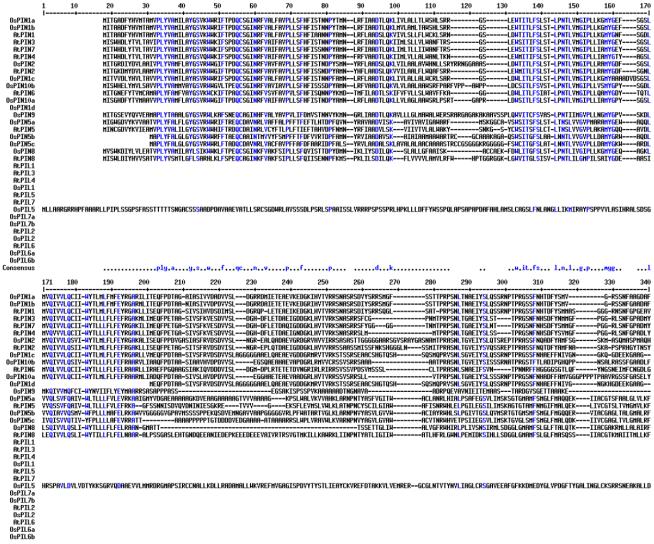
## **Supplementary Information**

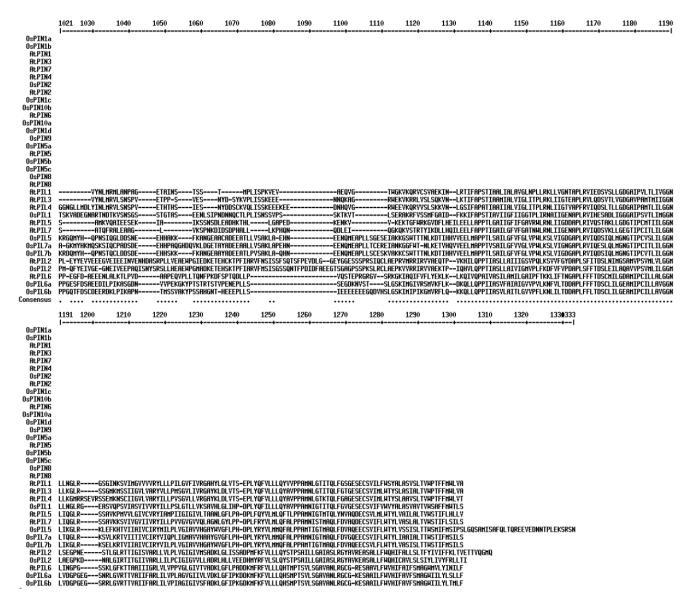
## **Supplementary Data File 1**

Multiple sequence alignment of OsPIN, AtPIN and OsPILS protein. Sequence alignment shows, alignment of OsPILS starts towards the end of the OsPIN and AtPIN sequence. This shows that, OsPILS and PIN proteins are highly dissimilar in their sequence.



	341	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490	500	510	
OsPIN1a	GYRT-	+		PSNYEEDAAAP											GA-EYNDAAAV				
OsPIN1b Atpin1	GYRT- FGSK-														gapdyndaaayi gggnhhadysti				
ALPIN3	SYQSS		RGPTPR	PSNFEENCAMA	SSPRFGYYPG	-66	AGSYP	APNPEFSSTT	TSTANKSYNK	IPKDYNTNQ	QTTLPTGGKSN	SHDAKELHMF	YHSSNGSPYSI	DRAGLNYFG	GAPDNDQGGRSI	DQG-AKEIRI	LYPDQSHNGE	K	
ALPIN7 ALPIN4	SYQSS			PSNFEESCAMA											GANEQYGKS				
OsPIN2	GGAGG		R	AOGLDEOYTN-	KF	ASGKAADP	PSYP	RGSYPAPNPEFSTGTGVSTKPMKIPKENQQQLQEKDSKRSHDAKELHMFVNSSSASPVSDVFGGGAGDNVATEQSEQG-AKEIRMVVSDQPRKSNAR PSYPAPNPGHMPAPRKKELGGSNSNSNKELHMFVNSSSASPVSEANLRNAVNHARSTDFRSAPPPRAVPVGGATPKGVSGSVTPA											
AtPIN2 Ospinic	GGAGA	GPGGDVYSL	QSSKGVTPR	TSNFDEEVHKT	AKKAGRGGRS	MSGELYNNNS-	YPSYPPNPHFTGSTSGRSGVKKKESGGGSGGGVGGGNKEHNHFVVSSRSPVSEANAKHNTTGSSTDVSTDPKVSIPPHDNLATKAHQNLIENM GGGHSPQPV												
OsPIN10b	SLHSS			PSSFDEHAAAR	AR		ASATV	'APT				NDI КОТНИТ	FUSSGASAASI	EVIGI PVER	SGRETRRI VPS	napstassr:	TRPPPGATGG	-R	
ALPING	GFGFT		RPGLGAS	PRRLSGYASSD			AYSL	QPTP				RASNFNEL	DYNGNGTPYN	KSP	AAGRIYRQSSP	KHHHESGORI	AAKDINGSYP	K	
OsPIN10a OsPIN1d	SLU55		KGPTPK	USNF DEHSHKP			PKPP GGGH	CDODVV				-CADAUL RHE	UNCCCOCDUC	00000000	GAYHYFGGGGGA	DHEDAKGAQA	INTERNET	-HEETG 	
OsPIN5a AtPIN5	IAGPA		AMAIGSI	YLGLHGDYLRY	H1 AT		IQH TQA					-ALPOSITSF	IFAKEYGLHA	DYLSTAVIF	GHLVSLPLLVG GHLVSLPVLVA GTLISLPILIA GTLASLPVLIV GHNVAVPVALA	YYAALEFIH			
OsPIN5b	VAGPL		ATLYGAA	ALGLRGDVLHL	AI		IQA					-ALPOSIASE	YFAKEYGLHA	DVLSTAVIF	GTLISLPILIA	YYAYLGFY			
OsPIN5c OsPIN8	FI 6PA		HTHYGHF I NGMSSY	HLGLRGULLRL Atghrgvi i kt	H1 AT			HEHETHSPSS	FFLLSPEICL	ISNGCHHUT	SPHUETHRUEU	-ALPUSTITE	YFAKEYGLAA YFAKEYNYQAI	ETESTHATE TESTATTA	elfholgan a	YYFANTTPAI	к		
AF51N8	<b>VLGPR</b>		LHIASAY	CIRLKSTLFKY	AI		LQA					-ALPQGYVPF	VFAKEYNLHP	IISTGVIF	GHLIALPTTLA	YYFLLDL			
ALPIL1 ALPIL3																			
ALPIL4																			
OsPIL1 AtPIL5																			
ALPIL7																			
OsPIL5 OsPIL7a	emsca	ELKPNVVVY	ANLIDGFMR	EGNADEAFKMI	Kenyaagyop	NKITYDN	LYRGL	CKHGQHDRAS	LLLKQMVRDSH	IRPDTITYN	LIIEGHFRHHS	KKDAFRLLSE	MENAGISPNY	TYSIMIHG	LCQSGEPEKAS	DLLEENTTKO	LKPNAFVYAPI	_ISGYC	
OsPIL7b																			
AtPIL2 OsPIL2																			
ALPIL6																			
OsPIL6a OsPIL6b																			
Consensus					••														
	511	520	530	540	550	560	570	580	590	600	610	620	630	640	650	660	670	680	
0sPIN1a	1	+	+	-NRGVAERDAE	AGDEKSVAAA	VSGEHGK	PGI TPB	+нрр	TSVHTRI TI TH	VURKI TRN	PNTYSSI TGI T	USI VCERU		KSTSTI SD	AGLGHANFSLG	+	PRTTACGN	 (VAT	
OsPIN1b	FG			-NRGYMDRDAE	Agdekaaaaa	GADPS	KAMA-A	PTAMPP	TSYNTRLILIN	YHRKLIRN	PNTYSSLIGLI	HSLYCFRH	NFEMPAIY	KSISILSD	AGLGHAMFSLG	LFHALQ	PHIIACGN	(YAT	
ALPIN1 ALPIN3		HPASGDEGG	FOOFSFAGK	-EREEFSFGNK FFFAFRPKDAF	DDDSKYLATD Ngl nkl apns	GGNNI Taalosk	SNKTTQ TGLGGA	iakympp Fasorknapp	TSYNTRLILIN ASYNTRI TI TI	IVHRKLIRN IVHRKLIRN	PNSYSSLFGIT PNTYSSLTGLT	HSLISFKH HALVAFRH	NIEMPALI HVAMPKTI	IKSISILSD IOSTSTLSD	aglgmamfslg Aglgmamfslg	LFMALN	PRIIACGN	RAA Svat	
ALPIN7	86	GPHNGDYGG	E	-EESERYKEYP	NGLHKLRCNS	TAELNPK	EAIETG	ETYPYKHMPP	ASYMTRLILIN	IVHRKLIRN	PNTYSSLIGLI	Halvafri	DYAMPKII	QSISILSD	AGLGHAMFSLG	LFHALQ	PKLIACGN	STAT	
AtPIN4 Ospin2															aglghamfslg Aglghamfslg				
ALPIN2	SPG	RKGHVENDQ	D	-GNNGGK	SPYH	GKKGS	DYEDGG	PGPRKQQMPP	ASYMTRLILIN	IVWRKLIRN	PNTYSSLFGLA	HSLYSFKH	NIKHPTIM	SGSISILSD	AGLGHAMFSLG	LFHALQ	PKIIACGK	SVAG	
OsPIN1c OsPIN10b	GP	FNKØVG		-GODELAKLEA	-TLSKLGSNS GAKTEDOTTA	THULRPK VTTTTKG	DUGEGA	HHHMPP Frargoonap	AGVMERETET AGVMERETET	IYHRKLIRN 'YHRRI TRN	PNTYSSLLGVI PNTYASLTGLT	HSLYSYRH HSLTAFRF	GIEMPHII HITMPTIV	IRSISILSD IKSTSTLSD	AGLGMAMFSLG AGLGMAMFSLG	LFMALQ	PRIINCGN PKITACGY	SVAA	
ALPING	EI			-sfrdalkaap	qataagggas	MEEGAAG	·KDTTP¥	AAIGKQEMPS	AIYMMRLILT\	YGRKLSRN	PNTYSSLLGLY	WSLISFKH	NIPHPNIY	DFSIKIISD	aglghamfslgi	LFHALQ	PKHIPCGAI	(KAT	
UsP1N1Va OsPIN1d															rplprgpcrhg Aglghamfslg				
OsPIN9															TAYGLSHFSSG				
OsPIN5a AtPIN5																			
OsPIN5b																			
OsPIN5c																			
OsPIN8 AlPIN8																			
OSPIN8 ALPIN8 ALPIL1																			
OSPIN8 ALPIN8 ALPIL1 ALPIL3 ALPIL4																			
OSPIN8 ALPIN8 ALPIL1 ALPIL3 ALPIL4 OSPIL1																			
OSPIN8 ALPIN8 ALPIL3 ALPIL3 ALPIL4 OSPIL1 ALPIL5 ALPIL7																			
OSPIN8 AtPIN8 AtPIL1 AtPIL3 AtPIL4 OSPIL1 AtPIL5 AtPIL7 OSPIL5	REGNY	SLACEIFDK	MTKVNVLPD	LYCYNSLIFGL	SKVGRVEEST	kyfaqhqergi	LPNEFTYSG	LIHGYLKNGD	Lesaeqlyqri	ILDTGLKPN	DVIYIDLLESY	FKSDDIEKY-	sstfksmli	DQGY-HLDN	RIYGILIHNLS	SSGNMERAFF	VLSGIEK <b>n</b> gs	/PDVH¥	
OSPIN8 AtPIN8 AtPIL1 AtPIL3 AtPIL4 OSPIL1 AtPIL5 AtPIL5 AtPIL7 OSPIL7a OSPIL7b	REGNV	SLACEIFDK	MTKVNVLPD	LYCYNSLIFGL	SKVGRVEEST	Kyfaqhqergi	LPNEFTYSG	LIHGYLKNGD	LESAEQL VQRI	ILDTGLKPN	DYIYIDLLESY	FKSDDIEKV-	sstfkshli	DQGY-HLDN	RIYGILIHNLS	SSGNMEARFF	VLSGIEKNGS	/PDVHV	
OSPIN8 ALPIN8 ALPIL1 ALPIL3 ALPIL4 OSPIL1 ALPIL5 ALPIL5 OSPIL75 OSPIL75 ALPIL2 OSPIL76 ALPIL2	REGNV	SLACEIFDK	MTKVNVLPD	LYCYNSLIFGL	SKVGRVEEST	kyfaqhqergi	LPNEFTYSG	LIHGYLKNGD	LESAEQL VQRI	ILDTGLKPN	DYIYIDLLESY	FKSDDIEKV-	sstfkshli	DQGY-HLDN	RIYGILIHNLS	SSGNMERAFF	VLSGIEKNGS'	VPDVH¥	
0sPIN8 RtFIN8 RtFIL3 RtFIL4 0sPIL1 RtFIL5 RtFIL5 0sPIL75 0sPIL76 RtFIL2 0sPIL2 0sPIL2 RtFIL6	REGNYS	SLACEIFDK	HTKYNYLPD	LYCYNSLIFGL	SKVGRVEEST	KYFAQHQERGL	LPNEFTYSG	LIHGYLKNGD	LESAEQL VQRI	ILDTGLKPN	DVIYIDLLESY	FKSDDIEKV-	sstfkshli	DQGY-MLDN	RIYGILIHNLS	SSGNMERAFF	VLSGIEKNGS	/PDVHV	
OSPIN8 AtPIN8 AtPIL1 AtPIL3 AtPIL4 OSPIL14 OSPIL7 OSPIL75 OSPIL75 OSPIL75 AtPIL2 OSPIL2 AtPIL6	REGNV	SLACEIFDK	HTKYNYLPD	LYCYNSLIFGL	SKVGRVEEST	Kyfaqhqergi	LPNEFTYSG	LIHGYLKNGD	Lesaeqlyqri	ILDTGLKPN	DVIYIDLLESY	FKSDDIEKV-	sstfkshli	DQGY-HLDN	RIYGILIHNLS	SSGNMEAAFF	VLSGIEKNGS'	/PDVH¥	
0sPIN8 RtFIN8 RtFIL3 RtFIL4 0sPIL1 RtFIL5 RtFIL5 0sPIL75 0sPIL76 RtFIL2 0sPIL2 0sPIL2 RtFIL6	REGNV	SLACEIFDK	NTKYNYLPD	LYCYNSLIFGL	SKVGRVEEST	KYFAQHQERGL	.LPNEFTYSG	LIHGYLKNGD	LESAEQL VQRI	ILDTGLKPN	DVIYIDLLESY	FKSDDIEKV-	SSTFKSHLI	DQGY-HLDN	RIYGILIHNLS	SSGNHEAAFF	VLSGIEKNGS'	/PDVHV	

Image: Construction		681	690	700	710	720	730	740	750	760	770	780	790	800	810	820	830	840	850
BP37      Renors Transmission Conclusion Stratuce (LINE)         BP36      Renors Transmission Conclusion Stratuce (LINE)         BP376      Renors Transmission C	OsPIN1b	YAH	AYRFLAGP	aymaaasfay	GLRGTLLHYAI	YQAALPQGIY	PFYF	AKEYSYHPSIL	STAVIFGHLI	ALPITLYYYIL	LGL		+						1
BP3P      Henrie TUMETROMUNICATION CLUBERTON PROTECT      HERRY TUMETROMUNICATION CLUBERTON PROTECT         BP3P      HERRY TUMETROMUNICATION CLUBERTON PROTECT      HERRY TUMETROMUNICATION CLUBERTON PROTECT         BP3P      HERRY TUMETROMUNICATION CLUBERTON PROTECT      HERRY TUMETROMUNICATION CLUBERTON PROTECT         BP3P      HERRY TUMETROMUNICATION CLUBERTON PROTECT      HERRY TUMETROMUNICATION CLUBERTON PROTECT         BP3P      HERRY TUMETROMUNICATION CLUBERTON PROTECT      HERRY TUMETROMUNICATION CLUBERTON PROTECT         BP3P      HERRY TUMETROMUNICATION CLUBERTON PROTECT      HERRY TUMETROMUNICATION CLUBERTON PROTECT         BP3P      HERRY TUMETROMUNICATION CLUBERTON PROTECT      HERRY TUMETROMUNICATION CLUBERTON PROTECT         BP3P      HERRY TUMETROMUNICATION CLUBERTON PROTECT      HERRY TUMETROMUNICATION CLUBERTON PROTECT         BP3P      HERRY TUMETROMUNICATION CLUBERTON PROTECT      HERRY TUMETROMUNICATION CLUBERTON PROTECT         BP3P      HERRY TUMETROMUNICATION CLUBERTON PROTECT      HERRY TUMETROMUNICATION CLUBERTON PROTECT         BP3P      HERRY TUMETROMUNICATION CLUBERTON PROTECT      HERRY TUMETROMUNICATION CLUBERTON PROTECT         BP3P      HERRY TUMETROMUNICATION CLUBERTON PROTECT      HERRY TUMETROMUNICATION CLUBERTON PROTECT         BP3P      HERRY TUMETROMUNICATION CLUBERTON PROTECT      HERRY TUMETROMUNICATION CLUBERTON PROTECT																			
B-7180	ALPIN4	FAM	AVRFITGP	AIMAYAGIAI	GLHGDLLRIAI	YQAALPQGIY	PF¥F	AKEYNYHPTIL	STGVIFGHLI	ALPITLYYYIL	LGL								
0-71000	ALPIN2	FAM	AVRFLTGP	AVIAATSIAI	GIRGDLLHIAI	YQAALPQGIY	PFYF	AKEYNYHPDIL	STRVIFGHLV	ALPYTYLYYYL	LGL								
0.2010.00100000000000000000000000000000																			
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B-PTI65 B-PTI6	OsPIN1d	YAH	AVRFLYGP	AVMAAASIAV	GLRGYLLHIAI	YQAALPQGIY	PFYF	AKEYNYHPNIL	STRVIFGHLI	ALPITLYYYIL	LGL								
BerPBB6 BerPBB	OsPIN5a			TTILLIJETI			JITI	ILLINTIIDII			LUL								
G-D1B6       RP116       PR3.103PHK (F1)PHK (F3)PHK (	OsPIN5b																		
RP1L1       HSJ LEGREL/LINGS LGCT TRUTUS FHERE SECURCH FXXRX LGFHMULS SULCT SELES FSJ LMRUR SESS LSL FSJ LMRUR SESS FSJ LMRUR SESS LSL FSJ LMRUR SESS FSJ LMRUN SESS FSJ LMRUR SESS FSJ LMRUR SESS FSJ LMRUN SESS FSJ LMRUR SESS FSJ LMRUR SESS FSJ LMRUN SESS FSJ																			
RP1L3         MVALL           RP1L4         RP1L4           RP1L4         RP1L4           RP1L4         RP1L4           RP1L4         RP1L4           RP1L5         RP1L5           RP1L5 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>HSI TO</td> <td>сакі нттност</td> <td>IGKTTTRI YN</td> <td>TSPEHGDSHCk</td> <td>(OP-PUKNNC</td> <td>TOFNHNTSNVI</td> <td>KOYSETESE</td> <td>STNOPTOPST</td> <td>SI EI STI DSE.</td> <td>¥</td> <td>MPHPI I</td>									HSI TO	сакі нттност	IGKTTTRI YN	TSPEHGDSHCk	(OP-PUKNNC	TOFNHNTSNVI	KOYSETESE	STNOPTOPST	SI EI STI DSE.	¥	MPHPI I
ap111       m611         RP115       m671         RP117       m671         RP118       m671	ALPIL3								IJETQ	JUNCHITTUGT			New INTRONE	Tối NINTON I	INCIDENCI	THOUTHOT	JEI EJIENJI		MVKLL
BPIL7       FIGL         OP112       VS1.153.LCK1000EX0FG1LBERSKKWUPUTUNELIDG.LCSGDISTNOVTHSLIDGSCXV60IS00FYLNELATGTP00-FYS9LTIGSSSK0LEQNFLIEEHTKRHSTSSFNU.VGC CRRRATE LLLWTM MG1       MG1         OP712       MG1       MG1         OP712       MG2       MG2         OP714       <	0sPIL1																		MGLL
GeP112a       HFIL         RP112b       HFIL         GeP112b       HFIL         GeP121b       HTRELTAR MUSICAL WARGEN         GeP121b       HTRELTAR MUSICAL WARGEN </td <td></td>																			
BP112b       HRIE         BP		YSSLI	SGLCKTAD	REKAFGILDEI	MSKKGYDPNIY	CYNALIDGLC	KSGDI	SYARNYFNSIL	AKGLYPNCYT	YTSLIDGSCK	GDISNAFYL	YNEHLATGITF	PDA-FYYSYL	TTGCSSAGDLI	EQAMFLIEEN	FLRGHASI	SSFNNLVDGFO	CKRGKHQETLI	
BPTI2         INDEX SHU (WYPP) TW	OsPIL7b																,	ISCESSC-NVI	MGFL
dp11L6       mtersummer         0.491L6       mtersummer         851       860       870       880       890       900       910       920       930       940       950       950       950       990       990       1010       1020         0471L6	0sPIL2																Ì	IDHLSANLQY	PQYTYH
Consensus         Image: Consensus	OsPIL6a																MMERSLMEAL	ATAAQGG1	YGTSYF
Improvemental and the second sec																	MMGRSVLEM	/vaaaqggggg	
GePNIG RePIX REPIX R		851	860	870	880	890	900	910	920	930	940	950	960	970	980	990	1000	1010	1020
GePNIG RePIX REPIX R	OsPIN1a	I	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
RePTN3         RePTN4         RePTN4         GePTN4         GePTN5         GePTN5         GePTN6	OsPIN1b																		
BrP1M4         GsP1M2         BrP1M2         GsP1M2         GsP1M2         GsP1M16         GsP1M16         GsP1M16         GsP1M16         GsP1M16         GsP1M16         GsP1M16         GsP1M16         GsP1M16         GsP1M5         GsP1M6         <	ALPIN3																		
RPTNE         0sPTNLo         0	ALPIN4																		
0sPTN10b 0sPTN10a 0sPTN10a 0sPTN10a 0sPTN10a 0sPTN10b 0sPTN5																			
REPTNG         0sPTNLd         0sPTNLd         0sPTNS         0sPT																			
0sP1N5 0s	ALPIN6																		
0±PIN5a REPIN5 0±PIN5c 0±PIN5c 0±PIN5c 0±PIN6 REPIL1 0LFITSSIPVAKILLITGIGFYLALDQVNILNHORKQLNNTVFYVFSPSLVASSLSETITYESNVKM#FMPLNVLLTFIIGSFLGHTVIKITKPPSHLRGIILGCCARGNLGNMPLIIIPAICNEKGSPFG0PES-CEKFGLG-YIALSMAIGAIYINTY REPIL4 ELFITSSKPVVETLLITSVGFYMALDGVNLLGHORKKULNNTVFYVFSPSLIGSRLADSVTYESLVKM#FMPLNVLLTFIIGSLLGHTVITIKPPSHLRGIILGCCARGNLGNMPLIIIPAICNEKGSPFG0PES-CEKFGLG-YIALSMAIGAIYINTY REPIL4 ELFITSSKPVVETLLITSVGFYMALDGVNLLGHORKKULNNTVFYVFSPSLIGSRLADSVTYESLVKM#FMPVNVLLTFIIGSLLGHTVITIKPPSHLRGIILGCCARGNLGNMPLIIIPAICNEKGSPFG0PES-CEKFGLG-YIALSMAIGAIYINTY REPIL4 ELFITASSKPVVETLLITSVGFYALDTVNLLGHORKKULNNTVFYVFSPSLIGSRLADSVTYESLVKM#FMPVNVLLTFIIGSLLGHTVTTKPPSHLRGIILGCCARGNLGNMPLIIIPAICNEKGGPFG0PES-CEKFGLG-YIALSMAIGAIYINTY REPIL4 ELFITACVPVLNMLVTGVGSFLATDFVGILNKORKKUNNTVFYVFSPSLIGSRLADSVTYESLVKM#FMPVNVLLTFIIGSLLGHTVVTTKPPSHLRGIILGCCSGRGMMGNTFLIIIPAICKEKGGPFG0PES-CEKFGLG-YIALSMAIGAIYINTY REPIL5 ELFURSKPVTQULFISLVGAFLARSDRCKLFPVERNSMKKVVFYVFNPSLVATULAQTTILEGLALAFMPVVNULTRCTFLIGGLLGHLVVKUTRAPRARLRGLIGCCSGRGMMGNTFLIIIPAICKEKGGPFG0PES-CEKFGLG-YINTYTFRLTKG REPIL5 SLLEVRSMPVTQULFISLVGAFLARSDRCKLFPVERNSMKKVVFYVFNPSLVATULAQTTILEGLALAFMPVNNGLTFLIGGLLGHLVVKUTRAPRARLRGLIGLTVATCRGGNGNGNTFLIIIPAICKEKGGPFG0PES-CEKFGLG-YINTYTFNTKIKK REPIL5 SLLEVRSMPVTQVLISVGAFLARSDRCKLFPVERNSMKKVVFYVFPDCIMFANLARTVTLODTISM#FMPVNNGLTFLIGGLLGHLVVKUTRAPRARLRGLITATCRSGNMGNIFLIIIPAICKEKGGPFG0PES-CEKFGLG-YSSLSMALGGFYINTYSQLVRS 0±PIL5 GRULVNMLTENTISGLSEAGKLSEVNITFVELQKVTSESARAMFSSLFMDITNQGKTLOVVVDUTDINCHCKEGNLDKRLMLRDVTWIKSAPMCGSSVLATVONLCRKKKLSERLNLLKEMDKRGNQLGSVCRSIGLS-YSSLSMALGGFYINTYSQLVRS 0±PIL7 BLLVRSMPIVQVLLIGVVGAFLARSGVSKLITSSALRDNNKVVFTVFTPSLHFRSLAKTVILSDVISM#FMPVNIGITFIYGGTLGHTACKTLKPPQHFRGNTIAFCSRGNLGNLLLIVVPOCDEGMPFGKDSSLCSSGSLS-SSLSMALGGLFINTHTYSLMKK REPIL2 -DILSGVVPULKLICLIVGVFRETRSVYNKLVFNFFDLIFSLGSSINGHVISSMFMPVNIGITFIYGGTLGHTACKTLKPPQHFRGNTIAFCSRGNLGNLLLILIVPSVCDEGMPFGKDSSLCSSGSLSCSSGSLS-SSLSMALGGLFINTHTYSLMK REPIL2 -DILSGVVPULKLICLIVGVFRETRSSVXNULVFNFFDLIFSLGESSTIL	OsPIN1d																		
0sPIN6 0sPIN6 0sPIN6 RePIN6 RePIN6 RePIN6 RePIN6 RePIN6 RePIN6 RePIN6 RePIN7	OsPIN5a																		
0sPIN8 REPIN8 REPIN1 DIFITSSIPVAKILLITGIGFYLALDQVMILMHORKQLMNTVFYVFSPSLVASSLSETITYESMVXM#FMPLMVLLTFIIGSFLGMIVIKITKPPSHLRGIIGCCAAGALGNMPLIIIPAICNEKGSPFGDPES-CEKFGLG-YIALSMAIGAIYIMTY																			
REPIL1       DLFITSSIPVAKILLITGIGFYLALDQVNILNHDARKQLNNIVFYVFSSLVASLSETITYESMVKMHFNPLNVLLTFIIGSLGALVIXITKPPSHLRGIIVGCCARGNLGMNPLIIIPAICNEKGSPFGDPES-CEKFGLG-YIALSMAIGAIYIMTY																			
REPIL3       ELFITSSKPVVETLLITSVGFYHALDGVNLLGHDRKYLNNIVFYVFSPLIGSRLADSVTYESLVKMHFMPVNVLLTFITGSLLGHIVIVITKPPSHLRGLILGCCARGNLGNMPLTITPRVCKEKGGPFGDPES-CKYGHG-YVALSHAHGSIYIHTY		DI ETT	SSTPVAKT	I I TTGTGEVI I	а поумті мно	IARKOI NNTV-	-FYVESPS	VASSI SETTI	YESHVKHUEH	PI NVI I TETTA	SEI GUTVTK	TTKPPSHI PGT	TVGCCAAGN	I GNMPI TTTPI	TONEKGSPE	GNPES-CEKE	GI G-YTAI SHA	атсатутиту.	
0sPI1 ELFITACVPVLNILLYGVGSFLATDFVGILNKDRRKYLNITVFYVFNPSLVATYLAQTITLEGLAKLAFHPVNILLACTFGLIGALGVVKVTRAPARLRGLIGCCSAGANGANIFLIIIPALCKEKGSPFGAPDV-CHTYGLA-YSSLSHALGAVFLATVANIHRA RcPI15 SLLEVASHPVIQVLLISVLGAFLASGNCKLFPVERRKSHNKVVFVFPARLHFANLAQTVTLEDIJSHHFHPVNGLTFLIGGLGALUVKLLKPPPVLGLIVATCSAGANGALPTILVPATCDEOKSPFGA-RSVCRTVGLS-YASFSHALGGFYIHTYFRLIKG RcPI15 ELEVASHPVIQVLLISVLGAFLASGNSKLVFVFPARLHFANLAQTVTLEDIJSHHFHPINGITFLIGGLGALUVKLLKPPVLGLIVATCSAGANGALPTILVPATCDEOKSPFGA-RSVCRTVGLS-YASFSHALGGFYIHTYFRLIKG OSPI15 GRGLYPNALTIFHIJSVLGKELSEVARLSEVHTIFVELQQKTSESARAFHSSLFHDNINGKTPLUVVDDHIRDHCKEGNLDKALHLRDVIVAKSAPHGCSSVLATVDNLCKKGKLSEAN.LLKEMDKRGMLQPTLVALLGFHFRRHHHILIKLGGLYIHTHYSLMKK OSPI173 SLLUVASHPVIQVLLIGVIGAFLASGYSNILTSSALSANKVVFTVFPSLHFASLAKTVTLSDVISHHFHPINIGITFHGGGIGAIACKILKPPQHFRGHIIAFCSAGANLGALLLIVPAVCDEOGAPFGKDSSRCKSLGS-YSSLSHALGGLYIHTHYSLMKK OSPI174 ALLVASHPVIQVLLGVGAFLASGYSNILTSSALSDNNKVVFTVFPSLHFASLAKTVTLSDVISHHFHPINIGITFHGGGIGAIACKILKPPQHFRGHIIAFCSGANLGALLLIVPAVCDEOGAPFGKDSSRCKSLGS-YSSLSHALGGLYIHTHYSLMKK PSPI12 -DILSGVYPLLKILCLIVIGLLABFXTQLYPRATFLLSKLVFALFUPCLIFFELGESTILDUTUSHHFHPINIGITFHGGGIGAIACKILKPPQHFRGHIIAFCSGANLGALLLAIVSSCHTKTNPFGFCKRGVGYSVSSLGSVCKSGLG-YSSLSHALGGLYIHTHYSLMKK PSPI12 -DILSGVYPLLKILCLIVGULLABFXTQLIPSATFLSKLVFALFUPCLIFFELGESTILDUTUSHHFHPINIGITFHGGGIGAIACKILKPPPHFFKFTUTTGFGNTGMLLALIVSSVCHTKNPFGFGCKRGVG-YSFAQUVARILVYTVYTHHPP OSPI12 -DILSGVYPLLKILCLIVGULLABFXYNULSKLVFALFUPCLIFFELGESTILDUTUSHHFPINVULSKVGSLGIVVLSKVGSLGFVVSGLGGVVLSKGKCKSVCHTTDHFGFGGACKRGVG-YSFAQUVARILVYTVYTHHPP OSPI12 -DILXGVYFVCVGULKILCLINGSVYNULLABKSVVNULALKSLVFALFUPCLIFFELGEGANTUNGKMULSKVGSLGGVVSLGFVVSSLGFVVSSLGFVVSSLGFVVSGLGGVVTTDHFFFTVINTFGGAUVGATLVYTVYTHHPP OSPI16 DILKYRVFTVGTGLLABFXYNULGLUARSKYNULANGLVFSULLPCLIFSQLGARTUNGKULANGHFPINVVGLISTAGSCIGFVYSSLGFVVSSLGFVVSSLGFVVSSLGFVVSSGSCHTTDHFGGSSVCHTTDHFGGSVCHTTDHFFGDSKLCKGANGAUVGTLVYTVYTKHFF OSPI16 DILKYRVFTVGTGFLAGSKYNULQANGKLLNGLVFSULLPCLIFSQLGARTUNGKUNGKULGHFFTVWVLGTSGSSTGFVSSSVFTTIGTGTSGSVCHTTDHFGGSVGHTDHFFGDSKC-CKEGGANGATLTYTYVFKKLAP	ALPIL3	ELFIT	SSKPYYEI	LLITSYGFYM	ALDGYNLLGHD	ARKYLNNIV-	-FYYFSPS	LIGSRLADSVI	YESLYKHNFH	PYNYLLTFII®	SLLGHIVIV	ITKPPSHLRGL	ILGCCAAGN	LGNMPLIIIP	<b>AVCKEKGGPF</b>	GDPES-CQKY	GMG-YVALSHA	AMGSIYINTY-	
REPIL7       ELLEVASHPIVQVLLISVLGAFLATDYCSLLSADTRRSVNKLVFVFTPCINFANLAETVTLQDIISNHFHPINVGITFLVGGILGALVVKLLNPKPQLHGLIIATCASGNHGNLHLIVPAICDEGSPFGN-RSVCRSIGLS-YASFSHALGGFYINTSVQLVRS         0sPIL5       GGRUVPNALTENTISGLSEAGKLSEVHITFVELQQKTSESANAHFSSLFNDDTINGGKTLQVVDOITKOHCKEONLDKALH.RDVIVHKSAPHGCSSVLATVONLCKKGKLSEALNLLKEMDKRGNLQVVLIGTHAFKGNUTFLVGGISSANAHFSSLFNDTINGGKTLQVVDOITKOHCKEONLDKALH.RDVIVHKSAPHGCSSVLATVONLCKKGKLSEALNLLKEMDKRGNLQVFLVALLGTHAFRAHHTLHKKLGGLTHHTYSLMK         0sPIL7       GSLLVARSHPIVQVLLIGVTGAFLASGYSKLISSALROHNKVVFTVFTPSLHFASLAKTVTLSDVISNHFHPVNGTIFLVGGTLGATACKTLKPPQHFRGHIIAFCSRGNLGALLITVPAVCDEGOMPFGKDSSKCSLGS-SSLSHALGGLFIHTHTYSLMK         0sPIL7       ALLLVRSHPIVQVLLIGVTGAFLASGYSKLISSALROHNKVVFTVFTPSLHFASLAKTVTLSDVISNHFHPVNGTLFHAGGTLGATACKTLKPPQHFRGHIIAFCSRGNLGALLITVPAVCDEGOMPFGKDSSKCSLG-SSLSLSALGSLGS-SSLSHALGGLFIHTHTYSLMK         0sPIL7       ALLLVRSHPVQVLLGUTVGAFLASGYSMUTSSALGSUNKVVFTVFTSDVISNHFHPVNGTLSNHFFPLNGGTLFHAGGTLGATACKTLKPPQHFRGHIIAFCSRGNLGALLITVPAVCDEGOMPFGKDSSKCSLG-SSLGLS-SSLSHGLGGLTYHTTYSLMKK         0sPIL7       DLLSGVVPLLKLICLTVGULUSKLSKL-SSLGSLGSVKVVFTVFTSDVISNHFHPINGTFFHAGGTLGATACKTLKPPQHFRGHIIAFCSRGNLGALLITVSSVCHTKTPPGGNS-VSSLGG-SSLGSLGS-SSLGSLGSVS-VSFAQUVARTUVTVTVVHHMEP         0sPIL2       -DILSGVVPLKLICLTVGULUSKLPFRTLSKLVFRLFLPCLIFTELGESTILDNTVQH#FIPVVVLISR4VGSLGYVVLISR4VGFTVVLISR4VFTVVVLISR4VFTGFKTVTTUTGFGNTGMVLITVTVVFFKAQUVARTUVTVTVVHHMEP         0sPIL2       -DILSGVVPLKLICLTVGLVSKVFTQLPRATFRLSKLV <frlflpcliftelgestildntvqh#fipvvvlisr4vgsslgyvvlisr4vgftvvvlisr4vftuvtvtvvfkaramapatuvtvtvvyhmhep< td="">         0sPIL6       GTTKRTAVPVVVVULUSKLSKLINGLVFSULGUGAVTUCKLUPVLISTIGUGUGATUFVVVULISRAGSGSLGFVVRSISVPPVFFKFTVTITGGTGANGNVVULURAFTVVVVVITVYVSFA</frlflpcliftelgestildntvqh#fipvvvlisr4vgsslgyvvlisr4vgftvvvlisr4vftuvtvtvvfkaramapatuvtvtvvyhmhep<>	0sPIL1	ELFIT	ACYPYLNM	LLYTGYGSFL	ATDF¥GILNKD	ARKYLNNIV-	-FYYFNPS	LVATYLAQTII	LEGLAKLAFM	PYNILLACTFO	GLILGHIYYH	VTRAPARLEGL	ILGCCSAGN	HGNIFLIIIP	ILCKEKGSPF	GAPDY-CHTY	GLA-YSSLSH	ALGAYFLATYA	YNIMRA
0sPIL7a SLLLYRSHPIVQVLLIGVIGAFLRSGYSKILTSSÄLRDHNKVVFTYFTPSLHFÄSLAKTYTLSDVISHAFHPVNIGITFIVGGTLGAIACKILKPPQHFRGHIIAFCSRGNLGNLLLIIVPRVCDEDGNPFGKDRSLCRSRGLS-YSSLSHALGGLFIATHTYSLHK 0sPIL7b RLLLVRSHPVVQVLLIGVIGAFLRSGYSNILTSSALSDHNKVVFTYFTPSLHFASLRRTVTFGVISHAFHPINIGITFINGGTLGAIACKILKPPQHFRGHIIAFCSRGNLGNLLLIVPRVCDEDGNPFGKDSSRCSSGLS-YSSLSHALGGLFIATHTYSLHKK R+PIL2 -DLLSGVPPLLKLCLTVIGLLAHPKTQLVPRATFRLLSKLVFRIFLPCLIFTELGESTITFIOVISHAFHPINIGITFINGGTLGAIACKILKPPQHFRGHTIAFCSRGNLGNLLLIVPRVCDEDGNPFGKDSSRCSKLGS-YSSLSHALGGLFIATHTYSLHKK R+PIL2 -DLSGVPPLLKLLCLTVIGLLAHPKTQLVPRATFRLLSKLVFRIFLPCLIFTELGESTITIVFDVISHAFHPINVLLSRVYGSLIGVLVILCRPPPEFRNFTIYTAFGFONTGNLLARVSSVCHTKTNPFGPMCNSRGVS-YVSFAQUVARUILVYTVYHMHPP 0sPIL2 -GDAVSRVNPLKKLCLTVIGLUSNPRTFLLSKLVFRIFLPCLIFTHLGGSVTIQNILDHAFIPVNVLISRVFGSLIGVIVALCSRTVFDPPFPFRFTVINTGFGNTGNLPAILGSVCHTTDHPFGPGCHRKGVYVSFAQUVARUILVYTVYHMHPP 0sPIL6 GTIKTRVPIKVFTHCFLGLHRSKYVNILPSGKLLNGLVFSLLPCLIFSQLGARVTLQKUQHAFIPVNVVGRYSGSLIGFVYRSITRPPPFYFKFTITIGIGVNGTURVLIALGRCDTSNPFGDSEK-CSUGFAVSFAQUVGRUILYTYVFKHLAP 0sPIL6 DLKYRVLPIRKVFTUCFHGFLHRSKYVNILQPNGRKLLNGLVFSLLPCLIFSQLGARTTLGKUQHAFIPVNVVGRYSGSLIGFVYRSITRPPPYFKFTVIHIGIGNIGNIPLVLARLCRDTNPFGDSEK-CSUGFAVSFAQUVGRUILYTYYFKHLAP	ALPIL7	ELLEY	ASHPIYQY	LLISYLGAFLI	ATDYCSLLSAD	TRRSYNKLY-	-FYYFTPC	INFANLAETY	LQDIISHHFM	PINYGITFLYG	GILGHLYYK	LLNPKPQLHGL	IIATCASGN	HGNLHLILYPI	AICDEEGSPF	GN-RSYCRSI	GLS-YASFSHA	ALGGFYINTYS	YQLYRS
REPIL2       -DILSGVVPLLKLICLTVIGLLLAHPKTQLVPRATFRLLSKLVFALFLPCLIFTELGESITLDNIVQHWFIPVNVLLSAVYGSLIGYLVVLICRPPPEFNRFTIVNTAFGNTGNLLLAIVSSVCHTKTNPFGPNCNSRGVS-YVSFAQUVARILVYTVVHHMEP         0sPIL2       GDNVSAVMPLMLLCLTVIGUVSMPRQTIPKATFKLLSKLVFALFLPCLIFVHLGGSVTIQNLIDNHFIPVNVLISTAIGCILGTVALICRPPOPFFRTVINTAFGNTGNLIAIVISSVCHTKTNPFGPNCNSRGVS-YVSFAQUVARILVYTVVHHMEP         0sPIL2       GDNVSAVMPLMLVLCLTVIGUVSMPRQTIPKATFKLLSKLVFALFLPCLIFVHLGGSVTIQNLIDNHFIPVNVLISTAIGCILGTVALICRPPOPFFRTVINTAFGNTGNLIAIVISSVCHTKTNPFGPNCNSRGVS-YVSFAQUVARILVYTVVHHMEP         0sPIL5       GTIXKIAVPINKVFTHCFLGLHARSKYNTLPSGKLLMGLVFSLLPCLIFSQLGQAVTLQKHLQHWFIPVNVLVSGAVSGSLIGFVVRSITIDIGSCNGTAVILVILVNLANKSGNVPVFNFKTTUITIGFGNGAVPLQKULAIVILANKSKVFTHCFLGLHARSKVFTHCIGLUNGKLUNGLVV-FSLLPCLIFSQLGANTLIKKLQHWFIPVNVLVYGAVSGSLIGFVVRSITRPPPYFKTVINIGIGNIGNILVLIAALCROPINFGDSK-CXEDGAA-TISEGQAVGATILYTYVKHKLAP         0sPIL6a       DHLXYAVPINKVFTHCFGLHARSKVFTHCIGLUNGKLUNGLVFSLLPCLIFSQLGANTLIKKLQHWPINIVVGAVSGSLIGFVVRSGSLIGFVVRSGNIVPYPYFKTVINIGIANICANILVLIAALCROPINFGDSK-CXEDGAA-TISEGQAVGATILYTYKKHLAP																			
0sPIL2 GDWVSRVHPLNKLLCLTVIGLVLSNPRTQIIPKATFKLLSKLVFRLFLPCLIFVHLGGSVTIQNILDHHFIPVNVLISTRIGCILGYIVALICRPPPQFFRFTVINTGFGNTGNLPIAIIGSVCHTTDHPFGPGCHRKGVA-YVSFAQHVAVILVYTLVYHVHFP Repil6 gtikirvhpiakvfthcflgllhaskyvnilppsgrkllnglvfslllpclifsqlgavtlqkhlqhhfipvnvlgtisgsiigfivasivrppypyfkftiiqigvgnignvplvllanlcrdfsnpfgdskcbigta-yisfgquvgaiilytyvqhfap 0spil6a dhlkyrvlpiakvftvcfhgflhaskyvnilqpngrkllnglvfslllpclifsqlgratiekhlqhhyipvnivvgaysgsligfivasirppypyfkftihigignigntplvlianlcrdfnpfgdskchrgquvgaiivytyvfkhlap	OsPIL7b	ALLLY	ASHPYYQYI	LLIGYYGAFLI	RSGYSNILTSS	alsdhnkyv-	-FTYFTPS	LINFASLARTY	FSDYISHNFM	PINIGITFMAG	GTLGHIACR	ILKPPQHFRGM	IIIAFCSAGN	LGNLLLIYYPI	<b>TYCDEDGNPF</b>	GKDSSRCRSL	GLS-YSSLSM	ALGGLYINTH	YSLHKK
Ospilga dhlkyavlpiakvfivcfhgflhaskyvnilqpngrkllnglvfslllpclifsqlgraitiekhlquhyipvnivvgavsgsligfvvasiirppypyfkftvihigignigniplvliarlcrdptnpfgdsdk-chedgna-yisfgquvgaiivytyvfkhlap	OsPIL2	GDHYS	avhplikli	LCLTVIGLVLS	SNPRTQIIPKA	ITFKLLSKLY-	-FALFLPC	LIFYHLGQSYI	IQNILDHHFI	PYNYLISTAIO	GILGYIYAL	ICRPPPQFFRF	TVINTGEGN	TGNLPIAIIG	SYCHTTDHPF	GPGCHRK	GYA-YYSFAQ	<b>WAATITAATI</b>	YHMMEP
USPYLL6D ONEKTHVLP1HKVEVVCFMGFLMHSKKVGVLKPSGKKLLNHLVFSLLLPCL1FHQLGKS1110K1MEMHF1PHNLHLGAVSRSLVGLIVHLIVRPPYPYFKFTITHIGIGNIGNIPLVLISALCROQLNPFGDSNK-CTQDGNA-YLSFGQAVGAIIVYTYVFKHLAP	OsPIL6a	DHLKY	AYLPIAKY	FTYCFHGFLHI	ASKYYNILOPN	IGRKLLNGLY-	-FSLLLPC	LIFSQLGRAIT	IEKHLQHHYI	PYNIYYGAYSO	ISLIGFYYAS	IIRPPYPYFKF	TYIHIGIGN	IGNIPLYLIA	ALCROPTNPF	GDSDK-CNED	GNA-YISFGQ	4YGAIIYYTY\	FKHLAP
	USPILED	UNERT	HATLAHKA	r yyur Nuf Lili	паккүйүшкр5	OKKLLNHLY-	-rslllpt	LTF HQLGKS1	TOKTUENNET	PHATHERARY	ISLYULIYHL	TARGULULULU	TINTOTON	TONTLATIS	ILLKUQLNPH	UDSNK-CTQU	unH=TLSFGQ	44001111111	'r KALHP



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