UniRef90_H2FVN2 UniRef90_UPI0003795E14 UniRef90_Q2Z079 UniRef90_U1KN85 UniRef90_R4K6P UniRef90_UPI00047D6BAF UniRef90_UPI0003670EA6 UniRef90_M4U3H1 UniRef90_UPIO000E0E887 UniRef90-D3FQZ3 UniRef90 F4HEX6 UniRef90_UPI000287B0F8 UniRef90_F8CUC2 UniRef90_Q6LSZ7 UniRef90_I1XQ60 UniRef90_UPI00034C18EF UniRef90-UPI000255A32A UniRef90_B7RWI7 UniRef90_S6ENN3 UniRef90_R6LJN2 UniRef90_UPI000403D672 UniRef90_R5R6B8 UniRef90_UPI000478C6B5 UniRef90_B5JW01 UniRef90_A4CBR0 UniRef90_E1SSN0 UniRef90_E6MIK2 UniRef90_C7RCW2 UniRef90_R7NIH4 UniRef90_U1LG22 UniRef90_W7KZP5 UniRef90_UPI00046F53AA UniRef90_F7RWQ0 UniRef90_UPI0003F937CE UniRef90_R6IDY0 UniRef90_E8LN49 UniRef90_D5D950
UniRef90_UPI0004 UniRef90_UPIO00411F6BC UniRef90_U1WJP3 UniRef90_UPI000287FBDC UniRef90_D3E6J2 UniRef90_-I1XJ14 UniRef90_UPI00037E040D UniRef90_UPI000363F2A4 UniRef90_E6LDL4 UniRef90-UPIO00380C7A4 UniRef90_W6MAK5 UniRef90-E9SIC6 UniRef90_S6BH32
UniRef90_UPI0003795008 UniRef90_R6CCM9 UniRef90_UPI00047101CC UniRef90_B9YAH5 UniRef90_R9PKY5 UniRef90_UPI000375CA41 UniRef90_D3PAF5 UniRef90_D6XV36 UniRef90_A1HPS9 UniRef90-F8F5L9 UniRef90_UPI00030C6A3E UniRef90_R9KY41
UniRef90 F6CLL7 UniRef90_N4WSI6 UniRef90_H3NL93 UniRef90-H1G4U7
UniRef90-E0RE13 UniRef90_UPI0003B64F9E UniRef90_R5F7J0
UniRef90 L0K7J1 UniRef90_E7MLP9 UniRef90_E6U721 UniRef90_R5D8L9 UniRef90_N2J465 UniRef90_A0A015L0Z0 UniRef90_B0TJ05 UniRef90_C6LLU4 UniRef90_B2A307 UniRef90_B8KEZ7 UniRef90_F7NDD7 UniRef90-H3SFB2 UniRef90_Q1QAD0 UniRef90_R7IPL8 UniRef90_J4K728
UniRef90_W5YSL4 UniRef90_R7GPC6 UniRef90_R5J5V2 UniRef90_R6IMJ9
UniRef90_H3NC22


${ }^{20}$




- $<$

L
 $V I N$ I AS R CA GFVVKK LGE GQLSA QLLGR Q DL F D QAAASASAA

V GNLVNRT V VAMNNKYF
v

$\qquad$ zer

## $$
-
$$



## 共

## . <br> $$
>-1
$$

## $$
-\quad \text { г }
$$ <br> -


LGNLLHRTLSMH GRFNGGVIANEPIDDELVELEANTAAAY
GGNLLNRTVAMUQKYFNGTVPAYEFEKQLVEVANETVKNY


L GN L A S R C A G F I S K R F E G R L S A E C A E P Q L L A D F I A A G D S I

LGNLVSRTVAMVEKYFGGVLPAAPFDDKLRALAAETAKAV
LGNLVSRTTAMAVKYFGGTLPCEREYDELVSMAKALREKY

LGNLENRTVAMVDKYFGGTVPAYAFDGSLQAAAAETVABV

GNLLHRTLNM|GRFN
VVN|ASRSAGFLVKKY

LGNLVNRTVAMCNKYFDGVVTNTNVCDELKS ALAMPGKT
LGNLVSRTVSMVEKYNDGILAKTEFDDELINLYKERRVDF
LGNLLINRTIAMDNKYFDGTVPSYAYDASLRELGDTTUTEY

## QUERY

 UniRef90_H2FVN2 UniRef90-UPIO003795E14 UniRef90_Q2Z079 UniRef90_U1KN85 UniRef90-R4K6P0 UniRef90_UPI00047D6BAF UniRef90_UPI0003670EA6 UniRef90 ${ }^{-} \mathrm{M} 4 \mathrm{U} 3 \mathrm{H} 1$ UniRef90-UPI0000E0E887 UniRef90 D3FQZ3 UniRef90 F4HEX6 UniRef90-UPIO00287B0F8 UniRef90-F8CUC2 UniRef90 Q6LSZ7 UniRef90-I1XQ60 UniRef90_UPI00034C18EF UniRef90-UPI000255A32A UniRef90-B7RWI7 UniRef90-S6ENN3 UniRef90_R6LJN2 UniRef90-UPI000403D672 UniRef90_R5R6B8 UniRef90_UPI000478C6B5 UniRef90_B5JW01 UniRef90-A4CBR0 UniRef90-E1SSN0 UniRef90-E6MIK2 UniRef90_C7RCW2 UniRef90_R7NIH4 UniRef90_U1LG22 UniRef90-W7KZP5 UniRef90_UPIO0046F53AA UniRef90-F7RWQ0 UniRef90-UPIO003F937CE UniRef90_R6IDY0 UniRef90_E8LN49 UniRef90-D5D950 UniRef90_UPI000411F6BC UniRef90_U1WJP3 UniRef90_UPI000287FBDC UniRef90-D3E6J2 UniRef90_I1XJ14 UniRef90_UPIO0037E040D UniRef90_UPI000363F2A4 UniRef90-E6LDL4 UniRef90_UPI000380C7A4 UniRef90-W6MAK5 UniRef90-E9SIC6 UniRef90-S6BH32 UniRef90-UPI0003795008 UniRef90-R6CCM9 UniRef90_UPI00047101CC UniRef90_B9YAH5 UniRef90-R9PKY5 UniRef90-UPIO00375CA41 UniRef90-D3PAF5 UniRef90-D6XV36 UniRef90_A1HPS9 UniRef90_F8F5L9 UniRef90_UPIO0030C6A3E UniRef90_R9KY41UniRef90 F6CLL7 UniRef90_N4WSI6 UniRef90-H3NL93 UniRef90-H1G4U7 UniRef90_UPI0003B64F9E UniRef90-R5F7J0 UniRef90-LOK7J1 UniRef90_E7MLP9 UniRef90_E6U721 UniRef90-R5D8L9 UniRef90-N2J465 UniRef90_A0A015LOZO UniRef90-B0TJ05 UniRef90_C6LLU4 UniRef90_B2A307 UniRef90-B8KEZ7 UniRef90-HODKJ3
UniRef90 F7NDD7 UniRef90-H3SFB2 UniRef90-Q1QAD0 UniRef90_R7IPL8 UniRef90_J4K728 UniRef90-W5YSL4 UniRef90-R7GPC6 UniRef90-R5J5V2 UniRef90_R6IMJ9
OZO

GEAWESREFGKAVRE GQAYEQREFGRAI RE E EAMDNMEFSVALTA A GLIFEEREFNKALRE A A SFENREYSRAI RE EKHMDALKMPEALDD EKNDDNLKMPEACLDE A QYYETRD SKAIKE ASTLFEKREFARA: RE ENAMEEMEFSVALTA A QHYENREYNKAI RE EEALDKFNAPAALDH EEAMEKMEFSVALCAT AEDYETREFSRAI RE

ADHYEAREYGRAVRLD
ADAYEKREYGRAMRE A DAYEKREYGRAMRE
 EAAMEDMEFSVALSA
 A DLYEARNYREAMRQ ANHFEGRDYSRAl RE ANFYEGREYGKAI RE AKWMDKLDFSRALES A QHYENRDFGRAVKH DELLTTYRVADALEA ATHFENREYSRAVRE
EEAMEKMEFSVALSS
 A QAYEEREFSKAMRE EQQMDK LDQ LHLALEEV KQAYDCRNYSDAVRA EEAMEDMEFSVALAS EENMDEMKFGSALSLHA

A

## AKRYENMEFSVALCT

EEAMEKMEFSDADT
ADLYESREFGKAMRE
A QAFEKRQYNKAI RE
EAAMENMEFSVALTMA
$A Q A Y E G R E F G R A M R E$
DEKMDK LRVADADTE
ATHYETREYGRAVRE
 A A DFEAREYSRAVRH
 AELYERREFSRAVRE
E ESMENMQFSVALTA
EK HMENMEDNAA I K E

## 



V AFQMDKFQLDHLALD $A E A Y E G R E F G R A M R E$
$D$
D A Y E T REFSSAMRE EANMERMEFSSVALSS
ANFYETRREYGKAMMRE


HEKMDELQFSVALSTVWK ADRANQY
E T A M E K L D DT TAA K V V WA L I GR S N K Y E A A ME K ME F SVVA L S A I WQFIS R T N KY I
 E K K M S E L R V A D A IT E I ADFFEAREFGRAMRR


 | $F$ | $K$ | $C$ | $Q$ | $R$ | $A$ | $N$ | $K$ | $Y$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $W$ | $L$ | $L$ | $V$ | $R$ | $T$ | $N$ | $K$ | $Y$ | $I$ |
| $F$ | $T$ | $L$ | $L$ | $R$ | $R$ | $T$ | $N$ | $K$ | $Y$ |

 $\begin{array}{llllll}\text { M } & H & L & A & D & T\end{array} A$ M A L A D K A N A Y I WE L I GRAN KY I



 $A M$
$L$
$L$

$W$ $\begin{array}{llllllll}W & S & R & T & N & K & Y \\ L & V & S \\ S & R & T & N & K & Y \\ I \\ S & Q & V & R & S & N & K & Y\end{array}$ $\begin{array}{lllllllll} & S & Q & F & V & S & R & S & N\end{array} K_{Y}$ Y $\begin{array}{llllllll}\text { I } & M A & L & A & D & R & A & N\end{array} Q^{\prime}$ I $\begin{array}{lllllll}M A & L & A & D & K & A & N \\ \text { Q } & \text { I } \\ W & F & I & S & R & T & N\end{array}$ | $M$ | $A$ | $A$ | $D$ |
| :--- | :--- | :--- | :--- |
| $F$ | $A$ | $N$ | $Q$ |
| $G$ | $I$ |  |  |
| $F$ | $R$ | $R$ | $S$ |
| $N$ | $K$ | $Y$ |  |

 $F K$
$M$
$M$
$M$ $\operatorname{L}$ A D E A N N A Y $\begin{array}{lllllll} & \\ F & A & L & L & R & R & S \\ N & N & K & Y & i \\ M & A & L & A & D & K & A \\ N & Q & Y & I\end{array}$
 $\begin{array}{lll}V & W \\ 1 & W \\ 1 & W \\ 1 & W\end{array}$
 $\begin{array}{llllll}\text { F } & N & L & F & K & R \\ C & N & K & Y \\ \text { I }\end{array}$ I $\begin{array}{llllllll} & W T & L & R & R T & N & K & Y \\ I \\ M & A & A & L & A & N & Q & V\end{array}$


 | L WR | D | $R$ | $R$ | $T$ | $N$ | $K$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| L |  |  |  |  |  |  |

 MA L A D R A N Q Y I WQLVSRTNKY I \begin{tabular}{cccccccc}
$M$ \& $A$ \& $A$ \& $A$ \& $\square$ \& $A$ \& $N$ \& $A$ <br>
$F$ \& $V$ \& $V$ <br>
\hline

 WE RRANKY WT L F K R C C N K Y I 

$M$ \& $E$ \& $A$ \& $D$ \& $\square$ \& $A$ \& $N$ \& $Q$ <br>
$Y$ \& $V$ \& $N$ <br>
$Y$ \& $L$ \& $L$ \& $R$ \& $R$ \& $T$ \& $N$ \& $Y$ <br>
\hline
\end{tabular}

 $\stackrel{70}{\mathrm{E}} \mathrm{Q}$ A P WVVAK Q E ${ }^{8}$
 WGLDGRTNKYI DETQPWALAK DEA MA L A D R A N Q Y I D E K K P W I L A K Q E N


 MA LA DKANKYI DEKAPWALAKEAAD MA L A D K A N QF I D T Q A P WV T I K D P D WQLVSRTNKYI DETQPWMLAKD D S MNL CDKANKYVDETAPWVIAAKDEN WTLIRRTNKYI DETTPWVLGGEDE |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $W$ | $Q$ | $L$ | $I$ | $N$ | $R$ | $T$ | $N$ | $K$ | $Y$ | $I$ | $D$ | $E$ | $T$ | $Q$ | $P$ | $W$ | $V$ | $L$ | $A$ | $K$ | $E$ |$E^{\prime} \quad S$ MALT DKANKYI D DKAPWVIAKEAG MALAD K A N QY I D A QAPWVL DK DAN M H L A D K A N QY I D A A E P WV L AK Q E G

KALLDS LEFSKALETVWALI SRTNKYi D

## QUERY

 UniRef90_H2FVN2 UniRef90-UPIO003795E14 UniRef90_Q2Z079 UniRef90_U1KN85 UniRef90-R4K6P0 UniRef90_UPI00047D6BAF UniRef90 UPI0003670EA6 UniRef90- M4U3H UniRef90_UPI0000E0E887 UniRef90 D3FQZ3 UniRef90 F4HEX6 UniRef90-UPIOOO287B0F8 UniRef90-F8CUC2 UniRef90 Q6LSZ7 UniRef90-I1XQ60 UniRef90_UPI00034C18EF UniRef90-UPI000255A32A UniRef90-B7RWIT UniRef90-S6ENN3 UniRef90-R6LJN2 UniRef90_UPI000403D672 UniRef90 R5R6B8 UniRef90-UPI000478C6B5 UniRef90-B5JW01UniRef90-A4CBR0 UniRef90_E1SSN0 UniRef90-E6MIK2 UniRef90_C7RCW2 UniRef90-R7NIH4 UniRef90-U1LG22 UniRef90-W7KZP5 UniRef90_UPI00046F53AA UniRef90 F7RWQ0 UniRef90_UPIO003F937CE UniRef90_R6IDY0 UniRef90-E8LN49 UniRef90-D5D950 UniRef90_UPI000411F6BC UniRef90_U1WJP3 UniRef90_UPI000287FBDC UniRef90-D3E6J2 UniRef90_I1XJ14 UniRef90_UPI00037E040D UniRef90_UPI000363F2A4 UniRef90-E6LDL4 UniRef90_UPIO00380C7A4 UniRef90-W6MAK5 UniRef90-E9SIC6 UniRef90_S6BH32
UniRef90_UP10003795008 UniRef90-R6CCM9 UniRef90_UPI00047101CC UniRef90_B9YAH5 UniRef90_R9PKY5 UniRef90-UPI000375CA41 UniRef90_D3PAF5 UniRef90-D6XV36 UniRef90-A1HPS9
 UniRef90-R9KY41
UniRef90-F6CLL7
UniRef90_N4WSI6
UniRef90-H1G4U7
UniRef90_EORE13
UniRef90_UPI0003B64F9E UniRef90-R5F7J0 UniRef90-L0K7J1
UniRef90_E7MLP9
UniRef90_E6U721
UniRef90 R5D8L9
UniRef90-N2J465
UniRef90-S3NVP5
UniRef90-A0A015LOZO
UniRef90-B0TJO5
UniRef90_C6LLU4 UniRef90_B2A307 UniRef90_B8KEZ7
UniRef90 HODKJ3 UniRef90-F7NDD7 UniRef90-H3SFB2 UniRef90_Q1QAD0 UniRef90-R7IPL8 UniRef90_WKY28 UniRef90-R7GPC6 UniRef90_R5J5V2 UniRef90_R6IMJ9
B64F9E
$\qquad$ zo


 SEQEVHDVCSVGVNLFRVLMTYLK PVVMPAMAEKAEAFLNC TQNEAHLVCSMGINLFKLLMTYLKPVLPAMAEQVETFLNT




 QKPRLATVLYNLAESLRGVSVLVSPFLPSTSEKDNEQINA



## 

NRGELLAC

O
Q K Q K T Q E V C S M Gll H LiF R I L M I Y L K P V L P E IAA K E T E T F L G A










## 

 K D E R L G A V L Y H L L A A E T


## ,

R


## -

ш
## 

## \section*{D}

A K K P QL G S V M Y HL A A E S L R I I S I LI QP F L T N AP K E I WR QL G V
 K K D R L A T V L

 R R D E L A S V M T H L A E S L R V A A S I L L





## QUERY

UniRef90_H2FVN2 UniRef90_UPI0003795E14 UniRef90_Q2Z079 UniRef90_U1KN85 UniRef90_R4K6P0 UniRef90_UPI00047D6BAF UniRef90_UPI0003670EA6 UniRef90-M4U3H1 UniRef90_UPIO000E0E887 UniRef90 D3FQZ3 UniRef90 F4HEX6 UniRef90-UPI000287B0F8 UniRef90_F8CUC2
UniRef90 Q6LSZ7
UniRef90-11XQ60
UniRef90_UPI00034C18EF UniRef90-UPI000255A32A UniRef90_B7RWI7 UniRef90_S6ENN3 UniRef90_R6LJN2 UniRef90_UPI000403D672 UniRef90 R5R6B8 UniRef90_UPI000478C6B5 UniRef90_B5JW01
UniRef90-A4CBR0 UniRef90_E1SSN0
UniRef90_E6MIK2
UniRef90_C7RCW2
UniRef90_R7NIH4
UniRef90_U1LG22
UniRef90_W7KZP5
UniRef90_UPI00046F53AA
UniRef90_F7RWQ0
UniRef90_UPI0003F937CE
UniRef90-R6IDY0
UniRef90_E8LN49
UniRef90_D5D950
UniRef90_UPI000411F6BC UniRef90_U1WJP3 UniRef90_UPI000287FBDC UniRef90_D3E6J2 UniRef90_I1XJ14 UniRef90_UPI00037E040D UniRef90_UPI000363F2A4 UniRef90_E6LDL4 UniRef90_UPI000380C7A4 UniRef90_W6MAK5 UniRef90_E9SIC6 UniRef90_UPI0003795008 UniRef90_R6CCM9 UniRef90_UPI00047101CC UniRef90_B9YAH5 UniRef90_R9PKY5 UniRef90_UPI000375CA41 UniRef90_D3PAF5 UniRef90_D6XV36 UniRef90_A1HPS9 UniRef90-UPI00030C6A3E UniRef90_R9KY41
UniRef90-F6CLL7
UniRef90_N4WSI6 UniRef90_H3NL93
UniRef90_H1G4U7
UniRef90 E0RE13
UniRef90_UPI0003B64F9E UniRef90_R5F7J0 UniRef90-L0K7J1 UniRef90_E7MLP9 UniRef90_E6U721
UniRef90 R5D8L9 UniRef90-N2J465 UniRef90_S3NVP5 UniRef90_A0A015L0Z0 UniRef90_B0TJ05 UniRef90_C6LLU4 UniRef90_B2A307 UniRef90_B8KEZ7 UniRef90_F7NDD7 UniRef90-H3SFB2 UniRef90_Q1QAD0 UniRef90_R7IPL8 UniRef90_J4K728
UniRef90_W5YSL4 UniRef90_R7GPC6 UniRef90_R5J5V2 UniRef90_R6IMJ9
$\qquad$ 20

ELT WD GTQQP LLGHKVNPFKALYNRTDMRQVEALVEASKE


 ELLTWNSI A A F DA G S K V K K G E A I F P R I D V D A K L E L L HIT WD S L K S F K I G S K L E K G DVI F P R I DV D E K L E M L N K I R E EFNWDSYKTVLTDHEINKFKPLMQRVEMDKVETMVEASKQ

 ELRWETLTSP LLLAHEIAP FKALFSRLEMKQ\|DALI DASK

 K L T WA NL A Q P L L N H Q I A P F K A L F S R L D G K Qi E A M I E A S K A
 D L A WD A I K E PL L D H Q I N K F K P L M Q R V D E K VI E E LI I E D S K Q SL D WT AL E S PLVNHTLSKFKPLDQRIDDPKQVEAMVDASSKP
 DETWDAAKKLPATVTVVKGEAVFPRVDAEKALAKLEELDHQ TAASWD G V R S F P A G T R V A K G E P L F F P R L STT W D S L K A WG E G T E V V H R G E N L F P R R I E E K
P L A WQ DVQ T P L L G H R I NK F K P L M Q RI E P E K I E A MVVEA S K E DLA WESAQTVLTGHTVNPFKALMQRVEMDKVNAMLADSKE ELTWDS IN TVLTGHTINPFKALDQRINPAKI EAVV
PATWDSSIQHFPS GVQVERCEPLVPRBDVKALAKEKEK DLK WA S A Q D V L T G H E I N K F K P M M Q R I D M K QV E A M I E D S K E



E

A EAWDSTRRFGAGTRVSKGDPIVPRLDDKAEVELID
PA S WP DEVVQP LL G H KI N S F V P L M T R V E P D K I A A I V E A S K E K QMATS LTD LRRFGKVV EKGTP I FPRM DMEEEVVA YI QMKMA ELSSWK S S Q S V LT D H P N NK F K A L M Q R V DM D K V N A M I D D S K E QAGWDAARTFGVGTKVVKGEPI FPRLDVEEVAADAEAM
 PMDWYS QAEP LTTDHTIDERFKPLMTRVEKERIVTAMI EASKE A T N WE S T N T F K P G T R I F K K G E S L F P R L

 E P Q WA D AR QP L L G H T $\quad$ I N R F K P L M T R V

## A

 EFDFASRQNILLAHTIET F ELT WD NLDDDDLA GHEVAKFKALMQRVVMK S I EA I I EASSE G G Y S G TKVEKPE LIFARLDINEVMKKVEELHP D N N K E E WG Q IP S G VRVV K D K P L F P R L E I E E E L E
 NFEFES LTT T YGALTVTEKPQPI FPRLDSEQEDAY VIGESMQ ADDFASWGR $\square$ KA GTVVAKPEPI FPRIIEEK
KADWDAARTFPEGTLVVKAAPI FPRLEAAAETAFDAESM D L S FA S R N E W L L G H Q I N K F K P L M Q R I E E K D IA A M V E D S K A
 NEDMNKF GLLMS GTKVVK P E I L F K R L DLLE EVVLK QV E A L P LLDWNKREQRLDENHGIVKFKPLMNRVDMAQI EKMMLDASKE D M K L D T F G S Y K S G T KV D HPEVLIFARLDPKEVAKQVEKL E T N WESTDTF GLLGTKVHRGEVLIPRLDVEEEIKVLEEM
T E N L A K F G VLRPA NV TV H K G D A L F P R I D D K E D D E L N A L I K A

| QUERY |  | ${ }_{\text {E }}^{\text {E }}$ V ${ }_{\text {L }}$ |
| :---: | :---: | :---: |
| UniRef90 | H2FVN2 |  |
| UniRef90-UPI0003795E |  |  |
| UniRef90 | -Q2Z079 |  |
| UniRef90-U1KN85 |  |  |
| UniRef90-R4K6P0 |  |  |
| UniRef90 | -UPI00047D6BAF | D |
| UniRef90UniRef90 | -UPI0003670EA6 | N |
|  | M4U3H1 |  |
| UniRef90 | -UPI0000E0E887 |  |
| UniRef90-D3FQZ3 |  |  |
| UniRef90-F4HEX6 |  |  |
| UniRef90-UPIO00287B0F8 |  |  |
| UniRef90-F8CUC2 |  |  |
| UniRef90_-11XQ60 |  | D |
|  |  |  |
| UniRef9 UniRef9 | -UPI00034C18E |  |
|  | UPI000255A32A |  |
| UniRef90-B7RWI7 |  |  |
| UniRef90-S6ENN3 |  |  |
| UniRef90 UPI000403D672 |  |  |
|  |  |  |  |
| UniRef90-R5R6B8 |  |  |
| UniRef90_UPI000478C6B5 |  |  |
| UniRef90-B5JW01 |  |  |
| UniRef90_A4CBR0 |  |  |
| UniRef90-E1SSN0 |  |  |
| UniRef90-E6MIK2 |  |  |
| $\begin{aligned} & \text { UniRef90-C7RCW2 } \\ & \text { UniRef90 R7NIH4 } \end{aligned}$ |  |  |
|  |  |  |
| UniRef90-U1LG22 |  |  |
| UniRef90-W7KZP5 |  |  |
| UniRef90_UPI00046F53AA |  | D |
|  |  | N |
| UniRef90-UPIO003F937CE |  |  |
|  |  |  |  |
| UniRef90-E8LN49 |  | D L |
| UniRef90-D5D950 |  |  |
| $\begin{aligned} & \text { UniRef90_UPIO0041 } \\ & \text { UniRef90_U1WJJP3 } \end{aligned}$ |  |  |
|  |  |  |  |
| UniRef90-UPI000287FBDC |  |  |
|  |  |  |  |
| UniRef90_I3E6J2 |  | N |
| UniRef90_UPI00037E040D |  |  |
|  |  |  |
| UniRef90-E6LDL4 |  |  |
| UniRef90-K6ZWZ7 |  |  |
| UniRef90-UPI000380C7A4 |  |  |
| UniRef90-W6MAK5 |  |  |
| UniRef90_E9SIC6 |  |  |
|  |  |  |
| UniRef90_UPI0003795008 |  |  |
| UniRef90-R6CCM9 |  |  |
| UniRef90_UPIO00471 |  |  |
| UniRef90_B9YAH5 |  |  |
| UniRef90_R9PKY5 |  |  |
|  |  |  |
| UniRef90-D3PAF5 |  |  |
| UniRef90-D6XV36 |  |  |
| UniRef90-A1HPS9 |  |  |
| UniRef90-F8F5L9 |  |  |
| UniRef90-UPI00030C6A3E |  |  |
| UniRef90 | -R9KY41 | R |
| UniRef90-F6CLL7 |  |  |
| UniRef90-N4WSI6 |  |  |
| UniRef90-H3NL93 |  |  |
| UniRef90-H1G4U7 |  |  |
| UniRef90-E0RE13 |  |  |
| UniRef90_UPI0003B6 |  |  |
| UniRef90-R5F7J0 |  |  |
| UniRef90-L0K7J1 |  |  |
| UniRef90_E7MLP9 |  |  |
| UniRef90-E6U721 |  |  |
| UniRef90-R5D8L9 |  |  |
| UniRef90-N2J465 |  |  |
| UniRef90-S3NVP5 |  |  |
| niRef90_A0A015LOZ0 |  |  |
| UniRef90-B0TJ05 |  |  |
| UniRef90-C6LLU4 |  |  |
| UniRef90-B2A307 |  |  |
| UniRef90-B8KEZ7 |  |  |
| UniRef90_H0DKJ3 |  |  |
| UniRef90-F7NDD7 |  |  |
| UniRef90-H3SFB2 |  |  |
| UniRef90-Q1QAD0 |  |  |
| UniRef90-R7IPL8 |  |  |
| UniRef90-J4K728 |  |  |
| UniRef90 | W5YSL4 | EM |
| UniRef90-R7GPC6 |  |  |
| UniRef90-R5J5V2 |  |  |
| UniRef90-R6IMJ9UniRef90 H3NC22 |  | Q M |
|  |  |  |

UniRef90_D4JR66 UniRef90-J1H5Q0
UniRef90_SOIPF2 UniRef90-R5E239 UniRef90_D4KKA4 UniRef90_R5CFM4
UniRef90-C6CTZ0 UniRef90 K1SFS2 UniRef90_UPIO0047D3A59 UniRef90-S0NG81 UniRef90-R9BYP5 UniRef90_Q480H5 UniRef90_V6Q363 UniRef90-UPI0003661FA3 UniRef90-R5Y347 UniRef90-E4KZC1 UniRef90-W6N333 UniRef90-Q9CHE0 UniRef90-R8VXH8 UniRef90-J6H303 UniRef90-W4Q769 UniRef90-D4H3M3
UniRef90 B9DLC7 UniRef90-R5YQA3 UniRef90-R5K0B2 UniRef90-R5AXD6
UniRef90 I3CDM5 UniRef90_Q9A178 UniRef90_R7FVW6 UniRef90-A5D697 UniRef90_UPIO0037E6FBF UniRef90-Q1QVN7 UniRef90-F3Y9K3 UniRef90-V71761
UniRef90-14X2B5
UniRef90-K8ZCU8
UniRef90_UPIO0030E77A0
UniRef90-TOJUQ1
UniRef90_F2KOP1
UniRef90-I3BN45
UniRef90_A5VZI8
UniRef90_UPI00034C9629
UniRef90-UPI0002D9198F
UniRef90-F6DBX4
UniRef90-G5GCL4
UniRef90-E5BGT0
UniRef90_UPIO00467E578
UniRef90_UPIO0037A8E0A
UniRef90_ UPI00031CFE3A
UniRef90-UPIO0031
UniRef90 E3CHV9
UniRef90_D2TY94
UniRef90-R7N729
UniRef90_UPI000416B3FC
UniRef90-C4KZW0
UniRef90-R5GW32
UniRef90-UPI00037FD6ED
UniRef90_A0A033UAT9
UniRef90-B3E2K8
UniRef90-D7ClJ6
UniRef90_UPIO00255C674
UniRef90-L2F8T4
UniRef90_E0P1L6
UniRef90_UPIO004690EA5
UniRef90_Q5M5M1
UniRef90_A0L8S1
UniRef90_UPIO003B714D4
UniRef90_M5E2T9
UniRef90-UPIO0026C7C4B
UniRef90-R6C2K0
UniRef90_R6C2K0
UniRef90_W2E5W7
UniRef90_R4IOU2
UniRef90_Q47IK0
UniRef90-E3GI27
UniRef90 R6NGX2
UniRef90_B1HS78
UniRef90 UPI00046
UniRef90_R6000468EAF3
UniRef90-R7FZE9
UniRef90-F9N6U9
UniRef90_F7V2S3
UniRef90_UPIOOO2E30A55
UniRef90-Q724N6
UniRef90_K2E4W7
UniRef90-G2SZ65
UniRef90_C7XXA7
UniRef90_C7XXA7
UniRef90_UPI000380DB96
UniRef90-D3E989
UniRef90_V6IU11
UniRef90_IOHVH3

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


## \section*{L <br> <br> -} <br> <br> -

GNLLSRSVAMCEKYFGGAVSANGQADALDDELKALPGKV


## UniRef90 D4JR66

 UniRef90-J1H5Q0UniRef90-SOIPF2 UniRef90-R5E239 UniRef90_D4KKA4 UniRef90-R5CFM4
UniRef90_C6CTZ0 UniRef90 K1SFS2 UniRef90_UPI00047D3A59 UniRef90-S0NG81 UniRef90 R9BYP5 UniRef90_Q480H5 UniRef90_-V6Q363 UniRef90_UPI0003661FA3 UniRef90-R5Y347 UniRef90-E4KZC1 UniRef90-W6N333 UniRef90_Q9CHE0 UniRef90_R8VXH8
UniRef90_J6H303 UniRef90-W4Q769 UniRef90-D4H3M3 UniRef90-B9DLC7 UniRef90-R5YQA3 UniRef90-R5K0B2 UniRef90-R5AXD6 UniRef90-I3CDM5 UniRef90_Q9A178 UniRef90_R7FVW6 UniRef90-A5D697 UniRef90_UPIO0037E6FBF UniRef90-Q1QVN7 UniRef90-F3Y9K3 UniRef90_V71761 UniRef90_14X2B5 UniRef90_K8ZCU8 UniRef90-UPIC0030E77A0 UniRef90-T0JUQ1 UniRef90-F2KOP1 UniRef90_13BN45
UniRef90_A5VZ18 UniRef90_UPIO0034C9629 UniRef90-UPI0002D9198F UniRef90-F6DBX4 UniRef90-G5GCL4 UniRef90-E5BGT0 UniRef90_UPIO00467E578 UniRef90_UPI00037A8E0A
UniRef90_UPIO0031CFE3A UniRef90 E3CHV9 UniRef90-D2TY94 UniRef90-R7N729 UniRef90_UPI000416B3FC UniRef90-C4KZW0 UniRef90-R5GW32 UniRef90_UPI00037FD6ED UniRef90_A0A033UAT9 UniRef90-B3E2K8 UniRef90-D7CIJ6 UniRef90_UPIO00255C674 UniRef90_L2F8T4 UniRef90-E0P1L6 UniRef90_UPIO004690EA5 UniRef90-A0L8S1 UniRef90_UPI0003B714D4 UniRef90-M5E2T9 UniRef90-UPI00026C7C4B UniRef90-R6C2KO UniRef90_W2E5W7 UniRef90-R4IOU2 UniRef90-Q47IKO UniRef90-E3GI27 UniRef90-B1HS78 UniRef90_UPI000468EAF3 UniRef90-R6Q519 UniRef90_R7FZE9 UniRef90-F9N6U9 UniRef90-F7V2S3 UniRef90_UPIOOO2E30A55 UniRef90-Q724N6 UniRef90-K2E4W7 UniRef90-G2SZ65
UniRef90-C7XXA7 UniRef90_UPIO00380DB96 UniRef90-D3E989 UniRef90_V6IU11
UniRef $90-10 \mathrm{HVH} 3$




E 1
KQ M
UniRef90 D7ClJ6
UniRef90 UPIO00255C674
UniRef90_L2F8T4
UniRef90-E0P1L6
UniRef90-UPI0004690EA5 E
UniRef90-Q5M5M1
UniRef90_A0L8S1
UniRef90_UPI0003B714D4 K
UniRef90_M5E2T9
UniRef90_UPI00026C7C4B
UniRef90-R6C2K0
UniRef90 W2E5W7
UniRef90-R4IOU2
UniRef90_Q47IK0

| $D$ | $L$ |
| :--- | :--- | :--- |
| $S$ | $L$ |

UniRef90-E3GI27
UniRef90 R6NGX2
UniRef90-B1HS78
EM
UniRef90_UPI000468EAF3
UniRef90 R6Q519
UniRef90-R7FZE9
UniRef90-F9N6U9
UniRef90-F7V2S3
UniRef90 C5BNH
UniRef90_UPI0002E30A55
UniRef90-Q724N6
UniRef90 K2E4W7
UniRef90-G2SZ65
UniRef90_C7XXA7
UniRef90-UPI000380DB96
UniRef90 D3E989
UniRef90-V6IU11
UniRef90_IOHVH3


UniRef90_Q5HRR5 UniRef90-UPIO002490622
UniRef90-F2F1A3 UniRef90-F2F1A3 UniRef90-B1I170 UniRef90-R5LQD8 UniRef90-UPIODO288855D UniRef90-H5XRM5 UniRef90-M7NTQ9 UniRef90_UPI000478BB09 UniRef90-F811A4 UniRef90-U7UIF8 UniRef90-UPI0003630866 UniRef90-UPI00047E3458 UniRef90_UPI0004674466 UniRef90 D3LSR6 UniRef90-A0A011SHL7 UniRef90-R6X0D7 UniRef90-V7HUT7 UniRef90-UPI0003B4ECA7 UniRef90_F8IIZ5 UniRef90-E3DRSO UniRef90_UPIO00376B6B3 UniRef90-A0Z8T6 UniRef90-C4GA48 UniRef90_C9RA63 UniRef90_U2KAX9 UniRef90-UPIO00463667C UniRef90-W8F150 UniRef90_UPI00031EC796 UniRef90-F0GXQ7 UniRef90-14BV09 UniRef90_UPIO004200E0A UniRef90-W7CGG1 UniRef90-A0A011NBT0 UniRef90_UPIOOO3729628 UniRef90-R6FU73 UniRef90_Q8XWT9 UniRef90_V2YFU2 UniRef90-U4TJP4 UniRef90-H1X9U3 UniRef90-A9BV21 UniRef90-W4VA87 UniRef90-R7IKV8
UniRef90_UPI0003A86E21
UniRef90_F0EY78
UniRef90-UPI00040DCABC
UniRef90-F4KM02
UniRef90-IOAGR5
UniRef90_UPI000370514B
UniRef90-UPIO00255DBCC
UniRef90-YOKFW8
UniRef90-J8WRB4
UniRef90_K0IYW1
UniRef90_F3L5L7
UniRef90-B9M907
UniRef90_UPI000474B0FB
UniRef90_UPI00035D07D9
UniRef90-R5RF18
UniRef90-KODDZ6
UniRef90-A0A024IKK2
UniRef90_J9HX00
UniRef90_D3IDA6
UniRef90_R4RUK1
UniRef90_UPI00041B85BF
UniRef90_F8AEP9
UniRef90_UPI00047BB7B5
UniRef90_Q8U221
UniRef90_UPIO00360D269
UniRef90-R7FMY8
UniRef90 U7UDD2
UniRef90_UPI00046CEE75
UniRef90_UPI000466BBF8
UniRef90_R7MFZ3
UniRef90-J0L857
UniRef90_D0L6Y3
UniRef90-S3EHL6
UniRef90_UPIO00411978A
UniRef90_UPIO003784251
UniRef90_E4TU74
UniRef90_UPIO00349DFB5
UniRef90-D3QZ66
UniRef90_B6IMK4
UniRef90-UPIO003759516
UniRef90-R9LNS3
UniRef90_I31IF0
UniRef90-C0BHK8
UniRef90-F9Z915
UniRef90-UPIO0037E127A
UniRef90-L7VCD6
UniRef90_UPI0002E3064C
UniRef90_R7P8J5
UniRef90_R7P8J5 9
-
 KDLMNQMHFSDALQATWKLVSRANKYIDETQPWLLAKDES
 A GLVNE EDDLSAAL GA

NENMQQIL HVVSDA L A E V


 T Q A ME T M Q I N E A I N A L W W GF I H R T N K Y I D D E T M P W S L A K E D A

 E E EMEKVR F S N A L D A V WK FVVSRA NK Y I D

 A NSYE EREY AKALREVVMALTDVVNEYVDANK P WGELAK Q E G
 $T$ D K M A D L H V A D A ITT E V F H L F R R S N K Y I D E T M P WA L A K D A D



 NKLMDEFNFNQALEAIVWTLIDRANKYVDETEPWULGRDDK






N E N M A G L R T A D A L A E E V W W

 A A A Y D ER D Y S R A L R ETM R LAA D DA N Q Y V N D H K P WE L A K Q E G

 D D QL E H F H F R E A L K T A M Q L A R I G N K Y L A D T E P WK VI K S D P
 S T H L L Q F F K F R E A L R E A M N L L A R L G N K Y L A D T E P WK L I K T D P




 E E K M D K LRRVA D S ITT EVV F T I F K R C N K Y I AD E T E P W V L G K D E A HKNF Q N MRTAD A L E S V W WT IDR RAN K Y I D E T Q P WV L A K D E T A T LF D T R E Y GKA L R EVVMA LAD QVNA Y V D Q N K P WE L A K Q E G E E H M D K M Q F S LA L T E IIWN L V R A A NK Y I D E C Q P WR L H K E G

 S S S I E R Y R F R E A L G E M M N V AA R L G N K Y L L A D E E P WK MV K E N P
 GK LI RE Y R F K D A L K K V M N LA G F GN R Y F D Y K E P WK T I K E D A E L L A E R D Y GK A L R E I M L L A D R V N E Y V D Q N K P WE L A K Q E G
 D A A M D D LAA F H K A L T S $\quad V$ W


 S R L Y E T R E F T H A M Q T ITT T L A S S K A N Q Y I N E K K P W I M M K E E K
 E E K V V N Y K F R E A L A A M M E FA A L G N K Y L AA E T E P W K L Q K E N P
 R A E LD Q Q A F H K A L D T I WWQVVVG DA N R Y V D E Q A P W S L R K T D T


 REHFDNQSMHLALEALWLMLGHANKYFSDQQPWVLRKSES


UniRef90_Q5HRR5 UniRef90-UPIOOO2490622 UniRef9-F2F1A3 UniRef90_B11170
UniRef90_R5LQD8 UniRef90-UPIOOO288855D UniRef90-H5XRM5 UniRef90-M7NTQ9 UniRef90-UPIo00478BB09 UniRef90-F811A4 UniRef90-U7UIF8 UniRef90-UPIO003630866 UniRef90-UPIOOO47E3458 UniRef90-UPIOO04674466 UniRef90 D3LSR6 UniRef90-A0A011SHL7 UniRef90-R6X0D7 UniRef90_V7HUT7 UniRef90-UP10003B4ECA7 UniRef90-F8IIZ5 UniRef90-E3DRSO UniRef90_UPIO00376B6B3 UniRef90_AoZ8T6 UniRef90-C4GA488 UniRef90-C9RA63
UniRef90_U2KAX9 UniRef90_UPIO00463667C UniRef90_W8F150 UniRef90-UPIOOO31EC796 UniRet90_FOGXQ7 UniRef90_14BV09 UniRef90- UPIOOO4200EOA UniRef90_W7CGG1 UniRef90-A0AO11 NBTO UniRef90-UPIOOO3729628 UniRef90-R6FU73 UniRef90-Q8XWT9 UniRef90-V2YFU2 UniReffo-U4TJP4 UniRef90-H1X9U3 UniRef90-A9BV21
UniRef90-W4VA87 UniRef90-R7IKV8 UniRef90-S9ZEC5 UniRef90-UPIOOO3A86E21 UniRef90-FOEY78 UniRef90-UPHOOO4ODCABC UniRef90-4KM02 UniRef90-UPI000370514B UniRef90 UP1000255DBCC UniRef90-YOKFW8
UniRef90-J8WRB4 UniRef90-KolYW1 UniRef90-F3L5L7 UniRef 90 -B9M907 UniRef90-UP1000474B0FB UniRef90 UPI00035D07D9 UniRef90-R5RF 18 UniRef90-A0А0241KK2 UniRef90_J9HX00 UniRef90-D31DA6 UniRef90-R4RUK1 UniRef90 UPIO0041B85BF UniRet90_-8AEP9 UniRef90-UP100047BB7B5 UniRet90_Q8U221 UniRef90 UPIOOO360D269 UniRef90_R7FMY8 UniRef90-UPIO0046CEE75 UniRef90-UP1000466BBF8 UniRef90-R7MFZ3 UniRef90_JoL857
UniRef90_DOL6Y3
UniRef90_UPIO00411978A UniRef90-UPIOOO3784251 UniRef90_E4TU74 UniRef90-UP1000349DFB5 UniRef90 D3QZ66
UniRef90 B6IMK4
UniRef90 UPOO
UniRef90-UPIOOO3759516
UniRef90-R9LNS3
UniRef90-131IFO
UniRef90-COBHK8 UniRef90-F9Z915
UniRef90 UPIOOO UniRef90-LTVCD6 UniRef90-UP10002E3064C
UniRef90-R7P8J5
 KSAELTDVMSNLAKSLRVIAGLLQPDMTQAPAKILGQLGL
 KKQRLAGVMYNLAESYR ATVLLSPFMPGFPARVWPQLGU
 KKTELDSVLABLIDT|RCVS|MLQPFLTSTPAEMFRQLGV

N

## ォスx0xmmixzzo-1|

 NSDRLDRVLYNLAETIRIVAQLIEPFMKNTTKII DEKIGT
 KRDELASVMSHLAEALRITAVMLQPFLTEAPDKMFEQLGL RENELQAVCTNALNLFRLLAILLKPVLPALSAKAEAFLKV KERTGTVLNDALNVAANLAVVSEPFLPFTSSKLSSMLGT QRDKLHAACSVALEAFRLLAVYLKPILPSTVARIEAFLNI NGPRLACVMYNLLEVLRVSAILLTPFMPSSSAEVLRQI GA TAKALDSVLGHLAESLRLVAVLIAPVMTRAPKEMFAQLGL QADKLASVMAHLAAALRVAALLLQPALTRAPKQTFHQLGL MDARLQDVCTTCIEAFRLLTIYLKPILPAVAEQVEGFLNV NKARLAAVLYNLAESDRIISILLQPFMPETPEKIWHQ QAEKLHEVCSVCLEAFRLLTNYLKPVLPGVAEKVEAFLGC QEAHLHMVCSSALTMFRDLARYLKPVLPTLTEQVETFLSV KKQRLATVMNILSESGYKIAFMVSPFMPISAKKIFEQLGF MEARLHEVCSELINAFKILTAYLAPVLPNVAAQAAEFLNM

Q K D ERVKTILNVSLQ TTANLAVVMEPFLPFTAQKMRDMLNM ADQELQMVCSQAVEMFRLLTLYLKPVLPQLDAKQVEQFLNV KQAELSNVLAHLAE SLRITGLLLRPFFVATPGKUATQLGF NNAQVHRVCSDGVQAFRILVSYLAPVLPEMATKSENFLNT
 DEQEVIDDVCSQGI NMFRAI MTFLKPVTP KKDRLSTVLYNLIESTTHGASLLKSFMPDTTDKALKQLNT KKALLSSSVMAHLAASLRVVAVLLQQVLTKAPRKYYEQLGF Q Q Q



UniRef90_A9BV21
UniRef90-W4VA87
UniRef90_S9ZEC5
UniRef90_UPI0003A86E21
UniRef90_F0EY78
UniRef90_UPI00040DCABC
UniRef90_F4KM02
UniRef90_IOAGR5
UniRef90_UPI000370514B
UniRef90_UPIO00255DBCC
UniRef90_Y0KFW8
UniRef90-J8WRB4
UniRef90_K0IYW1
UniRef90_F3L5L7
UniRef90_B9M907
UniRef90_UPIO00474B0FB
UniRef90_UPI00035D07D9
UniRef90_R5RF18
UniRef90_K0DDZ6
UniRef90 J9HX00
UniRef90_D3IDA6
UniRef90_R4RUK1
UniRef90_UPI00041B85BF
UniRef90_F8AEP9
UniRef90_UPI00047BB7B5 UniRef90_Q8U221
UniRef90_UPI000360D269
UniRef90_R7FMY8
UniRef90_U7UDD2
UniRef90_UPI00046CEE75 UniRef90_UPI000466BBF8
UniRef90_R7MFZ3
UniRef90_J0L857
UniRef90_D0L6Y3
UniRef90_UPI000411978A
UniRef90_UPI0003784251
UniRef90_E4TU74
UniRef90_UPIO00349DFB5
UniRef90_D3QZ66
UniRef90_B6IMK4
UniRef90_UPI0003759516
UniRef90_R9LNS3
UniRef90_13IIF0
UniRef90_C0BHK8
UniRef90_F9Z9I5
UniRef90_UPIO0037E127A
UniRef90_L7VCD6
UniRef90_UPI0002E3064C
UniRef90_R7P8
UniRef90_R7P8J5

 PANWGD WAPLPS GHRI EPYSHLMTRVERKQ』DALLEANRE D I EVVED WNKFT E GHKL GEASPI FPR
P L D WH T A S T LP A N H V I M Q Y Q H L M Q R


## 

 PLSFA DVEQALDPTHQQ GEYA HLDTRM DPKQVVEAMTEANKE


 TE D M D K F G L Y ES G T KV T D P E IL FMRLDDVK DV LA K A E E I D Y P K N G A K L P T G G K V V K K G Q P I F P R Q DV A E E V E F D




 PFTFDSARSSLS GHRI QEYKHLMMRVDVKQLDA LI AK T WES LIKE IKNAKVI EK GEPI FMRLNAEEE DEY DK QAMK

 DDS GAA TDRLAP GT TLLPKP T PI FPRYEV
K LT WN S IN N PLVN HKI A H F K P L F S R IT P Q TAK K I I Q M S


.

A A D ARSFADFDAGVQLPPPQPAFPR
NQASWD DETPLS VI NKYEHLMTRVDAK QMDALIFDA
Y S TE S F G H LE T G HV I K K A P VL F A R I D EK E
$N$ N S W D S V S S D I N A G H Q i G E A Y L L


$P$ R Q Y A A I S E L A P G T E L P K P A GVV P R Y E E P E V V L K

## UniRef90 Q5HRR5

| UniRef90-UPIO002490622 E |  |
| :--- | :--- |
| UniRef90_F2F1A3 | S |

UniRef90 B11170
UniRef90 R5LQD8
UniRef90-UPI000288855D S
UniRef90-H5XRM5
UniRef90 M7NTQ9
UniRef90-UPI000478BB09
UniRef90-F811A4
UniRef90-U7UIF8
UniRef90 UPI0003630866
UniRef90-UPI00047E3458
UniRef90_UPI0004674466
UniRef90 D3LSR6
UniRef90-A0A011SHL7
UniRef90_R6X0D7
UniRef90-V7HUT7
UniRef90 UPI0003B4ECA7
UniRef90-F8IIZ5
UniRef90-E3DRS0
UniRef90 UPI000376B6B3
UniRef90 A0Z8T6
UniRef90_C4GA48
UniRef90-C9RA63
UniRef90_U2KAX9
UniRef90-UPI000463667C
UniRef90-W8F150
UniRef90-UPI00031EC796
UniRef90-F0GXQ7
UniRef90-14BV09
UniRef90-UPIO004200EOA
UniRef90 W7CGG1
UniRef90-A0A011NBT0
UniRef90_UPIOOO3729628
UniRef90 R6FU73
UniRef90-Q8XWT9
UniRef90_V2YFU2
UniRef90-U4TJP4
UniRef90 H1X9U3
UniRef90-A9BV21
UniRef90-W4VA87
UniRef90-R7IKV8
UniRef90 S9ZEC5
UniRef90_UPI0003A86E21
UniRef90-F0EY78
UniRef90 F4KM02
UniRef90-I0AGR5
UniRef90_UPI000370514B
UniRef90 UPI000255DBCC
UniRef90-Y0KFW8
UniRef90-J8WRB4
UniRef90_KOIYW1
UniRef90 F3L5L7
UniRef90-B9M907
UniRef90-UPI000474B0FB
UniRef90 UPI00035D07D9
UniRef90_R5RF18
UniRef90-K0DDZ6
UniRef90 A0A024IKK2
UniRef90- J9HX00
UniRef90-D3IDA6
UniRef90-R4RUK1
UniRef90 UPIO0041B85BF
UniRef90-F8AEP9
UniRef90_UPI00047BB7B5
UniRef90 Q8U221
UniRef90_UPI000360D269
UniRef90-R7FMY8
UniRef90-U7UDD2
UniRef90 UPIO0046CEE75
UniRef90_UPI000466BBF8
UniRef90-R7MFZ3
UniRef90 JOL857
UniRef90 DOL6Y3
UniRef90-S3EHL6
UniRef90-UPI000411978A
UniRef90-UPI0003784251
UniRef90 E4TU74
UniRef90_UPI000349DFB5
UniRef90-D3QZ66
UniRef90 B6IMK4
UniRef90-UPI0003759516
UniRef90_R9LNS3
UniRef90 I3IIFO
UniRef90-C0BHK8
UniRef90-F9Z915
UniRef90-UPI00037E127A
UniRef90 L7VCD6
UniRef90_UPIO002E3064C
UniRef90-R7P8J5

## UniRef90 A7INF4 UniRef90-IORGA2 UniRef90-UPIOOO423EEB4 UniRef90_UPIO0036FC414 UniRef90-Q311K5

 UniRef90-LOJ466UniRef90 Q9RUF3 UniRef90-UPIO00255B110 UniRef90-UPIOOO35DA76E UniRef90_UPIO00463DFF4 UniRef90-Q8YH17 UniRef90-UPI00029A4B79 UniRef90-UPIO0046F77F6 UniRef90_UPIO0036C3520 UniRef90-A0Ао23BQ19 UniRef90-R7DUX2 UniRef90-S7TE52 UniRef90-UPI0003C14D6B UniRef90-R7EWN9 UniRef90-UPIIOOM283F55 UniRef90-K4KHW1 UniRef90_C2CK59 UniRef90-A0A059KPG5 UniRef90-UPIOOO4755FF3 UniRef90-HOULTO UniRef90-U5QA37 UniRef90-A6EQE7 UniRef90-DOBN14
UniRef90 KOP8NO UniRef90-GolWD7 UniRef90-16ZWI8 UniRefefo- -5 L217 UniRef90—UP100037452FF UniReffo-F8ADF2 UniRef90-C9LL99 UniRef90-R5G5V9 UniRef90-R7APQ6 UniRef90-14A033 UniRef90 UPIOOO46F5DEE UniRef90-E8RJ77 UniRef90_UPI00037DA603 UniRef90_M7BVX3
UniRef90 U5E9D2 UniRef90-K6S107 UniRef90-UPIOOO289A54C
UniRef90-H2XO UniRef90-H2XQX5
UniRef90 G9ZKM6 UniRef90_R6VV36 UniRet90-A4ANB1 UniRef90-UPI000367AE85 UniRef90-D6V6H8 UniRef90-A4G3S6 UniRef90-UPIOOO3699536 UniRef90-O33925 UniRef90_L6ZBX44 UniRef90-D2QN37
UniRef90-F9ZSP8 UniRef90-K2LUM5 UniRef90-BOTB76 UniRef90-UPIOOO3690021 UniRef90-U5N8H6 UniRef90-UPI00040832D6 UniRef90-UPIOOO371FEED UniRef90-D9RSX6 UniRef90-UPIO00382BE47 UniRef90-G2KRM7 UniRef90-G1WE57
UniRef90
B3T4L7 UniRef90-B3ETP4 UniRef90-F7C3K9 UniRef90-G8PG78 UniRef90-AOAO23NU11 UniRef90 Xow6H5 UniRef90-YGGJJ3 UniRef90-UPIOOO3EBD1CF UniRef90_C00139 UniRef90_S8GMS3 UniRef90_13YUH5 UniRef90-M1MGZ5
UniRef90 L W9U1 UniRef90-UPIOOO3089A20 UniRet90 A9BGA5 UniRef90-LOG146
UniRef90 J3SCMO UniRef90-QOAESS9

LGNLAQRSLISMTAKNTDGVVVPQPEDEATLALTADGMLEK ${ }^{10}$ LGNLAQRSLSMVAKNLNGLVPTPADDTELLALADGLLEQV GNFVNRAMVLTHKYFDGKVPATDYDRDTLAEFKDVKGEV GNFINRVVVLTNKYYEGVVPEPEVDEETLASVKAYPDVI LGNLAQRSLSMVAKNEDGKVPEPGEFTALLELACDGAMDRV LGNLLSRTVSMIQKYRGGVIPATDRERETEAAARALPDEV GNFINRVAVLIHKYYEGAVPEGNINAPELKEIQKTAKEV LGNLAQRSLSMIAKNCEGKVPQPEADKALLDQADAALETA LGNFVNRAVVLTHKYYDGQVPTEPFDVETLEEDPALVNRI LGNFINRAVVLTHKYFDGKVPHTEGDKEVLAQIQS KTEV LGNLAQRSLSMVAKNCQGAVPQPGAFTEMLDAAAELLPIN GNFINRVVVLTNKYYGGVVPSPGTFSEVLAELKAYPAVI GGNLFSRVTAMTHKYLDGDVPSGLRFGDLKSNAAAVIDQY LGN VKRTLDMQKKYFDKVIAAPSCRDELIATADAGSVGDY VVNI ASRTAKFVQKNAGGVLAGNPEPELWAQFVDAGESU LGNLVSRTTSMIDKYNGGVVVSDSFDDELTALSSETYSKF VNIASRAAGFISKRFGGKLSSDVGVEALLDTLRAHRDTV
 GNFVNRAVVLTHKYFGGEVPATPYDEEVLAEIPVIRKNI GNFINRVTVLTHKYYDGVVPAPDVDEQTLTELKTYPAVI LGNLVHRTLSLVHQYFGGLVPPNEADHAVLATLTASFTAV GNFVNRAVVLTHKYYGGKVPKEPVDEELIRILSEYPEKI LGNFINRTFTFAFKHFEGKVPPVDIDREMIELVKNYPAKV GGNLVSRVTAMAVKYCKGSVPAASSEADLSSTAVRVVQEV LGNLASRVAAMVTKYFDGELPEPSDHQALADKLAETVAKA
L

L
L

## L

LGNFVNRALVLTQKYFDNKVPVPEYDRETI AEAGKVKAAV GGNLVQRSGTMVNKNCDAKAPAPEDDRALLDRANALLEREC GNFANRSLVFIDKFLQGEVPQGTTDARIKELLKELYKEA LGNLLNRTVKMINKYEDGVIPTYEFDAALEATVATEAVTEF GNFVNRALQLTKKYWGGVVPATEVDRQTIAEFKDVKAKV LGNFINRVVVLTNKYYDGVVPEPSNFEETLAELKRYPEII LGNLAQRSLSMVAKNCEGRVPAPPEDRAMLAAAAGLCAPV $V N I A S R A A G F I A K K F D G R V V S D W A T A D F I S K L R N V A S E A$ GNLLHRLTAMLKKYFNGRLLPSPSAQEWLKERFFETKDA
GNFVNRAVVLTQKFCDGKVPATAYDQQ LDDEDADFPDRI VVNLAARSAGFIHQFGGGRLPSDGEDATFYAELAGQRERI L GNMCQRVLSMIHKNCNASVPTTEADQAILGKAYGMLDNV LGNLLHRSLSMVERFSGGIVAEGPLEKEIRELTAKTVADF
 $G N F I N R A V V L T H K Y Y G G K V P A K T E Q Q P V L D E L K A F P A K D$
 LGNFTNRSLSFTVNYADGKVPESDVDQEALQADEDQKDKI
LGNLAARTLSQIAKNCGGAVPAPDEDRALLESAQAMIIESV GNFVNRALQLTKKYWAGVVPACGELQDVLAEFADVKAKL LGNFVNRTLVLI QKYYAGIVPEMHTDQAII IDQMQEAADSII LGNFVNRAGMFVQKFFNGCVPEMELLSELLAQVAAELQQY
 GNLVHRVLTFTYRNFDGCVPTPGELDELDDRARDTLSTM GNLAQRSLSMVAKNLDGVVPNKGEDETLFAEFTAQAEQU LGNFITNRAGMFVTKFFEGCVPVMELQEELLALVSWELQQY LGNLFSRVVSMVHRYFKGETPGVDKGLDLEHQAWECVEKF SNLVNTLSFIKRFYDGELPSGSDDENLMTQVAEKEAVI GNFINRVMVLTDKYYDG\|VPEPATFSEILTELKAYPSVI GNLVNRTLVFAKKYFNSKI PNGEVADNIKEEI TSDYNVI LGNFVNRVIVLTNKYYDGTVPEPQNMEDTLELI
VNIASRAAGFI AKRFDGKLSTAWADDAFLTKLRGDAPEI LSNLVHRTLTMVEKYFNGVIPKPERKDKVLELLESKKNAY $\square G N F I N R A G T F V C K F F G G C V P A M D Y T Q D L L A H V T L E D R Q Y$ L NIASRCAGF SKCF

## UniRef90_A7INF4 UniRef90-IORGA2 UniRef90-UPIOOO423EEB4 4 UniRef9-UPIOOO36FC414

 UniRef90-Q311 K5UniRef90-LOJ466
UniRef90-Q9RUF3 UniRef90_UPIO00255B110 UniRef90-UPIOOO35DA76E UniRef90_UPI000463DFF4 UniRef90-Q8YH17 UniRef90-UPIO0029A4B79 UniRef90-UPIO0046F77F6 UniRef90_UPIO0036C3520 UniRef90-A0A023BQ19 UniRet90-R7DUX2 UniRef90-S7TE52 UniRef90-UP10003C14D6B UniRef90-R7EWN9 UniRef90 UPIo004283F55 UniRef90-K4KHW1 UniRet90_C2CK59 UniRef90-A0A059KPG5 UniRef90-UPIIOOO4755FF3 UniRef90-HOULTO UniRef90-U5QA37 UniRef90-A6EQE7 UniRef90-DOBN14
UniRef90 KOP8NO UniRef90-GolWD7 UniRef90-16ZWI8 UniRef90-X5L217 UniRef90-UPIOOO37452FF UniRef90-F8ADF2 UniRef90_C9LL99 UniRef90-R5G5V9 UniRef90-R7APQ6 UniRef90_14A033 UniRef90-UP100046F5DEE UniRef90-E8RJ77 UniRef90-C1C727 UniRef90 UPIO0037DA603 UniRef90M7BV3 UniRef90-K6S1Q7 UniRef90-UPIOOO289A54C UniRef90-H2XQX5
UniRef90 G9ZKM6 UniRef90_G9ZKM6
UniRef90_R6VV36 UniRef90-A4ANB1 UniRef90-UPI000367AE85 UniRef90-D6V6H8 UniRef90_A4G3S6 UniRef90_UPIOOO3699536 UniRef90-O33925 UniRef90-L6ZBX4 UniRef90-D2QN37
UniRef90-F9ZSP8 UniRef90-K2LUM5 UniRef90-BOTB76 UniRef90_UPIOOO3690021 UniRef90-U5N8H6 UniRef90-UPI00040832D6 UniRef90-UPIOOO371FEED UniRef90-D9RSX6 UniRef90-UP10003822BE47 UniRef90_G2KRM7 UniRef90_G1WE57
UniRef90
B3T4L7 UniRef90-B3ETP4 UniRef90-F7C3K9 UniRef90-G8PG78 UniRef90-A0AO23NU11 UniRef90 Xow6H5 UniRef90-F9GJJ3
UniRef90-K0UXY9 UniRef90-UP10003EBD1CF UniRef90_COQ139 UniRef90-F4GLG1 UniRef90_13YUH5 UniRef90-M1MGZ5 UniRef90-L7W9U1 UniRef90_UPI0003089A20 UniRef90 A9BGA5 UniRef90-LOG146 UniRef90-J3SCMO
UniRef90_-QOAES9 UniRef90-UPIOOO3C285F1
UniRef90_L5KWW6
 RTHFDAQAMHLDAEAIWLMLGAANKYFSAQQPWVLIKSES EKY YDTYRFRDALKEAMNLARDGNKYGADTEPWKTAKTDM ASSIERYRFREAGQELMNLARLGNKYLADAEPWKVIKEDE VRLFERVRFSNAGESLWELVRALNKYVDSSAPWTLYKT G RSHYDATAMHLDALESUWSVLSAANKYFSAQEPWVLRKTDG TDSLERYRFREASQELMNLARLGNKYLADEEPWKLIKTDE HQYLENFEFRNALSALMNLARFGNQYLQTEEPWKTLKDDE ATHYEAREYSRAI RLVMELADTVNGFVDGAKPWEQAKDET RKAMDDQALHLDAGALFAVVAEANRYFAGQEPWALRKTDP EKSLDAFKFREAVREAMNLARLGNKYLADTEPWKLQKTNP AELLDNYHFDAQRAAMGLARLGNKYLADTEPWKLAKED
 ASSDERYRFREASQELLNVARDGNKYGADEEPWKLIKTDE ETAMESFAFHRAMIAVWEFINQMNKYDDVAAPWELAKKKS REEMGKQLLHRALAAI DAVVSETDRYFASQEPWALKKTDP REAMEGFRIADAVEAILTLLRRANKFПDETQPWVLARDEA GDKDEDGEFKDGLQQVKMIRKANKMFDEFEPWVKVKKD
 TGLYEAREDAKVLREIMALADRVNEYVDQNKPWEIAKQPG
 EDSLENFKFREALKEAMNLARLGNKYLADTEPWKVAKTD ESSIERYRFREAQQELMNVARLGNKYLADEEPWKTVKVDE GKADEQFKFKEALQLCMGYATLGNKYLTDRRPWHLVKSNT AQSVEKYRFREALSLMMDFARTGNKYLAETEPWKTVKTNE GELIERYKIKDAVFEMMSLARAANKYFNDSEPWITVKKD EASFRELTFHKALMSIVDLINTANRYVVEKEPNLAKDPA DS SMEAFQFHRGLASL WDLI REANRYVDHQAPWALVK EG RNGMDNWK DNDAIKSVWTFI RS $\square N K Y I D V T M P W V L A K D K A$ SNYFSNFHFQNGLIELWNIIHRANKYIDETTPWILAKDEC
DSAMEHFEFSVALEEVWNLRRCNKYVDETTPWLLAKDES DEAMANVDFSAAAAAVQKLASRVNLYVEDSAPWNLAKSEE FEEMEAMRFSRGLMSAWTVVSRANKYIDETTPWTLAKDEA GNLVESGHMKQALEEIFEYIRSANKFYDDMKPWALRESDI NQLLEKVRIRDALRC LSVSRYGNQYUQVNEPWKRIKHDA RTEFDAQQMHLLALEA WLTLGETNRYFSANAPWALRKTEA HKLMDEDRFSDALDQVWKIVSRANKY DDETEPWNLAKDPA GVYLEAGKLKTALECHESFIRGANKYFDEQKPWDQLKEQK KSAMDSLHFSDALSAVWKLVAQSNKY:DQTEPWVLVKNPE SGSIERYRFREASQELMNLARLGNKYLADEEPWKVIKEDA RAEFDEQQFHRALERTWRVVAEANRYFTAMEPWKLRKTDA RDAMATQQDHVALNAI WAVVAEANRYFAGEAPWALAKTDP QALYDQREYGKALRTIMEQADATNAYVDANKPWELAKKPE SDSDEKYRFREAQGVMMNLARLGNKYLADAEPWKLQKTDP GEAWESREFGKAAREDMALADVANRYVDEQAPWVVAKQEG GQALGAYKFREALGHLMDLARLGNKYLAETEPWKVVKTDP GAAYAERDYARAI RDI MAMADRVNAYVDRHAPWQLAKDPA RPLFDAQAFHKGIEAI WELVGDANRYVDEMAPWGLKKTDP GALMDRFELANAHSALWKLI GRMNKYIDERAPWSLAKKPE GTGIDEARFKESDDLIFAHIRRANKYFDERKPWVQVKEN ATLYEQREFGKAMRRVMELADRTNQHFDAAKPWILAR EQ RGQLDRQVFNEALESIWVVIRANGYVDRQAPWGLKKTDP TQAYENFRFKEATAETMNLARIGNRYFTETEPWKTRKTEP RDEFEKFHDHRADEDDMRVAYDANAYDDKQAPWALKKTDV REELESLEFQRVLKKVWDFIDRQVNKYLDARAPWSLSKS G GQSI EKYRFKEAI QKWMDLARAGNKYLADTAPWHLTKT
 PALYNSGEFAEVTRRFVTMADMVNGYTAAKAPWAIAKDES DGLLYGCHFKAAITLAMSLAHDTNRYLDERSPWKVIKED AAYYESREYNKAI REDMALTDKANKYIDEKAPWVI AKEEG REHFAATALHLALEAL WSVLGAANRYFSAQEPWVLAKTDA TLHMEETEFHKALISVWEFDSTMNRYIDTQAPWTLSKDPE ENLLDVFKFRDAQKEAMNLARIGNKYLADTEPWKVAKTD ASSLERCRFREAQGELMNVARLGNKYLADEEPWKTIKTDE GNHIEQGNLKVALEKVFEFDRSMNKYFDENAPWDTVKDN GASLERFRFRESLNDLMALSSGGNKYGAEEEPWKLVKTNP LLNMERYQFTQALENLWEVIRFSNKYIDLTEPWILGNDPN AASIEKFRFREALGLVMDFARMGNKYLADTEPWKSIKED NQLLEKVK DRDALRSMLDARHGNQYL QVNEPWKCIKGDA EAAYEARDFSAALRHMMKRTDEVNELYHVAPWEVKDET

|  |  |
| :---: | :---: |
| UniRef90_A7INF4 |  |
| UniR | DQTRFRTVLYVTCEVLR AALLIQPVLPESAGKL |
| UniRef90-UP10000423EEB4 | PRTE T L NiSLQI A A NLAIAFEPFLPFSTAKLKQMLNV |
| UniRef90-UP100036FC414 | A RTKTVMYVALQLASALATLSEPFLPFTSEKLKNLLNL |
| UniRef90-Q311 K5 | DTARLGTVLYVLLECMRKVAVNLWPVMPEASEAMLGQLHV |
|  | RFR TVLYVTLETVRIATLLSQPVMPESTGKLLEQADD |
|  | QGRDDTVLYTAAEGLRVASVALEAVIPTKAKELREQLGL |
| UniRef90-UP10002558110 | - |
| UniRef90-UPIO0035DA |  |
| UniRef90-UPIO00463DFF4 |  |
| UniRef90-O8YH17 | ARMGTVLYVTAEVLRRVG\| MVQPF|PQSAEKLLDULAA |
| UniRef90-UP100029A4B79 | ERVKTIMNIALQITANLALVMEPFLPFTARKMRDMLDM |
| UniRef90-UP1000 | MDRVATILNISLELSANIAVLMEPFLPFSMKKLRQMMSQ |
| UniRef90-UP | ERMATVLYVTLEVLR】VALLDQAVMPESAAKLDDLLGV |
| UniRef90-A0A023E | RTKTIMYVALQIASALAIVSEPFLPFTSGKLFSKLDQ |
| UniRef90-R7DUX2 | KVEELKSVMSHLANVLY S GVLLQPVLTHAPKELFRQLGV |
| UniRef90-S7TE5 | CRQELDAVMYQLLEGLRIVSGLI YPVMPDTARKMQEHLGL |
| UniRef90 UPIOOO3C14D6B | GTVLYVTAEVVRIGILLQPFMPESCDKLLDLVAA |
| iRef90_R7EWN9 | GTVLYDLTEAI RWAAVMLEPIIPASAEEIYELGTT |
| UniRef90 UPIOOO4283F55 | KIECGKDLYVCVQLIANLSNLLEPFMPESSFKIRSFIGL |
|  | ( ${ }^{\text {a }}$ |
| UniRef90-A0A059KPG5 |  |
| UniRef90-UP10004755FF3 |  |
| UniRet90-HOULTO | NAERLNQVLYTLCEVLRLSALGVAPFMPESANRI WEQLGL |
| UniRet90_U5QA37 | ATILNISLQICANLT AFEPFMPHSTKKLSQILNM |
| UniRet90_A6EQE7 | KTIMYVALQUANALAVLSEPFLPFTSTKLKNMLNV |
| UniRet90_DoBN14 | L |
| UniRet90-K0P8N0 | SLLIKPFLPKTSEKIAHMLGV |
| UniRef90-GolwD7 | - |
| UniRef90-16ZWI8 |  |
| UniRef90-X5L217 |  |
| UniRet90_Q2LUB6 | M |
| UniRef90-UP1000374 | ARLATV LTSAEVLRAVAVLHNPTMPITAAKLWTLLGA |
| UniRef90-F8ADF2 | KKERTATVIYHLLEVVRVVATALLWPVMPESSEKILQKLGL |
| UniRef90-9LL919 | KKEALNAVMYMLYESMRTVLTA |
| UniRef90-D7N827 | NKPRLDSVLYNLAEALRITSVLIUNPFITSETSREMRKRVKG |
| UniRet90-R7APQ6 | A |
| UniRet90_14A033 | EEVE SIMNGAIQIIAAMLTQCAEPFLPTSAEKMMHMLGM |
| UniRef90_UPI00046F | ERGTLAR |
| UniRef90-E8RJ | QAGRLRTVLAFLAESLWK ALVLGPIMPDTASRMAAALGM |
| UniRef90- UPI00037DA603 | MKRTA |
| UniRef90-M7BV 33 |  |
| UniRef90-U5E9D2 | DLARMATVLYVTLEVVRIVAILVQPVMPGSAAKI LDLLAQ |
| UniRef90_K6S107 | D |
| UniRef90_UP100028 | A |
| UniRef90 H2XQ) | DKSRASTVTSIAANLSCLLCILIHPYMPQTSS\\|IQDQLNL |
| UniRef90-G9ZK | DKQKLAAVMAHLAASLRVI AELISPVMTHAPKEIFAQLGL |
| UniRet90-R6VV36 | KRVE |
| UniRet90-A4ANB1 | GRMATVMVVA |
| UniRef90 D6V6H8 | ARQKTVLYVTAEVVRQIALLAQPAMPEAMTKMLDALGAV |
| UniRef90 ${ }^{-} 44 \mathrm{G} 3$ |  |
| UniRet90-UPIOOO3699536 | F |
| UniRet90-0339 | 㑑 |
| - |  |
| D2QN37 |  |
| UniRet90-923S88 | ( |
| UniRef90-K2LUM5 UniRef90 B0TB76 | ARME ATVGYVLAEVLRHVGILVQPLMPASAAKILDQLVL |
| UniRef90-UPIO003690021 | RSACSDTLYTCTQ |
| UniRef90-U5N8H6 | RSEELGAVCASTLEAFRLLT YLQPVLPETARKVSELLH |
| UniRef90 UP100040832D6 | DRVKTVL |
| Ref9-D9RSX6 | KRVE TILYISLQLVANLSIAFEPFLPFSSKKLREMITNT |
| UniRef90-UPI000382BE47 | AGNTLHVSLQISAALSCLFDPTLPAKMKELRAQLGD |
| UniRef90-G2 | P |
| UniRef90-G1WE |  |
| UniRef90-B3T4L7 | R L GJ |
| UniRef90- ${ }^{\text {B3ETP4 }}$ | QVQTTLNTSLQLTAHIAILGAPF LPFTSQKLSQM |
| UniRef90-F7C3K9 | EQKRAGTVTGVAVNMAALLSVMLHPYMPTVSGLIQEQLLM |
| UniRet90-G8PG78 |  |
| (1) |  |
|  |  |
|  |  |
|  |  |
| UniRef90-UPIO003EBD1CF | QRAGTVTGVSVNIACLLSVMLSPYMPAVSQTIRDQLNA |
| UniRef90_COO139 | R |
| UniRef90_F4GLG1 |  |
| UniRet90 S8GMS3 | T |
| UniRef90-13YU | KTVMFVALQIASALALLSEPFLPFTSDKLKNMLNV |
|  | GKI KA WLGI |
| UniRef90-L7W9U | SKILDYSSL |
| UniRef90_UPIO003089A2 |  |
| UniRef90-A9BGA5 | + |
|  | $M L G T$ |
| UniRef90 J3SCM0 | KKRASTVIGVAVNIASLLSVVLQPYMPTVSAAI QDQLCI |
|  |  |
|  | A |
|  |  |


UniRef90_L0J466
UniRef90_Q9RUF3
UniRef90 UPIO00255B110
UniRef90 UPI00035DA76E
UniRef90-UPI000463DFF4
UniRef90 Q8YH17
UniRef90 UPI00029A4B7s
UniRef90-UPI00046F77F6
UniRef90_UPI00036C3520
UniRef90 A0A023BQ19
UniRef90-R7DUX2
UniRef90_S7TE52
UniRef90_UPI0003C14D6B
UniRef90 R7EWN9
UniRef90-UPI0004283F55 E
UniRef90-K4KHW1
UniRef90 C2CK59
UniRef90-A0A059KPG5 E
UniRef90-UPIOO04755FF3
UniRef90-HOULTO
UniRef90 U5QA37
UniRef90-A6EQE7
UniRef90 Q2LUB6
UniRef90-UPI00037452FF
UniRef90_F8ADF2
UniRef90-C9LL91
R
UniRef90 R5G5V9
UniRef90_D7N827
UniRef90-R7APQ6
UniRef90-14A033
S
UniRef90-UPI00046F5DEE
UniRef90-E8RJ77
UniRef90 ${ }^{-} 1 \mathrm{C} 727$
UniRef90 UPI00037DA603
UniRef90-M7BVX3
UniRef90-U5E9D2
UniRef90 K6S1Q7
UniRef90-UPI000289A54C Q
UniRef90-H2XQX5
UniRef90_G9ZKM6
UniRef90 R6VV36
UniRef90-A4ANB
UniRef90_UPI000367AE85
UniRef90_D6V6H8
UniRef90-A4G3S6
UniRef90_UPI0003699536 S
UniRef90-O33925
UniRef90_L6ZBX4 E V
UniRef90-D2QN37
UniRef90-F9ZSP8
UniRef90 K2LUM
UniRef90 B0TB76
UniRef90_UPI0003690021
UniRef90-U5N8H6
UniRef90 UPI00040832D6
UniRef90 UPI000371FEED
UniRef90_D9RSX6
UniRef90-UPI000382BE47 K
UniRef90 G2KRM7
UniRef90_G1WE57
UniRef90-B3T4L7
E V
UniRef90 B3ETP4
UniRef90 F7C3K9
UniRef90_G8PG78
$\begin{array}{ll}\text { UniRef90-A0A023NU11 } & \text { S } \\ \text { UniRef90- XOW6H5 } & \text { D } V\end{array}$D V
UniRef90_F9GJJ3
UniRef90-KOUXYg
UniRef90 UPI0003EBD1CF
UniRef90-C0Q139
QV
UniRef90_F4GLG1
UniRef90_S8GMS3
R
UniRef90 I3YUH5
UniRef90-M1MGZ5
UniRef90-LZW9U1
UniRef90 UPI0003089A20
UniRef90 A9BGA5
UniRef90_LOG146
UniRef90_J3SCM
UniRef90 Q0AES


UniRef90 UPIO00378D6E6 UniRef90_H6N4C0 UniRef90_D5BDG7 UniRef90 G7H629 UniRef90_UPI000255CD32 UniRef90_A9A088 UniRef90 F2IF34 UniRef90_UPI00039DFFDB UniRef90_G8ALW5 UniRef90_UPI00047C64B2 UniRef90-W9H8A4 UniRef90_K1M6Q6 UniRef90_I3C2W9 UniRef90_W1SLJ8 UniRef90_Q21TB9
UniRef90_R6SMW0 UniRef90-A0A010PLT7 UniRef90 I4AIM2 UniRef90_UPI00047E02F2 UniRef90_K1L2M0 UniRef90-E1QGA0 UniRef90_UPI00046545C4 UniRef90-X2GTF8 UniRef90_Q6MDG0 UniRef90_G0L5F8 UniRef90_B8D8R1 UniRef90_W6K938 UniRef90_A0A024KJC4 UniRef90_A5FLM7 UniRef90-F3Y4K2 UniRef90_A0A059MWN9 UniRef90_K2EJU4 UniRef90_E1VVH9 UniRef90_V5ND61 UniRef90_B1R1X2 UniRef90_UPI00047008E5 UniRef90_UPI00047D14DA UniRef90_R5Z9P8 UniRef90-R1H8H0 UniRef90_E3GYM3 UniRef90_Q3SSL8 UniRef90-F4AVH6 UniRef90_Q7NCF6 UniRef90_A9NEH8
UniRef90_W5X5X5 UniRef90_UPI00036D0F9D UniRef90_G214S0 UniRef90_U6HXJ3
UniRef90_G0FE63 UniRef90_GOEE63 UniRef90_TOCF76
UniRef90_A6DMJ3 UniRef90_Q98MV8 UniRef90-M5RKR7 UniRef90_UPI00037F8132 UniRef90_G1UP19 UniRef90_G6XI60 UniRef90_UPI000258DFEF UniRef90_D2R011 UniRef90_E7RWW6 UniRef90_F1W4F9 UniRef90_UPI0004773BCA UniRef90_Q0BT77 UniRef90_UPI00035D6FAD UniRef90_UPI0003ACF643 UniRef90_UPI0003B770BD UniRef90_C5CAB5 UniRef90_Q89AX4 UniRef90_UPI000401ED7C UniRef90_UPI0002EFD871 UniRef90_UPI00046ECFAB UniRef90_M0QK18 UniRef90_G8TCU5 UniRef90_L7YEG1 UniRef90_R6N3T0 UniRef90_J1JMN8 UniRef90_UPI000255C2B9 UniRef90_I1FWT8 UniRef90_V6K2H9 UniRef90_V4YJF1 UniRef90_UPI0003B39E95 UniRef90_UPI000403C32B UniRef90_G7Q6J7 UniRef90_G9WKC5 UniRef90_UPI00047B2B34 UniRef90_U3GW99 UniRef90_B1VQX0 UniRef90_UPIO00413527A UniRef90_Q4J8M3 UniRef90_K7YSU6 UniRef90_UPI0003807E17 UniRef90_UPI0004101486

D A All CELLDFQGG|I LA|IMDFCKKDNGY|VTEKEPWILAKDPA R E HFD A Q A $\quad$ A H L G L E T L WT T L A E T N R Y I S A Q E P WK L A K T D A S S D E KYR FREAQA EL MNLAARLGNKYLADE EPWKLVKTDE D QLMMDAVRQKDAVKVVLSMSRRGNQYMQSQQPWVLIGSEE
 RAAYEVVQFHRALERTWFVLGGEANAYFADEQPWKLKTTSDP


 E E A L E N F K F R E A V K E A M N L A R L G N K Y L A D T E P WK L I K T D E RRELTVQAFHKAIEAVWGVIGDANRYVDEQAPWALRKTDP

 GT LI E K GHFK QALE GIF QY I R GANRYF DE QQPWDQVK DN P
 REAYDQQDFHRALERTWFVLGEANAYFAE QEPWKLKKTD SQNLETFNFRDGLFEVMELARDGNKYLATTEPWKLQKTEP






 VKAMNEQLVHEAVAAI WEVVVSEANRYFAGQEPWALKKTD S S SVERYRFREALGELMNVARLGNKYLADEEPWKVMKDNP


 GDNDE E GNFK KALE Y I FSAIIKKANKYFDDEK PWVNIDK K D Q R LYE E R E F GK A L R EVVMLLAADRVNEYVDQNK P WELIAK QA G
 SEAYEAREFSRADREIMMALADKANRYVDEKAPWVLAK QE G GNF $\ddagger E N F K F R D G L D E I M K L A R D G N K Y F N D Q E P W K T F K E N$
 AEHWEALRFSEASGLALALVRAGNRYLDARAPWSLYKK G S T L M N ELRRVGDA IVELLMLVARAANKYIDDSEPWNLNKNGE AVAMDACEIGRAVEAAWGLVRFDNKYIDTRAPWALSKSND



 $R K A M A G Q G \square H L A L A A A I F D V V A E A D R Y F A G Q A P W A L K K T D P$ A A AYESCDYSRAMRRIMELADAANPFVEHAKPWEMKKDAD RS LMMEEQKFDQFLKNIWLVISDANKYVDNQAPWLLKKNDF



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



 GA ALD DAD FRRATAAVWR DV D E A N R H I N R V R P WE L A K A
 EKMLE NCEFNSAISSMVISLDAD DANSYVDNKK PWNLTKNDK
 E Q N I E N YRFREALKEAMNVARDGNKY LADCEPWKLVK TDP A S QL D R CALLT DALE DVWKVIRACNAY I D HQAPWALDKK T D P RNHFDA QA H L GLE A QWSVLA ETNRYISA QEPWKTAK T D




 CDAFERFAFSQGLEAWMRAVFACNQYVDDQAPWTL KKTDP R A LY A D G D F A A V V R L A M E A A D R I N R D WD A A K P WL L A K D D D VAL F GAA QFSRALKALWELVRGLNKYVDAMAPWTLFK E G
 GEALENNRFKA GI THAMHVVGEANAYI A A MEPWKLAKDD T






## UniRef90＿H2YYM3 UniRef90－R6HR85

 UniRef90－UPIOOO3738EDA UniRef90－E2BLT5 UniRef90＿S0G6J8 UniRef90－UPIO00309FDAB UniRef90O－UP10000289AEAE UniRef90－A5UJ98 UniRef90－17LL96 Uniinefol－A3Z689 UniRef90－FORVN6 UniRef90－D5E953 UniRef90－A716H7 UniRef90－UPIO0037FOEC5 UniRef90－X5E9W3 UniRef90－D8J718 UniRef90－R4LVW1 UniRef90－D8G4X4 UniRef90－X1D393 UniRef90－D8U4Q9 UniRet90＿S5TH96 UniRef90－C1D1U2UniRef90 E4WE4 UniRef90－H5YLT5 UniRet90－AOLR90 UniRef90－M5Х2H9 UniRef90－R7PRC8 UniRef90 UPIO003AB479F UniRef90－UPIO00405FE9E UniRet90 WgDRJo UniRef90＿S7XH14 UniRef90－AOAO31LRG1 UniRef90＿V6ATJ7 UniRef90－UP1000288C37A UniRe990＿likFY5 UniRef90－K4CC14
UniRef90 B7G4V2 UniRef90－UPI00037A471A UniRef90－A1A3N3 UniRef90－R5HTW1 1 UniRef90－D7W5Z3
UniRef90 E6YHV5 UniRef90－A0A031GE98 UniRef90－U5DM78 UniRef90－B8GFL4 UniRef90－UPIOO026CAB29 UniRef90－UPIOOO382952B UniRef90－K9SL13 UniRef90－Q9HSA4 UniRet90－C5C046 UniRef90－E1R197 UniRef90－K9XJT0 UniRef90－D2RCB1 UniRef90－＿R5AKV6 UniRef90－UPIO002485COA UniRe990＿U2TFII UniRef90＿I2MUEO UniRef90－P59077 UniRef90－C1DVT3 UniRet90－W5YO91 UniRef90－K2E5NO UniRef90－F1T3V2 UniRef90－Q2FU77 UniRef90－K1Z308 UniRef90－B1VFII Uniref90－K9ER18
UniRet90－U7DR23 UniRef90－G7VG04 UniRef90－UP10004723EC2 UniRef90－D5MEPO UniRef90O UPIOOO4409620
UniRefgo－F3k UniRef90－F3KVC7 UniRef90－E3EXT8 UniRef90－D3S1F2 UniRet90－R7FRO5 UniRef90－H8GEI8 UniRef90－A6FQ92
UniRef90－G1Y117 UniRef90－A3CX39 UniRef90－R7LKYY UniRef90－H8X953
UniRef90＿UP1000345B1A5 UniRef90－W9GKP2 UniRef90－UPIOOO440FDBO UniRef90－UPIOOO366BB23 UniRef90－K1TH57 UniRef90－12H267 UniRef90－W4L1N2
UniRef90＿B8HPV0



## ーーワ

r




 L G N L L V N R A V






 GNFIN RVAVLI NKNFEGKVPKGDVNAPELEEDGKRAVEI $L G N L A Q R S L S M I Q K N C N A K I P T P A Q D E Q L L K Q S L Q A L E D A$
 GNFVHRTLHFAHAQG】G IPDLDADQEI LQRIDETIA AV

 $V G N F A Y R A L L F A N R N F D G T P Q E V S D T D D V$ ETEDA QAMD D Y
 LGNLL N RTLNMVKKYCNGNVPDCPSSHPLKADGLT LGEKVV $G N L V N R V A N L I N K N F \quad G V I P P T A M D R A L L D Q T S D A F A L V$ $L G N F V N R A M V L T G K Y F D G T V P A A G E D S D T E A E T A A A A A R L$ $G N L V S R T V S M A V K N F \quad G E V P A P A E F R D L L D D A A A A F G V V$



 GN L V N R A V S M A Y K N F G A V P A E P A D E A I L A Q A D K A M A E V LGNLV S R VLTMTEKYCEGKVPEQLNYGDTHLDDLKGAWNGF G NLVVSRTI TMCDKYFDGKTPWKQQTSPDRD DAQRMFEPY





 LGNFVSRVTKFCRSKFGEVIPEGGTWNALIAELTQRLQAY LGNFI YRVVLHFAWRNFGEV K M NVDGEVI EQI RGAMNK I
 $L G N F V S R V T K F C R S K F G E A V P D G G E M R A L I D D L G D R I R T Y$ G N L A Q R F L S I I Q K N C G A VV P T P G A F T E A D N A L L A A A R T M GNNLLNRTLSMLVKYFDGEVPE FKDENPLAKKALGTVVQUV $\square G N F V N R \square V K F V N A K Y N G V L P K Y N N Y K E F V T E F N A L L$ K K Y $\quad$ K





## UniRef90_H2YYM3 UniRef90_R6HR85 UniRef90_UPIO003738EDA UniRef90_E2BLT5

 UniRef90_S0G6J8 UniRef90_UPI000309FDAB UniRef90_UPI000289AEAE UniRef90_A5UJ98 UniRef90_I7LL96 UniRef90_A3Z6P9 UniRef90_G1WHT7UniRef90_F0RVN6 UniRef90_D5E953 UniRef90_A716H7 UniRef90_UPI00037F0EC5 UniRef90-X5E9W3 UniRef90_D8J718 UniRef90_R4LVW1 UniRef90_D8G4X4
UniRef90_X1D393 UniRef90_D8U4Q9 UniRef90_S5TH96 UniRef90_C1D1U2
UniRef90 E4WEE4 UniRef90_H5YLT5 UniRef90_A0LR90 UniRef90-M5X2H9 UniRef90_R7PRC8 UniRef90_UPI0003AB479F UniRef90_UPI000405FE9E UniRef90_W9DRJ0 UniRef90_S7XH14 UniRef90-A0A031LRG1 UniRef90_V6ATJ7 UniRef90_UPI000288C37A UniRef90_14HFY5 UniRef90_K4CC14
UniRef90_B7G4V2 UniRef90_UPI00037A471A UniRef90_A1A3N3 UniRef90-R5HTW1 UniRef90_D7W5Z3 UniRef90_A0A031GE98 UniRef90_U5DM78 UniRef90_B8GFL4 UniRef90_UPI00026CAB29 UniRef90_UPIO00382952B UniRef90_K9SL13 UniRef90_Q9HSA4 UniRef90_C5C046 UniRef90_E1RI97 UniRef90_K9XJT0 UniRef90_D2RCB1 UniRef90_R5AKV6 UniRef90_UPIO002485C0A UniRef90_U2TFI1 UniRef90_I2MUE0 UniRef90_R7S3C0 UniRef90_P59077 UniRef90_C1DVT3 UniRef90_W5Y091 UniRef90-K2E5N0 UniRef90_F1T3V2 UniRef90_Q2FU77 UniRef90_K1Z308 UniRef90_B1VFI1 UniRef90_K9ER18 UniRef90_U7D2R3 UniRef90_UPIO004723EC2 UniRef90_D5MEP0 UniRef90_UPIO004409620 UniRef90_F3KVC7 UniRef90_E3EXT8 UniRef90_D3S1F2 UniRef90-R7FR05 UniRef90_H8GEI8 UniRef90_A6FQ92
UniRef90_G1Y1J7 UniRef90_A3CX39 UniRef90-R7LKY2 UniRef90-H8X953
UniRef90-UPI00034 UniRef90_UPI000345B1A5 UniRef90_W9GKP2 UniRef90_UPI000440FDB0 UniRef90_UPIO00366BB23 UniRef90_K1TH57 UniRef90-I2H267 UniRef90-W4L1N2
UniRef90_B8HPV0




UniRef90 H2YYM3
UniRef90-R6HR85
UniRef90_UPI0003738EDA
UniRef90 E2BLT5
UniRef90 S0G6J8
UniRef90_UPI000309FDAB
UniRef90_UPI000289AEAE
UniRef90 UPIO00465DDE8
UniRef90_A5UJ98
UniRef90_17LL96
UniRef90-A3Z6P9
UniRef90 G1WHT7
UniRef90-FORVN6
UniRef90-D5E953
UniRef90-A716H7
UniRef90 ${ }^{-}$UPIO0037F0EC5
UniRef90-X5E9W3
UniRef90-D8J718
R V
UniRef90 R4LVW1
UniRef90-D8G4X4
UniRef90-X1D393
UniRef90_D8U4Q9
UniRef90 S5TH96
UniRef90-C1D1U2
UniRef90-E4WEE4
UniRef90 H5YLT5
UniRef90-A0LR90
UniRef90-M5X2H9
UniRef90 R7PRC8
UniRef90 UPI0003AB479F
UniRef90_UPI000405FE9E UniRef90-W9DRJ0
UniRef90 S7XH14
UniRef90-A0A031LRG1 E $\square$
UniRef90-V6ATJ7
UniRef90-UPI000288C37A
UniRef90-14HFY5
UniRef90-K4CC14
UniRef90_B7G4V2
UniRef90_UPI00037A471A K V
UniRef90-A1A3N3
UniRef90-R5HTW1
UniRef90-D7W5Z3
UniRef90 E6YHV5
UniRef90_A0A031GE98
UniRef90_U5DM78
UniRef90 B8GFL4
UniRef90-UPI00026CAB29
UniRef90_UPIO00382952B
UniRef90_K9SL13
UniRef90 Q9HSA4
UniRef90_C5C046
UniRef90-E1R197
K
UniRet90 K9XJT0
UniRef90-D2RCB1
UniRef90-R5AKV6
UniRef90_UPI0002485C0A
UniRef90 U2TFI1
UniRef90-I2MUEO
UniRef90-R7S3C0
UniRef90 P59077
UniRef90 C1DVT3
UniRef90-W5Y091
UniRef90-K2E5NO
UniRef90 F1T3V2
UniRef90-Q2FU77
UniRef90-K1Z308
UniRef90-B1VFI1
UniRef90 K9ER18
UniRef90-U7D2R3
UniRef90_G7VG04
UniRef90 UPIO004723EC2
UniRef90-D5MEP0
UniRef90-UPI0004409620 D
UniRef90-F3KVC7
UniRef90 E3EXT8
UniRef90-D3S1F2
UniRef90-R7FR05
UniRef90-H8GEI8
UniRef90 A6FQ92
UniRef90_G1Y1J7
UniRef90-A3CX39
UniRef90_R7LKY2
UniRef90-H8X953
UniRef90-UPI000345B1A5
UniRef90 W9GKP2
UniRef90 UPIO00440FDB0
UniRef90_UPI000366BB23 $\qquad$
Unergo
UniRef90 12 H 267
UniRef90-W4L1N2
UniRef90_B8HPV0

## UniRef90_UPIO002D64110 UniRef90-Q648E9

 UniRef90-R5R518UniRef90 X1VPM6 UniRef90-C2GIMM UniRef90-G7SQW7
UniRef90- W7TRH3 UniRef90-C5AQE7 UniRef90 UP1IOOO3B3778E UniRef90-R5QE28 UniRef90-H6Q4K1 UniRef90-H6LOU8 UniRef90-TOLEU7
UniRef90 UPIO003 UniRef90-UPI00037569DB UniRef90-D1C8B8 UniRef90-UPIOO02624CC0 UniRef90-H1CYB9 UniRef90-B5GU87 UniRef90-B8DT48 UniRef90_D6Y8C9
UniRef90 A7HL66 UniRef90 KgY UniRef90_UPI0004766A4A UniRef90-D7GCG6 UniRef90-A0A059LDQ9 UniRef90-D8PH89 UniRef90-19WJ85 UniRef90 UPIOOO477216C UniRet90-D7BFY8 UniRef90-D1YW16 UniRef90-M4FI82
UniRef90 UPIOOO UniRef90-UPIOOO2FC8BAC UniRef90-FIYKU8 UniRef90-A8LIJ9 UniRef90-C6XHE6 UniRef90_10GK00 UniRef90-UPIOOO36D8641 UniRet90-A2C9RO UniRef90-W9G8K8 UniRef90-UPIOOOO451863 UniRef90_UPIooo36702B5 UniRef90_JOKCF4 UniRef90 W7 X6M8 UniRef90-UPIIOOO46301DF UniRef90-B4S8K1 UniRef90-Q2H9K5 UniRef90-B8H5U4
UniRef90-R6GK24 UniRef90-D4TQ37
UniRef90_Q1GEI7
UniRef90-D9VQHO
UniRef90-UPIO003B54D3F
UniRef90-D8Q449
UniRef90-F2L2D0
UniRef90-A5DIE2
UniRef90-F4GZ73
UniRef90-D6ZJ86
UniRef90-MOTV76
UniRet90-B9KGP1
UniRef90-H2VP84
UniRef90_Q3B3N3
UniRef90-R5Q3L3
UniRef90-P59076
UniRef90-W5WS17
UniReffo-U61335
UniRef90-M1M5E1
UniRef90-V7EKL6
UniRet90 $14 E S N 3$
UniRef90_14ESN3
UniRef90_R5BH50
UniRef90_UPIO00363169C
UniRef90-D3UJJ1
UniRef90-A0A059FG76
UniRet90-R4VXA8
UniRef90-Z9J×80
UniRef90-UP100039ABOD4
UniRef90-A2QP×3
UniRef90 C8WFU2
UniRef90-QOANL8
UniRef90-UPIOOO469C16D
UniRef90-A3U1×7
UniRef90_S3XU14
UniRef90-G7JSP8
UniRef90-UPI0003B4D956
UniRef90-L7U9L7
UniRef90 UTPVC9
UniRef90 M8CQ75
UniRef90_X49X2
UniRef90_Q6A707
GNLVNRVANLIAKNFGQIPPMTDEDRALLAQSSAAFDTV
GNLASRVAAMVGKYFGGTLPEATDAGPAEQGLAAAAEQA
GNLLHRTLAMLQKHFDSVIPGVGNDEEDDKKLDEDYDKF
पGNLLNRSLGMLKKYCKGSLDDGLTISEIKKDGETLCDRT

GGNFVNRSLKKFAARFDRRVPGAEQUAGLGSQLRAALVTQY
477216C
$\qquad$
GNLVNRAVSMAHKNNGAVPRPNTPEELKAVARKAFDTV NGAV
$\qquad$ GNFVNRVLTEI ESK GLLVKGEDDPSVSEAIKTAMSVA $\square$ GNFVNRVLTFIVAKGYGSVIPDHPLTQSLAENVGKFVEQY GNFVNRALVLTDKYFEGRVPEAPMEEELLAQMMAFPEKA
GNLLARTLSMIGKYFESRVPQPGEFTDADRALLDAADKV
IGNLVSRSVSMILKDYDGMIPTPGAFTELLSVCSRVLQED
GNLINRTLNMLAKYKNLDVPSYSVDPEFVAFSKEKFASF DGNLLSRTSTMARKWFEGSVPSADAVADPAERAVTDADTRIV
-
L GNLVNTAAMBAKNF
L
 LGNFAHRSLSMUARYRGGRVPAEQSEKELASAFEVAPS GNFTKRSDDFSNVRFEGVVPCDCSMDDLGDDWQESFACL

L
L
LNLLNRTLNMVKKYCAGEIPSDAPQDTLKTПGGQLGEKV LGNVSRVTKFCRSKFGEVVPEGGAHEALIAELSDRVRRY LGNFVSRITKFCRSKFGEEVPDGGTWGELIEELSTRIGAF GNLVNTATMVHKNF
VGNFAHRVLSFIKTRFGGVLPSTPPDAEFVEAVAKYVKSA
LGNFVNRLVKFTIAKYNGVIPDYPDYAVFEKDVNELLSSY GNLVNRTANMIHKNF GAIPEAPVDAALRATTAAGFDTV GNLVNRTASMIAKKFGEDPPAGDFTAELDDAVNAGFETV
 GNFINRALSFVANFFNGIIPETDADAEVLAEDRDECIQW LGNFIKRSI DFTNSRFGGEVPHSCTVQEWEGDWYATQSQL
LGNFVNRVLKMTAGKFSNEVPDGGQWGDLEKEFVKT LADY
GNLVNRVANLINKNFGEIPPDDEDDRGLLEEASAAFDVV G GNLVNRTVSMAHKNFGA PTPGEFTEELLDEAARAFGIV GNFVNRAVVLTHKYFEGKVPAAD\|DKEALAQVPVLKESL NUASRTCQLIAKYLGGKLNYYEKEKELSQELYLRTEIVV
LGNFVSRVTKFAKSKLGDTIPADPEETALIVDLGARDRDY
GNLVNRSVSMAAKNGGAVPTPDADRALLATTSGAFSAV LGNFVNRDTKYAVGKFDGVVPDGEHEAWDAAELSERLPAL
LGNLLSRTLGMAEKYFALHLSGEFSLYEEKKQUEQDLARLL
 G GNVVRTAAMDAKNVGEDPATDRDRELLGTIGQGFSTV LGNLVNRVVKLVTASYGSVVPEPESFQPTLDEVTATLRQY GNLAQRSLSIIAKN GAKVPSPEDDQALMEKIAG\|PHQV GGNFVNR TKYTVSKFDGTLPSAENEAWMAAELDQRLPAL
 GNLVNRTAAMMAKNVGGELPATDADNALLAKVTEGFDTV LGNFVNRVLSFIAKGYDSIIPSHDPTKKFANKVAAYMEQY LGNLVSRVTKFCRSKFGEVVPEGGDWDALIAEVEGRLRAY VGNLANRALSLLAGPLGGTVAAEGAGRALVESVLARVPEVV GNFVNRDVKFVNAKFDGVVPEYFDFAAWVGDVQKLLDEY


UniRef90_UPI0002D64110 UniRef90-Q648E9 UniRef90-R5R518
UniRef90 X1VPM6 UniRef90-C2GIM0 UniRef90-G7SQW7 UniRef90-W7TRH3 UniRet90_C5AQE7 UniRef90 UPIOOO3B3778E UniRef90-R5QE28 UniRef90-H6Q4K1 UniRef90-H6LOU8 UniRef90-TOLEUT UniRef90-UPI00037569DB UniRet90-D1C8B8 UniRef90-UPIOOO2624CC0 UniRef90-H1CYB9 UniRef90-B5GUB7 UniRef90-B8DT48 UniRef90-D6Y8C9 UniRef90-A7HL66 UniRef90_K9YJUO UniRef90_UPIO004766A4A UniRef90-D7GCG6 UniRef90-A0A059LDQ9 UniRef90-D8PH89 UniRef90-19WJ85 UniRef90-UPI000477216C UniRef90-D7BFY8 UniRef90-D1YWI6 UniRef90-M4F182 UniRef90-UPIO002FC8BAC UniRef90_15C970 UniRef90-FIYKU8 UniRef90-A8LIJ9 UniRef90-C6XHE6 UniRef90-10GK00 UniRef90 UPIOOO36D8641 UniRef90-A2C9R0 UniRef90-W9G8K8 UniRef90-UPIOOO4751863 UniRef90_UPIo0036702B5 UniRef90-JoKCF4 UniRef90-W7X6M8 UniRef90-UPIO0046301DF UniRef90-B4S8K1 UniRef90-Q2H9K5 UniRet90-B8H5U4 UniRef90 R6GK24
UniRef90 D4TQ37 UniRef90-UPI0002557E82 UniRef90_Q1GEI7 UniRef90-D9VQHO UniRef90-UP10003B54D3F UniRef90-F2L2DO UniRef90-A5DIE2 UniRef90-F4GZ73 UniRef90-D6ZJ36 Uniinef90-MOTV76 UniRef90-B9KGP1
UniRef90_H2VP84 UniRef90-Q3B3N3 UniRef90-R5Q3L3 UniRef90-P59076 UniRef90-W5WS17 UniRef90-U6I335
UniRef90 R5SBJ UniRef90-M1M5E1 UniRef90-V7EKL6
UniRef90 14 ESN UniRef90-l4ESN3
UniRef90_R5BH50 UniRef90-UPIO00363169C UniRef90-D3UJJ1 UniRef90-A0A059FG76 UniRef90-R4VXA8 UniRef90-Z9JX80 UniRef90-UPIOOO39ABOD4 UniRef90-A2QPP3 UniRef90_C8WFU2
UniRef90_Q0ANL8 UniRef90-UP1000469C16D UniRef90 A3U1X7 UniRef90-D1BXV4 UniRef90-G7JSP8 UniRef90-UP10003B4D956 UniRef90-LTU9L7
UniRef90 $\cup 7 P V C 9$ UniRef90 U7PVC9 UniRef90-×4R9X2 UniRef900Q6A707

#  

 I SAVEEYEFKKLVDSAMKLADFGNSFFQREEPWHLIKKDA LSYMNDLEFRKALNELRAVWVEGNNYMSTTEPWTVIKTDA GKLVESFRFREALVYFMDLARMGNKYLTEEEPW WRGGGF RGLMQNLJALHADLAETWAVVGEANRYFASEEPWKLRKSDP DAAMARTDVRKSASELRALWVLGNEYGQAAAPWSTFKTDP SAFYEVREFARATRLVMELADAVNEYVDEKKPWERAKDPA EKETMAFELRQAIQTVLELSRLGNGMFQNNSPWKVAKENP MEHUYQ\|GVTGADDEUFKLIRKTNQYWEDSAPWNLAKNKE
 DQLMVDADMNRYLEYLWRTLSMGNKA ADAKPWVRMK EG


 SNAYNKYQFHQACEELMELVRACNKY CNSLKNMEFRKAVEALCSLWSVGNQY DAAAPWKVIKVD GKLIEECKFKAAITEAMRVVATANQYDSQQEPWKLGDDTD EAGYNALLFRDVLLMVEELNSACDEYGDKSAPWKLAKQPE RRAFTDLAFSDGLEAWMRAVFACNQYVDEQAPWTLRKTDP
GGHLSRSRFRAGGSEAMRVVTAANRYISDQQPWKLKDDPD俭
 REQVLQQNLHDYVGDAWKVLAAANRYMSAQEPWKLKKTDA
 EGHMDAMEVRKAAAELRALWVAGNEYLQAAAPWSVFKTDP EESFEKYGLSFALDRVFELISYLNNYDQVKEPWKHTNDDN GQSMP DMDFAGGAAAVFDFIKQVNGYLTEQAPWKVAKDDS
 TAKLERADLRDALRELFELSSFANKTFQDGEPWRRRKGEK
 AQLYEARREYGKALREEMLLADDRVNAYVDQNKPWELAKKEG RSAFDQGDTGRGLAVAWAFIGRANRYVDQAAPWRVARAPA DEAYRNFHFREAASLSMQHARRANRFLTESEPWKVIKQDP AEQMDALEURKSAQALRALWVVGNEYLQEAAPWTALKTD KQAYSVLAFNEVAQAVMLLVQTSNKF DEQAPWSLYKQG ERHMEAMEVRKSAQELRALI WVAGNEYLQSAAPWSVFKEDP EGHMETDQYRKAAAALRALWSAGNAYLDEKAPWLEVKTDL GAQDQTNRQRGADAAAMHTVADVNRYLSETQPWKLKSDPD TANMEAVKLRAGLQTПMALAARGNGYLQASK LGKALMDE EAHYDRIVELKEALMDAVEIAREGNKYLNLRAPWQLVKERP I ERNMEAVNIRKGLELAMAISSRGNLELGDNKLDNTLYT GDLIESHHQKAALAEMMRLVGEANRYVTTTEPFKLGKDES LDAMEKVKLKQGLKIAMSISSEGNAYLQESQFWKLFKEDP DKQFDGVHLKDAVKTILSVSRRGNQYMQAMTPWVLMKDDA DQAYEGFHFREAATIAMDIARAANRFLTSAEPWKAIKTDP
TKYMQAMEFRKAMVELRAI WVEGNNYLTAAAPWTVIKED
GSS円ETHHQKHALSEAMRVVGDTNKYISATEPWKI KDD GDNLNRSRFKAG|TEVMR|AGRANQYVASMEPWKLAKDEE AKNTETYHFREALKDAMS\ARLGNKYISDTEPWKVAKTD RKNLEDREYSRALKEDMSYADYTNQCFDNEKPWEUAKKDE ESLMSQMEVRKAAAELRAMWVIGNEYLQAAAPWSAVKTDP GDLLARNRQKAAATEAMR|VGEANKYLSDQAPWKGKEDPA


## ग

GELIRTHRQRAAIAEAMRLVSEANRYVSETEPFK MKSEE
KEKLDNFKVDGLI GDIDMSFVRSVNGYMEKNQPWKIVKED IUEEMEGAHLRAGVVSAMKLAEAGNGLIQANRDNSLIANEP AA MMEAMEFRKAAAEVRADWAAGNEYLTKAEPWVKYKSDV QGHMDADEVRKAAQELRAIWAAGNEYLQAQAPWTTFKTDP GNLMRTHRQRAATSEIMHLVGEANAYVSATEPFKLYKAEE EAALDRLAQHDALGGVWTLVDAANLYUTETGPWKVAKEPG EGFMEAMEVRKAAIELLSIUVAGNEYLQAAAPWTVVKTDP
 KLDMDAVHLRSGVEKATAVSSQGNTLLQYRLDNASLEKEP GDLIGNHSQRAALAEIMRLVGEANAYVARTEPFKGKAPE



UniRef90 UPI0002D64110
UniRef90-Q648E9
UniRef90-R5R518
UniRef90-X1VPM6
UniRef90 C2GIM0
UniRef90-G7SQW7
UniRef90-W7TRH3
UniRef90 C5AQE7
UniRef90-UPI0003B3778E
UniRef90-R5QE28
UniRef90-H6Q4K1
UniRef90 H6L0U8
UniRef90-TOLEU7
UniRef90-UPIO0037569DB
UniRef90 D1C8B8
UniRef90-UPIO002624CC0
UniRef90-H1CYB9
UniRef90-B5GU87
UniRef90 B8DT48
UniRef90-D6Y8C9
UniRef90-A7HL66
UniRef90_K9YJU0
UniRef90 UPI0004766A4A
UniRef90-D7GCG6
UniRef90_A0A059LDQ9
UniRef90 D8PH89
UniRef90-19WJ85
UniRef90-UPI000477216C
UniRef90 D7BFY8
UniRef90-D1YWI6
R V
UniRef90-M4FI82
UniRef90-UPI0002FC8BAC
UniRef90 - 15C970
UniRef90 F1YKU8
UniRef90-A8LIJ9
UniRef90 C6XHE6
UniRef90 IOGK00
E
UniRef90-UPI00036D8641
UniRef90-A2C9R0
UniRef90_W9G8K8
UniRef90-UPI0004751863
UniRef90_UPI00036702B5
UniRef90-JOKCF4
UniRef90 W7X6M8
UniRef90_UPI00046301DF
UniRef90-B4S8K1
UniRef90 Q2H9K5
UniRef90-B8H5U4
UniRef90_R6GK24
K
UniRef90_D4TQ37
UniRef90 UPI0002557E82
UniRef90-Q1GEI7
UniRef90-D9VQH0
UniRef90 UPI0003B54D3F
UniRef90 D8Q449
UniRef90-F2L2D0
UniRef90-A5DIE2
UniRef90 F4GZ73
UniRef90-D6ZJJ86
UniRef90-MOTV76
UniRef90 B9KGP
UniRef90 H2VP84
UniRef90_Q3B3N3
UniRef90_R5Q3L3
UniRef90 P59076
UniRef90 ${ }^{-}$W5WS 17
UniRef90-U6I335
UniRef90 R5SBJ3
UniRef90 M1M5E1
UniRef90-V7EKL6
UniRef90-14ESN3
UniRef90_R5BH50
UniRef90 UPI000363169C
UniRef90-D3UJJ1
UniRef90-A0A059FG76
UniRef90 R4VXA8
R V
UniRef90-Z9JX80
UniRef90-UPI00039AB0D4
UniRef90 A2QPX3
UniRef90 C8WFU2
UniRef90_Q0ANL8
UniRef90_UPI000469C16D
UniRef90 A3U1X7
UniRef90 S3XU14
UniRef90-D1BXV4
UniRef90_G7JSP8
UniRef90 UPI0003B4D956
UniRef90-L7U9L7
UniRef90-U7PVC9
UniRef90 M8CQ75
UniRef90 ${ }^{-}$X4R9X2
UniRef90 Q6A707

UniRef90＿14Z0J6 UniRef90－M5VNXO UniRef90－UPIOO0469456B UniRef90＿S9PT32 UniRef90＿UPI0002DAAE8A UniRef90－E2SBM4 UniRef90－A0A022KW29 UniRef90＿D1A7H6 UniRef90－A0A023F4C7 UniRef90＿UPIO0047980D3 UniRef90＿UPIO00462F0FE UniRef90－U3A893 UniRef90－UPIO002FE0069 UniRef90－X1NF94 UniRef90－D6X965 UniRef90＿L9ZS31 UniRef90＿UPI0003AA3707 UniRef90－B2W192 UniRef90＿UPIO00382E912 UniRef90－UPIO002B4AD59 UniRef90－R9T9W3 UniRef90－W8S1C7 UniRef90－UPIO002C32BAD UniRef90－K4C2D8 UniRef90＿E4TYT6 UniRef90－B9RWD7 UniRef90－F8AKH4
UniRef90－J0DFD0 UniRef90＿C7MDC0 UniRef90＿UPIO00395BD21 UniRef90－M5A5G3 UniRef90＿S3CWM5 UniRef90＿Q0C161 UniRef90－L9YGM4 UniRef90＿A5GTC2
UniRef90 UPI0003 UniRef90＿UPIO00375BE18 UniRef90－H5SF26 UniRef90＿C7LK01
UniRef90＿Q0FK12 UniRef90＿Q9PL07 UniRef90＿D5WZ44 UniRef90－S8C3P2
UniRef90 B9GFU9
UniRef90－TOL392 UniRef90－D0LY31
UniRef90＿C8X6U2 UniRef90－F4S9X5 UniRef90＿UPI0004414885 UniRef90－A8MA54 UniRef90＿U2SXS5 UniRef90－K2A231 UniRef90－D2RG67 UniRef90－K3V6M0 UniRef90－B7A6F5 UniRef90－F5XPL4
UniRef90－M0IZT6 UniRef90＿UPI00047E5ED7 UniRef90＿UPI0003DE961A UniRef90＿C6WJH3 UniRef90－KOJNZ1 UniRef90－TOZAJ3 UniRef90＿UPIO003770B70 UniRef90－A3Z2B7 UniRef90＿A0A058Z1H4 UniRef90＿D2PQ35 UniRef90＿B5YJ14 UniRef90 LOB640 UniRef90＿K2BW00 UniRef90－K3VKB0 UniRef90＿Q44951 UniRef90－O83776
UniRef90 A6URW2 UniRef90－W5WX29 UniRef90－I1QU94 UniRef90－B5RME0
UniRef90 A0NM72 UniRef90－X5H4Z0 UniRef90－A3K5N1 UniRef90－X7FAG8 UniRef90＿Q3AJZ4 UniRef90＿AOAO24G3H7 UniRef90＿A0A034U8N4 UniRef90＿UPIO003F08B4A UniRef90＿W2S485
UniRef90＿A4HBS8

10
20
30
WLADADPGKT LGNFINRVLSFIAKKYGSIIPQAGGGESFAERIGUCVDQY
 VGN F V N R T L K F T T A K Y N G I I P H Y L E N P D F V Q D I N K L L K K Y




$L$

L
 GNLVNTATMIHKRF LGNLLNRTAPGVIRYCQGKVPPYKEGGELKEATEAGVESKL vGNFWYRSLGAYRNYE GNFVHRVVTFTQKNF LGNFINRITKYTASKFD LGNF：NRVIKFVNKMYD VVPDYPYFTEHRKKVNDLLKTY
「ーーーワ -
「ーーーワ -

 GN NLNRTLVGLKKNCQSTLTAAADGNAFKDKVKEELVVKA
LGNFYHRSLSFTHKHF
 E Y
E G
TA
V D
S GNFTHRALVFSHRKFKEIDPIVDEENKELISRCKETVKKV

 GNLASRVAAM $\square$ SKNF G G SLLPS GDAETALQQQVAAKAVAEA VGNFAYRSLLFAARNYNGT PDATTSKEVAERIREAVTEF IG N L V N R S I SMARKWFEGVLP QEPSNHPLKQAAQAAVADV G N L V $V$ N R T A S M LGNYFNRVVVLTKK LF NGKVVPSEEKFKTILKFLKKCPLKI
 VNDASRAAKFDSQYF DGKLGYAHNTGDLRDAAKALAD DV
 $L G N L L N R I I G M S G K Y S E Y E I D S E K Y H R N E L D A M N K A L A N L$

L
 LGNFI NRVLLKFDAKGYESABPSHPPTKDFGCKVGKLVQEY
 L G NL V S R T L G MVVWRY Q Q G TI S $\begin{array}{llllllllllllll}G & N & F & Y & R & V & L & H & F & A & W & K & N & F \\ G & R & V & \\ G & N & F & V & R & L & T & K & F & T & I & K & H & F \\ D & G & R & V & P\end{array}$


## L

 GNLVNRSVSMAHKNV
$\qquad$ $V G N F L$ Y R S ML F A Y R N F E G
LGNREXKNLESTHP

$\qquad$ G N F WYRALLFAHRNYDGTP
$\begin{array}{ll}1 \\ G & N \\ G & L \\ \text { G } & \text { L } \\ \text { H R T T }\end{array}$
VGNLVNRTLGFLDSRYDQAVPAPGSSHPLAQAALLAREQV

 NI AS RAAPFI TK F F D GKLLKFDENTEELINEDELKVDLV
$\qquad$
G
G

$N L V N R V L T F Q R K F F G D V I E T D E \square Q$

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






UniRef90_14z0J6 UniRef90-M5VNX0
UniRef90_UPI000469456B UniRef90-S9PT32 UniRef90_UPI0002DAAE8A UniRef90-E2SBM4 UniRef90-A0A022KW29 UniRef90_D1A7H6 UniRef90-A0A023F4C7 UniRef90_UPI00047980D3 UniRef90_UPI000462F0FE UniRef90 U3A893 UniRef90-UPIO002FE0069 UniRef90-X1NF94 UniRef90-D6X965 UniRef90-L9ZS31
UniRef90- X1PLY9 UniRef90_UPIO003AA3707 UniRef90-B2W192 UniRef90-UPI000382E912 UniRef90_UPI0002B4AD59 UniRef90_UPI0002889EA9 UniRef90_R9T9W3 UniRef90-W8S1C7 UniRef90-UPIO002C32BAD UniRef90_K4C2D8 UniRef90-E4TYT6
UniRef90 B9RWD7 UniRef90 F8AKH4 UniRef90-JODFD0 UniRef90_C7MDC0 UniRef90_UPIO00395BD21 UniRef90-M5A5G3 UniRef90-S3CWM5 UniRef90_Q0C161 UniRef90-D1BCE7 UniRef90_L9YGM4 UniRef90-A5GTC2 UniRef90_UPI000375BE18 UniRef90-H5SF26 UniRef90_C7LK01 UniRef90_Q0FK12 UniRef90-Q9PL07 UniRef90_D5WZ44 UniRef90-S8C3P2
UniRef90 B9GFU9 UniRef90-B9GFU9
UniRef90_TOL392 UniRef90-D0LY31
UniRef90_C8X6U2 UniRef90-F4S9X5 UniRef90_UPI0004414885 UniRef90_A0A022QUZ8 UniRef9O-A8MA54 UniRef90_U2SXS5 UniRef90_K2A231 UniRef90-D2RG67 UniRef90-K3V6M0 UniRef90-B7A6F5 UniRef90-F5XPL4 UniRef90-MOIZT6 UniRef90-UPI00047E5ED7 UniRef90_UPI0003DE961A UniRef90-C6WJH3 UniRef90-KOJNZ1 UniRef90-U1MHH4 UniRef90-TOZAJ3 UniRef90_UPIO003770B70 UniRef90_A3Z2B7
UniRef90_A0A058Z1H4
UniRef90-D2PQ35
UniRef90_B5YJ14
UniRef90_S3KV99
UniRef90-LOB640
UniRef90-K2BW00
UniRef90-K3VKB0
UniRef90_Q44951
UniRef90-O83776
UniRef90 A6URW2
UniRef90-A6URW2
UniRef90-W5WX29
UniRef90-I1QU94
UniRef90-B5RME0
UniRef90-A0NM72
UniRef90-X5H4Z0
UniRef90-A3K5N1
UniRef90 X7FAG8
UniRef90-Q3AJZ4
UniRef90_W4HNLO
UniRef90_AOA024G3H7
UniRef90-A0A024G3H7
UniRef90_A0A034U8N4
UniRef90_UPI0003F08B4A
UniRef90-W2S485
UniRef90_A4HBS8

SDSIGERYRFREASQELMNLARLGNKYLADEEPWKVIGKD

| R N NYEELALSSACEAVLEI GNAGNSYMDERAPWSLFKQGG E E CFESRNYSKA IRLI MDI ADDTNKYDNDNTPWKKDTKEA |
| :---: |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

E ENLDDKCEFKRALLKAVMELUQFGNRYFDACAPWALIDK D



D N H I M E F NFK D AL M GVVMLAK DGNNYFGKMEPWTV ENEN
GRLLDNQHQKAALSEAMRIVGEDNRY ISATEPWKVRDDE
G GLI E A HRQRAAA A EAMRLVGEANAYVSRTEPFK MKAEE


 K D A IN DYS DK QA GDAAVAL AAFGNEYI QRNEPWHLTTDDEP


GGFIE KYHFKDALMTFMELARGGNKYLTDEEPWKDNKK
E EHMAHAEVRKSATALRRAAWVLGNEYQQDAAPWSTGTKTDP
A D H Y Q QY S L R K A C S T I M E LAA AL GN GYF N D QAP WK LA K E D L A A AFEAREYARA LREIIMAYADRINTAFDAAQPWILAKDEA

D D F MQNMQTHRYLEELWKLFTIGNKAI EEHAPWTKMKEDK
 RDS LD N V K L R G GL Q H L S L S G R G N L Y L Q Q A G L S N A L L D S V D A M E K V K L R E A L S K A MEI S S A G NKYL E D P P Y Y K L Y K T D E E E D Y E R I M L K D A V S Q S I E I A R DG N K Y L N ER Q P WR L


L D NME GVVRLRA GLDVAMA I S A
RTVVRELGKFHVALE EVMAYVKALNRYDNEKRPWELYKKDP GALLRRSRFKQALGEAMRVVGAANKYLSDTEPWKLKADPA




I EGMER LD FRQAAAAALQLADSANGFL






 I D A M D K V K $\quad$ I K Q G L K I
 K A N MLLKLSLNDSLE KI I HLLATQANEY ISQSEPWKLVNEPE ETHMEAI EI RKAAAALRGAWVLGNEYLQEVAPWTTFKTDP





|  |  |
| :---: | :---: |
|  |  |
| UniRe90-M5VNX0 | QAACSLVVKTSAGL |
| UniRef90- ${ }^{\text {S9PT32 }}$ | RQKCADA GY |
| UniRef90-UPI0002DAAE8A | NSAKLDVFLYNLVETLRFIGTLLKPFLPETSESILKQIKA |
| UniRef90 E2SBM4 | A AERLAT LVTLAEGLRALAVLLHPVMPKATAVLWDSLGA |
| UniRef90-AOAO22KW29 | QRDRLLT L HVLAQAVTD |
| UniRef90-D1A7H6 | DKARKGTLLHVALQVVDDAKTLLTPFLPKSSDKVHKMLGG |
| UniRef90-A0A023F4C7 | DKKRAASGIGLLCNVVCLIASLLQPYMPTVVGTIAKQVNV |
| UniRef90-UP100047980 | R ${ }^{\text {a }}$ T |
| UniRef90-UP1000462FOFE | NE KAGALLGLI ANLLALVAVNLHAFMPKT T Q |
| UniRet90_U3 | TOERMKRVAT |
| UniRef90-X1NF94 | KQKELHNILYNLLETLRTLALILFPFIPDSA |
| UniRef90_D6X965 | AGQRLDRALDALLQACLVLADRLEPFLPGAAARDEEQC |
| UniRef90-L9ZS31 | EQ AAQVIRDCVQ |
| UniRet90_11PLY9 | ERCKTVLHVSLKIINALSVFIASYLPFSSDKI WKLLGH |
| UniRef90-UP10003 | DAAA ${ }^{\text {d }}$, V |
| UniRef90-B2W1 | PD RCAAVVGLALSQIHLLASLIQPFMPDTTAAILSQLNA |
| UniRef90-UP1000382 | KERVQTUMYIALQUAAALAVLAEPFLPFTSSKLKRILAV |
| UniRef90_UPIO002B4AD59 UniRef90_UPIO002889EA9 |  |
| UniRet90-R9T9W3 | ECGSALNLNLRLVKALAULSNPFL |
| UniRet90_W8S1C7 | DRAAAITRFALNLIPVYAGLSAPFIIPDAAAAMAKAMGT |
| UniRef90_UPIOOO2C3 | DASEAAADLVILLEAMR |
| UniRef90_K4C2 | TAFETAADLVVVLEAMR!ISIALSPITPGL |
| UniRef90-E4TYT6 | RTDEALATVALVANLLAKASVMLNA |
| UniRef90 B9RWD7 | SCNVVMRASVGLVYLLACLLEPFMPSFSLEVEKQLNL |
| 8AKH4 |  |
| JoDFDO | VRLAV |
| UniRet90_C7MDC0 | R |
| P1000395 | DRQRAGTVTGVAVNVAAALAALLQPFVPGVSAAIQ |
| UniRef90 M5A5 | G PEVDTVMGDALEALRLVALLCAPAIPDTAQAVWERIGM |
| UniRef90 Q0C161 | - |
| UniRef90-D1BCE7 | RLATILVTA AEALRTLAVLLNPVVPKAAEGLDTALGA |
| UniRef90-L9YGM4 | V |
| UniRet90_A5GTC2 | NRDQVAADLYAVLEASRVVGVVLQPLLPEFSERLLQQLNA |
| UniRef90_UP1000375 | QRER |
| UniRef90 H5SF26 | QAALS Y Y ALRALDSLKVLFAPFLPFSSEALHQMLGY |
| UniRe90-CMLK1 |  |
| UniRef90-Q0FK1 | AARS\\|LFCACYC |
| UniRef90-D5WZ44 | RRAELQDACSQALAGFWLLSVMLSPVLPALTARVR |
| UniRet90_S8C3P2 |  |
| UniRef90_B9GF | QPSCSIVIKTSLGLVYLLACLLEPFMPSFSVEVFKQLNM |
| UniRef90-TOL | KDEALIATVVALVANILAKASIMLSPVMPKTTVT1A |
|  |  |
| Rete |  |
| - | RRCAQ VLVSMNLVYLLSVLVHPFMPTTSDLILKQLNA |
| Ref90_UP1000441488 | KRCAQVVARALNL MVLAVL EPYMPNTAAS NTQLDA |
| UniRet90 A0A022QUZ8 | CALA SALKTSAGVVYLLACLLEPAPMPSFSVKVLT QLN W |
| UniRef90-U2S | QRERLGTVLYTAAEGLRAL |
| UniRef90-K2A231 | E ELSVVLTTLVEAVRLISLLVLPFIPATTQKTWAG |
| UniRef90-D2RG67 |  |
| UniRef90- B7A6F5 | EAQAVLYRVVEGLRIASILLTPAMPAKMAELACAL |
| UniRef90-F5XPL4 | RDAVLHTALQVVSDANTMLTPFLPHAAQKVHEAL |
| UniRef90-M01 | RAAQVIRDCVQIAKATSVLFYPVVPGKMQALWE |
| UP | DNLRAVLAVTAESI RII TALLYPVLPYSTSKVWT |
|  | KSLCSLVMKTAAGIVYLLACLLEPFIPSFTLEV |
| UniRef90_C6WJ | LQVVQDANTLLTPFLPHSAQKVHELLGG |
| ef90_KOJNZ1 | LHTALQVVQDANTLLTPFLPHSAQKVHEALGG |
| 1MHH4 |  |
| OZAJ3 |  |
| UniRef90 UPI0003770B70 | GEVLYVLTETIRYI |
| UniRefo | RQQVADDLYAVLEAARQVALLLAPILPDLSARMLLQLNQ |
| UniRef90 A0A05821H4 | ECNTLLYVMVNFJVYLIATLL HPFIPATSVAICEQLSP |
| UniRef90-D2PQ35 | NA WNAIADSNVFLYPFMPETANK |
|  | W |
| UniRef90-LOB640 | E |
| UniRe990-K2B |  |
| K3V |  |
| 44951 |  |
| UniRef90-083776 | RERADALMRELCYVI RDVLILAHPFLPWYTQQAARFLGV |
| UniRet90_AbURW2 |  |
| 俍et90_W5WX29 | EGTKR VLTTTLNLFRVLAIYLKPILPIIYSEKVAVLLNS |
| UniRef90_11QU94 |  |
| UniRef90 B5RME0 |  |
| UniRef90-A0NM72 | $R C Q T V I Y V T L D S L R T V M E A L T Q V I P A S A G K A L A M L N A$ |
| UniRef90-X5H4Z0 | LLYTMLEALRIIGIALQPFIPGSAKAMLDSLAV |
| UniRet90_- 3 K 5 S 1 |  |
| UniRet90 X7FAG8 |  |
| iRef90 Q3AJZ4 |  |
| iRef90 W4HNLO |  |
|  |  |
|  |  |
| Ref90 UPI0003F08B4A | A |
| UniRef90_W2S485 | A |
| UniRef90 A4HBS8 |  |

130
140
 UniRef90-X1NF94 UniRef90-D6X965 UniRef90-L9ZS31
UniRef90 - 1 PLIY9 UniRef90_UPI0003AA3707 UniRef90 B2W192 UniRef90-UPIOOO382E912 UniRef90 UPIOOO2B4AA59 UniRef90_UPI0002889EA9 UniRef90_R9T9W3 UniRef90-W8S1C7 UniRef90-UPI0002C32BAD UniRef90-K4C2D8 UniRef90-E4TYT6 UniRef90_B9RWD7 UniRef90-F8AKH4 UniRef90-JODFDO
UniRef90 C7MDC0 UniRet90-UPIOOO395BD21 UniRef90-M5A5G3 UniRef90-S3CWM5 UniRef90-Q0C161 UniRef90-D1BCE7 UniRet90_L9YGM4 UniRef90-A5GTC2 UniRef90_UPIO00375BE18 UniRef90-H5SF26 UniRef90_C7LK01 UniRefofo-QOFK12 2 UniRef90-Q9PL074 UniRef90-S8C3P2 UniRef90-B9GFU9
UniRef90-TOL392 UniRef90-DOLY31
UniRef90_C8X6U2 UniRef90 F4S9X5 UniRef90 UPI0004414885 UniRef90-A0A022QUZ8 UniRef90_ABMA54 UniRet90_U2SXS5 UniRef90-K2A231 UniRef90-D2RG67 UniRe990 K $3 V 6$ GM UniRef90_B7A6F5 UniRef90-F5XPL4
UniRef90-MOIZT6 UniRef90-UPI00047E5ED7 UniRef90 UPIO003DE961A UniRef90-C6WJH3 UniRef90-KOJNZ1 UniRef90 TOZAJ3 UniRee90_UPI0003770B70 UniRef90_A3Z2B7
UniRef90 A0A058Z1H4
UniRef90-D2PQ35
UniRef90-D5Y 14
UniRef90_s3KV99
UniRef90-LOB640
UniRef90_K2BW00
UniRef90-K3VKB0
UniRef90 Q44951
UniRef90-O83776
UniRef90-A6URW2
URe90-W5WX29
UniRef90_-110U94
UniRef90_B5RME0
UniRef90-AONM72
UniRef90 X $5 \mathrm{H} 4 Z 0$
UniRet90-A3K5N1
UniRef90-X7FAG8
UniRe90-Q3AJZ4
UniRef90-AOAO24G3H7
UniRef90-A0A034U8N4
UniRef90-UPI0003F08B4A
UniRef90-W2S485
UniRef90-A4HBS8

P P D L E KAKKPPA GHK I GTP DP L F K E L K DEEVEAFRKK

PATDSFSLPLLDPGHRIGEPE YLFSRI DESMEEKW
E E ETFESSLE EFG GTQLQPGEKLFERLDK
GA DVARWGQLDAGTAVVKSDALEPRIDDD



 $P$ QD A R DLAALA QDNRVDNPTPAFPRLELPQ
PDAFDGRDEVVVGTPGAKPAPVFTKLDES VEEELA
VGGVLPAPAPLFPRDE
 EGKWEAFNNLNVGYKLERPQPLFTKLSDQ DGMVEA
 EFSWE ARSLDVGHKI GTAGYLFS QI K P E K EQE WRE E L S WP DVVS K L P N G HQ I G E P E L L F R K V E D S E DiN A QL E A T K K A A T WN ETK WLK K G QVVMAP PN PVVARIVEA VVNGEEEA DRQSFDDAEL LLLKNNIINKYKPLLKRLDEPII IPEEKPMSNE DNTWKS LN I PPAEHKLRSPAPL FTKMEPIEEE


E IT TE E S Y R N L DA N KTVIK K DP P L FPPRVVEPDMMQEAP KAMDE
DI DRAPWEFIPBNHKI GTPEPLVKELKDEEVDFFRKK
ELDLE LIRGNKLKKPKVVFAKI EDDKIVMVKEKLLLK
S GTFSALEAIVDGTEIHKPEPVFQKI PEEAVDEEL
T G D Y T D VV A WE P G Q T V A A K P T P
PPERCGLGTLPAGHRVGTVSPLFQKLEPEQVEALRQ
TPDAATWGQYPAGATVTKGDPLFPRI
$P L D K W T P D S L A G G H K I G K A E Y L F T K I D D K K E E E W$

EETAAEFGQLPAGTRVTKGASLFPRLDE
DSKVHNAALESPPRNFNEPE EL FEK I EDE H $\square D D L N E R L R D$ P G D WLE L L N WL T P G P LDA P S P L L Q R L E LEE
 QL NWQLL LKVTP GLLLSNNK LLEDKITTDFEIKK QLDKL
D D S WP DL T S L P A GHAF T VAP DVTF R K I T D D E RE
ERDF VWS DATE T P Q HAAPYQHLMHRDDPKR LDA LIFE


A GEHVDLSLLGPGRPFEA LIPPLVTQIDDDRLEELKQ
A GVWAA
$P Q R S L P L T D L L P G H M D G E A D Y L F R K D D A D R$
PKRTAFALLDILPGHKI GAPALLFHPIDDASLEAWRQ


D TT CDS L N N T LDAK TP H QLK MLFPRTE T K
DLKKLD D A L K K V D DVVVE LS K P K I P F E K V E D K K IE E M
$P L R W T G E D L L D$ GHSSIDREPKHLFRKIDEKK MEEW
K E EVVERWGLALPGPIPE EAPVLFP
S GVWA A QPE EQPGTPLLAKPTPL FAKLDEK
DGAVA DVGEAPADT FGEPEALIFEKLIE



| $T$ | $G$ | $W$ | $A$ | $A$ | $Q$ | $P$ | $Q$ | $D$ | $E$ | $V$ | $G$ | $R$ | $P$ | $L$ | $A$ | $K$ | $P$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $A$ | $P$ | $L$ | $F$ | $A$ | $K$ | $L$ | $D$ | $P$ | $E$ |  |  |  |  |  |  |  |
| $S$ | $G$ | $V$ | $W$ | $A$ | $A$ | $Q$ | $P$ | $Q$ | $L$ | $P$ | $V$ | $G$ | $R$ | $P$ | $L$ | $A$ | $K$ |
| $P$ | $A$ | $P$ | $L$ | $F$ | $A$ | $K$ | $L$ | $D$ | $P$ | $E$ | $L$ | $A$ | $E$ |  |  |  |  |


$P$ I D F D D A A R P L L G H R I N A F T P TVEDRNFKA LKK P GT II T K P E PVVF FK I E EK

A A E S GAVLDPLLA GHVI GTPARRLFERLSEETVAAL
A A A WRS R P VVVPGTPVAPPRPDVFAKLDP SVVVDE ELARL
R D Y D DD Y K M L K WE VK TEE K I E QL F P K I E DK TEE Q M K V E K R E

E YPAK WQDA LI LPE K I E S F KHMMSRVDED DFSKLF DEKKE
A ENRVK DPDLA WG
PETWTGGDVKPGQKDGEPKLLFTQDPASKLDEWREA
SYQFS T L G TK S G I K KI E F TEEI L F NKLE Q K KI N N L
QLS WS DVVGER K GLLT QVVHPPVVI L F R P L E T E T I A A Y


EKAKRPWDLI PS GHRI GKPAPLFK

PAVWKELDRLEGNS DLGE DE TLLYPRV
PENMTAASAI KFGTLIEKPSPVFKKHE
DESWA ALEMLP Q GHTFTVPDDVTFRKDT DAERE
DAD WP DLLSTLAP GHAFKVPDVTFRRKI T DAERE
S LDPNNWGRLMCSGSALDPK T PVVMRRLEDDE

$P D K C N F V C F \square P P G H K \square G Q G G V V T A K A D K V K \square E A E D K K L L E$ D F S E E DI S Y I K P G H K I G K A E YL F T K I D E K K A D E WR E

UniRef90 I4Z0J6
UniRef90-M5VNX0
UniRef90-UPI000469456B
UniRef90-S9PT32
UniRef90_UPI0002DAAE8A
UniRef90-E2SBM4
UniRef90-A0A022KW29
UniRef90 D1A7H6
UniRef90-A0A023F4C7
UniRef90_UPI00047980D3
UniRef90 UPI000462F0FE
UniRef90 U3A893
UniRef90-UPIO002FE0069
UniRef90-X1NF94
UniRef90 D6X965
UniRef90 L9ZS31
UniRef90-X1PLY9
UniRef90-UPI0003AA3707
UniRef90 B2W192
UniRef90-UPIO00382E912
UniRef90_UPI0002B4AD59
UniRef90_UPI0002889EA9
UniRef90 R9T9W3
UniRef90-W8S1C7
UniRef90-UPI0002C32BAD
UniRef90 K4C2D8
UniRef90-E4TYT6
UniRef90-B9RWD7
UniRef90-F8AKH4
UniRef90_J0DFD0
UniRef90_C7MDC0
UniRef90_UPI000395BD21
UniRef90 M5A5G3
UniRef90 S3CWM5
UniRef90_Q0C161
UniRef90-D1BCE7
UniRef90_L9YGM4
UniRef90-A5GTC2
UniRef90_UPI000375BE18
UniRef90 H5SF26
UniRef90-C7LK01
UniRef90_Q0FK12
UniRef90-Q9PL07
UniRef90 D5WZ44
UniRef90-S8C3P2
UniRef90-B9GFU9
UniRef90_T0L392
UniRef90-D0LY31
UniRef90_C8X6U2
UniRef90-F4S9X5
UniRef90 UPI0004414885
UniRef90-A0A022QUZ8
UniRef90_A8MA54
UniRef90 U2SXS5
UniRef90 K2A231
UniRef90-D2RG67
UniRef90-K3V6M0
UniRef90 B7A6F5
UniRef90-F5XPL4
UniRef90-MOIZT6
UniRef90-UPI00047E5ED7
UniRef90 UPI0003DE961A
UniRef90-C6WJH3
UniRef90_K0JNZ1
UniRef90 U1MHH4
UniRef90-TOZAJ3
UniRef90_UPI0003770B70
UniRef90-A3Z2B7
UniRef90 A0A058Z1H4
UniRef90-D2PQ35
UniRef90-B5YJ14
E
UniRef90 S3KV99
UniRef90 L0B640
UniRef90-K2BW00
UniRef90-K3VKB0
UniRef90 Q44951
UniRef90_O83776
UniRef90-A6URW2
UniRef90_W5WX2
UniRef90- 11 QU94
UniRef90-B5RME0
UniRef90-A0NM72
UniRef90 X5H4Z0
UniRef90-A3K5N1
UniRef90-X7FAG8
UniRef90 Q3AJZ4
UniRef90 ${ }^{-}$W4HNLO
UniRef90-A0A024G3H7
K
UniRef90-A0A034U8N4
UniRef90 UPI0003F08B4A
UniRef90-W2S485
UniRef90_A4HBS8


UniRef90- O73NT9 UniRef90 A0A024UGJ0 UniRef90-L8HEJ9 UniRef90-D8SGU7 UniRef90-UPI0004726EB4 UniRef90-R7L4Q3 UniRef90-Q7MAJO UniRef90-UPI0003A73EDD UniRef90_C7NR83 UniRef90_A0A017SD56 UniRef90_F7VV41 UniRef90_C8PIQ3 UniRef90-Q7VGH9 UniRef90-M7MU37 UniRef90-M1M7V0 UniRef90-N9TJ14 UniRef90-N1PC42 UniRef90-D4Z1L4 UniRef90_K2BQM9
UniRef90 I1FWU7 UniRef90-K1ZOH4 UniRef90-N4VFQ2 UniRef90-J9E7A8 UniRef90-A818V5 UniRef90-W0HTQ0 UniRef90-A1RXT9 UniRef90_S3UHZ7 UniRef90_A9GLJ7 UniRef90-Q6BZY8 UniRef90-H1VLB0
UniRef90-NOBFE6 UniRef90_UPI0004795C6D UniRef90_V511B0 UniRef90-K4DRR4 UniRef90-WOVMH9 UniRef90_I1BIY4 UniRef90-UPI000344DCD6 UniRef90-K6GJV3 UniRef90-W6MSW4 UniRef90_F2RZC1 UniRef90_S3XHJO
UniRef90 G4U2T5 UniRef90_UPIO0036F6453 UniRef90-K7G4T8 UniRef90-H2EDI7
UniRef90 R9IUY8 UniRef90-M7BVD2 UniRef90-H9GEG0 UniRef90_UPI000470543F UniRef90_COS1P3 UniRef90-E8R8S9 UniRef90-L7MFY6
UniRef90-T1JZI2 UniRef90-V6TW69 UniRef90-J2AXU3 UniRef90-M4DE30 UniRef90-Q4WP29 UniRef90-F2SGR6 UniRef90-A9EA91 UniRef90-G2RBC3 UniRef90-D2EGP4 UniRef90_Q0CCR1
UniRef90 G3ASH9 UniRef90-S8FRH5 UniRef90-S5M0Z2 UniRef90-E6WU86 UniRef90-D6PB15 UniRef90-G3MMGE7 UniRef90_UPI00038EAFA4 UniRef90_13J2K3 UniRef90-S2J7V5 UniRef90-E3J1Y4 UniRef90_W5UJB4 UniRef90-H2L5B3 UniRef90_UPI0002DDD1EF UniRef90-UPI000378A4E4 UniRef90-N1JCJ2 UniRef90_UPIOO0392DB0D UniRef90_G8YT24 UniRef90-XOWIV4 UniRef90-G3C9C1
UniRef90_ U6L8U1 UniRef90-C5MJ30 UniRef90-S7KFS3
UniRef90_CONAH8



## ELVASVDHLPDQV

LGGLLNRCTGFSEACFNGRGSGRALPEDLVSSVEALPSQV LGNLANRVLTLLATSFDGUVPQ VPDSELVREAARLPSKV LGNLASRVLSSVVMAGEGRFPRTEHQDFL $\qquad$ ESSPEKA GNLARRVGTLSMKKMNGKVYRRSVDKAVADLVATHVGAY

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

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





 $L G N$ L V N RVMA Q I N K F F D G V L P DVVPSHA EL L A KV D E G L A R T





 L G NLVVHRCI SLAAVKFSEGTVPPPRRQQVSPRAQLSPBCSKM


## UniRef90 $1115 F 8$

 UniRef90-KOREW8UniRef90-X1MMP1 UniRef90-Q73NT9 UniRef90_A0AO24UGJo UniRef90-L8HEJ9
UniRef90 D8SGU7 UniRef90-UPI0004726EB4 UniRef90-R7L4Q3 UniRef90-Q7MAJO UniRef90-W7SXX9 UniRef90-UPIo003A73EDD UniRet90-C7NR83 UniRef90-A0A017SD56 UniRef90_F7VV41 UniRef90_C8PIQ3 UniRef90-Q7VGH9 UniRef90-M7MU37 UniRef90-M1M7V0 UniRef90-N9TJ14 UniRefifo N1PC42 UniRef90-D4Z1L4 UniRef90-K2BQM9
UniRef90 11 FWU7 UniRef90-K1ZOH4 UniRef90-N4VFQ2 UniRef90-J9E7A8 UniRef90-A888V5 UniRef90 ${ }^{-}$WOHTQ0 UniRet90_A1RXT9 UniRef90-S3UHZ7 UniRef90-A9GLJ7 UniRef90-Q6BZY8 UniRef90-H1VLBO UniRef90_NoBFE6 UniRef90-UPI0004795C6D UniRet90_V5I1B0 UniRef90 K4DRR4
UniRef90
WOVMM UniRef90 - 11 BIY4 UniRef90-UPI000344DCD6 UniRef90-K6GJV3 UniRef90-W6MSW4 UniRef90-F2RZC1 UniRef90-S3XHJO
UniRet90 G4U2T5 UniRef90-UPIO0036F6453 UniRet90-K7G4T8 UniRef90-H2EDI7
UniRefo
R9IUY8 UniRef90-M7BVD2 UniRef90-H9GEGO UniRef90-UPI000470543F UniRef90-COS1P3 UniRef90-E8R8S9 UniRef90-LTMFY6
UniRef90
U1JZ12 UniRef90-V6TW69 UniRef90_J2AXU3 UniRef90-M4DE30 UniRef90_O2CD95 UniRe90-Q4WP29
UniRef90-F2SGR6 UniRef90-A9EA91 UniRef90-G2RBC3 UniRef90-D2EGP4 UniRef90-Q0CCR1 1
UniRef90 G3ASH9 UniRet90-S8FRH5 UniRef90_S5MOZ2
UniRei90_E6WU86 UniRef90-B7FWX8 UniRef90-D6PB15 UniRef90-G3MGE7 UniRef90-UPIO0038EAFA4 UniRef90_13J2K3 UniRef90_S2J7V5 UniRef90-E3J1Y4 UniRef90-W5UJB4 UniRef90-H2L5B3 UniRef90-UPIO002DDD1EF UniRef90 UPIIOOO378A4E4 UniRet90 N1JCJ UniRef90-UPIOOO392DB0D UniRet90_G8YT24 UniRef90-XoWIV44 UniRef90-G3C9C1 UniRef90-U6L8U1 UniRef90-C5MJ30


## 

50
60
70
TDAMDKVKLKKGLLKTAMAIISSEGNAYLLQESQFWKLYKQDA VEKMTKYTLEGGANIDQACRDVNGYLTREEPWKLKGEEN

TE $\quad$ L MDRLSFSEALSEVWRMVKAANLYUDRSAPWRLAKEKE EEAFQAYALQEAAFRFMEVVRATNGYGTTAAPWHMTDDHE SEHYTNVEFGPGISAGEELLYDANKYLQDNEPWKLRKTDP
 EAGVNDYSDRKATQAAVELASFGNEYUQRHEPWNLDDDEA AEHMENLNPRSALQDDVSIVEKTNKYFHAAEPWK
NE QVKGTK LDRAGLATVLSIVGVGNKLLQDNKDSNQLLTEE IS ALLEEVATNRYLEELWRALALANASIAKYEPWNLI KNG QEKMLSMQPHRYVEELWKAFGLGNSVITKYEPWNLIKSHQ
 LNAMENVKLKEGLKDAMADSSVGNKYLQDTAAWKTIKSD RKEFDAVHLKAALSCAREISSSLGNLLLQSNKDDNSLFNNE HNLIGQYRFNEALDATWVIIRQANKMVDDEKPWELE SVGS $\square E N M E K C K D R D G L K C D L S S K D G N G Y L Q A G E P W K L D K N N A$ AAHMQAHEFHDALARLWKFINKVNAYFHSQEPWKI AKSDP SNHVDQLNPNQAI GSVGDVLVEANKYDSEAAPWKLVKDPA
 EHHMRQLEYRKAGVAMRRMWTRGNEYI THQQPWRQVKTDP AEFMYAFRFKEALTH\|LDLSSSGNSYLNFRKPWELDSESA RE WYEARNYTRVMKECSRLGDDANKYVNDDAPWDQDKTDA A AAAATAQPTRALDA $\square W T V \square A A A N L Y I D K A A P W V A K K T D P$ NTLMENTKDKSAQDTAMAI SSRGNQFLQDNKDNSLFADHP SKHMDELDPNAADRSVFSVLAETNKYISDRAPWELTNSTK KNGLANWEFKVVSDAFMELSSFGNNYFQNAQPWDLVKKD AEHMENLTNPRSALREMMAIADKTNKYFHAAEPW

 DAAVRAFDLRAATGAVVALADEGNRYVADHEPWALAREBPG LI H Y E K K E F S K A lik LI M Q I A D E T N K Y I I N E H T P W K L L D K N E A





NASFEHFQLYKALESVVACVRQTNGFFQRHAPWKLCRDNP A E A F E A Y E L H V G L A A D


 AEAFDAYELHVGLADI FAFVGEANRRFAKRAPWADAKRQA
 ERHMDAI EVRKAAAELRAI WVTGNEY LDQKAAPWTVIKTDE AEQMEKLNPRAALQDIMAIIEKTNKYFHAAEPW KTPA
 NAELKGLKLRAALSTVMSISAMGNKLLQDNKLNNQLLAEE

 D A A MSELLRVSDALTHIRAALTAANVLMTEARPWD KQTP K D L M N K Y N F S E Al S VV LIK F S Q ELDN K FIIE D S K P WNL E K E N K P ELLYTE DNFAA VTRNNAMAAA DMANE Y I A ATAP WALAAKDPA QA RMDK LEELQAGATVVIGAFRDVNGFLQEEAPWLKK GDE H
 A DCYEN F QI YK ALEAVVSSCVVRQTNGFVQRHAPWKLSWES P EKHYETMHLYKALEAVSACVRLTNGFVQRHTPWKLRKNSE NRAFEERDFSKAYTY IGFDMANKHFAENEPWKMAKQS Q


 P PAFENLALQQAVEAWLQAVFACNAYI DA QAPWTLLRKTDP TS SYNSRNYSKAVRLI MEMSDDINKYINDSTPWKKEPNEA S K E ME K L S VK D AL RHI MNVVVYHTNTY FQQTKPWEVVVKS QE

 E NFVKKNFELHRAIE EIIFKFVREVNKYVNDKEPWKVGGKE






UniRef90 |115F8
UniRef90-K0REW8
UniRef90-X1MMP1
UniRef90 Q73NT9
UniRef90 A0A024UGJO
UniRef90_L8HEJ9
UniRef90-D8SGU7
UniRef90 UPI0004726EB4
UniRef90 R7L4Q3
UniRef90_Q7MAJO
UniRef90-W7SXX9
UniRef90 UPI0003A73EDD
UniRef90-C7NR83
UniRef90-A0A017SD5
UniRef90 F7VV4
UniRef90 ${ }^{-}$C8PIQ3
UniRef90_-Q7VGH9
UniRef90-M7MU37
UniRef90 M1M7V0
UniRef90-N9TJ14
UniRef90-N1PC42
UniRef90_D4Z1L4
UniRef90 K2BQM9
UniRef90-11FWU7
UniRef90-K1ZOH4
UniRef90 N4VFQ2
UniRef90-J9E7A8
UniRef90-A818V5
UniRef90 W0HTQ0
UniRef90 A1RXT9
UniRef90_S3UHZ7
UniRef90-A9GLJ7
UniRef90 Q6BZY8
UniRef90- H1 VLB0
UniRef90-NOBFE6
UniRef90 UPI0004795C6D
UniRef90 ${ }^{-}$V511B0
UniRef90 K K 4 DRR4
UniRef90-WOVMHs
UniRef90 I1BIY4
UniRef90-UPI000344DCD6
UniRef90_K6GJV3
UniRef90 W6MSW
UniRef90 F2RZC
UniRef90-S3XHJC
UniRef90-G4U2T5
UniRef90 UPI00036F6453
UniRef90 ${ }^{-}$K7G4T8
UniRef90-H2EDI7
UniRef90-R9IUY8
UniRef90 M7BVD2
UniRef90-H9GEG0
UniRef90-UPI000470543F
UniRef90 C0S1P3
UniRef90 E8R8S9
UniRef90-L7MFY6
UniRef90_T1JZI2
UniRef90 V6TW69
UniRef90-J2AXU3

UniRef90-M4DE30
UniRef90_Q2CD95
UniRef90 Q4WP29
UniRef90-F2SGR6
UniRef90-A9EA91
UniRef90 G2RBC3
UniRef90-D2EGP4
UniRef90_Q0CCR1
UniRef90 G3ASH9
UniRef90 S8FRH5
UniRef90-S5M0Z2
UniRef90-E6WU86
UniRef90 B7FWX8
UniRef90_D6PB15
UniRef90-G3MGE7
UniRef90 UPI00038EAFA4
UniRef90 I3J2K3
UniRef90- S2J7V5
UniRef90-E3J1Y4
UniRef90 C6WQV5
UniRef90 W5UJB4
UniRef90-H2L5B3
UniRef90_UPI0002DDD1EF
UniRef90 UPI000378A4E
UniRef90-N1JCJ2
UniRef90-UPI000392DB0D
UniRef90_G8YT24
UniRef90 XOWIV4
UniRef90-G3C9C1
UniRef90-U6L8U1
UniRef90 C5MJ30
UniRef90 S7KFS3
UniRef90 CONAH8


UniRef90_UPIO004793AE0 UniRef90_10Z940
UniRef90-L8X6F2
UniRef90_Q7T0Z0
UniRef90_UPI000380B9C1
UniRef90_UPI000398F8F4
UniRef90_E9GLK4
UniRef90_A2BWJ4
UniRef90_K2E5E0
UniRef90_UPI000395C1E2 UniRef90_M9M013 UniRef90_K2G262 UniRef90_D5E4Z1
UniRef90_J3T5N6
UniRef90_A9FN80 UniRef90-UPI0004705645 UniRef90_M2S4G3 UniRef90_R0LG47 UniRef90_A0A023DZD2 UniRef90_V8CKL8 UniRef90-F9WM13 UniRef90_K9P3R1 UniRef90_M3B4Y4
UniRef90_L8FNB4 UniRef90_UPI00037078D9 UniRef90_B0W122 UniRef90_UPI0004561A3F UniRef90-TOLNN3 UniRef90_B9TEL9

VGNLLNRTLGLLRKNCAGAAAADPA DNPDRAVAELEVAAA L N E D E A DP T F V S E V N E L L S E Y $L G G L L N R C T A M Q H Q Y E N F P V A S R D Q V H D L L G A L Q E L D V E E V$


 $L G N F I N R A G M F V T K F F D R L V P E M E E D K Q L L A Q V T W E L Q Q Y$
LG N L VN RVVTMVCRF LD GHVPEPGGEPPV
 VGNLLSRVLKKAEREFDWRDRGEDRDEELDGMMARMREEF



 $L G N L T S R \square S S$

LGNLASRRISAKDHARLAERDPEDQMVQALEQALTELPSKV $V G G F V S R V L R L V V D E Y S S V V P R W S E D Y G F V K V T N D L L N R Y$

 LGNLVARVAAMCV






 MVDKA


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


L G NL V Y RIV A


GNY


LA E Y A QF F S L E S T L G RA S N A F

## UniRef90 A2BR68

 UniRef90-H9JMP4UniRef90 G8JSR6 UniRef90-T1DBV3 UniRef90-E3QFN3 UniRef90_UPIO00362A2AD UniRef90-H9HONO UniRef90_G3X0K4 UniRef90_A0A059ETC4 UniRef90-C0SFY7 UniRef90-W9DV41 UniRef90-E1WXC1 UniRef90-TOSYP3 UniRef90-X1NGH4 UniRef90-G3PZR8 UniRef90-X7EH21
UniRef90_Q9HJ12 UniRef90_M3ZDK1 UniRef90_UPI0004793AE0 UniRef90-10Z940
UniRef90-L8X6F2
UniRef90-Q7TOZO UniRef90_UPI000380B9C1 UniRef90_UPIO00398F8F4 UniRef90-E9GLK4 UniRef90-A2BWJ4 UniRef90-K2E5E0 UniRef90_UPI000395C1E2 UniRef90-M9M013 UniRef90-K2G262 UniRef90-D5E4Z1 UniRef90_J3T5N6 UniRef90_A9FN80 UniRef90-UPIO004705645 UniRef90-M2S4G3 UniRef90-R0LG47 UniRef90-A0A023DZD2 UniRef90_V8CKL8 UniRef90_F9WM13 UniRef90-K9P3R1 UniRef90-M3B4Y4 UniRef90-L8FNB4 UniRef90_UPI00037078D9 UniRef90-B0W122 UniRef90_UPIO004561A3F UniRef90-TOLNN3 UniRef90-B9TEL9 UniRef90_C5F022 UniRef90-UPIO0046D8AB0 UniRef90-V9KTA7 UniRef90-H0Z474 UniRef90_UPIO00368D6F8 UniRef90-J7RM56 UniRef90_Q5KQ95 UniRef90-B4UG79 UniRef90-C5L3J1
UniRef90-D3VPM5 UniRef90_G9P987 UniRef90-B3PM80 UniRef90 Q9VFL5 UniRef90-E1FMW4
UniRef90 R4X9N8 UniRef90-X11545 UniRef90_UPIO0045619D1 UniRef90_Q2GR29 UniRef90_A0A024GK78 UniRef90-A711B6 UniRef90-G8ZVQ2 UniRef90_K2BJQ6 UniRef90-A7AW53
UniRef90 R8BE76 UniRef90_UPI00047DD893 UniRef90-I6ZL55 UniRef90_EOSAF1 UniRef90-J3PS48 UniRef90_A0A024VRD7 UniRef90_V6LUH4 UniRef90-Q6LLM5 UniRef90_MOUWH3 UniRef90-K2C475 UniRef90-K2GGY2 UniRef90-A7HD54 UniRef90-X8J2Z0 UniRef90-R9NX01 UniRef90-K2FV43 UniRef90-D1J7S4 UniRef90_UPI0003B57DB0 UniRef90_UPI0004621AE9 UniRef90-K2AJ89 UniRef90_J5JIIIO
UniRef90_L8WRL5
 DATMRQQDDSEGCAIIRQVTGATNEWITRVEPWKDKDDKE DELMDEFKLDKALEYSMNLSDADNKYIDDLKPWTLTAHE CKEMDDYDTSAAL RVVFELLRETNRYVSDTKPWDLVKNQD
 EEQFDEDMIYKALEELLMEVMRQANGFFQFYEPW HESLS ENVIHKAV GSVMMHMVSAANALMQKEEPWSKSCSEK DDMMARFEFSKALEALLETDGQTNELLQRMEPWSASVPEE $\square$ K EMDGVE LRAGLLTALEISRCGD ATDFQUPDFHQGLQKDMLYLHKVNRYFSSNEPWVLKEEEH VENLE EVATSRYLEEELGKALNLANSSDTKYEPWKMGKNGE ADQISTFQTRDALRNVWSIIDQSNTFMQEAKPWAKSGT TKAI SEYKFDGAMANI WERIKKADQFVSEKRVWELK SHLQRFADQDALVTVIDEYRDTNKYLTDREPWAKGSVDT YYHMETDDPSRALQSITNAALDSNKYIDDTMPWNQAKNEA ERHMYNHDFHR\|SYTLDDYIREVNKHWVNNV KKADNNN



 SESUKNDKMKNGLQUWLEAVTLANNYFNSEAPWNIVNDHE DEHLKEFQFEKALEFI WVEITTLDDHRI EKEKPWNLTGK


 KKYFDNFNADKALKKAI ELSKFLNEYI DKNEPWKLKENDP QKADDNLEVGEALEEDI ALLRLANKTVTTDAPWSASCPPT



## UniRef90 A2BR68

 UniRef90-H9JMP4 UniRefefo-G8JSR6 UniRef90-T1DBV3UniRef90-E3QFN3 UniRef90-UPIO00362A2AD UniRef90-H9HONO UniRef90- G3X0K4 UniRef90-AOAO59ETC4 UniRef90-COSFY7 UniRef90-W9DV41 UniRef90-E1WXC1 UniRef90-ToSYP3
UniRef90
X1NG 4 UniRef90-G3PZR8 UniRef90-X7EH21
UniRef90-Q9HJ12 UniRef90_O9HJ12
UniRef9O_M3ZDK UniRef90-UPIO004793AEO UniRef90-10z940
UniRef90
UXK6F2
UniRef90-L8X6F2
UniRef90 O7TOZO UniRef90-UPIooo380B9C1 UniRef90-UPIO00398F8F4 UniRef90-E9GLLK4 UniRef90-A2BWJ4 UniRef90-K2E5E0 UniRef90-UPIO00395C1E2 UniRef90-M9M013 UniRef90-K2G262 UniRef90-D5E4Z1
UniRef90 J3T5N6 UniRef90-J3T5N6
UniRef90 A9FN80 UniRef90-UPIOOO4705645 UniRef90-M2S4G3 UniRef90-RoLG47 UniRef90_AOAO23DZD2 UniRef90-V8CKL8 UniRef90-F9WM13 UniRef90-K9P3R1 UniRef90-M3B4Y4
UniRef90
L8FNB4 UniRef90-UPI00037078D9 UniRef90-BoW122 UniRef90_UPI0004561A3F UniRef90-TOLNN3 UniRef90-BgTEL9 UniRef90-C5FO22 UniRef90-UP100046D8ABO UniRef90_V9KTA7 UniRef90-HoZ474 UniRef90-UPIO00368D6F8 UniRef90-J7RM566 UniRef90-Q5KQ95 UniRef90_B4UG79
UniRef90 $\mathrm{C} 5 \mathrm{~L} 3 \mathrm{J1}$ UniRef90-D3VPM5 UniRef90-G9P987 UniRef90_B3PM80
UniRef90_O9VFL5 UniRef90-E1FMW4 UniRef90-R4X9N8 UniRefgo- X11545 UniRef90-UPIO0045619D1 UniRet90_Q2GR29 UniRef90-A0AO24GK78 UniRef90-A711B6
UniRef90 G8ZVO2 UniRef90-K2BJQ6 UniRef90-A7AW53 UniRef90-R8BE76 UniRef90-UPI00047DD893 UniRef90_16ZL55 UniRef90-EESAF1
UniRefon - 3 PS 48 UniRef90-J3PS48 UniRefefo-V6LUH4
UniRef90 $06 L 1 M 5$ UniRef90-O6L1M5 UniRef90-MOUWH3
UniRef90-K2C475 UniRef90-K2GGY2 UniRef90-A7HD54 UniRef90- X8J2Z0 UniRef90-R9NX01 UniRef90-K2FV43
UniRef90
D1J7S4 UniRef90-BoDFP1 UniRef90-UPIOOO3B57DB0 UniRef90-UP10004621AE9 UniRef90-K2AJ89 UniRef90-J5JIIIO
UniRef90 L8WRL5


DKKRAGTVTGMA
AEQLWDTILHVTLECLRVYGTLLQPVVPHTADKLLSRLAV Parer tlgsLvácrelavolepflp DRERQDAVVFLAMEVARDLSLLLQPFIPRLSGKLDDRDDV AGDAERSVLYTGGKALLGLARVLAPILPRFSAALAAAYGR KR MAI RLLMESVYVLAHLWAPFIPMGADKIFEKLAT HKEELENULVRLLNGIYAVSWSLQUVMPNKDAEVAKALNV PESRVNWVIFNSAEAGRIAGLLLQPIMPTKASELDDALGV RLNVVLNTLLNGIYVVNYMLSVAFPTKSARLNQF NQARLETIIAMTMDALRLSGVLQPIIPQLANRLLDKLSV DDRKVSSLLY DCYEVLRICGULLQPAVPHYADHLLNRLGI TRTE R ATALYTCLEAARIAALFLQPVMPTSMHEMLDRLGV RQASATALYVADSVLSCLRTVLYPFLPFSSQRLHEFLGF VVLEAVVLVSGTESLRGCGTLLRPFMPNKMDELLDVLQV ARKRLQGlLNTIDATRLCTVLLQPADPEAAANLDDYLGV
 QQDAVTYLCMEASR】LSILCQP DIPTLATRLDNRIDV DKEREEALTRLVRE円RQISVDLVPFMPESAEKISRQFN RLDTMRNVLYYEAGYFLNHLMEPVIPGASSVVFKKLGT
 ,
 $P R$ RCA QUVLVALLLVYLMPSVASVYPSMPSTSEELL LRMCNL HKYFHTTVYVTLECMKYFSLLMFPFDPNDSEALLRNLGD
 EVAEQAADLVILEAMRIIADALSPITPSDSLRIYTQLGF
 ASPASRALLFSCAKSLRAI ATLLWPVMPRFCGDLAAAFGQ VVVRAHK YSITETLRDVGLLLQPFMPSKADQLLTGQGGV $\stackrel{+}{\mathrm{H}} \mathrm{K}$ NVYVTNVV L V

PKLLLNWTTHRSAEALRTAATLLQPTMPSKMKRLLDEMGV


UniRef90 A2BR68 UniRef90－H9JMP4 UniRef90－G8JSR6 UniRef90＿T1DBV3 UniRef90－UPIO00362A2AD UniRef90－H9HONO UniRef90 G3X0K4 UniRee90 ${ }^{-}$A0A059ETC4 UniRef90＿COSFY7 UniRef90 W9DV41 UniRet90 E1WXC1 UniRef90－TOSYP3
UniRef90 $\mathrm{X1NGH}$ UniRef90－G3PZR8 UniRef90－ $\mathrm{X7EH} 21$ UniRef90－O9HJ12 UniRef90＿M3ZDK1 UiRet90 UPI0004793AEC UniRef90－ $10 Z 940$ UniRef90－L8X6F2 UniRef90 Q7TOZO UniRef90－UPIOO0380B9C1 UniRef90－UPIOOO398F8F4 UniRef90－E9GLK4 UniRef90 A2BWJ4 UniRef90－K2E5E0 UniRef90－UPIOO0395C1E2 UniRef90＿M9M013 UniRef90 K2G262 UniRef90－D5E4Z1 UniRef90－J3T5N6 UniRef90 UPIO004705645 UniRef90－M2S4G3 UniRef90＿ROLG47 UniRef90 A0A023DZD2 UniRef90－V8CKL8 UniRef90－F9WM13 UniRef90－K9P3R1 UniRef90－M3B4Y4 UniRef90－L8FNB4 UniRef90－UPIO0037078D9 UniRef90 Bow122 UniRef90－UPI0004561A3F UniRef90－TOLNN3 UniRef90＿B9TELO UniRe90＿C5FO22
UniRei90＿UPIO0046D8AB0 UniRef90＿V9KTA7 UniRef90－H0Z474 UniRef90－J7RM56 UniRef90 Q5KQ95 UniRef90－B4UG79 UniRef90－C5L3J1 UniRef90－D3VPM5 UniRef90 G9P987 UniRef90＿B3PM80 UniRef90－Q9VFL5
UniRef90 E1FMW4 UniRef90 R4X9N8 UniRef90－$\times 11545$
niRef90 Q2GR29 UniRef90－A0A024GK78 UniRef90－A711B6 UniRef90－G8ZVQ2 UniRef90 K2BJQ6 UniRef90－A7AW53 UniRef90－R8BE76 UniRef90 UPI00047DD893 UniRef90 ${ }^{-16 Z L 55}$ UniRef90－EOSAF UniRet90＿J3PS48 UniRef90 A0A024VRD7 UniRef90－V6LUH4 UniRef90－Q6L1M5 UniRef90－MOUWH3 UniRef90 ${ }^{-} 2 \mathrm{C} 475$ UniRef90－K2GGY2 UniRef90＿A7HD54 UniRef90 X8J2Z0 UniRef90－R9NX01 UniRef90－K2FV43 UniRef90＿D1J7S4 UniRef90 BoDFP1 UniRef90－UPIo003B57DB0 UniRef90－UPIO004621AE9 UniRef90 K2AJ89 UniRef90＿J5JIII
UniRef90 L8WRL5

EDSWKKWGLLVSNSSLPKPTPTDNKLEYEQ
RPSWQAADAI HETRRI QGGKVLFPRISKDK
PDEETFHLLIGGGHTUKQAEYLFQRVEEAMDAKWRNK
PASWEEALLPP
QVDKRGFEHAVFGADLTYGTPM
NTK【RNLAFLDEKNKKK【D ILFKK
SETERGLUQPFEGRRLLGPDTLFPRLDK DEKYFDEGTLPNNHKISNDEVLFEKLDPNVVQ
PFSLDELKELKPGHK GKAKYLFSQIDPKKADEWREM
EEKNIKLDTLTKGNNINK円DTLFKKIEKD
ILTEEHQRKUYSGHVLEEVVALVPKIDDALIKEEDEADEA
PESDYSDDEFPENHK NEQGVYFPAVEE
EADGWQLHFPPPGQKLLPPKPLF
EAEWPDLQRLAPGHAFTVPDVTFRKI ADAEREEWQE
PFA $\square$ GSYRHLYEMHAVHRGAI PFEKI DLESLVSK
ERSWKDLDFLGFGTDCSNCGLLFSRLETQSGDKQKTMKSK
STTWE YKEiPSGYRTPETSULFERLDKSVIDEERAKL
GLDSGDASWLPKGQATPPPKPVFARLEGDFVTE
PPRVIPSTDLLPNHKLGTPELLFSPIKAEKADEWRNK
PHKMRTLKKFLAATRICYFQALFPRLEKSE
SDVPALLDALPRGHEITPPDVLFRKIEDEQVAEWTD
EPEERGLSSLTFNGQPCPFEVLFHRLEK
DWNFARLRSSTADTSLGQGTVLFPKI
NESWNDWGLLKSKSNLPAPYPIIEKLEYE GSK乌ASGSPLFPRL

PDDGKFALDLLAGHK\GKASHLFKQ\DPKQEE
ADYPESLKDWELPQLIDKAEPLYPRI
NDSFDKIENFFDGVISAPKFMLFERI
TPEQTQLKN LPFNHKINKSKKLFQKLDV
PPEVFRLEELPAGHEIGAKQPYFP
EMNFKDLDFSKFNSVLTKE LLFNRD

ELBEK
E DSPAS KQGK\FHEVRMMPPLFQKLD
PA
ARHWGK पATELA पPEPTPVMHRLE $\square D$
E DDEWTAESIPAGHKIGKAEHLFKMIKPEKAQEWKEM

## EQGRRGFFDAVVG

PAGGT\PPDRPVYPRLAVE
SRHWRDLHGQFDRKQRSLAEDLFRRIVPPKVEE
PDDGRFQLDLDPGHRDGKAAHLFKRIDEAEED
SDENASMSHLAETCEFKPSEDIFKKLEDEEEPE
DFDWGAAWNAMLGRTIGAYDHLMKRVEPKMIEDLFD
EVNAQNYKNFVCGEEVNP $\square P A L F P K L E E C E V Q K P V E E N K E$
GPGERD
SAANRT $\square E F T Q \square G T D H T Y G T H$
PRSWVDAEWPPSEEKVLRTE
PEAWTPDLEPFDGAPVQVVEPQDARVDAKQVQKLI
APRPETFENLEPGHPIPKSGCLMQGAVIKRAEEK\｜ERDKR

PTA WNYLAESFATSPNSSNSPGFQRDLEETSAKEVKEQKP KKNERGLGNVKLGRPLGEYSPLMERI
KGSVEDFHSPSPGQRLLPPEPLFSKLDEELADEET
DANWADLVAVDGPGRLPKVKPLFPRLEVD
PKCWC ADSI KMGHRVAASENMFFWIDPPRAEEWRKE
PRNERGF

S PERRTLAYAKVG
GEKIIKGESLFPRL
EKRDHDYDNDTEGTKVVVGDULFQKVE
PQTQRTYEYARLGADFEYGTPI
DWNWDK LLEPLTAYVKHELKELDPRVDFKKHEVQLAEMEQ
E ETDPDQMNIIDGHTDNNI YPVFKNFTDEQLEEMRKYEAS
EETPES IQQI DGHMDGGRICPLFENFTPEQLEEMKK

DIDEENTSLDMLETRTTKF
PEDEWKINQLKMGQKDGTEK』LFQRVILKEEE
NYKFDDMLGGDDFRPLKGEPPFKKLEDKKDN
TEDWDDWGALKAGQAMMEPKPDFAKIETEVEE GPT $\square K$ T QSALFPRL
ERRWDEDFDPFAGGPVVVAAPQTARLDPRQVEKLI
DRGWKDTGDPAlGRTSRVTQQLFPRL
PEAKRKHPKDLLGVGEGKPQPLFPRIEL
EFSEKMDFNYFDNKKFSKPN【LFER】KP
PRDWASAQ
DFDE DENFEKFND DS $\square$ NENK $\square 1$ FPR $\square$
PPAERTLADADFGKR
R P D R R S VA
DRGWNDTGDPSVGRTSRLNQQLFPRL

UniRef90 A2BR68
UniRef90 H9JMP4
UniRef90-G8JSR6
UniRef90 ${ }^{-}$T1DBV3
UniRef90 E3QFN3
UniRef90-UPI000362A2AL
UniRef90-H9H0NO
UniRef90 G3X0K4
UniRef90 ${ }^{-}$A0A059ETC4
UniRef90_C0SFY7
UniRef90-W9DV41
UniRef90 E1WXC1 UniRef90-TOSYP3
UniRef90-X1NGH4
UniRef90 G3PZR8
UniRef90- X 7 EH 21
UniRef90-Q9HJ12
UniRef90-M3ZDK
UniRef90 UPI0004793AEO
UniRef90-I0Z940
UniRef90-L8X6F2
UniRef90 Q7T0Z
UniRef90 UPI000380B9C
UniRef90-UPI000398F8F4
UniRef90-E9GLK4
UniRef90 A2BWJ4
UniRef90-K2E5E0
UniRef90-UPI000395C1E2
UniRef90 M9M013
UniRef90 K2G262
UniRef90-D5E4Z1
UniRef90-J3T5N6
UniRef90 A9FN80
UniRef90-UPI0004705645
UniRef90_M2S4G3
UniRef90 ROLG47
UniRef90 A0A023DZD2
UniRef90_V8CKL8
UniRef90-F9WM13
UniRef90_K9P3R1
UniRef90-M3B4Y4
UniRef90-L8FNB4
UniRef90-UPI00037078D9
UniRef90 BOW122
UniRef90-UPI0004561A3F UniRef90-TOLNN3
UniRef90_B9TELS
UniRef90 C5F02
UniRef90-UPIO0046D8ABC
UniRef90-V9KTA7
UniRef90 H0Z474
UniRef90-UPI000368D6F8
UniRef90_J7RM56
UniRef90 Q5KQ95
UniRef90-B4UG79
UniRef90_C5L3J1
UniRef90_D3VPM5
UniRef90 G9P987
UniRef90-B3PM80
UniRef90_Q9VFL5
UniRef90 E1FMW4
UniRef90 R4X9N8
UniRef90-X11545
UniRef90-UPI00045619D1
UniRef90 Q2GR29
UniRef90-A0A024GK78
UniRef90_A711B6
UniRef90 G8ZVQ2
UniRef90 K2BJQ6
UniRef90-A7AW53
UniRef90-R8BE76
UniRef90 UPI00047DD893
UniRef90 I6ZL55
UniRef90-EOSAF-
UniRef90-J3PS48
UniRef90 A0A024VRD7
UniRef90-V6LUH4
UniRef90-Q6L1M5
UniRef90 M0UWH3
UniRef90 K2C475
UniRef90-K2GGY2
UniRef90-A7HD54
UniRef90 X8J2ZC
UniRef90- R9NX01
UniRef90-K2FV43
UniRef90 D1J7S
UniRef90 BODFP
UniRef90-UPI0003B57DBC
UniRef90-UPIO004621AE9
UniRef90 K2AJ89
UniRef90- J5JIIIO
UniRef90_L8WRL5

## UniRef90 M3J3R5

 UniRef90 G2Q7E4 UniRef90-F7WZ15 UniRef90_W5JRB3 UniRef90_R0V7X8 UniRef90-V5ES24 UniRef90-B4G4V4 UniRef90 Q4N0W4 UniRef90-UPI0002658D77 UniRef90_IOEP97 UniRef90-A0A059A9A9 UniRef90-M2MYL9 UniRef90-D0RNZ8 UniRef90-G4TJK4 UniRef90_R7B3J9 UniRef90 ${ }^{-}$V4XHI6 UniRef90_UPI0003DF5E73 UniRef90-Q9ZKG9 UniRef90-K5WW27 UniRef90-K2E321 UniRef90-V2XWT4 UniRef90-H2B1F2 UniRef90_UPI000479F52A UniRef90-B3L310 UniRef90-G7E5L7 UniRef90_K5W7S3 UniRef90_O74634 UniRef90-FOYBX7 UniRef90-A8IL68 UniRef90_G0W9Q6 UniRef90_-V7PZ48 UniRef90-L7JSL0 UniRef90-M7YGI8 UniRef90 G4LZ29 UniRef90_J9G463 UniRef90-Q4PCW9 UniRef90 I1FG43 UniRef90-G8BGP7 UniRef90-F5YEZ77 UniRef90 UЗKAP9 UniRef90-F6W0G8 UniRef90-C4Y0R3 UniRef90_U1F7N8 UniRef90_UPI00006CFE82 UniRef90-UPI000410AFB6 UniRef90_T1CVW2UniRef90_U2K520
UniRef90_E6ULK5
UniRef90-G5F5T7
UniRef90 X1VD15 UniRef90-C8W770
UniRef90-R4LPW8
UniRef90-E0RN63
UniRef90_U6L832
UniRef90-S3A6K9
UniRef90_B6GE55
UniRef90_U2CG01 UniRef90-R8W506
UniRef90-Q3AF87
UniRef90 UPI000463F1FC UniRef90_C4L4K0 UniRef90-A0A034WBY6 UniRef90-U2VIC9 UniRef90-UPI000424671C UniRef90-I8U5W4 UniRef90_E5Y8L2 UniRef90_UPI00047B799F UniRef90_COD147 UniRef90-U7VCW2 UniRef90-UPI00037954E4 UniRef90 A4J7L1 UniRef90-R7BJM6 UniRef90-M9RGL2 UniRef90 W8F6Y7 UniRef90-R6NA48 UniRef90-X1RAJO UniRef90-E6LHI1 UniRef90-UPI0003B71700 UniRef90-F8F013 UniRef90_L8JS75 UniRef90_A0A024JDY6

GNLLGRVLSEIVKNFDETDPESLQPASLEDALVDLAPSV
 L GNLLSRCCGKAEEAFE RLKSYDVTNRLLEVLHEMPDKT VNI AARASGFDAKRFESRLKDVADSALLAKLTAQSEAD LGNLLSRCAPKI HARLEGDRPSREQCQNLEAALQEQPSKA
 GNLLSRCTGKANDNTNHM| PGMPRE ES LLLEQSMADPAKV $\square G N L D N R T L G L L R K N C K S T L S T A A D G N A F K D T V E M L V G K A$

 A QKNFEGYMP LGRVSKEVLKKVYNVMCAY
$\square G N L V N R C F G K S \square N P D R \square I Y N S T E Y K N G L K A L E N L S E K A$ GMAKKYFNYSLKSTAYYPKELEKAHQULDNA DLI DTQRTTPARV
LGNTVARDAKDAEKFETAPDPDNDWESDIFKP

GNLVHRATAFAQSKCGGKVPAPQAVAGLGRDLDALRAQLD LGNGLNRTLNLLAKFHDSAVPLDPADLPLRQLAAEKLPAA GNLINRCCG KKFNDVLSICDDDPELDSELEELPMLM LGNLTSR LITLSEKY LDANLNLEE $\qquad$


$\square G N L V S R C A P K \square H A R F A R D A A T H V L H R P L K E Q V E Q L P A N V$ GNLLSRATATK THPPE 1 K $\square C I D P N H L M K D G K E L$

## PSNPLDKWLLSVAEALVEKM

D S LVSS ITS SLFS EM FDEALPQNPLDAWLLS ITQKLVKSV

LVNDMSRVFKK IVK DGK DTENEQD DEYDSKFTTDSNK T NFANKAARFVMMNLEGKSPETLGRPA ILSRLHQADAQT

FNGKQPVNPLDRWILSUTQKLVKDV $K W I L S R V N N L T R E$
LA NTFNRCLYGAQNVCGGRLPSVEADAEVVAACREATLTF

 PDEPG
PAHPLDRWLLS EAQRLVLTV
$\square T N \square F N R C \square Y G A A N V C D G H D P A V D P H Q G V I D A C T C A T L A F$ YRTGRIPTGAPSEAVVAETEQAIIAF NFANKVSRFПMMNMDGKI PQDPVDKWILSKLNNVVKEV ASRFIQMNLT DDNAELPADLALEDILHKYNELVKAVV NFANKASRFVLMNLEGFTPQGUKQEELLARDNAVIDRV NFANKVSRFIVMNLDGKLKKNPADRWILSRCNQVVKEV ASRFA $\square$ MNGANVDGEVPANA $\square \mathrm{D}$ Q WI L TRRDETVESVV
LG $\operatorname{GLLLSRACAKVYPRDHAVQLADLLQMDAAKRLQDALQQQ}$ LTNIFNRLARSCANVCEGHLPTVAPKAEVVDECREAVLAF KYQERTSSHVMDKWIISKLNTMIHKV $\square D K N \square D G S$ ANEASHQWLLARLENGKKD ASRFDMMIEKAPDGVTPDSLTMADILSKVNTLAGDV
 R RWILSRLQGTAKDV ASRF $\square$ MMLDKAEDKKVS DDE LTPAI LSKLNT DAEDV VPPTQSVNKWUIGETAKVLVVV ENKDPDTMTTEEDVVSKFNTVAKEV
VSRFS DMNLKNFDEKLLKMNLVDKWIVSKLNKTIKKS NFINKASRFVLMNCEGMTAAELQDRWILARLNETVAKV EPVDHWI LSKLNKAVKEV

G NLVTR

MVDENLDDGA
 LCGPKFD LDPADLPETPLAREVDGLVKTV


[^0]

| UniRef90 M3.33R5 |  |
| :---: | :---: |
| iRef90-G207E4 | A AVLFLAAEGLRISGULLQPFLPPKAWRLLDILGV |
| UniRef90-F7WZ15 |  |
| UniRet90-W5JRB3 | PDDRAMA |
| UniRef90 R0V7X8 |  |
| iRef90-B4G | AMTMDALRLCGIVLQPIMPQLA ARLL |
| iRef90 | SVLRVLLESVYFLA HFLYPVLPQSMERLFLKLGT |
| UniRef90-UPIO0026 |  |
| UniRefor ${ }^{\text {a }}$ AOAO59A9A9 |  |
| UniRef90-M2MYLS | पEAETDQCTF LAAETLRLVGTMLQPFTPISAKRLLDMVGV |
|  | SEQNIKNDLFSTLVALKNIFILLYPVMPLASTKFLKSLNI |
|  | DPDVRAAAVSLSREALRICGILLQPFLPNKAPLLLDWLGV |
| UniRef90-R7B3 | SEELRRQTLIDSFYLLRIATLLMHPIVPRGTEKICDFMNF |
| UniRef90-V4X | AR QVIRDCVQIAKATLVLF |
| UniRef90-UPIOOO3DF | K Q L A A |
| UniRef90 Q9ZKG9 |  |
| UniRe | HQVL |
|  |  |
| UniRef90-H231F2 |  |
| UniRef90-UP100047s |  |
| UniRef90 B3L310 | GVPR NQ |
| UniRef90 K5W7S3 | G\\|LLQPFMPSKAEELL |
| UniRef90-O74634 |  |
| UniRef90-FOY | A AKRTET L RLLLEACYALALLLAPLVPRAATFALRRVGG |
| A8LL68 |  |
|  |  |
| UniRef90-V7PZ48 | EKGKKNDSFALVFSVIALADMLVPFLPNDCADLHEMCED |
|  |  |
| G4 | F LSVVSESDRDCALLLQPVIPNDSDRL |
| Q4 | SLRISALLLQPFMPQKMSAL |
| I1FG43 | K |
| G8BGP7 | \| |
|  | SALKTLITVAPFMPFIT T |
|  |  |
| UniRef90-F6W0G8 |  |
| C4 | , |
| UniRef90- UPIOOO454C00F | A LLAGMAHPYMPTISATIQAQDOD |
| UniF | LSTFLYPFDPQYDQNVYQLMN |
| UniR | El WQ |
|  | K 1 K K NALLALNANLLLKASLCLYP |
| $2 \mathrm{6U}$ | DADKAQAVYEALYCALKGAMKAASPYMPFDTEAMYQHLVV |
| UniRef90-G5F5T7 |  |
| UniRef90-X1VD15 |  |
|  |  |
|  |  |
| ORN63 | V |
|  |  |
| UniRef90 ${ }^{\text {B6C }}$ | EADAAMTALVDAF HQLRAATVLMHGUVPTGCEKICEHEAD |
| Ret90 | K Y V |
| UniRee90-R8 |  |
| UniF | DA LTWTLREVLKNALKLLHPYMPFVTEEIYS |
| UniRef90-UPI000463F1FC | GQVLDQL |
|  | MRL M |
| UniRef90 AOAO34V | G |
|  | A |
| UniRet90-UP1000424671C | V |
| UniRef90-I8U | V VAAPFVPF |
|  | MHPTMPFVAE WQALPG |
| C01 |  |
| iRef90_U7V | VLWTVLEAGLKLLHPFMPF:TEEIW |
| RRef90-UP10003795 | LHPFMPFITEE1 W |
| UniRef90 A4J7L1 UniRe |  |
| UniRef90-M9RGL2 | QQVM NWVLSQCVTLLHPDMPFITEELWALMGN |
|  | Fltetclkt |
| R6N | L |
|  | WSKLP |
| Ref90-UPIO003B71700 | FCTLQD |
| UniRef90-F8F013 | NQ |
|  |  |
| ef90_A0A024JDY6 |  |

 UniRef90-G2Q7E4 UniRef90-F7WZ15 UniRef90-W5JRB3 UniRef90_R0V7X8 UniRef90-V5ES24 UniRef90-B4G4V4 UniRef90 Q4N0W4 UniRef90 UPI0002658D77 UniRef90-IOEP97 UniRef90-A0A059A9A9 UniRef90 M2MYL9 UniRef90-D0RNZ8 UniRef90_G4TJK4 UniRef90 R7B3J9 UniRef90 ${ }^{-}$V4XHI6 UniRef90_UPI0003DF5E73 UniRef90_Q9ZKG9 UniRef90 K5WW27 UniRef90-K2E321 UniRef90-V2XWT4 UniRef90-H2B1F2 UniRef90 UPI000479F52A UniRef90- B3L310 UniRef90-G7E5L7 UniRef90 K5W7S3 UniRef90-O74634 UniRef90-FOYBX7 UniRef90_A8IL68 UniRef90 G0W9Q6 UniRef90_-V7PZ48 UniRef90_L7JSL0 UniRef90 M7YGl8 UniRef90- G4LZ29 UniRef90-J9G463 UniRef90_Q4PCWS UniRef90 I1FG43 UniRef90-G8BGP7 UniRef90-F5YEZ7 UniRef90 U3KAP9 UniRef90 F6W0G8 UniRef90_C4Y0R3 UniRef90 U1F7N8 UniRef90 UPI000454C00F UniRef90-UPI00006CFE82 UniRef90-UPI000410AFB6 UniRef90 T1CVW2
UniRef90- U2K520 UniRef90-E6ULK5 UniRef90-G5F5T7 UniRef90 X1VD15 UniRef90 C8W770 UniRef90_R4LPW8 UniRef90 E0RN63 UniRef90 U6L832 UniRef90-S3A6K9 UniRef90-B6GE55 UniRef90 U2CG01 UniRef90-R8W506 UniRef90-Q3AF87 UniRef90-R6WJI8 UniRef90 UPI000463F1FC UniRef90-C4L4K0 UniRef90-A0A034WBY6 UniRef90 U2VICs UniRef90-UPIO00424671C UniRef90_I8U5W4 UniRef90_E5Y8L2 UniRef90 UPI00047B799F UniRef90-C0D147 UniRef90-U7VCW2 UniRef90 UPI00037954E4 UniRef90 A4J7L1 UniRef90_R7BJM6 UniRef90-M9RGL2 UniRef90 W8F6Y7 UniRef90-R6NA48 UniRef90-X1RAJO UniRef90_E6LHI1

PTSARTWENTKLSFRTNQDS $\square$ LIFRR $\square$ VPSTEQEQRTKSKQ
PPEQRVRRKDLIGKGEGKAKPLFPRDE\|E
PASWDCLNE
PKKWENLDNLEKDSNVSVGD LLYQKFNLDE
E $\square$ SPKNYERFFKSKELQD $\square E P \square F S K \square E R \quad V E E K E P E K \square Q E$
EAEKRTWE WCEVGKDGSYGLPM

PAGKRSLSQRTAGNEATPNQKLFDAD
D F D
DATVADALEPPAREFDEPAEP FEQVAEETVEELNARLDE NRNWEDTKPDHLTHVLCQNILFFKKI
E $\square$ TPNNYERFFKAKKLQDMEPLF
ERTWRAVERVG

LP S KRSLS F A E DG
EGDF LMMKKSWP VYKPELSFP EEEKATEMV
DASPSS
HRRWSDLA
$P \square S H R T L A Y A N L G$
APAPVSFDNLAPGGAVTPGAPDFAQRELPGEDALAKEKKA A $\square$ T WADSAWLQAGHRTAEPAPVFVRDEAPE
SNDRRS L S F AK L K T DDSYGFNMNDKSDDVP $\square$ PREVES $\square$

$P$ LGWNRLGSLEAGHQLGKVELLFEKDEDSVIEAQLQKLQD DLVVTDTDGRLVSHVVQKPHPLFPRIEV

TPERRNCNFTSVGADLDYGE
ESDPES $\square$ H
 PDETRNKDFAKLGTVKYHHKPLMRKVE

PPPACSLCLLPPGHSFSTVGAL
K ND

D D E S $\square M \square S K W P V Y R E D Y N \quad$ F P E E E K K M S $\square \square M D A \square K$
FFSWENAFLTPAGERPSEHEPLPPRFD
AK 1 QAPKKPLFPRL
LNFSHEEFFSWENAFMGPKELAAKLGQSAEEHQLEEL
EEMPDSV HLCDWPEVDERRRDTVLEEKM
K P K L P W WLENLEPGTELLKPADVLF
AFSWEHAETLGGEATTHAVEALPPRFD

EGPSIMVSKWPEYQTEDCFAA EAEQVETMMDTIR
EGKTIMLAPWPKGRADENPEAVKQMSSLMEVIREDRRLRA

E G D
PPEWRNLGESFATTAAHTDAVLFRR DQLD ESELHADKP
EFSWEHCFEDPAG

 EEQT $\square$ MVS QWP $\square Y$ RDDWNF KEEENATET $\square K E$

QGETIMLAQWP
DEES DMUSEWP VYKEEYNFP VEENADET IKEAVR DLTHQDWPE IS AGLVDDQADAEMSWV品 QU D NDRSTRA
$T \square P H E G E T V M D A K Y P E F K A E D D F P E \quad D V A E M E R V M D A \square R$


E E E S $\square \mathrm{M} V$ S D WP $V$ Y K D E WN F A A
D E K A $\square$ E T $\square$ K E A $V R$

## UniRef90 M3J3R5

UniRef90 H2B1F2
UniRef90 UPI000479F52A
UniRef90-B3L310
UniRef90-G7E5L7
UniRef90 K5W7S3
UniRef90-O74634
UniRef90_FOYBX
UniRef90 A8IL68
UniRef90-G0W9Q6
UniRef90_V7PZ48
UniRef90-L7JSL0
UniRef90 M7YGl8
UniRef90- G4LZ29
UniRef90-J9G463
UniRef90 Q4PCWs
UniRef90 I1FG43
UniRef90-G8BGP7
UniRef90-F5YEZ7
UniRef90 U3KAP9
UniRef90 F6W0G8
UniRef90_C4Y0R3
UniRef90 U1F7N8
UniRef90 UPI000454C00F
UniRef90_UPI00006CFE82
UniRef90-UPI000410AFB6
UniRef90 T1CVW2
UniRef90-U2K520
UniRef90-E6ULK5
UniRef90_G5F5T7
UniRef90 X1VD15
UniRef90-C8W770
UniRef90_R4LPW8
UniRef90 EORN63
UniRef90 U6L83?
UniRef90-S3A6K9
UniRef90-B6GE55
UniRef90 U2CG0
UniRef90_R8W506
UniRef90-Q3AF87 E V
UniRef90 R6WJI\&
UniRef90_UPI000463F1FC
UniRef90_C4L4K0
UniRef90_A0A034WBY6
UniRef90 U2VICs
UniRef90-UPI000424671C
UniRef90-I8U5W4
UniRef90 E5Y8L?
UniRef90_UPI00047B799F
UniRef90-C0D147
UniRef90-U7VCW2
UniRef90 UPI00037954E4
UniRef90-A4J7L1
UniRef90_R7BJM6
UniRef90-M9RGL2
UniRef90 W8F6Y7
UniRef90-R6NA48
UniRef90-X1RAJO
UniRef90-E6LHI1
UniRef90 ${ }^{-}$UPI0003B71700
UniRef90-F8F013
UniRef90-L8JS575
UniRef90_A0A024JDY6

| lupas_21 |  |
| :--- | :--- |
| lupas_14 |  |
| lupas_28 |  |
| jnet_ |  |
| conf | 8 |
| sol25 | 8 |


|  | 1 | 10 | 20 | 30 |  |  | 40 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| sol5 | B B | B B B B | B | B | B | B | B |
| sol0 |  | $B \mathrm{~B} \quad \mathrm{~B}$ |  |  | B |  | B |
| jhmm | $\square$ |  | $t$ |  |  |  |  |
| jpssm | $\bigcirc$ |  |  |  |  |  |  |



| sol5 | B | 130 | 140 | B B |
| :--- | :--- | :--- | :--- | :--- |
| sol0 |  |  | 150 |  |
| jhmm |  |  | -6 |  |
| jpssm |  |  | -160 |  |


[^0]:    lupas_21
    lupas_14
    lupas_28
    jnet
    cont
    sol

