## QUERY

UniRef90_L7ZHI3
UniRef90_K2GZB9
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UniRef90_B5FBI6 UniRef90-EOWSD4 UniRef90 ${ }^{-19 M F 76}$ UniRef90-UPI0003676D02 UniRef90_UPIO0035E6940 UniRef90_UPI00036939E9 UniRef90-UPI00037F1661 UniRef90-A3XQN6 UniRef90-E4PFU1 UniRef90-Q46QM6 UniRef90_UPIO0025588BA UniRef90_UPIO0036EEEA6 UniRef90-R6BB02 UniRef90_A3YDL9 UniRef90_UPI00039ED999 UniRef90-I1DTD6 UniRef90_C6CJS7 UniRef90-E7NVM1 UniRef90-R6PVF6 UniRef90_UPIO0047B4B1B UniRef90-UPIO003603DB9 UniRef90-F1TDM4 UniRef90-R5CHQ9 UniRef90-12EYE2 UniRef90_U2CW11 UniRef90-UPI000406F000 UniRef90-D1PY44 UniRef90_Q3J7L6 UniRef90_UPI000469EBFE UniRef90_UPI00035C26F6 UniRef90_UPI00037A9333 UniRef90_UPIO00378E6CF UniRef90-G9EVI4 UniRef90_R5ANN5 UniRef90_F6CTL6
UniRef90_B8GLP6 UniRef90-M4RGB6 UniRef90_UPIO00371F77C UniRef90-M4U9D1 UniRef90-F9UV705 UniRef90-R5UGZ1 UniRef90-U2MQG0
UniRef90_L1MBL1
 QQVHLSGPTMGTSYNIKYIQQDPSSDDLHKEIDDRLEEVN



K SGKTM

## E Q Q N

 LSGSTMG $K$ QQV V $V$ S EPYEN

 QQA HLTTGSTMGTYYSVVKYVSDMELPADI QAEI DARLELVVN ELLA S F S G P T M G T T Y T V $V$ K F F T T K D VYR LE GK TMGT Q Y H I K MVVPP P P S Q S E L Q Y A V D E E L R R I N




 Q L Q R

## E Q V H <br> E LI I

 MD GQ T M GLS GPTMG
HLTGHTMG

## E <br> $E$ $E$ $E$ Q E K E




UniRef90 L7ZHI3 UniRef90_K2GZB9 UniRef90-Q8D171 UniRef90 F0LU68 UniRef90_C0GEW8
UniRef90 E5YIG1 UniRef90 ${ }^{-}$C9NNM8 UniRef90 UPI000366B462 UniRef90-UPIO004706863 UniRef90 D3V457 UniRef90 LOMEP0 UniRef90-H8YY27 UniRef90-LOGZS7 UniRef90_B4EUU0 UniRef90_G8M0R5 UniRef90_LOWEH1 UniRef90_R1GXA4 UniRef90-A6VW14 UniRef90-UPI0003B46493 UniRef90 D4F2L2 UniRef90 I3VUW9 UniRef90-M7CQ75 UniRef90-C5CFH3 UniRef90_F9TM79 UniRef90-14W5J4 UniRef90-V5HNN8 UniRef90_Q6LTY3 UniRef90_Q0VQR2 UniRef90-K6ZQC5 UniRef90-S7V5H9 UniRef90-B0TQZ7
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UniRef90_B5FBI6 UniRef90-EOWSD4 UniRef90 ${ }^{-19 M F 76}$ UniRef90-UPI0003676D02 UniRef90-UPI00035E6940 UniRef90_UPI00036939E9 UniRef90_UPI00037F1661 UniRef90-A3XQN6 UniRef90-E4PFU1 UniRef90 Q46QM6 UniRef90_UPIO0025588BA UniRef90_UPIO0036EEEA6 UniRef90_R6BB02 UniRef90_A3YDL9 UniRef90_UPI00039ED999 UniRef90-I1DTD6 UniRef90-C6CJS7 UniRef90-E7NVM1 UniRef90-R6PVF6 UniRef90_A3QGZ3
UniRef90_UPIO0047B4B1B UniRef90_UPIO003603DB9 UniRef90-F1TDM4 UniRef90-R5CHQ9 UniRef90-I2EYE2 UniRef90-U2CW11 UniRef90_UPIO00406F000 UniRef90_D1PY44 UniRef90-Q3J7L6 UniRef90_UPILO00469EBFE UniRef90_UPI00035C26F6 UniRef90_UPIO0037A9333 UniRef90_UPIO00378E6CF UniRef90-R5ANN5 UniRef90_F6CTL6 UniRef90-B8GLP6 UniRef90_UPI000371F77C UniRef90-M4U9D1 UniRef90-F9U705 UniRef90_R5UGZ1 UniRef90_U2MQG0
DB7298

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80
YKFSFTDERSVVKK $\square$ NDHPNEWVEVDEETYS LIKAACAFA DQMSTYRPDSELSRFNASRDRPFPVSPATAEVVREALRIN QQMSTYDEDSDGSRFNQAAGTWHEVPPDFARVLEAALALS DQMSTYRPHSELSRFNQSRNQPFPVSAATAKVVQEAGRIN A DMDRHQSDSDVAK DNAAAGQPVAVSEETFEVIVRQGVEFG DQMSTYRSNSELSRFNQSTNKPFPVSA ATAKVVSEAB R N N


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UniRef90 E0WSD4 UniRef90_19MF76 UniRef90_UPI0003676D02 UniRef90_UPI00035E6940 UniRef90-UPI00036939E9 UniRef90_UPI00037F1661 UniRef90-A3XQN6 UniRef90-E4PFU1 UniRef90_Q46QM6 UniRef90_UPIO0025588BA UniRef90-UPIO0036EEEA6 UniRef90-R6BB02 UniRef90_A3YDL9 UniRef90_UPIO0039ED999 UniRef90-I1DTD6 UniRef90-C6CJS7 UniRef90-E7NVM1 UniRef90-R6PVF6 UniRef90_A3QGZ3
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UniRef90_UPIO00378E6CF UniRef90_G9EVI4 UniRef90-R5ANN5 UniRef90-F6CTL6
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UniRef90_L1MBL1

E LT DGAFDPTVGRLLELWGFTGNYENLRVPSREEDEEA TK RVTDGALDVTVGPLVNLWGFGPEGRPDKVPSEAELAHRRA




R

## a <br> R

 hLSGGAFDITGPLVNLWGFPEHRPDAVPDPAAAAABE Ki Tigatovivgaplviluwgrgpegarthopsadelakakk EISDGAFDATIGPLVKEWGISTDKPT VPSMERLQNLIIG QQSDGAYDVTVGPLVNWGFGPDPDFEPPSDEDVRKAQA EMSDGEYDVTVGPLVNLWGFGPGKREDKVPSQAM| DEAKL WLSMGAFDVTVGPLVNLWGFGPDKPLGSNPSDEAA ANALT KLTDGADDVTVGPLVNLWGFGPEGRPDREPSPSQIAQRRA KISDGYFDITVAPLVNLWG円GTDHA HVPTESQIKDAMK KKTNGAFDITIGPVVNLWGFGPESRPEKVPSDEELAQRLS EKTGGAFDPTVYPVTKLWGFDSSSSKKRVPSEKEVEKTLET
${ }^{\text {e }}$

 $T$ LSHGVLDVTVVGPLVNLWGFGPDAKPEKRPSAQVVTQVKA
 QKS G GAFD DTVGP LVNLWGFGPRGPDNTVPAAS DI QKSAGAFDPSVGPLVDLWGFGPQMTNDQIPTDDEI


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



 K VT G GALDI TLGPLVNLWGFGPDKRPTALPSQAVI SAAKA


 EKSNGAFDVTVGGPLVNLWGFGPDKRPEKVPAQSVI EQKNQ



 $R D S G G A Y D P S A G P L V D L W G F G P A P R R C A T P A P D Q Q V A Q V R Q$

 K M S K GE Y D I TV GP LV N L W G F GP GK K T D T V P S V D D
 $R A T G G A M D I T V G P L V N L W G F G P Q K Q P V T D P S Q Q Q$
 NETHGAF DDTVAP LV N EWGF GF K K G V E RKTDGALDI TLGPLVNLWGFGPDKRPTRVPSAELI

 VLT DGAFDITYGSI DKRF WNFDRTMTALPDPETAKETIK

 $R$ L S K GAF DV TV GP LVV N L WGFGP GSYTNEDPSRREMEAEK E
 A EMDGLLDPTIGPLVDLWNIGSGGD KRTD GKFNPA G GNLV T L WN I GHE GA AK TKGSFD $\square$ TVEP L V A L WG I G T D K A KATNNAFDMAI YPIVKAWGFTENEYT
 QMTKGEYDVTVGPLVNLWGFGPGNREDRVPSEAE TE TAKS E LS G GA F DVVTYA S V V V Y Y R Y D Y R Q G
 QLS G GSFDI T GPI MDLWGFGKNEQ HVPDSDE H




QUERY
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UniRef90_A0YHB4 UniRef90_Q1YP00 UniRef90_G0GG06 UniRef90_H9UCF4 UniRef90_UPI0002DB7298 UniRef90 P44550 UniRef90_B8CY08 UniRef90-V4JC95 UniRef90_Q82SE9 UniRef90_UPI0003B79AA8 UniRef90_B0ND39 UniRef90_A8FYV6 UniRef90_Q1N4Y7 UniRef90_B5FBI6
UniRef90 E0WSD4 UniRef90-I9MF76 UniRef90_UPI0003676D02 UniRef90_UPI00035E6940 UniRef90_UPI00036939E9 UniRef90_UPI00037F1661 UniRef90_A3XQN6 UniRef90_E4PFU1 UniRef90_Q46QM6 UniRef90_UPI00025588BA UniRef90_UPIO0036EEEA6 UniRef90_R6BB02 UniRef90_A3YDL9 UniRef90_UPI00039ED999 UniRef90-I1DTD6 UniRef90_C6CJS7 UniRef90_E7NVM1 UniRef90_R6PVF6 UniRef90_A3QGZ3 UniRef90_UPI00047B4B1B UniRef90_UPI0003603DB9 UniRef90-F1TDM4 UniRef90_R5CHQ9 UniRef90_I2EYE2
UniRef90_U2CW11 UniRef90_UPIO00406F000 UniRef90_D1PY44 UniRef90_Q3J7L6 UniRef90_UPI000469EBFE UniRef90_UP100035C26F6 UniRef90_UPI000378E6CF UniRef90_G9EVI4 UniRef90_R5ANN5 UniRef90_F6CTL6 UniRef90-B8GLP6 UniRef90_UPI000371F77C UniRef90_M4U9D1 UniRef90_F9U705 UniRef90_R5UGZ1 UniRef90_U2MQG0

160 WT GAD KL SVQ G S A LVVKSIPE L Y Y V DLS SIA K GYGVVDVA E



 D A GF QN I EL N I G S I A I S K K T P L QI DL S AIA K G Y G V D Q V A D


 L V N Y K DIITINSDKSEAK LEKKGQIDLGGIAKGFAADEAIE

 KI G S D K Y S L D S T K R A I K K A N A L Y I D L S A I A K G Y G S DL I A D
 WVG GQ H L S L Q GNALVVKDPELYVDLSAIAKGYGVDVVA D Y I N YK DVL LDEK N DEVVKSRKGMAI DLGGIAKGFAADEVEN
 RVGGYK N VV DVVS S S KV W I L N GA E L D L S G I A K G Y A V D D A I A

 EI G Y Q NL SVVTD D N K L V K Q I P GLLYVDL S SIA K G Y GVVDV A E II GYH HLKVD GNKLIKDDP DLYVDLSSIAKGFGVDVVAD

 K LGFRHIVETKDGALIKHHRAVTIDLASIAKGYGVDQVAA
 TTGYQHLILNPTNQSISK DLAALRLDDLSAVAK GYAVDCQI A E



 K A G H A K QV RLD P P A L R K Q Q P D L Y V D L S A I A K G Y A V D R V A E A $\square$ G Q D K L V L D R E T H I R K L H S D I Y I D D S A I A K G Y A V D R V A E ATGYEN I EL R P EPSAFRSDRPQYI DLSAI AK GYGVVDAVAR S M G Y Q R E L Q Q S P P A L R K Q DP G L R I DL S A I A K G Y A V D A L A E

 WI GI D K A V E Q K Q D A L I K T I P E L Y V D L S GI A K G Y G V D V I A D LVNYHLVEVDTANTI YLPKAGMMLDLGAIAKGYATDQAVE


 KV G F Q N $\operatorname{I}$ V I D D S E A S T V V A T GFE K L EL R V D P P A V R A T P P Q Y V D L S A I A K G Y GVVDA V A R QCGWDRI ELDID GGCALDPGGVSLDFCAIAKGFAVDAVAQ $R \square G Y D F V E L D P Q A Q T V G K Q G E Q Y V D D S A I A K Y G G V D D E L A R$

 KVGFS AI ALSE Q T L S S K A K DVVI DLSSI AK GYGVDAVA Q



 RTGLHALELGPE SAVKH DPSLYVDLS TIAK GYAVDEIAE

 LI N Y R N V I LID S Q N L T TV

 RVVGF K Q Q V $\begin{aligned} & \text { R H S P P P A }\end{aligned}$
 LTNYKDVIVDDKAKTVVKAKAMVLDMGGI GKGYAADRI A D
 LTKVSNVTIDEDATVYLEKEGMAVDLGGIAKGYASDKLAE
 LVGLLEKLI I GPTW ASKTNPNLYV
 $R$ R G WH K I E L R S P P A I R K A R G DV Y HVNYKNVKVD GTTVQLLDPKAA

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UniRef90_UPI000378E6CF UniRef90_G9EVI4 UniRef90_R5ANN5 UniRef90_F6CTL6 UniRef90-B8GLP6 UniRef90-UPI000371F77C UniRef90-M4U9D1 UniRef90_F9U705 UniRef90_R5UGZ1 UniRef90_U2MQG0
$\square \mathrm{A}$ LS FDENAT GF
180
190
200
GEK A G GD GKYPWVI GVKDPRG YLQS QHVQNYMVDIGGEVRTRGHNSEQKPWRIAIIERPTQQ
 YL EAQNI K D Y MVVDI G GEVVRTRGNNGENKPWRIAIIEKPVA Y I E S Q G I H N Y MV E V G G E I R L K G L N R D NV P WR I A V E K P D E T M Q E M G I E S A S F D A G G D I R V L
 L L R E Q G Y QHFMASVGE LRLSGHPKRQP W
 $Y L Q S Q Q V R N Y M V D V G G E V R T R G L D G K E Q P W R$


| $Y$ | $L$ | 1 | $S$ | $Q$ | $N$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 1 | $Y$ | $K$ | $H$ | $H$ |  | T N Y MV DI G GEVVRTQGVNGNDKPWRI | $I$ | $Y$ | K E H N | V |
| :--- | :--- | :--- | :--- |
| $L$ | $L$ |  |  |


$V L A B L G G$

| 1 | $M K E N$ | $G$ | $I$ |
| :--- | :--- | :--- | :--- |
| $Y$ | $L$ | $D$ | $H$ | $R 1$ K S M D E TA A G G F I D A G G D I YI E S LGG $\square$ N NYMVE IGGGEI RLVGVNQEEVP WR Y L Q R I G A

 $Y F D E L G B$
$L \begin{array}{lllll} & L & A & N & D\end{array}$ $\begin{array}{llllll}V & I & S & D & A & G \\ L & L & D & I & P & N \\ L & L & L & Y & A & G \\ V & E\end{array}$ NY L $V$ V $\underset{E}{E}$

| $L L D Y A G Y E R$ |
| :--- |
| $L$ |
| $L E M L A L$ | $R$

$R$
$P$
$R$


CHGVLGGNFAVSRYGTPW
YIESTG VNN YMVEVGGEMRLLKGHNREGVRWRI A



 YLEE E G V RHAMINLGGNVLAMGSKLDGSDYNIGI QKPFD YL E E E G $\quad V \operatorname{R}$ K



$\bar{Y} L T$ E K G $F$
$\begin{array}{lllll}L & L & I & E & K \\ G & V \\ F & L & E & S & G\end{array}$ SAAI D L G G N I LALGKK P P N G N D WII
$\qquad$ $\left.\begin{array}{llllll}L & L & L & E & K & N \\ L & L & K & K & K & G\end{array} \right\rvert\, V$

| V |
| :--- |
| L |

## H







 $\begin{array}{llll}Y & L & E & A \\ Y & D & D & S \\ V & F & L & N\end{array}$ L L K K K G $\begin{array}{llll}L \\ V & K & K & K \\ Q & K & G\end{array}$ $V L Q D K G$ I L R K H G $L L Q T Y K$ $V L R E L G$
 D L D A R G Y L E S A G

 E H G QVV G A G G D T R L L L G D R R $\quad$ G R P W W V V




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UniRef90_UPI000378E6CF UniRef90_G9EVI4 UniRef90_R5ANN5 UniRef90_F6CTL6 UniRef90-B8GLP6 UniRef90_UPIO00371F77C UniRef90-M4U9D1 UniRef90_F9U705 UniRef90_R5UGZ1 UniRef90_U2MQG0
UniRef90_L1MBL1

210
220
230
240
D DVID Y $\quad$ VY LIK S GAVATSGDYERYFVVDGVRYHHDLDPSTG





 RAVQQQVI E PGTMMMATS GDYRNYYEENGKRFSHII DPRTG
 $R A V F R V V R D N D \square A M A T S G D Y R N F F E Q D G K L Y S H T I D N H R G$


QTVQEII APGDMAI ATS G DYRNYFEENGVRYSHTI NPATA
GHAERII P VT DVAV A T S G D Y R N Y F EKN GVRYSHTIN PVTG




RAI QE II EPGNMAI ATS GDYRNYFEK DGVRYSHLINP QTG DELVRTI ELD DRAVATS GDYRHVFEDN GRFYSHHI DPRS G






P K YVGI L RVRNKAVVTSGVYERFEMQDGVRYHHLLDPSTG

R AV E A V I G L N N M GMA S S G D Y R DY F E E N GKR F A HEI I D P K T G


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



S R AQE I I E P G DM SVVATSSGDY R NY F E E K GVVRYS H TII D P S T G


 N NQLGKLKVTNKTVVTSGDYERYFEENGKHYHHILNPDTG N K V F A L L


 GHAQKVVELADVADATS GDYRNYFERDGVRYSHTIDPKTGG $R A V Q Q I I T_{T} P G D M A V A T S$ G D YRNYFE QDGI RYSHLI DPRTAA


 DEVVQQLL E PGNGAMATS GDYRNYYEEE GQRFTHII D P R N G RAI QRVVTVGNNADATSGDYRNYYEEDGVRYSHLIDPSSG
 QQLLQTVLNNVTNKAMATS GNYRNYYYKNGKKYA HTI
 G GI QK I I A PGD G GLAT T S G Y R NYFEHDGVRYSHTIDPATA R R V Q R R L L



 E NYVGVVEI SDACAVTS GGYQRYFEENGKKYHHIIDPAATG







## QUERY

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UniRef90-K6ZQC5 UniRef90_K6ZQC5
UniRef90_S7V5H9 UniRef90_B0TQZ7 UniRef90_A0YHB4 UniRef90_Q1YP00 UniRef90_H9UCF4 UniRef90_UPI0002DB7298 UniRef90_P44550 UniRef90_B8CY08 UniRef90_V4JC95 UniRef90_Q82SE9 UniRef90_R8B5Y8 UniRef90_UPI0003B79AA8 UniRef90_B0ND39 UniRef90_A8FYV6 UniRef90_Q1N4Y7
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UniRef90 L1MBL1

Y P A R V 250
260
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YPARGVWSVTVIDEDATTADALSTAGFVMAGKDWRKVVLD R P I H H RVVSITVLLSPTCMTADGLSTGLNVMGPERGMARAN


 R P

 R P I H N L V S I TVVIA P T CM S A D GF S T G L DV L G P DK GMEVVA E K $R P V H R L A S I T V I S P T C M T A D G L S T G L D V M G P E R G M A L A N$ $R P V H L L A S V S V L D E S C M R A D A L A T G L D V L G P E D G D A L A B E D$

 Y P A D S GIDGTVVI A D L S V D A D A L S T A T F V L G L E K G M K L I E K Y P V H K L A S V S V L H K D C M T A D G L A T T M T V L GP EK GME FA K A




 R PAR S VIS ATVI S K S A LIE A D A FA T A A FVVIGT S P G IT T K P I H K V V S VTVVLHPS S M T A D G L S T G I MV L G E D A GLLED N E WPV H E V A S V S V L A N E CMQA D P L G T M L S V L G A E H GMA Y A R E K P A H K V V SV T A H P S CMTA D GLA T GL MV L G E K E G I R VA N Q K P A N HVVSVVTVI SPQSMTADAYATTESVVMGEESSIALANK K PANHVVSVTVVLHPSSMTADAYATAFSVMGEEESIKLANE Y P V Q H K A S V SV L HK S A M DA D G LAA T A MTVV LGP DEGMAFAK D A PI H NLVAVTVVHPSSMTAD GLATALIVMGKDEALNVA RAVNGVASVTVIAPTETFAD GLATALDVMGPEKGLALVNQ

 RPIHRLASVTVVTDRCIDADAWATAFLVMGDEAALE IANQ YPARTGLSVTVVHPKGI DADALSTTGFVLGMERGHAYLRE
 K P I N K VVVSVTV I D A S S MTA D G L A T G L MV L G E T IGGMS LA E E Y P I Q H HA S I T V L A P T S M T A D GL S T G L F V L G E D K A L E V A A E K Y P GS DLQ S V T IVYAPTA LEAD ILSTA V F I MGWERGREELEK RPVVHNLASVTMCAESTMQADAWATALLVLGPERGFEVAQE WPVENGASVTVLLAESCMVADAWATALLVLGHERGLTI A E D K PI R H N A S V TVI A D NTMLA DA LA TGGNVVMGYERAQALA T



 RPINHRVSVTVLDPSCMTADGLSTGLDVLGPQRGMELAN WQPREVSSVTMVNSSSTYGDVLSKPIVVLGVEKGLELLKQ K P I H K L A S V T VI H P S S MY A D GLA T VI TV L GP E K G L A F A E A K P I H N L V S V T V F H P S A MLLA D G L A T A I TV L G P Q E G L A A F A N K
 Y PVENNLFVSI I T NESADADALSTTGFALGLEKGMPFMES Y P A T G I I S A T V FAAP KA E L A A D A L A T S V F V E P A H K L A S V TVVA D DCMMTA DAL A TMGFNVMGYERANE LAVR YPAHALASVTVLHTECMMADALSTALTVLGPQAGMEHARR











 Y P V Q H GIS A TV L A D Q C A VA D A Y A T S F M V M G L D K T K E I L K K




 K QAR D L M Q T T V V V
 A PIE R NLS ATVVGDRAILVDGLATAFMVL GEQRAPA LAVVS Y P ET HLQQQVTII S DASVVGDALSTTCGALGLEEGSKLIKS

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



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UniRef90-12JMZ2 UniRef90-L1N1V2 UniRef90_UPI0004129A82 UniRef90_R9BT78 UniRef90_J9GR90 UniRef90-UPI0004633344 UniRef90_R4KJV0 UniRef90-F4LQM4 UniRef90-UPIO004778980 UniRef90_DOLJG3 UniRef90-D9QV33 UniRef90_W0E6I1 UniRef90-T0P7V2 UniRef90-UPIO000E117E7 UniRef90-C1DR08 UniRef90-F3PPI3 UniRef90-D1W3R2 UniRef90-UPIOOO28972B0 UniRef90-I8U744 UniRef90-L8JZD4 UniRef90_G2E3G5 UniRef90-X5E1K2
UniRef90 R6CKK1 UniRef90-E6U4G2 UniRef90-S5AJL2 UniRef90-W9T9L7 UniRef90-R6R855
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UniRef90_N9U1N8 UniRef90-V9W0B2 UniRef90-H1PX30 UniRef90_A1SSY9 UniRef90_R6SI46
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UniRef90_C4SZ68 UniRef90_UPI00037DDE87 UniRef90_B9NVH5 UniRef90_C7R8K4
UniRef90 U2CQ59 UniRef90-K5YEW4 UniRef90-D4M5Q1 UniRef90-R9JE45 UniRef90_UPI0003735254 UniRef90_E8SR78 Unirete: UniRef90_A0A058ZNT7 UniRef90-A6FIV5 UniRef90-B2A695 UniRef90-G1W8Z5
UniRef90 R7R0E9 UniRef90-E2ZBR8 UniRef90-R6IC53
UniRef90-R5T2G5 UniRef90_A0A023RGZ8 UniRef90-I7ZC99 UniRef90_A8UI10
UniRef90- 2 DWZ7 UniRef90-K1L1N9 UniRef90-R6BNS0 UniRef90-B4WXA6 UniRef90_UPI00030102A1 UniRef90-UPI0004668D64 UniRef90_K7A117 UniRef90 E4RPW6 UniRet90_G5GGI0 UniRef90_UPIO0036BDEC5 UniRef90-F4DFS57 UniRef90-D7NAD7 UniRef90-R2R480 UniRef90_UPI00046689CF UniRef90_UPI00047D615F UniRef90_A0A021W760
E117E77
$\qquad$
DDE87
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 8

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E
 YQHNKGATEGTTYHAAYQSND路

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\text { E P } \quad \text { D } \\
\text { F Q } \\
\text { Y S S } \\
\text { E P Y } \\
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SRTELMMGTVVSVSLYD

## Q

## Q

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 QE EVVM D E AIA A Y L K K V M D

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Y G GP TM G S S Y S V K Y V H T D P D

QSEFYMDTACTI TIYENKPD

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QKFESEKFLFGTYVKITIYDDEKLA


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Q EEYRNGETMGTTYNVVAVDGELTGEQLLGAVEAQLKAVN
 $\square S K T G F Y F D T V I K M T L Y N S$
QYFEESGSVFHTSYHUKYKAKQ

## D D A

SHSFFAMGTYMKITAYGK ETHQLRGESMGTTWSVSVCAPPEDALPLQRLLQAELAREVV
 FAMDTYMSVTAYG ADGRNFQKSVDSLLLVFN RWQQQDWDVMGTRASVTLWSEQKDAAPMEDALKEEMARLN
 EDNSF $\square M N T L V Q M R A Y G E$

SEFALDTAITVMLYDS
QPYSKTDF LMMGVVTLKMYDKGK

 YQHNEGFIFGTVYHATYQYDK GGE D $K P Q E D K Q F L M G T Y V Q Q R \square Y D D G K$



UniRef90_S6FB06 UniRef90_R5Q3T7
UniRef90_12JMZ2 UniRef90-L1N1V2 UniRef90_UPI0004129A82 UniRef90-R9BT78 UniRef90_J9GR90 UniRef90_UPIO004633344 UniRef90-R4KJV0 UniRef90-F4LQM4 UniRef90-UPI0004778980 UniRef90_DOLJG3 UniRef90-D9QV33 UniRef90-W0E6I1 UniRef90-T0P7V2 UniRef90-UPIO000E117E7 UniRef90-C1DR08 UniRef90-F3PPI3 UniRef90-D1W3R2 UniRef90_UPIOOO28972B0 UniRef90-I8U744 UniRef90_L8JZD4 UniRef90-G2E3G5 UniRef90-X5E1K2
UniRef90 R6CKK1 UniRef90-E6U4G2 UniRef90-S5AJL2 UniRef90-W9T9L7 UniRef90-R6R855 UniRef90_UPI0003077B5F UniRef90-I3CG31 UniRef90-D5ECH9 UniRef90-R5YH93 UniRef90-C6J7F6 UniRef90_UPI00025571C2 UniRef90-B5YE61 UniRef90-D6GRB9 UniRef90-R6SNT0
UniRef90 N9U1N8 UniRef90-V9W0B2 UniRef90-H1PX30 UniRef90_A1SSY9 UniRef90-R6SI46 UniRef90_U1S7L6 UniRef90_UPI00047C148D UniRef90_15AYC8 UniRef90_UPIO0030B6A2E UniRef90_A7HLP9 UniRef90_A0A037ZDB5 UniRef90_R5F9M6 UniRef90-R6FVB2 UniRef90-C4SZ68 UniRef90_UPI00037DDE87 UniRef90_B9NVH5 UniRef90_C7R8K4
UniRef90 U2CQ59 UniRef90_K5YEW4 UniRef90-D4M5Q1 UniRef90_R9JE45 UniRef90_UPI0003735254 UniRef90-E8SR78 UniRef90_UPI0003B5CA94 UniRef90_A0A058ZNT7
UniRef90-A6FIV5
UniRef90-B2A695
UniRef90_G1W8Z5
UniRef90-R7R0E9
UniRef90-E2ZBR8
UniRef90-R6IC53
UniRef90_R5T2G5
UniRef90-A0A023RGZ8
UniRef90_I7ZC99
UniRef90_A8Ul10
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UniRef90-R6BNSO
UniRef90 B4WXA6
UniRef90-R6MH94
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UniRef90_UPIO004668D64
UniRef90-K7A117
UniRef90-E4RPW6
UniRef90-G5GGI0
UniRef90 K8FDS8
UniRef90_-UPIO0036BDEC5
UniRef90-F4DFS7
UniRef90-D7NAD7
UniRef9O R2R480
UniRef90-R2R480
UniRef90_UPIO0046689CF
UniRef90-UPIO0047D615F
UniRef90_A0A021W760
 QKTDGAFDITVAPLVNAWGFGFKKGKMPVQSQ WVTNGAFD:TVAPLVNLWGFGPVKHDGKP S S D EAVAKALE KETNGAFDITVAPLVNAWGFG FKTGVKPTPNAIDSLRR



 KLSQGYFDPTI GPVVKLWGLGSEKANQRVPSKDELADKLK RRSAGAFDDTVGAFRGLWKFDQDKDGSIPAADEVAARLPLL





 SLTDGAFDI T $\square$ GP LVNLWGFGPETRPARDPSEQEIAAAKA



 ERTKGRFDPTVGPIVDLWNDGHEGNNAKVPDPNVLKEKLQ



$K L S N G K F D V S V A P L V N L W N D S T D$
KDYKVPEEAVLRKELK

 ELSDKKYD IT I GPLLKAWGFGEVG E DSI PSKECLAQADK
 RESRGAFDPTI GPLAAAWGFGEGG RVPDAAELEAARA $K L T Q G A D D V T V G P V V N L W G F G P E K R D E K Q P T E E E Q L A A R Q A$
$T$

 NLSEGAFDDTVGPLVNIWGDGTDKA RIPSPKEIKEKVA KETHGAFDVTVAPLVNLWGFG FKQGQQPNKHAVDSVMP

 AQSRGTFDVTLGPLI ELWGFGPRKPEDPVPADADIMAAKA


## D

## D


 RLTHGALDVTVGPLVNLWGFGPDKSVTREPSPEQIKQAAS


 QATNGAFDI:TVAPLVNAWGFG FKKHQQLPNQQQVDSLRK EKSQGAWDITTGVI TDLWGDGTD NQRIPSDEEI AAAES

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

 KSTDGCFEDGIYPLMQEWGFTDGYNYKVPDKETLQKLLPD




 HLTGGAFDI T I APLTALWGMGTE TPSVPTKEEI LRARS KLTNGKLDVTVGPLVNLWGFGPDKRPVKRPDEAAIVAARH




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 TGGYQKVKYDGKGEHKKDNRIMLDCSA:AKGYGSDMVAR
 YI NYKDITGDKENQTVYTKKGMTLELGAISKGYGADKVRE LIGFNDVEFDDDKTVFLKRNGMMLDLGGVAKGFTADVISD LVNYARSVINKETKIMLLQKGQMLDLGGIAKGYAADEVAQ DYKSLQUNNDSGPSVLVTRPGQVVDLGGIAKGYAGDEAKR LVDYQLVKLNPETQNISTREGMDLDVGG\| AKGYAADEVI E LGYRGVRLAPGSKRAGLRRAGMRITLGGI AKGYAVDRAVA LVNYKENINEDKRTVMLAEPGMKLDLGGVAKGYIVDQAAE LINYNDIVLDETNKTITFKRENMIIDLGAIAKGYAADEVAK FSGLDKLQLNGLELTKTVDGL YLDLST:AKGYGVDAISQ
 LTGYDKVSVMMGTVKKQDSRIMLDCSGIAKGYGCDAVAQ FINYKDVILDDSNKTVFKNPNMIIDLGGIAKGYAADVLTD


 AVSGAGVILNEKDGSARDGRHQSVDLGGI GKGYAADMVLK YVGYQKLSTTPTGL KKSHPMLYVDLSTIAKGFGVDEVAE ITGHRHLRDDGERLCK DAAVQL
 E
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F


UniRef90_S6FB06 UniRef90_R5Q3T7
UniRef90_12JMZ2 UniRef90-L1N1V2 UniRef90_UPI0004129A82 UniRef90_R9BT78 UniRef90_J9GR90 UniRef90_UPIO004633344 UniRef90_R4KJV0 UniRef90-F4LQM4 UniRef90-UPI0004778980 UniRef90-DOLJG3 UniRef90-D9QV33 UniRef90-W0E6I1 UniRef90-T0P7V2 UniRef90-UPIO000E117E7 UniRef90_C1DR08 UniRef90-F3PPI3 UniRef90-D1W3R2 UniRef90_UPIOOO28972B0 UniRef90-I8U744

## UniRef90_L8JZD4

 UniRef90-G2E3G5 UniRef90-X5E1K2 UniRef90-R6CKK1 UniRef90-E6U4G2 UniRef90_S5AJL2UniRef90 W9T9L7 UniRef90-R6R855 UniRef90-UPI0003077B5F UniRef90-I3CG31 UniRef90-D5ECH9 UniRef90-R5YH93 UniRef90_C6J7F6 UniRef90_UPIO0025571C2 UniRef90-B5YE61 UniRef90-D6GRB9 UniRef90-R6SNT0
UniRef90 N9U1N8 UniRef90-V9W0B2 UniRef90-H1PX30 UniRef90_A1SSY9 UniRef90-R6SI46 UniRef90_U1S7L6 UniRef90_UPI00047C148D UniRef90_I5AYC8 UniRef90_UPIO0030B6A2E UniRef90-A7HLP9 UniRef90_A0A037ZDB5 UniRef90_R5F9M6 UniRef90-R6FVB2 UniRef90-C4SZ68 UniRef90_UPIO0037DDE87 UniRef90-B9NVH5 UniRef90-C7R8K4
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UniRef90-R5T2G5 UniRef90_A0A023RGZ8 UniRef90_-17ZC99 UniRef90_A8Ul10 UniRef90-S2DWZ7 UniRef90_K1L1N9 UniRef90-R6BNSO
UniRef90- B4WXA6 UniRef90-R6MH94 UniRef90_UPIO0030102A1 UniRef90_UPIO004668D64 UniRef90-K7A117 UniRef90 E4RPW6 UniRef90-G5GGI0

UniRef90-K8FDS8 UniRef90_UPIO0036BDEC5 UniRef90 F4DFS7 UniRef90-D7NAD7 UniRef90-R2R480 UniRef90_UPIO0046689CF | UniRefyo-UniRef90 A0A021W760 |
| :--- |

210
220
230
240
RS VVIE QVVVGLIHNDAMATSGDYRDYFEENGVRYSHE\|INPQTG
 QELQAVLSSTDNAMATSGNYRKFYYKDGKKYAHTIDPRTG

 PR PLGUVKVSNCSVVTSGNYERFFEVEGKRYHHI FDPHSG
 KNILGVVKVKNKTVVTSGNYERYFDEDGVRYHHILNPQTG DAAFAVAEVENQTFSTSGDYERSVVRDGVRYHHILDPSSGG

 RAVVQR I S V GN HA V A T S G DYR NY F E E A GVVRY S HLLI D P N T G $R$ VAAQRI I A L D GYA V S T S G D Y R N F F E Q N GKR Y S H T V D P R L G QELQTILQVTGVGIATSGNYRNYYYKDGQKYAHTIDPRSG DELQTVLNVTDKAMATSGNYRRFYYKNGKKYAHTIDPRTG NSTVGNLLVNDKSVVTSGVYERFFEENGKKYHHILNPKTG RSVQRILALKNMALATSGDYRNYFEEDGVRYSHLIDPRTG N KVVFAL L P V K E GAVVT S GNYEKYVT F N GLLRYSHII DPRTG R S V H R I I P V S N R A L S T S G D Y R N F F E E N GKR Y S H EII D P M T G

 RAVQKVVII GENAVATS GDYRNYYEED GVRYSHLIDPTTTG




## N

in

DAA A PIEKT TAI VT S GDY QRFFEKD GKLYYHHI LIN PT T G


 QELQTI L E I TNNVGMATSGNYRNFYYK DGKKYAHTI D P R S G PQGYIATLSLDGGYATAGDYQRYFEADGVRYHHILDPSTG


 GEYFGI I KTSHKSIVSSGNYERFFEKGGKRYHHILDTKTG D P L T I L N V T D K A M A T S G N Y R N F Y Y K A GRKYA H TII D P K T G





 D G L R T L L GNTQLIVPLNNRSLATSGDYRFHVDKNGKRQSHII NPNNK Q GLLY E I
 R QYF A V L E L L N G E A V D T S G D Y E R Y F E E D G V K Y H H I L D P Y T G NKLQTVL N I TNKAMATS GNYRNFYYR GKKKFAHTI DPRTG D T A L A TVV S I P D G TVVVS S GVVYERYFKK D GVLVYHHLLDNP K T G D DYL GIVAVSNENI STS GDYERFFEENGVRYHHIFDPKTG
 DKTA GTLS TSDTSSVTS GDYERYFMAKGRRYHHIFDPHTG $R$ Q $\square E D V V I T N G M A L S T A G S Y R N Y Y E L D G R R Y S H D I D P A T G$ $P F E A P W L L A D D G A V A T S G D Y R R Y F E Q G E R R Y A H T L D P R S G$





 GNVMAII ESEDQTIVTSSGNYERYFEEDGEIYYHHIBDPENG

 QPGAFIVIPNGMALSTAGSYRNYYE LDDGQRYSHIIDPATGG






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UniRef90
D9SOK0 UniRef90 I $14 \times \mathrm{QUO}$ UniRef90-Q896H7 UniRef90-C0QLJO
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UniRef90 F7XPG8 UniRef90-R7C721 UniRef90-H6LDL2
UniRef90 D3AJA9 UniRef90-UPIOOO4744D7A UniRef90-K4IPX8 UniReffo-R6ELI8 UniRef90-W1Q651
UniRef90 M4WZJ5 UniRef90-J3H1Y5 UniRef90-R6J5S1 UniRef90-131FH8 UniRef90-UPI000248A3F6 UniRef90-C7PU53 UniRef90-N2A829 UniRet90_U5C4N6 UniRef90-16Z657 UniReftol-F4BRG1 UniRef90-A2AO22 Uniref90-A5FClI
UniRef9O_A5W413 UniRef90-H1YG35 UniRef90-LOKX74 UniRef90_S5FBV6 UniRef90-UPIOOO2559366 UniRef90-F8EWX7 UniRef90-R7D5G9 UniRef90-A4GAG1 UniRef90-R7DG53


1 30

AEGPDFGTYYHIKYEASEP

# NA 

QKSGFYLDTVCNLTAYDSEE
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Y QHNKGM $\square$ F LS GPTMG

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F K D KKTERE $\square$ FAMDT IMNLTFYGE NGEQAMTAAVSEI QQLE TRSDFLLDTFVSI TLYGE
$\qquad$ TKS SFMLNTFVTVTLYD T SDESLLDQPFERIEALN TDDPD LNGSGELLRSYE
SQSEFILGTVCSVSLYDRGR
$\square$ A E

RYDFNGAMTAVTLQIFHEGSEAEAAMTEAYDYMDRME RVSGPTMGSTYSIQYAAQTPDSQRVKAEVETALGALD
 QSSKLHTRLMGSDFELIATGTEALIANRRLEQGVAEIKRUE EKLSVAGLYFDTVIGQDAWGVRTS SVLEECKEVCETVE AQERDFKKEVDSLLLVFN GPTMGSTYSVKYVASDGAAAKAQRETESILAQLD EPFERT TEF LMGTVVKVTIYNQ TGTTMG\|VYNVTYLDDQ NRDFKQSTDSVLVAFN QRY SLDGETMGTRYTLYYGAGMD Q $\square Y N D T R S I M D T V G T K V V D D S T H A R N O D C I A E V S R I E$ EQTTLSGKTMNTVVTLTVNSGDESADDUINECFGLCYNYE EVIKLSGATMGTTFNIVANGRRVEKAALEAAVHSALADVN

VHTLQGKTMGTSWSVKLAADAARRDP
YQQNEGIIFNTIYHI TYQYDS
KYYEKSNIVMDTAVTLSAFGP
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UniRef90 K4KSM9 UniRef90_K4KSM9
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UniRef90_C0QLJ0 UniRef90-W4AJI8 UniRef90_R6M7G6 UniRef90-K2MKT0
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KMIS S WDETSETSEDNRNAITKPVIKVVAELFG|LTERS\|K\|S

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R S
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UniRef90 R5DHP5 UniRef90-G7LY20 UniRef90- X8K4B7
UniRef90 - $950 K 0$ UniRef90-D9SQK0
UniRef90_14XQU0 UniRef90-Q896H7 UniReffo-COOLJO UniRef90-W4AJI8
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| :--- |
| UniRef90 |
| G8QRE2 |

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 AATGGSFDVTVGPLIDLWGFGAGRTRNDMPTDAE:ARAMA AESDGAFDPTMGRLVDLWGFGPAPASLAPPSDGDVAAALA DETEGGFDVTVGPVVKLW DFNKKTRPTAALVEEALP AQSDGAFDATVGALVDAWGFGPPGRRAALPDAVQVAALRE EKTHGAMDTTVGPLVNLWGFGPEKQPVATPTQEQIDA ARK ALSGGAFDVTVGPLVNLWGFGPEERLDAVPAPEQVRAALE K TGGAFDISYGS I DKSLWNFDKTMTTLPSTEEALKMVH EASDGAFDVTVGGLVNLWSFGPEARPEEVPEDSLIEQRLA KETDNNDDIAGGSTVKLWNVGFD NASVPSDEDI QKSLE
 ALSEGAFDMSFAS $\begin{aligned} & \text { VGQHYNYMTGQAPDAATLADARA }\end{aligned}$ ESTGGVFNPAVYP MQQWG FDTKNYKVPNKKELEQTMK EDTDGAFDITVYPVMEAWGFTTEKY RDPGKTELQKLLA K LEGTFDPTIRPLVKLWGDGTKEERDPQRSE, DKVLK ELSEGRFDVT:GQVTDLWNFQPEGGEGKDPEQEALNEALT RDSQGSFDLTVEPLLNLWGFGPQGRGEAVPSDEALAQARQ KLSKGNFDITVGPLVKLWGDGTE NARVPSKEEIDTTLK LLTNGAWDGTLKPLVDLWGFGTKAADTKMPDPERVKALLS KTTNGAFDTSIYPLM VKWGFTTQKYNVPSKNEISKLLK AASGGQFDVTVGTLDDWGFGAGKGGEHMPSAAAT ETALA EKTNGTWDITIGTISQLWGUGTDHAGRVPDDEEI RAALA KETNGAFDI TVAPLVNAWGFG FKTQQLPTKSQVDSLRS SETQGAFDITYAS VSSGGYDYNYREKQRPDEQTIMQLLE
 QQTGGAMDITIGPLVNLWGFGPDKQPDKTPTQPQIDAARK KSTKGAFDITVYPLMDLWGFTTGKY HVPSKAQLKETLK ESTK TLDVTMGPLDDLWGFGPDKKPTKRPSDEALADMVA EQTEGAFDPTVGPLVNVWGFGPDGPSEKLKDSVE:|rDLL EQSDGAFDVVGPVVNWSFGPDNRPEKVPSDEAI$A$ AA A A IKTGGAMDIVGPLVNLWGFGPDRQPTHTPDQAEIDAARA EKTNGAFDITVGGLVKAWGFGFGNKDHAKVPDGVKEFLDP ALSTGGAFDITVAPLVNLWGFGFFKQGTPPTKAVLQEATS EMTGGAYDVTVGPLVNVWGFGPDPDRFSPPDALEI DA ARA HLTQGKLDVTVGPLVNLWGFGPDKRPVKRPSEAQ|AAARE QSTKALDVTMGPLIDDWGFGPDKRPTQRPEQAELDAMLA ESTNGAFDVAMYPVMKAWGFTDGKNYQVPDTDELKATMV KKTLGAFDISLAPDIKDWGDFCE SNERVPSVKEVEKNLS NDTDGLFDISYYPLVKLWGFTTEKYHVPDKAE KSSGGYFDVTVGPLVDLWGDHSPEDKEAPAREADNETKLK KVSDGDFDITVVEPLSSLW WFSSEDHAVPSDSEMREARD
 ELSGGAFD THEPLSSLWDFTSGGKETQUPDKALLSSSAGK EVSGGRFDISIGAVSNLWKDGD VDARKPSDQEIQAADP AESAGAFDIAVGDLVDAWGFGPPGGFTDDARRDALRSQPR RESGGAFDLTVQPLMNLWGFGPQSRGEHDPDAGALARERA RLSGGAFDPTVGRLVDLWGFGAS VPKKAPSEAEDKEVLK RLTDGAFDITFAS LDARYYDYRKRLTPSEAQRAALLP AESDGAFDPTAGRLVDLWGFGPAPARLAPPNDAQABAALA ELSGGKFDDTHAPLSDLWNFTDNPDHVIPDAAATEEARS QKTEGAFDPTVGPLVNLWGFGPGGP QLKDSVN: QNMDS ESTAGSFDLTVGPITELWHTGFDKDARKPEQSEVDETLN EDTNGGFDVSFAAMDRDWKFDGSMTEM PSAEADKKSVE
 HITHGAFDI THLPLLDLWKSKFPGGTHQPPAENEISETLR

 KLSDGAFDPTVGPLVKLWGDGSD NARVPKEHEDVHVLP


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UniRef90_F0K477 UniRef90_F7XPG8 UniRef90_R7C721 UniRef90_H6LDL2
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140
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160
$K|V| G Q K|I Q L D K E Q L T| V|L P D E M K| I|G F G A| L \mid G K G Y A A D K A K E$

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 L V D Y H K K L N D E E K TV V Y L E E K G M Q L D L G A I A K GF I T D E V V K
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 HI D DD SVVLD EK R S SVKAKEGMMIDLLGAIAK GYVADKVKD
 AI GWRGLLLDRAGTLRFARPGMRIDLGGFAKGHAVDNAIA $N$ N N E S K I K Y D S K T R V A K L D K K M K I D F G G IA K G Y T S S E VM K
 N M D A D K I C D E K K G TVVK L D Q K M K I D L G GI A K G Y T S G R V M E
 LI NY Q D V L D DK E K TVIL R N R N Q R L DL G A I A K GYAA DVI R D


 SAGQEKTLQUGAETLRKTRPAAEVVLGGIAKGYTSSRVMQ
 $L V G F S K V N L D \quad G T T V K K T D P R V M L D C G A I A K G F G V D C V A R$ AI NYRHVVLNE EDKTIDK FKHPKKI DLGGIAK GHAVD NALA
 ITGLSSHLQVVNRAGQQKDLPELYVDLSTVGEGFATDHLAR
 $K I G Q D K L Q L S D A G L L K T V D G L E L S F S A T A K G Y G D D K V A Q$ LVGFDKVVFD EK QV SK TVVTGLYLDFSADAKGQGVDVVA D NVGDAKLEVRLDPALKKSRDALYVDLSAIAKGYGVDQIA Q

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


 KK ID YKKI ELLLS D Y QVRIIPS GMAI DL GAAAKGYLSQKII D
 LV N WK D IV I DETA S TVV LIKQPMMG

 | $H$ | $G$ | $Y$ | $E$ | $K$ | $V$ | $E$ | $L$ | $K$ | $G$ | $N$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $I$ | $R$ | $F$ | $Q$ | $E$ | $D$ | $G M$ | $M$ |  |  |  |

 YTGF DK KKF GYSVVKKSNDNDAGYAVRVGD
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 TV G H R H L QV V G E Q L C K
 KV G Y K N I I L D S VQ S T I F L K K G M K G F G A L G E G Y A T D K C R T
 LVNASNI TVIK GNDI F L E E G M K

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UniRef90-FOK477 UniRef90-F7XPG8 UniRef90_R7C721 UniRef90-H6LDL2
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 QPSQGLISATVITASAMDADAFATALEVMGEQEGVEMI EE
 YPVNGVVSATVVADTCTFADGLATALMVMGAEPGTALVNT KSVQGVQSVTII GEDALTTDGLSTAVFVLGPKKGLEMIER YPVEDKKMVVVLCDNAFEADLLSTTFFLMPDDKAINYVNS KSARGTMSVTII GPDGFDTDALSTSVEVMGVEKGLALIEG YPDNDIAGVTVITNESDDGDGLSTAVFAMGVKKGLEYAEG
 YPFDTNISSVSVADKSINADALSTLIFTKGLEEDGLRMVDD FPERSNLSATVIAPDAMTADAYATVCMVMGDEKGLALDES RPVHSTASVTVMTENAMLADAWATALLVLGTERGLIUAND RPVNGVAAVSVVHTRCMDADAWATASTVLGUEAGMALATQ FPERLCRSVTVIAPTATMTDAFATGLFIGGPEKGLAALKR RPIQHKVSATVIAPTALEADGWDTGLMVLGTEKAKEVALK APVAQRLASTTVADSAMMADGFATALLVLGEQRGPALAES LPPITGUKSVTVISNNAEFADAMATPGAVMGDENGLYLVDQ YPVENNDGVSVISKKSTQCDALSTAVFSMGLEDGLKYVND APVHSLAAVTVVDESALRADGLSTLLMVLGPEAGEAYAER
 YPADSGKSVTVISSDGTLADGLSTSLFVMGMDKAKEYWRA YPANGLSSVTHVSKDGTLADGLSTSLFMMGRKKATTYWKK YPVEDSVSAIGAGNEGYDCDSLATTCLIGLGEKDGKKL RPVHGLASVTVI HPAAVMADGLSTLLLI LGPERGWDYAEK YPSESGISSTVISDKSIDGDALSTVTFVGGLEKSMEVIVEN YPVNDLLSVTIVTDTSMDADAMSTSVFSLGLAEGRRFIES YPAESGKSVTIVSDDGTLADALSTSLFIVMGKEKALDYWHE RPIDNTASATVLTGNAMLADAWATAMLIMGREKGMQVAEA
 ESSYEVQSVTLIGPKSTLNDGLSTAVFVLGVQKGDDLINQ YPENGLVSVTVLSEESADGDGLSTACFALGLEKGLEELEEQ RPDQHNVSATVI ATTALEADGWDTGMMVLGPEKAKALALR YPADSGLTVSVVSEDGTLADGLSTSLEVMGKDKADAYWRQ YPVRHNLSATVIASDCMTADAYATAMMVMGLDKADALDEE RPPHPPASVSVLHADCAAADAFATTLMVLGPERGYNWAEQ MPVSGVKSVTIFCPNAETADAMATPVGVMGDKAADDLVNQ RPIHKLVSATVIATTALEADGWDTGLMVLGTEKARQLADR YPVHNLLSATVIAPTCIQADAYATAFMVVGVDRALEICKS WPGNQTMSATVI ADTVMDADALSTALFILGPNKGIGLINS YPVQHSDSATVLTNSCARADAYATAFMVMGDERAQEVLAR YPVHALASVSVLHPSAMMADGLATAMTVLGPKEGDAFAKA RPVHRLVSASVITKDALEADALDTALVVMGPEQAMAFAKA RPVHNTTSVTVMTDSAMLADAWATALLVLGRDRGLETAND MPIHDLVSVTVLHPSAMTADGLATALTVMGMEQAKAYAEQ YPANGLVSVTIVSADGTLADGLSTSLFVMGKDKATDYWKA YPAKEELSVTVIFENSMLCDAVSTAAFI AGADGGDELVKR YPSEELISATVIAEDADSADSLADAVFVMGKEDGLKMIEQ MPANNLASVTVIAENGAMADAYATALSVMGEEKAI AFQKK YPSKSGIVVTVSASKSVDADSLSTTLFLDGLDEGLKKVES

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## A

 PVVALAAVTVVDPSGLHADGLSTLLMVLGPEEGYAFAER YPVHNLASVTVVDDNCMDADALATAAMSMGETKALKFAAD RPVHGVAAVSVVHRRCMDADAWATALTVLGLDAGLALANE WPVPYIKSVTVVSPSAELSDALATALTVMGPEVGLNLVNQ YPANGLLQATVITDSSADGDALSTCCFALGLEEGSALAES RPVHGLLSATVLAANCMKADALATGMMVMGVEKSMALQQK APIHRLAAVTVVDPSALRADGLSTVLMVLGPERGLAYAAE YPVHSLLSASVLAQDCMTADAYATAFMVMGFEKAKALLTK YPATGLCSVTVFGPNAETANGLSTSMMVLGQTEGLLLLQK YPATGLCSVTVFGPSAERANGFSTSMMVLGKDAALQFIKK YPSQNLISATVIAPTGIDSDALSTSVFVLGEQDGLKMIEE YPVNRLLSVTIISEDSLSGDALSTTCFALGLKKGMRLIEN RPVNHNASITVFAPTTMTADGLSTGLFFLGAEKALAVAER RPIHGTVSATVMTDNAMMADAWATAMLVLGRERGLQIAEA YPVQNGLSVTIIGDHSTDADGLSTTVFALGYEKGRALLES YPVWNGLDVTVVCDSGLDADGLSTACFVLGMDDALELLEK E P A H G L A S V TV L H C D C M A A D A W S T A L Y P V M



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UniRef90-13YT27
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 4 ,

50 H Q I S T WK SDSVLSRFNYQG 60 70

80
 QAMSTYRDDSELDAFNEAPDEWQPLSNELIEVLADSQSVA

 KLI S S WD S LS Q T S RIN KNADRPVKVDKELLFDLI ERSLAA S
 WL LS T WKK S A ALMKFNRSSTEPWPVSEAMSDIVVGA LR GG NKMSTK $\square$ ATSEEVSKDNESA DDKVTVSDDTFTVIKEALKYG QSLSMFNKKSVIARLNRG ETDQVDSDFVRMFTKAGEVY EKFTINNADSSEVSEINQNADRPVKVSKDTYYVIKSSITKY ASLSMFNPRSVVARWNRG KESEEVDSDFMRMFQAAEKDN
 AKMSPVEPVSDLSRYNRAAGTWTALPAATVAVLRRALEIA

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## D



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UniRef90 I 3 YT27
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UniRef90 GOL1Y0 UniRef90-B4S8H3 UniRef90_UPI00016C4774 UniRef90_UPI0004790F58

QKTDGEMDTTVIGPLVNTWGFGPTKVPTHTPSDAEI|AAAKA EASQGAFDITVGDLVNLWSFGPGSRPEEVPADALLAEQDA QASGGAFDLTVVEPLRNLWGFGPQARQVKVPADAMALAQQRA QKTEGKDNIA YGSVLSSWHEYREREHAKLPPEDLLDERRQ KKTDGAMDI TVGPLVNLWGFGPVAAPEHTPDPQAI DSAKA
 NLTAGDFDPTLGALVNLWGDGTDRKNPTVPQPSADEKALVK QKTQGAMD $\quad$ TVGGLVNLWGFGPDK DK

FRN

| $K$ | $T$ |
| :--- | :--- |
| $E L S G A F D$ | $T$ |

RETKGAFDI TVAPLANAWGFGYKQNRFPL
$K L T D G A F D \| S F A S M D K D W K F D G S M T E$
$G L T K G A F D P T V M P L V N A W G F G P E K R M K Q$
 ELSEGGGFDPT: RPVVELWGDGTDKV $N$ N QGRFDDT: GVI NKLWN: GSE

## E <br> 

 EQSQGAFDMTVEPLMNLWGFGPQARVEKVPSAEQIAAVRR DLSQGDFDPTVGTVTELWNFHADVSDKTVPDEESAKKKALS
 KSTK TLDVTMGPL $\quad$ DL WGFGPDKRPTMRPSQAELDDMRT RDSDGAFDLTVEPLLDLWGFGPQGRVEKVPDVAALAQVRQ K LTNGKFDITIGK AQDTWDFHNHKSKPPAKEKLAKAMK RASGGAFDI GMGDAVAAWGFGSTAADPRLIRNA LDVARQ K $\square$ S D GTFD $D T 1$ GTLSDLWNFSEDAETAKVPSPEQI EAADA MTSNGAFDPTVGPLVRLWGFGYSGNHKQIPTPEAI T LATT AQTDGAFDPTLGALTDLWGFGPRPFAGQPPQAETLAPRRE RATGGAYDVTTGALSEAWGFF KGPRRVPSPQDLADARE KVS GGAMDPTMGRV DR LW D DD DGENPHIPSDDELNS LLE
 RETEGAFDI TVAPLSNAWGFGYKRDSFPV PAKIDSLLDQ ERSDGAFDPATGVLVDLWGFGPAGPRQDLPSAYALGEARS EDSGGDFDLTVGPLLRIWGFHGGNGSQVVPDPEELQAALE RLSAGTFDITVGKLTAL WDFHAESPKLPDDAAI ADAVA AASGGAFHIAAGALVRAWGFGGAGRPN PGADAALAGRPLD RLTNGCFDPTIKPLVNLWNDG KENFRIPKESEISTS KS

 EESGGAFDLTVAPLSLLW D $\quad$ DTGKNPRVPAQGEIDQA A RESSEGAFDPTVGALVHAAWGFGAGGGTPALPPEQTLQQARA $R E T Q G A F D L T V L P L M N L W G F G P Q S R V Q Q V P T A R E L A R A R E$ RASGGAFDIVGMDAVVAWGFGAEE QNKMSSPDRIVRSAME EASQDRFDVTVGPLVDRWSFGPGKRNRDDPSDEELEDLGR RAAKGAFDPTVLPLVEAYGFGPARRPK GAPVKVDSLLQ
 GFSGGAFDITVVG SVLEGWRFEAGHQGAPSASEIVRQLAR



 RASGGAFDIGMGDAVSAWGFGPAEASPDRIRSATQA
 KMTNGAFDVSIA AMDKUWKFDGSMDTM PTAEAI KRSVQ
 RDTDGAYDPAGGALVNDWGFGYDQAGFYAPAAAAIDEVLA AKTGGEMDワT IGPLVVNLWGFGPEKQPTKTPDAKQIESARA NTTDGKLNI AMGSVLRI WHDYREAADNKLPSQEELDAAAR KETKGAFDITDYQVMELWGFTT KNYRVPESSEI ADVLK KSTGGAFDIAIYPIMAEWGFTTG DFKVPSKETLDGLLEE NQTS GMMNIAMGSVLK LWHDEREYASYHPNDEGKLEAAKH KETDGLFDCTITPVMKLWGDRDGANFRVP THTKGHFDPTVGILVNAWGFGPGKQME TMTDGAFDVTFKPVGQLWNVGKERTAPMPSARVDSLLR LKSGGAFHGQVGDLVRVWKEGERAGRTAPPPQDSTATALS LKSGGAFHGQVGDLVRVWKEGERAG

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UniRef90 G0L1Y0 UniRef90_B4S8H3 UniRef90_UPI00016C4774
$K T G L Q H|L| R V I D G V S G Q W L Q K D L Y|V| D|L T M G E G Y A T D H| L A R$ $R V G F D A V E L D S Q N M Q A R R T R D V F V D L S G V A K G H A T D R V A T$
 HTDDS GLI I NE EA STVVF E DEMS L DVGSIGK GYAVQRLA E LT GLLQHL KV DQTS Q GQKDLP GLYV DLSTMGEGYATDHLLAR RVGYK KIVLNRENRTVFLKEKMKIVGFGGDGK GYAA DHAK K LI NYRHULLDEANTVMLKEKGMRIGFGGI GK GYAA EMAKA NTGY QYL DLDEESAKLTQAKVKI DLGGIVKGYAA DSVRK $R V G L S H L T V R Q T A Q G Q Y L Q K D I P V D L S T V G E G Y A A D N L A R$
 YVGMDKVKI E GEKLA K AVVQGIQMDASSIAKGLGVDLVAD KI D Y R K IVLDDTA QTVF QDEGMVIDDGAIAKGYVADEI DK Y I GMEK L K KDA GCHLL K EKK EMEI DASSI A K G L GVDDLVA E KV G Y Q N T I L DP E N V T V F L K E G M K I G F G G I GK G Y A A D K A K K
 L V N Y K D I I L N E K D R T I K L R N K G Q I D L G Gil A K G Y A A D E V K N

 RCGWQRVALDDAARQAAF QPGGAY L D L S S I A K GYGVDDAA M LT DPS K MQFSA ET GAVVSFSVSSMELDDLGGI AK GYTSSSAMMM


 $R I$ GQE HL QAR DDPPALKKA DGERVDLSAIAK GHGVDRVVE

 DVGHRHLII DGQRLCK DAAVQLDFDSIAAGYTVDAVGE LV N YRNI IL NDQNKTVF LKEKMR HVDYKKVELRKDSGECSVRSAARIGD GGGI QVGYEALEFDLASRTLVKTSPRALDFSSIAKGGYABDRMKE LVGYDKIKVDEKNKVMLTQPGMALDLGGIAKGFAADEVLK KV G F E K K I I F K D G A L T K T I D GV


 $H V N Y$ KNIEDKGNQVRLKDPQAKIDDLGGIAKGFIADEMRS

 $N V G Y D K V T L D D G N K V T M P E G V T L D G G A A G K G \square G C D A A Q K$ LVVNR NVKFDAERTVYGTRKNMKLDLGGDAK GYIT DQVK K KV GLLH HL HLLSSNSK GE WLQ K DMYV DLSSTLGE GYGVDEELSR Y V GMGR L RLLE E GR L L K EKE G I EMDASSI A K GLGGVDLAA D

 A I D Y S NVVVD GNEVT LTT QPDAALDLGGIAKGY AD K MKE $P S G P D L L Q I D R P G C R A R K R A P L A L D L S G I A K G F G V D E M A R$ Y IG G S K I V L D G N E L Y Y SE D K A E E I D T G S F L K G Y A V E K A K E LVNYTDIVLDKKNSIMLKKQKQSVDLGGIAKGYAADKVKE


 $R V G Y R R L S I D N R R L C K$ D S DVVEIVDLSSMAAGHTVDRIAA RRVPA H DALE $\square$ D GTRVRKRVPITLDLNGDAK GYGVDRLAG
 QI GQQ H L E A R DDPPALLKKS DPERVDLSAIAK GHGVDRVVE Y VGF QY I T F D SVV SVAK QKPNDRLDLNSIA Q GYSVD QVAA

 H T GWQKL QLDQSAMRVLQPGNLYVDFSGIAK GYSVDLIAQ P P A H C I E H Q GR Q WI RT D R R CL L D F G A I A K G Y A I D R GIA






 NS R R R R E V V F F D R K N R R L $R R R A H Q P R L D P E G R R L Y Q P G G A D L D F S S V A K G Y A V D R M A Q$ RVGLA HI ETSE GQWLQKSMPDMYVDLSTVGEGYATDHLAA
 $K$ TKJS DVVFDKETSSIFKTDGMAIDLGGIAKGYTSTRIMD TNILDIVIDDERNTVLLKDKLMRLDVGAI AKGYATEEIAK $K \vee D G S K V R I \quad E G N T V T G L D D G T V$ YVGFNKVKLTERFTVQKTEPDIVYDLGAIAKGYTSQQIME




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UniRef90 W2D5A6 UniRef90- SOJ 6 R 1 UniRef90_UPIOO046EEE31 UniRef90 GOL843
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UniRef90 09 O3Y8 UniRef90-LODB94 UniRef90-R7CFE6 UniRef90-UPIO004684ED4 UniRef90 R411S2 UniRef90-UPIO00475E660 UniRef90-UPI00031F68EC UniRef90 UPI0003B59A1D UniRef90-N2B7C1 UniRefofo BoUNI9 UniRef90 FOK473 UniRef90-FOBEK1 UniRef90-B8KY17 UniRet90_U2DTH5 UniRef90-G7UQR9 UniRef90-W0H709 UniRef90-D7A7N7 UniRef90_A6C820 UniRef90-F8EG00 UniRef90-OOABS9 UniRef90-N9WH94 UniRef90- YokFG4 UniRef90_UPIOO04772344 UniRef90-W7C3D7 UniRef90-D8DTC1 UniRef90-G8R4G4 UniRef90-UPIO004668B4E UniRef90-W8KM56 UniRef90-10K6K9
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R P|I H RLVSATVI\|ATTALEA DGWDTG|LMVL|GEKRAQALALR R PVV QL A SVSVFHPSNAWADAWATALLVVGEQDAMQMAIE
 $M P P E N F P$ L V S V L T E D S GLLA D A W S T A L F NME F E K G L A L V E S YPSAGLISATVFAPKAELADALDATSVFVMGKEVGLNRINQ
 HPDQHTVSATVISPTALEADGWDTGLMVLGPEKAKALALE
 Y PI D N ELLMT T I LTTKNSMVA DALSTTTTFAL GVDEGLKKLI E N Y P V Q R D D S S S V Y A P T C M E A D A Y A T A F M MVL G L
Y Y P I H P L L S A TVVF APTNP TVVSVTVFA E DCMTA D GLLAT P品 YPENDLASVVTVI

 QPIHNLASI SVVAENATLADGLSTGLFVLGETEALKLAEQ

 $R P$ VR H D A S V T V I A S T C M A A D A W A T A L N V L G P E R A I E L A N E
 K PVNHKAS ITVLAPTSMTADGLSTGLFVLGAEKALEVAER APIH HLASVTVIDPSTRNADGLSTLLMVLGPEEGYRFAEK
 WP I H E V V S V T V V D P S V T T R A D GLLA T S L L V L G K D E A LLALLAE E
 S P V E S Q A S V SVI S D T C M D A D A W A T A L M A M G A K K A I A F A K E Y P DN G LI A V T I S D Q S VD G D A L S T T CFA A L G LE D GMK LA E S RPVHELVSVTVLHPSAMTADGLATALTVMGTERAKAYATE R PI H K L A AV TVVVHRSALMAD GLSTLLLILGPEAGWDYAE K

 A PVVATVSVTVLAKDC $\quad$ VSADAWATALTVMPPER
EPAFGPASVTVLAPTAAEADALSTAFYLLGPAAAASYVTA YPARSGLTVTVVCDDGLNADGLSTACFVLGKEKAEELLKK
 YPVQR DISSSSVYAPTCMEADAYATAFMVL GLEK S KE I V V L K K Y S AP A V Q S V S V LA A N K A D D S D A L S T T V F F V L G V S K G L A L I N Q CPVNQVVVVSVLHREAMLADAWATALTVLGPAAGMSVAER R PVVELAAVTVLHNSAATAD GLSTVLLVKGPEKGWDYALE Y P E N DL L SVVTI I CKNSVDGDALS TSCFALGVVEKGME LIG T
 YPENEVLSVVSVI SDES DDGDGLSTGLY IMGVKKGIDDLVNS A P I H A P A A V TVVLAR D A M Q A D A WA T A M T V L G T D A G L A Y A A K R PIHDVVVSVTVLHPSTMMADAWATAMIVLGSERGLAALAES

 A PVHDLASVTVI HPSALMADGLSTLLLILGPKRGWDYAQQ APAQSPASVTVLAPTCAEADAWATALMVLGAGKGGELARR

 HPARGLSAATVVHSDPVRADAASTADMLAGPEDWPAVARR YPESEI A GVTIVVDKSIDGDALSTLVFTKGDNEGMKFINN YPTGGVHGVSLLARDVAEVNGLGAAMMVRGAKAGQALVAR FP $\quad$ DN R S NVVSVLHA QCMIADALATAFTVMGTQAALS YAE Q WPATKVQSATVIA SSATLADAWSTA LFIQGADGBM
 YPVQHNDS STVEADNCATADA YATAFMVT GLDDGAKK DL A K FPARNQLSVSI IADDKCDDADAYATTCMVMGMQAAQSYI E G
 H P A R GTR S V TVI H D H A A E A DVAAS T A L F I A A G D D D WPR A A R YPVLGLKSVTVIAPNAELADALATPIMVMGPQVGLHLINQ APMNPPASVTVVASTCAQADAWATALMVLGPDRGGEVALR
 MMAGDLLSVTVEAPDADTADA YDTAFLVMGLTETKRFLAR
 GPI H K L V S A TV I A T T A L E A D G W D T G L M V L G T E K A K Q L A DA



 FTKNNTLAA ATVLA DNCAKADAYATSFMAMDLDEVLKVLTV YPAKGMKS STVVFSSDPAKADAYATAFFDMGYEKALAVVAE RPAEGVSSATVVANNNVTANALATTVCVLKPEEGLKLVAG

UniRef90 E8LKY2 UniRef90_UPIOOO36788C9 UniRef90_UPIo0029AF280 UniRef90-D7UX57 UniRef90-A0A024IT44 UniRef90 UPIIOOOO3AB2F4 UniRef90-UPIO003821C86 UniRef90-E2NNP8 UniRef90_UPIO00477422D UniRef90-Q1QHD3 UniRef90-AGG5T6 UniRef90-R5QC77 UniRef90-UPIOOO4777781 UniRef90-J5UWF3 UniRef90 H7EK12 UniRef90-UPIOOO42901B2 UniRef90-H1ZAY3 UniRef90-F21773 UniRef90' COEAE2 UniRef90-UPIOOO3698078 UniRef90-A0А024НКТО UniRef90-14N5F2 UniRef90-HOQOB4 UniRef90-EOE3Q3 UniRef90-Q01TF1 UniRef90-UPI0004059A33 UniRef90-19BU91 UniRef90-B1R410 UniRef90-A0A031GUB6 UniRef90-UPIO003B568FC UniRef90_D1Y205
UniRef90-R5DL13
UniRef90-G6CGP6

E UniRet90_10GMH5 UniRef90-D8GF39 UniRef90-GOVRC7 UniRef90-C6KVO2
UniRet90 V6S8F3 UniRef90-V6S8F3
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UniRef90-R6YKT1
UniRef90-UPIOOO329F847
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 KPASRTYYLFSTIITVRVFDDRDTEKHFDHIVGLLEEID ERFSFAEPHLGTVVEVTLYAPEETANEAAKAAYARLGELLD
 RHALNGPTMGTRWSALFYTEGFDPEPVRHAGQAEMDEVD QETRGAMGTLAEMTVLDTESQAKAALEAGFAEVERIS SSKKIVNNCF SHKEFTGTTFTVVVAGRDADGEALAEADYAELEAVN QQQSYVFGTLVEVSVYDPEAQARQAIAAVLARFDALH
SEEFFAMDTKMTVKVYGEG APEAAREAKERLQGLD SFAAMNTFMSVQVFADEKKGREACADVRDEIARLE TLSGETMGTSYHISYQLPDGTNEAADQAIDERLQQIN FSRAFF LMGCNFDVT VANQGEAHALI DGADAEMKRIE ELMGTVIEMKVGHPE AEALLEKSEAKLRDYE ERSLFAMNTYMTFTSYGE NSE円ALQEAADFVKKVE RESRVLMGTRVDVVASAQGADAHEAVRQAFAEMERLE

E V SF G GP

## R ${ }_{2}^{2}$

R H A
$R \square Y$ RQ

TRG GYV
$G A$
$S$
$S$
$S$
$R K H S V A M D T V M T L T A F G S$
$K P Y$ , SFYAMDTPITLTAYGPR
VT GYK LNTYVAVSAYHKT



MDTTVSLRASGKE $R \square A L N G P A M G T R W S A L F F A D R V D$

MGNRFE $\square$ SVVGPDQNWDD EKVQQTFYVFGTEVQVEIVDPKEKAQHAI
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UniRef90_10GMH5 UniRef90-D8GF39 UniRef90-GOVRC7 UniRef90-C6KVO2
UniRet90 V6S8F3 UniRef90-V6S8F3
UniRef90 $W 7 U Z 23$ UniRef90-Q31EK5
UniRef90-C6W729 UniRef90-C6W729
UniRef90
T1XM63 UniRef90-R6YKT1 UniRef90-UPIOOO329F847 UniRef90-D2ZE74 UniRef90-U2S685 UniRef90-A6DR08
UniRef90-U2D1S1 UniRef90-Q0F1W1 UniRet90-R6WJ31 UniRef90-UPIOOO255BF45 UniRef90-UPIIOOO47EE1B3 UniRef90_UPIO0046A4841 UniRef90-UPIOOO345A642 UniRef90- H1CT89
UniRet90 F8.
F3634
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D A I S TF DPNSE\| A RFNFDSTEPFP|ISNYLLAD|I I E E GNRQS QQMNRQLIAGSELDEVNRQAGQSVVVSADTYKVVERALIFYA RTFSDYKSDSEVMRLCVDARGPVKVSPELFQQLELSLRTA DINNEFKQESEVDKINAASTKPVSVDKNIYKLIKRGILYS AQMSTWKPDSALMRLNAGPVGWIDVPARLADVLHDALEDG QLIF WEGNPDGPVYAFNHRTP STAMPEEULQLISRCCEYS HSMSTYDPDSDISKDN NGDATVRVDQMFREVFELSQEVH LLFSTTNTNSELYQUNHNKNKTQTISNELASVIQQGLYYS
 DEMSTYRPESELSRFNRAGKQADAASAHLVEVMALAKAVS LVFSANNKESELYKINHAHHKLQPLSKELFKVIKEGLYYS ALWSATSEGSDVARLNSGAGEAVALAPETMRLLRDSEAVR KSLSTTYPDDSDVFRMNNSAAVRDVPVCKDVKELVDFSSFMY Y LLSEWMPDTPVSVVNHAGDQPVQVPEELLELTARADNFS A LWSVTDKNSEI YRANHNYGQPVTISKETEDLVSYALEMA
 QQLSGYRSDSDVQRFNAQPADSCRVPPAVLALVQYGQSLS RSYHAWQP SELTALNESRGQVATVSDELAGMLKDAARLS NKMSSQMASSEVSKINQNAGKPVKVSDDTYTVIKKSLVYS SALSDYKPDSELNRVCRSAGHPVKADPDLFRVAAABVALS AQMSTWQPDSTLMRLNRTPVETSVVPAELAEVLALGLRUG RKFHAWEP S MLT TALLNDAKGEPMRADAEMVGLLKSAEKLS
 LMMFSRTN PD S T L Y K L N D G Q IT T T TV P H E L G E L I S Y GI Q Y A NQATLTKSGSELDKINDNAVKPVQVSKDMWPLMEKALHYS HHYSTYRGDSIVSQFNRLAGQCLALPPDMLALVSLGQHLA

 $K L A G Q N E D S D V S R I N A A A R E Y V Q V D P A V Y E M I E Y A K D Y S$ TQMSMWNAESALMRINAAPVGWVVVPEQLRAVLRLGLEDGG N ELLS VTS E S S DIDWS I NHS Q GEAVVI I C D RDWHAWEPGGIIAKINTAQQQPIEVQESDKAFI LKSKKLA

 DLFTVNRAESEVMDINRAAQRPVSVSAAVYQLIKCAKAAS




 D L LS A YKPTSEFSKWMKNGKQTTKI SPELFEVLQQFEHYK Q Q M S TWKA D S D L N R L N A GPE Q WLPVVPQELATVLAAA LRVS NMMSVVNDENSEELSKVNSEAFHKVKLSDDDLYYVIEKSIIYYA A EMS P WD P A S A L S RFN A A A GT WH P L A D GFF K V L S S A L S WA R D WH A WA P G ASMSTY
 D L F T V N N R A H S E V M Gl N H A A R H P V


 $R \square A G T G E E D A A R L A A A A G T G A W V E I S P E V Y E M L E A A Q D W A$ H RF S A N D A S S E ELMMEVVNR Q A DIA A P V





 LSMS L Y K K GT LI NQFN A AE KE I K T D RFMN DVLKR SFE I N


 K S M S T Y WE D S Di S LI N R G I D S I K V D A N F Q NVFFKA S E Q I Y

 D 1 Y H D Y P G K N N HI F S R T L S T S EL Y RVVNNQ E ETVTI S D K L Y E L I Q T G L E Y S Q L L T WN P N S E I S QF N Q N S T D W DP V S K EL A EVVVTTTV R L S


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UniRef90-R5DL13
UniRef90-G6CGP6 UniRef90_10GMH5
UniRef90-D8GF39
UniRef90-GOVRC7
UniRef90-C6KVO2
UniRet90 V6S8F3
UniRef90-V6S8F3
UniRef90-W7UZ23
UniRef90-Q31EK5
UniReffo-C6W729
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 KLTEGAFD TMAGLNQWW GYDGAMKKLPSFAELKAAKR VSTEGRFNLADGPVVKLWHDGFS DARVPSQEE:| DERLD RESGGAFDDTVGALMNLGGWREPGHEAVPTPAQQGRALR SASDGAFDLTVEPLMNLWGFGPQSREERVPAETDLDRERA ELGDSLFNPALGELDALWGFQADEFVARLPDPDG| RTVLD
 DASQGHYDLTUKPLYDLWGFSGDHLT PPEEQSMREVLS RASGGAFDMGMGDAVRAWGFGPEAADPQGDRGALAAARV K KLSQGNFDDSVQPLLKLWNFKSEKKD Q ITPNQKD:| DENLK


 A K S Q GE WD ITVGGVMTNLWR\|GND A A
 RASGGAFD GMGDAVTAWGFGPGAAAPEGDRAAMDAPRR KDTQGAFD SYGG|DKKF WNFDLEMKEGPDAETAKKSVE AESDYLFDPGIGQLINGWGFHSEDWHGPPPSKDVIQQWLA
 QETHGAFDLTVAPLVNAWGFGGFKNAAQVDSTMDDSLHQ VPPASAFNLAIGPLVKRWR G GKGGDSVPPEADIQALLA AATDGAFDITLAPVSSAWGFTED TYRVPEDAELALLLP KLSEGAFDVTIQPLWRLFR KNALKGQLPEPRAI AKVKE

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 VLTDGAFDITVQPLWS KFNQAAARHSLPSSEERLNARS

 RLNLGGANAAVGPLVKLWRIGFSGANGLPDPVEIQKRLS
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 LLPASHLNDA: GPLVQAWRDGFS DARIPNNAEVTHALS
 EKTNGALEEPTYPVLREWGFTTGKY QVIPDETKMRDLEN KKTDSKVNI AFGAVLKVWHNYRDEENAKIPPDDILKKASQ
 QESQGLYDVTVAPLLKLWGFKHDPAQGAIPTAAEDEAAKA


UniRef90＿E8LKY2 UniRef90－E8LKK2 UniRef90＿UPIooo29AF280 UniRef90－D7UX57 UniRef90－A0A024IT44 UniRef90 UPIIOOOO39AB2F4 UniRef90－UPIO003821C86 UniRef90－E2NNP8 UniRef90－UPIOOO477422D UniRef90－Q1QHD3 UniRef90－AGG5T6 UniRef90－R5QC77 UniRef90－UPIOOO4777781 UniRet90－J5UWF3 UniRef90－H7EK12 UniRef90－UPIOO042901B2 UniRef90－H1ZAY3 UniRef90－F21773 UniRef90－COEAE2 UniReffo－UPIOOO3698078 UniRef90－A0А024НКТО UniRef90－14N5F2 UniRef90－HOQOB4 UniRef90－EOE3Q3 UniRef90－Q01TF1
UniRef90＿UPIOOO4059A33 UniRef90－19BU91 UniRef90－B1R410 UniRef90－A0A031GUB6 UniRef90－UPI0003B568FC UniRef90－D1Y205 UniRef90－R5DL13 UniRef90－G6CGP6 UniRef90＿10GMH5 UniRef90－D8GF39 UniRef90－GOVRC7 UniRef90－C6KV02
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UniRef90
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140
150
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YVGHDKYELLRRENGKKKADPR｜V｜K｜L｜D｜LIVIVEGLGADLL｜AQ LINYEDVEMDATARTПRLKQPMSLDLGAIAKGFAADLIAE SVGWQDVALDATNQTERKRSGMQEDFGGVAKGYAADQQMS QPAHVNLLEDPEVAAVRKRAPDTI DLNGIAKGFGADELVKA Y IDYRA Qi NLKDGQLSSKFTQTQUGFGAVAKGYGVDQALA FVGLDKVRLNSDGTITKKDPRDFMDFNAIAKGYAIDRLA SVNYQNIICDHKRILYKNPDTMMDLGAI AKGYIADKLKE RVGHAHLHVDGERLCK DAAVQVDFDS：AAGYTVERIST ACGWRQLDLDTGARRLRRHNCGPIVDLCGIAKGFAVDLVAE D $\backslash$ SQNULD NQKDRFLNEQTMIDLGA AAPRMEDLHIENNQAWSDNPAVQLDLGGYAKGYALDEAVR LTGAGKLKLDEAAGTARDEKGSSVELGAVAKGYAGELVAA VVDFKSVVQEGDSLYKKKDGVGLDFSAVAKGYGVDVAAG HVGYQKI QLDRANQTGFTQKKMKIGGGSIGKAYAADCAKA NVDYRRIE DAGKELTVPNEMQLDMGAVAKGYTADLITQ LVGMDGLVLDRAGTARLARPGMALDLGGVAKLPILHAGLR RVGYRHVRVDGGSLVCKDVAAQLDFDSIVAGYAVDRVSQ ARPRMSDLVIEGNRVSSRNPSVR AVSHKDILNDKDKSVFLKKEGMKIDLGGIAKGYCADKLAD RSGYRKLHLDASARTVMLDPGMQLDLGAI AKGYAADAALS A $\square G Y R K L H C F P D C \| G K A A P D V R V D L S S I A Q G Y S V G C I S T$

PA HEALEVDGHRVHKRSAITLDLNGIAKGYGVDRLAE LVNYKNDVNRKNPRLKKNGMSICDLGGUAKGYGANKIKE SVGSDQMTFDDASGKLTLAPGQSVDLGGIGKGYASARVME
 YVDYTRTENNDGTYTVDKPDKTVIDLGA｜AKGY｜ADK｜RN RVGYQHLRV KGRALCKDAPVQLDFNSIVAGHAVDLIAA KI GWQKLELDEKQSARLMQKGMGVDLGGVAKGFAADEVRK KVNYKDILLRPEDHVMLAKAGMAI DLGGVAKGYAVDEIRK PAQEVLEDEGMQLRKTAPVALDLNGIAKGHGVDRLAE ワスのカワTワの一でー

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 KIGYKRMILNNQKHTVKDKGMR LVKQQHYILDEKNKTVTRDDEVPLALNSFAKSY DINKAAD LSATAALTVDTQRHQVRKRAPLHLNLNGDAKGFGVDELAR LKNYKNVELNPQTKEVRFNENVKLDLGAIGKGYAGDEMRK GAPKMTDLTITGTTVRSSNPAVQLDLGAYAKGAALDLA E LLDFEG KLSGNTVSKDKEKVQLDFSATAKGYGVDVTAE QLDQVD LQAHDHSVFLKQPGMQ｜DDGAIAKGYFADQIVE
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 SVALKNLELDAAGRARKRTPLRLDLSGIAKGYGVDRLGE
RVDHRVRVTEENGKWFMQRDQNVDMGAIAKGYGGQKLAE RVGSDKMLLDPAKTVQLTKPSDKLDMGAGAKGYAADEALR ， RVOYRK
RVGWEK DPPSMGDGERNGQHALSRRGDVAL AAQLQAAPWTLDGHCATLHAAYPLGDNALAKGYDVDRAAE CVGMKNLKLKDGWLIKSKPCVHIDLNGIAQGYSVDLIAA HINYESVHITENQVMLSDPSACMELGFIAKGFIADKIKE


\section*{

##  <br> \section*{\section*{H}}

Q


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

UniRef90_E8LKY2 UniRef90-UPIOOO36788C9 UniRef90-UPIOOO29AF280 UniRef90-D7UX57 UniRef90-A0A024IT44 UniRef90-UPIOOO39AB2F4 UniRef90-UPIO003821C86 UniRef90-E2NNP8 UniRef90-UPIO00477422D UniRef90-Q1QHD3 UniRef90-A6G5T6 UniRef90-R5QC77 UniRef90_UPIOOO4777781 UniRef90-J5UWF3 UniRef90-H7EKI2 UniRef90 UPIO0042901B2 UniRef90-H1ZAY3 UniRef90-F21773 UniRef90' COEAE2 UniRef90-UPIOOO3698078 UniRef90-A0A024HKTO UniRef90_14N5F2 UniRef90-HOQOB4 UniRef90-EOE3Q3
UniRef90 - OO1TF1 UniRef90-UPIO004059A33 UniRe990-I9BU91 UniRef90-B1R410 UniRef90-A0A031GUB6 UniRef90 UPI0003B568FC UniRef90-D1Y205
UniRef90-R5DL13
UniRef90-G6CGP6 UniRef90_10GMH5 UniRef90-D8GF39 UniRef90_GOVRC7 UniRef90-C6KVO2
UniRet90 V6S8F3 UniRef90-V6S8F3
UniRef90-W7UZ23 UniRef90-Q31EK5
UniRef90-C6W729
UniRef90-T1ХМ63
UniRef90-R6YKT1
UniRef90-UPIOOO329F847
UniRef90-D2ZE74
UniRef90_U2S685 UniRef90-A6DR08
UniRef90 U2D1S1 UniRef90-Q0F1W1 UniRet90-R6WJ31 UniRef90-UPIOOO255BF45 UniRef90-UPIIOOO47EE1B3 UniRef90_UPIO0046A4841 UniRef90-UPIOOO345A642 UniRef90-H1CT89
UniRef90 F8.J634
UniRef90-F8J634
UniRef90_O52718 UniRef90-FSSQE8
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W6T4N1
UniRef90-M9VZ78
UniRef90_D4LKL4
UniRef90-JOML82
UniRef90 A1 $\mathrm{A} Q \mathrm{Q} 2$
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UniRef90 UPIOOO36B252B UniRef90-11ZLT1
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## UniRef90-E1VME0

UniRef90 UPI0003A32CAD UniRee90-UPIOO0372F288
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UniRef90-R6NK45 UniRef90-G4KU39 UniRef90-UPIO004632FB5 UniRet90-R6KB45 UniRef90-UPIOOO37A9B70 UniRef90-UPIOOO37D4909 UniRef90_UPIIO00349CA52 UniRef90_C2KUIO

## 


$K$ LD D K K|V|PAYM|I|A|I|AGATRTKGNNPQGKPWK|V|G|IEDPK G Y LTSEG I GSALI DLGGNLIDALGAKPNGDAWSI GI QDPHR $R L R E H S L N C T L V A V A G D V V A G D A P P K A G W K V G V A P D A A K A$


 RL M Q M G V D S F L V QV T GEELKAVGRKPDGSPWRIALIE EPR D
 YL L K NKVNSALI NLGGNI LCVGGQKNNNPFSI GIITDPQN IL T S H G I K N A L V N I G G NV I A L G Q H G DRPWRVGI Q HPRK

 DWRQA GA DY GLI NLGGNVLVMGPNRADGFWRIGI QRPDA LLREEHG V D S A L L S L G G N I QAI G S RP D G T D WR I G I R A P WE

 IL R A R G I HNALINDGGNVMALGKKG DAPWRLGLQBPRK
 LLENIG

$L L R E A H$

|  | $R$ | $R A G$ |  |
| :--- | :--- | :--- | :--- |
| $V$ | $M A A A A G$ |  |  |
| $F$ | $L$ | $L$ | $E K$ |

V F K E N G




 $S L K S V G$ $F L \operatorname{LA} A R G$



## 

$\square Y$ Q NE GA ER
KALK D H G






 QL R Q A G V T S A V V N L G G N V K L L G P Y T E D H R WE V G I Q A P TA


 EMRAA G L S S WLV G ID GEMRAEGQKPD GRPWTVAHERPSA

 $A L K A K G G V T A A L V A G A G D I V D G D P P P G R D G W T I G V A R P G K$




$\begin{array}{llllll}L & L & V & N & G \\ F & L & L & S & K & G \\ Y & L & K & S & & Q \\ V & H\end{array}$


## -

YLESNG VNG
YLRLYGYR
F $\mathrm{LV} V$
E
E

## UniRef90 E8LKY2 UniRef90_UPI00036788C9 UniRef90_UPI00029AF280 UniRef90-D7UX57

 UniRef90-A0A024IT44 UniRef90_UPIO0039AB2F4 UniRef90_UPI0003821C86 UniRef90-E2NNP8 UniRef90_UPIO00477422D UniRef90-Q1QHD3 UniRef90_A6G5T6 UniRef90-R5QC77 UniRef90-UPI0004777781 UniRef90-J5UWF3 UniRef90-H7EKI2 UniRef90-UPI00042901B2 UniRef90-H1ZAY3 UniRef90-F21773 UniRef90-C0EAE2 UniRef90-UPIO003698078 UniRef90_A0A024HKT0 UniRef90-14N5F2 UniRef90-H0Q0B4 UniRef90-E0E3Q3UniRef90 Q01TF1 UniRef90_UPIO004059A33 UniRef90-I9BU91 UniRef90_B1R410 UniRef90-A0A031GUB6 UniRef90-UPI0003B568FC UniRef90-D1Y205
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UniRef90_V6S8F3 UniRef90-W7UZ23 UniRef90-Q31EK5
UniRef90_C6W729 UniRef90-C6W729
UniRef90 T1XM63 UniRef90-R6YKT1 UniRef90-UPIO00329F847 UniRef90_D2ZE74 UniRef90_U2S685 UniRef90_A6DR08
UniRef90_U2D1S1 UniRef90_Q0F1W1 UniRef90-R6WJ31 UniRef90_UPI000255BF45 UniRef90-UPIO0047EE1B3 UniRef90_UPIO0046A4841
UniRef90_UPIO00345A642 UniRef90_H1CT89 UniRef90-F8J634 UniRef90-Q52718 UniRef90-F5SQEE8
UniRef90-W6T4N1 UniRef90-M9VZ78 UniRef90_D4LKL4 UniRef90-JOML82
UniRef90 A1VQL? UniRef90-A1VQL2
UniRef90-A7IQ70 UniRef90-UPIO0036B252B UniRef90-I1ZLT1 UniRef90-10QJU5 UniRef90_G9WGGT9
UniRef90_UPI00047D373C UniRef90_R5PJY7 UniRef90-LODDV9 UniRef90_UPIO002899AB5 UniRef90-I5AVS6 UniRef90-E1VME0 UniRef90_UPI0003A32CAD UniRef90_UPIO00372F288
UniRef90_UP100046A04AB UniRef90_A6GZN4 UniRef90-R9N672 UniRef90-Z4WZU9 UniRef90_UPIOO03A938BB UniRef90_D5BHR4 UniRef90_E4RUM2
UniRef90_R6NK45 UniRef90-G4KU39 UniRef90-UPIO004632FB5 UniRef90-R6KB45 UniRef90_UPI00037A9B70 UniRef90_UPIO0037D4909 UniRef90_C2KUIO 52
9
 $G A H L G T L Q V V N K T V V T S G V Y E R F F R V G D T D Y H H L L D P K S G$
$S S P S R L L L K K N C A I S T S G D A F Q F V E I G G I R Y S H V V D P Q T G$ GQLIGYLPAHNKSIVTSGDYERYLEADGVKYHHLFDPKTG RAPHSVLALQEAAVATSGDYRHWTVVNGRRDSHTMNPRRG PNLLAVLEI DSQAVVTSGDYEKYFIVEGRRI HHLLDPKTG

 AAAGVAVALHDDAIATSGC ERGFTRGAQHFSHTADPRTG RAVQSILPVTDAGVATSGDYRNYWEKDGVRYSHTIDPRTG NHSILSLININNDSIVTSGTYQRYDE DNSKKYHHILNPSTG PGTLATLDLHDGAI GTSGDYQRYFEAGGHRYCHLIDPRTG GALLGAVEVADAAVVTSADDQRFFDEAGNRYWHVLDPATG PDDAACVKVESKAVVTSGGYERFFVDDGKKYDHIFDPRTG GSTVTERQTNKMHLATSGNYRNSVI FDNKRYSHTIDPTTG KKVFATFPDENGAVVTSGTYEKYAIIGDKKYSHDIDPRTG GEIMMATVPVKNQSVVTSGDYERSFKQEGQSYHHI LDSKTG DGNLGVLEISDAAVVTSGGYENYFEENGNDYWHILDPDVG PARLLGVLQGGGVVASSGDYERGFVRAGRRLHHVLDPRTG RTVERSLDVDGYGVSTSGDYRNYFEEGGQRYSHTFDARTG QHASRELGVDGYGVSTSAEQRSFFLQAGQRYSHLLDARTG

 RAPHAMLTDQDAAVATSGDYRHWVTVQGRRDSHTMDPRRG ERVLGVLEI CDKSVVSSGDYERFFEKEDKVYHHDIDPKSG AGTVAQIALRDEAI GTSGDYERYFMKDGKRRPHI I DPRSG GEITAVVEVTDQAVITSGGYERFFTDPGEVFDHILDPRTG


 PRAVGTIPESNESIVTAGTYEQYLISNGHKY DYLFDPQTG KAFLGIVSIENQALSTSGDYERYFIQDGVRYHHIFDPRTG RTPHSVLALQDAAVATSGDYRHWVEVHGRRDSHTMDPRRG RTDFSTFKI TNTSVATSGNYEKFVMINNKKYSHTDDPKTG
 PVIREVISI GDGAVTTSGSYRKFRESGGVRLSHIIDPATG DRAMGVI ELGDAAIATSGDYRHWSVIDGERVSHTMDPRTG QE I QVVLKLTNVGLATSGNYRNFYYKGGKKYAHTDDPRTG
 GALAGILLEASDAFAVT PVLA EL DVLKGDKSIVTSSGDYERFFIYQGKRYHHILSPKTG PSESVGVLTLDGGVSTSGDYERYVEVDGVRYHHILDPRTG
 EAALNKVKVSNMAVATSGNYRRGFNVNGKWYSHVVDPRTG REVMGVMELSDAAI ATSGDYRHWDDVKDRHYAHTMNPATG THPETVLALA GLSVVATSGDEQRYFEHGGRRYAHTVDPRTA WGVVGAVLRPGEALHTSGNYERYFDRGGDRFSHIIDDRTA RLTLAAIRQPNSSLATSGNYRNSVIFNGRRYSHTIDPTTA $P R P L V Q V Q M P A R T V V T S G 1 F E R Y F K V G N Q M Y H H D L D P R T G$ NALVGSI DVVGQSVVTSGIYERYFEQDGRRWHHILDPRTG
 DEYKTALQMDGRSVATSGDYETAFTPDFV HHHUFDPATG RDLGVLELSGAAVATSGTYRHRVEVAGRVLSHTMDPARG
 NTNLMVLAI RDQSVVTSGIYERTFEIDGKTYHHIFDSQTG NQLLGSLETPARSIVTSGIYERFLQVDGKKYHHMFDSKTG RELVGVLEVEDVAVATSGGYRHCREVAGRTVSHTMDPRSGG SRYFAVVAVSDTNVITSGAYERNFEKNGHRYGHVLNPTTG
DAPRCYLSLSRAAVSTAGDAEQFVEIDGKRYSHIVDPRTG
 GQVQQLLTLSDQVI STSGSYRNYREDDGVRYSHTIDPVSG GTLGGIELGGGEGLFTSGDYERGYEHEGERDHHVIDPDTG APAVA HVQISNGALATSGNAHRGYQVGGRWFSHVLDPRSG


 RTFQATLKLKNRAMATSGNYRKFRVDSGERFVHTINPLNG PQYPSQLEVGEMAVATSGPYEKYAI DNGKRYSHTIDPRTG

## -

 REYMELLEHI NDTSVVSSGTYERYFSDDGTFYHHULNPKTGG SQAAPRLALHGLSVATSGDY LKVFWHHGERCAHTDDPRSG VDGQDEEQFADTSLVTSGDYERFYVVNGKRYAHIVDPRTGUniRef90 E8LKY2 Uniinef9o_UPIOOO36788C9 UniRef90-UPIooo29AF280 UniRef90-D7UX57 UniRef90-A0A024IT44 UniRef90-UPIOOO39AB2F4 UniRef90-UPIO003821C86 UniRef90-E2NNP8 UniRef90_UPIOOO477422D UniRef90-Q1QHD3 UniRef90-A6G5T6 UniRef90-R5QC77 UniRef90-UPIOOO4777781 UniRef90-J5UWF3 UniRef90-H7EK12 UniRef90-UPI00042901B2 UniRef90-H1ZAY3 UniRef90-F21773 UniRef90' COEAE2 UniRef90-UPIOOO3698078 UniRef90-A0А024НКТО UniRef90-14N5F2 UniRef90-HOQOB4 UniRef90-EOE3Q3 UniRef90-Q01TF1 UniRef90_UPIO004059A33 UniRef90_19BU91
UniRef90
B1R410 UniRef90-A0A031GUB6 UniRef90-UPIO003B568FC UniRef90-D1Y205 UniRef90-R5DL13 UniRef90-G6CGP6 UniRef90_A5W6F6 UniRef90-D8GF39 UniRef90-GOVRC7 UniRef90-C6KVO2
UniRet90 V6S8F3 UniRef90-V6S8F3
UniRef90 W7UZ23 UniRef90-Q31EK5
UniRef90-C6W729 UniRef90-C6W729
UniRef90
T1XM63 UniRef90-R6YKT1 UniRef90-UPIOOO329F847 UniRef90-D2ZE74 UniRef90_U2S685 UniRef90-AGDRO8
UniRef90 U2D1S1 UniRef90-Q0F1W1 UniRet90-R6WJ31 UniRef90-UPIO00255BF45 UniRef90-UPIOOO47EE1B3 UniRef90_UPIOOO46A4841
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UniRef90-10QJU5
UniRet90-UPIooo47D373C UniRef90-R5PJY7 UniRef90-LODDV9 UniRef90-UPIIOOO2899AB5 UniRef90_15AVS6 UniRef90-E1VMEO UniRef90 UPIOOO3A32CAD UniRef90-UP1000372F288
UniRef90_UP100046A04AB UniRef90-A6GZN4 UniRef90-R9N672 UniRef90 Z4WZU99 UniRef90-UPIOOO3A938BB UniRef90-D5BHR4 UniRef90_E4RUM2
UniRef90_R6NK45 UniRef90-G4KU39 UniRef90-UPI0004632FB5 UniRet90-R6KB45 UniRef90_UPIOOO37A9B70 UniRef90-UPIOOO37D4909


## 

 YPFQNDLSVTVITEESMAADALSTSVFGLGLDQGLAYLEQ
 APGSSPASVTVVARTCAEADAWATALTVLGPTSGTELAGQ LPAEKCQAVTVYASSAEQADAMATGLFVIGAEAGQQVLER YSDNGLASVTIVSPSSMQGDALSTVCFSLGLEKGKALIES AP 1 RPDTHRLVTVVHAQSAAAADAWATALNVLGPKEGLALA T WCDNDLSSS VSKSSLQGDALS VGFLGKEKGLAALLNS
 SPAESDVEVTVICGKGMYADCLSTSLFVMGKEGAVDFWRK EPIIGGAPVTVAAESVGLADAWATALTAMPYEQALATAEQ MPTTEGASVTVEAPKAELANGISTSIAVMGGETGLHLINQ RPANSGLEVTVIGSEGRLCDALSTALFIMGAEEAGNYWRE WPTEGVHGVALRARTVAEVNGWGAALMVRGAAQAGAWHAQ TPVRHKAAVTVVDRSTLHADGLSTLLMVLGPDEGFRYAEQ RPVNHSASVTVIHPSALSADGLSTLLMILGPEQGWDYARG APATATQSMTVRPNAGTLSDAASKAPFIAG DGWREYTRR YPENNLSSVTIISKKSDDGDALSTSTFGLGDEEGMKFDEG K P V H Q T V S S V T V V V N D N P T M A D A W S T

## .

##  <br> \section*{}

 WPAKSGAMVTIVAADGMLTDILSTAVFVLGPEQGARFLSS Y P D N NLASVVT IVSKNSVDGDALSNAAFDKGLKGGLQYMNA YPARS GVMSDSI I ID GMLS DMMT T IVFVLGPQKGMELVNS
 $R P A N G L V S V T V I \quad G D C G L D C D A L S T A L E F V E G Y E N T H D F L R N$




 WPAMQNQSTTVMAPSAMLADAWS S P A H DVA GVTIVVTKD GFLSDALSTACFVLGQEEGQQLLEK YPFNNDAGVSVITNRSTEGDALSTVLFSDGVKGGLAYAKK

 C P A E K GI S S T I I T K N N G I D A A D A L A S T A T Y FPAHDVI SVTVVTDDCMTADVLATADTVLGPEEGP
$R P M R G V V S V S V L S D N G A L S D A A A T A L C V A G E E D W P R D A A Q$
 Y PVEN QVQVTI IT GQSELAAEVLTTVCYFQGAQRGSELIET


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



 R P DH K GVVSVSVVLDDD A L A D A WA TA L N NV L G P D A G F E L L A E S
 Y P D N E MIDS V T V Y A N D A I TAA D GY D N A L M A M H L K D A I A A F V E S Y P D V K G L Q S V T I I S P D P E L C D A I A T S

 K P E R S N L S A S V L A E S C M L A D GY A T A F M A L G L
 YPA ES GISSVTVVAPHGTMCDAFS TA L F F V V M GEEKAAVEFWRS FPSEHFSAVTIVVTHNSGMADVLSTAIFNMPFEQGKKLIDS




UniRef90 E8LKY2 UniRef90-UPIOO036788C9 UniRef90-UPIO0029AF280 UniRef90_D7UX57
UniRef90 A0A024IT44 UniRef90_UPIOOO39AB2F4 UniRef90_UPI0003821C86 UniRef90 E2NNP8 UniRef90 UPIOO0477422D UniRef90-Q1QHD3 UniRef90-A6G5T6 UniRef90_UPIOOO4777781 UniRef90-J5UWF3 UniRef90_H7EKI2 UniRef90-UPI00042901B2 UniRef90-H1ZAY3 UniRef90_F21773 Uniref90_COEAE2
UniRef90_UPIOOO3698078 UniRef90-АоАо24НКТО UniRef90_14N5F2 UniRef90-HOQ0B4 UniRef90-EOE3Q3 UniRef90-001TF1 UniRef90 UPIO004059A33 UniRef90-198U91
UniRef90-B1R410 UniRef90 B1R410
UniRef90 AOA031GUB6 UniRef90 UPI0003B568FC UniRef90-D1Y205
UniRefo - 25113 UniRef90-R5DLI3 UniRef90-A5W6F6 UniRef90-10GMH5 UniRet90_D8GF39 UniRef90_GOVRC7 UniRef90-C6KVO2
UniRet90 V6S8F3 UniRef90 ${ }^{-}$W7UZ23 UniRef90-Q31EK5 UniRef90-C6W729 UniRef90-T1XM63 UniRef90 UPIOOO329F847 UniRef90-D2ZE74 UniRef90_U2S685 UniRef90-A6DR08 UniRef90-U2D1S1 UniRef90_OOFIW1 UniRef90 UPIOOO255BF45 UniRef90_UPIO0047EE1B3 UniRef90_UPIO0046A4841 UniRef90_UPI000345A642
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UniRef90-R5PJY7
UniRef90_UPI0002899AB5
UniRef90-15AVS6
UniRet90_E1VME0
UniRef90 UPIO003A32CAD UniRef90-UPIOOO372F288
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UniRef90-R9N672
UniRef90-Z4WZU9
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UniRef90-E4RUM2
UniRef90 R6NK45
UniRef90'UPI0004632FB5
UniRef90-R6KB45
UniRef90-UPI00037A9B70 UniRef90_UPI00037D4909 UniRef90_UPIoo0349CA52 UniRef90_C2KUIO

TDH AVYAIIEMDKDGKAAYSRAFEPY $\square K$
WKGVEALVFVTTDHVVTLTPGLK

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

$\stackrel{L}{R}$
$\stackrel{Y}{\mathrm{~L}}$
HPGAEVFIVTSSAAGRVVESPGWARLSQ
AG\|A ALFI TETDNGLAETTSAWK

LDLKEV LMVDAQRNVHMTAAMQA


 MEGVDCE ITGTDNAVYMTQGFK
$R \mathrm{G} L \underset{\mathrm{~L}}{\mathrm{D} A L \mathrm{~L}} \mathrm{~F} \mathrm{~L} \mathrm{~L} R \mathrm{RDEEGN}$



## UniRef90 R7N805 UniRef90-F9UMN9 UniRef90-19KX84 UniRef90_UPI00047D4537 UniRef90_E8TV67

 UniRef90-Q04DL9UniRef90-A0A031MHC UniRef90-D1CH08 UniRef90-UPIO00471A485 UniRef90-R5L9W7 UniRef90-M5RVQ2 UniRef90-K2JV47 UniRef90-UPI000365EC81 UniRef90_UPI0004230F8C UniRef90-U2JSH3 UniRef90-D4KD10 UniRef90-C7MLE1 UniRef90_UPIO0047728B2 UniRef90-R5FTV3 UniRef90-H8GMA5 UniRef90-V4PAP2 UniRef90-Q3B3Q9 UniRef90-C6W2G9 UniRef90-E6U1E2 UniRef90-C5T714 UniRef90-B3QTB6 UniRef90-H3KG44
UniRef90 V2Y5N3 UniRef90-V2Y5N3
UniRef90-K1 X9D8 UniRef90_UPIO003B2FD10 UniRef90-EORYJ2
UniRef90-TOCLO5
UniRef90-B3PBT4 UniRef90_UPIO0034B27B0 UniRef90-W8QSX7 UniRef90-A8AXE5 UniRet90_UPI0003B5230E UniRef90-F7Q0L4 UniRef90_UPI00047AB508 UniRef90-UPIO00363F4E1 UniRef90-V4IIQ1
UniRef90-B9MM66
UniRef90_G9Z4X1
UniRef90_UPI0004066513
UniRef90_C6DJZ9
UniRef90_UPI000360F8A9 UniRef90-E1SSU7 UniRef90-A2TS66 UniRef90_UPIO003B4AC67 UniRef90-A1WVK0 UniRef90_UPIO0047EEDE1 UniRef90_UP10003688C3A UniRef90-UPIO00462EC6F UniRef90-BOTMN7 UniRef90_M2BRB5 UniRef90_UPI000362B193 UniRef90-A1AV94 UniRef90-S2S819 UniRef90-IOWH87 UniRef90-B7X2L7
UniRef90-B9XT43
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UniRef90-A0A023BXG8 UniRef90-A0A023BXG8
UniRef90- UPI0004021FF9 UniRef90-W8EWZ3 UniRef90-F5XOS9 UniRef90-C8WMP3 UniRef90_LOWHY4 UniRef90-A2TYZ3
UniRef90 W2UP22 UniRef90-C2M728 UniRef90-R5EYN9 UniRef90-D411M2 UniRef90_A6LEW5
UniRef90_UPIO003779AAF UniRef90-L1NY15 UniRef90_F6IKR4 UniRef90_A6VZ05 UniRef90-17ZFV1 UniRef90_UPI000289B39D UniRef90-J2LHG1 UniRef90-DOYYH5 UniRef90-E4KME0

1
$P \square S V T D Y K{ }^{10} N T Y V Q \mid D S Y T^{20} N \quad V N K N V S^{30} D A D G L C D Y Y E$ PIEDTQFMMGTVVTLRDYNKGKD NVLAGAFKLLKTEA
 HRLQQHGPTMATRWAVSCDVPPVLDTNALCQALAEVEQVD
 QEVTRHFRAMNTDVRVAIAGDPKEANRYIDQVEALEADTE
 RHALNGPTMGTTYMVKVHSPPEQPDWASEADDRELRSVN HKLSFYAFG VYEDTOTMLMG RYTTDFYVFDTVTQVDAYCES SRDFFLFNTENHI EVV

GFAQGTTYHI TYYA
 FTFFDTVSNISYAGDDEDTFDAAALVLE EYHKL VQQLKGFAQGTSYHI SYWSPAPDAQAVKKAVADEFASLD

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

 YKQTRFMLDTYVTIHVFDYESVANDAI IRAFNRMQSLD QKVGFFFDTVITLTAYDAEKSCDEFLSECLTECSRYE
K
N S K K A L E K A F K RAN D I


 $K \square Y$ TST $\square F A M D T V M E L Q I A G K K$ TST@FAMDTVVMLEVIVGNT
 KSMFAMGTVVNVIVVTDHEDNAHTAADDTAFVVMGALAA $R$ VY S Y S AVLMGSPI L L K L F QRFHAEFLLEDTVTQUVGYAKK YV Y S $Q \mathrm{~L} Y$ $V$ HPAMG $\square T \square A G N A F G T$
$P Y K G G F Y F ~ D ~ T$

 HVYSYSVVLMGSPIVLKLF ENNQSAAQTVFRLI KQQE $E L Y I H G T Y V F G T R V Q L V L Y G P L D E A Q R D A D A V F A R F Q A M H$







 KTQRIN | F T | L |
| :--- | :--- | :--- |
| F | L |
| N |  | $\square K G E T M G$ F TAMASSYHITFQNPKVNQDEI RQAI DKRLQQIN F A MASPCRI RLA GVADEA QALA QAAVDEVRRI E $\begin{array}{rl}W R L R & R \\ N & G A\end{array}$

 FTKEAR LMGSSHFTYTVVAD DTLGWNADNAADAETRMIDD
 Y Q TVS GETMGTSYHI RYAD HLS DTAAS DQAA DDERLQAA N Y TLLK G G V F G T T Y K K 1


 Y LIDE GEA Q G S R C E L RLLSAPNAAAAAALAARAIEVRRIE

 V F S Y S A V L M G S P IL L KL F D D N P



## UniRef90 R7N805 UniRef90_F9UMN9 UniRef90-19KX84 UniRef90_UPI00047D4537 UniRef90_E8TV67 UniRef90_Q04DL9 UniRef90_A0A031MHC UniRef90-D1CH08

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UniRef90 C5T714 UniRef90_B3QTB6 UniRef90_H3KG44 UniRef90_V2Y5N3 UniRef90_K1X9D8 UniRef90_UPI0003B2FD10 UniRef90_E0RYJ2
UniRef90 T0CL05 UniRef90_B3PBT4 UniRef90_UPI00034B27B0 UniRef90_W8QSX7 UniRef90_A8AXE5 UniRef90_C7MMV1
UniRef90_UPI0003B5230E UniRef90_F7Q0L4 UniRef90_UPI00047AB508 UniRef90_UPI000363F4E1 UniRef90_V4IIQ1

## UniRef90_B9MM66

UniRef90_G9Z4X1
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UniRef90_UPI00047610F2 UniRef90_BOTMN7 UniRef90-M2BRB5 UniRef90_UPI000362B193 UniRef90_A1AV94
UniRef90-S2S819 UniRef90-I0WH87 UniRef90-B7X2L7 UniRef90_B9XT43
UniRef90 UPI0004 UniRef90-UPI000477AFEE5 UniRef90_C0BFY3 UniRef90_E3PU52 UniRef90_A5WBL1 UniRef90_UPI0003B59BA7 UniRef90_UPI000349035
UniRef90_A0A023BXG8 UniRef90_UPI0004021FF9 UniRef90_W8EWZ3 UniRef90-F5X0S9 UniRef90-C8WMP3 UniRef90_A2TYZ3 UniRef90-W2UP22 UniRef90_C2M728 UniRef90_R5EYN9 UniRef90_D4I1M2
UniRef90-A6LEW5 UniRef90_UPI0003779AAF UniRef90_L1NY15 UniRef90-F6IKR4 UniRef90-I7ZFV1 UniRef90_UPI000289B39D UniRef90-J2LHG1 UniRef90-DOYYH5 UniRef90_D4IKY0

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 A QMS PWQPESALNQLNRAPVGWLALPA QILEVLARALEVC K EA T L T E K G S VL D K I N A N A I K P PV K V P D D F WP LI A K A M Y F S EAASTWRPNSEMSRFNAAPAGTCQAMPQDLEVVELAQQQH GRLSRFLDPDEELSALNTAAGRPFQASAMLVEVVHAAVEAA





 S S L S DY K P Y S VI T R FN RAPR GL VP D G H L R K V V L R A Q E V S

 REMSP Y RVVDS DL T R F N L A A G H F V A L



 E L L S T G K D S S E VV S R L N N T G K A K F S NKKEGSDVV

 HKF HA WQP SAL TAALN DADAR SYQ GDAEMVVDLAKRAARDIS


## D

 ERFSATRDGTELGPLNEAAGEGMQVSEELIAALERAREME RAWHPWEPGA GRTNEATQNEFSVDPSILPLLELGQALE DLTVNREHS . <br> \section*{} <br> \section*{}AKY Y SRRYR S D S
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L
QLFDIYNDYNNLKTVNDQAVAPVEVDGDIIRLLLECREFY AI FTVNRPHSEVMSINRAAKHAVAVSRVLYEVILKRAKEAS HLFNAFDSTSVISQVNQN RDIRVDTLLQKVFKKALEVS TKYSRYRPDSIVSRINAAAGRPVACDSETMALIDYAAALF
 KELSTYRPDSFIS NSMSRYRDSVVSRINGLAGSDVEVDDETAGLLDYADAAY NSMSTYMATSDVSKINGRGDTNVKVDDMFVDVETMSKKMH KEFSTYRNDSYISEFNHSATQWQPASKEFIDLVALAKTVN


## UniRef90_R7N805 UniRef90-F9UMN9 UniRef90-19KX84 UniRef90_E8TV67 UniRef90_Q04DL9 UniRef90-A0A031MHC7 UniRef90-D1CH08

 UniRef90_UPIO00471A485 UniRef90-R5L9W7 UniRef90-M5RVQ2 UniRef90-K2JV47 UniRef90-UPIO00365EC81 UniRef90_UPIO004230F8C UniRef90-U2JSH3 UniRef90-D4KD10 UniRef90-C7MLE1 UniRef90_UPIO0047728B2 UniRef90-R5FTV3 UniRef90-H8GMA5UniRef90- V4PAP2
UniRef90-Q3B3Q9 UniRef90-C6W2G9 UniRef90-E6U1E2
UniRef90-C5T714 UniRef90-B3QTB6 UniRef90-H3KG44 UniRef90-V2Y5N3 UniRef90-K1 X9D8 UniRef90_UPIO003B2FD10 UniRef90-EORYJ2
UniRef90-TOCL05 UniRef90-B3PBT4 UniRef90_UPIO0034B27B0 UniRef90-W8QSX7 UniRef90-A8AXE5 UniRef90-C7MMV1 UniRef90-UPIO003B5230E UniRef90-F7Q0L4 UniRef90_UPI00047AB508 UniRef90-UPI000363F4E1 UniRef90-V4IIQ1

## UniRef90-B9MM66

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UniRef90-B9XT43 UniRef90_UPIO004725551 UniRet90_UPIO0047
UniRef90_COBFY3 UniRef90-E3PU52 UniRef90-A5WBL1 UniRef90_UPIO003B59BA7 UniRef90_UP1000349035
UniRef90_A0A023BXG8
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UniRef90 A6VZ05 UniRef90-I7ZFV1 UniRef90_UPI000289B39D UniRef90-J2LHG1 UniRef90_DOYYH5 UniRef90-E4KME0

A

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 RLSDGAFDPAVGALVDAWGFGAACDTPDAEADRAARNAKR



 RASKGAFDIGMGDAVTAWGFGPAEAAPDRDKAAMNTNRVP




 KASQGCYDLTIKPLFTLWG FNGETPAVPDDKALADTLKK ALTDGAFDPAGLPAVELWGFGAKTVAPGVPDPTEVASAAKK K K
 QFSDGAFDVTVGGSLKGWNFEAGHQTVPSPALI ARQRE ERTSGAFDISFKPLGQLWNV KQRTVPPTKAEIDSAAK
 REGAFDPT GTVDDWNFHA GTVILWNFHADS DSTNGADDDTI YPVLKTWGFTADSDKA K L L I E N S G F N V ARSDGAFDITVGKLMKAWGFFRS $R \square S K G Y F N$ I AVGRVVVQQWRQKRNARGHVPTEAELAP VARA KATSGYFDPTVGTLRNAYGFG DTEAFETLDDEPTLEDSLMQ DKTNGUIDPSINSVYVLWTFSNEDKNNPDPSNVDIKNALA ARTGGRFSPAI GGLTELWGFSAQEGPLEEPPPAEEDEAWV LR S DACLNDAIGPLIKLWQVG

RLSGGRFD SSGGLRQAW

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UniRef90_F9UMN9
UniRef90_I9KX84
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UniRef90_D1CH08
UniRef90_UPI000471A485
UniRef90_R5L9W7
UniRef90_M5RVQ2

YVD Y T K VIS 130 140 ITP G G CLDGAIAKGY!ADKIKA LVDYKKKLNDKKRTVYVEEK GMQLDLGGIAKGYMTD QVKT



$\begin{array}{llllllll}L & l & R & D & G & Q & L & C \\ l\end{array}$ $\qquad$ $D V A \backslash Q$

NPP GMAGDILERNAGARLRAK APVALDLNGAKGYGVDR LAE
 PEGWSDVVRDVQS S SLLSFSSDVTVNFGAVAKGYYSDEMKK HCDINDLVVIDEEAKTYLSDPEMSLDVGSVGKGYAVEMVCR
 S G G W R K L T V V D D T HL GK K Q A T L Q T DL S SI A Q G Y S V E S L S R L V D Y R A V R L E R K K M T Y L E LIGFKQIEFNEKEVQA
QA $K K G K$

L MDHTKIVENKEKQTVFAEEGMM L | $L$ | $V$ | $D$ | $G$ | $R$ | $L$ | $V$ | $L$ | $D$ | $E$ | $Q$ | $T$ | $A$ | $Y$ | $L$ | $T$ | $R$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $Q$ | $G M A$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $N$ | $F$ | $K$ | $N$ | $I$ | $V$ | $L$ | $Q$ | $P$ | $D$ | $S$ | $L$ | $T$ | $L$ | $F$ | $L$ | $K$ |
| $Q$ | $K$ | $M$ | $R$ |  |  |  |  |  |  |  |  |  |  |  |  |  | DVSRVRVTE E K GRHYVQUDPGQF $N V G S D K I I F B E A T G E I F K N K G M K$ K I GYKNLJKLSEDKLERLTEV




3B27B0

 LT NPENI ELDD HTDF RQVHVNGQVVVIDDAAARVVLGGIAKGYY A D K $S V G Y R K V V L E R G G A H V I D P D G M E I D D G G V A K G Y T G T A V S D$ LV N Y K N VII D Q K Q K TVVKI D S N DN L DL GAI A K G Y A G E LI K K $N V G Y D R 1 D V E Y A G C N V K L E D N M Q V D L G B V V K G Y T G S Y Y A E$

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





 HA H $\square$ T DLAI SPTGVVSSANRAVSII K T GMDGYVL D NGMIVKVVPDLA
 NCGYRKLHVDPASTVELDDAGMEL I S S IE Y L R L D N S R VK K L K DVVH


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

 R GWDRVVWT GEA A L P RAGMEI DFGGI GKEYAVDRAAT

 $R I N Y R N V V L D A A R R T V L K D K G M R M N L A G V L Q G Y G I R R A R Q$ LAN PE HII L NAEK SVVFLNRKGMKDD L GALAAKGY I A DK IM D $R V G Y A A V Q V D E T A G T V T L E G G A Q V D V G G V A K G F A A D E L$ R A WVGLDK VTLLNE QKLSKS DDGVGLDFSAIAKGYAVDVI A N
 FTGGD K V S I T T E G Y L L K N H P Y V Y F D F N A L A K G F T L D L I A R LT GMDKVHYDDTPRIVK DNPNIQLNFNAIA QGYTSDVIAE HMDFDAVIIDDEDASTVFIDPETRLDVGAVAKGWSAQRAAE
 LV GWRHVVCERQQVYLLLQPGMLEDDF GGFGKEYAADARAA YV GFD K V QLLT D DN HI R K K D S H I L F D F FN A DA Q G Y T S DVVVA A
 LV GWHRVIKWDRPRIKLPDPEM QLDFGGFGKEYAADAAAA




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UniRef90 V2Y5N3 UniRef90-V2Y5N3
UniRef90_K1 K9D8 UniRef90-UPIOOO3B2FD10 UniRef90-EORYJ2
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UniRef90-G9Z4X1
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UniRef90 UPIOOO462EC6F UniRef90_UPIO0047610F2 UniRef90-BOTMN7 UniRef90-M2BRB5 UniRef90_UPIO00362B193 UniRef90_A1AV94
UniRef90
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UniRef90 D411M2 UniRef90-A6LEW5 UniRef90 UPIOOO3779AAF UniRef90-LNY15
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UniRef90 D4IKYE

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$\mathrm{Y} L$ D DNG YLLNHG QLQQAG
YFRENG VLTGHG TFLGK HLASM

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 LLGE LiLl VEAAI FNAGGDLMTLGRPQER AWRVRI RHPRG LLDAKGADPAGVNDSGDINTWGKQLDGKQWKVGIVNPNK $\stackrel{A}{A}{ }^{\text {A }}$ SDVSFGVDAGGDLYVGGR R A VARGVQDYLVEVGGEI RVKGRKRPGEMMKIGI ESPSE ALVERGCKSYVLNVGGN:RTIGTKVDGSGWIIG:KDPPD LVRSEPGVRSAVVEIGGELAGWGVQSDGQPWWVDVETPSG FLKSLG DRFMVEMGGEVLCSGFKTGGKPWVTGU ENPKT LMVEHGVTAGMIDLGGDIIVIGNNPSGKPWSIG| QDPLA VLRREGVRNALVNGGGDVLVMG QMQGRPWRVGLRDPLA VLENAG IENYI LNAGGDLYFSGSKNGTWTSGIKDPDGES ELLAAGAPRALLDLGGNVVALNGKTAEABWRVGLQRPDT VLKENNISSGLVDAGGKVYALGKKE GKMWKVGI RDPRK FYLERG NSGANLGGNVLLIGQKPNKTDFTTGVQRPFG

$F$ LK E K V A R A A G MLREKG
TLLKAKK KNFMVEDGGEVMVQG (II DLGGNIYVMGPKNVKKDWNVGIQDPKK KDENGUEYYIQMGAEMLVKGKFKTVHDAPITIENPDG KLGAAGW AGGLFEDGGELRSWGQRPDGRPWQVQLGTGGT MFLERQGITRYMVEDGGEIRCGGRKDDNDSWMAG|EDPTK
 VLHKDYKINNYMVEIGGEVSTSGVNQNAQPWQIAIDAPTL LLLEAGVRSGLVNLGGDLRVLGPHPDGRPWRLGVAHPRA VLAQAGL QHGLVNLGGDLRVLGPQADGRPWLLGIQHPRQ

 LLRERD TSALFDLGGNVTALGSKPDGSPWKVGVADPDD TLLHEXGVVNYMVE:GGEVATLGVNDKGDPWTLG:DAPDV
 YF LSSKQ ISNFIVEVVGGEVIHGRNTKNKPWRI GU| DNPED YLLQRG VRDALINGGGNVLAGNSV RQAWRIGLKQPFA MLEKKGVRNYLVEFGGEMRVKGVNPSGMDWRLGATVKPTD VLIEAG VRHGYVNLGGDMRFIGPRLDGRPWS GM| QDPRD
 VLGRRHDDEHGUVDLSGDLVLVGPHPDGSPWRVGUQHPRD

UniRef90 R7N805 Uniref90-=9um UniRefi90-99K $\times 84$ UniRe e90-UP100047D4537 UniRei90-E8TV67 Unirete90-O04DL9 UniRef90-ААААЗіМНС7 UniRef90-D1CH08
 Uniret90-R5L9W7 Uniref90-M5RVQ2 UniRef90-K2JV47 UniRefi90-UPIoooz65EC81 UniRef90_UPIO004230F8C UniRef90_U2JSH3 UniRef90-D4KD10 UniRef90-C7MLE1 UniRef90_UPIO0047728B2 UniRef90_R5FTV3 UniRef90-H8GMA5
UniRef90- V4PAP2 UniRef90-Q3B3Q9 UniRef90_C6W2G9 UniRef90-E6U1E2 UniRef90-C5T714 UniRef90-B3QTB6 UniRef90-H3KG44
UniRef90 V2Y5N3 UniRef90-V2Y5N3
UniRef90-K1 UniRef90_UPIO003B2FD10 UniRef90-EORYJ2 UniRef90-TOCLO5 UniRef90-B3PBT4 UniRef90_UPIO0034B27B0 UniRef90-W8QSX7 UniRef90-A8AXE5 UniRef90_C7MMV1 UniRef90_UPI0003B5230E UniRef90-F7Q0L4 UniRef90-UPI00047AB508 UniRef90-UPIO00363F4E1 UniRef90-V4IIQ1
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UniRef90_LOWHY4
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 KDYAGSINVSGKAVITSGGYERYFVDDGKKYCHVIDPHTG GGQKLMVAHKDAAMATSGDYRNFFEVDQQRYSHTIDPRTG RSAHSVLALQDAAVATSGDYRHWVEVQGRHLSHTMDPHRG GTAGSIELGAGEALFTSGDYERGYDWEGEYIUHVIDPRSG DK FA TFPLENSAVETSGSYEKYVTFNGVRYSHIIDTRTG PELMGSVTVTGQAVVTSGNYEKYFEENGKRYHHLEDDCTG

 SKYAMYLSLTDTA CVTSGGYERYFIVDRVKYHHLADCETGQ
 NALAATVRLTDRAMTAAGNYNHIDRNGITYNHLDDRTG SRGQGTLDATDESVVTSGDYRILLKEDGEYHHL NPFDG APVMTFEDKKLGIATSGDYENFMYQGEKYHHI DLDTG DRYFAVVEATDESVITSGAYERYLEKDGKRYGHI LDPKTG PNYMAAVKLEDCAVITSGGYERYFEEGGKDYHHLLNPKTG
 QKIVSFDAGEPMSLITSGTYRHYFDSEGKRYSHILDARVG
 GNNLALLSDQDQSVVTSGDYERNLKANGKDYHHVFDRNTG
 GVYJGTVFVKDKAVVTSGNYERFFBDQDKKYHHVLDTDTG


## D








 TEAES IVVACREGAFATSGDFWHQFTHAGKRY SHTMDPRTG

 P G GA H V L K V S D M T V A T S GT Y R R K WT F N G Q T V H H I I D P F L G
 D S I R Q P L L S N K L H L A T S G N Y R N S VVVAF D G R R Y S H Til D P T T G




$\square$
UniRef90 R7N805 UniRef90_F9UMN9
UniRef90_19KX84 UniRef90-UPI00047D4537 UniRef90_E8TV67 UniRef90_Q04DL9 UniRef90_A0A031MHC7 UniRef90 D1CH08 UniRef90_UPI000471A485 UniRef90_R5L9W7 UniRef90-M5RVQ2 UniRef90_K2JV47 UniRef90_UPI000365EC81 UniRef90_UPI0004230F8C UniRef90_U2JSH3 UniRef90_D4KD10 UniRef90_C7MLE1 UniRef90_UPI00047728B2 UniRef90_R5FTV3 UniRef90_H8GMA5
UniRef90_V4PAP2 UniRef90_Q3B3Q9 UniRef90_C6W2G9 UniRef90_E6U1E2
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 A P Y Q N N L M V S I S K K S V D G DA L S TA T F D K GL K G GM K Yi N G
 $R P A H A G L S V T V V G S D G U V C D A L S T A L F V K G L E E S V R L W Q A$ $K P V N N V A S V T V L A P R C M D A D A W A T A L L V A G S G Q G L A L A H R$

 Y P D N D D L L S S V T V I S P Y S I D GEE I Y S T Q L Y GM G L E K G C E WL A T

 R P S Q GVASATVLHHDPALAD GAATTMWM AGPEAWPE YAR R

 FPSNEMVSVTVEAKDA I TAADAYDNVMMGMHLDEAFAAFLKR MPANYGISVSI DTKDSGLAD ALSTALECMSYEEGKALI EK $R P V H D V V S V T V A H P D P T V A D A W S T A L D C L G E A Q G L K T A N A$
 GPRPGGRRVTVFAQDADTAD GYDTAFFVMGLEATKTFGKN YPMNE LAGVTIVSEESIDDGAYSTAVFGMGVNEGFEYVEN Y P T A GVVHGVSLLARDVAQDNGLGAAMMVQGAKAGQMLVAR FPAKGLKSVTVESEDPTLADAYATAFFILGYKPALQIVKQ






 YPA Q S DVAVSVI A R D ALDGDGYSTALLIMGLRRAYEFVEA K P A E S GVVSVMIV G K D GLL L C D G L S T A L F F E G G L D K A D E E Y K


 YPLDNELDVTVVSADSLDGDDWTTLLYGLGVEKGCAALEK
 $R P V E G R L Q A T V I A P S A T D S D A L S N A M F V L D E D G R K R L M G S$ YP KTE GV SVVVMNEQHDYADVVLSTTDFLMPMKEAMAMAES
 YPAMGSRSMTVI HDDPVHADAAATALF IAAGDDWQALAEE YPVNDLA GLTI I SKSSSLVGEDY TSLYFNLTS QDLLAAKLSV QPAREARSVGTLHHDGAEA DAAATALFVAGPGRAFEDAA G

 Y P V Q N RL N A S I I S E S S T L A D A L S T S S Y Y L G E E K T R AL L Q K VGLTTK GITVVTIVARHGDEADGLATAVSVIGATRGMQFIDS LPASTNLSVSSVI HNSAMIADAYATAMMAMGSSKA QILAQ
 YPSNVLSSLVL STGSAMEADAYATAALVVMKLEDAK QLLKK WP V H DL A S V TVVF HEECMMHADA LATVL TVVLGPQQGMD FALDQ
 $\square P V E D V V$ S CTVV H Q DLLVQA E V M A K VGLVLGRERGSTWL N
 QPI A G GAPSVSVVVADSVSADAWATALTAMTYEKADATAK Q WPVSHWQSVTVAAPSCLAAGALSTLAMLAGP QAPAFLQS









 K S TP S DVS ATVVA P T T MY A D GYA TMMMMVMGLEKK S K M F L E K
 WPVGELSAVSVIAS QCLVAGTATTDAM LKEKDGKA WL YTPS D L L A SVIA N NCATADGYATSFMAMSLEQTKAVLKT



|  | 29 |
| :---: | :---: |
| UniRef90_R7N805 | LEEGDEA VIF MTNDGSKYYSDNAKAY】 |
| UniRef90_F9UMN9 | K A D Q Gl G Al Fl T K K K V YV S N NLK K |
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| UniRef90_UPI00047D4537 | S S DFEA I FITEDGEVYI T E GI |
| UniRef90-E8TV67 | H GLDA A L WLLRRGEALVVELG |
| UniRef90-Q04DL9 |  |
| UniRef90-A0A031MHC7 | HE LPALFVIREGDGFVSRS |
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| UniRef90-R5L9W7 | HKS EFDFIAL S GNTAYVTSG■ |
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| UniRef90-UPI000365EC81 |  |
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| UniRef90-U2JSH3 | LDGIEA VFI Q S D G SVVTSKHID K Y Q |
| UniRef90-D4KD10 | LDGVEA MWCTPDKQATTSSGWDSHLKK |
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| UniRef90-Q3B3Q9 | MRDTTLA MI LID STGRI HRSPNLSAFIE E |
| UniRef90-C6W2G9 | RKDMDVYMLYTNEEGQLFATDGIKDFIEE |
| UniRef90-E6U1E2 | VDGVDA V FVTTRDREUFVTSGL |
| UniRef90_C5T714 | QPG VHALMVAADGTPWYSVGM |
| UniRef90-B3QTB6 |  |
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| UniRef90-UPI0003B2FD10 | PDT YVMFIT DNYEVVTS |
| UniRef90_E0RYJ2 | NRDKEF DMVLVT DD R E V Y LT E G |
| UniRef90-T0CL05 |  |
| UniRef90-B3PBT4 | NH L A V L F $\quad$ D Q H GREDKSPALDEALQ |
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| UniRef90-W8QSX7 | H E $\square$ P AVVVVD D A D M T |
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| UniRef90_UPI000363F4E1 | HPELKVFLI FVNDNQE |
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| UniRef90-G9Z4X1 | RHDLEA IVFVTKDRRVVLS |
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| UniRef90-C6DJZ9 | QPDIEA $\quad$ IFVTKSKE |
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| UniRef90-UPI0003B4AC67 | YPGYECMYIL DDYSPVYSSGFEDYL |
| UniRef90-A1WVK0 | LE DGYALLVDRDGAVWMTEAM |
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| UniRef90-A1AV94 | QLNLSVVLIL |
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| UniRef90-UPIO004725551 |  |
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| UniRef90-F5X0S9 |  |
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| UniRef90-LOWHY4 | Q GLLMAMFVIETKTGFIVQT DAMQQ |
| UniRef90-A2TYZ3 | YKNIEVILLFSDKDGN |
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| UniRef90-R5EYN9 | Y N A EAMWVDADGGEFFSPGFRALLR |
| UniRef90_D411M2 |  |
| UniRef90-A6LEW5 | VPGLEYF\I CI G D GY HPEYSEGFRQYL |
| UniRef90-UPI0003779AAF | S DMGYLAIDEHGQTLY |
| UniRef90_L1NY15 | HPDMAVLLVYSNDKNELFKTKSFEKLI |
| UniRef90-F6IKR4 | H G\\|AARLVAETE |
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| UniRef90-I7ZFV1 | GNL GLPWI A A HRDGTVTGS |
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| UniRef90-D0YYH5 | NLPVFFI QDEEGKFI SSS |
| UniRef90-E4KME0 | AIEG V VVDRHN |
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UniRef90_F9YTN6 UniRef90-R5WNX4 UniRef90_JOD4Z8 UniRef90_UP100037E32C9 UniRef90_UPI000365B5F6 UniRef90-U2K3T1 UniRef90_UPI00036E9DD9 UniRef90_UPIO003B49063 UniRef90-J6PHL3 UniRef90-B7RXQ1 UniRef90-R7JHY3 UniRef90_UPI0004793B58 UniRef90_UPI000463427B UniRef90-A0A011QQN2 UniRef90-19WKV7 UniRef90_U3A654 UniRef90-FORSF3 UniRef90-UPI0004e

RHALLNGPTMGTRWSALEHADG|L|DPAP|VQAALLQAAVADVD $R K T L K L M G S H D D D L D F D S I D D A E N D L D D A V E M L K M Y E$ Y QS Q G Y L F D T I T T S MV GY A K D K E A Q E L H D E $S L S G P T M G V A W T L K A R A P A G L L D A A A V A A A V Q A C D R V V$



[^1]

[^2]$\qquad$

$$
R \square S G N A M G
$$


<br>$K L Y R$ RVQRDRGESM $T$

$S$
$T$
$T$
$G$
$G$
$G$
$\qquad$
A ${ }^{R}$
 RYAMNGP $\stackrel{V}{\mathrm{~V}} \mathrm{~V}$ KRYEATFL KRYEAT
ERHSLD
RF ERH
QF Y
QVE QVERQEFKAMG

## K R Y L

FVFGTRVEVVVVYGDR

EKTSVAMGTVVIVKL F G | $\mathrm{P} R \mathrm{~T}$ |
| :--- |
| D |
| N | ELH Q $\square$ GEALGTTYSVQYFSEENDAEFTRAMDSVVNLVN ELDMGT

QYRIVTE GHT HTYYRITY Y Y Y ETYE ${ }^{\top} K G Y Y$ T $Q G T$
QFOKQQLKLMGTVID
QEQKKTVYAMDTIMDLTAYTDNSD VIVLNAEKK NAYN

 WHGTT LGASSTIKLYHKDEAAQRADDAALAEELEME

RLHS GAALA
 QKHEWTFFAFDTLCSIRDMPSRSAAAP LLKDAWETAHLVE

 QLFTFHHEVLGSSLDLGVQASDAQQAAAVEA LDEVERLR
 QVYVQGTYVFGTRVQLALYGPDDRAQQATNAVFAHFQAMQ KLHTISGLAQGSTYQIKYISDREEDK TLNTTVMGTTASITVYGRNGS SRAFRAMGTTVRIQIAAETQDADDIDDDMDLENNLD ETYSERRFMMNTVIELQLY EPVVKETIEKDFAVFKRDD

 QSFEHSFKAMGGPCKIGVGAEEKSAVAALAACEAEVRRGE EYLTASGAMLGTTFQATGDDTDCTAQELYRADMQDDAEAK $R \square Y T S T L F A M D T V M E L E I A G P S \quad D Y T L Q A E Q M \| R A L E$




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UniRef90-G5II73 UniRef90-D7DNHO UniRef90 B4RG98 UniRee90-FOSPK3
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UniRef90-Q315K8 UniRef90-G9YVT2 UniRef90_UPIOOO476A465 UniRef90_UPIO0045E74F6 UniRef90_UPIO003722D94 UniRef90-R6DVD4 UniRef90-H6P8R1 UniRef90-G2IVP4 UniRef90-UPIIOOO406E02C UniRef90_N8YX03 UniRef90-UPI0003942DD9 UniRef90-R7CZ02 UniRef90-UPIO00368EE5D UniRef90-UP1000047B5DEF UniRef90-K4Q929 UniRef90-R6P4P9 UniRef90-TOITK7 UniRef90-FoSR89 UniRef90-UP100047D7FC4 UniRef90_-F8EUM5 UniRef90-A0A031GVW9 UniRef90-C7RDN8 UniRef90_UP100037A566F UniRef90-D5EK98 UniRef90-R7BJIO UniRef90-UPIOOO3B62256 niref90-R5CW81
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 N RLLHAWK P I S E L G E L N S A F A Q P V P I S P DL A SMLA D I T T L S RILSDYDPDSENQLCSNAGQPTTVSEDLFRVLTFSQLLS KSMSTYDDTATVMAFNRAKVEKVHIDPDFIQVLNASKTVY FELSTYKEGGDVWNDNHAKGQEVEVDKDTYDLIKDALDYA ESMSTYIDDSK SRMNKGGESVELDAHFTRVENKSKEDYY HSLSTYHKESVISQLNNQPLASVTIDEHFLKVMEVSKKVY NLFTVNRAASEVMAINHAAEHAVVVSQPVFDLDACAHAVS AQMSTWQPGSDLMRFNAAAVEWQALPADLLVVLAAGLQUG RTFHPWQA SDLTTGNFAKGEAREVSDEMLFLIRASQRYA GEMSNWEAGSDISRFNGSAGGWVPLPPGMMTVLQAGLAMA GMLSNYRPESEWSAVNRAALRPVRVSPELFHLLTECLRYG SSLSRTVDTSEVSRLNRADGSAVWDEDGAQLLSWALQHS QSMSTYUEDSDVSKLNRN EDVEVDKHFKRVLKASKEVY
 AQMSTWDADSDITRFNRAAGTWQRLPDAFHRVLTTALEUA KRFSANDNYSELMRDNHNATQPVEVSRDLEFLI FIGTEQS AAGGRGQEFSDLNRLAAQAGRPLKVGDDTWQLLSLAAEYW KVFTTFSDSSVTNEVNMAGVSPVEVPEEFFWLVFRAQKMS
 A QMS SWDANSDTSRYNRAAGHWSRLPEELHTVLRAADAVA SSLSTYQSDSDISKLNAAGDTVVIDDMFTEVFQDSKKIU H KVLSNYRDDSVIEQFNAQKTEAQTVDAELVELVEDARTVH ARYSRYRTDSFLSDINRVAMGRISVDKETEGLLNYAATCY QKYSRYRSDSVLSQLNSQAGSWQTLDVETMQLLAFADSCY ARYSRYKPDSFLSADNAAGGTDNVDDETASLLDYAVTCH EQMSTWRPESDLNRLNAAPGEWVFMPESLLTVLGTGLETG KEVSTYRNDSYSTFNQSSIQWQPASDDFLRLLSTARKIN DIYSDYDGVVNLKAVNDAAGGPVVVDRKI DDLDLRCLREG NRFSANDEDSELVRVNMAGISPVKVHPELFELSVGKFHS ARYSRYRHDSFLSEINRAAGGRISVDDETAGLLNYAATCH RLLHAWQP SELTRINRADGQAVDIDAEMAAILRGAQTEA
 EEMSNWKDSSDLTRLNHAPDVWVSISGNLAQVLTRADEDG
 QVFSANDKNSQLFALKTTAVKPVVVDRDLYELLKGGKAHS HSLNPFDSLSIVSAVNTNRN MEVDSDFDHAFRVAEEVS A IFDRHKGDTPVSVLNATGRLSDVAPELRSVMEKAVIFN QSLSVYHDTSLI SQFNQSKRG VVLDKHLKKVVNEAQKVA HRFSANDSTSELMADNRAAVKPVRAHSDLLTLIQDGKSHS

 AEMSHWESDSNLGRFNRAAGSWHDLPPAFFDVLSFALDVA ADFSVYRADSVISRDNSTGHDENAPAAFTELLTKALTVS A QMSHWNDESDLGRFNRAPGSWHSLPAAFCEVLGFAMHVS KLYNSYDSVNNFRTMNKAGGEPVKVDPETIELIEYSKKMY RLMSRYNPASQVYQLNRDGM LVRPDARLLEVLKQAALLS
 DTYNSYDK LKNLKYLNENAYKPIKVDAEEVELLTFGKDVF TLLDPEVENSAAYQLNHAEGQNVIVTPQVAETLETALKVC RSMSTWKSDSDLMCLNRAPVEWVSVAADLRQVIELGLKDG KDLSTYDETSEVSRVNATTVPVPCSAELLDVLGFYDWWT NEISTFKPDSGLSSFNYQGSEPRPISTGMADVITTADRIG A RSMSTYRSESEI SKINRA NEEAYODTHFEKVFLASQSD W EKVISWRSDSEVWNINHSAGEDYQISDELADVLERTDEUS HMFSANSGSSDLMRVNKNAGRAVEVQPELYSLISLGKTYS WLCNRFDSHSQVYQINMAGKHGVAVSADVLK LRLSKCLS DRFSANDLTSELMEVNLNAVQPVPVAPDLYELIELGKEHS HSLNPFDSTSLISAINLN ESQQADSMLREVFLQSVETS
 SKYSRYREGSVTTAINSAAVEAVELDKETAGLLAYADTAW ASMSDFDSTSLLSR|NRGETDSVLDEHDIVNLRGAERFS KELSVTDEGSEIAKLNKNGTG MVSGQVSEIIERALDVC RTYHAWKPELSALNAALAAGRPQVVSEEMAELLADAQRLA AQMSHWRADSLLGRFNRAAGEWFTLPTAFAHVMTAALDVA


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 QASKGAFDPTVMPLVSLWGFGKEMRDDRMQSPAEIVQARS
 RDP DSLFNLAI GPLVKCWK CGG KQGDYLFDPGVGALVRAWGFGPAQGRADPARDKALIGQR RLSGGAFDPAVGRLVDSWGFGP

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 $K$ VPGSF DN A A I GPLI QAWRVGFSDAKYPEPT TI QSLLK
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 EGT G GQVVNAALGGVLALWHDAREAGDSDPASAADPDAAACL






 RRS GGAF DSTVLPLVEMLKGHADAD GRDNLSEKDMK DALG

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


 Q MS DGAFDVTVQP L WRLFSESAARGGLDSVAERRRA QA V V



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 $\square T$ DP N QI I NE E E Q S V V I LA K K G M A I N L G A V A K G Y I A D L M I E H M D $\square$ N D D A NPKMTDDVLKGNTAYSNNPSVK L D L G GYAK GYA LDVVAA A
 LI D F D S V V L Q A N QL S K N K A G V A L DF S A I A K G Y GV DVVVA D HVD Y N K VVLSEESGKY TVDKDARLDGGGIAKGYGADKLKN

 LIN P Q DVI L D A A T RVVMLA R P G ME I D L LATASSA L ELL DMA G GRARRKLAA V D L D L S GI A K GFAA DV LA G AHPS DA DLDDD G H R VS S R NK DV E L DF G G I A K G Y A LD DAR E NHPS P WTAI EVE H GQAR R LA DVTLD FSGIAK GFAVDA LAR
 $F \vee G F Y K M N I \quad I P S K$
$F \vee G / L N R \| G L I \quad G N K D K K P K K M Y$



 ID Y R N I V L DA Q T C TVVF L K N K G M R
 $R V G \quad H D G L R V T P D R V V L L K P G A A I T V N G I A Q Q Y A T D K V V A$ AV Q Q Q H WLL L DLLEA QTASHLTT DTP L R L H TFAK SY IMDQAAN $R C G W Q R L Q L Q D G Q L Q \quad Q P G G L V L D L S A D A K G F G V D C V R H$ Y VGLDDKVVLNKNRTISKKHPEVYLEFNSIAKGYCLDRIST


 K VG WH K V S WK R P V L A F S VP G M E EVD F G G V V K E Y A V D RAA S SPA HDVL E LD KAA GRARKHSDMCFDLDNGIAK GYGVVDQLTR

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 LP G W K K L R T A H TVVQRLTMS GT L KVGLKY L KL DSESS GYSLQKEVYVDLSCLGEGYATQQLS HIGGMD L L E I D EVVNRD DK K DP K I K I D L S S I A Q G Y S V G A V A H HHPSPWTAIADIE GDRARRTADVVTLDFSGIAKGFABVDAMA $R G A R \square A D D A I P D G V V T S A N R A V A I D D G G F A K G W A L D D A A A$

 LIN Y K MM MEM GT Q S V F LIP Y S GMM I D L G GI A K E Y ALLH L A A E
 $F V G F N K V Q L T D E K F I E K E N P A D F F D F N A I A Q G Y T V D V I A D$



 ARPG $\quad$ A DL RLA GLQVSSRQRELALDFGGYLKGVALDRAAG V S G Y R R L A A F D S E T G R L R R Q P G G L A R L D D RYR WADLQQDET GRH L Q P G GL R L D L S GI A K G FA V D Y GMR $H V D Y R K L E V$ HA HRAGLRESGMLLDVGGLAKGYAADCAKQ

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 A DLAEPVALHGLSVATSGDWRRAFVSDGRRYAHTLDPATR QEEGEWL QL KNASVVATS GDAKRFVIEIDDGVRYSHVVDP KT G R N T DA LI R R P K Q G L A T S G N Y R N S L V Y N G V R Y S H T I D P D T G

 $R S L Q K V T R L Q N E A B A T S G N Y R K F R V D P G K K D A H T L D P K T G G$ $D A L D G V \square G V N N R S V V T S G \square Y E R Y F E D D E V C Y H H D L D P Q T G$ $R T V R G V I E L T D R A V A T S G D Y R H F V Q V G A G Y L A H S M N P R D G$ GGAMA TLALYDGAI GTSGDYQRFFDVAGQRYCHLIDDPRTA
 PRTAA EVVLLKDMS LSTS G GYEKFFLAEGRTYSHMMNPRTG
 QSVYKAl ELLKDEAMATS GTYRKF DDKNGNRYAHII NTMTG

 EDAARVLAAD GLAVATS GDRWHRFEAGGVRYAHTFDPRDG GNFALVLATENVSIVTS GDYERSFEWNGRTYHHDFDSRTG
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 E EDGAALPTRGAAIATSGDRWHHFDVDGQRYAHTIDDPRTG

 EAAMGMLUKGA


 $K K I V T I Q D E Q G V T L D T S G T Y R R S F D A D G Q S Y S H D L D D P R T G$ E QUQ D I L N L S N R GLA TS G N Y R K F Y K E G D K V Y S H TL D P K T G

 $D A L L Q T V E L A R G A M A S S G D Y E R C L T I E G V R Y G H I L N P R T G G$ PEAL A TVVELHDGADGTS GDYQRYFEMDGERYCHLIIDPRTA K Q S M GTL K L K DTCVVSTS GNYEKYFEQDGKRYMHHI L N AT T G
 Q GP QA KV K L Q NVAMATS GNYRKYRDIT GQRFVVHTVNP ITG NQAQAYFDLNTGAMATS GDSKRY LIFKDGVRYSHVLNPLTG GNCVAKVAA R NQSVVTS GDYERTLKHD GNQYHHIVDSHTG D S T QL N TD I E QVGLATS G DYRNFY IVK DGKKYAH TIN P K T G K G GYPSVI HRDAAVATSGGYEVYYDAN RTHHHVI NPRTA Q E TQ Q I I I P K K G A I TT S GSY R K F V V T K G L K Q T HL I D T K T G
 Q N Y V G GV K V S DK A V I T S G GY Q R Y F VK D GVVYEHIV DP K T G

 $P Q A \square T E V N V R D K C V A T S G G Y G T L F D D A G K$ FTHIIMNTTG H P A E M L L A L H G L S V A T S G D Y R RFFED GTVVRFSHTI D PR S G NPYSTVVVVVKNTSVVTS GDYQRFFTVDGKNYHHDIDPATR A G A LA TLYA Q GCSVATSGDYECTFTPD YRHHHI FDP T A G
 SEYLD K V I A D DK SVVT S GSYQRYYTVGGKKYCHI I DKNTL PSVI GSVPLVDAGI ATS SWYEHCFKKDGEVYYHILDPYTG GSYVGTLKVGETAVVTS GNYQRYFDSDGVKYHHLIDDPSTG
 A P PLT QL KLT DRAI STSAAYERGYTFGGKHYSHILDPRTG E DF DVVQI NL Q G F DVVSTS G S Y L N N Y F E K D G K R Y S H L I D P P A T G



 K NT IV V F F L HN WN T VETS G DY R R Y I K V N G N Y Y T H V F D P TK G



 P H A A A T L E L S G Q A L A S S G DY ER A I E F E GN RYGHIL N P RTG
 DSTTGMVEADDVAIIDTS GGYERYFEENGVKYWHILDPETG
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| UniRet90-Q315k8 | GR ${ }^{\text {a }}$ |
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| UniRef90 UPIO0045E74FE |  |
| UniRef90-R6DVD4 | F DAEAVFIFNNNAVRVTDGL |
| UniRet90-H6P8R1 | EG LITKDNRLALTNGLR |
| UniRef90-G21VP4 | QLDALFVMREGEG |
| UniRef90- N8Y ${ }^{\text {U }}$ O3 | SGQAWl। |
| UniRei90-UPI0003942DD9 | GLEAVV |
| UniRef90-R7CZO2 | HPELEYFFIYADSTGRTEYSPGMEKYLVK |
| UniRet90-UPIIO00368EE5D | QPGSD CLIVGKSGANVTTRRWSRLSR |
| UniRet90-UP10004 | E E |
| UniRef90- R6P4P9 | NQDFQA VLITTDGKIYVTD |
| UniRef90-ToITK7 | REN |
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| UniRef90 UPIIO0047D7FC4 | Q GLAARFVERTDHGHVTYHEYLSTHLR |
| UniRef90-F8EUM5 | G |
| UniRet90-A0A031GVI | KVEYWIORDE |
| UniRei90-UPI00037A566F | LP AVDLMSDDKQGHEKRSSGF |
| UniRef90-D5E |  |
| UniRe990-R7BJIO | KDNDIEVIWMDNSGKT |
| UniRef90-UPI0003B62256 | LKDUGLEYVAVTKDDR। |
| UniRef90-U2NK | TNNMGAVVITV DGNLAHTDNLK |
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| UniRef90-B4DBG | QD ADCLIVTADGRQL |
| UniRef90-UPIOO | A Y Y M M EKG |
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| UniRei90-A3N9S2 | HGGVACVVLIVDAQGRV |
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$S F G G P T M G S H Y S V V Y A G Q P E A A A L R P E V E A L L D E V D$ QSTAFRAMGTDVELFVDDTGPELSSLACQLEASII RRYE EDTHLVLGTVARI QARGTEKAARMAVEEAYDLLSD
 VQTRFLFHSHLKIKLSA FYEESVFDELFAVLEHVD EVVSULGRTMGTTYSVKYTTGDKNNDDIKEKIEEVLRNVN QVVRRGQVLMGTPVDLVVYSDRDQAQAAVAATLARMGELE VHNSRFLAFGTLTDVSVVGPANKAGA
QIIIIQGEAQGSTYAVKYVSSSELVSK

40 YHTKVGMLMGTVIKLWVQHPE AESELVNAETRARDFE QRFQDRIKMVMGTVIDLQUISDKADTQGLQMARELLITYK QRFQSQFMVFDTVSVLTGYDDEKSFQEKAEAVHKELRDCH QQTALFMGTMVSUTVACPSTQAHDAMDLAFAEGRRLE

 RYEFSHQMGMVVA AV | V |
| :--- |
| $\square$ |



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HKYSRFITAQCILWQLNHAYGHKOLTDEETWQLLAFAKQCF QRFSANAEDSELMKVNHHAGKPVKVDDELYELIKDGKEQS ACLNVFDSTSNLSRLNRGETK NQADAMLVKVLTMARNDY KRFSANDPDSELMAVNQAAVTPVSVHKDLYQLIKVGKEHS NRFSANDDDSELMAINHQAVEPLIVHPDLFELIHIGKEHS ALFDDYDDYENLKTVNERAGQPVKVDGRITELLKFGKEDY ALLTRHDAAAPLGVLNSQG SLRDVPPELLNVWQRAHG $\square C$ NSYDAFDGVNNFRTLNENAKEPVKVDPKVIELEVEYSKKMY TFYSRFLSENELARLNGLIDGEWVEVSEELYELLQFAEELK NIFSLYRPDSEVVRLNHTGALASPAPEMVELLGLCRTCW NRYSRYRDDSLTSAI NRGAAVSCEVDAETAALLIRYADTCY DIYNTYDGDNNLKTINDNAKEPVKVDRKIIDLEKFAKEWY HKYSRYLK DSCVSHINQSGGKAVALDAETVGLIAYADQCY ALFDVYNDYNNIKTINDNALAPVSVDPEVIELLLSTAKEFY

VSAELAGLIDEALEVS LACSRFSPDSELMKACRETGTPVQVSPFLFEPI RFAVELA NRFSANDDDSELMADNHAAKEPVSVHPDLYELIETGKENS R TMSRYRPDSQVSALARAAKHPVPIAPELMSALRLASEVS DRFSANDGTSELMEVNLNAVQAVPVADDLYELUKLGKEHS KLYDIYNDYNNKTINDNAVKAVQVDKDIIDLI MFSKEWY RLMSI YNPASQVEQLN RDGALDYPDLHVLTVLEQAHADS RLFDIYKDYQGVVNLKYAAAAPVKADKALI AQMSNWKADSDLSRLNRAPGSWTPTSANLAAVLVRALETG
 HRFSANAETSELMAI NHQAGSPVKVNAEDYQMIKHAHHVS
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 NSLSVFNDESLVSLVNDSDSRKIGADSLFMKVMTMSRRVN QRFSANDPTSELMQUNQQAGQADAATQELFELYAQLGKAHS K EMSTYKSDSDISKTNGKNDSTLVVDHMFRDVFEDSKQVY DRYNNYKGDNNLKTINDNADRPVKVSDEDFFLIKKTGEYN SLFSGYRHDSALAQLNRQGHLAHPGPADLVRLLSESTHYS
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| UniRef90_B9Y6Y7 | D |
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 A WTE GVFDP TIGKI MDKHGFNRHYLT GERLNSRSADS V

 L A K G S NRTGKETNI A MGSVLSS WHDYNNPDEAKIPPMEDLIKEATK



LSSNQKMNVLIGPLVKLWK $\square G G E G A N$
 KETD GFFDPTVGNLVNAYGFGPKNEMLNLTDDEVFEQ
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 AHSEGCYDLTVKPYFELWGFRGDK LTK PS S A EQUQTLKQ




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 K ES G GMY D P TVVG I FVVKVWGF G GE S V Q P D L P T D K L L D S L K R $K D S D G V Y D P T V Q P V W Q L Y H F T S N N P D P A G P A A A D M A K A L A$ $M A S G G L F D P G I$ SHLVKLWGFEAD QF DRQPPVAA E DE T WRQ $R \square S E G A F D D T V Q A L W H A F S A A A S Q Q D R D P S D A E R R A A M A$ L V D




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L V G F ERTIE F D S R H I E M P T G M K|L|D F G G|V|AKEYAV|DRVA Y
 L T N P H A I L N D Q D R S V Y Y L K E A G ML L I D L



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 $R V G W D R V V W K R P F$ L S F G R P GME I D

 II GME K L R VK GNR LI K RVN HVVSID L N GI A Q G Y S V DV L A D





 $\stackrel{L}{L} \operatorname{T}$



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 AVGYR GLRI DGQRLCK DFALQVDLNSIAA GYAVDRIGGQ






 L I N D E D I I N D DV D K S V F L K K K G M I L D L G A V A K G Y A T E L V C N HCGMDRVLNDSVVKAAEAEPVPAKLDNFNAIA QGYSCDVVAG




 $T V G Y R N V R I V G G Q Q L C K S A A D V Q V D L N S I A A G Y A V D R I S Q Q$ YVGFDKVKI DADGYVKKES Q A DQIDDLTSVVRGYTVDVI G D






 $H V G Y Q Y L E L R E G N M D R L M K P G M Q I D R G G L I K G Y A L D E G L E$ E I K Q T H WV L N P K T R TAA THLDDNAP L M L N S F V K S Y II





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$V L R Q Q G$ VLRQQG SNAMLNGGGDVLVSGRLQ FFKKNGA A
KALSEGL
ASNRAN ASLRANGIE KLEDKGL E

## T

FF N Q N G V T $\begin{array}{llll}F & L & I & K \\ R & D & G & D \\ I & A\end{array}$ $\begin{array}{ll}R \\ L L & K \\ R & A \\ R & G \\ V & R\end{array}$
 A EMME A GE E A A GIV V








##  <br> V

## 

 Y1
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1
 WLKEQGVESALLNLGGSTVIGLGPENEDGMWHVGIQNPAD
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64F5F0

## 64CD0C

220
230
240 DRAASVLIA\|SQGALIATSGDTRRFFEVVGMRYGH\|VJDPRTG GNYVAVVKVKDESVVTSGDYERKFVWEGKTYHHIVDSQTG HNYLTTI S LTVDCGLATSGNYRNFHDADGNRFGHTLDPKTG
 $A R G Q N M L K A H N Q S V V T S G U Y E R Y G T M N N V D Y H H V E D C Q T G$
$E R Y A L T T G L S E L S L V T S G D Y E R Y Y T V N G E R Y H H I V D P D T G$
 RHYPQVLELYNQAI ATSGGYEMHYDAEG RHHHLLDPSTG NPYSSIVSLKNTSVVTSGDYQRYFMVNGKRYHHIIDPATM ANADGTLYLRDAGLGTSAATFQFFEYKGQKDGHLLDPRRG P DGF DD PVEGDALASSSPNRRRW R RDRHHLVDPRMA GNAA A VVKVKDQSVVTSGDYERVLDQEGSKYHHIFDSKTG AAPEEFIDIMDQALATSSFAGFQFEESGRRNHLDNPKTG A QLQVRIGISNRGLATSGNYRKFYTDSGRKDVHTFDARTG PTLLGGVLMTGGALATSGDYARFLRDAGRRYGHILDPRTG DRILKVLKLKEDAVATSGSTEKYAEVGGKRYSHI I DPKTG S VVLDTVYLNNDCVVSSGDYQRYYIVDEKKYHHLIDPTTL DSTEGVI ELSDGAITTSGDARRYLFKDGVRYGHILDPRTG QGRLLRVRMVNNAITSSGVYEQQRNVGGRIVSHHMNPLTG




P B N

 | $H$ | $E$ | $S$ | $E$ | $l$ | $I$ | $T$ | $T$ | $N$ | $R$ | $A$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $R$ | $S$ |  |  |  |  |  |  |  |  |  |
| $S$ | $R$ | $I$ | $L$ | $K$ | $V$ | $F$ | $A$ | $L$ | $G$ | $S$ | $S$ |

## 



 HKVV G Y V R T S A C A I GT S G IV E R R LIV V G N R T Y H H M F D S Q T G
 $P E R R V F V P I C D K A V T T A G S Y R N Y F E T T G K D F S H A I D P K T G$




 P A Y GQVVVS DK DQ A L T T S G VA E R K L T T N G K T Y H H L L N P Q T G











 TSSVVDMLLVSNEVLSASGDDERYFMYEGKRYHHLI DPRTG E A P IIA S L RII S D K A V A T S G N Y R R G E LI I G G H WY S H I V D P R T G








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HADGTA DT LTYGMKDDY VINKSFELDDHYE
RFSAFGTYYR QVEDLGQDLQPLFDSVALIMRIN QRHVMTHHALGTRINNTVGNKYGFSLLKKSMDLIDHYE EETKLVMGTVARLTVRADEDTSQAALRDGLAVLAQVE Q TY SWQGVALGADAQLHIHHPDPVAQTLIDQALSEVVRLE QLYRWRGUALGAGAE: DVLHOSAEAERLFANVDAE:RRLE
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RHVE HVMGTVFSFDVRTPPPEDRAALTAAVAWLHRVD


TMQUVLTDPAALSLARDETDAELDLVE RSFPAMGTRLDMLLGQSPQCEMLFHEINHEVERIE ALGTVLSLRVAHDGEQADAALDAAVATLHHIE FEENFKALGTDIYYGIDAPKEETEKTLAEVKNDYKRKE TFRTMGTLASVSCSYDTAPPGTLKARLQEECRRDE KDEKSWRAMGTTNRLTLFG TADERADDDADHFVNDYE QTVTLQGETMGTTYTVKYLSNNRDPAETQKRIDDALKEVN LSGTAMGSRWSVQLWPQDHDLSDLTARLSARLARIE RVTFTAMNSEF LLLGEKRPEVGSALREIRLWFAYVE QAHRF FHEWHGEALGAASSLSLWHSNAHAQRTLARMVSEVARMD LYRWRGTALGAPASLQLVGSDAQAAPDISALEAELDRLE
 QLAT TK $\quad$ FAMGCH R DAKEANVLH HISKAFT IFKTVE Q $\square$ AT $\square K \square F A M G C H \square Q \square S L N T T R D S A Q P \square T N D \square Q Q L A D W E$

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 SVVNRRFD ITS E L Y R L N R S G QAI GASSEFVVSVLSNA R Y CA RVFS R FRSDSELLSRMNRANGAPVLASTMFIVLLQQLSEQYH HQMST WE P D S LI S R F N RLP P GTMDVVP A F R QV L A I A LDVA $R$ L M S F H D A E S DV S R L N M A S R G A VTV H P WT Y A V L E MA L D M A E RFS P FK P G S EVV S RLDRGE $\square$ G P C E V S A D L A E V L A L C E E Y R QKYSRY IVGNLVMUQDNNSHGKWVDDDQETHRLLABFGQTCF $R \square F S D F D P E S S I A R L N$ ATGVLEDAPADFRVLLSDADLDA S QMS PWENDS DL R RYERAPD SWLAFRPEAFHVLQNALSIA RILS R F R S D S E L S A L N T R A GE WV R A S R T L WEVVLNDALVAA
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R $\ S D G \square Y D P T V Q P \square W Q T Y H F A S H P D P T G P T P H D \square A A A D A$ SATCGGFDARLGQLIQLWEHSN QVQNDDDQTQEALLR QVQN LLDDDQTQEALLR R
WRTDGDVDPTVGAAVVALGYNRDF AVLSDEPAPSATI ATTQGDFD NMGEVSALWK GEKETPLENEVAERDRS ARSQGSFDVTVQPLWEAFESAKGREGQLPSAQAVSEARA KRDD VFNTFMGAQASSWQQLGESGFPRASAAA
NQHFG FNVADGPLVKLWHUGFS DAQVPSHTAMEHARR RLTHGALDVTVGPLVNLWGFGPDKSVTREPSPEQIKQAAS RRSGGAFDVGLAAEVAACGFGSGWSGSGVARDRIVA
LKTNFLFHPLVGRRLEETGYDRSFDEMREFDPSSIRPS F AATDGDFDTSVLPVLQYFESLRQPAVLGAGDRERIGVRDR DKTCGAFDARLGQLVGLWEKSQGLTDDAGLDTATHAQVLJN DATGGAFDPTVQPLWMALATGA PDAQVAQARA AETNGAFDITIGPLMKVFRNSDGATPRTPSAEEVAFAQQ A AMEGAFDDTAGPLIDAWGFTTR QGRKPNSDEIDEALK


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 RI GFDKVHIGPDGVQL QDGMQLTLDGIAKGHDIDQAAN KTDYKNIEIDPVNLKVRSGSGQEIVTGSFLKAFAVDKAAV APGWWRVGLDAAGSRLVVPRGVLLDLGATAKALCADRAAR GYEHLEMREREEGGMHRYEPGMRIDRGALIKGYALDEDRP MADWHKLQLDSGNGTTKLAENVLIDLGGI GKGYAADAALK LVGAEHLEASGKALR FTRSGMGLTLDGIAKGHIAE AMS FVGGDKVSL KNGEVVKPTETYLEFNAIAKGYGVDVISE STGWKK DHFENQVEWKEHDDTQLDGGGAKGLCVDLLVE HRAVELGTRGGGHVLRYHDDGARLDLGSVAKGYGVDRAVA NVGWKHITLDLTNKTVKKHPDVQLDLCGAVKGFAVDCLLE PGRRLDPNAVVKGWAVQQAAS保 RVGYQHVRLDRNTRTVTFDSGDGDDPGAAGKGFAVDRLRQ LIGWHKVQWSDDA IYLPQTGMEL SVTYHDVVLEYHARTETVTKGMEVDGGGVGKEYAVDR TVL SVTYKDIVLEYHARTLTVTKDLVIDLGAVAKGFADDLAAQ HISMENLQLDAAAHTVFFDAAMSLDVGAVGKGYAVEKAAE LVGMQHVHLDPTDTVRFDKEGTMLDLGAVGKGYALEVASE DVNDNDDDUKDDNNKYTKYNDUKLDLGGIAKGYVTELVGN LLAGHQVRFRHAGL LVNFKRLQLDATTQTAFLDKNMGVDLGGIAKNYILLQVRS $L V G F G G V R F N R D R I A F R R P G M A L S L N G I A Q G Y I T D R V V E ~$ DPANATLNDQDQTVFLTKKGMELDLGGDAKGWAADRIKD Yi GFDEKKKYDTDSGYFATKPGVMLDITGLGEGYAIDKLVE YI GWAKVKYD QSSTTLPKGMELDFGGAGKEYAVDCVAK RVGYEFLELNTVEETGQKRYQMKIDRGALLKGLALDGURS
 WPAAVSEIDIDGLDVRLPRGTTLDPGGLGKGLAADMLSE VPGWRRIAFDPNTRRLRLPPQARLDFGATAKA LTADRAA FVNWREVETNREEMTLFLRNKMRUGFGGDGKGYAAKQAGA SGFPGRFQLDFGMRAI GRNADVQL HLADTAASLTRTTPALLDLSGVAKGYAVDEMGR GFDSDELLADHRVRFGDPGVKVDLGGVAKGFAVDCADD YTGWQNVQ FTQQQQRCP LVGWRNVFME GGRVRLLKSGMAVTLNGI AQGYITDKVGD QAGFQSVQLATETLSVYQPGDLTIIDLCSIAKGFAVDLVCQ ASGWRAIRLDPQRRTVALPPGMRLDLNGVAKGWAATRAAQ TNPFKVVLNDQDQTVFLKMKGMELDLGGIAKKGWAADRARD LVDYRK| ELDRRDSQVKDAKGQEVDTGSFMKSYAVDKLVQ LINPDEILKDEEFSDFLPKKGMEDDRGAIVKGYIADR1 KD GWQHLEFQSNTKTLIKKNPHVAQUDLCGVVKGYAVDCLNE DPG DDAAGAEGLRKSASGLTLDLGGUAKGFAVDRALE LTGWQKVERQPGR ITRMAGMELDFGGIGKEYAVDRAFE RTGYHHIRLLPGKRAAMDDDEGVVDPGAVGKGLAIDYVV NTGWEHISIDFTNQTVKQHADVQLDLCGAVKGFAVDCLLE GVGNQYLQLNESNKTVFTHPKTRISFGSIGKAYSVQKADE LVDWRAVEVDSRQRTAFAHPGMGLTDNGGAQGYITDRVTD QLKTQSUELNPKTKQLKMGSADKIAPDAYAKGYVIDRALD LVGYEK ML LEGDMDRFKQKGMQLDGGGDAKGYAVDRAI SGMKQMEYDEIGQRIRFLSGKPG DFGAYGKGYALAKVRE KVDWRQLQLDPQQSLGVPGMAVTLNGDAQGYAADRVRA

 ANPRMSEI EDDGLEITGRNPELDLDFTAFAKGTAIDMAIE YTG $\square D K 1$ LKQGKDYSKTHPKAYLD AHETVELRRGRRDRKRAAVSLDABGAKGWAVDELSR STGPSSLTFIPHMKAVIRRTDEKVDLGGIGKGWSVDRAAE LINYRRVVLDAQGVRFTLPGMAAVTLDGLAKGYVIDQGIJA LVDYR IDVVNRGVRLASHGMAMTLNGMAGYITDVVAD RVGDRVFDLDETGFVTSHVDYPLLDLGAVGKGYALDQVVT AHD ALELDISAMRVRKRAAVTLDLNGIIAKGYGVDRLAD LVGCSKLKLDATNTTELLTASMRI NLGGI GKGDA: DRVAD STPTNVQDTTSANHANQQPAGMALDLNGYVKGWCAMQLAE

## UniRef90 A4WXF7 UniRef90-UPI0003B390A2 UniRef90-TOP2G0

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UniRef90-N8GKK9
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UniRef90-A5WDA9
UniRef90 $\times 11348$

YFKEKG VKS GLINAGGNVECIGTKSNGKPWNVAVKSPFP

LWRSAGVRAGMI NLGGNVLIMGPKHDDGDWRIGVQNPFA




A VVSA A L G C G V L V S L G G D L A TA A GTP P E G G WH

$V L R D R G L N R$ AVVAAS GDVAFGDPPPGKAGWDVTFESAED
MWLNH GVNQGUINLGGNVVLLGPGPHQDQQWKVGIQDP FD



$L L R A G G G A S S L V D M G$ EARAF GQRPDGTAWRAGIADPHA









## \section*{}

## V





 V
$\stackrel{L}{L}$


QLK QA GL EHALVDMGEI RSLGVAPGNRPWRVGLADPSH

R RAA A A T GS GVVLAEVVGGDAVVAGAP
RRAAAATGSGVLVNLGGDLATAGPVPEGGWRIALADDHA


WL Q T H Y E MV T GLVVNA G G DLLQA WH HE A A A E E P R WL L


| $A$ | $R$ | $R$ | $C$ | $G$ | $V$ | $R$ | $S$ | $A$ | $M$ | $V$ | $N$ | $A$ | $G$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $L$ | $A$ | $T$ | $F$ | $G$ |  |  |  |  |  |  |  |  |  |
| $L$ | $L$ | $R$ | $A$ | $A$ | $G$ | $V$ | $E$ | $R$ | $F$ | $C$ | $L$ | $N$ | $A$ | $G$ |


YLHS IGGVK DMLVD DG EIVYDGDNPSGK GWTIGVVNPVD


\section*{| L |
| :--- |
| K |
| T |}


 ICNTFCPNN YVVEWGGE IKTSGHHPS GRPWRIIFSEA $V L R A R G G L S T T L V N M G E I R A L G A R A D G T P W R V G L D P D D R$


 L L N R H S DA N Y MV E DG G EVVVVKG S N P K GK D WLI E IT R P H E
 $L L H R A G A P D H C V N G G G D V R A R G G P A P D Q P W R V G I T D P A D$ $V L R A H G F E H \quad M L V D M G E P R A D S T K P D G S A W R I G I A N P A N$
 QVA A MTGS GVLVNLGGD:ATAGNAPAGGGWQVLVVDTAD ILIA H QVTQA VI NF GDSS I LT LGGKHPS GEYWPMSSVRNPM K TL REH G DE HALINTG E WA ALGGRPNAQR GWVLGI A NPR D



 WMMERGGIKA GLVVDGGGDIRLDW HKPGYRWRIGVVEDPDD SLKAAG IDTALVDAGGDVRAISGSDSNRQWHVGIVDPGD






UniRef90_X11348

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UniRef90 $\times 11348$
 DSIVFGILEASD\|AI DT S GGYERYFEKDGETYWHI I DPKTG DSHNQEVVVASMSGALTTAGGYERKYMMNGKQKYSHHVNPKTGG ERNDAA AQUEACSAVTSGDYERHLDVDGKSYHHTLDSQTG KDLASFWLRHDTGVATSNCIKRSWLSDGSRAHHII DPRTF
 EKILQDMALNNGALATSGNYEHYFDRNNKHHHII DANSG
 GLA SQUV TDRSGGLATSGTVRRRWKRAGRVVHH:IDPRTG ESSTDMLLVTDEVLSASGDDERYFMYEGKRYHHLIDDPHGG ADRYEHV TLSNCGCSTSGDLHQFLELGGRRYSH1VVDPKTG


 GAA PDVAVVESSGGAVATSAEYE RGAHILDGRTG QKV MLKLSGQAVATSG】GRRKWE RGERFHHLVNPK GSVFGTVQLQDAGIATSGWYEHSFQKNGTVYHHLLDPRTG PDVVAQFRLAAGAVASSGDYERFLLID GVRYSHLLNPKTG
 EAAKPVFALKDCAVTTSGGYERYFTDDGKEY DHI FDSSTG NY YQTLTLPDGYSLIVSGDYQRYFEYEGVRYSHLIDLTTG QDLLTVVPLVDQSLSVSADWGKSFQQSKVRYGHVI DGRTGG


 SRNTTSSVMVQECSAVTSGTYERYLVVDGKKYHHLI DPRTGG ATMLTKVELDNRSISSSGNYRKFYDEAGNRRPHLI DPKTG
 GENLATVLEPACSAVTSGDYERFLIKNGRRYHHLLDPRTG TTSLLNLNVHNQAISTSSGAGTVLSRDG SDTHLFNPANG
 RPI PEHIALTGGALATSG\|GVRNWRRAGRTLHHI I DPVTG
 $\begin{array}{ll}T G Y Y D V I Q S S N A C M A T S G D Y E N A F T P D Y K ~ Y N H I I ~ & D \\ D S G E A F H Q R V N G A M A T S G S H R R R W K V G Q E T K H H L I & D P G T G\end{array}$ GPGWR VARCGRSMATSGDYRKVRFSDGERVSHVVHADAT PRLLCQVAVSDGALASSARRFDPFRSAETTATAVVDPSTR
 SAKSALVKGASGGLATSGMYRRFYVHNGVRYSHILDPRKTG


 E EDLFKLLKL


 P K MMAVVVPVKDRAVVTS SWYE HYFECN GRVVYGHLI D PA S G SATTKIIELNNTAVATSGNYHQQWS EEGKIYTHILDPRTG
 $R R D A A V V E G R D D V A T S G T A E R G L$ P N S V T T L E V V D Q CVV T S G G Y G T L F F D S A G A F T H L I D T R T G
 D PASRIAALPS GAALATSSTTRRRWRTGGE VVHHILDPRTG
 ESAMTRLALGGRCIATSADNQTTFSADRRHHHIFDPHTG NENE IIAAEI SNEGI ATS GNTRKYWE DDGKKFHHLDNPKND WETFGTLTIS DRSLSVSADMGSKITR GRQGSHVLHPQTG

 GNTQIIVMLNNRSLATSGDYR】F
 P DRERMLLFME GAVATSSKGYRCWKHEGKTVHHLLNGRTG H R VA A L L T L R N A A L G T S G N Y R $\square$ F Y S S D K K L F HVI D P H T G


 RAPHSVLAALHNGAVATSGDYRHWVVAGGHRLSHTMDPHRG P NRLAGIWLRDAALATSGSGKQFFHHRGKRYGHVIDPRTG

 | $D$ | $E$ | $D$ | $V$ | $A$ | $I$ | $L$ | $K$ | $L$ | $S$ | $S$ | $G$ | $A$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $T$ | $S$ |  |  |  |  |  |  |  |  |  |  |  |
| $S$ | $D$ | $P$ | $L$ | $P$ | $T$ | $F$ | $A$ | $F$ | $A$ | $D$ | $K$ | $A$ | $V$ |
| $A$ | $T$ | $S$ |  |  |  |  |  |  |  |  |  |  |  | S D P $\mid$ P T F A F A D K A V $\mid$ A T S G N Y Y R Y Y D P E K E V GH|IMDPRTG

## UniRef90 A4WXF7

 UniRef90-UPI0003B390А2 UniRef90-TOP2G0 UniRef90 U1X532 UniRef90-W8G5W0 UniRet90-C8WYR7 UniRef90_U2RHHOUniRef90 D1AFF6 UniRef90-D8K219 UniRef90-C6WR82 UniRef90_UPI000174443A UniRef90_UPIOOO24924F6 UniRef90-G1UUU5 UniRef90' UPIO0047B404E UniRef90-F8KYB7 UniRef90-W0RSQ2 UniRef90-UPIO002F17E1E UniRef90-K4UMG1 UniRef90-KoNIG9 UniRef90-R4TD48 UniRet90-K2ABC9 UniRef90_U2QN91 UniRef90-UPIO0045E68BF UniRef90-A7BV68 UniRef90_K6EOKO UniRef90-10X695 UniRet90_D1PJA6 UniRef90-UP100037F11C2 UniRef90-R7HHE2
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UniRef90
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UniRef90 11 M3 ${ }^{2} 8$ UniRef90 - W8AN79 UniRef90-A4SE98 UniRet90-O3ZW54 UniRef90-A0A059FS56 UniRef90-HOT1M3 UniRef90-K4RO13 UniRef90-R5BY49 UniRet90_Q15YD5 UniRef90-UPI00036078E3 UniRef90-B5JEVO UniRef90-A7NFX5 UniRef90-Q5FI41 UniRef90-UPIOOO47B9CDB UniRef90-EOP1H9 UniRef90_G8P5H5 UniRef90- Q89XJ4 UniRef90_M4ZN29 UniRef90-A9D201
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 YPRQNNVSVTVESKDSVVGEVTVRLFFAGGPEVPNWMET MPVSYWASVSVVAPSCLLA GTLSTDAMLKQSDARMWLDEQ HSPRAVSSVSVVAPTVAEADALSTTLFVKPRPEAVAFANS YPSENKA VGLITEESFDGDILSTGFFNCEPERFRQLMKD HSPRELASATVVAPDTAYADALATAAMVMGVTESLALFEK DPAPCWRTASVVAVDCVTGNTASTAAVLLG EDAPAWLAE YPADTGASVTVVLPQGLDSDMLSTAVFVLGPEKGAKLLDD YPVNTNASVTVISKKSTTGEAWSSIGFYNGUN TLKLSSTI QSPALNASVTVTAPEGLMADALATALSVMPPREALALADA
 YPVETPAGVTTFTKNSVDAEDECKRCFFAG KAALDHWVN KPETFLKSVTVVDMKAEQADVWAKTITFLMGKEDGMEYA R YPMPTLKSVSILSSRPVYTDLLSTAFFLLGEEEGGVLVDR WPVAGLRAVSIVAQHCVVAGSVATDAML KAKNGLAW WP INAPHSVTVAAGTCTEAGILATFALLHG EKAEEFLTN CSPNDWVSCSIIAPFAMMADAFSTAAFLLSEEESKKLMED RPVNELVSVTHITKKGDTGDLLSTALFAMGKEKADDFWKN YPARYCSSVALLAPAGGTGDALSTALFCLPEETGRTVLEN NPSNYMKSVTVITKSSLDADVYSTYLYLDPVDKGLEVVNK YPTNSLSSATLFAK FPAPTFSSLCLILGKSATLEFIAQ SGAHLYRSVVVIAPDATSADALSTAFSLLEPPAVQRIVAA
YPAVHFRSVSIITADSGLADFLSSAVFLMSYDEGLKLIUS
Y
 Y PVVHSMVSVSVAPSATQADALATAFMGMGHEKAK\|LAES YPIEDARSVTIAAPYC



 EPAPVWRTVSVAAATCVDANAAGTAADVLGDRAVDWLR WPKEGMKS STVVFSADPAKADAYATAFYILGSEKSLVEVRR


 YPVQHNLSATVVAPTAAEADALATACMVLGAEDARS LIES YPVSGPRSVTVATEFCDQSGMLATMALLQGTEAEHFLQAQ A PAREWASMTVVAERAADA D GLS TA L S I
DEADK LLSVSVEFDNCMKA DAYATALGYLQGAKTGLAFAEK APAETVVAVTV DAPSLFEAEVAAKVVVILGSVAGMEWLSA



RSPA L YRTVSVIAP TATEADALSTAFSDMPAS QDGDIAA T RPAHGVYGATVRAPTCMVADALTKVVMIAGERAAAPLA
$R S V N A P A S V S V L A Q T A M R A D A L A T A L M V M G P D T G P V F A E E$ YPVSGPRAVTVLATQC
K PVVEFTSVTVI CDKAVYADMLSTALYVLGEENGETVIRS K P L E L H D Y A TV I HS S CAFADAMATVLMTFSTKEALA WA QK Y P
MPSTEDSSVSVKGKDAVIANFDSTTLMLTNPKERRKLQKL RPATALRSITVVGRDLTRTDALATALFAMGBEARPWLAA
 MP DQTVEQCVVVGQCAA DADALATASTAMSPYEGMQLI E Q Q T V Q D P M S V T TV I A P H A T T T D A
 K P V S E GK S V S V L S K S P L D GEVVL STAFML L S P E QYA VVV NE Y S P T GLLA AVTVGAS TCALADALTKVMFVAGFEGAL QLA EFSFDLKSVTVVAGTTQEADVMAKVLFLMMGLEGGLKBSDE
 R P A D R M R TVTVVVHPS TATATAAATALF $\square$ A GP T QWCG $\square$ A ER
 CPANTGVQATV DGETAAEAEVLAKVLCLFDPDEAKRWAEK Y S PLV Y S SVTVVMAES SVDA DAMSVAAASMPLPRLREVMAS

 QPMPVRKRVWASAPTAALSDALSTAFAVMTRQETTAFCAR A P
Q P A G D L L S L S VVT R R A $\square$ D A D A L A T G L F VMGR D NAK R FAE STRSSLMSCTAIAPSAMLADALSTSAFILGTEKGVNLLND


| UniRef90_A4WXF7 | M G\|V|RA VL|M|IT D D G S TL A T T Q A M |
| :---: | :---: |
| UniRef90_UPI0003B390A2 | SDDFDA I F IT E D G EVYVT E G |
| UniRef90-T0P2G0 | RKNLEVY I F N NEKGEI E Y S K G F S N F |
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| UniRef90- W8G5W0 |  |
| UniRef90_C8WYR7 | LP NTEALLL D DELRETHTQGW |
| UniRef90_U2RHH0 |  |
| UniRef90_D1AFF6 | LK D M Y IE GF LMDKA G K I H Y S D G F EK H |
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| UniRef90_K4UMG1 | N N 1 Q A F |
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| UniRef90_R4TD48 |  |
| UniRef90_K2ABC9 |  |
| UniRef90-U2QN91 | LR R D S GEMIA A VREDGTVA A S P G |
| UniRef90_UPI00045E68BF | LH G S G LP F L C C Q S G R L |
| UniRef90_A7BV68 | Q D |
| UniRef90_K6E0K0 | LN $\quad \mathrm{V}$ K G M L I T P N L Q $\quad$ VK A G G FQQ |
| UniRef90_10X695 |  |
| UniRef90-D1PJA6 | AEGYEALWWMY P DGST T Q S D G W |
| UniRef90-UPI00037F11C2 | HP QARWLLVNQG |
| UniRef90-R7HHE2 | T S D $\square \mathrm{EA}$ A $\square \mathrm{W}$ Y C ( K D N I VR S D N F N |
| UniRef90-H0SNT7 | FQA S A MLVAA D G NILTT S D WQ |
| UniRef90-UPI0003603959 | HP HVVQA L L V D S Q Q V T S T A A L |
| UniRef90-B8R8U5 | $R P G L R V R L L P S D G D$ |
| UniRef90-E7G8N0 | LD GVVEAI WL L D D G K $\square \mathrm{K}$ M S S G L K |
| UniRef90_I7KQ16 | V N R I G A V F V Y A D E |
| UniRef90_UPI0004789113 | LP GlVEAMFV DGGKEKEMEFTSGFPKPE |
| UniRef90-K6YYQ8 |  |
| UniRef90-F8DRG7 | $P \mathrm{GNRGADFIHNDE}$ |
| UniRef90_L1N0S9 | $\mathrm{V} P \mathrm{~S}$ A L V I L I G T D GRL |
| UniRef90 M5ISW5 | D P S L Q A WV L |
| UniRef90- A0NZK2 | F P A T R A FVV |
| UniRef90-N1M3G8 | APHLLGAVALVLT A D R Q Q HRSVNWSEFE |
| UniRef90_W8AN79 | G T A L P A RLTS LD G LVVRLLGDWPP |
| UniRef90_A4SE98 |  |
| UniRef90-Q3ZW54 | LD GQK PCLLAKT |
| UniRef90-E0IE31 | RAPC Y E A L V D H A G NVT |
| UniRef90_A0A059FS56 | H G L A A L F Q F R N Q |
| UniRef90_H0T1M3 | LA R Y GAS A LLLVA P NGDILLRTADWQ |
| UniRef90-K4R013 | RPGCQVFA V D A ERRVLRTE GVP |
| UniRef90_R5BY49 | LD GVEAYL I C S D G T WK S D G F L L |
| UniRef90-Q15YD5 | QQKHWCYW |
| UniRef90_UPI00036078E3 |  |
| UniRef90-B5JEV0 | $R \quad S L A A L F Q T K N G F L L S S Q A$ |
| UniRef90-A7NFX5 |  |
| UniRef90- Q5Fl41 | P DRIG A VFVYNDE |
| UniRef90_UPI00047B9CDB | LQE Y EVSGFLVDQ D N $\$ T T Y T E D F R K N $\square$ K E |
| UniRef90-E0P1H9 | $\square P \mathrm{G}$ A Q L L L G T D G HV |
| UniRef90_G8P5H5 | HPEVYYG A I FlS K N K K I K T |
| UniRef90-Q9Z8K2 | H H |
| UniRef90-Q89XJ4 | $R P D V Q \mathrm{~V}$ R L I T N D G N L R L |
| UniRef90-M4ZN29 |  |
| UniRef90_A9D201 | NG $\square$ S A L F L N Q D G G R E T M V V F D R H $\square$ |
| UniRef90_L0W848 |  |
| UniRef90_D3AF20 | LR E R E |
| UniRef90_Q254F6 | N N $\square$ E A F $\square$ |
| UniRef90 J9FHM5 |  |
| UniRef90-K1LTR9 | F P N Y |
| UniRef90-UPI000376549E | R P A P H A Y AL T A S GRAWA T P GWHL |
| UniRef90-S6B5G4 | A GGTKA I YVT P E GVV |
| UniRef90_S3T8V6 | LVGFEAQ LVA S D G T S Y Q S T G W |
| UniRef90-X0W4U1 | LPQVEG M IVVSEGMKRDTSKGWAHFQ |
| UniRef90_IOWSB4 | L GLLPAR FVVTWDRAVRTVGA WP |
| UniRef90_UPI0004722EC1 | F E Y DEVVVVT FSS GASIQK |
| UniRef90_UPI00036B50FA | P Q WAVDVLVVDKS GRWQA T P GL |
| UniRef90-K2FSH9 |  |
| UniRef90-W2BTE5 | TPQ Q D C C F M T LD GRFLASPNL |
| UniRef90_B1MWA6 | NS DYPFGAI FIY R D Q S |
| UniRef90-W9V9A8 | $M \mathrm{G}$ VD Q A L L I D R E G R V H LT P A LDAR $\mathrm{L}^{\text {L }}$ |
| UniRef90 C6SL22 |  |
| UniRef90-Q21BK4 |  |
| UniRef90-M1Z2Q2 | NFPHLAPYLFDDQENRMDISNNLEKYAKK |
| UniRef90-14VI21 | RNNQ WLVFFPRDNRTSWRSRDLP Q |
| UniRef90-N9C7Q7 | LA GYEAK LTM R S GASYQSAGWNGLLQ R |
| UniRef90_A0A024KGK6 | $\mathrm{V} P \mathrm{P}$ G ARALLTTRTEGTVVR |
| UniRef90_D0CP71 | FPDARLEMLI |
| UniRef90_UPI00017460AE | H LEVEA】W |
| UniRef90-N8GKK9 |  |
| UniRef90_M5T6T1 |  |
| UniRef90_D5D9X3 | A D $\square \mathrm{GG} \mathrm{V}$ L F |
| UniRef90_A5WDA9 | $H \mathrm{H}$ A A L L I D R D N K VMVT S A M R P |
| UniRef90 ${ }^{-11348}$ | $\square \mathrm{L}$ D VE A L I I D S G R K V T K S S GLLLE Y |

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UniRef90-K2FLD1
UniRef90-Q9PKW2
UniRef90-C7NEM8
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UniRet90-R7K5M6
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UniRef90-UPI00047DF27E
UniRet90-M5A1Q5 UniRef90-R7ZW36
UniRef90-V5AY75
UniRef90-F81K81
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UniRef90 WoZDT7 UniRef90-A1B9T4 UniRef90-W71X38 UniRef90-13ZER0 UniRef90-A0A059IR90 UniRef90_A0A021XFF8 UniRef90-A8KYD6 UniRef90-UPI0003823A91 UniRef90-D9X7M3 UniRef90-R7PS50 UniRef90-UPI0002E17C8C UniRef90-UPI000364F09A UniRef90-B7S200 UniRet90_S4NKE8 UniRet90 T TKKQF7 UniRef90-W0E7Z7
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D 30
FAFDATGTRWET ETPDVLSEGLRGQCLERMRRIE EWRFEAL GTGWEDETGAPDTD GDVRAAVTAEAERFD RYETMLSVVGTDARLEAVANKSHARRMFQQAVEQMRMVE RLLRFRFRAMNTDVEVQLAAGREEAEHAAALVKNWFETQE
 VQTTAF■AFGASADLRLVGEDAAAEATDEDQRDFAFMD
wKgVa Las gat Lr

 RRERTGMGTVFSFDLRDPVTRPARALEEAVAWLHHVD QYNTRSFYEMGTSVVLQQLVPKDD VIGKSFELIDHYE

HRVEHVMGFPVSLRA DDESVPESAADTVFAWLREVD RDRR DALGAEAELTLYGPPDLTARAQARAWAELDRDE F $\square$ SRKYQGLGTVIELSVRTDKVKDVEK LDQAYEEIKKYE
$M E L V I D G E G S A A R E A T A E V G A L F Q T L Y$ SNT पYVMDT $\square C T$ TTA PESLQEPLAETMRQLD

Q VEEGFTVFNMPMT RFANESPKATQTVNAAAGDVEPQY RFAFDA】GTHWTIDTAHH GTADLRRHVLARDDAD

RWRGRALGAPAEMILHHPDAQAERLTRRVVVEMDRLE SHAEPVMGTVVSDDVRDAVGLDAAIGAAVRVLHRVD RDT RNDAAMGTLFELLLLGDDTELTDVAEASI AELKRVE TAQWPVWGTTARVVVTDPSRLDE ATELVRSELAAVD $T \prod Y G G \prod M G T V F S F D V R D A P T$

H RVEETMGTVFSFDVRGGEPAAVRAADEEAAAELRVD

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UniRef90 C3J9R3 UniRef90-K2FLD1 UniRef90-Q9PKW2 UniRef90-C7NEM8
UniRef90
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UniRef90_S7WOT7 UniRef90-V7EKN8 UniRef90-UPIIOOO364CE9F UniRef90-UPIOOO35EE8380
UniRef90- $55 G W 4$ UniRef90_-B5SGW4 UniRet90-EOUSB8 UniRef90-WOP2C3 UniRef90-UPI000287FF71 UniRef90-D3RVN8 UniRef90-UPIO003FEBEA9 UniRef90-A3VCT4 UniRef90-M3UQ19 UniRet90_O988S2 UniRef90_NOAVUO
UniRet90-D4VSW7 UniRef90-E6SJZ1 UniRef90-IOHOH7 UniRef90_18T8D6 UniRef90-R7MLQ9 UniRef90-K2AGB4 Uniretgo_LNNH3
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HKYSRYRPDSVLSRTNAAAGRPVLTDEETSALLDFAHGDW AVYSRFRPDSLVSQIAAAPSGGHFVPDDAAGLFDLYDRLS RLWSRFRDDSDVVRLGRSGGSLSAGPDAGPMLDAYRELD

 NLLTVNRPQSENMALNDAAKHPVQVSDATYTLTKRALQLS

KKFSRFDQQSELCDLKNDGKFVRVSSGMMEVVSKAVFYH T LF SLYRPESQVSRLN REGRLDAPAPELLEVLAQCDALH YTANPFDSTSQLYAINNNRTEL VNEGGVELLAAQEYG KDFSRFDEESELSKLNNNLNDFSTSSVEMTEGIKSSDFYY QUFNNWNPSESSRUNRSETEPGSLSPELFSFLCEMDRFH RAASRFRADSELARINMLSGCLAADDPT LAKCLTAAVHTE RTLSRFRPDSELRRLERRPGEPQPASALLFDEALERSDMAA RLMSFHDAASDVSRLNRAAPQLLQLHPHTWQVLQLAAQMA NQ SSWNKNSDUSNFNKNTTKPQKINKNLAKLISUGLLVG CALSASREGSDLYRFNAAAGERDEISPLTFAALSESKRLF RKLSCYKESSEEASLNKRKKH RLSDETLEALKRSUQIC
RRYSRYREDSLISEINRQAGFGVRTDPETHALKQYADQCY



$A V A T R F R \square D S D V A T A A T P G V W V P V S P V W Y P L Q V A \square W \square A$ EVFSTYRPGSVISRLGRGEPVPERYGPEVAEVFALCEEAA AELTRFDPVSPLSRLN RDGRLALVPSNLHVVLREALALS KSWENEVSRFAEKVNNAKPGESIPVPGIIYILLQKAEYYK

ARFSPFKEDSEVSRYDRG ELSEVSADLAEDLDLCEHYR SVFSLYCEDSALSRLNATGRLDAPPPELLDVLALSARLH

RDWHA WEAG DLGK LNDAEGGAFRTDARLADLLREGVALS DQLDCYDAESVVSRCNQSGTSQ DTMLYDLVTQVQTAQ
LA WSRFRDDSAVAEMARTAGR HPTAESDQP LVDWYRRDY SRLTVNQPHSEIMT $\square$ NQAGYDNTEISCGTYALIKNAVLAS


$S L L S R F D P D S D \square S R L N A A R G M W V E V D E L D E V L Q T A S R L A$ SAWSRFRPDSLVS LLARGGGPVPVPPDAAAMLDAFEEVS N L L S LYRPGSALARLNRDGV LDAPPFELLDCLSAAGAVH LACSRFRSDSEVSRLHTTPGRAVAVSPLLAEALGVALRAA K L LSA WDAKSEFSRWQKTRGVAVKVSPELMDVKARFDAWQ AAMSPFRKWSEDSVFNRSRTTWLPLSSVVLRA AKAQSVA RIF SLYRPDSALATLN ARGALADPPVELVELLEQSHTVW



 HWSRFRADSLVARLSRGR




RAWDPWVSG VLADLNRATGTPVTASADARPMLDAYRGLS

 $R$ L M S F H A E D S DVV S RI NA A A G S EVVCVD A Q T Y CVV L ERA VA L G

## R


 LS DS TSEPTSEDVRLNLR

RAWSRFRDDSAVAEMA R
RRFSTYRADSEI A A I NRGDVPVVDWS
K IL L
ARWSRFRGDGALLARLAAAAGARA
$R N F G H Y G A L A E F N R E L G A G K A P$



## UniRef90 UPIo003775DBE UniRef90－UPI0003826DA2 UniRef90－UPIO0046A6C10 UniRef90 ${ }^{-}$X1G443 <br> UniRef90 UPIO00418FBE1 UniRef90－C7QIC1 <br> UniRef90＿UPIo0047668A8 <br> UniRef90＿LOHOWO

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UniRef90－E3D1X0
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UniRef90＿C7NEM8
UniRef90－H6N4Z2
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UniRef90＿S7WOT7 UniRef90－V7EKN8 UniRef90＿UPIO00364CE9F UniRef90－UP100035EE8380 UniRef90＿B5SGW4 UniRet90＿EOUSB8 UniRef90－WOP2C3 UniRef90－UPIo00287FF71 UniRef90＿D3RVN8 UniRef90－UPIO003FEBEA9 UniRef90－A3VCT4 UniRef90－M3UQ19 UniRet90＿O988S2 UniRef90＿NOAVU0
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UniRef90＿WODG16

EMSDGLFDTTSGVLRQAW DFRGGTPPDPEHVEALLP ALLGGAMDPLVGRDLELLGYDPDYSLTPASRTERAAHART AATAGAVNPLVADSLEALGYDAAYSLRAGEPADADERP GQTEGDFQPGपSQALRASGYDVSFEQDQURQSD\TDMLRD ADTAGAFTAYPA
RATDGAFDPTVAP WAAYAQAS VEGRTPDADELAGRLA EQSGGLLNLATGRLAALWGFHASQQGGPPPSAAAIRELIE RQHFG FNAT GPLVKLWK ALTGGAFDPTVQALWKLYADYFAAHPDTPPPQNSVDEALK
KQTDGYFDPR】ISADENFGYTDDFGKNDFAGKHSDFNESY RGTGGAFDPTTQPL FATFAQAAAAGRTPSGDEVARARA RGSGGFYDVTVAPLVNAWGFGFSPSPWKEVPASA\DSALS HESEGGFDPRVIGFLNNWGYYESFHSKNFFKGKLKKIVN K DGGEYDDT MPLTRLWGFY KQNPILPSQDKIKKAKR QLTDGLVCASLGAELVACGYDEDFAAVRARSTAAVAVSTG ADSGGKVNAAMGSALLLWHEANDPEHAYLPEEDAIQAADE AASNGLFDPTDRDALEAAGYDRSDERDEAEGPGPARLPRP ELSQGL FNDACAPRLVEWRCLPRPGDAQLPP KKTNNLGDITSGTLINIWGFGPTSRKHSIPSKKTTKGAQM EASDGLFDPTAAASVDLWGMPYDREEGVLPEQRYVEAFAE DRFGTGVQUSSGALSRLWGMTSSEHPRVPTDADRLAAFAET
 TLTGGLFDVTVQPLWELYASHFARDDADPAGPAAAADEAA RATDGRIDPLVGADLVELGYDPGYSFTVHDGAVFRVGADR RLTDGLFDPTVQALWEAHDWFRDQDHTTLPPDGVIASARR
 EWTGGRFDPACGHRLAALGFDRDYQTGERLAWPABECSP HTTGG
A LTGGAFDVTVLPVLRYFETDRGVAGTDAREQRVAEDRDA RKNYGFNALI GPVVKLWHDG FKGAHVPTDDQIKEKMK K LSNGKFD DTUATUNSLYG FPEGPFRUPDNETUKNKSD
KATGGAFDVRL
EATEGRFDPTVQP LWWADANGADP
QEHFG FNASVGPLVDLWR $\square G F S$
D A R $\square$ P S DRE $\square$ Q P A $A \mathrm{R}_{\mathrm{L}}^{\mathrm{R}} \mathrm{R}$
CQSGGRFDPATGALVALWGFHEDPPEGEMPDAAAVAALTA QQDGVK凹DVTUGALTALWG■TTDHP KVPTAAQRQQALA
 QREARPREDPEETLNRLA EGTDGAFDPTVGALLAAWGFHNSHVTHPLPTEAFLDAWLE ADTDGAVDPTLGADLEAUGYDRDFAELPVPDAGVSGAARQR
TASCGAFTPLIGALVESWDVKGWGARWHPPDPAVVQQARR LATSGAVNPLVGASLDRLGYDATYSLRAGDP RASGGLFDPTVQPLWSLWAEA AVNGRRPTPEERRDALA RLDTGLVDPTVGTALRAHGYDRDFAAVAADDPRPDGVRRV ARTRGAFDPTLGGLVGRYGFGPDTGAPA
A LSGGMFDPTVQPLWLLHVRHFSTPDADPPPRES DEAVLA EQTGGWFDPAW
ETTGGAFDDTASTPASDQPVPVSFAQVSLD
RETGGAVDPTVGG ALCGLGYDRDFAALTGRRVAPAVRV
RLTTDG
RASDG
 HASDG
A ATGGAVNPLVADSLAALGYDADYSLVPGDPQGQDETVR AQSEGLYNPALGRLITLWGFDRTPPYANPPTQGQLETLLT
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NETGGYFDIAVGKITK RKTHGK DDVTISSLDD DWGFGVHKKPNNYPS DEK】KKNM■ VATGGAFDVRL
SESEGLVNLSIGGRVRLWGFDTATTSRHPPERERTSDLVA DLSNGALDPSQKPEEDVWFSPSGA RLLDSTD：RSVLP DLTGGAVTPLVGGTLAAAGYDADYALRPAESVPSV
DQTDGYFDIR
QK TSGMFNPY $\square G K \square I C E \square G Y D K S F E M \square Q T K R S R \square Y N P N Q \square$
ENTFHLFDDT
EWSGGLFDPACVTADKASGYDRPFAQLLKPGAGRRDPQPF EATDGCFDPTVGAY EDWHFGDGAEARVPAAARLAAQRRR QASGGLFEPRVASLVYLWGFDSVERTRNEPPPPDENAFM QKYGDEVLISSGALTLLWKDAKKNNILPEETQDKTLTNKT


UniRef90 UPIO003775DBE UniRef90-UPIO003826DA2 UniRef90-UPIO0046A6C10 UniRef90 ${ }^{-}$X1G443 UniRef90 UPI000418FBE1 UniRef90-C70IC1 UniRef90-UPIO0047668A8 UniRef90_LOHOW0 UniRef90_C2D144 UniRef90-E3D1X0 UniRef90-R9IT81 UniRef90-K2ENG0 UniRef90-A8LLZ2
UniRef90-C3J9R3 UniRef90-K2FLD1 UniRef90-Q9PKW2
UniRef90
C7NEM8 UniRef90-H6N4Z2 UniRef90-U2R3Y5 UniRet90_D1C1S5 UniRef90-UPI0003778743 UniRef90-Q89AP6 UniRet90-R7K5M6 UniRef90-D4LD68
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UniRef90-UPIO003740D38
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UniRef90-K2NXE2
UniRef90-R6G1P9
UniRef90-DOD1T1
UniRet90_R7GSL6
UniRef90-W7DDK0
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UniRefoto-S3Y4E4
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UniRef90-A0A059IR90
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HRPTMNDVHVDGLEVSVTNRRVQFDFNGCAEGYAGHLVIDQ RRTWARDITRHGAITLITRGPVLIDTGAAGKGHLIDLIAA PRRAGWRRTRDEDGRLHLPPGLRLDLGASAKAHAADRIAH RTDP GLLEGAGGRWRLGDGAQLDLGGI AKGWVADRLRD APSNWPTRVRWRDERLALAEPAMIDVGALGKGRLVDVVAR RTGWDRVRLDAAR TLEPGMALTLNGIGQGYVADRVAA PGWHRLHLDEGRREVLLPRGVHLDLGATAKALAADRAAA AMAQKHWSLDRVHGTATRLSDAPLVLASFTKSLITQKAAD RTGFEHVAFD RNRDAFRRPRMGLTLNGVAQGYDTDRAVD RGDGT DPTGLVKGWAADAAST DVHRRVAFSRSDVKLDGAIGKGYALDRVKQ FATPDWRAVRLRGLELTVPDGVLLDLGATAKAMAADRAAA
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 $G W D G V Q V A P D R D T L E L P G M A L T N G D A Q G Y I A D R V A A$ RHSWRDVRTDRAFSLVGLPAGVGLDLGATAKAWTVDEAIR LIDPKQLISDEKNLSVFAKTGMKIDDGALAKGYIADRIVE STGGL LTGGQ VFDKSTAYINNTIK AAPSMSATTTEGLTLRGSNPGRDF

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 ELHEAG DGAFAVDGSGDLLVSSPEPDEPVRUALEHPLD LLVGRGLTN VLVDLGEQRALGPRPDHSPWLI ARRD FLGSRD VRHFQIEFGTDADSYGKGPGNRNHRLVITNPEG YLHQQGVTEGLINLGGNVQTLGTPQGRWSVGVKKPFAQA MLYAVG GHNTCVNGGGDIQRRGEAAPGTPWRIGIAHPAR ALRAAG DEYALIDAGGDIQAISGNDPGRHWNVGVDPRD FFKSEG ITKAMINAGGDLYALGNKKNRKWHIAIKNPDNK AWLSARGVSHHVVEDGGELRGEGVKPDGMPWWVELESPPA LLGAAGATRLVLNAGGDVVVSGGPFHDGPWRVGVRHPHA FWKNQGEVSGVVNLGGNVLFLGRFLTRENRVGIVNPKT LLQARG IGDAVLNAGGDVNEIGSHG DRAWRVAI RDPFV VLNQSDASY AIVSMESSMVLYGAKPNGKPFVISVRDPDG VLDENKVTTAIDDGGNDVKGDSPKGGDWVVGIQDPFE
 YLDGQGLEHYLVNLGGDLIVRGYRDTESQPWRIGGEAPLD AAEKAG ITNCLEDTGGDLFMGG QAGDKPWHLAD ENPLK QLTHAGHREHVLDDGGDLRHHG RARGSLRVGLEHPHD VFKENNKVTYSIIDGGNVYVAGNNPNGNKWNVGIQDPFS LCDADGA TSALVSUGTSSVATSGDAGDKPWRVGUQS DD ALEPWTDGRAVVDASGDLLVT LLEAEGLGDDILIDTGELRADGGRPDGRDWPVRLAEGGA AVAAR TGCGVLVALGGDLATAGRAPVGGWQVAVGDDHRA VALHAGA TGIMLNVGGDVVTRGALTQRVDDANPKADAEN ALRSIGLLEAFFIEMGGEVLARGTRPDGSPWRAAVERPGP ALTAAGA PSHCVSAAGDLRVRGTWAPGRPWRDGDADPFD LLLEYGVKQAFVHGGSSSVTADGGGPQGTGWQI ELAVNWQ RVAERLDVGVLVADGGDVATAGPAPTDQGWQLVQDRPG LLAEKYHEGMLIDAGGDIATVGNKSDGSPWCIGGQHPRK RHIDAAGASGVSVNGGGDVQMLGAPGAGRPWRVGVSDPLR KLDKEGDENAMIEMAQDAVTDGKQFDGANWLLGLIRHPFN AAALAAVPGDLVVDAGGDIRVRGS GVRIGLEHPYD RLRELGIV NALIQRDGAWRASGDRG GQPWRVPILRAGG VLC A HRVTTMTVDASGDLLHRGET LLGAEGLTD TLDDTGELRALGGHPQGGDWPVRLAD RLRRRLTGP ALVSLGGDLAVLGTPAGGWQVEV AETE
 FLVK NSVKKAVIALSGDIRCTGT CKI AVNNPDD LLKKKG VKNYTVSIGGTVLVKVDNKDNKPKDVAVVKPVD LLTGAG VRRFCLNAGGDVVVRGGERSGQPRVGVRHPEA FLEEKGIKNYLI QDGGENLAKGTNEREEDWKVHLADSTQ LLRAQGLR DVMVNAGEEVMAMQGPTGPGWSV IV A ADAVDEYIVDAGGDMVISARQQ LLRGNG TSGAIDAGGDLVLWGNRKEEWEVEIANPIDDN LIEQENDNHAFVNFGNSSILGMGHHPYGDSWRVSFLNPYN V-LGTVGPALVNVGGDLAAGGPQAAGGLWRV ALQQAG VRRAMVNGGGDVLCLG QGRDPAWRIGVVDPAE VLD RNNTDYAVI SMTSSILLYGEKPDNTDFKVQURDPNG MLRDEGLGADVLVNMGEMRALEGRSW


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## A

## G

RDVLVADPLS RGGLAATSGDYERFFDHDGKRYCHVDDPRTG ${ }^{2230}$ PRVI GVANLADAALCASATTRRTW GPGLHHILDARTG

 DRYAALVTGRDFAVATSGTAE SHRL SGVYGTVEDSDESVVTVGDYERSFDYAGETYHALLDPRTG


 TS R RELRDRDRAIATSAPDAMTLAAGAR H HEDPASG



 $A P D E A V V R L T A G A L A T S G L G R R Q W T R E G Q V L H M L I V P R T G$
$P R A A A Q V L V R D E A L A T S A A Y F S T R R H G G R Q I S A L V D G R N G$ NEDHCLI SLKNNAVSTSGTYRNYYTDHGKK! DHMI NPDTG PSQSALI LSGNVSI GDSGDYQRFFEADGKRYCHI I DTRTG
 DKVVARFELTRGALATSGDYERFQLIDGVRYSHIMNPKTG
 QRVIGVVVLAEAAICASAVSRRSW GHGLHHLLDARTG AASI ALSRGALATSEGSGCVLGARGA AHHLFDPRSG

 PELAAVVTGRDLDAATSGTAE RGAHVLDPHTG GRVAAVVQLRNAALSTSGNYRVFFSSD RRLFHIVNPRTG GDNIT TVMVPKCSAVTSGTYERYLVVDGKKYHHLIDPRTG KKFLSVIALKKNKAVATSGNYERYFEKNGKRYTHIFDATTGD GRLGQITL NGAAAATSSPGAMILPDGS KSLVLQVLTNSKSAVTSGDNQRYLEDEGETYHHII NPETG

 SRVIGTVPEANKSIVTSGGYERYDEVDGVKYHHLLDPRKTG PTKAIGVVTADGAICASASNRRVW AD ADHHIVDPRTA $N \square G \square G T V I K P A C A A V T S G D Y E R F L D K G G K R Y H H L L D P Q T G$ RGVLASIDDLSGQSLANSSGNYEHRFDYKGEAYSHITINPKTAC PRVLGIARIENQALAASATNRRAW GDGLHHVLDARAG DPSQQVSIPNGSAIATSSTGKRRWRTAEGTAHHILDPRYG PRVIGKLPESNMSVVTSGDYERYWEVDGKTYHHILEDKTG DGII GSIAALRGQSLATSGDHLQRLLVTSTVVHHVIDPRSG VGLRARRALATSAPDGTSFDEAGRDGHILDPDSG RAPRSRMADGGGAVATSSTTRRAWRRAGRPVHHVIDPRTG DAADDTVVLRDRAI ATSGSYRRGFAVAGELRSHLIDPRTA GRAQRVVALRDEALATSGDLINSYVLAGHRYGHITDPQRM AGTDIRVDLVNRAIATSGTNGFRFAGPGSP SHLLDPRTG $R R L V A V V E G T E L A V A T S G V A E$
$D A P G G L A T L S L K D V S L S C S D S H S S E T A \quad R G A H V V D P R T G$
$D$ DPGDCVRLPAGAALATSSTAGRTWGRPGELLHHIVDPRTG
 RNLATVMLDNWDMI QTSGDYRRF IVKHKDTFYSHI FHTVKD

 PGELATVITTDLTIATSGTAE RGAHILNPHHG PKAI GVVDVHDQALCASADNRRAW GSGLHHVLDARTG SGVLAIVARRDEALGSVADHQRDFDHQSVI YHDVLDPRSG

 $D G P S E S V V P R D G A L T T S S L G G R R W D T A G$
$G N H L A L L K \square R D Q S V V T S G U Y E R T F T Y Q G$
 NQPLALFTMNNSGVSTSGNYNRY DKSPKYNHLI NPKTK QKQAIHIHLKNSSISTAGTYRNYYYLKKHRDSHLI DPTTG D QLCAVLELSEGAVATSARYE SAVLAIVVRGDEAMATVAEHDRSFTDRGRLYHAVLDPRTG
 PKAlGVVTLDGGAI CASASNRRAW ADWHHIVDPRTA DEIVKIVYPRGRGVATSGTY VRGQHIYNPHDG QNVFRFN IGGSDAGIATSSAMKRRWQTEGESDHHIDDPRTLD GLPGWVLGVARCGVATSGDDRQRWDRAGREWHHLMDPRTGG PRLRGVVALRSGVVASSGDYERFFDAQGRRQHHILDPRSG PDLIA ILDARDESVNTHGDDQRYFDHEGKRYAHILDPRSG


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UniRef90-C3J9R3 UniRef90-K2FLD UniRef90-Q9PKW2
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UniRef90 R7MLO9 UniRef90-R7MLQ9
UniRef90-K2AGB4 UniRef90-L7KNH3
wp $V$ c
$T P V D D \square V A T W V A H R T A V A D A L A T A L F L$ QPVRTWAATWALAPEAMTADAVATALFFDG W
EPADTDVQCTVLGQHTSQCE\|IAKTVC\|LGSAEAVGWDNR EPATGFASVTLIGARDAHTDAYATAVFAMGPERGMEWAEE $L P A R Q W T Q V S V T T P A A A L A D A D S T A F C L M T R Q E D D A A L A A$
$Y$
$Y$ YPKQNDASITIFSKYS I DGE I ETARRLFFAGKPDA GWARD
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 FPSQN KQVGVITENAFFGD IISTGMYNQTPEKFYEDMGK APARQWAQVSCAAPTALQANAASTAAVILDSSAPRWLSQ WPARHYRSVTVICADSGLADALSTAAFI MDEESGRULLET RPVSRWQVVTVAAGSCVVAEVAAKVAWLLDDDDGPAWVVR EPLLAAASVSVRAPRCAVADALTKVVLASGDAQHPALAAS

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 LP VQGVLAT WAVARTCAEADGLATALLFVAPE
 RPMENKISAHIKAPTCTQADALATMCMLLSLEESQHLTTS


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 WPVQE IVVSVSVLNTDGGRADAAAAALSVAGRSDWPQVAAD MPVET DKTVTVLCDSGLRRDLLSTEIYMEGTAGLE R R M YPDNDDAGVSIISEKSUDGDGLSTATFSKGVQGGLDFDET SPAREVLATWVI A PSAMEADGLATADFFATPAAFLDGDFD YPLQTQAAVTVFARDSLQGELEAKRLFFAG KPDPGWEKD RPI HRLASVTVAHPSNAWADAWATALMVLGEEEGMALARS RPVRRIAGSTVWANHYADSDGATKGAMMLEPEQVPDMVRK


 ASARPVWRTASVVAQSCVDANTAATAACVLLGAQDAPAWLAR QPAAAVLSSSVIAPDAATAGALATALSILSPRESAALMQR APADSAASVSVFARRADTADALATALFALGPKRGPALAE
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 E $K P V H T T V A T W T M A A S A L V A D G L A T A L D M V D P A P G E K$
 MPVRTWAATWAWAPETMTADAVATALFFDGGVELAAMWN RPARDSRAVTVLLDPDLATATVAARALFVAGPEHWLEVAQR $L P T D R D I D T W A I A A T T L E A D G L A T A L F F A E P A S L L A$
$Q P A P P W R S V T V G A A S A A L A D G L S T A A C L M P T R A S L I$ QPARRWRTATVVAPTALSANVVSTWMLV DAADGAEAALAA
ACAVWEDSTSVVAADCMTADALTKVVRLA

QSEQNFFSVTLVSNPSATLDAYATAVSVMPVKKAYAFLNS TPVHNLVSVSVISSTALEADSWDTGLLILGGKFKKAKKL | $L P A A G L D S$ |  |
| :--- | :--- |
| $L$ | $T$ |
| $R$ | $T$ |


 HPDQDVVSLTVI GADVLEADRFATAAFAMGARDGQLFDEQ K S
 WPTRGLHGVTVVAEQVETVNGLGAATMVGGVRRAQSWLAA QCASGLRSLTVVAHSDGALAEAGGAALFVAGTNHWPALAKQ CPSESDLTVTVVFADSGDLTDYMSTKIFIVETQNDENHLDNA


HYDRH DVLWMTREGSTY
RAGFEAYAVL PDGTTVETAGFARYL
VP Q
MGVSQA LLFDREGTAQMTPDMAA
$R P D \square Y G$ AVFVTRDRHVT $\square$

FPGARVEF
$\square P S V E Y L L$


 GAEALWVYADGSASWTGGCDAY $G L A G R \quad F R D R A G A V V T V G G W P A$
Q Q EK LA VC LIKKNKSTLWTSPQFKKF L
LQGLCGFAVLTSQGGK
LHAADYQVLAVDAAGK $\operatorname{L}$ HYYSDGLQ
R G $\quad$ GYI LFLDDNNRVILSKNILDSFVED

VGSDDAGFVAIRGNGVVELTPGLELF
RAGFHYDFTLMRADGSAVVSPDF
QPRVGRPAI WATDTGRHHHWPA
DPTLEGMDVFNEAGTQTWRSKGFEL
REDIEA LIFTKKREVILSS
A GAQAKVWYEDGTSVETRGWRDH
LDGHEALGUTATGEVWRTPGLP
RDH
P D R $\square$ G A VF VYNDE
$R$ GDAARMLLRTPRGFTEMSPAFAAML
LEGCEVFA VVAERRVLRTPGFPA
$\mathrm{L} P \mathrm{GL} \mathrm{R} A T A \mathrm{ATRDGD}$

LQ ATDYQVLAEDQNGQVYVSNGLHFTKR
YKGVEA I F V S K E K K V Y I T S GLK
HHAEGFHHVTVRRNGSVEHTPGLELF L
PNNLGAVFI Y
Q DLK VLMLIREK DGSSVATPAF
YKFTAVSLHSDGRLTPSPGF
R GADARLVALDGGUVRTGAWP
F E GVDA $\quad$ VIS K E K KVYETS GLK
HRWGAEWVRMLTNGRVEWSRG
F D G
R G L PAA LLVAGDGTA LPVGGWPAAE
HPD AAYMIVTRDGERVASKGWATY HAGMDADFLSRDGAGREVMTGRFR
LP A TQVHL
LARRGWEWLTVDTTGRLTHSAGFP
TPSR LVTPD LDD LR L LGGWP


EFEFSWLRVSSTGSAAFSSGFE

LQGYEALALRKPDGQTWRTSGF
$M G V T E A$ L LVD R S GEV HVTQAWNRLER
EFDFHWVRMFATGRVESSPSLN
SHRYGAR LVAQDGTLT TCGAWP


R
$R \quad G \square P A L L \square A H N G A E T R V A G W P P$
H P Q F GYLLLVF SDGSVYVNKT F LEFFE

UniRef90 D4ZHD4 UniRef90-K6SFL1 UniRef90-L7EQT9
UniRef90 R4LWK UniRef90-Q1NM06 UniRef90-E6K1E2 UniR Refo-G2YQ36 UniRef90 D3D7Z1 UniRef90-W1HXG8 UniRef90-R5DAK5 UniRef90-R7KX74 UniRef90-M6ZXFO UniRef90 ${ }^{-}$A0A031FQR2 UniRef90 UPI0004766C9C UniRef90-K2FKG8 UniRet90-A9NEB6 UniRef90- U5W7U1 UniRef90_UPIo003693FE3 UniRef90-K5CL23 UniRef90 UPI000237D58C UniRef90-UPIOOO3B63624 UniRef90-T2QTK6 UniRef90-UPI0002379A21 UniRef90-067299 UniRef90-A4WXU3 UniRef90-B2UF50 UniRef90 B7RIJ8 UniRef90-D5AVJ1 UniRef90_UPIOOO379D948 UniRef90-UPI000471B575 UniRef90-X2GXY0 UniRef90-18XYQ8 UniRef90_Q8A1S5 UniRef90_A3K6A6 UniRef90-XIJAM7 UniRefefo-D5EQL1 1 UniRef90 S1SU36 UniRef90-13WKA6 UniRef90-UPIO004630ED9 UniRef90 S6C183 UniRef90-UPI00047AF8AF UniRef90-UPIo00374F9BB UniRef90_C1DUV7 UniRef90-E8LV70 UniRef90-K6WY45 UniRef90-RGJKY4 UniRef90 C2KN95 UniRef90_U1D3B4
UniRef90 UP100047EBB2B UniRef90_T3QL32 UniRef90-F9SHF1 UniRef90-E3BLG7 UniRef90 D3SP18 UniRef90-UPI000475C3BD UniRet90-D6U1G5 UniRef90-B7GP91 UniRef90-UPI00028952FB UniRef90-A0A037XBC3 UniRef90-V9WN72 UniRef90-K2GD87 UniRef90-B9KWZ8 UniRef90-D5X100 UniRef90-R4PWUO UniRef90 ${ }^{-}$A9AOT7 UniRef90-UPIOOO3B4BFA7 UniRef90-GOTV75 UniRef90-S9WG85 UniRe99_W8GZR5
UniRef90_UP100016A62E3 UniRef90-E2SFA7 UniRef90_R1ID09 UniRef90-C6XCP1 UniRef90-F5SRF1 UniRef90-UPI00047A51F2 UniRef90_S8FAK6 UniRef90-Q472Y1 UniRef90-O8A238 UniRef90-D2RCZ0 UniRef90-I3AW73 UniRef90-E6K214 Uniref90-K7YY8
UniRef90-K1TWDO UniRef90-UPIO002DE3DD1 UniRef90-Q57W38 UniRef90_W5W9V2

MGTVFSFDVRGGDPRAGSALAAADAGLHKVN H HVE HVMGTVVSVDVTDDDPVPRGMIDDVCAWLHEVD QRSRVMLGTVVNLTVYSEREQAEQAVTATLERMAELE


```
MGTVVSWAVRTELPSEDAALDSAVACLHRAD
```



KEFVFGFEKFGTK NFS VVFESSEEKVQEKAEGDYERYN MDTFIGGTVHAPKAVWDKALKEMYMLYHELT
HHAEHVMGTVVSDDLADDLPDQRAMIGDVCGWLHEVD WEGFAFGTDWE S TPLPLTAALRESLDR EGFD
 HPYHKSAF LMNTVLDMVFWGGKECAEDASSAI DAKDKRLQ VVSDPRALEPAVADLQALMHRVD

#  

 ERVFYLMGTYLIL DELRGKEV AVYKYMKKLE RDRGKALGTGVQLLAHPDADAMG RRALAEDARLE DRRSMLLGTFVEVRDDVYPQAETADAAASVIEQAE QRWQGRALGAEVEITIRGPKDIUAVALKAARDLLTRVE SWEG\|ALGARARIVIDHPEAAAITAEAAAEIARLE VID AMHTFIGGRIFTEDSKWLNILKEMFQTYHELT

SWQGRALGAEVSVTLTGPRSETEPALADLPAQLDALE
KTHLFEHEAMKTTFTFRTSDDAMKAKTAAKAATELLEDTE YKYHFNAMSVPCEDILYAPK AQK AABDQVNTLRLE
 PMLGTFVEUGLAVDSRLDHAFDMAFGKUAQ\|Q
 WTRQTMGMP $\boldsymbol{T}$ SLHVRGAELSTEHQVEQVFASLCDAD


TYSFAAMGTVGTLQFPGADARGEQ AK $V R G L E$
TKT 1 RLMGTIIQLTDTHPRRP LLAEAERRLKSYE EALGTG I IVRSAQTDSPVLQRDLQSLDDED KYSKTSYYLGTVNEVTVENKESKSDKILNECDSILRYMD PFVHRFHAMTVPCEVQILSPKACAKDI ADETEQNTHRLE

HRFKAMTVPCEVQLFGSPANSQUAAVIEQNTYRLE
DHETRHLMGTYAFVELDHPDKGAGKAYEAYRYMKSLE
EETRLIMGMPLTMAILDASATQADLDTVFTYFVAVD KTYNVTGKALGTG WSLVLHTDAPLADGLHDRLGAFVDTYE VHTWQGDALGARATLRLAHP DAKADSARVAAEI SRLE
 R $\quad$ RGQAMWGTRVSEVLNEDDKSLKKIVNGAYKNUVDFE

 TTARVVLDHRDRRHDDARSCVDEVAAVD
YAVSGLELTVPYVIKVVTSAEEARNVTDEVLRSAWQLD $K Q F M K K G L A H T V P Y T L K I V A K D D A E L A A A K A V G E E F Q V A D$ EHVMGMPVSLAMRGRHGGDRAAWAEVGRTVRGVD
PLLGTVVEMHVVERAGGDALPHAFEQVARVVE
FPALGTTAELVVTDP ARLDQAAALLRALVEAFD EKHKRATDALGTIVEVSLWEPGTDPSPLFETAYQATRQVH TLALKAMGCYIQVHLDHSEVQDEQLKQDDEHTLSHWE EDHQFNHRAMATHFEVRIANEEAYAAQAAQAALDVLDALE PLMWTRLEALLDGKSKEASATWNADVDECVRLS
F पSMHTRVSLRID DGEGEDFAAATDAVFAWLREVD
QVYs ws

$$
\begin{aligned}
& \text { FLSMHTRVDIILYSQKTERELLLNRIYDALCRLE }
\end{aligned}
$$



UniRef90-K6SFL1 UniRef90-L7EQT9 UniRef90_R4LWK6 UniRef90_Q1NM06 UniRef90-E6K1E2
UniRef90-S2YQ36 UniRef90_S9RX35 UniRef90-D3D7Z1 UniRef90-W1HXG8 UniRef90-R5DAK5 UniRef90-R7KX74 UniRef90-M6ZXF0 UniRef90-A0A031FQR2 UniRef90_UPIO004766C9C UniRef90-K2FKG8 UniRef90-A9NEB6 UniRef90_U5W7U1 UniRef90-K5CL23 UniRef90_L9PCA2 UniRef90_UPI000237D58C UniRef90-UPIOOO3B63624 UniRef90-T2QTK6 UniRef90_UPI0002379A21 UniRef90_O67299 UniRef90-A4WXU3 UniRef90-B2UF50 UniRef90-B7RIJ8 UniRef90-D5AVJ1 UniRef90_UPIO00379D948 UniRef90_UPIO00471B575 UniRet90_X2GXYO
UniRef90_18XYQ8 UniRef90_Q8A1S5 UniRef90_A3K6A6 UniRef90-X1JAM7
UniRef90 D5EQL1 UniRef90-M4U4N8 UniRef90-S1SU36
UniRef90_I3WKA6 UniRef90-I3WKA6
UniRef90_UPI0004630ED9 UniRef90-S6C183 UniRef90_UPI00047AF8AF UniRef90_UPI000374F9BB UniRef90-C1DUV7 UniRef90-E8LV70 UniRef90-K6WY45 UniRef90_C2KN95 UniRef90_U1D3B4 UniRef90_UPI00047EBB2B UniRef90-T3QL32 UniRef90_F9SHF1
UniRef90_E3BLG7 UniRef90-D3SP18 UniRef90_UPI000475C3BD UniRef90-D6U1G5
UniRef90 B7GP91 UniRef90-B7GP91 UniRef90_UPI00028952FB UniRef90-A0A037XBC3 UniRef90-V9WN72 UniRef90-K2GD87 UniRef90-B9KWZ8 UniRef90_D5X100
UniRef90_R4PWU0 UniRef90_UPI000299DF8A UniRef90-A9A0T7 UniRef90_UPI0003B4BFA7 UniRef9-GOTV75 UniRef90-S9WG85 UniRef90_W8GZR5
UniRef90_UPIO0016A62E3 UniRef90-E2SFA7 UniRef90-R1ID09 UniRef90_C6XCP1
UniRef90_-5SRRF1 UniRef90_UPI00047A51F2 UniRef90_S8FAK6 UniRef90_Q472Y1 UniRef90-V6KRE1 UniRef90-D2RCZ0 UniRef90-I3AW73 UniRef90-E6K214 UniRef90_D7IYY8 UniRef90-K1TWD0 UniRef90-UPI0002DE3DD1 UniRef90-Q57W38 UniRef90-W5W9V2 UniRef90_D9T896

AKYNFHDKDSWLLSRVVNTRRSSKVVELDHETWT\|L/RQVREYS
EVVSTYRENSQDSRDARGEDSVA DCDPEVAEVVDDCAEAE



 KMLNRFDPESEVSFVNREAGHPVTVGEELWNILLNCKRYN



Q $\square F N R F N S D S E \square S K \square N Q E \square G S F N E V S D E V R E V V E K S V L Y N$ DNYRGYEGVQGVYYINNKTDQTVEIKKELYDLLSDGVELY HRFSTYRDDSEVSRLRRREDKPSECSADMRHVLEACADL
 RLMSFHDAASDUSRLNRAAGELLAVHPHTWQVLQLAAQDA EVLDRYDSKAETYLI NQEASQSVPASPLLIGFIRQGDNFF RAASRFR DDSELDNWAVNNGRPVAVSRTLVNLVETALGEA

$\square K \square N R Y E E G S D V W Q T N H E D K Q S L F V S D E C Y A C L R \square A D E A H$ KKYNFHQPSSWLNKLNQRNGSSLKVDSECAKILTRVRHDS EVFSPFRPDSAVNRVRQGRPVPEEWQPELSEVLALCADAH SVLSRFRADSLVTAMGESSHGSFDFPDWASGLVDLADAFC
SMMSFYDPKSELSQLNKNPNQWVEVSAETAEVIQHAKSLS
$D N F E G Y D P \square K N V Y Y \square N N N \square N K K \square E \square D K V L Y D D L E F S \square E V Q$ ALFSTYREDSQLSRWERGELADADADPALAEV FEDCEEAR
 $K$
$R A C S R F R D D A E L Y S$
AKWSRFLPDSEDSVLNRHPGAFMAVSPETWDLLVGARYWQ ARFSANDATSELSFVNCAGVKPVSVHSQLFDLIQIGTKHS ATLSRFRTDSLVGLMAAATCGSFDFPDWTLPG FDLYDADD NKMSTHDPGSDVSKINDNAKKFVRVSDDTFFVVKEADQYS EKYNFYSDDSWLTRAINQRTTSEVELDSESSAEVFEHLDRGLS

## E

## N

$\stackrel{N}{\mathrm{~N}}$ RTLSRFRDDSTVSRMRTATRGGVDFPDWASGGMDLYOALY

 $A D F S D H R P$ SEELRLDNTGCVAVPA FELLDCLTMTGRVH
 T LLDRFNSEAETFKVNKNAFKSMA SPBEMFKTDSNGMKY D
 AACSRFRSDSELVARADELVRGAEVSPLLAALVHQALDAA
 QL F S TYRPDSFVSRMIRRGVVDNEHPPAAVKEVLGCGQRAF QLVSTYRPDSFVVSRMIRRGEVDNEHPPAAVLEVLALGDRAE


 R Y Y K F DQVSELYAVNHRAAEPYPVGDEDWS ILTACREHH KLMSFHRHDSDLGRLHAAPGQRVSVHPWTMHVLRQAFRMF ARFSPFKPDSEVSRYGRGEVADGELSADLTEVLGLCADLR RITANYYDPSSELSQVNQRASTPVMISQSLYRMISLCTEYH



DK F N F Y S A T S M LTTMN QREGK R VMMDD T ETR D D LTTKVH D Y S



UniRef90 D4ZHD4 UniRef90-K6SFL1 UniRef90-LLEETM UniRef90_R4LWK6 UniRef90-E6K1E2 UniRef90-S2YQ36 UniRef90-S9RX35 UniRef90 D3D7Z1 UniRef90_W1HXG8 UniRef90-R5DAK5 UniRef90_X0QK49 UniRef90_R7KX74 UniRef90-M6ZXF0 UniRef90-A0A031FQR2 UniRef90-UPI0004766C9C UniRef90-K2FKG8 UniRef90-A9NEB6 UniRef90_UPIO003693FE3
UniRef90_K5CL23
UniRef90-L9PCA2
UniRef90_UPI000237D58C
UniRef90_UPIO003B63624
UniRef90-T2QTK6
UniRef90-UPI0002379A21
UniRef90-O67299
UniRef90-A4WXU3
UniRef90-B2UF50
UniRef90-B7RIJ8
UniRef90-D5AVJ1
UniRef90_UPIO00379D948
UniRef90-UPI000471B575
UniRef90-X2GXY0
UniRef90_I8XYQ8
UniRef90_Q8A1S5
UniRef90_A3K6A6
UniRef90-X1JAM7
UniRef90-D5EQL1
UniRef90 M4U4N8
UniRef90-S1SU36
UniRef90_I3WKA6
UniRef90_UPIO004630ED9
UniRef90 S6C183
UniRef90_UPI00047AF8AF
UniRef90_UPI000374F9BB
UniRef90 C1DUV7
UniRef90-E8LV70
UniRef90-K6WY45
UniRef90_R6JKY4
UniRef90_C2KN95
UniRef90-U1D3B4
UniRef90_UPI00047EBB2B
UniRef90_T3QL32
UniRef90-F9SHF1
UniRef90-E3BLG7
UniRef90-D3SP18
UniRef90_UPI000475C3BD
UniRef90-D6U1G5
UniRef90-B7GP91
UniRef90_UPI00028952FB
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UniRef90-V9WN72
UniRef90-K2GD87
UniRef90-B9KWZ8
UniRef90-D5X100
UniRef90_R4PWU0
UniRef90_UPIO00299DF8A
UniRef90-A9A0T7
UniRef90_UPI0003B4BFA7
UniRef90_GOTV75
UniRef90_S9WG85
UniRef90_W8GZRE
UniRef90_UPIO0016A62E3
UniRef90-E2SFA7
UniRef90_R1ID09
UniRef90-C6XCP1
UniRef90-F5SRF1
UniRef90_UPI00047A51F2
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UniRef90-D2RCZ0
UniRef90_I3AW73
UniRef90-E6K214
UniRef90_D7IYY8
UniRef90-K1TWD0
UniRef90-UPI0002DE3DD1
UniRef90_Q57W38
UniRef90-W5W9V2
UniRef90_D9T896
 QVS E G WF

RASAGAFDPTMLPLLNAYRRLGDGAGEAAPTREKTTAARK $L L P G G N L N D A D G P V V K L W H \square G$ FADAR $\square P E D G A \square R E R \square A$ LATGGAFDVRL
$M A T K G A F D P T L Q P \square W \square A H \quad A R S A A Q G R \square P S E D D L M Q A R D$

AKTHGAMD TTVGP LVN LWWGFGPDKQPVT TPDAKA DAAAKA $E L T E G Y F D I T L Q G F D Q V L$
$V E T Q G L I T P T L L K P L W A A G Y S S H \square K P C Q K C N A A T Y \square Q A Q P$


 EFTDGYFDMSUGK IIDVWKNLIDESDYQE ID KED DDYA IN


 R RT
TATDGA $\square D P C V G E D L I R \square G Y D A R Y S M T M E P D V E H H \square G A V H$ QQSNGLFNPTLGGELI ERRVLPNHFDHRFESRG

VLT E GYFN $\square$ S $\square$ GK $\square I D K W K D \square D D P D A N N Y T E E Q \square K N \square P \square$ HRTGGYFDARSLPRVSGAGRHY
$K \square T K G A F D \square T V G S I T \square N H R R D K M \square D R \quad K T A E K$ VGTQGVFDPTVGSIKWLLRNNH QLSRAEAYQLAKP RLSGGAVDPAVGHHLVLLGYDRDDDADRTGTTYSPVGRPS EQTGGIFDVTCAPLINLWGFGFTKFDS DTPQLVDSDRH RATGGLFDI RPNPELNLGESAGGAVEESSGFYFRRENIDA
 A ASRGA DPCVGEDLIRLGYGADMTFTDEPDAHEHTGSI U


 QQSHDAFSPTLAALLNKLWGFSNTEPPLTPPSQAS DQKLLS K ET G GYFD DQ
SGTDGADDPCVGEDLIRLGYDAVYFTVEPDARGGRDGADH


 LAASEGYFDDTLGARLVERGVLPDHGFATLEAADG
LIASEGYFDVTMGARLVERGVLPDHGFATLEAADG

RKSEGYFNVFA GKVYA SLK E K K S A A F S ES S L P $\quad \square \mathrm{D}$


 QES GGAFAV
$R L S G G L F D P T D A R T L V A R G L L P A P D G R V P D A G A C$
AVTDGAVNPLVGGSLEHLGYDADYTLDARGVPVPAAPWSA $R R L T M G G V D P T V G A A V R D D G Y D R D F A A A G V L G A A G M A A G E P$
 $D K T Q G L V T P T L L Q A L C D L G Y S Q S F E T L P T$ GQSASVEHLDD E I T H G A F S P TPAGLHTQSAM
RLT E GYF DVA LIGKFKA DS
$E L T S G T F D P S V A A A L V A D G L L P A P A G P R P A T S T T$
$R A T G G A F D V R L$
$K$ K T L G C F D V T I $\quad$ HSDNYN QD T $\square H S \square$
DATHGGAFDACI GADLLAALGYNNSKNDNSSSYSCSNYRRAL
 GKTLGGCFD DTVVGUSENYNQNT■QSIV
A LT Q G $\square$ F D $\square$ T VG TVKA L $\quad \square P R S S \square S R E Q \square Y$ Q D A A NSSAGCFDPSTAPVAKALRE $\square A L G K E R N N A C L E A L T Q A C T$ DRTEG
TAT


|  |  |
| :---: | :---: |
| UniRet90－K6SFL1 | VLAKDG VTAAIV DLGGNV |
| UniRef90－L7EQT9 | LTAAGVSGVSVNGGGDVQLCGAPGPGRPWRVGVS |
| UniRef90－R4LWK6 | ARLAAAGSANHCLSAGGDVRARGHAANGQPWRIGVR |
| UniRef90－Q1 NM06 | VLQAHGFTQ TYVEAGGDLLVHGGKPGDEPWRIGLQ |
| UniRef90－EEK1E2 | SLLS LGLL SVLLDLGGNIITIGEKMTDRPWRVGLQD |
| UniRef90－S2YQ36 | TAAGAQRFVLNAGGDVVVSGG PWRVGVRH |
| UniRet90－S9RX35 | RG LS DLLVDME AALGKH PWPVGIVTPGG |
| UniRef90－D3D721 | VLTAAGAVDH CVNAAGDVRVRATDQR PWRVGVAD |
| UniRef90－W1HXG8 | MEQEG I SRYVVVGGALVSRGMNGEGKPWRVAI QKP |
| UniRef90－R5DAK5 | L LEENGIGKALVNFGNSSVLAVGTHPCGEYWPVGLDNP |
| UniRet90－X00¢K49 | I SRSHDWQLPCLVDMGGDI A G VPRSQALDKAl NGE |
| UniRef90－R7KX74 | 1 LEQES ${ }^{\text {LS }}$ DAFIDFGNSSISGMGHHPYGDCWK |
| UniRef90－M6ZXFO | VVAAHTGGPHVVDAGGDMVISARE HPVRIA |
| UniRef90－A0AO31FQ | LVPA GGPAVVDAGGDVAVRGVNR GQR ALEHP |
| UniRet90－UP10004766C9C | EVVASGSNR GDDWVVGVERP |
| UniRet90－A9NEB6 | YLT DLGLS TYLISGGGSSMLYGNPKTEDGSYRTGLINNPQD |
| UniRef90－U5W7U1 | RLAEAGSVNH CVNAGGDTRARGRSGQGLPW |
| UniRef90－UP10003693F | ELEGAGA GSFIIDASGDLLVRGPD |
| UniRef90－K5C | ILQQENLQDAFIDFGNSSLLGMGHHPYGNCWKVSFLNP |
| UniRef90－UPIOOO237 | EKHGIFNAFISFGGSSFLTRGHHPHGDFWPFALKS |
| UniRef90－UP10003 | R DRYDCDVLVEDGGDIAVANTSRSGRRGSWQUAA |
| T20 | N |
| UniRet90＿UP10002； | A |
|  | YIKTEK GFI ALA GDMKVWGHK |
| UniRef90 A4WX | LLGAEGLTD VLVDTGELVAPGVQPDGRGWP |
| UniRef90 B2UF50 | 俍 |
|  | － |
| D5AVJ | BKGGGVIVGLGGDASAGPGPTVEGNPWQVIVQD |
| UniRef90＿UP1000379D |  |
| UniRef90 UPIOOO47 | YIKDKGYUQ YLINSGQSSITAYGQDNYDGTFSFGLINPMD |
|  | WLEAEIAPEYGLIDGGGD |
| UniRef90＿18XYQ8 | GWK ELG |
| UniRet90 Q8A155 | W |
| A3K6A6 | argatral diga o |
| UniRef90－XIJAM7 | daga Av |
| 俍iRe90－DSEQL1 | K DGK |
| UniRet90 M4U4N8 | ， |
| UniRef90＿S1SU36 | LRAAGAEHVCLNGGGDVQLYGG |
| UniRef90－UPIOOO4630ED9 |  |
| UniRef90＿S6C1 | NI FVMGPKDAKKDWNVG |
| UniRet90＿UP100047AF8AF | T |
| niRet90＿UP1000374 | WR |
|  |  |
|  |  |
|  | S ${ }^{\text {S }}$ AGVTPDGGWQlLVDDGPGE |
| UniRet90＿R6JKY4 |  |
| UniRef90 C2KN95 | LID F CKARGMVNLGSSSLAF RADENEPW |
|  |  |
|  |  |
| UniRef90－F9SHF1 | GA TSMLVNFGGD |
|  | ESMGVSAALINFGGDIRVLGTKPNQEAFNVAV |
| UniRef90－D3SP18 | HLKTAW GFl A $\square$ AGDMKVWGH S |
| UP1000475C | KKHG Q A AM NAGGDIRLTG |
| D6U1G5 | MLKTWGF QNFYIDAGGDIQVAGGK |
| B7GP91 | RQSAHDDRQYV DAGGDMLIRTV NFSEPDTVALED |
|  |  |
|  | QGFN A ALVNTGEFRASAGDWRDG |
| UniRef90－K2GL | ALKSAWYNDH MINLWGDTCLS WYNLFWGKWQVGISSPFD |
|  |  |
| UniRet90－D5， | SLQRAG EQA VNAGGDARAFGPH SSETPEFADEHPTD |
|  | HLRDFG DDA VNGGGDLYC GHQSETPDEFALEHPTD |
| UniRef90＿UPI000299DF8A | LDEFGIKNTFISFGGSSLLTRGHHPHGNHWPFSLKNQED |
| UP10003B4BFA7 | SIAARLGI GALVSLGGDVATAGPDPSGGWQVRVQDLDE |
| UniRef90－GOT | WGGDCRASGTNARNGPWIVGITRPPD |
| UniRef90 S9WG85 | KLNAAS 】ENVFFEWGGDVRANGHNSQGHAWSVG |
| W8GZR5 | DFCLSAGGDISCRTLDPA |
| ef90＿UPI00016A62E3 | GA TAGAVSAGGDLRVFG DAPQPVSVRDPDA |
|  | AATGVPCVVDAGGDLLNLGSEA ALIRVALEHP |
| UniRef90＿R11D09 | AAAGCGTLVNLGGDLRAAGAPPAG GWQLALID |
| UniRef90－c6xCP1 | TVk |
|  | ） $\mathrm{V}^{\text {c }}$ |
| UniRee90 UPIoo047A51F2 | ALVAGGSS AGDPLGDAPGWSC |
|  | A ${ }^{\text {a }}$ |
| UniRef90 V6KRE1 | NAG |
| UniRef90 ${ }^{\text {O8 }}$ |  |
|  |  |
| UniRef90－ 3 AW73 |  |
| UniRef90－E6K214 | KLQGMCCGP FSLDAGGDLCFSPDSDPGSSVLVALEDPDD |
| UniRef90－D7IYY8 | W |
| D0 |  |
| UPI | DIRVAGQKADGDDFIVGVINPHD |
|  |  |
|  | GGDDALHVASPSRPAWRVGIEDPRD |
|  |  |



NKTPFFVPTTDAALTTSAHSERQMQFGDKTTSHILSKQD TQAFFSLPLVNSALTTSAHYERKTQFSDGQSSHLLSEKGT GVLLEGYNKKDLCLSTSSNKDRR GUGWGTET

 FNNKAIHVIKNNADATSGEYRNFKDFDNKMITHTIDPKTF AGGTVPLDARALATSAPLGDTFDEH ARVGHILDPRTG GLLA TRRLSK GAVATSSPMATPGGSKG HILHPRQH NEIFTTGELSSKSISTSWTFDRKWKDNNEDYHHIRNPGSD AGHLELRSAALASSAPLGTTFDGEG RAGHILDPRTG AVPLGIRQANGAVYRSGSLRNAAVASSMVGHCVMHPGDG
 PQKQGMVMMRQNALASSGNY LKKGHILSDR DPVDHVRIASGWSVATSSTQKRRWEQDGHARHHI LDDPRWG
 TTLVALVPVHTGAVATSGAT PARTRVLGHTRGAVATSGRYFSFGFPDDAQADVATTPHAA PSRAVGVAVPGQALCGSAVNRRAW GEGLHHVLDARTG EAVARPALTRAGALATSGTTRRRWRRGGRTVHHIVDPRTG QMYVPLGYLHNQALATSGQPSNRDTAGDQLDPIVDPNTR
 RQRDDVVELRDRAMSTSGNMPAHPK HI IDP TGQ THLLGALNR GAVATSSAYGKYA IVSGARDRGQAPKTPR DRVCAVLAVTDGAVATSGRYE RGDHIIDGRTG NHKTQSI LLNNECLTTSGN NSDDRKHIISPSSG TTQAVGVAI ASGALCASSAARRRWKVKDVVATHLINALDG PNAVGTVEISHGAFCASSPSRRHWDAAGHQLHHLLNA DG ADRADGLARLDRSLCASAPSRRHWTADGQRLHHILDAMDG NI LLHNECLTTSGN DSPERRHIVSPRNG ADLQVKI SLSGKGLATSGNYRKFRDSSGRKIVHTVDPRTG QQAALFALPLRNQALTTSAHYARRQQFADHESSHDLASQDT ASYI SVI SLDNEALATSGDYENLYTADDKPDTCTYDWKAM PHALLGVTIRTGAVATSGTA


UniRef90_U1D3B4
UniRef90_UPI00047EBB2B UniRet90_T3QL32
UniRef90_F9SHF1
UniRef90-D3SP18
UniRef90_UPIO00475C3BD UniRef90-D6U1G5
UniRef90 B7GP91 UniRef90-B7GP91
UniRef90-UPI00028952FB UniRef90 A0A037XBC3 UniRef90-V9WN72 UniRef90-K2GD87 UniRef90-B9KWZ8 UniRef90_D5X100
UniRef90_R4PWU0 UniRef90_UPIO00299DF8A UniRef90_A9A0T7 UniRef90_UPIO003B4BFA7 UniRef90-GOTV75 UniRef90 W8GZR5 UniRef90_W8GZRE
UniRef90_UPIO0016A62E3 UniRef90-E2SFA7 UniRef90_R1ID09 UniRef90_C6XCP1
UniRef90_F5SRF1 UniRef90-UPI00047A51F2 UniRef90_S8FAK6 UniRef90_Q472Y1 UniRef90_V6KRE1 UniRef90-D2RCZ0 UniRef90_I3AW73 UniRef90_E6K214 UniRef90-D7IYY8
UniRef90-K1TWD0 UniRef90_K1TWD0
UniRef90_UPIO002DE3DD1 UniRef90_Q57W38 UniRef90_W5W9V2 UniRef90_D9T896

|  | 290300 |
| :---: | :---: |
| UniRef90 D4ZHD4 |  |
| UniRef90-K6SFL1 | K N S D H D Q A T F T T N D K K |
| UniRef90_L7EQT9 | LPDVEA L LIT A G E V R C T G GLA R |
| UniRef90_R4LWK6 |  |
| UniRef90-Q1NM06 | FPGCQGC F V G K L R V K T A G P P A |
| UniRef90-E6K1E2 |  |
| UniRef90-S2YQ36 | LP GCEVFA VD A G G R V L R E G F P |
| UniRef90_S9RX35 | TD GAKLEAM |
| UniRef90_D3D7Z1 | LE P E G W A W L V V R T GA $\square$ R R S G G F P |
| UniRef90-W1HXG8 |  |
| UniRef90-R5DAK5 | F D $\square \mathrm{Y}$ EK K V |
| UniRef90-X0QK49 |  |
| UniRef90_R7KX74 | F K N $\square$ Q A T L |
| UniRef90-M6ZXF0 |  |
| UniRef90-A0A031FQR2 | W GADWVRMRTDGSVEWS P |
| UniRef90_UPI0004766C9C | LK LT A L L I T I K E D N |
| UniRef90-K2FKG8 |  |
| UniRef90-A9NEB6 | NGYEVY T Y LFN N T Y K S Y Q S E NFRP |
| UniRef90-U5W7U1 | $R$ VA D GYNSAVVT D D GRAFSSAGLPA |
| UniRef90_UPI0003693FE3 | DEFEF SWLTVFS DGSAA Y S A A F E |
| UniRef90 ${ }^{\text {K } 5 C L 23 ~}$ | F K D $\square$ Q A T L |
| UniRef90_L9PCA2 |  |
| UniRef90_UPI000237D58C | F K V I Q WR\VF |
| UniRef90-UPI0003B63624 | QR VA ARLVD R T G A V VT $\square$ G G WP |
| UniRef90-T2QTK6 N N $\square$ Q A |  |
| UniRef90_UPI0002379A21 | F P G A K $\square \mathrm{E}$ ML L |
| UniRef90_O67299 | FP EAAVLIL Y T D G S LF VN G K F R D F F E |
| UniRef90_A4WXU3 | LP S CHI I AL |
| UniRef90_B2UF50 | LS S Y HA HVV |
| UniRef90-B7RIJ8 | $\mathrm{F} \quad \mathrm{G} \\| \mathrm{RA} \mathrm{L}$ L V Q Q G Q L |
| UniRef90_D5AVJ1 | F P G A R V E HL |
| UniRef90_UPI000379D948 | F R A E Gl P A RLVDS R G R VT T T G G WP A |
| UniRef90-UPIO00471B575UniRef90-X2GXY0 | NKVETYTYLFNNT F K T Y N Q S S G F E |
|  | IC DRSARFI VKENQ |
| UniRef90_18XYQ8 |  |
| UniRef90-Q8A1S5 | F K H |
| UniRef90_A3K6A6 | T D A DLH R IT L VD H D G NLR T |
| UniRef90-X1JAM7 | R P GLEAMIVTGSKDHKIHMSKGFEALLE |
| UniRef90_D5EQL1 |  |
| UniRef90_M4U4N8 |  |
| UniRef90_S1SU36 | LP GVAAF G VM S D GR T WT T |
| UniRef90-I3WKA6 | F D F ECAAVHADRTA $\square$ M S R H P P |
| UniRef90_UPI0004630ED9UniRef90-S6C183 | VF NVA Y H L |
|  | $L K Y$ Y A D A $\square \mathrm{F}$ VT K D K K V Y LS S G Lik |
| UniRef90- S6C183 <br> UniRef90 ${ }^{-}$UPI00047AF8AF | NKLT E |
| UniRef90_UPI000374F9BB | N EYQG M V K A D G R |
| UniRef90_C1DUV7 | NVT F GY L I Y Q D GRVE F N K K L L E Y F E |
| UniRef90-E8LV70 | P S EAGVI FI D D QL K I HQDTE |
| UniRef90-K6WY45 | T G LP A R L V G R D R TVVT L G G WP |
| UniRef90-R6JKY4 |  |
| UniRef90_C2KN95 | H HVA A A VFF T C D Q V L T P D M V K F LR |
| UniRef90-U1D3B4 |  |
| UniRef90_UPI00047EBB2B UniRef90 ${ }^{-}$T3QL32 | VA F S C A L L P D R R V L L S W F P |
|  |  |
| UniRef90-F9SHF1UniRef90 E3BLG7 | ES AVIY ID D QLHTIH Q S T E F |
|  | EVAVI FID D Q L K I H Q D T E F |
| UniRef90_D3SP18UniRef90_UPI000475C3BD |  |
|  |  |
| UniRef90_D6U1G5 |  |
| UniRef90_B7GP91 | HFDFECAILNANRAAAQSPNFP |
| UniRef90_UPI00028952FB | N N $\square$ A LML V I G S K G E |
| UniRef90_A0A037XBC3 | F Q D A HVE |
| UniRef90_V9WN72 | T P G $\square$ |
| UniRef90_K2GD87 | DND\D Y L F $\square$ M K N R E |
| UniRef90_B9KWZ8 | LP GLDRLA A L V |
| UniRef90-D5X100 | L G G |
| UniRef90_R4PWU0 | Q Y GLQ T L L V |
| UniRef90_UPI000299DF8A | HFNVEKWAVF |
| UniRef90_A9A0T7 | LD REKLF GIL V D K N A R W L S A A K A D R R D |
| UniRef90_UPI0003B4BFA7 | $L R Q S G R A A R L V A A D G T V V R L G G W P A$ |
| UniRef90_G0TV75 | R D A VK D Y L Y I R E N E R V |
| UniRef90_S9WG85 |  |
| UniRef90_W8GZR5 | RPNSG Y LVVWADGSTTSSAA |
| UniRef90_UPI00016A62E3 |  |
| UniRef90-E2SFA7 | HV T $!$ D A E G L R A S D D |
| UniRef90-R1ID09 | RH LPARLVG $\square$ G G G DVVT T P G WP A |
| UniRef90_C6XCP1 |  |
| UniRef90-F5SRF1 | N NLA G L I V D T S Y QVVT S |
| UniRef90-UPI00047A51F2 | N HSWLA F L |
| UniRef90_S8FAK6 | R Y V I D G Y K $\square \mathrm{Y}$ |
| UniRef90_Q472Y1 |  |
| UniRef90_V6KRE1 |  |
| UniRef90- Q8A238 |  |
| UniRef90-D2RCZ0 T G A E F A V M P N H A L R K T C A F P A |  |
| UniRef90-I3AW73 |  |
| UniRef90-E6K214 | G R L P P F D F L L L R D G S $\square$ Q M S P D F P A |
| UniRef90-D7IYY8 |  |
| UniRef90-K1TWD0 |  |
| UniRef90_UPI0002DE3DD1 |  |
| UniRef90_Q57W38 | R D TVR D Y R V Y VRENERV |
| UniRef90_W5W9V2 | RPE YE $\square$ TVV |
| UniRef90-D9T896 | $\square \mathrm{L}$ S P W Q H AV VT D D A H Q H H S R T LP |

UniRef90 B1HMS2
UniRef90 ${ }^{-13 I R 79}$ UniRef90-A0A022L6R5 UniRef90_D818Y2 UniRef90 R5J7B9 UniRef90-K9E2P4 UniRef90-D4TZV2 UniRef90_T5KTV4 UniRef90 F8K3S7 UniRef90_UPI0003773885 UniRef90_U1E8Y0 UniRef90 17CMA7 UniRef90 T0U191 UniRef90-UPIO0047C1C32 UniRef90 U2RKP0 UniRef90- UPI00037D6062 UniRef90_R6KK12
UniRef90_Q0FQZ1
UniRef90 S6RAL8 UniRef90- UPI0003B6591F UniRef90-UPI000307037E UniRef90 D1EA57 UniRef90 Q4CYX1 UniRef90-R5WRC1
UniRef90-UPI000375A73D UniRef90 Q0RT75 UniRef90 A0KTN UniRef90_UPIO0035F2179 UniRef90_J1TCF5 UniRef90 A3TRV9 UniRef90-UPI0003716407 UniRef90-J5KB41 UniRef90 A0K1X9 UniRef90-B6XSD2 UniRef90_Q72JX6 UniRef90_G0UVX1 UniRef90 UPI00047948BA UniRef90-R7QU90 UniRef90_Q2JGH0 UniRef90 R5FWI7 UniRef90 UPI00037C16F2 UniRef90-A4C883 UniRef90_UPI0003B2EF10 UniRef90 F4FAD5 UniRef90-Q3SKW1 UniRef90-W5YAJO UniRef90-A1K846 UniRef90 HOQHZO UniRef90-A4HMB4 UniRef90_S4IIA0 UniRef90 D7BPM7 UniRef90-V8HUN1 UniRef90_UPI0003B4DEB9 UniRef90 UPI00046807D4 UniRef90 E4U331 UniRef90_UPI00037E9AC6 UniRef90-S4HBW9 UniRef90 B1YFP8 UniRef90 ${ }^{\text {F8A3X0 }}$ UniRef90-UPI0004657794 UniRef90 UPI000348564E UniRef90 Q7UTU4 UniRef90_A0A010QB54 UniRef90_DODSL0 UniRef90 K6V6M5 UniRef90-UPI000363849A UniRef90-Е3B9J1 UniRef90_UPI0002631044 UniRef90 C5R8S3 UniRef90-K7QTF5 UniRef90-A8ZRD6 UniRef90 W5IHS5 UniRef90- SOKMB5 UniRef90_UPI0003B56FB8 UniRef90_J0L1I0 UniRef90 C1AYG0 UniRef90-UPI00036E58FD UniRef90-F9MTK7 UniRef90 U4TME9 UniRef90_R6XG21

QTRVWVEE $\square$ MGTPMSVHLDSDEATTERAVRACFDELHQVD MGTQVSLHLRGPRVDTEPAVAAVFGHLRTAD YYAW FEAMHTRIDLILCNPQVDSLAVTEEI YNEI ERDE
 WRSSFPAMGTRVDII GWGGDGMAIVNAVVGVVARHE

HAEPVMGTVVSFAVAVDGARVREAMEQAVAFLLHRAD $R L R H A E P V M G T V V S F A V A V D G A R V R E A M E Q A V A F$
$R R S V E Q U M G M P I S L A R G G P A S S A A A A A A V F A E L R E D D$

VRTTGYHANAAAERARDTALS L E
MMGT【IDDLIESD TPEKHDNDVCHLLT YK ILVETADPVGDALHARLCRAVIDDVK VMG IPMSI DI RDAG DHRDVADRAFEVLRQAD
 RWRGMALGAEAEITLHGPGAEEALEAAL AKIRACE

WAGRADGADAS $\square$ A $\square$ A GPDKRAA LLWPK $\square E A L I E Q \square E$ WVDHVMGMPVSVHVRGDDAHAERAVRAAFAELREVD WK GVALGSGAELRLFGDDRQAADLVNKVLAEVARLE
 GTVMGVPMS LDLRAPADERARAAARAFDLLRVED MGTVVS I DVRTPPPALDAAMETAVAVLHQAD
 FEFETDGSHWHDEAALPFGETVRRRLLEEASRFD


MGTVVSLTLPAASGADEAATAVVEQLFAGLD
PYTTAFPALGTGGLVSTARPVSTD\|RAKMEQLIDGYE RWEG VLGSF $\square E V Q L L A P P W R A R R A F G A V L R E V R R Q E$ QLRARTFRSMGTVVSLTVAGSQDELESAVEVVQGVFTELD A DAPAVQRLADDVFAHAH
 $\square T \square R A L G T Q V A W G A G A F A L A E R R L E$ $\square Q K R M R P L L G T F V E V A D E Q G D F S Q N Q A F A A A F S K I E N I Q$ T $\square$ TFAAMGTLVSASWRSTPQVAEVLRVSLPKRAAQLE
$\square G T L V E \square V A E G D D A T L I A A S D R A F A R I A A V H$ $P L L G T Y V E D G T T A G G R V A E A A T D R A F D D I A A A D$

EVWGTVVT\T DSHQSPQFDPVLAACRDFMDR!D T WTGRAFGADLRITAPGALPLAE I RAEVVAAll E EAASEVRAVVFAGHD RRARPLLGTLVDVQ AEGPEAEAAVAAAFDEDAAVH

RTFECMGTVISLTAAEGQPRLDEDAAAVER $\square$ FRELD

$$
N \prod R F \square T N Q R \square E E K E W Q D D E Q F F H Y \text { V }
$$

WVE QVMGMPVSVHVRGEDRSTARAVGAVYAQLRDVD MGTVVSLTVASNRDELESAVDVVEGIFAHLD $P L L G T L V E V A A P A G G A T H E A A F A A V W A L L Q D L Q$ E LIKHRAMACDFVVLVPDERVGNRSVADVVLEAIEEUE
 MGTVVSLALSATEPPG LSDRIGALLDGIE F Q G $\square$ GT GWDI T T P L P P LPASLLRARVLNTVVKFD
EHTMGMAVSI RVAHDEFDSRTAAHRAFAALHRAD
RFAAMGTRIELHLFG RDDPAALAAAEVAI RSAE

 QENQTSIIKNFIHS FE
MT IPFTDHLVTKEPDDPNLIRQIDTFLARDN $R L V F E T M G T V G S L V$ APGGLPANLGPRVMSVFSEMD

TWGVHAR VVTDPDALS SASNLIRGYLAAAD $H K V T R S K P D M G D V I S L T L G V H G A C A M R A M R T A F A Q L E G F A$ YTVQFYLFDTVTTVA $V P A K Q E E A K D L S D Q \square H E E F L H Y H$


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UniRef90 B1HMS2
UniRef90-13IR79 UniRef90-A0A022L6R5 UniRef90_D818Y2 UniRef90 R5J7B9 UniRef90-K9E2P4 UniRef90-D4TZV2 UniRef90 T5KTV4 UniRef90 ${ }^{-}$F8K3S7 UniRef90_UPI0003773885 UniRef90_U1E8Y0 UniRef90-I7CMA7 UniRef90 T0U191 UniRef90-UPI00047C1C32 UniRef90 U2RKP0 UniRef90 UPI00037D6062 UniRef90_R6KK12 UniRef90_Q0FQZ1 UniRef90 S6RAL8 UniRef90-UPI0003B6591F UniRef90_UPI000307037E UniRef90_D1EA57 UniRef90 Q4CYX1 UniRef90-R5WRC1 UniRef90_UPIO00375A73D UniRef90 Q0RT75 UniRef90-AOKTN7 UniRef90_UPIO0035F2179 UniRef90_J1TCF5 UniRef90 A3TRV9 UniRef90_UPI0003716407 UniRef90-J5KB41 UniRef90 A0K1X9 UniRef90 B6XSD2 UniRef90_Q72JX6 UniRef90 GOUVX1 UniRef90 UPI00047948BA UniRef90-R7QU90 UniRef90_Q2JGH0 UniRef90-R5FWI7 UniRef90 UPIO0037C16F2 UniRef90-A4C883 UniRef90-UPI0003B2EF10 UniRef90 F4FAD5 UniRef90-Q3SKW1 UniRef90_W5YAJO UniRef90-A1K846 UniRef90-H0QHZO UniRef90-A4HMB4 UniRef90_S4IIA0 UniRef90 D7BPM7 UniRef90 ${ }^{-}$V8HUN1 UniRef90_UPIO003B4DEB9 UniRef90-UPI00046807D4 UniRef90 E4U331 UniRef90_UPI00037E9AC6 UniRef90-S4HBW9 UniRef90 B1YFP8 UniRef90 ${ }^{-}$F8A3X0 UniRef90-UPIO004657794 UniRef90-UPI000348564E UniRef90 Q7UTU4 UniRef90_A0A010QB54 UniRef90_DODSLO UniRef90 ${ }^{\text {K6V6M5 }} 5$ UniRef90-UPI000363849A UniRef90-E3B9J1 UniRef90_UPIO002631044 UniRef90 C5R8S3 UniRef90-K7QTF5 UniRef90_A8ZRD6 UniRef90 W5IHS UniRef90- SOKMB5 UniRef90_UPI0003B56FB8 UniRef90_J0L110 UniRef90 C1AYG0 UniRef90-UPI00036E58FD UniRef90-F9MTK7 UniRef90 U4TME9 UniRef90_R6XG21

QATGGLFSGHWQGW
DRTDGYFD
RKTDRVFDVT\HSKNNYRHG】ND 1 L
TRTDGCFDVTI EATGGAFNPLI GPLVAA WDVKSMRAAYPAPSERVVEAALR HATGGLF
RATGG
T LT DGLF DAR
WH TGFSDAK\PTQAEDDEK LK
ERTDGVFDTRQGAVEHDLKAYLRGDRESISPAFETGSVRI LTHPGNLN $\downarrow$ A $\square G P L V Q S W R \square G F D$ DANVPNPEK DQKALAA
AVTAGRVDPCAGADLVRDGYAASFEMDDSGTSAAGGVGLR DASAGAFRIRTAEGL
RATDGAFSVW
TRTAGCFDVTI HSADYTPNLIRSVQ
EASGGAFDPSVQP $\square$ WRA $\square$ AS GGD
VA A A R A
$K A T G G V F D P S \square Q P V W \square A T A Q G G D \quad \square T A A R Q$
ATTDGAVDA WGWS
A $\square T E G A F D P T V Q A L W K L Y A D Y F A A R P D T P P P E N S V K E T L K$ ASSGACFDPATGPLVELRSVMKDEKSDAESTLTEEEVERF NDTDGAFNPAVYRLVDLWGFSSR■YSYRVVTGEYFAEHGY IASGGAFDVR
DATGGWFDPAW
RASDNLFNCTVGGEMMSRGAL PAY $\square$ GMPLL
$R$ LSEG
A ATSGAVDPLVGRDLELLGYD GAYS LRPD DPA $\square A Q Y A R E$ ERTDGLFRAW
$\square G T G G A F N \square A A A P \square T A \square Y V Q G G Q P D P E S \square A A A L I A A Q G Y A$
LLTE GA
DVTRGA $\square D P C V G E D \square I R \square G Y D P T \square S F T V E A D A E R \square G A L R G$ EATGGAFHPAPAHGGEAFRFVGEEVE
NSTGADFDPATAP IVSRGRQAVRNPD\|VSDTLSEKEVEHF LATEGAFSAE
D $\square T G G R F D P T$ TGVVSRAYENC $\square$ A DNARPPDPAETARY KH ERTGGRFDPAW
T $\square T E G L Y N P F M G N \square Y D A Y D E L L A M N \square D K \square P N D N F \square K T E \square N$ QETRGWVTPTVLPALEVAGYRQGPGDGRGGDAVLV
RSSSGLFNDSCTKPLQTDGLLPQHFEDEDFSK
QRTGGFFKLFPCLGWDAETLQLRGEQARLTDG
AATDGWFDAWAVP
RAS DGLFDPSVAGRLVESGQLPRHTGFPDATTT
E LT DGLFTAFS
$R A S D G L F N C T V G G R L V A \square G A L P E H G G T C L E Q G H A D D L V L G$
 AATHGAFDACDGADLLALGYDNSKNENSSSDSWANYRRAL TMTNGAFDP
$D \square T R G A F D P T V Q P \square W \square A L A E G R D P \square Q P R A$
ERTGGAFTP
DASARAFD CRVGTPEQLADTRF $D A T K G A F D \square A \square A G T F K S \square S N \square A T \square D D Y R V Q \quad K K K \square A$ LRTEGA
AATRGAFDACDGADLLALGYNNSKNENSSSYSWSNYRRAL EQTEHYFSPFLLEQQRANGYDRSFPFRRAVESEM
VATDGAVDA W
LATDGAF
TLSDGAFDLAQGSG
ERTQGAFDLTAGPGVETWGFTKREGRKPKPDE DESARE NRTEGNDSCRNGALYDYWAEYVQGKHD $\square$ SRRE VRRLA DQTEGLFNPYYG
$R V T$ G GAMTP $L \square G G S L E R \square G Y D A A Y \quad S L R P A G P P L$
$T V T N G G F$
$R A T G G R F D P S \square G A W S A L A$
NLTEGAFDPYF
EATQGAFHPAPRHGGVPYHLAGN
RATRGLVTPTVLGALQQVGYGEPSPGRP
TATDGAFDPCVGEDLVRLGYSQSFELDKAEEP $\square K \square R K K \| H$
EKSEGLFDPFYNGNY
KTTTGFFDPYYAS
RTTDGALDPTVAPALHSWR
YRSDGVFD VAATGTGGAAD
KTQSKEVN DAMGSVLK $\square W S D Y R D H D Q A H \square P P M D Q \square Q E A A K$ ETTQGDFDPFF
$\square R S N L K Y N L S \square G S L S T L Y D D Y Q N Y \square N Q L S K D D S K L Y Q T L V$

[^5]UniRef90 B1HMS2
UniRef90 ${ }^{-131879}$ UniRef90－A0A022L6R5 UniRef90＿D818Y2 UniRef90＿R5J7B9 UniRef90－K9E2P4
UniRef90－D4TZV2
UniRef90－T5KTV UniRef90 ${ }^{-}$F8K3S7 UniRef90－UPIOOO3773885 UniRef90＿U1E8Y0 UniRef90 17CMA7 UniRef90 ${ }^{-}$TOUl191 UniRef90－UPI00047C1C32 UniRef90 U2RKP0 UniRef90＇UPI00037D6062 UniRef90－R6KK12
UniRef90＿QOFQZ1
UniRef90－S6RAL8 UniRef90＿UPIOOO3B6591F
UniRef90－UPIO00307037E UniRef90 D1EA57 UniRef90－Q4CYX1 UniRef90－R5WRC1 UniRef90－UPIo00375A73D UniRef90－Q0RT75 UniRef90－A0KTN7 UniRef90－UPIOOO35F2179 UniRef90＿J1TCF5 UniRef90－A3TRV9 UniRef90＿UPIOOO3716407 UniRef90－J5KB41
UniRef90－A0K1X9
UniRef90－B6XSD2
UniRef90＿－Q72JX6 UniRef90－G0UVX1
UniRef90 UPI00047948BA UniRef90－R7QU90 UniRef90－Q2JGHO UniRef90－R5FWI7 UniRef90 UPIO0037C16F2 UniRef90－A4C883 UniRef90＿UPI0003B2EF10 UniRef90 F4FAD5 UniRef90－Q3SkW1 UniRef90＿W5YAJO UniRet90 A1K846 UniRef90－HOQHZO UniRef90－A4HMB4 UniRef90 S4IIA0 UniRet90 D7BPM UniRef90－V8HUN1 UniRef90－UPIOOO3B4DEB9 UniRef90＿UPIO0046807D4 UniRef90－E4U331 UniRef90－UPIO0037E9AC6 UniRef90－S4HBW9 UniRef90－B1YFP8 UniRef90－F8A3X0 UniRef90－UPIOO04657794 UniRef90－UPI000348564E UniRef90 Q7UTU4 UniRef90－A0AO10QB54 UniRef90－DODSL0 UniRef90 K6V6M5 UniRef90＇UPI000363849A UniRef90－ЕЗВ9Ј1 UniRef90－UPIOOO2631044 UniRef90 C5R8S3 UniRef90－K7QTF5 UniRef90－A8ZRD6 UniRet90 W5IHS5 UniRef90 SoKMB5 UniRef90＿UPIo003B56FB8 UniRet90＿JoL110 UniRet90 C1AYGO UniRef90－UPI00036E58FD UniRef90－F9MTK7 UniRef90－U4TME9 UniRef90＿R6XG21
 DDDNDKLSFTHKQTK DLGPVIRGYAVDRALE FDPTGWVKGWAVEEASR पSTTDQTVFFSHPDVQ円DLSGYLKGYALDRVKD \P ASSWGLLSRVGERRWVMDAPSPSLDLGGIAKGCTADACRD SGGYRGWFDPTGWVKGWAVEEASR WFSTGYAGGLDPTGLVKGWAVERAA RPDDSWDPSGYVKGWAVQRAAR \INPDR【IRDDEFSDFDPEKGMEDDGGA\AKGY\｜ADRDKD DGD $L V V T E T E L D L N G L A K G Y I V D R A T A$ LSNPNNDLNPNTKSFSQKGMKIDLGALAKGYIADKVMD RAHWGFDVHRDGGSVLVTDRAVQLDFGACGKGLCVDLLCR D DDGVKGWAAANAAA $R \square G W E K \backslash S P Q E R T L L F Q P G V T$ NLSGFLKGYALEKTRK RUGWEKVRDGNRIALGMGQALTFNGI AQGVATDAVAE AAGYAVDRITE RVGFGKDSFRRGFDPTGVVKGWAVERALD CLP CLPQSFDVNMTDGTIARKHEGAKLDLGGVNKGYTVDRVVE PLPEQKYIDAFSDGKFTDYYQQWLDLGGVAKGYAVDGIVQ RRDGTLDPTGLVKGWAADAASA $\square Q G D W R D \square E \square Q A D K A R \square A R P \square I \quad T D D G I A K G A V D M A T$ RRAWDRDVCR QGSDLITRRSVVVDVGAAGKGHLVDLLAG RARDGGRPTFDPTGLVKGWAVGTSAA NRFILNNNNKSUTKLNDFWFDLSSGAKGYAVDLIYE RPVWGHDVVRSDGTTLVTHGSVHLDFGACGKGYLVDAGAT S四PRSEGNGEEGTDTRKHEEARLDGGGNKGYTVDYVVN RPDGILDLSGIVKAHAAREAAL A $\square G W R K R \square S R T A D T V T R G N A N T V D V D G \| A K G F V I D L L V A$ NSKNTK\IFSEQGRSVRKRGDGTLDPTGLVKGWAAEAASR PDTAGLVVRDEIIRLPPGVRLDLGGTAKGWIAGRAGR CNTPPFLINNHRVKITQGHQLCVDGAKGYAVDCAQA VGAGGLDLGGIAKGYAAAQLAS
DWRGDE $\square D G D R V R Y T Q P G L V D \square S G I A K G Y A V D V A L T$ R A RNDSGSDPRKQEALFDPTGLVKGWALEKAAA RPDGALDLSGIVKGHAIREAGM RFTLTNSDNVKEGTDARKHEDAMLDLGGLNKGYTVDCVVD PVTWADISRDDGGTTLHMNQPVQLDFGAAGKGYFVDLVTQ WIVPGGFNPSGYVKGWACERMAR
 $P$ VA AGDVVCKQTFARMDLGGI AKGYAVDRA PFASCAHLILEGNHLTFANEYTKMDLGGLVKEYAVDQSIL PVTWSDTSQDSGSATLCTNQPVQLDFGAAGKGYFVDLVTQ NLPPETSPFLVEGCEVTRVGGGTIDGGGTGKGAA AMMA RWSPAGYDPTGVVKGWADERADT
TSERPDGDDDSGIVKAHAMREAAF
PWHWDGT WLWREHARTRLDAGGLAKGDADDQAVA RVGWKRLLDVESRTARFAVEMSLNMGALGKGHAIDVLAA RVARDAEVNFNDDNSVAFASPDQWDLSEFAASLAVDRGVN WQTATEGVFSPDRPDGRLDLSGVVKAYAIGRVAE PAPAWESVLTWSGTVLTASAPVLLDIGAAGKGLLVDLLAA TTDLVGPDGSRGYDPGGVKGFAVERAAD DDPAARRIVAERPDTLDFGGFGKGFALDRAVQ NNHYDPTGLVKGWAIQHGFE RVELFAPDDGLAKGYADRAA RGVPDARQVRVSAGSTHLAPGVGLDLGGTAKTWIASRA $R L Q W E S L R Q A G P G S T L T V S Q P V T V D F G A V G K G F L V D V I A D$ DPTGLVKGWALEEAFF YWVAHDWGTLTDGAFHPYRLDGTDDLHGVVK KAALADDA STTVDGTEVTLPAGVEDDTATARASSADHCAS WMDIDLSVQGFVTLRRPLMUDLGGVRKGFAVDLIVQ HSNTDD\｜ILNPEEKTVFKDPKMALDLGAVAKGYATEK MRDTQKVVVNRDFKTTDSKYTTSDTGGGYGKGYA EK

[^6]
## UniRef90 B1HMS2



UniRef90_131R79
UniRef90_A0A022L6R5 UniRef90-D818Y2 UniRef90_R5J7B9 UniRef90_K9E2P4
UniRef90_D4TZV2 UniRef90-T5KTV4 UniRef90_F8K3S7 UniRef90_UPI0003773885 UniRef90_U1E8Y0 UniRef90-17CMA7 UniRef90_TOUI91
UniRef90-UPI00047C1C32 UniRef90 U2RKP0 UniRef90-UPI00037D6062 UniRef90_R6KK12
UniRef90_Q0FQZ1
UniRef90-S6RAL8
UniRef90_UPI0003B6591F UniRef90_UPI000307037E UniRef90_D1EA57 UniRef90_Q4CYX1 UniRef90-R5WRC1
UniRef90_UPI000375A73D UniRef90_Q0RT75 UniRef90-A0KTN7 UniRef90_UPIO0035F2179 UniRef90_J1TCF5 UniRef90-A3TRV9 UniRef90_UPIO003716407 UniRef90-J5KB41
UniRef90-A0K1 X9 UniRef90-B6XSD2 UniRef90_Q72JX6 UniRef90_G0UVX1
UniRef90_UPIO0047948BA
UniRef90-R7QU90
UniRef90-Q2JGH0
UniRef90-R5FWI7
UniRef90_UPI00037C16F2
UniRef90-A4C883
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UniRef90-W5YAJO
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UniRef90_S4IIA0
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UniRef90-Q7UTU4
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UniRef90-DODSL0
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UniRef90 A8ZRD6
UniRef90-W5IHS5
UniRef90-S0KMB5
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UniRef90-F9MTK7
UniRef90-U4TME9
UniRef90_R6XG21
 LFKES G VSKVCI NYGSDTRMIEPPSEKNSWKVGG LHPVK RHLA LS SALAVGI NAGGDLQLFTAPGADWRWHVGIADPHE $1 L V R N N S C D V L V N I G N S S I L A M G N H P Y G K G W K I G T V S S R D$ LLQRYEVGDALI NMGNSSVLALGHHPMADGWKVDFAAASQ LAVAMGARGVLVSVGTSSVSVFGTRADGSSWRAGLRDPQG RHLALTSAVAVGINAGGDLQLFTADGSDRRWHVGIADPHD $R M V A A A G A R G V C V N G G G D V Q L L G R P G P W Q P W R V G V A D P A R$ $\begin{array}{ll}H W P Q T G E L D W C L N A G G D V V V R C G G & D R S F N V G I A D P R D \\ F W H A Y G & A \\ \text { S }\end{array}$ FWHAYG ISSGIINLGGNLLLVGPHQTDKKWRIGI RNPND YLKSEK VTSAMI NLGGNVLVYGPKQENGDWRIGI QNPKT LEEEFGADSPFVI DAGGDLVV GPREDPEPLR AALEDPAD
 LL QHYEVKDALINMGNSSVLALGHHPLVDGWKVGFGQGAN LL QHYEVKDALINMGNSSVLALGHHPLVDGWKVGFGQGAN RMDALG VHDYMVQATGELKVSGLKPDGSPWRVTLDAPSD $Y L Y G K G F Q N V L V D M G E V M A L G H S G T D P W R A G I A G P D$ ALG GVRGDVAIDAGGDVAVRCDPA GPGWLVGVEHPDR KLNAAGMR DVMFEWGGECRAF GVRNADHQPWAV ECRHPQS MLDQRNLER YYVDAGSSSSLYGLGVGGSEMTLNLTDPFD LL RA GGF GDDCFNAGGDVAVLGGPEPGRDWVVAVRSPSA ALDEAGABDHCVNAAGDLRIRGASGSGKPWRIGIVDPFD ELRRAGVCGGWVNAGGDLKVFGS MI ASSGA A AVCVNGGGDVQLHGG 1 LREHGFEE FVVDGSGDMVHAGKQV HLETVDHПAFSI GAGGD\VVGTGRGMLGPVLTVGLEHPGD QLiGAD I RSALINTG SFAADGTRSDGRPWSI DI SAPDA YLLQ NDFTNFFI E $\square G G E M F I T G L N N N N K \quad W N I G I S N P E N$ SLLALGDR DWCLNAGGDVLVSGSPAPGTPWRAGIVDPED
 $A A L R A G A R A A L D V N L G G D L A R K G P G R A E V L V E A P F G B P D N$
$N L R A A G M E N V L F E W G G D V R V S G R N D K G H Q W V V A L A R P P S$ SLGALGL HNWCLNAGGDVLVSGHPGHQEPWLTGGVDPDD ALINAGH PNCYVDWAGDIRAQGHHPDGRPWRSAVMAPWK


 RLRAAG VQDYAVLTGADLVVRGHAGHGGPWRVAVHHPTD SLRDAGLAAAATVNAGGDLARFGGABTPIHVRLPQQ LSPLLDLGLAYCLNGGGDIDAAGASAQ APWRIGIEDCDN ALRRAGL PGGWVNAGGDLRCFGDABARARERMD SLLALGM ANWCLNAGGDVLVGGSPNPGTPWRAGIVDPAD QLNAANF SDVLFEWGGDCRASGVNVQRQPWAVGVAKPGH MLKDAN DNNFCI NAGGDVLTRGYSYRDNPWVI GI RHPHD ICARAGL GDCLI DMGEFQALGG S R D PFRLGI EDPEA VLDAAGCAADWMISAGGDVLVRGHHRGDEPWSVGVVDPAB




 RLQAQGW-PAGWVNAGGDLRVFGPLR ALRADGM CDFLIHAGHSER
YLAS LD DHSYHISA $\square$ G LETHAS NQGFSWQGAVAQEAVTQ KHLEDSRVVGVCLNGGGDMQF ASQHDFTWNI GDEDPRD ELAAQGL ADWCLNVGGDVRREGQARPWTAGIVDPTDRSG DLAAAG GAFVIDASGDLLARGA GPVSVALEHPYN VLRAVPGIVFCLNAGGDLTCDAGPGSDERVWRVGISDPRD DFLQQDSIVAIALNGAGDMQLNTKENNPFQWHVGIENPAD $A K A K A D G A R A V L V N L G G D L A R L G L G E$ G SAGFEGEFVLDAGGDVLLA


 $A \square R Q A G G R R G I V D L G G H I R A F G A Q E W R V Q F H L H$

## AF LDNDPAVVAVGVNGGGDMQLATRPGSTFQWHVGDEDPAD

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


T G R A A G A N SK P S T $\square$ A Y $\square R$ P WQRPVLS T S K L A S G VL S H S D G QSYLAA Y QLTNGAVATSGY SKRGHHI QAVK MFSQFT LSSRYPALATSGTSE RGGHI WSAPGV

 | $R G A$ | $H$ | $I$ | $V$ | $D$ | $P$ | $R$ | $T$ |
| ---: | ---: | ---: | :--- | :--- | :--- | :--- | :--- |



 K TIVATYELKNGALATSGNTKRGMHIQTKR
 HS L S A V YKLK NGAAATSG

F S K R GQH $\square \mathrm{SNLT}$ T
D P TCQVS $\square P S$ GAGVATAS

SKRGEHILR
$P Q L I A A Y T V A T G A V A T S G T$
RQESSYVSSMYGTLSTSGYYNNYFYTLGDNYHHLIDSNKK

## UniRef90 B1HMS2

NiRef90-131R79 UniRef90-A0A022L6R5 UniRef90_D818Y2 UniRef90_R5J7B9 UniRef90-K9E2P4
UniRef90-D4TZV2
UniRef90-T5KTV4
UniRef90 ${ }^{-}$F8K3S7 UniRef90-UPIOOO3773885 UniRef90-U1E8Y0 UniRef90-17CMA7
UniRef90-TOU191
UniRef90-UPIOO047C1C32 UniRef90 U2RKP0 UniRef90 UPI00037D6062 UniRef90-R6KK12
UniRef90_OOFQZ1
UniRef90 UPIO003B6591F UniRef90_UPIOOO3B6591F
UniRef90-UPIO00307037E UniRef90 D1EA57 UniRef90-Q4CYX1 UniRef90-R5WRC1 UniRef90_UPIo00375A73D UniRef90_Q0RT75 UniRef90-A0KTN7 UniRef90_UPlooo35F2179 UniRef90_J1TCF5 UniRef90-A3TRV9 UniRef90_UPIO003716407 UniRef90-J5KB41 UniRef90-A0K1X9 UniRef90-B6XSD2 UniRef90-Q72JX6 UniRef90-G0UVX1 UniRef90 UPI00047948BA UniRef90-R7QU90 UniRet90-O2JGHO UniRef90_R5FWI7 UniRef90-UPI00037C16F2 UniRef90-A4C883 UniRef90_UPI0003B2EF10 UniRef90 F4FAD5 UniRef90-Q3SKW1 UniRef90-W5YAJO UniRef90-A1K846 UniRef90-HOQHZO UniRef90 A4HMB4 UniRef90-S4IIAO UniRef90 V8HUN1 UniRef90-UPI0003B4DEB9 UniRef90-UPI00046807D4 UniRef90 E4U331 UniRef90-UPIO0037E9AC6 UniRef90-S4HBW9 UniRef90-B1YFP8 UniRef90- F8A3X0 UniRef90-UPIOO04657794 UniRef90- UPIO00348564E UniRef90 Q7UTU4 UniRef90-A0AO10QB54 UniRef90-DODSLO UniRef90 ${ }^{-}$K6V6M5 UniRef90-UPIO00363849A UniRef90-E3B9J1 UniRef90_UPIO002631044 UniRef90 C5R8S3 UniRef90-K7QTF5 UniRef90-A8ZRD6 UniRef90_W5IHS5 UniRef90 SoKMB5 UniRef90_UPIO003B56FB8 UniRef90_JoL110 UniRef90 C1AYG0 UniRef90-UPI00036E58FD UniRef90-F9MTK7 UniRef90-U4TME9 UniRef90_R6XG21


EPVDDVAAS WAAVPMTMVADGLATALFCAEP RPASGLVISATVVAADLTTADVLATAVF
AAPAGI AGVTVLAASLTDADVDATAAYALGP DALTWLRR KPVEGKREVAVVTDNGA GEVLSTGLFVAD AGGVLWSTVSVEAESAALADALSTAGCMMDADADHRAATA SPVNHGASVTVLHPSALMADGLSSLLLILGPERGWNYAQE APL WATVAVSGPSAAVADALSTAFCLMDRAA $\square D A A L T H$ LPAHGVRSATVVGPSPCWADVWATAVMV
EPDESEAQVSTKCYSAMYADALATASLTKDDSKVRHMEE APAQTVKEVLVVIPWAGKGDCLTTALTVMGRQKTVDFVNK RPAEALLAATVVAGDLTAD LIATSVALGP DGVGWA VPASGLLSVTVVGSDLTVADAYATAALAAGSDTG DVLLAE LDEQQCRVVSVRAPFAWRADALTK KGVAGYLDDATAATK QPTSNVVATFAVADNAAAADGLATALFFACEPTLRA QGDSRPGSATVTGPELLWADVWATAAFV DPTTTERLLEA QQPALYRNVIVTADRAVLADALSSAFSLMPMAEDTA EPTNNKSTSVTVSNSTTDADALATALNAMPFEQALDFSNN RVAPVFRQVSVAAAD VTADVLATAIVAGGL Q PMLDRA LPAQQMEATWITVQSTSVADGLATALFI ADPNE
RPA FGLDATVLAPSALLADGLAKALFVLGEEAFPVLRA A LA Q ANRSGFTQVSVAAADTVTADVLATA $\quad$ VVAGGTRT四DAVE SVMKANQMVCVAASTCALADAVATASMTFDLPQAVAFLQQ
 APAHRFVQVTAVTGDVRTAETLAK LALLGADEVLEHLAA IISAGCWSVLAKKAWRADALTKVVALQG
LAFTDDCAALVVGPDAMSCEALSTALIAGGSPLLHDLTQK EPADQMVAATVVGPNLAVADAYATALYAAGPS GLINWFRS EADCAETSVTVLAPDCMTADALTKVV AADSACAAGVLAR GQTAWTGALTVCGPSVMWADVLATALFANPGSH QQILSR LIAAGVH SVLARYAWRADALTKVASQLP AEFRQVSVAAVDVVTADVLATADVAGGVPMLNRATA GLAQVSVKCYSCLYADALATASFV
$\square P A C D L C A S W V Y A K T C D Y A D A L A T A L F V S Q E S D \square Q K \prod V Q T$ AAANGACSASVVGPDAAVAEILSTALVVDG RKSPAWFAG DP RFSTVTVEGASATLCDAASTAFVLM
RTATTFVGATVVADDUVTADVLATAl VAGDEDDLRRVTS LA LPALAGATVRAPTCVLADALTK AVLATGDAASPLLAQ ECSKHYSQVSIIAPTTVDAGVWSTALL
DPACDLCASWAYAPRTAYADALATALFVSGGTPMLNLAAD RPDERFVQDTASAPQLYEAEVMTKLAFQMTESERQKLFKW EPANGVLSATVVGPSLTWADVWASAVA


WPSAKFQ VISVADNAFEAMLLAHYSATKTAQQAME DANA EDDLLQVTVVDDQLSFADVWATAGMAAGQAEFDALTAK EP QP目
VDENRCASVTVVGPDLVWADVWATACFL
THVSAPATAVAVAATGAEAEAWSTALLVADAASADRLCAA SPDDSLTQATIIANELLVADVMATTAIAMGRQKFEAFANK RPAAG LQATVLAGSALLAEALAKALFVLKEEAWP ILKA
 DTTQQVTVLAPYLSLADCWATVGVAADESQFQHLIRK

$R G P A D L A Q V T \ L A P N L T A A D V W A T A G L A G G Q V R L L D H T A Q$ $\square S D T Y F D S A S U M \square D D P G Y A D M Y S T A L M L Q E A E E L R N L L D S$

[^7]| UniRef90 B1HMS2 | N C Q R N A R Fil ${ }^{\frac{290}{\text { VK }} \text { ( }} 300$ |
| :---: | :---: |
| UniRef90_I3IR79 | LP EKEWLLLSEKKQKGD\EMSSGMEK |
| UniRef90_A0A022L6R5 |  |
| UniRef90_D818Y2 | A P GYEVAAL |
| UniRef90 R5J7B9 |  |
| UniRef90_K9E2P4 |  |
| UniRef90_D4TZV2 | WS RLLS G A L |
| UniRef90_T5KTV4 |  |
| UniRef90_F8K3S7 | HPRAEAFA V N R D G GTWRTGGFP |
| UniRef90_UPI0003773885 |  |
| UniRef90_U1E8Y0 | NPEVYG AIF F $\quad$ S K D K K I |
| UniRef90-17CMA7 | WPDLEAFVI HDGVFRTTEGFDAH |
| UniRef90- T0UI91 |  |
| UniRef90_UPI00047C1C32 |  |
| UniRef90_U2RKP0 |  |
| UniRef90_UPI00037D6062 | R V G R T G L V V W A D |
| UniRef90_R6KK12 | RELLEAEF |
| UniRef90-Q0FQZ1 | $\square \mathrm{L}$ GV R R $\square$ T L VT HEGDLR |
| UniRef90_S6RAL8 | HK IP AFFVI R A D K R F 1 DRSNA |
| UniRef90_UPI0003B6591F | F P N T RLLEH |
| UniRef90_UPI000307037E |  |
| UniRef90_D1EA57 |  |
| UniRef90_Q4CYX1 | WR H |
| UniRef90_R5WRC1 | ERNDT I V V V Y ETM D G |
| UniRef90_UPI000375A73D | $\square G \mathrm{Q}$ G A W W L GVRPD G T L |
| UniRef90_Q0RT75 | FTRAGWAWLTVTTTGRIRAGKAFP |
| UniRef90_A0KTN7 | I Q QL G G D L V |
| UniRef90_UPI00035F2179 | LDGTEGFA VAADGTTWQTSGFARHL |
| UniRef90-J1TCF5 | HFEFTSVRMFADGHVE $\mathrm{V}^{\text {V }}$ S P D F E $\square \mathrm{F}$ L S E |
| UniRef90_A3TRV9 | R D P A Y RLL V |
| UniRef90_UPI0003716407 |  |
| UniRef90_J5KB41 | N N M S VMFl ${ }^{\text {V }}$ K T E S S ElV V S D S W |
| UniRef90_A0K1X9 | T D GWDIEVLAVRTGGELLATPGFRR |
| UniRef90_B6XSD2 |  |
| UniRef90_Q72JX6 | FR A $\quad$ RGLLF T P EGPV |
| UniRef90_G0UVX1 |  |
| UniRef90_UPI00047948BA |  |
| UniRef90 R7QU90 | L V D |
| UniRef90-Q2JGH0 | LAREGWA WLIVDAVGRLDHSGGFP |
| UniRef90_R5FWI7 | $Y N$ FDILIFKDKE!VY |
| UniRef90_UPI00037C16F2 | QPG ARLLAYEAS GATWTWEG |
| UniRef90_A4C883 |  |
| UniRef90_UPI0003B2EF10 | $\mathrm{G} V \mathrm{~L} G \mathrm{GA}$ Y A L A M T S N G R VF A D P A LQL |
| UniRef90_F4FAD5 | GS D Y R L I |
| UniRef90-Q3SKW1 | H GAQAIVLDGQRA |
| UniRef90-W5YAJ0 | $F P \mathrm{G} Y \mathrm{E} \mathrm{V}$ |
| UniRef90-A1K846 | $\square H$ A L G G HVL |
| UniRef90-H0QHZO | M WD IE A L A VRANGELLAT G GFRR |
| UniRef90_A4HMB4 |  |
| UniRef90_S4IIA0 | T S A EFAVMLP NKTLR K T R A F P A H |
| UniRef90-D7BPM7 | F P Q Y A FVV |
| UniRef90-V8HUN1 |  |
| UniRef90_UPI0003B4DEB9 | $D G G \square D V L A F \quad G A D G R V W A T P G A R R$ |
| UniRef90_UPI00046807D4 |  |
| UniRef90_E4U331 |  |
| UniRef90_UPI00037E9AC6 | TWDVAVLA $\square$ R R A D GSMLA T P A F R |
| UniRef90-S4HBW9 | NVGAEFAVMQPNHALRKTCAFPA |
| UniRef90-B1YFP8 | $F P N$ GRLLLMDES GK M |
| UniRef90_F8A3X0 |  |
| UniRef90_UPI0004657794 | VEKWGA DVLA VR R D G T L L A T P EFR |
| UniRef90_UPIO00348564E | GLGGAHAVFHDA |
| UniRef90_Q7UTU4 |  |
| UniRef90_A0A010QB54 | S P S L AVKLI DES GRVFTS |
| UniRef90-DODSL0 | Y R L S G L Y L |
| UniRef90-K6V6M5 | R WDVAVV LAVA P D G G LF A T S H F |
| UniRef90_UPI000363849A |  |
| UniRef90-E3B9J1 |  |
| UniRef90_UPI0002631044 | A P D R H F R F |
| UniRef90-C5R8S3 | Q NLLHGLLITNTS Q |
| UniRef90-K7QTF5 | H GAQGVLFTGEG |
| UniRef90-A8ZRD6 |  |
| UniRef90-W5IHS5 | LP H LE F E F F Q F F T D R A A F S P GFPA |
| UniRef90_S0KMB5 |  |
| UniRef90_UPI0003B56FB8 | E HQLEVLLA F GQ T G DVWA T P A F R A |
| UniRef90-J0L1IO | HQLTG L L M T S K T I P S SE G |
| UniRef90_C1AYG0 | LT NLLELP A RLVVDQEFRV IT L G G WP |
| UniRef90_UPI00036E58FD |  |
| UniRef90-F9MTK7 |  |
| UniRef90_U4TME9 | A Q LT G Lbr VT A A H RVQ |
| UniRef90_R6XG21 |  |
| lupas_21 |  |
| lupas_14 |  |
| lupas_28 |  |
| jnet | - |
| conf |  |
| sol25 | B B B B B B B B B B B B B B B |
| sol5 | B $\mathrm{B}^{\text {B B }}$ |
| sol0 jhmm |  |

1
jpssm $90 \quad-\quad 100 \quad 110 \quad-\quad-$
jpssm
jpssm $\quad 210 \longrightarrow 220 \longrightarrow 230$
jpssm $250 \Rightarrow \overbrace{-}^{260} \quad 280$


[^0]:    

[^1]:[^2]:    

[^3]:    lupas_21
    lupas 14
    jnet
    conf
    con
    sol
    sol25
    sol
    sol
    sols
    joum

[^4]:    lupas 21
    lupas_14
    lupas 28
    jnet
    cont
    cont
    sol
    sol

[^5]:    lupas_21
    lupas_14 14
    lupas 28
    jnet
    cont
    sol25
    sols
    solo
    jhmm

[^6]:    lupas＿21
    lypas－14
    jnet
    jnent
    con
    cont
    sol25
    sols
    solo
    jhmm

[^7]:    lupas_21
    lupas_14 14
    lupas 28
    jnet
    cont
    sol25
    sol25

    ```
    solo
    ```

    jhmm

