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UniRef90 E6PYU7

MIT DENKK LTAQWAMDYA LTKNGCQAAKVLLYSSSNTSFEDR EQLKSLVSDCLAEARRQGATAAEVSLEHGLSVTARMG
 LQQLASDALAHARLKGATACEVDVSEGQSVSVRCG QLELAVEQALDSAKRLGAEAAEVSISKQTGLSVRNA TASELLDLCRRTLDLAKATGATAAEADFSESQSVSVRLG M $\square$ T DNNKKLAQWAMDFADKNGCQAAKVVLYANSNTSFELR TSTQQEQVEQ AEAKRQGASACEVSLEQGLSTSVRQR ESLRRIAQDMLDYARQQGATSASAEVSEGQAVTVRHG LQNIARDVLDHARKAGATACETDVSDGQNVTVRRG I EALQSAAEFVLKEAKRLGASAAEAGVSHSQGLSVTVR IDEVKEAVSEVLAQAKKLGATAAEAAMSRTSGLSVRLG QQLEERVVAF:LDEARRQGASACEVAVSQNTGLSVVRGG HLREATD RYARKRGASACETDVSEGFGQSVGVR
 N E

 MNQEDEA AVA V G A S A A E V A A T K T G 1

 LK K QVE K I L A VA K Q Q GA S A CEVV SV H Q G LA T S V R Q G $M D L D T L K Q \square A E D V L K Q A K L A G A S S A E V S Y G T G Q N V S V R L G$ TLDEI K QMSEDVLKVAK SLGGASEAELSSLDGQNVSVRMQ Q TLRELAGDVLAHAAKQGASACEVDVSTGQSVSVRCG IT DNN K K L A Q WA L D F A L K K N G C Q A A K L V L Y A N S N T S F
$E V K E R V A T V L E L A K S L L G A D G A E V A M S R Q Q G L V V R M M G$ MTAQLQD LATQILAVAKQRGATAAEVNDDKGTGLSVRMG ERLSDIAERLLARARALGASQAEVSCSEDRGLNVRLG T Q D Q S Q T
K E I $V S$ D $V L Q Q Y A$

EDFQE VEETMR $M \square T N D N K K L A C W A M E F A L K N G C Q S S$ RVGTVYNGSSSSNEDR

DRLADLAQDVIRRARAAGASSAEVAASDDTGLSVRLG MVADLLSEAKKQGASAADAAVS SSAGLSVRMG TQDELKEIASDIL RHAKSLGGTDAEDSEGDGLSVSVRRG MS DDLCDI A A K AVVELAKKHGADDAEVVVRDGAELVVRLG

D R L A A I A A DVVI T R A R G A G A S A A E V V SV E T G L N V QQRLEA QTA YALE QARQLGATACEVSAQQGMHVSVRLG $T Q D Q L Q Q L A R D V L G Y A K A Q G G T D C E V D F S E G S G L S V V V R$

 KEHFQEI I ERSLNSAKKLGAS QAEI SEGK GLSSVSVRKG

H F E E L V D L A I A HA K K LLGA T DA EAS EGC G L S V V S V R R G D H L E A T S S DF DLIVQ KALAKAK Q $\square$ GASDAVASVSESSGLGVRQG
$V L D D V V S R A R K A G A D A A D A V M V D G R S V S W R L G$


QLS A S D A A DV YLQS TRFESVVL
$F E T R V D A A L A H A K K L G A S D A G A E V S E G L D S V S V R N G$ SSQFQEIINFMLKEAKRRGASDAVAEISEGQGLSVTVR FEQLVDTALAHAKKLGATDAGAEASEGCGLSVSVR MTSEQDPALL EDLI RKARAAGADSADADVARSTAL SHRMG


LQTVLSNVLGGAIDNADLYFQSTYS ETVVL E DE S HL T R A L A E I R A H RVVD DA DL Y F E T T R S E G WS L
KTDLKTLA LIELVDRALCAGASDAEAVVFEGDETKVRLG
D DVELAVQYALELAAKEGTSAA $E R L L E R C L G E A L S A G G E F A D L D Y F E A V T S T S L G M D$ MDYQELEDLAGQVVEKAAKRGV LAEAYLTAGEELSIEVR DLE PLMQQRVLLDALFGAAGVDYADLYFQYARSEAWSL E LE S A MAEMFSHQVDYADLYFQHSSSEGWS LE LHKVLASMRSRGVDDADLYFQYTCSEGWSLE L D R GLE HALGAGI D YA DLYFERTWHE GWVL G

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

LS Q D L E ALL NGKLT GQADYADI YFQHSRHEAWVL E
I E K V V A R L A G S D $\square$ D D A D V Y L Q S S H Y E S WS L E

## QUERY <br> UniRef90_UPI000413056F UniRef90-N9U3F8

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UniRef90 C9QN62 UniRef90_L8D7Z0 UniRef90_UPI0003B38AA8 UniRef90-UPI0003B41118 UniRef90_YOKJD5 UniRef90_C6WXZ8 UniRef90-A0A011PGY6 UniRef90_UPI000473E451 UniRef90-A3Q9Z0 UniRef90_R5S4J5 UniRef90-W1NC80 UniRef90-Q47VH3 UniRef90_UPI0004764A7D UniRef90_UPI0002630276 UniRef90-F5S685 UniRef90-X2K1K6 UniRef90-E6QV79 UniRef90_E7RV10 UniRef90-K5ZIF8 UniRef90-UPI0003455AC6 UniRef90-WOTID0 UniRef90-A4BQM8 UniRef90-E8YLN5 UniRef90_D0LV04

UniRef90_T1AN65 UniRef90-B5ENG9 UniRef90_UPIO004703E2C UniRef90_UPIO003674714 UniRef90_C6X7F8 UniRef90_A0A059KHN8 UniRef90_M1L9V7 UniRef90-G9EKH4 UniRef90_UPI0003721E2F UniRef90_JOUQF2 UniRef90-UPIOO047A4784 UniRef90-E6QT32 UniRet90_UPI00036BC271 UniRef90_K9HWA0 | UniRef90_LODZZ5 |
| :--- |
| UniRef90 | UniRef90_UPI0003F9D3B4 UniRef90-UPI0003B331DF UniRef90_C9YGL6 UniRef90-A4SW83 UniRef90 F5Y4C5 UniRef90-UPI0003B7A351 UniRef90_A2SJQ1 UniRef90_UPI00036DC0A9 UniRef90-K2BIP0 UniRef90-UPIO003F7E75A UniRef90-I3ZJR4 UniRef90_W6M858 UniRef90-A3WPW7

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UniRef90_Q60BT3 UniRef90-C1F2G6 UniRef90_UPI0003F75793 UniRef90_E6PWI4

DMDRTQQASFGG ${ }^{50}$ GS $\square S T Y V^{60}$
70
70
NRLNRKELDETA
R Y G S I EVETVEHHRSRGLGVTVYVGRRKGSASTTDLSPEAMRETV ELESIVFNKDGALGGAVYRDGCKGSSSTTDLGRDADRACVV

 EVETVEF
E OL H
EVVT I EYNRDKGLGVTVYFGQQRGNA
DVETLEHNNDTGLAVTVYFGQSKASA
EVETI EFNQDGGLLGVSIYVGNKKGSA EVETVELNRDRGFGISLYLGQRKGSASTSDLSPSALRSVV
 EVVETVEFNRDE GFGITVLYVGHRKGSASTSATAGNA$I$ R E TV QI ENVEHNRDKSLSISVFDGQRRGHAS DV TV EHHRDQGLGVT EVETI E YNRDKGUGVT EVE EYNDKGMSVT EVENVEFNRDGALGITVYRGHRKGSAS EVDTVEENNSDGALGGI TVYYRNQRKGS EVETVQEAASHGVGFRVFLKGKMAFS EVETVEFNRDQGFS $\mathrm{I}^{T} V Y$ HGQQKGSAS
 EVETI EYNRDKGVSVSVYLGQRKGHAN KI ETI EQNKDKGMGVTVYLGQKRGNAS EVETVEFNKDGALGI TLERDGCKGSSS DVESVELDS DQGI AVVVYVGQRKGSAS EVENVEFTNDGGLLGITVYREGRKGSAS AV E K L E Y H R D Q GA GIITI Y F G NRK GY S S AVETVE T C TRDRGIGVTVYFGQRKGSAS
 $E V K T A S F N D D Q G V G V R A V S G E K T A F A$ $K V E T$ I E Q T R D K GLGVVSVYVGQRRGHAS
 EV E TVVEHTRDRGFGLTVYFGQRKGSAS
 E V D T L E H M R D R G L A I TVA EVETIE H N R D K MV GVTVVF G N K R GNA
mo
EVVETMELATDQGGIGVTVYVGKRKGSA KIETDENRKGMGVTVHIGQRRGNAS


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


 QV E TI E RMRDNSSL G V T TV YR GKARGSASS S
 ETET L R S A K E VR LGGL RLFF DK R S A T S S
 EVVK S G S H S E Q GA GV R A V S G E K TGGFA Y S D E I T L P T L LA A A
 EVVETVE Q S LD K QV GVTVVFLGHHRGNASTS ELENVERNRDKSLGVTVYIGQRRGNAS









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




## QUERY

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UniRef90-R6KM66 UniRef90-UPI00036A4537 UniRef90_F0EX58 UniRef90-D9SJG5
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K NG DDSTRY L AK KEARVLADPSRYYKGGKPDLKLYDAKF EAACRDAQYAAEDEYAGLAPDPDTLA TEEFPELDDIYYPW



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 A A ALAAI A QHASEDEYSGLADDEKMAKS
 QAADDI ARYTSPDPFAGPADAELLA YEAPDLDLYHPW KAACAA ATHTQEDRCAHLA EP EELMATDFPELDDLY HPW
 A A A CNI ARYTAQDEFCGLADPALLAR





 RNGDESTRYLAVDEARVLPDSSRYYKGGKPDLQLFDEKGR ERAMADARYTGEDPASGLAD AELMATHLPDLDVHHP W
 AQACAI ARYTEDDVAAGLAEAA LMAREQPDFDRWHPWP QAACA A ARYTAEDDCSGLADANLMAQHLDG DFDDNKYHEW DAAFNI ARFTAEDDCAGLAEAAELLEMHPQDLSLFHPW EATRAIAR GGAHQRHHAVANKSGHA

 DQACAI ARYTEEDPAAGLADAA LMATEFPDLDLWHPW



 AKAYDI ARYTGEDDKAGLA PVELMASDFPDLDLYHPW EAAYNI ARFTADDDCGGLPE AELLEMAPPDLQLFYPW
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 AAA L N I ARYTAEDDCAGLADPTLLLKGDRRDLDLYHPW




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 RATRA AA QGSEKQTRDMGLSGNDTRQAYPSLDPDALCQD


 AMACAI ARHTEVDPAAGLADPERMAKA GTVRAIARQG RGRVK VGGAARPATGG

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UniRef90'A4BQM8 UniRef90_E8YLN5 UniRef90_D0LV04
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SLNPDDKTEMAKAVAEEALGKDERTISVGSSYGDGEDFAY
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A <br> \section*{T} <br> \section*{T} D A E A A
S I AD HA QL V E EA A LAVACEDAARDYDPRIVNE GASGSTQFGIMV
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QLTVDEAALLA QQCEEAALAVVARDIDNEGASVVTGTGFFA
SV E D AVVAIARRCE QAAFAVSPAI SNE GATVVSIQE GQFV



DLIN A E T A I R R A Q E T E A DA R E S D A R I


S L Q D A E K V A L L E K L E Q Y A R A I D P RIT Q HI SVVPQAI EL AREIE A A S F A V S P QI A N S D A SVVSVGH GHFL


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## S

A $\begin{gathered}\text { A } \\ \text { E } \\ \text { D } \\ \text { P }\end{gathered}$
SVEA
s V
DVD
N 1 LDADAQLAALKCEDAAFACDPQISN
 ALDAD
S $V$ DA DPTSATIVMAAECEAAALAVDE ELTADQMUAMVAEAAALAYSDKITNS DCPSDQALE LLARRTEAAGFALDPRVDNEGASVGTRRAMFW


 NDDAARAARIALACEAAAFKTDRRITNEGAGVSAQQSHFF EPSPEDLIERARLCEEAARAVEGVTNSEGAEAGWGMTRVS DLPDEGAVALARQCEGVARGVDARISNSEGGVASHATRHC SMDSTAKVQLLERAERMARARDGRVVQVMAGLASEYDVVL



170
180
190
200 LGNTDGFDHGYASSRHSLSCSVVGQRGDSMQRDDWWTVAR YGNSHGFVKGYAASRHSLSCVLI GEQDGEMQRDYGWSCSR A ANSLGFMGGYPTSRHY A CSVI A GEQEAMQRDDWYTTHR YGNSHGF ${ }^{\text {GKGYAGSRYGMSCVLI GEQDGDMQREYGYTSAR }}$ YGNTHGFAAHQQGTRHSDSCSVVAAQENGMQRDYWYDSAS
RLMSNGFEGESKSTWYSVSASVAIVGEGEARPSDYWYGSS $R L M S N G F E G E S K S T W Y S V S A S V A D K G E G E A R P S D Y W Y G S S$
$Y G N S H G F I D G G S A S T R H S L S C V M I A E G D G Q M Q R D Y W Y D V H R$ YANTHGFCQHQKGTRHSISCSLVADGGDGMERDYWFDVAC FANSLGF $\square$ GGYPTSRHSVSCSVI AEQMDAMERDYWYSVAR Y ANSLGFMGGYPSSRHSISCAVIASHDDTMQRDYWYSTVR Y ANSHGFSGQVKSSRHSISCTLIASDSEGMQRDYWYDVAR Y GNSHGMLA GYPRTRHSUSTMVI GQQGEQMQRDAAYTV SR $\begin{array}{lll}Y G N S H G F & G S S D G T R H S A S A V L I V N T E D G M Q R D Y W Y T V D R \\ S A N S H G F & G G Y A T T R H G L S C S V I A G E G D G M Q R E Y W Y D S R R\end{array}$ YGNSHGFIGGYASSRHSGLSCVMI AESNGHMQRDYFYDVNR L F GNTLGF L HGTMSTRHSLSCSVLAERGGNMQRDYWYSVAR AGNTOGFMGSYCSSRHSLSSCVIAEQDGNMERDYAYIUGR
 YANSHGFNAGYPSSRHGLSCSVIAESGDSMQRDYWYTSAR YGNSHGMLASYPSSRQS S C SVI GVDKNGDMERDYSYTVA
 LANSRGLLKSTKMSACSFGVYVVAEKGDQRSSGGEYCLRR YGNSHGLIA GHAGTRHSTS CVMI AQADGQMQRDYWYDYGR YANSHGFNHGYPSTRHSISCSVI AEAEEAMQRDYWYSSAR Y S NSHGFTGGYPSSRHGI SCSVI AESDDSMQRDYWYATAR AANSLGFDAGYPSSRHYLSCSLIAGTNDGMQRDDWYEVAR AGRGAKMQRDDWYSSM
$G E Q D G H M Q R D Y D Y T V A R$ YGNSHGFLNGYVSSRYSLSCVVIGEQDGHMQRDYDYTVAR YANSHDFMGSQRGSRHSLSCMLIAEDAGGMQRDYDYTSAR YGNSHGQLVGYPSTRHSLSCVMI ASDGDDMERDYAYTVNR YANSHGFSGAVHSTHHSASCVLVGQDGESMQRDYWYSVAR YANSHGF $\square$ GCERSTHHSLACTLIAGQGDGMQRDGWYSSAL YANTHGFCQHQRGTCHS 1 SCSLVAADAAGMERDYWYDSDC
LGTTRGFLSGYPYSRHYLSVSPI AGSGSHMQRDDWYSSK IA RSDGHQAADVRP LVRRLSLQVIAEQNGQREQGSA GGGGR SANS LGFCDGFAHSRHTLSVGPIARRGRDMQRDGWYSSAR
 Y ANSHGFVGRER GTRHSDSLSLI A GDEA GMQRDYWYDSVR Y GNSNGFVGGYPTTRHGLSCVILAQDGDCMQRDYWYDSRR
 FASSGGFVGGYRGTYASFYVEPDCDRADNKKRNGYWWTA G YANSHGFIGREHAT QHSMS CALI A GNGED GMQRDYWWDSA Y GNSLGGFMGSSRSSRHSLSCSVIAEDRNGGMQRDYWYDVA YGNSHGFLHAEKGTSHSVACRLIAGSGDAMQRDADYTAAR SANSRGFIGGYPYSRHTVSMMAAIA GRGAGMQRDDWYVSV YANSHGFSGGY LSSRHSISCSVIAE EADA MQRDYWYSTA A GNSRGFRGGYASSRHSMSV SPDAGRGAQMQRDSWYSSA LLNTF GFF GSRMYS QYGLSVMPVIASDNNGNMQRDYWYDSN SA A THGFRRGGYA S S R H S L S VAA PiA A GK G DAMQRDYWY S SM
 YANSHGFVGHDRSTQHS I GCALI A A ESER GMQR DYWYSSAR

 $\begin{array}{ll}L \\ Y & \text { G T Q }\end{array}$ VIGQD GALLHGDVRPLVRLNVTVIVQENGRREQGSAGGGGR
 MGTSHGFMGGYPFSRHYISCAPIASGKNAHMQRDDWYSSS SAHTRGFRGGYASSRHSVSVAPIAGRGDNMQRDAWYSSM

 IMMAS D G H LLA A DVR P L V RLN $V A R A D G T L A A D V R P L V R F S V T V I A E Q K G R R E V G S A G G G G R$ MANSRGFAGHYRKSYCGワGTTPIAQDANGMQRDGWGSGAR YGNSHGFCGGYPTSRHSLSCSVIAQEGAEMQRNHWYTVAR YGNSHGFLGGYLQSRHNLSCVLIAKEGERMQRDMSYSVAR IA A S D GTFAS DTQPLARLLDFVIAKDEQNNTARGTSGGGG LANSQG $\square$ TAA Y HAANCGASTFVVAVENGESQT GF GLAAYG VARAD GHMAADVRPLVRVS $\square$ SVIMMEKGRREQGSS GGGGR

 $V$ T S S D GTLLAADI R P L V R R F NV SVIVVRNGRRERGSAGGGGR V A R S D G LL A A DVVRPLVRVSLQVIVEESGQREQGVAGGGGR $V A N Q D G S L Q A D V R P L V R M N V S V I M S E N G R R E Q G S M G G G G R$ VVVASDGTLAADVRPLI RCNVSVIAERNGRRERGSAGGGGR I F GLDDGAMHGDVRPLVRLNVVVIVEAGGRREQGSAGGGGR IAASDGTFASDTQPLARMNVFVLAKNDERTAQGTSGGGGR YANSHGFLGRERGTSHSLSASFI AGSGDGMERDYWYTSA
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LY M N DLIK K G IG QK ALLERVLRKLGQKKVQS GKYTMVVDPM D AKELEAAEAVGRKAAERTVVRLGARSLSTRQCPVI FAAD RMGDLWSPQRIADDEAVERTLSRLGGRKIGTCQAPVLEHPD NAGALEAPEAVGQQAARRAVARLNPKKI STGSFPVI FEAP RFDELWAPERVADEAVSRTLGRLGGRKI GTTQAPVLFHPD $R H Q D M D S P A Q I G Q T A A E R T L R R L N S R S I P T$ GNYPVLEDAT L F Y D K L P K T D G S VA L E R V L R K L G Q K K A K S G K Y T M M V D P
 S A D D L L G A V A V G R D A A E R DASDLSSAVQVGQTAA QHTLRRLDAKEI TTGQYPVIAAAE E QA GLK KA A K DVGGLEAA QETLARLLNSQKL GTMKVPVI FRAA

 D P A D L A S P EA V G R Y A A E R A L S R L K A R KLL S T R K CP V L F E S P NPSDLESA DHVGQKAAQRTLRRLGARGLSTRQCPVLYAAE A IDDLLKSPDWVGAECARRTLSRLAPRKLDTMKAPVI FAPE SALDLEPAR QVGERAAERTVARLGARRLGTQESPVLFRAD R D P A D F P A P E I G D Y A A R R A L S R L G G R K V K T C E V P V V I F EAA HGLDSARAVGLRAGERAARRLGPGKIKTCQVPVLFEAP RHRDDWDAKKVGLEAAKRTVSRLDAKKLDTMKVPVMFAAD RHKDDDLWTPEVVGQKAAEKTVVSRLDA QKLLKT GKYPVMMFAAAD
 NFKDLKSPEEI A EKAARKAYKMLDPQMVKTQKAEVI FDTD $R G D L L T D A A T I G R D A A E R T V S R L G A R S V P T C D V P V L F A A E$

 R N P N $N$ K L HP DKLQKTGI GQKALERVLRKLGQRKTAS GKYTLIVDSLD
 AREDLERASAIGRRAAERTVARLQPRSLPTGEVPVLFAPE D A A QMDS VE QI GR】AA QRTVSRLNARSIATGSYSVVLDT T R A A S D L S P E A V G R Y A A E R A L A R L H A R K L S T R K C A V L F E A P
 L Y F D TMMDK E GLLGT K A LDERVVFR K L G Q K K V A S G K Y RMMIVD N M A ANELQAATEVGREAARRTVARLGGRRLGTRKAPVLIRAD DAAKFMDAKALGDKAAERTLARLGARSLSTRQCPVLFASE DWQELKSSPQSIGEKAARNAVAKLHGRKLGTCQAPVIMABAD DPSALQTATVVGQEAGRRTVQRLGARRLSTRTVPVLTTPT
 RF LDD T D P E EVVGREAARRTVATLGSRKIETCEVPVIPDPE
 RAADALATPEI GRTAAQRALRRLDARKVATTKAPVLEENQ SPDDLYSVEEVGRRAAANTLARLAPRNVTTGRYPII FAPR RDAS RMSPEAI GRYAAERALAKLNARSLTTRTCPVLIEAP R N A D W L D S S K N I G Q L G E R T VV R R L G C R R I K T A Q V P P V L F D A S $R$ DVVA D L S P E A V G R Y A A A E R A L
 R D P
 $R Y P E R L A S A Q R V G E A A K R S V M R L G A R Q I P T G R Y P V I F E A P$ NYVDALSPAE I GRKAAERAARRLGARRVKSARVPVI YDPR
 H L GALESSPEAVGKRAAERTLRRLGARKIKTQEVPVVEDPE TDYRYFRADEYAREAVRQALVNLEAVEAPAGTMTVVLGPG FDFAHFTEADYVQKAVQQALINLEARPAPAGAMTVVLGHG R S A D E RSADELSPEAI GRYAAERALARLGSRKISTRECPVLFESP

 Y DYDELDKNDMAREAVRQALVNLNAVDAPAGTMPVVLGPG
 A QNDLEAPVTVGRTAAQRALRRLGSRRIDTRQLPVLFAPE $R T Q D L A A P E K V A E E A A Q E T L S R L G G R K I D T A K V D V I M R A D$ $R V A L D F F P E H F A R E A A R T A D L Q L G A V A A P A G E M E V V L G P G$ LKFKNDDPAKVGREGASKAVRMLGAKRVNTQRAAVVEDPY F D Y A YFTDTDYARRAVHQASVNLAAKPAPAGEMTVVLGPG

 YPMARLRDEGYAREAVVRQALVNLEADDAPAGQMPVVLGAG $F D Y G Y F T D Q D Y A H K A V H Q A Q T N$ LVVSKPAPA GSMTVVELGNG SDYGYFRAMDFAREAVRQAQINLQAEDAPAGNMPVVLGPG
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 YAAKKLKMQGHAGGlHNWLVQPTQGGGASLLMTMGTGLLV V V K RAG $\square$ K S T GNGAHNFYMAAGKNPPEEII RATKKGLLL YSGRKLGMPSTANGARNVFVTHGNDDQAALLKKMGRGLLV
 YSARKLGMQTTGNGCHNLIVRPGKRDLPGLLRKMERGLLV YSARKLGMQTTGNAGGSHNLAKRTDNNKAMLKKKMGTGLLV YSARKLGLTNHAGGDYNWTLSHTGQTFDELVKQMGTGLIV
 Y S A R R L GMNTTANGARNLRDGAELKSRDELLAQMDRGILV Y SAR KL GLTTT GHAGG IHNWQGHD GSFDAMLMTMLGTGLLV Y S A K KL GMVTTGNGNHNLILQSTGHSYEDLLQQLGTGLLL Y S A RKLGLQTTANGVHNLQVAANAADLQAILKGLPRGLLV Y SARKLGGMQSTGNGAHNLHLSHTHDSQAALLRDMGTGLLI YSARKLGMQTTGNAGGSHNLRMFTDDFRAMLRKLGTGLLV L N A R L M G V H DPMPRMTNTYMLNGQHDPQE IIA SVKN GLYA YSARKLGMQTTGNAGGSHNLTARGDNFARMLKKMGTGLLV Y S A NKMEVVKPT IAASPS ILTTMQMGDKNTDDSLI A S VVDKGILV Y S A CRLLLTTSTANGPRNLADTMGELDRKAMLRELGTGLGV YSARKLGLTTTGNAGG\|HNLVVTPSDFAGMLARLGTGLLV Y S A CRLGMMTT GNGVRNLS NTGNLS LE QMLREMGRGLLV Y SARKL GMKTTGNGIHNLVVHPGAMDYSQLLQDMHQGLVV Y S A RKL GMQTTGNAGGSHNLSRAEDDFEEMLRKLGT GLLL
 Y SARKL NMKTTGNGAHNLTLQPPGKAS LDELLHQMGHGLLV Y S A R RLGLAT TANGARNVRIDAPLSRYQEMIAGDERGVIV YSARKLGMQTTGNAGGSHNLTAPGDDFTAMLRKLGTGLLV
 YSARKLGLSTTGNAGGSHNLRMFTDDLRSMIKKMNKGLLV
 Y T A RKL GMRTTGNAGGSHNLSFHSQRLDAMLRKLGTGLEV Y A GRKLGMPSTGNAGGSHNLTRPEDDLDAMLKKMDRGLLV Y S A RKLGLQTTANGVHNLEVAANAGDLDAMLRDMGRGLLV YSARKLGMSTT GNGSHNLLVVNSSGEDFDGLLKKMGTGLLV YSARKLGMRTTGNAGGSHNLTQTMDDLNALLKKMHRGLLV RSARQLGLAPTGHASRGTWI EAGEMSAEDMLAGVKEGVYV Y S A R R L GL Q TT GNA G GARNVTVRPHP FTDDLLADMGT GLLV YSARKLGMKPT GNWPTNFYLQSGPHEPTEII RSVDAGLYV $L$ NARLMGVHLPMPRMTNTYMLAGPHDPQEIIASSVKKGLFA
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 Y A A R RLGMVT T GNGVHNLIVEAGAFGQADLLRQLGTGLWV YAARKMDMQPHAGGIHNNWLTHGDKS LAAELDKKQMGT GLLV






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E L V V|E Q V L G Y A R Q ${ }^{10}$ G A S D A VA E V ${ }^{30}$
40
L R R AL GDMLSAGVDDADLYF QY T RSEGWSLE


## AK D

A FVLE E ARRQGASNAEVDLS LS Q GLDSVRLG
I E Q AL GRVKVSTVDYA DLYFE YCQSESVSME
L D R A L G A L I GP G I D F G DL YF Q HARRRESWTV E
QE
DFEYFVK F A L D I A T K K G A SEA I A A I S E S H GL TVAA R MSQDLAAALTDRMLQAARKAGAESADADAVD GTSSVSIDVG


E Q NVE K Y L G A A L S A G G D Y A D L Y FE Y L T T TS S S S L D DRTK Q IVAETINNGADDGELF LEYSESLMFDNG DALSETAAMALEVAKELGASAAEIVRGDGLHIQVRMG
MTE
QQFR LLMVQVAL QQAA D $E A T R R L V A D A L L A G A D D G E L$
 D RLTR IV S DTL

T S G L $\qquad$ T GAD D GEL $A G A D D G E L / W M B E$
EQRKLL L L
E
 GAVS $\begin{aligned} & \text { A } \\ & \text { N }\end{aligned}$ $\begin{array}{ll}R G A D & A \\ H & E \\ H & V \\ V & F \\ \text { K }\end{array}$

DRARVEGVVQDAL HSADDGELYLEQSES LGWDDDG MTKSLANLTHRLI DAAKSAGADSADAVADA GTSAS DDVR

 ETARR ITQDALD
,
L L E R CL Q A A L S A
MTTDLDERSLSKAVASALE GGDFAE

E T LDD L A K A L G E I F H K V D Y A DL Y F Q Y T R S ES WG L E
DEAALERTLAHMRHHA DDYAD LYFQYTRNE GWHL E W

MS QNLE ELTHALLQQAKKA GANDADAMAVKGTALS IDVVR


 $T$ D P LQS L A G DVL DFAAAK GAS QAVVVSVS QGRTDRVRNG
T-DLLP DLL E KLEFK TMFNRNVD DA DL Y F Q S C S Y ES WY L E
 QRLDDD L L T A A RKA GA DA C E A $V$ V F A E S R S $D K D M M N L I D T A L S C G A S S A D C V L S R S R G I S L R L G$
 K K L I E K TVVG L K K Q D I E N F D I Y A V E S S GFTVEEVK N E S V I MTHSLS DLTH QL I D DA RKA GA D TA D A IA V D GT S L S I DV R LEK TLS FMHQRK LD Y A DLFF QTSQHESWVL E
S D LH $\square E N L Q T A D L K L H A F D \square D Y S D \square F D Q E V Q H Q Y W Q L E$ N ILEDLVAKALAS GAD GVDVRIQQSSTSDSYRLG

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

$S D \square S Q Q Q A E Q V V S E T L N N$ CDDGELLFLEN
DLTPEDAQDEDDQVM HKADDGELF DER
L
ELLAK SLS II GE HHVDYA DI YCQRTAFES WHLLE
MRDK $\square K E$


NTLE QT TQLAA ELL I K Q Q
T Q

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 EVVK S A S Q G $\square S A$ G C G V R V VA G E R T G Y A Y T D D L A P E K I L H A A RLKTA NFNTDQGFGLRRAVAGEAS GYA HS S DLLSEA S L L R R A A
 E L E T L E F N Q D S H F GI NVVY F G Q R K G T V S
 KTENDE FNND GS L G I S S V Y LDN QR K GNA S T S DL Q P Q S I Q R A V $R L K T A S F D T G Q G F G L R C V A G E A T G Y A H A S D L S E A A M V K A A$


 KV EVVVES DETA D LGGLRVFVGQKQAVVSVSEFSPKTLERLV $D V K E G S Y N V E R G V G V R A V S G E K T G F S Y S D A D N D E A L N E A A$ EVVETVK Q AVE E GVVGVRVFYE GRLGFAYTTVMTPEKIMETV NL D K L L H Q S S E N K L NLE QA ERSEGT DVGL RVFVGGKSANVSASDTS DRTI EEMA
 RLKTAAYDLTRGFGLRCVAGESTGYAHSAEMSVPALVRAA $R L K G A N Y D T A Q G F G L R A V A G E A A G Y A H A G D I S E G A L K R A A$ EVK S A S Q G M SVGCGI RVLS GERTGFSYTDDLTEAKLLHAA
 EVKTGSFNDS Q GVGVRAVSGDKTAFAYSDDISSKALLDAA ETEKLERSEGQDLGLRVFVGRRQAVVSSSDPSEESLDELV EVK S G S F S IV Q GVGGVRAVAA D K TAAFAYS D A I N Q D A L T R A A EVVK S G S F N I D Q GVGGVRAI S G E K T A F A Y S D D I S R N A L G D A A
 NL E Q A E R S E GVDD G L R V F VGGQR Q A CVVSSSDTS Q S T I D A M C
 KI R QA GYDSSQGFGLRAVSGEAVGFAHASVLILDSLBRAA KI E S TMMSGRD F GVGI R I F K G T N SVVY A Y T N K A T R D NLLDVA DI DTLT Q NQSRFLSVTVYFGQRAGSVSSTLFSREALRDAV DVK S GNFS LD K GVGI RAVSGDKTGFAYCDDILLDSMLLRAA
 RLE EAQRSEGVEDGLRVLIGQRQACVSASDTSDRVL GEMA


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


 DVK DASFNLNKGLGVRAIEGEKTSFAYANQLQLQALENA I

 QPERLERAEA GDLGL RVFVGGKRQAVVSTTDRSDDTLAS LV RPESLLERSES GD D GL R V FVVGRRMAVVSSTDRSPAMLLRELA


 R L K N A S F D S S R G F G L R C V V A G E T T G F A Q S S E M S A G A L T R A
 R L K T A S F D T S R GF G L
 EVVK S G S F Q i D Q GVVGV R A V S G E K T A F A Y A D S L L I D S I I N R S A
 $D V K H G S F S D E Q G V G V R G V Y K G E T G F A Y$
 RLE S DE R E ES A S IA L L R CFY G K R Q A S V S G A DL S R E GLLKA LA D I K S GN F D ID R GV GVVRVVSGEKT GFAYS DDLDF PA L E S A A





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II D T A A A A E L A L R GERAARAVD S R|ITNTDA GVN T Y E G QF V S L D S A S K V A L L E K V E R L A K A A D N R V V $Q$ V M A S L A S E F S $\operatorname{L}$ L




 | $\mathrm{E} P$ |
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 GS DVLGGKLVEL VVKRSSDEAAARS Y D S R I Q E V R V S Y A D E L R K I L SPSFFEAKAKLLQEDDA WLRAEDPRVRQVVASSLAAS WQHVEE EM $D T D P Q M V E S A K A C E A V A L T K D A R I K Q S E G V S S Y N H R S V S L$

 T L D E Q A GEGF S D K V K LiL E I N A Y A R A K D N R V R QV S I G L S G E W Q AV A
 E L N A E T L K G RALDS CEAA GVVEVDARLQTDDSASAGRA LTT HWT

 $L V P$ F E EKKV K L L A D I D A Y A R A K D E R V R QV S C S $\square S G E W Q A V Q$
 A P S F E A K $V$ V K L L

## の

$D V V$
 SLEA A A KVVA L LIE K VE K LA K A I D P R V I Q VMA G LA M E Y D V V Y







 S A E S LQQQRA LDD DEAGG LATGNDALQS DA A S T GY VQQNMWS
 S M S A P D K V A




 $N$ VE Q Q Q K IV L L R E L D A K A R H L D E K V Q Q V I V S L S A V D E Q MLL









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

 $S$ L S E Q D K L D L L H Q V D K R A R A A D P R I Q Q V S V S L S G VR E V
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V

MGNTRGFMGGYPYSRHS|L|S|V|APIAGRGSKMQRDYWYTS E VA RAD GLMAADVRPLSRLSVTVIAQQGDRREVGSAGGGGR VARRLDGRHAA DVRPLVVRLSSVTVIVEQNGRREQGSSGGGGGR $V A T S D G Q M V G D D Q P L S R L Q V T C I A E E N G N R Q V G T F G G G G R$ $V A R S D G V L A A D V R P L V R L N V Q V I V E H N G R R E Q G Y A G G G G R$
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 I I R P D G QPVF DVRPLVRMDVSIVAGEGDRQESGHCGRGGR FGNSHGMLQSYCSSNHVISSCVIAKGKDGMERDYAYTDSR

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 LANSA GFSAGYPTSLLHTLWSHAI ARNETQRQQQGFWHTVGR VANMDGQMMADVRPLVSINVSVIVEDSHGRRESARS GGGG LVTSHGFEGDYRGSAFSLGVGVI AEKDGAMERGGESRSTR $L$
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 MSAT NGF G G A Y K Q S S Y S L G V A V V I A GT D C T M E R DY D Y TA K YYNSNDHSFNYTTSSFSLSIILLAAAEENEESGMGWDYDVR IA R H D GVVRAADVRP LVRRLVVTVIA ERNGRREVGS SGGGGR $V$ A A T D G T L LA A D V V R P

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F QGD LPS PEDVGRDAAERTLARANARRPKTGSYPVI F DER


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$V$ \& $L$ \& $G$ \& $P$ \& $G$

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$\square G G$ \& $D$ \& $D$ <br>
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\end{tabular} RFA A D L D V V D TGRLLAA E RALAASLGARKDETQKAAVLIFDKR Y G E D L K S P P K E $\square$ G Q E A A K K A I A R I GA T K P L T G K Y P V V

 TD Y R F FRAMA YA R EADVR QA TVVNLDADAAPAGSMPVVMMP G

 RYFSDL N V D L V A V R A A E N A V E L L G A K P L K T K K I P V I FK N T
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 VA T G I


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 WP Gll L L H E A V GHG G G D F N R K K T
 WP Gl LL HEAV GHGEGD FNRKGS

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 TNFGGGQVDVTSGKFVFSASQWWVENGQLKYPVKGATLVG VNFGGGQVDITSGKFVFSAEAWWIENGKLQYPVKGATIVG





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 KNFGGGQVDDTNGKFVFSAEAYLI DGKLGPAVKGATMG T S M $\square$ G S TII NPNTGDYSRGAS GFWI ENGEI A YPVVECTIAG
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 VNFSGGQVDDTSGKFVFSTEAYMI ENGKVTYPIKNATLIG $V N F G G G Q V D T T S G K F V F S A E A Y L I E N G R L G A P V K G A T L I G$


 TSMIGSTI NPNNGDYSRGASGFWVENGEVAYPVNEDTIAG TSMFGPSVNNDTGDWSAGASGFWFENGVIAYPVNEITVAG


 A D A M G $\square H T I N P \square G E F S D G V S G \square Y F K D G K K V Q P V T G M T V A G$
 TSMMGSTIINPNTGDYSRGAA GFWVENGAI AYPVNECTVAG P N F G G G QV D $\square$ T S G K F V F S S E A Y L I


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 $N G P E T M Q K V R M I G N D L A L D E G V G V P S L L I D G L T V G G$ QLPDMLKNVVAVSDDVEHRSNIQTGSVLLDKMKI S G NLKDIFK S I V SIIGSDSYTKGSKTSGSULI EKMSVAG $N L D D M L A R I Q P A N D A R T H G S R V V P S L L V E G L T L A G$ $N L K D M W L N I V N D S N D D E T R H N D Y C G S V L L E E M Q I A G$ $N G P D V L S K V S M V G N D L K L D T G I G \square P T L L V D E L T V G G$ NLLDMFAKMIDAGNDLEFRHASNAPTLRIDGMMVAG $N G P D V L T R V S M V G N D L K L D E G V G T P T L K V D R L T V G G$ NGPDAMHRVSMVGNDMKLDNGIGMPHLRMNQMTVGG $N G S D \square F L G I C E I G N D D D S K G A I R T G S I L T D R D T I A G$


 NGADALTRIKALGNDMKLDTGIGTPTLHMEALTVGG
 NLREMWSSIAMIGNDDETRSNI QCGSVLI PEMNI AG $D G P A V M Q Q V E M V G D D F A F D P G V G T P S L K I R G L T V G G$ NLIDI FARLEP A SDDEDKGTLDAPSILVDALNI GG NGPEVMQQI SMVGNDLALDKGVGVPSLKIDNLTVGG $N D K D L F G K L I A V G D D L R F Y G A K G S P T L L I E E V A V S G$ NILVLWKNLAEVGNDPRESSPWRLPSLLFSDVNFSGL NGPDSLTKVSMIGNDSRLDPGVGTPTLRLEGLTVGG NLNDMLARI DPANDARTH S R RVIPSLMI DGMTLAG NGPEAMMRVSMDGNDMADDPGVGTPTLRIDGDTVGG
 DGPTALNHVSMVGHDLLALDEGMGTPTMKLDRMTVGG NGPDAMKRVSMI GNDMKLDTGIGQPHLRMDQDTVGG NGPETMNKVAMIGNDLSLDSGVGTPTIRIDGLTVGG NLLEMFARMVPADDLEFRYGTDAPTI RI DDMSLAGL S GPEVLNYVSMDGNDLALDQGVGVPTLRID
 $N G P D V M Q Q U S M I G N D L A L D S G V G M P T V R I E K L T V G G$ NLRDMLLRMTPANDARTHLSRVVPSLLVEGMTLAG NLNHMLKEIDPANDARQYISRVVPSLLI DGMTI A G $N G P D V L T R V S M V G N D M N L D D G V G V P T L R V D G L T V G G$
 $K G L E V L K K I D M V G N N L D L G Q G M G Q P T I R V S S M T V G G$ NLKTLLLQCVAL GADI HTQGNLSCGSLLI E EMQI A G $N G P D V M K K I S M U G N D L A L D R G U G V P T L K I D A L T V G G$ $K \operatorname{LDPELYLRLQRGGSDAFRGGFNVPSLMFDAVAIAG}$
 $N L D D D F K R L V P$ AS DLLEVRGTMDTPSLLVEGLSLGG NLKEMFMTLKPAANDLDYSHTINSPTLFVEEMTIAG
 $N G P E V M N R V S M V G H D L E D D S G V G T P T L K D D Q Q T V G G$ $N L K D M F Q S V Q A I G N D L E K R G S V L T G S W L L A P M T I A G$ HLEKMFASIVA ANDLMFQYGTDCPTVRID GLTVAG NIKELLTNITTVGRDQRWDGNDCSPSVLI KSLTVSG $N G P E V L N Y V A M I G N D M A L D E G V G V P T L R I D$ SGAEVMQAI SMVGNDLDALDTGUGVPTLRI EADTVGG NLRDMLLTLDPA ADAQLHLS RAVPSLLVEGLTLAG NGPEAMQKVSMVGNDLALDLGVGVPTLKLDELVVGG $N L K D M F A K L T P$ ASDLEFKGSTDAPTVRI DGMTVAG $N G P E V L K R V S M V G N D S K L D P G \square G V P T L K V D Q M T V G G$ NLKDMYLNMTPADDLEFKFGTNAPSLRVEGMMVAG NGPEVMKKVSMDGNDMALDRGVGVPTLKVDELTVGG
 NLKEMFRNLTP ASDLELRHGDDAPTVRIEGMTVAG $N G P K A L G D I T M T G N N L K D D E G A G L P S V L V S K M T V G G$ NMDE LL LDNVPA NDLDFRHATNSPSVYVDTLAI GG NLERMFAGLVGIGDDTDTRGSVHTGSWLI DAMTVAG


 $D G P T V L N Q I K H D G N D M K D D P G D G V P S L Y V E N G T V G G$
 NGPEVLKHVSMLGNDTALDSGVGVPTLRIDGLTVGG NGPDAMHRVAMVGNDVALDTGUGMPHLRMNQVTVGG $N \square 1 P$ LINSSLIFTGNDPRKSSRWQ HGPEVMQQ SMVGADFSLDKGVGVPTLKVDAITIGGM HGPTVLQQVSMLGNDFALDDGVGTPSLKIDADTVGGO
 NLK DMLNNVVSI ASDVDFRSNLKVGSTLI SEMTI SG




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UniRef90－A8F4G3 UniRef90－U3A1N3 UniRef90＿UPI00038058B4 UniRet90－G6F 1 K6 UniRef90－${ }^{-} \mathbf{K O C H L O}$ UniRef90－UPIOO0465E432 UniRef90＿UPIOOO4700989 UniRef90＿UPIOO047C3527 UniRef90－I5BSK8 UniRef90＿UPIOOO3B77364 UniRef90＿A9GKN5 UniRef90－C3X5J8 UniRef90－UPIo002D85A8F UniRef90－A1BA42 UniRef90－UPI0004698747 UniRef90－R51449 UniRef90＿UPIo00467318E UniRef90－17ER28 UniRef90 DoU4R0 UniRef90 LoEU75 UniRef90＿UPIOOO2558585 UniRef90 UPIOO0478C4F9 UniRef90＿S9QGP7 UniRef90－Q5LNX6 UniRef90－E8LJU1
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UniRef90＿wотнмз

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$L I$ ESQLRQVLAAALEKGGDYADCFOSSHESVL KSLLEDII NTAMSTGGDFAEVFVEDRYSTSLYLG ■EK乌VYQALEGTRKYGQESEVSIDKTTGGTVNTE MQDDAQSLDDALVEAAKRAGADASDAVVERSTDVSVVRLGG DDARAL QILRAAT DGADDGELFLERRRSLVFDDG NQEKITILLSSLAAKGTDYADLYFQHSAVESWFDE QSLLSDTLESSGAGDGELYLEKSESFSFDDG DEKVVQDVIVYGIKKGAEFVEIFSEDRTSTTMTDG

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PDARAKAKSHQVDYADLYFQFTKNESWSLE THLDQDRALRILRDALAAGADDGELFLERSRSLVFDDG MSQPLDALTKSLLQAARRAGADDADAKAVRATSLSVDVR ARRILEAALSKGGDYADMFFEHSNDLSLRDG D VVARLVEAGRKAGAVACDAVASRSTSVSVRLGG MTQTPESLSHALLDAARKAGADAADAMVAEGSSLSUEVR ADDGELFLEYSETLKFDNG MDDQDRADT LDREAVAGADDGELFLERRSLHFDDG drsaaktliasale gmddgelfleesegvsledg DRDRTLAQ ALRAALEGAEDGELFLERKRSEALVLG D DDRNFLDKALSELASRKDDFGDMYFEKNVTESFFDE DESOLAENLKKYK GYEY EVFFERVKKIEVSNE MLSDQARDRADDLVERARRAGADAADAVYSSSEGDQVRLG MIS REVASKVLSKCLITGGDFAEIFEEDSTNNSIGIN

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NOSLERVLGQLMSRHVDSADLYFQLSRQESWVLE DRSRLERQVAEALKYGDFAEVFVENKYENRUELG NKETASSVIDYALMKGADFCELFIDKQNFESFTDK AERLVNQALT GMDDGEDFLEYRESEVNG TEEQLAEVAHDLIAQAHAAGASDVKVSLSEMALSVEVG LEKRLSHLCSAKDDYADLYFQSSCHESWLLE D TSEAHVERTVADALKDADDGELYDEYEETESFDNG KQQLQRLLTDCMHSNADAE FEEEGSSEADSNN
AKkDLEEVLQAALG GGDFAEIFLE D पNHQHLQEVLGSLAERHLDYADLYFQS KNLTERVLLKASESGADFAETFAERYSSLDARAG NENTVNRVVSDCLCAGADGGELFAEMSEALGFEDG MSOTPTEDT ALEELCAYKLDYGDLYFQSHFHESWSLE m $\square$ s
 HGADDGELYYL

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 MASLLENTAQLTMDLLKKYDTTDYETLLSSSVSEVRGG AQTTLNKTLDELCTRKGADFADVVFVEESLRRALSGGGEFADTYFEEGSSTAIVCE RTANEVIGVLLKHGAEFVELFDEETSNFSLVNG M1 S
 EERIDKVLKSALDKGGEFAELFFEKKESNQLSME DEALSULQTALS GADDGELFLEKTES

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RLLKNGSFNQGQGFGLIRCVISGETVGYAHSGEDTHSAlL DRAA KIRSATFDTAQGFGLRAVAGETAGYAHASTLDNASIERAA AVNNSYSNDDYGVGVRVLDGDQSGYAYVENVTLEDMLKAA RVEESERSEGDDVGLRVLVGRRQATVSTNDIGGDNVAKLA RLKQATYDTAQGFGLRAVKNDAVGYABSSDVSDALARAA DLKDGNFSMEQGAGLRAVSGEKTGFAYSDELQLPALIEAA V GLEQAERAEGVDGGRVLDGGRQANVSASDTGEATVAALA EVKSGSFSTDQGVGVRAVSGDRTAFAYSDDDSLPALQQAA EIRSAQVGLVQGVGVRVIAGAKVGYAYSDDWDEAALLRAA KVESLTRGTDYGI GIRIIQGLNTVYAYTNDLDEENLIQTA
 DIKEGSFHIERGVGVRAINGEKTGFAYADEITP DVNRASSNIDFGMGVRVLSGDQTGYAYVEQITLDEMLKAA KVEDGMAGRDFGVGIRIFNGLNSIYVYTNNCNBDNLLKVA RI ENAEFNDNEVLKVIVFDNKKKGVAFSNNDNMQAVVDTI VVDTALSGRDFGIGIRIMKEHFSVYAYTSDMSEQSLIRLA QLEDVGRSEGAELGLRLFVGQRSASVSSSDFSKEALSALV KVEGTDASEADDMSLRVFVGQKVASISAATSSNPDMALA EVKSGTYHDSHGVGARAVSSDQTGFAYSDDLNDKAIEKA I RMKNISYDSTKGFGLRAIAGEARGFAHSGELSESSLKRAS KDESSLSGRDYGHGLRVFKGLQSVYAYTTDGSKEGLLKAA RLKAADYSRDSGFGLRGISGEMTGFAHANDVSAEARRRAG RI RAASFDTTLGFGLRAVSGEAVGYAHAGEFTEAALKRAA TIRTATTDITSGFGLRSVLDTETGFAHSNELNDQALKRAS DVRDASFNLERGAGVRIVSGDKTGFAYSDDISDDTLTQAG RVRTASYDASEGFGLRAVRGEVAGYAHSSDISEAALTRAV NIEKSGFGUEYGLGIIRIVKDNNSVYAYTSDTSRNNLRETG KVEGTEASESDDMSLRVFVGRRVASVSAPANADPAP LDA RVKTASYDASEGFGLRAVRGEVAGYAHSTETSESALKRAM ELKAASRGVSMGVGVRVQRGDATGYAYTEDLTWEAMRRAA EVKTGSFSIDKGVGVRAVAGEKTAFSYSEDISPVSLEDAA ALEDVQRSESAALGLRVFHGKRSASVSGADVTASGLATLAA GLEQAERSEGTDIGLRVFVGQRAATVSASDTSERTIEEMA EVNSVRSHDDFGAGIRVLKGDRTGYAFSESTRFEDLMKA KVEGTESSESDDVALRVFVGKRVASVSANAMSADVNRLDA EVETLQYHLDKSFDI NVYMGQKKGHASSVDLSKDSLNKTI YIKEGNFWTEQGFGLRVVAHEAVGYGYSNEMSDAALKRVA RIRNAAYDASEGFGLRAVRGEVAGYAHATEDSESALQRAV RIKTASYDASEGFGLRAVAGEVAGYAHATELSEAAGGRA RLRSASYDASEGFGLRAVKGEVAGYAHSTDVSEASGRRAA QVENVSSSEERGIGIRVLKDKRLGFSYTSFLGEEEIIKDTV KVTRSNYNQSQGFGLRLVEGEQSVLTSADRFDATTIGKAA KLEDVERSEGEHVALRVFSGTRSASUGSSDDSPAALDEDA DI RSASFDTSSGFGLRSVLGEETGFAHSDETSTSSLRRAA RLKTADYSTDAGFGLRAVSGEMTGFAHASDISADAARRAA DVKEGSHSRDQGVGVRAISGEKTGFAYSDEVLLPALTQAA HLRSATFDTVQGFGMRAVAGDTVAYAHASQIDDDALARAA KVDDVSSGINFGMGDRLFFGTKVLYGYTNSTDKESLTSIV TLEQAERSEGTDIGLRVF门GRRSAVVSSSDTKDSTIATMA EIRSATFDTSSGFGLRAVLEEETGFAHSDEDSENAI RRAA RVNTRSQHAKSGLSLTVFRGDRQGTTHSTDFSAVNLQRMV DVKNGSYNDDKGVGLRAVCGEKTGFAYADQMTEKAIDDAS

RLKSANYDHMRGFGL
KI ERVIS GRE E GAGI R IV K GDSTAYGYT T DLSK K GLLLK LA DIK R GSYN D Q GVGI R AI R D D K T GFAYAD QI T L Q AL Q Q S A
 $\stackrel{\mathrm{C}}{\mathrm{I}} \mathrm{C}$
 A L E Q A E R A E G R D L G L R V F F V G R R V A S S V S T S D D T R A E A L T T A M A RLKAANLDSSRGFGLRCVAGDAFGYAHSSDPTLDAVRRAA K I E N A L G G R N Y GVVGI R I FK G L K SVVYAYTNDNSSLNSLLDTA K P E A V

 D I E R V L A G A D R GVVGI R V I S D L R TAA Y A F T N E A D S E S S L L A L A
 QF D S I L S G N D F GA S V R I L R G T Q SVVY A Y T N DV S R E S ML E L A
 RLK GASYDAVVEGGLIRVVAGETAGYAHANE\|SAAAAI DVKE G $\square$ Y H I D Q GVGVRAVS GEKTGFAYADQI T LINTLQK S A $E V K K G S F S I D Q G V G V R A I S G D K T G F A Y A D D L L M P A M E A A A$

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UniRef90
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UniRef90_U2YMQ8 UniRef90-В99558 UniRef90-C5CEM7 UniRef90-D9QU95 UniRef90 UPIo0036F1B75 UniRef90-D7AL39
UniRef90
F4QWU7 UniRef90-F4QWU7 UniRef90_C4K620 UniRef90_WOTHM3

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 RTAAR 1 ASAN ERAVAMARVAPDDQYVGLADPSLLAQNFPDLDLLDRVMP DAVGAV TAARAIARGGQDGRVRIGQRP ERCVAMAKAVPEDKYCGLPDASTLATGAQRLYEPDNPID
 ERAVAMAREAPVDPYAGLAEPGQLLARDWDVAALELCDPSP AATRTMGKSGS RTAAMIAQGGGSERAYPVK RHASAALNGGKKNLVFNFNKKER RVPVPSHYRVGQPLE ERAVDMAKVSLKNPFTSLSDKNDLAH HYPDLDLFDPV RFARRDGKAGQNGTVRVPKWQEQTVKPDYPAVDPDTRYAD ALEAAASAARGDA IAGQTHKVQAFKRQQQHALYDSADP RTAARDAESATPKAPAGLTDVSLKY NYYAVEKSWD KEGAMADKKAKKDKCSGTSILDDLKGEVLNLNPIKDMPN NAAVNDASYTSKDKCSGTSDQELLSFDPIYLDLLHPDKL ERATAMAREAPEDPWAGLAPKELLMKGALAYLENDDGGR ARAVAMAKVSPDDAFNSLADADRLA TEFADLDLYDKS ETARLAVV SFAKGISTQTGTRRDQAFQSIPQVARYNGSN Y STM ETVKSVSK NYSGMMAPAPSHGDNKPAMYSUSPIE DRLDQALSAGNGSEKKIDM ETLQLLDPAKGKPAPPPRRNNRHZYTDASP ETVRGV

KTGRGGADDVAPRATNARLYSDANPVA ETVSQLKMGRSG TMSENP $\square A T N Q R L Y H P E N P L Q$ NAAAAIGRQGSSKAVRVKGGRAM P ATARLAVGDGGGTLAAGPQPTNR HLYTDADP A RDASRIVRSGQSKVARPAEPRTAQAR NEAC LLT TSVNKPYKKПNLHKNIDQGHHN【TMLPNKVNK ERAVAMAKASPEDPYQGLAEPDMLAHAT TDLELFDAT DTTRLAV ETAAQIATGSGGKEKGEGRRREDPTRYELPSISDDAPGL RTTRTIGARG ERAVAMARLAPEDAYAGLAPEELLVRGPLPELELDDDPLQ QTVRLAV TRAVAMAREAPEDAFAGLADPDQLLD WD I AALELYDDTP
 ERAVAMAREAPEDPYAGLAEPGQLAQDWDLAALELFDPS
 ATARLAVGD RAGGGTMAPPP
ETAR ETARLAVGDGVGDGGGVMAPPP
KAARSASSGHECGKAGI EKAMEMCETQEPDEANGFDEKLKPSKA DLAADAVGHAPVSPAGLV LKKLPKRGPTYYTLDDPLD ARA DDMARLAPEDAYAGLAPQDMLAGGPWPELDLLDPA YKAALALGDLREERT\|VINN ETVSAV RNGRSGIMAPPP RTIINDRHNIEVFPN ET SALLDPAKQAHAAPPPRTNRHLYDEATRLYSDNNPLH AAARAI AHHGAQGSLQAWRAQPE KRVGEALSEVKПDDLTLDFDNKK■KNRHVIYLYASDDPLD

 ETVTQIRAGRSGTLAAGP RATNHRLYPDIINPLG GKALDAR ARTNEDRHAGLVDGDGDSRFYADLKMDNPW
 NDLRASLGKKEEGKEVVPDRTNLTRETDENRHPDQDDPM ETVGLAAKGHDA KAARSVVNQGKGKVGLINPDDLAKVDFEHLYSALDPDQ

KEKAPTSSTTKERPD AAAAASAADDGKKLDNSVNLVRQDDENKHKILVNPM ALVKSTNSSGNGGVITHLNKTKPALYPETNP
KKARS I DF DKGSGKTRTLSKKQQIFYSADNPLETFS ERAVAMARETPEDPYAGLADPSQLLARDWDMDALQDADPAE RAADAVRAVKGGYSGTLAGAPARTNVRLYTDQNPLA EAASAVKRGHAG YKAALALGNDKGDVSVVLND ATKIITNINSHKLYPS VRALAMAKAAPEDKYAGI ADPDATARQ WPSIEMYDPT ERAVAMAREAPEDPYSGLADPDQLARRDAEGLELYDATP ESACLITKYTQNDEFNGLA PKELMAFNAPDLDLYYPW NVAAAREAKGGF ERAVAMAREAPEDPHAGLADPAQLARDTDSSRLEMYDPSP
 KAAGTASKY NEDVTTNNLQQKNTDSVHQREVRPETVE RRAAKVLGEDGRNEEISLTERYIANYSPTLLVPS DNALVGAESQTPDADHGFPDPPAVYPDVP RAADSAALAKRGYDGTAAEAPRDTNQRLYDPDDGLA CSARNTENQPHQ A

















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UniRef90 UPI0003B7359D UniRef90-UPIOOO373F060 UniRef90-R6VBK7 UniRef90-Q3SPH8 UniRet90 W3RJA5 UniRef90-D3RP40
UniRef90-A0A059DXP4 UniRef90_UPIO0046FC3A4 UniRef90-A3VZ80 UniRef90-19W3U1 UniRef90 H8NOR5 UniRef90-U2L647 UniRef90-LOETEO UniRef90-A5EVF5 UniRef90_-Q121K3 UniRef90-G8UKV7
UniRef90 K0AYC0 UniRef90_KOAYC0 UniRef90-EORK12 UniRef90-F8ETQ5 UniRef90_UPIO0047AF643 UniRet90_A3VFW6 UniRef90-A1AVR1 UniRef90_UP10003B52616 UniRef90-E5WNT6 UniRef90-A8F4G3 UniRef90-U3A1N3 UniRef90-UPIOOO38058B4 UniRet90_G6F1K6 UniRef90-K0CHLO UniRef90-UPIOO0465E432 UniRef90-UPIOOO4700989 UniRef90_UPIO0047C3527 UniRef90-15BSK8 UniRef90_UPIO003B77364 UniRef90_A9GKN5 UniRef90 C3X5J8 UniRef90-UPI0002D85A8F UniRef90-A1BA42 UniRef90-UPI0004698747 UniRef90-R51449 UniRef90-UPIO00467318E UniRef90-I7ER28 UniRef90-DoU4R0 UniRef90-LOEU75 UniRef90-UPIO002558585 UniRef90_UPIOO0478C4F9 UniRet90-S9QGP7 UniRef90-O5LNX6 UniRef90-EELJU1 UniRef90_D8IYX2 UniRef90-J2ZQ90 UniRef90-UPIO004176AA2 UniRef90_UPIO002260B37 UniRef90-Q1GQP4 UniRef90-D5BW82 UniRef90-B7IFB0 UniRef90_13TPG5 UniRef90-TORD25 UniRef90-G21067 UniRef90_UPIO002893A4C UniRef90_M4UJL9 UniRef90-A9DAIO UniRef90-R9LMH8 UniRef90-M2SDG8 UniRef90-K4LII1 UniRet90 D 2 U 2 L 9 UniRef90-A3SQH8
UniRef90 R6JRZ9 UniRef90-Q3Yт04 UniRef90-G2LNA4 UniRef90-AзКЗХ3 UniRef90-J6LKZ8 UniRef90_UPIOOO47A60F4 UniRef90-A8U3H6 UniRef90-A9DWLO UniRef90-A1AXM3
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UniRef90_WOTHM

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 PVPFETKVKLLSEIDAYARSRDPRVKQVMASVVGSWQAVH EVSTKDKMPYLQKLNDQQFALDKRVHKVQASQSDTTSHMF APGFEAKVKLLGEDDAYVRDKDPRVRQVSVSLAATWQVVE S DTTA LLARARAGEEAALAIKGVTNSAGSSASWGRTDTT EPAPDALARMAQEAEAAALGVAGVTQVQSATAGYSQRAVH DVAVARKTALLTRADKASRAFDSRI QQVNASYVDQTRRIIA EASUKERDDSLRMGSEEMKNYDEIITQTSANYADVDQQVL TVNDNDLRDSALAMEGAALSVPGVSNSGGSVSMSMQGI A S AMDEVTKIGLLKQADAY円RSLDSRIIQVVVSLSGVHEEII EMIVKDKMPYIQKLNDRIFALDSRVTKVSAGLGDTTSHIL DINFG I KLASQAEKDADQYDKRI DCTEGSRFNSYTTKV R ETDPA ILREDALTSEDAARSVEGVTNSEGASASAGRTIFA DVTAEMLTQDALEAEAAALEVEGVSKSSGAGASAGVGGMV DAAFPVKVETLRETDAYA RDRDPRVVQVSATHAASLQEVV SFSSQEKVNFLKRID DLGRKEPKVKQVSALISGGFSEVL EVEKDRKVDVMKKASEDAKNYHSSI QQVTVRYLDEEQNVL EVSKTDKARIMKLAYEGAKGYSSLITQVLIRYWDYDQKVF
 QGSFSARAHLLHEIDAYARSKDKRVVQVSASVSGEWQAI Q VWSSERKVAVLQEMDRLARSLDPAVKEVTVSLSGVQDVIL GVEFPVKLETLRADDAFARDLDSRVVQVTATHAASCQEVEE N EVSAERLKEDALLAAEAAALDVSGVTNSSGSGANAGSGGLV DATFAGKDDLLREDDAYTRALDPRIVQVSATMAAGQQEVE TISAAEKVALLERVEKLAKATDPRIVQVMAGLAGEFDVVL DPDPALLRTLAEACEDAARAVPGVTNSEGGSAGAVRSVMA DVPFAARVALLREDDAFARGLDPRVVQVSASGATSVQEVA EHSTVEKKHYLLMLRDFINRGSDRIVSITGNGGDMLTRV
 EPAPAALQEDALAAETAGFAVPGVTQVQSAAAGYGTHKVH DLDAQHSUDLAKECEAVALIEDEVDNSEGSEVSSFEGEGL -
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 $A P S P A E L L Q E D A C A A E A A A L A V E G D G Q V Q S A S A G Y G R R Q V H$ EGGTFAS RAAMMLS E LDA Y A R A R D P R V V QV M A S L S A E WQ A V Q



 TMS P E E K I A L L R R V D Q VA R A E D HR V Q E V DV T L S G V Y E HV L





 $E$ VG Y D K R I G I M K T A Y K S A K G Y S E D I S Q $V$ V $S$ E P S A E A LVVE R A R A A E E A A R S V D LD S S D S IIE LAAMARCEAAK A L D Q Q K Y I D N S D GA E L S S Y Q G K GL
 $E P D P G A B L E E D A R R V E A A A R G V E G V T Q V Q G A T A G Y G B R R Q H$

 $S V$ P N R D K GE L V R R A Y S SA R Q Y H N S V V Q A I V S Y K D C D Q K L T
 A PA F S D K I A L L A E I D A WA RAR D P R V V QV S A S L VGGR RA I D


| UniRef90_UPI0003B7359D <br> UniRef90-UPI000373F060 <br> UniRef90_R6VBK7 <br> UniRef90_Q3SPH8 UniRef90 W3RJA5 <br> UniRef90 D3RP40 <br> UniRef90-A0A059DXP4 |
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LRAD GHFVRD DRPMVR|LS\|SVMAGQGDRQESGSYSMGGR ILRADGA AADVRPLVRLNVTVMVEHGGRLETGTHGLGGR FCNSEGVMFYDYRPMVTLGAVCIMEENGRTENGYAARAYR |VVRPDGESYRDIRPLVRVNVAVVAGSGDRQETGSHGYGGR VLADDGTLAADVRPLVRLNVSVIAEQDGRREQGSSGGGAR
$V A A S N G F S A F K T G T S T S L G A M A V A E R D G Q M E D Y D S W S V R ~$ VAASNGFSAFKTGTSTSLGLAAVAERDGQMERDYDSWSVR UniRef90_A3VZ80 UniRef90_19W3U UniRef90_H8N0R5 UniRef90_U2L647 UniRef90_LOETE0 UniRef90-A5EVF5 UniRef90 Q 121 X 3 UniRef90G8UKV7 UniRef90-K0AYC0 UniRef90_Q7VRC0 UniRef90 E0RK12 UniRef90 F8ETQ5 UniRef90_UPIO0047AF643 UniRef90_A3VFW6 UniRef90 A1AVR1 UniRef90_UPIO003B52616 UniRef90_E5WNT6 UniRef90_A8F4G3 UniRef90-U3A1N3 UniRef90_UPI00038058B4 UniRef90_G6F1K6 UniRef90-K0CHLO UniRef90_UPIO00465E432 UniRef90_UPIO004700989 UniRef90_UPIO0047C3527 UniRef90 ${ }^{-15 B S K 8}$ UniRef90_UPIO003B77364 UniRef90 A9GKN5 UniRef90 C3X5J8 UniRef90_UPI0002D85A8F UniRef90_A1BA42 UniRef90_UPIO004698747 UniRef90 R5I449 UniRef90_UPIO00467318E UniRef90_I7ER28 UniRef90_D0U4R0 UniRef90_LOEU75 UniRef90_UPIO002558585 UniRef90 UPI000478C4F9 UniRef90_S9QGP7 UniRef90-Q5LNX6 UniRef90_E8LJU1 UniRef90_D8IYX2 UniRef90_J2ZQ90 UniRef90_UPI0004176AA2 UniRef90 UPI0002260B37 UniRef90_Q1GQP4 UniRef90_D5BW82 UniRef90_B7IFB0 UniRef90_I3TPG5 UniRef90 - TORD25 UniRef90- G21067 UniRef90_UPI0002893A4C UniRef90-M4UJL9
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UniRef90_W0THM3
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UniRef90-G21067 UniRef90_UPIO002893A4C UniRef90-M4UJL9 UniRef90_A9DAIO UniRef90-R9LMH8 UniRef90-M2SDG8 UniRef90-K4LII1 UniRef90_D2U2L9 UniRef90_A3SQH8
UniRef90-R6JRZ9 UniRef90_Q3YT04 UniRef90-G2LNA4 UniRef90_A3K3X3 UniRef90-J6LKZ8 UniRef90_Q0AMG5 UniRef90_UPIO0047A60F4 UniRef90-A8U3H6 UniRef90_A9DWL0 UniRef90-A1AXM3 UniRef9O-WONZRO
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UniRef9O-U2YMQ8 UniRef90-B9M5E8 UniRef90-C5CEM7 UniRef90_UPI00036F1B75 UniRef90-D7AL39 UniRef90_F4QWU7 UniRef90-C4K6Z0 UniRef90_K2DT14
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$H G S D L M P A A S I G R S A G E R A V A R A G P R K V A T C K V P V V F D P R$ EGYQRFDETKAWRNAADGALRQADSVPAPAGEMDVVLGPG A D LGYFLVEAFAREAVRDALVNLDAVEAPAGTMTVVLGSG FTKDRPTAAEDGDTAGERTISRLGSRKLKTQKAAVLYDRR VWLHDLNAAELGHSAGQKAVARLNPGRPATGRYPVVFDPR I FA A DLRESEGGRRAGERAVERLGARRPHTGAYPVVFDER YAYSYFRMQQYVDEAVASALVNLESDPAPAGAMTVVLGAG RYWDGVTPESVAEEAARQAIATLGAVDCVAGPQTVVLAPG EF LDRELDKALAKETARTAKTLALADYMPSGKMTVIMDNA FYSDLRNTEEIGYRAGNFAVRRLNPHKMDTGSYTVVEDVR HYFSPEQDRNYVQKAVKQAQILGLTAQAAPAGEMPVVLGNG HDYSSFFI FEFARDAVRQAQVNINAVDAPAGEMPVVLGNG
 RVFNKLNTPEWGQESARRADARLGSKK DKTMKSKVLFASE EFLENLNDEENARHAAWDASTMVKAGYAPSGRDPVVDENG RYFEDLDPAEDGKRAGERADARLNPQRLTSGQMPIVFDPR
 Y N Y R Y Fi D HA YVNEA I R QALVVALEAKKAPAGNMPVILGMG
 EFMENDNLEHYANEASRIAVTMLGADPCDSGKFPVII DNE WLYDDLFKGENWNRADDQALVNLDSVPAPAGEMTVLLGPG $F D V T R L V W Q R A V D E A L R Q A V V N L D S I A A P A G E M E V V L G P G$ YGYDEI TQEHLWKAAVDEALRQQQSKPAPAGEMDVVLGSG VSYQWLRMESWARDAVRQALVNLEAAPAPAGAMPVVLGPG GLLDPADWQAKAQEALRQALVNLRADPAPAGVMDVVLGPG $F$ SLIA LLEQRQMAREAVVRALVNLDAVAAPAGDMPVVLGAG DFYNTINDIDEYAKESARMAKTMLHSQDCPSGPMTVVIGAGK HFLDLDAPEE LGRSAGERAVRRLNPRKVDTGRYPVVYDPR $R L M D P A H W Q G L A R E A L R Q A L V N L D A V P A P A G M M D V V L G A G$
$M Y F E G K S P E W H A E E A A R Q A V A M L D A R D A P A G E M N V V L A P G$ YGFTDEVVRKYVHEATRSALVNLEARPAPAGPMTVVLGAG F LAD LE SPDD G GRRAGERAVARLGSGRLDSGPMPVIYDRR GMVAPEHWQGLVREAGRDALVNLRSVPAPAGVMDVVLGPG KGFEFLSEEMAADEAVKGCMRDFEANRPPCGEMPVVMGAG
 LDANDLNPPKTGDKAASLDAQQKLGAQSLTSQKCPVIFTSR VGFTEFDHNESWKEALRRQALVNLEADDAPAGTMDVVLASG GLLDPADWQAKAREALRDALVNLEAIPAPAGQMDVVLGSG RVLTPNVWRDAVDEALRMALVNLDARPAPAGEMEIVLGSG VTLDGLDWQAKAREALRDALVNLRAEPAPAGVMDIVLGPG $V G G L D G L D W Q A Q A R E A$
$A$
$A$
$R$ RRLKNLNWKSMVEDAVFKTVNLLHPSPFETRSMPVVFFRE VGLATFDHAADESVAALAVDAALDKRAAPAGTMTVVDGPG HGADLPSPAEIGRLAGERTVAKLNSGKMKSGAMPVIFDPR EMFNEIDPEYYGKEAARSAYVMLNARNCPAGRMMAAIDNG YSVTKLDWQHGVNEALRTALINLDARPAPAGEMEVVLGSG

 A WVA P ERWQALVEEA LSSQALDNLEAAPAPAGEMTVVLGSG
 $R L L A P Q V W Q G A V D E A G L M A L V N G L E R P A P A G E M E V V L G A G$
$A P H R L Q A P E A T G E R A A R S A L E A L G G C S D S S R S C P V$
 K LIGDFSWRHGADEALRQALVNLDAVPAPAGTLDVVLGAG EFYESTTPEEDGKEAVVIDALVMTQAKPCPSGKMPVIIGNG YDLERLMNEESWQRALAAQALTNLDSVDAPAGQMNVVLGSG RGLELFEPAADGRRAAERALLMLKARRAPAGRMPVVISGE Y GYQYFRAEHYAREAVR $\square A L V N L A A D A A P A G T M P V V L G A G$ YHADLRSPEEDGRLAGERAVERLGARKPPTGAYPVLEDER EMDDETDDNEAAEETVRQAVEMLKADNCPAGKMPVVLARE

 AEFDRWI WKPDADEALRIA RVNLDAVDAPAGVFDVVLGPG EIDFEEIDPEYYGKEAARVAHTMLNAKNCPAGNMMVAIDNG FDAD EDAATDGRRAGERAVRRLNPRRPKTATLPVVYDPR FQADLRDAQDI GTRAGERALARLDARKPPTGSYPVLFDER
 EFFQDLDLDHDARET GQRAMRMAGAGYDEGGMMPVILGNG FQADLKNPEEIGRLAGERAVARQKPRRPRTGKYPVLFDER RGFEDFRTMGPALAAARRSLMMLGARKAPGGAMAVVLSSE EFFNTFDVFEAGQKAGRDAARMVEAEYAPAGRMPVIIANE E LFDEYSPEEVGKKAGQKADTMLEARPAPSARMPVVVNHG GGLEMFDTWSPGEQASQVAVMKLDAVPSPVGEDPVVLSRG
 FGYDYFRAEAFAKEAVRDALVNLSALPAPAGSMPVVLGHG T TYEMF LQNQYAREAVRIAGVNLSALPAPAGDMPVVLGSG


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UniRef90 H8NOR5 UniRef90-U2L647 UniRef90-LOETEO UniRef90-A5EVF5 UniRef90-Q121X3 UniRef90 G8UKV7 UniRef90-K0AYC0 UniRef90-Q7VRCO UniRef90 EORK12 UniRef90-F8ETQ5 UniRef90_UPI00047AF643 UniRet90_A3VFW6 UniRef90 A1AVR1 UniRef90_UP10003B52616 UniRef90-E5WNT6 UniRef90-A8F4G3 UniRef90-U3A1N3 UniRef90_UPIO0038058B4 UniRet90_G6F1K6 UniRef90- ${ }^{-} \mathbf{K O C H L O}$ UniRef90_UPIOO0465E432 UniRef90_UPIOO04700989 UniRef90_UPIO0047C3527 UniRef90-15BSK8 UniRef90_UPIO003B77364 UniRet90_A9GKN5 UniRef90 C3X5J8 UniRef90_UPI0002D85A8F UniRef90-A1BA42 UniRef90_UPIOOO4698747 UniRef90-R51449 UniRef90-UPIOOO467318E UniRef90-17ER28 UniRef90-DoU4R0 UniRef90-LOEU75 UniRef90-UPIOOO2558585 UniRe99_UPI000478C4F9 UniRef90-S9QGP7 UniRef90-Q5LNX6 UniRef90-O67719 UniRef90-D81YX2 UniRef90-J2ZQ90 UniRef90_UPI0004176AA2 UniRef90_UPIO002260B37 UniRef90-Q1GQP4 UniRef90-D5BW82 UniRef90-B7IFB0 UniRef90_13TPG5 UniRef90-TORD25 UniRef90-G21067 UniRef90_UPIO002893A4C UniRef90_M4UJL9 UniRef90-A9DAIO UniRef90 R9LMH8 UniRef90-M2SDG8 UniRef90_K4LII1 UniRef90 D2U2L9 UniRef90-A3SQH8
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$V D D G T I Q N R R G S S T D D E G T P T N R T V L I E D G I L V G Y M Q D R$ VDDGTLPGRRGSLNLDDEGTPTQNTVLI EDGGLRGYMQDK




 K E D P F RK R G L A S S R A F D G E G L P T K K P L N N I D Q G R L T T W WL L


 V D D TI P NAWGSANIDDEGTPTQRNVLI E
 $V D D G T M P D R R G S L T V D D E G T P S G Y N V L I E K G V L T G Y M Q D K$

V V $V D D A T M L Q S R G T$ NVDDEGHEPERSTL $V$ D D GSIANRRGSLNMDDEGNPTQRTVL, NGGKLVGYMHDR I D D P H RV R GMRSSRSFD GE GLDATAPFRRVIDQGMLTGWMMDS V D D G T DP D R R G S $\square$ S V D D E GTP P G R N V L I E


LE R P F V V K K T L G A K A F D T D GlV L K K R E Q Y F


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## V

 $V D D G T L P G K Y G A F R F D D E$ VEDAHRVGCRGSLADDDEG I DDGTLKNQRGSLNVDDEGTPGQYNVLI E VDDGTLGARRGSTTHDDEGTPSNRTVLI VDDGTMPERRGSLTIDDEGTPTERSVLI EDGULTGYMQDR




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NGPDVLTRVSMLGNDMALDPGDGTPTLKVDLLTVGG NGPKALADI TMVATNAKIDNGCGMPSALVSKLTVGG HLIEMFKSLTP ANDLTFRYGTNAPTVRIEGLTVGG NGPTDLHRISMVGNDLELDTGTGTPTLRMDRITVGG NGPDVLTRVSLIGNDLRLDEGVGTPTLRDDGLTVGG DLPSMFARLDPASDLEFRGTRDAPSIMUEDMSLAG NLDEDFASIT DADDLVFRFGTDAPTLRTDALDNAG SLPEMLRRMIPANDARLHLGRVVPSLLIEGGMTLAG VGPEALKNISRVGCDPMPDPGMGIPTVRDDNVTVGG NLKEMFMSAVPANDIDRRYKDSTPTLVIDNMTLAG QGIEVMQRISMVGDDFALDGGVGQPSVKIDRLIVGG NGPEAMGLISMVGNDLQLDKGVGVPSLKVDRLTVGG
 NLME MFSNIVAISNDIETRTNLRCGSVLIDSMQIAGD KGIIETLQNIDKVGNNLDHGQGMGQPTIRVSEMTVGG NLKDMFMNIVA ANDLRFRRSEVPTLRIEGMMVAG NLKDMFMTMVPANDLDRNYGTAAPTVLVPEMTLAG DGPKAMKRIQAVGNDMALDPGTGQPTLRIGGLTVGG SGAEVLKKISMVANDLKLDNGVGVPSLKIDQLTVGG
 KGTDVIAKIDMVANDEARGQGMGQPTI RVSELIVGG DGPSVLTRVTGGNDLABDEGVGVPTLLIEGLTVGG NGPDALTRVTMVGKDLALDPGIGTPTLKLRGLTVGG SGAEVMSRISMVGNDLALDTGUGVPTLRVDSLTVGG DGATALQH|SALGNDMALDPGMGQPTVMLGGLTVGG SGPEAMGRISMIGDDLELDNGVGDPSLKLDNITVGG NLKDMFLNMTPASDIDDRNFGTAAPTLLVEGMTLAG DGATALQH1RADGNDMAMDPGMGQPTLLIGGLTVGG NGPDLKKVSMGGNDMQLDSGVGVPTLRI EDVTVGG NGIDMFAALDPADDLEFRYAVNVPTLR DGMVVAS DGATALEQIRADGNDLSLDPGLGLPTLRIGGLT GG NGPEALASITGVADNLVDDGCGMPSVLVSKLNVGGD NLKDMFMNMLPANDLDRNYGTAAPTLLIEGMTLAG NLRDMLRSTVPANDARSHLLSRVPSLLVEGMTLAG NLKDMLDGIVHVGTDVDQRSNLKVGSVLINQMTIAG NGPEAMKRLSMI GNDSELDPGLGQPHLRMDQVTVGG SGPAAMKQ1RALGNDMALDPGMGQPTVLIGGLTVGG NGADAMTKVSMLGSDVALDPGIMGPTLKMTGLTVGGA DGPSALQRIRGGGNDMALDPGMGTPTVLMDGLTVGG NGPEVMNLVSMVGNDLKFDAGIGTPTLKVDALTVGG NGLDLLKNVEEVGNDLTFYGSVGSPSVLVKKLTLGG NGPQSLKNVKLIGNDLEVNTGVGQPTLVRIVGMTVGG KGSEVLMNDDMVGTNLAQAQGMGQPMI RVKETTVGG NGADAMTSISMI GSDVALDPGTGTPTLKMTGLTVGG NGPSVLTKVTGGGNDMAVDEGIGVPTELVSGGTVGG KGYEVMQKIDMVGNDVGRGQGVGQPTVRVSEIVVGG NGPDVLKRVSMI GNDMALDGGLGSPTLRLDGLTVGG SGPEVLKQ| SMVGDNLDFYTTVGQPALKVDSLLVGGG NGADAMTKVTMIGGEPALDPGIGT
HLREMFAGIVAVGSDTLTLGNISSGSVLTDQLRTGG NGFETMQQI SMVANNMCLDAGVGVPALKIDQUTVGG NGPEAMQRI AMVGNDSALDTGLGMPHLLMNAMTVGG NGQEALMNVDMVGENLLARAQGMGQPRLRVSSMTVGG SGPEVMNRVKAVGTDFALDEGDGVPTLLAEGLTVGG AGKEAMQQIISMVGNDLKDDSGIGVPTLKLDSITVGG SGPEFLRRMTPANDARTHLSHVVSLLVEGLTLAG NGGEVLRNDMVGNNPGMRGGHGTPTLRVAEIVAGG NGPDVLTKVSMI GNDLALDSGMGTPTLKIDNVVVGG SGLEVMQKI SMVGDDLKMDPGI GVPSMKLESLTIGG NLREMLRADTPANDARPWLSRVVPSLLVEGLTLAG DGPTALTQUMMGDDEEMDPGVGMPSLRMSGLVGGG KGSDLMN:DMVGDNKQAQGMGQPMI RVKELTVGG HRRDIFRTLTP ADDLVFKYGMDVPTVRVEGLMVAG NLKEMLLGVEHTGSDTDHRSNDKVGSVLVNQMT AG S GLEVMKKISMVGDDLKMDVGUGQPSIKLDSLTVGG KGHEVLPRI SMVGNDLELAAGMGQPTLKVDSVLVGG NLRDMLMTLVPANDARTHLSRIVPSLLVDGLTLAG NGPDVLNKITMVGNDLGFGLGTAQPTLLISEITVGG KGSELLMKIDMVGNDLKRGQGMGQPTIRVSELTVGG NGPESLHRITMVGDDLEHAPGMGQPTLLIEELTVGG MGVEAMMNIEMVGNKLDFDGGFGQPMIKISKGVVGG DGATALTQUQI GDDFAFDPGVGTPSLK GGATVGG




## UniRef90 B6JIY3 UniRef90-G1Y4T4 UniRef90-R6QZRO UniRef90 $L 10 \mathrm{OP94}$ UniRef90-UPI00036A1DA3 UniRef90-S5TWZ3 UniRet90 O7VRC1 UniRef90-Q7VRC1 UniRef90 UPIoo03184D6B UniRe990_UPIOOO3B66CD2 UniRef90_UPIOOO4773BE7 UniRef90-R5V5NO UniRef90-M1 P6B6 UniRef90-B4VWR1 1 UniRef90 FOK6N5 UniRef90-N9XZP2 UniRef90-S5RP94 UniRef90-U4UXP3 UniRef90-M1RTE2 UniRef90-R6QGB8 UniRef90-WOAFH3 UniRef90-UP100037DAAF6 UniRef90-UP100040ABC6E UniRef90-UPIOOO36F5411 UniRef90-K1JZ65 UniRef90-UPIOOO42170E9 UniRef90-R6WVC2

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 D:KDGSYN:DQGVGVRAIYGEKTGFAYADQLTLNALNQSA
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 ALEDVERSEGEEAGLRLFVGRRSASVGSSDDSQQAALDALV NNVVENFNSDGGLFITVYNKFSKGSVSSKDFSMKNIKNML AVRGGAWQCDSGFGURVLNGEETTFASSQRDGADALRTVA EVNGAGSHIDYGMGVRVVSGDQTGYAYTEITTMNEMTNAA
 DI K E G GF Y DDR GF G V R A V S GEK T GFAY A D Qi S F N QL L Q C A EVTRAVAGRES GACVRVLYRGAWGFASTPDVREPALTEAA DVK E GAF S LLDRGF GL R V M S GEK T GF A Y A D QI E L S AMMLEAA KLEGANS GL RWGLSI RI FDGLRTVYGYTNEQEEEK』LTVI $R V R S V G G S V D M G V G I R V V L G Q A V G Y A Y A E S L E P G A M A E$

 TLE QAERAE GT D I GL RVLLGGKRAAVVSSSDARPETUAAMA
 DVKDGSFHLDQGVGVRAQSGEKTGFAYSNAINREALSAAA
 EVVEKY L K K S F GVS FRAK $\square$ NEKMGYSYTEIIDDEA K L E T L L S E G V S DG GQQ R A C Y K G G W G L S S F K V E T L S E Gl S $\square G G Q Q$

 K I E R S L T G R T G GVGGI R I F N G F N S VVY TY S H K K D R D T L I K L A A L E Q A E R S E S V E I G L R V LVVGR R VATVVS G S D L R P E S M A TMA












 EVVSS S G L N DD Y GVGG R V L C G E K T G Y A Y S E S T E WA D ME Q A V
 R L E K Y L V C G S D K G A G L R A I Y G D H EVDQFTTAEVTGVSFRGVYA DQMGYAYTEKDDES
 $R$ E T L S E GL S L G GQVVRACYR G GWGFA S

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 HAARS VQ
 ET MALIDDPA HPKAAPPTRTNHHLYTDADPDD RAARSVSKQAGSGEAKD DFSKGYRVRIKDQFDPIG NTLKDSF ERVVAMAKASPDSLFEGLANKQPYRHVKSDKKHQPK DPYD EEAISAAR IVGGDGETLLAPIS VVQDTCQLPLTGTDPRM NEASLALGGLKDNKS TLLKERLNL HKAAVALGELKANMDIVLND NAAYNIARFTASDNFAGLPDENTDKIVPNKHIIKFYPE ERAVAMAKEAPEDPYTGLADENTLGEMNPLDFKLYTPWFLL
 ATAKINAELLENDEKEFIFEGN DQAHAMAREAPEDRYAGLAPGDRLMTGEYP KLDNLYNSKLN ERAVAMAKVSPEDPYQGLADAASLAKS I RNLDLDDSTVV YKAALA $\square G E L Q E E K D \square I V N D$ G ERAVAMARVAPEDRFAGLAPADRLARS FPEDDLLDSEDP
 DGAKENAF ILDTEDHEDLYSG LAASKIAEGGTGTASA】CCR
 HMAKS
RTTRDI RNHAD KSAKEAASCDESND DF MGK AALVAARAATARLPGNARAALKPDHQA PAGQNGLRRPA ERAVAMAREAPEDPYAGLAPEDRLDRGALPDVDGDD GA
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 QNASKSDKGLPQNDNDDFVM ADMPSVVHPVMDSPQ



 EEARENALLSG KRGSLPEGRP LGSHDLLGEGLSAP ETMVK LDK GRAGQVDAQGRGGLDEFRKQAAQGLHAPEVPDS ETAMK I AKLSRGNARDY L GEPVR DEVEDKVKKPFT
 N NLKASAR ALRSKGMKTRKA
$N L L A D S R G T A R E K G Q T L V L K G N L K S S S F P S A N V R D P R$ RAAQTAAAVADGPARPGPQHFSVDPLPQRYPVRTTWD ERAVAMAKVSPEDPFACLADEASLAKS YPDLQLFDPA DTLARLKGGGGRVDARGAGGLD FRKTAPAGRHAPERPFE E QALSMLGLEVNEAVHSSFD GLPNDRDFADDKAHWLNQCP KDTRS $\square G A T Y T A Q E N N G G R L V R R L Y P T P R A D R Y P I L Q N W R$ NQADGMSGSINKDKFEGGKKLKDFGSNKNDWMD ESLLARDTGSTQKNDTDDEDKK DPFPEVKRP
E NALLENASVLE S E DVEEDYKG DSNYK D TSFSSEALTK


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UniRef90-M7TC33

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T
 K $\square$ D A S K LI DI ALLEL E K E TK GY S D K V I N L N A C I S Y S S S K N G D A GQAAKLPLLMRADKQGYAVSPVVQQVSASLVDSTKHUQ

 NIDDPAELI E I A I DD L E R QTK N Y S D KV V I NL S G CKVVS Y S S S R S ESDISS R AP FIKKELNDKIFSLDNRVNKVIAKLTNSTT QVL



K V A F L K S L D DY A R K DD V R V K QV M L S L S G A Y D S I L
$S V T \square A$
DVDGKARVELLRRADRRAARAASAEVVRVDASLVAVHKEIL




 S I D TMDKQ
D E V E

## D

 APDPAAALEDAARRAEAAARAVSGGVSQDDSAAAGWSSARMH DANMAA K A F LIRQADEAARAENEKIDSQF DGNDGQREQQDE
 S L E L T R R E
 E P T L DS T I C S VEDGRK LV A
 HMP LE EKVE LVLSSLERKALALD
 QK A EK K G V R V S F R E D L V E T H

D K V S K E T K A L KL V S L S K DM Q D A S E K I T Q TVVV RLIDE K E Q K V L

 A RD K R WR E L Y

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190
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$\overline{L V}$ V S T GFHGA Y LLR S S Q S L S M T A DA GEGT GMERDYDFTSA I ANTD GQLVA DARPVTRLFDHVVLERAGTRAQGSA GVGGR
 FANSHGFDDVYP T T RYSI SAEFI A D DKH GMQRDDAYY A SR



 LVTSDGFCGTYHSSYFSRSC SAVAGEGTAMERDYDYTTA
 II ANTDGTFVEDRRVRTRDGINAIASKDGENQTGFEGCKGF LANSHGFMSGYPFSKHIISISPIADK GKEMQRDNWYSSN MATSNGFAGGVAYTGRSTSAVAIAGEGTGMERDYDADTR MENSYGVKIE ETLS GF FVMGCADAKDGEDTSSGCSYDAS
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 HAADLPDPAE $\square G R K A A E R A V R R L N P T Q M P T G N A T V V Y D P R$ A GLEEFRRDRKWARDAVSEAAVHNLGAAPAPAGDMPVVLGPG RDFSAFEAEKDANVAVDEALSYLGAESVKSGYYPVI FKNK A GTEMLTEDELADSIEAGIDDRFVAKRPKGGQMPVVMGAG TNYSFF DTQDWTKEAVR AALLNLSSHEAPSGTFPVVLGSG RMFNAKSWHDVADKAIKQAQTNLRADAAPSGDMPVIVANG D S DDELDTKKIAKQGVEDADSKLGGKSDPSGNYKTI I YNE
 $H L A D L E D A A A I G A R A G D R A V K R L N P G K L S S G A M P V V Y D P R ~$
$E H A A G V D R E L A L T A T R Q A L V K L G A A P C P S G K D P V I M E S G$ R DDDLIKPE LLGQKTAKRAISRLGSRK IQTMRSPII FSSE

 EFLTHNLIDEIAQEAVKRTAILFEAGIPEGGEMPVVMGAG

 $M G F E A F D G D R H V A V A R D C A A S L V A G K S P P S G D M P V I V D H G$ GDYT IVMNKETAERCVARAVRQALHNSAPAGTFPVVLGPG EFYDQLDVEAMARDAARTAKVMLNADECPSGEMTVVIDNG HGAD LAADPAGLGRAAAERAVLNGDPRRPATAKLPVVYHPR NMGFEFFTDEMIRKVAKDAVRQVVSQDAPAGEFTVVLSSE VFYQDLDDAA GKRAGERVVARVNPRKVKTSNDNVVFDPR
 TDYRYFRAMGYA REALRQALVNLEADPAPAGTDPVVMGAG


 ELVED D DFPHWAELVKEKALSLLSHARSPPSGEFEIIMDPE
 E L Y DEI SVEDIANEASRVAVITMLDAKSAPSGKFPVVLDNK THGADLSPEEI GRRAAERAVERLSPRRPRTGAYPVLFDER EFNSKVDPKQLGQDVAKQAMVKLFADACPSGEMPVITGNG RAWDVDFSLVGERAAELARSSLNAVSVESGSYDVLLGPQ



 LGWEGI DLHYWTAHVKEKALELLRASSPPSGEMDVI ADPE S DPGFLRQWDYENAAAESAGKMLYADFVESGNYPVIMANE
EFDESFNWLDYVVENSRLAVVEAAGAPHVKPGRYDVVLDN $E F D E S F N W L D Y V V E N S R L A V E A A G A P H V K P G R Y D V V L D N E ~$
$E L F D V D D F D T A K E T A L K A V A L L D A K D M V P Q V L P V V I H N G$ $E F F N E L P V D Q L S K T A A E R A L L M L S A G Y M Q G K K M P V V M G N G$
$Q G L D F Y R V E R V V R E A T A R T L I L F D A V D A P V G E M P V V L A A G$ EFHHDVDPVAMGERVARQALTKLDAAQTACPSGEMPVVLAAGB YYAELEDPAE $\square G R R A G E R V V K R I N P R Q V P T K N V T V I F D P R$ VGLELFDPAEHGRAAGEQARTLLGARPAPAGPMPVVIGNA GRPDDLRNWDSAKEVCESAGTMLYADYVDAGQMPAVLANR EMTTDELIEEDAEK\TCGDDEAFEAVRPKGGQMQVVMGAG GNPDDGRNWDI TCELNEESAQKMLYAGFVEAGQMPVVLANK TNIDEEINPRE:IAKMGVDEALSKIVNSKSIETGNYKIVALYNE SDWGKVNAKESAHKAVQEAVSYLNPDETDDKFYPVILRQD $R Y G D L L N L E P Q V I G A A Q R A V T A L D D P M V R G N T Y T V V I D P D$
$S N P D F L R T W A D G A E V V E A A G T M L Y A D Y V E S G S Y P V V M A N B$ TAYEDLTQLEHQVRAAKRAVNSLNDPPVRGNDYTVVIDPD DRPDDLRAWASAAEVCNSAGTMLRADYVDAGQMSAVLANR EFFEGLPDKDLAQNAAERALFMLDAGYI EGKKDPVLMGNG


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270
280
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 WPGLLDHEAVGHGEGDFNRKGTSAFAGRIGERVAAPGVTV FGGVIFHEACGHPEASAVSRNDSIFTGKLGTKIASDIVTA TARGIAGHDACMVNGASVARKTSLLQNCLGKAVMKSDVHV LSGQFVHEAFGHLSEADMAYENPDLDEVMSKRFGPPDLQU FGGVI FHEACGHSEATSVAKGNSEFAGKLGEQUASTKVTA ISSSLGHLLALTNGAMIARGSSWAKDLLGEQVLPNGLS
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 A MASLLETESDVFS A E EA QRGGSLLLKGKE GKII A S D VV I

 $\square$ S HMFFSHLASAISS G WN

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 LAGLFVHEAFGHLSEADMLYENPDLLEVMSKRFGPKELQI WAASLI GHLLSAUNGTADARGASWLRDGLNTDVLPKGLSL
## L

## F

 VAGSLLGHFAGATNGAA MARGTSFLKDAMGQAIFABGISI AGGTMI HEACGHGMEADLVLSGSVYREKVGKKI ASEKITV VSRGLI GHLVSADNGAAVARKTSFLKDMMDKQVAlDEGLTL FGGVIFGEACGHAEATSVADNASVFCNKLGEKI ASDVVTA WS GVLLHEAVGHGEGDFNRKGSSAYSGRIGELVASPLCTIA

## $\frac{\mathrm{L}}{\mathrm{W}}$

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 K K M G G G S V N $N$ N V T G E F N F N A E G Y L V



T


UniRef90＿K9PWQ7 UniRef90－G1XXN7 UniRef90＿UPIO003463875 UniRet90＿OOW6X4
UniRef90 B7A7X0 UniRef90－UPIO0036D603D UniRef90－AoZDR5 UniRef90－A9HKF2 UniRef90＿UPIO004123BE5 UniRef90 E1QGU4 UniRef90 M1 WSHO UniRef90－T1AUA3 UniRef90－EOMQA3 UniRef90－K9XXQ3 UniRet90＿K9VFJ8 UniRef90＿UPIO004299FA2 UniRef90＿D1Z2L4 UniRef90 UPI000368BDFC UniRef90－R9GWU1 Uniinefoc－K9U29 UniRef90－E8Q6V1 UniRef90－BOT106 UniRef90－R5BFI7 UniRef90－K9Q7M6 UniRef90－UPIOOO3455826 UniRef90－AOYXY8 UniRef90－D8K421 UniRef90－E3PWM3 UniRef90－W9DTW1 UniRef90－K9SY80 UniRef90－UPI0004048203 UniRef90－U5D7C4 UniRef90－UPIO0034A446E UniRef90 UPIo0047E139B UniRef90－Q2NJE5 UniRef90－D5VOIO UniRef90＿UP10003B4B866 UniRef90－G5LXJ6 UniRef90－Q58403 UniRef90 W6WDS9 UniRef90－UPI00036175FA UniRef90－L8JHR7 UniRef90－JovBB7 UniRef90＿D9PXT9 UniRef90－U6E1X4 UniRet90＿D2Q4D8 UniRet90 E9X900 UniRef90－Q2GEH8
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${ }^{1} \mathrm{MTDTGK} Q A{ }^{10} \mathrm{AD}$ MD पTQTQDR■QDLVSKYRSQ ANKLVDAR R ELEAVLKALAGGADAEVYAASGKITVVEG an
 NKLFAEGEK DGDSDDELYYEKQSGFGVSQG LGGALARGGQWAELYFQHTLSNLIEDG $N \square A A D U T K L G K K Q N Q D A E F T V Y E T N K T S C S A R$ TSSSTGVSVREG MENSTERLQLMAGARDRVDYLEVRLEQSESTAUSFR ■TQAEAKA】DKVLSYAK A ADETEVTLSRTGN\RYARN KRLIDLALKEGATEAEDFYSKGRAVNVRGG
$K E D A D V A N A A K S G A T Y A D 贝 R \square G R Y L N Q E A T R$ MNYELQKLAERLLELAAKCGAEAAEVYQARSQSVFFEAN LSEWIKKGLEKGUTDLELHAVESKSLKLSLGG M $\square G \square E D K E L L K Y C L D T A L E Y G A D K A R M T \square N R S I E D L V A N A$ LAEQLLELLALKSGAEAAEVYQSHSLSVFFEAN MSDLFAEHKNRLSELISTYGVDFLTIRLEQVEETNTLLR MNTAIEEQLRDQI KTHRDRVDYLEIRLQQSETTSI SFR HELVEFAVEKALELGADYAEARFEEKNGTELVNG DKLFEAGKNKGFENQETYYEESLNDSVYQG

## MQDQLQSADAPYLQA

kLLADVALNTSK
HSVDFFDTRIIEGTTTSUDNG

MTVTKПEDTATHAREDAGQLGINKFDIYGVDESSVQVDGG MML LRALADAALSRARELGAEHADVRVERITRTQSLRLR MT $\square_{D ~ P ~}^{\text {P }}$

EAQRKGLEEAVSTALEGKSDYSDEVAVQKASGHSFEKG
$\square S K E E A K R \square V D K V S F A K \quad A D E T S V T \Pi S R T G N D R Y A G$ MADQLQQAIIDQVLDRVKAAGAE ADVIANCSNNFSLKAN TREQAEALLKKALAYSK ADECEVTLSNGGNDRYARN DFAEKALKLALRNAEMAEVYIEREQTVDVEVQ HELAGAALQRAKDLGATFAEFRLERTRSESIALR

KGGADGGELFVEYSLSLKFEDG EELLQRADAVLAAARGSADFVEVRVQKTLQNRIEFQ DLHTLIEKGIKRAHELGASEAEIYVVRRVSLSLSGR MTEAEAKTILDKVI ALSTADECTAAQDGTDDGNIRFALN MDVELQDLADKAI RYARDSGAQYCDARAEERKSVLIENK EKKRLADIGLNSAKANGATYADVRIGRYLNQYIFTR $M M$ NMKEAAEQVLVLAEKKGVKDVDVVVERSESLDVEDG R MTFENFKKM VFEYAAAKKTNDFEIYIKKTHEVSIQKG DEDLDYAIKEAEALGASDAEACAAASSEVFIENN KKLADDALNAAKAKGATYADARTGRY品NGFVTR EIANHAKDSANKDGПKKFDПYIVDSTSVQVDQG MT ETNDFDDALFAEARKQGLDEWQVKYVESESSDIQVQ LSKEQARKLADAALSRARDLGAEHASFRLERIRTQNLSLR MDINRAQRLLEMLSCAKAGGADAAECVWCSYGSRSFSVN EKLEDLIDLG DFFDVRYGYTASARLYNG पT KAEAKALLT KVLAYSK
MTK DQETATYAQENAAKDGVKYAD\｜RAGTSRTSSVLMG NKQELQELLQFGLDTGADFSEIFLEDSANMSVNNG LAEKLI DLALKRGAEAAEVLQSRSRSVFFEAN KRLADVALNVAKSKGATYSDVRIGRYLQQYLFTR DQLE QLITK EKEVDYVDTRAGSGNGTNIVMN ESWIRKGEEMGADYVDIRYQEYEIILLDNG TKEEARKLLEKALSFSK ADTCEINLSNSGNI RYARN DTEAEAKALLTKVLSYSK ADECEVNLEERGNLRYARN MVMANQQEIATAAKESAEKLGMKKFDVYGSSADATSVQVG TSDSLEESAHRLLSLALKEGAAEAEVYGMVGRSVDVDLR ELLDELRRSGADYADAFVEERDSRSAVVG
QKWL EKGMQQGFEALEADALEESQTLSALDKG MTRDEAKALLTKVVAYSKAESDEANLNGEVSGNIRTARN
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 NVSTSGVITNTDLSVQVAFGKRVGSASUNEFSDAALARVV ELQNAVNTESFGVGIRVIANGTWGFASTLDVSEAG|QKAA ELLDEYKVTSGQVIGVRVIKDQRTATSYSESLDLAS:CDMVV DII TGYYNDSQGLGVRTFLGETRGYSYADIINDNSLKEST EIEKYKDATTLGVSFKVLKDGKVGYSFSEVLDEQAVKLLV DIKQAKSQKPSSVGDRVFVRGSAGFCSVNSLSKSKIKDAV EVDSTTNTESAGIGVRVIANGTWGFASTSNMTPDSVAKAA EPKQVKASNLSGVTVRVWNEDRTGVTSTTDVDPRGLELLALL $K V S K Q G A S A V R R L N L A V K A G D K D G H F V T E C F D V A E A A F I V$
$D A R L V G S G E D T G F A V R V H N G T W G F A A S V V L T A E A V R V A$
DLEKSHASDSDCLGLRILREHRQGVAS DIEEVSSGMSSGVGVRMLYENGWGYATADDTDDHAAALC KVEEVKSNHTHGTGVRFFLNGNTVYASSNGTDLNAGRACLI AVSTSGGTSSNSLVVSSAFGKKLGTATANEFDDASLGEVV俍 EPKQVKASNRSGVIVRVWNEENTGVTSTTDVDPGGLELAL DVISVSGGNTYGVGVRLLSGDDEVYGYTNDTSYEAVKHLV EVQNISNAESYGVGIRVIVNGTWGFAATSDVTPDGVAKCA

KTQEDNTGDTNGARVRVLKNGAWGFAFTND\SK TEEVS VVRESTVSKSRGVGFRVFYKGFVGYASTNDLNEPSLKNTL EVSTSGSLSNQSLAVQSSAFGKKVGVATIDEFDDASLEKVVV EPKQVKASNLSGITVRVWNEKNTGITSTTDVNSKGLELAL
 RVEMASESYHCGLGLRAVVDGAVGFSSSSDMSAQLKFVA KI DACVWSDVASAVIRGIFANKKTSTIALEQLTGGSALDNAF SVSTAGELDDT LTVQSTFGKKTGVASTNEFTDAADERVV $R L K Q L E T N Q S E G T A L R L W Y K G R P G L A V A D Y G N V E P Q A L V$
$T V S T S G H S N Q T L V V Q S F G K K S G T A T I D E F D D E S G E K V V$

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UniRef90 ${ }^{-}$B3CMR2 UniRef90-T1AUA3
UniRef90- EOMQA3
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 TAAARTMQSHGQEAADTGRGVGTTGSSQDSQAYSTLEAAG
 KAALVAKGTLGKDDERGMGGLD FRKRAPKGLHAPKVPVG EKAFKMAKTNS ERIKEKYELKYSKSYKARSIIKTKIDFD ERALALSQLNQPEPVELVQNSQPSYPDVGSTVPLQLLVNW ANLKENSVLIEGDPEKLF
 SKVVEMAKNAQEDPYASFAEDNSNYISSYADKNGKDANLP ARAVAMAKVAPPDPHTGLAPPDRLAKN WPDLDLLDEA EEAVAQAKLVGKETTQLAAADATEDVVKVELKRDPR
 RTAVKCARARGRDPSGKLPGPKPYKSVS ERAVAMAKASPEDPFASLAAPDRLATS YPDLDLFDAC GLAV SVAKANSKDGAEPVQLAPQKGYGEVSWKTPIEANAF
 EELISNAKVVTVDEPATTYEGSKKYPVIKENTFDFD NDA KNAMKCDNREVELLFSKREKEKNAYLNVNPLSAMSN DRAVAMARLAPEDQYAALASTERLARGPFRDLDLYDPT AESHSVVKAISPDECRVLPPPELTKAVTGDELDLCDSSWE AR EEEADAAAKMVGESETILANVEAVHDTCQLPGSGSNPR KKAVKLAKAASKVRNEPIRFSEEDFHEVYYEVKMRKD FR EQAVERARLAGD GNSEFAQVAPVNDKVVIDDEHDPR NAAYENAFADESTDPVCLHDGSGDYKFME ETADSQAKLIGNETTQLAEVPADQA VVKVE IIENDPR ETAVADAKANSKLQKEPVVLAPVAAYGEVSWKTPIGKNSM GEADAAARMVGTETTTDEAPVTPVEGVYRGPDTGTDPR ERAVEVARVAAPVNREPTEGAPEPSHGDVTWVSSYEMDPF VLSLLLKLKKTFQGKANKVIALQTEKPLKNTMQKHYN EKAVKIARYTGSYGSVVSMEARNMVKDRUVSHYGIDPFDV
 ERAVAMAKVSPEDPFACLADETDLARS YPDLELYDPT RRAEEDARLAPENPEYVPMDGPQKYLNTKP EQALLNAKYTKQDEHQTISCADSHLTTDVAEDYQQD


ASDFTRKNRDADGSAMTAEAAHETACGDPGYKFEDQDD EQAK LIGDRDPENTSFSDVEPVVDHVTVEPQEDP VEARTNAADAGVDPVAAVARPDGVAQ PDLELYDPRFE QNTVKVAKTLPEDPQWISLPKRYGYTQCY DIVDNK KRAEDLAKLAPENPEFMPAVGPQTYRAT NTFSAATA DAAMKNAGHGTKNKNN EKATA DAKANGKDQTEPVQLAPVQSYGEVSWKTPLEKNAV DNALTNAQYSQQDPHQKISCIDSRLATTEPEVY OQTE ENAFENAKLQDPTQVEMLDAPAEDP DSASLERYNTEDD DEALENVTVIESEESDFLHDGSGEYTDFPT LYLGEFD SMAVK IARVSPKDRYNVLPSRSKKPRMLQ GGIYDKNAQ EQAVAVAMANSKFQTTPVQLAPVKGVGEVSWQTPDKKNAM ETAYEASFFGVKENV PDDFPQATIPDTHQSDQKYP GEAAANAALMDCDEKFFFYDGHGEYRAVHP YRPQDD EQAVEVAQVAAGMNAERDEDADEPLYNNVTWVSAYDVDPF EDAFRNARHGAAEDDVVFARTQPTAPAD DLGVYDPDLV QKAYKVAK KNCEEKAGMTSKD PRKKDEMAPDPKGNFK ETAQLAKRLDRNPRKKTMAPLPKGGKEVYRVKKNPG RRAEELAQLAPENPEFMPFLGPQEYGAESP TFSPATA LK ALDKMTGSLRGDVQVGSGAPSVDKTMVRSSRPPSD KTAYEASFF GVKEND DKALATSD DNDRGFNKGNAPETLEDVEGGRHRYPDMGQ ETAVVAAKANSKDQTEPVNLAPQKGVGEVVWNTPDKKNAF
 EQALRIARALEGRSRPARVASRGVHRERVVSDYSDDPD RRAEELANLSPENPEFMEPLGPQMYDESIVGSGFSEATA KTAYEASFFGDKENV EDA ISQSK TSDP DD $\quad$ DDPGPTEDPKDEDR MSAVRSARARGRDDTWTALPQPERVTEPE HRAGKTAGAAVPEHALSVGGASRVARNRSW GOGHEGIC RRSEELAOLAPENPEFMPGEG ERAVSLSQLNQPEAVELNGNFQPGYPQDYVDV RRAEELAQLSPENPEFMAPMGPQTYDEPVSFVEA
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| :--- |
| UniRef90 |
| $13 D 2 R 5$ | UniRef90-E4TP94 UniRef90-W9AE31 UniRef90-UPIO00288E1C8 UniRef90-G8DB31 UniRef90-C5CEU0 UniRef90-K01E83 UniRef90_F4APX3 UniRef90-UPIO002FBD05E UniRef90_R6J530 UniRet90-UPIo003621C69 UniRef90-C6VXH8 UniRef90 D1Y8F9 UniRef90-A6UUHO

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SVS DDEKETDKDANKAASDDDVISTGV NYSDSESQNV DVDVSEKVDLLKADHGTDRE EKALSSVVLRYAFEKDRRV NITPEYRAEVASSSIVPA DAKDVTAAGFLNDSAGFSA DTRAEVVAKSLELSRAENLA QVPVSEVDESLLAAEKELIAAHPADQGVPYNLSQRDDDRF SLGFEWLRSTGEKLDDLAWSVGGKIENVPYSYAGKTWSRF D WS P DWSPERLELLRIADTGAREAENTVKSVRTTWFESLHRDQ DVNPNWRANAADASESTSKOSSKGATVGSGFLNDSATFAA KTTPEYRAEVADKSUTPAAAKDEVTAAGFLNDSAGFNA

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F|V|NSNGSC|VVQRDDVNRFGAl|ARGDDG|VRQGFESLNS VCATDGTLAGD $\square R P Q V R \square N \square A V V A E G N A K R A S G S A G D G G R$ II ATSEGSTIVQSWADWEMRFAATARDGNTVQTGRETVGSR
I
ANSNGVLVEDRETVVMGYVDVIIVEDGQVSTMFEYDVA I ANTEGVLAEERRVRTRLFVLAVAQDGAEVQTGYAGPGKS VKNSLGNDVYKEENY LYLSSTAYSLENGVRGFGRESKGGV LVNSQGLDCYYTDTTLNCYMSAEWVRGDDFLSVADGQTQR $L$
$A$
$I V$
$I$
$V$ $I V C S D G K K R A D M R P R A G L R A S C V A Q Q G R E R Q S N Y H D D S A R ~$
$V A A S D G T F A R D Q R L T Q S V G F N I L C A D G S C R S S V G E R U G N T$ LATVSGFVGSFSKSTF V NQVSVVAGEKNEMKUGEXYGNTA VAAADGTLAADVRPLVRLNVQVIVEAEGRREQGYAGGGGR


 LVTSHGFSGSYMATRFGRSVSAI AGEGTKMERDYDYDSR STDGSYDDQDVHRDYPSFNVTRGDRQSGKFMGMGYEYDNA LVNSLGLDCHYTDTVDSCYLSAEWVRGDDFLSVSDGQTQR $V A A T D G T L S A D\|R P L D R L S\| L V Q V E H N G R R E Q G F S G G G G R$ |LVTTEGFSGFHQASGFGVSASAQAGEGALMERGGEGGSTR
 IATSEGSLI EQSWSDMEMRFAAEARKGDTVQTGRETVGSR

 WIKNTKGLDVRETKSHIYAYGUVVAKEKEDTRTGUGFDMA FASSDGSYI DQDVHRIWPTFNVTAVNREEPMGMGYEYMDG $L A T S D G T L V E Q V W S D L E A R F A A T A R S G E L V Q T G R E T T G S R$
$Y L N S T G A L R N E S R S Y A S L Y U Y T K T E E E G K K P R S A G A F R D S$ YADLDNGTTTQQRVRLHPVVEATGETEGAFDTMAGRGWEY
 LI NSQGDHCQYQETSLLNYYLGLEWVRGEDFLGGISVGGGW $V V R G D G K I V S D L R F H S L F A V Q V T V E R K G T Y E V R A F Q T G P G$ FGNSHGMLQGYCSTRHSLS SCVIAEENGDMERDYAYT DGR FMDSEGSRDEGEDTRC MMYMNCVAKENGNDQYGAERTGGF LVTSHGFSGSYMASRFGRSVSVI AGEGTRMERDYDFDSR LANSKGLWAYNQQTSAEFSUTVRTADG LGSGYATRDV LANTKGTLCQHQERSTYCYAYTLYEQDDKQSMHGGMSSG


 FGNSHGMLQGYCSTRHSLS SCVIAEENGDMERDYAYT GGR II K N T G G T V T D E QP MV R L G F S V V L K N E K G G A Q G G T S G K G G $\begin{array}{ll}Y \\ V & N\end{array}$ I GNSYNDAMVSEKTGFYFGIIEVKAVDGDKESSYSEYYWA WANSKGAFGYQRSTGMDYTCTVRTEDGGRGSGWVARNL F A N S E G S E IT Q DFT DVIID MVATAHESGGT QS DNDTE G GR FASTE GSY IDQDVHR IVWPNFNVTA DDPDSPMGMGFEYMDP LANTQGTTLCNHSERSTYCYAYTTYEKDGKQAMHGGGMSS G
 Y $D A N S S G M E M Y S R S D G G Y A Y V M A L G K K N G S P K S A F Y F T A G$ LA NSNG

 L


 | $\square I$ |  |
| :--- | :--- |
| $H$ | $S$ |
| $H$ | $G$ |


 Y V N S D GA V RT ES H S LAA TVVYLYTKT E E EN KKPR SA GA YR V K IANSK G $I T Q D D V R T Y T R C G L S A V A Q D G N L M Q D A F E A N M G F$
 MERDYAYTIGR
FLNSEGTNIIT DQTRVGMWLNVIASNGELIQ\GHDSVGGA IASS RGDYVDFTRRMVGVGGVLVAQAEGSMERLSHGVAGW MIDNSKGLFAYNQSTDVDFTVTMRTNDGGTGSGWVSRDF MMNSKGLFAYYPNTNVNFSLTVRTNDGKGSGYVARGYSD Y LN SE GAMRGESHSLAS DYL Y SKTE E E GKKPRSA GAFRDS
 $V A T S E G V R R S E Q R A R T R M H V R V A A A D R T G R R A P G K G G G L E$






UniRef90_K9PWQ7 UniRet90_G1XXN7 UniRef90-UPIOOO3463875 UniRef90-Q0W6X4 UniRef90-B7A7X0 UniRef90 UPIOOO36D603D UniRef90-AOZDR UniRef90 A9HKF2 UniRef90-UPIOO04123BE5 UniRef90 - E1QGU4
UniRef90 M1WSH0 UniRef90-M1 WSHO UniRef90-T1AUA3 UniRef90- EOMQA3 UniRef90-KgXXQ3 UniRef90-K9VFJ UniRef90-UPIO004299FA2 UniRef90-D1Z2L4 UniRef90-UPIooo368BDFC UniRef90-R9GWU1 UniRef90-K9U294 UniRef90-U4KKA7 UniRef90-E8Q6V1 UniRef90-BOT106
UniRefo-
SBBFI7 UniRef90-K9Q7M6 UniRef90_UPIOOO3455826 UniRef90-AOYXY8 UniRef90-Q5JG33 UniRef90-D8K421 UniRef90-E3PWM3 UniRef90-W9DTW1 UniRef90-K9SY80 UniRef90_UPI0004048203 UniRef90-U5D7C4 UniRef90-UPI00034A446E UniRef90-UPIOOO47E139B UniRef90-Q2NJE5 UniRef90-D5U010 UniRef90-B7K060 UniRef90-UP10003B4B866 UniRef90-G5LXJ6 UniRef90-Q58403 UniRef90-W6WDS9 UniRef90-UPIo0036175FA UniRef90-LDJHR7 UniRef90-JoVBB7 UniRet90-D9PXT9 UniRef90-U6E1X4
UniRef90 D2Q4D8 UniRef90-E9X900 UniRef90-Q2GEH8 UniRef90-B2A5P5 UniRef90_R4Z787 UniRef90-EOSSE9
UniRef9O-D9OKS5 UniRef90-13D2R5 UniRef90-E4TP94 UniRef90_W9AE31
UniRef90-UPIOOO288E1C8 UniRef90-G8DB31 UniRef90-C5CEU0 UniRef90-K01E83 UniRef90_F4APX3 UniRef90-UPIO002FBD05E UniRef90_R6J530 UniRef90-UPIO003621C69 UniRet90_C6VXH8 UniRet90_D1Y8F9 UniRef90-A6UUHO UniRef90-G7VA49 UniRef90_UPIO0046921D2 UniRef90-O26944 UniRef90-K9ZHG3 UniRef90 UPIOOO470A6EO UniRef90 UPIOO02FEA664 Uniref90-E4RYIG UniRef90-C4U0L2 UniRef90_R9SJT4
UniRef90_I3TG68 UniRef90_UPIO0047B6823 UniRef90-D2QM25 UniRef90 X5JRQ9 UniReffo-OC72RK5 UniRef90-F4BU48 UniRef90-UPIO0036E359E UniRet90-A9JR05 UniRef90-UPIO0039AB954 UniRef9O-UPIOOO35DP4D3
UniRefgo-UPIOOO29 UniRef90 UPIOOO29A3473
UniRef90_A0A03812RO
 TSARDMKDSMTGNGMTNTFLERGPYDPEETIASVKNGIYA

 LGHLQTGYPMTGSGMRNTFIAPGDKKPEELFEGVEFGLYA TTGKQLGNTTGNGFFNFLIQPGSASLQDLIGEMDDGLIV KTAEKDGVKSTGHGNKNFYVLPGDTSYEDLYKDFEEGYMI
KSAAWFNTRTPMPRMRATFMAPGPHKPEEVADVKGLYA MSAAWFNTRTPMPRMRATFMAPGPHKPEELVAAVDKGLYA
 LINAKLMGMHLDMPRMTNTYMRAGPHSHEELICSVKKGLYA ETAGKMQEQPTGNAMTNTAGEPGNTPFEDMDSDVEEGVYA

DQAHILGLEESQGCCYAQGWDDVQFQRMNMI KNVEKGRYI
KTAKDFNVEPTGNGFSNCYLVPGMRSFDEMI SSIDNGLYV LLNSKFMGVCSTGNGMTNTYMLPGKSTPEETINSIEYGVYA SSAKQLGLESTGHATHNLTLQPGDRDLAGLMADAGTGLFV YMSRKLGMPQTDATSPKLMPTDPGAGRDSIMKMCGSGILV TTGRQLGVSYPTPGLFNFLIQPGSVPGRDLDRQLDNGLVV ETAGKKGTYPPIVRMTNTAMEAGDHSFEEMIADIDEGVYA EYAYKLGQRSNASAMANTYLAPGDHSFEELI ED: KLGVYM


$R \square A R L T G T P$
 QSARKGGLP LT GNGMSNTFLLP GEEPFEGLLEKAGKGLLV
Y SARKDGLK STGHAGGDHNWR


HTASFFGGIENTANASRHTMMATGTSSSDGEDTA GEYGELVE
F WAEKTGAKSVPN PGGVVMEGGNQTDEDMIKSTKRGILV



ESAAKMGEHPP CRMMRTTCDAPGDATWEDMI K DVVKGGVYA


E TAAVTAFD S A P T G N M M A C T CD DE K G D W K V D E

E S A CKE NKKST GH A S H N L V W WP R GE H S L E QL C S L N N K C L L V
KTAR DN RESTGNAYFNLVLGNSGDPFEDMVKAIERGLVI

 $F$ WADKKGVKA DPS P GGDIFQGGNDSDADLIMKSTEK GIV V QYGKRLGTVSTGNGSRNLFVVPGTRSAEELAAVYDDCFCV




 TVGRSSLGAESTGNGFYNTLVQPGAKSDDELI ASVVNGVLV


 Y WA QK Q GKKPL PYPNNFIMAGGTASLEDMIKSTQRGILV
 Y T A GKD GVVRSTGNSVRSGYSDDIDDSPSAYDLQAAETE GY
 Y WA QK T GMP Y VF G G S PA $\square$ NMVGGSES LEDMI K GTRR GVLV $T T G S Q L H D P S T G N G F R P G L G S Y P T P G L F N F L D Q P G S G T L$


UniRef90_K9PWQ7 UniRef90-G1XXN7 UniRef90_UPIOO03463875 UniRef90_Q0W6X4 UniRef90-B7A7X0 UniRef90_UPI00036D603D UniRef90-AOZDR5 UniRef90-A9HKF2 UniRef90_UPIO004123BE5 UniRef90-E1QGU4 UniRef90-M1WSH0
UniRef90-B3CMR2 UniRef90-T1AUA3 UniRef90-EOMQA3 UniRef90-K9XXQ3 UniRef90-K9VFJ8 UniRef90_UPI0004299FA2 UniRef90_D1Z2L4 UniRef90_UPI000368BDFC UniRef90-R9GWU1 UniRef90-K9U294 UniRef90_U4KKA7 UniRef90-E8Q6V1 UniRef90-B0T106
UniRef90-R5BFI7 UniRef90_R5BFI7
UniRef90-K9Q7M6
UniRef90-UPIOOO3455826
UniRef90-AOYXY8
UniRef90-Q5JG33
UniRef90-D8K421
UniRef90-E3PWM3
UniRef90-W9DTW1
UniRef90-K9SY80
UniRef90_UPI0004048203
UniRef90_U5D7C4
UniRef90_UPI00034A446E
UniRef90_UPI00047E139B
UniRef90_Q2NJE5
UniRef90_D5U0IO
UniRef90_B7K060
UniRef90-UPIO003B4B8666
UniRef90_G5LXJ6
UniRef90_Q58403
UniRef90-W6WDS9
UniRef90-UPIO0036175FA
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UniRef90_JoVBB7
UniRef90-D9PXT9
UniRef90 U6E1X4
UniRef9O D2Q4D8
UniRef90-E9X900
UniRef90-Q2GEH8
UniRef90-B2A5P5
UniRef90_R4Z787
UniRef90-EOSSE9
UniRef90-D9QKS5
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UniRef90_E4TP94
UniRef90_W9AE31
UniRef90_UPIO00288E1C8
UniRef90-G8DB31
UniRef90-C5CEU0
UniRef90-K0IE83
UniRef90-F4APX3
UniRef90-UPI0002FBD05E
UniRef90_R6J530
UniRef90_UPIO003621C69
UniRef90 C6VXH8
UniRef90-C6VXH8
UniRef90_D1Y8F9
UniRef90-A6UUH0
UniRef90 G7VA49
UniRef90-Q0W6X3
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UniRef90_UPIO00470A6E0
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UniRef90-E4RYI6
UniRef90-C4U0L2
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UniRef90_UPIO0047B6823
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UniRef90-X5JRQ9
UniRef90_Q72RK5
UniRef90-F4BU48
UniRef90_UPIO0036E359E
UniRef90-A9JR05
UniRef90_UPI00039AB954
UniRef90_UPI00035DF4D3
UniRef90_UPIO0029A3473
UniRef90_AOAO3812R0
UniRef90_A0A03812R0

455826

04820334A446E

96175 FA

370
380
VRMLGGQTNGEMFTFA AAEGYMIIRDGK\|AEPVISDVTLISG VEFSGGTVDDTSGQFNFSAKAFLIEDGKVTAPIEGATLDG KNWQGGMTNGEMFTFNTAGEAWMI RNGKIAEPVRDVTLSG NSVIGAHTANPDGDFSVECRNFVVENGVMVKPVKSLMLSG K EMGGGQVKPGSGEYNFAVQGYI I RKGRIVEPPVRGAMLVG KGFHYGYVIPSNGQYTFKCEYYIIEKGGUKHPIKDQSLTG

 | V |
| :--- |
| K |
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| I |

$K G S R G G Q V D T G K G L F Q F S A E A Y L I E N G E L T Q V L K D A G L S G$ T E LI G Q GVVNMIT GEYYSRGAT GFW



















 D QI L G G GA G IS G G D F S V N I D G Y R I H R G QL V G R V K D T M V A G




## 




 $\begin{array}{lllllllllllll}N & \text { N G K } & \text { K } & H & P & V & K & N & F & R & F & N & E \\ V & G & K & T & S & I & D & S & A & T & V & A & G\end{array}$ $K N G N P V H P V D N D T M N G$


 ENGKI KHPVKNFRFNE



UniRef90 X0YXK5 UniRef90-A4FW35 UniRef90_UPIOOO40E2B16 UniRef90-F8AMS66 UniRef90-K9UMR7 UniRef90-F6BF05 UniRef90-K9PLX9 UniRef90-G7GU72 UniRef90-A4SJT4 UniRef90_UPIOO04700A5B UniRef90-A4BEA4 UniRef90 - 12 EZ40 UniRef90-D2S6V2 UniRef90_K9VMG6 UniRef90-UPI00036EE753 UniRef90- QOW1K0 UniRef90_UPIo0037671C9 UniRef90_UPIOOO3670702 UniRef90 B8HUM6 UniRef90-UPIO00381B5D8 UniRef90-UP100047DD1EE UniRef90-E4RY19 UniRef90 - D2QM26 UniRef90-A0A059MQNo UniRef90-K9WGP5 UniRef90-A0YHY9 UniRef90-K9S7K3 UniRef90-UPI0004778C44 UniRef90-UPI0003B644B6 UniRef90_UPIO0037731D1 UniRef90-A0A013WGD5 UniRef90-R9LMH9 UniRef90-E8VUP2 UniRef90-UP100037FE48C UniRef90-A9A4H3 UniRef90_B6YVX0 UniRet90 Kobc40 UniRef90-V8URQ6
UniRet90 C1A314 UniRef90-85Y9Y2 UniRef90-E8R7W2 UniRef90-UPIOO04750D69 UniRef90_B5YBV4 UniRef90 K4HHJO UniRef90-UPIO0045E647B UniRef90-K9ZGH7 UniRef90-A9BHL1 UniRef90_UPIO004793C56 UniRef90_UPIOOO36EA059 UniRef90-UPIO003653886 UniRef90 WoRD88 UniRef90-UPIO003088AB3 UniRef90-V6JZTO
UniRef90-12GC08
UniRef90-K2F5F1
UniRef90-Q31NQ0
UniRef90-UPIO0046A1FE3 UniRef90 M11E49 UniRef90-UPIO003688527 UniRef9O-UP100047AAADB UniRef90-UP100035EA4AC UniRef90_K8GQG2
UniRef90-UPIO00377D44A UniRef90_W8ERJ3
UniRef90-Q0IAL2 UniRet90-X1KW81 UniRef90-NOGF84

UniRef90 L8M714 UniRef90-D5U5W5 UniRef90-L8LUP3 UniRef90-A1ZG28 UniRef90-M3AX61 UniRef90-C6A1V9 | UniRef90-K6YCA4 |
| :--- | UniRef90_K9VPP0 UniRef90-B7KEQ6 UniRef90-B8DZB0 UniRef90_UPIOOO36907C3 UniRef90-C0QXBO UniRef90_UPI00046773AF UniRef90 F8C4J5 UniRef90-UPIOOO35FEF9B UniRef90-R7GDS1 1 UniRet90-ROCZR1 UniRef90-L8M3H6 UniRef90-UPIo0047589AB UniRef90-R6UOR4 UniRef90-UPI00037A2316 UniRef90-F4APX2

UniRef90_K9UNX4
D YK ${ }^{10} \mathrm{C}, \mathrm{L} K \mathrm{C}$ ${ }^{20}$ 30 40

```



``` D I N I E K L E K L L E V G
```



``` MSTLDMNNLLT RLLEKVAELGAEADLIDNRDKAFSLLDKG
\(M\) TQQ SVAERLLNWAKDAGAE AD LIVNESRSLSLKNG LS KEEAKKI DD KVLA F S K A DEMSVVSLSRTGNDRYARN
```



``` \(K \operatorname{LDT}\) QLALLDAVVLHGGASYA DIVRIIQSKSNQRVEAN MKEELLDQVAEKVMNAARAAGVE CEALVQKKRFTSVAVG QEQAK R I C D RV DGGLS K
LRELAAAALSRAGELGAEHADFRFERVRDASFRRL EAK A LLEK V K V GLD K GLLS D \(\quad\) Q \(R\) Y A R N
```



``` \(\square S E D E A L S L I E T V\) I QQ S E DIQQELSKQAQDAAEALGDQK FDVVCGSSVDE TSVQVVG
```



``` QK WID R A L E L G L E S F E I Y Q S LTSE R S V T WG \(M R E \square L R D L A R\)
```



``` \(K Q T L D N A D A W I\) ERAKELGLEQFEIYLSSEKEFTWFQG QAD 1 AQANDNFSLKAN
```



$\square T$ REQAQA VEKAVK L S K $K D D L Q K V A Q E A V K L S$ A DAVDVQVNTYTN V TRFADN PD F FDIGFI E E R SNKS LVLE E AV LIE KLVEAGVGK GLS EVEAYSVESSSSTV S S N MKSESSAELAE QLI DLDALKAGASCAEVVQSNSRPVVFEAN




E E LAALYALQAAKDAGASYADVRFGRYRRQSVSTR
 $K R L A D A A L N A A K S K G A S Y A D V R \square G R Y L R Q F V I T R$ LQQLA EDVVLKHAREKGATACEVVASEGFGQSVRCN
 K K M A DVALLNAAAK K G A T Y A D V R $\square$ G R Y L N QVVVA TR EVLE $\square$ CD K A
 D $\square$ QE LTA Q TKE $\square \mathrm{AE}$ K L G $\square$ R K F DI Y GVDE T SVVKVDQG $M T \square E Q A K A M L D K A \square K F S K A D E C T$ A QLTGSNGGNVRYALN L S K D E A Q A LIL K K VI GF S K A D E C Q Q N L DL F E K I I K K A D C F T E L L R Y H N R E S $\square \mathrm{S}$ V R K G

QELAN LADVNLIRRQAGCEYGDDRLCKYRNQRLSAR K S N DIID EIIEVYI S S S E E F SVVRER E Q LLE L A QK S GASEAEVYQVSA QS VYFEGN LS KEEAKK L LAKA L S S K $A D D C D V$ ELLANLA LI L I R Q T G C E Y G D ADHADFRLR
 $M \square N Q E A K K L L S K V I A L S K$ ADECECNLDGRTNURYARN HAL RDQLHALAKRDGDQRWDLGASSSTNASVQVG ANELANLAVDLIRRKTGCEYGDVRFYRRQNLYARDR LT HEEA LSSLIESVI KQSEAEGVVFVVSGASESALSSRESEN
 MEEALK RAEELGASFADVRYTRVRTLVLVAN
 LT R D D A L A L A D R L R L L S
 N K L K K E A L L A S G I K E D
EMEEVA
EEAVDIL LESVVA
 $M H S S H K R H L A D V A L N T A R K A G A S Y T D V R D G R Y L N Q Y V M T R$

TEQHAKELLSKVLTFSK
 UniRef90-V8URQ6 UniRef90-C1A314 UniRef90-B5Y9Y2 UniRef90_E8R7W2 UniRef90_UPI0004750D69 UniRef90-B5YBV4 UniRef90 K4HHJO UniRef90-UPIO0045E647B UniRef90-K9ZGH7 UniRef90-A9BHL1 UniRef90_UPI0004793C56 UniRef90-UPIO0036EA059 UniRef90 W0RD88 UniRef90-UPI0003088AB3 UniRef90-V6JZT0 UniRef90-I2GC08 UniRef90_K2F5F1 UniRef90-Q31NQ0 UniRef90_UPIO0046A1FE3 UniRef90 M1IE49 UniRef90-UPI0003688527 UniRef90_UP100047A8ADB UniRef90-UPI00035EA4AC UniRef90-K8GQG2 UniRef90_UPIO00377D44A UniRef90-W8ERJ3 UniRef90-QOIAL2 UniRef90-X1KW81 UniRef90-NOGF84 UniRef90-D5U5W5 UniRef90_L8LUP3 UniRef90-A1ZG28 UniRef90-EOUJQ66 UniRef90_M3AX61 UniRef90-C6A1V9
UniRef90 K6YCA4 UniRef90-Q05SS0 UniRef90-K9VPPO UniRef90-B7KEQ6 UniRef90-B8DZB0 UniRef90_UPIO0036907C3 UniRef90-COQXB0 UniRef90_UPI00046773AF UniRef90 F8C4J5 UniRef90_UPI00035FEF9B UniRef90-R7GDS1 UniRef90-R0CZR1 UniRef90-L8M3H6 UniRef90_UPI00047589AB UniRef90-R6U0R4 UniRef90_UPIOOO37A2316 UniRef90_F4APX2
UniRef90_K9UNX4
D L

 A LEEHNANSADTLGLRVVHENRVGTAYSEATDEDALRFML SVSTSGESYDQSLAVTAVFGKRSGTATDNEFDDASLEKTV DLESLAD GEDDGLAVRVVHEGTWGFAAGVVLTAAEAVRLA RLK LLETAQAEGLALRLWRDGRPGLAVA YGPVELQULV EVVTLNNTESVGFGVRVIANGSWGFASSSILTKSEIVIVVA
 Q GE Q
QFETLSESLCRGGQVRACHRGGWGFASFNQLL
DGRTDSSTTDVGFAVRVVHEGAWGFAAGVDLTPEAAAYVA EVVKNEDSYQTGALVKGVYNGKAVNAKWEDLSDENFSHVA EVV QNIIVNTESSY GVVGVRVAAADGCVWGFAAVVVDANAAADMA KAA DVQAAVDSVDTGLAVRVVVDGTWGFASHAEANSADVAAATA
 KVENTVNTESYGAGI RVIAD GA WGFVAADNI TKDNIAAAMA KLDTFTTSKVLGTSI RGVYQKKMANMAFEKIEDDQMDAVL





QVSTAGSTTDA QLG IQSAFGPKHAVVTTNDLSDAADERAV KLERPSAGTVFGASLRVIVNGATYFSVVDNPTLEGMFNAA $K V K E A S R S R \| V T T G L R G A I G R R V G G L A L T A L N V D P V E V A G$
 QLKNGSFHQDMGFGLRVVAGEATGYAHSSELSAAALKRAS Y I H Q NV S D T S Y Y DR V R TI M G K K T A T A T T N K L D D E S L K Q T L R L K Q L E T S Q S E G T A L R L WL N G R P G T V A Y G S V D P Q V
 $A V S T S G S R A N Q N L V V Q S A F G K K V G T A T D D E F D D A S L L E K V V$

EVTGVVDSESFGCGIRTLVDGAWGFASTADVSKESLRKTA $H V R H Q A H V V E D G G N V R V F H Q G A V G F V H F D \quad G W D D L L P R B D$ DAKPA GS STDLLGYAVRVVHGGTWGFASGVDLTMDAAAAVAA EVQNTVNTESFGVGVRVIADGCWGFAAVVDANENDTAKAA


 E $L$ L $K$
 EAD QVKASSRSSVTVRVWNDENTGVTSTTMVDPTGLELDAL


$D L K N L A D N D S S G F G V R V L L D G A W G F A A S H R K T A E E V T R D V$ DLDKYTFAESGG■GLRLIVKGKVGISFTEK】DS





 $G V T T N V A T A R V N T R I E S H V G G R V G S V S V G G L E W E E L A R A V$ RIIDE $I$ NWGKEEGIAFRKIDEKKINFAYASNLENAVLEDLV

 QIS QNIQKNKFSLTITSYYFGKRSASASTTELDPDA』AQTL




UniRef90 X0YXK5 UniRef90-A4FW35 UniRet90-UPIOOO40E2B16 UniRef90-F8AMS6 UniRef90-K9UMR7 UniRef90-F6BF05
UniRef90 K9PLX9 UniRef90-K9PLX9
UniRef90_G7GU72 UniRef90-A4SJT4 UniRef90-UPIO004700A5B UniRef90-A4BEA4 UniRef90-12EZ40 UniRef90-D2S6V2 UniRef90_K9VMG6 UniRee90-UPI00036EE753 UniRef90- QOW1K0 UniRef90_UPIo0037671C9 UniRef90-UPIOOO3670702 UniRef90-B8HUM6 UniRef90-UP1000381B5D8 UniRef90-UPIO0047DD1EE UniRef90-E4RY19
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QSALRFAGNTTPDENKLPDDKGITENGP KKAHNMAKNTHTKKS\|ELKDDPVICDNVKADVKIHPE
 KTAHEASFFGDKE HAPDFSPEATAPIAEMEIESGE NKAYKMAKVSNTDKEVILKEVKAVVDKVKPKAKINPKDVN ERSLALSQLNQPESVDLVSNFQP VGYQDATWVSTYRDLGE QDALDASRFAKVDPDQRUSVAGSRUSTDCAEINQPD

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 KRAA ELAKASSTGRKDSTSLAPEPVHQDUWTSPYLIDPF $K Q A L Q A A R F G K P G N Y E F H A N G K Q A R Y D G T R S D Y D N K D A$
$R R A E E L A R L A P E N P E F V P A P G K Q R S T$ RRAEELARLAPENPEFVPAPGKQEFRST
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 RAAEELAKLAPENPEFMPAVDKQVYKTSPPRDTFSEATA NALAQQTEV\TSTETVSLTEAQEVETDENP HHFK NNALESAKYAKIDPHQKISVVGNQIISDYAELN M QEC RRAEEVARLAPENPEFLPAVKGQVYKAS


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$N L A V E D A K G S R \square S Q Q E P V R \nabla P V D A Y Q D Q Y D T P I G I D P F T \prod$ ETLI NNAKISLSYANAEPDYNVLIEKEDDEEVYNIINNDI EKALALSKLN NENPEYM PPETPELVTQRREDHPPQGK
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 NIDPEYRAKAAFDSIDDPCI KKNLTAAGYLEDSTGFTA EVPDAEKTGLLTE ELSEQLLAADGVEHVETVCDQAVKEQKY KVPLE EKLDLLF EDDGILRKNDKIKVAESEMNFWREHQWL
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 QHT QMTPFVENAERVRE EAVALLSAPDCPDGDMDLIIGGG $R$ S S F S V E E V G R K A T E K A I A Q L G Q K G L E T G T M D V I L R P D

 RGWE YWDWDEELASLPGLLAERVKAPSVEAGEYDLVIDPS NDNNDLNDKDLIDDENIKLGTGQLGAKSIKSGKYPVVESNE
 A GDA H WH WN E EL ER RP GWWLA EKAAAPSSVQA GPTDLV I DP T











 Q A F


 E Y VT S LD MANAAERWAARAAEKL TARSDEPGRYDVVLDPR $N D F G V L R N D D Q D K D A A R S A V A L L D A P E V E G G E Y T V V V D P Y$




 R S IIA E LDDVE G C L L K E TA D K T $\square$ S H L E D V A A R F D A K K A E


 DIF F DI DSFTKNIAADNVISKLNSKEIESGKYKTVFTSK EKK Q E LDDL F E I ID K I S R R L E WA KTN V E PY S G K Q P V L F T P D
 $R$ G WE Y LT GTG WDDWDAP E L L A A A K VVRAP SVVRP GA Y D L V I D P S

 E H I N P D D L L S Q I E R V A A E A I
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 GA D G V W W D WN T E L L A R I P P E WLLA E K V K A P T V D N LDD F ID C A GVVAK D L A D DE K Q I T T R T L D D G K F S GV M I L T P G RGYEYLDMAEDAVLAAE QAKAKLSAKSDDPGKYDLVLEPS S D V K L L D M T A K D A S S I A D Q K K S K G S A E A A K E M E P G K Y T V I L E P P A

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 $F$ D DGS LENLR GSSPYDDEGTRTQRTYLI REGYLSGRLHSR



## F

## F

$F D$
$\square D$
F $S$

## V

F
FDD GT DP
FE P $N$ P
YQDP EAGPYSQCPF YSDPSDGLILASP FDNE $Y S D P T H P E L D A S P W A G D$
$V D D G T \square A E R R G S D T D D D$ RADRTQEGALDARVMWDD Y D T GKDMGSRGYLP F DDEGVPAEEWTLI DKGIVKDYQTTR

SE
S E
Y D D A R H P S NVGATAFD GEGTPTRRLP LIEA GVLKNF LHSA
 VID D G T L Y E G I G SM S F D A E G Y P S R R N D L V K K G KI V S V M M N S


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 K D DP VF D K G $\square$ Y N T H F D G E G S K T K D L N I I T N GV L S S Y L Y N N A QLVHGV TCCP F D D E G T P T Q DLLA L L E K G I L K K G F Y S D D R
 T G D R TA E H GLLA SVVGY D DE G V A A QE WD I V R D GLLVVGWQLD R K D DGNMPNAYGTRKFDDEGVPTRETTII ENGELKTY LL NT Y S DPSNP $\square$ APAAP FEQNGFPREKVDWIKD G VVKNMPNTP HDNGLHPGHVGAAPFDGEGTPTQRLCLIHNGRLESFLHSE K C D R T Q P G GRGTMM Y D DE GVVK S Q E WY V V K D G L V D


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UniRet90 C1A314 UniRef90-C1A314
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340
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1
$\square \mathrm{V}$ ASRAG $\square \mathrm{KS}$ T GNA ATA A H H F G V A S N G S A VT T R H L L V F G T G P H S E A E V K T G E Y L E L
 Y WA DKK GVVKAVP P
NTARMMGGMPVQRMANVS LQPA P

Y W A L K T G K R A

 KTAADFSTAPTGNGFGNLVLESEDDSLDEVFKTGNEGMY







 LINARLMKTHLPMPRMTNTYMLGGATPPEETI ASVKRGLYA FWAKKQGKPATAGGFSTFKMAGGTKSVDDLIKETTRGVLV YTASRMGDEPTGNGFRRVPGSPTQPGATNMVVQPVRGVVY TVGRKLSDPSTGNGFRNLGLEPGESTFNELVSHLDDGLIV LNARLMGVNPTGNGRRESYAHAPMPRMTNTVMTRRR WDAQKAGVDNNGHAPFALRFETGKSSVEKMIKSTKKGVLV TTGRQLNISYPTPGRFNFLIEPGTASLQQLIQDMDEGLIV FWANKQGKTPTGS TAGLRMADGAESLESLI AGTSRGVLV YWAQKQGKKPVMPFNNVMMAGGTASLEDMIKSTQRGILV E QA A WT G VKKRSHGCAFAQSWSDVPFQRMPNVSATDRGVMF ETAAHLGERPTGNAMRNTVIAPGDTAFADLFQGTKRGIYA


GTAKRLGASPTGHANLGAKVTVSPHFGVVEAAEARS LIDD $D Q A H D L G L K E S Q G C C Y A D S W D S \square Q F Q R M P M V K N V E K G I V M$ F Y S L Y L G QKP T GNAMRNTYFAP GD DS Y QEILRRETKNGI L L YTA KKENRESTGNAVRNNLIDERGSKSWMEILSGIKKGI
 GTAK RLNAQPTGNANFYHVFAGDAATGTYNLDTAENVVLI $Y$ WA QK Q GKKAVGGQP GNLI MVGGDKS TMDVVMS TK K GVLV Y WA DK NKTEPTAFSGNFIMEGGTQSVVQDLIMKSTARCGLV

 Y T A RKDSVKTTSHACHNF ILEEGKNTGEELISQIKNGILV
 Y WAKKKGKDY T PAPSNGUMLGGSASDQDMM K S TK K GVV V

 ATARRFGVAPTGHA GLGAKVVSVGPD WFEVGTSEGTSLI ES ETA YR LGRGSSNGSACADSWS SHTATMAEMDADTEDCILI
 YYAAY LGGANPTGNAMRNTHFEPGDSTREELVVEVNE GYLL
 Y WA QK T GAEADPAAHNFTVVA GGTTP LDEEMIRGVVRGILV YFSLKKYGKHVPIPRMANTYIEEKGSHRPEEIIMSIEKGLLV

 Y WA Q QK GKEANGS FFP VMMAGSEKTVDDLI

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

## UniRef90 XoYXK5

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UniRef90_K9UNX4

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 EHVKGAHTNRVSGDFSVATYGYRIKNGKKVAMLKNGMYQG THTWYARMVDPQSLLLTRDGTFYVVNGKIVKHPUKNFRFNGE TDFHGAGUNAASGEYSLPATGYVV VGDKSWSIDMQRYNFQFTGQRAY
 VGDGSFS DQQRYNFQFGGQFYEVKDGQLAGMLKDVAYQS DQLLGGG DGGISGEFSVNVEGYRVQKGQV GGRVKDTMDAG
SRAWYVRYVNPRTLEVTGMTRFWI EDGKIAYPIKNLRFNQ VSALHAGVNALQGSFSLPFDGWLVNKGDRVGSESATVAG TDLQGAGIDFVTTNFSLQASGYLVKDGKRDRSVT LI TVAG VEYVGGNTALELFTFSTAMYGYLIERGKVGEMVKDUVLSG TRTWYGRMVDPQTVLLTGLTRFYIENGQLKYPIKNFRFNE


THFHYSNDIDPDSLLITGMTFFMVENGKTTKPLKNMRYTD DQLGGG DGISGDFSINDDGYWVKKGQVIGRVKDTMVAG TNIMGMHTADPVGRFSVQISGRLIENGEFVRSFRGMTLAG TRLWYLRPLDQRTLMYTGLTRFLIENGKIARSIKNFRFND TKLWY VSFGGGQVDITSGKFVFGCTAYMI EDGKVGAPVKGAMLIG KGTHGGQTNGELITFFLIAAEAYLIEDGQUTAPVRNAVLTG

$\square Q A \square H A G V Q S \square Q G S F S D P F G W L V N Q G D R V S D E S A T V A G$ FGRNSYSIDQQRYNFQFSSQAYEIKEGKIVGMFKDAAYQA VSPSGGQTSPDGTFQFGTQESYLIENGEISKPLKTVGDSG VRYTGDSPNTVTGEFTIINEGYY, EEGE:SFSIVEATFSG
 DEVHHAGVKALQGSFSLPFDGWLVNNGDRT SVESATVAG TRTWY RMVDPQTVLLTGMTRFY ENGETKYPIKNFRFNE TRLWYIRDVDPQTLLETGLTRFYIENGKIKFPIKNFRFNE KGPMSGQADANAEFMFGVQEAYEIKNGKLGKLLEGATVAG PNFGGGQVDGTSGKFVFSTEAYLIENGKVTKPVKGATLDG NSLTGTHVNSDSGDFSLQAEGLKVENGKLSYTANPFIVSG DQUGGG PDDSGDFS NDDGYRVHRGEIDGRVKDTMVAG TRLWYGRSVDPQTLLYTGLTRFYUENGKIKFPVKNFRFNE VGNRSWSIDQQRYNFQFTGQFYRIERGRLAGQLRDVAYQA TNVWYTRQNYVTTGDFSTMPRDFLIENGEVVKPIVNIRVSD TRLWYDRTLDPQTLLYTGLTRFYVENGEIKYPIKNFRFNE DGMGSYSVDQQRRNFQFGGDFWKVEKGKVVGMLKDVTYAA SRAWYVRYVNPRTLEVTGMTRFWIEDGKIAYPIKNLRFNQ AQALGAHSNIDNGDFSIGLSPGYVENGEI LGHVKDAMVAG
 TRFWYTNMVEPRGLLLTGLTNFLI ENGEIVAPVRNMRFNE RKMGGGEVNPLTGDFVFEVRGYYIEKGE1AYPVKGATLVG
 TRLMGGAADP TGNWTYAVAGSWI ENGETVHAVTVVTVGG
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UniRef90- D2QM26 UniRef90-A0A059MQNO UniRef90-K9WGP5 UniRef90-A0YHY9 UniRef90 ${ }^{-}$K957K3 UniRef90-UPIOOO4778C44 UniRef90_UPIo003B644B6 UniRef90 UPI00037731D1 UniRef90-A0A013WGD5 UniRef90-R9LMH9 UniRef90-E8VUP2 UniRef90-UPI00037FE48C UniRef90-A9A4H3 UniRef90_B6YVX0 UniRef90-VOBC40 UniRef90-C1A314 UniRef90-B5Y9Y2 UniRef90 E8R7W2 UniRef90-UPIOO04750D69 UniRef90-B5YBV4
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EDLDVLHHDDAVSDEFELSVGY ETLNILHNI DAVSDEFKLSVGY
DFREVLNSIVYIEPKEELTNSGVCPRDWVEGLSVTG E LUNULYNVDAVTKEFKLSVGY NUYSALKQLVSLGGDADWNGSCYTPSLIVEGLSTTS TTTDFWNAMEAVGGPSTWRVSHGCPSALFRGINV NFYRLLGELEAVGDRLQHNDGFYAPLIRFGGLNIAG SGAEAMTQVSMLGGNLELDPGDGTPTLKMTGLTVGG SPVIMLNNLEAMGKPTRV GGCLIPPLKDRDFTFSSL TTTDFWGSMRVVGGPRTYRVSHGCPVALEENVNVGG NVYSVLKQLVELGGGSEWN
NLPALLQHAT A ADNYKLVAAGY历PsVKDekVRVSG SPVTVLNNIDELGKPQVIGGDMVLPPMKVRDFNFTSL SLYDFMKNLSDI GSDLLFHGCYGAPSLRVDGTTVSG NVFTTLADIEAI GDDFYWDVGCGGPSLRIRNVVVGG TTTDFWGSMEAVGGPGTYVVSHGCPSALFRGVKV NFFELLNNLEYVANDFKFGSGDGTGSVKIKELLTVAG NTQEFWNSCAQVCDERDFFDGKGQPS TTTDFWGSLEAVGGPSTWQVSHGCPSALLRSVNV NVYTVLK QLVALGGDDADWNGPCYTPSLVVEGISTTG DFLELLQSILFVEPEAELTPNGVSPRVWVEGLSDTG NTQEFWNSCAAICDDYRLGGSF
NFMDLMKKVEQVGSDLDWYHQDKSPSTYFKECAVSG NLFQTLGKIDAVANDFRWTTPTGSPHVRLREVLVGG SPVIMLNNVEELGKPVRVPPNTMVPPMKLRDFTFTSL RFLDLMNDVWEVGSDLEWTYQLVSPS LLFKNCADSG SPVSMLKNVIEELGGMVESNGQMMIDPPMKVRDFNFTSL
 TAPEFFESIDACGNDFTIRPITNCG
NGPDAMNRVSLIGNDMRLDSGVGTPTLRMEGLTVGG SPLFMLNNLEELGRAERLGGDVVMPSIRARDFNFTSL NGLTDLENIEAVSGEEDMDAGI GEPYVMVSRILIGG N 1 YEWLGRLIGVGSDGRDNNGVGSPSIWVSRVNVAG



DFRELLRNVQVDADAQTPGGDSPAVWVEGDSTTG NTQEFWNSCVQRCNDYRLGGSHGSATTRFNGVNV YTDETLKSVVSVSKEFNVFPGFGGPYVKVEKVKVGGI K LLKDILRNIVEVSMEDRYVGNDRSPYILIQEVSIGGI NTQEFWNSCVKICDDYRLFGSHGSSTARFNDVNV TTTDFWGSMEAVGGESTWRVSHGCPSALFRAVNV

 QAFEVLNSVDAVSKDFQWDGSGYCG
 MTTDFWNQVDAI GDESEL
NILDLLNDIEMLANDTEYHSSTYTPSALIRELSFAS $N V Y D V L K Q V 1$ ALGND SPVIMLNNLEELGQQQRVNGN LVPAMKปRDFTFTSL MTTDFWNSIDALG
TTTDFWGSMTAVGGPETYVVSHGCPSALFRGVNV NFQHILESTKALGKDLVYHIHWWFTPYVLVKDVGLT DDREVLNGUVGLEADAKVTHQGVCPHVWVDGLAITGG MTTDFWNQVDALGSERVQCGTNMCGPVRVRDIQUGG
 STL ETLKRVSGVSKELEFSPGFGGPYVRVDEVRVGGV STLDLLSNVEMLANDTDYHSSGYAPSALIKELSFAS NGPKVLEIIDMVGDDLKKIPGTGQPTLRUPELIVGGD ITPNFWGSMDMLAGEDEWIFFWGTP NLVDVLNNVNCIVSDFKNFGRMGTGSAFTNSLARSG SLPAMLKNIEAVGMTKRCGTSVIPACKVNNFHFSSI

 NTQEFWNSCSALCDDYRLGGSHGCSTTRFDKDNV
SPITMLNNTEALGEPQRR EGCMDPPMKIRDFTFSSL

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LRELADAALERAGALLGAD
 DDAEALTKKVLGFAT ADETRVVLRHGWTTRFAAG MHELL L E A E RE GAS FA DL RYY K V K E V S LVVS

MRNLFENGVER LL NALTKEG E D T I T K VLDLDALS S G C $C D E$
$S S Y$

 $K T L A D A G L N A A T G S G A S Y C D V V Q G R Y L R Q F V I T R$
 E LAA E R L L D Y S K S K G F S Q C E I Y Wi E K I L E K S F D LiK EEFVDKALDYASKR SKYAEVRFFSSTRNSVMMK LTRLTEAALSRAREQGARYAALRVQRVRSTVVHDGG R RLAEVALAAARSAKASYCDVRI GRYLNQSVITR DLA D I A L T A A K R N GAS Y A D V V I G E T R R E Y A L A K




## LQ A LI Q K I

QLTAA ALHRASRLGA
VETLVSLERENVE
MS S QLED AAVLAAVRRAVEAGATEWELVYWAGRGGSFRIE MSS QLEDAAVLAAVRRAVEAGATEAEAYVVQVKGQAYANN



 $D L P E Q L L D R A \square A A G A Q A A E V Y Q S S S R P A M I E A N$
$\square K A L M Q V A D D T A K S G G A S Y A D V R V A A R R Q Q N V N T R$ E IADKTYEYLKTKDGLKGDFTISETETNEITMK
D LVEYAVR $\square$ A GE LGASYGEARFHGVSGLNDYTR EALERALKWAEELKAEYDELRYEDLRKTTLGDK LEKALQHSKKRQDDECEI SFVKKKTVRITDS
 K D Q T L S L V D S V I A Q S Q A E G V F V S L S L G D E F L S R F S E N SYCDVRIGRYLRQFVMTR E LLYKALEYGLS $\square G A S Y$ S

ARFSEDRYMRDRSNR VVVK VAESALHTARDYGCQFSDI RDCWULKERIREN MRDLLRD $\square$ LRDCSGFVELRYHGKRS $\square$ TAEKG

QEQAFDWVDK I AARAESDGVS VY DEERESARFGEN






$K$ Q L G A S HA DVVR I ER HRT TRRLR D G EARE $\square$ GAK LLSYSKAETA $\square A E I S G W T R L N L R I A C N$ MSAPTDDFLDHILAKAKDAGATAAQALTNRTREIEFDHH K E IT T Q IS E A A D S L N LK K WD A S F S N D Y SVQQD K G
$M \square D V$ E S L A E
$\square L$ N S K DVE WE TY WE S G R S G S F R $\ E$ E L R A Q K T R NVT L L N G E V S
MREVVS $\square$ ARARGL QADL FVRREKSIE YEA G MENLI RFGEKF FDELEIYREREVGVGVELN $E L L V K A L D Y G R S L G A T Y V E V R W Q K D Y G A A V R N G$ $A V \vee D N D L G L A E R R G V S$ A EVVFYLRDDETEFETN MESLLEKASKS AEQADVFVVESEETNFEAN
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 K MD T F V N S K I L Y TS FRAL VEGK I V S VS LE K VDD DKMIE T L $R V E M A S E S L S R G L G L R A V L R G A V G F S S T S D L S K$ $K$

 K L K E A S T K K L T G V S V R V W W AV G A V




 E L D E S S E SFFE GA A I R AL A G G S WGF V Q T E S L D D
 $D P E G S Q V G V E S G A G V R V L V D G T W G F A A G P D L S V G G L A E A B A$
 $N L I V G T R A D S E G V G V R V A V G K R I G F S Y A S S L E L D E D G T E A A$ $K L$ KTASSTRETGLGVRAVIGKKLG IAFAT NPLDGHFVG







$N G G V V G S G V V S R D G V R V L V N G A D G F A A T P E D S R D G V R R A D$ D GVFTSFTLVRGVAI RVLADGAWGFASTSELENLEKK DEE

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


 $R L E R T A V R R R S G V G V R V L E A G T W G F A A T G D P S P A A \square R E A \square$

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

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UniRef90_B4SRS6
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UniRef9O Q7NKB5
UniRef90-B4WRIB
UniRef90_L8F8A2
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ERTDKDAK VSEVPFRGFPVPSKVPEVKG $\quad$ VYDRK


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$E N L V$


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#### Abstract

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YMSSEGSF $\square$ K A R $\square P R$ VE YF YMMGVMES GNFEQAYRQY GMS S S DG S W $\square E$ QT F L RTYP K F IVVTVVDK K E GKFE S R S S F S G G L


## $\square G N S A G L R A Y D K K T N A E F S F T A K \square G N G S$



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I L L N S N G V D V E E E N T Y Y S A S 1 A G G I N N G E $\quad$ I
 FANLA GTRTTQQRVRVVPEFTTNVSDSGFSSMRTIAPPAG Y A ATTGGLVVFQEATTRLHYTVSARTRDGG EGAGWAASAA FANSNGLRQRERRGGHGFRAMFMAKDGATTSFNAVGGRSF Y A NS S GAFRSYTKS QA A LY LY A R A E EKNKK P R S S GS VK LG FANSEGGSYDEQSKPDLTLRRLTADARENNEVQQAGLSLGGSN

 I N S N GVEAYATYSYAHGKVMYMGEGSGYQEELG



 II MN T R G GF S E Y RK T VM GVVGLQ GSRDR GT DMLDFVGD G H D D C
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220
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$E L P G E E V F D E V G E A L W E L E L S Y Q A G L D S Y E G E I I E E P H$
F EEIDEIDFENIAKTASIRAIEKLSP GGYEAFDSWKLVDKLKHELKMAAKAKSRPQGRVPIFTPK ELIFGDKSWEEMAEEAARIALDKLGRKTPEGGDYTVVAGPS RGWEYLHGEGWDWALPAHLAEKVQAPPVRSGRYDLVIDPS AYRDSYDPVEDATAAARQAREKLKAPSVKPGKYDLVLDPS ARGAGWDYVVGAGLIDEAAQAGEEAKPVTPGDYDVVIDPT
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LLDKWRLHEKLPVELARYEEVLFKAVPPTDPVDVIVGSE RTLSKFSAEQIGNDAKKMCDESINPKKDDTDVYSIIGEPY DPFEVFDTREIVETIKRRIDGQLKGRPPKGGDYNVVLAPD NSFADLDPQTLAVTAVQKAKDSRSPVAVEPGRYTTVLEPPT DPAQKFDMREDAVAAARQAREKLAAPSVEPGRYDLVDDPS RGWEYWNGTGWDWRDPELLAEKLQAPSVEPGRYDLVVDPS GQFKDLFYYAKIDTVVEDLKKKAEGVYAKPGDHDVVLGPD
GGYEDFDRWNMLDTLPEEDREDANAKKSPEGTFDLIVGPE EIIEKKAFEREVVEATHQAKEKLHAKSVVPGDKDLVLHPT GGWDCLDPLQMAEKAAATAVDLLSAGYAEGGWATVILSPS SDPGFLRQWDYENAAAESAGKMLYADFVESGNYPVIMANE NADDLAAPEAVGRYAERADARMGARRLDTRKVPVLFEAP WGLEELPDEQIVATTLQRATMAQNPTRLEPDTYPVVFGAG DNLDEDLGSIERDLQDAENSLNPDKDSDKFEGDVIGTPS ARAAGWDYAGEARQAVEDARQKLYAKPVEAGVTVVVGPDA YSLEDTDVDLCTKEAAEKTDSHLNYSPVDTGKYKI CLSSPE DSLDLDVEGTVKRGAEQVKWAYKVKEAKNEEATVI FGPWA RVINDIDVKTIAKYFAKNVIGSDGAGKGESFVGTVILSPS GFEVVEKACEVAEKVAETVLKLTKAKTPPSGKMKVVMDPS
 GPFASLYDAAGVGRLMAECERSLERRPVAGKFIDVVVTP YGVEDI DIDSCI KDASNKTISHLNYSSIKTDKYLICFSP GDLAA ERHEQVKEDAKHAAALLSAPEVKGGEYTVVVSPE RNFSPADLYERIDRLYRRLKEKCEGVYAEAGEKTVILGGI
 N TSLNLDVEGVVERALKKVKWAYNVKASKNEEVPIILSPWA RDAEP DYDRLVEEVLTKFRRAERNAQVAGGSLPVVFSPR
MDFSYYTPEEIVKTAVDRTLVLFDAVQPAGEMPCVLGG NVITGTD EIIANVLTQLERAEKNVG\|HSGEMPVIFTPS FGYEFFRADAWAKEAVRMALVNLSAVAAPAGTMPVVLGAG MPDLEEELSLGLGKALEEAELSYNAKKSSSYEGEIILEPH RKIAEEELVKRVVEAVDYTTMFRNPATPESGVYPVVLAPR


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| UniRef90-A31ZC4 | AFLSLISAFSNL |
| UniRef90- Wor | A |
|  | V VGV |
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| UniRef90_C7P | ALYELLPYLMPAFSAENVQRDRSV |
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| UniRet90-UPIO004787652 | AMGSLMTRLLSGVNAGNVIKKVSPLENKDGERTASEVITII |
| UniRef90-FoQx93 | LAGMVVESUGHPEGAEAGESYARPDYLGS |
| UniRef90-B2A0X6 | VGGLFIHEAFGHLSEADNLIGNKTLAETMTSEFA |
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| UniRef90 E8RN47 <br> UniRef90-UPI000378A342 | HMWLTLHESVGHPTEEANYAGTSFATLDKREQYGSENVNGM |
| UniRef90-G7WK05 | AFAEILNAFLPSTFADLVQKGRSSLAGRIGEKVAEESLMT |
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|  | WLTIHETVGHREAAFAGRSFVTPEDVGTLRYGSPAMTV |
| UniRef90-H2Cll | MVGLLAHEA GHTVEADFVISGSVARDLLGQQVASEKVTL |
| UniRef90 3 ZUT8 | AFQS |
| UniRef90 B1L5Z6 | SLPGIIPFIVDAANAENLQYGRSFLTGRLFTQVAREEVS |
| UniRef90-UPIOOO3B3D | CVSQMLGAII GNTVVDHTLIKTSVWLDKLGEQV |
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| UniRef90_UPIO004796B | NLWLTVHEVI AHPTEEAN |
| UniRef90-UP1000420DCDA | CSVQMLSFLLGNTVVDAlUAGTSVWKDKVGEEVVSPLLTV |
| UniRef90 E8R9Z5 | GLIVHESCGHPSEAAQAGKSFITKPGMTGVRIGSEHATV |
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| UniRef90-10K0 | NLWLTIHET GHSTEESNYAGTSFLKVDQNFDFASPIVTI |
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|  | A |
| UniRef90 ${ }^{-} \mathrm{KgPL}$ | PRMI WNMSARSADEGRSFFSNRLGEKLFNDKVN |
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|  | ANFAGTSFVKPHMLNNFGSELMTI |
| UniRef90 UP100030BACA8 | RSMLDGVSUSKDS GElVVS |
| UniRe90-F4HIL7 | GLLYYALFPAFSGERLIKKT P P A D |
| UniRef90 A6VHB4 | ALS ${ }^{\text {L }}$ L |
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| UniRef90-UPI00037B3CBD |  |
| ef90-UPIO0038190CE | ALLAGSSPFKDKRGERIASPLFSL |
| UniRef90-A3F | MFNARSILDGVSSNKNSTGEKLSTDALNI |
| UniRef90_x1K7B5 | S DFVYQNEQLIRDIIMTRRFGGKQLN |
| UniRef90_O5JHIT |  |
| UniRef90-R6TQG9 | AHEAVGHTVEADLVGGGSVAAHSTGRRVASEDVTL |
| UniRef90-B5YBV5 | AVGELFEMLSYGFSAKAV |
| UniRef90 UPI000367D541 | N |
| UniRef90-F8АНО9 | RLVKGTTPLAEKTGEQVANDVLTM |
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| UniRef90 Q7NN08 | AAAFALGGLFQALS GQTVVO |
| UniRef90- xosalo | VTGVLLHEAIGHMEADFNRKKISTFSTMIGKKVAFPFVT |
| UniRef90 D8K422 |  |
| UniRef90 ${ }^{\text {W }}$ 1G9S3 |  |
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| UnRef90-A6UX47 |  |



## UniRef90 D1Y1N2

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UniRef90_G7WR72 UniRef90_UPI0002EFF5DB UniRef90_A8M0P0 UniRef90_H2CI96 UniRef90_I3ZUT8 UniRef90_B1L5Z6 UniRef90_UPI0003B3D8F5 UniRef90_R7FLJ9 UniRef90_U2EH02 UniRef90_K9Z7R5 UniRef90-F2KP96 UniRef90_Q7NKB5
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UniRef90 F0G8H8 UniRef90_K9PUV1 UniRef90-UPIO004120240 UniRef90_F0LL68 UniRef90_UPI00037F7827 UniRef90_UPI00030BACA8 UniRef90-F4HIL7 UniRef90-A6VHB4 UniRef90_X1KLD7 UniRef90_D3RZP5 UniRef90_UPIO0047EE752 UniRef90_UPI00037B3CBD UniRef90_UPI00038190CE UniRef90_A3PD24 UniRef90-X1K7B5 UniRef90_Q5JHI7 UniRef90_R6TQG9
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UniRef90 D1Y1N2 UniRef90_UPIOOO47663AD UniRef90-A3IZC4 UniRef90_WORE90 UniRef90-W7KZ70 UniRef90-E3J7AG
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UniRef90 $13 Z U T 8$ UniRef90-G0ECX8 UniRef90- B1L5Z6 UniRef90-UPIIOOO3B3D8F5 UniRef90-R7FLJ9 UniRef90-U2EH02 UniRef90-K9Z7R5 UniRef90-F2KP96
UniRet90 UniRef90-Q7NKB5
UniRef90 B4WRI8 UniRef90-L8F8A2
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Un UniRef90-FOG8H8
UniRef90
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400 VGDRSWSIDMQRYNFQFTGQFYRIRNGRLDGMLRDVAYQA DKLQHAGVNTLQGSFSGPFDGWLVNKGKLTGSIDAATVAG FSPLGGQTSPDGSFQFGIQEGYRIEKGEVKEPLRNVGDSG VGDKSWSIDDMQYNFQFTGQRFYIRKGRIVGQLRDVAYQA NGVIGSHTSNPIGDFAVEDQNSYYKNGEVICPIKKGMFSG FGSAGGQTSGEAFTFAVQG GY Y RNGKLCEMVRDUALSG DSVMGTHTNDPAGEYSLNDGCGYMEDGKLVGKVMDTMVSG FGSAGGQTSGETFTFAVQG GYKIVNGEIKGLVRDDALTG KELGSHTADPDSGEFSVGVSGVYYKNGEPVKVLSEMALSG SRAWYVRYVNPRTLEVTGMTRFLIEDGK SHPI KNMRENQ TDLQGMHVDFVSGNFSLQAKGYLVQEGKKVRPLTLITVAG RKVYGEHTANPVGDFSLTMELGYVVKGGEVRPFKDNMLAG TEMMGMHMANPVGDFSLGVNGFLIESGQKTHYMKASTFSD KSFTEWNDDDIRFNEYVGREAYHVKNGEIKEVVRRPVIET KGLGGGGQADANAEFMFGVEAYEVKNGKIGEPVKGDTVSG

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 NNLSAGSPGANGEMSGVAKNAFYVENGEIKKGAVIETGIAF


 DQDMGEGGDDAGNLSVNDDLGYRVSAGEDIGRVKDTMVSG VGDKSWS
$V G D G Q R Y N F Q F T G Q F Y R I V N G R L D G Q V R D V A Y Q A$
$V$



 NRAWYVRYVNPKTLEVTGMTRFWI EDGQIAYPI KNLRFNQ











## E Y $\square$ M GA Q GNVLGGDFS GNVLGYKVENGQ】TGRVKDTVVAG

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



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UniRef90_B8HVY8 UniRef90-F4FA41 UniRef90-R4LYX9 UniRef90_10GLH4 UniRef90-R7BFD9 UniRef90-W013z8 UniRef90-G4ADW6 UniRef90-UPIOAO30BCADO UniRef90- X1KY15 UniRef90_U3HF75 UniRef90-D9PZ65 UniRef90-A0АогзС7V4 UniRef90-14Z5Y1 UniRef90 UPI00047AF089 UniRef90-UPIO004075A33 UniRef90-W5WUU2 UniRef90 K7VX79 UniRef90 UPI00036E22AF UniRef90-A4NP51 UniRef90-UPIOO047024BE UniRef90-UPIOOO2FOED1D UniRef90-X0ZQD3
UniRef90-B8KX68 UniRef90_V6JD52 UniRef90_R7EMQ5 UniRef90 M11WMO
UniRef90 Q97AJ8 UniRef90-G6FUB1 UniRef90-UPI00013B24A7 UniRef90-K0BAC1 UniRef90-UPI000370DEBB UniRef90 - 1 HA37 UniRef90-H2C197 UniRef90-R5RUD7 UniRef90 ${ }^{-}$A0A038GTC9 UniRef90-UPI0003B42BB9 UniRef90-U2DCQ9 UniRef90-K9V712 UniRef90 UPIO00373500A UniRef90-W9VGX6 UniRef90-UPI0002624A6D UniRef90 W8APM6 UniRet90-D4TT18 UniRef90-R5HND1 UniRef90 KgUJN1 1 UniRef90 K2GTX5 UniRef90-UPIO003B5210E UniRef90-F8JYO1 UniRef90 T2JED2 UniRef90 CozzRo UniRef90_UPIO004654C16 UniRef90-Q9RJ51 UniRef90-A8M9G1 UniRef90-H6RT67 UniRef90-L8D181 UniRef90-W6RUL7 UniRef90_L8LG68 UniRef90-R5FQ03 UniRef90-Q97444 UniRef90_M4V686 UniRef90_D5UOV5 UniRefofo-14ET65 UniRef90-S6GY43 UniRef90-B8GM47 UniRef90-NobM41 UniRef90_UPI000345F1AE UniRef90-D2S6V1 UniRef90-D3D9R2 UniRef90-S6A0U9 UniRef90 UPI0003B3349E UniRef90-F9VNG6 UniRef90-UPIo0037C0747 UniRef90-R6XQ30 UniRef90_UPIO004686DB9 UniRef90-UPIO003137331 UniRef90-F4G017 UniRef90-D5WFY8 UniRef90-T2RF27 UniRef90-LLU2R9 UniRet90_R7P6J1 UniRef90-W2F490
UniRef9O-A6FWW8 UniRef90_UPIO0047B72F0 UniRef90_UPI000369FCD0 UniRef90-UPIO00478147E UniRef90_E7MR57

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A \cap \mathrm{Wli} \mid \mathrm{Gl} \| \mathrm{l} \text { A } \mathrm{T}^{30}
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40

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





$M L D T L E Q H A R R A A G R \quad L P A T A H H W S V R G V R E Y S E Q L S V R$ RA GASYA D $\$ R L GE TE TA YAK D D

GCDYVETREHTTDRKMMVNG A A LR S TANVFS LRHVRQSHLSVRRN
 MWSELTKA IAH $\quad \square N \square P A D W L G \square R V V K D T G A F Y R N G G$
 EA GD $\square$ F Y S D V S MK S V R $\square \mathrm{G}$
DERDKNAADRLLSTNRPAGSQEVCASSESERRLVFEND $\square S D A E R E D A D K S V Q M A D D A G A S A V M V S D D K A K T E G Y A D G$
 K P I L K E L I G I L LAK D Y K Y V S I L GT D S K G K T Y NV Q MF A DLLN K A L SQ HELVERALELLSRAD GC VVIAADEGS SAN LR WA GN



$\square R D A A Q W A V E Q A A K R G A R A R S V R H E G \square A K T A D R D G$ HE IVERALELSRADGCVVIADEES SANLRWARN A DWIGLRVTETSTLRVRDG


 EQADTDI R I ETMYSTK I L D D

 F E Y V E V R E HK DS S THMFFV I

 $A Q R V V D L A L A E A E R G G A D E T I V L V T D R A G A S L R W A$ MFDLSA QLSQRF AALQSRAQFYSLRYVRQTSQHLCVR QRVLE Q F R S VAVVE W S AK S L S S EA DFWS L RVVDERTETHAVR D R P Q DVVEK ALAAASTA DG QVAFVVESSAANLRWASN HELVERALALSR




T D DLLE E E
A A LHCA A E H WS

ARRFPFKYVEVRHQRSRVIVLMNG A R A L R S D A D F WSVVRFVERKDEHVVRN

MNNLILLGKEYGMD TEVFKEKNNSTNDSND QETVERALALSRADGCVVVIVEGSTANLRFAGN $L T K K R A K A D A D T L L G A A M A P E V V V R V R D R V E G N T R A A N G$
 ETVERALALSK
LK Q L V/S K L
A D WVGLRLVQQQEQULALR GKDYDYVSVLSTDSKGFAIRIS

## UniRef90 B4WI66

 UniRef90＿UPIO0034AB7AA UniRef90－UPIO0037CFEF6 UniRet90＿K9SGN6UniRef90 B8HVY8 UniRef90－F4FA41 UniRef90－R4LYX9 UniRef90＿10GLH4 UniRef90－R7BFD9 UniRef90 Woliz8 UniRef90－A4XQA1 UniRef90－UPIOOO30BCADO UniRef90－X1KY15 UniRef90＿U3HF75 UniRef90－D9PZ65 UniRef90－A0A023C7V4 UniRef90－14Z5Y1 UniRef90 UPIO0047AF089 UniRef90－UPIO004075A33 UniRef90－W5WUU2 UniRef90 K7VX79 UniRef90 UPI00036E22AF UniRef90－A4NP51 UniRef90－UPIOO047024BE UniRef90 UPI0002FOED1D UniRef90 XoZQD3 UniRef90－B8KX68 UniRef90 V6JD52 UniRef90－${ }^{-}$M1IMMO UniRef90＿－Q97AJ8 UniRef90－G6FUB1 UniRef90－UPI00013B24A7 UniRef90－KoBAC1 UniRef90－UP1000370DEBB UniRef90＿－1HA37 UniRef90－ H 2 C 197 UniRef90－R5RUD7 UniRef90 A0A038GTC9 UniRef90＿UPIO003B42BB9 UniRef90－U2DCQ9 UniRet90－K9V712 UniRet90＿UPIO00373500A UniRef90＿W9VGX6 UniRee90＿UPIo002624A6D UniRef90 W8APM6 UniRet90－D4TT18 UniRef90 R5HND1
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UniRef90 UPIOOO4654C16 UniRef90－Q9RJ51 UniRef90－A8M9G1 UniRef90＿H6RT67 UniRef90 L8D181 UniRef90－W6RUL7 UniRef90－L8LG68 UniRef90 R5FQ03
UniRef90 Q974J4 UniRef90－M4V686 UniRef90＿D5UOV5 UniRefofo－14ET65 UniRef90－S6GY43 UniRef90－B8GM47
UniRef90 NoBM41 UniRef90－UPIO00345F1AE UniRef90－D2S6V1 UniReffo－D3D9R2 UniRef90－S6A0U9 UniRef90＿UPI0003B3349E UniRet90＿－＿9VNG6 UniRef90＿UPIO0037C0747 UniRet90＿R6XQ30 UniRef90－UPIO004686DB9 UniRef90－UPIO003137331 UniRef90－F4G017 UniRef90 D5WFY8 UniRef90－T2RF27
UniRef90 LTU2R9 UniRef90－R7P6J1 UniRet90＿W2F490 UniRef90－A6FWW8 UniRef90－UPIO0047B72FO UniRef90－UPIO00369FCDO UniRef90＿UPIOOO478147E UniRef90＿E7MR57


RAEPPFFSSDLGAMLSVRIDGVEAYAATSDLSTEGLQRALL KMSQYGMTVEEGCGLRVIKDGRVGFAYSNRCTEE LV KNVA AYLNHDEGAMLTVRVNGVEAYAATHDLSLSGLQAALL NI VANSRSETRGISARVGKDGLFGFASTAEYSNEAAGKVI
 DPQSNGKSLNMGAMIEVIVDGCLGYAATNSLDTSSLQNAA RGEPPSDTQDVGAMLTVRRDGVEAYAATSDINAAGLQRALD


NDTANAETAESGVSARVYHHGYWGFASTPATDSKSRNKVM VAEPPALSQDEGAMLTVRTNGVEAYAATADLSQSGLQRAL DFSLIFRTLFNTTMSLTSIKDGKKGSARUNSFEDDAVAAAV RQAHFFNLRDTGYGLRVIKDGKVGFAHSNLDDDS俍俭

DLSVVSETSGDRFGLRLLHNEHTGFATTNSAETGRLLHTL EIDNIRQTGDRSLTFNIYADGKYGTFSTNRFEEESLRDFL VAQPLRRARDRGAMLTAWRGAGAGYAATPDLSATGLQAAL

 ALTTNGVTRGRTLTVVATVDGAQGTASGVVSRAAVTADEL VVEPSLIASSLGAMVTLVTAGGVGYGATSDLSPAGLRAAA



ETEMAERSGSQSLGLTVFHNGRRGSASTAGFDRAADDRVV ALTTNGVTRGRTLTVIATVDGARGTAAGNVSQGAVTAAE NMTTNGVSLSRTWTVISIVREKVGTVSSSSVDPEQUSALV EDLRREEADDTMYSIEAVYEGNRCRIYTNHLEET

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 QLSQNMQDNQLNVAITSYFGQRSASAYTTDLTPESLRATL NGSPAGSVSHSGYSVRAFKDSVMYFTSSSDVKDLSPLS

D
NMTTNGESVSRSTTVISIVRQRVGSVVTSEVDPAADAA KAEPPYLSSDEGAMLTVRLNGVEAYAATODISQRGLQAAL VVEPPVRSLDRGAH1TVMDRGGLAYGATSDLTPAGLRAAC
 SLTTNGMRSRQVVVVSFVDGGAGMAAGTRTGSPDVGELV
 A $\square \mathrm{NG}$ GTLTTERGNVVRVYKDGLYSEYSFNRFDHDKAKDMA RQYQNMNILDRGYGIRITKDGKLGFAYGNRDDNLLDLA
TLTTNGAMRGSRVTVAATVGAGEGTAAGSSTTDSSLRELV KNVTSSSLTESGFVIKVRGKNLYTEYSINETNEKNLDEVV KAEPPRFSRDQGAMLSVRVAGVEAYAATSDLSRQGLQAAL
RRTSATSGNDRGFVVUHNYVNYSEYSFNEISKDTVLEDA RRTSAISGNDRGFVVRUHNYVNYSEYSFNEISK
DVAPLSTARERGAMVTAWAGAGAGYAATADLSASGLQRAL
KVK【FQTTNVDTYTTKATKDNRCVKLVTENTKKTKELV TLTTNGVARSSRLTVISVAGQGVGVVSRSAVRHDQLEDVV QPTTQGDVERLELSVTASIQGRSATVTSNRDDKDSLTALMM QVKTDTLTTERGNVIRVYKDGLYSEYSFNRFEGDTVAMAA ALTTNGETRGRRVTVVATVAGTEGTASGSGVTVDRLEGLV


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UniRef90 - Wol3z8
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UniRef90-B8KX68
UniRef90-R7EMQ5
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UniRe990-X1HA37
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R5RUD
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 EQAETLARQ $\quad$ RA RYSLLDLLREQPVPTGRHDYLSPHFDQP R D CLATGEASEADDAWDI EMA I E TMK L S K E DKFNV L P Y SKPV
DEAL DRSRK $\quad$ GGKSK I F TGRD KKAYQQAIITAK QWWIHPFQARSERPKVRSSWTKLGNKKVL



HEAESLAATAPPSPFDADAVPTEAHRTTVYNDDADHEDSD CKADVETVVRMLLVA DP F R G L L P D K K D L D $\square$ ATRRAAEASAR LLSLVDHRRVARPSRS GAYESPHMAT
 EA A YHHA $\square$ A S S E WS VF K F DVVT T S R P QV I G E Y I S P H V K S L D EPLVRAAEAAAR ASGPAEDAQPLVEGVPASASFTEPPAA





EEAMLIAAHVQPDPDADLPPADRLAFAGPAPLLYGDSPRS LEP LVVRAAEAAARQAEPAEDAEPLVAGVAPDAAAFTAPPA E $\square$ A Y Q Q A DT A A E WG DY P F TVVEQR P QA VGT Y Q S P Y VK P QASEQAARTATAADDAS DLIT QSAAETDD WDLPAA
 NEALSVIDRRLNEDPEYVP $V$ THQ GSVVSTWDSYD S AASEQAARDAGPAEDAMPLIAPDPDRGVPPGDGNWAADPA EAVVVRASEAAARSAEPAADAMPLLPENSAVPENWDHPA Q
 E R S E S L A R


 EHAEALARRLABHA LLDLTTDQTVATRADYVSPHLNDA E QAMAWLENSRHHPLFDTGCVPRPERSGTYSSPVEDPWDE EMAVK ISSRVSED R D S ALDA RARAA QAFALVDQRSVPRRPSASGSYASPMVQA A ASEQAARDAGPAE D AVVPLVTETPPGAGDWDADPA






 AAADRAAREARPSE DARPLVEGGASE GWDRPVE
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UniRef90 Q97AJ8 UniRef90-G6FUB1 UniRef90-UPI00013B24A7 UniRef90-K0BAC1 UniRef90-UP1000370DEBB UniRef90_-1HA37 UniRef90-H2C197 UniRef90-R5RUD7 UniRef90 ${ }^{-}$A0A038GTC9 UniRef90_UPIO003B42BB9 UniRef90-U2DCQ9 UniRet90-K9V712 UniRef90-UPIo00373500A UniRef90_W9VGX6 UniRef90-UPIO002624A6D UniRef90-W8APM6 UniRef90-D4TT18 UniRef90-R5HND1 1 UniRef90-KgUJN1
UniRef90 K2GTX5 UniRef90_UPIO003B5210E UniRef90-EBJY01 UniRef90_T2JED2 UniRef90_COZZZR
UniRef90_UP10004654C16 UniRef90-Q9RJ51 UniRef90-A8M9G1 UniRef90-H6RT67 UniRef90-L8DI81 UniRef90-L8LG68 UniRef90-R5FQ03 UniRef90-M4V686 UniRef90-D5U0V5 UniRefofo-14ET65 UniRef90-G8RLP4 4 UniRef90_-s6GY43 UniRef90_-NoBM41 UniRef90-UPIO00345F1AE UniRef90-D2S6V1 UniRef90- S6A0U9 UniRef90-UPIo003B3349E UniRef90-F9VNG6 UniRef90_UPI00037C0747 UniRef90-R6XQ30 UniRef90_UPIIO004686DB9 UniRef90-UPIO003137331 UniRef90-F4G017 UniRef90-D5WFY8 UniRet90-T2RF27 UniR Ref90-L7U2R9 UniRef90_R7P6J1 UniRef90-W2F490
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AMSQKETDDFMQADDDHCKQRYPGLKSTTVMLQEEHHRKR ■PGLLADCLGLLAE ESASVPSDSRLVDWQASLGMSLVEQT E P D T
 SLSAGEI NHLLVR DCQSDKVSEQUVKTTAGANTGERETW


EFAGDDLPFEAMQR LLAEAKRDARVADDRVEFSFSDSVRT SVSRDEKLEMAREFSAPSSDRNWRVVSEEVEYNNTDSDTY ALPTPREWLARLA HECGAARDDARIVERVASVQVVESEQ V

 ETSSEEVAAFAPALGESFAAARAGGRRGYGFAYHSVTSTY

 $L$ S P WE

A QAT T EAAARA $\square D R \square T A E \square A A S D S R \square R A G E S V A D A T E G L W A$ ETSAEVFGAFAPALGEAFAAARSGGRELYGFAQHTLVSHY $D V L S P K D \square N D L L L K V N E T \square K V N D K \square V S T S A D A R L V E T E D Q$ LTDIIGVFAPLAADLSTAFDGDD QQLFGFAHHQLHTTW WDEPHMDTETLRQVRKMAEESRMDTHVSRCTYEQVCRDDQ ETSSAVFADFAPALGEAFARARAGDRELYGFANHEMTSTY
SID DAEEKVIDMVKEADDASLSEGSVRNAGAFTYGVSESM S DEDAEEKVIDMVKEADDASDSEGSVRNAGAFTYGVSESM HTSVAVFGSDATELNVGFDGRD DRGYGGFAQHRVDNVW K I S NK SKl DVLN
 PLEEKQKIGVVNDANSLGKNIKVNSKIVSVIFSYSESVEDKN KLSLSEEVDFLKTTSGALKKSDALITAVSDAMLGECSQSY AVPLAEKGDLLTGVTATMRA AGVAVAEASSQAWDTRTA FPPLSDCLHLLMS ESTAVPQDDRLVNWQVSLGLENVEQI WP LQEKLERLGKHDDRALADHEAVVDRQVQLTRRHLALH

 GS MPEELVDKLQKFSDEGVALSDEVUDCNCVAQSTHICK QTKINDYLAFGDE REYV NGAGENNWVYEYYEVMNLKVK

 SMGVEEKISLLKDISKEVLSQSKLQNMVLTYAESVESKEV A $\square$ DYEKK $\square K V M K E A Y K S A K D Y S K E \square S Q V N V S Y V D K T Q K \square L$
$\square L V K K D L V S L \quad N H \square K K D Y P C \square K S D E A E F S H V L C G N Y$ PTSIDEVFRDFAPALGESFASAEASGRRLYGFAEHILTSTF KLGAKQRLTRVADAVKVAKDAGAGVEAAGFFQHHEESYA GELPEEVGKLQKLSDEGAALSDEVIDCTCAAQSTHICKMF QTSDGVFADFAPELGAAFGRARESDRLLYGFASHQLTSTY

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| UniRef90_K0BAC1 |  |
| UniRef90_UPI000370DEBB |  |
| UniRef90_X1HA37 |  |
| UniRef90- H 2 Cl 97 |  |
| UniRef90_R5RUD7 |  |
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| UniRef90-U2DCQ9 |  |
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| UniRef90_UPI000373500A |  |
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| UniRef90_W8APM6 |  |
| UniRef90_D4TT18 |  |
| UniRef90_R5HND1 |  |
|  | UniRef90-K9UJN1 |



VVNSHG $\square H \square T$ QKEQ $\square$ A S WF $\square M G M A R D G A Q V T S F D Y D G G S A$ $L T S S D G C R C R Q T E T S F E V S S Q V T V E D N D G N K Y T G L W W D Y G$

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UniRef90-NOBM41 UniRef90_UPI000345F1AE UniRef90_D2S6V1 UniRef90-D3D9R2 UniRef90-S6A0U9 UniRef90_UPI0003B3349E UniRef90 F9VNG6 UniRef90_UPI00037C0747 UniRef90-R6XQ30 UniRef90_UPIO004686DB9 UniRef90_UPI0003137331 UniRef90-F4G017 UniRef90-D5WFY8 UniRef90-T2RF27 UniRef90-L7U2R9 UniRef90_R7P6J1 UniRef90_W2F490
UniRef90_A6FWW8 UniRef90_UPIO0047B72F0 UniRef90_UPI000369FCDO UniRef90_UPI000478147E
UniRef90_E7MR57


ATVIDLFED TTRRVADFRDSVIGSLNPRKGRTYPVLLHPY VSPEKVLT SECGRKAVEMAVMQIAPVNADKGKYTMVVSRG EILD HFGFDGAGERLAREALALLAAPNCPSGVRDLLLMPD EVISDLKLKEESFRVRDEALLLLKSRPCPEGKRDLILRDS

 VRQGGLE ILAEAPCVAEEAIALLEAPECPSDTRDLILLPN

 RCYQTPDLLWARVRQVGEQAVELLAAMECPTETTTLVLAPD KNDNKSAFLKTLKKAISKLKQTLDWTNSPSGLMDVIIWNE RIEALIAPETLARDAAARARRALGARAMGSRRCAVLFDPR

 SHDSGMDVTSCVRRVDREAKASVGGGKLPSGRYPGILGGK


 GGFELIK DWD I ENA LAEKIRNVDEVLTKTPGRKDVI FSNM EFFNLDQALTDCSEIAADQADELLSAMDCPSETCDLISLAPD
 $P D F A D V P T D S M L E R L S T R L G W A R R T V E L P A G R Y E T V M P P S$
$E V I A S N G L I G A A G N V A D Q A L Q L I M A P N T P Q G P R D L L L M P D$ GGLARFHFHEDASRTANEALTLLDAPECPEAVASSLLLMPS
 RDFADVSVADLVGDVQRRLGWSQRRDDUPA GRYETLUPPS



 $E V 1 E R L G L D G A A A Q V A D Q A L Q L L L A P N T P T D T R D L L L M P D$ K GGELLDDEMEASVEVVNNTL VL L EAEPMPPGEYEVICCDPD
 EMFEEDDPAYYGKEAARTAHTMINARNCPAGKMTVADDNG KEYNFKEFKNYLIGKRLRTLLEKGNGVSVKTGVYKVLETNG RDFADVDVAALDATLAQRLEWAKRR\|ALEAGRYETLLPPS KAVEGGGPIAAVAAEKADLSQSPKAVDTGRQLVILEAS E DFDRDGDLVNKSFKELQDS LGSEHVDPGEYEIITAPD RDFRDVDLAA IDTDLAQRLSWASRTDDLPAGRYETLDPPS $T Y R G G W E R E E R V Q R V G E E A V A L L T A A N C P T T A T T$
$G G P E V F T Q K D K L A P D$

## UniRef90 B4WI66

 UniRef90-UPI00034AB7AA UniRef90-UPIO0037CFEF UniRef90_K9SGN6UniRef90 B8HVY8 UniRef90-F4FA4 UniRef90-R4LYX9 UniRef90_10GLH4 UniRef90-R7BFD9 UniRef90 Woliz8 UniRef90-A4XQA1 UniRef90-UP100030BCADO UniRef90-X1KY15 UniRef90-U3HF75 UniRef90-D9PZ65 UniRef90-A0A023C7V4 UniRef90-14Z5Y1 UniRef90 UPIO0047AF089 UniRef90-UPIOOO4075A33 UniRef90-W5WUU2 UniRef90 K7VX79 UniRef90_UPIo0036E22AF UniRef90-A4NP51 UniRef90-UPIOO047024BE UniRef90-UPIOOO2F0ED1D UniRef90 XoZQD3 UniRef90-88KX68 UniRef90-R7EMO5 UniRef90-M1 IWMO UniRef90-Q97AJ8 UniRef90-G6FUB1 UniRef90-UPI00013B24A7 UniRef90-KOBAC1 UniRef90-UPI000370DEBB UniRef90-x1HA37 UniRef90-H2C197
UniRef90 R5RUD7 UniRef90 ${ }^{-}$A0A038GTC9 UniRef90 UPIOOO3B42BB9 UniRef90-U2DCQ9 UniRef90-K9V712 UniRef90_UPIOOO373500A UniRef90_W9VGX6 UniRef90-UPIO002624A6D UniRef90 W8APM6 UniRef90-D4TT18 UniRef90 R5HND1
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UniRet90_UPIOO4654C16 UniRef90-Q9RJ51 UniRef90-A8M9G1 UniRef90-H6RT67 UniRef90-L8D181 UniRef90-W6RUL7 UniRef90-L8LG68 UniRef90 R5FQ03
UniRef90 $0974 \mathrm{J4}$ UniRef90-M4V686 UniRef90 D5UOV5 UniRef90-14ET65 UniRef90_G8RLP4 UniRet90-B8GM47 UniRef90-_NoBM41 UniRef90-UPIO00345F1AE UniRef90 D2S6V1 UniRef90-D3D9R2 UniRef90-S6A0U9 UniRef90-UPI0003B3349E UniRet90_-F9VNG6 UniRef90_UPI00037C0747 UniRet90_R6XQ30 UniRef90 UPIO004686DB9 UniRef90-UPIO003137331 UniRef90-F4G017 UniRef90-D5WFY8 UniRet90-T2RF27 UniRef90-L7U2R9 UniRef90_R7P6J1 UniRef90 W2F490 UniRef90-A6FWW8 UniRef90-UPIO0047B72FO UniRef90-UPIOOO369FCDO UniRef90_UPIO00478147E
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QMMLQLHESVGHPGDERNYAGGSFIIQPQDFGRLLAYPLMNV ${ }^{260}$ QMLLQUHESUGHPGDERNYAGSSFLSDFGTLQYGSELMNV NLWLTLHESLGHDGYEANYAGTSFATPDKKLKYGSALMNV AADMLWSTLQAALNGKRV QLALQIHESVGHWEAAFAGTSWLDLTQLGSLQYGSELMNI QLALQUHSVGHWEAAFAGTSWLDLAQLGSLRYGSELMN CAMDMTYYALSNFVGESAVENTGDWDGKDGQKVAADKLTV AVASVISUMSNLYGDNVYHRRSRFSKVGDTIASESFTL VATGLISHLATAISGGSLYRKASFYW QM LQUHESDGHPGDERNFAGTSFDRQFGHYPYGSPLLNV FGGVIFHEACGHLETTQTERGTTPFAKKLNKKVAHEAVTA
 AVSELLFPLLNHVSLENVYRGRSPLRPGGHDALGSRVTA WPGVLLHEAI GHGEGDFNRKGSSAFC MGGMLAHEAVGHTVEADLVMGGSVAGPNLGKRVASDLVNL VTGLIAHEAFGHVEMDMFVKKRALGAEY DKRVGSDLVSM QMTEQVHESMGHPGDERNYAGWSFVKPEDFGQYGSKLMNV

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UniRef90-Q97AJ8 UniRef90_Q97AJ8
UniRef90_G6FUB1 UniRef90_UPIO0013B24A7 UniRef90_K0BAC1 UniRef90_UPIO00370DEBB UniRef90_X1HA37 UniRef90-H2CI97
UniRef90 R5RUD7 UniRef90_A0A038GTC9 UniRef90_UPI0003B42BB9 UniRef90_U2DCQ9 UniRef90_K9V712 UniRef90_UPI000373500A UniRef90_W9VGX6 UniRef90_UPI0002624A6D UniRef90_W8APM6 UniRef90_D4TT18 UniRef90_R5HND1
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UniRef90-Q974J4 UniRef90-M4V686 UniRef90-D5U0V5 UniRef90_I4ET65 UniRef90_G8RLP4 UniRef90_S6GY43
UniRef90_B8GM47 UniRef90_N0BM41 UniRef90_UPIO00345F1AE UniRef90_D2S6V1 UniRef90_D3D9R2 UniRef90-S6A0U9 UniRef90_UPI0003B3349E UniRef90_F9VNG6 UniRef90_UPI00037C0747 UniRef90_R6XQ30 UniRef90_UPI0004686DB9 UniRef90_UPI0003137331 UniRef90_F4G017 UniRef90-D5WFY8 UniRef90_T2RF27
UniRef90_L7U2R9 UniRef90_R7P6J1 UniRef90-W2F490 UniRef90-A6FWW8 UniRef90_UPI00047B72F0 UniRef90_UPI000369FCD0 UniRef90_UPI000478147E UniRef90_E7MR57

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TFDATHSGELLASYDYDDTGAPAKREY|LIVQG|VLERG|L|GG|L| TFDP TVSGEYASYAFDDVGMAATREYLI KDGLLLRGLGSY $T G G R L T E E H G L S T V G F D D E G V A A Q R W Q V V K D G V L V G Y Q T D R$ FDDELHSGNVAASAFDGEGTPTRRVPVITAGKLTNF LHSA $G Q N P T A \quad G P Y S C P F D D E G T P T Q P L D F I R E G \| L Q L F F T D R$





VDFAHTYNGPLP VY LDD DEGDKAEDAVLIKDGDLTGYMNSR HEGANCVVDVASYAFDDEGTLAGDVTEIDHGILKTGVCDA


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 IGDRSQPGALSTVGYDDDGAPSAEFKVVEKGVFKNFQMALL TFDPTLREELASYSHDDDGTPASKQFLI QDGMLLRPLGGA
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LS Q WR S GLLS GVA NSRACS WLLEPGDKSLAELIGG\|ECG\|LM ATEMRTGHKRTGSG
QTAALANTRSTGNGSRSFTDAPGTATRDEMVNDTKEGLVI LSQQRSGLPGVANRMANLNDEPGNQRLEQLVGGUERGLCM FWARKAGGVNTHSSWRTFMTLPSUSMSYLVLDAPSAGDL G
ETAERYNMKPTGNARGWTCTLPGKNTVEELTESVEDGYYL LAALDRGTKPTGNGMTNTMFDSGSDSKDDMIASVKKGYYL
 ESQTRANLPGVACAMANLNLEPGNATFEEVISGUDHGLYMM MNARLMGGAPTGNG
 HTAKRSGRADTGNATGDGRSLPDS
YMSRKLGTPPTSSCPNRPVLQP
LSQQRAGURPP DDRMANNLEPGTSSDDEMIAGWGRGMLM




ESQARLDDPGVACSRACSWWE
FSGRKLGM
HTARLTGDPSAPMVDNLVLDAGGTRSVEELVADTERGLLL
ESQURANVPGVANRMANI NLEPGGSSFEEMISNUESGVYM
ETAKKAGVESTGNGFHPGMEEKNDTTRNCLEEAMGEGLLI
HSAGLTGLPVAPAGNLVLDGGDPDRSLDEMVAGTERGLLL
RTASKLGWLTPSMRHLHVGPGSLKDDPQSMFNELGNGVFV





$L S$ Q H R A G M D GVVA N R M A N L N I E P G D Q P L A Q L I G N I E H G I L M




YWSLKANRENTHSAARNYYDSPTDLDDNVKSGSDNEGDFI
FTAELTGAPAVTPPMDNFALSVNTGTTDDLVAGMDNGLLLD

Unefo_E7MR57

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 UniRef90_G4ADW6 UniRef90_A4XQA1 UniRef90_UPIO0030BCAD0 UniRef90-X1KY15 UniRef90_U3HF75 UniRef90-D9PZ65 UniRef90_A0A023C7V4 UniRef90_I4Z5Y1 UniRef90 UPIO0047AF089 UniRef90-UPI0004075A33 UniRef90-W5WUU2 UniRef90_K7VX79 UniRef90_UPIO0036E22AF UniRef90-A4NP51UniRef90_UPIO0047024BE UniRef90_UPI0002F0ED1D UniRef90-XOZQD3
UniRef90-B8KX68 UniRef90_V6JD52 UniRef90_R7EMQ5 UniRef90_M1IWM0
UniRef90 Q97AJ8 UniRef90_G6FUB1 UniRef90_UPI00013B24A7 UniRef90-K0BAC1

## SNNRSWS $\square$ DDARNKFQFGCEWGQ $\square E N G E L K G V V K N P N Y R G$

EQLMGGQGN LLGGDFSGNVLGYKVENGEVVGRVKDTMVAG TTNRSWSIDDARNKFQFGCEWGQIENGELKGVVKNPNYRG DAVF $V D Q V Q G V H G E F A V S A A L A W D S D G G L \quad R E F V L S G$ STNRSWSLDDARNKFQFGCEWGQDEHGELKGVVKNPNYRA

DDSGNGQADLTGEFMFGVTCGYEDKNGK $\square$ GRALLDTTVSG EGMFSGMEDPHWG $\mathbb{C D C D A R G R E I D D G K F T G V V A P V V M T G}$ MANKSWS IDDYRNKFQFGCEYAKI ENGKLTKTLKNPNYRG ESNRSWSI DDQRYKFQFGCEYARI ENGKLTKTLRNPNYRA STNRSWS IDDARNKFQFGCEWGRIEDGELRGVVKNPNYRG

H
HTNCSWSDDDSRNKFQFGCEYRMVRGGRLAEVVRNPNYRG VGAGSWS DQQRDNFQF GGQFYEI KNGEI GDMLRDVAYQS KGFRGGQTNLEMFTFS PEEGYLI RKGKLGKKVRDLNLTG MKTGNGQADSTTEFMFGDDLDAYEI KNGKLGRAI TDTTVSG RTNRSWS $\square$ DDARNKFQFGCEWGQI EHGELKG\|VKNPNYRG ARFSGGEPSSNGDFSGVAKNFIIENGKVTEAAAETMDSG
 KSFTEWNDDDLRFNEYVGKEAYY ENGGDTKGRVRRPVLET
 TSLKG LIHSNAVSGAFS DGADGVLLDGEKHDPVSGVTLSG KNWYGGTTSMEMFTFS AGEAYMIRHGKLAEPLRPVVLTG PQRFSGNEDP DS GRFSGVAKNRWVENGEICFGVQEVMVSG
RTNTSWS TDDHRNKFQFGCEFGQDEDGELTQVVRQPGYRG
 DGTMSGMEDPSWGDQCMGAYGREIDDGKLTDTVKPVIMTG ESNSWS DDDRRYKFQFGCEYAKI ENGKLTKTLRNPNYRA





TC $\square W Y \square R E V D P A T L L L T G L T R Y L V E H G E V T G A V N N F R F N E$ QSNRSWS IDDYRNKFQFGCEYAKI ENGKLTKTLKNPNYRG TTLWY IREVDPTTLLLTGGTRYLI EDGKUVGAVNNFRFNE $T H V D G A G T D A R T G K F S L I A G R R R I R A G K E A E P F R E V T D S G$
$T$
$C$
 UniRef90_E7MR57


## $\square$ S A Q F WR G L K A VG D N Q V I R VG H A S P A CVF A D $\square \mathrm{DVF}$ G

$N V Y$ QVLK D IA A T G S E T R WVGGF RTPHLYCPSSLVAS ISASFWRSLAAVGBNQVVRVGHASPACVFSQVDVFG

$\square$ AF D M L K T VD MVS NE区E WS S G M G GPHMRCK $\square M \square G G$ $Y \vee P D L L G S V S M V S T D R E S F G N G G C G$
1 TVVP F WS S L K A V S A A R E TYG S P Y C P F CLLF E NVEVFG TTPEFWHSLDQVGDNSNW
VS A N F WR SLAA VGBN Q VVRVGHASPACVFRQVEVFG
$\square S$ A T F WR S LA MVGNS QVIR VG H A S P A CK F S N $\square D V F G$ RTDP FWNS L D GLLGD TYHLDGT F T C G
 TA A M MLLK TV V AVV NDMSWSCS GYC G $\square S A R F W R N L A A V G D N Q V I R V G H A S P A C V F S A \square D V F G$
 $N$ I K D L A K N V V GALLGEKEMVWNVMTK S L F FN GVVN $N$ TVNFYSSVDAVGKDLHFNAGIGGPHLRLRGMIV TTPEFWHSLTKVGNSSTWEMYGTPY IT NP FWRSLSMTGNE DTYEVFGTP

 $N V F T T L M N I D G D G N D L K M N Q G G G C P H I D R B C L V G G$ DLG GLLR DVIDAASTE RMVS GGWSAP YLLVD GCSV
$\square$ S A S F WR S L A A VG NEATRRDGHASPACVFRDVDVFG NSMRFWK QCAEVAD
$Y$ VP D L L K S $\square S M V$ S G E VE L S G S G A C G
TTPEFWGSLVKLGNSSSTWWVGHGSPVCVFADVEVFG SPVDDLGRATEVVGRTERWFTRAAAFAAMRVPDFNMSSV


 YVPD L L K S I SMMS DECELA GT GYCG


$N G L E A L A S$ ID A VG A D A R L P V V F GQP T VR FR G L H V
 $S P V D L L G R L T E V G A P R E W N D Y F V M P P L V V P D F N M S T V$ $S P V T M L S N V L A L G R P Q R V M S$
Y VPDLLGSISMASNDY ISSGDGACG
$S P V D V L G R A V E V G R T E R W F T R A A M P P D R V R D F N M S S$ $V T P Q F W H S V V Q V G D N Q V I S V G H R S P V C V F D N \square E V F G$
 A QQVVD DALA EAARRGADETMVLVTDRADASLRWN
 VTS ILDAKAKNGGLS AE I YYVERKEYE DT RE ERWARAARELDRDEAALLDARAGEYTRFAVE AERAVAASR DCDSC $\square$ A $\square$ AEETSH $\square$ RWSRN Q $\square E D E \square E S \square$ ARRFPFRYVE $\square R H H Q S R V \square S L M N G$

HASVRVERRRSGLALLR MSSELQQ

$$
A Q E L V E R A D A D S T \text { V }
$$ A QLLVTEVALA EAHRDGADETIVLVTDRSSLRWANN MRNLLDKALKK CDAAELFKKEEYQLSLGLG MTAKI DELLKASGATAYEVSVTEAWEFYFIGH

 DLVERVLRAAR ADETMCVVTDRAETNVRWN QESVERALELSR ADECVVI AEETSNDRWAGN $M T D R D I Q L K N S G A D A W E V Y F D R H Q L D Q N R V R$ ETAA GVVVDLVRAGPAAEAEVLVTRSDLLTRFANS
 ENTVAK L L E YGLQQGADFTEVFVEDSVASS INLQQ
MSTELDDDA GRVDE LARR LDA GAGAEAEVVAVHSTRFANS MNQEDFQALSDRLFARLSGGEVLFCSLGGETSDFVRLTRN $M K K N Q L D E K A K A Q G A$ QASSLGQSESTAVSFEND



$M K Q A F E T L V G D V R K A L Q T G E Q F T L G Y A E Q S Q F V R F N H A$ MT DNE L S TLEQQQL DET LL DKKAE GEEFTVERSQFTRFNHA QSFNNLCDTLINQLQENQYLVLELKAENSHFVRFNNA A E A S DFI RFNHG A ES S AFVVRFNHA
 $D S F N Q L I E T L L D \quad K K E D S E Q F T V K L E Y S Q F T R F N H A$

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

MNRNELRELMDQLFKESQSG YS VVRLESKRGMRLSNG
EALVAVLKAGワSPNEHFAEASDFDRFNHG

$K L L A G R A D E A A V V K \prod K Q L N \prod R F A N D$ V EANELFFDKK



MQTYFYALADYLTSQCHADEFY LCSYEGEDSDFIRFNQG QQLVDKALLELSRADGA VVLVDAGTDANLRWANN MTDEREDALE AMDWLLDARFEDYAEVYKEKTDAVVTHEGG

 MNTEEFKQLAQT LLEKKETDEHFTLKLSWEDSSQFVRTNQG ETSDFlRFNAG MRAHLQRLAAALSGLLRESEGFTLWLEAERTDFVVFNHG


UniRef90_XON6M2 UniRef90_G7CDS6
UniRef90_K2BTL4 UniRef90-UPIO003655D1F UniRef90 A0A031LN01 UniRef90_UPIO0036D6214 UniRef90_A1UXJ1 UniRef90-F4B9Q6 UniRef90-M1IBY4 UniRef90-D9VC35 UniRef90-TOM3J6 UniRef90_Q6LOQ6 UniRef90_UPIO0047C6864 UniRef90-G8S2W9 UniRef90-IOS2B1 UniRef90_A0A031LNR4 UniRef90-E4WHK8 UniRef90 UPI0004634DD7 UniRef90-A0A017RSV1 UniRef90_UPIO003B4AA4C UniRef90-M1WYZ0 UniRef90 ${ }^{-}$B8HVK2 UniRef90_UPI0002D4CBEA UniRef90_UPI000463E24D UniRef90-R7WSV7 UniRef90-D1A2P3
UniRef90_UP10003B3D7C5 UniRef90_G413G4 UniRef90-D9TDV5 UniRef90_UPIO00346AFCA UniRef90-EORVN0 UniRef90_UPI0002896638 UniRef90-W1MHR5 UniRef90-R4M075
UniRef90 W9VJM7 UniRef90-X0U3Y6 UniRef90_UPI00039D8A75 UniRef90_I3Y6E9 UniRef90-W2DL81 UniRef90_K9RW37 UniRef90-D4TT19
UniRef90 $\mathrm{X1BDM}$ UniRef90- V9UQZ1 UniRef90-UPIOOO3739066 UniRef90-X1LGV4 UniRef90 K9YH14 UniRef90-W0MKN8 UniRef90-Q3K5H1 UniRef90-H8Z2Y8 UniRef90-E1QSG7 UniRef90_UPI00031D50F6 UniRef90-E7NXU1 UniRef90-W7WXC1 UniRef90-X7XJ37 UniRef90_W4LK88
UniRef90_L8MAR9 UniRef90-UPI00047EBE6E UniRef90-W0EFA8 UniRef90-W4LXM4 UniRef90-W0H324 UniRef90-W4M0E4 UniRef90-L8FC17 UniRef90_Q8ZU72 UniRef90-M1MJS0 UniRef90_UPI000468150B UniRef90_UPI0003A02F8E UniRef90_UPI00047330DA UniRef90_W7VLW5 UniRef90-X0UZ75 UniRef90-M11455 UniRef90-M2ZZG8 UniRef90_UPI0003F53D35 UniRef90-A0A049TRV9 UniRef90-I3CFV8 UniRef90-C7QJJ4 UniRef90-MODEH3 UniRef90-K9RAE1 UniRef90-C4RR42 UniRef90_B2T2Q7 UniRef90-K2ALX0 UniRef90-G7VG23 UniRef90-A0A024QL22 UniRef90-R4K3W5 UniRef90_UPI0003093BDD UniRef90-X5JTS0 UniRef90_UPI00016A758B UniRef90-Q7NUK1 UniRef90-XOTCC0 UniRef90-14B8R5 UniRef90-G7HWI9 UniRef90_Q1D8W6
 SMTTNGESVSRTTTVVSVVRRHVASVRSSEVDPAAIPALV DVKEGGFSUDRGFGLVVMSGEKTGFAYADQ 1
 RVHQPQDDTEQQVVVVRAVNGHAARVATSAMED RAQP
S LT A N GFT RA QRLTVVAVAGDRAGVVAREDLSPEADT GMV ELLGVYDE $\square E G G Y S V R Y F \quad N D A \square F F V S S Q N P N E$
DGRPAGVSDETAVGVSVVWKGFRGFAGVAGPSRETAALAA A IIHQNVAETTTGVRLRLHLDGRTASGSTTLTGADGLRALV

SMTTNGVSTSRSWTVLSVIRSADGSARVGAVTSSTVDAGA TMTTNGESTSRTTTVISIVDAHVGSVRSSAVDPAVI TDDV $K V Q G V T G K N T T E I A L R L I V D N N M G S A V S T S T N D E S I \quad I$
 $K V R Q T G L V T D A T L T L R L L Y N Q R I A Y A A F P F T G$
QIPRLDHGEQHVRQURLVHDGRLGSADSRSASWPELKEQA
$G L T T A R H W T V I S L \quad L R S T G G T R \square G V V G S A S T D P D A V A A V$
 DVEHDEVTV SMTTNGVSTTRTTTVISVVRKGTGAVRSSDVNPAADPVLV F V H Q NVSET GVAVHL RLHVDGRTATGSGSRGDADGLAALV


$A D H Q N V A E A T T T V R L R L H L D G R T A G G S T T V T G A E G L K S L V$ RI RQA GHLDSFSLGLTLISGARQAEGVC DLTGQPGPDLA KLKSAKSSQSTGMSVKVIVDGK IGTSHTTDTDD VDGVV DL R Q S GII IEDYAVTI SLFLNKKSLQAATTVSSD RIRQAGHVRSAALGLNLIDGARQAEGRC DLTGDARQDLV $R V R Q A G Q V Q Q A S V N L K L I H D G R H A L A G A P E L D R Q R L A E G L$ KVRQTGTVSDAQLTLTLIHNERTAFTSNPELDQSRSRYAL KVRQTGVVYDGSVHLTLMADNRSGFCHFPEIDWEVACQNLL
$K V R Q A G T V N Q A G A Q L R L D R D G R Q A D S G D T Q L D S Q R D F T A L$ $K V R Q T G C V A D G W V E L T M A N Q R S S F R H F E E L D W Q V A Y Q A L$


 KVRQTGTVADGWVELTLMQNQRSGFRFTGDVDWQVAYKAL KFSNMACDSDEGUMVEVLYKGHFSYAATQNMTTEGDAAAA

A R R PGSVQQRS LS LDLIAGRRHAPGTDTEWDCDRLNALV QVRQAGHVVQATGRLRLIRHDRSAETAVSDTDHQRLAEGL RFERVSSGWDSGDGVQAFKEGVTGFASSDVLSLEAGQQVM
 A I RQPGSVQQRSLSLDLIVGRRHAGTVTLSGDFESDCERLL
D TTVFKNWQSENTFDY LSKARKTAFV GVTGPPTVEKD




EVAT DQK LIDVNYG DMVRKGNRYFMYSGTNDDVEE A ALTTNGTARGRAVTVIATVGGGQGTAAGVVSGSAVTADDV DVEH $\square N V K V Y K K L D D G K M L G S A S G E \square Y P T \quad L S E E E \square K D E \square$
$K \prod R Q A G N V K Q A H L T L S L I R G Q R S S L T L S N D F A S D S L K S T L$ TLTTNGVSAGQSVTVISVKNGAAGAASASGVDLDTVELV PRERVSFAES GVWLRTFADGAADYRYTTSLDEGSLEDEA
 $K V R Q S G S V S Q G K L T L R L D D G A R Q A Y S T L T V C D L D E V S A A L$


EDD DTRSKEVQHFKVTVYKGEKYTGSSTFDVHPGTNDNED KVRQAYPVLQ $\square E L T V R L I L G E R H A S A R \square N E Q D T A Q L G Q T L$ QVRQTGCLLDGCVELKLMSNQRSSYRRFPEDDWQQGSQAL



UniRef90 XON6M2 UniRef90_G7CDS6 UniRef90-UPIO003655D1F UniRef90 A0A031LN01 UniRef90_UPIOOO36D6214 UniRef90-A1 UXJ1 UniRef90- F4B9Q6 UniRef90 M11BY4 UniRef90-D9VC35 UniRef90-TOM3J6 UniRef90-C66LOQ6 UniRef90-UPIOOO47C6864 UniRef90 G8S2W9 UniRef90-10S2B1 UniRef90-A0A031LNR4 UniRef90-E4WHK8 UniRef90 UPI0004634DD7 UniRef90-A0A017RSV1 UniRef90-UPIO003B4AA4C UniRet90_M1 WYZO UniRef90 B8HVK2 UniRef90-UP10002D4CBEA UniRef90-UPIo00463E24D UniRef90-R7WSV7 UniRef90 D1A2P3 UniRef90-UPI0003B3D7C5 UniRef90-G413G4 UniRef90-D9TDV5 UniRef90-UPIO00346AFCA UniRef90-EORVNO UniRet90 UPI0002896638 UniRef90-W1MHR5 UniRef90-R4M075
UniRef90 W9VJM7 UniRef90 ${ }^{-}$XoU3Y6 UniRef90-UPIO0039D8A75 UniRef90-I3Y6E9 UniRef90 W2DL81 UniRef90-K9RW37 UniRef90-D4TT19 UniRef90-X1BDM4 UniRef90 vguQZ1 UniRef90-UPIOOO3739066 UniRef90-X1LGV4 UniRef90 K9YH14 UniRef90-W0MKN8 UniRef90-Q3K5H1 UniRef90-H8Z2Y8 UniRef90 E1QSG7 UniRef90-UPIO0031D50F6 UniRef90-ETNXU1 UniRef90 W7WXC1 UniRef90_X7XJ37 UniRef90-W4LK88 UniRef90 UPI00047EBE6E UniRef90 WOEFA8 UniRef90-W4LXM4 UniRet90-WOH324 UniRef90_W4MOE4 UniRef90-L8FC17 UniRef90-Q8ZU72 UniRef90 M1MJSO UniRef90-UPI000468150B UniRef90-UPIO003A02F8E UniRef90-UPI00047330DA UniRef90 W7VLW5 UniRef90- XOUZ75
UniRef90
M1 1455 UniRef90-M2ZZG8 UniRef90 UPI0003F53D35 UniRef90-A0A049TRV9 UniRef90-I3CFV8 UniRef90 C7QJJ4 UniRef90-MODEH3 UniRef90-K9RAE1 UniRef90-C4RR42 UniRef90 B2T2Q7 UniRef90-K2ALX0 UniRef90-G7VG23 UniRef90 A0A024QL22 UniRef90-R4K3W5 UniRef90-UP10003093BDD UniRef90- ${ }^{-15 J T S 0}$ UniRef90_UPI00016A758B UniRet90-Q7NUK1 UniRef90-Xотсс0 UniRef90_14B8R5 UniRef90-G7HW19 Unire90_Q1D8W6
 A ASQDAALTAPEARDSAPPDPGDTTPDDWDD P K SA R S UV Q S G G G N A V V K S H A E L T L S P L Y P A L N P I M

R R A T A DA R DLDD HA A P GPGSA WT P EN A T N D D HLL L WH D D T A


RAAERTARRAPPAPDAQPLPSGESPDWAEPPVRTSFDDFG FEPSPERVMGWSSDFLDSEPENGTYQVDEKTP LS
ERAVAVARACRAAGGERVEPVGEPVYPDAEWTSGHRVDPF
 AASVEAARSAPRAR DAAPLLTGSGAP DDWDAPVP
$\square A D V M R A S E D A A R S A Q P A E D A M D \square P A G D G V G G V D W A D G P A$ AASQKAAAAAPPARDNAPALPGGDAPPN WDDADP DRAL $\quad \square$ S N R Y QKCEA DE F A S K K P E K $\square S$ CF D P RVV K K I I D L L L R A S YVK NAYFE LDNKENTQQEN K DYDVEEK QEL RQEISSYLPLDPYLVL DRADD TATGLENLD Y V R Q E VK QLPE DP Y IVLPENK GS S R LQASALGPVSA ISSSFPGDDMTTVVDDSPPDLTVMLQWVQ

\begin{abstract}
VRAAEDAARAAEPVDDTAPLVAGAE DPDWG $R Q A E Q A A A E S R P A E D A A P L A A D A P P G L G G E \quad$ WA APPA EA QK IIA DLYNRAAYVKNPYFEDNKKPVKGGGESFDPAKM A A A EHAAHAAPDARDSAPLLSGNGDPDDWN ERTRAAARLAPPDPA WP GLTAP T P V V P GPAVDEDTA
 TGNLGQS QKEGQS GDMQS LQP Q S DE DIH H DT VN PE




K N GFEVS S GA QLYY $\square$ LS R NDREFVIDQNNENURE
EPLVRAAEEAARGAGPADDAQPLVADVPHSPAYAEPPAGA DKLIGRAENV KNPFYELNKPGDFEASKESNVDVS

QQLREQLPYTPDDPYLL LYSTTVQNS RASEKAAEESGPAEDA FELVAGRSSADWDEPPAQTD ERAVRGGEMLAQRDPASFDAHTNHRAVHG GWANEPVD

 EKAKRDAVEDP DFTGFSKKEEFLKKYQVKQGYHDRKLDM

[^2] UniRef90_A0A031LN01 UniRef90_UPIO0036D6214 UniRef90-A1UXJ1 UniRef90-F4B9Q6 UniRef90-M1IBY4 UniRef90-D9VC35 UniRef90-TOM3J6
UniRef90 A4YDS8 UniRef90-Q6L0Q6 UniRef90_UPIO0047C6864 UniRef90-G8S2W9 UniRef90-IOS2B1 UniRef90_A0A031LNR4 UniRef90 E4WHK8 UniRef90_UPI0004634DD7 UniRef90-A0A017RSV1 UniRef90_UPI0003B4AA4C UniRef90-M1WYZ0 UniRef90 ${ }^{-}$B8HVK2 UniRef90_UPI0002D4CBEA UniRef90_UPI000463E24D UniRef90-R7WSV7 UniRef90-D1A2P3 UniRef90_UPI0003B3D7C5 UniRef90_G413G4 UniRef90-D9TDV5 UniRef90_UPIO00346AFCA UniRef90-EORVN0 UniRef90_UPIOOO2896638 UniRef90_W1MHR5 UniRef90-R4M075
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UniRef90 $\mathrm{X1BDM}$ UniRef90-V9UQZ1 UniRef90-UPI0003739066 UniRef90-X1LGV4 UniRef90-K9YH14 UniRef90-W0MKN8 UniRef90-Q3K5H1 UniRef90-H8Z2Y8 UniRef90-E1QSG7 UniRef90_UPI00031D50F6 UniRef90-E7NXU1 UniRef90-W7WXC1 UniRef90-X7XJ37 UniRef90-W4LK88
UniRef90 L8MAR9 UniRef90-UPI00047EBE6E UniRef90-W0EFA8 UniRef90-W4LXM4 UniRef90-W0H324 UniRef90-W4M0E4 UniRef90_L8FC17 UniRef90-Q8ZU72 UniRef90-M1MJS0 UniRef90-UPIO00468150B UniRef90_UPI0003A02F8E UniRef90-UPI00047330DA UniRef90_W7VLW5 UniRef90-X0UZ75 UniRef90_M11455 UniRef90-M2ZZG8 UniRef90-UPI0003F53D35 UniRef90-A0A049TRV9 UniRef90-I3CFV8 UniRef90_C7QJJ4 UniRef90-MODEH3 UniRef90-K9RAE1 UniRef90-C4RR42 UniRef90-B2T2Q7 UniRef90-K2ALX0 UniRef90-G7VG23 UniRef90-A0A024QL22 UniRef90-R4K3W5 UniRef90-UPIOO03093BDD UniRef90- X5JTS0 UniRef90_UPIO0016A758B UniRef90-Q7NUK1 UniRef90-XOTCC0 UniRef90-14B8R5 UniRef90_G7HWI9 UniRef90_Q1D8W6
 GTGVGEFTADADGLVRGFRGAD RLYGYARHIVETTF


 SEVLKEK IVRELEDL
$G L I P$
A L A EVFERDARFSGYAERQVRTTY
$S \square S \square E E K \square A L L K D \square S K E V L S Q E S K \square H N F V L T Y S E S V E E K E$
AVPRGEWTEPLAAWSRALLAV PHVAHVHAKDKVAGETTF EFGFDEATARATPAERAAFVDAAGGLETAGFCRTQYVSAA GTGAEVFAGVADSLSRGFRGVD QLYGFAHHVVETTL
STSVEVFEGLVPGLADGFAGAD RLYGFAHHQVHSTW RTGAEAFGGVANSLTRGFRGGD TLFGYARHILETTF NLTTEEMDYEGQKI NVFAKLSQDIIP DIHUVKNVKNTQ ELYPGEL MAKDYLEALQQIPETSTEDDNSYFAEKCTKR


DDAATTDFDVLAGVVDALATGFGGPDPLYGYAEHAAETVT ETD DGVFARLAPALGEAFAQAEAGGRRLYGFADHQMTSTY ARDFIEVMQQDPETSGEDDNSYE APVPETGAAVFADVAES LSGGFGRTDRLYGYAHHVVETTF FASPDERAERVRAFVDAVEGLEAAGYCR GYATSYRSGA $L T A E Q A D D A L L E P A Q G V D F D G F Y A A G A D A R A N A N S A G Q K$
$V P K M A Q D F D E A L Q Q V P E T S G E D U N S Y E I F A$ $T V S K S E R V E L L R E L D N K T R N H G D D \square Q Q V T V N M S E K K R S V L$
AAGPQERAARVRDFVDAAEGDE TAGFCRTNYTSGG ARRVSAEMPSAEEALSDLVAAAEGLDLVGDWAG GEILEA PVTKKEMVSDGEEMMSLVKDYNP DILLGAGATKGVATSK EMIKSGQLPHRNEILEALMDVITKDYLVGVWTS GKIDRRA
 EPETAVTAILAPVQDLDFTGLYAGGLIFRGNSNSAGQHHW $K V P D S I L T S L E N L D F T G M Y A G G I I M R G Y G D S K G K S H W F$
SHSQQEQP LPPELSDVLTLLEREAGDLDLVGDYAAGPDCRG KTVLEQVAELDFTGIYAMGGGVVIKAYGDSQGQKH SVSLEKMAELGEKLI A TVKGHTPDIICEAGVTKGVVSVR GSSHEVYQGHLLDSNDALSHILPDVEGLDFTGFYASGSLI



$P$ PAEDAVAALDDAGEGHDLVGПYASGGTYAG RHATDENNLPD DSQVLAEIDAEARGLDLVGIYAAGPLHRG K LVHEDKSFIFDTLEQYVKEVDKGIKHVNASVSASSYHHH

 SESPGENHLPEPEDAVAALMAAGEGRDLVGDYASGGTYAG

FSK L P D LVK TADDSAQGVERSAGVVHLAYVTVTYE WINEVTKATYKKD QLQPPDCAAVLEQDGRAAQGLDNKGVGFYAAGPISRG


MAKELEVLTKKADGRVTGVNVMYSDGDSEVA S A A VF D $\square \mathrm{V}$
A
$\mathrm{K} \square \mathrm{A}$
$\mathrm{K} \square \mathrm{A}$
$E R \prod A N N A \square P R T N D A \prod D T \| L S T T Q G L D F V G \square Y A T G G \square F R G$ ISVFSSFAPALGETLAAARAEGG NLLFGYAEHSMGTQY AVSVDEKVAAVEDGLAATEDLDLRRDWV NYADTHGEET
 AH IVAECAQGLD SMDYKKEARLLAEMSWAMNHEPSTMSF ILSGDNFLIRERM
STGADVFTDVATGLVHGFRAARGAGDQLYGYARHVLETTF
 $S Q V L D E V G D L D F T G I Y A G G A$ ALAR\|VADAARGLDFVGFHAGGAVVRG
ERDAD GALP DAE SMVA D I LAA A A E GGLDLV GILVACGEMS F G $\square S L E E K$ YLLDCSHNK LLLSGKEIQTSAGRYADUHTTKY

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UniRef90- X0U3Y6 UniRef90-UPIO0039D8A75 UniRef90-I3Y6E9 UniRef90-W2DL81 UniRef90-K9RW37 UniRef9O-D4TT19 UniRef90-X1BDM4 UniRef90_UPIOOO3739066 UniRef90-X1LGV4 UniRef90-K9YH14 UniRef90-W0MKN8 UniRef90-Q3K5H1 UniRef90-H8Z2Y8 UniRef90-E1QSG7 UniRef90_UPIO0031D50F6 UniRef90-E7NXU1 UniRef90-W7WXC1 UniRef90_X7XJ37 UniRef90-W4LK88 UniRef90_L8MAR9 UniRef90_UPI00047EBE6E UniRef90-W0EFA8 UniRef90-W4LXM4 UniRef90-W0H324 UniRet90-W4M0E4
UniRef90-Q8ZU72
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 LGS STGLRLRHDQPTGLMELNAKDAGAS GG GSA WTGVGT
 LATSTGIRRRFTQPTGTVEVNAKRDGAS FANSAGHTAVGRAAEAAMDGIARAGGAD A AGMVARLCA HWFATETFSIDYSMFTSVEAADNLAGKSTADRAVKGGYAG YVNSEGDDVTVTYPKSMVEVVVNARNKEHEDEVYRMYEAG
IVNSEGLWAEDS RNYSRMRLSAVAEKGDGPQTAAESPGGY

FANTAGHSAQGRTAEAAMDGDARLAGAD GVARYAS LS S S $\square$ GHRHWHQSTSFNLDWSGYLEADKKSCYGGFSWDPS FANSAGTVYSTETTNFAVWVDGQLVRGTD LLWAGHGFGWK CSTSEGTNHWFEKDSFDFDFSGIDEKENMVKVLFPGSS LASSLGHRHWHQSDSFNLDWSCYLEADKAVKAGLGGFHWD FATETFTVDYSLITGGTGKAFVKADQAGSVWSESRYQAQDAA VTNSFNLD YSLIIIAPKKAVKATFAGREWKQS
FASSFGAFGWHQANSFNFD WSDFHENGEAVKANYAGQVW WFATDCFTLDY IINSRGGQANYRKS DFSLGGEGTLIRDTDMLFVGETQFSC RANYNSLGQKHWFATDSFFVDYSLINADNKAIKGC YSGT FASSWGALGWHQANSFNFD WSLFHENGQAVKANYAGHDW FASSSGAFGWHQANSFNFDFSLFHE NGEAVKASYAGHDW Y DDSTGLELEDKASFVTLTVRAF DDDDRAVKGSYAGLVWD FATDSFTLDYS

FANSDGQRNWFSSYSFNADWSFYHEKDKAVKT AYAGD FANSFGAFGWHTAHCFNFDWS LFHANH QAVKADYAGS IRNS $\square$ G LDE ISNKATSFSTYVYG I GRSDGTRVSFVIPRAVLMHQGTVRENGRAQSTLISRSGL IGNTRGVLASDTTTAM SVAEMEVGLGAAHDHGVHGSFS
FANSLGQRNWFSSYSFNAGWSFYHEKDKAVKTAAYAGL
DTAGREGSYSVNRDYMTMRSFLGEDSATSAAAGRRDGD VVNSEGVDVEAIINYCMVELVATWKETGEEVELYRCLNFS FASSAGAFGWHQASSFNFDWSLFHANGQAVKAQYAGQHWH SSSKGTSHWFEKDSFFDFSWIDAKENMVKI LY PGSDWNED
DASSDGTYVSDIRLHQTVGLNVIASEAQYRSSGSRRFGSS VAGVTA
$1 L N S N G L S D S Y N T T \prod A L V Y V N A D S R K D G D T S T G D Y F G I S R$ LVTSYGFNGSERRYKIDGYVRAFNKEYSGQ
 A WVGDGT
FANSLGQRNWHSSYSFNLD WSCYHAQDKAVKSAYAGFNW LGSSAGLRLRHAQPTGSVQL NAKSGDRSRSAWSGVPT VGNTTGSTVRTTLDRARVTCSLQLEDGPKVRRHAGSTEGA YADSGGKKHWFSTDTFTLDYSIFT DSGQAVKGFFAGNDW FANSTGHSARGSAAEAAMDGIARSGGAD ARAVARDA

VATSTGLRRRYTQPTGSVEDNAKRGGAS AWAGVGT KRIITSEG DDKSFENYKGMIEFVDNWKEEEEDELYKMLTF FANSWGARGWHECANALLDWSLFDAGEAVKSTYGSADWDA WFASDSFTGDY SAVFTPEAQAVKGNFAGSQWCQD FASSTGSRGWHEVENFDFSWSDYDPSG RADKTVYAGD FANHLGGQFNWQQSESWNFDWSLYSHGDKAVKR K SQAGS

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UniRef9－$\times 1 B D M 4$ UniRef90－V9UQZ1 UniRef90－UPIOOO3739066 UniRef90－X1LGV4 UniRef90－K9YH14 UniRef90－WOMKN8 UniRef90－O3K5H1 UniRef90－H8Z2Y8 UniRef90－UPIooo31D50F6 UniRef90－E7NXU1 UniRef90－W7WXC1 UniRet90－X7XJ37 UniRef90－W4LK88 UniRef90－L8MAR9 UniRef90－UPI00047EBE6E UniRef90－WOEFA8 UniRef90－W4LXM4 UniRef90－WOH324 UniRef90－W4MOE4 UniRef90－Q8ZU72 UniRef90－M1MJSO UniRef90－UPIO00468150B UniRef90－UPI0003A02F8E UniRef90－UPIO0047330DA UniRef90＿W7VLW5 UniRef90－X0UZ75 UniRef90－M11455 UniRef90－M2ZzG8 UniRef9O－UPIOOO3F53D35 UniRef90－A0A049TRV9 UniRef90＿l3CFV8 UniRef90－C7QJJ4 UniRef90－MODEH3 UniRef90－K9RAE1 UniRef90－C4RR42 UniRef90－B2T2Q7 UniRef90－K2ALX0 UniRef90－G7VG23 UniRef90－A0A024QL22 UniRef90－R4K3W5 UniRef90－UP10003093BDD UniRef90－X5JTS0 UniRef90 UPIOOO16A758B UniRef90－Q7NUK1 UniRef90－XOTCC0 UniRef90－14B8R5 UniRef90－G7HWI9
UniRef90＿QD8W6

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RDFTDVDPRALDAELARRLGWAERRTELLPAGRYDTLDPPS PDFTAVTVDSMLEELSTRLGWARRRVELPAGRYETIMPPS GGYDVVMKNDVALAQVKRA
EVLDRYAFDGAGVRLATDALTLLAAPNCPSGPRDLLLMPD RYPKK DLTTAKDTIISKVQSTAKRIKKDSVPKSVIVTPK LGLDKGPATVADVVARAVRTRGRKPLPDGVYTVVLGPE LiAQGGVDFEGAGARVADEALQLLAAPNCPSGRRDLLEMPD ADFAADVVESNE ADFAAVDपAATADEATARपHRTPRRDPLPAGDYEVLLAPS WDQKLPATASATSRMSEINPGKFRVLLSPY GGDERTKEDKVGSHLVERVKSDDLILQRTTGRRDVVLSPV GFKFNIDPYRYGELAAETARKTSKKIDDDEGKYDIILSPY RGLEYLEGWDWATEVAGMPSHKLSAPPVEPDRYDLVVDPS ARLSDLDGAALGARATAKARALAEPAELPPGQYEVVLEPT पDFTDVSVPKLLADLDTRLGWSDRTVALSAGRYETVVSNM PDFVDVPTDSMLDELGTRLSWAGRTVELPAGRYETIIMPPS RSFSEAE円ENTHEHKDSQNRDH SCDKDHLVKELTDTLRFGKDRLKATPTPALKKATVLFSTE HYQAQTEQCKAQLEVLDQAPVHPVPPGRYRTYLAPA TCPRPVKLIEDUQQ RWTWTEKQUTLPDGQYPIVFLDA TDFTDVDTEALLADAARRLDWHARTVNFESGSYNVVLSPY GDFTDVDPA TDOARBLEWRRBVELPAGRYETIPS GDFTDVDVPALTDQLARRLEWSRRRVELPAGRYETLLPPS PWFVDVQTDALLDDLALRLGWAERTVELPAGRYETLMPPS DRLADLDGAALGARAAAKARAAADPVELPPGHYEVVLEPA RHWEQAAYAAQIDRSKQQLQALSPAKSIRRGQYRTYFAPD TCDKDHLVKEVSNTGKFGKDRLDTKPTPNLSKATVIFSTN
EFFQDLNLEELAENAAQSALRMAAGGYDGGKMPVIGGNG

 KR E I D HVE $\quad$ RA QKA $\square$ A LFKMAENDAPVTSGDMPVIFTPE T WDKNKFDAAFKEASNKLKLMNKPMELKPGKYRVWFEPN DSAAFANRKLDALREGGLRLMARPARTLDPGRYRAYLAPA ARPQLQTLEQPGKTIL PGQYRTYLAPA AY $\square N K \square A D G K K Q L S L L S R E P R$ EDPRGKYRTYFAPG SADDFTARLRQAREQLGFLGRPA VTLKPGSYRAYLAPA AYVEKTDAAKKQLKLLSR PAKKLLKGQYKTYFAPA HPL LETRTMTEAVLQQDELARNRASVPSQSLPVVFTPG FWDDDAFEKQIEEQKVLLEQLNLPTRQLFPNSYRTYLAPA NSEAFLRRFEQAREQLEFLGRPLHV LEPGQYRAYLAPA NSEDFARRTQQAREQLEFLGRPLRRTLPPGQYRAYLAPA NTLDGFRPRDAGAEAGRRLSKDLPEESVGSGRYNVVLGPL RTFQGGWELFNPEQAKTQAKQVGAEEPCPNDTRTLVLMPD GY䐜RARFEQDGPRVAREADELVAAPHCPSGRMDLLLMPD TWDSAAFDRKVEAALLSERLLAAQNQLELLAGGRYETLLPPS RWDSAEFASRLADARQQLEYLGRPAHPLQPGDYRAYLAPA RLINQRELEHLINYTASNVNQLRDRGVIEDGEKEVLLLPH LEKEEASLENKALERAEFSKEVCRAPQLSSGHYPLVIDYG THLTDFSPYDTGAETARRADQARQSIVLPTGDYTVIFSAE A WDSAAFDHKVEVALSHLDVLRQPPQTIEPGAYRVYLSPT TKAERL GEENSHTLRLAKGLPQTRAEPSRTSLLMTPL ELDDSDEDAREVEDMDNLCKEKALAKSTPNDEKATVLFTGE ADAFALRMQQAR AMKMEYLGLPPRTLAPGGYRAYLAPA GMFRLWDHEKAANDVFESSMNM四YADYVDAGQMPVVLANK PDLTGLDVPALAAELSATLARPGRRVELPPGRYEVLLTPN
 SPNDVKDTDKKAVEFASMTNRARGVKLDDGKYNVVMSPGL TCDKENLKKDTSEVLKYGKDKLIAKPTPKLSKAAVVFPTS PDFVEVPIDLMLERLSTRLRWAQRTVERPAGRYQTVMPPS ADFSDVDVVAAGQDGARRLEWAKRKIDLPAGRYETVLPPS NNQAYSDKISQAKQQLEELSRPSKQIPRPGHYKTYFAPA DAVFAAKVEQAATRDAVLARTPRTLAPGRYRSYLAPAALA AKLNAKDPYNVGKETTKAA DKQ $\square G G T R V K T G K Y T V Y G G P Q$
PDFADVSTDALLADLSLRDGWAERAVALPAGRYETLMPPS SDYEPGF DSDAVKETIFLAKRANAKETVKSGKYKVILRDE QVLSDL FEKAREQLHHDSTPR MS DKMGQYRAYLAPA AWSDKANAKRQLQLLS RORAPKARGQHTYLAPT AWDDAVLA K K E EAAARLPLGRAPKALAPGRYRAYLAPA
 RYLDQLALEAQLEEDARVLVDLQNAVLPPTGEFSVVLAGD

## UniRef90 X0N6M2 UniRef90_G7CDS6 UniRef90-K2BTL4

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UniRef90_UPI0003B3D7C5 UniRef90_G4I3G4 UniRef90_D9TDV5 UniRef90_UPIO00346AFCA UniRef90_EORVN0 UniRef90_UPI0002896638 UniRef90_W1MHR5 UniRef90-R4M075
UniRef90-W9VJM7 UniRef90_X0U3Y6 UniRef90_UPI00039D8A75 UniRef90-13Y6E9 UniRef90-W2DL81 UniRef90-K9RW37 UniRef90-D4TT19
UniRef90 $\times 1$ PDM UniRef90-V9UQZ1 UniRef90-UPIOOO3739066 UniRef90-X1LGV4 UniRef90 ${ }^{-}$K9YH14 UniRef90_WOMKN8 UniRef90_Q3K5H1 UniRef90-H8Z2Y8 UniRef90_E1QSG7 UniRef90-UP100031D50F6 UniRef90-E7NXU1 UniRef90-w7WXC1 UniRet90-X7XJ37 UniRef90-W4LK88 UniRef90-L8MAR9 UniRef90-UPIO0047EBE6E UniRef90-WOEFA8 UniRef90-W4LXM4 UniRef90-W4MOE4 UniRef90-L8FC17 UniRef90-Q8ZU72 UniRef90-M1MJso UniRef90-UPIIOOO468150B UniRef90 UPIOOO3AOLFPE UniRef90-W7VLW5 UniRef90-XoUZ75 UniRef90-M11455 UniRef90-UPIOOO3F53D35 UniRef90-A0A049TRV9 UniRef90-13CFV8 UniRef90-C7QJJ4 UniRef90-MODEH3 UniRef90-K9RAE1 UniRef90-C4RR42 UniRef90-B2T2Q7 UniRef90-K2ALX0 UniRef90-G7VG23 UniRef90-A0A024QL22 UniRef90-R4K3W5 UniRef90-UPIO003093BDD UniRef90-X5JTS0 UniRef90 UPIO0016A758B UniRef90-Q7NUK1 UniRef90-XOTCC0 UniRef90-14B8R5 UniRef90-G7HWI9

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 DVEQ
QMILQTHESTGHPGDERNYAGTSFTKTEDFYQYGSSLLNV AVADLLDNLAFGFNGKAFAQHQSFAELGAQQ AVQELMEMLAWGGFDSHRTQQTPLLKLVRGERRLDPR T GMKVLLLALALGVDGKNVVLGSSPLAGKLGKK!AHDSFT AVADFVDMFNWNGVSESSFRNGSSLKMRNSELKLLSPLLFSL AVNELTDMLAWGGFDLKSH
ALEEEVSMLAWGFSAQALASKGSPLQRLYAGDQALNPLVS AVAELLDMLSWALSESSIQQGNSALAPSRGEKQLSPKFNL QLALQVHESCGHPVEEISYAGGSFLSLDNNFTYGSPKVT AMDELAGMLCWGFSAQALATGNSALQRYNGDARGSPLVSF AVADLLGMLSWGGVSEADIQQGNSALAPLSRQEKQLSPKF VANALISPLMAAFNGKTVLQGASPIGNRLGQPVFDKELWL AVDEV GMLTWGFSAQALASKRSPLQRYDGDTRFNPGVST ALEEVMGMLCWGFSAQSIASKSSPLQKLYAGDQAFSPLVS VSAHLYGTAMWFNAYSVITEMSGUSKNDIGNVIDASEGLSI AVADLLSMLSWGGVSEADLQQGNSALAALSRQEKLLSPTF QLMLQUHESIGHAGDERNFAGGSFMKIEDNFQYGSKLMNV ATGDLMQYLVWTMGGRGAHEGRNAFATRTGERLTDLPVTV ALYDLLGMLSWGGFGLKKDRTKRTTLLKMVEADTHLHPSV ALDEVLGMLSWGFSARALANKESPLQRLDQGSARFSPL VAEAFIGYLLNNFKGSQUYNNRSAFSFQNNKSMMKEDFY
 ALDEI GMLCWGFSAQALASKHSPLQRLYSGDTRFSPLFS ALYDUGILSWGGFGLKDHRTKRTTLLKMVEEDARLHPSV TVADMMIYLTWTMDGRGAHEGRTALSTRVGEKLTDLPLTL AVKELFSFYYTKSNABSVYKNESTWKDIQGEEAQGDLITM
 FGGVIIHEACGHLETSQIRERGTPLENKLNEKI ALHESVTA
 VVANLMGFFADFASAFSVITGSSFLAKFKVGDRIASDLLT DAVQUYSWFVEKCNAGFIYSKYSDWEDGKDPKAKGDKVTL TVADMMDYLGWSMAGRGAQEGRTAFSTRVGERLTEERPLT SVADLMDYAYWNAA DRDADDGRSVFSKSGGGSKLGENVTL AAGQLFHFVSHYLEADTGYMGMSPYAVGADRIAPEGLD AVADLLHNLAWGFNGKRHAERQSFAEPGAAQEFDPAVTL ELLSV VGAWSGFSARAQASSRSELKLHVGEVVVDPRVTV VFAHLTGEAAGNWSGSEVLAGTSRYKEDTGREVASRLLTV TVADMLIYYAWSMDGRGAQEGRSALSTRVGEKLTDLGLTM PVKEVLKYYVDKTRADAVYNKLSNLKYGQGDKLKGDLVNL AVSELLMMLSWKGASEADDQQGNSALGKLYHQGKILSPKF AVQELVSLLGWGFSARANAARSSGHRLHAGEAALDPRVTH LSGVFAHEAFGHLSE
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## UniRef90 X0N6M2 UniRef90-G7CDS6 UniRef90-K2BTLL

 UniRef90_UPI0003655D1F UniRef90-A0A031LNO1 UniRef90-UPIOOO36D6214 UniRef90-A1UXJ1 UniRef90_F4B9Q6 UniRef90-M11BY4 UniRef90-DgVC35 Uniinefol-TOM3J UniRef90-O6LOO6 UniRef90_UPI00047C6864 UniRef9O-G8S2W9 UniRef90-10S2B1 UniRef90-A0A031LNR4 UniRef90_E4WHK8 UniRef90-UPI0004634DD7 UniRef90-A0A017RSV1 UniRef90-UP10003B4AA4C UniRef90 ${ }^{-}$M1WYZ0 UniRef90-B8HVK2 UniRef90-UPIOOO2D4CBEA UniRef90-UP1000463E24D UniRef90-R7WSV7 UniRef90-D1A2P3UniRef90-UP10003B3D7C5 UniRef90-G413G4 UniRef90-D9TDV5 UniRef90-UP1000346AFCA UniRef90-EORVNO UniRef90-UPIO002896638 UniRef90-W1MHR5 UniRef90-R4MO75 UniRef90-W9VJM7 UniRef90-UPI00039D8A75 UniRef90-13Y6E9 UniRef90-W2DL81 UniRef90-K9RW37 UniRef90-D4TT19
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UniRef90 L8MAR9 UniRef90-UPI00047EBE6E UniRef90-WOEFA8 UniRef90-W4LXM4 UniRef90-WOH324 UniRef90-W4MOE4 UniRef90-Q8ZU72 UniRef90-M1MJSO UniRef90-UPIIOOO468150B UniRef90 UPIOOO3AOLFPE UniRet90-UPIOOO47330DA UniReif90-X0UZ75 UniRef90-M11455
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 YSDPTADGLPASSDRFDNGLAUGRVDWLRDGVINALAYPR


 MDNPLVDGGLGYYRTDDEGVKARPKHLIKNGLINELLQDR

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UniRef90_L8FC17 UniRef90_Q8ZU72
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QRAKMAGVANSRASSWNDNDEPGTSTDGEMTSGDEHGTLM YWARKAHVENTASAYRNYSSQPVITSTNHSVEENSKVVVD TGHAHV ARESLPAPVAANVVMAPGPDDDLVAGVADGLYV LSQARAGLPGVANAMANLNVEPGAHTFGELVAGDERGILM IKAKRENTASASRGYYPSNLEFYVKNEEEDLSEEGKVYVD YSAHKFGVESNGSAMSNTYFKPGDYSFEELIEDIKDGUYF GTGTTGNAGIISPRAWQMSLNAGKTRFENMLDDLEDGLLI STSVKAGTATTGNAPWQLSDEPGSRSYDDIINDIDAGIFD ATARVLGADRSTGCAYSLRPAPNGPSTAELIAGVSRGLLV TSAAEAGAESTGHASGTSRSWGPFPAHRPLVARMRRGLLV AAAAEFGAPVAVAADNLLMTGGSAALDEMVASTERGLLL FSANRDGTTSNGSAMSNTFFKPGNLTFDELVEDVKEGVF! AAAAEFDAPAAVPGDNLLLTGGSAAMLDDMVARTERGLLL SDGKKLGL
QFRYYLGKDSFDAGNF
SVDGGSSTEAEDRSGTYDEP RTAKEYGKIPNGANASETETSPGTLTSEETLPQLDTGLYT RTAKEYGUQGNMEGLRSPEVLPGSLATDQLLAKLDTGLYL ASASELHMPSTAMGYRPLVVQPGQYSLSDLMNLVPRCLYL ASAHRFDAPVAVPGDNLILHSHSTDLDAMLASTEHGLLL HSAALTGLPMTPAVDNLILRGPDGASLEDMVARTERGLLL AAAAEFGTSVAVAADNLL MTGGSAELADMVAATERGLLL RGGAEAGAGSTGHGMPGSATFGP\|PHNVRLLAGMRRGLLV


LS QHRSGLEGVANRMANLNDEPGKSFAQLVGGTERGVLM TSAAEVGATSTGHATPAQPAAPTAPSARALVAGLTRGLLI
 RTAK
QTAA
RTGKEYGLTSNGANGAETE\|LAGNLKYEDILSADDTGLY\| SSAAEYNGADYGEGPSALNMAGGSLEDDQLEKLGTGLYM RSAAEYGLTANGASPSALNMGAGDLPQAELLKQLGTGLYI RTATKFNTISTGHAVGNWLRPRPRHDIEAI AAELGNGI I RTAKEYNGANSAESLRAPELSPGNLAFDRILPTLDTGLYV ESQQRSKLKGVANRMANDNLEPGTSSFEDI SSI EKGL LMM ADAAEFGAAPTVGADNLVMTGGGSQTLEQMIAATENGLLL RSAEEYGVPTNGAAPESLDMAAGTLANDDVVKQLDTG|YM| KYSNLMDLLKPTPGRGSSRLYSVNMKTFEELIEQLEDGIVV FSAEEAGMEVTGAGRAESYGYDPDPRMTNLLCEEGKHLLL
 RSAEEYGVPANGAAPESLDMAAGTLASDDLLKRLDTGVYL RTAHALGMEPTGHALYNWTRPTPGHVYUAPFRELKNGVYI RYAHYLQVEPTGNISNDVISGGSQSVDELRKEPHIEVAVF
 AGELRTGHKRTGSGMRNTYMAKGEHSKEDLINSIGEGLYC HTAERTGAPTPMVDNLVLEGGPDAPTLPEMVRSTRRGLLL ELGQLMGQKSTGNAPNAFAIDDQEGNMGVESMTSGNVILL HTAALTGLPVAPYTDNLILEAGGARSLDEMVAHEGPELLL RFRYYLDADDAKNSYLLAYNFDVGGGSKAEEIRSGKYLEEL RSAKQYNGANEEEMPNALEMQAGNFPQAYDLDADETGUYI ASAAEEETYPAGNAVPSDGHGQPPRIHARHDD
RSSDEYNGANSSESLRSPQMSRGNLPSEKDLSILDTGLYV RSGAAAGVGSTGHGPTPVNLRLSGPAPANTVAGMERGLLV RSAREYGLTPNGASPAALSMQAGDRQDEEVLAKVGTGLYM RTAHALGMEPTGHAMHHYARPWPGHDLEELLLDLLRRYYI AAAAEFSAPVAVPADNLL VTGGSAEPADMLASTERGLLL
 RTAKEYNGANASETLRSPEDNPGNLASEDIMTQLETGLYV


RYADLLKAKQT SALMNIEVAPGTTPYADFL GEGVLE
RSS GQKDAGNNARKMEFSSPSLPRGTNLVIEGIVI

## UniRef90 X0N6M2 UniRet90-G7CDS6

 UniRef90-K2BTL4 UniRef90_UPI0003655D1F UniRef90 A0A031LN01 UniRef90-UPIOOO36D6214 UniRef90-A1UXJ1 UniRef90- F4B9Q6 UniRef90-M11BY4 UniRef90-D9VC35 UniRef90-TOM3J6 UniRef90_A4YDS8 UniRef90-Q6L0Q6 UniRef90_UPIO0047C6864 UniRef90 G8S2W9 UniRef90 - IOS2B1 UniRef90-A0A031LNR4 UniRef90 E4WHK8 UniRef90 UP10004634DD UniRef90_A0A017RSV1 UniRef90-UP10003B4AA4C UniRef90 M1WYZ0 UniRef90 B8HVK2 UniRef90-UP10002D4CBEA UniRef90-UPI000463E24D UniRef90-R7WSV7 UniRef90-D1A2P3 UniRef90-UP10003B3D7C5 UniRef90 G413G4 UniRef90-D9TDV5 UniRef90-UPIO00346AFCA UniRef90-EORVNO UniRef90-UPI0002896638 UniRef90-W1MHR5 UniRef90-R4M075 UniRef90-W9VJM7 UniRef90 ${ }^{-}$XoU3Y6 UniRef90 UPIIOOO39D8A75 UniRef90-13Y6E9 UniRef90-W2DL81 UniRef90-K9RW37 UniRef90-D4TT19 UniRef90-×1BDM4 UniRef90 V9UQZ1 UniRef90-UPIOO03739066 UniRef90 - X1LGV4 UniRef90 ${ }^{-}$K9YH14 UniRef90-W0MKN8 UniRef90-Q3K5H1 UniRef90-H8Z2Y8 UniRef90 E1QSG7 UniRef90-UPIO0031D50F6 UniRef90-E7NXU1 UniRef90 ${ }^{-}$W7WXC1 UniRef90-X7XJ37 UniRef90 W4LK888UniRet90 L8MAR9 UniRef90 UPI00047EBE6E UniRef90-W0EFA8 UniRef90-W4LXM4 UniRef90-W0H324 UniRef90-W4MOE4
UniRef90_L8FC17 UniRef90-L8FC17
UniRef90 Q8ZU72
UniRef90-M1MJSO UniRef90-UPIo00468150B UniRef90-UPIO003A02F8E UniRef90-UPIO0047330DA UniRef90-W7VLW5 UniRef90-XoUZ75 UniRef90-M11455 UniRef90-M2ZZG8 UniRef90-UPI0003F53D35 UniRef90-A0A049TRV9 UniRef90-I3CFV8 UniRef90-C7QJJ4 UniRef90-MODEH3 UniRef90-K9RAE1 UniRef90-C4RR42 UniRef90-B2T2Q7 UniRef90-K2ALX0 UniRef90-G7VG23 UniRef90-A0A024QL22 UniRef90-R4K3W5 UniRef90-UPIO003093BDD UniRef90- X5JTS0 UniRef90_UPIO0016A758B UniRet90-Q7NUK1 UniRef90-XOTCC0 UniRef90_14B8R5 UniRef90-G7HWI9 UniRef90_Q1D8W6
 TTFWY IRTVDPTTLLVTGLTRYLVEDGEVTAAVNNFRFNE

RTNTSWS DDDHRNKFQFGCELGQDENGK\TQ\|VKQPNYRG SVQGVHTSNFDTGEFSVVSPVAWI KDGKRIGULREDTVTG ERFWYTRLVDRRTSTITGVSCFRIVVGEQTEPVRGARFTQ $\begin{array}{ll}R T N T S W S S D D H R N K F Q F G C E F G Q & E N G E Q T Q V V K R P N Y R G \\ E V Q G V H T S N F D T G E F S V V G S V S W I ~\end{array}$ KSYMEWNDDDRQGQRYVGLETYEVRNGEDGEPVDVFVVFEG NNAWYTRQDYRNGIVFSTVPRDFLVKGGEVQGALSGMRISD KTYMEWNDDMRMGQRY GLEAYEIKHGEVGEPVLFPVLEG
 TDLDWTTRVLDPKTLVVTRNGVWLVEDGEITGQVSNLLRFTQ


$V E F S D F S V D P \square T G D \square A G E \square R \square A Y Y H D G D K V T P V T G G S V S G$ SNLHYLNWSDCSTTGMTRYACFWVESGKIVAPI ENLRFDE SNLHYLNWSD DPGTGMTRYACFWVEKGEIVAPI QDLRWDE GNWIGGRSTNPRGDDAGNAELYYVEHGEVLGRVKNTVVSD ENAGKCYCDPDTGEII IDPVYAYKIRGHKKVSCLNNFILYA TCLWY IREVDPRTLLLTGGLTRYLVEGGEVVAGEVNNFRFNE VEFSDFSVDPDTGDIAGE R DA YWHEGDKVTPVTGGSVSG TTLWY DRTVDPTTLLLTGLTRYLIEDGEVTAAVNNFRFNE SDFWYTRVLDPKQLVVTRNGVWLVEDGVPTRAVRDFRFTE


SYNRSWS IDDARNKFQFGCEWGQDEDGELKGVVKNPNYRG TDFWYTRVLDQKSLVMTRNGVWLVENGEITAAVSNMRFTQ GNLWYCNWSDANECRMTRFGTFWVENGEIQAPVKAMRFDD
SNTHY LN WS DS LGTGLTRYACYWVEDGKMVAPDKTMRFDD GNLWYCNWSDPNDCRATGMTRYWVENGEIVSPVKVMRFDD SNLWYLNYSDQPAARLTGMTRFWVEDGEIVAPVSTMRFDD

 SNLWYLNYSDLDAAARMTRFATFWVENGQI QGPVSTMRFDD SNLHYLNWSDRQTTGMTRYACFWVEQGE! IAPIEDLRFDE

SNLHYLNWSDRPGTGMTRYGCFWVEKGKVVATIKDLRFDD SNLWYLNFSDRAAARLTGMTRFWVEDGQIVAPVSTMRFDD S NL WY L NFSDQPAARLT GMTRFWVENGEI QAPVSTMRFDD GNLLWYCNWSDPNYCRVTGMTRYWVENGVIVAPVAPMRFDD T N N WY Q NVKE GVF S TVVR DVAF LVVRNGKLSARVRGRRIAD SNLH Y L N WS DRPT T GMTRYACFWVVEGGEI DAPI ENLLRFDE
 HTNCSWS DDDSRNKFQF GCEYRMI RHGRLAEVVRNPNYRG




 S N V WY L N Y S D R A A C R L T G MT R F WV E D G E I R A P L N VM R F D E
 SDF TMNDVTGDFCGEDRMARYFDGKNTDPVTS GS I S G G N L WY L N Y S D RPA A RMT GMTRFWVED GQ QQAP LASMREDD
 K S M G G
TSLWY LR DVDPAS LLLTGLTRRRVEDGE VVGTVHNFRFNE $M D I D G L G D N P \square S G Q M S V G A K G L L I$ E K
$N N V W Y T R F Q N Y Y G S F S T V G R D A V V K D G K P D G \square A D R \square R \square S D$





S NLHYLNWSDRPSTGMTRYACFWVANGEIVAPIEDLRFDD S DLWYTRVLDTKSLVLTRNGVWLVEGGVPVRAVRDLRFTE



 SNLWY LNNVGSARLTG GMTARATAFWVENGQDI API ETMMRFD D S NL H Y L NWSDHSTT GMTRYACFWVENGEIVAPI ENLRFDE
 S NLWYLNFSDRSACRMTRFACFWVEDGRIVAPLGVMRFDD

UniRef90 X0N6M2 UniRet90-G7CDS6 UniRef90-K2BTL4 UniRee90-UPI0003655D1F UniRef90 A0A031LN01 UniRef90 UPIOOO36D6214 UniRef90-A1UXJ1 UniRef90- F4B9Q6 UniRef90-M11BY4 UniRef90-D9VC35 UniRef90-TOM3J6 UniRef90-O6LOQ6 UniRef90-UPIOO047C6864 UniRef90 G8S2W9 UniRef90-I0S2B1 UniRef90-A0A031LNR4 UniRef90-E4WHK8 UniRef90 UP10004634DD UniRef90-A0A017RSV1 UniRef90-UPIOOO3B4AA4C UniRet90_M1 WYZO
UniRef90 B8HVK2 UniRef90-UP10002D4CBEA UniRef90-UPIO00463E24D UniRef90 R7WSV7 UniRef90 D1A2P3
UniRef90-UPIO003B3D7C5 UniRef90_G413G4 UniRef90-D9TDV5 UniRef90-UPIO00346AFCA UniRef90-EORVNO UniRet90_UPIO002896638 UniRef90 ${ }^{-}$W1MHR5 UniRef90-R4M075 UniRef90 W9VJM7 UniRef90 X0U3Y6 UniRef90_UPIO0039D8A75 UniRef90-I3Y6E9 UniRef90 ${ }^{-}$W2DL81 UniRef90-K9RW37 UniRef90-D4TT19 UniRef90-X1BDM4 UniRef90 vguQZ1 UniRef90-UPIO003739066 UniRef90-X1LGV4 UniRef90 K9YH14 UniRef90_WOMKN8 UniRef90-O3K5H1 UniRef90-H8Z2Y8 UniRef90-UPIOOO31D50F6 UniRef90-E7NXU1 UniRef90 W7WXC1 UniRef90 X7XJ37 UniRef90_W4LK88 UniRef90-L8MAR9 UniRef90 UPI00047EBE6E UniRef90 WOEFA8 UniRef90-W4LXM4 UniRef90-WOH324 UniRef90_W4MOE4 UniRef90-L8FC17
UniRef90-08ZU72
UniRef90-M1MJso UniRef90_UPI000468150B UniRef90 UPIOOOOAOO2F8E UniRef90 W7VLW5 UniRef90-XoUZ75 UniReffo-M11455 UniRef90 UPIO003F53D35 UniRef90-A0A049TRV9 UniRef90-13CFV8 UniRef90 C7QJJ4 UniRef90-MODEH3 UniRef90-K9RAE1 UniRef90-C4RR42 UniRef90-B2T2Q7 UniRef90-K2ALX0 UniRef90-G7VG23 UniRef90 A0A024QL22 UniRef90-R4K3W5 UniRef90-UPI0003093BDD UniRef90- x JTSO UniRef90_UPI00016A758B UniRef90-Q7NUK1 UniRef90-XOTCC0 UniRef90 14B8R5 UniRef90_G7HW19

SPVDLLGRATEAGRTERTFPRTAMPALRVPDFHMSSV SPLDVLRRATEAGSEYTLPREWGMPALRVPDFHMSSV
$\square$ SANFWRSLSAVGN
 SVFDLLSTVDGVGAELRWNGSVTAPAIRAHGFRFG BSASFWRSLRAVG DASTFGVYGTPY RTFDVLMSIDAVDKSLEFFGGTGGPNMRIRNAVI SPLSLLARLAEAGRPREWHGRTAMPPLRVSDFGVG SVMDILKNVTADSRERKRVKWWTMPYVMVDGTNIS KTTEFLSAIDGADDSLEFYPGMGGPNLRLRNVMV STINTRRNLQEVSSERVNVKWWDMPYALVNN|INIS SYPQALGRVLGI GAESVLDARYASPALHLASWNVTG SPLDLLHRVSEVTLPREWGDWAAMPSLRLPDFHMSSV KTTDLLSSVDAVDNTLEFYPGTGGPNMRFRNVKV SPRDLLRRVTEVGATEDWFTRTAMPPMRMPDFHMSSV

SLPELLKNMK LSKEQKQYDCNLIPS TKVENVTDAG
SLYCFWKNLLDLTNESRQLGGSLVPGMLVKDFT
SLYSFWGDI PEIGYDGRSLGGSLVPGMLVEDFTFT
NAFSALRQLDAVGRQPHWIPAGYLPPLLLDADADAG NANKILQSIHGLGSDFELNGGIGAPSLLLKDU
SPLDLLRRATEAGATERWFTRTAMPALRIIDDFHMSV SPVDLLSRLTEVGATARTFTRAAMPPVRVADFNMSTV



VSAQFWRNLSAVGDNQVIRVGHASPACVFSDVDVFG SYP QALGAVRAVGAEARWS GRYTAPALHLASWNLTG S $\square Y$ YLLGRLEGLTRERELYDGRSTGSALLPGLLVSG■
SFYNFFGNDEGVGKEDRNPGETTCPGDLVNDFEDT SLYHLLGRLEGLTRERELYDGRSTDSALLPGLLVSGD SVYHLLGSLEALTAERELTSSNLLPGALVKRLTLT SLYNCFGNLVDLTYEHRALGGSLVPGLLVDNFTFT SLYDFWGEIPEVGYTKRQLGGSLVPGMLVEDFS ITPEFWRSCDGITHKKYWKV WGVP SLYSLLGSLEDLTSEREMTGSSHLPGALVKGLTDT


## SPLSLLARATEAGRPVDYFRMVMPPGRVPDFLMSAV



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S DYNFWGNTPEVGYDNRQLGGSMVPGMLVEDFT SYPRALGAVVGI GRDRVDGVWWDAPALRLAA WNFTG SLYRLLGSLEQLGAQAELTGGMQLDGLLVRSFELT NIGEMMKNIDALGRDRVQTILWASPLVAIKNVNLT TLENNVNNVAQLSREARQTYWWHSPYAIVKNIGITT NVNN QSNTVFLSKELQNSDGFIGPALEMFNVSMAG SVYDMLGTVDSGTYERRGLDSHVLPGALLEHLTLT SLYHFWGNLVNFTNFQEFIGGSLVPGMLVEDFT SLYRLLGQUAGDELEQLGA APELLLND
SLYSVLGQLEALTAERELTQSKLLPGALVKSLRFS
```

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

 ADYSDIRYEKDTVGSNGK

RSNTETDAE ${ }^{50}$ T GVWCRAFA ${ }^{60}$ GS A GYRFTP ${ }^{70} V_{V}^{V}$ TTESTLQDT ${ }^{80}$
 VGTYEFDSSVPEELDFAFTTK GTSYFADDSPTALRTAL $R V R Q T G R V V Q G R L T V R L A S G A R Q A V Q T Q T A A D R A E L G E A L$ SMTTNGVSVSRSVTVRRGSGAR DGTVVSAEADPRVLPGLV RVGSYEFDNSGPEEYTYFVGGGRGTSYD VNKEGPLDDS
 SLETVRATDTGETSVTVYHDGKLGDATFTSMSDEEDKEKL


UniRef90_D3T1R5 UniRef90-R6XI21 UniRef90_D0LQ93 UniRef90_Q08ZY3 UniRef90_UPI0003B47907 UniRef90-C5AL21 UniRef90- X8AXK1 UniRef90-S9QQS0 UniRef90-R5HIS2 UniRef90-X0XYC1 UniRef90 R7EN23 UniRef90-A7HA54 UniRef90-E6PZQ6 UniRef90_G2FVM9


A A L REAVRDAADDPHLLFDTSS
WRHTTCR
AASQQAAATAPEAGDAAPLLADAGEPADWDAPVPGTG $S \square A L R T A D W L A T D E K Y K A S L S Q L L K K K G E N V Y T V E D P K Q P$ DEAVKGAYYAASFVKNPFFELPKGKKENKVQVKSSDCG
 AAAAERAKLVFNEPYELPADGCGNYELES NLGGDEPRVL

NDPGYW $\square$ RE L E Q WR QASYQDPDATH $\square$ PSP

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lupas }2
lupas_14
lupas
conf
sol25
sol5
sol0
jhmm
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AAGOLHHC 250 FFMDTA
A A GQLIH HCSQFFEMDTAYAGAMPF
 AAAVFFHEVFGHRIEGHRQKERTTFASKVGERIMPDWLSV ASGVLFHETVGHRLEGNRQREGKTFRGQEGKPVLPTFLSII ASAVFFHEVLGHRLEGQRQREGQTFTKLLGKQILPPFMNV AVREMVDLAGWSFSARAQRSARGALQRYDGEVALDPRVSI TVADMMDYMAWSMAGRGAQEGRTAFSTRVGERLTDDPLTL $A A G V L F H E A V G H R L E G D R Q D E G K T F R G Q V G R Q V L P T F L S$
$N V R T L I D F Y M D R S S S G M V Y P G Y S N Y Q A G M D$
$V$ NVRTLIDFYMDRSSSGMVYPGYSNYQAGMD MAGVFTHEAFGHFSEADI DE
E DDDLMSALAYDLTYAGVYVHSNLHKDVIQTSGSGDRLSLL A A GVLF HEAVGHRLEGDDDKEGQTYKGQVGQRILPAFLSI



lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
hmm
jpssm


350
ETA $\square E E E T S P S G N L V F P L G F E H P P R \| H P R H L L D$ QFGQY $G G \square P S G N A D \quad E D Q V A K G K K T K E A D C K G Q Y L E D$ NHGRKEPGRVPVSRQGNLVVEAARSLPTEELEGKPFGMLF QHGRSQGTRRPVARMANLLVESSKQVSDEELKKMPYGLII


RFASY L GEPETGEDRCMTVASGTLTDAELDAMPH KHGRSQGARSPMARMANLVVESRRAVSPDEDKRKPYGLVI NGHGRAQVGHVPNGRQGNLIVTSTKMVSDNKQHKDYGLYF KDAVRWGAKPTPQGTAGLYLKHQAEVPDEALQGVEDGVLV

$\square A D S G \square Q \square D V Y N D Y \square G G E \square R D A \square Y H S D D T T Y P V S G \square S F S G$ TDIS GGFTNTTRFLPQAFVMAYRVYPDGRRELVRGVD\|VG RDI TGGNTNTSSYGYQRMVYRVDVRDGK ESLVRGVEIVG EDI SSGTTRRSPQAFQVIVVYRVYVDGRPDELVRGVSIVG GNLWYLNFSDRVHCRMTGMTRFWVEDGRIVAPVEAMRFDD

RDDTGGNTNTSSYGYQRMVFRVDVKTGEET UVRGEVVG VSFSDFSMDSLSGYFGGEIRLAYLFDGEKVTPVTGGSVSG $\square S \square S G \square Q V D \square Y N D Y \square G G E \square R \square A Y R H A D G K A E P D T G D T M S A$ RDIT G GNTNTMSYGYQAFTPRLVYRVDARTGAVRGVE LVVG


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14
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lupas 21
lupas_14
lupas_28
jnet
conf
cont
sol25
sol5
solo
jhmm
jpssm
 TPLTALGSI MA ASREVETFNGDSAPSMLLRSLEV TPLSSVNRILASGKKAGLFNGF TPQAALNRIVATSDKQDVFNGUVAPAMLVSE $\square$ SFYALFGS

TPLSAVNRTMATGRKQGVFNGF NLLELQKDMAFSTERYKDKDYDGPAVEFHGVAVAG K LSEVLDTMR पSERDEVRERCAGPALLLRGVKD TPLA SVVKVMATSRDVKTFNGYVAPAVLVGEI TPLAAMKSIVATGNHYEVFNG NFMDLL A S



[^0]:    V

[^1]:    

[^2]:    QK VENNDFAA Q
    
    $T Q L R G Q L D V L P A D P Y L L L N T$
    QELR QEI P YL PVDPYLV LPTGNNNSHEDHPGEDLSELWTS ATLLRDSLRDAPDDP HLLEDTSSWQQSSRRTGRLDPDPD $P A L R A A L E Q V Q D D P F L L L N Q R$ R $L$ $E L A T K G A Y L I G K G E E \square E L A S G P \square Q E V I S A Q Q E L D P A D$

