## QUERY

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UniRef90-19ABT1
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,
$K Q M N V V L I G G G T G D S V L A R G L R E F P \prod D \square T$ $K$ Q L K V V L I G G G T G L S V L A R GL R E Y P
 K K V K I V
 K QLDK L V L I G G G T G L S V L A A R G L K K T F P

| $Q$ | $P$ | $K$ | 1 | $V$ |
| :--- | :--- | :--- | :--- | :--- |
| $G$ | 1 | 1 |  |  |
| G | $K$ | 1 | $V$ | $T$ | $\begin{array}{llll}R & G P & K & V \\ R & T \\ \text { R P A } \\ \text { I } & \text { T } & V & 1\end{array}$ $\begin{array}{lllll}E & Q & L & L & V \\ K & L & 1 \\ K & K & V & A & \end{array}$ G G GTGLL K G P K I V V V G G G T G L RGPEIVVI GGGTGL

 K GTKIVAL G G GTGGSTLLRGILKKYSAN
 R G

$P \quad K \vee \vee A$ | $P$ | $K$ |
| :--- | :--- |
| $P$ | $K$ |
| $V$ | $V$ | | $P$ | $K$ | $V$ | $V$ |
| :--- | :--- | :--- | :--- |
| $P$ | $K$ | $V$ |  |
| $P$ | $V$ | $A$ |  | K G P $K G P E \| V A F G G G T G L$ S NL R GLKKNSDNL

 $K G P K I V A, G G G G T G L S T M L R G L K Y Y T S N$ R GPKIVVVGGGTGL R GPKIVVI G G GTGL $\begin{array}{lllllll}R G G & K & V & V & V & G G G G T & G \\ R & L & P & R & V & V & G \\ R & G & G & G\end{array}$
$R G P R$

| $\mathrm{K} K$ | V |
| :--- | :--- |
| V |  | | $R G P K$ | $V A$ |  |
| :--- | :--- | :--- |
| $K$ | $A$ | $A$ |
| $L$ | $V$ |  | K GP K V V A

KRANI CVV
K GPK CV
K GP K I $\left.V \begin{array}{ll}\text { K } \\ A\end{array}\right]$

KKKKiv V R G P K I VA $R G P K I V A I G G G T G L$ | $P$ | $K$ | $V$ | $V$ | $A$ |
| :--- | :--- | :--- | :--- | :--- |
| $R$ | $L$ | $L$ |  |  | $R P R I \vee V M$

R $\quad K$
K V V
 $R$ R P K I V V V $G$ G G T G L
K GPKIVVI G G GTGL
K QKKIVV
GGGTGLSVLRGLKTFPVS

PPK V V


PKIVAI
R G P K I V V I
P K V V V

R
R
$R$
R GPKLV T
$\qquad$

| $R P K$ | $\vee$ | $A$ |
| :--- | :--- | :--- | :--- |
| $C$ |  |  |

R GP K
$R K P K I V I M G G G T G L$
RRKRIV I 1 G G GTGGLSLLRGLKKYPVD
PRIVVI G G GTGM
 R K K I V V I G G G T GLL SVL L R GLLK T FP P VD

$R P L R I V V$

KNKKVTVIGGGTGMPVLLRGLKHYPIHLAAAVTVADDGGS
$R G P K V V V I G G G T G L S N M L S G I K K F T S N I$
$K R I V V$
$R$ G P

| $P R$ | $V$ | $V$ | $V$ |
| :---: | :---: | :---: | :---: |
| $L$ | $K$ | $V$ | $A$ |

RAAKLVV

 $K G P K V V V I G G G T G L S V M L R G L K N K T Y N L T A V V T V A D D G G S$ $R G P N I V A \operatorname{GGGTGLSALLQGLKRYSSR}$

$R G P R V V A V G G G T G L P A T L R G M K N Y T A N I S A V V T V A D D G G S$ $R G P K I$ AVI G G G T GLA TLLRGLLKHYTSNITAIVTVADDGGS



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 GRLAGHSLGNLILAAMQEITGDFVTGVRELSRVLAVRGRV GGLSGHSLGNLLLAGMSDITGDFAQGVQEISRVLNVKGKV

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g
$$ GELSGHSGNLFITAMNDI

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210
220
230
240
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 KA I Q Q S HAPKVYVSNVMTQHGETDEFDVMDHVHAL NRHMG KG| KSSKALKLY CNVMTQFGETDDYTVSDHVQTLYDHVG NAIVESDAKKLYVSNLMTQPGETDHYTVMDHVDAI HQQLGG

 SAAKKTDALTAYVCNVMTQPGETDNYTASDHVQAI YDHDD E A I K E S E A L K ITY N C N I M T Q P G E T T G Y T V V S D H V Q A L Y D H A G


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## N






 E AVKK S K A DK V Y I S N I M T Q L G E T E G Y K L S D H I I N A I E K H C G


 EALIQSTAPKLYI CNVMTQPGETDGYSAADHIAEAI HABVGG D A L GK T R A VIVV Y V C NVVMT QP G E T Q G Y K LL S D H I K A I I E K H S H
 QAL R V S KARKIV I CNVMTQPGETDGYAVSDHVRALEEGAAG H E V V A S S N A K K
 E A I LIA S K A P R L F V C NVVMT Q P G E T D N Y T


 T T I K R S S G L K M Y V S N I M T Q P G E T D N F KVVS D H L R V L Y K H C G EAVSESEAKKVYI CNVMTQSGETDGYTASEHLDALIFSHCG NEVLKAKARKVYI CNLMTQAGETHDFTASDHIXAIYDHMD


 D A V R A S R A R K I F V V V M T QPGETTDGYTAY D HV K T I LDE HA G


 EAI ADSQAPCIVVCNIMSQPGETDGYTVADYVRTLDRVAG


 DAVLRAKAKKAYVCNVMTQAGETMGYTAFDHVKALHD HLN


 DEVKK SKAKKVYI CNVMT QQGETDHYHASDHVHADI SHCG
 EAITTCAQAPKIVYICNVMTQPGETDGFSASRHVNVMYEHVD
 S A L R E A K G K V V Y V C C N V M T Q V G E T A G Y T A A D H A Q A I D D


 QEVCKAKAKKVYICNIMTQAGETPHYTVSDHVEALHAHLG E ALYASSAPKVVYVNAMTQLGETNHYTASDHVQALDDHAG
 EAI QRSKAPKLYY CNLMTQPGETDGLDLA GHIRAIEA QLA



 | $D$ | $A$ | $E$ | $A$ | $S$ | $K$ | $A$ | $V$ | $K$ | $V$ | $Y$ | $V$ | $C$ | $N$ | $I$ | $M$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

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 A PFLDFVI CTTREMDPKIMKRYEREQSQPVKYSPEDIKA L
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 , KDIVDYVI
KGM|DELVH CAFIDTILVNSETI PPDVELRYKEFLAQPVHFDLDKLMS




 | $G R L F D V V L V Q K Y K P S D R A L Q N Y A K S ~$ |
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EKLEDAVLVHQRSPSETALARYSILE
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## QUERY

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SN|L|AGHSFGN|L|F|L|AAMAE|V|TGDMETA|L|RESSK|VL|A|V|KGR|V GELEGHSFGNLFLTADCSITGDMVRAVKESSNVLNIRGVV GMLKGQSFGN LFLAAMNGISDSFEAAVKKMSEVLAVSGKV



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 $N Q L A G H N F G N L F I T A M H D V V G D M E G A L S A T S E I L A K V R G R V$ GSLA GQSFGNLFLAADNGISPSFDAAVRRMSQVLAITGRV D DLHGHSDGNLMLAAMTDITGDFASAVKKTGQVLNI KGKV GALKGQSFGNLFLAAMNGVYGNFETAVYKMSEVFAITGRV DALKGGALGNLMLAAMYGMTGDFAVAVEEMSKIVNVKGTV GELGGHSFGNLFLTAMSEMTGDLEKAVSASSNVLAVRGRV




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 GNL T GHS

G
 SMLRDHAFGNLLI AAMCAINGDFERAVQETSRVLNDRGRV

 S Y L S N D S L G N L L L Y A M T D I T G D S $\quad$ I K A I
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EAVCQAKALKMYI CNI MTQDGETEGMTASDHVKALLAAHSG

 E H I K A S K A P K I Y I C N V M T Q P G E T D GY TAA A HV A A L QRAA G




 D AVVRSNADKIVI CNVMTQPGETDGYGAYDHVQALVDHVGG E A L K K S R A L K I Y I C N V L T Q P G E T D G Y T A S M H A R A I L D H A G

 D A I LKE S E A P K V V Y I G


 E S I GRSN A IIK Y Y V S NVMMTQP G E T D D F TVVSD H I K T L M K Y S G
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## Q

Q
 Q A I I K E E S K A P C C I Y I C C N V M T Q S S G E T E G Y T V

 EAIIDRSKVPVVYI CNVMTQPGETKGYDAMKHLKVIESSYGG

 QALKETKAEVVYI LNNIMT QPGETNGYSVTAHVAAI DDHAN


 VAA I E N S K A L P I Y V C N M M T Q P G E T D D L D D V E G H I K A I E S Q L Q RAVCES DAEVVYI CNVMTQKGETDNFSDADHVRVLNRHLG
 D AVANSKALRFYI A NI MTQEGETEGYTMLE HLLSALMKHGR
 D AI K S SVVAPKVYI A NIMMTQPGETEGYNVLEHVNAIVKHTD
 RAI F DSRAKRFYI CNI MTQPGETSNYTQEDHIRAIIEAHLD
 E AVK QTKAE II YI CNIMMTQK GETERFTNANHVRVL NEHLGG E ALKK SKA QKI YI CN A M GQMGETENYSVADH\|ESINRHVG D AVKRSLALLKVLVVNAMTQPGETDGYTAYDHYRAFLEHSS D

E



 | E S | $L$ | $K$ | $N$ | $S$ | $K$ | $A$ | $K$ | $K$ | $M$ | $Y$ | $V$ | $C$ | $N$ |
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| $Q$ | $A$ | $M$ | $S$ | $E$ |  |  |  |  |  |  |  |  |  |
| $V$ | $R$ | $E$ | $T$ | $K$ | $A$ | $E$ | $V$ | $V$ | $Y$ | $V$ | $C$ | $N$ | $I$ |
| $M$ | $T$ | $Q$ |  |  |  |  |  |  |  |  |  |  |  |

 \begin{tabular}{ll|llllllll}
$K$ \& $A$ \& $V$ \& $C$ \& $E$ \& $T$ \& $A$ \& $A$ \& $E$ \& $V$ <br>
$K$ \& $A$ \& $Y$

 

$K$ \& $A$ \& $L$ \& $C$ \& $E$ \& $E$ \& $A$ \& $Q$ \& $V$ \& $V$ \& $Y$ <br>
$Q$ \& $I$ \& <br>
$K$ \& $A$ \& $E$ \& $T$ \& $Q$ \& $A$ \& $Q$ \& $V$ \& $V$ \& $Y$ \& $I$ <br>
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 Q G IV
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 $R Y K V A V I G G G G T G L P V I L R R G L K R \square D A D I T A V V T V A D D G G B$
 Q G P R $Q G P R\|V A\| G G G T G L S$
RKPK TTVIGGGTGПPVILSSLRHEDVD $K Q L R V$ VAI G G G T GLS TLLRGLKRYVAE $R P K I V V I G G G T G L P V I L K S L R D Q D V D$
 $1 \vee \vee I$ GGIGSNLRGLKSHTSNL
$R$ V P K I V
$R K P K I V V L G G G T G L P V I L R S L K E K D A E V$ RSLK K A EVAVVTVADDGGS GPr R V V $A$ $K P K V V V$ G G G T G L $\quad$ P VV L S G L R D H NVD I $M K V V C V G G G T G L S N L L R G L K R E V G N L$ K P K V V VI G G G T G L S V L L R GL K H F P V E I





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 K GPSVVVI GGGTGLSVLLRGIKLITNNCT

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Q K $R N V \vee T I G G G T G S$ $K K V V V L G G G T G L$ $K N V V V L G G G T G Q S V L L V G L K K F P V N D$
R P T
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 DAA ANRHADIVYI CNVMTEAGETDGYDAAQHVDALYRH G



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ERGG
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$D L R D V V V A D P R S V D$
athrvorilidaysilptrgershmeraa
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$S$
$S$
PDA D K
K
K

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P G R
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SGRDRRELGLMPPGDLRMALAALCGDDTWWSRVLQHRFGE





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T






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110
120
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 GA LA G H P I GNL MLA G L S EVLAADPVAALDELGRIL GVK GRV EGLDNHA L GNLLIVTLWELLGDPVEGLDRAGALLGARGQV
 GALA GHAVGNLLLAGLLERDGDPVRALETLGGLLGCAGRV GALEGHAVGNLLIAALWQDHEDHVVGLDWUARLLRAHGRV GAELAGGHAVGNLLLSGLNEVTGDVVKALDDDLTDLEDVDGRV
 GPLNGHAMGNLLLASGWNENEDPVVGLDRVGQLLKV IGRVV $G V L A G H A V G N M L L G G M L E V L A D P V R A L D E T M R L F G A R G R V$ GALAGHALGNLLIVALTDIFGTSQLALD KVAELAGSRGRV
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 GALAGHALGNLLLVGLSDVLGSHVQALDMLASMLRSRGRV


 E T L A A G H N
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 GALA GHTVGNVVLTALAQQHGDFARAVEAAAAMLGARGRV


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 G A L A G H A V G N L L L A A G L G E I L D D S P V






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 E Q $\mid$ QR S K A K K EALRATAATRVLCVNLVTEPGETDGLDAAAHLRAVQRQAG

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 $K A \operatorname{A}$ K K N R A VL I Y I D N L A P E Y G P A Q K M D L N R K L I WCCQR A C G D A L R R TP P R L V Y V A S L M T E P GET D G L S L T D H F H T I TR H L G A A L N E T S A LVVVVI LVNLS P $\operatorname{L}$
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 A A L S R T T A T K V L V L N L A P QP GETA GF SAE Q H L H V L R Q HA P
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 Q A LLR R T R S P V V F I D N L G R E R S P A A K L T L R R R L D D M E H H I G

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 GPK L L F F S G G S A L K D T C A E LI Q Y T H N S ITHVITP F D S G G S
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UniRef90-M1WTB7
UniRef90_W1Q0Z3
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UniRef90_UPI00047B1AE2 UniRef90-UPI0003B5F833
UniRef90_V7BSQ2
UniRef90_C4XRH3
UniRef90_A0LH16
UniRef90_V6AS18
UniRef90_UPI00035E6B32
UniRef90_Q82DE2
UniRef90_K6Z5D2
UniRef90_G3ZVW1
UniRef90 ${ }^{\text {N6UHG4 }}$
UniRef90 F4AJ22
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UniRef90_E6VRX9

UniRef90＿F7RWQ6 UniRef90＿B7R9N3 UniRef90－E6KXV1 UniRef90＿M3VB17 UniRef90＿K2FEX6
UniRef90－S6CEP7 UniRef90＿UPI000470F521 UniRef90 R4Z5B2 UniRef90＿UPI00047A4102 UniRef90－K2AUG6 UniRef90－Q9CN20 UniRef90＿A8FVG0 UniRef90－B4ESU9 UniRef90－BOTUP1 UniRef90－W1GQG2 UniRef90－G8SCU8 UniRef90－D7GEQ6 UniRef90－F4DE74 UniRef90＿K2CB36 UniRef90－A7NML3 UniRef90－F7RNS1 UniRef90＿B5FCN9 UniRef90－I2BAZ7
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## F



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F D L R G A S M G N L I L A GY F S HN R HI
G P L D G H A L G N L L I V T L L WE L L G D P V

A S L Q P H P IGNAA LVA L WE Q T GS L V EA L R V L G D L A GVV ER L


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


STDEGHCLGNLLVTAAILRESRESAGLDMVARAIGAPPRLD




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UniRef90_F7RWQ6 UniRef90_B7R9N3
UniRef90_E6KXV1 UniRef90-F2N8H5 UniRef90_M3VB17 UniRef90_K2FEX6
UniRef90_S6CEP7 UniRef90_UPI000470F521 UniRef90 R4Z5B2 UniRef90_UPI00047A4102 UniRef90-K2AUG6 UniRef90_Q9CN20 UniRef90_A8FVG0 UniRef90_B4ESU9 UniRef90_B0TUP1 UniRef90_W1GQG2 UniRef90_G8SCU8 UniRef90_D7GEQ6 UniRef90_F4DE74 UniRef90_K2CB36 UniRef90_A7NML3 UniRef90_F7RNS1 UniRef90_B5FCN9 UniRef90-I2BAZ7 UniRef90_UPI0002C32A3C UniRef90_B8LPL0 UniRef90_UPI0002B464CF UniRef90_I1NPM5
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 LP M S T VP L VI EA D V T G S R V I R G QVVAV A T T P G T V R R R V R V N P









LPMSEFP TDLCAHMEC GTQQI LGEVSI D QLATPPPLS L GLMP
LPVTNQPT TLY AK LRFNGRTV I GETN I HKQRSPIRQVVYLKP

I PMSEHPSDLGALTSDLRKISGETNVDEMDELPLRLEFLDP

L P V S N N R L T L G C E L W W G TVI R G Q N E I

 $\mathfrak{V}$ P MLLDD N Y C H L L A A H L L
 RAIT GDER QLMARLQDGTRVVGQHEVAPISSPVQRLKLVH
 $V$ P M S S S P L VI E A DI V S G S R V S G Q V A V A S A R G R L E N V G V V P



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 KTVVDTSLHLGTHLESGETI L GQHNLDPLQSPI QNI WLND RPIMNKYLHLVSRLENGEILLGQHELPAUESPVQEIYYLS


 RPTDNKDLHLAVRLEDGNVIVGQHAI TGKETPDRDIWLTD LPVTNDRLTLGCELWDGTIIRGQNKISHPTNEIKRVFYMS

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 $L P M S P E P L E D E G D S E D P R T I R G Q V A V A T T P G Q V R R V S L$ RPIVNSNAHLCVRLQDGRII CGQHRFTPVTAPI SDIWLAA RAAVD A N L QL G A ELLA D G R RVI G QRADIS GKE S P I R R C F L S P
 RP LIDDANIHLCVVQENGEIVIGQHRFTGKKSPIRKIIWFSK




## UniRef90_F7RWQ6 UniRef90-B7R9N3 UniRef90 E6KXV1 UniRef90-F2N8H5 UniRef90 M3VB17 UniRef90_K2FEX6 UniRef90_S6CEP7 UniRef90_UPIO00470F521 UniRef90-R4Z5B2

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UniRef90 $12 B A Z 7$ UniRef90-UP10002C32A3C UniRef90-B8LPLO UniRef90-UPIO002B464CF UniRef90_I1NPM5 UniRef90-UPIO003C7A743 UniRef90-W7QRD2 UniRef90-UPIO00369C32E UniRef90-M1ZMW8 UniRef90- ${ }^{-} 3$ ҮСҮ0 UniRef90-UPIOOOO2558C23 UniRef90-K3ХН93 UniRef90-D8RUB7 UniRef90- J2ZSL6 UniRef90-AOAO59CD81 UniRef90-G8PFT6 UniRef90-F6D112 UniRef90-A3WMA8 UniRef90-UPIO0032ABOCD UniRef90-BgS992 UniRef90-Q2LRC3 UniRef90_WOZZM2
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UniRef90 R1HP41 UniRef90-Q30VA3 UniRef90-AOFP3 UniRef90-E6VU01 UniRef90-Q1MQM6 UniRef90-UP100035D5F3A UniRef90-F2KP43 UniRef90-UPIO00370F1A5 UniRef90-UPIO003749B7E UniRef90_E6VRX9


NEHDPSPKTRDLICSAELVCYPMGSFFSSVMANLLPRGVG SEVTLPKRNRKLIGQAELICYPPGSLYSSVIANLLPAGTG AALQLPERNQRLIETADLI CYPPGSLYSSVIVALLPAGVG




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UniRef90-A0A059CD81
UniRef90-G8PFT6
UniRef90 F6D112
UniRef90-A3WMA8
UniRef90-UPIO0032ABOCD UniRet90-BgS992 UniRef90-Q2LRC3 UniRef90- WoZZM2
UniRef90 A5UWL6
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UniRef90_F4IGV4
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UniRet90-S5SUM2 UniRef90-S7TX66 UniRef90_UPIO003629F26 UniRef90_F2JVA6 UniRef90-D6SMII UniRef90-M2WGZ5 UniRef90-UPIO00364E234 UniRef90-F6HM88 UniRef90-C7LYI6
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UniRef90-M1WTB7 UniRef90-W1QOZ3
UniRef90_UPIO00478E987 UniRef90-E1JVZ1
UniRef90-UPIO0047B1AE2 UniRef90-UPIO003B5F833 UniRef90-V7BSQ2 UniRef90-C4XRH3 UniRef90_AOLH16 UniRef90-V6AS18 UniRef90-UP100035E6B32 UniRef90-O82DE2 UniRef90-K6Z5D2 UniRef90-G3ZVW1 1 UniRef90-N6UHG4
UniRef90 F4AJ22 UniRef90_UPIooo373231A UniR Ref90-F3ZDV8 UniRef90-A9RL56 UniRef90_M1NJF4 UniRef90_O47LX2
UniRef90 R1HP41 UniRef90-Q30VA3 UniRef90-QOFTP3
UniRef90-AOA037ZDW0 UniRet90_E6VU01 UniRef90-Q1MQM6 UniRef90-UPIO0035D5F3A UniRef90-F2KP43 UniRet90_UPIOOO370F1A5 UniRef90_UPIo003749B7E UniRef90_E6VRX9

QAIIKKSPAKVIFIVDN【VPELLSPAGNTTLLQKFAWLEQQIGG DAIETSKA KKIYVCNIMTQPGETLGYTATDHTKALFDH G EQLRQSEAKKIF:DNLGDEHSPASSLSLDARLQWINETVG RALKSTNARKVLFVNLANEPGETTGFSVERHLHVLHAHAD EAI RKSKAKVIYNCNLTNKKGQTENFDVDKYAQ
EAI RASRGRVLFVCALADVQGETWGLTAREHFEADAAHGM RAVARSTAQVVYVANLASHEAESEGYDVADHVAALTDH
 EALQKSHAKKIEIDNLALEQSPAASLSLSDRAQWLHHTVGO KALRRSSATTI YI GNLGKELSSAASMTMSDKIAMMETYI G QALRRTPAPMVITSAKSIARREAVAGGAHRDYGALCRQAG RAAVASPARRLVTLNLGTDK ETHGLSAAGHLTTLHRCLDP QAI NESSAMLVFVCNLVTENGPASQLDGMSQCRWLESRVG QALQKTKARLVYACNRTTKDGETNQYTAADYVNTLTHYUGG KRVAASKAPVIFI DNLDEESSPAAQFSLEQRIAWCHQVIG KA:|NSNKAKVVFIDNLSKEFGPAGKMDHRMMLEWCERACS
 QALSQSQAKKVYVPNLTQDP KA|SQSKAKKVYVPNLQDDPGE


E IISSQACPKVLLLNGSHDRETSGFSASSFVTA TDALN KSIARSPNPKVYVPNLGNDP EQFGMSPNETVDALLKHLR QAICQNPNPKVYVPNLGTDP EQLGLSLTERVERLIEHAN HALANTQAYVVFIDNLAHEKGPAGSLCVSEKLRFLEHHVG
 QADRENKALK LGANFWDQEGETDGFRVSDLVEAYDHNUA RWPGRCAAPR
EAGAHCRGTVAYVCNSTTQPGQTDGYRCDDHVQRDVTGG E\ISSRSCRKVLLDNGSQDRETSRFTASCFVTAUADALN EAVRNTHALKLLVSNLLWVQTGETDKFRVSDMLRAYEDN: RSI CQNPNPKVYLPNLGTDP EQQGLSLMERV EAINDTDADRVVMLNLSPEVGETQGFSSERHIHMDAQHAP RAVRRTACPKIFIPNTGGCDPETVGMGIMDQIRCLAFFLN

 KAVANARCNKVYGPNLSEDP EQUGLRLAPDCVATLGNYAR EALSDARARVVFFANLARQEAETMELDADGHLERVLAH EAVAANTCPKVFVPNTGNDP EAQGLSVADQAALLNTYLH E
 DAVAKKTVVVSPI IGGAPVRGMADACLTAGGVEAVAEHYG SAVAANACPKVYVPNTLPDPECVGLSVADLVERLDALLR E IVYSRSCLKVLVLNGTWDRETNGFSASCFVTAMTDALN NAIRNTRALKILGANFWIQEGETDGFYVSELVEAYEQNVP KELSKNRKRVVAVSPLIGNKGPAAEYMAAAGIEV
 EAUSRNPQPKVYUPNLGNDPGQTGMSLEDCVLTLLSYMR

A AVE Q T NCPKVLI GNI LQCRETIGLTLADVLSAFREHGG EAVANNPNPKVYIPNLGHDP EQLGMTLEDCILTLLSYDP EAVAGAEAVVIGLSPIVGDRGMADKMLAA GGVETVAAHYG EAIADAGVPVVGLSPIIGDRGMADKVLAAVGVEAVAEHYG EAVKNNKALKILVSNLWVQAGETDKFLLSDLLKAYERNVP DAVAAKTVVVSP\|

R AVAANHCPKVFVPNTGHDP TAI A A R HVV KVVYLPSLGRDP

R A V A A N A CP K V F I P N DN


$P A!E N A S C P V V F: G N Q \square Q Q C R$
EAFAAKTVVVSP:IGAAPVR
$A A V A R C P G P K V F V P N P G G D P$


UniRef90 F7RWQ6 UniRef90 B7R9N3 UniRef90－E6KXV1 UniRef90－F2N8H5 UniRef90＿M3VB17 UniRef90－K2FEX6
UniRef90 S6CEP7 UniRef90－UPI000470F521 UniRef90－ $\mathrm{B4Z5B} 2$ UniRef90－UPIOOO47A4102 UniRet90＿K2AUG6 UniRef90 Q9CN20 UniRef90－A8FVG0 UniRef90－B4ESU9 UniRef90 BoTUP1 UniRef90 ${ }^{-}$W1GQG2 UniRef90－G8SCU8 UniRef90－D7GEQ6 UniRef90 F4DE74 UniRef90－K2CB36 UniRef90－A7NML3 UniRef90－F7RNS1 UniRet90＿B5FCN9 UniRef90－12BAZ7

YQP\｜DLIA\｜SNVSPLLHTN\｜PSCVASDQELTHRHDTDGLL
LKSLDY QPI DGIVPFNAV QNSQP
AGA DIDVVHRSADAAALVGRLAERTSQPARHDAFPFRDM TVGVDDVVVDAASVPAGAERDHLVRAA ASF
$E G L I D Y M L V H S K V P$
TGRUDAVLCHGQPAQEGLI YRSP伿DDQHDRDAL
GLSPDAVLYDPDMNTEALTDRLLAAADVPHHHDRQLLREA VFPFDRVIVNDNFSPKUPN DYRYK YVNDEESKN KEIIDATIVPTNA
TKVI DKVLCHSERSYQDGKПSYRPLVSHPGLHDRTALEN LQTIDAVIISPETQYESMKGRLLEAVSHPGLDHDRTAL LKIIDKVLCNDSAYQEDNTCYYPLRSSHHILHDKRALSK GGCGD
ELRVDTVLADVKWAGEP
GLRLNTVVAD KGAG
QGRLDALAPQGAGDAGTD DW RP DDIVVDKTILTDRTMP HVVHYNKTGLEQA QGTLDVALINRSDPDPAAI RSYAEEGDHLLRPDDDEI VAD KPVITKVLRHGEQVRLDTLVNY LKNRHNPNLHDQTGLRD GRKVDIILTD KELNGLQQEYDCKK RPWLDAALVGSSTPGRLMDCEPLAAADPYRHDRQLLRNA GPR NCLKNNPDPSYINTLLVPRDGEDPVDRQCLADQ RTYGDTHNCLNNTAPDYINTILVPKDGEI PVDFQALAAQ RGYPDKSLKN LPKDYVNALLVPKGGQUPLDTKNLSSK KKIIDGVVVGP KVDVTGI
TKHLDHKVSVSSVLSTVLLDKSAQHQLTPAQY QQLSKL SSVLNTVLIDKNAQNQLTPAQY
GKMVDYVIVNVGQDDKELEEKYKKKKSKLVKПDE KGALDFLLI DEKQSYQGL ARLLNLVLLRELND EAEAL


R TYGNSNNENDPSQYПNTLFVPKDGA DPVD DEDLATQ AD AGEDTPTDKLLNFVVTTDERHAAEFDWAELEAQ YSALDYLLDD APVVDAVLTNFHDASTTMPQGE
EPHNRL $Q$ QLPSQYMNTLLVPRNSETSVDADCLAAQ RKYGDNCLENS PSQYI NTLLVPKEGEIPIDAHCLATQ EGLFDVVLANLEHMPGSVLRNYALEGKSPUYLDRSSVESL
PGVLDVALDNRSNPDADALRPYEEEGLHLLRPDEDETAAV RTHGDTNI RLKNPPGYYINTLLVPKDGEIAVDLKQLSEQ KGLFEETLCLSDDVPASVLQDYAVEGKVPDYLDREVVKEM
 TLRVDRIVIDGHSVTTTSERGHIARAA RGVLDFILVD QVRGDYHGELDREELTRM ADVPDLVIVDTC RGDYRDPFAAEEVEAL EKALDILLLDEHHNYGED KKHKDSQLLNFVLLDKD HELYKG DVGПDAVVADPSSVE RD CGEQTHSNDLLNFVLLDKDHMLNMSNERLERAV RTYGD PQNGKNPPSQYINTLLVPKDGQIPVDVQCLASQ GVRVDAVVADHGFTPRAARHRD VLVRSWRLRGQ SGLLDGWLVDT
QSGIVEFVVVDTK QGRYQGGLGRRELEAM

 SGLVDGWLVDEAD RDLLNAVLVDSRN ANYPGGLKKKR\｜LAL EDGLRFVFVDSR PGLLDGWLVDTADAD
SGLLDGWLVDT VDASVVERVEAAG
KNTPQP LAASQYISTILLDVNSKYYQGGПPFDR $\quad \square R E \square$
 AGLLDGWLVDT UNEKYYAGG AGLLDGWLVDTVD RTFCDSMESRNDHSPSDYTTVMLVPEGGDTK\｜DVENLTRM GGLEDKVLCLSKDVPATVIQNYAVEGKDP $\mathcal{Y} L D R D E V R E Q$ ADLLDGWLVDEADAD
RD DSATTDTDVLNF LLLDTACPRFSGETADEAR ARF【THVICDSAVPKSDCA SDVISHVGDTDAPANKLLSHVICDRSVSQSAAAEVTKRH SGYPDII GEYPGGVNKKGLKDQ SGYPDLLVDRNT NNYPGGLPYKWLIRN SDFLDIFVVDESDRVERDTEVVKTNILMKNKEDEKRLAKF KGGGNADLFVSVLANRMLFPFEKTDGKFPYL RENLQED AGLLDGWLVAEEDAAADV
$A \subset A L D H \quad L V D G R V P$

# E $\square K$ KLAGRDNADDTS YRHDRALLCSA DDELGEL <br> ARRVRARVPWVAVRDFSCARHDPSALGACI DEVMNRCRSR GARLVVADLAV PGTHEHDPRKSANTLSRLLSDHSDR 

##  <br> NHNGDK IIKKD IINEEFPLYHNSSKLAKT\|LR $S \square K \square M V R P L Q A D D \square S \quad Y R H D R S L L S Q A I D D L L G E L$



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GEHTLLALD
 G IN QVVVVDSIQDEKSGTIF DPKSLISCLETAMLKKNNR

G I SNVVVVDS $\quad$ HDPKVGVV YDPKSLIQALANDMGR GI SUI GADLGTSTHSVPYYDPEKLVCMLLS FL NVAVIKTPLITHKPEK YDERLVAKALLSLV

 $G V L P V E A T \square Y S R \square N S A G V I H H D P Q K F A L A V R A L L Q E R G S L$
RALGVVEPRRADWNKQDTDRYDTGALGVALHEVVM GIYDVRVVESVGDPKHGDLFNPSSLINTLAGLV GYEPVECGVYSRVARQGFUQHDPRMLAEAVRVLY
 GAEVTYRDI RMQEEGHRRLLHDPDKVAATLLDILAERR G $\square \mathrm{N} V \mathrm{D}$ T TLVSDESEP
GARVVDCDLVSDESEPY $\quad$ DGRLLSQVLLS L GVEVIKTRLISSNAN RYDE LLVNEALLSM GVKVIEAPL VDPENRPFLNADFLLERLLSMV A ARMGADVHFADLRREGLPDHSPDKLAAAYQEVMER ESQGVQLLNYPLISESSLPYYDPLRLAQRLISLA G 1 FFHVSSV
E GA

GLKVIDCPLVTEASSPLIDEHN LTRVLLSL



GVEVI D LP L VQGDGSAG $\square$ DPEK LVPA LMS $\square$
$G V E V V D V P D A R S D D S G Q A D S R K V A E L L V S L A$
RVLPIEATIYSRRRMRQVIHHDPQRFALAVRTLVFAHR

G $\square \mathrm{N} V \mathrm{~V}$ QRD L VTMRS APFYNDDLLLKS LLE $\square$ A
APYTLDRDEFEDAWSRG QHDGEA $\square$ TAS LLK $\square V S A E N$ G $\square \mathrm{NVVQRDLVTMRSAPYY}$
$G \square R C R A V P L L M T D L D A \quad S A R M A R A A L E L A E E V R A$
GI ARVVTVDSTIDEKLGGI YEPKALIGALVEIAMLHSHG



GLDVVDCPLV
GI ELI S TEL $\quad \square T K T Y A P Y F D P Q K \ C Q T L I Q \square L N R$
 VLDVL
AGTA $\downarrow$ R GEFEDAWSRG QHDGDATVAVLLK $\square$ A
$G L R \| D R P L L A D E P G$
$R F D P \square R / V R A / L V / L V$

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1 GPRV 10 20

20 GPRVVMLIAGGTGAARFLRGLLAVQQDLLLIVNTGDDTEV GPRVLFFSGGSALTGMARTLTRYTYHSLHLVTPFDSGGS MRVVALAGGVGGAKLAAGLQEAAGELAVVVNTADDFEL


$M R$
$M ~ K$ 1 TVLSSGG
 G ${ }^{G}$ $M R \cap V V D G G V G G A K F L V G L R$ $M R I V V P A G G U G G A R F L R G L K A A E N Q I T V I G N T G D D I T L$ GPRILFFSGGTALRDASTDLARYTHNSVHLITPFDSGGS MKVAFLSGGTGTPKLIRGFRNHDNDISVIVNTAEDMWII $M K 1 T L L A G G V G G A R F T R G L L H L T A E V T V V A N T G D D M W L$

$\qquad$
I GILS GGTGTPKLI WGMKEIIYDDFFVVVNTAEDVVWV $M K V T V L A G G \square G G A R F L R G L R T H T A D E D A D V V N T G D D D M L$ $K V V V F G G G T G L S N V L A G I K A V F P C T T A I V C V T D D G G A$
 V S

E H P E
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$R-1$
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GPRVLFFS
THNS
$M R\|V V L T G G\| G G A R F L V G V R A Y G A E V T A V V N V G D D V R M$ GLLRIAVLVGGVGGARFLMGVRELGADLTAIVNVGDDVWM

 T K G $|$| 1 | $L$ |
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$\square L A G G I G G A R F L R G L K A A D S T I T V I V G N T G D D D T L$

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

 GPRVLFFSGGSALNGIARRLKRYSYNTMHLITPFDSGGS


$M K V V A L A G G V G G A K M A D G L A R V A E D V T D I V N T G D D F N H$ GLP A I GEPQQES GHEVTAVVNVGDDVWM
 VLALS G GV G GAKLS L G L D RVPGDLHVLANTGDDFEH K RENVI A L S G GVVGGA K L A D G L V Q A V G D L TVVV V N T G D D F N H $M R I V V L A G G D G G A R F L R G L K A A D A D I T V I \quad G N T G D D I H L$

 I TVLSGGTGTPKLLQGIVRVPSEVTVIVNTVENDYF $P R V T L L A G G G V G G A R L A H G F A R A P H A L T V V V N V G D D T E R$ $R \vee V A L C G G V G G A K L A L G L S R L G A D L S L V V N T G D D F E H$ $I L A L S G G V G G A K L A L G L A D R P G E L T I V A N T G D D F D H$ PSLVVFSGGTAFNSVAGHMRQLTTRAAHVLPVSDDGGS
 $1 V A L A G G V G G A K L A Q G L Y R V P D T L T V I V N T A D D F E L$ I TI L S G GTGTP KLLIQ GIVVKLP K D I N I V V N T L E N S Y F
 LTVVLS G GTGT P K LL Q G L K R F S E E L N I I V V T A E D T WI


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T A VLRRY $\square R M P A V G D \square R N R \square L A L A D R D P A W R W F L E F A P S C$
F GRDCP D LDD T VG WGRSEETWNALDS DRRLGGPDWFQLGD



 F G D L D T V M Y T L G G Gl N E D Q G WGRTVET F R V K E E L WF G L G D







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| :---: | :---: |
|  | F DYRNASUGNLTLAGYLDEGRALEPVLJFMMKMVDVRGTVI |
| UniRef90-H5SDD 1 | RDVATASTGNVRTKLREGRSLTDVAVLSRRLGVRARL |
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| Unif | RDLIALHVVRSRALRA GVS |
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| UniRef90-N6XHG3 | GDLATHVERTRRLAA GEPL |
| UniRet90_R9SMV6 |  |
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| UniRef90-UP100034860CE | G |
|  | P |
| UniRef90 | PEWFGDIIATHLVRTRMLNAGYPLSAVVEALCHRWQPGVRL |
| UniRef90- | RDLATH LVRTRMLDAGYSLSDVVRALCERWKPGVRL |
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|  | RDLATH LIRTRMLDAGYPLSAVTAALADRWQPGVTV |
| UniRef90-W4 | A GL |
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LDRAKIQKTLLLRD
KDLATHVV RTARDRE
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RDIATHLVRSQRLRA
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UniRef90-TOAPM7 UniRef90-D1YZW5 UniRef90-X0P2C9 UniRe990K6WZ84 UniRef90-UPIO00255EE29 UniRet90 D9pXN9 UniRef90-F6FU03 UniRef90-UPIO0036AFAOC UniRef90-UP100037DD4A0 UniRef90_E1ZTZ8 UniRef90-UPIOOO3AAA2F2 UniRef90-UP100037D5F2E UniRef90-UPIO0046F04B5 UniRef90-F6D1M4 UniRef90-UPIOOO3752174 niref90 N6UTIO UniRef90_-EXU999
UniRef9O_G2YQH6

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 LPATDDRLETHVVVDEGEIHFQEWWVRYRGNVPTHVFVGA LPATDDRCETHVVIGDPEVHFQEWWVRYRANVETHVTVGA LPMSDMPLDDTNRPDEMYSLTGQSTIAKTSAEVIEVPLD LPAITNNFTHHISVANGEVITGQNSISHPPARIERLWYGN LPASDERSETHVVITDPTIHFQEWWVRYRAKVPTHSFVGA LPMSENDIVASHVLVEDEHIHFQEWWVRHRAALPAESIGAGA LPMSNEDSDIVVVTDEGDMEFHEFVVERGRSEPGVLDVRF LPVTDDRVETHIUATEDPEVHFQEWWVRHRAEPAARVPVGA RATVNEDLHDAAELDDGSFVVGQHEARPLASGDKELWLTL \PMTDDRVETHVVEEDGEVHFQEYWIRLRASVEAQVPVGA LPMSDQSVETHVEHSAGDLIHFEEWWVRYRADVEFVQUGL DPMTEQSVATRVHSDQGELAFQEYFVRCEPKVERDVFEGD RAVVDELHLGVTLADGRRVLGQREVAPLDAADASVFLLFP LPMSDDRVETHVIINDDQVHFQEWWLKLRASVPAELSVGA I PMSDVDSDTVIETDDGQLDFHEFLIEKQCKPTVK DVVY LPMTDDQVETHVVVDDGALHFQEWWI RHRAARPAEVSVGA LPMTDDVETHVVVEEEGRIHFQEWWILYRAALPARQFVGA LPMTDSEVDTIVVLLDGARLHFQEWWTRHRATLAPAAFEN LPTVHEDLHLMAELADGSVIVGQHRDPADASPIRRLAMTR LPMSDERVETHVVISDARAVHFQEWWLRLRAAVPAQAIIP LPMSDQPVETHDEHPAGSLLHFEEWWVRYRAGAAAVQVGLV
 VPIVDDDGHMAATYDNGTKIVGEHLIDEPSPDEAVHM| TK LPMSDQPVETWVETQEGWLPFQEYYVDDWKEHDVNLELEPR LPVTDERVETHVADDAPEVHFQEWWVRYRAEPKAHVPVGA LPMCDEPVATDVETPDGDLAFQDYFVRRRQADEVRRFEGD HPMSNQAVRTTVHSDEGHLPFQHYFVRRQCEPAVTGFLEQ LPMSEYDITSVISTPLGDMHFQDFWVGMHGEPDVSAVRLM LPMSDDRVETHVATEDETVHFQEYWVRLLRASVPAVVPVGA LPMSDEPVETHVVVDDQEIHFQQWWVGMGAGVPARAFIGB LPVTNYTVTDAAELENGERLVGQCEISHPSARISRVFYIN I PMSNQESD RIDTDEGEMGFHEFLVER RSEPEVLDVGF VPVSDYRVRTLVDTPSGRVAFQEYFVRRHHADAEVLHFDGV
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 E S A K P A P G V L E AVMA Q A D A V I L P P S N P V V S V G S V F Q V P Gi R $P G V A P A P G V V E A I$ A A A DVVLLAPSNPVVSIGPILAVPGVR $R$ LPA A GAEAATYI A TA DLI CYPMGSFWTSVVANLLPVGVVG E K A R P A P G V L D A I A E A D A V V L A P S N N P V V S V




 $P G A R M P A E A H R H I \quad S R A G L I$ CFPMGSFYTSVLANLLPQGVG APY VNP K A I AVI K A A DL L V L G P G D L Y T S L L P NIV V A GI K





 D R A R P A PGVVLEAI RTADVVLLPPSNPVVSIGVVLSVVGVR


 D A A R P H P QL V E S L R S P T L TVV I CPSNP FVVSVAPML R L P GV E






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$R A \prod A S T P C P K V F \prod P N T S G D P E L H G Q D V M E Q V R T T L Y T L^{Q}$ ERLR DKKVIAISPVVGEKGPAGKDMRAKGYEVSARGVA E ILRREKVVVSPIIGSRSFSGPAGKFMKALGYEVSSRGIY
 EKLRANRALKLLVANDWVQSGETDKFHVSDLI RAYERNVP
 EALLKTVVGVSP:IGGAPVRGMADACLTAGGVEAVLEAYG
 D AVAGGPAPVVGVSP\IDIDRGMAKCLATDGVEVTAAGVG EAIQN
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 DAV R STAAPPVI AVVRGMAEQCLETVGVTAGGVAESYGARSR

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 E


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| UniRef90＿H5SDD1 | VA RF Y A Gll A D RLL I D ERDI GW |
| UniRef90＿UPIO0046A3FBF | A DLLNLMSNDCPTEGLLNDVLQRGDYPGGVSVPALERL |
| UniRef90－Q1AXF3 | GGLVD GMVVDRADGGERAD VEGLGMEVLVTGTVMRDA |
| UniRef90－D2PMD9 | GGVLDGWLIDTS D |
| UniRef90＿UPI0004708A35 |  |
| UniRef90－Q8PVT6 | QDFLDVFVFDERDRADE |
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| UniRef90－E3JOZ1 | K GLLDGWLVD T |
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| UniRef90＿R9SMV6 | K DFVDKLI I D NEDKDLSSLK【K DIVGDVGVTNTMMKS［L |
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GCKVVRADTLMKTRE
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G $\square E A \square R \square Y G R K N E G E F V R Y D E R G L I Q A \square$

GDKПMLAR【LL
DERGRLA
G $\square$ QVI DCELISEKSTPHपDP

PVKVI DRRLVSDESEGLD DPALLAPELLKपA
GVRHILEVD SYTDDCGRANFDPAALVSRVEIL
ADRVRVARETLAFA AADHHP


GVT IIDRPLI DDGASAHAPKLVAQADFE【AAR

ПDQVHHAKSKSDTLKRSLDRHHPDKLAKKL!SLL GVDLLDAPVVRPLLDGAQARHDADAVADLLLGMAR
 G $\square V \mathrm{HVVTKTVMQDYD} \mathrm{DRMNLAETLEFCQKLM}$

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EDREHLAREVLRFAD
QDKVGLARRVLAFAR
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$\mathcal{V} L R \vee V$
G\|RVYGRRSESGREGQGVILKNP

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UniRef90-U1NLE3 UniRef90-B0R5L0 UniRef90-W4JXS9 UniRef90-A3CXG7
UniRef90_D8JAR8 ITVLS GGTGTPKLLQGLKKVVDNLAVVVNTGEDTWL
 $M R \square T V L S G G V G G A R F T R G L L R L L A R V T V V A N T G D D D W D L$
 IG E GTGG E HEEITALVVNTGD DVWM




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VLASGRAPADHEVTAVVNVGDDAWM GRRF LA $\square$ S G GVG GA KLA LGGLYHAPE DLCDI ANIGGDDFE H
 VLA E GL P P S E H E V TABVVNVGD D A WM GPRIVVLA G GVGGSKFVVGVREAAAEVTVIVNTGDDCWLL P T V L A $\operatorname{l}$ $M R I T V L A G G V G G A R F L R G L R H H T A K D T A V V N T G D D M W L$ $K I T V L A A G G V G G G K F V E G V R E E C A R R I T V I V N T G B D D V W L$




VTF $\quad$ A GGTGTPKLLAGTEAPHSVTAIVNVGDDSYM

 SVC YIL GVS DNGGS H QV T AVVNTGDDTWM HEVLTAVVNVGD DAWM
$R \square A A L S G G D G G A K F V H G L A M A A P N L S V I V N T A D D F S D$ $V T F L A G G T G T P K L L D G A S A V P A D T T V V G N T G D D V E L$


HE LTAVVN $\square$ GDDA WM
LA GGVGGARFALGLREAAA D\R IVANVGDDMWL $V T F L S G G T G T P K L L S G A D A V F A E T T V V A N T G D D V E L$

 $M K V C I L S G G T G A P K L I Q G L K E I E E D I S V I V N T G E D$
$H E V T A V V N V G D D A W M$
 A R GVT D TASALTVVVNTGD DLWL VVGLGGGVGASRFWRALLNEPSELTVVVNTADSGGS HEVTAVVNVGDDAWM KPK G IVVFS GGSAANNLVDVFKNVAERLSYVIMPIGDNGGS $L L G L G Q Y G T D A T A V V N V G D D A W M$
 $V$ T F LA G GT GTP K L L D GA A RVVPA ETAVVVAN TGDDDVEL L E G GSAF GELSSSALANSSKSVDYVVPVTDNGGS
 IVI S G GS G GNAMANSFPR ARTSYVLPVSDDGGS $V T F L A G G T G T P K L L D G A A E V P A E T T V V A N T G D D V E L$ $M K V T V L S G G T G T P K L I Q G L K N H E E D \square S V I V N T G E D T W$

$M S V L A L A G G \nabla G G A K L A N G \square A G D P G A L T \Pi A V N T G D D G L H$ $L T L L A G G T G T P K L L A G A R R D P D E L T V V G N T G D D V E L$ $M T V L A G G V G G A R L A H G L D L A G A D L T V V V N V A D D V E L C D$
 SLSGGTGTPK N



QPRIAVLVGGVGGARFLQGVREDNADVTALVNVGDDVWM
VT F LA G GT GTPK LLA GARD DFDN TFGA G GT GTPKLLAGARRVPAETTVVGNTGDDVALL III S GGTGCNAI CAAFSQAC YVLPVSDDGGS



HGDLDTCMYTLGDGDTERGWGRRGETWHAKEELAAYGADP LGLICPDFDTLQGWGRRDETWTFMQVLRQIGDDAWFLLGD LGLHIPDDDTMTGWGVEGETWSCDDALSELGGPDWFRLGD H GDLDTCMYTLGDGDDTDRGWGRRGETWHAKEEDWFGLGD SGRLQPDVDLAGVNDTARGWGRAGESERVATELQAWGAGW HGLHVDTMMYTLSGLSNQETGWGVAGDTFFGVDTWFNLGD
 A GRLMPDFDLAGVNDTERGWGRAGETERVAAELREWGVGW


 H GL HV TVMYT LGG GVEES Q GWGRRDDTNVVAEPQWFTLGD HGDLDTCMYTLGGGDPDRGWGHRNETWNAMEELAAYGADP $G G L L V P D V D T C A G G I L D T D T W W G D A E D S A E T H E Y R W R R F S$
 TS ELLRVVLGGPS DGDDRS RLT RLIDNDEWAMIVEGRHRHK H H G DL D T C M Y T L G G GI D E E R G WG R A G E S WAVVGELAA Y G A P P





FGDLD T CMYT LGGADPERGWGHRNETWHAKEEDAAY GV
 $A G K V C P D L D L A G V G D T E R G W G R A G E S E R V A A E L A A Y G V G W$ $G G L L V T V L Y D R G G V L D R E R W W A V A D D T T A T H D E L Q E R V G E$
 HGDLD T CMYTLGGGDTERGWGHKNETWNAKEELAKYGADP GGHLVDVLDRETWWGIDGDTTATHEEQTAGREIARWRRFS TMVGDLYLSPDVDTVLYTLSNQ FGDDDTCMYTLGGGDPERGWGHRNETWNAKEEDAAYGVQP $H G G L V P D L V T F W L A D R D D E R G W G L K D D T F L V M D A L R E L G D$ LGDLDTVMYTLA GWGRKDETWNMLSADSDMEGETWFQLGD S G R L Q P DVVDLA GVNDTERGWGRQGDTERVNHEDLQEWGAGW
 $H G L R V G R Q D L E R G W G V Q G E S W R V M D A V R S L G G D P W F H L G D$





 $G G H L V P D V D T V G G G V L D T D R W W G I A D D T T E T D D E L H R L A D$

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

 $G G H L$
$L G L L I$
$L$


$S G H \square V P D V D T V L F G L L D T E R W W G \square Q N D S \square E T H E M R W R R F S$ GGLLVGVLDRETWWDYLT DLAAAAD DDPDARWRRFSAASE SSE\|I RVLGGPS $\quad$ GGDI R S ALLWVGIPNDRFENEVLRRAHKN


## UniRef90_C5TAX6 UniRet90-M3BAF9 UniRef90-M6ZZW9 UniRef90 A0A011UTT UniRef90-C7P5P1 UniRef90-D5VRP2 UniRef90-HoR705 UniRef90-UPI0002E6F370 UniRef90-D6GVK2

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UniRef90-V4Y2G9 UniRef90-W5TNZ3 UniRef90-F2UHS2 UniRef90-U1NLE3 | UniRef90-BORLLO |
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| UniRef90 | UniRef90-A3CXG7

UniRef90_D8JAR8

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UniRef90_D8JAR8

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130
140
150
160
APMTNEP|V|RTMVHTADGELGFQDYFVRRQCAPEVLRYAGA










 L P A T D D R H E T H V E D E K V A I H F F Q E WWV R H R A Q I P T H G F V G S

 L P M T D T E V D TH HV F TA Q G RMMF QE WWT R HRA T L PA Q G F DA P $V$ V M S N D P V K T V L S T D E GE LP M Q R Y F V G R R P K V F E V R Y V


 L P M S D D P VA TMM $\backslash$ TP GG VMHFQEFWV A H G GEPVDVEFRGA I P M S N Q Q S H DT I T T N L G EMEF H Q F LVVEN Q GK P E V R K I S Y



## L

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LP A T D D R C E T H V V V V T D P A I H F Q E WWVVR H R A H V P TA H A F V GA










 VPMSDDPVASV1VADDGEMHFQEFWVARPAVTEVEFRGA




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

 H P A A A T A L D M P T V VF P D P N $\quad$ D K F T K









## UniRef90 C5TAX6 UniRet90-M3BAF9 UniRef90-M6ZZW9 UniRef90 A0A011U7T2 UniRef90-C7P5P1 UniRef90-D5VRP2 UniRef90-HoR705 UniRef90-UPI0002E6F370 UniRef90-D6GVK2 UniRef90_UPIO00463239F UniRef90-UPIOOO35DDBOA UniRef90 A6WES5 <br> UniRef90-F4BZA6 <br> UniRef90-UPIO0037CD614 UniRef90_W7SN12 <br> UniRef90-101228 <br> UniRef90-F4CTC0 <br> UniRet90-M4BZ43 <br> UniRef90-V8CSQ8 <br> UniRef90-D5QEF3 <br> UniRef90-UPIO0037FD070 <br> UniRef90_UPIO003680EF0 <br> UniRef90-T5KBD3 <br> UniRef90-UPIO0037E343B <br> UniRef90-L9XTR1 <br> UniRef90-A0A024H7M6 <br> UniRef90-UPIOOO3B7A0C2 <br> UniRef90-LOAEUS <br> UniRef90-KOKTS7 <br> UniRef90-MOMD16 UniRef90 K2RCR9

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UniRef90 C5TAX6 UniRef90-M3BAF9 UniRef90-M6ZZW9 UniRef90-A0A011U7T2 UniRef90 C7P5P1 UniRef90-D5VRP2 UniRef90-H0R705 UniRef90 UPI0002E6F370 UniRef90-D6GVK2 UniRef90_UPI000463239F UniRef90_UPI00035DDB0A UniRef90 A6WES5 UniRef90-F4BZA6 UniRef90_UPIO0037CD614 UniRef90 W7SNI2 UniRef90-101228 UniRef90-F4CTC0 UniRef90-M4BZ43 UniRef90 V8CSQ8 UniRef90-D5QEF3 UniRef90_UPI00037FD070 UniRef90-UPIO003680EF0 UniRef90- T5KBD3 UniRef90-UPI00037E343B UniRef90_L9XTR1 UniRef90 A0A024H7M6 UniRef90_UPI0003B7A0C2 UniRef90-LOAEU5 UniRef90 KOKTS7 UniRef90-M0MD16 UniRef90-K2RCR9 UniRef90_UPI00047AE374 UniRef90 UPI0004797AFC UniRef90- F7PP34 UniRef90-19BR31 UniRef90-S2J165 UniRef90 UPIO0040A36C5 UniRef90-W9BLR6 UniRef90-I4EGC3 UniRef90- J3JFF3 UniRef90-V9VQT1 UniRef90-H5SVY2 UniRef90_UPI0001FFFOBF UniRef90 Q5ZDY0 UniRef90_K5BHA1 UniRef90-J6CVX9 UniRef90-U1MP06 UniRef90- MOLZM7 UniRef90-FOT6L5 UniRef90-D5UW07 UniRef90 M0EC96 UniRef90-A6UV80 UniRef90_UPIO00464F9FA UniRef90 UPI00047BD710 UniRef90 ${ }^{\text {K6GIZ2 }}$ UniRef90_UPI0002D8D024 UniRef90-B8KXS6 UniRef90 UPIO00362486C UniRef90-V5X841 UniRef90-R1GAF6 UniRef90_A4TF82 UniRef90_L8TQG6 UniRef90_C9SZ37 UniRef90-M0EJX7 UniRef90-L1K3T2 UniRef90- F8A087 UniRef90_M0P8V3 UniRef90 G4TDL3 UniRef90 I3R7F8 UniRef90-UPIO0037
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SPLIDACVLD ${ }^{250}$ D D
260
D S Q G L
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N

| $K$ |  |  |
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A GLI DGWLI
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 A GILDGWLVDTGD
$G G L L D G W L V A E G D$
ALLVD 1 F VVD
VARIYAGLVDVMVIDER DAHLAGPV ADLD
SRKADGVL
D DVLDGFVLDREDEAAAPHMR
GGLLDGWLVHTGD
ANVVDYVI ANNAFPPEDVLVPY $\quad$ EERGEELLLPTPE $\square$ AARE A G I LDGWL DD TAD DP
ADFVDLFVLDETD
$R D L V T A F I V D E T D S D E V A C \square R$
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RDICDVFVMDNED
YPFADAFVIDENDNTE
GGILDAWLIDSAD A GLSRS $\square$ A GAGVRPVVV
ARLLDAWLVVDETDASA YS ITSDAVKLNYTD\|ITHLMFMENPE UKVRQDD\|EAV EPFADAFVVDERDPTE
KDFMDKFI I D
AGLLDGWLI
EPFVDAFVLDEADRTD
A GLADGLVID
EQLIDA

## EADAADAAT $\square A \square \square$ THVTRT $\square M R S H$ RRKYYDTHAEEDPM AGSLRQH

A GULDGWLIDRGD
RDFLTGMVIDEQD
DPFADAFVLDDGDGTE
ERY AAG 1 AQTLVIDHQDEG $\square$ G DD RAF
A LGYDVSPVSDAEMYRDVASTLVIHESDRADMD EUKAK G GLLD GWLV H S GD
$R G Y P D K S L K N \quad \square P K D Y V N A L L V P K G G Q \square P \square D \square K N L S S K$ A G L D G WL $\square H E G D H A E$

EPFCDAFVLDDGDDTP
KFIIDGVDVD
AGULDGWLVAEED
YPFADAFVLDDGDPTA $\square D R H V E R T D T R \square D D A D D A E R V A R A$
A GlLDGWLVHEGDAAD
DGLLDGLLTDEE
KFYNNYIV IDSSDVSE
PERLDAVWVADTLPA QS $\square$ MDVEKT $\square$ A AF GVE $\square$
AG $\square L D G W L I D Q G D$
ESRARG GADADTPFEYRKYVTHGAGTPVVDRAELAAL A GlLD GWLIHEGDHAD
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KDVDTMUIDN
AGFDDGFVIDR
DGVLDGWLVDE
RQGPDRALPNAA ADYVTHLLYPAGGTVHVNEQRLGAL
$D G L I D G L M V D S A D A A G L A D D G L A V R S A D I L M R N V D Q Q R A L L$
DPFVDGFVLDSDDDTTLDRPVVRTDTEIDGPVDSERVFEA
VARLYVGLVDVMVIDDHD AHLADAVRAL
ADFLDGWLVDEDDP
EDILDVFIMDETDNTDE
QSRGNSWN $\square$ HTHAPDKDVYRKYH LINGEGTPQVDRQQLAS L
ADFLDGWLVDPADAS
A G $!L D G W L I H S T D$
SSRHNAAKQDDAALVSQFVTHVLY $\square T$ TSEVPMDGGRLEEL
D DFADAFVLDTADSTD $\square D R P V V R T D T S Q D T E A D A E R V A R A$ A RVEPYGLGHAATPVSAFDTHLVYDRGTSVEVD\QRVTELA
GEIVDVFVQD $\quad$ HDPDD

UniRef90 C5TAX6 UniRef90-M3BAF9 UniRef90-M6ZZW9 UniRef90-A0A011U7T2 UniRef90 C7P5P1 UniRef90-D5VRP2 UniRef90_H0R705 UniRef90 UPI0002E6F370 UniRef90 D6GVK2 UniRef90_UPIO00463239F UniRef90-UPI00035DDB0A UniRef90 A6WES5
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UniRef90_J6CVX9
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UniRef90_D8JAR8

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

## $G \square K V H A T D \| L M R D P P G$

PCKV LIT NTIMKT LDDKV
GCEVYTTNGLMKSLE

K G DF $\square$ NEK $\square$ P YE
HDPDK $\square \mathrm{L}$ P T $\square \mathrm{KR}$ R $\square \mathrm{N}$
AERLARELVGFAPTLGTR
RLAKNI I EFC
DK $\square R$ LAKE L L EL
$R E R \square A R E L L A L A$



A DKRQ $\square$ A D A V $D \mathrm{DFANT}$
GH SQNNFYRRPVDHGFRH

G $\square$ F H V VSV

CERALAAVE ADAPDAGPPRGDAE
$\mathrm{G} \square \mathrm{E}$
$G \square D V L R V Y G M K T D Q Y G G \quad R Y D P K A \square M Q T \square E A \square I G R A D K R$

GCPVVRTDTR】DGPK
DAERVARAVDGALAEVM
$G V A H V V A V P S V G D G K E G G R V Y D P A A L A A A D Q G \square A R$ A AQMI
VEEVLARV
GMDVVVTDTVMGGAPG
RERLAREVLR

G $\square \mathrm{DCL} \quad \mathrm{K} \square \mathrm{Y}$ GRKS DKGVMLYDPQALDGA $\square \mathrm{EA} \mathrm{A} \mathrm{V}$

RTRALVSA $1 \mathrm{~L} D \| L$
CRDALVA


UniRef90 C5TAX6
UniRef90- М3BAF9
UniRef90-M6ZZW9
UniRef90-A0A011U7T2
UniRef90_C7P5P1
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SRRN

LD R S
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UniRef90_J3NHG2
$\overline{V V}$
10
20
30
40
$N$ V I I N G GRGASAT I PA L L R Q GLDHV T S V V NAYD D G K S GMRIVVLTGGGGGARFLLGVRAYGAEVTAVVNVGDDLYL $G K H V L A L S G G V G G A K L A A G L A A V P E D L D V V V N T G D D F E H$
$V$ TF LA G GTGTPKLLAGADDVPAATTVVANTGDDDE L
 $M Q \square T V L S G G V G G A R F V R G L V H A D H R V T V V G N T G D D I T L$
 PK GlVVFF G GSATNNLVDVFSTVRSSLSYIIPISNNGGS T I V V T GDDFEH
V T F LA G GT GTPK LLQ GAPAVPAATTVI ANTGD DVEV IT TLA G GS G SVKLVVRGFASHRTDDNVI TNVGDNYWL RIAVI S G GVGAARFLRAVISAPERIDAVVNTGDDTVL LILAGGI GAAKFIKGLANIPALLKIVINTGDDDEL
 $P S L L V F S G G T A F N G V V E E L K R L T T R V A H V L P V S D D G G S$ $R V A M F S G G R G G A A I A R E L L R T P \square R L A L L I N G Y D N G M S$
$M Q \prod T V L A G G \nabla G G A R F T R G L L D A P P A V T V V G N T G D D \prod T L$ $M R I V V L T G G I G G A R F L L G V R A Y G A E V T A V V N V G D D L R L$
 GLPADGEPEQDSPHEIS AIVNI A D DVWM ARFLQGVRNLDHEETALVVNVGDDVWM
 $I V \vee F S G G S A A N N L V D V F E S V S T S L S Y V I P I S D N G G S$
$\square L A L A G G \square G G A K \square A A G L A A D P Q E L A \square V V N T G D D F E H$
$\square T \square I S G G K Y S L R L I S G L R S F D N E \square A V I S N T S D S F K M$ KRNNIVVFSGGSAANTLVDVFREKGCTLSYIIP ISDNGGS

> ARFLQGLKTWAHEDTAVVNVGDDVWM ARFLQGVRELDAEVSAIVNVGDDVWM
ARFLE GVRSLEHDIT AIVNVGDDVWM
$M N I V V F S G G T A T N S L T P C F T E V S V D L A Y I L D L S D N G G S$


## $M N V V V C S G G T A T N S L T P C F S N \square G H E L T Y \square L D S D N G G S$



PPSLLVFSGGTAFNGVVEELKKVTTRVAHVLPVSDDGGS KKTGITTVFSGGTAANSLVDVFEKKNCQLNYIIPI SDNGGS
 SIVVVSGGSAANSLVDVFKQVGSPISYIIGISDNGGS $\square T F L S G G T G T L A L I R$ GSRQHDSDLAVVASTAGDSWV

G S P $\square \mathrm{S}$ Y $\square \mathrm{IG}$ GS D N G G S
GSSLLVFSGGTAMNGDCDADRDYTTSVTHVLPVSDDGGS TLLAGGTGTPKLLAGANAQPAELTDVGNTGDDDEL VLVIS GGSGYNDLVGA TPGATYVMPISDNGGS $M D F V V F S G G T A C N H I L K A F H K \square S N N V N Y V L G I S D N G G S$
$R V C V F C G G H G G T S L V R E L A K R P D H T T L L V N G Y D N G L S$
 $M N L V V L S G G T A S N S M T D C L A K L S Q D L T Y I L P I S D N G G S$ IVVVVGGSAANNLVDVFNAVRDSLSYII PI SDNGGS
PSFVIVSGGTGCNAICSAFNDSNACYVLPVVSDDGGS

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

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UniRef90_UPIO0024885CA
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UniRef90_A1CBK9
UniRef90_L8DM53
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UniRef90- W3XDW7 UniRef90-W7HWN9 UniRef90-I7J8R4 UniRef90-G0RJ09 UniRef90_D5G5V9 UniRef90_S8BIT7 UniRef90-W9Y3I3 UniRef90-K8ELA2
UniRef90 U1P7N1 UniRef90-E6ZXZ6 UniRef90-I1BKV0 UniRef90-U4LSD4 UniRef90_F2QPI9 UniRef90-G7WLL8 UniRef90_Q5BHE1 UniRef90_S3Y2G5 UniRef90-X8JNJO UniRef90-C9CUK7 UniRef90-W0VQH2 UniRef90_S8B0Z8 UniRef90_UPIOOO440E412 UniRef90_GOSE84 UniRef90-G9PIN9 UniRef90_X1KXX1 E412

 TGEI RRFFGMVGPSDIRKVQEDMLPEDDVDYGVFGYRFPA HGDLDSVMYTLGGGDPERGWGRVDETWTVKSELAAYGAEP GGHLVTVLFLDGEVLDRETWWG\ADDQTAGRD\ARWRRFS
 FGDLDSLLYTLGGAVDEGQGWGREEDSRRVMDELWFGLGD
 L G L HV TVMYT DA GLLNNRQQGWGLAGESWALGGATWFQLGD A GHLVGVLDTDRWWGDENDTTNTADAQTSGRQDSQWRRFS
 FGLLKMCPD CDDIITYTLANIVDKEKGWGFFEWFNAGD
 TAEVVRVIGGPAVGDIRSRCLRLSDQSSAVRKLLGHRDPS VGDLDTLLYTLGGSVDEAQGWGRAGESTRVSEELWFTLGD


 TSEI I RVF G GPGIGDVRSRLVRLIPDDTA\|KHLFNHRLPK
$\square G D \square D T V T Y T \square A G \square A N R E \square G W G \square A G E S W A \square G G E S W F R \square G D$ $S G G \square I D N L L F L F S G \square L N T N T W T G D A G D T Y S T N K F L E R H P E$ SSELIRVLGGPGDGDVRSRLVRLIPEDAAMKTFFNHRSSF
$H$ G DLD T CMY T L G G GDT D R G WGR DAE T WNARDELAA Y GAD P H G DLDTCMYTLGGGDDTERGWGRVGETWHAKEELWFGLGD




H G D LD T CMY T L G G G $\square$ DTVRRGWGHAGESWNAKEEGAY GAK P S S El I RVF G GPG I G DVR SRLVVRLIPNDRADKHFFNHRLPK
 S P D I D T L

TSE $\square L R \square V G G P A \square G D \square R S R \square V R L L Q D E Q L V K \quad L F A Y R L P N$


 HGDLDTCMYT LGGGADPERGWGHRGETWNAMEELAAYGAQP

T A E V VRVLGGPAVGD R R S R CLRRLSDESTLVRRLLGHRLPL S S E L I R FIIG G P S V G D I R S R L V V R L I P N P S A L K A L F E Y R L P G

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

 G GLIV GVLDTDRWWGID GDLVRLADRQTTGRKLARWRRFS


M $\square$ D R R R WWG $\square$ E G D T F R T HNF $\square$ K S $\square$ GR
$T G L L R G L V G M L G P S D F R K N L T H H L D R D A A L L G L M E F R M P M$



UniRef90 A7NR16 UniRef90-UP100037027F5 UniRef90_C4RPZ1 UniRef90-J2PMD9 UniRef90_Q5V5R9 UniRef90-K5XBY6 UniRef90-11C1B0 UniRef90 UPI0003B48C5B UniRef90_A3Y719 UniRef90 ${ }^{-A 4 \times 3 H 1}$ UniRef90-C1GE19
UniRef90 O5NW70 UniRef90-U1NEQ7 UniRef90-B3T2R7 UniRef90-M5APR5 UniRef90 ${ }^{-1 H 1 H 4 N 3}$ UniRef90-D6U5X8 UniRef90_N1PZ78 UniRef90 M1S179 UniRef90-UPIO003ACDEB8 UniRef90-A5DAQ9 UniRef90-UP1000255ECD2 UniRef90-F4F5H9 UniRef90-G8SL92 UniRef90-UPI0003644E34 UniRef90-F5Z210 UniRef90 E4WK88 UniRef90-A0A017SB26 UniRef90_J5JNE1 UniRef90 G2QSY3 UniRef90-UPIo0024885CA UniRef90-A3LWH6 UniRef90-H1Z457 UniRef90 L8G513 UniRef90-A1CBK9 UniRef90_L8DM53 UniRet90 Q5YQR9 UniRef90-M2LTSO UniRef90-UPI0000D882DF UniRef90-A0A022LRF6 UniRef90-R7WJC6 UniReffo-T1VM73 UniRef90 BOY1H1
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UniRef90 G1WYY UniRef90 $16 Z \mathrm{ZO} 08$ UniRef90-G9NCB1 UniRef90-B8M1N0 UniRet90 W5CR41 UniRef90-G4UDU5
UniRef90 W3XDW UniRef90-W7HWN9 UniRef90-17J8R4 UniRef90_GORJO9 UniRef90_D5G5V9 UniRef90-S8BIT7 UniRef90-W9Y313 UniRef90-K8ELA2 UniRef90-E6ZXZ6 UniRef90--118KV0 UniRef90-U4LSD4 UniRef90-G2019 UniRef90-Q5BHE1 UniRef90 S3Y2G5 UniRef90-X8JNJO UniRef90-C9CUK7 UniRef90_WOVQH2 UniRef90 s8B0Z8 UniRef90_UPIOOO440E412 UniRef90-G0SE84 UniRef90-G9PIN9 UniRef90-X1KXX1
UniRef90_J3NHG2

QDLATHLARTRWLAQ GRTLSEVTASLAQRWGLPVRL KDLATH VRTQMLDAGYPLHEVTEALATRWQPGIR KDTATHLVRTTMLTAALDGYPLSQVTAALCERWQPGITM RDLIATH LVRTRMLRAGYTLSDVTAALCDRWRPGVRL
 DWFDRDIATHLIRSQMLRVGYPLSAVTEALCKRWQPGVSLV



YYETGDRERGLARAEMDSLGLKMTEDTGEFCQDLGTTATT FNFQSAAVGNLFLTGARLFTGSFESADYLLGSDTGVPSNV
DWFDRDपATHLIRSRMLRTGFPLSAVTEALCNRWQPGVRL RDLATH LIRTEMLRAGYPLSAVTEALCNRWQPGVKL SYFSGASDGNLFLTGARLFTGSLEAADYLSSDCADPPTVV AADAAHNEWNLFLTGARLFTGSFESAIYLLGSICSVPARV KDDATH LVRTQMLGAGYRLTDITEALCTRWSPGVRL DWFDRDTATHLI RTRMLRTGYSLSDVTAALCVRWQPGVAL DWFDRDIATHLIRSQMLRTGYPLSAITEALCNRWNPGVALV DKVKAKMEWNLFLTGARLFMGSLDASUELMMRUCSSKVHV
DWFDRDTATHLTRSQMLRTGYPLSAVTEALCNRWQPGVTL FDYSGASIGNLFLTGARLFTGSFEAAIYYLSSICSVPDRV FDFSGSSLGNLFLTGARLFTGSFEAAIYLLSSICAVPDRV A ADAA HDEWNLFLTGARLFSGSFESAIYLLGSUCSVPVRVV LRQRAHCLGNLLLVAA VYQQVSPPALAFLADMLGLPEAV

DK $\square$ QAKKE WNE $\square$ VEGSHP $\square \mathrm{WGS} \square \mathrm{DAS} \square \mathrm{E} \square \mathrm{MmR} \square \mathrm{CSPQVHV}$

FDFTSASVGNLFDTGARLFSGSFESATYLLGSTCGVPVRV DPFAKASLGNLFLTGARLFTGSLESSIYLLSTI CSVPSTV SAEAARHEWNLIVEGTHQNWGSLESAIFLFRSICGVPTHV

DCFTNGSTGNFFFAGARTFFQSLDAATFLESRVSQTPAEV DNFAEASUGNMFDTGARIFSGSFESAMYLGMICSUPPNV EADVARLEWNLFITGCRLFFGSVDSAIFLFRSICGUPTHV RARAVQIA RNLLRRGMT

LTEAVQAQCRALSUGATV
SAETARHEWN LIIEGTHDFFGS $\square$ ESA $\square$ F $\square$ FRS $\square$ CG $\square$ PTHV
GDFVNGSTGNFFFAGARMFFRSMEAADFLYARVSKDPREV AVGEFMTLGHTTRTSLLDEGRSLTEVTATLADALGVDLTL HAPSRKQEWMDILKGRHALWRGI EEVLRRAHRHFNFRGKV FNFCHGS\|GNFLLTGARLFTGSLEAALFLFASDTGVPGLV

RE $\square \mathrm{D} \square \mathrm{DRS} \square \mathrm{H} \square \mathrm{FRSELLREG} \mathrm{\square S} \square \mathrm{SEATAR} \mathrm{\square CRADK} \mathrm{\nabla AGK} \mathrm{\nabla}$

## GDLTAHILPNLVIAGLYLRपGGFNEATAVLGEAVGSP\|EV

 FCFRNGSLGNYFLAAAQGFFRSLPSAIFLFSSDTHSQAHV RDFGLHDYRTQRRAMGKGDRPSDUADVARAFGVSAED DNDKAKEEWNFFLTGARLFGGSDDATVEDLMRDCSPHCH FDFTSASVGNLFLTGARLFSGSFESAIYLLGSUCGVQVRV FSFVNGSUGNYFLAASQGFFRSLPSAMEGLESSUCSSQANV EVLKAREEWNMFLTGARLFTGSFESADYLLSMICSDPPSV


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UniRef90 UniRef90-B8M1N0 UniRef90_W5CR41 UniRef90-G4UDU5
UniRef90-W3XDW7 UniRef90-W7HWN9 UniRef90_17J8R4 UniRef90_G0RJ09 UniRef90_D5G5V9 UniRef90-S8BIT7
UniRef90 W9Y3I3 UniRef90-K8ELA2 UniRef90 U1P7N1 UniRef90_E6ZXZ6 UniRef90-I1BKV0 UniRef90_U4LSD4 UniRef90_F2QP19
UniRef90_G7WLL8 UniRef90_Q5BHE1 UniRef90 S3Y2G5 UniRef90_X8JNJ0 UniRef90-C9CUK7 UniRef90_W0VQH2 UniRef90_S8B0Z8 UniRef90_UPIO00440E412 UniRef90_GOSE84 UniRef90_G9PIN9 UniRef90_X1KXX1 UniRef90_J3NHG2

UniRef90 A7NR16 UniRef90_UPI00037027F5 UniRef90_C4RPZ1 UniRef90 J2PMD9 UniRef90_Q5V5R9 UniRef90_K5XBY6 UniRef90_I1C1B0 UniRef90 UPI0003B48C5B UniRef90 A3Y719 UniRef90_-A4X3H1 UniRef90_C1GEI9 UniRef90_Q5NW70 UniRef90_U1NEQ7
UniRef90_B3T2R7 UniRef90 M5APR5 UniRef90 X1H4N3 UniRef90_D6U5X8 UniRef90_N1PZ78 UniRef90 M1S17S UniRef90_UPI0003ACDEB8 UniRef90_A5DAQ9 UniRef90_UPI000255ECD2 UniRef90 F4F5H9 UniRef90-G8SL92 UniRef90_UPI0003644E34 UniRef90 F5Z210 UniRef90-E4WK88 UniRef90-A0A017SB26 UniRef90_J5JNE1 UniRef90 G2QSY3 UniRef90_UPI00024885CA UniRef90_A3LWH6 UniRef90 H1Z457
UniRef90 ${ }^{-}$L8G5I3 UniRef90_A1CBK9 UniRef90_L8DM53 UniRef90 Q5YQR9 UniRef90_M2LTS0 UniRef90_UPI0000D882DF UniRef90 A0A022LRF6 UniRef90_R7WJC6 UniRef90_T1VM73 UniRef90 B0Y1H1 UniRef90 G0VHE5 UniRef90_A0A022U2E6 UniRef90-C1B1C6 UniRef90- S0DY92 UniRef90 G9P6Z1 UniRef90_C4JRA3 UniRef90_S6HF67 UniRef90 D6Z268 UniRef90-I2G2C0 UniRef90-K1X3X5 UniRef90_W9XNE4 UniRef90 J8PIG2 UniRef90_B8NKX0 UniRef90_C5FQW7 UniRef90 G7XWV4 UniRef90-C5GL86 UniRef90_V5G2V0 UniRef90_M7SYT6 UniRef90_G1WYY5 UniRef90_I6ZG08 UniRef90_G9NCB1 UniRef90 B8M1N0 UniRef90_W5CR41 UniRef90-G4UDU5
UniRef90-W3XDW7 UniRef90 ${ }^{-}$W7HWNo UniRef90-17J8R4 UniRef90_G0RJ09 UniRef90 D5G5V9 UniRef90 S8BIT7 UniRef90_W9Y3I3 UniRef90_K8ELA2 UniRef90 U1P7N UniRef90_E6ZXZ6 UniRef90_-11BKV0 UniRef90_U4LSD4 UniRef90 F2QPI9 UniRef90_G7WLL8 UniRef90_Q5BHE1 UniRef90 S3Y2G5 UniRef90-X8JNJ0 UniRef90_C9CUK7 UniRef90_W0VQH2 UniRef90 S8B0Z8 UniRef90_UPIO00440E412 UniRef90_G0SE84 UniRef90 G9PIN9 UniRef90_X1KXX1 UniRef90_J3NHG2


 R A L H E T TV
D TI A R S K SLRRAKVLLLNS QDRETDGYSAVDYVNTVVRTLN

 A A $\square$ MQS DARKVAISSPGTVKGPADKMMASAGVDEVAQLYQ
DALYSS QA $\quad$ I Y S $I G S L G S \square D R E T G P Y T A D D F V E A \square V R A G G$ $E L L R R R R A P V V A V S P F \square G \quad G Q A \square K G P A A K \square M H E L L A S F Y$ S ALETTPV
$D L L A S R R V A\|S P\| V G G A A L K G P A D R M$
E SLKNVK Q KVI
 AKS S S G LGTLDRETGPYAMDFVAAVNAC
 RAI A A A KNKKKILLLLNGSHDRETFGMSATD FVVEDVVKAT E ALRGTRAPVVGVSPLL GGRPVRGHADACLQPLG DAVANGPAPVVGVSP\|IPVRGMADRCLAVVGVECSAAGVG
A A L R S T SAPVVPVVGGRAVRGMAEACLKAVGVDAVGEHYG A ALRSTPAPVVGYSPIIDGK PDRGMGLESSSHAVGQHYG GAL R T T K A KIV G G L S PVI D GKPLRGMADECDAEAI GRHYG


 RAI A S S DRKKRVLLLNGCLDRETFGMTATNFIKEIAESAA T ALLK S A KV
 GALRTTGA QVVGLSPVV DGKPLRGMGVETTAQAVGRHYG GALRTTRAKVIGVSGVIDGKPLRGMGVETTAEAVGRHYG
EA AR S S QA I IYS IG S LGS LD RETGPFAAS DFVEA LVRAGG A ALRSTSAPVVGVSPVIVLDRGMADACLTADGVEAVARHFG GALRTT TAKVI GI SPIV GGRGMADDCGVETTAEAVGNHYG $G A L R T T A A K V V P V 1 G G K P L R G M A D E C G V E T T S E A I G R H Y G$
$R S \prod A S G P A R K D L I L N D R E T G P T Q P L S A S E F V E A D V R A A E$ GALRTT TAKVVVGISPIVPLRGMADECLDVIGVETSAEADG

 QAIVASRAYKVAVSPIDA GKTVKGPADKMLRALVAQCY A AI R Q N R A MKVLLANLWVQA GETDRYHVVDLLRAYDRNIP TSI ATSSTLRYKVLLLSVQDRETRGMDAVDFVQAIRRSLD S S I A S T N A K Y K I L L L N G S LDP R E T R D F T A R R D F V A A

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-\sin -6
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QA VITSPARHK LI L N GS LD RETEPFTAVNFVEADT RAGE RS I A S GPARHK LL L L G SLLDRE T QP LTASEFVEA IARAA G

 EAI A S P H $\square R$ NKIL VLDNGTTDRETGPFSGLDFVATIANACA KAlAMSPARHK】LILNGSLDRETGPFTAVDFVEA\|VKAGE

DLL




N A IA Q S Q T LK HK IF L L G S Q D RE TH GY S A L D F I G A IT H A L H QAI K GCPSHTPKI LLLGGHDRETASTMGTSFVKAIVRAIT QA LS KKRGNKVLLLNGSYDRETFTMTALDFVKHUVHAL DLL R R R R S R VIAAI SPDLV D GRPVS GPAAKFMRA QAIVSSSPARHKILILDNGSDRETVPFTAADFVEADTTRAGE EAMVE GRSRVRCLLVNDRHDKD IVGLDAEHVVDNALTGLG


UniRef90 A7NR16 UniRef90-UPI00037027F5 UniRef90_C4RPZ1 UniRef90 J2PMD9 UniRef90 Q5V5R9 UniRef90_K5XBY6 UniRef90-I1C1B0 UniRef90 UPI0003B48C5B UniRef90 A3Y719 UniRef90-A4X3H1 UniRef90 C1GEI9 UniRef90 Q5NW70 UniRef90-U1NEQ7 UniRef90-B3T2R7 UniRef90 M5APR5 UniRef90 X 1 H 4 N 3 UniRef90-D6U5X8 UniRef90_N1PZ78 UniRef90 M1S179 UniRef90-UPI0003ACDEB8 UniRef90-A5DAQ9 UniRef90_UPI000255ECD2 UniRef90 F4F5H9 UniRef90-G8SL92 UniRef90-UPI0003644E34 UniRef90 F5Z210 UniRef90 E4WK88 UniRef90_A0A017SB26 UniRef90_J5JNE1 UniRef90 G2QSY3 UniRef90_UPIO0024885CA UniRef90-A3LWH6 UniRef90 H1Z457
UniRef90-L8G5I3 UniRef90-A1CBK9 UniRef90_L8DM53 UniRef90 Q5YQR9 UniRef90-M2LTS0 UniRef90_UPI0000D882DF UniRef90 A0A022LRF6 UniRef90 R7WJC6 UniRef90-T1VM73 UniRef90-B0Y1H1 UniRef90 G0VHE5 UniRef90-A0A022U2E6 UniRef90_C1B1C6 UniRef90- S0DY92 UniRef90-G9P6Z1 UniRef90_C4JRA3 UniRef90-S6HF67 UniRef90-D6Z268 UniRef90-12G2C0 UniRef90-K1X3X5 UniRef90-W9XNE4 UniRef90- J8PIG2 UniRef90-B8NKX0 UniRef90_C5FQW7 UniRef90 G7XWV4 UniRef90-C5GL86 UniRef90_V5G2V0 UniRef90 M7SYT6 UniRef90 G1WYY5 UniRef90-I6ZG08 UniRef90-G9NCB1 UniRef90_B8M1N0 UniRef90 ${ }^{-}$W5CR41 UniRef90-G4UDU5 UniRef90-W3XDW7 UniRef90 W7HWN9 UniRef90-I7J8R4 UniRef90-GORJ09 UniRef90 D5G5V9 UniRef90 S8BIT7 UniRef90-W9Y313 UniRef90-K8ELA2 UniRef90 U1P7N1 UniRef90-E6ZXZ6 UniRef90-I1BKVV UniRef90-U4LSD4 UniRef90- F2QPI9 UniRef90-G7WLL8 UniRef90_Q5BHE1 UniRef90 S3Y2G5 UniRef90- X8JNJ0 UniRef90-C9CUK7 UniRef90 WOVQH2 UniRef90- S8B0Z8 UniRef90_UPIOO0440E412 UniRef90_G0SE84 UniRef90 G9PIN9 UniRef90-X1KXX1 UniRef90_J3NHG2

RGLIDAALVIDQADAS
NELFDVVLI NQSRLKAD

RPVSNASIAD
RSRSGVSEVVTTYPASAFVTHLVY LKGCQVSVDVQRLAGL EQHIDA

VEVSAA GVA GLYADLLD G WLVDDADAGSAS GLIHDLVIDNQDASS
RQHHDLMALNENPYTSYVTHLLH $\square D G P G T P L V D R E R L A R M$ GDLLDGLVIDRAD

DPFVTHVLCHEGAGDRAVQVKAVQMKAVPVDVPE GTW YSLLNEKNPKSPEWTTFVTHLVYLIEVDVETLNNK A D FLD G WLV
GGLLDGWLVAEED
EGVLDA WLVHSTD
SGILDYWLVHEGEQTAD
AGILDGWLVHSTD
ESRGRGPLTNRLPYSSYVTH\|LHDEGPGTPHVDRERLAKM ADSRGLPPPEEEQYFHYVSHVIAVDKQRLAED ESTAPAEVGRDEVLRRYVSHLLYVDAEGGPAVDVPELERL A MLDGLVIDETD


RGLLKFPNHTSSPPTSYVTH L LH $\square$ DGPGTPKVDRERLAEM S GILDAWLVHTTD
A GILDGWLI HTTD
 AGLLDGWLV
S GILDGWLVHTGD
AGLLDGWLVDEGD
 $R G \square L D G W L V H D T D$
$\square Q K \square N G T V A \square P E P H T A Y V T H V I H L E G P A T P R V D R E R L N E M$ QGLIDLLIIDRQD
GGFPQMLVVGMREDPGSILQNYALEGKVPDYLDRERVCRL NHSDQPTPVGGKGEEWKDGQVKVDVEKLEAL SSRGDAVEVGVEGWREYVTHVIHLQGDGTPHVEREVLEMRA
ESRGRMTLSSSNPYSSYVTHLLHLEGPGTPQVDRDRLAEM GPNFNTDYTPHEPYTSYVTHILHLDGPGTPHVDRDRLNEM

ENSVDRLPTVS LIPYTSYVTHVLHDEGPGTPRDDRERLAGM

EGDLDGWLVDEGD
DS R GLDPRPPADEYS LYVTEGPTSP VVDKRLFAQL ESRMDA ILVTPEPYTSYVTHILHLEGPGTPSVDRERLSAM

ADSRGLPRPSRAEYALEGPTSPVVDRQAFAQL
 ACRHDLLVPDTSAGPDS $\square$ YRKYH $\square S G E G A P R V D R D Q L A S L$

EQRDDAA $\square$ TQMDTPPSSYHMVY $\operatorname{L} K N T T \square Q V$ DVAADER $\square$ GDP DTARWRDYVTHVIFLEGNGAPKVNIDELKAR DYSMLQNGK LSKTKRTKYRDF $\square$ THE $\square \mathrm{LV} \mathrm{DADELAQH}$
ESRGRVT LT GPGAFPSYTTHVLHLEGPGTPHVDKDRLAEM DAHNRRRALTHVLLSGDGKVRPAHREWGQHR

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A LF |D HV
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SSAPSHVLVDKGVSSN $\square$ TS SD $\square$ WTESSELIQDDFDS $\square$ QTP K DLISTFII DQKD

UniRef90_C4RPZ1 UniRef90 J2PMD9 UniRef90 Q5V5R9 UniRef90-K5XBY6 UniRef90-I1C1B0 UniRef90 UPI0003B48C5B UniRef90_A3Y719 UniRef90_A4X3H1 UniRef90 C1GEI9 UniRef90 Q5NW70 UniRef90_U1NEQ7 UniRef90-B3T2R7 UniRef90 M5APR5 UniRef90 X1H4N3 UniRef90_D6U5X8
UniRef90_N1PZ78
UniRef90 M1S17s
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UniRef90-A5DAQ9
UniRef90_UPI000255ECD2
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UniRef90-G8SL92
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UniRef90-G9P6Z1
UniRef90-C4JRA3
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UniRef90-I2G2C0
UniRef90_K1X3X5
UniRef90-W9XNE4
UniRef90- J8PIG2
UniRef90-B8NKX0
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UniRef90 G1WYY5
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UniRef90-G9NCB1
UniRef90-B8M1N0
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UniRef90-W3XDW7
UniRef90 W7HWN9
UniRef90-17J8R4
UniRef90-G0RJ09 UniRef90-D5G5V9
UniRef90- S8BIT7
UniRef90-W9Y313
UniRef90-K8ELA
UniRef90_U1P7N1
UniRef90-E6ZXZ6
UniRef90-I1BKV0
UniRef90 U4LSD4
UniRef90 F2QPI9
UniRef90-G7WLL8
UniRef90_Q5BHE
UniRef90 S3Y2G5
UniRef90-X8JNJ0
UniRef90_C9CUK7
UniRef90 WOVQHz
UniRef90 S8B0Z8
UniRef90_UPI000440E412
UniRef90_G0SE84
UniRef90 G9PIN9
UniRef90-X1KXX1
UniRef90_J3NHG2
$P \vee R Q V L D T F$
ESTEMLGKHDGAKVVQT\|LDLYEDAT

GVRCVEGEADQDVSAGAPPKFDAHSVREADTS\|LSQESN
 G $\square E C V L Y G R K V E N E S G G V V R Y D A A A L T Q A L$

G $!\mathrm{P}$ C VVTDT $\square \mathrm{MRDQQAKT}$
$R Y \operatorname{A} L A R T V L E$
Gie SLRCYGRKDEHGKS G
$R Y D S R A L \stackrel{A}{V} Q A L E A \square \square G R$
GRARWISADLAEPARPGT
$G \square V C V P V E \quad R Q E G T Q Y Y D T H D \square Q Q K \square S A L I$
 GI ESTRLYGPKDAA GLGGGRYDAKALAQALETIVGRKNVR G IVCVVAAKRPGGGDKGPVRYDEAALGEVLEAIL
NTRD $\square$ RCVEVKKVAGTDYF D $\square$ QS $\square Q E K \square T E \square$

G $\square$ R K $\square$ MAP GPDGEEVA VGMKYDPNALVQA L

G $\square \mathrm{ECDRVYGRKVEGQSGEVRYDSTALTQAL}$

G $\square \mathrm{E} C \square \mathrm{R} \square \mathrm{Y}$ GRKVVNDEGSVKYDPAGLVQAL

GVSPワEAADASQSDFDGVLQHDPAAVATAD
GIRCIAAK SQSRSKSGAPKFDEESVRTALRRD
$\mathrm{G} \mid \mathrm{E} \mathrm{V} \mathrm{V}$
$G \| D C L \quad K \square Y G R K S A K G V M \square Y D P Q A L D G A \square E A \square L$
G I E TLRGRK VTTTGAGGVMKYDATALVQAL
GUECLRLYGRKVSNDEGCVKYDPDALVQAL
G $\square$ E C VR $\square$ Y GRKVENES GVVRYDPTALT QAL

G $\square$ DTTRLYGPKDGQGKGG RYDAKALAQTLES $\square$ IGRRSDR GIETLRLYGPK $I$ MS DDGGMRYDPTALVQAL
$G \square D T T R L Y G P K D G Q G K G G R Y D A K A L E Q T L E S I I G R K D T R$ GUECM RVYGRKNPDGEGRYDPTALAQTLET LAAARTG
$G \square D C L \quad K \square Y G R K S A K G L M L Y D P Q A L V G A \square E A \square L$

GVEPVRVYGRRHPDGEGGMLYDSVPLLSALGAILGKARGR G 1 K G V


GALVVEADLTDPDHPAQHHGANTLRALLDLV

UniRef90 A7NR16
UniRef90 UPI00037027F5
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UniRef90 J2PMD9
UniRef90 Q5V5R9
UniRef90_K5XBY6
UniRef90-I1C1B0
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A R
UniRef90-A3Y719
UniRef90-A4X3H1
UniRef90 C1GEI9
UniRef90 Q5NW70
UniRef90-U1NEQ7
UniRef90-B3T2R7
UniRef90 M5APR5
UniRef90 X1H4N3
UniRef90-D6U5X8
UniRef90 N1PZ78
UniRef90 M1S179
UniRef90-UPI0003ACDEB8
UniRef90-A5DAQ9
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UniRef90-G8SL92
UniRef90-UPI0003644E34
UniRef90 F5Z210
UniRef90-E4WK88

| UniRef90_AOAO17SB26 |  |
| :--- | :--- |
| UniRef90_J5JNE1 | $\mid \quad$ L D R S |

UniRef90 G2QSY3
UniRef90-UPIOOO24885CA
UniRef90-A3LWH6
UniRef90 H1Z457
UniRef90-L8G5I3
UniRef90-A1CBK9
UniRef90 L8DM53
UniRef90 Q5YQR9
UniRef90-M2LTSO
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UniRef90 A0A022LRF6
UniRef90 R7WJC6
UniRef90-T1VM73
UniRef90 BOY1H1
UniRef90 G0VHE5
UniRef90-A0A022U2E6
UniRef90-C1B1C6
UniRef90_S0DY92
UniRef90- G9P6Z
UniRef90_C4JRA3
UniRef90-S6HF67
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UniRef90-I2G2C0
UniRef90-K1X3X5
UniRef90 W9XNE4
UniRef90 J8PIG2
UniRef90-B8NKX0
UniRef90-C5FQW7
UniRef90 G7XWV4
UniRef90-C5GL86
UniRef90-V5G2V
UniRef90 M7SYT6
UniRef90 G1WYY5
UniRef90-I6ZG08
UniRef90-G9NCB1
UniRef90 B8M1N0
UniRef90 ${ }^{-}$W5CR41
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UniRef90 W3XDW7
UniRef90 W7HWN9
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UniRef90-GORJOS
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UniRef90-W9Y313
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UniRef90 U1P7N1
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SRRN

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UniRef90-G7WLL8
UniRef90_Q5BHE1
UniRef90 S3Y2G5
UniRef90- X8JNJ0
UniRef90-C9CUK7
UniRef90_WOVQHz
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UniRef90_UPI000440E412
UniRef90_G0SE84
UniRef90 G9PIN9
UniRef90-X1KXX1
UniRef90 J3NHG2

QKHKVTLLAGGVGGAKMAEGLAALPDALSVIGNVADDDWV PRKVCLLAGGVGGAKMAEGLAAHDDALSVI GNVADDDWV $V L G G G T G C N A V L G A F N G G M V S Y C L P V S D D G G S$ $R \nabla T L L A G G V G G A K M A E G L A A L P V D L T V I G N V A D D D E F$
PALVCFTGGTAFNG【VDELLDLTSRVTHVLPVSDDGGS LAGLR FCPNLDAVCRIADDAVP


$$
\begin{aligned}
& \text { MR } \square \text { VLFS GGSACRT } \square \mathrm{N} \square \mathrm{~A} \square \mathrm{CRR} \text { RGCHVTRDVPAWDSGGS }
\end{aligned}
$$

$$
\begin{aligned}
& \text { SDYKDN【T ITGNVGDDDWV } \\
& \square \mathrm{VI} \mathrm{SGGTGCNA} \square \mathrm{CEA} \\
& \text { FGKDASYVLPVSDNGGS } \\
& \text { AF GHYAQGVKVIGNVADDDEF }
\end{aligned}
$$

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lupas_21
lupas_14
lupas_28
jnet
jnet
sol25
sol5
sol0
jhmm
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SPD DDTLTYSLTDVIDRTQGWGVADESHRALETLNKLGAD $S P D I D T L T Y S L A G R I D R A Q G W G V A D E D D L L G A E T W M S L G D$
 HGLDID TLSYSLA GLI DRRQGWGVADEGHRALEVLARLGQ
TAE VVRVLGGPAVGDLRSRCDRLSDEDSAAAKAEWYRDQE GTRTAVVSLRDAGLIDPGAWGWLDDEADAQAVARTYRHAR S GDワRSRLVRLIDADTSKATETSTNERAALDALFEHRLCS S G ELLIDRFFGGPSRGNERGALRADFEHRLCASDPNQARTEW
 WG LRM SPDVDAVLAADADEPSVARELTADDVGP CPDLDTCMYTLGGGIDPERGWGHRNETWHAKEELDWFGLGD SPDLDTLTYTLANEVNPVTGWGHKNDSAQFGSSTWMHLGGD SSEI DRVLGDIDRSRLIDRLIIWAGDPPDRFESELLKRAHKN MGRRDETWHAKEELARYGVQPDWFQLGD $H G D \square D T L I Y S G G D Q \square D R Q Q G W G R K G E S A A L G Q D T W M T L G D$


TW $\square$ GDRDFG $\square H \square H R T M R R \square R G D P S D T A R D V A R A F G V Q A E T$ RDFGDHDHRTMRRGR GDRPSDIARDVARAFGVKPAI GEGTSHSEWGDVVEGTHRLWRGFNFKKASIGN GSQDS $\square R V$ PSWDRD DAMHLLRREGLDAGQSDT CDTGNLAERLGDRGQI DCLGDRDFGLHIWRTMRRMRGDRPSVIAAAARALGVGPRL
GDFVNGSVGNFFFAGARMFFRSMEAA $\square L L Y S R V S R \square P D E V$ GTAAAQQQWTQCRGAQSE TAAV FNFAGASVGNLFLT GARLFSGSFEAADYLLSLLCGDPDHV FNFAGASVGNLFLTGARLFSGSFEAGIFLLSLLCGIPDHV

FKNGSVGNFFFAGARTFFRSLEAATFLFSRVARLPSHV
 QWFDRQVATHLARTAWLGMGATPSEVTARDARTFDTPDES

 FDFRNGSLGNYFLAAAQGFFRSLPSAIF LFSSUTHSQAHV


| UniRef90_V5ERN8UniRef90_B6BF70UniRef90_A0A17HAS0UniRef90_M7WQG7UniRef90_AO5U48UniRef90_A13130UniRef90_M3DAQ1UniRef90_C1MQ11 |  |  |
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130
GNT ${ }^{140} \mathrm{~F}$ TKDESSA $\mathrm{L}^{15}$ 150
${ }^{160}$
$\overline{L L P T D N K V Q T R V R T D A G W L S F Q E Y F V R E R C A P E V R I L Y D N E ~}$ LLPTDDVVQTRLRTTDGRWLSFQEYFVRERCAPEDRFSGM I PVINTSVT TAAEDEDGSVIA GQSEDSHPCGP VPASEQSVRTVLTTAEGDLDFQSYFVRRCEPKVESLEYQG





NISFSKDDEEDLPARTGRVWY 1 N REKTGNI DFSKSSEPALVSPI RRILYYVN

 APPTRSHSRLDAVTHDAEGHDGEGNLAYRKGKDDRIFYIN LPMSDVPVETHAVLDGEEQVHVQQWRHEDGCPPATRFVVAA
 LP VT S H F V T $\square$ AA A E L


[^1]

UniRef90_V5ERN8 UniRef90 B6BF70 UniRef90_A0A017HAS0 UniRef90-M7WQG7 UniRef90-A0Z5U8 UniRef90 A1B130 UniRef90-M3DAQ1 UniRef90-C1MQ11 UniRef90-E3B6R1 UniRef90-S3CNU7
UniRef90_U7Q757
UniRef90-L7IA86 UniRef90 M9MG85 UniRef90-UPI0004560B4L
UniRef90-D8U5Q1
UniRef90 B9K3L2
UniRef90_J9VQU3
UniRef90-K1E3G4
UniRef90-IOS2R2
UniRef90 F5Z5U0
UniRef90-L8WZA9
UniRef90-X7ZL55
UniRef90_F6CXN4
 DKARPAPEALAAIGQADLIVIAPSNDLVSIAPILGVPGI T DMARPTPEALTAUAGADLIVIAPSNPLVSIAPILGIPGIGG
 EAARPTPEALAAIAEAEAIVIAPSNPLVSI APILAVLGI A

EHADAAPGVLDAVRSADVVVLPPMSP 1 LDMAGF $\square A V R G \square R$
PYGHANPKVLAALRGAEVIVYSDGS LYTSIIPSLILRGVG
 GSHEVFPSANPRVLQCSCVYLCACVLKVKKHT TVCVVGMG $\square$ Y P E P N T D Y $\square \mathrm{DA} \square \mathrm{QNRD} \mathrm{\square LVYSCGS} \mathrm{\square WTS} \mathrm{\square VPC} \mathrm{\square A} \mathrm{\square KG} \mathrm{\square A}$ EQATAGPGVVEA TETADA $\square E$ T A DVVL $\square A P S N P V V S \square G A \square R$ EFASATPEVLAALEAAD


UniRef90_V5ERN8 UniRef90 B6BF70 UniRef90_A0A017HAS0 UniRef90-M7WQG7 UniRef90-A0Z5U8 UniRef90-A1B130 UniRef90-M3DAQ1 UniRef90-C1MQ11 UniRef90 E3B6R1 UniRef90-S3CNU7
UniRef90_U7Q757 UniRef90-L7IA86 UniRef90 M9MG85 UniRef90-UPIO004560B4D UniRef90-D8U5Q1 UniRef90-B9K3L2 UniRef90_J9VQU3
UniRef90_K1E3G4
UniRef90-IOS2R2
UniRef90 F5Z5U0
UniRef90-L8WZA9 UniRef90-X7ZL55 UniRef90_F6CXN4
 A ALRAARAQKVAVSPFIVVKGPADRMMAA EALRAADAPKIAVSPF VVVKGPADRMMAALGLRA
EALTRAAVAVAPIVDGAADKGPLAKMMADRGLEALMKTLH EGLRQARVPR\AVSPF IVVKGPADRMMAALGLRA AA $\backslash$ SSPVIRTK』LILDNGLDRETGPFSAMDFVAT VVHAC
DA $\square R G T S A R V V A \square S P \square G \square D D A A S W R L T G A T A S S A T \square A H L Y$
SATAGGSGAKVLILNSSV DRETDPMSAVDFVVALARAAS
TTIATSTKLRYKVLLLNI HDRETRGMDALDFVSAICDSLN
THIA TSSTLRYKI LLLNIHDRETHNLSACDFI SAITASLN EAlAARNVPKVMMLN GSHDRETSGLPAWGHVQAC DALN

E Q $\square$ A R S Q T $\square K$ AKVLLLSSNDRETTDYAASEYVAAMLRHYD
GA $\square R S T P A P V I P \square \square G G K P \square R G M A D E C G V E S T S E A V G R H F G$
A A LRSTPAPVVGYSPD DGKP LRGMGVKCTAEAVGQHYG QAVIDSAAYVVAVSPLITVKGPADKMLASEGKSVDSKGDY
lupas_21
lupas_14
lupas_28
jnet conf conf
sol25 sol5 sol0
jhmm

UniRef90_V5ERN8 UniRef90 B6BF70 UniRef90_A0A017HAS0 UniRef90-M7WQG7 UniRef90-A0Z5U8 UniRef90-A1B130 UniRef90-M3DAQ1 UniRef90-C1MQ11 UniRef90-E3B6R1 UniRef90-S3CNU7
UniRef90_U7Q757
UniRef90 L7IA86 UniRef90 M9MG85 UniRef90-UPIO004560B4D UniRef90_D8U5Q1 UniRef90-B9K3L2 UniRef90-J9VQU3 UniRef90-K1E3G4 UniRef90-IOS2R2 UniRef90 F5Z5U0 UniRef90-L8WZA9 UniRef90-X7ZL55 UniRef90_F6CXN4

R S D P GE WQVV
$P G L V D L W V L D R R D Q D A A E V L R L R G E$ DAV ADFVDALVIDDAEAPTRY
$G G V T H L V Y$ LDGDDVEDGGAHAQSGSGELAPVVDKAALGTM HSLADA R】DVPGQETRWKPSQFVSHLVYFQEGQIHIDTKALQQQ $R R R T R R P G G R L R H P P N A Y I T G L L V P R G G A L R V D P A A L A L L$

KPRRDQLLPGPEWKAANLISHVVWLEGAK $\square E \square D E D Q \square L E S$ AG $\square$ LD GWLIHEGDHAE

PAR
$D G F \square D G M V \square D P Q D A Q E A D W \quad L L A Q G V D V L V T P T \square M K E R$
lupas 21
lupas_14
lupas_28
jnet conf sol25 sol5 sol0
jhmm
jhmm
jpssm



HSAA $\square$ AARG $\square H P E C R P \square L M R D D K Q R \square A A E V L E \square A R M L A A R$ G $\square E T M R V Y G R S D E N G K G G R Y D V K A L T Q A L E A V D G R$
$G \| V C V K V K G R L D T S R D G G V R R H G R G L K A V L A K T D$
GI TCIPAA STTSKNGTPDFDQDALTAALHHDTRQ
GI A CVK VHPSAWMDNGRPKFDEKAI RYALD GVRHULEVDSYMD DQGRANFEPGALVARVDE!LR


D DKVSLLDQVVAFA
lupas 21
lupas_14
lupas_28
jnet

## conf

sol25
sol5
sol0
jhmm


[^0]:[^1]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
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    sol5
    sol0
    jhmm

