QUERY
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D S S NTPP E H ${ }^{10}{ }^{\text {D }}$ A
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MD GNGRWAKKRKMPR ${ }^{3} K G H Y E G M Q T \prod K$ MDGNGRWAKKRNMPRTFGHRAGVETIR $M D G N G R W A K Q R G K D R V F G H E N G V K A V R$ MDGNGRWAKKRNLPRTMGHKAGVETIR MDGNGRWAKARHLPR DMGHREGMKSVR MDGNGRWAKQRNLPRTMGHKAGVETIR MDGNGRWAKKRKLPRTVGHKAGVETI R MDGNGRWAKKRQLPRSLGHRAGGEAL R MDGNGRWAKKRKLPRSMGHKAGVETIR MDGNGRWAKNRGMPRDAGHKEGMGVVK MDGNGRWAKQRSLPRI A GHKEGVNSVV MDGNGRWAKKRGNSRVF GHKNGVKAVR MDGNGRWAKQKGMMRAFGHENGTKSVR MDGNGRWAKKRFLPRTAGHKAGVETVR MDGNGRWAKEQNLPRSMGHKAGVETIR MDGNGRWAKAKGLPRTFGHRAGVETI R MDGNGRWAKKRGLPRADGHRAGVDALR MDGNGRWAKNRGLPRIMGHQRGVDALK MDGNRRWAKKRNLPVALGHKEGAKTLE MDGNGRWAKERGLDRTFGHRAGAETLQ MDGNGRWAKNRGLDRDAGHHNGMKAVK MDGNGRWAKEKGK $\square R V F G H K N G V L A V R$ MDGNGRWAEKQGKARVFGHQNGVEAVR LDGNGRWAKKRLLPRKAGHVAGSKTVE MDGNGRWAKKRALPRAAGHYEGMQVVR MDGNGRWAKERNLPRSMGHKAGVETIR MDGNGRWAKKRGLPRDAGHREAMKTVK MDGNGRWAKERNLPRSLGHKAGVETLN MDGNGRWAKKRFLPRVAGHREGMQVVK LDGNGRWAKKKGMPRNYGHAQGSKNVE MDGNGRWAKSRNLPRDAGHKEGMSTVK MDGNGRWAKQRKLPRIKGHYQGMQTVK MDGNGRWAKKRLKPRVFGHKAGMDALQ MDGNGRWAQKRALPRVAGHHEGMKNVR MDGNGRWAAQRGLPRSAGHQAG $\square E T L R$ MDGNGRWAKQKGLFRSDGHENGSKAVR MDGNGRWAKKKGARRVFGHKNAVKAVR MDGNGRWAKKRSLPRTAGHHEGMKVVK MDGNGRWAKERGLPRMKGHEQGAESVR MDGNGRWAKKRSLPRDAGHHEGMKVVK $\begin{array}{cc}M D G N G R W A K S K F L P R T A G H K A G V V T I & R \\ M D G N G R W A K K R G K P R L M G H Q A G V & R A \\ R\end{array}$ MDGNGRWAGRRLLPRVAGHKAGIGPVR MDGNGRWAKKRALPRMAGHYEGMQTVR MDGNGRWARRLGMPR VGGHR GMKAVK MDGNGRWAKQRGLPRIEGHRRGANTLK $M D G N G R W A K K R G L P R I A G H K E G M D V V K$ MDGNGRWAKRQGAARVFGHRNADKAVR MDGNGRWAKKHNLRRI A GHREGAKSVR MDGNGRWAKKRGLPRIAGHHEGMKVVR MDGNGRWARKRGLPRIAGHHEGMKVVK MDGNGRWAKKRALPRVAGHHEGMKTVR
 VDGNGRWAERRGLPRSAGHREGAKAVR MDGNGRWAKKKGS $\square R V F G H K S G V K A V K$ MDGNGRWAQKRAMPRIMGHHEGMKVVR LDGNGRWAKKRFLPRNMGHAQGSKTVE LD GNGRWAKKRGLPRQLGHKKGCETLE MDGNGRWAKERGLPRMAGHHSGMKAVK MDGNGRWATERGKERSYGHQAGVESVR MDGNGRWAKKRGGLRDFGHQSAI TAVR MDGNGRWAKEKGKLRVFGHQNGVLAVV $M D G N G R W A N S R G L P R L A G H R Q G A R T L$
$M D G N G R W A K R R G L P R T M G H R A G A D V L K$ MDGNGRWAKQKGKLRRIFGHENGVKTVR MDGNGRWGKQRGLPRIMGHQRGVDTI R CDGNGRWAKRRGLPRIMGHKQGVEALK MDGNGRWAK L R GKPRAMGHRAGVEAVR $L D G N G R W A K S K G M P R N Y G H T M G A K N V E$
$M D G N G R W A K E K G K D R V F G H Q N G V K A V$ MDGNGRWAKKQGLNRI FGHKSALTSVR MDGNGRWAKERGMPRVVGHRAGMKTVK LDGNGRWAKKRGLPRSMGHKEGCVVVE MDGNGRWAKQQGKPRIFGHEKGAKTVR MDGNGRWAKNKKMPRIKGHYEGMQTVK MDGNGRWAKKQGMLRVLGHENGAKSVE MDGNGRWAKQQGNKRTYGHERGVETVR MDGNGRWAKKRLQPRVFGHKAGMEALQ $M D G N G R W A K K K G A M R I F G H R H A Q K A V K$ MDGNGRWARQRGLPRAMGHRAGVEVLK $\begin{array}{cc}M D G N G R W A K K R M Q P R \mid & M G H K A G M D A \\ M D G N G R W A Q K K G A M R I V \\ F & G H R N A L A A \\ R\end{array}$ MDGNGRWAKKRSLPRVVGHQKGVDALK MD GNGRWAQSRNRPRTYGHKKGVDAVR MD GNGRWAR LK GKTRDEGHAGGVDSVR

## QUERY

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UniRef90_UPI0002E190FF UniRef90-F9YUG9 UniRef90-UPI0003792A42 UniRef90_A8AZB0 UniRef90_UPIO00426563A UniRef90_K9P3Y3 UniRef90_UPIO00375AEF5 UniRef90-G0IX57 UniRef90-K9YI62 UniRef90_U1JRM1 UniRef90_R8VZJ9

50
$K \square T R \square A S D D_{G}^{50} K Y \square T \square Y A F 60$ EVVKACSELGVKYLTLYAFSTENWKRPSEEVGALMNLLVE ETVETAAKIGVEYLTLYAFSTENWKRPKLEVETLMKLLVA RVI KEADRI GI KYITLYAFSTENWRRPQEEVTALMKLLVQ AVVEAARKVGVKVLTLYAFSKENWQRPKEEVSFLMKLLSE KVIKESNKLGIKYLTLYAFSTENWKRPNDEVSALMKLLVE E IVVK E C S K L N V VK A L T L Y Y A F S T E N N WK R P K D E V S A L M K L L V E
 K I V K E S KRLGGIKYLTLYAFSTENWKRPKEEVGALMQLLVV RIVVRYASDIGIKVLTLYAFSTENWKRPKNEVEFLMKLPVD KVVRAAHQCNI KVLTLYAFSTENWKRPKKEI DFLMKLPKE
 TII TECKRLGUKHVTLYTESTENWKRPALEVGTLMKLLVS RI LKEATRLGI KNLTLYAFSTENWARPKDEVGTLMKLLVTOT KI I KECDKI GVKYLTLYAFSTENWKRPKDEVGALMNLLVE NIVKLCRQLEI EYLTCYAFSTENWKRPPKEVTALMNLLVE DLLRCCRDWGI PALTAYAFSTENWGRPLEEVEFLMTLFER KIVRYANKDGIKYITVYAFSTENWKRTEEEVNSLMTLFQN KII QTASDI GI EVLTVYAFSTENWKRPEEEVGLLMRLDAE KVTDAADELGVKCLTMYAFSTENWKRPKDEVDFLMKLPEE STVEGAAELGVKNLTLYAFSTENWNRPKLEVTALMELLVS

 DVVKECDKLGVKYLTLYA RVVKEADRLGVKVLTLYT K I I K EASDLGI KYLTLYA RMTRYASGVGI DVLTLYA R 1 CKEAYKMGIKYLTVYAF RI A DAADELGVKAMTMYAF KI TKEASNLGI EYLTGYA
 RVVELCGELGI PILSAYAF EIVEGCAEI GVPFLTLYAF


 RTTKLAANELGVKVLTVYA KVLKECQRLGVKHLTLYAF ETVSGARELGVEVLTLYA
 RATDAADELGUS LTLYA KMLVYCKDLK KTLAYAF KIVEACREI GI KYLTLYA K I V K K H A S R L SIVRAA GELGI KYLTLYAF KI TRRLA N D L G V G GVLTVVYA
 DTTEACAELGVKYLTLYAF
 RI IEDAFDMGI K YLTVYAF QVVEDAARLGI RYLTVYGF
 ETVEAAAEMGVEYLTLYAF
 KIVIAADEDGIKALTVYG KVVENCAKLGVGYLTLYT N I L T Y C Q D WGV GALTVYYAF A ALLRTCNDWGI SAATAYAF
 DTVEAATELGVEYYTLYAF
 R TR HASDLGVKVLTLY Y K TVRKANDLGVKYL T L Y Y A QTl E Y C V E NQI K Y V T L Y A F $N V T B A A K E M G V Q V L T V Y A F$ RTLIRHCSDWGI GALLTAYA DAITEGSAEMGGVDVITVYAFSTENWSRPEKEVKFIMNLPVE NLL R CCDDWGI GVLTAYAF


STENWSRPESEVNYTMNTPVN KVTKAASDMGVKVLTVYAFSTENWTRPGEEVAFLMALFER

80
$\qquad$










 T E N WK R P K S E V | $S$ | $E$ | $N$ | $W$ | $R$ | $R$ | $P$ | $D$ | $E$ | $V$ | $N$ | $A$ | $L$ | $M$ | $R$ | $L$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $E$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $S$ | $E$ | $N$ | $W$ | $R$ | $P$ | $K$ | $N$ | $E$ | $V$ | $D$ | $F$ | $L$ | $M$ | $K$ | $L$ | $P$ |


 S T E


 \begin{tabular}{llll|l|l|l|l|lll}
$S T$ \& $E$ \& $N$ \& $W$ \& $R$ \& $R$ \& $R$ \& $K$ \& $E$ \& $V$ \& $E$ <br>
$S$ \& $F$ \& $L$ \& $M$ \& $R$ \& $L$ \& $P$ \& $E$ \& $E$ <br>
$S$ \& $E$ \& $N$ \& $W R$ \& $R$ \& $P$ \& $E$ \& $E$ \& $V$ \& $N$ \& $F$ <br>
$L$ \& $M$ \& $N$ \& $L$ \& $F$ \& $V$ \& $E$

 TEN WN R R P K L E 

S T \& $E$ \& $N$ \& $W$ \& $S$ \& $R$ \& $P$ \& $K$ \& $A$ \& $E$ \& $V$ \& $E$ \& $A$ \& $L$ \& $M$ \& $K$ <br>
\hline
\end{tabular}

 \begin{tabular}{llllll|ll|llllll}
$S$ \& $T$ \& $E$ \& $N$ \& $W K$ \& $R$ \& $P$ \& $A$ \& $A$ \& $E$ \& $V$ \& $N$ \& $A$ \& $L$ <br>
$S$ \& $W$ \& $T$ \& $L$ \& $L$ \& $E$ \& $H$ <br>
S \& N \& W R P \& $K$ \& $M$ \& $E$ \& $V$ \& $D$ \& $F$ \& $L$ \& $M$ \& $K$ \& $L$ \& $P$ <br>
$E$ \& $E$

 

$S$ \& $T$ \& $E$ \& $N$ \& $W$ \& $R$ \& $P$ \& $K$ \& $M$ \& $E$ \& $V$ \& $D$ <br>
$S$ \& $L$ \& $M$ \& $K$ \& $L$ \& $P$ \& $E$ \& $E$ <br>
$S$ \& $E$ \& $N$ \& $W$ \& $R$ \& $R$ \& P \& $L$ \& $E$ \& $V$ \& $D$ \& $T$ <br>
$L$ \& $M$ \& $N$ \& $L$ \& $L$ \& $S$ \& $T$ <br>
$S$ \& $E$ \& $N$ \& $W$ \& $R$ \& $R$ \& $P$ \& $G$ \& $E$ \& $V$ \& $E$ \& $S$ <br>
$L$ \& $M$ \& $G$ \& $L$ \& $E$ \& $N$

 IE N WR R P G P E V V 

$S$ \& $V$ \& $E$ \& WK R P R R A E \& $V$ \& $E$ \& $T$ \& $L$ \& $W$ \& $R$ \& $L$ \& $L$ \& $R$ <br>
$S$ \& $Y$ <br>
\hline \& $E$ \& $N$ \& $W K$ \& $R$ \& $P$ \& $K$ \& $T$ \& $E$ \& $V$ \& $D$ \& $Y$ \& $L$ <br>
$M$ \& $Q$ \& $L$ \& $P$ \& $E$ \& $Q$
\end{tabular}

 | $F$ | $S$ | $E$ | $N$ | $W$ | $R$ | $P$ | $T$ | $A$ | $E$ | $V$ | $D$ | $F$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $F$ | $L$ | $M$ | $T$ | $L$ | $P$ | $Q$ | $E$ |  |  |  |  |  |
| $F$ | $E$ | $R$ |  |  |  |  |  |  |  |  |  |  |
| $F$ | $T$ | $E$ | $N$ | $W$ | $R$ | $R$ | $P$ | $K$ | $S$ | $E$ | $V$ | $E$ |







 STTE N W N R P D L L E STE N WK R P K M E V E F L M K L P E E E STE N W R R R P K D E V $V$ D A L M K L L R D







 | S T E | N WK R P | Q | E | $V$ | $D$ | $F$ | $L$ | $M$ | $S$ | $L$ | $F$ | $Q$ | $V$ |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $T$ | $E$ | $N$ | $W N$ | $R$ | $P$ | $D$ | $N$ | $E$ | $V$ | $Q$ | $A$ | $L$ | $M$ | $K$ |
| $L$ | $L$ | $E$ | $S$ |  |  |  |  |  |  |  |  |  |  |  |  |

 | $S$ | $T$ | $E$ | $N$ | $W$ | $N$ | $R$ | $P$ | $D$ | $S$ | $E$ | $V$ | $S$ | $A$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $M$ | $K$ | $L$ | $L$ | $N$ | $S$ |  |  |  |  |  |  |  |  |  |
| $S$ | $T$ | $E$ | $N$ | $W$ | $R$ | $P$ | $A$ | $F$ | $E$ | $V$ | $T$ | $A$ | $L$ | $M$ |
| $E$ | $L$ | $L$ | $V$ | $S$ |  |  |  |  |  |  |  |  |  |  |
| $S$ | $T$ | $E$ | $N$ | $W$ | $S$ | $R$ | $P$ | $K$ | $E$ | $E$ | $V$ | $N$ | $A$ | $L$ |
| $M$ | $E$ | $L$ | $L$ | $V$ | $S$ |  |  |  |  |  |  |  |  |  |


 F S T E N WK R P K L
S T E N W




 TEE N W G R P R L E E V


## QUERY

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UniRef90 R7QVK6 UniRef90_H8KP54 UniRef90_UPI0003814B04 UniRef90_M1ZLXO UniRef90_R5TRC9 UniRef90-J2ZUQ6 UniRef90_U2A8T5
UniRef90_UPI0002E190FF UniRef90_F9YUG9
$F$ LTKTFLPE $\frac{90}{L I} E$
100
110
120
 YLK K EVKELHKNEVVLRVLGEI DKLPKECEREIKDAI EDT YLQKEVDELHEKDVQI RAI GEI ELLLPRQVLELLDKAI KKT Y L K NELEELNKNQVVI NGLGDI DKLPSDAQREIKKAIVTT YLKKELKELHEENVVI RYI GDI SKLPKDCQDELINASNRT SLKKELNTLMKNDI RLNTI GNI EKLPSSAQKQLLEVDNKT


 TISSETKTLMENNVKLGVI GCVDTLPKDVHRKLMECMEKT SLKKEDKTLQDNDIKLSAI GALNSLPTKVYKELFEVIENT YLKKEVEELNRNNVRLTAI GDIEKLPKACLEELKRAMEDT YLKKELKECHENGVRMNVLGDTSKLPKECQNALEEALETT YLKNEFEELNSNGVVINHI GDDTKLPKPCRDELVSAYEKT FLQKEDDELCANYVRVSSIGRTEELPPAAQKALQMAVNKS VLRRELEEMMQQNVKI RFI GNLSALPESLRREIAKSQAET YL DDYSKRADSENIKVKII GSRENLSNKMIDDKI EKCMERT YLDSKLAAMHANQVQLRHVGDLA GLPPALQLKKTKAMEQT FLS S L LaELIEKNVQVRMMGHKEDLPSHTLKAIEEAERQT TI NKETKTLMENNVRLNATGDLSSLPKRCYNELQEATSKT TIKGELPTLQKNKIRLQAI GDLESLPQATRDELQEAI DAT YLK KCi KRSTKNNMCVRVI GDITPLEEDMKQSIKELEEAT FLTTFLPELVAENVKVQVI GHTEALPDHTRRAVEKAVKET YLKKEVEELHENNVIVNTIGDDLKLPQDCQDELRSAYEKT FLNTYLVELDEQNVRVQAMGDLSRLPSYTLKAVESADERT YLKKQLNELHKNNVIVRTDGDISKLPNDCVEVLEEAKEKT FFDTFI PELMEENVRVNVMGYKEELPSHTLDAVERADEAT

 F F D K Y V P E HK N N V R L Q
 Y A A RE E E E L R E K G V R V K K V I
SLKKEI KTLNNNDIKLNAI
 S L K K E L L T F F N E N K I A A V N A I G N L FIEQETPTLMKNGVRLQAI GRIHELPESCQTALRKTIEDT FLNTY LPELVEENVQVRDI GDETALPAHTQRADEKAVQDT YLKKEVRELHKNNVKI STIGDDDKLPKSCVDELERAYELT Y L Q N Q L D Q ML S H GVVRLQTCGAI DLLPARVQRVLKDARERT YLKQELPDLQKNDIRLQADGRLDALPMQVRRELDSAVEST

 LLQKELKEMEAERVCI NFIGDLSPLPPSLQQEMHRSMERT

TI R GEIGKTLMDNNVRLATIGNTESLPVDCQHELAEAMRET YL REEAETMIRNDI RLNTIGGMERLPEKVQNFLMKTMDAT $F L G S F L P E L V A E N V Q V R V M G N K E Q L P A H T L R A I N K A M N D T$
 Y L D K E L A EI TTKNNI QFRMDGR LDDDLPAEDQSKI RRNLKAT FLGTYLPELIEQNVRVVMMGESETLPRHTHNAVRKAMEAT F L K T DL N ELI E R NVVKV QMLGGEKSKTPSATQQALLAAFEEKT Y L K S A EN ETND K N I R V K II G S R I G L S P ELIDNQIDDKDEK H T TI R K E L N T LQQKNNVRLMAI GNLLDLDPEGCRQQLKDADAQT TI KKETQTLIMKNNI KLDAIGNI QSLPKACQRELKSAMEAT

 YAKRLLAMAEKNNDRVRMIGERGRFASDIVDAINVLEEKT
 ALEDELLFMKNDVRFQVIGDDDRLPEEVQKKLQETIDHT TII R K E T A T L N K N N I R L Q T I G N TEES L P K A C Q K E L L E A I E I T

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 S L K K K
 FI K R ELA T LIHKNGVRIIRII GDRTRFDDDDRVLLANAEERT $Y$ L K N C I K T A A K N N M R V R V I G D I T G L D P A M Q K Q I A E L E E A S TI N K E T K T L M E N G V R L N A F G D L K S L P S R C Y K E L M E A I D K T
 F L E L E L E ELIVNN NV QVVRMI G D K E G L P S H T V V K A V E K A I Q E T Y M V R L L $K$

 F L K K K Y D L L A E H NI R L N A I G D L Q R L P Q KVA EV L F G T I E K L AVDNELEELKSNNI RLEVLGNMAELPKEPREALQMAIEET

 F Y D K Y V P DLHANNVRI QMI GDHDRLPEATMTALYRAENKT A IT D E V P T M M K N N I R L E T I G D DID S L P D S C I K H L K M G K E K T V L R R E L A E M M T E G V K


QUERY UniRef90_R7RRQ1 UniRef90_A4CPU1 UniRef90_F8ADC4 UniRef90_R9CDX2 UniRef90_A0Q0R6 UniRef90_UPI00047ABFCF UniRef90_UPI00047D0285 UniRef90_B2V4F8 UniRef90_A0A059NX08 UniRef90_A0A024QC71 UniRef90_W7YRX2 UniRef90_UPI00036D1D65 UniRef90_R5Y398 UniRef90_A6LSP4 UniRef90_U2NQA6 UniRef90_C8W4R3 UniRef90_B0JI62 UniRef90_R6H3Y1 UniRef90_UPI00037F5CD3 UniRef90_UPI000375D7AD UniRef90_UPI00031CE09D UniRef90-H6L570 UniRef90_R7C7A5 UniRef90-Q5L0J8 UniRef90_A0A037Z5X2 UniRef90_V6IZV4 UniRef90_UPIO002882EC0 UniRef90_W7CVJ0 UniRef90_R6PLA9 UniRef90-D0BKL1 UniRef90_H0DIU2 UniRef90_UPI0003706693 UniRef90_UPI0002882663 UniRef90_C9RBV4 UniRef90_I3YTM6 UniRef90_A1ZP32 UniRef90_UPI00028A0208 UniRef90_UPI000288DA38 UniRef90_B4CX07
UniRef90_O31751
UniRef90_UPI00047BB055 UniRef90_Q1NXW6 UniRef90_Q021Z5 UniRef90_B7GG85
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UniRef90-I2GQF0 UniRef90_I2GQF0 UniRef90_UPI00046ED8B8 UniRef90_K6BYA0
UniRef90_I8UDX1 UniRef90_UPI0003B4A1A8 UniRef90_S2XKG7 UniRef90_UPIO003B4D5E6 UniRef90_L7VNR3 UniRef90_UPI0003453368 UniRef90_UPI000476A52B
UniRef90_UPI0002D2BAA7 UniRef90 R6R296 UniRef90_D7GW17 UniRef90_UPI000370522A UniRef90_R6XD76 UniRef90_J0LJK5 UniRef90_UPIO003F4EC85 UniRef90_K9PLB5 UniRef90_R5BL12 UniRef90_F0RD66
UniRef90_K9Q5F2 UniRef90-K9V8M2 UniRef90_R5YAE4 UniRef90_K2MMM5
UniRef90_R7QVK6 UniRef90_H8KP54 UniRef90_UPI0003814B04 UniRef90_M1ZLX0 UniRef90_R5TRC9 UniRef90-J2ZUQ6 UniRef90_U2A8T5
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UniRef90_G0IX57 UniRef90_GOIX57 UniRef90_K9YI62 UniRef90_U1JRM1 UniRef90_B3EFE1
UniRef90_R8VZJ9

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 K N N T GLLTL NLAL NYGGRDEINNVVK K I A QLI E K G E L N S D Q
 KNNKGLILNIAFNYGGRDEIVRALKLIAEEYKDNEINDDD KNNQGLI LNLALSYGGRAEIARAARLIAAEACLKGDLKPQE K D N I G I S L N I A F N Y G G R D E I L R A V N L V L E E V
 K D N T G L











## 

K D N T GLLHF QV A L N Y G S R D E

K N N T G L L V L
K N NTGMIL NFALLNYGGRDE
K GNTGLVLNFALNYGSRA
K N ND GLNFQ $\square A L$ N Y G S R DE


RQNSGLVLNFALNYGGRAEI TNAVRLI AQDVLDANLNPGD
 K N N K R M T L T L A L S Y G S R E E I T T K T I K E I K D H T G L T L T L A L
 SYGSRA ELB A K K K SFRVK NLISEA D

 AANDGLILNLALSYGSRDEIVRASRRLAAEVAAGRQAVAA SANRGLLVNLAAINGGRAEIVVAVNSILEMARLEGSDTLK
 K N N R D $\quad$ Y F NVAA
 E Q N T GL T
 K E NT GLLI L NFA $\begin{array}{lllllllllll}E & A & N & T & G & M & V & L & T & L & A \\ K & D & N & T & G & L & L & L & N & F & A \\ K & D & N & T & G & L & I & L & N & F & A\end{array}$ K D N TGGLI L N F A

 KENTGMTLVLALSYSGRWEMLNAFKSLLKEAKEQDLDLDS

 AENTGLVLNFALNYGSRKEMVDAMRQVAADVRDGRLDPEA A D NKAMTMVIAALSYSSRWEITTKAVKEI STDVAEGKAKAD D K D N S R M T L V L AL S Y S GRWD
 A Q A M Q R A V E V G H G T I A P T D

 R T A V Q E I S I KVVKN NIIS PEN VQACQAI A SKVAA GELLKPMD L S A CRRA I A S QV E Q GLL K A D E MI R A MR HMDS DV K A G NL K E E A A D A MRQ I AQKVAA GEI QADA MI R A MK K MVVE D H D A G RI L P V S E TQQMAK QLAA K I ENKEMS AA D IE AVKK I A LDAVSANTLAVDS L D A V K A I A R K V E K R E L S S P D S
 $L Q M T Q Q A A Q R V Q Q G L L D P Q Q$ $L$ N A V K K $V$ RAVKKNMVSDVNNRKDTAES I HAAK QLV

KKGCTE $T$ Q A $\square R N$ N A Q E VLDAK F N P G D | $T$ | $Q$ | $A$ | $K$ | $R$ | $I$ | $A$ | $K$ | $S$ | $E$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $V$ | $G$ | $K$ | $L$ | $K$ | $V$ | $D$ |  |  |  | TKAVRRSVGQDVDAKFNPGD EK A V Q A I V K K VVVK G E L S A E A LHACRHI ATQVVQEGKLQQED




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| :---: | :---: | :---: |
| UniRet90 UPIO00248DB43 |  | MDGNGRWAQKRGLPRVAGHHSGMKNVK |
| Uni | INMGSLPQHIA! | I MDGNGRWGTERMLPRNLGHKAGVEALR |
| UniRef90-R5JWN9 |  | LDGNGRWAKKRGMPRNFGHDQGAKNVE |
| iRef90-D9 | LDMDKIPEHIAI | MD |
| UniRef90-UP1000470E8CA | VKSKPLPQH | 1 MDGNGR |
| UniRef90-UP10002FABCBC | LDCDRLPQH | I MDGNGR |
| UniRef90-F9VJN0 | LKHGNLPN | I LD GNGRW |
| UniRef90 J5KEL3 UniRef90-LOK5V | LKQGDLP | MDGNGRWAKSRNLPRVSGHKEGMNSVR |
| UniRef90-E1K | R |  |
|  | R | MDGNGRWAKRRGLPRTAGHKVGAEVFR |
| UniRef90-E4RV93 | NLPKHVAV | I MDGNGRWAKSRGALRIFGHQHGMKVR |
| UniRet90-W6VXN2 | H | I MDGNGRWANKRGLPRTVGHSKGVEAVR |
| UniRef90-R4K6X6 | M M ${ }^{\text {d }}$ | MDGNGRWAKEKNLPRSIGHTVAVENLN |
| UniRef90-K1YYV2 | MQKEKLPRH | MDGNGRWAKSKGLPRVEGHKQGVEVSE |
| UniRef90-UP | PMPTHV | MDGNGRWAKQRKLPRIAGHHEGMKTVR |
|  | N ${ }^{\text {P }}$ | MDGNGRWAQNRGLPRIAGHHSGMKAVK |
| Un | R | I MDGNGRWAKGQGKVRVFGHEQGVLSVK |
|  | DNMPK |  |
| UniRef90-UPIOOO224926F1 |  | MDGNGRWAQQRHLPRVAGHKQGMEVVE |
| UniRef90-R6ZIC9 | SKLPVH | MDGNGRWAKKRFLPRSAGHRAGASNFR |
| UniRet90-UP100046F773F | R $\downarrow$ P | MDGNGRWAKQRGLPRAMGHRKGVEAVR |
|  |  | MDGNGRWAKARGLPRTAGHKRGAEAVR |
| UniRef90_K1M | 1 | MDGNGRWAKSRGEERTFGHKNALEAVR |
| UniRef90-UP10004690EF | DDER ${ }^{\text {L }}$ |  |
| UniRef9- Q97162 | TNFSNIPKH | MDGNGRWAKKRNLPRTMGHKAGGEALK |
| UniRef90-FOP7E0 | LDLHN\PEH |  |
| UniRef90-A0 | -PQHVA | MDGNGRWAKARGLPRAAGHERGVEALR |
|  |  | MDGNGRWAKARGLNRSDGHQQGVVAVR |
| UniRef90-L1ML | QaQtpry | MDGNGRWAKARGLERSMGHQEGAQTVR |
| UniRef90 R6JG | KTRIPQHV | MDGNGRWAKQRGEERTYGHRAGAETVQ |
| UniRef90-F5L4k | पNNIPRHVA |  |
| UniRef90-UPI0003F9, | DRLPQH | MDGNGRWAKRRGLPRTMGHRRGVDALK |
|  |  |  |
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| UniRef90 R7NN | $!$ | MDGNGRWAKKRGLPRSAGHSAGAKNFR |
| UniRet90-D3 |  |  |
| UniRet90-B9EB | HiPK ${ }^{\text {a }}$ | MDGNGRWAKAKKMPRIKGHYEGMQTVK |
| UniRef90-UPIO003A12D6D | LDMTRIPEH | MDGNGRWAAEKNKPRSFGHQAGVDAVR |
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| UniRef90 ${ }^{2}$ | LDRTS | K |
| UniRef90- UPIOOO: | LDR ${ }^{\text {d }}$ | MDGNGRWAKRQGRPRTMGHRRGVDVLK |
| UniRef90-UPI0003791EAC | R | WAQEQGQDRLFGHYHGVESVR |
|  | R |  |
|  |  |  |
|  | R |  |
| UniRef90-UP10002E6E14F | N: PRHVAV | MDGNGRWAKERGQERVYGHVNGVESMR |
| Unif |  |  |
| UniRef90-F9D2S7 |  |  |
| UniRef90 UPI0003 |  |  |
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|  | R 1 P | M |
| 速 | VVKOSTPK ${ }^{\text {P }}$ |  |
| UniRef90-15B | LDFNLLPAHVAF | IMDGNGRWAKKRLMNRVKGHERGAQTVE |
| UniRef90-H5SMG4 | R | MD GNGRWARRRKLPRTAGHRAGVAAVR |
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|  |  | $M D$ |
|  | R H | I MDGNGRWALRRGLPRTVGHCAGVEALR |
| Un | PR ${ }^{\text {R }}$ |  |
| UniF | DLVPK |  |
| UniRet90 | $7 \mathrm{P} \text { © }$ | E |
| iRef90 |  |  |
|  | EQNRIPQHV |  |
| UniRef90 UPIO002625B3/ | Lid | 1 M ${ }^{\text {d }}$ |
|  | GHAP | M |
| UniRef90-I1MBA3 | EMMPKHVAV | M DG |
| UniRet90 | PESVA | MDGNGRWA |
| UniRef90-UPI00040AB1B6 | D $\square^{\text {d }}$ | MDG |
|  |  |  |
| UniF | L |  |
| UniRef90 UF | S SLPR ${ }^{\text {che }}$ | M D |
|  |  | Mdingrwa |
| UniRef90-K2DVL2 | G KiP PH | I MDGNGRWARG |
| UniRef90-R7F3H0 | EKENFPKH |  |
|  |  |  |
|  | MSDKKFPRHVA | I LDGNGRWAQQRGRERTYGHQVGAANVK |
| 59B | Q |  |
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## UniRef90 KoIYQ9 UniRef90 UPIOO0248DB43 UniRef90-А8МНН UniRef90-R5JWN9 UniRet90_D9SKM6

 UniRef90-UP1000470E8CA UniRef90-UPIO002FABCBC UniRef90-F9VJNo UniRef90_-J5KEL3 UniRef90-LOK5VG UniRef90-E1KQ60UniRef90- R5DBC6 UniRef90-E4RV93 UniRef90-W6VXN2 UniRet90-R4K6X6 UniRef90-K1YYV UniRef90_UPIo0046E814A UniRef90-W8YWQ6 UniRef90-UPIO0029A1FDE UniRef90-W4E132 UniRef90-UPIO0047DBF8D UniRef90-UPI00024926F1 UniRef90_R6ZIC9 UniRef90-UPI00046F773F UniRef90-V6F1Q1 UniRef90-K1MFC2 UniRef90-UPIO004690EF1 UniRef90-UPIO0040BDCD9 UniRef90-O97162 UniRef90-FOP7E0 UniRef90-A0A059F8T7 UniRef90-J9GRQ7 UniRef90-L1ML11 UniRef90_I3CKD9 UniRef90-F5L4K8 UniRef90_UPIO003F9A140 UniRef90_UP10004669CDC
UniRef90-UP100036B8287 UniRef90-R7NN50 UniRef90-D3IBC1 UniRef90-FOR425 UniRef90-B9EBEO UniRef90-UP10003A12D6D UniRef90 C8P7W8
UniRet90
Q31RM3 UniRef90-D4S7K7 UniRef90_C7RGM5 UniRef90-UPIOOO368A872 UniRef90-UP10003791EAC UniRef90-Q7NPE7 UniRef90-UPIO001E2C264 UniRef90-C9LET0 UniRef90-UPIO002E6E14F UniRet90_G51FP9 UniRef90-K6YSV1 UniRef90-F9D2S7 UniRef90 UPIOOO365F30D UniRef90-G5GD99 UniRef90-H3NKH8 UniRef90-Q8EGH1 UniRef90-15B533
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UniRef90 $\mathrm{R} 5 \mathrm{SMW1}$ UniRef90-UPIO00289F59B UniRef90_C4L654
UniRef90_BOCON

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R VEVANAY Q KVLTLLYAFSTENWKRPDQEVVIKY|LMK|LPQE KI TMAANS IGVVKLTMYAFSTENWKRPKEEVDYLMKLPME
 E I T K E C S K L G V K Y L T L Y A F S T E N WK R S N E E V N I L M K L MV E EVIKKTSDELGGKYLTLYAFSTENWKRPASEI DALMSLLVE

 KI V Q I A S N L GVVKYITTYAFSTENWQRPQKEI DF L M N L F K K KI TAECTRLGVKNLTVYTFSTENWNRPTDEVAALMGLV KI ATYCKELGVEYLTVYAFSTENWKRPADEVNTIMGLLKQ E TVE G C A E L G I K Y L T L Y T F S T E N W G R P K A E V D G I M D L L V K ETVVRAAGDAGVKYLTLEAFSSENWSRPETEVRDLLGLLRR KII K E T S DLGVVKYLTLYAFSTENWNRPAEEVNTLMKLLAE

 $K$ VT M A A D R A G V K Y L T L Y A F S T E N WK R P K T E V D F

 T IT K A A S K I G V K V V L T L Y A F

 R I TA A C C R L G V K F L T L Y T

 TITRAASDLGVKYLTLYAFSTENWSRPDEEVNYIMGLPVN RTVVEAAP E L GI R Y L T V F S F S T E N WR R PAA E V SA L F GL L KA E 1 T T A C S N
 K I T E D A A R L G I K Y L T L Y T F

 S VVVRFARESGGI ES L T L F A F


| $A$ | $A$ | $E$ | $E$ | $A$ | $A$ | $R$ | $L$ | $G$ | $V$ | $K$ | $Y$ | $L$ | $T$ | $L$ | $Y$ | $T$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |


THTMAASKLGVKVLTLYAF
R $V$ V R A A S D M G I EV V T T V A F
DI CLLYAKKRGVKYMTLYAF
DLLRCCRDWGI EAMTAYAF
ELLRCCKDWGI GALTVYA

KVIRAAMKWGVKYLTAYA
 RUTSECTRNGVKYKTLYT NATNACNEVGVPYLTHYTF EATTTASNLGVRFLTLYT RAVSAASQLGI QSLTLLFAF DVVMACRELGI DVITAYAF KITKHASKLGI K VLLTLYA KIVRAANALQVEALTLYA
 GVVKA A PDGGIKILTCYA EILQACTNAGVQVLTBFAF DVI EGADELGVSHLSAYAF DMLYVVDELGVKYFTVYAF ASLRAAARWGVKYLTLYAF TVVETAAELGLQVLTLYAF KTVDACKALAI EHLTVFS AVVEESVRRGVGTLTLFAF KAIRCASDLGVRYLTVYS
 KVTIAAASHGIKVLTLYAF ALLRCFKDWGIPALTAYA KTVSTANRLGVEVLTLFA ElVTAASRIGVEYLTLYAF KIVRYANKI GLGYI TVYA TVVRAAGHGi KVLTLYAF NIVRAAGHMG| RCLTVAF EAVRTAQELGG RSTTYYAF STENWKRPREEVDYLMKLPQE STENWGRPLEEVDFLMALFER
 STENWKRPQDEVDALMKLEKQ S ST STENWNRPAEEVGGLMRLFKE促














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## UniRef90 KoIYQ9 UniRef90 UPIOOO248DB43 UniRef90-A8MHH3 UniRef90-R5JWN9 UniRef90-D9SKM6

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UniRet90 B9EBEO UniRef90-UPI0003A12D6D UniRef90-C8P7W8 UniRef90-O31RM3 UniRef90-C7RGM5 UniRef90-UPIO00368A872 UniRef90-UP10003791EAC UniRef90-Q7NPE7 UniRef90-UPIOOO1E2C264 UniRef90-C9LET0 UniRef90_UPIO002E6E14F UniRet90_G51FP9 UniRef90-KKYSV1 UniRef90-F9D2S7 UniRe990 UPIOOO365F30D UniRe990_UPIOOO36
UniRef90_G5GD9 UniRef90-H3NKH8 UniRef90-Q8EGH1 UniRef90-15B533 UniRef90-H5SMG4 UniRet90-R2SX96 UniRef90_W8AF26 UniRef90-I4D9G2 UniRef90-A0A022MI21 UniRet90_O67PB2 UniRef90-D5BVW5 UniRef90-UPIO0034B4346 UniRef90-C4Z5J9 UniRef90 R6GQ19
UniRef90
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UniRef90-TOL7D1 UniRef90-K2DVL2 UniRef90-R7F3HO UniRef90 ${ }^{-H 1 C Z C 5}$
UniRef90 R5SMW1 UniRef90-UPIO00289F59B UniRef90_C4L654
UniRef90_BOCON

F $N$ VY LP $\mathbf{L l}^{90}$
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 Y L N S F KTHVVKREKLTVRVI GDRSRLD DDI NELI DE LDWEVS FLNKEDDELHENQVVVRCLGDITKLPEECRKTLEEAYERT YL R REI RELNSNNVKI SVLGQVEAFPTVAQREIAKAVELT





 FLIDAKKEKMLRTGI KL NAI GDLDLLPTEVRQTLEETRRDT

$F \operatorname{L} A \operatorname{L} E L E E L I E N N V Q V R M M G Y R G N L P D F T L A A L D E A D E K T$ TI NRETETLNKNNVKLNADGNDASLPQECIDDLKEAMAK T



 Y L R NEVANLHKNGI RLLRVI GDRSRLSRDI NALI DESEAK T TLLLE AEEIFTKGLRMHI I GDQSRLPQLVQDQLNQVVELT SLEDEI FMKHHVRFRVIGNDNRLPEEVQKKLQQTQDHT
 FLKREFNELNKNNVII NPIGNILGLPEAC\|TALNDAKNKT FLNTF LPELDEKNVRVETVGFIDELPEKTIQAIEEAK DK T



 FI R R D L A E L H K A G V R V R M
 SLEDEI FMKNNVRFRVI


 FFSTFVVPDVVKNNVRVMVMGDIQRLPAKTQEAVNDADADT
 FI E S KL D LIMMKENCKLN FI G DLDEKLPASTKE DCDRAMEDT




 FL E E E L Y L R R E L P T L M K N D I QLVA I
 F F D S F L P ELI K H NV RVI T

 FFDTFVPELIKENVKVHVMGYKEFLPAHTQDAVERADEQT
 Y L R K E L E EL HQNNVVI RAIG ILLK DL PMEAQHELKRAVERT $F \| R K S R E Q L D G L G V R V R W V G R M P R L W K S V A K E L Q D A Q E Q T$
 A L S S R LD R L Q E WNV R L R II G D R N G L S E E LRRSE I A K A EA L T T I R R R R D E L H A R GVVRV K WAG R S G R L WK S V I K E L QEA E E L T




 TMLAEVDGLHEEGVRVRTI
 F F D T F $V$ V P D VLRAELKELIREDVRIRFVGDRTQLRPSLQSEIAGAMQAT
 Y LE TEAEELHKEGVRLKVI Y L D D Y S K R A D T E N I KVVKV L YLIS QLK ELVED NVVVVHIVGGDTSVLS


UniRef90 KoIYQ9 UniRef90-UPIOOO248DB43 UniRef90-A8MHH3 UniRef90-R5JWN9 UniRef90-D9SKM6 UniRef90_UPIO00470E8CA UniRef90_UPIO002FABCBC UniRef90_F9VJN0 UniRef90-J5KEL3 UniRef90-LOK5VV UniRef90-E1KQ60 UniRef90-E4RV93 UniRef90-W6VXN2 UniRef90-R4K6X6 UniRef90 K 1 YYV 2 UniRef90_UPI00046E814A UniRef90-W8YWQ6 UniRef90-UPI00029A1FDE UniRef90-W4E132 UniRef90-UPI00047DBF8D UniRef90-UPI00024926F1 UniRef90-R6ZIC9 UniRef90-UPI00046F773F UniRef90-V6F1Q1
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UniRef90 J9GRQ7
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12D6D

 KHNTGLILNFALNYGSRKEMLEGIQRLAQDMKENKVAADE




 SDNNGLTLNAALDYGGRAE AKNNAMTMTIALSYSARWE AGNQGFQAN CLLN ALSYGGRDE RFNTALTLIAAFNYGARDE AAGKGMTLTLALSYGARDE AHNDGMLLNFAMNYGSRFE
KANTGGVLNFALNYGSRSE

 APKTGMVLNLAMNYGGRAE
RHNTGLTLVIAAKNGGRDE
 AQNTAMTMVVALSYSARWE


##  <br> <br> $\stackrel{A}{A}$

 <br> <br> $\stackrel{A}{A}$}$$
\begin{aligned}
& \text { A ANTGLNGMALSYSGRWE } \\
& \text { EANTAVETVATNYGGRQE }
\end{aligned}
$$

KHNDKLHLI ALGNYSSRWE

$$
\begin{aligned}
& \text { ENNNAGILNVAANYGGRWD } \\
& \text { AYNTAMTMVVAMSYSSRWE }
\end{aligned}
$$

A GNSGGILNVAANYGGRWDVLQAAQKLAEKVETGEMTSSQ
RGNDRLILNLAVNYGGQAELVDAFRSLAAEVQSGRLLAPEA
KNKTGMIINAAMNYGGRDE:VKAVVKEVAFDAKFGNVIDVEE
E ID TGGLTANALNYGGRAE

$$
A Q N V F N V N \text { AFNYGGRAE }
$$

AGNTALDNGQVAANYGGRWD
AHCTGMILNFAGLNYGGQAE

$$
A H N Q G V Q F T V A Q N Y G S R E E
$$

KDNTGVTGN GAALNYGGRNE
AKNDGMVLNVAGNYGGRME
 RHNTGLILNFAFNYGSRKEMTEALRGIARRDVKQGVLDPEQ



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UniRef90_R9XN54
UniRef90_F7QMF0
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UniRef90_C5BHC2
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UniRef90_C4LJQ6
UniRef90_UPI0003809BDB
UniRef90_UPI00028A30D4
UniRef90_W1Q2E3
 DRADAPRHVAI I MDGNGRWAAARGLPRAEGHRRGVEALR VS P D A FP K H I A

V P R HV A $\square D E N K I P$ K HI A MD GNGRWAKKQGKPRVFGHKA GVV SVVR MDGNGRWAKARHLPRIAGHRRGAEAVR SVA S V P R HVA MDGNGRWAQKRHLPRVAGHKQGMENVK I MDGNGRWAKHQGKMRVVFGHKA GVVKSVR $M D G N G R W A Q Q K G L P R S V G H R A G V V A$ I MDGNGRWAKSHGKPRVVGHKK GVVSAVR V M D GNGRWARER G L P RTEGHKRGEAV L M I MDGNGRWA QKRFMPRPMGHQAGVKRAVR

 $M D G N G R W A K Q R G L V R T E G H R E G L D A V M$ $M D G N G R W A K K R F M P R D A G H K R G Q V E V R$ MD GNGRWAKKRGLPRTAGHAAGAETFR P D GNGRWAKKR GLPRNVGHREGSMA LK MDGNGRWAQQRGKMRVKGHHEGVKSVR P K HVA | $L$ | $D$ | $E$ | $A$ | $R$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $D$ | $R$ | $E$ | $R$ | $R$ |
| $L$ | $P$ |  |  |  |  |

## $M D L Q R \square P$ <br> K P N S L P

 VP N H l Q H 1$E$ VG TVPR R HVA $L S$ S E QL $\begin{array}{llllll}P & K & H & I & A \\ P & E & H & A & A\end{array}$ S EKPGPQHVA MD GNGRWAKKRA L N R L R GHKA G I E A V R
 $M D G N G R W A Q S R G R P R L F G H Q M G A R R V R$
 LD GN GRWAKK RLLMPRTYGHLH GANNL LDGNGRWAKMRGQLRRMGHKAGAQNVK MD GNRRWAKEKNLPSAFGHKKGVDAL K $M D G N G R W A T K R F L P R V A G H V K G A D T V V$ MD GNGRWAKAQGKPRIFGHKNGVMAVR $M D G N G R W A K Q R G L K R T A G H E E G A K V V R$ MD GNGRWAKKRGKLRVSGHRAG MDGNRRWARQF GLPAALGHANGARRVR MDGNGRWARARHLPRTEGHRQGVHATR MD GNGRWAKARRLPRVAGHRQGIEAVR
 $V M D G N G R W A T S R K L P R V A G H K R G D D A V V_{R}^{R}$ LD GN GRWAKK RLLDPRNAGHLDAGSETNR
$M D G N G R W A K R R L Q P R F M G H R A G G V K T V$
$M D$
$M$ MDGNGRWAKARGLPRTAGHRKGAEAVR IP A E P L VP A H H V A A $\begin{array}{llllllllll}1 & P & A & E & L & V & P & Q & H & A \\ L & A & M \\ D & P & S & R & P & Q & H & A & A\end{array}$ $\begin{array}{lllllll}\mathrm{L} \\ \mathrm{L} & \mathrm{N} & \mathrm{D} & \mathrm{N} & \mathrm{I} & \mathrm{P} & \mathrm{Q} \\ \mathrm{L} & \mathrm{H} & \mathrm{V} & A \\ A\end{array}$ ME ER K V P T H I I G NV PEHI A
N N T P K HVA
$\square$ PRHVA


RPSKTPRHVA
 $M D G N G R W A K R \square G M P R T V G H Q N G M K A V K$ MD GNGRWAKQRGLPRSEGHKA GAKVFK LD GNGRWAKKRLLPRNA GHLQ GSRVLE MMD GNGRWAKKRFMPRK】GHLEGSKRLE IMD GNGRWAKAR G L P R LA GHKR GVD S V R $V M D G N G R W A N Q R G L P R T E G H R A G E A A L L$ MD GNGRWAKKRMMPRVYGHRKGVERLV $V M D G N G R W A T L R G L P R T K G H E A G E D A L I F$


MDGNGRWAQARGL SRSEGHRAGTEAAR
$M D G N G R W A G A R G L A R T A G H R A G V E R V R$
MD GNGRWATRRGLPRYKGHEEGLKATK MD GNGRWATKK GL PRSFGHNKGVSVLK MD GNGRWA QK R GL P RIE GHRVGANVTV
 $M D G N G R W A K Q R F M P R V M G H Q R G V E T V R$ MDGNGRWAKRQHKSR IFGHKAGMQNV E MDGNGRWAKARGDPRTLGHRRGVEAV R MD GNGRWAASRGLPRLEGHRRGVEAL R MD GN GR WA LK N GMN RLQ GHQE G I MEQVRQPEHVA $1 \mathrm{~V} P \mathrm{~S} R \mathrm{R} P \mathrm{~S} H \mathrm{~V}$ GV $\begin{array}{llllllllllll}1 & D & T & \square & R & L & P & Q & H & I & A \\ L & D & P & K & F & V & P & S & H & V & A \\ V & S & E & Q & K & I & P & Q & H & I & A\end{array}$ DKSSLPHHLA $\begin{array}{llll}P & A & H & A \\ P & \text { A }\end{array}$

## I P S E FV ${ }^{P}$

I D L N S L P N H V E H T H llP R H I A PKHVA
N VP P K H V A
NNLPKHI G VP A E R V ${ }^{\mathrm{P}}$ HI A TS SPPRHVA
$\square E$ R S S P P P T R H V

| $G$ | $R$ |  | $P$ | $K$ | $H$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $V$ | $A$ |  |  |  |
| $A$ | $I$ | $P$ | $R$ | $H$ | $V$ |
| $A$ |  |  |  |  |  |

R I PRHL G MSNRKI PEHI A M D La R

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UniRef90_UPIO002488FF4 UniRef90_UPIO0046A946D UniRef90_C5BHC2 UniRef90-E1GU02 UniRef90-K4KXP3 UniRef90_UPIO00379621A UniRef90-C4LJQ6 UniRef90_UPI0003809BDB UniRef90-UPIO0028A30D4 UniRef90-W1Q2E3
UniRef90-K9EAK8 UniRef90-S6B4A6
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UniRef90-A6F6G7
UniRef90-DOWJ17 UniRef90_K9RRI3 UniRef90-A0A037ZPW3 UniRef90_UPI00030A5D6E UniRef90-UPI0003B3303C UniRef90-R7GHX0
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UniRef90_FOLKT3 UniRef90-WORKU1 UniRef90-A0A024KKS4 UniRef90-W0DUV5 UniRef90-F2JGN7 UniRef90-H4GKR3 UniRef90_G4L2G2
UniRef90_I3YCEE

VLRQELREM190
110
120
VLRQELREMIQENVQ| KFVVGLLNA|LPRTLQEEIISHSMEKT

 YLLAELDELANNGVRLKI I GDYRRFGPDLAAMLDNAVART F FDKFVPELDENNIRGVVMYYDQLPEKTREAVNDAVSQT


 VLHDHRDELDAKGVR1RW GRRPRDWRVVIDRELEKAEAQT
 FFAKFVPELLEQNVRVETIGDDEGLPEATRKVLKQAGADT FFDKFMPELMENNI KVMTSGTEEGVPGRTDKTVQKVIDQT ALEREVTKLHNNNI RLKVIGDRSRFEGKLVEMIDHAESLT Y L L E A I EQMERDRVKMAFFGDLTPLHPELRDLCRQTQE I S
 TMLDAVDGLDEENVRVRTIGDLSLLPEDTRAAFGRAWDQT VLRRELAEMVAEGVQVHFVGDLACCLPASGQEEDNWAMAAT
 Y $\square R T K I G A L D A E G A R I$ RFAGK $A_{E} G L P P D V Q A I A R E A E E R T$ YFRKYKKNLEDSNIKITIIGRRDRLSPQFLEFIEEAEENT YLEHYIDELNEHNVQAHVI GDRERLSADLIAKI ERFETAT TI KNELKEMHENGVVINFI
 VLSTEVKKLHKNNLRLRVI GDKRRFSQRLQQKI AQAEEDT FLKNELETLMKNEI RFKAI GDLSKFSNSLQKTI KEVEEKT AL DNEVKSLHKHNVRLSVI GDLSRFSPRLQERIRRGQVLT YLKKEVNNMNAKGVRLKVV ALEKELPELVQNNI RLRFI GEREAFS
 ALEREVGKLHNNGIRLRVVGARTLDATLAR MTELENAT YL HEAI RDMRKKNI RMKVFGDVSRLSPQLQELI AETDEDS ALDNQVKKLHDNNI RLCIIGGDIDKFT YEIADDEEI HRYEVRVRAI GR』NLLPKNVQKAI KYAEERT YLGNELNNLHENGVRLRVIGERERFGGELARMI TAAEEKT T R R RVDLLDSWGVRVIWSGRKPRLWRSVVRELEVAQERT YLIGNVKRMNDNNVRMAY $\quad$ GGRTYDLPQEVQETMQWAMEAT FLA $\square E L D E L I E N N V Q V R M M G H E E Y L P S Y A R E P L L E A D R R T$
 YLVDKKSKClKNNMRVRII GNRNGLDDDI I QKIEEMEAAT YLRHEARKLGRDG\RLRFIGDRAGLASDLQMAMASAEAVD VLRRQRDQLDAWGVR RWSGRRPRLWQSVVKELEVAEQQT FFKDFMPQLMENQVKITVIGQVEALCAETQAMMREALEKT VFGRRIDDMDS LGGVNVRWAGRRPRLWNSVIRRLEKAEART
 Y VK N K L S L F L D N NV RFRAMGRLLWELP DY LQE GFKE DE EKT Y L K N E KK TMMK N GVVR LMVSGK KE GVNKELDEEVEK TEK LTT FLKKELSS LRE QDI RLKVLGE LSEFPFGVKQVVAHT』KKT F I R K D L A E L H R E NVVCVVKVIGGCRQSSLKPDI R GLLLDEA E DR T Y L K K E F D F Y R E Y GI R IVVHS G N L E G L P R E I R R DL L D V M R D T

 NLKRAADDERVHENRI RVI GQREILPEDLQRAI DYAEERT $M L E R E V G K L H E N N D R L K V I G B R S R F E A Q L V R H I E E A A E L L T$ F F N T F V P E L DE N NI KV E GI F I R R DLAEL HREGVRVRVI F I HNDLHELHRANVKI K I
 SLRKE $\quad$ RAELNQHGI RMRFTGNRSSLSPDVQKQMHEAAAMT YLAKETNNLIKENI RFSIIGDATRLPTVVKNSIVKSMKAT FV R S E L G RMMSNNI RFNVI GNRTEGMADI NAEI SAA DAK T
 VI R R R R D E M N E L G G V R V
 AL QK QV GRLHENNMRLKVLGSRERFNEEI RRGI EQAEALT
 Y $L$ K K C I K I

 VLEREVVGKMAANGI RL KIVGGMSRFDPKLQEMAAKA EA QT ALGREVDQLCKEEVRLRFLGDRSGLPDRVVQSIVDAESRT YLDKE EREMHEKNVRRIRFIGRVDELTPELIDRRVRHAE ELM
 F V A S D L E K L M R N NVQVVRII G S RQDLDESLQRLI A EVVEAT


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UniRef90 E3H8Z1 UniRef90_C6C1S7 UniRef90_A9DCW9 UniRef90_E0RTL9 UniRef90_UPI000473090C UniRef90_UPI0003B4E928 UniRef90_Q2BQY1 UniRef90_LOHKE1 UniRef90_D5CSE4 UniRef90_Q04F84 UniRef90_UPIO003750EC3 UniRef90_UPI00037623EC UniRef90_B6YQK8 UniRef90_K9AZ88 UniRef90_D3HL02
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UniRef90_I3YCE9

140
150
160
K N N H S |I QF T|V|ATNYGGR QE|IVQACRM|I|AEK|V|E Q GS|L|KAHE NKNTALTVNIAANYGGQWDIVQATKRIAHQIIKNNVIPDED
 K DNDGMVVNVAANYGGKWD A DNASTTLVIALNYGAQDE

 $K N N T G L V L N V A L N Y G S R 1 E$ $A N N T G M V V N V A A N Y G G K W D$ VN N T R MTL N MCIN Y G GRAE I KDNK GLTLVVAANYGGRWDMADAMKLVAEKVQS GEDSPS D


 QNNTGLSLTIAANYGGRWDLVQATHRMLEANPDCGQTFK
 CNN T K L T L N A AN Y G GQS D I AN A A K Q I A I A

 Q N N D MI HLTVVALNYGGRDEV






 LDA V N R A A

Q D GlV A P A D


| $V$ | $T$ | $A$ | $V$ | $S$ | $K$ | $I$ | $A$ | $E$ | $S$ | $V$ | $K$ | $N$ | $G$ | $I$ | $D$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $Q$ | $G$ | $D$ |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $V$ | $T$ | $L$ | $A$ | $E$ | $Q$ | $V$ | $R$ | $Q$ | $G$ | $T$ | $L$ | $L$ | $P$ | $E$ | $A$ |  |

TKKA A Q D I A C E L Q Q K N N I LK A V K E V A Q EVVQS G A L N V Q Q

V A A RRYADDFA QKK TS T

LEATNKMTAEAGANGQPGHA
A A KVQ
$G E L A!D A$ A N N T G L Q L Ni A AN Y G GR WDD TH S V K QV DA QVQR GEELS A E D AHNHTITLTVAANYGGRWDMVQAVKA WQ A IVAHP GETVDA RDNTGMELVIAVSYGGRWDVTAAVRCLAVEVAEGRLDPAS A GNTRLTLAI ALNYGAQDELLRATRRLMREARAGEIDDPDM
 $K D N K G L T L T I A A N Y G G R W D I L Q A A R K L A A A R V A Q G G A A A B$ K D $\square E G F Q A N$ I C $\square$ GN Y G GRA E I $R N N T G L I V N$ A ANYGGRWD K NYNKFF N A I A Y G G Q Q E


 $V R A A Q A Y A$ EDYA | $T$ | $Q$ | $S$ | $V$ | $R$ | $Q$ | $A$ | $Q$ | $V$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $A$ | $T$ |  |  |  |  |  |  |


$V$ A A A R S L A A D A A A G R V D A A Q

| $V$ | $D$ | $A$ | $T$ | $R$ | $S$ | $L$ | $A$ | $D$ | $D$ | $V$ | $A$ | $A$ | $G$ | $L$ | $N$ | $P$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $D$ | $A$ | $V$ | $R$ | $R$ | $L$ | $L$ | $T$ | $D$ | $L$ | $T$ | $T$ | $E$ | $A$ | $H$ | $S$ | $R$ |

TECMK TL GREVEAGRLKAED
R GAEKYDVNDAINYGGRLELVDAVKQLGEKIKA GELDPABD



$K D N Q G L I L N D A L N Y G G R D E$

L H C D G M V A A V F A V V
LAAARRLARRVAEGELCAEN

A D A A A L M A DVRDGRLKPDK


\section*{| $L$ | $D$ | $A$ | $V$ | $N$ | $R$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $D$ | $A$ | $V$ | $N$ | $K$ | $I$ |}

$V R A \quad C K K M \square T$
V R A T R L I A E A V Q A
L R A MKRWL
V K VA K E L A L K S S S

E N CKS MTL NLALLNYSGRDE

K NNKNFLLNVCVNYGGRQE
A HCKTMKAVFTVNYGGRQE
$\begin{array}{llllllllllll}Q & D & C & D & G & L & H & L & N & I & A & A \\ N & Y & G & G R & R & D \\ K & N & Y & D & K & F & F & F & N & I & A \\ A\end{array}$
A N N T S LTL T I A A N Y G G R WD

 A K NE EFTLLNVVNYGGKWDV

RGNDAMNLVIAFNYGSRDE
$R D N T V M T L A M C V N Y G G R A E$

KNNTSI
ANNTGLTLAIAADYGGRWD
A N NTGLRLDIAANYGGRWD
 K D M T GL NL N I A I NYGGRNE
 A A Y TALQLNVCFNYGGRWD KNNTGVHFCVAVNYGGQDE RKYSNYILNI AL A Y G GRSE A H NDRLTLNLFISYGSRAE
 K DKTGICFNMAFNYGGRDE

SENTGMILNFALLNYGSRAE

I D AVNKAL

```
\(\square C O S\)
```

K E GAKE

MQAMHALSQAHPERATAFG

| V D A T K | I | $V$ | $N$ | $Q$ | $V$ | $L$ | $G$ | $K$ | $I$ | $K$ | $T$ | $E$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |



| $A N A$ | $V$ | $N$ | $A$ | $I$ | $T$ | $A$ | $V$ | $A$ | $T$ | $G$ | $K$ | $L$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |



$V$ D A A R DFAR RVAA GELSAD D
I D A TRR $\square A A D V A A G R L K A D K$

$L Q A V N K L V$ RAGETE
A N SMK T I F Q QVQ N G QL S $\square$ D D


$M$ Q AVSKMI K D

VD A I K R V VA DI E D G N I T K K D
$V R A A R L L A R D V A E G R M S P D D$
T E A M R S IA R DVAA A G R $\square$ A P D A
$V$ S AVVQA WQ L A HPEHT LD Q
$V$ S A V K N I A T D




## UniRef90 I4VZD3 UniRef90-R6Q8H2 UniRef90 R5H1Y3 UniRef90-V1CQR7 UniRef90_UPI0004643FC1 UniRef90-D0LK92 UniRef90 O1D99 UniRef90- R9LYI8 UniRef90 COQWQ5 UniRef90_UPI00036BA8F2 UniRef90_UPI0003B2FA81 UniRef90-IOIA66

 UniRef90_UPI00030B6DF2 UniRef90_UPI00037CB42A UniRef90 X4Z4W0 UniRef90-A0A051TWS7 UniRef90-X1MME5 UniRef90-F5SA23 UniRef90-H3NF04 UniRef90-UPIO003A50FFE UniRef90-F5YB09 UniRef90-F21512 UniRef90-G2J5N5 UniRef90-A0A023D8X2 UniRef90-K1Z8F6 UniRef90-F4D987 UniRef90-D5T0P5 UniRef90_Q2YBA3 UniRef90_L8JVX4 UniRet90_UPI000375A2E1 UniRef90_C9KQN5UniRef90-N6YJ98 UniRef90_UPIO003B6D594 UniRef90-LOWE45 UniRef90-E9CNE7 UniRef90_B7RSL4 UniRef90_K5YQ02 UniRef90-D6GRA5 UniRef90_UPI000360AA51 UniRef90_Q97B58 UniRef90-LOGUR1 UniRef90_G4E455 UniRef90_UPIO00255F2AE UniRef90_D5V7E2 UniRef90_UPI0002630ABA UniRef90-G2KUC4 UniRef90-B7IDI1 UniRef90-B0PB05 UniRef90_UPIOO04790AA2 UniRef90-I7LNE3 UniRef90-D1BA64 UniRef90-N1ZST7 UniRef90_C4ZPR8
UniRef90-E1VNL5 UniRef90-M9RR27 UniRef90_H9U9N8 UniRef90_Q8TXA7
UniRef90-B7A8W6 UniRef90_UPI0003758AB1 UniRef90_C6XFU5 UniRef90-U2KNQ9 UniRef90_F3WVN1 UniRef90-B2KCL4 UniRef90-K2QZF6 UniRef90_A8PM60 UniRef90-K0C5S0 UniRef90-I1HTJ2 UniRef90-A5G1L4 UniRef90_X2HBD0
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UniRef90_UPI00035CD71A UniRef90-F5RAD5 UniRef90-R5VH44 UniRef90-UPI0003F6FC1E UniRef90-DOGNJ2 UniRef90-D6SQH0 UniRef90_D6SQHO
UniRef90_N9UWY2 UniRef90-Q3A399 UniRef90_R6X982 UniRef90_A8LK38
UniRef90_K1MNN8

50
EAVIESCLIREGVVALITA 60 AFSSENQRPQDEVGALLMNLIFVR KLTKEAEGLGVEYITVYAFSTENWKRSKDEVDSIMGLLRE KTLNWARELGUKCVTFYAFSTENWKRPADEIUGGIMNLLRQ ti VRHCKDIGLKTISFYAFSTENWKRSQEEVGALMNLFRD DIVRAARQLDVEALTLYAFSAQNWARPPEEVAGLMGLLRD EVTRTARRLGI QALTLYAFSSQNWARPAEEVAGLMDLLRE RIATYCKNIGVKYLTVYAFSTENWKRSETEVSAIMALLKK NIVEASCELNIKYLTLYAFSTENWKRPEEEKKALFKLLKE DVASGAVELGVKWLSVYAFSTENWKRSPEEVRFLMGFNRD RAVKAAEKLDLKYLTLFGFSTENWNRPRAEVDALFDLLRR RILEHCVRRGVKVLTIYA DVVKGCLELGVKNLSLYAFSTENWKRSPEEIRFLMAFNRD EVVESCPDLGIKKYLT:FA DIVCGAIELGI KWLSLYA KUGEWCRKRGVKGLTVYT RVAHHAANRGVKVLTLYA RLVAHCASVGVKALTLFA
 EVVSGCQNLGVEYLTLFA RCVVAAAIQRGVRYVTLYA EAVTFAARAKIEALTLFA K IATAASNLGVKVLTLYA EVTEGCAELGVKYLTLYA EAVETCARFGVRFLTLYA
 DVLFGAMEDGVKVISAYA AI RHAAQRGVEVLTLFA
 KIVQECRKLGVEYLTVFA RAIEAAVTHGVPYLTLFA GVTERCSNLGIKYLTVYA
 RTV RFCAEQGVEVLTLFA SALKGCKDKGI EVLTLFA DVMAGAVQLG| EYYVTVYA RVARAARTLGI EVLTLYAF EVTTEASDLGVKVLTLYA EVVRWCAEYGVKYTTFYAF KVIDACAERGIEFLTVFA
 VAVRAAKDLGI RYLSLYAF
 DTVENCARAGVEVLTVYA DVVRWCAERGVKYATFYA DVLEWCLDLGVKAVTVYAL EVLEWCLEMGIRTVTVWVF AVVEETCAKQGVEVVLTLEAF EII IKAAARMGIRYLTLYTF RIARAARAMGIEALTLYAF
 RVLDWCVDLGI EIVTAYAF KVIK K S C S E M G|VKALTVEAB ETVRLSRAWGI RALTAFAF
 EFLDWCFEVGIRIVTVYAF AAMRACDDFGVKYLTVYAF EAVRFFGERGVAALTLEA RAVRAAI DLGI QYLTVYS NILKTAI GLNLESLTVYAF
 KLTNYIFSRGVKYLSVFA VCVDFCLAEGIEALTLFAF KII EHSVKDGVKYLTVYAF AIVEESRRLGI QHLTLYAF TVVRAAGDLGEALTHYAF VIVEESRRLGLSYLTLYAF
AVVEACPDLGI EYLTIFA
UniRef90_I4VZD3
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UniRef90-B2KCL4
UniRef90 K2QZF6
UniRef90_K2QZF6
UniRef90_A8PM60
UniRef90_K0C5S0
UniRef90_I1HTJ2
UniRef90_A5G1L4
UniRef90-X2HBD0
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UniRef90_X1L4Z6
UniRef90_UPIO0035CD71A
UniRef90_F5RAD5
UniRef90_R5VH44
UniRef90_UPI0003F6FC1E
UniRef90-D0GNJ2
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UniRef90_N9UWY2
UniRef90_Q3A399
UniRef90_Q3A399
UniRef90_A8LK38
UniRef90_K1MNN8


 YLA DVRNFLSENTRMVFLGDKSAFADDI REKMEKLEADS


 T I R R Q V D Y L G S $\square G V$ R I R WA G R RP K L W R S VI K E L Q V A E E K T F V N S D L E S L K A R N V R I R I L G A R E N L S A DL K E IVVERA E N E T
 V D R R T D E L D A M GVVR R R WA G R E P R L WK S V V T KL K A A E ERT

 A N R K N V V K E L H Q R K
 FFDREVPE LIENNDIVVMMMGDEEKVPSSTLKSIHKAMDET A L Q K EVVSKLNE N NVRRLLI IGGDRSGFS E E L Q T HI HLDA E S LT
 ALLENEVEKLHSNNI CLLKVIGDRSRFAPRDVERIEAA EART Y L R H K V T E L H E Q D V QL R V I G E V E R F E P E L R E EMA RAA A L T

 Y L K K E D K VL V K K N F R L 1 A i Y Y L L K E L E EMND Y NVVR RF GRME GMPE GLQRQMREAEA L M
$S L R K E V A R L D E N G I R L R V V G$ VI R R R R D EL NDLG V $V$ RI R WA

Y L R S E V R E L N K D G I R L R R SLK GEVSRLAENDI ALRLI



 Y R R R V E QL QR D SVVR R R $Y L R R E V E Q L Q R D S V R L R F I G R R D R L S L$
 F L A S E L D ELLI S E GVVKLK VI G DWH QLLS P DLVAAMID GA I A R T
 Y L T D TYKHRDENARL RF LGERGPLSSDI REMIERDVEH S AVSKY L L K MVNDGVRI RII GDRKGVPERILAAWDDAEART $T L G K Q L K A L H K A N V R L S F I G D L T G L D P K L D T K L A E A V A L T$
 Y K K Y il

 Y I QREARDLLDANGVRVRFIGDRVRLDDKLVRLMDELELLDT K I GEFYERMAKEHVRRLRFI GRIMELPEPVKQKCYEYEEKT

 ARR A D AR Q | $A$ | $L$ | $R$ | $E$ | $V$ | $K$ | $K$ | $L$ | $H$ | $R$ | $N$ | $N$ | $I$ | $R$ | $L$ | $R$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $F$ | $L$ | $I$ | $I$ |  |  |  |  |  |  |  |  |  |  |  |  |
| $K$ | $K$ | $G$ | $F$ | $Y$ | $S$ | $L$ | $K$ | $K$ | $N$ | $N$ | $I$ | $K$ | $V$ | $R$ | $V$ | HLRKEFEFYKKEQVRVRHL F L R K D L A E LVS D NV R L RVI E L D R A A K R I H K N K V R V R V I


GKLELPEDVREAI RIIAEKS T TLKTQAKRLHNNNI RLK LVGNLERFNAPLRQWIDKSQALT VI H D S V S E F L R D G I R L R V I G D C S R L P Vis L Q K TARAA E EA T YL R S ELLRE LAAEAGVRRLHI I GERDRFGSSLKAELRADAEART


AI E E ELPELQERGVRLRFI AL Q Q E V E K L N R N G V R L R VI F V R R R D L A D D YLK QELQEMHEDNVRIHFI FI G K Y I L E I H E R GI KL R HL
 EFKKEYVSLHKDNIKVIVS


 FLNGELPTLMRQDI RLNTL | $F$ | $V$ | $S$ | $D$ | $I$ | $D$ | $E$ | $F$ | $A$ | $A$ | $N$ | $D$ | $V$ | $R$ | $L$ | $K$ | $I$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $F$ | $L$ | $E$ | $R$ | $E$ | $L$ | $E$ | $T$ | $L$ | $L$ | $T$ | $H$ | $R$ | $I$ | $R$ | $L$ | $N$ | $V$ |

S I A D E E I D S L A A K G V


## UniRef90 I4VZD3 UniRef90 R6Q8H2 UniRet90 R5H1Y3 UniRef90-V1CQR7 UniRet90_UPI0004643FC1 UniRef90_DOLK92 UniRef90 Q1D999 UniRef90-R9LYI8 UniRef90_C0QWQ5 UniRef90-UPIO0036BA8F2 UniRef90-UPIO003B2FA81 UniRef90-101A66 <br> UniRef90-UP100030B6DF2 UniRef90-UP100037CB42A UniRef90- X4Z4W0 UniRef90-A0A051TWS7 UniRef90-X1MME5 UniRef90-F5SA23 UniRef90-H3NFO4 UniRef9O-UPIIO003A50FFE UniRef90-F5YB09

 UniRef90-F21512 UniRef90_G2J5N5 UniRef90-A0AO23D8X2 UniRef90-K1Z8F6 UniRef90-F4D987 UniRef90-D5TOP5 UniRef90-Q2YBA3 UniRef90_L8JVX4 UniRef90-UPIoo0375A2E1 UniRef90_C9KQN5UniRef90 N6Y 198 UniRef90-UPIo003B6D594 UniRef90-LoWE45 UniRef90-E9CNE7 UniRef90-B7RSL4 UniRef90 B1XTU7 UniRef90-K5YQ02
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D6GRA5 UniRef90-UPI000360AA51 UniRef90-097B58 UniReffo-LOGUR1 UniRef90-G4E455 UniRef90-UPIO00255F2AE UniRef90-D5V7E2 UniRef90-UPIo002630ABA UniRet90-G2KUC4 UniRef90-B7IDI1 UniRef90-BOPB05 UniRef90-14Z5N6
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UniRef90 E1VNL5 UniRef90-M9RR27 UniRef90-H9U9N8 8 UniRef90-O8TXA7 UniRef90 UPI0003758AB1 UniRef90-C6XFU5 UniRef90-U2KNQ9 UniRef90-F3WVN1 UniRef90 M MTZU1 UniRef90-B2KCL4
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UniRef90-B8INK2 UniRef90-X1L4Z6 UniRef90-UP100035CD71A UniRef90-F5RAD5 UniRet90-R5VH44 UniRef90-UP10003F6FC1E UniRef90-DOGNJ2
UniRef90 O8GJK9 UniRef90-D6SOHO UniRef90-N9UWY2 UniRet90-Q3A399 UniRef90-R6X982 Uniretgo_A8LK38
UniRef9O_K1MNNN8


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 ANNRSMRLVLALSYGGRES

VRAAKRAABKAANGEMKPED LHAARRLAEAVERGELAAGR
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RDGPPE
ADAAARLAADAAAGRIDPAK
LQATRAMLQAEPDLLALRPAD
AEATKETARMAAAGRLNPER VQAVKNIIK

KKVPASE
TEA MKTVAQDVLEGQVAVRD VQAVQQWQLAHPDSSVAEM
SRAVNRALGEVK
GYGNPDS
VQAARRMAEAGQRGEDGANA TEAVRKLCGEVAAGKiKadD AGAARKLAKAVAGELADD MQAVRKMLAECPHLATTF IEAVKRLIATDVQSGSLKTDD VDAVKKIV KVRGLDIES ANAVAALMRAHPER VDATRKI AALAALGQLKPDK AQAARVLADRVAAGELSPEQ AQATQKLALEVQAGRLVPQD VQAMRQCLVANPNLK PEQ SHADKKIMLSDRESPUDGDK LDAIKRI ARDAIIAGKTNVDE VQAAQRLAADCAAGQLEPTA IDAVRKLASEVAAGTLSADE TRAVKKLV VAGKLE LNATKKI ATEVKNGNLNVDD VDA TKKI DDSKISD Vatrallable VQACQKLALDEVKIGELEAEQ VAAAKLLAQQVASGDLTAEE LRAIRKVCKDVAEGKYKAEE LDAMSRLMAREPGRLERF LQAVNRDAAVAPDKAGSW VRAVQAMARAVQEGRLSPEA LDAVRH1 I VDATKDVVKLVLDNKLSDDD
 QRA
LGAVKA DAGEVAVGRMGLDA
LQAAKRMAKEYADDPAGLLS
ARATKRLAQEVAGGRLDAEC
VHAVNQYI
EGGATMP




## UniRef90_T2GFN7 UniRef90-Q74IR9 UniRef90-19AXK3 UniRef90_S6D5L8 UniRef90_N6WPE1 UniRef90_K7WQ45 UniRef90_UPI0003C7EBFC UniRef90_G8S3F8

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## UniRef90_T2GFN7 UniRef90-Q74IR9 UniRef90_19AXK3 UniRef90-S6D5L8 UniRef90-N6WPE1 UniRef90-K7WQ45 UniRef90_UPIO003C7EBFC UniRef90-G8S3F8

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UniRef90-U7K377 UniRef90-UPIO00362C3F8 UniRef90_UPI0003648BAB UniRef90-D5ATT3 UniRef90_UPI000349D6D1 UniRef90-Q6MEF4 UniRef90_C7MD77 UniRef90_R5ITF9 UniRef90-D6TL28 UniRef90_UPIO0047BB84F UniRef90-17LBL3 UniRef90-N8UIF9 UniRef90-E6VSU6
UniRef90 A3V5Q2 UniRef90_A3V5Q2
UniRef90_UPIO00369AA59 UniRef90_UPI00047EC273 UniRef90_-R7LWG8 UniRef90-Q1AW64 UniRef90-B2FIA4 UniRef90_Q73K76 UniRef90-R6TYA6 UniRef90-Q4JWN8 UniRef90-W6AJS7 UniRef90-UPI00036A61C2 UniRef90-M4U6H1 UniRef90-D3R241 UniRef90_UPI00036438C7 UniRef90_UPI000367C94B UniRef90-UPI0003A63A19 UniRef90-I2JL16 UniRef90-R7NIN3 UniRef90-D0LOQ9 UniRef90-TONAF8 UniRef90-UPIO00466A21D UniRef90-TOMOZ1 UniRef90-W7X7J5 UniRef90_V4LHR9 UniRef90-W5Y1Y7 UniRef90-D3Q0K0 UniRef90-D5SNW1 UniRef90-Q2G8K6 UniRef90-R6APE6 UniRef90-H3NXC1 UniRef90-A4BS26 UniRef90-WOP446 UniRef90-UPI000225DF60 UniRef90_Q824H0 UniRef90-HOURX4 UniRef90_UPI00036A88F1
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UniRef90-K2BG93
UniRef90-A0A011QUB4
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UniRef90-W9G1S4
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UniRef90_C9MYS5
UniRef90_UP10003B32AB6
UniRef90_UPI000371C72A
UniRef90-UPIO0047B47A5
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UniRef90-Q9PEH8
UniRef90-E6PC85

|  |
| :---: |
| L |
| F |
| $V$ |
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| A |
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| V |

LLTRELLPVF|L|ANNV|R|L|RTLGEWSELDPFASRQVLKLVLAKT

 ALEREVKKLHRNNI RLRMI GDRSAFSENLREHMARAEALT
 VI RRRRDQLVDLGVRVVWSGRSGRLWKSVIAELQTAEEMS VLKREVAELAEHNI RLSIVGDKSAFSARLQKQIATAEEKT






 GVPGLAGRMHARGVRMRWCGRRDRVEAVLRELLEWAEERT YLSEQCDSMIQNGIKKLETIGEDDPLPEFLKDTLKETKKAT


 FFDKYMPTLDENNVKVNIMGYLDEELPAKTLDIVTKAMEDT T I HEQ LIPRMEKFNI ALRFI GDRSRLSGHLRDLMQYAEQKT FLTTRE ES S LKKKQSIVRLRVLGEDDDMPMAVRQTLKHVMRQT Y QREARALVDNGVRVRFI GDRDRLDDKLVS LMDELELLDTV


 ALDREVDELHRRGVRVRFI GERERFGAGLVSRMQLAEQRT

 VLRRQRDYLNSLGVRIRWVGRRPRLWRSVIAELEQAEELT
 VLGSEVKKLHKHGIKKLKI GELTGGFSSRDQKKVLEAEKDT FFLTTYDAELALDDVRLRFAGDLDCLPPEVKKTI NTAETNS VIA R RVVDELDEMGVRMVRAGRKPKLWGSVVRTLQAAQERT
 YLL SETKGLHADGVRIRFIGKRDQLSASLRKQMDYSEQQT YFNTKFEKI NKKGVKVVISGRKENDRADVDEADKNDEEKT

 SLRGLLDRDYKNEDKVRVIGDFKGLPQYLIGQTNDVEKST NFKSEMPYYQRYKI KISVIGKRTNNISESLLGGI REVEEAT $V V D H D$ SHGDLNCQVRLVGHDNLLPDEVTNKMCAAAADT VI HRRRDELNAMGVR RWAGRRPKLWRSVDKELEDAQEMS
 FI RNDLDEFVANNTRLRLIGDYQALAPDIVQMI EDAMART


 FI RTDLEEFVKNGVRLKIVGDWRALDADIVAMLEDALERT QLDEQFPYLIENKIRLRCIGNLSALPLQLQQKISEDSLKT
 $V \operatorname{V} S L A A D D G \quad R W R V H H V G T L D L L L P T$

 WL QRKSEEMKERGVCLAFLGDLTKLPERLQHKINHAVDVM ALKDEVSKLHRNGVRLRVIGDLSRFDADLQALI RSSEERT YAKRKIRAMAAEGLRVRFAGRRDNLSSDLQSLI SWCEAET AVAELAETK RWHLK VVGALELLP E Y L Q K EVSAMHASGVRLKVVGDLNRFD YLDKEKKNLKKQGVRLLVTGSKENDSQQLQSLMAS GQALT
 FMKSEAKKLLTNGVKVRFIGDRSRLDKTLIMLMNDLEFDT FFNKF IQELMDNNI RVTFAGELEKFPENTKAVIRKAVNQT $F$ I K A DLA RLRRREGVCVVRIGGQEAGLPPDVVGMVAAAAEQT
 FL R R YENKLVNERDRLII SGDLSEI SEKLRNRSISVMKNT $T L D R L G E S N V R V Q P V G A L E L D P A N L S D K V C A L A T Q T$ ALAREVPQLKKDGVRLHFVGERDSLSPKVRDGLGQAEAAT IER I I DELAAS GRYRI HPVGGASDLLPQSVARRLKEAMERT

 V L HR Q R DVLNE K G V RVV WA GRRPRLWRSVIRRELELAEEMT




## UniRef90 T2GFN7 UniRef90_Q74IR9 UniRef90_I9AXK3 UniRef90_S6D5L8 <br> UniRef90_N6WPE1 UniRef90_K7WQ45 UniRef90_UPI0003C7EBFC <br> A A K

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A HNT GTL 130
140
150
160


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 RHNKTLTLQFCVNYGGQAEI ADAAAAIARDVAAGKLRADK A HCTGMMLN $\square$ GA ANYGGRWDI TQAAKKVAGRVAAGEVTPA D RKNRKLTVNFCLNYGSQEELLAAAFGRLNEEVIRNKVSQKP AGDKRFVLQDAANYGGQWD A GNTNMNLAVAFNYGSRDE

 KNNTRMTLVMCVNYGGRAELADAMQSMARDI EAGTLRVGE AENTGLVLSIAANYGGRWDIAQAAKKLAFKVQQGSMKLDD A H NDRFLLQQVAFNYGGRADLVDAA RRHMERVLAAGETVEP A MNAR LNLTVA DNYGGRDELRRAAVSDAQEVAAGRDLPEA S GNS GVTFTSCLDYGGRQEMVDALKRTAAEALSGRLDPTR CACD QIDDLI LAMNYGSRRNELQRAFTRVLDEVVEQGNLKKE E
 K DNKRIGLNVCFNYGGRAELVDAVRQIIDADGRQPET
 A AFDSMTLTDADSYGGMWDMANAAKCI AQDVLAGKVQTNH AKCEAMTLNLALNYSGRDEVLRAARALV AKGTAPDA A GNDLI HL TI ALLNYGGRDEVTRAAKRLAYE DEMGRLSHKD ANNTQLTLTIAANYGGRWDILNATQRMLKARPELDVAG ASNTRLTLNMCDNYGGRAEI ADAARADAEDVSAGRLKASA
 A E N D R L R V Y I A L N Y G G R S E
A D NTTLTGLS A AS Y G GRQ D
S A Y T G T A A L L
K A NEGLHL ML A L NYGGHYD
K N N T T M T L G CVVNYGGRA

A G G T R L NL NV A L L S Y G S R A E
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KHNTGLVLSLALSYGGRQE


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A HNQRMVLNVCFNYGGRWD
K S YKEKHLVMADDY S GRFD
Q D N D GVIV N
K H NDKITLLQFCVNYGGRAE

K HNTGLCFN A AVNYGSRDE
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A A NTGGQLNLAASYGGRWD
LE N N GLI L NVA I N Y G G R WD
A Q G T
H R D

A D L T GVFVNVAV GYGGRHE


| $K$ | $D$ | $N$ | $K$ | $M N$ | $V$ | $M$ | $V$ | $N$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $H$ | $Y$ | $G$ | $G R$ | $A$ | $E$ |  |  |  |

A GNNTLNLNIAANYGGRWD
K D NERIKCNVLMNYGGRPE A GNR RLILTVAANY G GR WDD
A GGAEMDLIV CFNYGGRQE
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A DCNK I F N I A F N Y G G R R E
VNN N N L HL T I A L N Y G GRDE


ERFVGGKTLNIA I NYG GRAE

ANNTRLVLNVCFNYGGRWD


HNNTGMVVNFAFNYGGRLLE
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A ANTGLS LVIFLSYSGRWD
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 YLK SKI QFFQSKEIRVSVIGNLAKIPESLLRTVVELEEAT
 VVDEISA PDQNWRIKUVGTLDQLPQAVAQRLKSAEERT


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 MLPRSLPDMQQNGI RFRVL GDVAPLPGSARRAVEKACAET

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 LMDRDESDK

A I SVSAMGAPELLPD
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 Y IRQEQEHYMEHGIRFETI GDLSPFGSKLRQTLEATREDT YI EREADSMAAEGVRMRFI GARERLNRKLARLMDGDELRT AVRGLADSR RWRดRVV AVRGLADSR

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160
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 KLRTFADRVHEAGVCIRAIGETEMLPERVRDAI DYAEGRT LATELAE PGNPWQLRDMGTGDVIPSPHAAGLKAAEEKT
 KLYELADSDRVHDNRVRAIGEDDRLPARVRTAVEHAESHT YLANEVQSLVKNGVRLTVI GRRDRLPDGIJANAIARAEAAT TVRDITAEGRPWE VVQVI GSLDMLPGAGARVLKEATAAT IWADLAGVLADNRDWRVQHVGSNEGLPDNLVTALERAEQRT WI RWHLPPPNKRKTRFQFLGRLELLPEKIRKLIKELVEKT QI RQHGELCEKYGVRLRVVGNRKLLPVDVQQVVQETEDMT VLTDDLHIFDENNIRLRIAGSKKRLTKGVLDRALEEAEQQT CLDDALKEFEKNGVRLKAVGDLSRLDEKLKEKDALVEEKT KFRDLDDPDRDLDDVRLRWHGRAGRLPPDLADLLHLRERGT SLK SKYKEFKTHQVCHMRLGNTSYLPVSLQQLCAELMDKT YEFADAERVHDSGVCIRAI GDVQQLPPRVREADDYAERQT YLKNDDDYFLQNKIAVKVVGNDKR1PDSLKNT: ADTVKKT KELCSSEKI HKNRVRVRAI GRDDMLPEYLQNAI KEAEAAT FYDNYVPELHANNVKIGMIVGETERLPKQTFEALTKAEELT RI RQUVEMAEKYGI KVRIYGDLSLLDKELRDDMNNAMEDT


## UniRef90 S5ZPT5

 UniRef90-V4AUS1 UniRef9-E5S310 UniRef90-DSUJB1 UniRef90-U7V2X9 UniRef90-K2ALT3 UniRef90-D4G8E4 UniRef90-W5XZJ7 UniRef90-M4QSY7 UniRef90-UPIo0036B03FD UniRef90-C5ZVV7 UniRef90-C7MYP2 UniRef90-A0Ао37ZAAо UniRef90_A2SH94 UniRef90-P55984 UniRef90-W0TF31 UniRef90-UPI00024855E7 UniRef90-UPIO00401F421 UniRef90-UPIO003B39E53 UniRef90-×4RBDO UniRef90-A4WUH7 UniRef90_UPIO003664BA1 UniRef90-UP10001BC2DDCUniRef90-UPIOOO3F66A48 UniRef90-UPIO003F
UniRef90-D1AXP3 UniRef90-R7HH80 UniRef90-UPIO0037586DA UniRef90-UP1000366D1A2 UniRef90-B3T2W7 UniRef90-B4N1W3 UniRef90_UPI00034685D2 UniRef90_D7EBW6 UniRef90-UPIOOO4650C2F UniRefoco-T1B5N4 4 UniRef90-Q2JAV9 UniRe90
UniRef90-W6TD42 UniRef90-E8R720 UniRef90-V4YIZO UniRef90-DoWPZ4 UniRef90-D2RGY2 UniRef90-K4KGZ4 UniRef90-MOP8Q5 UniRef90-S3AMK4 UniRef90_UPI0004034F9D UniRef90_U7PAT7 UniRef90-14B1G6 UniRef90-W1TP73 UniRef90-M3J769 UniRef90-R6HOU6
UniRef90 TOY8H3 UniRef90-EOSP48 UniRef90_B4L4Q2
UniRef90 F5YUHO UniRef90-C4LHN3 UniRef90-X0RK14 UniRef90-JoNHK9 UniRei90_UPI00042454CB UniRef90 W6MV71 UniRef90-F4BVA7
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140
IRA而KKLS
150
160
S NFSGTSIV ${ }^{130}$
AEEDNK KHNTRAILNVCFSYTSRDDUCTAMRELASGVKQGHIDKQSD RENKGLFLNLCFPYTAFDELRRACISSMKTFKANGQPEDQ KNNTGMTSLAFNYGGRGEI DDAVRRII AEGGSPQS STMPGVQVNIAVYGGRQEADAVRELLHDAAAAGTSVQE AKNSKYVLNIAIDYGGHEE KNNTKLNLNI AVNYSGRWD DGHTGVEVNIAVGYGGRQE HGRSGVHVNVAI GYGGRQE ESCNGLTQILALNYGAKDE DGRNGIVNVAVGYGGROETRAFLKIQ DGRNGMIVNVAVGYGGRQEIADAVRKLLQQHAEEGTSDQQ ENNSGMLLNIALNYGSRSEITNAIKNIVHDLDVGINTDK AHNTRITLLSVAFNYGGRWDVLQA
 STKTHKKVQEGSULIED VDAVRELIDAELGRGTKAEK VEAARKI AAKVEHGILRPDD ADAVRSLVRQEMAAGETVQS RHFKDFTQVLALNYGSKNELSRAFKSLIESPPSHINADQ KNNKRAVLNI CFPYTGREEI ADHTGLRVNI AVGYGGRQE

## A

 QFNQRLHLTVANMGGRDEL
RDNRRMTVAFDHGGRRD EGDCQMRVNVAVGYGGRQE KDNDKLVLNIAFNYGGRLLE QNNKGTLLNVCLNYGAQEE KGNPGMHVNLAVGYGGRGE KDYSNHFLNAALYGGQNE EHNDKLFLNVAFSTSRDE SGEPGLIVNVAVGYGGRRE VGRTGCQVNVAVGYGGRQE:
ARYDQYFYNVAI AYGGRDE
RVM VHSDKE MEETAEGUDDYRE VDATRALVDELVARGVPADR ADAVRSLLDEHAEAGTLEQ
TDAMRAIVAEHHAAGRSED
ADAAMELVRDVRRGLVEPH
aracromcedvae VNAVKSLLRLRTDEGTDLET ADAVRALLRERAAAGEVAAS
1 DALKKVVAKNLEDNENNDS
VRASERYHEDLVNNKVSKNE
VDVIK KMV KNKVEVEQ
VDAVRSIIAQHQLGGGSLED VDAVRKIGTKIKEGKLDVKD TQAVKTVGELGEEGHLTGED
$\qquad$ CYAVRTLLQEQLDAGADPAA

$$
\checkmark 1
$$

HNYDQFNLNIAlAAYGGRQD


VN N T G $\square$ A V N M A V G Y G G R Q E

F GNDDVLNL T V
 RDNTRLLLVVAANYGGQWDLARAARRLGERVAAGELAPAA A K GKKL L ANFCDNYGARDELL
A
$R T D S P L T V N$ AVGYGGRE
K N NS RAVLNVMCP YT S R DE I
AR A AR R W A A GGAA K A KK LIP
$H$
$V$
 $T$ H S l K TVVV D Q T S K GVVKM
LQAAGS
$L Y A \vee K R L M$
V D A V K A A E E WKA AKKEK $\square K$ MTQ A VVE K ND E S A D D E PL $\left.\begin{array}{l|ll|lllllll|lllllllll}V & D & A & V & R & G & L & L & G & K & E & L & A & N & G & A & T & A & E\end{array}\right]$ VDATK K I V EVVK R GELK QD D AD A VR D L L R E R A VA G D S L E D VDAAARF

STE
 ARAGAALARAAVA GEVDPAR


$L G A A R D V A A A V E N E T L D P T D$
A D AVR S L L Q E HA K A G S T LE E
$L$ R A A R DVATADD D GEVLAVED
TS A V E S I VR S HQS G E I E L D D
L N A A A K A A A LT S L T R
$V D A V K$ SAFEAHMAAGGDPAE ADAMRS $\square V Q S H G A G G G T \square D T$
 MT Q S I R NVVAES LIDN
AD A FEAMRDHVVGDQ
$V R A A K R V V$
TR A A A A L A R R A R A GQQLD P DLL MCTA IIE DLLAAASEGLVKPRN I R A I K K G K N




EGNSGAVLSDCVAYASTDEMARAVEECCEEKARGG GEE




| UniRef90 S5ZPT5 |  |
| :---: | :---: |
| UniRef90-V4AUS 1 | GVLAFVQVLWP EFS ${ }^{\text {OWW }}$ |
| UniRef90-E5S310 | SCLYFDPVLWPDYSFWNLFRAILFYQQNVRKYGK1 |
| UniRef90 D3UJB1 ${ }^{\text {d }}$ | A ELFFTPTYWPEFSTRELEQUIASYRQKNRRFGGL |
| UniRef90_-1TG32 |  |
| UniRef90-U7V2X9 | SELYFCRAL WPDFTRVDFL |
| UniRef90_K2ALT3 UniRef90 D4G8E | SELFFSKLLFPDF |
| UniRef90-W5XZ, |  |
| UniRet90-M4QSY7 | T |
| UniRef90-UP100036B03FD | SEIWFTEAYWPAFRRVDFLRALRDYAARHRRYG |
| UniRef90-C7MYP? |  |
| UniRet90-A0A037ZAAO | AK ${ }^{\text {a }}$ WFTKDFWPDFK |
|  | SELYFTDCLWPD |
| UniRef90-P55 | AELFFTPILLWPDFTPKDLENIISDFYKRVRKFGEL |
| UniRef90 Wotr31 | CTVELVDCLWPEFTPFSML |
| UniRef90-UPIO0024855E7 | SEDWFTETYWPAFRRHDFLRALRDFAGRHRRFG |
| UP1000401F4 | SEFYFCDSNWPDRRVD |
| UniRet90 UPI0003B39E53 <br> UniRet90 X4RBD | SEEYFVEALGQPDLREVEDLRAL |
| A4W | AEYDFSPTLWPDFTATELAATIERYGVRERRFGGV |
| UniRet90-UPIod | AEWVFPQVLWPDFRAAHFWECLDA |
| UniRef90 UPIOO | S |
| UniRef90_UP10003 |  |
| dres |  |
| 7- |  |
| UP1000 |  |
|  | S |
| UniRef90-B3T2W7 | S |
| 90-34N |  |
| UP10003468 |  |
| UniRef90-D7EBW | CTAYFCAPYWPMFR |
| UniRef90-UP10004 |  |
|  | SELYFCEAYWPAFREI |
| UniRef90-F7XM | N |
| UniRef90 W6TD42 | A |
|  |  |
| niRet90-V4YZO |  |
| 俍et90_DOWPZ4 | TELYFCEAYWPDFRKVDFLRALRDYTQRERRLG |
|  |  |
| UniRef90-P38118 | SEIWFTSDTYWPAFRRLDEFLR |
|  |  |
| Ref90- S3AMK4 | ${ }_{\mathrm{A}}^{\mathrm{N}}$ |
| UP100040 |  |
| iRet90_UPI000403 | A |
| UniRef90-I4B1G6 | AELYFTEKTWPEFAAADVDVASAEFSRRKRKFGGL |
|  | T |
| UniRet90-W1TP73 | SEYYFCEAFWPDFRKIIDFYRALRDFALIERERLLG |
| UniRef90 M3J769 |  |
|  |  |
|  | SEFYFSKKY WPSFNRDDL |
| UniRef90 E0SP48 |  |
| 5Y | SEMWFTEAHWPAFRRVDFLRA |
| UniRef90-C4LHN3 | SElWFTDTYWPAFRRV |
| UniRef90-XORK | A ELYVTEKFWPDFGKKDLEKAVLDYQQRQRRYGG |
| O | SEFYFCEVNWPAFRRIDDLIRALRDYAGRERRMG |
| UniRef90 UPIO0044 | SELVFRDELWPDFSREAFRAALDEYEARTRRFGG |
| UniRet90_W6MV7 | CDECEVVAPFWP |
| UniRef90-M3DAK2 | AELHFTDDPWPEVDRRDLWEAVVAYTHRKRRKGA |
| UniRef90 E6WRM3 | T ELWFTDTL WPDVDAKVLQHALDDFGRRERRFG |
| M5VR | C |
| 6AU02 |  |
| 退e90-Q5V 11 | NETFFCTPYWPEFRKV |
| UniRet90 UPI000364C01C | SEFYFYDGNWPEFRRVDFLRALRAYALIRQRRFG |
|  | NEVYFCAPYWPEFSKVD |
| UniRet90-M5BTD7 | TQI HFSNVYWP |
| W41 |  |
| 00036 | A M M WVdCy |
| A0A022LD71 | SEFYFVEAFYPDLREVVDFLRAVRDFGLRRSRRFGG |
| 2 O |  |
|  | CSVVFSDRLWPEFSPLLHMAKILLNWSFNTYWYG |
|  | SELLLFLKKHWPDMTTKDVSSILKEYERRERRHG |
| UniRef90-E6L9E3 | ELCSAALCP |
| UniRef90-UPI000262DDE2 | AELHFTPDLWPDTDRRHLWQAI TAYTHRQRRHG |
| iRef90_UP10002657B53 | $T$ |
|  |  |
|  | NEFFCPYWPEFSKDLUAVRTYESRAQSF |
|  | RRFGSV |
| Ref90_-29HP68 | EVFFCTPYWPEFSKVDLLRAI RTYESR |
|  | ECYFCAPYWPEFRKLDFLRA |

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A MLYSPTVLWPEFGVRHMLR I I I E F QK
K GVA $\square \quad 1 D C L W P D F G P L R M A W I L L K F$

NEVYFCAPFWPEFSK $\square$ D F L R GIIRTYESRE

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| :--- |
| UniRef90 V 4 HCL | UniRef90- UPIOOO35C32A8 UniRef90-UPI00037F2458 UniRef90-Q45R63 UniRef90-J413R4 UniRef90_A3MVB5 UniRef90-A7TEJO UniRef90-X1UV64 UniRef90-G6DPC3 UniRef90 Q8H984 UniRef90-K1RK01 UniRef90-MOA9A3 UniRef90-BON768 UniRef90-G4RP22 UniRef90-J9JYW9 UniRef90-M7X438 UniRef90 A3CWG4 UniRef90 ${ }^{-}$F4IM18 UniRef90-U3U663 UniRet90-J9YWK2 UniRet90 MOMEB7 UniRef90-B3GUVO UniRef90-UPIO00476A4E1 UniRef90 A3KGLO UniRef90-A0A024J6J7 UniRef90_UP100035D4877 UniRef90-F2PSM2 UniRef90-A3GHZ7 UniRef90_UPI00029AD533 UniRef90-V4KWB6 UniRef90-UPI0004710B94 UniRef90-P35196 UniRef90-F4X7S3 UniRef90-W9SAW2

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UniRef90 R5AGK1
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UniRef90_U2JXW5
$\frac{1}{\square} R$ VGPVPQHVIAFIIMDGNRRFAKQNHQETREGHNAGFQSTS ${ }^{20} \mathbf{S}^{30}$ LKHGKVPQHVAFVMDGNRRWARKHRVETDEGHSLGFEALK

KQKNT PTHVATI QDGNRRYARSNGDDASDGHRAGADTTE MNPETTPQHVAVIPDGNRRWAKRRGLDSGAGHAEGARRVV LIAAGPVPRHVAFI MDGNRRYARSHQRRVQEGHAEGFRALR KIPTHIAFI PDGNRRYAKKVGLDFYHAYKRGVEKVR VPKHVGFVMDGNRRYAKKKDIEDKEGHEAGFLSMS HGLPRFQGHLAGLERAR
$N S F E C T V G H Y K G O K L I S$ VSVGP DPVHDAF $\square M D G N R R Y A K K K N L L E G T G H R F G Y \square A L I ~$

PTHVAVIQDGNRRYARQNGGDAHDGHRAGAETTE
R $\$ PKHTAVIPDGNRRYAKKYGLSFDEAYRRGVEKVR LTYGEDPKHVAFI MDGS YGEKNCI SAQESYAKGFDKLV LR $\square G P R P Q H V A F I M D G N R R A R E R K L P V R V G H E E G F E A L K$ KHVPRHVAVI QDGNRRFAREQGLDTAIGHRDGADATE LQRELMPRHVSFILDGNRRWAKRDGLTTAQGHEAGTKRDI KKKGKLRTSGHKAGVRSVS PSHVAlVIMDGNGRYADERGKDASDGHRAGVKTTE DKYGPDPKHVAFIMDGNRRFADSKMLKOSDGHLYGFSKLS
RTGTRPNHLAMI MDGNRWAKQLGLEDAAAGHRAGAKMI TKAGPVPKHIAFIMDGNRRYAKKCQVERQEGHTQGFNKLA LRTGPVPQHVAFI MDGNRRFAKQHNLEEGGEGVAGFESLS LRQGPTPQHVAFVMDGNRRFARNQGI ERVEGHNLGFEALA MKTGPIPNHVALIMDGNRRYSKAKNLPLKEGHDSGAETLL
 $\mathrm{A} \vee \mathrm{Q}$
VPrhVGFTMDGNRRFARKKEMDVKEGHEAGFVSMS MPKHVAFITDGNRRYANKYNLSRREGYLKGLNKIN RRRESPKHVAVIMDGNRRWARLRDLPVDSRYEAGLRSLR LSVGSLPSHVAFLMDGNRRYAKRKNLVEGDGHWAGFSSLLH
$\square Q \square G P \square P G H \nabla G F T M D G N R R F S R A V G L S V A G H R A G F E A L K$ ALIPDGNARWADLNGLTTIQGHLAGLAVGI SPGHPPRHDGVIMDGNRRYSKGNGLSVLAGHQVGAHKLL
R G GPDPKHVALDMDGNRRFSRRLGAKPDKGHEAGFEALK LSVAQVPEHVSFIMDGNRRYAKSRNLP NKGHEAGGVTLL KRLPNHI GDI PDGNRRWAMAHGMDIYTAYLIGSDKVE VKTGPVPQHi ALVMDGNRRYAKVNGDQLRSGHDAGADALV


LKAGETPHHVAFTMDGNRRFAKKVNVETSEGHRSGFDNMT
 $\square K$ VGYVPQHISFI MDGNRRYAKSFDLPVKKGHEAGGLNLL
 MDGNRTYAKKHRLPLKEGHFAGANALV
$\square K \square G G V P S H \square G F \square M D G N R R F A R Q H \square A \square K S G H E G G F \square G \square R$
MDGNGRWATRRADPRPAGHRAGARA回
 LKDHEVPSHVALIMDGNGRWAKKRALPRVAGHHEGMKVVR LRAGKLPKHVAFI MDGNRRFARQRHIARLAGHSAGFDKLK R1P PKHIGA RVPRHIGVIPDGNRRWAQGQGMTKDKGYSYGIDPGY
 RVPNHIGGIPDGNRRWAENKGFGREKGYVAGliDPGL RVPKHI GIIPDGNRRFAVSKGLTKDKGYSLGMDPGL

R PK K HGVPDGNRRWAVENGREKDQGYDHGMEPGR


 VSVGP I P E H I A FIMD GNRRYAKRRNLDVAE GHKA GYLA L M


LS C GATP T H TA F IM D G N R R F A K K Q N MVE GE G H R A G Y K S L I SREII PNHVALI PDGSRRWAVKKGMSYYESYDLAMRNLCD

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UniRef90-X1UV64 UniRef90-G6DPC3 UniRef90-Q8H984 UniRef90-K1RK01 UniRef90-M0A9A3 UniRef90-B0N768 UniRef90_G4RP22 UniRef90-J9JYW9 UniRef90-M7X438
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UniRef90-A8MCW5 UniRef90-A8MCW5
UniRef90 C4QX29 UniRef90-M2LUG0 UniRef90-M6SA33
UniRef90- GOWF45 UniRef90_GOWF45
UniRef90-Q6FN24 UniRef90-J3PN13 UniRef90-R7B5G9 UniRef90-T1IIK3 UniRef90-A7TJ53
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UniRef90-R9AKK1 UniRef90-G4AXX5 UniRef90_WORDZ0 UniRef90-M7ZBQ5 UniRef90-R6FMP1 UniRef90-W4RIF6
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 NLLRVCLKMGVKEVSAFAFSIENFKRSKYEVDALMDIVKN N ELVKESVKQNVSSLTLYAFSSENWSRPKSEIVAIVKLVVK SVLDAALEESI GHLSLEVFSTENWRRPQSEVVALMQLAAD



 RGGVKYLTLYTFSTENWNRPADEVAALMGLVLDT RVLE WCQD G GVEELTLYTFSTENFERADEENEALEDLLCD KFATWVLYREI KHMTFYALSTENLDQRSKAELELLERGVKK
 QVLDWACELGVQHITLYTFSTENFRRDSAELESLFLLRRE E I A EVVCFELGI HTVSAFAFSTENWGRDKFEVKCLMSLFNH RAVREAVSHKLEALTHYAFSSENWSRPTQEI TAALMELEDW K I I TE E SVK QK QVLC

E
N
D
 $R T V R A A V K R G V K W L T L Y A$ RILELCYEAGVDTATVFAFSSENWRRAPGEVADLTGLLRY
 TILGYGYDLGTRYVTVYAFSIDNFKRWPDEVQGLMDLMVE $R\|V A Y L L D A D\| R Y L T V W G F S S D N W K R P G E Q V H F L F E Q A Q A$ $R \| L E L L L R \square N V P H V T V Y A F A I G N F K R S P E E V N K L M D L A R T$ ARARDACELGIEQLSLFGFSAENWTRPAAEVDDLMNLFAT QVMSWAFSSGVKNLTVWADSDDNLKRGPQELNPL FSMMAD S LLDFFLHLDITTVTVYAFSTDNFRRTEEEVEGLMDLARN TLAYDCKK GVKCVSAYAFSDENFNRSKEEVDFSAKLDEF EVLEWALDNNVQAVTVY LLSYENFMNRSEEKR ILYELLDR DVLGCCYRVGVKAVTIYAFSDENFNRSQAEDNTLDELLKQ
 TLVYDCKKDGVKCVSAYAFSDENFNRSKEEVDTLMNLDAD TLVYICKTLGVKCISAYAFSI ENFNRPREEVEFGDKLDEF RLLEFLLRLGVLHITVYAFAIDNYRRTAEEIEKLMEMGKS
KTYNMCE $\square$ FG $\square$ DEVSVYAFS $\operatorname{VENFKRSKDEVDADMEIFRD}$ SLVYACKRMGVRCVSAYAFSIENFNRPKDEVDFADKLDEF DLV S WCETEGGIAVVTVWADSRDNDRRAAAAVGRULDATAV
 KVLECCYKVGUEQVTIYAFSLENFNRTKEEVDTLFGLLRM
$R V L E F C L R \square H V R T V S V Y A F S \square E N F N R G D D E V E Y L M G L K L A$
 SVIDLCHKYGПEEATFYGFTVDNTKRPADQKEAFTNACDD K ITKLANELGVKALTVYAFSTENWKRPKMEVDFLMKLPEE






ELFK LCQK LDDKE TYYYGFTTDNTKRPSYQKMAF DDAC TK QLF KLCQE IGVKELTYYGFTMDNTKRKNEQTKAFTQECIN

F $\square F K \square C H E L G \square K E D T Y Y G F T T D N T K R P K V Q K D A F T Q A C D D$ E S Y RLCRDLGCEEVTFYGFTTDNTRRPSVQTKAFTKACID

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


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UniRef90-M6SA33 UniRef90-GOWF45 UniRef90_Q6FN24 UniRef90-J3PN13
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UniRef90 F2JQH4 UniRef90_UPI00047EC028 UniRef90-TON8B6 UniRef90-X1FI79 UniRef90-S6F7Z3 UniRef90-W5EYH4 UniRef90-H1CRF2 UniRef90_UPIO00381B7B3 UniRef90_K2CEA2 UniRef90_L1QE35
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UniRef90_U2JXW5
 SLTQi TD MVDQYGi RI RIVVGDLN RLKPDVYEAVVKVVEST KLLEFADRVHDREVGIRALGDVDLLPDRVREAVTYAEGRT AI NEQVPDLKKQKVKLKFFGAIEDFGSKILSKI DEAETAT SI RSFAD YTERGLRLRWCGAQEGLAPHVVEALGEAELRT $\begin{array}{llllllll}V & F & S & R & L & A \\ K & F & C & R & Y & G & L & L \\ E & L & R & L & D\end{array}$ VPATSLSTlGDLGGLRPASSRQRIEGAVGLS


 SLEDEI FMKNNVRFRVI GDLKRLPQQVQDKLQETMDHT
 E I R REDP II HDNRVRVRFIGDRS ILPRDDVEEMEKLEKET
 KFAA I LRDKRVHRNRI RMI GDRSLLPDELLTTMDAAEEAT Y LK SNi QYFQRKEVRVSVI GNKTKIPESLLKEIHEDEEAT
 FLENKIKILEKNKI KLKII GEKKAFSKKI KYLLNKTESKT KLREFADRVHDREVGI RAI GETDRLPAHLRDAVEYAESRT


 AI EEQVPELIEQKVKLTFFGRHDDFGKKI SKKI KEAEFNT QLSEHGELLERYGASVRVLGRRDQDRPDVLEAVDRTVELT KI EHEDSYARFNNVRI RII GNRTYIPPDILADLERAELVT
 YLRHKVAELSREGVRLRVIGDLTRFPVDIQEEARRAERVT RIRQUTERGCKYGVRIKII GDLSLLDKSLLEDVRVAVETT
 K I E ELLKTGDQYGIRI YFI GNLRLLNGNVRDAAEKAMKAT

 HFPCAVEALAPLGVRICHLGSRSGLPEPVLDALDDLASAT Y I REMMTGFSDPDVRFRVVGDRS ILPGYLNEVVDKAEAAT Y L E EALRDFMDENI RVRFI GDVSAFPQELQELI QEVEEAS $K L G E L C Q K G Q R Y G I R V R V I G R R D L L P D E V Q R A C L S A E R L T$
 K LKKAREDPRIHGNKVKVI GRWRNLPPYVVDEAIK TMNAT $K L L Y L S D T S H Y Y N V R I N I V G N K D M I P D E F R S D L D K V E E D T$

 A QKANDYKDPDYGSSLRIVGDRSLISPELRERIENVEKLT $K M L E D C E R F E R F G D R V R M V G R V D L L P P D V Q V L V A R V Q A L T$ Y L K RLLLK AI RAKDF QDPLYGAKDKTVGDATMI GDEMKRRIKRVEKDT GLAGDAAS


 MKILGNVARLR

 S $V$ V
 A VNLLSKEDAD $L L V V G$

 AVKMLSK NNASLLVI AVRTLANEDAE SLHDELNQDANEKGDKILLI GNTKS P
 AVEMLSREDASLLVVGNTESPKFPRELLKYTRKRHK
 SVELIANEDCE AVKLLSQEDTSLL
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A VNLLSKENAE
A ANLLDEGAAL


VGNTKSPMFPEELLPYTNRIK $K \square E G L L D K E S Y L N Q R V C F I G N L K L L S E P V R A A A E N A M K A T$ AI GMI ASE SVMLLTKEDCE KI EVI TEKDCEMILVIGNES DVFPQELPPFDTRQK K EVLLEKENQYGIRVYFIGNLKLLNEPVRDAAEKAMKAT LVTGLA GPHQPWRLRLARSFHLLPTGTARRLRAAEAAD SVMLLTKEDCE

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 NELKSAD M H T D T MNDSDSNCH DELKKST TQAAKNDAKDVLEGKLELD YNGKAKKKK NSLKAAD YNDKQKKVKKSK LQK
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SALSAKDGK
VDAVKKITK
NNIS GVE N
V R A V R K $\square$ A E D VK E N K $\square \mathrm{NVED}$ $\vee H A V E E S C K E K M$

$N L L$| $R$ | $T$ | $A$ |
| :--- | :--- | :--- |
| $K$ | $E$ | $S$ |

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UniRef90-X1UV64 UniRef90-G6DPC3 UniRef90-Q8H984 UniRef90_K1RK01 UniRef90-M0A9A3 UniRef90-B0N768 UniRef90-G4RP22 UniRef90_-J9JYW9 UniRef90-M7X438 UniRefyo-A3CWI
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94
 I DEGLFEKNLLLNDSLPLDWLI RTSGVERLSDFLMWQHED


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| :--- |
| $I$ | I DENLENNYLYTAGI PDVDLLI RTGGEFRISNFLLWWQSAY $V$ NEHLMSQALD LGEPDLLVRTSGEVRLSDFMLWQDSN TNEED DEKHMYAAVVPDPDII I RTSGETRLSNFLLWQSAN TTEENFEKHLETSFMPDPELLI RTGGELRUSNYLLWQDAY

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## L

 VDEALM ERELNCSDPSPDLMI RTSGEQRTSNFFTWQLAY胃
 IDPATVEANLYRAPSPPVDLIARSGVSRLSDFLLWOSNE $\stackrel{N}{N}$

| 1 | $D$ |
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LKEKEDEKFLY
TLSSFSRNMF

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पdegrToswlls Vy LLe
NRNTIASTLKSNDISRVDLITRWGGRRRLSGFLPVQSYY EKKKNIYNNI HSNDISRIDLI I RWGGRRRLSGFLPVQSVY
 SRQNIYDNIKSKDISRVDLLI RWGGMRRLSGFLPVQSVY SKSNNIANQUQSNDISRVDLIIRWGGRRRLSGFLPVQSUY MEESHFNYFY
பK RKNDTNNLKSNDTSRTDLI!RWGGRRRLSGFLPVQSVY YLNSSDiSRVDLI RWGGRRRLSGFLPVQSUY TDESLFADELQTSWFPCPDLLIRTSGELRLSNFLLWQSAY IKSKNHYDNHQSKDRSRHDLAIRWGGRRRLSGFLPVQSVY $\square S E E L$ SRALYWPELPDVDLMVRTSGEMRTSNFHLWRGAY VNKNNI QDYUQSFDVSRLDLURWGGRRRLSGFLPVQSIY KNKRKVIKELKSNDTSRVDLLIRWGGRRRLSGFLPAQSVY SSKKHILPCIHSEDISRIDLIIRWGGRRRLSGFLPVQSVY
$\square V R N G \| S R E L T T A G Q P A P G F L!R T G G E H R L S G F M P W Q T A E$ K HVENNIKSREDSRDDLI I RWGGRRRLSGFDPDQCVY VTAESFERHLYTCGLPELDLLIURSGEQRLSNFLLYQASY

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R S C
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SDFYVLDTLWPDFKEEHFVDALNWYNKQDVTGGG
HPVWF TKVLWPDFGFYDMDEC\|VAYQR
SDFYVVDDYWPNFNKDHFYNALKWYNTQDTTLGG SDFYVVDDFWPDFKPEHDDEALNWYNEQDVTLGG SDFYVI DEFWPDFKEKHFYDAALDWYQNQDIVTGGG ADFYTLDEMWPEFSKDQFSRAIVEWYNKQDVITGGG SDFYVIDEYWPDFKPQHFYDALNWYNEQDITLGG

S DF YVVDD L WP DFKPNQFYDALNWYDKQD TTLGG ADFYVIDDYWPDFKPEHFYEALAWYDKQDITLGG SELLFFTDTLWPDFGEAEY LQALMSFQSRDRRFG SDIY IIDDLWPNFNKDHFFNALEWYKDQDDT LGG AE $\square Y F T P V L W P D F D D V E L D R A I A A Y Q N R E R R F G K \square$ A ELYFTPDDYWPDFDDPQHLYDALAAYYSDRERVTFGK A DFYVIDNYWPDFKS DD: K DA F S WY DTQDVTGGGG

ADFYVLDDYWPDFKEEHFYDALKWYNTQDTTLGG SDFYVIDTYWPDFNSQDFYSALLNWYNDQDUTLGG

AEFCFRPSHGPAFSYQDFTDTLAVYARRRRRFG


UniRef90 S4MXR8 UniRef90-R1CZK0 UniRef90-MOEC46 UniRef90_UPI00046AE1C6 UniRef90-C5FUG1 UniRef90-G3ISP1 UniRef90_N9WGY3 UniRef90-G4UTX4 UniRef90 S3D153 UniRef90-UPIOOO2196761 UniRef90-UPIOOO32A6E46 UniRef90_M2UZX5 UniRef90-GOJMT5 UniRef90-B9T1V5 UniRef90 GOJQF3 UniRef90 W7SJZ8 UniRef90-N1PP49 UniRef90-UPIOO042B4A34 UniRef90 A7AVK2

VSAGPLPRHVAFIMDGNRRWARNRGLPVAEGHRRGYAKLE
MAKNRTPRHTGFTPDGNRRWAQHRGTPKEDGYGCGDDPGL LRQGPIPQHVAFVMDGNRRFARNQGIERVEGHNLGFEALA MAKNNIPRHVGFIPDGNRRWA DDHGLPKETGYAHGПNPGF RIPNHIGIIPDGNRRYATSLGLTKDCGYDHGLLPGL LKQGPVPRHVAFVMDGNRRYARSHKIETIEGHHLGFEALA LRQGPIPQHI AFVMDGNRRFARSHKIETVEGHNLGFEALA KIPEHI AII MDGNGRWAKKRLMPRAAGHKAGMNTVK LSVGPLPNHVAFIMDGNRRYARRRNLGEGDGHKAGFSALL GGKAGYAHGVNPA LRMGPIPSHLSFIMDGNRRFTKKENLKPGAGYRAGFLAGLM
 LSVGPVPAHVAFIMDGNRRYARQHNLKEGAGHDAGFSALM MDGNRRFARLMGMEVHKGHRCGLNKLM LMLLPDGMRRWSKTNGVSLDDGYRAMADKLV पRQGPVPKHVAFVMDGNRRFARNHRIETVEGHNGGFEALA

TKQSAVPRCTALVIS DSDLDDSASLDKLQ VRDGKKPEHVAI ILDGNRRWAFHKSLDPWIGYRHGANKI D KHILLVMDETDLYADAKG
DSKYPDPEHVSLVIS ETDLLYADGFRKLK
AF MDGNRRFAKKHKMKEAEGYKAGY DA L

$\square H D G N P P E H V A V I T E R D L L A D G A F D T \square S$

HVGVIPDGNRRYAEQKG $\square$ SRRKAYKNAKQTVK
PEHVALVI TERDLLEPGAYETLS NHLALLIDDGRRYAKYMS 1 KPSEGHMKGFHKLL
RSSPPPDHVAVVI TERDLLEQGAYETLG PQHMPRHVAFIMDGNRRFARRNKASAVEGHRAGAHTLS

VAFIMDGNRRYAKSVNK TNPKELGLDTMK $\square D R S R L P Q H V A V L A D G N R R W A R L N G E P L V A G Y E A G A D R L R$ GLI PD DMRRWAEANGTTLTDSYRRGAEKVV $\square \mathrm{PKHDAFVMDGNRRFAKEKGVHSSVGHYLGSKTLI}$

$$
\begin{aligned}
& \text { MD GNRRFSSKQQQAAAYGHRCGGHALK } \\
& \text { D पDRLPQHपs IILDFNDDEQRGAGLE }
\end{aligned}
$$

[^1]
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| UniRef90_S4MXR8UniRef90_R1CZK0UniRef90_M0EC46UniRef90_UPI00046AE1C6UniRef90_C5FUG1UniRef90_G3ISP1UniRef90_N9WGY3UniRef90_G4UTX4UniRef90_S3D153UniRef90_UPI0002196761UniRef90_UPI00032A6E46UniRef90_M2UZX5UniRef90_G0JMT5UniRef90_B9T1V5UniRef90_G0JQF3UniRef90_W7SJZ8UniRef90_N1PP49UniRef90_UPI00042B4A34UniRef90_A7AVK2UniRef90_UPI00037BDFC1 |  |  |
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130 N Y G 140
SAHERAVLTVCFAYTSREEVIASAV
$Y Q Y D T L K L N A A L A Y G G R N E L D R T A Q Q \square T Q E V A D G D \square D P E A$ GMKVNLLINYGWEWDLGGLK
SGNGDAILNI CFPYTSRDEI TSAVRN
QGDGIKVNLLVNYGWEWDLVGLKNGG
CGKGGUKVNFLINYGWEWDLKNYTNSSS $\square$ MSSSD $\square$ R R $\square$
KNNKKCILNICFPYTSREEMTTAI
K N NGDCVLNICFPYTSRDE ITGAI
ASGTGMVLN
AHNQERVLLICDAYTSTDEVVHAVQESCDDKWN
AHNKKAVLNVCFPYTSRHEIVTAVVMKTVETYSTPMHNKRA RGS GMKV NFLVNYGWE WDLA GLGCG
SSNTKFVLLICVVAYSSTNEITHAVQQYCKEKWN
GMKVNLLVNYGWEWDLAGLSCG
KNNKVIDVVFCINYGGRAEIADACAADAREDRDGRDSGDR KHNDAAVLNVCFPYTSREEI THSVRETVRDFTKPPSRPRP ANNSNALLTLCVAYTSTNEI DQAlQKSCEEKW
DKEDQULVNVCVSYGGRNE ARAKEKDA NDPGDRTHE
 SHNQKCVLNVCFPYTSREEITTTAVKCVVEQW
AANSRLMLSIAASYGGRQDI
GRGDGLRVNLAVAYDGHEEIV AAAHAVIAEGGVEA KRYTDRFVNNVSUGYGGKHELTNALREDMEEVRANKVDVED KRYNKEIN I S I GFGGRSELTKGDKElVARVERGELEPEE RKGKDFQUY SVGFGGRKEVTKAVRDULEKVKEGKIKASE ADFDEGTFNVCFPYTSRDEI ARAI EMTVRNHNDSPENVEN ANNSRFVLLIAVAYSSTDEVVHAVV

GLGGKREFANVVRSLAEEVDSGELDPDD K N NTRMTLTLALSYGSREE IINAVKIISDKVKNNDISDDS AKASDAP RITVGLGGKAEFAAAVRELAACDVEAGDLDPES GSGGRMRVTVSLGYGGKREVTEAFRDLLSEVEEGRLDPED AENTGLVFSVCMPYNSTSEIANAVTELCKERRDMMQGQQD
 SEFNKDTLNICASYGARNEDANA

GFGCRLLVTVCVAYGSRREDARA
KNNSNFQLIVAVSYSGKYDVVQACKS $\square$ A QKVKDDVIRDDD NKRVKNKELTVNLF DCYDESI YYNKD
$\square G H V G M H D N A V A Y G A V M N C V$
TTGTAFNVNI LIAAYDAMDELRRAHARAQAEGCDTSAAF EQFDNLLLNI FFSYTSRNEM
RREKTVVLNI CLAYSGAEEFGSAAW
AKNCKAVLS I LYLE G MNKNERNHL
SSNSRMLLRI CVSYGARHEVYRA
AHGRHLT LLLSAEDGRSTLVDCTKTDAEMSQRNKDAPSD


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


FSESH $\square T Q H \prod R K Q M L$ CLRSSDVSRMDLIVRWGGGRRLSGF पPVQSVY
ALRSSDTSRMDLIVRWGGRRRLSGFLPVQSVY VTEKMVADHLYNPDIPDCDLVIRTSGEQRTSNFLPWQAAY FSETHLQRNILSRQLP
EEAK GEYSLLVGGEYKPPEDLDRTSGVTRDSDFDYYQCEF LTGKILAENAYVPQQ VDYLIRTGGA乌RMSSFFPLMSPY

LDSAAVGRRLERWGQPGCDLILRTSGEQRLSGFLLWQSLT IDGRALESHLMFKCEP DLFIRTGEARLTDFLIWQAVY
TDEKLLESQLIFKSEP DLVIR SGATRLADFLTWQSVY S SKDU SRLTVKHEP DLFIRSGGK HLSDFLI WQSIY ITAEA IDSNMDICNDPPGDVLIRTSGVCRLSDFLLWQCHR
TDAEEVEERLVFPDEP DVVKT GAERLSDFMTWQSVY I DDSILNKHLYTHNGPDVDLVIRTSGEHRISNFLLWQIAY IDAADVSDRLVFPEEP DLVIKTGAERLSDFAI WQSVY LSVADLDHHMYSAGCPDPDLVIRTSGETRLSNFLLWQTYU

 $\square D E S L T E Q E \square E T S C Y P F P D L L T R G E D R V S F L L W Q L A Y$ VDLIIRTSNVHLSGFLVRQARG $D \square P D \nabla D L V I R T A E P L L S G F \square P \square Q S Q Y$
$\square K \square T D \square E K N M Y M V V A P D P D \square K \square H T S S E T R \square S N F L I W Q S A H$
TS PELDDAETT ESVMGEPDLLLLF GPRVVLKGYPP WQVR LDVNVLDNLLSNKGFPDPDLILKFGPVDSTLGF LP WH:R

[^2]UniRef90 S4MXR8
UniRef90 R1CZK0 UniRef90-M0EC46 UniRef90_UPI00046AE1C6 UniRef90 C5FUG1
UniRef90_G3ISP1
UniRef90_N9WGY3
UniRef90-G4UTX4
UniRef90 S3D153
UniRef90-UPI0002196761
UniRef90_UPI00032A6E46
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UniRef90-V9DIV0
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UniRef90-W4TVC4
UniRef90_UPI000462ECBB
UniRef90-A5K517
UniRef90_K8EQL9
UniRef90-UPI00042B66B8
UniRef90 U6MYX5
UniRef90-K2T054
UniRef90-M7BSA4
UniRef90_G9NW50

NEVYFCTPYWPEFSKVEFARAVRTYEARE
ADFY $\square R D E Y W P D F Q P Q H F E N A L S W F K R Q D R S F G G$
ADFYVRDEYWPDFDPQHFEQALAWYKKQDQTLGG SDFYI IDD DFWNFKETHLFEALEWYNTQDVTLGG

A D F Y $\square$ R D E Y WP D F D $\square$ K H L D K A LD WY N K Q D R T $\square G G$
A DFY IRDEYWPDFE $\square E H F D H A L D W Y K K Q D R T \square G G$ AE LD FVVE L FP DCGREVLWRA DNY DHRDRRFGGV

AELHFSPVLFPDMKRADFDTALRDLRQRERRYG

AELYFTPEHWPDFDRAAFDAMLASFAGRERRFGA SELYFTDVNWEEFRK $\square \mathrm{D}$ L M RAVRDYQYRQRRYG
SEFYFTDVNWLKFRKDDLYRAVRDFQWRERRYG SEYYF TDVVDWRS IDRKLDIIRRI RDFQKRQRRFG DTVIVLNIHWPEFRYWHLFLAVLGWQRKK
$A E L Y F T D V N W D F R K R D Y \square R A L R D Y Q D R Q R R F G$ AEFYFTDVL
AELYFTDVNWRDFRKRDYLRAVLDFQDRQRRFG
SELYFTDVNWLRLRK DDFLRAIVRYQGRERRFG
CRTRTPSGL
A EFYHDQKNFPSVSPKDVREA LDHFNS DRRKKG SELYFTDVNWRDLRKRDYLRALREYADRSRRFG

SELYFTDVNWRDFRKRDY $\square R A L I D Y A D R Q R R F G$
T R VF
TKIHF LKKCMWPEFTYTHFLLSY LIY

CY $\square Y$ SPSVLWTE $\square G F R Q F \square W A \square L N F Q R \square H$




[^0]:[^1]:    lupas 21
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