## QUERY

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120

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 $N V D L A A B L G A Q T F V M W G G R E G A E Y D S A K D L K A A H D R Y R E G$ QLELGVELGAKTEVMWGGREGAEYDSAKNIQAALARYKEA QLDLAAELGAETFVAWGGREGAESGAAKDVRAALDRYKEA
 AV DLA A QL GATTFVMWGGREGSEYDGSKDVFAALERYREG

 $N$ I DLTAELGAKTEVMWGGREGSEYDGAKDLHAALERYRE G SVDNAAEMGATTFVMWGGREGTEYDNSKDLAAABARYAEG $N L D L A A E D G A G D Y V C W G G R E G A E S G G A K N I Q A A D D R M K E A$ $N V D L A A E M G A T T F V M W G G R E G A E Y D S S K D L N A A F D R Y K E G$ SMDLGHELGAQTYVFWGGREGTEVDASGKLLDALAWFRDS S I D L G A ELG G EVVYV FWGGRE GTESSGVAKDPRRAALERYREA
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 CMDATMMLGGENNYVLWGGREGYETLLNTDMSREFDQMARM ALDVTHELGGENYVFWGGREGYQNLYNTDMKRELDHLAKF GLDI AKELGAENYVFWGGREGYETLLNTDMKLELENLSSF

 GL E T A KELLGAENYV FWGGREGYETLLNTNLKLELDNLARF
 CI DVTKRLNGENYVLWGGREGYETLLNTDLGRELDQLGRF AL EVTKKELGGENYVFWGGREGYQCLVNTDMKRELDDHLGQB
 A MNATKRLGGENYVLWGGREGYETLLNTDLKREREQLGRF
 AI EVT K E L G GKNYVFWGGREGYETLLNTDMRLELENLARF CIDDVTKRLE GENYVLWGGREGYETLLNTDMGRELDQLGRF CMDATHKMGGQNYVLWGGREGYETVLLNTMMGAELDHMGRF
 A L D A T M A L D G E N Y V F WG GRE GYMSLLNTDMKREGD HMGRF
 GLEVAK DLGAENYVFWGGREGYETLLNTDMKEEQDNEGRF ALDAT $\square$ QL G GENYV FWGGREGYMTLLNTDMKREKE HFARF ALL D A A A A G S E N Y V F WG GRE GYESLLDT DMGRELDNLAS F CMDATMKLGGGENYYVLWGGGREGYETMLNNTDMGRRERQQAGRM
 AMNSTKILGGENYVLWGGREGYETLLNTDLRQEREQLGRF ALDATIIALNGENYVFWGGREGYMSLLNTNMKREQEHFARF ALDATIALGGENYVFWGGREGYMSLLNTDMKREQEHFAQM


 AI EIITVKLGGK GYVFWGGREGYETLLNTNMGLLEQDNMAARLL $M L D V T K E L G G L G Y V L W G G R E G Y D N L L L T D S A L E E K L F A R F$

 AMEVT HYLGGGENYVFWGGRE GYQSLLLNTDMERELNHMARF A LDATMMALDGENYVFWGGREGYMSLLNTDMGRELDHMGRF A MNVTHKLDGENYVLWGGREGYESLLNTDLRKEREQLGRF SIDAT 1 AALGGENYVFWGGREGYMSLLNTDMKREKDHLARF GLE L G K E L GA GNYVFWGGREGYDTLLNTDMKDEQENYARF AMNATQQRLKGANYVLWGGREGYETLLNTDLKRERE QLGRF A ID A T I E L G G DN Y V FWG GRE GY L S L L NTDMKREDE HLLAD AIDA TLALGGGESYVFWGGREGYMSLLNTDMKRERAHFARF A MGATHRLGGANYVLWGGREGYDTLLNTDLRRERA QLGRF CLEVTVEAL G GENYVLWGGREGYDTLLNTDLDRELSNEGRF GLE LIGKELGAENYVFWGGREGYETLLNTDMQLEMDNLGRF ALEATHRRGGANYVLWGGREGYDTLLNTHLKREDDQLGRF
 AMDVTKRLGGANYVLWGGREGYETLLNTDLKRELDQLGRE S L Ell A K R L G A E N Y V V W G G R E GY E T ALEATHALGGANYVMWGGREGYETLLNTDLKRELDQMGRF AI DAT TALGGENYVFWGGREGYMSLLNTDMKREQDHLAQF
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## QUERY

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0
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๑ด
$G G \square N F D A K M R R N T$ GGFNFDAKVRRSSEVVEDLVFHAHVVG
GGLNFDAKVRRGSEPEDLFHAHIAGMDSFAVGLRVAAD G GIVNF D A K V R R Q S E P V D L L






|  |  |
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KF S V G P WNVH DGADTYGPATRTE DDFEEK $\quad$ TK
 $M E L K F S T G \square W V L G P G Y E R F A P Q G Y R S A K D V V E L I A$ GKTME ELLRFSVCFWTFRGTGADPFGFPTRPWDDGSNTME

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RAFQ $\square \mathrm{A} \square \mathrm{P}$
P S WA YGNS GTRVF A QA GVPRS PWEKLE
$R R Q H \square E T P$
SWA FG
R R Q H I E T P
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SLAPAVAERLAVPSWAFANSGTRVFGQPGVPRTPDE

$A \prod P S W G V G T G G T R F A R F P G R G \quad E P A N V F D$

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E $\square K$ FS A G $\square$ WY F S P F A S R F H D Y Y K P T L $\quad \square E Q R L E$ QQLKALTIETPSWGFGDSGTRVFEQEGVPRDPFEKI E QKLK L F QI G IP S WALGTGGTRRFSGGGEPSNEKMADI G MEQEIE TPSWGYGNSGTR FGVFKQPGAARDERLS

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 $R \amalg E \amalg P S W G F A N T G T R \quad F G K F S Q P A A T D E E K F A$

D L K F S VG $\square$ WY F T P G G GR F HEP Y VE QK S $\square$ PEEMAA
$S V G \square W A F G P A V T R F V P P G Y H P E A A E E P M A E$ $R \square E \| P S W G F A N T G T R \quad F G V Q N A A A T T D E E K F A$ WE GRDDLIG
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UniRef90-UPIIO003AF7A99 UniRef90-C2FWY7 UniRef90-UPI00036DFC20 UniRef90_Q2CD79 UniRef90-A6EG31 UniRet90_UPIOOO420E937 UniRef90 A9CFA4 UniRef90-UPIO0029AA453 UniRef90-UPIOOO47DE8DB UniRef90-K9D6Y4
UniRef90 V2DL96
UniRee90-UPI00035E4A18 UniRef90-UPI00035E4B20 UniRef90_UPIO002DF3786 UniRet90-EOXSV6 UniRef90-UPIOOO37DD5A4 UniRef90_UPIO0036FA182 UniRef90-T1A649
UniRef90-UPIO0047A9318 UniRef90-S9SMF9 UniRet90_UPIOOO255B729 UniRef90 UPIO0037FA8DB UniRef90-DOMFR3 UniRe990-UPI0002E1D4CC UniRef90 E8WZ91
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## UniRef90 E3ZCQ7

UniRef90_G5HIB5
UniRef90-Q1AZO2
UniRet90_UPIOOO47E120C UniRef90-UP10002627350 UniRet90 S9SA86 UniRef90_UPIO0037493C0 UniRef90 WoRF22 UniRef90_C4LG26
UniRef90_V4NZS5

AYKELGFDAVQMHDDDTVSADDDWPAT品KVAQVKSMLDG FYRDLGFVGIQFHDDDIVPDGKTHSQLMARTKTVKAQLDD VKYYTFHDRDMAPEGRSNKNLDEDSDLALQLQKK RFKETGLDAVQFHDDDAVPEMNN SEIRERAREVRGLLED FFSKLGIDYYSFHDTDVAPEGTSLKEYRHNFAHMVDHLER EVKK YYTFHDRDLAPEGETNRNLDEDTDLALELQRK TFAEMGFSA पQFHDDDAVPNMNTDEE\KTEARKVKALLDK

KVADAGFTGVAPSDADHDPWDSV
QASRVDLKGLEFHYPTEVNE
NARR
DAATVHFTGVAPSVA Th TPWDTVP LYRPLGFEGVQFHDDDVVPGMDSPD
 AAKVNELLTGLAPTVALH: PWDTV DAAQVHFTGVAPTVALHIPWDAV
 DAAQVHATGLAPRVALHIPWD DAAKVHLTGLAPTVALLHPWDKV DAAEVGDDSYVDLNYPFTGEDTT AARVNAYTGAAPRVSLHIPWDRV DAAQVHYTGVAPTVALHIP PD京 KV VD
 A AKVHELTGLAPTVALH:P AAAVHRFTGLAPRVALHIPWD DAAQVHFTGIAPRVSLHVPWD DAAQVNFTAAAPAVAMHIPWDKV DAAQVHRTGLIAPAVALHIP WDRC AAQTHAFTGSAPRVSLHYPWDRV LLAALNSGADSLHIPWDDPDRN DAAQVHRTGICPSVAVHIPWDKV FFTKLGVKYYTFHDRDIAPEGESNRNLD LLHKLNRSA $\square$ S $\square H \square P W D \square P$
K NYPDHVD DVGLLHANKSCGAVSLHH| P WDK DAAQVHFTGAAGTVALHIPWDKT VINQL TRATPNVSLHIPWDK LLHALN RATPNVSLHI PWDK DAGEVNR पTGATPTMALHVLWD $\square P G C G$ VIHQL TRATPSVSPHFPWDKPTDA

KपDDCGVIHQLTRATPGVSLHFPW DCAVISLTSTTPTVSLHFPWDKA DAAEVQLSGASSRVALH $\square P W D A V$ DAAEVQLSGASSRVALHTPWDAV GHEDDYAQLGREDTD LLHQLTAGAVSHDPWDPBDTG DASQVNAPTVALHVDWDLPGGK
 DAAQVNATGVSSTMALHVLWDLPS
EMAKFGVKGTEAHYPAEVNE QFKQLGLGYVDLNYPEHIEKFE

EDWAKLGQAASD SNVKSVKKALLED
RLRAGFEFFQK
DYGALARHAED SAKAAEVKTILAN TVEDYAALAKYAEE doyralka yakd DDYAALARYARE EDYTALTRYAEE GDYGALTAYARD LVDDFGALATFAAD DDYAALRSFAQD EDYGALARYARG DDFEALKVHAES TVDDYADLAAYAGD DNYGKLRSHAES EDYSKLRSHAES DDYAALREYAAG GDVQAVKALADS LVDDFGALRSHAEG LVDDFGKLAQHAAD DDYAKLAKHAKD DFAALRAHAEE EDFGALREYAAE A KADAAQ DDYAALRSYAED DDYGELASFAGS EDTDLALKLQNQ QDAEALKQLASY ADPAELRAKAEE
IP QNYESIKRHAQD DDYAHLAAFAD QDPKRLKAHADA TPQNAESLKSLASS D A R 1 KI K QCITD DDYGQLKQHARD EKIMALAKS ADYDALKEEASH DKVSDTQALRQQAEA DDFAALKKHATA

ADVPAI QADEKK DVVDDWAALRAHAEA DKVDDFTELKQFSDE GKSD $\square P K$ QQRERT

ENDHLYKQLEKE ASEIKTMMEA GYDDDE:|REMGG ADVQK1 HALEKQ Y SDP EVKKIALLSE ARV
RDPDALKASASR
$D D D K A R Q K D E E$
$D Y T E V R Q Y E A$

| UniRef90_W6T4R9 <br> UniRef90-U4KKQ7 <br> UniRefgo_UPI000477B3BD <br> UniRef90 ${ }^{-1}$ <br> UniRef90 GOEMI7 <br> UniRef90-UPIO0035E3B54 <br> UniRef90-I1FQ24 <br> UniRef90-E9HNY5 <br> UniRef90-IOYV41 <br> UniRet90_D1PVX4 <br> UniRef90_V2EIP9 <br> UniRef90_R5FM05 <br> UniRef90_C2KII8 <br> UniRef90_LOD947 <br> UniRef90-UPIO003B43108 <br> UniRefoo-w <br> UniRef90-F3GUA6 <br> UniRef90_UPI0003EA9187 <br> UniRef90_UPIO0046F1221 <br> UniRef90-E3J5G4 |
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TGMKIVLIWNTSNMFTNPRFVIEGAATSPSADIIFAYSAAQLKH YNKKLLWGTANNFTNKMFMTGAATSPNADVFADAAAKIKK TGVQLL WGTACLFSHPRYSQGGATSPNAQVYAYAAAQVKK TGVKLLWGTANVFSNRRYMNGAATNPDFGVVAWAGAQIKN TGKKLL WATSSLIFTNPRYMHGAATSPYADVFAVAAAQTKK TGKKLLWGTANMFSHPRYMSGASTNPNPEVAAFAALQVRH TGVKLLWATCNLFAHPMYSNGASTSPDAHVFAMAGAQVKK EMARTLWGTANLFSHPRYMAGASTNPDPEVFAYAAAQVKL TGVQLLWNTCNLFAHPRYSNGAATNPNAHVFAYAAAQVKK TGKKVLWGTAQLFKHPRFMHGAATSPNASVHAYAAAQVKA RPTRLLWGTANLFSNRRFMAGAATNPDPDVFAYAAAQVKN KMKKLLWGTANVFSHRRYMNGAATNPNFDVVARAAVQIKN SGVKLLWGTANCFTNPRYGAGAATNPDPEVFSWAATQVVT TGUKLLWSTANVFGNKRYMNGASTNPDFDVVARAIVQIKN EGLFDETVAPRLWEDPRTVDGGFTSNSASDRKYALDRAKR HGLTPEVVAPRLWESPQTIDGAYTSNSPKERQYALDRSKR TGVKVLWITCNLFAHPRYMNGASTNPDCHVLAYAGAQVKK HGLAAEFVAPRLWEDPRTDDGAFTSNDAEHRDFADWRALR HGIKLLWGTANCFSNPRFAAGAASNPDPEVFAYAATQVFS TGLKVLWATCNGFAHPRVSSTEGLLSVSSLLLEALAPWSF

AGTSLGTVNANVFQDDDYKLGSVTNPDPRVRRKALDHLA YNLVAAALPPVLSQEPDWARGALSADDNDVRRKAVERCKR LGVK Y WTFHDR
AGVR】GAVNPNVFQDDDYR【GSVCNPDPAVRRKAVDA!LD QGLTPEFVAPRLWFAEQTTDGAYTSNSASDRAYAWDRTKK RGVRLGAI NSNTFQDDDYKDGSVCHPDAAVRRKAVDHLKR HGLTVDSVNSNTFQDQKDQUHSLCHTENAVRQQAI EHND Q

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 $L G L A V N G F A M A Y Y$ T N P P A F K L L G A F T H P D R N V R R E A I E L T K R H G L G F D A M N S N T F Q D S P Y K F G S L S H H A D P A A R R R Q A V V H N L E




 | $L$ | $G$ |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $N$ | $G$ | $L$ | $F$ | $D$ | $A$ |  |  |
| $K$ | $V$ | $S$ | $G$ | $N$ | $S$ | $N$ | $T$ |
| $A$ | $F$ | $Q$ |  |  |  |  |  |

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## R

 YGVKSGSIV SNLLFQDAEYKFGSIANPSAEIRGNALAHLKD GGLGFDAVNSNTFQDQPGQPHSLSHADPAVRRQA:AHNLQ LILSWDSINSNTFQDQPGQEHSFKNTSAASRELALAHNLD YG|RSGSVNPNLFQDQEYKYGSDCNPSAEDRGNALSHLLD AGI RLVAVPLSLFYDKLFEFGSLSNPYEKYRKVAYERLVN HDLKLNGVA
$\square G V N G V A L$
LRFRGEFDNGELGNADAKDSAHALELCKN
HRMDLPVVAAG H GVKAGSI N A GLHTDPTYALGAFDNPDPSLRRKGI DTLKR S GLSNGAVCDRYFQSQE YKFGSIIANPSCEVRKMALDHLLE
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## UniRef90 W6T4R9

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UniRef90-Q1AZO2 UniRef90-UPIO0047E120C UniRef90 UPIO002627350 UniRet90-S9SA86 UniRef90-UPIO0037493C0 UniRef90-W0RF22 UniRef90-C4LG266
UniRef90_V4NZS5

SLLEIIGKRIVGAENYVVFWGGREGYESLWNTNMKAEQEHAAKF AI DATYELGGTGYVFWGGREGYETLLNTKMDVELNNLATM ALECTHELDGLGYTFWGGREGYSTLLNTDMKRELDHLAAF A IDATIALGGMNYVFWGGREGYMSLLNTDMKREKEHLAQM TMDUAKKLNAKGYVFWGGREGYETLLNTDMKRELDHLAYF ALEATHRLGAGYVLWGGREGYDTLNTKVGQEMDQLGRF AMDVTHELKGQNYVFWGGREGYDTLLNTDLVREENQFARF GLEIGQKLGAKNFVFWGGREGYSSLLNTDLNLEMSNMANF AMDVTHRLGGANYVLWGGREGYETLINTNMGQELDQMGRF A $\square D A T \square K L G G E N Y V F W G G R E G Y M S L L N T Q M Q R E K N H L A N M ~$ AMNATHKLGGEYVLWGGREGYETLLNTDLRQEREQIGRF AI DAGIKEGGQNYVFWGGREGYMSLLNTDMKREKEHMATM SLDDAKRLGSESYVFWGGREGYDFLLNTDTKRELDHPAAF CVVDANEIGCRNLVLWLAREGTYVRETKSSADAVGQULDA
 AMNATQRLKGSNYVLWGGREG S $\square D$ AN ALGCDKGVLWLAREGTLCAESKSPVTATKQLIDA SIDVANELGCDKLVLWLAREGTLCAESKSPVTATKQLIDA CVDVMDQTGSRDLKLWF SDGTNYPGQDDDRARQDRLAEA A TD $\downarrow$ A A CVDTMDVTGSRDLSLWGGA CI DIARA乌DCKAVVLWLAR


 AAEAVRALGARYVKI WPGQD


## UniRef90 W6T4R9

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W6KA31 UniRef90-D1PVX4
UniRef90-V2EIP9
UniRef90-R5FM05 UniRet90-R6CPK4 UniRef90_C2KII8
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UniRef90-Q1AZ02
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UniRef90-UPIO0037493C0
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FHMAKDYAN 170
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200 LK ISRDYANE GFDAQMLLEPKPKEPSTHQYDFDAATTAA

 LIMTRDYARKKGFKGTFLI EPKPMEPSKHQYDVDAETVI G

 | LTMTVEHKHKI GFKGDTWI EPKPHEPTKHQYDRDVGTVYG |
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| FKMVVAYKKKI GFTGQLLI EPKPKEPTKHQYDYDAQTVUS | LHMAADYKEKI GFQGTLLI EPKPREPSTHQYDYDSATVFA LRMALVYKKKI GFEGQLLIEPRPKEPTRHQYDYDAQTVMS LKGAVAYKKKi GF GGAI LI EPKPQEPTKHQYDWDAATIMG LAAARDYARGKGFKGTFLI EPKPMEPTKHQYDVDTETV VG MQMVVEHKHKMGFQGTLLI EPKPQEPTKHQYDYDVATVYG

 FKLAKDYANEDGYQGQFLIEPKPKEPTQHQYDFDVQTTIA A TNVLLEYDSET FKMAVAYKEKIGПKORLIEP INRALDYKHK TNKMLQY DPEILVLI
$\stackrel{\square}{\mathrm{F}}$
 FRLALAYKKKMGFNGVFLL VNAMLDYDKELGEDQRMLL PKPNEPMDIAYIPTIGHAI G

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UniRef90-DOMFR3 UniRef90-UP10002E1D4CC UniRef90-E8WZ91 UniRef90-A3TT39 UniRef90-E3ZCQ7 UniRef90-G5HIB5

## UniRef90_Q1AZO2

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GAFDFSRFY
GAF GAFDFNSRFY
GAFDFNSRFY
GAF DN $G S F D F N S F Y$
$W G M D V N D N Y G$ GAFDFNSRYYG GAFDFNSRFY GGFDFNSRFY GGFHFNS GAFDFNSRFY GGFHFNSRKY GGFDFNSRFY
GGFHFNDSKYG GSFDFNSRFY GAFDFNSRFYG GAFDFNSRFY GSFDFNSRFY GAFDFNSRNY GGFHFNDSKYG GSFDFNSRFY GGFHFNARRYG ADDDLIVGAADPFQLFRILEVIRGGGLD ADDDLMAGAADPFQLFIMHEVVKNGGLK ADDDLMVGAADPFQLF I MYEVVRADALD ADDDLIVGAADPFQLFRILEVVRGGGYG ADDDLVVGAADPFQLERLLEVARGGGLD ADDDLMVGAADPFQLFIMNETVRADALD ADDDLMVGAADPFQLFRILEVVRADALR YY ${ }^{A}$ ADDDLIVGSADPFQLFRIMSEIVAAGAH ADDDLVGSVNPYELFLI FYQUQLAAAE ADDDLIVGAADPFQLFRIMYEVIRGGGF ADDDLIVGAADPFQLFRILEVIRGGGYA DDDLVGAADPFQLIMNEIVRADADR ADDDLIVGAADPFQLFIMHEVNQGGGFD ADDDLIVGAADPFQLFRIIVEVVRGGGL ADDDLIVGAADPFQLFRILELVQQDAHL DDDLTAGALKPYQLFLIFNELVEHATD DDDLIVGSTNPFELFLIYVELVDAERR GSTDSNTDPGVGHRSVPPGH
GGFHFNDSKYADDDLTAGSTKPYQLFLTFNELDARGMD LGVHLNDGYAKRDDGLMVGAVHSVQTVELDRQGRDGYD GGFHFNDSKYG DDDLDTAAIDPYRLFLVFNELVAPGFD GGFHFNDSKY ADDDLTAGSIKPYQLFLIFNELVEHATD GGFHFNDSKYG DDDLDAGSTEPYRLFLVFNELVDAEYR GGFHFNDSKYG DDDLTAGSIKPYQLFLIFNELVEHAKD GGFHDNDR RYADDDLTLGSIDPYQVFRIFHEIHSAAAD GGFHFNDSKYG DDDLDSGSINPFQLFLVFNELEGEAFK VGFHLNDG YGHFDDGLMLGSVHLLQTLEYMYYAKRVNFN AHTHWNSQPLGNYDQDLNVGVISPEITEAALFVLKMYGYT ADDDLIVAAHNPYELYLILQQLVAAKYD GGFHFNNRKYGADDDLTTGSVNLYEVFLIYHEILNAERA FYDHFNDNDRG ADWDMLPASVHLWETLETLHYMREDGYD GGFHFNDSKYG GGFHFNDSKYG DDDLDSGSINPFQLFLVFNELEGAAFN
 GK LGVHLNDG YG GGFHFNDRKY GGFHFNDAKYG GGFHFNDRKF FYVHFNDN FHTHWNSQPLRNADWDMPVASVNLWETLETIHYMDSLGYD FGIHLLNDGYGLN DDGLMIGSATPFKTLEFLYYIRKHOYD YGLHMNDG YGEDDNGLIFASVSMPQALEFVYYLKKYNYD GHQHANDG GGFHFNDRKY WGMQLNDGFRPGC GGFHFNDSKYG
GGFHFNDR
GGFHFNDSKYG
GGLDCNDGKWGKRDDLTAGSIKPYALFLVFHELRLPSFR
$G G F H F N D S K Y G$

UniRef90 WGT4R9 UniRef90＿U4KKQ7
UniRef90＿UPIO00477B3BD UniRef90－W7YQB2 UniRef90＿B6YRF5 UniRef90－G0EMI7 UniRef90＿UPI00035E3B54 UniRef90－I1FQ24 UniRef90－K2ESM2 UniRef90－E9HNY5 UniRef90－IOYV41 UniRef90 W6KA31 UniRef90－D1PVX4 UniRef90＿V2EIP9 UniRef90－R5FM05 UniRef90－R6CPK4 UniRef90＿C2KII8 UniRef90＿LOD947 UniRef90＿UPI0003B43108 UniRef90－W5LAK9 UniRef90＿UPI0003735238 UniRef90－F3GUA6 UniRef90 UPI0003EA9187 UniRef90－UPI00046F1221 UniRef90＿A0A022RRT8
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UniRef90_A0K062
UniRef90-UPIO00476B894
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UniRef90_UPIO0035EDCA0
UniRef90_UPI000345933C
UniRef90-C7MA54
UniRef90_UPI00047DA177
UniRef90-E9V340
UniRef90-D1CHD1
UniRef90_UPI0003AF7A99
UniRef90_C2FWY7
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UniRef90-K9D6Y4
UniRef90_V2DL96
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UniRef90_UPIO00255B729
UniRef90_UPI00037FA8DB
UniRef90_DOMFR3
UniRef90_UPI0002E1D4CC
UniRef90_E8WZ91
UniRef90_A3TT39
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UniRef90-Q1AZ02
UniRef90_UPI00047E120C
UniRef90_UPIO002627350
UniRef90-S9SA86
UniRef90_UPI00037493C0
UniRef90-W0RF22
UniRef90_C4LG26
UniRef90_V4NZS5

GGLLNFDAKPRRTSAANDLLFYGH\｜VGMDSFAAGLIV｜AMKMK GGLNFDAKTRRPSNVEDLLLAYI HGMDTYALGLRKAVELD
 GGTNFDAKTRRNTDLEDIFIAHISGMDIFARALVSAAA L GGFNFDAKVRRSHTMDDLMYAYIAGMDTLA WGLRDADKIV GGSNFDAKVRRQSDVDDLFYAHVGAMDLLARALENAAAMI GGLNFDCKVRRESDLQDLF DAHI GAMDSFARGLMCAVELF $G G L$
$G G L$
$N$ GGINFDAKLRRETDVNDLFYGHISGMDALARGLRNAAQML GGTNFDSKLRRQSNAEDLVIAHVGGMDTCARALLAAAAMI GGSNFDAKLRRNTDPED：FIAHISGMDAMARALLNAAA MM GGLNFDAKVRRSTDKYDLFYGHIGAMDTMALSLKIAARMV GGTNFDAKTRRNTDDLEDVI I A HVVSGMDAMARALLENAAKLL GGLNFDSKARRQSQADDLFYAHI A GMDTYAAGLKVAAKLI RNVGLDVKAMRTTTVEDSMQHLSNSRTMF GGLNFDAKVRRETDDLEDLFDAHIAAMDAFARGLEKNAVKII
（

GG $\square N F D A K V R R E T D D E D \square F D A H V G A M D T F A R G L R S A V Q \square I$ SYVGLDVKAMRTTKDQDRYKHLENSDNDVRTGEEKAKRFD GGFNFDAKLRRETDVEDLF DAHDAGMDTLARGLRNAAK【D



 PA WMDDASHNTKDPI EDLQSVNGULAAYAA LLVDRAALS

 PDSGVTFMLDQCHNI EA QKTPGQTRSVLNVQEAAKALL



 RPESVNFMLDQCHNDE EKIPGQDRSVLNVEQAAKALL G
 PAWMIDASHNLKDPMEDLLQSLEAIKLAYAALLVDRAALE PESDVAFMLDQCHNVE KK】PGQLRSVLNVQ
 KGTTVSYVLDQCHNI EP PAS GVAFMLLDQCHND
 PASGVNFMLDQCHNLE SKDQGQDRSVLNVQETAKQR
 GA RMUDQSHN【EPKIE GMIISVMQLQESYARALVDWRELLE
H GWM $\square$ D AS H NQK DP LVDLLQSVEA IK $\square A Y A A L L V D R A A L K$



 L G WM I D A S HNVVK D P L E DLL L Q S V E A I M I A Y A A L L V D R K A L G G F D I A F M I D Q S H N L K G KM E A MVVQTVV T A Q DIIV V K A A L V D

 GA WMI DASHNVK DP L E D L L Q S VEA DMMAYAA L LVVDR K A L K
 G WVA Y DVFTRS G D NVVA I A S T F E I M M E DLLD S L L D K D PA YMLDQSHNVTDPI ESLMSSAVEVQRAFQANLVDRDALR

 PAWMDD ASHNTKDPLE DLMQSLEADQDAYAALLVDRTKLK
 P A Y MI D Q S H NVK D P I E A L L Q T V D H L QRAYA ALLVDR E A L S P N Y M L L D Q S H N V T D P I




 GHLLYFDTEPDNEDPVREAEANDRRCTSWWNQAAELEAK




UniRef90＿W6T4R9
UniRef90－U4KKQ7 UniRef90＿UPIO00477B3BD UniRef90－W7YQB2
UniRef90＿B6YRF5 UniRef90－G0EMI7 UniRef90＿UPI00035E3B54 UniRef90－11FQ24 UniRef90－K2ESM2 UniRef90－E9HNY5 UniRef90－IOYV41 UniRef90 W6KA31 UniRef90－D1PVX4
UniRef90－V2EIP9 UniRef90－R5FM05 UniRef90 R6CPK4 UniRef90－C2Klı8 UniRef90－Lod947 UniRef90－UPI0003B43108 UniRef90－W5LAK9 UniRef90－UPIOO03735238 UniRef90 F3GUA6 UniRef90 UPI0003EA9187 UniRef90＿UPIOOO46F1221 UniRef90－A0A022RRT8
UniRef90－E3J5G4 UniRef90 EOSTZ？ UniRef90＿UPI000359EFF2 UniRef90 UPIO0037DD71A UniRef90 UPIoo017449B3 UniRef90－H2JXX1
UniRef90－F4L071
UniRef90 J9S5T8
UniRef90－UPIo003626FA4
UniRef90－E8W3J5
UniRef90－D8HV70
UniRef90＿C5C322
UniRef90－D1BY75
UniRef90＿UPI0003F557AA
UniRef90 W5WED8
UniRef90 U2R792 UniRef90－UPIOOO3048632 UniRef90－E3EJ84 UniRef90 ${ }^{10} \mathrm{H} 710$ UniRef90＿UPI00028801C7 UniRef90－A0K062 UniRef90 UPIOOO476B894 UniRef90－UPI000255C96D UniRef90－I4F5E4 UniRef90－UPIO0035EDCAO UniRef90－UPI000345933C UniRef90－C7MA54 UniRef90－UPI00047DA177 UniRef90－E9V340 UniRef90－D1CHD1 UniRef90－UPI0003AF7A99 UniRef90＿C2FWY7

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## EDGVMQKMLQ

Y $A F Q K Q C V A E R N Y E A D E M Y \nabla M E \square L$
EEGVIAQMLQ QRYपSFSSGПG SMVEEGTATLVELEEFE YEFQKQ
EDGSLDELVRK RYQSFDTELGAQDEAGDVLEKKADEWGE VDVDALGAAQRAGDILGANAVLMDAYRPLLAELRQSQGLD SVIEMNSP $\square D V D A L R A A Q A E G D L G A N E V F V D A Y R P L A E M R T E M G L D$
SVMNVQEATAKALLVDRAALAGAQASGDVLGANAVLMDYN QAQE ENDVVQAEELLRDAFLTVDVRPLVAEAMRLDGGA AAQRSGDVLGANAVFMDAYNTVMDVRPMLADRRVRRGLLP A SVMNVQEATAKALLVDRSALRAAQQAGDVLAANAVLMDLD LDREALTAAQDAGDVLAAHQVVMDAVRPLLAAYREAKGLP EAQAGQDPLAAQRVVQDA EAQQEGKVLEANAVLMDAYNT DVRPLLAELRAEDGLD VDREALTAAQLAGDVLAANGVLMDAYRPLLAELREEKGLA VDRDALAAAQSAGDVLGANAVLMDAVRPLLAEVRGEAGLAD SVLJVQTQYAKALLINHAEVEEASSRQDVLAEDAVRQAFE DDQEALAVAQRDGDVLGANAILMDAYETDLADRREERGLP SVLNVQTQYAKALLIHHDEVRQAQEKGDVLAVRRAFEEFD EARENNDPSLAQEILQNAYRT DVRPLLAEARLQSNGA VDRAALSDAQEAGDVLTAHEDFMDAVRPDLAAWRESRGLP SVMNVQEATAKALLVDREALRTAQRSGDVLGANAALMDYN VDADALKKAQLAGDVLGANDVLMDAYRDLLGELRSEQGLA SVLNVQEMTARALLLDTGALRAAQVAGDVLEANAVFMD VDREALAAAQEDNDVLLANEILMDAVRPALAAFREERGLP

EAQQQNDVVKAQELQDAFRT DVRS VAESR पREGGA EADDRQDAVSSQGIVQEA GAQEANDALMATAELKRAFRT DVEPTLAKARSDKGAA AAQDDNDVVRCQEDLQHAFRT，DVRPVVAEARLRAGGA VDHAALEAAQTAGDVLGANAVLMDAYRPLLAELREERGLGH GYQQDNDALMASDMLKRAYRTMDDVEPILAQARQLAGGA AAQDNNDVAGAQE ILQN ELPGLQDSCELVQAEETFRGAFWRDVRPMI AA WREMRGDP ALQEQNDVLEAAQTLKRAFRT DVSP ILAMARVRAGGA S IPETEAMUKSQ
YEKVVWAMM
STTNVQSLYAKSLLVNHEVLQKAQEENDVLAAEEAREGYE EAQQKNDVSLAQEILQAAYRT DVRPLIAEARLQSGGA NAQMNADTVGCEEILRAAYET DVRPLLAKVRLQKGAA
GFQESHDALQSAQTLKHAYRTDVSA $\square \square A M A R \square R N G G A \square D$ VNRTKLSELQQANDVLLASLALKDAYSPLLAEARRRNGAA VDRAALAEAQAAGDVNRAHGLLTDAVRPLTASVREAKGAA
AAQQEHDVVACQETLHAAYNT DVRPLVAQARTNAGGA DQARLTAELQQECRLVEAEEGAFWQDVRPVVREWRVARGLP HYQETGDVLMAERTLRAAFET DDVGPLVAEVRRRRGGA EYQQNNDALMASNTLKNAFNTDVSPILAMMARLRKGGAID VDHAK【AELQKSCSLVEAEETFREAVRP乌VRAWRQSHNLP ESGD

## HDRリII

TIIDKNDATEANQL
EVIKEQDGIKAQKLV
EARERADALGAQK
ELTKLQDECRLVE
ELTKLQDECRLVEAEELFRDSFWTDVRPMVRAWREAHGLP
GHQEENDALMASETLKAAFRTDVT LQMARRESGAA DD INQDKGDIISAEQCLQRAFMTDVTGA QASWRKEKGLY AHQESGDVLMAERTLKDAFETDA
A A DS RQDAVASQQD
EYQDANDVMMGNCLRMAFETDM

| UniRef90 W6T4R9 |  |
| :---: | :---: |
| UniRef90－U4KKQ7 | PDVKSGKQ EYLEMIVNQ |
| UniRef90 UPIO00477B3BD | KYALSNSSGRQEMMENLLN |
| UniRef90 W7YQB2 | PAMLSGKQELYE QML |
| UniRef90 B6YRF5 | PLQESEGKQSGNQELLEAKVNMYY YNL |
| UniRei90－UPI00035E3B54 | PAPVSGRQ EYLENVVTQ |
| UniRef90－11FQ24 | PTPTSGQQEMYEVLFNNALK |
| UniRef90－K2ESM2 | PRGVSGKQ ELLEN L NQA |
| UniRet90－E9HNY5 | PEMISGQQEHCE AlVNRYL |
| UniRef90 10 YV41 | PDLPSARAEL |
| UniRef90－W6KA31 UniRef90 D1PV44 | PMPVSGRQEALE |
| UniRef90－V2EIP9 |  |
| UniRef90 R5FM05 | PKQTSGKQEKYETLVSL |
| UniRet90－C2KII8 |  |
| UniRef90－Lod947 |  |
| UniRef90－UPI0003E |  |
| UniRef90 W5LAl |  |
| UniRef90－UPI0003735238 |  |
| UniRef90－F3GUA6 |  |
| UniRef90＿UPIO003EA9187 UniRef90＿UPI00046F1221 | PKTTSGKQEKYE STFNHYL |
| UniRef90－A0A022RRT8 | PKVASAKQEDAEMTFQSAL |
| UniRef90－E3J5G4 | PDPMGARSGYAER】 |
| UniRef90－EOSTZ2 | PSQTSGQQEHFE NMTNYY号 |
| UniRei90－UP100037DD71A | PDPVAARSGHGEKL |
| UniRet90－UP100017449B3 | TVRGपGEVREE $\square$ |
| UniRef90－F4L071 | $\square \mathrm{DPL}$ A |
| UniRef90－J9S5T8 | ADPMAA |
| UniRet90－UPIO003626FA4 | PDPDAAASGY |
| UniRef90－E8W335 UniRef90 D8HV70 | PDPFAAASGNQER！ |
| UniRef90－C5C322 | ADPMAA |
| UniRef90－D1BY75 | ADPYAASGYQQ |
| UniRee90－UP10003F557AA | PDP成AARGYQQQE |
| URR90－ 28792 |  |
| UniRet90 U2R792 | PDPLAA |
| UniRef90＇E3EJ84 |  |
| UniRef90－10－770 | RDPVAA |
| UniRef90－UPIO0028801C7 | VTPL LHaVREEQ |
| UniRet90 A0K062 | ADPMA |
| UniRet90 UP1000476B894 | LDPVGA |
| UniRet90－UP1000255C96D |  |
| UniRef90－UPIO0035EDCAO | PDPAYAKSGYAEK■ |
| UniRef90 UPIo00345933C |  |
| UniRer90－UPIOOO47DA177 |  |
| UniRef90－UPIO0047DA177 | A DPMRAASGYQEQDE VRENLIGAR |
| UniRef90－D1CHD1 |  |
| UniRet90－UPIO003AF7A99 |  |
| UniRef90－C2FWY7 | LTNPV |
| UniRet90－UPIO0036DFC20 | Tprya |
| UniRef90－Q2CD79 | L D P P L |
| UniRei90－UPIO00420E937 | PDPFAA |
| UniRef90－A9CFA4 | 1 DPV |
| UniRet90＿UPIIO0029AA453 | S P ${ }^{\text {a }}$ |
| UniRef90－UPIIOO047DE8DB | TDPLAAESGYVER■ |
| UniRef90－K9D6Y4 UniRef90 V2DL96 | ADPVA |
| UniRei90－UPIO0035E4A18 |  |
| UniRet90 UPIOOO35EE4B20 |  |
| UniRef90－UPIOOO2DF3786 | LEPV |
| UniRef90－E0XSV6 | ID Pi |
| UniRef90－UPIO0037DD5A4 |  |
| UniRef90－UPI00036FA182 UniRef90－T1A649 | $\begin{aligned} & \mathrm{P} V \mathrm{~A} \\ & \mathrm{~V} D \mathrm{P} D \mathrm{~A} \end{aligned}$ |
| UniRef90－UPIO0047A9318 | ADPVAARSGGY |
| UniRet90＿S9SMF9 |  |
| UniRef90＿UPIO00255B729 | VT |
| UniRef90－UPIO0037FA8DB | PEPLKAESGYVEK【TQ |
| UniRee90－DOMFR3 UniRei90－UPM0002E1D4CO | $\frac{\square}{P} \bar{D} P \bar{v}$ |
| UniRef90－E8WZ91 | A NP他AESGYVEKDS Q |
| UniRef90－A3TT39 |  |
| UniRef90－B5YAD2 |  |
| UniRef90－E3ZCQ7 |  |
| UniRef90＿G5HIB5 UniRef90 Q1AZ02 |  |
| UniRei90－UPIO0047E120C | AdPLeeragay |
| UniRef90－UPI0002627350 |  |
| UniRef90－S9SA86 | PVSAYRRSGY |
| UniRef90 UPIO0037493C0 | PDPLEE |
| UniRef90＿W0RF22 UniRef90 C4LG26 |  |
| UniRefan＿C4LG26 niRef90＿V4NZS | $\square \mathrm{DPMA}$ |

GKPMHEWRFAMCFWHFRTSESD AT $\square$ RRPWNVLEDAFE


TGQWADLPFEEVCR】S F NTWVY GSFP SWLPSYTLEETIA FSTNAFTRYTLDPESUS

RQQWNL GE K A LVEK GT Q IDD ESLAF TLE WS F E KT F E


$R F S \square N Q M T V K Q L A D P E L T E$

TGQWADLPFDEVCR WMRAEPDETI A HRWEDALE PGRGEPRG■FDKLDDCA

GTD $\square$ T P A $\square \mathrm{LFPD}$ D
PGASLEEKLE
 $\square S G P G A \square R F G Y G T N A N H R L G D A L A$ TGQWADLTLDEVAE TGQWADLPFEEICR

S F N T WA Y S
 A GRTM K ELL UniRef90-FOYMIO UniRef90-X0ZKT9 UniRef90-R1F321 UniRef90-X0Y2C3 UniRef90_UPI0004675C48 UniRef90-M0DHA4 UniRef90-KOII48 UniRef90_L9ZXE3 UniRef90_MOMJV1 UniRef90-M3CPK3
UniRef90 14 E 1 U 5 UniRef90-K4R9V5 UniRef90-J7LAG8 UniRef90-J7LR16 UniRef90-D7AVQ9 UniRef90_UPI0004761A01 UniRef90-UPI0003600B96 UniRef90-D7C1M5 UniRef90-UPI000366AEC2 UniRef90-F6G258
UniRef90 R6MX33 UniRef90-D9UN68 UniRef90_S7UXF6 UniRef90-S2YSK9 UniRef90_UPI000362C54O UniRef90- I2GEA4 UniRef90-R6DBU8 UniRef90-UPI00037E50F3 UniRef90 B9DW10 UniRef90-UPI00041EE2E7 UniRef90-KOP3S0 UniRef90_W2EFY9 UniRef90_S6A5Q1 UniRef90-W5X856
UniRef90 H0QL70 UniRef90 UPI000288FDEB UniRef90_UPI000371C02B UniRef90-X1R288 UniRef90 D6Y6T8 UniRef90 A0A015KYY5 UniRef90-U4WLQ8 UniRef90_U3HRK3 UniRef90 O69950 UniRef90-D3QD19 UniRef90-J9DW37 UniRef90 F8ECE7 UniRef90 UPI00047B05D4 UniRef90-UPI00037BB31C UniRef90_UPI0003822114 UniRef90_J7LU30 UniRef90-UPI0003B64835 UniRef90-F7STD7 UniRef90-UPI00037C082F UniRef90 B5HCD5 UniRef90 ${ }^{-}$W8X897 UniRef90-A4XW09 UniRef90 UPI00037FD778 UniRef90 R9LVR? UniRef90-UPI00047AF539 UniRef90_D5SU76 UniRet90 U4V6R UniRef90-UPI0002F78FCF UniRef90-F4L631 UniRef90_UPI000367C3EE UniRef90 UPIO0040E272A UniRef90-F7Y4D5 UniRef90_D9T9C1 UniRef90 UPIO003B71BCC UniRef90-A0A024Q688 UniRef90_U5W1B1
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UniRef90 X1TQR2 UniRef90-TOQ2Y8
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UniRefon - 0 Y 2 C3 UniRef90_UPIOOO4675C48 UniRef90-MODHA4 UniRef90-K0148 UniRef90-L9ZXE3 UniRef90-M3CPK3
UniRef90-I4E1U5
UniRef90-K4R9V5
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UniRef90-F8ECE7
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UniRet90_B5HCD5
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UniReffo-DgT9C1
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UniRef90_A3ZQP3 UniRef90-R6Y3F9 UniRef90_K8GF60
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UniRef90 N6Y 04

FMELLGLR LFAFQDTDLVPEGYEHHWDVVDPY VQAKMRD HVDFNFPQHLAGLDAGAVAAALDD VSEVGMDAMELVFPYEV YPPALMPDNSDELKTLTSK FCEKVGAPYYCFHDDDVRPEGATQAESDANFDIVAERQAA VIAGLGYSGVALTLDH AVADAGYDGIELLFDE EIAKDGYKGVEILCD ELADAGYDGVELLDE ACRDLGVPAVGLWRAPV
 PHAYFPNFDDADEGDLIAALDD FAKELGFDFVELSDDESDERGARLDWSKEERLELVVKAIFE ACGGLGVTNVGLWREPVRTYGGDVGKAEATAKLVRD VAKEMGYDLIEVCDEDPA RLSR GYDGIEGCA APHAWPYYDSEEKRMKIKKDLEA LIADLGYEGVGLTLDHP HLDPFTPDAFARTARIGRRLSE ILADLGYAGVALTLDHAHLDPFAHDVARRVATVARLLDR
 GCVKAGVPGVGLWRAPVQEYG VEAMARIRD LLSDLGYDGVTLDHMHLDPFAPDLDAVRVHLAHEAELDA RLAKLGYQGVEVAGQP EYFSQAQQIGRACRE TCADLGVRNVGLWREPVRAYGYPDDFNDEASAALVRD KLARLGFKGVEMMCDKMHLYPPDFNAEDLAAVAAALER FVKELGYDGVEIADFTDAESAEQVS REERKRIRKLAED FLKNSGFDFVEV LASKMGYDGLEVACWGNGTDTDRAYSDDSYVAWI KETLAK VIAGLGYVGVGLTLDH GHLDPMAPDLARRTAEVGRLLAD FAKSLGFDFVEMSUDESDERLARLDWSKEERLKLVQAIYE RLHRFGYDGIEL GAASPHVFAGEPEQLDREEIKRLMER VIASLGYEGVTLDHDHDDPYAPGAARSVARKDLGKMLKD LLSELGYDGVEISV DLEPEEVGELSKDVKD LHAELGMEFIDMTLEPPAA DGSWLVDVKE:CRALHE AAAEAGFKGVEY आFPYDYSAVE LKARLDE LLADLGYDGVTLDHMHLDPLGPDLA ARTAQVARRLGE LAAEWGYDGLETACWGDHFDVEKALTDDSYVERKREVLAK RLAGMGYDGIELGCA SPHAWPDYLSAEKRADVSRILER
 GYDGVGTLDHMHLDPLADDLAARTRRLARRLDT FAKELGFDFVELSLDESDTRLARLDWSKEQRLELVKAVIFE ACARHGDKAIVPWRDQVAAFG FVKGTGYDGI EIA PFTCA KYVTDVSKQRRSEDKDLAAR GCARAGLRGVGLWRAPVRAYG KSHDLGYGLIE RVARYGYDAIEL VGEPATHNVDEINKLTSD LIHRLSTPMVGQHMLWFFSEDGITADYRK AQRVQEELEA AAAKAGFKGVEY GFPYDYAAAD
 AAAKAGFKGVEYLFPYAWPK $\quad$ EELARRLQA AAAEAGFSGVEYACWGLFPYDFA


 KLAAWGYEGI EFWGS
 VLADLGYVGVTLDHDHLDPFAPGLARRVAAVRR KVSDWGYDGLEACWGDHMNVQKAAQDSAYVEKKKEVLKK GCTDHQDPVISVWRKDAEVG VIADLGYTGVTLDHDHLDPYAPGDA RQVVETADRLRD VVADGGYKYMQMTPHDFTPFYNHPKADDERVGQLKKACTD NIKKWGYDGVELPVFDLDP LAKRDGYQAVE I AVRDPSVVDNEVARLSKE KAKEMGYDGLELACWGNHLDAKRVVEDDSYFQEVMDLLKK KAAKAGFTGVEYAFPYEF
 LASGWGYDGLEVAVSGQDHLDAWRWDEPGYVESKLAVLEK RHFQGWIEWAKE VLSLLGSENVAAVEVAPTR【WADWE\|SPEVGDRYRQNLQS AAARAGFQAVEF K KEFGYDAVEDPVEDPA DIDKVGTKKIN』HASYA $\mathbb{C}$ GWVDRDQ DE PKHFKKWVEFCKE AAADSGFTAVEFMFPYDYP
AAAEAGKGVEF
LIFPY

UniRef90 X1TQR2 UniRef90-TOQ2Y8
UniRef90-FOYMIO UniRef90-X0ZKT9 UniRef90-X1RD77 UniRef90- R1F321
UniRefon - 0 Y 2 C3 UniRef90-UPIO004675C48 UniRef90-MODHA4 UniRef90-K01148 UniRef90-L9ZXE3 UniRet90 MOMJV1 UniRet90_M3СРК3
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UniRef90-A4XGKO
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UniRef90 HoQL70 UniRef90-UPIO00288FDEB UniRef90-UPIo00371C02B UniRef90-X1R288 UniRef90-D6Y6T8 UniRef90-A0A015KYY5 UniRef90-U4WLQ8 UniRet90-U3HRK3 UniRef90-O69950 UniRef90-D3QD19
UniRef9o-J9DW37 UniRef90 F8ECE7 UniRef90-UPI00047B05D4 UniRef90-UP100037BB31C UniRef90-UPIOOO3822114 UniRef90- J7LU30 UniRef90-UPI0003B64835 UniRef90-F7STD7 UniRef90-UPIO0037C082F UniRef90_B5HCD5 UniRef90_W8X897 UniRef90-A4XW09 UniRet90 UPI00037FD778 UniRef90 R9LVR2 UniRef90-UPIO0047AF539 UniRef90-D5SU76 UniRef90-U4V6R8 UniRef90-UPIO002F78FCF UniRef90-F4L631 UniRef90-UPIO00367C3EE UniRef90-UP100040E272A UniRef90-F7Y4D5 UniRef90-D9TMC1 UniRef90-UPI0003B71BCC UniRef90-A0A024Q688 UniRef90-U5W1B1 UniRef90-UPIO00360B1FC UniRef90-B8HDD3
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DPDLRKNAlIEEVRR
SSDC CDYGAANDMANRRYMHGSATSPSGVYKEAAAQVKR AGL CGAVCLRYPSPEFSAGALTHPDAAVRAKAVALTVE YNLKVSEVFIESWSDRKWKNGAYSTTEKDVRKEAIRIFKE SGLKLLWGTANLFTPRRYMNGAATNPDPAVFARAAASVKK NNLQVAGTAVNLFSSPKWKLGSLSNQDEKLRREAVEEVQR LGGGVVVETARYLLDPWHKHPTLLDPDPARRAHRLDFLTR NDAISNCNAFMLTAEDFHHPSFVEPDEDYRRRRVDYT D NDMA SNANAFMLTAEDFHHPSFI EPDEDYRRERIDYTLA TELQISNVNANTATGYYFFDPSVITADDDDREWRIEYTKR AGLTVTTLCRGGF TGVRIPTVTFSGGHRRYPLGSNDPEKEARALEMMEK
 NNIKVSSMLPAPGGGPGANPASPI DEEERKWTVQHYKD LGLAVVVETARYLMDPRRKHEPTLVSDEGA ELRVDLLRR LGLSLVVETARYLLDPWHKHVPTLLDDDPARR LGYLRR
 LGLGVTLETARYVLDARRKHPSLLDPEPDDRARRVDLLLR


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 YNLGVWAI SNHLVGQAVCDHPIWGSGDP NRLKVAAMLPAPGGGPGMNPSSPLLEP YDLELSNVNGTFSHEPTFEPSLCNAREEVRNQRIRYTKQ NGLT TGLRIPTUT FSGHRRFPMGLSNDFNTEEKSMELMKK

YGLKVVVTTG $\quad \square P$ VDSDVSSEDPAVVKRGEAVLRA
AGIDVSSICSTWFGEERD LIDNPAANRQKALDYGKS RGVKMGSISPTYFLAGSEDGSFASQNPADRKRYIEQTVL


$N G L V Q$ VLHNLPAGDWDAGERGTATDEGDRARALEDNRA
$N K L E Q V L F N L P A G D W G K G E R G D A C H P D R E E F R A G V D G K$ H GLKVFAIS NHLVGQAVCDHPAADWGDEGVRQRAAERMKD KPIRISSIGTGMAYG MEGLSITSSDPSIREAADQRLKG
 L GLGFDAMNSNTFADAAYKFGSLTHVDPAVRAQAVEHNDE QGLECTTVTVV VGPDHSPISPDAKVREAALNRLKW L GLQRLAVAN S GLLKVST』CAGYRG Y NIK WGSVTL HGiNR WGSVTMMLEER NLLAKDPDQRKRSVQYVLA

 Y NL LK C WAL GA HL A GQCVVGDRYDVK GKP E ELLRA WAVEEMKA

 E RLAVSSMLPAPGGGPGNNPSSPVVVERALTVEHYKD

 Y DLK CEALSTH DYNDPRLNNFALADQPDAI RAWAVETMKY
 NGLTQ A GLEI $\quad$ SLCRGGF FPSHSPTSRQAADDDNLR Y NLGVVWA SNH LKGQA VCDDP DDFRHEEGVRQRAAE EMKH NMTCVVESGARFLLDPKQKHEPLVSPTKHGRQRRFEFDRH HGMKLDFNSSTSFSHPKSGDLSLDNPDPGDRDFWVEHTKR Q GLLCSS LQA LLFK QPDLKVVGT PNQRAALVEHLKR




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 CVQLAKKLGAKNLSTEP GGPIPSNRDSNKGEKVFLET AI DLASITSAPAVCLATGRP AVDEAAALGTDTLVLVS CIVFAQDGGRNDQL AVRIADAWGARAVSFWSGI CVDADAWGARAVSWGD LPPGADPDRGWERLVAG CVVIAQAVGSPHVAMYSATGKARLDPPEERRQQRQWAADS AVRVADDLGAEAVSFWSGD LDAGVSRERGWSRLTSG AVALGSDLGAEAVSFWAGAR PRGVAPSAAWNRLTAG
 AVRDAGDLGAHAVHCFSGT GVGPPGTGPETAWQRLAET LVDFAAALGAPMVSCHGTRVGRVRPGAAYAQEWDWLVEG AI DEAAAMGTRVLVLVS GGLPDGERDLRAARERVADA
 VIDCTVAMGATLLTGPYHSGFKTFAGRPATKQEWAWSVEG APVVAKKLGCYVVT DWK WLYSFPQTTEEMVENGYDETVRL AVDVAAELGAEAVSFWSGTVPADVSPG CITLAQDLGVRTI QL AGYDVYYEEKSQETRQRFLKN CVDLAVDTGAAVVIAVPSPVGKSAPGSSAHEE WNHAAAS MVQLTADWGGKRLICLPGW KGYMFGTAYRQAWDWARDA AIDAASRSDUKGVITGLIRGKGEEWEQUD QP ITNLLLE CLRIFGELGTKWMNLHPGRYTPMHP ERDRSFYUQRNLQT AIDYATVLGCKQVNCLAGMQ PRQGVSLEQARRTLVEN AVRTAADLGAHAVHCFSGV TPGGTSAPAAWQRLEQS ALRLVKEMGADMAISWPGMDGYRYMHGKPFMSMWDLFETT VIRAA RDWQCPTVI WVAGWVVHGTSQREAFRYSLAEG LI DLAAKVNAKNISITSGRCLSGNPPN QREQADNHLTNS A A YAKVLGNTQVNCLAGMA PRGADLGEAEMTFIEN AVDVAAELGAHAVHCFSGV TPGGTDEDTAWKRLAEA CIEFAQDIGVRNIQL AGYDVYYEEKSDDTHKRFIKN ALDEAAAVGAECIVL VVGGLPDGFRDVVAAREMVAEG LVQFCQDLGGKSIVVIGSPHQR NLESGVTLEQATEWATEV AVEEAAAGGTGTLVLVS GGLPPGSRDLPGARERVADA AISDTRDLGSSGGI FSAHTKYQSLP TRKGWDNSVAA VADFAAAVGAPTIIVGPSPVGKTEALASDEQEWEWAVEN GARПAVELGNG\|LSLWFPDGTNYPGQREDQDMKECVIEF ADDYATALECKQVNCLAGDK PEGVSDAEAHRTLVEN AVEEAAELGTDTLVLVCG GGDPADKD PATAREQVAQG AIDEAATLGTDTLVMVS GGLPVGSRDLVAARERIADA AI EYAQALGCPQLNCLA GKVPEGVDAAAAHRTFVEN AlAYAKVLGNTQNCLAGDRPQGVDCATVEKTFVDNLRYA TARAAARLGVKTVVIWHTVAMFPPASQAMIDRGYQDFADR QLDLGALLGCP VIIGSMRGRTGSSQT FEQVDAWMVDS VAKMVKELGGSVISLVPATVGKIVP DARPEEEWNWAVEG AIHLADDLEADCVSFWSGILREPWP ARREKTMEILAEG CI EIGKAI GSKALTVWL SDGSNFPGQQNFTRAFERYLIAS AI DCNHALGAWNMVGPFHSPGGVFSGVPPTEDERKRAADV ALDCAAVIGAKLLMGPTHSALGVFTGQPATQEEWQRGVAH
$R L T A A A E L G A V G L I F V P I F G G P R I P D L S P Y K A V E L E M D L$ LAQLVADLGGKVISFVPATVGKIDPDARPEEEWEWAVEG VLTMVSELDGEVITLVPATVGKVVPDGTEEEEWKWVVDA TARLGAKKGVKTVVIWKYVAMFPPVPQEVIEEGYQDFADR TAKAAKNMGCYVVVT WKFWYSFPPTSEDMVEAGFEKGYKK
AIVEAAELGADVLVLVCG A VEEAAELGADVLVLVCGGR PSPHKDLAESRKWVQQG ILRLAHDWECPTVIYLPGWAV FGTSQSDAWSHSLEA Al QiAVDLGVSTMNTEFSGRP VIDSVAAAGGTLLCGPMHSALGTFSGTGATGDEWKWALET

 AIAEAHALGAPLIVLVAGAVPGQPRSE ADEAHALGAP SRRQIADG CARLLARALGVDTVVIWQYVAMFPPVPEKVIDAGYQDFADR CRADAEEMGKAQGDPSGMNLWVHDGSKDLTVNRMLYREL VADLAVALGARPMVF GAPKNRDRGDLDEKSALHQALEV ADAYAKELGVKQLNCLSAVVGUVPQGVTRQDAQVTLVDN C RAAEELGQACVMNYWTGDGYKDDPSDRKGPRERYKDS


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UniRef90_J9DW37 UniRef90-F8ECE7 UniRef90_UPI00047B05D4 UniRef90-UPIO0037BB31C UniRef90-UPIO003822114 UniRef90-J7LU30 UniRef90_UPI0003B64835 UniRef90-F7STD7 UniRef90_UPI00037C082F UniRef90_B5HCD5 UniRef90-W8X897 UniRef90-A4XW09 UniRef90_UPI00037FD778 UniRef90_R9LVR2 UniRef90_UPIO0047AF539 UniRef90-D5SU76 UniRef90-U4V6R8 UniRef90_UPI0002F78FCF UniRef90-F4L631 UniRef90_UPI000367C3EE UniRef90_UPIO0040E272A UniRef90-F7Y4D5 UniRef90-D9T9C1 UniRef90-UPI0003B71BCC UniRef90_A0A024Q688 UniRef90-U5W1B1 UniRef90_UPI000360B1FC UniRef90-B8HDD3 UniRef90_UPI00029B40CF UniRef90_A5IK03 UniRef90_UPIO00381D961 UniRef90-C4WIL3 UniRef90-I2BUZ6 UniRef90_UPI0001744BCE UniRef90_A1R5Y0 UniRef90-A3ZQP3 UniRef90-K8GF60 UniRef90-L9PBB7 UniRef90_UPIO0047DF222 UniRef90_R9IL43 UniRef90-E8XV58

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UniRef90-UPIO0047DF222
UniRef90-R91L43
UniRef90-E8XV58
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210
220
230
240 VIAKKLG KDNVGVLVIDFGHALMSKESPAEVVICTLGEEKKLL FLLRHRDQTHFKI CVVATSSL GDDPMHEVAYASMTKCL LCADVDRANFGLTLDVGHCLAAGENPAQSVAAVAARGRL LLNEVGG DNVGGALDVGHSLMAQEHDAESVVILDRAEKL
LTKK\G K DNVGVLVDFGHADMGKENPAEVIWDLNEEKKLL LRHTLGDPETFGLTLDDGHCQCLEAETPAQCVR RAAPWL LMDRVDS ERDTCNFDAGHLFCMGEDPAELVETLAPYTRH

L $\square \mathrm{DDVG}$ A H
 SAGHI  $L$ R R R L G D P E R L R V T L D V G H GVVCN E P D G P E G A IAARA G D L I











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UniRef9O－M3CPK3
UniRef90－I4E1U5
UniRef90－K4R9V5
UniRef90－J7LAG8
UniRef90＿J7LR16
UniRef90 A4XGK0
UniRef90－D7AVQ9
UniRef90＿UPIO004761A01 UniRef90＿UPIO003600B96 UniRef90－D7C1M5 UniRef90 UPI000366AEC2 UniRef90－F6G258 UniRef90－R6MX33 UniRef90－D9UN68 UniRet90＿S7UXF6 UniRef90－S2YSK9 UniRef90－UP1000362C54C UniRet90＿l2GEA4 UniRef90－R6DBU8 UniRet90－UPIOOO37E50F3 UniRef90－B9DW10 UniRef90－UPIO0041EE2E7 UniRef90－KOP3S0 UniRef90－W2EFY9 UniRef90－S6A5Q1 UniRef90－W5X856
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UniRef90-F7Y4D5
UniRef90-D9TMC1
UniRef90-UP10003B71BCC
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UniRef90＿N $\mathrm{N} \times \mathbf{X} 04$
 GSIDCS MGDSYQVLSDAKHATQLMRTVIQQQGLA
 FQ』HLNEN YRDADPDM】FGTVNFWE【LEFYYYMNKTDYD

[^1] EHFHLADENRVHNHLIPGRGEDDFHSVFA LQAMED IGYDE
 HTFQLAD WDTPLPEGVLGDGA IDMRQWQGYVDALDD DGYD
 HTFQLADWTTPLPE GVLGDGSIDMR DEWKGYVEAAGYT

 IA NVQLDDMRPGVHEHLEFGDGE D D LPGVLGALEDVGYR
 $H S F Q L A D W I T P G P R G Q L G D G S V D F R$
$A S F Q L A D W I T P L P E G V L G D G S V D F R W F R E H V D A V E A T G F D$
$M$ RHVQ ED MRRDVHEHLPFGEGEDDFPPV LAALAGTGYR

 GHIHIEDDADTRDHRHLVPGRGAISFDSV FKAMKRLGYA RHVQIED MRRGIHEHLPFGDGEIDFPPV LKAAAESAYQ KHVHANDANR LGPGMGDTDFAPLAKALKEINYD VQUSENDRST WNFR PGQGNVDFNGVF QVLRDIEYD
 AAI HLKDTYPVFRDVPFGQGCVNWQ PPVMFSVLKKSNYN

 GHFHVADSNRLAB VRILGAGRDTGYM

 RHLQQEDRRGVHEHDPFGDGEI DFPPVLAALAELTAAGYP AHTHWNSQPDGNYDQDNNDGVI NPMETEALMYSLWAYDYH YHVDCKDAKVRVGNGRRGRLSSHDPWWEECFRALNA $\square G Y D$ RHVHLSDNDRL APPGQGYGNFDABLKKALKEAEYK

 ASIMLKDTYAVTEDRDVPFGEGCVEWEKFFKDLKDDHYN


 NHVHLADSNRAA D PGGVGHIDFRPT
 LGFHVSDWKVPMDDMRFMMGDGVIE IN KMRKAVEAAGYH HSFQLADWTTPNGRGQDGDGADDMR E WRERVESAGWT


 G GHVMDSENDRGT VQLSENDRSTVL KHIHLADSNRLL VNFHVADNNRMA PGTGQVNWAEAFAT GQGHVDFEK I IAT
VNFHVADNNRMA PGWGKDNWEKGFA FDFHVADNNRFAA GGGQIDWPRIVAT
 GHLPWGDPRRGWDFVSFGRGDVPWDAAFV LRALADAGYR YHVHLKDGKAG L G SHLPF GDLHRGWNFEIIRELNDIGYK

 VHVSDSMDHHASHGDRYDTNPPGNPVRVHQHLK VGGD VHISENDRST PGEGHVDWKTTFQTLKELK YHFHVADSNRWA PGCGHFDFESTF Y HVHMKDARRGWNFRSLGHGDVNFE AHIQLADNPGR NEPGTGEI NYPNVF NHI QLADNPGR NEPGTGEINYRFLFEH FAFHVCDWKTPTTDGLDMGEGCIP $\square R Q \| K G W V$ LK K $\square G Y D$ LK SMDYQ ALKE IGGD LKEIDYD

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GWQA $\square \mathrm{D} \square 1$ APRDD

G IVGVELPRHSHSGPQTALRS LINALRAASTPPWKADDRLR GYVTVELYPYQETAAE
GFVTVELYPYQDSPVQAAQEA
GFITI ELYPYEETPVETARGAMA
GFATLELYTYPDRPDEAAREAYEELSAYC
GS I EVVLLF NEDLWAG DGRELLAETARRWA
GPFLI EMWSENCETVEETRAADKEAQEFLYPLMEKA
GAIDEVLFNDADWARDGREVLAETAQRYL
GLASVEL PRHGHAAPLV AERSKHALDAAWERA
$G S I V V E S F \square P T V E E \square A S L W R P V A P S M D A L A R$
GYVTME
GLASVELPRHGHAAPLVAERSTRALTRALADSRARRA GLVAVELPRHSHAAPTLTAESUA GPI EVE I F GPIEVEIFNPALWARDGAEVLAEVADRYRTLVL
G $G P V I V E A T A S G P D P F T A V K A G$
$G F V T M E L F P P A F H T D S Y V K H H$

GPIEVELFNDELWAGDGRKLLATTAERFAR
GDI C L E L Y P Y V DMPE LIA GREGLA Y L
GFVSVEVFDFSPGAERDARESLDYLRK】FA

GPLSVVEWEDSGMDRIEGATEAAAFVKK
GPFLI EMWTENCQSIEETRKAI QEAQDFLYPLIEEA
GP LTMEFLPPVSNPYAAASMKAE
GYLSME
$G L V A V E \square$ PRHSHAAPDVAA

GPVTLEVFP TEDRTYLVHSAKVLREVWDRV
GWI SYELLPPAGD
G LTVVE LIPRHSHAGPELARSS $\square$ EF $L$

GYLSMEVFHTRKADPD
GFi T VELYTYSDNPVMAAKES DEFDTPYFKN
GWVGCEYKPATTTAAGLGWMKAHNA
G
GPFLIEMWSENYDTVEETRYA $\quad$ K T A Q S F L Y P L L I E K V
GFHEVEDF
GWLSI EAF
GYVSVEVFKFEEGPEA $\square$ AQQS $\square D Y \square Q K T F A$


GNV $\square F N D D P S K N W S Y$ AFDQMARAEQLIPS $\square L K$
GWI GCEYKPKTTTVEGLGW
GPI EVEIDNQSLWDRDG
GFI EVELFNDGLWARDGV
GWI GCEYKPGRTEDGDGWIQA $\square$ A
GWI GCEYKPATTTAAGGWMASHQNSMHNA
GPI SIE WEDAGMDRLVGAPEALQFVRR LAFDAPTAAFD
RSLTIECFP VPDGYTAAERGLRHLRALDEA
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G GL HVELSRHSYMAPQVLQESFEFL
G WMVIEAF
GMLSI EAFSM
GFMALECSVPG DPSETLPKAAQY LRECMA
KVLSVEFCPP
GALTNEF
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GPLSVEWEDNGMDREFGAQESVE
GPI EVE $\quad$ DNQA $\square W D M P G$
$G L V A V E L P R H S H A A P T V A R E S L A F L$
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GDVNWDEF
GWLTVEAFGLALDPELAAATKDWRRMFPTEEYLAQNALAFM
GYi SVECDPL
GPLSVEWEDSGMEREYGAKQAAEFV
GWI GCEYKPKTTTEEGLSWFKHHEAER
GWVGCEYKPDTTTEAGLGW
GYSEVE $\square F S T R Y W S M D$
GPISVEWEDAGMDRLHGAPEALAALKKF

NWVT $\square E M R A T E Q P \square E G V K Q A L K T V R S G Y E V V$
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GVI SIDSFTP

GWVGCEYKPRARTEEGLGWLNA

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D A L G GV L E L L E A

T D P A A

E N V E V

S

Y $\square \mathrm{K} E \square \mathrm{E} E \mathrm{~K} \square \mathrm{Q}$

EA R $\square$ GEAARKA
S LDA I K R S $\square$ AKAVLLNTAEQKMCQENLD\|IASNVEYE
$R Y E A A G Q G F E R L A L L E$

DESNFTDLMVHQ EELKTMPFGD■WDE Y


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

 $G C A R H G \square G W \square G P W R D G L A A Y G$
 B L S E L R RAA K D GCARHG $\square G W \amalg G P W R D G \square A A Y G \quad \square A R A A R H \| R D$
WVADQGGEH $\quad$ E $\quad \backslash V P \square G F D \square A G D T Q L A D A V R Q K A E E$ TLS R $\square$ NKLDYTHLE $\square Q G A P E S Y$ D


 DA GEWGYDGLEVACWGDHLDVWRAAEDDAYVKSRQDVLEK QASHAGFHGVEY LFPYDFSADKLASQLHQHNLMQ LAAKAGFEGVEY $L$ FPYDFAK
 $\square A A R A G F E G V E Y \quad \square F P Y D F D K T A L R G E \square$ PKRLDDLD R KIK S WGYDGI ELPCWGGHFDVQAALKDDSYCPKRLDLLAQ
 LVAGLGYEYLQTPHRDF IPFFNHPRADDDLVAKFRKACSD
KFKKWGFDT $\square E \square$
$P D E D P S H D N P E R V K A A L D R$
$D R D K D E P R H F Q G W I D W A K K$ SAKEDGFDF TE TS TDESDEKLQRDDWSDSE円YRLRRLCEQ
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 PAAKAGFKAVEF LDPYAFS KHFENWVK WAKE
 W $\square A D N G G E H V E \quad \| V P F G F D \square F K N P E$ KHFAKWVEWAKE

 RHFQS WME WAQE

VA A A CGFTGVEY $\square$ SPYD $\square$ PE
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A A D V A SAL A E
 KHYEKWVNWAKE HK $\square$ N $\square$ HA $\square$ YTDTDEK $\square$ DFDE $\square$ E PRHYSKWVDWAKK CARHE
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K E V $\mid$ G TVDVVVT 90 LEV VTTTT

0

 Y NLKAWAlSNHLVGQAVCDHPDWGSGNPEVRQAAAKEMAD

 H GLGCWAI SNHLVGQCVCDP DDERHKPEGVRERAAEEMKN

 A GII I S A I GANF LTD D Y ENEIERVKK

 A GVVISS SVLP LLFRWSGPDEDERQAAVRYWKR H H L R CFALISA HLT GQCVGDEWEPR LDDNFA DRKWAVEEMKR A GIGCS F S L G L D A D S D IS SGDPEKAARGKRK LEA

 H GLLNLYADSNHMLTGQADVCDDYTWGD GDPEVVRQRAAAEDMKR H G L G L D F N P T L F S HP KA K D F T LAA HP D K E V R D F W I Q HC DQ $H G L T Q V L H N L P A G D W A G G E R G I A D L D D R D E F R K G V A$

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 H G L G V S V C A V L GLGLVVETARFLLDPRRKHEPLITPEAEGRARRLEFLKR TGI RI PSMCLS A HRRFPLGAEDDETRNQGLE DMRK




A GLRVS SL
NGMSIS A

$H G L S L V L I N L P A G D W E K G E R G L A B F P D R D E F R R A L E$
HGLGVWAI SNHLVGQAVCDDP』WGDGDPEVRQRAAARMAD

 C G L A $\square$ S S L A $\square G A$ A
 HNLKVFAISNHLVGQAVCDHPLWGDGDAEVRQRCANEMKD ARLGLGVQTCSLLPPDLC LIDSPDAAKRRAGDTY LK Q A GLLVVSSSLCRGGF
 $H G K S I P M M \quad$ CCSPDFTHPDAAFRANEI AK QKR $L Q L Q V A A V C T K F V S L \quad$ VDPDVRAEYLAGLKE IG $\operatorname{H}$ E PA F H NLK LDD F N S TS F S H P K S G Y LT L S N P D K D DR D F WI E H TK R


 HGVQVTELSTHLQGHPAYDEMFDGFAVPEVREWAVKQVKA Y GLLKVWA I SNH L T GQA VCDNP DWGD GDAEVVRQRAASA L K D

$S N \prod R \| I C L T P$
F K i Q V V A
$F K I Q V V A \mid G T G Q A Y B E G L$
HGVQVASLLPMYR WASEDEEDERKKAAFERGLID
H GLKLYA】SNHLT GQA DCDDP DWGDGDAEVRQRAAEEMK L
 H GL K V V LHNLPA GNWEAGER G IACHPDREEFRAGVAQ A G L TVV T S L C C R G GF
YEE PVVRGFTPEHNAYPFNYMDGTMEAMRQESVEY LTT

 H QLDIG CSSRGLT FDADVSSEDSATVARGVA LLEE Y GMP L Q SMCLLSA MRRFPFGSEDEAVRREAYLIVMEK
 A GLQ TV VLFNLSPGDRDAGERGLAADPGRQAEFRETLQQ

 $R G L G L D F A P G F F S H P K A G Q F T L S S P D D E I R K F W D D H G K$
 LG G L D F N P T C F S H P K S A D F T L S S H P D K E I R D F WI E H C K R H H $L$ K P L A A L N A L V V
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UniRef90 A6NPU6 UniRef90_13×358 UniRef90_B4EBH8
UniRef90_M1Z4F9

LVD $V$ KEEGSTLLGGVNYAGWGCDSGKPKTDEEWNHSVEA
 TARAARAFGVDVVVVWHTLAMFPPASQEMDDRGYEDFARR SVEAAHFDDCKNLVIHSNALGEEGRMCTDGNDGNDRTKMA $I L K A M E K V G S K S L V G A M Y S Y W P C Q F E D T D K E A A W E R S ~ I ~ E G ~$
$I$ A DDEAATLGARCLVI A D DA Y QMGAKNLALMSGKD EVD $\operatorname{DAHRLGVKLMRHDVAWKAPNEDS\square RDFEQDLPRMAEA}$ VAKMVYELGGKVISLVPATVGK VPPDARPDEEWEWAVEG
 A DQ QT ADLGVDSMISEFNGRP A $\square R V A H E C G A K H V C G D L Y S A F Q K N F V P T T P A G V A M S V E D$
 A DEYA QLL DCK QI NCLA A GKHPGGYSHEQCHET LVEN

 TARAAKKLGVSVVNDWHLFYSFPPVPDAMIEEGFRLFAER TARAAAKLGVDTVVNWKYVAMFPPVSPDVI EAGYRDFADR $\mathrm{V} V \mathrm{Q} \mid \mathrm{T} \mathrm{V} \mathrm{D}$ L G V NVI NTEFSGRP
 $L I D Q M V I L D C P S G I V Y S A V G R A D A V P A K E Y A A Q W K T V V K N$
$C R A D A E E M G D P C I M N V W V H D G S K$
$D L T V N R K Y R E L L C D S$
 TARAAQRLGVSVVNIWHSLYAFPPTSQAYWERGFQDFAAR KVDVAQDLGSKSMRHDAAWGFGPDRANRGLQNVVERLADG CI EAA LLLGAPTVVLYAAVGRTWRMGTEERARLLDQIAA AVDVCATCRGEAVSFWAGVP RPGVTEEAAWPWLVDG AIVLAQDLGIRVIQL AGYDVYYQQANENTRERFRDG
 GCEISADLGCDVVNFVSPWPSTVTAPNSDWERYWSSHVDA ILN RLSLLSGKGIVVWGMFSKRLPPPPRSEEEDRKVLLES CVDLAAAVGSPHVAMYATTGKARMLGPDERAQQFRWAAES S A A AK K G CPVLVVCG QVGDFRPGVDRQVARK SVA
 $G V R Y A L K L G V P C L H C M A G V V P K S V P B R R E Q A K E T Y L D R R$ TARAAALLGVDVVIIDWKYVAMFPPVSAETIEAGYQDFADR TARLAARLGFTGSSI WKYVAMFPPASEAMVDAGYQDFADR A AAYATA DTPNDHVMAGFAAGD AVAYATTLGVSQLNCLAGDK PAGVSDEQAMATLVSN YVDLAAAMGAPRMR HDITQGYKGERYQSYESLIPVLAEA $A M R Y L G E E L G G R T A V V H P T G A T T P P Y A D E N V G A A A E R I H R S$ TARAAAKLGVNVVI I WHTLAMFPPVPDSMIDAGYKDFADR VVDCSVAAGSRILMGPDFAGFKAFAGRPATADEWAWSVES A DDAAALGAACLVLDVVGGLTGGSRDDPAARRRITDA

 II ESMGVLGATVYSNWPADYSLQVIDEPDDKKRRKDNCIAG
CRRIIADAMGKAQGDPCIMN I WVHDGMKDYTVEKMRYRE
 CLETGAKLGADVFAGPLYAGGGKSDPPDEAEREWELAVQG TARAAAAFGVNTVIDWHLLAMFPPVPPGMDERGYEDFAER AAD $\square C A E \square G A R Y L F L T S G R G Y E H D P P Q Q E A W A R S A Q S$ A $\square K A S Q H M G \square N A H A T W P F V Y P W P Q R P A G L I E T A F D E L A R R$ TARAARLLGVDTVVIWWHVAMFPPVPPSMITRGYEDFAAR A $\square R Y A K A L E V P Q L N C L$ VG LPPGVAREAAREVLVGN VI DYAVFLGAEYVRIYG GSFAQEEQDGDGGKERRLVEA
 TAKVARRLDVDTVVIDWYYVAMFPPVPDAVIEAGFEDFGNR SRKIARKELGTSALTNDWTPDGYKDIPS DRLTPRKRLEDS
 SMDMAKEMGADFTLISSAGHSGY EVDVAYRDGVKFMRHDVAWRPDPEVTVKQLDEDLPRLAEA ARKIAAYMGEETGQVCFWVPDGMKDNPDDRYQPRKRLMES
A I
A GI TI TAELGGHYFGGILYGAMAKYSAPV TKQGRRNSIDS

 ALEYAA LLDCRQLHVMAGDPHADEPHAVCREVYLDNLRQA
 LVDCTHAMGGELI A GPVHSPVGHFTGLGPTSDELA WCVDA C I R I A T E LLGQ P CVVMNDW





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UniRef9＿－A7ZAH3 UniRef90－A6NPU6 UniRef90－13×358
UniRef90＿B4EBH8
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LIJDMIGLD D ${ }^{210}$ VKIVIHLDTYHMNVEEKDFY ${ }^{230}$ ATKAAKGK ${ }^{240}$ YCKAVGTGNMA VHLDCFHMIREETSYREAAEVCGKA YL LRSELGDPDALGITVDIGHCVVVEPGGVQGA LQQAGAL
$\qquad$ EAVGNR AFQ NWDPCHMVWOGLDPANFIR

## $\frac{1}{Y}$

 YCRVVGSPNVVKLLYDDYHMQLMEGDLVNTLA WCDALG TAQEVRKV DGVGVALDVYHIWW


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ILEAI DHRPAFGGLNWDPSHMVWQD LDDPAAA I IV

|  | $E$ | $A$ | $G$ | $G A$ |
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| $V$ | $L$ | $D$ | $A$ | $V$ |

$\begin{array}{llll}H R E A & F & G & L \\ A & W & D & P \\ A & N & L & L \\ M & F & D & C \\ S & D & A & F \\ Q & Y & D & l\end{array}$
$F \square A G F P$ HPNFGLLCDMGNF LCADEDPALAVARVAPYTR





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 LSYAAANPGKC DPLMDNGHYHPTEVVSDK』PA HID A IIGHPNDIRAAMYDTAFHANDE EADPDDGAF

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$\square \mathrm{HY}$ H|L|CE 250 CDRG $\square \mathrm{PGT} \mathrm{Cl}^{260}|\mathrm{~V}| \mathrm{D}$ WD G|V|F
270
RALLKETNYN GYVHVCENNRG\| EFFTALHDIGYE
 YHVDCKDAKVNTKDGRRGTGHGDVPW EACFRALNTIGYK GY VH $V$ GD GHLHVGESNRKLG PGMGSLPWRDLG AGFHVCDWDQETRDDRGMMGDGVIDDAGLR TAVVAAGYD A H GGQDPNHPLYGDKHPRFGE GGIPELSDFDRALDEDGYS
 GHLPWADPRRGWDFVSTGHGDVDWEGAF RALNA GYS TNVHLADTFDHTASSGLRY IINPPGSAARDHQHLD IGQ YHVHIKDGKNGILGSCLPFGDLRRGWNFVSVRELNAMGYE GYFHTGDSHRGY LGSGSIDFAEVF RALVFSGYT VDCHLA WADPRRGWDFVSTGHGDVPW EASFRMLNA $\square G Y E$ GHTQLADNPGRH EPGTGEDNYPWLLNYDDQI GYQ A HVQLADNPGR NEPGTGEIAYPFIFNALDTLGBYD Y HVDCKDTRMRTPNGRAGVGHGDDPWEDA FRALNA $\square G Y T$ A LHVSRPVRWDSDHVI ILDD ELREDGDE VVRNDA DD AHTQLADNPGR NEPGTGEINYPFVF DALEAGGYD VHVHLNDPRRGWDFRSPGRGQIDFD A DARALNVIGYN GHLPWGDPRRGWDFVSTGRGDVPWE ACFRVLNSI GYE RLVHVADTMDHHRSHGLRYDTNPPGNPVRVHQHLK IGD LMLHVSRPMHWDSDHVTLFDDNTRNLFS EDVRANALD GHFHACGS

DRGTPGNDHTDWKP

I M M HVSRPVRWDSDHVTIMNDET LEELCKEIVVDALDRVHD VQIHLKDTRKVTADRDLVIGEGEVNFA SI FHTLAKI GYN FHVHMKDVWWGHGNGDVGVFGGHTTFFEEVIVALNDiGYS


 QLVHVADAYDHRRSHGLRYDTNPPGNPVRVHQHLEPVGQ


 Y HVDWNDPRRGWDFVSTGHGDVPWEDCF Y HV H WA DPRRGWDFISTGHGDVPWEDAFRN GHI QFA SVPDRGAPDH
GHMQLADN PARNEPGTGEINYAFLIAHDRAL YVHAKDFDRKSFNDDPGEGSGNFDPVKQCLHDLKSAGFD


 VTMHASDRYKRLSHGEIGKGLNDYNAADFTELKRVGFN
 GHFHVSPNRKVPYHTDRDP WNEVGRALRD GGYD $\square M \square H V S R P M H W D S D H V T L F D D N N D F H E L V R A N A L D R A H V$ YHAHMKDASVTLNGRHLPFGDQRRGWDFEIIRALNDIGYG FHFHACANHRGAPGQG FFPWEQIFGLLRSHGYQ
 RMFHVKDAEFNPTGRQLGDGQVDFGAIASKLDDLAASGYR


 YHVDCKDTRLRPRNGRAGVMGSHLPWWEDSFRALRAIGYA A H D L HVSRPVRWDSDHVVILDD E L LREDGLE IVRNDALD

 SMIHLKDFYYRPFYRNPGVGHGDIDMWSV,IKAIKRYGYD
 GYVHIGESNRGY G GSGTIDFSQFF HALAMDGYQ VQI HLKDSKGQFRDLVIGEGQVDFPQADFRTLAEMQYN $\square$ MLHVSRPVRWDSDHVVILDNDDDARE IVRCDALKRVH GYVHI GESHRGF
 GHI QFASVPDRGAPDH GEVNYPHIFAHIQNL
 MLHVSRPVRWDSDHVVIMDDEDQEDAKEIVE FTLLLHVSRPDRWDSDHVVTFDDELQADA RELVVNDMLET




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| UniRef90-UPI000288345C |  |
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| UniRef90-UPI00037703AD | GPLSVEWEDARMDRVHGATESAAFL |
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| UniRef90_UPI000472650B | GPLVIESF |
| UniRef90-H8MWK4 | R LVCVELSSRDAHRAHELVPRALEW |
| UniRef90-E8XUB7 | GPYLI EMWSETAADPMQEVRNARA |
| UniRef90-E8NDX4 | GPLSVEWEDAGMDRLVGAPEALAFVRR |
| UniRef90-A0A022L1E1 | A DVDFDAF |
| UniRef90-R7N2H4 | GFLSLEWAH |
| UniRef90-M1ZL31 |  |
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| UniRef90-D3EFI5 | GAI EVE $\dagger$ F NRQVWDMPG |
| UniRef90-M5RPT7 | GYVGLEYWPKHA PSEGLRHVARWFTAA |
| UniRef90-UPI00034AD7FC | K LVCVELS |
| UniRef90-A4IN45 | GVVGLE Y $\square$ P A RESSESFAWY D A |
| UniRef90-A3TIA5 | GPI SIE WEDAGMDRLVGAAEAVGFVRRLAFEPPA |
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| UniRef90_V4YDP0 | GTVGCEYKPKAATEAGLVW |
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| UniRef90-S0S7F0 | LVRN D L L K T H $\square$ GLD F F D A T $\square$ NRVA A WVI |
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| UniRef90-K2LG05 | G WAVLE WE CA LKHPEDGAREGAEFIKNH $\square$ I R VTEKAFDDF |
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| UniRef90-C5ERL9 | GWYSLEY ERRWHPQDLPI ADVGMKNSAE |
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| UniRef90-Q122U6 | GWI GCEYKPAGTTEAGLGWR |
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EYEANGQGFERLLALLE

F LQ E VKK QEKEKR
GTRNTQKA LLKAMLEP $\square \mathrm{D}$ T $\square$ KE $\square E \square S G D Y T T R \square A M \square E E \square$

DEGKWFERLA

A D G G T DEAA

## Q

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A GG $\square$ NAAAKA
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$P G B P F V D R V S$

D AF A



A $\square \mathrm{KK}$ K A D $\mathrm{V} \mathrm{K} \square \mathrm{SMH}$



MTVFV VW

HNFDDRFG
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F G P VT N
WTYETFA DFlDRFQ

TLNNSNLVKDLE


HDFLDR $\frac{L}{F} E$
MDVI DVIA
RKQGDI
GGPW@LWDNUE
ARPFTAEHFP
$\square \mathrm{AEKLR}$
E R ${ }^{\text {L }}$ A
YFAYWTKEWQADYKY I Q
F QENTAPFES LNEK
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$N G L T Q$
$V L T F N L P P G N W E A G E R G L A S L P G R E S E F R D S V S E$

 EGVRTASLLLPNMPAGNWDQGERGDACDPDRVGEFQDGVGR QGlGLDF NPTHFSHPMMKDMTLSHPDKEVRDYWI EHGKR QNMKLDF NSSSFSHPKSGSLNTLNDLDEEGRRQAVAVLKE A GVEVSSGSPGGFT AYSFMHPTDSVRSEGIAKLQY
 AGFAMPML A GMKAVCLTPEQCQYPV
Y GLFY TCHTP CCSPWSSPDETLREASARYWKR CSSPDTNPDADARKRAVAHEAE MDHFIGDFDPARSRDAVDNLRS $\square G V E V T E L S S H L Q Q H P A Y D P M F D G F A A P E V R E W A V Q Q M M W$ NGLQQVLFNGP PGDWNGGERGLACAPGREAEFREGDAR HHIKPLALNALEF FNNRDKEGHDADIQEFQE
AGLTVTTLCSGFFQEPDWFDDNRRADDE
$H G L G A S L V L V$ MPPGRELVRAERATVAATQDYDRR AGVVITELTTHDQGHPAYDADFDGFAAPEVRAWADDQLKD TGLAMLGLNTRMGDVEAGDNGSALCHRREEARAAIDEALAA
 AGVKISSVLPDQQWSSPNEQEREAAVRNWKR A GVVSAISMCPLVLLEPQNEHQQWSSPNEQEREAAVRNWKR YGISKVVCVCPEQ NNPKPWNVAVRG EAGQKRILKSYFKN

 AGMQVWSVVH HDLLVVAMMLGSD VIDRARTSEARRSMRE



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UniRef90_UPI00035F657B


 ALDYARATACRRINCLAAGMA DAGVPRERLLDVMADN AAIASKRLGLSHTVSWPYLYPWPQRPEGLVDEAFDELARR $A V A L V R D L G G T A G I L S S A H G K Q E H S L S G L V R K G W D Q S V A T$ AAELGAPVLVLVS GGLADRPHDDAGARDRVAEA A $\square T \square A Y K L G V R V I Q L G A G Y D V Y Y E P A N L Q T H Q R F I A G$ A AKASQNLGLNAHLLWHTVYPWPQRPAGLVETGFKELAER A $\square$ DRTYDLNAKIISGPFHSAHAHFAKHEPQNREYGWSAEV A AKASQNLGLKVHATWPFVYPWPQRPAGLVEEAFKELARR TAKAAKNLGVKUVNDWHLLYSFPPNDPSQUDDGYALLKER A L K Y A $\square$ AL G CPTVVVMAGV $V$ VPEGTDREAYKQTFVEN HI RFGSETGAVVII GLMKGQKKDCG DPVKYDAYFRAG NLE ECSDMN IPKLRVDTVDPPTG\|PGGMDYESCFSK\|AEV AL RRAADLGAEALLYVPGVTTSPVSPGERYDHAWRRVREN $T M Q L A S D L G A G A V V V V P G R V S S L F P P S R T D S E L L$ L $L$ R D S ALEAAAELGSD LLFQVVPGWGYRSEP VGEAWERSRDS Y A QVLGNDQ ALEYAT GLGCQQUHAMAGUK G 1 K MAT LLGGTDSLLVVPGEVGWGSTMKYGYEVTWERVSAE

 SMEDCAFFGCRYVVVHGFKLAKY THEADDKAS WE STVKV
 RVDI TAALRGNDMMGPUVIPYGLFPDQDYLKGRYENAQPII
 AV EYAKA GGWQLNCLDA GLKPAGVSDEEADETGCGN
 AADCAAALGAKDVGLVFAGRPPQPVAEDERVARKERCVNA SRRTGAQLGQTCVTNVWVPDGYK DTPADRMAPRKRLKAS



 QVAAAGELGSTGVDMVPAFNSQKPPCKPHTGETVDYLCEQ
 A A AYAKVLGCHQLNCLAGLAGYDVPSGVTHEAAEATEDAN LV D A A A L G GHVL Q CLDQAKALGSDFMLISPAHAGYE GI A YAREL GCVQLNCLDGVPPEGVPEAADAATFKSNLRHA
 $R T G F A Q A L D Y A E A L N C P H A M V G D R A E S A D A K T A D A T L V A N$
$A L D R Y A E A L D C P S L H A M A G L L P A D A D E A T A R E A H L A T Y I D C N$ A RK $\square A A E L G Q V A V N N F W V P D G Y K \quad D N P \square D R Y T P R K R L M E S$
 RWQRRYGDA A A DYA RALKVPQLNCLVGDA P P A SVERDTALAT VVDN AIETAVELEVDTMNSEFGRGPYCCHTGSMDEACEDAWWRS SRKIAKETGQTC NNNFWMPDGMK DNPDDRYTPRKRMMES G DDQAYEDGCVDFSFLSGRYREET KEQSFEQLDRS CRRDADAMGPCDMNIWVHDGSKDMPVQ RKKYREQLAAS LAETAPQLGAKVILVPFFGNGK DIDEDDHDDAERFIDG HADFLKEMGCGQVVVCEVAYAFNDPVVERRREEWQHMVDG
TVQVAVDLGVTQLNTEFSGRP

 QLSVIAELGGVGAMTWGMFSRRLPPFEPPRSADGDRLVDA TIDLAAKLDI PVVNTFWPVAPWPPDFQEILDWQWENVIPY AAKASQNMGLKSHVLWPFLYPWPQRPAGLVETGFKELGKR

 $C \square D \square A A Q L G A P A L S$ GAYASVGRTWRMTEGERAARE A ARASQRLGLATHVTWPYVYPWPQRPAGFVEAAFDELARR YARVT GSSAVHVMAGKSRGTASKSTFVDNLA S A AVAADHGVPVLIVTTGPDQD QLTV TGELGGIGVMTWGQFSQRDPPFEPPREEDREVLAEA

 T I RLAAAELDVDRIITFWVTFPWPQEHSDADEYQWEDAVDY




 $\begin{array}{rl}\square A E A A A A \\ Y & A K A \\ Y \\ \text { Y G T P R C C T }\end{array}$


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FERFPGL $\quad 210$ K LT DDTGHANIIGTTGGKR ${ }^{230}$ REFLLSRFDRII ${ }^{240}$ M R A DD K EWDKLVYSVPHAFFYDDGQGDVEQHLEEAGDL F L E KVNNHPRACLLYDPSHFVLQCLDYVQY DD H Y Y
 LI ERVGEAN VKKL QYDVYHMQDMEGDLAA LTMLQREL

 RLVDMADHPNVQAMFDTHHANI EEKKFSQAI STIAPVLTH


 $M V Y K V D H P N$ FLTLFDSCHGHMCKETLDPGGVVQFAHMGK FVDGFGS ERLGVYLDVGNLPGLHQHPPHWI EILDH
 QQDKVGSANLF LQYDCPMHAAGESFDDCFQALGNG

It

$L L Q D V G S D N L F$ QOVVYHAQRMEGEDANTLK
 AVERIDRMNDLGFCFDTGHANLVGDDFESFIM


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| $F V K$ |
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| $L L$ |

FYMGYA PA AVQL MLD TFHMHMEEAS
FYMGYAVKNNMMLTLDAGHFH PTESIADKISSMLL

 RDAQ SEGGVKCMGDFWHMREETSDYG

A LUS GGKYL LCEEP G GF RHDGV A DDAYHCWW D P K L L A E QV $\qquad$ RK A VGGFRHLGVA DA A C C WW WD E M L L A S P P WF T V Y P D V G N L S S A W G N D V L F E HV
LIAEL
I I K E V V G A P E N N L W W L





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EHIIHASDN F GKEDNHLP ${ }^{250}{ }^{260}$ GT T DDFSRFT ${ }^{270}$ RTIIKEMGY ${ }^{280}$ LHVLIADTLNHKAAFGLRYIVNPPDANVTVHQHL NPGE
 GHVQI ADNPGRH EPGTGEINFPFLF NAFHVK DAEFNPDGRQLGDGQVDFNAIIFSK DWLDR\GYA
 $A L F Q A A D W V T P V G R G Q L G D G H V P D R E L L A A T D A B G Y A$ VQIH LK D T Y K VFR DLVI GE GEVDFSAVVF RT
 VHISENDRGT
FHVKDA GGYQSWADRP LGDGGQVDF VHCHMKDVYWF WDFRSLGRGSI NFE KFTHVQ IASVPDRHE PDEGEINYQY IF PGHAHYD F A S T F S A L L K E V V G G E E GHVHVADSDRWY GHIHLIDSDGTLHDTHAPLGTG

 RHIHFIDSDHLTW G G GQLPLR A YLNQLSNHGYQ NHIQLADNPGRHEPRGTGEINYRFLF




 AHVHVGDTFNHKASSGLRY ILNPPGTQARIHQHLD
H Y I QV S P P D R GA $\square$ H T S W FFLQLADAPPWSRHHRVFPGEGDFDLN YFMQQVARSGYD V S V H L K D T LDPVFR DVP F G D GTVVDFE G A H V Q V A D N P GR H A MVVI K D F Y V R H P E S E L G VGGQ G D D D M R R V L G V V K E S G Y D
 VHFQANENHRGF P PGTGSTDW II LLHVSRPMRWDSDHVVVMDDEDLLDDGREVGVRALHEDSYS

 F DVALHVSRPVSRWDSDHVVGVYDDELKEDAKBGLAKTGYD





 YHLHI PDSNGVDA THLVPGEGVTP YKELLQEI RDLDPE


 LLLHVSRPVRW DSDHVVDMDDELQE DGKE


 AHMGNSPECEAYGDNHPRFGENDVPELARYLRRLLDDGFR LMLDHVSRPVRWDSDHVT DMNDDDLFKELVRSDALDRAHV

 $R V V H V A D T M D H H A S H G L R Y \square T N P P G N P V R V H Q H L K$
 A H I HF T DGYPG GHVVPGQGRLDMNGY LE LI DSAGFQ Y HV HA H DNHNVEADLVLLA LGGMGNDDWPRV V R A L KAA GY K





 $K A F H V K D A E F R P T G R Q L G D G Q D D F G A D F S K M A$ QY DYA

 LA HVL DAD TLNHKHQHLNPGE GE ID FD A L Y Y R KLRE $\square K F D$ $L$ NFHVSDWLHETRDVRRLMPGD GQQDNALIRRSWMREAGYK
 $V$ QVV

 H A M H AK D G R WP T N P D K L G E G L V D F K K V F S G
F HV H M K DV
V S D T P K Q F HVUHMK DVV WS D T P K Q I GF G DA R R F WN F E I I R A L N D I G Y Q FQDHLHVSRPVRWDSDHVVA DDD
$A H \vee Q i A D N B G L$

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UniRef90_UPI00047A8D55 UniRef90-UPI0004755EAB UniRef90 L8K1F9 UniRef90_UPI0003B70D5A UniRef90_C9MF61 UniRef90-R5G179 UniRef90 ${ }^{-}$X1C5M5 UniRef90_IOICT1 UniRef90-UPIO003657507 UniRef90-UPI0004722B11 UniRef90-M5QX16 UniRef90_UPI00026291E1 UniRef90_UPI00035EEBF8 UniRef90-A6C353 UniRef90-R5VZX6 UniRef90-JOB742 UniRef90_G7VWB8 UniRef90-R9JLK8 UniRef90-A1B2N2 UniRef90_I4FUA2 UniRef90_K6P633 UniRef90_W6W5P6 UniRef90 C6D224 UniRef90-UPI0004106DBA UniRef90_UPI000362A699 UniRef90 UPI00046F1546 UniRef90 A0A015M0R3 UniRef90_UPIO0039B76AA UniRef90-W6JYR6 UniRef90-A4QB63 UniRef90_A6LQK4 UniRef90_V6A2G4 UniRef90_UPI0004719C7C UniRef90_S8H0U4 UniRef90-D7ARX9 UniRef90_J3E5V6 UniRef90 UPI0002DED1B0 UniRef90-P37679 UniRef90_UPIO003624C2B UniRef90_E1QWK4 UniRef90 A0A011PL64 UniRef90-B6AY55 UniRef90_UPI00031A0948 UniRef90-UPI000364CC29 UniRef90-R2XSV1 UniRef90_UPI00046356AF UniRef90_Q2SWK6 UniRef90 A0A017HWU2 UniRef90-UPI0002F587BA UniRef90_G5HK92 UniRef90 D5ET19 UniRef90 UPI0003B2EBF1 UniRef90_UPI00047A6F1C UniRef90-N1UWH3 UniRef90_LODNA6 UniRef90-C0D4C4 UniRef90_Q0W4S5 UniRef90_D9T990 UniRef90_UPI00035D4150 UniRef90-F8EQM7 UniRef90-J3CVL5 UniRef90_LODKB8 UniRef90-W7BDM4
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K TVIT FEDFSRDKDYLKASRE
GEVNFDA
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GWVSAEYLP
S WAVLE WECCVKSAEQG AAEGAPF $\square$ AAHLDEAPAR
 GPVEVEDFSEDLWRRPGGEVLRELLGRYRDHLLERPER
APLVI E MWAKDNQWKENIITA
GWAVLEWECADKHPEDGAREGAPFDQSHMDRRTERA
GWLTIEAFSRNDPD FANS $\square G V W R E Y S K P W D \square A$
GWAVME WECC $\square K S P E Q G A R E G A P F I Q S H \square I E V T K K A F D D F$
GP LSVE WEDSGMDREHGAAEACAFVRK
GY G GEYKPRGDTAKGLSW
RAVALESFDYPDP
RTVT AE $\square$ MP WRPGLLAD TAAS $L$ R D $\square \square H$
ATPILE II SSSS PLEDLNASADALKR
GY LTLE DCAERYDPIGPLKKGLQAIREAL
GWVGCEYKPLTSTEAGLAW
GWIGCEYRPIA GTVEGLNWAS
GFMSPEYGHDTPRDISTAWDKDAAM
SWVS IE DGVNGMEDLEESVAFLRA
GVFMYEVK
GWIGGEYKP
HVVSVE LTF RPEYYEGDAEEA IRRTAKET
K VLSFETAPVDTAFPEALREEALAL
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GAFTIEMWTEKADDP
GWDGCEYVPKGRTSDGLGW
GYISIEF
GYSEIE $\square F$ S NE WWPMDEVLRTC $\square$ ARHRTA
GY 1 SEAFAWPDP
GPVS LEPFRRNDDRFGVPFAQWRAPHEDESERLAASAAFD
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GAVVMEPFVM
KYVSFE
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GSFLIEM WTEKAKEPVLE I I QARRWDEARMQEA GDLSVEPFTTCVSAEVTLDADASATTRAHLQTHGRAM RTATIELVTNYLS EPRLYSRRSIDNVRAMLDE
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LVRN
D L L A K T H $\square$ GLD F F D A T $\square$ NR R V A A WVI
G A V VLE
GYVGCEYKPRATTAEGLGWLRQDA
VPWDAFFGTLHE $\square G F D G I M T A C V F A W E D R A$
GLDFFDAT NR
P V V S E EVK PWKDEWPEAVIANA
GLDYFDAS $\square N R \square G A Y$ G $\|$ GARATQKC $\square Q Q A L E P K E L L R$
SWFVLE TPGKDDPVASAAQNLNFVRN
GWDILEAEPAVADPVEYAQKA
GWDS $\square \mathrm{E}$ DGMNGMGEMAESDAFDRMMDKR
GY A L E LD RQYEPEQAVKASLEFFRRYEHNSK LSFAGGD

GWLALECRL RGEPVAALRQAA
YVVSI EHEDGLMSVEEGFSKAVQNLKQ
GWAVLE WECCIKSPVQGAAEGAPFIAADDIQVTEKA
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GLLTDEAF
DVVV S V

GWAVLE WECA LIKHPQDGAREGAEF $\square R$ RH I IRVAEHA
RP G GVEY LDPDEGEQPDMLWDA

| $G Y$ | GCEFSPTGDADE |
| :--- | :--- | :--- |
| $G Y$ G | ALECRLRGEPEV |

GIVTFAYPDRPEWSNEVT LIKS $\square R E G$
GAVEDE
GYVSAET
DVLSIE WED GLAEPTEGLEKAVTMLQEGLLR
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 RLTEMGYDVIE $\quad$ IDPLEDHDDL $\quad$ DYDRAAEVVRS YVKAQGVEAVEDGTGGYPGNAHCNPADPGKDARFKEAVES AKKAGFQYVELT F FPY QVPDAGFSFVDLS $\square D E T P E R A A R \square D W D R A T R R L V R D A A A D$ AAASDGFRAVEY DFPYDHPATE
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 Q QAVA $\operatorname{A} G V S G V E V N T W S H A P H \square D L P L L R G S A A A R F M Q A F E S$
 RAA QLGFNF

WVDRDRDEYKYFVPWVDFAKE LATAHGYHGVEDRAHPEEPVVHPGLSPAERAEIAALEKE YLSE $\square G V D A |$| $E$ |
| :--- | :--- | AAAADGFEAVEY AFPYDYS AQQLKQRLDD AKRLNDHAI Y LE SE QPVARDQ QQPEHFANWVKWAKKMND YCAELGFDAVDPTGYYF PGYPTPPSDAY LYYQKQKAFR R\MQKGFDGVEDDIYDVNFQARKEFFEEGFAEKIKECMKK KAKDYGYDVMEI AVEDVASID AVRDAGFDGIELLP DADLSVDQI NQAKAA $K A K E A G F Q Y V E C Q$ FPYDYA WASDSGFQMLEAACWPPVTHDNVGQDDDAKAKEIKTTLAK TVSDLGFDACEDWTSP HHFFVDYQQYDDPFALKSQADY

 EARSDPVDGLELHT LI GFFWDTTPAGDDQVGDALNA AAADAGFAGVEIQFPYEVPAAD $\square R A E L Q R N A$
LAASSWGYDGLEIACS GDHFEVDKALADDDYVPAKDAVLEK
Y $\square$ S G L G VDAVE $\square G V G G F V G A T H V D R E R E D A R A E L A D D L D E$
GAKRAGYD\|IE TPLLSPSAVDG
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 A TDATATLGGGTLVGPGYSSTGRLWQMDAEERERELAET $S V L L A E K L G V Q N V I T F S G C P G W P S D F D E V L K W Q W E E L I P Y$ SI SYA GGGQKRMH1 MAGRDPAGADDKEKMMSTYLDN AAVLGNDRVHVMAGDAVPANADRARCRAVYLEN
 SMAVCAFFGCPYIVIHGFK LVRFDGSEEQEWRETARF KFDVMGELGTDRILICSSTHPEALGGTERARCDDRADD CVDAAAEVGAPVVAGPMYAAVGRTWRTTERARCLDELRDG AAEVCSELESPLLELTAGRGYEDEP SREMAQELGQQSVNNFWIPDGFK DNPIDDKQAPRERLIES KFEMMGRPGGREGDLLPNWVVSSWPPEGQVAKEWERLAPY A TDLAVDLGLRND QMAGYDVYYEQKTVQSREWFDED GLAYARVLGNTRLNCLAGLKPAELSEQ SRRTAQELGDQVLNNVWVPDGFKDIPADRMGPRLRLKAA LL QLA HDLGAPFIRVFPGADPDRPREESDAVA A $: R L A D Q L G V N T V C F W I T A P W P S E H A D A H E Y Q W D V A L E Y$ AปTYAKALKCEQLNCLVGV ひPQGGDAKKAHDTLVSN Y AAVLGNDRIHVMA GLLAHETDRARHHDTYLEN
 ADP AAEAGADTVRI I AGLNAVRREGEAFEKQWERQI NR CI QIANELESPIFGGPLYAAVGKTRLVSKEQKELERCLEN AL TGGGEVGCTRVLLVPGVVRQNKQVDYLQCWQRAVEG S: AYAKRLKVERIHCMAGIVPQACLYEEAKKTYVKNMAYA 1 DVVADAVKSKFVVVTSGWAFYD ALEEAAQLGAEVLVLVVGGLRPDATPAGDLAGSRQRVADA MIP TSARLGGPRATC RVLSGQAHPSVSVEQGLEWASTA ALAYAEVVQPQRDNVLAGR QLAEGVEREQALSLLARH AARAAAKLGVDTVVIWKYVAMFPPVSQAVIDDGYQDFADR SLAVTHGLGGTHFTGALYSALGKY AGPLTAAGRRNAVTV A ALEKTIQMGGTHMCGILYSALGKYDKPV TKRGYENSIAA
 SRYFGEQLGTPSVMNDWDPDGMK DTVTVDRAPRQRLLAA H VMMSGLGSPTDVTPNWITSSWPPITTKDWQWNEVFITPY VI DVARDTQAGKIV!TSGWGFLDEP SIEVCRDFDCDKIVIHPGVDGSLRQHPTTRDEEFEMNIPF HVDLLHRMGDRHMRVSTFTVPVEQTTDAYFEQHDDAMVEG YLDMCYEYEAKNLLLVLGEY

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D64A

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190
200
I EATNTRMDTDYLLNSLSKFEV

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 LSYAAKEMAKEN IR LLVEPDNKYDMPAFYLKNTHQADE WADLAEFAADHGVDGDEMHPNMLVYEPHGLLRLDEAT WLPGLNAYDEAGVDVAYELHPTHRMSSGEDLHDGGTFEM LNEGVQTAAKEHVMLSMEXMDTHRMSSVRFMNDKRMMM LVRLAQTAAAK QVHDGI E NVNWKFLLSPDEMAG LAPVVDHAVAAGVVVGGLEPDNRYETSGEVNTVDQGLEE LCFAADAFAPGG CIMTVFEATNTHDMPGFDIHSSAQMLA WKKAADYAKEQGVKIAIELHAGFLVHTPYTLLKLRAAT WRYAADAFAEHGLDV Li EPGNTRDVPNYFVAHQRRAVE WPPAVQEAEDGLGVRDAL ENCPMWPGGQNLASTPARWRK WR TLAWAAARALAAGCTLLI EP E EAADVGVK
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RECTNYAEEHVEVPVCLENQRDKPSSRRNTAVPDRTAA



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 WPP VK YAEDKGVKI

LRSLAKEAATKGDVG

LAYAAASAAAHGITV



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LDELVAYGEARGVELW FHPLVSD LRGLGEDAAEHGTRDMAYEADAW TMGRYVNTYEHAWR
 LDEV

 GRACTDYAARQGGVVMVVLQNHADGDGESVGQADHVLD

AKKMAEH
MrRASQHKVK ${ }^{\text {S }}$

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WNPDLDVFDEVG VRFAHEVHPSEDAYDYWTTKRA


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## LIDEVNS

 NPWFTVYPDLGNVTAWGNVVRRLPEAGI GLMLDVYHMNIEETDLEQWI RILG KRI FLEKVNNHARACLMLYDSHFVLQAMDYLSYI ARAGEREAB
 LDQMVDRPN VGANLDPSHEWWQGIDPVAAI K DLGRENAL

| $F$ | $L$ | $A$ | $V$ | $S$ | $P$ | $N$ | $F$ | $G$ | $L$ | $N$ | $Y$ | $D$ | $P$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $S$ |  |  |  |  |  |  |  |  |  |  |  |  |
| $F$ | $H$ | $K$ | $C$ | $M$ | $N$ | $Y$ | $D$ | $P$ | $S$ |  |  |  |  |

F L E G V A H H P R A S


## IV E T V N R

E NVGLVLDCFH
A M S GL










LVDSVDH PSCQLLLDTFHMNIEDKDVPAAIRSADR
LREAVG EEVGGANFDPSHVFWQGDDPITALRKLDREGA V


## F

 VEHVLNSVPGLGMF

隹
LREETNG
L DAEVGS

| MQ MME GDLlar CQl VEGD |
| :---: |
|  |  |


| T Y A ALDAP |
| :--- | :--- | :--- |
| RYLGERDA |

FKV -

 VVDPFPAS AVGVVVDEF LDRIPERASFGVQLDDSCQUVEGDLITTTLRRDLPTGRV

##  <br> 3

 L LDALGNR| G |
| :--- |
| P |
| K |
| W |
| M |
| M |

PTEVI


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GPLV TESF TAENAT TATAAS TWRPTAPSQDA $\square$ A
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EVASVELD
GPLC $\square E S$ TAHND $\quad$ S $\square$ ATAAS $\square W R P \square A T S Q D A \square A$
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GFi GVEFEGTD\｜SPEEGD
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RYVTVE WEKKWHPETAAAA $\square$ A $\square$ PQH $\square E \square L R$
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GAVVVESF TPDVESIAKAA
GVLS EHEDS $\square M S G K E G F E K A V A F \square K E V V I R E K$
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GDLTFESDDFLVNFPEEVFPAA
FVISDE
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GPLCDESFTAHN
GALTFELFGDGSYS पEP RAAVTRCLDAVEAGLTRDSA
$G L D F F D A T \Pi N R \quad V S A W V I G A R A T Q K A L L Q A M \square A P \square$
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GWI GAEYKPK TDTVAGL


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RVIGLDFFDAS $\square$ NR AA WVIGTRNMKKALRALLEPTAA $\square K$
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GTLSFEAGQYRKVPTDLLPTMLNWTAD\｜GRYFDKRIAE $\square R$
GYITVEF EGMEDCREGSRUGMDNLRRFWEEA
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A QAGDEERVRAQL

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PDARARAGLLE LR L GGGHAFVELAVDGGSTGAVERALEAL
$\square D P E \square P D R V T A Q G V E F V E F A T R G A E A E A L E R L L A A M G F$ R D G

D D LKKAE


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DAEAKWD

D $\square K K \square Q D S E N Y S K \square E E \square K T \square P F G A V W D E Y \square A R Q K E V E K Y E$ KHARVERADEAA

Q $\square E E N G D Y T A R L A L L E E Q K S L P W Q A \square W E M Y C Q R N D A R A Y E$

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KEVLSRRG

K E VLS K R

KEVLSQRG


TGQWADLpLEEVCS WT LP WT A H L G LR GP DA P L F R P L D Q I D

MNPLDFAE
E M ${ }^{L}$
MSVLD V V
QFSADQPPFNDLDSIAA
RTPEEFERWLE
E Y A T
A F E
HA F
LP F L D D F K
F $E$
$\square D$
GCPTWPLSKIVKT
WPELP YLLDRFS
$M T I L D A A^{R}$
MYYASMSTAQTELAK
पDEMLE
E EMDD
DAFE
C WQADDVLGFANNGPLNPEEVFA
PF L E R FE
$\begin{array}{llllll}P & D & D & L & D \\ F & E & E & M & L & D\end{array}$
F E QLAA G

| E E M |  |
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| E A L L | D |

MS F E A L

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DAFS
$\square D E K \square A$
D R F G
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UniRef90_R6Z5V4
UniRef90_S3ZBS2
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| $\square$ | $A$ | $A$ | $R$ | $L$ | $G$ | $Y$ | $D$ | $G$ | $V$ | $E$ | $V$ | $M$ | $V$ |
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70
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 AATAAGFKAVEFLFPYEYP ADLLAEKLHQ LA F A A GFD DI SFYDWS LP HSPFLT DQWEK WLA R L E R KKD E AA AEAGFAGVEY ADPYPYAPARLRTLLRA AA ADAGFEAVEYLFPYEYP APLLAEKLRE
 GCVTAADPS I GVWREPVAEVG
LCEKY GYD F I E I R DD QL VDYLLKD H T

A $\square A A A G F D G V E I F E Q D F I A H D G G P R E V G R M V R$
A A A A A GFD GVVE I QFPY EVVP A APRAGLRGIE WDFDLYGEGANPLETAEGRSELREALKA AVREAGFEAVEFWWPFAEP V PAEAEVES FVDTVRA

 VK QLGLE TVE GGTGGYPGTAHCDPADESK L KAFKKAVD D YASS $\square$ G $\square D G \nabla E \square$
 $K Q R L D A$
$Y L S E \square G V G A V E F G C G G F V G D S H L A R E E Y A A Q Q E L L E L V A E$ AIARAGFDGI E IG ENDLLAF DRTPDEVGRMVR
I A A R L G Y D GVVEMVWT
D PVSSQDVEALRRLSDY
RARAAGFEAVECWWPFADP
DPSAAQVAAFVSALEA
AEKAGFD GVELS FQY KQFDPFSDSEDEL MK I RDF FK G RAKSAGLDAVEGGTGGNPGNHHCPTDELLASPEKRQAYLA A A ARDGFAAVEFLFPYEYP A A A Q A GFEAVEFLFPYEYP A A E LKTRLEA
 WA A D T GF K AL Q I P A WD R RLD DA T A A E S QTYCDELVGMMA D
 KIA A A GLDAVEIGSGGNPGNAHCPTDEESARQEYLDEKFTK $F I A D L G F A G V Q D N Y A A L R P A D E Q T$ K A HEMGFEGVEYVSQLYTPMME TYDNDTDALDSSILPKMKA HAARMGVSGVETCGWSTAPHFDGMLEDRRKRDDFHRAR QD AAKNAGLSAVEFHLWDDKP W $\square$ A GNGGEHME $\quad 1 V P Y G F T L V D Q P E L A D A V R D K A K \square$ WAASQGFKALQDPAWDERLFDVEQAAHQQYCDDMDAMLAG
 $L C R D L G L D G F D L G I I L L$ AA A R D GFK A V E Y M A L Q N A GF D GVVE $\square$ WA E HL
AAREAGFDAVEFLFPYAVE
$\square A$ A E L GYD GI E VMVT A
$\qquad$

D P L S Q D I S A L R R L SD Y

 AAK Q CGFDAVVE IQFPYSLP
 K A A ELGF DYVELSPNTFHFWHRCPKADDDFVAGLNKAQKD


LVA QA GLECVEVACWPAHDDADRVLEDDAYAQHLLDYAA Q $L A A R L G Y D G V E V M V G Q$ DLDDKA GTHKI NVHANYAIFEDGEFADRDA HFKKWVE FAKA


 RI K QLGFDALELWVA HLDP VQATPEMIRTTAANLLER
 NAARLGVVSGVEVVTWSTAPHFDSMKASADSRRDFAKAFEN

EAKRDGYAGVEMCPQELWP
LTK A M G S D A I E I R N D L N DVE $\square$ D D GTPP
$E R$ VRDLCQG
$Y$ Y $\square$ A M G F D G Y E
E N L E E V K A A $\square$ K A
$\square A D A L K C D A D E \square R N D A D R Q D E F G T P A S R V R E L C A V$ WA A EKGF L G V QI P TWDTRLI DMKAAESQTYCDEI RGMLAD
 YVKAMGFDSFEIIDGKLLV ENLPADKAAIAE FAAE QKFDADELLSCWPVA NDRDYSSTDDDVSKFDSKTTKE Y LDDLGVDAlDEGVGGY PGDHHLDRSAHLDDDDDRGKK A YA A A GFEA G L LEMKL PEDDNNN $\quad R R L L D K$ F V R D A GF D Y A E L L A K V T K P
 A $\square$ A A A GFD GVE $\square$ F E N D L LT F D GSPE D VGK T I R D
$\square A R D L G Y D G L E V M V T N N A$
 A $\square$ A A A GF D GFEVVFEP DFVGSP LSAPDLAARA A A AK A GF R A V E F L WG P Y DYP HVELDRLSYFDAKEDRYK DEK AAAKAGFRAVEFLFPYDYPGAEVGKAELDK

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120
ITQRVWSTDPWV KLQR $H G L V Q V L F N T A P G D T A G E W G L A A L P G R E A D A R A D I D$ LGVSFGQCHAYTYNFCAPMT AGLRQVLINSPAGQ PGSPERAGLACHPGRAADFRAGIER NGLKQ VLFNTAPGNVAAGEWGVAADPDRDDDARRDIDS NDFYINSMCLSLLETVRRFPFGSADEKVREKSDEIMEK
aghrvs birggafivrdadaraa hetanvea
HHLKPLSLNALCFFNNRTKAD HGL TIELFQPFRDFEG LPDPD RSRALNRARH AGMPLVLINVPAG DLDDGGPGLAGVPARREEFAAALRE SGVSVVSICADYF MDCPLVRVDTETFEKRLIATLKW SGLRLVGLNLFAGDMPGGDRGVVSWPDRAEEDRANAAVVR HGVVVSELSTHLQGHPAYDTLFDAFAPREVRQWASEQVALL HDLRVSALAT
HATRSAGLKVNA HAIRSAGLKVNAY CHGNLTPDEAFAKSSHESFVQ KNLMVSA YDVSNNFVKSSEGERKMEI QKVFN UniRef90-UPIO00287CB87 UniRef90-R7A421

NGLVQVLFNAPPGDWAAGERGLATL
HDLELSALLST
RGLE VLAVHNLFQPFRD HNNPLGMDDDRADRAVTEAQE HGVPVLAVHAPCLL $\quad \square T Q R V W S T D P W V \quad K L Q R$ ADVRLTGI NLFAGDMPAGERGVVSHPGRAAELAANLAV SRIKPDC|IATTFFLSDDPHEPSUI SLSHEKRQQRDDLIKK ERLEKRGLDSAFS Q
 KGLVVSELTTHIFGQLMAVHPAYDHGNPQAREWARQQLLL RGI QMTSQKGVLFSDPTRREEELMSYRQHV EFLRRMGA YGLKCWADSNHLVGQHQNILPARIWGDEGVRQRAAAEDAD RGIMISA
RGLIRM KSTQFDVQNVSFVHDPLGWNLPRWSVEADGRAALKAELGH RGLELISLLNAN GNPLHPTDATQGRSRSERNQAVEDHKK AGMKCDGPRRSLVDPAQHGEFLEAVAA AGLEVSNGTHMTGQLVAMPANFVQGSEEAFQAEVARVKE
 LGSFELGVTV HAPFSDVNDGSLN HQLPVVSIHAPTLL TYQRVWGTDP HQLPVVS HAPTLL WA ITQRVWGTDP WGKLDR HGLVQALFNAPPGDWAAGER AAALPGREDEFKRSDDTALR TGLKTSI NHAPFHDLNIATPDTFDYERAFHVLNE HHLQLALF NFPPGDWEHGERGIDACDPRRGEEFRSNVQL HQ P T A THAPCLEA DFTQRVWGRDPWD HGi GLSGYCRGGFFPAANAAGLQAALDDNRRADDEAKTLD NNLKLCNLGAS SNLHYMDATRRQKNMDEARR NGLRLILLPNYTGGPRGFAAQPEHVDR FRY DMKR QDLQLVLFNVD ADTLLQGGEGLAAVPEKRDQFKAAVEQ SGVTVRTLNP YSMANWVQEDDEERAEGVRNWRR YGLTISSLA YYDNNLDHDIJNKRTKINNHFKK
 KGIEISSLA YEVPVLAVHAPCLI YYPNTMDADLDKRTAAVEHLKK
 YDMKIVSVN D\AHCERTDPENVKRIIEEAHA FGFEQLFNMPPGDWDAGERGFAA保GREEEFASVD
TGVRVTSGMTGGDPYGRLNHFGHPDADVRRYYVDWFKT RGLEISALS CHGNPLHPNPELAKQFHEEFQN YELQVVSYTPSFRTPHT GIDDEMKK RALMISA S CHGNPDHPQEEDAQAHHQVFEK RGLEI DALNANGNPDHPTQPEQGECDKDTIRDAGDMGIKT RNIGUDF NPTLFSHPMAASGTLSSPDKNIRDFWIRHVKA YGLLSNLVVHAPY乌INIANTQKPHVFELGVDFLQK
A GM SNLVVHAPY INANTQKPHVFELGVDFLQK
AGLRTVTMGGHKSLTDGLNRRE

USHDRDERE
$Q G \prod T V L S T N N^{P T C}$
RGLVASHITGQLVAVHPAHDQПMDSFAPERRAWAEEQLCF
 HDLGASVVLV MPPGRELVDTDAATVSATQDYLRH TGLPVSTACGGY DGWIGDFDEERRLNGLQQITR DTLKLTGEN NDEDASDAYYDNCLHPDTSDRENNVKHLYN VGVAFDF NGTFFSHPMADEYTLASKDEKIRRFWIEHAKR VARELETYDMEITSALAVHNNPLDPDEETGDRADMELRE YGFEVSNCVVSVLQGVVLPKGDWKGDDFEGPKDTETRURQ NQVPLDAFNTRLFPPDMSIVGPDVDMDEDARYLAVAFAR LGLKLVTFQPGFR FRDFEGMPEPQRTRAFERAER
 YGLPVLA HAPTLLLTQQVWGSAWT RDLGLTVDLYQPFRDLD SVDPDTFARNLVRAER
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## UniRef90_B1VSK8

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 VPPGEDAARYRETFTGN PALVKSKEKNTAYFQELL ALEYALEAGNCPSVLVMAGVTPDVAAGADGDAYVQTFADN ALLLAKKLGSII QLAA I RETAALGAATLVL VPGGDI YLELCOKLDCEYVVAVPSNLENTA KFDLMAELGCARILVCSSVHPRALGG ALTYAAMVGPACVNVLPGR RALGG LISTCPEMGVTRVVLPFVDASKMVEGVARGQALATLADN R IGEALGCRSFNLYGNRRSDVSDAEQDAAA AARASARLGLTAHATWPYLYPWPQRPQGLVERAFKELGDR A RRLADQDVNTVTGFWITAPWPTEHADAHEYQWRVADEY TVKLAKKLGVTTVTTFSGTPGWPNEHGEVLKWQWEELIPY ALETAAVLGAPVL VVAVVGGLPPGSRDLDDARAQILDG GLDVAKKLNTNVVRTF S YKGGDISENVSFEQGKSLIIEC AMEYAAVLGNSNI HVMA YKGLLPSEAERARHHAVYLDN AVRLADQLGVENVNTFWVTAPWPPEHAEALDYQWEEVAPT
 VRTVVEATGCARVNALYGQRLPGVPAAVQDETATLKLRRA GISMAKTDGDPDVSFQSGYLRQEHVDNPSDD PRKKLIDG S IQLAALMGVPVVNTFWPVIPWPTVYSDIKTWQWENLIDPY Y AAALGNRKLHLMA GLIQPGQDRAAHRAVYQEN ALEAACVLDCPQVHIMAGV JVQPGMDQAECEKTLIEN AAPGAKQLGCKQFI QHVVTCELGG SIIGDPRRSAHENHVIPLMPEQWGHMVEG TARAAAAFGVRTVIDWHLVAMFPPVPPGMIERGYAEFAER STKLASLMGVKVVNTFWPVTPWPTVYSDDKTWQWEHLIPY SLDTARRIGGRTVICVAGFD PARDRAAQLAAMADN WVDAAKYLGCHAIRV NLIGAADRDVWKTSADDG TVCTMSGLPPGDTMPNWVVSSWPPETQEDLRYQWEELIPF HVDLVNRLGMKHMRVTAFTLPTENMTIQWFEENLHHMVKG AAKASQRLGLDRMGTFSGSFAWPYLFPFPDEAAFEELARR TADASARENALVVTVHPGRGHCSPASRKFREDYNRVRDS SAEAAKELGASVVVVHPP YMASVLGNTKLHVMA $\quad$ GLVAAGADRARYHATYVAN ALDYALA LGAKQLHCMSGD V VPSGMS LDERARQSLIGN SKEMAEALGATTVVVHPA $\quad$ APCLVLVVGALPGALEGK PAYKDKOREYAREF FDDLAGQLTCPYVRVFPN DLDKDQDRQQTDDLISAN VFRYAEALGVRMI HVMT GAAEGDEARAVLIDN TLTYTERLKPYVINVLPGRCDDPQRLGADEEYQTTLLEN CVDAAVQLGVPAVGTFGGRNDDKTV TVENEEQWYRS TVKLAALLGVPVVNTFWPVIPWPTVYSDMKAWQWEELDPY
 CMRDAEETGFPCVINFWTGDGDKDVP ADRMGPRLRYMKS ALMYAKALNCKKV HAMSGLHDAKFTRQQHVETFISN FADDSAELGASGMTQFADFTHRDYDDPARRARLFDDALDC AVRLAEQLEVQNVVTFSGCPGESCPWPDDLSRVVEWVIPY VYETAKAI GAPVLANGFHPSN TILLAEELEVGMVCLFSGCPGWPPDYAETLKWQWEELVPY CRKDAAYIGEKQHDI WDPDGLKDVPAEADRFGPRQRLKES E ERTEALGAKD VLHPAGGHVGAGVDVGMIKR1DEG E: RRTHAGGVKNIVLHPGAFTD NIELAVKWDIPSLIVFSGNRGGDSD A EEGLTNTVDG IAAALAEVGGKGIVVWGMFTFRDPPSPRSLEADRKAVSAS SRYFGEQLGTPSVMNDWDPDGMK DIDTVDRLAPRQRLLEA AARASQRFGDTTHTLWPYVYPYPQWPEGLVDEGFTELAAR
 CLDIAELGSPTLCGPAYASVGRTWRMTERQRCVREWRDH TLEALAEVGGKGIVVWGMFTYRLPPMVSPRSQAGDRLADS
 CRKDAAWLGEEMGSPCDLDTWVPDGAKNYTVDKFGYRSM
 MIETGEQMGAQVFNSELG GSRATPELCEAKLMRS KFDLMEELGTDLLMVCSNVSPHSLGG AVRAVRDI GGSKLGGILYSAHAKYGRMPTKRGWDSSVAA EVRRTHAGGVKNV RHPGAYTDM R DAPEYGGQRIADG KFDVMEQLGCDTLLVCSSPLPQAV WQUR RDDLLTEQ GLRMASELNCDVMAVNSGWGYW NENREEAWKRSREM ALEYALALNCPQVHVMAGV VPPGADRGAYEAALIGN HVQFLQKMGSKHVVTCPRRSPADRNVIPFTDEEWNHMVDG Y AKALGCKQV HAMAGKLDARFTPEQQQACFIKN

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 NMYPWR $R D R E M L A Y A P D$
$Y$ MFSSQHQAA D L RYAADTFAPHGDKV
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 I E FIGADPQNTINTLKQALDD

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 WK EMAAFAADH LA A LQP TMKETG LKECASYAEEQG VVR $\begin{array}{llllllllllll}L & A & A & T & T & Q & A & A & K & A & G & I \\ \text { W T } & A & L & A & E & H & A & D & D & H & G & V \\ N & V \\ L & R & E & L & G & E & R & A & A & R & R & G \\ L & R & V\end{array}$ H E V G F E A L A C F E L L $A P$$K B$
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LAYARTAATQGDTV

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L L D L G E Y A R E V G M MP LA I E P H P M Q A A D RA C I NTMDE H A LDD
MRDGGQYAK GANVTVLLESHGEVVWKDLLVQIMQKA

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LR RIIA D VAA T K S G $\quad \mathrm{V}$ R I A I I E P I

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UniRef90-D1AHW3
UniRef90-F0RTX6
UniRef90-W0JX32
UniRef90_UPI00047DAC02
UniRef90_C8WR46
UniRef90 J2W2F8
UniRef90 K2LYR8
UniRef90_UPI0003B31DE2
UniRef90-W7YIE4
UniRef90_A9WTD2
UniRef90 M2XBS4
UniRef90-U1Y569
UniRef90-UPI00032A13B3
UniRef90 UPIO00248DBE9
UniRef90-IODSV9
UniRef90_L9VZ65
$R \mathrm{DVLSKR}$

| UniRef90_D3EAB2 |  |
| :---: | :---: |
| UniRef90-E1V542 | SVARWT F D F L S LEELC Q |
| UniRef90-F5LGW9 | P P G T PLLEKVL |
| UniRef90-W6KD60 |  |
| UniRef90_UPI0002D4BE4C | M V N P R WS P Q Q L IE |
| UniRef90-W9AFZ7 | FDDMLD |
| UniRef90-D6WIB1 | FCANLSFMF TEQPFDERYR |
| UniRef90_B8G117 | LPMMERFQ |
| UniRef90_UPI00029A2ABF | F VT A $\square$ LP E L T L K E VA T |
| UniRef90_R7QZE9 | TDMEEAMK |
| UniRef90_A0A021WXS4 | ( A L R |
| UniRef90-H0TWA7 | P F LD R F A |
| UniRef90_E8WFR9 |  |
| UniRef90_U3AKU7 | P K LS LE A F FA |
| UniRef90_A0A037Z7K9 | T 1 D |
| UniRef90_G9YMJ6 | F V S A $\triangle$ L G WS FEEMIDD |
| UniRef90-UPI0003FA2940 | L N P L D F AK |
| UniRef90_B6EQJ0 | F L E R F E |
| UniRef90-I0HP76 | HDFLDRFA |
| UniRef90-UPI00036CF34F | T R K S M T L D D L A |
| UniRef90_UPI00026C6BAE | E EAFR |
| UniRef90_A0A038GGT6 | P R L S L E A F VD |
| UniRef90_UPI00035E02FB |  |
| UniRef90-E6TTX2 |  |
| UniRef90_R6NJF2 | EKAVE |
| UniRef90_I3X767 | F GVIHTSM WTM NWDRPG |
| UniRef90_UPI000346539A | F VTD T L G NLP LG DVLK |
| UniRef90-A0A037XVC3 |  |
| UniRef90_B5E7Z4 | A GTLFT F P LP K A F A |
| UniRef90_S5XRV6 |  |
| UniRef90-F4B0Z9 | WS L H K P F LD G T M N P K N F P Q |
| UniRef90_UPI000372FDD9 | FSTLLGVPGLPVA DVLH |
| UniRef90_UPI0003B7402E | ( FDEVLE |
| UniRef90-16SIJ7 | QFSDDAAPFNSLP A 1 A R |
| UniRef90_UPI0003726536 | E Q A R |
| UniRef90_UPI0003FFC917 | T R A G L G S VGLLE |
| UniRef90_L5NEK1 | PEEMLD |
| UniRef90_E2XQF8 | P Q H E F $\square \mathrm{ER} \mathrm{F} \mathrm{A}$ |
| UniRef90_M5TS20 |  |
| UniRef90-J3CBE2 | D G Q A G WS E Q VID |
| UniRef90_UPI0003695DB7 | V D |
| UniRef90_UPI0004705C6F | F S T L G C P D WS F A E $\square$ T D |
| UniRef90-E8SHA4 |  |
| UniRef90_D9XAX4 | F S T L G VP G L P L P D V L R |
| UniRef90_K7ZN62 | PQLSVVPDFFA |
| UniRef90-J3HH89 | Q F $\square$ G P Q P P F N S L E G L Q |
| UniRef90-W4QY94 |  |
| UniRef90-W8C0M9 | A E K I R |
| UniRef90-X0UF88 | K LR L S WS NWGF GREPLRQ |
| UniRef90-C1A1N0 | LEE K L D |
| UniRef90-X6GLP8 | LAEKFA |
| UniRef90-UPI0003182A16 | LP F L D R F A |
| UniRef90_UPI0003B7ABD9 | A FE |
| UniRef90_R6HJV9 | T T G N P GRAAT PEQ $\square$ M A D F E |
| UniRef90-K0CBE5 | YPFMERYA |
| UniRef90-C1DPU7 | GLS T Y HCNVVTEA R |
| UniRef90-M5SFF8 |  |
| UniRef90-UPI00042942F6 | LE K L V |
| UniRef90_R4VSJ9 | EAFE |
| UniRef90_UPI0002883DA4 | E A S L K |
| UniRef90-H2JBN5 | E T K E F T GY ${ }^{\text {P S S M }}$ |
| UniRef90_K7QWM8 | L E E K L V |
| UniRef90_UPI0004787C2A | F E |
| UniRef90_U2CNQ0 |  |
| UniRef90_B8H753 | P D H T VP Q A L R |
| UniRef90-F8FQS7 |  |
| UniRef90_UPI0002DE2662 | K ■E |
| UniRef90_UPI0003B58B23 | Y DMETAFK |
| UniRef90_Q0W693 |  |
| UniRef90_L1KST8 | F S T L G VP G LP $\square$ A DVVR |
| UniRef90_F2KFB7 | L P FTERVK |
| UniRef90-F5YDI2 | F T LF D A E E |
| UniRef90_WOIXN5 | S F T WWS F A R G VEP ET L L A |
| UniRef90_UPI00035EDA71 | QF A $^{\text {a }}$ |
| UniRef90-B0T1W8 | Q F $\square$ G A E P P F D K LE T MA A |
| UniRef90_UPI00036C69CA | E T V E |
| UniRef90-D2PX24 | AFE |
| UniRef90_A3TUP9 | QF AS DEAPFNDWDS ${ }^{\text {PT K }}$ |
| UniRef90-A0A059KNR2 | QFAGDAAPFDS LD GLA G |
| UniRef90_K1XCY9 |  |
| UniRef90_UPI00029B01B6 | K $\square$ S L A Q W S L H T Y F D K K A D P $\square \mathrm{D}$ F A K |
| UniRef90_A6WDK6 | L L D A VR |
| UniRef90_C6D4T3 | P F E EALD |
| UniRef90_UPI000375E02E |  |
| UniRef90_S8EI03 | P Y N T L L G L A A |
| UniRef90_UPI00046E77CB | T M N P P F G F L D R D |
| UniRef90-A0A011P293 | LP F L ERFA |
| UniRef90_V2UR15 | P L I E R F A |
| UniRef90-G8NUU0 | PRSAWREEFP |
| UniRef90_C0W6Y3 | TASCPLGKAENT F R |
| UniRef90_F1T7C8 UniRef90_D2R4T3 | $\mathrm{A} \boxed{\mathrm{V}} \square \mathrm{T}$ A L N <br> GGTTGEISVIDAAR $P L G V F T S V D A G L G V K L E$ |

UniRef90 D3EAB2 UniRef90-E1V542 UniRef90-F5LGW9
UniRef90 W6KD60 UniRef90_UPI0002D4BE4C UniRef90-W9AFZ7 UniRef90-D6WIB1 UniRef90-B8G117 UniRef90_UPI00029A2ABF UniRef90_R7QZE9 UniRef90_A0A021WXS4 UniRef90_HOTWA7 UniRef90-E8WFR9 UniRef90_U3AKU7 UniRef90-A0A037Z7K9 UniRef90-G9YMJ6 UniRef90_UPI0003FA2940 UniRef90-B6EQJO UniRef90-IOHP76 UniRef90-UPI00036CF34F UniRef90_UPI00026C6BAE UniRef90-A0A038GGT6 UniRef90_UPIO0035E02FB UniRef90_E6TTX2 UniRef90-R6NJF2 UniRef90_13X767 UniRef90_UPI000346539A UniRef90-A0A037XVC3 UniRef90_B5E7Z4 UniRef90_S5XRV6 UniRef90-F4B0Z9 UniRef90-UPI000372FDD9 UniRef90-UPI0003B7402E UniRef90-I6SIJ7 UniRef90_UPI0003726536 UniRef90_UPI0003FFC917 UniRef90-L5NEK1 UniRef90-E2XQF8
UniRef90 M5TS20 UniRef90-J3CBE2 UniRef90_UPI0003695DB7 UniRef90_UPIO004705C6F UniRef90-E8SHA4 UniRef90_D9XAX4 UniRef90_K7ZN62 UniRef90-J3HH89 UniRef90-W4QY94 UniRef90-W8C0M9 UniRef90-X0UF88
UniRef90 C1A1N0 UniRef90- X6GLP8 UniRef90_UPILO003182A16 UniRef90_UPI0003B7ABD9 UniRef90-R6HJV9 UniRef90-KOCBE5 UniRef90-C1DPU7 UniRef90-M5SFF8 UniRef90-UPIO0042942F6 UniRef90-R4VSJ9 UniRef90_UPIO002883DA4 UniRef90-H2JBN5 UniRef90 ${ }^{-}$K7QWM8 UniRef90_UPI0004787C2A UniRef90-U2CNQ0 UniRef90-B8H753 UniRef90-F8FQS7 UniRef90_UPIO002DE2662 UniRef90_UPI0003B58B23 UniRef90-Q0W693 UniRef90-L1KST8 UniRef90_F2KFB7 UniRef90-F5YDI2 UniRef90_W0IXN5 UniRef90-UPI00035EDA71 UniRef90-B0T1W8 UniRef90_UPIO0036C69CA UniRef90_D2PX24 UniRef90-A3TUP9 UniRef90-A0A059KNR2 UniRef90_K1XCY9 UniRef90_UPIO0029B01B6 UniRef90-A6WDK6 UniRef90_C6D4T3 UniRef90_UPIO00375E02E UniRef90-S8EI03 UniRef90_UPI00046E77CB UniRef90-A0A011P293 UniRef90-V2UR15 UniRef90-G8NUUO UniRef90-C0W6Y3 UniRef90-F1T7C8 UniRef90_D2R4T3

KAREVVGADGVVQI YAVHGEMDPANLSASARKELLKDYIID ${ }^{50}$ LVRRIGFSAI DLVGPDQWHILKRHGIDSSMCNGAE KVAEAGFHTVELNLYASGGVGGTMDTKPAEARKTGENVRS
 YVSSKGLEAVELGTGGYPGDAHCKVDDEQKLSEFKQKVES
 AVKAAGLKRVEFMFPYD TARSAGYSCI EVMCWPPSKAERRYAGVTHDNVVDFTREQA TMMPGTAKDNV EASYADFEPAARRNAGVTBKHFAKWVEFAKA KTAEHGYRAI EF AYLRPEKF
 MSRRLGVEAVELN
FAKENNMNAVEDNMN TVPIVFPENFNKEERRKI KDYAET TARDLGFSCVEAACWPSVSHDDVDGLTDEKSAYVLGYCKE
 AAARDGFKAVEYLF DGFYAYTTAEKMQMFGEQLAALLKA FCSDVGFDAVDPTGYYF PGYPAAPPDSYDYALKRKAFR LAAEI GYDGMEVMVSYPRDPGYPAAPPDSQDPDALKRKAFR LAVKLGAGA $V E \square R N$ D $\square K G \square E \square E N G T A P E V V A D L C A A$ $\square K A F K Q A F D S$
$L I A K A G F D A W D F S M F D A A D N D R E N H L S G G N Y L A Y A R R L K Q$ A ERAVVAAAVKYQVDF $\square E \square P M D N P P A V D T E H \quad T R A L L E K$ HAERMGLS GLLEVNTWSTAPHFNLQQMLDSNAARFTRSFEQ

$D L G F T G V E Y V T$ QLY P E L Q D K S D Y EE K $\square$ M N WA REMK E Q S D A LAVTHGYH GVEVRA HP E E PVVHPGLDAAAQR A DVAA EFKA IA A GLGGLS SI ELPNWSEAPHINLDADNEAERAAFMGRIAD WAAETGFSALQQI PAWDRRLFDATAAESSTYCDDLTGMLAE
 HAKESGLLKAVE $\square G T G G Y P G N A H C D V E S E E K R K E Y L A K V E D$ AAKADGFDAVEY LFPYEYSAEVLQQR

ACAKRGYGATTYWR
REVGKRAFEDGQRTRAA QMIA A GADGIE LMMDG PGWDRFDVRMDEFARELDHSRK FA AK HNYS G I E I R G DQRQMD LP LDCPEFNQNRNATMS LMK D

LATTHGYHGVELRAHPEEP VHPGLGPAERADVAAEFKG LA QRLGCYEVEI RN DLPDVTGQDAAQIARAASD

$\square A H K A G F R A V E \quad P$ PNAEQDDVLQAK $\quad$ DD RLR R A D $\square E Y$ L E L H GNRYA D L GYDA GETA S L L D D AI A A A GFD GFEVVFEPD F VASPWSP A I S A A GFD GVE IFENDFLAFDGSPRDVGRMA

A A A EAGF Q AVEFLFPYEHPP EAVAEKLKA | A A A E A G F Q A V | E F L FP P E HP P |
| :--- | :--- | :--- |
| $\square$ |  |


 A A L K R R V D G RRELGGDTMQQLH EAAQKFKS QLDE

 RCKEAGFNVL DLLNMCAMLNRQTNGDDWDKNAENVINEAAK A I A RAGFRAVEI FEDDLCTYRGTPRE LR R LAES
 LF R A A GLDAAEVIVQDDYKS GLP QRDRRAA LDALKAAD DE
 HI A MA GYD G I ELS A $\square D G M S Q H L V L A N W Q E L A D D I K R F A K E$



 $M A A N L G F D G I D V D V V S Q D A D A L R H D S D V$ WVAD L GYVGVQMPTG GADSFFDLAA ES QTY CDDDIA GLLAG




VA K E Y G DE GVE Y VN Q F F A D
K A E DK A Y LTT E LTK K R A D D TLAADCGYDGI E LSLDNA A HVDPWAFSAADADRLRAVLDA Y I A A K G LIE AVELGGTGGYPGNAHCDPDDAGKLKAFKHAVES Y R H F A P WVD WAK D WASSLGGFKALQQPDDARLDDDHRAAEDQAYCDSVKATVAK
 A A A VD GFEGVEYLFPY DYP
LARKHGFD HVEDQRPYE LS
 LA A E L G Y D GVVEVMVWS $E R S T Q D P Q V L A A B L A R E$ K A K D A G F D A L E A S F Y K $\quad$ V $\quad$ D G D $\square$ S M N S R L Q D I R T I

## UniRef90 D3EAB2

 UniRef90-E1V542UniRet90_F5LGW9 UniRef90-W6KD60 UniRef90-UP10002D4BE4C UniRef90-W9AFZ7 UniRef90-D6WIB1 UniRef90-B8G117 UniRef90-UPIO0029A2ABF UniRef90-R7QZE9 UniRef90-A0AO21 WXS4 UniRef90-HOTWA7 UniRef90-E8WFR9
UniRef90 UЗAKU7 UniRef90-U3AKU7
UniRef90-A0А037Z7K9 UniRef90 G9Yм UniRef90-UPIO003FA2940 UniRef90-B6EQJo
UniRef90-10HP76 UniRef90-UPIO0036CF34F UniRef90-UP100026C6BAE UniRef90-A0A038GGT6 UniRef90-UPI00035E02FB UniRef90-E6TTX2 UniRef90-R6NJF2 UniRef90-13X767 UniRef90_UPI000346539A UniRef90-A0A037XVC3 UniRet90-B5E7Z4 UniRet90-S5XRV6 UniRef90-F4B0Z9 UniRef90-UPIOO0372FDD9 UniRef90-UP10003B7402E UniRef90-16SIJ7 UniRef90_UPIO003726536 UniRef90-UPIO003FFC917 UniRef90-L5NEK1 UniRef90-E2XOF8
UniRet90
M5TS20
UniRef90-ЈЗСВЕ2 UniRef90_UPIO003695DB7 UniRef90-UPIO004705C6F UniRef90-E8SHA4
UniRet90-D9XAX4
UniRef90-K7ZN62
UniRef90 J3HH89
UniRef90-W4QY94 UniRef90-W8C0M9 UniRef90-X0UF888 UniRef90-X6GLP8 UniRef90 UPIOOO3182A16 UniRef90-UPIooo3B7ABD9 UniRef90-R6HJV9 UniRef90-KOCBE5 UniRef90-C1DPU7 UniRef90-M5SFF8 UniRef90_UPI00042942F6 UniRef90-R4VSJ9 UniRef90-UPIO002883DA4 UniRet90_H2JBN5 UniRef90_K7QWM8 UniRef90-UPIO004787C2A UniRef90-U2CNQO UniRef90-B8H753 UniRef90-F8FQS7 UniRef90-UPIO002DE2662 UniRef90-UPI0003B58B23 UniRef90-Q0W693 UniRef90-L1KST8 UniRef90-F2KFB7 UniRef90-F5YDI2 UniRef90_WOIXN5 UniRef90-UPIO0035EDA71 UniRef90-BOT1W8 UniRef90-UP100036C69CA UniRef90-D2PX24 UniRef90-A3TUP9 UniRef90-A0A059KNR2 UniRef90-K1XCY9 UniRef90-UPIOOO29B01B6 UniRef90-A6WDK6 UniRet90-C6D4T3 UniRee90_UPI000375E02E UniRef90-S8E103 UniRef90-UPI00046E77CB UniRef90-A0A011P293 UniRef90-V2UR15 UniRef90-G8NUUO UniRef90-C0W6Y3 UniRef90-F1T7C8 UniRef90_D2R4T3

पGपEIISALLVGDGGGHGFQ ${ }^{90}$ PNLEDGW

EVLSLNALY PFNSWNEERRKAQAETLAQ RGLMUSALS CHGNPLHPQKKDAEPADEDLEK ANIQQVLI NTYTGDVTKGELGFAADPGKEQEFKDSIQK HQLEM VVLFNLPAGDWGAGERGITADDPSRQEEFKAGVEK SEVNGLMAEAQVSDSALGYYPNPLTPEDADAKQYVEHDQK HHMGMDF NPTFFSHEKVKNGTLSSPDEATRKFWIDHGKA DDVEVGVTMGL G PVIDRDVSSEDQAVVAGGKAMLAD AGTQLVGLNFYAGRDPGPDRGALSGPGEESRETDERFRA AGVRIVSUNA NGVKLTMHAPE
RGVELSSLA
 PPGDWDAGERGFAADPDDGEGELAADTM HDGQQVLFNAPPGNWDAGERGIACL LGLDISGTGVR $\square$ NDFSLA
 $\qquad$ KPFHDDFMRT DE AQATK WRESEEQFRNDLPKLVE $\square G L D N G I V C N Q \quad S H A P F P S W G L E S$ SR VPVLK HRLRALCSLG HNVEVTELNANGQGPLDPPTQP LSIHAPFMPDDGWGGP VAVHPAYDAAFDAFAPAALRGDPRARQWAVDQVAK AGTDNVIIMVD RDGELADPDNSKREEAI AVHKY $A G V E V L G L A G$ YRDGELADDPDNSKREEALAVHKY AGLGISALNANGNQL HGLVVSELTSHIFGQLM AGVRVTGLHWLLSHLPMAPASITDPARSDEAQAVLLR SYLQQHGVVIGSMGLPVEWRRT RGLTISA FSCHGNPTSPDKAFADQCHETFVK NGLVQALFNAP PGDWAAGERGUAS DPGREAEFRGGFDQ HGLVCTMVSSHSLTNGLC AGLTVSGLCRSPFLVGPLA PRTRSAVLDDFRA KGLRFDDLGAVYSVHTPVWDINLTSENHFVRQAALQSLQY

SGVEILGLAG
CHNNPIAP
YARVAAPGDDEPV
AGLTI SSVNA GYPFNLWSDDDAGRAERLA
YGLQUSELSTHDEGHPAHFAPAALRGDQEKRAWATQTVKL TGMQDCLTDADGDSKFGSASV PGAGENFKSQLQE LGLTAAGLCGMFGRDNDLSSRSAVS DDRQNADDYVRR LGLL VDEAQFARNLVRVQR AGLTQALF NMPPGDWANGERGMAADPGREREFRDRAER YGMPDRSUHAPTLLLSRRVMGSSPGG NGFGIDF NPTLFSHPLVKEGTVSSPEKEVRDFWDRHCDQ NDLRO VLFNLPAGDWDAGDRGLAAGPGREAEFRDGVAR FGLKTLCVNALVGDERYQG YGUQCTAVFGGFYADDPTVVKTVGLVPPATRQARLKEMME TGURDPATGCLSAHRR FPFGSRDSATRERARADMVK AAEYDLT SA LGLEDWSDH DPGGDDWDVSSLDSTKREQALSTLSS LGLSFVALQP $\quad$ GRDYEGMPPEVQKRRLARIVR HGMPVLAVHAPVLL $\quad V M Q R V W G S D P E V R N W D K L R R$
$K G M G D F N P T F S H K V D G T L S S P D E V R N W W E H K A$ KGDGLDFNPTFFSHSKVVDGTLSSPDDEVRNFWDEHGKA
 YELELLA YN MEQPSRDPERMELIA HGPFSQLDLASLHEPLWNETMRQTRQ


 GLRCTETMLQGHPAYDELFDGFAPPELRGWAVGQLKA HQ PPVA HAPCLL NGUAVTELSAHLQGQLVAVHPAYDHGDPKARQWAVQQVRQ HGLEIVAVHPAYDLPMDAFAPAALRGRPAERAWAQQQLHL NYTVHAQY GNGSLNDLDDKDREET MKGIYQ
NGVT SVLI
TGLTACSLATGHLLSGNAFEPALVDPDPAERARRLDLLRR RGLMISALSCH ANPLHPQKAISSADDATDRKTIE
 HGLQQALFAP NGDWDGGERGLASMPGREDEFRRADDTAME HHLSLCLINAPAG DLMQGGLGLAGIPGREREFFHGLQQ YNIATPALCGDWF MTVMVPLIRCSPAERERRERHLHD GKLKENELALSSLSTLLLNDTSLISEDSHERKDAFSUCEK

## UniRef90 D3EAB2 UniRef90_E1V542 UniRef90_F5LGW9 UniRef90-W6KD60 UniRef90_UPI0002D4BE4C UniRef90_W9AFZ7 UniRef90-D6WIB1 UniRef90_B8G117 UniRef90_UPI00029A2ABF UniRef90_R7QZE9 UniRef90-A0A021WXS4 UniRef90_HOTWA7 ,

 UniRef90_E8WFR9 UniRef90_U3AKU7 UniRef90_A0A037Z7K9 UniRef90-G9YMJ6 UniRef90_UPI0003FA2940 UniRef90_B6EQJ0 UniRef90 IOHP76 UniRef90_UPI00036CF34F UniRef90_UPI00026C6BAE UniRef90-A0A038GGT6 UniRef90 UPI00035E02FB UniRef90_E6TTX2UniRef90-R6NJF2
UniRef90_I3X767
UniRef90_UPI000346539A UniRef90_A0A037XVC3 UniRef90_B5E7Z4 UniRef90_S5XRV6 UniRef90_F4B0Z9 UniRef90_UPI000372FDD9 UniRef90_UPI0003B7402E UniRef90- I6SIJ7 UniRef90_UPI0003726536 UniRef90_UPI0003FFC917 UniRef90_L5NEK1 UniRef90_E2XQF8
UniRef90_M5TS20
UniRef90_UPI0003695DB7 UniRef90_UPI0004705C6F UniRef90_E8SHA4
UniRef90_D9XAX4
UniRef90_K7ZN62
UniRef90-J3HH89
UniRef90_W4QY94 UniRef90_W8C0M9
UniRef90_X0UF88
UniRef90_C1A1N0
UniRef90 X6GLP8
UniRef90_UPI0003182A16 UniRef90_UPI0003B7ABD9 UniRef90_R6HJV9 UniRef90_K0CBE5 UniRef90_C1DPU7

UniRef90 M5SFF8 UniRef90_UPI00042942F6 UniRef90_R4VSJ9 UniRef90_UPI0002883DA4 UniRef90_H2JBN5 UniRef90_K7QWM8 UniRef90_UPI0004787C2A UniRef90-U2CNQ0 UniRef90_B8H753 UniRef90_F8FQS7 UniRef90_UPI0002DE2662 UniRef90_UPI0003B58B23 UniRef90_Q0W693 UniRef90_L1KST8 UniRef90-F2KFB7 UniRef90_F5YDI2 UniRef90_WOIXN5 UniRef90_UPI00035EDA71 UniRef90_B0T1W8 UniRef90_D2PX24 UniRef90_A3TUP9 UniRef90_A0A059KNR2 UniRef90_K1XCY9 UniRef90_UPIO0029B01B6 UniRef90_A6WDK6 UniRef90_C6D4T3 UniRef90_UPI000375E02E UniRef90_S8EI03 UniRef90_UPI00046E77CB UniRef90_A0A011P293 UniRef90_V2UR15 UniRef90_G8NUU0 UniRef90_C0W6Y3 | 130 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $l$ | $M$ | $L$ | $G$ | $L$ | $E$ | $L$ | $G$ | $T$ | $N$ | $I$ | $T$ | $T$ | $H$ | $\square$ | 150 WV H A A

TVA A TII LA EKLGGVPVVNTEWPVVPDWPHDDFQEVRLKWQWE EAL T A
 AV A L A Q A L HVK Q I N CL $\quad V G K V R E D Q S P A E Q R A T$ LIA N VI KAS S L L GL T R M N TFVGRDWT K S V


 IITTF G DDD G V S RMV C FTLVDDRK S YME E F Y EK E Y K N I L K E S

 ALAYARALDCPRDHVMA


| $G L V$ | $P$ | $A$ | $G Q T$ |  |
| :---: | :---: | :---: | :---: | :---: |
| $G$ | $R$ | $V$ | $Q$ | $E$ | $\begin{array}{llllll}R E & Q Q T V & F \\ R E S V \\ \text { R } & \text { S }\end{array}$ LAQYARACGAKGLVLCPLNDRADPRNGAQRANAGKYARGF $V$ VVVNGFSGCPGDHEGAKYPNWPVPWPGDYQEILDWVRTA


 T $\quad$ R LIA G E L G



 AVK A S A R L G F S G S L A WP Y L F P FP QR P E GL I K TAFD E L A R R Y AKAASRLGCTRSCTY L L P S T DEENPA AL E Y A AVLG NSRV HVMA GLLP S A I EATAAEGWKNVICFSGNAR

 | $S$ | $I$ | $L$ | $S$ | $A$ | $K$ | $L$ | $G$ | $A$ | $E$ | $H$ | $V$ | $V$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $F$ | $H$ | $P$ |  |  |  |  |  |  |  |  |  |  |  |
| F | $D$ | $L$ | $A$ | $H$ | $Q$ | I | $D$ | $C$ | $P$ | $Y$ | $I$ | $R$ | $V$ |




## L

 DAKAASTLGGCRTCTTY ILLPSTDQDAAPFMAKATTRRLRTC









 A I TA A LL GADRVRVV YA GSWHPGDADHAARWAKLRDA

 CVELSAD FTVTVVV HPG ILSPLGREMKKAWERNVEA
 S L A V A A Q L G C P P S L N L H G T G L G G D G L SIAAKAVEWRDPVLICFSGNRAGAGNENLDTNHPGDAAAET A REVVAERLGAETVVVHPP FRWQRDYAKAF A AVAS R RLLGLNAHATWPYFYPWPQRPAGLIDEEAFAE LGRR





 T R E
D S A K A K R DSAKAK RLGGKA HVTWP YF Y P WP QRPAGLVDTAFEE LAARR YSAVLK NRLLHVMAGGRVPEDT REKQMDDYLEN A L H Y A R V L G NER LHVMAG G $\quad$ P K
 PF VDNSK AD L L G Y

UniRef90_D3EAB2 UniRef90-E1V542
UniRef90 F5LGW9 UniRef90-W6KD60 UniRef90-UPI0002D4BE4C UniRef90-W9AFZ7 UniRef90-D6WIB1 UniRef90-B8G117 UniRef90_UPI00029A2ABF UniRef90-R7QZE9 UniRef90_A0A021WXS4 UniRef90-HOTWA7 UniRef90-E8WFR9
UniRef90- U3AKU7 UniRef90_U3AKU7
UniRef90_A0A037Z7K9 UniRef90-G9YMJ6 UniRef90_UPIO003FA2940 UniRef90-B6EQJO UniRef90-IOHP76 UniRef90_UPI00036CF34F UniRef90_UPI00026C6BAE UniRef90-A0A038GGT6 UniRef90_UPI00035E02FB UniRef90-E6TTX2 UniRef90-R6NJF2 UniRef90_13X767 UniRef90_UPI000346539A UniRef90-A0A037XVC3 UniRef90_B5E7Z4 UniRef90-S5XRV6 UniRef90-F4B0Z9 UniRef90-UPI000372FDD9 UniRef90_UPI0003B7402E UniRef90-I6SIJ7 UniRef90_UPIO003726536 UniRef90_UPIO003FFC917 UniRef90_L5NEK1 UniRef90-E2XQF8
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UniRef90-F1T7C8
UniRef90_D2R4T3



 $L E S$ S L G Q Y NLQ GF V E PLGFP I
 I R Y A A E QLQ Q $\square$ GVKL L L E P DN K Y S VP N Y Y L N C Y D RA L S






 VA YA A A E A A K LGGINV LI EPINERDMP GFFLNRQD QAHA





 WR P L LD D A E D HGVDI C FEI H
 $G E D L H D G \square T F E M$
 WMPVLNACDEHGINLCYEI HP SEDLHDGAVSFEM

LR A CAEVLESYGMGLEFVGPHHLRQAGK WKEQAKLAEENGVK I GEELHA
LA YA GAAAA EVGVTV
L K K I V P V $A$ A E A A GV T L
$V$ A EVAD EA Q S A K V LWEL LDDFNK D Y GMKLLLVENVMGDKN
 $L G T A A E Y A N D L G L L E$

$A$
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-
$F R$ Y A A D M L A P E G I T L L



WE E I GEEHA Q E H R D V

G L E L H A


H
TTWK
G F


L R E LAAERAA QRG $\square R V G Y$ EALSWGRHVRDWPQAWEVVVW








LCTENDNN



L

WR P DLDAF D E A GVDVA Y E I H P
L EYAA QQARTS GITI VLEADNTRDMP


FVRGIQDREQA G GVV YAVENMFTWRPRDPHSSRDF QAYS
VYK L S C SAEKA G I L CA ENVWH GF LL GPVEAA QYCD D

## UniRef90 D3EAB2

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UniRef90 U3AKU7 UniRef90-U3AKU7
UniRef90-A0A037Z7K9 UniRef90-G9YмJı UniRef90-UPIOOO3FA2940 UniRef90-B6EQJo UniRef90-10HP76 UniRef90-UPIO0036CF34F UniRef90-UP100026C6BAE UniRef90-A0A038GGT6 UniRef90_UPIO0035E02FB UniRef90-E6TTX2 UniRef90-R6NJF2 UniRef90-13X767 UniRef90_UPIOOO346539A UniRef90-A0A037XVC3 UniRef90-B5E7Z4 UniRet90-S5XRV6 UniRef90-F4B0Z9 UniRef90-UPIO00372FDD9 UniRef90-UP10003B7402E UniRef90-16SIJ7 UniRef90_UPIOOO3726536 UniRef90-UPIO003FFC917 UniRef90-L5NEK1 UniRef90- 2 KOF8
UniRef90
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UniRef90 $\times 6 \mathrm{GLP8}$ UniRef90-UPIOOO3182A16 UniRef90-UPIOOO3B7ABD9 UniRef90-R6HJV9 UniRef90-KOCBE5 UniRef90-C1DPU7 UniRef90-M5SFF8 UniRef90-UPIOO042942F6 UniRef90-R4VSJ9 UniRef90-UPIO002883DA4 UniRef90-H2JBN5 UniRef90-K7QWM8 UniRef90-UPIO004787C2A UniRef90-U2CNQ0 UniRef90-B8H753 UniRef90-F8FQS7 UniRef90-UP10002DE2662 UniRef90-UP10003B58B23 UniRet90_O0W693 UniRef90-L1KST8
UniRef90 F2KFB7 UniRef90-F5YD12 UniRef90-WolXN5 UniRef90-UPIO0035EDA71 UniRef90-B0T1W8 UniRef90-UP100036C69CA UniRef90-D2PX24 UniRef90-A3TUP9 UniRef90-A0A059KNR2 UniRet90-K1XCY9 UniRef90-UPIOOO29B01B6 UniRef90-A6WDK6 UniRef90-C6D4T3 UniRef90-UPI000375E02E UniRef90-S8E103 UniRef90-UPIO0046E77CB UniRef90-A0A011P293 UniRef90-V2UR15 UniRef90_G8NUU0 UniRef90-COW6Y3 UniRef90_FIT7C8
UniRef90_D2R4T3


 SFAALHDGWVFMPLMDNGHYHPMEYVSDKDPAMLCFYPE | V |
| :---: |
| A |
| V |
| V | VVDRVNAAGNTFLLDLY VLEELGKTTNLYLLTWDDG

 I VAEVVGAAN L K V Q Q M D L LLNRINS DWFAANDDIGS TDEDYAH

FNAHLDAVNDFVACLDDG

LRDAVGNPVIGANLDPS
MIEFLHEKNLF LTFDCT
FLDRVGQHPRANMLYDPSHYGSGRANYNDFLCY VMTEVDS DYAGTLPDFGNFCVKRWGAPCIEEYDTYKGIV VLGPVGHR LYDALGS EWVGINLDPS
FYQRVNEHPRCRVLFDPS
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CREVGAG LVKQVGS
EF
VLGLVGHR
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 LVRRTDHPN VGVVDDFHTLAMRRMEGGSMRSIPADKI WDPTEHDYEN A TTAADRPN R LIDA A\ERVGRPN ERDNLKKND LADK ${ }^{\text {D }} \mathrm{S}$ LRDAAN VEPTP PW WGANF
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WDPS ADHPHLGLVLDSFHAFVRGNPVAELARLSGERVV
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IVDR俍 FLDRVDQHPRARMLYDPSHYVLQCLDYMANLD DYAER
 LLTRTGSPD
LREAAG
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## UniRef90 D3EAB2 UniRef90-E1V542 UniRef90 F5LGW9 UniRef90-W6KD60 UniRef90_UPIO002D4BE4C UniRef90-W9AFZ7 UniRef90 D6WIB1 UniRef90-B8G117 UniRef90-UPIOOO29A2ABF UniRef90-R7QZE9 UniRef90-A0AO21 WXS4 UniRet90-HOTWA7

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UniRef90 A0A037Z7K9 UniRef90-G9YмJı UniRef90-UPIO003FA2940 UniRef90-B6EQJO UniRef90-10HP76 UniRef90-UPI00036CF34F UniRef90-UPI00026C6BAE UniRef90-A0A038GGT6 UniRef90_UPIO0035E02FB UniRef90-E6TTX2 UniRef90-R6NJF2
UniRef90-13X767
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UniRef90-UPIO002883DA4 UniRet90_H2JBN5 UniRef90_K7QWM8 UniRef90-UPIOOO4787C2A UniRef90-U2CNQO UniRef90- 88 H 753 UniRef90-F8FQS7 UniRef90-UPIO002DE2662 UniRef90_UPIO003B58B23
UniRef90_OOW693 UniRef90-L1KST8
UniRef90
F2KFB7
UniRef90-F5YDI2
UniRef90-WOIXN5 UniRef90-UPIO0035EDA71 UniRef90_BOT1 W8

VHTHAKDG ${ }^{250}$ K NHQYFGHYHTAGVPGRHELLDYYPAIMRAIKETGFE VHVKDFKTGVGNYQGFVPLLSGDVNWTABVREALEEDGF GNCVIEDGHYLYGDLQPRFGSDDMPEVRDFFALLLKMG HHFHAKDRDRAWYFRSVGFGH DTKTWADIVSTLRLMNYD GHVQDAQVPNRNEPDTPGE B KYYVYVLETLKSLGYN AHIQVADNPGRHQ PGTGETDYH AFFKTLAEVGYS VH|GAKDVRDDQHKLDPGLGDVNWGQFFSTKGLSDVGYR GYFHUGESNRGY $\frac{G}{G} V Q T A D N G G B G A N E P D V G E: N Y P Y L F E L D D E L T E G Q$
 RTCHIHDNNGKSDHQII GTGNDDFNKHF
FHVHYKDAYPLQYMEPKLPGLGDVNWAKYVSALTDDGYS ELMPFAHGVSAKTFDFDAAGNETTIDYFKMLGAVKKAGYT GHVQTASVPERH EPSEGELNYPHLF TVLDECGYQ GHFQ\|AG VPTRHEPDVGEIHHPYLFALDDEL GWD AATWQUKEKLLFVNGKETETDLGKIMQDVRQSGYR THMHLADSGNTTKDEHLPPGEGNQPCA EVLRRLANRGWE HHFHAKDSYALMLDRAWQFRTVDMKVWADTMSALRLVGYD VHVHINDAKDIPVHDRLFPGEGVID LSGFLRALKAAGYK KALHLHDNDRRH DSHQUPFSMDIDFVKVVVNALKKIGYD MDVSARSWSYGT LGFGHGEQWWRQFCYR LKMAGYD KMFHVKDAEFNPTGRQGVYG
RNDHFSD YGHGRQHLLPGHGILPLTR FLNHLRNTAYN KMFHVKDAEFNPTGRQPGDGQVDFKG $V F S K$ LAQYDYE EGMPFAKGVSAKSYNFDENGNETKLDYARMMQVADSGFE GYVQVKDDASPDDTTPLPDGAGVLPLA ECVELLTRHDWD MHVHAKDNTPVVAANGLPDGTGMTLWWADFVYELRAAGYD TMFHVKDAEFNPTGRQLGDGQVDFNADFSK LTGYDYA AHDHANDTNRG VHVHDNDAKPVPDNDRLYPGEGVDD DPGFLRALAEDHYD GHDQUAG YRAPDRHEPDLGELNYPYLFELIDQLRTGGYD GHYHTAGNPGRHELDDTQE AGYHLCDWLADTQDVMMGDGVSDLRSTR KAVESAGYK LAVHLHDN DGTSDQHLPMGVTPWEPVFSVLQ RHTHIKDVNEKIEYCFLGKGEVPD FEAIDLLAKGGYE HHFHAKDTYDNWTFRTVGYGHSPYEWG EMI SQLRDHGYD GYVQVKDDASAEDTTPLPDGAGVLPGA ECVEVLSRHGWD DPA LGGDDAMLDAHRVLVDGDDRLENA GQLRRLDAEGYD KAFHVKDAEYLPNGRSPGDGQDDFPA CFSKDQTAGQYDYD GHI QIA QAPHRHEPDVAGELDFSYVF GVIKSSGYS VNLHMADTRGA FFLQLADAPFWSRHHRNFPGQGSFD LSAFAQHVYATGYD FIVQLADAPYWSRHFRNMPGEGDLP VRQFMQAVAATGYD AHVQías VPDRHEPDEGELNYPHLFA
AHLHLADGSPSMMDEHLVPGRGDQPCA EVLTELSRVQFL VPLHVTRSMHWDSDHVVLFEDSDKDIAAEVVRCPEGMDLI GHVQFADAPGRHQ PGSGEDPLAELFAR PADADQUGYQ VHCVWSDQPGVTFGREVPDGQGDVGM ETYDKTLREDGYA AACHEDTYPVFRDVPFGDGCVDFVGDFTTVTGQRLGYR HHFHAKDPNRSWMFRSTGYGHGE EHWKDVVSTLRMMGYE
GTVHMSDDGKDERHWLPGEGUTDWDQV VLD KALHTNDNFGQDDLHLLPFGTIPWEKV LKTLTKIGYE FLVQLSDAPNLSRHHRSFPGQGDWPLADOFLEAVLASGYR QH|HLTDGRGSFKDEHLLPGHGDDQQADQLLQYAAASGFG GHVHVKDSERSVRSRVIGTGILPWR EILJALLRHGYD AVIHLNDSKNPRKDRHAPVGA
VQVMDHDSWSRHYRCFPGQGDDPDDKFVANM RATGYD KHVHIRDCKGKERGPGTPEGRGDIDLVGYMRVLHENGYT NH1H1HDNKGTSDEHLAVGEGTVDWTRVFKGLKEYKG GYVQVKDVASADDTTPLPLGAGVLPLARECVELLSRKGWD
 AHYHTAGNPGRGPIDG GPGSPQELNYPATFQAIRETGYA RHLHMADGSGSNKDEHLIPGRGSQPCA EVLESLARRGFT RHMHLDYNGKDHOVDGDGVOKGK KHVHLTDGTGSAKDEHLVPGRGTQRAADL पNGLANNDFR GMFHVKDAEFNPTGRSLGDGQVDFGQVFSK
KAFHVKDAEFRSGRQLGDGQIDFRAIVSK FHDHAHDNDFNRPDPHKAPGEGKVDW QAVVKTLKQDKYN ELMPFAKGVSAKSHEFDSAGNEVNLDYRKLLPVVLSYGYR LQVED DAD RVHAHLVPGDGDVDFDAVGAVLDADRGYG HHFHAKDTDRAWQFRSVGFGHDDLKTWADLVSTLRLVGYD KVVHIKDAEFVPDGRQGAYGGNDWEERAGRFRADTQHGYE AHIQAAG VPDRNEPDTGEVNFNYLFEQLDDL GYR
 GSVHMKDRYKKPEGRPLGTGSANFDDVF YKALKHSSYQ RHLHLTDGLPGFRDDHLLPGQGNQDCA GLLRYLTRTGFA


UniRef90 D3EAB2 UniRet90_E1V542 UniRef90-F5LGW9 UniRef90-UPI0002D4BE4C UniRef90-W9AFZ7 UniRef90-D6WIB1 UniRef90 B8G117 UniRef90 UPI00029A2ABF UniRef90-R7QZE9 UniRef90-A0A021WXS4 UniRef90_HOTWA7 UniRef90-E8WFR9 UniRef90-U3AKU7 UniRef90_A0A037Z7K9 UniRef90-G9YMJ6 UniRef90-UPI0003FA2940 UniRef90-B6EQJo UniRef90 10HP76 UniRef90-UPI00036CF34F UniRef90-UPIO0026C6BAE UniRef90 ${ }^{-}$A0A038GGT6
UniRef90 UPI00035E02FB UniRef90-E6TTX2 UniRef90-R6NJF2 UniRef90 $13 \times 767$ UniRef90-UPI000346539A UniRef90-A0A037XVC3 UniRef90_B5E7Z4 UniRef90-S5XRV6 UniRef90-F4B0Z9 UniRef90-UPI000372FDD9 UniRef90 UPI0003B7402E UniRef90-16SIJ7 UniRef90_UPIOOO3726536 UniRef90 UPI0003FFC917 UniRef90 L5NEK1 UniRef90-E2XQF8 UniRef90-M5TS20 UniRef90 J3CBE2 UniRef90-UPI0003695DB7 UniRef90_UPIooo4705C6F UniRet90-E8SHA4 UniRet90 D9XAX4 UniRef90_K7ZN62 UniRet90- J3HH89 UniRef90 W8C0M9 UniRef90-X0UF88 UniRef90_C1A1NO UniRet90- UPIO003182A16 UniRef90-UPIO003182A16
UniRef90-UPIOOO3B7ABD9 UniRef90 R6HJV9 UniRef90-KOCBE5 UniRef90-C1DPU7 UniRef90-M5SFF8 UniRef90 UPIO0042942F6 UniRef90-R4VSJ9 UniRet90-UPIooo2883DA4 UniRef90 H2JBN5 UniRef90 K7QWM UniRet90_UPIO004787C2A UniRef90-U2CNQ0 UniRef90-B8H753 UniRef90-F8FQS7 UniRef90-UPIO002DE2662 UniRef90-UPI0003B58B23 UniRef90 QoW693 UniRef90-L1KST8 UniRef90-F2KFB7 UniRef90 F5YDI2 UniRef90 W0IXN5 UniRef90_UPIO0035EDA71 UniRef90-B0T1W8 UniRef90 UP100036C69CA UniRef90-D2PX24 UniRef90-A3TUP9 UniRef90-A0A059KNR2 UniRef90 K1XCY9 UniRef90_UPIO0029B01B6 UniRef90_A6WDK6 UniRef90 C6D4T3 UniRee90-UPI000375E02E UniRef90-S8E103 UniRef90 UPI00046E77CB UniRef90 A0A011 P293 UniRef90-V2UR15 UniRef90-G8NUUO UniRef90-CoW6Y3 UniRef90-F1T7C8

GY ITLEREVK ${ }^{290}$
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GHTGVEYEGSRDGEEEGD
DWI GCEYNPRNTTEEGLGW
GWI GCEYRPRR
GYLPDET
GSVLLEVTTSRDP
GHLSFEPFAESVHADEDTPQATSASMAHLSRA
YVVSTEHEDGLMSVEEGFTKAVENLNQ
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GWLS पEHEDVLLNSLEGLEKSVA【MQ
D\LTLEDSPHEFPKGEQ\IESLKE\LAYLRRETEKA
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GYVGTEYEGPLEDPKEGDALTKALVQKSI DNLK
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GWLCWEY
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Gpws Le TfndVfrra dtarta TDahrstLhlee
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GPFLFE
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GH LIIE DNTRRSEREDDLIESDEFTRKHFVRTADAARSSR GWAVVEWECALKKPEDGAREGAQFVRDHIIRVTEK
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A

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R D R

G VRNMQKA LLRALLLPQAR LKEVEAR $\square D G T A R L L L T E E$


R P Y P D $\stackrel{\square}{\square}$ A E K K K

N LDEMLD
MQHG $\square Y Y$ Y Y WE RE WD GD Y K Y
$\mathrm{Y} \square \mathrm{K}$
$S \square A R W T F D$

GFFPEASTAEQ@E $R$ F G VH T S $\square$ A G G $\square$ DK A A

AFE T T P N WT PESA $\square \mathrm{K}$

E E S M M

|  |
| :---: |
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| $F$ |$\quad$| $A$ |
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RPFH $\square$ GA HP $\square$ NWVGE DVE

> QP F E T A LD
> F E E M L D
> HLP F E D ML

> MK K A K $\underset{\square}{L} \mathrm{~A} \frac{\mathrm{~V}}{\mathrm{I}} \mathrm{T}$ WT Y G L E D B $\square$ Q M A Y S A $\square$ T WG GK D G R R P G A N P W F L S LD A LCA R T GCCTW $\square$ F G GE | $D$ | $L$ | $A$ | $A$ | $\square$ | $A$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $P$ | $L$ | $D$ | $F$ | $A$ | $Q$ |
| $G$ | $F$ | $N$ | $A$ | $P$ | $K$ | R K F $\square$ GA HVVTVGGPFNAPK QFADDKAPFNNLKN ISQ LEE D K L T P E L N WK E R LE D M L A $\begin{array}{ll}\text { F } \\ \text { F } \\ \text { F }\end{array}$ $\begin{aligned} & \text { RFS V } \\ & \text { R } \square \text { R } \\ & \text { V G S A P D S WG VWF P D D }\end{aligned}$ R $\square \mathrm{RVGGSAPDSWGVWFPDDPQQVPWERFLDEV}$

ECFE
S Y WHFGQE
$K \square S A R W S L N Q Y \boxtimes R$

K Y P V $\begin{array}{lllllllll}\text { K K K K } & H & I & \text { F } & \text { D } & I & I & S \\ P & E & M & \text { I } & \text { E } & E & A & L & K\end{array}$

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 RVAAAGADAIEIILDGELSPE EARDHAAD AAKSAGFDAVECHWPYDTP RAAELECDTFQ TFSTNPRGW KSKTDSKEEANDLANNLDK DAAMLGFDGVEVLVSS DPASQD DDLLRRLSDY ETAKNGFDLIEILLPSNMEFDATT Y K KAGANICEVFMDTFSEYTPEFG A $\downarrow$ AG $\square G \square R D V Q L T H E F V N P G W P A A T \square A K D R L F N S A D S R$ RCARAGYRVMNFYDCTSFRSAFVTDDWRAWIEDURMLADQ $R \prod A E L G A G A V D L V A \square R G L C E H D C P D G E T G K L R R A A A T V A$ $A 亡 Q Q A G F D G I E I F E Q D F L A S D F T P A E V G R M V R$ AAAAAGFDAVEVFEPDLV ASPLAPAQVRALAGD HGDDTTYEQUMDDMQRLGLAGEMGRKYPREDDVLKRELGK

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 NGVVLTSV VTSRGLIVSA LSCHSNPRLH PQKAALREEADVRLVTK $A G \square G I G S V D A \| I \quad Y A L L S K D Y N E R G E A F E K V K A$
 HGLEDS LFQPFRD G HQVTATTVEV VRPDPLKWNFTlG\|VPRAYRAARDDALKQ NGVEEIVVHAPY UINLGSYKDNTYQLAVDFLQQ HQLGLDF NPTCFSHPLSSDFTLSHPDEKVRRFWIDECQA
 HGVRLTV LGUKLDFNPTYFGHPDASGFTLSHADAAVREFWI RHGVA YGLDSSMCNAELSLEDGWGDTRFHS SGLAIPTM CHGNPDT IMLRDWWSASEEEYPTVFEDCLK

 YD $\quad$ RVES $\quad$ LFTSAFTRHGNPDSPDKAFAEECQETFKK HGIDVAVLQASGETVG DDNVAPA VVDGSVEQSUAEFK

 HHMPVTAVHSPCLVL TQRVWGKDP NNLDAVCS LNLPKEAH【PFYP YGVKVYSVHANLNYEPNLNNPTKRARDDAEV PY EGVGLDF NGTFFSHPMVKDNGGOMFKT
 LGGLKMLALNADTFSQAHGSFYNFCEKNDPEREFWETSVLR HGLEIT

LF QPFRDFEGLP

LF QPFRDPD
 QWK S VL
CHGNPL
$\mathrm{H} V$
F
S
S
P R GLSLDALNCNGNQLHPTDGQRQSSVVEKTDRDASELECS RGLMI SA FSCHGNPLSPDKEFAEVSHDTFVK HGIELAS FGLP RNMTLCALDN
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 N NLSLAMFSSG NVEVD HGLDSSMCNGAELGDEDGWAESANHD
 $A G V Q L T G L N F N A G D M P G G E R G L V S W$ PARSQEFRDNLEV

 A GMETTELSTHLQGQLVAVHPAYNELD DGFAEWATQQLKY RGLVLENII LGLSV DLYQPFRDFEAVPPPVFEANLRRAER $T G V P$ E ETV CFSAQRKYP LGGKKWENE AKELLQK TNFTMIGLNTRRGDLGTGENG DSALPGREDDAKDADDE NHLELAALGTGPMVSEDQLR FTSLDGTDRNEAMTRAKA KGIEISGTGVR NNFANPDPEKRAADVKHVKE YKLKPVIVHAAY $\quad \square N \square A S P K D E L W E K S I S A L K S$
 PSVWDATWEHVSQ TRI QVAAVGANNFSHP $T G L Q V A S V V A P T L L F M P R V L T K D H W$
 $E G L G V P A V S L Y T D F A A Q D E \quad R Q A L K D V Q G$ Y GLEVNALASYLTCTDD QKVRLDFNPSYFSHPNAADFTLAHADSGDRQFWI DHGIA EKI QNVLIMVDDEGD S GLRVSSLCRGGFFTVPEGPERRAADDENRRA TEE RAMPVLVHAPYL TG LDAMLGINTVKGPRESDFGLAAQPGREAEARRAIDEAFD YA QPILAVHAPTLLLTQQ YDMPVLSVHAPCLLI SQRVWGANP VWGKA WN K ITHR $F E G V D A A Q L A R N L E R A R R$
$F M P Y R G S E S E W R A E Q A K L D$ $\square G L A D \quad D G Y Q P F R D F E A V P P A V L A G S L R R A E H$ $Y G L T C A M G N G A S D G D T K G W N$ D YGLVVSELSTHLEGHPAHDVAFDGFAPPEVRAWAIESVKK Y HLKKTLINPGNWDDGFRGLAS LKKAKKEFRK
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140 ANLFGETD ${ }^{150}$ 150

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 VADRAAELGAPHLVVGGGAQRYSGDQEDDYEK LITADA QALAYAAMTRPRFVNVLPGRLADGLS RERALACLASN
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 TVRLANLLNVPVVNTFWPVAPWPNDYGDVLKWQWEELRPY SIEAAAAADARNCLAVVGQRQPTVP RHEQRSAD A A AYAREDGAKVHVMAGFAEGSD GVKRADLIKAKYMVLHP GSHTGSGVDGADDR KASA SKEMAETLGASTIVVHPA FRWQREYARDF ALDKTAQLETTFLGGVLHSGTGVFTGNPVTNQEKE\|IINV ALSNGAQLEAKSYTGHLHSGGGTRTKRRQYNGDKEKLGKR FAD SAELGAPGMTQFADFTYKDFDDPQRRAALLDVALEC SRYCGEKLGSQVVNNFWFPDGFKFDNPIDKKTPRLRLLKAK LIAECATVGAPLLILPGFEAGAESSSAGDVTTRLAQVVEG KCEVVRELGCDLLVVSSVHPGAVREDGELAAQLRALAEV H LFLKEMGSDVISTCLHFDPRRTPHEKEVEAGWRSLAEG $T V Q L A E L M E V P V V N C F W P V V P W P N E Y S D V L K W Q W E E L V P Y$ TVKLAEKLEVPVVNTFWPVAPWPNDYQEILDWQWEKVIPY KVCLMSGLPTDKTPNWWISAWPPETSEDLAWQWNEVLLPY TLKLAELLEVPVVNCFWPVAPWPNEYGDVLTWQWEELVPY TMELAGLLGVKKVIMWLTYYVSWPPVDKDTYQWEDVADPY WADASAALGCHSMRV GGLSYWTKLHGNSELEGWKNFSAES
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 TAALAAAGATGSAAVLVLVAGGLPAGSTDLIGARGRVADA ALVRAASVGARGVVVHTGSCVADGDHDRAMRQVREALLPL Y SAQMAHDVGAEVVVAHP

## PFRWQTGYA

ASFVN KFDLMHALGTDRLLVCSSVSPQTDADDALLTEQLGGALAEA PPLLASALGARRAGMWIMPGSDDSAYEENFAFHVTRFQPD KFALMERLGVTLLLVCSNVSPAAVDDDALA IIPAAAKAGLKNVITFSGNRDGM AAAASAK GGLRAHATWPYVYPWPPHNPALLEEAFAELARR SLRRGREGAKGVVVHTGSATAGRPREVALAQVRERMLPL AVRAAQDLDARTVVVHPPF ALQGTAALGAPGVR 1 NVPRYDGTSPY $\square P \square R E R S R A Q Y R E$ ELARCAQLGLTLLNFHP GSHLQQLSEEACLSRIAES EIRRTHAGGVKNIVLHPGAFTD

AEGVS R D R A M A C C L A A A




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$\overline{\mathrm{A}}$AlLS Y A A M T R P R F VVINVLA G R Q
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 LNAAGAMARAAGHGVRLA YEALAWGTHVADYRHAARVVAA
 WHKLVANGREFGUIDNFAL E DH
 $G N Q L V Y N V P T L L R$
$G G F V H T P Y T L L$

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L H T L G GVRA A
 LK E CMAYA E QK G V V F DGGI QN H


$L R E A A A A A A E K$ E A A D D V

M G E C L V A A E K A G V V L A A I E N H


 LDFATEYPAEQTLD AVECKDFGDGSESYVVG ASAAY L RKLSEYAATKNI NVLCE L A ELLEPDARAAGVTL A

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 LRLLAERAAEHGI R I AYEALDAWGAHVSDYHHAW IRRIMSLAEQHKVTDVMEL LDNK DNHKDYMCDHTKWGAA



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DVDHPGLP GII GLDTANLILYGKNPVDAVKILGPHDR
 LREETC LCKEVGS DKMKLLYD DYHMQIMEGDV

| $V \mathrm{R}$ |
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|  |

FYSSYADSRKKLFCLDMGHFHPTESVADKLSALLQFHDRLC

A


| L | D | $A$ | V | G |
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| I | C | $R$ | $E$ | V |
| N | S |  |  |  |

LRREVNS KSI KGNWD P



$\frac{1}{F} \quad$ NR $\square N A D N L A V H L D T F H T A M S G S D A M D M A R Q L G D$ RAL
 FYQNYAISRNKLWTIDAGHFH—PTEDVSDKFSAFFPFGKG LIDACSAFAWVGACWDFEHAD $\square M G Q S Q R E G D$ D $D R \square G D R G$
 A

[^4] LREAT
K L R E L $\mathrm{T}_{\mathrm{T}} \mathrm{S}$ $Y L D A$ G A P N $L R N A V G$ A
D $A$
D A
K A
$\square$ H S E S N A K K L L L L S F

AHYAlQ


LLDRVGA AD LS LLPPDAYHMNVEEACPAAALRAGGAE F EV $\square A A V N H P Y C G V L P D F G N F C W G S P C F E E Y D K Y D G \square S E M M$
 ADHPAVGLCLDSFHVLSRGSDLAALDRTI SVKRVDS PYLQVYPDVGNI SNATKDVVGDIKT G DIKKVN QPNLKLMFDCYHVQLMEGNIVGKLKSGMPY
 I I EQVDQSARLGVCIDDCHAFAACYNDSKDFDKLIGGDKL
$\qquad$


PGDRI


F Q Q $\lfloor$ YKPDASSPAMGMNVDTGNFV GGDPYPQFERLAPYAT I FLEDVGH PRVRTIFDGSNLHVNHVDQMSADEKLYHHDHL

 LAAEPFPASS VGVVVDTFHIWWDPQVLDQDARAGAAGRIG YLDVLDHHPRAKVCLDTCHLFAAGHDLADRFADGAGADRLD


 VREAGHPN LCEMVGS ERMKLLYDIYHMQ1MEGDV
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HHFHAC
HHVHAKDTR $\square Y$ WLFRSVGYGHGE AFWKDVVSTLR $\backslash V G Y D$ QHVHDKDQQDPFNF DPLGEGELDFPD【IA A $\backslash$ RESAYD HHFHAKDTПMLWRYTDPGHGTVEW NHVHGKDTEDLWRYT DPGHGTVEW SEVAVVLDRDGYK GHVQFAD GHVQFADAPYPGRGEPGSGQVDFEPV GFLRALQEDDYP SMHAKDGRWPTNPEQLGEGEVDFAKVFAG LRAAGYK GVVHTNDSKNPRKDRHAPTGSGDTGNRVVHHELLAGRPFT L
 GHFH TGECNRMVPGAGRMPWK GEISDALKEDHYS GHYHTAGSRPGRWDSDHVVDFNDDLKAVFLEDARGNALHR GHYHFAGVPGRHEDDDTQE GDHLDLRACRAIRDTGFQ YHFHAKDTYRAWYFRTVGYGHS QQTWVDMMSALKMNGYD NYCHGKDTE ILHDDTDPGQGEVDWGKVAVR VHVDINGVIETQEVTDVAVGCGDLKWWKEFFSVVRMMGYN EYIQLADAPGRNQ PGSGEVAYGHMLTR SGRELDGQ HHFHAKDTFDDQDNVNMYGLTDMQPWINMMSALRTYGYD QQTVLNSNHAPFTEENNRTGITKAEKVMECVKMQAGCKD EHVHFADAPGR NEPGTGELAMERI KGLTALDELGYD GHVQFASVPDRGAPDH GEVNYAWLFKQFDAL GVIHANDSSNKDRHQHTGQGEIGL SHVHVADGFGGQNDEHLIPGRGRQPVA ELLEHLANTGYG KHFHITESNRGM PGEGTVNWDELFEKALKATNFE NNVHLTDYDENGNDLRPGKGVVDYYDLFSR KLKGIGYD PIIHIKQSSMNKGGHWPFTAAYNKDGRIVPQKLLDAVRQG LFMHVSRPVRWDSDHVVIMDDALIRDT RATHVSDQTGDDNDHILPFGGIDWK AHVQLRDAVAGDDRRAGGHGG\｜DFARFF保 AESSGQ FFVQLADAPYWSRHFRNMPGEGDLDVAGFT RAVMATGYD GM DLLPLSHHRLFPGQGGFDLAGFHRAVL ASGYD AYDHDKDVRTIRRGVFTLPGTGDLDFEPIIGELLASRGYD HHFHAKDADPVNIHKHGITDMQTYDKMLDRAWQFRTVGY HHVHAKDTWHNWSY TTIGYGHGE SWWREFCYRLRLVGYD HHFHAKDT YIDDQNVNMYGLTDMQPWSDMMSALRTYGYD VHVHVNDASLPPNEAHPGDGQIDLQG FVAALEHDGYT HHVHGKDDPANRAWNYVAVGCGDLQWWKEFFSVVKMMGYE ELLPYAKGVSAKSYDFDAEGNETTVDYQKA GQLVKDSGYS LHYHVSDSGRS GUDGSGHDDYVAQYKVLQEDGFD KALHEKDNPKAYKFVELGQNGGTVIQN NIINVLSKQNYQ GHYHTAGNPGRHEPDDNE GHVQTADSPGRGA
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LHQDGYR RHIHDTDGSGSLTDEHLVPGRGRMPVA ETDQYLAKHDWS VQAKTYYGGGHYYDDDL KNYHWNDNWYLSKPTPIFQGDLDQK AFLKELMNRQYD DHVHTKNACWLKKGEDWASFSDGYADFPKFFNALKAVGYD LMMAVSRGVRWDSDHVVTYSDTELQSDMQEVVRGDYD ASYQVCDFLTPDPADMMGDGHVDFDSLTA AVGATGYA GAVHANDSMDRCRDRHQRDGAGHDGAA
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$V$ VI ADADVLEWSRHYRSFPGQGDFDLARFTARVIES GFT VHVHVDDAPAGVPRDELITGVIDDDG FMQALTHAGYD
 KAFHVKDAEYQPNGRSPGDGQVDFKGMFSK GYПQVAQVPNRGACDTR GEIDYHFIFDEDRSINPSWVI KLIHANDSKDVHKDRHANDGAGHDGED AFRALLRHPETD THVHLADGSGLPKDEHLVPGRGDQPCA ELLASLLVERDFT VGFHLNDAKSTFADRHHSDGEGNQGTPFRWDMQQSHFDN AVMHINDSKNAHKDRHTPTGSG WIGFEA NRUVNHEKDQ

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GTLS TIEHEDS LTSAREGLEKG $\square$ DVLDRA
S WLMVE LDN YDGDPAEAAK $\square$ S
GA 1 S $\square \mathrm{E}$ LEDHR
GWVTVELDAW EDPYQGALDAS
GWLGAE $\mathrm{Y} K P S G V T A D S L G W$
SVLSLEDF
GAV T I E RETSGPQQDEDVRQ
PWI GKDAKTQR PMYEAEDALLR
$R V L G L D F F D A S \square N R \square A A W V I G T R N M K K A L R A L L E P T D A \square R$
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GYI GQEF $\square P K R P D K L A S L Q Q G V E \square C$
GTVVMEPFV
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SWLS LELERDDLWQQDPLSVARLGLERM
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GPVSIEDEDHRYW
GPVSLE MEDLTMS $\square E A G \square A T$
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LDRTH $\square$ GLD F F D A T $\square$ NRVAA WVV
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GWAML E QDPANCPPYEFANRAL
YVVSIE HEDPLMS $\quad$ IEEGFTRAVRNL
S W $\square$ S
Y VV I E HEDPLMS IDE GFARAVQNL
GPLSLEVLHQ
GEVSLEMEDLTMSPEAGDRTSVEALKQT
GF 1 GVEYEGGRLSEEDGUKATRDLL $\square R \square G S A D A$
$G Y \vee F \bar{F} E$
GPVVFE DNPYKYS LK D $\square$ LE H
K WAV VE
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RYLSME
GYLP $\quad$ DE

$G W L T V E Y$ E GDDEQKLGAAGSLANLARDLE
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GYISLMEGKEDAATAVPKSLKLFRE
GFVSLE Y
CYVTFEDFSGKESSDEK LKNNLIF $\square$
GRVHFDAS $\square$ NR
GFI GVEYEGDRGDEPAG $\quad$ K ATKDLLLIDA KK $\square K$
GDVEVE $\square \mathrm{F} \square$ WA ADPVEVVERTVRAFER
GAFGAEYRPSGRTDATLKWMTA
GVVAVEVSTRKFEREELLRRS LDEARESF
GHVILE
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GPLS LEVFND IFRQAAAMRTAQDAM RSLIALEEQAGARL GFVAQEF $\square P A R E D K L A S L K Q G V D \square C N$
$G W A V L E W E C C L K D S D V G A R E G A E F \square Q H H \square \square P V A N R A$
GAEYLDAKP
G
G Q V V LE
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${ }^{10}$ S $V$ R WT YG ${ }^{20}$
S V A R WT Y G D

पS $ا$ EE LC $Q$
D GHGAGWPVERVID
P S VALE D S I Q
FSTLGVPGMP LP D D V R R

ADNFADRAR
$R \square S$ A C $\square W L$ F A A E D GHGAGWPVERVID DVFA
$\mathrm{E} F \mathrm{~A}$

FSTLGVPGVP $\square$ P EVLR


F DFETAAR


H PKGYWADEFP $R \square R \square G S A P D S W G V W F P D D P Q Q T P W R R F L D E V$
 RFAFSTLGLPQLPVAEVAR

F G $\square \mathrm{ST}$ T PEVVTEETLK SHLIPDEKMK
$P G L S \square E A F F R$
PFGGD $\quad \underset{K}{\text { K E K K K K }}$ P $\square \mathrm{DAF}$

E K $\mathrm{M} \|_{\mathrm{I}}^{\mathrm{I}}{ }_{\mathrm{N}}^{\top}$
HVSMS GTEMF $\square$ GSVK
DK LD
$K \square S \square A E W S L \quad F R P L F A G K L T H L D F T T$
QYSAC $\square W$ WFAEPGDR
 TGTYDAAG $\underset{\square}{\text { R }}$ HA A $\underset{A}{\mathrm{~V}} \underset{\mathrm{~S}}{\mathrm{Y}}$

S PKKEFK $\square$ SVA Q WCFAS Y
PLEEFLA
FD D MLA
P NVA
GAHVSAAGGVENAVY TFSGSTPDLTVAA $\begin{array}{r}\text { LEDRMA } \\ \text { LLEKF K } \\ \hline\end{array}$


S Y S Y WHFKGD
RF GP $\square \mathrm{AA} \square \mathrm{E}$
 QDFDEALK

A GMSLFELMD YF GAHVSAAGGVENAPA





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De wa Lime
TAEDGGYDGVEVMVTHNA WSQDARREKENCEK LAHAHGFQQVEILQFPYEL
पAVAHGYHGVEDRAHPEEPVHPGLSP KCVELGVEGVEMTGWSGAPHFRADELDKG LLRTKDREDEA AAKSAGFHAVECHFPFDEP I D AVQQSLE E
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VAARFGLELIEFILDYE DAAENPLLAEGGLESLRAAMES A DAGYE WI ELGPYGYLPTDP ARLTETAA TVKEAGLHAVEYPGNSHCDLDGLLENEEARNEYLKKVQD VAAEAGYDGI E WMRDLD EAYTASGGSDAE LKDYAAS LARDGGYQGVELRCHPEEP VHTGLGDGERADVVEEFAA $A \emptyset A R A G F D G V E F E N D L L S F D G S P$ F
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$N$ VNQVRNDAEK LVKRLEFNKVELRNDM PSGSVTDDL NYNQVRNLAEK YAKSVGVDYVEVSGMSAFDDDQRNFEIKERDKWAKKNADE


RAKEYGYDGDEDDGKR PHGNP DDWATARCHDLRARAEG A $\square$ ANAGFDGVEIFENDFDTNDLSPD EA LSYNANCLMDYTGAPQNT TRKS $\square D A R \square K E A E E L M K E$ A A A A A GFDGVE IFENDLIASPWSPR RLRDRCTE
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$D P \vee T Q E G G A L R A L S E L$
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 TAEDLGYDGVEVMVTH NSWSQDGLLLNRLAQK


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 Y A R D LA A EA V QVVFVA NPRGWATPA GNPRQD E EFRAACAA EALGYDANTFMLYTGAPQNTRRSEMNQE $\square A A G K K L M K E$
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$R A A V F G F P T F Q F F S K N Q M R W S S P P$

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YG\｜DSSMCNGAE ${ }^{90}$ NNDDGF 100 PEFHDEGEQR 110
120




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SCHSNPDSPD
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AGVEL LTLAS
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AGIKI WSIHM

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EGVSAYVHAPYロ AGVQLSGLNFNAGDMPGG DRGLVSHTAETVTRSVASLRH TSGNPW HRMP\｜S I HAPTLLFTQQVWGSAWNLDPU VSMTRQ
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RGMTLDVLNCSANPHPY VVLGNTDKPQNFGFAIEFLRS LALLKMVLINPNYTGGERGFAAVPGLEDDURSFELAEALGG RG AGVQLTGLNFHAGDMPGG DRGLVSW PERSQDFRDNLDV YGI QLASKF 1 GVFF
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 TIQLASLMNVPVVNCFWPVVAWPNEYSDVLKWQWEELIPY EMKMLAELGCPAV AAPPYGDVDGAGPEHFAAH LLALARDLGAHVRVFP RGGDQPPVEADPTA ABAR KFELMEQLGTDFLLVCSNVGAEGVAPSQAMDDMDRVVAD SVRAAEQLGAQTVVVHPPF ACNAARELGAKYYVFHGERNNKQVV KDAQWTAKV CYEAGLELGAKKVVFHSGMNPYAY AQGVGARALVLCPGNDGTVVPPEV YLGLNERDLRKA TVEA KVELLEVLMEPQLVLFHPSYYSVAYLGLNERDLRKAQLIKS SCARDCRAKALVLVPVNDG SGREDGARQANLRQA HMNFLHAMGAKVI GCSEQSKSEEKPYFTDTE WQRVAEG LIRMTADFGAPTLRVWWGVTRHPQLATYDDEETWDWCREA KVERTDKIGAGQVVHPGSAVGLVGDVQAVKWIAEG
 WVEAANFLGCHSIRINAYTAVPFSQDAKLEKEADDVCSST SVKVAQRLAAPILI YYABAGDDLPGRSRQEQRLALTAA AVDVLAELGHLCGI IYSAMRKYMEPATP RG SI DLALEVGASTVVLHPPGGNERTGFPRGWQREYAAAF A1 GKVADAGYTNL GCFSGNRRGM TlRLASLMNVPVVNGFWPVLPWPTEYGDNYHYQWEELIPY VCRAGKALGAKTYTFHGMRKV EVDRTEAIGAKQIVLHP GGSHVGEGAD KGDAKI ADC
 AAAEAADLGATNIVVMPSGIAVPYMK RQPQLDUVATA ALLHDAKRYGASSVLVVPGTVDERMTYADAYTRTQDELRKA SVRAATELGAPTVVLHPPF MNQLGTDLMLVCSSVHPAAMGGMDRMAQDFHELGELAARF CDEMAQELECPKVRIMSFRREMILFGKGGAEHWWEKLLELD ELQRCQDIGTSLVGHPGEGHVKAGE RLALCERFADPTLLLVADFARAPEAS SLRRGRADGARGVVVHTGSARGGRTREVALAQVLARAVVSL N AVVAA GERTGCKAFNALYGNRRPEHTPEAQDELAVRN KLDLAAQLGVSLVVGG SADLAREVGAEIVVAHPPF C IELAYKMGDPCMRLINTGRWGT ACDRAHELGSDKIRGFSFWRVAEP AKLSERTAGE AVLYAKALGCPRIHGMAGRVPQGADPAAVRSEMETVFLEN WIDVAVKLGAPVIRIFAGPIPAGY ENKRAEVEAYMAAS EMHRCEQGDDRLNFHP GSGLGKDTEEESLDRDAES

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UniRef90- M3А9Z4 UniRef90-A0A024YMJ8 UniRef90-UPIOOO2888AF8 UniRef90-LOEEZ6 UniRef90-UPI0003724109 UniRef90-T2L695 UniRef90-C1DEK5 UniRef90-X8DLU4 UniRef90_R7RV67 UniRef90-R5HTN1 1 UniRef90-C6L113 UniRef90-A0A023SWS3 UniRef90-UPI00041AFD86 UniRef90-LOLXL3 UniRet90_UPIOOO42A40C0 UniRef90_A1JSK UniRef90_LODQT7 UniRef90-UPIO003B40375 UniRef90-UPI00047DF8F0 UniRet90_H5X123 UniRef90-D8NUN5 UniRef90-UPIOOO4049073 UniRef90-UPI0003B610FB UniRef90-UPIO0047D7B94 UniRef90-W9GFH7 UniRef90-Q7CVR7 UniRef90-UPIO00255ACA4 UniRef90-SONNK5 UniRef90-B1B940
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 VGRTADVAAQAGTKVRLGVVPLNRIDHINYFVLESTAREGLD VDGVASREADSGLRLAVENMY PWRTARRDMLAYARQHWDP LA QLMPDAEKHGVVLQMGELFNQDNHPDYMCDSSLWGVE


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DATD

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$\bar{V} N L H D N D R N K E N S C L V P G K G D D D Y S K L F N K \quad L R G L N Y K$ $K V L H V N D S K N K D R H E N I G F G Y D G F D P V F E N V P K D L E T P Y V$ AMAHAKDRKADGSFATAGAGDVDFPDFFAR D A A A VGF D





 | $F$ | $H$ | $H$ | $A$ | $K$ | $D$ | $A$ | $H$ | $T$ | $Y$ | $R$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

FHVQVCDPRELMT DSDRVPGE GDFRLEPV $\square R R L N E \square G Y A$ KLI HANDSK DV HK DR HENDGA GH D
QIADAPGR NEPGTGEGPLQQWIERSREL G Y S HVHLKDSFCKFKDWHFTTGEAGGDDFLQVRYILEDHNFE RHVHLT DGTANGKDEHLLPGDGDQPVA A ALEFLGETGWD


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 A Al HLSDN

E P GRGDMDFPALF
TA A E N S GYS
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Y HVHAKDCR $\quad$ NK K N R A L D LI EVVQPFWAPAAERAW
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G WLC WE Y
GHFSLE
KYVSI E F E G I E Q T LT G I E I GLENLKRF I
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GALGLEYRP
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ERFN DMPVILETPDES $\square$ WAEE $\square K L L R S F E$
GAVCDE
GLLIAAEYRPKNQSDQSFAW
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GELTSE
FDD DPMVLET TDDTDWA
$G P V I M Q A F \quad R D D E G L V F R Q L A W L R E K A$
Y VV S
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GPLSLEDF
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QGRTWT DECMKKEDVQACDES LYASDFC
G ITTTLESM NHVHPA I ASALA $\square$ WH
GI Y A FEPF
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GYLSLE I
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GWI GCEYRPRAGTSEGLGW
GALGLELTPSTTDTAAALTH
G W
GQVVLE
$G P L S L D F N D Q F R P R L V A L D G H R S L I D L Q D R V R R A E P A L T$ GVVSFESVHEQGSFEGGFLRSVEAFKRIF
G SLS Y E HEDVTMSRMDGVEKVAEFM
GPVS $\square E \square M N P \square L W S L K A T Q V T E \square G M A A D G R L L E P A A$
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GPYSLEDEGDEGEPDPSLEEHHNRVKQSVVY LQE
GA I CVEVGTRKAQREEMLGYCLEYARNHLAVGIERAAA
GYiSl E F
ETMSLEFKAHGLTHLETTKRS LQGMLTAM GFVGCEYRPQGDTVEGLSWDH
GYLP
G $\square P M V L E T P S D T \square D A D G K K V E D K G \square W A R E \square K M L E S \square V G M D$ VDTCTDECSTQEAVLASFYGAKNDFE GTFS FEPFS PRVHTLD

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VLENFSSSVPGMQQADS $\square$ WQ

GWVSAEY $\square P K R T E E G \square D W F R Q A$
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R D Q

R D K
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30

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QVADWGYKY TEQSPHP DNPFYKHPLFSEDCEREYRKALKE LARVLGVEGI DVGY FYRSALDKARLLKTPEAYGEE
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D $\square$ QEVGFEGVELGGRF
PRDPAELKALLGR




UniRef90_G7W7J6
UniRef90-D3P474 UniRef90_S7UUF3 UniRef90-G7GU81 UniRef90-A0A023X344 UniRef90-W1N6B3 UniRef90-H3K8Z5 UniRef90_UPI00047C54AE UniRef90-K7S9C4
UniRef90- U2D7A1
UniRef90 K6X3H7
UniRef90-R5P7S9
UniRef90_UPIOO0364789D
UniRef90_UPI0004663E00

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UniRef90_G7W7J6
UniRef90-D3P474 UniRef90-S7UUF3 UniRef90-G7GU81 UniRef90-A0A023X344 UniRef90-W1N6B3 UniRef90-H3K8Z5 UniRef90-UPI00047C54AE UniRef90-K7S9C4
UniRef90-U2D7A1 UniRef90-K6X3H7
UniRef90-R5P7S9 UniRef90_UPIO00364789D UniRef90_UPI0004663E00 190 AQGlGRLLETGAPRNLLAVE TLDYPFAWAAP FDDIVGELED DSGVAVAVENMFPMRADRLFGAGERSARR
 ME ELGPILIEREG MRVEDQSHP HHHLGSDFCESLNETCD

 LETICDMAQK YNLLVNLEFMAFAN VRTLEESLV FDDIVGELED DSGVAAVENMFPMRADRDFGAGDRSAQR NAVYWSEKLLKYPDI QI YMEN LQKLSTYAATKNDNVLCE | $M F D D T P E L L A G$ |
| :--- |
| $G W L S S D A E K L M$ |




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UniRef90_G7W7J6
UniRef90-D3P474 UniRef90_S7UUF3 UniRef90-G7GU81 UniRef90-A0A023X344 UniRef90-W1N6B3 UniRef90-H3K8Z5 UniRef90_UPI00047C54AE UniRef90_K7S9C4
UniRef90-U2D7A1
UniRef90 K6X3H7
UniRef90-R5P7S9
UniRef90_UPIO00364789D
UniRef90_UPI0004663E00

250260
 FFVQLA A KK DSMDHFRNFPGQGQLPVQGFVDAVLAS DYR $F F V Q L A D A P K L S M D H F R N F P G Q G Q L P V Q G F V D A V L A S G Y R$
$\square$
$\square$ $\square H L H V R F T R D G A G R D H V G L E E M P P E H F A A V M A D L K D$ K THLHLADGSGAAHDEHLLPGDGTQPCATDCRRQLAASDFD AVIHLNDGSNRDGHARLGEGRDPPEALDEF LREVRG
QHVHCKDMRFSVRDTVPGDGDUVFLPT FADTFNGRADVTIHQHLAMGEGDVDFAGD, FETLRGMDFA GHAHLRQARPGALQTKLEEGTLNFPAMFSTF LRDAGFD HAVHVCDGDPVPAAE DPDQGVGGS DPMQEWVDAVKATGYD GFVHLCDGPAWDPPDDHPDMAGVARSARLYVGE
THLHLADGDGAATDEHLLPGDGGQPCAEVCRR LAASDFD
 A HVHCKDVRNA TFGMFTVPGDGGLDYAQVMQELKK $\square G Y S$

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UniRef90_G7W7J6
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UniRef90-U2D7A1
UniRef90-K6X3H7
UniRef90-R5P7S9
UniRef90_UPIO00364789D
UniRef90_UPI0004663E00

GCLTLEAYPTVQERED SSALSFDEKAYSRAAKVRDLIL GPLSLEDFNDEFRAAPARDTALDGLRSLIHAEAEA GVVSLEVFSHRH
GAVVLE
EQDPKVAHP $\square$ TYAR $\square$ GHHN $\square R S \square A E Q A$
GWLACEYVHQGYFD
GWYASE IVFCDKANEFDF LEVA



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[^0]:    

[^1]:    80

[^2]:    60

[^3]:    

[^4]:    

