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UniRet90
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UniRef90_C5DEY7 UniRef90-W0T8U2 UniRef90-B0XXB1 UniRef90-F2S8X1
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DADDRPK ${ }^{\text {S }}$ LW
MDDDNRPK $\mathrm{T}_{\mathrm{S}}$ LW GlLKSM VETVSEEHKSLMWVLLKQL LDDDNRPKDSLW GILKSM MASFNGDMTKMTAPPF VL MDDRPKSSLW MDADDRPK $M D A$
$M E$
$M A$
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$E T$
$M$ ADNRPKVSLW GLLK S DAQAS SGTWSA S F MSPQSQSSKGSWTS

## Veatieetr

SLLW


STSASWTSFAK
$\qquad$ TGKDMTKMTLPVSFNEPTS
A

VSEENKSLIWII AVPAGOKSSWGSFIKQLAPGMDLS
 ASFNGDLS ${ }^{\prime}{ }^{A}$

|  |
| :---: |
|  | SFNGDL RPGTDLSR

EAVPSAQRSSWTSF
AVPAAAKSSWGPF
adnrpk SLw
 AVPPQSKGSWT SFLK

EGESVE
KSSWSSFLKSQVRLGMDL


H GS IIT
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SFSGDL
RPGMD
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## VETVSE

 NKNLIMWVQKSSWT
QRSSWTSF
AAQRSSWTSFLKSUAS
EAGVP RPGMD
■

ETVSEENKSLIWMLL

G

EM
VEELAEEHKSLIWYLVKQ D LGSVE
ETVMDSEQGS
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L L Y R C G E DME Y A DLLDD LDA A E
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LVEFSAYWTENTS LIVAPT
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$L$ L M F A D F F A H P D L F L K V V E L
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L L QKVAEPLE YA QL LDDKACR
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MLERVTDFMSHPELLIEAST
FLDKLS DYYYHADFL
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AEQDP
D $\square$ A A DRPDA SEAAVEENA
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KGKDE
SRAAVEEDA
LTEFPAYWCEHPDVFAA DADGL




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DAATEED
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oubry
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## QUERY

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F L GEWKDD
F GKWKDD $\qquad$
F IGGKWEDE
YEYARPDKGYR AGVTE


YEYVRPDKG
FRCCWFHPQTN
FEYCRPDKG
YEYARPDKGYR

YEYCRPDKKYR
F LGKWEDE
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F L GKWEDQ
FEYARPDKE
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FRCRWFHPQTD
F L G S WND
T

## A GVT E

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FRFFDEQVSHHPPDGAA WAESP

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FLGKWEDD
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F G GKWT DEPSKK

| FVGKWTDEPSKK |
| :--- |
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FL GK WEDE SHTFYIA E
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FFDEQVSHHPPVGAAWAESPN


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Y E LVREDKG
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FRCRYDYPDG SRGFY $\quad$ AE

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$\underset{F}{F} \mathrm{~V}$ GKWESDDTH GEAVCLSE
$A G A T Q L V S E$

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| $P$ | $I$ | $G$ | $A$ | $A$ | $Y$ | $A$ | $E$ | $S$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $P$ | $R$ |  |  |  |  |  |  |  |  |
| $P$ | $V$ | $S$ | $A$ | $F$ | $Y$ | $V$ | $S$ | $N$ | $R$ |

R
 PITAYAIQNKTNK PVMTAYSATYNDKYR PVTAYADWNDKHG VRLAAMQAD SANWS PVSAFYVSNRKDG Q
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## QUERY

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 Y S S


## QUERY

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UniRef90_J7S2U3
UniRef90-G8BSD5
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I K PSGTLVGDKEDKKEHSAA HWRFKRELDWDSEKEIK
 EPDKTGG $\square$ WRFDKEKAR
 EPEKTGG $\square$ WRFDEAKARA

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P D A G \(\square \mathrm{E}\)
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PNAVWEGVAPDK K TVAGVWRYDDKKAAEA LSKRLGSESVPDDKDKTNGUWMFDAEKAREAK
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GDSDKTGGLWRFDKAKAEKAKDLK L

PGSGHKRPGPDKASDQPSGH

QS F E WP G VE

[^1]

| UniRef90_S4A8X0 | ${ }^{50} \text { YADLLDD SAA }{ }^{60}$ | $\text { KATS }{ }^{80}$ |
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| UniRefofo-J3QE99 |  |  |
| UniRef90-J7RRM4 | MLQRVTEDGEYSNLLSKASTFPDSTL |  |
| UniRef90-V5FLO6 | MLERITNFMAHPETLLP TSTl | $\begin{array}{ll}\text { D } & \text { P } \\ 0 & \text { P } \\ 0\end{array}$ |
| UniRef90-F2TLV9 UniRet90 V2YNZ8 | MLERITNFMAHPETLLPMPAD |  |
| UniRef90 S2KDNO | LLEYGTY WGDHPSTFTAA | NDAEKT |
| UniRef90-W0VLE4 | LLQRVAEDLEYTDLLDMAASF | D D |
| UniRet90-K1WVF6 | 11 EYSAYWNESPSLLVA | EPNP |
| UniRef90-C5DIY5 | LLQRVAEDLEYSNLLTEGAGFEDSTL |  |
| UniRef90-GOWEV8 | MLERITNQLQFPDL | LDAHSESNE |
| UniRet90-E9COV0 | LEMYADFMAHPDIFVGVAQL |  |
| UniRef90-L8WH30 | EFPAYWSERPELFSA Pad $^{\text {a }}$ | KTE |
| UniRef90-C5DGL9 | MLERTN NLQFPDL | LEAHQEKDD |
| UniRef90 UPIOOO3318B9E UniRet90 M1WFD8 |  |  |
| UniRef90-B4NI39 | QRLVEDYEYADILDI |  |
| UniRef90-U4TVE3 | LLEMYADYFAHPDLFTC | K D |
| UniRef90-F9WW80 | QRLAESMEYANLLDEAAAARSEER |  |
| UniReforo-MosGio | SLQKCFEDLEYSYLIDR | YEWGKKGNG |
| UniRef90-F78CZ8 | LLEMFANFMAHPDLFLSİA |  |
| UniRef90-6ND73 |  | SEPDP |
| UniRef90 C4XXZ4 | QRLAEDIDENDLGNKAASTPDSTL | SEPDP |
| UniRef90-A3LZ99 | MLERITNFFQ\PQ1 | LEANATTDD |
| UniRef90-A0A034V755 | MLQRLTEDYEYADLLDAAARC |  |
| UniRef90-O9BXB4 | LLEMYADFMSHPDLFDADTNG | A T A |
| UniRet90-V5HS10 |  |  |
| UniRef90-R1G5.J9 | MLERITNFMAHPETLLPMPT四ED |  |
| UniRet90-E3S4X1 | TVEDPQYWADHPYLWASPA | S E E D P |
| UniRet90-W8AR42 | FLDKLSDSYYHADLL | SRAVTEDDP |
| UniRef90-A0A024JE | MLERITNQLQHPGIL | LDAHATKDP |
| UniRef90-W9Y415 | MLERITNFMAHPDTLLPMPEVED |  |
| UniRef90-b6K2S0 | MLERTINFMSHPGLCFPLS | SEPDP |
| UniRef90-S4AAS2 | LLQRLVEDFEYASMLDRAS | ASDNP |
| UniRef90-H3CZR7 UniRef90 E3QZX8 | LQRLSEELEEYTDLLDIUANHDED | T ${ }^{\text {P }}$ |
| UniRef90-L2FK80 | MLERTTNFMCHPEMLLPTPET | D D P |
| UniRef90-Q6BWJ4 | LLQRLAEDIIEYSTLLDKAAQIDDSTL |  |
| UniRe | ML QRMAEDMEFS | CLDAAVNERDP |
| UniRef90 N1PXJ4 | TEFPRYWDEQPEL |  |
| UniRet90-R72244 | MLERTINFMAHPELMLDPMPKLQD | P |
| UniRef90-H2YQU0 | LLEMYADFFAHPDLFV | EVGEKETA |
| UniRet90-M1WAW0 | MLERITNFMCHPEM |  |
| UniRef90-C3ZKD7 | FLDKLSDYYYHADLLSDAVTMTKSSVL | $\square S A \nabla N \square D{ }^{\text {¢ }}$ |
| UniRef90 G3NKB9 | LLEMYANFMAHPD |  |
| UniRef90-G2WRH1 | MLQRDAEQLEYSQLLDAAV | QQKTA |
| UniRef90-H3AQPO | LLEMYADFMSHPEL |  |
| UniRef90 J3PFD8 | MLEERUTNFMSHPEMLLP | D |
| UniRef90-U5HHW9 UniRef90-S8AFJ3 | LCCEFPSYWGEPTQQFAA | AK D $\mathrm{D}^{\text {P }}$ P |
| UniRef90-H3DCN8 | FLQRLSEYMEHTHLIHQANTMTDS |  |
| UniRet90-H6BX | EFPCYWAERPALFTAP | EPSP |
| UniRef90-H3BB08 | MLQRLTEDLEYHELLDKAAKC |  |
| UniRef90-S9x0V2 | MLERITNFMSHPDFLLPVPHV | S A |
| UniRef90-U4LEG1 1 |  | $\square A A D R A D P$ |
| UniRef90-A8PY59 | FLEKLADFYYHSYVIAEAA | AEDDP |
| UniRef90-UPIO004438926 | mLQrLTEDLEYHQLLDRAVHC |  |
| UniRef90 K7VGZ22 | SLQKCFEELEYSYLLDRA | YECGLLRGNG |
| UniRef90-AOAO59] UniRef90 A5DJF2 | SLQRCYEDFEYSCLVDQA | W WGKQGND |
| UniRet90-13JTP2 | FLQRLTEYMEHTYLIHQA | NATTDS |
| UniRef90-Q758V4 | MLERITNQLQYPNI | LDAHAEKDE |
| UniRef90-M3J381 | MLERITNFFQDPYLLIE | NTKD |
|  | A ELPAFWAERPSVFAPAKC | EDP |
| UniRef90-E5RZP1 | FLEKLADYYY HADLL | EAKENDP |
| UniRef90-K7KN29 | SLQKCFEDFEYSFLLDRA | EYGKSGNS |
| UniRef90-UP1000359FC8E | MLQRLCEELEYSELLDKAADY | D D ${ }^{\text {P }}$ |
| UniRef90-T1EDS4 | LLL EKYSDFL MSHPDL | QSTA |
| UniRef90 S2JH45 | MVQRIVEYMEYANLLKLAD | KTS ${ }^{\text {d }}$ |
| UniRef90-W2SXJ2 | LLEMYADFFAHPDAFVITV | ESP |
| UniRef90-F7F973 | MLQRLTEDLEYHELLDKAVKC | ENS |
| UniRet90_W9XJP5 | VELPA Y WAERPSVEIJA A | SSDD |
| UniRef90-H2M9X6 UniRef90 J4GB29 |  | P D P |
| UniRef90-J4GB29 UniRef90 V7AVY1 | SLQKCFEDVEYS Y L | EWGKMGDG |
| UniRef90-L1 J9B9 | FLEKCSDFMAHGRLIQD | SDP |
| UniRet90-K5W955 | MLERTTDFMAHPDLLFGAEKCN |  |
| UniRef90-G3APU5 | LLQRLSEDITEYCSLLDTACTYDDSTL |  |
| UniRef90-S2JXI6 | LEYSSFWADQPGLL | SAVGKSDNA |
| UniRef90 ${ }^{\text {W }}$ W9XN46 | VEMPAYWAERPAVFVAPS |  |
| UniRef90-M8CAJ4 | SLQKCFEDLEYSHLLDRA | Y ${ }^{\text {P G L K GNS }}$ |
| UniRef90_JT210 | LTEFPAYWCEHPELFAA |  |
| UniRef90_M5G5V8 | MLQ R M A E D M F F S E | CLID A A V]R E S D P |




## UniRef90 S4A8X0

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UniRef90_F7BCZ8 UniRef90-16ND73 UniRef90-FoXUZ4 UniRef90-C4XXZ4
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UniRef9O-G8YGSO UniRef90-G3NKB9 UniRef90-G2WRH1 UniRet90_H3AQPO UniRef90-J3PFD8 UniRef90-U5HHW9 UniRef90-S8AFJ3
UniRef90-H3DCN8 UniRef90-H6BXT1 UniRef90-H3BB08 UniRef90-S9XOV2 UniRef90-U4LEG11 UniRef90-A8PY59 UniRef90_UPIOOO4438926 UniRef90_K7VGZ2 UniRef90-A0A059D7P4 UniRef90-A5DJF2 UniRef90-13JTP2 UniRef90-Q758V4 UniRet90_M3J381 UniRef90-W9VS28
 UniRef90-E5RZP1 UniRef90-K7KN29 UniRef90-UP1000359FC8E UniRef90-T1EDS4 UniRef90_S2JH45 UniRef90-R7UWO1 UniRef90-W2SXJ2 UniRef90-F7F973 UniRef90-W9XJP5
UniRef90_H2M9X6 UniRef90-J4GB29 UniRef90-V7AVY1 UniRef90-K5W955 UniRef90_G3APU5 UniRef90-S2JX16 UniRef90-UP1000359F6CA UniRef90-W9XN46 UniRef90-M8CAJ4 UniRef90_J5T210
UniRef90_M5G5V8 755



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## V

180 $\square P$ VT H TT F 190

200 VSYQGDFGMISKFRGKYLQ/ VKQVGHKLPDNTGDHYTWRK WSYQGHCGQKTSFSGK SVIVKQVGHKLPDNTIESYLITM WDYYGETNVYSKFTGRSFVIKHLGRWFVTMRPEVYTYKK WRVDGTLKPRSKFLGNSAASMMEGINRGEPGKGERYIVTQ WNYYGEVDAQNKFMKSFETRPTGVAHAEKGKVIEHYTWKK WDFWGESNVDTKF NGRSFGUKHHGLWYIKMRPE VYTWKK VRDAGHVAPKASFSTTVNDDRQGYSI DHLDKFNEDYFDTM WDFWGESCVDSNF NGRSFEVEHLGLWYLRGRPEDYTWKK FCLSGSVTARSKFYGNS WE YWGESAVRSKFYGK
$\stackrel{S}{\mathrm{~S}}$

\section*{| 1 | $R$ |
| :--- | :--- |
| $I$ | $R$ |
| $F$ |  |
| $I$ |  |
| 1 | $R$ |
| $I$ | $A$ |
| $V$ |  |} FWQDQRWKNKFWGKSVEIISSGLVNVTLPRYGDHYEWNK VHLEGFNAQKATFSRT INIKQUGHAVLSLKTETYLTTL VRVDGTLKPRSKFLGNSAASMMEGNRGQDKAKGERYILTQ WDYYGENAVVSAFMKGRSFDVKHLLGKMFCVIRPELIYSWKK WHYYGEVDAQNKFMKSFEDRPTGVAHAELLLPEEHYTWKK WKMWGDTNLKSKFWGPSIQLLDPVGVLNLEFDDGEVFQWSK WKMWGDTNLK SKFWGPSIQLDPVGVLNLEFDDGEVFQWSK FCLNGSLLCKSKFYGNSSALLMGGACLTLLNRGED WDY

$M \mathrm{C}$
CV KGRSFDVKGGKMFCTVRPELV FS OSP VWTKS MCVNAHDWTKSKFMGMSVVSMEGEGLLCVSEHGE
RRVDGTLKPRSKFDGNSAASLMEGNRGQDPSRGE
VRTDGTLKPRSRFDGNSAASMMEGVNKGEPGVGEKYVLNQ FVFHGSIYPKLKFWKSIEAEPRGVITLEDPKYNEAYTWTN
 WDYWGESAVKSKFYGK SFDINPLGTWFLRLRPELVYWKK
SLWQETTIASKFRGKYISTMPLGAIHLEFQASGNHYWWRK FNISSTILAKSKYYGNSSAMMMGDVR1TLLQRGETYIATL TLWQEDTLSSKFRGKYLS MMPLGAIHLEFQASGNHYVWRK WKFWGDSNLKSKFWGQSIRLDPNGVLTLEFDDGETFQWSK WKFWADSNLKGKFWGRSIQLDPVGILTLQFEDGEMFQWSK DRVDGTVIPVSKFLGNSSAMMQGWGHVTGEWGNEVYDMNQ
$F V F H G S I Y P K L K F W K S T E A E P K G V I T L E L P K Y N E A Y T W T N ~$ IRVDGVVIPKSRFLGNSSAAMEGWGYVTGRWDSEVYTVTQ VAAEGYTRQEITFSGSDNDQQDGHATLHLAQQDETYLIPQ RLWQEDTVSSKFRGKYLSIIPLGTDHCEFPSSGNHYTWKK WKFWADSNARSKFWGRSIQLDPVGVLTLEFDDGEDFQWSK L WQDVRMKTKFWGKSMEVQPLGHVHVILPKYRDHYKWNK SVGGEAHPKAKFLGNSAATVMKGYTRVVFLNNETFELSN
YEFSGSVLPKLKFWKSVEVTPKGIVTLHLKRHNETFSWQN YEFSGSVLPKLKFWKSVEVTPKGIVTVHLKRHNETFSWQN ISFHAHIYTKSSFLGLSIVANMGCGTVILHDYNEQYTVTF VSAEGYTRQEDGFSGSMT RQLGHATLHRARHDETYLIPL
 WKFWGDVSLKSKFWGRSIQLDPVGVLTVEFDDGEDIHWSK
俍 MKMNASDYTKSKFMGMSIGVVMGKIHLRLESHDEDYVFGL VSAEGYTRQETTFTNTMNINQMGHATFHLARHNETYLTPL


## UniRef90 S4A8X0

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210
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EMEINHTTKER
VTTTVHNII VGKLWIIDQHGEMEINHTTKERCSMKYYAYSY PKDRIEGLWMASPYIELTENSHI QSSSGYHTVMEFKGKGY PQNTVIGLLVGKPEVDNSGEVRIDNTTGDYCUMNYKARGW PNMYARGLLWGKMKYELGDHSYVRCENNLSADI EFRTKGY VTTSVSGFI LGSPTMDHYGDMIINHRTKDTCDLTFKPRGW PDNTVDGIVGGPQVDNHGEVVVNHTTGDRCLINFKARGW

PNMYVRG FGKMRIELGDHMLIKGPNGKIDDLEFKTKGF
PSAYARS LS TTPWVELASKTTLTCRTGFSATI DFHAKPT
 PYAHCRGULYGALSLELGGRVTVECOTRLRADLEFKLKPF VTSTVNG I VGKLWVDQHGEMEEVGTNGDKCLENYNPYSY ATCFRRNVAGEKYVEPVQTMTVQNTNGMRAVATFKAGGM VTTSIMNLELGKLYCDHYGTMR|OGNHEYSCKLKFKEQSIV PENSVIGI LTGKPEI DNHGDVTINHTTGDYCLLHFKARGW
 PNVYVRGLEGKMKTELGDHMYVKCKTGYEADIEFKTKGF PCAYARSVLTVVPWVELGGKVSVNCKTGYSASITFHTKPF ATCFRRNI AGEKYVEPVGEMVVNETTGQKTVSTFKAGGM PNNQVVGLLGNPQVDNYGDVKINHNTGDYCMIHFKARGW PNDKVKGLLGGTPHPELDGEYSLDSSNGYDSHMKFEGKSF PYAHCKGLEVGTLSMELGGKVNIECNTGYKTELEFKGKPF

## 



 PNMYARGULFGKMKYELGDHSFVRCEDDLVADVDFKTKGW VNTSVVGFILGNPTIDNHGGEMVITNRTKDRCIVLTFKPRGW PNVKVQGISGSPYPELTGSHS ISSTGWVAEVDFSGKSL PNMYARGLEGKMKYELGDHAY:R

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## UniRef90 S4A8X0

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UniRef90 A3LZ99 UniRef90 ${ }^{\text {A0 }}$-A03 4 V 755 UniRef90-Q9BXB4 UniRef90-V5HS10 UniRef90-Q6CUK7 UniRef90-R1G5J9 UniRef90-E3S4X1 UniRef90-W8AR42 UniRef90-A0A024JEC8 UniRef90-W9Y415 UniRef90-UPIO001A61CEE UniRef90-B6K2S0 UniRef90_S4AAS2 UniRef90-H3CZR7
UniRef90 E3QZX8 UniRef90-L2FK80 UniRef90-Q6BWJ4 UniRef90-R7SOZO UniRef90-R7Z2Z4 UniRef90-K4DCD8 UniRef90-H2YQUO UniRef90 C3ZKD7 UniRef90-G8YGSO UniRef90-G3NKB9 UniRef90-G2WRH1 UniRef90-H3AQP0
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UniRef90_W2SXJ2 UniRef90-F7F973 UniRef90-W9XJP5 UniRef90-H2M9X6 UniRet90-J4GB29 UniRef90-L1 I9B9 UniRef90-K5W955 UniRef90-G3APU5 UniRef90_S2JX16 UniRef90-UPIO00359F6CA UniRef90-W9XN46 UniRef90-M8CAJ4 UniRef90_J5T210
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PVYTTGEYKVAWRRRPAPPESEKYYNFTELACQPTDSRRR WAD KTDPELFIDVNADEDIKKQVRP KRSKPPKCPTRYNLTRFAMTMNELTPGLKEKLDSTDSRLR YSN KGPAKSQDLEFTSYTPEKPTTPLIVEPDEAQHPLESRRAWA NDKTNKKEVFYDTKKTVTHRPKVRPLEEQWDYESRKLWK EAKTGEETVLFKADADTKHKRRYVVPLDAQLDP ESERLWE VSNRLVEEAKKHYGLTKRAASKNEVTPLENGDRFESRRLWK VWHVNERPEFPFNLTKFAVTLNAPQPHLLPWLPPTDTRLR
 NL QTQKKTVLFDAQTAKPYLPLVRPIEEQGELESRRLWQ  NVKTQ EVTPFLDTNDLVVAADSTRPLDEQGERESRRLWF PVDQPKRTIELWKVVPRRSNFSMQLNELEPGGCPTDSRLR PNAQPEDHFDYYGFSRYARELNELTPELEAVLPPTDTRFR EGSSKHNSSKTYDAAEQPTSKLIVAPGDKQHPLESRRAWK KWQAAPRPKVPFNLTSFADTLNGLDNNLKRYLPPTDTRLR QPSHSTEYILDWRNSEKPKAPFNLTPFADTLNCPTDCRLR
 Y SSGVSWNRTQLVFKFVTITRKLVRKDELGGLDESRRLDR
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GKNSS
SEVFLDTKNMPIIKKQVKPVDQQEDFE ALDPRPVDSEEYYAFTLFAMMLNELPDSLRSQLAPTDSRLR PA YGDEYLFDDVRAQPEMKKECVPVMQQSERESRRLWR KIVQSSHSRLLWKKYPGPENAENMYFFPEEGDVATDSRWR DARKGVHVETF DVRSSTTTPLTVDPLPDQDPWESRVAWR PNPQPKDYLDYYGFSTF PKEEVTVKNVDDMDDWE KRSPPPEYQTRYNFTQFAITTLNEITPGLKEKLPPTDSRUR DKKTGASNVELDVEAEKQKSFMNVDPEDKQKYYESRRVWS NSRTGQKRVLFDAVRDQKVCPKWVPPEEEQEPNESRRLWH KWQAAPRPKVPFNLTAFAVTLNGIDDNLKPYLAPTDSRLR

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$P D Q R C L E N G Q H E M A N S E K L R L E Q R R Q A R K M Q E K G G W K$ QVTRGLKTQNLDFATEHKTKLEDGQRAGKKERDERGQAWQ
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EA YYFKYEKEYNQE LLSKQH

G Q K G NWK D VEA $\square$ F VDEP DAGAWTYNK
$\square K G L K G R G \square R G D M D M A H G V W M W D E E K Y R S V Q E$ $\square L P G Q K F T E K F Q \square P A$ LP GQKFTEKFEVPGQ HKRASSEQRVRKVSDQPSGH

H S A
$P \square G S A A G \square S A N G D C D K T G G \square W R F D S A K A A A V R Q$
$\square S \quad \square L G \quad$ PHDDEKSDSSG

KTGDYKGDSDTREQNAPSQH
 Q T

P
$Q G \square E D E S T C G V W R F S S D A A$

ASYKFKGPDEA
$\square R G T N G C W R F D K E K E \quad R R W K E G R G S W R P$

PSSTSVHQEQSEDSDSPG
PSG
PGQSPKGE


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\square \mathrm{P} \text { GQK F HQDFD } \square \mathrm{PA}
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 $M L E R I T N L L Q R P S S L L$
$M L Q R M A E D M E F T E$ $\qquad$
LL L E A NHT
$M L$ E R M T N N F F Q AP D L L L

$M$ L E R I G N A F F T P Q L L

AL QRFAE D I E Y S YLLLDMAA
L L Q R VA E Q L E Y A Q I L D T A S S H K N P S Y

LTEFPSYMAERPSLLT AAA H
$\begin{array}{ll}L \\ M & T \\ M & \text { R P S Y M M A E R P S L F T A A A A H } \\ \text { L }\end{array}$
TLLQHMCE ELLEYTEELLDKAAET
FLD K L A D S YY HAD I L S K A V
M L
M L
LERDT NQ 1 HP
L L QAAA E EYEYADLLDRAGKCEDWV
V L Q R ${ }^{\text {S }}$ Q S E D L E Y S H L L D T A A E C
SLLQKCFE DFE Y S YLLLD QA
MLE R IT N QL Q F P DV L
$\left.\begin{array}{ll|llllllllllllllll}F & L & D & K & L & S & D & Y & Y & Y & H & C & D & L & L & S & K & A\end{array}\right]$
VLQRDSEDLEYSYLL LA A E






| $L L$ | $Y$ | $R$ | $V$ | $V$ | $E$ | $D$ | $M$ | $E$ | $Y$ | $T$ | $N$ | $L$ | $L$ | $N$ | $D$ | $A$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |


MLSKLSSDHYHHAD
MLQRLT EDFEYAHLLHKAATTDDSCN
FL QRLTEDLEYSEI LDRAAAC

ML QRLVEDYEYA DI LDDIAASCNDE
LL E MYADFFSHTD I F L L N $\square A D G Q$
ML QRMAEDMEFSE
LLEMYADFMANPMAW
ML QRLT ED YEYSS ILDD QAATF
F L D K L S D Y Y Y H A D FL

| $M$ | $L$ | $E$ | $R$ | $V$ | $T$ | $D$ | $F$ | $H$ | $S$ | $H$ | $P$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $M$ | $L$ | $L$ | $H$ | $G$ | $V$ |  |  |  |  |  |  |
| $M$ | $Q$ | $L$ | $A$ | $E$ | $Q$ | $M$ | $E$ | $Y$ | $S$ | $E$ | $T$ |

$\begin{array}{lllllllllllll}F & L & Q & R & I & T & E & F & M & E & H & T & Y \\ L & M & I \\ L & Q & R & L & C & E & E & L & E & Y & S & E & L \\ L\end{array}$
LL E Y S S Y WA D Q P D
A L Q K Y A E V I E Y P E L I T N A LTTHFS D Q
ML E R $\quad$ T N F FQQ $\square P \mathrm{~K} L \mathrm{~L} L$
$T L Q R L C E E L E Y S E L L D B A A H T$



| $T$ | $L$ | $Q$ | $R$ | $L$ | $C$ | $E$ | $E$ | $L$ | $E$ | $Y$ | $S$ | $E$ | $L$ | $L$ | $D$ | $K$ | $A$ | $S$ | $Q$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $T$ | $L$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $Q$ | $H$ | $L$ | $C$ | $E$ | $E$ | $L$ | $E$ | $Y$ | $S$ | $E$ | $L$ | $L$ | $D$ | $K$ | $A$ | $A$ | $E$ | $T$ |  |

F L G K L S D Y Y Y H G D L L
MLQRLLTEDFEYS DL L DKAAQCDDSC
$M L Q R L T E D D L E Y H H L L D B A V B C$
FLEKLADSYYHADLLSQAV
F L Q RLCEE LEYSELL
LL E M F A D F FA H P D SFC Q $\square$ A D M
LL QRCA E D LEEYSNMLDKANECDDD
MLERDTE FMSHPDLV F GA
$T L Q R L C E E E L E Y S E E L L D K A A H \square$
ML QRMAEDMEFSE
AL QRLCEELEYSELLDQASRT
$M L Q R L A E Q M E Y S Q T L D D A N A T D D T C L A$
$V V E N P G S W A Q R P C L F T A P T N$
FLQRLTEYMEHTYLIHOA
MLQ QRLTEDLEYHELLDRAAKC

$M L Q R M C E D I E Y$ DDLLSLASRTGNASL
VLQRLLCE ELE Y S ELLLDKAAS L
SLLQKCFE DLE YS QLL DRA
T L Q R R L C E E L L E Y S E LL L
A L Q RLLA E QL E Y S ELLLDAADT
F L Q R MA E D I E Y S E L L D R A S E T E D

R S D S
DEGAEKADS
KATSS
LAEKHP
AEDD $\underset{P}{P}$
RTDS
K T P
$\begin{array}{ll}\text { A } S P \\ A & P\end{array}$
QPTP
S R A A L E G S A
D V A A K D R A
$C L D V A A K D R D A$
D D P
QK D P
E P D A

LKVGD S N N D P
SEAA LEE N N
D K $\square E S P$
T D P
DTANNTADP
$Y$ LA D A GHGVTE
$\square$ D S N S $\square E D P$
P N P
K K D
ATDDP
D A C LTTVAASEK D S

| D D |
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| D |
| D |

SRAAAEDDP
T S S

EQEEDP
C LD S A CAE T S A A
$E \square D P$
NA A
ATDS
E NS
T D E
D D P
REYGQK GN R
DTANQTQQP
VP A E T


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UniRef90-H3DJU4

170
190
200
CWQEFTMSSKFRGKY LQV 180 PGEYHLEFD GS GNHY T WRK

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 L S V N A Hi WT K S K F L G L S I V E M I G Q G C L S DL K K H D E E Y M V T F I R A D G V I I P R S K F L G N S S A A M M G V A Y V $\operatorname{C}$ T L G E H D E V Y S





 VHA E A Y S T Q H T S L S G T S I L I R Q G HI V LT V D K Y D E T Y L L P L WK YF GET DAKNRFTKS FEI KPTGGVAHATLKKLPDE HYSWK K F WQDVRWKNKFWGKSME LDPDGIVNVMLPSYGDHYE WNK FCDS C S I LA K S K F Y N S T S Ai L E GV AT LT L LP R GESY T LTV

 VH QDFTMTSRFRGKY LSVI P IGYSHVKF LH QKNEYSFKK WKFWGDSNVKS K F WG Q S I QV D PVGGVLDTVEFDDGEDFK WS K $\square R V D G V C I P K S R F L G N S S A A M M E G L T Q L Q F L D P E R Y T L S Q$
 L WTYY GESSMTS R R F R GK Y L S S V T P P V G G Y T Y V VK F F L D S G N E Y S Y K K
 WSYYGESSVRAKFYGK SFDINPDGTWFLKLHPELYTWKK $F N \square A G T \| L A K S K Y Y G N S S A M M L G S \square R I V L L A R G E T Y T V T L$ VF WQDVRCKNK FWGKSME IVVPVGTTHVVTLDRFGDHY E WN K WKYY GESSVKSKFYGK SFEFNPDGTWFCHDKPDLYT WK K $\square Q V S G H \quad D W T K S K E \quad L G L S D G V E M V G S A T V V L P G E E Y V V T F$





 L CWQEFSMTSKFRGKYLQVNPLGGAYVLFPKTGHRYSWRK IS M N T H I WT K S K F Y GMSVGVVVNVGE GVI NPLHDEEYVLT F
 QCWQEFTMTTKFRGKY LQQVVPLGGAYAQFTDSGNKYTWRK


 $V S D T V N D A Q K T K F S T Q M L V D Q Q G Y C M M L E M R Q H G E K Y$ L L K Y A L S P T QK F WGK H S ELLT T K G TV M L T D KA T GE V F T WT H
 Y S H WTYDAV K Y K QHFWGK SVELA TDGCVLLRRLGGDVY S YRK WKYYGEVVDAQNKFQRSEEMVRMTGVAHYGPGLVKEHYSWKK








 WLYY GEVVA QN K F MK S F E I RPTGGAHHTVGRVVEHYSWKK

 FVFFHGSIYPKLK FWK SIEAEPKGTVTLELPKYNEAYTWTN


 WELDWGDSTLLKSKFWGRS DQLDPVVGVLTVQFDDGETFQWSK F WQDVRWKNKFWGKSMEIVPM GT THVVTDPAFGBHYEWNK


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## UniRef90 E9GAAO

 UniRef90-UPIO00329F6D7 UniRef90-G7EOD3 UniRef90-B4JSKO UniRef90-M3AG03 UniRef90_UPIO003FODF77 UniRef90-C4Y9N5 UniRef90-H2AUE6 UniRef90-14Y8R7 UniRef90-F1D919 UniRef90-A7TJU7 UniRef90-G3B5T8 UniRef90-H3DJU4 UniRef90-UP10001FE4FDE UniRef90_S3D6S1UniRef90 Q9uUA1 UniRef90-C5MAX1 UniRef90-WMXSN7 UniRef90-F4S7W6 UniRef90-W5UE87 UniRef90-T1EAP5
UniRef90_L8WIP7 UniRef90-W1QIJ7 UniRef90-R9P7B7 UniRef90-F1KXT2
UniRef90
W5HMNS UniRef90-A7TSJ5 UniRef90-T1JT55 UniRef90-F4PRN8 UniRef90-G5EHN6 UniRef90-F7VQB2 UniRef90-F2U322 UniRef90_V9DGX4 UniRef90_G1XJB4 UniRef90-U1MEG9 UniRef90-UPIooo3b53A31 UniRef90-M3ALP6 UniRef90-U6HMR5
UniRef90 $\cup 6 \mathrm{HX} 85$ UniRef90-UPIO0046C222E UniRef90-G6DOR3 UniRef9O-UPIOOO2C4572B UniRef90-D8PY93 UniRef90-B3S1 $\times 6$ UniRef90_L9KR97 UniRefto -G1XAS5 UniRef90-T2M6M8 UniRef90-G4TU17 UniRef90-E9CAU8 UniRef90-G6CM74 UniRef90-UPI00034F3DFD UniRef90-U5HDJ6 UniRef90-Q245K3 UniRef90-F6PJS9 UniRef90-H2U4M1 UniRef90-G3AH63 UniRef90-Q9UW21 UniRefot--F1NN82 UniRef90_G4TCY3 UniRef90-J9VU20 UniRef90-UPIO004573466 UniRet90_G1NB13 UniRef90-Q6ZPN6
UniRef90-UP10001CBA369 UniRef90-UP10003EC68FD UniRef90-UP100022C912A
UniRef90-W5N787 UniRef90-UPIO0035946A6 UniRef90_O13944 UniRef90_S8DZT2 UniRef90-UPIOOO46BC415 UniRet90_S8DR23 UniRef90 UPIOOO4433C19 UniRef90-G0QKA6 UniRef90-A0A016P8R7 UniRef90 H2MR02 UniRef90-S9WE30
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UniRef90_G4VD9

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## D

4F3DFD

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220
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240
 VTSTVHN: VGKLWIDQSGDTDINTTTKDTCRLKFSPYSY PYAHCKGILMGTLSMELGGKINIECNTGYKTELEFKLKPF PSLHDEGLIFGAPFVELDGSTYI SSSSGYTAKI DYSGKGW PNIYARGLLFGKMKYELGDHAVVRCETGLEADVEFKVKGW PNGYCRGALFGKLRYEMGOKMSIKCKTGLASADVVFKTKPF VTMAVTGFITGSPVDDHFGDMVVNHRTGESCTLTFKARPW PSGYCRSGLTVPWVELGGETRVTSSAGYEADVEFKTKGF

 PNVYARGILFGKMRLELGDHMVVTNSTGGKANVEFKQKGM PDVCARGVLSGVP WPELDDTYKIVSSSGFTAGMRFTGKRF VTTIVSNFILGSPSDDHYGDMEI NHRTGEKCILTFKPRGW VTTCVHNLLSGRRWLEHYGEVT:RNSSACWCKLTFTKGNY VTTNVSGFIVGQPTDDHYGDMMVNHRTGDTCLLTFKPRGW PSSFMRNLLAGNKYLEHVGELTVTNSTGQRAVIEFKEGTM VTTTVHNIVGKLWDDHGEMVINHTTGDKCFLKFHPYSY VTTTINNLILGKLYCNHHGIMH: KGNRQYSCKLKFKEPSL


$\stackrel{y}{\mathrm{~V}}$

UniRef90 E9GAAO UniRef90-UPI000329F6D7 UniRef90-G7EOD3 UniRet90-B4JSKO UniRef90-M1W3B2 UniRef90_UPIO003FODF77 UniRef90_C4Y9N5 UniRef90-H2AUE6 UniRef90-14Y8R7 UniRef90-F1D919 UniRef90-E4WZX5 UniRef90-A7TJU7
UniRet90 G3B5T8
UniRef90-G3B5T8
UniRef90 H3DJU4 UniRef90-UP10001FE4FDE UniRef90_S3D6S1 UniRef90-Q9UUA1 UniRef90-C5MAX1 UniRef90-W9XSN7 UniRef90-F4S7W6 UniRef90-W5UE87 UniRef90-T1EAP5 UniRef90-L8WIP7
UniRef90-W1QIJ7 UniRef90-W1QU7
UniRef90
R9P7B7 UniRef90 F1KXT2 UniRef90-W5HMN9 UniRef90-A7TSJ5 UniRef90 T1JT55 UniRef90-F4PRN8 UniRef90-G5EHN6 UniRef90-A8P5L2 UniRet90_F7VQB2 UniRef90-F2U322 UniRef90_V9DGX4 UniRef90_G1XJB4 UniRef90-U1MEG9 UniRef90_UPIo003B53A31 UniRef90-M3ALP6 UniRef90_U6HMR5 UniRef90-U6HX85 UniRef90-UPI00046C222E UniRef90 G6DOR3 UniRef90-UPIO002C4572B UniRef90-D8PY93 UniRef90-T1KGW1 UniRef90-B3S1X6 UniRef90-L9KR97 UniRef90- B4JRV4 UniRef90-T2M6M8
UniReffo-G4TU17
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UniRef90-UPI00034F3DFD UniRef90-U5HDJ6 UniRef90_Q245K3 UniRef90_-F6PJS9 UniRef90-H2U4M1 UniRef90-G3AH63 UniRef90-Q9UW21 UniRef90-F1NN82 UniRet90-LOPGF2 UniRef90_G4TCY3 UniRef90-J9VU20 UniRef90-UPIO004573466 UniRef90 G1NB13 UniRef90-Q6ZPN6 UniRef90-UP10001CBA369 UniRef90_UPI0003EC68FD UniRef90-UP100022C912A UniRef90-W5N787 UniRef90-UPI00035946A6 UniRef90_O13944 UniRef90_S8DZT2 UniRef90-UPIO0046BC415 UniRef90-S8DR23 UniRef90_UPIO004433C19 UniRef90-G0QKA6 UniRef90-A0A016P8R7 UniRef90-H2MRO2 UniRef90-S9WE30 UniRef90-B4JRV6 UniRef90 ${ }^{-}$F4NUV3 UniRef90-UPIO0046C090C UniRet90-D8S445 UniRef90-H3BZ22 UniRef90-ROKGG7 UniRef90-M2XTR3
UniRef90 G4VD90

FSRETQRKVT ${ }^{250}$ GAVMTRD
FSREVPRKVTGVV
FGGTYNSLHGHAKE
GGGAD
LSGKKN
VGGTYNA AGY T LIDTLH

YGGSKHRTTAEV
RSGTYDALHGDI KDYTG
RGGMEKGQETKGFVEN
ПSGTYDAПEGSIIKEIETS QKQHK
MGGKMHKVSAQCF EPNKKKELFQLTGKWND乌IDIK


 DSGTYNSUAGKVLDKNGRVSTGEVLYKDSGKWDSEMSVE WGGERNMFEASTYR TADQARKSLFTVSGSWSSRFTIF RGKDANEVKGSVYDTSG
WSSNVNEVQGFVMDQEG
W KVVHRLFGKWHEGLYWR LGGNEYTNLLV DSGSYNVIEGQUKNTKT $\quad$ GEVLYELSGKWSEEMYIK FSREDPRKVTGLVDANSDSKGKVQWITQGTWDRSLDML LDRNPHLVQGFVE EVGDNDGKKASFLDGKWDESMYYW


FSREPPRKIAGFVKNP
TKSSAHLIGGKVLDAN
NELHSVRGEVKDKGAVSVCLGGRWNSKFYAR LSGTKNSFTASLW KEGEGSEKSPLYTAVGQWSDSFTIK RGAGAYEVKGRVVDKDGMQKWSMGGRWNDKGQGNDSAA: LGGGMNVVSGAll WNSSVNEVEGTVTV

 YGPAGASLT LDDADPP LGPAGASLTLQDALPP


FSGTKNTFQATVYH
KGDDRKHAFCSAE
KNGEAKWVVRGTWDDKIEIA YGNKQNY TFEVVNARGKAEQUICRGEGYWDGQUVFN FGGSYHELLCTV KAKEPAKAPFVKISGKWNEVLVAQ FSKDAQRKVTGVI FSGTYNADAGKIKGPKGEIG
FSDKGQ
FGKELHRVEGYDQDKN
WGSDGNKNE V TYGEMHHFKATVSHM FSGRSEGVVVKAFDHE ПYGTYDAI EGIIKDSET WNPNAHEIEGSVMDKTGNVVHRQKEGLFQUS FSGRSEELSVQAFSETGALVP WG SANVVNAAVYLK WG RGRDAFETKGNVK
WNSNVNEVEGTIMDQYGKTVAD WNSNVNEVQGVVIDQEG

V V HREG
FSRDDPRKVTGDV
TDAAGTAKYGGKVDVFIKEE
SDGAGKAKYVALSGTWDKKMEAA पG GAEQMNQVTGGTRLGKETLA\|IS WSPETNEVQGSVLDAAGNVVHRFGGLWHCDGYWDGQILIT YGSRKHRVVANIFF EPNEKKSFVTIDGEWNGVMY FK FSGRSEDVLVTVDRSNGEEDPKC FSGTYNAIIQGRVRAGTQDMG EVTGKWSEVMEYT FCGAVSCQPRKPKCASKMOWWDGHRTSIPKGETSKEKMSL RGKDAYEICGYVADVRGNVTYETAGRWNSQGQLHSDVKIIG WSTNSHEIEGTVFDKAGKAVRRLFGKWHESDYSSSTCIWR
 FRGKRNSFEARVYHK DQPKKICYKVSGVWSEGWKDT WDEKMDCFKVQPVVGENGGDARQRGH WEAEESRVMLWK FGREVQRSVKGVVYNRNN NGCGGGEIVGKVTDSRGQDRFED WSAKRHEVVGAVFDESG IDRNPHQVQGYVHNEGGD WSSSVNEI EGVVT FAGRSEEVSVTFDSTODSKGKVVHSIFGKWHESMFQG

## UniRef90 E9GAA0

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UniRef90-F4PRN8 UniRef90-G5EHN6 UniRef90-A8P5L2 UniRef90_F7VQB2 UniRef90-F2U322 UniRef90_V9DGX4 UniRef90_G1XJB4 UniRef90_U1MEG9
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UniRef90 L9KR97 UniRef90_G1XAS5 UniRef90-B4JRV4 UniRef90-T2M6M8 UniRef90_G4TU17 UniRef90_E9CAU8 UniRef90_G6CM74 UniRef90_UPIO0034F3DFD UniRef90_U5HDJ6 UniRef90-Q245K3 UniRef90-F6PJS9 UniRef90-H2U4M1 UniRef90_G3AH63 UniRef90-Q9UW21 UniRef90-F1NN82 UniRef90_LOPGF2 UniRet90-G4TCY3 UniRef90_UPIO004573466 UniRef90-G1NB13 UniRef90_Q6ZPN6 UniRef90_UPI0001CBA369 UniRef90_UPI0003EC68FD UniRef90_UPIO0022C912A UniRef90-W5N787 UniRef90_UPIO0035946A6 UniRef90_O13944 UniRef90_S8DZT2 UniRef90_UPIO0046BC415 UniRef90-S8DR23 UniRef90_UPIOOO4433C19 UniRef90-GOQKA6 UniRef90-A0A016P8R7 UniRef90_H2MR02 UniRef90-S9WE30 UniRef90-B4JRV6 UniRef90-F4NUV3 UniRef90_UPI00046C090C UniRef90_D8S445
UniRef90 H3BZ22 UniRef90-H3BZ22
UniRef90 R0KGG7 UniRef90-M2XTR3 UniRef90_G4VD90

RRVP P PDAE ${ }^{290}$ Y NFTELLAC 300
LNEMEEGLLAPTDSRKR KVYQTLPPK LLWKKYP RDG EKKVLFDAGKADVTPKSVSDEADQLDHESRKLWS KTGEETLLFKADAEMRSKRLTRYLVPMEKQLPTESERLWR EGSPKRNSPATYDAAGTAQSELKIAPVEKQYPDESRRAWA DLSTGQK ELLFDASHAKPSIPKSRPLEEQAPRESQKLWH WANGTTETFIDTTTMK TYKKKVKPUDQQGEFESRRLWK NSSG EKSVEYDTTNAVTHKPEVKPFEHQLPNESRKLWH NQKAEAPKTVLFNSHEHRPLKP VVRPLEEQGGYESRRLWK KWKNSEKPKLPFNLSPFAITLDDLPGDQKKWLPNTDCRLR D LNTGKKSVLI NTHKTlQVKPRVRPLEEQSEYESRRLWK GKVMVANKRPTSRKLVKSIA QQEPTWSRRLWK P PKFDGSKFMVWRANKRPEGPFNLTPQPKLLPWPTDTRLR
 KVDHPDYYDQFYNFTNFADTLNDVDEHLASRVCPTDSRLR
 RITQDHHTEVPFNLTAFALTLNGIDDNLKKWLAPTDTRLR NALGQKVEVFDLADRKNQPVPPSIRPLEKQSPWESRRAWG
 DTRSNEESLLFNATPEVRAKRRFTVPMESQGMNESERLWQ
 ANEMPPYAEDYYGFTYFAMSLNELSDDCKDVLAPTDSRLR KVIKDSDNKRMWTVNPPYPGCDKMYYFMEEGVAPTDSRLR EKNKPSPNPTRYNLSSFA TTLDELTPELQEKLPPTDSRLR YKEKHSKKTVLFDTHKSSPLKPLVRPLNEQGDYESRRLWK DKRTGQESILWEVTSDVRNARRHLVPLDSQEDFESEKMWR
 KVTNEVNTGENARFETDTPNRDWTINEPEEGVAPTDSRLR LTNDPTKAFLDWQANPRPTTFNHLDDNLKPWLAPTDSRFR SPETPKDKHVIWERTPPDPDFEQMYGFYERGCAMTDSRFR EGDAKRGKELTFKPSDDKLSRDNVAPDEEQDVVESRRAWS KSFSSTQAFLVWETHERPPAPFNLTPFARPHLCPTDTRLR HNGKKSLLWAPTKEVIKQRLPRYEIPLESQGDWESKKLWL
 WTDNGREGLFVDTEADP MKKQVRPRSQQLCNESRKRWR VDQVLGTTEVIDARMIKREPKWVRPVSFQAPEESQRLWT
 PSWYPSDSVHSCDEASQPRLKKRHTVLLEEQTELESERLWQ GPGSPSASSLWRNSEKPPRSPFNDTPFAKPYVCPTDCRRLR
NKRRSSKGKSVYE SVVFKKDWERVYPPPEHEKMYNDSRLDR KVIDPDPGEEYYNAKPPPTTQSTLSWQKNSLPPGRENMYR
 PVMRWKRRPVPPDADKFYNFTTLACQLNEPEEGPTDSRLR Y S SPNSKNGESRDVASDPVTKKMVRKIEKQSEFESRKLWQ RTGNHTADLLPFNLTPFAITLNDCPDTLKKYLPPTDCRLR YTG AKEAPYFDAAKAlKVNKSVRALDVQAPFESRRLWK PVTSASADNTVCKTGKFVVAWERVPAPADSEKWYNDSRLR DKKTDNSEVFWNPTPD KKQWRHTVKFEEQDDFESEKLWQ RKGFKDK ETDFDASTAKDTQKVVAPEDKQSENESRRLWS NAETNQTTVVWYHYTTYAFQLNHLYKDLMKKVPPTDSRLR
 PNPQPKDYLLYYGFSTFAMELNELTPDLKMLLDPPTDTRLR AGDQLPQAEKKFGFTAFAGSLNKITEMERGQLAPTDSRLR
 RTDAKYKEEVHCGFTKFAATLNEITCIEKGFLPRTDTRDR
 PNSVPKEFEQYYGLTKFALELNELHPDLKSSLPSTDTRFR PGSMPTNYERYYGFTRFAI ELNELDPVLKDLLPTTDARFR SSGGTELFWTPSEEVRRQRLKRHTVLLEEQSELESERGWQ
 DKRTGQESVFFNPTPEIRKKRKYTVPLEHQGPWESEKLWY WAS GKNEVFVDTKTYAREKKEVKPDLQQDEFESRKRWR NTDEGNVIERIWEVGPFAAQMNEITDLEKDKDPPTDTRLR SKKTGKKRVLFDVQKDNKTAPKWVAPEEEQEPNESRR LWQ DHPMPKGYEQYYGFTQFALELNEDDSSLKTLDPPTDTRFR GVDPSPEYVLLWRNSEKPPAPFNLTPFADTLNDCTDCRDR AHPMPKGHEQYYGFTQFALELNELDSLTRPFLPPTDTRFR RYPGPQNSEWNYHYTQFALQLNHLNQDNDKWLCPTDSRDR DANGKVEDYTVEPETS KSNKETQNSVDEEAEEMPPPVAETVQVIPGSELIWKDTPR R NPLPKNAENMYYFSELADTLNA WESGTAPTDSRLR YKVAWQRRPEAPDAAKYYNFPQFACQLNEPEERPTDSRLR QRPDTQWKRYPMNYTTFAMS DNETNAELETILPDTDCRLR AGNLDP PNHERYYGFTRFADELNELGPDAHLLPPPTDT RFR




## UniRef90 E9GAAO

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UniRef9__G4VD9

330
340
350
360 PDQRLMEEGKWDEANDEK पRLEEKQRSARRQREDDAETYE PDQRLMEAGLWDEANSQKQRLEERQRLERKRRAQANEGYQ KVTAAIKKNDLDAATDAKTATEDAQRDRAKDRDHKSETHE KVAEAI QAGDMDTVSAEKGKI EQAQRNDRNKEKAENRSWE STTAAIKKADQRTATDEKSRI EDQQRKEAAERGD QEWK DVTYNLKMKNMDATTAAKHKLEERQRAERKERNEKNIKWQ KTLVALDQRDHKSATDEKFKVEEEQRLKAKKRHEEGQHFT KVCDALAARDHKVATEEKSLIENEQRALAKRRLEDGVEFH PTIDALARRDHATATEEKFKVENEQREKAKKRLEDGVEFH EVTENLKDND DEKATDGKRRLEQKQRDERKYRDENKITYQ PDQRAMEDGAYDLAADEKHRLEVKQRAARKERDEENDEY KTDDADHKRDHTVATEEKFKVEEAQRDRAKERVANGEDFV PDIRAMDNGDDDLASQEKKRLEEKQRTARKSLSKSGEDWK PDQRLLENGDMDGAQAEKTRLEEKQRSVRRQREAKSTHHV PDQRALEAGDLDEEAERLKGVLEEKQRVRRKEVEVRGDVHV $K T C Q A V D A R D Q T T A T E T K S A V E D R Q R E E A K Q R E D E N V Q W K$
$P D Q R D M E D G L Y D R A A D E K H R V E V K R Q A R K R E E T K K Y V$ PTFDADKNDDFAAVVHQKSRLETAQRHMRKQEHDDGKKWE PDQHAFERGAWEKANELKSALEDFQRKRRRRELGELREHS PDQRYLEEGKLELAAAEKQRIEEDQRARRKWHEESNTKHQ HVSAAIHRDDQVGATEEKTALEEAQRDSAKERKATCTDWV PDQRAFEMGRYERANELKSDQEDFQRATRRRREGELPPHK KVTDALAQRDHHTATDEKFK IEEEQRVQQKKREEEGVDFH PDQKAFEEGDVDKAEQLKHKLEEAQRSRRKKDESEGKNYM PDQRLMEEGKWDDANRLKVQI EKKQRAVRRRREALAEEYQ PDQRHLENGEYEKANAEKLRLERRQRMSTKL QDNG WK KVTDALAQRDHKVATEEKYQI ENYQRELDKKRVEDGVEFH NVTNAI DNGDQ\|AATEEKTILEEEQRREARERLINKESWN FVSNAITKRDQKEATAEKDKLENVQRQGVKKRKEKNDEWQ PDQRAMEDGRYDEAGEEKNRLEAQRARRRKREENGEEFV PDQRLMEDGKWNEANEMKVKIEEKQRAVRREREQRGEPYK PDQRAMEEGEYDFAATEKNRLEEAQRARRKARESKGEEFQ PDKNLMEVGEWDMANRVKHLLEEGQRFRRREYERTKTKWT KVAQSDEKGDMDAVAHYKSRIENAQRS LRKKEQEEKRDWD PDQRAMEDGEYDFAAEEKNRLEEKQRAKRRERETSGEAYK KVSEAlARDDQVAATEEKSILEEAQRARAK TNPHHK VDQRLLEEGNLEAAEEQKQR EQLQRDRRR LLEENNVSHQ PDQRAMEEAEYDFAAKEKNRVEEAQRARRRVREAKGEEFV SVTQNLKQGNDDAATDAKSLLEQRQRREAAARLEARQRWI PDQRYLEEGNVQAAESQKRRIEQLQRDRRRVMEDNNIFHQ HVTAALRAADTDAATSAKRRLEQAQRDAAKKRПDDNHKWE HVTRALGEGDQHRATQEKLTLEAQRRRALERQQTLTPWI PDQRAFEMGKWDLANDLKVAQEEKQRADRRAREEKLPPHA
 DVTFNLKDRDDDAATEAKHRLEERQRAEARERKEKEDQWE DTYDALAKSDFQGUVRAKSKLENAQRAMRKREDAENRRWE PDQRLMEEGAWDESNVEKLRLEEKQRTKRRAKDAAGRPYE HVTSALRKNDLEVATSEKYKLEEQQRKEKQQRDSSGMEWK PDQRAFEEGQYERANVLKMEQEEFQRATRRRRERGEDPHK PDORLMEEGLWDEANAEKLRLEKGRAVARORGEAPARA RVTRAIINAKDQTEATAEKYVLEEAQRQAARDRKTKNEEWT KVTAAIKKSDDDAATDAKTVIEDAQREAVRRREEEGATFK PDIDGMENGDMDHASEKLRLEQKQRARRKENEQSGQHHK PDITRGMENGDMDLAGNEKERLEEKQRASRRERAKNNEEWQ PDQRMLEEGKVDETDKKKDE: EERQRERRKELSKMGKDHV PDLQQFEKGNVDEAEELKLKLEQDQRVRRKELEDKKEDHV PTUAGLAKRNHELATEEKSKVENEQRDKAKKRLEDGVEFH PDQRFLEEGNTEAAEMQKQRIEQLQRERRKVLEENNLEHQ PDQRALEEGRLDEADDLKIKVE TDQRALENAEYDRAQGLKTLNEEKQRNTRKLRAEKGPEVG PDQRYLEEGNTEAAESQKERIE PDQRLLEEGNDEAAASEKQRI E PDQRLME GGLWNEANQVKVQL PDQRLMEKGQWDEANTEKQRLEGA DVQA NGDDQVATDAKTQLEEAQRERAKERKLKGQEWI PDQRLLEEGKVDEAEKKKDQVEQVQRDRRKVMEKRGEAHU
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$P D Q R A L E N A Q Y K L A S D D E F R Q L E E K Q R A A R K K R E M N G E S Y Y$
$P D Q R L M E Q G L W D Q A N E E K R R R L E A K Q R N K R H A W E K A V R E F$

| UniRef90_E9GAA0 | $\text { PNWFRKEKDRYTGNMLLHVF }{ }^{370} \text { G } \mathrm{G}^{380} \text { GRYWECKRKQDWAV } 400$ |
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G QVA GVA $\square \mathrm{N}$ G D Q D K T G G L WR Y DAAKAK

PGQRLTA APAYKKHD】QSSH

$\square R$ GTSGCWRFDREKEES
WRCGQGS WRPE
$\square$ LPGQQFTEKFS $\square$ PA
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TAGVWRYDEQKAAKARK

P T

P
HKGPGPARWLRKASDQPSGH

K L Q P DRTKGVWKFDRKKAD

MSAEWEGVD
$\underset{\mathrm{P}}{\mathrm{V}} \mathrm{A} P \square \mathrm{~V}$ GQKFDEKFHYPA

P
P
HKRPSSDRR $\square$ RKASDQPSGH

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Q Q VT WK D \(\square \mathrm{DP}\) P \(\square \mathrm{F} \square \mathrm{PDEP}\)
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DEETRGVWRपNEES LRRQ


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A CPDA


L L Q R L S E E LLEYTVDL L D $\square$ A N H DE D
$M L Q Q L A A E M E Y S D L L D S A N A T D D Q G L A$
MLQRMAEDMEFSE
FLQRRLSEDLLEYADLDRACVCKNNLVK
$M L$ QR MA E DME F S E
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FLL QRLA E YME Y D QLL L
$V L Q R M A E D M E Y S H L L D D A D E C E D$
$M L Q R L T E E F E Y S E L L D B A A$
F L Q RLTE DLE Y


F L D KL S DYYYHADFLSEAS



| $M$ | $L$ | $R$ | $L$ | $T$ | $E$ | $D$ | $L$ | $E$ | $Y$ | $H$ | $E$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $L$ | $L$ |  |  |  |  |  |  |  |  |  |
| $L$ | $L$ | $E$ | $M$ | $F$ | $A$ | $D$ | $Y$ | $N$ | $A$ | $H$ | $P$ |
| $L$ | $M$ | $L$ |  |  |  |  |  |  |  |  |  |
| $L$ | $L$ | $Q$ | $R$ | $T$ | $A$ | $E$ | $Q$ | $L$ | $E$ | $Y$ | $A$ |



TLQ R L C E ELLEY S SLL LDRA S R T
$M C Q K V A E Q L E Y A Q L L N Q A A$
$M L Q K M A E L M E Y C D L L D K A D E C E D$
ML QRLSE DLE Y HELLDKAARRC
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MTQRMAEVLENRSLLEKAA
T L Q R R L C E E L E Y S E L L D K A A S $\square$
$S$ L Q K C C F E D L
LL Q RAA E QL E Y C QL L D S A GKCHD T
TLECLAATLQHGKLM
N L E Y WH Y L D R P E TFAA A $\square$
$\begin{array}{lllllllll}F & L & N & K & L & D & Y & Y & C \\ I & H & A & D & L & L \\ \text { I } & \text { Q } & \text { C A A S M }\end{array}$
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L L
L L Q R V A E DLLE Y S E L L D R A C T F N D S T L
T L Q R L T E D Y E Y S E L L D R A A K C N D
MLQKMAELMEYSYLLDMADDCED
F L Q R I S E QL E Y A QL L
MLQ K I S E L M H Y H NV I EK GMTIQ D DCK K
LL E M Y A D Y L A H P D L F L K K A N D L
TL QRMCEEL E YCELLLNKAANTHD



LL QRVA E QL E Y CN L L NTAA D
L L E M Y A D F FA H P D L FVVS $\quad$ AA E

ML QK MAE LMEYSY L LDMA
LLL QRVAA E ELLE Y S E L L D S A V
L

| $S$ | $L$ | $Q$ | $C$ | $F$ | $E$ | $D$ | $L$ | $E$ | $Y$ | $S$ | $F$ | $L$ | $L$ | $D$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $M$ | $R$ | $A$ |  |  |  |  |  |  |  |  |  |  |  |  |
| $M$ | $Q$ | $R$ | $L$ | $T$ | $E$ | $D$ | $L$ | $E$ | $Y$ | $H$ | $H$ | $L$ | $L$ | $D$ |
| K A A |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

S L Q K C F E DL E Y S Y L V D H A
NL EYWH Y L D R P ETTFA S $\square$

$L L Q R V T E D D E$ Y S T L L D Q A A T F E D S T L
$\square 1$ E Y S A Y WAE H P E $\square \mathrm{F} \square \mathrm{S} \square \mathrm{P}$
MLQRMSEDLEFSE
SLQ KCCEDLEYSYLLDQA
$F L S K L S D H \stackrel{Y}{C} H A D L L D Q$
$-\quad$ SRAARRGNG
 I L Q M FSETFQYAS L L P N GS T
SLLQKCFE DLE Y S Y L I D R A S F S LIF LI L VR YRKEWF ILLQGNE $M L Q R L S E D L E Y$ Y E L L D K A A K C Q N S
NLEYWH Y LDRPETFAAD
SLQRAFEDVEYSYLLDRAAEY


$R R G N S$



UniRef90_S9XBA3 UniRef90_A0EBG9 UniRef90-J9JW23 UniRef90-G6CTF0 UniRef90_V5HXJ6 UniRef90-E9GD18
UniRef90-H2Y2C6 UniRef90-A9UQA5 UniRef90-H3BWN9 UniRef90_Q245K2 UniRef90-S7QPN1 UniRef90_A7S4A2 UniRef90_E6ZYU6 UniRef90_UPIOOO440975F UniRef90-L7HPW5 UniRef90-Q6BHM3 UniRef90-A9PH21 UniRef90-W6UDG7 UniRef90-B3RRNO UniRef90-V4SNU5
UniRef90-Q7QGU9 UniRef90-T1G6M7 UniRef90_V4ZN13 UniRef90-H3DVH3 UniRef90-UPIO004440DEC UniRef90 G3VBC8 UniRef90-A0A059DEI9 UniRef90-M7NKB9 UniRef90_U6IGC2 UniRef90-S3CCJ2
UniRef90 W9CQU1 UniRef90-W9CQU1
UniRef90_J9N1D8 UniRef90-W5PE40 UniRef90-K3VLV2 UniRef90-M7YLW1 UniRef90-H2U6M0 UniRef90_G2X305
UniRef90-J9JBR9 UniRef90-A8J9C1 UniRef90 STPCV6 UniRef90-W1PUK8 UniRef90-V9DRF0 UniRef90-L116H7
UniRef90 1 N1PD42 UniRef90_N1PD42
UniRef90_UPI0003C8AE73 UniRef90-J912L9 UniRef90-B2B4B3 UniRef90-GOVK17 UniRef90-I2H6M9 UniRef90-B7Q875 Uniref90_MOSOPO
UniRef90_Q2HGX1 UniRef90_-J9HS99 UniRef90_J9K4A3 UniRef90-H3DM44 UniRef90-U1GE26 UniRef90-C4XXY5 UniRef90_H3A5E2 UniRef90-UPIO003991545 UniRef90-G2XXL1 UniRef90-W5LH79 UniRef90-M4C8W1 UniRef90-Q9LZM1 UniRef90_R4XF63 UniRef90_UPI00027F4C7E UniRef90-G3NPV9 UniRef90_B9INW8 UniRef90_UPIO00343F47A UniRef90_UPI00035109A7 UniRef90-K9G460 UniRef90-H2YR78 UniRef90-BOWDSO UniRef90-GOVCCZ7 UniRef90_W9XSK7
UniRef90_S9VZP0 UniRef90-M5EAL2 UniRef90-K7LMS4 UniRef90_UPIO0038C378F UniRef90-H2AUR6 UniRef90_GOVIZ4 UniRef90-F4HP28 UniRef90_H2UV09
UniRef90 I2JSJ9 UniRef90-I2JSJ9
UniRef90 M3AK15 UniRef90-A9SDE7 UniRef90-I2GVG2 UniRef90_Q4SWC8 UniRef90_C6H9J3 UniRef90_G3MHI6
UniRef90_F4WPA7

170
180 190

200 WH HSPRP\|QKFWGKS DELNTHGDVNTQLNCGH KFVFTK MQMQTDLQTK MSPRSMEVQPTGGNVYIKLKQCNDQIISYNK MEWQDVRIKTKFWGKSMEFQPTGYVNVQCODSKDHYRNK MCLEASGGVKSNGMGNYVMQFLGEVELRLLSLDEVYVIGL F WODIRIKTKFWGKSMEFQPLGTVNVRLPMHDDHYRWNK WSYWEEDTLVSKFRGKYEVTPTGVVHLKFHKSGNYYTWRK F WQDQRWKNKFWGKSVEIISSGLVNVTLPRYGDHYEWNK YVFHGDSNDRSQFWRSFEI NPVSYLYIKLNRGKHDIVFKK WNYYGEVDAQNKFMKSFEI RPTGITAHADIVIPEEHFSWKK VFWQEYKLDTKFRGQFFKVIPTGHCHLKFKTNGHHFSWKK WEYMGCVDAKSKFGRTFEURPTGVAHVNGKVPREHYSWNK WEGNATSSGKTKF WGKSFETIPTGILTLRIGADTFEWNK $F$ A QAPAPT QKFWGKSME LT TE GKARRVVLARLPD E HY S WGV FSFSSPAPNQKFWGKNFEVFTNGDCKLTI RSTGEMFTWNQ


 CWQ E F TM T S K F R GKY Y I Q V V P L GYA H V E FP A T G N RY T WR K IM WQ E F S M S C K F R G K Y I E V V P L G IA H L K ID

 F C L S G S I LIA K S K F Y G N S S A I L L E G E A R L T F L L N R G E DY VMTM




 Fs




 WK FW W D S N L K GK F WGR S I QL D PVGGVL T L Q F D D G E T F Q W S K $F$ T QSPLPS LPKFWGKSSEII NEGKARLVLHSTGETYSWAA VSMEGYMHTGAQFNGNSIPAIPFGQRTLRLEQFGEDYMMM $I E A M M Y$ D Q L S A K F T G T S I K V T P G Q F N Q G I F I






 1 F WQ D L R C K N K F WG K S M E I F P I G T T H L Q L P R F G D H Y E W S N YF GES A V R S K F Y GK T F D DNHLGTWF L R L L R P E L Y T WK K LSFSSPAPTQKFWGKTSEFYTSGTVRLSIMSTGGEVGTVNH
 $L G Q S P A P N Q K F W G K S A E L I T D G R V R M V L R D P D E R Y T V N Q$

 FA Y D C T S K L K T K F L G N S I D D V Y P V G R T R V T L K R D WSF H Q Y QA TA Q K F Y GK S MLLLTTE G FT T V R L M T G D V Y T WE K
 WK F WGE S D LIK S K F WGR S IGQLDD P V G T L T L E F D D G E IG Q WS K





 WE Y M GCVVD A K S R F GR S F E I $\operatorname{T}$ TP T G V A H V R L K IG P E H Y S WN K
 FC C IS G S I V A R S K F Y A E V Q V H R E S R Q R A G A D P R L D T R V P T L
 WN F WG DS N IGK GK F WGR S I Q L D P V G V L T L K F D D G E I Y Q WS K

 $I E A V G Y$ D QLSAK F T GT S V K V V P G Q Y N Q GIIF VR N E E Y QL T H WK F WG DS N L K S K F WGRSI QLLDP VG LITLK F D D GE VF Q WT K




UniRef90 S9XBA3 UniRef90-A0EBG9 UniRef90-J9JW23
UniRef90 G6CTF0 UniRef90_V5HXJ6 UniRef90-E9GD18
UniRef90-H2Y2C6 UniRef90-A9UQA5 UniRef90-H3BWN9 UniRef90_Q245K2 UniRef90_S7QPN1 UniRef90_A7S4A2 UniRef90_E6ZYU6 UniRef90_UPIO00440975F UniRef90-L7HPW5 UniRef90_Q6BHM3 UniRef90-A9PH21 UniRef90-W6UDG7 UniRef90-B3RRNO UniRef90-V4SNU5
UniRef90 Q7QGU9 UniRef90-T1G6M7 UniRef90-V4ZN13 UniRef9O-H3DVH3
UniRef90-UPIOOO44 UniRef90_UPI0004440DEC UniRef90-G3VBC8 UniRef90-A0A059DEI9 UniRef90-M7NKB9
UniRef90 V8NBX2 UniRef90_U6IGC2 UniRef90-S3CCJ2
UniRef90 W9CQU1 UniRef90-J9N1D8 UniRef90-W5PE40 UniRef90-K3VLV2 UniRef90-M7YLW1
UniRef90 H2U6M0 UniRef90-G2X305 UniRef90-J9JBR9 UniRef90-A8J9C1 UniRef90_S7PCV6
UniRef90_W1PUK8 UniRef90_V9DRF0 UniRef90_L116H7 UniRef90-N1PD42 UniRef90_UPI0003C8AE73 UniRef90-J912L9 UniRef90_B2B4B3 UniRef90_G0VK17 UniRef90-B7Q875 UniRef90-MOSOP0 UniRef90_Q2HGX1 UniRef90_J9HS99 UniRef90_J9K4A3
UniRef90_H3DM44 UniRef90-U1GE26 UniRef90-C4XXY5 UniRef90 H3A5E2 UniRef90-UPIO003991545 UniRef90_G2XXL1 UniRef90_W5LH79
UniRef90-M4C8W1 UniRef90-D3AX60 UniRef90-Q9LZM1 UniRef90-R4XF63
UniRef90 UPI0002 UniRef90_UPIO0027F4C7E UniRef90_G3NPV9 UniRef90_B91NW8 UniRef90-UPIO00343F47A UniRef90_UPI00035109A7 UniRef90-K9G460 UniRef90-H2YR78 UniRef90-BOWDSO UniRef90-GOVCZ7 UniRef90_W9XSK7
UniRef90_S9VZP0 UniRef90-M5EAL2 UniRef90_K7LMS4
UniRef90_UPIO0038C378F UniRef90-H2AUR6 UniRef90_GOVIZ4 UniRef90-F4HP28 UniRef90_H2UV09 UniRef90-I2JSJ9 UniRef90_M3AK15 UniRef90-A9SDE7 UniRef90-I2GVG2
UniRef90-Q4SWC8 UniRef90_C6H9J3 UniRef90_G3MHI6
UniRef90_F4WPA7

PACF|L|KNVIA|IGEKYVVEYDHMVVITSTTGDKATIQFKVGGM CTTKVHNI IFGNMYIEHDGEMVFNHTTNDKGVLTLSEN
 VTTCVHNLFGGQRWVDQYGDMHIVCHTDVSCKLNFIKASS PTMYWRS LLNQPYVEDNGRVSVTC GDAVAPITFHPKPF




 $\begin{array}{ll}V T T S V S G F I V G S P T & D\end{array}$ ATVVFLRNVVMGEKYVEPVGSMAVNNSTGSRAAVEFRTKGGM



 $V$ KLLVHNVIWGKLWAEVDGTTLVVQKKGDYSIVQF R RKGW


A T V V L R N V V M G E K Y V E

| $P$ | $P$ | $M$ | $H$ | $G$ | $G$ | $M$ | $G$ | $S$ | $P$ | $P$ | $E$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $T$ | $D$ | $V$ | $T$ | $V$ | $G$ | $F$ | $L$ | $S$ | $A$ | $L$ | $Y$ |







 $P A A F L G G F$
$P Y A H C K E L$ $\qquad$ QLDPPF F G G S T S I N Q $\square S G$

 $P$ D N T V I GI LV G N P Q V D N H G E V K I N H T N G D Y C I L N F K A R G W



 P S GYGR S L L T VP WI E L G G S VTIISCQTGYMCDI E F HTKP F





 VP TM K H N L I F G R T WVID S P G E M V MT NTTTGD K V V L Y F QP C G W






 $P$ L V T L E G L W W G S P Y I E L S K K S Y I I S T S G Y M T T I I E Y S G K G Y








 P Y A H C K G L L Y G T M T L E L G G Q I T V A C K T G Y S A Q L E F K L K P F P NM M A R GI L WGKM K Y E L G D H SVVI R C E N NLLSA D I E F K T K G Y


UniRef90 S9XBA3 UniRef90_A0EBG9 UniRef90_J9JW23 UniRef90-G6CTF0 UniRef90_V5HXJ6 UniRef90-E9GD18
UniRef90-H2Y2C6 UniRef90-A9UQA5 UniRef90-H3BWN9 UniRef90_Q245K2 UniRef90-S7QPN1 UniRef90_A7S4A2 UniRef90-E6ZYU6 UniRef90_UPIOOO440975F UniRef90-L7HPW5 UniRef90_Q6BHM3 UniRef90-A9PH21 UniRef90-W6UDG7 UniRef90-B3RRNO UniRef90-V4SNU5
UniRef90 Q7QGU9 UniRef90-Q7QGU9
UniRef90-T1G6M7 UniRef90-V4ZN13 UniRef90-H3DVH3 UniRef90_UPIO004440DEC
UniRef90-G3VBC8 UniRef90-A0A059DEI9 UniRef90-M7NKB9 UniRef90-U6IGC2 UniRef90-S3CCJ2 UniRef90_W9CQU1 UniRef90-J9N1D8 UniRef90-W5PE40
UniRef90_K3VLV2 UniRef90-M7YLW1 UniRef90_H2U6M0 UniRef90_G2X305
UniRef90-J9JBR9 UniRef90_A8J9C 1 UniRef90-S7PCV6 UniRef90-W1PUK8 UniRef90_V9DRF0 UniRef90-L116H7
UniRef90 1 N1PD42 UniRef90_N1PD42
UniRef90_UPI0003C8AE73 UniRef90-J912L9 UniRef90_B2B4B3 UniRef90_G0VK17 UniRef90-I2H6M9
UniRef90-B7Q875 UniRef90-MOSOPO UniRef90_Q2HGX1 UniRef90_J9HS99 UniRef90-J9K4A3
UniRef90-H3DM44 UniRef90-U1GE26 UniRef90_C4XXY5 UniRef90-H3A5E2 UniRef90_UPIO003991545 UniRef90-G2XXL1 UniRef90-W5LH79 UniRef90_M4C8W1 UniRef90-D3AX60 UniRef90-Q9LZM1 UniRef90-R4XF63 UniRef90_UPI00027F4C7E UniRef90_G3NPV9 UniRef90_B9INW8 UniRef90_UPIO00343F47A UniRef90_UPIO0035109A7 UniRef90-K9G460 UniRef90-H2YR78 UniRef90-BOWDSO UniRef9-GOVCZ7 UniRef90_S9VZP0 UniRef90-M5EAL2 UniRef90-K7LMS4 UniRef90_UPIO0038C378F UniRef90-H2AUR6 UniRef90_G0VIZ4 UniRef90_F4HP28 UniRef90-H2UV09 UniRef90-I2JSJ9 UniRef90-M3AK15 UniRef90_A9SDE7 UniRef90-I2GVG2
UniRef90-Q4SWC8 UniRef90-C6H9J3 UniRef90_G3MHI6 UniRef90_F4WPA7
 FKMVGTVCDSHGKEKYKLKGQWNDQLVWK

 DNEGKVVR WSSNRYEVVGSVTDPNG $\qquad$ VDAKGKLVHHL

 FSRETPRKVSGVV FSSAEPRTVVG WS S D WS NSKNEVQG RGRDANSGQFEVVEMGGW VQDNFKKLKGEVKDPEG RGKDAFE RGSVYDAQGTMQ WASTPNVVTGIVYSPDG FGGRGEDVQVETWGPDGVHTG FSGRSEDLTIK SIGPNKKNDPVSLAGTWTQSLRKV FGAGRYEVDGYVYNAAEEPQULMTGKWNGSMSYQPCDMEG


DAAEQPK LLMTGK WNESMSYQ
$M D S N Q Q K W V V N G T W D S K M E \square Y$

$P$ V
$\qquad$

 TSRD I PRKV TGGV F A PETMDADGNEQYVMSGTWDEKMECS FGGRSEDVQVETYDSSGAHTG
 $R L P P L S A P A A P P P G G E G A S D F V P F W G A G G G G G R V H L P Q F P$ WGGRIDEDVGVEDFNPEGANTGSGLV
$F G P \| S S Y C L C Q \quad$ G WA R G W W VWKAA
FSKDVPRKVTGVV A V
VGGTYNAMGGFI KRESTDEVVRTEGRYTQSKDAQPQEVWK
 WSTNSREIEGTVF DKSGKAVHRLFGKWHESIVYG DDRNPHQVHGFVQDNKTGKKKWDEAMYYVLGDPSTKPKGY FSGRSEEVEVQTDDSQGQELSDG L G M WGE WHA GKL R RDTNES E EVLYDVS GHWDTKLILR FGKTQNKVEGDIYKPRTKDVPSKQILGRIEGVWTEKIVFT
SSSNSFKVDGEVY


RGGRGEEVKVETYGPNGS

FSREPPRKVTGVVDKKGDK
FGAGRYEVDGYVY TDPEGTALL
FGGRGEEVQVDVLGPDGAPSGV
TNKNAYKVEGNVIDQNG
YGGKKHRITAEVFGPKT KKAQFA NGLWNEKYSIK WNPSVNKVEGVI TGPKT DNKGNVIHKLGGKWHEAVYYK KASSAYHVTGKVMDQGGNTK WSIGGRWNDKIY FTGRSEDLTIKAYDSQ KRSLPSTVVGTWTESMTWT FSRDVARKLFQCVVK QAYHMSFKFDLIEFSAPESKSMLSA FSRDVARKVTG FGGRSEDVGVEAYDGEGKHTGT GILQGNWTSSLKLV YGGKKHRITAEDF GPNDKKSFCSIEGEWNGVMYAK DDRNPHQVHGDVQDKSGMFGKWDESMHYVTGDCSGKGKCW FGSGRYEVDGYVYNSAEFPKMDKTGKWNESLDSYQCDAFG

 WSSDSNKNEVQGV VLDRAGEVVHRFGGLWHEGIFWK DDRNPHQVLGGVQDKNGKTKWDDSMHYKINGDSRNAHLLDW FSKEVARKVTGVV SDSQGKAHYVLSGSWDEQMECA IDRNPHQFSCVVRGKK DCCNRTGEKVAMLI GKWDETMYYV $\square$ GRSQNK LEGVIVRYESDKDT IVNRVVARITGGWHGKDYFT FTRDTQR RVKGVVNAQGMDNASQVKWVINGTWDSKI EWN TSTGAFELKGDVYN
VGGTYNS GGGI KNEKT FTGKKNTFKGSVVHQ
RSANAYEDRGHVTMASGN
 ADSKAEPG YR E GSWTGMLKKIA


FGGRSENVNVVI
TSTDKGNKKYRFSGKWTENLKDG
$F G G R S E E V V A S V Q$
$\square D R N P R Q V H G F V Q D N T$ DKHKKTIQTIVGKWTDVLKDS FSRDVPRKVTGVV TRTMEGKAHYVLSGTWDEKMEFS FSGKSNSFKCRIYRNHEESDNKYNADYTIFGQWSGVCFDS FGKTQNKVEGVI YKPADIKNDKDQILGGLEGVWTEKIYFF DDRNPHQVQGFVHDKSGIFGKWDESMYYIMGDISEKPKHW

LGSSD

F S R D S Q R K V K G|I V M N
UniRef90 S9xba3 UniRef90-AOEBG9 UniRef90-J9JW23 UniRef90-G6CTFO UniRef90-V5HXJ6 UniRef90-E9GD18
UniRef90-H2Y2C6 UniRef90-H2Y2C6
UniRef90-A9UQA5 UniRef90-H3BWN9 UniRef90-Q245K2 UniRef90-S7QPN1 UniRef90-A7S4A2 UniRet90-E6ZYU6 UniRef90-UPIOOO440975F UniRef90-L7HPW5 UniRef90_Q6BHM3 UniRef90-A9PH21 UniRef90-W6UDG7 UniRef90-B3RRNO UniRef90-V4SNU5
UniRef90-Q7QGU9 UniRef90-O7QGU99
UniRef90-T1GGM7 UniRet90-V4ZN13 UniRef90-H3DVH3 UniRef90-UPIOOO4440DEC UniRef90_G3VBC8 UniRef90-A0A059DEI9 UniRef90-M7NKB9 UniRef90-V8NBX2 UniRef90_U6IGC2 UniRef90 -S3CCJ2
UniRef90- W9CQU1 UniRef90-J9N1D8 UniRef90-W5PE40 UniRef90-K3VLV2 UniRef90-M7YLW1 UniRef90-H2U6MO UniRef90_G2X305
UniRef90_J9JBR9 UniRef90-A8.99C1 UniRef90-S7PCV6 UniRef90-W1PUK8 UniRef90-V9DRF0 UniRef90 - L116H7
UniRef90
N1PD42 UniRef90-UP10003C8AE73 UniRef90-J912L9 UniRef90-B2B4B3 UniRef90-GOVK17 UniRef90-12H6M9 UniRef90-B7Q875 UniRef90_MOSOPO
UniRef9O_Q2HGX1 UniRef90_J9HS99 UniRef90_J9K4A3 UniRef90-H3DM44 UniRef90-U1GE26 UniRef90-C4XXY UniRef90-H3A5E2 UniRef90-UPIOOO3991545 UniRef90-G2XXL1 UniRef90-W5LH79 UniRef90-M4C8W1
UniRef90 UniRef90-Q9LZMM1 UniRef90-R4XF63 UniRef90-UP100027F4C7E UniRef90-G3NPV9 UniRet90 B9iNW8 UniRef9O-UPIOOO343F47A UniRef90-UPIO0035109A7 UniRef90-K9G460 UniRef90-H2YR78 UniRef90 BOWDSO UniRef90-GOVCZ77 UniRef90-S9VZPO UniRef90-M5EAL2 UniRef90-K7LMS4 UniRef90-UP1IOOO38C378F UniRef90-H2AUR6 UniRet90-GOVIZ4 UniRef90-F4HP28 UniRef90-H2UVO9
UniRef90 $12 \mathrm{JSJ9}$ UniRef90-12JSJ9 UniRef90-A9SDE7 UniRet90-l2GVG2 UniRef90-Q4SWC8 UniRef90_C6H933

 RYELSQDYKNYFYFTKFAMNLNLLNIDLDKSLPCTDCRLR PGTMPEDYELYYGFTRFAMELNELDLETAKFLPKTDTRFR PGAMPADYEAYYGFTRFATELNEMEPGMEDVLPHTDTRDR YPD GNTREWPVREQHRQRKRCRPVDAQDTCESRRLWR PGALPEDHEHYYGFSRFADELUDLEPCLVDVLPPTDSRFR KKKLWQTHPLPVGAEKMYFFTDLAVTLNEQEPDPTDSRLR DANGISKRVLWKRTEHVANFEKMYGFVFEKGCAVTDARFR PNAQPEDHFDYYGFSRYARELNELTPELEAVLPPTDTRFR NLETNQVITVWYHYTQHSFQLNHLTKEMLKK PPTDSRGR DDSDDLWTAVARPDDSYKMYAFTRFTDQLNDPCPTDCRNR
 EAGKSAGAEVWYGMTTFVASMNEITELEKGKLPPTDSRLR VGELLLPNYKKYGFTKYAGSLDKITDIERGNLPPTDTRLR EPRAGTEMKEVWRVAEAPKNDKFQYTHFAHKLNSFDTAPR DEN NADDRCDWRANPLPSNSSYYYGFTQGRLPDTDTRGR PCDSEGEPLPGTELKEVWRVADAPEDDKYQYTYFTHKLNR KTGNYKTAWTRRMPPPDSDRYYNFTLLACQLINEPTDSRLLR
CNKPHPDLSKCYNFTEFADTM GSRRLVWRPAVRPAHSDAYYGFGYLTMELNEVTAEYNPFR RPDQA EYLFVDVRESKECRKQCVPVMQQGDRESRKLWR DPANFDAHKKMDKKNSEEKKGNKLIWKDAPRPENSAKFYA DKKTDSSETVFNPTSETKQRRRHTVKFEEQEPF EPGPGTELKEAWRVAEAPKNDKYQYTYFGHKDNSFNTAPR NVKTGKRVVLFDATNSSYTQPVVRPEYEQEDRESRKLWS KVYQTGSPKVLWKKYPRPENAENMYYFPEDDVAPTDSRMR DPRNKSGGQEVWHVTQFAVSLNEVTALEKGKGAPTDCRGR DTR TGNTVLQCDANLLKRKSLTVRPIDQQRDYESRRAWR DSKGKLVATYTVDPETSADEMHIDPVEEQDPRESRRAWG
 TLPPKLLWKKYSLPDNAENMYHFTLNEPEEGVGLTDSRLR DTPKPEKSDWMYQYGHFTLQLNSYLDALLQEKLPPTDSRLR RTPEVPNPTEQYCMTRFALGMNDPADPDMPFLPPTDCRFR GPSSSTCVWRARQCSAANQDDLEMEEFEMFITTTDTRFR DKSTGAEQVLYDYDECHAKEAPQRLQLSNGLPTDSTVCMP HGATEFKRLLDMDVDPLLPGPKKCPPMEQQLPNESRRFWN KNPYPEKEAFMYGFSHFMLQVNYLPNFLRNQLPPTDTRWR PGNKEDWKPNTYGMTTFAASLNEDTPEKGKLPPTDTRLR KWKACARPDAPFNGTQFAMTMNAPQPHLLPWLAPTDTRLR RATPKVVWRRNMPSEEYERMYNFTVNEPEPGVAPTDSRQR PCDKEGEPLSGTELKEVWRVAATPVNDKYQYTYFAHKINR PGGQEDWPTTTYGLTTFAAGLNEDTADEEGKLPPTDCRLR


## AGAMDPNWEKKFGFTEFVGT\NKПTKПEDGFपPPSDSRपR

 LPGMAGEKKKKRATKLLQKSLHGMFSLRENAENPTDSRLR KHDAEDTRVLLWKRNPLPKYAENMYYFPESGTAPTDSRHR EGGRSGPEIWCYGLTTFAAQLNEDTE DEMGKGAQTDSRGR wKRSKPPGNPTKYNDTRFAMT DNEDTPG旨KEK पPPTDSR NSKTNKTTTFFDINSFKTLDMVVPPVAEQPENFSRRVWG EPLPGTELKEVWKVAEAPKNDKYQYTHFAHKDNSFDTAPR KSITWSTGTLRCGFTTFATQLNETTELEANCLPRTDSRDR PGSMPTNYELYYGFTRFADELNELDPVLKDLLPPTDARFR PNVQPDDYHQFYGFSQYARELNELTPELEAVLPTTDTRFR KRSKPSKHDTRYNLTRFADTLNELTPELKKLPSTDSRLR
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$R$ VAS GQK ELLFNATNAKHTPPLVRPLEEQEPHESQRLWN HAD GRFK E WK P E L K R H P K R CR PV D T

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ATAQAVRERNHELATDEKTKVEDMQREEREDRNRDGVEWR PDQRALENGETELADKEKHRLEEAQRARRRQMDKDKFHYE PDDRALELGEWNRATSEKDRLEEKQRSARKERKEAGDEYH $P D Q R F L E E G N V E E A E V Q K Q R L E Q L Q R D R R R V L E E N N V E H Q$
$P D Q R F L E G E Y E M A N A E K L R L E Q R Q R A K L Q E R G W Q$ PDQLALEKGDHEAAEHLKNQLEEAQRARRREMEANDKAWQ KVTEAL LA GDLIVANREKपKVEDEQRALRVKEAEQKVQWT DVTEYITSKQFAQATTRKQQLEERQRERAAEREKAGEKWQ HVTRAI SDGDQHRATQEKFSLEEAQRQRARERQQNLVPWT PDQRALENGDMKTAAYEKNRLEEKQRVVRRYREKFNIEHK PDQRFAEQGDLDQAEEWKVKLEEAQRVRRRVLEESGEEYK
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P D M Q A Y E K C D $\square$ S S A E K L K H Q L E E GQR A R R K K L E Q S G G S H V PDQRLMENGRWDEANTEKQRLEEKQRAVRRKREAEVTRAT PDQRLMENGRWDEANAEKQR TPYDPYK

PDQRYDENGEFEMANEEK乌RПEQ
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P V WF R
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## $\square R W F Q Q G P N P H N K A Q D W \square Y T K G D R N Y T Q L P D \square$

PRWFD DT DESPTPWGDDEVYRYNGKYTEHRAVVD

P LLWFERKVDPDTGE L LMCVYKGGYWESKEKQDWS
PRFFKETPNGY
PRWFVKVATGSDGDEVWRDKGGKDGYWEERARGTWT
RRFFVEVEGGSGRDEVKE
$P$ LLYR S L P GGEHQVFHQLAKGTKWKLHDH
ARFFRRQTDSSGKE WWV TNNTYWRLRAEPG
PRWFVKVENAPEGEEVWKLKTGKDSYWEERAKGSWQ
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$P R \square F R P V K$
PFYFEKKLIEEAGET $\quad$ TV Q $\square N G K Y W E D R D K K D W S K$
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PRFFR
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PKHF $\square$ K S D NTY
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> EKGGETYSYVGGYWEAKERGNW

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PQ QLFHEDHSPWNP LT DVTQFEQDGVLHT LQRAHKTTF $\square G S$
PQFFEK TSANKWKYRQGPQSYWERRKRQDWS
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A LDF EK L Q DPVS GETLHV V YKGGYWEAKEEGNWDV
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PK L F RTV

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EEK L L
EPAQWEG

】F GPDPADRSD

P
$Y E \square G S K K A K G D K A E W K D V Y H$
P

GA A A P L K DED R $\square$ F N N L Y GRHWH $\square$ QRGRWYKTKE I L

P S

ETKGVWRVDDEALQEERQ】T $\square$

EEKDV

P

P

GEGGWKGE

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PSG $\square L E G S S K E K \quad S S K T M K H W R F N L E K F N A E K D \square K$




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UniRef90 H2TUG2 UniRef90-H2TUG22 UniRef90_UPIO003315026 UniRef90_G7E574 UniRef90-11FQ13 UniRef90-M2RB57 UniRef90-w9xSm0 UniRef90-UPIOOO3334230 UniRef $90-$-FTVVQ UniRef90-S9XYJ2 UniRef90-G7YX26 UniRef90-V5HMR6 UniRef90-H8X718 UniRef90-J5K1U7 UniRef90-FOXCM1 UniRef90-UPIOO032A66C0 UniRef90-B4QBG4 UniRef90-G2WYE3 UniRef90_V9KQT7 UniRef90-K5XD34 UniRef90- W6MJBO
UniRef90 G7INK5 UniRef90-G7INK5
UniRef90 - B8MNH UniRef90-F7AGM0 UniRef90-K9IKF5 UniRef90-W5ME88 UniRef90-13JHR2 UniRef90-B7PE28 UniRef90-Q4S627 UniRef90-MOXXZ2 UniRef90-F6RHR3 UniRef90-ı3043 UniRef90-Q74Z50 UniRef90-E7Q4J2 UniRef90-UP10002B4C60B UniRef90-L2G344 UniRef90-V7AZQ8 UniRef90_GOS3E3
UniRef90 12 JW32 UniRef90-MOUP97 UniRef90-S3CNG2 UniRef90_W5JTH9 UniRef90-G7Y8J7 UniRef90-_9HZD9 UniRef90-W4JQH5
UniRef90-UPIO00194EBC1 UniRef90_L8FSA7 UniRef90-G7JUB4 UniRef90-UP10003AF79FO UniRef90-UPI0002ADA9DB UniRef90-B6AFX3 UniRef90-Q4SC61
UniRef90_S7MNJ4



WSTNSREIIGTVF
DKSGKAVHRLFGKWHESTYYG
FSGTYNALAGRVRRASHDDG
FSRKAQRSVKGFIYNRNN EVSGRWNHVMEFK
EAKWIVVRGTWDDKIETA LGKPKHRVEGVVRGQVLTAAAPKRPVASFSGKWTEQUVCD LGKPKHRVEGVIYRYDDATENLDKVLARMEGSWMSQLIFYT FGKELHKVEGHTF DKSKKKLCALYGKWTECLHWR YGGKVHR $\backslash \mathrm{SGEVKHTQTN}$
FGGESSRGYVEGSDEDSSHTR
FNNKKCDVKGQ LDSNG
FGGRSESLTATITPPKSSKWKRQA
Y G GKPHQVTAEIKGQSGNTT
F G

## F

## 

 FSKDTPRKVTGVV T DKDGVVYWVLKGTWDDHMECA $R G K D A Y E \| S G Y V A D A A G T \quad V Y E I A G R W N S Q L$
$1 G K A K Y K V E G V V Y Q Y T H E D D G D Q K V R A K I E G S W M S S Q L Y Y T$ $V$ S GCYNAl G GTI K DERT GEI LYELS GLLWSDEMF IGK FSRETPRKVSGVV QDAKG』AHYVMS GTWDSYMECA




LGRSHYRVVGVIFRYDPENDDKRKVIAEMSGKWSDRMDYK
FSREQPRKVY GIV

MSFARYVCS GVI KRPDGTHWNRDLS YTRAGEDEDEKVQLW


 WG PSN IV S G V S S P S G S T $\square A Q L E$ GKWDEQMSSHLDVLWR F GRAQNRVVGLI FRYDPSDDKYTRVLVRLEGCWQEQI EST



 L D K S M H MI R A I V F S A A G R R R P V R L S G S WS H A L Y V E


 WGGRKKNGFTADVVFRR

 F S GRSETLSVVRVQDKGQYLP LELRRGSWTEELHFYTELVWK FGFGGN $F$ R R RLIDKGK I I D S L T S K V L F RV N G H WD S T V T L K
 F GK K L F GKELH R RVEGY $\square$ QDKKNSKKKLCVI YGKWTECMWS I

 FGAGRFEVVDGYVYTAAEEPKDMMTGKWNKSMSYQPCDQEGB WGGTRNAFTAKVVGPSEPGSTKRDVLYTVEGVWSKGWTVR





 HF S S R R S E K LTVVKVY G P T S K S
LDRNTHLVCF
 NNKDLHRVEGHMF DRNKRKTHFLYGKWTEFGICCT LS GALH QVVTGPLLVPKASSESPVVVSRQFFGSWTRGLGTVV GGKSAYE I E GFAFTPSKQKKWKLYGKWSVK SLDTNEEYWQ


 F S R DVARKVTG EVTDASGRV HFALLGTWDEKMDCF


WS S N $\downarrow$ H E V Q G A V F S R S G

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UniRef90_J5K1U7 UniRef90_F0XCM1 UniRef90_UPI00032A66C0 UniRef90_B4QBG4 UniRef90_G2WYE3 UniRef90_V9KQT7 UniRef90_K5XD34 UniRef90_W6MJB0 UniRef90_G7INK5 UniRef90-B8MNH9 UniRef90_F7AGM0 UniRef90_K9IKF5 UniRef90_W5ME88 UniRef90-I3JHR2 UniRef90_B7PE28 UniRef90_Q4S627 UniRef90_M0XXZ2 UniRef90_U7Q1T7 UniRef90_F6RHR
UniRef90_I3J043 UniRef90-Q74Z50 UniRef90_E7Q4J2 UniRef90_UPI0002B4C60B UniRef90-L2G344 UniRef90_V7AZQ8 UniRef90_G0S3E3 UniRef90_I2JW32 UniRef90_S3CNG2 UniRef90-W5JTH9 UniRef90_G7Y8J7 UniRef90_J9HZD9 UniRef90_W4JQH5
UniRef90_UPI000194EBC1 UniRef90 L8FSA7 UniRef90_G7JUB4 UniRef90_UPI0003AF79F0 UniRef90_UPI0002ADA9DB UniRef90_B6AFX3 UniRef90_Q4SC61

290

## 300

310
320
SVSS SHMK TERDWTTGERPAASTRMYGFT QE GVCPTDSRCR


## 

G P S S S T CVW
SARTGQQRRVLFDVPKDGANAPMVVQPEEEQEPYESRRDWQ
 QTGEVLWTNEPPSQAALDHGFGFACRLNELPPQDSQQYFR
 I YTNLLE K KRRQE GKHRVETKTPWK TK LIFHKKDE
LVDDHOR






 DMKTGHK EMFFDAHRSKPSPP LVRPDEEQEERES QRLWQ K I VT T N N S K R LWQVH P LPVGA D K M Y F L M E T G DAP T D S R F R LGSK P F E K N LI DDL N P L D P DP K V V P P L E E Q L P N E S L K F WD GKSTDRFQKLWESNNQFPPDCQDYYGFNEKVLPPT DTRFR DPATFEACKKNDKKN
 $R$ VMQS SRGGENGTEGKQKTVVYTLKWRRNP LIPE GAESMYY DFRTGQSSRTLF DAHNANAVVQKTV P P LIE QQHPNES QRYVR LA G S V E R H L L I D IA P L F P S S K V V P P E E K Q L S N E S R R C WS
 $K P S G G D L A V F V D T T S L D D T K K V V K P \square E K Q E P Y E S R R M W K$ DYSNFEEYYK
QVDEWPVPANKYGFPTYT $\mathbb{V}$ K M NEMASAPDYGLLAS DSRLR DVELFEDM
E AHKK L E K K M MYNFTNFAMS LNELLDPGMEAVLAPTDSRFR AS GRPPNSAQMYNFSSFADSLNELEAGMEERLAPTDCRLR



 RNPRMGETVEVYDAPENQPVPMVIDPLLAEQDPWESRKAWE K IVQS S P S S P S S D GK Q
WAD GWNC
P VA EYEEYMQTHNF
A GELLDPNYQKKY GFTTFAGT LDNK $\square$ TEMEQGF $\square P P T D S R \square R$ EYE QCMRDYWRSEGPPPSDSPDNKLQHLVQGMWDTDPI WR
 DTNNS DERVIYY A KEVRLQA PVVVKDAESVWQTESALIDWS
 ETHRKNDKRQMYNFTHFAMMLNELDEEMKSSFAPTDCRFR MTPFPKNADDYYGFTYF GDTLNELI QDDAN KLPP T DSRRR A GNLVPNYASKF GFTEFAAGLNQITMMLEKGKLAPTDSRLR
 ANPMPKDSELYYGFTKYAFQLNEMDPK $\quad$ KK F S L L P CTATRRFR

D P H
D PQAYEAHKKNDDADDMPEVQETVMCLNELEPPHTDCRFR P GTMPE DFE L YYYGFTRFA DELNEELDQQMAKLLDPPTDSRRR
 DP LPGTEELKEVWKAAPAPPSDKYQYTYFAHKDNSFDTAPR D ARSGAVLETYD DAPENKPAPDDDPDTATQDPWESRRAWA

 D
VK S K P K CS A EMYNMTEFAMG L NE LL LPEHENVIDAPTDSRYR DSHPPEARYTI DDLGPDNVAPKVIDPAEKQLVNESDQLWS D R N N REERVIYYA K EVVMSVLTPDILKDSESVVPTESTMVWG


## $D L K T G K K D \quad L M F N A A K S K H T P P T T R P L E E Q D E R E S Q K L W Y$

 DD P A VWES REEKMRPDS SRRQPAHCTRSKSFDPCQDGDM
 RAGGKEEWSTLMDLSTLHVVPKAVRP LERQLPNESRRRWE





UniRef90 B3RZY4 UniRef90_A9TMD7 UniRef90_N1JLW8 UniRef90_H2SPK9 UniRef90_UPI0003BB80D4 UniRef90_UPIO00455E019 UniRef90_B4JRV5 UniRef90 F2UHH1 UniRef90_U4LES3 UniRef90_UPI0002B4DAF1 UniRef90_UPI0002A49F55 UniRef90 - UPI0003F0BE8E UniRef90_R9AFG0 UniRet90-B3RRV7 UniRef90_Q6FNL4 UniRef90 E9GSJ3 UniRef90-UPI000292B1A2 UniRef90-M5E8A9 UniRef90-H2MLC8 UniRef90-F4Q696 UniRef90-W2RSE8 UniRef90-E5S9Y9 UniRef90-W4KGC1 UniRef90-D5GDT7 UniRef90-L7IIH6 UniRef90-H2ZFT6 UniRef90-Q0U7MO UniRef90-14YFF9 UniRef90-F7G2NO UniRet90-MOS5W7 UniRef90-H2TDW8 UniRef90-A8Q0B5 UniRef90-C5PEG6 UniRef90-Q9U2C7 UniRef90-B7PFKO UniRet90_EOVXN7 UniRef90-A4RTN7 UniRef90-C3ZTV1 UniRef90-H2TUG2 UniRef90-UPI0003315026 UniRef90-G7E574 UniRef90-l1FQ13 UniRef90-M2RB57 UniRef90 W9xSmo UniRef90-UPIOOO3334230 UniRef90-F7VVQ7 UniRef90 S9XYJ2 UniRef90-G7YX26 UniRef90-V5HMR6 UniRef90-H8X718 UniRef90 FOVBI3 UniRef90-J5K1U7 UniRef90-FOXCM1 UniRee90-UPI00032A66C0 UniRef90_B4QBG4 UniRef90_G2WYE3 UniRef90-V9KQT7 UniRef90_K5XD34 UniRef90-W6MJBO UniRefefo-G7INK5 UniRef90-B8MNH9 UniRef90_F7AGM0 UniRef90-K9IKF5 UniRet90 W5ME88 UniRef90--13JHR2 UniRef90-B7PE28 UniRef90-Q4S627 UniRet90_MOXXZ2 UniRet90_U7Q1T7 UniRet90-F6RHR: UniRef90-Q74Z50 UniRef90 E704J2 UniRef90-UPIO002B4C60B UniRet90-L2G344 UniRef90-V7AZQ8 UniRet90_GOS3E3 Uniinefol-I2J332 UniRef90-S3CNG2 UniRef90_W5JTH9 UniRef90_G7Y8J7 UniRef90_- 9 HZDI 9 UniRef90-W4JOH5 UniRet90-UPIO00194EBC1 UniRef90-L8FSA7 UniRef90-G7JUB4 UniRef90-UP10003AF79FO UniRef90_UPI0002ADA9DB UniRef90-B6AFX3 UniRef90-Q4SC61 UniRef90_Q4SC61
niRef90_S7MNJ4

PDQRLLMEEGKILEASKEKHRLEEKQRAVRRYRANEKTEYK PDQRALEDGNLEKATPEKLRLEEKQRSARRVRKEKGLEWQ


DDTEADERKDMDAATEAKSAVEDAQREDRKREESGEQYV PDQRLMEEGAWDESNVEKLRLEEKQRTRRRALEAEAELYE PDQRMLENAQYDEAAEEKKRVEQVQRDARAARAAANTGYE EVTDA: DAKDYAKATQVKTDIEERQRERAAERVEKATPFK PDIRAMENGNDDLASEEKKRLEEKQRAARKNRSKSEEWK

PDQRALEQGNADDAEEYKNYDEQAQR DRRSRDKSYAHSR TDQRYLEEGNLAAAETHKLRTEELQRKARKAREAAGHKWT PDIKAYESGDIEKAEELKLKLEQLQRDRRLMKKGHDVK PVRRNLISGDFQSAAEHKKII EERYREKERKRHGQGMPYR HVTRAISKGDQHRATQEKFALEEAQRRRARERQESLMPWK D
HVTQADLDRDQVQATQEKFVLEDAQRKEAKERGD VPWT PDRKYLEYGENKLANREKAKI EERERAKRKERELSGKKWE DVAEPLRKGNFSVALDAKSQLEQAQRDLRKKEKASGKKWQ PDQRLMEQGNFDDANVEK DRLEEKQRASRKQREDEAEQ
GVTEADHARDYSRATQLKSEDEERQREKAAARAAEGVEWK KTAQAVKDSQHELATEEKTKI EDMQREEASRRNQEGVEWH PDQRVMEEGNWDLANDLKQRLEDAQRSRRKRREAEVEPYK AVTQAIVGRQYSLATNLKTEI EEKQRQKAAERKTSNTEWK PDQRSLEEGDANTADNYKNTLEQSQRERRNQDKGYDQSRV

PDQRCDENGEYEDANSEKDRQEQRQRQARKMQE TGWK FTTLALTLNEPEEGVATDSRLRPDQRDMEAGR
GVTAADHSRQYTLATQKKHELEERQRVKAADRMERNHEWK PDQRLMENGEWDEANRKKLEEEEKQKELAMKKGDKYEEYE
PDRVALDEGD SSATSLKTQLEEKQRAERRTRKEKGEVWT
PDTRAMENGNMNEASTEKERLEEKQRTARKERAKNDEEWS PDURCMENGDMDVASQEKERLEEKQREARRGRAREETEWQ PDQRAMEDGDVDKAEETKKTLEDKQREKRKEWESSNSGPQ PDQRLLEEGQIEEAGEEKVRLEEKQRAARKARDKKKEEWK PDVRALEEGKLDLAEDEKARIEEMQRERRRAGAER EVTTAMNEKRYSDATRVKQDLEQAQRDKAAKRKDLNVEFK EVYRYLRDGDDEAATEHKRRLEEKQRAEERRRETLCTPWR

PDLQAYEQGDADKAEELKNKपEQDQRVRRKQMEENGTEHV PAVRPAHSDAYDEYDPEKSRFRPDQKLYEEGRVEEADEEK NVTKAMHAKQFSKATTDKQEREEAQRVKARERERTGAVYT PVIDGUVRGDUSHVVAEKSRIEQAQRCMRAHEAKNGTUWK
$E L S Q A V N K D W E K R E A K K V V E E R Q E V M R E R E S K G E T W V$
DVAAGLRAGDVRAAVAAKTELERAQREMRAAEADEGRTWT PDIRAMESGNMELAGVEKERLEEKQRAARKERAKGEDEWT PDVRALEEGSLDLAESEKARVEELQRERRRQGEER PDQNAYENGDVDEAEQLKLSLEEAQRLRRKENEATFKKHE SLGQA LSSKDWEKAREAKKIVEQKQREVSRERESKGETWV PDQRYLEEGNIEAAEMQKERUEQLQRERRKVLEENNLEHQ
pDDRAMENGNMDEASKEKERDEEKQRAARKERAKRDEEWS PDQRLLEEGNDSAAENVKSQLEQFQRERRKQREESGLDYQ
pdryatekgdmskgahkstiemograkkimdtkgekft GVLDGLGKGDLSQTVAEKSKIEQAQRRMRAREAAAGEVWT $\mathrm{E} V \mathrm{Q} \mathrm{E}$
PDQRLMEEGRWDEANAEKQRLEEKQREREAASQEEGAPHD PDVRLYEAGDVDAAEQLK पQLE QLQRERRSKGADVS
LDMRCLENGDDEGAAAEKQKLEEAQRERRKDMHSSGETWD GVTEAI HAKQFSKATTVKVELEENQREKARERERTGEVFK ELSEAI DSKEWERAREAKLEVEERQRK乌VKERESKGETWD GVIDGLKTGNLSQVVEEKSKLEQAQRQMRAMEAVRGVTWE PDQRMYEQGDVDKAEA LKLDLEQRQRDRR
KTVQA $\square 1$ ARNHEVATDEKTT $\square E N M Q R D E A A R R A E E G \square D W Q$
PDQRALEEGDLIKAASEKARLEDKQRKMRKEREQTGDEYK RVTTKLVSKEFGEATRHKHAIEQKQREDAAERKRKGVEFV DVTYNLKDRDDDAATAAKHALEERQRAEARARKENETSWE
 FSELLALTLNAWEAGTATDSRLRPDQRLMENGR
FSELAALTLNAWEAGTATDSRLRPDQRLMENGREESLMPWK PDQRLYENGDQDGAQLEKSKLEDEQR

UniRef90 B3RZY4 UniRef90-A9TMD7 UniRef90-N1JLW8 UniRef90-H2SPK9 UniRef90 UPI0003BB80D4 UniRef90-UPIO00455E019 UniRef90-B4JRV5 UniRef90-F2UHH1 UniRef90 U4LES3 UniRef90_UPI0002B4DAF1 UniRef90-UPI0002A49F55 UniRef90 UPI0003F0BE8E UniRef90-R9AFG0 UniRef90-B3RRV7 UniRef90-Q6FNL4 UniRef90-E9GSJ3 UniRef90_UPIO00292B1A2 UniRef90-M5E8A9 UniRef90-H2MLC8 UniRef90-F4Q696 UniRef90-W2RSE8 UniRef90 E5S9Y9 UniRef90-W4KGC1 UniRef90-D5GDT
UniRef90-L7IIH6 UniRef90-H2ZFT6 UniRef90_Q0U7M0 UniRef90-14YFF9 UniRef90-F7G2N0 UniRef90-M0S5W7 UniRef90-H2TDW8 UniRef90-A8Q0B5 UniRef90 C5PEG6 UniRef90 Q9U2C7 UniRef90_B7PFK0 UniRef90-E0VXN7 UniRef90 A4RTN7 UniRef90_C3ZTV1 UniRef90-H2TUG2 UniRef90_UPIOO03315026 UniRef90 G7E574 UniRef90-I1FQ13 UniRef90-M2RB57 UniRef90 W9XSM0 UniRef90-UPI0003334230 UniRef90-F7VVQ7 UniRef90_S9XYJ2 UniRef90-G7YX26 UniRef90-V5HMR6 UniRef90-H8X718 UniRef90 FOVBI3 UniRef90-J5K1U7 UniRef90-F0XCM1 UniRef90-UPI00032A66C0 UniRef90-B4QBG4 UniRef90-G2WYE3 UniRef90-V9KQT7 UniRef90-K5XD34 UniRef90-W6MJB0 UniRef90-G7INK5 UniRef90- F7AGM0 UniRef90-K9IKF5 UniRef90-W5ME88 UniRef90-13JHR2 UniRef90-B7PE28 UniRef90_Q4S627 UniRef90-M0XXZ2 UniRef90 U7Q1T7 UniRef90-F6RHR3 UniRef90-13J043 UniRef90 Q74Z50 UniRef90 E7Q4J2 UniRef90_UPI0002B4C60B UniRef90_L2G344 UniRef90 V7AZQ8 UniRef90-G0S3E3 UniRef90_I2JW32 UniRef90-M0UP97 UniRef90 S3CNG2 UniRef90-W5JTH9 UniRef90-G7Y8J7 UniRef90 J9HZD9 UniRef90-W4JQH5 UniRef90_UPIO00194EBC1 UniRef90_L8FSA7 UniRef90 G7JUB4 UniRef90_UPI0003AF79F0 UniRef90_UPI0002ADA9DB UniRef90 B6AFX3 UniRef90-Q4SC61

NMWFTQS\|EDENSEPSWV YKGTYW
PRWF VRAEGGDGGEEVWKLKSGKEGYWEQRSRGVWT
TRWF QLGTNPHTGAEDWLYTGG
PRFFEQRAGRWEP KNGUR KDPDSSDAS $\square$
PMWFERKKAQDSEDLVHVF KNTYWEAKAAQDWS
PRFFRPVPRPHTQETVREEWVYKGGYWRMKAA
PRFFQELEEPVLSEEGKKVLEGEKGEWKL
PRYFERDDESM NEYSWVYKYRD
PRWFQQGQNPHTRSQDWLFS GGYW
VK WF K N $\square$ G D D W $\square \mathrm{P}$
PRFFE
PRYFEK\SN

VEWKRDEGSACYWSKRERNDWSDVEK



PRFFE
PRLFRRV
PVWFEPQKCQFSGEVTHV YKNSYWESKKAQNWS
PRFFT $\quad$ RWFKK $\square$ NND WVP $\square \square$ NEKEPVYFEKRARVS
PRWFAKDKASGT YRY $\square G G Y W E T R G K G S W$
PRFFMPVDSSGRPE LTADGRKVLERL
PTWFVRVQDE SNGALIDQFKGGYWEAKEQQNW NRVFHEVGEHWVYNNSLQK
PRWFKKAEHELEKDVGTDVWEFNDDYD
TRWFK $\square$ GTNTHTGSQDWLYTGG
TRWFRRGKNPHTGSPDWLY
PQYFEEKD GKWHAKEGESSYWEKRENGKW
PRWFTEKFDPDTNTSYHVF
PRWFKQSGDEWLYVGGYWEQRAHG
PRFFTAPTESSGKPELTTQYGKE


PQFFRF $V$ NDEPVDEGKWEF $\square$ T GENSYWNRRKKQDWQ
TRWFAKGEDP ITHEPAWD YKGGYWEAKAEAGFSD
PVYFTHAT
PLLFRSSSSSHDDAEAPCPKATRDTFHR $\square$ A A G $L D \square Q L H$
PKHFKEGDWDCDP $\square \mathrm{Q}$ K WVPP
$P$ LLFR SAPGAKHDVFHRDAE
TRWFRQD LN RYTGTQDWD YTGKYWE
PRWFKKVGEEWQYVGGYWEERAKG
TKFFKEIPGSRDPGNDWAFVEGDKSYWNRRKRQDW
PKHFKEGSWDCDP I QKWVPP
PRWF LR VVDPGTEEVIWKLKTGRDGYWEERARGEW
PRFFRKTSDD SWVTNGTYWQLRKDPGFAK DDC

TRWFQMGTNPYTGSQDWDYTGG
PMWF R
PKWFKMTEDSPTPWGDLEVYEYNGRYTEHRAADDSSSVVV P L F FKNAEHD GDAVFHRLAAAAGAGTHL
A $\square W F E R C E D P \square T G E E$ G $\prod H \square Y K G G Y W E A K E R G S W$
PMYFRK SGNNSWTLLNGNENYWERRRRHDWS
PMWFS LEENEY LKCKEW
P VFFE Q
SKHFNKEGWECSP
PLFFR SCSGEE HEVFRRMVKEWGL

AK LIFR P VRGGPGGSEEGEEDLDW L L AN $\square$ DGDTPEK
S LYFEEYVDPQTEEKG YKY DRDYWEDRKNGNWS
PRYFEKD DESGVPR DTDDGEAADEEELKEDPAYTPEDA TR LIFHEDGECWVYDEPLLKK
$P R \stackrel{ }{F}$
PKYFKEDGWKCSP $\square Q K W V P$
$P Q \square F H E D H R P W D P \square K D \square A Q Y E Q D G \square L R T \square Q Q E A V G S P G P R$ PQWFTRDK

UniRef90 UPI0003BB80D4 UniRef90_UPI000455E019 UniRef90-B4JRV5
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UniRef90-H8X718
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UniRef90 M0UP97
UniRef90 ${ }^{-}$S3CNG2
UniRef90_W5JTH9
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UniRef90 J9HZD9
UniRef90_W4JQH5
UniRef90_UPI000194EBC1
UniRef90_L8FSA7
UniRef90 G7JUB4
UniRef90_UPI0003AF79F0
UniRef90_UPI0002ADA9DB H K R S S P D Q QLR K A S D Q P S G H
UniRef90 B6AFX3
UniRef90_Q4SC61
UniRef90_S7MNJ4

E S V R T W $\square$ WP P

HERSGPDQR $\square R K A S D Q P S G H$

S $\square$ T D $\square$ T D S D F S P K N P K T
KGS $\square \mathrm{DAKNVLGNNGCWRFDPKKWRA}$

GMEGW EHLYDDRTKGVWRVDE

P
${ }_{\mathrm{Q}}^{\mathrm{A}} \mathrm{EETDDVSS} \mathrm{\square E}$
LH D D R T K G VWR VD D N K

EREWK LDEGERTKGVWRVNEE

QTP $\square$ LP G Q K P N Q K N Q $\square P$ P S H

H S

UniRef90 179W8 UniRef90-R7Q9D8 UniRef90-K1VZ40 UniRef90- Q9LVD4 UniRef90_C1MJKO UniRef90_Q2HD45 UniRef90-G3GSN1 UniRef90_G4VN00 UniRef90-UPI0002C36135 UniRef90 W9QPB7 UniRef90-FOZJQ1
UniRef90 G7JUB2 UniRef90 R0F4S2 UniRef90-J9FGD3 UniRef90_Q0CBF1 UniRef90_F2DR34 UniRef90 E7KQS UniRef90 $\mathrm{L9L6B4}$ UniRef90_UPI0003F1B2D3 UniRef90-A1D8F2 UniRef90 F4Q167 UniRef90-T1G6T7
UniRef90-B6U019
UniRef90 W4W7J1 UniRef90 E2LQ58 UniRef90-R1EV2 UniRef90_F4Q168 UniRef90-10Z058 UniRef90-L8YF52
UniRef90 UniRef90_L8GK15 UniRef90-G2YVV7 UniRef90-D3AWM1 UniRef90_F4P0X3 UniRef90_F4PXX5 UniRef90-M0U050 UniRef90-GONYU5 UniRef90-UPIO0006CB82D UniRef90-T1HCH5 UniRef90_11MSM4 UniRef90 K1WPH2 UniRef90_M4DBR6
UniRef90_UPIO0042BDD3B UniRef90 G0QML3 UniRef90 L1JSZ2 UniRef90-B9HBM7 UniRef90_A0A016PD39 UniRef90 E1FUH UniRef90-H0ZJX8 UniRef90_UPIO002B49A7B UniRef90 IOZ6J5 UniRef90 H1V4Y2 UniRef90-B6AD06 UniRef90_S3DT26 UniRefo-T5AE90 UniRef90 ${ }^{-}$A0A058Z4EC UniRef90_W9SG34 UniRef90 E3QLF5 UniRef90_UPI0002B493A1 UniRef90-A0A024U483 UniRef90_A2GIZ1 UniRef90-F0XEI4 UniRef90-W9QEGc UniRef90_UPIO004413C1E UniRef90 UPI0003F49197 UniRef90-V7CBJ9 UniRef90-Q54EF5 UniRef90 Q4PAA1 UniRef90 A0DTI5 UniRef90-G1 XMF5 UniRef90_C1HDJ9 UniRef90 J9FKV7 UniRef90-D3BDW1 UniRef90_S9R7X7 UniRef90 UPI00032880B8 UniRef90_L5M3K7 UniRef90_-V9FLN3 UniRef90_J9IN59 UniRef90 UPI000444A019 UniRef90-G2QK01 UniRef90-J4H2B0 UniRef90_F4Q0W3 UniRef90 UPI000185E7E9 UniRef90-A0A059D1C6 UniRef90_UPI0004407DBF UniRef90 A0DRG1 UniRef90-A2E8G9 UniRef90_J915L9

1
10 WS $\quad$ K $c^{20}$
20 T 30 TGK K D TS R $\prod_{R}^{30}$ LTP VY LTN E P T S V GMDVMNMSLPI WLFEPST D A A SRQALWRQLASV D DKAPSVSLWSTLKS D SKSLA SRFSELVVF EKDSENTPPNLIQRILSLVRAKGDLSNVTGPINFLAPCS EPDETASRKALWSQLKGM MGADMSLLSVPVF DMEPLT

##  

ETVSEENKS LIWTVLLKQV RPGMDLSRVVLPTF LLEPRS R S D F S V WS I L K K CI R G G L E L S K I TMP DA F NE P L S
 GS G S H D $\quad$ A A L G M M L K K
 LKVGSDVNS F V VPPVSSANEPTS

 DQMENQSVLTSVIKK $\quad$ IGGFGADLTSMTVPGAFILPKS EEDLAS QRGVI WDLVKSFGKAAKELTSTSMPVRLEEPRS


 L P S L F NMPKS
 $L W$ S I M K N Clla N T K D S S K L K M F LGG $\quad L R K F \square G D \square A S V S L P A R L L E P T P$ $N G \square R R \| L S L F K N V R L G S D L T N F Q L P P Q L N Q P R S$ GK DVVSVSLPVR IFEPR S


 MS LE EESDTE RASNLLRRQAMTIDKDLLKYKAPPNFNDPKS


 E P Q S D GSK LK T F LGG ILKK F $\square G D L A S V S L P S Q L L E P T P$


E P Q S D GSK LK T F $\square G \square L K K F \square G D L A R F S L P S Q L L E P T P$

 MK QF TKNLLK CDYSNMSVPCSYSEPRS

 PQDSETKGKITMLIGDLRKFLGDLARESMPANLMEPDP


KK Q G GVVKDVIKSAGAKGKSAVSLSLPVRIFEPRT QRGVLMNVVK QLLFKGLT ITHISLPIKIFEARS EPQNEGSK $\square K$ TF $\square S \square L R K F V G D \square A S V S \square P S Q L L E P T P$


 MT P E E QEREVNWKMVKK T TKKF SLDL QHFSFPVA YSEPRS M T P E EQE R E V N K M M
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UniRef90 G7JUB2 UniRef90 R0F4S UniRef90 J9FGD3 UniRef90_Q0CBF1 UniRef90_F2DR34 UniRet90 E7KQS UniRef90-L9L6B4 UniRef90_UPI0003F1B2D3 UniRef90-A1D8F2 UniRef90 F4Q167 UniRef90-T1G6T7 UniRef90-B6U019 UniRef90 W4W7J1 UniRef90-E2LQ58 UniRef90-R1EV24 UniRef90-F4Q168 UniRef90_IOZ058 UniRef90-L8YF52 UniRef90-D3B7W5 UniRef90_L8GK15 UniRef90_G2YVV7 UniRef90-D3AWM1 UniRef90_F4P0X3 UniRef90 F4PXX5 UniRef90-M0U050 UniRef90-G0NYU5 UniRef90- Q54ID7 UniRef90-UPI00006CB82D UniRef90-T1HCH5 UniRef90_11MSM4 UniRef90_K1WPH2 UniRef90-M4DBR6 UniRef90-UPI00042BDD3B UniRef90_G0QML3 UniRef90 L1JSZ2 UniRef90-B9HBM7 UniRef90-A0A016PD39 UniRef90 E1FUH UniRef90-H0ZJX8 UniRef90_UPI0002B49A7B UniRef90_IOZ6J5 UniRef90 H1V4Y2 UniRef90-B6AD06 UniRef90_S3DT26 UniRet90 U6P6R UniRef90-T5AE90 UniRef90-A0A058Z4E0 UniRef90_W9SG34 UniRef90 E3QLF5 UniRef90_UPI0002B493A1 UniRef90-A0A024U483 UniRef90 A2GIZ1 UniRef90-FOXEI4 UniRef90-W9QEGO UniRef90-UPIO004413C1E UniRef90 UPI0003F49197 UniRef90-V7CBJ9 UniRef90-Q54EF5 UniRef90 Q4PAA1 UniRef90 A0DTI5 UniRef90-G1XMF5 UniRef90_C1HDJ9 UniRef90 J9FKV7 UniRef90-D3BDW1 UniRef90_S9R7X7 UniRef90_UPI00032880B8 UniRef90 L5M3K7 UniRef90_V9FLN3 UniRef90_J9IN59 UniRef90 UPI000444A019 UniRef90_G2QK01 UniRef90-J4H2B0 UniRef90_F4Q0W3 UniRef90 UPI000185E7E9 UniRef90-A0A059D1C6 UniRef90_UPI0004407DBF UniRef90 A0DRG1 UniRef90_A2E8G9
UniRef90_J915L9


NLE Y W NY LD A P NAFAA

$M L Q R L T E D L E Y H E L D D K A V K C$ MLDRLVDDY

KCNSGESP

Q Q Q C Y A E
TLE
L
S $\square$ Y CTASDLLSNLNS GKTP

NTERVCSSMGFAPDY LDE
NLEYWNYLDYPNAFANI
NLEYW NYLDRPETFVSU
IL QKCATSQEYTDILETA
$\triangle L E L A A S Y L K Y F H L L S G A L Y$

NLERVCDDMDYAPTFLNTAY SIQRIVDMWSFAP

N LE Y W N Y LD S P N A F VA $\square$
LIQQMSEQFAHFDLLLQAND■ LLAFLGSCWGFAPFC
QLQ ${ }^{L} \mathrm{C} F \mathrm{G} E \mathrm{P}$ L

DAALSQDI
GESDDD
GKSDDH
GKQQKEF
ETDP

A Q NDA
KY $\square$ K M A A DTSDQ
GTADDP
KDE
LSRAADAQTDE
YCTREDMLSRCCRAES P

NLERFCYSFTFAPQ LLE
KAAK $\square D N \square$
LLERMTDLDF
SF $\underset{N}{\mathrm{~N}} \underset{\mathrm{~F}}{\mathrm{~L}} \mathrm{AMKYADLAAAATTP}$

|  |  |
| :---: | :---: |
| UniRef90-R709D8 | VLRDCLVAAFVISAFSHT ERV |
| UniRef90 K1VZ40 | KR\\|AFVAAFAMSNYSS T T GRIAK |
| UniRef90-G4NA50 |  |
| UniRef90-Q9LVD4 | TERMKAMVTWYISTLRP LITF GLAPYNPVIGET |
| UniRef90-C1MJK0 | HARLALIATLAISTYSCS ERTKKPFNPILGET |
| UniRef90-Q2HD45 | VERFVAVVKFYLSGWH\|RPPG VKKPLNPVLGEV |
| UniRef90-G8JX89 | VARLGLVASFATSYLSVY REKARSMRKPLNPLLGET |
| UniRef90-G3GSN1 |  |
| UniRef90-G4VN00 | IKRMELVSAFAVSSMSSNA GRIGGPFNPLL |
| UniRef90-UP10002C3 UniRef90-W90PB7 | QDRVGGFVEYYLTAFHEGRKGTL VDGAKKPYNP |
| UniRef90- FOZJS1 |  |
| UniRef90-G7JUB2 | LERFTSVVAWSISTTRPTS |
| UniRef90-ROF4S2 | LERLLKSVTWNISTLRPNYMEGMSPYNPVLG |
| UniRef90-J9FGD3 | TERFEYVAAFUVSSLSCNYM |
| UniRei90-F2DR34 |  |
| UniRef90-E7KQS1 | RFLYVMKWYLAGWHDAP KAVKKP品PVL |
| UniRet90-L9L6 | R K V V |
| UniRef90-UP10003F1B2D3 | VERMQCVAAFA |
| UniRef90-F4Q167 | ERMFQVYRYYMSTFKVYD |
| UniRef90-T1G6T7 | ELRMLTAVEWYLTSFHAARQGS■ AKKPFNPIL |
| UniRef90 - B6U019 |  |
| UniRef90 W4WJI |  |
| UniRe |  |
| UniRef90-F4Q168 | FLQVYRYFMSTPRISS GEKKKP |
| UniRet90-102058 | LERMVYVAAFAGSAYASSY FRAGSKPFNPVL |
| UniRef90-D3B7W5 | QERFIQVVKYLFTA CRLPEDNMRKPLNPVL |
| UniRef90-L8GK15 | RLKLVMTFAVSGFF NTVENQKGKPFNP |
|  | EVMRFWFTK DLKYVKGKPCKPYNS |
| UniRef90-D3AWM1 UniRef9- $4 P 0 \times 3$ | QRFLQVLRYHMTW DTMKMFFPKNPLNP L GEU |
| UniRef90-F4PXX5 | EQRFLQVLKYHMTW PTMMFFMNPLNP |
| UniRef90-M0U050 | RFASVVAWSUSTRPALL |
| UniRet90-GONYU5 | MQRMEYVAAFALATVSANH KRLSKPFNPLLLET |
| UniRee99-G54ID7 | ERFRLTTAFAIA ALY M NVCKQLKPFNP |
| UniRef90-T1HCH5 | QLAHVAAFTISSYS TTSNRTGKPFNP |
| UniRet90-1MSN | G |
| UniRe990-K1WPH2 | EVVM |
| UniRefo-UPIOOO42BDD3B | SRRKLVLRWYLSGFYKKPKG |
| UniRef90-G0QM | RFKLTISYAVAGLHNAC |
| UniRet90-113 |  |
|  | RLVYSASFFISVY NAFQRTWKPFNP |
| UniRef90-A0A016PD39 | RMLEVVRFWLTK DLKYAKGRPCKPYNSCLGEF |
| UniRet90 E1F | VDRMAYVIA ${ }^{\text {V }}$ |
| UniRef90 UPIO002B49A7B | LERLGAVVGWSISTTRP LTFGAFPYNPILGET |
| UniRef90-10Z6.J5 | RLLLVAAFAQIGFS A GLRPYKCMNPVMG |
| UniRe990-H1V | RSLKVLRMLLVAMRSQYYVAGAPGVSTKKPL |
| UniRef90-B6AD06 | DVITFSLLTPYAS |
| UniReto-S3 | TGRFRKFFNP |
| UniRef90-T5AE | ADRMGEVVRFWLTK ${ }^{\text {L }}$ (TKYAKGRPCKPYNSCL |
| UniRee90-A0A058Z4E0 | LRRLALVSAFAVSSYA RTAVRFNRKPFNPLLGET |
|  |  |
| UniRef90 E3QLF5 |  |
| UniRef90-A0A024U483 | FKLTMAFAVAGWH HTVGCMKPFSPILGET |
| UniRef90-A2GIZ1 |  |
|  | $\square \mathrm{ER}$ |
| UniRef90-UPI000441 |  |
| UniR |  |
| UniRet90-V7CBI9 | LDRLI LVVAWT S T TRP |
| UniRef90-Q54EF5 | GERFLQFVKFYLTGWH TRPKGICKPFNPVIGEE |
| UniRet90-A0DTI5 |  |
| UniRef90-G1XMF5 | ERCLAVLTFWFTK ${ }^{\text {a }}$ KGKPCKVRHNIPSDVN |
| UniRef90-C1HDJ9 | GRMLEVLRFWFTKDLCNWE\EDT ERP罭TPSVP |
| UniRef90-J9FK | AYVGVYSTTLLAN DERNS |
| UniRef90_D3BDW1 | SRRMATVIQYFLSClRDGN FTKKPYNALLGEN |
| UniRet90_S9 |  |
| UniRe990-UP10037288088 |  |
| UniRef90-L5M3K7 |  |
| UniRef90_V9FLN3 UniRef90_g9IN59 | LERFKLVISFAMSGLYGS■GQL CTSQYKPFNPGLGET |
| 44A019 |  |
| Unil | VDRMLEVLRFWFTK D $\quad$ KKYAKGKPCKPYNSCLGEF |
| UniRef90 F4Q0W3 |  |
| Ref90 UPI000185E7E9 | LERFKWTVTFAVASLHLGMKHGDKELRSQRMPFNPLLGET |
| UniRef90-A0A059D1C6 | LERLTSVVGWSIISMRPMEDIGVAPYNPILGET |



## UniRef90 1719W8

 UniRef90-R7Q9D8 UniRefoto-K1VZ40 UniRef90 ${ }^{-}$Q9LVD4 UniRef90-C1MJK0 UniRef90-Q2HD45 UniRef90-G8JX89 UniRef90-G3GSN1 UniRef90-G4VNOO UniRef90-UPIO002C36135 UniRef90-W9QPB7 UniRef90-FoZJQ1 UniRet90-G7JUB2 UniRef90-ROF4S2 UniRef90_-J9FGD3UniRef9o-QOCBF UniRef90-F2DR34 UniRef90-E7KQS1 UniRef90-L9L6B4 UniRef90-UPIO003F1B2D3 UniRet90_A1D8F2 UniRef90-F4Q167 UniRef90-T1G6T7 UniRef90-B6U019 UniRef90- E2LO58 UniRef90-R1EV24 UniRef90-F4Q168 UniRef90-10Z058 UniRef90-L8YF52
UniRef90 D 3 B 7 W 5 UniRef90-L8GK15 UniRef90-G2YVV7 UniRef90-D3AWM1 UniRef90-F4P0X3 UniRef90-F4PXX5 UniRef90-MOUO50
UniRef90 GONYU5 UniRef90-Q54ID7 UniRef90-UP100006CB82D UniRef90-T1HCH5 UniRef90-11MSM4 UniRe99-K1WPH2 UniRef90-UPIO0042BDD3B UniRef90-G0QML3 UniRef90-L1JSZ2
UniRef90-B9HBM7 UniRef90-A0A016PD39 UniRet90-E1FUH1 UniRef90-HoZJX8 UniRef90-UPI0002B49A7B UniRef90-10Z6J5 UniRef90-H1V4Y2 UniRef90-B6AD06 UniRef90-S3DT26 UniRef90-T5AE90 UniRef90-A0A058Z4E0 UniRef90-w9SG34 UniRef90_E3QLF5 UniRef90-UPIO002B493A1 UniRef90-A0A024U483 UniRef90-A2GIZ1 UniRef90-FOXEI4 UniRef90-W9QEG0 UniRef90-UPIO004413C1E UniRet90_UPIOOO3F49197 UniRef90-V7CBI9 UniReffo-Q54EF5 UniRef90-AODTI5 UniRef90-G1XMF5 UniRef90-C1HDJ9 UniRef90_-J9FKV7 UniRef90-D3BDW1
UniRef90
S9R7X7 UniRef90_UPIOOO32880B8 UniRef90-L5M3K7 UniRet90_V9FLN3 UniRef90-_J9IN59 UniRef90-UPI000444A019 UniRef90-G2QKO1
 UniRef90-F400W3 UniRef90-UPIOOO185E7E9 UniRef90-AOA059D1C6 UniRef90_UPI0004407DBF UniRef90-AODRG1 UniRef90_A2E8G9
UniRef90_J915L9

SYGHTHVQSKVTGKSVEVKVVYGPYYNLLKY ${ }^{180}$ GECEHYKVQ ${ }^{200}$
180
190
200 WEAGEVVD WKYYGEVDAKNNFAGYFE: RPTGVAHYPEGYVVEHYSWKK

 VRVDGTLKPRSKFLGNSAASMMEGNRGADPSKGERYTLTQ MCVNAHVWTKSKFLGMSIVTMVGEGILSLLEHGEEYTFSL YSLRATVQFKGRFWGKSVVQPKGLVTLQLYHFNESYTWQN LCELNTVWTKSKFMGMSVVSMIGEGVLRLLEHGEEYVFTLL YILQLETELKSKFYGNSSVEIEGVNHFINKKTGDHYTWNH VEMDWCQQAVPKFRTSTEAEVHGKRVLNLRNHGETYEMNC YEFDGVVSPRLKFWTSIVVQPSGSFRLKFLNHNETYTWKT VSARGFDQUSAKFTGTSERVTPGQQNNIEKRDNEEYQLTH I RVDGVVIPKSRFDGNSSAAMMDGSTVLQFLKPEKYVLTQ FCLSGSILAKSKFY


TYVSYHDQVKSTFMGTYAKपFEGTVRTRFDKYNEVYTGTC YHFYGFGEWSASFRGNSVKGHQAGPNIINFADGGCITYS MSARGFDQISAKFTGTSIKVTPGEHNNIERRGNEQYQLTH
 VELDWCHKPVPRFHGSVEAVIKGKRHLRLLKFGENYEMDS FDLQQESWTTTKFWGNSLDVFHGQNHLYLNSTGEHFTWKV YKHGHYEYKAKLNSANSVGSQEGPNHVIFYDGQEIIYRF
YCWQEFMSSKFRGKYLQVIPLGTAHLQFH GGSHYWRK



 TLWQEITDASKFRGKYLSDMPLGADHEFHS GGNYVWRK DEMDWCHYLSKYRGTSVETEMCGKRELKLLNHGETYVMNC TRADGYARVEMTFSSSVNDRQVGHAVLHIDRYDEDYVI YRVWGHDSDKSRFTGQSEVSVLGNVNITFSGRNDYYTYNR WF QTFSAEDTNAWAQTCEFAPERPVRLGQQNGEDYRWNK M WQDLRPTQKF GGRSIEMSYGGTVFLDLHTERYSWER LSARGFDQDTAKFTGTSVRVLPGEHNDGIFITGETYRLTH


FClS GS LLAKSKFY
LLWHASMSVKSNAMLNTNKGPVRVTFPDEGLPGTTDEYNL YEFFGHYEFTANMGANNLKSGLRGPNNDKFADGQHLRFRT MAMAGVDQISAKVTSTAAVRIGPGSQNKGLFEGEKYQVTH LHAKGFDQH TAKFTGTSVKVMPGEHNTVERRDHETYQLTH VELSGHDQQSAKVSGTTLRUVPGSLNKGLFVKGETYHITH FSFWGNFAFRAQLKGNYGVLRQEGETAVRFRHDETIRFSQ LEMWWCQHPVTRFYSTSVETEMHGKRQLKLLIRGETYEMNS $V$ V MG $\|$ DQDSARVSGTGVRVAPGALNKGUFMRDEQYQVTH


UniRef90 1719W8 UniRef90-R7Q9D8 UniRef90-K1VZ40 UniRef90-Q9LVD4 UniRef90_C1MJK0 UniRef90_Q2HD45 UniRef90_G8JX89 UniRef90_G3GSN1 UniRef90_G4VN00 UniRef90_UPIO002C36135 UniRef90-W9QPB7 UniRef90-FOZJQ1 UniRef90-G7JUB2 UniRef90_ROF4S2 UniRef90-J9FGD3
UniRef90 ${ }^{\text {Q0CBF1 }}$ UniRef90-F2DR34 UniRef90-E7KQS1 UniRef90-L9L6B4 UniRef90_UP10003F1B2D3 UniRef90_A1D8F2 UniRef90_F4Q167 UniRef90-T1G6T7 UniRef90_W4W7J1 UniRef90-E2LQ58 UniRef90-R1EV24 UniRef90-10Z058 UniRef90-L8YF52 UniRef90_D3B7W5 UniRef90_L8GK15 UniRef90_G2YVV7 UniRef90-F4P0X3 UniRef90-F4PXX5 UniRef90-MOU050
UniRef90-GONYU5 UniRef90_Q54ID7 UniRef90-UPIO0006CB82D UniRef90-T1HCH5 UniRef90-I1MSM4 UniRef90-K1WPH2 UniRef90-M4DBR6 UniRef90_UPI00042BDD3B UniRef90_G0QML3 UniRef90-B9HBM7 UniRef90_A0A016PD39 UniRef90_E1FUH1 UniRef90-H0ZJX8 UniRef90_UPI0002B49A7B UniRef90-10Z6J5 UniRef90-H1V4Y2 UniRef90_B6AD06 UniRef90-S3DT26 UniRef90_T5AE90 UniRef90-A0A058Z4E0 UniRef90-W9SG34 UniRef90_E3QLF5 UniRef90_UPI0002B493A1 UniRef90-A0A024U483 UniRef90-A2GIZ1 UniRef90-FOXEI4 UniRef90-W9QEG0 UniRef90-UPI0004413C1E UniRef90_UPIO003F49197 UniRef90_V7CBJ9 UniRef90-Q54EF5 UniRef90_Q4PAA1 UniRef90-AODT15 UniRef90-G1XMF5 UniRef90_C1HDJ9 UniRef90_J9FKV7
UniRef90_D3BDW1 UniRef90-S9R7X7 UniRef90_UPI00032880B8 UniRef90-L5M3K7 UniRef90_V9FLN3 UniRef90-J9IN59 UniRef90_UPIO00444A019 UniRet90_G2QK01
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UniRef90_J9I5L9
 PQALVVNLFVGGAFVDHFGTVELKNTTGTSATLNLTQCGW
 PDVKVRGFLSACLYPEVVGTYHIVGSSGYISEMKFSGAGV PTTRINNNIVGRTWMDSFGELVVCNTTGASAVI KFKECGLL


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## UniRef90 1719w8

 UniRef90-R7Q9D8 UniRef90-K1VZ40 UniRef90 Q9LVD4 UniRef90-C1MJK0 UniRef90-Q2HD45 UniRef90-G8JX89 UniRef90-G3GSN1 UniRef90-G4VNOO UniRef90-UPI0002C36135 UniRef90 W9QPB7 UniRef90-FoZJQ1UniRef90-G7JUB2
UniRef90-R0F4S2
UniRet90-J9FGD3
UniRef90-Q0CBF1
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UniRef90-UPIO003F1B2D3
UniRef90-A1D8F2
UniRef90-F4Q167
UniRef90-T1G6T7
UniRet90-B6UOIT
UniRef90- E2LO58
UniRef90-R1EV24
UniRef90 F4Q168
UniRef90-10Z058
UniRef90-L8YF52
UniRef90 D 3 B 7 W 5
UniRef90-L8GK15 UniRef90-G2YVV7 UniRef90-D3AWM1 UniRet90-F4P0X3 UniRef90-F4PXX5
UniRef90-M0 UniRef90-GONYU5 UniRef90-Q54ID7 UniRef90-UP100006CB82D UniRef90-T1HCH5 UniRef90-11MSM4 UniRef90-M4DBR6 UniRef90-UPI00042BDD3B UniRef90-G0QML3 UniRef90 L1 JSZ2 UniRef90-B9HBM7 UniRef90-A0A016PD39 UniRet90-E1FUH1 UniRef90-HoZJX8 UniRef90-UPIO002B49A7B UniRef90-10Z6J5 UniRef90-H1V4Y2 UniRef90-B6AD06 UniRef90-S3DT26 UniRef90_T5AE90 UniRef90-A0A058Z4E0 UniRef90-W9SG34 UniRef90 ${ }^{-E}$ E3QLF5 UniRef90-UPI0002B493A1 UniRef90-A0А024U483 UniRef90-A2GIZ1 UniRef90-FOXEI4 UniRef90-W9QEG0 UniRef90-UPI0004413C1E UniRef90-UPI0003F49197 UniRef90-V7CBJ9 UniRef90-Q54EF5 UniRef90-Q4PAA1 UniRef90-AODTI5 UniRef90_G1XMF5 UniRef90-C1HDJ9 UniRef90-J9FKV7 UniRef90-D3BDW1
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UniRef90_J915L9

250
260
270
280
FTPWKHSNGGRMINPNNTFNYDKSAFKTEGDAWDSF\|ISN FSAGRYEVAGELLDSNATKVVLKGAWKAKGEGTNRLWMA RGATAFQUKGRVDDAHGKEQWEDAGPH K SRKQ LYEISGHWDRTVTAK LGGGRWEVSGEILNAAG EPRMSLRGKWNEKVEVT
FS S RSEDLT $\square$ T $\square$ Y DNDKK $\square$ S GN $\square K G Q W T K Q N D A T G E \square V W E$ YGGKLH
SGHGCNRVTGELYAPSTLDKMQ
YGGKVH
LGLDRGNPGS DKGTDFESSSM KPDFEDNGHWDRTVTV LGAGRYTVTGEVLD DSEDDVRYRLSGKWNESLQMD YSFLGGGGNSKLIKGKILDSSSFNVLYDVDGQWDRTV NV ERNRGNKNRSUKGKIFESSTGNQ
 VF GTYDADEGTVKDYDGN AYYEISGKWNDVMYLK
 GRAQNKVEGLI FRYDPNQDPEGDVLAKISGSWHGQIYYT
 GGGDARCVRGRIFHSAEP GDTLCEIDGFWDRQVTRR
 FSGRSESFEATMSHAPGFGGSGAKESHVVEGLCHQTSKF LF GSNNVVEAKVY KGKEKI QKI KGCWDQELK IN
 LYGSYNTFDTTIY KMFPTDYDRGEVVFKNKEDDKKEVVCKVQGSWDSCIEFD LGGTQNKVEGVVFRYDPDNDNKKDVLARVSGNWKDKLYFS
 IGSQWHTVNVQVF KGTELIYDITGTHVDTLNIT F LGF GGSSKS IRGK $\quad$ GHSKTGKTIYEIDGQWDR』VKLK YNHKGGDVHVEGHIFEG KNKI KALY GNWTLFLASC FEGTQRKVQGE ILDSKGNARVHINGKWDKYVKAKKHSEGP FFSRAEFPTDYFTGT\NRDSDKAQIINNVKGSWLEYLEGF
 FGFRA GRRDIKGKDFDSLDMKI LYKK EGHWD STVTV IERFKGNNNRTVMA QGGA $\square W R P G V S G A D A H G R R E D P \square A S L W H S Q G Q P D P F P S M G$
 $L G M W G S W H R V E G K V K S K V K G V K K L I G S I Y G H W D T Q I Y R D$
$F G A G R Y E V D G Y V Y N A A$ LGRTTNKIDDGVI FKYDPENDDKDDVLARLSGPWTLGPRPV TEVYGS IMDNRGILVVKDFGYYDRFLQKVNQK WDEEYLFE LGRKSNSRA $V V N G S D F A Q S F S D K N L C H I D G Q W D R S V T M K$ FS GKNALKHEMTGVVELNGKKLPAPATISGHFDQKLVAN
 FGS DLNS LGKTQNKVEGVI FRYDPENDNKKDVLARIS GN LGRTTNKDDGVVFKYDPEKDDKTRVLARLSGEWTDKEQLI $L G R T T N K D D G V V F K Y D P E K D D K T R V L A R L S G P W T L G P R T V$
$G G F W G G G A S A S A N K N T G Q L S V P G C P A G T L S G R W D E S Q Q W R ~$ FGAGRYEVDGYVYN LGRSTNRVEGUIFKYDPENDDKVNDKARLSGPWREKDEFT KGMFASNKVPT DRFRGTLVSKMDDVCEVSGSWDEELRFG SEFAYSY YYGGПKK DRGKKEKKTDFTKVYRGDYCKQLT



 VGRSKYRVVEGVI FKYDPENDPDKDDKARIUDGCWDSEXYYT
 VK G D $V Y$ VYNE
 FSSSKTPTDS
F S S SKTPTDS RRGVI LDTSVSPPREI CDVT GS WLH DL
FSGKRDEYVGVIYQCMKQIKDMSRQI CDI QGSWLRSLRDD
 LGKAQF LVVEGVI HWT RVK HVPRSCILATFDGSWKHKDRWK $\frac{F}{F}$ MGSYNYFESTVY RGKEKLHKIKGHWDKQLDDN PTHSSSHVPSDFFYGEDKDTATGASRSVVTGSWDDQVNFD G R N R R T



UniRef90 179W8 UniRef90-R7Q9D8 UniRef90-K1VZ40 UniRef90 Q9LVD4 UniRef90-C1MJK0 UniRef90-Q2HD45 UniRef90-G8JX89 UniRef90-G3GSN1 UniRef90-G4VNOO UniRef90-UPI0002C36135 UniRef90-W9QPB7 UniRet90-FOZJQ1 UniRef90-G7JUB2 UniRef90-R0F4S2 UniRet90_J9FGD3 UniRef90-QOCBF1 UniRef90-F2DR34 UniRef90-E7KQS1 UniRef90_L9L6B4 UniRef90-UPI0003F1B2D3 UniRet90_A1D8F2 UniRef90 F4Q167 UniRef90-T1G6T7 UniRef90-B6U019 UniRef90 W4W7J1 UniRef90-E2LQ58
UniRef90 R1EV24 UniRef90-F4Q168 UniRef90-I0Z058 UniRef90_L8YF52 UniRef90-D3B7W5 UniRet90-L8GK15 UniRef90-G2YVV7
UniRef90-D3AWM1 UniRef90-F4P0X3 UniRet90-F4PXX5 UniRef90-MOUO50
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UniRef90_G1XMF5 UniRef90-C1HDJ9 UniRet90-J9FKV7 UniRef90_D3BDW1 UniRef90-S9R7X7 UniRef90_UPI00032880B8 UniRef90-L5M3K7 UniRef90_V9FLN3 UniRef90-J9iN59 UniRef90_UPI000444A019 UniRet90-G2QKO1 UniRef90-J4H2BO UniRef90-F4Q0W3 UniRef90-UPIO00185E7E9 UniRef90-AOA059D1C6 UniRef90-UPIO004407DBF UniRef90-AODRG1 UniRef90-A2E8G9 UniRef90_J915L9

DWENWKPNKKPANNSTYYGFSYMTMQDGQ ${ }^{310}{ }^{390}$ SPHYDDSRFR ${ }^{320}$ GSHLLSEEEVYANCTKFTKK\|LSHSDHALELPPNDSRFR

DPKGR\VEEYNDEADENपPAAMELPPLEEQSPWESRRAWN NTKTGQLEVYYKASENTAKKTP\|VENLQEVSESESAVVWG RPTETLWTKLPMPTDDNPYGFCNLMSTAPPGLLASDSRLR
$N T R Q T A Q R E M F F N A L K S K P S A P M C R P L E E A E R E S Q R L W A$ VNELVPEAPKKFGFTKFTANLNEDTELEEGKLPPTDSRLR

KDDTSGKVRVIYNSKEVISKTPMVKDPKGVWPSESALVWG NGSSSTTSTTLWEASKEPITNKFLFPKWRKILPPTDSRLR KDTKSGKVKVIYDAKEVISKAPIVKDAEGVWQTESALIWG KNLKTGELEVIYNAKENUAEPPTVKNPKEVMESESGII WS ElTNFEFRYDDW
VPGTNEPQLLIDDTPLFPAPKNVPPSEEQLSNESRKFWS DIKSGEVSVLYDANDA IANLVTPEVKDEEGLSSSESVVWS DLKQPRSPKVFLDTHKESPLRPKVRPGSEQGEYESRKLWK PTPD $\square K$ QWRLIRHTVKF EEQGDFESEKLWQ D P
MAG TAEPRLLIDVTPLFPVPKTLPPEEDQLSNESLKFWA SEYKKNDHTTF FKRKGMTPSIIQTPHTLYETDSSNVWR YAN GQTKLIDTGKLEDKHKCVRKVSDQDDNESRRLWS DLATGEVSVLYDAQRA乌GDLATPVVQDRKVSASESAVVWG E P
SGPRSGKEFHDVNGPKEEVTAVGAEKDGKMGGFETRQLWK RDGADTKQEKRYGFTTFAAALNETTPVEEGKVAPTDSRLR SEYKKDDYTTLCKRTDLTITELQFPSSLLDTDSTKVWG KCDWECKEKPEGDKYGFTYFARMLNSGKGLAPLPSDSRRR ANPMPKGFEQYYGFTQFALELNELDSSSRSLLPPTDTRFR EYKKDDYK LWDRRT MKQGAMRGPEVLLPTDSSDVWK LGPKGDNQDLLIDLAPLQVAPKIMPPTEKQLPNESGKFWS LAGSNED LLEADMKTSDVEPKIVQDLANQHELESQRVWQ
 DVHSGEVTVLYDAKKALSGLKTP LLQAPQNWPTASATVWS SRKSSGEHTKQWEATHEPPENFNWKHGKWUQGLNEMSKEYR PGTSMEGTHDNPDYKTGPYTVAW DPLPSDCRFR PVTS STEGTHDNPIYKTGPYTVAWVQDESVWPTETALVWG LGPKGGDQTLLDDLAPLSVAPKLIPPQTAQLPNESLRFWS EVEVIYNAKESISGLKPPMSTVKNDKEVTETESAMVWS RTPWGHPRRPPAFASPPVPSGRDSPGPPAQSKCPARRLWQ EESKEEEVMYDFDQSAKFFGVEQVKMKKASLPTDS LVVWS PCDM
 A IPLPKNANQYYGFSQFACGLNEFLNDDERLAPSTDSRFR K
YHNGNAKVIYDANEVISNDKTPVVVDPKGVKATESAKVWG MANGSTKTLWRCQFSEWTASLNELPVGQRKRLPASDARLR DAR
LGPKSDTQT LLIDDSPDSVAQKVLPPDETQLPNESDKFWS $V$ VGDTPDHPQYFGFSDFTMGLNELYPEDRASLPPTDSRLR
 ATPPPANHLQQFGFSEFAVGLNDPNQCPELLPRTDTRFRT
$P C D L E G E P L P G A E L K E V W R I A K V P E N D K F Q Y Y F A H K L N R$ NSHPPEARYT GIDDLAPLNVAPKVVPPKEKQLENESLTMWG

ASHPVAEQTVTWDLNNDRAKRPHQDIADEYLLPADSRFRF HRRCGGVWDLCAAANERRESHSECLRYKGVLPSEAAVVWG KLKGEKDWTTLIDLDLLAVIPKKNVRPLHEQDEAESRKLWD NASN
K ${ }^{1} \mathrm{~N}$
KKGDK EPRLLLNVNDVDP TSKSVRPLSAQEDMESRRDWE K PAGSKEK KLIVDVKPLFPATKFVPSNEDQLDNESRKMWQ KEKEKDKRLLLIDI APLFPVSKVVPPADQQLPNESRKFWS KNPYPENWEYMYGLTQFGLQMNYFPNFMHKVVPPTDTRRR KSKKKHSKSRKHHYNPTKLEANQTQYPRTNDPMSSDNTWK YAGDSESKMLV DLNELDLVHKRCPPGNKQFPFESRKIWY KVQPVIGRVMLWKRNPLPKNAENMYYFWEAGTAPTDSRLR PTPDVKQWRLIRHTVKF VGGYMMYPEEQGDFESEKLWQ GKKYWDTDE SSDDSKDWNVLLDLNHLNVVPKTVRPLERQLPDESRKLWE NSHPPEDQDTIVDIAPLNVAPKVLPPPEKQLPHESLQLWG RANTPTDYATLIDLSGLHIDPKSVRPDEKQLPNESRKLWE SSFNSCDFTKLIDRHELTPTEIILPPHEGLLPTNSLLDRFR DVSNGKQKVIYNAAEGMSGNAPQVKDSKGVEAWSESAMVWS DASADEEQATLIDVSTLLVVPKRVRPLEKQHTYESRKLWQ

GVK Y WNTINE

UniRef90 I7IOW8 UniRef90_R7Q9D8 UniRef90_K1VZ40 UniRef90-Q9LVD4 UniRef90_C1MJK0 UniRef90_Q2HD45 UniRef90_G8JX89 UniRef90_G3GSN1 UniRef90_G4VN00 UniRef90_UPI0002C36135 UniRef90-W9QPB7 UniRef90_FOZJQ1
UniRef90_G7JUB2
UniRef90-R0F4S2 UniRef90_J9FGD3 UniRef90_Q0CBF1 UniRef90_F2DR34 UniRef90_E7KQS1 UniRef90_L9L6B4 UniRef90_UPI0003F1B2D3 UniRef90_A1D8F2 UniRef90_F4Q167 UniRef90_T1G6T7 UniRef90-B6U0I9 UniRef90_W4W7J1 UniRef90_E2LQ58 UniRef90_R1EV24 UniRef90 F4Q168 UniRef90_10Z058 UniRef90_L8YF52 UniRef90-D3B7W5 UniRef90_L8GK15 UniRef90_G2YVV7
UniRef90_D3AWM1 UniRef90_F4P0X3 UniRef90_F4PXX5 UniRef90-MOU050 UniRef90_G0NYU5 UniRef90_Q54ID7 UniRef90_UPI00006CB82D UniRef90-T1HCH5 UniRef90-I1MSM4 UniRef90 K1WPH2 UniRef90_M4DBR6 UniRef90_UPIO0042BDD3B UniRef90_G0QML3 UniRef90_L1JSZ2 UniRef90_B9HBM7 UniRef90_A0A016PD39 UniRef90_E1FUH1 UniRef90_H0ZJX8 UniRef90_UPI0002B49A7B UniRef90_I0Z6J5 UniRef90_H1V4Y2 UniRef90_B6AD06 UniRef90_S3DT26 UniRef90_U6P6R2 UniRef90_T5AE90 UniRef90-A0A058Z4E0 UniRef90_W9SG34 UniRef90-E3QLF5 UniRef90_UPI0002B493A1 UniRef90_A0A024U483 UniRef90-A2GIZ1 UniRef90-F0XEI4 UniRef90_W9QEG0 UniRef90_UPI0004413C1E UniRef90-UPI0003F49197 UniRef90_V7CBJ9 UniRef90_Q54EF5 UniRef90_Q4PAA1 UniRef90_A0DTI5 UniRef90_G1XMF5 UniRef90_C1HDJ9 UniRef90_J9FKV7 UniRef90_D3BDW1 UniRef90_S9R7X7 UniRef90_UPI00032880B8 UniRef90_L5M3K7 UniRef90_V9FLN3 UniRef90_J9IN59 UniRef90_UPI000444A019 UniRef90_G2QK01 UniRef90_J4H2B0 UniRef90_F4Q0W3 UniRef90_UPI000185E7E9 UniRef90_A0A059D1C6 UniRef90_UPI0004407DBF UniRef90_A0DRG1 UniRef90_A2E8G9
UniRef90_J9I5L9


$G V I A N L G G G D T R \square A A A E K A K D E Q A Q R R M R A E E K E R G E T W E$ EVSEGIVTTNNWEKAREAKRDVEEKQRESLRKRKASGQS WU PDRVALEEGANAEAGAAKHALEEMQRAERRRRDAA GTT WT KTSQAVKERNHELLATAEKTKVVEVQREEAAKRANDGVEWH $P D L R L Y E A G D V D T A E E L K L K L E R M Q R E R R T M G Q D \square A$

E V S Q G L L N K D WG K A MEAK K A VEEK QRELLRDRNSRSETWA T DR $\square$ AL EA G DLDLLA A K E K Q NL E EK QREDKRNRVAENKEWE

$N V T E A T L D K R Y S Q A T K L K Q E D E E R Q R Q K A A E R Q E K N E T W Q$ EVVSEAI LAAKDWEKASEGKRKVEGTARSLEKERNEKGEVWM KVTBAL AVRNHPVATEEKFQI E DHQRQL
$R \bigvee T R A L N A K D Q T E A T Q E K Y V L E E A Q R Q A A R D R K T K N E E W A$
GVTKA $\square$ NEKRYSEATRDKQEDEERQREKAAERQQKNESWQ GVFEAADKKAPKEMTREKSKVEEAQRK LAADRKAKGMPWV KV DGCLK S G D M
EVSNAGLKKDWETAQQAKRRVEDTARRFAKERNDRGEVWT
 ADQRAVVE GDLDKAEALLKAKLEERQRQRRRVMEEHGQQWE D LIF EAAK S GTSSKD DT REKTKVVEAARK DAAERKA NGVEWV
 GVF EAADK LD S GT S A T K EK T K V E EA QR K DTAAERK QK GEVVWK E D CK Y LA K G DLDETA GDWKRKI E QKQRSEAALRKE GVTVEA LQ GRQQSRATAALKQELEERRREKAKERQEQGDDWQ
 GVADAFAKKD GRRA GLDEKQKVE EAQRKKAKAHQQNHVHV EVVSQA I L N K E WGKA SAA K QUI E E K QR K L QR ER K S S G E L WV


$E L S Q A I L S K D W E K A R E A K K T V E E R Q R E L F K E R E S K G G N W V$


 RLSAALTRRDMKDANR $\square$ KNEDEEEQRR $\square R K E R A K R N Q A Y Q$
GVTDATHHAKQFSKATQVKVELEEAQREKARQREANKETWQ $P$ DLLKALENADTARAFEAKTNLEKLQRAR NEA DHK
 $P D \square R A L E D G R Y G Q A D S L K R E L T A R \square K K K V L D E A K K G T P L Q$

GVTEATT T R QYARATNLKQELEERQREKAKEREAS GT T WQ $P D V R N L E D G K \square D D A V A Y K Y E L E K A Q R A R A D D E K A \quad H K$ GVTEAIG SKQFSKATNLK LEELE ESQREKAREREKSGDEWK
 GVTEALHAKQFSKA TQVKVDLLE E KQRELDARERERTGGEVFK D PRS A RA GK DY
Q D L K F L S Q D D L D D A Q E WK L A L E K L Q RADRTKRKE GR R P
 GVTKA R S K Q F S LIA TTLLKQEL E E GQREKAREREHKKEDWK



PVTQA I LAKKYSEATKHKQD IEQKQRNAAAERKRKNETF $\square$ MDLLWWKLRDF DKS QE WK EK L E DQQRQDRK LREQKGKK
 SVTAAI GEKKYSLATKLKQELEENQRQLAAARKEMNEEWK PDQRALENGDMKNASSEKNRLE EKQRAVRRYQEKNNDLHK

 QVTRAI NAKDQTEATQEKYVLEEAQRQSARDRKTKNE EWT E DLLHYLA G G DLDESSQEWKVVKLEVLQRADRKAR
EDL DWL KYNYMK DAA QWKVRME EQQRHDRRLRRLKQKE KVTNKLVGKEFGEANKYK QADEQRQREAAAERKKKGVVEVV EVTTKALLAAKQFSRATTTLKQELEEAQREKARERERKGET WK

Q D I LCLRE G L IEE A Q D WK L E L D AVQRRDRAVRANR
E V S G G I L
 LDDI LYWKLLRDFDNSQRTKE YYEVKQRNDRKWREKTGKKH
D R A Y L I D K Q P L E VA D K V K E S I E I A Q R R E E K L R

UniRef90 1719W8 UniRef90_R7Q9D8 UniRef90-K1VZ40 UniRef90 Q9LVD4 UniRef90_C1MJK0 UniRef90_Q2HD45 UniRef90-G8JX89 UniRef90 G3GSN1 UniRef90_G4VN00 UniRef90-UPI0002C36135 UniRef90 W9QPB7 UniRef90-FOZJQ1 UniRef90-G7JUB2 UniRef90 R0F4S2 UniRef90-J9FGD3 UniRef90_Q0CBF1 UniRef90_F2DR34 UniRef90 E7KQS1 UniRef90-L9L6B4 UniRef90_UP10003F1B2D3 UniRef90_A1D8F2 UniRef90 F4Q167 UniRef90-T1G6T7 UniRef90-B6U019 UniRef90 W4W7J1 UniRef90-E2LQ58 UniRef90-R1EV24 UniRef90_F4Q168 UniRef90-10Z058 UniRef90_L8YF52 UniRef90-D3B7W5 UniRef90_L8GK15 UniRef90-G2YVV7 UniRef90-D3AWM1 UniRef90-F4POX3 UniRef90 F4PXX5 UniRef90-M0U050 UniRef90-GONYU5 UniRef90- Q54ID7 UniRef90-UPIO0006CB82D
UniRef90-T1HCH5 UniRef90-11MSM4 UniRef90 K1WPH2 UniRef90_M4DBR6 UniRef90-UPI00042BDD3B UniRef90 G0QML3 UniRef90-L1JSZ2 UniRef90-B9HBM7 UniRef90_A0A016PD3s UniRef90 E1FUH1 UniRef90-H0ZJX8 UniRef90_UPI0002B49A7B UniRef90_IOZ6J5 UniRef90 H1V4Y2 UniRef90-B6AD06
UniRef90_S3DT26 UniRef90 U6P6R2 UniRef90-T5AE90 UniRef90 ${ }^{-}$A0A058Z4EO UniRef90 W9SG34 UniRef90 E3QLF5 UniRef90_UPI0002B493A1 UniRef90-A0A024U483 UniRef90 A2GIZ1 UniRef90 FOXEI4 UniRef90-W9QEGO UniRef90_UPI0004413C1E UniRef90 UPI0003F49197 UniRef90_V7CBJ9 UniRef90-Q54EF5 UniRef90 Q4PAA1
UniRef90 A0DTI5
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PRYFRKVAEDKQLWEP $\square G N Y W T D S R$
PLLFASSKGEH HDAFHRLTEGTDW
PKHFTGKDWDCVPLQPTVP
PRWFVKELHD LVED $\$ GT DVWE $\square$ KPEYRE
PK LDFRPV
PKYFRKSGTE
W $\square$ S $\square$ T GHKNYWEKRRYSDWSDAP

PKHF $\quad$ VSYDKESGW
TVHFKKVDDAAHG YRWKFQDLYWTQREA
PKNFSGLDCDCSP $\square$ NTWVP
PKHFSMVKD
PRFFTGAVT P $\square$ GKEEGWKA DEGHDKYT
PKHFKNGNWECWPLDKSVPP
CK $\square$ FE $\quad \square D P \square T$ GEWHYKFADTRP WDP $\square$ NDM $\square$ QF
PRFFT
P $\square$ HFHKKGDDWY $\square$ NENEY $\square$
PKHFKSGDWECWPLEDSVP P
$\square K H F K H \square D N D P T Y E R A K \square T P P T E D A Y$
PRWFVKVAGGEEGGEGGGEEEGKDGYWEERAKGEWT
PKHFHKQGDEC
PRWFRPAKEEVYPAEYS LMWEFTGHY LK
PRFFR STWVMDGPKLVREDFQVAEEHAPS VVFTDE $\square \mathrm{D}$
P VYFEQDKN
PRFFT
PVHFE TYTPENPLKP
$\mathrm{P} V \mathrm{HF}$
PAYFQ
PKHFKENEWDCSP DEQSVPP
PMWFAKNDDGWSYKGDYWAREY
PNYFSKREDS KYGYRWDFNGKYWDERDK

PKHF LVSYSKEGGWE CSPDQKSVPKA
PRFFVEATTPLGKPE LTEEGKEALRRLQEDRELSEDPV PKHFSVVDWDCTPLQPTVP
PQLFR LDPATQEWRYLHEE
PRFFRFKEGRWVPRDEMYQFQ
PVFFKHVTGDLTDKGREVLDRAQKGEWSL
RMWFEQRHDLMTNTTLWVC NGRYWQ


PRFFTGAVTPLGKPE
P LWFFVEKMDEFSNTD $\quad \square \mathrm{Y}$ VSNGKYWQ
PTFFEHVT TDEAGRFAFTGE YWTVRDGAGFSGEDL
PRWFDQTNDSPTPWGDLEVYSYNGKYTEHRAAVDSS
PVFFVQVTDEGGKPELTEKGRE
PLWFERKVDAVTGE LIDCVYKGGYWEAKDKQDWSV
PVFFEQ PTGNGGKPEDSAKGKVLERAQKGDWSMD
PKHFKEDGWDCSPKEK IVPP
PRYFE ND $\square$ STG $\square$ PKLTEEGRKA LEELAEKPEYQLEEE
PRFFVPD

PRFFDAD $\square$ S DGRP
PQYFVVGGEPG $\square P$
PRFFT
PVYFEEKFNPEDNQMYFVYNYT YFEKDRKDKTW RVYFRFDD
PRFF $\square$ PDNE
P L WF ERKKDPVTKE LTH $\quad$ YYGGYWECKEKQDWNT
CKLFEADTRPWDPLNDMVQFEKDGV

PKYFEKD $\square$ ESGMPEEGRRADE EEDREGDPAPAPAV
PVFFEQATDKAGK PSLTDKGREVLNRAQRGDWSMD
PKYFE
P $\square$ HYHQND
PKHFTVSYDKENGW
PAFFEKD $\square$ DS G $\square P$ P VLTAEGQRVLEEE $\square K T V D$

UniRef90 I7I9W8
UniRef90-R7Q9D8
UniRef90_K1VZ40
UniRef90_G4NA50
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lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm
${ }^{1}$ EQEQKEERDYNWAMJVAKFTKFTMNFTQFSFPVVYSEPRS E Q E Q K E ERDYNWAMJV|AKF TK KTMNFTQFS FP|V|FYSEPRS

AGKEILKSVGKK\|LSGKFNLTTISFPIKCMCPET V CWELVKSVGNSGKELTSTCDPIADFEARS $G A V K S F I S Q L G \quad \square G Q E L T K V S M P S M F L M P Y S$

K D QR S VLLN M $\square$ K R M G S QGK S VMS VS $\square$ P $\square$ Q $\square$ FESRS K VS R S VVAEVVK QMGRSGQNLLSVTFPVRCCQPRT
 VI QQUGRKILSGDMNLTKISFPIKAMIAKS

MKSNDSSSSS LLWQF $\operatorname{MKQLQPQV~DLLRMCSP\square FПMRP\square S~}$ KSIISTVKNIKLGYGMDIYQMSTPASLIAPYS EPQSDGSKLKTFVGULRKF $\square G D L A R F S L P S Q L L E P T P$

## EPQTEGSKDRTFLG\|LKKFDGDLASVSLPSQLLEPTP  <br> 

SRNDVSTWS LLKKC G GMELSK TAMPVLFNEPLS QRSVLLDI IKRMGSSGKSLMSVSLPI QVFEARS $V I Q E I G K K L L S G D L L N L T V S F P I K C S V A Q S$

GNFGS $\quad$ MMQ $\square$ SKP $\square$ AMS $\square D M S$
EEK $L$ A A Q K A VI K F $L I T R \square G A M G K S \square T G \square S M P V S \square F E A R S$

 $L$ WS V LK DC $\backslash G R D L S R \square A M P V Y F N E P T S$


UniRef90_A2DZ32
UniRef90_E5S312
UniRef90 J9IL84 UniRef90- FOZDI1 UniRef90-F4Q0R0 UniRef90-B3L5C6 UniRef90 F8NHU6 UniRef90-X8IZY2 UniRef90_A8P5IO UniRef90-A0CIN1 UniRef90 C1GF96 UniRef90-L1IYL4 UniRef90_R7SH35 UniRef90 G0QPR6 UniRef90-A0D1E9 UniRef90_Q4YN79 UniRef90_D2VV26 UniRef90 Q86HL8 UniRef90-G4NE06 UniRef90-M3Y0Q9 UniRef90-A0A024X556 UniRef90-R9APD1 UniRef90_U7PIK5 UniRef90-UPIO003870C7B UniRef90 E9EX70 UniRef90-Q54RM1 UniRef90_G2R817 UniRef90-17MJW4
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UniRef90_M7WVG4
UniRef90_AOCNY9
UniRef90-V6LKA6


F L E R MARAQGHAPLFFEP
1 LECAAYQF
ALQTILY
A L E K NLQST $\quad \mathrm{FFFP} \mathrm{\square Y}$
TLELYTYYTE PTLAGKVLREMDSEL
SLTY $\square$ SDSFS NLEYW NY LDAPNTF DA $\square$ CKPYNSC $\square$ GEFFRCNWEAEDNP WRTWVSVGRAALEGDA
 $R G T C F F P \square Y \square G K A V Q \square L N N$

F L H GVA LGHTFGNLLERCS
NTERVCSS $\square$ GFAP $\square Y$ Y $\square$
Q L S P
$M \square Q R \square A K G F G H A P N F \square E K G G L V N S \quad S$
THEYYSDNM AREFD L L K K S $\square$
F LDQRQCEDLQQ VDLLN LVGHHPPUTAYVATASEYSCEG
F LQRASRASG
PDCMAQGPP $\square$ LKKAFAGGP

lupas_21
lupas_28
jnet
conf
sol25
sol0
jhmm
ssm


| UniRef90＿A2DZ32 | $\text { NERLLNIUATGDAAGFHLYM }{ }^{100} \quad \text { CKKP WNPVLUGE }{ }^{120}$ |
| :---: | :---: |
| UniRef90＿E5S312 | L $\square$ RMELVVFFSVCCLRS CDELAACGKAVQSNFG |
| UniRef90－J91L84 | ERLILVIAASIALIYPTH QFEKPLNPILGE |
| UniRef90－FOZDI1 | VERLKLIVSFAVS GLHLT T T $\quad$ I AKPFNPLLGET |
| UniRef90－F4Q0R0 |  |
| UniRef90－B3L5C6 |  |
| UniRef90－F8NHU6 |  |
| UniRef90－X81ZY2 |  |
| UniRef90－A8P510 |  |
| UniRef90＿A0CIN1 | LQQMKQT\AFHMATFMMG】，QQEKPFNP\｜LGET |
| UniRef90－C1GF96 | L GRMLEVLRFWFTKDLCNWEDEDT ERPITPSAPNGGTT |
| UniRef90－L1IYL4 | $V E R L K H V T A C F \square A C \square H \quad T T S Q F V K P F N P T L G E T$ |
| UniRef90－R7SH35 |  |
| UniRef90－G0QPR6 |  |
| UniRef90－A0D1E9 | MEQLKLVITAT】ATFHINLS SFHKPLNPILGET |
| UniRef90＿Q4YN79 |  |
| UniRef90＿D2VV26 UniRef90 Q86HL8 |  |
| UniRef90－G4NE06 | RVNTKAILASSLK SKKNVPAALGVAAGDSRAASNLSVAQT |
| UniRef90－M3Y0Q9 |  |
| UniRef90－A0A024X556 |  |
| UniRef90－R9APD1 |  |
| UniRef90＿U7PIK5 |  |
| UniRef90＿UPI0003870C7B |  |
| UniRef90－E9EX70 | ANRWLFAQCNWETEDNCVSGSEKGSLRSDKVPPKSDKNES |
| UniRef90－Q54RM1 |  |
| UniRef90＿G2R817 |  |
| UniRef90－17MJW4 |  |
| UniRef90－K3YIN1 |  |
| UniRef90＿UPI00034FA219 |  |
| UniRef90－W5KPG2 | $\square$ DRMKC VAAFAVSAVASQWERTGKPFNPLLGE |
| UniRef90－A0CMP9 |  |
| UniRef90－G0R505 | AERLKYVITATIANFFVNCTFL KPLNPVLGET |
| UniRef90＿C0PN53 |  |
| UniRef90－F4RXD0 | T |
| UniRef90－E3KL41 |  |
| UniRef90－G0S219 |  |
| UniRef90＿UPI0002C3DDB0 |  |
| UniRef90－A0BJI4 |  |
| UniRef90－O94512 |  |
| UniRef90－A0BM91 |  |
| UniRef90＿L8X029 |  |
| UniRef90－I7MJQ99 |  |
| UniRef90＿C1FGC0 | $\square$ RLOKPFNPILGET |
| UniRef90＿Q55CR3 | DERLLGVFKYILS【K P I DE D S TR S P DR SVNGET |
| UniRef90＿U6KJX2 UniRef90 E1F9G5 | पERFEDCVA <br> WVTVRNRFSGKSLEVTMPG $\square A H V T F H R T G E R$ |
| UniRef90－A4S1V2 | ERDDAVTRFAGVALA M |
| UniRef90－U6MNS1 | LEKFKATLAFAVSLLHRGC WQAPPLAAYL GET |
| UniRef90－C6LVB4 | ERFELCVAYVIGCLYP TVVDQHKAFNP\IGEC |
| UniRef90＿M7WVG4 |  |
| UniRef90＿A0CNY9 | ERMKLI ICATLGNFYLNCSFL HAS |

[^2]

[^3]

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UniRef90-E5S312
UniRef90-J9IL84
UniRef90-FOZDI1
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UniRef90-A8P5IO
UniRef90-C1GF96
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VEMMGDDQ ISAKVSGTTDRVAPGSFNKGワYVR\ETYHDTH I EACGVDQISAKVVGTSVRVTPGSSNRGIFISGEKYRITH I TMQGUDQQUAKVTGTATVRVTPGEYSDGIFKGESYHUTH ITAGSFDQISAKFTGTSIGRVPGQHNLGDFRDNEEYQLTH

 YKYF GNYCYEASAGLNS ITLKNKGKRTIIFNGGQRIDYNF
WS MKSTFQ LLAK LKMNYVDLNDAGKHLLQNGETEEYDFTL IEELCYNYAAK LLFMYFRINIDDAETFI KFNKFNETYNIIL $L H A R G F D Q \square T A K F T G T S U K V M P G E H N L G \square F H D N E T Y Q L T H$
$C F L G W G V G G G G W W G A S R S P G A D Q D A T W C L L P R A A G V I I T M$ NNAEHYTYER
TEVCGVDQVSAK ITSGTSTKVPGERNNGIFVREEEYHDTH LHARGFDQLTAKFTGTSIKVMPGEHNDGI FRDNETYQLTH I FWHXXXXXXKFWGKS LEIVVPVGTVNVQLPRTGDHFEWNK LTARGFDQ\SAKFTGTSVKVLPGEHNMGIFITGETYQLTH ITLDCNVQFSAKFHMNSVSVVTTGAVKICQUIKETYIIDK
 VRLVWCQSPVPKFHGSIEAAVRGRRELRLPRHGERYEVDC DMKWKNKFWGKSLEAVVPVGTINVVSLCRFGDHFEWNK DFTNERNKKKKDFAGRGLSTPKGQUCLGQREKVNTVSLPH $L F G A F C P I V N M G T N S L A G E Q Q G H S Q U Q F Q N T N L K F Y Y M A$
$F R C Y G Y Y V Y E T K A G L N S L T L K N K G V R T V E D D D Q K I I Y N F$

VIA Y GVDQ ITSAKFTGTSVKVFPGPMNKGПYRRDEEYEПTH VIAHGVDQiSAKFTGTSVKVFPGPMNKGIFNRNEEYEITH $L H A K G F D Q U S A K F T G T S U K V M P G E H N T V E R R N H E T Y Q L K H$
$W V G T G S L D F V T K N G S A S A G I Q G M I N A K F L K W D E D Y T W N F$ WVGTGSDDFVTTFNGSASAGIQGMDNAKF DK WDEDYTWNF
 SALLSQVDQISAKVVGTSVRVKGDFINITKGPGELASHSG YDLYGCH $\square P L V N M G A N S L T G L L A G N P T V Y F K N T Q N A D W N S$ WVI RGYFQPRPRLLGVHAVEVEMLGRRMWEVGPRDRREDY VKVHFNTETKT』FNGTN】KLP $\square G N I I I R F E K F N E E Y T I T N$ VQFLRKGWLDKTCHHLRAII FDASGRPAYRL
YKIIGGAELIVSTGLNKVRIVRKG\NSDCFATGNRDTFEF
 A QVWGHLSFLVNYQPGQCVVTVKGKMNVCFSKGEMFSFSLC



[^4]

lupas_21
lupas_14
lupas_28
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sol25
sol5
sol0
jhmm
jpssm

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UniRef90 F4RXD0 UniRef90-E3KL41 UniRef90-GOS219 UniRef90_UPI0002C3DDB0 UniRef90 AOBJI4 UniRef90_O94512 UniRef90-A0BM91 UniRef90_L8X029 UniRef90_I7MJQ9 UniRef90_C1FGC0
UniRef90_Q55CR3 UniRef90_U6KJX2 UniRef90_E1F9G5 UniRef90-A4S1V2 UniRef90-C6LVB4 UniRef90-M7WVG4 UniRef90-AOCNY9

250
260
$260 \quad 270$
GDYCKE:IKQG GREDSRHVHGFIVINQRETRQNGSAVPAKGRYGDWTCTIEDY YELG NIKKKTQDYYTGEDHQFGKKILEI KGNYMGYMD RLQQNHUNNDKKQNNNGNNDDEGDVISNIEGTWLTQLLID VKGDIYEYNEEKNEEEHHATLSGYLNSTVNDEYFDTPASS FDNEIHKVRAVVCDRYKN IIFY IJYGKWSEEI YYDSYFFNA LGRAHFLI EGVI HTYDENHVPQSRILAVFDGCWRNRVRWR L GRSQFLVEGVI HTYDPTNPDECRVVATFDGTWRGLI KWK LGKAHFLVEGVI HVVYDSDDPNQ SQWT LDGSWRGKI RWK NKSFFSRQTTPI DHFLGKDYKCKMAHKTGSGDSKEEILET
 DS GE ITKVNGKVVSTCYGSYLGFI EF D
VKRKATDYFEGSI NMGQQELCK FDNEDHK RGGVCDRFKNVIFF IVGGK WSKKENYDTCFFNE VSGSLTDRKGKTLLNLKGNICGK TKGNSSDLYPSTLLPL IGGKYNYFEAYV SKKDTDEKIYKIFGQWDKEQQUL F G GSTSINQ NSGKMTSGEEVLVALGTGHWDREVFIK FEKE IVNVRGVVCDRYKNIIFFDYGKWSKK LIEYDNYFFNE IGKPKFLVEGVI YWNKVKQVPKDQVLASVDGTWRTQDKFK
 LGRTTNKDDGVVFRYDPENDTKTRVLIDRLSGPWREKPKPM


[^5][^6]UniRef90_A2DZ32 UniRef90-E5S312 UniRef90-J9IL84 UniRef90_F4Q0RO UniRef90-B3L5C6 UniRef90-X8IZY2 UniRef90-X8IZY2
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UniRef90_M3Y0Q9 UniRef90-A0A024X55 UniRef90 R9APD1 UniRef90-U7PIK5 UniRef90_UPI0003870C7B UniRef90 E9EX70 UniRef90_Q54RM1 UniRef90-G2R817 UniRef90_I7MJW4 UniRef90_K3YIN1 UniRef90-UPI00034FA219 UniRef90_W5KPG2 UniRef90 A0CMP9 UniRef90_G0R505 UniRef90_COPN53
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NSHPPEDQ TT I DD $\square$ AP $\square T V A P K V L P P P E L Q \square P N E S \square Q L W G$ FKNNILKSKLGSDHSLRQDKDQLSQGNDKQ
DVSTGEVSVLYDAQRADSKLTTPVVQDHKGDPSESAVVWG
 ПSPRPDNSAQYYAFSTFAMQLNELEEDMKESLPTTDCRLR EVRYWDYR

 EQQQSNQARELVDLSS

 FDGTWRGLIKWKRVGSSVSDPWCVTLGPQQDPNESHRLWE RYLEFDGMRYWDDSKDFPY MCEYEMNPLPSDSRYR EPSTTKVHVLYEEAAAAEEVEADVAFQLPGDEKSSERVWG NCKTKETKLLYK $\quad$ K SGSWTDS LT TGNVQYN VVTSETDIYS DFSKKRDPMDGCVR K I S SGEAVARYDLEDAKRFRGQIVRHTHLDDERDTEVVWK D E E $\square \mathrm{WS} V \mathrm{~V}$
SGSWTD SI ILGNVNYNVVTSETSVHSLFSERRDPMDGCLR KVGESSSVPLV DLLPLNVVPKAVAPLEEQGPMETRKVWA $E V R$
$E G D F V S G L K Y K W D V N Y U R P Y E C K V F K P N Q F L L S D A S$
$G$

[^7]UniRef90 A2DZ32 UniRef90-E5S312 UniRef90-J9IL84 UniRef90 FOZDI1 UniRef90-F4Q0RO UniRef90-B3L5C6 UniRef90 F8NHU6 UniRef90-X8IZY2 UniRef90_A8P5IO UniRef90 A0CIN1 UniRef90 C1GF96 UniRef90-L1IYL4 UniRef90_R7SH35 UniRef90_G0QPR6 UniRef90_A0D1E9 UniRef90_Q4YN79 UniRef90-D2VV26 UniRef90 Q86HL8 UniRef90_G4NE06 UniRef90-M3Y0Q9 UniRef90_A0A024X556 UniRef90-R9APD1 UniRef90_U7PIK5 UniRef90_UPI0003870C7B UniRef90 E9EX70 UniRef90-Q54RM1 UniRef90_G2R817 UniRef90 17MJW4 UniRef90-K3YIN1 UniRef90-UPI00034FA219 UniRef90-W5KPG2 UniRef90 A0CMP9 UniRef90_G0R505 UniRef90-C0PN53 UniRef90 F4RXD0 UniRef90_E3KL41 UniRef90_GOS219 UniRef90_UPI0002C3DDB0 UniRef90 A0BJI4 UniRef90_O94512 UniRef90_A0BM91 UniRef90_L8X029 UniRef90 17MJQ9 UniRef90-C1FGC0 UniRef90_Q55CR3 UniRef90_U6KJX2 UniRef90-E1F9G5 UniRef90_A4S1V2 UniRef90_U6MNS1 UniRef90 C6LVB4 UniRef90_M7WVG4 UniRef90-AOCNY9 UniRef90-V6LKA6

- 330

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340
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360
ПDRSLLIDQKNDDEADKGKVII EESQRREEK|L|R PDVRYL ENGELDLAETEKLRLEEKQRFARSLSKETKRQWT LDSVTLRTKNDNEAQKMKEKLEEDQRHDRKLRE DDIRYLKLGNDEKAKEFKALIED
EVTKHIVANDMASSDVVKKEI EDEQRKRDRATKEEEKK E PDQRSYENGNDEVAMSEKQRLENKQRMNSKKYMGKN SYE SVTTRLLNKEYGEATKHKLAA EQKQRDEAAERKRKGAQFI
 LDLLLMKMKD DQRAQEMKEKMEVDQRKDQK LRQK
RVTAAI GEKKYS LDENEGKSKERGKEKDKRLLLIDDAPWK EDRNALVNGEVERAQVEK
PDTSRLVKKEYGEATKHKLADEQRQRDRAAERKRVGEEFD QDMFHLSKGNTKKAQLEKE\|GEQLQRNDAKLRKKHHEQ GDYTNLAALDI DKAQIEKENLENLQRHDAKLRTK PDQRNYENGNIEDAMNEKHRLENKQRDNAKKFTKNN PYK EVTYNILHDNKDKAFDCKHEIEEDQRAKASKDKLEGKTHE GL DDAHNCGNNK LTK DKEKTKVDEDQKLIENQRKKENDNFK GVTEA $\square N A K Q Y S K A T N V K \square E L E E K Q R E K A R E R E R T G E A F K$

PDQRYYENGNDEVAMNEKQRLENKQRQNAKKFNNTNKYE PVTKAILEKDYNQATKSKQGI EQHQRDLANERKRTNEQYQ EVTKA LIAKQFSKHARGFDQUTAKFTGTSDKVMPTGIAWN PPAETQKRQIEQLQRD RRRVMEENNITHQ GVTKA $\square$ HAKQFSKATD LKKVELEKQREKAREREKNKETWQ

E VTKA $\square$ LAKQYSRATAVKQE LEEYQRQKARERDRAGEKWK
EVSDALLKKDWEKARQAKRRVEDEARKLAKERNEKGEVWT PDQRYLEEGNDQAAEAQKRRIEQLQRDRRRVMEENNDAHQ PDIRALENGDIDSASAEKKRLEEKQRVARKNRSKSSEDWK LDLLYMKMKDVSKGQDVKEEMEVDQRKDKQLREK $\mathrm{V}_{\mathrm{V}} \mathrm{G}$ EDLQLLSMNAVNQAQKAKEQIENNQRQDA ILRKNN
PDQRHLENGEYEKANAEK LRRLETRQR MARKMQESG WK ELTNLI KSKNYSEATKVKQII EQNQRDLAGKRKESQRNFE SLTSLI QAQNFTEATKEKQTIEQNQRDLSNKRKADNQPFK EVTKA KVSDA I IKNDQTDAMEEKFTAEEA DDLIF MKSQKMEDAQKAKDQLEEQ
P VTHNILAKHYTQSESNQDSSNDRSSTAPSTAESSHTEWK $M D L L W W K L R N F D Q$
HVTKNLLSKNYSEATRVKQNDEQQQRDDAASRKARNEEFV Y DLLYFQKNDKKKSQDMKEEMEEAQRYDQK DR
SVI DAMNRGAWDEARAGKRRVEEAERKERRRRKDAGEPWR DIIVPDSKGEKDNDSKERSKI LEYQKKD
PDQRLYEEGRVDEAVQQKNRLEEKQREAARARPRGEQDYS EDDTMFMADEVDKANLIKAELEERQRNDRA LRA ETFKAMEENRWDDAKNAKKRVEESEREKRREREARGETFE

ED D A MFMADEDDKANVIKAEDEERQRSDRTDRASS
SVVDALNKKDYSTTNGNAVGSSAASTKSTRSNFSKGEVYR PDLRQLKRNKVQEAQKEKDDLEMQQRQDAKDRK
HD DQLFLQQNYKEANNEKDRGEEDQRNDRKFR
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PKH

R VY F K F DEE
 PRYFEND DSSGVP
PVYFE TDDSTGQPVLTAEGRKAVEEELA
PRYFEKG $\square G E L T E E G W K A V A E G \square D Q D A Q L A P P A P \square S D S K L$
PRFFT
PKYFEED

PKWFTKNKDP $\square Y K \quad D K E \square Y \square F N N T Y W E T K K$
TK IDFKPTGH
PKFFDKNKETDKWEDDK
PVFFEQVTD KGGKPQLTEKGRAVLER AQKGDWSV
PKWFYKHKDP $\square$ FNDRD $\square$ Y $\quad$ FFNNKYW $\square$ TKDKNQFSD
SCYFQLDTPEGKP
PVFFTQVTGGNGGKPELSEKGRQVLERAAQKGDWSMV ARFFRRLTDA NGKESWV TNNTYWKLRQDPGFAHLDS PVFFEHVVG NGGKPDLTDKGKQVLERAQQGDWSM
P VFFEQATD
PKHFKNGEWECWPLEESVPP
ARFFRRQMDGSGKE WWV TNNTYWRLRAEPG
TRWFNQGANPHNGGQDWL YCGGYW

PRWF QRDSEDGT YRYVGGYWEAREQLSSSPK LP TEELFE ID T DEYKESKPY LKSNGKE ILEAEFKAIG
$P \mathrm{LI} \mathrm{F}$
PVFFEQATHP
R RLFDFKDKQWYKWENWEKYDAEKDGEE $\square$
PRFFEKEGRPT LTEEGKKVLEQ
P VY F E Q D
PRFFEDVDGDWV
PRWFRRQPNS EDWV YKGGYWEAREAGDWS
PRFFTLDE

PRFFEPEPDNVADWDGRPVLSAEGK
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[^1]:    Y A $\square$ LP G Q K P DRQFN $\square \mathrm{PS}$

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[^8]:    lupas 21
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