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ATTSRLRGSASGRCADVDNSSTAAGATVLLWDCHTAAN P G T D G V $V$ A R A G A GKCLDVP GFSQTNGTQTHIWDCHGGTN GTGNVL R GTGSNRCLDVVGASTTNGVQTAAIWDCNGGTN L R G Q A S G R C V KGAGSGRCVDVPGAVSTNGTQVAMWN


 LRNVNANRCLDVPNASQANGTQLALDDCNAGAN IVGTAS GRCADVPNSTQTLGTQVQLWDCSGATN
 PAAA GPI RGGA GKCLDVAGAATADGTKVQLYTCNGTAA
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 $P Q G Y Y R L V N R R S G K V L D V S G G S T A D G A K A D Q W T W T G G A A$ ADTGTVGGLGGKCLDVAAASSANGTAVQMYDCNGTSA
 $R A L G K C L D V A S G G T A D G T P V Q L W D C N G T A A$ LVSAAS GRCLDVTGNTAAQGTALEIWDCS GQTN
 $P Q Q N V Q V V G A Q S G R C V D V P N G T T T N G T Q V Q L W D C S N S A A$

P A A P S YR LTNLWSHQVTSTGGTVSAPGHGTVMYRVSVGGG $L V S A S S G R C L D V P G S A T A N G T G L V 1 W D C H T A A N$

A A GKA $\square R G \square A \quad G K C V D V A A A N S A N G T P V Q L Y D C N G T A A$ GYYKLVARHSGKALDVENASTSDGANVIQYSYSGGDN APTGPLTGLA GKCLDVAGAATADGTPVQLHTCNGTAA A A T G T I T G L ADNGQVRGL P P S GT G | $G$ | $K$ | $C$ | $L$ | $D$ | $V$ | $A$ | $G$ | $A$ | $A$ | $T$ | $A$ | $D$ | $G$ | $T$ | $P$ | $V$ | $Q$ | $L$ | $H$ | $T$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $C$ | $N$ | $G$ | $T$ | $A$ | $A$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $G$ | $K$ | $C$ | $L$ | $D$ | $V$ | $A$ | $G$ | $A$ | $S$ | $S$ | $A$ | $D$ | $G$ | $T$ | $A$ | $V$ | $Q$ | $L$ | $Y$ | $D$ |
| $C$ | $N$ | $G$ | $S$ | $S$ | $A$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $\begin{array}{llllllllllllllll}G & K & C & L & D & A & G & A & S & S & A & D & G & T & A & V \\ G & Q & Y & D & C & N & G T & S & A \\ G & K & L & D & V & A & N & N & A & T & A & N & G & A & V & V \\ H & L & W & C & Y & D & S & V & A & T\end{array}$ $G K C V D V A A A S S A N G T A V Q L Y D C N G T T A$ GK CVV DVAA A A S S A N GTA V QMY D CN GTTA GK C L DVV G Q GTV $V$ G T R L Q QLWE C N G S G A

$G A \square T G \stackrel{R}{\square}$
$P G A G G T L K A L$
P P A D T GRIT GYG
 GKCVDVAGAATANGTPVQLWDCNGTGA
 A S
$G K C V D \vee A N$
FTWP G GT S
 PTPTFSLLRGAGSGRCLDVLGGATVAFPQTLTVDYVRVYSY S GPVSFRSHLD GRCIDVDGHDF SDGKALHVWDCN GAPA $P N T S T I T G V P S N R V L D I V G Y G T S N G S R I Q L Y D A H G D W N$


T P A GE L R VY D GTRCL
V I S A L N GRCDDDP N GNF S D GVRVQMWNCNGSAA GTLVSA GKCMDVKGAGTANGTLVQ】YDCNGTGA A GKCLDVA G GATADGTPVQ\YGCNGSTA A A T Y T V V GVQS G K C V EVVA G G S TA A D A A A L Q I A S C N G S T R $P N P T T F R L R S Q S A D R C L D V A G A D S S N G A Q M I T W D C H T G A N$ GTGGRITGLA GKCMDVAAASNANGTPVQLYDCNGSEA
 WGAQT H A S T GP TVGVGS GRCLDGTGNPSNGVQPYDWDCSTGGAN ARTGAFVGLA GKCLDVAGGSSANGTAVQLVDCNGSAA

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 QTWTSTSTKQLTVYGGKCLDATGTTAGAKVAD WDCNGGTN QE WTSTAAKELRVYGNKCLDAFGTSPGTKVVI WDCTGGAN
 QQWTYTSGRQLTVYGTKCLDAQGTTAGTKAQI WDCTGAAN QAFTHNSTSELTVTDAGVTDCKGTTANGKVQI YPCNGQPN QQWTLTDSNQLTVYGDTCLDVPGTTAGTRVQIWTCSGGAN QRW $\mathcal{W}$ T R G NQLQVLGKCLDAYNTTNGTKVEIWDCNGQTN QQWTGTSARELRVYGTKCLDARGTANGTAVVIYDCTGGTN SATNVTSGSRGNTNTGTVVVTGGNWPSGAQTVKANAGDQS QQWTATAAGQLQVYGTKCLDAGAGTSGTRAVIAACTGAAG QQWTATSAGELRVYSGDCLDAYGTTPGTKVAI WSCNGQTN QQWTVNANGTVAVQSNDCLEAQGTANGTKVLLWTCNGQAN QQWNVNPNGTITVQSGLCLDVTGTTNGTPVELWSCNGQSN QNW ARSGATFRALGKCLDVGGTANGTKAQLWTCNGSGA
 QQWRLREPGLVSRHSGKCLEVWSTVNSAPVQQYSCGGGAN QKWNPDNTGTTYTLTDDDGSATVFARGA QQWARTASNELRVYGDRCLDASGTADGTPVIIWDCRGTAN QAFDGTGYNLVNANSGKCVEVGGTGSGTNVQQWSCNNGSH QLWTTWANGEI RVFGDKCLDA TTSGARVFSRTCTGQSN QKWTGLS GTSTPPDGTCSLDPSTYRWTSTGALAQPANGWVS QRWTLTTAAELRDYSDKCMDAGASQDGTRVTINSCNGSNS QRWSVSGAHDI NPQADKCLDANGSANGTRLQI WTCTGATN GGGTGSAKQIIGTPSGRCVDINNTTNGTQAQLWDCNGQSN
 QRWTVTAARDI NPQADKCLDVTGNNNGTRLQIWSCTGGAN QQWTYTSRKELVVYGNKCLDAYGTTNGTKVVI WDCNGQNN QQWRDASYKLVVSRHSGKVLEVPGTTSGVQLDQWSDTNSSH QQWNVGADGTI RAL GKCLDVGSTANGAKLQLWDCNGSGA Q LWTATSSKQLTVYGNKCLDANGTTNGTAVIIYDCNGQTN QQWRFQEVGIISQASGRCLDVDSTANGARII QWSCNGGTN TTPPTGARTIRG $\mathrm{T}^{\prime} \mathrm{GGKCLDVAGSANGTAVQLYDCNGTGA}$
 QT $W$
QRWT Y T
$V$ S G S $T$

S S VGT DTG
QT WTA G $\begin{array}{lllllllll}A & D & G & T & L & R & S & L & G \\ A & T & G & R & I & T & G & G & G\end{array}$
Q Q WT V Q Q WRL $V$ GKCLDINGTADGSKVQLWDCTGGPN G QRWTLASDGTVRAL GKCLDVTTGTADGTKVQLYTCNGTGA Q Q WTVVGS D G TVI R A L $\quad$ G K C L D V T G T A D G A K A Q L WT C T G A A N Q WTV GT K
 QRWVAES D GHLLNPQS GRYLDVVPGTAD GTRLLQIWDRNTNPW QRWTA GA D D T L R A L G K CLLDV S G T V D GTKI QLLYGCN GTVA GNPPAGRTGAIDSGLGGKCLDVTNTTNGNLPQMWSCSSGPN

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 QSWKFSNTS IVGVA NKVLDATGSANGTK\|QLYSNAQTSN Q Q WT R T A A GEL TVVYS GRCLD TSSGTSAGTAAVI AACTTGTT QRWTYTTHDVVNAGANKCLDDTGSADGTRAQIWTCTGGAN QQFRLNADGTITVQS GQCLDVSGGGPGTANIIWPCHRAAN AS GTIT GLAAGKCVDVAGTANGTAVQLYDCNGTGA QKWEFV NGTLRTGNNKCMDVAWTANGADLQQVTCS GNPA QVWK S GSNGSINPAS GKCLDDPSTTDGTQLQIWDCNGNSN GRCLDVPGHNDGQPLFMWDCNGADA QRWTVGADGTDRAL GKCLDDVAGTANGTAVQLYACNGTAA QQFRMESAG』RNVNSNRCMDVAGTSDGAR\|QQYSCWSGEN QQF TQTGQTLRVMGRCDDVPSDAPGARAR\|WDCTGGAN QRWTVGTDGTIRAL GKCLDVGGTADGTPVQLWDCNGSAA QRWTLAAD GSVVRAL GKCLDVVTGTAD GAAVQLYTAN GTGA Q WWKLA DTGDVNVRTGRCADVEGGNDGARVIDA WAANTGTN



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 QQWNVNANGTVTVVQSGRCLDVWGATANGQQVQLYDCNG QKWTLGQDGSI RNVHAGLCLDADGAGTADGTPLVLWTCNG
 QQWNRNSNGTITSVQSGLCLDVAGGSTANGALVQLWDCNG

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 TTTPPRQNVQVVGTPSGRCVDVAGANTANGSGDQLWDCHS QQWRLNADDSVTSAQSGLCLDASGAGTANGTAVILWTCTN QQWRLNADGTITGVQS GLCLDATGAATANGTLLELWTCNG QQWTVP
QK WAPQADGTVRNPQSAKCLDASGGTWNDGTPVHLWTCHT QQWRVAP
QNWAPQADGS $\square R N P Q S G R C L D V S Q N S S A D G Q Q \prod H T W D C H G$ QVWQAY NGGYRNPASGRCLDVPGSTTADGTQLQLWDCHG QQFVLSTEGDLVNPQADKCVDVKDNATGDGARLQLWTCAG QQWTL
QF QVRSESGPEAASTTRYVYDVTDG
QQWRVDADGSVVGVASGKCLTPAAGGTANGTRLELRTCGA QSWSFTP
QQWT LGSDGT $\square R N V Q S G \square C D D V E G A A T A N G T H A \square L W T C N G$ LK DFTTVTYNGKHLVYASNVSGSSYGSMAFAPFTNWSDMA QK WVF NSNGTVTSTQSGRCLDVNGGGTADNTAVIVWSCHG QK WTAPAAG
QQWTPTATKQLMDYGT KC LDASNQGTTNGTPAVIWDCNG QQWKFTKTG
QQWTMNSNGTVTAVQSG $\square C \square D V T K G G T S N G T A \square E \square W T C N G$ QKWTV
QKWNVNSDGTDTNVNAGLCDDAYNAGTANGTQTVLWSCNG QQWNVNSDGTITNVNAGLCLDAYGAATTNGTKLVLWSCNG QRWQLVDTGRLVNVRTGLVADVSGGSLDDGAQVIQWAASG QKWTVTAAKDLVNPQADKCADVQDKSTANGARVQLWTCTG QQWNVNSNGTITGVQSGLCLDANGAATANGTKLILWSCNG QQWELRDAGEVVARHSGRCLDVIDSSTANSARLHQYDCWG QQWDVRSDGTリRAL GKCLDAKDGATANGTLVQLWDCNG QKWTV
QKWRQNADGSVTGVQSGLCDDVNGNGTANGTAVILWTCGG QNWAAQSDGSLRNTSSGKCLDVSGNNSADSTIVHLWTCNG QQWNLNSNGSISGVQSGLCLDANGAGTANGTKLILWACNG QQWTVGSDGTHRAL GKCLDVTGNSTADGAKAQLWSCTGG QQWTSQADGTIRGARSGQCLDVDRNRTANSTAVLLWTCTG
 QK WVVSSANDIVNPQANKCLDVTDNNPANGTRLQIWTCGG QRWTYAPGTHVVNTAANKCLDVGTGNSSADGTRTQIWTCTG QKWTVTAAHDIVNPQANKCLDVTGNNSANGTRAQUWTCTG QKWTFSGSG
QQWQAQSNKTLVNPVSGRCLDATGPSSANGTRLQLWDCFA QA WQPGSGDTLVNPASGKCLDVTDKSTANGARLQIWTCAG QTWKLPSDGTTPPPGSCAPALAPGQ
QKWSPQPDGTLKNPSSGKCLDASGVSSADGTKLHLWTCHT QTWTLGTDGTVRAL GKCLDLKDSSTADGATVQLWDCFG QA WARSGSGELYSGDSTRCLDASGQGTTPGTKVVIWNCNG QRWTPTPDTGVPGRGS
QKWAYNSNGQUVNPQSGKCLDATDVSSANGTRLQDWDCGG QRWT PTP
QRWNRNTNGTDSNVASGLCDDVNGNATAAGSPVILWTCTA QQFRLNDAHDLVNRQADKCVDVTDAKTADGTGLQIWDCTG QRWTVGTDGTI RAL GKCLDVSGGSTANGARVQLWDCNG QQWTLQSDGTVRGARSGKCLDVNAAATANNSPIQLWTCTA QKFALNGAHDLVNTVVGMCVDIAGANRNSGAALQLLHCSG QKWEFNPANGSIVGVGGKCLDVEGANTADGTRVQLWDCTG QKWTATGNGTLTNGQSGMCLDVSGAATANGSKVII WTCHG QKWTHN
Q 1 W
Q $I$ WSNPGDGTLRAL GKCLDTADRGTADGAAVQLWDCSG $Q Q W V L S A A G D L V N P Q A N K C A D I D A W N P N D G A V L V L W E C T G$ QS W
QKWRFGSDGT DRAR DKCLDVANANFNNGSR DQLAWCNG QQWTYDPVTHVVGAGSGKCLDVTGNTSADGAKTQIWSCTG QQWSFTDVARLTARNSGKSLDVYGRGTADGTAVIQWTSNG QQWNLNTDGTI GNAQTGLCLDVNGGSTANGAAVIVWSCHT
 QRWSYNAATRLVNTAADKCLDVRDRSSADGARTQIWTCTG QQWQ VD
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1 GSTNR【I GLLAA NKCVVDVJPGANGADGQY|L|H|LJWHNGTNA GLDAVNSFSADVTAG $R A L G K C L D V T S G S T T D G A K V Q L Y D C N G T G A$ PPVGSPALLSHGSTRCLDISGGTTDGSQALIRDCHGGAN TGTYR』TNDNS GKFLEVANAATDDGATVQQYGDTGHPC $G \boxtimes S A A L C V D A A D S G T A D G T H A Q \square W T C N G S Y A$

## PGGAGWIIHAASDKCLEVAGNSKADGAVVQMYTCNGGAN

 PTGPVTVVNSGSGKCLDARAAQTANGTAVQQYSCNGTTA GSYVIVTSVMNGKSLDDKYWTWENGGNIQMWDNRGS DNGRTGP $\square$ T G $\square$ A GKC VD $\square$ A A A S S A N GTAVQ L Y D CNGTTA
$G T V R S L \quad G M C M D V A W G S K D D G A A D Q L A R C S G N B P A$ L H AVVGA GKCLDVVPDSTTTA GT QVVIWWGCHSAAN P P S GS GQVID DWNGKCVDVPSGNF VDSAPLQTWTCNGSNA

 SGPVSFRSHLSGRCLDVVGHNFNDGQP LFMWDCNGADA GS STYP QTMTVVDY VQ H T T T W W G KCLDVPNATRTAGTQVQIWSCNGGAN
 $P G R T G V L T G \square A$

A P GT T $\square \mathrm{Y}$ S H A S N K C $\square \mathrm{E}$ M V G H K G A D G S P $L$ Q $\square \mathrm{NS} \mathrm{C} \mathrm{T} \mathrm{G} \mathrm{K} \mathrm{N} \mathrm{W}$ GKCVDVAGANS A N GTAVQLY DCNGS G A QWVF DHNFF GGYYKLISQSSGKADDVAGGNTHDGANVQQWTDNGNAQ G GYYRLKAQHSGKVLDVYNLSGADHADIVQWGDAGGAH

 P P P T T G QIVGRQS GRCLDDVNNSTTTNGTQAQLWDCNS GS N
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GA WYRVANTSSGACLDATDWGTANGTLLQQWTCGDGAN GYYKLVSENSGKVLDVASAATYDGANVQQWDDTNGTC $V \vee S$ GY G GKCAEVT G GTTANGTA V QLD T C GS GS A
 $K G L G K C L D V V N G A T T D G A T V H L W C F A G L T S$
$G T L T G L G G G K C L L D A S G$ TANGSAVQTWSCTGAAN
P N S F Y QL DNVNS GKY L EVESASTTNGANVQQWENTNCLC PSPTAGPVRANGAGRCLDVSGVSTTPGATVQ\|WDCNGGTN PTGTPQQVLNDNSGKALAIVQRTPDATADAQRWTFTKVSG GGYYRI RNVHSDKCL DVVSASTADGAAMVQFTCHDNPN T TA GELRTLGGTRCVDAYGNRTAPGTAVIVWSCTGGAN
 TGFATVVNAASGRCLDAKAAATANGTAVQQYACNGTTA
$P \boxtimes Y P N G P V P S G \square A G K C A D V D H S E V G N Q T H D Q L W S C N N S N A$ GGYYKI DNRNS GKLLLGILNSSSVDNGGDAIQETNN GSNS G VWY TITNTAT GKCVDAS G G GRKD GTPDVVSYSCS GK DN $V T S G G S G N C \quad S A G G D S D F Q P L Q P I L Q K Y N L R L K$
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A GLYTMTAK HS GKNMAVQGASPADSAPDVQQAPGAGKE T F Y RITVVRHSGKAMDVQQPNTDNGARVGQYTYNGNTW $\square Q \vee S A D N S N W T T V Y S T T T G D G G \square D$

GKCVDDNHQATANGTAIQLWTCNGSSA
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P T A Q GQ $\square T$ GPGTGECVDVNTNTSVNGNAVQLWACDNAVG A WYVL VNRNSGKALDVYGQSTSDGARITQWTRNNGTN GTFSLVNDNSGKCMDIQNGSTNAGAAI DQWPCTGAGN
 $P A G P V G T L G A V G$ GTCVVRAGGGANGTPVQTGACDGGAD NNKCI DVPSSNFVDRAPLQMWNCNNTNA T T Y T L V GVQ S G L CVV VVDAAVTAD DVVL QLWDCNG GT N D GDRLVVNNS GKCLTVKGGASANGTAVQUSTCGTGAS
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 QKWRVDGDSLVNVNSGKCLDVNGTADGTRI QQWTCKQNGA QQWSI TSTSDGYVR $\square G A R A D S V S T A D S A P V H D W T Y G G G D N$ QK WYINDAGNGYVYNGRCLEVEGTAAGANVWQWDYLGNAN QNWTVASDSTLRAL GKMLGDAAGTADHLSARWQDYWSPGGA QS GGGGRSGAFVGLAGKCLDVAGSANGASVQLYDCNGSTA QTFVLSTQGDLNPQANKCVDANGTGNGTKLQLWTCAGTPN QT WTHSASGQLTVYSGQCLDAYDTTPGTKVVI WPCNGQRN QKWTAVNGALQAQNNKCMDVAGTAAGSAI QLYTCNGTGA QLDWTLADNGSVQ GRGKCLDVANTTDGAAVLLWDCFDSTS QQWQAVDYHFVNRHSGKCLDVPSTADSVQLVQYTCNGTAA QDWSVSPDGTI RS FGKCLDVQGTANFTKVQLWECNGSGA QKWRFGSDGTIRAR DKCLDVANADNGSRIQLAWCNGSAA A WT WN NWSGSCSSGPTLITVYNGTPTNYGAAYKAHLASAG GSTGGDYTGRDTGPGGMCVDVAGSADSTPIQLHNCTGNAA QT WTHTASNQFTVYSGMCLDAYNTTPGTKVEIWSCNGQSN QQWLLQDQGNGYYHSGKCLDVENTANGARLIQWPCGTGSN QQWSVDSSNGYLVNAKSGYCLEDTADGNPLI WACNPGDV QRWTLGDDGTVRAL GKCLDAQGTADGTRVQLYTCNGTGA
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Y S GRCIDVPNADDGKKLFMWDCNNGVA EKWQFRSTGDVNQFNNKSWDVDGTADGTKVHLWDYVGGTN QRWK IIDAGNISAVSGKALDVGDTKAGANVQQWYETGGDN QSWTAASDGTLRAL GKCMTVAGTANGTAVQLATCSGAAS QQWTVESNGSLQAL GKCLDVNGTANGSLVQLYTCNGTVA QQWYLLRPTGDVSHDSGLAADVNGQNDGAAVVQWTANNGAN QQWTYTAGKDLNVKANKCLDIKDNNDGAKLQLWTCGGGAN QRWTLGTDGTLRTN GKCLDVTGTADGAKLQLYDCNGTGA QQWQIVQNSEINRHSGKALDVHSTADGANIVQWDQSGYPN QSWTRTSARELTVYNGRCLDAQGTTPGTKIVIWNCNGQAN A YVVNTSGGSQRTDAGRSLAYTLPAGA $\square$ ATFVWSSTGTPA GWDNNAAYRLTNAKNGKALSVE QQWSVTEAGGGAVRDGKVIDAYGSPPGTALVQRASNGGAS QQWRQNADGTITGGQGLCLDVNGTANGTAVILWTCHGGTN QLWQVTSGGYYRLNPAQVWDVTNTADAAPVQLWAYGGGDN QQWSFTDAGDGYVR $\square G N R N D T N S T A D G A A V H L W S Y G G G A N$ $P \square G D A P V V V Q V E A A K G K C L D V A G T A N G T P I Q L T T C N K S A A$ QHWFLTGDGSVQAMGKCMDVSGTANATKVQLWDCNGSGA QKWRMVDYKIVNMGSGKLLEVTSTANGGDVAQWTDNGGKN QQWQFTANGFFRVASRRALDVEGGADGTHVQLWTYGGGTN LQ GGGCGGKSIIGLANKCi DVPNSDDGKRLQLWDCNGSSA QQWSFADYKIVNRNSGKLLEVINNTENGGDAIQGTDSGSDS $Q Q F Q F V D S G G G Y Y H S G K V L D V W S T A D G A N I H Q W T D H G G A N$ $Q L F W A K D A G G G Q V H S S Q C L T V A G T A D G A A V V Q S A C A A G T N$
 QK WQVDPVGDGSYTDGKCLEVPGQSTELDVQQYACNGGGN QQWQF QDAGNVSRNSGKCLDVVSTADGAELIQYTC GTGTN $N \square S F A A T N A R Y V R M Y G T Q R A T E Y G Y S G W D F E V Y S D S ~ G P V D$ ATGP ITTGLAGKCVDVASNANGTAVQLYDCNGTNA QQFTVNANGSLSVLGKCMDIDGTANGVKVQLYDCNGTGA QRFRVTPTSIIVNVNNKALDI KSTAANALVHQWGYGGGAN QNWRDNSWLLTNVNSAKCLEIWGDEDGAAADQWTCNGSAT QEWTLRARGLTGVNSGHCVDVENGSPGANVRQWYCNAQPA QA WYFTNASLLIAT GGKVVLDVVGGSTNGMPLQLDWDLDGGAAN
 ITNNNDDTMGALVSNEAGSNNTISGNSEFNS Q Q WS LET D GT $\square R A Y D K C L D V N G T A N Y T K V E L W D C D G A G G$ Q Q WQFVDSGGGFYRSGKVLDVTGTTDGAAIVQWTDNNASN QRWTFSGSA IVSARSGLCLDVNSTAEDHALIQWTCRNTAN QRFRLES T GDGYY HSGKVLDVRSTAAGVQLQQWTDNGTDAA
 QQFRFEAYRIRNVQSDKCLDVRSTADGAAIVQYTCHDNAN
 GHHT LVNVASGKLLDVTGTADGAPVGVHQPTTGAN Q Q WQF VDSGDGYYHS GKVLDVWSTANGGSIVQWTDLLSTN GGGGGSGQSFVSRLNGKCIDVPNSNDGVQLQMWNCNGSNA

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QRFTANPDGSLVNTNSLKCDDVSGNGTANGTLVQLYECNG QRWRIVDDGGSYAVHSGKVADVYGWSTDNGGNVVQWSDTG

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GWDGDSPMDVHDHAAS DKCLEVAGNSKADGAVVQMYTCHS QVWQAQSNGTLRNPVSNKCLDASGNSSANGTRLQDWECFA
$Q Q W T L P G D G S V R A L \quad G K C L D V T S A S T A D G A K V Q L Y D C N G$
QKWRVQD
Q Q WT L HP D G T IT GVQS G LCLDNVTGGATADGSPAELWTCNG QQFVLSGAGDLVNPQSNKCVDIKDWNGADGARLQLWDCAG QK WTL N A A G DLVVNKAS GK CLLDVVRDRNTAN GA KLLQLWTCT G QRFQVAP
 QKFTLNGAHDLVNTVVGKCVDIPNHSKGRGTYLILWECTG
 Q QWTVGTA GTVVRAL GKCLDVAAASHNDGAVI QLVYCN G Q Q WTL NS S GTIT GVVQSGLCLDIAGGATADGSLVELDTCNG QQFR
QRFTLSAAGDLVNVSANRCVDVKDRNTANGAQLQLWDCTG $G Q K W Q V P T G T S A S G P S G R V A G Y N G K A G A E G A A V Q L N T C G S$ QRWAYNSARDLVNVPANKCLDVLGQNPADATPTQLWTCSG
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Q Q WR L
QKWAVSGANDVVNDNADKCLD $\square K G N T S A D G T R V Q L W T C T G$ EQWQTNSSGEIVNPVSGLCLTDASNGATNRTQLTIATCTG Q Q WN VN A D G T I TT T A Q A GLLCLDAVGQGTGNGTKIQVWS C S G QQWTV TAARD VNPQANKCLDATANSSANGTRLLQUWTCTG QTFSLEH
QRWY I N D D GNLEAVHS GKLADVVEGASTSDGANVIQWPDTG QKWQFASDGTVR DNG LCLDDVANANYNDGTPMQ@A WC S G Q Q WRAESQYRFVARHSNKCLAVVGSSTADGAKLSQQTCS G QKWQFTKVDESHNTGSNTGSDTPVAT QKWQA QANGTLVGTQS GKCLDATGPSSANGTKLQDWTCAA QVWQAQSNGELVNPHS GRCLLDDTAS ASGS GTQLQQIWDCTA Q QWQLTTP
QK WTVNGASTPPTTPPVTPTTVPPGSGNPDLGPNVSDFDP QRWTYDATSSHVVNTAANKCLDVTERSTAN GARAAQIWTCTG Q Q WS LQQVGNLVSRLS GKALEVVNHSTANGANVVQWQDYS Q QWTV Q S N GTI TGVQS GLCLDVTGSATANGTPI QLDATCTG GP DDSAA WY QVVNANS GACLDAVD WGTANGTAVQQWTCGT QHWMLSTTGNLINAATGSLLDDVTGGATSDGAPVGTYQPTT Q Q F KL L P
Q Q W
QQWQP VEEYHFVNRHS GKCLDVPGASTADSVQLQQYTCNG Q Q WLPVVDD GHFVNRNS GKCLDDPGAS LADSVQQFVQYTCNG QS WQLV D GYS LLWNPNAMKCLLDVSGSNPAN GTKIRITYTCNS QKWKASS GALVNP QS GKCLLDDPNSTT T D GT QLLQUWECN G Q Q WY L
Q Q WK PVDQGNLVAQHSNACLDVTGGSSADNTRLQQLQCTG QKWDFAGDGTLRAD GKCMDAPGAGTSNGTPVQLANCS G

 QQWRAT DTGDGYARSSGKCLLDVADESTADKAALLEQS CTG
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QRWRIVDAGKVISKASGLVMDVSGASTADGAAVQQWTDNG QQWRAGSGRTLVNQAS GLLCVEVKGSATAEGTPLLARVCDT QQFTLNAAGDLVNLQAGKCVDIKDWNGNDGARLQLWDCGG Q Q WSVTEAGRIJTSRLSGRVIDAYGSPPASGTALVQRASS G
 QS WTFPSWKS LAAFRHSSKCDDVSGAGSADGAAVVQYGCNS $Q Q W R L A D Y$ VRF $L$ S R HS GKALLEVVQASTADNANIVQYDDWG


| Ur | K W |
| :---: | :---: |
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| UniRef90-V6KNF5 |  |
| UniRef90-U5VWJ5 | T GA QR |
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| UniRef90-D6KD42 | SAA |
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| UniRef90_UPI0003B58DFC |  |
| UniRef90-H1QQG1 | G A N |
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| UniRef90_U5WA41 | S T A QK W |
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| UniRef90-UPI0003675A2A |  |
| UniRef90-M0A4B4 | GANQRWT F |
| UniRef90-G2GLC1 | N NAQKFVL |
| UniRef90-G2GDI3 | S A A Q F RLL |
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| UniRef90_C7QGB8 | S A NQKWQL |
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| UniRef90-U5W3Y3 | S M S |
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| UniRef90-R1HRX5 | A N ${ }^{\text {a K W }}$ W |
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| UniRef90-W7TE41 | G P S QL |
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| UniRef90-W7TH98 | T A NQ $\square$ WHLL |
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 WG GS Q G G
PAAGTRDAGPG GKCVDVAGDDTANDSPVQLWDCDGAAA LASQKVIDITNGSTAVNANAQLYSYNKTMA GYYVIENYASGKVLDVEGVNCNNGANVQQQWQYGGGAN

YK $\square 1 \mathrm{NRHSGLCLDVAGANKASGTNVQQCQANGNVA}$
GKCLDVAGNSTANGAAVHVWCYDSVAS
PNAWYVIVNRNSGKAIDIYNNSTADGGRITQWDRHNQNN GANTRVVNANSGLCMNVRDGKDANGTQVEQVNCDANSY NGGLCDDARGGSARAGTAVQTYTCNLTPA APGTTDFGHASNRCDEMVAHKGADGSPLQDANCTGKNW AANGTI RSL GKCMDVAWGSTANGAPVQLTSCNGNPA GGAYQ\|VNRNSGLCDDVNGGSKADGATAIQYPCGTQAN SGYWRIISRHSGKCLDVVSASTADGAELQDYWQPGGLGGTCGTGAN GSYEIVNQKSSHLLDVTDASTADGATVVQQPDTNADS GYYTVTGAASLKPLTVPGATTWPGTQLGLWSTNGGPE A WYVLVNRDSGKALDVYNDATGDGAR1UQWTRNDQYQ $G Y Y R L K S R H S G K V L D V Q N S S T A N G G A I V Q W T D A N G T N$
$G G Y V R V N G N S N K S L D V A G P S T A D G A L V H Q W D W L T Q D S$ GA $\square Y \mathrm{~K} L I N \mathrm{~N} N \mathrm{SGLLALDVNGASSTGGATIIQWNDNGAAN}$

SAWYVLVNRNSGKALDVYNLATTDGARDAQFTRNDQTQ
 PANGNYSQIQNVKSGKVLAVTNGSIIASESNVIQWSSTGGAD ATYNTLVARHSSKCADVANQSDATGAAISQYTCNSGGN
 RAF GKCLDVANAGTANHTAVQLFDCNGTAA
 $P G G A G W V E A A E G K C L D A E G G K T A S G T P V Q U Y T C N N S S G$ PTTYTDTNRASGKCLEVAGSSSADGANVQQYACDGGGN YEISSKNGGKALEVSANSTANGGRVQQWTWASAAS GQITALGGRRCMDAYNSGTTNGTVVGTWACNGGDN GYYKV $\quad$ AEHSGKS IDD DDNASNQSGANLKQYDYSQNNA GYYKVIAEHSGKSUDIDNASNQSGANLKQYDYSQNNA GTYKIVNRNSGKAMDVVNASTANGAKIQQWGYAGTGN GKCLDIPGGGTANGLKLQLWDCNNTAA AKV F T WNEDGTPN
RAQGKCMTVAGGGTGDGTAVQLATCSGAAS YVIRSGLSSRRVLDVSGGSKDNSANI QIYESNTTAA GAHYVLRNHHSGLVADVESAGTEDGARIIQWERTDRPW PGPTGHDTGPGTGKCLDVDTNTSTSGNKVQDWDCNSTAG GGYVKIVSRNSGKLVDVSQGSTADGASAIQYTDNGGAN ATYNTLI ARHSAKCVDVPNQSLLTGVAVTQYTCNGGGN
 GATYTLVSVNNSSVLDVASS GTTNGTKVQLWWSNNSNA STAYRIVNKATGRCLDIAGPSTADGAAIHQWGCHTGSS
 G GWYRVRSQHSGKVLDVQGWSTADAAKVVQWSDTGGAN $P P S G Y T N L Q V A H S N L C L D V K K S A L W N G S T Y Q Q W S C N G N N N$

 GA A NVA S G K C L D V K S A G T A D G T A I Q I WT C N Q S P A | $T L V N R A T G K C L D V Y A S S L V D G A D A G L W T C N G G A N$ |
| :--- |
| $D Y W S G G V G$ | $P G G \nabla Y T L V N P N S G K A L Q P A G G A S A D G T V T Q D F T A N G T A A$ GGYYRIQARHSGLVLDVWEWNPDNGATIAQWNDLGGTN


 LN NTKC DVVPNSNFS D GVPPLQMWNCN GTN A
 P P A Q Y F QLVNRRS GRADDVPGA DTSAGTGLIQQTPGSAAN $S T Y Y T \square K N V N S G L L A D V N Q G S T A D N A S V I Q W Q S N S G T N$ ANKNYVLDVAGGSTANEANVQIYVNNETDA
 S S Y K K LVNQNS SKCVVVVQQPNTSAGSNVDLYGCNGFAW GATYK IIAKCSGKSLDNDNWQTTPGSNVHQWGYDNQAN T G GQSLAAVHSGKCMSVTAASLDNGATIDQRPCTGASD
 SAYYK VVNKNS GKVLDVVKGA Y LDD STSVVQYADNGGAN
$G T Y T V V G V Q S G S A L D D P G S S T A N G T Q M D \square W S V N G G N N$ GTFVIVNKLDSGKVLDDVGYKTTDGTTVWQYGATGGSN AFTPL RNEATGNCLDSFGGSSANQTKIVGWDCHGGRN GTKYYVQAKHSGKYLDVASQSRADGSSVIQTTYTSGTS GYY QVVAN H S G K V L DVAGS S T A D Y A A I QQWTYGGGNN

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UniRef90 S4YF52 UniRef90-S4YE52 UniRef90_UPIO003765BFB UniRef90_C4RG89 UniRef90_UPIO00364CA30 UniRef90-W0V1T0 UniRef90_UPIO004150A7E UniRef90-UPIO003635804 UniRef90-V6JIA2 UniRef90-B3RR08 UniRef90-F8CJ72 UniRef90-W5N3U8 UniRef90_UPI000466B8FB UniRef90_UPI0003612A7B UniRef90-COBAS9 UniRef90-G8S547 UniRef90_UPI000381CF4D UniRef90_GOAGQ2 UniRef90_UPIO0029B0031 UniRef90_UPI0003B5E6A2 UniRet90_S4Y486 UniRef90_S9PC74
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UniRef90-C4RL93 UniRef90 K4QYN1 UniRef90 UPI0002E7F146 UniRef90-D7BOW7 UniRef90-F2RHT6 UniRe990 UPI0003B2E6E UniRef90-UPI000368C167 UniRef90_W4BEV6 UniRef90-N9V175 UniRef90 G8S9Z5 UniRef90 ${ }^{-}$E4NIX1 UniRef90 W7Z1A7 UniRef90 UPI0002883BEF UniRef90-B4CYS8 UniRef90-UPI000248D15B UniRef90 R4LM51 UniRef90-10XLJ1 UniRef90-D9XFK8 UniRef90 UPI00037AFFE3 UniRef90 UPI0003658C92 UniRef90-W8F6U5 UniRef90 C9ZEC5 UniRef90 COBAT2 UniRef90_COBAT2 UniRef90-W0IYK7 UniRef90 UPIO003674B76 UniRef90-UPI000361C061 UniRef90-A0A022MJZ8 UniRet90_C0B964 UniRef90 UPIO003478700 UniRef90- ${ }^{-15 H P X 8}$ UniRef90-F8JK44 UniRef90 D6TYG5 UniRef90_UPIO0037B40B3 UniRef90-U2SkV9 UniRef90_F4FFB2
UniRet90-J3CGB7 UniRef90-UPIO00465BOEA UniRef90_U2RQL4 UniRet90 D5UBT5 UniRef90-R9PUH4 UniRef90_S4YE52 UniRef90 UPI0003765BFB UniRef90 C4RG89 UniRef90_UPIO00364CA30 UniRet90_WOVITO UniRef90 UPIO004150A7E UniRef90-UPIo003635804 UniRef90_V6JIA2 UniRef90 B3RR08 UniRef90-F8CJ72 UniRef90-W5N3U8 UniRet90 UPI000466B8FB UniRef90 UPI0003612A7B UniRef90_COBAS9 UniRef90-G8S547 UniRef90 UPI000381CF4D UniRef90 GOAGQ2 UniRef90-UPIOOO29B0031 UniRef90_UPIo003B5E6A2 UniRef90_S4Y486 UniRef90- S9PC74 UniRef90-UPI000365CDB5 UniRet90_W2F115 UniRef90 W5XC74 UniRef90_UPI0003B6450A UniRef90_A0A024YU03 UniRef90 D2QTW7 UniRef90_UPIOOO3790430 UniRef90D6XBF2

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QRWK $\|$ DAAQLVNVASQKCLDVAGNNDDNKTP $\square R \square W Q C N D$ QQW
QLWRVMs回
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$P N G Y K S V N A K G K V A G I L E G S T O D G A K V L W T E N N S N D$ PNGYKSIVNAKSGKVAGILEGSTTDGAKAVLWTENNSND ASGE पLSKAKPMC\|DSAVDNRNYHKPVNMWPCHNGGN

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$Y H F Q N V G S G Q Y L E V D S G K A E N G A N V Q Q W G A D T F D G$ PSRSGYKLVSAHDALCASAAGAS NGANVQQWGADTFDG GR RNLATGRCLVAQGRPSQKGGVVVLRPCDRDPE GETRNVETNCLDNMARKENE KVGLFNCHGGGN GWFRVKNRNSGKVLGVDGMSTANSARVVQFDDNGTAD PAAWGEVRAASGLCVDSKHST GTELRLDNCTWAHE AHGRLVVQKSRLCLDVAGGRGPHGNNVLIYNCEKAAD PEGRYILINKLSNKSLDVTGYSQANSANII QWNLGSGLD GVIKSVNSGDAI DVKGGAKEGSPLIQWDPHGGDN PGDAVRNLGYGAKTCLDSPARKSNLHKPVGLYPCHRGGN SGRPLVVAASGKCL SGGAGTEGVQLFQATCDGSAT GTYSI RAVHSGKALDLYGWNTNDGAEVRQWTYTGADN AANNHL LNRNSGKCADVWFLSTADGAAVDSGNCNSGAN GSYVITNVNSGKVLDVSSGQAHNGATVWQYDFNGTAA

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$Q Q W R F L D S G G G Y Y H S G K V L D N W S T T A G S N L V Q W S D Q N A A N$
 QQFKKS QNGHVRLVNRFSGMAVAVRNGGGVVQDRDRGGAS Q $\square W R Y$ DY T GRWY L DS GYCLDDT D GDNGNQL QIIWE CNDGPN
 QTLYVSAPPELVI GMNGGLGDDGGAAGAQAVQRTCDDAPG QEWA YDEES QLVLA G L L C L DVVSEVRTTFDPPRRMMKCHGGGS
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 QRWYLR DAGNAYYNWVLNV TVGSFADGSTVVLSSPDCGDC QSFELIPT GDKPKHSGLCFDIPPYSEDGVGLIQQTCTGNPN Q Q WIVI TD Q GTYNNYYNKVMDVRNGNNGEAIQLMSDYNNTA Q Q WTV SHDSK GNVNS GKALDDVKDGKNGSNVHQYAPNSYRS QK WVVVEGGGSRNLATQKCLDVQNNNNGTPLADWTCNESPAA QE WTYDED HE LIL A GLLLCLDDMSEDRSSSDPPR LIMKCHGGGS
 QHFEYNSMKEIRR FGSTLQRCFDVRHEKVILQQNTENSP QRWVVSRYGLANAAYHQCLDVEGGDDGARLLQYGCHEEVN HNYTVYWNTGGPRSVRLANAAMSTADGGRALLDWSDS GTAD QLFKFVKNADGSYTDDSCLGVNSTELGANVLQWSCNETDS Q Q W I D DMGTYNNFYRKVMDVRNGHNGEAI QLMSDFGNSA QQYK E LQ S DGTYAS G LDVYA WSTES GGNI NQWNYWGGQC QVLTF GWRED $\quad$ WRVMHTRRKLCFDADVHSSPVTVYDCHGKGN QQHLEHA GRKQIHFGGTQGLCFDVQQEQVILQNCTKEGQ W $\square G D S P V V I E L R G T T G K C L D V E G T A N G T P V Q V Y T C N C S A A$ QKWYVTNLGSNY DA G GRMLDVVNGGSNGTNIQQWPANGKDS Q Q WEI E PHR IRNTQGGSVVDAYLNDPEKKAAGWTWHGGDN QRWVVITYSGGYYVTGGKYLDDAHTAD GSTVGQWTGGTSTN QLWY Y Q D GFVVVNKCS GK ALDDVRGGP LVDD A WWICQYD DA Q N QTWRFTRRQGDGNAES GLCAADVSGTAPGAEVIQWTCTGGAN QE WYVSHGEDGTITFNLDIA YGKDEDGANV GIYHAYGGEA
 QKFKFVSTGDGYYYYKKCVDVDGGKDGTNIMQWSYWGGEM QVFSYTKRHQDTA DDNCLDAASVR GPVKLVRCHGGGN QKFK LVVD GNGYYNYKSCLDVWSRDNGANINQWQYHGGDC $K F K A V A A G D G Y F Y L V S Q L G D G N S T E D G T N I E I Y T F N K G E N$ Q Q WRDS D Y CR V V I GDESMC $\square$ NS S A D GVNI ELLQKYS GTD N Q G WT LT K T S TVV SPMLR LADVK GASSANAANVVMATDNN QVS QF WML S K D GEI R R D D S C ID Y A GT DV MVYPCHGKGN QK WRL N K N G T I S S Y D H L V LDDVKG GC D K T HVII Q P L E G E E T
 QVFTFSWREDIRPQHTKKFCFDS DSHSSPVTLFDCHGKGN LWNYNRDTKQLKHASGWCLDVGGMKMNDNIKLNDCSAAGS QAF WY DPTRRHE LSSHDRCADI DGGRRAGTA I QVWDCN GSAA $L G T T V W G V R D T D S W R S D Q T P L D F D G N G N K V L N A D N G G G T S$


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QRFLFEDKGNDKAMHSDKYDDワYGAYAGDAGRVIQYRWTG
 QKWUlSDDGNGVSNCNNLVLDVAGASTNNETNUWMYTYNG Q Q WS
QD WLLSWRFQMKNRKSGLCDGGSGASTANGAQAAQFPCDG QKWEWIERRSLFNRATDRCLDVDGH AAGAPLNAWTCVF QKFNDKYYYTiSAMHSGKYi DVAGSSKQNGATVDQWEYHG
 E EWEAVSYYKFVGQGSGLCLETPSASTANGVQLEDYTCNG QQWSFSP
QHWSLIEVGPLVNRATGQALEAQGGAPDNGTRVAQAPDGG Q $\square$ WDFHRRTIFYNFHSGKALEIADGSRANGARAQQWA QKWSSTGSGTLT $\square$ G GKCLDVAGGATTHGTRVVLDDCNG QQWKASGRYHFTARHSGKCLSLPAGGGEQSTALVQRTCDG QLFVVSSSD VNDATGVSMDVTGASTANGARVQLYSSNN QKWKFIP
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 QT F WF
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Q $\square \mathrm{F}$ KFVDNGDGTYT $\quad$ TTKCVAVASDSTDSGANDVQWTCNG QQWR IRPNGSAYKIHTNLCLGTRDASRGTGAAIESQRCAN
 Q L W WE Y DP
HLWRLLD
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QHWTFRSDGSYTVASVKSGLALTTASKTPGAPVTQQTDT G QRFKVKKTYY $\square A T A C S G Y V L D D E K K S K E N G A N V D Q W R Y N G$
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 QKFKFVKNSDGTYTDGKSALDVNGQSRDAGANI QQYTYNG QLFKIVKCGDDYGUVSKSGLDVYDWSVDNGGNINQWNYWE
 QKWD ${ }^{\square}$
QDWFYT DDKRVA $D T N Q G F C D D L^{T} N G D L T N G S Q A Q V W K C D N$ QKFNDSTVDGIWHRDSPVNLDVAANSTVNGANDALYTYTG QLWKYGKDKTLYHPVSGTCMDCCTESDHRIFMNTCNS QKWEFEH
QRWTHDGARLHAADAPGKCLDVPGNSPASGANLVLYTCDG EPPPASDAGTIKGVGSGRCLDVPNASTSDGVQLQLWDCHG QCWDFQENGMIVHILSGKCMEA MTQENNKDLYLRQCDG QK WVLREGGFIRHHKLNVCDDSRDHTQ VGVSAQRCNS

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GSNQQWQL
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GVLRSLASGYCLCAQNSGPYDGAAVQLYPCNGTGA PGWHGAIRSRGSSECLDYNSPDNNPGANLSLFGCHGGGN AFGTTVVNQANGNCVEVPGGAATNALQLVQAGCGAGAR
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DGSGNVGDYRCDDDRD GH $\square K H \square D S G \square C \square T S Q A A N E K G T K V M S F T A V G S N G$ TGTIRGQN GLCLDLNGAVTVDFNHVQVFDCNNTGA AYGEDVNQSGGNCLELPGGSSAGGTQLRASACAGGAN GEIRNVETNQCLDNMGRKENE KVGDFNCHGGGN


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UniRef90 C7Q356 UniRef90-W5JKD2 UniRef90_K5Y2Y1 NRCMD $\square$ NGHDNNLVNGANVQLWDCDDSFD QWRYS PGND V NVAA DKCLDDVANTA G GTPDLQIA WCS GN WA QK W IF E P VG DV S KLS GRCLDVMSME DGAGIQI WDYMGGD N QAWRVEDAGSVNAATGLVLGVEGTETGAAAIVREDDGSED
 QF F E Y T S N K E M $T T D G V D L E Q R A N S G T A S$ Q $\square W K \square S R Y R G V N T W S N K S D D S T D G \square P G T E L Q Q W T D M S N A N$ Q Q WS IT PY LI ANRGNGKVLDVCGTANGTAVRQWAALGNVC QTWSYDAKGGLKGANGYLTVGSSGLTTSADDFTGDPG QMFYFTTYGEI RTFGARCLDDFAGGKPGSTLSMYGCHMKGN QWTYNSENQUKLADKDFCLDLTDGNSGNQLQIWECTGNRN Q Q WVVNTTYE\|VSRRNGLVLDVANGTNNSNLQVY■PNQSAA HNWEMVTDGFRNAHSGKVLGVMDTADGATVLQWSDNGTAD QLFTF RQVGDANLNS GKLI DVNRSANGSVVQQYQSNGNEA GIQVVGSVYQ』MNRNSFKALEFWGTANHTLADQWEYUAGAN QFFEYS SFKEIRYNTRQCAAVEAGTDYLIVHLCRSNHQSN Q WA LY G DRTIVNSTRGLCVTTNGYNSKDLIII LKCQGLPS
 QQWKFA GAGNGNVNSGTVLDDCAQSNGTAVQLWASLGNTC
 QQYQHTSSRKEV HFGRPQHLCFAVRQEQVILQNCTEEGQ WLP TIGLVNQASNMCLDVEGANDGARLQQYPCHSEAN Q Y WM NTKVQLVNKAS GRCLDI PNNHNGAQLQVWTCNQSDA
 QFFEYTSNKEIRRNSVTELCAEVPEQKNYVGMQNCPKDAN QTETVTPYT\|TTLTPGSCLD\|YGTADNAAVIQYTCHGGTN
 QS FTFMMGDGTRIRA GRRRCVDDIDGGPNGTKVQLWDCNGWSN QLFTFQSWN I KNTKSNLNLDDQGSSSGAAIVQNTASSAAS
 Q Q WT NGYFEIVVSRLSGKVLQVADSSRGTDVLQFAPT GAHN



 QVIF S Y T A D K E I R T D D L CLLDV S S R L N GPDV M L K CHHMR GN SDMRATSVCI SPYS GKNT

 E N WE Y P D V S RVVS GT S T H CLL DVVP G A Q N G L A MQQIMR CN G S E A Q WWVVY NEEHELVLNNLLCLDDMSETRSSSDPPRLMMKCHGGGS QKWHAS QYLVVNQGNHNCLDADAGTVGSRワRARSCDGLSA
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 QFNPSRYFRDTNVTAGLALDS GGNVSGSNLKQWSWDSSNN QTWS GTEDAT $\square R V Q G R C L S P A S G Y A A A G V R L W A C N G K A A$ QVWHYCRGLFKSKANDT CLLDVDGGKE GAKVAMVWEHGRLR
 Q Q WTL E D D G LLLR SAAD P GL CLDSRA DAGVVVLGTCA DGDH
 QKFKFVKNSDGTYS I K S A L DVVNGQSRGANI QQYTYN GGNN QYFEYTT QRDQRHNDA K QLLCLHAS GSTLGGLRSCQFT GKDS





 AKFLFTDLGNGYQNSHKCI QPQNGRNGVGLQQWFCEATGT QLFTFQSAGNGNANSNLNLDIRNTTAGAAIVQNTASTADS

 QVFAYTKRQQIMS DDLCLDASSS NGPVNMVRCHNGGN
 QYWMLSKAGEI R RDDSCLDD YAGKDVTLIGGCGGGN QVWS YDAK GRLK GVNGY LTA GS S GLTTTSP EATMRGS

 GSNLKQWNYD GSTN QFFQLSWHRDLRDKFGLCWDVSESVPNAKILLYHCHGGGN


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UniRef90 Q4U4N0 UniRef90_B4P5X0 UniRef90_B5HRD3 UniRef90_A1UZA4 UniRef90_J9JLD8 UniRef90_R7F631 UniRef90_R7F631
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QHWUFNKETEMFENRANKCLDNRGQAYNNGEVVIVDCVD Q K WNVP
QQWRIVD P
QLWWQLVPDPEGRNYGTGLTLGVGDMSTEPGAPVIQWT DG QKWRL NE D GT I S S Y LIS DQVL DIVGG NYYDKNHIVMNPEE D $\begin{array}{llll}\square \\ Q & W H\end{array}$
 QK WAl F SVVYMLVRNGTGLVVNLRWGQARNGMAIDGYLANG QEWRIT P
QRWLLNANGQ!LGEAS GKCLDVSGQATADGSKVILYSCNG QEWK RS GKQUVGAASKLCLEAAVNG NDRKLIVNTCDN QVWLEEGPP GNHSNVD GSKCMDVEGA DFAN GTPVVQIFDCN G QKFKF ID Y H IVVALDDENMALDVENESKEDGANI QIIYP HK WT LL GQGDI RNVNS GRLLA IAA GNSTAVGAFAVQDAD D G Q H WHAR WLGGF $\square G S G S G K F L D D P A G N T A L G T K L Q Q W Q D T K$


 QKWELVKAGGTGNPSRN
Q Q WDVTS HYT\SNVNTGMTLDVTNCGTANGTVVRQWQQLD

 QRFRFEGWTTLVNDTS GLVVDAPGRDWHTGGRPYLDBERNG EVVYDLDTVRGEFLLRWSQGLADAPASAKA GARVVVARBD G




 QQWRFVAPSDMYPTAPKQLVWAED
QRFKWVFD DWEVPTATVNMVGCNQNG
KASRLSATYFTINKNSGMSLDLDAGALDAGTNIQQWDFNK
 A QWRVSGQ LLINAAGDKCLTDPSGGTNSGTAVTVTPCAG QRWRLAP T F H L V S V V G S G K CVVTP S G GS P A S N T D L V Q L P C A S
 QL WE Y DVQ NTFVH $T$ N S Q S CLL SVRK Q D N GK S DPTVVESCTG QI WHYC R GLFKSKANDTCLDVDGGRDTPGAKVALWTEHG

 QQWQFVKVGNHYSRVSGLVLGVAEASKDDGTVVVQWNMEK QLWWWWPP
Q Q WTFGKNNRLYQVSVGQCLRVVDPLGQKSS VAMADCDG QRWQLGGAGTLVSVPDGFCLDAEASSGQDGQPVQTFGCAG $T L W Y V V G G G Q L D R V L H S A K C L S D F G A S \square A P G T K L V Q E A C D E$ QAWKF $V$ P
PVWHFKEDGTПYHPHSGKCDTAY RTAEGADVEMRTCNA QVWSLTESGRVVNPNADKCMNTKDNATTAGAAVQTNSCDS
 QQWNMTKVG
$L Q W Q A V D V G K L V N R T N G M V A D G W G N \quad T A D G S P A Q Q A P W N G$ QQWS IR GDGS S LLLQKTYLCMQNSREANGNRPTLAKCNG



 QK WYVETSSTSGNITTGSYPVVT
QEWELT QD QLI RNSGS GTCLL TSQDKKPAMASCNP
 QHLERLSTGQLKHPAS GLCLGVKDGATADRTPLVLVTCDD A Q WK LASTDNGYFFRNGGCLDNVDGNTTEGNNVRVYDFNG HRWTLVANYRDRNVNS GKVLAVVLNGSSTWGTQVVQESDNG
 H NWVVVTEGKFRNVNSGKVLGVENMSTADNARVLQWGDNG QEWNFV SW
Q Q WQLL P GTMDK NRSSGRCVDVPDFSSADRVT LRRQWTCPG QKWTLTDAGDLRNVNSTEIAGVAQSSTTDGAAVVQWNNLT Q Q WT I NTVY IVT ILSK GYI DDNPGSSTSDNTQLVLYS IN G
 QRWNLD Q Q Y VLVNKNS GKYLDUPAASTATGTAADQWRNSA
 QK WA L Y G D G S lir R K Q N N Q C L T C C Q K D S V V QFWTYRENTQLHHGTSGKCLAI SESKDKLLMEECNQ
 QA WVYDS KEMI KHKTTEDQCLE HSMSADQYAAI LDECDG QK F RLR GYYEI ENDRSNK LLDVVQS DQGSGMNVDQWSNNG




| UniRef90_UPI00022469BA |  |
| :---: | :---: |
| R7 | s |
|  |  |
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| UP100 |  |
| UniRef90 UPI00035041EA | S |
| $\begin{aligned} & \text { UniRef90-UPIO003D0D968 } \\ & \text { UniRef90_UP10002E003AF } \end{aligned}$ |  |
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| UniRef90-W6TYJ6 | GNNQK W |
| UniRef90 H3ATT4 |  |
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| UniRef90-UPIO003 |  |
| UniR |  |
| UniRef90-85162 | NTCQQW |
| UniRef90-F3WV |  |
| UniRe |  |
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| UniRef90 C5BTR |  |
| UniRe90-52 |  |
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| UniRee90-C3YBV8 | , |
| UniRet90-UPIO0036A086C | RAGQR |
| $\begin{aligned} & \text { UniRef90-M3 } \\ & \text { UniRef90-EA } \end{aligned}$ | ANGRVWR ${ }_{\text {A }}$ |
| P10004572 | St ${ }^{\text {a }}$ Q M WI |
| UniRef90-UP100032B0418 | Q K |
| UniRef90_UPI0004412BDD | T TNQNW |
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| UniRef90-UP100037F37: | WR |
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| UniRet90-G1NRH7 | ADNQMWKF |
| UniRet90_C6WPF3 | $\begin{aligned} & \text { ATSKQWGF} \\ & D D S Q Q W S F \end{aligned}$ |
|  |  |
|  | GPNQQWKПT |
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| UniRe | ELLTQK |
| UniRe | AADQL |
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| UniRet90-E7EULO | S |
| UniRef90-C3 | G T |
|  |  |
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| UniRet90_E5S8J4 | QNNQQ |
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| f90_K5Y2Y1 | NL |
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UniRet90 - $9 W X \times 5$ UniRet90-M4BSF2 UniRef90-N2IOJ3 UniRef90-UPIO003C742CE UniRef90-Q8W2E7 UniRet90-12N2W0 UniRef90-A8NHR8 UniRef90-R7B6F3 UniRef90 W8AMU9 UniRef90-FOKVU7 UniRef90-F2JKA9 UniRef90-UP100037599DC UniRef90-FoK7S3 UniRef90-D812P8

G S Y VII 10 30
 GA A LVMYTA NTADN G WY Y TK GVQS QKY LTVNADNVS GWK GVCIRTGSGDDA S GRLHNVES GLCI GVA GNKPLKGTEAELQTCSSAA G
 GTYVIRNKNSGKVLDVRYAAAANGAVVWQYAANGSQA

G WY E $\square$ R A A G NGLAALDVS GASGNDGANVQ IYKANSTAA VNTS YALDVDGDKTTNSTNVQLYSANKSNG VASGEDRNQGYGNCMDSPAGKKNLRKPVGLYPCHNGGN GAVYMTQNVNSGLYLEVDGGKAADGTNVQQWGANEPAA PAFGSIRQRQ LCLDTLGHSDE QTVGMYVCHDTGG GWYYIKNDNAQKYLQVANNTGKAGQNVELGSGSGVAG PPAHGEVRNVASNMCLDSMGNKGNRAQIKVFPCHRGGN VFTATLIARHSDKAVSVDGEKKTDGAAlI VQWAYADRDH
 GKLR N P A S A N CLMVVAG KTNSYVRIITCVVHDTS S GQYRПKNRFTGKVMDपAMSGVVNGTWVHQWEKTTGKG
VGYGALRNPNSGLCLDTLQRDEKST\TLGDFACQGSSA LIRTADGQCLDISGG DGKSLIRYPCHGRAN S GEGAFVNTASGMCLDLTSGGTTNAGTALQAYGCNGAKG $Y R \stackrel{F}{F} N V N S G L Y L E V K D G A A Q A G A N V Q Q W G G D T V G D$ $P G R V Y Y \square R E K V S G N Y L D V K G G E A N N A V T A Q L Y T F N G S A A$
 GS TNPHSGVVTAPRAAANGASVWVETCGSSTN
 I RNAGSNRLLSEKDAGLYMSTKSNDWLVKEQQT A WGMMRNPSSNDCLDTLQRDEKADFEMGLFHCQNGAN GWFSLRNGANLSCMDAYGGGGLNGTKVQVWSCTGGAN GAVYMLKNVNSGLYLEVANGAAENGANLQQWGADSAAA GTGTHRTRLNDFCLDVDDGAANDANCVNPYRPDCPA
 GASFMI KNVNS GLYMEVGGANAEEGANVQQWGANEPAA



 PD DRYKLTNRKTGKAIDVEGRSHDDGHKVLLWGYTNGGN GELLRNVAANKCVDTHFKNAEEKFGLRKCVSDGPAN SFTGNDIGRD GLCVDVRNGYDTDGTPIQLWPCGSQRN GYYS TAKHSDMALDVVGGN@PNPTNVRVWNFNSFDV
 $P$ VA H WP QV RNE ES GLLC I DTQF K GQNE RAPCL K D QR GR S GE $G E \| R$ Q GAFCLDDTLGHVL DGTVGIYQCHHTA GN
A A Y Y QFV S VR S GNA LDVA GA DHA DGVVI QEEKRAA GAA
VA H GE I KNLGYGTCMDAPAGKKHDKKSVGTYPCHRGGN P P NF A GAI QSVHPNLCDDTLN NGEKGT VGLYSCASSHN P A A WGMVGDLRSKKCLDDAKF Q S E GA A L S L M P C K E E G N N D PRFSGKLHNTGLGFCADCAAEEAAPGCAVMLAPCDGEP Q GWGKV HA VNNSNDCDD DLL LQ NNEK P Y N A GLL Y P C GK QK S
 S A WY GVIARSSGRSLDDANASAEAGAAAVQWEFTHA S

VAS GEVRNLGYGNCLDSPARKTDLNKPAGLYPCHKGGN $R L R N A D T G T C L D A D G G K S V V G T D V R G W T C K G Q R N$ PAASYVTLVNRATGMFLDGMYR FADGSLAGQWQSS GSTA SNYN L DVQ N S S Y Q N G S N I Q LIF S K S S D S K PAD G V S VR VRHS GQY I DV HNYGTVEGNRVNQYYKNCKTN NAASGKCLDVQGSSGANGANIQEYTCSGAAN

CLDTLGH FADGVVGDYECHNAGGN
LRNTTTKRCVDVPGENGQAEGPVRQFTCNETPN VRNAGT QLVLSENGGNVYMSGKSGDWLVQEQQV GGSFQQIRNLQQTGKCLNLLAGASTDAGVVELGQFSCDQTNA GSLINRPS GDA $\square$ SAESG ES GTTLTMQVHDNASK GQTADVSGASTENGANVIQWALTRNTN
SGGNQ $\square R N R G S K N C L D W A S H G R Q R S A N V G L Y W C H K G G N$ ANQS LLLDAAGASPQVGANISSWSNKNQNN $L G S N N V L D D P G$ GNA S D GDVGAQQIWDNVSVA S
 $T G Q V H D V A G G \quad C L E N A N D S T A T N N A Q W L N T C G T N P G$
T Y K I I S S S T G K VL NVR N Y S S Q S G A Q I E E L VDVG A L S
PARWFRIVNVTS GL AVDGGGAVAAGSALKVWTPDGSTN

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 QQWRFVPFRIIVRHTGQSLTLTSPDENAPLTQRPWDGSFY PLTFQGTHDAFAVYLTPATSGGE QYWMLSK $\square$ GE $\square R \quad$ RDESCLD QLWWYDAEGRGQTHDRCVQSEGAVQAGAGLELGNCSDAAG Q QWMVEAAGSYVKПKNRASGLFSSVNGAGVVQKAGSTNFS QVFTVHYAGNDHKSSGKAVDAGGSKNGANI QLYODNESDY QMFRLKKREEKYYTMEPMVLARATSADTLILQKYSAGAAN WSASDGGAAQQWSCTGAAN SHDDMARVIQWAWTGAPN QEWALTKEKSVKHMDLCLTVVDRAPGALVKLQGCRENDS QLWDLDVKFIRNVKDRLCVDLPAAPVRSRIQEFTCDGTDN WFFDSATQQVRSKSSDRCLDAYQGWDGGDVHVFGCDDQAN RRWRVTSYQLVNVQTRKCATVRSTENNVNLVQFTCDNDPS QGWLPSNNTRLTPIIGMNGLCVQRNDQEDVGLATCDDNNN QLWEPEATGGGYVHSGLCLNVKGNEDGAQVIQWTCGTDAN QMWYIVPDGNGYYNQNLVLDATGSQNGANITAWTDQNNNN ESWIMTDVK LNSDTGEVMDLFNTTDGTVIGQWDDNGGAN QKWYLTNTSNGYVTLKNGLDYMANVDGTNIQIYSPNGMDA QQWSRWSDGTGRVQGRCGDTLNGTGNGTRVVLVVCTASTS EQWKDADSNGSYK NNSDDGGVSTEGTDVKQYQYAGAEN

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$R R W R V T N Y Q L V N V T G K C A T V A G G T E N N I R L V Q F T C D T$
 EQWKFVAKGQLVARSSGKCLNVEGGVGQQRNLIQWTCDG QE WKYPDESQULHVITSKCLEM GG SRDGSKLMMN QK WULVESNFRNAANNSLALDATGSNPK DGANVTAWTSKN QRWRFY
QRW FTDDKK $\square R G K Q S N K C L G T K S F \square V R K G D S V V L A D C D F$ QKFKLVPTATTKSSVDTKSLDVYNFGTTDGSNVCEWTYYK QRWTFYASGYDQNQKSQTCLAPSNNKTTAKTPI TITAVCAN


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$G V Y W \square R N R F T N K V L D L D A A N V A K G T S I L D F N E H G T F N$ AAGLCLDVRGGTPGPGAEVTLARCSGADT NSSTGKSLDALNCGTADGTRVHQWSWLGNAC
 NGNQDKCLDVRGANFANGTFVQDYDCNGTPA G S F LVKNQYNNQYLDVVADSLYY DQVNILTWEKHNKPS $V T Y Y Q Y Q L F Y Y S K C L D V A G \quad Q A N G S U V Q Q Y T C N G T V N$ PYASGS TQSVASSLCI DTMQRGR GEPI GLYPCSNSHN AFGRVQVQKGNLCLDNGQNDEEKPYNLGVYECHSQPS GGLHYIANQKTGLLI DNGNTGATEGATVKQWGYNGNQN PKGTYVKIRNKNSGKYAVVKDASLDNGALI IVQHSTGGND
 GVYK VNVFSKHCLTSSTNPSGQPTLVQSQYRQCTBD STWSTLVNKNPNGLEVGGKGEAEGSDI WHFRR $T L V T V S G N D C L D V Y G N S S T S G A V I D Q W T C N G Q S N$ PGYYGAI ENVKKGNCLDVGTDNTGEPTVVLLYGCHSMSS PADFGA QSTNPNDCDDTMNRG KGQDVGLFSCHPQAN



K Q GDMVMDVRKSDVSEGTDIIMYSPHGGDN P $\square E P T V R D G G R D$ GMCVDVSDEAYNNGNP I LWKCKDQEK


PNGTYAQVVNAASGRCLEVSGD FDKGTDVITAPCTAAPT SGFFNLVNKNSNLCLAVRNASNLPGEETYQWNADGTTD
 GLLLEAKGAKGE I SIECDRSA G L DVA GDSGDDKTNVVVWQFNSFDF PTAGHFRLRNVGADLCLSVKGEPRT GAATTLALCSGDD【 GSYTIDNSASGLALDVQSGQARNDARVILWSPNGGNN \RNLESNLCAD $\square$ PNGKGKPDGPVNQFHCTDKDN PDGEF LLRNRASGRVMDAAYMSTDPGSAVIVYDYKGNSN

GGYYRVKSRHSGKVLDVYNWSTANGGAlV TYGEVRNKASGYCLD QGAEDDDQAILYPCHGMSS PPVEWGEI RGFETSYCIDSMGHGTNGGNVEI GPCHRGGN DNGT\|INPRSSLALTAD SSDNGYKLIVQTNEY LMR GNYVRVKNRASGLYLDGQGNTTDGAVVGQRGDTNATS FFGRTLHDSSNKCATVKNGDEKDGTPVQLSSCGEQSN GYYKLIHAASGKSLDDYGATTDFNANVCVHDANGSDA PPTFAGA QNVGDKRCDDTMGRRKHKRMGVYACAEDPQKT PTAPGTRLRNAGADLCLDVRD LPKEGSGTQLAECSTAWT GEIRNAELETCLDTMGRKY GEKIGMSYCHGGGN
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 Q EWK LDMECKIKNLHSGKLLVVRNTSVGAEIIQYDENGTEN QLFQFDPYRIQNLNSGKYLGVQKGKTKAGSFIMQTNDDAD QQWHLDDKGL $L$ RANPGYCMDARGSTR DGVGIWSCSGGNN QHWRFVESGIMHCGSGKLVDIHGCCNGAIISVYGRNGQSN MKDGTYT I QSAKFDGKYLDVVFSNQKGANVQCYQYEEAAN QQFQFVAYGELRARNSGQDVSVSGSSTAQIVQQPANTSAG QFFEYTSKGEMR HNKVNEQCLEVNGNDVTSSACTTHEN QFFVLT WHKD RMFSTMCWDLPNSYPMSPILFHDCHGQQN QFLTLTNDGELRDKMEKCMIVDFATKKSRAAMVQEKKK QQWTYETDGLLRSGAAPGLCLDSRL GYSVRLAPCTATGE
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 DKWTVTAYKLMNVNSGKALAVENGQNNAKVLQWDYGTTGN Q $\square W Y E D Q V T S T\|R S K S S D L C L I I G S D K\| L M V D E Y K D K A E G$
 LQWQNGYYKLVNRTNGMVADGWGTANGEPARQKAWDGSDT QIFSTSS GKHCLDAYYANSKYNVHVWPCDTNGN QQWSYQDDGLLRSAADPTLCLGADPGHRTTALVSCLVHAG QRWSYETDGLLRSGANPDLCLDSRLGYSVRLVPCTGTEN QRWRVDDDRGLAAGPDFCLDSRGATHRG VGI WECDNGRN SD DWLYQDGLIKNKLARSMSDQVMGNGAKVVLWTETRVPV QRWRVDFERGLYAYPDFCLDSRGSV YRGVGDWTCSNGQN Q $\ F S L T N D G K L R R E D T C A K D D R N T D N K A A V H L V Y C G E S E K$ QYFEYSTHHELIRHNGQKELCDHGAAGAVRLEECQYKGGAE


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QQ

 QQFDYTRDGRI RVHGQNDCLDVTDGKLENGNPIQIVSCGD ES WULTKKHFRLRNKNSGKYLGVFQNSMQDDYKLVQVNDSE $N H W T L Q P T G C l$ QQWRIDRDAFRIIASAMHNKVADVAGWSGEDGAPVVVGRTGP QRWAI DEDGYI FCEAPDLVLDIVQGAEDEDCVPVILYERRRE S LWWLPQQQWQFKNRNSGLCLDVYGASGTAGQQLDQWPCKN QTWMFVLGGVIASKLNGKCLEAVQQADGVYKAVLLRCDPQ QFWKYNLKTKQITHDKNVCVECN M AKTMKLYVNKCDN QRWKHSKNGLIVNGAFGQCL SAKRLKSMSKIKLVDCNP AARDLHYDVTRQGPRSDQGLALTPAATDGSGALVVKTRAA QRFRALDEGWVLYTGTGDGSKVVDSHARESDVIGWKDDGG QKWRFI S CYKI QN QLINEMVLDVYKKSKNDD DEI CDRKFNG QKFTITDGTIRPRDRANECTVKSEGF TYWEIWDNGTI $\operatorname{P}$ NPKS A AVLSAESSAMGGKLTVQKNDY PHWQYRQDKTLLHVPSGHCLTA SVDKDELSVTPCSE QQWALYTDGSI RSQNTNNCLTSKDHKQGSTILLMGCSN QQWTFGKNNRGYQVSVGQCLKAVDPDSHKGGYVAMAGCDG
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TKA DA SVQVWACTG ETFFDLTVRGELLLRRDDSLVVARAAGRPGAAVVVTERDG VRYDFTLQGTLVPRFDQDLALSPAATDGSGRLVLKSRQDD

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$K D Q P K H S R K A D D V D R V S S D P G A V I N Q W A N G D G N N$ TNFYRVVALDHSGLALLTVDGASAQDYTNLVQQPFGGSTN $P G G Y Q R L K N G G N G R C L E T A Y G N T P$ ALIGDCTGDPSAS
$P G T R Y T L A N A G T G M A A E V W G G R S A D G T V L V G A R A T G Y A Q$
 AFTSTVVNQGNGNCATVPNGNSA VQLTQTGCTSGAG
 GTYLIKN A NS GLYYLTVK GHAK Q S PA D V VQD RLQD WP Q

 P TYFRLLRSAETG CVVMSLS GPLDDVVRVQVVEETGGAE
 ATVYLRNPN GRCIDAPG SAVGTGLVLADCTQAQA GEI R NVETNQCLDNMGRKENE KVVGFNCHGGGN




MLRVRGKNMCVDDGGAWFAATTKFVDMPCNNSPN
PSPGTYRDRSVVSSLCLEVEGESG GHVVFQADCRRS DPT
GKLL R N QAVVPRCLLEAETDPYASSNRALAPSPCND KEN


Q $\square R$ N $V$ M T G Q CA D $\square$ S GF GK GK S G GK LM Q F P R S S D N
PDDSFTVVVNAAS GLCLD DRDQQVEKRTDAVLAQCS GSDT PS GRTI GTFA GKCLDVEGASRADRAPNI QYRCHNGAN AS GA I Q S LA P QYCL D TLLN NGRQ SEVGLLYPCAENPN
 A Y F R L WN A A LGGF LADVD HVEDM GRVVVVSNSRA GGS C

GN R R RQ K CL E SQRQNNQETPNL KLSPCADAKS
 NNNDVVLWEQFDSNR
$P G M Q D Q N V R Y A T C A S D E N G G D D G G R G I V S F G C A G R P D$ VA Y GVL K NLRD DLCLD Q GPDTDNVPI MYLCHGMTP APATRLRNVRTGLCLDLRGSAAVLGTPAVTARCEGSAS S GTMMNPAYDLVLTS KNGDNDNSLSMKKNYCGNQGW ADRTRLRNVAA GLCLDVRGEPKA GAGARVAECSEA GT $P G H V Y R L Q G T Q S G K A L A D S E D G T G V V I R T T D A T S A$


A YA QV VNLA S GLCLLSVDDGA LDNRTVDVVTARCTSSSPA


$A Y G V L I N L K T D L C V D \quad Q G P T P G N T P I T Y$ G C C H S Y S S $V$ HATHPNLLVDVDPNDASHGVQVWQCHALNNLD A QRYRVVNVQS GTVLDLSSG TNGKSVSGWKQNDGEN


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QKWKVTESGTSRKVLDGFYVAGTSNGAVVQПWTDNGTTS QKWKVTESGTSRKVLDGFYDANSPAPQHKVIQFANFGNDN QKWELEYNDTHQAYNNKDMAWNAYQNDTNVFATPFEGKEE
 QEWTFLSDKTUR YSNKCLTFETSREGYVVLYNCSEKGN ODRADGVPVKLYDCHDWAN QLWRFIDLGTGYYQDQQSGRLIDILAGSPIEQICQNATDT QQWTVEPNGDGYYHSGKAMDIKK WDGVDVVQYSVGGSWS WPGPETWRIHPGFNTAKCLDVRGAVNGTPVQUYDCNGTAA QQWDFDDAGNGLVRDGKCLQTGGAPTGMWI AQQTCGGAAT QLARYTKEGFLHLGDTRCLVDNSKSRLPQLLDCDKVKSSY QSFRFTPYAVGTFTAGNCVDIYGTSDNAAVIQYACHSGTN QLWVVSKYSIENARSGTCLDLSNSKNGTPIIGYEATGHPN QKFIFEPDKTPVANGTYTVKNLNSGLYGNADTAKNSGSAE
$R A A Q A W R F R T Q Q H S G Y L Q V W K D K A P L V Q E H D E N T S$ RAAQAWRFRDQNQHGGYLQVWSKDKGAPLVQEHLEENTS $N Q R L S T D H T H R L Y L T H R D A C L M G D D K D N F V K V A P C N N D S S$ QKWYFYW TTVVEVWGGWNWDCPGDQKTSEVGVHPCHGGVN QVWYQNGLLRCKLVEDCCLETSGSMAGGRLNISPEHGKEN QRWRVDPGRDSFADPDLCLDSRGADDGDGVGVWECDSGDN QQVTIDQNGTVRMRGRCVGPARSSAGGARLTLQTCTSSNY QVFSYTADKEIRT DDLCLDV SRLNGPVIMLKCHHMRGN WELVDAGSGLYRIVETDSVDGAAGQNGAPAVVRADDGAED QKWRLGDAGNGYYNSQRCLDVAGSDQGAPAMQWACWGGAK
QTFILARTKEIRPVGNLELCLTSDT QYNIKTGELESVSKPGLCIDDGGSWNGTKAHLWYCDINNNQ VKVEKVPAGKGYAHSGKCVHDHSSENGAPDTQWECVNQPN YALEESADDTVQVRSLHCLGVGSTKGGTQMMDDHCGHRGT QLWMLSKDGEIRRDVN CLINGAGQNVTVSRCHGKGN QVWHETFEGSMRLMGVLCDDFVDDSGGGNPMLSKCHSGGS
 QVWDFVVYVIVKVKDDLCLDDPGVPGATGVVQYKCNADDN VSNGQCLDAYTQDGRLRVHTYTCDSNGN QRWRDDSEGLLHTEADPDFCLDSRGDTDRVGIWPCDNGEN QRFTFQRVGNIRTFAGKCDDVEGASRADRARI
QFWE SEHRDVRQHDGLCLDVPGSNPNSKVLMWPCHQGGN QRFDVSSYSGINVNSGKGLDVEGDSNGALLQQWSYGANAN QV VWYYEDGLLKNQVAPTMSLQVIGTPPGSKVVLWSESRMPR QVWAFTYTQQD LQEELCLSVITGFPGAPVVLVLCKNGDD QVWSFRQGLLKSKACKVCLAVIGGKDGGRVALWPEHGRAH QVFSFHPRGDIKTNSGLCLWWNTTHQLRPVEQQRCDGQD QKWKILYDESKMAYTLKCYLTWFSSAGNNVGTYRTEGNND QNVYYTSSQQLHLDDNKCLVDVNSKPRLLECSYGTTKHMK QLWRWDGEGRLRNQAAPELCLNAEPQGT VALLRPCAATEE RVGNYVEP II ASUIGGKQMCLEATEENTNIWLEECVKNKE QLLWLDSSQLLRSTTNKCVDAYKPENGGPVHLWDCDATNN QQWTYEDDGLLRSVADPGLCLDSRADAGVVILGTC RQLWSVRYTLTNAGTGKVLDDPGTGEVPEAAQWVMSTTGD WTFRSAAGGSVNVSTGSCLSANG NGQAVFVGDCSGGSN DGWWK DDDGADNSCTDTNLKNNDPANGSNVQVYPPNNSVA TSASDPGYAAFNLATNKVLDDEKGDRGTPILGWDYHEGDN QRWRFDAARGVSADPEYCLDSRGAVDRGVGIWTCDNGQN QDWSWTKSNQIK HESLCLSGISKKSEEIVRMVPCVATDN QLWYWTPDKEI R RDNRCWSVDEASGF IGMAKCGGTDK TWYVANAGGDINEHNNQCLSIWGGNDGDAAFVYDCQGTTD QKWKF DYDTTKSAYQDKSVWAYDSGDRDNVVATSNQYKTS QHCYYRTDGQLYDKYNSNRCLVDPGTGVHPGLYDCKDAKQ
 HGRPVVLKPCDGSWN RПNRAQGKY口TVAGSVRATSVClVSPYGKDT QKWYSDGKQLRNQLITGKCLTVNQH NRVVIATCQNQVN QAWSLTSDGEVRSDETCLAADRAADKAKKVKLEKCSTTNH KKWKISKNGANNHCLSRALDRDRGADDAKVHLWQAVLNNN QQWHATSTSEGYYRLQSNQLTANKQAQGNLQLGACDKDDS FFFLATGGGFYRTTIRRCWTVGGTSYGTPVSLLMPCDAAAN QWQVLPDGTGSYYLVPKC QSFRLMSNGMIRSTGTPGQCVDAASTGPLLYPCADN NPN QHCEYNTQREVR CGSAGQLCFDVRKEQV ILSDCSLKED QLLRLNVEGQLAQGEWCLD TPKGVRVEANHCVGTVN QQWQLVPAGTGSYATGKCVVPLNGNPGTPLVQGDCGTDDG
QVFKYISTSKQFASVYKTGLCTVTASGSKAQLNKCDANS QVFKYLSTSKQFASVYKTGLCLDTASGSKAQLNKCDANSQ QQWNTSVSHPGNAKDGHCLDTLPEGPPDGVVGVAECHNGGNN
QMFVMRKDGVIMTDESVCLDAPNRHEKPKVKLMACSGFAS QVWDFVLA QIKNKKSGLCLDLPSQPSRTALNQTHCNLTDN QNWSLTRDHEDRLGNSKDDCLEQGLRSKSVWLFRCHNGGN $R E S S D Q D K G Q L Y H P D G K C D E F S S K N S E D V Y M A N C N E Q E N$
$W T Y S P G A N G T R L V S K S K C L D P N G S S V A V A C N G S V$ TWREDTRIGDGPVKNTAMCWDDSMGANKRISYWSCHGHGN RVDAVSTGIVFNTASGNCLWDSGAAAGVGFAPCTGGEK TPMGPRCRFWTCNNDSS QKFELSYADDTRVKHKNCWDDPHAGQNAAVVMFECHGHGN QLI RLNAGQLGVGERCVEADRQGMKAVCRLGTVDGPWN

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DRWNVAIDGTI SNPSSGLVLTTDP STNRSQLIVEVNKF QQWDYGTDDRISLPSSG
QGWVFEYSKQLRNPASNRCLNTPNDSTTSGTALTTATCTG NQWKLEKDGDCYKNKSNGKVMTVEESVNNGAKVMVADDQG
 QVWRTGAGGSLYSVSNDQCLLD GSNAFGGGVATAACEG QKWKLAALDGAVTPSGGYALTVSDRPYYGSWLLDLRRANG KRWNFIQNGAIMNKGTGRCLEVENRGLA GDDLILRSCTG QQFRLQPAGNLVAVSSGKCV QHWVIHRNYVIENKATSTYVDLQGGNSANGTPVQSWAGEG QNWNVTADWYTLRTADGKALTVANSSSENGADILIDADFNG QSWQLTDPYR SNLHSGLWVKVRDHSAAAGAVIEQSTEST LQWQAVDLGNLVNRTNGMVADGWG SVNNGAPAQQAPWNS QRWMYSPHTQYINLKTGLCLDAADGANSMARLQMDGCSN QRWRVYHNMTVANVRTGECLDQESPQGPPTSGVGVHACHG QFWNVTADGLVRNLKPDLVLEVKGGQQYDKTQVILNTFDE QQW FRDGQQIRSSMSGKCLDIPDAGKQGNKLALYQCDG YKWDSNGSARYMNRGSGRCIDNQWNVNIPGNPI TQYDCN QLWEY
LLWQUVPDR■ANYGTGMTपAVDEMSTESGAA पIQWT DG QHWRLAP
VTWDYDQANMLLNTKTQKCLAV GDGNNLVTEDCDH NQWFDMDESTLMLKNDNLCLDDGGGQTAGATRYVMWYCNN VKWREEPAGEGYSYQTGKCLHQQGATQSNGDPITQWDCVD AEWFRDQRYRDTAVHSGQCVSVPGGSTRKGDPVLQLPCAA QEWRYNHQ KCLEM TRDGAGLNMVPCNA QQWS WLHKKQLLNPASGRCLTDTKDTVSMATYLSVEFCDN QKWDQTDNKRFRFQNSDLCLDSKGHKEHG LVVETCNQ QNWQFTSDGHLQSLNANQCMDV DPTQNNKVGMWWCYD QRWWLQGRGWIRNYKSNMCLDVWGKTFGAGARLGVANCYP
 QFWFYDREKWMVHGQTGNCLEAVRQG DQMSVIANACDN QR QYWSYEATTKQLRHHASYCLDTGTTTGTKPHLWQCLA QTWS DSDGGHICSMFEGRVLDVKGGRGYDRDHVVLWEPTE RQQWTKTGSHIEHTASHLCLDTDGDGTENGKEIVVNPCES QRWRDNKNGTISHLKPSLVLDLKGGKGYDKDHLVVNEFTD KWQYWYFAPIPNNKFGFMMDDQCMDRASSGWLNVWTCHG QYWEDNYLNGNASMYSNKFLDVLNSGTGNGTNVQVWNSNG LTWTFTQGGPDQNMESQRCLELVESRQSEFSQLAI QDCTD GEEPANGEGTTAGGNATAEEDATAGEESADTRYALASD

GTWTF VNAATGRLTDVTGQSSADGAKVSTYTPTS LRWATGSGDSLRTVYDGGCLDL QKWTLEFDNEHLSTGSNSFFVADVNKVEPYGNVNVWNYHG QHWVIKKYYKIQSVKTQTFVDLNNGGKDNGTKIQGWVDET LDFAVDAHGVIRPADAPDRAVTPAG
 QKYNYIDSGQLLRNVHSGKCVAVGGGRTNKGVDVYLIAECKG QYWKLKY DGGNYRFDNEGALDVNNGNTGNGTHLLYWNFQN KRWDFEQDGPDQNRETKRCLEIVMADHGAYALVVQQ CTG QHWIVDNVHQTVALSTGLCLDAYQG WNGGAVHLYSCSS FKWKIEEHDDGTYRISPITVDLVKGNSKNGTLVVLWGQHD Q $\square W H Y C$ RGLLFKSKVNDACLDVIGGRDVPGAKVALWVEHG QRFDF
QFDYDAGAGLLKHRDTGRCMELFGD A $\square L Q \square R E \square P$ QKWKVE RIIFNANSNGAK\ITDNQT DD EWFMPNGSपRVVSRKGGSSMKVAGESYANGDNIVEDVWKN QEFMLTPQGGRWITFRTKYCVDADANSRNGASI RVWECNG SSTSCLDMYSGIPANGKNI EIWNYNM QRWKLDGGRDMNVTAAGVSRGVCDRGGLDGARADTTNCST QLWN
GPWAYEETGHTTYTRSRQCLTVDAPRPGD TTLTRCD ARWQLQPFGFTLRTTVGDLVAGVGQQRFGAHRVVLQNGNG NQWFVMNTKTLMLKNNNLCFDDGGGATTGSTKYVLWTCNN QKWQI EGNSKLRHVGSNLCDD SRTAKNGGLSVEVCGP QQWRIEDRKKFHNFASGLCLQVNNNSHTNDAPLIVGDC QLWWVENRGWI HNYASDQCLEVWGEKPDNDARLGIVKCSP QYWFYNHRHRWDGQLWVWCLEAQLARGQKGKVLANKDCDN QHWQFAHFN
QSWKTPSGRTTKNMNSGYCLLVGPPF VMTYTCDS QLYKYLPETQIFHPAHRMCVESVD DYLVFAACND QLWQVRGSELRPLSLLGECL TA TADTRLSLRPCAG YQWYSFWDYTLSWKDTGKCVDDPDGNTKNENVAQVWGCSE QHWUVEPPIILKHADTNHCLEADVTAS KVVTNVCND DGVFFYDEETQQUAYKKIGGLCITAAASSNSHDLITLKRCDP

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| UniRef90-E5A9A9 | QWY $\square$ KPNATS $\square$ QLADTTCMDASGWKDMANVY |
| UniRef90- ${ }^{\text {- }}$ 6MUA1 | QEFELVVMKEQQMQHNDTLDGPYY $\square$ R AVH SKKFFQSFEDF |
| UniRef90-G5BMN4 | Q $\square$ W $\\|$ Y E GC $\square$ K R $\square$ AEDCCLTVVGS TS GSKLGLDADDQNVDS |
| UniRef90_UPI000361BA63 | QYWYLDSAPGQNKYSDKCMVVQGTTNGTPI NQMNCYGNTR |
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| UniRef90-C0EEC1 | FVPFGDYYKVIQAADGRALDSNAPGNGTNVILREDTGADN |
| UniRef90-C7PM48 | QLWSLT D ${ }_{\text {LGGGQYR }}$ |
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| UniRef90_UPI00037EB443 | GNPGTYRTE |
| UniRef90-K5URM3 | QLWAFYATRII DTKCPSGNGCELLHASHLQEDGPKTS |
| UniRef90-B9T5U3 | DGTlR Y N GKC |
| UniRef90-TORDC7 | F R D DKFGLHTYACDTNDN |
| UniRef90-E3M168 | S P Q LM S $\square$ S E G N L R R NTCAAEES GNVRMKTCSKRAN |
| UniRef90-UPI000248FD80 | V Y NARMYDARTSND |
| UniRef90-X8JRL3 | QWY LQRS GGGYT F K NRKVNDVASTDTHALVTASKCPST |
| UniRef90-UPI00046AE7BB | $\square \mathrm{IV}$ E GSAYQLKNLFTGKTFQPKPADVALEEGSTN |
| UniRef90-UP10003647D12 | GTNNGTAVHLWT GNGTTA |
| UniRef90-D1BKB8 | GSGSHALR Y VLE A A D GRVLGATPS GVALK TQSVADALA DP |
| UniRef90-HOYAKO | QLFRTNEANQLMQYDQ CLTKGADGSKVMITHCNLNEF |
| UniRef90-W4GV85 | WDAANKVDLCLDAYEGWNGGTVHLWPCDANGN |
| UniRef90_D9VQF0 | WRVSAVHSGGGVFHNGRRLDVANTESGARVQVWRANAFGA |

[^1]|  | 90 100 110 120 |
| :---: | :---: |
| UniRef90_UPI0003827D87 | VK FELVPTYR\RFVES GLLCAEVDGASVRERAAVVQAPCDA |
| UniRef90-W4DNE1 | QK WVFFVPTGDDAGSYSGQALLDLDTGQ NKIQLYPYLG |
| UniRef90-V9EMM4 | NQWFVLDEETLMLHNWNLCFDDGGGTTAGASKFIMWHCNN |
| UniRef90-L5M2J8 | KQRWRRKASFIQHSVSGLCLEAQP A QLVTSKCQD |
| UniRef90-A0A024 | QKWSYDVATKQIRHHTGYCLD M M |
| UniRef90-UPI000375EABD | QFWTLKKAGY IENKSNGKVLDVNGSNTAENTNIIAYTYGG |
| UniRef90-U5W664 | GRWSLFATDHGFSLRTGLVAGVGSQRFGAARLLVLQQPDK |
| UniRef90_E9JCC | Q W WKFDF Y S N |
| UniRef90-TOPW69 | QKW\IA NGQ K H A T HANLCLDVDPNDSNH R VQVWDCNN |
| UniRef90-UPI0001A61DAD |  |
| UniRef90-W8C3L0 | QLWYYNRQHDWYGKNRKFCLEVRPELKM QVVINR |
| UniRef90-B6AEY6 |  |
| UniRef90-UPI00047516D9 | QLWWLEPA WLI RNFASDHCLAVGGDAPGDGARLADAECDD |
| UniRef90-E5AS | QKWVAQDDGRAALQASQQCLDLQY |
| UniRef90-X6MUA1 | FFFFFFGCMFYICM YVYKI SGESKSDDAAVLQWKFEG |
| UniRef90-G5BMN4 | QFWCMKSDGR\YSKKPNLVLDIKGGSQYDQNHIILNTVNE |
| UniRef90-UPI000361BA63 | QMWRQKS Y Y F FVNVAT GKCLDNTAGGTTLGNKI QI WS CSS |
| UniRef90-W5JZ78 |  |
| UniRef90-C0EEC1 | QLWTVTKSGDGFDKDAGKSGGQLVSESGESSNIHLWEDVA |
| UniRef90-C7PM48 | $V N K G N S L S L S V A G G S T S N G A Q V I Q E T T A S$ |
| UniRef90_14W3Y5 | QE WLYMPESAWFNVGSGQCLNAAGDAGQNST VNLADCDS |
| UniRef90-V2WV50 |  |
| UniRef90-UPI0003620FE4 | QQWQLRPTGEILSQQSGKAVSVADEDR NVEQQAFNY |
| UniRef90_U1MK81 | WQLQLVGSVAVMSQQS GKALSVAGTVKA GTNVEQQAFTH |
| UniRef90-W7SI52 | QQWRFQT NAWLVNSHSGKCVELPGWNTDDGLLLAQSDCVG |
| UniRef90-UPI00037EB443 | QE WQVYDWFFLINANSQKVMGVSGGATANGSGVIQWDRNG |
| UniRef90-K5URM3 | QEWA |
| UniRef90-B9T5U3 | TRWQI WDNRT\INP\SGLVLEAT S GNNGTTLIV |
| UniRef90-T0RDC7 | QKWUIDAANHKIKHHNNLCLDVDPTNPSHVAQV WECHN |
| UniRef90-E3MI68 | ERWAYEKQ MIRNLKSGKCLSTANLKAGDDA I VVECDEN |
| UniRef90-UPI000248FD80 | WQFKHDGNIKNI GSQRYLEVPFAACANGSNI STWTSAN |
| UniRef90-X8JRL3 | WVLLKI GDRYGIK GDKLI DLHF GRRTNGTEVHTWPSDG |
| UniRef90_UPI00046AE7BB | QQYEFEPVGKIKLKGTDLYY T P E DKKGTTNSAI L L A K K K |
| UniRef90-UPI0003647D12 | QRWUVYDTGMLKNVNSGKTLEVAKGSKNNGALLQVWPDNG |
| UniRef90-D1BKB8 | S S WWAT TDGSTWSFASGSSLEVGGQSTANNAPVSLWQFGG |
| UniRef90-HOYAKO | K E WQYFKVF |
| UniRef90-W4GV85 | WNYDGNAKLLRHATGF |
| niRef90_D9VQF0 | QE WLVERHLDD P GVVSLVACDSGLPLEADGGRVRQGEDTD |

lupas_21
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jnet
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sol0
jhmm
jpssm


| UniRef90_UPI0003827D87 | $S K G Q V F A F$ |
| :---: | :---: |
| UniRef90_W4DNE1 | Y N N Q R WIIF |
| UniRef90-V9EMM4 | SPNQHF |
| UniRef90_L5M2J8 | AP A Q W WQL |
| UniRef90-A0A024UHJ7 | T T D |
| UniRef90-UPI000375EABD | TKNQKFKL |
| UniRef90-U5W664 | A R HQS WT |
| UniRef90-E9JCG9 |  |
| UniRef90-TOPW69 | NDNQK F |
| UniRef90-UPI0001A61DAD |  |
| UniRef90-W8C3L0 | Y P N M K WT F T |
| UniRef90-B6AEY6 | EDKKQW |
| UniRef90_UPI00047516D9 | AYYTKW |
| UniRef90-E5A9A9 | L G N |
| UniRef90-X6MUA1 | CDQQQFCF |
| UniRef90_G5BMN4 | EKTQVW |
| UniRef90_UPI000361BA63 | GTNQLW |
| UniRef90-W5JZ78 | Q C W |
| UniRef90-C0EEC1 | NPVQVWKL |
| UniRef90_C7PM48 | D NKQYWTIT |
| UniRef90_14W3Y5 | S D Y Q W |
| UniRef90_V2WV50 | GKHQCWKF |
| UniRef90-UPI0003620FE4 | A Q Q Q WQ ${ }^{\text {a }}$ T |
| UniRef90-U1MK81 | S DAQQWFF |
| UniRef90-W7SI52 | GWKQY W |
| UniRef90_UPI00037EB443 | N T D Q Q W F |
| UniRef90-K5URM3 |  |
| UniRef90-B9T5U3 |  |
| UniRef90-T0RDC7 | A N T N W |
| UniRef90_E3MI68 | D P HQKWNF |
| UniRef90-UPI000248FD80 | S NHQKW V ${ }^{\text {V }}$ |
| UniRef90-X8JRL3 | S AKQT WKL |
| UniRef90-UPI00046AE7BB | TREQQWTI |
| UniRef90-UPI0003647D12 | T T THRWDI |
| UniRef90-D1BKB8 | GAHQR W ${ }^{\text {T }}$ |
| UniRef90-HOYAK0 |  |
| UniRef90-W4GV85 |  |
| UniRef90_D9VQF0 | S P S Q WWRL |
| lupas_21 |  |
| lupas_14 |  |
| lupas_28 |  |
| jnet |  |
| conf | 88725772 |
| sol25 | B B |
| sol5 | B |
| sol0 |  |
| jhmm |  |
| jpssm |  |


[^0]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^1]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

