

# In Silico Analysis of Fungal and Chloride-Dependent $\alpha$ -Amylases within the Family GH13 with Identification of Possible Secondary Surface-Binding Sites

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1 AAB95446 *Pennicillium polymyxa*  
2 CA819465 *Thermactinomyces vulgaris*  
3 BAD06003 *Aspergillus awamori*  
4 BAD06002 *Aspergillus awamori*  
5 AAF14264 *Aspergillus flavus*  
6 BAD01051 *Aspergillus kawachi*  
7 BAA22993 *Aspergillus kawachi*  
8 BAA64850 *Aspergillus niger*  
9 AAF17100 *Aspergillus nidulans*  
10 PS6271 *Aspergillus niger*  
11 CAK44871 *Aspergillus niger*  
12 CAK40249 *Aspergillus niger*  
13 CAK41088 *Aspergillus niger*  
14 CA331218 *Aspergillus oryzae*  
15 BAO12555 *Aspergillus niger*  
16 ABE00431 *Aspergillus tubingensis*  
17 BAA12010 *Cryptococcus sp. S 2*  
18 ABG48762 *Fusicoecum sp. BC04124*  
19 AAO12212 *Lipomyces kononenkoae*  
20 AACA9622 *Lipomyces spencerartinsiae*  
21 AAF175021 *Lipomyces starkeyi*  
22 AFD64461 *Melanconium*  
23 ABE77529 *Ophiostoma floccosum*  
24 EPS26265 *Penicillium oxalicum*  
25 BAA04285 *Phanerochaete chrysosporium*  
26 BAW15173 *Pholiota microspora*  
27 BAF98616 *Pichia burtonii*  
28 AGJ52081 *Rhizomucor pusillus*  
29 ADO28123 *Rhizopus oryzae*  
30 AAD80242 *Saccharomyces cerevisiae*  
31 BAF76467 *Saitozyma flava*  
32 CAB11471 *Schizosaccharomyces pombe*  
33 CAB40006 *Schizosaccharomyces pombe*  
34 CA334162 *Schwannomyces occidentalis*  
35 CAAS1912 *Schwannomyces occidentalis*  
36 ABA03110 *Sclerotinia sclerotiorum*  
37 AAO33110 *Sclerotium amyloclavus*  
38 BAG69580 *Trichoderma viride*  
39 CAJ21046 *Valisaria rubroscia*  
40 AXMK66236 *Alicyclobacillus sp. 18711*  
41 AAO11675 *Alkalimonas amylolytica*  
42 CAL14744 *Anoxybacillus flavithermus*  
43 ABW07373 *Bacillus subtilis*  
44 ABA22149 *Bacillus amyloclavus*  
45 ABB68223 *Bacillus cereus*  
46 CAD26699 *Bacillus halmapalus*  
47 AAS22226 *Bacillus licheniformis*  
48 AEM05860 *Bacillus licheniformis*  
49 AAR00598 *Bacillus megaterium*  
50 AGR05141 *Bacillus paralicheniformis*  
51 BAF69734 *Bacillus pasteurii*  
52 AAA22231 *Bacillus sp. 707*  
53 BAF03567 *Bacillus sp. JAMB 204*  
54 CSC39917 *Bacillus sp. KSM K38*  
55 ABA18785 *Bacillus sp. MK 716*  
56 AAA63900 *Bacillus sp. TS 23*  
57 BSW7262 *Bacillus sp. YX YX1*  
58 AAO0567 *Cytophaga*  
59 AACT7494 *Escherichia coli*  
60 AF241193 *Exiguobacterium sp. DAU5*  
61 AAS22235 *Geobacillus stearothermophilus*  
62 ABX83871 *Geobacillus thermocentrificans*  
63 AFC87893 *Geobacillus thermoleovorans*  
64 ACT170573 *Bacteriosthelium orearii*  
65 BAC02077 *Neisseria meningitidis*  
66 AAS27110 *Salmonella typhimurium*  
67 BAA24178 *Streptococcus equinus*  
68 AAY97431 *Streptococcus equinus*  
69 AANS9233 *Streptococcus mutans*  
70 CDC36060 *uncultured bacterium*  
71 AAF73597 *Vibrio alginolyticus*  
72 ABG62854 *Hydrophaga*  
73 ABB11196 *Parasaccidodiscus brasiliensis*  
74 BAW15172 *Pholiota microspora*  
75 AAB60935 *Aedes aegypti*  
76 AAB60934 *Aedes aegypti*  
77 AAO33322 *Aedes atropalpus*  
78 AAO33323 *Anopheles merus*  
79 AAN77138 *Anopheles merus*  
80 AAN77139 *Anthonomus grandis*  
81 AAN71355 *Asterias rubens*  
82 AAY23288 *Blattella germanica*  
83 BAB72257 *Callosobruchus chinensis*  
84 AAO33050 *Culex tarsalis*  
85 AAF20998 *Drosophila virgifer*  
86 AAF20999 *Drosophila virgifer*  
87 BAB91544 *Drosophila melanogaster*  
88 BAB91544 *Drosophila bocki*  
89 BAA04582 *Drosophila erecta*  
90 BAB91509 *Drosophila kikkawai*  
91 BAAS9437 *Drosophila leontia*  
92 BAAS9441 *Drosophila lini*  
93 BAA54583 *Drosophila mauritiana*  
94 AAN91479 *Drosophila melanogaster*  
95 CAAB28638 *Drosophila melanogaster*  
96 AAB26839 *Drosophila pseudoobscura*  
97 BAA04585 *Drosophila sechellia*  
98 AACA6463 *Drosophila virilis*  
99 AAG60011 *Drosophila yakuba*  
100 CAH76926 *Phaedon cochleariae*  
101 PS5634 *Tenebrio*  
102 AAO33708 *Tribolium castaneum*  
103 AAF73435 *Zabrotes subfasciatus*

[illegible]

24_ABL09312_Acarus_siro	MQMKFDDIAA-----ECERFLGPK-GYGGIQLSPVNEHAVLG-----N----	RPWYELYQP-VGYK-IQ-SRSGN
24_BAB85635_Anguilla_japonica	FEWKNADIAA-----ECERYLAPN-GFAGVQISPPSESIVLQ-----NFW----	RPWYERYQP-ISYN-LC-SRSGT
24_AAL37207_Crassostrea_gigas	FEWKWSDIAA-----ECERFLGPK-GYCGVQISPPSENRIVT-----NPN----	RPWEERYQP-VSYK-LV-TRSGN
24_AAL37183_Crassostrea_gigas	FEWKWSDIAA-----ECERFLGPK-GYCGVQISPPSENRIVT-----SPN----	RPWWEERYQP-VSYK-LV-TRSGN
24_AAD38942_Dermatophagoides_ptononyssinus	MEWKYDDIGD-----ECERFLGPK-GYGGVQISPPNEHAILD-----R----	RPWYERYQP-VSYD-IR-TRSGD
24_AAD38943_Euroglyphus_maynei	MEWKYDDIGD-----ECERFLGPK-GYGGVQISPPNEHAILD-----R----	RPWYERYQP-VSYD-IR-TRSGD
24_AAC60246_Gallus_gallus	FEWKNADIAL-----ECERYLAPN-GFAGVQISPPSENIVIT-----NPN----	RPWWEERYQP-ISYK-IC-SRSGN
24_ABO26610_Haliotis_discus_discus	FEWKNWSDIAK-----ECERFLGPK-GYCGVQISPPSENRIVVT-----NPN----	RPWWEERYQP-VSYK-LQ-TRSGS
24_BAM74656_Haliotis_discus_hannai	FEWKNWSDIAK-----ECERFLGPK-GYCGVQISPPSENRIVVT-----NPN----	RPWWEERYQP-VSYK-LQ-TRSGS
24_AAA51724_Homo_sapiens_pancreatic	FEWKNWVDIAL-----ECERYLAPK-GFGGVQISPPSENVAIY-----NPF----	RPWWEERYQP-VSYK-LC-TRSGN
24_AAH63129_Homo_sapiens_salivary	FEWKNWVDIAL-----ECERYLAPK-GFGGVQISPPSENVAIH-----NPF----	RPWWEERYQP-VSYK-LC-TRSGN
24_AAA37221_Mus_musculus	FEWKNWVDIAK-----ECERYLAPN-GFAGVQISPPSENIVVH-----SPS----	RPWWEERYQP-ISYK-IC-SRSGN
24_AAA37230_Mus_musculus	FEWKNWVDIAK-----ECERYLAPK-GFGGVQISPPSENIVVH-----NPS----	RPWWEERYQP-ISYK-IC-SRSGN
24_H2N004_Oryzias_latipes	FEWKNADIAA-----ECERFLGPK-GFAGVQISPPNEHILVS-----SPW----	RPWWEERYQP-ISYN-LC-SRSGG
24_CAA68065_Pecten_maximus	FEWKNWSDIAK-----ECERFLGPK-GFGGVQISPPSENRLVN-----N----	RPWWEERYQP-VSYK-LQ-TRSGS
24_CAA54524_Penaeus_vannamei	FEWKWSDIAA-----ECENFLGPK-GFAGVQISPPNEIVEYQG-----DVK----	RPWWEERYQP-VSYK-LV-TRSGD
24_CAB65552_Penaeus_vannamei	FEWKWSDIAA-----ECENFLGPK-GFAGVQISPPTECLDAYQG-----DVQ----	RPWWEERYQP-VSYK-IA-SRSGD
24_AAF65827_Pseudopleuronectes_americanus	FEWKNADIAA-----ECERYLGNP-GFGGVQISPPNEHIMLD-----NFW----	RPWWEERYQP-ISYN-LC-SRSGS
24_AAA40725_Rattus_norvegicus	FEWKNADIAK-----ECERYLAPK-GFGGVQISPPSENILIN-----NFS----	RPWWEERYQP-ISYK-IC-SRSGN
24_AAH89226_Rattus_norvegicus	FEWKNWVDIAK-----ECERYLAPN-GFGGVQISPPSENIVVN-----SPF----	RPWWEERYQP-ISYK-IC-SRSGN
24_P83053_Struthio_camelus	FEWKNADIAL-----ECERYLAPY-GFGGVQISPPSENIVIT-----NFX----	RPWWEERYQP-VSYK-LC-TRSGN
24_AAF02828_Sus_scrofa	FEWKNWVDIAL-----ECERYLGNP-GFGGVQISPPSENIVVT-----NPS----	RPWWEERYQP-VSYK-LC-TRSGN
24_CAC87125_Tetraodon_nigroviridis	FEWKNWVDIAA-----ECERFLGPN-GFAGVQISPPSEHILID-----SPW----	RPWWEERYQP-ISYN-LC-SRSGS
32_AAA21016_Aeromonas_hydrophila	FEWKFNIDIAN-----ECETVLGPK-GFGGVQISPPAEHKQ-----GS-----	QVWWTIVYQP-VSYKNFN-SFGGC
32_BAA22082_Bacillus_sp_195	FSWTNNAIAR-----ECTENLGPA-GYGYVQTSPPQEH-----QGAA-----	WWTHYQP-VSYK-IE-SRFGT
32_AAY89036_Bifidobacterium_breve	FQTNWNSVAK-----ECTEAGPE-GYGYVQTSPPMESI-----QOTE-----	WWTSYQP-VSYK-LD-SKLG
32_CAB92963_Halomonas_meridiana	FEWKWSDIAK-----ECENNLGPK-GFAGVQISPPQEHQ-----GD-----	AMWTRYQP-VSYQ-LE-SRSGS
32_BAJ52728_Kocuria_varians	FQWKNWSDIAK-----ACEQTLGPA-GYGYVQTSPPQEH-----TGDQ-----	WWHYHQP-VSYQ-LE-SRLGT
32_ARG25402_Microbacterium_aurum	FSYTWNKIAS-----ECEDTLGPA-GYGYVQTSPPQEHAMVAGEGNF-----	WWIYYQP-VSYK-LE-SRSGT
32_CAA41481_Pseudoalteromonas_haloplanktis	FEWKNWQDIAK-----ECEQTLGPK-GYAAVQISPPNEHIT-----GS-----	QWWTYQP-VSYE-LQ-SRSGN
32_AAA86835_Pseudomonas_sp_KFCC10818	FEWKNWQDIAK-----ECEFLGPK-GYAAVQISPPQKQSD-----NF-----	AWWSRYQP-VSYA-FE-SRSGN
32_AAA96317_Streptomyces_albus	FEWKNWQDIAK-----ECTSTLGPA-GYGYVQISPPAEHI-----QGSQ-----	WWTSYQP-VSYK-IA-SRLGT





AABA5446 Paenibacillus polymyxa  
AACA4946 Thermoactinomyces vulgaris  
BAD06003 Aspergillus awamori  
BAD06002 Aspergillus awamori  
AAFI4264 Aspergillus flavus  
BAID01051 Aspergillus kawachii  
BAIZ2993 Aspergillus oryzae  
EAA64850 Aspergillus nidulans  
AAFI7100 Aspergillus nidulans  
PS6271 Aspergillus niger  
CAKA4871 Aspergillus niger  
CAKA0249 Aspergillus niger  
CAKA1088 Aspergillus niger  
CAK31218 Aspergillus oryzae  
BAI01255 Aspergillus shirousami  
ABEB0431 Aspergillus tubingensis  
BAL12010 Cryptococcus sp\_S\_2  
ABGA4762 Fusicoccum sp\_BC04124  
AQUL2212 Lipomyces kononenkoae  
LAW514922 Lipomyces kononenkoae  
LAW514923 Lipomyces kononenkoae  
LAN75021 Lipomyces starkeyi  
AFDS4462 Malbranchea cinnamomea  
ABF72529 Ophiostoma floccosum  
EPS26265 Penicillium oxalicum  
ABQ42285 Phanerochaete chrysosporium  
WAF9616 Phialota burtoni  
AGJ52081 Rhizomorcy pusillus  
ADL28123 Rhizopus oryzae  
ADD80242 Saccharomycopsis fibuligera  
AST67447 Saitozysa flava  
CABI11471 Schizosaccharomyces pombe  
SCHI0062 Schizosaccharomyces pombe  
CCSA3162 Schwanniomyces occidentalis  
ASAI51912 Schwanniomyces occidentalis  
ACN28436 Sclerotinia sclerotiorum  
CAO30110 Thermomyces lanuginosus  
BAG65980 Trichoderma viride  
CAJ21046 Valrharia rubricosa  
WAF9616 Walcottella sp\_18711  
AQUL675 Alkalimonas amylolytica  
CAL41744 Alicyclobacillus flavithermus  
AEW07376 Bacillus acidicola  
AAAZ22191 Bacillus amyloliquefaciens  
ABY86223 Bacillus cereus  
WAD2658 Bacillus cereus  
AAD22262 Bacillus licheniformis  
AEM05860 Bacillus licheniformis  
AAKO0598 Bacillus megaterium  
AGN35141 Bacillus paralicheniformis  
ABR68734 Bacillus\_sp  
AAAZ2231 Bacillus\_sp\_707  
WAF93567 Bacillus\_sp\_DAMB\_04  
CAC39917 Bacillus\_sp\_KSM\_K38  
AAB18785 Bacillus\_sp\_MK\_716  
AAG63900 Bacillus\_sp\_TS\_73  
ABW87262 Bacillus\_sp\_YX\_YX1  
AAF00567 Cytophaga\_sp  
AAC74994 Escherichia coli  
EFZ41193 Exiguobacterium sp\_DAUS  
AAAZ2235 Geobacillus stearothermophilus  
ABXB3871 Geobacillus thermodentificans  
AFCE7883 Geobacillus thermoleovorans  
ACL70573 Halothemotrux oreani  
CAQ30277 Nostoc sp\_FOC\_T719  
WAF71510 Salinisphaera typhimurium  
BAR24178 Streptococcus equinus  
AAAP97431 Streptococcus equinus  
AES59233 Streptococcus mutans  
CDC30600 uncultured bacterium  
ALP73597 Vibrio alginolyticus  
BEG62854 Histoplasma capsulatum  
BSU11196 Histoplasma capsulatum brasiliensis  
BAMI5172 Phialota microspora  
AAAB86093 Aedes aegypti  
AAAB80934 Aedes aegypti  
AAAO3322 Aedes atropalpus  
AAAO3323 Anopheles merus  
WAF7136 Anopheles gambiae  
AAAN77139 Anthonomus grandis  
AAO13555 Asterias rubens  
AAAV23288 Blattella germanica  
BAB72257 Callosobruchus chinensis  
AAAO3350 Culex tarsalis  
AAP20998 Diabrotica virgifera virgifera  
CAA3243 Diabrotica virgifera  
BBAP1544 Diabrotica bocki  
BAOA4582 Drosophila erecta  
BAB91509 Drosophila kikkawai  
BAAY5437 Drosophila leontia  
BAAR9441 Drosophila lini  
BAOA4583 Drosophila melanogaster  
BAK93479 Drosophila melanogaster Amyrel  
BAAC2838 Drosophila melanogaster  
AAC46839 Drosophila pseudoobscura  
BAOA4585 Drosophila sechellia  
AAC46463 Drosophila virilis  
BAG60011 Drosophila yakuba  
CBM7656 Drosophila yakuba  
WP5634 Tenebrio molitor  
AAAO3708 Tribolium castaneum  
AAP73435 Zabrotes subfasciatus  
ABLO9312 Acarus siro  
BARB8563 Anguilla japonica  
AAL37207 Crassostrea gigas  
BAAT37193 Crassostrea gigas  
AAD38942 Dermatophagoides pteronyssinus  
AAD38943 Eurygllyphus maynei  
AACG0246 Gallus gallus  
ABQ26610 Haliotis discus discus  
BMH74659 Haliotis discus hannai  
BAAT7974 Haliotis discus discus  
AAHG3126 Homo sapiens salivary  
AAAK37221 Mus musculus  
AAAK37220 Mus musculus  
ZHND04 Orzyzias latipes  
CAAG6065 Pecten maximus  
CAAS4524 Pennaeus vannamei  
CAAG6552 Penaeus monodon  
AAF58572 Pleuropleuronectes americanus  
AAAO4725 Rattus norvegicus  
AAAH8828 Rattus norvegicus  
BP3053 Struthio camelus  
AAF02828 Sus scrofa  
CAC87121 Tetraodon nigroviridis  
BAAT37193 Tetraodon lineatilis  
BAAT22082 Bacillus\_sp\_195  
AAAY89038 Bifidobacterium breve  
CAN92363 Halomonas meridiana  
BAJ52708 Kocuria varians  
AGZ5402 Microbacterium aurum  
CAAT41491 Microbacterium haloplanktis  
AAAG6835 Pseudomonas sp\_KFCCL0818  
AAAG96317 Streptomyces albus

[illegible]

CSR-I

[illegible]

RT-AFQNMMINTCHTAGVKRVVV	DS
RA-AFKSMVDTCHAAQKRVVIA	DS
RD-AFASVMVSACHAAGKRVVIA	DS
RA-AFKSMVDTCHAAQKRVVIA	DA
RA-AFKSMVDTCHAAQKRVVIA	DS
RT-AFKSMVDTCHAAQKRVVIA	DS
RD-QFAMVMTCHSAGGVKIT	DA
RA-AFRSMVMTCHAAQKRVVV	DS
RT-AFRNMIDTCHAAQKRVVV	DS
RA-DFIDMVNTCREAGKVIYV	DA
RA-DFIDMVNTCREAGKVIYV	DA
RS-QLQNMMINTCHSAGKRVVIA	DT
RA-QFQNMISTCHSAGGVKIT	DT
RA-QFQNMISTCHSAGGVKIT	DT
RA-QFQNMVTVCHTAGKRVVIA	DT
RQ-QFQNMVVSACHAAGKRVVIA	DT
RS-QFANMVSTCHSAGGVKIT	DT
RD-QFASMITTCHAAQGVVIT	DT
RT-SFANMITTCHAAQGVVIT	DT
RS-QFQSMVSTCHSAGGVKIT	DT
RD-QFQNMISTCHTAGKRVVIA	DT
RD-EFANMITTCHAAQKRVVIA	DT
RS-QYKNMIDTCHAAQGVVIA	DT
RG-QFQKMI SACHGAQKRVVIA	DT
RD-QFQNMIDTCHAAQGVVIT	DT
RT-QFANMIATCHAAQGVVIA	DT
RS-QFANMITTCHAAQKRVVIA	DT
RT-SFANMITTCHAAQGVVIT	DT
RD-EFANMITTCHAAQGVVIAGIIPRSFYHSDSIATKPV	DT
RS-QYQNMMINTCHAAKRVVIA	DT
RD-QFASMITSTCHQAQGVVIT	DT
RD-EFANMITTCHAAQKRVVIA	DT
RA-QYQNMISTCHSAGGVKIT	DT
RS-QFQDMVSACHSAGGVKIT	DT
RA-QFQNMISTCHTAGKRVVIA	DT
RQ-QFQNMISTCHSAGGVKIT	DT
RD-QYTNMINTCHSAGKRVVIA	DT
RQ-QYQNMVTTCHAAQKRVVIA	DT
RA-QYANMITTCHAAQKRVVIA	DT
RD-QFANMITTCHAAQKRVVIA	DT
RT-QYANMITTCHAAQKRVVIA	DT
ET-QYQNMIMKTCEAAGKVIIA	DT
RD-QYQSMITQCKSAGGVKIT	DT
RQ-QFANMI SACHSAGGVVIT	DT
RA-QFANMVNTCRAAGVSI IIA	DT
RD-QYTNMINTCHSAGKRVVIA	DT
RD-QFQSMITCHAAQKRVVIA	DT
RS-QFANMITTCHAAQKRVVIA	DT
RT-QFQNMISTCHSAGGVKIT	DA
RA-QFANMIATCHAAQGVVIA	DT
RA-QFASMITTCHAAQKRVVIA	DT
RA-QYQNMISTCHAAQKRVVIA	DT
RS-QFQNMISTCHSAGGVKIT	DT
QA-QFQSMI SACHSAGKRVVIA	DT
RS-QFASMVTTCHAAQKRVVIA	DT
RA-QFQSMIETCHAGGLVIA	DT
RD-QYANMINTCHSAGKVI IIA	DT
RA-QFASMITTCHAAQKRVVIA	DT
RD-QFQNMISTCHSAGGVKIT	DT
RA-QFQNMINTCHSAGKRVVIA	DT
RD-QYADMVSRCNAGVGGI IIA	DT
RD-QYTNMVSRCNAGVGGI IIA	DT
RD-QFQNMVSTCATAGVGGI IIA	DT
RD-QFQSNMVSTCHNAGKRVVIA	DT
RS-QFQNMIMNACHSAGGVVIT	DT
RA-QYQSMIETCHSAGGVKIT	DT
RA-QYQSMIETCHSAGGVKIT	DT
RD-QFQNMVSTCHNAGKRVVIA	DT
RT-QFQNMIDTCHNAGKRVVIA	DT
RS-EFANMVTTCHNAGGLVIV	DT
RT-QFATMVATCHSAGKRVVIT	DT
RE-QFASMITQCSAAGGVVIA	DV
RD-QFANMVSTCHSAGGVKIT	DT
RD-QFANMVSTCHSAGGVVIT	DT
RE-QFASMITRCHAAQKRVVIA	DT
RD-SYKNNMIDTCHAAQKRVVIA	DT
RA-QFAMMVTTCSAGGVVIT	DV
RQ-QFQSDMIQACHSAGGVVIT	DT
RA-QFQNMISTCHSAGGVKIT	DT
RA-ALASMIETACHKRVKRVVIA	DA
RS-QYQAMVQTCHAAQGLVIA	DT
RA-SFRNMVDTCHAAQKRVVIA	DA
RA-QFQNMINTCHAAQKRVVIA	DT
RQ-QFQNMVNVCHNAGVSVIT	DT
RD-QFANMVSTCHAAQGVVIT	DV
RE-QFQNMISTCHSAGGVKIT	DV
RV-QFQNMVTCCHDAGKRVVIA	DS
KE-ELASMVSTCHDAGVSVIT	DI
RD-EFASMIQCCHDADQVIV	DT
RE-QFQNMVNVCHNAGVSVIT	DT
RD-DLRNMIDTCHAAQKRVVIT	DT
RE-EFASMIETCHNAGKRVVIA	DA
RE-QLATIMDACHKRVKRVVIA	DA
RD-QFATMVKTCHNAGGVVIA	DT
RA-QFERMVVACHSAGKRVVIA	DT
RS-QFQNMISTCHSAGGVKIT	DT
RD-QFQNMVSCNAGQGVVIA	DT
RA-EYEMVVSACNAGKRVVIA	DA
RE-QFAMMVSTCHSAGGVKIT	DT
EA-EFASMVSTCADAGGVIT	DT
RE-EFIDMVNTCKTAGGVVIA	DA
RS-EFANMI GKCKAGKRVVIV	DT
RD-QFANMVSTCKSAGGVNIIA	DV
RA-QFANMVQACRTAGGVVIT	DT
RD-QFANMITTCHAAQGVVIT	DT
RE-QFQNMISTCHSAGGVKIT	DA
AD-QFQNMVMTCKTAGGVVIT	DI
RD-EFSSMVTTCKNAGGVVIT	DT
RD-QFQNMVVAICNAGGVVIA	DA
SD-SFQSMVDTCHSAGKRVVLS	DT
RD-EFQSMVETCHAAQKRVVIA	DI
RD-EFQSMVETCHSAGGVKIT	DT
RE-EFQSMVETCHSAGGVKIT	DT
AD-QFANMIVKSCNAGVAVLL	DT
RD-QFQRMVKECHTAGKRVIT	VD
RE-SFQSMVNTCHSAGGVKIT	DS
RE-QFQSMVNTCHSAGGVKIT	DT
RD-SFRNMIDTCHSAGKRVVIA	DT
RE-QFQNMISTCHSAGGVKIT	DT
RA-AFQNMVNTCHSAGKRVVV	DT
RT-AFQNMVNTCHTAGKRVVIA	DT
RA-SFVNVMVNTCHSAGKRVVIA	DA
RE-QFQNMVNTCHSAGGVVEA	DT
RG-FFLNMVSTCKSAGGVKIT	DI
PC-QFQNMVNRCHNAGGVVIT	DA
RE-EFADMVSTCNAGVGGI IIA	DT
EA-EFADMVQVORTSAGGVVIT	DT
EA-EFQDMVQVRCGGAGGVVIT	DV
QA-EFESMVSTCNAGAGGVVIT	DV
EA-EFQDMVQVRCASAGGVVIT	DV
EA-EFQDMIERQCGAGGVVIA	DV
RGATVQVMTCHSAGGVKIT	DT
AGASYQDILDAHAGMKRVVIA	DT
EGATYQDLINECHKKRVKI VQ	DT

DTVNHHMSAG  
 DSVINHMAAGS  
 DAVNHMAAGS  
 DSVINHMAAGS  
 DSVNHMSAGN  
 DTVNHMSAGN  
 DAVNHMAAGS  
 DTVLNHMSAGS  
 DSVINHMMAGS  
 DAVINHMTGTGSAG  
 DAVINHMTGTGSAG  
 DTLNHHMAGVDS  
 DTLNHHMAGIDS  
 DTLNHHMAGIDS  
 DTLNHHMAGVDS  
 DTLNHHMAGSDS  
 DTLNHHMAGVES  
 DTLNHHMAGVDS  
 DTLNHHMAGVDS  
 DTLNHHMAGVDS  
 DTLNHHMAGVDS  
 DTLNHHMTGMSD  
 DTLNHHMAGMSD  
 DTLNHHMAGIDS  
 DTLNHHMSGNDN  
 DTLNHHMAGVDS  
 DTLNHHMAGIDS  
 DTLNHHMAGVDS  
 DTVLNHHMTGMSD  
 DTLNHHMTGEDS  
 DTLNHHMAGVDS  
 DTLNHHMTGMSD  
 DTLNHHMSGLD  
 DTLNHHMAGVDS  
 DTLNHHMTGNAQ  
 DTLNHHMVS - S  
 DTLNHHMSGDS  
 DTLNHHMSGDS  
 DTLNHHMSGDS  
 DTLNHHMSGDS  
 DTLNHHMSGDS  
 DTLNHHMTGESN  
 DTLNHHMAGADS  
 DTLNHHMTGQSS  
 DTLNHHMAGIES  
 DTLNHHMAGIGG  
 DTLNHHMSGSD  
 DTLNHHMTGSDS  
 DTLNHHMTGSDS  
 DTLNHHMTGSDS  
 DAVLNHHMTGG - S  
 DTLNHHMTAKDN  
 DTLNHHMAGSDS  
 DTLNHHMTGVAS  
 DTLNHHMAGIES  
 DTLNHHMAGVDS  
 DTLNHHMAGIDS  
 DTLNHHMTGNAE  
 DTLNHHMSKVES  
 DTVNHHMSAQSS  
 DTVLNHHMAGS  
 DTVLNHHMAGANS  
 DTLNHHMTGESS  
 DTLNHHMTGESN  
 DTVLNHMTA - GG  
 DTLNHHMAGIDS  
 DTLNHHMAGIDS  
 DTLNHHMAGISG  
 DTLNHHMAGISG  
 DTLNHHMAGISG  
 DTLNHHMAGVDS  
 DTLNHHMAGSDS  
 DTLNHHMAGINS  
 DTLNHHMSGQDS  
 DTVNHHMAGGSS  
 DTVNHHMSGQDS  
 DTLNHHMSGIDS  
 DTLNHHMTAMDS  
 DTVLNHHMAGIDS  
 DTVLNHHMQGDS  
 DTLNHHMAGIDS  
 DTLNHHMAGTES -  
 DAVLNHHMTGSD - A  
 DTLNHHMSGQD - N  
 DAVLNHHMTGSDS  
 DTLNHHMTGAS  
 DTLNHHMAGIDS  
 DTLNHHMSGVDS  
 DTVNHHMTGXE - SG  
 DSVLNHHMTGXE - SG  
 DSVLNHHMTGXE - SG  
 DILFNHMTAQQ - NG  
 DAVFNHMTAQQ - NG  
 DTVNHHMAGIDS  
 DTVNHHMAGIDS  
 DTVNHHMAGSDS  
 DAVLNHHMTGSD - A  
 DTLNHHMSGQD - S  
 DTLNHHMTAKD - SG  
 DTLNHHMAGIDS  
 DTLNHHMSAQTS  
 DAVLNHHMSGSA - FG  
 DTVNHHMSAS - S  
 DAVLNHHMTAG  
 DAVNHHMSGAS - A  
 DTVNHHMAGVD - N  
 DTVNHHMAGTDS  
 DTVLNHHMSAQG - S  
 DTVNHHMAGISB  
 DTVNHHMAGVD - N  
 DTVNHHMTGID - G  
 DAVNHHMAGSD - S  
 DAVLNHHMSALN - N  
 DAVNHHMAGFD - N  
 DTVNHHMGFD - S  
 DTVNHHMSFL - SG  
 DTVNHHMSLSL  
 DTCNNHMSGTY - E  
 VDTLNHISATQ - G  
 DSVNHHMSAGG  
 DAVLNHHMSAG  
 DTVNHHMSARS  
 DTVNHHMSAGS  
 DTLNHHMSAGS  
 DTVNHHMSSGS  
 DAVNHHMSSGS  
 DVMNHLTGGPNSSG  
 DTVNHHMTAGS  
 DAVNHHMSGRE - C  
 DTVNHHMTANT - A  
 DAVLNHHMSAGTT - E  
 DTVNHHMSAGTT - E  
 DTVNHHMTGSS - AST  
 DTVNHHMSAGITT - E  
 DTVNHHMSAGITT - EDRRG  
 DAVNHHMSGTSG - NLFPTTVYG - KRDSQWSYYTDA  
 DTVNHHMSGTSG - GLFPTTVYG - VRDSQWSYYTDE  
 DVLNHTSBNRGR - GLFPMISRDYHLTDGVGTGNYAEYDE

[illegible]

1 AAA5446 Paenibacillus polymyxa  
1 CAA49465 Thermoactinomyces vulgaris  
1 BAD06003 Aspergillus awamori  
1 BAD06002 Aspergillus awamori  
1 AAF14264 Aspergillus flavus  
1 BAD01051 Aspergillus kawachii  
1 BAA22993 Aspergillus kawachii  
1 EAA64850 Aspergillus nidulans  
1 AAF17100 Aspergillus nidulans  
1 P56271 Aspergillus niger  
1 CAA44871 Aspergillus niger  
1 CAA40249 Aspergillus niger  
1 CAA41088 Aspergillus niger  
1 CAA31218 Aspergillus oryzae  
1 BAA01255 Aspergillus shirousami  
1 AEB80431 Aspergillus tubingensis  
1 BAA12010 Cryptococcus sp. S.2  
1 ABG48762 Fusicoccum sp. BCC4124  
1 AAO12212 Lipomyces Kononenkoae  
1 AAC49622 Lipomyces spenceri  
1 AAN75021 Lipomyces starkeyi  
1 AFD54462 Malbranchea cinnamomea  
1 ABF72529 Ophiostoma floccosum  
1 EBF26265 Penicillium lanuginosum  
1 ABQ42285 Phanerochaete chrysosporium  
1 BAW15173 Pholiota microspora  
1 BAF98616 Pichia burtonii  
1 AGJ52081 Rhizomucor pusillus  
1 ADL28123 Rhizopus oryzae  
1 AD080242 Saccharomyces fibuliger  
1 ABS76467 Saccharomyces flava  
1 CAB11471 Schizosaccharomyces pombe  
1 CAB40006 Schizosaccharomyces pombe  
1 CAA34162 Schwanniomyces occidentalis  
1 CAA51912 Schwanniomyces occidentalis  
1 ACN82436 Sclerotinia sclerotiorum  
1 CAA03110 Thermomyces lanuginosus  
1 BAG95980 Trichoderma viride  
1 CAJ21046 Valsaria rubricosa  
5 AWX62636 Alicyclobacillus sp. 18711  
5 AAQ01675 Alkalimonas amylolytica  
5 CAL14744 Anoxybacillus flavithermus  
5 ABW07376 Bacillus acididoli  
5 ABA22191 Bacillus anthracis  
5 ABY86223 Bacillus cereus  
5 CAD26699 Bacillus halmapalus  
5 AAA22226 Bacillus licheniformis  
5 AEM05860 Bacillus licheniformis  
5 AAK00598 Bacillus megaterium  
5 ABA35141 Bacillus paralicheniformis  
5 AAR68734 Bacillus sp.  
5 AAA22231 Bacillus sp. 707  
5 BAF03567 Bacillus sp. JAMB 204  
5 CAC39917 Bacillus sp. KSM K38  
5 AAB18785 Bacillus sp. MK 716  
5 AAA63900 Bacillus sp. TS 23  
5 ABW7262 Bacillus sp. YX YK1  
5 AAF00567 Cytophaga sp.  
5 AAC74994 Escherichia coli  
5 AFZ41193 Exiguobacterium sp. DAU5  
5 AAA22235 Geobacillus stearothermophilus  
5 ABX38371 Geobacillus thermodenitrificans  
5 AFG07833 Geobacillus thermoleovorans  
5 ACL70573 Halobacterium salinarum  
5 CAQ30277 Nostoc sp. POC 7119  
5 AAA27110 Salmonella typhimurium  
5 BAA24178 Streptococcus equinus  
5 AAA97431 Streptococcus equinus  
5 AAN59233 Streptococcus mutans  
5 CCB30600 Streptococcus mutans  
5 ALP73597 Vibrio alginolyticus  
5 ABK62854 Histoplasma capsulatum  
5 ABS11196 Paracoccidioides brasiliensis  
5 BAW15172 Pholiota microspora  
15 AAB60935 Aedes aegypti  
15 AAB60934 Aedes aegypti  
15 AAA03322 Aedes atropalpus  
15 AAA03323 Anopheles merus  
15 AAN77138 Anthonomus grandis  
15 AAN77139 Anthonomus grandis  
15 AAO13755 Asterias rubens  
15 AAY23288 Blattella germanica  
15 BAB72257 Callosobruchus chinensis  
15 AAA03350 Culex tarsalis  
15 AAF20998 Diabrotica virgifera virgifera  
15 AAC35243 Drosophila ananassae  
15 BAB91544 Drosophila bocki  
15 BAA04582 Drosophila erecta  
15 BAB91509 Drosophila kikkawai  
15 BAB95437 Drosophila lecontei  
15 BAA95441 Drosophila lini  
15 BAA04583 Drosophila mauritiana  
15 AAK93479 Drosophila melanogaster Amyrel  
15 CAA28238 Drosophila melanogaster  
15 AAK46839 Drosophila pseudoobscura  
15 BAA04585 Drosophila pseudoobscura  
15 AAC46463 Drosophila virilis  
15 AAG60011 Drosophila yakuba  
15 CAA76926 Phaedon cochleariae  
15 P56634 Tenebrio molitor  
15 AAA03708 Tribolium castaneum  
15 AAF73435 Zabrotes subfasciatus  
24 AB109312 Acarus siro  
24 BAB5635 Anguilla japonica  
24 AAL37207 Crassostrea gigas  
24 AAL37183 Crassostrea gigas  
24 AAD38942 Dermatophagoides pteronyssinus  
24 AAD38943 Euroglyphus maynei  
24 AAO60246 Gallus gallus  
24 ABO26610 Haliotis discus discus  
24 BAM74656 Haliotis discus hannai  
24 AAA51724 Homo sapiens pancreatic  
24 AAR63129 Homo sapiens salivary  
24 AAA37221 Mus musculus  
24 AAA37230 Mus musculus  
24 B2R004 Oryzias latipes  
24 CAA68065 Pecten maximus  
24 CAA54524 Penaeus vannamei  
24 CAB65552 Penaeus vannamei  
24 AAF65827 Pseudopleuronectes americanus  
24 AAA40725 Rattus norvegicus  
24 AAB88228 Rattus norvegicus  
24 P93053 Streptococcus camelus  
24 AAF02828 Sus scrofa  
24 CAC87125 Tetraodon nigroviridis  
32 AAA21016 Aeromonas hydrophila  
32 BAA22082 Bacillus sp. 195  
32 AAY89038 Bifidobacterium breve  
32 CAB92963 Bifidobacterium meridianum  
32 BAJ52728 Bifidobacterium varians  
32 AAG25402 Microbacterium aurum  
32 CAA1481 Pseudalteromonas haloplanktis  
32 AAB6835 Pseudomonas sp. KFC10818  
32 AAA96317 Streptomyces albus



32	BAC73693	Streptomyces avermitilis	-L	-Y	-SSYDMD	-CT	-	-ATITD	-T	-NR	
32	CAA40798	Streptomyces griseus	-I	-W	-SGADMD	-CR	-	-SEIND	-G	-NR	
32	AAA26698	Streptomyces hygroscopicus	-F	-Y	-QDQFFHG	-CR	-	-KSISD	-T	-NR	
32	AAA88554	Streptomyces linosus	-I	-W	-SGADMD	-CR	-	-SEIND	-G	-NR	
32	CAB06622	Streptomyces lividans	-L	-Y	-SSNDLON	-CT	-	-SQINN	-G	-DR	
32	CAA73775	Streptomyces sp_T01	-L	-Y	-SSYDFDD	-ST	-	-SQVNT	-G	-DR	
32	AAA82875	Streptomyces sp_WL6	-Y	-F	-GDADFHT	-CT	-	-TAIKD	-T	-DR	
32	AAA26697	Streptomyces thermoviolaceus	-L	-Y	-SAPDFDD	-CR	-	-AEITD	-Q	-DR	
32	AA36561	Streptomyces venezuelae	-L	-Y	-SGSDMD	-CR	-	-ATISN	-Q	-DR	
32	ABP13430	Thermobifida fusca	-I	-Y	-QSDQFMD	-CR	-	-RDITN	-N	-DK	
32	CAA41981	Thermomicrospora curvata	-I	-Y	-QSDQFMD	-CR	-	-RDITN	-N	-DK	
32	BAV60949	Pholiota microspora	-L	-Y	-QNQDFHH	-CG	-	-LEPG	-DDIVN	-D	-NA
32	KJA26527	Hypholoma sublateritium	-Y	-Y	-QNQDFHH	-CG	-	-LEPN	-DDIVN	-D	-NA
32	KDR78015	Galerina marginata	-Y	-Y	-QFTDFHH	-CG	-	-LEPD	-DDIVN	-D	-NR
32	PPQ83160	Psilocybe cyanescens	-Y	-Y	-QNQDFHH	-CG	-	-LEPG	-DDIVN	-S	-NR
32	KT32361	Moniliophthora roreri	-Y	-Y	-QNQDFHH	-CG	-	-LESG	-DDIVN	-G	-NR
32	KDQ30003	Pleurotus ostreatus	-Y	-Y	-QTQDFHH	-CG	-	-LEPG	-DDIVN	-S	-NR
32	RDX41646	Polyporus brumalis	-Y	-Y	-QNQDFHH	-CG	-	-LEPG	-DDIVN	-D	-NA
32	OJT13448	Trametes pubescens	-Y	-Y	-QNQDFHH	-CG	-	-LEPG	-DDIVN	-D	-NA
32	PFH45132	Amanita thiersii	-Y	-Y	-QVQDFHH	-CG	-	-LEPG	-DDIVN	-G	-NR
32	KIM37787	Hebeloma cylindrosporum	-Y	-Y	-QDQNFHH	-CG	-	-LRPG	-DDIVD	-T	-NR
32	PRK61492	Armillaria solidipes	-Y	-Y	-QYQDFHH	-CT	-	-LTST	-GDIED	-T	-SR
32	ETW76368	Heterobasidium irregulare	-Y	-Y	-QTQDFHH	-CG	-	-LEPG	-DDIVN	-D	-NR
32	RDB27268	Heterobasidium mediterraneum	-Y	-Y	-QYQDFHH	-CG	-	-LTSG	-DDIVN	-D	-NR
32	PPQ71147	Gymnopilus dilepis	-Y	-Y	-DYDNFHH	-CG	-	-LEPD	-DDIVN	-D	-NR
32	OSD07916	Trametes coccinea	-Y	-Y	-QNQDFHH	-CG	-	-LEPG	-DDIVN	-D	-NA
32	KZW01389	Exidia glandulosa	-Y	-Y	-QNQDFHH	-CG	-	-LESG	-DDIVN	-S	-NR
32	EIW55835	Trametes versicolor	-Y	-Y	-QNQDFHH	-CG	-	-LEPG	-DDIVN	-D	-NA
32	SJL11930	Armillaria ostoyae	-Y	-Y	-QYQDFHH	-CT	-	-LTST	-GDIED	-T	-SR
32	PAV18085	Pyrenopeziza noxium	-Y	-Y	-QYQDFHH	-CG	-	-LEPN	-DDIVN	-D	-NR
32	RPO65356	Lentinus tigrinus	-Y	-Y	-EQQDFHH	-CG	-	-LEPG	-DDIVN	-D	-NA
32	PRK84861	Armillaria gallica	-Y	-Y	-DPHH	-CT	-	-LTST	-GDIED	-T	-SR
32	KLO18298	Schizopora paradoxa	-Y	-Y	-DNSSFHH	-CG	-	-LEPD	-DDIVN	-D	-NR
32	PPR08271	Panaeolus cyanescens	-Y	-Y	-QNQDIHH	-CG	-	-LEPG	-DDIVN	-S	-NR
32	KIK53845	Gymnopus luxurians	-Y	-Y	-QTQDFHH	-CG	-	-LEPG	-DDIVN	-D	-NR
32	KI264431	Sphaerobolus stellatus	-Y	-Y	-QAQDFHH	-CG	-	-LEPG	-DDIVN	-D	-NR
32	EJ007843	Botryobasidium mediterraneum	-Y	-Y	-QYQDFHH	-CG	-	-LEPG	-DDIVN	-S	-NR
32	EPQ53992	Gloeophyllum trabeum	-Y	-Y	-EYQDFHH	-DC	-	-GEAD	-QNDIN	-D	-NR
32	KIP11288	Phlebiopsis gigantea	-Y	-Y	-ESQDFHH	-CG	-	-LEPD	-DDIVN	-D	-NR
32	KIY62009	Cylindrobasidium torrendii	-Y	-Y	-QTQDFHH	-CG	-	-LTSG	-DDIVD	-S	-NR
32	KIJ69360	Hydnomerulius pinastri	-Y	-Y	-YTS-DNFHH	-CG	-	-LEPD	-DDIVN	-D	-NR
32	KZT20455	Neolentinus lepideus	-Y	-Y	-QNADFHH	-CG	-	-GEFD	-DDIVN	-D	-NR
32	SGH97351	Serpula lacrymans var lacrymans	-Y	-Y	-YSA-DNFHH	-CG	-	-LEPG	-DDIVN	-D	-NR
32	KDQ60610	Botryobasidium botryosum	-Y	-Y	-QYQDFHH	-CG	-	-LQSG	-DDIVN	-S	-NR
32	PPR00074	Panaeolus cyanescens	-Y	-Y	-GSQDFHH	-CG	-	-SPG	-NDINN	-F	-DR
32	EKM53319	Phanerochaete carnea	-Y	-Y	-EYQDFHH	-CG	-	-LEPD	-DDIVD	-S	-NR
32	TBU45601	Dichomitus squalens	-Y	-Y	-QNQDFHH	-CG	-	-LEPG	-DDIVN	-D	-NR
32	PSR82077	Phlebia centrifuga	-Y	-Y	-QNQDFHH	-CG	-	-LEPG	-DDIVN	-D	-NR
32	KIM89391	Piloderma croceum	-Y	-Y	-EAQDFHH	-CG	-	-LEPN	-DDIVD	-S	-NR
32	PIL31175	Gaeumannomyces grisea	-Y	-Y	-QYQDFHH	-CG	-	-LEPG	-DDIVN	-D	-NR
32	KIY70325	Cylindrobasidium torrendii	-Y	-Y	-QTQDFHH	-CG	-	-LTSG	-DDIED	-T	-NL
32	KDQ58060	Jaapia argillacea	-Y	-Y	-NSTNFHH	-CG	-	-LEPD	-DDIVN	-D	-NR
32	CEL62905	Rhizoctonia solani	-Y	-Y	-QCTQDFHH	-CG	-	-LQPG	-DDIVN	-N	-NR
32	GAT57350	Mycena chlorophos	-Y	-Y	-NTTNFHH	-CG	-	-LEPG	-DDIVN	-N	-NR
32	KIM25608	Serendipita vermifera	-Y	-Y	-GTQDFHH	-CG	-	-LTSG	-DDIVD	-S	-NR
32	GAM02849	Lentinula edodes	-Y	-Y	-EAQDFHH	-CG	-	-LEPG	-DDIVN	-D	-NR
32	TCB63303	Steccherinum ochraceum	-Y	-Y	-QSDDFHH	-CG	-	-LQPD	-DDIVD	-S	-NR
32	KZP22139	Fibularhizoctonia sp CBS_109695	-G	-Y	-Y-SATSFHH	-CG	-	-LEPN	-DDIVN	-D	-NR
32	KII90441	Plicaturopsis crispa	-P	-Y	-YTDNGDFHH	-CN	-	-NGND	-DNTQN	-D	-NS
32	KDQ58058	Jaapia argillacea	-Y	-Y	-DTTNFHH	-CG	-	-LEPG	-DDIEN	-D	-NR
32	OCH93218	Obba rivulosa	-Y	-Y	-SDSDFHS	-CR	-	-T	-TIITD	-D	-NE
32	EMD36390	Gelatopora subvermispora	-Y	-Y	-SDSDFHS	-CR	-	-T	-SITS	-D	-DE
32	EIM78746	Cosmophora puteana	-P	-Y	-YTS-DNFHH	-CT	-	-N	-MAIED	-NE	-NR
32	KII86244	Plicaturopsis crispa	-Y	-Y	-QANESEIADMPBPPTPKHFFVLPFGQWLESG	-DDIVN	-	-	-DDIVN	-D	-NR
32	EKM75205	Agaricus bisporus	-Y	-Y	-QIQDFHH	-CG	-	-FHFS	-DDIEN	-S	-NR
32	KZT36083	Sistotremastrum suecicum	-Y	-Y	-ASTDFHT	-NC	-	-GTFD	-NQIDD	-N	-NA
32	KZS90559	Sistotremastrum niveocreum	-Y	-Y	-ASTDFHT	-NC	-	-GTFD	-NQIDD	-N	-NA
32	EFI98134	Schizophyllum commune	-Y	-Y	-QTQDFHH	-CG	-	-LESG	-DDIVN	-S	-NR
32	BBC62173	Tricholoma matsutake	-Y	-Y	-QTQDFHH	-CG	-	-LTFG	-DDIVD	-S	-NR
32	CCA69081	Steccherinum indicum	-Y	-Y	-QYQDFHH	-CG	-	-LTST	-GDIVD	-S	-NR
32	EFI98135	Schizophyllum commune	-Y	-Y	-QTQDFHH	-CG	-	-LEPY	-DDINN	-G	-NR
32	KII85613	Plicaturopsis crispa	-Y	-Y	-NTTNFHH	-CG	-	-LEPN	-DDIVN	-N	-NR
32	EINI1730	Punctularia strigosozonata	-P	-Y	-YTDGDFHH	-CG	-	-LEPG	-DDIVN	-D	-NA
32	PIL33242	Ganoderma sinense	-Y	-Y	-QNQDFHS	-CR	-	-	-HGINN	-N	-NA
32	KZT18190	Neolentinus lepideus	-Y	-Y	-QYQDFHH	-CG	-	-LEPG	-DDIVD	-R	-NR
32	KZY75308	Peniophora sp. CONT	-Y	-Y	-QAQDFHH	-CG	-	-LEPG	-DDIVN	-G	-NR
32	KII86838	Plicaturopsis crispa	-Y	-Y	-NTTNFHH	-CG	-	-LEPN	-DDIVN	-N	-NR
32	KDQ80818	Botryobasidium botryosum	-Y	-Y	-QNDNFHH	-CG	-	-LEPG	-DDIVN	-K	-NR
32	KIY73061	Cylindrobasidium torrendii	-Y	-Y	-TTDDFHH	-CG	-	-LTSG	-DDIVD	-T	-SR
32	KZW01365	Exidia glandulosa	-Y	-Y	-THDSFHH	-CG	-	-LEPG	-DDIVN	-D	-NR
32	KDQ58178	Jaapia argillacea	-Y	-Y	-SNSDFHH	-CG	-	-LEPG	-DDIVD	-T	-KR
32	KZY75307	Peniophora sp. CONT	-Y	-Y	-QAQDFHH	-CG	-	-LEPN	-DDIVN	-D	-NA
32	KIK51212	Gymnopus luxurians	-Y	-Y	-QSDDFHH	-CG	-	-LETD	-DDIVN	-F	-DR
32	RDX41931	Polyporus brumalis	-Y	-Y	-QNQDFHH	-CG	-	-LEPG	-DDIVN	-N	-DA
32	TBU29254	Dichomitus squalens	-Y	-Y	-QSDDFHH	-CR	-	-HGIDQ	-N	-NA	-NA
32	KIY45802	Fistulina hepatica	-Y	-Y	-SGDFHH	-CG	-	-TEGD	-AIVD	-S	-NA
32	KIL59382	Amanita muscaria	-Y	-Y	-QYNDFHH	-CG	-	-VEPY	-DDIKN	-T	-NR
32	KIY53725	Fistulina hepatica	-Y	-Y	-DSDNFHH	-CG	-	-TTDN	-DIED	-N	-NV
32	KIY47132	Fistulina hepatica	-Y	-Y	-GVQDFHH	-CP	-	-PVNG	-SIAMD	-G	-NR
32	RPO55342	Lentinus tigrinus	-Y	-Y	-NTTNFHH	-CG	-	-HGINN	-N	-NA	-NA
32	TCB61445	Steccherinum ochraceum	-W	-Y	-DTSNFHH	-CG	-	-TPG	-NDIQD	-Q	-SR
32	KIM25602	Serendipita vermifera	-Y	-Y	-QTQDFHH	-CG	-	-LAPD	-DDIND	-T	-SR
32	EJD37603	Auricularia subglabra	-Y	-Y	-TTDSFHH	-CG	-	-LAPG	-DDIAD	-D	-NR
32	KZT54766	Calocera cornea	-Q	-Y	-FNNFHH	-CG	-	-LEPN	-DVIAN	-N	-NR
32	KIY46805	Fistulina hepatica	-Y	-Y	-TTDDFHH	-CN	-	-SPGG	-QIQD	-N	-NE
32	PPQ69654	Psilocybe cyanescens	-Y	-Y	-QYQDFHH	-CG	-	-LQSG	-DDIVN	-S	-NR
32	KZQ93971	Calocera viscosa	-Q	-Y	-FDNFHH	-CG	-	-LEPN	-DDIVN	-D	-NR
32	KZP07860	Fibularhizoctonia sp CBS_109695	-P	-W	-VADNFHH	-CG	-	-DNDGSGDSMWDD	-T	-NR	-NR
32	PVG03687	Serendipita vermifera	-Y	-Y	-QVQDFHH	-CG	-	-LAPN	-DDIQD	-S	-NR
32	EIM87674	Stereum hirsutum	-P	-Y	-TSSSFHH	-CN	-	-GANG	-AKDISN	-D	-NA
32	CCA69087	Serendipita indica	-Y	-Y	-SANDFHH	-CG	-	-LTFD	-NNIAD	-T	-NR
32	CEL62035	Rhizoctonia solani	-Y	-Y	-NNNDFHH	-CG	-	-LTNN	-DDIQD	-G	-DN
32	EIM05398	Punctularia strigosozonata	-Y	-Y	-SSDFHH	-CG	-	-T-TG	-DAILD	-S	-NR
32	EJU02896	Dacryopinax primogenitus	-Q	-Y	-YQDFHH	-CG	-	-ISSE	-LPLVFN	-D	-NR
32	KIO30302	Tulasnella calospora	-C	-Y	-L-TD	-L	-	-EDSD	-GDHID	-T	-NR
32	CEL62036	Rhizoctonia solani	-Y	-Y	-GWNDFHH	-CG	-	-T-NN	-DDIQD	-D	-DR
32	KIO24533	Tulasnella calospora	-Y	-Y	-DKNDFHH	-CG	-	-TP-G	-NDIQD	-N	-DR
32	EIM84100	Stereum hirsutum	-Y	-Y	-SSYDFHH	-CG	-	-TD-G	-DAILD	-S	-NR
32	KDM35973	Rhizoctonia solani	-Y	-Y	-EMDFHH	-CG	-	-NPPG	-DDISD	-S	-NR
32	KIY48489	Fistulina hepatica	-Y	-Y	-NSTDFHH	-CG	-	-TT-D	-DAILD	-S	-NR
32	KIY48486	Fistulina hepatica	-Y	-Y	-DSSDFHH	-CG	-	-TT-D	-DAIED	-S	-NR
32	KZP26813	Fibularhizoctonia sp CBS_109695	-P	-Y	-TQSDFHH	-VC	-	-SLDD	-N	-NS	-NR
32	KDQ32476	Pleurotus ostreatus	-Y	-Y	-SYQDFHH	-CG	-	-SSDE	-VIHD	-R	-NR
32	EIM84087	Stereum hirsutum	-Y	-Y	-SPEHFFHH	-CG	-	-TK-G	-DGIED	-S	-DK
32	KDQ32475	Pleurotus ostreatus	-Y	-Y	-SYQDFHH	-CG	-	-TPNN	-DILN	-T	-NR
32	EQ88347	Chaetomium globosum	-P	-F	-QSDDFHH	-CT	-	-SQISD	-V	-NA	-NR
32	ORY89754	Leucosporidium creatinivorum	-P	-F	-TSSDFHH	-V	-	-	-	-	-NR
32	EW234052	Fusarium oxysporum	-L	-Y	-SFFDFDD	-CT	-	-SGVRD	-S	-DR	-NR
32	OBT91518	Pseudogymnoascus verrucosus	-L	-Y	-SSYDFDD	-CT	-	-AQVSN	-A	-DR	-NR
32	KEY73157	Stachybotrys chartarum	-L	-Y	-SSYDFDD	-CT	-	-SQINN	-A	-DR	-NR
32	OBT62577	Pseudogymnoascus sp 23342_1_11	-L	-Y	-SSSDFDD	-CT	-	-SAVSN	-A	-DR	-NR
32	BOM97874	Phaeoacremonium minimum	-L	-Y	-SSYDFDD	-CT	-	-SDINN	-G	-DR	-NR
32	GAT55198	Mycena chlorophos	-Y	-Y	-HEMFHH	-CG	-	-GTVA	-ATITD	-T	-NR
32	OAG04271	Paraphaeosphaeria sporulosa	-L	-Y	-SFYDFDD	-CT	-	-SQNTN	-V	-DR	-NR
32	EGG02960	Melampsora larii populina	-Y	-Y	-DYHDFHH	-CG	-	-RNGN	-DHISD	-T	-DR
32	EGG02993	Melampsora larii populina	-Y	-Y	-NFSDFHH	-CG	-	-RNGN	-DGVIN	-T	-DR
32	OAV91411	Puccinia trititica	-Y	-Y	-TRNNFHH	-CR	-	-KRGN	-LEISN	-K	-DR
32	EPF79978	Puccinia graminis	-Y	-Y	-TRNNFHH	-CR	-	-KRGN	-LEISN	-M	-NR
32	GAT51088	Mycena chlorophos	-P	-Y	-TASQFHH	-CN	-	-GANG	-ABISD	-T	-NR
32	KNE94052	Puccinia striiformis	-Y	-Y	-	-SR	-	-KRGN	-LEISN	-M	-DR
32	KN254553	Puccinia sorghi	-AASV	-VAMRS	-	-	-	-P-TT	-TVTS	-	-NR
32	AOF40721	Microbacterium aurum	NCANWGVPMGY-SARGYTL	YNCQWPNATSGMFP	-KEIFHQ	-	-	-CWIGN	-EG	-EG	-NR
32	CAB06816</										

[illegible]



	CSR-V	CSR-II	CSR-III
32_BAC73693 <i>Streptomyces avermitilis</i>	-ANV-----QNCVLGVADLDTGE-EYVRKTIAGYMNTLL-GYAGDGGVAAVHHPA-DL-ANIKSRITNP-----SV	MSR-VII	MSR-VII-ASGE--AVQPEYTG--NG
32_CAA40798 <i>Streptomyces griseus</i>	-ANV-----QNCVLGVADLDTGE-PYVRDIAAYINDLL-LGVGSGRDAAKMPAA-DL-TAIKAKVNGP--ST	MSR-VII	MSR-VII-GAGE--AVQPEYTG--TG
32_AAA26698 <i>Streptomyces hygroscopicus</i>	-DDV-----QTCVLVDLADLTGS-DYVRTIAAGYGLR-SLGVGSGRDAAKHISAT-DL-AAVKRGKMDP--G	MSR-VII	MSR-VII-GAGE-AVRDEYTG--IG
32_AAA88554 <i>Streptomyces linosus</i>	-ANV-----QNCVLGVADLDTGE-SYVDRIAIAYINDLL-SLGVGSGRDAAKMPAA-DL-TAIKAKVNGP--ST	MSR-VII	MSR-VII-GAGE-AVRDEYTG--TG
32_CAB06622 <i>Streptomyces lividans</i>	-FNV-----QCEVLGVADLDTGE-AYVRKIAIAYINDLL-SLGVGSGRDAAKMPAA-DL-AIKSRISNP--SV	MSR-VII	MSR-VII-GAGE-AVRDEYTG--SG
32_CAB07175 <i>Streptomyces sp.</i>	-ANV-----QNCVLGVADLDTGE-EYVRKIAIAYINDLL-SLGVGSGRDAAKMPAA-DL-AIKSRISNP--SV	MSR-VII	MSR-VII-GAGE-AVRDEYTG--SG
32_AAA82879 <i>Streptomyces sp.</i>	-GDN-----QNCVLGVADLDTGE-DEVRSTIAAYLDGLR-SMGVGGDAAKMPAA-DV-ALQGDERRFP--G	MSR-VII	MSR-VII-GAGE-AVRDEYTG--TG
32_AAA26697 <i>Streptomyces thermocloaceus</i>	-ANV-----QNCVLGVADLDTGE-EYVRGTIAAGYINDLL-SLGVGSGRDAAKHIAA-DL-ANIKSRISNP--NA	MSR-VII	MSR-VII-GAGE-PKPGEYTG--TG
32_AAB36561 <i>Streptomyces venesuae</i>	-ANV-----QNCVLGVADLDTGE-DYVRGIAIAYINDLL-SLGVGSGRDAAKMPAA-DL-ANIKSRISNP--SV	MSR-VII	MSR-VII-GAGE-AVRDEYTG--SG
32_ABF13430 <i>Thermobifida fusca</i>	-MEV-----QNCVLGVADLDTGS-PYVQDIAIAYINELI-DLVAGSGRDAAKHIEG-DL-QALISLRKNVHPAA--GGGK	MSR-VII	MSR-VII-GAGE-TISTGYTH--LG
32_CAA14881 <i>Thermomonas curvata</i>	-MEV-----QNCVLGVADLDTGS-PYVQDIAIAYINELI-DLVAGSGRDAAKHIEG-DL-QALISLRKNVHPAA--GGGK	MSR-VII	MSR-VII-GAGE-TISTGYTH--LG
32_BAV06949 <i>Pholiota microspora</i>	-LEV-----QTCELNVLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHINTS-DL-ANITSRITLT--KP	MSR-VII	MSR-VII-GAGE-ITPAQYTG--NG
32_CAB07175 <i>Streptomyces sp.</i>	-LEV-----QTCELNVLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHINTS-DL-ANITSRITLT--KP	MSR-VII	MSR-VII-GAGE-ITPAQYTG--NG
32_KDB78015 <i>Geletrix marginata</i>	-LEV-----QTCELNVLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHINTS-DL-ANITSRITLT--KP	MSR-VII	MSR-VII-GAGE-ITPAQYTG--NG
32_PP083160 <i>Palcioybe cyaneusens</i>	-LEV-----QTCELNVLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHINTS-DL-ANITSRITLT--KP	MSR-VII	MSR-VII-GAGE-ITPAQYTG--NG
32_KT832361 <i>Moniliophthora rozeri</i>	-LEV-----QTCELNVLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHINTS-DL-ANITSRITLT--KP	MSR-VII	MSR-VII-GAGE-ITPAQYTG--NG
32_KD030003 <i>Pleurotus ostreatus</i>	-LEV-----QTCELNVLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHINTS-DL-ANITSRITLT--KP	MSR-VII	MSR-VII-GAGE-ITPAQYTG--NG
32_RDX41646 <i>Polyporus brumalis</i>	-LEV-----QTCELNVLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHINTS-DL-ANITSRITLT--KP	MSR-VII	MSR-VII-GAGE-ITPAQYTG--NG
32_OJT13448 <i>Trametes pubescens</i>	-LEV-----QTCELNVLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHINTS-DL-ANITSRITLT--KP	MSR-VII	MSR-VII-GAGE-ITPAQYTG--NG
32_OJT13448 <i>Trametes pubescens</i>	-LEV-----QTCELNVLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHINTS-DL-ANITSRITLT--KP	MSR-VII	MSR-VII-GAGE-ITPAQYTG--NG
32_KIM37797 <i>Hebeloma cylindrosporum</i>	-LEV-----QTCELNVLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHINTS-DL-ANITSRITLT--KP	MSR-VII	MSR-VII-GAGE-ITPAQYTG--NG
32_PBK61492 <i>Armillaria solidipes</i>	-AQQ-----QTCQLGGLADLATE-EYVRGLAAYINDLL-SLGVGSGRDAAKHIAA-DL-ANITSRIFS--SF	MSR-VII	MSR-VII-GAGE-AVRDEYTG--TG
32_ETW67638 <i>Heterobasidion irregulare</i>	-LEV-----QTCQLNVLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHIAA-DL-ANITSRIFS--SF	MSR-VII	MSR-VII-GAGE-AVRDEYTG--TG
32_RDB27268 <i>Hypsizygus marmoreus</i>	-VQV-----QTCVLNVLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHIASG-DL-SNITGLRSLA--AP	MSR-VII	MSR-VII-GAGE-PQPEYTG--TG
32_PP071147 <i>Gymnopilus dilepis</i>	-LEV-----QTCQLNVLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHIASG-DL-SNITGLRSLA--AP	MSR-VII	MSR-VII-GAGE-PQPEYTG--TG
32_OSD07016 <i>Trametes coccinea</i>	-LEV-----QTCQLNVLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHIASG-DL-SNITGLRSLA--AP	MSR-VII	MSR-VII-GAGE-PQPEYTG--TG
32_KIM07136 <i>Trametes glaucopertus</i>	-LEV-----QTCQLNVLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHIASG-DL-SNITGLRSLA--AP	MSR-VII	MSR-VII-GAGE-PQPEYTG--TG
32_KIM58535 <i>Trametes versicolor</i>	-LEV-----QTCQLNVLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHIASG-DL-SNITGLRSLA--AP	MSR-VII	MSR-VII-GAGE-PQPEYTG--TG
32_SJL11930 <i>Armillaria ostryae</i>	-AQQ-----QTCQLGGLADLATE-EYVRGLAAYINDLL-SLGVGSGRDAAKHIAA-DL-ANITSRIFS--SF	MSR-VII	MSR-VII-GAGE-AVRDEYTG--TG
32_PAV18085 <i>Pyrrhoderma noxium</i>	-LEV-----QTCQLVGLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHIAA-DL-ANITSRING--AP	MSR-VII	MSR-VII-GAGE-ITPAQYTG--TG
32_RP065356 <i>Lentinus tigrinus</i>	-LEV-----QTCVLNVLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHIAA-DL-ANITSRING--AP	MSR-VII	MSR-VII-GAGE-ITPAQYTG--TG
32_PBK84681 <i>Armillaria gallica</i>	-AQQ-----QTCQLGGLADLATE-EYVRGLAAYINDLL-SLGVGSGRDAAKHIAA-DL-ANITSRIFS--SF	MSR-VII	MSR-VII-GAGE-AVRDEYTG--TG
32_KL018298 <i>Schizophora paradoxa</i>	-LEV-----QTCQLGGLADLATE-EYVRGLAAYINDLL-SLGVGSGRDAAKHIAA-DL-ANITSRIFS--SF	MSR-VII	MSR-VII-GAGE-AVRDEYTG--TG
32_KIM07136 <i>Trametes glaucopertus</i>	-LEV-----QTCQLVGLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHIAA-DL-ANITSRING--AP	MSR-VII	MSR-VII-GAGE-ITPAQYTG--TG
32_KIK53844 <i>Stropharia luxurians</i>	-QEV-----QTCQLGGLADLATE-EYVRGLAAYINDLL-SLGVGSGRDAAKHIAA-DL-ANITSRIFS--SF	MSR-VII	MSR-VII-GAGE-AVRDEYTG--TG
32_KIJ56431 <i>Sphaerobolus stellatus</i>	-LEV-----QTCQLNVLADLATE-EYVRGLAAYINDLL-SLGVGSGRDAAKHIAA-DL-ANITSRIFS--SF	MSR-VII	MSR-VII-GAGE-AVRDEYTG--TG
32_EJ007843 <i>Fomitiporia mediterranea</i>	-LEV-----QTCQLNVLADLATE-EYVRGLAAYINDLL-SLGVGSGRDAAKHIAA-DL-ANITSRIFS--SF	MSR-VII	MSR-VII-GAGE-AVRDEYTG--TG
32_EP053992 <i>Gloeophyllum trabeum</i>	-TEV-----QVCQLGGLADLDTGE-EYVRGLAAYINDLL-SLGVGSGRDAAKHIAA-DL-ANITSRIFS--SF	MSR-VII	MSR-VII-GAGE-AVRDEYTG--TG
32_KIP11288 <i>Phlebiopsis gigantea</i>	-AQQ-----QTCQLGGLADLATE-EYVRGLAAYINDLL-SLGVGSGRDAAKHIAA-DL-ANITSRIFS--SF		

AA854466 *Paenibacillus polymyxa*  
AA949445 *Thermactinomyces vulgaris*  
BADO6003 *Aspergillus awamori*  
BADO6002 *Aspergillus awamori*  
AF414264 *Aspergillus flavus*  
BADO1051 *Aspergillus kawachii*  
BADO2293 *Aspergillus kawachii*  
EAA64850 *Aspergillus nidulans*  
AAFI7100 *Aspergillus nidulans*  
P56271 *Aspergillus niger*  
CAK44871 *Aspergillus niger*  
CAK0949 *Aspergillus niger*  
CAK1088 *Aspergillus niger*  
CAK31218 *Aspergillus oryzae*  
CAA1255 *Aspergillus shiroyensis*  
AEBB0431 *Aspergillus tubingensis*  
BAL12010 *Cryptococcus sp. S 2*  
ABG44872 *Pisicoccum sp. BC4214*  
AAQ12212 *Lipomyces spencermartinsiae*  
AAQ49622 *Lipomyces spencermartinsiae*  
AAN75021 *Lipomyces starkeyi*  
AFD54462 *Malbranchea cinnamomea*  
ABF72529 *Ophiostoma floccosum*  
EPF82625 *Penicillium oxalicum*  
ABG42285 *Phanerochaete chrysosporium*  
BAF15173 *Phialocephala blanda*  
BAF98616 *Pichia burtonii*  
AGJ52081 *Rhizomucor pusillus*  
ADL82123 *Rhizopus oryzae*  
ADL80242 *Saccharomyces fibuliger*  
ABF44067 *Saitozysa flava*  
ABG14771 *Schwiebia schenckii*  
BAF40006 *Schwiebia schenckii*  
CAA34162 *Schwannomyces occidentalis*  
AA51912 *Schwannomyces occidentalis*  
ACN82436 *Sclerotinia sclerotiorum*  
CAA31310 *Thermomyces lanuginosus*  
ABG69580 *Trichoderma viride*  
VAL21046 *Valentinomyces coccos*  
AMX66236 *Alcalyviobacillus sp. 18711*  
AAQ16765 *Alkalimonas amylolytica*  
CAL14744 *Anoxybacillus flavithermus*  
ABW07376 *Bacillus acidicola*  
AAK22191 *Bacillus amyloliquefaciens*  
ABW07376 *Bacillus amyloliquefaciens*  
CAD26699 *Bacillus halmapalae*  
AAA22226 *Bacillus licheniformis*  
AEM05860 *Bacillus licheniformis*  
AAO0598 *Bacillus megaterium*  
AGN35141 *Bacillus paralicheniformis*  
AAK22231 *Bacillus sp. 707*  
BAF03567 *Bacillus sp. JAMB. 204*  
ACS39917 *Bacillus sp. KSM K38*  
AAI18785 *Bacillus sp. MK 716*  
AAI63900 *Bacillus sp. TS. 23*  
ABW87262 *Bacillus sp. YK\_YK1*  
ABW05067 *Bacillus sp. YK\_YK2*  
AFD74994 *Excherichia coli*  
AFZ41193 *Exiguobacterium sp. DAU5*  
AAK22235 *Geobacillus stearothermophilus*  
BAK38871 *Geobacillus thermodentificans*  
AFC87833 *Geobacillus thermoleovorans*  
ACD17732 *Halothemophilus oreii*  
AFC87833 *Halothemophilus oreii*  
AAK27110 *Salmonella typhimurium*  
BAA24178 *Streptococcus equinus*  
AAK97431 *Streptococcus equinus*  
AAIN59233 *Streptococcus mutans*  
C0D30600 *uncultured bacterium*  
ABP73597 *Vibrio cholerae*  
ABG62854 *Histoplasma capsulatum*  
ABSI1196 *Paracoccidioides brasiliensis*  
BAW15172 *Pholiota microspora*  
AAB60935 *Aedes aegypti*  
AAB60934 *Aedes aegypti*  
AAK03322 *Aedes atropalpis*  
AAK03323 *Anopheles gambiae*  
AAW77138 *Anthonomus grandis*  
AAW77139 *Anthonomus grandis*  
AAK33755 *Asterias rubens*  
AYX23288 *Battellata germanica*  
BAF72257 *Diabrobruchus chinensis*  
AAK03350 *Culex quinquefasciatus*  
AAT20998 *Callosotoma virgifer*  
AAT20998 *Callosotoma virgifer*  
AAC35243 *Drosophila ananassae*  
BAB91544 *Drosophila bocki*  
BAK04582 *Drosophila erecta*  
BAB91509 *Drosophila kikkawai*  
BAK95437 *Drosophila leontia*  
BAB95441 *Drosophila melanogaster*  
BAK95438 *Drosophila mauritiana*  
AAK93479 *Drosophila melanogaster Amyrel*  
BAK28238 *Drosophila melanogaster*  
AAC46839 *Drosophila pseudoobscura*  
BAK04585 *Drosophila schellia*  
AAK46465 *Drosophila yakuba*  
AAG60011 *Drosophila yakuba*  
CAK76926 *Phaeodon cochleariae*  
P56634 *Tenebrio molitor*  
AAK03708 *Tribolium castaneum*  
AAT73435 *Zabrotes subfasciatus*  
ABU09513 *Acarus siro*  
BAB85635 *Actinotrichia japonica*  
AAL37207 *Crassostrea gigas*  
AAL37183 *Crassostrea gigas*  
AAD38942 *Dermatophagoides pteronyssinus*  
AAD38943 *Euroglyphus maynei*  
AAC60246 *Gallus gallus*  
AAC60246 *Gallus gallus*  
BAM74656 *Haemaphysalis bancrofti*  
AAH51724 *Homo sapiens pancreatic*  
AAH51728 *Homo sapiens pancreatic*  
AAK37221 *Mus musculus*  
AAL37230 *Mus musculus*  
AH2N004 *Mus musculus latipes*  
CAK68065 *Pectinotransversarius*  
CAA54254 *Panueus vannamei*  
CAB65552 *Panueus vannamei*  
AAT65827 *Pseudopleuronectes americanus*  
AAH08228 *Rattus norvegicus*  
AAH08228 *Rattus norvegicus*  
AAT68025 *Struthio camelus*  
AAT68028 *Sus scrofa*  
CAC87125 *Tetraodon nigroviridis*  
AAK21016 *Aeromonas hydrophila*  
BAA22082 *Bacillus sp. 195*  
AAJ989038 *Bifidobacterium breve*  
CAB92963 *Salmonas meridiana*  
AAK57278 *Salmonas meridiana*  
AKG25402 *Microbacterium aurum*  
CAK14481 *Pseudocitronomonas halopantantis*  
AAB68635 *Pseudomonas sp. KF0C188*  
AAK6317 *Streptomyces albus*

[illegible]

32 BAC73693 Streptomyces avermitilis DV-Q--EFRYAYDLKR-----VFNN-----E-NLA-LK  
32 CAA40798 Streptomyces griseus DV-Q--EFRYARDLKR-----VFQN-----E-NLAHLK  
32 AAA26698 Streptomyces hygroscopicus DV-D--EFRYGTHLKS-----AFQS-----G-NIAQLK  
32 AAA88554 Streptomyces linoosus DV-Q--EFRYARDLKR-----VFQN-----E-NLAHLK  
32 CAB06622 Streptomyces lividans DV-Q--EFRYARDLKR-----VFNN-----E-NLA-LK  
32 CAA73775 Streptomyces sp\_T01 DV-Q--EFRYAYDLKR-----VFNN-----E-NLA-LK  
32 AAA82875 Streptomyces sp\_WL6 DV-D--EFRYGGHLKS-----AFQG-----G-GIAQLK  
32 AAA26697 Streptomyces thermoviolaceus DV-Q--EFRYAYDLKR-----VFTQ-----E-HLA-LK  
32 AAB36561 Streptomyces venezuelae DV-Q--EFRYARDLKR-----VLQG-----E-KLS-LK  
32 ABP13430 Thermobifida fusca SV-T--EFQYHDIISH-----AFAM-----G-NIAHLT  
32 CAA41981 Thermomicrospora curvata SV-T--EFQYHDIISH-----AFAM-----G-NIAHLT  
32 BAV60949 Pholiota micropora DV-Q--EFRYTTAVQQ-----TFSS-----G-GISMLQN  
32 KJA26527 Hypholoma sublateritium DV-Q--EFRYTSALQS-----AFSG-----G-GISSLQN  
32 KDR78015 Galerina marginata DV-Q--EFRYTSAIKS-----AFSG-----G-GISGLQN  
32 PPQ83160 Psilocybe cyanescens DV-Q--E--YTSALKD-----AFSG-----G-GISSLQN  
32 KTB32361 Moniliophthora roreri DV-Q--EFRYTTTLKS-----TFLG-----G-GISSLQN  
32 KDQ30003 Pleurotus ostreatus DV-Q--EFRYTSELKN-----AFSG-----G-GISLQN  
32 RDX41646 Polyporus brumalis DV-Q--EFRYTSLKQ-----SFLG-----G-TISMLQS  
32 OJT13448 Trametes pubescens DV-Q--EFRYTSALKD-----AFSS-----S-GISMLQD  
32 PFH45132 Amanita thiersii DV-Q--EFRYTTALRD-----AFSG-----G-GISSLQN  
32 KIM37787 Hebeloma cylindrosporum DV-Q--EFRYTTALKD-----AFSG-----Q-GISSLQN  
32 PRK61492 Armillaria solidipes DV-Q--EFRYTTALQS-----AFGG-----G-SISGLN  
32 ETW76368 Heterobasidium irregulare DV-Q--EFRYTTALQD-----AFSS-----S-GISGLQN  
32 RDB27268 Posticiporia mediterranea DV-Q--EFRYTSLARD-----AFGL-----G-GISMLQ  
32 PPQ71147 Gymnopilus dilepis DV-Q--EFRYTTLMN-----AFLN-----N-GIASLQN  
32 OSD07916 Trametes coccinea N-----EFRYTTALKN-----AFGL-----G-GISSLQS  
32 KZW01389 Exidia glandulosa DV-Q--EFRYTSALKD-----AFQS-----N-GISSLQN  
32 EIW55835 Trametes versicolor DV-Q--EFRYTSALKD-----AFSG-----S-GISSLQD  
32 SJU11930 Armillaria ostoyae DV-Q--EFRYTTALQS-----AFGG-----G-SISGLN  
32 BAV18085 Pyrrhoderma noxium DV-Q--EFRYTTAVQN-----GFLS-----D-GISGLQN  
32 RPO65356 Lentinus tigrinus DV-Q--EFRYTSLKQ-----SFLG-----G-TISMLQS  
32 PRK84861 Armillaria gallica DV-Q--EFRYTTALQT-----AFTG-----G-SISGLN  
32 KLO18298 Schizopora paradoxa DV-M--EFRYTTALLN-----SFLG-----SNGANISGLQD  
32 PPR08271 Panaeolus cyanescens DV-Q--EFRYTSAVRD-----AFSG-----N-GDGIASLQS  
32 KIK53845 Gymnopus luxurians NV-Q--EFRYTTALFN-----AFSG-----G-GISMLQN  
32 KIJ56431 Sphaerobolus stellatus DV-Q--EFRYTSTLQS-----AFSG-----S-QALSSLQN  
32 EJD07843 Posticiporia mediterranea DV-Q--EFRYTTALKD-----AFGL-----G-GIASLQN  
32 EPQ53992 Gloeophyllum trabeum DA-Q--EFRYTTALKN-----AFTC-----G-GISSLED  
32 KIP11288 Phlebiopsis gigantea DV-Q--EFRYTTAFQN-----AFTN-----G-SISSLQS  
32 KIY62009 Cylindrobasidium torrendii DV-Q--EFRYTSTVRD-----AFNN-----G-DISGLRD  
32 KIJ69360 Hydnomerulius pinastri DV-M--EFRYTSALQT-----GFSG-----G-GINTLEN  
32 KZT20455 Neolentinus lepideus DA-Q--EFRYTTALQN-----AFTD-----T-GISGLKD  
32 RGM97351 Serpula lacrymans var lacrymans DV-M--EFRYTSALQS-----AFGG-----G-GISSLQD  
32 KDQ60010 Botryobasidium botryosum DV-Q--EFRYTTALKD-----AFGL-----G-GINTLQK  
32 PPR00074 Panaeolus cyanescens DV-Q--EFRYTSALKD-----AFQN-----G-NIASLQN  
32 EKM53319 Phanerochaete carnosia DV-Q--EFRYTTAVQN-----AFSG-----S-GISGLQS  
32 TBU45601 Dichomitus squalens DV-Q--EFRYTTALKN-----AFGL-----G-GISSLES  
32 PSR82077 Phlebia centrifuga -----VFNN-----E-NLA-LK  
32 KIM89391 Piloderma croceum SV-Q--EFRYTNSLKD-----AFGL-----G-GISSLEN  
32 PIL31175 Galerina marginata DV-Q--EFRYTTALKD-----AFGL-----E-KISSLQS  
32 KIY70325 Cylindrobasidium torrendii NV-Q--EFRYTSTVRD-----AFNN-----D-GISGLQD  
32 KDQ58060 Jaapia argillacea DV-Q--EFRYTTALQD-----AFTS-----T-GISTLEN  
32 CEL62905 Rhizoctonia solani DV-Q--EFRYTSTIQN-----AFQS-----G-GISSLNG  
32 GAT57350 Mycena chlorophos DV-Q--EFRYTSTLKS-----AFGL-----G-GINTLQS  
32 KIM25608 Serendipita vermifera AV-Q--EFRYTSTIKD-----AFQS-----S-GISSLQN  
32 GAW02849 Lentinula edodes NV-Q--EFRYTTALQS-----AFGL-----G-GISMLN  
32 TCD63303 Steccherinum ochraceum AV-Q--EFRYTSTLQS-----AFGL-----G-GISMLRD  
32 KZP22139 Fibularhizoctonia sp\_CBS\_109695 NV-M--EFRYTTALQN-----AFTN-----G-SINSLES  
32 KII190441 Plicaturopsis crispata DV-M--EFRYTTALQT-----AFTN-----S-GISMLQN  
32 KDQ58058 Jaapia argillacea ES-V--IFRYTSALQD-----AFSY-----S-GISNLEF  
32 OCH93218 Obba rivulosa DV-Q--EFRYTSALQS-----AFTG-----G-GISSLES  
32 EMD36390 Gelatoporia subvermispora DV-Q--EFRYTSALQS-----AFTG-----G-GISSLES  
32 EIM78746 Cortophora puteana DV-M--EFRYTSALQS-----AFGL-----G-GISGLQD  
32 KII186244 Plicaturopsis crispata DV-Q--EFRYTSALQS-----AFGL-----G-GISGLQD  
32 EKM75205 Agaricus bisporus DV-Q--EFRYTTLRD-----AFSG-----G-GISSLQN  
32 KZT36083 Sistotremastrum suecicum DV-M--EPRFASTIQT-----ALSS-----S-GLSGMVN  
32 KZS90559 Sistotremastrum niveocreum DV-M--EPRFASTIQT-----ALSS-----S-GLSGMVN  
32 EFI198134 Schizophyllum commune DV-Q--EFRYTHTIQD-----AFTN-----S-GLDQLQD  
32 BRC62173 Tricholoma matsutake DV-Q--EFRYTTALKN-----AFGL-----S-SGSSSISGLQD  
32 CCA69081 Serendipita indica AV-Q--EY-----AFGL-----G-GISGLQ  
32 EFI198135 Schizophyllum commune DV-Q--EFRYTRAIQS-----AFGL-----G-GIDQLRD  
32 KII185613 Plicaturopsis crispata DA-Q--EFRYTSALKS-----AFAN-----G-AINGLQY  
32 EIN11730 Punctularia strigosozonata DV-Q--EFRYTTALQD-----AFGG-----S-GISSLED  
32 PIL33242 Ganoderma sinense DV-Q--EPRFTDALRD-----AFTH-----S-SQLSDLQN  
32 KZT18190 Neolentinus lepideus DV-Q--EFRYTFLIKD-----AFPT-----S-GIAGLQN  
32 KEV75308 Peniophora sp\_CONT DV-Q--EPRFASLKR-----AFGL-----S-GISGLQD  
32 KII186838 Plicaturopsis crispata DA-Q--EPRFASLKY-----AFGL-----G-PISGLQD  
32 KDQ80818 Botryobasidium botryosum DV-Q--EFRYTSALKS-----AFEG-----Q-GISSLPN  
32 KIY73061 Cylindrobasidium torrendii NV-Q--EFRYTSTLQS-----AFGN-----G-DISGLQD  
32 KZW01365 Exidia glandulosa NV-Q--EPRFTSTLQD-----AFSS-----G-GISS  
32 KDQ58178 Jaapia argillacea NV-Q--EFRYTTALKE-----AFSM-----T-GIAN  
32 KEV75307 Peniophora sp\_CONT NV-Q--EFRYTTTELQN-----AFGG-----S-GISALQD  
32 KIK51212 Gymnopus luxurians DV-Q--EFRYTTAVQN-----AFGL-----D-GIASLQN  
32 RDX41931 Polyporus brumalis -----AFRFDALRD-----AFTC-----K-SNLSLKD  
32 TBU29254 Dichomitus squalens HV-Q--EPRFKDALTA-----AFTG-----S-SRLSDLQN  
32 KIY45802 Fistulina hepatica DA-Q--EFGFMSAMKS-----AFEN-----D-ASTTYSLS  
32 KIL59382 Amanita muscaria DV-Q--EPRYPATLKN-----AFSS-----G-NISALQD  
32 KIY53725 Fistulina hepatica DA-Q--EPRFPFTVKA-----AFTN-----N-ETSI-SELE  
32 KIY47132 Fistulina hepatica -----MFRPPLAPLQ-----AFSN-----D-SVGL-S  
32 RPO55342 Lentinus tigrinus DV-Q--EPRFMDALRD-----AFGL-----K-SNLSLKD  
32 TCD61445 Steccherinum ochraceum DV-Q--EPRWTALQK-----AFSG-----G-GISSLQS  
32 KIM25602 Serendipita vermifera NV-Q--EPRYTQAVQS-----AFMG-----D-GIILQD  
32 EJD37603 Auricularia subglabra NV-Q--EPRYTSTLRD-----AFSGV-----SA-GIAQ  
32 KZT54766 Calocera cornea DV-Q--EPRYTSALKD-----AFLS-----S-GIAS  
32 KIY46805 Fistulina hepatica DA-Q--EPRNPTTLKN-----AFGL-----N-GATT-SQLK  
32 PPO69654 Psilocybe cyanescens DV-Q--EPRYTTALRD-----AFGL-----D-GIASLQN  
32 KZQ93971 Calocera viscosa DV-Q--EPRYTSALQN-----AFLS-----S-GIASLTS  
32 KZP07860 Fibularhizoctonia sp\_CBS\_109695 DA-Q--EPRYVWALKa-----AFGL-----S-SSSI-S  
32 PVG03687 Serendipita vermifera NV-Q--EPRYTDTLKN-----AFTE-----G-GIDS  
32 EIM87674 Stereum hirsutum DV-I--EPRVPETVLT-----YFTS-----Q-GIANMVT  
32 CCA69087 Serendipita indica AV-Q--EPRYTNLKN-----AFTE-----G-GIDT  
32 CEL62035 Rhizoctonia solani DI-Q--EPRYTPALRD-----AFNN-----N-GIAG  
32 EIM05398 Punctularia strigosozonata DV-T--VSDYQGLQK-----AFGS-----T-NIASLNG  
32 EJU02896 Dacryopinax primogenitus EYTL--LFRYTSALQS-----AFLS-----N-GIVS  
32 KIO30302 Tulasnella caloopora DV-Q--EPRYLSALKD-----AFTS-----S-NIASLANIAS  
32 CEL62036 Rhizoctonia solani DV-Q--EPRYPEALKa-----AFTG-----G-GIAG  
32 KIO24533 Tulasnella caloopora DV-Q--EPRYTSLLSN-----AFNS-----G-NIAQ  
32 EIM84100 Stereum hirsutum TV-S--VSDYQVAVET-----AFKT-----G-GIDT  
32 KDM35973 Rhizoctonia solani DV-Q--EPRFASLKR-----AFQA-----D-GIAR  
32 KIY48489 Fistulina hepatica QV-N--AFEFAYGLT-----AFLA-----D-GLTA  
32 KIY48486 Fistulina hepatica QV-N--AFEFAYMRS-----AFFY-----D-GLSA  
32 KZP26813 Fibularhizoctonia sp\_CBS\_109695 DV-M--EPRFASALQS-----AFGL-----S-GISS  
32 KDQ32476 Pleurotus ostreatus DV-Q--VFEYSKKIRE-----AFMK-----G-SFTI  
32 EIM84087 Stereum hirsutum LV-S--ASDYQDMLQK-----ALRS-----D-GLVS  
32 KDQ32475 Pleurotus ostreatus DV-H--VFDYAMEIKR-----AFLS-----G-NIAS  
32 EMB88347 Chaeospora glaberrima DV-Q--EPRFASLKR-----AFQA-----E-KLA-LK  
32 ORY89754 Leucosporidium creatinivorum GV-L--EPRARSLVS-----AFVK-----G-NGIK  
32 EW234052 Fusarium oxysporum DV-Q--EPRYAYGLKR-----VFNN-----E-KLA-LK  
32 OBT91518 Pseudogymnoascus verrucosus DV-Q--EPRYAYDLKR-----VFNS-----E-KLA-LK  
32 KEY73157 Stachybotrys chartarum DV-Q--EPRYAYDLKR-----VEDN-----E-KLA-LK  
32 OBT62577 Pseudogymnoascus sp\_23342\_1\_1 DV-Q--EPRYAYGLKS-----VFNN-----E-KLA-LK  
32 RGM97874 Phaeoacremonium minimum DV-Q--EPRYAYDLKR-----VLNS-----E-KLA-LK  
32 GAT55198 Mycena chlorophos DI-T--EPRFASLQK-----AFSG-----S-SGVSNLVT  
32 OAG04271 Paraphaeosphaeria sporulosa DV-Q--EPRYADLKP-----VFNN-----E-KLA-LK  
32 EGG02960 Melampsora larii populina NV-H--VFQASDLKR-----LFKT-----D-GMRLVH  
32 EGG02993 Melampsora larii populina NV-Q--IFQASDLKR-----LFKT-----D-GMLVQ  
32 OAV91411 Puccinia triticina RV-H--IFQAYDLKR-----MFLS-----D-GIALQD  
32 EFP79978 Puccinia graminis RV-H--IFQAYDLKR-----MFLS-----D-GIALQD  
32 GAT51088 Mycena chlorophos DV-T--EPRYXXXTTKKTKTARV-----TRLSSNQISTLAME-----S-GIANMVT  
32 KNE94052 Puccinia striformis RV-H--IFQAYDLKR-----MFLS-----D-GIALQD  
32 KN254553 Puccinia sorghii -----AYDLKR-----MFLVRLTSLWPDPFSYNGSDGIA-LGHVSTPLSTLMYTHPVLIFLASY  
32 AOP40721 Microbacterium aurum SV-N--HSAPFTTWKREYSTND-----VQAVIEQYQENLMGGDQGPSTNARLNGNHYTHPDHSQFSQMNIDMRHMNFADNASNA  
32 CAB06816 Streptomyces lividans SV-T--HSAQPTTWKREYSAAD-----AKAAALEMEYEQGGTGNQPTSANAFLENGSYHVPDHSRFSQMNIDMRHMNFADNASNA  
32 JWA81565 Pezizomyces ruminatum VV-Q--SSPLYTWNPKDYGNWYESTGDKNLEKTRQE-WTDGATPKRSNNAFLNGNHYTHPDYSEFSGLNIDFTMHHSFENANNA



CSR-IV				CSR-VII			
1 AAB5446 Paenibacillus polymyxa	RY	SDDR	YYRDAQTNGVFID	RY	KPFLNDASGKPGANWDKWPQLKAALGF	TL	TSR
1 CAA49465 Thermactinomyces vulgaris	RY	AQDY	RYNNMTNGLFID	RY	PRFLNEASGKPGASNDKWPQLKAALGF	MF	TTR
1 BAD06003 Aspergillus awamori	MIKS	VASDC	S-DPTLLGNFID	MIKS	PRFASVTSYD	YSQAKNVLSY	IF
1 BAD06002 Aspergillus awamori	MIKS	VASDC	S-DPTLLGNFID	MIKS	PRFASVTSYD	YSQAKNVLSY	IF
1 AAF14264 Aspergillus flavus	MINT	VKSDC	P-DSTLLGTFTV	MINT	PRFASYTND	IALAKNVAAP	II
1 BAD01051 Aspergillus kawachii	MINT	VKSDC	P-DSTLLGTFTV	MINT	PRFASYTND	IALAKNVAAP	II
1 BAA22993 Aspergillus kawachii	MIKS	VASDC	S-DPTLLGNFID	MIKS	PRFASVTSYD	YSQAKNVLSY	IF
1 EAA64850 Aspergillus nidulans	MIET	VKYTC	S-DATLLGNFID	MIET	PRFASYTDD	ISLAKNVAAP	VI
1 AAF17100 Aspergillus nidulans	MINT	VASNC	R-DPTLLGNFID	MINT	PRFPNTYTD	MSRAKNVLAAP	LF
1 P56271 Aspergillus niger	MIKS	VASDC	S-DPTLLGNFID	MIKS	PRFASYTSD	YSQAKNVLSY	IF
1 CAA44871 Aspergillus niger	MIKS	VASDC	S-DPTLLGNFID	MIKS	PRFASYTSD	YSQAKNVLSY	IF
1 CAA40249 Aspergillus niger	QVQS	MMKNC	N-DVTALLSFSFID	QVQS	ARFASMTDD	MLAKNLTFT	TL
1 CAA41088 Aspergillus niger	ELAT	INDLC	P-DTFAMVNFID	ELAT	DRWAMNDD	IMLAKTALT	MM
1 CAA32128 Aspergillus oryzae	MINT	VKSDC	P-DSTLLGTFTV	MINT	PRFASYTND	IALAKNVAAP	II
1 BAA01255 Aspergillus shirousami	MINT	VKSDC	P-DSTLLGTFTV	MINT	PRFASYTND	IALAKNVAAP	II
1 ABEB0431 Aspergillus tubingensis	MIKS	VASDC	S-DPTLLGNFID	MIKS	PRFASYTSD	YSQAKNVLSY	IF
1 BAA12010 Cryptococcus sp. S.2	GISA	MSQDC	S-DPTLLGSFID	GISA	PRFASVTSYD	YSQAKNVLSY	IF
1 ABG48742 Fusicoccum sp. BCC4124	EINT	VKSDC	K-DPTLLGSFID	EINT	TRFAATSD	LSQAKNVLAAP	TL
1 AAO12212 Lipomyces kononenkoae	VVKS	EQATF	S-DAAHALTNFID	VVKS	PRFASYLGDGNC	DDVLREDAAT	LF
1 AAC49622 Lipomyces spenceriartinsiae	MIDT	LKSEC	T-DPTLLGSFID	MIDT	PRFASYTSD	ESLKNALAP	TI
1 AAN75021 Lipomyces starkeyi	MIDT	LKSEC	T-DPTLLGSFID	MIDT	PRFASYTSD	ESLKNALAP	TI
1 AFD54462 Malbranchea cinnamomea	NINK	VQTC	N-DPRLLTFTV	NINK	PRFASYTDD	IALAKNVLAAP	II
1 ABF72529 Ophiostoma floccosum	MIKS	VASDC	A-DPTLLGNFID	MIKS	PRFASYTSD	YSQAKNVLSY	IF
1 EBP56265 Phaeoacremonium aleuticum	MINS	VASDC	S-DPTLLGNFID	MINS	PRFASYTSD	YSQAKNVLSY	IF
1 ABO42265 Phanerochaete chrysosporium	MLAQ	SKQKF	K-DPVSLLGNFID	MLAQ	PWRNLSVD	PQSLNMAVF	NN
1 BAW15173 Pholiota microspora	TFED	SKTKF	K-DVGLLGNFID	TFED	PWRNLSVD	PQSLNMAVF	NN
1 BAF98616 Pichia burtonii	MIDN	ILKLC	N-DVLLGNFID	MIDN	IRLSTIKD	KALKNLAAP	TI
1 AGJ52081 Rhizomucor pusillus	MLGS	NNRAF	E-DTSVLTFTV	MLGS	PRFLNSQSD	KAL	NALTY
1 ADL28123 Rhizopus oryzae	FSDI	KGNF	K-NIDVLFNFID	FSDI	PRLLS-KAD	QSLVFNALAY	SP
1 ADDB0242 Saccharomyces fibuliger	MISV	VASDC	S-DPTLLGNFID	MISV	PRFASMTSD	KSLLNLAAP	VL
1 ABS76467 Saitoyama flava	MIKS	VASDC	S-DPTLLGNFID	MIKS	PRFASYTSD	YSQAKNVLSY	IF
1 CAA11471 Schizosaccharomyces pombe	ANML	VAHHC	K-DPTLLGLFID	ANML	PRFLNSQSD	YTVLKNMNTL	NL
1 CBA40006 Schizosaccharomyces pombe	YQEV	MASNC	SKYDSTMLTFTV	YQEV	YRFPYTSYD	QSQIMGALSF	VL
1 CAA34162 Schwanniomyces occidentalis	MIST	LQSCS	S-DVSLGNFID	MIST	VRFPSTYSD	TSLLKNMNTL	II
1 CAA51912 Schwanniomyces occidentalis	MISS	LESDC	K-DITLLGNFID	MISS	PRFLNSQSD	SALKNLAAP	NL
1 ACN82436 Sclerotinia sclerotiorum	GINT	MMKSC	S-DPTLLGSFID	GINT	PRFASYTSD	ESLKNALAP	TI
1 CAA03110 Thermomyces lanuginosus	ALAT	VQSCC	K-DNLLGNFID	ALAT	ARFASMTSD	IALAKNVLAAP	II
1 BAG95980 Trichoderma viride	MHRD	L-SF	P-DPTLLGTFTV	MHRD	PRFLSVND	TSLL	NALTY
1 CAJ21046 Valsaria rubricosa	NHDT	VGSTF	S-DPTLLGNFID	NHDT	PRFLSVND	HALLKNALAY	VI
5 AWX62636 Alicyclobacillus sp. 18711	GGY	DMRLN	LNNTM	MMNHQAVTFTV	GGY	QAL-QS	W
5 AAQ01675 Alkalimonas amyloxytica	SK	DRMWN	GGVL	NSQHRDRAVFTV	SK	GNPYGM	P
5 CAL14744 Anoxybacillus flavithermus	GGY	DMRLT	LNNTL	MDQPTLAVTFTV	GGY	QSL-QS	W
5 ABW07376 Bacillus acididoli	GGA	DMRKL	MNTNL	MDQPTLAVTFTV	GGA	QSL-QS	W
5 AAB22191 Bacillus anthracis	GGG	DMRLT	LNNTL	MDQPTLAVTFTV	GGG	QSL-QS	W
5 ABY86223 Bacillus cereus	NGN	DMRNI	LNNTL	VANHPHTAVTFTV	NGN	QSL-ES	V
5 CAD26699 Bacillus halmapalus	GGA	DMRKL	LNNTL	VANHPHTAVTFTV	GGA	QSL-ES	V
5 AAA22226 Bacillus licheniformis	GGG	DMRKL	LNNTL	VANHPHTAVTFTV	GGG	QSL-ES	T
5 AEM05860 Bacillus licheniformis	GGG	DMRKL	LNNTL	VANHPHTAVTFTV	GGG	QSL-ES	T
5 AAK00598 Bacillus megaterium	NGN	DMRNI	LNNTL	VANHPHTAVTFTV	NGN	QSL-ES	V
5 AKN35141 Bacillus paralicheniformis	GGY	DMRNI	LNNTL	VANHPHTAVTFTV	GGY	QSL-ES	V
5 AAN68734 Bacillus sp.	GGY	DMRNI	LNNTL	VANHPHTAVTFTV	GGY	QSL-ES	V
5 AAA22231 Bacillus sp. 707	GGY	DMRNI	LNNTL	VANHPHTAVTFTV	GGY	QSL-ES	V
5 BAF03567 Bacillus sp. JAMB 204	SGY	DMRNL	LNNTL	VANHPHTAVTFTV	SGY	QAL-ES	T
5 CAC39917 Bacillus sp. KSM K38	GGG	DMRKL	LNNTL	VANHPHTAVTFTV	GGG	QSL-ES	T
5 AAB18785 Bacillus sp. MK 716	GGA	DMRKL	MNTNL	MDQPTLAVTFTV	GGA	QAL-QS	W
5 AAB63900 Bacillus sp. TS 23	SGY	DMRNL	LNNTL	VANHPHTAVTFTV	SGY	QSL-QS	W
5 ABW07262 Bacillus sp. TX YK1	GGG	DMRKL	LNNTL	VANHPHTAVTFTV	GGG	QSL-QS	W
5 AAF00567 Cytophaga sp.	GGY	DMRNI	LNNTL	VANHPHTAVTFTV	GGY	QSL-ES	T
5 AACT4994 Escherichia coli	GRD	DMTQI	FTGTL	VEADPHAVTFTV	GRD	QAL-EA	P
5 AFZ41193 Exiguobacterium sp. DAU5	GGY	DMRNI	LNNTL	VANHPHTAVTFTV	GGY	QSL-ES	T
5 AAA22235 Geobacillus stearothermophilus	GGA	DMRKL	MNTNL	MDQPTLAVTFTV	GGA	QAL-QS	W
5 ABX83871 Geobacillus stearothermophilus	GGA	DMRKL	MNTNL	MDQPTLAVTFTV	GGA	QAL-QS	W
5 AAF087833 Geobacillus thermoleovorans	GGG	DMRKL	MNTNL	MDQPTLAVTFTV	GGG	QAL-QS	W
5 AGL70572 Geobacillus thermoleovorans	GGG	DMRKL	MNTNL	MDQPTLAVTFTV	GGG	QAL-QS	W
5 CAQ30277 Nostoc sp. POC 7119	GGN	DMRNI	LNNTL	VANHPHTAVTFTV	GGN	QAL-QS	W
5 AAA27110 Salmonella typhimurium	GAE	DMRNI	LNNTL	VANHPHTAVTFTV	GAE	QAL-EA	P
5 BAA24178 Streptococcus equinus	KAB	DLRQI	FEQTL	VANHPHTAVTFTV	KAB	QAL-ES	T
5 AAB97431 Streptococcus equinus	KET	DLRQI	FEQTL	VANHPHTAVTFTV	KET	QAL-ES	T
5 AAN59233 Streptococcus mutans	GSD	DLSTI	LDLSS	MSHPPFAVFTV	GSD	QAL-ES	T
5 GCD30600 Streptococcus mutans	GGG	DMRKL	LNNTL	VANHPHTAVTFTV	GGG	QAL-ES	T
5 ALP73597 Vibrio alginolyticus	GGG	DMRKL	LNNTL	VANHPHTAVTFTV	GGG	QAL-ES	T
5 ABK62854 Histoplasma capsulatum	E-FA	DLRKY	FEGLS	VYKREKHAFTV	E-FA	QSL-EE	P
5 ABS11196 Paracoccidioides brasiliensis	E-GA	DLRKY	FEGLS	VYKREKHAFTV	E-GA	QSL-EV	P
5 BAW15172 Pholiota microspora	RSR	DLRKL	FEDTI	VRARNDSTFTV	RSR	RTL-ES	P
15 AAB06935 Aedes aegypti	LTKNGSAG	V	L-LP	SSQALVFVD	LTKNGSAG	SILTY	K
15 AAB06934 Aedes aegypti	WG	EQ	G	L-LP	SSQALVFVD	SILTY	K
15 AAA03322 Aedes aegypti	WG	EQ	G	L-LP	SSQALVFVD	SILTY	K
15 AAA03323 Anopheles merus	FG	EA	G	L-LA	SRDAVFVD	GNYC	ILTY
15 AAN77138 Anthonomus grandis	WG	VG	G	M-AD	GSKTAVFVD	SN	SAYLNY
15 AAN77139 Anthonomus grandis	FGFDEQ	G	V-TA	GEHTLCFVD	FGFDEQ	NQFLNY	K
15 AAO13755 Asterias rubens	FG	EA	G	L-LP	ETAAVFVD	GNYC	ILTY
15 AAY23288 Blattella germanica	FG	EA	G	L-LP	ETAAVFVD	GNYC	ILTY
15 BAB72257 Callosobruchus chinensis	WG	EA	G	L-LP	ETAAVFVD	GNYC	ILTY
15 AAA03350 Culex tarsalis	WG	EA	G	L-LP	ETAAVFVD	GNYC	ILTY
15 AAF20998 Diabrotica virgifera virgifera	WG	PQ	G	L-LD	GLDAVFVD	SSALTY	K
15 AIC35243 Drosophila ananassae	WG	TE	A	F-AP	ASRSLVFVD	GNYC	ILTY
15 BAB91544 Drosophila bocki	WG	TA	G	F-AA	ASRSLVFVD	GNYC	ILTY
15 BAA04582 Drosophila erecta	WG	TA	G	F-AA	ASRSLVFVD	GNYC	ILTY
15 BAB91509 Drosophila kikkawai	WG	TA	G	F-AA	ASRSLVFVD	GNYC	ILTY
15 BAB95437 Drosophila leontis	WG	TA	G	F-AA	ASRSLVFVD	GNYC	ILTY
15 BAA95441 Drosophila lini	WG	TA	G	F-AA	ASRSLVFVD	GNYC	ILTY
15 BAA04583 Drosophila mauritiana	WG	TA	G	F-AA	ASRSLVFVD	GNYC	ILTY
15 AAK93479 Drosophila melanogaster Amyrel	WG	TD	G	F-LP	SGQALVFVD	GNYC	ILTY
15 CAA28238 Drosophila melanogaster	WG	TA	G	F-AA	ASRSLVFVD	GNYC	ILTY
15 AIC46839 Drosophila pseudoobscura	WG	AA	G	F-AA	ASRSLVFVD	GNYC	ILTY
15 BAA04585 Drosophila pseudoobscura	WG	TA	G	F-AA	ASRSLVFVD	GNYC	ILTY
15 AIC46463 Drosophila virilis	WG	TS	G	F-AA	ASRSLVFVD	GNYC	ILTY
15 AAG60011 Drosophila yakuba	WG	TA	G	F-AA	ASRSLVFVD	GNYC	ILTY
15 CAA76926 Phaenodactylus cochleariae	WG	PA	G	L-LE	GTDAVFVD	SGALTY	K
15 P56634 Tenebrio molitor	WG	PE	G	L-LP	ETAAVFVD	GNYC	ILTY
15 AAO37078 Tribolium castaneum	WG	PE	N	L-LD	GLDAVFVD	SSALTY	K
15 AAF74435 Zabrotes subfasciatus	WG	TS	G	L-LP	ETAAVFVD	GNYC	ILTY
24 ABB09312 Acanthosiphum sordidum	FG	QF	G	M-VP	SSDALVFVD	GNYC	ILTY
24 BAB85635 Anguilla japonica	WG	EQ	G	F-MT	SGNALVFVD	GNYC	ILTY
24 AAL37207 Crassostrea gigas	WG	P	G	M-PN	SNDAAVFVD	GNYC	ILTY
24 AAL37183 Crassostrea gigas	WG	EQ	G	M-PN	SNDAAVFVD	GNYC	ILTY
24 AAD38942 Dermatophagoides pteronyssinus	FG	TE	G	L-VP	SGDALVFVD	GNYC	ILTY
24 AAD38943 Euroglyphus maynei	FG	TE	G	L-VP	SGDALVFVD	GNYC	ILTY
24 AAC60246 Gallus gallus	WG	EA	G	M-LK	SDDSVFVD	GNYC	ILTY
24 ABO26610 Haliothis discus discus	WG	SA	G	M-LK	SDDSVFVD	GNYC	ILTY
24 BMM74656 Haliothis discus hannah	WG	SA	G	M-LK	SDDSVFVD	GNYC	ILTY
24 AAA51724 Homo sapiens pancreatic	WG	EG	G	F-VP	SRDALVFVD	GNYC	ILTY
24 AAB63129 Homo sapiens salivary	WG	EG	G	F-MP	SRDALVFVD	GNYC	ILTY
24 AAA37221 Mus musculus	WG	EG	G	L-MP	SRDALVFVD	GNYC	ILTY
24 AAA37230 Mus musculus	WG	EG	G	L-VP	SRDALVFVD	GNYC	ILTY
24 B2M004 Oryzias latipes	WG	EG	G	F-VP	SRDALVFVD	GNYC	ILTY
24 CAA68065 Pecten maximus	WG	EA	G	M-PN	SNDAAVFVD	GNYC	ILTY
24 CAA54524 Penaeus vannamei	FG	EG	G	M-ID	RHDAVFVD	GNYC	ILTY
24 CAB65552 Penaeus vannamei	FG	EG	G	M-ID	RHDAVFVD	GNYC	ILTY
24 AAF65827 Pseudopleuronectes americanus	WG	EG	G	F-MS	DGNAVFVD	GNYC	ILTY
24 AAA40725 Rattus norvegicus	WG	EG	G	F-VP	TRDALVFVD	GNYC	ILTY
24 AAB88228 Rattus norvegicus	WG	EG	G	F-MP	SRDALVFVD	GNYC	ILTY
24 P93053 Streptococcus	WG	EG	G	F-MP	SRDALVFVD	GNYC	ILTY
24 AAF02828 Sus scrofa	WG	EG	G	F-MP	SRDALVFVD	GNYC	ILTY
24 CAC87125 Tetraodon nigroviridis	WG	EG	G	F-MP	SRDALVFVD	GNYC	ILTY
32 AAX20116 Aeromonas hydrophila	LG	ES	G	L-LP	SSDALVFVD	GNYC	ILTY
32 BAA22082 Bacillus sp. 195	TLNG	IG	PT	AG	FG	GNYC	ILTY
32 AAY89038 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 CAB92963 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 BAA22082 Bacillus sp. 195	TLNG	IG	PT	AG	FG	GNYC	ILTY
32 AAY89038 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 CAB92963 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 BAA22082 Bacillus sp. 195	TLNG	IG	PT	AG	FG	GNYC	ILTY
32 AAY89038 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 CAB92963 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 BAA22082 Bacillus sp. 195	TLNG	IG	PT	AG	FG	GNYC	ILTY
32 AAY89038 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 CAB92963 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 BAA22082 Bacillus sp. 195	TLNG	IG	PT	AG	FG	GNYC	ILTY
32 AAY89038 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 CAB92963 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 BAA22082 Bacillus sp. 195	TLNG	IG	PT	AG	FG	GNYC	ILTY
32 AAY89038 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 CAB92963 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 BAA22082 Bacillus sp. 195	TLNG	IG	PT	AG	FG	GNYC	ILTY
32 AAY89038 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 CAB92963 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 BAA22082 Bacillus sp. 195	TLNG	IG	PT	AG	FG	GNYC	ILTY
32 AAY89038 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 CAB92963 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 BAA22082 Bacillus sp. 195	TLNG	IG	PT	AG	FG	GNYC	ILTY
32 AAY89038 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 CAB92963 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 BAA22082 Bacillus sp. 195	TLNG	IG	PT	AG	FG	GNYC	ILTY
32 AAY89038 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 CAB92963 Bifidobacterium breve	GLAK	VG	GDG	W-S	SKDAVFVD	GNYC	ILTY
32 BAA22082 Bacillus sp. 195	TLNG	IG	PT	AG			

[illegible]

AA85446 *Paenibacillus polymyxa*  
CA94965 *Thermactinomyces vulgaris*  
BAD6003 *Aspergillus awamori*  
BAD6002 *Aspergillus awamori*  
AF14264 *Aspergillus flavus*  
BAD1053 *Aspergillus kawachii*  
BAD2225 *Aspergillus kawachii*  
EAA64850 *Aspergillus nidulans*  
AAFI17100 *Aspergillus nidulans*  
PS6271 *Aspergillus niger*  
CAK44871 *Aspergillus niger*  
CAK40249 *Aspergillus niger*  
CAK41088 *Aspergillus niger*  
CAK51218 *Aspergillus niger*  
BAD101255 *Aspergillus shiroyamii*  
ABE80431 *Aspergillus tubingensis*  
BAI120110 *Cryptococcus sp. S\_2*  
ABG48762 *Fusicoccum sp. BC04124*  
AAQ12212 *Lipomyces kononenkoae*  
AAQ14962 *Lipomyces kononenkoae*  
AAU75021 *Lipomyces starkeyi*  
AFD54462 *Malbranchea cinnamomea*  
ABF72529 *Ophiostoma floccosum*  
EPS26265 *Penicillium oxalicum*  
ABQ42285 *Phanerochaete chrysosporium*  
AAAI15170 *Photorhabdus luminescens*  
BAF98616 *Richiella burtonii*  
AGJ52081 *Rhizomucor pusillus*  
ADL28123 *Rhizopus oryzae*  
AD80242 *Saccharomyces fibuliger*  
ABST7467 *Saitozya flava*  
CAB11741 *Schizosaccharomyces pombe*  
CAAM006 *Schizosaccharomyces pombe*  
CA34162 *Schwanniomyces occidentalis*  
CA51912 *Schwanniomyces occidentalis*  
ACN82436 *Sclerotinia sclerotiorum*  
BA043110 *Thermomyces lanuginosus*  
BAG65890 *Trichoderma viride*  
CAI2046 *Valsaria rubicola*  
AWG66236 *Alcyonidium rubrum* sp. 18711  
AAQ161675 *Akaihalmonas amylolytica*  
CAL14744 *Acylomyxillus flavithermus*  
AEW07376 *Bacillus acidicola*  
AAAZ22191 *Bacillus amyloliquefaciens*  
ABY66223 *Bacillus cereus*  
BAD26589 *Bacillus cereus*  
AAAZ2226 *Bacillus licheniformis*  
AEM05860 *Bacillus licheniformis*  
AAK00598 *Bacillus megaterium*  
AGN35141 *Bacillus paralicheniformis*  
ABR68734 *Bacillus sp. 707*  
AAAZ2223 *Bacillus sp. 707*  
CA33567 *Bacillus* JAMB\_204  
CAC39917 *Bacillus* KSM\_K38  
ABAI18785 *Bacillus* sp. MK\_K16  
BAK63900 *Bacillus* TS\_23  
ABW87266 *Bacillus* sp. YX\_YX1  
AAU00567 *Cytophaga* sp.  
AHC74994 *Geobacillus* sp. coli  
AFZ41119 *Geiobacterium* sp. DAU5  
AAAZ2235 *Geobacillus stearothermophilus*  
ABX83871 *Geobacillus thermodinitrificans*  
AFC78383 *Geobacillus thermoleovorans*  
ACL70573 *Halothermothrix orenii*  
ACQ30277 *Nostoc* sp. FCC\_T119  
AAB77110 *Nostoc* sp. cyprumium  
BAZ24178 *Streptococcus equinus*  
AAAP97431 *Streptococcus mutans*  
AEN59233 *Streptococcus mutans*  
OCD30600 *uncultured bacterium*  
ALP73597 *Varicoides alginolyticus*  
AEN52054 *Phaenocarpa apiculatus*  
ABAI1196 *Parabacillaria brasiliensis*  
BAW15172 *Pholiota microspora*  
AAAB60933 *Aedes aegypti*  
AAAB60934 *Aedes aegypti*  
AAAO3322 *Aedes atropalpus*  
AAAO3323 *Anopheles merus*  
AAW77198 *Anopheles merus*  
AAAN73139 *Anthonomus grandis*  
AAO13755 *Asterias rubens*  
AAAY23288 *Blattella germanica*  
BAB72259 *Callosobruchus chinensis*  
AAAO3350 *Culex tarsalis*  
AAAP2020 *Drosophila virgifera*  
ACB35243 *Drosophila ananassae*  
BAB91544 *Drosophila bocki*  
BAOA4582 *Drosophila erecta*  
BAB91509 *Drosophila kikkawai*  
BA9A5437 *Drosophila leontia*  
BA9A5441 *Drosophila lini*  
BAOA4583 *Drosophila obscuritarsis*  
AAK93479 *Drosophila melanogaster Amyrel*  
CAK28238 *Drosophila melanogaster*  
AAC46839 *Drosophila pseudoobscura*  
BAOA4585 *Drosophila sechellia*  
AAC46463 *Drosophila virilis*  
AAAG60011 *Drosophila yakuba*  
CAK76926 *Phaenocarpa caroliniae*  
PS56634 *Tenebrio molitor*  
AAAO33708 *Tribolium castaneum*  
AAFY3435 *Zabrotes subfasciatus*  
ABLO9312 *Acarus siro*  
BAB86535 *Anguilla japonica*  
BAI37207 *Ceras*  
AAJ37183 *Crasostrea gigas*  
AAAB38942 *Dermatophagoides pteronyssinus*  
AAAB38943 *Eurylyphus maynei*  
AAC06204 *Gallus gallus*  
ABQ26610 *Haletios tiscus discus*  
BAAB7656 *Haletios tiscus hancrati*  
AAH51724 *Homo sapiens*  
AAH63129 *Homo sapiens salivary*  
AAK37221 *Mus musculus*  
AAK37230 *Mus musculus*  
H2N004 *Oryzias latipes*  
CAK68065 *Pecten maximus*  
CAK54524 *Penaeus*  
CAB65552 *Penaeus vannamei*  
AAAF65827 *Pseudopleuronectes americanus*  
AAAA0725 *Rattus norvegicus*  
AAAB88228 *Rattus norvegicus*  
P38053 *Struthio camelus*  
AAQ02828 *Sus scrofa*  
CAK97125 *Tetranychus nigroviridis*  
AAZ21016 *Aeromonas hydrophila*  
BAI22082 *Bacillus* sp. 195  
ABY989038 *Bifidobacterium breve*  
CAB92962 *Halomonas meridiana*  
BAI52728 *Kocuria varians*  
CAK54202 *Micrococcus aurum*  
CAAI4991 *Pseudotaleromonas haloplanktis*  
BAAG6835 *Pseudomonas* sp. KFCC10818  
AAAG6317 *Streptomyces albus*

CSR-VII

[illegible][illegible]

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1 AAB5446 Paenibacillus polymyxa ---QN---GSGREKVVDDSFYSPQRSK---NGD---EAVFVINSNSQRT-RTI-GN-----  
1 CAA4945 Thermoactinomyces vulgaris ---RK---GTQAEKVVDDTFYAFQRSY---NGD---EVMVINSNSQRT-RTV-PN-----  
1 BAD0603 Aspergillus awamori ---DS---DYITKNDPIYDTSNTIAMRKGT---SGS---QVITVLSNKGSGS-SYT-LTL-----  
1 BAD0602 Aspergillus awamori ---DT---GFVTKNDPIYKDDTTIAMRKGT---DGS---QVITVLSNKGSGS-SYT-LSL-----  
1 AAF1424 Aspergillus flavus ---DT---GFVTKNDPIYKDDTTIAMRKGT---DGS---QVITVLSNKGSGS-SYT-LSL-----  
1 BAD0105 Aspergillus kawachii ---DT---GFVTKNDPIYKDDTTIAMRKGT---DGS---QVITVLSNKGSGS-SYT-LSL-----  
1 BAA2293 Aspergillus kawachii ---DS---DYITKNDPIYDTSNTIAMRKGT---SGS---QITVLSNKGSGS-SYT-LTL-----  
1 EAA6485 Aspergillus nidulans ---NE---TYLSKNDPIYNNNNVLMARKGF---DGS---QITVLSNKGSGS-SYT-LTL-----  
1 AAF17100 Aspergillus nidulans ---DS---SYLSRNTFPYDSNNTIAMRKGS---GGS---QVITLNNIGTIG-SYT-FDL-----  
1 P56271 Aspergillus niger ---DS---AYITKNDPIYDTSNTIAMRKGT---SGS---QVITVLSNKGSGS-SYT-LTL-----  
1 CAA44871 Aspergillus niger ---DT---GFVTKNDPIYKDDTTIAMRKGT---DGS---QVITVLSNKGSGS-SYT-LSL-----  
1 CAA40249 Aspergillus niger ---DN---HYPOVEDPIPEGGSELGFRKGI---EGR---QVVMLSTQGTNSS-AYN-LSM-----  
1 CAA41088 Aspergillus niger ---DS---SYISKNDPIYQGGSELAFWKGN---NGR---QVIMVLSNKGSGS-SYT-LTL-----  
1 CAA31218 Aspergillus oryzae ---DT---GFVTKNDPIYKDDTTIAMRKGT---DGS---QVITVLSNKGSGS-SYT-LSL-----  
1 BAA01255 Aspergillus shirousami ---DT---GFVTKNDPIYKDDTTIAMRKGT---DGS---QVITVLSNKGSGS-SYT-LSL-----  
1 ABB80431 Aspergillus tubingensis ---DS---DYITKNDPIYDTSNTIAMRKGT---SGS---QITVLSNKGSGS-SYT-LTL-----  
1 BAA12010 Cryptococcus sp. S.2 ---NG---GFVTKNDPIYDTSNTIAMRKGT---SGV---QVITVLSNKGSGS-SYT-LSL-----  
1 ABB48762 Fusicoccum sp. BCC4124 ---DA---TYLTKNDPIYKDDTTIAMRKGT---DGS---QVITVLSNKGSGS-SYT-LSL-----  
1 AAO12212 Lipomyces kononenkoae ---TG---QVTFYSDTIVLFGSGVSHMQRGP---G---LVIVLNNVQHII-DNT--GY-----  
1 AAC4622 Lipomyces spenceri ---DD---TYLTKNDPIYDTSNTIAMRKGT---TGN---QITVLSNKGSGS-SYT-LTL-----  
1 AAN75021 Lipomyces starkeyi ---DD---TYLTKNDPIYDTSNTIAMRKGT---TGN---QITVLSNKGSGS-SYT-LTL-----  
1 AAF54462 Malbranchea cinnamomea ---DD---AYITPTDIKYSDDHTLALVKGA---D---VTTLNAGANAG-ETT-VTV-----  
1 ABB72529 Ophiostoma floccosum ---DS---SWATSANSPFYQDSNTIAMKGS---SGS---XVITVLSNKGSGS-SYT-LSL-----  
1 EBB26265 Phaeoacremonium aleuticum ---DA---NYTSNNRNTPIYDTSNTIAMRKGS---SGS---QVITVLSNKGSGS-SYT-LSL-----  
1 ABO42285 Phanerochaete chrysosporium ---TD---NMLNSTEVLITTDYGLAIMKGP---G---VISIMTNGSPV-APE-PVL-----  
1 BAW15173 Pholiota microspora ---TD---DWHVKEAQLITTSFYGMKIMKGP---G---VISIVTNGSPV-NGT-HIA-----  
1 BAF98616 Pichia burtonii ---DN---SYPTSVSIIYSDHTIATKKAN---A---LVIAFTVNGASAS-P-S-VTL-----  
1 AGJ52081 Rhizomucor pusillus ---K---TVMDIYVGDNAYAFKRGD---A---LVVL---NNYSGST-N-Q-VSF-----  
1 ADL28123 Rhizopus oryzae ---S---TVMGIAQTDNVYVFRGGG---S---LVVV---NNYQGGST-N-T-ITV-----  
1 ABB02422 Saccharomyces fibuliger ---DS---SYATSGLVSVFSDNRYIATRKGS---G---VSVFNNLNGSGS-S-D-VTI-----  
1 ABB76467 Saitozyma flava ---NG---GFVTKNDPIYDTSNTIAMRKGT---SGV---QVITVLSNKGSGS-SYT-LSL-----  
1 CAB11471 Schizosaccharomyces pombe ---EDGEIYRSITRAIMIGDHWVMYKGP---G---VITFYNIGAVDK-EYL-IRM-----  
1 CAB40006 Schizosaccharomyces pombe ---DP---DMVTSTYQISAEVDHYVGGKND---D---VLVMFNNMGVYTN-L--TI-----  
1 CAA34162 Schwanniomyces occidentalis ---DS---AYSTKSSVSSSDHYIATRKGS---DAN---QLISFNNLNGSGS-Q-D-ITV-----  
1 CAA31912 Schwanniomyces occidentalis ---DS---KYTTKSSDVLVYASGHVIALQKGA---DQ---RIVSVFNNLNGSGS-Q-T-VTF-----  
1 ACN82436 Sclerotinia sclerotiorum ---DP---TYLTKNDPIYVSDGTTIAMRKGT---TGR---QITVLSNKGSGS-SYT-LTL-----  
1 CAA03110 Thermomyces lanuginosus ---NP---EFTSNTVIVQDSTIAIMKGS---G---VTTLNAGANAG-ETT-VTV-----  
1 BAG9580 Trichoderma viride ---AD---NDHKLHYEFTAYAWSRAG---G---KLVAFTVNSGGSS-A-Q-FCF-----  
1 CAJ21046 Valsaria rubricosa ---AG---NDHVLHYTTDNAYAWSRAS---G---KLIVVTSNKGSDS-S-T-ICF-----  
5 AWX62636 Alicyclobacillus sp. 18711 ---QH---DYLQNG---DVIGWTRGEG---SAHAG---SGLATVMSDG-PGGS-----  
5 AAQ01675 Alkalimonas amylolytica ---QH---EYSGNTE---AVAYVREGL---SNVPG---TGLVLMISGR-MGSS---Q-QS-----  
5 CAL14744 Anoxybacillus flavithermus ---QH---DYDASA---DIIGWTRGEG---AEKAN---SGLAALITDG-PGGS-----  
5 AEW07376 Bacillus acidicola ---QH---DYLDHS---DIIGWTRGEG---TEKPG---SGLAALITDG-PGGS-----  
5 AAA22191 Bacillus amyloliquefaciens ---QH---DYLDHS---DIIGWTRGEG---SSAKP---SGLAALITDG-PGGS-----  
5 ABB26223 Bacillus cereus ---QH---DYFDHP---DVIGWTRGEG---SVHAN---SGLATISDG-PGCT-----  
5 CAD26699 Bacillus halmapalus ---QH---DYFDHP---DIIGWTRGEG---TTHPN---SGLATISDG-PGGE-----  
5 AAA22226 Bacillus licheniformis ---QH---DYFDHP---DVIGWTRGEG---SSVAN---SGLAALITDG-PGGA-----  
5 AEM05860 Bacillus licheniformis ---QH---DYFDHP---DVIGWTRGEG---SSVAN---SGLAALITDG-PGCT-----  
5 AAK00598 Bacillus megaterium ---QH---DYFDHP---DVIGWTRGEG---SVHAN---SGLATISDG-PGGA-----  
5 AKN35141 Bacillus paralicheniformis ---QH---DYFDHP---DVIGWTRGEG---SSVAN---SGLAALITDG-PGCT-----  
5 AAN68734 Bacillus sp. ---QH---DYFDHP---DVIGWTRGEG---SSHPN---SGLATISDG-PGGM-----  
5 AAA22231 Bacillus sp. 707 ---QN---DYLDHS---DIIGWTRGEG---TTHPN---SGLATISDG-PGGS-----  
5 BAF03567 Bacillus sp. JAMB 204 ---QH---DYIDNQ---DVIGWTRGEG---TSKAK---SGLAALITDG-PGGA-----  
5 CAC39917 Bacillus sp. KSM K38 ---QH---DYFDHP---DVIGWTRGEG---SSHPN---SGLATISDG-PGGS-----  
5 AAB18785 Bacillus sp. MK 716 ---QH---DYLDHS---DIIGWTRGEG---TEKPG---SGLAALITDG-PGGS-----  
5 AAA63900 Bacillus sp. TS 23 ---QH---DYIDHQ---DIIGWTRGEG---DTKPN---SGLAALITDG-PGGS-----  
5 ABB97262 Bacillus sp. YK\_YK1 ---QH---DYIDHQ---DIIGWTRGEG---SSAKP---SGLAALITDG-PGGS-----  
5 AAF00567 Cytophaga sp. ---QH---DYIDNP---DVIGWTRGEG---STKAK---SGLATVITDG-PGGS-----  
5 AAC74994 Escherichia coli ---QT---LFFDHP---NCIAFSRGT---DEFFG---CVVMSNG-DGGE-----  
5 AFZ41193 Exiguobacterium sp. DAU5 ---QH---DYIDHQ---DVIGWTRGEG---TDRAK---SGLATISDG-PGGS-----  
5 AAA22235 Geobacillus stearothermophilus ---QH---DYLDHS---DIIGWTRGEG---TEKPG---SGLAALITDG-PGGS-----  
5 ABB383871 Geobacillus thermodenitrificans ---QH---DYLDHS---DIIGWTRGEG---TEKPG---SGLAALITDG-PGGS-----  
5 ABB383871 Geobacillus thermoleovorans ---QH---DYLDHS---DIIGWTRGEG---TEKPG---SGLAALITDG-PGGS-----  
5 ACL70573 Halothermothrix orenii ---CY---DYIDNDQA---DIYSVRSCT---PDVAG---DGLVMSIDG-TSGM---V-AG-----  
5 CAQ30277 Nostoc sp. POC\_7119 ---QY---NYLDHW---NTIGWTRGEG---ADHPG---GMVIMSIDG-SBGI-----  
5 AAA27110 Salmonella typhimurium ---QT---LFFDHP---NCIAFSRGT---EENPG---CVVMSNG-DGGE-----  
5 BAA24178 Streptococcus equinus ---EM---NYFDPN---NCIGWSYLG---KEHPT---SLAVLINA-HSTA-----  
5 AAA97431 Streptococcus equinus ---EM---DYFDQA---NCIGWTCG---DEHPT---ALAGLINS-KATS-----  
5 AAN59233 Streptococcus mutans ---QH---DYFDQA---NCIGWTCG---DEHPT---GMVIMSIDG-EANC-----  
5 CCB30600 unclassified bacterium ---QH---DYFDHP---DVIGWTRGEG---SEVFG---DGLVMSIDG-EBGI---I-IS-----  
5 ALP73597 Vibrio alginolyticus ---QH---SYLDHW---DVIGWTRGEG---AKHPG---S-MVIMSIDG-PGGS-----  
5 ABB62854 Histoplasma capsulatum ---QR---DYFDKR---HCIGVFRGD---SGHPD---GLACVLSNG-PAAAT-----  
5 ABS11196 Paracoccidioides brasiliensis ---QR---DYFNKR---NCIGVFRGD---SAHPH---GLACVLSNG-PADK-----  
5 BAW15172 Pholiota microspora ---TE---DYFAHP---NCIGVFRGD---ATHGT---CAVLSNKG-EGDSTYL-HE-----  
15 AAB60935 Aedes aegypti ---SLDHQIA-T-QNTAFPCRG---KGF-IVFNNS--B-N-TIT-QQY-----  
15 AAB60934 Aedes aegypti ---GLND WSDG-NQOIAFGRGD---KGF-IVFNNS--G-Y-DNN-ENL-----  
15 AAO03322 Aedes atropalpus ---MLN WSDG-NQOIAFGRGD---KGF-IVFNNS--G-Y-DNN-ENL-----  
15 AAO03323 Anopheles merus ---PLQH WSDG-NQOIAFGRGD---KGF-IVFNNS--P-F-DNN-VLL-----  
15 AAN77138 Anthonomus grandis ---ELTN WSDG-DNQIAFSGR---KGF-IVFNNS--G-Y-DNN-SNI-----  
15 AAN77139 Anthonomus grandis ---DMQO WSDG-N-QIAFSGR---KGF-IVFNNS--G-Y-DNN-SNI-----  
15 AAO13755 Asterias rubens ---PLTN WSDG-NHMAFGRGD---KGF-IVFNNS--G-Y-DNN-SNI-----  
15 AAY23288 Blattella germanica ---AVIN WSDG-DQOIAFSGR---KGF-IVFNNS--YNT-HIM-HTL-----  
15 BAB72257 Callosobruchus chinensis ---ELTN WSDG-NQOIAFGRGD---KGF-IVFNNS--G-Y-DNN-SNI-----  
15 AAO03350 Culex tarsalis ---GVND WSDG-AKWMAFGRGD---KGF-IVFNNS--G-Y-DNN-SNI-----  
15 AAF20998 Diabrotica virgifera virgifera ---GINN WSDG-HQOIAFGRGD---KGF-IVFNNS--G-Y-DNN-SNI-----  
15 AAG35243 Drosophila ananassae ---PVQN WSDG-NQOIAFSGR---KGF-IVFNNS--N-S-DLN-QSL-----  
15 BAB91544 Drosophila bocki ---AIQN WSDG-SNQIAFSGR---KGF-IVFNNS--N-Y-DLN-SSL-----  
15 BAA04582 Drosophila erecta ---AIQN WSDG-SNQIAFSGR---KGF-IVFNNS--N-Y-DLN-SSL-----  
15 BAB91509 Drosophila kikkawai ---AIQN WSDG-SNQIAFSGR---KGF-IVFNNS--N-Y-DLN-SSL-----  
15 BAB95437 Drosophila leontis ---AIQN WSDG-SNQIAFSGR---KGF-IVFNNS--N-Y-DLN-SSL-----  
15 BAA95441 Drosophila lini ---AIQN WSDG-SNQIAFSGR---KGF-IVFNNS--N-Y-DLN-SSL-----  
15 BAA04583 Drosophila mauritiana ---AIQN WSDG-SNQIAFSGR---KGF-IVFNNS--N-Y-DLN-SSL-----  
15 AAK93479 Drosophila melanogaster Amyrel ---EITG WSDG-DNQISFCRGN---KGF-IVFNNS--L-Y-DLS-QDL-----  
15 CAA28238 Drosophila melanogaster ---EIQN WSDG-SNQISFCRGN---KGF-IVFNNS--N-Y-DLN-SSL-----  
15 AAG48839 Drosophila pseudoobscura ---DLQN WSDG-SNQIAFSGR---RAF-IVFNNS--N-Y-DLN-SSL-----  
15 BAA04585 Drosophila sechellia ---AIQN WSDG-SNQIAFSGR---KGF-IVFNNS--N-Y-DLN-SSL-----  
15 AAG46463 Drosophila virilis ---QLQN WSDG-SNQIAFSGR---QGF-IVFNNS--N-Y-DLN-SSL-----  
15 AAG60011 Drosophila yakuba ---AIQN WSDG-SNQIAFSGR---KGF-IVFNNS--N-Y-DLN-SSL-----  
15 CAA76926 Phaedon cochleariae ---SISN WSDG-NQOIAFGRGD---KGF-IVFNNS--G-Y-DLN-QNL-----  
15 P56634 Tenebrio molitor ---QVEN WSDG-DNQIAFSGR---KGF-IVFNNS--G-Y-DLN-QNL-----  
15 AAO03708 Tribolium castaneum ---GIEN WSDG-NQOIAFGRGD---KGF-IVFNNS--G-Y-DLN-QHF-----  
15 AAF73435 Zabrotes subfasciatus ---DMTN WSDG-YQOIAFGRGD---KGF-IVFNNS--G-Y-DLN-QHF-----  
24 ABB09312 Acares siro ---AVSH WSDG-DQOIAFGRGD---KGF-IVFNNS--G-Y-DLN-QHF-----  
24 BAB85635 Anguilla japonica ---PISH WSDG-SNQVAFGRGD---KGF-IVFNNS--DR-HLD-MTL-----  
24 AAL37207 Crassostrea gigas ---TMIN WSDG-DYIAFSGR---KGF-IVFNNS--TS-DIN-VNL-----  
24 AAL37183 Crassostrea gigas ---TLTN WSDG-DYIAFSGR---KGF-IVFNNS--TS-DIN-VNL-----  
24 AAD38942 Dermatophagoidea pteronyssinus ---PVHN WSDG-DYQIAFSGR---KGF-IVFNNS--Q-NLQ-QKL-----  
24 AAD38943 Euroglyphus maynei ---PVHN WSDG-DYQIAFSGR---KGF-IVFNNS--Q-NLQ-QKL-----  
24 AAO60246 Gallus gallus ---HAF-IAINLQGRK-NLR-QRL-----  
24 ABO26610 Haliotis discus discus ---KAF-IAFNLE-GY-DLS-KSL-----  
24 BMM74656 Haliotis discus hannai ---GLSN WSDG-DYQIAFSGR---KAL-IAFNLE-GY-DLS-KSL-----  
24 AAS1724 Homo sapiens pancreatic ---P-YN YDNG-SNQVAFGRGD---KGF-IVFNNS--DW-SFS-LTL-----  
24 AAB63129 Homo sapiens salivary ---P-YN YDNG-SNQVAFGRGD---KGF-IVFNNS--DW-TFS-LTL-----  
24 AAB37221 Mus musculus ---P-AN WSDG-SNQVAFGRGD---KGF-IVFNNS--DW-ALS-ETL-----  
24 AAB37230 Mus musculus ---P-AN WSDG-SNQVAFGRGD---KGF-IVFNNS--DW-ALS-ATL-----  
24 B2B004 Oryzias latipes ---PHSN WSDG-SNQVAFGRGD---KGF-IVFNNS--DW-ALS-ATL-----  
24 CAA68065 Pecten maximus ---MLQH WSDG-NQOIAFGRGD---KGF-IVFNNS--NR-NLD-QTL-----  
24 CAA54524 Penaeus vannamei ---DMND WSDG-SNQIAFGRGD---KGF-IVFNNS--GW-DLK-ETL-----  
24 CAB65552 Penaeus vannamei ---DMND WSDG-SNQIAFGRGD---KGF-IVFNNS--GW-DLK-ETL-----  
24 AAF65827 Pseudopleuronectes americanus ---PHSN WSDG-SNQVAFGRGD---KGF-IVFNNS--DW-DLD-ETL-----  
24 AAB40725 Rattus norvegicus ---P-AN WSDG-SNQVAFGRGD---KGF-IVFNNS--DW-ALS-STL-----  
24 AAB88228 Rattus norvegicus ---P-AN WSDG-SNQVAFGRGD---KGF-IVFNNS--DW-DLS-TTL-----  
24 B93053 Streptococcus caninus ---P-AN WSDG-SNQVAFGRGD---KGF-IVFNNS--DW-DLS-STL-----  
24 AAF02828 Sus scrofa ---P-AN WSDG-SNQVAFGRGD---KGF-IVFNNS--DW-DLS-STL-----  
24 CAC87125 Tetraodon nigroviridis ---PHSN WSDG-SNQVAFGRGD---KGF-IVFNNS--DW-DLD-VTL-----  
32 AAB21016 Aeromonas hydrophila ---PVSN WSDG-NQOIAFSGR---RAS-SPSTTRA-----  
32 BAA22082 Bacillus sp. 195 ---AVNN WSDG-SSAIAFGRGD---KGF-IVFNNS--ALT-RTF-----  
32 AAY89038 Bifidobacterium breve ---DVTN WSDG-TNVLGFRGD---VGY-LAINNSAD--DSK-QTF-----  
32 CAB92963 Bifidobacterium meridianus ---EITL WSDG-HNIAFSGR---KGF-IVFNNS--ALT-HTF-----  
32 BAJ52728 Clostridium varians ---PVTD WSDG-EQSLAFGRGD---KGF-IVFNNS--GLD-ASW-----  
32 AAG25402 Microbacterium aurum ---DVNN WSDG-SADGSAIGFRGD---KGF-IVFNNS--SVQ-REF-----  
32 CAA41481 Pseudoalteromonas haloplanktis ---AVTN WSDG-NQOIAFGRGD---SGH-MAINKESS--TLT-ATV-----  
32 AAB6835 Pseudomonas sp. KFC10818 ---RVTN WSDG-YNQVAFGRGD---LGF-VINRDDN--K-GIN-QGF-----  
32 AAB6317 Streptomyces albus ---PVTD WSDG-ADAIAFGRGD---KGF-IVFNNS--TVQ-RTY-----

32 BAC73693 Streptomyces avermitilis -----SVTN MDNG-GDAIAPGRGA-----KGY-VAINHESG-----SLT-RTY-----QT  
32 CAA40798 Streptomyces griseus -----PVTN MDNG-GDQIAPGRGD-----KAY-VAINHESG-----ALN-RTF-----QS  
32 AAA26698 Streptomyces hygroscopicus -----ELTN MDNG-GRPIAFARSD-----KGF-VALNNGDA-----ALT-QTF-----AT  
32 AAA88554 Streptomyces linosus -----VTDN MDNG-GRPIAFARSD-----KGY-VAINHESG-----ALN-RTF-----QS  
32 CAB06622 Streptomyces lividans -----GVTD MDNG-GDQIAPGRGS-----KAY-VAINHESG-----SLT-RTF-----QT  
32 CAA73775 Streptomyces sp\_T01 -----AVTD MDNG-GDAIAPGRGS-----KGF-VAINHESA-----TIS-RTY-----QT  
32 AAA82875 Streptomyces sp\_WL6 -----ELTD MDNG-GSALAPGRGD-----KGF-VALNADD-----ALT-ETF-----TT  
32 AAA26697 Streptomyces thermoviolaceus -----PVTD MDNG-ADAIAPGRGS-----KGF-VAINHESA-----TVQ-RTY-----QT  
32 AAB36561 Streptomyces venezuelae -----AVTN MDNG-NNAIAPGRGS-----KAY-VAINHETS-----ALT-RTF-----QT  
32 ABP13450 Thermobifida fusca -----GIGSAVTGD-NRIAPARSG-----AGY-AAFNATNT-----AWT-RTF-----TT  
32 CAA41881 Thermomicrospora curvata -----VTDN MDNG-GRPIAFARSD-----KGY-AAFNATNT-----AWT-RTF-----TT  
32 BAV60949 Pholiota microspora -----SAAITD VSPQ-AQIAPGRGA-----LGF-VAINNADS-----SWT-SAF-----TT  
32 KJA26527 Hypholoma sublateritium -----SSALTN VSPQ-SQIAPGRGA-----LGF-VAINNVD-----TWT-ATF-----TT  
32 KDR78015 Galerina marginata -----TSALTN VSPQ-SQIAPGRGA-----LGF-VAINNADF-----AWS-TSF-----TT  
32 PPQ83160 Psilocybe cyanescens -----TSALTN VSPQ-SQIAPGRGA-----LGF-VAINNADS-----AWS-TTF-----TT  
32 KTB32361 Moniliophthora roreri -----SALTN VSPQ-SQIAPGRGS-----AGF-VAINNADS-----TWS-ASF-----ST  
32 KDQ30003 Pleurotus ostreatus -----SAGITN VSPQ-SQIAPGRGS-----AGF-VAINNADS-----SWT-ATF-----AT  
32 RDX41646 Polyporus brumalis -----SALTN VSPQ-SQIAPGRGA-----LGF-VAINNADS-----AWS-ATF-----ST  
32 OJT13448 Trametes pubescens -----SALTN VAPQ-SQIAPGRGS-----LGF-VAINNADS-----AWT-STF-----TT  
32 PFH45132 Amanita thiersii -----TASMTN VSPQ-SQIAPGRGS-----AGF-IVINNAGS-----SWT-STF-----TT  
32 KIM37787 Hebeloma cylindrosporum -----SALTN VSPQ-SQIAPGRGS-----LGF-VAINNADY-----AWS-ATF-----AT  
32 PBK61492 Armillaria solidipes -----SAAITD VSPQ-SSQIAPGRGS-----AGF-VAINNAS-----DWS-SSF-----TT  
32 ETW76368 Heterobasidium irregulare -----SALTN VAPS-SQIAPGRGS-----LGF-VAINNVD-----SWT-ATF-----TS  
32 RDB27268 Heterobasidium macrosporus -----SALTN VAPS-SQIAPGRGA-----AGY-VAINNVD-----AWT-TTF-----TT  
32 PPQ71147 Gymnopilus dilepis -----SAPMTN VSPQ-SQIAPGRGS-----LGF-VAINNADT-----ANN-AVF-----TT  
32 OSD07916 Trametes coccinea -----SAPMTN VAPQ-SQIAPGRGS-----LGF-VAINNADA-----DWS-TTF-----ET  
32 KZW01389 Exidia glandulosa -----SALTN RSDS-SQIAPGRGA-----LGF-VAINNQDD-----AWS-ATF-----ST  
32 EIW55835 Trametes versicolor -----SALTN VAPQ-SQIAPGRGS-----LGF-VAINNADS-----AWT-STF-----TT  
32 SJU11930 Armillaria oostoyae -----STALTD VSPQ-SSQIAPGRGS-----AGF-VAINNAS-----DWS-SSF-----TT  
32 PAV18085 Pyrrhoderma noxium -----SSALTN VSPS-SQIAPGRGS-----VAF-VAINNESD-----SWT-AEF-----NT  
32 RPO65356 Lentinus tigrinus -----SALTN VSPQ-SQIAPGRGA-----LGF-VAINNADS-----DWS-ATF-----ST  
32 PBK84861 Armillaria gallica -----SAAITD VSPQ-SQIAPGRGS-----AGF-VAINNAS-----DWS-SSF-----KT  
32 KLO18298 Schizopora paradoxa -----AASMTN VSAS-SQIAPGRGS-----AGF-VAINNADS-----TWT-TTF-----ET  
32 PPR08271 Panaeolus cyanescens -----ISEITN VSPQ-SQIAPGRGS-----LGF-VAINNADS-----DWT-ATF-----IT  
32 KIK53845 Gymnopus luxurians -----SALTN VSPQ-SQIAPGRGS-----LGF-VAINNADS-----AWS-ATF-----TT  
32 KIJ56451 Sphaerobolus stellatus -----GNVTN VSPG-SQIAPGRGS-----TGF-VAINNQDS-----TWT-STF-----QT  
32 EJD07843 Botrytis mediterranea -----SPHALN VSPS-SQIAPGRGA-----AGF-VAINNESD-----SWT-ATF-----NT  
32 EPQ53992 Gloeophyllum trabeum -----SALTN VSPG-SQIAPGRGS-----LGF-VAINNQAS-----SWT-GTF-----AT  
32 KIP11288 Phlebiopsis gigantea -----TAAITN QSPQ-ASQIAPGRGA-----LGF-VAINNADT-----AWS-ATF-----TT  
32 KIY62009 Cylindrobasidium torrendii -----STAVTN QSPQ-GNRIAPERAG-----TGF-VAINNDSG-----AWT-GTF-----TT  
32 KIJ69360 Hydnum erulius pinastri -----SAALEN VSPA-ADQIAPGRGS-----LGF-VAINNDDY-----PWT-ATF-----TT  
32 KZT20455 Neolentinus lepideus -----SAAITD VAPS-SQIAPGRGS-----AGF-VAINNEDT-----SWT-TTF-----ST  
32 KGM97351 Serpula lacrymans var lacrymans -----TAAIGD VSPS-SQIAPGRGA-----LGF-VAINNESD-----TWA-TTF-----TT  
32 KDQ06010 Botrybasidium botryosum -----STALTN VSPQ-SQIAPGRGD-----LGF-VAINNADA-----DWS-RTF-----TT  
32 PPR00074 Panaeolus cyanescens -----SGSLVN VSPA-AMRIAPGRGS-----AGY-VAINNADS-----AWS-ATF-----RT  
32 EKM53319 Phanerochaete carnea -----TAMMTN VSPQ-SQIAPGRGS-----LGF-VAINNADA-----VWT-TTF-----AT  
32 TBU45601 Dichomitus squalens -----DAEVTN VSPQ-SQIAPGRGA-----LGF-VAINNADS-----DWS-ATF-----ST  
32 PSR82077 Phlebia centrifuga -----SAALVN VSPQ-SQIAPGRGA-----LGF-VAINNADS-----DWT-ATF-----TT  
32 KIM89391 Piloderma croceum -----EAPITN VSPQ-SQIAPGRGS-----AGF-VAINNDDF-----AWS-TTF-----TT  
32 PIL31175 Galerina marginata -----RGTN VSPQ-SQIAPGRGD-----LGF-VAINNADS-----AWS-TTF-----TT  
32 KIY70325 Cylindrobasidium torrendii -----STALTN QSPQ-GRIAPERGD-----TGF-VAINNADA-----AWT-GTF-----TT  
32 KDQ58060 Jaapia argillacea -----DASLTD VAPT-SQIAPGRGS-----LGF-VAINNADS-----AWT-ATF-----ST  
32 CEL62905 Rhizoctonia solani -----GSVNTN VSGT-NQIAPGRGS-----SGF-VVINNADS-----AWT-RTF-----TT  
32 GAT57350 Mycena chlorophos -----TAALVN ASPQ-ASQIAPGRGA-----LGF-IAINNADA-----AWT-GTF-----TT  
32 KIM25608 Serendipita vermifera -----SALTN VSGT-SQIAPGRGS-----AGF-VVINNADS-----SWS-ATF-----TT  
32 GAW02849 Lentinula edodes -----SAAITD VSPQ-SQIAPGRGA-----LGF-VAINNADT-----VWS-ATF-----ST  
32 TCD63303 Steccherinum ochraceum -----SALTN VSPQ-SQIAPGRGS-----LGF-VAINNADS-----DWS-ATF-----ST  
32 KZP22139 Fibularhizoctonia sp\_CBS\_109695 -----SSALTN VSPQ-ADRIAPERQA-----LGF-IAINNADA-----AWT-GTF-----TT  
32 KII90441 Plicaturopsis crispa -----SEDLTD VSPS-SQIAPGRGS-----TGF-VAINNESD-----DWS-NTF-----ST  
32 KDQ58058 Jaapia argillacea -----SAPLTV VAVG-AQIAPGRGS-----AGF-VAINNADT-----PWS-FQF-----QT  
32 OCH93218 Obba rivulosa -----DADMEG VAEQ-TNQIAPGRGS-----LGF-VAINNADT-----VWS-TTF-----ST  
32 EMD36390 Gelatoporia subvermispora -----DADMEG IAEQ-SQIAPGRGS-----LGF-AAINNADT-----IWS-TTF-----ST  
32 EIM78746 Cortophora puteana -----SALNLD SPSG-SSQIAPGRS-----NAF-VAINNESD-----DWS-TTF-----QT  
32 KII86244 Plicaturopsis crispa -----SALTN VSPQ-SQIAPGRGT-----LGF-VAINNDSG-----AWT-ATF-----TT  
32 EKM75205 Agaricus bisporus -----SATLNV VSPQ-SQIAPGRGS-----LGF-VAINNANS-----QWS-STF-----TT  
32 KZT36083 Sistotremastrum suecicum -----SSAVTN VAPS-SQVAPGRGA-----LGF-VAINNQDS-----TWT-SSF-----TT  
32 KZS90559 Sistotremastrum niveocreum -----SSAVTN VAPS-SQVAPGRGA-----LGF-VAINNQDS-----TWT-SSF-----TT  
32 EFI98134 Schizophyllum commune -----DAELTD VSPQ-GSQIAPGRGS-----AGY-VAINNADS-----EWS-TTF-----ST  
32 BHC62173 Tricholoma matsutake -----SAGITN MSGG-PQIAPGRGS-----AGF-MAMNMSD-----SWT-ATF-----VT  
32 CCA69081 Serendipita indica -----STALTN VSPA-SQIAPGRGA-----SGF-VVINNADS-----SWT-STF-----TT  
32 EFI98135 Schizophyllum commune -----DVMSD VSPS-SQIAPGRGA-----LGF-VAINNVDQ-----EWT-TTF-----AT  
32 KII85613 Plicaturopsis crispa -----AGSLNV VSGT-SSQIAPGRGS-----AGH-VAINNGVK-----DWS-VTL-----AT  
32 EIN11730 Punctularia strigosozonata -----DAAVTD VSPS-SQIAPGRGS-----SGF-VAINNESD-----AWS-TTF-----QT  
32 PIL33242 Ganoderma sinense -----NAAMTS TAPE-GQRIAPGRGA-----LGF-VAINNESD-----EWS-TTF-----AT  
32 KZT18190 Neolentinus lepideus -----KESTIN VAPT-EQIAPGRGS-----KGF-VAINNADT-----AWT-ANF-----TT  
32 KEV75308 Lentinophora sp\_CONT -----TAALEN VAPS-SQIAPGRGS-----VGF-VAINNDSG-----QWS-TSF-----KT  
32 KII86838 Plicaturopsis crispa -----SGALQV VSGT-SQIAPGRGS-----AGL-VAINNANS-----AWT-VTL-----AT  
32 KDQ08018 Botrybasidium botryosum -----GTPVANVTGS-SQIAPSRGA-----VAF-VAINNDCN-----PWS-KTF-----AT  
32 KIY73061 Cylindrobasidium torrendii -----DAELTN QSPQ-GSQIAPERGD-----AGF-VAINNDSG-----DWE-GTF-----TT  
32 KZW01365 Exidia glandulosa -----DVSNQKGT-AQIAPSRGT-----TGF-VAINNEDA-----TWT-GSF-----ST  
32 KDQ58178 Jaapia argillacea -----PVTN FASG-SQIAPGRGS-----VAF-IVINNADA-----HWS-GKF-----NT  
32 KEV75307 Peniophora sp\_CONT -----TAVLVN VAPS-SQIAPGRGT-----VGF-VAINNQDG-----SWS-TSF-----KT  
32 KIK51212 Gymnopus luxurians -----SALTN VSPQ-SQIAPGRGN-----LGF-IAINNDF-----EWS-TTF-----TT  
32 RDX41931 Polyporus brumalis -----TAPMTN VAPD-SQIAPGRGS-----LGF-VAINNESD-----AWT-ATF-----TT  
32 TBU29254 Dichomitus squalens -----NVDITN TAPA-AQRIAPGRGS-----LGF-VAINNESD-----EWW-MKF-----HT  
32 KIY45802 Fistulina hepatica -----AGVSN VSPQ-NRIAPGRGT-----LGF-VAINNDD-----DWT-DTF-----NT  
32 KIL59382 Amanita muscaria -----SSPVTN VSPQ-SQIAPGRGS-----LGF-VAINNADT-----PWT-SSF-----ST  
32 KIY53725 Fistulina hepatica -----AELTN VSPQ-YDRIAPGRGT-----LGF-VGINNDG-----SWS-GTF-----TT  
32 KIY47132 Pistulina hepatica -----ASLTN ASPS-PQIAPGRDR-----TGF-VAINNADT-----HWK-TQF-----NT  
32 RPO55342 Lentinus tigrinus -----TAMMTN VSPQ-SQIAPGRGS-----LGF-VAINNESD-----AWS-ATF-----ST  
32 TCD61445 Steccherinum ochraceum -----SALTN VSPS-SQIAPGRGN-----VGF-VIINNDA-----AWG-ATF-----TT  
32 KIM25602 Serendipita vermifera -----DAPLGN QTGT-HQIAPGRGS-----SGF-VAINNEG-----EWS-PTF-----ST  
32 EJD37603 Auricularia subglabra -----AVQNVKGT-AQVAFARGA-----TGF-VAINNEDA-----VWS-GAF-----ST  
32 KZT54766 Calocera cornea -----TPL-DNVVTGT-SQIAYGRGS-----TGF-IAINNGD-----QWS-TTF-----TT  
32 KIY46805 Fistulina hepatica -----APMTD VSPA-NRIAPGRGN-----PFG-VAINNDA-----AWG-ATF-----VT  
32 PPQ69654 Psilocybe cyanescens -----SSPLDHTVGT-SQIAYGRGS-----TGY-VAINNDD-----EWS-ATF-----ET  
32 KZQ93971 Calocera viscosa -----SAVNV AAGS-DQIAPGRGS-----VAF-VAINNVDQ-----PWS-QAF-----AT  
32 PVG03687 Serendipita vermifera -----VLQN QTGT-NQIAPSRGS-----SGF-VAINNGD-----DWS-KTF-----ST  
32 EIM87674 Stereum hirsutum -----AVG-QSSALTNQGT-NQIAPGRGS-----LGF-VAINNAS-----SWS-ATF-----TT  
32 CCA69087 Serendipita indica -----EITN QTGT-HQIAPGRGN-----LGF-VAINNESD-----QWS-AEF-----TT  
32 CEL62035 Rhizoctonia solani -----GLTN AGGS-NQIAPGRGD-----AGF-VAINNEDW-----AWT-STF-----QT  
32 EIM05398 Punctularia strigosozonata -----SALNV VQGS-TQIAPGRGS-----AGF-VAINNESG-----AWS-KTF-----TT  
32 EJU02896 Dacryopinax primigenitus -----ASL-DHVMGT-AQIAYGRGS-----TGF-VAINNDSG-----AWS-ATF-----ST  
32 KIO30302 Tulasnella calospora -----GTSINA VSDQ-ASQIAPGRGS-----SGF-VAINYSS-----IWT-KTF-----TT  
32 CEL62036 Rhizoctonia solani -----GLGN VQGS-NQIAPGRGS-----SGF-VAINNEG-----QWT-QTF-----QT  
32 KIO24533 Tulasnella calospora -----ALKN KQGD-SQIAPGRGS-----VGF-VIINNSN-----KWK-TTF-----TT  
32 EIM84100 Stereum hirsutum -----SLTN QTGS-NMQIAYERDA-----TGF-VIINNTG-----EWD-NTF-----TT  
32 KIM35973 Rhizoctonia solani -----RGNFHSNATPL-CSTVIVGRSNWQSGRGRCCTIF-1PSFRITK-----SWS-DH-----RC  
32 KIY48489 Fistulina hepatica -----SMVN TSAS-SQIAPGRGS-----VGF-VAINNAS-----EWS-TTF-----ST  
32 KIY48486 Fistulina hepatica -----SMVN QMGT-SQIAPGRGS-----TGF-VAINNAS-----DWS-STF-----ST  
32 KZP26813 Fibularhizoctonia sp\_CBS\_109695 -----KNVTD FSPN-SELIAFGRGS-----SGF-VAINNQT-----DWDASF-----ST  
32 KDQ32476 Pleurotus ostreatus -----APLENQSPR-DRIAPSRGK-----SGF-VAINNSD-----PWS-ATL-----NT  
32 EIM84087 Stereum hirsutum -----PLTN QSGS-PQIAYERAG-----KGF-VVINNSG-----DWS-NSW-----TC  
32 KDQ32475 Pleurotus ostreatus -----TKLEN QSPQ-GRIAPSRGN-----AGF-VAINNSD-----PWI-STL-----LT  
32 EAG88347 Stereum hirsutum -----VAVD MDNG-NQIAPGRGD-----LGF-VAINNDSG-----SLT-RTF-----QT  
32 ORY89754 Leucosporidium creatinivorum -----SAVNSLATS-TNBSAPGRGS-----IGH-VAINFESS-----SWD-ATL-----DT  
32 EW234052 Fusarium oxysporum -----GLTN MDNG-NNAIAPGRGS-----MGY-VAINHESG-----SVT-HTY-----QT  
32 OBT91518 Pseudogymnoascus verrucosus -----ALTN MDNG-NNAIAPGRGS-----KGY-VAINHESG-----SVT-QTF-----QT  
32 KEY73157 Stachybotrys chartarum -----AVTN MDNG-NQIAPGRGS-----RGF-IAINKESS-----SLT-RTF-----QT  
32 OBT62577 Pseudogymnoascus sp\_23342\_1\_I1 -----ALSN MDNG-NNAIAPGRGS-----KGY-VAINHESG-----SVT-QTY-----QT  
32 EKM97874 Phaeoacremonium minimum -----ELTD MDNG-NNAIAPGRGD-----KGY-VAINHESG-----SLT-RTY-----QT  
32 GAT55198 Mycena chlorophos -----QILNDV VSGT-SQIAPGRGS-----LGF-VAINNADT-----PWT-QTF-----TT  
32 OAG04271 Paraphaeosphaeria sporulosa -----GVTN MDNG-NQIAPGRGN-----QGF-VAINKESS-----VLT-QTL-----QT  
32 EGG02960 Melampsora larici populina -----PVNIIITSG-SNRTAYSRS-----KGF-IALNNEPE-----EWLPPG-----TV  
32 EGG02993 Melampsora larici populina -----PVNIIITSG-VNRTAYSRS-----RAF-VALNNEPE-----EWLQSG-----TQ  
32 OAV91411 Puccinia triticina -----PVNIIITSG-AHRIAPSRGS-----KVF-VAINNDS-----PWLRLDV-----LV  
32 EFP79978 Puccinia graminis -----PVNIIITSG-AHRIAPSRGS-----KVF-VAINNDS-----AWLRLDV-----VV  
32 GAT51088 Mycena chlorophos -----ASLSTSTSG-NQIAPGRGS-----LGF-VAINNDSG-----SWS-QTF-----ST  
32 KNE94052 Puccinia striformis -----PVQNIITSG-AHRIAPSRGS-----KVF-VAINNDS-----DWLEDV-----VV  
32 KN254553 Puccinia sorghi -----E-HRHF-----MIVGAVRGA-AASQ-----PVQNIITVS-RNGO-V-LSSIMEREKATEN  
42 AOF40721 Microbacterium aurum -----KQKQ-----STEGVSGNMAFKRRFT-----EGS-----VD-SFAVA-1SGG-A-----  
42 CAB06816 Streptomyces lividans -----QMKG-----STDGVTGDMAFKRRYT-----DGG-----TD-SFALT-VSGG-A-----  
42 AWA81565 Pecoramyces ruminatum -----KQKQ-----A-SVDGQMAFKRRYT-----DNN-----TD-SFACVS-ITGG-A-----





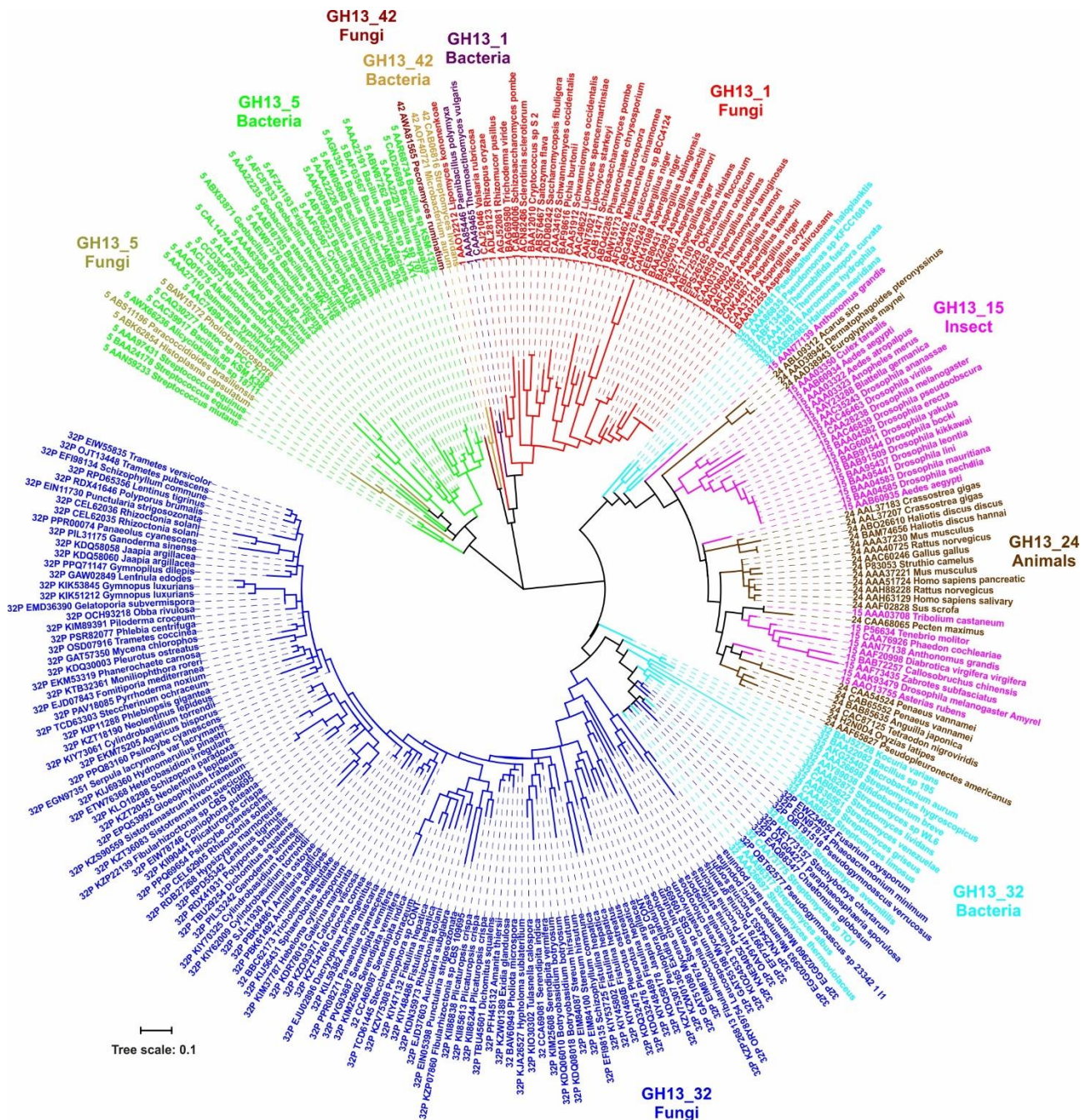
32 BAC73693 *Streptomyces avermitilis*  
32 CA40798 *Streptomyces griseus*  
32 AAA62698 *Streptomyces hygroscopicus*  
32 AAA88554 *Streptomyces limosus*  
32 CAB0622 *Streptomyces lividans*  
32 CA73715 *Streptomyces rochei*  
32 AAA82875 *Streptomyces\_sp\_ML6*  
32 AAA26697 *Streptomyces thermophilolacus*  
32 AAB36561 *Streptomyces venezuelae*  
32 ABF1340 *Thermobifida fusca*  
32 CA41881 *Thermomonospora curvata*  
32 AB09499 *Phlebia nigrispora*  
32 KJ2652 *Phlebia subteritum*  
32 KDR78015 *Phlebia marginata*  
32 PQ083160 *Psilocybe cyaneusens*  
32 KTB32361 *Moniliophthora roreri*  
32 KDX130003 *Pleurotus ostreatus*  
32 KDX41644 *Pleurotus brumalis*  
32 KJ73448 *Polyporus fructitrem*  
32 PF45132 *Amantia thiersii*  
32 KIM37787 *Hebeloma cylindrosporum*  
32 PKR61492 *Armillaria solidipes*  
32 ETW76368 *Heterobasidion irregulare*  
32 RDB27268 *Hypsizygomus marmorosus*  
32 PQ71147 *Gyomopilus dilepis*  
32 OSU079216 *Trametes trochilopa*  
32 KZW01389 *Xizkia glandulosa*  
32 KIF55835 *Trametes versicolor*  
32 SJL11930 *Armillaria ostoyae*  
32 PAV18085 *Pyrrhoderma noxium*  
32 RPD65635 *Lentinus tigrinus*  
32 PKR84861 *Phlebia subteritum*  
32 KLO18299 *Schizophora paradoxa*  
32 PPR08271 *Panaeolus cyaneusens*  
32 KIK53845 *Panaeolus luxurians*  
32 KIJ56431 *Sphaerobolus stellatus*  
32 EJD07843 *Fomitiporia mediterranea*  
32 PQ53992 *Gloeophyllum trabeum*  
32 KJ11288 *Phlebia subteritum*  
32 KIF62009 *Cyrtobasidium torrendii*  
32 KIJ69360 *Hydnocremulus pinastri*  
32 KJZ20455 *Neolentinus lepideus*  
32 EGN97531 *Serpula lacrymans var lacrymans*  
32 RQ060610 *Ptyrobasidium botryosum*  
32 KJ000704 *Panaeolus cyaneusens*  
32 EKM5139 *Phaeocheilium laevis*  
32 TBU45601 *Dichomitus aequalens*  
32 PSR82077 *Phlebia confertifuga*  
32 KIM89391 *Phlebia croceum*  
32 PIL31175 *Ganoderma sinense*  
32 KIJ70325 *Cyrtobasidium torrendii*  
32 RQ060610 *Ptyrobasidium botryosum*  
32 CEL62905 *Rhizoctonia solani*  
32 GAT57350 *Myceena chlorophoros*  
32 KIM25608 *Serendipita verifera*  
32 GAW02849 *Lentinula edodes*  
32 KDC63303 *Sclerocentrum ochraceum*  
32 KXP22319 *Fibularhizoctonia\_sp\_CBS\_109695*  
32 KJ17061 *Cylindrobasidium torrendii*  
32 KQ58058 *Jaspa argillacea*  
32 OCH93218 *Obba rivulosa*  
32 EMD36390 *Gliophoria subversipora*  
32 EIW87746 *Coniophora puteana*  
32 KII86244 *Plicaturopsis cripsa*  
32 KIM52025 *Plicaturopsis cripsa*  
32 KJF36083 *Sistotremastrum sueticum*  
32 KZS90559 *Sistotremastrum niveocremum*  
32 EF198134 *Schizophyllum commune*  
32 BBC62173 *Tricholoma matsutake*  
32 CCA69081 *Serendipita indica*  
32 EF198135 *Schizophyllum commune*  
32 KIS5613 *Plicaturopsis cripsa*  
32 RIN11730 *Punctularia strigosocanata*  
32 PIL33242 *Ganoderma sinense*  
32 KZT18190 *Neolentinus lepideus*  
32 KZV75308 *Peniophora\_sp\_CONT*  
32 KII86383 *Plicaturopsis cripsa*  
32 RQ080818 *Botryobasidium botryosum*  
32 KJ17061 *Cylindrobasidium torrendii*  
32 KZW01365 *Xizkia glandulosa*  
32 KQJ58178 *Jaspa argillacea*  
32 KZV75307 *Peniophora\_sp\_CONT*  
32 KIK51212 *Gyomopilus luxurians*  
32 RDX41931 *Polyporus brumalis*  
32 RIM29254 *Dichomitus aequalens*  
32 KIJ54802 *Fistulina hepatica*  
32 KIJ53725 *Fistulina hepatica*  
32 KIJ47132 *Fistulina hepatica*  
32 RPD55542 *Lentinus tigrinus*  
32 TCG61445 *Sclerocentrum ochraceum*  
32 KIM25608 *Serendipita verifera*  
32 KJF37603 *Auricularia subglabra*  
32 KJF54766 *Calocoria cornea*  
32 KIJ46805 *Fistulina hepatica*  
32 PQ066564 *Psilocybe cyaneusens*  
32 KZ039371 *Calocoria viscosa*  
32 KJ17061 *Cylindrobasidium torrendii*  
32 PV036877 *Serendipita verifera*  
32 RIM87674 *Stereum hirsutum*  
32 CCA69087 *Serendipita indica*  
32 CEL62035 *Rhizoctonia solani*  
32 RIM05398 *Punctularia strigosocanata*  
32 KJ002896 *Dacryopinax primgenitum*  
32 KJ033032 *Phlebia subteritum*  
32 CEL62036 *Rhizoctonia solani*  
32 KJ024533 *Tulasnella calospora*  
32 RIM84100 *Stereum hirsutum*  
32 KDN35973 *Rhizoctonia solani*  
32 KIJ48489 *Fistulina hepatica*  
32 KIJ48489 *Fistulina hepatica*  
32 KXP26813 *Fibularhizoctonia\_sp\_CBS\_109695*  
32 KQJ32475 *Pleurotus ostreatus*  
32 RIM84087 *Stereum hirsutum*  
32 KQJ32475 *Pleurotus ostreatus*  
32 QA088347 *Chaetomium globosum*  
32 OYR9754 *Leucosporidium creatinivorum*  
32 RIM34454 *Chaetomium globosum*  
32 OBT91518 *Pseudogymnoascus verrucosus*  
32 KEY73157 *Stachybotrys chartarum*  
32 OBT62577 *Pseudogymnoascus\_sp\_23242\_1\_I1*  
32 EON97874 *Phaeoacremonium minimum*  
32 KAT59198 *Chaetochlorophoros*  
32 GAG04271 *Paraphaeosphaeria spulosa*  
32 GAG029610 *Paraphaeosphaeria populina*  
32 GAG02993 *Melampsora larici-populina*  
32 RQV91411 *Puccinia trititica*  
32 EFF79788 *Puccinia graminis*  
32 KIJ51088 *Myceena chlorophoros*  
32 KNE94052 *Puccinia stiformis*  
32 RQV54553 *Puccinia sorgh*  
32 ACP40742 *Microrhizoctonia aurum*  
32 CAB06816 *Streptomyces lividans*  
32 ANA81565 *Pectonamycus ruminantur*

LTLAG	-TCYVQNN	-	T	GVTVDSGR	TATLGA	-	TALAIYSGK			
SLPAG	-AYCDVQSG	-	R	SVTVDSGT	TATVAA	-	TALAIYTG			
SLPAG	-TCYDVVRA-AS	-	SCDG	-D	VTV-GDTEAQ	-DA	-KSVALRHGA			
GLPFG	-AYCDVQSG	-	R	SVTVDSGT	TATVAA	-	TALAIHTGA			
SLPAG	-DYCDVQSG	-	K	GVTVDSGR	TATLGA	-	TAVAIHRGA			
SLPAG	-TCYVQNN	-	K	GVTVDSGR	TATLGA	-	TALAIYTG			
SLPAG	-TCYVAAASPD	-	DCDG	-N	VTV-GDDGAAQVTPA	-R	-GALAIHTGA			
SLPAG	-TCYDVQSN	-	-	T	VTVDSAGR	TALIPG	-	TALAIHNGR		
SLPAG	-TCYDVQSN	-	-	T	PVTNSSGG	TATLAA	-	TAVAIHRNA		
SLPAG	-TCYDVANGFTV	-	-	DGVCDPGS	-	YQVSGG	TATVPA	-	GAVAIHRVA	
SLPFG	-VCYDVANGFTV	-	-	DGVCDPGS	-	YQVSGG	TATVPA	-	GAVAIHRVA	
SLPAG	-TCYDVSGN	-	-	SGCTCSGS	-	FVVS	-GGVATVPA	-	SAIAIHTGS	
SLPAG	-SKCYDVSGN	-	-	SGCTCSGS	-	FVVS	-GGVATVPA	-	SAIAIHTGS	
SLPFG	-SYCDVSGN	-	-	SGCTGTG	-	FVTL	-GGT	TATVPA	-	GGIAIHTGA
SLPAG	-SYCDVSGT	-	-	SGACTGTG	-	ITVS	-GGT	TANVPA	-	SAIAIHTGA
SLADG	-SYCDVSGN	-	-	DGACTGVG	-	VTVS	-SGV	NANVPP	-	SAIAIHTGQ
SLPAG	-AYCDVSGS-A-N	-	-	AGTCSGSL	-	ITVA	-GGS	SATVPA	-	SAIAIHTGA
SLPAG	-TCYDVSGS-A	-	-	SGSCTGSS	-	FVVS	-GGS	SATVPA	-	SSIAIHTGQ
SLPAG	-SKCYDVSGS	-	-	SGACTGTG	-	ITVS	-GGT	TANVPA	-	SAIAIHTGA
SLPFG	-SYCDVITGR	-	-	SGACTGTS	-	VTVS	-GGR	SATVNA	-	DALAIHTG
SLADG	-SYCDVITGR	-	-	SGSCTGTS	-	MTVA	-GGT	TATVPA	-	SAIAIHTGS
SLADG	-SYCDVSGT	-	-	NGTCSGTS	-	FVVS	-GGS	TATVPA	-	SAIAIHTGA
SLPAG	-TCYDVSGS	-	-	SGSCTGSS	-	FVTS	-GGT	AATIGS	-	SAIAIHTGA
SLPAG	-TCYDVSGN	-	-	SGSCTGAA	-	ITVS	-GGS	TATVPA	-	NAIAIHTGA
SLPFG	-TCYDVSGS	-	-	SGSCTGSS	-	ITVS	-GGT	TATVPA	-	SAIAIHTGA
SLPFG	-TCYDVSGT	-	-	SGSCTGSS	-	ITVS	-GGT	TATVPA	-	SAIAIHTGA
SLPAG	-TCYDVVAGK-P	-	-	GTTACAGA	-	VTVS	-GGT	SATISG	-	NALAIYVGA
SLPFG	-TCYDVVSGT	-	-	GTTCTGSS	-	VTVS	-GGSL	SATVPA	-	SAIAIHTGQ
SLADG	-SYCDVIGT	-	-	DDTCTGSG	-	FVVS	-GGS	TATVPA	-	SAIAIHTGV
GLPEG	-EYCDVIAQAQO-T	-	-	AGTRCGSG	-	FNVS	-GGT	STTISA	-	NAVAIHGA
SLPFG	-SYCDVSGS	-	-	SGSCTGSS	-	FVVS	-GGS	SATVPA	-	SSIAIHTGA
SLPAG	-TCYDVSGS	-	-	SGSCTGSS	-	FVVS	-GGS	TANVPA	-	GAVAIHRGA
SMPEG	-SYCDVSGSS	-	-	AGTCSGSL	-	FVTS	-GGT	NANVPA	-	TALAIHTGA
SLPFG	-NYCDVHGT-A	-	-	GCTCSGTS	-	VSVS	-GGR	TATVPA	-	NALIAHTSA
SLPAG	-SYCDVSGTS	-	-	SGKCTGTG	-	ITVS	-GGT	TATVPA	-	SAIAIHTGA
SLPAG	-TCYDVVAGL-P	-	-	NAGCQGS	-	VTSSCGT	TATISA	-	NAIAIHGA	
GLPAG	-SYCDVAVGP-N	-	-	GAVCAGPS	-	VTSSCGT	TPITISA	-	NAIAIHGA	
SLPAG	-TCYDVSGN	-	-	GVCSASA	-	VTASDGT	SATVNP	-	DALAIHTG	
SLPAG	-TCYDVSGN	-	-	GVCSASA	-	VTASDGT	SATVNP	-	DALAIHTG	
SLPAG	-TCYDVHGT-A	-	-	NGTCSGA	-	ITVS	-GGS	TATVPA	-	SAIAIHTGA
PLPAG	-TCYDVSGPPS-G	-	-	STCSGAS	-	VTASDGT	SATVLA	-	NAIAIHTGA	
SLPAG	-AYCDVINGAA	-	-	NGTCSGTV	-	VTASDGT	SATINA	-	DALAIHTGA	
SLPAG	-SYCDVSGPPT-S	-	-	STCSGAS	-	VTASDGT	SATVAT	-	NAIAIHTGA	
GLPFG	-SYCDVANGA-L	-	-	GSSTCGPS	-	YTVT	-GGSL	VTVPA	-	SAIAIHTGA
SLPFG	-TCYDVSG	-	-	GSSTCGPS	-	ITVS	-GGS	SATVPA	-	SAIAIHTGQ
SLPAG	-TCYDVSGIS	-	-	GSSTCGPS	-	ITVS	-GGS	SATVPA	-	SAIAIHTGQ
SLPFG	-SYCDVSGSS	-	-	GSSTCGSS	-	FVVS	-GGS	TATVPA	-	SAIAIHTGQ
SLPAG	-SYCDVSGTS	-	-	SGKCTGLT	-	FVVS	-GGT	SATVPA	-	SAIAIHTGA
SPADG	-SYCDVSGNS-A	-	-	SGSCTGTS	-	FVSV	-NGSL	TATVPA	-	SAIAIHTGA
SLPFG	-SYCDVHSGA	-	-	DGFTCSGS	-	FVVS	-GGS	SATVPA	-	DSIAIHTGA
SLADG	-SYCDVITG-T	-	-	SGSCTGDS	-	FVVS	-GGS	SATVPA	-	SAIAIHTGA
SLPAG	-TCYDVSGS	-	-	SGSCTGSS						



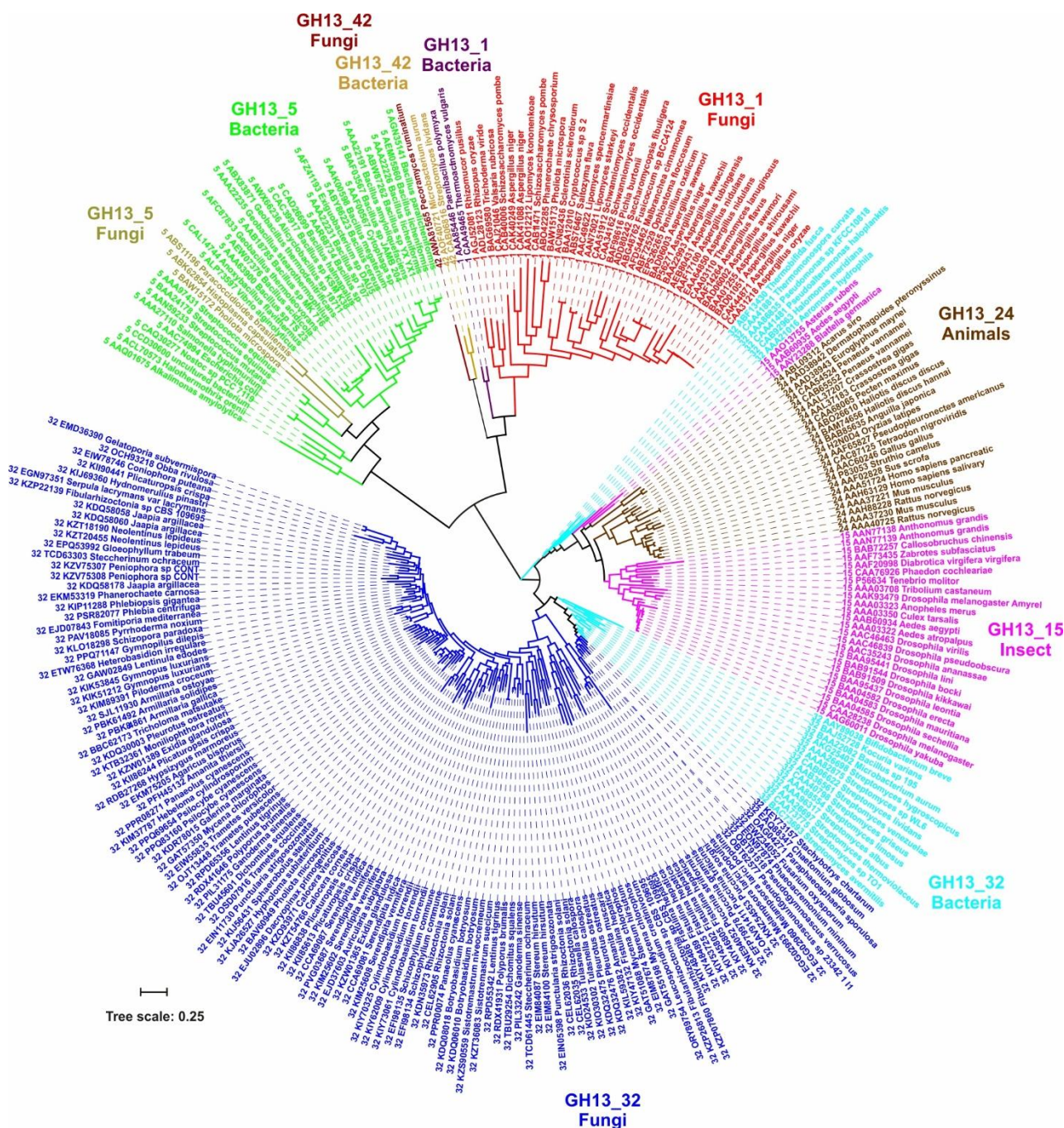
**Figure S1.** Sequence alignment of all 268 collected sequences representing  $\alpha$ -amylases from subfamilies GH13\_1, GH13\_5, GH13\_15, GH13\_24, GH13\_32 and GH13\_42. The alignment spans the segment of sequences from the beginning of the strand  $\beta$ 1 (CSR-VIII) to the end of the strand  $\beta$ 8 (CSR-VII) of the catalytic TIM-barrel (including the domain B) completed by a part succeeding the strand  $\beta$ 8 (CSR-VII) since there are residues involved in SBSs. The CSRs are and catalytic triad are highlighted in yellow and red, respectively. The residues involved in chloride binding are signified by green; dark green is used for lysine replacing arginine in the CSR-VII. For SBS residues, blue highlighting is applied for residues conserved within a particular subfamily; outside subfamily, the corresponding residues are signified by cyan. The sequences are ordered from the top according to subfamilies starting with the subfamily GH13\_1. Within each subfamily, sequences within subfamilies (except for GH13\_15 and GH13\_24) are grouped as bacteria followed by fungi; each group being arranged alphabetically.

A





B



**Figure S2.** Evolutionary trees of studied  $\alpha$ -amylases based on the alignment of (A) sequences spanning the segment between the strands  $\beta$ 1 and  $\beta$ 8 of catalytic TIM-barrel; and (B) extracted eight conserved sequence regions. The same trees without all the leaves described are presented in Figure 2. Details concerning all  $\alpha$ -amylases compared in the trees as well as their colour codes are given in Table S1. Each protein is labelled by the GH13 subfamily number, the GenBank accession number (or rarely the UniProt accession number) and the name of the organism.

**Table S1.** List of 268 sequences from GH13 subfamilies containing fungal and chloride-dependent  $\alpha$ -amylases.<sup>a</sup>

No.	Source	GenBank <sup>b</sup>	UniProt <sup>c</sup>	Length <sup>d</sup>	$\beta$ 1- $\beta$ 8 <sup>e</sup>
GH13_1 – Bacteria					
1	<i>Paenibacillus polymyxa</i>	AAA85446.1	P21543	1196	753-1072

2	<i>Thermoactinomyces vulgaris</i>	CAA49465.1	Q60051	482	44-358
GH13_1 – Eucarya – Fungi					
3	<i>Aspergillus awamori</i>	BAD06003.1	Q76L96	634	36-352
4	<i>Aspergillus awamori</i>	BAD06002.1	Q76L99	499	36-352
5	<i>Aspergillus flavus</i>	AAF14264.1	Q7LV45	499	36-352
6	<i>Aspergillus kawachii</i>	BAD01051.1	Q76CT3	498	35-351
7	<i>Aspergillus kawachii</i>	BAA22993.1	O13296	490	35-352
8	<i>Aspergillus nidulans</i>	EAA64850.1	A0A1U8QLT9	490	30-344
9	<i>Aspergillus nidulans</i>	AAF17100.1	Q9UV09	623	34-350
10	<i>Aspergillus niger</i>	N.A.	P56271	484	15-331
11	<i>Aspergillus niger</i>	CAK44871.1	A2QL05	498	35-351
12	<i>Aspergillus niger</i>	CAK40249.1	A2QTS4	555	40-359
13	<i>Aspergillus niger</i>	CAK41088.1	A2QYT9	549	43-362
14	<i>Aspergillus oryzae</i>	CAA31218.1	P0C1B3	499	36-352
15	<i>Aspergillus shirousami</i>	BAA01255.1	P30292	499	36-352
16	<i>Aspergillus tubingensis</i>	AEB80431.1	G9DA07	640	36-352
17	<i>Cryptococcus</i> sp. S-2	BAA12010.1	Q92394	631	35-366
18	<i>Fusicoccum</i> sp. BCC4124	ABG48762.1	Q0Z8K1	475	13-329
19	<i>Lipomyces kononenkoae</i>	AAO12212.1	Q8J1E4	499	38-356
20	<i>Lipomyces spencermartinsiae</i>	AAC49622.1	Q01117	624	108-424
21	<i>Lipomyces starkeyi</i>	AAN75021.1	Q6YF33	647	185-501
22	<i>Malbranchea cinnamomea</i>	AFD54462.1	K9L8F3	492	36-350
23	<i>Ophiostoma floccosum</i>	ABF72529.1	Q06SN2	630	33-349
24	<i>Penicillium oxalicum</i>	EPS26265.1	S7Z6T2	626	32-348
25	<i>Phanerochaete chrysosporium</i>	ABO42285.1	A5Y589	530	34-348
26	<i>Pholiota microspora</i>	BAW15173.1	A0A1L7MPN9	535	34-351
27	<i>Pichia burtonii</i>	BAF98616.1	A9ZPM0	494	45-358
28	<i>Rhizomucor pusillus</i>	AGJ52081.1	M9TI89	471	48-347
29	<i>Rhizopus oryzae</i>	ADL28123.1	E2G4G0	462	41-340
30	<i>Saccharomycopsis fibuligera</i>	ADD80242.1	D4P4Y7	494	42-358
31	<i>Saitozyma flava</i>	ABS76467.1	A7LGW4	631	35-366
32	<i>Schizosaccharomyces pombe</i>	CAB11471.1	O14154	513	40-352
33	<i>Schizosaccharomyces pombe</i>	CAB40006.1	Q9Y7S9	564	36-356
34	<i>Schwanniomyces occidentalis</i>	CAA34162.1	P19269	512	51-367
35	<i>Schwanniomyces occidentalis</i>	CAA51912.1	Q08806	507	47-363
36	<i>Sclerotinia sclerotiorum</i>	ACN82436.1	C0LW29	499	36-349
37	<i>Thermomyces lanuginosus</i>	CAA03110.1	UPI000011D79A	493	33-350
38	<i>Trichoderma viride</i>	BAG69580.1	B5BQC3	463	35-334
39	<i>Valsaria rubricosa</i>	CAJ21046.1	UPI000057623F	493	35-332
GH13_5 – Bacteria					
40	<i>Alicyclobacillus</i> sp. 18711	AWX66236.1	A0A3P8MUS3	514	41-399
41	<i>Alkalimonas amyolytica</i>	AAQ01675.1	Q6WUB6	587	50-378
42	<i>Anoxybacillus flavithermus</i>	CAL14744.1	UPI0000DAC7C3	586	13-369
43	<i>Bacillus acidicola</i>	AEW07376.1	J9PQD2	479	9-365
44	<i>Bacillus amyloliquefaciens</i>	AAA22191.1	P00692	479	40-396
45	<i>Bacillus cereus</i>	ABY86223.1	B0LVG1	513	39-395
46	<i>Bacillus halmapalus</i>	CAD26699.1	UPI000002EA3C	485	13-370
47	<i>Bacillus licheniformis</i>	AAA22226.1	P06278	512	40-394
48	<i>Bacillus licheniformis</i>	AEM05860.1	I3P686	483	11-365
49	<i>Bacillus megaterium</i>	AAK00598.1	Q9AQ54	533	39-395
50	<i>Bacillus paralicheniformis</i>	AGN35141.1	UPI00002A8802F	512	40-394
51	<i>Bacillus</i> sp. KSM-1378	AAR68734.1	O82839	516	44-401
52	<i>Bacillus</i> sp. 707	AAA22231.1	P19571	518	46-403
53	<i>Bacillus</i> sp. JAMB-204	BAF03567.1	Q0KKZ7	513	39-395
54	<i>Bacillus</i> sp. KSM-K38	CAC39917.1	Q93I48	501	32-386
55	<i>Bacillus</i> sp. MK 716	AAB18785.1	P71034	521	46-402
56	<i>Bacillus</i> sp. TS-23	AAA63900.1	Q59222	613	43-399
57	<i>Bacillus</i> sp. YX-1	ABW87262.1	A9YDD9	514	40-396
58	<i>Cytophaga</i> sp.	AAF00567.1	Q9RQT8	519	45-401

59	<i>Escherichia coli</i>	AAC74994.1	P26612	495	10-369
60	<i>Exiguobacterium</i> sp. DAU5	AFZ41193.1	M4I6P6	514	40-396
61	<i>Geobacillus stearothermophilus</i>	AAA22235.2	P06279	549	46-402
62	<i>Geobacillus thermodenitrificans</i>	ABX83871.1	A9UJ60	549	46-402
63	<i>Geobacillus thermoleovorans</i>	AFC87833.1	J9PXA2	549	46-402
64	<i>Halotheothrix orenii</i>	ACL70573.1	B8CZ54	623	153-508
65	<i>Nostoc</i> sp. PCC 7119	CAQ30277.1	B1VK33	489	9-366
66	<i>Salmonella typhimurium</i>	AAA27110.1	P26613	494	10-369
67	<i>Streptococcus equinus</i>	BAA24178.1	O50583	484	9-367
68	<i>Streptococcus equinus</i>	AAA97431.1	Q53786	485	10-368
69	<i>Streptococcus mutans</i>	AAN59233.1	Q8DT08	486	10-368
70	uncultured bacterium	CCD30600.1	I7I8P3	486	10-369
71	<i>Vibrio alginolyticus</i>	ALP73597.1	A0A0S2UQL4	507	33-389

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GH13\_5 – Eucarya – Fungi

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72	<i>Histoplasma capsulatum</i>	ABK62854.1	A0T074	540	42-399
73	<i>Paracoccidioides brasiliensis</i>	ABS11196.1	A7L832	535	42-397
74	<i>Pholiota microspora</i>	BAW15172.1	A0A1L7MPN7	519	40-399

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GH13\_15 – Eucarya

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75	<i>Aedes aegypti</i>	AAB60935.1	P53354	737	275-594
76	<i>Aedes aegypti</i>	AAB60934.1	O02652	486	35-345
77	<i>Aedes atropalpus</i>	AAA03322.1	Q16924	491	35-345
78	<i>Anopheles merus</i>	AAA03323.1	Q17059	514	39-356
79	<i>Anthonomus grandis</i>	AAN77138.1	Q8I9K6	484	34-341
80	<i>Anthonomus grandis</i>	AAN77139.1	Q8I9K5	491	35-348
81	<i>Asterias rubens</i>	AAO13755.1	Q8IA45	492	34-345
82	<i>Blattella germanica</i>	AAZ23288.1	Q2KJQ1	498	35-351
83	<i>Callosobruchus chinensis</i>	BAB72257.1	Q5KTR5	489	33-344
84	<i>Culex tarsalis</i>	AAA03350.1	Q23767	496	34-350
85	<i>Diabrotica virgifera virgifera</i>	AAF20998.1	Q9U406	482	37-343
86	<i>Drosophila ananassae</i>	AAC35243.1	O77407	494	35-348
87	<i>Drosophila bocki</i>	BAB91544.1	Q9NKZ2	494	35-348
88	<i>Drosophila erecta</i>	BAA04582.1	Q23932	494	35-348
89	<i>Drosophila kikkawai</i>	BAB91509.1	Q8MM52	494	35-348
90	<i>Drosophila leontia</i>	BAA95437.1	Q9NKY9	494	35-348
91	<i>Drosophila lini</i>	BAA95441.1	Q9N6Q7	494	35-348
92	<i>Drosophila mauritiana</i>	BAA04583.1	P54215	494	35-348
93	<i>Drosophila melanogaster</i> Amyrel	AAK93479.1	O18408	493	36-347
94	<i>Drosophila melanogaster</i>	CAA28238.1	P08144	494	35-348
95	<i>Drosophila pseudoobscura</i>	AAC46839.1	O46116	494	35-348
96	<i>Drosophila sechellia</i>	BAA04585.1	Q24642	494	35-348
97	<i>Drosophila virilis</i>	AAC46463.1	Q24737	494	35-348
98	<i>Drosophila yakuba</i>	AAG60011.1	P51548	494	35-348
99	<i>Phaedon cochleariae</i>	CAA76926.1	O97396	485	35-344
100	<i>Tenebrio molitor</i>	N.A.	P56634	471	17-326
101	<i>Tribolium castaneum</i>	AAA03708.1	Q26854	490	34-345
102	<i>Zabrotes subfasciatus</i>	AAF73435.1	Q9N2P9	483	34-344

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GH13\_24 – Eucarya

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103	<i>Acarus siro</i>	ABL09312.1	B0KZK1	517	41-360
104	<i>Anguilla japonica</i>	BAB85635.1	Q8QGW2	512	32-357
105	<i>Crassostrea gigas</i>	AAL37207.1	Q8WSG9	519	36-356
106	<i>Crassostrea gigas</i>	AAL37183.1	Q8WSH2	520	36-357
107	<i>Dermatophagoides pteronyssinus</i>	AAD38942.1	P49274	496	18-337
108	<i>Euroglyphus maynei</i>	AAD38943.1	Q9Y196	521	43-362
109	<i>Gallus gallus</i>	AAC60246.1	Q98942	512	32-357
110	<i>Haliotis discus discus</i>	ABO26610.1	B6RB08	511	35-356
111	<i>Haliotis discus hannai</i>	BAM74656.1	L8AW48	511	35-356



112	<i>Homo sapiens</i> – pancreas	AAA51724.1	P04746	511	32-357
113	<i>Homo sapiens</i> – saliva	AAH63129.1	P04745	511	32-357
114	<i>Mus musculus</i>	AAA37221.1	P00687	511	32-357
115	<i>Mus musculus</i> – pancreas	AAA37230.1	P00688	508	32-354
116	<i>Oryzias latipes</i>	N.A.	H2N0D4	512	32-357
117	<i>Pecten maximus</i>	CAA68065.1	P91778	508	35-354
118	<i>Penaeus vannamei</i>	CAA54524.1	Q26193	512	33-357
119	<i>Penaeus vannamei</i>	CAB65552.2	Q9U0F9	489	33-357
120	<i>Pseudopleuronectes americanus</i>	AAF65827.1	Q9I9H6	512	32-357
121	<i>Rattus norvegicus</i> – pancreas	AAA40725.1	P00689	508	32-354
122	<i>Rattus norvegicus</i>	AAH88228.1	Q5I0L0	511	32-357
123	<i>Struthio camelus</i>	N.A.	P83053	497	17-342
124	<i>Sus scrofa</i> – pancreas	AAF02828.1	P00690	511	32-357
125	<i>Tetraodon nigroviridis</i>	CAC87125.1	Q8UWE5	513	32-358

#### GH13\_32 – Bacteria

126	<i>Aeromonas hydrophila</i>	AAA21016.1	P41131	443	32-328
127	<i>Bacillus</i> sp. 195	BAA22082.1	O24781	700	59-357
128	<i>Bifidobacterium breve</i>	AAAY89038.1	F9Y041	1708	58-364
129	<i>Halomonas meridiana</i>	CAB92963.1	Q9L4I9	457	27-326
130	<i>Kocuria varians</i>	BAJ52728.1	E5RKQ5	736	93-391
131	<i>Microbacterium aurum</i>	AKG25402.1	A0A0G2T4B5	1417	64-367
132	<i>Pseudoalteromonas haloplanktis</i>	CAA41481.1	P29957	669	33-329
133	<i>Pseudomonas</i> sp. KFCC10818	AAA86835.1	Q52413	563	37-320
134	<i>Streptomyces albus</i>	AAA96317.1	Q53633	460	42-334
135	<i>Streptomyces avermitilis</i>	BAC73693.1	Q82AS5	460	42-334
136	<i>Streptomyces griseus</i>	CAA40798.1	P30270	566	41-333
137	<i>Streptomyces hygroscopicus</i>	AAA26698.1	P08486	478	43-329
138	<i>Streptomyces limosus</i>	AAA88554.1	P09794	566	41-333
139	<i>Streptomyces lividans</i>	CAB06622.1	P97179	573	48-340
140	<i>Streptomyces</i> sp. TO1	CAA73775.1	O65947	453	37-328
141	<i>Streptomyces</i> sp. WL6	AAA82875.1	Q59964	459	44-333
142	<i>Streptomyces thermoviolaceus</i>	AAA26697.1	P27350	460	42-334
143	<i>Streptomyces venezuelae</i>	AAB36561.1	P22998	569	41-333
144	<i>Thermobifida fusca</i>	ABF13430.1	Q1KLC8	605	46-350
145	<i>Thermomonospora curvata</i>	CAA41881.1	P29750	605	46-350

#### GH13\_32 – Eucarya – Fungi

146	<i>Pholiota microspora</i>	BAV60949.1	A0A1E1ERR9	589	51-347
147	<i>Hypholoma sublateritium</i>	KJA26527.1	A0A0D2LFX5	591	47-343
148	<i>Galerina marginata</i>	KDR78015.1	A0A067T4C3	589	48-344
149	<i>Psilocybe cyanescens</i>	PPQ83160.1	A0A409WXA0	586	47-341
150	<i>Moniliophthora roreri</i>	KTB32361.1	A0A0W0F7R2	585	44-340
151	<i>Pleurotus ostreatus</i>	KDQ30003.1	A0A067NPJ8	587	47-343
152	<i>Polyporus brumalis</i>	RDX41646.1	A0A371CMZ2	584	48-344
153	<i>Trametes pubescens</i>	OJT13448.1	A0A1M2W0S7	597	52-348
154	<i>Amanita thiersii</i>	PFH45132.1	A0A2A9NBQ2	588	52-349
155	<i>Hebeloma cylindrosporum</i>	KIM37787.1	A0A0C2Y9T3	580	44-340
156	<i>Armillaria solidipes</i>	PBK61492.1	A0A2H3B359	573	36-330
157	<i>Heterobasidion irregulare</i>	ETW76368.1	W4JS51	545	2-298
158	<i>Hypsizygus marmoreus</i>	RDB27268.1	A0A369JZU5	587	48-344
159	<i>Gymnopilus dilepis</i>	PPQ71147.1	A0A409VY19	654	108-404
160	<i>Trametes coccinea</i>	OSD07916.1	A0A1Y2J3F4	577	50-334
161	<i>Exidia glandulosa</i>	KZW01389.1	A0A165NYB6	595	53-348
162	<i>Trametes versicolor</i>	EIW55835.1	N.A.	598	52-348
163	<i>Armillaria ostoyae</i>	SJL11930.1	A0A284RT72	591	36-348
164	<i>Pyrrhoderma noxium</i>	PAV18085.1	A0A286UF06	1482	426-722
165	<i>Lentinus tigrinus</i>	RPD65356.1	A0A5C2SVV8	593	51-347
166	<i>Armillaria gallica</i>	PBK84861.1	A0A2H3CP67	565	36-324
167	<i>Schizopora paradoxa</i>	KLO18298.1	A0A0H2S996	582	42-341
168	<i>Panaeolus cyanescens</i>	PPR08271.1	A0A409YZ37	590	43-341

169	<i>Gymnopus luxurians</i>	KIK53845.1	A0A0D0ATN4	598	54-341
170	<i>Sphaerobolus stellatus</i>	KIJ56431.1	N.A.	542	9-307
171	<i>Fomitiporia mediterranea</i>	EJD07843.1	N.A.	646	105-398
172	<i>Gloeophyllum trabeum</i>	EPQ53992.1	S7Q3A2	569	34-330
173	<i>Phlebiopsis gigantea</i>	KIP11288.1	A0A0C3PUH0	577	44-340
174	<i>Cylindrobasidium torrendii</i>	KIY62009.1	A0A0D7AVY0	589	35-333
175	<i>Hydnomerulius pinastri</i>	KIJ69360.1	N.A.	568	35-332
176	<i>Neolentinus lepideus</i>	KZT20455.1	A0A165P365	574	39-335
177	<i>Serpula lacrymans</i>	EGN97351.1	F8Q2E0	585	46-349
178	<i>Botryobasidium botryosum</i>	KDQ06010.1	A0A067LUS3	588	46-342
179	<i>Panaeolus cyanescens</i>	PPR00074.1	A0A409YAP2	590	46-341
180	<i>Phanerochaete carnosa</i>	EKM53319.1	K5W345	577	43-340
181	<i>Dichomitus squalens</i>	TBU45601.1	A0A4Q9NZH8	572	51-347
182	<i>Phlebia centrifuga</i>	PSR82077.1	A0A2R6P097	555	46-312
183	<i>Piloderma croceum</i>	KIM89391.1	A0A0C3GFG2	598	58-359
184	<i>Ganoderma sinense</i>	PIL31175.1	A0A2G8SBN2	555	50-346
185	<i>Cylindrobasidium torrendii</i>	KIY70325.1	A0A0D7BJC3	579	36-334
186	<i>Jaapia argillacea</i>	KDQ58060.1	A0A067PW10	650	115-411
187	<i>Rhizoctonia solani</i>	CEL62905.1	A0A0B7FYW5	975	38-333
188	<i>Mycena chlorophos</i>	GAT57350.1	A0A146IBV9	748	143-439
189	<i>Serendipita vermifera</i>	KIM25608.1	A0A0C2WGV7	593	40-336
190	<i>Lentinula edodes</i>	GAW02849.1	A0A1Q3E749	669	60-357
191	<i>Steccherinum ochraceum</i>	TCD63303.1	A0A4R0R9L4	551	13-312
192	<i>Fibularhizoctonia</i> sp. CBS 109695	KZP22139.1	A0A166KQ11	580	42-340
193	<i>Plicaturopsis crispa</i>	KII90441.1	N.A.	584	45-347
194	<i>Jaapia argillacea</i>	KDQ58058.1	A0A067PTB3	573	22-333
195	<i>Obba rivulosa</i>	OCH93218.1	UPI000DC9AC67	571	41-334
196	<i>Gelatoporia subvermispora</i>	EMD36390.1	M2QWA3	569	40-332
197	<i>Coniophora puteana</i>	EIW78746.1	A0A5M3MIB8	569	32-327
198	<i>Plicaturopsis crispa</i>	KII86244.1	N.A.	501	43-365
199	<i>Agaricus bisporus</i>	EKM75205.1	K5XL16	474	42-338
200	<i>Sistotremastrum suecicum</i>	KZT36083.1	A0A166B801	589	45-348
201	<i>Sistotremastrum niveocreteum</i>	KZS90559.1	A0A164RHE5	589	45-348
202	<i>Schizophyllum commune</i>	EFI98134.1	D8Q2K0	470	38-334
203	<i>Tricholoma matsutake</i>	BBC62173.1	A0A2Z5Y5L0	491	62-358
204	<i>Serendipita indica</i>	CCA69081.1	G4TCP2	570	24-316
205	<i>Schizophyllum commune</i>	EFI98135.1	D8Q2K1	482	49-345
206	<i>Plicaturopsis crispa</i>	KII85613.1	N.A.	782	58-355
207	<i>Punctularia strigosozonata</i>	EIN11730.1	N.A.	477	44-341
208	<i>Ganoderma sinense</i>	PIL33242.1	A0A2G8SHK1	483	48-342
209	<i>Neolentinus lepideus</i>	KZT18190.1	A0A165MD72	510	42-338
210	<i>Peniophora</i> sp. CONT	KZV75308.1	A0A166K504	485	57-351
211	<i>Plicaturopsis crispa</i>	KII86838.1	N.A.	509	33-330
212	<i>Botryobasidium botryosum</i>	KDQ08018.1	A0A067LXA2	483	47-345
213	<i>Cylindrobasidium torrendii</i>	KIY73061.1	A0A0D7BTW3	469	37-333
214	<i>Exidia glandulosa</i>	KZW01365.1	A0A165NXQ6	594	29-327
215	<i>Jaapia argillacea</i>	KDQ58178.1	A0A067PTN6	729	160-457
216	<i>Peniophora</i> sp. CONT	KZV75307.1	A0A166K4Z3	474	45-341
217	<i>Gymnopus luxurians</i>	KIK51212.1	A0A0D0C0R2	475	43-340
218	<i>Polyporus brumalis</i>	RDX41931.1	A0A371CNS9	429	2-295
219	<i>Dichomitus squalens</i>	TBU29254.1	A0A4Q9MNH0	436	2-298
220	<i>Fistulina hepatica</i>	KIY45802.1	A0A0D7A480	566	30-329
221	<i>Amanita muscaria</i>	KIL59382.1	A0A0C2WDE5	515	46-344
222	<i>Fistulina hepatica</i>	KIY53725.1	A0A0D7APG0	558	8-315
223	<i>Fistulina hepatica</i>	KIY47132.1	A0A0D7A7Y2	549	10-308
224	<i>Lentinus tigrinus</i>	RPD55342.1	A0A5C2RUP1	429	2-295
225	<i>Steccherinum ochraceum</i>	TCD61445.1	A0A4R0R8J3	477	51-349
226	<i>Serendipita vermifera</i>	KIM25602.1	A0A0C2X8T3	514	45-341
227	<i>Auricularia subglabra</i>	EJD37603.1	J0WW10	567	2-304
228	<i>Calocera cornea</i>	KZT54766.1	A0A165EFL8	539	69-364
229	<i>Fistulina hepatica</i>	KIY46805.1	A0A0D7A7V0	479	40-338
230	<i>Psilocybe cyanescens</i>	PPQ69654.1	A0A409VTS4	367	47-343
231	<i>Calocera viscosa</i>	KZO93971.1	A0A167JVZ9	472	2-297

232	<i>Fibularhizoctonia</i> sp. CBS 109695	KZP07860.1	A0A165WS59	590	45-352
233	<i>Serendipita vermifera</i>	PVG03687.1	N.A.	536	46-362
234	<i>Stereum hirsutum</i>	EIM87674.1	N.A.	600	41-343
235	<i>Serendipita indica</i>	CCA69087.1	G4TCP6	486	2-298
236	<i>Rhizoctonia solani</i>	CEL62035.1	A0A0B7FWG9	479	48-343
237	<i>Punctularia strigosozonata</i>	EIN05398.1	N.A.	442	12-307
238	<i>Dacryopinax primogenitus</i>	EJU02896.1	M5FXX0	522	42-341
239	<i>Tulasnella calospora</i>	KIO30302.1	A0A0C3M9C4	444	2-298
240	<i>Rhizoctonia solani</i>	CEL62036.1	A0A0B7FVR4	477	48-341
241	<i>Tulasnella calospora</i>	KIO24533.1	A0A0C3KSS6	476	44-338
242	<i>Stereum hirsutum</i>	EIM84100.1	N.A.	475	44-339
243	<i>Rhizoctonia solani</i>	KDN35973.1	A0A066V6S6	451	2-297
244	<i>Fistulina hepatica</i>	KIY48489.1	A0A0D7ADK8	447	16-311
245	<i>Fistulina hepatica</i>	KIY48486.1	A0A0D7AF22	459	27-322
246	<i>Fibularhizoctonia</i> sp. CBS 109695	KZP26813.1	A0A166Q6M7	430	2-291
247	<i>Pleurotus ostreatus</i>	KDQ32476.1	A0A067P9A6	466	50-352
248	<i>Stereum hirsutum</i>	EIM84087.1	N.A.	477	45-341
249	<i>Pleurotus ostreatus</i>	KDQ32475.1	A0A067NZR1	458	38-342
250	<i>Chaetomium globosum</i>	EAQ88347.1	Q2GZT0	458	40-332
251	<i>Leucosporidium creatinivorum</i>	ORY89754.1	A0A1Y2G021	594	45-339
252	<i>Fusarium oxysporum</i>	EWZ34052.1	W9JPP9	456	38-330
253	<i>Pseudogymnoascus verrucosus</i>	OBT91518.1	A0A1B8G6R5	459	41-333
254	<i>Stachybotrys chartarum</i>	KEY73157.1	A0A084B6H8	458	40-342
255	<i>Pseudogymnoascus</i> sp. 23342-1-I1	OBT62577.1	A0A1B8DUF8	459	41-333
256	<i>Phaeoacremonium minimum</i>	EON97874.1	R8BEZ8	461	43-335
257	<i>Mycena chlorophos</i>	GAT55198.1	A0A146I682	846	405-708
258	<i>Paraphaeosphaeria sporulosa</i>	OAG04271.1	A0A177CAS9	458	40-332
259	<i>Melampsora larici populina</i>	EGG02960.1	F4RXF9	500	72-375
260	<i>Melampsora larici populina</i>	EGG02993.1	F4RXG2	462	34-337
261	<i>Puccinia triticina</i>	OAV91411.1	A0A180GFL8	516	77-380
262	<i>Puccinia graminis</i>	EFP79978.1	UPI000251D20C	574	85-388
263	<i>Mycena chlorophos</i>	GAT51088.1	A0A146HU33	1085	44-377
264	<i>Puccinia striiformis</i>	KNE94052.1	A0A0L0V451	535	102-397
265	<i>Puccinia sorghi</i>	KNZ54553.1	A0A0L6V192	666	109-477

#### GH13\_42 – Bacteria

266	<i>Microbacterium aurum</i>	AOF40721.1	A0A1B3IKE0	1278	658-1112
267	<i>Streptomyces lividans</i>	CAB06816.1	P96992	993	369-827

#### GH13\_42 – Eucarya – Fungi

268	<i>Pecoramyces ruminatium</i>	AWA81565.1	A0A2S0S3D2	975	379-805
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<sup>a</sup> Colour code: GH13\_1: plum – bacteria, red – fungi; GH13\_5: green – bacteria, olive – fungi; GH13\_15: magenta – eukaryotes; GH13\_24: walnut – eukaryotes; GH13\_32: cyan – bacteria, blue – fungi; GH13\_42: gold – Bacteria, ruby red – fungi. Sequences No. 146-265 of fungal  $\alpha$ -amylases from the subfamily GH13\_32 were collected based on the CAZy database and BLAST search using the sequence of *Pholiota microspora*  $\alpha$ -amylase as a query.

<sup>b</sup> GenBank accession No.

<sup>c</sup> UniProt accession No.

<sup>d</sup> Length of the protein in amino acid residues.

<sup>e</sup> Segment of the protein from the strand  $\beta$ 1 to the end of the strand  $\beta$ 8 of the catalytic TIM-barrel including domain B.