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 S A A S L A S A A D L

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 A P ME QLA QKVGGMSLDADEKYPNCHPEVNPFDFYRAHLAN


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 $D A D S L Q V L L D G L G V D D T G S F P A A D V L T R P L D I$ YRTHIA Q
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| $M Y R Q Q$ | $V$ |
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| $L F E K E$ | $A$ | VNA A D Q K V S E

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$T \square K G L E T L L Q S \square G L T V P P A F S A A N V V V N P V D \square Y R C Y V A D$
Y K N L V V D K R TI A E Y K K V I A E Y K Q Q V T D MKAHLTE FKSEVTK FK QKVVE FKK LAAE
 FK QII A N $F K Q K I A G$
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## QUERY

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 E MH K I T G V S R D I V Y P A L E WT QQMME K G D L I M A V P R L R
 VL S E V T G V D T A I I Y Y P N L G W T S G L I L E K I T G



 AFQ K L VECEDEDTAYYDA E L S K I S GVDA S LI Y P A L E T S DS K D S A D L N L P PVPR L R AK G G L L H DV S GVVE K S L I Y N A L Q WT A T L E E N G D L L L P V P P A L R V K G K

 V L V $K$



 RI K E NT E L E V DLLI E K L I E Q P P K K E M G D Y A FP C F QL K T F R K L L A A A A E I S V E D A A A A V E I P A K K E M G D F A Y P C F R L K V F R K

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 IL A D D A T N L KI R E N L V V D D V E S I E K L I E $\quad$ DP P K S D M G D Y A F P C F S

H A L K
 R L A P F V S R P A A E L D P L I Q WT T T LDD K G D L M L A A A A L R V K G K
 E I A K VVVDLELDA I YNLL ETPKNSEMGDDAFPAFSSLKVLRK


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S I S E Q V L


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 L I A E V Y S D $\quad$ LEVVAL KQAAECGED\|PFNSI
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L I S K V D G FTL S S QVELL| $E$ |  | $K$ | $K$ | $N$ | $I$ | $D$ |
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| $A$ | $L$ | $E$ |  |  |  |  |
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| UniRef90- 66 | TVIPDV |
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| UniP |  |
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| UniRef90-A6R2 | TVISSIL |
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| E4UY |  |
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| UniRet90-K9EB | A Q |
| UniRe990-T2 |  |
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| UniRet90_G8PDT9 | EVL |
| UniRet90-D3HGM5 | $\begin{aligned} & \mathrm{DV} \\ & \hline 10 \end{aligned}$ |
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FKKSTAE
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MKT $\square \mathrm{KEE} \mathrm{EV} \square \mathrm{N}$ K QLI AS
YKRI I S D
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YK Q WL A G KELIAS

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 LLGSAAGADIDEPQLVLERPKSAEHGDFSSNLAMMLAKRAK ALAATGAFDEEAALKLI SVPPDTSHGNYT EVAAAAGLEEELPEVIIETPKDKQHGDFATNTAMQLAKKK CIDKGDFELDSDPDIMIEKPKEKSHGDFATNIAMTRKDKK AI EAAVGIVSQEEDPAI EVPKDKAHGDLLATVAMQRMAKR QI VEAAGLATQPEVVLETPKEKTHGDYATNMAMQRVAKK LLTTALGLLADLPTPQVERTKDPSHGDFATNVALTLAKRQ IVVEGLAERSEVPEVILETPKEKAHGDYATNMAMQRIAKK AVVKALAEKAELPEVLLETPKDKTHGDYSTNMAMQRIAKK HVSSSLGVDGNAALVAVGGTGKDGDYTVAVPRFKLPGK AVVKAELATKEEDPNVIETPKDKTHGDYSTNMAMQRVAKK
 SLFAVLDLELQDTENKLENPKSKEMGDUATNALAMMLTKGK Q AHIVSSLSKEEVLSUMEDPKLSEEHGDMAFPCFRLKELRK TL HQALSLTYEQIENLLEKPKYAEHGDVAFPVFSLKIFRK AVSKALAAPEEMPDVVLENTPKDKAHGDFATNNAMMLRTKGK EIAKIVDLTQEEILRLLEKPKNTEMGDUAFPTFSLKIFRQ
 TI YDLTNLNKEETKELIEDPPNPEMGDFSFPCFKLKTLRK ALKPLLHLDEATMSQLIETPKTSDLLGDYAFPVFRLKVFRK AI VKAGLVTREELPSVI EVPKDKSHGDLIATNAAMQRIAKR LLQQAVG| DENDFMAQ| ERTRDAQHGDFATNAAMLLAKKL AVVQAVGLEEEVPELLLEVPKDKKHGDYSTNIAMQRVAKK AI Y EVVDLKMEQ LQALETPKAVEHGDVAFPTFILKTYRK E KAALALEEQIPDVILETPKEKAHGDYSTNMAMQRVAKK QI SAMVDDPADQVI QCVEAPKNKDLADFALPLPKDNRFKK ALASVAPEAADTPIQ LERPRDASHGDFATNLAMQRALKK EI KASVGLATEEQIPAVETPKDKTNGDYSTNMAMQRVAKK AI A DAAGLAAREELPALEVPKDKAHGDLIATNAAMQLTKKK VIKAQLATTENDPGVVIESPKEKEHGDYATNMAMQRIIAKK IILHELVAASEEDPEPKVERPRNRDHGDWATNVAMQLAKGT LFVEAMEVAPEQVSVLIERPKQASHGDYACNLAMQLAKRK LLTQALGDIPKDIEPQLERTRDNQHGDFACNVAMALAKKM LI LSKVDLPKEQVMGLI ERPKNPKLGDYAFPCFVLKSLHK AVIQALATAEELPAVILEKPKDKAHGDFASNDAMQRIAKK SVAEAVSLSEDD:FTMLEYPPDSSMGDVALPCFKLRALHK AVFEVVNLTDPEVRLLENPKSVDHGDVAFPTFALKVFRK
 NLAHILSLDEETLLNLLEKPKSADLGDUAFPAFSLKVERK VLADAGLDVSVLPETVERPRNPEHGDYATNGAMQVAKGT ETKAAVGLVSDETAVEDPADTKMGDYAFPCFRLKTLRK RISAVLPVSAEQAYAVVDYGKKDAGDYSVAVPRLGLKG ALAQLANIPADAVPPTIERARDPRHGDFATNVALVLAKRS QVAEILNLDDERUWAGVESGK KEGGDGTDAVALVFRAKGS TVKK SLELLPEAGEVVI E


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UniRef90_R5J0G2 UniRef90_UPI00037F991C
UniRef90-D8Q801 UniRef90-D8Q801 UniRef90_C4L0Z5
UniRef90 B0E624 UniRef90_B0E624
UniRef90_C0MAS8 UniRef90-UPI00036DF868 UniRef90_UPI0001E2D0B3
UniRef90_T1Z6T2
UniRef90_G2IEP0
UniRef90_D4MX68
UniRef90-G2KW45
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UniRef90_E5WGX6
UniRef90_C6J6S
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UniRef90_C6CSS4
UniRef90_E6TY31
UniRef90_G9PET1
UniRef90_D9SIG8
UniRef90_A7BYQ0
UniRef90-17KP37
UniRef90-A0A024PPJ3
UniRef90-R7FTY5
UniRef90_C2CKP1
UniRef90_R2R9P0
UniRef90_K6DS47
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UniRef90_C1A1Z7
UniRef90_M8DJR4
UniRef90 UPIO0036149AA
UniRef90_UPI00044124A8
UniRef90_Q0PQU7
UniRef90_E3K2Q7
UniRef90_G8LTY8

| $K$ | $V$ | $I$ | $T$ | $Q$ | $V$ | $F$ | $Y$ | $E$ | $R$ | $E$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |$N^{\prime}$ Y $\quad$ G



S V L EII I NTVLE E K S E Y $M \operatorname{L}$ N QV A E EK E K F G $Q \vee L T A V 1$ A D GA D Y $N \vee L$ A A I L Q K K E G Y G \begin{tabular}{llllll}
\hline$I V$ \& $L$ \& $K$ \& $K$ \& $Q E Q Q G E N F$ <br>
$Q Q$ \& $Q$ \& $Q$ \& <br>
\hline \& $V$ \& $V$ \& $K$ \& $G N N$

 

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

 EVLAK $\operatorname{A}$ V N GTYG 

$Q$ \& $V$ \& 1 \& $E$ \& $T$ \& $V$ \& $L$ \& $T$ \& $E$ \& $E$ \& $E$ \& $H$ \& $F$ <br>
\hline
\end{tabular} L

$\qquad$ $A V L E A$
$Q$
$Q$
$V$
$Y$
 Q V L Q A V T T E K E H Y
 QVL GEVVVEKNHYG $V$ I Q A V HEQGDKYG

$V L A A D L A A A G R Y G$ KVLKTIIE EKNHYG | $L V$ | $P$ | $E$ | $L$ |
| :--- | :--- | :--- | :--- |
| $S V Q G A W Y G$ |  |  |  |
| $S$ | $N$ | $E$ | $L$ | STL NE IA AK GLDYG $Q |$| $l$ | $I$ | $P$ | $S$ | $V$ | $L$ | $T$ | $A$ | $G$ | $G$ | $N$ | $Y$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $G$ | $D$ | $V$ | $I$ | $L$ | $S$ | $E$ | $G$ | $D$ | $D$ | $Y$ | $\begin{array}{lllll}V & I & Q & R & V \\ V & L & Q & Q & A\end{array} \quad Y \quad G$ | $D$ | $V$ | $V$ | $P$ | $A$ | $V$ | $L$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $A$ | $G$ | $D$ | $A$ | $Y$ | $G$ |  | | $A$ | $L$ | $V$ | $P$ | $Q$ | $L$ | $L$ | $A$ | $G$ | $P$ | $N$ | $Y$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $E$ | $V$ | $V$ | $P$ | $A$ | $V$ | $L$ | $Q$ | $A$ | $G$ | $D$ | $G$ | $Y$ | | $E^{\top}$ | $L$ | $H$ | $A$ | $V$ | $L$ | $E$ | $G$ | $G$ | $A$ | $S$ | $Y$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | | $L$ | $T$ | $L$ | $Q$ | $T$ | $V$ | $H$ | $V$ | $M$ | $T$ | $H$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $Y$ | $G$ |  |  |  |  |  |  |  |  |  | SVVNDVI E A GKDYG $\left.\begin{array}{ll|l|llllll} & V & V & D & V & L & S & E & G \\ A & G Y & G \\ V & I & G & Q & A & K & E & K & G\end{array}\right] Y$ Y

 AVI NEVITTEKEDYG | $A$ | $L$ | $T$ | $Q$ | $L$ | $L$ | $E$ | $K$ | $D$ | $Q$ | $Y$ | $G$ |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $E$ | $L$ | $N$ | $E$ | $V$ | $L$ | $E$ | $E$ | $G$ | $S$ | $A$ | $Y$ | $G$ | E I $L$

 \begin{tabular}{l|l|ll|l|lllllll}
$S$ \& $I$ \& $L$ \& $Q$ \& $A$ \& $L$ \& $K$ \& $E$ \& $G$ \& $A$ \& $D$ \& $Y$ <br>
$G$ <br>
$Q$ \& $V$ \& $L$ \& $R$ \& $E$ \& $V$ \& $V$ \& $S$ \& $H$ \& $G$ \& $S$ \& $D$

 

$Q$ \& $L$ \& $A$ \& $Q$ \& $V$ \& $H$ <br>
$H$ \& $Q$ \& $G A$ \& $A$ \& $Y$ \& $G$ <br>
$V$ \& $M$ \& $E$ \& $I$ \& $L$ \& $N$ <br>
\hline

 

\hline$V$ \& $I$ \& $M$ \& $E$ \& $L$ \& $L$ \& $N ~ E ~ G ~ K ~ E ~ Y ~$ \& $G$ <br>
$L$ \& $L$ \& $P$ \& $Y$ \& $I$ \& $D R G G S$ \& $Y$ \& $G$

 NVI K E I L D K K E K Y G $D |$

$L$ \& $L$ \& $Q$ \& $T$ \& $L$ \& $L$ \& $A$ \& $A$ \& $D$ \& $H$ \& $Y$ \& $G$ <br>
$V$ \& $V$ \& $R$ \& $E$ \& $V$ \& $T$ \& $D$ \& $K$ \& $G$ \& $S$ \& $D$ \& $Y$ <br>
\hline

 

$V$ \& $V$ \& $R$ \& $E$ \& $V$ \& $T$ \& $D$ \& $K$ \& $G$ \& $S$ \& $D$ \& $Y$ <br>
$G$ <br>
$I$ \& $V$ \& $K$ \& $Q$ \& $V$ \& $L$ \& $D$ \& $A$ \& $G$ \& $A$ \& $E$ \& $F$ <br>
$G$
\end{tabular}

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

 | $L$ | $\square$ | $I$ | $P$ | $T$ | $V$ | $L$ | $K$ | $A$ | $G$ | $E$ | $K$ | $Y$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $G$ |  |  |  |  |  |  |  |  |  |  |  |
| $I$ | $I$ | $K$ | $Q$ | $V$ | $L$ | $A$ | $E$ | $G$ | $D$ | $R$ | $F$ | $G$ |
|  | $V$ | $V$ | $R$ | $T$ | $V$ | $L$ | $T$ | $A$ | $G$ | $S$ | $A$ | $Y$ |

$\qquad$

 $E L A R T$ L L T A GANYG $E \vee V$ T ALT Q GA S Y G A IV V H A V L H A G A GY G \begin{tabular}{ll:|ll|llllllll}
$T$ \& $V$ \& $E$ \& $D$ \& $L$ \& $T$ \& $A$ \& $K$ \& $E$ \& $T$ \& $Y$ \& $G$ <br>
$L$ \& \& $P$ \& $T$ \& $L$ \& $E$ \& $Q$ \& $A$ \& $E$ \& $S$ \& $Y$ \& $G$

 

\hline$D$ \& $T$ \& $L$ \& $K$ \& $T$ \& $V$ \& $L$ \& $E$ \& $K$ \& $Q$ \& $Q$ \& $T$ <br>
$Y$ \& $G$ <br>
$S$ \& $I$ \& $I$ \& $P$ \& $I$ \& $I$ \& $L$ \& $E$ \& $A$ \& $A$ \& \& <br>
$T$ \& $L$ \& $I$ \& $P$ \& $K$ \& $I$ \& $L$ \& $S$ \& $E$ \& $K$ \& $S$ \& $D$ <br>
\hline

 E T L N E I I $M V L K Q: A K E K N H F G$ QLVNSI FEQKGHF 

$Q$ \& $V$ \& $V$ \& $R$ \& $Q$ \& $V$ \& $L$ \& $K$ \& $A$ \& $G$ \& $D$ \& $T$ <br>
$F$ \& $G$ <br>
$Q$ \& $L$ \& $H$ \& $D$ \& $V$ \& $I$ \& $E$ \& $A$ \& $G$ \& $S$ \& $D$ \& $Y$ <br>
\hline

 

$\square$ \& $V$ \& $V$ \& $S$ \& $V$ \& $L$ \& $E$ \& $A$ \& $G$ \& $S$ <br>
\hline
\end{tabular} N I L T K V L E E K G D Y LV P SVLAA GNRYG G I LD Q I

LV $P P A$ A $L E Q G P D Y G$

 | L K T | Q T M K D K Y G |
| ---: | :--- |
| A N | L |
| LE A G D E Y G |  |

PDRT A LDV RQH|LA ${ }_{\mathrm{G}}^{\mathrm{G}}$ $Y K \bigvee K$ A
 S TVT D $\square E A V L E Q \square G V K V P \square Q F S S A D V L K R P D D Q G R S Y L A D$ VT E

ETLKQEIVA $\square 1 \mathrm{D}$ QVKQTLIE LK QALHN LKTAI Q
 NYVNMYSEQI EK VMKQTVEQ FKEDVI A N MKASLHA MKKKIEE
ASTSAESSNRPK $\square G \square P E \square P E V P G T D P T R S V L D S F R \square A \mid A A N$
 MKEELAE

$N \square F Q N F E T R I G D$ | $D L L$ | $R A T A A K$ |
| :---: | :---: | :---: | :---: |
| $D T$ | $R Q L I A Q Q$ | E S MKNY ${ }_{1}$ QE LIK E EI A A NKIAE LPPLPHVPGTEPDRCVLDAFRTA I A Q SLPPLPSVPGTDPSACILDAFRTAI AQ

MKNYRSLIGE
L K A S HLLA A A
DQVRSSATK $A D V L R T L R Q L L D E$ TSS $\square P Q \square P D T D P S S C V L D A Y R \square A I A K$ $H T V E Q L L K Q A L M S$
$M K N L L A S$ NSMEQRKNQLIQ

VERVRGGDAA


DLLKQGITE
VYEK $\square$ RENTSK MKNQISN $\square 1$ R A A L T D KLTFAE NLFKYFR QE $\triangle 1$ AA LIKTTATT

V E T $\square$ R AT L A A
K K LVVD
MKNKI I D
NTFSDFHAlIAA
VE QMKERLAA LK SHLAE
 NLFKYFREEI DK

I K ELIE N LI RESAAH N IVQKAKEETMK

MK QQVV] DVVRSALAA


MK DTI IS

$F \prod A R \prod A R$
STSTLPAVPGTDPSRC\|LDSFRISIAK

UniRef90 WoSED6
UniRef90 F8HYP8 UniRef90-F8HYP8 UniRef90-B6QSG6 UniRef90-A3DGS4 UniRef90-UPIO00347EECF UniRef90_UP10003B5F456 UniRef90- $\mathrm{R7IHX} 1$ UniRef90 UPIOOO360BB22 UniRef90-O5HRD1 UniRef90-G1VQK4 UniRet90-K2AX19 UniRef90-P38714 UniRef90-UPIOOO3753222 UniRef90-UPI00040766C3 UniRef90-UPIOOO2F9D9DA UniRef90_R5N8X0

## UniRef90-J8LMX0

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UniRefono-RTSR16
UniRef90-F214F8
UniRef90-B8E6G9

| UniRef90 $66 \mathrm{WPQ9}$ |
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| UniRef90 |
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UniRef90-E3HYW2
UniRet90_-a5ZOZ9
UniRef90-F2KDD9
UniRef90-UPI0002E6803B UniRef90_UPIO00255652B UniRef90-W0D2M7 UniRef90-R7FPH0 UniRef90-M2R1T7 UniRef90-F8NIT6 UniRef90-V1CM39 UniRef90-UPIO0042A4015 UniRef90_C7RPS4 UniRef90-B216M4 UniRef90-H5X5W8 UniRef90-D5EG59 UniRef90-BOD7N6 UniRef90-UP100026C7CCB UniRef90-UP100035DF6F1 UniRef90_-Q88X53 UniRef90-W7YPH5 UniRef90-10V5F6 UniRef90-UPIO0036044CD UniRef90_LOEIX1 UniRef90-UP10003B2F2D6 UniRef90-A819L7
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UniRef90-B7GMJ3
UniRef90-L1MN99 UniRef90_R5K039 UniRef90-UPIO004027BBE UniRef90-F6B657 UniRef90-UPI00047B443E UniRef90-UP1000046A3D83 UniRef90-R5JHZ3 UniRef90-UP10001D2E51B UniRef90 K8DZB9 UniRef90-AOAO11 QZQ4 UniRef90-10JJ33
UniRef90_C5ZZZ3 UniRef90-Q2W492 UniRef90-P67570 UniRef90-W5WRG1 UniRef90_UPIO003795D4F UniRef90_UPIO00401FE70 UniRef90-Q8R786 UniRef90-UPIO0046AF11E UniRef90-I4F2T1 UniRef90-UPIOO04622690 UniRef90-A0L512 UniRet90-E8UFH3 UniReffo-OO7N56 UniRef90-E1V8J4 UniRef90-H6LH28
UniRef90-W4QTA9 UniRef90-LORAC7 UniRee90-UPIOO02486D27 UniRef90-B1VFW3
UniRef90 STREIT

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LLRAALGVAPEQAETLLERPKQASHGDFASNDAMQRELKT TLSTILDLDVETLKAKIEVPKDSSKGDYAFPTFTLKELLKK LLADAVQRAPD DTPAVERTRDAAHGDFASNDAMTLTKRR V VKRELPQCDPEVAYRS HWPNDTFNGDLIAVNLPKLSHKGA RVFNEHDLKKERLYSLIEKPKQAKMGDLAFPCFELRNYRK ATAEELRGLLAVPPDPKMGDYALPVFRLKALRM AVERALATREEMPAVLLETPKEKAHGDFATNMAMQRVAKK El ERKANDAEDDPEIKIETPKDPKNGDYSSNDAMVLTKKR AVQKAFDTELDTASUVI EIPKDKSHGDYSTNVAMQRVLKN ELQQSGDLPADRPREQDATKDQQHGDFATNDABMLSKKR ALHDVSG| DHSLLDNALESTNSMDRGDLLLPLPAMKIKVA ALNGSLTLTE NSLI EKPNYADQGDLLAFPCFQLKALKK
 SVSASGDAAEVPAFVIERRKNRAQGDFSTNAAMLKAKVS TVADGLELTVEQVYQGVDYGKKGE DFTVALPRFRLPGK LLEQTLEVPADEARDQVDRTKDKSHGDLATNGAMMLTKGK ALRVAGKLPADAPTPVIERPKTREHGDFATNAAMLLAKRT俭 VLAERGLDPAVLEVTVERPRNPEHGDYATNLAMKVAKGT AVLKAQILEEGTDFQVIEVPKDQTKGDFATNLAMQLTKKK KLSNIVELDKDNVRIMVENTKDKAHGDFATNIAMLLAKGM VLKAELATEEQRPNVVESPKDKTNGDFSTNMAMQRVAKK LVARALPLTLEQVYAGVDYGKKGVGDFTVAIPRRRLPGK RVSDALP TLEQAYSGVDYGKKGV DFTVALPRFRLPGK DISEEGELENLDVASLIEVPTDEKMGDYAFPCFRLKEFRK ALHSVAPAEADTTDH ERPKQAAHGDFSCNLAMQLALKR VL RARGVDADVLPVTVERPRNPEHGDYATNLALQVAKRA AVAEEKNVATDDIPEAIEKPKNEGHGDWATNAAMQRIFHD RLSETLPLTLQKAYDGVDYGKKGE DFTVALPRFRLPGK LVQKSGEIPADDUEVKVDRTKDSAHGDYASNLALILAKRQ EDHEADADLATDPVVILEAPKDKAHGDYATNMAMQRIAKK ALGKAVDLDPEMPAFVVEVPREKEHGDFATNAAMLLAKRR A T P V L L S LEDDEAKVEVPKDSRLGDFADPTFFLKSRHQ AVAALAGELPELSRIVVEPPRDAAHGDLATNAAMVLAKKM ALNKAAGTLPAGDYPALEVPPQKEFGDFASNIAMQRVAHK KLEQATLCAQEDPSYVLEEPREREHGDLATNAAMLLAKKA
 LTND GSLPEGPEVVLELDRDKAHGDYATNMAMRLAKKK QVADVLKVLPEGMEPSVDRTRDKSHGDLASNDAMTLAKKK ALSRLSGLDTSKVTA LEPPREEAHGDVATNAAMVKAAGQ VLSDK DLDASVLPETVERPRNPEHGDYATNVALQAAKGV LIADVEGMTAEEIATFI EDPPKQELGDYAFPCFRLKTMHK A LEKADAKPVELPQEVVIEVPREKEHGDFATNMAMQRVAKK $A L L K V L E D T E E Q V Q K L Y E K P K T S D L G D Y A F P T F D L K S L H K$ LLAQUEGMSKEDISATIEDPPKPEMGDFAFPCFRLKTMHK ILEKASGRLPETLDASVEPPKDAAHGDLDTNVAMVFAKEA ALQKAVGLPVAVPDVVI EVPREKGHGDFATNLAMQLAARLD LMAALLSVAPSESDAALERPKQATHGDFSCNLAMQLARKR QLSHLLGESREWVYDKIEEDPKQPHLGDGAFPCFSLASFKR SVEAVVGRDTSKVTAMEPPREVSHGDVATNAAMVLTKGM VLAEARGLDASALPQMVERPRDPEHGDYASNLAMQLAKGT A LDK DGVNNFNDF DI EDPKDSKNGDFATNVAMKLAKKK AVLDAHDLDVSVLPETVERPRNPEHGDYATNIAMQVAKGV ALIQVLGLTEENITVMIEKPKFNSLGDLAFPCFELKHYRK VVLKAVVEAPEDQLKQLVATPPSRERGODVAFPCFMVREAKM AVERAVDVPAEVV YQGDRPKNPEHGDYATNVALRLAKGR VVADALELTVEQVYQGVDYGKKGEGDFTVALPRFKLPGK
 LLERALDLQRQAILPSVDPAKDKAHGDYATNLALMLAKGL ALNQVQATGALIN ETRLEDPREKEHGEYSTNIIAMQLPKKK HLENLLSTGNEVEKLLENPKYEQQGDMAFPCFSLKLLKK VLGSLDTKPEKA VLEP
EVLTERGLDASVVNPTVERPRNPEHGD

UniRef90_W0SED6
UniRef90_F8HYP8
UniRef90_U2G2X6
UniRef90_B6QSG6
UniRef90_A3DGS4
UniRef90_UPI000347EECF
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UniRef90_UPI0003753222
UniRef90_UPI00040766C3
UniRef90_UPI0002F9D9DA
UniRef90_R5N8X0
UniRef90_J8LMX0
UniRef90_UPI00047DD7D7
UniRef90_G3IVZ0
UniRef90_R7SR16
UniRef90_F2I4F8
UniRef90_B8E6G9
UniRef90_E6WPQ9
UniRef90_R4VL49
UniRef90_E3HYW2
UniRef90_Q5Z0Z9
UniRef90_F2KDD9
UniRef90_UPI0002E6803B
UniRef90_UPI000255652B
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UniRef90_R7FPH0
UniRef90_M2R1T7
UniRef90_F8NIT6
UniRef90_V1CM39
UniRef90_UPI00042A4015
UniRef90_C7RPS4
UniRef90_B2I6M4
UniRef90_H5X5W8
UniRef90_D5EG59
UniRef90_B0D7N6
UniRe90_UP100

100
110 APNDI A S DLVVDAMDTS DY QKVIAMGPYVNFFLDP KA A GA
 A P R Q VV G E DLL R N K F P E N S S L F M L
 A P P K I A T TVVVEKWSHEDVVARAEAVNGYVNFFLVRVNFAA

 K P K D I A A M I M K A L P H S K N I K K V E I A G P F I N F F L T N D T F Y N D P VAVA N R WA DELC T H G C I GK V C A K G P F L Q F F L D Q R Y L I Q
 S P V I I A K E I A L L S P I $\quad$ N 1 D P A T V A K R WA A E L T L L S G S L G K V C A R G P F L Q F F F D Q T Y L L Q N P R Q L A A E K L I A A L L P Q D T A I
 N P R E L A Q L I I D T L P A S A Y V A K K V NPRAVA QALVVAMPASDDVVARAEIA GPFINFHLAA GA WQR
 NPRDLA GWLAEAL GAAD GI TSAEVAGPFLNLRLAAAABG


 I D E L A A A K V L
 NPRAI A QALVDALPANEQDASVEIAGPFINFRIAEAAWBR NPRQLAELLLSELPPSPWVSKAEIAGGFINFHLPPTAK DQ




 APQMI AS DIVEKVDSSD FEKVVAMGPYVNFFFKKDAFAA






 SPRDIAAAIVAHMPKDSEIERVEIAAGPFVNFYLSTAAGN
 NPADI AKDVASALAEHPAFARAEATGGYVNVQLNRDALMR


 A P R M I A E E L I N N S F D Q S K A I $Q$ K K V

 APNMIAEDLVGKIDQAGFEKVVNTGAYINFFLDKSSFSN
 APRKI A EAVVENLDADTPVERVEIAAGPFINFYLQPSWVY

 K P R DL A E K I A E V L L R A H P A V T G V E V A G P F I N L R L A D S S F WF E
 NPRDDAS DLVTNI EKDNFI DK DEI A GPFINFFINKKYF N P R E L A T WLL V D T L A A D D A I D E A S
 A P P QI A Q DLVEKLNTQDLI EKIVNMGPYLNFFFDRQKYSA P P R E V A E V L A A E L R A V D G I A G V DVVA G P F L N DT LAA K D A L G A $\square D E L A K K V I G K F Q P D E W V E S V T H D R A F L H F R C R T S T T L M R$ K P R DLA Q R L V D A LP S G GVVSRCEIA GPFINFFVTPERLR

 APRFI A ETLVVAHMKTDDYLEAI EIIAGPFI NFKLKKEWHYE A P NLI A A DDL A S K I N H P P F I E E N V V
 NPRELGTWLAEALAATDGIDEATVAGPFINDRLAADAQAR


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| :---: | :---: |
| WOS |  |
| UniRef90-U2G2X |  |
| UniRef90-B6QSG6 | LLLPYMNDRQNSYG |
| UniRef90- A3DGS4 | VLKVIQKEKENYG |
| niRef90-UPIO | Q1SKEKTNFG |
| UniRef90-UP | G |
| UniRet90_R71H: | SVLKAGENYG |
| UniRet90-UPIOOO3E | VLTEKQAYG |
| UniRef90-C5HRD1 | A 1 PEAITKGDRFG |
| UniRef90-G1VQK4 | ITRVLQEQDNYG |
| UniRef90-K2AX | $V \mathrm{~T}$ SLLVKGENYG |
| Uni |  |
| UniRef90-UP | AIVEKV |
| UniRef90 UPIOO | QVI ELVLGQGKEYG |
| UniRef90-UP10002F9D9DA |  |
| ef90 R5N8X0 |  |
| 这 |  |
| Ref90-UPIO | Q L GEVLAQGSAYG |
| UniRef90 G3 | VIKQ1HDQGPKFG |
| UniRef90 F214F8 | Av A Dokesayg |
| UniRef90-B8E6 | QLQNAVNDE |
| UniRef90-E6WI | EVAGVDRHGGEYG |
| Ret90_R4 |  |
| 900_E3HY |  |
| iRet90_O5ZOZ | G |
| UP10 |  |
| UPIOO |  |
| UniRef90-W0D2 | G |
| UniRef90-R7FP\| | AVVKEVIKEGKKYG |
| 2R1 |  |
| UniRef90 F8NI |  |
| UniRef90-V1CM39 |  |
| UP100042A4015 | STLRDVASQGETFG |
| UniRef90_C7RPS4 |  |
| Ref90_B216M |  |
| Ret90-H5X5W8 |  |
| Ret90_D5EG |  |
| UniRef90_B0D7N6 | D L L QV HA |
| UniRef90-UF | AVI RDVWEQGEAFG |
| UniRef90_Q88 | DILNQVLSNGGHFG |
| niRef90-W7 |  |
| iRet90_10V5 |  |
| P1000 | AVLPEIIAAGENYG |
| Un | VIGEVLRAGESYG |
| UniRef90 A8191 | GV A ALRAGTDFG |
| UniRef90-G0VRD7 | - |
| Ref90-G7D9D3 |  |
| Ref90-K4L0 |  |
| B6BVT8 |  |
|  |  |
|  |  |
| UniRef90-AOY |  |
| UniRef90-UP1000413 | DVVRT |
| UniRef90-V6F183 | R LIAEVLQAGAAYG |
| iRet90_B7GMJ3 |  |
| N99 |  |
| (5K03 |  |
| UP100 | G |
|  |  |
| UniRef90-UP100046A3D83 | AVIJNKANYG |
| UniRef90-R5JHZ3 |  |
| Ref90-UP1000 | VLAEGDAYG |
|  | GVIPMIIEQDRNYG |
| UniRef90-A0A011 QZ |  |
| UniRef90-10JJ33 |  |
|  |  |
| iRef90-Q2W492 |  |
| iRef90-P67570 |  |
| f90 |  |
| D3 |  |
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| UniRef90 UPI000401FE70 |  |
| NiRet90-Q8 |  |
| Ret90_UP100046 |  |
| iRee90 14 F 2 T 1 |  |
| Ref90_UP1000462 |  |
| AOL |  |
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|  | 相 |
| Refefo-H6LH28 |  |
| Ref90- W40TA9 |  |
| UniRef90-LORAC7 | AMIPEVIERGEDFG |
| UP10002486D27 |  |
| UniRef90-B1VFW3 |  |
| S7REI7 | QVLT QVIHALK P E |

DT $\square R \mathrm{QL} \square \mathrm{Q} Q$
$D A L R A A L V Q$
KQLIS G

| $M K E Q L Q D$ |  |  |
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| $F R T A$ | $A$ |  |

D LIKKALRE
DLLKSTAAA
EFFRPVISN
AELAS
ELLRATASA
$P \square Q R \square R T V L D D$

E E: K K K K I I C

 VVKNTHTE

UniRef90_IOR2T4 UniRef90-A5EJW7 UniRef90-WOBGN9 UniRef90-FOT2D5 UniRef90_G9XDF4 UniRef90-E3D823
UniRef90-E2COL4 UniRef90-UPI0003F646C5 UniRef90-M1WWA5 UniRef90-F0X879 UniRef90_UPIO0047A1673 UniRef90-Q3JF27 UniRef90-F8ICM6 UniRef90-F9ZHV3 UniRef90_UPIO0047EEE04 UniRef90-A4A8L6 UniRef90_UPIOO03B6D291 UniRef90-U4TSE4 UniRef90 ${ }^{-}$A0A017TEW9 UniRef90-UPIOOO476190B UniRef90_UPIO00349293B UniRef90 ${ }^{-}$W7CUX6
UniRef90-W0RJP5 UniRef90-F6CRF8
UniRef90_UPIOO0475EC60 UniRef90 M1PF20 UniRef90-A0A024HB76 UniRef90-V2XNC0 UniRef90-R5VZ54 UniRee90-UPIOO04626A69 UniRef90-A7HXJ6 UniRef90-K2KNN6 UniRef90-R5NVL2 UniRef90-D5VR79 UniRef90-C2CL26 UniRef90-G7WHK4 UniRef90-UPI00036F6171 UniRef90-D5C452 UniRef90-W4HNJ7 UniRef90-UPIO00376971F UniRef90_UPIO004767C0F UniRef90_C6WHL6 UniRef90-E3ELR9 UniRef90-Q3SF80 UniRef90-F5LCE4
UniRef90-RTFAF3
UniRef90-J6LGY2 UniRef90_O8Y2P8
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UniRef90-E8T216
UniRef90-R61KQ9 UniRef90_HOJFY1 UniRef90-UPIo001E894C5 UniRef90-E7MLI7 UniRef90-UPIO0034AOE8A UniRef90-DoWRR6 UniRef90-B9E8L3 UniRef90-Q0AFN4 UniRef90 UPIIOOO426F840 UniRef90-R4KTD8 UniRef90-U4WU83 UniRef90 W6LZ20
UniRef90-Q21WF8 UniRef90-EOD192

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80 ALLSQLMGILAKADLPAAVVRPKNRDHGDWATNIVAMQGGGM ALAKDGNWPEDVSRVVVEPPRDPSHGDMATNAAMVLAKKA EVRQSGVIPPDVAHIKVERTKDKAHGDFATNAALVLAKHQ RLKQSADLDFDELPAVIEEPRERQHGDLDANLAMLLTKKK DLGKAGNLTEDLIPAAVMRPKDRAHGDWATNVAMQLAKGM MLKGLDGAAPDLSRVTVESPRDPAHGDLATNAAMVLSKGM AI ASLDDVPADLARLAVEPPRDASHGDVATNAAMLLAKGR ALKAVLAEKPEKA VVIEPPKDKKFGDMSVNVAMMLAKKK LLGSULTLDASADYA AAFDGVISSDEVPE A QVQRTRDKSHGDFASNISMVLAKRQ A $\frac{1}{A D V V A R P V D E I A R M L E Y P P N P A L G D L A L P C F F A R E M R K}$ ASSAlTSLETAAUSVELTRTKQASHGDYSCNLAMQLDKHK LLSEALQADDTAPEVQVERTRDAAHGDLLASNIALASAKKM AV HEFAGLPPEDVEVQLERPRHEGQGDWASNIAMLKPLGM ALSQLTTLTTDQVADMLEVPKTLDLGDFAFPAFQLKSLHR ALAELDPAAVTTAAFSVERPKRAEHGDLATNAPLQKLAGR VLT ARGADPAVLPATVERPRNPEHGDYATNLALQVAKKA LLESATGVLPDDLQPAI DATRDKAHGDYASNLALALAKGM GVVKALELDASAVPVLLEVPKDKKYGDYSTNIAMQRVAKK A AQALGAPDGIDVILERPRDPSFGDWTTNLAMARTLKR ALERALGLLPAVTPPAVEVPREKEHGDFATNLAMLLAARL ALERPKAASHGDWASNIALQRQDKR ALAS LVGLTPDVGQVETTKDRSHGDYASNIAMMLAKGM RVSEALPLTVEQVYSGVDYGKKGVKDFTDALPRFRLKEK ALKA VEAALRSLEEEGVLPAVEPPRDPSHGDLSTNAAMVLAKGM Q1 ALDALEKDGVLPAVEPPRDASHGDAATNAAMLKAAGM K L EKKNVD VEVNVDEPPKDEMGDFSVNVAFRLAKKR VLSEHTAVLPETV TVERPRNPEHGDYATNLALQVAKGV VLADARGDHSVLPETVERPRNPEHGDYATNLALQVAKKV ALSSLEGMLPDTHNDQVKRTRDKRHGDFASNITMMLAKRQ LLARADDAGTETARPAIGATKDPKFGDFQTNLAMLLAKGK AVAQVLGDDPIPEVQLRPKGEGHGDYACNVAMARVLKK VLST RGLDPSAAEVTVERPRNPEHGDYATNVALQTAKGT ALAPDAPVSLE AVAAGLVQASELPEVVLEVPKDKSHGDFATNLAMQRIAKQ QLHELLGLGRMVAEEKVEIPADKSHGDFAANVAMVKAFRM LVAKRLPQNLDLGRVLVEPPRDPTHGDLATNAAMVLAKGK LLSDAVGLLPERPEIVLERPKQAAHGDUACNVALQLAKGT LFRQUTLDASAVRIEELERKQASHGDYSCNLAMQLAKHK ALGRAVGVLDEAPLPAI EVPKERQNGDYSTNVAMAKAFHK ALDRLIGTLPADVAPAIENTKDKSHGDFASNVALLLAKRA TLHSUPELQLDKUTQLLEKPKHAQHGDLSFPCFELKMKRT AVKQVYDIDADDSILIVETPRDPKMGDYSTSVAMRRTLHK ALTALVDVEVTELDTQVERPKNRAHGDWASNVAMAKKLGV ELASALTHEGELPVVKVERPRSREHGDWATNVAMQLLAAGR LLAQAVKLPEEEIHILEQRPKQMDHGDYSTNLAMKLAKRR VLRRVAPEVGDDVLARVEPTRDPAHGDMATNAALLKAARR ALVEALGVEAGEIPPVVEVPREREHGDFATNGAMLDPKRM Qi TAALDFSCERVLGMLETPPNPQMGDLAFPCFQLKALRK RQLDVTGTDLSRI VVEPPKDASHGDMATNAAMVLAKKA RITGEVPASI TLERPKNRDHGDYATSIALAAKGM ADT RLVGVLPEGLTPALENARDKTHGDFASNIAMMLAKGM AVDDGTALLAADQVPATVERSRQREHGDWATNVALMLAKKT LLQDAVNALEKQPVVALERPRDASHGDIUCNIAMQLSKKK LLIKSLG DLIEKGLDHTKDKTHGD QUSRVFSDPDEKAYEGVDYSKKDS MI MDALGVLAEQAVPAIEDPADKSHGDFA ANTAMVKAFKM VLTE HGLLDTSVPDTVERPRNPGHGDYATNLALQLGKGV ALHSADTTDKQULDKSUQPADKKFGDFSTNVALLAAKRR T1 TETTDLDPSVAPDLVERPRNPEHGDYATNIALQTAKGT VLAD RGLDVSVLPDKVERPRNPEHGDYATNVALQVAKGA AVLNVTGGERPKSAPTLERPKQAAHGDYATNAAMLLPKGA
 ALTALAGVLPDGLNVAVERPRNPEHGDYANLALQVAKGV LLTPLSEMGPSALDANI ERPRQANHGDYSCNALMQLAKRQ AISKLAGCAIKAAYPVLENPPQPKFGDYQCNCQMLKTKKV VL DAPDLLNTATIAEKLEAPKSSQLGDVAFPTFTLKALRK VL DARGADHAVLPDTVERPRNPEHGDYATNLALQVAKKV EAGDLSLDTLEVRVERPKSRDHGDWATNLALQLAKGM ELGKAGNLTADQUPEAVMRPKDRAHGDWASNAMMLAKGM
UniRef90_IOR2T4
UniRef90_A5EJW7
UniRef90_W0BGN9
UniRef90_F0T2D5
UniRef90_G9XDF4
UniRef90_E3D823
UniRef90_E2CQL4
UniRef90_UPI0003F646C5
UniRef90_M1WWA5
UniRef90_F0X879
UniRef90_UPI00047A1673
UniRef90_Q3JF27
UniRef90_F8ICM6
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UniRef90_A0A017TEW9
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UniRef90_UPI000349293B
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UniRef90_W0RJP5
UniRef90_F6CRF8
UniRef90_UPI000475EC60
UniRef90_M1PF20
UniRef90_A0A024HB76

120 $K P R D L A E A I A E R L R A D E L V A K V D V A G P F I N L T L H P V V W A B$



 N P R H I A A E A I I A K Y I I D E E K






 A PRAAI A E DV A A $\square$ GEE HALI NK DEI A GPFI NFY LD NA Y LT

 N P R E L A Q E I V R EI T P H P WV A K V
 N P R E I A Q K I V Q Y F D V N N A A V T K V E I NPRALATLLSGELETVDGISSVEVAGPFLN\|RLSAASAAG

 N P K E I A E E L V K D L K K V E G V K K E I K V V V N G Y I N F Y L D Y E I Y G R


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| :---: | :---: |
| Ref90-A5 | Q LGTlLR |
| Ref90-W0 | TVL |
| UniRef90-FOT2D5 | VLPEVLNKGERYG |
| UniRef90_G9XD | QVLDKV |
| UniRef90-E3D83 | AVVDEVLKQGADFG |
| UniRef90-E2CQ | KVLKSVL |
| UniRef90-UPI00 | F LKTSLAEGEGVG |
| UniRef90-M1 | TVGVIRDAGKAYG |
|  | L L |
| UniRef90-UP100047A |  |
| UniRef90-Q3JF27 | AVVSQVLEQKESFG |
| UniRef90-F8ICM6 | R VIGQA |
| UniRef90-F9ZHV3 | QFLHLTLRSKNTG |
| Ni | E |
|  |  |
| UniRef90_UPIOOO3B6 | DVLEAAV |
| UniRef90-U4TSE4 | L |
| UniRef90-A0A01 | VLGEI |
| UniRef90 UP1000476 |  |
| UniRef90-UPI000349 | $Q T V A R V L$ |
| UniF | ALIP |
| W0 | GlLP LARDGQYG |
| Un | E, PR1 |
| UniRef90 UPIOOO475EC60 | OVIEKDGQYG |
| M1P |  |
| UniRet90 V2XNCO | EVLDQV |
|  |  |
| UniRef90-UP1000462 |  |
| UniRet90-A7HX | A |
| UniRef90 K2KN |  |
|  |  |
| 5VR79 |  |
| IRef90_C2CL26 |  |
| G7WHK4 |  |
| UP100 | A 1 VRQV |
| UniRet90_D5C | AVVSLVL |
| UniRee90-W4 ${ }^{\text {UniRet90 }}$ UPI00037 | NV VVDVL |
| UniRef90-UP10004767 | AVLVQVLQQGD |
| UniRef90-C6WHL6 | A V REI |
| E3EL | A V V |
|  | GIVRQ |
| F5LC | IV A AVAEQAD |
| R |  |
| J6LG |  |
| UniRet90-08Y2P8 | OYM |
| 8GG96 | $\begin{array}{ll} \mathrm{Q} \\ \mathrm{~V} \\ 0 \end{array}$ |
| UniRef90_E8T2 |  |
| R6 | LEDLMAQGENYG |
| UP10001E8 |  |
| UniRef90-E7MLI7 | VINTVINAGDDYG |
| UniRef90-UPIO0034A | ETARRVV |
| DOWR6 |  |
| B9E8 |  |
|  |  |
| UniRef90-UPIO00426F | SVVPSVL |
| UniRef90-R4KT |  |
| U6 |  |
| W6LZ |  |
| UniRet90_O2IWF8 | A LIRAVLDAGAGYG |
|  |  |
| 3744 | LV RTILIAGSTYG |
|  |  |
| UniRef90-UPIO00319CDEB | ELARSVVEAGEAYG |
| UniRef90-C3 |  |
| UniRef90_UPIO0028A06E1 | AVVNDI |
|  |  |
| Un | VVENVL |
| UniRef90-K5BF | LV ADVLA |
| UniRef90 B4SH34 | Q |
| -950 |  |
| - |  |
| UP1000369C | A VA |
| UniRef90 D0 UniRef90 UP | ${ }_{\text {T }}$ V |
|  |  |
| UniRef90-14DCG | GV |
| UniRef90-E7G6T5 |  |
| P100047C3D31 | ) VAKILAQGAEYG |
| A0A0372 |  |
| UniRef90_UP1000469CA3F | GEQF G |
|  |  |
| Un |  |
| 90_UP1000476937C | V |
| UniRef90_UP10003B691C0 |  |
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K EALTS
D $\square \mathrm{KE} \square \mathrm{WKHE乌A}$

A AFTD
N $\square \mathrm{FADFNER} \mathrm{\square K}$ N I IEQKIVK

M N T A $\square$ QA
N L F A D $\square$ RS LVLT
K N H L Y T

MKEQ $\square$ A C
$N L L D T A R Q A A A D$
FKSHCDQ
GTDPERCVLDAFRTA】AQ
TEVEAL R DAF $\quad \begin{aligned} & \text { AAAE } \\ & \text { Q } \ \square D\end{aligned}$
$D \square K D L \frac{L}{L} L A A B \ K D$
MLLEELLMD
$Y$ LS HVRE


K A A LVS
FAAHVGD
NLFSD $\mathrm{D}_{\mathrm{R}} \mathrm{A} \mathrm{V}$ L L Q
SNMIQAAREQVAA
D $\square \mathrm{K}$ S N I I NADKEVISK
NLIFADFETRIKA DELLA QTITS


$N \square E L E L K K$ K L K N
IKNYLAE
FRPVIQD
LLKATAAA
MKEE SK


PMDKFKQA। AE
NAVEQDQHEVKI
UniRef90-UPIO004718DF2
UniRef90_M0QPT6

UniRef90 UPIO003B4C513 UniRef90 UPIOOO3B715B6 UniRef90-M5E1X7 UniRef90-E2MTI3 UniRef90-UP10003B41F25 UniRef90_UPIOOO36532EE
UniRet90_UPIOOO35D818F UniRef90_UPIooo3694AAD UniRef90-R9LLE9 UniRefefo-SoG394 UniRef90-A0P526 UniRet90_SOFP33
UniRef90-D5BQVo UniRef90-UPI00039C9CF7 UniRef90-UP100046D3318 UniRef90_D7WDG6 UniRef90-K2AZ95 UniRef90-E4RP30 UniRef90-Q8FO57
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UniRet90 E8LFN6 UniRef90-E8LFN6
UniRef90 H2J4W9 UniRef90-UPIOOO35D344C UniRef90-L1PFX3 UniRef90-D5QCL7 UniRef90_UPIO00466797F UniRef90_DUJSA9 UniRef90-11B0D6 UniRef90_D3R1P9 UniRef90-_9CIz3 UniRef90-UPIO003B45ECE UniRef90-UP100039A5AD9 UniRef90 X5MNF9
UniRef90-G9YR89
UniRef90-Q57689 UniRef90_H4FB15 UniRef90-R4YM55 UniRef90-K6VJ22 UniRef90-UP100037DDF6B UniRef90_GBP47
UniRef90 A0LSJ1 UniRef90-UP10003B5FD72 UniRef90 R574D8 UniRef90-R5ZC78 UniRef90-A4SGY3 UniRef9--F9MQ15 UniRef90-UP100047D67F2 UniRef90-Q1G180 UniRef90-U2U8P7
UniRet90_R5PXI8 UniRef90-DoD1P0 UniRef90_-11CC68 UniRef90-UPIO004718DF2 UniRef90_MOQPT6

RLLDSVEG|VS ${ }^{50}$ TEADVALLER ${ }^{60}$ RNREHGDWA ${ }^{70} N$ NTAMKJLAKGT ${ }^{80}$ ALDTLVALPPDLPRDAVEPPRDTTHGDLLACNAAMVLAKGV EVLTSHDADVSKVNVSVEVPREKGHGDYATNLAMVLAAGM
 LISAALEGGVTGVTVILERPKNREHGDYATNGALQLAKKR ALTELAGUAEQVLKDVVEDPPKPEMGDLGDPMFFAKMLRK GLDVSALPETVERPRNPEHGDYATNDALQKKVGV AVRALAPADANLPAVTFERPKAAAHGDLACNVAMQVAKKT AVEALDGGSADLSRDTVEPPRDATHGDLLATNAAMVLAKGQ ALKKU GDNEEINFNVEHPEDFKNGDYSTNVAMICAKKS A पHAVQs $\square K Q Q G V L P S L$ HDAAELPGSDDDLK ALDAMVDLPRGLITDNVEPPRDASHGDMATNAAMVLAKGM A DA VD DEWARTVEPKNREHGDYATNVALKLAKGL ALQAVDLDEWARTTIEPPKEKKFGDMAANUAMVLAKKR VTIEESHVVLERPKNRAHGDWASNAAMQLAKGT TLKGDEGCFADGVVPATEKPAHAEHGDFATNVAMQMAKRK VVKAAYDLPQAELPPAVEMPKDAANGDWASTFAMQCAKRM L LVDQAAQVLPDEVGVQVERPKLADHGDYSSNLAMKLALRR AVFAARGLDASLLPDSVERPRSPEHGDYASNLALQVAKGV AQGKLQGGQPLPAFTVEDPADSSHGDFATNAAMVSAKHS DLI QAGDLPADRRNVTV

SGVLADDPEAVPEKVERPRNRDHGDWATNVAMQLAKRA AAQKAIDKPGTLPEVMLEVPPQKEFGDFATNFAMQRSLHC S EVLRARELDESVLPEVVERPRNPEHGDYATNHALQKRLGV I EQGNLALEPTDLPEKVERPRNRDHGDWASNIAMQLDKGM $K V L T D R G L D V S V L P E T V E R P R N P E H G D Y A S N V A M Q V A K G Q$ KVMNALGVAEGKLEAVVERPADVSHGDFSCNAAMAKALRN ELLAALCNMQPDEMEAFI ETPPQTDLGDYALPCFKLKTMHK LITEADNLGVSDVKVVLERPADKSHGDFAANGAMVKAFRM RIGSLGEDDVPPAVMRPKDRSHGDWASNVAMARKASM ALDALLPADLDRRNVTVEPPRDASHGDLATNAAMVLAKKT TLETLSGLDLANVATVEPPRDPSHGDIATNAAMVLAKKM EIDTKL ALEQTDSTSLDFSRIVVEPPRDPS LLSQTIGVLAEDVSPRINDTKDKSHGDFACNAAMMLAKGM RVLDAHDLDSSVVPETVERPRNPEHGDYSSNUALQVAKGT RLQEDFGCATKAAYPDLESPPQPRFGDYQCNSAMLKAKKV AVADQLRVDVPAEVLVERPKRKEFGDYATNVALQLAKGR VLND LDLEEDDI EMPKDRSNGDYSSNVAMCKKLGK QLNKMAGADUKAESQLSDPPVKEHGDYSTNVALRYAKGK VLAE HGLDSAALPDTVERPRNPEHGDYATNLALQLGKGA ALQTATGKLPEGSYPALEVPPQKEFGDFATNIAMQRVAHR AVVEALGLSEAEASVIVETPPDSKMGDLADPCFFAKALHK VVASVEELVAEKLPHAVERPADTDHGEWTSTVASARLARM AI EQAEGLLPEGLNTAVEPPRDPLHGDMATNAAMVLAKKA


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 KPRDLAEKI AERLRAVDSIDTVDIAGPFLNLIRLDAGVWAR




## A <br> <br> A <br> <br> A <br> K

 A P R A 1





N
N

## $N$ $N$

## 

NPRELAAQNIVDALLAEPDISSSAEIAAGPFINFRLATAARRH N P R E L A Q K V V D A V K A D S L V A A L E I A G P F I N L R L S P E A R A E


## K

## N K N




## N

## A



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\begin{aligned}
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A
\end{array} \\
& N
\end{aligned}
$$

## $N$ $N$

## N

## \section*{A}


 K P R DI A E A L A T R I A S S D P R V V S S A E V A G P F L N L






 NPRELAGWLAQALDDDDGIDSSEVAGPFINLRLAAAAQG



 N P R E L A G WL A E A L A A S D G I A A A D V A G P F V



 Q LP L Q A Q A I IT K I D A N Q Y I D K V T $V$ V

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E\|ART\|VEAGDGFG E ELREI AAQGADYG $N$ L I I T K RA E D Y G $\checkmark \vee E E V L A A G E K W G$ VI AQTIVEAGSLLYG $M \vee A A B L K A G E Q F G$ I IG S L LA A E DS FG EVVREAI ERDEKFG AV H S VLA Q G D A Y G $P \vee V D Q V L A A D D R Y G$ EIVADI L NRRAQFG K I I N D AL E N N K N Y G AV R I I K E E K E Q Y G $E D S D D: L T A G Y Y Y G$ $Q \quad R \mathrm{~N}$ I ACDVEAY $\mathrm{G} \cap \mathrm{V}$ A D I LAA K G E A Y G $G L \vee K A V L T E G L S F G$ $N \mathrm{~L}$ K LI NK L K D D Y G IV A K L E Q GEK F G ELARTIVEAGDTFG V VKNVLDEGGDYG LI L D Q I NE
$S \vee V K A V L D E G K E Y G$
$V$ PRVVWQS GESYG
I DK TVV LA Q GDNF G
$S A Q E V L T Q G E K F G$
$\begin{array}{ll}A V V Q A & A S \\ G E A D A Y G \\ A & A\end{array}$ GELA E L A I A A G G D Y Y

 QVVVS S I L E Q K E TFF G AVL D A A AE GARYG $V L R A V L A D C D R Y G$ A HLAA L I A S GADYG K V K E L E K G D S W G A V L D A I M Q QK G D F G A I L D Q I Q Q Q K E TF G | E | L | A | $R$ | $T$ | $I$ | $V$ | $N$ | $A$ | $A$ | $G$ | $E$ | $Y$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $A$ | $S$ | $V$ | $L$ | $A$ | $S$ | $G$ | $T$ | $D$ | $Y$ | $G$ |  |  | $V \vee A T Q V L Q A G A D Y G$ NTDA II EERGEAF G

 | $Q$ | $V$ | $L$ | $A$ | $I$ | $A$ | $Q$ | Q G S Q Y G |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $V$ | $L$ | $S$ | $E$ | $D$ | $R$ | $A$ | $A \vee \quad R A V E T C G A D Y G$ QFLHAVLQAGDSFG LVLDQVHA

ELARTIVTAGPCYG \begin{tabular}{cc|cc|cccccc}
\hline$I$ \& $V$ \& $A$ \& $G$ \& $V$ \& $L$ \& $E$ \& $A$ \& $G$ \& $D$ <br>
\hline \& $D$ \& $L$ \& Y <br>
\hline

 ELAARTVVEEGAAYG LAA KTAl $A$ ELAR TIVQAAADSYG $D L L A A G L A A A G E N Y G$ Y $\square$ P KI EK E N P D F 

$G$ \& $V$ \& $A$ \& $K$ \& $V$ \& $E$ \& $E$ \& $G A G Y$ <br>
$E$ \& $L$ \& $A$ \& $T$ \& $V$ \& $E$ \& A G G A F G

 $E \vee A A Q V L R A G D S Y G$ A I DT K V L E A A A D Y G 

$T$ \& $V$ \& $G$ \& $E$ \& $V$ \& $S$ \& $S$ \& $G$ \& $S$ \& $D$ \& $Y$ <br>
$A$ \& $G$ <br>
$A$ \& $P$ \& $R$ \& $A$ \& $V$ \& $L$ \& $D$ \& $R$ \& $G$ \& $A$ \& $D$ <br>
$F$ \& $G$
\end{tabular} ET T G K V L T D

$T A B Q V L A B G D D Y G$ | $D$ | $I$ | $I$ | $R$ | $Q$ | $L$ | $T$ | $A$ | $G$ | $S$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $F$ | $G$ |  |  |  |  |  |  |  |  |
| $D$ | $V$ | $D$ | $L$ | $E$ | $R$ | $G$ | $S$ | $S$ | $Y$ | $G$ | $D E L R A V A A A G A D Y G$ AQVK GVLEA GEKFG GVLA D LQAEGETYG R L L A T $\quad 1 \quad$ DS E G T D F G Q V

E L A R T I V Q A G R S Y G QL

IARQ $\quad$ VE A GPRYG
E L K E I I K L E N N Y G

 | $S$ |  |  |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $M$ | $G$ | $E$ | $V$ | $L$ | $R$ | $Q$ | $G$ | $E$ | $\operatorname{A} F \quad G$ T S L A D I L A A G E T Y G TALT Q I NT D

DVLGKALNAEEAYG | $E l$ | $R$ | $A$ | $R$ | $E$ | $Q$ | $E$ | $D$ | $F$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $R$ | $L$ | $K$ | $I$ | $L$ | $E$ | $T$ | $G T$ | $T$ | $F$ | $A$ L PGAVLTQGTDFG

 | D | D | V | S | T | I | L | T | D G A A A A Y |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |



FRRSIAC

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VLT E LVGGEVVS ANVT ${ }^{50} 60$
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70 LKDKDGNAVD LT R DA ERPKVREHGDYATNIALQLAKGM
 $R L Q E D F G L A L I R T S Y P E L E N P P Q P K F G D Y Q C N S A M L K A K C G M$
 AL Q ALVGTLPEFANVTLEPPRDPSHGDLATNAAMVLAKKT A LREGALDPEGE LPQQVILEVPPQKEFGDFATNAAMQRVFHR

 SAGGGMQADGUPTVEPPRDAGHGDMATNAAMVLAKGK




$T \ E A L S$ G E A LDDLSRVA V E P PR DAASHGDVATNAAMVLABKGE LL N DALLKANDEGGTARMERPKDAAHGDFACTTALQKILKK
 VLLS R G L D I A V LP A E V T
 $\bar{A} L$ E E L $\quad$ T L V V

 LI S E E GLDA WP S K


 QLGEA WGEDP A KLLFA GVVDTGKR GY Y D L A A A A P R F A K K G G A D DGRWPAA GAGFSVVEAPRDPKHGDFAVNAAMVLAKGR

 ALLQSAA $\quad$ LETVKV
 AV A A L LPAD D DASRVTVVEPPRDPEHGDMATNAALVLAKGL

$K L P E F V V$ E
 AV E R P K N RAHGD WA TN I A MQLL A K GV CLHDAAGGLDTQAV $\quad$ AVVEPRRDAAHGDMATNAAMVLAKGT



 ENDKVNI EVPADHKNGDFSSNVAMVYAKKM LI E K A A GELPE GDY QR L EVVPKEKDFGEYSTNAAMQRTAHK QI HRALQLLSVE QVYPGVLY GVVKGDFTVAMARFRLGGK
 $V L S S$ R GLDDTGVLDAAVERPRNPEHGDYATNLALQQGKRV

 K V E K P R D E K H G D LA A T N V A F L R E L K R
 ELLDKTLA DNAE LPPLARVERPKSREHGDWATNI ALQQLAKGK A GLDRRNVVAAVEPPRDPA HGDLATNAAMVLAK GT
 $A F D K Q K L A S S D F P A F G I E E P K L S A H G D F S S N F A M V M A Q K M$





 AVF QA H DLD A SLVVPETVERPRNPEHGDYATNIALQQLGKRA

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| UniRef90_V5PWC4 | SVA R A I L T E G A T F G |
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| UniRef90-B8IYS4 | QTVT DI ESAGQAYG |
| UniRef90_D3E0Z3 | QLLDSV DEDYG |
| UniRef90-A1K2E2 | AVVGEVLAK G A D F G |
| UniRef90-E7NY90 | K TL R A V I E Q G K N Y G |
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| UniRef90_F6DAL6 | AVVA Q V H Q Q G P Q F G |
| UniRef90_J6ESV0 | AMLNTINEMGEAYG |
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| UniRef90-B1XPX8 | T L L K E Q Q |
| UniRef90-R6GIT1 | SIINDI L L L K E N Y G |
| UniRef90-H1D0E2 | E $\checkmark \mathrm{L}$ K NIL A A G P S Y G |
| UniRef90-L8WYX6 | Q V L K Q V |
| UniRef90-M1N3Y5 | NTLKKLI IE E G T $\square \mathrm{Y}$ G |
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| UniRef90_IOHHF6 | VLAR DIVLA G S A Y G |
| UniRef90-G6CU24 | HVLS CI L R L G |
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LKMLIE E VT M $\square$ K Q K L DD
 K $\square_{E} \mathrm{~L}$ L


LWK E S I A R FAAHIDA MKEEICK MKEQLQK
 $N$ FA LFEARVRD $\begin{array}{lll}\text { A A } & \text { A N } \\ \text { S A } & \text { E K }\end{array}$



Y L S HVRD
A ALAG
DK\KQGTEA
DEELVRTALAA $L \mathrm{LQQAVTE}$
$L \mathrm{MKQA} A A$

A $\square \mathrm{RA}$
N L F T L F HSHV

MMET $\square$ KSEI KR
MQNLVKE
$\square K Q Q L V Q$
FKSAIAT
ELVRDAAKK
YKAQVTN

 $K L N E L K Q \square S T S A A N F \square I E P P S N R V H G D \square Y$ T N V A A MVLAAKK K
 GGEAPKARPTLERPRQADHGDYATNAALLLAKKA I TRSK S P E H G DYASN $\square$ A L AK A A K S AVGRAVVAEELPAEPMLEDPA DRAHGDWSAN TAALVRAFREL AI DK GLIDPHDEVPEVMI EVPREKGNGDFASTLAMQLAAKM VVQASKGADAAFVLPAI ERPKVAAHGDVACNVALQLAKGA $V L T E \quad R D L D T A A L P A T V E R P R N P E H G D Y A T N L A L L Q V G K G V$

 $\emptyset L R S V L D D P G Q T L D I D T E R P K I A A H G D V A S N V A M Q R A A R R$ AV R GLL P DV P E E TVAARVEVT P D P A H G D M A T N A A L L L A K A A AVSTAVALLKLEKMIVSEVVTTRE EAFGBYASNAAMVLASRD SISKKLSKLAD DLP F VVVDPTKSSEHGDFS SNDAMLLAKRL

REKSHGDDATNMAMQR $\operatorname{L}$ SAKK
L LT R A A S E SVT LTPEVT VER P
ASAAGLLPETVTPSVEDPKDTANGDYTTTLAAAKAMKM ALA QMAGLDTANV TVVEPRDAAHGDMATNAAMVLAKGK LVVEDVF GLLADRKAFPDVDNPPSSKFADYQCNSAMLEKEGA AL H Q ALLELS P GAGSK AVESSPKVAA HGDLATTAAMQQLAKKL AL R SF DS SWE HVEFVVE PT REKKHGDFATNVAF LRDAK R $R \quad R R V A G A E V E L D L V K L E R P K D R E H G D W A S N I A M A K P F G Q$


 GLEQLLPGAADKA AFESPKVAAHGDDACTAAMQLAKKQ $\square L K Q S L N L E N E L E S A D D H T K D K T Q G D F A S N D A M V L A K R S$
 I DFDRI TVVEPRDASHGDVATNAAMVLAKGT
 AKASLD
 ALV VA F GEDYA ET DPLVVVPAAKPEFGDYQSNVALSGLAKKQ K DA G VI N CLIPE Q I I L D R P K N R D H G D Y A T S V A L T L A K VA CLK D AVVEIDVEELPEVRV ERPKSRDHGDWATNDALQLSKGM LI A H E A GILPSSAEFPPVVEAPKDPAHGOFSTNMAMVMAQKM A L Q K
$V L Q E A A G D D V A B A E L L A$ P P R D P A H G DL A T N A A MVLA K G T
 CLD QLA GLLPTDNVA AVEPPRDAGHGDMATNAAMVLAKGV SLEEVIGKKLAPEWE GKI EFTPNPEMGDFGTAVALARILRR
 $M L Q K V T D D D T Y E L T R L L E T P P S V A M G D L A F P C F T L J K S W R R$ $A L I D R A V L P Q G A A L P A I E E P P E K E L G D F A T N F A M Q R V F R Q$ $V$ EPPRDASHGDVATNAAMVLAKGM L EVPREAQF GDYATNDAMQLPAHM E L K N L F E VA $\square$ T N A Y P DL E NP PNPKF GDYQCNSAMAIIA QK T A I QDLK WEEPPED KFEVPPNPNMGDLATSVAFQLAQKK ALVAAFGDELAATDPLVAATNNPKFGDYQSNVALSLPKKQ
 QLVD VFS L S $\square H K$ AFPTLADPP QEKF GDYQCNSAML KAQGK ALAAAFGDEFADTDPLVAPTNNPQFGDYQANVAMSLAKKQ
 ALRRRIVPDLPDEVAARVVATADPAHGDMATNAALLAAARR ELEKLS PGSAGRAAFESPKVAAHGDFACTAAMQLAKK L
 AQREGSSLVAVTLLPEVVIEHPQNPEHGDFALDPLKMARTAK H $\square$ A P L T GLLE Q DE V L R R L L E E A LQA SVDAE LVSLLTVPAVVERPRSRDHGDWATNVVAMVVVAKGM LAVIDGGLVASGTLPAFESPKVAAHGDFACTAAMQLAKK L


 TI E GIVVREMAPDWSEDI QFTPSPELGDFGTPVALARLLRK FI EKVLL ETNVVLEKPKDVSLGHYATPVAFSUAKKK $A V Q A A D D L P S A G L V A N L E D P K V A A M G D F A D T A A M Q L A K G K$

 S L L S V L N L S S A EVVYEK L E QP K T Q A M G D LA F P AF AL KV L H K QLAAEGELPEDVSRDSVEPPRDPSHGDISTNAALVLSKKM $A L D A L V G L D R G A I$

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 N P DE I A E V L A K E F E L F D D EVVA K V E I A G G F I N M H L K DE V W M

 P P R K I A E LLI T K H L V L D G Y F F D R F E I



 K P R E L A D V L V A A L P A S DA: Q K TAEDA GPFIINFFAAAABAAAQ NPRKI A KVIVVDSLNDDGLI EKVDDIA GPFI NFFDAREGVWR


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## K

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VLNEVLNKKENYG AVLDAIQAQGERYG SVLPAVLKAGERYG
IVAQALDSGDAFG SFAEDERLGERYG EVLVANSKDKF QV DSILVAGDSY
 QVGELLNRG
 LA KTIVDAGAEY QILDTIDDRNENY DELAAI PQAGGDYG KLLKQVVKE
QVVREVLAAGEGFG II IEQIINQAEHYG RLLASUGGAGDDYG AVVRDALEAPEAFG RLLAAMI GAGTDFG QVVREVLAAGSAFG AVVNSVLENPETYG TV SVIQEAGQSYG GVVQAALENGAAFG NLLQTIAQD VVI EVLTAGKKYG ELARSIVEAGRTYG PVLDAVHAADGRYG TVL DVAGSGDRYG ELL GLISALLGADYG I LKKVLHE GVVKAVLSDAGFG

SFLSVIDDQGNNFG TLLEQSKE EHY T RAV $\square A A G E G F G$ K LAAATRAGVDYG VIGEI EAKGADYG HVLSSILKSG MVLESUNN DYG L
LVVED】IKQGGNYG
KI I E
SILSTADREG
QL
SIMNTILYEVNHYG QLAQVIVETGAEYG SVPAVLGAGESYG EVVREVLSAGERFG GVVE
$T \square K S V L E Q G V C Y G$
ATLDVARKEGMDF QVEFVSAAGESYG KLLQE
PVVDQVLNQDATFG
ELARTIVDAGTAYG
ETVREVLQAGTAYG DVLGAVETERDNYG LMLAE $\qquad$
 SVVSD:LLRKEKFG SLVDDALSNKENF QVVGEVLAAGVGFG ETVLTVFEEKERYG ETLMDIRKKGSDYG $\square \vee A A E I V D A G A A Y G$ ENLN
$L$
$D$
$D$
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 AVKQKYNVELENVHVRLEHPENEKWGDYATNVAMELAKKQ AVQRAPDADPKQVDQAVETPPDTGKGDLAFPMFFAKILRA
 AVGALVGGGTDADPTVEPPRDPGHGDMATNAAMVLAAGR
 AVKADEGGETDSRVAVEPPNDELGDFGTAVSLARVFRK AVEGLDGGAETARVNVEPR AVEGLDGGALETARVNVEPPRDPSHGDIATNAAMVI AKGE QLSRVLALPPESLIKSISVSKKEEVADFQLSVDSLLEDNV LQQSGEMPTDEVETKVENAKDPSHGDYATNLALVLAKRQ ETELPSFIVEDPSDDKNGDVACNLAMARAFHK CLKDAVSDTESAVPDAVERPKNRDHGDWATNNALQLSKGM
 A VLEKNKDVFKGHFATPAAFSLAKKK Y-K KAYPDLENPPLAVTPSQQPKFGDYQCNSAMSII TKKV AlEGVFG SINFSVEHPANEDMGDYASNIAMVMAKGK ALGOALKAPDSGVAAVFESPKVAAHGDFASTAAMOLAKKK ALGQALKAPDSGVAAVFERSNQNEKFGDYDCNAAMQLLKGGL SFPEA QVSRSDTYGGLTETPNLKMGHFAFACFPLKALKQ ELLAADAGELDKLSPAFESPKVAAHGDFACTAAMQLAKKL AVEAAARTLGADIEAVIQETPPGKPGDYGTPAAFLLAKRG AFPSVDGVAV ALT ALETVNNYPDKDTKPLEATNAKGDYQCNAAMLKALGM ALAPTLAGTEVAANVVERPRNPEHGDYATNDALQLGKGV AFPOVC GTADVTVLRPRDPSGDVACNAMQLAKKM LLDTA $\square G$ GEGSVPEYTIEVPNNSEHGDFAANAAMARIFRT LLTQAANEAQQQSEVTVERPQNPEHGDYALPAKLARATGD ALESVLGYSVSNFV
 PKPEL

## ALPQGLALDA

VAVEPPRDAAHGDMATNVAMQLAKRS ALRRGLGLEVA PVDAVDRPSAREGVDYQCNAAMSLAKGK REAGELKLTTDDFTVKLEMPPSKQFGDYSSNLLALTLRKSA GVVAVGGVDQAVERIVVERPRPGGRGDYATNAALQUAKGR QLSQVLDLPPENLLKSIS STRKQEVADFQLSLRSVLESTS LIESAVNVPSNEIEIILEKPKMKLYGDISTNNAMRIIKKK LYPAAFGEELKPLELLSDATNENFGDFQCNFAMMKIIRE A DAAFGEDLAGTDPMLVLASNPKFGDYQCNAAMS|LTKGK CELSVPVPAVQPPPRPGCGDYASNVALQLAKGR VRDAVANGELDVAVPAVERPRQPEHGDYASPVALQLAKRR ALDALIGLD SMPEIPVERSRGADHGDFASTVALVLAKGV ILEDAI RAAVAAGELAI EVPKTPEHGD DATPIALGLAKRM ALAAALGAEYAGVDPILVTASNPKFGDYQANVALPLAKGK ALRTALDVEITAEQALIRPSAAGRGDYQCNAAMSLAKGR ALHAAG APEGSPATVKPSGKPQFGDYQANGVMAKALKM QVGQEDGVSQESVYKATEYPSDPVFGDLSTTLALAKALRQ RVKSAAGIPADY SPHLAVSKKAGFGDYQANGAMAKALKT AVENTYPKILSDNEDKVEYPKNEDYGDLSSNVSVIIAKKK ALGRLVNVPAEPLPPQVTVPADNSHGDFSANTALVKALRS A■ATAFPQVCQDVPAVITVSSSAKFGDYQCNNAMQKLKKT

> AGLDRSAV SVEPPRDAAHGDVATNAAMVLAKGM KVRAAMTAAPDDCQPMVAAAKKAGFGDYQANGAMAKKMGT VERPRNPEHGDYATNLALQVAKGT QLSPDTGCEDEDVLKMLEDPKKPKSADTTDQLAKMY ALEALLQEWPEIVVQ ETPPDKE GDYGTPVAMARTLRK IDCKI KIVEKKILRIVIERPRDCAHGHLSTNAAMDRPLGL ALNEFINPDAEAVAPVVQNAPNPEMGDLGAPMFAFKALRM KI SQAVGCDA
$M L N K A G V S E V S F T L V Q S A K P Q F G D Y Q A N M A A A K K M G K$
MPEKEEHGOACNAAMQLVLKK MLNKA GVSEEVSFTLV DPEKEEHGDFACNAAMQLVLKK VLMELGAGAADFV LLEWPKKEEFGDLSTPMAMSDAKGK QLSRVLNLPPENLTKSI SVSKKRPVADFQFFVGSVSSDRS VLERGLDTSALIPAVVTVERPRNPEHGDYATNVALQVAKGV LLRDKFNADV ALQEAMMGVENAPVPVSRSARPEFGEYQFNGAMALAKKQ ALVAMSVDPAKDDDYVAMVKNADHGDYQANMSMALSKGK UniRef90 S3ZR.j9

## UniRef90_V5WG58 UniRef90_E6LAB5 UniRef90 L0EVS1 UniRef90_Q2CHV3 UniRef90_UPI0004791C19 UniRef90-UPI0003C110CE UniRef90-W8KH33 UniRef90-V7IFY4

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UniRef90_T1IQB8 UniRef90-T0RWS2 UniRef90_F0Q599 UniRef90_E8U948
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UniRef90 Q1GU18 UniRef90_UPIO00373E107 UniRef90_M1P6B5 UniRef90_S7XRE4 UniRef90_D3PLZ6 UniRef90_UPI0003B359F8 UniRef90_UPI000465093E UniRef90_V2QI70


| UniRef90_V5WG58 | QTUTRULQQEGDTYG |
| :---: | :---: |
| UniRef90-E6LAB5 | T LAKKALKQPDEFG |
| UniRef90-L0EVS1 | V LD SII L E G K D G |
| UniRef90-Q2CHV3 | DLVRQVL RDDSYG |
| UniRef90_UPI0004791C19 | TA T Q I L E |
| UniRef90-UPI0003C110CE | $R L L A D M \\| G Q G \square D F G$ |
| UniRef90_W8KH33 |  |
| UniRef90_V7IFY4 | Q V |
| UniRef90-UPI000258 | TTLS N LV K |
| UniRef90-K2DPP9 | VLYLI LAAPPEDYG |
| UniRef90-F2NUI6 | GI L A S I V S Q GENYG |
| UniRef90-UPI0004758F02 | QVVNAVLSDPEAFG |
| UniRef90_UPI000346BD66 |  |
| UniRef90_S9R1S9 | GVLR A V L E D P G Y G |
| UniRef90_I2K5Z1 |  |
| UniRef90-D0RP12 | G |
| UniRef90-IOHY46 | AVVAEVLQ G G G F G |
| UniRef90-G0HMJ4 | ELVREILEKKNAYG |
| UniRef90-Q11HB8 | RL GEMLLLAG DYG |
| UniRef90_UPI00047C4AC2 | Q LKLMASETVEYG |
| UniRef90-Q3U186 | AVLQQVTEDGCKYG |
| UniRef90-G1KQM3 | TVLQQVFDDGPQYG |
| UniRef90_UPI0003F9FAD8 | LIISEI |
| UniRef90-J9D1D8 | $\vee \vee T G A \quad S S$ |
| UniRef90-A1R7X2 | LA KAlVEAGASYG |
| UniRef90-F2KNI6 | DTIN YI LDS D E E Y G |
| UniRef90_A9AWK6 | SVLHD $\sqrt{\text { S Q K K A Y G }}$ |
| UniRef90_UPI0002557B2D |  |
| UniRef90-UPIO004671417 | V IK GVLEEKNNFG |
| UniRef90_UPI0004637656 | KLANVA |
| UniRef90-M7AK35 |  |
| UniRef90-A9WNA7 | LA K N V H A G S Y G |
| UniRef90_K2AT18 | GLAEML |
| UniRef90-Q123B6 | QVVREVLQGADQYG |
| UniRef90-T1ISB88 | Q RL H G |
| UniRef90_TORWS2 | Y |
| UniRef90-F0Q599 | EIVREVLAAGDRFG |
| UniRef90-E8U948 | S |
| UniRef90_G8XG65 | ALARE 1 VLA G D P Y G |
| UniRef90-A0A016RS8 | Q DG T I A |
| UniRef90_U7VBD4 | V K K I |
| UniRef90-G7CGA4 | AIVATVLRQGARYG |
| UniRef90-L9PM88 | VVKAV $V$ A Q GAAF G |
| UniRef90-B0W0R1 | A |
| UniRef90_D4H768 |  |
| UniRef90-X1W2E1 | QV DS L R A D A |
| UniRef90_N0BJA5 | AV NTILDEDEDYG |
| UniRef90_G8QXT0 | ELSTE ASRKEAYG |
| UniRef90_UPI00034A05B2 | A V VAEV $\mathrm{D}^{\text {A A P E S F G }}$ |
| UniRef90_A3V6H6 | V S AL |
| UniRef90-UPI0003FA2939 |  |
| UniRef90_S0ET34 | TLLR I E ELGRDYG |
| UniRef90-UPI0003648E0A | ALVEDI RRLGPAYG |
| UniRef90-F7G9W7 | TVLQQVFEDDSKYG |
| UniRef90-LOB521 | DEI ELLYRDKYG |
| UniRef90-UPI0003AAAEC7 |  |
| UniRef90-D8G3Q3 | E V |
| UniRef90_Q6MEP4 | NL DILLRDAHFG |
| UniRef90-UPI0003819234 | LV REVL |
| UniRef90_UPI000371A468 |  |
| UniRef90-UPI00047172D2 | V RRLL |
| UniRef90-UPI0003B4FCE8 | G |
| UniRef90-K9U7Y4 | QL |
| UniRef90_W5WG66 |  |
| UniRef90-Q2SMY0 | S LR Q V |
| UniRef90-O59147 | ILINDILAK G D R F G |
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| UniRef90-A4YHG8 | EVFSSM DQDYG |
| UniRef90-Q21140 | Q TV |
| UniRef90-B3SEK6 | K F L K K LVN |
| UniRef90-R5GUF5 | $\mathrm{G} V \mathrm{~V}$ R A AVA M G G D Y G |
| UniRef90-Q17PZ4 | A I MS 1 L K D |
| UniRef90-U5QMA7 | EV GQILALGAEYG |
| UniRef90-Q1GU18 | E ELALI HDLRGDYG |
| UniRef90-UPI000373E107 | Q T |
| UniRef90_M1P6B5 | I V A R I L A A G G S F G |
| UniRef90-S7XRE4 | SIIK D I L |
| UniRef90_D3PLZ6 |  |
| UniRef90-C6XHL5 | K I L S S V V S G IE Y G |
| UniRef90_UPI0003B359F8 | P \\| L K A VKEQG DNYG |
| UniRef90-UPI000465093E |  |
| UniRef90-V2Q170 | TVMD $\square 1 \mathrm{~N}$ NKK |
| UniRef90-UPI00037BCA9B | EKIT EANKLGDAWG |
| UniRef90-H0A9J6 | K 1 DNELNS EAFG |
| UniRef90_C6HWB7 | F L VQ |
| UniRef90-UPIO0042BE095 | TVLQQVFKDGSEYG |
| UniRef90-B1MLU2 | TIVANILKAGETYG |
| UniRef90-E4TXZ7 | EYASWALSHGDEFG |
| UniRef90_B4RU34 |  |
| UniRef90-UPI000308C662 | Q $\quad$ LQ |
| UniRef90-F4LJ77 | AlL GRVAA Q N A S Y G |
| UniRef90_S3ZRJ9 | L V Q K V L |

VADLERSALN $N \square L A$ L VI R R A V VAA NIQS LISDKDKH MKVISKELTD
 11 DVT T QAll NA $\mathrm{N} \square \mathrm{Q} Q \square \mathrm{~L} \mathrm{~S} \mathrm{D} \square \mathrm{K} \mathrm{Q}$

$M \square E T \square K T D R H$ $M N\|R Q\| V E K$ V A A
$\square I E S \square E Q A V N K$


P L E Y L R R S V I E
$N \square S E \square L Q A R A T D$
QT円AT
MK QKVA G
NVFNWlTKYEIK K AAEKSNDKASTDDSTRESSUDE VDVLGRVKREIAS

TA I IQQQ $\prod_{F} K E \underset{F}{K} \mathrm{R}_{\mathrm{F}} \mathrm{F}$ K
NVEDLKKSVTN
NIHNLLSARFSH

L VRQLI IE $\square A \mathrm{Q} L \mathrm{RDK} \mathrm{K}, \mathrm{S}$ EQLK LLKLTM MFRAFYK $\square R Q R \square A A$
$N \square F S N A \prod E A$ MKKKICQ $\square K$ QLLSD

K K Q L L A
$E Q L K M K$

ETVRQAVKT D IFREAI
$N \square \mathrm{QALLS} \mathrm{DK} \mathrm{V} T \mathrm{Q}$ GSVKQQLISN
 $N L S A L L R K R F H A$
$M R R Y L F A$
$T$ 1QQDTMD
$D R L R N E L G D$

TTSVLSDLK $\quad$ R CSK



N $\square$ Q A F L S E K $\square$ S M
N I I K T Q Q SFlE
I L ELLLEARLVA

UniRef90_L1JIY9 UniRef90-M9SCU8 UniRef90-A8J387 UniRef90-A4C6X3 UniRef90-S6EEN9 UniRef90-G6C4L6 UniRef90 ${ }^{-}$C4GIG7 UniRef90_UPIO003679512 UniRef90-UPIOOO409A809 UniRef90-R607F4
UniRef90-K8EIQ7 UniRef90-B3GZM9 UniRef90-UPIOO047E8832 UniRef90-UPIO0035A026F UniRef90-H5UWS8 UniRef90-B6B195 UniRef90-UPIO004713425 UniRef90-U1MCC4 UniRef90-W7IVT3 UniRef90-G4HHX9 UniRef90_UPI0001746B16 UniRef90 A4EHK7 UniRef90-V9HLT1 UniRef90-UPI00034B4A50 UniRef90 H9UKA2 UniRef90 D8P192 UniRef90-M1VEG3 UniRef90-W7VU99 UniRef90_Q7X398 UniRef90-K9SMN1 UniRef90-19W9V8 UniRef90-B9L8B8 UniRet90-K7YNQ0 UniRef90-W0FYJ9 UniRef90-UPI0003B648BD UniRef90_Q6FOR1 UniRef90 - 2 CCBF
UniRef90
VgGCMO UniRef90-X1TUM8 UniRef90-C5ZVN9 UniRef90-BOJLI8 UniRef90-UPI000475F11B UniRef90-Q83GE9 UniRef90-K6ZDY9 UniRef90-S3XMN1 UniRef90-UP100034CCD13 UniRef90-F812D3
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UniRet90 U4UK14 UniRef90-R7BJM8 UniRef90-D1Z229 UniRef90-UPIOOO37A2210 UniRef90-N9TUE4 UniRet90_SODG66 UniRef90_O72CN5
UniRef90 K9V5G7 UniRef90-B5Y8А2 UniRef90-F2NM42 UniRef90-K4KPG3 UniRef90-G2LHQ5 UniRef90_E2C789 UniRef90-HOW382 UniRef90-B5GL74 UniRef90-G9Y2B9 UniRef90_E3BD76 UniRef90-M8A1H6 UniRef90-M9R7W4 UniRef90—D3SP48 UniRef90-F8L2M9 UniRet90_X1CU08 UniRef90-13EJX4 UniRef90-UPIO00468BC0F UniRet90-L8MUII UniRef90-G8AQT9 UniRef90-F6CT9 UniRef90-UPIO0029A4E75 UniRef90-E6Q5C4 UniRef90-R7LWP5 UniRef90-B4ETN5 UniRef90-UPI000467BCA2 UniRef90-X0UA60 UniRef90-UPIIOOO3828106 UniRef9O_UPIOOO465EA67

A $\square$ AQAFP\| $\mathrm{V}^{50}$ ES $\square \mathrm{DEKSIVQA} \mathrm{T}^{60}$ SDAKHGDYQCNSAMADHKPK ${ }^{80}$ PDNADLATPCFTLKALRM TAYPNAGDEPVVAACNNAKNGDYQCNNAMAKLKGK MVAAGLAYPNAGDNPAVTQSTRAQFGDYQTNGAMAKKLKA VLTE WTDADSSVIEMLKASQDAKFGDYQANFAMARIPDL AMLQA GAD EQCEALVRQSNKPQFGDYQANMAAAKKLGL AQLSGCP ALQP ShKALKDKAPPKSKDNVEYPKHKNHGDYASNIALNLAKGL LLAAAVGTLPAELSPRIQRPRDKSHGDFATNLALMLAKGM AVKKLNQMKQEDVFTLAETPKNEEFGDFAVNVSSLRYSKM PEDDLPEASRTRDLGKADFTVQWSRFCAKRK AM $\square A A G A D S N V E P L R Q S G K P F G D Y Q A N G A M A K K \square G M$ AF PEDPNPVVQVAPSAKFADYQCNSAMVKGTKS ALD DAAGAPADCEPQVRQSAKAQFGDYQANGVMAKKLGM LLKNDLNTE EVVLEKPKDRTFGHFATPGAFSLAKRK AVAAAAGL PEDTNPAVTQSTRPQFGDYQUNGAMAKKLKT ALRRGLGVEDTPAEAVI RPSTRDGVDYQCNAAMSLAKGK VCQSFGTKLPDSVQVRIEQPASMEHGDYATNAAMQLAKRK GTLPADLATAAVSVEPPRDASHGDMATNAAMVLAKKM Q DEQAFAVA】SGSPIVLQSPKDAKHGDFQUNGVMGAAKGQ AAAEA GVDQDSTQVIVSLPPSSDLGDLAFPMFPLRGFRS MLEAPKRPEWGDVSCTVAMSLSERR VLSKEYGALPEEVVPMVVFSSRPEFGDFQCNVAMARQLKS SLKKLLKSDAPLAE IVQSTHPQFGHYQCNSAMELAKKT ALVRAFGEEFAEYDPAVMAAKD DRFGDYQCNAALGLAKKR LLFANAVNVAPDAPAPAIERPKAAAHGDVACNTALQLAKKT KFKDHLGE CLRSLAKWPEK LPFDRIEPPRDASNGDTATNAAMVLAKG\| VLTELFYNADSTAFPDVADPPNPKFGDYQCNSAMPLAKKV
RFAAAVGSDPE RFAAAVGSDPE P QLAPQLGVQVERLIA $\stackrel{\mathrm{P}}{\mathrm{A}}$ PAS $\frac{\mathrm{P}}{\mathrm{V}} \mathrm{P}$ RME Y SVDETGG VLEQ
LVA
TVA AL PNAPPDGF IVHSMYNFDCSEIV STRPRDAHGDINTNAALVLAKRT AI GMYNFDCSELVSLRPPKPEYGDWALSLDLVKLALLK A AQAMGDDDARIP LSRSTRPDFGEYQFNGAMALAKKQ PAVTQSTRPQFGDYQINGAMAKKLKT RL EAEGFPGLGE WVEVDVPTEKGHGDLTSSFAMARYTKL AVSAVAG DGEIVGADLVSQNPKFGDYQCNVSMARGEKV ALKNKSHLNLNNTDNSLVITP NPKFGDYQANVALSLSKGK EVKKLLNCEDKY LNVTKDPTRGDFATNVAFRLLAKRQ AFQQSLDAAPSMAEPAIVNPNNPKFGDYQCNNAMGKLKGK LEWPKKEEFGDLUTPDLAMGLSKGK
ACPDTRNTPPVDTALS YLSNVLEMSEEELLKLVEDPPEEKMGDLAVPCFMAKKMRK LLSEARSLMEKAVAGAGYSSPDSAHADVSSALPFRLGKKK RLAAFTALLPEGTNPAVTQSTRPEFGEYQDNGAMAKSLKT SINEA LDKLK DNKTVVLTEAKNYGDYSTNIALQKELGK A पQD VVMGLAWPEKAIQPASRPEHGDYQANMAAAKSRKLL AMGTAFGAEYAEADPMLMTTNNPKFGDYQSNVSLSLAKGQ STQKVFGLSTEDMPALIQFTPDDTMGDYAVPI GFVLAKRT ALQALGVEDPPEV VVQETPPDKPGDYGTPLALARALRK AAMSAVGGPADCP PAVAPAKKAGFGDYQDNGAMGAAKRM HLAYPDISDPPVIVTTSNNLKFGDYQCNSAMPLAQHL HLSRVLDGPPEKLIKSVS SSKKEK DGDFQLFVDDSLHSRS ALVAAG APANSEALVRQSAKAQFGDYQANGVMAKKLGD AI ASALGDEWRDADPVI RPANKKQADVQVNAAMALAKGK ALSRRATVPEVDVEPIVEVCTGKFGDYQCNNAMSKVKGK CLNVLTGVLPDFANVTVEPPRDATHGDMATNAAMVLAKGLD A KIREIVEYKTEVEEFQVEPPRQEELGDLLATNVAFILSKRR L KQEYGVEKITLW SISKPHDTNLGDISFPLFSTKETGK II SKSCGLEVERVNKALMRSKTMKNGDFIVPFSQLTRDEA A) AAAFGEAYDNYDPAVAPSKDAKFGDYQCNAALGLTKKQ LLDELAGLDTARDTVEPPREAAHGDLSTNAAMILAKGK
 VEAPRRPEFGDFATNALAKAARS AMSAAG APADSEPLVRQSAKVQFGDYQANGVMGAAKKM PADCEPQVRQSAKAQFGDYQANMAVAKKLGM YLQKTFATDEQLAGKSLNDPLKQQFGDLSTNAAMVLAKQK ALERAQDEVPEGFPDKVVPAQDVRHGDYQANAAMALAKRM


| UniRef90 L1JIY9 | S FAKKLLKNG |
| :---: | :---: |
| UniRef90-M9SCU8 | DVLEEISSRKEDFG |
| UniRef90-A8J387 | RVV |
| UniRef90-A4C6X3 | QLVA A NQDEK |
| UniRef90-A6BZY9 | QTQNLVADER |
| UniRef90_S6EEN9 | NV |
| UniRef90-G6C4L6 | S I KK $\square$ GEA |
| UniRef90_C4GIG7 |  |
| UniRef90_UPI0003679512 | LKLQD K N K L G $\quad$ K F G |
| UniRef90-UPI000409A809 |  |
| UniRef90-R6Q7F4 | TIVKD\INDKHDYG |
| UniRef90-K8EIQ7 | LAINAIIE Q G T K Y G |
| UniRef90-B3GZM9 |  |
| UniRef90-UPI00047E8832 | $N \mathrm{LV} \mathrm{H} A$ |
| UniRef90_UPI00035A026F |  |
| UniRef90-H5UWS8 | L V E S A VLN ER |
| UniRef90_B6BI95 |  |
| UniRef90_UPI0004713425 | R V L C K H K E K S N G |
| UniRef90-U1MCC4 |  |
| UniRef90_W7IVT3 |  |
| UniRef90-G4HHX9 |  |
| UniRef90_UPI0001746B16 | ALSSLITTDER |
| UniRef90-A4EHK7 | G V V K A A L S D P A Y G |
| UniRef90_V9HLT1 |  |
| UniRef90_UPI00034B4A50 | V V S A V LQQ A A Y G |
| UniRef90-H9UKA2 | LI AS DLTSAPEKFG |
| UniRef90-D8P192 | DVLREIEA Q G R Y G |
| UniRef90_M1VEG3 | SVI RQMMS D |
| UniRef90_W7VU99 | Q V , EVLAS G T DF G |
| UniRef90_Q7X398 | EL |
| UniRef90-K9SMN1 |  |
| UniRef90_19W9V8 |  |
| UniRef90_B9L8B8 | EFANKVL |
| UniRef90_K7YNQ0 | Q I SKILELGQDFG |
| UniRef90_W0FYJ9 | K LMTLFDHG |
| UniRef90_UPI0003B648BD |  |
| UniRef90-Q6F0R1 | T T I K N I T T L K E A Y G |
| UniRef90-H2C8F4 | EIFSSI GEDYG |
| UniRef90_V9GCM0 |  |
| UniRef90_X1TUM8 | QL L E |
| UniRef90_C5ZVN9 |  |
| UniRef90-B0JLI8 |  |
| UniRef90_UPI000475F11B | D R L A D I L A A G T D Y G |
| UniRef90-Q83GE9 | G IIS EVLEQGS S F G |
| UniRef90-K6ZDY9 |  |
| UniRef90-S3XMN1 | T V T A Q |
| UniRef90_UPI00034CCD13 | S V |
| UniRef90-F812D3 | VVNLVRANPATYG |
| UniRef90-A6DMD4 | Y AI T ML R D ER |
| UniRef90_Q9K5M5 |  |
| UniRef90_UPI0003B66F6C | N IKKLLENNQKY G |
| UniRef90-D3S057 | TVERILDEDENYG |
| UniRef90_UPI00047B554C | EALPKI |
| UniRef90-UPI0003B34B94 | LLL DVHQKDRKYG |
| UniRef90-E1ZM20 | H T T MLR Q G |
| UniRef90-T0XTQ8 | FLEETI |
| UniRef90-U4UK14 | A $\square$ S S |
| UniRef90-R7BJM8 |  |
| UniRef90-D1Z229 | S L G DIL $\quad$ K K G |
| UniRef90-UPI00037A2210 |  |
| UniRef90-N9TUE4 | TV NLVNEDGSEYG |
| UniRef90-S0DG66 | WVTQALHDS |
| UniRef90-Q72CN5 | TI $\square$ RA QEAGSAFG |
| UniRef90-K9V5G7 | QL |
| UniRef90-B5Y8A2 |  |
| UniRef90-F2NM42 | A |
| UniRef90_K4KPG3 | Q T |
| UniRef90_G2LHQ5 |  |
| UniRef90-E2C789 | Y T L N S WLK K G D |
| UniRef90-H0W382 | AVLQQVIEDGSKYG |
| UniRef90-B5GL74 | LV R RVLEQGPAYG |
| UniRef90_G9Y2B9 | QV EI ALADERLG |
| UniRef90-E3BD76 | QA STILADGS |
| UniRef90_M8A1H6 |  |
| UniRef90_M9R7W4 | G V V R A V LT D G D F G |
| UniRef90-M5UKI6 | T I VEMI GDER |
| UniRef90-D3SP48 | EMTKQILQEGESF |
| UniRef90-F8L2M9 | K L L R |
| UniRef90-X1CU08 | NLMKFILNE |
| UniRef90-13EJX4 | ELVIDDILTKKGEYG |
| UniRef90_UPI000468BC0F | Y ATFA】MNEKD |
| UniRef90-L8MUI6 |  |
| UniRef90-G8AQT9 |  |
| UniRef90-F6CT91 | E L V |
| UniRef90_UPI00029A4E75 |  |
| UniRef90-E6Q5C4 | RVVERALHEGARYG |
| UniRef90-R7LWP5 | LV DEIFEKNKDFG |
| UniRef90_B4ETN5 |  |
| UniRef90_UPI000467BCA2 | R V |
| UniRef90-X0UA60 | LA QELFEQKENF |
| UniRef90_UPIO00382B106 | K V |




DETERQVRK EVPPFLPYAG AVTPADLSRTVL H

TRNLLSD N QL E Q S V D N

TEDA E

| $\mathrm{T} E \prod \begin{aligned} & \mathrm{A} \\ & \mathrm{~K} \end{aligned}$ |
| :---: |
| S T S VY S R Y R A A FA |
| MYREY |
| N P I R SVK E E |
| $N \square Y \mathrm{~K} \square \mathrm{Y} \mathrm{F}$ G |
| F K S EVES |
| M K |
| LD K I K S Al |
| NIQALLSEKV |
| VIE D Y G S S |
|  |
|  |
|  |

MYRTQRQA
QFRSEVEA
F R R S $\square \mathrm{AC}$
$\begin{array}{lll}Y \\ Y & \mathrm{~L} & \mathrm{E} \\ \mathrm{I} & \mathrm{N}\end{array}$
$S \square D P \square K P F R D E V E S$
FRRVIAE
ADPQTVLARRVQS $N \square Q A \square L N D E \square K K$ QALIND
| F EQAl VKK $\square \mathrm{KLFRQAVRA}$ MNTYKLY FNH DLLTS Y LAA S


MKTFDOTS NTQALLSNKIN D EDNLKASSKKSLFTGQ

$\begin{array}{r}\square C R E A \\ \hline\end{array}$
FRTEVKS

## UniRef90 Q7N565 UniRef90-W4U869 UniRef90-V9TT68 UniRef90_B1AIR8 UniRef90_C1F3Q4 UniRef90 Q4QL12 UniRef90-A9F5R2 UniRef90_D3UG69 UniRef90-G2DSM7 UniRef90 U7DBJ9 UniRef90-K9RVM5

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UniRef90-M4YUNO
UniRef90-R6RIG8
UniRef90-U6IMV7
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ALL $\square$ AAGAPADSEAHI RQSAKAQFGDYQANMAAAKKVGM RIESAlGVDPQ LRPATKPQFGHFQSNVALRLAKKR

 ELELYPQLLDPSTAILKVEQPPPESKFGDYALPLALARALRK
 T IKKLLEDALDVRDDTLEMPKNKDFGHYATPDAFTGAKKK VLQSAFGLGYDAAYARTVRSNRPDLCQFQCNGAMAKKVGK VL GDQVALPDVVVGPA $S Q P Q F G D Y Q S N V C L V L G K K Q$ KV HQAAGLPAEHGGPHDADSKQAQFGDYQANLGAAKQLKT SVSKLYP EMSTIPILITEAQQVKFGDYQFNSSMQKLLRN ELLALSSNDKLDKINIVMQKPPKSEMGDLSQLIFEFKILKLC


 LLDETGTPWPAGDKVLVDKPAHPEHGEYSTNVAMLLAKKK AVRRAVDEDALRAPVRVERTRPGGSGDYACAVALQLAGPA AAAAQLGAPDTDAAI QETPPSKAGDYGTPAAFLKALBG YVT QAA GLLPAEC QAHVAASKKAGFGDYQANGAMAKIAKA $V V N S L G G A C A E P A A V L L E Q P P N A D F G D Y S S N D A M Q L A K R K$ KVSQUAAGAPADCEPQVRQSAKVQFGDYQANMAVAKKLGM
 $L L E R V L$ QTEVILEHPKDRSLGHYASVVAFPLAKKK ALANALGVPAADDEAQV KPAEPAHGDLSFATFPDKAQKK LLREATGLE
 AI NSFFDITKSURKLTLEPPKDDNHGDMSTNMAMILSKKQ
 II DKMLNKSYEYVNYS: DYPPEAVFGDYSTNGAMVLAKKQ AL
 $D L A V S I E Q P R Q S D F G E \square A V P A A F Q L A K R Q$
 $V$ S ANTKQGFGDYSSNDA LILAAK GQ LLT K MEQVLKDKANDATEQPPTDALGEDATPVAFELAKRK AL A DALGLDLPTDDLGMERPPDDMDATLASSVAFRLAGGA Q LS RVLDLPPENLITKSUS DSRKEEVADFQLSVDSLLHSRP VLKEAFACEYDENFAKVTVSNRPDLCEYQCNGAMAAAKRK ALEKLLTVKSFDLFGS KNPKFGDLSTNVALILAKGR ALVSTFDLA DK KAFPV VTPSTSPKFGDYQCNNALSLCKK ATKAAFQAMGADVRFEDEVPATG VADFAVPCFPDKALRK AFPNLEDWAPEI TPSTKEHGHYQCNDAMARVLKK QVARVLGLPSERVAHCDRTVPVHRKHDFQLFMTSLGDPS A LGAAFGPEYRDTDPVI
 ALGAAFGPEYR
 KVSKALEAAGAPAGSPVRQSAKPQFGDYQANGVMAKRLGT VLK Q AL L A S Y E Y K D L E E V V E S D H A D L AFPDVS PENTPAMVMPAS
 L I R A V E N F K S D F K Y S T L E P P K N P $\square$ N G DMS T N L A M I L S K K D







E A MV V Q S A K A QF G D Y Q A N M A V A K K L G M


## $D A L R \vee P \vee P$


AVRRAVDLSVAVPTRAVVTP

VI E K S L D K C GF RAENLDLS P
SQHADISSSRVAFRLAERK
$N L I$ ERRPRRAGCGDYATNVALQLAKLV



| UniRef90_Q7N565UniRef90_W4U869UniRef90_V9TT68UniRef90_S3VUK8UniRef90_B1AIR8UniRef90_C1F3Q4UniRef90_Q4QL12UniRef90_A9F5R2UniRef90_D3UG69UniRef90_G2DSM7UniRef90_U7DBJ9UniRef90_K9RVM5UniRef90_UPI00030E4986UniRef90_J9FK72UniRef90_W6U076UniRef90_K9ULA5UniRef90_D3EP61UniRef90_W5SA54UniRef90_H8GY61UniRef90_W5SNT1 |  |  |  |  |  |
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 A P
 SPALI A E E L A K K CED DEVVEKVVEVDGGYI NLTLCHACL
 N P R A L A A S L L I E K L L


 STMSVI T E EI I K Q L L GN K Y A T K


 K P R D I A Q Q A V D Q L Q Q N S M I S A P M A L A G L I T A E F QV G G I V Q R I E I A K P F I N L Y I N WQ E WA G
 P P K II A L L E L V D R L L E D E V F A K IIE A L N G Y I N F T L K E S F L D R
 $N V R T E V$ TFSHGKLIVEVRKTGDYVNAFVDEKELGK

 S P L D L A E K IVS S F LD S D P L DQ T DD








 A P I M I A G NVVEK L QEN PVVESSVEAVNP FI NLLKVNK T F L A D
 A P R D I S T K I C E N L E K G S L I D K V E I A G P F I N DY I S Q K F V E G

 N H E E R A Q QL A G K L V C D S VI S D I GTA R A S V T F K I N R D L L T R

 NPREFA QTV LDD HL S DD DI A E K L E I A A G P F I N I F L K N E WI S K NPREFA QKVL DVL DLLN GI A S K V A P K E I A E DIV V N HL P ENTLDSHAVAT GPY I NFYV S DF F L H K




## 375CD95

 ${ }^{2} \mathrm{H}$



P P R QL A E QVVVQL L QLLD G IAA A K T E I A G P F I N I F L D R Q WL S A


 S P R QV A E I L R P H L R R T E GVVA A V E I T G G P F L N i HiL D R V A V TA NPREFA QKVLDVL D LDD GMAEKTEIAAGPF:I NIVELSTEWLA

 K G D R V A E V L R R R L V V T P GI A G V E I I A G P F L N I T V D S G G H A A
 P A L E V A R I L CE RVVA A EP G I G RVVEI T G P F L S F T L D P G D S D R


| UniRef90 Q7N565 | 30 |
| :---: | :---: |
| UniRef90-W4U869 |  |
| UniRef90_V9TT68 | QV SKMLE F G Q N F G |
| UniRef90-S3VUK8 | Y L ES T I Q K G A F |
| UniRef90-B1AIR8 | NLLK Q I Y Y E K D R F G |
| UniRef90 C1F3Q4 | D F V K R |
| UniRef90_Q4QL12 | E 1 |
| UniRef90_A9F5R2 | ELA E T |
| UniRef90_D3UG69 |  |
| UniRef90-G2DSM7 | NI |
| UniRef90 U7DBJ9 |  |
| UniRef90-K9RVM5 | E T T P K L G D Q R |
| UniRef90_UPI00030E4986 | T L |
| UniRef90_J9FK72 | S T T $\$ A L K  \hline UniRef90-W6U076 & NTIKKVNKEQENYG  \hline UniRef90_K9ULA5 & Q L  \hline UniRef90_D3EP61 & Q 1  \hline UniRef90-W5SA54 & D TIK K VNE Q K K Y G  \hline UniRef90-H8GY61 & G V V E T  \hline UniRef90-W5SNT1 & D TINKVNEQKEKY G  \hline UniRef90-E4UE18 & $\square \mathrm{L}$ S F I V V S G $\square \mathrm{E}$ Y G |
| UniRef90_F5LTD9 |  |
| UniRef90-E8WBQ2 | $A C \vee R Q V L E Q G L R Y G$ |
| UniRef90_UPI000376AF0E | $\mathrm{N} V \mathrm{~V} \mathrm{E}$ |
| UniRef90-F3LIM4 | $\mathrm{NL} \quad \mathrm{R} \square \mathrm{I}$ N Q D K Q L G |
| UniRef90_UPI00047030D3 | Q T |
| UniRef90 V1YDY0 | Q V |
| UniRef90-UPI000378F879 | Q |
| UniRef90_D8M593 | $\mathrm{H} \square \mathrm{L}$ S $\quad \mathrm{L} \mathrm{NHG}$ |
| UniRef90_E7G3G6 | $F \mathrm{C} N Q A L K L G Q D F G$ |
| UniRef90_Q1D785 | EVID A A R S A G I R Y G |
| UniRef90_A2STL6 | SVHA ARREDYG |
| UniRef90_Q4J904 | LLFTEM QDDYG |
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| UniRef90_Q64AM3 | D T M H E I F E K K E R Y G |
| UniRef90_W0JIA0 | E F L T L Y Q K E T Y |
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| UniRef90_UPI0003A261E4 | LKNILDE G T DFG |
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| UniRef90-M0D7U0 | TLDAAAVD D D Y G |
| UniRef90_T1I9W8 | QLTK L VAE |
| UniRef90-F1S0F9 |  |
| UniRef90-M4YUN0 | D V L E $\square$ G S A G R D F G |
| UniRef90-R6RIG8 |  |
| UniRef90-X1R2E5 | S V V Q Q I N K K H F |
| UniRef90_U6IMV7 | E I V K L V |
| UniRef90-A3CXN6 | $A \vee R E A$ |
| UniRef90_UPI000366B0B8 | S TLLT E IMMK E K E N Y G |
| UniRef90_Q9Z7Y3 | Q L |
| UniRef90-F6QKN3 | $\mathrm{T} V \mathrm{~L}$ Q Q $\square \mathrm{SK}$ K D G S $\square \mathrm{Y}$ G |
| UniRef90_A0A023GLQ8 | S V H R L L E G |
| UniRef90_Q47TB0 | Q V |
| UniRef90_K4RLS9 | NLCDEALT L G E G F G |
| UniRef90-F1WEE2 |  |
| UniRef90-UPI0002D6DA42 | Q |
| UniRef90-D1JGB4 | T L |
| UniRef90_IOINR1 |  |
| UniRef90-X0RSS2 | R V A E M L L |
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| UniRef90_UPI000375CD95 | FICNLI |
| UniRef90_W0GRK5 | IM A DV LT LK T N Y G |
| UniRef90-V5CAS6 |  |
| UniRef90_UPI00037798AF | R |
| UniRef90_Q04TG2 | Y I E K S L S G D H F |
| UniRef90_R6FZ46 | Y I NK M K D E K F G |
| UniRef90-E0WRV7 | QV D H L K A |
| UniRef90-K8EMX8 | $\mathrm{K} \\| \mathrm{L} \mathrm{Q}$ |
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| UniRef90 C6C7L8 | QL |
| UniRef90-S7KGQ6 | T L |
| UniRef90-H0B6Z2 | $A \vee L D A V R E Q G L A Y G$ |
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| UniRef90_L1Q732 | Y V |
| UniRef90-L1KT76 | LV R R $\square$ Q R D G T S |
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| UniRef90-F7XMG4 |  |
| UniRef90_D7CG11 | LV R GVLERGEDYG |
| UniRef90-T0ZUY7 |  |
| UniRef90_UPI00036A3BAC | AVLD A VREQ G S A Y G |
| UniRef90_10YTF4 | $\mathrm{R} \\| \square \mathrm{Q}$ I L |
| UniRef90-H0A499 UniRef90_U2QSK5 |  |

MENLSTELQNQATK $\square L K Q$
AELSRTVLGALRHAVRE NI ENYIEQAAAR FNLLKRYFTY MSLLKTDEED

MS S Y K E E $\square$ K Q


V I D 1 L N $\qquad$ $R$ VK

$\square \mathrm{A} S$ AELSRAVLHAVRRAVA C F P D

Y N $\square \mathrm{Y} K \mathrm{~S} \square \mathrm{NQQQQR}$
$\square R Q \underset{S}{D} \stackrel{A}{A} \frac{L}{L}$
DSVQQQLAS


IFNNLKNLEKK MDLFGNVLTE VNSLSASI QQ DPVKVLTQRLAD
S Q $\square$ QKA $\square$ AEERTN $\square$ KP $\square E V E A S \square L D S L V S L F T V$

E A A R VV A A

QLQQAA E
FKK QVT S
N L E T \| LGTVVAN
FRRTIA S
FRRKIAE
S L Q Q
FRQR $\square$ AE
K Q H L N L

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UniRef90-K3Y5T4
UniRef90_UPIO00373BDBB
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UniRef90_UPI00036190AE
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 AVQTLYQTDFPAAQVPISTTRKEFAGDYTVVVFPFKAARK ELRAVAPBRAAQVGVRVPPHPGSGDYATEVARRLAKGR KVRIPPRPGCGDYATNVALLLASGS $A V P D V N V E P A V V$ PSIEKSGKKFGDYQCNNAMSKIKGK $\square F A Q A F E L G Y S Q S F A K V V T S T R E G V G H F Q C N G A M P L A K K K$ AVENPSPDITQSTKEHFGHYQCNDAMKRTLKM A L G A AF GPEFADTDPVI RPSQFADYQANAALALAKGR
 A VARFGEAYMKVDPIVAASNPKFGDFQANVALSLSKGM KLLHKQSGGKLQSLNPQLVPATKPEFGDFQVNLALSKILKK
 SAAQ ALSAAFGEDFADRDPVV R R S SQFADFQANVALPLAKGA




 AF EAAGYEKEL GKVS $\square$ SNRPDLCEYQCNGAMAGAKKK $N R A L G D Y Q C N S A M L K D R G K$
$N \square P F S G N F Q P V A A A A K A R G Q$

 LLNF LPE DKEYNLENDLSVPPNPEMGD\|S DPCFFASILK I AVAEVSEGVAERVTVAV PRPGGYGDYACNVA LLAAART
 $S L K K S L E E E F D K F K K N L ~ I V P S K E E F G D Y Q S N I S L I ~ L S K G K$
$L T$

 VRRAVEGGELSVAVPAVTPPGPGGSGDYATNDALQLAAGR ALAHAFGAEHADADPLI RRSQFADFQANVAMSLAKRR LQHAFDGA DRKAYPDLNVPSMAKFGDYQCNSAMQSAAKT EMSKAFEAAYDKKYARVTISNRPDLCEYQCNGAMAKEYGK EFEKAFEQNEDKKLGKVVVSNRPDLCQYQCNGAMAGAKHK
 AMQRAFPDVDALLDPQLAPANKPEFGDFQANLPAAKAKKQ $H A D L S T T V A F R L V L R K$
$L A D F Q C N M A A A K A A R A$ $E L S T A C G Q A F E A T L G M V R R S D R P D L A D F Q C N M A A A K A A R R$ DAGELSVTVPERAVVTPPGPGGGDYATNDALQLAAGQ
 $A L K S L Y G L E V E A S T V V P Q T T K K E F E G N L T V V V F F L K A S H K$
 ALLNTAFPEAAS QVNPQLVAATKPEFGDFQLNLALARI I K K ALEQSFGEDFKRRDPVI GLLREAT D Y D V D $\square$ S D V E V E D DT D E E K G E F S S P L QLL S QL F ALSATLPREAAGADPLL RRSDRADFQANLALAKKKAKA
 K F A D Y Q C N N A M SK I K GK
 RVAD ALGADPLL RRSDRA AMTAAAP DAGGIDPVV RPSDRT A $\square$ AGAFP NVPFIKAAVNPPKQFKFGDGANGIMGMAKRM A $\square$ A GAFP NVPF IVA AVVNP K K Q E K F G D Y Q C N S S M Q I A E K FVNQVVSVLENAVQRLAVQSSKEEFGDYQCNVCLCLSKKK
 A GRALDDVELTPEQALI QASPREGV DYQGNGAMSGLGKGR AFAEA GYDAS YGKVTLSNRPDLCEYQCNGAMAKAYHK A $\square$ S AFPNLDPPA LLVVDVTRTKNAQFGDYQCNSAMTSVKGK



VLT DALGLQAEDL GLEP
SQHAD
QRSHGDFTTAFSAAKKFKK A VK T LY G L E T E P N Q DQ LQKTK KEFEGDLTVVIFFVKAARK $K$ L S K V L G S S E E A A V S A V P V S K K Q Q S P D F R V S V S S S L V Q N G L K L GRALQQQSEDVFIPALTAVPVLDKKADFRLLI GTLRAS GIG

 NLI NQASKEEF GDYQCN, CLVLSSKK S



|  | $\square 130$ |
| :---: | :---: |
| UniR R90-UPI000365CFD5 | FLDD TAEOADYG |
| UniRef90-M3 | LVVQDVLARRTD |
| UniRef90-G2 | LV RAVLSQGDRYG |
| UniRee90 UPIO003669232 |  |
| UniRef90-UP10002C311E9 | LQKMLVDG |
| UniRef90 Q253D1 | R ${ }_{\text {L }}$ |
| UniRef90-J7LAZ2 |  |
| UniRet90-UPIO0037 | $\square \mathrm{L}$ Q DREPDYG |
| UniRe |  |
| UniRe990_V9R8W5 | $\mathrm{M}_{\mathrm{M}} \mathrm{E}^{\text {V }}$ |
| UniRef90-U4KLF 1 | NLLDEIFNL |
| UniRef90-T1DST1 | ALLSDLLAS ERYG |
| UniRef90-R707P8 | AKLAAMLADRAR |
| UniRef90-Q971X1 | LTFTNF PEDYG |
| UniRef90-W8JKQ7 |  |
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| UniRei90 UPI0003768052 |  |
| UniRef90-Q1 | $T$ V |
| Un | G |
| D5VHJ3 |  |
| , |  |
| CIMLK2 |  |
| UniRef90-R9NAZ2 | YLNQMLADEK |
| iR |  |
| UniRet90-V6KVM7 | RERRDRGADYG |
| Ref90-K2GZC0 | $\overline{\mathrm{EF}}$ |
| UniRef90-R5WGK | KIAE $\square$ ASDDHFG |
| UniRef90-UP10003090C5B |  |
| IiRe990_RKF |  |
| UniRet90 J JKR19 | SVVEDALSKKETFG |
| K2F2H4 | NLMH \DSKKEDYG |
| UniR |  |
| UniRef90-C9Z8H0 | T LVRR】L |
|  |  |
| UniRet90_W5JARC |  |
| A5Z9 | YLND MKEADKYG |
|  |  |
| UniRef90-B3T7W5 | TVLPESL KENYG |
| A0B5 | EV |
| UniRei90-UPI0003B52504 | RV |
| UniRef90-D9XFY6 | G |
| $\mathrm{G}_{\mathrm{F} / 4 \mathrm{H} 545}$ | RLAEVVADA ${ }^{\text {a }}$ AFG |
| UniRef90-R7- | GV $\square$ D HiHATK DYG |
| UniRef90-UPIIOOO349A6AA |  |
| UniRef90_W2VOY9 | FCIN UNSSGLSYG |
| UniRef90- X0X820 | EALFD |
| KSGSEYG |  |
| UP1000051031C |  |
| UniRef90-LOADL1 | ETLSK\\|V]DGTKYG |
| UniRef90-S2YV98 | N |
| UniRef90-U1Q7L6 | TVEA AQADDYG |
| UniRef90-UPIO00288522 | T DEKDNVQSVNFG |
| UniRet90_K3Y5T4 |  |
| UniRef90-UPIOOO373BDBB UniRef90 ${ }^{\text {O2GEZ }}$ | EYYLAA K V V |
| UniRei90-UPIO0036190AE |  |
| UniRef90-84Z6H1 | SVA |
| UniRef90-E4WSL66 UniRef90-R5MVD6 | R $\downarrow$ |
| UniRef90-R5MVD6 UniRef90 O31CZ4 |  |
| $\begin{aligned} & \text { UniRef90_Q31CZ4 } \\ & \text { UniRef90_D5EBN5 } \end{aligned}$ |  |
| UniRee90-R5 |  |
| UniRef90- R6L WWT |  |
| UniRef90-A0AO24FL |  |
| UniRef90-UP100036676B4 | L A E |
| UniRef90-R7LG | ALLEEINANEHYG |
| Uni | Y |
| UniRef90-R4110 | H |
| UniRee90-K4MPG9 |  |
| UniRef90-E4T7D0 |  |
| UniRef90-UPIO003EA8667 |  |
| UniRee90-UPIO003944011 |  |
| UniRef90 UPIOOO4718AC9 UniRef90-A2C016 | A LED GNTSDYG |
| H2V8R4 |  |
| Q7V396 |  |
| FONZ06 | TI VISYLSENAQNYG |

MKKQ!TE
$M L K L L I E N$
$S A V \square G$
KDELAN

IE N Q I S R A V I A
SMN I E K A I S S A V L K

■ELQLQTA|LAT A T

| $S A$ | $A$ |
| :--- | :--- |
| $E$ | $A$ |

$\square \mathrm{D}$ V I S K E V K D
$S \square A D$
S QP QE T EA DQ C R VEESVR H L S R N P EKLISSKLK E

$\square \mathrm{D} V \mathrm{~V}$ A T S $\quad \mathrm{D}$ $\square \mathrm{T}$ M N $\square \mathrm{KN} \quad \mathrm{I} \mathrm{E}$ K Q L A K K K l MNTLSELI TK NPSQAl ETALQQ
 $S R T V M H A V R R A V A D E$

RDDVA D
$N \prod E N A I C S S V 1 \square S$ IE N QI A QAVT A

D D MF A I I D T

MEQMAEELSA
KS VLGE PVELSRNKAAE LELDSERVAN

E S VK A
VLELISKEVGD
$\checkmark$ V
MFNEFFKK VD
$\square \mathrm{KE}$
A D P V I R P F
$N P H E F L V D N V K R Q A E$ $R A \vee R E$
QFRKEVET
$D C L E N D L V$
N TQ N K I E QKVK K
IQ S L Q Q A T A E
$D \square L V V P \square Q N$
DC L E K

A 1 DA
 S S V DA
$Q R \vee A D$
$\mathrm{N} \Pi \mathrm{E} Q \mathrm{~T} \Pi \mathrm{~N}$ Q A A L Q

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UniRef90_M7YDV6 UniRef90_K1XKA7 UniRef90_J4WP51 UniRef90_UPI000476F9EA UniRef90 UPI0003B2F6E6 UniRef90_S6A5J8 UniRef90_B5GNL4 UniRef90_G5GHR1 UniRef90_A4RSX3 UniRef90_A5CD00 UniRef90_B6ETP1 UniRef90_C6X034 UniRef90_R6XJQ6
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UniRef90-R5FQX1
 QVIN NVSK F S P E E I E R CMEKPKK P A F VVCGY DAKY GKVTVLSNRPDLCEYQCNGAMAAAKKK AFQQA GYDAS YGKVTLSNRPDLCEYQCNLAAAKQYHK KVERARPGGAGEYASNVALTLAAGR

 | K |
| :--- |
| L |
| A |
| Y |
| A |
| L |
| $A$ |
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| Q |
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| E |
| A | KVR D R Y G K E

 Y L S S N V L N VVD K E K V V L N S I I E Y P T K E Q AL E A L A DLDD Y P T D DL G I E E P P G DVV A A L A S SVVA F RL A A G A
 A $V$ V $K$ A V S E L Y G Q DV P A D K I Q L L Q K T K A N F E G N L
 E L K K A A E CG Y D E Q Y A K V TVVS N R P D L C E Y Q CN G A M A A A K A K $E L S S A V G F G L E K K L G Q V R R A D R P D L A D Y Q C N M A A A K A A K R$ AVK E L Y G Q DVVPEKIVQLQRTKPGFEGNLTLVVFFLKMSHK
 FEKA GYSRD YGKVVISSNRPDLCEYQCNGALA GAKHK $G \boxtimes P A E L A \quad R V T A S D R P D L A D F Q S N G A L A A A K G K$ $Q L S A V L G \quad D A F A S L E L P A R K P G Y V G P D G Q C N G A M A K A A A K$ LVVVKSLADAAD DVEPML EVVSKS G FSDYQCNNAMSLFPR


| $A$ | $F$ | $E$ | $A$ | $A$ |
| :--- | :--- | :--- | :--- | :--- |
| $T$ | $G$ |  |  |  |
| $A$ | $T$ | $N$ | $G$ |  |
| $A$ | $T$ | $L$ | $A$ | $A$ | KVERTRPGGR

 EVSRAFECSYEGGYGTVLVS RRSDRAD F
 EFEESLRIDDEPDVVPSI DPCAANKAGDYQCNNAMAKMKGK




 $R$ LA P A F S V A GERVD PAV




 DEPDVEPLIAACCTAKFGDYQCNNAMGLTTKFK
$R S S H P N F G D Y Q C N L S L A R K F K \square$
$P S N R P D L D E Y Q C N G A M A G A K H C$ A $\square$ R E T A G VT D A L L VE

K V
G
GEHADLA
ADFQFSMSPVLDANS
VAPPRPGGCGDYATNVA LRLLAAGE
AFEK SGYDPS YGKVTVSNRPDLCEFQCNGAMAKA YKK AVGAAFAAEVDAALARVTASDRPDLADFQSNLAAAKALKA
 $A V C R A V D A G E L D V D P V V T P P G A G G C G D Y A T N V A L Q L A A G Q$ AF EAAGYDRKL GRVTVSNRPDLCEYQCNGAMAGAKHK $E E V I L N P S N P D L S D Y Q Y N G A M T L A A K H D$
 AF EAAGYERELGGVGDSNRPDLCEYQCNGAMAGAKGK
 EVTTKAVSAGYDEKYGKVTLLSNRPDLCEFQCNGAMAAAKKC QI S K V SKFTPEEVERCMEKPRKPN $\square$ VE S I Y DVRLENVD $\square \mathrm{S}$ L TRK S LE S A VR D K F S DYLETVVIITANP SLLG ALKAKKGKAPELAAPA LVSKGFAVVEAQVEVR KAPK $A M A R V L P D E D S G Q R D A G V R P$ A L S A ALDLDPTD DL
 AI SHL HQVDLA QVE FQPTRKDFEGDVTVVTFMLRQIKT




 AL Q E K F A A R S D L T A E IVE L I S R E K F G DV T V K M P M L K E A G A
 ALSAALP EAGAADPLL R RRSDRAD F QANLAALAKKLGGG


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UniRef90_R6E0Q5 UniRef90 D6K121 UniRef90_C4G8Q6 UniRef90_R7NGG4 UniRef90-R6WYR7 UniRef90_UPI0003B2F6C1 UniRef90_K2BM25 UniRef90_UPI0003A2AB52 UniRef90_C4ZD15 UniRef90_I7AFH5 UniRef90_W8VZ99
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UniRef90_R5FQX1
S P K A|V|AEK|L|AAQCDTD GLL|ARCEVAGPF|I|N||FVAPAY|L|E|

 A PFMI A DDVA A AL A S NPMFASVVESVKPFLNLRLAPE YLKQ
 A P F D I A A E R V V E CLLA A E S I F K K T I E V V

 D $\square$ $P$ PP QVA GEVADAVDPAE YLARVETSSGYYNFFTDDDA YAA NPPAVGQAIMKNLPPSEVIESCSVAGPFVNVVLSKKWMSK SPEQTA QEI GELSSANSPYI S GFNVVKGFLNLEIA GKCWLE
 K P E E LIG N E L A L V V T D N G A L F S A F NVVI K G F L N L A I A D D S F WL N
 NPREI A G E V A P K I

 $N P R E I A T A V A G R L Q Q D P R L A S V E I A A G P F L N L K$
K P Y DV A K D L A E HYA A GR LVVLRV EASS GY L NFFANNSLLS S NPRELAAKL DEALHGDPQQGAAEDAGPFINLR NPNAVGQAI ADNLPPSRGVESTSVVGPYVNIVLSSDWQAQ S P E I T S A E I G E Y I S K K C E E I I E S F F N V V N P K NLIA E D L K T R L E K D D
 K F E E L


 TPDHVATELGDAFTQADFVESFNVVNGFLNFFINNFYSAK



 S
S
P

## A <br> + <br> <br> \section*{N}

 <br> <br> \section*{N}}
 A P I M I A N D V A A K L A D S SVVFE K A E A V A P F L N L T T L K N E F V G E
 D INLLQAEELAN KLKCDAVVSQI SPGKGTVDFTINRDLLAK
 A P F M I A D D V V A Y L K D S Q V F S M A E V V K P F F I
 SPNA I GEWLKANVSEDAGYNSVK PALRVADVLRGHLLNLDGDRDVSVTGPFLNi SLRADAGAQ A P F MI A D EI A D CLS G D E M F A S A E SVVK P F L NI R V S G D F L A D







 $P$ P R D L A E A L R S E LLA A G P F





D

| UniRef90_R1CZl2 | $\text { STVNS ILR HG }{ }^{130}$ |
| :---: | :---: |
| UniRef90-E0S8J0 | DVLGYI Q S NKETFG |
| UniRef90-D4KWV2 | Y VADMQADEG RFG |
| UniRef90-F7V7V8 |  |
| UniRef90-UPI0002EF0F6B | E V VR A V ${ }^{\text {d D A G V }}$ A Y G |
| UniRef90_UPI000475A6AD |  |
| UniRef90-D7JEL7 | $\square \square N E \square$ DS HRQYG |
| UniRef90-X1CBB7 |  |
| UniRef90-D310N2 | L_LNDIHAD DRFG |
| UniRef90-F4B4N2 | ELLKEIFTNSENYG |
| UniRef90-V4GVR6 | DTLEA ARDERYG |
| UniRef90-B9RKG2 | K I Q K M L D D |
| UniRef90_UPI000423140A | L_LS DI NS LPE Y G |
| UniRef90-U2L7U3 | SLLNDIHSD DHFG |
| UniRef90-D1PTU0 | ALLNDI NADAKYG |
| UniRef90_G8TGL9 | FL K M |
| UniRef90-R7AIB6 | YLAD MAKDDKYG |
| UniRef90_UPI000414D92B | T |
| UniRef90_UPI00036EAEF9 | R V |
| UniRef90-F8N8V5 | L LDD $\square$ DRDPRYG |
| UniRef90-R5KPX1 |  |
| UniRef90-UPI0003B42AD2 | Y VA E A $\square$ S S DK F G |
| UniRef90-B4R8T9 |  |
| UniRef90_V6AS74 | 1 I L K |
| UniRef90_Q0AMI8 |  |
| UniRef90-M7YDV6 |  |
| UniRef90-K1XKA7 | VFNETY ${ }^{\text {V }}$ H D |
| UniRef90_J4WP51 | T I E FINKNK S S G |
| UniRef90-UPI000476F9EA | RLLATVREHGEAYG |
| UniRef90_UP10003B2F6E6 | Y VVKMLHEK |
| UniRef90_S6A5J8 | IVFNSVT R L G D S Y G |
| UniRef90-B5GNL4 |  |
| UniRef90_G5GHR1 | SYLKE MAQNERFG |
| UniRef90_A4RSX3 | ELIF |
| UniRef90_A5CD00 |  |
| UniRef90_B6ETP1 |  |
| UniRef90_C6X034 | Q NLD QV |
| UniRef90-R6XJQ6 |  |
| UniRef90-R5XH87 | F L |
| UniRef90_D5EPA1 |  |
| UniRef90-R5YEN1 | VVTEMKQDEG R F G |
| UniRef90-Q1LT18 | K I A T A |
| UniRef90_UPI000467AA90 | $E \vee \vee R E \vee L R C G G R Y G$ |
| UniRef90_A4X181 |  |
| UniRef90-A9A493 | LI L S |
| UniRef90_D6PC15 | DIF DE\N N SEYG |
| UniRef90-C5BXZ8 |  |
| UniRef90-M0M914 | TL AAAGDNYG |
| UniRef90-D1QVJ0 | L L NDI NADEKFG |
| UniRef90_R5YYL5 | Q LNAI AATPHYG |
| UniRef90-W9S6J0 | S I Q M MLL |
| UniRef90-A3F4X5 | E V |
| UniRef90_R9L0P7 | Y K G MRAEEKYG |
| UniRef90_LOHL89 | V 1 R A A VKP G Y G |
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| UniRef90_D5ZXE7 | LV QEILRCGPRYG |
| UniRef90-C6J894 | YLKEMAAD |
| UniRef90-M7AXB7 | TVLDQQVFKDGSEYG |
| UniRef90-U3AU10 |  |
| UniRef90-R6E0Q5 | ELFTEDASDKE F G |
| UniRef90-D6K121 | RL VEEI L R R G Q R Y G |
| UniRef90-C4G8Q6 |  |
| UniRef90-R7NGG4 |  |
| UniRef90-R6WYR7 | ALLNDI NGDERFG |
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| UniRef90-K2BM25 |  |
| UniRef90-UPI0003A2AB52 | R V |
| UniRef90-C4ZD15 | Y MNDMKDDEGRYG |
| UniRef90-17AFH5 | DVLGY V QKNKDTFG |
| UniRef90-W8VZ99 | EF NVMLENEQFG |
| UniRef90_R6YFM3 |  |
| UniRef90-Q01EV0 |  |
| UniRef90-UPI0003A7992C |  |
| UniRef90_A1RXP0 | V V Y S S V VRLLG ${ }^{\text {d }}$ Y G |
| UniRef90-E4ND74 | QV |
| UniRef90 I3R1D8 |  |
| UniRef90-B5CSM1 |  |
| UniRef90 A3DPW2 | D I I K K I F D Q |
| UniRef90-UPI000419ABD8 | SF EA $\mathrm{F}^{\text {ANNSDFG }}$ |
| UniRef90_J6GU20 |  |
| UniRef90_A3YUE2 | E L |
| UniRef90-UPI00047B6B19 |  |
| UniRef90-H2M771 | K VLEPFGKEDDKYG |
| UniRef90_D7D834 | NYLS K $\square$ F D Q $\square$ K S F G |
| UniRef90_A9DIM0 |  |
| UniRef90_A6LHY5 | L L N S 1 N EQ P A Y G |
| UniRef90-A0A022MUB1 | AV Q GIN S L G D F G |
| UniRef90-Q9HLE7 | EVLESIEKSG |
| UniRef90-V8BUK1 | L L N S I D T N K F G |
| UniRef90_X0P2L8 |  |
| UniRef90-R5HXQ4 | EVYGSTA A D G S F G |
| UniRef90-R5FQX1 | A L L |

- 30

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$\square K$ S I S K RQLLAK
$N \square Q K T \prod E Q A V K N$ DLVHSAVVR
EHTGD
LKERLTN

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FRREVET

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lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
ssm


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UniRef90_16ZIB7
} AF EAAGFDRS YGRVTVSNRPDLCEYQCNLAAAKAYHK \(A\) VK QLY GQEVSSTDSLDPPQKTKSNFQGNLTLVVFLLKDSRK AFEK CGYDKKLGKVGISNRPDLCEYQCNGAMAGAKKK TVAAAFGLPPE FGLVTVSNRPDLGQFQCNLAAAKQARA RVNEVHKTPENDVY \(V\) V D PT GHSDFTVRVFRL DNQP \(A V S R S V E L G E E Q L \quad Q U Q K T R K E F D G D Y T L R V F R L R R S R K\)
 LAPA TGGVRRAVEEAFERPPSQSGGDYSAALYPGAKLGGV \(H \square K K V L N \square I T I T T H A I V R T S D K K V W D Y Q V N D K L A N N L N K\) LCKRATFPDDLELEPLVADC TGKFGDYQFNNAMSKDKGQ GDFATNVA LAARPAGLL \(A V A K T Y D V Q \square Q Q V E \quad F Q P T R K D F E G D D T V V T F M L R Q V K T\) \(V \operatorname{VAD}\) RGLATTAVPDEVDRPRDPGRGDYATTVALRAAGAA VVSKAFECGYDASYAKI TDSNRPDLCEYQCNMAAAKA YKA FLQDVVAESQFTLLKVLEESRHPKYGLFNTNDPFILDASRK ALTDIVKCGYPEASGVVTPSDRDDLCQFQCNFAAAKAYRK EMQKAFGAGYDESFAKVTLSNRPDLCEYQCNGAMAAAKKK S 1 K ELLYGQDVPSDMAQLQKTRSDFEGNLTVVVFFLKIDSKK ALAAALD DLGYPTVEEPPADVPAVLASSAAFRLAAGA ALERALEGLDFPTDDLGGI E EPPDDVASVVLASSVALRRLAAGA
 QVKEAFRRALAAAFPSVDHAPVSKFGDFQCNSAMALFKQK TLNNKYN \(\quad\) LKT II KYNDKNQLFDFY LADLIDQKTLQK NLS Q LLNWDLLLEKVVVEETKNYKFGEYQCNGAMAKAYMK

\footnotetext{
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jnet
conf
sol25
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sol0
jhmm
jpssm
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\footnotetext{
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lupas_21
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lupas_21
lupas_14
lupas_14
lupas_28
lupas_28
jnet
jnet
Nam
Nam
sol25
sol25
sol5
sol5
sol0
sol0
jhmm

```
jhmm
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jpssm

```

F \(\square\) S EMSTE EKFG \(\frac{L}{Y}, ~ L N D \square N A Q \quad\) PHFG Y V
HI DAQARDER

 LV

 SV
FVNSMF EKEKFG LKVEK I
\begin{tabular}{|c|c|}
\hline \(\square \quad \square \mathrm{L}\) D \(\square\) & NADELYY \\
\hline T \(\mathrm{V}^{\mathrm{L}}\) & \\
\hline T L A D & ATDETYG \\
\hline \[
\begin{array}{lllll}
\mathrm{D} & \mathrm{~L} & \mathrm{~K} & \mathrm{E} & \mathrm{D} \\
\mathrm{~K} & \mathrm{~V} & \mathrm{~T} & \mathrm{D} \\
\mathrm{~V}
\end{array}
\] & \[
\begin{aligned}
& \text { JK QKGH } \\
& \text { ESGANYG }
\end{aligned}
\] \\
\hline
\end{tabular}

D LK K I L K Q K G H
KVLTDVCESGANYG```

