

M = *D. melanogaster*

V = *D. virilis*

BBS candidates in bold

Predicted TM domains

D. melanogaster

D. virilis

M AKH R - PA (Genbank ref # AAF52426)

```
1 makvaeendh rdlsnwsnvn dtngtihltk dmvfndghrl s sitvysilfv istignstvl
61 ylltkrrlrg plridimlmh laiadlmvtl llmpmeivwa wtvqwlstdl mcrlmsffrv
121 fglylssyvm vcisldryfa ilkplkrsyn rgrimlacaw lgsvvcsipq aflfhleehp
181 avtgyfqcvi fnsfrsdfde klyqaasmcs myafplimfi ycygaiylei yrksqrvlkd
241 viaerfrrsn ddvlrskrkr tlkmtitivi vfiicwtpyy tismwywldk hsagkinp11
301 rkalfifast nscmnp1vyg lynirgrmnn nnpsvnnrht slsnrldssn qlmqkqlttn
361 sllngrgqvm aaavsattkl anvvslkgta ngngsaaaag tvpitppltv tiaplatdde
421 anddsclsav tircqdqspi rqk
```

(*sfrsdfde* sequence in ECL2)

M AKH R-PC (Genbank ref # AAS64647)

```
1 makvaeendh rdlsnwsnvn dtngtihltk dmvfndghrl sitvysilfv istignstvl
61 ylltkrrlrg plridimlmh laiadlmvtl llmpmeivwa wtvqwlstdl mcrlmsffrv
121 fglylssyvm vcisldryfa ilkplkrsyn rgrimlacaw lgsvvcsipq aflfhleehp
181 avtgyfqcvi fnsfrsdfde klyqaasmcs myafplimfi ycygaiylei yrksqrvlkd
241 viaerfrrsn ddvlrskrkr tlkmtitivi vfiicwtpyy tismwywldk hsagkinp11
301 rkalfifast nscmnp1vyg lynirgrmnn nnpsvnnrht slsnrldssn qlmqkqlttn
361 sllngrgqvm aaavsattkl anvvslkgta ngngsaaaag tvpitppltv tiaplatdde
421 anddsclsav tircqdqspi rqkcgdsiel tsvvk
```

V AKH R PC (Genbank ref #XP_002051398.2)

```
1 maqsgevnev vydhrlrdw snvntngtm hlskdmifnd ghrlsitvys ilfvistign
61 stvllylltkr rlrgrplridi mlmhlaiadl mvttllmple iawawtvqwr stdlmcrlms
121 ffrvfglyls sfvmvcisld ryyailkplq rsynrgriml acawlgsvic sipqaflfh1
181 eehpivkgyf qcvtfhsfvs efdnwlyqia tmcamyafpl iafiycygai yleiykrnqr
241 vkhdviaerf rrsnddvlr akkrtlkmti sivivfiicw tpyyficmwy sldktsvdkv
301 nslvrkalfi fastnscmnp lvyglynirg rmnnnnnvsv nnrhtslsnr ldssnqllqk
361 pintlpnng nvmaaavaat tklahvvrk tngaagdsqs pvaaaplaap ldinddvsvs
421 vvttkcqeqt pkqpktpiic lncgdsieva svekt
```

M AstA R1 PB (Genbank Ref # AAF45884.3)

1 maghqslall latlisswpk aswgatgnsg iisvsnsnsgn nyaftsehtd hsdhnandsm
61 eydaesvale rivsti
77 **vpvffgiigf** **agllgnglvi** **lvvvanqqmr** **sttnlliinl** **avsdilfvif** **cvpftatdyv**
147 lpewpfgnlw **ckfvqymivv** **tchcsvytlv** **lmsfdrflav** vhpv**tsmslr** **ternatlaim**
207 **cawitivtta** **ipvalshsvr** iyqyhgnagt acvfsteeei wsl**vgfqvsf** **flssyvaplt**
267 **licflymgml** arlwksapgc kpsaesrkgk rrvtr**rmvvvv** **vlafaicwlp** **ihvilvlkal**
327 nlyggshlsv **iiqiishvva** **ytncscinpil** **yafls**dnfrk afrkvvwcgs ppplmtnqqv
387 **tktttrt**atgn gtsnieml

V AstA R1 PB (Genbank Ref # XP_002055362.1)

1 mglsshrlam alaltvlisf wptgshgaaa vdcadwlsps ecsnstggnnn nnnnnnnkig
61 nnsnyaaags taldhlnssm rpdnllemdl eqdgdnwple rivsii
107 **vpvffgiigf** **agllgnalvi** **lvvvvnqqmr** **sttnlliinl** **avsdilfvif** **cvpftatdyv**
167 lpewpfgnlw **ckfvqymivv** **tchcsvytlv** **lmsfdrflav** vhpv**tsmslr** **ternatlaim**
227 **cawitivtta** **ipvalahsvr** iyqyhgragt acvfsteeev wsl**vgfqvsf** **flssyvaplt**
287 **licflymgml** arlwksapgc kpsaesrkgk rrvtr**rmvvvv** **vlafaicwlp** **ihvilvlkal**
347 nmyggthltv **iiqiishvla** **ytncscinpil** **yafls**dnfrk afrkvvwcgs pp pivtnqqm
380 **tktttrt**atgn gtsnieml

M AstA R2 PA (Genbank Ref # AAF56809)

1 menttmlani slnatrneen itsfftdeew laingtlpwi **vgffffgviai** **tgffgnllvi**
61 **lvvvfnnmr** sttnlmivnl **aaadlmfvi** **lipftatdym** vyywpygrfw **crsvqyliv**
121 **tafasiytlv** **lmsidrflav** vhpirmsmmr **tenitliaiv** **tlwivvlvvs** **vpvafthdv**
181 vdydakknit ygmctfttnd flgprtyqvt **ffissyllpl** **miisglymrm** imrlwrqgtg
241 vrmskesqrg rkrvt**rlvvv** **vviafaslw** **pvqlilllks** ldvietntlt **klviqvtaqt**
301 **layssscinp** **llyaflsenf** rkafyk/avnc ssryqnytsd lppprktsca rtsttgl

V AstA R2 (PA-like) (Genbank Ref # XP_002053983.1)

1 mnlstlntl psnsswlesq lelttassnl dnstlssfya eaeairatvr wv**vpffffgii**
61 **aisgffgnll** **vilvllnkn** mhstt**nlliv** **nlaaadllfv** **ifcvpftaid** yvtqhwpgk
121 **mwcrsvqyli** **vvtayasiyt** **lvlmsidrfl** avvhpirsrm lrtehitk**ia** **iftlwtvvt**
181 **vsmpvtfahd** vvdvdydnqtn vtyamcryid ndvldl**stfq** **vsffissyll** **plmvisglyv**
241 rmimrlwhqg tgvrmskesq rgrkrv**trlv** **vvvviafasl** **wlpvqlilll** kaldmyeins
301 mfn**vilqiva** **htmaytssci** **npllyaflds** nfrkafyk/ai ncsnryhnyt sdlppprkts
361 cgrtsttgl

M Ast-A R2-PB (Genbank Ref # AAF56809)

1 menttmlani slnatrneen itsfftdeew laingtlpwi **vgffffgviai** **tgffgnllvi**
61 **lvvvfnnmr** sttnlmivnl **aaadlmfvi** **lipftatdym** vyywpygrfw **crsvqyliv**
121 **tafasiytlv** **lmsidrflav** vhpirmsmmr **tenitliaiv** **tlwivvlvvs** **vpvafthdv**
181 vdydakknit ygmctfttnd flgprtyqvt **ffissyllpl** **miisglymrm** imrlwrqgtg
241 vrmskesqrg rkrvt**rlvvv** **vviafaslw** **pvqlilllks** ldvietntlt **klviqvtaqt**
301 **layssscinp** **llyaflsenf** rkafyk/glqs nrlgmw**tth** qdssektty

V AstA R2 (PB-like) (not annotated; obtained by direct inspection of genomic DNA - see SXX document [AstA R2] isoform annotations)

1 mnlstlntl psnsswlesq lelttassnl dnstlssfya eaeairatvr wv**vpffffgii**
61 **aisgffgnll** **vilvllnkn** mhstt**nlliv** **nlaaadllfv** **ifcvpftaid** yvtqhwpgk
121 **mwcrsvqyli** **vvtayasiyt** **lvlmsidrfl** avvhpirsrm lrtehitk**ia** **iftlwtvvt**
181 **vsmpvtfahd** vvdvdydnqtn vtyamcryid ndvldl**stfq** **vsffissyll** **plmvisglyv**
241 rmimrlwhqg tgvrmskesq rgrkrv**trlv** **vvvviafasl** **wlpvqlilll** kaldmyeins
301 mfn**vilqiva** **htmaytssci** **npllyaflds** nfrkafyk/ek ikikpn**swhs** **vgtr**grrsap
361 lcftyf

M AstC R1 - PA ((Genbank Ref # AAF56809)

1 mftwlmmdvl qfvkgmentad seanatnwyn tneslyttel nhrwisgsst iqpeeslygt
61 dlptyqhcia trnsfadlft **vvlygfvcii** **glfgntlviy** **vvlrfskmqt** **vtniyilnla**
121 **vadecfligi** **pflllytmric** swrfgefmcck **aymvstsits** **ftssifllim** **sadryiavch**
181 pisspryrtl hiakv**vs**aia **wstsavmlmp** **vilyastveq** edginyscni mwpsdaykkhs
241 **gttfilytfff** **lgfatplcfi** **lsfyylvirk** lrsvgpkpgt kskekrrahr kvtrrlvltvi
301 **svyilcwlph** **wisqvalihs** npaqrdsrl eiliflllga **lvysnsavnp** **ilyaflsenf**
361 rksffkaftc mnkqdinaql qlepsvftkq gskkrsgskr lltsnpqipp llplnagann
421 **sstttssttt** **aektgtttgtq** **kscns**ngkvt appenliicl seqqeaftt arrgsgavqq
481 tdl

V AstC R1 - PA (Genbank Ref # XP_002048373.1)

1 mwllivglhl vgsptesqp ewllmgntst apynypndti ysthsseylp ttgssihstd
61 lptyqhciat rnsfadlft**v** **vlyglvcivg** **lfgntlviyv** **vlrfskmqtv** **tniyilnlai**
121 **adecfligip** **flllytmrics** wrfgelmck**a** **ymvstsitsf** **tssifllims** **adrymavchp**
181 isspryrtlh nak**vs**alaw **stsavmlmpv** mlyastveqe dginyssnim wpsdaykkhsg
241 **ttfilytfff** **gfatplcfil** **sfyylvirk** rsvgpkhttk skekrrahrk **vtrrlvltvit**
301 **vyiscwlphw** **msql**alinsn paqrdsrle **iliflllgal** **vysnsavnp****i** **lyaflsenfr**
361 ksffkaft**cam** **tkqd**inaqlq lepsvftkqg srrrggsrrl lttnpqqqqe qqppllalhv
421 gnnn**ssttts** **stttaektgs** tnapkscsn gkltvpgsst apeaenliic lseqheaftt
481 ttrrgsslvq qtdl

M AstC R2 - PB (Genbank Ref # AAN11677.2)

1 meggwrrggg gggrrlgkai meghstpnga aashrnstr tniatngcah sgillfvlt
61 mtltslitpt eqlavapngt tlhqlesves esypsingtq netmvtsvrp hldhrnrptq
121 qngshyleyd ddgpdcysy nfilklitmi lyalvciigl fgntlviyvv mrfskmqvtv
181 niyilnlaia decfligipf llytmqvgnw pfgnymckay mvstsitsft ssifllimsa
241 dryiavchpi sspryrtfv sklvsafawm tsvllmlpvi lfastvqssn gnvscniewp
301 dtqnshtdst filyslvlgf atpltfilvf yclvirkclht vgpkhkskek krshrkvtkl
361 vltvisayif cwlphwisqv alissapqrc asrlelavfl acgclsysns amnpilyafl
421 sdnfkksfmk actcaarkdv naqlqlensf fpkfgkgrqs erllggngkg gaqrgaltkk
481 kclatrnnna pma **ttttttt** **tttgtdavtc** lqppvhqvpv eiqvgnpatv lvvnaetnnc
541 kppvhlhdl

V AstC R2 PB (Genbank Ref # XP_002048370.2)

1 mkgypkpnaga anrschmdhv hggcgvllfl ltaltltsli tpteqltats tsvatlangt
61 atvqpmptyt kssdadaaad sdidvdvnsf gfspalelsd yykhmnanlv nggsgsgfif
121 psgfngtlpi gfggdppngs gpynpmqgr rdgsfgleli tmilyalvci vglfgntlvi
181 yvvlrfskmq tvtniyilnl aiadecflig ipflllytmqv gnwpfgnymc kaylvstsvt
241 gftssiflli msadryiavc hpisspryrt pfvskvvsav awttsvllml pvilfastfe
301 sgpghvscsi nwpeafniqs dsafilyslv lgfvtplifi mifyclvirk lhtvgpkhks
361 kekkrshrkv tkvlvtvitv yimcwlphwi sqvalinstp gcasrlelav flacgclsys
421 nsampilya fls dnfkksf mkactcaark dvnaqlqlen sffpkfgkgr qserligpna
481 aannskakkr alanarnna qm **tttttttt** **agtdvvt**siq pvaithtape vtptagaall
541 vvnaetnckp pvlhdl

M AstC R2 - PD (Genbank Ref # AGB94708.1)

1 meggwrrggg gggrrlgkai meghstpnga aashrnstr tniatngcah sgillfvlt
61 mtltslitpt eqlavapngt tlhqlesves esypsingtq netmvtsvrp hldhrnrptq
121 qngshyleyd ddgpdcysy nfilklitmi lyalvciigl fgntlviyvv mrfskmqvtv
181 niyilnlaia decfligipf llytmqvgnw pfgnymckay mvstsitsft ssifllimsa
241 dryiavchpi sspryrtfv sklvsafawm tsvllmlpvi lfastvqssn gnvscniewp
301 dtqnshtdst filyslvlgf atpltfilvf yclvirkclht vgpkhkskek krshrkvtkl
361 vltvisayif cwlphwisqv alissapqrc asrlelavfl acgclsysns amnpilyafl
421 sdnfkksfmk actcaarkdv naqlqlensf fpkfgkgrqs erllggngkg gaqrgaltkk
481 kclatrnnna pma **ttttttt** **tttgtdavtc** lqppvhqvpv eiqvgnpatv lvvnaetnnc
541 kppvhlhdl **x** drapsmplet vvfiarr

x = stop suppression

M AstC R2 - PF (Genbank Ref # AGB94708.1)

1 meggwrrggg gggrrlgkai meghstpnga aashrnstr tniatngcah sgillfvlt
61 mtltslitpt eqlavapngt tlhqlesves esypsingtq netmvtsvrp hldhrnrptq

121 qngshyleyd ddgpdcsysy nfilklitmi lyalvciigl fgntlvivv mrfskmqvt
181 niyilnlaia decfligipf llytmqvgnw pfgnymckay mvstsitsft ssifllimsa
241 dryiavchpi sspryrtfv sklvsafawm tsvllmlpvi lfastvqssn gnvscniewp
301 dtqnshtdst filyslvlgf atpltfilvf yclvirklht vgpkhkskek krshrkvtkl
361 vltvisayif cwlphwisqv alissapqrc asrlelavfl acgclsysns amnpilyafl
421 sdnfkksfmk actcaarkdv naqlqlensf fpkfgkgrqs erllggngkg gaqrgaltkk
481 kclatrnnna pma**tttttt** **tttgtdavtc** lqppvhqvpv eiqvgnpatv lvvnaetnc
541 kppvhltdl**x** drapsmplet vvfiarr**x**dh qvelldldtai dcqaiarqpe cll

x = stop suppression

M CAPA R PB (Genbank Ref # AGB94708.1)

1 mnsstdptfs elnasftntp dtlfatsvss dpshgfgeed yacgtfncsp kefvafvlgp
61 qtlplykavl itiifggifi tgvvgnllvc **iviirhsamh** tatnyylfsl **avsdlllyllf**
121 **glptev**flyw hqypdlfgmp fckirafise **actyvsvfti** **vafsmerfla** ichplhlyam
181 vgfkrairii **talwivsfis** **aipfgllsdi** qylnypldhs rieesafcsm spkivne**ipv**
241 **fevsfciffv** **ipmiliilly** **grmgakirsr** tnqklgvqqg tnnretrnsq mrkkt**virml**
301 **aavvitffvc** **wfpfhlqrli** flyaknmdny ldine**ealpsi** **agfayyvsc//t** **vnpiyysvms**
361 rryrvafrel lcgkavgayy nsgfardhss fressaydrv hs//vhvrasqh pnkftedsss
421 anrvlikkty slplpk/nads **tvlsttd**ivi vlen**shtvce** epkveniwi eneetci

(/ = intron)

V CAPA R X2 PB (Genbank Ref # XP_002047623.2)

1 mnmnmstnms mdtnlstylg tsdatalpyp gmddygcphm nctamefvqf vlgpqtllph
61 kallisiifs gifit**gvlg**n **vlvc**miirh **aamhtatnyy** **lfslavsdll** **ylllglpaev**
121 **fly**whqypyl fglpf**oklra** **fvseactyvs** **vftivafsm**e rflaichplh vcamsgf**qra**
181 **lriitalwiv** **sflsaipfgv** kteiqylnfp n/dgsrilesa fcsielefpe **efplfevsfc**
241 **iffiipmili** **illygrmgag** irsratkgl/vqqgsrnres rssqk**kravirml/aavvit**
301 **ffvcwfpfhl** **qrlw**flyakn ianyqdv**ew** **lfsiagfayy** vs//ctinpivy **nvms**qryrva
361 fkeilcgkka gayynsgfar dqssfirdes sfrrgssatp nlrgrs**trysr** **vsang/madcs**
421 llntttkivi vlgnnspqrd vdrnipeete akkqen

M CCAP R PC (Genbank Ref # AGB94708.1)

1 mlhlrlfdss lyytlasase ssglasstst ersfngtqga ggvaaggesl tptdvaavn1
61 tyftpaishv mlapttiatt tasatmvqiq ttaapshdle tggntssdp gefdnlnsfy
121 fyeteqfavl wilftvivlg nsavlfvmfi nknrksrmny fikqlala/dl cvgllnvltd
181 iiwritiswr agnlackair fsqvcvtyss tyvlvamsid rydaithpmn fsks/wkrarh
241 lvagawalisa lfslpilvly eekliqghpq cwielgspia wqvymslvsa tlfaipalii
301 sacyaiivkt iwakgsifvp t/eragfgaap arrassrgii prakvktvkm tltivfvfii
361 cwspyiifdl lqvfgqiphs qtniaiatfi qslaplnsaa nplyyclfss qvfrtlsrufp
421 pfwftccck syrnsqqnr chtvgrrlhn scdsmrtltt sltvsrrstn ktনারvice
481 rptkvvtvpa msev

V CCAP R PC (Genbank Ref # XP_002053465.1)

1 mlhlrlfdss lyytlasvss gmlpppqasn gsqtlgtgaa agiapaestv nltyftpais
61 hvmlaptptt asaaqttea ttttatppta sttptgsdfe aaaataasgd nltspyagel
121 dnlnsfyfyeteqfavlwil ftiivlgnsvlfvmfinkn rksrmnyfir qlaladlcvg
181 llnvltdiiw ritiswagn vackvirfsq vcvtysstyv lvamsidryd aithpmnfsk
241 swkrarhlva gawllsalflpilvlyeek liqghpqcw elgspmawqi ymclvsaalf
301 avpaliisac yaivktiwa kgsifvpter vgfgaatrr assrgiipra kvktvkmtlt
361 ivfvfilcws pyiifdlqv fgqiphsqtn iaiatfiqsl aplnsaanpl iyclfssqv
421 rtllsrufpfw wltcccksyr nnsqqnrcht vgrrlhns cd smrtlttslt vsrrstnkt
481 arvicerpn kvitvpamse v

M CCAP R PD (Genbank Ref # AAS65092.1)

1 mlhlrlfdss lyytlasase ssglasstst ersfngtqga ggvaaggesl tptdvaavn1
61 tyftpaishv mlapttiatt tasatmvqiq ttaapshdle tggntssdp gefdnlnsfy
121 fyeteqfavl wilftvivlg nsavlfvmfi nknrksrmny fikqlala/dl cvgllnvltd
181 iiwritiswr agnlackair fsqvcvtyss tyvlvamsid rydaithpmn fsks/wkrarh
241 lvagawalisa lfslpilvly eekliqghpq cwielgspia wqvymslvsa tlfaipalii
301 sacyaiivkt iwakgsifvp t/eragfgaap arrassrgii prakvktvkm tltivfvfii
361 cwspyiifdl lqvfgqiphs qtniaiatfi qslaplnsaa nplyyclfss qvfrtlsrufp
421 pfwftccck syrnsqqnr chtvgrrlhn scdsmrtltt sltvsrrstn ktনারvice
481 rptkvvtvpa msev**laht srkrsafsih gptsfsdaef 1

** Stop Suppression

V CCAP R (PD-like) (not annotated - obtained by direct inspection of genomic DNA; see SXX Document de novo [CCAP R] isoform annotations)

1 mlhlrlfdss lyytlasvss gmlpppqasn gsqtlgtgaa agiapaestv nltyftpais
61 hvmlaptptt asaaqttea ttttatppta sttptgsdfe aaaataasgd nltspyagel
121 dnlnsfyfyeteqfavlwil ftiivlgnsvlfvmfinkn rksrmnyfir qlaladlcvg
181 llnvltdiiw ritiswagn vackvirfsq vcvtysstyv lvamsidryd aithpmnfsk

241 swkrarhlva gawllsalfs lpilvlvyeek liqghpqcwi elgspmawqi ymclvsaalf
301 avpaliisac yaaiivktiwa kgsifvpter vgfpgaattr assrgiipra kvktvkmtlt
361 ivfvfilcws pyiifdlqv fgqiphsqtn iaiatfiqsl aplnsaanpl iyclfsqvf
421 rtlrpfppfk wltcccksyr nnsqqnrcht vgrrlhns**cd smrtlttslt vsrrs**tnktn
481 arvicerpn kvitvpamse v**lahstrk rstfavhgpt **sfsdaefl**

M CCHa1 R-PA (Genbank Ref # AAF57819)

1 mianlvsmet dlamnigldt sgeaptalpp mpnvtetlwd lamvvsqstq wplldtgsse
61 nyselvttet pyvpygrrpe tyivpilfal ifvvgvlngg tlivvflsvr qmrnvpnty
121 lslaladllv iittvplast vytveywpyg sflcslsefm kdvsigsvsf tltalsgdry
181 faivdplrklf hahgggrrat rmtlatavsi wllailcglp aligsnlkh1 gineksivic
241 ypypeewgin yaksmvllhf lvyyaiplvv iavfyvlial hlmysasvpg eiqgavrqr
301 arrkvavtvl afvvifgicf lpyhvfflwf yfwptaqqdy nafwhv1riv aycmsfansc
361 anpvalyfvvs gafkrkhfny lfcrgasgrr kkrqhdtdfc mhrdt**sltst** askrfqsrhs
421 cyqstirscr lqettittlp nggnqngani savelalpvl qapghneaha ppsygflpln
481 eivqqtrssp akfqeslln

V CCHa1 R (Genbank Ref # XP_002049859.1)

1 mmtsvlsdis tiamdmelgs gsesplspln atralwelam ttttaetplfd engslvpvte
61 ipyvpvpygrrl etyivpilfa ifvvgvlngg tlivvflsv rqrnvpnty ilslaladll
121 vilttvplvs tvyaveywpw gsflcslsefm mkdvsigsvsf ftltalssdr yfaivdplrklf
181 fhahgggrra trmtlaiavs iwllaiicgl paligsnlkh1 vginqeksiv icypypeawg
241 dnyaklmvml hflvyaipl viiaafyvmi alhlmysasv pgemqgavrqr vrarrkvavt
301 vlafvvifgi cflpyhvffl wfyywptaqq dynmfwhv1r ivgfcmsfan scanpvalyf
361 vsgafkrkhfn rylfcrgisg rrkkrnqhnd tfcmhrnt**sl** **tst**askrfqs rhscyqstvr
421 sclrqettit tlpngglnga ps**tavthnea** pgyeftplsd fgplkasqla qrlqespln

M CCHa2 R-PA (Genbank Ref # AAF57285.4)

1 myaslmdvgq tlaarladsd gngandsgll atgqgleqeq eglaldmghn asadggivpy
61 vpvldrpety ivtvlytlif ivgvlngntl viiffrhrsm rnipntyils laladllvil
121 vcvpvativy tqeswpfern mcristeffkd isigvsvftl talsgeryca ivnplrklqt
181 kpltvftavm iwilaillgm psvlfsdiks ypvftatgnm tievcspfrd peyakfmvag
241 kalvyyllpl siigalyimm akrhmsarn mpgeqqsmqs rtqararlhv armvvafvvv
301 fficffpyhv felwyhfypt aeedefwn vlrivgfcts flnscvnpva lycvsgvfrq
361 hfnrylccic vkrqphlrqh statgmmdnt svmsmrrsty vggtagnlra slhrnsnhgv
421 ggagggvggg vgsgrvgsfh rqdsmplqhg nahgggaggg ssglgaggrrt aavsek/sfin
481 ryesgvmry

V CCHa-2 R PA (Genbank Ref #XP_002049178.2)

1 mpknmlaalm dmsqtaasl ayaplesnaa ataaaaaaaa vlnvsqqlgn ssqldgslat
61 aaatttttav ttststhnas geeppqykv ldrpetyivt vlytlifivg vlngntlvi
121 ffrhrsmrni pntyilslal adllvilvcv pvativytqe swpfermcr iteffkdisi
181 gvsvftltal sgerycaivn plrklqtkpl tvftaviiw failgmgsf vvsdiqgytl
241 ptpngnitie vcsprfrskiy akymvvakas iyylvplsii gvlyimmakr lhisardmpg
301 eqlsiqrssq ararrhvarm vvafvvvffi cffpyhvfel wyhfyptaee dfddfwhvvr
361 ivgfctsfln scvnpvalyc vsgvfrqhf nrylccicvkr qphlrqhsta tgvmdtsvts
421 mrrstyvggg gggavggsla ahraslhmnn nhgvavgggg ggggrggsfh rqdsmplqha
481 gsgnghahnv gpggagigra siinek/slik rydertry

M CCHa2 R PB (Genbank Ref # AAF57285.4)

1 myaslmdvgq tlaarladsd gngandsgll atgqgleqeq eglaldmghn asadggivpy
61 vpvldrpety ivtvlytlif ivgvlngntl viiffrhrsm rnipntyils laladllvil
121 vcvpvativy tqeswpfern mcristeffkd isigvsvftl talsgeryca ivnplrklqt
181 kpltvftavm iwilaillgm psvlfsdiks ypvftatgnm tievcspfrd peyakfmvag
241 kalvyyllpl siigalyimm akrhmsarn mpgeqqsmqs rtqararlhv armvvafvvv
301 fficffpyhv felwyhfypt aeedefwn vlrivgfcts flnscvnpva lycvsgvfrq
361 hfnrylccic vkrqphlrqh statgmmdnt svmsmrrsty vggtagnlra slhrnsnhgv
421 ggagggvggg vgsgrvgsfh rqdsmplqhg nahgggaggg ssglgaggrrt aavsekr

M CCHa2 R PC stop suppression (Genbank Ref # QCD26194)

1 myaslmdvgq tlaarladsd gngandsgll atgqgleqeq eglaldmghn asadggivpy
61 vpvldrpety ivtvlytlif ivgvlngntl viiffrhrsm rnipntyils laladllvil
121 vcvpvativy tqeswpfern mcristeffkd isigvsvftl talsgeryca ivnplrklqt
181 kpltvftavm iwilaillgm psvlfsdiks ypvftatgnm tievcspfrd peyakfmvag
241 kalvyyllpl siigalyimm akrhmsarn mpgeqqsmqs rtqararlhv armvvafvvv
301 fficffpyhv felwyhfypt aeedefwn vlrivgfcts flnscvnpva lycvsgvfrq
361 hfnrylccic vkrqphlrqh statgmmdnt svmsmrrsty vggtagnlra slhrnsnhgv

421 ggagggvggg vgsgrvgsfh rqdsmlqhg nahgggaggg ssglgaggrt aavsekr✘gt
481

M CCK-R 17D1 PA (Genbank Ref # ABW09450)

1 mlprlcadac rqc kakiarr dthrgtrtpy gca dtqsrpk pnfllrevde vcctaasasp
61 rllvlfrdhk rasffgl tid afyhylrqal plakeaaih1 nasneisavg dgvtitgtpg
121 dllnysglel dlgl dldlnl dmdlatt pss stlapavtvr tpgnrsvrv sadvpiwvvp
181 cysaillcav vgnllvvtl vqnrrmrtit nvfllnlais dillgvfcmp vtlvgtllrh
241 fifgellckl iqfaqaasva vsswtlvais ceryyaichp lrsrtwqtin hankiiaiiw
301 lgslvcmtpi aafs qlmpts rpglrkcreq wpadslnyer aynlflldal lvlplllalsf
361 tylfitrtly vsmrneramn fgssgpevtt ssaavaeag sqrrangshc qsl dtivphq
421 hnphqqh hhh sqyyydyghc gskrrlisgg gpcegrrhly cmr sasvks1 rhqqingggg
481 tlgstgagng eccsrvrhmr qqmqlqqqgy vsdnesrrks lsqpslrite aglrrsnetk
541 sleskkrvvk mlflvlvleff icwtplyvin tmtmllgptv yeyvgytsis flqllaysss
601 ccnpitycfm nasfrrafvd tfkgmrvcer lcapccfwrr rsknetnlsv agnsialans
661 vmsstiles prl

V CCK-R 17D1-like (Genbank Ref # XP_032295977.1)

1 msgslaseat mtsatasatv mptplvpsnr smsrviadvp iwvipcysii llcavvgnll
61 vvtlvqnrr mrti tnvfl1 nlaisdillg vlcmpvltvg tllrnfifge slckliqfaq
121 aasvavsswt lvaisceryy aichplrsrt wqtinhanki iafiwlgslv cmtpiaifsq
181 lmptrsrglr kcreqwpans lgyeraynif lnllallvpl malsfaylfi trtlyvsmrn
241 eramngssg pdvgltt nss ssnnnsctg irrt ygnsny lmrqmqrqea laidgsakld
301 mllqqqkasg ppqyyyaegy tqggskr rlf gscdgrrhly cmr sasvks1 rqqqqqqqq1
361 ggsgdccarm qrmrqqqlnm tagndgerrk slstpslrit eatlrrsnes ksl eskkrvv
421 kmflvlvlef ficwtplyvi ntmtmligpv vyeyvdytai sflqllayss sccnpitycf
481 mnasfrrafv dtfkgmrlcd ggrfgf crrr sknetnlsva gnsialansa msshtiles
541 rl

M CCK R 17D3 PB (Genbank Ref # ABW09450)

1 mfnyeegdad qaamaaaaay ralldyyana psaaghivsl nvapyngtgn ggtvslagna
61 tssygdddrd gymdtepsdl vtelaflslgt ssspspsstp assststgmv pvwlipssystem
121 illfavlgnl lvistlvqnr rmrtitnvfl lnlaisdml1 gvlcmpvtlv gtllrnfig
181 eflcklfqfs qaasvavssw tlvaiscery yaichplr**sr swqtishayk iigfiwlggi**
241 lcmtpiavfs qliptsrpgy ckcrefwpdq gyelfynill dfl111vlp11 vlcayilit
301 rtlyvgmakd sgrilqqslp vsattaggsa pnpgtsssn cilvltatav ynensnng
361 nsegsagggs tnma**tttltt** rpt**taptvitt** **ttttvtlak** tsspsirvhd aalrrsneak
421 tleskkrvvk mlfvlvleff icwtplyvin tmvm1igpvv yeyvdytais flqllaysss
481 ccnpitycfm nasfrarafvd tfkglpwrng agasggvga agggl1sasqa gagpgayasa
541 **ntnis**lnpql amgmtwr**sr srhe**flnavv ttnsaaaavn spql

M CCK-R 17D3-like (Genbank Ref # XP_032295927.1)

1 mysasaedaa saaatykall dyyanarsaa shivsltlap lneslslgla eagngnasgn
61 anssasyedd alsaenifli tesvatesr gaaaaangva vsgsrssss aptempawli
121 psyslillca vvgllvist lmqnrrmrti tnlfllnlai sdml1gvlcm pvtlvgtllr
181 nfifgef1ck liqfaqassv avsswtlvai sceryyaich plr**srswgti shaykiigfi**
241 wlggilcmtp iavfsrlipt srpgfckcre hwpdqgyerf ynimldlill vlp111lcaa
301 yilitrtlyv gmnvgkdarm pas**sgsaqtv** ataaiaatpg ssscvlvlna aseynessn
361 nnaattstta aa**tattttta** **tatttatatt** **tlttttttl** **ttvt**pakssn aspslrihda
421 alrrsnetrt leskkrvvkm lfvlvleffi cwtplyvint lsmfigqtly eyidyttisf
481 lqllaysssc cnpitycfm asfrarafvd fkglpwkrng taaggl1sasq ggvpnl1snp
541 pglamgmdtw r**srsrnd**qll nsvvytnsaa aaadspql

M CNMa R (Genbank Ref # ABW09450)

1 mdmeyitsss gnitattead fssslgesnv teynttemda nesagedeem lriaaffighf
61 **vhqyyipvlc** **ctgsignils** **vfvrfrtklr** klsss**fy**laa **lavsdctcfla** **glfaqwlnfl**
121 **nvdiynqnyf** **cqffftffsyl** **asfcsvwfvv** **aftverfiav** iyplkrqtmc tvrrakivlf
181 **cltlvgclhc** **lpyiviakpv** fmpklnttic dlnseykeql **alfnywdtiv** **vyavpfttia**
241 **vlnt**ctgctv wkfatvrtrl tmhkmkpqtn **smpsnsns** ggassavasy rlsaslkrqk
301 stgthpsgqh nvanrqtddq eqqqqsqqhq inncqhhcei tqkparrkvq nssqlkv**tkm**
361 **llivstvfv**c **lnlpscllri** eaywetesar nqnstialqy ifhaff**fitnf** **ginfvlycvs**
421 **gqnfrkavls** ifrrvssaqr eagn**tgvtvs** **eycrntgtst** rrrmmtqhcw nemhelhplk

V CNMa R (Genbank Ref # XP_002047272.3)

1 manpyepttm tamsntsqdi sapttttttt tattatvttt lsytttdssrn isidleymsv
61 edeemlhiaf lisdfv**nryy** **vpiicctgsi** **gnilsvfvff** mtklrklsss **fy**laalaid
121 **tcflcglfmq** **wlnflnvniy** nqnyfc**qfft** **fisylasfcs** **wfvvvaftve** rfiavmyplk
181 **rqimctvrra** **kivllgltla** **gcvhcvpyil** iakpvyspkl ndticdlns ykeql**alfny**
241 **wdsivvyavp** **fttitvlntc** tgctvwkfat vrtrltmhkm kpqitnvpaa attgggva
301 tyrisaslrr qkstgthpsg qh**svsrqteq** qqqqqqqqrh darsqhhcei tqktgrrkvq
361 nssqlkv**tkm** **llivstvfv**c **lnlpscllri** etywetqtsk tqntt**ivlqy** **ifnaffitnf**
421 **ginfvlycvs** **gqnfrkavls** ifrrvssaqr egi**tgvtvse** **ycrntgtstr** rrrmmtqhcw
481 emhelhplr

M 4313 R PD (Genbank Ref # AAF45710)

1 mfppksgptp hpisialpls dpyatdhmad qdavlvppls dsldldvdvd lnlnmnlnl
61 vddrrqvlfe gysdelltia wvacivfiiv gvpgnlltiv alsrgrqtrn staifiinls
121 csdllfgcfn lplaastfke rawthsdllc rlfplmrygl lavsllsvsl itinryiia
181 hprqypriyq rryla lmvag twittfsimi ptwrgvwgif gldvsigscs imhdrygrsp
241 keflfiaafm vpcicivicy arifllvrka airagtagkt nvsvdtpssa pqhqi qamat
301 pkkpekvtts sgeanepiag rpfvveenla yiddnastds lpisysirrr dqqdqqppvd
361 anvvlkerek erdrdqekvs lgrsqtqlem gkthgknpit tslrtsftr fsprkshyas
421 mgntsnassi ypgrmsakdr rllkmilvif vwfvicylpi tvakiwksat evhwnfiagy
481 lliylttcin pliyvlmsse yrraywnllr chgspdtqkq rnqanakrkh lesnrqvkat
541 t

V 4313 R PD-like (Genbank Ref # XP_002057364.1)

1 mihqlsdaq gldiqllgvp gavaqplala rkaggtnrsn smdqenelfe gysdelltfa
61 wiacivfiiv gvpgnlltiv alsrgkqtrn staifiinls csdllfgcfn lplaastfke
121 rawthsdllc rlfplmrygl lavsllsvsl itinryiia hprqypriyq rryla lmvag
181 twlvtfsemi ptwrgvwgrf gldtsigscs ilhdkydrsp keflfmaafm lpcvcivicy
241 arifllvrqa amragaksse laitppiqtq tqtqkppvad kpkdkskvks kdrqqeldkd
301 adfgtsrpfv vaeslayidd nassesfpis ysikqeapid anvvlqdnal annkhsvsqs
361 apatgpatad atvnksqsqleqgrnsknpi tslrtsftr fsprkshyvs mgntsnassi
421 ypgrmsvkdr rllkmilvif vwfvicylpi tvakiwksan dvhvfningy lliylttcin
481 pliyvlmsse yrraywnllr chqteqqqqq qralkkhles nralkt

M 12290 R PA (Genbank Ref # AAF45710) (starts just before TM2)

1 maidllilal llvsflinll alcafwitpg lrttanrfti nllainligc cilaptlflg
61 lpgksaeast snaetleffs kpgnhqvilar rngqlveqdg vvrnrnisen gdtvetffkc
121 natycrelti dergdggfvi tetetheenl safeslptea pilppvqlrc wsidmtaalg
181 alavlllvvgd twcavtdplr yhsrisgvkt wifialtwvv gilfgalsaf rvldfeadal
241 fsrqrrlavt yfnisstnsi fgvvayasvyf iviillpfgf vcgmywrifs eargnglrmr
301 qngssp11qs alnltagqqa aqanqfsnsl cvhrh**sis**sa sshgggnsslg lgglqmqidq
361 rqqprsspsc lrrdsaakvl lptisddggs daesgagvql mpvqehslsd rnqnimltlq
421 tasgeikrny sarqlplltg ssqdlretnr lqgirqvhs pnlhkytelr qdslseecgs
481 phllghaqrq qqqqlhlqhq qqqhhhhqqh hphfssprhq qhghalqipa ihaspkalsy
541 msslrhrln asslfkyree sra**arisilv** vvmfvvsylyp fgllvl1qsr lsaanfggss
601 **qlaifmilla nlsspifay** rnkrvrrgvk rlfgl dsssg lqrn**cssvk** tngtagpaas
661 gaqlqrns**sk lsqyssnsck** yltpqsslvs qvpvhtltl rpnsscstii nfggargsad
721 sdeqppatpp ptvavapppt rpqrpk1qrg itivehiait ptmpqkfqn rarlfdmffr
781 sskklqagcq sqslptev

V 12290 R (Genbank Ref # XP_002053408.1)

1 maidf**lilav llisfiinll** alcafwitpg lrttan**rfti nlliinligc** cilaptlfls
61 **g**fkslsgqee qlsgvnaagd siefyskpgn hqltirhhgq lvekdgivlr knitsgnsns
121 ndssgdziem iykcnatycr eltidergdg gliitetetr ednlsvsvhs ntslpavqlr
181 cwsidmtaal galavllvvg dtwcavtdpl ryhsrisgvk aw**ifitltwv** **vgivfgals**a
241 frvldfetdt llsrqrrlaa tyfnisstss ifg**viyacvy** **fiviillpfg** **fvcgmywrif**
301 seargnglrml rqnqssp11q salnltahaq aapatpyans lcvhrh**sis**sa **asshggggv**l
361 sgg1qmqidq raprnspsc1 rrdsaakvll ptisddgsdv dvesshggq lmsvpeqtva
421 drnqnilltl qtasgeikrn ysarqlplltg tssqdlrelh rlqgirqvhs spnlhkytel
481 rqd**sltsee** cssphllqah rqqqqhsrql hqqqqqlqql paqqqlhthf stgpqqvaag
541 halqipaiha spkalsymss lrhrlnsnass lfkyreesra **arisilv**vm **fvvsylypfgl**
601 **lvll**qsrlsa anftgs**tqla ifmillanls** spfifayrnk rvrrgvkr1f gl daasalkr
661 qhssslknhg hsaassapq lqrns**srlsq yssns**crylt pqsslvsqcq ttpvhtltl
721 lrpnsscsti ingyghhkg adsdevpsle atpppqrqtr pklqrgitiv ehihiagspp
781 kfqsrrgllld mffrgskkmq sscseampte v

M 13229 R PA (Genbank Ref # AAF58717)

1 mmqetgnqmg qthmhqrvpf ndtvlkdyhl tstdiekfvk lwqeyqmknm tpqvdecqgy
61 cqgeiynwlr aynsihgyvs lmicifgtia nilnimvltr kemaktpinn ilkwlavadm
121 fvmleyipytt syqyiympg ekdlsytwav cllvhmfhtq ilhtisiglt vtlavwryva
181 irhpnggcan fllahsreai llpfilspil clptyfvfvqv retydvdkvn seamyhvyfd
241 kdsvlrfnf wihsvlikll pcgilivisa vlmhvlceas rrrlklrdyn npakyaiqln
301 lnetkskkpp rcdrrndrnt lllvavlvlf litefpqgll gllsgvmekc ffahcypfg
361 elmdllalin aavgfvlygl msqfrttfr slfmkrhfgs **temrltrvt** ttcv

V 13229 R PA (Genbank Ref # XP_015024303.1)

1 mqetnmaqrq rephvalnet llkdleitss diqdfvklff dfqkknhsqq decqgycqge
61 iynwlrayng ihgyvslllic ifgtianiln imvltrrema kapinilkw lavadmfvml
121 eyipytttyqy iymkpgekdl syawavylv hmhftqilht isigltvtla vwryvairhp
181 ngscanflla hsreailfpf iispivclpt yfvfkvretl evdtrehevm yhvyfdvds
241 lfrfnfwihsviikllpcci ltvisl vlmh vlceasrrrl klkdydnptk yaiqlnlnet
301 ksrrpprcdr rndrtlllv avlilflvte fpqgllglls gvlekcfah cypfgelmd
361 llalinaavg fvlyglmskq frttfrslff krhfgs **semtrtrvt** ttcv

M 13575 R PA (Genbank Ref # AAF58717)

1 mallhytfdq lelylewafa qhgeatpips iqpypgvfv g dlsqlnrfkr hafsavvgtl
61 fvlaafcgnls tlyvnsrrkl rpffraclis lacsdlvssi fctvsymaqf qaqlqlwti
121 ggfmckfvpf itttsvls g ltlvaialdr ylavmrpvl g fwspdkrfst lsmlliwacs
181 igssgpllgi ydyrkiyll d vedsseese vvtavpeelv vtelemvhmc lagdhdvgly
241 yvilftlflf pcivsfwl n aviarqlwlr rhyhqeqqeq hqepkegqfk tmanggdllm
301 pstlvsamgv avpfaldntp lppkstvn ap gkkttaaala rearhrkmvv vllmmavfi
361 clrlpawvfl imrlygsyse pidwlllyfsf gilnlfscal npifytfltq tirtltlvkh
421 kiqgflgcpp gkvpdgmp t qmdksgcccg lrpptftwrc hpsrdr aaat virdvdqdpd
481 psdqvqp dps slrrflsykq evftiykqcg dsssiess a

V 13575 R PA (Genbank Ref # EDW60637.1)

1 malrslid t ddlypivias dlcqihd tpr yifmalvtvl flctfvgnvs alyvntrrkl
61 rpffraclis lacsdllycv nfttsntamf naeyleywil gpfmchfvpf vntttvlcss
121 fmlvaialdr ymairraaig iwnpgfvfcg vciagiwlac maaavplffi ytpiqvyiqn
181 tdelliseld qatmcvgrt qigiynsvsl slvfvp civa fvflnatiar qlwqlrhqqr
241 nlqqqqqqqr eqdqprfvhl lnkpettyam mtafsvaasf dmstaqltgl ppplplplpe
301 klspaaaarv arhrrmvr v lllmngafmcl rlpawtflm rvygsfssp v swlfyfsfgl
361 lnltsca lnp lfytflp qti rvlsklkral srlccrras klesdatmpq etaerarrcl
421 ccglqvtwrc hlksppaaag svvtqtvavi eapsaasslp pvghckddyk dlaiynensl
481 *qttasmkssr*

M 13995 R PA (Genbank Ref # AAF52333)

1 mnrndlqqww ensyrrqhpe ptddlglglsa elhlalqepn qlpadydygn fslgnpydvd
61 sehsispltl lllavsyglv vfggvvgnst lvl**tlcsass** vrlrnp**llla** vciadllvtg
121 **isapvtllnl** amrrrtrslp lvlck**vihyv** **qvmpvsasti** **sffmlsldry** atvkhprlaq
181 lrqrrylhvs **lallswlasa** **aistpflfay** kiiaksmvkv gggaanttpn pvsisctsd
241 ganamfmsfi **ifhtiavfvl** **pgigvllnhy** gvrrklcals ltaraahgel plpipilrrq
301 thmvivtgcp naqqaacggg ttaddtsngn gtgtgggpm vspgdiqlht lqprqpgsag
361 salepgsyrs snpispramr eirahsqrqr inragrgpat pgiplp**qtst** **lrsrrhlanm**
421 **liasavifia** **cwaphvcif** yknfgnnqgc **sqtsvyfsl1** **lgyfysaisp** **viywalnhns**
481 lrqspcapii rlrsmqnlr srfrthtapp ppsstneaal gafnpklikl tpkqyraqas
541 shyly

V 13995 R PA (Genbank Ref # XP_015028190.1)

1 mnsnnlqqww ensyrrqhqq qptvdsnidn dndsdateql hyalleqnnf ggnsaggidgn
61 fggqlsssfy ydsygnftlt npydidtgad tehaipslti **lllaisyglv** **vfggvvgnst**
121 **lvl**tlcsass**** vrlrnp**llla** **vciadllvtg** **isapvtllnl** amnrgrtrslp **lllck**lihyv****
181 **qvmpvaasti** **sffmlsldry** atvkhprlaq lrqrrylhvs **lailswiasa** **aistpflfay**
241 kiiaksviik gagggttppn vsisctselg anamfmsfii fhtiavfvlp gvgvllnhyg
301 vrrklcalsl taraahgelp lpmpilrrqt hmvivtgcan aqqagcggat taddtsngng
361 ngggqiainp gdiql**hnlqp** **crpgssaale** **pgsyr**ssnpi spramreira hsqrqrifra
421 grgpatpgip lpq**stlrsr** rhlan**lias** **alifivcwap** **hvcifyknf** gykqycsk**ts**
481 **vyfsl1lgyf** **ysaispviyw** **alnhntlrqs** pcapiirlrs mqnlrsrfr shtvppaass
541 tneaalgafn pklikltpkq yraqasshyl y

M 30340 R PA (Genbank Ref # AAF52333)

1 masvssddf dfgkwdfpae riwlhkpnge itwkictflp liafglygnf smvyvia**tnr**
61 **slrsptnlii** anmavadllt laicpamfmv ndfyqnyqlg cvgcklegfl vvvflitavl
121 **nlsvvsydr**l taivlpmetr ltirgvqivv vctwvsgill **asplafyrsy** rrvvwknfte
181 ryckentsvl **pkywyvliti** lvwlpplgiml **icyiaifykl** dryekrvlsr enpltvsykr
241 **svaktlfivv** **vvfaalrlpf** **tilvv**lreky fgedvsvssg **mqlfwyisqy** **lmflnaavnp**
301 **liygfnn**enf rrayyqiswv rrwrdatqmk kfsrspdhcc ycafmkngkr tseaaqkagn
361 lekdiskdms saqqsakstk ivenefvsei eadgfi

V 30340 R PA (Genbank Ref # XP_032293011.1)

1 mtaynysiqq fdfsqwdfpa eriwlhkane eia**wkiisfl** **pliifglygn** yiliyliatn
61 ralrsp**tnli** **ianmamadfl** **tllicpamfl** indfyqnyql gcvgc**klegf** **lvvvflitav**
121 **lnsvvsydr** **ltaiv**lpqet rltlc**gariv** **iagtwlagll** **lalplaiyrq** yrvriwrnft
181 eryckenmtv **lpkywyvlit** **vlwlpplgim** **licytaifvk** ldryekrvls renplsv**ryk**
241 **rsvaktlfiv** **vivfvllrlp** **ftifvvlrek** **yystessvdc** **gmkyfsyfsq** **ylifvnaavn**
301 **piiygfnn**en frrayaqiac mqkrraan rihhclycdf iqnknsgqan aeqrskais
361 qsaaretkkl gatsnidetl mpqlkgegfi

M 32547 R PC (Genbank Ref # AAX52506)

1 mspaeqlrlv gvsvdayqlaa ssggaggggg gggggggggg lgggyggggsg gdaggsgekm
61 kdvpdkyvta lshfldwhsn gtvdmerlsg pilkssiksv ywlfliqyaa lallgvvlnv
121 iivvyimyhr lykdvt**hafi** inlalchfvq calvlpvslm vmliqnwifg qflcf**flpml**
181 **qdiplhvami** shiliawdrn rwnldplkgr lpgfv**cccat** wltgm**vialp** ypiytiyvel
241 gdympqlsgi glcvvnlmdd **mqeytrglfl** lmycgp**avll** sylyi**irtsqe** lrppdgpfav
301 mmyehradlr mrqrns**stss** veprhlsggg vaglsngggg sarsydlysa eldvhrekkr
361 **qrnfgsmaat** qvvc**mcplmi** lrfarlslee tyenakh**df** tylmfvw**vaf** lptvif**pciy**
421 **asqilprdeq** erlrgyfrls skrkkqsqrr sdagggsgvg gssredsiek deasnttsvh
481 haaephkhss klrherevrl pghgssaggd rytgapyrqg kdrerererd rdrerdrdre
541 rererqragg rgagdagvvn nlgkdvrgkk hdvkinisid gvghgatshs haahpahrkq
601 tggnnnnnnn srsrtnpgg rhggsklta**d** cl**snvtastf** cngsgsvtag atgngngpsg
661 vlipddssts nygdgeessv vssmmvppqr wpgsgggvlr hkd**v****sfsecs** **stfssstler**
721 dleimdqler ersmdiqeml qrererekvr rqlpdiekly aqrspkgkrg eaagagagtg
781 aglalvmpgs dplssls**qsr** **sisteyslcs** tletsgagvs vghdevlphh leeveeevvp
841 pdfydsytpg gtqnlppnag gavpvataav payqyqysrn rlsrkssgss sghhhhghhhh
901 gqhgggggvgg vaggrgskrd sfnslnqtdl iagafceldp tqplnk**mavi** egrmrrspr
961 na**sfssgsgv** **sgrssmksss** rdydyghgss shsahpeldf renifael

V 32547 R PC (Genbank Ref # XP_002059063.1)

1 mppaehhvat pqaagnddfq leastsaekw kdvpdkyllv iahtllaghsn etedmerfng
61 pilkasiksv ywlfliqyaa lallgvilni **aiivvyimyhr** lykdvt**hafi** inlalchfvq
121 **calvlpislm** vmlmqnwifg qflcf**flpml** **qdiplhvami** shiliawdrn rwnldplkgr
181 ipgfv**cccat** wltgm**vialp** ypiytiyvel gdylpqlsgi glcvvnlmdd **mqeytrglfl**
241 **imycgpavll** sylyi**irtsqe** lrppdgpfav mmyehrvdlr mrqrns**stss** eprthsgggv
301 aglsnghgts trsydlysa eldvcrekrkq **rnfgsmaatq** vvc**lcpmlil** rfarlsleet
361 yenqkh**df** **ft** **ylmfvwvaf** **ptvifpciya** sqilprdeqe rlrqyfrlsa krkpkqsrrs
421 nag**tgslqdd** siekdehtnt tsvavnvagq tqppaesqkh ppkgnavslr herspghgls
481 stdrysgaph rggqsavker drerdrdrer erdrdrerer ererergrdr ererrerggh
541 vlsgrgagda gvvnnlgkhm rgkkhdvkin iisdghgstg sgrkqpp**sss** **snnssgrskp**
601 aagqarpkpt ie**ym****svsnn** vsnltassyc ngnsalldd sgtsnygdge essvsvsmh
661 ppqrwphvag lrhk**disfse** **csstfssstl** erdleiidll erersmdiqe mmqreqqgek
721 vrlsvggvgr qlpdieklya qrspkpkrdg gygydkgala lvmpgsdpls msl**assqpt**
781 **eyslcs**nlqe hqlhqqaqqr lghlqqqqqlq qqqqqqlhqh qldeeev**pd** fydsytpggs
841 nnlppavqav qvaappppp tyqyqytrrl srkssgpgsh hvpgggtarg skrdsfnsln
901 gtdliagafc eldptqplnk maglegmrr ssprnasfns **nsarssmksr** dyghgsth
961 hpeldfreni fael

M 33639 R PA (Genbank Ref # AAF48813) (PA-specific underlined)

```

1 mitrlyntee dpaycsfiwg snltssvdvl aanatsvfss dlrddfyrdv edprteslre
61 ycyglvlpii camgiignvl nlvvltrrnm rgtayiymra ystaallaiv faipfgirml
121 vkhdrgqwee fgpafytahl elylgngclg vgvmmllvlt ieryvsvchp gfarpvmgpp
181 gvvvfltcla tvivylpsif rgelikcilg ssdvyvylrr dntiyqqtif yrvykimlev
241 ifklvptlvi gglnmrimmv yrrtcerrrk mvlsrphaqg hghghghghg hghghahghg
301 ylkdddprkf aeerrlflll gstsilflvc vspmailhmt iasevypsfp fqvfrasanl
361 lelinysltf yiyclfsedf rntlvrtikw pwlkgkfchq aehevsaspp atagtvvavag
421 tgnghvsifh paipaltltp aepderprca ngvlh

```

M 33639 R PD (Genbank Ref #AGB95518.1)

```

1 mitrlyntee dpaycsfiwg snltssvdvl aanatsvfss dlrddfyrdv edprteslre
61 ycyglvlpii camgiignvl nlvvltrrnm rgtayiymra ystaallaiv faipfgirml
121 vkhdrgqwee fgpafytahl elylgngclg vgvmmllvlt ieryvsvchp gfarpvmgpp
181 gvvvfltcla tvivylpsif rgelikcilg ssdvyvylrr dntiyqqtif yrvykimlev
241 ifklvptlvi gglnmrimmv yrrtcerrrk mvlsrphaqg hghghghghg hghghahghg
301 ylkdddprkf aeerrlflll gstsilflvc vspmailhmt iasevypsfp fqvfrasanl
361 lelinysltf yiyclfsedf rntlvrtikw pwlkgkfchq aehenptngp gvpmacftkv
421 drghqkhhit ttsglgrsss i

```

V 33639 R PD-like (Genbank Ref # AGB95518)

```

1 mitrlyntee dpaycsfiwg anltssndlv lgttansthi yandlrddly advedprtes
61 lreycyglml pvicalgiig nvlnlivltr rnmrgtayiy mraystaall aivfaipfgi
121 rmlvkhdrgq weefgpafyt ahlelflgng clgvgvmmllvltieryvsv chpgftrpvm
181 gppgvvvflt cfatfiiylp sifrgelike mltsnnyvy lrrdnniyqr tifysvykim
241 levifklipt vliaglnlri mlvyrtcer rrqmvltran yvkdddprkf aeerrlflll
301 gstsilfllc vspmailhmt iasevlpsfp fqvfralanl lelinysitf yiyclfsedf
361 rntlmrtikw pwlksklchq vdetqtikgv pmvrfdkvtl rnhhittsg igrssi

```

the *D melanogaster* PB and PC isoforms matches PA; PD differs by an alternative splice but does not introduce a BBS. The only *D virilis* isoform received by Blastp search was orthologous to PD.

M CNMa R PA (Genbank Ref AAF50229.3)

1 mdmeyitsss gnitattead fssslgesnv teynttemda nesagedeem lriaffighf
61 **vhqyyipvlc** **ctgsignils** **vfvfrrtklr** klsss**fy**laa **lavsd**tcfla **glfaq**wlnfl
121 **nvdiynqnyf** **cqff**ffs**yl** **asfcs**vwfvv **aft**verfiav iyplkrq**tmc** tvrrakiv**lf**
181 **cltlvgclhc** **lpy**iviakpv fmpklnttic dlnseykeql **alfny**wd**tiv** **vyavp**fttia
241 **vlnt**ctgctv wkfatvrrtl tmhkmkpqtn **smps**nss**nss** ggassavasy rlsaslkrqk
301 stgthpsgqh nvanrqtd**dq** eqqqqsq**hq** inn**cqh**hcei tqkparrkvq nssqlkv**tkm**
361 **llivst**v**fv**c **lnlps**cllri eaywetesar nqnstia**lqy** ifhaffit**nf** **ginfv**lycv**s**
421 **gqn**frkavls ifrrvssaqr eagn**tgvtvs** **eycr**ntgtst rrrmmtqhcw nemhelhplk

V CNMa R PA (Genbank Ref # XP_002047272.3)

1 manpyepttm tamsntsqdi sapttttttt tattatvttt lsytt**dssrn** isidleymsv
61 edeemlhiaf lisdfv**hryy** **vp**iic**ctgsi** **gnilsv**fvff **mt**klrkl**ss**s **fy**laal**aisd**
121 **tc**flcgl**fmq** wlnflnvniy nqnyfc**qfft** **fisyl**asfcs **vwfv**v**vaftve** rfiavmyplk
181 **rqim**ctvrra **kivll**gltla **gcvh**cvpyil **iakpv**yspkl ndticdlnts ykeql**alfny**
241 **w**dsivvyavp **fttit**vlntc tgctvwkfat vrrtl**tmhkm** kpqitnvp**an** attgggva**aa**
301 tyrisaslrr qk**stg**thpsg qh**svsrq**teq qqqqqq**qrh** darsq**hcei** tqktgrrkvq
361 nssqlkv**tkm** **llivst**v**fv**c **lnlps**cllri etywetqtsk tqntt**ivlqy** **ifna**ffit**nf**
421 **ginfv**lycv**s** **gqn**frkavls ifrrvssaqr egi**tgvtvse** **ycr**ntgtstr rrrmmtqhcw
481 emhelhplr

M CRZ R PA (Genbank Ref # AAF49928)

1 medewgsfdr lpsvpsasmd letenevvsn wstlanftrl vagaapeivn ytlnmidvgv
61 gmatdisnls vsttplpaya isnssslaht nsrheappma eqvpehvmdh apqlsrsgll
121 kvyvvlavmal fsllgnllti wniyktrisir rnsrhtwsai yslmfhlsia dvlvtwfcii
181 geaawcytvq wlaneitckl vklfqmfslly lstyvvlvlig vdrwiavkyp mkslnmakrc
241 hrllggtyil slvlslpqff ifhvargpfv eefyqcvthg fytadwqeqm yatftlvftf
301 llplcilfgt ymstftrtiss sekmfqgskl anystaklpt qtnrqrlhk akmkslrisv
361 viiaaflicw tpyyvmmimf mflnpgkrlg ddlqdaifff gmsnslvnpl iygafhlcpg
421 kggkssgggg nnnayslnrg dsqrtpsmlt avtqvdtggtg ssrqmrafrq qsyyrsssng
481 tagpgaapfk eqvgllhvqp gngtppggsvs sgatpqlirk gsallarqps clregehqqr
541 lllhekpstl vlsydsqrgg vgvvasgll dnnervssv

V CRZ R P (Genbank Ref # XP_032290616.1)

1 meglediaha rlpvgnttvp ihsdlldnay netdsnwstv anftrliiaa asevapnian
61 ytlnmldvgi alateatnae satstampgs nrgteaayai mtnsrlnsst lghinslhel
121 spvaeqvpheh vmdhapqlsr sgllkvyvlt vmalfsllgn lltiwniykt ritrrnsrht
181 wsaiyslmfh lsiadvltvg fcligeaawc ytvqwlanel tcklvklfqm fslylstyvl
241 vligvdrwia vkypmkslnm akrchrllgg tyilslvlsl pqffifhvar gpfveefyqc
301 vthgfytavw qeqmyatftl vftfllplci lfgtymstfr tissekmfq gsklanystt
361 kqlptqtnrq rlihkakmks lrisviiia flicwtpyyv mmiiifmfwnp dkrlgddlqd
421 aifffgmsns lvnpliygaf hlcpgksnks gtgggnnnay slnrgdsqrt psmltavtqv
481 daaggsarqm rtfrqqsyrr sssngtaggp fkeqvgllqv ggaggsgatp hmmrksssvr
541 sphpnhsai atrhsgclre qeelllqtkp stlvlnydsq rggvgvgvan gnklmtgasl
601 rvdnkecvss v

M ETH R PA (Genbank Ref # AAF47700)

1 mlpqipsyir ttamffcivi mllgvvgnvm vpivivktkd mrnstniflt nlsiadllvl
61 lvctptvlve vnrtpetwvl ghemckavpf veltvahasv ltilaisfer yyaiceplka
121 gyvctkgrai licvlawgia alftspilwv aeyklaeyid gssvavcltq aisdwtlaff
181 lmtisvffv pfvtlvvlyg iiarnlvsnr aamlrarptk pelslkarkq vvlmlgavvl
241 sffvcllpfr vltlwiilst dqtldhldglv ryysllyfcr imlylnsamn pilynlmstk
301 frrgfkrclq dagrlllelv tlgrrkedss rrrgtlslg mgtntntntn **tn ssnatgatss**
361 **silsrssnrr** csedisrtrl kiemqmpcgs dleamamlqh stlgkgiarr vsdsrlmplr
421 nhqprrrhkpq isfdeeslee nkrseakipt kcreklpgia reivnltent l

V ETH R PA-like (Genbank Ref # XP_002058475.1)

1 mlpqipsyir ttamffciiii mllgvignvm vpivivktkd mrnstniflt nlsiadllvl
61 lvctptvlve vnrtpetwvl ghemckavpf veltvahasv ltilaisfer yyaiceplka
121 gyvctkarai licvlawgia alftspilwv aeyklveyid gssvpvcltq aigvstvgfff
181 lmtisvffvl pflmlvvlyg iiarnlvsng gamlrarptk pelslkarkq vvlmlgavvl
241 sffvcllpfr vltlwiilst eqtlhdmglv ryysllyfcr imlylnsamn pilynlmstk
301 frkgfarlch dvarfllkll tlgrrranpa dsrgrsgtls **tgtgtqtntss nataatnssi**
361 lsrssnrrgs edisrtrlki elqlpcgsdl eamamlqnst lrskrrqsds rllgekkpr
421 pkpqisfdea avgrapketv ipa

M ETH-R PB (Genbank Ref # AAF47700)

1 mlpqipsyir ttamffcivi mllgvvgnvm vpivivktkd mrnstniflt nlsiadllvl
61 lvctptvlve vnrtpetwvl ghemckavpf veltvahasv ltilaisfer yyaiceplka
121 gyvctkgrai licvlawgia alftspiiiai stysvepygd gtdapvctta adgfwsifyf
181 vgcitvfffl pfgilvlllya aiaykllrpn nafhrptspq pqqpsggats gssqvpstkg
241 nshqqsnmgr khrkqvifml vavvssffvc llpfraftlw vilasaedve glgiagyyml
301 lyfsrfmlyl nsamnpilyn lmskfrsgf wrllltclgq rphhhhrhhy hqrqhptagg
361 sgrnastrqe qdaeegaala gttsarhprl tlreatfli nsistssgtd **rttssawrs**
421 nslsisglse rergilgaai igt **taatvtt** acdqerrask i

V ETH R PB-like (Genbank Ref # XP_015024858.1)

1 mlpqipsyir ttamffciiii mllgvignvm vpivivktkd mrnstniflt nlsiadllvl
61 lvctptvlve vnrtpetwvl ghemckavpf veltvahasv ltilaisfer yyaiceplka
121 gyvctkarai licvlawgia alftspiiiai ssysvepygd gteapvctta adgfwpilyf
181 vgtitlfffl pfgillllya aiaykllrpn safhrptspq gp **tptaataa** snkgnshqqs
241 ngmrrhrkqv ifmlvavvas ffvcllpfra ftlwitass edverlgiag **ynllyfsrf**
301 **mlylnsamnp** ilynlmskfr rsgfwrllls clgrrphhr hhhhyptiae rslrqtqrrq
361 dhepteavpg tdnaqrprrt lrreatflin **sistssgter** **htsstwrsns lstslglger**
421 erdrgalgaa iigt **taatvtt** taclqerras kt

M FMRFa R PA (Genbank Ref # AAF47700)

1 msgtavarll lrlelpspgv mpppptydydy ggpisddefl asamategpt vrydlfpqnn
61 sqptlqivln htevqtdlqy phyedlgl dpnwtriced vynpllenr iefwvcgвли
121 nivgvlgilg niismiilsr pqmrssinyl ltglarcdtv liitsillfg ipsiypytygh
181 ffgyyynyvyp fispavfpig miaqtasiym tftvtleryv avchplkara lctygrakiy
241 fivcvcfsla ynmprfwevl tvtypepgkd vilhcvrpsr lrrsetyini yihwcylivn
301 yiipfltlai lncliyrqvk ranrerqrsl rsekreigla tmllecvvivf fmlnflplvl
361 niseafysti dhkitkisnl litinssvnf liyiifgekf kriflliffk rrlsrdqpd
421 ihyessisnn gdgtlnhrss grfsrhgtqr sttttylvat gggggggcgg ggggnslnnv
481 rltqvsgspg lvkikrnap spgpvyfpa remqrsastt nsttnntsi gydwtlpdsk
541 klghvssgf

V FMRFa R PA (Genbank Ref # XP_002047744.1)

1 msaaaarl11 rleqpvgvm pppapaeydw spisvdqfla satgrsqeda vryeladplg
61 stlapliydv gqrllfngss gtqngndtyt dlfpqmedmg depnwtrice evynpqlenn
121 riefwvcgvi lnivgilgil gnvismiils rpqmrssiny lltglarcdt mliissmlf
181 gipsiypytyg qffgyynyvy pfispamfpi gmiaqtasiy mtftvtlery vavchplrar
241 alctygraki yfivcvcfal aynmprfwev ltvsyqlpns tdvlhcvrps plrrnptyin
301 iyihwcyliv nyiipfltla ilncliyrqv kranrerqrl srsekreigl atmllecvviv
361 ffmlnflplv lniseafysv idhkvtkvsn llitinssvn fliyiifgek fkriflliff
421 krrlsrdqpd lihyessisn ngdgtinhrs sgrfsrhgtq rsttttylva tgggggnssl
481 nsvrltqvsg spgllkikrn rapspgpvy ypgpremhsvstsnsttn ntalgydwtv
541 dgkklghvss gf

M LGR1 PA (Genbank Ref # AAF55460)

1 mekhpslsqr mgttyrprkg lkclsfefqc rlllhhl1lt slsgrhfvya tsavggalsa
61 nnchdihhgf dvypnltavs laqstdtplt atmprsawkc ccwnasnae evecregdg
121 lnrvpqtltl piqr1tiasa glprlrhtgl kvvgstlldv aftdclqlel iqdgafanlt
181 llrtiyitna pkltflskdv flgisdtvdi iriinsgltr vpd1ghlpph nilqmidldn
241 nqitridsks ikvктаqlil tnneisyvdd saffgskiak lslkenkklq mmhpnafdgi
301 iditeldlss tslvglpsag lqniealyiq nthtlktips iynfrnlqra ylthsfhcca
361 fqfpsrhdpg rhaqrmleie kwrkqcksds gtrkerstld npfnmpedfg sfggtdsat
421 ditp1tfasf dymaddtmnk gtfhekiiln pgddssaalc gnftfrkpn1 ecypmpndln
481 pcedvmgyqw **lrisvwivva lavvgnvavl tvilsirpes tpvprflmch lafadlclgl**
541 **y1llvacida** hsmgeyfnfa ydwqyglgck **vagfltvfas h1svftltvi tierw1aitq**
601 amylnhrikl rpaa**limlgg wiysmlmssl plfgisnyss tsiclpmenr dvydtiylia**
661 **ilgsngvafs iiavcyaqiy** lslgretrqa hqnspgelsv **akkmallvft nfacwspiaf**
721 **fgl**talagyp linvt**kskil lvffyp1nsc adpylyailt** sqyrqdlftl lsk1glcqq5
781 alkykdslsg qattrftihg siqrhssltc kmqtvmaet qkmlknsedy v

V LGR1 PA-like (Genbank Ref # XP_032289845.1)

1 mkcmviisql dfltfills1 ahgtrqantn chdnngfnt vfnnlsidng netdmsvimt
61 qaptmstnpt sdasvkwccc weatnqnefe crcegealtr vpqtlklp1l rltiasaglp
121 rlrsmglkvy attlldvafi dclqlea1qn gafsnltflr tiyisnapkl tylpknvfeg
181 isdtieiri insgltsvpd fgy1ppnnil qmidldnnqi sridsksiqv ktaqfv1ann
241 dihfiddsaf lgskiak1sl kdnrrltdvh pnafygiidi teldlsstsl vs1psag1qt
301 vevlyiinth tlktipsiyn fqnlqrahlt hsfhccafqf psrhdpkrha erlqelqkwr
361 eqcnverdly rdvdkklkkn tsvkdtagvh ytnqsgtatd n1ltdaasns ydymadstmn
421 nigifheqit inpddnqlae ycg1nftfrnp diqcfmpna lnpcedvmgy qw**lrisvwiv**
481 **valaivgnla vltvtlsiks** esp1svrfl1 **chlafadlcl glyllliasi** dahsmgeyfn
541 yafdwqyglg **ckiagfltvf ashlsiftlt iiti**erwfai thamylnkri tlrqaag**iml**
601 **tgwiysiims slplfgisny** sstsiclpme irdiyd**siyl ililgcnfva ftiaaicysq**
661 iy1slgqetr rarrnnpgem sv**akkm1llv finftcgapi affgl**talag cplinv**tksk**
721 **illvffyp1n scadpylyai lt**sqyqqd1l tflsklgicr qnalkykh1sd slhgtshyti
781 rgsieqqss1 cqkppqegaa etqtmlkne dyv

M LGR3 PA (Genbank Ref # AAF56490)

1 mvygrsiavg fclmtvvl11 aavifylslg pcpaasfacd ngtlcvprrq mcdsrndcad
61 ssdenpvecg llygskeiad kivrnaiekk qqrlisavsn asgadsttsm vprnqsltln
121 mtcdivtypk acqcgqgtil ycgryaklrr fprlssevtn liiirnnltl rdnifanftr
181 lqkltlkynn isrvplgsfs glfherlel shnnvshlph gvflglhslq wlflvnnhlh
241 hlpveqlrff rrlewlvlsr nrltlrnvql pkiptlyevy ldfnrileyig eetfsqldnl
301 hlldlqhnli thihgrafan ltnmrdirlv gnpikelsge tflhntrlea lslalmpihi
361 ssslmeplni sflnltgiry dhidfeains mnrntyiiyd rffycsmtpr vrmckpstdg
421 vssfqdllsk pvlrysawvm atltiagnvl vlwgrfiyrd envavtmvir nlaladmlmg
481 fylvtigvqd yryrneyykv vldwitswqc tligtlavss sevsmlilaf mslerfllia
541 dpfrghrsig nrvmw~~lalic~~ iwitgvglav apvllwrtst lpyygsysgt cfplhiheaf
601 pmgwlysafv flgvnlllllv miamlytall isiwrttsat ~~pltlldcefa~~ vrfffivltd
661 flcwvpiivm kiwvffnyni sddiyawl~~lv~~ fvlplnsavn pllytfttpk yrnqiflrgw
721 kkitsrkræ agngnvattt tg~~atgss~~qh pddftifaka amrch

V LGR3 PA (Genbank Ref # XP_002056481.1)

1 mvygrsiavg icfmtvvvvl sgliyyylslg pcptgsfacn ndiqcvpqrq mcdkhldced
61 gsdenpvecg nlygskelad kivrnaiekk kqqqqqqqen qrlmivtsns sawdspslag
121 srnqsmpipc aittyprqcq cgggtmlycg rfaklrrwpr iseevtnlfi irnnvtlren
181 lfanltrlqk ltlkhnnisr lppgcfsglp hlerlelghn nfsqlphfil kdldpalqwl
241 lvnnqlrsfp mdhlaamhkl ewlvlshnrl tlrneqlsks pklveifldn nrileyigekt
301 faqldnlell dlqynlithi hvkafanlta isdirllignp ikelsgetfl ynthealsl
361 aymploidrn lmkslnvsfl nltgieferi dfaalneirn lkyivfdrfy ycsmtphvml
421 ckpksgdvss lkdllskp~~sl~~ rhstwfmatl siagnlmvlw grfiyrdenv av~~tmvir~~nl
481 ~~ladllmgfyl~~ liigvq~~d~~frf rdeyhkvard wisswqckai gtlavsssev smlilafmsl
541 erflliadpf rghraisv~~ri~~ iyfsllciwv tgvglaitpv viw~~sssttdf~~ ygthsgtcfp
601 lfiheayplg wqysafvflg vnllllllmia llytallisi wrtrsa~~tpls~~ lldcefa~~vr~~f
661 ~~ffivltdv~~lc wapiiamkiw vffkynisdd iyawlvvfil plnsavn~~pl~~ ytfttpkyrn
721 qillrgwkki tsrkrtegh gnvantttgt ~~atgss~~qnpde yttatgiksm plaltlsh

M LGR4 PB (Genbank Ref # ABW09404)

1 mciahlpitf tlaillaias negaqqvesa trtaieairt gigtkpetei adateaeapv
61 revisllgii dgaesdilvp daddkcpqgy fhcnttaqcv pqrancdgsv dcddasdevn
121 cvnevdakyw dhlyrkqpgf rhdnlrigr ec lwpnenfscp crgdeilcrf qqltdiperl
181 pqhdlatldl tgnnfetihe tffselpdvd slvlkfcslr eiashafdrf adnplrlym
241 ddnklphlpe hffpegnqls ililarnhlh hlkrdfnl qklqeldlrg nrignfeav
301 farlpnlevl ylnenhlkrl dpdrfprtll nlhtlslayn qiediaantf pfprlrylfl
361 agnrlshird etfcnlslq glhlnenrie gfdleafacl knlssliltg nrfqtdlsv
421 lknltslldyi yfswfhlcas amnvrvcdfp gdgissklhl ldnqilrgsv wvmasiavvg
481 nllvllgryf yk**srsnvehs** lyrlhlaasd flmglyltli acadisfrge yikyeetwrh
541 sgvcfafagfl **stfscqsstl** lltlvtwdrf msvtrplkpr dtekrivlr llllwgisfg
601 **laaapllpnp** yfgshfygnn gvclslhihd pyakgwe**ysa** llfilvntls lifilfsyir
661 mlqairdsgg gmr**sthsgre** nvvatrfaii vttdcacwlp iivvklals gceispdlya
721 **wlavlvlpvn** salnpvlytl ttaafkqqlr rychtlpscs lvnnetrsqt **qtayesglsv**
781 slahlgggvg ggsgrkrmsl rqmsyl

V LGR4 PB (Genbank Ref # XP_015025567.1)

1 mtimmmplls lgalvallsl tsmtlacity sveqprgtir ssvgqgntmf mlgssvvdav
61 ademdelmsg illpdekdnk pagyfhcmtt aqcvpqranc dgsvecddrs dewncvnev
121 akywdhlfrk ssfgrqgmdk kpigvcywpn aknfcpcrg neilcrfqqf talppqlptn
181 nlstldltgn nfgvidetff gglpaveslv lklcaireia shafdralai plktlymddn
241 elsrlpehff apgnqlrili larnqlssls sgdfrylqhl edldlrgnli shfeaqvfaq
301 lhslevlyln nnrlqqlrpg mfpsnlvhlh tslahnqis siaantftfp qlrhlflagn
361 qlsyirdgtf cnlsylqglh lnenqiekfd lhafdclenl ssliltgnrf ktlepavlqn
421 lssldfiyfs wfhlcraalh vrvcdprgdg isstfhlldn ql**lrgsvwim asiavvgnll**
481 **vlagryfyks** **rsnvehslyl** rhlavsdflm giyltliaca disfrgqyir heeswrhsgf
541 **cafagflstf** **scqsstlllt** lvtwdrfmsv trplkprdte kirivlrlll **wgisfglaa**
601 **apllpndyfg** ahfygnngvc lslhihdpya kgweysallf **icintislif** **ilfsyvrmlq**
661 airdsgggmr **sthsgresv** **atrfaiivtt** **dcacwlpiv** **vkvaalsgca** ispdlyawla
721 **vlvlpvnsl** **npvlytlta** afkqqlrryc htlptcslgn netrsqt**qtg** **yesglsvsla**
781 hlgggggagg gggsgkrmsl shrhmsyl

M LK R PA (Genbank Ref # ABW09404)

1 mamdlieqes rleflpgae eaeferlyaa paeivallsi fyggisivav igntlviwv
61 attrqmrtvt nmyianlafa dviiglfqip fqfqaallqs wnlpwfmc sf cpfvqalsvn
121 vsvftltaia idrhraiinp lrarptkfvs kfiiggiwml allfavpfai afrveelter
181 frennetynv trpfcmnknl sddqlqs fry tlvfvqylv fcvisfvyi q mavrlwgtra
241 pgnaqdsrdi tllknkkkvi kmliivviif glcwlplql y nilyvtipei ndyhfisivw
301 fccdwlamsn scynpfiygi ynekkrefn krfaacfckf ktsmdahert **fsmhtrassi**
361 rstyanssmr irsnlfgpar ggvnngkpgl hmprvhgsga nsgiyngssg qnnnvngqhh
421 qhqsvtfaa tpgvsapgvv vamppwrrn fkplhpnvie ceddvalmel psttppseel
481 asgagvqlal lsressscic eqefgsqtec dgtcilsevs rvhlpgsqak dkdagkslwq
541 pl

V LR R PA (Genbank Ref # XP_002047380.1)

1 meadiiynqh iheellpgae eaeferlyaa paeivalls ifyggisiva vigntlviwv
61 vattrqmrtvt t nmyianlaf adviiglfpsi pfqfqaallq rwnlpyfmc g fcpfvqalsv
121 nvsvftltai a idrhraiin plrarptkfi sk fiiagiwl lalvfaapfp iafrveeitd
181 rfrendvyfn ltrpfcmnkn lsdeql kayr yalvfvqylv pfcvisfvyi qmavrlwgth
241 apgnaqdsrd itllknkkkv ikmliivvvi fglcwlplql y nilyvtipe indyhfisiv
301 wfccdwlams nscynpfiyg i ynekkref nrrfaacfck fktslepher **tsmhtrass**
361 irstyanssm rirnnffavr nagnngktgln igrsayqang ngtgtgianv netssynng
421 hqtvvtfags gstmppwrrn qfkplhpnva eceddlalme lpstneeapp smaeagvpla
481 lfkaesress sciceqefgs rtedcgtcil sevsrvqppa tkgpdgvggi gsgseseilw
541 qpl

M moody PA (Genbank Ref # NP_569970.2)

1 msdettisle dgypplealt tmvppadatg fsqsl**ltfaa** **vmtflimivg** **icgnlltvva**
61 llkcpkvrnv **aaafiislci** **adllfcalvl** pfqglrfvqg twrhgqvlcr **lipfiqygni**
121 **gvsllici** **ami tinryvmith** hglyariykr **hwiavmiaac** **wlfsygmqlp** **tll**gewgrfg
181 ydsrlqtcsi mtddhghssk **tll****fitafvi** **pclviiacya** **kifwvvhkse** qrlkrhatkq
241 nsipnnlrpl astgsgalps gaecqpsnrv ssdssssfsi dvpeta^spsgk qqptrvkdqr
301 evrkrnewr itk**mvlaifl** **sfvvcylpit** **ivkvadkne** hpslhi**csyi** **llylsacinp**
361 **iiyvim**nkqy rkayktvvfc qparlllpfg kngassaae kwkdtglsnn **hsrtivsqms**
421 **ggt**gaasgag tatgtaavav mqtpppevqqa qalemvsrgp dlisksnlpq pnvtppppsv
481 ltatpng**sns** **ns**l^tlrlplk knnhcy**t**ns**g** **f**nsstpsps glgigissss iyrpgvgslg
541 sgsasirrit mvgddiilee eelp^tppat sapt^tpapp pssplhpl**st** **dsstttisgg**
601 avvagssapk patptphiym nvdspkrnqy ymdrntnava pesdsgpant satvsisgsk
661 ltakmkfpkd

V moody PA-like (not annotated; obtained by direct inspection of genomic DNA - see SXX Document - "de novo moody isoform annotations")

1 mnddtasps pglghgvddm ltaaptgtas gldavdesgf sqs**lltfaai** **mtflimivgi**
61 **cgnfltvval** lkcpkvrnva **aaafiislcia** **dllfcavvlp** fqglrfvqgt wrhg^vvlcrl
121 **ipfiqygnig** **vsllciamit** **inryvmithh** gcyariykrh **wiaimiacw** **lvsygmqlpt**
181 **ll**gawgrfgy darlqtcsim sdahghsskt **tl****fitafvip** **clviiacyak** **ifwvvhkseq**
241 rlkrhankqn sipnnlrpva aaspagqdg^s vqptaaasrv ssdssystd vpegk^qpppq
301 sr^vkdqrevr akrnewritk **mvlaiflsv** **icylpitivk** vadkdvehps lhi**fsyimly**
361 **lsacinpiiy** **vim**nkqyrka yktvvlc^qpa rlllpfgktn gassaaekwk dtglsnn**hsr**
421 **tlvsqms**aga aaaaaaaaaa avaaasastp ppspasdcqs lpatkaspqs lelmsrcpdl
481 inrtnqplv tpppp**svtla** **taqps**ss**ns** **nssnsggs**r1 plkksnhsyi nngfns**sghs**
541 **qns**avyrpaa gsppsaaaap lrritmvgdd iileeeelpa vpsp**tatal**s **vskvt**kspiy
601 mnvns^pkrnq sysdkasvkd alqqasvpsd qgkdqqdask vpikfnpkd

M moody PC (Genbank Ref # NP_001188535.1)

1 msdettisle dgypplealt tmvppadatg fsqsl**ltfaa** **vmtflimivg** **icgnlltvva**
61 llkcpkvrnv **aaafiislci** **adllfcalvl** pfqglrfvqg twrhgqvlcr **lipfiqygni**
121 **gvsllici** **amit** **inryvmith** hglyariykr **hwiavmiaac** wlfsgmqlp **tllgewgrfg**
181 ydsrlqtcsi mtddhghssk **tllfitafvi** **pclviiacya** **kifwvvhkse** qrlkrhatkq
241 nsipnlnrpl astgsgalps gaecqpsnrsv ssdssssfsi dvpeta^spsgk qpptrvkdqr
301 evrakrnewr itk**mvlaifl** **sfvvcylpit** **ivkvadkne** hpslhicsyi **llylsacinp**
361 **iiyv**vimnkqy rkayktvvcf qparlllpfg ktingassaae meryrveqqp qphnrlpdvg
421 gngsrigrsd gngngsgggd adptggpt**sp** **slgdg**vagtg pnkqieppaa eryasatlgp
481 hgdtqrkqqq qphpataaqe eqsllhqqrll qqqhsqqqqr lgdrdqqlh lparswltge
541 rlrlpshnn gggrhntggr gaaahasgdf cadnagtspt liptasavhg linnnnqrrs
601 sgsgeqctka gdanaphlhc crqpeekpil hgs

V moody PC-like (Genbank Ref # XP_002057362.1)

1 mnddttasps pglghgvddm ltaaptgtas gldavdesgf sqs**lltfaai** **mtflimivgi**
61 **cgnfltvval** lkcpkvrnva **aaafiislcia** **dllfcavvlp** fqglrfvqgt wrhgplcrl
121 **ipfiqygnig** **vsllici** **amit** **inryvmithh** gcyariykrh **wiaimiaacw** **lvsygmqlpt**
181 **llgawgrfgy** darlqtcsim sdahghsskt **tllfitafvip** **clviiacyak** **ifwvvhkseq**
241 rlkrhankqn sipnlnrpva aaspagqdgsv vqptaaasrv ssdsssstyd vpegkqpppq
301 srvkdqrevr akrnewritk **mvlaiflsfv** **icylpitivk** vadkdvehps lhifsyimly
361 **lsacinpiiy** **vim**nkqyrka yktvvlcqp rlllpfgktn gassaaekwk emeryrieqq
421 pqpplclpdv rrrsssssgg gggggcsgig vdaavarir lpvlagdqsv **asvtgad**vpm
481 **srsnksnest** aigyapaaig nagngsteqq qqqqqqqqrr qsaaaeqeqs llhqqrllqqq
541 raqpeqrlls arswlpavgs ggaiashhhg ggryhtgggg **tarsaqsdgd** gavsqqsnqi
601 ahlherqqse ekpil

M Ms R1 PA (Genbank Ref # AAF47635.2)

1 masgnnetep lycgsgmdnf htsyknmhgy vslvvcilgt iantlniivl trremrsptn
61 ailtglavad lavmleyipy tihdyiltds lpreeklsys wacfikfhsi faqvlhtisi
121 wltvtlavwr yiavgypqkn rvwcgmrtti itittayvvc vlvvpslyl itaiteyvdq
181 ldmngkvins ipmtqyvidy rnellsarta alnatptsap lnetvwlnas tlltstttaa
241 pptpspvvrn vtvyrylyhsd lalhnaslqn atfliysvvi klipcialti lsvrlilall
301 eakrrrkkl tskpatpgasn gtkspangka adrprknskt lekekqtdrt trmllavlll
361 flitefpqgi mgllnavlgd vfylqcyrlr sdlmdilali nssinfilyc smskqfrttf
421 tllfrpkfld kwlpvaqdem aaraersav apvlekgrqq pqvvmasttt nitqvtnl

V MS R1 PA-like (Genbank Ref # XP_002047415.1)

1 maggsndttp lycgtgtdnf htsyknmhgy vslvvcilgt iantlniivl trremrsptn
61 ailtglavad lavmleyipy tvhdyilkds lpreqklsyg wacfikfhsi faqvlhtisi
121 wltvtlavwr yiavghpqn rvwcgmrtti itittayvvc vlvvpslyl itaiaefmdq
181 mdvegnliss ipmsqyvidy rneqakmsv avnatptspt anvtqwlms vlatpmppt
241 pvppaslvvr nvtvyrylyhs dlalhtslq tatfliysvl iklipcialt lsvrlimal
301 leakrrrkkl tskpaasngt ktlvngksae rprknsktle kekqtdrttr mllavllfl
361 itefpqqgilg llnsvlgnef lmqcyrlrsl dmdvlalins sinfilycsm skqfrstftl
421 lfrpkfldkw lpvaqdelaa sradglqrsv vaavpdkyqs thkqpqvvtl aattttnat
481 evtnl

M MsR1 PB (Genbank Ref # AAF47635.2) (stop suppression)

1 masgnnetep lycgsgmdnf htsyknmhgy vslvvcilgt iantlniivl trremrsptn
61 ailtglavad lavmleyipy tihdyiltds lpreeklsys wacfikfhsi faqvlhtisi
121 wltvtlavwr yiavgypqkn rvwcgmrtti itittayvvc vlvvpslyl itaiteyvdq
181 ldmngkvins ipmtqyvidy rnellsarta alnatptsap lnetvwlnas tlltstttaa
241 pptpspvvrn vtvyrylyhsd lalhnaslqn atfliysvvi klipcialti lsvrlilall
301 eakrrrkkl tskpatpgasn gtkspangka adrprknskt lekekqtdrt trmllavlll
361 flitefpqgi mgllnavlgd vfylqcyrlr sdlmdilali nssinfilyc smskqfrttf
421 tllfrpkfld kwlpvaqdem aaraersav apvlekgrqq pqvvmasttt nitqvtnlxh
481 rrsgrtrtll srllsvlkrq rrrssgeggg vggggaplag ndavepafqa ivvvvdkvsg
541 atenqlytae qarivt

M Ms R2 PA (Genbank Ref # AAF47633)

1 mvtnmsqphy cgtgiddfht nykyfhgyfs livcilgtia ntlniivltr remrsptnai
61 ltglavadla vmleyipytv hdyilsvrlp reeqsyswa cfikfhsvfp qvlhtisiwl
121 tvtlavwryi avsyprnri wcgmrttlit iatayvvcvl vvspwlylvt aiakfletld
181 angktiasvp lsqyildynr qdevtmqvms sttpdvswai psdsangtav sllslttvip
241 lttlstgvtt ssslgerntv vyklyhsala lrdrqfrnat fliysvlikl ipcfaltils
301 vrligallea krrrkilach aandmqpivn gkvviptqpk sckllekekq tdrtrmla
361 vllflvtetf pggimgllnv llgdafflqc ylklsdlmdi lalinssinf ilycsmsrqf
421 rstfallfrp rwldkwplps qhdgegrvgg sggllgygygy grqrlhtda vksmaidlg
481 lttqvtnv

V MS R2 PA (Genbank Ref # XP_015031310.1)

1 mvtnmsqphy cgasvddfht nykyihgyfs livcilgtia ntlniivltr remrsptnai
61 ltglavadla vmleyipytv hdyilsarlp reqqsyswa cfikfhsifa qvlhtisiwl
121 tvtlavwryi avsyprnri wcgmrtttit iatayvvcvl vvspwlylvs siakfletld
181 adgktirsvp lsqyildynn eehitmqls sttpdmawsl apgssnttav nllgpftdlp
241 tttmtttvtp ydvgerntv yklyhselal hdrplrnatf liysvlikli pcfaltvls
301 rligalleak krrkilacha andmqpivng kvvtpsqqks ckllkekqt drtrmllav
361 lllflitefp qgimgllnal lgdaflmqcy lklslmdil alinssinfi lycsmsrqfr
421 stftllfrpr wldkwplpsq hdgdardgag grldgygrqr lvhtdavskv maidlglttq
481 vtnv

M MsR2 PB (GenbankRef # AAN12219) (stop suppression)

1 mvtnmsqphy cgtgiddfht nykyfhgyfs livcilgtia ntlniivltr remrsptnai
61 ltglavadla vmleyipytv hdyilsvrlp reeqsyswa cfikfhsvfp qvlhtisiwl
121 tvtlavwryi avsyprnri wcgmrttlit iatayvvcvl vvspwlylvt aiakfletld
181 angktiasvp lsqyildynr qdevtmqvms sttpdvswai psdsangtav sllslttvip
241 lttlstgvtt ssslgerntv vyklyhsala lrdrqfrnat fliysvlikl ipcfaltils
301 vrligallea krrrkilach aandmqpivn gkvviptqpk sckllekekq tdrtrmla
361 vllflvtetf pggimgllnv llgdafflqc ylklsdlmdi lalinssinf ilycsmsrqf
421 rstfallfrp rwldkwplps qhdgegrvgg sggllgygygy grqrlhtda vksmaidlg
481 lttqvtnv xq essgraamsa aaggaaasva lalaatdvdg cppatdaavs tndislvekl
541 hlqpsprgta issgqhrorr sgsgtkciwp ttdwlrklrn qkareteqss eqdielgkss
601 inrrssvllm vllsssdevk akavlvseqp pspadedved aidalwl

M NPF R PA (Genbank Ref # AAF51909)

1 miismnqtep aqladgehls gyassnsvr ylddrhpldy ldlgtvhaln ttaintsdln
61 etgsrpldpv lidrflsnra vdspwyhml**li smygvlivfg algntlvvia virkpimrta**
121 **rnlfilnlai sdlllclvtm pltlmeilsk ywpygscsil cktiamlqal cifvstisit**
181 **aiafdryqvi** vyptrdslqf vgavt**ilagi walallasp lfvykelint dtpallqqig**
241 lqdtipycie dwpsrngr**fy ysifslcvqy lvpilivsva yfgiynklks ritvvavqas**
301 saqrkvergr rmkrt**nclli siaiifgvsw lplnffnl**ya dmerspvtqs **mlvryaichm**
361 **igmssacsnp llygwln**dnf rkefqellcr csdtnvalng httgcnvqaa arrrrklgae
421 lskgelkllg pggagsgtag gegglaatdf mtghhegglr saitesvalt dhnvpvsevt
481 klmpr

Dm NPF isoforms do not differ by BBS, only by alternative CT sequences and a small exon

V NPF R (Genbank Ref # XP_002058565.3)

1 miiamnrtef gtlpqfessa eifkaiarns nfdligerrh lanfpslhtg dvsssssssi
61 snsnsninn ssnsnssnn ishsnmtill lnstnnesnf mpadmdpvlm dqylhnaie
121 spwyh**lliam ysvlivfgam gnimvviavv rkpimrtarn lfilnlaisd lllclvtmpl**
181 **tlmeilskfw** pygscavlck **tialtqalsi fvstisitai afdryqvivy ptrdslqfvg**
241 **availagiwi laltlasplf** iyqqlismdm ppvlqrlgvp hrisyciedw plsdgr**fyys**
301 **ifslcvqylv pilivsvayf** giynklk**sri tvvtvqsssq** rkvergrmk rt**nrlisia**
361 **iifgvswlpl nffnl**yadlq hpsavtqrml **vayaichmig mssacsnp11 ygwln**dnfrk
421 efqellcrst estnvalhgh ttgsnmqaaa arrrrkhelq llgnsvqrga sdgdclgms
481 iaatefntrh tvng**trsavt** esvaltespm psemttlvr

M Pk1 R PD (Genbank Ref # AAX52950)

1 msagnmshdl gpprdplaiv ipvtvvysli fitgvvgnis tcivikkhrs mhtatnyyfl
61 slaisdflll lsgvpqevsy iwsypyvfg eyicigrll aetsanatvl titaftvery
121 iaichpflgq amsklsrair iivlvwimai vtaipqaaqf giehysgveq cgivrivikh
181 sfqlstfiff lapmsiilvl ylligvhlyr stlvegpasv arrqqlksvp sdtilyrygg
241 **sgtams**fngg gsgagtaglm ggsgaqlssv rgrlnhygtr rvlrmlvavv vcfflcwapf
301 **haqrl**iaiya pargaklrdq hefvytvmty vsvgl**yylst cinpllynim** shkfreafka
361 vlfqkkv**skg slnsr**nnies rrlrral**tns sqt**qrfsies aeqpkpsimq nptnkppvaa
421 qyamigvqvn

V Pk1 R (Genbank Ref # XP_002054764.2)

1 mspastppai nqsaatitql lgaqrdplai vipvtvvycl ifltgvvgni stcivikkhr
61 smhtatnyyl fslaisdfml llsgvpqemy fiwsypyvfg geyfcigrll laetsanatv
121 ltitaftver ymaichpflg qamsklsrai riivliwlla vtaipqaaq fginsyagvd
181 kcvvrvivq hsfqlstfif ffapmsiilv lylcighly rsvviggsp tapvtessar
241 rqqplkavas dtilyryags ssvlannagp qlssvrgrlt hygtrrvlrmlvavvicffl
301 **cwapfhaqrl** iaiyaparga qlhdqhelly **tvmtyvsgvl yyilstcinpl lynlms**nkfr
361 eafkavllgk kyskgmqnsr hqlesrrlrr **tttlnsstqr dsieskht**lm qtalnerllq
421 tksqlvl

M Pk2 R1 PA (Genbank Ref # AAF54930)

1 mlgqvaitia ndsnddginq sfmahvspsp nqspsigvgi giasstmanp sespemlllk
61 ndkflthvah llnittenls nllgstngtn astmaadspv desltlrta1 **tvcyalifva**
121 **gvlgnlitci visr**nfmht atnfylnla **vsdlillvsg** **ipqel**ynlwy pdmypoftdam
181 **cimgsvlsem aanatvltit** **aft**veryiai chpfrqh **tms klsraikfif** **aiwlaaflla**
241 **lpqamqfsv**yqnegysctm endfyahvfa **vsgfiffggp** **mtaicvlyvl** igvklkrsl
301 lqslprrtfd anrglnaagr **virmlvavav** **afflcwapfh** **aqrlmavygl** nlinigisrd
361 afndyfrild **ytsgvlyfls** **tcinpllyni** **mshkfreafk** itltrqfgla rnhhhqqsqh
421 hqhnysallr qngsmrlqpa scsvnnnale pygsyrvvqf rcrdanhqsl **lqd****sirtttt**
481 **tttins**nsma agngvgggag gggggrlrk qelyggpgt avphrmlqaq vsqslsgda
541 nsllaevvd rhyasgrakr allatksal lvtppqsgdp sevspatrl kltrvisrrd
601 evantstppf cgshslpde tcqsasvagr ssrkfpwrkr rktedpsse gltygspksq

V PK2 R1 PA-like (Genbank Ref # XP_002056087.1)

1 mmqgvdfala sdnddglngs fmahmlpnar pslrpsters psatsspell llhndkflth
61 vaqmlnmtte nltnllaans tngssatati tattsttnma nsteesptll **iilticyali**
121 **fvagvlgnli tcivisr**nfn mhtatnfylnlavsdlll **vsgipqel**yn lwcpsypft
181 dgicivesvl **semaanatvl titaft**very iaichpfrqh **tmsklsraik** **fifaiwlaaf**
241 **llalpqamqf** svvnqdnqys ctmenfyah **vfavsgfiff** **cgpmtaicvl yv**ligmklkr
301 srrllqslpr aydanrglna qsrvirmlva **vavafflcwa pfhaqrl**mav ygvslinacr
361 crdafndyfh **ildytsgvly flstcinpllynims**hkfre afkitltrqf glarnhqqqs
421 qyrqhnysal mrlqgsmrlq pvscsnna lepygsyrvv qfrcrdanhq **lslqd****sirtn**
481 **ttttinss** lagagaasvp gsgggcgsg vggnggasg rrlrkqefya tapgsavphr
541 **llqsqvsrls** **dgnshsllt** nvadvgrhca agrakrtlla tngallat aqpddaqppt
601 rlklrvisr rdepaysgss slpeqet**tns** **tnttdp**ngge lrkfpwrkr qkqnvanne
661 tgggrngyat pksl

M Pk2 R2 PA (Genbank Ref # AAF54929.2)

1 mavkmlptns sgvlatlql fhnekflnl tqvlnisadn ltsllqglep eellptvtpm
61 tplsllatls vgyalifiag vlgnlitciv isrnnfmhta tnfylnlai sdmillcsgm
121 pqdlynlwhp dnypfsdsic ilesvlseta anatvltita ftveryiaic hpfrqh **tmsk**
181 **lsravkfifa** iwiaalllal pqaiqfsvvm qgmgtscmk ndffahvfav sgflffggpm
241 **taicvlyvli** gvklkrsrll qalprrcydv nrgisaqtrv irmlvavava **fficwapfha**
301 **qrlmavygst** sgiesqwfnd vfsildytsg vlyflstcin pllynimshk freafkvtla
361 rhfglggknq grglphtysa lrrnqtgslr lh **ttdsvr** **tt** **mtsmattttg** lngsangsgn
421 **gttqgs**vrl nrvsldsvqm qgqnrqrqdl fdnprmlqt **qisql**ssvgd ahsllleadlq
481 fpgeplqrqp tmcsideltd dlairsrllk ltritrppgg vtggvaggst tgaagsggvs
541 gdessgkvrk akvkvksss pfgklrtkfn wrarrkgshk phekgatvng gdteeraaf

V PK2 R2 PA-like (Genbank Ref # XP_032289636.1)

1 msammlatnv salgegtppl selqmfhsek flnlqtqvl isadnltsll qelephdlle
61 qsprpmathm gllat **lsvgy** **alifvagvlgnlitciv**isr nnfmhtat **nf ylnlaisdl**
121 **illcsgmpqd** lynlwhpnny pfsdgi **ile svlsetaana tvltitsftv** eryiaichpf
181 rqh **tmsk** **lsr** aik **fifaiwi** **aalllalpqa** iqfsvvtqga gssctmndf **fahvfavsgf**
241 **lffggpmtai** **cvlyv**ligik lkrsrllqal prrsydvnrq isaqtrv **irm** **lvavavaffi**
301 **cwapfhaqrl** mavygstfqi esqwfndvfn **ilnytsgvly flstcinpll ynims**hkfre
361 afkvtlarqf rlsghqggq lphnysalrr nqtgslrlh **t dsvr** **ttttlt** **tlngssngaa**
421 vggcrssqrl qrgsl **sssha** **tllstq** **srsr** **qdl**faarvva adaaattaag aaaaatagaa
481 ahsqphr **tlq** **tqisql**ssvg dahsllaell qlpeehyela arhkcphaam gaidelscqs
541 svvggaaaag lsrarlkltr itrhpqmqtg gaalasepaa ttataaataa sasasavaks
601 tsgskvrkak akrntlkg1 raklnwrgrh kesandsadg qqmphssvas tpsgvv

M Proc R PC (Genbank Ref # AAX52477.1)

1 mtmsststat atstatatld eanatvgemf sdadmaevrh vvq rilvpcv fvigllgnsv
61 siyvltr krm rcttniylta laitdiaylt cqlilslqhy dypkyhfkly wqly gyfowl
121 cdsfgyisiy iavcfti erf iairyplkrq tfcteslakk viaavaifcl lstlst afeh
181 titigtrqid dayqpcnqtv anispmpppp vavtpplatp plptpatriwq spdsamestt
241 sgssnqlvdw gsgsgdgepe niprhrhwq ssgfvltpl rktleeqdqk vadaaqrsgv
301 tesllqlwrr krsaenhnin ntadafnvt eycqnvtyyn hglselgyde ly sylwnlft
361 llvfvvfp11 llatfn sili llvhrsknlr gdltassir rtkrksnsgl kgsvsqenrv
421 titliavvlm fivcqlpwai ylivnqyme qigtq vvagn vcnllasla asnfflycvl
481 sdkyrktvre litgyryrrr harnntslyv phtttltqi ngdhygsnyg gagsrrnrnt
541 grlia

V Proc R PC-like (Genbank Ref # XP_015026487.1)

1 mttlaatsts tampvdgigt akmfssadva evrhvvril vpcvfvigll gnsvsyivlt
61 rkrmrcttni ylsalaitdi ayltflils lkhyeyiky celywrlygf imwldacay
121 isiyiavcftierfiairyplkrqtfctes lakkviaava lfcllttltst afestydinw
181 klidgayrpc nltlanvspt paqptlataw hvdehannaa tprylepfdl ssgsgsgage
241 sdhipsrqhr lpastsasvg vtaaatepat aaatasllql srarsedny dseassnny
301 nynnnsafaf niteycqnm vytnlsslq qnalyfniws vytlivfvvl plfvlatfnc
361 flillvhrsk slrgdltas sirrtkrksn sgitgsvsqe nrvtitliav vllfivcqlp
421 waiyilvqy veiemniqri agnvcnllva inaaanffly cvlsdkyrkt vrelitgyry
481 rhrharnnis lyaphttttl ngdgagggga sgygssysga ssrrcraksa varrlia

M rkts PA (Genbank Ref # AAF53367)

1 maarcrswr lalcp111ql 1lq1111pps amghdetken papdmqnsqe qepyvhlqhl
61 qqqqqqnpqt vqqlsqitvn rtsksasvtp tgirenvmpl sadpekeaqi lyekslqeyh
121 gsq1stasta tdviagkrtl hsicerwlqk hchctgslev lrlscrgigi lavpvnlpne
181 vvvldlgnnn ltkleansff mapnleeltl sdnsiinmdp nafyglaklk rls1qncglk
241 slppqsfggl aqlt1slq1ng nalvslgdgc lghlqklrtl rlegnlfyri ptnalaglrt
301 lealnlgsnl ltiindedfp rmpnliv111 krnqimkisa galknltalk vleddnlis
361 slpeglskls qlqelsitsn rlrwindtel prsmqmldmr anplstispq afrgmsklrk
421 lilsdvrtlr sfpeleacha leilkldrag iqevpanlcr qtp1rkslel kt1nslkripn
481 lsscrdlr11 dlssnqieki qgkpfnglkq lnd111synr ikalp1dafq gipklq1ld1
541 egneisyihk eafsgftale d1nlgnnifp elpesglral lhlk1fnnpk lrefpppdtf
601 priqtlilsy ayhccaflpl vamssqkkts qvqeav1f1ps daefdmt1wn nsmmniwppm
661 hn1skqlgas mhdpwetain fneeqlqtqt ggqiatsyme eyfeehdvsg patgygfgtg
721 lfsgmstedf qpgsvqclpm pggp1pcadl fdw1t1rcgv wv1f11s11g ng1t1v1f11c
781 s1rskmdvprf lvcn1aaadf fmg1ylgila ivdaatlgef rmfaipwqms vlc1q1sgfla
841 v1sselsvyt lavit1lerny aithaihlk r1slkqagy1 msvg1v1fali malmp1vgvs
901 dyrkfavclp fetttgpas1 tyvis1lmfin gcafl1tlmgc ylkmywairg sqawntndsr
961 iakrmallvf tdf1lcwspia ffsit1aifgl qlis1eqaki ftv1f1plns ccnp1flyaim
1021 tkqfkkdcvt lckhfeesrv vggggppggrg avartkrgdl pp11lpaaav ahppgcrclr
1081 mlpsempnwh kmeqtpsmwq r1rtf1ccgen rrrrk1rrqp qrrrqr1yta aanpyqyqf
1141 aelrq1qrnr assissenfc s1r1s1s1wrhg ppssapvppg ncsmp1k1mle phahphghgr
1201 rrhsaw1itr kt**sqdsnl1s** srnd**ssasat** **tast1tfr1s** **rssags**stpl psiihngka
1261 qldavkprlv rqeavqeed ssp1r1lgvrf lp**tipsaads** svvmedg1sa **ntgvas**flgm
1321 plpgassgfl iapttaatts pppv1lqpak pppdpndapl

V Rk PA-like (Genbank Ref # XP_002057499.2)

1 maahsrrrrk qkr1sdagrav trvaaatsit afglq1smpp 1111t111mr t1t1alltpts
61 mhl1netkenr gtakq1sgis vnnms1stpta tptttptatp vgirenvmpl ssdpereaqi
121 lyekslqeyh gkaaaaaaaaa aasassnvds ngvsgsgsgs atk1tarslh svcelw1lkh
181 chctgslenl klscrsigil avpvnlpsev lf1dlgn1nl trleansffm vphleelt1s
241 dnsiinmdpy afyglaklkr l1slqncglka laphsfqgls qlv1slq1ngn alvsl1dgncl
301 gn1lq1r1tr legnlfyrip tnalag1kt1 ealnlgsn11 tiindedfpr mpnliv111k
361 rnqimkisag alknltalkv lel1ddnliss lpeglgklpq lqelsmts1nr lrwindtelp
421 rsmqild1ra nplstittga frgmsklrkl ilsdvrt1rn fpeleacha1 eilkldragi
481 qevpsn1crq tpr1kslelk tns1ksipn1 sscr1dlr1ld lssnqiet1q grpfhglkq1
541 hd1111synri ktlp1dafqg ipklq1ldle gneivhihk dafaftaled lnlgnnifph
601 lpeag1rall hlktfnnpkl refpppdtfp riq1tlilsya yhccafl1plv amsaqrk1tsq
661 vqeav1f1psd aefdmt1wnn smmniwppm1 n1skqlgaam hdlwdspl1n yn1nedl1qqs
721 ptgsqsassy meeyfdehdv sgp1gtgygfg tglfsgitad dlqpgsvqcl pmpgp1flpca
781 dlfdw1t1rc gv1v1f11a1 lgng1t1v1f1 vc1rskmdvp r1flvcn1aaa dffmg1ylgi

841 laivdaatlg efrmfaipwq msllcqlagf lavlsselsv ytlavitler nyaithaihl
901 nkrlslrqag yimsvgwifa lmallpllg vsdyrkfavo lpfetttgva sltyvislmf
961 ingcafltlm gcykmywai rgsqawntnd sriakrmall vftdflcwsp iaaffsitaif
1021 glqlisleqa kiftvfvlp1 nscnpflya imtkqfkkdc vtlckhfeet rvvggataa
1081 araargkrvg elppllpat **ataata**agva hppgcrcclrm lpsempnwhk meqttptlwq
1141 rlkrlccgqr qrrkqrrqpq qrrqraytaa aanpyqyqfa elrqqrknra ssissenfcs
1201 srssswrhga nsstpapqsn csmpklmep gqshthgrrr hsawltrkt sqdnlsssr
1261 ndssasatta **ststfrlsrs** **sags**stplps iiahngkqgh etltkprlvr qeavqeeeds
1321 spprlgvrfl p**tipsaad**ss vimddgdsan aaagsagclg mpqpgvssgf lvtpaqlqp
1381 ekpppapnda pg

M RYa R PA (Genbank Ref # AAF56655.3)

1 mehhnshllp ggsekmyyia hqqpmlrned dnyqegyfir pdpasliynt talpaddegs
61 nygygstttl sglqfetyini tvmmnfscdd ydllsedmws sayfkii**vym lyipififal**
121 **igngtvcyiv ystprmrvt nyfiaslaig dilmsffcvp ssfislfiln ywpfglalch**
181 **fvnysqavsv lvsaytlvai sidryiaimw plkpritrkry atfiiagvwf ialatalpip**
241 ivsgldipms pwhtkcekyi cremwpsrtq eyytllslfa **lqfvvplgvl iftyariritir**
301 vwakrppgea etnrdqrmarskrkm**vkmmll tvvivftccw lpfnilqlll** ndeefahwdp
361 **lpyvwfahw lamshccynp iiycymnarf rsgfvqlmhr mpglrrwccl rsvgdrmnat**
421 sgtgpalpln rmn**tsttyis** arrkpratsl ranplscget splr

V RYa R PA (Genbank Ref # XP_002053912.2)

1 mefnsvfwqr rrlldlqrtl nderlyyiap qqpllredd yqdtagalmy nssstelslg
61 aedadyisst patehfnvtv llfnsctdvs shsddlwssd yfksv**vylly ipififallg**
121 **ngivcyivqs tprmrvt ny fianlalgdi lmslfcvps fisqyilnyw pfgivlchfv**
181 **nysqvsvlv saytlvaisi dryiaimwpl rpritrkryak fiiagvwfia latafipivv**
241 srlmpvssiw hekcekyicr evwpsteqdy **vytlalftlq fivpllvlif tytriaiavw**
301 gkrppgeaen srdqrmarsk rkm**ikmmlltv vivftscwlp fnilqlmlnd eefanwkplp**
361 **yvwfahwla mshscynpii ycymnarfrg gflqimyrvp glrrccclhr ylrsgersy**
421 eatg//tedafh lhrvnt**tctty istrklrtn smqm//sqfsca ettvlr**

M RYa R PB (Genbank Ref # AAF56655.3) (difference from PA underlined)

1 mehhnshllp ggsekmyyia hqqpmlrned dnyqegyfir pdpasliynt talpaddegs
61 nygygstttl sglqfetyini tvmmnfscdd ydllsedmws sayfkii**vym lyipififal**
121 **igngtvcyiv ystprmrvt nyfiaslaig dilmsffcvp ssfislfiln ywpfglalch**
181 **fvnysqavsv lvsaytlvai sidryiaimw plkpritrkry atfiiagvwf ialatalpip**
241 ivsgldipms pwhtkcekyi cremwpsrtq eyytllslfa **lqfvvplgvl iftyariritir**
301 vwakrppgea etnrdqrmarskrkm**vkmmll tvvivftccw lpfnilqlll** ndeefahwdp
361 **lpyvwfahw lamshccynp iiycymnarf rsgfvqlmhr mpglrrwccl rsvgdrmnat**
421 sgemttkyhr hvgdalfrkp kicir/ngsst **ssqs**nehihh lhqrrsskats difasepiiv
481 rrdvttavav isknktdspv rr**sgssggte** anirstef

V RYa R PB-like (not annotated; predicted based on inspection of genomic DNA documented in SXX Document - "de novo RYaR annotations")

1 mefnsvfwqr rrlldlqrtl nderlyyiap qqpllredd yqdtagalmy nssstelslg
61 aedadyisst patehfnvtv llfnsctdvs shsddlwssd yfksv**vylly ipififallg**
121 **ngivcyivqs tprmrvt ny fianlalgdi lmslfcvps fisqyilnyw pfgivlchfv**
181 **nysqvsvlv saytlvaisi dryiaimwpl rpritrkryak fiiagvwfia latafipivv**
241 srlmpvssiw hekcekyicr evwpsteqdy **vytlalftlq fivpllvlif tytriaiavw**
301 gkrppgeaen srdqrmarsk rkm**ikmmlltv vivftscwlp fnilqlmlnd eefanwkplp**
361 **yvwfahwla mshscynpii ycymnarfrg gflqimyrvp glrrccclhr ylrsgersy**

421 eatg//emtkynrrngdglvrkpkirir/nrrcipptscehlhhlhqhktkaahefyane/pifm
crdhsvavapgtapepkprlqprqptgsfhlnsasy1sstqf

M RYa R PC (Genbank Ref # AHN57552)

1 mehhnshllp ggsekmyyia hqqpmlrned dnyqegyfir pdpasliynt talpaddegs
61 nygygstttl sglqfetyini tvmmnfscdd ydllsedmws sayfkiivym lyipififal
121 igngtvcyiv ystprmrvt nyfiaslaig dilmsffcvp ssfislfiln ywpfglalch
181 fvnysqavsv lvsaytlvai sidryiaimw plkpritkry atfi*iagvwf ialatalpip*
241 ivsgldipms pwhtkcekyi cremwpsrtq *eyyyt1slfa lqfvvplgvl iftyaritir*
301 vwakrppgea etnrdqrmr skrkm*vkmm1 tvvivftccw lpfnlql11* ndeefahwdp
361 *lpyvwfafhw lamshccynp iiycymnarf* rsgfvqlmhr mpglrrwccl rsvgdrmnat
421 sgemttkyhr hvgdalfrkp kicircctlh lvsvsvflfv llrfwfi

M SIF R PA (Genbank Ref # AAN13859.2)

1 mmaasgrirk rkhkshtsgd vpstttsvpm piptmapgkm vaetmeeaaa lagdynnfth
61 nfvdlqnlis fnelngtsgs ggtavsslgs ssaiklnsa itdtllgtvl ttatatvapa
121 assllatlaa tttasargsl agkslaiada tsstyynll nlsattsli saaaatksyn
181 dsalrweqld gsvdfgfdpl yrhslamsmv **ycvayivvfl vglignsfvi avvlr**aprmr
241 **tvtny**fivnl **aiadilv**ivf **clpatl**igni fvpwmlgwl **ckfvpyiqgv svaasvysli**
301 **avsl**drfi **ai** wwplkqmtkr rar**imiigi**w **vialv**ttipw **llffdlvpae** evfsdalvsa
361 ysqqqflcqe vwppgtdgnl **yfl**lanlvac **yllpmslitl** **cyv**liwikvs trsipgeskd
421 aqmdrmqqks kvkv**ikmlva** **vvilfv**lswl **plyvif**arik fgdisqeef eilkkvmpva
481 **qwlgssnsci** **npily**svnkk yrrgfaaiik srscgrlry ydnvaias**st tstrks**shyh
541 qnsrksps kgnavsyye hnsrrhnm lkqdsnlsqq mllkqds hgs rqlikq**ess**
601 **csdas**girrp lcqqd**sngsk vslskqdsiv syme**arrsag hglndtlvdr dsvsmdvgr
661 qga**tpsslld** krqkfvkq**ds visfvd**qrpe qrrhqlvkq**d svisfad**qrr gllhkqdsml
721 anrtgdapth hvsilk**ktds qlsygsstsp** rradlye

V SIFa R PA-like (Genbank Ref # XP_002058467.3)

1 mavggrtrkr khrshaagdt ptttaaaaa agtaataa itnsssssgn tpatgglgrg
61 wpmleqrdll edvtqgagea nnfthnfvdl qnllnfndaa ssnsnssn nvvgvsfssp
121 aiklsngait dtllgtlitt atatvapaas slissltaat atattttaat atsssssq
181 aigmpgaviv adatsssyya sllnmpatt slitaaatk syndsllrwd qldgnvdfgf
241 dplyrslam siv**ycvayiv vflv**gligns **fviavv**rap rmrtvt**nyfi vn**laiadilv
301 **ivfclpatli** gnlfvpwmlg wlm**ckfvpyi qgvs**vaasv **sliavsl**drf iaiwwplkqm
361 tkrrar**imii gi**wvialvtt **ipw**llffdlv paeevfsdal vssytqpqyl cgevwp
421 gn**lyfl**lanl **vacyllpmsl itlcyv**liwi kvstrsipge lskdaqmdrm qqk**skv**ik
481 **mlvavvilfv lsw**plyvif **arik**fgdis qeefeil**kkv mpla**qwgss **nscin**pilys
541 **vn**kyrrgfa aiiksrscg rlyydnvai **as**tt**strks** shyhpngsrk spsspglrkt
601 navsyyehn slrrhnlmmk qdsnlsqqml lkqds hgsrq flikq**esscs das**gtrrllc
661 qq**dsngskvs lskqdsivsy mes**rrvaala aqer**svdsal tq**qdt**isies** rrggaqat**tpa**
721 **sll**dkrqkfv kq**dsvisfvd** qrpeprhql vkq**dsvisfa d**qrrgllhkq **dslm**tnrsgd
781 apthhsilk ktdsqlysgt **ssssssaspr** rnyelye

M SNPFR PA (Genbank Ref # AAF49074)

1 manlswlsti tttssists qlplvsttnw sltspgttsa iladvaasde drsggiihnq
61 fvqiffyvly atvfvlgvfg nvlvcyvvlr nramqvtvni fitnlalsdi llcvlavpft
121 plytfmgrwa fgrslchlvs faqgcsiyis tltltsiaid ryfviiypfh prmklstcig
181 iivsiwvial latvpygmym kmtnelvngt qtgnetlvea tlmlngsfva qgsgfieapd
241 stsataqaymq vmtagstgpe mpyvrvycee nwpseqyrkv fgaitttlqf vlpffiiisic
301 yvwisvklng rarakpgsks srreadrdr kkrtnrmlia mvavfglswl pinvvnifdd
361 fddksnewrf yilfffvahs iamsstcynp flyawlnef r//kefkhvlp fnpnniin
421 itrngynrsdr ntcgprlhg kgdggmgggs ldaddqdeng itqetclpke klliprept
481 ygngtgavsp ilsgrginaa lvhggdhqmh qlqpshhqqv eltrrirrrt detdgdyls
541 gdeqtvevrf setpfvstdn **tgisilets** tshcqsdsvm velgeaigag ggaelgrin

V SNPFR PA-like (Genbank Ref #XP_002048039.1)

1 manvsnetvn awlvsvstql phvlgidvgv nwssssttst ttmairssm gttttastvs
61 slssdantda aadadksgii hnqfvqify vlyttvfvlg vfgnvlvcyv vlrnramqtv
121 tnifitnlal sdillcvlav pftplytfmg rwafgrtlch lvsfaqgcsi yistltltsi
181 aidryfviiy pfhprmklst cigiivsiw iallatvpyg mymkmtnvevm dnttqlvgan
241 qtssrygny glatpdatasa aqaymqvmtg gvtvceenwp sehyrkvfga itttlqfvlp
301 ffiisicyvw isvklngqrar akpgsksrr eadrdrkkr trnrliamva vfglswlpin
361 lvnifddfd ksnwrlm lffvhsiam sstcynpfly awlnefrke fkhvlpfn
421 snniinitr gynrsdrntc gprlhgngge ggaggsldad dqddngitqe tclpkeklli
481 ipreptygng ngavspilsg rginaallha sqpqqqqqv qqqqveltrr irrtdddtd
541 fidsgdeqtv evrfsetpfv ssdnt **tgism** letsesqfqd sgelpelsav vvgdasrrcn

M SP R PA (Genbank Ref # AAF46037)

1 mdnytdvlyq yrlapsaspe memeladprq mvrghlptn esqleipdyg nesldypnyq
61 qmvggpcrme dnnisywnlt cdspleyamp lygycmpfll iitiisnslv vlvlskksma
121 tptnfvlmgm aicdmltvif papglwmyt fgnhykplhp vsmclaysif neimpamcht
181 isvwltlala vqryiyvcha pmartwctmp rvrrctayia llaflhqlpr ffdrtymplv
241 iewngsptev chletsmwvh dyigvdlyyt
271 syylfrvlfv hllpciilvt lnillfaamr qaqerrklf renrkkeckk lretncttlm
331 livvsvfll aeipiavvta mhivssliie fldyglanic imltnfflvf sypinfgiyc
391 gmsrqfretf keiflgrlma kkd_sstkysi vngartctnt netvl

V SP R PA-0like (Genbank Ref #XP_002055695.1)

1 marsvdqsl1 ieleevstlt aatavakss smdnntvysy disitdvlyq wsaaasgara
61 iaqsaasgpl ptasvaavae rlpelvgmsl etrasqasl esqfllvdya nsmndsldya
121 syqqqlgsse crqmdgnmsy wnltdcspld yalplygycm pflfmsiis nslivlvlsk
181 ksmatptnfv lmgmaicdll tvvfpapglw ymytfgnhyk pmhpvsmcla ysifneimpa
241 mchtisvwt lalavqryiy vchapmartw ctmprvrct fyiallaflh qlprffdrty
301 mpmeiewngn etevchlets lwvheyvgvd lyyt
335 syylfrvlfv nllpciilvt lnillfaalr qaqerrklf renrkkeckr lrdsncttlm
395 livvsvfli aeipiavvta mhivssliie fldygianif imltnfflvf sypinfgiyc
391 gmsrqfretf reifmgrvag kke_sskysi vngprtctnt netil

M SPR PD (Genbank Ref # AAF46037) (stop suppression)

1 mdnytdvlyq yrlapsaspe memeladprq mvrghlptn esqleipdyg nesldypnyq
61 qmvggpcrme dnnisywnlt cdspleyamp lygycmpfll iitiisnslv vlvlskksma
121 tptnfvlmgm aicdmltvif papglwmyt fgnhykplhp vsmclaysif neimpamcht
181 isvwltlala vqryiyvcha pmartwctmp rvrrctayia llaflhqlpr ffdrtymplv
241 iewngsptev chletsmwvh dyigvdlyyt
271 syylfrvlfv hllpciilvt lnillfaamr qaqerrklf renrkkeckk lretncttlm
331 livvsvfll aeipiavvta mhivssliie fldyglanic imltnfflvf sypinfgiyc
391 gmsrqfretf keiflgrlma kkd_sstkysi vngartctnt netvllvm lvprrgssdh
451 rrsststttt tttktigsm iiggeasaqh qhlvthhlqt hsqpsqqrsv stmdiiteer
511 il

M Tk R 86C PA (Genbank Ref # AAF46037)

1 mseivdtell vnctilavrr felnsivntt llgslnrtev vsllssiidn rdnllesinea
61 kdflteclfp sptpryelpw eqktiwaaiif glmmfvaiag ngivlwivtg hrsmrtvtny
121 fllnlsiadl lmsslncvfn fifmlnsdwp fgsiyctinn fvanvtvsts vftlvaisfd
181 ryiaivhplk rrtstrrkvri ilvliwalsc vlsapcllys simtkhyng ksrtvcfmmw
241 pdgryptsma dyaynliilv ltygipmivm licyslmgrv lwgsrsigen tdrqmesmks
301 krkvrmfia ivsifaicwl pyhlffiyay hnnqvastky vqhmylgfyw lamsnamvnp
361 liyywmnkrf rmyfqriicc ccvgltrhrf dspksrltnk nssnrhtrae tksqwkrstm
421 etqiqqapvt sscreqrsa qqqppgsqtn raavecimer padgsssplc lsinnsiger
481 qrvkikyisc dednnpvels pkqm

V Tk 86C R PA- (Genbank Ref #XP_002053610.1)

(virilis lost the intron/exon encoding the additional CT sequence)

1 mseivdtell vnctilavrr felntivntt llntlnrtev vgllsgiiien rdnlldsinea
61 kdflteclfp sptpryelpw eqktiwaivf glmmfvaiag ngivlwivtg hrsmrtvtny
121 fllnlsiadl lmstlncvfn fifmvnsdwp fgsiyctinn fvanvtvsts vftlvaisfd
181 ryiaivhplk rrtstrrkvrf ilvliwalsc vlsapcllys simtkhyng ksrtvcfmmw
241 pdgryptsmt dyvynvtilv ltygipmivm licyslmgrv lwgsrsigen tdrqmesmks
301 krkvrmfia ivsifaicwl pyhlffiyay hnnqvastky vqhmylgfyw lamsnamvnp
361 iyywmnkr/f rmyfqriifc cclglmryrf espksrmank nssnrhtrae tksqwkrstm
421 etqiqqmpkt ssrdkdagvq glntaveci ierpiddnss piclsiknsa gerqrvkiky
481 iscdednpi eegsenns sh dsnhshghgh scgrshgqna kaiqq1

(155) virilis adds 25 bp at end (new exon or read through?) which includes a BBS

M Tk R 86C PB (Genbank Ref # ABW08638)

(underline is the difference with D melanogaster PA, due to an unspliced intron)

1 mseivdtell vnctilavrr felnsivntt llgslnrtev vsllssiidn rdnlesinea
61 kdflteclfp sptrpyelpw eqktiwaiif glmmfvaiag ngivlwivtg hrsmrtvtny
121 flnlnsiadl lmsslncvfn fifmlnsdwp fgsiyctinn fvanvtvsts vftlvaisfd
181 ryiaivhplk rrtsrrkvri ilvliwalsc vlsapcllys simtkhyng ksrtvcfmmw
241 pdgryptsma dyaynliilv ltygipmivm licyslmgrv lwgsrsigen tdrqmesmks
301 krkvvrmfia ivsifaicwl pyhlffiyay hnnqvastky vqhmylgfyw lamsnamvnp
361 liyywmnkrf rmyfqriicc ccvgltrhrf spksrltnk nssnrhtrgg ytvahslpns
421 sppttqtlla vlaqtltpk pqtqllshh sphptqpsaa etksqwrst metqiqqapv
481 tsscreqrsa qqqqppgsq nraavecime rpadgssspl clsinnsige rqrvkikyis
541 cdednpvel spkqm

V Tk R 86C PB

1 mseivdtell vnctilavrr felntivntt llntlnrtev vglsgiiien rdnldsinea
61 kdflteclfp sptrpyelpw eqktiwaivf glmmfvaiag ngivlwivtg hrsmrtvtny
121 flnlnsiadl lmstlncvfn fifmvnsdwp fgsiyctinn fvanvtvsts vftlvaisfd
181 ryiaivhplk rrtsrrkvrf ilvliwalsc vlsapcllys simtkhyng ksrtvcfmmw
241 pdgryptsmt dyvynvtilv ltygipmivm licyslmgrv lwgsrsigen tdrqmesmks
301 krkvvrmfia ivsifaicwl pyhlffiyay hnnqvastky vqhmylgfyw lamsnamvnp
361 liyywmnk/at ecrfntlv vmghgnsdii isstessfmvg ysgs/icclg lmryrfespk
421 srmanknssnr htraetksq wkrstmetqi qqmpktssrd kdagvqglnh taveciierp
481 iddnssplicls iknsagerq rvkikyiscd ednnpieegs ennsshdsnh shghghscgr
541 shgqna kaiqq

ATECRRFNTLVVMGHGNSDIII

SSTESSFMVGYSGSI

M Tk R 99D PA (Genbank Ref # ABW08638)

1 menrsdfead dygdiswsnw snwstpagvl fsamssvlsa snhtplpdfg qelalstssf
61 nhsqtlstdl pavgdvedaa edaaasmetg sfafvvpwvr qvlwsilfgg mvivatggnl
121 ivvwivmttk rmrtvtnyfi vnlsiadamv sslnvtfnyy ymlsdswpfg efycklsqfi
181 amlsicasvf tlmaisi dry vaiirplqpr mskrcnlaia aviwlastli scpmmiiyrt
241 eevpvrghsn rtvcypewpd gp~~tnhstmes~~ lyniliiilt yflpivsmv tysrvgielw
301 gsktigectp rqvenvrskr rvvkmmivvv lifaicwlpf hsyfiitscy paiteapfiq
361 elylaiywla msnsmynpai ycwmm srfry gfkmvfrwcl fvrvgtepfs rrenltsrys
421 csgspdhnri krndtqksil ytcpsspksksh rishsgtgrs atlrnslpae slssggsggg
481 ghrkrlyyqq emqqrwsgpn ~~satavtnsss tanttqlls~~

V Tk R 99D PA-like (Genbank Ref # XP_032294790)

1 mldsittttt gagqvmenne elldntwsnw styapvliyn amnsvlanqt plsseygpsl
61 aynlsrvlpt gitglpaadv dedaatpvas fafvpwvrq vlwsilfggm vivatggnli
121 vvwivlttkr mrtvtnyfiv nlsiadamvs slnvtfnyyy mldsdwifge fyckvsqfia
181 mlsicasvft lmaisi dryv aimkplqprm skrrnlaiaa liwlsstlis cpmllffrte
241 evpvtmenkt rivcfpewpd gq~~tnhskqeh~~ iynilililt yflpiismv tysrvgielw
301 gsktigeytp rqtenvrskr rvvkmmivvv lifgfcwlpf htyfi vtscy paiteapfiq
361 elylviywla msnsmynpai ycwmm srfry gfkmvfrwcp fvnvgaesln rrenltsrys
421 csgspdhnri krndtqksil yacpsspksq rvshcgkdds lsgkdslslsh afsysysvag
481 vpprslpvqq lssrrgqrs syqqemqerw sgdkssnsln sttecrttql ls

tnhstme - present in ECL

M Tk R 99D PC (Genbank ref #ABW08638)

1 menrsdfead dygdiswsnw snwstpagvl fsamssvlsa snhtplpdfg qelalstssf
61 nhsqtlstdl pavgdvedaa edaaasmetg sfafvvpwvr qvlwsilfgg mvivatggnl
121 ivvwivmttk rmrtvtnyfi vnlsiadamv sslnvtfnyy ymlsdswpfg efycklsqfi
181 amlsicasvf tlmaisi dry vaiirplqpr mskrcnlaia aviwlastli scpmmiiyrt
241 eevpvrghsn rtvcypewpd gp~~tnhstmes~~ lyniliiilt yflpivsmv tysrvgielw
301 gsktigectp rqvenvrskr rvvkmmivvv lifaicwlpf hsyfiitscy paiteapfiq
361 elylaiywla msnsmynpai ycwmm srfry gfkmvfrwcl fvrvgtepfs rrenltsrys
421 csgspdhnri krndtqksil ytcpsspksksh rishsgtgrs atlrnslpae slssggsggg
481 ghrkrlyyqq emqqrwsgpn ~~satavtnsss tanttqlls~~ qpaiqvpppe mqtqivcssp
541 ynnnyrranp glsdrdssdd ktwl

M Tre1 PA (Genbank Ref # NP_524792.1)

1 mdqdmqmatg yfqdadmqmd epaaatqsiy phsatlfaai sacvftigv lgnlitllal
61 lksptireha ttafvislsi sdllfcsfsl pltavrffqe swtfgttlck ifpvifygnv
121 avslismvgi tlnryiliac hsrysqiykp kfitlqllfv wavsfllllp pilgiwgemg
181 ldeatfscti lkkegrsikk tlfvigfllp clviivsysc iyitvlhqkk kirnhdnfqi
241 aaakgsssg ggsymtttct rkarednrlt vmmvtiflcf lvcflplmla nvvddernts
301 ypwlhiiasv mawassvinp iiyaasn rny rvayykifal lkfwgeplsp mpsrnyhqsk
361 nskelsgvir stplfhavqk nsinqmcqty sv

V Tre1 PA-like (Genbank Ref # XP_002056799.1)

1 mdaptqsiyp hsatlfaaic acvftigvf gnlitllall ksptirehat tafvislsis
61 dlffcsfslp ltavrffqes wtfgstlcki fpvifygnva vsllsmvgit lnryiliach
121 srysqiykpk litlqlvfvw avsfllllpp ilgiwgemgl deatfsctil kkegksikkt
181 lfligfllpc lviiiisysci yitvlhqkkk irshdnfqig aaagaktgsa sgsyvtttst
241 rkarednrlt vmmvtiflcf licflplmla nvvdderkt n ypwlhiiasv mawassvinp
301 iiyaasn rny rvayykifal lkfwgeplsp mpsrnyhqsk nskelsgvir stplfhavqk
361 nsinqmcqty sv

both present in ICL1 and 3

adjusted TM3 prediction to end just before SRYSQIYKP

M Trissin R PB (Genbank Ref # AAF52294)

1 mimtmmqtvr awqqesdveh rkqhkqrwrp dgahisaayd lnsdnddghh rvvhnqngs
61 pnsspnqsts afrqrqphhp ptgqqpprlp ctvthfsahw ktllilltll sastltasan
121 vtstisppin gsstdyilly gesttslvpa lttglsgdgs gaviedeeda ekaseyifdr
181 tdvriifitl ytlvfccff gnllvilvvt lsrrlrsitn fflanlafad fcvglfcvmq
241 nlsiyliesw vfgeflcrmy qfvhslyta sifilvvicm eryfaivhpi tckqiltaar
301 lrmvivotvwi tsavystpkf vfsktiknih tqdgqeeeic vldremfnsk lldminfvll
361 yvmpllvmtv lyskiaialw rssrgltphv vqhghqppqq pscqdigmgm hnsmyhhhph
421 hhhhhhqhghq lqsaassagv vgvglggggg gggppslasg gssttslsrk qsskyekrgv
481 sitesqldnc kvsleadrpi vsacrksfy hhghahhgra gnasvgggsg gagagathms
541 hsssnvlrar rgvvrmlif vltfalcnlp yharkmwqyw srsyrgdsnf nalltpltfl
601 vtyfngsvnp llyaflsrufrnf rkgmkelllc swkkkgkgs snssmhhkrk alqthslptd
661 tthigneql

V Trissin R PB* (not annotated; predicted based on inspection of genomic DNA documented in SXX Document - "de novo TrissinR annotations")

1 msvhslqgms tstaalptsc wqrqrqlrr rrqqeteaas hrrahkqmr tgsanisaay
61 ednddnnnnn nnnynnnnnn nnskasksp ttttnysisg lpdcqqqkte qsthklts
121 ihpralpwlf lspllllvll vdrslstagn ysslalnesg iestlpinat tailataapt
181 ggsgaattal alsepttteq adeedaens eyvfdrtivr iifitlytiv fccffgnll
241 vilvvtlsrr lrsitnffla nlafadfcvg lfcvmqnlisi ylidswvfge flcrmyqfvh
301 slsytafifi lvvicmeryf aivhpitckq iltaarlmv ivtwitsav ystpkfvfsk
361 tiknihtedg qeeeicvldr emfnsklldm infvlllyvmp llvmtvlysk iaialwrssr
421 glsphvtqhq qqqqqqhqqq qqqaigensm slhnsmyhhh hhhpqhphhh qlhqhqqlpa
481 saaaaaassl agssstsls rkhskeyekr gvsitesqld nckvsleadr pivsacrks
541 fyhshshnq rqqnggaggg gathmshss nvlrarrgv rmlifvltf alcnlpyhar
601 kmwqywsrsy rgdsnfnall tpltflvtyf nsgvnpillya fllsrufrnkfkgm klllcswkk
661 gkgksssnss mhhkrkalqt hslptdthi gneql

M Trissin PC (Genbank Ref # AAF52294)

1 mimtmmqtvr awqqesdveh rkqhkqrwrp dgahisaayd lnsdnddghh rvvhnqngs
61 pnsspnqsts afrqrqphhp ptgqqpprlp ctvthfsahw ktllilltll sastltasan
121 vtstisppin gsstdyilly gesttslvpa lttglsgdgs gaviedeeda ekaseyifdr
181 tdvriifitl ytlvfccff gnllvilvvt lsrrlrsitn fflanlafad fcvglfcvmq
241 nlsiyliesw vfgeflcrmy qfvhslyta sifilvvicm eryfaivhpi tckqiltaar
301 lrmvivotvwi tsavystpkf vfsktiknih tqdgqeeeic vldremfnsk lldminfvll
361 yvmpllvmtv lyskiaialw rssrgltphv vqhghqppqq pscqdigmgm hnsmyhhhph
421 hhhhhhqhghq lqsaassagv vgvglggggg gggppslasg gssttslsrk qsskyekrgv
481 sitesqvle adrpivsacr ktsfyhhgha hhqragnasv gggsggagag athmshssn

541 vlrarrgvvr mliifvltfa lcnlpyhark mwqywsrsyr gdsnfnallt pltflvtyfn
601 sgvnpllyaf lsrnfrkgmk elllcswkkq kgksssnssm hhkrkalqth slptdtthig
661 neql

PC form does not include the micro exon(at 486) present in PB which inserts ~6 AA; in both there is a precise BBS, but sequence varies (TESQLD vs. TESQVS)

V Trissin R PC-like (Genbank Ref # XP_002051478.2)

1 msvhslqgms tstaalptsc wqrqrqlrr rrqqeteaas hrrahkqmrr tgsanisaay
61 ednddnntnnn nnnynntnnn nnskasksp ttttnysisg lpdcqqqkte qsthhklts
121 ihpralpwlf lspllllvll vdrslstagn ysslalnesg iestlpinat tailataapt
181 ggsgaattal alsepttreq adeedaenss eyvfdrtivr iifitlytiv fcccffgnll
241 vilvvtlsrr lrsitnffla nlafadfcvg lfcvmqnl si ylidswvfge flcrmyqfvh
301 slsytafifi lvvicmeryf aivhpitckq iltaarlrmv ivtwitsav ystpkfvfsk
361 tiknihtedg qeeecvldr emfnsklldm infvllvmp llvmtvlysk iaialwrssr
421 glsphvtqhq qqqqqqhqqq qqqaigensm slhnsmyhhh hhhpqhphhh qlhqhqqlpa
481 saaaaaassl asgssstsls rkhsskyekr gvsi tesqvs leadrpivsa crktsfyhhs
541 hshnqrqngg gagggga thm shssnvlra rrgvvrmlii fvltfalcnl pyharkmwqy
601 wsrsyrgdsn fnalltpltf lvtyfnsgvn pllyafslrn frkgmkelll cswkkkgkgs
661 ssnssmhhkr kalqthslpt dtthigneql

M Trissin R PD (Genbank Ref # AGB92644)

1 mimtmnqtvr awqqesdveh rkqhkqrwrp dgahisaayd lnsdnddghh rvvhnqngns
61 pnsspnqsts afrqrqphhp ptgqqpprlp ctvthfsahw ktlilltlll sastltasan
121 vtstisppin gsstdyilly gesttslvpa lttglsgdgs gaviedeeda ekaseyifdr
181 tdvriifitl ytlvfccff gnllvilvvt lsrrlrsitn fflanlafad fcvglfcvmq
241 nlsiyliwsw vfgeflcrmy qfvhslsyta sifilvvicm eryfaivhpi tckqiltaar
301 lrmvivotwi tsavystpkf vfsktiknih tqdgqeeec vldremfnsk lldminfvll
361 yvmpllvmtv lyskiaialw rssrgltphv vqhghqppqq pscqdigmgm hnsmyhhhph
421 hhhhhhhqhq lqsaassagv vgvglggggg gggpsslasg gssttslsrk qsskyekrgv
481 sitesql dnc kvsleadrpi vsacrksfy hhghahhgra gnasvgggsg gagagathms
541 hssnvlrar rgvvrmliiif vltfalcnlp yharkmwqyw srsyrgdsnf nalltpltfl
601 vtyfnsgvnp llyafslrnfr rkgmkelllc swkkkgkgs ssnssmhhkrk alqsafftp

V Trissin PD* (not annotated; predicted based on inspection of genomic DNA documented in SXX Document - "de novo TrissinR annotations")

1 msvhslqgms tstaalptsc wqrqrqlrr rrqqeteaas hrrahkqmrr tgsanisaay
61 ednddnntnnn nnnynntnnn nnskasksp ttttnysisg lpdcqqqkte qsthhklts
121 ihpralpwlf lspllllvll vdrslstagn ysslalnesg iestlpinat tailataapt

181 ggsgaattal alsepttteq adeedaenss eyvfdrtivr iifitlytiv fcccffgnll
241 vilvvtlsrr lrsitnffla nlafadfcvg lfcvmqnlisi ylidswvfge flcrmyqfvh
301 slsytafifi lvvicmeryf aivhpitckq iltaarlrmv ivtwitsav ystpkfvfsk
361 tiknihtedg qeeicvldr emfnsklldm infvlllyvmp llvmtvlysk iaialwrssr
421 glsphvtqhq qqqqqqhqqq qqqaiqensm slhnsmyhhh hhhpqhphhh qlhqhqlpa
481 saaaaaas**sl asgssstsls** rkhsskyekr gvsi**tesqld** nckvsleadr pivsacrkts
541 fyhhshshnq rqqnggaggg ga**thmshss** nvlrarrgv rmlifvltf alcnlpyhar
601 tskmwqysr syrgdsnfna lltpltfvlv yfngvnp11 yaf1s rnfrk gmkelllcsw
661 kkgkgk**sssn ssmhhkrkal** qvsantkyyr vtlsiwh

M Dh31 R PA (Genbank Ref #XP_032292141.1)

1 msdqignpna tfsqsgsgsg tnvasiaesv aesgpdfdal raacetrlna sgqlagsggp
61 gaeagthcag tfdgwlcwpcd tavgtsayel cpdfitgfdp aryahkecgl dgewfkhplt
121 nktwsnyttc vnledlnwrh **tvnlisevgy gtsllaills lailgyfksl kcaritlhmn**
181 **lfasfaanns lwlvwyllvm** pnsellhqsp **mr**cvahlitl **hyfllsnysw mlcegfylht**
241 vlvaafisek rlvkwliafg **wgspaiivfv ysmarglggt** pednrhcwmn **qtnyqnilmv**
301 **pvcismflnl lflcnivrsv** llklnapasi **qgscgpsrtv lqa**fratlll **vpllglyil**
361 **tpfrpapkhp wentyeiisa ftasfgglcv ailfcfcnge** viaqmkrkwr **mmcfsnrprt**
421 nsy**tatqvs**f vrcgpplpge ekv

V Dh31 R PA-like (Genbank Ref # AAN16138.1)

1 maeqtsnsss sssgsvssss sssgsshiaa esgpdfdalr aacnarlnss hqltgkrrcd
61 mphaachstv qfayklvslg sycagtdfgw lcwpdtaags sayelcpdfi tgfdparyah
121 kecgedgewf khpltnkts nyttcvnldd larnhn**vnli yevgysisll aillslails**
181 **yfkslkcaritlhmnlfssf aansslwliw ylvvvpntel** vqlspgycva **lhilhyfll**
241 **tnyswmlceg fylhtvlvaa fisekklvw liafgwcpa iviciyglar** gftgsweqnl
301 hcwmt**dtfn yilivpvcis iflnllflcn** ivrvllkln apasiqgscg **psrtvlqafr**
361 **atlllvpllg lqymtprp gqehpleyty qvisaftasf qglcvatlfc ffng**eviaqv
421 **krkwrtvcfs nrprtnsy****ta tqvs**fvrccp pvpgeekv

M Dh31 R PC (Genbank Ref # AGB93483)

1 msdqignpna tfsgsgsgsg tnvasiaesv aesgpdfdal raacetrlna sgqlagsggp
61 gaeagthcag tfdgwlcwpcd tavgtsayel cpdfitgfdp aryahkecgl dgewfkhplt
121 nktwsnyttc vnledlnwrh tvnlisevgy gtsllaills lailgyfksl kcaritlhmn
181 lfasfaanns lwlvwyllvm pnsellhqsp mrcvalhitl hyfllsnysw mlcegfylyht
241 vlvaafisek rlvkwliafg wgspaiivfv ysmarglggt pednrhcwmn qtnyqnilmv
301 pvcismflnl lflcnivrsv llklnapasi qgscgpsrtv lqafratlll vpllglyil
361 tpfripapkhk wentyeiisa ftasfqglcv ailfcfcnge viaqmkrkwr mmcfsnrprt
421 nsy**tatqvs**f vrcgpplpge ekvxlkdmsa krrasagpgh hqphhqshql stdqqrars**sq**
481 **slas**sssfle gwrdrmpflk rrqtidhsrq sqplmeegge tvgqaksapg avdrptlmtt
541 iaedvae**tgt aat**shaasts daaaaaavga ggatgaeegh pngmgtvivr meragqghma
601 deal

V DH31 R PC-like (Genbank Ref # XP_032292141.1) (stop suppression)

1 maeqtsnsss sssgsvssss sssgsshiaa esgpdfdalr aacnarlnss hqltgkrrcd
61 mphaachstv qfayklvslg sycagtfdgw lcwpdtaags sayelcpdfi tgfdparyah
121 kecgedgewf khpltnktws nyttcvnlld larnhnvnli yevgysisll aillslails
181 yfkslkcar**i** tlhmnlfssf aansslwliw ylvvvpntel vqlspgycva lhiilhyfll
241 **tnyswmlceg** fylhtvlvaa fisekklvw liafgwcpa iviciyglar gftgsweqnl
301 hcwmt**dt**dfn yilivpvcis iflnllflcn ivrvllkln apasiqgscg psrtvlqaf**r**
361 **atlllvpllg** lqymtpfrp gqehple**ty** qvisaftasf qglcvatlfc ffngeviaqv
421 krkwrtvcfs nrprt**nsy**ta **tqvs**fvrpgp pvpgeekv**x**l kdlsasakrr ssaphrphqq
481 qqqqqqqqqq qqlqqqqqhl laqqqrarsq slgmt**gatss** ssrlidgwrh klrllrpsv
541 dnahqrqplm eetagnsqpq maantqaead rptlmttie dvaeaattta **tatgittttt**
601 **tn**nateqrng tgmglglvsr sglglapgig vvivsvdand qqhiadeal

M Hector R PA (Genbank Ref # AGB93483)

1 mattssdses qnvdasqaq tqdnlriflk hlyaecvfry qnvtydtddp sfslgpatdy
61 dsdlpenfsp vprylenaam negvidmrnv deelaekeel matvvsatma tnqkenrlfc
121 plnfdgylcw prtpagtvls qycpdfvegfnrkflahkct lengswyrhp vsnqtwsnyt
181 ncvdyedlef rqfinelyvk gyalsllall isiiiflgfk slrctri~~rih~~ vhlfaslact
241 cvawilwyr~~l~~ vversetiae nplwci~~ghl~~ vvhfmlvny fwmfcegl~~hl~~ hlvlvvfvk
301 dtivmrw~~fiv~~ iswfs~~pipia~~ ivyglarhfs spd~~nkhwit~~ dslylwifsv pitlsllasf
361 iflinv~~lrvi~~ vrklhpqsaq paplairkav ratiilvplf glqhfl~~lpyr~~ pdagtqldhf
421 yqmlsv~~lv~~ lqgf~~vvsflf~~ cfanhdvtfa irtllnkllp slvtpppags ntgqmattp
481 srelgv

V Hector R PA-like (Genbank Ref # XP_032296576)

1 mallraaltm ataayfemtv sgamppqpd nlr~~tflkhly~~ aecvryqnd tataqlatep
61 dgglllety tmipryleqa vl~~negtidmq~~ dvdeeaasen elyatvlsat matnhshnt
121 semetlycpv nfdgylcwpr tpagtvlsqy cpdfvegfn~~s~~ kflahktcle tgs~~wfrhpvs~~
181 nqtwsnytn~~c~~ vdyedfqrq fv~~nelyvkg~~ alsllalfis iviflgfksl rctr~~rihvh~~
241 lfaslactci awilwyr~~lv~~ ehteqiaenp pwc~~ialhlv~~ h~~yfmlvnyfw~~ m~~fceglhlhl~~
301 vl~~vfvkdt~~ ivmr~~wfklls~~ wllp~~llfvlp~~ ygvarhfsan dnahcwm~~nds~~ fylwifsvpi
361 t~~lsllasfif~~ li~~nv~~lrvi~~~~ klhpqsaqpa plairkav~~ra~~ tiilvplf~~gl~~ qhfl~~lpyrpd~~
421 agtqld~~r~~fyq~~~~ llsv~~lvslq~~ gfv~~v~~slf~~cf~~ anhdvtfamr tllnk~~lmptl~~ vappagsnt
481 gqlattt~~psr~~ elgv

M PDF R PA (Genbank Ref # AAF45788)

1 mtllsnildc ggcisaqrft rllrqsgssg pspstaptagt fesksmlept sshslatgrv
61 pllhdhdast tespgtyvld gvarvaqlal eptvmdalpd sdteqvlgnl nssapwnltl
121 asaaatnfen csalfvnytl pqtglycnwt wdtllcwppt pagvlarmnc pggfhgvdtr
181 kfairkceld grwgsrpnat evnppgwdty gpcykpeiir lmqqmgsxdf dayidiarrt
241 rtleivglcl slfalivsl1 ifctfrslrn nrtkihknlf vamvlqviir ltlyldqfrr
301 gnkeaatnts lsvientpyl ceasyvlley artamfmwmf ieglylhnmv tvavfqsfp
361 lkffsrlgwc vpilmttvwa rctvmymdts lgeclwnynl tpyywilegp rlavillnfc
421 flvniirvlv mklrqsqasd ieqrkavra aivllp1lgi tnllhqlapl ktatnfavws
481 ygthfltsfq gffialiycf lngevravll kslatqlsvr ghpewapkra smysgaynta
541 pdtdavqpag dpsatgkris ppnkrlngrk pssasivmih epqqrqlmp rlqnkarekg
601 kdrvektdae aepdptishi hskeagsars rtrgskwimg icfrgqkvlr vpsassvppe
661 svvfelseq

V PDF R PA-like (Genbank Ref # XP_032288784.1)

1 mptaapssnr tvsthhsttm tststtygtt sttqaaltsf epmavtaagm dvtmagtepl
61 sstsiptfwn ssintasans ydnscalfan ytqpttviyc nwtwdsllcw pptpagatah
121 mhcpagyhgv dtrkfanrkc eldghwagrp nsteqkptgw tdygpcykpe virilmqeikd
181 vnlymdiaqr trtleiiglc lslfaliisl mifcafrslr nrtkihknlf fvamvlqviv
241 rltlyldqfr rgksdsannt slsvientpy lceasyvllle yartamfmwmf fieglylhnm
301 itvavfqqnf plvffsllgw gmpvlmtfvw vqctaifmdt slgdclwnyn ltpyywileg
361 prltvimlnf fflvniirvl vmklrqsqas eieqrkavr aaivllp1lg itnllhlvpa
421 lktawkfaiw syvthfltsf qgffialiyc flngevravm lksiavwlsv rghpewapkr
481 psmysgaynt apdtdpqlkq gdpqqsgkrl sqstkrnsr kassvtivis tepqihryvp
541 rrrnnnrast gsarvrgilk atee pasgsa vgqrristdd gasttgrnsn wmfglcfrgq
601 kvlrppass vpesvffel seq

M PDF R PD (Genbank Ref # AHN59298)

1 mtllsnildc ggcisaqrft rllrqsgssg pspstaptagt fesksmlept sshslatgrv
61 pllhdafdast tespgtyvld gvarvaqlal eptvmdalpd sdteqvlgnl nssapwnltl
121 asaaatnfen csalfvnytl pqtglycnwt wdtllcwppt pagvlarmnc pggfhgvdtr
181 kfairkceld grwgsrpnat evnppgwdty gpcykpeiir lmqqmgskdf dayidiarrt
241 rtleivglcl slfalivsl1 ifctfrslrn nr~~tkihknlf~~ vamvlqviir ltlyldqfrr
301 gnkeaatnts lsvientpyl ceasyvll~~ey~~ artamfmwmf ieglylhnmv tvavfqqgfp
361 lkffsrlgwc vpilm~~ttvwa~~ rctvmymdts lgeclwnynl tpyywilegp rlavillnfc
421 flvniirvlv mklrqsqas~~d~~ ieqtrkavra aivllpllg~~i~~ tnlhqlapl ktatnfvaws
481 ygthfltsfq gffialiy~~cf~~ lngevravll kslatqlsvr ghpewapkra smysgaynta
541 pdtdavqpag dpsatgkris ppnkrlngrk pssasivmih epqqrqlmp rlqnkarekg
601 kdrvektdae aepdptishi hskeagsars rtrgskwimg icfrgqkdkc vmppsqtqq
661 ifm~~tsqmppt~~ stlaavatti tttsttttaa kt~~tiasiati~~ atmtkskaka kaiskshqiq
721 mpka

V PDF R PD-like (Genbank Ref # XP_032288761.1)

1 mptaapssnr tvsthhsttm tststtyg~~tt~~ sttqaaltsf epmavtaagm dvtmagtepl
61 sstsiptfwn ssintasans ydn~~csalfan~~ ytqpttviyc nwtwdsllcw pptpagatah
121 mhcpagyhgv dtrkfanrkc eldghwagr~~p~~ nsteqkptgw tdygpcykpe vir~~lmqeikd~~
181 vnlymdiaqr trtleiiglc lslfaliisl mifcafrslr nnr~~tkihknlf~~ fvamvlqviv
241 rltlyldqfr rgksdsannt slsvientpy lceasyvll~~e~~ yartamfmwm fieglylhnm
301 itvavfqqnf plvffsllg~~w~~ gmpvlmtfvw vqctaifmdt slgdclwnyn ltpyywileg
361 prltvimlnf fflvniirvl vmklrqsqas~~d~~ eieqtrkavr aaivllpllg itnlhlvpa
421 lktawkfaiw syvthfltsf qgffialiy~~c~~ flngevravm lksiavwlsv rghpewapkr
481 psmysgaynt apddpqlkq gdpqqsgkrl sqstkrnsr kassvtivis tepqihryvp
541 rrrnnnrast gsarvrgilk atee~~pasgsa~~ vgqrristdd gasttgrnsn wmgfclfrgq
601 knkcvipnaq vsqqifm~~tsq~~ lp~~tataattt~~ ttttvaaaaa at~~tttaata~~v aaat~~tt~~sr~~is~~
661 saaaaaaaaa aailqkqtp ka

M Dh44 R1 PA (Genbank Ref # AAF58250)

1 msdnhhidsv nasgsdplld lhnldgiges velqclvqeh ieastygnds ghcltqfdsi
61 lcpwrtargt lavlqcm del qgihydsskn atrfchangt wekytnydac ahlpapesvp
121 efevivelpt **iiyyigytlslvslslalivfayfkelrcl** rntihanlff tyimsalfwi
181 **lllsvqisirs** **sgvgscialitlfhfftltnffwmlvegly** **lymlrvktfs** **gdnlrfrniya**
241 **sigwggpalfvvtw**avaksl tvtystpeky eincpwmqet **hvdwiyqgpvcavliinltf**
301 **llrimwv**lit **klrsantvet** rqyrka**akal** **lvliplfgit** **ylvvlagpse** **sglmghmfav**
361 **lravllstqg** **fsvslfycfl** **nsevrnalrh** **histwrdrtr** **iqlnqnrryt** **tksfskgggs**
421 praesmrplt syygrgkres **cvssat**tttl vgqhaplslh rgsnnalhtm ptlaanamss
481 **gstlsvm**pra isplmrqgle ensv

V Dh44 R1 PA-like (Genbank Ref # XP_032292296.1)

1 mskdnnnnnn nngnnpia sealnssvnd alwsldnldg inqsvelhcl lqqqieatty
61 gnasdhcltq fdtilcwprt argtlavlqc mdelqgihyd ssknatrfch sngtwaqytd
121 ydacahlpae tqtvpefeti vel**ptiiyyi** **gyalslvsltlalivfayyk** elrcl**rntih**
181 **anlfftyims** **alfwilllsv** qisirsglss **cialvtlfhf** **ftltnffwmlveglylymlv**
241 **vktfsgdnir** **fniyasigwg** **gpalfvvtwa** vakslvtyn nnmekydinc pwme**tnvdw**
301 **ifqgpvcavl** **iinltfllri** **mwvlitklrs** **antvet**rqyr **kaakallvli** **plfgitylvv**
361 **lagps**esglm **ghmfavlrav** **llstqgfwvs** **lfycfln**sev **rnalrh**hast wrdrtrniqrn
421 qnrryttksf skgggsprae smrpltsyyg rgkres**cvss** **at**tttlvgqh aplslhrgsn
481 nalhmlptni ag**tgstlsvm** praisplmkg leensv

M Dh44 R2 PA (Genbank Ref # AAF58501)

1 madddlralv dslddasqed lakvianfsv dmlqrasali gaqqgssggq lqnrtrlqcqq
61 qqgreeeqas lealassggr ilqcpssfds vlcwprtnag slavlpctfee fkgvhydttd
121 natrfcfnpg twdhysdydr chqngsipv vpdfspnvel **paiiyaggyf lsfatlvval**
181 **iiiflsfkdlr** clr**ntihanl** **fltyitsall** **wiltlflqvi** ttessqagci **tlvimfqyfy**
241 **ltnffwmfve** glylytlvvq tfssdnisfi **iyaligwgcp** **avcilvwsia** kafaphlene
301 hfngleidca wmr**eshidwi** **fkvpaslall** **vnlvflirim** wvlitklr**sa htlet**rqqyk
361 **askallvlip** **lfgityllvl** **tgpeqgisrn** **lfeairafli** **stqgffvalf** **ycfln**sevrq
421 tlrhgftrwr esnrhrnss iknr/rhrask **dyslrsrtes** lrltstspip tghye

V DH44 R2 PA-like (Genbank Ref # XP_032292527.1)

1 maedelqalv erlddasaen ianaianfsl emlqrasali gtqqphsgdi linrtledqc
61 kqqaeqqdal yssphlshtg idqyssskas adkptlycpt sfdsvlcwpr tsastwailp
121 cfeefkgvhy dttenatrfc hangtwnhys nysschqqlg svppvpdfsa svdlp**aiiya**
181 **ggyfisfatl** **vvaliiflsf** kdlrclr**nti** **hanlfltyit** **sallwiltlf** lqvittessq
241 **agcitolvimf** **qyfylnfsw** **mfveglylyt** **lvvqtfssen** isfvi**yalig** **wgcpalcilf**
301 **w**siakafash lenefngle iectwmr**esh** **idwifkcpas** **lailinlvfl** **irimwvlitk**
361 lr**sahtlet**r qyyka**skall** **vlipflgity** **llvltgpe**qg isr**nlfeamr** **afllstqgff**
421 **valfycflns** evrqtlrhrf irwresrnh rsslknr/rh rtskdys**qrs rtes**lrltss
481 spvpaghfe

M DH44 R2 PB (Genbank Ref # AAM68690)

1 madddlralv dslddasqed lakvianfsv dmlqrasali gaqqgssggq lqnrtrlqcqq
61 qqgreeeqas lealassggr ilqcpssfds vlcwprtnag slavlpctfee fkgvhydttd
121 natrfcfnpg twdhysdydr chqngsipv vpdfspnvel **paiiyaggyf lsfatlvval**
181 **iiiflsfkdlr** clr**ntihanl** **fltyitsall** **wiltlflqvi** ttessqagci **tlvimfqyfy**
241 **ltnffwmfve** glylytlvvq tfssdnisfi **iyaligwgcp** **avcilvwsia** kafaphlene
301 hfngleidca wmr**eshidwi** **fkvpaslall** **vnlvflirim** wvlitklr**sa htlet**rqqyk
361 **askallvlip** **lfgityllvl** **tgpeqgisrn** **lfeairafli** **stqgffvalf** **ycfln**sevrq
421 tlrhgftrwr esnrhrnss iknr/steevc iclrpsphtr lgslqryhsi ditdfv

V DH44 R2 PB-like (Genbank Ref # XP_032292526.1)

1 maedelqalv erlddasaen ianaianfsl emlqrasali gtqqphsgdi linrtledqc
61 kqqaeqqdal yssphlshtg idqyssskas adkptlycpt sfdsvlcwpr tsastwailp
121 cfeefkgvhy dttenatrfc hangtwnhys nysschqqlg svppvpdfsa svdlp**aiiya**
181 **ggyfisfatl** **vvaliiflsf** kdlrclr**nti** **hanlfltyit** **sallwiltlf** lqvittessq
241 **agcitolvimf** **qyfylnfsw** **mfveglylyt** **lvvqtfssen** isfvi**yalig** **wgcpalcilf**
301 **w**siakafash lenefngle iectwmr**esh** **idwifkcpas** **lailinlvfl** **irimwvlitk**
361 lr**sahtlet**r qyyka**skall** **vlipflgity** **llvltgpe**qg isr**nlfeamr** **afllstqgff**
421 **valfycflns** evrqtlrhrf irwresrnh rsslknr/st eecviclrps lhtrvgslkh
481 chsidltdfv