLSDANITDQLITFLIAGHETTSGTLSFAFYHLLKNPSAYRKVQEEADAVLGRGPAKVEHVSKLVYIQAVL
RETLRLSAAIPAFSVEALEDTLIGGKYLVHKGEPITCVLAKSHLDPVVYGDDANDFKPERMLDDEFARLNREFPNCWKPF

GNGKRGCIGRGFAWNEAVIAMAILFQNFNFSLDDPNYQLEIASSLTIKPKDFFMRATLRDGMTPTELEQRLAGKGVVEEH
HADKKAASAASSKGPQNPLAVYYGSNSGTCEALAQRVATDAASHGFKVTDLAPLDSANQNLPKDRPVIIVTASYEGLAPS
NAAHFVSWIENLKGNEVEGVSYAVFGCGHHDWVQTFHRIPKLVDSTLAEHGATRLIPLATTDAADRDMFSDFETWEDETL
WPALKEKYGTSAASTDGSAGGLIVDVSLPRKSTLRQDVEEALVTSTKTLTTSGSTKNHIEVRLPTGMTYRSGDYLAVLPF
NPKDTVARVFRRFQLSWDAVLTIHSDQPTALPTDTPVSANDLLRAYVELSQPATKRNISVMVEATQDEELKAQIEKLAGD
DYQQEISAKRVSVLDLLERFPSLELPLDTYLAMLPPMRVRQYSISSSPLADPSKLTLTYSVLEQPALSGQGSHFGVATHF
LASLAPGERLHVAVRQSKAFHLPTDAENTPLIFVGTGSGLAPFRGFVQERAAMIAAGRKLAPALLFYGCRSPDMDDLYAE
EFERWEKLGAVEMRKAYSRASDKSFGCKYVQHRMSHDREDLFKLWDQGAKVLVCGSRDVGKAVEAVCVELVQEKAKADGK
EVDEEKAQAWWDKQRNERYVTDVFD*

>535524|jgi|CYP505M2|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
MTTRKNSNIPQPRTIPLLGNIPDVNLEYPLGSLLHLANKYGPIYKLSIGGTKLVILSSYEFVNEVCDDSRFKKSIQGDLE
ELRAVVHDGLFTSSGEEEENWGIAHRVLMSAFGPMSIRGMFDNMHEVSSQLTLKWARYGSSTPISVGEDFTRLTLDTVAL
CSMGFRFNSYYRDDMHPFIKAMYAVLKAAGDRNMRVLPSILHKSADRRFESNIAILRSTAGQVLAARQKAPDATGDPKDL
LNAMINGVDPKTGHKMTEQSIIDNLITFLVAGHETTAATLSFTMYQLVTNPDVYRKVQAEIDHVVGSGPIMIDHVGKLKY
LSAVIRETLRFNAPISAFAREATKDETIGGKYRVKAGEQLVCLLAKSHLDPKVYGDTANEFVPERMMEDNFNHLMKEYPH
CWSPFGTGLRSCIGRPFAWQEMILSLAMLMQNFNFVMDNPSYSLIVQETLTIKPKDFKIRAIPRGGLMPFQLEARLAGAF
SGKTQGPLPTSDQQSPSNLSASPLNSVAKVSGGTKLTIFYGSDSGTCEFMAQRLANDASSHGFKATVDTLDAGREALPTD
GPIVIITSSYEGQPPHNAGHFVDWIQNMDGEKLDNVAYAVYGCGHSDWVKSYHRIPQLVDVTLEKLGARRIVSMGTTNAK
DRDMFSDFESWEDEVLWPAIEKQFGGCTENDKSPISGLSVSFSTPRALTLRQDTREGFVVAARTLVASKSLSKKKHLEVR
LPSDITYATGDYLAVLPHNPKETVLRAIRRFSLAWDSHVVITASEPTTLPTDTSIPISSLLTSYVELGQPATKRNVLSLY
LIAEDGKSKQELYHLATNAYETEVRLKRVSILDIAEQFPDLSIPFNHFLLLLPPMRVRKYSISSSPLSDPTTATLTYSVI
DSPALSGNGRYIGVTSSYLSSLAPGDRLQVSIRAAQGAFRMPADSSKTPIICIATGTGIAPFRAFIEERSIILKSGRSLA
PAVLFYGCRNPLDDNLYYDEFCTWEAAGAVTVFRSYSRQPEASHGCKYVQDRIWHERQNVTQLWDSNAKIYVCGSNVMAD
GVRETLIRILSNKLETKGVPMGKKEAMEWFERITSERYAIDVFD*

>521588|jgi|CYP561J2|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
METLFTYAKRPVPALPEVQGFMHEVVEGLNRETIIQLLGILTVLFLVYRIANIVHNVWFHPLSKFPGPTHMAAFYLPYTY
GTFLSGRMHHTMKKLHRKYGPIIRVGPNHLAVDGSIAWPEVFGHKTDKEEYGKLPGFLFAGDTISIIGAPKDMHRRQRRQ
LGHAFSDGALRDQGPVIQSYVNLLMERFTEKSEAGKSFDVNDWFNFTTFDVIGHLTHSKSFNCLENGSHPWISEFFRGFR
GRSYAHFLSQVPYAFEIVKGLHLIRDITNNEKDKNDSVQRTIERIKLGDYAIEGYRDFTSYMLKKNHDGESSFVGLELLA
SATILIGAGAETTAATMSALIFYLGITPIAYNRLVEEIRSTFDDEESITITSTQQLEYLHACIEESLRVYPPINETPPRV
CPGDTIDGKYVPRGTAITVFQEVTYHNPEHFAEPDSYIPERWLPRSHPFYDTKFDNDNRAVFKPFSYGPRDCIGKNLAYS
EMRLTLSRMLYRFDMELVPGQENWHSAQRTFMAWERRPLNIYLRRR*

>20756|jgi|CYP535D5|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MESVAGLPASVVLLAAGLFGLLVVGRALQFARLRSFKGPFLTNFTNLPHRKALFKERAHEWYAEVCEKYARVAPNLLITS
DPDVWIHVNNKPGYKRSDWYYTACRIEYQRDNVFSQTDNKKHEQRRKQMAPGYSGRENLDLEISIDQCLQEFIDLIRSKY
VSTDAKIVPVDMAKKVQFFALDVISGVGLGRTFGMVKNDTDVEGYLQSAEEGLRIANFSLAIGLSWIAQAPVIGRFIAPS
PKTPNGFGRMIATCFRYVDEREANATDKRSDMLASFIRHGITGADLKTEALEQIVAGSDTTSSAIRIILLHIITNPRVYA
KLQKEIDEAVHTGKAPTEGIISHSQTKQLPYLQATIREAMRVMPPVANIFSRDIPAQGDTVRVKGQDVFLPGGANIGYSA
YAMHRSPEIYGEDAKAFRPERWFEEDQDKLAVMLRTNELIFGHGKYQCLGKSVAQIEIGKVIFELLRYFDIAVMHPDKPW
HAENALGLFHIKDMWVQVMERGV*

>58830|jgi|CYP5076Q1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MPVPNPLLAASAVGVAAHLLFFKKLEHHVVHRRYVAFRRHVAASAGSFALGVYMSQSPILNEKPGVHISWVSAISFSLQL
HACFLLGLYASLLTYRLFFHPLKKFPGPLSARISTFWLTSYNYNDVWRDVASLHEQYGPFVRIAPGELSVRDPKAVAALH
GPKSKCDEAPFYHVIKPTTSLHMLPDPDIHDDFDDRTLREYNQRASAYRSVLLDRIHATKGEPMDMARWFRFYVCEVIGH
LAPGAIFNILQTSDNHWAIDAFGSGLLPSVHDICYRPIVHTLVAGMTSILYELVKHPEHIDRLRQELAPLVQDSLLDPSP
DELEHLEHLNAVINETLRLHPPVHTTIWCVTPPGGVRFGPPGGVRLGHVHIPGGTIVTYPQYAVSRSKSAVPLDAFIPER
WYRFPWMAVYKNTFSPFVMGVYPWAGDNKRLALMDIRQVISRLVWTFDVAFAPGEDGGSFEGVALDTFMVAYGPLILTLK
ARQGVQL*

>66770|jgi|CYP5046B1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MLDMADTDKMMTLAKDWADQYGDVFYTKVGLQHFIWLSSPTAVKDLMDKRGSIYSSRAASPMINMVSNQERLNFLPYGEK
WRTLRNILHSALNLETTSSYKPVQDFESKQALWEILHAKDDTAFSDINRRYSTSTIMTITYGQRVPSLSDPLYQDILKIV
RHFSLATAPGGWMIDTLPMLADIVPEWLLQNWKTVARQWYEEDSRIYLRMYNKLMTDIENGTAPNCFLKDMAREKIEKSL
ISDVTAAFAAGALIEAGSDATTTALNNVILACLLYPEVVTGAHEELDRVVGSNRMPDFSDEPNLPYIRGIAKETLRWRAS
TKIGTCHSTTQDDWYKGFFIPKGAVIVLNWWAIHMDESRWKDPQRFDPTRYLADPLTEAESMAQPDANLRDHFTFGAGRR
NCPGVHIAHNSLFINIARLFWAFNISKAIDADGNAIEPSTEAQPGFLLTPVKFPCRLEARSARHAAIIERTWEEAQRE*

>1209779|jgi|CYP587E1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MSDNSKLKPTLPHSLLFGHISILLQFRKHHPEDVHFGIIMKWLVDNCPNWIPDLKHNTPSPPPVLYLDIWPVFPDLMMMV
FDGSLSAQFTQTKSLPKHRITRTFLEPLTDNLDMTSADGAQSKVWRSRFNSSFSPRNITALIPELIDEIVVFKELLAGLA
GPEGQWGGVFQLEERTTNLTFDVILRATMDERLHEQINPQGSPLKQALISQIRLMSKVLGLNHILGIKRWPWDSLTRARN
NEALRKALLGHVQDAINRSPPRVADALTEDKKKDKKKTILNIALDRTLAETGGAAPDKGDIEAILANLKLFLFAGHDTTS
STICWMFKLLQDNPDCLSKLRAELDNVLGDDPSQAASLLRDSPQLLNSLSYTNGVVKETLRFYPLASTVRQGEKDFFLTL
PGSNVQYPTEGTAIHDVPSVIQLDESVWPRAGEFLPERWMAPQGDPLHPNKDAWRPFSMGPRSCIGQELAMVEIKLVAAL
VCRDFDVREAWEEWDAKRGGMVKREMVGGERLYGCGQTVQHPKDGMPVCVRRLV*

>1321427|jgi|CYP5104A5|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MLAFAQSHTLHVFLAFGSALLVASAAYIVYQCYFSPLASFPGPFAAKVTTLWRAYTTSRGQWHRKLGELHRRHGSVVRIG
PNQLSVGDPDAFRMIYRVSGAFVKSSSYAVLQGSRPFDLAGERNEKIHSAQRRLVARPYSMESVVHLEPQVDRLLDDLLV
KFDAFALSPNPIDLGNWFQLFAFDVIGAVSFSKPFGFVAQGTDQGMFGRIERAFSSTGWLMYAPWVFRFHQRFILPYIGN
FLAANDRNGYFFDFAKSEVQDRRDKGGNDKDIVGQLFQTARNKPELTDLSISFMMTSNVFAGSDTTAIGLRSIFLNLLKH
PHVLKKLRAELEERKAAGQLSNPVTFQEAEACPYLQAVIYEALRVFSPVGFTPDRDVPKEGMTVCGKFVPGGTVVGSSPW
VIHHSPEIWGPDYEEFKPERWLGENTSHMSKTLNINRFFFAFGGGTRTCIGKNISWLEMDKLVSTFLMRYDFELVDEAKI

TDVCR*

>1321474|jgi|CYP620B12|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MFSIIVAGVVTVICLFIHHQYYRKKNASLSLPPGPKPLPIVGNIFDLPPPGTPEFQHWLKFKDLYGPISSITVLGQTMII
LNDKHSADDILNKLSLKTSSRPKSVFAYELCGFQNFTPGRSYDATFRLHRRFMHQQAGTKAIAAQYHGIHDVESRRLLKR
ILDDPNNLVQHFKTGTAAMILKIVYGYSIEPKAADPLVELIDEMMSNFSEAMVPSSRLVDLIPALKHLPHWFPGTAYKET
ARQWKKINHDTVNIPYSFVKRQMASGTHRPSMVSDLIERYTSANPRNGEMDNDKEDAIKWAAGIMYGGGSDTTVAALTSF
ILAIALFPEAQQRAQEEIDGLIGKHPERLPQFEDQGRLPYTSALVKEVLRWYGIVPISTAHVADEDITYGGYCIPKASYL
LPIVWWFHHDPQTYRDPFVFSPERICPGRYISDDNLFITIARILAVFNITEMVDRQGNSIEFQVEYTPGLVSHPAKLPSM
LITARSERHEQLICCIEVDHPWEKSDAGLLESEDGLKTSK*

>1322523|jgi|CYP534C4|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MALIPIAAAVLVAYGIITWTVNLRYHIKEARRSGLPYVVTPCNPHWLPWQVTHKLWLPIIKLFPKSWWDGWLEIMIPNFT
YRTRHEWFAKLGESFLIASPGGLLMMTDNAETIRTVTLKREHFPKWTAVYNILRQFGENVLTTEGSVWRMHRKVTSASFN
ERNAALVFREAINQTQGMLRMWTGPSGDTREEPLRTLQHDTMKLALNIISYVGFGMRLLWPGETHPAGTDPKLLKYGSHE
PTAGHQLSFTDTMELLLHYLLLLLIVPRWILRMLPFESIKKAVLSYDEYVSYMNELLDEKIEEARKGEHVEGMDLMGQLA
KSSFGTDAKEATLTRDEIIGNAFIMFVAGHETTANAIHFTIIYLATHPEAQRAMQRDIDDILGGRDPRDWDYDSLVNPMT
ASMIGAAMYETLRLVPAVSEIPKKISPDADESLVMDGARYVLPRGTGISLVTVSTHVNPRYWPTRSSKITPGASNILDYC
PDRWFQKTAKDKERDGGGGGNESVAGADSEDFGGFQGSDINAQLFKPERGSYIPFSDGARSCLGRRIAVVEIIAALAVIF
RSYSVELAVDEWASRDEVEAMGREERARLYRRAQDKSRWTVGQATTRLTLNLHDGLHVPVRIVRRGEEKFVDWVDAE*

>1327207|jgi|CYP5391A1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MLPQGAISRASILGLVLCITTALLNRFLRGGKARKYPPGPKPWPIIGNMFIFKGIVYDTEATLAWMAKSFGDKVMIWLFS
KPFLIVDKLEDAKELMDKRGSIFSDRPRPSNFVERVWPCLLPIKPLGDEYRIVRRIYNDLLGPKQSQSVRKYQDYESRML
MRDLYHAPEKFQVITERYSMSVIFSAVYGVRIGRLDYPVIEELFSIMDTMANYILPGSLLIDYLPFLQRLPECFQPWLKF
ADNMHARESKFHNGFLNVLKEQIEAGTASYCFGVDVLKLQEKNDLSDEFTLDILKGVIAAGSETTSSMLQSIFKALAMNP
EAQRKAQEELDRVVGPSRLPHWDDAPNLPYIRALIKELHRWTPLFILGVPHASTEEVVYKGYTLPQKTLVMPHVYRLSRD
SDVYEDPDAFAPERFLGDDLDSYASAKQSDFRKRDHVNYGWGRRLCQGIQVAENSIFMQVSRLLWAYSVAPLAEEPLRLE
DRLRKFSFLCFCVM*

>1332226|jgi|CYP671C2|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
IAAACRTSWQAAALVSLVAGGTSHHLIFRPFEVDGYAWQLLFIFVGSIAILIIAHTQIGGYGIVLATCRTLLISNAYNTG
VAISVLTYRAFFHPLNRFPGPAMAKLSRFYAMRNAAKSVKAFEDIQKLHEQYGDIVRVGPRELSINRASAISVIYETPTR
TTRSPWYAQVSNDVTKISLNSTRVLKVHKLRKRIWERGLGFRALAVYAPRIKNKVDLLLSKMAAHGGRPMDMTAYSMFFG
FDVMGEIGFSKDFHMLESETEHPAIKGVHESMLAIGVLGTVPWLLSMISKVPGAAASFSRFTAWCHQQLQEKRQAATLKD
QDPRDIISWLIKALNEGDPSAPPGEMAIQEDARLLIIAGSDTTSAALANALYYLARNPDTHRHLQATLRDQFPAGIHDWS
GENRVPYLDYVIQETLRLKPSVPGGLPRVAPPEGLMIDGEFIPGGTVVAVPTFTVQRDPRFWPDPNDFRPERWDGLSTEK
VPWLPFTRGQWACPGRNLAMMEMRMVLSRIALQYNVAFAHSDAAKKFDSDVMDTFTLTLPPLHLVFTPV*

>1332541|jgi|CYP65A3|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MGLLSQPIPVSSIIRSATLLPFFAITLGLAYVLYVAIYNLFFHPLSRYPGPWLWAISDVPYSLVSVSGNAHKRMLQIHIH
YGPVVRVGPNTVFYSHPDATKEIRGHRNGIKAEHLKDPHLHSGNQSNVIGANHENHSRYRRSLAYGFSHQAMLDQEPIMR
IYIDTLVTKLKNQSTKQESIDIVRWYNYTTFDMIGDLAFGEPFYCLESTDYHPWVALIFSGVKNLSFRSVFSKHGKLGKI
LAMLLVPKDLPAKGREHRRLSIEKVRKRLDSGSSRPDFMTAMMTTRGSSQELTFNELASNASLLIAAGSETTATALSAAT
YYLGLYPETFAKLAAEVRSAFCSEKDITLTNVQRLAYLQAVIDEAMRLFPSAPGTQPRIISPGGDTILGRYVPEGTVVGV
WQWVNHHNPAHFHDAETFIPERWLGDARFQSDKRDAFMPFSIGPRNCIGRNLAYSEMRLILARIVWNFDIRLAKESVGWD
MRSKVYMLWEKGPIYVYLAQRERSQTEP*

>1333303|jgi|CYP5128C1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MAANTAVTDNILASPSPLTIGLSVVLILLLLKALYGLTTDRLRHIPGPLIARLTPIWYWYIVWKGIECRAIAALHKKYGPV
VRIAPNEVDISDGAAVPAIYIDNGGFLKTPAYKNFDINGFPTIFSVTDHAHRAVRAKAVAPLFAQQAINNSKPAMQRIID
ATLSQLEHRKFFAEGKPVDLLDLFRCMAMDVMTEYLVGECFKSVGSERLSATGFVDSFAAAGRFFHLPNWLFSIADYCAS
KFHKNRASITTSIDTVHQFAAKVVDDSITRGEKATYQGRLLRTGTSREETIAQVVDIMFAGTDGMARILAVFCWHMAQAP
DKYDRAFEEVLQNPDTDARSLPYLSGAVKEAARLALANPTRLARIVPSGGLQVPGLPAIPAGTSVGIGAYALHLNPEVFP
APYEFLPERWLECTPEMLRDSFYFGKGPRQCIARNFASAVVWWAAEALVRSRVLDCAKPVQDEIEIVEWFNSKQVGDNIE
LSWA*

>1335585|jgi|CYP537A10|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MLLLSPVVLIGAAALLFVVRLIQRLRSPLGRIPGPAVSRFTSLVLKWKEIKALRTAYIHQLHRKYGPVVRIAPNEVSFTS
WEALKEIYCSGGSGYDKTEFYDLFKIYGRRTMFTTLNKADHAKRKRILADRYANSNIMKSASVAGVQERSSKFLRRCVSS
PGGVSDIFVTLHAYACDCITHHLFHPFGTDCIDKKEDEEMMHQVAADDSLQSKSSPYRLISHYAPTLHRLFSKVLYLFAK
PRETPLADDYVLETSQLSGTAPFTLTSRFDEKTGDLDYIDKAAECLDHMAAGIDTTGDGLCFLMWELSQPRSLAFQRKLT
DELRANPETPSDRLPYLDAVVNEGLRCFPPIPMSLPRYVPRGGRSIDGFWLPEKTIVSCQAYSVHRLNSDVFPDGDRFDP
DRWLEPKGDADRRRLQFAFSNGGRGCIGKHLALLEMKTLLRDVYSRYSTTPHESMKEEAMVMSDQLISARPVGQKCLLRF
HALGDDGKEDET*

>1342672|jgi|CYP5080B6|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MSAFQLAISACGILVVARLLFSFVTSFTSPTRRIPGPLLARFTRLWYLRRVALGRFEHENIQLHRRYGPIVRLAPNMYSI
DLPEAVNKVYGIGSKLPKSDWYDGWKHPSPDAWTMFPDKDIRRHAQTRRVFQGLYSMSSLVSYEGYVNECADVLLNRLSL
FSKSREPINMGHWFQCYAFDVIGNITFSKPFGFLDRGEDVSGLLQALQKVLAYSTLIGIYSSLHPYIFAVTNFFGIGGAA
GRTYLAGYVKQRIRQRKAEQTKNEEKTLPAHTDGSPEDFLEKIMIKNKDAPSKVTDYHVFMMSMSNIIAGSDTTAISLSA
ILYYLIRYPYVMQKVREEVDRISEAGTHLSFKESLEMPYWQAVMKEALRLHPATGLPLWRTATEGGIELNGHFFPEGTWI
GLNTWTAHYNEDVFGENAAEFRPERWLEAEEEGGRKLAQMNAYYLPFGLGSRTCIGRHISYLEMSKLIPLLVRNFDFELQ
DKDGEWQTTNHWFVKPNNFNVIVRARATS*

>1342831|jgi|CYP620S1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MIFIADKDAAQEILEKKSAVSGGRPIMPFANYCGFANFTNMHQLEKKFTAQRKAMHKALGTKAVVTKYNEILEREAGRLL

LRTLDNSDKIIKHFETEAAAVILKIVYGYTINPRGPDPMVILIERMIANFSRACVPFARLVDFIPALKWLPAGFPGTGFK
AEAEQYGKEIRAVVEEPYAFALKQLAERNFAESYVARLAQEYTGDKDELSEDDAYTIKWSAATLYAGGAETSVSVLVSFI
MAMILFPEVQRKAQEEVDRVTGGTRLPVLADREQMPYIEAMVTESLRWCPIVPMGVPHVMSEDMTYGGYDLPKGAYILMA
IRDFAHDAPAYTDPDDFAPERFLAPRNEPDPRWTVFGFGRRVCPGRLLADTSLFLNMASLVAVFDMTKAVDEKGNVLEPK
LDFEAGIIARPKPFPFKITPRSEKHTELIRGFEREHPWEESDAAQLGELPLPSL*

>1343179|jgi|CYP559C3|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MALPELLGSVTSSQLWSFGALFLVLSFIVEIASHPQYPRQIPVMGKGHGILGALYDSFRYITNYHRWVSDGYDKFGKKGM
AFIVRGPISRTAEVVMPREQLAWLFDQPDNILSTYDAHNAVLFSEYNFLGRRLAYDPFPNRVMHKYLARHLSTVIPDIDD
EIQHAVDTALGMDTDNWKSIKLWDLWLEIVPHVTNRLLIGAEMCRNRQFLNGMVSFTNDVIRNGLLLQLLPKVLHPIFGR
LLSISNYIHWRSSNTQAQPVIQKRLDAMLKKAAGDAEYKDYTPPEDFITWLIRQALLEQKTFELDPIVISRHMLPIEFAA
IHTTVLTGQLWMQDLLTSDPETGILDILRAEIVANKPASGPWTKAAISKLIRLDSSIRESQRVSNFSATLIERTVAAPNG
LHNPDLGWTLPKGSFVTVNLEGTHHDEELYPNPHSYDPLRYSRPREAWDAKSDEEKKRDAEEGTKIRGLGMVTTSAQHLA
FGHGRHAW*

>1343459|jgi|CYP570C9|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MLGQTAQLQFDLPFLFHTGGCSFRNVSLADVVLFTSTVALAWFVSSSVCQYWRIRQFDGPFVAKISNLWLFLSVNSGRSY
LDFWQVTRKYGTIARVGLNDLVTDDPDFVKHMCNVKTEYRRSSWYDGMRFNPTSNNCLSTRDEIAHSLLRSKMAAGYAGR
DVDNIEPTIDNNIRDFMRLLAEYADRRRPVDLGRKVQYFTLDVISDLAYGAPFGFVETDTDVYEYIQTTEKNLPMVMVIT
VFPWLLTLLNSRILKGLLPSTKDRLGFGRIMSIAKDVAAERFKSDIKEGRDMLASFIRHGLTQTESESEILLQTAAGSDT
TASAIRSTMLQVCLDRDILHHLRREIASADIAGDIITDTEAKKLPYLQAVIKEGLRIFPPIAGLMSKEVPPHGDTWNGVF
IPGGTRVGYSIWAITRREDIWGADALKFRPERWLNNPPDKAKELESTLDLIFSYGRWLCLGRRIALIELNKVFVEVCTFV
RCLDKKGNALSGSLSCR*

>1343980|jgi|CYP551A4|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MYLSTIADRLASQPLATTVLWATVLYFVIYNVYLTIYRLWFSPLAKFPGPKFAAASFWYEFYYDYWLDGKYLFEIEKMHK
KYGPIVRVNPDELSIHDPEFYNEVYVTESKRRTESYDVFCKGIDFDGSHLLTTDHDLHRKRRKPMEGFFSRKGITRLQPM
LAEVALHLESRFRELEGTNSVIRLDHAFSAFSGDIIGRICLGTDDRGSHGDRFLDSQDFASDWYDVIHAIVRSIPLFTGF
PQIIQVLSLLPESLLLKIYPKGQMFNIFRQRALEQIRIANRNKSEKDANDISIFRHIANSDMPVEERTEERLAKEAQVLL
GGGTASTARTIGFASYYILSRPELRSKLEAELREPMANWPQQVPTWAELEQLPLLQAIIKESLRLSYGVMHRLPRVFPDQ
PLQYKDWVIPIGVPVGMSAYLMHSDPQVYPNPGEFVPERWIHDVTPAMHRSYVPFCRGSRNCLGMNLAMAEMSLILAVLY
RPNGPKLELYETDESDVKQAHDFLIPLPKLTTKGVRALIR*

>1344489|jgi|CYP5390A1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MGAQSVIALAGITAVVSYLKLSGASHATVLLGLAAYLATQLALYLAFSSLIYRWFLSPTKGLPHPQHTSFILGNLIPFLS
EPWGFPLVRWQLTVPPTASGFYRVFLGPFDYLIPRSSQAVNTIMTQPYLFHKPAAVRDGLVESLGVGLVSAEGPVHKRQK
KLLTPIFGMSRNRRLVPQMWGKALILANKIQELVAKSGSKSQVLNMYPLTMAATLDVIGVTTLGVDFDSVTHPDQPILEA
YQRVFPSFENQSAVDKFFGATLPAIISPHLLFKLPLKPIREFHRGMAYLQDFCQAQIRQKRQEIEEDEHGNAEIREKDIL
SAIIAAGLTDENEILSHTLTILAAGHESTAITLAWAIFKLAQHPDVQEKLRAEVLIATRNTGPDGLTLENINSMTYMRCF
LMEVLRLYPAFPAMMREAAQEARVGDLQIPKGKQIMVSPYAVNRSQELWGDDAEEFKVERWEDSYSGGAKTSQAFLTFSS
GPRICIGKDFATLSLKVFLTVLVSRFRFEEAIPGWHPMIQKGTSLKPQGLKVKVSLL*

>1347192|jgi|CYP550C1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MAFDPVGDAFAPVAGHNTATPVSVYLLTLVALTVAFLFAYSRLQKNKREVEVDFPPWVPLEVGISSALIQAGGTASWLFS
LIWPRKGSRFGLTSRHQILHNLDNIDRVFTKSPHILSADVLGLRLGIRVFGARLTKEISEEFLVINRKLTQIIERYFVND
ASATASIQSADIPGKVARLLSFSPDAQKQYQWEQSAAIKVLSTNSEGQSGAVEADLESLMRDFGACVSIPRLYGQDFLDR
NPHLLEDFWKFDNNAFSLLVIGVPTWAPIKSFREALAARTRLHDALEGFYIRLDQYKHGRKVDFDADMRDVSTAAMERNS
FLEEHGVPIRARAELELGTFWGLNANMQPMVFWLLLYVYSTPGLVDELRKEVSPCMTMSTADCPLHITALDFSRLSHECP
LLKSCLFETFRLVEDPTSLRYVSKPMTVSDGELEHHFKPGTWLSAPHALLQSDPSIFPEPEKFIPDRFIETDKETGHRVA
RYGRLKPWGSGSALCKGRTFAEKEVMGIVACFITLWDMENAEGPWKLPSMIPGTGVKRPQKPIRVVIKHRSLE*

>1355807|jgi|CYP51F1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MGVLQDAANHRVAQLYFQQGIGAQIAIGAASFIALAVILNVLQQLLFKSPNEPPMVFHWFPFIGSTVIYGMDPPKFFREN
RAKYGDVFTFVLLGKKTTVAVGPAGNDFILNGKLKDVNAEEIYSVLTTPVFGRDVVYDCPNAKLMEQKKFMKIALTTEAF
KTYVPIISHEVTSYFKRDPDFKGKAGIVDIPKKMAEITIFTASHALQGSLIRSKFDETLAALYHDLDMGFTSINFVLHWA
PLPWNRKRDHAQRTVAKIYMDTIKERRALGDQDKELDILKHLMTSVYKDGTPVPDHEIAHMMIALLMAGQHSSSSTSSWI
MLRLAQYPNVVEDLYQEQIRVLGADLPPLQYEHLAKLPLCQAIVKETLRLNAPIHSIMRKVKQPMPVPGTKYVIPTSHVL
LAAPGVSGSDPTYFPNPDLWDPYRWLPGSPNAPLLVRNDEEEEKVDYGYGIVSKGAGSPYLPFGAGRHRCIGEHFANLQL
QTIVCEVVRLFKLSNVDGSNNIVGTDYASLFSRPLEPAKIRWERRQ*

>1375009|jgi|CYP5333B1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MAAVEALWSHVKTGLDEKQASVAVAAIVTFLVLVFTTRAITGSPATVDASGKHKIPPSPSYWLPFIGHALSMANAGFLPS
LRDRFPEGIFSLKMAGKMHHFIYKPSLAAALFNLHRPATEEQMLANRLLISTFGVSKKDAAIYNNVFPEALALYKHLTSE
PGLSEVTNAAVSQVKQTINSLVTFNSNPMDQTEWEKMADVDVIEESGPDGPITQADLMELTRNYVATTAIPGIYGTDFVE
NFPELWKWMWVFNEAFVLMATGVPAWVPWPRLQRGKLARRRLLGYLYEFNEAMEQHMDGKETDPKWQNLDNVSELVRSRI
ALFRKHGVSLAGRASFDLALLWAAVANSNPLIPWMLYELYRDPVLLEQVREEIAPYVRAVQPKNEFGDAVWVPPVLEDVD
IDGLISKCPLLKASYIETMRVYSCGWAMKLMYSDTVLEGKGKGGDSFLLKKGSYAHVPQELHQSDPAYFSNPKEWQAERH
IRETVDESGNKVLTAELGTMRPYGGGLKMCKGRQFALREMLLYTAAIITFYDMQPPKGGPWPVPRTRKLVANKHPKKPLK
VWIKRRKLPGEGEER*

>1378835|jgi|CYP504A23|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MAYQILGIAIIAAAFVLLKILNATDTPKVKGIPEIPGVPLFGNLLQLGVDHARVAKNWASKYGPVFQARLGNRRIIFVNS
YDAVKYFWITHQSSLISRPTFHTFHSVVSSSQGFTVGTSPWDESCKRRRKAAATALNRPAVQSYMPILDLESTVSIKELL
NDCRNGAQDVDPSPYMARFALNTSLTLNYGFRIDGNIDNDLLAEITHVEREISNFRSTSNNWQDYIPLLRMFSKTNTKAE
EYRLRRDKYLTDMLNDLKERIANGTDKPCITGNILKDPEARLNEAELKSICLTMVSAGLDTVPGNIVMGMAYLSTEHGQS
IQAKALEAIQQAYPNGDAWEKCLVEERVPYITALVKETLRFWTVIPICLPRMNISDIPYEGSVIPAGTTFFMNAYAADYD
EARFKLPEQFIPERFLEDKEIGTPHYAYGAGSRMCAGSHLANRELYTAYIRLITSFQIVPTKEPDQAPIIHPIECNATPT

SLTTDPKPFKVGLKPRDEVKLREWIAEAEERTKNL*

>1378853|jgi|CYP584R1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MDSGQVGFTLYVGVVVFCLFKYVSHRFKRAAEQKQLSQEHGCQPIHIKYPHKDPILGIDVFIQNVKAVSKHTFLETVTRR
HEEVGETYQLNMLGTVGIMTRDDEIIKTILSTRFKDYSLHEERKKALNPLLGYGIFSSDGLSWAHSRSLLRPQFARSQLM
DLSMLESHVSCLMRLIPDGQEVDLQDLLLRFTMDMATDFLFGESTNSLLADQDGYHSRLEGFAESVQYAQDRIAMRMALG
RLALLKPDPKFKHHVRVVHKFVDELVHKALHGNDPGPKAQPYILLRALVEDTQDPVRIRDEVINILIAGRDTTASLISNV
FFLLSKRPELWSMLRNEVLTQFKRQPPAFEDIPQCKYIRYTINESLRLFPPVPVNSRVANCDTTLPRGGGVDGKSPLLIP
KGTPVIYNVFGLHRRRDVYGPDVEEFRPSRWETLRLSWEFLPFNGGPRICIGQQFALIEASYVLIRFLQHFESLESKDER
PWQEKIALTVSNRNGVRVSFKRG*

>1378902|jgi|CYP561J1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MDSVWTYAKGPNLAAPRVQSLMQEVIKELTRKSGLHLLGIFVGMFITWRVAVAFYNVWFHPLSKFPGPPHMAAFYLPYMY
DTFICGNMHNTIRKLHQKYGPIVRVGPDHLAIDGSVGWPEVYGQKTGQEEFGKVPEFLFQGDTTALIAAPKDVHRRQRRQ
LAHAFSDSALRAQEGVMKQYVDLLMSRFAERADTGESFNIIKWFDFTTFDIIGHLYHSEPFHCLENNGYHPWVSAFFKGI
RGDSYRRFLRHFPLAHEIVKRLRVLSDLNSSTDNRDYIMEKAQARIKQGDFAIEGYRDFIAFMLKKNRDGEFGFFEPEIL
ASSPLVITAGSETTASSLSALVFYLGSNPVPYKRLTEEIRSAFSDEEEITLNSTQRLEYLHACIEEVLRVYPPVPETPPR
QSPGGTIDGKWVPRGTTLTVFQMATYHNPKHWAEADSYLPERWLPKSHPLYDDKFKDDNRATFKPFSYGPRDCLGKNLAY
SEMRLILARLLFGFDFELVPGQEGWHDALRTFLVWERMPLNIHLKKRSTTA*

>1381736|jgi|CYP526K3|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MTLAISSGGAWVVGIVCVALYMAYRRILPKPIPDIPYNKDAAAKMFGDVPEMMGYVMRTQRIFQCWLTSLTTRLQSPIVQ
AFIKPGGLPWVVVTDPFESQDILLRRIKEFDRSEFFGELINGILPEQHIQFISTDPRFRNNRSLINHLMAPTFIREVSAP
EVYMAAKALMKLWKMKCTIARGRPFSAHHDVTFAALDSIFASSFGLLEDETSTIQRIKALDGFKPVLPDGVDEPLAFPEG
HTPDIFSAVLTLANSVTDTQLSPAPVLTSWVIRKFPYMRRAKSIKDKYIRGKVEESVRLIEKDPNIRPKSALHSVLLRER
DVATKEGRQPDYRKGAIADEFFGFMTAGHDTSATTIAWGVKMLTDNPAAQNRLRDALRSAFPAAVQEKRDLSYAELSNAQ
IPYLDATVEEILRHSNTIAFVVRQAQQDATVLGCRIPKGTNVFLMANGPGYLEPNMKLADEARSPGARQTARSALTRAWS
DDDIGKFLPERWLETDSDTGAEVFNTMAGPSLAFGLGLRGCFGRKLALQVLKIHFALIVWNFDLLPVPEKLGGYEAVQKF
AREPTQCFILLREIDL*

>1382929|jgi|CYP630C2|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MILLLLSLALLLLVLEPLATYLWDSKNLRRFPNASYLSGITDCAYIVQRYRGFRSKEIHQAHLKHPVLRIGPNSLSFSSA
EAIRAIYGHNTPCTKGGTYVTAAGAHTSLLDSVIKEEHARKRRILSHAFATRNLEQWEFKVTDKVQQLVAQFDRICREGQ
GDATTVDFRLWSNLFTIEAIADIALSRQLGCLGSGSDVVTIVKDGREKEVHYIDCLHSGRRATSMLIWSTKWFSSLRFVL
KRLPGFFRTQWRKGQDFDEMVQHFVRQRLQRFEAGEKLEDLVACLLQDKHGEARKLGIGEIEAEVATLLDAGSDTTAISL
VHAMYFLLKTPSALSRLRDELRDALEDGQEIATYASVKNLPYLHACINESLRLLPPVAFGLNRMTPPEGLQIGKDWIPGG
TLVGVPAYTGHRNPVFTDCEQYQPERWLQSGIKEAQGTFIPFSTGARGCIGRNITFIEQTVLLATLVQRYDFSLLDNWDL
EHEEAFNLWPGPMPVRIRRREAS*

>1385341|jgi|CYP65A4|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MGVLFGSDALGVDPPVKLSVALPLAVVALGFGYLVWSCIYNVFFHPLRKFPGPKLAAISRIPYSRMLLNGVGHREVLDLH
IKYGPIVRVAPDFLSFSHPDAMNDIRGHRKAGQPEHRKDPLRQEMNVHNIIGADRHNHTRFRRALANGFSHQAMLDQEPI
ISEYIEQLMEAIEKQAEGGSKPVDMVRWFNYTTFDVIGDLAFGESFGCLQSSNYDPWIQLLFDSVKTLVWMGTLKHFEMI
PRWLIKYIMPKGLERKYAENQRLSTMKVQKRLDTGSNRPDFITSMTAKRNGESLTFEELAANASILIIAGSETTATALSA
VAYFLSLNLEVQAKLAQEVRSTFNSPQEITITSVQHLTYMLAVIDEAMRLYPPVVAGLTRLISEGGAVVAGEYVPEGTYV
EVWQWPLFHNPSYWTKPEEFIPERWLGDPMFADDKREAFQPFSTGPRNCVGKNLAYSEMRLILARVIFQYDLKAAEGTEG
WDYRSKAFTLWSKGPVNVYLTPRKME*

>1400181|jgi|CYP541A2|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MATPIPKPPGVPLLGNIFDVKPGNTWDSLRKLAEKYGEIFQIKVLGQTIVFVASAALAEELCDEKRFRKYVGGPIVEIRA
AVHDALFTAYDDEPSWGVAHRIIYPKLSPDAMKGHFGEMRNLATELFNAWRGLGDENTICPLEQLNRLNLESTTYVLFGK
RLNTLIGPPHPEIQAMEDSTSEAMKRPTRPGVLNSLLYGRKFRSSIKIMRDYAADLVKYRQENPTERQDVLAAMMNTPDP
ETGKKLTDSQVIDEIVSMPIGSSTAPCLLAWTIYFLLKNPEVILKAREELDRVIGTGEFELEHLEQLEYVQGIVRESLRL
SSAAPGFNVEPRPKEGDKSPVLLGGGKYQVAHNQAMIIVLHGVNRDPAVFDDPLAFRPERMVGEAFVNLPAAAKKWFGNG
KRVCIGRYYALQWSLVVLAKMIREFDFEMADPEYKPELDGWFNIRPIDFYVKVKPRET*

>1400239|jgi|CYP5392A1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MATIQALLPWLAVASLVGGIYYVWYRVFSYQGIPKSLAFANSDGSFFSRGRASLGSVFEVNSLLWAGHRDYSKKGRPYIL
PDIFTGHQVILPPENLQWLMKQPASILSQRESNNEFLAAKHTFLNCVAADDNEWVFVVNLIKDITKELNNKTNDVIEEIQ
AALDDLWGSDTTNWKQIELLDVCLELMSRIVSRMYVGLPLCRDQTYLSSSTHFAKFILIEALLAQLTPKPLRPLLGPLLA
QYDWMQFKRMDRCVNPIIKERARRFGRMEDGEKKDPDQPSDLLSRLMQEAYRRNDDPCRSQSHSSKLLAILNWAAIQVQG
ITLENALIDIAHAPQSVDIQNKLREEALAADAADPSVRWTRAEVAKLPKMDSVMTESLRLWGFAHGIIKVVVAKEGVDLP
TGEHIPYGAKIGIGSYGLHHDAEVYPGESPFAFDPFRFLDEKAEAQTTGLKFAATSDTYLAFSHGRYACAGRFFANHLLK
LLLSQMVMRYDIKHDTEPRPQNPWFSYVSPPPIGYKLSVRRRKQ*

>1400351|jgi|CYP548A14|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MLSLSVQHAAAWLALLFGAGAFYLFSVAIYRIFFHPLAKYPGPLIAKLTDGYQLYHAWKGDRHLQFWRLHQKYGKVVRYG
PNSLSFSTNQSLKDIYGFKSNVRKAEFYNSFAHPVANTHNTRDKDVHARKRRVLSHAFSESAMKEMQRYILNNIRTFCEQ
IGLQDGTSDSKGWTQPRNMANWCNYLAMDILGDLSYGKAFRMLESPDNRFALDLVEAATTRHLLCGTMPIVDKLKFDKIM
FPKLAAGRARYMAYSKAQLTERTKLGEETDRRDFFYYLLKARDPETGQGFSTPELWGESNLLIIAGSDTTSTAMASTLFY
LTRNSHALKKVTDEIRGKFNDVEEIVQGATLASCTYLRACIDEAMRMSPSVGGILPREVLPGGITIDGEFIPAGIVVGTP
HYNIHHNEAYYPQPFMYAPERWLNGAVNPATKRTTTADDVAVAQSAFCPFSIGPRGCIGKGLAYVEMTLTLARALYLYDV
RRAVGVQDPSEGRADLEWGRHRPDEFQLADIFTSAKKGPIVEFRLAEKA*

>1401499|jgi|CYP617A8|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MPFKLMLVSALAGGAGWTYATQDVWTRASFLQAAVVLLLTQLVVYGIYDVFLYPKWFSPLRHLPTAPGSHWLMGHGLKIL
ADKPGAPMREWVLTIPNDGLIRYYWFFNRERILVTSPKALGEVLTTKSYAFQKPENVRTFLGRILGYGVLVAEGDEHKRQ

RRNLMPAFAFRHIKDLYPVFWDKSREVVQAMTQECGARGEAEMEIGEWASRVTLDIIGVAGLGRDFKAIQDEHNDLVQTY
QFLFKPKPPAKLMVLLAVLVPTWVLYRLPLERNKEVDDAAKIIRSVCRDLIREKKQKMMANKERTDVDILSVAIESGQFT
DEDLVDQLMTFLAAGHETTATAMTWAIYFLCRSPEVQTRLRNEVRERLPSPDDAGATITSLDIDRMPYLNAVCSEVLRYF
SPVPMTVREAAHDTTIQGVRVPRGIRVSLSPFANNVDPKLWGPDAGEFNPDRWISADGLSDESNRKAASGGAESNYAFMT
FLHGPRSCIGASFAKAEFACLLAAWVGRFEFELVNEEEKDLDKVDIKGGVTARPAKGLHVRTRVLPGY*

>1403057|jgi|CYP642C1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MHQVGVIPSSSSHPAVGEPALTGDGVSFQFPYHIFLLLLLIAPLVHTYRGHKRLARPRLSVRLLKVLSQLRYRAYSLIYN
AILNCARPTLSINIFPRKVLVTDPSMESTLSRHTSETSLANVMFLIGRRVFGLSDGTINAIGSYDPRPVHVGEFSSASNV
RALLAQVSATASQKLRGQPDVQETELGPWLFKLTSSSVASALWGPESPWVVDEEFQTQFMKISGSQMTLLRPFSRYTAQA
AHKARALIIDRLRFFHFRNRDTRVRQIAHRINAVVMSDPNWESNKDYFNVELLTSLGLLVTPSSMAVWMIRHLLMRPDLF
DRVVKEARDPSVLDAEGNIDVVRIRESFPFLAACLYETLRLHMTAIPRLAKTDFDLAVPNSQPVHLKSGDLIYLAMSSFN
KDTATWGSDAGVFSPSKFLNNSGSLSASMIRKLRVFGVAGNLCPGRKLGFETILFVVAKMLRDFDIENPREEEAYPEPRT
EDGFGIGFERCANEITVRLRRV*

>1403209|jgi|CYP618A4|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MESLCVALVSFTGVVLTLRQTDATISLAAAVGLGLYILGTILFKIVKALIYPFYISKLRNVPGPKDNQFLVGQAIRLLKA
PGPNDLYLEWVRKWPDAPFIRYLTFGNAEVLLVNSLEAAREVLQTHGGSFVKPAFFEKLVGEMMGTGVLFSVGEQHRQLR
RIMAGPLSKPNVRRMLPLFKEKARELSASLNEAISGESKGVVEIEALFSRTAFKVISTALLSRDITDFRSASSPLSFEEC
YKGILTPPTLLGKLITFINPFIPLRWLPVEANLAFIRANTALRGMLSELVQERVAQVKRDKGAGEKDFLTDMIEANLAES
KGVSDQMLVDIIIQGVSAGHETTAGALTWTVHALTQHPHMQKRLRAEILSARQKQPDLDAATIDSLPYLNNVLSESLRVY
SPTLMAPWEAGRDLVIAGVAIPKGTTVTTIPAMVHLNPSIWGAADVDEFNPDRWDAGTGAVANPFAIEAFLNGPRTCPGR
ALALLEMKTVLVEVVGGFELEAAGEGEEVRFENPSLTLKPKGGLWVRVKRV*

>1404401|jgi|CYP528A8|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MEVGYGLIWTPLWALCYGLGVLLLSITTVIFYRLFLHPLARIPGPRLAAISNIWHAYHARNGHMFDLGRRLHQEYGEVVR
VGPNELWFNNTEAFDKIYSSTKGFEKSDFYLATSLNWPKIDAFLRPLFADSLDLLSERDMKRYRLQRRLIGRVYQTANVI
KFEAAVDEVIKQVIARLEALDGAEIDLKEWMHIIAVECLGASVLSWSPGLLKAGTDWGSSAHSYLGWRRKSVMGLFPTLT
KLTLRSNLFEWIFRDLWDLKYTAPPGFRTFFPDVAKRISRRIKSALKPNPPKDNRADLLADLIQLHQDKPDFTENYLRKM
AMTNFGAGHETMASTLTSIFTMIGSHEDVQRRVRQEVRSAMDASSYAGTLQLQYLRAAAREAMRLHPVLSMSLPRRVPDS
GAHINGCFIPGGTTVGCNPVALHRNADIVTGPDPEAYDPDRWLGGESAETRLMERYSLNWGGGPRTCPGKNLAEMVVYKV
VSALFERFDVEVVVPQKVGQPSYFLSMMTGVKARFLSAAPQATGKGGL*

>1405028|jgi|CYP526M1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MFPYPKPFVLITDFRESHDILSKRYREFDRSKRNADIFGTIGTNFHLAMQSRDPRFKGNKELLRDLMTPGFLNEVSAVHI
YNIATVLVDMWALKTAQAQGHPFSAHEDLHYAALDIILAAAFGIPLEESLTQKQYEFLQLQEPATPPSSSKDEPVAYNRI
PIPRSRMSLIEVTGSVVVAYKSPFPRLHHWLLKKTIWRRTFAEKEAFITNEINKSVERLTSENKEKNRMRCAMDMMLLRE
LGQAKKESRTPNVNAPRIRDELFGYVATGHDTSSTTLSWITKMLADNPSSQAKLRRQLHTAFAEAHADKRQPTVVEIIEK
PAPFLDAFLEECLRVTKTIPSILRETLTDTTILGHSVPKGTGVMIYNHGPGGQLEPGFGIPESVRSSTSRDSKDRVGEWN
EDDIGQFRPERWLQRKTGAEPDGGGEGEFDGIEYNAYAGPFLTFGGGPRGCFGRKLAYMELRIVLAMLVWNFVFEQCPAE
LSSYEGIDTATVVPKQCFVRLKQLL*

>1405776|jgi|CYP531G1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MDNNSVPYSWGAARLLQDDQSTYLRSVVLFLLVPTATFVLWHAVAYLASPLAKYPGPVLASFTNFYRMYYAYRGDMHLIS
KKLHDKYGPVVRMGPNYLDLDYSSLIKTCFDTQGVWRKTEWHGVSGAMVEGKLYFNIFSEVRPEEHVRIKKPIAKYFSAA
GVAPLEPHVDAVLATLCGVIDQRFAGDETFGPSFDFAEWMLFYAMDVVAKTTWSQSVGYLEKGHDFDGTLSVSDKAYDYL
VTIGMNPVLDKFLDKNPIMRLGPPSFGTVTGICLGHLMARMKGADGHDQSKPDFLDRYLEAQQQNPEVVDVYRILSYMLV
NVAAGADTTAAGLRSIFYLSLKNPAVYDRLRSEILAARFSQLPVPYAESRQLPYLEAVSRECFRYLPGNCFAQERYVPKG
GLLLPDGSLVPAGTAVGFNAYVLHRNKEVWGDDAEEFRPERWLQDDGETADEYKIRLQHLNNVDLSFGAGSRKCIGMNLG
KMEISKTVATLITLFDFELEDPKKEWKVHNSLIPRASDIMIKVRKRSAASEQISQMASHY*

>1425568|jgi|CYP609C1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MATLASPQEWPASALILVAATVVVLLARLLKRPGLPSGASWTEKGLPFFGSFNFFTKRGDFLREGSKKSPNGHFNFYYGS
YPIIALSGEAARASYFTTRGLDLSAGFRKLFSAGPDIDRMLGCNMSAYFIILFKRLTGKDHLASCLPHLINDAQASYAAI
DTSVPMDPFVNLWNVLYKMTHRTVGCHEVAEDPALQEKTMRYYEKLDKSSAIQVMFPWLPTPTKLIKIWAGAKLHMLFGD
IIRDRRRTGRKKQDTMQILMDRGESDLLSSAFIIGALFAGLFNTGVQSAWILCYLAHDPVWYAKVREEVDTVVAKYRTSD
DQTPVDVLRALSLEAWESEFPCIDLGVRDSIRLNLMGASIRQNTSGKDIAIGDTGVVVPKDAFAVYRVADIHMDEAVYRD
PLKWDPARYLPDRAEDKKEQHGYIGWGTGLHPCLGMNIAKLELFVSTAVFFAMFDFKAVDKNGNPTTEPLPRYDANALSA
KRMIDTVYFKCDRRF*

>1426043|jgi|CYP621C3|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MPVAQLLSDNPLILYTTIILFLMLVVTYQKKTQHGSLPPGPPGEPILGHLRIIPTDNPEYYYMRISREYGSDILSFNNLG
QSVIVLNSVQAATDLLDKRGANYCDRPRFVLFEVMGWHKTLTFLRWGPSFRLHRRILQKNFQKSNIGRYRYLQEREAAML
LKGIMDRPAAWETALRRFSTAIALGVGFGIKIETDSDPLVQVAADASYALGHGGAPAGTPVDFFPLLRFLPGFLHDRSLK
FANHWRFAIVNLRNKPYEAIMASKTQVQSLVQDMLDQQQSQAKRGQAPEISEGDIKGAGAAVFAAGQDTTWSTLVVFILN
MVLHPEVQSKAQRELDQVVGRDRLPTFDDRPNLRYIGLIVQETFRWCPVSPMGVPHRSLKDDVYGDFFIPAGSFVYANAR
AMTHDETVYENPDDFDPGRYAPLDEGGRGEPFPRGQFGFGRRICIGKHFAEATVWIVVAVMLSTMSIEREADANGTEILP
VVELTNGLTSHPKSFPCRIRARDEKSAAVIRNAQLSL*

>1426484|jgi|CYP65U4|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MVTVWGWHVSASAWLGTTALTLITYNVLRIIYNLYFHPLAKVPGATAWKASRLPFIWSLLRGTIVHDIERLHRKHGPILR
IAPNEVTFAHEDAWRDIFQLRKDHQPFLKDPIWWKSQPGMPESLLSAIDPKRHARIRSLLAPGFTPKALKEQEDILHFYV
NLLVERFRELAGRQPEGGAVVDVVPWFNFIAFDIFGDLGFGESFNCLQDSKYHPWIALLFNSVKAASFVAAARFYPVVQR
LLLMCIPQSLRKMQRDHYQQIVDKVDRRLNFELERPDIMSHVIRGTERRELPPGTIHTTFMVLTTAGSETTATALSGTLN
YLVNNPDKLETLTREIRGAFEAEADINLDSLRKLPYLNAVLNEGLRLCPPIPWVLPRVVPEGGDTVCGTWLPGGTPVSIQ
AYSMNRGPANFHAATSFEPERWLPSSRTDPSSPFFHDRLQVVQPFSDGPRACLGQHLAWAEMRLIMAKLLWTFDFGVVEG
RRTRWEDLRTFLLVEKRPIEVRVRLRGTTAGSVA*

>1430641|jgi|CYP548AA1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MAFMNAFHAIPAFGFAFACLGLAKLLYSHLKTFELLDIFWWAQLMFLGLSTALLGRCVYILAFHPLAKYPGPLIAALTDW
YTVYWIAEGGRHLELDKQHKRYGKHVRFGPNRLSINSAQASKDLHDVRKKTNKADAYASFKRFFGAEMSLTTVDHKEHTF
RRAVNQAAITPAAVKEFEDQVTPHVDEFINIIAEGAGSKAQGEKGWSFGKDMSYAVAFCLADIMGSVTFGRTWNAQKDPQ
YRHFIKDLPNGVAGIHLVGHMQSLFFGNLHKLLFKELITGVDNLMKVSRSFAMWRLEQESMPNRDVWAALIAARDPKTGR
KFTTEELISEASLFIIGGTDGMITSTTATLFYLTHNPRTLERVTREIREAYPLRAEDIGKKGLAVHCPIRFASAELQAIE
YLTACIDEAMRLSPPVASILPREVGPGGLVVDGEYFPPGVNLGIPHYSMHHSGDNFAEPLRYAPERWMPEERKRGAVDGS
VPVSGREPATMKAAAGHTDGFTPFGAGRSSCIGKYLAYQEMSIVLARMLWLFDIRLDPGSNLGEGVGDDLEGRGCRNEFQ
LYDRFVSSQKGPMLQFRYREELAA*

>1431728|jgi|CYP65BM2|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MLSLEGLLFSLRPEAALVLWLVILGTVYLASIPIYNIWFHPLRKFPGPRLWAATQIPFVRMIFSGRSHQKMLELHKTYGD
VVRIAPDQLAFSDGAAWQDIMGHRKRGQGENGKDPIFWKANQHSVISADRENHTRMRRTLAHGFSAHSMMEQQPLIQGYV
DLLIKKLRENCADGSKPVEMTSWYNYTTFDVIGDLAFGEPFGCLENSDYHPWVSLIFDRIRVGAESTALRRLPFGERLIQ
LVLTKEERKRFQGHFELTQQKVNKRLALPGSRPDFMEVMTKREGDQKFSLPELWDNASLLIIAGSETTATTLSGVTFFLL
THPEALEKVKNEVRSSFTSEDEIDLLSVQKLGYMLAVLQESLRMYPPVPGAIPRRAQPGGDVICGQYVPENTVLGIWQWP
MYHLTKNFTLPDSFIPERWLGDARFSSDPKDVLQAFSFGPRNCIGKNLAYAEMRLILAKIMWNFDLSLHPDSRDWMERQQ
AFTLWQKPDLNVFIKPRVTQ*

>1433645|jgi|CYP539B7|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MISTMSQSIQEQILGLAWSLAVITTCLIVGLGVLERVIVNHRLSKTNGVRASILGGNPITSFYAFFKAGYMHAHNRLQEN
FTDMFTHASPSCPHAVEITIFGHRSIMTIDPEHVKALLTTNFAHFGKGPRFHRTWEPFLGDSIFTTDGRQWQQSRTLIRP
MFVTQRVRDLDILERWTDVLLAKLPASGQTVDVCDLFYRMTLDAITDYLLGQSVESLDNPNGEFTNAFTQVQRTQMLLAI
FAPFQRFVPQAEYRKGIKVLEAFIQPFIEATLALTPEQLETISKSDREFTFLHHMALFSRDPKVIRDQLMAVLLAGRDTT
AATLSWTIYELSNYPEIWRKLRCRVLERVGPHAAPTYEDIKDLTCLTHALNETLRLYPAVPYNVRSCLQNSTLPGKPGQP
DIAVLKGDHVLYSTLVMQRRKDLYPPVSDKFADTAVYSPERWEHWTPKPWQFIPFNGGPRICIGQNFAMTEMAFTLVRLL
QRYERIEIYRGDWAAQYLKADIVGCPGLGVPIALYEAKR*

>1435464|jgi|CYP65BQ1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MALGRKGAFCFLASRGCLCSGLLYVGYTVIYNLFFHPLRHFPGPKLWAIHYGFYARLELCGDAHKLLIPLHQKYGPVVRV
APDHLVFCHPDALTDLSGHRKAGQLENGKEKARNLLVPNTLFSADRENHARMRKSMANGFSNQAMLDQQPLIMTYVEKLF
EKLDEESARGEKIDIATRYNWTTFDIIGDLAFGEPFGCLENSMYHPWVEMVFDGVKNVQVDATFRRMPLLYKLLVMLTPK
AMMDAFKQHSELSEHKVRKRLDTVTDRKDFIAAMTSKKGKDVTVQELTANAALLIIAGSETTAVALMAATYYLGRNPGPL
KKLCDEVRSSFASEDEIDLVSVGRLNYMLAVLDEAMRLHSPVPGTTPRTINEKGDVIAGHWVPPGTHIDIWYWTMFHYPE
FWTQPEDFVPERWLGDPRFANDQKRIFTPFSAGPRVCIGKNLAYAEMRLILARLIWRYDFELLDESIGWDTRSKVYIAWQ
KGPLYIRLKPRA*

>1435540|jgi|CYP61A6|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MPISVEGTANATQHDASGLVESLYSTYSAASNWQIGITALLVLVAYDQYLYISRKGSIAGPTFKIPLMGPFLQAIYPKFD
AYLAQWASGPLSCVSVFHKFVVLASDRDLAHKVFKSPTFVRPCLVPMAINIMRPTAWVFLNGKAHAEFRRGLTGLFTNKA
LSTYLPVQEKVYADYFNRFVEHSKANGGKPTKFMGWFREINCALSCRTFFGDYISQEAVKRIADDFYLITDALELVNIPL
SIHVPFTKCWRGKRTADAVLAEFTKCAAACKVNMASGAQPTCIVDQWVQHMFESKRYNEAVAAGVEGLEKPTNLIREFSD
EEIAQTLFTFLFASQDASSSATTWLFQILAQRPDVLDRLRAENLAARGGDKNRPFELEMLESLTYTNAVVKELLRYRPPV
IFVPYLALKPFPVTPDYTVPKNAMIIPSCYPALHDPAAYPNPDVFDPERWITGDAEAKTKNWLVFGAGAHDCLARRYVPL
TMAAMIGKASLELDWVHHATERSEEIRVFATLFPMDECPLVFTRRE*

>1436831|jgi|CYP620B4|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MSNLALAQGIIVLIGILLYALFFRKKSKSQLPLPPGPTPLPILGNIKDVPPPGTPEYEYWLTFKDKYGPISSITTLGQTI
VLLHDEDVVNEVMEKGSMKTAGRPWFPFAAMCGYDRFFALLQYGDQFRLYRRVVHQHFGTKNIVAQFADIQEVESKRFLW
RVLRDPDHLFQHIKTEAAAIILQITYGYEIELEKPDPLVTLIERVMTNFSETTVPFSWAVDIIPGLAYLPDWFPGTGFKQ
IAREQRALHDASAEIPYNFVVKQMSNGTNQESFASKLVTAYRNQGKAADDAIFEDIKWVTSNVYGGGADTTVSSLMSFVL
GMVLHPDVQQKAQEEIDRVVGSDRLPSPSDQENLPYVDGIATEDIIVRGYRIPKGSYILPGSWWLLHDPKRYPEPLRFAP
ERYMAPRNEPDPSSHAFGYGRRVCPGRYLAQDSLFTTISRTLAVFTIGKAMRDGKPVDVEWKHTRGLIDHPVEFPYSIVP
RSEKHAELIRHVEVEHPWKGGSSQEALQGVQILDGLKKL*

>1439740|jgi|CYP530A15|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MFKAWVTLGLIAVTVLLWQLSRIGRRPSNYPPGPPTLPLIGNLHQMPTKNAHLQFQKWAKEYGPVYSLMLGTKVAIVLSS
DVVVKDLLDKRSSIYSGRPELYMGQEIMSGSYRPLFMGNNSVWKMVRKLAHGVLSVKVSRTYVPYQDLEVKAMLMGLLES
PGNFLNHIRRYTTSLTTQMAFGYRTPESDDKNLLEMFGNFEELSKLTGSQSAAILDLYPIARLLPDFLLPIRQMGREYHE
REIKLFMKHFQNARTQQPCCAIDLLCAQKEYGFSDELGCYLSGSLLQAGSETTSIILVGFFQAMLAFPEVAKEAQAEIDR
VCGDRIPDLNDFPDLPYIRACMKESLRWMPATALGVPHAVTQDDAYMGYHIPKDAGIILNVWAIHNDPERHPDPRRYNPA
RWAGDNQNSAQAAVNPDPSKRDHFVFGAGRRLCQGMHIADRSLFLAIARTLWAFDLKRPVDKQTGKEIIPDVDNIKDGLF
ISPMPFAADIAPRSERRAAAVREEWGKVADLFDEDMQWKTVPEGLKWKDYEPLDDDNRDVLESLS*

>1441056|jgi|CYP570E3|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MPLIMVHPSTICLLLLFAFLAKRIYLWQRLRHIPGPPSAGWTIWWQLSGAMSGRYHERLKEAADTYGPLVRIGPNQLLSI
DPDVLRHMSAVRSGYTKGRFYASGKIIPGVDNVVSLRDPVKHKEMRALMTPGFSGKANEGFSFEPVLDRQLSSFINLLER
RYVSSDSDVRPFDMAEKTQFFALDAIGDVSLGQPFGYLEKDQDLYQYNKINRTSLPVMNVVSVMPALASLIHTWPLRLLL
PKEGDQVGFGRLMHFARSYVERRLDTKAPPAHDMMQAHIDNGMTKDDLIQQVLLSIIAGSNSSAHALRMTLLALITNPPA
HTALLTEIRSVITISPVISWSDIQSLPYLQAVVSEALRMWPPVAGLGFKTVSPEGDSLNGYFIPGGTEIGQGFHGVGRSK
AVWGPDADVFRPERWLRAGGEELRKMKNAVDLHFGHGKYSCLGKGIALMELHKAVFELVRRFDFCIVNPETPIKTTASIF
LFASDFWVTMTKRPL*

>1441274|jgi|CYP61A1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MDAVNATRAPSVLTSVLANSKYVSANMPPHVDYVIETIAAAGAWTWFFTILAICVAYDQISYLMNKGSIVGPAWKQPFIG
PFLQSMDPKFEEYYAKWKSGPLSCVSVFHKFVVIASTRDMARKVLNSPAYVKPCVVDAAYKLLGEDNWVFLDGKPHVDFR

KGLNGLFTRKALECYLPGQEEVYKAYFKRFLEVTKANGGKPVPFMPEFRELMCAVSCRTFVGHYISDEAVKKIADDYYLI
TAALELVNFPIILPYTKTWYGKKAADMVLAEFAKCAAKSKVRMAAGGEVTCIMDGWVLQMIQSERWREAEEKGLSTEGLV
KPAPMLRMFRDYEISQTIFTFLFASQDATSSAATWLFQVTAQRPDVLDRVREENLKVRNGDPYAELNMDQLESLTYTRAV
VRELLRYRPPVLMVPYKVKKPFPITENYTVPKGAMLIPTTYMALHDPDVYENPDYFDPERYYSGDAETKGAKNYLVFGTG
AHYCLGQVYAQLNLALMLGKASVQMNWTHHATPLSEEIKVFATIFPKDDCPLTFEERK*

>1441869|jgi|CYP602B6|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MYPQSNSTPFHAAAGTPALFASWTPKASYYVATLVVLLVAWLLRPKSQPSKLSVPFYGASKLKWIFDAESQIVTSYNKFR
DQVYQIKATEGIQAMIPPRFIAELKGLPEDILSSTEAVADALQTKYTKFSPGHNGDMLSLLVRTRLTQNLVGLIPQLKGE
LESYIATEFPPCEDWTPVKWQPFALRGIARLSGRAFVGPSLNRDEQWMEVTINFAIDVFMSVIKLQLFPEWARPVAQYLI
SDLRKIRRDINTAKYLLKPLLQERIRDMEISSFHDPPNDLMQWLIEALPEDEKCDVQTHAELQLILAAASIHTTNNLLFE
CMADLASHPELQAELREEAYQILEVKGGWARKESMAKLKKLDSFMREVQRMRGNITSFIRKVLKPIDLSDGTHLPAGTRV
LAPQAGISIDEQFYHSPEEFDALRFYNMRQQSAEASNRWQFTSLCDTNLNFGAGKHACPGRFFAGNEIKLILAFFLINYD
VRLKKGDQRPKPMAMVMTKGPDANAEFEFRRRPLEE*

>1441972|jgi|CYP671D5|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
METIDTSPVPHLSSSWQLVAGGAFLVGIASHHPVFRPYEIDTYVWQLIFAYIAVTAALLARCVLTGGYQVTTALIYTLSI
ASVYNCSVLGSILVYRAFFHPLRHFPEPFAARLSRFYAMGKMIRSRKGYEDVQRLHEKYGDIVRVVTRPPWYAQMSRHAA
KSSLVNTRDVVMHRLRKKLWERALGPRALEVYEPRVQAKVDLLMSKVAAAKNRPIDATRYFIYFSFDVMADVGLSKDFRM
LESTSYHPAIEGVHRTMSFIGILSTVPWLIYMIGSIPGLTTFNRFSMWCRDEVDEKREAFAMNKEKEPQDVMSWLLGAMN
ENDPSAPPSDNPYIDHIIHETMRLRPTVPGGMPRTVPPQGLFIDGQFIPGGTIAAVPTYTIQHDERYWEDPLAFKPERWE
GWPWTCPGRNLAMMELRMALSRIALQFDVGDTVDNVSMRLPELKLVFKPRH*

>1446562|jgi|CYP58M5|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MENEVPRLWLALAGLGLYLGVRTIYRLYFHPLSHIPGPKLTACSHLYEFYYNIIRPGKFLFEMERMHKQYGPIVRINPRE
VHISDPDFYDEIYASSSRKRDKDPKYVPTYALPGCMVAAVGHEQHRFRRGILKDFFSRRSVAELSDSVNERVQKLMRRLE
ADRLNGNIVSLDDAFSALTSDIITAYCCGKDWDFVEDENFRSDIRNAAENAIEFTHISRFVPWLVYAMSALSPRTMAWIM
PGKAKLFEFLESFLEYGQMESHVDKRKTMVATLADPSIPEKERDYYRIRDETFGLLAAGTETTGRVSTIAAFYLASDSRV
REKLQAELKQAMPTLDARPTWVELEQLPYLNAFINESLRLGYGITARLPRVAPNEALRYKGYVIPPGTPVSSSTYFIHGN
ASIFPEPDTFRPERWIEAAERGENLKKYLVTFNRGSRGCIGINLAYLELFLTLAHFARRFNLELHDTVLDDIRIVRDMTM
GLTRRGGIKVYAKLLPVDE*

>1462563|jgi|CYP5386A1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MALFDIEKWSINSATIIIGLLTLSFALRYLSGRKLHPSEPTVVQPWIPIIGHLLGMVVHGGRYIKRLGLCYPQEPILTLP
VPGSRIYVVTEPSLAASVQRNTKSLSMTPLLPEITKRVLGLDKKTYHVISQNLDPEPGAPRGFFADIHDWVYTSFGPGEY
VNTLSCEAAQELCFQLRATVDATGPVPSPVDLLAWVRHMVTVGTAKAFFGPHNPIAEEPDLAQDFWAFDHGLGALLIGIF
PSLTAPEAYAGRERLTAAFRKYFEAGYLDEATSIVRGRARIEKNYGMSTDMTARSALSFLFAGIVNATTTTFWVALRIFA
NEALLARVRQEIRQALEASSQRSGPGMLSIAAVKENCTMLFAVYRECLRVGSENFSVRMIKEDTMLADRYFLRKGAVVQI
SGGAIHGRSTIWGQDVDEFNPGRFLKEKGKGDGFHPAAFRGFGGGKTLCPGREFATNEILAFAAMIIHGVDWVAPDGGTV
SVPEKNDRVLPVHILEPATAPEGIVRPRAEEMEMLSRLKVVM*

>1469582|jgi|CYP526N1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MKLPGFDFDVSPLLALGLGLGLIVCIGYSLYLAALPKPIPGIPYNKESANSIWGDIPLLSEARYRRRWAWAQPREHGAPL
SQIFIFPFRAPTVVVSDYREVVDILARRAREFDRGTRTKECIGFVAPAFHFTMETSDPRFKSNKKLIRDLMTPKFLNNVS
APRIYDKALALVTLWKIKASKAHQRPFFATEDLYSATLDMICVAAFGMENAKSALQQAIAHAQSTNPTIPEHEEAPADFP
VPPTIPELDALFDGPKMVSIAQSSPFPGISQFLALLTPEHARAHWNRKTLIMGQIDKSLQRLIQSGSDGCESALDQLLLQ
EMNAAKKADRLPDYYSPAIRDEILGYLVAGHDTSAATLSWWVKYMAAYQPVQARLRDALRQAHFEAYRDSRLPTMKEICD
SPVPYLDAVIEETLRYSAVAALIVRTSACDTQILGYHIPKGTDVLLALAGPSITEPALPVREAARSPESQESKDQVPYWG
DDVSEYKPERWLKQVKNAEGEDEEVFDPYAGPTLAFSAGPRQCFGKRLAYMKLRTVMTLLMWNFEFQPLHEELNTPELIE
ILVNLPEDCYVKLAKA*

>1470969|jgi|CYP574C1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MRYELLCLASASGGILSHLLYFIHGNKSFQAPQIVIFYLIALCFLYARSIHLLGALHGFLTASLIALCYSLALFTSIVVY
RIFFHRLRRFPGPFFAKVTKFYSPWLARDGKLHEKYLKFFEQYGDIVRVAPNELIVLSTDAQQKLHKASSRCSKQGTVYE
VVHYEGYSNLETAVDRDEHRVKRQVWDRAFNAKALEAYESYAREVVYEWLGKMASLQGQPVNTSLYSLLIPFENMGRMGF
SDNFGSIQKGKEDPMLHYLEVTLGSVGKLGAMYWPIALLNAIGGSSEHVAFQRLACNMVDKREKEADEEKEDIMKYLLQD
HHAKEPKAMRDHMMVYAEAQALMVAGTDTIGAALSFAFYYIARDPAIQKKLYAELEPLYGRTISGEFTNHDLSDAEAPYL
NAIINETMRMHNPTCSNGPRLTPPEGLEVEGVFIPGNVEVYVPIHAMHRSAKFFREPNTFIPERWTTRPDLMIDKRAYHP
FLLGPHTCVGRRIALNVIRFVIAYTVWYYEFRFAPGEDGVAIDRDSVNGQILKAGKLECVFTQRA*

>1471078|jgi|CYP613K1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MLWSIVNGLDRTQATAITGVIALLLLFIVRVIFKDALKQVSITPRGIKPFPGPSFRFPNGQGTEKFFNGRDAAKRWKARY
GSIYSIWSGHKREVVITKPEHVQAFYKDSHNHIKASDNNSGWLFGELLGSCVGVVSQKRWVRVRTPFEHHFTRPAASQRC
SLFIHEARSFLQSLNKKEESIVNVTDDLKYCPFFMVASIFFGPLASGQRDEMYKIGPLREELFRHAFSGGVNRYSFAKYL
PGSALPKLREFQSLWEGFVKKACSEAHSSSGSAIVSLWEAVEHGEISKDELLQTLDESLFANLDVTAHALSWCVIRVAHH
TSIQNGIRQELRENHRSEQEYEDYLRRDNTLLAACVLEASRLHPILPFSNPEAAPTKKFVGGHKIPANTDVIVDAYAINV
DNPYWENSTEFNPRRHLGQKDQARRYNMWRFGFGPRQCLGKNVADIILRVIVAEILRCYRIDIVGKEGIDGIGLQADSWI
GLPDCKARLTPLVVEPGSNE*

>1473415|jgi|CYP539K1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MWFPSLYPSSYTLIVGISLVFLLTLLVKLRHLASDFKIKSLGGVRAPVLAGNLLSGAKRVLITRDPEQIKAILATNFSSF
GHGPMWHRLWRPFLGDGIFGVDGQLWHDSRAMIRPMFARDRLRNLAIFDDCTGKLLRKIPSAGAAVDLKELFYRWALDTT
TEFLLGENVNSLDFPDHDVFNAMHVAQRIQMYIFVLNPIAPLIPKGDYHRAIRKIEDFIESAIARALAIPQAQLEELSKS
DMEFSFLHSIARYTRDPKVIRDQIMSVLLAGRDTTAATLSWAMYELSHYPDVWAKLRSKVLAALGSQGTPTYETLKDLKY
VKNILNETLRLHPAAPLNMRQALETTTIPGRPGEADVVLLKGDSVTINTLGMHMCAELYPPVSETFVDPRIFSPERWEHW
TPKPWTYLPFSGGPRICAGQNFALTETAFCLVRLAQRFESIEYRGDWAAQKLQADIIGTPALGIPMVLYEPGEKRGVPLK
DCI*

>1473600|jgi|CYP5389A1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MALLNRHSSLYVGLFLLLAFAIWQCLHTTRHDSKEPPIVSPSIPLIGHFLGFYKHGVSYLDHLRHRTSWPAYTLSVIGHK
TYVVTSPGLSHAALKSRAMSMDPLIANVSSNMLGLSKEAGHYFGLDHAGAYRDTLAIRDRREEFSHSLAPGPGATLPAQN
CSDVVAEAVNAFDAEWVTRDFFIWVRDVITLGTANGLYGSKSPMAVDNSLIQDVWTFDESQLRLSWGILPRLVAPTGVRA
VSRISQGFQDFIRNGSIELASEGVKSGIATALNMNVSIEDCSRIEVFKISVATVNTVPTTVAMMQNILAKPALLQTLREQ
LAAVLTVHETAAGRTAELDIGLVEAQCPLLHACYQEALRIGSTPTCNRVVLEDVVLTEPNTGRQVLFKKGWRVCIPTFLL
HNRDSFWGGDAETFGPEKFLPGGVGTDNHGKVRTQGFVPYGGGAHLCPGRHLAKKEILAASALMIMALDFDAENGFATQN
YASSKGAKKPVGLNDVQIRRRSGWENVQWSVKV*

>16230|jgi|CYP655C3|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MLLYEYVNNLGGSHVATLAALGVSVLVVLLARLFRESTKGSEAGCKPVTRVRQWEPFLGLDMVYSQLQALKRNYYLEWLR
NLHKGKPKTFAITFMGVKQICTTEGENLKAIQATNFKDFGLEPMRRKTKGAMPFADKGISTTDGKNWEFARFLVKPFFYR
EVYASIDRIDPYVRKFFTLLPEEDGVTFDIQPLIQRWFLDLTSEFIFGKTMDSMTYPDRADITWTMLDVLRGGRLRIQMY
KFLWAFNWNWWLKAVYEVHDFVNVHIRSTYKELEQREQRIKDGLPVGPERVDLLWYMATHVRDEEELRSQLCLVFVPNND
TTSIFISNCIWHLARDREAWQKLRKEVLDYGDQPITFESLRSMPYLNGVLNETHRLTPNNIVQVRACLNDSVLPLGGGPD
GKSPLYVNKGDLVSVTKTVMYRDPDVWGPDVDVFRPERFFGVRGNWNFLPFGGGPRRCPAQMMVQTESAYMLFQLAKRYS
RLECRDPEPYTAVMRIGPSNVNGVKIAFYE*

>65365|jgi|CYP584D5|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MSPLLESQYSLLYFFLPLLPISYILRSIYSQVQQYRISRTRGCKEAQSKAPVKDPFIGLDFIWDCLFAKPVEKYLDSTYR
TFQRLGSTYVCRRWTWEAVYTCDSRNIKHVLASGFEDFKLPRLRVNAMTGMLGSGIFTLNGKSWSHARGVLRPCFAKQNK
ESIVSMLETHFQALLGRIPADGTSAVVDLQPLFFWLTMDFATHFLMGRSTHVLHRASSHAKEKQFLDDYLTCSTEIVRKM
QLGPLQMFSVNFAAMRARSRVFRYIDDFISASLGYERREEDGSMKTGCNVLQGLAAVTTDRKQLRDQILHILVASRDTTA
CLLSNLFFVLARKPHIYEKLRREVISIAGVEPVTSTQLNNMEYLKWCVQESLRLHPVIPTNAREASRDTVLPYGGGEDGN
SPLFIKKGNLVMYNIYAMHRDAHVFGPDPEEFVPERWNGLRPGWGYLPFNGGPRICIGQKFALLETHYLVSRMVQTFETM
SASDDAEWVELYALATTCKDGVNVRLTRS*

>1335849|jgi|CYP52X4|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MSGHDPTGIAEVIHGVNASNKKVFPIYVQANFEREAKKYGRPVGTVRVKAPFFRNTLVTTDPQNIQTMLALKFKDFGLGV
NRTENFEPLLGHGIFATNGKQWEYSRALLRPQFIRGQVSDLNLEEGHVKALMTVLNRHVGPNGWTDLVDLQPLFFRLTLD
SATEFLFGESVNSQLEAGESGTEKDGSFANAFDRAQYTLSIGSRLGPNYWIVHLPEFHRMVKQVHEFVDYFVQKALHQGA
SEKPMNEDKYVFLNALAKETQDPEQLRSQLLNILLAGRDTTASTLGWFFFTMADPRYASVFRKLRAVILDEFGTYSNPKE
ITFEKMKGCQYLQWCLNECLRLYPAVPMNVRTAQVDTTLPTGGGLDGQSPIFVPKGQDVGYSVHLMHRRKDIWGPDAEIF
KPERWLTRRPGWDYLPFNGGPRICIGQQFALTEVGYVVIRMMQRIDSIDGSQVGPVKHGLTLTNCPGEGVKVRLHFAE*

>1365821|jgi|CYP584S1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MYSYILAISILAYWIVKRVVASTEERIVARKNACQPCARLPQRERVIGFSLFKQDAAAAREGKSLQTAQDRFRSLGDTFS
GVILGQFFISTIDPENAKALLSSQFGHFDSGKKALFGPFLGHSMLTTDGAPWKHSRSLVRPHLGRNQAEDLSKLEDCVQS
FFACLPKNGSTVDLQHLFFRLTFDNVIQLLLGETVSTLDCQPGSELHMVIEAFESIGDLVNRRATLGPLLRFYRDSEMTA
ACRILHDFVDRIVEKAFRKRNTSKGSTPPGSFLENILDSTDDLVKIRFEVLGLLLAGRDTTAGTLSSLFYILARRPDIWA
KLQTEIKRLGGRKPTYNDIKGLKYLRQLIDETLRLYPPVPVLFRAANQTTILPRGGGVDSQSPVLVPKGTVISCSTFSLQ
RRQDVYGLDAEEFRPERWEILNAHWNFLPFSAGPKVCLGQTYAYAQMAYIVSRIVQHFERIEERSSEPWVEKWSIILMNA
SGTKVGMIPRTGTV*

>1403695|jgi|CYP538A4|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MSVIVGELAALLGCALTGTYILWSALERIALVATDQPLTSFSRYSSLGLALILLPFFNALRKRHHYLNGTRLNGCQPAAV
YPHRDPILGIDFLRTSVKALREYRLLELWDAVLAAHRGTCWYNAVGRWMLLTSEPDNIKAILSTHFDDWPMKSLRQKVSV
LTLGPYAIFSVNGPEWHHARAMIRPSFVRNQIADLECTDRHVDNFLARLPRDGAAFDVDRLLYHFTMDVSTDFMFGYSTS
LLTSPTKEALEFMTAFDYILTTSTNRARLGWLVLLRPDRQFDRYVKTTQRFVDHHVSRALAQEKEKERPYIFMNEIIKSG
ASHREVRDQLFSLILGGRDTSASTMASLFYVLARRPDVLRKLREEIALLDGRKPTWEELKNLKYLNMVLKETLRLYAPVA
SNMRTAERDTILPRGGGPDGQSPLFVPKGTDCRYSTYTLHRRKDLWGADADDFRPERWETHRPGWEYIPFSGGPRICIGQ
QFALTQMLYLVARVLQTFKDIQPGNDEPMRHQVGSTLSMVGGCWIRLIPVEAEEV*

>1335454|jgi|CYP5387A1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MTGPEGVRAKGRIPKYRTSCDNCQTAKVKCGHEKPSCRRCSVHRVDCVYSLSRRMGRPRAKKVAADASNHGPSAATSEQS
GNANPKAVTPEDAAEGARPPQTLAAEGCGAEAEPAEPLVSEAGQIPENWAPLFGDLGQLNATEAMDGLEGSEQQEDDPME
FLSTESPMELGDMAFDGIPSFLNSLSGSLEPQATTSTVPAELFGSHEMLSFALPDASVKGDHASARPSTHQQHQASSSSE
SCTCGHSAKPSRRDSASAPSARDESNQLPNLASILFSEASYSPQEVSSCSPSNASQPSDTSPSVQTSCDGHSSEPSWRRT
QVVLRRGNCSCMATITERIASLKAEQQSSCFMPMDCVLMLEQEVQESLSLLHECRNCRLDSVVHLLALVSVRMMLNILQK
TARSEFVSRPTSPSGGSYETIALCIGGYRVPGRVRCRFLRKALQARFHKLAALVEERESLVTGKKQDSFSKSASLLLVAD
GVICDQFELIWVAPTVTSDHTKPMTPVYKSTSKPQDDNRQRVNSGDVAMEPSHLHNTTATTTLGYKLQSALDRPFATAAV
TILISIVSIAFLDWLNYQHQRSRLGKIPIVGDAPYLWKRLRWTENESNLKGVFQRGYDTFSKKLKPWAYWGQHDDFILVL
PPGTCDEVKNADPSQMSFLQAVEDSYHFRLHTNILGRAHVDAVRQSVNKNMNQEPFAGFLQIWHLVHLVAASFLIGPHFA
RDPDYMGYIEDYCLNVPHFVHLYFWVPAPLRKLFWYLSPWGFRVRRVIKNLKSFIIPELKRRIADWRANDRNQSPDQYTL
LRAMLDLKEERGQFARDATAMTRQEEERQINIFSDEVMFTAFDSAGPVACLVTQLLFESIQDPSLTEALRAEISKALADN
GGEWSVQMMSSLPRLESFTRETLRVDGPTLFSVTRSILKPFQLKSGLVLRPGNIISAPSWMIHNDEDNYPNAKQFNPYRF
YDETINTATVKATTASNTFLAYGYGSQMCPGRYLGVRMTQIIFAKLLMRYDATFEGGKRTKPENIVMPGQVLPSYYSKIV
LKLREGGEN*

>1326255|jgi|CYP505P1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MKAAKDSNLVEIPKVKGYPVVGILPHIDLASPLFSLIELLKPYGPIVQFSIGGELNIFVHSVELMNELCDESRFHKDIKQ
ELEKLRHIVHDGLFTARNGEPNWAIARGILTPIFGTIKIREMFPGMRDVAEQLCLKWARYGPEYVIDVTSDFTRLTLDTL
ALCTMGYRFNSFHNGTVMHPFVISMIRALKESTVQAAMPGAINSLRKRSWRRFEKDTAYMRQLCREMIQKRKAEANPDSR
DLLGALLQGRDPKSGEGLSEESIIDNMITFLIAGHETTSGLLSFAFYYMLAHPETMEKARQEVDQVTQGSPVTVEHLSRL
PYLNAVLKETLRLQPTAPGFFLVSDEDQIIGGKYFIPAKVPIGILLHILHQDKAVYGEDAAEFKPERMLDENFNKLPPNC
WKPFGNGMRGCIGRAFATQEALLITSMLLQNFTFELADPTYRLKVKETLTVKPDDDFRMKAKLRRGGTATDFQRELHSVG

STHDVRPSLTPSTNTLSQAGEGNKKPLTIFFGSNSGTCEALAYRLASDATLHGYYARTIAPLNAACGNLPKSEPVLILAA
SYDGLPSDNAEEFFDWLNKAEKDSLNGVSYAVFGCGHRDWVATFQRIPILIDDLLQRAGAERFAARGLADSAVMDLFVEL
EKWTADSVWPAITQTDGGGGERDDDGEGRLITSLLKVDFSQPRQLKQYSQLVEASVTESRTLTTASAIGKKVHLDIQLPS
DQSYSPGDHLLVLPVNPMQTVKRVLSRFHLTWDTIVRASGNDSVRIPADTSMTAYELLSSYFELSQPATPRDIRVLAAAA
EDEATKQLLTDLATSSYVEGIQEKRTSLLDLLERFPEIPMALGTYLTLLPSLRLRTYSISSSPSWNPGHATLTLSVLEEP
ATADCGSHFLGVASNHLAGLSRGDLIHVATRPVKGIFRMPTDLSKVPIIMIAAGSGLAPFRGFIQERAIQQRNGTELAPA
ALFFGCRSSDDDLYRSELDEFESAGVVRVFRAYSREDVGSRPNTRKGYVQDSMTAEKDAFAQLWNAGAKIYVCGSVRMAS
QVKDVVTKLVYAAETLGASKQFTPQEWFKRFEKTRYAAEIFT*

>1340110|jgi|CYP505A25|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MAETVPIPEPPGLPLLGNLGEFSSNPISDIIRLADQYAGEIYRLHLGTRPAVFVSTQALVNECCDEKRFQKSLSSVLRIV
REGVHDGLFTAHSDEPNWGKAHRILTPAFGPLPIRDMFDEMHDISSQLALKMARHGPHEPIAVSDEFTKLALDTIALCSM
NYRFNSYYQEKMHPFVQAMSDFLAECSRRNRRPGFAPNFLYRAANEKFFNDIAIMRDTANAVVEARKKNPSDRKDLLGAM
LNAVDPLTGEKLSDANITDQLITFLIAGHETTSGMMSFAFYHLLKNPDAYRKVQEEVDQVLGRGPAKVDHVSKLTYIQAV
LRETLRVTAAIPAFSVEALEDTIIGGKYLVHKGEPISLVLAKSHLDPLVYGEDANEFKPERMLDAEFARLNRDFPNCWKP
FGNGKRGCIGRGFAWNEAVIAMAILFQNFNFTLDDPNYQLEVAASLTIKPKDFYMRAQLRHGMTATELEQRLVGKGVPEE
HRADKKAAAEGSSKGSQKPLAVYYGSNSGTCEALAQRVATDANSHGFKVTDLAPLDTAHQNLPKDRPVVIVTASYEGLPP
SNATHFVNWIENLKGNELEGVSYAVFGCGHHDWVQTFHRIPKLVDSTLEQHGATRLIPLAATDAADSDMFSDFETWEDEA
LWPALKEKYGAAAGSSGGSAGGFIVDVTLPRKSTLRQDVEEAFVTDARSLTTSGPAKRHIEIRLPTGMTYRSGDYLAVLP
FNPPDTVARVFRRFQLSWDAVLTIHSDQPTTLPTETPISANDVLRAYVELSQPATKRNISVLAESTEDEQLKAQLEKLAG
DDYQQEIGLKRVSIIDLLERFPSLNLPLDSYLAMLPPMRVRQYSISSSPLADPAKLTLTYSVLEQPALSGQGSHFGVATH
FLASLSPGDKLHVAVRQSKAFHLPSDAENTPLIFIGTGSGVAPFRGFVQERAAMIAAGRKIAPALLFYGCRSPGVDDLYA
EEFERWEKLGAVEMRRAYSRAPEKSLGCKYVQHRMSHDREDVYRLWDQGAKVLVCGSRDVGKAVEAVCVQLVQERAAAKG
TEVTEEKARAWWDKQRNERYVTDVFD*

>112279|jgi|CYP5388A1|[Trichoderma pleuroti TPhu1]Triple1
MESLPTLAWVSPALTAVAVILVALFSGYRKSPKAFNVPTLGEDSPMRYVQEADILLREGYEKFKNTIFQVLTPDGPRLFL
PRKFANELKPFKRHEASGMKALADRHLGHYTTIDHESDVMLGAIKIDLNRNLGLFVGDVEQEVSHCFKSNFPSCEEWTPV
DLHETLLRVVAQASARIFVGYPMCRNDEWLECSTKFALDVMTGGEKLKLWHPWLRPFAQYWIPEMRQIRGDHQRALDLLM
PELEKRATEARKPDAPPRQDMIAWMQQRAQKLGDKSFDYKELANLQMLTATAAIHTTRLAIIHALYRHCSPP*

>114289|jgi|CYP65BQ2|[Trichoderma pleuroti TPhu1]Triple1
MAILLENLAAAISLKSVVLLPLLAVISGLLYIAFTAIYNLFFHPLRKFPGPKLWALQYGFYARLELSGEGHRRMLQMHQK
YGPIVRVAPDHLAICHPDGMNELSGHRKPGQLENGKEEARTNSNPHTIIGSNRQDHTRMRKSMANGFSQQAMLDQQPLIA
SYVDKLFENFQGFAAKGEAFDAVSWYNYTTFDVVGDLAFGEPFGCLQESTFHPWVELVFKSMKNMAFDSSFRRMPFLYNL
LIMLTPKSVTTKFKEHKELSEQKVRKRLNTETDRKDFMTCMTSRKGKDELSFTELTANASLLIIAGSETTATALSAATYY
LGLHPEPLKKLCDEVRSAFKSEDEIDLLSVGRLDYMLAVLNEAMRLHSPLPATAPRTINEMGDTIAGQFIPPGTHVDMWY
WTLFHHPEFWTQAEEFIPERWLGDSRFESDKRQIFTPFSVGPRVCIGKNLAYAEMRLIMARLVWNYDIELLEESVGWDHR
CKVYLIYEKGPLYIRLKPRK*

>114402|jgi|CYP617A8|[Trichoderma pleuroti TPhu1]Triple1
MALKLMLATALVGGAGWTYLGQDAWSRASFVQAAAVLLLAQVLVVHGVWSMFVYPFWFSPLRHLPTAPGGHWLLGHGKKI
LAAKPAVLFREWALTMPNDGLIRYYWLLNHERLLITSPRALAEVLVTNNYAFQKPENVRSMLGRILGYGVLLAEGDEHKR
QRRNLMPAFAFRHIKDLYPVFWDKAREVVQAMTTECGKLGEAEFEAGEWASRVTLDIIGVAGLGRDFHAIQDDNSDIVQT
YKFLFKPRPPAKLLVFLATLVPTRWLQRLPLERNRAIDEAAQTIKSVCRDLIREKREKMMTNKGRTDVDILSVAMESGQF
TDENLVDQLMTFLAAGHETTSTALTWAIYELSRSPAMQTRLRNEIREKLPCTDDAEAKITSLDIDHMPYLNAVCNEVLRF
FSPVPLTIREAAYDTTIQGVPVKKGTRLTISPFAVNVDPRLWGSDASQFNPDRWVAAEGAADEGNKRAASGGAESNYAFL
SFLHGPRSCIGMGFAKGEFACLLAAWIGRFEFELVNKEEADLDTIDIRGGVTAKPANGLYVKAKVVPGY*

>114626|jgi|CYP602B6|[Trichoderma pleuroti TPhu1]Triple1
MYRQSNSTPFPSAVEAPALFASWTPRTSYYVAVLVMLLVAWLLRPKSQCNKLSVPFYGASKLKWIFDAESQIVASYSKFR
DQVYQIKATEGIQAMIPPRFIAELKGLPEDILSATEAVADALQTKYTKFTPGHNGDMLSLLVRTRLTQNLVELIPQLKIE
LEHYIGTEFPSCEDWTSVKWQPFALRGIARLSGHAFVGPFLNRDEQWMEVSINFAINVFMSVIKLQFFPEWARPVAQYAV
SDLRKIRRDIDAAKSMLKPLLEERIRDMEISTFYEPPNDLMQWLIEALPEEEKADVQTHAELQLILAAASIHTTNNLLFE
CMADLASHPEVQAELREEAYQILEVENGWARKESMAKLKKLDSFMREVQRLRGNITSFIRKVLKPIDLSDGTHLPAGTRV
LAPQAGISVDGQFFHNPEEFDALRFYHMRQESAEASNRWQFTSLSDTNLNFGAGKHACPGRFFAGNEIKLILAFFLINYD
VRLKKGDKRPKPMAMVMTKGPDANAEFEFRRRQLAN*

>114714|jgi|CYP526M2|[Trichoderma pleuroti TPhu1]Triple1
MAEASRGGLLAFWRISTPLPIALVIICVFLYWLYIRHFPKPIPGNIPYNKLSASRLLGDTPDIRRYQKKGDFRHFFRDHN
TKLDTSISQVFMFPYPKPFVLITDFREGYDILTKRHREFDRSKRNADIFGTIGSNFHLAMQTRDPRFKGNKELVRDLMTP
AFLNEVSAVHIYDIATVLVDMWAHKAAETSGRPFSAHEDIHYVALDIILAAAFGIPLEQSTTQKQYEFLQLQPSKIRSAN
SIDDPVTYSRIPIPESRMALIKVTGSVAVAYKSPFPRLHHWILRNTIWRRDFAQKEAFITDEIKKGVERLTSENIQENHM
RCAMDMMLLREFGYAKKEGRKPNINAPRMRDELFGYVATGHDTSSTTLSWITKFLADNQSSQAKLRRQLRTAFAEAHAEK
RQPTVMEIIEKPAPFFDAFLEECLRMTKTIPTILREALTDVTILGHPVPKGTGIMIYNHGPGGQLESGFNIPEAVRSDTS
QGSKDRVGEWNADDISCFRPERWLQRTTGVKSDGEGDTEFEGIEYNINSGPFLTFGGGPRGCFGKKLAYMELRIVLAMLV
WNFDFQPCPAELSSYEGIDTATVVPKQCYVRLKQLL*

>114912|jgi|CYP5386A1|[Trichoderma pleuroti TPhu1]Triple1
MVTVGTGKFLFGPNNPISEEPDLEHDFWAFDHGLGGLLIGILPSLTAPKAYKGRERLTAVFRKYLEAGHLDSASLIVKGR
ARIEKEYGMDIDMTARPALSFLFAGIVNATTTTFWVVLRIFADQQLLGNVRQEIRQALELSSQRSGPDSLIIGVVKETCK
TLFAVYRESLRVGSENFSVRLIKEDTMLADRYFLKKGAVVQISGGAIHARSTIWGQDVDEFNPGRFLKEKGKSDGFHPAA
FRGFGGGKTLCPGRDFATNEILLFAAMIIHTVDLVAPGGGTIAVPEKNDQIMPVHILEPVTNPRVIIKPRVDDAGILTQV
CFQVIFLLLNGVLGFSWGGRRGGGRLNYSADLPPSGGHSTSTSRFDSSQLPAMYATALSELQELESEPLCHRTAARLLIN
NCQLLDGRNDATMLTDSGRAARDFVDSYAASLAICDLERGSFTIPSSCFKFQESILARMSPPTRPQLHVTTSEIDGCLEG
LAQSDSAWNTWVSYRHKTLRFCEAARADNEKDQNIRLHQRLTSILAKLTTQLEEEMETRLRSMNKMFEEAGATVESLKPR
MNHLKNSITEIDALFRDHIVENIQQSADFVTHGLGDARQLQTLLSMLVDVTQNQSHDLTTSHESALQEATLRITGEVDVI

LAALAAAVASSTSLHREIEISQSAAAAVALRQESIETGMKKLEGLADSLLAQHKGHQEQLVSAQQTASDLIDILDSASAS
AVTLRGSIHGGFGWGSWWPHVFCPLTSLVVGSYGLPPSATRNIMLIGLGEVIGFGISIVKHYGSDIHTAFSSHGKVPLRA
NSTPSFDEVIYSNNGVSRDDLYQFKLGEATQA*

>115023|jgi|CYP620B11|[Trichoderma pleuroti TPhu1]Triple1
MSNLVIAQGIIVLIGVLIYSLFFRKKQDGLLPLPPGPKPVPILGNVRDGPPEGMPHFLHWLTFKDKYGPISSITVLGQTV
VFLHDKDAAVELLEKKTSLKTSGRPSFIFSQMSGCGKQMPFLQYDDELRLYRKLVHQQFGTKLLASQHSHVQDVEVKRFL
LRVLNELAIYSTTSERMANSLMPNPATLMNLQLTTCQYREAAAIILKVTYGYSVELYKPDPLVKLIEQVTTETSEALTPL
RWAVDTFPALQRVPDWFPGTGFKRIARRYKVNAEAAASIPLDFVKQQMAMGTHQESFCSKLIDTYKNGDKEPGQNIEEAI
KWTSAVLFSGGADTTVATIMAFVLAMILHPEVQQKGQEELDRVVGPHRLPTKDDQENLPYINAIVKESLRYYPVAPLAAP
HRVTEEIVYRGYRLPKDTYIMPTTWWYLHDPKVYPEPDKFIPERFLEPRNEPDPDAVFGHGRRVCAGRYVAQESLYLTIS
QTLATFNIGKAMKDGKPVEVECKHTTGIVDHPEEFPYSIVPRSEKHAEMIRRVEVDHPWEGSSTDAIRGNATFDKFKAIC
EAES*

>115133|jgi|CYP5390A1|[Trichoderma pleuroti TPhu1]Triple1
MGVQSLLALAVMVGVTSYLKLHGASYTTILLGLLLSTVTQLAISLVFSSLIYRWFLSPTKSLPHPRDTPFVLGNLIPFLS
EPWGFPLVRWQRTVPTTTSGFYRVFLGPFDYLIPKSSQAVTTVMTQPYLFHKPAAVRDGLVESLGVGLVAAEGSVHKRQK
KLLTPIFGMSRNRRLVPQMWAKALILADKMQELVTKSDGNSEILYMHPLTMAATLDVIGVTTLGVDFDSVTRPDQPILKA
YQRVFPSFENQSAVEKFFDILSAIIASGLEDESEILSHILTILAAGHESTAITLAWAIFKLAQHPTVQDRLRAELLAATR
NMKEEGMTLDEINSLTYLRCFLMEVFRLYPAFPAMMREAGNGTLVGDLHIPKGKQIMVSPYAVNRSQELWGDDAEEFRVE
RWEESYSGGAKSSHAFLTFSSGPRICIGKDFATLSLKVFLTALVSRFRFEEAIPGWHPIIQKGTSLKPQGLKVKVTLL*

>115134|jgi|CYP5389A1|[Trichoderma pleuroti TPhu1]Triple1
MDIHTSSSSLAFDNFAGEVTRHSSVYVGLGFCALLALWHYFDVSGHDPREPPIVKPSIPLIGHFIGFYRYGVSYMDLMRH
HTSWPAYTLSVMGHKTYVVTTPGLSHAALKSKSMSMEPLIAEVAPKILGLSKDAGHHFGIDHTGFYNGSPALRERREEFS
QALAPGPGANLPGQICSDVVADAVNEFGAEWATRDLYQWLRDVITLGTANGLYGPKSPVALDKSIIEDIWTFDENQLRLS
WGFLPNLIAPTGVRTLNKISKAFQEFFQSGNASLASDAVKLGVATARRMDVSIEDYSRIEVFNVSVATVNTVPTVVAMIQ
NILANSNLLHALRKELESVLIIEQTPNGRQAELNIGHAEIECPLLYACYQEALRIGSTPTCNRSVLEDVVLTDPDTGREV
LFKKGWRVSIPTFLLHNGDTFWGGDAETFGPEKFLPGGIATDSKGKIKTQGFVPYGGGAHLCPGRHLAKMEILASSALVV
MALDCEAENGFVTQNYSLNSGAKKPIGLDNVKIRRRMGWEDIEWKVKI*

>115182|jgi|CYP5391A1|[Trichoderma pleuroti TPhu1]Triple1
MEMRIDRLDYPIIHELFDILTTSAGYLLPGKVLVDYIPILERLPEFLQPWIWAAKSLVRREDALHTGFLAVLKKQIEAGA
ESYCFGIDILKLQKKNGLSDKLTVDILKAIIVVGSETTSSMMQSFIKVLAMNPEAQKKAQEELDRVVGHSRLPTWEDSPN
LPYIRALIKELHRFAPLFYVGLPHASTEEITYKGLTIPKTILMPNAWALSRDPERYQDPDLFEPERFLGDDLDAFSSAKQ
SDFHKRDHINYEGFVKKPKAFRVSITPRSDEAVKVLLQSAEDAVTELPDADSVEMSI*

>115275|jgi|CYP541A2|[Trichoderma pleuroti TPhu1]Triple1
MTTPIPKPPGVPLLGNIFDVKPSNTWDSLRKLSEKYGEIFQIKVLGQTIVFVASVALAEELCDQKRFRKFVGGPVVEIRA
AVHDALFVAYDDEASWGIAHRIIFPTLSPNAVRAHFGEMRDLATELLNNWRGLGEQNKISPVEQLNRLNLESNTYIFFGK
RLNGLTGPPHPMLQAMEDSTSEAMKRPTRPGLFNWLLYGRKFKSSIKTMRDYAADLVKYRQENPTDRQDVLAAMMNTPDP
ETGKTLTDSQVIDEVVSMPIGSSTAPCLLAYAIYILHKNPEVIVKAREELDRVIGNGEFELEHLEQLVYVQGIMRESLRL
SSAAPGFNIEPRPTEGDKSPVLLGGGKYEVAHNQAMIIVLHGVNRDPAVFDDPLAFKPERMVGEAFDNLPAGAKKWFGNG
KRVCIGRYYALQWSLVLLAKMIKEFDFELVDPEYKLEMDGWFNIRPIDFYVKVKPRAL*

>115303|jgi|CYP584D5|[Trichoderma pleuroti TPhu1]Triple1
MPYSFILLLISYICHCIYKQTRQHQLSRSKGCKDAQSKAPVKDPFIGFDFIYDCLFAKPVEKYLDSTYKTFQQLGATYAY
KRWTWEAVYTCDSRNIKHVLASGFDDFKLPRLRVNAMMGLLGSGIFTLNGYSWSHARGVLRPCFAKQNKESVVNMLEMHF
QALLRRIPNDRAPIDLQPLFFWLTMDFATDFLMGHSTRVLDRASSHAKEKQFVDDYLTCSTEIVRKMQLGPLQMFSINFA
AMRARSRVFRYIDDFINASLDKKDESESTNMGCNVLECLSAVTTDRKQLRDQILHILVATKKPHIYDKLRGEVISIAGVE
PATDNQLNNMEYLKWCVQESLRLHPVIPTNAREASKDTVLPYGGGEDGNSPLLIKNGSLVMYNIYAMHRDARIFGPDPEE
FVPERWNGLRPGWNYLPFNGGPRICIGQKFALLETYYLVSRMVQTFETMSAADDSEWIELYALATTCKDGVKVGLTRAN*

>115383|jgi|CYP570C9|[Trichoderma pleuroti TPhu1]Triple1
MLSHTAQLAQHISSFVDHVGSFFSVISPASVAVFALVLIVAWFVSSSTWQYYRLRHFDGPLLAKISNLWLFKSVDSGRSY
LDFWEVTQKYGTIARVGLNDLVTDDPVFVKHMCNVKTEYRRSSWYDGMRFNPTSNNCLSTRDEVTHSALRSKMAAGYAGR
DVDNIVSKIDNNVREFMGLLGRYADKKAPVDLGRKVQYFTLDCISDIAYGAPFGFVETDSDVYEYIETTEKNLPMVMVVT
VFPWLLQLLNSPILKGLLPSTKGKLGFGRIMSIARDVAAERFKPDVKAERDMLGSFIRHGLTQTESESEILLQIAAGSDT
TASAIRSTMLELCANPEILRKLRQEIASANIAGDVITDSEAKALPYLQAVIKEGFRIFPPIAGLMSKEVPPQGDTWNGVF
IPGGTRVGYSIWAITRRQDVWGEDALKFRPERWLNIAPDKLKEMESTLDLIFSYGRWLCLGKSIALIELNKVFVELIRRF
DFTLCDPDKPYKIFNHGVFAQSQIWMDVTRTKKTQ*

>115518|jgi|CYP620B6|[Trichoderma pleuroti TPhu1]Triple1
MSKFILAQISIVLVFVVYRFFFRKKHDLLPLPPGPKPLPLVGNINDLPPPGVPEFEHWLTFKDKYGPVSSVTVLGQTMVI
LHDKTAVLELLEKSSLKTSGRPVFFFGAEMCGYGGFMPTMQYTDLYRQHRKFIHQQLGTKILASRFNDVQDIESKRLLLR
TMNDPKNFFEHIKTEASAIMLRITYGYVIEPLNQDPLIQLMQDVMTNLSSAFLPLYWATDFVPAIRHLPDWFPGTGFKKT
AREWKSINQAVTKTPYDFVQKQMETGIYQQTSYVSEHIKAHGHGDGTGVSEEDSSNIALTATDMYGGGADTTVSTIMAFT
LAMILFPEVQKKAQEEIDRVVGSDRLPGYEDQEDLPYTTAVAKEALRYFSIVPIGTAHRAEEEISFRGYRIPKGSFILPS
IWWFSHDPEVYQDPLVFDPERFLEPRNEPDPGDEAFGYGRRVCPGKYLAIESIYITVVRLLAAFTITKGVDENGKEIDVE
CKQTPGLISHPAKFFYGIKPRNKKYEDLIRKVEVDHPWEKSDAEFLEGDVMEAYKQEVKKKH*

>115706|jgi|CYP627A6|[Trichoderma pleuroti TPhu1]Triple1
MTEIDFTKFFNIVDGALRSSDKFYSGTNAATGESLWGTPVATEKDVDDAVAAAQKAFPPWAAKTYKQRTELLDKFHDLYL
AHAHQFIELLKAETGRGDQVTAIEVHWAANWLKYPSKYEIPEKRQEDEEKVSVTSYEPLGVAAAICPWNFPLMLAIGKIA
PALATGNCVIVKPSAGNNASIILADVDVEKTAPLIAAGLWFNAGQVCLASRRLYIHESIYKHFVDALTRATNSSAEDLVA
SVGPVQNQMQLGKLKTLFQEMRDRGYRFTTDKSGVKEGPGFFAYPTIVDNPPSDSSIIKDEQFGPIIPCIAFSDVEEAIR
LANNSESGLAASIWTNQSDVAEKIAKRLEAGNIFINGPPKPDPFVAFGGYKQSGIGAEYGLEGLLSYCQLKPSTSLFWNG

YWSSIQDSFTPTRVALAGLFAVFVIPRILGLLKALFSPLQRVPGPFLNKITSWPFTLSVLNGASHRFTDDLHKRYGPIVA
LAPDMISVSDDAEVKKIIQTQDWHKSEAVYGNFRQDPERPTLIAFTDKSSYGVRKRMISSMFGIRYIRSMQPLMLDCINV
AINKLEKQCSDKPVEIDMQNLIQSLAVDIIGITTFGQSFNVVQNGSHPLPDQIKKALKLAGLLMLVPWIRNIPFLPARDP
YVDKFTSDAVENRRAILKNSNKQDLLQKLVEAGDDSEGSIFRRSDIQDEAIILLTAGSETTANAELFTLIMLTRNKDKMA
KLVAEVDQWYPPSDLEKIVDCEYSFLGMTYLQACIDETMRLVPGQATGSPRECLQDEKILGYTIPKGTTVFPSTQNVHMD
EKVWPNAAEFLPERWLDIYASGKTNEVAFWPFSAGSRVCIGKHFALQEMHMTLVSLFRRFEFEYIPQQDETTVFRVAQQL
QAHRYMIKVKRRTF*

>116034|jgi|CYP534C4|[Trichoderma pleuroti TPhu1]Triple1
MSLIPIAVAVLVAYGIVTWAVNLRYHVNEAKRSGLPYVVTPCSPFWLPWQVSHKLWVPIIKLLPKSWWDGWLEIMIPNFA
YRTRHDWFAKLGESFIIASPGRLVMMTDNAETIRTITLKREQFPKWTAVYSILRQFGENVLTTEGSIWRMHRKVTSASFN
ERNAALVFREAIAQTQGMLRMWTGPTGTRTEPLKSLQHDTMKLALNIISYVGFGMRLLWPGEAHAAGTDPKIVKYGSHEP
SDGHKLSFTDTMEILLEYLLLLLIIPRSILRWIPSEKVKKAVLSYDEYVSYMNELLDEKIEDARKGEHTEGMDLMGQLAK
SCFGTDNKEATLTREEIIGNAFIMFAQRRMQKDIDDILGNQDPKDWDYDSLVNPMTASMIGAAMYETLRLVPAVSEIPKK
ISPDADEGFVMDGTRYVIPKDTGIALVTVSTHVNPRYWPTRPSKITPGKSNILDYDPSRWFQTKEKQDGQGSEVVAGADS
EDFGGFQGSDINAQLFKPERGSYIPFSDGARSCLGRRIAVVEIIAALAVIFRSYSIELAVDEWATPEQVDKMSRDERARV
YKTAQDKSLWTVGQASSRLTLNLHDGMHVPVRLAKRGEEKFVDWVDKE*

>116053|jgi|CYP65FW1|[Trichoderma pleuroti TPhu1]Triple1
MAWLDLSSLYSDPALGTASVSHVLISITFIGFLYWVTAAVYSVTLHPLSRFPGPWYASLSCIPFWIAAISGRQVQWMQKL
HSKYGPVVRYGPNELSYMDGSGAAWKAIHGHERGGREFPKAREWFVAPYNGVYGINSAPAHEDHRRFRQVFAPAFSERAL
KRQEPIFQKNIDQLLSTLSETSADGQSVNMVEMYQFTAFDIMGHLTFGEPLGLLQSNGYSKWVESVFDSIRVIPIAQIIQ
YYRILDVAFKLLEPQSIKQMKYNHFKHSADRVDKRLQRESDEADIWSLVLDADQDKQLTLEEMHCHGDVFMLAGSETIGT
TLSGVTYYLLKNEDKLALLLREIRTKFRSQAEISFQAAAELVYLNACIKEALRLYPPVPVGVPRVVPNHASGMKMPGGPV
PAGTRVSVHHYATYHSPDNFRDPDSFIPERWLNDPVYSGDNRECWRPFAFGPRDCLGQNMAMRETQLILARLLFKFNMEI
CDGVEGVSDWDEQNAYVLWEKKPLNCRLTLASGHMSSPEEE*

>116055|jgi|CYP526K3|[Trichoderma pleuroti TPhu1]Triple1
MAVIASSGGAWVVGIICVALYAAYRRILPKPIPDIPYNKDAAAKLFGDVPEMMGYVMRTQRIFCWLTSLTTRLQSPIVQA
FIKPGGLPWVVVTDPFESQDILLRRIKEFDRSEFFGELINGILPEQHIQFISSDPRFKNNRNLINHLMAPTFIREISAPE
VYMAASTLMKLWKIKCNMAKGRPFSAHHDVTFATLDSIFASSFGLLESETNTIQRIKALDSFEPVFPDDVDAPITFPEGY
TPEIFSAVLTLANSVTDTQLSPAPVLTSWVIRKFPYMIKAKSIKDKYIQDKVEESVRLIEKDPSIKPKSALHSVLLRERD
VATKEGRKPDYRKGAIADEFFGFMTAGHDTSATTIAWGVKMLTDNPAAQSRLRDELRSAFPAAVQEKRDLTYAELSNAQV
PYLDATVEEILRHSNTIAFVVRQAQQDTTVLGRTIPKGTNVFLMANGPGYLEPNMNLTDEARSPGARQTAKSALTRAWSD
DDIAKFIPERWLETDPDTGAEVFNTMAGPSLAFGLGLRGCFGRKLALQVLKIHFALIVWNFELLPIPEKLGGYDAVQKFA
REPTQCYIRLKEIDL*

>116084|jgi|CYP504B10|[Trichoderma pleuroti TPhu1]Triple1
MNGPKGLPLLGNIWDIRVNAAEKYRQWAKQYGEVYQIILGNIPVVVVNSASAAKSVFGSNAQTLSSRPELYTFHKVLSDT
AGTTIGTSPYSDSLKRRRKGAASALNRPSVATYVPHLEVESKDFIKGLFEYGNAGQTPVDPMPMIQRLSLSLALTLNWGT
RLKTQKDDLFGEITHVEKEISKFRSTTGNLQDYIPILRLNPINFHSSKAREMRDRRDRYLTDLNKDLNERITTGTHQPCI
QANVILDKEAKLSKDELTSISLTMLSGGLDTVTTQVAWFVALLSQHPEIQEKAIVEIRKHYGEDQPLCDENDDQKCAYVV
ALIKESLRYYIVLRLALPRASVKDLPYQGTVIPKGTMVFLNAWACNMDEKVWTDPEVFRPERWLEQPDAPLFTYGVGYRM
CAGSLLANRELYLVFIRLLNCFYIKKHDNVDCHPVTGNADPKSLVALPPRFKSYFVPRNHTALRAAVEKPS*

>116131|jgi|CYP630C2|[Trichoderma pleuroti TPhu1]Triple1
MIVYLLSVAFLLLILEPLFTYYWDSKKLRRFPNASLLSGMSDVGYILQRYRGFRSKEIHEAHLQHPVVRVGPNSLSFSTP
DAIRAIYGHNTPCLKGGTYVTGAGTHPSLLDVVDKQEHARKRRILSHAFATRNLEQWEFKVTDKVQKLVAQFDLLCHDNE
EAIVDFRMWSNLFTIEAIADIALSHHLGCLGQGSDLVTIITKDGREKGVSYIDCLHSGRRATSMLIWSTKWFSSLRFVLK
GLPGFFQAQWQKGQGFDEMVRYLVQQRLRRHENGEQLEDFVGCLFQDKHGEARNLEIAEIEAEVATLWSDTTAISLTHAM
YFLMKSPAALSRLREELRVALDGSQEVAKYATVKNLPYLHACINESLRLLPPVAFGLNRMTPPEGLTIDGSWIPGNTLVG
VPAYTAHRSPLFSNSEQYQPERWLEDDIKETQGTFIPFSTGARGCIGRNISYIEQTVLLATLVQRYDLSLADPEGNLDHE
EAFNLWPGPLPLKIRRRENC*

>116134|jgi|CYP671D2|[Trichoderma pleuroti TPhu1]Triple1
MAQPLELEGLGDALFPAVPSSWQVTVGLSLIAGVVSHHAVFRPVEIDNLLWRLLFIYIIALATITGSYIRVGGYQITAAL
LQTALVATTYHVGVFTSIFVYRAFFHPLQKFPGPFWARVSRFYAMGQMIQSRKGYEDIQKLHQKYGDIVRVGPRELSINR
PSAIRSLYGAHSQTSRPPWYSQTSRHPSKSSLINTRDSAAHKLRKKIWEKALGSRGWEALDVYESRVQAKAELLLSKIEE
TNGTPVDMTKYFMYFSFDVMADLGFSKNFNMLESTSIHPAIKGVHDTMWFIGLLTTIPWMLYMVGSTPGLNSLSRFSIWC
HEQLNEKRKALASEKEKEPQDVMSWLLKAMDNRDPAAPPSERAVQEDSRLLIIAGSDTTAGILTSAFHLLLTNPTTYERL
LAEVQQQFPGGISDWTYEKAKAIPYLDWIVYESLRLRPTAAAGMPRDLPPQGIMLDGEFIPGGAIASVPPYTIQRDPRYW
DEPLAFRPERWENCSTDSVPWIAFSRGMSSCPGKGLAMMECRMVLSRIFLQYDVTLPLGMGGDTFEEDTIDNVAMVAPAF
NIAMASDTELINSLTAEQARAILIHLSQNRSVADKVSKYAKAMRTQTSLRAICVQCNSTFDPSDSNNCFYHDGELEVYED
DDFWADHDEDCHGIIDTDEMREESPEGFKWSCCNETGEAKGCQRGRHQADPDNLVPDDDNDQGGEDPDDEEESDDEDHEH
KRGHGDESQNSGPNKRQKR*

>116389|jgi|CYP551A4|[Trichoderma pleuroti TPhu1]Triple1
MEALLSQPIATTALVATVFFSCVYNVYLVIYRLWFSPLAKFPGPKFAAASFWYEFYYDYWLDGKYLFEVEKMHKKYGPIV
RVNPDELSIHDPEFYNEIYVTESKRRTNSYDVFCKGIDFDGSHLLTADHDLHRKRRKPMEGFFSRKGVTQLQPMLAEVAL
HLESRFRELEGKNAVIRLDHAFSAFSGDIIGRICLGTGDRGSHGDRFLDAPDFASGWYNIIHAIVRSIPLFTGFPQIIQV
LSLLPESLLLWVYPKGQMFNIFRQRALNQIRLANSDEYKGGDSGISIFRHIANSDMPVEERTEERLAKEAQVLLGGGTAS
TARTIGFASYYILSRPELRSKLEAELKEPMANWPQQVPTWAELEQLPLLQGIIKESLRLSYGVMHRLPRVFPDQAVQYKD
YVIPPGIPVGMSAYLMHSDPEVYPNPGEFIPERWVHDVKPAMHRSLAMAEMSLILAVLYRSNGPKLELYKTDESDVKQAH
DFLIPLPKLSTKGVRALIR*

>116388|jgi|CYP65U9|[Trichoderma pleuroti TPhu1]Triple1
RIPTASVVSVNNTVCSAIFSAMWSYGSMKFGSTPGGGGIDPSHCEAILNPFRYKPQNIRLVCHGGHLGMARHGLGVAEHY

RPHAHNLAWRASRLPFIWSLLRGTIVHDFERLHRQYGPVIRIAPDEVTFAHEDAYKDIFQLRKDHQQFLKDLVWWKTQPG
MADSLLSAIDPKHHARIRSLLAPGFTPRALKEQEHILHFYVNLLVERIRERVNETPESGAVIDMVPWFNFTAFDIFGDLG
FGESFNCLEDSKYHPWIALLFNSVKAASYVAAARFYPIVERLLMMCIPPSLRKMQRDHYQQIVDKVDRRLNFELERPDIM
SHVIRGTERRELPEGTVHTTFMVLTTAGSETTATALSGTLNYLVNNPDKLENLVREIRGTFPQESDIDLDALRKLPYLNA
VLNEGLRLCPPIPWVLPRRVPEGGDTVCGTWLPGGTPVSIQAYTMNRDPANFHSATSFVPERWLSDSRTDQESPFFHDRL
QVVQPFSDGPRACLGQHLAWAELRLILCKLIWAFDFEVVEDRKMRWEDLRTFLLVEKKPIEVRARLRDAASVA*

>116448|jgi|CYP51F1|[Trichoderma pleuroti TPhu1]Triple1
MGILQDALSHPTAQLYFEQSVGAQVAIGVAGFLAVVVFFNVVQQLLFKNPSDPPMVFHWFPFIGSTVIYGMDPPKFFRDN
RAKYGDVFTFVLLGKKTTVAVGPAGNDFILNGKLKDVNAEEIYSVLTTPVFGRDVVYDCPNAKLMEQKKFMKIALTTEAF
KSYVPIISHEVTSYFKRDPAFKGKSGIVDIPQKMAEITIFTASHALQGSLIRSKFDESLADLYHDLDMGFTSVNFVLHWA
PLPWNRKRDHAQRTVAKIYMDTIKERRALGEDDKELDILKHLMKAVYKNGTPVPDHEIAHMMIALLMAGQHSSSSTSSWI
MLRLAQYPQVVEDLYQEQVKALGADLPPLQYEDFAKLPLNQAIVKETLRLNAPIHSIMRKVKQPMPVPGTKYVVPSDHVL
LAAPGVSGTDPTYFPNPDKWDPYRWLPGSPNAPLITRNDEEEEKIDYGYGIVSKGAASPYLPFGAGRHRCIGEHFANLQL
QTIIAETVRMFKLSNVDGSNNIVGTDYASLFSRPLEPAKIRWERRD*

>116821|jgi|CYP617AE1|[Trichoderma pleuroti TPhu1]Triple1
MLAISSSSKYGAVYDEPSSGICRLFYRTCSVVLYPWFLTPFKDLPQMNLIGRFMNRRDIEAAFVDFAKSTNQKHDGLLRS
YMPHAREMLIVLGPEGLADVLVRKPYQFEKPDHIKFDLGYLFAKGLFTAEGVEHKALRKNLAPAFAFRHIQSLNSIFWSK
SLEMVSAIEKQLGAQAANDGVVQMHDWTTRATLDIIGIAGMGFDFGSLRDPGNRVHQEYKRITSMSRRPNLFLGVARAFG
LESVFRLGLKMQPTEHRIRDAAMATVRGIAAQMVQNERVKEKQGGESFNIISVAMRSGNFSDEALVDETMTFIGAGHEST
SAAMLWGVYSMCQYPDVQKRLREEIRGSLNSEDIFGPDESLIESIADKIHRLPYLNAFVNEVLRFHPSVPVTLRRSVCDT
TVDGVFVPADTALALPIRAINRDPRLWGSGADEFNPERWLAPGMTNSGGAAINYANMTFLHGPRSCIGRDFARFELLFLM
AALAGAFQMELKEPGKELDTVLQITLLPRDGLMVRLSPLGPW*

>116992|jgi|CYP530A15|[Trichoderma pleuroti TPhu1]Triple1
MPKKNAHLQFQKWAQEYGPVYSLMLGTKVAIVLSSDVAVKDLLDKRSSIYSGRPELYMGQEIMSGGYRPLFMGNNSVWRM
DLEVRAMLMGLLESPKDFLNHIRRYTTSLTTQMAFGYRTPESDDKNLLEMFESAAILDLFPIARILPDFLVPVRRLGRKY
HEREKRLFMKHFLNAREQLSSETSKPCCAIDLLRTQKEYGFSDELGCYLSGSLLQAGSETTAIILTGFFQAMLVFPEVAK
EAQAELDRVCGDRLPDLNDYPDLPYVRACMKESLRWMPATALGVPHAVTQDDSYMGYHIPKDAGLILNVWAIHNDPKRHP
DPRRYHPARWAGDNQNSAQAAVNPDPAKRDHFVFGAGRRLCQGMHIADRSLFLAMSRTLWAFDLRRPVDRETGHEIIPDV
DNIKDGLFISPMPFSADIAPRSKSRATAVKQEWEKVAELLDDEMQWKTVPEGLKWKDYEPLDGENEDSLESLS*

>106838|jgi|CYP540B34|[Trichoderma pleuroti TPhu1]Triple1
MAVQQFYLLGEPITSAREIDISSNLDLDGLKHLVASYFAIVEPTGIEFQVQESALQDLSDIISITGPVAISIDGHAVRDP
PGPKGLPYLGNFFEIYPDHLGNHQRLFQTYGPVIKTNNMGRVVYQTNDPNIALIAFAESDFFTKKINEAHPLYALKTPTA
GVFLGDTDTEEWKIAHKFLPPALGPKAVRHYAPTMQKTVEDACKVLDVLDEQGEAWNVYQYMLKLGAQAVGKLTLGLDFQ
HFSSPDAPVHEMVHLIAEVLSLNKKVTSKGDWYSSLPFGDPKRLKDVKYRIEEMVEESIQRASRNGVEDLPLQDAAIEAS
NMVDYAIRAIDNKGEKLPKTSLVWALVVATGAGFTTTSSLLSWLIYGLVTYPGMQERLLQELVDNDFTDETQITSEYTDR
LVFQDKYIKEMQRKHNPSFQPGRTAKTDLILPGGYKIPKDAVMIPALHHIHHNPEVWSNPEKFDPDRWDTDEVKNKPKGS
YMPFAAGGRMCIGFNFALQEIKVFLPKLIYRYKFTREGDATVEYDPMFQLIRPNNLYVRAERRVKWPPKSETAAPKNATA
*
>106978|jgi|CYP538A11|[Trichoderma pleuroti TPhu1]Triple1
MSLIVSEIAAFVGAALAGTYIAWSVLERISLVAANEHLTPFASYASLGVAIVLVPVFALLRRNHHYLRGTRVNGCKLARV
YPHRDPILGLDILRMSVKALKEYKLLELWDKLLNTYNGTFWLSSTGKWMLLTSEPENLKALLSTRFDDWPMKSLRQQVGI
LTLGPHAIFAVNGPEWQHARAMIRPSFVRNQIADLECTDRHVENFLARLPRDGSKFDMDKLLYHFTMDVSTDFMFGYSTS
ILTSPTKESLDFMTAFDYILTTSTNRARLGWLALLKPDRKFDEYVKITQQFVDNHVSQALAHEKMERPYIFMNEIIKSGA
SHREVRDQLFSLILGGRDTSASTMSSLFWVLARRPDVLKKLREEIAELDGRKPTWEELKNFKYLNMVLKETLRLYAAVAS
NMRTAERDTVLPKGGGPDGQSPLFVPKGTDCRYSTYSLHRRKDYWGDDADEFRPERWETHRPGWEYTPFSGGPRTCIGQQ
FALTQMLYLITRVLQTFGDVQPGDDEPMLHQIGSTISMVNGSPSRDHAFDAPETAMSSGGPSEAQSNLPVEPSQRTKDQD
PPFQHLKMASRSPSRSRRRAPSRTPPRSNSNGSRSPPPTHRRRRHDSRSPSRSRSRSRSITPPRRNGRNRSGSRDRSRER
GRDSRSPSEGPPKRTTKIVVERLSKNVNEEHLYEIFGQFGHIKDLDMPMNRTSGINRSTAYILYEHQADAEVAISYMHEA
QIDGAIINVSIVLPRRKSPGPPLARRGANIDPRIPYQNSRGGGPPSGPLGGGGGGGGRRRFSPSSRYGPRSDVYRPNSLSP
ARSPGGVPSSRGGGGGAGGGSRYRSRSNGSYSSRSRSRSPAPRRRGGGGGGGGNGAGRYDDRETRRRSRSRSFGSDRSNS
RNRGRNYR*

>107078|jgi|CYP539K1|[Trichoderma pleuroti TPhu1]Triple1
MLLSSLQSASFAKVASVGLAFVTILTVLVWLRHLASDIKIRKLGTLFVCYLLIITTASKLYYEIGKNQYNNNLVAWCTAQ
LDNLPPGKRAFAEFSLTGSKRVLITRDPEQIKAILATNISSFGHGPMWHKLWRPFLGDGIFAVDGQLWHDSRAMIKPMFV
RDRLRNLAIFDACTSKLLSRIPSAGATVDLKDLFYRWSMDTTTEFLLWENVDSLDCPDNDVLNAMHVAQRIQMFIFVLNP
IAPLIPKGDYHRAIRRIEEFIEPAIARTLAIPQARLEELSKLDMEFSFLHSIARYTRDPKVIRDQIMSVLLAARDTTAAT
MSWAMYELSNYPKLWARLRREVLRELGSHATPTYEALKDLTFVKNILNETLRLHPAAPLNMRQVLETTTIPGRPGEPGVV
LLKGDSVTINTLGMHMFADLYPPVSDTFADPRIFSPERWEHWTPKPWTYAPFSGGPRICAGQNFALTEMAFCLVRLAQRF
ESIEYRGDWAAQRLQADIIGTPALGVHMALYEPGERPDLRFKRHAN*

>107484|jgi|CYP671C4|[Trichoderma pleuroti TPhu1]Triple1
MALAFGDAFSTALHASWELSALVSLLAGVTSHHLIFRPYEIDGYAWQILFIFIGSVFILIIAYIQLAGYGLMLGLCRASL
IATTYSAGATISILMYRAFFHPLNRFPGPFLAKISRFYAMKNAAKNIKAFEDIQSLHKEYGDIVRVGPRELSINRPSAIS
VIYEPPTRTIRSPWYAQVSNDVTKISLNSTRVLKVHKLRKKVWERGLGFRALAIYAPRIKAKVDLLLSKIAKHHGHPIDM
TEYAMFFGFDVMGDIGFSKDFHMLELESEHLAIKGVHESMLAIGVLGTVPWLLSMISKLEVTQPAQLFQTRGGAFRLYYL
AGNPNSYQRLQVAIQKEFPGGMNDWTYEKNIPYLDYVIQETLRLKPSVPGGLPRVTPQQGLMIDDDFIPGGTVIAVPTYT
WGYGYVYVDTSAVASCIYAFVTAKIPGLGVANNTNGIDGIGDGMYYFTPSGKS*

>107569|jgi|CYP6839D1|[Trichoderma pleuroti TPhu1]Triple1
MLNIPTGLICTSLLLLITYLYQKWTTARRHHVTALQHGCQAPAKYPHRDPFWGYDLLMERIKAAKDGRQLGLYMKHFSIY
GKTWEENFLGKRVINTMEMKNIQHVASSGFEDYGKGSNAMGKRFLGDGIFSQDGPEWKHSRDMIKPIFSRSELSDVERLD
FHIDRLVNLIPRDGSMIDLQDPINKMFIDSSSEFLFGKSMDLQLNDDDSNDAADFLTAFQACLVGLGKRRLLGHLRHIYD

LFDKNWPQSCQKVHHYTDIQIKRALEEISGPEAKSESRYLLIHELAKQIRDPIKLRCQILQIWVPSRDTTALVVNSSIFQ
LARRPEIWEQLRVESLAIGDEPITFELLRSLKLFKYVVYETLRLQGPSSRVQKVAVRDTILPVGGGPDGKSPLFLEKGTD
IILNLWGLHHDKDIWGDDVDQFKPERFADKRFTWDFVPFLGGPRICPAQQQVLTHCVQVLVRLTREFSRIENRDPVMEYV
EMWRLLPESRNGIKVALFI*

>107571|jgi|CYP6138A1|[Trichoderma pleuroti TPhu1]Triple1
MALVSVLDGLQGLLQLDSYSINYWYVGGSIAALFAIFAVYAVVLVVYRLCFHPLAKFPGPKLLAATTWYETIIDLCYHDF
PERLAKIHKKYGPIVRVAPNEIHVNDAEFFQSVFVAAAKHRTDIIPPRGLGQDDSIGSTPTHDMHQMRRKPLDKFMGRQN
IVRLQHIIHEEIRTLDRKMVALKGTGKPIRLDCVFTAFTGDIVGQIACGESPALLEGPDFTPEWYDMIRGAARIIPVLRH
FPQVGEMTQKLPNWLVQALVPRSAGFKVLQLLGEKRIARIRTEVVREPKGGYEGDSMFHHLLRSDIPDSQKETARLNAEA
VSFLGAGTYPTAATLIFVAYYILADSKIEARLRNALKDVMANFDEEVPNWIKVEQVEYLDACIKEGLRLLRLFRRKSRIS
TDLDLQYGDYVIPKGTPVSLSPYTMHMDPDVFPEPETFNPDRWLTKNPDPRMERNLNPFLGGSRNCIGMHVAWAQMYLIL
GTLFRPNKSYQLELGETDESDVYPVVDNEFGVAKYGSRGLNAVVN*

>107573|jgi|CYP5975A2|[Trichoderma pleuroti TPhu1]Triple1
MLDTNMISLPWPKLSLSMPSTPQILAGASLLVAYWIATAVYNVIFSPLRKIPGSSLGAVSWLPWYKYWFSGYMHREVLKL
HETYGPVVRIGPSEISFIDQAAWKDIYSLKRCRQIERDPTSFPSLTPHGSKFDLLTYSPTDHAKYRKILNPCFSEKATKE
YEATIHENVDRMIAKLASNVKKGNGGTNVTKWFQWLTFDMVTDVTWGESFECVSKNESHPCLALSMDLVSLSSFIVFVAW
WKGLKDFLVKLSGVEGLFTNLVRSKCENNLKSDSKKASIFSNLVTAGNPLNQAELDGNLTAIVIAGSETTGFALTATSYY
LAKNPECLRKAASEIRSTFSSVDEINDDALRKLPYLKAIISEALRMTPAEPNGLARKVVVDGLDIAGHYIPKNTAIYVSQ
FAANRSSSYFRLPNEYHPERWLDDAKFKDDKLDAVQPFILGVNVCIGRGLAWMEMRVTLAKLLWQFDWTIDGDGGKAFEQ
SKAWHVWMKSYVHLQLLDRGTLDSKA*

>107574|jgi|CYP682BE2|[Trichoderma pleuroti TPhu1]Triple1
MEDPSVTRPSERMVGSFAALYILYLFCLVIYRLYFSPLAKFPGPKLAAISKWYEFYYDVVLRGQFTFQIQRMHKKYGPIV
RINPFELHIEDSSYWDELYTSNKEYERYAWMSGRFGANTTTSSTVKSDLHSIRRAPLNPMFSKRSITKFEPIIHEKVELL
SKGIACYDVSGSVLPLNSAFNAFAGDVIASYCFGFSYNQLESTDFHDNFHPAYEAVRKLAHFSLQFPMVYIALGLCPRRL
MKVLTPNIYKMFELQKDLQGKIKNIIDGHEKNRVNSGHPTIFNELLQSNLPPQEKTVRRLGSEAQQMIGAGVETVAWALT
TTVFHLLNNPSKLKTLRNELEKAIPDPAALPNSLALEKLPYLTACAKEGVRLSTGVSVRLPRVSPKKPMRYRNWVIPPGT
PVSMTTLDVLRDEQIFTDSTSFIPERWLDNPKTSRGDSLSRYYVPFGKGPRMCIGINLAYVELHLTLAMLFRRFKFELYE
TDISDVEIAHDFFVPQPKLDTKGMRVKVKLADS*

>107800|jgi|CYP53A46|[Trichoderma pleuroti TPhu1]Triple1
MALIEYALSPWAIVALAGALVASYLYQYFVTYGPLRRFAAPFPAQFSNLWLLSVCRRGDRYATVDKLHKKLGKFVRIQPN
HVSVADDEAINLVYGHSNGFLKSEFYDAFVSIRRGLFNTRDRVEHTRKRKMVSHTFSVKSIGQFEPYIHQNLELFVRQMD
RLVDTSQYKDQNGNKEARIDCLPWFNYLAFDVIGDLAFGAPFGMLEKGVDLAEVRDAPDSPPIYAPAIEILNRRGEVSAT
LGCFPALKPYAKYLPDPFYSNGLAAIQNLAGIAIACVKRRIDNPPDVERKDLLARLMEGRDDKGEPLGREELTAEALTQL
IAGSDTTSNSSCALLNYVVRTPGVLDKMQAELDAAIPKGVHVPTFEMVRDLPYLAAVINETLRHHSTSGIGLPRQVPPES
PGVTICGEFFTAGTVLSVPTYTMHHSTEIWGPDAEDFNPDRWANVTQRQKDAFIPFSHGPRACVGRNVAEMEMKLIAATW
ARRYGAKVLQGPMLTREGFLRKPLGLDIALYKR*

>107892|jgi|CYP65EP1|[Trichoderma pleuroti TPhu1]Triple1
MLSSDRTQYNSLALWLTPVALYVLYAWLKVIASAFFGPLSKIPGPKLWALSRIPRMYMEWQGEEAAGVAALHKKYGPVVR
LAPNEVSFAGGAQAWKDIYGYRKNVGQGKHPHRSSASYWPPANGAPSMIQAMRDEDHARLRKSLAVSFSEKSMKQMEPRV
KGWARLLQTKLAESGDAAVDMLELFRCATFDAMGDLALGDDLQMLRNGRLSDYVHAAFSGIRTIIRLRVLSTYNSFTRWL
VRDCFLQSAFVRKAAMENLRYSADRVDRRLQDPVRDPPDLWTKPLTGIDGKMSPDEYHSTAQLLMTAGTDTTAIGLVGTL
YFLLTNPDCLAKVTHEVRSAFSSMDDVTYETLAQLKYLDAALQESLRLYPPVPTGAPRVTPMPGWSIGGYWIPGGVNVSA
PHYATSHFPAHFTDPESFHPERWLGDKKFQNDRLDAVQPFNLGPQNCLGQAFAMNEMRLFMAAVLLQFDLQLSEDPRAWL
DQRVFSMWEAKPLMCVATKRS*

>107992|jgi|CYP5189D1|[Trichoderma pleuroti TPhu1]Triple1
MATIPPPRILSARMLERNSTIAEWASSEDRHQPVSIMATMGDVWVGLPWPAQLITTCLVLIATVLITTRLNSLSHSWPAA
AGKGHEPPIAPYWLPGIQHLAAFLLNPARTFRTTQSKYKDSPYTLLMGGVKFHVFGSPSAATHVFARSRTFAYEPVTMSM
LENGLDLPVADRVHFQIGLDRANSGENEKGFVLQNHNVWLRYLSGEPLDDLMQLFTREFHQVLEQHLDMKTRDWQTVDLY
QVLRKVIFDTSVLTFFGPHLAPIWGPTMWEDFCLFNDATYIGVRTNLAYVLQPRAGRARERMLRAFEEWLTHHSEGDWPA
KDNYWNEEWGAKMNWERDHLARQFGLSLRGRATMQASFLFAIVLNAAPMSSWLTWVVASNPDRLAKCRAEASKFLRPSKS
SRFDHELDIDAAQMRGSSFMQTLWKEALRIGTAASPARVVMEDTELEGYVVRKGSVILMPTALLHHSDLFPRSDQVDTER
WTGEDAMVQQRSKSIRTFGGGMGMCSGRHAAEQELIGLVSKLITLFDIEFEDSWKDKFHFDPKSLGIMHPAGPPMVRLKR
REVS*

>107997|jgi|CYP548AA1|[Trichoderma pleuroti TPhu1]Triple1
MVFHIIPACAFASICLGLATLSYFHLQQPRNLRWYAQAAAIFFFEWFFSNLVYRLAFHPLAKYPGPLIASLTDWYTVYWI
AEGGRHLELDKQHKKHGKFVRFGPNRLSINSAKASRDLHDVNSNTFKADAYGSFKRFFGAEMSLTTVDHKAHAFRRRVNM
TGITPAAVKEFEDQVTPHLEEFISIIGEGAGSKSQGEHGWSSGKDMSYAVAFCIADIMGSVTFGRTWNVQRDPKYRRFVK
DLPNGVAGIHLVGHMQSLFFCNLHKLLFKELIVGVGNLMSVSRSFALWRLEQSSMPYRDIWQGLLASRDPKTGNAFSTEE
LISEASLFIIGGTDGMITATTSTLFYLTHNPRTLERLTREIREAFPLSPGDIGKKASNVKCPIRFASAELQRIVYLPACI
DEAMRMSSPVPSILPRVVGPGGMTVDGEYFPAGVNLGIPHYSMYHSEDNFAEPLTYAPERWIPEERIKGLKDGSVPVSGK
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>108095|jgi|CYP61A1|[Trichoderma pleuroti TPhu1]Triple1
MDALNATRASSVLTSVLANSKYVSANIPPQVDYVIDTIAAAGPWTWFFTILALCVVYDQVSYLMNKGSIVGPAWKQPFIG
PFLQSMDPKFEEYYAKWLSGPLSCVSVFHKFVVIASTRDMARKVLNSPAYVKPCVVDAAYKLLGEDNWVFLDGKPHVDFR
KGLNGLFTRKALESYLPGQEEVYKVYFKRFLDITKENGGKPVPFMPEFRELMCAVSCRTFVGHYISDEAVKKIADDYYLI
TAALELVNFPIILPYTKTWYGKKAADMVLAEFAKCAAKSKVRMAAGGDVTCIMDAWILQMIQSERWREAEEKGLSTEGMV
KPAPMLRMFRDYEISQTVFTFLFASQDATSSAATWLFQIAAQRPDVLDRVREENLKVRNGDAFAELNMDQLESLTYTRAV
VRELLRYRPPVLMVPYKVKKPFPITDKYTVPKGAMLIPTTYMALHDPDVYENPDYFDPERYYSGDAEVKGAKNYLVFGTG

AHYCLGQVYAQLNLALMLGKASVQMNWAHHATPLSEEIKVFATIFPKDDCPLTFEERK*

>108431|jgi|CYP5128C1|[Trichoderma pleuroti TPhu1]Triple1
MATAAADSVLLMATLSPVSIGVAVISILLLKVLYGLSTDRLGHIPGPFIARLTPIWYWYLTWKGVECTVITALHKKYGPV
VRIAPNEIDVSDGAAVNPIYVDNGGFRKIAGYRNFDINGFPTIFSVTDHTHRAVRAKAVSPLFAQQAITNSKPAMQKIID
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KFDKNKLSITTSTDIVQEFAAKVVDDSIAQGEKETYQGRLLNANLSREEAIAQVMDIMFAGTDGVARILAVFCWHLSQAP
DRLERIYKEIMQNPGVDARSLPYLSGAVKEACRLALANPTRLPRIVPSGGLNVPGLPIIPAGTSVGIGAYSLHFNPKVFP
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LSWA*

>108948|jgi|CYP504A23|[Trichoderma pleuroti TPhu1]Triple1
MAYQILGIAIIATILVVLKVLNATDTPKVKGIPEIPGIPVFGNLLQLGVDHARVAKKWASKYGPVFQARLGNRRIVFVNS
FYNRHFPWDESCKRRRKAAATALNRPAVQSYMPILDLESTMSIKELLNDCMGGSQDVDPSPYMSRFALNTSLTLNYGFRI
EGNVTSELLTEITHVEREISNFRSTSNNWQDYIPLMRMFGTTNTKAEEYRLRRDKYLGDMLNDLKDRVAAGTDKPCITGN
ILKDPEAKLNEAELKSICLTMVSAGLDTVPGNIIMGMAYLSTEHGQSIQAKALEAIQEVYPNGDAWGKCLVEEKVPYITA
LVKETLRFWTVIPICLPRVNIKDIPYEGAIVPAGTTFFMNAYAADYDQSRFKLPDQFHPERFLEDKEIGTPHYAYGAGSR
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HL*

>109080|jgi|CYP620S1|[Trichoderma pleuroti TPhu1]Triple1
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ADKEAAQEIMEKKSQTSSGRPVFQFANYCGFGEFISLHQLEKRFTSQRKVMHKAIGTKVLATKYAEIQEREAGRLLLRTL
KDPQKIVKHFETEAGAIILKIVYGYTINPHGPDPLIGLIDRMMANFSRSSVPFTRLVEFIPALKWLPDGFPGTGFKAEAN
QYGKEIRAVINEPYKFVRKQMIDHNIMGSYVARLVQECIGDADEPSEDEAHTIKWSAAALYGGGADTTVSTLISFILAMT
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>109223|jgi|CYP52X5|[Trichoderma pleuroti TPhu1]Triple1
MQLSLAAGIAAAALTFVYVVNLILESIRYRARSRELGCKPPVWMSGYDPTGIADIIYGVDASRKKRFPIHAANNFEREEK
KHGRPVGTLRVKAPLFRDTLVTTDPQNIQTILALKFKDFGLGVNRTENFEPLLGHGIFATNGKQWEHSRAMLRPQFIRGQ
VSDLNLEEEHVKALMTVLNRQVGPDGWTDLVDLLPLFFRLTLDSATEFLFGESVNSQLDQVHPTSEKDGNFAYAFDKAQY
NLSIGARLGPNYWVVHTPEFKRMVKRVHAYVDYFVQKALVQGEKMPVNEDKYVFLNALAKETRDPEELRSQLLNILLAGR
DTTASTLGWFFYTMADPMYASVFRRLRATILEEFGTYSNPNEITFEKMKGCQYLQWCLNECLRLYPAVPMNVRTAQVDTT
LPIGGGPDGQSPIFVPKGQDVGYSVHLMHRRKDIWGPDAEIFKPERWETRRPGWDYLPFNGGPRICIGQQFALTEVGYVV
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>109330|jgi|CYP65GB1|[Trichoderma pleuroti TPhu1]Triple1
MQYTSIAAAVAAAVVAYFISTFIYNIAFHPLRSFPGPLLWRATGLFKCYHFLRGDMPFAVRELHVRYGSVVRISPGELAF
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GKVPQDMRDWFMWLTFDITGMLSFGAEFGGLRYAKSAEWVATLTDNVRVLMAMSALFGYVGATTRSILTWIFMSGLIPSV
AAHTQRTKDMLRERMDRKGAYDDRDYIIDGLININDHRVESNAVMLIMAGSETTSTALTATLFALLQAPDKMARLTKEVR
STFSRDEDITMASTLDKLPYLMACINESLRWYPPSVSGLARVVPEGGAKISGHYVPEGTIVAAWTWSVTRDPRYFADAYG
FHPERWLPGEDERFANDELDASPPFSVGPRSCMGKNLAMAEMRLTLARMIYNFDVTLSTPFDGDWFKGQKAYLVWDKPSV
LVNLTPVGES*

>109498|jgi|CYP5080B6|[Trichoderma pleuroti TPhu1]Triple1
MSLDAANLIKAAVPEAEGRSARIISQNVSDHRDPNFLSKDFPRRPPKLYLTAESDEFDAVTIAEWQAEGFDVEYLPMGNG
GDEYLQKLRGLRGNEMSSFEIFGIVAYGDAAAMCLEHYHIMDNNPDFKLKLLIAYYPTAIPDPKGQFPNNISALVHLIAG
EDVGVTKQSQMIGIQGKRRTTHKTIQPGIGTGGLLSLAYPSYTYQAQPGFAEHDLDEYDMISAGLAWSRSLAAARRALGQ
TVDLEPVWEENVQGKFFTRNPKPTMPSYTTHKSPHVTYIPTLTGGIGADELQEFYSQYFGNPKSLKLTLLSRTIGSDRIV
DEIHVRFKHTQEMPWILPGVPATQKRVQILVVSIVTLRGGKLYHEHVYWDQASVLFQIGALDPDVVPEAARKMGIEKLPI
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RVALGGFEQENIQLHRKYGPVVRLAPNMYSIDMPEAVNTVYGIGSKLPKSEWYDGWKHPSPDAWTMFPDKDIKRHAQTRR
VFQGLYSMSSLVSYEKYVDECADVLVNRLSIYSKSREPINMGHWFQCYAFDVIGNITFSKPFGFLDRGEDVSGLIQALHR
VIAYSTLIGIFASLHPYVFAVTNFFGIGGAAGRTYLAGYVKERIRQRKAEKEMSEDKVIAHADGSPEDFLEKIMMKNKDA
PSKVTDYHVFMMSMSNIVAGSDTTAISLSAILYYLLKYPDVMRKLREEVDQSTSTGDHLSFKESLEMPYWQAVMKEALRL
HPATGLPLWRTVTEGGLELNGQFFPEGTTIGLNTWTAHYNEDVFGRDAAAFRPERWLEAEKEGGGRIAQMNAYYLPFGLG
SRTCIGRHISYLEMSKLIPLLIKNFDFELQDRQMDWKTTNYWFVKPNNFGVTVRPRAVV*

>109510|jgi|CYP642C1|[Trichoderma pleuroti TPhu1]Triple1
MKLPSFIITIIIKTNNTEYTAFFHLHKSSYTCMMNRVNVIPSSISHHAVGEPVLAGTNVSSHFPYHFLLLLVLVAPLVHT
YRGHKSRTERPLSVRLFKILSQMRYQVYSFVYNAVLNCARPTLSINIFPRKVLVTDPSMESVLSRHTSETSLANVIFLIG
RRVFDLSNETINAIGSYDPRPVHVGEFSSASNARALVGQVSTAANQRLQSQPDVQETELGPWLFKLTSSSVASALWGPES
PWVVDDEFQTAFMEISGSQMTLLRPFSKYTAQAAHKARALIISKLKSFHFNNRDSRLRQIAHRINAVALSDTEWESNKDY
FNVELLTSLGLLVTPSSMAEARNPDILDAQGRIDVARIRESFPFLAACLYETLRLHMTAIPRLAKTDLDIAVPNAQPIHL
KSGDLIYLAMSSFNKDAQTWGSDASAFSPDKFLTNAGSLSASMVRKLRVFGVAGNLCPGRKVGFETILFVVANVLRDFDI
ENPRGEDVAYPEPRTEDGFGIGFERCANEITVRLRRVA*

>109762|jgi|CYP680G1|[Trichoderma pleuroti TPhu1]Triple1
MLNDWKHIAAPSADMAIPLVVLLPLLLVAWVLVVATYRLTFHPLAKIPGPKLAAITQLYQTFYSYHNNQSRFYQKVESLH
AKYGPVVRITPDEVSLSDPENYSTIYHVGTKYGKPDAYYHVFQAPGSFFTAADNREHAKRRAPVNPFFSRKGVLELEPVV
QEKAKILLSKLRKDLDEASKNPGGFVELQDLYSAISIDVASDYSFDDCYNTLEVEGYGRDFSDMVLGLLTSFWFFMQFST
LETFALSLPTWVSSALSPALKEYNKLVKGVRQNITNVKTQILSQQGKSQKRSIFHELLSADPNRTVDDMTDIALSIVVAA
AAATGNTLGILSYNVISNPDIYRRLRAELLEAYPEETQEMKWMALEKLPYLTAVIRESLRLAYGVIGRLPRVVPEGGANF
NGYFLPAGTTVGMSSWMMHRNTSAFPDPDKFDPERWLDPEGSSKQHKYMVAFGKDSRQCIGMPLAYCELYVTVASVFRNF

ADLEIRGTKPSDLEFNDYFSGYHPATATPLRVARRGSK*

>109966|jgi|CYP680G1|[Trichoderma pleuroti TPhu1]Triple1
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YYGSYPIVALSGEKARSAYFNARGLDLNAGKLFSAGPDIDHMLGCNMSAYFIVLFKKLTGKEHLVTCLPYLNKDARDAFS
AVDTSVPMDPFVVLYDLIYKFTHRTVGCHDVAEDPVLQEKTMRYYEKLDKTAAIQVMFPWLPTPTKLNKLWAGQSCICCL
GTSYGKGEKTGRKVEDVMQYLMDKGESDLLSSAFIIGALFAGLINTGVQSAWILCYLAHDSDWYAKVRAEVDAAVEKYRT
SDDQTPVDVLSGLSLEAWESEFSCIDFGVRESIRLNLMGASIRQNTSGKDIVLGDTGVVVPNQAFAVYPVSDIHMDEAIY
KNPLKWDPARYFPERGEDKKRQHGYIGWGTGLHPCLGMRIAKLELFVSTAMFFAMFDFKAVDKNGKPATGPLPSYDNNAL
AAKRMVNTVHFKCDRRF*

>110562|jgi|CYP539B7|[Trichoderma pleuroti TPhu1]Triple1
MVTGNGGSDKIRIQLDDLGVSRLDFVNDSSALPTAASRAQNVWYVVEEVSTMREARIEIQQSFHLWDTPAPPDPALTRWN
REIEGNLRVRCISLQDITGLTVYCQHGAVRCIYPHRDESFFDTSYPYPHDNSPPAAQIIPSVTESTSMAAIFFPFAKGER
ISSIWVRKCEPDDSSIPDTLAIIMTTGRFQLFGKYLCPDRPEVDFQQLSGNDTATHLLFQDADFPFQRTSYFAAVSAPVN
NTDMSPIVPAQLTQSRGFSWSSSFTYVSMVELKNVQQIWLFRRKVHEGTPRKDRLCKGMMLQYEDGTMAAAGVCRREPEI
AVQVAILPTSIHYKISHEAGGLAVECATQDVGRDDILGDDAEPPRFKMAMLQSLQALIPGQAWSLLIIVPCLVVSFGIIE
RLVVNYRLSKVNGVRASNLAGNPVVAFYHFFKAGYMHANNRMLENFLNMFQDADPTCPHAVEMTIFGRRSILTIDPEHIK
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LFYRMTLDAITDYLLGHSVDSLDNPNGKFTTAFTKVQHTQMLLAILAPFRRFIPKAEYYKGIKILEEFIQPFIDATLTLT
PEQLESISKSDKEFTFLHNMALFSRDPKVIRDQIMAVLLAGRDTTAATLSWTIYELSNYPEIWRKLRSRVLETVGPEAAP
TYEDLKDLTCLTHALYETLRLYPAVPFNVRSCLEDSTLPGKPGQPDIATLKGDHILYSTLAMQRVKDFYPPVSDKFADPA
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AKQRYEKGSN*

>110585|jgi|CYP570E3|[Trichoderma pleuroti TPhu1]Triple1
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QLLSTDPEVLRRMSAVRSSYTKGKFYASGKIVPGVDNVVSLRDPAKHREMRALMAPGFAGKANEGFSFEAAMDRQLLSFI
SLLEHKYVSSGSDVRPVDMAEKTQFFALDAIGDISLGQPFGYLEKDEDLYQYNEINMTSLPAMNVVSVMPSLANLVHTWP
LRLLLPKEGDQVGFGRLMHFARSYVETRLDPRTPRAHDMMQAHIDNGMTKNDLIQQVFLSISIAGSNSSAHALRMTLLSL
ITSPPAYITLVDEIRRASPTISSPITWAQTQSLPYLQAVIREGLRMWPPVGGLGFKTVPPEGDYLNGYFVPGGTEIGQGF
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>110721|jgi|CYP58M6|[Trichoderma pleuroti TPhu1]Triple1
MEDVPRLWIALAGLGVYLSLRTVYRLYFHPLAHIPGPKLTACTHLYEFYYNVIRPGKFLFEIEKMHKQYGPIVRINPREV
HVIDPDFYDEIYASSSRRRDKDPKYVPTYALPGCMVAAVSHEQHRFRRGILKDFFSRRSVAELSDSINERVQKLMTRLEV
ARMNQTIISLDDAFSALSSDIITAYCCGTDWDFIEDENFRSDVRNAAENAIEFTHISRFVPWLVYAMSALSPRMMAKIMP
GKAKLFEFLEAFLEYGKNESYQGKRKTMVATLADPSIPAKERDYYRLRDETFGLLGAGTETTARVLTAASFYLANDDRVR
ETLQAELKQAMPTLDSRPTWAELEQLPYLSAFITECLRLAYGITARLPRVAPTEALQYKEYTIPPGTPVSSCTYFIHGNA
SIFPEPATFRPERWIEAAERGDNLKRYLVTFNRGTRGCIGINLAYLELFLTVAHFARRFNLELHDTVQEDLRIVRDMTMG
VTRRGGIKVYAKLLPVDE*

>110731|jgi|CYP5127C3|[Trichoderma pleuroti TPhu1]Triple1
MIQEEYDKSNGAPFWIQAPENRYLVVSSWDHIKEIDAAPEDVLSLQAAAKEILQPRYTMQNFNWFDKKGVDGTPLVRTLR
TLLTNHLPDILPDARRSMSALFDGILESHSMVNGSYTTPLFPMVIEAIALTNAAAFFGKDLACDKVFMSAAMNFIEQTLI
TAEVVRVLPSAIAPFIGNLLAKKLGAGKILYHALVPIAEERLEEKARKSLGQTVPEHTACFALHHLCIHSEYIEPLRNEI
ESTGWANFEQSGGKAFPLLDSFMKESARMNPVESVSSRRMALKPFELSDGSRIEPGEWICTAPRGMMADARYYADPLEFQ
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AWRTFVYPFASTKVVLHPRSAV*

>110883|jgi|CYP540A12|[Trichoderma pleuroti TPhu1]Triple1
MASKKFFLVGDDVSTAYPIQVSPTYGPDELKRAVARHFHIVQPSGVSFHVSYGSINSVSDVLDATEPIGIRIDNQAVREP
DGPEGLPIVGSFYEIFPDHLGNHLRLFRQYGGLIKTTNMGKTNYLTDDPEIAAVALNESIYFSKKINQDHPLWGVKDNIA
TFVGDTETETWRLSHKFLPTSMGPKAVRHYAPLIQETVRRSVVVFDAFAESGRSWNAYQYMVKLASETIGKVILGQNFGH
LVNADAPFHPIPLSILTMFALNKRVASRGAWYQNLPFGDPKKLRETHKLCYALIEGIVSDIETSDTAMPKMSTADAALKA
SNLVEYLIKGTNEKGETFPRSMIVPNIVMLTSAGFTTTASLLSWLIYSVTEHPGNQERLLQELANNGISETTEWSVDLVS
KLSFLDKFVKETQRLHNPAFQPARTAKTDVIVPGGYRLKADSVVVCALYSLHTNPNHWHDPSQFDPDRWDTAEVKGRHRA
MYLPFATGPRGCIGFNFALLEAKIIFSELIYRYEFIRDGSENVQYDPEFQLVRPLNLYVSVRRRTNLSMK*

>111064|jgi|CYP61A6|[Trichoderma pleuroti TPhu1]Triple1
MESNPFIVSWWPLALADQALFHVSLQTASLYEELQAQKGFPISDLLMVDSIALVRRRIEDSSLAFQDETLDSVVTLAAIE
HGKGNIEASRMHIDGVKRMVGIRGGIDELKQRSPLTARMVSWVSMLVLEAPQFPIKDDSGHGDGIGAIPQWQLTSTDAET
QDANLDKLNITPAMSNILSRLRNIFHHSWHSSLTNTQLHDLTCFVMHKLLLLPPFLDVDANPVQSTASECLRYATALYML
ILHGTTYYSHAGLANAIILQLKGHLAALLRNDHIRDPLGIWAISVGMVATVGTRNHEWFTDRANVAAEALGLNTWEDVLT
HLQSILWVRVPQEELFRQEWEESFKMAAKGGWQVCGFHGNHPIKPWALSILTMTSNRSSGLNKDHAKVFLWLTSSNDTMA
TIVEGSLPLSVETTANVTQHGASKLAGGFLSSYSGWQIAITAFLFLIVYDQLLYLMRKGSIAGPTFKIPIMGPFLQAIHP
KFDAYLAQWASGPLSCVSVFHKFVVLASDRDLAHKVFKSPTFVRPCLVPMAINIMRPTAWVFLNGKAHAEFRRGLTGLFT
NRALSTYLPVQEKVYSDYFNRFVEHSKANGGKPAKFMGWFREINCALSCRTFFGDYISQEAVKRIADDFYLVTDALELVN
IPLSIHIPGTKCWRGKRTADAVLAEFTKCAAACKANMASGAQPTCIVDQWVQHMYESKKYNEDLAAGKEGIEKPSNLIRE
FTDEEIAQTLFTFLFASQDASSSATTWLFQILAQRPDVLDRLRAENLAARGGDKNRPFELEMFESLTYTNAVIKELLRYR
PPVIFVPYLATKAFPVTPNYTVPKNAMIIPSCYPALHDPVAYPNPDTFDPERWITGDAETKTKNWLVFGAGAHDCLARRY
VPLTMAAMIGKAALELDWVHHATPRSEEIRVFATLFPMDECPLVFTKRE*

>111189|jgi|CYP531G1|[Trichoderma pleuroti TPhu1]Triple1
MDNNSVPNSAYGAGLLQNGPAMLVRPAVLFMLLPVATYVFWSFFSYLISPLKKYPGPFLASYTNFYRMYYAYRGNMHLLT
KKLHDKYGPVVRMGPNYIDVDYPSLIKTCFDFQGVWRKTDWHGVSGAMVEGKLYFNIFSECNPEEHARIKKPIAKYWSAP

GVAPMEPHVDSVISTLCRALDQRFAGDEAFGKTFDFAEWMLFFGMDAVAKTTWSEAVGYLEKGYDFDGTLSVSDRAYDYL
VTVGMNPIFDKFLDKNPIMRFGPPSFGTVTGICLGHLMARMKGEDGHDQSKPDFLDRYLEAQQQNPEVVDIYRILSYMLV
NVAAGADTTAASLRSILYLSLKHPAVFRRLRDEIVNAKFSQLPVPYAESRQLPYLEAVSRECFRYMPGNCFAQERYVPSG
GLALPDGSVVPAGTALGFNAYVIHRNKEVWGDDAEEFRPERWLQADNETDEEYKNRMQQLNNVDLSFGAGSRKCIGMNLG
KMEVSKTVATLITLFDFELEDPKKEWKVHNSLIPRASEIMMKMKKRPGAGEQISEMSSHY*

>111205|jgi|CYP65DT2|[Trichoderma pleuroti TPhu1]Triple1
MYAAAVGVVAAIGAYLAGPSSGPPKVSIANGTVVGSSLDGVDSFLGIPYAQPPMGDLRLKRAQPLQEKFGTIQATSIPRA
CPPLKVRGDPNMLSQLPPELAAMIGTYFNEPTFVGEDCLTINVQRPSYIARNAKLPVLVWIYGGGFEQGSTQQYDFARFV
NSSVTMDHPVIVVQMNWRVSALGFLGGKELKKEGNTNLGLRDQRFALEWIAENIEAFGGDPSRVTLWGESGGSMSVFNHV
LINGGDHTYNGKPLFRGAMLNSGAAGPAVQVDSPVAQKTYDTIVKAAGCSSAEDTLACLRALPYEVFMDASNVVPNMFNQ
DGIAVAFTPRPDPSDGFFPLSPDVVIKANPPKVAPVSLLAGTMEDEGTFFALALYRQQTKDALVDTIHGIAPDCPRSVFE
KLFSFYPDDPKHGSPFGTGEANELYPGYKRNAAITGDICFAFQHRAVLEAISDKIPSWSYLSSLSSSLCTWQWRSIFLSF
VHHLDPNVISKMDGGARPLPEWPRYDVKTKDMMQFTDKGLIIGKDDFRQDAFNYFNSKLHQLRCLPLTMDWFSFGLVAKV
AFGSLVFFETVQIIYNIYFHPLRHIPGPWLFRAKRLFYVVRFNQGRLSYDVHKWHAIYGPIVRIAPDELAFEDPDAFKDI
YGRRPDDEMAKPDRSYHLIGEARSIMNETREKHARLRKQLALGFSERSMRDQEPIIGNYVDLLVKRLHEYCIDGDTLDPI
TGEKAKRELDMTAWYAWTTFDIIGDLAFGEPFGCLERAKYDPWVAAIGKAVRFSPVILGAKLLGYEWALRPLLSMLNKYR
REHNRLCMEKLQRRMAMSAERPDLIEGLLQKAKDWDMDVRQVMQNSSNLIIAGSETTATGLAGITYLLLKNPDALQRVVQ
EVRSSFSSEDEITLLSVNNLPFMFACINEALRLYPPVALGLPRIVPRGGAVIAGQFVPQGMTVSTWHWAIYHSERLWAKP
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YLTPVKK*

>111354|jgi|CYP528A8|[Trichoderma pleuroti TPhu1]Triple1
MYYGREMGSGLIWASIWALCYGIGLLLLSISTIVLYRLFLHPLSRIPGPRFAAVSNIWHAYHARNGRMFELGRTLHQKYG
EVVRVGPNELWFNSPEAFDKIYSSTKGFEKTDFYLATSLNTPKIDCFLRPHFFDSLDLLSERDMKRYRLQRRLIGRVYQT
ANVAKFEAAVDEVIKQAIARLEALDGAEIDLKEWMHIIAVECLGASVISWSPGLLKAGTDWGSSAHSYLGWRRKSVMGLF
PTLTKLTMRSNLFEWVFRDVWGLKYVASPNFRSFFPDVGKRISRRIKTTLKPNAPKDNRADLLADLIQLHKDKPDFTESY
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VPDMGSHIQGYFIPGGTTVGCNPVALHRNANVVIGPDPDAYNPDRWLGGETLDIRLMERYSLNWGGGPRTCPGKNLAEMV
VYKVVSALFERFDVEVATPPEIGQPSYFLSMVTGVKARFSSVALQTAGKDCL*

>111472|jgi|CYP550C3|[Trichoderma pleuroti TPhu1]Triple1
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SRGKGSLFGLTSRHQILHNLDNIDRVFTKGPHILSADVLGLRLGIRVFGANLTQDACEKFMAINRKLTQIIERYFVNEAS
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NLLEDFWKFDNNAFPLLVIGVPTWAPIKSFKEALAARTRLHDALEGFYNRLNQHKRGLAVDFDADMSDVSSAAMERNNFL
EENGSCLFETFRLVEEPTSIRYVSKPMTVPDGNHEHHFKPGTWLSAPHALLQSDPSIFPEPDKFIPDRFIETDKETGARV
ARYGKLKPWGSGSAVCKGRTFAEKEVMGIVACFITLWDMDNAEGSWKLPSMIPGTGVKRPQKAIRVILKRRSFV*

>111599|jgi|CYP620B15|[Trichoderma pleuroti TPhu1]Triple1
MASLVVGQVAIVLVGSLLYQLFFRNRSKFPLPPGPKPLPIVGNIRDLPPPGTPDFRHWLPFKEKYGPISSVTLLGRTLVI
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FKEPESLFQHIKTEAAATILKIVYGYNVEPFGADPLVRIINDVMENASRAMLPFKKPVEIFPALKRLPDWMPGAGFKRLA
REWLALTDASAYIPYNHVKKQMENGTYQPSYVSELIQTHGKGKNMEPDEDTKEAIVRTAQMLFTGGADTTVAAIMAFALA
MIHHPEVQEKAQEELDRVVSTDRLPTYEDRPNLPYINAFMKEMLRWFTVAPVNTAHKNDEEIIFRGYRIPKGSYTVASNW
WFLHDPKTYANPMAFDPDRYLAPRNEPDPTGMFGYGRRICPGRFFAQENLFITVSQTLAVFKITHALDENGRPVEAVLKH
TPGLIDHPQEFPYSIAPRNDKCVELLQRLEVESPWEESNAEDLEWGSFTTYQEEHRRSVAERRSKVSN*

>111719|jgi|CYP548A14|[Trichoderma pleuroti TPhu1]Triple1
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PNSLSFSTQQSLKDIYGFKSNVRKAEFYNSFAHPVANTHNTRDKEVHARKRRVLSHAFSESAMKEMQRYILNNVRTFCEQ
IGLQDGNADAKGWTRPRNMAHWCNYLAMDILGDLSYGKAFHMLESPENRFALDLVEAATTRHLLCGTMPIVDKLKFDKIM
FPKLAAGRARYMAYSKSQLTERTKLGAETDRRDFFYYLLKARDPETGQGFSTPELWGESNLLIIAGSDTTSTAMASTLFY
LTRNPHALQKVVDEIRGKFSDVEEIVQGPTLGSCTYLRACIDEAMRMSPSVGGILPREVLPGGITIDGHFVPAGIVVGTP
HYNIHHNEEYYPQPFTYAPERWLKDAINPATKRASTVEDVAQAQAAFCPFSIGPRGCIGKGLAYVEMTLTLARAFYLYDM
RRAVGVADPSEGRADLEWGRHRPEEFQLADIFTSAKKGPVVEFKLAEKH*

>112112|jgi|CYP559C3|[Trichoderma pleuroti TPhu1]Triple1
MAIPELLGSVTSSQLWSFGALFLILSFIVDFASHPQYPTQIPVMGKGHGMLNALLDSFRYLTNYHRWVSDGYVKFGKKGL
PFVVRSPLSRPSEVVIPRNQIGWMMDQPDDILSTYDAHNAVLYSEYNFLGRRLAYDPFPNRVMHKYIARHLSTVIPNVDD
EIQHAIDTTLGNDTEIWKSFKLWNLWLDIVPHVTNRLLIGPEVCRNKQFIDGMVNFTNDVIRNGFLLQVIPKVLHPIFGR
LFGMFNYLHWRSANAPAQPIIEKRLNAMLKKAAGDPEYKDFTPPEDFITWLIRQALADGKTFELDPIVISKRLLPIEFAA
IHTTVLTGQLWMQDLLTSDPETGILDILRAEINANKPESGPWTKAAISNLVRLDSSIRESQRVSNFAVTMIERKVVADNG
LYNPEHGWTLPKGSFVTVNLEGTHHDQDLYKDPHSYNPLRYSQVREAWDAKSDEEKKSEPEEGTRIRGLGMVTTSPQHLA
FGHGRHACPGRFFVAHELKLIMIHILLNYDMKLVGKVPEKQWIGGTIIPHLKAEIQIRRKKVSA*

>112278|jgi|CYP5388A1|[Trichoderma pleuroti TPhu1]Triple1
MIPIDLSNGFHIPKGTIVQCNTNILDETPAAWGEPHAFDGFRFYRLRENPEDTNRFQFASPSYDSMQFGFGNDACPGRFF
ASNQIKIILSYILSNYDIKFEDSVKERPKNFMFEVNVMADPTVKVLFKKL*

>112301|jgi|CYP5090A2|[Trichoderma pleuroti TPhu1]Triple1
MYPDDPQELPYCIPVLGHAAAFFNNSNTLLTEARAYFGNTNEPFALTIAGSKIYVITKPKDVASAYRNTETLSFNEFVQA
LMRAWGNTESCIQAMYTPLPKDKGGFANPQGKPLATLARQIHIHQLFPGDGLDFLENSFLEWFDERMDIGKLHAVCPYAL
KSTDVDIVLPLMEWCSDFFTRAGQRAYFGDELDQIDATLAKEFVIYDELSWQVLYQYPDFLAREMKRSKDIIQRALKKYI
QLPQSQRSGEAWFTKAMENEMRALDISEDDIAAMFMAIYWAINTSTRKAAFWLLTYVLHTPSLIKVIRDETKAAFDETGT
VNLEHLHNQCPQLNAMWTETIRMSSYAASVRFITKDTVIGGKVLRKGNRLMIPFRQLHFDRSVFGETADSFDHERFLKKA
TLTQSNNWRPFGGGNTMCPGRHMAKRSVLLFVAMLLHRFDVEMDGYQPIPAAEEGKPVLGIMSIKGTDDLRVRLTTRKAE

A*
>112302|jgi|CYP5091C4|[Trichoderma pleuroti TPhu1]Triple1
MPVIADIVLLTFKLAAPVIYKEKLLGVAFLVAVLFVAQFYRVRTATSFLVRRIHGVLYLFSGPKLIDRAYNRAQGKPFKV
STPSNDHLFITSNSLIKELINAPSQHLSLHAVAKEILQPNYTMWGFEVQEHRGIEGTGYVRALRSLLTSHLPKFQPHLEG
IVKNVLLTRLRDVQPDGFAHARIFPLMKTLVTRVNCFVFFGEELSQNTEFTSAALDFPQAVAIAAEILRITPEFMRPLVA
SIATNRHKAATTIYRYLVPIIEQRLAVRGLRSNEATPMDCMQWLIDNSPRKPPWTPAKMVGEIMAVWFGSVHQLAMTSTY
AIQDLCLHPEYVEPLTIEIRDCFYEENSPRDVERLPLLDSFIKESVRNSNFDAITCRRKALVSYTFQDGSSLNKGDWACV
PQRAMMQDSTRYRDPQTFDGFRFAHDNARLHQQKQPVNMPDQKESKFTDATLNWPIWGLGNAACPGRFYASLVTKLVLIR
ILEDWDCKMLEPEAPRTMTWRSSIVPRSSTIIMFRKRHIQ*

>112321|jgi|CYP65BM4|[Trichoderma pleuroti TPhu1]Triple1
MLSTAESLLFAQRPGVALVLWVIILGSVYLISIPIYNVWFHPLRKYPGPRLWAATRIPYARMIFSGKSHQKILELHQTYG
DVVRVAPDELAYANGAAWNDIMGHRKRGQGENGKDPVFWKTQPNSVIAAGREDHTRMRRTLSHGFSAQAMMDQQPLIQGY
VDMLINRLRENCADGTRPLEMTSWYNWATFDIIGDLAFGEPFGCLENSDYHPWVSLLFTRIRTSARNNVLRRFPFGEKLI
QLLISEHDLKKFQEHYQLTQEKVNKRLAETNPRSDFMEVMIKKDGAMKFSYPELLDNASVLIIAGSETTATTLSGVTYLL
LTHPEVLQKTVDEVRSSFSNEGEIDLLSVQKLGYMMAALQETLRMYPPVPTAIPRKAQPGGDVICGKYVPENTVLGIWQW
PMYHNPKNFTLPDSYIPERWLGDARFSSDPQDVLQAFSFGPRNCIGKNLAYAEMRLILAKILWNFDISLHPDSKDWLQNN
NSYTLWQKPDLNIYIKPRENL*

>112364|jgi|CYP539A31|[Trichoderma pleuroti TPhu1]Triple1
MGFIELFLEKFSITRFFLSTVGVWTAVFIVGRIREHQKIKSLGSYGPALKPLLPLGLDFVYYGARATLHQQTFELWRDVL
FSQFWTIEMRVLNERVCFTADPENIKAVLATQFQDFGKGKRFHDEWYDFLGDSIFTIDGAPWHDTRQLLRPQFSRDRVSD
LYCLEKHVQVLFKAIANGGPLDGENQPVDLSRADGRRVDVKDLLFRFTLDASADFLLGTDFKSLTNPQHTLMNSFNEVQR
IQNILVRAPLTRLFISKKPFYSGIRDIENFVNPIIQRVLSMTPDQLAAHTKSDRDYTLLHELASFTRDPKLIRDQIFAIL
LAGRDTTASTLSFAMYELSRHPQVVARLRSEILASVGTHQLPTYEHLKDMPYLRAVLNETLRLYPPRRPDLYPPVSETFA
DPAVFSPERWAVWHPKPHEFIPFNAGPRFCLGQQFALTEMGYTLCRIFQCFDRVQSFMHDIDGGELRLKTDIVLTPAQGV
HVAFWEAKNDQ*

>112403|jgi|CYP574C1|[Trichoderma pleuroti TPhu1]Triple1
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TGTRCSKDNTSYESVDYKGFQNLEAMTNREEHRKRRQIWDKALSTKPLESYETYAREVVYEWLEKLASLQGQRVNTSLYS
LLIPFENMGRMGFSINFGSIQKGKEDIMLHYLEETLGLIAKLGTMWWPIALLKTLGGSGDHIEFEKLACRMVDQREKQRD
DENEDIMKYILQDHHAKVPKGFHHHDILYSDAQVILVAGTDTIGAALSFAFYHLARDPTIRQKVLAELGPLYGRTLTGEF
TNLDLSDTEAPYLNAIINETMRLDNPTCSNGARFTPPGGLEVDGVFIPGGVVVYTPTHAIQRSAKYFKDPDTFIPERWTT
RPDLIIDKRAYLPFSLGSHSCVGKRVAILVTRLVLAYTVWYYDFEFAPGEDGLAIHRDSIDASILKPGKLECVFSQRT*

>112422|jgi|CYP5168G1|[Trichoderma pleuroti TPhu1]Triple1
MEAMDFYYANQQAILTAVGALSGIIAHNAVYIRGEWHVQAPQITIQLFALYVGCPVLAQTLKDTAVAGILRGIIFWSYGY
LPGLIASILLYRVFFHPLTRAGFRGPWYARCTKIWHMWAARGSKNHHILNDIHNKYGSFVRTGPAEITVFHPDVFMAVDG
PRSECVKSEWYDILHPGQALVTARNKSVHAIRRREWNSGFTTKALAEHEAKILKYVDKLDQCIEEDAKLQKVTNMRDLLL
WFGFDIMGDFVFSKSFGMLENQQWHHIIVRLQRALSLLGPFSSVPWLIQVGFNLAPRVSVLKDWFDTVAWCQSQMRDRLE
KGSSSQSQDLSYYLMEKDSEGYGFSENEKWHWAAGDSLLAIVAGSEPTAVALIAVFCELGKHPEHAEKIYEEVKDVDATD
LKTLVNLPHLNAVMKESLRLHPALLTGGNRKTTSSGLTIGDQFIPPNTTIVAPRYTIGRLESCFERASEFVPERWTTRPE
MVRNAAAYAPFGTGHHSCLGKTLALDTMKYVLARILKNYRFRAAPGDDCLSALETVKDQFTSNPGTLKLQFERRHATD*

>112503|jgi|CYP621C3|[Trichoderma pleuroti TPhu1]Triple1
MRASQEYKSDILSFNVLGQSVIVLNSVQAATDLFDKRGANYCDRPRFVLFEVMGWHKTLTFLRWGPSFRLHRRILQRGFQ
KSNIGQYRYLQEREAMALLRGIMDKPAEWEMILRRFSTAIALGVGFGIKIQTDTDPFIQIAEDASYALGHGGAPAGTPVD
FFPLFRYLPSFLHDQSLKFANQWRFAIANLRDKPYEAIMASRTRVQSLVQEMIDQRESQVQQGQAPNVSEEDVKGAGAAV
FAAAQDTTWSTLVVFILSMVLHPEIQSKAQRLLDQVVGRNRLPTFNDRPNLQYIDFIVQETFRWSPVSPMGVPHCSLKDD
IYRGYFIPAGSFVYANTRAMTHDETVYQNPDDFDPDRYFPLEEGGRGEPLPNGQFGFGRRICVGQHFAEATIWLVVAVML
STMSIEREKDASGAEIMPVVELTSGLTSHPKSFPCLVRPRDEKSGVVIRDAEA*

>112545|jgi|CYP537A10|[Trichoderma pleuroti TPhu1]Triple1
MLLLSLITLVAAAALLLAIHLIRRITSPLKKVPGPAVSKFTSLVLKWKEIKALRTVYIHQLHQRYGPVVRIAPNEVSFTS
WEALKEIYCSGGSGYDKTEFYNLFKIYGRRTMFTTLNKADHAKRKRILADRYANSNVMKSASVTGVQERSCKWVCLHGFG
TSRDGTLTGTALHAYACDCITHHLFHPYGTDCITKKEDEEMMHQVAADDSLQSKSSLEGLKPNTPPLTGFIDRLISHYAP
TLHRLFSKVLYLFAKPRETPLADDYVLATSQLSGTASFTLVSRFDEKTGDLDCIDKAAECLDHMAAGIDTTGDGLCFLLW
ELSQPRSLGIQRTLAEELRANRETALDKLPFLDAVVCEGLRCFPPIPMSLPRHVPPGGRSIDGFWLPERTVVSCQAYSVH
RLNGDVFPDGDVFRPERWLDVEGDADRRRIQFAFSNGGRGCVGKHLALMEMKTLLRDVYSKYSTTPHESMHEEAMAMSDQ
LISARPLGQKCLLRFHPLDVDEQVKV*

>112553|jgi|CYP5057C2|[Trichoderma pleuroti TPhu1]Triple1
MTNKEEHAARRKISASPYSLQSMTRLEPMIRSKADNLAKRLLAMSSSATTGTVNAFLLCGLFSLEVVCKAGFGKEFPFED
TKDLTELLQAMDGSAPTFILDGLLPWLRPTGFAHKLPFFGEPYQCRRTWEQKSRALLREFLQLPDKDDGYFISPYLSSVD
SFLGRKMNHEEFLEEAMGIMFAGSGTTSSTLAYLMYALSRPGYEAIQTRLRAELEDGGESVSELRKLPYLNAVIKETFRL
YPTIISSLPRVLDEPMKVHGIDLPVGTVVNMQNYVHHRNPEVFPDPELFNPDRWLNSHADMESSLTPFSLGRRACIGLNL
AWDELYIAVSSVFRNLELRLGDEMTEADMELEDRFNIAPVGRKLMLKASKVKKLL*

>112552|jgi|CYP6588A1|[Trichoderma pleuroti TPhu1]Triple1
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HVMDEVRRLPEDQLSLRKEIFNNMHGRYSELGAEHALGVSAIKNDLTNNIGRMLPELQDETIFALNQHIGPAPDWTQLYL
YQKLLHISALTNGRFFVGLPMSRNPAWITACLKYTSDLISVVMAVGITKFFIGPLVHLVAPFLPQIRNFRKDKVVGSKVL
RPAIDALLLSRQKPDAVENPASNQYNLISWILNRMDTTGPVDFDTIALEQLFAGFASIHNTAVTVINILFDLASHPQYIP
AIRAEIEEVLREEPDQIIRKINLPKLRKLDSLLRESQRMNPASLTSLQRLVVAKDGIKLSTGHTIPRGTSIGFMHPFAPW
VKTPSNLESHLALVQGQPPLEDFYPFRHSEMRAVPGHENGYQFVQTGPDNINFGHGPMACPGRFFAGAEVKCIIIEILRR
YDVALGPGGEGAGGPSGLKRPTNVTYPNLFLLPDFKTPLYFKELPQVVPVMRS*

>112815|jgi|CYP5046B1|[Trichoderma pleuroti TPhu1]Triple1
MKYLPPGPKGLPIIGNMLDMADTDKMMTLAKQWADEYGDVFYTKVGLQHFIWLSSPTAVKHLMDKRGAIYSSRAASPMIN
MVSNEERLNFLPYGEKWRTLRNILHSALNLETASTYKPVQDFESKQAVWEILHAKDDTEFNDINRRYSTSTIMTITYGQP
VPRLSDPLYQDILKIVRHFSLATAPGGWMIDTLPMLADIVPEFFLQNWKTVARQWYKEDSEIYLGMYHTLMDKVKNGTAP
DCFLKDFAREKLEKSLISDVTAAFAAGALIEAGSDATTTALNNVILASLLYPEIVAGAHEELDRVVGSDRMPDFSDEANL
PYIRGIAKETLRWRASTKIGTCHSTTQDDWYEGHFIPKGAVIVLNWWAIHMDETRWKDPQRFDPTRYLDDSLTEAESMAQ
ADANLRDHFTFGAGRRNCPGVHIAHNSLFINIARLFWAFNIRKSTDEHGNPIEPSTAAQPGFLLTPVKFPCRFEARSDKH
AAIIEQTWSEAQTQ*

>112818|jgi|CYP5387A1|[Trichoderma pleuroti TPhu1]Triple1
MEQSNLLSMDTTILRYILQMAAENPAATAAVVVCSSILLIVFFDWLNYQKQRRRLGNIPIVGDAPYLWKRLRWTENESDL
NGVLQRGYDTFSKKLKPWAYWGQHDDFILVLPPGACDEVKNADITEMSFLQAVEDSYHFRLHTNILGRTHVDAVRRSVNK
NMSQEPFAGFLEMWHLVHIVAASFLIGPHFASNAAYMEYIEDYCLNVPHFVHQYFWVPAPLRKMFWYLSPSGFRVRGVIK
KLKRFIIPEIRRVMEHWRVTGRVPDRYSLLGAMLELKEERGILKRDPTAMSREEEERQINIFSDEVIFTAFDSAGPVVCL
VTQLLYESIRDEKLTEALRAEISTALADDQGRWSAQMMSSLPRLESFTRETLRVNGPTLFSVTRSVLKPFQLKSGLALRP
GNIITSPSWMIHRDEENYPKADEFNPYRFYDEMTNSATTKATTASNTFLAYGYGSQMCPGRFLGIRMTQIIFAKLLMRYD
AVFDGDERAKPDNIVMPGQVLPSYYAKIVLKLTPKAQAREDDLLARPW*

>112869|jgi|CYP620B17|[Trichoderma pleuroti TPhu1]Triple1
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VFIHDQKPITELLENMSLKTASRPQMNFLDLCGYNREGASILLKLTYGYSSELYKPDPLVELMQEVLRNVSLVMVPFSWT
VDILPAISYLPEWFPGAGGYKRIARKWRALLDASADIPHDFTKQQMRQGLYQSSYASKLISFFAKEGKEVDEMTLEAIKW
TAAVMFAAGAETTVATILSFFLGMVLNPDVQQKAQEEIDSVIGSDRLPEASDEKNLPFVRGVIMEALRTFPVLPMGISHE
AVEDIIFQGYRIPKGAYIRPCIWWYFHDPQTYADPSRYDPARYLEPRNEPEPMDAFGYGRRICPGRFIAQETLFFTVSRT
LAVFNIGKAMQNGKPVDFEPKHSTGGLDHPQEFPYSIVPRSEKHAELIRRVEVDHPWEGSSVDAIQGNAVFDKYKASCNA
GTGSH*
>113098|jgi|CYP5392A1|[Trichoderma pleuroti TPhu1]Triple1
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PDIFTGHQVILPPENLPWLMKQPASVLSQRESNNEFLAAKHTFLNCVAADDNEWTFVVNLIKDITKELNNKTNDVIEEIQ
AALEDLWGNDTRNWTQVELLDVCLELMSRIVSRMYVGLPLCRDPTYLASSTHFAKFILVEALLAQLTPKPLRPLLGPLLA
QYDWMQFKRMDRCVNPIIQERARRFGRMENEEKKDPDQPSDLLSRLMQEAYRRNDDPCRSQSHSSKLLAILNWAAIQVQG
ITLENVLIDIAHSPQSASIQDQLREEATAADKADPSKRWTRAEVAKLPKMDSVMTESLRLWGFAYGIIKVVVAKDGVDLP
TGEHIPYGAKIGIGSYGLHHDAEVYPGESPFSFDPFRFLDEKTEAQTTGLKFAATSDTYLAFSHGRYACAGRFFANHLLK
LLLSQIVMRYDIKPDADARPQNPWFSYVLPPPIGYKLTVRRRKQ*

>113180|jgi|CYP6332A1|[Trichoderma pleuroti TPhu1]Triple1
MDGYGTFLGPMMLNEYSVVLPVVVLCVSLYLATRKQLSLPAVGRLTSPGLFGFWFPGVVANILSTREVLEKGYRKVCLGE
IRVGTCAYTALQYSLNDKAFFIPQLEANNVLIPPAWIKAYKRAPTSDLSLDGAIEDNLQIRYLLGPQIRQNSYHIEWTRD
SLTPLMPSVLDWLHEEIADSLDQVLDKDNHGFQKVKIFPFSLSLNCRIAARIVVGKPLCRNVKFQHLCEQHSQLLVVLSM
ILKFLPAWCKPLVVRMSPLRGVQRQITDLVRPLVLASYRKLKQGDEHSKGAASEPPQDEHGTTQPSLMDSLVRTAISRTL
SLAVEEDIVHEITMRFLSILFLFSGSPTLAVANMVLDLVSEPQELYSDALRSEITSVFEKHGGRWTLENLKELDLTDSFI
KESMRLRPAAFTIAGRKVINPRGYTLPDNSATVPFGSYLTLPMYAIHHDQNHYPPRTGDGSDFDGFRFKGTENNEAVPLV
GSSETFLSWGAGRHICPGRFASAAILKMCLAELIRQCDFKPRSRITDVTFANIYVPSKTLTVEMRRQNSR*

>113436|jgi|CYP65A7|[Trichoderma pleuroti TPhu1]Triple1
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LKYGPIVRIAPDFLSFSHPDAMNDIRGHRKAGQPEHRKDPVRQELHVQNIIGANRADHTRFRRSLANGFSHQAMLDQEPI
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PRRLLKFILPYAMPKGLSTKYAENQRLSAMKVRKRLDTGSNRPDFMTSMTTKRNGESLTFEELTSNAAILIIAGSETTAT
ALSAAAYYLGLFPEAQAKLAQEVRTTFNSVKKITITSVQHLTYMLAVLDEVMRMYPPVVSGLPRLTAEGGATIAGEYVPQ
DTIVEVWQWPLFHNPNYWTQPDDFIPERWLGDPKFANDRRECFQPFSTGPRNCIGKNLAYSEMRLILARVIMQYDIKLAE
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>113739|jgi|CYP526N2|[Trichoderma pleuroti TPhu1]Triple1
MPTADPQFKFNKKLVRDLMTSKFLNKVSAPPVYEKATALVALWNLKAYKAHGGPFEAGNDLYSATLDMICGVAFGMEDTK
SALRHEIAHVQSTNPTFPTMGDGPVYFSQARAIPELEALLDIPKMVSIAQASPFPTFSQFLALLKPRHARAQWNRRALVK
RQIDRSLPRLVSAGAEGCESALDQLLWREMNAAKEADRLPDYYSPAIRDEILGYLLGGHDTTAASLSWWVKFMSTYQSVQ
SRLRDALRQAYSDAYRDSRFPTMEEICGTSIPYLDAVMEETLRCGSVATLIARTATCDTQILGYPIPKGADVILTVTGPS
MTEPALPIPESLRSPESQESKDRVPCWEDDVSEFKPERWLKMVKSADGSREEEVFDQNAGPTLIFSAGPRQCFGKRLAYM
KLRTVMTLLTWNFEFQLLDGSLNSPDIHECFVNLPKDCYVKLAKV*

>114531|jgi|CYP6001C27|[Trichoderma pleuroti TPhu1]Triple1
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KAIITAKLKGETQADDKTMIMEKTIQLVAALPGGSKRQEQLTNMFIDELWYSLDHPPLLYMGDQFRFRQADGSNNIAQNP
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LDLAPLYGHSQDAQDSVRTFKDGMLKPDTFADKRLLGMPPGVCIILVMFNRVHNYVAANMAAINEGNRFAKPSPTLQGDA
ATAAWKKYDEELFQTARLVTSGLYINITLVDYVRNIVNLNRADTEWTLDPRQEAGVDVGTKKGSERGVGNSVSAEFNLCY
RWHSCISEMDDEWIHAFYDDLLGENYGTMDMRTLMIAIRKFAMGMPKDPADCVFGGFTRGPDGRFDDDDLVNCIATAIEQ
PGGSFGARNVPRIMKPVEMLGIIRGRKWHLVGLNEFRKHFGLKAYETFEDINSDPQVADALRNLYQHPDYVELYPGIVAE
EAKAPMVPGVGIAPTYTISRVVLSDAVSLVRGDRHYTTDYNPQYLTNWGYKEVEYDLKVNHGCVFHKLFIRAFPNHFKQD
SVYAHYPMVIPQENRKILTSLNRVHRFSFERPRASAPRVDVTTFGGFKQVIANEDKYRVQWQEGLEILSGHTGRYMQAND
CKTLESVLYKDNWRSAVQAFYTKTAETLLAKKSYTIMGKKHIDIVRDFGNTAHTHYAAQIFNIPLKTQENPKGVFSEHEL
YAALAAIFTTIFLDIDPAKSFSLRQKTKEAADVLGESLETTIKYTKSFGLRLFTGNTSNDPLSTAGVNVIKALAKSGMSP
HDIAWGLILPTAAAIVPTQGRLFAQAVDWFLSSEGAEYVEDLHVLASQEPGPEVDALLLGYAMEGVRMAGAFGLHQVSTG
PDIITEDDGRKISVNQGDKVFASFVSGARDPTQFPNPETVDPGRPLESYIQFGAGTHSALGKEVSQIALVELFRALFKKQ
GLKKVTGPQGELKKVPRQGGHCEYLSEDWGTLTPFPVSMKVTWDN*

>108579|jgi|CYP6003A7|[Trichoderma pleuroti TPhu1]Triple1
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TSDNRTQITNKFITTLWENLQHPPLSYVGSDVKYEVVNATEPTHKRKSDDGDSIEFKVPDSDVILREHIPREPDSLHQYR
MPDGSFNNILQPNLGKAGTAYAKTVRPEKCLHGVKPDPGLLFDLLMARDEETFKENPAGISSMLFYHASIIIHDIFRTNR
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NQVSVEFNLLYRFHACISQKDERWINNFFLKLFPGRSAENLKDISWTDLGQALVTFEKSIPKDPSLRTFDGLQRQADGRF
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TSPDMVELYPGLMIEDIKPARAPGCGICPTYTVGRAVLSDAITLVRSDRFNTIDYTPANLTNWGYNEVRQDYKTLGGSML
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NSLFSGKKDVSWFMLAGDRAQNFEHRASWTKAMGELPDLLKAVTDLIAGVGKELIQKESFTLGQGLDQIDLIRDVAIPLN
TRLLADLFYFDLKSNDNERGSLTTVELYRHLLNIRIWGVNNNDPGQAWNRRRRAQESVQTIIETTRKLVDAVKSRGNGRY
FTHRKTNSGTDPKPGSLRFHGLKIVEKLLDQGNSPEQVVDNLWLTAFGGVGVPVTALYEVMEFFLRPENASIWAQVQALA
QEDDLEKLQAYVVEAQRLTSSQRNVRIAVQPIELEGKSIQAGNIVVMMLGEAGRNPLEVPNAKEFDAMREKNAVTAFSYG
QHECLAKHIGLAFITGVVKLAANLKQLRPAPGQMGQVKTIRVGTEKSYLNDSWSYLGFDASSKFPPFLRTFQGERVPTKL
MDMQQYYFLLQKPKDQLLTAKTESIDPNVDEGATSPATKHAQEEHSIKSLPKHNANLNTIDSKGEFPLYGAAAGGHYDNV
KSLLEQGANPSLSTPYGWTSLHWAAGNGHENVVKILLAYGAEVNPRSDTYKTPLSMAKTDSIYQLLKQHGAQ*

>106776|jgi|CYP505P1|[Trichoderma pleuroti TPhu1]Triple1
MGYIKTLKKLGGHDGGQNGLEKPIEPMSKRVSEGKMKSAKDPNLVEIPKPKGLPVIGNLHNIDLDSPLFSLIELIEPLGP
ICQLTFGSELNIFVSSIELLNELCDESRFHKIVTAELEKLRYVVHDALFTARNEERNWEIAHRILMPVFGTIKIREMFPE
MKDLAQQLCLKWLASLGLDAVYALVALTGWELGLGYGEEYVIDVTADFTRLTLDTLALCTMGFRFNSFHNGSVLHPFVDS
MVRTLKEASVQAALPGFIQSFRKRSWRRYEKDTAFMRKLCRDIIEKRKGKTEPDSHDLLAALLGGRDPKTGEGLSDDSII
DNMLTFLIAGHETTSGLLSFALYYLLANPQTMEKARQEVDEVTQGSPIAVEHLSKLPYLNAVFKETLRLQPTAPGFILSA
DKDEIIGGKYFIPANVPIGVLLHMVHQDKAVYGEDVAEFKPERMLDENFNKLPPNSWKPFGNGMRGCIGRAFATQEALLI
VAMLLQNFRFEMADPGYKLKIKETLTVKPDNFRMRAKLRRGGTATEFQRELQSVGSVNTKTSSTPSVVSAPVAGGDKKPL
TILYGSNSGTCEALAYRLASDATLHGFHARKIAPLNAVRDSLPKSEPVIILVASYDGLPSDNAEEFFDWLNTAEKDSLKG
VSYAVFGCGHRDWVATYQRIPILIDDLLQKAGAERFANRGLADSAVMDLFVELEKWTAESVWPAISQTDGKLDNDGEGQL
INSLLKVEFSEPRQLQQYSQLVEATVMESRSLTTPSAIGKKMHIDIQLPSGVSYHPGDHLLVLPVNPMRNVKRVLSRFHL
TWDTVVRASGNETVRIPVETAMTAHELLSSYFELAQPATPRDIRVLAAAAEDEATKKVLNDLANISYLEDIQEKKTSLLD
LLEKFPEIPIGFGTYLTLLPSLRLRTYSISSSPSWNSTRATLTLSVLDEPATTEGSECFLGVASNHLAGVTPGDLIHVAT
RPVKGIFQMPTDLSKAPTIMIAAGAGLAPFRGFIQERAYQQQNGVQLAPAALFFGCRSSHDDLYRSELDAFESSGVVRVF
RAYSREDAGSKPNTRKGYVQDSLQAEKDAFVQLWNAGAKIYVCGSVRMASQVKDLVANLVYTAGPMDAQKEFTPQEWFKR
FEKTRYAAEIFT*

>109384|jgi|CYP505A25|[Trichoderma pleuroti TPhu1]Triple1
MADSVPIPEPPGLPFLGNLGEFSANPTDDIVRLANTYGEIYRLHMGSRPVVFISSQALVNEVCDEKRFQKSLSSVLRVVR
EGVHDGLFTAHSDEPNWGKAHRVLTPAFGPLPIRDMFDEMHDISSQLALKLARHGPHKPIPVSDEFTKLALDTIALCSMD
YRFNSYYKDKMHPFVQAMGDFLAECGRRNRRPGFAPNFLYRAANDKFYSDIAILRDTANAVVEARRKNPSDRKDLLGAML
NGVDPQTGEKLSDANITDQLITFLIAGHETTSGTLSFAFYHLLKNPSAYRKVQEEADAVLGRGPAKVLRETLRLSAAIPA
ISVDALEDTLIGGKYLVHKGEPITCILAKSHLDPLVFGDDASDFKPERMLDDEFARLNREFPNCWKPFGNGKRGCIGRGF
AWNEAVIAMAILFQNFNFSLDDPNYQLKIASSLTIKPKDFFMRATLRDGMTPTELEQRLSGKGVSEEHHADNKAASAASS
KGSQKPLAVYYGSNSGTCEALAQRVATDAASHGFKVTDLAPLDSANQNLPKDRPVVIVTASYEGLAPSNAAHFVSWIENL
KGNEVEGVSYAVFGCGHHDWVQTFHRIPKLVDSTLAEHGATRLIPLATTDAADRDMFSDFETWEDESLWPALKEKYGAGA
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FQLSWDAVLTIHSDQPTALPTDTPVSANDLLRAYVELSQPATKRNISVMAEATQDEELKARIEKLAGDDYQQEISVKRVS
VLDLLERFPSLELPLDTYLAMLPPMRVRQYSISSSPLADPTKLTLTYSVLEQPAMSGQGSHFGVATHFLASLAPGEKLHV
AVRQCKAFHLPTDAENTPLIFIGTGSGLAPFRGFVQERAAMIAAGRKIAPALLFYGCRSPDVDDLYAEEFERWEKLGAVE
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KQRNERYVTDVFD*

>111432|jgi|CYP5333B1|[Trichoderma pleuroti TPhu1]Triple1
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MRSRFTDGIFSLKMGGRMHHFIYKPSLAAALLNLHRPAAEEQMLANRLLGSTFGVSKKDAAIYNKIFPEALALYKYLSSE
PGLGEITGGALSQVKQSINSFVTFNSNPMDQTEWEKMADVDVIEEGDKGVPTTQVDLMELTRNYVATTAIPAIYGTDFVE
NFPELWKWMWIYNEAFVLLAMSVPSWIPWPRLQRGKLARRRLLAFLYEFNEAMDKHMDGEEVDPKWQNLDNVSQLVKGRI
ALFRQHGVSLDGRASFDLALLWASVANSNPLITWMLFELYRDPVLLEQVREEIAPYVKAVQPRNEFGSAVWVPPVLEDMD
IDGLITKCPLLKASYIETMRVYSCGWAMKMMYSDTVLEARGKGGESFLLKKGTYAHIPQELHQFDPQYFSNPTEWQAERH
VRETVDEGGNKVLTAELGTMRPYGGGLKMCKGRQFALREMLLYAAAIITFYDMQPPKGGSWSEPQTRKLVANKHPKKPLK
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PSPIPESLKPLPTSSKTSPTEATTIASAAAATAKDAAKGAAKKPKPTNDPLASVDKSATEQRKADWAIMKEMSRYLWPKG
DVGTKVRVGLAVALLIGAKVLNVQVPFYFKSIVDSMNIDIAAVGGTATTVAGAMIIAYGATRIGATLFQELRNAVFASVA
QKAIRGVARNVFNHLLRLDLSFHLSKQTGGLTRAMDRGTKGISFLLTSMVFHILPTALEISMVCGILTWQYGVKFAAVTA
LTMVGYTAFTIWTTAWRTKFRRQANAADNRASTVAVDSLINYEAVKYFNNEKFEVSRYDKALREYEKSSIKVATSLAFLN
SGQNVIFSTALTAMMYFAAEGVAAGTLTVGDLVMVNQLVFQLSVPLNFLGSVYRELRQSLLDMETLFNLQKVNVNIVEKP
TAWPLALIKGGEIKFENVSFGYHPERPILNNLTVTIPAGKKVAVVGPSGCGKSTLLRLLFRYYYDVQGGRILIDDQDVRDV
TVDSLRRAIGVVPQDTPLFNDTVEHNIRYGQIDASHDQVVAAAKRARIHDIIEKFPEGYQTKVGERGMMISGGEKQRLAM
SRLLLKDPPLLFFDEATSALDTHTEQALMMNINGILREKGRTSVFVAHRLRTIFDSDLIIVLKEGHVAEMGTHRELIDRA
GVYAELWSAQETMFHEDGTETKEAKADEEADEADEEATEQKKN*

>112039|jgi|CYP535D14|[Trichoderma pleuroti TPhu1]Triple1
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DDDDDASSTASLSESIYDYRQIHGRTFQNSRTTEYWGPNDDRQNNGLDISHHFITMLLGDQLFEAPIKKPPSKVLDVGTG
TGIWAIDVADMFNSAEIIGTDISPIQPTWVPPNCMFHIEDAQLEWTYPSNTFDYIHIRALYGSISDWGELYKQAFNALTP
GGWIEDFEFNITLMSDVPEVRDDPKHIFKRWSEVFTEAGERMGRTLLIGTGGRMRKLMQEAGFVDVVEKNYKVPSGKWSS
DPTLKQVGAYNLAFLDESLEGFALFMLKEIMGWDYIEVQVFVAEMRKAINNQKIRPYYILTPRMQEVKISLTWAAYSAHF

AWAYRRTVEQTFPNPDERAEEAQRQQRTRPDPSVDGSPAARPPSIPWLKAGMEWNGGLKAPRAFETMTASPLLAPYPALL
RAAAAAAAAAAAVSFSQMEGIAGIPGSVLLLAGGLIGIFVIGRIVTKALFQQRCQEWYGEICEKYGPIARIAPNVLITSD
PDVWIHVNNKPGYKRSEWYYTACRIEYRRDNVFTQTDNKKHEARRKQMAPGYSGRENPNLEQSIDERLQEFIDLIRSKYV
STSGHVVPVDMARKVQFFTLDVISGVGLGRTFGMLQSDSDVENYLQSSEEGLHIANFGLAFSLSWITQARFLGKFIAPSP
DDSKGFGRMMATCFRYVNERVANPTDKRSDMLASFIRHGIQGDELRSEALEQIVAGSDTTATGIRCSLLHIITNPRVYAK
LQREIDEAIRDGKAPQDGLITHGQAKQLPYLQATIREAMRVWPPVANVFSRDIPPEGDTVKVKGEDVFLPGGACIGYSAL
AMHHSTEIYGPDAKAFRPERWFEQDKDKLALMLRTNELIFGHGKFQCLGKAVAQIEIGKVVFEIFRNFDMALINPTKPWV
ALNSLGLFTISDISLGLGHVIAAIGRTMFLEPRMAQIAQTPKNHGNAPVDSITMSSALAKAPLAPAADSKPRASVAAIPT
FDNALSKGIAFGRVAVLLGLLAAQFNDLVAEPVPALQSALPVVAAVQVAYAVLCLPAAGSQQAKAAKKARPGEKKKAEQA
GTSSVVTALLALVLSTIATPVIHALFILFGAPFLDHATHTFLCAAHFSLLGIFPVIYARGVDSQALIAVAGLSAPLDETL
GGLLGALLGAWLGAVPIPLDWDREWQKWPVTIVCGMYAGSCLGSWLSGVVFFGRRLGGTASAAKDE*

>112046|jgi|CYP618A5|[Trichoderma pleuroti TPhu1]Triple1
MESLSVALVSFTSVVLVLRPTDATVPLAAASGLLVYLLATVVCKVGKALIYPFYISRLRHLPGPKDNQFLVGQGIRLLKA
AGPNDLYLEWVRKWPDAPFIRHLSFGNSEVLLVNSIEAAREVLQTHAYSFVKPSFFVKLVGEILGTGLLFSVGDQHRQLR
RITAGPLSKPNVRKMLPIFKDKARELSVEFDTAIGEEKTGVVEIEALFNRTAFKVISTALLSRDITEFRSSSSPLSFEEC
YKAILTPPLLGKLITFINPFIPLRWLPIEANLAFIRASNALREMLTELIQERVQQVQQDKKSGQSDATADTKDFLTKLIE
ANLAEKNGVSNKVMVDVMLQSVSAGHETTAGALTWTVYALVKYPEMQQRLREEILAAQQKQPDLDAATIDSLPYLNNIIS
ESLRVYSPTLMAPWEAGEDVVIAGVSIPKGTTVTTIPAMVHLNPAIWGADFDVFNPDRWDTTTGAAANPFALEAFINGPR
TCPGRALALLEIKTVLVEMLSNFSLEAVNLDVGFEHPTLTLKPKEGLHLLRPDVFEPPTTAKTQRGPHAVSLRALPQEEI
KVRWREATVWFLQKYWDRDYVQALEDQVRLLSASLEQSKESSSSQSASPASQPSPSEPKKLPYGPKMLKALHDFGSVKWA
DVTGRDGLPMLAGPGRFSFYSNTLLPTFEDGTKPSPPPKEGMSKEAFLLEIASNLSLKQHLKAHFLDNINPYYKFIDPVW
LNFSDLFPHNDTALQFLYSALFAAAAYSSPVATREIAEAFMAYAEGLVQQCYLEHLCLPVLQGLMIIAWQKHVMLDAAKG
HLYHYMAIGLSNHLKIRDLPAQERTVNDVATIRTFWSLFFLDRISTPKLGAPTAIPWDPDNITPYIDTVSPELVDVAALS
FDHHCKLYNIQQRYIDVMYSPNFQQRPAAEKQAVFAKANNEMLALRKKIDRRLYISRNVKPDRVQVVFWITYHSILINLY
RPVLNPKDPGMVHNIPMAFRSSTASAMAITRLLKSLQASDEIKHLPPFIIYHVFRAALVHGLNLIAAEEAGGQRMSSGNF
WSCFRVLGELSGIWKELSEGTM

>200187|jgi|CYP5091C1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MSVTADIAPPILRLTTLMAYKEKLLGVTLLLAILIVVQFQRIRTAISFLIRRIQGLLYLFFGPEIIDHAYKQAKGKTFKV
STPSNDHLLITSTALIRELINAPLQHLSLHAVAKERKQILQPKYTMCGFELHDNRGIEGTGYVRALRSLLTSHLPKFQPD
LERIMKDALEAGLSEVRPDGFAHVKIFPFMKTLVTRVNCFVFFGEELSQNTEFTSAALELPQAVVFAAELLRITPEFMRP
LVASIATNRHRAARRIYHYLVPIIEQRLAVRELQSSNEATPTDCMQWLIDTSPRKNLWTPAKIAGEIMAVWFGSVHQLAI
HADAVDCCFIKESVRSSNFDAITCRRKALVPYTFQDGSSINKGDWVCVPQRAMMQDNTRYRDPQIFDGFRFARANVQLQQ
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MLRKKELQ*

>13758|jgi|CYP5389A1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
LSLCVLLAVWHYFDVSGHDPKEPPIVKPSLPLIGHFVGFYRHGVSYMDRMRHHTSWPAYTLSVMGHKTYVVTTPGLSHAA
LKSKSMSMDPLIAYVAPKMLGLSKDSGHHFGIDHTGFYTGSPALRERREEFSHALAPGPDVNFPGQIFSDVVAEAVNAFG
TDWTARDLYLWLRDVITLGTVNGLYGLKSPAALDKSIIQDIWTFDENQLRLSWGVLPNLIAPTGVRTLGKISQAFQKFVQ
SGDDYFASSAVKLGIATARKMDVSIEDYSRIEVFNVSVATVNTVPTAVAMIQNILANSNLLQALRKELETVLIIKETPHG
RQAELNIGSAETECPLLHACYQEALRIGSTPTCNRAVLEDVVLTDPDTGREILFKKGWRVSIPTFLLHNRDTFWGGDAVS
FGPEKFLPGGIATDGKGKVKTQGFVPYGGGAHLCPGRHLAKMEILASGALVIMALDFEAERGFVTQNYALNVGAKKPLGL
DNVRIRRRTEWEDIEW

>31830|jgi|CYP618A4|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MESLCVALVSFASVVLVLRQTDATIPLAAAFGLLVYILGTVVYKVGKALIYPFYISGLRHLPGPKDNQFLVGQGIRLLKA
AGPNDLYLDWVRKWPDAPFIRHLTFGNSEVLLVNSLEAAREVLQTHAYSFVKPSFFVKLVGEILGTGILFSVGEQHKQLR
RIMAGPLSKPSVRKMLPIFKDKARELSTEFDTAIGGEKNGVVEVEALFSRTAFKVISTALLSRDITEFRSKSSPLSFEEC
YRGILNPPLLGKLITFINPFIPLRWLPIEANLAFIRAHTALRAMLSELIQERVMQVQQDKKSGRSDENAGPKDFLTHMIE
ANLAEKKGVSDQMLIDVIIQSVSAGHETTAGTLTWTIYALVQYPDMQQRLREEILSAQQKQPELDAATIDSLPYLNNIIS
ESLRVYSPTLMAPWEAGEDVVIAGVSIPKGTTVTTIPAMVHLNPAIWGADVETFNPNRWESTTGAAANPFAIEAFINGPR
TCPGRALALLEIKTVLVEMMSNFSLEAVDVDVQLEHPSLTLKPKGGLHVRVQRL*

>32911|jgi|CYP642C1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MRYQVYSFVYNAILNCARPTLSINIFPRKVLVTDPSMESVLSRHTSETSLANVIFLIGRRVFDLSDATINAIGSYDPRPV
HVGEFSSASNARALVAQVSNAANQRLQSQPDVQETELGPWLFKLTSSSVASALWGPESPFVVDDEFQTAFMEISGSQMTL
LRPFSKYTAQAAHKARALIISKLKSFHFNNRDSRLRQIAHRINAVALSDTEWESNKDYFNVELLTSLGLLVTPSSMAVWM
IRHLLMRPDLLERVVKEARNPDILDAEGRIDVARIRESFPFLAACLYETLRLHMTAIPRLAKTDLDIAVPNSQPIHLKSG
DLIYLAMSSFNKDTATWGSDAGTFSPDKFLTNSGSLSASMVRKLRVFGVAGNLCPGRKVGFETILFVVANVLRDFDIENP
RGEDVTYPEPRTEDGFGIGFERCANEITVRLRRV*

>32994|jgi|CYP570E3|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MPLKSNYLSNFCLIFLVAFVAHRIYRWQRLRHIPGPTSAAWTIWWQLSSALSGRYHERLKEAADTYGPLVRIGPNQLLSI
DPEVLRRMSAVRSGYTKGKFYASGKIVPGVDNVVSLRDPTKHKEMRALMAPGFAGKANEGFSFEAAMDRQLLSFISLLER
KYVSSGSDVRPFDMAEKTQFFALDAIGDISLGQPFGYLEKDQDLYQYNEINTTSLPVMNVVSVMPSLANLVHTWPLRLLL
PKEGDQVGFGRLMHFARSYVETRLDPKTPRAHDMMQAHIDNGMTKNDLIQQVFLSIIAGSNSSAHALRMTLLSLITSPPA
YSALIDEIRRASPSVSSPITWAQTQSLPYLQAVIREGLRMWPPVGGLGFKTVPPEGDYLNGYFVPGGTEIGQGFHGLGRS
KAVWGPDADVFRPERWLAAQGDALRDMTNAVDTHFGYGKYSCLGKPIALMELHKAVFELVRRFDFCVVNPETPIKTTASI
FLFASDFWVTLTKRNL*

>34391|jgi|CYP559C3|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MAIPELLGSVTSAQLWSFGALFLILSFVIDFASHPQYPRQIPVMGKGHGMLNALLDSFRYITNYHGWVSDGYTKFGKKGL
PFVVRSPLSRPSEVVIPRNQIGWMMDQPDHILSTYDAHNTVLYSEYNFLGRRLAFDPFPNRVMHKYIARHLSTVIPNVDD
EIQHAVNTSLGDDTENWKSIKLWNLWLEIVPHVTNRLLIGPEVCRNKQFIDGMVNFTNDVVRNGLLLQLLPKVLHPIFGR
LFGISNYIHWRSANAPAQPIIEKRLNAMLKKAAGDAEYKDYTPPEDFITWLIRQALADGKTFELDPVVISKRLLPIEFAA

IHTTVLTGQLWMQDLLTSDPESGILDTLRAEINAHKPESGPWTKTAITNLVRLDSSIRESQRVSNFAVTMIERKVVADDG
LYNPELGWTLPKGSFVTVNLEGTHHDQDLYKDPHSYDPLRYSRIREAWDAKSDQEKKSEPEEGTKIRGLGMVTTSPQHLA
FGHGRHAW*

>37402|jgi|CYP5333B1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MESVEALWSNLTSRLDERQQSIAVAIIATFLVLILTTKAITGSPTTVDASGKHKIPASPSYWLPFLGHAFSMAQGGFLAS
MRNRFPDGIFSLKMGGKMHHFIYKPSLVAALFNLQRPAAEEQMLANRLLGSTFGVSKKDAAIYNKIFPEALALYKYLTSE
PGLSEITSVAVSQVKQNINSLVTFSPNPMDQTEWEKLADVDVIEEGGKEGPITQVDLMELTRNFVATTVIPAIYGTDFVE
NFPDVWKWMWIYNESFVLLATGVPSWIPWPRLQRGKLARRRLLAYLYEFNEAMDKHMDGEEVDPKWQNLDNVSQLVKGRI
ALFKQHGVSLDGRASFDLALLWASVGNSNPLITWMLFELYRDPVLLEQVREEIAPYVKAVQPKNEFGSAVWVPPVLEEMD
IDGLITKCPLLKASYIETMRVYSCGWAMKLMYSDTVLEGKGKGGGSFLLKKGTYAHIPQELHQFDPQFFSNPTEWQAERH
VREIVDESGNKVLTAELGTMRPYGGGLKMCKGRQFALREMLLYTAAIITFYDMQPPKGGSWSLPQTRKLVANKHPKKPLK
VWIKRRELPAEGGERRR*

>38198|jgi|CYP68Q3|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MDTFNATPLAWPARLVEEPIQNDKLFVYLGSAAVIFLIYLYSGRKSTPLPLVNPSGRWELTRNRTNKEWLAKAKEIIMRG
VESFPGKPFNMMAADVGMTTVVPPEFAHEIRNNPNLSFVEFMAHLFFSNLPGFEPTREGMFDNDIGIVVIQKYLTSLARM
TEPLSQETEYALPDIYTENEEWHDVNLRNTNLALVARLSSRIFLGEELCRNEDWLRITVNYTVDLMKAAEQLRQVPGPLR
RLVHWILPEAKKLRAEVKQAGDIIRPILEKRRKEKASHLAQGKEPVEYYDAIEWFEQIAEEKQRLYDPEIVQLFLSTVAI
HTTSDLLTVTMFDIARNPEIIEPLCDEIRSVLQNGGWKKTSLHDMKLMDSVIKESLRLKPIGLVSMRRVATSPVTLSDGT
YFSKGTKLAVSSHKMWDASVYPEPQKWDGHRFLNIRETPESANTSPVKGKETLLVSTSERHLGFGHGKHACPGRFFAASE
LKVALAHILMKYDFKVPEGVEVKHRITGASYYADPFATLSLRRRKDEW*

>39153|jgi|CYP5104A5|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MLASVQSLALYPFLLFGSALLVTSTVYVVYQCFFSPIAAFPGPFAAKLTKVWRAYTTYRGQWHRDLIELHQRYGNVVRIG
PNELSVGHPDAFRTIYRANGAFAKSASYSVLQGSRPFDLTGERNEKIHSAQRRLVARPYSMESVVHLEPQVTRLIDDLLI
KFDSFATSPRPIDIGNWFQLFAFDVIGAVSFTKPYGFVAQATDDGMFARIERAMGSTAWLMHAPWFFKFHQKFILPVFGN
FLGANDRNGYFFQFAKSEVQDRRDKGGNDKDIVGQLFQAAHAKTELTDLAISFMMTSNVFAGSDTTAIALRSIFLNLLRH
PHVLSKLIAELEERRAAGRLSNTVTFQEAEACPYLQAVMHEALRIFSPAGFSFDRDVPKEGMIISGKFIPGGTVVGSSPW
VIHSLPEVWGADVDKFRPERWLEGENSSELSEKRISRR*

>42427|jgi|CYP539B7|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MLQSLQAQIPGLALWLVITIPCLVVVLGIIERLVVNYRLSKVDGVRASILAWNPVTSFYHFFKAGYMHANNRMLENFFSM
FKDADPRCPHAVEMTIFGRRSILTVDPEHIKALLTTNFTQFGKGEMFHRTWKPFLGDSIFTTDGQMWQQSRNLIRPMFIK
QKIRDLDILERWNDVLISKLPPSGQTVDICDLFYRMTLDAITDYLLGHSVDSLDNPNGEFTTAFTKVQRTQMLLAILAPL
KRFIPKGEYIKGIKILEAFIQPFIEATLALTPEELESISKSDKEFTFLHNMALFSRDPKVIRDQIMAVLLAGRDTTAATL
SWTLYELSNYPKIWSRLRSRVLETVGPDAAPTYEDLKDLTCLTHALYETLRLYPAVPFNVRSCLEDSTLPGKPGQPDIAT
LKGDHILYSTLAMQRIKDFYPPVSEKFADPDIYSPERWEHWTPKPWQFIPFNGGPRICIGQNFAMTEMAFTLVRLLQRYE
RIEYRGDWAAQYLKADIVGCPGQGVPIALYEAKQRY*

>44583|jgi|CYP5128C1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MVTTVTDTALLVTTLSPLSIGVAFVTILVLKVLYGLSTDRLGHIPGPLIARLTPIWYWYLCWKGIECTVIAALHKKYGPV
VRIAPNEIDISDGAAVNPIYVDNGGFRKTAGYRNFDINGFPTIFSVVDHAHRAVRAKAVSPLFAQQAITNSKPAMQKIID
ATLDELQHRRSLAAGRPVDLLNLFRCMSIDAMTEHLIGECFNSVGSERLSAAAFVDNFVAGGRFFYLPSWIFSLADSWAA
KLDENKASITTSTDIVQKFAAKVVDDSIAQGEKDTYQGRLLSANISREETIAQIMDIMFAGTDGVARVLAVFCWHLIQAP
DKYDRIYNEIIQNPEVDARSLPYLSGAVKEASRLALANPTRLPRIVPSGGLKVSGLPIIPEGTSVGIGAYSLHFNPKVFP
EPDAFVPERWLECTPEMLRDSFPFGKGPRQCIARNFASAIVWWASEALVRSRVLDGAKPVQEKLEIVEWFNSKQVGGNIE
LSWA*
>46089|jgi|CYP630C2|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MIVNLLLVALLLLLLEPLVTYYLDSKKLRRFPNASLLSGVSDLSYILQRYRGFRSKEIHKAHLQHPVVRVGPNSLSFSTP
DAIRAIYGHNTPCIKGGTYVTAAGAHPSLLDVVNKEEHARKRRILSHAFATRNLEQWEFKVTDKVQKLIAQFDLVCHENE
GEAIIDFRTWSNLFTIEAIADIALSHHLGCLGQGNDLVAITTKDGREKTVNYIDCLHAGRRATSMLIWSTKWFSSLRFVL
KKLPGFFQTQWRKGQGFDEMVHYLVQQRLRRYKNGEQLEDFVGCLFQDKHGDARNLEIGEIEAEVATLLDAGSDTTAISL
THAMYFLLRTPVALSRLREELRVALDDSQEVSKYAKVKNLPYLHACINESLRLLPPVAFGLNRMTPPEGLMIDGNWIPGN
TLVGVPAYTAHRNPLFSSSEQYQPERWLKDNIKETQGIFIPFSTGARGCIGRNISYIEQTVLLATLVQRYDLSLADSGWN
LDHEEAFNLWPGPLPLKIRRRENC*

>46635|jgi|CYP671D2|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
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EFPGPFWARISRFYAMGKMIQSRKGYEDIQKLHQKYGDIVRVGPRELSINRPSAIRSLYGAHSQTSRPPWYSQTSRHPSK
SSLINTRDSAAHKLRKKIWEKALGSSRALDVYESRVQAKVDLLLSKIEEANGNPIDMTKYFMYFSFDVMADVGFSKNFNM
LESTSIHPAIKGVHDTMWFIGLLTTIPWMLYMVGSTPGLNSLSRFSIWCHEQLNEKRKILASEKEKEPQDVMSWLLNAMD
KGDPAAPPSERAVQEDSRLLIIAGSDTTAGVLANAFHLLLTNPHTYEHLQAELQKQFPGGISDWTYEKAKAIPYLDWIVY
ETLRLRPTAAAGMPRALPSQGLMIDGEFIPGGTIASIPPYTLQRDARYWAEPLAFRPERWEDCSMDSVPWIAFNRGTWSC
PGKGLVMMELRMVLSRVLLQYDVTLPPGMGGDTFERDTIDNVSMVVPALYLTFTPR*

>47284|jgi|CYP53A46|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MALIEYALSPWAIVALAGALVASYLHQYFVTYGPLRRFAAPFPAQFSNLWLLSVCRRGNRYETVDKLHKKLGKFVRIQPN
HISIADDEAINLVYGHSNGFLKSEFYDAFVSIRRGLFNTRDRAEHTRKRKMVSHTFSAKSIVQFEPYIHQNLELFVQQMD
RLVDTSSYKGENGRKEARIDCLPWFNYLAFDVIGDLAFGAPFGMLEKGVDLAEVRDAPDSPPIYAPAIEILNRRGEVSAT
LGCFPALKPYAKYLPDPFYSNGLAAIQNLAGIAIACVKRRLDNPPDVERKDLLARLIEGRDDKGEPLGREELTAEALTQL
IAGSDTTSNSSCALLNYVVRTPGVLDKMQAELDAAIPQGVDVPTFEMVRDLPYLAAVINETLRHHSTSGIGLPRQVPPES
PGVTICGEFFTAGTVLSVPTYTMHHSTDIWGPDAEDFNPDRWAKLTQRQKDAFIPFSHGPRACVGRNVAEMEMKLIAATW
ARRYSAKVLQGPMETREGFLRKPLGLDIALFKR*

>47601|jgi|CYP530A37|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MPKPWVVFGLGTLVLFLWRLNKIGRRPKNYPPGPPTLPLIGNLHLMPKKNAHLQFQRWAEEYGPVYSLMLGTKVAIVLSS

DVAVKDLLDKRSSIYSGRPELYMGQEIMSGGNRPLFMGINSVWRRVRKLAHGLLNVKVSRTYVPYQDLESRDMLMGLLES
PKDFLNHIRRYTTSLTTQMAFGYRTPSSDDKGLLEMFENFDELSRLTGSQSAAILDLYPIARILPDFLLPARRLGREYYE
REKKLFMKHFLNARQQLNSGTSKPCCAIDLLRAQKEYGFSDEFGCYLSGSLLQAGSETTAIILTGFFQAMLVFPEVSKEA
QEEIDRVCGDRLPDLNDYPNLPYIRACLKESLRWMPATALGVPHAVIQDDSYLGYHIPKDAGLILNVWAIHNDSKRHPDP
RRYNPARWAGDNQNSAQAAVNPDPTKRDHFVFGAGRRLCQGMHIADRSLFLAISRTLWAFDLKRPVDKETGHEIIPDVDN
IKDGLFISPMPFAADIVPRSESRAAAVRQEWENVAGLLDDDMQWKTVPEGLKWKDYEPLDDENEDLLESLS*

>47618|jgi|CYP5168G1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MDFYYANQQAILTAVGALSGIIAHITVYIRGEWHVQAPQITLQLFALYVGVPVLVRILKDTVVAQILQGVVFWSYGYILG
LIASILLYRIVLHPLTRASFQGPWYARFTKIWHVWAARGSMNHRVLDDLHKKYGNFVRTGPAEITVFHPDVFMAVDGPRS
ECIKAEWYDILHPGQALVTARNKSVHAARRREWNSGFTTKALSEHEAKILKYVDKLDQCIAEDAKLENVTNMRDLLLWFG
FDIMGDFVFSKSFGMLENKQWHHIIVRLQRALSLLGPFSSVPWLIQIGFKLAPRVSVLKDWFDTVAWCQSQMRDRLENGS
ASQSQDLSYYLMEKDSEGNGATENEKWHWAAGDSLLAIVAGSEPTAVALIAVFCELGRHPQHAEQIHEEVKNVDVTDLKT
LVSLPHLNAVIKESLRLHPALLTGGNRKTTAFGLTIDDQFIPPNTTIVAPRYTIGRLESCFERPSDFIPERWTTRPEMVR
NGAAYAPFGTGHHSCLGKTLALDTMKYVLARILKNYRFRAAPGEDSLSALETVRDQFTSNPGILKLQFEKRHTID*

>47705|jgi|CYP574C1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MRDELICIASASAGVLSHLLYFIHGNKSMQAPKILVFYLLAVWAFLGTVLASAMLLSYFMALFTSISVYRLFFHRLRHFP
GPFAAKLTKFYGPYSAWDGKLHVKHIKLFEEYGDIVRTAPNELIVLSTDAQQKIHAASSQCSKKDTAYEAINYKGYQNIE
TILTREEHRWRRQVWDKAFNTKTLESYESYAREVVYEWLGKMASLQGQRVNTSLYSLLIPFENMGRMGFSINFGSIQNGK
EDPMLHYLEETLGSIGKLGAMWWPIALLNSIGGSRDHVEFQKLACRMVDKREKVADDEREDIMKYLLQDHHEKVPKAMHD
HDMIYSDAQALMVGGTDTIAAVLSFAFYHLARDPTFRNKLHAELEPLYGRTIIGEFTNFDLSEAEAPYLNAIINETMRMD
NPTCANGPRITPPEGLEVDGVFIPGDVVVYTPIHAMHRSSKFFKEPDSFIPERWTTRPDLIIDKRAYHPFLLGPHNCVGK
RLAMIVMRFVLAYTIWYYDFEFALGEDGIAIHRDAINGQILKPGKLECVFTQRA*

>47780|jgi|CYP540B36|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MISSSFYLFGEEPSIARQITFPATYNFADLQVLVASYFSIVDAKDVGFIHRNIELTSASEVYAATGPIAISINGKPVRDI
PGPAGLPYVGSFFEIYPDHLGNHQRLFNKYGPLIVTTNMGSRIHHTNDPRLANIFFSESAFFSKKIIPNHPLHAVGMSEA
GLFFGNTDSEEWRITHKFLPPALGPKAVRHYAPAMQRTVEESFSVFDKLDLDGESWNVFPYMMKIGSQAVGRLVLGLEFG
HFTSVDAPLHEFVTKVTSVVELSKRVTSIGSWYTNMPFGDPKRLRDNMKEVRRILLEASKKASKGIEDLELQDAALQSQN
LVDYCLRARDMKGNRLTWDQFVPALVVITAAGFVTSASLLSWMIYGLVTYEGVQERILQELIDHDWDENIQVTADLTNQL
KFMNNFVKETQRKHNPSFQPSRTALVDMILPGGYKLAKDSIVIADLHHIHTNPHVWDNADKFDPDRWDTEKIKNRPPGSY
QPFASGPRACIGFNFALQEVKIVLSKLLYRYRFSLAETGTVEYDPYYLIIKPSNLYVRAERRFKWPQKTGAKRDA*

>49153|jgi|CYP623B8|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MAPVDTFLAYVDDYRDWTKYVVFAVIIVILYQHLFATSYPNGLPLVGERPGAKWFSLRTRWRYYVDCRGLYQEAYENFIK
KGKTVLVPGFGTRTEIIMPQSSLPWVLQQADDVLNVQKAFLEINQTKYSLADERYWADGWQFHLVKTHLNPILQNLTVGL
NEELGYAFDKYFGTDAENWTELPLQSTIRKVVAAAASRFTVGLPLCRDEEYLTTTYKIIDGFMLNAAATSTTPRWLRPIV
GRLVSAHTLRNVEKIKKIWEPLYRERLQTLEKPEDDPNQPRDHLQIMMRYASTERRDELPDLHVMTKRLCAANFASMHQT
AITVTNMVLNIIGSDAEYNTLAELREEMSEIWKSEKPEWNKTTIAQMIKTDSVARETLRVNLFGNRTLFRKVLKEGVTTQ
DGIELPKDCLISFFSQPVQVDAEKFVNPLKYDPFRFSRQREAAPAEDGKPGLTSLSFVSTSTSFLPWGHGKHACPGRFLV
DFEVKMMVAYLLRHYDIEFPDQYGGKRPPNVWLAEVGMPPIGVKIKVKRRQVPY*

>49273|jgi|CYP526K3|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MAATISSGEAWVVGIVCMALYMAYRRILPKPIPDIPYNKYAAAKMFGDVPEMMGYVIRTQRIFCWLTSLTTRLQSPIVQA
FIKPGGLPWVVVTDPFESQDILLRRIKEFDRSEFFGELINGILPEQHIQFISTDLRFKKNRNLINHLMTPTFIREISAPE
VYMAASTLMKLWKIKCNMAKGRPFSAHHDVTFAALDSIFASSFGLVEDETNTIQRIKALDSFEPVFADDDDEPVAFPEGH
TPDIFSAVLILANSVTNTQLSPAPVLTSWVIRKFPYMRKAKSIKDKYIQDKVEESVRLIEKDPSIKPKSALHSVLLRERD
VATKEGRQPDYRKGAIADEFFGFMTAGHDTSATTIAWGVKMLTDNPAAQDRLRNALRSAFPTAVQEKRDLTYAELSSAQV
PYLDAAVEEILRLSNTIAFVVRQAQRDTTVLGRNIPKGTNVFLMANGPGYLEPNMKLADESRSPGARQTAKSALTGAWSD
DNIDKFFPERWLETDPDTGAEVFNTMAGPSLAFGLGLRGCFGRKLALQVLKIHFALIVWNFEMLPIPEKLAGYEAVQKFA
REPTQCYIRLKEIDL*

>49550|jgi|CYP5268A8|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MCIHAKVKFTGIPILGNMLQVPQTHSWIKFKQWADQYGPLYSLSLAGNRHVVVSTEKIANDLLRGRGNIYSSRPYLPMGA
EILSQNLRPVLLPYNDLWRKGRRLMHSFSSETVASAYEPIQSHESSRMLKDLLADPVNYEKWFERYSAGVILRLAYGKTV
ETGDEENVREILEVVHTVERVASPGAYLVDIFPILLWLPKWLAPFKWEGDRLHRRELDLFRRSLDDVRTEIAEGSQTPSF
CRSWLEKEQLSGLSNDEAAYVIGTMFEAGSGTTTSAMLSFVLAMVHHPEWQRRLHQEIDAVVGNSRLPSFDDIQHLPITR
AIVKETLRWRPVTAGGLPHQLIKDDIYEGIFLQAGTSIHPNQWAIHRDPTLYPDPESFRPERWLEPSWPTYREPLTQFPN
LQNFSAFGFGRRICPGQSIAERSLNIAVARIGWGCTVSKIRDVEVPLYDYTTGFNVQPKKFHFSLEPRGSHALSLLSEVL
*
>50427|jgi|CYP684L1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
RDPLSQVPGPWYTKWTSLVIKYHWLKGNRARYQHELHLKYGPLVRLTPNEVSVTNIEAVKKIYNARETYLKTSWYGDLSV
TTENLFNTTRVEVHRRLRRLLSSSMSETSLQMAIPQVQFKIDLAIQRMGEEMERRGAADVIKWFLFMATDIIGELSFGDS
FRTLEIGEKSGYTKDLENLGYLGAVRSAFPTFIAMAKYLPIPFFTRPLQATRNMIRYSEESIARYRNLLDSDPTSVKWTL
FTKVFKDTDKDAFTPVELRANASGYIVAGSDSTAVTLTYLVWSVCSNPKVKATLLEELQTLPTDFNASHLRDLSYLNQVI
DETLRLYSGIQSSLPRYVPEGGDDIAGYWLPGGTSICAQAYSMHRIVSVFPNPDVFDPSRWASPTREMKDSFMPFGNGAR
ICIGLHLARIELRYATARFFLTYPEAKVSTLEGFSDEDMVPKVFFFEEPTAKRCLIQRY*

>50878|jgi|CYP584R1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MDFSRIALTLYLGVVVYCVFRFVSHRISRAKRQQEFSRQYGCEPIHKKYPHKDPFFGIDVFIRNIKAVTNHQFLETVTKR
HDEVGETYQLNMLGTIGIMTRDEEIIKTVLSIRFKDYSLHDERTKALNPLLGNGIFSSDGSSWAHSRALLRPQFARSQLM
DLSMLESHVNCLIDIIPDGEEVELQELLLRFTMDMATDFLFGESTNSLLVNQDGYHSKLEGFAESVQYAQDRMAMHIALG
KWALLKPDPKFHHHVRVVHKFVDEFVQKALQENDLDSKTQPYVLLRALVEDVKDPIQIRDEVLNILIAGRDTTASLISNV
FFMLSSRPQLWSMLRKEVQDQFQNKPPTFEEIPQCKYICYTINEALRLYPPVPVNSRVANCDTVLPRGGGRDGKSPLFIP
QGTPVIYNVFGLHRRQDVYGTDAEEFNPSRWQSLRLSWEFLPFNGGPRICIGQQFALIEASYVLIRFLQHFETIELKDQR
PWQEKIALTVSGLNGVRVSLNRSK*

>50949|jgi|CYP504A23|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MAFQILGIAIIAAVFVVLKVLNATDTPKVKGIPEIPGIPLFGNLLQLGVDHARVAKNWALKYGPVFQARLGNRRIVFVNS
YEAVKHFWITHQSSLISRPTFHTFHSVVSSSQGFTIGTSPWDESCKRRRKAAATALNRPAVQSYMPILDLESTMSIKELL
NDCMRGSHDVDPSPYMARFALNTSLTLNYGFRIDGNITNELLTEITHVEREISNFRSTSNNWQDYIPLMRMFSKTNTKAE
EYRLRRDKYLTDMLNDLKERIANGTDKPCITGNILKDPEAKLNEAELKSICLTMVSAGLDTVPGNIIMGMAYLSTEHGQS
IQAKALEAIQEVYPDGDAWEKCLVEEKVPYITALVKETLRFWTVIPICLPRMNIKDIPYEGSIIPAGTTFFMNAYAADYD
ESRFKLPDQFIPERFLEDKETGTPHYAYGAGSRMCAGSHLANRELYTAYIRLITSFQITATKDSTQAPVIHPIDCNGTPT
SLTTDPKPFKVGMKPRDEAKVRQWIAEAEERTKHL*

>52077|jgi|CYP540B33|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MPEQQFYFLGEPISSAKHIDVDTTLDLDGLKHLVAAHFAIVEPNGIGFQAQDKFLSELSEVVSSSSPVAITIDGHEVRDI
PGPQGLPYVGNYLEVYPDHLGNHQRLFDQYGPIFKTTNMGRTVYQTNDPVISAIAFAESDFFSKKINESHPLAGLKTPAA
GIFLGDTDTPEWRVAHKFLPPALGPKAVRHYAPTMQKTVEEAYEVFDELDRNNKAWNVYQYMLKLGSQAVGKLTLGLDFQ
HFTSQDAPLHEMVHLIADLLSLNKKVTSKGTWYSKLPFGDPQKLKVVKARVEELVDQSIQTAARGGVTDLPLQDAALQAS
NMVDYAMRATDNKGEKLPKSSLVWALVVATAAGFTTTSSLLSWLIYGLVTYPGMQERLLQELIDHGIDENTQITADITDR
LDFLDKYIKETQRRHNPSFQPGRTAKVDLILPGGYRLPKDAVLIPALHHIHNNPSLWDNPAHFNPDRWDTEQVKNRHKAS
YVPFGTGPRMCIGFNFALQEIKVFLPKLIYRYKFIRDGDGVIEYDPMFQLIRPNNLYVRAERRVKWPARTPQNSS*

>52099|jgi|CYP537A10|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MLLLSPITLIAAAALLCAIHLIRCIRSPLSKIPGPKLSKFTSLVLKWKEIKALRTVYIHQLHQQYGPVVRIAPNEVSFTS
WEALKEIYCSGGSGYDKTEFYDLFKIYGRRTMFTTLNKADHAKRKRILADRYANSNIMKSASVTGVQERSSKFVRRCVSA
PGGVSDIFVNRLISHYAPTLHRLFSRVLYLFAKPRETPLADDYVLETSQLSGTAPFTLMSRFDEKTGDLDYIDKAAECLD
HMAAGIDTTGDGLCFLMWELSQPRSLGIQRKLAEELRTNPDTPFDKLPFLDAVVCEGLRCFPPIPMSLPRYVPQGGRSID
GFWLPGKTIVSCQAYSVHRLNSEIFPDGDVFNPERWLELDGDADRRRIQFAFSNGGRGCVGKHLALIEMKTLLRDVYSRY
STTPHESMQEEAMAMSDQLISARPLGQKCLLRFHALDAM*

>53015|jgi|CYP5390A1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MDVQSLFALAIAAAVISYLKLSGASYTIILLGLLVSAITQLAISLTFSSLVYRWFLSPTKSLPHPKDTPFILGNLIPFLS
EPWGFPLVRWQRTVATSISGFYRVFLGPYDYLIPKTSQAVMAVMTQPYLFHKPAAVRSGLVESLGVGLVAAEGSVYKRQK
KLLTPIFGMSRNRRLVPQMWTKAIILADKVQEHISQTESKSDVLYMHPLTMAATLDVIGVTTLGVDFDSVTRPDQPILQA
YQRVFPSFENQTTIEKFFGATLPAIISPHLLFKLPLKPIQEFHQGMAFLKNFCSSQIRQKREEIENDKNGNIDIREKDIL
SALIASGLEDESEILSHILTILAAGHESTAITLAWAIFKLAQHPGVQDKLRVEVLVATKNMKREGLTLDEINSLTYLRCF
LMEVFRLYPAFPAMMREASQGTTVGDLKIPKGKQIMVSPYAVNRSQELWGDDADEFRVERWEESYSGGAKTSQAFLTFSS
GPRICIGKDFATLSLKVFLTVLVSKFRFEEAIPGWHPAIQKGTSLKPQGLKVKVTQL*

>53058|jgi|CYP526M2|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MAEANENELFVPWSISTSVPITLAVIWVLLYYLYIRHCPKPIPGNIPYNKSSANRILGDTPEIKQYQKTGDFRRFFRDHN
AKLNTPISQVFMFPYSKPFILITDFREGYDILSRRHREFDRSKRNADIFGTIVPNFHLAMQTQDPRFKGNKELVRDLMTP
TFLNEATVHIYDIATVLVDMWAYKSTQAAGRPFPAYEDLHCVALDIILAAAFGIPLEQSATHKQFEFLQLQPPIIRSSKS
KDDPVIYSQIPLSESLMALIKVTGTVVVGYKSPFPRLHHWILKNTIWRKDFAQKEAFITDQINKSVERLTSENTQESRMR
CAMDMMLLREIGYAKKEGRKPNINAPRMRDELFGYVATGHDTSSTTLSWITKFLTDNESSQAKLRHQLHSAFAEAHAEKR
QPTVMEIIEKPAPFLDAFLEECLRLAKTLPTILREALTDVTILGHSVPKGTGIIIYNHGPGGQLESGFDIPESARSDTSQ
DSKHRVGEWNTDDISCFRPERWLQRMTGVQYDGERDAEFEGANYNANSGPFLTFGGGPRGCFGKKLAYMELRIVLAMLVW
NFEFQPCPAELSSYEGIDMATVVPKQCYVRLKQLL*

>53201|jgi|CYP5094A4|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MLGKGTLCFSGLFLTISCLFVYRLILHPLSRFPGPKLAAATKWYEFYYDIVKSPGGQFAKEIERMHDQYGPIVRINPDEI
HIRDPLWFDTLYAPNPTQRDKYPPAARMAGLPLGSHGTVEHGIHRKRRVANAPLFSKRAIISDGQNLIQQHVKELIGIFE
EHFTEGKPIQLDTVLLAFTTDTLYHYAFDRESGLMSDPKAARSWRNAMVSVAAATPFIKQFPWILRIVRAFPHAVLSYLL
PDVSRLLGVHMTMMSLVSEYIATRDDRPRPTEKELQGDSNTKIGLERPPTLFHSIERSALPPHEKSAVRLQQEGTTMLFA
GSETTARLLAHTIFHLLDNPDVVQKIKDELLEVMGDDKQIPDLKILEKLPWLTASVRESLRLRAATTSRLPLVSKTTLAY
KGWVIPANTPVSMSHPDVLHNPTIYPEPLKFDPERWFNPSEQANRSFVAFGKGTRMCQGMDFAYAEMYITLATLFLRFDL
ELFETYRGRDIDYVRDCFLAEASPSSQGIRVKVVSNSGKYIN*

>53278|jgi|CYP623B7|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MVTGLVISGAITLHGIVLYCIVPLATIYLINALFLSIPNPKGVPLIRERTGKRSFSLKTRFKYLTSCESLFREAYHNYSK
QGKAVIIPGFGCRNELILPTSSMRWVLSQPDAFLSAWDAFVELDQVYYSLGHSRYVADPWQGNLVKTELNNMLESVIAAL
DDELRVAFDKYFGTDEDNWQTIDLSEAVKMIVAQGASRFTVGLPLCRDEQYLRDTLSVIDGLVVNAGITSGTPPILRPIV
GRIASLKCRLAQQKIEKHFKPLYEARLNSLKYAKNEPQHVEPQDHLQLMMRFAQKERPKELYDFGIMSRRLTTVNFGSMH
QTSIQVINMLLNILGSDAEYNTIAVLREEVNRNMDTAWTKAKISNMWKADSVARETLRCQSFTGRAIFRKVMVDGLETDT
EIKLPKGSLISFLGQPAHADEAIYDEPQKYDPFRFSRAREAALAAELTKTNTLSFVSTGPDYLPFGHGKHACPGRFLIDF
ELKIIIAYVLTNYDLRLPEEYGGKRPPNRWVAEAVFPPSGVKLLVKRRRSVVV*

>53366|jgi|CYP596A2|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MNSTTYSIPLAIGAIPPYLQFVAFGCVLAVGYNIWWALVSERRLPGFPVATLEGQGLPPKESYFKDASGTIASGLKAYAG
PFQIITGTGPKIVLPNKYADELRNRPELDFNEAFRKDFFAHYSGFDGFRASLDNPTLIPSTLRVKLTQSLGLVTNHLVDE
ATSALHQLYGEDREWQSIAVKQHNLNLVARLSSRVFLGRPICRNEQWLEIAKNHTVDSFLAARDLRAQHFFMRPIMHYFM
PHNKNIQRHYTDAKRIISTEVERRKIRAQILLEAGDKPPKVSDAIGWMVEMAGGKKVDYVAAQLSLTVASIHATTEALTI
ALLDLVSHPEIIPQLRKEIIEVLGDAGWSKQALYKMKLMDSFLKESQRLHPPSDVSMNRKVMRRLTLSDGTVLPKGARLM
VAARFRDAEIYPEPDAFDATRFLRLLNNTSSNSPHHYVSTSAEMFAFGTIRCHGKHACPGRFLASAELKIALSHMLLKYD
WKLDKSDTMPRFFANETAHMTNPGLKLMVRRRTEEINLDLDVDPDLIDVED*

>53375|jgi|CYP526AA3|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MDLALSLSGSSPQNAVLLAGGVVVSLVLFYRWALPKPIPGIPYNKESVNSIFGDASSMVAHTSKTQEMFDWMVQQNVKLK
SPIIQLFVRPFGKPWVVIADFRETQDIMVRRTKEFDRSIFFSEISGKITPSSHFSMRTDAGFRKHRRWIQGLMGLGFLHD
TAAPRIYEAGLDLLQLWEQKSRIAKGHPFTAAEDIYRTAMDAIWAIVFGADPDNNVTKAQLRLYATIKSIELNNDLDTEA

ELPAAPFPAAVQSVLTLTDSVSTSIKSPVPKLAHWRLRQTATMKKAYKDKDVFLQEEIQKALNRVTGKKANEKLITCAID
DMIQREMLLAEKEKREPEVLSSGMSDEILGFIMGGHDTTATAITWGLKNLSDFQDVQSKLRDELHAHHAEAVAEKRLPTF
QEINTTTVHYRDAVIEEILRCSNTEYGGIRTAMVDADVLGYRIPKGTEVFLMGNGPSIFSPEFEIDDSLRTPSGIESKDK
IGVWKHKGMAEFDPERWMVEDKATGQKVFDPSAGPLLTFGLGERGCYGRRMAYVEMKLLITMIVWNFHLHKCPEALSTNA
AIDKMTHVPQQCFVRPVKLLR*

>53637|jgi|CYP526AA1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MTVSDSNNVVLGLRLSDTLIVLSGTMLSLYLLYLWLLPKPIPGIPYNKEATSKLFGDIESMVKYTSETQELYQWIIEQNI
KLKSPIIQLFARPFRKPWVIVTDFQETRDVMLRRSKEFDRSPFWGEVSGSIIPDCHVHMPTNARFKRQRRWLQGLMTPAF
LHDVAASHIYDICLDLIELWDQKSRLTQGRPFAAADDVTYIALDAIWRIVFGAESSVSTTKNQLELYSSIQTVHLPEDPN
AEVILPRAPCPPQIQSIITLEESGETSLKSPFPKIAHWFIRQTSGYRNAYNIKEKAISDELSKALRRREVVKSEKDRKVN
SAIDDLLYRESLLAEKEGRAPQPLSRGIHDEILGLLIAAHDTAATAIIWGFKFLADHPDVQNKLRSDVRAAHATATNQKR
LPTCQEIVYTTVHYRDAVIEEIIRCSHTESALIRTALVDLQLLGHHIPKGTDVFFMGNGPSVSYPAFDIEDSLRSQTYHA
AAAKENEKIGRWDPEDMGLFQPERWLVTTTQEEDGGKIFNSTAGPLLTFGLGERGCYGRKMAYVEMKLFITLIVWNFELQ
KCPDAMSSYAAVDKLVHAPQYCFVKLRKLPA*

>53690|jgi|CYP526AA4|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MESIVPRFLVDGDTTSYLVLSVSIPGIIYLCYRWALPKPIPGIPYNKDAVKSIFGDATSMVEYTSKTQEMYAWMVEQNIK
LQSPVVQVFVRPLSNPWIVVSDFRESYDCLVRRTKDFDKSVWFKDVAGGVMPESHIFMRTTPRFKQHRRLIQDIMSPVFL
NNVAAMHIHNVCQDVIHVWEQKARLASGHAFSVIKDVHYAALDAIWALIFGDDSANSTTKAQLDLFLTMEKIALPGNSNS
PVELPRADSPLTVQSVMTLTQSIEASLKSPMPALAHWMYRQTSAMKRAFKIKEEFIKREVNDAERRFDTKTDVQCAVDNF
LRREAVAAEKEGRQRNFHSRDIYDEILGLLIAAHDTTSTSILWALKFMADHQDVQKKLRKALHTAHSNAVSEKRLPTYQE
ILNSPVHYRDAVVEEIFRCSLTEAAVTRTSIRDTEILGHFVPKDTEVFFMCNGPSIFSAAFPIDDAVRSTSSQEGKDQAC
HWDPTKMAVFDPERWLIEENGQIIFDHSAGPLLIFSLGERGCYGRKMAYVEMKIFLTLLIWSFDFQACPEELSGYGAVDK
LVHAPQQCYINPIPLSRP*

>55825|jgi|CYP526N2|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MALIWILVGGSLAIILVYSLYLAALPKPLPGIPYNKESAKKVFGDVPLMQKVRYRRQWIWNQPREHGSPLCQVFLLPFRS
PTVIVSDYREVMDICSRRLKEFDRGTRNKEYFSIVSPYFHFAMPTTDPQFKFHKKLVRDLMTSKFLNKVAAPRVYEKAAA
LVTLWNLKTYKAHGKPFEAGSDLYSATLDMICGVAFGMDDTKSALQHEVHHVQSTNPIFPNIEGESVHFSRARAIPELEA
LFDISKMLSIAQASPFPSYSQFLALFKPKHARAQWNRRALIKQQIDRSLPRLMLAGVEGCESALDQLLWREMNAAKEADR
LPDYYSPAIRDEILGYLLGGHDTTAASLSWWVKHMSAYQSVQARLRDALRQAHSNAYRDSRLPTMSEICETSVPYLDAVM
EESLRCGSVATLIARTSTCDTQILGFPIPKGTDVILTVTGPSMTEPALPIPESLRSLESQESKDRVPCWGDDVSEFKPER
WLKLVKSADGSEEEEIFDQNAGPSLVFSAGPRQCFGKRLAYMKLRTAMTLLIWNFEFQLLDESLNTPDIDESFVNLPKDC
YVKLAKA*

>58605|jgi|CYP540B34|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MAVQQFYLLGEPVTSARAIDISSNLDLDGLKHLVASYFAIVEPNGIGFQVQESALQEVSDIASITGPVAISIDGHAVRDP
PGPKGLPYLGNFFEIYPDHLGNHQRLFHHYGPVIKTNNMGRVVYQTNDPNIATIAFAESDFFTKKINEAHPLYALKTPAA
GVFLGDTDTEEWKIAHKFLPPALGPKAVRHYAPTMQKTVEDASKVFDALDEQGEAWNVYQYMLKLGAQAVGKLTLGLDFN
HFSSPDAPVHEMVHLIAEVLSLNKKVTSKGDWYSSLPFGDPKRLKDVKRRVEEMVEESIQRAARGGVEDLPLQDAAVEAT
NMVDYAIRAVDNKGEKLPKSSLVWALVVATGAGFTTTSSLLSWLIYGLVTYPGMQERLLQELVDNDFNEDTQITSDYTDR
LVFQDKYIKEMQRKHNPSFQPGRTAKTDLILPGGYKIPKDAVMIPALHHIHHNPDLWTNPDKFDPDRWDTDEVKNRPKGS
YMPFAAGPRMCIGFNFALQEIKVFLPKLIYRYKFTREGDATVEYDPMFQLIRPNNLYVRAERRVKWPPKSEAVPSKNTAA
*
>58857|jgi|CYP61A6|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MPLSIESAANVTQHGSSKLLGGFLENYSSWQIAITAFLFLIVYDQLLYLKQKGSIAGPTFKIPIMGPFLQAIYPKFDAYL
AQWASGPLSCVSVFHRFVVLASDRDLAHKVFKSPTFVRPCLVPMAINIMRPTAWVFLNGKAHAEFRRGLTGLFTNKALST
YLPVQEKVYSDYFNRFVEHSKANGGKPTKFMGWFREINCALSCRTFFGDYISQEAVKRIADDFYLITDALELVNIPLSIH
VPFTKCWRGKRTADIVLAEFTKCAAACKANMASGAHPTCIVDQWVQHMFESKKYNEDIAAGKEGIEKPTNLIREFSDEEI
AQTLFTFLFASQDASSSATTWLFQILAQRPDVLDRLRAENLAARGGDRNKPFELEMFESLTYTNAVVKELLRYRPPVIFV
PYLATKAFPVTPDYTVPKNAMIIPSCYPALHDPVAYPNPDTFDPERWITGDAETKTKNWLVFGAGAHDCLARRYVPLTMA
AMIGKASLELDWVHHATPRSEEIRVFATLFPMDECPLVFTKRE*

>59079|jgi|CYP671C2|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MNNVAKNVKAFEDIHSLCVSCLLSSPRELSINRPSAIGVIYESPTRTTRSPWYAQVSNDVTKISLNSTRVLNLHKLRKKA
WERGLGFRALAIYAPRIKAKVDLLLSKIADRCGQPIDITEYAMFFGFDVMGDIGFSKDFHMLEQESEHPAIKGVHESMLA
IGVLGTVPWLLSMISKVPGAAASFSRFTTWCHQELQKKREIMANEAAMLKDQDQDPRDIISWLLKALNEGDPSAPPGEIA
IQEDAPIPLASLFQMRKLYYLASNPNSYRRLQAVIHQEFPKGINDWTYEKNIPYLNYVIQETLRLMPSVPGGLPRLTPPQ
GLMIDDQFIPGGTIVSVPTYTVQRDERFWSDADAFKPERWESLSTETSAWIPFTRGQWVCPGRNLAMMELRMALSRIALQ
YTISFAHTDAGKNFDAGVKDTFTLTLPSLHLLFTPL*

>59931|jgi|CYP673E1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MASYSTTVLPLILIPCTLVWLLIWIFVHPLRKIPGPFWARRTPLWQVYHVYRRDLAAAVQKAHEKYGTVIRIGPNHVNFQ
TRDAIDPIYKAGRSMPKTKFYDAFTAMHPNLFSTRDEEYHKIRRRQMSHSFSMATLLKFEDRFGKHLHRLFSNIEQQMEG
QVFDLKQSVACYAYDVISDLAFEKDLNTQSNPAANELPPIPDHIVIGTMYGMLSSLLPYSMRVGNKLPIPSLQKLIQSRQ
LLSQKASEYVNNAIENHKAGEKETLLDSLLEAKDPTTGAPLTPTEVSSEAFAFLVAGAHTTSATLGLLFYHLLHNRYAAE
KLTEELSSNVPLYNEGGKEVSYSGLESKLPYTMACIKESFRITPVFTMPLPRLVANPSGVDIHGFHIPQGTTVSMVSQAL
HHDPGFWGGDHDKYIPERWLDDAISFNEVMPFGLGHRACIGRNIASINILKVFCAVWRNFEITPVNKYETLEMDSLGVDE
KKGPLLCTVRKRQS*

>59982|jgi|CYP563A3|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MLIQILSVNSVVSALSVLLITSLFIRILQNRVFHPLRSVPGPWLNSLSELPAAIALVKGDQHLYYKSLHEKYGLVVRVSP
NELSFIGTDAREEIYGFRKGGPLMEKSPIFLGAVGSMNGETGVSLALNKEHSRQRKALGYLFSNSALAKLEDILQIHVQK
LVAVLEKGASENQAVNVSDWYTYLAFDMMGDLCFAEPFGCLDQASATEWSTSVINVFVAATWTQGIRRISGVGTWLERLM
TRLLVPTKASLWRSIHLNNSRDKTVRRLQDPNRNHADFMYHILNSESKNLLSKTEIQLNMALFISAGTDTTATALVGWTY
FICTHPNVYKRLTAEIRDAFMANDDIKWEKVKNLRYLDATLNETLRLFPPSPASQQRVVPPGGAIIAGYYVPAGTTVAVP

PWVSTHSHVNFIEPDTFRPERWLGEDAEFQDDRLNASLPFGTGPRVCIGKNLANLEMRLIASKVLWNFDIELDRSNYETA
NQQWGLSGQMMPMKVFHSMTKLPLWIKLKKVNL*

>60000|jgi|CYP68AT1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MSWVHSNPILCLCLVILILAGIPVLLYFPTHRNLEHLPLLKPVDGFSLLDIKSKTAFVFRSKELLAKGRALFPQSPYRMI
TDLGEIVFLPVGLADEIRNDPRLSFGSAFGEGAAVHTYNDSVLQTIVRKELTKSIVINPMSVEATHSLSINLEWREIELK
SVIVDVVARLSARVFLGKDLCRNEDWLRATKEYTINFFVAGTHLRMIPRPLRPLLHWFVPKCRELRASFNESRRIIMPAI
HRRRVARAAALTAGEKIPEFDDAIDWADREAAARGVGYDPAIMQLMLAVAAIHTTTDLVTQFIIDLALNPEFVAPIRQEI
VHVLRTTGMKKSALHDMKLLDSALKESQRHKPPGLASMRRRAEKPLTLSNGLALKVGDRIAIDTYRMNDPELHKEPEKWD
PYRFLRISEQPEKSKFAQLVVTSPDHLAFGHGEHACPGRFFAAYEIKIILCHLLLKYEWELVPGSNIAPMVLGLTYAASP
VARIKIHRRRELELDIDSL*

>60068|jgi|CYP5777B1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MSNARPHLQVSVGHIVTGHSGHHPQPTRIDGEEWYFQRKAATRAFTKRNFETHITQSVHHWLDILMGLLSNLANKQVEFD
FQKLMGRLMFCLFLRLAFHEEELARDILSDDPKVLDSMPDYIEALDQATILFDRRRRDPLWKITEKLSGDDKITKRAVDL
FYVQIEKLIEKRLIAMENGYQPNPDLGVDLLDLFLQSTTNKYKLSGMVFAFLSAGRDTTAYGISWLMKEIYHQDNKHLDA
IKKIRLEARELHVDGNYLTYEDAPKMRFMNAMWNETSRLDTVSPAGQMEAAGDDILPAIPELGIPPRHVKKGDIVSYQNY
VLARMPEVWGKDAAVFNPYRWFKEDGQSISYSPFKYHSWNAGPRSCLGRALATYEAIAISTAIIQRFDVILSDDSKVYEP
LAAMNMGIKDGVPMKLKRRATEA*

>60180|jgi|CYP627A6|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MAMSTPPYLQPLKYPANWSSIQDSLTPTRVALAGLFAVFVVPRILGFLKALFSPIQRVPGPFLNKITSWPFTISVLNGAS
HHFTDDLHKRYGPIVALAPDMISVSDDAEVKKIIQTQDWHKSEAVYGNFRQDPKRPTLIAFTDKSSYGVRKRMISSMFGI
RYIRSMQPLMLDCINVAVKKLEDQCSQKPVEIDMQNLIQSLAVDIIGITTFGQSFNVVQNGSHPLPDQIKKALKLAGLLM
LVPWIRNIPFLPDRDPYVDKFTSDAVENRRAILKNSNKQDLLQKLVEAGDDSEGSTFRRSDIQDEAIILLTAGSETTANA
ELFTLIMLTKNKDKMAKLVAEVDQWYPPSDPNKIVDCECSFLGMTYLQACIDETMRLVPGQATGSPRECMKDEKILGYTI
PKGTTVFPSTQNVHMDEKVWPNAAEFLPERWLDIYDSGKTNEVAFWPFSAGSRVCIGKHFALQEMHMTLVSLFRRFEFEY
IPQQDETTVFRVAQQLQAHRYMIKVKRRSF*

>60266|jgi|CYP570C9|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MLSNTAQLFHHVSSLIDHVSYFLNAAPLASVALFTLAVIFVWFVSSSTWQYYRLRHFDGPVLAEISNFWLFKSVDSGRSY
LDFWEVTQKYGTIARVGLNDLVTDDPAFVKHMCNVKTDYRRSSWYDGMRFNPTSNNCLSTRDETAHTALRSKMAAGYAGR
DVDNIEAKIDTNVREFMGLLGRYADRKAPVDLGRKVQYFTLDVISDIAYGAPFGFVETDTDVYEYIKTTEKNLPMVMVVT
VFPWLLRLLNNPILKGLLPSAKDKLGFGRIMSIAKDVAAERFKPDVKAERDMLGSFIRHGLTQTESESEILLQIAAGSDT
TASAIRSTMLELCANPDILRKLRQEIASANIAGDVISDSEAKVLPYLQAVIKEGFRIFPPIAGLMSKEVPPQGDTWNGVF
IPGGTRVGYSIWAITRRRDVWGQDALEFRPERWLNVSPDKLKDMESTLDLIFSYGRWLCLGKSIALIELNKVFVEGTR*

>64821|jgi|CYP5391C2|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MSPTIISLSNGGVELATICGVVLCFLTAIFHYRPTRAIKYFPGPTPWPLVGNLPYFSKVLKNLQVELPLMAERFGGLCML
WMGSQPTLVISSLKDADELLNKNGALTSNRPRNNIFVEHAMPHYIANAQVGDELRFFRRIYSDLLGLKQSQRMKKYQDYE
YTQVLRALCDDPDAFETHLNRGAMSVIFSAVYGVRVSRLDHPLMVELHAVWQEILKNLQSGSLIIDYLPFLEKLPLRLQP
WVQHADSLAARQYAVHMAFLTMLRKQFEAGVEPVCFGADMLQRQKQQGFDDKIAIGLLSGMIFLGGESSSSMMNSFIKIM
AMHPEVQKKAQQELDRVVGPSRLPTWEDHENLPYIRALIKELHRYSPILSFAAPHASTEEITYKGCTIPNATLILPSTDN
LHRDPSRYENGDEFQPERFLGDELDALSSAKHPDYLKRDHINYGFGRRLCQGIYVAENSLFIQASRYLWAFNITPRAGEP
PLSMADVQETMSRKPKSFKVDITPRCDAILQVVRQSAEEAHTDIPDVDDIEMAE*

>65025|jgi|CYP620S1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MASTLIIQSLIALVGFLVYHQIFRKPKKNLPPGPKGLPFIGNILDLPPNGTPNHVHWNSITDKYGPIASVTVLGQPMIFV
GDKEAAQEIMEKKSQTSSGRPVFQFANYCGFGDFISMHQLEKRFTSQRKVMHKAIGTKVLATKYAEIQEREAGRLLLRTL
EAPQKIVKHFETEAGAVILKIVYGYTINPRGPDPLIGLIDRMMANFSRACVPFTRPVEFIPALKWLPDGFPGTGFKAEAN
QYGKEIRAVIDEPYKFVRKQMANHNIMGSYVARLVQECIGDGDEPTEADTHTIKWSAAALYGGGADTTVSTLISFILAMT
MFPEAQRKAQEEIDRVTGGTRLPVLADLDQMPYIEAMVSEALRWCPILPMGVPHAMSEDMTYKGYDLPKGAYIFPAIWKF
THDPSVYVDPDTFAPERFLAPRNEPDPRWAVFGFGRRVCPGRYLADSSLFLNLAYLVAVFDISKATDEQGNVIEPKLDFE
AGIIAKPKPFPFNITPRSERHKELIRDIEKKHPWEESDATLLGELPPPSR*

>67506|jgi|CYP5090A2|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MYLVISASSPLLKGSQDNFVLVLSAFALMSGWLLWRLGRFTVFPRMYPDDPQELPYCIPILGHAQAFFNNSNALITRARA
YFGNNNEPFALTIAGSKIYVITKPKDVSDAYRNMNSLSFNEFVQALMRACGNTESCIQAMYTPLPSNKGGFANPRGKSLA
TLSRNMHIRQLLLGDGLNFLENSFLEWFDVRMDIEKLHSACPYAIKSTDVDIVLPLMEWCSDIFTSAGQRAYFGDELGQI
DDTLAKEFVIFDDLSWQVLYQYPDFLAGEMKRSRDVIQRALKKYIQLPQSQRSGEAWFTKAMENEMRALDISEDDIATMF
MTIYWAISTSTRKVAFWMLSYILHGPSLTQVIRDETKAAFNEEGKIDLEYLHNQCPQLNAMWNETIRMSSYAASVRFITK
DTVIGGKVLRKGNRLMIPFRQLHFDQGIFGETADSFDHERFLEKAALTKTNNWRPFGGGNTMCPGRHMAKRAVLLFVAML
LQRFDIEMDGFQPIPTAEEGKPIIGIMSIKEGSDLRVRLTTRKKM*

>70946|jgi|CYP5189D1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MATMSDVWVGLPWPVQLIATCFVLTATLLITTRLNSLSHSWPAAAGKGHEPPIAPYWLPGIQHLAAFLLDPAHTFRTTQS
KYKDSPYTLLMGNVKFHVFGSPSAATHVFARSRTFAYEPVTLSMLENGLDLPVADRVYFQIGLDRANSAEHAKGFVVQNH
NVWLRYLSGEPLDDLMQLFTRHFHQILEQHLDMKTRGWQTVDLYQVLRKVIFDTSVLTFFGPHLAQIWGPTMWKDFCLFN
DATYIGVRTNLAYVLQPRAGRARERMLRAFEQWLTHHSEGDWPDKDKYWNEEWGAKMNWERDHLARQFGLSLRGRAAMQA
SFLFAIVLNAAPMSSWFTWVAASNSDRLAKCRVESSKFLRPSKSSRFDHELDIDATQMRGSNFMQALWKEALRIGTAASP
ARVVMEDTELEGYVVRKGSVILMPTALLHHSDLFPRADQVDTERWTGEDAIVQQRSKSIRTFGGGMGMCSGRHAAEQEVI
GLVSKLITLFDIEFEDSWKNKFHFDPRSLGIMHPAGPLMTYASGMSYADVY*

>72675|jgi|CYP535D10|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MEGFAGVPGSIVLLAGGLISFFAIGRIVTYARLRAFKGPFLTNFTNWPHRKALFQQRCQEWYGEVCEKYGPIARIAPNVL
ITSDPDVWIHVNNKPGYKRSEWYYTACRIEYRRDNVFTQTDNKKHEARRKQMAPGYSGRENPDLEQSINERLQEFINLIR
TKYVSNSANVVPVDMARKVQFFTLDVISGVGLGKTFGMLQSDSDVEGYLQSSEEGLHIANFGLAFGLSWITQAPFLGKFI

APSPQDSKGFGRMMATCFRYVNERVGNPTDKRSDMLASFIRHGIEGDELRSEALEQIVAGSDTTATGIRCTLLHIITNPR
VYAKLQQEIDEAIRDGKAPQDGLISHSQAKQLPYLQATIREAMRVWPPVANVFSRDIPPEGDTVKVNGEDVFLPGGACIG
YSALAMHHSTEIYGSDAKAFRPERWFEEDKDKLALMLRTNELIFGHGKFQCLGKAVAQIEIGKIVFEIFRNFDMALINPT
KPWIALNSLGLFTISDMWVQVMERHV*

>74289|jgi|CYP5117A3|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MSSFTSPDILSHLPIEAIQPSQLLYLLPIGFVAWALYHLSIGFYNLTLHPLAGYPGPLLARSSTLWYAGALARGTIAQDL
LALHDKYGDTVRITPDEISFIDPKNWKEIYGYRGGKVEMIKDPRYHDTVKPTPTILTGDYDQHNYYRKVLSAPFSEIALK
KNEHILHEFVDKWVYRVKELGQNGTKRIDATDWFNFLTFDLIGYLAYGEEFNCMTNSRLHDWIEASLAMATLMTLGQAAR
QLPYPFDKIYKAWAIPEYVYRHTKMHRTLVEEQVNSRLGKDPKHMDFLQRMIEIYKAGNLDFPTLSEHASLLTIGGSETT
ATLLAGAVYFLAKDPKVYGKLTKEIRTRFADEKEMNLINLSQCKYLLGVVEESLRIYPPSPANHTRMVPQGGATLEGKHI
PGGYCVSMPMYGSFNAKSNWAQPTRFAPERWTGEEPETFGRDRKEALKPFSFGPRNCLGQQLANHEVRLVIAKMAWHFDL
ELMSESIGWEQQTSYTFWKKLPLYVKMIPRKN*

>74291|jgi|CYP5094A3|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MEQLKTRLTEPNLSTEQKLLVLIGLPVLYVVGLTVYRLYFHPLARFPGPKLAAATKWYEFYHDIIKGQGGQYFVRVSEMH
DKYGPIVRVNPDEIHIRDPSFLDTLYATNPTKRDKYPPSAEMAGLTYGTHGTVDHDMHRRRRMANSRMFSKRAVASAQEL
IHGHIKELTEAFERKVGSPEPVEMQTTFLAYTTDVIYHYMFNKDVGFQKDWNKAQSWRHSMEAVAQATPFCKQFPWLNGK
LLMLPEWILKVIVAKLQPDIAGLLATHKLMGRIAAEYVAHRSTDKGKRESEEDEKNIKPLTIFHSIDRSALPNEEKTALR
LMQEGLTVLFAGGETGSRLLAHTIYHLLDNPEILEKVRKEILEAAGDSKELPDVKVLESLPWLAASVRESLRLRATTTSR
LPLVSKKELIYKDWVIPAGTPVSMSHPDILHNDEIYPEALKFKPERWFNATEQQNKMFIPFGKGTRMCIGVDFAYIELYM
SLSTLITRFDLELYDTTWERDVAYTRDCFLGEASRDSPGIRVKVLADNKRWVSD*

>75420|jgi|CYP534C4|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MSLLPIAVAVLVAYGIINWAVNLRYNINEAKRSGLPYVVTPCSPFWLPWQISHKLWVPIIKLLPKSWWDEWLEIMIPNFA
YRTRHDWFAKRGESFLVVSPGRLVMMTDNAETIRTITLKREQFPKWTAVYGILRQFGENVLTTEGSVWRMHRKVTSASFN
ERNAALVFREAVAQTQGMLRMWTGPSGTRKEPLKSLQHDTMKLALNIISYVGFGMRLLWPGEVHAAGTDPKIIKYGSHEP
SDGHKLSFTDTMELLLKYLLLLLVFPRWLLNLVPSKTIKTAVLSYDEYVSYMNELLDEKIEDARTGEHTEGMDLMGQLAK
SCFGTDNKDATLTREEIIGNAFIMFVAGHETTANAIHFTIIYLATHPEAQRRMQKDIDDILGEKDPRDWDYDSLVNPMTA
SMIGAAMYETLRLVPAVPEIPKKISPDADESFVMDGTRYVIPKDTGISLVTVSTHVNPRYWPTRPSKITPGKSNILDYDP
SRWFQTKNKQNGQGNEVVAGADSEDFGGFQGSDINSQLFKPERGSYIPFSDGARSCLGRRIAVVEIIAALAVIFRSYSIE
LAVDEWATQEQVDNMSRDERAQLYKKAQDKSLWTVGQASTRLTLNLHDGMHVPVRIAKRGEEKFVDWVDKE*

>75938|jgi|CYP51F1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MGVLQDALSHPAAQLYFQQGIGAQVAIAVAGFLAVAVFFNVAQQLLFTNPSDPPMVFHWFPFIGSTVIYGMDPPKFFREN
RAKYGDVFTFVLLGKKTTVAVGPAGNDFILNGKLKDVNAEEIYSVLTTPVFGRDVVYDCPNAKLMEQKKFMKIALTTEAF
KTYVPIISHEVTSYYKRDSAFKGKSGIVDIPKKMAEITIFTASHALQGSLIRSKFDESLADLYHDLDMGFTSINFVLHWA
PLPWNRKRDHAQRTVAKIYIDTIKERRALGDADKELDILKHLMKSEYKDGTPVPDHEIAHMMIALLMAGQHSSSSTSSWI
MLHLAQYPQVVEDLYKEQIKVLGADLPPLQYEDLAKLPLHQAIVKETLRINAPIHSIMRKVKQPMPVPGTKYVIPTSHVL
LSAPGVSGSDPAYFPNPEKWDPYRWLPGSPNAPLMVRSEEEEEKVDYGYGIVSKGAASPYLPFGAGRHRCIGEHFANLQL
QTIIAETVRLFKLSNVDGSNNIVGTDYASLFSRPLEPAKIRWERRD*

>81149|jgi|CYP61A1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MDALNATRASSVLTSVLANSKYVSANIPPQVDYVIDTIAAAGPWTWFFTILAICVAYDQISYLLNKGSIAGPLFKEPFIG
PFLQSMDPKFEEYYAKWLSGPLSCVSVFHKFVVIASTRDMARKVLNSPAYVKPCVVDAAYKLLGEDNWVFLDGKPHVDFR
KGLNGLFTRKALEYYLPGQEEVYKTYFKRFLDITKENGGKPVPFMPEFRELMCAVSCRTFVGHYISDEAVKKIADDYYLI
TAALELVNFPIILPYTKTWYGKKAADMVLAEFAKCAAKSKVRMAAGGDVTCIMDAWILQMIQSERWREAEEKGLSTEGLV
KPAPMLRMFRDYEISQTVFTFLFASQDATSSAATWLFQIAAQRPDVLDRVREENLKVRNGDPYAELNMDQLESLTYTRAV
VRELLRYRPPVLMVPYKVKKPFPITDKYTVPKGSMLIPTTYMALHDPDVYENPDYFDPERYYSGDAEVKGAKNYLVFGTG
AHYCLGQVYAQLNLALMLGKASVQMNWTHHATPLSEEIKVFATIFPKDDCPLTFEERK*

>82420|jgi|CYP548A14|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MLSLSNQHPVAWLGLLLGAGVFYLFSFVVYRIFFHPLAKYPGPLIAKLTDGYQLYHAWKGDRHLQFWRLHQKYGKVVRYG
PNSLSFSTTQSLKDIYGFKSNVRKAEFYNSFAHPVANTHNTRDKDVHARKRRVLSHAFSESAMKEMQRYILNNVRIFCEQ
IGLQDGTTDSKGWTQPRNMAHWCNYLAMDILGDLSYGKAFHMLESPDNRFALDLVEAATTRHLLCGTMPIVDKLKLDKMM
FPKLAAGRARYMAYSKAQLTERTKLGEETDRRDFFYYLLKARDPETGQGFSTPELWGESNLLIIAGSDTTSTAMASTLFY
LTRNPHAMQKVIEEIRGKFNDVEEIVQGATLASCTYLRACIDEAMRMSPSVGGILPREVLPGGITIDGQFIPAGTVVGTP
HYNIHHNEAYYPQPFTYAPERWINGAVNPVTRRNTTVEDVAAAQGAFCPFSIGPRGCIGKGLAYVEMTLTLARAFYLYDM
RRAVGVADPSEGRADLEWGRHRPEEFQLADIFTSAKKGPIVEFRLAEKA*

>90820|jgi|CYP620B6|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MSKFIIAQIIVVLAFVLYRLVFRKKQDLLPLPPGPKPLPIVGNINDLPPPGVPEYEHWLPFKDKYGPVSSVTVLGQTMVI
LHDRAAVSELLEKSSLKTSGRPVFFFGSEMCGYDGFMPPMQYTDQYRQHRKFIHQQLGTKILASRFNTVQDIESRRFLLR
IMNDPQNFFEHIKTEASAIMLKITYGYVIEPFAQDPLIQLMQDVMTNLSLAFVPLSWAADFIPAIRYLPDWFPGTGFKKT
ARKWKSINEAVTKTPYNFVQKQMERGTYRQKSYVSEHIKDHGHGDGTGVSEEDISNIQLTATDMYGGGADTTVSTIMAFT
LAMILFPKVQQKAQEEIDRVVGSDRLPGYEDQENLPYVSAVAKEALRYFSVVPIATAHRTEEEIFFRGYRIPKGSFILPS
VWWFLHDPEVYKDPLVFDPERFLEPRNEPDPGNDAFGYGRRVCPGRYLAVESIYLTAARMLAAFTISKGVDENGKEIDVE
CRQTPGLISHPVKFSYDITPRNKKYEDLIRNVEVDHPWEKSDSESLEGDVIEVYKQEYKSRK*

>90966|jgi|CYP58M6|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MEDMLRLWIALAGFGVYLSLRTVYRLYFHPLSHIPGPKLTACTHLYEFYHNIIRPGMFLFEIEKMHQQYGPIVRINPREI
HICDPDFYDEIYASSSRRRDKDPKYVPTYALPGSMVAAVSHEQHRFRRGILKDFFSRRSVAELSDSVNERVQKLMTRFEV
ERMNQTIVSLDDAFSALSSDIITAYCCGKDWDFIEDENFRSDVRNAAENAIAFTHISRFVPWLVYAMSALSPKTMAFIMP
GKAKLFEFLEAFLEYGKMESYTGKRKTMVATLADESIPAKERDYYRLRDETFGLIAAGTETTAKVLTAASFYMTNDRRVR
ETLQAELKQVMPTLDSRPTWAELEKLPYLSAFINECLRLAYGITARLPRVAPTESLQYKEYTIPPGTPVSSSTYFIHNNA
YIFPEPDTFRPERWIEAAEKGENLKKYLVTFNRGTRGCIGINLAHLELFLTIAHFARRFNMELHNTELEDFRIVRDMTMG
VTRRGGFKVYARLSRVDE*

>91346|jgi|CYP5085A3|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MLASLPLDQGLTPVALISTASVALVCLVLYRRRSGAADLHSLGIPVFDSRDDDNGIVATLERANKLHPNAPFALAVPGQQ
LVVLPVSEIDTVKAQPETQLSIKKHHYNQFLGEYSYMGTRADEFDNAMRNTLVRNTPTVLRAFTAEIDYATRVTIGDKLP
TWTKIKPRGIMARMATILSGRSFVGLPLSRDEEWINATVGFTGDVSKAWMVLRFIPHFLRPFIAPFLSQVRSLEGCKALI
TRKLNGLLQEREKKQDSEKPAGDDEVGGELLDWFRSQYSHKPTVKELARDQLLATFASIYNLTNALTYVVFDLASHPEYI
EELRAELQEVVGEDGVINKTTIMQLVKLDSFVRESQRLRPTSLVNIPRVVTAPKGLKLTTGHIIPPGFLVMVRAQPINLS
PTLYPEPEKFDAFRFAKMRAQPGNEMKFQHTSTGTDNINFGHGIWACPGRFFASAQVKVVAAHLIRNFDIRLPEGKEKPV
PQYGGLAIFPDAVAEIELRSRKL*

>126116|jgi|CYP609C1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
LLLAATIIVSLLVRLFKRPGLPSGASFTEWGMPFIGSLNFFTKRGDFLREGAKRSPNGYFNFYYGSYPIIALSGEAARTA
YFNTRGLDLSAGFRKLFSAGPDIDRMLGCNMSAYFIVLFKRLTGKEHLTTCLPYLNKDARTAFTAVDTSVPMDPFVVLYD
LLYKFTHRTVGCHEVADDPALQEKTMRYYEKLDKSSALQVMFPWLPTPTKFNKIWAGAKLHMMFGDMIRERRRTGRKAQD
TMQILMDKGESDLLSSAFIIGALFAGLINTGVQSAWILCYLAHDPVWYAKVRDEVDAAVAKYRTSEDQTPLDVLAELSLE
AWESEFPSIDLGVRDSIRLNLMGASIRQNTSGKDIKLGNTGVVVPNNAFAVYSVADIHMDQAIYTDPLKWDPSRYLPDRG
EDKKGQHGYIGWGTGLHPCRKQTLIAKLELFVSTATFFAMFDFKAVDRNGNPTTEPLPRYDSNALSAKRMVDTVYFKCDR
R
>134374|jgi|CYP5386A1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
LTTVIIGLLSLTFALRYTSGKKVHPSEPTVVQPWIPLIGHLLGMAVHGGRYIKRLGLEWALDSDTLCDPILTLPVPGSRI
YVVTEPSLAASVQRNTKTLSMSPLLPDITKRVLGLDETTYRVIGQNLDPEPGEPRGFFADIHDWVYSSFGPGEYVNTLSC
EAAQELCFQLSRALAPPDDTTRAPESVDLLAWVRGMVTVGTAKFLFGPNNPISEEPALEHDFWAFDHGLGGLLIGILPSL
TVPKAYKGREKLTAAFRKYLEAGHLDSAALIVRGRARIEKEYGMSTDMTARSALSFLFAGIVNATTTTFWVILRIFADQQ
LLDIVRQEIRQALELSNQRSGPNSLSTGVVKETCKTLSAVYRESLRVGSENFSVRMIKEDTMLADRYFLKKGAVVQISGG
AIHAMSNIWGPDVDEFNPGRFLKDKGKSDGFHPAAFRSFGGGKTLCPGRDFATNEILMFAAMIIHAVDIVAPDGG

>134555|jgi|CYP5391A1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
KKHPVGPKPWPVIGNLFIFSKIADTKDQTLASLTKEFGGLCMLWLFSQPMLIVNKLADAKELMDKRGAIFSDRPKMNIFV
ERVWPNMLPLKGIGEDFRFLRRVYIDLLSAKTSQSVRKYQEYESRMMLRDLYNAPEDFRAHTERYSMSVIFSAVYGVRIS
RLDYPIIDELFNIIDSVIKHFLPGSLLVDYLPILERLPEYLQPWLWTAKSLRSREDALHNGFLAVLKKRIEAGAESYCFG
IDVLKLQQKSGLDDKLTLDILKAIIVVGSETTSSMMQSAFKVLAMNPEAQKKAQEELDRVVGPLRLPTWEDSSNLPYIRA
LIKELHRFAPLFAIGLPHASTEEVSYKGLTIPKTTVMPNMLALSRDPERYDDPDKFEPERFLGDDLDAFTSAKQADFHKR
DHVNYGWGRRLCQGIHLAENSIYMQISRLLWAFDI

>147207|jgi|CYP5392A1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
VILPPENLPWLMKQPASVLSQRESNNEFLAAKHTFLNCVAADDNEWTFVVNLIKDITKELNNKTNDVIEEIQAALNDLWG
DDTRSWREVELLDVCLELMSRIVSRMYVGLPLCRDPTYLASSTHFAKFILLEALLAQLTPKPLRPLLGPLLAQYDWMQFK
RMDRCVNPIIQERARRFGHMADDEKRNPDQPSDLLSRLMQEAYRRNDDPCRSQSHSSKLLAILNWAAIQVQGITLENVLI
DIAHSPQSVSIQDQLRQEAAAADNADPSVRWTRAEVSKLPKMDSVMTESLRLWGFAHGIIKVVVAKEGVDLPTGEHIPYG
AKIGIGSYGLHHDAEVYPGESPFSFDPFRFLDEKAEAQTTGLKFAATSDTYLAFSHGRYACAGRFFANHLLKLLLSQIVM
RYDIKPDANPRPQNPWFSYVSPPPIGYKLSVRRRRRQ*

>147960|jgi|CYP5076G1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MPVNYPFLTASIVGVLTLLLYFKVGEHHLAPQRYAFSVVASFLSGVVFVRSPILFDKPSPDWMSAVILSTQIHASFLGGL
YASLITYRLFFHPLNKFPGQIGARISIFWLCYHVRGLDAWRKIAALHDQYGPYVRVGPSELSVRDPKGVLALHGPMSKCK
KDPHYDLTKPMTSLHMFRDRSLHNSLRRVWSQAFSDRALRGYEQRIRGYRNILFDRITAAEGQPIDMAKWSRFYSFDVMG
DLAFGKSFSMLNTSRNHWAIDLLDAGVLPLALQLPVWLLRLGMSIPILSRDWWKFIGFCRDSLQSRMKSEPEVPDIMSTL
LEPLKGREPTQEETDLLIGNAQLIIGAGSHTTAASLASILYELAKHPRHVGKLRQELVSLVRDSRFDASPDELAHLEHLN
AVINETMRLHPPVPTTIYRLTPPEGIMIGSVHVPGSIAVMCPQYAVGRNETVYSKADSFIPERWYQFPDMIKDKNAFAPF
STGPYGCIGKRLALMDIRQMIARLVWVFDFSFAPGEDGASFERNAIDAFMMTFGELRLTLRPREII*

>151265|jgi|CYP5829A2|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MLAQIMILCALITLLLYFLLGHRKMRKNVTDTSLSPPIHSSWVPFLGHIFNIATKGSNLYISSLCALQRSPIATLKLPGQ
DMHLIHPLDLSSVKQFTGMRHLSLMAVFHIAVGPAMGLVPASEKFLTDPDTGDFKRGLSRLFNGELRSLQNLHKYAFQLE
KKIDGYWRQKFTTQDVSINVGLGSWTFDILSRSMGAVFWGEQGPFEDKLFRQHLKLFIQNLETLRNPITFFIPSELRLAR
EYVREKIAQSAFNEAYGGEDVTLFERLALLYDSLEIPPECFSDCHLVAIVGLMSNVINIISWALCHILANPELRDALMEE
LNRLVETSSSPYLIIDADRIRNNCPLLVATWYELLRVYGDSPVARGVHKDSLFDGKYRLEKGSIIMTPIHLHNFDKNIWG
EHADEFQPRRFLRNGESVDAELIKHLNVFGLPGMHQCPGRYLGFTMTLAFVGKVLLEFDITPASDDALGKGNIPKRKETM
LGLPAMSEDPKVNIKRRRGIEGVQVAFDNVKPGW*

>151281|jgi|CYP5049A4|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
PGPPHSALWGHLKVLGEVAATIPQNSHPQAYYTEIARKYNLEGIFYLDLWPIADSSVVLTDPTLMEEVTVRNPLKQHTMS
EAFLSPIIGPNVIATVNGPVWKRLHNAMAPAFSWSHIRTLTAVMVDECSLYRAALTKYARSGEVFSVEELSARLIFDVIG
RVVFNFRLHAQTADSPYLNDLRELVDLAHGQTDLAASYNPITRVAKWWKKRKVLGRLHPLILGKIQDRLDLLLNEGIMPS
RKDPSSILDLMLREHILQSEASGIVNTKSQISLSRYLYSIKGLLLGGHGTTTDSLCYILMLLSRAPTALYKMRQEHNDVF
GKDFDGTVESLLDAPAKLQDLPYTDAIIKESLRLFPVGFTVREADTGAKLTVQGKSYPIDRHQGVVLNGHDLHYNSDFFP
NHMEFRPERWLDSEGGVPRSHFRTFGRGPRACLGQNLAMNELKVILLMIVRDFEFECAGLEPNAKPKTLYTNLDTVFGDI
IFQELGIEARPRGGMMMTVKRNY*

>151337|jgi|CYP526AA5|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MQEASPYFAYAGGAIVALYLLYRWALPKPIPGIPYNPEAIRSLLGDVPSMVQHVGKTQEVHSWMSAQNVKLKSPIVQLFN
RPFGRPCVVVTDFPEAQDILVRRTKEFDRSKFIADVSGGIVPESHFVMQTNDKFRKHRKWIQGIMATGFLQDIAAPFVHA
AGLDLLQLWEEKARLSKGHAFAAANDVYCTTMDSIWPIVFGKDPANSNSKAQLRLYLTVKEVDVPSDPDAPITLPKAPHP
DIMQSILNIMHSVEACIKSPVPALAHWMLRQTPTLKKSFRDKDELIQKEIRRAVDRAMAASKDGKEAQVQCAIDDIVIRE
FQLADKENRSPEFFSRGISDEILGFVVGAQDTTATSVTWALKYLADHQDVQTKLRNELRKAHSEAAADGRAPSAAEITTT
IIHYRDAVVEEIFRCSLTEASSVRTAVVDTQVLGCFIPKGTEVFLMGNGPGFFSPEFEIDDSLRTKSSLESKDKVGSWEH
SDMAIFNPDRWLVTNAAGQTEFDAAAGPMLTFGLGERGCYGRRMAYVQMKQLLTLIVWKFELHKCPEALSSYAATDKMAH

MPQFCYIRPVKAKW*

>151636|jgi|CYP5794A1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
LKSVPGPMKARWSRFWLIWIDMSGNRSKTVHKLHQKYGSIVRIGPREVSFSSRQAMKDLYGSGNKFRKGPVYEAFGRQSS
FTILDKSVHRSRQKRIAHVFAPASIAAVEPLVKKHTQKLLRVLSKRTNLPLDVMEWFRIFALDVVGSVFLGQSFGGLDKE
APPEILYDLDEVFPSLLVEWQFAAILKMQKYGTEKFNEYIARHGRSGDRIDLLTKLIAGSKDFGPLEDDQIINEMTNLIF
AGTDTTSNTFTYMFYELAKHPEWQKKLQAELGEAALEEVPEYKDVVKLPVLDAVIHETLRVHPAAPAGLQRLAPGAGGAV
VDGITIPQNGIASCQAYTTQRDPTVYPNPEKFDPNRWLVASEDHLNVMHEHILVWGKGQRACLGKYMAYMELKVGTAALM
GKFNVEIGSATTDDDMEMTDHFALVPKGKRCILRLKERN*

>160585|jgi|CYP617A8|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MLATALVGGAGWTYLQQEAWSRGTFVQAAAVLLLAQVFVVYGIWSQFVYPFWFSPLRHLPTAPNSHWLFGHGKKILAEKP
AAPFREWALSMPNNGIIRYYWFFHHERLLITSPKALAEVLVTNNYAFQKPENVRTFLGRILGYGVLVAEGDEHKRQRRNL
MPAFAFRHIKDLYPVFWDKSREVVQAMTAECGERGEAEFEAGEWASRVTLDIIGVAGLGRDFHAIQDDNSDIVQTYKFLF
KPKPPAKIMVFLGTLVPTWMLYRLPLKRNKVIDEAAQTIKSVCRDLIRAKKEKMMANKERTDVDILSVAIESGQFTDENL
VDQLMTFLAAGHETTSTALTWAIYALCRSPEMQTRLRNEIREKLPSTDDAGAKITSLDIDHMPYLNAVCNEVLRFFSPVP
LTIREATHDTTIQGIPVRKGTRLTVSPFAVNVDPKLWGSDASEFNPDRWLSTDGLSDESNKRAASGGAESNYAFLSFLHG
PRSCIGMSFAKGEFACLLAAWIGRFEFELVNKEEMDLDKIDMRGGVTVKPANGLYVKTRVVPGY*

>170454|jgi|CYP677F1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MSPMSLFLVGLAFAAFWGFFQVLYNVFFHPLRKFPGPWLAGATSGWKAYKEVIKGETLAQELFDLHRRYGEIVRISPNEL
HFGNPNAFHDIYHSSRRWDKDPGLYRTPGVKSGSFVFLKYDQAKERREVLLPIFSKKAIQNLEHLVWRNATRLASSITKA
NVTQSSIDLLFAFRSYTLDTIMCFTFGNCVNALEAPEFRDPLILAMDASLRALPVLKNFPLVRNLIYAVPPGLVMRILPD
AKRLAPRLYQVRDLIQQQLQVVLQCPSKLDSVSHQTIFHRMLDPQAYRRKSVPNMTSLHDEGFTLIFAGANTVADTLLMG
HWHTMRRPDLLAQLRQELVTVWPSLDTEPTLKDLEALPLLTATIKESLRFIPSGVSLTRVVPPGGAVISGKHIPGGAAVG
MAILHVHQSAEVWGDDVLDFRPERWLEDGKKDLDHWLVPFSRGPRMCFGINLAWAELYIAFATMIRRFDLAIDGTTPEDM
EWRECIAAYYPRRHLHAWCHPAQS*

>181847|jgi|CYP551A4|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MEALVSQPVATTVLLATVLVSCIYNVYLVIYRLWFSPLAKFPGPKFAAASFWYEFYYDYWLDGKYLFEVEKMHKKYGPIV
RVNPDELSIHDPDFYNEIYVTESKRRTESYDVFCKGIDFDGSHLLTADHDLHRKRRKPMESFFSRKGITQLQPMLAEVAL
HLESRFRELEGKNAIIRLDHAFSAFSGDIIGRICLGTGDRGSHGDRFLDDPDFASDWFNIIHAIVRSIPLFTGFPQLIQF
LSLLPESLLLWIYPKGQMFNIFRQRALQQIRLANSDQSKEDSNGVSIFRHIANSDMPEEERTEERLAKEAQVLLGGGTAS
TARTIGFASYYILSRPGLRSKLEAELKEPMANWPESVPSWAELEQLPLLQAIIKESLRLSYGVMHRLPRVFPDQPIQYKD
YVIPIGVPVGMSAYFMHSDPEVYPNPGEFIPERWIHDVTPAMHRSYVPFCRGSRNCLGMNLAMAEMSLVLAVLYRSNGPK
LELYETDESDVKQAHDFLIPLPKLSTKGVRALIR*

>186579|jgi|CYP55A26|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MATDAPNFPFRRASGMEPPAEFARLRATDPVSRVKLFDGSLAWLVTKYKDVITVATDERLSKVRTRPGFPELGAGGKEAA
KAKPTFVDMDPPDHMHQRSMVESLFSAEHIKDMQPYIQKTVDNLLAALKAKGCANGPVDLIKEFALPVPSYIIYTILGVP
FHDLEYLTHQNAIRTNGSSTAREASAANQGLLDYLTKLVDQRIQEPKDDLISKLVVEQVKPGVIEKADAVQIAFLLLVAG
NATMVNMIALGVVTLFQHPEQLAQLKADPSLAPAFVEELCRYHTASALAIKRTAKVDIEIGGKLIKANEGIIASNQSANR
DADIFKNPDEFNMNREWPVEDPLGFGYGDHRCIAETLAKTELSTVFSTIFKELPNLKLAVPDSKINFTPLHRDVGIEDLP
VVF*

>187993|jgi|CYP528A8|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MGSGLVWTSVWALCYSTGVLVLSITTIILYRLFLHPLSRVPGPRLAAVSNIWHAYHARNGRMFELGRTLHRQYGEVVRVG
PNELWFNSTEAFDKIYIATSLITPKIDCFLRPHFADGLDLLSERNMKRYRLQRRLIGRVYQTANVTKFEAAVDDVIKQAI
ARLEALDGAEIDLKEWMHIIAVECLGASVVSWSPGLLKAGTDWGSSAHSYLGWRRKSVMGLFPTLTKLTLRSNYFEWIFR
DVWDLKYVASPNFRSFFPDVGKRISRRIKSALKPNASKDNRADLLADLIQLHNDKPDFTESYLRKMAVTNFGAGHETMAS
TLTSIFTMIGTHDDVQKKVKQEIRGATDASSYAGTSQLQYTRAAIREAMRLHPVLSMSLPRRVPDMGSHIHGYFIPGGTT
VGCNPVALHRNANIVIGPDPEAYHPDRWLGGETLDMRLMDRYSLNWGGGPRTCPGKNLAEMVVYKVVSALLERFDVEVAT
PPEIGQPSYFLSMITGVKARFSSVAPQMAGKDYL*

>189003|jgi|CYP540B35|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MPTLFHLLGEQPSTAVEFEVSTSLDFEDLQDLAASHFAIVEPRGVGFISDDQYLTSVADVLAADGPIAISIDGGAVRKIP
GPKGLPYLGNFTQIYPDHLGNHQRLFETYGKLFAVTTFGTKWNYTNDPNLTNICLMESEFFTKGVIEGHPLHPFNLGDAG
IFFGSTYTENWRANHKFFPPALGPKAVKHYAPKLQDTIEDSFTVFDQLDKDGEAWNVFPYMLKLTSQAIVKLILGMQVRH
FASVDTPLDEIVSMVIEILVLARKVNRYGSWYGSLPFGDPQKLRNITKMIRERLDKKMEEVENAKMGAKELELQEAALEA
DHLIDFAIRARDNKGNRLTKDQASLGVTIIAGAGFSTTAALLSWLIYGLVFYDGMQDRLLQELVDNDWNEDTHATLELTK
NLKFLDKYIKETQRRHNSSFQPARTAKTDLILPGGYKMAKDSLIILALHHLHTNAEHWNSPLRFDPDRWDTEEVKNRPAG
SFQPFASGPRGCIGFNLALEEVKIFLPKLVYRYKFTLAKMDEAVQYDPNQVVIKPDNLYVRAERRVRWPAKSE*

>190045|jgi|CYP620B9|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MFNILVAGIIVLIDALLNLPPGPKPLPILGNILDLPPSGTPEFQHWLKFKDLYGPISSITVLGQTMVFLHDKQAAYDILG
KMSLKTSSRPKSVFAFELCGFQNFTSGRQYDATFRLHRKFMHQQAGTKLVAARFNGIQDVESRRLLKRILGSPKSLVKHF
GTEAAAIILKIVYGYSIDPHVSDPLAELIENMMDNFSQAMVPSPRLVDLIPALKHLPDGFPGTEFKETARQWNKVNHDTV
NIPYSFVERQMANGTHRPSFVSGLIERYSSEKSINGKIDRNNEDAIKWAAGIMYGGGADTTVSALSAFTLAIVLFPEVQK
KAQEEIDNLIGMHPNRLPQFDDQEQLPYTSAVAKEVIRWYSVVPISTPHLADEEITYGGYRIPKGSYLLPSIWWFNHDPQ
TYPDPFSFSPERFLEPRNEPDPNEVFGWGRRICPGRYISDDNLFITIVRLLATFNISKAVDEQGRQMEPNVEYTPGLISR
PVSFPFSITVRSSEHAELIDSVEMDHPWEKSDAEFLELEDNLTTHE*

>190071|jgi|CYP620B8|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MSDFAIAQGIIILIGRGVLLPLPPGPKPIPILGNIRDVPSPKVPEFEHWLTFKDKYGPISSMTVLGKTQIIIHDKEAIIE
LLEKSSLNTSSRPHMNFMSLCGYDRWPSVMPYNSRHRLYRKLIHQQLGTNLLSAQYTDIQDVESKRFLLRVLMDPLHLFK
HVKIEAASIILKLTYGYSTELYKPDPLVELIQQVLLHASAVIMPFTWAVDSFPFLSYLPEWFPGAGFKRTVREWRALLDA
SAEIPYNFTKEQMQKASYQSSYTSKLISTLGKDGREVDEETADAIRWTAGMMFAAGAETTVAAIQAFILGMVLHPDVQQK

AQEEIDKVVGPDRLPEASDKENLPYISGVVKEALRFFPVTPMGVVHEVSQEMIFRGYRLPKGAYIRPAVWWFLNDPKTYA
NPSRYDPERYLAPRNEPDPMDAFGYGRRICTGRYVAQDSLFFTISRTLAVFTISKAVHEGKPVDFEPKHATTGALDHPQD
FPYSIAPRSEKHAEMIRRVEADHPWEGSSGGAIQGNALFDKFKADCEVGIGSY*

>190955|jgi|CYP65BM4|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MLLTAESLFFSLRPGVALAAWLIILGFAYLISIPIYNVWFHPLRKYPGPRLWAATRIPLTRMIFSGMSHRKIYELHQTYG
DVVRVAPDELSYINGAAWNDIMGHRKRGQGENGKDHIFFQSHKHSVISANRENHTRMRRTLSHGFSAQAMLDQQPLIQSY
VDMLISKLRENCADGNQPMEMTSWYNWTTFDIIGDLAFGEPFGCLQNSDYHPWVSLIFQRIRVSSINTALRRFPLGDSLI
QLLVSKEARKNFDAHFQLTQEKVNKRLAETNPRSDFMEVMTKREGDMKFSRAELWDNASLLIIAGSETTATTLSGVTFML
LTHQTVFQKTIDEVRSSFSNESEIDLLSVQKLSYMTAVLQETLRIYPPVPTAIPRRAQPGGDVICGQYVPENTLLGIWQW
PMYHNAKNFTLPDSFIPERWLGDARFSSDPREVLQPFSYGPRNCIGKNLAYAEMRLILAKILWNFDITLHPDSKDWLQKN
MAYSLWQKPNLNIYIKPRVAA*

>191731|jgi|CYP65EM1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MLETLYSNLTGMPLTTAFAACAQAVIIYCIWRIIYQIYFHPLSKFPGPWLAAVTYLYKFRLVVSGNHHKIIDELHKKYGE
TIRIGPNELSCIHPTALKDVYGHHPTAQTFTKDPRLYSSPLGQTESIVTITDINRHAGVRRLLSHAFSDRALSEQEDIIQ
MYVDKLMVKLRDQAKQGPFNIIHWFNFFTFDIIGELSFGESFNCLSQGQMDDWITVILGRVKALAIAWGIRSFPLLNKTY
HYFLPASLRQQGAKHMAYSRGKVSKRLQSTAERKDFISCLDREGIISSFTVEEISAHTASLVLAGSDTTATSLSGICYYL
SKNPEAYKILANEIRNTFQEEKEITHLSCQRLSYLQAVIEEGLRLYPPLPIGAPRLAPKGGAMMGDIYVPDKTYVSVPSW
TLTHLEANFPDAWSFKPERWLSRSSPDLRDQSQPFLLGPRGCIGRNLAMLEMRLVLSKLFWNFDFEIINRDLIWERDQTA
YIAWQKPQLIFQLTPRRL*

>191816|jgi|CYP613A3|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MGRKREIRTHIANVDIIHIKTWMLISSYVICLGVALVEAILPGLLPQPVLDILSAVLNKFLLWQYPIKSVNGSNTLPACP
CRWPNGQGDGAKFLDGIQNSVEWSKSYGPLYRIWSGMSPEIVLTRPEQLQIVFYDSDKHRKAINNDSGYFMGQLLGQCVG
LISPPQWQGVRAITEVPFRHQTSIANTGVIEEFVRDCFNKLELEGDLSRGMLHPTQDLKMLPFWMVCYFLYGRLPVQMTE
ALKNLTECREEQMRDVIKGGISRFSFSRLLPTAANRRLREFKDRWLLFNRTAEEYARSHGSNSPIVDMFDAVHRGTISDD
QLLQTLDETLLANLDVTTGGLAWNPVFLAVYPKCQQKSRQEIQNLPDQAALHKYLQSPSTYLQACILESSRLRPLAAFSV
PQSAPTPRVLDGYIIPASINFIVDAYALNVRNSYWAPDNETFRPDRFWGRKNMELRYLFWRFGFGPRQCMGKYVADSILR
VTLAYLVQNFQLSLTTDDWVRDKQTWITHPDFLLRCERLKQ*

>191943|jgi|CYP655B4|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MAAIAAAANNSKQYTKIKLKETLEALSYSLKTKTHKCGKIKFYKTKDPVWGIDFMNNLSRALQENRILSWMEELWASQGT
KTFRVSFMGKRVIYSRDLENMKAVSTTQFQEFLVEPVNGHLDPFLGSALSTADGKVWQHSRNLVKPYFERQAFANVQRLA
PFTDRLFGLFPTDGETFDIQPLLSRWFLDATTSFLFGRSRDSLTNAENKDVMLAIFDIVRGASARRSMGPLKYVFHDAKW
HESIQFAHKYLNDHIDEALDELKARNQNPEKFTTESDRTDLLWSLVQQLNDRTLLRDQLAALWIPGMESTSILVSNILFF
LSRHPRVWQRLQSEVKATGEGALTYNTLRNMQYMTWVINETQRVFPAGVSMTRVAGKDTTLPRGGGPDGQQPVFCAKGDL
VVCNRYLLHRDPEYWGEDAAEFRPERWDGIRPFWNFVPFGGGPRICPANVMAVTEAAYFVARFCQKYKSIESRDDRPFTP
VLHAGVSNLNGVKIAVTSW*

>191958|jgi|CYP5082E1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MAYISISYSALLCCLFLAWIIYRKREPIIHFILSTVVYPIRDIQGRPISGPRWKSMDGQGIDKFLRGHEFSRDWRRHGAV
YRIWSGFVPEIVLTRPEDVKTFYIDSAVHFKSTSSNGGWLFHQLLGDCMGLINGERWKRTRLEFNSYFINRAITEFSPQM
EQGAAKYTQNLKGGCGHGIDVIHAGNISRFPFMTTAEHIYGPLTKQEKENLWSLGQRSLGLMGKVLSGGVYRFKVCQYLR
PGTYQILKKFNYDWTAFNEQIYNSRKGCFQKPPIVHVWESLEEGKVSKQELIQTMSEILFANLDVSTHVLGWLIIFVAQN
TTVQEQLRKEITDQYGDVVEFLRRKDTLLHFCYLESLRLRPFTVFTIPETSPMAKVLGGYRIPKNTGVVVDTLAINYNAE
FWGDNSRDFNPYRFQHLSSTELTNKKLRYNLFTFGFGSRKCLGQHFAEAMMKQFLCKLLEGYELTLPETEIRKGTEEKFS
RDTWVPISDLRVTLTPVDLRR*

>192422|jgi|CYP5127C3|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MQSLLSTARKRINAWLFLTRGPSIIQEEYNNSNGNPFWIEAPENRYLVVSSWDHIKEIDAASEDVLSLQAAAKEILQPKY
TMQNFNWFDKKGVDGTPLIRTLRTLLTNHLPDILPDARRSMSALFDDILESRSMVNGSYTSPLFPMVIEAIALTNATAFF
GRDLAHSKVFMNAAMNFIEQTLITAEVVRVLPSAIAPFIGNLISMKLGAGKIIYNALIPIAEHRLEEKARKSLGQAVPDH
HDCIQWVMECSPLSKPWSAERIVHELMALWFGSVHITSTTACFALHHLCIHSEYIEPLRNEIESIGWTEFEKSGGKTFPL
LDSFMKESARMNPVESVSSRRMALKPFELSDGSRVEPGEWICTAPRGMMSDARYYADPLKFQGFRFVNPDLLEKKFSGTS
GDGVSQEGPSKYTDINDWQLWGTGRSACPGRFYATAVMKTLLALFITKYDMQLENPKAARYFAWRTFIYPYASTKVVLRP
RSVV*
>193168|jgi|CYP605A3|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MVRYSPPQRGDDEKIVVSTNSSAFVGRDLGTSSAWISHVDRLPMAVAIPSIIVSLLPGFIRPFVKPLLFAPAIYTRYMLG
RLLGPVIKEDIAEYEASKVEKRAVADPKEKGKVALTSWLLRRYTSSPKNALAKLMEDYINISFESTTSTAGTLFFLLTEL
ADDPALVDALRDEIKTVAPGGLLPFTHLNELRKLDSVMRESARVNPFSHIILWRKVMQPLKLSIGPELPVGTNICVDAHH
INFSPDLWERPEEFDGLRHYRARQKPGNEQRFKFANLGSDAPGWGDGSQACPGRLFADNTLKIILTHILMNYDFKFRPGE
TKPKKGSMPNGSMYPDMGAKLLFRKRNQ*

>193186|jgi|CYP65BQ4|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MAISSYISPPIFSLKLIIAVPFLVFLLGLLYVAYTVIYNLFFHPLRKFPGPKLWALHYGFYASHEVSGEGHQTMLAIHQK
YGPVVRIGPTHLAFCHPDAMEDLAGHRKPGQPENGKDRARNMTSVGSIIGANRADHARLRKSMANGFSQQAMVDQQPLIS
SYVDKLFEAMEKFSATGEAFNAVAWYNYTTFDIIGDLAFGEPFECLKNSNYHPWVSLVFQAVKNMAIDSAFRRMGILYNV
LVLSIPKSLASKFQEHHELAAEKVRKRQSNDSDRKDFMTSMLAKKGKDALTFEELKLNASLLVRAGSETTATVLSAVTYF
LGTNPEPMKKLCDEVRSAFTNEEEIDLFSVGRLQYLLAVLDEAMRLHPAVPGTIPRVVNPMGDTIAGHFVPPGTAVDIWN
WTTNHFPDYWAQAEEFIPERWLDDPRFENDKRKIFNPFSVGARVCLGKNLAYAEMRLIVARLIWKYDIEILDESIGWDRR
CKSYIVWQKGPLYIRVKPRQ*

>193209|jgi|CYP5292C1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MDNTPIHHPVPALIAFLVILYRICLIIYRTKFHPLSRFPGPVLAASTSLYSHYFNFIRGGNFIRQLEYLHDTYGPIVRTH
PNELHIRDIEAFDTVFKVGSRFEKDPRFYGFPFEGSHFNMVTLKQAKPRRDLLQPQLSRRAINRAQNILEMSVWKFIDLL
ECRRAKGQTIDLSLAYRCVTADMFLGYAFNRPLEALNCPDFKYSPAMHMDAALVASFLAKNFRFSFTLLWKVDCKKMILD

LRKRKENDEIMHPTMLDTLIDPAEKQLGPSLSISTLTAEAIVLLFAGAEATSLTLILGTFHISKDRNMLTKLQDELSKVM
IDKRTLPSLDILRGLPYLTGVIKEALRFSHGAPGKLPRITPDEGATLCGQWIPPKTPVSLSHWVYHYDSRVFSDPGAFNP
ERWINDQNGDLDRHLLSFSKGSRSCIGINLAYAELYLLFASFFRNYRPTLNGTNDQDMEVRDYYAPMCKGHLRIVIDE*

>193333|jgi|CYP58Y1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MLANILFSSSSLSDALCDPNVAVGVFFFFIIYTILKASYRLWFHPLAGFPGPKFAAVTTGYEFYYSVIKDGMFLWKLIEL
HEQYGPVVRITPNELHFSDPEFHSEIYSGHKNPKDKYAPFYHFTGATQSAFETHDHKLHNSRRQPLMSAFSKRSIVAIEP
LILEKVNMLSQRFETAYLNKTVIKLDSAFSALTADITSQYAYGRCFGYLEDKDFKNDIRESLLASLTLFHIVRFFPIVMK
GAKVLPFRVVQSLNPMLSKVLGLRKLINAITIEELHTMKQGKTSDAMLIQVLNNPSIPESERSLERLNDEGFVFMNAGTT
TGKTLAFIMFHLLKDNGAYYSVLQQELIKTFPEGMERLTWKDLETLPYLRGVIYEGLRLSIGPLTRLPRVAPTEPLIYQG
RAIPPGTGISECNYFLHMDPVLFPNPAKYLPQRWITAEENGERLQKYIVTFGKGTRHCLGMNLAYAEMFMTVAVIVRRFC
LELHETTEADVEVIKDRIFGYPRNPSQGVRVLTTKLT*

>193511|jgi|CYP531G1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MDNNSVPHSAQGVATYVFWSIVSYLISPLRKYPGPFLASYTNFYRMYYAYRGDMHLLTKKLHDKYGPVVRMGPNYIDVDY
PSLIKTCFDTQGVWRKTDWHGVSGAMVEGKLYFNIFSECRPEEHARIKKPIAKYFSAPGVAPMEPHVDSVLSTLCRAIDE
RFAGDETFGKTFDFAEWMLFFGMDAVAKTTWSEAVGYLEKGHDFDGTLNVSDKAYDYLVTIGMNPIFDKFLDKNPIMRIG
PPSFGTVTGICLGHLMARMKGEDSHDPSKPDFLDRYLEAQQQHPEVVDIYRILSYMLVNVAAGADTTAASLRSIFYLSLK
HPAVFRRLRDEILNANFSQLPVPYAESRQLPYLEAVSRECFRYLPGNCFAQERYVPTGGVTLPDGSVVPAGTAIGFNAYV
IHRNKEVWGEDAEEFRPERWLQADEEAEEDYKDRMKQLNYVDLSFGAGSRKCIGMNLGKMEVSKTVATLITLFDFELEDP
KKVWKIHNSLIPRASEIMLKVKRRSGAAERISEMISHF*

>193582|jgi|CYP65U9|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MVIAWEWPVTASAWLSTTILTLITYNVLRIIYNLYFHPLSKVPGPVAWKASRLPFIRSLLRGTIVHDFERLHRQYGPILR
IAPDEVTFAHEDAWRDIFQLRKDHPQFLKDLVWWKSQPGMPDSLLSAIDPKHHARIRGLLAPGFTPRALKEQEHTLHFYV
NLLVERIRERVNETPESGAVIDVVPWFNFIAFDIFGDLGFGESFNCLQDSKYHPWIALLFNSVKAASYVAAARFYPIVER
LLLMCIPPSLRKMQMDHYQQIVDKVDRRLNFELERPDIMSHVIRGTERRELPEGTLHTTFMVLTTAGSETTATALSGTLN
YLVNNPNKLKNLTREIRGTFQQESDIDLDALRKLPYLNAVLNEGLRLCPPIPWVLPRRVPEGGDIVCGTWLPGGTPVSIQ
AYTMNRDPANFHSATSFVPERWLPDTRTDPESPFFHDRLQVVQPFSDGPRACLGQHLAWAEMRLILSKLLWVFDFEVVED
RKMRWEDLRTFLLVEKRPIEVRARLRDTASVA*

>194303|jgi|CYP561J2|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
METLLTYAKTPIPAFPQVQGFMHEVVEELNHETIIQLLGTLIALFIVYRVAIAIHNVWFHPLSKFPGPTHMAAFQLPYTY
GTLVSGHMHNTMKKLHRKYGPIVRVSPDHLAFDGSIAWPEVFAHRADKEEYGKVPNFLFMGDTMSIIGAPKAIHRRQRRQ
LGHAFSDGALRDQGPIMKKYVDLLMQRFTEKSDTGKSFDVNDWFNFITFDIIGHLTHSKSYSCLENGSHPWVSKFFRGFR
GRCYSRFLSQFPFALEIVTKLHLIPDINTNEDDKRDAVERTMERIKLGEYAIEGYRDFTFHMLKKDHDGEMGFVGLEVLA
SATILIGAGAETTAATMSALMFYLGTTPTAYRRLVEEIRSAFDDEEGITLTSTQQLEYLHACIEEALRVFPPINETPPRV
CPGDTIDGKYVPKGTAITVFQEVTYHNPEHFTEPDSYIPERWLPKSHPFYDAKFKEDNRAVFKPFSYGPRDCLGKNLAYS
EMRLTLSRMLYKFDVELAPGQENWHSAQRTFLAWERRPLNIYLKRRQTA*

>195017|jgi|CYP621C3|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MTAVAQLILGSPLGPPGEPIIGHLRIIPTDNPEYFYMRLAKEYGSDILSFNVLGQSVIVLNSVRAATDILDKRGANYCDR
PRFVLFEVMGWHKTLTFLRWGPSFKMHRRILQKSFQKSNIGRYRGLQEREAIILLRGINDKPTEWETILRRFATAIALGV
GFGIKVETDTDPFIRVAADAAYALGHGGAPAGTPVDFFPLFRFLPSFLHDRSLKFANQWRFAIVNLRNKPYETIMASRTR
VQSLVQEMLDQRQNQVEQGQAPDISEEDIKGAGAAVFAAGQDTTWSTLVVFILNMVLHPEVQSKAQRLLDQVTGRDRLPT
FDDRPHLQYIDFIVQETFRWCPVSPLGVPHRSLKDDFYGDYFIPAGSFVYANARAMTHDETVYKNPDDFDPDRYSPLEEG
GRGEPLPIGQFGFGRRICVGKHFAEATVWIVVAVMLSTMNIEREKDANGTEIMPVVELTNGLTSHPKSFPCLIRPRDEKS
VAVVRDALLCIAGRDIPTT*

>196018|jgi|CYP548BB1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MALYDELSKDIVPWLYTLATFVTIFSVYVISLITYRILFHPLAKYPGPFLAKFMEWRDVYHAYREDKHLDLYELHKRFVR
PIVRYGPNTLSFNHPAALRAIYGHKANVRKSDFYLSFPATPGAVSTHTAIKRSVHARKRRVMSHAFSEAALKGVEEYVLA
HIRLYIQKLAGGSSGEWTEPKNVSKWSTYLGFDVMGDLSFGKSFNMLEGDIPENREAAHLLAQAAKRHNTTGPLPWLHQS
GFDRILFRKLNKDRDQYMAFSKKQVRSRMNSSIFNSTRKDFFYYLLNSKDPETGQGFAQSELWGESNTLIIAGSDTTSTT
LTSTIFYLAHNGAALDRAYKEVNSKFNSVEAIRAGPELNSCTYIRACIDEALRMSPPVGAILPRQTLDGGLEVLGEKLPA
GVGVGCPIYALHHNADFVQDPFVYRPERWIIGEAASEASLKSLRDVFNPFSIGPRGCIGKPMAYMELTIALSRLVWAYDM
QLAPGKLGEIGEGNPGLGKGRERPGEFQMSDIFVSKIDGPYVSFRPRQ*

>196674|jgi|CYP5388A1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MAVSGLLADMESLPTLAWVSPALTAVAVIIVALLSGYRKSPTKFDVPTLEDSPMRYVQEADFKNTIFQVLTPDGPRIFLP
RKFANELKPFKRHEASGMKALADRHLGHYTTIDHESDVMLGAIKIDLNRNLGLFVGDVEQEVSYCFETQFPSCEDWTPID
LHETLLRVVAQASARIFVGYPMCRNDEWLECSTKFALDVMTGGEKLKLWHPWLRPFAQYWIPEMRQIRGDHQRALDLLMP
ELNKRATETRKSDAAPRQDMIEWMQQRAQKLGDKSFDNRELANLQMLTATAAIHTTRLAIIHALYDIAARPEYIAPLREE
IKEVTRDTNGVLQKQHLTQMRKLDSFMKESQRHSPPSVATYQRKAMIPIDLSNGFHIPKGTIVQCNTNILDETPAAWGEP
HAFDGFRFYRLRENPEDTNRFQFASTSYDSMQFGFGNDACPGRFFASNQIKIILSYILSHYDIKFEDSVKERPKNFMFEV
NVMASNTKVLFKRL*

>201459|jgi|CYP5799A1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MTTPLFLGTIISLCVATALFFRYWRLRQIPGPILASVTNLWRFNIQYRGPILPCLLDLHRKYGSLVRIGPNTISVSDAAY
VSAIYTNKGDYVKAKKKRYMQADSYEPMRVFVNGQSVGSIVDMQDEEQHRALKRSVGGAFTNKSLQEYEPDVDMILENLL
ARIGKKSTFVLHDVLQWFQLDFLMKIAFTESPGHLQHGADVYGLSKLTAQRIAHWYTWQSLPQLERFIYRNSVWGRFLAR
PSKWAKMSKERFNARVATTHDRQEIERRDLLQKCIDYSEKYPDVLKPQTITSVVNSIISAGTDTTSGAMTTMLYFLLKSP
SCYKSLMDELDDAQKSGKLSIPPRYTEVSRLPYLDAVLREALRLNPALAIPMERIVPSSGCSINGTFIPGGTVIGCLAMA
IHMDQTCFGKDPELFQPERWLNRSDAERSAMERGFLGWSAGSRACLGRQIAELEIKKVIPTLLLKYNISLDNPEQTLQFV
NGVLEYGSNPISVTFNTKTQ*

>201602|jgi|CYP5042A6|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2

MHFHCFFTVPACLAEYFKPVGKRKGQRGIKPRLPAGPAGVPLFGHLLTLKNIREDPDCQELKDLAKFGEMTTLHLGSKTW
ILLNSKRVVSEIIAKRGNATNTRSPMPIASGIVSHHRRSLLLPQEQWKEPRRVMHNLLNGTALKQYGEWQQQESAQMLAE
YLFQPKRWYKHNYRYANSVVHRIALGERLVKSTKELSDLQDVVTYFVGSIGSSIIDWFPELARLPRFLQVWRPHWDQLAE
WNNNVYKSWWYPVRKQIEDGTAPPSFVRDVLLHPDTKYSGDDEDAMYLALQLIEAGSDTTREALNIMIMASLEYPHGFKK
ARDEIDRVCGTGNDSRYPTLDDMDDLRYICAMSKEVLRWKPIFILTPDHTSSEDIDFEGYHFPAGVGFVINEVVVGNECE
NPDEFIPERWMDGHETDITHGLWQFGGGRRICIGYRLAQRSLFLNIARLIQCFDFQPNGPYNPKFLNLESTDEPFPVKVT
LRHETYRQLIIDEATRAGVLEDAKLARDIL*

>214982|jgi|CYP602B6|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MYRQSNSTPFPPVVEAPALFASWTPRTIYYVAALVMLLAAWLLRPKCEPSKLSVPFYGASKLKWIFDAESQIVASYSKFR
DQVYQIKATEGIQAMIPPRFIAELKGLPEDILSATEAVADALQTKYTKFSPGHNGEMLSLLVRTRLTQNLVELVPQLKAE
LEHYIGTEFPSCDDWTPVKWQPFALRGIARLSGRAFVGPFLNRDEQWMEVTINFAINVFMSVIKLQFFPEWARPVAQYAV
SDLRKIRRDIDAAKSMLRPLLQERIRDMGISTFHEPPNDLMQWLIEALPEEEKADVQVHAELQLILAAASIHTTNNLLFE
CMADLASHPEVQVELRKEASQILEVENGWARKESMAKLKKLDSFMREVQRLRGNITSFIRKVLKPIDLSDGTHLPAGTRV
LAPQAGISIDEQFFHNPGEFDALRFYHMRQESAEASNRWQFTSLSDTNLNFGAGKHACPGRFFAGNEIKLILAFFLINYD
VRLKKGNARPKPMAMVMTKGPDANAEFEFRRRQLAN*

>215790|jgi|CYP541A2|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MTTPIPKPPGVPLLGNIFDVKPSNTWDSLRKLSEKYGEIFQIKVLGQTIVFVASVALAEELCDEKRFRKYVGGPIVEIRA
AVHDALFTAYDDEPSWGIAHRIIFPTLRPDAVGAQFGEMRDLATELLNNWRGLGEQNKISPVEQLNRLNLESTTYVLFGK
RLNGLNGPPHPMLQAMEDSTSEAMKRPTRPGFLNWLVYGRKFKSSIKLMRDYAADLVKYRHENPTDRQDALAAMMNTPDP
ETGKTLTDSEVIDEILSMPIGSSTAPCLLGFAIYLLQKNPETIVKAREELDRVIGDGEFELQHLEQLEYVQGIMRESLRL
SSAAPGFNIEPRPTTEGDKSPVLLGGGKYQVAHNQAMIIVLHGVNRDPAVFEDPLEFKPERMVGEAFERLPAGAKKWFGN
GKRVCIGRYYALQWSFILLAKMIKEFDFELADPEYKLEVDGWFNIRPIDFYVKVKPRAL*

>216144|jgi|CYP608A5|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MFTQQPQLTSERSLDGPPPPVVHIPREVRRSIKVNEAYSKALDEHGPVIVVPRHGRNEYVIDHRYAREVLTDTENFTFEK
AVFDLLHLGFLAVFDNGAFVHDVDALVEKNVQPRMNAIIDQIFPVFREYFDRLEDELPSGADDKTFVEFPDIFYRIQLAI
AHAMVVMILGQAHASSVVAGRFAAIAIAMANMTGMHENTHEWIRFPWLWVLINGFSAIFFTIIPQFFFYVAPALWKARHE
HLDNGLAARHSNFVPLFDILLTKHYQGKTGIFALAGFFRCVILSIGIIFASIHQTVVAGSWILVKLTQMQDEYLPAIRQE
WESVNPPGENITVNKLSKMTLTDSFMREVLRTKGDAWGPVRQTTRAVRVGPYVLPKGAMCIVLISRAHQHPDNYGDEGKV
FDGFQWDKKQRPAVQGNHDFLTFGLGRWACPGRQLAIHEIKIVLYMFFSKFDIKLKANTFRTTNTINTTAVAPDATLLLR
RRKDTDVATVV*

>216161|jgi|CYP613Q1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MERDGSNVMVLLLLLLPSALVFYVVCVDNASGSLLSRFGNFILQRSARPCTFQKGGRPVPVLNFEWPNGQGTQKFFEGRA
SSIRWRKEKGYIYQIWAGFKPEIVLTSPDNLRDFFHDSDKHRKAPNNNSGWLIGEVLGSCLGLVSGSRWVNMRIPWEHPF
SLPQAKSYVGLMRASAREFVQNLENQAGGSSATFEIQATQALKMFPFFLVASILFGKLSAAQKETLTKLAPLREELWREG
IHGGQNRTLLAKYFRTRGARLLEEFKTRWRDFIENAYEESIAKGKNGHIEQLLKEAREGKNLTVEECMQTVDESLYANLD
VTTSAVTWSHVLLAQHPAIQDEVRAEVREHMQLPTEEWEKYINRSDTLLAYSVLEASRLRPILAFSNPESAPTDKVVGDV
VIPRNTDVIVDTHAINVAHPFWVNGTEYNPHRFEGMQPRQQYRYHFFRFGFGPRKCLGQHIADRMVRALLAEMLSRYRLS
IKESVDKDKDFQLQDQSWVLLPEVMMTCDRV*

>218787|jgi|CYP539K1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MVAGVGFAIVSILTVLVWLRHLASDIRIRKAGGVRAPILAGNLLSASKLYYEIGKNQYNNSLVDWCTAQLDSLPPGKRTF
AEFSLTGSKRVLITRDPEQIKAVLAANVSSFGHGPMWHKLWRPFLGDGIFAVDGQLWQDSRAMIRSMFLRDRLRNLFIFD
ACTAKLLSKIPSAGATIDLKDLFYRWSMDTTTDFLLGENVNSLDFPDNGVFKAMNVAQRIQMFIFVLNPIAPLIPKGDYH
RAIRRIEEFIEPAITRTLAIPQAQLEELSTSDMEFSFLHSIARFTRDRKVIRDQIMSVLLAGRDTTAATLSWAMYELSNY
PKLWARLRKEVLREIGSHATPMYEALKDLTYVKNILNETLRLHPAAPLNMRQVLETTTIPGRPGEPGIVLLKGDSVTINT
LGMHAFADLYPPISDKFADPRIFSPERWEHWTPKPWTYAPFSGGPRICAGQNFALTEMAFCLVRLAQQFESIEYRGDWAA
QRLQADIIGTPALGVHMALYRPGEKPDLRFKHHVN*

>221775|jgi|CYP5811A1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MAAYILAIGFLLFITSYVYASFYSSKLPKHIPKIPLWTTIYDTFYGTSRVSFYNKYVRDLAEKHGAVVIWHLGRWSIQIT
KPEYLMQMFREDTVFAKGGSYAKVPWGPLGQLFGINVIDATGQVWKQHRSIVLPAIKQQFDVAYMKRRSSELRTRLWREH
EMQDKTCKSGIDIDEHAQDWSLSICCKYLMGIDLERVPDIDRRLTRVLTDRKKNFMGGITMVFPILQRFPWLFPSISRAF
RLVKEFEEVVMEIGKLNTDNEPDTNGNTLRDRLNSARETGEISEFHYRSNMKQLFLAGFEDVESVLLSAVVEMAKNPQIQ
STLHDEMSSLVPATYNLEDLDRLPVLLAVILETLRLHPPFPSLTNRYTTQQTLLGGDINIPAGTWIGWNAYAVQTDARVW
GSDALVFRPDRWGRDTASINAMFRTQQAKAVFIPFSSRSRTCLGVNFTLMQLKVVLYELFNELEWGIYCNDEVPILRQGP
LVNPIHCKFTLKARKRNTVP*

>222495|jgi|CYP526AA2|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MQIDDDGVIYKPSIASPGSPALYAISTTVALYLVYRWLLPKPIPGIPFNKDAKSSLLGDIPSMVKHSMKTQELHDWIVAQ
NVKLQSPIIQIFARPFSKPWVVVADYQESRDVMLRRTKEFDRSYFWSEVSGSVMPESHIFKRISDDLFKRQRRWLQGLMS
PGFQNNVAAAHIYNVCLDFMQLWEEKSRLAQGHPFAAAHDVYYVALDAIWTIVFGPESPDVQTTTRAQVELLSAIKDLPL
PQSKDAEVDMPRAPCPETLQSIIDITESYELTVKSPWPSITHWILRQTSSTYKKAFKIKENFIEKEIAKAIQRFQSRSEG
NSDIPTANIKSAIDDMIDKETTLAEKEHRQPEIMSRSFFDEILTLLVAAHDTTGTVITWALKILADNPEVQDKLRAELRA
MYSEAYTEKRYPTVQEINSISSHYRDAAIEEIIRCSRTESALARTAMVDVELLGHRIPKGTEVFFMGNGPGYFSPAFEIK
DSLRSQSYLSGQDKDKFSSWDPKHLEVFDPERWLVEENGQKVFNGTAGPLITFGLGPRGCYGRKMAYSELKIFITLLIWN
FELHRCREELSGYKAVDKLVHAPQQCYVKIAKAL*

>222494|jgi|CYP65A7|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MDVLIGNGGAKVVIPVKLSLALPLAVVAFGFGYFFWRCIYNLYLHPLHRFPGPKLSALSYYPYYRLLVSGVGYLTVMDLH
MKYGPVVRISPNSLSFSHPDAMNDIRGHRKAGQPEHPKEPMGREFHLKDIIGAERADHARYRRSLANGFSYQAMLDQEPI
IQEYIDQLMESIEKHSANGTQQIDMVRWFNYTTFDIIGDLSFGEPFGCLQSSTYDPWVQLIFSTVKSLVHIAALKYLRII
PRRILNYLMPYLMPKGLSTKHAENQRLSAMKVKKRLEANSTRPDFIASMTKSRNGESLTFEELTANASILIIAGSETTAT
VLSSAAYYLGLFPEAQAKLAHEVRTTFNSAQDITTTSVQHLKYMLAVINEVMRVHPAVVTGLPRVISEGGATIAGEYVPE

DTCVEVWQWPLFRNPKYWTQPDDFIPERWLGDPKFANDRRECFQPFSTGPRNCVGMNLAYSEMRLILARVILKYDIKLAE
GTEGWDSRSKVYLLWEKGPVNVYMIPRKI*

>224106|jgi|CYP5802A1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MALSSFIQSVYDRLLDVSNRPFRLTLAIGIATSILYGTYQRIFHPLAKVPGPVVASLTRLWLGRQFRSLKMHRIEIALHH
RYGSVVRIGPKEVSVSSPQAMQLLYGAGSRFEKSDWYVCCGSRKEKEAFNLMGETDMAQYRTHRRLITPAYTVRAMQDLQ
DGMHQVISRFAEVIMGNNGEKVDLSLWINLFSIDLLTNLLFSKRLGLLDVGKDDGSISANEISSAYAHWSGLFPWLYDFN
SWVIKRFGIHLFDKHAPYPAVPWCLSQMEPRLESTDSIAPEYQDILAKLIGLRLQNPQLKRDDVIAMAFTTLYAGFDTMG
ITLTATLTLIASTPGCQKRLHAELDAAREQGQISASPTFEETKQLPYFQACLAEAMRYHPTTGTTLPRVVPKGGAEIDGY
FLPEGTTVGISPWVLHRDKSIFGHDADEFRPQRWLEASQDIRYEMEKCSLEFGGVTRSCPGKQLALVAMNIMLAQILMDF
TLHLDGLEEVKEICMFSVHLENVKVAFLPRERTF*

>228211|jgi|CYP5080B6|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MYSIDLPEAVNTVYGIGSKLPKSEWYDGWKHPSPDAWTMFPDKDIKRHAQTRRVFQGLYSMSSLVSYEKYVDECADVLVN
RLSICSKSREPINMGHWFQCYAFDVIGNITFSKPFGFLNRGEDVSGLLQALHKVIAYSTLIGIFSALHPYIFAVTNFFGI
GGAAGRTYLAGYVRERIRQRKAEKEMSEEKAAPHADGSPEDFLEKLMVKNKDAPSKVTDYHVFMMSMSNIVAGSDTTAIS
LSAILYYLLKYPDALRKLREEIDQSTSIDGHLSFKDSLEMPYWQAVMKEALRLHPATGLPLWRTVTDGGLQLNGQFFPEG
TTIGLNTWTAHYNEEVFGKDAAAFRPERWLEAEKEGGERIGRMNAYYLPFGLGSRTCIGRHISYLEMSKLIPLLIQNFDF
ELRDSQREWKTTNYWFVKPNNFDVSVRAREAV*

>230779|jgi|CYP65EP1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MLSSDRTQYTLALWLTPVVLYVVYAWLKVITGAFFGPLSKIPGPKLWAISRLPRMYMEWQGEEAAGVAALHKKYGPVVRL
APNEVSFAGGAQAWKDIYGYRKNVGQEKHPYRSSASYWPPANGAPSMIQAIRDEDHQRLRKSLAVSFSEKSMKLMEPRVK
GWARLLQTKLAERGDAAVDMVELFRCATFDAMGDLALGDDLQMLRNGRLSDYVHAAFSGIRTIIRLRVLSTYNSFTRWLV
QDCFFQSAFVRKAAMENLRYSADRVDRRLQEPDRDPPDLWTKPLTGIDGKMSLDEYHSTAQLLMTAGTDTSAIGLSGTLY
YLLTNPDCLAKVTDEVRSAFSSMDDVTYETLAQLKYLDAALQEGLRLYPPVPTGAPRVTPMPGWSIGGYWIPGGVNVHAP
HYATSRLPAHFTAPESFHPERWLGDEKFQNDRLDAVQPFNLGPQNCLGQAFAMNEMRLFMAAVLLQFDLQLCEDPRAWLD
QRVFSMWETKPLMCVATKTS*

>230790|jgi|CYP611A4|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MEHLDVVTEKLKSLKTTAENLNGFTLAALGVTILLVAINKWLLPSYDGREPPLAPTSIPVFGHVFGFMRNSFGYYEKLNK
KLKLPIFTICMPGRKIYVVTKPELISKIDKQNKAFSFAPIISEFSSVTCGTSKEATEILNQNLLGEHGNWGLCEDMVVGM
RESLKPGENLDIMNRTMATEVCRLLEDTKPEAGKEFRVIKLSSWVAEVVTMATTNSVYGPMNPYKRQDIKDAFWEFEKGI
MKMLVSPFPEITAKDSIQARDKVTKVLGDYFANGYHEKGSGLAKARFDYSVKNNVPLADIGRFEIGGTIAILVNTLPSCY
WMLLLVHAVPGLLEDIRKEVDAALVIDKENNKVTIDITTVKNNCPLLLSTFKESLRYRAMGTAVRVVVQDTDLGGYLLKK
GSMVQIPLPSIHSNQDHWGQSATDFDPRRFVRDPKSGKKIPDDSGYRSFGGGKHLCPGRFFATNEILAVVGLFISRYQMR
PVGGGDWVLPTTANSNPATQISQPDFELDMEVRNRPGFEKFSWEVILTKSNAVNAVLAGDRVD*

>36591|jgi|CYP584D5|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MLYFFTLLFFSYISHGIYKQILQYRISRIKGCKDAQSKAPVKDPYIGFDFIYDCLFAKPVERYLDSTYKTFQQLGATYAY
RRWTWEAVYTCDSRNIKHVLASGFDDFKLPRLRVNAMTGLLGSGIFTLNGHSWSHARGVLRPCFAKQNKESIVDMLETHF
QALLRRIPDDNTTIDLQPLFFWLTMDFATDFLMGHSTRVLDRISSHAKEKQFVDDYLTCSTEIVRKMQLGPLQMFSINFA
AMRARSRVFRYIDDFISASLERKDESNSAIMGCNVLQCLAAVTADRKQLRDQILHILVASRDTTACLLSNLFFVLAKKPH
IYDKLRREVTSIAGAEPPTSSQLNNMEYLKWCVQESLRLHPVIPTNAREASKDTVLPYGGGEDGNSPLLIKKGNLVMYNI
YAMHRDAQVFGPDPEEFVPERWNGLRPGWSYLPFNGGPRICIGQKFALLETYYFVSRMVQTFETMNAVDDSEWVELYALA
TTCKDGVKISLKRC*

>40365|jgi|CYP539A31|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MGFVEALVENASIKTIPLATVVVWAALMTIGRIQEHRKIKSLGNYGPSLKPLLPFGLDFLYHGIRSTIAQQNLELWRDVF
FSQFWTIEMRILNERVCFTGDPENIKAMLATQFHDFGKGKRFHEEWSDFLGDSIFTVDGARWHDSRQLLRPQFSRDRVSD
LHCFEKHVQILFKAIANGGPLDGEDQPVDLARADGRRVDMKDLFYRYTLDASADFLLGTDIKCLTTPEQTIMHSFNEVQR
IQNIMIRISKLRWLIPKKAYHAAIRDIENLVNPIIQGVLSMSPDELAAHTKSDRDYTFLHELASFTRDPKLMRDQIFSIL
LAGRDTTASALSFAMYELSRHPEVVARLRSEILTTVGTHQLPTYEHLKEMSYLRAVLNETLRLYPPVPFNVRIALKDTTL
PRGGGPDGTEPLSILKDTQVAYSTIVMQRRPDLYPPISESFADPAIFSPERWAVWHPRPHDYIPFNAGPRFCIGQQFALT
EIGYTLCRIFQRFDRVQSFMHEIDDSQPLLKSDIVLSPGPGVHVAFWEAKND*

>53311|jgi|CYP538A6|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MSAVLSEFAHLIGAVISGGYIVWSIVERVSLKYINRDLTPFAAYSSLWIAVVLVPFFIYIRNRLYYLRGSRMHDCKPAKV
YPHRDPILGLDMLFIMLKAVREHKVLSIWYSLFHSIGSTYWTLTTGKWVLMTCEPENIKALLSTQFESWPLSPIRKKGLE
EVLGPHAIFTVDGPEWQHARAMIRPSFVRRQITDLEYMDRHVENFLDRLPKDSSKFDIQELLYLFTMDVSTDFMFGHSTN
MLTNPSKEALEFTNSFDYMLYAAATRGRLGWLLLLMPDKRFRECIKVCNSFIDRYVADAITQDKEKERSYVFMYELIQSG
ASPRMVRDQLMALILGGRDTSASTMTSLFWILARRPDVVKKLRNEISDLNGRKPTCEELKTLKYLNMVLKEGITMSHFPQ
FCFPRNMLTCIVALRLWPPLPSNMRTSNKDIVLPKGGGLDGQSPVFVPKGTDCRFSTYSLHRRKDLYGEDAEEFRPERWE
SLRPSWEYIPFSGGPRICIGQQFALTQMLYLIARVLQHFDQIKPADNNPMLQKAGTTISMVKGCWIYLTPP*

>55803|jgi|CYP6001C27|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MQLYRASRRPLPNKTGDGTYQVVRNRPTLMQDLSTITFQDLKTLKAIITAKLKGETQADDKTMIMEKTIQLVAAMPSGSK
RQEMLTNMFIDELWYSLDHPPLLYMGDQFRFRQADGSNNNPLMPKLGAAGTPYARSCHPGVVPLGALPDPEAVFESIMAR
DKFIRNPNNVSSILWYWATIIIHDLFWTNERDPNINDSSSYLDLAPLYGHSQEAQDSVRTFKDGMLKPDTFADKRLLGMP
PGVCTILVMFNRVHNYVAANMAAINEGNRFAKPSPTLQGDAATAAWKKYDEELFQTARLVTSGLYINITLVDYVRNIINL
NRVDTEWTLDPRQEAGVDVGTKKGSDRGVGNCVSAEFNLCYRWHSCISEMDDEWIHAFYDDLLGENYGTMDMRTLMIAIR
KFAMGMPKDPADCVFGGFTRGPDGRFDDDDLVNCIATAIEQPGGSFGARNVPRIMKPVEMLGIIRGRKWHLVGLNEFRKH
FGLKAYETFEDINSDPQVADALRNLYQHPDYVELYPGIVAEEAKSPMVPGVGIAPTYTISRVVLSDAVSLVRGDRHYTTD
YNPLYLTNWGYKEVEYDLKVNHGCVFYKLFIRAFPNHFKQDSVYAHYPMVIPQENRKILTSLNRVHRFSFERPRASAPRV
DITTFGGFKQVIANEDKYRVQWQEGLEILSGHTGRYMQASDRKTLESVLYKDGWRSAVKAFYAKTAEKLLAEKSYTIMGK
KHVDIVRDFGNTAHTHYAAQIFNIPLKTQENPKGVFSEHELYAALAAIYTTIFLDIDPAKSFSLRQKTKEAADALGASIE
TTVKYTKSLGLRLFTGNTSNDPLSTAGVNAVKALAKSGMSAHDIAWGLILPTAAAIVPTQGRLFAQALDWYLSSEGAAYV

DDIHTLASQEPSPETDALLLGFAMEGVRMAGAFGLHQVSTGPDTITEDDGRKINVNQGDKVFASFVSGARDPNQFPNPET
IDPRRPLDSYIQFGAGTHRALDKEVSQIALVELFRAIFKRQGLKKVAGPQGELKKVPRQGGHCEYLTEDWGTLTPFPLSM
KVTWDN*

>59886|jgi|CYP584S1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MHYYYLILLGLAYWVVKRLIASFEQRKFADKNACQPCRRIPQRERLIGYHLYLQEVTLAREGRSLQEAQNRFRLFGDTFS
GVVMGQLFISTIDPENVKALLSTQFNDFDSGKKSLFGPFIGDSMLTTDGALWKHSRSLVRPHLGKDQVGNLSKLEGHIQN
LFTCLPNDGSTVDLQQLFFRLTFDNVIELLLNEKVSTLNCQPGSHLYNVIKAFDNVGNLVNRRAALGPLLRFYRDTEMNA
TCKILHDFVDEIIEKAYIRRKIRKILEQGNSFLDNILDSTEDLIKIRFEVLGLLLAGRDTAASVMSNLFFVLAQRPDIWK
KLQTEVGCLQERKPTYEDIKGLKYLRQVIDETMRLYPPVPGLFRAANCTTTLPRGGGRDGKSPVLVPKGTVISCSTFSLH
RREDVYGHDAQEFRPERWDDLSTRWEFLPFSAGPKVCMGQTYGYAEMIYILSRILQEYERIERRSDEPWEEKWSITLLNA
SGTYVGLIPKTSPMTERI*

>91340|jgi|CYP52X5|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MQLSLAAGIVAAALAFVYVLNLILASLRYRARARELGCKPAVWMSGYDPTGIADIAYGVDASRKKRFPIYAQNNFEREEK
KHGRPVGTLRVKAPFFRDTLVTTDPQNIQTILALKFKDFGLGVNRTENFEPLLGHGIFATNGKQWEHSRALLRPQFIRGQ
VSDLNLEEEHVKALMTVLDRRVGLDGWTDLVDLLPLFFRLTLDSATEFLFGESVNSQLDENHPTSEKDGNFAYAFDKAQY
NLSIGARLGPNYWIVHTPEFQRMVKRVHEYVDYFVQKALIQGEKMPVNEDKYVFLNALAKETRDPEELRSQLLNILLAGR
DTTASTLGWFFYTMADPMYAPVYRRLRATILEEFGTYSNPKEITFEKMKGCQYLQWCLNECLRLYPAVPMNVRTAEVDTT
LPTGGGPDGQSPIYVQKGQDVGYSVHLMHRRKDIWGPDAEIFKPERWQTRRPGWDYLPFNGGPRICIGQQFALTEVGYVV
IRMMQRIDSIDGSQVGPIKHGLTLTNCPGEGVNVKLHFAE*

>155466|jgi|CYP603E1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MAAINALVDLPIYNYLIIAVVLGIVVYTASKRSRPNLDHIPGIAFSDGDNSTERYVKDSGTLLHEGYLKFTKKGIPFKLR
NPANPEHPQVILPWKYLSEVRSAPESRLSFPLYSNQAFLLDHSNAPQQTDVAVHIVRTDLNKNLAVLIDGMQEEIDLALA
SQLPKCPEWTPFPPYMALAYTISRATARVFAGTELSRNDEWVQIGVNTTIMAHQAAQEIRKQYPPFIRWLAKWRHPGARA
VYANRLRAAELMAPILKKRLSNDLTESGEPDGVQWSIAATRSRQKKVLEVVDEHLFLGIASVHSSSATSLSVLYDLLDRP
QIMQEIVEEIQTIHATCSNGRWNKQALTQLEKLDSFMAESQRMYSLGLVTVTRSAVKAYVFKDGLRLPKNTQFSFPNYEL
NHDPDVYPNPEQFDPWRFLKMRKTIDANKYHFAYTSDQILNFGSGTHACPGPELMAPSEYGMNDYAKTRTDQIRTNRWPT
DVTILRRRVTEVTEFIAAVILSPTGTMAVRSGRNTKILPLYFALCGLVSPFTTSFTATKADWKALSIEVSEKLHAASPLG
RPCFSTLNGESVSIEERECAITQDNYFNGSFRTDRYEGFLHLFGDGCMSNTTDECFFNNGDPLSSTDNKQCNQGLVSPYY
LNVGGVSDVKAAYRFSRKTGVPISIKASGHDYMTRSSIKGSLALWVRNLKTMTYHQSFKPTGDTSAKSVSAITFGPGVNS
DEAQAFANKNNVTLVGPSSPTVAIAGGWSFFGGHSVLTPTFGLGADRILEVEIVTPDGEHRICNRKRNADLFWALRGAGG
GVFGVILSTTIKVEAAMPITFALITFPPTLSRQDEFLSLLINETRSLSSEGWGGPMTPSSLVLVNPRLDEAAANKSMSRF
SSFSNENNGTVSILKFNTFYEFYSAFISTTPSDAGTGPLLTFRVLPKRLHETKKGQKDLHEFLMNQIKQGHSPTIFMTPP
AQFKYPTDSTSMHPAWRNSYWDIGFTINYAVNSTFEERRQAAVQSQQLSRDIIALAPDGAAYPNEANPWQQNWQKEFWGE
NYKRLTQIKAKYDPHGILSCWRCIGFQDAWIHSNTRFGCMGEFEGLA*

>210109|jgi|CYP538A4|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MSLIVSEITALAGAVLTSTYIAWSVLERIFLVVTDQHLTPFSSYASLGAAIVVIPIFALFRRRHHYIRGTRVNGCKLAAV
YPHRDPILGLDMLSISVKALKEYRLLQLWDDLLKTYNGTYWFSSMGKWMLITSEPENLKTLLSTRFEDWPMKSLRQQVSI
LTLGPHAIFAVNGPEWQHARAMIRPSFVRNQIADLECTDRHVENFLARLPRDGSKFDIDKLLYHFTMDVATDFMFGHSTS
ILTSPTKESLEFMAAFDYILTTSTNRARLGWLVLLRPDKKFDEYVTITQRFVDQHVSQALAQEKMERPYIFMNEIIKSGA
SHREVRDQLFSLILGGRDTSASTMSSLFWVLSRRPDVFKKLRNEIAELDGRKPTWEELKNLKYLNMVLKETLRLYSAVAS
NMRTAERDTVLPKGGGPDGQSPLFVPKGTDCRFTTHSLHRRKDYWGPDADEFRPERWETHRPGWEYIPFSGGPRICIGQQ
FALTQMLFLITRVLQTFGDIQPGDDKPMQHEIGSTISMVNGCWIQLTPADAPELAISSGGLSESSNLPAELSQRTKDPPF
QHQQWRRDLHPEPAAGRHRARLHGPTPTTRARRLQAIAAGATIRGLRRVLDPGRDQPLRLVAMDETGAAVETGVASVAET
AARPAKALLEEPPRLWWRDCQRTSMKSISTKSLVSLATSRTLTCR*

>49165|jgi|CYP655C3|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MGGSHTVTISALCVSVLVVFLSRLFNESTKGTDFGCKPVTRVKQWEPFWGLDMVYSQLQALKRNYYLDWLRKLHNGRPKT
FAIKFMGVKQICTIEGENLKAIQATNFKDFGLEPMRRKTKGAMPFADKGISTTDGKDWEFARFLVKPFFYREVYASIDRI
DPYINRLFTLLPKEEGVTFDIQPLIQRWFLDLTSEFIFGKTMDSMTYPERANITWTMLDVLRGGRLRIQMYKFLWAFNWN
WWLKAVYEVHDFVNVHIRSTYKQIEEREQRIKDGLPVGPERVDLLWYMASHVRDEEELRSQLCLVFVPNNDTTSIFISNC
IWHLARDPEAWQKLRKEVLEYGDKPVTFESLRNMPYLNGVLNETHRLTPNNIVQVRACLNDSVLPLGGGPDGKSPLYVNK
GDLVSVTKTVMYRDPDVWGPDFDKFRPERFFGVRGNWNFLPFGGGPRRCPAQMMVQTESAYMLFQLAKKYSRLECRDPEP
YTAVMRIGPSNINGVKVALYK*

>61018|jgi|CYP505P1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MKPAKNPNLVEIPKPKGLPVIGSLHHIDLESPLFSLIELIQPLGPICQLTFGSELNIFVSSIELLNELCDESRFQKIVTA
ELEKLRHVVHDGLFTARNEERNWEIAHRILMPVFGTIKIREMFPEMKDLAQQLCLKWARYGEEYVIDVTADFTRLTLDTL
ALCTMGFRFNSFHNGTVLHPFVDSMVRTLKEASVQAALPNFINSLRKKSWRRYEKDTAFMRKLCQDIIDKRKSQTDTDSH
DLLAALLRGRDPKTGEGLSDDSIIDNMLTFLIAGHETTSGLLSFAMYYLLANPQTMEKARQEVDEVSQGSPIAVEHLSKL
PYLNAVLKETLRLQPTAPGFILSSPKDEIIGGKYLIPANIPIGVLLHMVHLDKAVYGEDAAEFKPERMLDENFNKLPPNS
WKPFGNGMRGCIGRAFATQEALLIVAMLLQSFTFEMADPGYKLKIKETLTVKPDNFRMKAKLRRGGTATDFQRELQSLGS
VGAKLSSTPSVTSAQTGGGDKKPLTILYGSNSGTCEALAYRLASDATLHGFYARKIAPLNAARNSLPKSEPVIILAASYD
GLPSDNAEEFFDWLNTAEKDSLKGVSYSVFGCGHRDWVATFQRVPILIDDLLQRAGAERFANRGLADSAVMDLFVELEKW
TTDSVWPAISQTDGKQDNDGEGKLISSLLKVEFSQPRQLQQYSHLVEATVMESRSLTTPSAIGKKMHVDIQLPSGVSYHP
GDHLLVLPVNPIRNVKRVLSRFHLTWDTIVRASGNESVRIPIETAMTVHELLSSYFELAQPATPRDIRVLAAAAEDEATK
QVLNNLATTSYLEDIQEKKTSLLDLLEKFPEISIAFGTYLTLLPSLRLRTYSISSSPSWNSSRATLTLSVLDEPATTPGS
KRYLGVASNHLAGLTPGDLIHVATRPVKGIFQMPADLSKAPTIMIAAGAGLAPFRGFIQERAYQQQNGVQLAPAALFFGC
RSSHDDLYRSELDAFESSGVIRVFRAYSREDVGSKSNTRKGYVQDSLQAEKDVFVQLWNAGAKVYVCGSVKMASQVKDLV
ANLVYTAEPMDAQKEFTPQEWFKRFEKTRYAAEIFT*

>212112|jgi|CYP65BG2|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MSNLPPKRGKLLYRVLFYNLYFHPLRKYPGPFLWIAFPWLKNISLIRGKADHALVAFHERFGPVVRTAPNILSFTSLTAW
RDIYGTGHAELPKHIFKGSGMEERPNIITANARDHHRFRRALLPAFSNDALARQEPLVNGYVEQLINQLRGIAESDNSIA

DISKWYTMTTFDIFGELAYGESFNGLATGKVHPWIRALSDMKSLVPLLVFPSISWILVLLLTTAEQRGSLAEHQQRSMEL
TYKRIKNKEIQERGDIMTFVLREHGEDQGLTDYEMACNADIIISAGSETTGTAMTGITYYMLRNPEKLAKCVDEIRSAFE
TEESINFKETTAKLPYLTACIEEGLRLFPPVPTGLLRETLPGRPTLIDGHLIPERTVVAVHHLATYHSESNFHDAKSFLP
ERWLPEIHSEPTSPFYKDNRSCLKPFSYGPRNCIGRNLAYHEIRLILSRVLWNFDLSLKPGFEDWAIGQRSYQLWEKPSL
MVDVKMRTV*

>50977|jgi|CYP505M2|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MAKSNIPQPRTIPLLGNIKDIDMDYPLGSMLHLASKYGPIYRLSIGGTKLVIVSSYELVHEVCDDDRFQKSIQGDLEELR
AVVHDGLFTSSGEEEKNWGIAHRVLMSAFGPMSIRGMFDDMHEVASQLTLKWARYGSSTPISVGEDFTRLTLDTVALCSM
GFRFNSYYRDDMHPFIKAMYAVLKAAGERNMRVLPSYLHKSADRKFQSNIDILRSTAGQVLAARQKSPEATGDLKDLLNA
MLNGVDPKTGCKMTEQSIIDNLITFLVAGHETTAATLSFTMYQLVTNPEIYRKVQAEIDGVVGSGPVKIDHIGRLKYLAA
VIRETLRFNAPISAFAREATKDETIGGKYGVKAGEQLVCLLAKSHLDPSVYGDTACEFDPERMMEDNFNRLMKEYPHCWS
PFGTGLRSCIGRPFAWQEMILALAMLMQNFNFVMDDPSYSLVIQETLTIKPKDFKIRAIPRGGITPFQLEARLAGASGAS
TQGSLTTLDQPLLTKKSASPSNNVDTVSDGARLKIFYGSDSGTCEFMAQRLANDASSHGFKAAVDTLDAAREALPIDGPV
IIITSSYEGQPPHNAGHFVDWIQNINGEKFNDVAYAVYGCGHSDWAKSYHRIPRLVDVSLERLGARRIVPMGTTNAKDRD
MFSDFESWEDEVLWPAIQKQFGGCTENDNTPVSGLSVSFSTPRALTLRQDTKEGCVVATRTLVSNESAVIKKHIEVRLPS
NVTYSTGDYLAVLPYNPKEAVSRAIRRFNLAWDSHVIIMASEPTTLPTDTSIPISTLLTSYVELGQPATKRNILSLHSIA
EDNQTKQELHHLATDAYDSDIRLKRVSILDIIEQFPDLPIPFNHFLLLLPPMRVRKYSISSSPLSNPTRATITYSVIDRP
ALSGNGRYIGVTSSYLSSLSPGDRLQVSVRAGQGGFRMPADSSRTPIICIAAGTGIAPFRAFIEERFIILRSGRPLAPAV
LFYGCRNPLDDDLYYDEFSGWEAAGVVTIFRAYSRQPEASLGCKYVQHRIWRQREYVADLWESDAKIFVCGSNKMAEGVR
EILIQILLDKLKTKGVSMGEKEAAEWFERVSNERYAIDVFD*

>68923|jgi|CYP505A25|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MAEAVPIPEPPGLPLLGNLGEFSANPIDDVVRLANTYGEIYRLHMGTRPAVFVSTQALVNEVCDEKRFQKSLSSVLRIVR
EGVHDGLFTAHSDEPNWGKAHRVLVPAFGPLPIRDMFDEMHDISSQLALKIARHGPHKPIPVSDEFTKLALDTIALCSMD
YRFNSYYKDKMHPFVQAMGDFLAECSRRNRRPGFAPNFLYRAANEKFFNDIAIMRDTANAVVEARRKNPTDRKDLLAAML
NGVDPQTGEKLSDANITDQLITFLIAGHETTSGTMSFAFYHLLKNPSAYRKVQEEVDAVLGRGPAKVEHVTKLVYIQAGT
SQVLRETLRLSAAIPAFSVEALEDTLIGGKYLVHKGEPITCLLAKSHLDPMVFGGDANEFKPERMLDDEFARLNREFPNC
WKPFGNGKRGCIGRGFAWNEAVIAMALLFQNFNFSLDDPNYQLEIAASLTIKPKDFFMRAALRHGMTPTELEQRLAGKGV
VDEHHADKKAAGEASKGSQKPLAVYYGSNSGTCEALAQRVATDAVSHGFQVTDLAPLDAANQNLPKDRPVVIVTASYEGL
APSNAAHFVDWVENLKGNEVEGVSYAVFGCGHHDWVQTFHRIPKLVDAQLGEHGATRLIPLATTDAAGDMFSDFEAWEDE
SLWPALKEKYGAAAVSAEGSAGGLIVDVSLPRKSTLRQDVEEALVTDAKTLTTSGSTKNHIEIRLPTGMTYRSGDYLAVL
PFNPKDTVARVFRRFQLSWDAVLTIHSDQPTALPTDTPVSANDVFRAYVELSQPATKRNISVMVEATQDGELKAQLEKLA
GDDYQQEISVKRVSVLDLLERFPTLELPLDTYLTMLPPMRVRQYSISSSPLADPSKLTLTYSVLEQPALSGQGSHFGVAT
HFLASLAAGDRLHVAVRQSKAFHLPTDAENTPLIFIGTGSGLAPFRGFVQERAAMIAAGRKIAPALLFYGCRSPDMDDLY
TEEFERWEKLGAVEMRKAYSRASDKSFGCKYVQHRMSHDREDLFKLWDQGAKVLVCGSRDVGKAVEAVCIQLVQERASAV
GKELTEEEAKAWWDKQRNERYVTDVFD*

P450 fragments/pseudo

>38394|jgi|CYP6477A1-fragment1|[Dimargaris cristalligena RSA 468 single-cell v1.0]DimcrSC1
MEGAIQDSGVNSLIKKLLQMCHQEQAPEVNLYKEFVGVTFDVMRYLVFGQAFGTAEQNDMTVVNWLGDYFIYVPMIRALP
ILKGRLANLVPPVRWGEMAKNSMSQLAMDAISRRRALLATANCDGDLDMVPNDILQLMIEATDPNSGEKLSDIDLASKSL
IQLIAGSDSTGCALTWVMYGLLTHPECYRRLESEVLGAFQPIPSHNISPDPDVDLISHDDVKNRLPYLEAVIQEALRFYP
PAATAVPRTVPPEGLTTGFYFIPGGYMLEAPIYTINHSPPAFERADEFTPERWLETADMNTLKQSTFTFLSGP*
>36318|jgi|CYP-pseudogene-fragment1|[Dimargaris cristalligena RSA 468 single-cell
v1.0]DimcrSC1
MLPQRINILALVALGLSLNVYGSVSAMEDDQPQTRKRDFFLQKLNRLWGRNTVPASNYHLGSSQQTENTVHPEEFTWNAY
TSGSTDQRGGGLGNLENLVPSPYMPGHYQENEPPETLEGYVPNPQASIPNQRNKEPDNREDSVPIAATLSHNQRSDESDN
PKASVSDMYTPNQTKRTGGSDNADKFAPKNKPVRRLDYTPAPLAPEVIWNPYQDLQAGLKSYWRGVGLKAKNSVISEAHL
KSGIRAMYKPWQKLLRHQLALGVWRKACRIMYEIFEIQNTDAGASEVLEYAKPQPKGIILGDLLEIGKDSPLFQKGAQRY
INPADLSEAELTKQLPLLDLVDALTHVKHVVPLFATLTNPSFDLLVKQDRKRIEELVPAGPEGPLWTMIKLWDLPAYKHL
AGFNYEMFSNTVAAIIMARLAFTGRQDQLQLFATGVRTYQDEYSQSGFYVRNDELGKLAVMLCAMTRQTDLLRITPSEFL
GHILPRQYKPAAVEPNCSLVGEMHQLGLKDSAQFLFKTLSCPEPKSNQRPDAEEVVGPYQFLHLMQLRLVELDGIPQMGV
PVIITEFEADTQEKIKDLGPWKHDTLWKLIVLDPKTNPAPFTDELLALELMLQVITGYETMTAVFENPLTFNSERFLGPE
GEERRRQFLVFYTGVRQCPGKRLTWFDIRPVPSNLLREMEFSPAVPNLSMMPIRSISVYELKDRHLYVFARISLDEFD*

>541306|jgi|CYP5192-fragment1|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MAMHRNKATWGDDADDFKPERFLPQNADKELALIEMKVVLAITLREFEFNAAYDELDSLKLDGTGNAGEVTKRAM*

>557477|jgi|CYP504E-fragment1|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1

MVNAFENCKKASGYIQRYGLETTLVLCYDNLLQEIVEGRDKYLDELLDRVRGMIKSSTEKPCISVTILEHENPRLIGVDV
SSICLSLPVVSTGFENMPDTPVCCISSLSTPEENLSAIVKGASRHYTLSNLSLPRKTMSDVTGFRWCDAIIPKGTIVWIH
AQAGKHLKPNPNNLLGLALLCTEKQLSSTPYLSFGAGSRSCYGAAIASKLTSAPKTDYRNYNNVGSALVVILRDFMIKLT
LRGGT*

>594414|jgi|CYP5415A-fragment1|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MRLPGAENFCGRGFLTTDGDVWQRSRKLLKPTFARNNLQDLKYLSEQVDIMIAQIPQNGETVDLQPLLYGMLLNTSIKFL
LGVDPTESLTDDRDFIRSQILQGMMASQETTSALLGNACFLLSRHPAYWQKIRDATSNHDLSYFDFDALLNLKIVRNIIH
EALRLYPIFPIMGRNAIRDTTLPTGGGSVQGEPVFVQQGTIAAMNYLPLHRDPAVYGEDTEAFRPERWETIQPSH*

>516837|jgi|CYP548AD-fragment1|[Ampelomyces quisqualis HMLAC05119 v1.0]|Ampqui1
MSLPASKKHFLAQAQYPATSHAIDLYGSSNIDDLHFPARAVVGFPMYALHNHPAYFPSPFTFDPAR*

>516906|jgi|CYP573A-fragment1|[Ampelomyces quisqualis HMLAC05119 v1.0]|Ampqui1
MLMHFREMLMRQRLRDVKEGKVDRVENDEPTKLYIKYSMTFGYGSRVCLGNGIALMKLHNAPR*

>541306|jgi|CYP5192-fragment1|[Ampelomyces quisqualis HMLAC05119 v1.0]Ampqui1
MAMHRNKATWGDDADDFKPERFLPQNADKELALIEMKVVLAITLREFEFNAAYDELDSLKLDGTGNAGEVTKRAM*

>4577|jgi|CYP5203D1-fragment1|[Caulochytrium protostelioides ATCC 52028 single-cell v1.0|Caupr_SCcomb
PKNVAYVLKDNYDNFVKGGTFKTSLGELLGEGIFVSDGEVHRQQRKTTAGIFTGNTFRGVITDGLFEELDLLIGLMDRWS
ASGEAFDFSKVMHALTMNLFGKVGFRRDFRLLERFPEEIPFTSAFDDADRTVSCRFSNPLFRLTEWWSGEGERLRDNIRT
IDAFAYDCIAEHRARHRPHAQASVAPPHADGSREPTVSAQHRDLLDMFMACRNPDRTPWSDVQLRDMLLNTIIAGRDTTA
QALAWAMYELQRHPA

>5165|jgi|CYP5203D1-fragment2|[Caulochytrium protostelioides ATCC 52028 single-cell v1.0|Caupr_SCcomb
TFDMIKALPYTNAVFNETLRLHSIVPANMKEAVNACVLPSGDHVPKGGRVAFHPYTMGRSTTIWGPDALAFKPERWIDAE
GRLIRESPTKWPAFNAGPRVCLGQQMATMEGVAVLAVIIQRYT

>3028|jgi|CYP65BB-fragment1|[Clonostachys rosea IK726]Cloros1
MGVIELLLSNVKVVALGVTFLSFSYVLGVVIYNLYFHPLAKYPGPFLAKISPIYSIWGLFRGRWPFDVNQLHLKYGPILR
TMPNELTFTDPQAWKDIYGHRQGHPQFHKDRFAAIQ*

>4657|jgi|CYP5080AB1-fragment2|[Clonostachys rosea IK726]Cloros1
MHAGFSLWLMLALALCVRLQDIWRTCISRLRSIPGPFLARFTRLWFLYKSYHGSFHLENIEMHMNYGPIVLWKHPDPKIF
TLFADRDSKRHAETRRKFQNMYSLSSLKSYEPYVDECAEIFKQRFHETVSRARPGSGGAELDIGHWRNVMLSMSLVTSHT
RNVSEFSMRAKTRMAS*

>8746|jgi|CYP5127A7|[Clonostachys rosea IK726]Cloros1
MACPGRFYAAAIMKVITGQVILKYDTELIPGKGNRFFAWRSAILPKSSIRVAFKPVETEMINCD*

>18911|jgi|CYP5258A-fragment1|[Clonostachys rosea IK726]Cloros1

MGEAIPPNTTLTANNWAANRSALNFHVPDEMVPERWIHPRPTEYQDEDRAAMKPFSFGPSDRRNVPVEKGVYVLDKATTGGEM*

>1430|jgi|CYP5332A-fragment1|[Clonostachys rosea IK726]Cloros1
MLRINPTFVKNIWVFDEGIPWLARGVPSFLRPSIYKARRAAIAQIRNWYLYAREHFDESYISSDGDGDPFWGSWLMRYRQ
KNLLPAEKHNDEVLSKLDLGLAWGVVGNTTPTSTLFAFHIFKDPTLLSRVRDEIETSFGNQDLLDMNPSELIKQPLLSSA
YAEILRLFIDVFFMVTSAHKDVPLGSYHLPKGRIALINSGISHKDDSFWNTRNGEHPVTSFWADRFLIDPSDPLSGPISP
GVYKPPSREDPDGDNGSKAPYFSLKGTEGSWFPYGGGHSICPGRVLAKSAVLFVSVLLARDYDIEPLVEKLKRRIGGVAL
VQSKSSMLFHFVLEKEEDKKITAAF*
>1630|jgi|CYP669-fragment1|[Clonostachys rosea IK726]Cloros1
MVQLALNEWAHPRVLTERAFTPFSVGPRQCTGKTLAYAELRHVATILLRHYDIEFADGYDPETIMKDQVTAQPGKVMCVF
KPREQ*

>1650|jgi|CYP65U-fragment1|[Clonostachys rosea IK726]Cloros1
MAPNGSAHRLQRFLMQLLEAVIETSEDGLEDFRDEALNPLTIIVWLKKAGRSLRNRMKKRGVVRSIPLVPPMVSLPVLIP
LAWLAAFFGFLLLSSPAVIGFLKSLLSYLERGIQKKQDIAFREQFFLPMRKASGIHKPKMVFESPRTNRFFLLPPELRYQ
ILNEAFGGGRTLHMSLEFQYPYYLANIERYNDPRFGCHAKIERLVTVNNSHLQTNKPKQWVWFGCVCHRSSCHASKTARY

LDKFGDKNGMLSRDSDAPCEPKDDRCLEGVARCKQWPGTWPDKCQIGIFGWLLTCRRAYSEGFSVLYGNNTINIASPALL
RSIQDVLPREALFCMTSLELVFDLDRVPFDEAFRTTSKKRAREHSSPLFPSMANLRVAFSKSSRNASSLGLDRNDLHWTE
IKKALLGQLFPMIDDFLERVFPSTTDVVISCPSWNWYSAIDLVLIDQQGKDTSKAQHSGFKGTKFWRQSPAHEVISPGNG
NVQALEEGTQPKPLRTGFWVHSSDRPMHTRSWRATEAPGALKNHHYIAIQFVTYLNKTTLCGFIVPPMRAFSMPVSEAMY
SLVSRWTTVLALVITYPIIRIIYNLYFHPLAKVPGATAWSASRLPFILALLRGTIVHDFQDLHRRYGPVLRIAPDEVTFA
QPDAWADIFQLRPGHEQFLKDPIWWKRQPGKPDSLISAIDPDSHARIRKALAPAFTPRALRSQEHVLYRYVNLLVERLQE
TVRAQPQEAEHAVVDMSPWFNFTTFDIFGDLGYGESFDCLQNSRYHPWISLLFNSVKAASYVAAARYYPVVEYLLLKCIP
ASLQKMADDHYRQIVDKVDRRFNWELDRPDIMSHVMRTKDEPEGMTTDQIYSTFMVLTTAGSETTATVLSGTLNYLIGNQ
DKLRKLESEILGAFQSREVIKSNTLKDLPYLNAVIREGLRLCPPIPWVLPRKVPPPGDTVCGVWLPGGTSVSIQAYTMNR
DPQYFHSPTSFVPERWLPEATTDGNSVFYKDQRHGLQPFSVGPRNCMGQHLAMAEMRLILASLIWTFEFQPAGQQLRWED
LRTFLLVEKKPINVRMKLRGPSSRPSAV*
>2741|jgi|CYP552H2-fragment1|[Clonostachys rosea IK726]Cloros1
PEKLARLREELKDEDPHKLSWVQLEKYPYLHGVVFEALRVALGIPVRTTRIAREEDLVYNNRGFNYVIPRGSTIGMSAFI
NHNNEEIFPDPDKYEPERWITAQGKPDYGMEKYIMSFSKGSRQCIGMNLAFCEIYLATAVMALRVLPHLKLHDTVYEDIK
YHHDAIIPQPKKGARGVRVKAVDAHTH*

>2748|jgi|CYP552H2-fragment1|[Clonostachys rosea IK726]Cloros1
PEKLARLREELKDEDPHKLSWVQLEKYPYLHGVVFEALRVALGIPVRTTRIAREEDLVYNNRGFNYVIPRGSTIGMSAFI
NHNNEEIFPDPDKYEPERWITAQGKPDYGMEKYIMSFSKGSRQCIGMNLAFCEIYLATAVMALRVLPHLKLHDTVYEDIK
YHHDAIIPQPKKGARGVRVKAVDAHTH*
>3382|jgi|CYP5478A-fragment1|[Clonostachys rosea IK726]Cloros1
MAATHALFDLCAMPEYVGALRAEAQSALAESGGVWQYSTIKNLRQLDSFLKESQRVNQSTFLGFDRKVMSTIKLSDGTIL
PAGSLIMMPGGPMSGDQEYYKNPGSFDGRRFCSPAANLSDDTSKATGGMTQDYTGIEPGNLSWGNGRFTCPGRWYGAAMI
KLILANVLIRYDISFPEGQTERPANTKYDTEVHPDFGAKVCFAKRGLD*
>4324|jgi|CYP5042G1-fragment1|[Clonostachys rosea IK726]Cloros1
MVTTHLGSKLWVVLNSNRLAHELYAKHGKVTNGRPPMPIVNDLLSQGRRSVMLPIDGWAERRRVMHQLLSGTAMTKYAEY
QAEESVVLLANYLRKPQEWYAHNARYANSVIYRITFGEKPKEGGNLMTDVTKAQFLFLLNAPPYNFWDCFPGLVELPKFL
QWWRGTFERAGKFTHDAYFEYYSPIKRNILEGKAPQSFARDVLLGQAKYQGSDTDKMFLTMQLVEAGSDTTRLAINIAIL
AAVRWPEKFLKARADLDRVCGADAARLPDFGDEESLPYINAFAKEILRWRRIFVWTPEHTLTENLEFEGYYFPRGTSFVI
NHASISENPDYFEDP*
>4346|jgi|CYP5042G1-fragment1|[Clonostachys rosea IK726]Cloros1
MPSHFNHHLSEASYFWAQTSAMQAFVTAASVLVIAFLFRVHQLLKAVDQLPAPPGKKWKLPPGPRGLPYLGNLLLYSKGE
KGAHEIAKYGEMVTTHLGSKLWVVLNSNRLAHELYAKHGKVTNGRPPMPIVNDLLSQGRRSVMLPIDGWAERRRVMHQLL
SGTAMTKYAEYQAEESVVLLANYLRKPQEWYAHNARYANSVIYRITFGEKPKEGGNLMTDVTKAQFLFLLMPAIQLLGLF
PRTRRAPEISSMVARDI*
>4658|jgi|CYP5080AB1-fragment1|[Clonostachys rosea IK726]Cloros1
MVGLYAKFHPLIYRLAQYIPGSGASARGFLMNLVRARMQKRSKERTEKPKVSDAEQRGTDKPQDFVDKISEASEKNPQNV
TPYHVFMMGFGNVVAGSDTTGTSLSAVLFYLTSSPRCLQALRAEIENCQDDSGNKPPTFEHLQKLPYLQAVIKESLCMHP
ATGLQMWRTVPKGGAEIQGVFFPENSVVGLNSWTAHYDEKVFDKPHEFRPERWLPNVGYSAERLKAMESYYIPLAWDPGL
VSDGIYPRWK*
>4911|jgi|CYP5412-fragment1|[Clonostachys rosea IK726]Cloros1
MPAWAMRMLIPNLSEITEKQKWWLKRVRKIRASLEPDDIKDTIFEGILASNLPENEKTDARMAHDVQLIALAGESTTGYT
LSTIIFELLSHPDDYKKARDEVLLAMPSDHPVPTYRQVQNLPYLNAVVQEFLRLHPDKVLITFSRGSRNCIGQEFARREM
SIILATILKHYEIYRGQEGRTLELYNTDDGWFYYPNDTITAQVVFSDVSLEQGLIWAKKLVTHSAASFSSPLTFPGYKDV
PVSYLIADGDHSIKTSTQRAQIDMIERISGNKVDVTVTNAGHVPPLTAPKDVINWILSVASKLDGEKMGTQ*
>5024|jgi|CYP5042G1-fragment1|[Clonostachys rosea IK726]Cloros1
MVTTHLGSKLWVVLNSNRLAQELSPMGDLRCPWSAISSAKVGSVMLPVDGWAERRRVMHQLLSGTAMTKYAEYQKEESMV
LLSSYLRKPQEWFAHNARYANSVIYRITFGKKPEAGGNAMKNVTKAQFLFLLNAPPYNFWDCFPGLADLPKFLQWWRGTY
ERAGKFTHDAYFAYYSPIKRNILEGKAPQSFDRDVLLGEAKFKGSDTDKMFLTMQLVEAGSDTTRLAINIAILAAVT*

>5219|jgi|CYP5057B-fragment1|[Clonostachys rosea IK726]Cloros1
MQLNNLCVPAGTIVGMQNWIHHRNPVVFPSPESFVPDRWLDATVEMESSLTPFGIGRRNCIGQNLAWQELYWAIDSLMRA
GVQLELGVEMSNWEMEKIDRFNIAPRGKRLMLAVTKGGKI*

>5220|jgi|CYP5057-fragment1|[Clonostachys rosea IK726]Cloros1
MRGRRVYELDRLHAKYGPIVRIGPDEVSISDWRHLRTIYHAKSGVIKDARFCDPIRMFGQHNIFQMIDPAEHAARRKLSS
SPYSLQSIAQLDPIIQKQSLEVICQAGFAKEFTGPTATDDARHLLDLIDGSAAAFMYSASIPFASIRGVGSRLPGPIGAS
YRAFADWQQVSRDMVDHFLQHSSEETKYLLNPLSQSTDRFLNRKLAHNELVEEAMTYMFAGSGTTSTTLTYILYEIAKPN
HRHI*
>5275|jgi|CYP6625-fragment1|[Clonostachys rosea IK726]Cloros1
MEVSVLSFAKEILVRSCIQICYGNDYATDPLFNQIVLSYWWDSAYGTALFELLPRSIAPYFVKFFMFWKGSMHKVGEVAG
YLMKKRLGALDEELNASHVDMAQFLLQSSRAPGQKDPVRLQQLLVAMTFVFAHQPPIALAWVLIELARHPEYMQLLRDEI
LTAEQQGHKDIMSHLPLMECVLREVSRLYTLDGLTIQRKALRPFTFSDGTSIQPGTNVAIPQQAIMRDPELYSDPDTFDP
FRFKPHAPEDQARIRWTDINERYTYWGSTARPWEVDGVTFAKKLFGDSAEK

>8565|jgi|CYP50343-fragment1|[Clonostachys rosea IK726]Cloros1
SEHEPDLTFAWCKLLGINNSFTTVDESIHRQFLRRAVEIIKSANAKRWVEAQHLARGTAAAHCCANGKVSALNIEQICRV
MCFVTALGLIFPTTRQATFDYERLDWITQTNNDLWVQSKSKGPQNDRLLSKLRDELQYLLPEERDDPLALILPAYETLWR
VVLLTYVHVAFRHIDGNTKVLLQAILKKFHDPNRWNLTKRWSDYLSALANYRSFFQEALRLYPPTKRIYRASQFGAVAAD
IESLHHDENIWGLDALEFRPSRFEALTQNQKDAFMPFGIGRHACPAGNSFAGKLIALLVVTLIEELGTAKTGTKIKFDDE
ELDDECHVMAPLPTGRSATKNWVVYPSPEA
>9998|jgi|CYP628G-fragment1|[Clonostachys rosea IK726]Cloros1
MRLHKTYGDIVRVGPSELSVNDPALFHSIHSKSSTFTKGPWYNLMHPVVSLHMIRDHDEHSRWRKIWDKGFSSKALREYE
PRVAFYTEQLLKRIVCNGNQTVNVTALFKYYSFDVMGDLAFGRSFNMLRDGAAHKYMKSSHDNMLTATAFSHLVWIFPIV
KKIPGLNYGHVQLQKWLTERVKQRRESPPTTPDIFSWLLNGFENLDHPTPQDEVNLVGTHTWSSSLGGEFLLLNLSMEAQ
R*
>15601|jgi|CYP54-fragment1|[Clonostachys rosea IK726]Cloros1

MTKLDSFLKEVLRCSNMVSATIHRKVKKPFTLSNGQLIPSGVTIEILSICVSSDAGNFTHPDEFDALRFYNIAQQYQDEK
TGSYGPVSNTEFSAADSRTLSFGYGRHACPGRFLASAEIKMILGNILTDYEIKLPAGVLERYKNLSFGPYVVFPESLEKD
LDTESFVVSQRAPN*
>18871|jgi|CYP547N-fragment1|[Clonostachys rosea IK726]Cloros1
MKPRPFADLLVHRSYDFIKPSHLSELLRHVLGDGLIIVEGSQHKFLRKNTMPAFHFRHIRDLYPMIKELAEEKEWILTSW
ASRVTLDIIGIAGMGRSFNMLQKSTDPLLSIYEQLLEPQREKIAFAVAAIVFGMETVRLLPWKVNARFRQLTNSLNELCR
PMIQEKRGAIIKNGDDHFDIVSLLIMSNNFSAGYTRDDGICNHLACYLLATHQEMQHKLRKEVLKALHSESPLGASDLED
IAGTLKQLPYLNGNINETLRLYPTVPVTLRQAIHDTHIAEHPISKGTVLCFIHLANQSFH*

>19248|jgi|CYP62-fragment1|[Clonostachys rosea IK726]Cloros1
MDDDCRSTIATISDWQSYWRNKDGQARGATWEVTNIGSLVITTLIHKPALRGYPGPWYTRVTHYVLKFYTLTGRRMQYVH
DLHQRYGSVVRLPPNQLAFCDPDAFIAIHKIGGGFTKTQWYEDFSGGAGGIGIGLCAMTDVKNHASRRKLFARAFSAASL
RSNCEDVVKEKVEKTVSRIMIEARDTGEADIMKRRILTASDIIGQLSFGESFELPESGEGSCVLFI*

>20793|jgi|CYP5042G1-fragment1|[Clonostachys rosea IK726]Cloros1
MPSHFNHHLSEASYFWAQTSAMQAFVTAASVLVIAFLFRVHQLLKAVDQLPAPPGKKWKLPPGPRGLPYLGNLLLYSKGE
KGAHEIAKYGEMVTTHLGSKLWVVLNSNRLAHELYAKHGKVTNGRPPMPIVNDLLSQGRRSVMLPIDGWAERRRVMHQLL
SGTAMTKYAEYQAEESVVLLANYLRKPQEWYAQMLAMPTL*
>21043|jgi|CYP5327-fragment1|[Clonostachys rosea IK726]Cloros1
MKSPSQQQTLNLDLEILSAVPSLKVLGRVPFMATNVLPTILARKALKAREYLTKGFAEYFRCGHHNTASEGVLVRLNHSL
QAGFTMDDVARGEIGSAIAILNNSVSAAFWMIHHVFSDPSVLDECRKEVDAAMRVDQDRCTVDFSIIKTSCPALQSTFQE
VLRYRGIGNLIVRQVLEDHILDSRFLVKKGGLVLIPNAVQHFKNDIWGDDAGEFHHRRFVGSDAPGGLKRYNQAAFRPFG
GGSLLCPGRHFATTEILCFAALMVASFDIKPVHSGWSRVKTDRSFGMGVARLFLLPDADIDVEMQPRGDLALQYALTGTW
SKYERQ*

>6124|jgi|CYP618-fragment1|[Escovopsis weberi CC031208-10]Escweb1
MKQFLVALLALASMASLASWAGLISVSTGGLVAFVTGCVISRILYIAIYPFWFSPLRHLPTPEGSNFITGHALKLLLAPS
PYTYIEVWARKWPDAPFIRSFAFGNAEVVIPNSLEAFKAIVGAHAYDMDKSPELKAILKSFIGEGLVFANGETHKRLRRV
VGGASIVDGIDRSDFQAKH*
>2756|jgi|CYP5472C-fragment1|[Escovopsis weberi CC031208-10]Escweb1
MLGAAPPAVVPSKSFGLNIVIPMFRAVASHRFYHWAKDLLKKHNHTAELRILGESLILTDDPENIQAIQDTQFWEFEKSE
EQHEIFKHILGDAIFAMNGEEWKAEAAIYKAHMARIRDTDFGITETHTRNAFKLLDRTGIDVFDVIDRLQLDIVTQVFCG
DSTDSLTSDQSPFRDSMEILQKIACFRQLLGKVGVWLDDRWLAPRAVKFIDKYQDAFADKAFARTGENPTSGTACLIDDL
IIKGKSRNDIKNAVTIRNFQFRSTAKKH*

>4992|jgi|CYP613K-fragment1|[Escovopsis weberi CC031208-10]Escweb1
MGRLLTFQRRWAIFAREAHAEATWKFEGAIVPLWLAASEGSMSMKQLLQTLDESLFANLDVTAHAVSWNVIDIARHTNLQ
RAVRLEMQSHMSSEEEYLAYLAREDTLLAACILESSRLHPILPFSNPEAASIDKVIDGYLIPKNTDVIVDAYAINVDNPY
WKDSSTFDPYRHLGQKDQARRYNMWRFGFGPRQCLGKNVADVILRVIVAELVGKYQLDLAKGEGTGDQVELQADSWIGLP
DGMVELTPIE*

>5065|jgi|CYP5043C-fragment1|[Escovopsis weberi CC031208-10]Escweb1
MSSIKAMEPFADECTEIFIRSMIEMQGEAIDLGMWLQWYAFDVISAITFRRRLGFMEQKRDIENMIHDIAEGFEFTAIVG
QIPQTLLSDLLRARTWLAHYIPFLEPRNPLRSVVDFTEHCISEYDRNPPSHESPDLLGWLRESNAKGEAIPQRDLVNQLS
NNFLAGSDTTAISLRAVFYYLTRHPKFYRKAQAEVDEADRDGKLSEYITYAESLQLPFL*
>5628|jgi|CYP5080B-fragment1|[Escovopsis weberi CC031208-10]Escweb1
MPKSDWYSAFKHPDPNRWSLFSDTNIARHTQQRRVFQNLYSMSSLVSYESYVDECADLLQGHLSQAARRREGVDMMHWFQ
CYAYDVIGNMTFSKRLGFLDRGDDVGGLLQAGNGALVYSVLVGIYASWHPFLHKLSCWFRLGGARMRDQLATFVGEQIGK
RKKASQEDKPTPSGPATAEDFLQKLMNKASSEGSTKVTDYHLFALGLSNITAGSDTTAASLSGILYLLLKNPAAMEKMRA
EVDGAATDGRFSDGHLAFKDSLQMPYLQAVIKEAMRVYSVTGLPMWRVVPAGGVEIGGTFFPEGSHLGINPCGRR*
>6147|jgi|CYP642-fragment1|[Escovopsis weberi CC031208-10]Escweb1
MVYPSMERALGKYADSMSLAHSTRFFGNCMFDISADGIQRVTDYDSRSIHRSAFSGTTAVRELVEQATNFAQTRIDMEPG
VQQTMLGAWLFKMVNTALITAIWGAVTVWMVRHLLSDQLTLRRVVSQVRSIDSASLDGGKMDVDHINRTCPMLVASAYET
MRLHMTAVPRVAKQDFQVPVMDAASGSILRVKEGDLVVLPMASVNLDPAVWGSNVERFSPERFLARDGSVSEAAVRRLRV
FGVAGNMCPGRKLGLSAILFVTATVLRTFDIEPAAGDVREARSPPPEASPELGIGLERVGGDVQATIRRINV*

>6869|jgi|CYP5094-fragment1|[Escovopsis weberi CC031208-10]Escweb1
MSLLLFELATNPEIHNNIRREVLDAAGDSKRLPDARVLERLPWLNGATPVGVSQPDILHNEEIFPEPLEFKPERWFDPSD
LELKAFVPFMKGTRSCVGIDFAFDEMHMLTALLAARFDFELYKTTWDRDLKYVRDCFVGAVDSSSKGVRVKIVGDNKRIL
L*

>548661|jgi|CYP5808-fragment1|[Naematelia encephela UCDFST 68-887.2 v1.0]Treen1
MRQLCPYLVSAIYETFRFTGSVFSGRMVLKKVQLRGINKVFSKGSIIRAMTRTASFDTTV

>3549|jgi|CYP50390-fragment2|[Rozella allomycis CSF55]Rozal1_1
MNFLPRVQRSQTYIDEFNEIIYSLIREKRANPPDDDTSADLLDRLIAASDKEEDGLTDCELRVNLLTFQK*

>5851|jgi|CYP50390-fragment3|[Rozella allomycis CSF55]Rozal1_1
MANGDEWKSHRRIVNPVFNKGWNTKGFGEKVLKMMSTWEISGHNMIDISKWTPRLALDIFSSEIFGIDFKTLEGDSELYQ
KYNKVISVMDENLLLMIPSLSTMNFLPRVQRSQKYIDEFNEIIYSLIREKRANPPDDDTSADLLDRLIAASDKEKDGLTD
RELRVNLLTFQKQDDIFIFFIAGHD

>6305|jgi|CYP50390-fragment1|[Rozella allomycis CSF55]Rozal1_1
LACALYLLAKYPDVQEKARREVNFVIGDQEKDYIPSIDQLKDFNYLSCVIKETMRLYPSVATLPLRKCVSDTKLGNLKIP
AGCFVSVAIYSMQHKNSNYEKPDDFIPERFYDEHAQSLKQPLESLNEYRWVPFSGGSRICIGMQFSFIEQKKLYDLFKR*

>6759|jgi|CYP5941J-fragment1|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
AGTDTTALTITWTMHLLMEHPAHMRRLRDEVIAAFPNLDVKITHDALQSLPFLDAVLHESMRVRAIVPYGMSRVIPEGGI
TLGGYYLPAGTTVSSSLNSLHYNEKVFPEPERFLPDRWLTATARQLGHMKHHFIPFSLGPRACIGRSLAWMEIRLAVAEV
VRRFDFTALPG

>10665|jgi|CYP6479A-fragment1|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
TLYSLLQHPACMEKLQAELDEAIPDINAYVTHAMVKDLPYLNAVCDEGLRIHSVGAGDAHRVVPPEGATVCGKFIPGGTI
IIPQTYATHHSTAYWDKPYDFLPERWLVSPEQVNRLKQNFMPFSLGVRACLGRSLAWVEFRVALAVLLRRFNFTFV

>20606|jgi|CYP5941A-fragment1|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
MKQSFFGFSMGSRACLGQNLAWMELRLLLSTLVRRFELTVPAGKEADMTPLFHFMNQPKDGYYRVRAMHRSD*

>28672|jgi|CYP6319A-fragment1|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
MCFFHGQEVHLAEDYYGAESRVFNPYHHYKPETSDATKPTTANDSFLVFGIGHHMCPGRFLAVMAIKIIAAYALRHYDFS
VLSGKRPTNTLRDGTSHLPMPEPIVLQARPAASP*

>30927|jgi|CYP6319A2-fragment1|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
MRTVARDVARTTLFKRMFPLSISRLLTRQVTAMSKNLKVADEIIAPEVIERRRLAKELGDAYNEPHDMLNWINNAKDDNG
DYYDPIAVARRSIQIAFASVTTTSNFCTHFIYDIASYPEYRKKLQEEQDELVHLYGEEITPEALQKMRFMDACIRESLRL
NSSASK*

>16155|jgi|CYP5941-fragment2|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
YDAIQDLPYLNAVLHESLRINPITASGFDRDTPEGGGMLDGYYIPEGTTVLTSILTLQRDKEVFPEPLVFKPERWIDASP
EQLQVMQKHFIPFLVGPRACLGRK*
>24362|jgi|CYP5941-fragment5|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
GTIRPVIGSLIIELYDVFKVGGDNLFATQDIAYHRVQKRLMANAYTPTALRELESMVYEEGVLRLVDRLYAHADAGETVD
MMVLLKHMTFDIIGKVALGKSFKLLDTPSESIPIIEWINASTMLGMMFARNMVEQRRNSGRGAHKDTLQQLIDAVDEKTG
STMSNDDIVAQTIMLMVAGTETTAVTLVWALYFVTAYPEYARKLRAEIMATYPDPSTPLSYERIRSCAYLEAFLRESMRM
RPIVCIGFLRRMPAHGITLGGHYIPEGCAVASSVIVMDFDERVFPSPDTFQPERWITTPEQLAVMKQHSLPFSMGVRACI
ARDLAWMELKLTLVQLLRRFTFTPSPDNDMTPIERFVLRPRKDQFLVQPHRI*

>25883|jgi|CYP5941-fragment4|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
MSLLETGLLVGAAYLVYKFAKLYYYDYFGWGGQNLLSTKDVQEFRVMKRLMLPAFTPNALAELEPMIHASGVEKLMRIIG
EHADAGDAVDLMALFKKMTFDIIGEVGFGKSFGLLDEKDGAHDIVHWIDDAFNLGIRKLIYGKLYHPMFFGKLVKSEQEL
IKASSHAVLSSPPC*

>27810|jgi|CYP5941-fragment3|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
MSLLHRRTSAASFLARLRLRILVPRMTSTLHSLYSAIPWLETTVLLLVAYILVKSPLARVPGPRFSTLNVLWTNFQQLYT
EDPAIALDLHKQYGPIVRIGPSEVWVSGVTMIRKILGSYQFSKSFHYEAFRTEGNSLFTTNDPDSHRLQKRLMLPAYTIN
SLNELEPLIYNVGVRQLVERVGRHADAGDTIDMMDLFQRLAFEIIGEVSFGKSLELFDEKKPQHPIMKWINGATTYSALK
MLLIEAVDEDTGASMSNEDLVAQSIMLMVAGTDTTACTLTWTLLLLVEHPECAQRLVKEIQALNLDPASKPSYDVLQSLP
YLDAVINESMRVRPIAPHGMPRV
>30300|jgi|CYP50258-fragment1|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
RLFGQPSHVRHARTILADEVHLLRQAYARDDASALPDALRRSSLAAILLDGPEPFTHEEVCDELFVFTVASLESTSAAFG
ARLREEVVRLTSGHDPFLTFEQMQPASAPYLDAVYRECLRLAYIAPAFTRTTTRPINAGALYVPAHATVLFPIAVLQRDT
RIWGSDADAFRPERWLDTPPTTRQAYLRAMYHFGGGDRQCYGQRQATMQLKLFLAVIAFYFRLDALPAHLHTDALEQCGF
LSRSACPWAIPVPLSAATPYNKQA*

>30680|jgi|CYP6319-fragment1|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
MEGLIDQWNASYVARLLTSPSVLLALIFVIGVYYYSDKQHPNEPPKASYTIPFVGHGIEFLQEPNEVFIRCREKYGRIFS
ILLFGRWITIIDRSETWNVMRASEDQFSFSKALSNLMDLAFAFGDDYPHDRFHIDTLRLNLAKRLSNFNTRIVNKIDAVY
KATVGDATKPYQMNNCVAFFENMVIRTMATCLAKEESIHNNEAILRMMGTVTRDVERTTLFKRILPTAVSRFLLRYITTI
DKNIKVVDEVIVPEVVRRRQQAAELGDAYVPPVCSSGRP*
>30927|jgi|CYP6319A2-fragment1|[Syncephalis pseudoplumigaleata Benny S71-1 single-cell v1.0]Synps1
MRTVARDVARTTLFKRMFPLSISRLLTRQVTAMSKNLKVADEIIAPEVIERRRLAKELGDAYNEPHDMLNWINNAKDDNG
DYYDPIAVARRSIQIAFASVTTTSNFCTHFIYDIASYPEYRKKLQEEQDELVHLYGEEITPEALQKMRFMDACIRESLRL
NSSASK*

>5304|jgi|CYP6383A-fragment2|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
NALLSPLRSIPGPWYCASTGIVYLWKISTSRHLAWIKDLHDKYGPIVRARLYLQANTDMHTTAPNMVNVRDVNALQAIFS
THRFAKSPFYSVFDLRGNPTVFSARDPTIAKMRRKLVIPMFTRTAVDDMDEMIMSAGIRPLLRRLMNDAASGNAANLMQL*

>32463|jgi|CYP6653B-fragment2|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MPLPSKLTSLFSNAVWERLFTSDVLLVVLVGLLFRKAVSEYFTPLAKLPGPRPSWLANLVIRYNILFRPDKGMPNNLHKR
YGPIFRTGSQVVNISCPDMIRTVYMSYRFPKGPNYNAFKFHGDNIFATQYVHAL*

>15250|jgi|CYP6315A-fragment1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MILLFEHPDCLHRLVQELDTALPAIDEPITHSKVMDLPYLNAVLYESLRLRTPISTALPRITPPEGAVLCNYFVPGGVNI
ALYAISTSTSNYDRPKVFDPDRWLVSPELVSEMKKAHMAFSMGPRVCIGKNLAWLKMRMTLASLLRTFTFELVPGQNLQP
TLRSVLRPMDSKLLVTASKRAV*

>17082|jgi|CYP6383A-fragment1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
QARLLQELREIAPDVNTEIRHSMVHDLPYLNAVINESLRIYPVGGNDLHRVAPKGGADICGKYLPEGTAVTVVQHAFCCW
DQIWDDPVAFMPERWLTDDSARLNEMKSAFFPFSMGVRACVGRDLAWMELRVAVASLIRRFDIEVLPENDMTPVFNLVVG
PRGHALNCRLTKRAE*

>27977|jgi|CYP5941D-fragmenrt1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MCLRAHHRDFDFHKRQDSIGEVSSGRSFETLLMEKDGREPKVIHWINDTAALGVAKYALGDLCQPWLLPRMFDSERQLVE
FARSAIQQRYSDKLGQNGRPKDVLQRLIDAVDPETGGCLTEDQLIAEIGGTETAGRTLTWSVNFLMENPQSAERLAEELR
QALPDRDQPVTYAQVKNLPYLDAVLHETLRMRSPAVGTMRATLPGGVDLCGHFIPEGRTIFVSFYCIHHFPKVYGKDASQ

FRPERWIDSSAEQLAHMRRMFFAFSMAHVHVLVAMATARND*

>33585|jgi|CYP6653B-fragment1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MTWCVSSMRPFPGCLDRLRAEINAAVPDRSTPITHAAVRELPYLNAVINESQRLRPISPHGMSRIVPKEGVMLGGYFIPG
GTTILASIKTLQEDKNVFPDPMAFKPERWLADESTVATMKRSLIPFQIGPRACIGRVLAMMEMRLTIAELVRHFAFEIPP
HLQTDMTPVNRFIYRPKDNKYVVLPHRID*

>33586|jgi|CYP6653B-fragment3|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MFPLPEPMQLFPDIIWDRFAVSSLLLAALTGVLLCKFVVSEYLTPLAKLPGFRPSWLSIWVLDFGTLLRPESGLYGRLHQ
RYGPIVRIGPRIVSIADPNMVRAVYTSYRFPKGVNYRPFSILGDNIFSTQDNSLHRKLKKLIAPAYSQGAVASMEPLIQE
VGVTRLLDLLRKHADAEEPVDLLCALQLMTFDVIGEIAFGRSFAMLETGTVHPIIEWIDDTTSLSVKHILGPLFMPFMFR
KKTESLHQLISFARDAVRTRREQKNTARQDTLQRLLEAVDEETGDRLTEDQLISEAIVQM*

>6018|jgi|CYP50337-fragment8|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
YLEACLRESLRLNTIPLALFRQAVQNVTFANGITIPAGRVCLFNMHAMNHNASVYKDAQAYLPDRSMDQPNLRATTTSPS
YVTFGLGRSSCPGRFLAVAEMMAFAAWLLRRYDFS
>8005|jgi|CYP50337-fragment2|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
LYDIAGNAEMRANLYQEQQDIIAQHGTDFTKEALQDMTFLEACLRETLRVHTNFTFSFRVAMRDVTFSNGKHIPAGRNCI
VHTRSENRQPDVHTDAEVYMPERAIGPTGQHLATTPGPGYITFGMGRKICPGRFFAVGMLKVLASMLVRDYDFSTESGTR
PANKTHDDGNYLPQPEPILFKK

>15254|jgi|CYP50337-fragment12|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MSGFQNLFPVRSVGRLPLLLAATARKHHHILDSIILPEIARRRAAAEKDPKFIPPKDLLQLFCDSSTPEGIKEAPRDVIS
YIMFVTTVSTFDVALPATNFLYDIASHPKVREKIYQEQQQIIARHGTAFSKEALRDMTYLDACLRETLRLHADAVIVART
AMRDVTLSNGTCIPKGRFCFMHVRAFNRAPKFHKNADEYLPDRTADLPSQRAVTRSPGYVTFGLGRRACPGRFLAVDMLK
SLAAWLLRNYDFTIEPGQHTADGTYGSSDHLSAPRPILFTPRDPKSVSST*

>16445|jgi|CYP50337-fragment6|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MFITLFVVEVTEGATHFLYDIAGYAETRTRLYEEQQQVIAKHGDKITVEALKDMAYLEACLRESLRLNSITQAVYRLAMQ
DVEFSNGMRIPAGRVCFFNMHAMNRNPEFHQDANEYRPDRIADQPNVRASTITPGFVTFGLGRNACPGRFIAVAEIMTLA
AWLLRRYDFTTKSGRRPENQMGATYRAIEDPVIFTKRCS*
>17503|jgi|CYP50337-fragment3|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MLLPEIARRFAAAADDPKFVAPVDLLQFICDSCSRSSGTNAPKDVINLVMFTIFISLSDITFHGTHFLYDIAGRPEMRAK
LYEEQQQIVAKHGTAFTKEALQDMTYMDACLRETLRLHTGATNAARMSLREVTFANGMSIPAGRLCLVHTWAANRRSDYH
GAADDYMPERTAGQPGVCASTTGPSYTTFGMGRTPCPGRFFAISEIKSLAAWLLRRYEFATESGRRPGNKTQKFGEYLPV
PEPVVFAPRNL*
>19235|jgi|CYP5941-fragment1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
LSRTLHMLINHPEHMQRLYEELLEAIPSEDCQISHADVQDLPYLNAVLHEGLRIRSVAAGSFPRLVPPGGADYNGYYVPE
GTVSVSFIFAMHHEESVYKDACAFQPERWLGQKEEVEELKKSLFAFSFGARACAGRRLAWLELRTALASIVRRYNFEELP
GQDMAPRNRFALVPAGNQLLVRLHRRSQSCK*

>19700|jgi|CYP50337-fragment5|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MTPDELVNSIMFVSFAAISTTTFHCTHFIYDVAAHADLRAKMYEEQQQVIAKHGTAFSKEALRDMTYMEACLRETLRLNV
NGPGTTRMARSDHTFSNGISIPAGRVCLVHTRAVNRDPDIYKAAEEYLPERAADQSNPHAATVMPGYVTFGMGPSACPAR
FFAVNELKMLMSCLLRRYDFTTASGKRPVEKIQRTTEYLPVDEPIIFTARTT*

>19753|jgi|CYP50337-fragment10|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MLSRITDEVNECTAFIDIFPFKWMGRLFAPLVNDVYRHYRIIENLVLPEIERRRIAARADPKYTPPVDLLQFMLEFNDKN
GDPNSTKDLTSSLMLTAFGAIATNVFIGTHFMYDVAAHPEVRERMYEEQQRIIAKYGTAFSKEALRDMSYMESCLRETLR
LNTHAIGTFRKMMTGFTFSNGLSVPAGRLCLVHTRAVNRNDKVYENANEYIPERVADPTNPRAATSVSGYVTFGMGEFGC
PGRHFAVGQLKALMAVLIRRYDFTTKSGKRPKDKIQRVTEYLPIDEAVIFTPRA*

>20762|jgi|CYP50337-fragment1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MQFLLDYRDENDRPYRLEDIPKMLIFFSHALVENTGFATTHFVYNMAGYPNVRARLYEEQQQVIAKHGTAFSTEALEDMK
YMDACLRETLRANTHPLGTARKAMQDHTFSNGLSIPAGRKCMIHTYVVNRNADVYDNADEYNPDRIAGQPRTHSTSLGPD
YVTFGLGRHACPGRHFLSAQMKMFMSVILRRYDFATKSGQRPKSKTQDGYFVPAEEPITFMPRGV*

>22367|jgi|CYP50337-fragment9|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MSYHVLNMLSEPVWLGVSFAHAAAIASIAYIVYRLYTQGKPVRNEPPMVPYTWPFIGHMFEFYGDTEAFLARCHEKYGPT
FNIYVLGQVNTVLGSDLITEAMRMPSTMLSSHEANQKLFNYDFFFDIPEEFFASITSSIRGPLTQNIPALLECIEEECDH
AFTEMLGDGLINDISKPISCCVERIASAAFVANKDIHFHPDIVRIMPSTVEDIANTAIFGSLPIKRLRYWLLERMSSHAQ
NLQAVETLITPEIIRRHTRSKEDPSYTPPMDVLQLVTNILSKDGELPNIKALGQYAMFCMIFYGEVIDSILHLVYDIAGH
EHIRARLHQEQQQAVAKHGDKITREALSDMTYLDACLRESLRLNSAPIAMFRIAMQDVTFSNGISIPAGRTCFSYTRAAN
RNPGVYQSADEYLPERAADRPNLRATTTGPSYLALGLGRKSCPGRFIVAAKAMSIAAWLLRRYDFSTVSGRRPLNRMGLV
YHPISEPFVFTKR*
>23342|jgi|CYP50337-fragment7|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MNVQQLNEPPVVPYKWPFIGHTFEFGERAAQFLEQCHQKHGPTFTVVIAGRPFTVIGPDLVTEVMGIHEDVMSFNTAIQD
TFSMEYCFRNKDAIKKLPKHVLHSHLPDIMPVLLERVVREYADVFGKAINANRVVQDISSIVSEAVLNSSARISRHIVQA
SANTALVFPNNSKSAIIRI*

>24652|jgi|CYP50337-fragment11|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MLGGTVFTVLGPDVIVEAMKSPAGVMEFHDANMELFEMEYCFRDKNIPKKLPIQAVRGPFTRNVPLLLKRMEKEYERVFT
EALGTNMAISDMRDTLMKMLVHCKSRQCSEFISLFPIKSLGYLLAPLVVDLKRHHRTLDSILIPEIQRRQKAAKVPGFVP
PMDLLQFICELRKDNDELGKPEELVKSVNFMIFASIFDTLFHTTHFFYDIAGLPGMRARMYEEQQQIIAKHGTDFTKEAL
QDMTYMDACLRETLRLHTNATSTVRMAMREVTFANGLSIPARRLCFVHSRAANRCANTYEAADDYLPERISATPGMRAST
TGPGYVTFGMGRTACPGRVFIVSVIKSLAAWTLRHYDFATKSGTRPKSSVQQFGDYLPTPEPILFELRNA*

>31753|jgi|CYP-N-term-fragment1|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MNGSRALERIRAWTLKEADYTVVIHAWLHPQLATIWFSPLRKVPGPWYTLFTIWFYKRAHIRGRPIQYVQAMRERYGTVI
RLGPKVVCVIDRDVLRTVLQSSDFRKGRVYTQFGFNGHDSVFSMRDPLLHRQRARIIAPLYSSSSLRQMEPLILEAGIRP
LVRRLDGHAAADDVVDMKKLFAYMAYDVISELCYGKSFQLLQQDNHPMPKHMSNTMVLAVRKQFFGAPLARLLAPSLSKS
ERLLSDYTEAAIEEAKGRLRERRDLLCMLLEAQDPDTGEHLSNGAVASEMTTNM*

>6017|jgi|CYP50337-fragment4|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
TILPAIHFIYDVASNPEMREKMHKEQQKVLAQHGTAFIKEALQDMTYLDACLRETLRLNTNAVTIYRKTARDMTFSNGVC
IPAGRLCFLNMRAVNRSSGAYNSASGHTPDSKVKKAVEPDFGYVTFGAGRKACPGRFFAVGMLKSLIAWLLRSYDF

>5450|jgi|CYP540B36-fragment2| [Trichoderma arundinaceum IBT 40837]Triaru1
MGSRIHHTNDPRLANIFLSETAFFSKKVIPNHPLHALGMPEAGVFFGHTDSEEWRITHKFLPPALGPKAVRHYAPAMQKT
VEESFSVFDKLDMDGEAWNVFPYMMKIGAQAVGRLVLGLDFEHFKSVDAPMHKFVLKIASIVELTKRVTSVGSWYAKMPF
GDPKRLRDTMEEARKIVLEAAEKAPKGTIDLELQDAALESQNLVEHETSKEIG*

>9798|jgi|CYP58M6-fragment|[Trichoderma arundinaceum IBT 40837]Triaru1
MEDMLRLWIALAGFGVYISLRIIYRLYFHPLSHIPGPKLTACTHLYEFYYNVIHVGPIVRINLREVYISNPNFYNEIYAS
SSRKKDEDVKYIPTYALPSSMVAAVGHEQHRFRRGIPSFLDVLSRSYPTLWTTLSSDIITAYCRGKDWDFIEDENFRNDV
RNAAENAIQFTHISRFIPWLVYAMSALSPRTMAMVMLEKTKLLEFLDAFLDDIELTAYRLGAFISGSLRLAYGITARLSR
VAPTESLQYKEYTIPPDDQQADRSCTTGATGKPVGDNQNRNSLLDLQNFQFTFDRSNRIEPDVGWGASGFVAASYWLQLF
STSCWITHTNLAAPITHTEQDVGRPVVCYLLDAKLAVALVPAAYAYPNDIPERERLAFQGPIIKKLFGDGLYFAPLSQAK
PPQLILDLVTGVGDWAIEMGDLFPSFDVIVTDLSPIKTDMMPPSVNFYVEDS*

>43|jgi|CYP528A-fragment|[Trichoderma arundinaceum IBT 40837]Triaru1
MIGAHDDIQKKVTEEIRSAADPSSYAGVMQLQYTRAATREAMRLYPVLSMSLPRRVPDMGLHMHGYFVPGGTTVGCNPVA
LHRNADVVMGPDPDVYSPDRWLGGESVDMRIMERYSLNWGGGPRTCPGKNLAEMVVYKVVSALFERFDVEVATPPEIGRP
SYFLSMITGAKARFLPIARTTAGEDSLRTG*

>275|jgi|CYP603E-fragment|[Trichoderma arundinaceum IBT 40837]Triaru1
MAHQAAQEIRKLYPRPIRWLAKWRHPGSKAVLANRLKAAELMAPILEKRLAGELSESGEPDGVQWSLSATEGRPKKVLDS
ATSLSVLYDLLDRPEILQEIVEEIQDVHSTCSNGRWNKHALSQLEKLDSFMAESQRMHSIGLVTVQRSAAKPYVFKDGLQ
IPKNTQFAFANYELNHDPDVYPNPNEFDPWRFLKMRNSIDANKHHFAYASDQTINFGAGTHACPGRYYAGYEIKLILVHI
LTRYDVKWPEGQSRPPNMVHDFQNSPSPMVPLLFKEKNIR*

>370|jgi|CYP609C1-fragment1|[Trichoderma arundinaceum IBT 40837]Triaru1
MSITASELGALVGVVITGTYIAWSVLERIAVVSTNQHLTAFSSYASLGFAIILLPLFTALRRRHHYLHGTRVNGCKVGTV
YPHRDPILGLDLLRVSVKALKEHQLLQKWDELLNAYGGTYWCNALGKWMVITSEPENVKALLSTDFEDWPMKSLRQKIGI
LTLGPHAIFSVNGPEWQHARAMIRPSFVRNQIADLECTDRHVSNFLTKLPRDGSRFDIDKLLYYFTMDVSTDFMFGYSTS
ILTSPTKESLDFMASFNYILTTATNRARLGWLALIRPDKKFDDCVKVTQRFVDHHVSQALAQEREKERTYIFMNEIIKSG
ASHREVRDQLFSLILGGRDTSASTMDSLFWVLARRPDVVKKLRDEISELDGRKPTWEELKNLKYLNMVLKETLRLHAPVA
SNMRTAERDTVLPKGGGPDGQSPLFIPKGTDCRFSSHSLHRRKDYYGPDADEFRPERWETHRPGWEYIPFSGGPRICIGQ
QFALTQMLYLITRMLQTFSDIRPGDDKPMLQEIGSTISMVHGCWIHLTPVYSGGLPESSSLPFDLPHRRDLPILCKQWRR
AHHLEAATGLLHDLLPDPTNHARRRPQANAADATVRDHRRVRLDPDRDQSLRLRAAMVGTGAAVETGVAIVSERPARPAR
APLIKAPRLVVLEHDSLKLQIVVERLSKNINEDHLYEIFGQFGRIKDLDLPINRTFGTNRGTAYILYDHEADAEAAITHM
HEAQVDGAVINVSIVLQRRKLSPAPPTARRGANIDPRVPFQSSRGGGPPSGPLGGGGGGGRRRLSPASRYGPRSDVYRPN
SLSPARSPGGAPPSRGGGGGAGAGRYRSRSNGSYSSRSRSRSPAPRRRGGGGNGASRHDDHDTRRRSRSRSFNSERSTSR
NRGRNYR*
>592|jgi|CYP584-fragment|[Trichoderma arundinaceum IBT 40837]Triaru1
MFLKERSHQSGKHGDARFTFDLAHIAWQRGSESEIALLLTLTGYIYCLPPRTCHQFADKYVQKALDQRRRQIAGAGSVEL
KHATLLDELMTETEDPLELRCQLLHLLLAGQDTTASLLSSAFFVLSKRPDVWEKIQECKYLSFVLKEAVLRLYPVIVTNS
RMANNDTYLPVGGGEDGLSKVFIPKGQVVAYHYHVMHRRKDIFGDDADDFKPERWLNARPRWGYLPFGGGARVCIGQQLA
LTEVSYTVFRFAQKFREIQSLDENEWRENISITSTAENVKVRMVPA*

>1094|jgi|CYP65BM6-fragment1|[Trichoderma arundinaceum IBT 40837]Triaru1
MGHRKHGQGENGKDPIYWRTNSDYHPWVSLVFDRIRGSSINTALRRLPFGDRLIQLLISKEARKRFYAHFQLTQEKVNKR
LAESSPRPDFMDVMTKKSGDMQFSFAELLDNASLLILAGSETTATTLCGVTFLLLTHQAVLAKATDEVRSSFSTKIEIDL
LSVQKLDYMLAVLQETLRMYPPVPTAIPRKAQSGGDLICGKYVPENTLLGIWQWSMYHSAKNFTLPDSFIPERWLGDARF
SSDPEGVLQPFSFGPRNCIGKNLAYAEMRLILAKILWNFDISLQPDSAYWLQENRAYSLWQKPNLNIYIKPRTIE*
>2875|jgi|CYP65A-fragment|[Trichoderma arundinaceum IBT 40837]Triaru1
MLQIHQKYGPVVRVGPNTVFYSHPDATKEIRGHRKGNQVEHQKDPHLHFGNQNNAIGANRENHTRYRRSLAYGFSHQAML
DQEPIINRYIDTLLNELKKASMIKEKIDIELTFKELASNASLLIAAGSETTATALSAATYYLGLHREAFMKLADEVRSSF
TSEGEITITNVQHLNYLQAVIDEAMRLFPSTPGTAPRIISSGGDTIAGRYVPAGTVVGVWQWVNHHNPSHFLEAESFIPE
RWLGDTRFKNDVRDAFLPFSIGPRNCVGRKYV*

>3028|jgi|CYP65BB-fragment1|[Trichoderma arundinaceum IBT 40837]Triaru1
MQTADPQFKSNKKLIRDLMTSKFLNQVSAPRTYEKATALIALWNLKASKAYGRPFSAGSDLYSATLDMICGVAFGMEDAK
SALRHETAHVQAINPIFPRVEGGPVYFSPAPAIPELEALFNIPEMVSIAQGSPFPSFSQFLALLKPRHARAHWNRKTLIM
RQIDRSIQRLILAGPEGCESALDQLLWREMNAAKEAERLPDYYSPEIRDEILGYLLAGHDTTAATLSWWVKYMSSYQSVQ
TRLRDALQQAHFNAYQASRLPTMEEICATSIPYLDAVIEETLRYASVATLIVRTSTCDTQILGYQIPKGTDVLLPLTGPS
MTEPALPIREMSRSLESQESKDRIPYWGDDISQFKPERWLKMVERADGSKEEIFDQHAGPTLAFSAGPRQCFGKRLAYMK
LRTVVTLLIWNFEFQPLDQSLNGSDIVERLVNLPKDCYVKLAKI*

>3355|jgi|CYP613H-fragment1|[Trichoderma arundinaceum IBT 40837]Triaru1
MQEQLQEIIPLRESIWNEVIKGGISRFSFSRFLLTSTNRTLKAFKKKWTQFNDQAYERASKEYPNHPIVILYAAVEQGTT
SKTELLHTLDEALFANLDVTIGNFSWNPVFLAADQSAQEDLRQEIRESREKESVDSWEQYLGKNSTLLMASILESARLKP
MAPFSIAQATPTDRVVGEYMVPADPYWGKDSSQFWRYGFGPRQCLGKNVADVILKVLLAHLVENYRMTLSERESMNSEDW
KRKPDVWISLAISDIICEEL*

>3629|jgi|CYP574-fragment|[Trichoderma arundinaceum IBT 40837]Triaru1
MLYADATIAMVGGTGTGSTILSFSFYELVKDPSLQESLRAAIAPCYGKTIPGEFVFKDIDKVGWLDGFVNEILRLYPPMS
TGLWRTTPPEGIILDGTFIPGNTQLMPCMYAIHRYSKFFEQPDELIVERWTTRPELIHKKDNFYPFLIGTLRCPGKRIAL
EMIKLTLAYTVWNYNFKFAPDADIKALHDKTVFQIVLKAGPLSCEFSKREEADSLSKA*

>4218|jgi|CYP584R1-fragment|[Trichoderma arundinaceum IBT 40837]Triaru1
MDMATDFLFGESTNSLLEDQYGYHSKLKGFAESVQYAQDRIAMHMALGKWALLKPDPKFRHHVRVVHKFADELVEKALQE
RDSGSKTQPYVLLRALVEDVQDPIQVRDEVLNILIAGRDTTASLISNIFLMLSTRPQLWSMLQNEVAQFNNQLPKIDDIS
QCKYLRYTINESLRLFPPVPVNSRIANCDTILPRGGGPMGETPLFIPKGTPVIYNVFGLHRRQDIYGADAEEFNPFRWQS
LRLSWEFLPFSGGPRICIGRK*

>10211|jgi|CYP561J-fragment1|[Trichoderma arundinaceum IBT 40837]Triaru1
MVSGNMHKKIEKLHRKYGPAVRVGPDHLALDGSIAWPEVFKFKKGGAEFGKVENYLFENDKLGIIAAPKDVHRRQRRQLS
HAFSDAALREQEAVINKYLDLLIQCLTEKSASNESFNIVDWLNFLTFDIIGHLTYSESFHCLDDKGYHPWVLQFFDGVRG
ESYRRFFSAFPFAKEIVTAFNLNDSMKKGNDHKSYIVEKAAERMHKDDDADKGYRDFMTYMLRKNSDGVLGFTKKEIFAT
MPLIIGAGSETTAATMSALIFYLGTHPNVYKNLIGEIRSTFAREEDITLKSTRQLKYLHACLEETLRIYPPVNETPPRRC
PGATITERYVPAEASRCLSSNMSTLLT*

>154835|jgi|CYP5039A-fragment1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
VEETHRKFPIVHTRQDAVHIDDPAFIDDIYPESSQRHRENFHTLVKLLLTPGSISGTADNEFHRRRRAVLKRYFSRQSAR
RLEPPINDTLGTLFERLKEWAREGKTSAYERRIPRRS*

>592|jgi|CYP584-fragment|[Trichoderma arundinaceum IBT 40837]Triaru1
MFLKERSHQSGKHGDARFTFDLAHIAWQRGSESEIALLLTLTGYIYCLPPRTCHQFADKYVQKALDQRRRQIAGAGSVEL
KHATLLDELMTETEDPLELRCQLLHLLLAGQDTTASLLSSAFFVLSKRPDVWEKIQECKYLSFVLKEAVLRLYPVIVTNS
RMANNDTYLPVGGGEDGLSKVFIPKGQVVAYHYHVMHRRKDIFGDDADDFKPERWLNARPRWGYLPFGGGARVCIGQQLA
LTEVSYTVFRFAQKFREIQSLDENEWRENISITSTAENVKVRMVPA*

>3629|jgi|CYP574-fragment|[Trichoderma arundinaceum IBT 40837]Triaru1
MLYADATIAMVGGTGTGSTILSFSFYELVKDPSLQESLRAAIAPCYGKTIPGEFVFKDIDKVGWLDGFVNEILRLYPPMS
TGLWRTTPPEGIILDGTFIPGNTQLMPCMYAIHRYSKFFEQPDELIVERWTTRPELIHKKDNFYPFLIGTLRCPGKRIAL
EMIKLTLAYTVWNYNFKFAPDADIKALHDKTVFQIVLKAGPLSCEFSKREEADSLSKA*

>378536|jgi|CYP511A-fragment1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MNLSYMEAYVFLGNLFRRFDMSLHNADQYPLRWKDYIALHLEDDVMISINSIR*

>74589|jgi|CYP505G-fragment1|[Trichoderma asperellum CBS 433.97 v1.0]Trias1
MTEVISTPSGYPILGNVLDVDPEHPHNSLARMVSTYVSGSLQQVRNALHDEIFTAYPGEHNWETAHRTLMPAFGPLSIGD
VFWVLMPAQMRRHLSQMIIKWARFGPDMPSDVQDDFMRLTLNSIPLCAMGTRFHSFYHESQHPFVRAMVGVLTESFTRSR
RPPLSKILFQTQEKKYREDIEELEAVAKELLNDRRANPRSKKDLLNAMILNKDPKTGESLDNDTIIRNMIIFLIAGHETT
AGLLSFLFYELWQNLEVYRKTQEEIDTVGSISARNPSSSPYRTCIHTSGKRRPDS*

>1167443|jgi|CYP540B-fragment1|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
MSTHFYLLGEPSFTAVEFDISEATDFQALQDLVGSRYAVVELRVPEVRAADGPVSISIDGNAIYPDHLGNHRRMFETYGK
LFAVTTLGTKWHYTNDPSLATICFTESDFFTKAVIPGHPLHAFNLGEAGIFFGSTDSENWRVNHKFFPHTLGPKAVELQL
QEAALEADHIIDFAVRARDGKGNKLAREQASLGVTVTGAGFSTTASLMSWLIYGLICHDGMQDRLLQELVDNNWDENTPT
DLMLPGGYKMAKVSIVIMALHHIHNDSEHWDSPARFDPDRWDTERVKNRHARSFQPFGSEPRGCIVFHLALEEVKVFLPN
LVYRYEFTLVKRDEAVQYDPDQVIIKPGNLYVRAERRVRWPAKSE*

>3026|jgi|CYP530A34-fragment1|[Trichoderma gamsii T6085]Trigam1
MKRQAKELHKKEMDMYLNLWLEAKQSYKNQTHNDCICVSLAQQQEKNGFTDEQAAYVAGSFLEAGSDTTSSTLYGFIQAL
ILFPEVQRKAQEEIDRVIGSDRLPTLDDEDSLPYIRGCVKESLRWMPTALLAGVPHASNREDEYMGYRIPAGAGLVNNVY
TIHMDPQRYPDPRAFKPERFEGDMASAADSALNPDPSKRDHYVFGSGRRICLGIHVAERSLFIAISRMLWAFDFLPELDS
NGQPILPDPDKLTEGLSVLPEKFGVQIIPRDEARARKIVDESKGIVMQ*

>2748|jgi|CYP552H2-fragment1|[Trichoderma guizhouense NJAU 4742]Trigui1
MESKTHPAADVSAERNERFMGHWTRARVQNTEIYSAIRQDLSKNLNIVLPLIQDETKYAFKELNIQSEWTSVNINSAMLR
MIALISGRVFVGSPLSRSEEWLDASINYTRALSKVQDDYLGLGPVLSNIAAPFLSSVWRARGYMTKAQTWMRPLVAEILA
AEKTMDGPSKAGVTGCFISWLLKYIPDAHKTATRVGEDQMIVSFAAIHTTSNTAAMAILDLASRPQYIGELREEVETVVA
EEGEQHEDGNVYLGKAAFAKMKKLDSFIKESQRFNSLAFGMRNHALQKPQSDGDLVTPAYKLLSNATFSNGIKLPKGTRI
TFPHHGQQKHVNNEQVFELRKQHGSW*

>8382|jgi|CYP5055A6-fragment1|[Trichoderma guizhouense NJAU 4742]Trigui1
MRDFEPKVASKIYTVLDQWAKIASTSDSAVDIFRWTHMLGFDTVYHLMFDVDPGTVKTGVESEKEFVPLLENWGIYVPGY
IGSYFRKVHAWKKAWNPNLRLLD*

>9457|jgi|CYP5262A-fragment1|[Trichoderma guizhouense NJAU 4742]Trigui1
MYTVPAIEQHIQERSQTVLRQISPDTPVDIYSLADCYALDIITFLVLGPHHSTQSVENVCLERQIVMDLKHLQFVGPLRL
HCPILFDYVSKLLDTLSPGLAYLRAEDRLASWCQQRISATMKDPDFDNSRSLLQHILANLQNVRPKQSTDHLYVAAEILD
NINAAEATVAVTATYLVWRLTEHPEWQQKIRKELNELAVQENGLV*
>6223|jgi|CYP613K1-fragment|[Trichoderma guizhouense NJAU 4742]Trigui1
MQLEDGEISMDLYTVSGQASSANVITQPEHVQAFYKDSHNHIKASDNNAGWLFGELLGSCVGVVSQKRWVRVRAPFEHHF
TRPASLQRTLLFLKEARVFLQSMNKDNNSTTINVTDDLKYCPFFMVASIFFGPLSAAQRHEIYMIGPLREALFRDAFSGG
VNRYSFAKYLPGSAMPKFREFQRRWEDFVKRSHDKATLTSGGAIVSLWEAVERGGLSKEELLQTLDESLFANLDVTAHAL
SWAMLRIAHHTSTQYDVRQEIGANSHSEEEYEEYLRQDNTLLAACILESSRLHPILPFSNPESALTDKTVGDFKILRN*

>6591|jgi|CYP561J2-fragment1|[Trichoderma guizhouense NJAU 4742]Trigui1
MERFTEKAEAGKSFDVNDWFNFTTFDVIGHLTHSKSFNCLENGSHPWISEFFRGFRGRSYAHFLSQVPYAFEIVKGLHLI
RDITNNEKDKNDSVQRTIERIKLGDYAIEGYRDFTSYMLKKNHDGESSFVGLELLASATILIGAGAETTAATMSALIFYL
GITPTAYNRLVEEIRSAFDDEESITITSTQQLEYLHACIEESLRVYPPINETPPRVCPGDTIDGKYVPRGTAITVFQEVT
YHNPEHFAEPDSYIPERWLPKSHPFYDAKFDNDNRAVFKPFSYGPRDCIGKNLAYSEMRLTLSRMLYRFDVELVPGQENW
HSAQRTFMAWERRPLNIYLKRR*
>6629|jgi|CYP5824A-fragment2|[Trichoderma guizhouense NJAU 4742]Trigui1
MKHSIPPENQPVVYETIKLAVKKDSPHLDEQTQQAEIGSEMFDHISASREVLGLVLSYTFWHLAQNPHAQRRVREELIEA
GIDLTSAPKLADYSTDLSTALPVALGKLKFLEAVIQESLRMRPTSTPLPRITPSDRAVSIAGIDNIPPNTRVNAFQWFVH
RDPTKWDRVDEWIPERWLGREHVSKKDRREDVLWALASGPRICLGSNWTYYAMRYIIAVTCFNFEFEALSGKPRNCWPGS
SQDLLPIKIKSLIASENEDIKREIA*
>6768|jgi|CYP548BK-fragment1|[Trichoderma guizhouense NJAU 4742]Trigui1
MNKILGENTVVDSEGWTEAINMTPICNHFTFDVMGEFGFGKAFGMLDKPDNHFIIHAIAASNMRTSIYCQFPALSKLKLE

KILYPRGSAMRKKFLDLTREFAEQRVSGGKESKNDLFRFVVDAKDPETGQGFSMAELWAESKFLIVAGSDTSSTVLATLF
FYLTRYREVEQKLFEELRTTFSSLEEICLGPKLLSCTYLRACVDEAMRMNPPAGGAMWREVDSNGAFIDGDFVSPGFDVG
TSMYAIHHNEEYYPESYTYKPERWIESDNNPAKAVQTARNCLNPFSLGPRGCIGRSLALMEIRVALARVVWAFEMKKPEG
ALGRVGEGIPEATNGRHRVNEFQLVDHLTSDKDGPYIQFRKRHI*
>7404|jgi|CYP62Y1-fragment1|[Trichoderma guizhouense NJAU 4742]Trigui1
MKGSGIAAELPWWIPPLLKCIPVEGIRELFRGNDILIKYGLEARRKCKAAGNDKSIFSAVNKEAQTEGGRLDETDVQYES
QGLLVAGSDTTTVTMTYLVWAVLSHPQWQAKLEEEVAELRPEFSEEDLEKLPVLNGIIEETLRLYGAAPGGLPRIVPKGG
AHMMGHYIPAGTTVTTQAFTLHRDSNLFRNPERFDPSRWQLSDDLEDTGAVSRITDAAKAVYSPFGLGARVCLGVHLARM
EMRLATTEFFRACRGARLAHSVTDESMAMENHFLIAPKSHTCEIVLQE*

>P450-fragment[Trichoderma guizhouense NJAU 4742]Trigui1
MNMPGGPVPGGTRVSVHHYATYRNPDNFRDPDSFVPERWLNDPVYSGDNQICDGVEGASD
WDEQNAYVLWEKKPLLCRLTLASGHMSSPEED

>1673|jgi|CYP5292C-fragment1|[Trichoderma hamatum GD12]Triham1
MVTLKRAKPRRDLLQPYLSKSAISNIQHVLEKSVWKFIDMLERHRVENQILDLSLAYRCVTADMFLGYAFNRPLEALGYP
EFKYPPAMNMDAILIASFLAKNFRLPFMLIWKVVSFLPRSMLKYLGVSLVFDVQEDCKKMILDLIKQKEDNNTAAHPTML
DSLIGLNGKDARLVLSISELTAESIVLLFAGAEATSLTLVLGTYYLLKDRELLSKLQNELSLVMLDKWTLPPVAVLQRLP
YLTGIIKEALRFSHGAPGKLPRITPEEGATLCGRWIPPKLVLDTGIV*

>5132|jgi|CYP684L1-fragment1|[Trichoderma hamatum GD12]Triham1
MDDLLDVVLARIYIVGAVTVAGIAYLIFYALRDPLSKVPGPWYTKWTSLVIKFGRIGYLGAVRSAFPRIIAMAKYLPIGY
FRRPIRSTKNMIRYADESIARYRNLLTSDPYSVKWTLFTKVFQDHGKEEGLSPVELRGNASAYIIAGSDSTAVTLTYLVW
SVCRDPKVKAALLAEFRTLPADFTIANLRDMSYLNAVIDETLRLYSGIQSALPRWVPDSGDNIAGYWLPGGTTVCT*

>536|jgi|CYP5811-fragment1|[Trichoderma hamatum GD12]Triham1
MIAIIGKRKNTLSKDKKSLIIDELVQQWTISVWGDQFLDMDFGKVGDGSSVLAQLSAIQSRMKKSFPSPIFSEFPILEKL
SWLFKSRQRAFDNIDEFEELLLRVTQHLKSEDAQECNKTKLVYQLKDAYNLGKLSKYHYISNMKNLFAAGHEDAEQALIS
FIWTLAVNQDIQTRLRHEINTKLPIDYEIADLKALPLLTACAYEILRVYPPIFQLTNRLTLAPTTIGDIPVPAGVYMGWN
AYGVHTNPQVWGSDAKAFRPERWGNDVKQIHELWRTAQVKDPEYQFRTTTSSAAQQMLATR*

>6482|jgi|CYP548-fragment1|[Trichoderma hamatum GD12]Triham1
MEGKVSGPPGFFSYIIGAVDPETESGWGVEEIWAESSVLVVAGADTIVTGIVSTLFYLLHDQNEMGRVLQEIRSTFSDVE
EIRMGPLLNSCRYMMACLDEALRLTPPTATAPPRQVLANGMNIDGNVIPEGCVVGTPIYGLHHNPDVFDDPFVFRPSRWL
PEENTDEVYQRYKSGYCVYSKGPRSCIGRNQAQLQMPLTLARILFLFDIRITPGTNEGEGDPKAKTWGRHRPGEYQVRDW
FTAERKGPSVQFKLREM*

>9444|jgi|CYP5046B1-fragment1|[Trichoderma hamatum GD12]Triham1
MLADIVPEFLLQNWKTIAKQWYEEDSQIYLRMYNKLMEDIKNGTAPNCFLKYVAREKMKKNPIADVTAAFAAGALIEAGS
DATTTALNNLDRVVGSDRMPGFDDEPNLPYIRGIAKETLRWRPTTKTGTCHSTTQDDWYKGYFIPKGAVIVLNWWAIHMD
ETCWKDPQRFDPSRYLNDPLTKAESMVQADANLRDHFTFGACRRNCPGVHIDHNSLFINIACLS*

>99484|jgi|CYP5696A-fragment2|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
VQVLIGALVALPVATLLYSVLYYLADVHRLRRFPSPSLAAALSPLWMMWHNARGKKYEALDLAHQQLGPVLRVGPKTLSF
SAPEAYKDIYGHGSPILKDIFYDNLANGNPSMGDATDRQLHSIKRKNLSSIFSAKNILSMEPKVTSSVEELLAAIRIKLN
GGALSNDDKHVVLEGVFDVQPWLNMFSYDVISKMLWSSSYGFLKCGSDDCNSMAGDGRRMERGDSDDVDFFSFFPIQKTK
RCPVPMELPELIAECGTFLNAGKLTRC*

>549187|jgi|CYP5609B-fragment1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
WPVDVHYFPDARIKTEHQAKRKKLAHVFAQKNIESLEPVILDATATLVSQIDKHIAQSKAINIRRYVNYYTIDLFAELLY
GRSLGCLERGDDIVEAQTKYAKVYKAHMIRSLHDATHMNTFLGYGAHLLPLTKTLFARHPYMKAGANWDNIIYHNTTKRL

QDAESGEEKKDLFSNLLRNNKGESLDLPMGEILAECSVMMNAGTDTTTAALTNTIFLLYKHPRVLAKLRQELDSAIGSSA
DVPNYASVSSLPYLRACIEESLRIRPASSYGLPRVVPAGGRVIAGQYIREGVTVSVPTYTLLRNTDCFKDA*

>47771|jgi|CYP5696-fragment1|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
SGNDTIQISLTNTIYELASHPEYQQKLYNLLTDSLPKQSQPIASYMELSKIPLLTAVLDETFRLLPPVRFNLPRIIVQNG
AVIAGHHVPAGVTVSSSVYIMHRDESLFREPLKWLPERWLPENPDFSDEERRNLKDFVLPFTLGGRACIGRNLAYMELSI
CIAALVMAF

>1387431|jgi|CYP539A14-fragment1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MGFIELLAQHVSIKAICLVTLALWAARMTINRIREHRKIKSMGNYGHTLQPRLPFGIDFIYYGVRSTIAHKNLELWRDMF
FANGAYTCEMRILNERVVLTVDPENIKAVLATQFHDFGKGPDFKREWSELLGDSIFTTDGAQWHESRQLLRPQFTRDRLS
DLHCFENHIQSLFKAMANGGPLNGEGQEVDLSRADGRRLDISELFYRYTLDVATDFLLGSDVKSLSTPKHDIAIAFAEAQ
RLQNIMVRASRLRWLTPKGAYRANIRKIDAFIDGGEPLLKSDIILSPGQGVHVAFWEAKK*

>1390919|CYP6001C27-fragment1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MSFNKSISTPNGNHAAVEEYPHGPVAKAKKPKVAKHGGLMQLYRASRRPLPHQTGDGTYPEVKTRPTVMQDLSTLTMSDL
KTLKAIIIAKLKGEMHADDKTMIMEKTIQLVARLPGSSKRQEKLTNIFIDELWYSLDHPPLLYMGDQFRFRQADGSNNNP
LMPKLGAAGTPYSRSCRPGVMPLGAMPDPEAIFEGIMARDKFIKNPNNVSSILWYWATIIIHDLFWTNEKDSNINDSSSY
LDLSPLYGHSQEAQNGVRTFKDGMLKPDTFADKRLLGMPPGVCTLLVMFNRFHNHVAANLAAINEANRFAKPPPSLQGDA
AAAAWKKYDEELFQTARLVTSGLYINITLVDYVRNIINLNRVDTEWTLDPRQEAGVDVGTAKGSERGKHVDIVRDFGNAA
HTRFAAHVFNIPLKTRENPKGVFSEHELYTSLAAVYTTIFLDIDPVESFPLRQKTKETATVLGAAIKTTVKYTKSFGLRL
FTGNTNDALSTAGVNAVKALAKSGLSAHDIAWGLILPIAAATVPSEGRLFAQALDWYLSPEGSPYIDDIRTLATQEPTPE
TDALLLGYAMEGVRMAASGSSLHAVAADTDTIVEDDGRRLNIGQGDRVFASFSSAARDPAQFPTPEAVDPRRPLDAYVQF
GAGTHSALGREVAQVALAELFRAVFRKRGLRRAAGPQGELRKVLREGGHCEYLTDNWGRLTSFPMSMKVTWDN*

>1430700|CYP684L-fragment1|[Trichoderma longibrachiatum ATCC 18648 v3.0]Trilo3
MYSSLPRRAPEDGNGVAGYWFPDGNTICAQAYSMRRMARVFPDPDVFDPSRWVARTREVKHSFMPFVNGPGPEFCRPFDG
YGPLFATIVVVTVDSLYRVAF*

>114890|jgi|CYP620B-fragment2|[Trichoderma pleuroti TPhu1]Triple1
MFSILHLIAVIVALIGFLVYHQYFRKKNALMSLPRGPKGLPILGNVFDLPSPEIPEFQHWLKFKDLHGPISSITVMGQTY
VIIHDKQAANDNMGRPYDATFRLHRKFMHQQAGTKIIASQFNGVQDVESWRLLKRTLDDPKSLIEHFKTGAAAIILKSVY
GYSIEPQAVDPLTALIETMMTNFSTAMTPAARLVDMIPAVQHLPDWFPGTAYKEIARQWNKVNHDTVNVP*

>116843|jgi|CYP552B-fragment1|[Trichoderma pleuroti TPhu1]Triple1
MLMDNEPFYLELQEEMGKDNKALKDTAAGREIMSQLSQLKEQQQRELTEMKEMLLRTAAEENKAALAALEEHYKKMMQGM
EKTISDERRMNEEAARSSDEKIKELTERIHKLEKKGSCVIMRAIYSILNTTYVFRFIPRLKLLALAVPYIAKYLSEDGRM
LAETLNITIPKMTKETKVEMDARVVREQETIFASLFQSNLPGEEKPVARFAGETTALFGAGTETTSWTLTVTTYYLLTQP
EILKELIEELRTVVDDPKLLPSWFTLE*

>110578|jgi|CYP540B36-fragment1|[Trichoderma pleuroti TPhu1]Triple1
MELEVSTSSDFEDLQDLAASHFAIVEPHADVLAADGPIVISIDGGAVREIPGPKGLPYLGNFTQIYPNHLGHHQRLFETY
GKLSAVTTFASLKGTLYTRSIWEMLESSLVAQTLRVGVQNHKFFPPALGPKAVKHYAPKLQDTTEGAFSVLDQLDKDGEA
WNAFPYMLKLTSQAIVKLILAKTDLILPGGYKMKKDSLVILALHHLRINSKQWDSPLRSDPDRWDTEEVETA
>114679|jgi|CYP561J2-fragment1|[Trichoderma pleuroti TPhu1]Triple1
LFNFTTFDVIGHLTHSKSFDCLENGSHPWISEFFRGFRGRSYAHFLSQVPFAFEIVKGLHLIRDINNNEKDKNDSVERTI
ERINLGDYAIEGYRDFTSYMLKKNHDGESSFAGLGLLASATILIGAGAETTAATMSALIFYLGITPTAYKRLVEEIRSAF
DSEESITITSTQQLEYLHACIEESLRVYPPINETPPRVCPGDTIDGKYVPRGTAITVFQEVTYHNPEHFAEPDSYIPERW
LPKSHPFYDAKFNNDNRAVFKPFSYGPRDCIGKNLAYSEMRLTLSRMLYRFDVELVPGQENWHSAQRTFMAWERRPLNIY
LKHR*

>116648|jgi|CYP5789A-fragment1|[Trichoderma pleuroti TPhu1]Triple1
MLSQPAKALIRLVRKLEACVDDVIQKGPDMDKSRICLLERINNNKHEQDEMFRDRLLQEAEQFIVAGSETTGHTLAVTTF
YILQDINVQEKLRQELLNADIVFDDNLEIAKLQALPYLSAVITEGLRFSHGVDSRLPRINKSSEVQYKQWRIPAGVPISM
TSRLHHEDARLFPEPYKFSPDRWLQADSKNLKKYLSPFGHGSRICPGMHLALYEIHIAIAYIFTHYTVINSDTTEDDLVS
KHDLGAPFPKQDSKGLQVTLRARVPE*

>116820|jgi|CYP5794A1-fragment1|[Trichoderma pleuroti TPhu1]Triple1
MQKYGTEKFNDYIARHGRSGDRIDLLTKLIAGSKDYGPLDDNEIINEMTNLIFAGTDTTSNTLTYMFYELAKHSQWQRQL
QTELDEAALGEVPEYKDVMKLRVLDAIIHETLRLHPAAPASLQQLAPSEGGAVVDGIVIPQNVSL*

>117351|jgi|CYP620B-fragment1|[Trichoderma pleuroti TPhu1]Triple1

MFPQVQEKAQEEIDKLIGTSPTRLPRLDDQERLPYTSAIVKEALRWFPIVPVPTAHITNEDIIYDGYRIPKGAVLRPSVW
WFLHDPQTYPDLFRFSPERFLEPRNEPDPSEAFSYGRRICPGWYIADDSLFLTIARLLATFNISKAVDEQGIQVEPRVEY
MPGLVTRPAIFPFSITVRSEKHEELIKSIEVDHPWEKSDADLLESGDDMMTCK*

>112140|jgi|CYP684L1-fragment1|[Trichoderma pleuroti TPhu1]Triple1
MSDVYHILLAPSYLFAGCCGVGTALCLLGHYIRDALSQVLGPWYTKWTFLVIKYHWLKGNRARYQHALHLTYGPLVRLTP
NEVSVTNILAVKKIYNARETYRKVSWYIEDYEGEKSGYTKDLETLGYLGAVRSAFPTLISMAKYFPIPFFTRPFRATRNM
IRYSEESIARYRNLLDSDPMNVKWTLLTKVFKDRDKDALTPVEQRTNTSGYIVAGSDSTAVTLTYLVCSVCRNPTVRAAL
LKALRSLPDGCNASHLRDLSYLNQVIGETLRLYSGIQSSLPRHVPEGGDHVAGYWLPGGTSICAQAYSMYRIASVFPNPD
VFDPSRWASPTRGMKDSFMPFGNGSQICIGLHLAWIELRCATARFFLTYPEAKLSTLEGFCNEDMVPKVFFFEEPKAERC
LIQRC*

>CYP587E1-Fragment|[Trichoderma pleuroti TPhu1]Triple1
MLIPELIDEIMVFNDLLGKMAGTSGQWGNVFQLEERTTNLTFDVILRATMDERLHEQINT
LGSLLKQALITLSRTLAETGGEAPDQRSVDAILANLKLFLFAGHDMTSSTICWMFKLLQD
NPDCLSKLREELNKALRFYPLASTVRQGEKGFFLTASGSDLRYPTEGTAIHDVPSVIQLD
EHVWPRANEFLPERWIAAQGDPLHPNKDAWRPFSMGLRNCIGQELAMVEVKLVAALVCRE
FDIQEAWDKWDVKQGLMKPKEMVDGQRLYGCGQTVQHPKDGMPVYVRRLYA

>59906|jgi|CYP5824A-fragment1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MHNISIKIMYTHLYPLLNSAAASGAQADALDISYRLCSDYISSFLLGYGNGTAYLSKEQSFIDEWRFHYDNYSCNECFFP
QEIPLLYNLLKTVGIDLLPRSYWASKKFLETWLRNMESKADKTILQREEMGKPIPPENQPVVYEAIKLAVEKDSPHLDEQ
AKQAEIGSEMFDHICLVLSYTFWYLAQNPHAQRRIREEIIEAGIDLTSAPKLADYSTNLSNALPVALGKLEFLEAVIHES
LRMRPTSTPLPRITPSDRAVSIAGIDNIPPNTRVNAFQCHEVYPCRHLFQF*

>151227|jgi|CYP68V-fragment1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
WDGICPFNRRQVDGQENTAQPVTTSPNHLTFRHRKHTYPGRFFTSNEIKMVLVHVLLKYNLRLHNRQPEI*

>205975|jgi|CYP5696A-fragment1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MSFTIQVLVGAFIVLPVATLLYSVLHYFIDTHHLRRFPSPSLAAAFSPLWMIWHNAYGKKYLAPDMAHQKLGPVLRVGPK
TLSFSGPEAYKDIYGHGSSILKDIFYDNLANGNPPMGDATNRQLHSIKRKNLSSIFSAKNILSMEPQVTSSVEELLAAIR
IKLNGGALSNKDNHVVLEGVFDIQPWLNMFSYDVISKLLWSSSYGFLKCGSDEYDIDFFSFFPTQKTKKSPIPMELPELI
AECGTFLNAGK*

>223842|jgi|CYP550C-fragment1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MTGNNTNGSGLHPFALYRLYAWTIRRIAERGQLLHVFVYGSLPTANHRVRLSRLSHECPLPESSLLEIFRLVEELTSIRN
ASKPMKVPDGNYEHHLKLGTWLSTPQTLLQSDTSIFPDPSTFIPDRFIETDKETGSRVARYGELEPWGSGSAVCRGRTFA
EKEFMDIAACFITLWDMEKMPKAHGSSRV*
>29262|jgi|CYP655B-fragment1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MFCAKGDVVHCNRYLMHRDPDYWGEDADEFRPERWADVRPLWHFVPFGGGPRICPAHILVATESAYALTRFCQRFKTLES
RDDRPYVPVMRAGPSNLHGVQVSVTPW*

>191659|jgi|CYP526-fragment1|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
MVIAGHDSMSSTLPWAVKYLADHQDAQQRLRKSMHAGYAKAFSEGYTPTTAEITGISIPYADAIMGEVLRFSTVVSFGSR
QATRDTTVLGRRIPKGTVVIYLKNGPSFFTKGYDIDESIRSETSKQEENRIKKDTGGNEIYDPNAAPMSTFGLGPRDCFG
KKLAYLEFRLLLTMIVWNFELQKCAGELSSYEGWYKTFVVPWQCYVRPNKIIR*

No hits

>17254|jgi|xxx|[Caulochytrium protostelioides ATCC 52028 v1.0]Caupr1
MHPKRASSVTVDAGSSTLPRGAARPEPSADTPPVASLTVIPAAAAAAAAAAAAAHRPLPRRAAPRPRRYSARPTMALASAH
ALRRAGHSMSRRSVLHAAVCHLRALPVRLAAPTAGAPAGRGRGLATPSAASPAAAAETTAALPAEALLYDKTNTRVFPRI
TSAEPCSPYDHASSAAGFLVGVDAALPGYVLKNAVALGDAAHVVAQYEAARHAAGELARLTASEFATLLSWIGARRVHVN
SPTAAVALARQMHADAMAVCPDDASVHAALITATAARGASDFALRFLRTTLAASSKTALLLPDGVETVAPLLTAALALLS

>19556|jgi|xxx|[Clonostachys rosea IK726]Cloros1
MADYEKNGVQNGEKSKAKVTTAAAVNPARKHDNQPAPLSSAAAPKKPGLLASVKEMRVASSRPLPTEMGDGSYRQIVNRP
TLRDDVGRLTKRDYKTLLDIVKGKLKGETQQDDKTMIMERTIQLVAALPNHSRTQEKLTNSFIDKLWNSLDHPPLLYIGP
ESKYRRPDGAYNNPTLPFLGARGHTYSRSCKPKHAQLGAQPDPAAIYEAVMARDGFRKNPNNTSSILWYWATIIIHDLFW
TDQRDPNKNNTSSYLDLAPLYGNTQEEQDSIRTFKSGHLKPDCFADKRLIGNPPGVCILLIMFNRFHNYVATNLAEINED
LRFPTPTPGMSDEEAEAVWKKHDEEIFQTARLVTSGLYINITLIDYVRNIINLNRCDTAWTLDPRQEMGVAVGTNNGSEA
GVGNVVSAEFNLCYRWHSCISEPDEKWIEDFYSELLGGGNYEEMDMRALMGAMKAFEQSIPKDPAERTFSGFKRGPDGRF
NDDQLMEALAQAIESPGGSFGGRNVPRCMKPVEILGIMRGRRWNLASLNEFRKHFGMKAYDTFEEINSDPVIADGLRNLY

QHPDNVELYPGIVAEERKEPMVPGVGIAPTYTISRVVLSDAVALVRGDRYYTTDYHPGNLTNWGYKEVDYDLSVNHGCSF
FKLFMRGFPNHFKSDSIYAHYPMVTPDENRRIMKSLNREHLFSWDRPTSHINRVNVTTYGGAKYILENVDKYKIDWQSSF
GSLLGDKPLHGNSRKALESLLYRPEWKKSVKTFYSAIAETLLAEKSYKLGAQTQIDLVRDFGNLAHTHFVARLFNLPIKD
KQNPKGLFSELELYQTLAHIFVGVFYDSDPAKSFPLRQATKEAAQKLGRAIELNVKLASKLGMRGLYTPKHKNDPLEAYG
VNLIKGLSKAGVDPHEITYGEILPTAGAMVPNQAEVFAQAVDFYLSPEGAPHVNEIQRVAAQPSSDETDDTLLGYALEGV
RKAGTTGLYREAAGNDTILEDDGRQVNIKTGDKVFISFADAANDAAHFPQPERIDPSRPRDSYIHYSAGPHAGLGRDISQ
VALTELFRAVFRKKGIRRAVGPQGELKKIPQPGGFSVYLTEDWGSTFPFPTSMKVAWDGQ*

>28131|jgi|xxx|[Thamnocephalis sphaerospora RSA 1356 single-cell v1.0]Thasp1
MQLIVPEALSKFWQSLPLDKFLQSLKPLEELARRTTPKQAVAALVLAYAAHFAVFRVIFAPLRHIRGPAYTRFSNLPFIS
SVKNGRQIYDYCEARKKYGKVARMGANIVSVVDPAALKIIYNSHNFRKGAVYDALDWFGPNIFSARDPEFHKQRRRAVYP
SYSPAAVNAMEPVLYETGPRALAAYIEQYAEAGQVFDIMQELQLMRIDEVGATTFGQKFDLIHQRTHPLLGWVTQTLHLG
MLQMWFPLLRRIPVPQIFSSHYRSRANLRAFVVSTIEQRRRVMEKKRDTLQVLLDAQDTDGQKLLGEQELVSELAIQLVV
GNFPVSLTLLWTINQLLENPDTLKQLMYELDHALPDPNNITDNKLVHLPYLDAVIRESMRHRPVMAEGLPRVVPKGGCQI
SGQFIPEGTVVFVSAYALHHEEELWHDPETFRPERWLGPAEQVNEIKKAYIPFSTGVRSCAGQRFAWMLMRLTLATLLRR
FTFEAMPNQNMKPAMAVFMVPAGGKYMVRATKRA*

>600332|jgi|xxx|[Tremella mesenterica Fries v1.0]Treme1
MDMKHLRSIGSEIWAKIGQHDWTKEDAWMTVGIGFGTYIFIWFFRYLKVHYRVRGLKKINSAIEVFEAGHRWNLPHIPFL
LPAKDFTLKEPWKMQKRRRHSSSQEEYEHAKSDLIAYTQATTPGYAVYSTSNPQVAQKISTNVLTFGKPIHVFRYRAINI
FGLQLTSTQSGPEHRRHRNVVKGCFGEEVMMTAWDKAVECLGDMYVAEGLEDGGVLDNVRLAMYKLTLLIIGAAGFGVKF
PWKVPETHGEILPFYEALHLVEVNITAELLVPLWLLENFPLSSVRRLGKAQRSLVHHFKNMIETRRAVLKAEQEGLNPGE
KIKPPSDLLGAIVASQMSVEAEEKLRGGSRQVGLTAEEQVATVWIFILAGHETSGNMLAFTLGYLSVYPEWQEKIFKEIE
EACHGAYPTYREVNNMPSILACVFESLRLRDLAMTLPKLAMEDTSIPYTTWDDHGNTTHHIHPIKKGDHIVIDGPAVGHN
PFFWRDTQTWDPTRWFGGEGVINKNLSISFSAGQRQCIGKRFAEVEMTAVLASIVKKFRFEPIRNKDETDEELKLRMTDG
YEVLTLTPNNFSIRFIKREGV*

>28212|jgi|xxx|[Trichoderma arundinaceum IBT 40837]Triaru1
MESLFVALASLASAVLVLRNTDASVPLAAGFGVSLFLLGKIAFKIGRALIVPFYFSELRNVPGPKDNQFLVGQAIRLLKA
PGPNDLYLEWVRKWPDAPFIRHLNWGNSEVLLVNNLEAAREVLQTHAYSFVKPSFFLKLVGEMMGIGILFSVGEQHKQMR
RIMAGPLSKPSVRKMLPIFQDKARELSATFDEAIEGEDKGVVEASAHATIVESLFSRTAFKVISTALLSREISEFRSKSS
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>31142|jgi|xxx|[Trichoderma arundinaceum IBT 40837]Triaru1
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>53084|jgi|xxx[Trichoderma asperellum CBS 433.97 v1.0]Trias1
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>499226|jgi|xxx|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
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>499226|jgi|xxx|[Trichoderma harzianum CBS 226.95 v1.0]Triha1
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>1112860|jgi|xxx|[Trichoderma citrinoviride TUCIM 6016 v4.0]Trici4
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>74949|jgi|xxx|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2

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>205377|jgi|xxx|[Trichoderma virens Gv29-8 v2.0]TriviGv29_8_2
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>107219|jgi|xxx|[Trichoderma pleuroti TPhu1]Triple1
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