## QUERY

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CRAAKA

| $V$ | $F$ | $L$ | $V$ | $D$ | $G$ | $S$ |
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## C

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



 GT QVV S 1
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 | $R$ | $V$ | $Q$ | $G$ | $A$ | $D$ | $K$ | $Y$ | $S$ | $D$ | $Y$ | $P$ | $K$ | $V$ | $M$ | $F$ | $K$ | $L$ | $N$ | $N$ | $Y$ | $S$ |
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 K T R V G V I Q F S D H N R E E F H L

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$C K D T M$
$C E D M K$ G $\begin{array}{ll}A & D\end{array}$
TKEAD YFLIDG
CHLQQE
T E E A D

CPEAS

$C \square K$ $-\begin{array}{lll}\mathrm{D} & \mathrm{D} & \mathrm{V} \\ \mathrm{D} & 1\end{array}$
$\stackrel{A}{\mathrm{~V}}$
GNVDLV
NGAADI IFLVDSSWS IGKEHFQLVREFGYDVVKQLDVG




 $C$
$C$
$C$
$C$
$C l$
$C$
$C H$
$C H$
 C $\square \mathrm{K}$ G N V $\mathrm{D}_{\mathrm{D}}^{\mathrm{L}}$ CRES P L E L CHTG

40

[^0] ${ }^{\circ}$K S A N R D I\begin{tabular}{cc|c}
$F L$ \& $V$ \& $D$ <br>
\hline$L L$ \& $I$ \& $D$ <br>
\hline


$S$ \& $S$ \& $I$ \& $G$ <br>
$N$ \& $Y$ \& $V$ \& $G$ <br>
$K$ \& $S$ \& $V$ \& $R$


$R$ <br>
$P$ <br>
$P$ <br>
\hline
\end{tabular}

$C K D T Q$
$C E D M K$

                                    \(F L D E S W S V\)G \begin{tabular}{l}
    $P \mathrm{~N}$ <br>
P <br>
\hline 1

 Nin 

$P$ \& $D$ <br>
\hline$I$ \& $G$ <br>
$V$ \& $R$
\end{tabular} $\left.\begin{array}{llllllllllll|l|l}D & F & Q & K & M & K & N & F & T & K & S & V & I & S \\ K & S & S & I & G \\ Q & H & T & I & M & L & N & F & T & A & S & V & V & D \\ N & F & N & V & R \\ N & L & R & Y & L & Q & R & F & L & E & N & I & T & A \\ S & M & D & V & K \\ N & F & Q & K & V & K & N & F & L & H & S & V & V & L\end{array}\right]$ L L D S S T S $\square G P Q N F$


$P E$

[^1] VELEDGESLOODEEKKLDEMKDMKKLSNS



## CESEKAD

## 



CR

## C K

R D A R A

| V D I P F | D G S G S | $\mathrm{N} V$ |
| :---: | :---: | :---: |
| N CKV DI S F L | D G S WS |  |
| Y V | D G S T S |  |
| C R K TVA D I VFMV D | D S S S | G |
| CKSRPMDLVLI I D | D S S S V | $\checkmark \mathrm{R}$ |
| E E A DI YFL I D | D G S G S |  |
| V F L V | D | G |
| S QVA DI $\mathrm{V}^{\text {F }} \mathrm{F}$ I V | DES GS |  |
| E EA DI Y L | D G S S S | Q |
| CEDEKVDLVFLMD | D G S N S |  |
| CKNRKADII F L I D | D G S E S |  |
| CNRARAD MV F L L | D G S G S | G |
| CENKRAD L V FVV |  |  |
| $D L$ M F MV D | D S T ENA |  |
| A D V V L V D | D S S T S |  |

[^2] VL VE VELVSTHRMGDATEKAKNEYOVSNLO








#  






$\qquad$




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UniRef90-X1WEZ4
UniRef90_UPI00046B3830 UniRef90_L9JD33 UniRef90_UPI0003316421 UniRef90_S4RB07 UniRef90_UPI0003315260 UniRef90_M4AQZ5
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UniRef90_UPI000333F4F3 UniRef90-UPIO003BCA61B

GTRDG|LV|QYSSRVRTEFP|L|NQYKMAED|I KKA|VLK|V|EYMEK
 E ARVAAI NFSHKVEVVVSTLQQYTNKDHLLKDAANDMQYLGE F DTTRRVVNYASTVQU E F P L K K M Y F D K T G L K K A L A R V E P L A S $H D R \square G V A K Y A D L P E L E F D L T T H S D Q E T L K K A V E E I G Q V G G$ $R V Q F G A V M Y S D N P E L L V Y L N T Y S N R S G I V E N L R R R R S T G G$
 RV H D G AVQ F S D K C QEEE F QL N Q Y L T K R DI K N A I GRMT LM G Q $R V R V G A V Q Y A E A N R V E F P D G A Y S S D A D L R K A V A N D R Q L G G$ $V V G A D G V R F G V T V F G D V P R M D Y N S L E E V L R A I K D L P Y E G G$ QATAR II NFSHKVDVVSTLQQYPNKESLKGAIDVMQYLGE
 GTRVVGLVVQYSSRVRTEFPLDMYHSAQEIVAAVMKVEVMEK E DKI $Q$ Q M Q Y S D N P H NE F F L N F F H H K E D I L K K I Q K L N Y R G G

 $K \bigvee R V G L A Q F S N E P Q A E F L L K D H K N K K S L Q A A V D T E P Y R K G$
 Q Y R I A L A Q Y S D D L H V E F L L D T Y K A K N S ML N Y V K K NVV F K G



 Q DKV H FMQYS TNRRLEE DLTTKHYNLE GMLNTIIDAMK QMNK K E F A HVA Q F S VDP K H E F Y L N T Y N D K T K M I E HI L N M T Y N G G



 KVRDGVVQYSNDRAVEFDIDVYHDNSVLRKAI YNDKQLKG


 S V R V G V I I I Y S T QVQIGVVQFSDVNREEFQLNRYRTQREIADAIDRMP LLDQ SA R V G VI I Y S T N D H V Q F H L N R Y K T N Q D V Y N A KTLFSSLMQYSDEFRTHFTFDAFKRNPNPRDHVNPISQLKG $K V R V G L A Q Y S T N P H K E F L L K E H L D A P S L M T A I Q K F P Y R T G$ E NKV R I DQ Y S D A P H N E F FL L N T F WH K N D I L E KI Q A L R Y K G G K D R V A V V Q Y S N D P A A N F F L N T Y S T K E DV I N S V K G L R H K G G
 $N T L F S V L Q F S N K D Q Q H F D F R T F Q N D Q N L N N L L Q E V R Q L H G$




 RVQFGAL KYS DDPEIL FYLNTYSTRPEITENLRRRRDTGG

 $R V R F G V V Q Y S D K D I S Q F F L T Q Y A S M A G L S A A I D N I Q Q Q G G$
 A S Q V G L V Q Y T S Y E Q R L

 GPLMMGI Q F G D D P S T E L L N L R T H T N N R D L K A A I E K I P Q K G G


 $R$ VRFGVVQQESDPRTQFEIGQYNTMVQLKAAVRAIQQMGG $K V Q V G V V Q F S T D P H K E F L L G E Y A N K A E L D R K I I D N L P Y R T G B$ S V R V G M V L Y N D R P S A E F Y L
 E I Q G G L L Q F S T T T Q A E F RL N Q Y S F R M D I L R A I S D I E QL N D



 E Y R V G V M R Y S T Y P A V Q F N L D R Y N Q K K F I K N R I D N I Q Y R S G
 A A R V G L L Q Y S T E VR TE FT L R QF S S A K DMK K A V S QMMKYM GR



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UniRef90_X1WEZ4
UniRef90_UPIO0046B3830 UniRef90_L9JD33 UniRef90_UPIO003316421 UniRef90-S4RB07 UniRef90_UPIOOO3315260 UniRef90-M4AQZ5
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UniRef90_UPI0003BCA61B

90
100
110
120
GTMTGLA|L|KHM|LIEHSFSEAEGARQN\||PR\||GLV|FTDGRSQD GTMTGKGLEFMSNEHFVGKAGSRQKVPQ\|AVVITDGKSQD GTETATAA NKA $\square E \square F H A A$
 GTMTGMAI KTAMEKAF DAEAGARVNSPKVAIVVTD GRPQD GTKTGKALEFMGPLFKRATVTRGHKVSEYLVVITDGESAD



 GTYTATAI SNATN I FKSA NTKTGRGLGYVLKELFQSSKGMRPG NTGAAMNYALDNMFHSSRRGRRRRQGVQQVLVLIVGGGPPQD GTMTGLALKHMLENSFSEAEGARPHVPRIGLVFTDGRS QD GTYTGGK S L K F M L L E Q F N E M A G S R H G V P Q i A V V I T D G Q S Q D











 GT LT G K A L D F I L P I M K K G R K T R A S Q V P C Y L L V L T D G K S E D









.

## \section*{} <br> ,

 RTF TA G Q A L L T F M Q QV I K E G A R K K H R LTNTFTAA NYMA VKVFRGDQGA NTYTGSAI RRATGLFQAS $\qquad$ RPGV KQNVKQI LI I I TDGVSHD GTMTGLAIQYAMNVAFSVAEGARQRVPRVAVIVTDGRPQD GTTTGKALSKMVPVFQNT AR DDVARYLIVITDGQSTD GTHTGKA LNFTLPFFDSSRGGRPRVHQYLIVITDGVSQD YTYTGRAALYVNTTYFTQAAGSRFSVAQVLIIVTEGDSQD GTYTGKALDFVRREYFTESAGSRQNIPQILVVITDGESTD
 SPNVGKALDYVIKTLFIRSAGSRRGVPQHLILLDGGRSQD NTNTGDALRYITSRSFSAQAGGRPGNRQVAILLTDGRSQD GTQTGRA LTFTADYFDGARGGRPNDAQYLIVITDGEAQD


 GTYMGKAMNFGKDNYFKAAGGSREKVPQVVVVITDGKSQD GTATGAAMKFAQNNLFTQKRGSRKGVKQUAIVMTDGESED GTSMGAALNFTRSLLQEARRQRGNRVPRHLVVLTSGTSED GYTH $\begin{aligned} & \text { GAA }\end{aligned}$ GTRTGKA LNFTLPFFDSSNGGRPDVHQYLIVITDGVAQD $\begin{array}{ll}T G C P G R A \\ G T M T G L A & Q \\ \text { G }\end{array}$ GSYSAYAI TNATKVFRQETSPARSSLRVALLMTDGRDQD GTSTGSALEFVRTSYLTEAAGSRDRVPQIVMLLTDGESSD ETYTAKAI RHVVNNVFTPQRGSRQNVKKVLIVITDGQSY KTNTDRA L D AVVQRMFTPRNGDRDYARNLIVVI TGNDESS KTNTDRALDAVRQRMFTPRNGDRDYARNLIVHITGNDESS LSNVGKALSFVNKNFFSDANGNRGGAPNVVVVMVDGWPTD
 GTHTGQAL


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UniRef90-UPI0003BD0BA5
UniRef90_G3TZ81
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UniRef90_V8NYX3
UniRef90_UPI0003D0BB29
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UniRef90_V3ZAH6
UniRef90_I6ZQG1
UniRef90-M3ZF23
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UniRef90_UPI000393FCA2
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150


A
 E
Q
$M K$
$M T S$
$V$
$V$
$Q D E$ EL $E_{1}^{160}$
DTSEWARKAKE
 FEDF

 RYMLDNDTASKLRRDQGVI TYAIGVKDAV $R Y M L N D T A S K L D R D K G \| I I Y A V G V D Q$
$S V Q R A A R E L Q Q$

ANQDELEI

## SVQRAARELQ

EVKNHAEALREEN $\quad$ ITY S VGMF QANKTQLMED
 NRTQLRQ1




SVVRPAHALRAKGVVIYA GV GKANKQE VED

EVQDAADQLKR DGVFVYVVGDNVQDVQELQKI KSPD IQDDSEKARALGDSFDTIGLSNDVNNTK
 EVLGPAERIRA EQISTHAI GI GKAHKK $P \vee V$ DAAARLVADSGUS LFAVGVGGA $N V K A P A E E L R A$ ANQLNATAKALRDKGLLILAVGIAGGANTEELLAM D 1 SV WAA RAKE E GIVMYAVGVGKAV NARRTIPEAEQARADNIHIYAIGGG LVKDPALALRQDG\IIYSVGVYGS
 NSRRT DP EAEAARSKNIHIVYIGGGG


 $N V T$ EAAAALR RAGVTVYAVGVQNA DPLDYAEVVQEADRAGITRFAVAVGPVVTSRLFQRELHAM

 RVLEPAQSLRA RVLEPAQSLRA EGTIIVAVGI GAAD SGNIGA EAVEEAHA EDIRYIIGIGKYFRAKESQEALHKF DRVPLGEAVEEAHAADIEIFVIGVMNDPRYQQFENEMNYM HNELSS
RVAEVA $\mathrm{R} \mid \mathrm{V}$ A E $R \vee V$ A A QARARGIDE I Y AVGVQ

PV PVAPAEAAQGLRD:GVNIYAIGVRDA NVAPPAKALRDRNVIIFAIGVGNVQRA EVVTPAEELLRQNGITVYVVGIGTHG DVSVPAMAAHQNGVIAYAI GV
DAIGPAREIKAAGI QVLAVGMDG DISRPTILVQNSGIRTLGI GTR LVLDAAA AAHAAGI RIFAVGVGAADKE EVLAPAKALRD AKGI TVFAIGGVFNA KVEEASRLARESGTNTFFVTIEGADENEKKNLVNTQNLVVEK SVKEPAERLRNEKVNI YAI GV EVKVPAHKLKNEGILI YVVGIGGH RVQDVAARARAMNUEIYAVGV E V T R AAEELRQEGIII YAIGDKQAD DIKGPAEDL DVTTT GILEPVGWLQQRERVRVHA GVRDA DV A QAAEDLRRRGVDI YTVGI GD
NVA $\square P A Q A L R D \quad R N I I I F A I G V G E A K H S Q L D E I$
DLSGP A AYAVAQAGVQVFAVGTADADRRQLELIAGRQP SVAEVAAKARNTGILIFAI GV GQVDLSTLKAM RSPSA 1 TAAAEAKQHNIRVFTVRLSADPNPDAMGTQLRSI $D V Q E A A S K L K E A D G V A Y V V G$
 D 1 Y D TWAAAERAERDDI NIYTVGI NLGDLTEDNE
DI YDTWAAAERAERDDINIYTVGINLGDLTEINE
RVEEASRLAARESSGUNIFFVTIEAAAENEKQNVIEPNKA
EVQDP ARQMRDRGIELFA $\square G \square K N A$
EVSEWATRAKQRG II I YAI G
AEAAEALRRDAVII YATGVRDAH $\frac{\square}{T}$
$D V R N A A E N L N E M \quad G V T T F V V G l I D H A D$


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UniRef90-H2SND0 UniRef90-H2SND0
UniRef90_UPIOO038 UniRef90-C3ZCZ6 UniRef90-V4BRQ8
UniRef90 H3B015 UniRef90_UPI000359CBBC UniRef90_UPIO003B3062E UniRef90-UP100042C09ED UniRef90_UPI0002C463D1 UniRef90_C3ZZV3
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UniRef90_C3ZZV2
UniRef90_UPIO003F15D29
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UniRef90-HOW5D3
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UniRef90-L9JD76
UniRef90_UPIO0044380E9
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$\qquad$



## C

 CRTAVNDLLFI TDGSWSVGYEDFDTAKNWLTNVTFDDGPS CREASLDVVFLVDA NINPQHARSVRNFLYLLVNSFNSK EKADIYFLIDGSGSISPKDFTEMKEFMKDVIKMFHPD $K N V R A D I V F L V D S S N S I$ RAAEFQKTKDFMQSFVIKVDVG
 CKSRPDDVVF I ODSSRSVGPAEFEKVKGFLSEMVNDIGSD
 CKMSEADYFLIDGSGSI RRRDFQDIKTFLNGVIKMFSPH

 CREATVDVVFLVDTS I NPQDNRSVRGFLYMMVNGFKRE C E S A D L I F L I D G S N N I G S V N F P A I R D F L V N F I E R L S V G


$C P M$
$C E R$
C
$C K N$
$C K R$ CKRAEVDVI FLVMGSSGVGRDQ

 CR GK P L D







 RDF GRVRKWVSDLV R DFDPQ CRTVYYDLVFVLDASSSVGDRDFGRVRKWVSDLVFDIGPD
 CKGMA F



 K R DUV FIL I D G S S S L G V A S F Y A I R E F L V R V I Q








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 A D Q V Q $V$ V V Q F $N$ N 1
 $G V R F S V V Q Y S D D P R T E F G L D T Y G S G N E V I Q A V R E L D T Y K G G$

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 GDS I Q V A Q Y N S D V T DE F F LIK DY S T K P Q I L D A I N K V I Y K G R



 $N T R V A V M Q Y S$
 GVVR I G L V F Y S S E E P R L L E F S


 VD K VQ F V V Y S S T P E V Y F S L N S Y A S K S Ql R K K I F N L K P LP G
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 $K Y$ QI GL A Q Y G D Q GHMEF LLNTYQTRDEMIA HVVRHFLL Q G




 Q I Q V G V V Q Y G E DVVVHE F HLLD D Y R S V K D V V A A A S H I E Q R G

 $Y V R F C T I V Y S N T P E V Q F N L K K H Y T K R E V N N A I S E L K A P T G$


 Q DKI $R$ RVSQYS S DPRTEWDLLSTYSTRDQQVLEAMRSSLRYKGG QDLI QV A Q Y A D S V K P E F Y F N T F Q T K R D I V M A L R R V V F D G P $K V Q V G L T Q Y S$ G D A Q T E WD L N S L S T K E QV L A A V R R L R Y K G G



 $R Q N F G L V Q Y S D D P R L E F T F R D H S N Q S Q V L T A V H N M R Y K G G$ $R \square K D G I A Q F G S R Y Q E V V D L E S S D N R T K M Q \square H I Q T D D R S E G$ DMRVGVMQFSTRTKVEFRLNQYFSKDEILEAIDNMKQQNG L VRIIGAVTYATEVQDEFSMNTYSGFKLSVINAMNF YHEG $M N D M R V M Q F S T K T K L E F R L N R Y F R K D E I L G A D D N M E Q Q N G$ QMQVGILQYAEVAVHEWSLKK YQTTQEVVEAAKNDRQEGR


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 GTMTGMALKTAMEQVFTENAGARPGIGKVA:IVTDGRPQD GTMTGLALEKAMKEAFTQTSGARQGISKLAIIVTDGRPQD RTYTGEALKYMLKLDFQDPQWQRGPHVPRHLIILTDGKSDD GTLTGSALTFVSDYFHVSK GARPNVKKFLVLLTDGKSQD SVLNTGSALDFVLANHFTEAGGSRIDEQVEQLVLVTAGQ SPNTGKALDFVAKNFFVKSAGSRDGVPQHLVLFLGGKSQD NTRTGAGFRHIADYDFLPRLARPGVPKVCILITDGKSQD GHKLGLALQFLLDHHFQETAGSRQGVPQVALVLSTGQPED EEANIGAALESVVENHFTRAGDEEGVPQVLVLISGGESSD ITLTGGALTFVSDYFKPSKGARPGVKKFLILI TDGVAGD GTMTGLAIQTAMEEVFTEEMGTRFNIPRVVIVVTDGRPQD GTMTGLA QYAMNVAFTVQNGARPKIPRVAVIVTDGRPQD
 GSKVGKGLSYVNNFFSDANGNRGGAANVAVVMVDGWPTD GTETGKALDFLQSVYFTQEAGSRQRVPQFAVVITDGDSTD GNTRTGAGLRFVADNFFGSNQLRPEVPKICILITDGKSQD GNTRTGAGLRHVAEHFFHPQLARPGVPKVCLIITDGRSQD HTYDGKGLKEVKAFFKSPRRRVARNVHQKLLIFTDGESKD DTYTGAALESMLGLEFSARKQRKNKVPTYLIVLTDGDPHD
 VANTGTAARHAQANHFVKEAGSRDDVPGUAFIVTGGGSSD GTLTGKAIRYVTKYGFGKSDGARPGVPKVVIVVTDGVSYD GTMTGLADQTALDSAFTVESGARMNISKVAIVVTDGRPQD GANTADALRYMRQLGFSQNSGARADVPRVAVVITDGSSPN GTKTGKGLEYLIQNHLTKAAGSRDGVPQLIIVLTDGRSQD
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 GSRRTKALRYLHQTFFREAAGSRFGIPQYAVVI TSGKSED GNTRTGAGFRYVADNFFSPTQRRPGVPQUCILITDGKSQD GNTRTGAALLHVSDHПFRTQLSRPGIPKTCILVTDGKSQD KPFTARALNFARQRFDVNHGGRPSYVTRILILITDEPTVIS RSHAGAALEKMRREVFSEAGGSRQGVPQIAVLVTHRPSDD GTFTGSAMLQARKVFRDS
GTMTGLALQYTMNVALSEAEGAR
GSRRTKALRYGHQTFFQEAAGSRFGVPQYAVVMTSGKSED ATLTAQALVVHRENGFTEESGARPGAPKVLVVISDGRSAD GETYTAAAMNFSMERLGEAFGGRKKVSQLLVTVSDGKSHD GTHTGDALRFMKQLFSRV VRDGVPRFLIVITDGKSQD GTMTGLAAQYTMNVAFTEEEGARPNVPRVAMVVTDGRPQD DTNTGQALSYAKEKFFSNEAGARPEVPKVLVIWVTDGFSTD TTYTATGIRKVVRELLEQANGARENAVKILVVITDGEKYQ STYTGAALDFLRKKVFTQKAGSRQGVQQLAVVITDGQSYD GTETRTAYGDEFARSEAFQKGGRKGAKRVMIVITDGESHD GTMTHKALDQMRTELIFTEAGGAREGHPRVCVMLTDGKSNK
 GNTLIGAALRNVGSYFWPDFGSRINAQQVLLVLTDGQSQD DTYTALALQYSIPFFSKAEGGREDGVPQLMFVITDGEATD NTNTSGG|YMMMTTEFVEDNGDRPNVPDTAVVITDGVSTR NTFTGDALTHVLEQNLKLEAGPRPEADKVVILLTDGKSQD
RGRTKAGERNEVFUPEKGSSKQGVQQUVVIMKSPSGD SPNAGKALDYVVKNYFПKSAGSRDGVPQHLILILGDRSQD RPRDDVALQHVVYMFDSSAGGRRNGVPQTLLVI TSGHLLY ARNTGSALDYVRNYFFTSSAGHREGVPKLLVLLTGGKSQD NTFTGLALTHVLGQNLQPAAGLRPEAAKVVILVTDGKSQD RPLNTGAALNYVRNSAFADSRQQDGVPQILILLSGGRSHD GTMTGLA RYAMNVAFSAEEGARPNVPHVAVIVTDGRPQD GRKTGNGLQYIQETFFQEEAGSRFGIPQYAVVITSGQSED GTETGKALDFLRTQYFTKEAGSRANVPQUAVVITDGDSTD GTNTGAALNFTLQEVFIKQRGSRKGVQQVAVVITDGKSQD NTRTGVGLRYVADNYFGSNKLKRNVPKUTILITDGKSQD
 GRTNTQGALSVALNQFTPARGDRAGVQNVVVLVTDGYSNV GVETGKA LTEVSQLLFNETEGGRPTLRQNLVLITFNKATD



$F \vee D D P S E A A R A$ HVHGPSEAAR

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$\qquad$ 0

 AK K V V SVKSPARAIRD SVSRPASHLR DVSEWANKAKA EVKDAAEAARD
 EV

 $A V K E A A D A L R Q G G V T V Y S V G V F G S$
$S A D A Y L D A S H A L L A R A G V L T F C V G V R N A$
 DV S R S S RVI $Q R L K G Q G V K V A G V V G I K N A$ HAWDQAEAFRRAGILGYVVGVRDAGSA
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 RVEESSRLARE SGUNIFFITIEGAAESEK
$\qquad$ R D

A HVNMIDAVGVQDAV


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#### Abstract

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SFTQPABEDLKKREG
KVKEPADRLRKAG
KVEEASRLLARESG

QS GITII YAVGI GKS $\square$

D AGPA A S SEI A QK
PDKTAREAKELHLDGVTVFVVGDGPAV DEQELNDD KVQDIAA QARAGGIEIYAIGV DRADLQSLKLM SADVTVEA N NARRDHI GLISVGVGPNVNTGELQAI EVMKAAEEAR NNARKGI ILLFALGVGP

 KEGLGAGEAKNSQLLEDT DVASAQETAE KEGITIYTVGVTNSVSFAELTST KVEEASRDARESGDNDFFDTVEGVENEKQNVIVEANVDKA $S V$ DQAALETRQSGIVLYAVGVGNY $D A R L A A Q V L K D \square G M D \square F A!G V$ QLSEPASLLR
DVAGPAQAARD
EVSDAAQTLREKGVKVMTVGVQ

DAEVPAAKLKNQGLKVFTVGI

LVDAAAQRVKEQGVKLFAVGI G I

D





DPLNYEDVIPEADRK
D FDEPASKL R S P D D E KVI EDSEKDNVTRYAYYNRRG







NADESELMML K
VN

K Q N
V NADSA NADSA NANKT 1
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[^4]
K D A K T A Q

 K A EL | Q |
| :--- | :--- | :--- |
| K |
| R |
| R |都


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





V IP F C A G T
AE $\square \mathrm{N}$

| $A$ | $E$ |
| :---: | :---: |
| $K$ | $N$ |
| N | E |

$\mathrm{T} \square \mathrm{Y}$ A $\mathrm{VG} \square \mathrm{Q} A$






KNADEAELKQV
DVHTAAHVLKDLGVNVFAVGV KNADEAELRLL
RVAEVAAAARESGlETYAVGV CAGT
TNAD ILLEQQMI
A RADMTS QRAM
DFDSRELKAM
DVSNADKTLKD



$P$ VE T P A Q Q L R D H G A T $\square Y$ A VG V

DGEE RQWPTLL
KNADHKELI RV
K HA D F E ELL KRMV
S K A D R A E L L K Ell PSSTVKSALEVHDSDITVLTV W DLDPTPAGKLHALGINVFGIGVGEAK


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A S Y P H WK YSVP DESF $\square Q \square S V V R S K \square I N Q L C S$
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ANKPSSTYVFYVEDY IAASKI REVMKQKLC
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AS TNETLGVVDNFNLLDDVRNSLLSSVCSV


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AS YPARKHVT NLESFLQLSNTEWKTKKQLCS ASDPDDKHFFNVTDEAALKDIVDALGERIGSL ASAPECLNMFFI EDFDEVSALKDAI EQKTCS A S D P DA R HVLQVDDFQAI ERI R ETLRQUIC
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## A S E P LELTTVYVLDFPLLS S LVSRLT RVLCT


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TSKPTEEYSFFVNDFKLLRTLSRLVSRRVCATTG $\square T$ GNSEK I ITYSDFNKLKNVKK RMVRE IC

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ASDPDDEYFFNVTDEA ALND V DAGGDRDFT



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UniRef90_UPI00021A4181 UniRef90_C3Z867
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 GPVM G VVG Y G DNN A T Q F N F R T H M N S Q D L K T A I E K I I T H K G G
 TA R IIGIIVNYSH KVEKV A NLKKQFSSKD DFKLAAVDNMQY L G E $K V R V A V A A Y R K R G V V I F N L K K Y K T M D K V Q T A V E G L K Y R S K$


 $H$ TLVGLETFSNGVEVKFNLNDFQNKLDVVNAISFBPYNGG GTMVAAVLQYASTVQNEFSFNTFFKKDDMKKAVAGDDPGST $R V Q V G L T Q Y S G D P Q T E W D L N S F R T R E E V L A A V R S L R Y K G G$ K DRVVVVQYSRDAEVHFYLNTYSTREDI I DSVRGLRHRGG


 S I QFA A V Q F S T T F RTE FTVE QYQQR K NL A GLLLK DA G HM K S
 $N V R V G A V Q Y A S Q P E V E F N I N Q H A N K D D L G L A I Q N D R Q V G G$
 $K V Q I G L V Q Y S D D P Y P E F Q L T D H R D K N S L L A A V E N L T H R G G$ K D K V R V GMVQ Y S G NMRS P R DK K E F D M GQYA D KK K L K A A DQ
 $K$ V R V G L V L Y S D E P R L E F G L N T F L S Q S E M L S H L
 QMQVGIL QYGEVVVHEWSLKDYQTTQEVVEAAKNI RQEGR

 QDLI QVAQYANTVRPEFYFNTHPNKREVMAAVRRMKPRGS
 R L R L A A V L Q Y S S T V S V E H N F R D W Q D L D D V F Q S R V S S MA L I G H K I RIG AL Q F N T F PYVVQFY L N A F H D K S DLI S AI R A I R R S S G



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



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






 KVRVAVVDYSDEPRADVYDNTFSNKSEGLQHVKKLSYGRG K I H I G L V Q Y N T V A F P E F Y F T T Y Q S K N E MI Q H I K K T N Y R G G $P G N K D S V T Y S D D Y H L Q F H L N S H L T S S S L T Q G I K N M N F P R G$ Y T QVA VI Q Y S D T P R M E DP L G Q H Q S GA K L IQ A I Q S IS Y LGG
 $D V R F G V V L F G D A A H G L L D L D D Y D D H T A L S K A I V S A R Y L D E$ P QQAQEVQYGSDPRFEFNLNTYKNKQDMVAAASKITQKGG




 PSKVRVAFTYGQKVFLDQDIEFGEFDNKASLQQRIRDIGW


 $V$ I HF G AI Q Y S D N S R VEF F K F N T Y L N G T S V V K A L Q NL K Y K
 QTRI G ALT F S T GVRLLE FDLK D H Q S K E GL M S AII D GIA S R G G $M V R V G A L Q F S S A P H L E F P L D S F S T R Q E V K A K I K K M \quad V F K$ S V R V G V M S Y G S S N Y Y H F Y L S T Y T A K S S SVLLTA I N N L P Y S G G
 GPEGTQQVQFSEEPRTEFHFNQHK DRNGVLKALKKELRYTGGG

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UniRef90 I3N1R0 UniRef90_I3N1R0
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R NSLRVALLMTDGIDHP
 GTYT G S A I E K A N QMF E A A

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 NTFTGGALSHVLGQNLKPAAGLRPEAAHLVILVTDGKSQD




 GTETGGRA L ETMLLT L MK E GT Q S R T T T TAPR YLVV L T D G K S Q D

 $K T K T G A A L D D L R N T V F T Q Q K G Y R Q G V Q Q L A V V I T T E G Y S Q D$ NA RTGHAALSFLVVDTLITAGA LRGDAAKVVILITE GKSSN ETRTASAIIHTACTEAFSEERGAREGATKVMVVVTDGESHD



 GTYSAYA ITNATKVFKQETS S S SLLRVVLLMTD GEDHP GTQTDTALLKADQELFNPARGMRDQSSKVLILVTDGASNN WT NDAKALVRHVNSNVLRPEVGGHRMGVRTAVVVISDBKPTV


 K TMTALGIDTARKEAFTPERGARPGVKKVMVIVTDGESHD



 GTYTATALQAANDMFKSA GRTGTSAAIDKMMYEDVYATRGDRNGVVNVAMVVSDGGSND GTHDGK A LTYT LDDNVFKVA PR QNVKNVLVVLTD GK SHD


 GTNTHLDALDY L RE HDFTSES GSRQSAAKI A VVQTD GVVBD TTHTGKALKFTLLE EVFKK A RKNVKNVLI ALTD GHASD NTFMDKAFAKMREGFSKENGGRPGQVPQI AVLLTDGVA
 K A NTGEALKYAKDYVFTKERGSRSDVQQI AVVVTDGKSSD







 S P NT GKA L E F VAARNFFVVKSA GSRD GVV QHLVVLVLGGK S Q D
 GTFSYYA ISNVTRLFKRE GRKNGVKVALLMTDGDDHP EAGFRTE TGMGA YMRD H L F K K KARPGVVM I CIVVITD GESQE GTMTGLADQYTMETAFTEDHGARMHIPRIAMIVTDGRPQD GTRTGSALEFARLNAAWRGGVMVMVMVVDGKSGD NTNTGKAILHTVRNFFSPDFGVRRGYPRVIVVFVDGWPSD $R Q T M T A G G D T A R K E A F T E A R G A R R G V K K V M V I V T D D G E S H D$ $L Q T M T A G I E T A R K E A F T E A R G A R P G V Q K V M V V V T D G E S H D$ GGNTRTGAGLKFMADNFFNPASSREVPKITILITDGKSQD







## UniRef90 H2SK39 UniRef90－G1PXZ8 UniRet90＿K7FNG1 UniRef90＿UPI0003346047 UniRef90－H2U310

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UniRef90－S4RZX5
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UniRef90-W5N2C8
UniRef90_UPIOOO388E276
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UniRef90_UPIOOO3EBDA47
 DKKNLTEVVKNARDTKVEIYVIGVVKTNDPNFKMFYKEM｜
 KVEEASRLARESGINIFFITIEGAVESEKQYVLEPNFPNK EVRQPAEALRAKGVTVYSIGVVA
DVVSGESAVLKANESQIGRFVIGVVNDPNSEEF DKEKGTEVVKNASDTNVEMFVIGKKNDPN GTRNSVAA $\square N K L K A K G T K V D G V G \square G$
LS G

KKELN

 EVDRPASLRR
SVEELAALLKD AGVTVFTVGПKNA GEDLEASLGECTDRNDTYADAVLGHYDRRQQDRTETKS AVQEPARDLRE DGIVIYAIGLRDAKDKG AVQEPARDLREDGIVIYAVGVREAKD $V$ VAVE DVSQPAQELKR SSIMAFAVGN K
 QL L NVADPAKALRD RNIIIFATGVGEAKHSQLLED RSPSSVMAAATAKQNGIRMFTIRLSGAPEQGAMGMKLRSM RQAT IQAAEVVKSHGUTLFA GVGGAD LFELNSV DDLATAPAANELKAAGMAEEFGVGLDETPDEETMRMV EMDDLKVIEANSERDNUTRYS

## $\stackrel{\text { E }}{N}$

 N VVTIREA K K L L H ELSN NHDLSEVVKACEDDGIERES SYDQAANALARAGVLTFC DVAMPAQVLRLAGVELFAVGVQDAVDS位 TDRNGGVARERGDVKNII RLVVVGVGHAKLGMVQDVAFVDK TDRNGTEVKRYDDKNIVRL QKESTVLEALEAKNRGSVT DPAAAVRNYGPGVEVFA $V I G V V K K S D P N F$
$V E G V G V A V G E D P$ PRETSSEAANL HDTGVGVGAGDSGAGIVVAQLNVI NSAKLIQRANEAKALGMEMYVVVSVGVGAGVDEGELKAV DVRAPAAAAHKAGПTVYSTGV SDDAYLQAANALVREGVLTFCVGASRA PRKTAAAASAL RDIGVVVLSDGVGSGIDKAE $L V K K P A Q A V R D Y G D E V F A V G$
$D P Y K A V E E A K K L K S G V E V F$ DPYKAVEEAKKLKSLGVEVFTHGVKDAKMS REGDTINEAAALKARGMGVDISRGVTNQVDVEELKAL DVAGPAKALRD DVSAPAADLRRSGVTVFAVGIKSFDN DVKKAASALRRTGVTVYAVGT KDANQNELKEM KPTLTKTAADEAKRRG\｜QVFATGVGTDV NSGELDDM DVVDASVEARA QGITVFAVGVGSEDT
 NSLT DTVTGECNKDGITRFGYY TRNNIDTTKL SVKEAAEIVRGHGVNTYADGVKGY
DVGPPSSAAQQ DVSAPAQALRDAGVTLYAVGISG
DVSRYSRVISSSG
DVELPSKNLKDSGDEVFVI GV GIDGD
PVAEPADALRA
$K N P D V K S U S E D A R T S$
$P D K T A K E A L G A R Q A G$
PDKTAKEALGARQAG IDDFA $\square G \nabla S$
TVKEVAAEARKAGDQDFADGV
SVASSANDLA SQGVDVYATGVG
解
NVEEAAVLARESGDNWFVVSVAKPSPEEASLVDQDFMRKA
NHRLNKVIQDCEDESUQRFSLALLGSYNRTEKFQEEMKSA

DVLKPSKALK

KSADTYELA
R
HVALLAKKLKKRGITVFAVGVR
YSATV TAANNVHNAGIVVFA1 G IVAGA
DVNRP AARRMRQAGUVVEAVGGVGA
LVSEPAKYARDR
DV㫐PPAKYARDR
RNADVSELNQ


STODNELKEI PDKTAKEALGARQAG

O VYAlGVGNYDATQLLEDA
 NVEAPAQKLRSQGVYIDADGV

KSADTYELAQ
DSHNTKKVIKECEEDDTERFGIAVLGDYNR HVALLLAKKLKERGITVFAVGVR

DVLPPARVVHALGRDCWVCFGEGPNP
$D V A E P A Q V L R$
GDVDDRELELI

|  | $170{ }^{170} 190$ |
| :---: | :---: |
| UniR |  |
| UniRef90－G1 | NDSN |
| UniRef90 K7FNG1 UnR | AVCRSKGRTFGNV |
| UniRef90－H2U310 | SGTPNRMYAGR DFDALKDLEKQMAMELC |
| UniRef90 UPP0003B5 | ASDPDQDYMFLITKDKVLKVLEKRLLRCVFEEG |
| UniRef90 UPI0003A | ATDP EHVYQFDDFFT |
| UniRef90 UPIOOOO5 | VSSP的DETMFMANQVEDLMSLSRDFVNFVC |
|  |  |
|  |  |
| UniRef90－K1PW | ANDPNNKHLFHVDDFAGLHADKKLLVLSA |
| 4RZX5 | TDPD |
| UniRef90－UPI00038EE |  |
| UniRef90－H2T3W1 | QPS YALAVTEFSDLPGIQEQLSSVMSTV |
| UniRef90－UP100038E | ATE ESLVFMVPEFRSFGDLQEQLLPYIVGVA |
| UniRef90－F7EN | ANMPSTHYVLYAEDYTT ${ }^{\text {a }}$ S |
| UniRef90 UPIOOO4574C67 | AGGADRK FSIENYADLDN K |
| UniRef90－HOXEJ5 | PSENNTYYMDNYGGLKNV |
| UniRef90－UPIOOO45722EB | A SAPHWRF UYRLNDFSMLESIVSDIVPSLHSAA $^{\text {a }}$ |
| UniRef90－H3AU32 | AGD DARWSFVQNFDSLKDIKNKVVQEI |
| UniRet90＿UPIO003C18834 | ASHPPQE |
| UniRef90－13JDE9 | ANWPSERFVLT |
| UniRef90－R7UP14 | A S LPTEEN【IHVNSYETLESUAAELT |
|  |  |
| UP |  |
| G3PD73 | A |
| $\begin{aligned} & \text { UniRef90_H3AEE6 } \\ & \text { UniRef90_UPIO003 } \end{aligned}$ | AEKPERK FYVNNFDSL |
|  | ASQ QGYVFNIEDFNRLDEVLGSISSTVC |
| UniRef90 13LUR |  |
| UniRef90－UPIO0044 | Y YEEKFESLQNLEKELLYQVF |
| UniRei90－V4A4M4 | CTHVFTLQDFSQMDTILNEIQ |
|  | YDYTYKVSSTS |
|  | ASEPWDKH |
| UniRef90－R7U942 | VTNP QVHYFQAETFSDLDA ANTLAQTGCSS |
| UniRef90 FGYOB3 | F |
| UniRef90－K1R2G4 | VKDFRSLVSI |
| UniRet90－UPIO00440E2EA | ASEKKEDHFFNVSDEAALINI VDALGSKDFAL |
| UniRef90 UP10002C46889 | S |
| 12 | KLLTP自TLT S |
| UniRef90－UPIO0033 | AVQRNNGFFYHMPNWFGTTKYVKPLVOKDCS |
| UniRef90－UPI0003AF4D58 | V |
| UniRef90－l3N1R0 |  |
| UniRef90－R7V | ASDPANEFTVRVRSDSDI EDGVGSLLSRVC |
|  |  |
| UniRef90－UPIOOO359D71B UniRef90－R7Vİ | A |
|  |  |
| $\begin{array}{ll} \text { UniRefgo-G3l } \end{array}$ | AFNPSLVYMMGDFSSLPDLPQQLIQ |
| UniRef90－UPIOOO359s | ASPPSCSRVRVLKDFSELTSMLPD |
| UniRef90－A7SV23 |  |
| K1QX18 | SSDPQSQHVFDVDSLEGLSSUVSRLSKSVCSSGT |
|  | AS ${ }_{\text {GSPKPD }}$ |
| UniRef90－W5k | ASYPQDKF |
| UniReef90－UPIO0045 | A |
| UniRee90 V4ABH6 | EP |
| G3N75 | S A |
| UniRef90＿UPIO00443C21B UniRef90＿UPIOOO2A4B3B4 |  |
| UniF | STSQQDVFQVAGFDALDKI QHSVANRTC |
| Uni | Y |
| UniRee90－UPPIO0034FB9CE | R V |
| UniRef90 F2UR | ASPPVEDNVVFİDTSEFSALASKISRANC |
| P10003 | P RLL |
|  | NSDH NKIY 1 VKDFDSLQDIVVELIDNVF |
| ， 1 |  |
| UniRef90－G17EK2 | S ${ }^{\text {cos }}$ |
| UniRef90－H2LCC10 | SPHSEHVHLVANFSQLESLI |
| Ref90－C3Y7M9 | NV1ELTD ${ }^{\text {d }}$ |
|  | VCKDNEFFTFTMPSWFSTNKFVKPLAQKLCS |
| UniRees90－UP | KHFFNV |
|  | D F |
| UniRef90－A7RFD8 |  |
| Re990＿G3PUX7 | S SEPLID |
| UniRet90 UPIO00359AEC6 | ERFKFKVTEFS |
|  | ASEPREQHVLLAEQVDATNGLFSTLSHSICCTIAS |
| C3 | A |
| 55N2C8 | $1 \mathrm{D}$ |
|  |  |



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UniRef90_UPI000333433D UniRef90_UPI000333433D
UniRef90_UPI00045725E2 UniRef90 Q9Z0R1 UniRef90_UPI0004405B41 UniRef90_UPI00034F87C8 UniRef90_K1QIT1 UniRef90_G3NTQ8 UniRef90_R7TXP6 UniRef90_V4BNS4
UniRef90 W9DPK6 UniRef90_Q8T5C2 UniRef90-E4XUM5 UniRef90-H2M4B8 UniRef90_UPI0003871C00 UniRef90-Q5G5W4 UniRef90_UPI0001DE9C9D UniRef90_Q75R52 UniRef90_UPI0003F1232D UniRef90_UPI0003340BA1 UniRef90_UPI00042BA691 UniRef90_M4AB63 UniRef90_Q28449 UniRef90_R7UZK5 UniRef90_H3B003 UniRef90_UPIO003C17E2D UniRef90-C3YD27 UniRef90_W5KLG0 UniRef90_UPI000440C49D UniRef90_UPI000443EC5E UniRef90_R7V7T8 UniRef90_E4YUB9
UniRef90-O77672 UniRef90_H3A4K7 UniRef90_G5CZ45 UniRef90_UPIO0046B87E8 UniRef90_V8PEV1 UniRef90_UPI000388B598 UniRef90_A9V8M9
UniRef90_UPI00038BB5F2

1 SREAEVVFVLDSSTATGED DFMSMRQF ${ }^{10}{ }^{30}$ DDTVVISVVNTS
DS TA TGEDDFMSMRQFIVTVSEVNTS
 C P
 S A A VD D L F L D G S Y S I G K G S F E T A K Y F V VK L C D D I N P D
 $C R N V$

 K R D I A F LV D GS S A L GPANFNAI R DF I A K V I QR L E I G P A A Q GDLL L L L D S S A SVVSYEF SRVK EFVGQLVQSLD S G
 CPTY MDVVIVLDGSNSIMY CNERAFDFI, LDSEVQTEVRRLVGRUDPE


 CKTAKALVFVIDGSNDLTADAFTKAKDFMKKVYNNFPVS



P D A K M D L V F L V D T T S S S I G H K A DAE S I R S F I Y K V V D T M G P D



C G
GHADDVLVIDR
PHC

LDVVA F L L E G S D S V G EA GF N R SA E F L E E V I R QM D R D

C Q A Q S L DV L F I L D S S S S I G $\square$ D D Y R L Q L Q F V A D L T Q N F S R E

CQAQS LDLVFALDASAGVGRENFLRVRNFVSSLQFSIDRD C K C A S V D L V
 K G K K A D M V F L L NTPVDLAFVIDDGSASVGPDQFEKSKKFVRDMVDGFNDG


 DLVFVMDGSSSMSEEDGVNI EQFVRDVVMTFENM A DIVFVLLD GSYSTKRA GWESDDEFVQRRFVK DNFEH
 SMVLDV AFVVLE GSDKIGEA DFNRSKEFVVVEVI QRMDVG

## UniRef90 11 G7C2 UniRef90_W5KLA0 UniRef90_UPI0003EACD63

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UniRef90_UPI00035978C6 UniRef90_A7S7H3 UniRef90_UPI000223F643 UniRef90_U3LM66 UniRef90-T1EDJ5 UniRef90_UPI00021A4182 UniRef90_G311N6
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UniRef90_A7RPQ5 UniRef90_Q7YR17
UniRef90 F1JTA0 UniRef90_UPI00045D9CD9 UniRef90_H2M7Y4 UniRef90_UPI000359682E UniRef90_P34576 UniRef90_UPI0003593FAE UniRef90_UPI000333433D UniRef90_UPI00045725E2 UniRef90_Q9Z0R1 UniRef90_UPI0004405B41 UniRef90_UPI00034F87C8 UniRef90_K1QIT1 UniRef90_G3NTQ8 UniRef90_R7TXP6 UniRef90-V4BNS4 UniRef90_Q8T5C2 UniRef90_E4XUM5 UniRef90-H2M4B8 UniRef90_UPI0003871C00 UniRef90_Q5G5W4 UniRef90_UPI0001DE9C9D UniRef90_Q75R52 UniRef90_UPI0003F1232D UniRef90_UPI0003340BA1 UniRef90_UPI00042BA691 UniRef90_M4AB63 UniRef90_Q28449
UniRef90-R7UZK5 UniRef90_H3B003 UniRef90_UPI0003C17E2D UniRef90_C3YD27 UniRef90_W5KLG0 UniRef90_UPI000440C49D UniRef90_UPI000443EC5E
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UniRef90_UPIO0046B87E8 UniRef90_V8PEV1

$P N K T R V A T D Q Y S \square E Q Q D E F R F D L P D V H T L R N A L G Q U V Y M D$ QFMTRI IVFS D DAQLS $\square R L N D Y W N M Q D L I T A D Y K I V Y R G Q$ SVRVGVMSYASSNFYHFDLNTYSTKSSVLTAINDLPFSDG

 A L S T G S LV HVGSRPHAEFPFA QHRSGAAVQDAI RAAT QRMG $F D T T$ R V I Q F S E D P K V E F L L N A H S S K D E V Q N A V R R MRP K G G
 Q T Q V S L M A Y G D D A T A A F N F G S V N T T S E II D D GII D A V S Y M QKWI RVVEYHK GS HAY $\quad$ VQ LRRDRKRPS DLRR RAS QVK Y T G S



 A DVVTVVVVYG GQVQTA F GLD A HLT QA A V L R A V S QAP Y L G G

 $R T R V G V V H Y S D R P T T A F E L G R F G S R A E V K A A A R Q L A Y H$







 VT QVGGLVVYGSRVQTAFGLDTHLGRAAVLRAMSQAP Y LGG G $N V Q F S T I V F S N E A S V A F G F D R Y L D P D S L Q Q A D R S V E Y I G S$



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

 Q NQ DQ MVQ Y S D K A A A E F F L N TH S T K K NVI D A V K QL K H T G G
 $R M K I G M A Q F G S R Y$ Q E I I E L Q N S LTTK T E WK S R I Q A I T K S K G
 S TVHVA VLQQY S Y TVV T A E H T F R E P Q S K A E V L R R Q V R E L R R R G N $R V L V G L I L V S D S P I L E F S F T Q H N S S S E L L K A L G D L E R R W G$
 A T R V A I V T F S S R V D Y I S P P A R A Q Q R Q H K C A L L S R E I P A QKKI RILEYRTGSNIYLGLKD\|KTQSQMRKIVQNIMY TG


## UniRef90 $11 G 7 \mathrm{C} 2$ UniRef90-W5KLAO UniRef90-UP10003EACD63 UniRef90-U1MA62 UniRe990-FFG7J7 UniRef90 - EOV8A2 UniRef90 W5MW23 UniRef90-H2ZXD1 UniRef90 L5KT32 UniRef90_UPI0003F1027E UniRef90-UPIO003F1027E UniRef90 UPIO00273A516 UniRef90-UPI000388ABB4 UniRef90-F600S3 UniRef90_UP10003C00D5A UniRef90-I1G361 UniRef90-I3J0G0 UniRef90-V3ZNH4 UniRef90-UPI0003D0753E UniRef90-UPIO004572035 UniRef90 A7TC56 UniRef90 UPIO003BD7F33 UniRef90_UPIOOO34FD2F9 UniRef90-UPI000359A47B UniRet90_V4BBR1 UniRef90-W2SQL4 UniRef90-F2USP7 UniRef90-UPI0003592FA6 UniRef90_UPI00034F820A

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UniRef90 A7RPQ5 UniRef90-Q7YR17
UniRef90 F1JTA0 UniRef90-UPIO0045D9CD9 UniRet90_H2M7Y4 UniRef90-UPI000359682E UniRef90_P34576 UniRet90_UPIo003593FAE UniRef90-UPIO00333433D UniRef90-UPIO0045725E2 UniRef90 Q9Z0R1 UniRef90_UPIO004405B41 UniRef90-UPIOOO34F87C8 UniRef90-K1QIT1 UniRef90-G3NTQ8 UniRet90_-_7TXP6 UniRef90 ${ }^{-}$V4BNS4 4
UniRef90 ${ }^{-}$W9DPK UniRef90-Q8T5C2 UniRef90-E4XUM5 UniRef90-H2M4B8 UniRef90 UPIOOO3871C00 UniRef90-G5CZO9 UniRef90-UP10001DE9C9D UniRef90_Q75R52 UniRef90-UPIIO003F1232D UniRef90-UPIOOO3340BA1
UniRef90 UPIOOO42BA691 UniRef90_M4AB63 UniRef90-Q28449 UniRef90_R7UZK5 UniRe990-H3B003 UniRef90 UP10003C17E2D UniRef90-C3YD27 UniRef90-UPIOOO440C49D UniRef90-UP1000443EC5E
UniRet90-UPIOOO42CA6C6 UniRef90-UPIOOO42CA6C6
UniRef90-R7V7T8 UniRef90-E4YUB9 UniRef90-O77672 UniRef90-H3A4K7 UniRef90-G5CZ45
UniRef90-UPIooou6B87E8 UniRef90_V8PEV1

ERNTGAAl DLAGAEL
100
110
NQNGRVGVIARIIVVLTGGRS
120
GTATGDAITYAVENLYVPRSMGMG KKYLIIVTDGQSYG NTNTGKALRHTVETFFSSENGMRKGRPRVIMVFVDGQSPD GGSTETGLALKYILWKGFPGGRNASVPQILILITDGKSQG GNTRTGAALRHVSDHVFLPHLTRPGIPKVCLLITDGKSQD QTMTALGUHTASAVAFKEENGARKGVKKIMVVVTDGESHD SNQTGKGLEPVMHGHLTRAAGSRDGVPQVLVVITDGRADD PALLTGAFARNNLFTSGAGYRAAEGVPKVLVLITGGKSDD PALLTGAFARNNLFTSGAGYRAAEGVPKVLVLITGGKSLD STNTGLAALDLAKEQLLTSKAGARPGVRKVLVVVTDGGSSD GTATGDAINFAVRNLFQPTKDGHN KNFLIIVTDGQSYD ETKTAQALMMACTEGFSQSRGGRPEAARLLVVVTDGESHD GTSTGSALSYTTQNLFRRTGPGR GIPRFAVVVTDGRSYN AGHSTRTGNADKYVRTSRFAESRKGVRKVAVVMTDGNSRF VASASSALLHINTDVMTVQKGARPGVSKVVVVLTNGGGME GGNTETGLALKYILRKGFPGGRNSSIPEVLVESDGKSQG GAVDKDKYPGGSTFTGAGLRMVKSNVPHILIVMTDGESHD STMTGWALRY ${ }^{\text {SCNNNDNPSVGMREDSRKI GVLTTDGKSHD }}$ TQTNFKAIDFTRKFAFSKEYGGRPNANKVMVVITDGESHD VTNTDDALNVKNSVLTSEHGVRRTRACLFLWI HLITRNG STNTAGALDKARUTFTSA RGARDAVKVAVLVTDGKSDD GTRTGSALDYARTNMFLTSRGARPGVPRVAIVIDDGQSGD ATYTNLGLKYAREQVLSPSHGARPNVTKLVIVITDGASTS PAPSTGAALLKNULTRSAGSRMEDGVPQLLIVLTADRSGD LTNTFKA QFARDSAYTAAAGGRPGATKVMVVVTDGESHD
KRGKTAALLEGRKFSLLEAWGARPDTPKVVVVLTDGKSTE PQTYTDRGLVEAHQRFAKENGARSRTTRVVVVINDGKSNG GPGTETG KAEELVNPASSGAREDANKILVVITDGQKYG RTNTAAALNLLRTQAFTATNGDRSGVPNVAIIVSDGNSND GTNTAEALDGMRTRGFSTSYGARQGVPRVGIVITDGYSNS VTKTASAMQHVLDNGFTPSRGSRKKASKVMVVLTDGDDFG DLKWLAEATYTGDYALNETDKGMRNTNKVVLVLTDGRS KGTETGKAMNFMAQMIDMGFGQRNDSKVVAIVITDGRSSE $R Q V N G G G A L D Y V S Q N I F K R P R D E E G V P Q F L V L I S S G K S D D$
$G T A L T A A L Q T V L N D V L P V$ GGEPKTGNALYKAKKGLFEVSSRPGVSHALVLLTSGSASD
 VGSAGTALLHIYDKVMTVQRGARPGVPKAVVVLTGGRGAE DMNWLAEATYTGEALSFALNNTMRKDNKVVLVLTDGRA RYTSTGEGDEYMATAQLASQFTRSWAERVGLVITDGNSQ LTRTGAADQHMVQEGFSERRGARPDIARVAIILTDGRSQD VGSAGTALLHTHGKVMTVQKGARPGVPKAVVMITGGRGAE RGSAGGEALSYVTKSVFTINGDQEGVPQFLILLTAGKSAD
GGRTETG A DRHLLRRGFPGGRNGSVPQSLVIVTDGKSQG GTGTHKALKRMREMFQER GRPEVPRGGVVITDGLSVS VASTGSALLHVRSDVLTAARGARPGVNKAVVVVTDGSGGD GTKTGEALGFANQNVLNAANGDREEVPDLAFVVIDGKSKV GQTA DGDGLENARLEVFPNRGGREEVQKVVILLTDGQNNG GGDTHTGTALRYDSTNNR WREEVPKILI FVTDGTPQ DSNTGKA LHTAETFFTQENGMRRGHPRVMVVMIDGWPSD
GPTRGKAI DFVVQNAMSESHGGRPSASKVAVVIVSGRSED GPTRGKALDFVVQNAMSESHGGRPSASKVAVVIVSGRSED GTVASTSEVLKYTLFQIFGKVDRPEASRGALLLTGMASQ ATFTDKALSLALQVFTPGSYGARANENHVAIVLTDGLSTD VGSAGTALLHIYDKVMTVQRGARPGVPKAVVVLTGGRGAE GTETRTAFGIEFARGIGEEYAHGAGLPLGGMEAMQGPSSG DMPWKTSTGKALEVTMNTMVREMKKENKVVLVLTGGRS NRTNTGALQYVSEHSFSTSQGDREQAPNLVYMVT GDTNTTGGLEMTKDKVIGQAGDREPVRNVVVVITDGDPTF N VVNGAYVLTNHFTRSAGSRDEERIPQLLVLVSAGRSAD AVKTGAA KHLQDNHFTKAAGSRDDVPQAFVI TGGRSQD GTEDGKALVFTKRRLFSELYGARQDVPRIVILITDGRSSP QLLNTGAALTYNVFTDPSGSRRLENVPQLLILLSAGRSTD FGMIGKALDHVLKHNFQPSAGMRPDAKKKVILATGGVSDD LPRIDLALRKVGDMFEPSAGGRRNGVPQTLVVITSGGPRY GLGYQTKTHLGIQAAAGDFQRNGHDNHCWLMVILSDGAPC GTNTGRALQYAAEHSFSAGQGDREEAPNLVYMVTGSPSSD GTNTGLALQYLSEHSFSATQGDREQVPNLVYMVTGNPASD RHNTKVGUEHRGNHFVPDAGSRQRVPQVAFVITGGKSTE YRGGGTYTKGAFQQAAQILVHSRVNATKVIFLITDGYSNG
$G E V A S A T E V L K Y V A L H V G G K A P R T N A A R I A L L L T A S K S P R ~$ GTYTAAGLEADRTQVFTESNGMRPGVPRVLIVVSDGAASA

UniRef90 11 G7C2
UniRef90-W5KLAO
UniRef90-UPIOOO3EACD63 UniRef90_U1MA62
UniRe990-FFG7J7 UniRef90-EOV8A2
UniRef90
W5MW23 UniRef90-H2ZXD1 UniRef90 L5KT32 UniRef90-UPIO003F1027E UniRef90-UPIO003F1027E UniRef90- UPIO00273A516 UniRef90_UPI000388ABB4
UniRef90-F600S3
UniRef90-UPI0003C00D5A UniRef90-11G361 UniRef90-13J0G0 UniRef90-V3ZNH4
UniRef90 G1NF03 UniRef90-UPI0003D0753E UniRef90_UPIOOO4572035 UniRef90 A7TC56 UniRef90 UPIO003BD7F33 UniRef90_UPIO0034FD2F9 UniRef90_UPIOOO359A47B UniRef90-V4BBR1 UniRef90-W2SQL4
UniRef90-F2USP7
UniRef90-UPI0003592FA6 UniRee90 ${ }^{-}$UPI00034F820A UniRef90-G1P981
UniRef90_UPI00035978C6 UniRef90 A7S7H3 UniRef90-UPIOOO223F643 UniRef90-U3LM66 UniRef90-T1EDJ5
UniRef90_UPI00021A4182
UniRef90-G311N6
UniRef90-I3KEZ4
UniRef90 ${ }^{-}$E4WWH4
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UniRef90-A7RPQ5
UniRef90-Q7YR17
UniRef90-F1JTA0
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UniRef90-H2M7Y4
UniRef90_UP1000359682E
UniRef90-P34576
UniRef90-UPIO003593FAE
UniRef90-UPIOOO333433D
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DVNa Tea aly ${ }^{130}$
DVRGPAITAAQRAGTTVF
DI EEAATLARESGINVF NVTEPAIAAR RVSVRPTEELGG NVTVPAQQLKDRGITVFAVGVR
NVD FPRWEELHLL
 NHNLKQVIDNCENEGDERFSTEVLGSYNRGNQFVEEMKS GLALPSAQLKSADVNVFAVGV AVSQPAQELKKNN
AVSQPAQELKKNN
EAQVPMQALKDMGVTVFIVST
$S V E D A B A L Q D$ RGVTVFAVGDKNA
DVRGPASSAHDSGVTIFSVGV
GEELIPTALLQACEAGRVTRYGIAVLGHYLR
RSATV QAAQAVHNDGIVYYSFGUGDGU
 DAAAPAQQ RDNGVVVFVVVIGDTERGVSDQVSHKELVND ( NATLPAKQVKERGLTVFAVGVMTVFAVGMKFPRWELHVL
 OVYEKSKNLR NALLSKVIGDCEKDN【IRFGПAVLGYYNRYNTDПKE円ES TPLSADDR
FINT
NVT $\square$ PATNA

$P Q L T E M E A A R L K A$
$D V R G P S T V L K R G G$
DVRGPSTVLKRGGA VPGSQG| GNA GAYTRRSELEGI
GSKLKEVIAQCNEDGLLRFGIAVLGNALDTKNLISEMQAL
P
E S
DSLKYSEA
ESRVSVRMPLAEAKGVIR
NPSSTVDEAADYARED GDTLYAVGVGTE
YSATTVDASIACRQAGIRLVTASLGDSU

KHDFVAEASKNLKKVVDVVIAVGVNMKKENEGSR EVVKTV PVGPPMQALKDLGVVVFIVSTMPDEEFVRGNLLAL

EDGPPALELR
EPRNMVRTVMOYVKNKAGVKVTAI GLLGKLANVKELIE I
 DAAVP AQKLRNNGISVLVMGVGPVLSEGDRRL
DDKRDTFPLTTLCGKGVQVGGLGVKDYSGRQPNSEQRDSC ESAKTKEAARQARESGLTMFAIGVGN

NWRIKDAQAARDSGVFAVGGNARHQELVRI


GPVLIREAVRRAL
EIKRLPGDIQ
LV $\square P A A A A A A H R A G \square R \square F A V G V G E A \square$ REEDEE
QVALLAKQLKE
PYLTKEEARLLHDDGVITFAVGIEGDVGKTFQTELEYU
 HKSPEHE SSLLRKEGVVIVAIGVGTGFL
DRAVPAAARSURDGVRDFAIGVGNAV
DVEQAA LIARESGDNVFLVSVAKPAAEELSMADRSEMKKA
TVEPAALSAR MNRVSLFPVGVGNSYDEEQLRTL
E DRKMAQNLQRYMQGLKKKKVIVVPVGTGPHVNLKQTRLT
DAAVPVQKLR NNGVSVLVVGVGPVLREALRRLL RNKTLI EAARDRNANTVLGIRI GQYQIQELIDI
DAVVP QKLRDDG D

$P K P N P R Q R A L D M A N L L K G Q A D V F A V G D T N Q T D D A F U S N \square I$ DYRQDPQAD $\square Q A G 1 L T L C V G V G N A E P$
 ES EVKRVADQVALAGVLTEAVGA
 DVSKAVEALRE AGICILALGDGDVYKE
CSIGDDELAKNAADDAKRQGIEIFSVCIGRDCDDFQLKEM DDDNTVKLVGESLRAAGDLTVVAVG VNKAVESELVED
EDVRMPGDLQ Q
EIKRDPGDIQ
DAQEASLILL
DPRPDAASLRDFGVEDFTFGDW, QGNDRELNDM
NQHILTLLQ
KKKVTVIPVGTGPS@SMEQIKDI
$P V A D P A K Q L K E G \| L V F A V G R$

UniRef90 I1G7C2 UniRef90 W5KLAO UniRef90-UPI0003EACD63 UniRef90_U1MA62
UniRef90_F7G7J7 UniRef90-EOV8A2
UniRef90
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UniRet90_A7RPQ5 UniRef90_Q7YR17 UniRef90-F1JTA0 UniRet90 UPIO0045D9CD9 UniRef90- H2M7Y4 UniRef90-UPIO00359682E UniRet90_P34576
UniRef90 UPIO003593FAE UniRef90-UPIO00333433D UniRef90-UPIO0045725E2 UniRef90 Q9ZOR1 UniRef90 UPIOOO4405B41 UniRef90-UPIO0034F87C8 UniRef90-K1QIT1 UniRef90 G3NTQ8 UniRef90 R7TXP6 UniRef90-V4BNS4 UniRef90_W9DPK6 UniRef90 Q8T5C2 UniRef90-E4XUM5 UniRef90-H2M4B8 UniRef90-UPIO003871C00 UniRef90 G5CZ09 UniRef90-O5G5W4 UniRef90-UP10001DE9C9D UniRef90 Q75R52 UniRef90-UPIo003F1232D UniRef90-UPIIOOO3340BA1 UniRef90- UPI00042BA691 UniRef90-M4AB63 UniRef90-O28449 UniRef90_R7UZK5 UniRef90 Нзв003 UniRee90-UPI0003C17E2D UniRef90-C3YD27 UniRef90- W5KLGO UniRef90-UPI000440C49D UniRef90_UPIO00443EC5E UniRet90_UPIOOO42CA6C6 UniRef90 R7V7T8 UniRef90-E4YUB9 UniRef90-O77672 UniRef90_H3A4K7 UniRet90_G5CZ45 UniRef90-UPIOOO46B87E8 UniRef90_V8PEV1 UniRef90 UPIO00388B598 UniRef90-A9V8M9

ASVPS LVFTTSGLDLASLIRTEKDS\|I|NVICTSGS
ASEPKDTHTFFTREFTGLEQFEQPLVRGLC
$A V C R D N G F F Y S M P S W F S T T K Y V K P L A Q K L C S L V$
$A G S P S ~ R W F Y V D R E D L D T R L R S L D K A A C$
$M$
ASEPNEQHVLFAEDVDDYNGLMSTLTSSTVCSA ASQPTNDFFFFVNDFSULRTLLPLLSRRVCTTAG TGDP RLVFTYAQPQELYSKVQEIRTTIC C ASEPFDMHVFHLENFTSLHDVVGNLVS

ASQPPEKHLRFV DVDDLQUIVPELRGST
ASTPAEEHVLYTEDFHLLGNVSPKLSRRLCVTAS
ASEPKNSHTFFTREFPGLEQUTPDLDRGCC
AS SGQGNVFNVSGFSDFGGVLRQLQVSTCS
 SYEDLQHYQDLITARTC
ASEPTEQHVLFAEHVDDANGLYSTLTSSTLCSA ASNPSELHVFYAENYDDDNGLETTLTQSTVCS ASEPK $\mathbb{N} H V F T A D F G Q M N T I V E D I K D K A C S$

ASVPKEKFFFNVSDEVALLEKAGTGGERTFSD ASAPSENFMFTIADYDALLSTKNTLALRVCKAG SSSPACTHTYTVADFQGI NALVEEIQHSVC TGAKDRTFHVNAFEDLNTRLRSAIQKVTC ASPPITNNVKFIDTFQAFSQLPAEISRANC
ASAA DNVIEAAGYTTLDSI GKLVGKQACKTG
SFMP DFAVADPTFRELGTVQHVISERV ASVPTERYFFNVSDEAALDEKAGTVGEHDFSD ASSQGDMHLY STADALKNDANSIVNSTCMV ASSPEQDHVFRVDNFGALDNDQQQLQDKIFAL AGDPTERVYNVEDFQSLSAFAEQLQTELC ASQPSYVSFVSSFSLALLNSLQFTLSQESC VAS ASDPKETHTFKVTNYMALDGLLSKLQQSUI ASEPDEHYAIVEES A
 ASQPFTSHVFLINDFSNFDTLVNTIAEK ASEPKSSHVFTA FLDTLPERMDELVTGVCS EKQASENKAFLLSSVDELEQRRDEMISYLC ASEPLSEHGFFLKOYSTLEEFDQVVNQLC $K D D P K P G F S F V L K D F T E L D N F L Q N L T A K I C$
$A G D A S ~ R V F K V D S Y D E L E N D K Q T L A H Q T C$
AGSP
NRWFYV
A
ASEPRAAHVFHVSDFDA $\square \mathrm{DK} \Pi \mathrm{WG} \mathrm{K}$ LRRRLC
ASEPQEQHVLLAEQVDATNGLLSTLTSSALCS ASR KENALRVLDFDALP RNLSSSLCIIIAA
RTTGSEDHMIAVPFYEDLKYFEDVLVQMLCS PTVDGDPAVFNAEDFDSLKNDEAMLIAGI ASD KDFALKDDNFDQLKNEETLHRIFTAA ASETGGTY YNAPDSSDLSETYATISQEL
AS SEEYVFTTSSFDKLSKIMEDVVKLAC ASEPYENHATF QDYSAVQRVRGHLERLVC AGPSATNRDMKLQNFEDLSTMDSEFDKKVC
EKQAPENKAFVLS SVDEREQRRDEDSYYGC TGDVKKVFSVEGFDAIHNDTYDITKAIC AGPRDTLIHVAAYADLRFHRDALMEWLC ASDPDDKHFFNVTDEAALKDIVDALGERIFSL AGSP NYLVHVSSYGDLRNYKDFI MERIC ANDPQPDFPTVLDNFGVLDSFLQNUTAN $I C$

S S G GVQN NWFHSASFEGLQE\|RDQ


ASHPKEEHCYLLHSFAEFEALARRALHEDLPSGS ERQWPENKAFIMNNVQELMENRDETINYLC
ATGSGDSNLYTIKSFDKISAVVDEMSSGAC

## UniRef90 H2U0F8

 UniRet90-Q7YRM6 UniRef90-C3YH52 UniRef90-TON9N2 UniRef90-A6YM37 UniRef90-A9UTW1 UniRef90-H3AVI2 UniRef90-11G7C7 UniRef90-A7SBT5 UniRef90_UPIo00359BC87 UniRef90-F6YHVO UniRef90-UPI00034F4DA7 UniRef90 G5AY50 UniRef90_UPIOOO32B2356 UniRef90-H2YSZ1 UniRef90-R7UIT8 UniRef90-A7RJY2 Uninefefo-A4Q874 UniRet90_QOV7N2 UniRef90-H3BGB0UniRef90-F5XVB1 UniRef90-Q91YG0 UniRef90-E2RS75 UniRef90_-F5XVB2 UniRef90-R7UA01
UniRef90 V4AEDO UniRef90-K1PYD0 UniRef90-K7F412 UniRef90-UPIO004443A4F UniRef90-UPI000333B592 UniRef90-W5MBY0 UniRefefo-F6WIX5 UniRef90-E7FF10 UniRef90-T1FOT3
UniRef90 W5UTL9 UniRef90_UPIOOO328E697 UniRef90-11GIM8 UniRef90-Q9XSA4 UniRef90-UPIO0046B669C UniRef90_UPIO0044339B7 UniRef90-H3CR51 UniRef90-UPIO002C459DB UniRef90-UP100038BDAE0 UniRef90-F7BAT4 UniRef90-D3ZUL3 UniRef90-J9EVT6 UniRef90-G5ATA7 UniRef90-M4AHU6 UniRei90 UPIOOO42C3EF9 UniRef90-G1KD78 UniRef90-UP10003836CDC UniRef90-UP10003836CDC UniRef90-UPIOOO3836CDC
UniRefogo-UPIO003836CDC UniRef90-UPIOOO3836CDC UniRef90-UP10003836CDC UniRef90-UP10003836CDC UniRef90-W5LMH1
UniRet90_UPIO0034F75A6 UniRef90_G3W9A2
UniRef9O_L9KGM2
UniRef90_G3N9W9
UniRef90- J91J35
UniRef90_UPI00038361AA
UniRef90-S7P168
UniRef90_UPI000442171A UniRef90-G3NRZ0 UniRef90-L5LBZ5 UniRef90_UPIO003B640B4 UniRef90-V9K7X3 UniRef90-UP10003C27FDE UniRef90-UP10003AEE8CE UniRef90-H3E2R2 UniRef90-G3VFA6 UniRef90-UPI000388D536 UniRef90-UPIO003D07053 UniRef90-UPIIOOO3AE0129 UniRee90-UPIO0035D143D
UniRef90-VGK7B8 UniRef90_UPIO002B8D644 UniRef90-A9AVS5 UniRef90-UP10002B8EC17 UniRef90-UPIO002ADA8C2 UniRef90-UPIOOO392ECEO UniRet90-F2DUH1
UniRef90_H2Y6Y5 D L F F V L D G S G S V G L Y N FNTVVK Q F V V T L V S A F T I N


AD\|VFLVDGS\|NLGRDNFKSVMEF\|LNLIDLFYTD DCPVDLVFVLDTSESVAGYLVEQVKDFTKKFIDRCDRN DEPMDVVVLLDGSTNIMEPQFEEMKTFVKELIKDTGNN CE GDVLFLLDSS GSVASYEF S RMVD F L S ELL F S L L G P D DVVA L L M D T S G S



$$
P D C P
$$

C
$D$
$D / V$
$D / V$
$V \vee F L L D G S D G$
$D V V F L L D G S D G$
TRNTFPAMRAFVQRLVEQFNVN
DVVVFLLDGSDG TRNTFPAMRAFVQRLVEQFNVNN

 RSGHLDNLYLLLDASQSVSERDFEVFKDSAVSMVDRIFSF QESADLIFLIDGSDKTGSVHFAA $\square R D F L V N F L E R L S \square R$
 CKQSPSNLLFVLDGSQS IKAPNFQUQIKFI IDLLQQIQ DS




CTFMSADVILADDDGSGS\|TAP DFNKTKAFVKELISRFNVG QRPVDIVVFLLD G S E R I GERNFHKAHR F V E E V A R R LT L A
 A A D I F L I D D S S D S V K K P D D IA Y I R D F V PANLV F L V D V S G S M D D N N KL L P L V K Q T L R L L T E QL R P
 $P$ V NLGFIVDRSSSMRGERLYQVKEACNNVVNQLNRQ CWS Y NLDLM LLLDDGS GS LNTLDFENSDDFVKQIAAT FDLR RCGA DVVVFVI D S S E S I GYTNFTVEKNFVIVVVNRKSET $\begin{array}{cc:c}R & C & G A \\ C & L & D \\ V & D & V \\ L\end{array}$


## UniRef90_H2U0F8

 UniRef90_Q7YRM6 UniRef90_C3YH52 UniRef90-U3JA51 UniRef90-TON9N2 UniRef90_A6YM37UniRef90_A9UTW1 UniRef90_Q7YQX2 UniRef90_H3AVI2 UniRef90_-I1G7C7 UniRef90_A7SBT5 UniRef90 B0WHU4 UniRef90-UPIO00359BC87 UniRef90_F6YHV0 UniRef90_UPI00034F4DA7 UniRef90 G5AY50 UniRef90_UPIO0032B2356 UniRef90_H2YSZ1 UniRef90_R7UIT8 UniRef90_A7RJY2 UniRef90_A4Q8T4 UniRef90_Q0V7N2 UniRef90_H3BGB0 UniRef90_F5XVB1 UniRef90-Q91YG0 UniRef90_E2RS75 UniRef90_F5XVB2 UniRef90_R7UA01 UniRef90_V4AED0 UniRef90_K1PYD0 UniRef90_K7F4I2 UniRef90_UPI0004443A4F UniRef90_UPI000333B592 UniRef90_W5MBY0 UniRef90_F6WIX5 UniRef90_H3AU92 UniRef90_E7FF10 UniRef90-T1F0T3 UniRef90_W5UTL9 UniRef90_-UPIO00328E697 UniRef90_I1GIM8 UniRef90_Q9XSA4 UniRef90_UPI00046B669C UniRef90_UPI00044339B7 UniRef90_H3CR51 UniRef90_UPI0002C459DB UniRef90_UPI00038BDAE0 UniRef90_F7BAT4 UniRef90-D3ZUL3
UniRef90-K1QF85 UniRef90-K1QF85 UniRef90_G5ATA7 UniRef90_M4AHU6 UniRef90_UPI00042C3EF9 UniRef90_UPI00035A2BA8 UniRef90_G1KD78 UniRef90_UPI0003836CDC UniRef90_UPI0003836CDC UniRef90_UPI0003836CDC
UniRef90_UPI0003836CDC UniRef90_UPI0003836CDC UniRef90_UPI0003836CDC UniRef90_UPIO003836CDC
UniRef90 W5LMH1 UniRef90_UPIO0034F75A6 UniRef90-G3W9A2 UniRef90_L9KGM2 UniRef90_G3N9W9 UniRef90_J91J35 UniRef90-UPIO0038361AA UniRef90_S7P168 UniRef90_UPI000442171A UniRef90_G3NRZ0 UniRef90_L5LBZ5 UniRef90_UPI0003B640B4 UniRef90_V9K7X3 UniRef90_UPIO003C27FDE UniRef90_UPIO003AEE8CE UniRef90_H3E2R2 UniRef90_G3VFA6 UniRef90_UPIO00388D536 UniRef90-UPIO003D07053 UniRef90-UPIO003AE0129 UniRef90_UPI00035D143D
UniRef90_V9K7B8 UniRef90_UPI0002B8D644 UniRef90_A9AVS5 UniRef90_UPI0002B8EC17 UniRef90_UPI0002ADA8C2 UniRef90_UPIO00392ECE0 UniRef90_F2DUH1 UniRef90-H2Y6Y5
 QDHVMVLQYSNVVRVEYNFSEAQSKDALLQHVREVQYDGG DTRVGVLQYSSSNTLGCNLGDHPDLSSFVNAMNAMRYHYG KHQVGLVDFSDNAYATPLTTDVTGVKNRISSLSAGGGTQT KARFGALLFSDFVENLFYLIKYTSTADVSKALLRAPYHRG A RVAGMMFHAEALPQFDFDDYTSAAQVQNAVANFNYPNW Q $\downarrow H\|S\| L Q Y S Y T V S M E F S F N E D Q S K R H I L E R I K Q \Pi H Y R G G$ $\square V Q F S K N V T E V F S F R N F A K T Q D L R S L L E N V E H L K S$ ETQTHTVRFSTESRTRVIIQLTEFFDGDALRNRDDSELNP KSHVGLVRYNQVADTLWDFNENNNLKSLKDAIEKIEYLPG YNYTRVITFSSQKKDFRHDDQDSQSVEDNDKCLLLNYQVP
 RMQVGVVQYSDDVKTEFSLAQNPTKGQLVEALKNGRFDGG QDLIQVAQYADTVKPEFYFNTYPSKREAVNAVRKMRPMEP GNDFHFVQLTGSPHTEFLFNTYHTNQEVLSHISNMSYPSN DVQVALVRYSSSADTAFSLSAHSDETNVINSIVSTTNNPG GVQVSVISFGNRATIAFYLNEYTNKQDIFAAIDEIPWKDQ KTRVSLNFFSAHHVIVSKLSDNFSKSKLMSLTDQMMYEKS QDHVTVLOYSDVVAVEYTFREAQVKRDVLQHVREDRFRGG QLRMSFIVFSTRGTI LMRLTEDKELTRDGLEELQKVLPGG QDHVTVLQYSYTVTVEYTFREAQSKGDVLQHVREXQFRGG KPKYGLVTYATNPKVWVRVRDKNSSDADWYEDHMLKSGTN RTQVSVLQYGS DT TIDVPWIAAQEQAP DQSPVEVMQQEGG GNHDMIVTFGHTANVDISLSERRLEMSFKNILTSRVTPK VDKTRMGLVLYSATVTKSUDFSGNSFLLRQEIRSLVQPRD Dr AMVTFSSNATLEFAFDEYRDNQSLEDAVNGVVPEYG NDKLRIVAFSSTFKTEFNFLDYVKSKDPDVLLAKVKHMLL $L V W N A G A L H Y S D S V E L I Q G L T R M P S G Q K N L K D R V E A V Q Y D$
$G T Q I S V V Q Y G K T N T L E D S W T D L Q N K E S L L D K V D A D Q Q R Q A$ HVRVGLLQVGTEPHLEFGFDAYSSQQGLQAALERTKQLKG WDSQAVVHFSEKAEVVFNFTTFSTKEEMYQALDNDLQFNE
 HIRVGVITYATNTIIDQFYGSTYKTKSQVLQAIS NLTY TAG QKRVRVVEYHDDSHAYDALRDRKRPSELRRDASQVRYAGS QUHVAVLQFAAAVAVEHPFREAQTKADVLRRVREVRYRGG QQVKFAGNDSRVSVVQYSGARAQEVVQLGVNVNSITDFKQ DVRVAVVQYSGTGQQRPDRAALQFLQNYTVVASTVDSMSF QSHAGVVQYSHNQMQEHRSPNITRNAQEFKEAVKKLQWMAG LTRVSVLQYGSDTTIDVPWNVPQEKASLLSLVDLMQREGG YYRCDRNLVWNAGALHYSDEVEDIRGLMRMP:DAVKYFGK EVHDAMI QYAEDP IDEFSFGTYRDLLDINNHIMTINDHSG QSYAGVVQYSHNQMQEHRSPNDRNAQEFKEAVRKLQWMAG KVRVAVVQYADRAKTEFSLNTHNNKQAVLSAVKRLRQMGR EVKVSII TFASKPKVIMSILDNKSGDVTEVAQSLYKDHEN DVRVSLITFGKGTYRQFDLTSYSTKDALMEA AKRVGVVQYSHEGTFEANDKRUDSKDALMEAVKGLEWRVGG

 RDRUSVVQYSRDAEVNFYLNTYTAKADVLNTVRGLRHRGG

 QUQVGVVQYSNEPRTAFYLNSYSTKADILDAVKALRDIGGG
$K P K Y G L V T Y A T V P K V L V S D R S S D A D W V T Q K L N E T S Y E D H ~$ KDRVSVVQYSRDVEVQFYDNTYTTKEDILDSVRGLKHKGG QEHYQI LLFSDDADLISSFSS NKNDLIQKLKNMKYPNE RVR GLMQFAEGQRTEFYLNSHNTKQNVLSAIAQLISLMGG E $N V$ VI TTFASKPKITMSVLDDNENDNYKGVVSSDEDHEN HSSTQVLQYGKVNSLELSWNVLQEKTDLLKRVDA IHQREQ GTRVGVVQFSHNGTFEAIRLDDPNTNSMSAFKAAVKQQWIT KYALVTYATDTNGLITRVSDAESSNAAWVTEKLDKISYEDH KDRVSVVQYSQDQQTHFSLNTYTDKQAVLNAVRQLDHRGG RSDNDNLQYGSETQQQVIFPLTYNLTDESDALAGIRYMNI VQFSTTYRTEFTFLDYAKQKNPDVLLNNVKHMRE FSKTRVVAYSSTVYSTVSLEECDDQACLNKIDTLNYPAG RRHNDPLQYGNEREQEVVFPGLTSNLTAGQGALSRIRYLLS
$E R V K F E V V Q Y S H G N T Q E L V A M G D V N I T N D R D K E A V K K L N ~$ ATRVAIVPFSSRANVAARVDYDSRRRPRQHKCALLGHEUP KVRI GAVQFSNEVFPVFYLKTHKSQASVINALRQLRHRGG QDKVTLVAYASGTQVHISGANGRDKNDLLKALDQLRA GARVGVVQYSHNGTFQAVHDNDSRDNSLSAFKEAVRLEWD ISVLRYNRVVDTSTQILLNEYLTDQSGFLAAYDRIPYNGG DYFSVVSFNDRAEVVVPCQRPNDKDQDKRADGMIEAKGG QTKDGIMQFSHWFRNEIGLGRYASHDRFNLAADKI RHHGY GTRVGVVQYSHEGTFEADQLDDERDDSLSSFKEAVKNLEW ERVKFEAGESRVGVVQYSHDNTQMGDANDDNDGALKQAVK
UniRef90_H2U0F8 UniRef90_Q7YRM6
UniRef90_C3YH52 UniRef90_U3JA51 UniRef90_TON9N2 UniRef90_A6YM37
UniRef90_A9UTW1 UniRef90_Q7YQX2 UniRef90_H3AVI2 UniRef90-I1G7C7 UniRef90_A7SBT5 UniRef90_UPIO00359BC87 UniRef90_F6YHV0 UniRef90_UPI00034F4DA7 UniRef90 G5AY50 UniRef90_UPIO0032B2356 UniRef90_H2YSZ1 UniRef90_R7UIT8 UniRef90_A7RJY2 UniRef90_A4Q8T4 UniRef90_Q0V7N2 UniRef90_H3BGB0 UniRef90_F5XVB1 UniRef90-Q91YG0 UniRef90_E2RS75 UniRef90_F5XVB2 UniRef90_R7UA01 UniRef90_V4AED0 UniRef90_K1PYD0 UniRef90_K7F4I2 UniRef90_UPI0004443A4F UniRef90_UPI000333B592 UniRef90_W5MBY0 UniRef90_F6WIX5 UniRef90_H3AU92 UniRef90_E7FF10 UniRef90-T1F0T3 UniRef90_W5UTL9 UniRef90_UPIO00328E697 UniRef90_I1GIM8 UniRef90_Q9XSA4 UniRef90_UPIO0046B669C UniRef90_UPI00044339B7 UniRef90_H3CR51 UniRef90_UPIO002C459DB UniRef90_UPI00038BDAE0 UniRef90_F7BAT4 UniRef90-D3ZUL3
UniRef90-K1QF85 UniRef90-K1QF85 UniRef90_G5ATA7 UniRef90_M4AHU6 UniRef90_UPI00042C3EF9 UniRef90_UPI00035A2BA8 UniRef90_G1KD78 UniRef90_UPI0003836CDC UniRef90_UPI0003836CDC UniRef90_UPI0003836CDC
UniRef90_UPI0003836CDC UniRef90_UPI0003836CDC UniRef90_UPI0003836CDC UniRef90_UPIO003836CDC
UniRef90 W5LMH1 UniRef90-W5LMH1
 NKTNTGALQYDSDHSF SPSQQDREQAPNLVVMVTANPASD

 GVAIR SAll NVLDNHRPEAQPVIVILTD GSNTQ


 GTRTDLDALKKVNEDDFSPMGGARNDVPQVLVVITDGKTNQ $R \square A F S G G G T Y T Y G A L K E A F K N A R L D S K K I I F L I T D G F S N G$
 E EANDGA ALLDYNVFTTAAGSRREEGVVPQSLMII TA GPSSD








 SNGGTPT DLGGIKEAIGGDFDTNGRADSKRVMIILTTDGYPNN GTMTHLA LDD A Y N MVLRATSRQGVPKIGLVITD GISK K



 DTNTVEAMARAQVLRVGVPGGARPDLPRVLVWLTDGVDPG
 F S HV VA GIVVHDNHVVRGARGGARRHAELAAFVFLT ATYTHTALDTARTVLFTESKGARQGVPRIVVVLTDGASTS

 WLA E A TYTGGALLEFALKNTDRLMRQENRVVLVLTDGR S DT


 GT GTARALEAMRQMFQTESSRRPFVHRVGVVITDGRSAA


 GTWT L S A L Q F A Y N T L I K E S
 $R P L N T G A A L Q Y V R D S V F A G S R K Q E G V P Q V L I L L S G G R S N D$ R P L $N$ N T G A A L Q Y V R D D S V F A G S R K Q E GVVP QV LI L L S G G R S N D
 $R P L N T G A A L Q Y V R D S V F A G S R K Q E G V P Q V L I L L S G G R S N D$

 EETNVGAALDFVVENHFTQGGVVEEGVPQVLVLIS GSQS S D
 HTYTNKALLLSHKTFKQ QQFVRNNSKNIQFILTDGQPTD $R A L N T G A Y A L D N H F Q T S S G S R R R Q G V Q Q V L V L I T G G P S Q D$
 AGGTGTPSALKFAYDNLIVDGKRAEAKVSVVVITDGR KLLKT GTADVYNMMGWA GDTPPEGWNRTRHVIILMTDGQHNG QPRNTGAALEQVRRNTFSGSRYKEGVPQULILLTGGRSGD GKGTYTDCA DQKGAEE LLLGGGSHHRENKYMVVVTDGHPDE GSADIDAADN NIVNNPVDRQRVARRNAELSFI FI T

 NA K F | $F$ | $S V G T G G I$ | $H$ |
| :--- | :--- | :--- |
| $W$ | $A$ | $N G T Y$ | A IA YRGGGTYTKGAFQQAAQHSRGNATKAIFLITDGYSNG S PNTGKALEFVARNLFVKSAGSRDGVPQHLVLVLGGKSQD S GSTA GA DAMEVVAYKQAQKHHDKDG』NRIDMMTD GDFNV A GGTWTPSALLKFAYDNLIKANQRDKAKVFAVVIT DGRH GTLTGNALRYVNDVILTGANGDRPGVRDVLIVLTDGRAHD

 T Y T A R A N Q A V R V D L A GS E R F A D P C T K K A I V I V T D GP A T D DA G GTWT P S A L K F A Y D R L I K E E S R R Q K T R V F V V I T D G R H LLNDA GGTYTGEALQFTKENRFTSDKRVAIVITDGRS $G A G T A T G N A D N N S V A L I D N K N F P N G D P K I V V I L$

## UniRef90 H2U0F8

 UniRet90－Q7YRM6 UniRef90－CZYH52 UniRef90－TON9N2 UniRef $90-$ AGYM37 UniRef90－A9UTW1 UniRef90＿Q7YQX2 UniRef90－H3AVI2 UniRef90－11G7C7 UniRef90－A7SBT5 UniRef90＿UPIO00359BC87 UniRef90－F6YHVO UniRef90 UPI00034F4DA7 UniRef90 G5AY50 UniRef90－UPIO0032B2356 UniRef90－H2YSZ1UniRef90－R7UIT8 UniRef90－A7RJY2 UniRef90－A4Q8T4 UniRef90－Q0V7N2 UniRef90－H3BGBO UniRef90－F5XVB1
UniRef90 O91YG0 UniRef90－E2RS75 UniRet90－F5XVB2 UniRef90－R7UA01 UniRef90－V4AED0 UniRef90－K1PYD0 UniRef90－K7F412
UniRet90－UPIO004443A4F UniRef90－UPI000333B592 UniRef90－W5MBY0 UniRef90－F6WIX5 UniRet90－H3AU92 UniRef90＿E7FF10 UniRef90－T1FOT3 UniRef90－W5UTL9 UniRef90－UPIO00328E697 UniRef90＿11GIM8 UniRef90－Q9XSA4 UniRee90＿UPIo0046B669C UniRef90－UPI00044339B7 UniRef90－H3CR51 UniRef90－UP10002C459DB UniRef90－UP100038BDAE0 UniRef90－F7BAT4 UniRef90－D3ZUL3 UniRef90－K1QF85 UniRef90－J9EVT6 UniRet90＿G5ATA7 UniRef90－M4AHU6 UniRef90－UPI00042C3EF9 UniRef90－UPIo0035A2BA8 UniRef90－G1KD78 UniRef90－UP10003836CDC UniRef90－UP10003836CDC UniRef90－UP10003836CDC UniRef90－UP10003836CDC UniRef90－UP10003836CDC UniRef90－UP10003836CDC UniRef90－UPI0003836CDC UniRef90＿W5LMH1

NAMQAAAQLLK ${ }^{130}$
140
A GVVLFAVG ${ }^{140}{ }^{150} Y$
160
AGLFAVGLRYPRWEELHALL

$S V V A P S Q G L A A D Q V N V F A G V G N Y V R S E L L Q \prod A N N N Q$ DAAVPAQK\RD SGVSIFLIGVGDDQQELLLR
DALNAAQQAKDLGIVFYT ITALLGSTDNPDTNQWNTLLKNM PALTVAAAAQADRALKRQNVRVVAVGGGNEVSKEELRQV
ElKR
DITPKDQADSATKSNDVTTYADGDGNDFNDDTNQNDLKSL
 RSEPYSSVLQPKKVRVQDKDVKVAVGVGHSIGKKELHAL
 DVGQVSHELKR
S SQPAQE LKADPSAEFKSADVNVYAVGV EDAEEGALREL LIDNSAARDMKSKATVIGVGURSMKGLNALALMDLKEM DQP亩TDPEANKAKAK
GFEETSDEAKSMKKYNVEMFTVYPEKGRTYNKDMMHL ETK R P GVDNUKEVLNDNQKRKDY品 Y YA GVGSL HVDWKELNNL DLAFYAE READRCRTLGATVYCVGVKDFNETQLA E：KRKPGDRQ
ElRRLPGD
RRDHKNPREDYLDVYVFGVGPLVNQENINAL SVEASVAAARAAAADANRVTVFPIGVGDRYDEAQLRVL
PSLTAASAAK■KN GQEYVTQA
VISRVESDTN
DARSEADRLADGNVLTFTVSS


GNANLQE
GN KAKDTRYSGGGADQGEMENI
DGKAAALALQSDNVRUY
GYKEPCGGLEDAVNEAKHLGTKVESTAVGVGNLEDELSNL
NTENAAYTAS VDRVTVFPIGUGKNYDVKQLETL
NVQEPMARDRDEGVAVLVVST
EISQTYPEAQLLKN MNVTTYTTGVTNDISPDELKALI GYKEPCGGTQEAANEARQHGIKVFSVAVSPDQEESBLSVI DGVTGNESLAEAVHSMRKQNVVPTVVAVG RSSTLTSAAADHAAG\｜ITAYSVGI
EPAKLSRNFARYVQGLKKKKVSVVAVG a NALEAELLABI EMRRLPGDTQ VVPI GVGPRADVP
GYKEPCGGLEDAVNEAKHLGDKVFSVAVTPDHLEPRLSVI
DRDQVPGALNVLCGNNVRVGGLGVKDYSGRRPNQEQLEDC DTQRDTTPLSVLCGPDI QVVSVGIVDVFGFVASSDQLNVI
 SPEQTKAQAELARAEGDTLMAIGFG DP向KHAQQLRE】EK VKIYVVYVGSDGFEAEEMNTI

PVSDSGPLLK NKRVNCDGVGTGNA NRSQLSQ DKIKEVLNINQKRKDYLDTYAI GVGNLDVDWRELNELGSK DWRQTRDASQAARDSGIDVYAVGVGRMENAVRREELDR NVDTPASALKE
NVDTPASALK
NVDTPASALKE
NVDTPASALKE
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NVDTPASALKE

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

DGKSAALGLKA
GVNSIKDVLNIRQDRMDYLDTYAIGVGNLD D 1 RDGVVALKQASIFSFGLGAQG DPVTVIDEIRRDRKNPREDYLDVYVFGVGPLVDQVNINAL GIGTNSDSGELRRV ITSEQI NQLRDLKVITYAVGVGVDIKNETLJALISG
 AVEPAVYSAR ，NRVSLLPIGVGTKYNAEQLKSL DPRDDDNLLQYLCDNDVVVNAIGVGDMFDKTQDNEILDSI DPVPVIQD｜RRDRKHPREDYLDVYVFGIVGPLVNQENLNALV GYKEPCGGLESAVSDAKNQGTKDFSVA TPPDHDEARLNLI DGDTGTKNLEEAIDSMKKHNVMPTVVAIGSDVDMDVL LK
GKD
ECGGGASTVAKRCGDARKAGI DLYAVAFKTDKFQEKVGVF DGVTGELSLNESTHSMRKODVVPTVLALGGDVDMD D DTSRFSQVI RELGETSSGGIVSLGVGNRNGNDRELLNDM GTVDFNTLKSRVEQQRKSGVSLTTLGFGTGNYNEHLMEQM NVLAPSRMLRA
DESRCVEMARRAQSKGTGTTALGTGD
STLLLANANAARRQNVVLFAVGVRRHAD

UniRef90 H2U0F8 UniRef90_-Q7YRM6 UniRef90_C3YH52 UniRef90 ToN9N2 UniRef90-A6YM37 UniRef90-A9UTW1 UniRef90- Q7YQX2 UniRef90-H3AVI2 UniRef90-I1G7C7 UniRef90 A7SBT5 UniRe90-BOWHOU UPIO00359BC87 UniRef90_UPIOOO3:
UniRef90 F6YHVO UniRef90 UPIOO034F4DA7 UniRef90 G5AY50 UniRef90-UPIOOO32B2356 UniRef90_H2YSZ1
UniRe990 R7UIT8 UniRef90-A7RJY2 UniRef90-A4Q8T4 UniRet90_QoV7N2 UniRef90 H3BGBO UniRef90-F5XVB1 UniRef90-Q91YG0 UniRef90 E2RS75 UniRef90-F5XVB2 UniRef90-B7UA01 UniRef90 ${ }^{-}$K1PYDO UniRef90-K7F412 UniRef90-UPIO004443A4F UniRef90 UPI000333B592 UniRef90 ${ }^{-}$W5MBYO UniRef90-F6WIX5 UniRef90_H3AU92 UniRef90 E7FF10 UniRef90-T1FOT3 UniRef90-W5UTL9 UniRef90 UPIO00328E697 UniRef90-11GIM8 UniRef90-Q9XSA4 UniRef90-UPIOO046B669C UniRet90 UPI00044339B7 UniRef90-H3CR51 UniRef90-UPIO002C459DB UniRef90 F7BAT4 UniRef90-D3ZUL3 UniRef90-K1QF85 UniRef90 JgEVT6 UniRef90_G5ATA7 UniRef90-M4AHU6 UniRef90 UPIO0042C3EF9 UniRef90 UPI00035A2BA8 UniRef90-G1KD78 UniRef90-UPI0003836CDC UniRef90 UPI0003836CDC UniRef90-UPIO003836CDC UniRef90-UPIO003836CDC UniRef90-UPI0003836CDC UniRef90_UPI0003836CDC UniRef90-UPI0003836CDC UniRef90-W5LMH1

ASEPVENHVVFFAEHFDAVNGLLYTTLLSTAVCSA


VS QP VD Q H F LK VS N Y D K L S G I LK DLQS K $\square$ F A $\square$ RNDSTRGRAFPVNDFNALTDVLDDLIRDEC A L G DASNVFMLETFDDLVRRLNAIMNSFC ASAPEGDHCYLLDSFDHFETLARK
ASSPS VAFESPEYTLLEAMKPNVSDTACDVA
 AFDSTL AFRVDEFKALQGILPQLL

ASTPLNTHVFNLENLTSLHDVVGQLVS CVHA VF QLY NLDCLNKI

ASKPTKSH LFKKTDGGARRKVVDQ $\quad$ VK Q $\square C S$
GWPNAP IFF QDFERLP
GSKKGERHAFILKDVQALSQVFEQLTDPDCGVGN
R\|ADSKDHVF PVNDFQALQG\|INSILKKSC
SWPSTP $\quad$ WFIKDFEMLIPREAPDLVLQRCCSGN
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A S SPS Q VKY S STFSDLTTTLKELLPEUC
SSN $\square \mathrm{D}$ D VFSPDNDDMLNT ILRETSHQDC

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ATD HTYRRNFTVNSEENVDESIDDMI EQVCCS
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VSPPTEEHLFFV DI DDIS\|IGEDLRNSIIE
ASSP DYFDPAEDFNTLGQL
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GWPNAP ILVRDFEALPREAPDLVLQGCCSGG ATDHTYRRNFTAADWDLSRDSTELI KETIDT KNDPKPGFSLVLENFAELDTFLQNLTSQUC
DAAFGERHLFRVPSYEAL
S S PGRPG\|SLEKENYAELDAFLKNDTAQ\|C AGSGASSNLVK LQRDEDLSTVLNSFLRKLCS
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ATAS NVFMSNSFND
A GGRSNVFGPKEFTRLRK L


ASAENSRTEYDTNAQQIVNVFSDEDKR
AS $\square G S N E R V Y T A Q D F \square G L H E L V P V V R D D \square$
ACPTRPGLSTQRDNYAELDTFLQNTTSYVC
AGSTS NIVY $\operatorname{ASSYSSLTNLVNLIENYFC}$

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UniRef90 U2ZOSO UniRef90-UPIOOO3C26517 UniRef90-H2LW08 UniRef90-UPIO002A4C4C9 UniRef90_UPIO003595A39 UniRef90-H2M7Q7 UniRef90-13J6B0
UniRef90_UPIo003599AD5 UniRef90-F5XVB9 UniRef90_Q258X0 UniRef90-H2RPL2 UniRef90-UPIO002A47A6A UniRef90-H2VW27 UniRef90-F7RRG9 UniRef90-UPIO003AFC6FO UniRef90-G3PG93 UniRet90_R5L980 UniRef90-U6MQE5 UniRef90-UPIOOO3C2A527 UniRef90-UPIOOO2B43D0C UniRef90_K7FBR7 UniRef90-C3ZN55
UniRef90 M4A6V8 UniRef90-F4X475 UniRef90-U6PA12 UniRef90-K1R0L2 UniRef90_UPIO0032B1079 UniRef90-W5U7S4 UniRef90 $-V 4 C E C 4$
UniRef9
G3W3 UniRef90-G3W3U5
UniRef90 UPIOOO42C6A58 UniRef90_UPIO003B3699F UniRef90-COH5V7 UniRef90-F4QND6 UniRef90-UP10003BCCE5E UniRef90-K1PTF4 UniRef90-UPIO003BBC419 UniRef90-G1LQ70 UniRef90 E1BCW8 UniRef90-UPI0003836BC1 UniRef90-UPI00046B47CF UniRef90_A7SV31 UniRef90-V4BDS6
UniRef90-UP100045D7BC9 UniRef90-K1R3V2 UniRef90-F6SXU7 UniRef90_UP10003834B09 UniRef90-A4QP34 UniRef90 UPI0003447FE2 UniRef90-UPIO003890464 UniRef90-E1BTM0 UniRef90-UPIO00364AOD7 UniRef90-H9GFZ9 UniRef90-Q464T5 UniRef90_UPIO004406340 UniRef90_D2VFU1 UniRef90-K1R4G1 UniRef90-UP100042COE3C UniRef90-A7T5D1 UniRef90_C3Y2X8 UniRef90-B7LM60 UniRet90-Q12VX7 UniRef90-F9RE522 UniRef90_M5BS79 UniRef90_UPIO0041495F6 UniRef90-UPI00037DE861 UniRef90-M7AYW1 UniRef90-UPI0003F11BB3 UniRef90_UPIOO0012434F UniRet90-T1FAC5 UniRef90-Q4RYT2 UniRef90-N8ZV22 UniRef90 ${ }^{-}$FOLYB8 UniRef90-UP100034F4D5E UniRef90-UPIO003B77F2F UniRef90-J2Y8W6 UniRef90_UPIOOO3598540 UniRef90-UPIOOO377522E UniRef90_SOFNB1


DVLFLDSSDDFNAEKFQRATQLIGDTVTNFGPD NLVFLLDVSGSMASTDKLPLLQTAMKMLTQQLSG
RCGALD VFVIDSSESVGLTNFTLEKNFVINTINRLGSF KRKPMD MIMLDSSGSMSKEDWKKAVDGAKLIIDNKQPE


VDLIFLLDSSESFRTSGFEDAKTF $\square$ QSVVNYFT $\square G$ K T DQVEMVFLVDASGS DGAENFRSEDNFVTKLLSDFTVD PADVI I MLD S S ENFSQE EYE KMRESVAELVDAGFDD

QGAFDLYFVLDKSGSVKHH WHE $\square Y S F V E S L A E K F \square S P$ CGGKPADVYFVLDTSDDVVAEEVEKQKQYASELVNLFYDEE PSGSMNMYLVLDASDSVGKNNFTGAKKCFASVI EKVASY

GADDVVFVIDSSESVGMTNFTLEKNFVDNTIDPTSPT



SVKR D YYF L LDMSGSVN NNWMNDYSFVEDVVKKFENP SVKRDVAFLIDGSDD SKDGFEA IRRFIQMVVENVEED

LDLGFLIDGSMSVGGENFKQ! INFVWNVVQSFQVS PRDIVLVVDGSQSIGTASFDLLKTKLIDFTKQVPMG $P \vee V P$ PKNVVFVI DVSGSMAGRKDEQTRDALLK LEDMKED QGAFDLYFILDKSGSV ASNWVEIYEFVEKLTERFVSP PKLSRNVVFVIDGSGSMSGREVEQTREALLKKLDDMKE RSGHLNLYLLLDASQSVSEGDFQIFKKSAILMVDRIFSF HGAFDLYFVLDKSGSVAQ NWVEDYDFVKQLTDRFVSP PPLPKNVVFVLDSSASMVGTKLRQTEALETLDQDLRPE HGAFDVYFVLDKSGSVTDNWFEVVKDFVKQLTDRFKSP RCGALDVVFVVDSSSESSGYTNFTLEKNFVIGNVVNRKSET
 C

[^5] ALDVVLVLDRSGSMKEQPLTDAKSAAKGVMENLLSN REYDVVFLVDDSGSMAGTRWNEASTALAGVARDASQY

PTMPKNVVFVIDKSGSMSGKKDQQTREA LDK LLDDLRPS P $\square \mathrm{DLMFLVDTSSSDG} \mathrm{\square NNFD} \mathrm{\square QKNFICEILKDVDPG}$ GKADLVFLVDTSDSI SYRDFYNIVTFIQYI SHQLEDK


PANLVFLVDVSGSMSAEDLPLVKQTLRDLTEQLRP PSGSMNMYLVLDGSDSMGASNFTGAKRCLANLIEKVASY
 APANLVFLVDVSGSMDRREGLPMVKSTLKLLVDQLRD A ANLVFLVDVSGSMHAQDKLPDLDQSSLRLMVNKMTA
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UniRef90_A7T5D1
UniRef90_C3Y2X8
UniRef90_B7LM60
UniRef90-Q12VX7
UniRef90_F9RE52
UniRef90-M5BS79
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 QLRMSFIVFSTEGRMLMALTEDRDQURAGLEELRMVQPGG
 QD G $\square H \square L Q Y S Y L A G V E Y T F N E T Q S K E D V L R H V R E V R Y R G G$

G $\square$ QVS V VYNDEPY $\square E F \square R K H N C K K H \square D D D A V E Y M E K$ $R D R V S G V V Y A G A A G V V L D G A S \quad G N D A Q T L I Y A D E Q L R A$

 KEDNWGLE RAY PDDVRTFATRSKVRWDLSDAKATNPSLAAAAARNLSYTTG FPHYSLITFASEPHVVISTQDANWVREQLEGLKYTDHAYK GSQAGVITFSHRSEHSIKLNDFSDVDSFEKAVDKDPDMGS QTQVGIVQYGQNVVHEFNLNTYMTTDDVVIAAKS I HQRGG ENDTRVVVTYSNADAQ $\square T$ RVK LINENYTRVTE $\square R N L P Y D R G$
AARTALVTFGGRGSVYRNDDQTSRHGPNDHKCYLLNKQFS

 LL R MS FIVFSSRGNTIMRLTESREQ DTKGLNV LRREDPGG
 NPRYAVVTYATEAKAVVSDDQSSDADWVTQQLEKIKYTDH Q $\square R M S F V V S T Q G T T L M K L T E D R E Q D R Q G L E E L Q K V L P G G$
 DKVSIVVYA GAA GMVLAPTHEGKYVKQALDCLS S A DDHFAII DF DSVIGTWKDSDTKATKENATEAMDYDRRMHS QNETRVMTFGSTVSTRFNFGTHTDQATVKSADAGTPFRGE

NDRMSFlTFSTEGHTVM QLTSDRNEVHDGLL RNLPYRTG


UniRef90_UPIO0020397DB UniRef90_UPIO00359622B UniRef90-K7FEE3 UniRef90-HOVUK8 UniRef90-H2T3W3 UniRef90-UP1000298DD9A UniRef90-P15988 UniRef90-UPIO003343A68 UniRef90 UPIO003315500 UniRef90-H3DGC0 UniRef90_L9KG40 UniRef90-O88493 UniRef90-G3IMT1 UniRef90-U2ZQSO UniRef90-UPIo003C26517 UniRef90-H2LW08 UniRef90-UP10002A4C4C9 UniRef90-UPI0003595A39 UniRef90-H2M7Q7 UniRef90-13J6B0
UniRef90-UPI0003599AD5 UniRef90-F5XVB9 UniRef90_Q258X0 UniRef90-H2RPL2 2 UniRef90-UP10002A47A6A UniRef90-H2VW27 UniRef90-F7RRG9 UniRef90-UP10003AFC6FO UniRef90-G3PG93 UniRef90-R5L980 UniRef90-U6MQE5 UniRef90-UPIOOO3C2A527 UniRef90-UP10002B43DOC UniRef90 K7FBR7 UniRef90-C3ZN555 UniRef90-F4X475 UniRef90-U6PA12 UniRef90-K1R0L2 UniRef90_UPIOOO32B1079 UniRef90-W5U7S4
UniRef9O-V4CEC4 UniRef90-V4CEC4
UniRef90-G3W3U5 UniRef90 UPIOOO42C6A58 UniRef90-CP10003 UniRef90-F4QND6 UniRef90-UPIOOO3BCCE5E UniRef90-K1PTF4 UniRef90-UPIO003BBC419 UniRet90 G1LQ70 UniRef90-E1BCW8 UniRef90-UPIOO03836BC1 UniRef90-UPIO0046B47CF UniRef90-A7SV31 UniRef90-V4BDS6 UniRef90-UP100045D7BC9 UniRet90-K1R3V2 UniRef90-F6SXU7 UniRef90-UPIO003834B09 UniRef90-A4QP34 UniRef90-UPIOOO3447FE2 UniRef90-UPIOOO3890464
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 ATDINAALRYVTSLYQQS QPGRANANKRLLVYSDGHSQG NKVNTGAATRHVQDVHFTKERIDQGVPQVLMVVTGGKLAD SSDLGDALKYVTENEFKPSSGSRFDASQHLIVITGGRSPQ AGGTWTPSALQFAYNKLIKESRREKAQVFAVVITDGRSA $R Q V H L G G A L E F V A K N D F R P Q D E E G V P Q F L V L I S S G R S S D$ AGGTFTPSALKFAYDNLIRNSKRARAKDSVVVI TDGR F SALYTGSSLFVRNNLFTSSAGHREGVPKLLVLITGGKSLD RHNTKVG IQQLRLNHFVPGAGSRIDVPQUAFVITGGKSVE GAGLQLAYQ IARDNRIDGGVNRVILATDGDFNV ATDVNAADRYVTSVYQQTSP RPLNTGAALSYVKDEIFSGSRRQQGVPQULILLTGGPSRD SSELLPDADDY MENEFQPFAVARPAATQHLVIUTAGRSTE PDENTATDLGIMAATRNFQTYGRQNVPKLLMVITDGES D SSALGSA II YAVNNLVIKQDGRRLSRRNAEVAFVF TT DTFMHRGFQRASEQIYYGT GDGYRTASVIIALTDGED KVPGGYSAAHSAGMLAASVVDSRRDSRKAVIVVTDGKSND GDAAFDDEAVKYLAVNDYDKNKREHAGRVAIILTASTNPR NRTNTQALQYLSEYSFSPSQGDREQAPNLVYLVT

YMPERGARQGVKKVMVIVTDGESHD
GTMTGLALKHMLENSFSEAEGARPSVPRVGLVFTDGRSQD DSQLEKALEKVSQFAFTKKRGDRPDAENVIIIVTDGPSSS TAGTMALNHILQYNFKPNVGLRPDSHKISILITDGKSQD GAGGTWTPSALKYAYDNLIRDSRRAKANVSVVVITDGRFD VTYTHFGLQDAKKLLFDTNRGARENVPKLVLVMTDGASNL AGTNTRAALEAVYHMLVQQEEEQLRHGPAPAPVVNSTRHV TTRIDKALRHSKNVMFTNQNGGRLEATKLLILLTDGSQTF AQTMTAGIDTARKEAFTEARGARRGVKKVMVIVTDGESHD NTTYSGGGTYTRGALLEADEKSREAANKVVFLITDGFSNG TNDGVAIALYGLNAARQQFQHGRDNATRVVIMI TNGRNRG KTYGYDA DYVRENSFSSAKGGRSGANRTVVILTDGLSNN NOMMHGGLQKANEQSHSQENGGDREQAPNLVYMVTGNPASD GKKDTGNVLSYLDTKVFTDFGSRRDAGHFIIMLTNGNSGK DTYMHEGFERASEQDYYENSQGYRTA SVII ALTDGEDHE DAGGTFTPSALKKAYDNLIRDSKRARAKVSVVVVTDGRFD GGSTAGGQGMALAYATAEANFTKGGINRV LATDGDFNV RGTTNIDNAVNMLVKDRQMERLPDRSADMIILLTDGMPNE
 DTNTGSALEFПRMHYGTEAAGSRNRVPQIVILLTDGESND GDTYMQEGFKKADEQEQAHSGENKVHSMI CLLDGTL RPGNTGAAMLF IIFTPSSGSRRHQGVPQLYLFSGGRSAD FTEARGARRGVKKVMVIVTDGESHD GPGTYDGRGDHVAKEYDFEASGRPRVPHALIVVAAGRSDD GTNTHLGMLEGNNLLSASTRSDKVMVDKVMIVITDGVS D GMTNUNDALLRGUNMAWEEHKVPEKSTSIVIMLTDGDANT ETYMHEGFKDANEQTVKAGGK STASVIIALTDGKL GGATNLYGGIMRGIDMLNAAHEQNLVPKIVIMLTDGQPNV ETYMHEGDKLATEQMKKEP KKSSSIIVALTDGKL GTGTNTYAALNSVHDMMNNQMQRLGMRHAI LLLTDGKSNM DTYMHEGLKLANQQDEGAGGNDSKFSSM1 AALTDGKLDG STGNTNSALTMDYIANNTDA

 GTGSDAGIKFNAADDQMVSYGRKSIVNKMAI HVTDGEST
 RFTTYRAGGSARTAEMLKTAFESNSNTNKTVVSLSDGREF WTATATALSLARDDVFQSVAGSRPNSAKDLFLDTDGKSNR AGGGTNGGAGVAMAYEQAQAGYDKGGVNRLLETDGDFND NTAGGEGUGLATKNFVDSEAKGR AKMVMLSDGTNTA GRRLDMLLTDY NKKDFARQTNGQYKPVFI IVTDGVPTD TN GEDALKLAYRQAQQALKKDGINRIIMLTDGDFNV GGSTNLSGGMLEGYAQVKNTFERNYVNRVLLLSDGLANQ GTKTGES LRFMLENHFEETVGSRRGVPQIAVVITDGQAQD GGTNDNDAMLMAVDNSNKEELLPSGSVSLIILLTDGDPTE G $\mathrm{D}^{2} Y$ YEQNLKKTTKRHQFDPTPKHDRLQVLCLVSDGYSDD GGTNDYAGLHEVRTNVLDSPYNRPNVPDIVLLITDGLSNR NSHGRKVNEVLSIFKANSVEQKFNETQNI LIIATDGFSNT GGATAGEQAI QLAYKEAEKAFVKNGDNRI LLATDGDFNV QTATGEGDGLATKTFDDSDAPQR
TRRALQAVYSMMGWEGAAPPEGWNRTRHVLMTD TN GGSTAGASGDDLAYQMAQQAFDPKGDNRDLLATDGDFNV GGSTNGALDGLRETDFTHQRGARNNSAKIALVQTDGKSTE

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UniRef90-U6MQE5
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SNTAAYSAR ${ }^{130}$
140

50 DVK QLHT

## SDLA QME


 DVS 1 YGPALKSSQ
DVSUYGPLLKKSQ DPRDD DKNL GA L CGGRDVLVNTIGGGDDF DQPEQSETLVS DAHASLALSQGGVKVFAVGVRDMDSA EVDEPAAELKR VGVAPVTVARNADREVGRV DPRDDEDLLKKLCDHDNVAVNAI GVGDMFKKQQDDEGLGGS I SPKPAVDSIKEVNQNRNDYLDIVAGGVGELDVDWRELNELL EVSQPARELKR

DAQDAS $\square$ AL T QK G VK VF A $\square G V R \quad N \square D S E E V G K \square$ GVRDNKALIAMDEKERDTGVTLTTDGFGTGNYNEAMMEQI KETD DEKAVQDALNQGLEIYVLAVGNQVNEPNDRALVRVY EIRDAVVNLKDVGVNTFVVGI. KNADILEMQSV DVNLYGQLLKS NTTATVEQAQAAKNMG $\square$ N $\square Y$ Y L GVTID $\square G S N V N Q D E L R L I$ DGITATEQLEEGVSAMKRAEGIPTVIAMGSDTDEEVLHK | $R E N Q F D L A Q R E A G R A R Q L G A T V Y C V G V G K D F N E T Q L S T D$ |
| :--- |
| $G P P V R A A V W D P Q W N T T S D G P Q L Q L Y A F G V R H A Y M P E V R S$ | $P \square R S I V K M L R \quad K K A \square T T L T V A L G P G V N M A Q V N D \square$

 D 1 S E Y KKAKE A GITMMAVGVGKAV RVQQPTRLA $\quad$ QQNNVTVLVISTLDADRHFVNELAGNQ GLTNFDELISLVEREQARGIGLTTLGFGMGNYNDRLMEQL
EV
 G $\square$ D SK T L DE DK $\square R G K N \amalg N I Y G V Y L E N D Y S M E K \square E K E T M E Y$ PSQTKSSAAA
 SAKQEDPSI
N YRLEDVIKDCEHEN $\square$ QRFGSYSRGNDSTEKFVEE $\square K S \square$ DVILPAQLTRQM
SYKRDSVIAECDKQG IIRFG DAVLGYY $\square R N N \square D \square Q E \square K S \square$ GDPRPAAHLLKNTGAIVFTFGIRTG NVEELHDI

 $Q P L \quad \square A A Q Q E A A R A R A L G A \square V Y C V G V K D F N E T Q L A T I$ SKMESWNANSLKKKGVY

 KNPDIFSALAADAKNQGIVKFIVGLTSA A G $\square$ S S IGEVEALVKQNRESGVTLTALGFGTGNYNEALMEKM
 $N$ HRLPQVI QDCEGDGIQRFGSYNRGNL EVQEAANKLKEDGVVVYVVG EEKTLKETVKEADKARQMGATVYCVGVKNFE VGUK $D V R V \square S Q D L R E N N D K V F T \square G T R$
 $D V I T P S L S L R E R M V G I V T V G V G K F Y T K L M H A M$ FPDATKIAAQNAKNDGVTVYAVGVGG GESRPEK DQENVRNAIGGKFPLYNLGFGNNLNYNFLESM KTKTTYAA NALKDLGVTMYSIGVTDIKNKEELNND






NKAAAFGSADRSDASSNDF IVGVNDSSSDD SEF GVSNLQE IQQANVKKA QGRYPLYNLAFGYAVDYNFLEKM NPLEASQEAYELRGEHVDVFAVPGGGKNPDVGTIRDV GPIPVADQLKGNVWMFPRHVTGKRYDG

 DPREVI 1 RAA R
GDSDVDEMLDLVKANRDRGDSLSTVGFGRGNLNDYMMEQM GIT DMAELQKIVSLKNSEEGISISSFGVGADFNEDLMTN
 SADK

GANPQ $\square$ A $\square$ AK $\square R Q D Q T D E T L L D V Y V F G \square G E Q V K K D Q L N V L$ GITDFNTLKGMVAEKRKSGISSTTLGYGTGNYNEELMEQI GVLDPMEAAKIAKKYHTTIYTVGVGAGEMMVKDEKTLQAI DPVTVIHD\RDLLD $\quad$ GGRDRPTDVYVFGVGPLVDQANI NAL GVSNPDDLEKLI EQKRDKGMF LSVLGFGSGNLKDDNLERLL GVSDFDSLKQMAVDKRKTGUSLTTLGFGVDNYNEHLMEQLL PALTGPAA
GTVDFDDLKKLVEGKRRGGVSLTTLGFGTGNYNDHLLE QL

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AD SKDHVFPVNDFQALQGVIDSTLKRSC
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ASKPDERHVFYपRDपTDQQQAFHDMDDE
ASDPTEKHFFNVSDELALLT VETGGERDFA
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AAAP ENVFRVEGFKDLGLIINSILEKSCT
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SKKDGERHAF LLQDTEALYQVFEMLGEELCCPDQS $R \prod A D T K E Q V F P V T G F Q A L K G I T N S I L K Q S C T$ ALENCGMVRHFQEDEDALKGFYDEI ADKGDGHTAYVSNDTDARKVFVDQLPQNI AD SRDQVFPVEGFQARRGIINSI CK CSCT CSTKGECPLFFMTNWDE $\square$ RKVGELIMAEVC

LDTVDDDKY
ALENKG
VS $\square P$ TEKN $\square F M M T S A A A \square K P Q R A L V S T \square C$
ADTGNGNYSYLDSLSEAQKVLSNEMNQTLVTVA
ASETGGSY YNAPSGSELQTVYNTISKEL
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ADNGNGNYSYDDSDEAKKVFGDELAATFNTVA LSEYGTGNYYFIDNADKTPE\|FAKELKGLLSV ASDPDDKHVYEVGDFTDLQ ISLIICYRCFVA ALDNGGRRLYEDSDSAQLKDFYQEVANPLLTS

ASQKGEKHVFDLKDFETLGEVFNSDISTMCGVA ADAGDGNYSYIDNKNEAKKVVQRQLSSTLATVA ADETGGQY FRARNQQDLQHIYDTINQ
ASKKDEQHVFKVKDMENLEDVFFQMIDESQSLG ADCGNGNYSYVDSLFEGKKVLIDEMGSTLVTVA

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conf
sol25
sol5
sol0
jhmm
jpssm
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UniRef90_L7UC97
UniRef90_A0D130

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conf
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| UniRef90_S5JAR5 | NDECRGSTNMASGDEQARQVLSGARNEKLAMIVVDGSN |
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| UniRef90-X2ML57 | TGG GEAGLRLAYEQAEKGF 1 K G GVNRILLTTDGDFNL |
| UniRef90-M7N615 | GTADGSALLAVATNRMRETSSK SKVIILLSDGENNA |
| UniRef90-E5RYN3 | VNISSAL RLCEMNVFNS L |
| UniRef90-H3BXX3 | ETFMHVGI KEASVQI RAQPSP |
| UniRef90-A7RM81 |  |
| UniRef90-M4A541 | GGDTLMDLGLQRANDQ\RKENF GTASVII ALT DG |
| UniRef90_UPI00033473BE | ENMSVYYMMNNQMQQLGLHTAAWREDRHAII L L T DGKSNV |
| UniRef90-C3ZTU5 | GTNT GAALKYVRQYAA WREG NVPKVIIVLTDGKSSD |
| UniRef90_L1P0F3 | TS GE RALRMAYEEAQKAFVKNGINRI L L ATDGDFNV |
| UniRef90-K1QTR9 | ATFTDVA\NEM\RLLDQPNVP S |
| UniRef90-UPI000298B8A0 | DTNTENALRDAQQLLRAAG GNVPRILLWLTDGASPG |
| UniRef90-K2QRA3 | PTGQRLNQLLKPYLQRVAADPDNTKPLNLDIVITDGEPSD |
| UniRef90-C1D2W8 | TNLHGG WLLEGATQVAQHDTPGALNRVILLSDGQANV |
| UniRef90-L7UC97 |  |
| UniRef90_A0D130 | DMGGTC I I A P LK Q M $\square$ Y HKNYGASKNTTLNVFLLTDGQDTA |

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lupas_14
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jnet
conf
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160
GVVDDP DEAAE $\square$ AKKYNAT TYTVGVGA GEMMVK DFFMTRKIV
 GGSPQPTVARDKNTVYMNHTVDIYMFAIGNDDFDDDLQPL GNDDPGMAARLAYAHGDKMHTIADGNYHENTLDETMLREU
 YVHDTVKEANEARKYGARVYCVGDKD SVVDPANK LK
SVQDQQLFDAQQQAEEARRLGATVYCVGV KDFNET

 GVADTETLKSMVAEKRKSGISLITLGFGTDNYNEEMMEQU PDKTRDAA DTARADGDTLIAVVGGVTPGSSAATELNAII DVGQVMSEDKAEGVFVLAVSAV DVESVIIHAAKKLDK CDAPA WQVGDQFFQVGREPGAKEH GVTDRREDARQVRGMTERGDSTTTUGLGSHY DEELLLA GPSGSPESMLESIRKYVAEGVTGTTVGFGMGNYRDDLMEK

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DTA A DGGQYFRARDAEQLEKMYDTI 190 ATSSA HYYSGSDFSQLSSUFQKITSSL A DVGNGNYSY IDDSLSEAQKVLKDEMHQTLVTVA ARI GEGEFFRVTDTQALQTVFSQlDQ
 A D TKDQVFPVKDFHALKG VVNSULKRSCT
 KD GERHAFILQDADALRQVFERLTDTICGVGN ANNK QNNVIELNNFNALLATKIDMISTNVCSYA ADAGDGNYSYIDSEKEAKKVLQHQLTSTLATVA

 $L K Q L D D E L A B L A G E D D L R D V V D T V$
 AEVGNGKYQ\|VSDKED $\$ VEKVIDLLEDSL



[^0]:    

[^1]:    
    

[^2]:    $$
    \begin{array}{ll}
    \mathrm{T} & \mathrm{~A} \\
    \mathrm{~K} & \mathrm{D}
    \end{array}
    $$

[^3]:    $\qquad$

[^4]:    

[^5]:    $\qquad$

