## QUERY

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 SNRAVAVLRGDAGVTGTVWFSQDKESDPCVIKGEIKGLSP SVKAVCVLKGSEKTTGTVYFTQAGPNQPVVVTGEITGLEQ
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VKAVCVLKGDSPVTGTVHFSQEGECGPVCITGELAGLTQ S s
MKAVCVLRGDSEVKGTVKF
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VKAVCVLLPNGDVKGTVHFEQKEGDDSCRIHGEVTGLTP TKLLVAVLKGDGAVKGTVVFT DDGAATKVEGTIEGLAP KAVAIISGDPNVKGSLLFIQYPNGA THVKGKIAGLSP VRAVCVLAGSGDVKGVVHFQQQDEGPVTVEGKIYGLTD KAVAVLKGTSNVEGVVILTQEADGPTTVNARITGLTP KAVCVLNGD VSGTVFFDQKDDKAPVVVTGEVKGLSK KAVAVFTPDKKVGGTITFDQESENGPTEIDDKIEGLAP ATKAVCVLKGDGPVHGTI HFEQQAGNGPVVVKGRI AGLNE SKAVAVLKGE KVNGVIKFTQESSSSPVSIIDDEIHGLEK KAVCVLNGE VKGTIFFEQSVESDPVKVTGTVTGLKP SLKAVCVLQGE AVKGVVRFTQDGKDAPVSVEYEVTGLKE VKAVAVLKGDSPVTGVITFTQEKEGAPVTVSGDIKNLAN SNRAVAVVRGDGINGTI WFTQDRETDPCLIQGVIQGLPP MKAVCVMTGTAGVKGVVKFTQETDNGPVHVHAEFSGLKA STRAVAELSGPSGVTGTITFKQDGNKPVSIEGKI MGLAS
 A AKAVCVLTGDKKVKGVVNFSQQADGSPCKI TGELTGLAA KAVVVLNGAADVKGVVQFTQEGDG PTTVTGKISGLSP AAVSVMRGDGPVKGVVHFSQDANGPTKIFGEITGLTP VKASVILSGTAGVSGLVHFEQDSENDPTSISYE:KGNSP VKAI AVLKGDAGVSGVVHFEQEADAAVTTI SWNI TGFEP SVTAVCVLKGDAAVTGTVNFKQ
 VKAVAVVRGDSKVQGTVHFEQESESAPTTISWEAAGLK
SNRAVAVLRGD
 KAVAVLKGS

VDGVVHLEQDGDG
$V N A V A V L K G N G V S G V V K F S Q A S$
$M N A S C V L N P D G D K G V I T P T Q E Q$ RAVAVLKADGVQGTI WFTQ RAVAVLKADGGVGGTHFTQ EGASVVKVTGEVQGLAP RAVALIA A G K

NGDGCLQFTDSG AAVAMMGQPGAVQGVVFFEQQAAECPVKVTGEVTGLSK RGVCCLVGDNEVKGVI HFTQQAPDGPCTLRGRI TGGLTE KAVCVMK AI AYVSGPS
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 GEHGFHVHEFGDNTQGCTSAGPHFNPDRKTHGGPQDEERH GLHGFHVHQYGDSTNGCDSAGPHFNPFNKTHGGPKDEVRH GLHGFHVHEFGDNTNGCTSAGPHFNPLGKEHGAPTDTNRH GKHGFHVHEFGDNTNGCTSAGAHFNPNGKNHGGPQDEERH GLHGFHVHAFGDNTNGC $\quad$ GSAGPHFNPHKKTHGGPDDEDRH GQHGFHVHEFGDNTNGCTSAGPHFNPGKKDHGGPDDEVRH AQRGFHIHQFGDNTNGCTSAGPHYNPFSKNHGAPSDVDRH GLDGFHVHVYGDSTNGCVTAGPHDNPFNKTHGGPQDDNRH GLHGFHVHEFGDNTNGCISAGPHFNPFNCDHAGPTDVQRH GKHGFHVHEFGDNTTGCTSAGPHFNPEGKTHGGPQDEDRH GKHGFHVHEFGDNTNGCTSAGAHFNPSKQEHAGPEDASRH GK H GFHVHAFGDTTNGCVSAGPHFNPTGVDHGAPEDPVRH GRHGFHIHEFGDNTNGCMSSGPHFNPFGKTHGAPNDDVRH GKHGFHVHAFGDNTNGCVSAGPHFNPHNKQHGAPDDENRH GLHGFHVHEFGDNTNGCTSAGAHFNPDNKEHGAPTDETRH GKHGFHIHEFGDTTNGCTSAGSHFNPAKKNHGGPQDAERH GKHGFHIHQFGDYTNGCVSAGAHFNPKNKSHGGPDDQERH SQRGFHIHASGDLSNGCLSAGPHFNPFSRTHGAPTDKNRH GLDGFHVHEFGDNTNGCTSAGAHFNPHSKEHGAPEDENRH GEHGFHIHELGDNTNGC $\square$ SAGGHYNPFSKTHGGPTSDDRH GKHGFHIHEKGDDTDGCASTGGHYNPDKVSHGAPNDQVRH GLHGFHVHEFGDNTNGCTSAGAHFNPDGKDHGGPDSDIRH GKHGFHVHEWGDNSMGCTSAGAHYNPFGKTHGGPTDTVRH GKHGFHVHEFGDQTQGCUSAGAHFNPFKKNHGAPDASERH GRHGFHVHQFGDGTNGCTSAGPHFNPRGKDHGGPTDEERH GKHGFHIHEFGDNTNGCDSAGPHFNPAGKTHGAPEDEERH GLHGFHVHAFGDTTNGCMSTGPHYNPWKKDHGAPTDEERH GPHGFHLHQYGDTTNGCVSTGAHFNPNNLTHGAPEDEIRH GKHGFHIHEFGDNTNGCTSAGPHFNPQKQDHGAPDAAIRH GEHGFHIHEFGDNTNGCTSAGPHFNPFGKTHGAPKDDDRH GQHGFHVHEFGDNTKGCTSAGPHFNPLSKKHGGPKDEERH GDHGFHIHEFGDNTNGCMSTGAHFNPHGKTHGAPTADERH GDHGFHVHQFGDTTNGCDSAGPHFNPHKKNHGAPTDDERH AERGFHVHEFGDNTNGCTSAGPHFNPHGKNHGAPSDSERH GHRGFHVHQYGDLSRGC $\square$ SAGPHFNPFNKTHGGPMDRNRH GKHGFHVHEFGDTTNGCTSAGAHFNPTKQEHGAPEDS $\square R H$ NERGFHIHQFGDNTNGCTSAGPHFNPFGKGHGSPSDDDRH GPHGMHI YEMPF $\square$ GGDCVSAGDHYNPQKTEHGGKHDWNRH GKHGFHIHEFGDNTDGCTSAGPHFDPFKKTHGAPEDEERH GKHGFHIHQYGDHTNGCTSTGGHFNPQNKEHGAPDVSERH GKHGFHVHEFGDNTNGCTSAGAHFNPFNRDHGGPDAAVRH GLHGFHVHALGDTTNGCMSTGPHFNPLGKEHGAPTDDNRH GKHGFHVHEFGDNTNGCMSAGGHYNPFLKSHGGPGDSLRH N $\square$ RGFHIHEFGDLSNGCTSAGTHFNPFNKTHGDLLDDNRH SQRGFHIHQLGDLSDGCTSTGSHFNPYGNTHGAPADEVRH NEHGFHIHEFGDVTNGCTSSGSHFNPFKKTHGSPEDENRH GKHGFHVHQYGDNTNGCTSAGAHFNPSGKTHGAPGDEERH GKHGFHVHAYGDTTNGCDSAGPHFNPTGVDHGGPSDSVRH GLHGFHVHALGDTTNGCLSTGAHFNPNNNEHGAPEDENRH NLRGFHIHQFGDNTNGCTSAGPHFNPFGKQHGAPEDDERH GKHGLHIHEFGDFSRGCLSTGPHYNPDGNDHGAPEDENRH GLHGFHVHQYGDSTNGCISAGPHFNPDGKTHGGPDSEVRH GKHGFHLHEFGDTTNGCLSTGAHFNPENKTHGGPNDSVRH GKHGFHIHEFGDNTNGCUSAGPHYNPHGKTHGAPEAEVRH GSHGFHIHEFGDNSNGCTSAGPHFNPGGKTHGAPGDEERH GKHGFHVHQYGDTTNGCVSAGAHFNPTNKTHGGPSDEERH GNHGFHIHVYGDNTNGCVSAGPHFNPFKKEHGGPSDENRH GFHGFHIHSFGDTTNGCNSTGPHFNPLNRVHGPPDEEERH GPHGLHIHQFGDDTQNCASCGDHFNPDGMPHGGPKDTHRH GKHGFHI HEFGDNTNGCTSAGAHYNPHGKMHGAPEDKDRH NLHAFHI HE LGGD LSNGCTSLDASHYNPF GETHGGPDACSRH
 GKHGFHVHEKGDLSNGCASTGAHYNPDKVDHGGPDHEVRH GLH GLH L H Q F GNLSDNCNAAGPHFNPYNKDHGGLDDHVRH GLHGFHIHQYGDTTNGCISAGPHFNPYNKTHGDRTDEIRH GKHGFHVHVFGDTTNGCVSAGSHFNPFNKTHGSPCDTDRH GPH G L HV H TLG DLT LDCLSCGEHYNPFGRQHGSPEDSDRH $N L R G F H I H Q F G D N T N G C T S A G P H F N P E G K F H G D R L D A S R H$ GKHGFHVHEKGDLTNGCASTGGHFNPDKMDHGAPGDEVRH AERGMHVHAFGDNTNGCTSAGPHYNPHGKTHGAPSDDERH GLHGFHVHEF GDTTNGCMSTGPHVNPTGEDHGDREDPVRH NLRGFHVHAFGDNTNGCTSAGPHFNPFTKTHGAPEDDERH NERGFHIHQFGDNTNGCTSAGPHFNPFGKTHGSPTDTERH A QRGMHIHQFGDNTNGCTSAGPHFNPASKKHGGPDSSERH NKRGFHVHTFGDLS GGCNSTGTHFNPFNQTHGGPNDPVRH N
ALRGFHIHEF R G
 GKHGFHVHEYGDLSDGCASTGAHYNPAGMSHGGPTDRKRH GLHGFHI HALGDTTNGCNSTGPHFNPLKKDHGAPSDNERH $G L H G L H V H E F G D V T N S C D S C G D H F N P N G E C H G G P Q D A H R H$

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UniRef90-H3B131
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## G9

90 100 S V I S LS GD H C
$D H C D I G R T L V V H$

| V |
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 $V$ G D L G N V CAA D E K G I A A K L L I K K D S

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$G R T V \vee V$ | G R | $T$ | $V$ | $V$ | $H$ |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $R$ | $T$ | $I$ | $V$ | $I$ | $H$ | GRTMVI H GRTVVI H GR T L | $G$ | $R$ | $T$ | $M$ | $V$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $R$ | $S$ | $L$ | $V$ | $V$ |
| $H$ |  |  |  |  |  | GR S V V I H $G R T M V V H$ | $G$ | $R$ | $T$ | $M$ | $V$ | 1 |
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| $G$ | $H$ |  |  |  |  |
| $G$ | $L$ | $L$ | $V$ | $V$ | $H$ | GRTMVVH | $G$ | $R$ | $C$ | $M$ | $V$ | $V$ | $H$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $R$ | $T$ | $M$ | $V$ | $V$ | $H$ | V GRAMVV H I GRTLVVH | $G$ | $R$ | $T$ | $M$ | $V$ | $I$ | $H$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $R$ | $T$ | $L$ | $V$ | $V$ | $H$ | V GRAAVV H $\begin{array}{llllll}\mathrm{I} & R & S & L & V & V \\ \mathrm{G} & \mathrm{H} \\ \mathrm{G} & \mathrm{A} & \mathrm{V} & \mathrm{V} & \mathrm{V} & \mathrm{H}\end{array}$ | $G$ | $R$ | $A$ | $V$ | $V$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $H$ |  |  |  |  |
| $G$ | $R$ | $V$ | $V$ | $V$ | $H$ | | S | I | $\mathrm{G} R$ | T | $\vee$ | $V$ | $V$ | $H$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $I$ | $G$ | $R$ | $A$ | $I$ | $V$ | 1 |
| $H$ |  |  |  |  |  |  |  | | $G$ | $R$ | $A$ | $l$ | $V$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $H$ |  |  |  |  |
| $G$ | $T$ | $L$ | $V$ | $V$ | $H$ | G R T M V V H | $G$ | $R$ | $C$ | $M$ | $V$ | $V$ | $H$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $R$ | $A$ | $I$ | $V$ | $V$ | $H$ |
| $G$ | $R$ | $S$ | $V$ | $V$ | 1 | $H$ | GR S V V I | G R A | $V$ | $V$ | $V$ | $H$ |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $R$ | $C$ | $A$ | $V$ | $V$ |
| $H$ |  |  |  |  |  | | $G$ | $R$ | $C$ | $A$ | $V$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $H$ | $H$ | $L$ | $V$ | $V$ |
| $H$ |  |  |  |  |  | GRTTLVVH | G | $R$ | $T$ | $I$ | $V$ | $I$ | $H$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $R$ | $T$ | $M$ | $V$ | $V$ | $H$ | G R T M | $V$ | $V$ | $V$ | $G$ | $R$ | $P$ | $L$ | $V$ | $V$ | $H$ |
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|  |  |  | $G$ | $R$ | $L$ | $V$ | $V$ | $H$ |  | $\begin{array}{lllll}G & R & T & 1 & V \\ G & V & H \\ G & R & A & V & V \\ G & V & H\end{array}$ | S | $V$ | $G$ | $R$ | $A$ | $V$ | $V$ | $V$ | $H$ |
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| $S$ | $H$ | $G$ | $R$ | $M$ | $V$ | 1 | $H$ |  |
| $S$ | $V$ | $G$ | $R$ | $V$ | $V$ | $T$ | $H$ |  | | L | $\mathrm{G} R$ | T | V | V | T | H |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| V | $\mathrm{N} R$ | T | I | G | I | S | I GRSLVVH | $V$ | $G$ | $R$ | $A$ | $V$ | $V$ | $V$ | $H$ |
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V GRAVVV H

 \begin{tabular}{lllll|l}
$G$ \& $R$ \& $A$ \& $V$ \& $V$ \& <br>
$G$ \& $H$ <br>
$G$ \& $R$ \& $V$ \& $V$ \& $V$ \& $H$

 

$L$ \& $G R$ \& $T$ \& $V$ \& $V$ \& $V$ <br>
\hline \& $H$ <br>
$G$ \& $R$ \& $M$ \& $M$ \& $I$ \& $H$

 

$G$ \& $R$ \& $T$ \& $M$ \& $V$ \& $I$ <br>
$G$ \& $R$ \& $H$ \& $M$ \& $V$ \& $V$ <br>
$H$

 

$G$ \& $R$ \& $A$ \& $M$ <br>
$G$ \& $V$ \& $V$ \& $H$ <br>
$G$ \& $V$ \& $V$ \& $V$ <br>
$H$

 

$L$ \& $G R$ \& $T$ \& $V$ \& $V$ \& $H$ <br>
$I$ \& $G$ \& $R$ \& $T$ \& $L$ \& $S$ <br>
$V$ \& $V$ \& $T$
\end{tabular} $\vee \vee G$ $\begin{array}{ll}V & 1 \\ 1 & 1 \\ 1 & 1\end{array}$


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$\qquad$ APGPVFMQLFFVQESIEH

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GN

## A R

RHAICILYPDSNVQGLVSF
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AI AVLSQSDTVRGNITF
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NNVTGNLLIVQDGKNGPVII
KAVAVLAGTGVSGVVSFV EDGEGTTVSGKI TGGLVA SMRGVAILNGNETVSGVVWITQRQDRDHVTIEGMI TGLKP MKATCILMGSGVQGSVYFDQSAQSDAVHISGQUKGLPK KAICLVNPEKNAKGIVHFEQENQYAKTHIFGNFTNLSK RAIVKLSSPDDVHGNITLTQLE GRVHVEGSTYGLPP AAVALLGGPGPVQGVVRFLQLTPERCLI EGTI DGLQP VKAVATVRGDSTVFGTI TFEQLDESSPTTISWNLRGDAN AVAFLTGPAKPTGNVTFTQNACGENVHVRVYLTGIAP AI AILAPGYDVTGAVTFYQKDLHSKTQITARLKNLNP AI AVLHSDGNINGTIHFQQ DKNSTTISGEIKGLTP AVCVLLGE TVKGVLHFDQQ GDVINVKGEVTGLTP AAVAILGGPGPVQGVVRFLQLSPERCLIEGTIDGLEP VYAI CLLKNENTVSAVVRLLVEKFENNKTHLKATFKGLPA MKAICVF DGDVHGQVYFNQNTPDDALRISGYLINLPR RGVAD $\square R G D N I T G S I S F E Q E E N D H$ VII RGKILGLPP TGVSGVSGTVIFE WDETEEVL: KGTVGGLSP MKA 1 VLS VKAVCVLRSDPNVSGSVTFEQDSESADTKVTWDITGHAN AAVAMLGGRADVQGVVRFSQVSESSKISVTAKVVGMPA ARVFLAGKSPVSGVLDLTESAAAGGVRIVGRITGLTP RAVVTI SNGEINGK VFEQASLKSPVKIRGTIYGLEA
 VRGLVRFLQLS $P G E V V G V V D F Y Q$ ENAGVRVNGSINGLTA $K A \backslash V L K S G E U D G K \bigsqcup T F T Q T A$ VKAVAVLN

VSGSLHFLHDTSGP
 VNAVCILTGSAGVSGLVRLTQESDSEKSE:MKELEGLSA KAVVTLYGDDTVYGTLVLSQSNEDAKTTVAGSLKGLSA KAVAVLRGDSGVSGVVKFSQENESAPTII EYEIQHVAN KAVAVI GDGRAQGNVTGTQSACNEPCHI ETSLVGLTP
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GLHGFHI HAFGDTSNGCLSTGPHFNPLNKDHGAPSDQHRH NEHGFHVHSAGDLTDGCTSACAHFNPFGTVHGGPDSKVRH GLHGLHVHEFGDISGGCNSCGDHFNPDGECHGGPQDEHRH GLHGFHNHQYGDMTNGCDSAGAHFNPFGKTHSGPTDQVKH NERGFHVHEFGDVTNGCTSAGAHFNPFNKTHGHPNSEDRH GLHGFHVHQFGNLTNGCVTAGEHYNPHKKTHAGPKDENRH GLHGFHIHALGDTTNGCNSTGPHFNPFKKDHGAPSDGERH GKHGFHVHALGDTTNGCMSTGPHFNPKGLEHGAPEDEVRH GDHGFHIHQFGDYTSGCVSAGSHFNPAGKNHGGPKDGERH SKRGFHVHQAGDLTNGCLSAASHFNPFGANHGAPTDSERH G LH GFHIHAFGDTTNGCNSTGPHFNPHNKSHGAPDDDERH NR G H H D R GDLTTQGCTSTGSHFNPYNMTHGAPNDTTRH $N$ LH G V Hi HEF G DLSNGCATAGPHFNPFEQEHGGPDDEKRH GKHGFHLHEFGDTTNGCMSTGSHFNPKKLTHGAPEDDVRH $N L R G F H V H Q L G D L T N G C V T A G P H F N P F A K T H G A P T A E T R H$ GKHGFHIHEYGDLTNGCTSSGGHFNPFKQ】HGAPEDDIRH NKRGFHVHQWGDLTKGCTSAGPHFNPFDQTHGAPSDKVRH GKHGFHVHEFGNLSGGCASTGSHFNPYKKSHGAPTDAERH A ERGFHIHAFGDNSNGCVSAGPHFNPHNKKHGGPEGSERH GLH G F H I H A L G D T T N G C N S T GP H F N P L N K V H G S P L D A E R H GLHGFHVHEKGDLSDGCTSAGAHFNPENVTHGAPEDTVRH GEHGHVHEFGDLTDGCTSAGSHYNPFGKSHGAPYNEDRH
 AKRGFHIHHHSGDVVSSCAAAGSHFNPFSTTHGAPTDPKRH GAHGFHIHVYGDMAHFCQSTGDHFNPFRKHHGGPEDWDRH AKRGFHIHQFGDNTNGCTSAGPHFNPTGTTHGDRAASVRH GSHGFHVHEKGDLSDGCTSAGAHFNPENATHGAPEDTVRH GNHG $\square H I H E F G D V S N G C T S A G E H F N P H H K Q H G G P K S S E R H$ GSHGFHVHEKGDISKGClSTGKHFNPEKVNHGAPDDKVRH


 GQYGFHVHETGDIVRGCISTGSHFNPEKKDHGHPSDEVRH $G L H G L H V H Q F G D L T R N C N S C G D H F N P D G M S H G G P Q D S E R H$ SQRAFHIHEFGDNTNGCTSAGPHFNPFGRTHGAPSHNERH G L H GFHVHDKGDIGDGCKAAGAHFNPTNKSHGAPTDFERH

 GDHGFHVHEFGDYTNGCMSAGPHFNPTAVEHGGPTDEVRH $G L H G L H V H Q F G D L T E D C \quad S R L N D L C P L P H D N A T H$ GLHGFHVHQYGDLSNGCATAGPHFNPFNKQHGGPNDENRH GLHGFHVHEFGDTSNGCTSAGEHFNPFNQDHGAPNAPVRH GAHGMHVLEKALTGNDCSSGGDHYNPQKTDHGGKHDWVRH GKH G L H V CSFGNDT DGYFHS GDHYNPCDKKHGGPQDEERH GLHGFHVHEFGDTSNGCTSAGEHYNPDGRNHGAPNAAERH SERGCHIHQFGDNTNGCTSAGPHFNPHGKTHGAPDDETRH AKRAFHIHTFGDNTNGCTSAGPHFNPHNKEHGAPGDENRH GQHGWHVHAKGNTYPNCSSAGPHWNPDGVDHGAPSAAVRH $G L H G L H V N E F G D L T N S C L S C G G H Y N P E G A S H G G P Q D T E R H$ GKHGFHVHQFGDFSNGCDSTGPHYNPRKALHGAPHDGPRH GLHGMHVHEGQQLGADCHQVGPHFNPTGKQHGGPRDANRH GLHGFHVHEYGDTSNGCTSAGEHFNPTNEDHGAPDAEDRH GRHGFHIHETGDITSNCASTGAHYNPFKKNHGALVDPERH
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UniRef90 E1CPU9
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TKAVCCVLV ${ }^{10} \mathrm{G}_{\mathrm{S}} \mathrm{A}$ GTII $\stackrel{20}{F} \bar{V} Q$
 AEAIIRGGSNVRGVIYF QNSWNGVGIYG\|VCGLRP SSAVVMLSGNSGLRGVIRFAETSEGC IGDGTIDGLTP KAlAKLTQPSGVHGNVTFTQDADGKVHVQGAIVGLAP TNNVTGSVNFVKTSDG
TRATAHLVGEN RGNIFTQQPDG
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 RA VTGRVEFLQTT

MKATCILSG
GD ISGETCFSQESP TSACQ DQPKDCGFI DFTQLPEFTEIEFYLKNLPR TSAVAMVGGSSQDQGVVRFDQANDDVCDVEGTVDGLSP QAVVYLKDDSGVSGELVFTQVAPNGPVSIGGNI TGLPA VKAVCCLVGD VKGTINFTQEGDGKPCHITGEVTGLTE AVSMLGGNSGIRGVVRFVQTKDGCNVVGGIDGLST DGDVSGH| TFHQRDADSKVKMLGVLNNLPF
GPDGVYGTLEFLQPKPDSSMH|VGELYNLPR $A V S I I N N T G S I Q G V V R F T I T N D Q A G V V V D G V I D G L T P$ VKAVCVLKGTGEVTGTVYFEQESDSAPVKLTGQI IGLAP KAKAVVKGGNKSEPGGNDYLMEMNGVVILMGNLYRLPP STSAVAMVSSTEQVLGVIRFTQTDS VLIADGSVDGLTP VKA AVVLKGDSNVSGVITFTQETEGGPVNVTGKWSSLSR KASCVMTSDEGLTGSLMLSQAQEEAPTIISGEDAGMRP MRADCCIKGNN FGELDFE ETGSGVRMHGNIRGLSP
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MRAVCVVTGE VEGL SVKORSTGGNIDILLDLSGFAS


PGDVGGVIFTSLNSQRITHVKGKITGLSP $A V A M D S S Q S Q V L G V I R F Q Q S Q S G P L V G D G S V H G L A P$ $A V V Q A K S G S E V V G A V D F D A V D N G \quad I R I I A N I G G L E P$ TGEKDVYGTVYFSPGEGEKDMQIEISLKGLNP KA $\square A V M H P T S K V K G F V T F T \quad K E K N G \| R V V A Q F E G L T P$ AECVISGTGP\|QGTIRFEQD【TGGATSUTGSVSGFTT $A V A \prod N T T G P T Q G V L R F S A D T D Q P G L V V D G V V D G L T P$ AAVTMLE EGQLKGVIRFVQSDRNKCIVI GLVDGLKP ALKAVCVLKGTGEVTGTVFFEQEGDGAPVKLTGEVAGLTP SARATLYFKGDTKPVGEVYFIQMPGGEVIVKGGVRGLTP AAVAlLGGPGPVQGVVRFLQLTPERCLDVEGTIDGLQP MKGVCVMSGG KGVVTFTQDLPHHVTRMSGHLDDLPK SLKGVALISGDSAVAGALHFVEDPSSGYTEVRGRVSGLAP KA KAVF KAVAVLKGNSETEGVVTLIQEDDGPTTVKVRVTGLTP VRMINGSGQEIGQALLSQTKEGGVRIQLEAGPLPP MKAMCVLKGQGPVEGTI HFVQKGSG PVVV KAVCVIKGRNDIHGIINTNQLQNDIV TKVAVFGSKGHVQGVVRFTEVEEDC IIDGTVDGLK VKAVCVINGD AKGTVFFEQRAATLPVKVTGEVCGLGK MYAICQVQPSASVTGLVLFKQLSPSSRLEAFFDLEGFPA TKAI ATVHGESGVSGTVTFEKGTEG VTVSASISGLEA AVAQLKPTSEVSGTTSFTQQ GDKLIVKTEVRGLKK
sVKAVCmLVGE AVKGRIEFEQGEGSNSVSVKG
$\square G V V H F T Q R$
$T G O V W W C D$
RAVATLRAEGKVLGVALFVQ NGVLMI RGRVRGLSP NGVLMVRGRNRGLSP
ESQGVRISVTVKGLSS
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SVKAVALITGDSKVRGSLHFVQDTS VGLINSHGMEIATATLTEQSE $K A \operatorname{TCVFATH} L M G Y I L L R Q K D L$ GDSKVKGAVSFTQQ

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GQHGVHVHEFADFSNGCASTGGHYNPFYNTHGDRNSRVRH GKHGFHVHQNPS LEDDCKGAGPHFNPFGQTHGHKASAMRH GLHGLHVHQFGDLTRNCKSCGDHFNPDGMSHGGPQDSERV GEHGIHI HEFGDVTNGCTSAGEHLDPFDEEHGDAAEHGH GLHGFHIHAFGDTTNGCNSTGPHFNPHNKFHGAPMDDERH GEHGSHVHVFGDNTNGC DSAGPHYNPHGKNHAGPNDAERH
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UniRef90_UPIOOO1C UniRef90-O7T9W4
UniRef90 $\times 8 J H 19$ UniRef90-X8JH19 UniRef90-li3VPJ9 UniRef90-A0A016RYT9 UniRef90-UP100042B592C UniRef90_J9S294 UniRef90-S4P4K3
UniRef90
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UniRef90_H2B643 ${ }^{796}$

## BB87B




120 AGDLGNLQADQRG\AF UNQFNSQITLKPNNSVLGRAILVH VGDLGNVLADTSGRAAFRKIDKFLKIP VGDLGNVVFDENRVSVLDYVDSVICLTGEYSIVGRAVVLH

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## V

 AGDLGNVESDENGNVKTVIRDDVASLVGPDSVLGRSFVIH AGDLGNIEAGSDGVAKVDMYDNGVSFSGGNNDLARALVIU
 EGDLGNLEADEYGFAYYDEVIEGLKLNGEHSVIGKSGVVH LGDLGNVEAPKSGPAKYDKVFDFLKFEGPYSVVGRGVVVH

 VGDLG NILTSEGSSTRDHKVDNVISTNMESNVI GRALVVH LGDGGNVRSYGYKYTHFSMISPRDSMYGEHSVLGRSLVVH
 AGDLGNDVANAEGVAEATVVDNQIPLSGPDAVVGRAFVVH

 VGDMGNLESDGENTTLTYTDNRIHL MMEVVGRGIIIH GGDLGNLEADASGKAVAEVADPVGSVNMPNSVI GRALVVH VGDWGNFDVAGDGPHLYTFTDHVAKLTGPYGUVGRSVVIH VGDLGNIAAGADGVSDIDITDRVLQLTGSNGAVGRAFVIH VGDLGNVIVGEDGTINFKIVDKQLPFTGSNSTVERVVVVH AGDLPNLVVNEDGSAVYEHVTNLVTLTPGFDEDGSALVIH
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AGDVGNIEADDYGVAYVEREDQFLDLYGEYSVLGRSFVVH


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| UniRef90-T1JX98 UniRef90 W4 6 a | KDPDDLGRGNSPESKINGNSGARLACGI |
|  | AGEDDYGLGGQSDSLTTGH |
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| UniRef90-V5G8G1UniRef90-UPI00022C93C3 | , |
|  | SGEDDLGRGSSPLSASTGN |
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| UniRef90-L8YDQ6 UniRef90 UP1000258E | EKDDDLGRGRNEESTKTGNAGSPLTCG |
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|  | DRDDLGLTDNPLSKTTGNSGGR |
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|  | D |
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| UniRet90-B5XOA4 | KDDGQGGDEESKKIGNAG |
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|  |  |
| UniRef90 AOAO23F | K ${ }^{\text {D }}$ |
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| UniRef90-Q2F6F3 | D |
|  | DDLGKGDDPASKIDGNSGKRL |
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| UniRef90-ETCQT9 UniRef90- D3TN65 | DDFGKGCNEQSSIDGNSGERIACGIIIARS |
| UniRef90-P81036 UniRef90-C1BSR9 | A ${ }^{\text {d }}$ 吅D |
| UniRef90-C6MAB6 | ADEDDF |
| UniRef90-G6DED22UniRef90 $66 F 457$ | QRADDTGRGSSPCSKTNGD |
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| UniRef90-J6F457 |  |
| UniRef90-W6JIT4UniRef90- ${ }^{\text {O96WH7 }}$ |  |
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|  | Dilagat |
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GTVTGKLISLIJQ DDD
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VIGANNESYGNAYF QEEDNGVMMTLALTGMPQ ALAATAMLDTEGNEMGVVELTESSEG VRIHVKLENVPE GQPK
TANSKTSGQVTFEQTADGGVHVKAKVEGLTP
VKLYNASGDQVGTAKVTQQSSG VKII SIKAEGLTP A LDHAVCRVLPSATVRGLVLFRQLRPGALLEAFFHLEGFPN ANSARALLNAEGAEVGKVELIQVKDGMVLKAALKDTPP SRTVEMINANGDSIGTAALSQSSAGV VRGKKLDVKGLPP VNI NTKGESUGTAQLTQV GNKVQMAVDVRDLSP
ATSLLKNNEMGTAVLT EETSRVRIELEAEGLRP SAKA QMYDTKNNLVGEILFKGESSKGVELTAVLNNLPP

VSGVVLFRQLRPGALLEAFFHDEGFPA KSGSNVTGVISFVQ EGAQVKMITANLTGLEP KSDSNVNGEATFE SNGEKVMMIAKLSGLTP AAVAVLDPTNSVQGVIRDKVIGES LETTGQVSGLKP AVCVLKGDGPVQGT HEEAKGDTVVVTGSVGLT VKPSSILEADQPVTGGVLFRQQYPDGRLEANFDLKGGPN MMDANGKEVGTVIFTQLPSGVVNMLVEMTDLPP KATLKPTAGNTVAGELSFTAVDGGGVRVTGEASDLEPP TQAISVLTSDYGVSGVIRFSQENCSAPLVMNTSFSGMNP DAVFQGNH SGGVYFTKHGSNMVRVGGSVSGLPP

TADSTAKGNLKFQQKDGS VLISGSISGLKP VMSSDNKSLGEAKFEEQADG VKVTVTVSGLPA AVAELKSGSAVEGKLTFHEMPGKGVHDEGRVSGLTP VD DKNADGDSTGKTTFEEQAEG ПK KKEVKGLPP

KAQAVLKTGSKLKGIDHFT EGDGEMKIETMVEGMK A $\square$ MARAKLQS VE GQS $\square E G E V S F K E A G D G \square E \square H L N V Q G L E A$

TASATLIGSEGNEDGTANFLDGPNGEVIRDELNPDSLSP GDGEVKGTVKFSQEGTSPVSVTGETSGLTP KSGSNVTGNVTFTEKNGE VFMKASVAGLSA
VQS $\square$ ARLEATSQVTGTVVFFPQPDGS VVRVKGRVEGLAP VK SNKEVKVYNAQGOSIGTVKLKEQADGALLFKTNLRGLPA

VEMFNAVNTASGTVKFTMEVGGGVVIDAQVTGLAPB
 QAIARLQATSKVGGDVKFTQK TGQQVVVNAVIHGLKP VKAVAVLSSGSSSEGTIFFTQEGDGQ TTVTGNISGLKP AICVLNTTN RGVRFVQTSNWS VEVTANVTGLPP ALSATALKDAAGDVVAVANLTQEDDYGPVKKLEGQGLSP SDTAVAALASKSGTQGSVTFTQR GNTVLVKVDVTGLPP

AMAQLQPTSKVSGSLQFTAQADGS VRVQGSVQGLAP


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TATAA $\square R D E A G Q V L G T A T F R Q M$ Q QL M F V S L A Y GAL RVTGQLS GMGVQVTVETRGLTP

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GVHa Thlvire
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 GKRA1 HI HKFGDLSDGCNTTGGHYNPFNVNH SMPSHH GKHGLSi NTFGDLTDGFRRCGPHFNPFGKRHGSPNSDERH GKHGFHIHEFGDLSVDGSSAGGHFAPEGHRHGKPGKGQHH GEHAFHVHEVGKCEPAFTTAGGHFNPTKKAHGLLAPKGKH NSHGVHIHRYGGLGNMCLEAGPHFNPFNMRHGGRFGKPRH GEHALHIHDKGACSPPFQSAGEHFNPEGKKHGLLHPEGAH GEHGFHVH EARATHVH SNHATHVHEFGDLSHGCDSTGPHYNPLAVQH DTRAIHIH GEHGFH|HEAGKCEPNFESAGSHYNPTNAKHGFNHPEGP NTHGFHVHEFGDCSPDATSAGGHFNPYDRDHGAPDSDERH GEHGFHVHEYGSCGNDADDAGGHFNPAGVQHGHLLSHGFE PPRAIHIHQYGDLSDGCDSTGGHYNPWKVNH
 GDHGFHIHEFGDNTNGCMSTGAHFNPHGKTHGAPDADERH GPHGFHVHETGKCDPDFASAGAHFNPEARKHGLNNPEGAH S LHADHVHKFGDLTDGCTSTGPHYNPNGVNH
GHAFHIHAVKCEPPFTSAGGHFNPENKKHGKMAEGGAH GLYGFHVHELGDTSTCDATGPHFNPDGTNHGDRVHDVRH GQYGFHVHETGDTTGGCDSTGAHFNPDNKDHGHPEDDNRH GEHGFHIHEVGKCEKPTFSAGAHFNPKGKEHGFDNPKGFH QVRADHI HQYGDLSQGCVTAGPHYNPQDVPH PNH GEHGFHVHEKGDCSPDGSSAGGHFNPTSAPHGDPSHASKH GVHGLHIHEVGQCQPDFDSAGGHFNPNNKKHGLLNSKGFE EPNGIHVHQFGDLSQGCDSTGPHYNPMSVPHGMMAPQH GEHG\|HFHAVGLCEPGFTSAGGHFNPATRQHGLENPKGAH GEHAIH(HENGSCPPDFQSAGGHYNPDGKKHGLLHPEGAH GKHGIHFHAVGRCDTPDFKTAEAHNPTHKEHGFENPKGYH GDHALHFHEYGSCTPDFMSAGAHFNPDHKKHGLKNPLGPH GFHGFHVHDKGVCEGNFKSAGGHILHGKNQPHSEGY HPH GDHGMHLHEFGKCSPSFESAGAHFNPTKKQHGVDNPAGPH NERALHIHQYGDLSEGFVTAGPHYNPDGVDHGAPAPSH EPNGMHVHQFGDLSQGCDSTGAHYNPGGVPH GVHA HLHENGDCSTDATSAGGHWNPKSNEHGDWDEGSHH GEHGFHIHEFGDLTAADTAAGGHYNPSGHEHGGPDAADHH HGGPKDEERH GMHATHTHQNGDCSSDDKSAGGHWDPTSEAHGKWGDEMHH GTRAIHVHKFGDMSNGCDGASSHYNPFSKPH PQH GEHGFHIHETGDCPQDGFRSAGGHDAGDSQHGDNSPEGPH GTHGFHIHENGDCEPDFESAGGHFNPTDAKHGFEHPEGPH GEHGFHIHEKGDCSPDGTSAGGHFNPDGVDHGQVTADPHH GWRGMHIHEKGDLSGGCETVLKHYNPLNNAHGAPWDADRH KKLGVHI HEYGALGNECNDAGPHFNPFNSDHGGLTGSPRH EKHGVHIHETGDIDNGCLNANAHWNPFNKNHGGVDSRERH NWHAFHVHENGSCADAGNAAGGHFNPTAKPHGMHGAGDHH GKHGMHIHEVGKCEGPDFGTGGHFNPTQKEHGKDNPHGHH GKHGFHIHTNGNCSPDGMSAGGHFAPTGGRHGAPTDKEHH GKHGFHVHEFGDNTNGCTSAGAHFNPFGLTHGAPEDRERH GELAMHIHDKGKCDPPDFSAGDHFNPDKKEHGLLNSKGPH GLHGFHVHALGDTTNGCMSTGPHFNPAGKEHGAPEDENRH GLHGDHI HEYGDMSNGCDSAGTHFNPQKKTHGGPGSKQRH GKHGFHIHETGDCSAPDFKSAGGHFNPAQHDHGEPGPSSH GWHGLHLHAVGTCEDEFKESGGHHGKVEGAHGLDNPKGPE GKHGFHVHEFGDNTNGCTSAGAHFNPTKQEHGAPEDAVRH GNHADHIHADGDCSENGKSAGGHWNPTDKNHGKWMEEPFH SRRALHVHRFGDLSPGCEAAGPHYNPRAAPHGKMPHH
NEHGFHVHEKGDCSSGDGSAGGFNPGQQAHGKGGKAHH GLHGFHVHEFGDNTNGCMSSGPHFNPHNKEHGAPTDANRH GKHGFHVHENT四KDDFKSAGGHFNPTDKHHGLKHPQGSH GEHGFHVHEKGSCTVPAQSAGGHYDPSHSKHHMGPEGEGH GKHGFHI HEKGDCSPDGTSAGGHFNPTGKQHGDPAKADHH GEHADHIHEKGKCQPDFKSAGNHFNPEKKEHGLLHPKGAH NEHGFHTHDKGDCGDNGNAAAGHFNPDGNPHGKYDSTQHH GHHGFHVHALGDTTNGCMSTGPQFNPAGKEHGAPEDENGH GSHGFHI HQYGDDTKGCTSAGXXXXXLDTNHGGPHCCTDY GEHGFHIHETGECAPDFTTAGGHYNPEDTKHGKEHHDGSH GQHGMHVHEYGRCTPGVDAGGHFDPGMSRNHDDPQAANGH NEHGFHVHEKGDCTPDAMSAGGHFNPTAKPHGSMSMPDHH NEHGFHVHEKGDCSSPDGSAGGHFNPTGHAHGRFDSAVHH GKHGLHFHETSVCEPDFESAGGHYNPEETNHGLEMEGGPH GRHGIHTHAVGNCTPPFTGAGDHYNPDGKQHGLDNPQGPH GKDAVHVHETGDCSPDAKSAGAHYNPENHQHGLDDASARH GAGGFMVHEAGQCDPGFKSAGGHYAPRGNRHGLLDPDGP SEHGFHIHEKGDCSPDGSSAGGHFNPAQSDHGAVSADPHH GQHGMHVHEYGRCADGVDAGGHFDPGMSKNHDDPQAPNKH CTSAGPHFNPHGKKHGGPQDQERH GEHGLHTHEYGDLSQGWKSAGGDYNPKQMPHGPPSKDGRK


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A GEDDMGRGGNQA S LE NGNA GRRLAACCVVGLC
AAADDY
ARPDDL
AKKDD
A QPDDY
EKGDD

## $Y A N G P D Q^{Q}$

EKRDN
EKADDY E K E D D D L G L G S D E
EGE D D L G GRGGN E
ATADDF
Q G V D D Y
$A G V D D L \quad T S$
E K P D DL GRGGN

K S QP | $T G$ |
| :--- |
| $V G$ |
| $A$ |
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AS A D DF
ERD D D R K G GNK
AQPDD $\bar{Y}$
SGA D DY
SKA D $Y$ E S Q P GSQEHGANAGKAREAACCCVI

KT KPTGDAGGRLACGVIEAA
EK E D D L K G K M N N D E E G S R K T G N S G K K R
A QVD DLGRFPD DGSRTTGNS GGRLACAVI GRT
ADDDDY
ENEDDH $\quad$ MTDPTGESGGR I ACGVI
$\begin{array}{lll}A N E D D F \\ E L V & S D P A G N S G A R G V A C G Y I\end{array}$
EQAD $\qquad$
G DPD DL
E LP D D L R K Q N N P E S L I S G N A G R R L M C G I I G LT
A DKDDL K K S QPA GNS GARIAC GVV

A QEDDH LTVPDGGAGARVAC GVI
A DEDD

NDPDDYY T T QPTGNSGARLLACAVIVE R
A D P
AGEDD
VG G D N Y
E VT D P S G N S G D R V A G G N
EQGDD
S
S
D
G
 $T$ Q P T G N S G A RVVA C GVI A
ESKDDFA GM

T T QP T GN A G A R II A C A V I
A DADDLGKGGHELL
A GKD DYGLGTHNDSLT T GHA GARLACCSVVLS
A GADDYA
S QP S GDA G DRVVAC GVI G
ARPDDY
$K D P D D Y \quad$ RSDPAGMSGARERCGVVI
KDPDDY $\quad$ TTQQPTGNSSGARRLACCMV: AK
SGEDD GETQPSGDSGERIIACGVI




A GTD DLGKGGNEESLKTGNAGPRPACGT


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KSDSNLSGEVVFTQKNGE VEMFNTVGDSLGKI KITEQASG VKAVVVLGSSEVVKGTVHFVQEGDG SNKEVKVY NADGDSLGNDKLKEVSDG KSQSNVAGTANFIEKNGTVEITYQLKGLPP AAVA【LGSDSQVSGTATFSEKTNG\|ITMVANISGLAP A पr DGAGAQVVGTVTLTQTA VQTVDVSQAHTGKTYFRPVSN AVAKLESTNTTTGTVTFVQ TGDVVKVHGEVRGLKP



## AVSLKTSTGEDAGTATFQQ

EKSK
VPIINATGTVIGKALLSAAEGG VKVRDEAKGLSE RAVAQLQSTNTAAGTVNFTQ SGDKVLVSGEDRGLKP

AETVAT GQPHVTGQVLFRQL
MFTHPYSGQVHFTPLSTGE KSVGDSIGGTVKLLQEQS
SAAVNMDNSKGEQ TGTANLVQ KPQGLARLVQIDTGDKVQTLQAHSLPP AVATIDSKSNTETSGTIFTEDNCKTDVTIQGISP LI NESGQK DGSGEVRDSSENGLDMHVKAKNLPP VYAACVMKPSSKVAGEVLFKQLVPDDGKLDVYFRLAGLAN ATCYFNSENAIRGRADFRQFFGDSGVDIRIQVVGLPT SLQAV SDSKDSGNVVFTQEDGE VSMTADISGLAE
 VKLYNASGDEVGTAKVTQQTSG VKISDKADGFTP $T \square S V Q M M N T E G R E M G K A E L T Q A D G A V K I D F S A D D P P$

 STTAYAVTNADGDALGTASVSEDSASDATELVVSFTGLEP TASVADAGPDGASLGSATLTQLDGGVRVAVEGQQGLPP GSMNGTLVLEEFDDG TRVEGLFHEVPF KGVGASDGTVTFKQTA KGLLI TPALGKLSP VPTKTSTGDDAGTASFNENKKG TLTVKLALKNLPP VTLKDAAGKDVGTARTSDGPAGKGVKIALNLKGLPP KAMNNDGEETATATLTEDDSG VNIALEGENLSS KATAKLSGASGSVGEAIFTQDDEN TVNINVHTMGVTP AVATIKSNSNVSGEVIFT DETNGKVSMVANIKGLSA AVAMLTADGAELGRATATEVTGG LRVTLDLHGLPP

SGQSTGTIVVSNYDDD GVVFAPNपTGLTP ATAMLQGDGTEHGTVNIQQTPSGQVMVTRDLTDPE VATHTADGKDAGTVTLRPGKREAVNVKVDVKNLPP ISIYNSENDKDGTATFTERPEG VEVALKVEGVEP $M K A Q A E L K A S G N K V G T A T L T E Q K K G V K V V L K V K G L G V P$ ATKAVAVLNSNEGVCGTDXLAEEGDGS TTVVGSLSGLKP KAVALVVGKNNVRNARLTAVPGGTHVKGKITGLPA GDEAVTGIVNFHQRPLDVFVRLSGFNTSASL PNPTRGTVTFAALD HGVRVSGEVRGLA P TQTVDGEKKEVGQVFLRPVDGG VQVYGKLTNLQP VSLVDATGAQVGTVSL DEDDDALE:EVAVDGLDP

GAHGFHVVHEAGDCSAPDASSAGHFNPAAKPHGHHETAERH GEHG $\square H V H E S G V C G P D F K S A G G H E N P N S K M H G M E N P Q G P H$ GDTTNGClSTGPHFNPNNLTHGAPEDEVRH GRHGMHDHEYGRCTPG DDGAGGHFDPAMSRNHDDPQAPNR GKHADHIHQKADCSAADTSAGGHWNPTNEPHGKWGSDGYH GEHAMHIHETGKCEPPDFSAGNHFNPDNKQHGLLHPKGSH GLHGFHIHALGDTTNGCMSTGPHYNPAGKEHGAPEDETRH GKHGMHI HENGKCEPPGFATGAHFNPTGRHHGAGHPE GKH GKHGVHIHEKGVCKAPTFKTAGNHNPDDKKHGLLHPDGPE
 G LHGLHVHRF GDLTPD GTSTGGHWNPTFKKHGKWGQA E Y G G GV HA H HVHDS GRCEPPFTSAGGHYNPAMRSHGFRANTGNH GMHGMHVHEFGRCTPGVDAGGHFDPSMSRNHDTPQTDHGH GLHGFHVHEFGDNTNGCMSSGPHFNPHNKEHGAPTDADRH GTYADHIHENGSCSSKAQGAGGHFNPFGKPHGNPNSPQSH GEHGFHI HEKGDCSSGDMSAGGHFNPGGKPHGSHGAAEHH GLHADHMHANGDCSPD GTSAGGHWNPTGVAHGKWGEGEFH GEKAI HFHEVGKCDPPQFTTGGHVNPAKKQHGFDNPKGYH GAHGFHVHERGDCSPDASSAGGHYNPDNHPHGDADPSRHH GVHAFHV H QTGGVCDSPFK S S G G H L A S E GQ H H GYYNE Q GP H GRHGI RVVHVFGDFSEGLVSAGGDFNPFSKNHGAPDDEDRM GEHAVHIHAKADCEPDFKTAGGHFNPENKQHGTLNPMGHH H G F HI GKHGFHLHEKLIENNDFKTAGGHYNPDTKKHGHDNPEGHH NEHGFHVHEKGDCSSGDMSTGGHFNPGGQPHGSHSDMAHH EMS GlHVHHFGDVSQGCQAAGGHYNPLSVPHPG
NKTGIHVHETGDIGNHCKNAGGHWNPFNKWHGGLTSSVRH GEHAI HI HDKGKCGPDFQTAGNHLNPENKEHGLLHPKGPH GEHADHIHEKADCSAADTSTGGHWNPTFQQHGKWGDEGYY GPHGFHFHAAGRCEGPDFKTAEHFNPKHKHHGFNNPQGFH GYHG $\backslash H \| H E L G D \square S R G S E S T G N H Y N P D N V E H G \quad N \square E K G H$
 GKHGDHFHEKA $\square$ CKAPFKSAGAHFNPYGKHHGF $\square$ KP K GP H T S K A I HVH T Y GDLSNGCDSTGGHFNPQNVDH PMH S QRGIH HIHEF GDIGERCSRVGPHFNPTQTRHGGRNSYPFH GKHAI HI HEFGDCSKDGSSAGGHWNPTGHHHGKWETEHFH HGLHVHKFGDLSDQCQAAGPHYNPFERDHGRRRGNLRH GTHA』HIHEKGDCSAADKSAGGHWNPTDAQHGEWGDEGFH NEHGFHVHAVADCSGDGTKAGGHFNPDNHAHGYPGQDQRH G $\square H G F H V H E N A S C T V A A L S A G G H F D P E K T K H L G P W S P D G H$ GAHGLHIHEMGECKAPRFESAGNHFNDKKKHGLMNPKGAE GTHGFHIHEKGMCEPDFKSAGGHFNPTNVSHGTESEDGPH DEHGFHIHEHGK LGNQCKDAGGHYNPTNKTHGGPASAERH $\mathrm{G} \backslash \mathrm{H} G \square H F H N V G K C E A P F E S A G S H D N P K N K Q H G F D N P Q G F H$ GWH GI HFHEKGDCSDAKMS GGHVHTMMPSVHGLLNPKATD $N$ LH GL HV V EVVPDED GNCNQAGGHFNPTSSVHGGPK SRTRH GIHAlHFHESGVCTPDFMTS GAHFNPEQKKHGLNSPYGPH GPHGFHVHEHGDCSDDGSSAGGHFNPTGAEHGGPHAEHHH NEHGFHIHEKGDCSPDGASAGGHFNPGKEDHGSVAATPHH



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 GEHALHI HTNAKCEAPAFTSAGGHFNPANAHHGPATPKPH
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UniRef90_UPI00035D3582


## UniRef90 A4CNR2

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VVGPNAKDLGTDTLT DAPKGVLLHLELKGLPP AQQAEANLAPASASLVSGRLALVPDARGVHITGVIGGLQP VVAKAlIQGSGDVTGEAWFRETASG LEIRAVLDNAPD

VLIMTANPNYSGQVFMRTNSDGMTSSLLGNVTGFTP GLARFVQVDEETCLI DLTVEGLSP AVANFVGDGKEDGRAQLLAAASGGVLI EVEISGLPA ASTATAVINSTSEVLGEAEFTTTAD AMLIEVTMTNAPS KOQ NGKKKI GTATFTQLAA KGVQI DVSASGLKK SQQAVAlVGSASGSTGTADFTQSGDTMMLTVEDQNVSP ATASARVKSGSTAEGEAYFTETEENGMVKEAKFSGLKP ASGQPAGTAVLTETPSG VEIVAQVQGLTA KSGSNLTGNAVFTQ ENGEVTMTAVIDGLAE ASASAT TKDAKGDSVGLLRIDARNNGKSRMRVVVRGLPP SRATALLNETGAVVGTATFEAVTGGGTRVTVQAFGLTP MRAVCVIKGEN IDGNDFFNQINKESPVYIEGIIINGLKP
 ATENGPGAPVGSVTISQSP YGLVFTPELQGLEP VHLVSADGVGAS IGTUSFQETPKGLLITPALWKLSP VEMFNTSGDSLGTIKLSEQSEG VELDVMLEGLD

TGTGKSLGKVHVT ENSHGLIFTPEDAGDPP $D P Q G T A Q G T V T L R Q M$ GMGVQVRVEARGLKP
ALESGQGKEMGTVSVSQSADGGLSFKADLSGLPA AEATDNPTEGNNDSGYFRVYEVNDTVRVMAQVKGLAP STLSGEMKGADGSSAGTVTVTMPTPHG

DGVGESDGTDTVRDHEEG
DQEGEEASSALTATPSG
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VELKDAAGTTVGTADTTHEAGSFLKISIVAGGLAP AMTASAVLKSGSTVQGSVKLAQQGDN RVAII AVDISGLPA ATAARAIVDRDGQADGTVTVNTESGVPLVVAVTDLPE AAEAVTLMTPDGRSAANATIEFTNGHATVTLETTTPGLAP VRAVTVVNAQGVGQETGTVLLSDSPAGLVIRTNLKQLPA

ATLNGDGAKVGTVTFAQ EGSDVKVTLDAKGLTP VAASAVLDASGNDVGTVRLREVTGG VEVVATVSDLDP QAEAALASASGSLVSGRVVLVPALQGI RIVGTVGGLRP EKNNIKKSIGTIKKIEENAYGLVFTPNLSTLPE
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 SGSGATGEATFTDDGEGE VTLKLTIENATP VKGVALIIGDNNVRGSLHFDQHPNGNYTHVTGITGLSP AVAVINTTGPVQGVVRFTTMTNNAPMVVDGVVDGLNP TKAYARLKGGPDIEGLVRFTEVPGG GPEQSVGTVTLSQTP Y KSDSNVSGNVVFKEVDGE V TWV花 GV NKILGVVRLQQTAEG PLVADGSIDGLSP SKYGAVLTPDLKDLPP位
 $K A V S A Q G D G A A V G S V K D E S S E G L V L R P E L G G L P$ VELLDPAKGNQEDGKVVITESAYGLVFTPELKNLTA $V Q L K D P A G A Q V G T A T I A K S G D H V E I T V E A H G L Q P$ KSNTSTQGTAKFTQK GVGDSIGTVTVEK GNKVTLDLNVYKKP ESDYGLMLTPDLSGLSP
SAKA VVKTADSEVLGEAVFTED EDDGATQISVRVSGLSA


## UniRef90_A4CNR2

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GEHA\| I H\| H Q NADCSAADTSAGGHWNPTGEPHGQWGDEGYH GKHGFHIHENPDTNGDFTTAGGHFNPTGKQHGHDNPKGAH GQHGFHVHEFGDNTNGCTSAGPHFNPAGKEHGAPTDENRH GQHGFHVHQFGDNTQGCTSAGPHFNPHSKKHGGPSDQERH GGHSFHIHETGTCDPDFEAAGDHYNPDGAEHGFMNEAGMH NEHGFHIHEKGDCSSPDTSAGGHFNPGNTAHGKYGHTPHH GWHGDHIHATGQCEAPFTSAGAHHGDPKKPHGLLNAEGPD GVHAIHI HEKADCSSADSSAGGHWNPTFKKHGKWGVGEYH GKHAVHLHENGDCSEDASSAGGHWNPADDEHGKRGENEFH GLHGFHVHALGGDTTNGCLSTGAHFNPNNNEHGAPEDENRH GTVAVVHIHEKGSCADMGNAAGGHFNPYNKPHGHPSSSESH GAHAVHIHEKGDCSAADSSAGGHWNPTTESHGKWGHDQHH GEHAI HIHENGDCSSDDKSAGGHWNPTTEDHGKWGDQDHH GPHGLHVHE $\quad$ GGECKAPRFSAGNHFNPDDKKHGLLNPKGAE E WHGFHIHETGECDAGFDSAGGHFT DSDTEHGFFREGGFH GWHGDHFHAVGDCTEKFEKSKAHVNHDQSKHGLLNPDGPD

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 GFH GL H I H QV G K C E P N SVVA G D F L S A G G HL Q V GPANA H P A GMF GF HVVHEKGDCSSADNSAGGHFNPTGQQHGDPRQGAHH GSHG $\ H L H E T G D C S A A D F T S A G G H \square A G D K E H G V F V A G G P H$ GFHAVHIHQVGQCEANSVPPGGFGSAGGHLHEQLQQAGPA GERGFHIHENGSCAPAMKDGAGSHYNPNQAPHHGTPVTGH GAHGFHVVHKNPSCEPAEKNGGGGHYDPDNS GYHGGPYEDGH
 GVA GFHVVHERGDCSAADASSAGHFNPTGAPHGRGGS GAHH GLH GFHIHENPSCDDGGGAGGHYDPNHTYKHLGPYNMNGH GKHA $\square H$ LHETADCSSDDTSSGGHWNPTSEPHGKWGDAGYH GQF GFHV HEKGDCSVDATSAGGHFNPAATAHGRAGTATHH
 GEHAVHLHENGDCSPDASSAGGHWNPAGVEHGKPVDMQFH
 GPHGFHI HEK GVCQAGDPED PF LDAAGSHWNPCNQPHGNH G $\square H G F H L H E K P S C E Q A G A A G G H W D P K K T G A H K G P Y D D S G H$
 GRHGLHVYESGDLSQGCNS $\square G G H Y N G G P H G G P G D P P D R R H$ GQHAFHLHANPSCAKNFKAAGGHYNPTGVPHGLLSGESFH GVHGFH LHQKPSCAPAEENGGHWDPDSTNAHKGPYDDSGH GPHGFHIHEFGNCSEDADSFGGHYNPTNQPHG$\quad N H$ GVH GFHIHENGSCEAGVKAAGGHFDPQKTGKHLGPYAEGH
 NKWAFHVHETGKCDSHHESAGKHFNPTKAEHGLLAAKGPA GIH GFHVHAKGNCESAEDAAGGHWDPKNSGKHGEPWGDGH GLHGFHIHQNPSCDAGLAAGGHWDPKNAGKHGYPWSDDA H GFHGLHVHQYGKCEANSTAPGNFLSAGGHLQVGDPNTHPA NLSASHIHEFGDCSPDGSSAGGHWNPTHEKHGKWEHGEHH GMHGFHVHQNPSCEPAEKAAGGHFNPDDGEHHGPYQEGH GTHAFHIHKMGNCANNGKAAKGHFNPENVKHGYLPKDGFH GYHGFHVHTTGKCPDDPSKTGDFLSAGGHLDPDDSAHGEH GRHGFH I HVF GDTTNGCNSTGPHFNPHNKPHGAPFDDERH

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10 20 VVLHDASGAEVGTVTHTVPVDGAVRVEGSLHGLPA VDLKNAVGDSLGKATLQEMSSG $\qquad$
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 KGLVFPELKLEP ATGQAVLINASGANAGTAELLQGPDGFRVVVKVEAGLPP $\square K D P G V S A G L V T L S ~ S N Q H G V V F T P E L N N L P A$ SGNSAGTVVIT ESEYGTVFTPQLTGLTA VTGRVIFSYNSGSGLTRVYGKICGLTA
RARALVRGGPEIRGEVIFKNVPEG TWVCAEIYGLPP APAAIALVNREGKKVGYIEIKE KGEDEGLDFHISAHSLTP A VGVVGSSIGTVAF QETPKGLLITPALGKLSP GPSIDGVTLS DSEYGLLVSPNLEQLEP
TRA $\square$ AR $\square$ SPDGADRGTLTLTAAP
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 A G D







 $V$ G D L G N $V$ G Y L G N V K T D A Q G N A K G S ll Q D S Q V K K I G P H S V I G



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10
10 20 KGETIGHIQVTEMASG G|VIG保 APKAVKVQAGGGKปGEVTLTVNGRSGVLLRLTASGLTP KVVELKNAQGADSGTVEFTQ TGDKVVIKIAVKGLAP VNAAGEENGTAKLT GTEGGVLIEIEVTGLPA VVNNKGATAGKAQLVDASGDTVVTLAVAVTGISP VTAEGDGKSLGTVKDDETQYGLQFTPDLQGLKP ADKTVAMVDAAGKGTSVGSVTISESRYGLVFTPALKGLSP VDLKDAAGASVGTANFV VKAVAVLGGTEGVGGVIYFGQ ALPTGAGDDDGVVTDT KDGNHEQVTVEAHGLRP AAYAVIKGGPNRGTLQFEAVDGGGLLFTPKKTGLTP
 KGVGAEVGQVVVS ESPYGLVFTPSLKGLPA $S \square K A \square A V L N$ KNKRSKGFVCFTMDPD पMGTDGKSHGTVTVTDAPKGVLLRIVAE TASGSLLGTDGTAHGNVHVTAAP HGVLVRITAQGLTP MKTVDMYNVSGDMIGTVALSEQADGGIQVKVKLEGLEP MKAVT AKGVGESVGTVKIE SSPYGLVFRPELSGLDS ATPQGEGKAIGEVVIS ETDYGLLFTPKLAGLEA

 ATKQGTGGSSIGYVNVK ENVYGLIDFTPHLKDLKMP
A $\square \mathrm{PTGDGDT}$ GGNTT TETE YGLLFSPNLKGLQP GVGQSVGTVKIT ETDKGLEFAPHLNSLPP A DPTGPGKEVGTVVI SEAPGG LHFKVNMEKLTP ATANLAETADQSKSIGTATFYGLSDGKKMDLELKFASRAD ATANLAETADQSKSUGTATFYGSDGKKMDLLKFASRAD D LK GAMYFYEMP YGVEVFVQVEGLPE
SADGTLVANATFDFANGFATLTVTVPNQVLTP GNGPTVGKVVIHYADDDDGVRFQPALHDLPP
 SAEAVAY IRGGPQDSGHVIVKDVPGG TQDYVEVSGLPE KS GKVTD QENEYGLIV $\square P D L S S L P G$ DGAGDVIGSVT AKDSDQGLVIFPDLANLS QAQVQTAGEGQSNGTVMSSBSEYGAVFTPELKDLPV AVAMVAGGAGLRGRVQFTQRPGGVAVDAHIVGLPK ATVTMNTVDASGTSTPAGTVEYHATPYGVLFTPNLKGLPP

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LLQKTGGQVATATFEFSKAGGTITVETTSTGLTP
LI GNDGKTIGTVTVTPAPKGVILRIEATLSGLSE MYAVAVLXGTSNVEGVVTLTQEDDGPTTVNVRMSGLXE OGVGAE GTUSLOHDPAGLVIRTSLSQLPP VELLNNEGKTIGSATATGTERATVVRVALSPGALPP VSAEGDGQNUGQUTSETPYGLLETPQLTALQP TAA $\square$ AYVKGGSKDNGTVIFRDVADGC EVYVNIKNLPP A $\square S Y$ YGGGPKVEGFVLFQDVPGGTAVYV PN KIEGRVYFREVS VNTEGIGESIGTISARDTD TASGTLIGAGDNDTGTVTMLETASGVVVLVEINAEGLPE GLPE SEKGDKSVGEVVAVKTNYGVAFFPNLKGLPA VSAEGMEESIGTVAAEHTDHGVLFTPSLSDLEP


TATASLKDADGKPVGTATFTTL GDAVKVSVTVSGLPA ANGVPAGTAQL ISDGQTMTLALAATGLSVGAGADLSGQTFKY E STGQSLGNVTLT SDKAVISLNAEGNVTPGGTSSLENDSEFGLVLTPNLSSLTP SDKAVISLTSDGQVSGVLSMEEF QGRTEVTGTVNGLPE

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UniRef90 Q3LTL5

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 GVHGFHV HEKP S CEARQEKAA GGHYDPAKTGRHGTP WGDGH
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 GIHGFHIHQNGSCQAGGAAGGHYDPFNTHKHGFPWGRDNH TTNGCMSTGPHYNPAGQEHGAPEDEVRH G $\square$ H GFHVHANASCAPGTQNGGHLDPQKTGRHLGPYNDKGH GEHGFHVHTNGSCQPAAEAAGGHLDPEHYGKHEGPNGMGH GYHGFHVHENPSCAPGEKAAGGHYDPGNTHHHLGPEGDGH SNVAVHFHEHGDCGDMGENTHGHWNPTNENHGKWDS GAYH LHGLHVHEYGDMSDSCNS LGGHFNPDNKEHGGPHKETR H
 GFHGLHIHSVGKCEADSVAPGDFNSAGGHYQAPGHTGYPA

 GLH GF HVVHENPSCDTND GVIGGGYDPDHTNKHLGPYNDNGH GPHFNPFGKNHGGPTDTERH GFHGFHVHMYPSCDPGGAAGGHYDPQNTNKHLGPYNMNGH GDHGFHVHSNPSCEAALNPEGGHWDPDNSGTHLGPFGSGH GTHGFHVHANGSCDS DTKAAGGHYDPEKTKHGFPWTDDNH $G L H G L H I H A V V G V C E P P Y S T S G G H F D P F S S E T P V E A N H P Y H$ GFFAFHLHEGPCGNPGVNPADYFPQTGGHFNPGNTPHPFH GlHGFHVHTNPNCGPAMQAAGGHFDPAHTGKHEGPWGNGH
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 GEHGFHVHEVGQCDENGFKSAGGHLARGLEHGDKSQNGPH GWHG $\square H F H E K G D C G P P K F T S A G A H V H T P V V H G L L N A N A N D$ GLHGFHVHQNADCGAGMKAGGHWDPAETKMHSFAWDDKGH

 HGAPDDANCH
GFHGMHLHTNGEC KASGSEPFTSAGGHLQVDGNTGHPS GEHGFHLHTTGRCEPDFKSAGGHLNPADREHGSLNPQGKH GQHGFHVHANAATSNSCKDAGGHFKWNDDEDHGASTDNRH GVHGFHVHANGSCETGGAAGGHYDPKNTGRHGYPWTNDNH GVHGFHVVHQTGNCEPGGGAGGHYDPDNTGKHGTPWSTDNH




## UniRef90 G2T9S8 UniRef90-DOZ3U6 UniRef90-G6EJI8 UniRef90- 5 KMM UniRef90-HOHM15 UniRef90-Q2N610 UniRefefo-BoUFV2 UniRef90-Q3SLO9 UniRef90-K0F953 UniRef90-MOTP44

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UniRef90-S7VQ55
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 UniRet90 F4A5W9 UniRef90-E7DRM9 UniRef90-UPIO0036BA1DF UniRef90 UPIO00304CCBO UniRef90-A0A0291H37 UniRef90-F1A5U0 UniRef90-O65325 UniRef90 UPI0002EA2CF4 UniRef90_UPIo00468178A UniRet90_A3UDK3 UniRet90_C8VZB8 UniRef90 E5YSP7 UniRef90-A0A022RGY2 UniRef90_UP100036BE6C5 UniRet90-E6Y8N7 UniRef90-Q2W2Z3 UniRef90-G51F08 UniRef90-K7WG90 UniRe990-UPI00037DCFDC UniRef90_E4YRQ3
$1{ }^{10}{ }^{10}{ }^{20}{ }^{30} 10$ VKAVAVMTGTNGRKGTVSFS VEGSGPTTVKGSLSGLPP
 - 1 DP GFVRFRQR GNVTRLTGMVFGLKP
 KGVGESVGQVTUS ESKYGVVFTPSLNGLMS
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VAGQARVNGTTNLEWMNGQRGHLTGITS SFDD VSAQGIGKELGTVELRDSAAGLVIHTQLQQLPA TolISSAGEDTGDVTITDAGDAGVTLAVTARKIAE AVCLLAPSTA GGGLLFRQKRPTSRLEAYVDGEAAPS AAVAGDSGARIGTAFATMPGPNGMVIRGDLEGLTQ

LLDRQGAEVGTATLV EGPHGVLVHVVAKGLPP A VAKVVGGPNLRGYTYFRRVQGG TEI CVSVTGLPP AYCAIJGGPSIRGMVYFTDVPGGCKVCITIINGLPP TKGVAKLSTTSNUAGYVTFTDSADGNVTVEANITGLGS VAGPDGPQQKVGTIQDEQ NKYGALLDPKLAGLPP RADAHITGGPDIKGTVFTQVHGGGTEVVVKVNGPS PEGQPHGTITAMPTPSGM MHLKI ELTDVPA DGKADGTVTVT PAPKGVILKLDAAGLPE AMAELKGDGTVHGRATLTEYANGGUVVTELMEVPS
 KSGSNVDGTTNFTEKNGF VKLTGEVKGLTP GGIGEEVGTISAT DSEYGLLTPNLKNLEE VVLKTSDGRPVANASHDFTDGYATVTVETTGGGGAP LTNEEEDEKGUYLYQLEEGVYLKIGGNNNQKS
 NSDLGVQVVASVAGLKA $T G \square G E A \square G V I \quad V A V D T P V G L Q L T P N L K G L P P$ AVAETKGDSNLSGTTTLTENQPLDTVEVKAEVSGLPP RALVTVQGTGDVNGKLMLEQASTNSPVKIRGVIYGLEP SQTATAEFVGDGTDDGRATLTAAGGKGVLIEMEIISGLPK

ADGTPVATAAFVFQDGYARTTVKTTQNGLTP ATESGAGKAVGEVTISETP YGLLFTPDLKGLKP S $\square$ AAVSILEGEES\|KGVVRFVQATPNTCIDDGTIDGLVP TQAYAQTQGGPKSAGT| EDS SVNDYGTVFSPSLSGUPD VEVLGTD ITGTLILTQRENGV VRIRGTI QGLTP TNAVAHVNGSPNLKGVVYFFSVPCG TEVSVCIHGLPV
 1 I NTDYDVI GEVT LT EDAEGVEVEVEVVGLTP SVNATALVVNADGKEVSAGTITMQETSYGLLFTPDLIHSLPQ



 QAQAQDAGP EINGTLFLKQQDDGS VRIIWGQDQGLTP SAAVSEFKGP DIFGVVRLA QVNMEDA RI EANFSGLSP APESYA IIKGSPQUQGUVRFYS
 SRAV LQDAEGAEVGSVSFSEVA AGTEVVAEVQGDEP


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UniRef90 Q05RT1 UniRef90_K9QGS9
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AYAKTKGNKKLKGTVSF YGVHGGTIVVAEVTGLPE APSATATLTGTGADAGRATATEVAGG LRVTLDAMNVPA $A \square A N L Q S N A N$

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SAAVAEFKGP DISGTVCFYPYQGGMAMMIYELNGLPK SPQADANICGSEKDRGQTRF YDLGQGTEVAVSLVGLSP ATSVSAELKTDGTKAGTAVFAADGSDVK TVTVDDKSLTP PDGTEVATAKFEFGNGFATVTIVTTGTHLTP A $\square$ A $\square F N \square K G E Q V G T A T F T Q T P G C G L Q V E V N V E N L T Q$
SAAVAEFKGP
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 GFH G LIH HE DGK CEANSVAP G GFLLSAGGHLHMRGPTPHP G $G L H A L A I H E H A V F D A G L A G A G A R Y N P H K A K L G G P Y T D E K R$
 GFHGFHI HEGTCGQGKA ESFA G G G A DGHYNPTNAMHP QH GPHGFHI HANQSCQVGDPTN PFQAA GDHWNPTDQPHGNH



 P Q H GF HV HTYGDVSVSDGSSTGGHFTDEDEHGLPDDEDRH GKHGWSINNEFGDLTEGAASTGKVFNPTNQ GKHG $\ H V H H E F G D L T G G C A S V G T H F N P A K K N H G G P Q A A A R H$ GMHGFHVVHVNPDCGAAMKAGGHWDPADTKKHSFAWDDEGH

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 GK H S L V V H Q F GN LT S GCDNVGEPY I SNKQSNN GNKCREII
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PYEK K G H LF R G GM G
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 GEHGFH I HANGSCQPA DKAAGGHLDPQNTGKHEGPEGQGH

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 GAHGFHIHSNPSCVKAGAAGGHYDPYGAGKHGLPWA $\quad$ GNSH DCKKAGSHFNPDKF THGSRDSHKRH GFFGLHLHQGGACRTVLE P F D DGAGDHWGLPGQRHPGH GFHMMHIHSVGKCEPNSVAPGGFFSAGEHYQAPGHTGEPA GYRGVVHVHEVGGKCETNSTAPGNFLSAGGHLQAGGNTSDPE $G \vee R G F H\|\| A K G S C D P A G A A G G H W D P D N T N A H K G P W D T T G H$

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UniRef90_G7GXY5 UniRef90-FOZE54 UniRef90_UPI00047AD264 UniRef90-W0GTK8 UniRef90-FOYXB2 UniRef90-R6HZE3 UniRef90 E3BKP8 UniRef90-X0W9X4
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 LGDLGALVADETGRADFAGTKTGLRVT $-$






 | $V$ | $G$ | $D$ | $L$ | $G$ | $N$ | $V$ | $E$ | $A$ | $D$ | $A$ | $N$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :--- | :--- | :--- | A P H LT L A D VS GR A L M $\square H$ V

$A G D \square P P I L A S \quad D G \square G \square L S V Y T S Y F T V A$

 A G D L P P L L S T R GAA WMAVYT GR I VGDLGNIJAGEH THYTHTKK】HA LGDMGNMFV K D GK S T S V I Y N R D M R L F G S F Gll S GR S







 LG D L P VL L SENGRAWSAVWT GRFGL PSQARGHTVIVVH


|  |  | 150 |
| :---: | :---: | :---: |
| UniRef90＿UPI0003B50F88 | EDPA HYGNGPDQESLATGDTGARSACGVV |  |
| UniRef90－B8J4J1 | AGGDNY SDQPAPLGGGGAR】ACGVI |  |
| UniRef90－H8GZR0 | AMHDDYA SDPAGKSGSREQCGVI | T P A |
| UniRef90－R9MAQ6 | SKPDDF $\quad$ R T QPS G S GK K I A C GV I |  |
| UniRef90＿W6TXM2 | GGTDDY $\quad$ T T QPT G N S GPRVGCGII |  |
| UniRef90－E4X0B5 | ALPDDGNPNREESS T GAAGARLGGCCLI |  |
| UniRef90＿UPI00047B8E53 | KLPDLQKAGGTA A D A G G P P RI G C GV I |  |
| UniRef90－E9HZI6 | QLPD DRAR $\square$ SNAE AENRLACG |  |
| UniRef90＿Q6RV39 | A DPD D L G R G GVELSS K |  |
| UniRef90＿UPI00042B71F8 | ETEDKSDQGRTA |  |
| UniRef90－G7CH09 | ERPDNFAPGPDAETLATGDAGSR】 |  |
| UniRef90－F0XWV5 | A D A D D L |  |
| UniRef90＿R9KEK4 | SGPDDFS T Q P A G A GAK！A CGT |  |
| UniRef90－U5QPK5 | D ATKPS KRI A CGVI |  |
| UniRef90－A7B2L7 | A HPDDM $\quad$ T T QPSGNSGAMI A CGEl |  |
| UniRef90－K8EER6 | ENPDDY R S QPAGKAGKRLA CGVI | K R |
| UniRef90＿R6XLN7 | DRPDDF HTQPSGDSGEKI A C GKı |  |
| UniRef90＿D3BJC0 | SKQDMGQGQDDD F GHAl A H CVI | $\mathrm{G} \square \mathrm{S}$ |
| UniRef90＿G2JBQ7 | RLLNNEASTVARRSAPRLA C GV I |  |
| UniRef90－UPI0003111439 | RDPSDPAFAQH GAGPALACGVI |  |
| UniRef90－M4F6D3 | E T E DMS LQ G |  |
| UniRef90＿A6BFJ6 | EMPDDF K T QPSGDSGMK\A CGET |  |
| UniRef90－R7QQ00 | EDQD AGSSE QPTGASGTRIGFCVI | G Y A N |
| UniRef90－U5GT17 | GTEDKSDKG |  |
| UniRef90－M5C975 |  |  |
| UniRef90－UPI00046F1EC0 | VGGDNH S D N P K A L G G G G A R MVC GVI |  |
| UniRef90＿UPI00032890FA | A GED DVGRGGRE |  |
| UniRef90＿R7V9J8 | EETNS KRVA C G | A R S |
| UniRef90＿U2CYV2 | EGPDDY K T QPAGGSGRRLACGLI |  |
| UniRef90－S2XYX6 | GMADDF RTQSSGNSGSK】ACGEI |  |
| UniRef90－A9XAN4 | V G T D D L K |  |
| UniRef90＿UPI00037CCAC4 | E G G T Y S E P H LG G G G G R M A C GVV |  |
| UniRef90＿G9EPI4 | EGGD N Y |  |
| UniRef90＿UPI0002B4104D | ETED |  |
| UniRef90－B1C365 | EKKDDL T S QPS GNA GKM\A C GET |  |
| UniRef90－E9HHT5 | A NVDDLGRGNGPESLKS GNS G A HI A C G L |  |
| UniRef90＿R6PDD9 | ENADDF $\quad$ R T QPS G S S G M M A C GKı |  |
| UniRef90－F3WWH4 | A A I I H A A D D L K T D P S G S G GR\｜A C GV |  |
| UniRef90＿X6PD79 |  |  |
| UniRef90－M7N0Z8 | A EPEDFALECDPNHTNHPHTNPKDACG |  |
| UniRef90＿UPI000477D07C | ENRDDF TSQPSGMSGDKI A C G K I |  |
| UniRef90－U1WZW2 | ENPDDY RTQPSGDSGRRLA C GVI |  |
| UniRef90－R7GRP4 | HQPDDF RSQPSGNSGSKLA CGVI | Q R |
| UniRef90＿F0ZNV1 | SQ DAKYADTHKESKPESDNGERIA CGVI | C R A |
| UniRef90＿UPI0004757D19 | ENPDDF K T QPSGDAGSK】A CGEI |  |
| UniRef90＿G4CTS4 | EGGDNY S D TPAKLGGGGGHRMACGVV |  |
| UniRef90－D6WRL1 | NS GKRLVCGI I | A R S |
| UniRef90－D8S967 | A T A D SVVH ${ }^{\text {V }}$ | A R S |
| UniRef90－A0A016SPC1 | YRFSTTEYS LQ T K DEGP L A C G T | G LT |
| UniRef90－E7GAR0 | EHPDDF H T QPSGNSGGK\｜ACGE\｜ |  |
| UniRef90－M0SRV1 | ETEDKS D P G |  |
| UniRef90－C4UFJ2 | VGGDNM S D HPEPLGGGGGRRYDCGII |  |
| UniRef90＿R6YM09 | SDPDDF HTRPSGNSGKKIACGVI | T S T K |
| UniRef90＿UPI0003692AD3 | A GDGM PGSSEARVACGVI |  |
| UniRef90＿U5WYT9 |  | $\mathrm{G}$ |
| UniRef90－L8N810 |  |  |
| UniRef90－K1QPY8 | Q GDHNHPDS E QIA C CVI | G R A Q |
| UniRef90－F2E710 | A TEDKSDS G IAAAAVV | A R S |
| UniRef90－U5IB19 | $E \square K D D L G$ L |  |
| UniRef90－A8PM32 | KL S V I E WS LR D K D $\square$ LP $\quad$ LA C G T | G F A |
| UniRef90－K9H2D6 | A GGDTYSDEPS $\quad$ LGGGGARVACALI |  |
| UniRef90＿R4WFI5 | REALD P P ASAPHNVGAALACGVI | R R |
| UniRef90＿E2C6C2 |  |  |
| UniRef90＿D8JX49 |  |  |
| UniRef90－B7Q898 |  |  |
| UniRef90＿R5Y486 | EGYDDFS $\quad$ TQPAGNSGAK\ACGR\} |  |
| UniRef90＿G9YX59 | ALPDDY R SQPTGAAGGR\｜ACGVI |  |
| UniRef90＿UPI0003A5001D | $V G G D N Y$ S $\quad$ D DPAPLGGGGGGRNLC GV |  |
| UniRef90－F4PXA7 | NAED TCTEGSSGAlVSQCVL | $\mathrm{G} \square \mathrm{G} N$ |
| UniRef90－R7FFV3 | ADPDDY RTQPAGNAGAR\｜ACGTil |  |
| UniRef90＿D8SUC6 | DHAD DLGRSEYE |  |
| UniRef90＿R9JYK6 | LHPDDFF HSQPAGDSGVK\ACGAT |  |
| UniRef90－D4QFJ6 |  | G R S Q |
| UniRef90＿T1FDT4 |  |  |
| UniRef90＿G8RGW3 | A D A | S P A |
| UniRef90＿A4RZX9 | A TADDFETEEDD GGAGP LVLYGSI |  |
| UniRef90＿I2AC51 | GAQD TENAMDRVACGVI | G |
| UniRef90＿G4MGK1 |  | R R |
| UniRef90＿D3BJC1 | $A \square R D \quad A G F N A T \quad F G A R \\| A Q C Q I ~$ | G L |
| UniRef90＿V0P0Z5 | V G G D |  |
| UniRef90－G7GXY5 | A GADNFGPGPDKRSLD T G D A G GRAACGVI |  |
| UniRef90－F0ZE54 |  | A L I N |
| UniRef90－UPI00047AD264 |  |  |
| UniRef90＿W0GTK8 | AGGDTY |  |
| UniRef90－F0YXB2 | $\square N P D D F \quad K$ T QPSGNSGEMDACGET |  |
| UniRef90＿R6HZE3 | S S P T FTS A T $\quad$ F GSRIACCGVI | R R |
| UniRef90－E3BKP8 | D S LGDNHSDLP T L S N A D N K RVIC Gli |  |
| UniRef90－X0W9X4 |  | K L |
| UniRef90－R6HCL1 | $R M A D D Y$ R ${ }^{\text {R S QPA G A GARIGCGVI }}$ |  |
| UniRef90－I0RKP6 | GAEHSP DAEKRMACGVI | G |
| UniRef90－A0A059MMD2 UniRef90 UPI00036EAD | QET VGGDNYSDDP |  |

UniRef90 U6P9S2 UniRef90-UPIo0002211F5 UniRef90-T1KEP7 UniRef90-W4YR39 UniRef90 K1PKM5 UniRef90-UPIOO0467084F UniRef90-F9Z8S9
UniRef90 F1YJS7
UniRef90 R5LH71
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UniRef90-A9SNG9
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UniRef90-J3PNM5
UniRef90-E8KFD7
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UniRef90-G7XD12
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UniRef90-UPIO0037B484E
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UniRef90-B8MC86
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UniRet90_S4AAH2
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VAVVNSSTDVTGS TSFSQSKGEADTE DDRNVKNDPY
SPSAAI GGSVLFRSSSNSVSV NGIVSGVAK VKGKI EFYQQTEYDITNVEVNLQGLSD SAAVCULETHNKIRGLARMDQVSKSQTLVDLTINGLSP QAVSSTFNDGVKGTI NFYQRSPYDTTIVQUSLSNLRG AVCYLQPTKDVNGSILITEVKSGNGINI AWVNGAPN AVCHMQPSATVSGRVLFRQPGPGARLEAFFDLEGFPE VCILETQNSIRGLVRMVQVSPKLTLVVDTINGLPP


$\qquad$

VATASFHKGVVGRVMFRQV KAKATFSNGTIQGTITLMQYANDLSILVELSLSGQTS NGDETVSGRVEITQQSEYDVSNVEVQLIKGQQD

## VRAVVNMRG ${ }^{\square}$ MGYFSFFQAS

ATLDASQPVTGLVLFRQRAPGAKLEAFFDLEGLPA NGDETVNGRLETTQQSEYD ISNAEVQLK GLNE
VRAVMNMRG ITSGYLEF DQESAYDVTDVEVNLEGLNG $A V L L P T L G S N A R G T V N F D E R V D G G M Q V T Y N L V G L P P$ RADATLRPTPGARGTVALTQRPEG VQVTYDIVGLTP
 SAAVS ULETKDPVRGLAR VQVSPEHSI I DLSIKGLSP SLAAVAEFKGKGDVTGVVRFVAVNEDTCVVVEGALEGLVP
 NGDREVRGLARMVQVSSGRTLVDLTVRGLAP KRVSAVIGMKGVKGYLNFSQISPFDPTIFTIFLTNLNK

 TKATVYVSGNQNVSGRFQFSSPEESDWVNIVISMRGLTE SSGLSGTATFAQ SGEEVTLTVTVSGCPA D GDLAVAGSVMVMQTD A GI ELT GTLGGLEA

 A $\square$ S S GTGENDGE TVSETP YGLLFTPHLNGLTP FGGNKDVKGNVVFT SSGKHVNVHVDMTGFPE AVAVFRTAG VTGRVTFRQRAPGATTHVHFNLRGVGR AVAIVDKGNNVRGVVRFTHVSENGAVLVDGVVDGLES



50
60
70
80
GEHAVLI HQFGDLSDGCSHLLGPPF $\quad \mathrm{FFKG}$
GMG GRHAVVLHQFGDSSEGCSRVGAPFSK
GASGFHVMEVSEFPCSCSRVGAPFSK V GEHSLRVHQYGDTSDGCASCGNTFDARGFDHGEKAGEQKV GKHKLFIHELGDISQGCDSCGDILGRLSPQTEKP
GFHSLAVTSAGVCDAAVDFASAGDVLNDPTNSTP GVPK GQYGFHMHEKNTMSNTTDGLGGHWDPDNTHKHAGPHGDGH GAHGDHDHTTGKCEPATD DVFGFHIHDGUICGSPDSGGASGAFAEAGPHLSLCPHPYH GVHGFHIHEKGDLGNGCVAAAGHFNPHKMMHGAPDDSNRH GAHGLQVHERGDCSAADASSAGRYFDPAA GAEQRGVAA GSHNLIIHEYGDESNGDVNVGNEY

 GHFDPKNTGKHLGPWSPDGH AQFAYHDHTNGNCSSA LGHDDPLQVTDGLTCDPLMPQYCQ GAHGWAVHEYGDLTRGALSTGPASNFPSS ANSPT MTNGCMSTRPYFNPSRKDHGALEDKNSH SNHGVY REFGDLGDGCQRDGPDFATNR N PDQQVGS SAGGYHLHDLP LSCGEYSVQGHFNPFGGSADTGTHDMYE SQHNWHVHVDAPDLLNCASAGGHYNPDDTCGVGRLQPGCE SQHNWHVHVDAPDLLNCASAGGHYNPLDTCGVGRLQPGCE AAYAYHIHTNGNCSSALGHLDPDAVTDGLVCNPQUSQYCQ GLHGFHI HENPSCEAGLGAGDHWDPKGTKQHGFPWSDNAH GEHGFHVAEFGDNSNGCTSAGAHYNPDKVDHAGPEDAVRH
GKYYATVVRDTGDDS QGAGSTGGDWEAVKAKVLGSEPVKEP GF H GLDRI HSVVGKCESASENGGGADFASAGSQVS GHNTYPA SKP PFSVHECGDLSNGCENCGSLL

 HVHEFADPENADNKCSGASVAGHFNPFGDTNANGTHDQYE SVHGFHI HAFGDDTTDGASI GGHWLSGAQVHAFPENTSRH
 $H D H D V Q 1$ YANGDLTSGCDNLGAKYDPHEDYH



 $R \boxtimes G P Y H V H D F P T P T C S N D N L G G H W N P F G V N P Y G S T H D D Y E$
 N N H M WHI HVNPKNGTDCLTTGGHYNPDGV DLTQPAYGGCE
 NDHNWHVHEN QVTSDCMSTGGHYNP FQVNVAQNYDERCE N G GYH I HK TPFPCEASTRYGHWNPDEVNPKSSPPPRQYE

 NS GYH I I HMTPPEFPCTEATTQLYGHWNPFNVNPQQQTTDQYE
 LF GP Y HV HNF GQCSNDNVGGHADDTTTSETYPVGPTHDKYE NDYSF LI YERGHCNAFSARDSGQVFDPSRWSGG SARP NTHAFALHQGGDCGGPRESSGGVGLTRDADSPAWQDDA K M S GYHVHMTPEFPCEGTSLYGHWNPDGVNTSDVPMDQYE K M S GY H I H M T P DFP C E S T S L Y G H WN P F G I NVGE GT T D Q Y E GRYFASVRENGD DSKGAVS TGG GAYAVTVRQFGDTTHGVATTGGVYTDADAAADAD DDAARA GRYWATIRETGDISRGPESTGGVWEALKKQQSERGEQSGP SP Y K L N V V H E C G D I S A G C D S V G DVV GE Y DLAAVHE F G DLS D A E R SVGGDVVGR H P G Y A D K P

 GKYP $\square H$ FHSKGKCAPDFRSSRGVFDTHSLGHKTRPDGQPP
 $\begin{array}{llll}\text { GF } & \text { A Y H V H H A }\end{array}$ STGGFHIHSGTTCASADDVGGHYFEGMADDPW
K VA F Y HV H Y L P VR S C S N D SIIGD H WN P F S L N R S S P T H DMYE


 NEYNLNVHECGDLSRGCSSVGEPINTQK

G VF S YHI HEFPDVGEDGCENSGKHFNPYGACEAQKDDSLCQ GEHAYHIHANGNCEATGGH LINPTGDADSVTCNPMVPKTCK GKLTA GLGAGGHWDPKDTKQHGYPWQDDAH KGGKLTAGLAAGGHWNPNKAPHHGFPWSDDAH


| UniRef90 U6P9S2 |  |
| :---: | :---: |
| UniRef90＿UPI00002211F5 | YSFSTAEWSLRTHFGEKPLACGTI GIA K |
| UniRef90－T1KEP7 | KATRD ERWVCGSI |
| UniRef90＿W4YR39 | A GSD VT A E $\square$ GAK F G L G $\quad$ A C G I A R S |
| UniRef90＿K1PKM5 |  |
| UniRef90＿UPI000467084F | GDA D A S S R $\quad$ A C G V I |
| UniRef90＿F9Z8S9 | A MP D NFTDHP VNGGSGARM |
| UniRef90＿F1YJS7 | $D L A D G G S E A$ |
| UniRef90＿R5LH71 | DMSDDFS TQPSGGSGKR】ACG』 |
| UniRef90＿A0A016W991 |  |
| UniRef90＿UPI0004647B69 |  |
| UniRef90＿H6TAB6 | N N K D F $\quad$ K K N N $\square \mathrm{P}$ L L （ G L I G $\square \mathrm{C}$ |
| UniRef90＿A0A016VI62 | G N S A E G G T RVAC G I |
| UniRef90＿H3E9H6 | E E S T MEWSLR QREKP P L A C G TlubVT K |
| UniRef90＿UPI0002B4D3AC | R T N GSHY $\square$ CAN |
| UniRef90＿15J9X8 | AGGDNH HDHPEPLGGGGARMACG』 |
| UniRef90＿F4S8S3 | A PNS T R L A C G N $\square$ T S FVD G T A |
| UniRef90＿A9SNG9 |  |
| UniRef90＿E0CU69 | IDP D DL G K G |
| UniRef90＿W4XNU0 | QNQDTYN A P L G C CVI GVTR |
| UniRef90＿UPI0001CBA6C0 | RDDE S GSRWS C S Di |
| UniRef90＿N8ZRX9 | AGGDNY S D T P K P L G G G GER\A C G V I |
| UniRef90＿A9V3S8 | G ADGAGARLTCAT |
| UniRef90＿A9V3S8 | G A A GA GARLTCAT |
| UniRef90＿J3PNM5 | LP N S T R $\square$ A C G N $\square$ T S T $\square$ D G T A |
| UniRef90 E8KFD7 |  |
| UniRef90＿U3PWG5 |  |
| UniRef90＿G7XD12 | K S Q GPFRQEDPDTLV GVIARS |
| UniRef90－X5KXH1 | A GPSGGGATSAAGSQ E R I A CGVVLA |
| UniRef90＿UPI00035A19D8 | Q GDQEEVLQGKS NRLACGIVARA |
| UniRef90＿W7TNQ1 | EKD GTRFACGTI |
| UniRef90＿K9SG01 |  |
| UniRef90－E5A8M7 | R Q R D GKFDKNDPD TLV GVI ARS |
| UniRef90＿UPI00037B484E | A GGDNYS D P P L G G G A R $\square$ A C GVI |
| UniRef90＿V4AP91 | KAVD GARYSCGNI |
| UniRef90＿Q54RN1 | A ARDDGN T Y VGGDRVAQGVVALL |
| UniRef90＿D6WZU6 | KKVDT S R WACATIE R |
| UniRef90－B8MC86 | KNKEGPFKAEDADT V $\quad$ V VI AR S |
| UniRef90＿Q9BKB9 | Q R H LHK S A K $\square$ A C CVI GR GQ |
| UniRef90＿K1QMK9 | K S Y K D |
| UniRef90＿D3BUH8 | S Q LYY A N P T Y S G $\quad$ MM A T C I GL |
| UniRef90＿UPI00034F7560 |  |
| UniRef90＿C5GS91 | K S K E GP F Q E D P T L V G VIA R S |
| UniRef90＿K8EBN3 | ENRDDFT TERDD GDA GK】 $\square$ A K GEI |
| UniRef90＿C4JEM9 | K NKD GPFKED DPNT V V GVI AR S |
| UniRef90＿UPI000440D3EA | QPN GTRFACASIGYS |
| UniRef90＿S4AAH2 | N A NLA T T R L A C A D V V P A T A Q A R |
| UniRef90＿S4AAH2 | NANLAT T R L A CADLVPA A T A Q A R |
| UniRef90 UPI0003836EFC |  |
| UniRef90＿UPI00034F745B | GP D GAAPRLA CANT |
| UniRef90－K1QXK9 | AEN A GGARIA CADI |
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| UniRef90＿F4PJD4 | D NERD K R $\quad$ A C G $\square$ T R A |
| UniRef90＿UPI0002A49D8A | S Q D N A R FACASIGG |
| UniRef90＿UPI00027F8715 |  |
| UniRef90－W8C2D4 | KKRRN ARWAC |
| UniRef90＿W4Z379 | R S D D G S R R C S S LMPVLLGD G F R $\square \mathrm{EA}$ A GV |
| UniRef90＿UPI0002247286 | KKEKN ARWACTTIER |
| UniRef90＿UPI00044439BC | LVV S G D P A CASI G |
| UniRef90＿UPI00034A0390 | R NED A S LEK T R L A C GVIRR |
| UniRef90＿UPI0004654B2C | EGYVDRAS LAEEQAQQAGDAAERSA |
| UniRef90＿A0A026W8D9 | KKEKNL R WACS TIER |
| UniRef90＿UPI00021A8136 | KKQKNL R WACSTI ER |
| UniRef90＿U4LUD9 | KKR EGWAENEKDT■ CGVIARRS |
| UniRef90＿C1FI37 |  |
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| UniRef90＿B0WC98 | E A D S K K R L A C GII A R A |
| UniRef90＿L8HCY2 | $R P$ AS P G G A RVAF GVI A R S |
| UniRef90＿E9ER45 | R Q NEAAGPLEND D TVV GVIA R S |
| UniRef90＿UPI000457370E | HPNS S RWLCGSIG |
| UniRef90＿M7A212 | $D A A P D T E \quad A R V A C G V I$ |
| UniRef90＿Q7NIL3 | K LH S L L R P G G S A L VIHA A H S R Q I I A CGAVT R T |
| UniRef90＿C1G384 | A SKE GPFRKE DPNTLV GVIARS |
| UniRef90－J3PNM4 | GANKTRLLACGNI |
| UniRef90＿S4XM92 | A A D P P A G GRI G CGLI E L |
| UniRef90＿F0YLJ7 |  |
| UniRef90＿UPI000393CFB4 | Q P N |
| UniRef90＿Q4TAY8 | Q GN GARFVCAS |
| UniRef90＿Q17HX0 | K K A N N |
| UniRef90＿A0A018QZ16 |  |
| UniRef90＿G8BES2 | Y A N T K L A C A D $\square E L A N$ |
| UniRef90＿F2UAX0 |  |
| UniRef90＿U5EJ42 | D T NEADR【ACG】 $\quad$ AR S |
| UniRef90＿A4SAG3 | A A A D |
| UniRef90＿K0KU80 | LENLDD K K L C G NTRVA K |
| UniRef90＿E3KFI4 | DLK G A WIA CGNI |
| UniRef90＿Q59081 | A GGDNHSDHPAPLL |
| UniRef90＿Q51853 | E G G D N H D HPAPL |







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