## QUERY

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$S D \square D Q K \square A E \square K Y N P A E V L A F K G E K \square E S F K K A E G K$

ENSADNDFDYS LSYDPLK ILRFQGDSDSNLPSTES D NNRALI NDKLASLQQYNPKTVMVFNGTSISNLLPAEER

 NKAVNDF LIAMNYDKKKLL THQGES IVNRF DKEGN PDGAS IGGEY SGGTY DADALLNVQPPSAARTPDDTE A Y I Q GLLS Y DLLN QLLAVDLTPAELDPASAGE


Q N S D I S S K Y I T
 VS P D A A T I G D Y I R T L G D D S K GLL A S QRT QV N S RTS S S GF AI N S Y V H SMP S VK Q ERKASEA K T I S L I S P L A S T SAE I K E Y I E S LDD Y NAD K I LAEVRTTEGD KEREELLS Y D NAA QLDSYVA QL NVNDSSSNLNAFV SALP


SKDNTDDG $\quad$ VS GEED L NELLLA D LS N S $\square E E L V Q E E A P$
RHED IN A G L REDK H N A Y A L L N S D MY D D N Y S Y P EA $\square E$ $\square T$ DQA E I QAYLGSLKAPGASATMRASAPTYSDVSTEGY





ETTQ
 QALSSS TKESDTP FPPVPDS
 $V L T N K S \square T A Y L T G L P F L P D G V L A R S A A D R E P G V N E K G$ E GLS T E Q IP G VE N G D Y I S N S H Y P TP GSTPSAGAK GD S A $\square$ N S Y V R T MP S VK Q $\square$ D P F S ERKVVA DPKPAS FE D G $\|$ S NLVITE QY GTETSNKVPGEDI L E R Y P QE V I N I SMM N P P

F QS VPESRSEETLSEGETYEDYTTGNGS SLE DKK PVVFAKVQDEVLSSEPTGGN

D R R R A $\square$ N A Y $\square$ S GLL $L^{L}{ }^{N}$

K E P A N M T E Y VR S L E K VA R Q $\quad$ K T P S R N P V S P R V T K E S L A R SP QKL L I VQGA QLSETEPQFNN S SPQ QVSNEG


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WRNGVFYVVEKKKKSDSNGSSDTSYDSAGEGNDYPGA TY L FDDSTYIVMTREKCSYEADF DI AVPSAYEDVTYPGALLV


EEDGTFLVIKKKQCSVANNTSELTYVDSLASRLFPGAMVL QLPDEFVVIERKKRSLLSTNTSDVSVTATNDSRLYPGALLVB



EEDGKTFKTTRVEYTVTKNLKKDP ILGNLEGVIFPGNLVR NPNDQGLTICNVKEVNFNSEFKDQVI TSVAGALWAGNLVH KKADKFIVI ERKKKNINTTPVDDSI I DSVTDRTYPAALQL NSNGKFVVVEREKKSLTTSPVDISII DSVANRTYPGAVQL SGG YTECKTVTYDLKNNFENIAILRPTNGIIYPGALVI RAGATKEFYEQAKE FEEQLLFSDDKNVFYPGALLR EESGKTFKTTRVEHSLTQNLSK LPD LGSDEGVTFPGNLVR
 VFGGAYDYT RASGNSEQANEDEEQLDFSDQEVI FYPGAMIVK $F R N D D F$ DLEEYEVAVGFDEQFLGSAANDEGFYPGSLVV
 NEKEYEQAREVDEQLLFSDANTI YPGALI K DASDRDFAYILDKRESSFSEKEDYVRGSGYENIYPGAILF NDGPGYWVITKKHYKASAMFDETMI LDD NAEILYPGCVLKK


 LDGGYWVKTSRKYK MSQSFDENIL FDPTGDMLYPGCVLK
 NEDGRDFSCRVDSYD TTRTPDDIVTFDPDAGLMWPGALL Q $\frac{\mathrm{L}}{\mathrm{N}} \mathrm{D}$ G GNWVK
 DKVTQTMEYDFTSNSEDFAILDPWASILWPGCLI Q WKClT TTYDDKTNGSGGFPLFNPSASVIYPGSLLQQ EDGQR VPGGWWVKTSRRYKLSEVGDESVLLNPTNDVLFPGVVFR VDGDDFVCVDQNYTSSTNKSDDNSVLDNAETNLFPGAVER YAFDTRAGSNKEFYEQAKEFEEQLLFSDDKNVFYPGALLR STDSNAKTLEEENCSFNQTDSDFFLLDPNSSLLWPGNLL
 WDNGFGKT HAQ EAETLRFICSSRTVSVTDGTGDFQTLDNLNRYI YPGSILD


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90
ADKALVENRPT 90 MVKRKP 100 MKRKPDNTNDLPGLKGENSTKVDDP ANDDFVQNRPNLLMCKRKPLNI SIDLPGMKKENTITVENP
 ANRNLIENKPNIVSCERKPITISIDLPGMGEEGKTTITSP VDETLLENNPTLLAVDRAPMTYSVDEPGMASSSDSFQVEDP
 ANRDLVHNRPDIITKRRPITISVDLPGMGTENKVVVKNP ANKNFTENKPDAIVTKRRPQKI HI DLPBGMGESASVEVKDP ANKGFTENKPDAVVTKRNPQKI H DLDPGMGDKATVEVNDP ANKAFADNQPSLLVAKRKPDNISIDLPGMRKENTITVQNP
 ANSELVENQPDVLPVKRDSVTLSIDLPGMNHDNE VVVNA
 ANQDLLENKPQLVSDSRKPGRISVDLPGMAGADSHTDAEP ADQSLLENLPTLI PVNRGKTTUSVNLPGLKGESNDTVENP GDKNFVENQPTVI NMERKPLTMSVNLPGMDGKNSETVKNP ADNNLDENNPTLVSLRRAPITVSVDLPGMTDNNAKLVAHP A N Q N L SKG S P T V V G G I D R A P A D T D L L V A NKAFADNQPSLLVAKRKPLNDSIDLPGMRKDNTDTVKNP
 ASNDLLDGKPQELAVDKDRVNITVDLPGATDDSFKVV G N N G I V E G S P Q S LL

 VAD E T L L E N N N P T L L L A V
 A DEATLGGGLP TPAAVDRAPMTLRLDLPGMGENGSLDVES P


GES $\quad \square P T$ GEY $\square G T T G G R A P \square T L S C S L E N L N G K P S T V I E N P$


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## QUERY

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UniRef90 G8R5U3 UniRef90_UPI000362F017 UniRef90_14Z7B5 UniRef90-K1ZT67 UniRef90-C9Q1C7 UniRef90_UPI00046657E7 UniRef90-D1W0J4 UniRef90_A0A016EAN4 UniRef90_C9LFF0 UniRef90-A0A015ZJ17 UniRef90-A4AS60 UniRef90-E1KQH9 UniRef90-W4T7H8 UniRef90-H1Q24 UniRef90_UPI00046AB24B UniRef90-A0A015Y1R7 UniRef90_W4T8C5 UniRef90-V6KKU9
UniRef90 UniRef90-14Z8P6 UniRef90-D1W2K5

TYGKVSGA ${ }^{130}$ 150

160
TYGKVSGAIDELVVSKNEKYSSTHTDPARTQYSESMVYSK TYGSVSGAI DELISTWNEKYSSTHTLPARTQYSESMVYSK
 TYSSVKAGI DSLLNKWNSHYSSПYSIPTRFSYSDSMVYSK SNSSVRGAVNDLLAKWHQDYGQVNNVPARMQYEKDTAHSM TYSTI NASIN S SLLATWWNTKYSSKYTVIPTRMSYTDAMVYSK TYSSVSAGI DNLVSKWNEKYSGTHTLPARTQYSESMVYS TYANIASAI DEETVNKWHDNFSGGNTLPARTQYTESMVYSK TYGNIS GSI DNLVSKWVDENSDTHTLPARTQYTEAMVHSQ TYANVSTAI DNLVNQWHDNYSGGNTLPARTQYTESMVYSK TYGNVAGAVDDLVSTWNEKYSATHTLPARMQYTESMVYSK TQSSVRGGVNALVDRWFSKYGSSYSIIPAKMQYDETTAYSM TKSNINDGVNTLVDRWNNKYSEEYNISAKI DYDQEMAYSE TRSTVRTGVNNLLSKWNNTYAGYGNTQAELQYDETMAYSM TKSSVTSAVNGLVSKWNAQYGASHHVAARMQYDSASAQSM TVSGMQEGI NTLVNRWNEKYAANNPAPARMHYESTSAYSM SNSTVRTAVNNLVEKWDQKYSKTHAVPARMQYESDSAQSM TRSDTNGSLNTLLERWNKDYAKYPNPPATMQYNETMAYTQ TTSSVNSAVNDLVEKWIAKDSVNHADPARIVYDTTSAQSM
 KYGNI RSAI DEKFNMWARTYADTHSIVARSFYNESMIASE TYGNVSGAVDELVSTWNQKYSKTHTLPARMQYTESMVYSK
 TFANVRAGI NDLLSKWFDSHGGEWSLPANFQYSSSQVYD
 NYSSYQKALNEILELWNKNPSSGYVNAARSSGNDEKADSN

TKYELDAA $\quad$ KAK\AEWKQNNP NGNIAAKVK SNSSVRGAVNDLLAKWHQDYGQVNNVPARMQYEKITAHSM DLASVQTAI DEALEWWNANYEEGYVNAASSSNRDTTSYSS TAVSVDLAI QK VVDTWRQHAQGYRPPMRAFSESHTAYSK SNSDVQTK】DEALEWWNANYQEGYVNAANSSY $\square A R T S Y S S$
SFSHVHEFTQANEKAWFESHGGS VEAGSLDTSCVEAHSK SFPNVSKEI DKTVDHWNVSKDNGYHNKSVSSLTK SVVYSN TYANVSSALDEEVNQWHDNFSGGNTMPARTQYTESMVYSK SNTTVQPKI DEALEWWNANYQDGYVNAANSSYSASTSYSS TLSGVRKGINELLSR GFNAPAANLTYSDEEVYDK SVKGVHDFI QANEKAWFESKGGS VEPGVLDVTCTEAFTK SLSTMRAAISELLNKN FNAPPANMTYNSYEVHDE KLSTVRDGISS LTR




$N \square S T V R E G V K D M L Q Q \quad G V T G S A S A K V N F T T E E V Y S E$ KLSTVRDAVSALLER NNSDVRMAINNIVMHTSDSRYD | $D$ | $F$ | $K$ | $P$ |
| :--- | :--- | :--- | :--- |
| $A$ | $A$ | $D$ | 1 |

 RLSEYREAFND WAKLNYQPNAV TSMHSVESITSK
 RKSEYQEVWNKWATDWKES PVVTTIQSVEKINS Q
 $R$ LSDYR EVFNDWGKANYQPNAV TSTHSVVELVS K $N L G G V N D G \square G N L M R K \quad G G N V K N A S R \| S V E V K S M N S S$
RKSEYQEVWNKWANDWKES

 SNSTVAQAVGSLVEQAQRSRIDDYGS

P VT T I E S I D K I N S E
 TP GK VQQDNLNE ILLNNY SASNIQQQGIQDILSTADVGTAADASSVEQVYNE

 QMSDYRKALNE WGQ $\quad$ WNFKEGS ALTTSSIDEVRSM RMSDYRTVFNEWARLNFKKG AVTSMQSLETVTSE
 $T P G K V Q D N L N A$
$R M S$ S LS A QRQS LQ N IM N $V M S Q V R Q K V N D L V N D$ SLLS S CR QLVMDLMHQK

$T L S G V R Q G I N D L / M N P \quad N V G D \square$ SLSNTRQQVQQDYIQQ SAMDEAPAYITYLSSNEVTTMK

 SLS SMRSSMFKAMKSANFSGQQSLA SAS A A Q E A I A K M I R D QK DLAASYRELRNK $\square L$ SQN $\square \quad$ TYHASAH TWSSYQT TLLQQWRSSPNAEPSV

T A GK|V|Q D A L E K I L L


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B55F3E

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 K YEKS



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VY T R N N P G VP ITS Y K LT Y L K D N S T A K L G Y T T E Y E VE T C Q D Y RLSTEN PGAPGAYKLKELGTNRTFKTVIVYKYTKND I K D N L L A TVG DA CN WVD TVVRE EVV

x





$P M E$ SPGA
PMEQMS
SMSEST
RLDPNVAPVA
$\begin{array}{ll}P \text { M E } & \text { Q MHP } \\ K ~ S ~ A ~ \\ I & G S G L P\end{array}$
$\begin{array}{llllll}\text { K S A } & N & G & S & G L & P \\ \square P & S & E & K & V & \text { A } P\end{array}$
P L T S S F K
$P M E$
$N V S R Q N P M Q$
$N V$ V R Q N P GYP



$N \square S R$ Q NP GYP ITS Y K V N Y VK G N R P F K V I Q N DK Y K V R T C D L V









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TDGK TNTDHSGGYVAQFNTSWDE $\square$ NYDPEGNE $\backslash V Q H K N W S$ QKYGI QLH
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RSSFKIT
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PKSKYNTV
P $\square$ G $\|$ RLKPQM YVRMDEPDADEDSYGVNGTQ $\square W E V R E S A$ $N K V R M Q L R F L G$
NYDK $\square$ R $\downarrow$ D
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KEMR $\square \mathrm{E} \square \mathrm{A} \square \mathrm{SG}$
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GGS S E R
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C $\square$ CHKE LSSPNNKY LT A WGTTVVPQC

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VYNSFA 60 QITTLNPVELVDESLSEVIFPGCVLR RTITARSDEMVIPDNMNRYI YPGSILE S L P D REFAF

1 LD K PDTAR DTPDGQVACSVQRYSLRAAPPEHAMKTLDQDKLWVGGVYR WPD KKGHSLTYETNEHGTTANTMRYI YLGSLLK $V V R G Q Y K T L D T E R K Q V L L E P A E L G V N N Q N T D V I Y P G S V L \mathbb{R}$ RDGLKGVIISSRSSYSAGVVYNEYLLFNPMSNLI YPGNVLV ALNDKGIYCKTDEERYDKTFENFSKLGGGAHLLWPGNIVQ


$C Q L R Q V D A S Y N P E E L V N F D A G A G L L F P S A L N Q$ DRNGVT $\square$ SRTRNANRDDFLYSEQFVFDRKSDQI F LDGNVL EYVETVQKQLELDPPQLINNDLINS Y KGVKRTKQTYSLTKNPEEAITFDPNVSMCFPGAIVQ
 $V \mathrm{~V} D G R \quad C Q V S R$ D K $\frac{1}{F} Y$ E NLLR SVVYEFYYPVVVVETIFLGGSVL
 I ITTTQKSGVLSPLSPS FDTNTELIYPGSILIR RRTDVLENLTLNAFDDR TATNTAALYPGSIIL ASGGAPLACTTRKVNMQSAPERFAASGYDQDKLWDGSMLQQ SSDVDCESS I IR DT DD DNSFMTAD【AA QVGEVVPGSVFN

YYRKVRRSFDLSGYELYTSNLNGAVVWPGNLI Y VRPGYYRK $\mathbb{V}$ RRIFDFYGYRTDDDY DPKLSEEAI WPGNIIH

DSNDNGE $\square \mathrm{F} \square \mathrm{GT}$ QY L G $\square \mathrm{Q}$ GWS H $\square$ ATP P DKTFD GA I L
 GKTFVGAVL DDSKEDE $\square \mathrm{D} \square$ SSKYNGVQGWWD


$\mathrm{F} \square \mathrm{GNQY} \square \mathrm{G} \nabla \mathrm{QR} \mathrm{WECL}$
ATPPHI YVGATFP WPDRVWVGNVFP FFPNNPMIYPGATFL EAVYLGAV
TGSTTVYPTQN
 IDKTEKLTWK FDSFIVDDNHVAQIFPGAIFS QNEKSTVITAKSPDQLYLGALLQ TTEDNMFIGDRNDSVNNDYVPAFYIGAAY NDNKYDLLPDNVTRKYRLSAEQSFVNPAFRTQVYPGHLIC QFIPKDTEQ
SVSTPVVNQDSSKVSFQVSRSEFQFVFPKDTTQLFDGSVLD $K K I L Y T L V A L A F S S A T F A Q S N Y V T K S D E F Y Q G A 1 / F ~ P$ FQYEN【KADAKNDHFD【VYNSTAQNKIFGHQLLD

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[^3] S VK A WVRVS Y R S $\square$ E S K Y D DVF GEVA LD G T G $\square$ WS

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PTKK $\square$ Q $\square R$

R P K
P T G

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Q D D N
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jpssm
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sol0
SOlO
jhmm

jpssm```


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    jpssm

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