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 $N L Y Q F G K M I K N K T G K P A M F S Y S A Y G C Y C G W G G Q G K P Q D A S$ SLLEF GMMI LGETGKNPLTSYS FY GCYCGVGGKGTPKDAT $N$ L L Q F G VMM E K A T G K L A A L H Y N D Y G CY C GI G G S K Q P V D Q T S L L E F GRMI K E E T GKNPLFSY DS Y GCY C GWG GQ GQP K DA T
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 H L L T GREPVFSYAFYGCYCGFGDKGSPKDAT L L Q F R K M I N L Y Q F E K L I NLWDLQKML S LIQLGEMI $G \mid L N L N K M$

| QF E | $N$ | $M$ |
| :--- | :--- | :--- |
| $D$ | L |  | $S$ LVQLWK M NLLDFRKMI S L K Q L Q D I I $N$ NL | $N$ | $L$ | $L$ | $Q$ | $F$ | $G$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $V$ | $I$ | $E$ | $F$ | $G$ | $K$ | S | $V$ | $E$ | $F$ | $G$ | $K$ | $M$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $L$ | $N$ | $F$ | $R$ | $K$ |
| $M$ |  |  |  |  |  | $N \mathrm{~L} \mathrm{Y} Q \mathrm{~F}$ GKM S L VQ F E T M I NLEQF GDMI | $N$ | $L$ | $Q$ | $F$ | $E$ | $L$ |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $V$ | $E$ | $F$ | $G$ | $T$ | $M$ | L L Q F G DLI S L Y Q F G K M I $\mathrm{N} L$| $L$ | V | F | G | V | $M$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| L | L | Q | F | E | T | A LWN F WK M I

 L I K F A K M I NLLNFRKMI $N$ NAQF LI KTTGKEPATTYGFYGCFCGLGGTGTPDDAT $N \perp A Q F G E M I R L K T G K R A E L S Y A F Y G C H C G L G G K G S P K D A T$
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 NAIQ F GK MI KATTRKNALLSYNGY GCFC GLGGGKGTPDVDA T LTNFWNMI RLLKTGKEAASSYGFYGCHCGAGGKGTPEDAT $N L D Q F A D M L K H M T G K L A L L N Y N D Y G C Y C G L G G S K Q P L D E T$
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 SLVVQF ETLLI MKVVAKRS GLLLWYSAY GCYC GWGGH GRPQDA T
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 SLI QQFETVLIMKVAKK S GMFSYSAYGCYCGWGGQGQPQDAT
 S I L N L N K MV K QVTG K $\square A V F S Y W P Y G C H C G L G G R G Q P K D A T$ SVI QL GKMI LQQETGKNPVKYYGAY GCNCGP LGGRRKPDDA T SLTNFWEMI WAVT GKEAVTSYGFYGCHCGLGGKGSPXDAT $N L D D F H K M I K K A T G K E A A S S Y G F Y G C Y C G W K G R G T P K D A T$ $N L Y Q F G R M I W N R T G K L P I L S Y G S Y G C Y C G W G G Q G P P K D A T$ GILNLNKMVKQVTNKTPILSYWSYGCHCG\|GGRGQPKDAT MTEKVIRKNSWLLYLNYGCYCGWGGKGTPTD DT $M T E K V I R R N S W W L L Y L N Y G C Y C G W G G K G T P T D D T$ $G \| L D L N K M D R Q V T G K T P F F S Y W F Y G C H C G L R G K G Q P K D A T$ $N L A Q F G M M I V Q K T G K S P L A \quad Y N G Y G C Y C G W G G S K Q P V D A T$ $N$ L WQ F GQMMSDVMRKNVVFKY LGSYGCYCGWGG
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## QUERY

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 DFARMIKHTTGKGALLSYSAYGCYCGVSGRGSPKDAT SMLSFVSKLHCATGMCPRDLEDYGCSCRYVAAGNPVDAL SMLSFVSKLHCATGUCP RDLEDYGCSCRYVAAGNPVDAL NFFQLGKMI QEETGKS VLAYVWYGCYCGKGRTGQPLDAT NLFQFARMIDAKQEAFSFFKYISYGCYCGWGGQGTPKDAS SMYELGKMILLETGKNAATSYUAYGCNCGVGRRGQPLDAT ALLHFVNKMRCVTGLCP RDFEDYGCSCRFEMEGLPVDEA ALLHFVNKMRCVTGLCP RDFEDYGCSCRFEMEGLPVDEA SILNLNSMTQRVTGKIPFFSYWPYGCYCGVGGKGQPKDAS
s

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 N LQ F S K M SLVQFEKMI KEETGKNAVPFYAF SLWELQRMI KEVTRKSAIPNYSHYGCYCGWGGAGMPKDST SLLDFQKMI RLATGKDAVSSYAFYGCYCGLGGRGSPKDAT GI LNLNKMVKQVTRKTPLTSYWYYGCHCGRGGKGQPLDAT NLYQFGEMISKKTGTFGLFSYVYYGCYCGLGGKGKPLDAT GI LNLNKMVRQVTGKVAAFSYWPYGCYCGLGGRGQPKDAT SLLELGKMLLQETGKNADTSYGSYGCNCGWGHRGQPKDAT ALLHFVNKLKCVTGLCP KDLEDYGCSCRFEMEGEPVDAA ALLHFVNKLKCVTGLCP KDLEDYGCSCRFEMEGEPVDDA SVLQLER\|IRAATGRSALLSYSWYGCFCGIGGSGTPVDPT SFWDLQKMIKQVTMKCAFWNYYNYGCHCGLGGKGTPKDGT SFWDLQKMIKQVTMKCAFWNYYNYGCHCGLGGKGTPKDGT
 S L L
 S A P SAFQF GAMI K L KTGKN P LA Y A GYGCYCGLGGAK QP D A T


 D F R K M I QLV T N K K P V I S Y G F Y G C Y C GL G G R G T P K D E T $L$ L QF V NGMK CVVA GLLCP R DFEDY GCSCRF EME GLLPLD E S WNLDRMI L K AVGKEAASAFGDYGCNCGYRQKGAPVDAT LLQFVNGMKCVAGLCP RDLEDYGCACRFEMEGPPVDES
 $A L L Q F V G G L R C V A G V C P$ $A L L Q F V G G L R C V A G V C$ $N L V Q F G A M T E R T T G K$

S LIE FRKMINQATSKSA



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80
DRCCFVHDCCYGRVRGCNPKLADYAYSFKKGN|IVCGKNNG DWCCARHDCCYKRLRKCGTKFLKYDVT $\square$ QGSSI TCKNQSS


 D WC C K A H D C C Y E H L Q K C Y A H L D D Y K Y K Y V S G Di E C Y G K S H

 DWCCKIHDCCYKHLQQCHVLVGRYNYNYNDGNIVCWGESH
 DKCCYLHDCCY GVLENCNAKDE EYTYSYRYGQLYCGF E S W DKCCYL H DCCYGVLE NCNAKI E E Y TYYSYRYGQLYCGFES W D R C C L A H D C C Y R RL R K C G T K FL S Y K F S M S R GKIT C GK Q D S
 D WCCKTHDCCYMALKNCRYTTDHYKYNMTHDDIHCSDGTW D T C C S $\quad$ H H N C C Y G K V T S C S T K WD S Y S Y S WE N G D I V C D E K H P D QCC Y L H DCCYERLK N CNAKFNSYSYVY LN GKI YC GM G S Q D QCCYLH DCCYERLKNCNAKFNSYSYVVLNGKIYCGMGS Q DWCCQKHDCCYKHLRQCRPKRDHYNYTFSQGDVQCPHRSW D WCC C I H N C C Y K R L K N CH GH T K R Y D Y A Y K N G NI I C G T WK S D R C CLAA H S C CY D T L P D C S P K T D R Y KY K RENGEI ICENSTS
 D W C C W W D RCCA EHDCCYERLEKCGTK LLEY DFTYEYGKI FCGK QDLL
 D RCCAAHDCCY GL L E DCGTK L L D Y K F DYKN GII F C V L Q D H
 DRCCWAHDCCYKKLKHCGTKFLNYNVS DRRGQITCADQGVV



 D S C C F Q H R K C Y E E A M E L E C S WD P A K I S C L T K N I T C E S G D P
 D WCCCHA H DCCYY K R L S T CVVP H L A T Y K F S JKR G Q I T C G S G S S
D R C C A K H N C C Y R K L K K F K C D T N K Y K F S T S G S K I I C E D K D V DRCCCIVHDCCYEKLVVKCNTKWDFYRYS LIRSGYFQCGK GT W D QCC R L H D C C Y D K L R GC F P K I Y M Y S Y F Y L S GKIIHC GLLGD W
 D R C C F V D H D C C Y G R V N G C N P K L S D $\quad$ Y S Y S F Q N G D IV V G G D E E D
 D RCC F V H K C C Y K K L T G CN P Q T D RYS FS WK N GA I V C G G D D P D S C C F Q H R K C Y E D A A E M E C A Q D S DRCCQAHDCCYRRLRECSPLITPYSFTSSDGNITCDEQSW D Q C C Y $\quad$ L $\begin{aligned} & H \\ & \text { D } \\ & \text { D C C C Y E R }\end{aligned}$



 D WC C H A H D C C Y S R L K K S C N P V V L V P Y K Y S I Q G S Q IV V C G G G S T


 D WCCA VLDDCCYYERLVEKCGTKVLDSY DFA YR GNQLVVCENQD F
 D R C C A A H N C C Y R R A A N V G C K T T L Y K

 D S C C F Q H R R C H E E A A E M D C
 DHCCFVHDCCYGEVSGCYPKTAFTLKFENQDIICGDEDP D WCC H A A H H C C Y K R L K S C S G S R Q R Y S Y T Y K D G Ni L C A L G G W



## UniRef90 Q1RP79

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UniRet90 U3KN66 UniRef90＿UPIOOO34FCF42 UniRef90－Q9PVF3 UniRef90＿Q6H3D7 UniRef90－UPIO0042BB1B5 UniRef90－UPIO0042BB1B5 UniRef90＿13MD59 UniRef90－UP10003C271CB UniRef90－P48650
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UniRef90－L8IBA1
UniRef90－G3SLG8
UniRef90－UPIO003EBD474 UniRef90－Q6T7B8
UniRef90＿UPIO003834520 UniRef90－P0DJJ8 UniRef90 ${ }^{-}$OIIC8 UniRef90－UP10003AF4EF3 UniRef90＿UPIOOO3AF4EF3 UniRef90＿UPIOO0442325C UniRef90－A8CG89
UniRef90－P80963
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UniRef90
UT1 UniRef90－UPIO0046B4EE5 UniRef90－H9GGW3
UniRef90＿HowKR5
－

CTRDTCECD ${ }^{90}$ VAANCFHQNONTYNKNYKF ${ }^{1100}$ SSRCRQTSE ${ }^{120}$ C QK CKKEVCECDKAAASCFAKALKSYNKKYQLYPNWMCSGNAP CPMQLCSCDQKLVYCLKRNDWSYNPNYQYFPNVFC CQKAICSCDKAAAYCMKNNLRSYKVKYRNFPNFLCKGNEP CQKQTCGCDVVAARCMQRNLKTYNKKYRNYPNSLCGKNNA CEKEDCQCDKELALCCRRNLETYKKQFCLSWLFFCQGENP
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$$ $\begin{array}{llllllllllllll}C & R & R & L & L & C & C & D & K & A & A & A & Y & C \\ C & F & A & R & N & R & N & T \\ C & H & L & L \\ C & T & C & D & K & A & A & I & E & C & L & A & R & S\end{array}$

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\begin{aligned}
& \mathrm{R} \\
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 D SYNKRLRYY RTQCQGQTP
 $C Q Q R F C E C D R A A D D C M T R S$
$C Q Q R F C E C D R A A I D C M T R S$
$C K K Q U C E C D K A L A A D C L R E N L D T$

## C C C C

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& \mathrm{C} \\
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## S

 CC

| CEQQLCACDKEVALCLQRNLDTYQKRLRYYRRSRCQGQK CQTTACECDKAAAECFKRTLGTYNKSYKNY RNLRCRGSRP |
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 C QV V L C A C D R K L V Y C L R R K L R S Y D S S Y Q Y F PR V F C
$\qquad$
CEKQLCACDKAMAFCLKSSLNTYQKKLRFY LRPKCKGTTP
C
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C

$$
\begin{align*}
& C P A Q V C E C D K A G A C F A V H K S S \\
& C R K Q L C Q C K A A E C F A R N K K ~
\end{align*}
$$

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1 N S S M N LLDA SFC

 $P Y N P D Y K N$ L $\quad$ D S A L C

E H L L L C T C C D K A A
C E HLLLAC TCCDKA A I E C CLA A A

CRSQLCRCDKAAATCFVKNRKTYSKKYQYYNNNKCSGKAP
C S CRS QL CQ CDDKEAAYCFARNKKTYNKKY QYYSNGKCS GRTP


| UniRef90 | Q C |
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| UniRef90-G5C4W0 |  |
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| UniRef90-A7X4N6 |  |
| UniRef90-UPI000328E4 |  |
| UniRef90-UPI0003C28228 |  |
| UniRef90-UPI000333439E |  |
| UniRef90-G3WHN3 |  |
| UniRef90-UPI0003331E2D |  |
| UniRef90-UPI00046C0F34 |  |
| UniRef90-UPI00046C0F34 |  |
| UniRef90-U3KN66 | C |
| UniRef90-UPI00034F |  |
| UniRef90-Q9PVF3 |  |
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| UniRef90-Q6H3D7 |  |
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| UniRef90-L8IBA1 |  |
| UniRef90-L8IBA1 |  |
| UniRef90-G3SLG8 |  |
| UniRef90-UPI0003EBD474 | WC |
| UniRef90-Q6T7B8 |  |
| UniRef90-UPI0003834520 |  |
| UniRef90-P0DJJ8 |  |
| UniRef90-Q0IIC8 | C |
| UniRef90_UPI0003A |  |
| UniRef90-UPI0003AF4EF3 |  |
| UniRef90-UPI000442325C |  |
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| UniRef90_UPI00033475D7 | E C |
| UniRef90_W4ZDA9 |  |
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| UniRef90-D6NKG5 |  |
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| UniRef90-UPI0004432E77 |  |
| UniRef90-U3K7L8 | Q C |
| UniRef90-M7BJE6 |  |
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 ALWQFRNMIKCTIPSSP

$N L$
 ALLQFVRGMKCVAGLCP $A L L Q F V R G M K C V A G L C P$

| $L$ | $L$ | $Q$ | $F$ | $V$ | $H$ | $G$ | $M$ | $K$ | $C$ | $V$ | $A$ | $D$ | $L$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
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| $L$ | $L$ | $Q$ | $F$ | $V$ | $H$ | $G$ | $M$ | $K$ | $C$ | $V$ | $A$ | $D$ | $L$ |
| $C$ | $P$ |  |  |  |  |  |  |  |  |  |  |  |  | SMFNLWKMIMVMT GKEA RDLE YGGAACRFEMEGLDVVDET

 S L WQL R SMLN KATGRSAF LN Y A Y Y GCNCGPMKRGKPKDA T $N L V Q F E L L I M K V A K R S G L L S Y S A Y G C Y C G W G G Y G R P Q D A T$ DFQKMI QLVT GKEALSSYGFYGCHCGLGGKGSPKDAT ELK S M I E K V T GK N AL M N Y G F Y G CY C G W G GR G TP K D V T
 $L L Q F V N G M R C V A G L C P R R D F E D Y G C A C R F E M E G L D V D E T$ $N L V Q F E T G I M K I A G R S G V W Y Y G S Y G C Y C G S G G Q G R P Q D A S$ SLENLK TMVEAIT GKNAI LVSVVGYGCYCGLGGRGLPMDEV


EFRKMI RLV T GKEAASSYGFYGCYCGLGGGKGSPKDAT
$A L$
 NLVQFGVMIERMTGKPAL
GILNLNDMVK QMTEKTPDISYWFYGCHCGLGGKGPPDDAT L L QF VN GMQCVA GLCP RDFVDYGCSCRFEME GQPVDE S

 M M H LAA TGKN P F DA Y GFY GCHCGLGGNGSPXDE T DFQKMIKFTTGKEPAIS YGFYGCHCGAGHRGTPKDAT
 $A L L Q F V S G L P R C A G L C P$ R D L L E D Y GCACRFEMEGLDPVDES ALL QF V S G L R CVVA G L CP
$S \mathrm{~L}$ L L N K MV ERVTTGK

L L H F VN GMKCVA G I C P $A^{L}$ $G L L$\begin{tabular}{l|l|l|l|l}
$L$ <br>
$L$ \& $L$ \& $L$ \& $K$ \& $N$ <br>
\hline

 

G M K \& $C$ \& $V$ \& $A$ \& $G$ \& $I$ \& $C$ \& $P$ <br>
$M$ \& $I$ \& $E$ \& $E$ \& $V$ \& $T$ \& $K$ \& $K$ <br>
\hline
\end{tabular} $\qquad$ MVE QV GKNA P $M V E Q V T G K N A L L N Y A F Y G C Y C G G L G G K G R R P K D P T$

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

DLK S MI E E VT GKSALLSHY GF Y GCY C GWG GR GAPKD GT $A L L R F V N G M K C V A G L C P$
ALLRFVNGMKCVAGLCP

$L L Q F V N S M R C V A G L C B$ RDFEDYGCACRFEMEGLPVDAS
 S K OMI SKAT GKNALMNYGFYGCYCGWGGKGTPKD GT
 ALLQ F V S GMKCVA GLDCPRDFEDYGCACRFEMEGAPVDEA ALLQ FVVSGMKCVAGLCPRDFEDYGCACRFEMEGAPVDEA
 FVQQFGEMIVAMTRKTALGQYSDYGCYCGGSSNWPVDQT $N$ L K QLE EMI ETVT GMNA E ENY GFYGCHCGFE GQGFP KDAT AV WQ F R K M I Q C TP G S H P L L E Y N N Y G CYYC G L G G S G T P V D E L AVWQFRNMI KC DPGSNPLKEYNNYGCFCGLGGSGTPVDELD
 $N L A Q F A A M \perp K K K T G K S A L A \quad Y N G Y G C H C G W G G S K Q P D D A T$ ALLQFVNGMKCVAGLCPRDFDDYGCACRFEMEGLPLDEP ALLQFVNGMKCVAGLCPRDFDDYGCACRFEMEGLPLDEP
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 LWQ FNKMI KKEVGKLPFPFYGAYGCYC GWGGRGEPKD GT
 S L L HFKNMI KCANGTRSWDRYVNYGCYCGWGGSGKPVDEV SVL QLA S ML K C VT GCS PLA F Q GYGC F CGYM G D GAP V D P I
 $M V R R M T G K D A F L N Y W P Y G C H C G L G G K G T P K D A T$ $N L Y Q F K N M I Q C A N G S R S W L D Y V N Y G C Y C G W G G S G T P V D E D$
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 CE QLL CNCDKTAADECIA Q S R

 FNSSMKGFKDSFCCPNE
$F N S S S M K G F K D S F C P N E$

 P Y NEEYRNYLN I Y CRGPTP | 1 | $N$ | $S$ | $S$ | $L$ | $N$ | $G$ | $L$ | $D$ | $V$ | $S$ | $F$ | $C$ |
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| $I$ | $N$ | $S$ | $S$ | $L$ | $N$ | $G$ | $L$ | $D$ | $V$ | $S$ | $F$ | $C$ |
| $Y$ | $N$ | $P$ | $E$ | $N$ | $K$ | $N$ | $L$ | $N$ | $S$ | $K$ | $Y$ | $C$ | CKSQLCACDRNAAYCFARNQKTYNKK F QYYSNGQCSGKTP CRK QL C QCDKVATECFARNRKSYSDKYQFYPNRLCLLGK S Q CQRQLCACDQKFVYCLKRNMRS



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 $\begin{array}{llllllllllll}C & G & M & Q & L & C & S & C & D & R & K & F \\ C & V & Y & C & L & K & R & N \\ C & L & W & S \\ C & R & Q & L & C & S & C & D & K & E & V & A \\ L & C & L & Q & R & N \\ L & R & T \\ C & E & C & D & R & K & A & A & Y & C & F & A\end{array}$

 $T Y K K R F K Y Y P N V L C S G S A P$
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 LLQFGSMI TCNSNSRPAWHYMDYGCFCGAGGRGTPVDDL NLLQFGNMINCNRGRRPARHYRDYGCYCGKGGSGTPVDDL GVLDLAKVVTCVGPRSPFATYMKYGCFCGLGGYGQPRDDI
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 $D W C C H Y H D C C Y T R A E E C S P K M D R Y S W E C V D N Q V Q C G P E N K$
$D W C C Q K H D C C Y K A A S D C D P K L Q T Y S W N C V N N T V E C S S Q S K ~$

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 LLELAGAIKCSTGRSALA YMMYGCYCGLGGQGWPRDRA GLVELAGTLQCAGSRSALA YMSYGCYCGLGGQGQPRDST A LWQFGKVIKCIPGSHPLKDYNNYGCYCGFGGSKTPVDEL L LQFSGMIRCATGRSAWKYFNYGNWCGWGGSGTAVDGV SLPNLGCMVECTAHVDGMDYYNNYGCYCGFGGSGTPVDED
NLDEFSAMTSCATGRNGL DYNGYGCHCGWGGSGQPVDDT
 GNCPCHYRITDPSPP
ALWQFRNMDLCLPDSWPLFSYSNYGCYCGLGGSGSPVDDL NLQQFKNMI QCA GTRTWTAYDNYGCYCGKGGSGTPVDKL ALWQFGKMI SCDQPGVNPLDYNEYGCWCGFGGRGSPVDEL NLLQFRGMI QCTPGSSPYLEFNGYGCYCGLGGSGTPVDEL
 NLYQLMNMI QCANTRT WPSYTNYGCYCGKGGSGTPVDDL NLYQFKNMI KCTVPSRSWWHFANYGCYCGRGGSGTPVDDL GLLELVGTLQCASTLSALA Y SYYGCHCGLGGRGWPRDST GLI GLAGTIDCVGBRPALVYVKYGCFCGLGGHGQPQDA NLVQFSYLIQCNTGKRASYHYADYGCYCGAGGSGTPVDEL GLIELVETMGCVGIRTPLA YVNYGCYCGLGGQGQPQDAA NLFQFKNMIQCAGGTRSWTDYVSYGCYCGKGGSGTPVDQL NLVNLKSMVEANTGRNADLSFVGYGCYCGLGGHGLPMDEV ALWQFGNMI QCAQPGVNPFLYNDYGCWCGFGGKGAPLDDV AMWHFGSMI QCAQPGVNPLRYNNYGCYCGFGGKGTPRDGV ALLQFDTM| ECANNRSSSNDYMDYGCYCGEGGSGTPVDDLC NLQAMVEALTGRNAIRDFVGYGCYCGPGGRGLPMDEV NLLNFRKMIKLTTGKEPATRYSFYGCYCGMSGRGTPKDAT NLAQFALVIKCAKGKRPRWHYMDYGCYCGPGGSGTPVDELV GLDELAEAI DCVGPRSPLA YVSYGCYCGLGGRGQPLDA


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UniRef90_W2T7B9



D R C C QLLHDACYDSLQHCDAKQQRYHYSWHSGRITTCRRDSW DWCCHRHDCCYTRAEECRPKTERYSWQCVNQSILCGPENK DECCFQHRKCYEEALEMECTWDPSKVSCSTKNLTCEFVDP DRCCEAHDKCYRK I PGCEPYYVIVGFSCSNRQVYCSAANE DECCMEHDSCYKKVWK WQ $\square Y F T H Y N Y Q C H G K R I T C Y N G S S$ DRCCQVHDECYAEAEKHGCY TTTYTWECRQVGPYCNSKTQ DWCCFNHDCCYGKAERCHPKUESYHWECEDNVAMCEDEEK DRCCETHDRCYRTAKKMNPYTELYSYKCSGNKITCSKNNA
$D R C C L A H D C C Y E K L K E C Q P V L N S Y R F H V A N G T V V C G C T C L$ DRCCKIHDDDCYGEAENCAPYWTWYTWKCGSDGPQCDDETG DRCCQVHDNCYTQAQKDPPYVKDYSYDCSERTVTCKDNDE DWCCWWHDVCYAELERKGY LTQSYRYRDRQGLVTCEDGSH
 DRCCFQHRRCYEEASEELCCVQDPAQLSCVSQNITCESSDS
 DRCCQVHDNCYSQAEKLNPYTNSYHFSCSNGQITCKSNNE
 DRCCQDHDNCYGQVKNDNPYTNDYSYTCSGSEIDCNSSNE DRCCQAHDNCYTQAKKMNPYTKLYHFSCSDKQITCSENNE DWCCHAHDCCYEKLEGCNPYMDHYEYTENDTKIVCFNQTA DWCCHRHDCCYSQAEKCSPK ${ }^{\text {D }}$ QRYPWQC $\square D R Q V Q C G P E N P$ DRCCQAHDKCYEDAEKCYPKWTTYYYYCGANGPYCKTRTK D WCCHSHDCCYEFAEKYGCKTK $\square Y$ S WT CKDNTVKCGDMDW
 DWCCDHHDCCYERAQKCSPKMELYSWQCQNQQVLCPTQNK
$D R C C F Y H H C C L D E A R K L G C R S L T G Q V Y C M D Q Q A T C T G L T D L$
 DSCCRSHDWCYKRHDSCYPK IIPY $\square$ ASTS GSHPSCS $\square$ TCH D NCCKTHDECYDSAVDSGDYYI WYYWQCNDGNPTCKNKSK DWCCHVHDCCYEALRKCHPKLVTYFYSGGKDTDTCLGGNE DSCCEAHDNCYERIK QCNVYYSSYKYSLSSDPQUECNGNTQ DRCCFSHHCCMEQVKKGGCHAERSEVVCFDDHTPKCGGQQSM

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| iRef90-H0ZQM1 |  |
| UniRef90-M3ZL6 | A V C |
| UniRef90-UP100046B667B CDKQTCECDKSLVLCLKRQE YREEYRAY |  |
| UniRef90-F62 | WKQDLCQCDVKAAGCFATNRAKYNRAYKD |
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|  | AFICNCDRVAAHCFA ASPYNN |
| UniRef90-TomJC2 |  |
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| 90 UP1000 | DKAALECFAGS NMNTS |
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| UnRef90-UP10003831C35 CEMFICNCDRAAAMCFARS TYHPQHRLDTKKYC |  |
| UniRef90-P0703 | CAAFVCNCDRVAADCFAGA PY |
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| UniRef90-P23026 CQRFVCNCDVVAADCFASY PYNRRYWFYSNKK |  |
| UniRef90-F6TK75 | $V C K C D S K F A E C L S K T R ~ F N S K$ |
| UP10003C0FB8A CQRMLCKCDNEVASCLSKAL Y S SK |  |
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| UniRet90-G316R7 | CEAFICSCDRQAATCFSKA PYNKENK |
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| UnRef90-UP1000441EE50 CERLLCNCDKEAIECFLRS PLNSSLNNLDASLC |  |
| RRef90-R4Fl |  |
|  |  |
|  | CGAAVCNCDLVAANCFAGARY |
| riRef9-UP100033309F6 CQVKACECDRQSVYCFRESLIPT Y EKNFKFPSRPQCGRRKH |  |
|  | N |
| UniRef90-R4FI60 |  |
| UniRef90 |  |
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| UniRef90-G3VTI |  |
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| UniRef90-UPIO00442377C CATLACECDKHASLCFRREAATYSHKLRHYPAVLCKEPTR |  |
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| UniRe990 UPIoo038BDB1B CQEV C C C E ELAA CLLAGTE Y |  |
| UniRef90 G5B4E8 |  |
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| UniRef90-Q6SLM2 CARFVCDCDRTAATCFAKA |  |
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| UniRef90-UPIO003AF | ( ${ }^{\text {a }}$ |
| UniRef90-A0AO24AX |  |
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| UniRef90-UP10003UniRef90 G302F3 |  |
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| UniRef90-UPI0003945E5F | S C |
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| UniRef90-J9K038 |  |
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| UniRef90-S4RSK0 | $\square \mathrm{C}$ |
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| UniRef90-F7EJ44 |  |
| UniRef90-H3BG53 |  |
| UniRef90-Q6SLM0 |  |
| UniRef90-G3PGI7 |  |
| UniRef90-UPI00032AF5FD |  |
| UniRef90-Q45Z46 |  |
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| UniRef90-Q6SLM2 |  |
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| UniRef90-G3Q2F3 |  |
| UniRef90-W2T7B9 |  |

## UniRef90 Q75S48

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UniRef90 H8PG85 UniRef90_UPIO0026546EE UniRef90-R4G2M4 UniRef90-F7EBG4 UniRef90-P23028 UniRet90_C3Z8GGO UniRef90_P48076 UniRef90-S4RSH3 UniRef90-UPIOOO333874B UniRef90-H2S2RO UniRef90-H2S2RO UniRef90-C3YYK9 UniRef90-R4G2D4
UniRef90 O5G291 UniRee90-Q9PUG8 UniRef90-F5CPE9 UniRef90-Q8QFW3
UniRef90 P20256 UniRef90-Q9DF33 UniRef90-C3YX84
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 NFWQFGRMIKLMTGKSAFFSYYGYGCYCGLGGRGNAVDDT SFWQFQRMVRHVTGRSALFSYYGYGCYCGLGGKGTPVDDT GLMQLAAMINCVQPDVTALMYNNYGCHC S FWQFQRMVKHITGWSALFSYYGYGCYCGPGGRGGPIDAT NFVQFAVMVTCAT SLDPGFLFNDYGCHCGLGGKGTPVDDV NVVQFGSMI SHVTGRSALDDYLEYGCYCGLGGSGTPIDPI SLLNDKSMVDANTGRNAIDSFYGCYCGGGGGGHGDPMDEA SVXQFQKKVKHVTGRSAFFSYYGYGCYCGGGGKGTPVDDT NLINFKRMI ECTTRRSVWDFTNYGCYCGSGGRGTPVDEL AVWQLRSMI QCTPGSHPLLQYDGYGCYCGLGGSGTPVDEL GVEEFGKM1 RCVQPGVNPSQYNNYGCFCGLGGQGRPVDKV SFWQFQRMVKHVTGRSAFFSYYGYGCYCGLGGKGVPVDDT GLIELAGAI SCGTGRNALAY LGYGCYCGLGGRGWPKDDV NLIQFSYLI QCNHGRRPTWHYMDYGCFCGSGGYGTPVDDL NLYQFDNMI QCANGKRATWHYMDYGCYCGSGGSGTPVDAL NLYQFKNMI QCTT KRPVWHFAWYGCYCGSGGSGTPVDEL
 SLWQLRNMIQCTIPGSHPLKDYNYGCYCGFGGSNAAVDEL SFWQFQRMVKHITGRSAFFSYYGYGCYCGLGGKGTPVDDT AVWQFRNMIKCTUPESPLKDYNNYGCYCGLGGSGTPVDEL MPQLGQMLFCDTARCP EEFESYGCYCGHEGRGEPRDAL MPQLGQMLFCLTARCP EEFESYGCYCGHEGRGEPRDAL SLFDMAMMLKCTPGSDPLLEYNNYGCYCGLGGSGTPVDEL NLYQFKEMIRYTDPCEKTWEYADYGCYCGAGGSGTPDDAL GVWNFFFMTF I GGKRAPWKYDGYGNHCGIGGKGSPVDSI EFRSMIKCADPSHPFLRFDDYGCYCGLGGSGTPVDEL
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## UniRef90_UPIOOO4

 UniRef90_C3Y4E1 UniRef90_UPI000383E84A UniRef90 UPI00038BE2AC UniRef90 ${ }^{-}$W5KYG2 UniRef90_UPI0002656EAA UniRef90 Q9W7J3 UniRef90_UPI00033191FD UniRef90_P41485 UniRef90_Q7T1R0UniRef90_P43434 UniRef90-H2MVY0 UniRef90_H0XQW0 UniRef90-R4FI56 UniRef90_UPI00032A1D8B UniRef90-UPI00038EB882 UniRef90 ${ }^{-}$F6ZQN7 UniRef90-UPI000443E27D UniRef90_Q0KKQ2
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 D R C C WVH D R C Y GELLE E C G $\square$ R T QA Y D YRVVTRGQV $\quad$ CE Y G S F

 DWCCQRHDCCYTRAEQCSPKLSRYPWQCDNETVQCPSENK
 D RCCYVVHDNCY GEARNCNPYMKSYSFKCAKRTLGCYDPGS D R C C E I H D A CY T Q A K H L N P Y T N S Y S F S C S GT N I C S S K N E
 DQCCF LHDCCYRHARRGRVKWQPYEFACSQSGTECRS QSV

 D R C C K D H DCC Y A E L K T C CPMF S T Y H F HVVVN G SVI C Y S G S R
 D RCCCHDHDCCCYKK AKRCQP K I G GYKWS CRDRTFQQPQS DW
 DWCCKVHDACYEAVYGVGAHVVTYSWTVTGGYVTCNNFGT D WCCHAHDCCYQKLEDCHTYGDHYDYT』ENNTVVCSEFNQ

 DKCCQAAHDNCYS QAKK L N P Y TETYYK FSSCSSEEEITCSSTNDE
 D QVGMAHDCCYKK LKECQPLLNNYQFHUIDGTVVXDPVCL




 DTNMFQLDACYSVVRVLATCTKA GKNKD HMCCQAHDCCYRRLRECSPLITPYSFTASHGNDTCTE QSW D R C CR S QPCTRK EALAA H WVEVQRGSWSKGFS LVVGVGQSP D RCCRSSQPCTR K E A L A H WV EV QR GS WS K GF S L V V GVVGQS P DTCCQTHDHCYDQAKK LNPYTNTYSYSCS GSEVTC



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D WCCFKP DCCYSKAEQAGPKDESYNWECEDNAAVCDS ED K D RCCQTHANCYTEARKCAPYYKTYSYTCCSGGTDITCNDNDE



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| UniRef90-UPIO00383E8 | QI WACMP S S LP P P WTARGFVPP |
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| 0331 | C |
| UniRef90 Q7T1R0 | CARFVCDCDRTAALCFGDSEYITGRHK NIDTKRHCQ |
| UniRef90-P43434 | C |
| UniRe |  |
|  |  |
| UniRef90-UP1000 | CGRMACECDREFAECLTAAK PRKRHFFYNRRELCAGPKG |
|  |  |
| UniRet90-UPIO003 | CDKOTCECDKNV |
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| UniRef90 F6TK24 | c |
| UniRef90-UPIO0026546C5 | CRQSLCECDRNAALCFARSK YNDGNTFYDK |
| UniRet90-C |  |
| UniRef90-UPIO | MVLCF |
| UniRef90-UPIO0 | 俍 |
| UniRef90 U3FAA2 | Q |
| UniRef90-U3J2 | A |
| UniRef90-A0A02319 | A |
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| Unif | RV |
| UniRef90 H8PG83 |  |
| UniRef90-P08872 | A AKC |
|  |  |
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| UniRef90-UP | CGLRACECDKQSAYCFKESLPTYEKN |
| UP | C |
|  | A |
| UniRef90-L5MIK4 | CEKLLCACEQTAAECMASAF FNQSLKSSGRQECQGPRR |
| UniRef90-UP100027F98DA | QQYYYYNKRLVRTRS |
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| ciJar9 | CAQA CKCDKDIVECLNQNDKDYNPKYN |
| 14 D | CAARLCEM |
| UniRef90 Q0PL66 |  |
|  |  |

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CDVHTCLCDKAAVECFARS
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$\qquad$ HPA

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| SLWNL <br> $N L L H F$ $S L V$ $V$ <br> S $V$ QF <br> SLLNL <br> F Q F <br> $A$ VYNL |
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GVIRLYNMVSCATGCNPLI SVFNFGEMSS NLYQFKEMDECANGTDSGLA AVWQLGNVFDCNDPRTGTFE
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A पWQFRGMपKCपPDSNPLLEFNNYGCYCGYGGGGWPKDKT
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YMNYGCYC

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AF WN LF SMKKC $\square \mathrm{GGKC}$ T T
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REYWAYGCHCLMMGKGAPVDAL SALNFQSMISYTTGRSALA

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CDRANCECDRIAAECFARYK YNCDY
CKHRTCNCDRKLALCDSKAEHHWRWGYRFWPGS
CDRANCECDKTATLCFKNT PYNCNH
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CARTVCETDKDFATEVSKLVGAWKSKFH IGNGFTCTGESE
CPRELFECDKRFVYDMLAEKDVFDDQFHAFYGGFDNRDPE C EQAACECDKDSVLGFANVIDIYDPTGHAFNGF

CQKHSCRCDQEDANCLAQTE YNLKYLFYPQFRCQQDSP

CEREI GECDKKFVYDGFEARLEFDNAFHNTDSFFDPTDKE

UniRef90 E4WW19
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UniRef90-E4XPP1 UniRef90-E4Y8M7 UniRef90 E4XS70 UniRef90-UPIOOO3D0B498 UniRef90-E4XNW6 UniRef90_E4XTT5 UniRef90-W4XV13 UniRef90-E4WR25 UniRef90 E4YYG9 UniRef90-UPI00042C19D6 UniRef90-UPIo0045715F1 UniRef90 E4WTQ2 UniRef90 UPIO0046294AF UniRef90-E4XIJ2 UniRef90-Q5XVR1 UniRef90_UPI0003315611 UniRef90- E4XVF4 UniRef90_UPI00042C864C UniRef90-A0A016WOC3 UniRef90 E4XG47 UniRef90-B4GPH8 UniRef90-Е4ХАН1 UniRef90 E4XMK2 UniRef90 E4YJA7 UniRef90-E4X477 UniRet90-H3NEP6 UniRef90 E4XCE3 UniRef90-E4WRG6 UniRef 90 - $4 \times Q T 1$

1
 MDFGNIDRNP【A YLRYGNYCGLGSRGTP DKFDERKYWAYGCHCY LMGQGAPKDEL
WQLMEQILYFNPAFDQRKFWAYGCNCLLLGYGPPVDEL S VLELERMURAATGRSAPLS YSWYG
NAFQEGWMपECVLDQSSWWSYADYGCYCGYGGSGVAMDK】 S $\square E V V M F \square Q D R A F A \square E A L$ SFWQFRMFLQADRSAFALEKYLQYGCYCFFVGRGDPVDEV RKYWAYGCHCYLMGMGRPKDAL
$\square W Q F A R M D R C A T G R S G$ WDYNDYGCHCGKGGGGNPVDANT
YQLDDMAMCELGW PMSEYNHYGCACSDLI RGAAVDQV MNNYGCHCNLSGQGASLDGL

GMDQYRTMTKK DTGYSYTKMFEKYGCTCDNRDNVKPEDAT LNAMIEQA GFQDS GKLKYYGCYCDPSGKGKPVDA I


QFDELIGPRTVTHGLANFTGYGCHCGPGTRGPVLDKI
QLLNMMVRYNPEFDERKYFSYGCNCQFFGGGPPMDPL KFDERKYWAYGCHCFDMGDGAPKDQU QF GMMQKCLLGKSVILDYDGYGCYCGFGGDGVPLDDT GF

S $V$ Y QF GKF $\square$ S CYAGFFDG $\square D Y N G Y G C Y$ RKYWAYGCH VNQ IMKMTMFLQETPSFDKFYRYGCWCFVGGHGEPVDEI QLKVVVLWLQQEQKFGRYCYYGCYCLDPGYGRPMDN
YNLGLQMLCYQGKSWS LDKFVKYGCYCGSGGSGTPDDAL QLKIVVLWLQNEQLFGRYCYYGCFCLQGGYGKPQDNIV
SFFNLAAMVECTVHSSGADGFVGYGCYCGDGGGGDPVDGV QLKIVVLWLQQEQKFGRYCYYGCYCLQGGYGKPQDN|


MCGTGRSS $\square$ Y Y $\square$ GYGCYCGLGGQGWPKDKT YMGKGRPVDEI
 $A L V F L G N M M S C T T N R T F L E D F G F Y G C Y C G F G G F G K P V D G V$ LT QLMEMDMY LQHEPVFSKYCFYGCWCLPYGAGDPVDEI


TTTGSGFGRYCGYGCWCLVAPGGNPVDDI LA YNEYGCWCGLGGGGTPVDDV QMATMVACLDPD DPPTDY DKYGCYCGGGKSGSPVDEQ SFWQFQRMVKHTTGPRTFFSNYGYGCYCGLGGQGTPMDDT S LWNF GRMGKCVLKYNPF $\square$ FNHYGCWCGSGGGWDPIDEN LY SMDKCSTGCDPLI YKGYGCYCGFGGHGVPAEGIL QFEAMAK DF DGSFDKRSDTRYGCNCPHDGKGAPVDP
$\square T Y N D M \| L T E Q G A L T S R$
 QLISMDNH I STRPATDY SFWQF QRTVKHUTGRSAFFSNYGYGCYCGLGGDGDPMDDT NLLQFNKMIK KMTKKNAFPFYTSYGCYCGWGGR

M 1 KQPPNKF $\square$ S $\square$ FKKYGCHC LGGQGRPKDDV
VVQF GGMVECLVRRGSLA, YNGYGCHCGGGGGGKAVDAT QFESMAKLFDPDFDKKSTTDYGCNCPELGKGQPVDETL
UniRef90_E4WW19 UniRef90_B3SE98
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UniRef90_E4WT50

DKACFDFK QCYRCLTK CAGE LLGYRFDLIDDRDIVCNTPGS D $\square$ CCMNHDNCYQNTNCKGLYFNFYSWKFQNNEIICKMSSDP D SVGCLK Y K QCLLKCARNCMNEFVFYGVAMN GNQPQCTDEGT D NKCKAFKDCQKCVRQCIGEFVQYTWKYSGKTGSFSSQNS D S VCK Q Y K D C Q K CARMCI GE FVVRYGLR DGNNGPVCRNNGS D TVGKHYKDCAQCAKKCINEFKKYKFSESNASMCKNEANS DKCCHSHDCCYNKAQVFGCTPGSHTYRYFNLGAKVVCRDR


 D T K C K A Y K E CQRCCVRKCDGEFVGA YM WK WTNK K GTF VGQNS DRCCEAHDTCYD GI DQCNA Y WRSYYYS LVACRTT DQCCERHNECYDSART LSPYYAFYSYKCESKK ITCKD $\quad$ H S D S S CHK LQQ C H A CLK Q C D P V H T R Y K A R L I D GEI LCLDNKS S CCWMHDRCYARLEKCNALTQVYRYR』ACGLVTCGRGSL D RCCWRHKCCYKNI ENCGPDWRPYDYSFVEPDELCC
 D K K C R D F S S C Y K C V K E T C K H T Q P Y S F E G R E D P V T G T R Y G T
 DKTCKHHKECYMCAKKCVPEETGYSHKGAYDKVTCMDPGT CNPK WKRYDFHEVNGTVTCNENSE D RTCRE YRNCRKCTRMCRGEFVVKYSETTGGNFKCGEEAGT DTRCRAYKQCNKCVRRCDGERVQYTWRYKASTGSFNKVGS



 D NRCKAYK DCQKCARDCDGEMVVKY WRYSKKSAAREAP GT D RVCQRFHKC IS CVHVDCPD WAPYTFKTNKKNVVCKNRDS
 DRCCQAHDQCYGKVKTAYCY LKKYRMSCKNKQTTCETRS G
 D T C C Q SH D ECYY G GL Q E D Q C Y L E GYE Y E H D G C K I E C K S S D D

 D R C C $V$ V K H D N C Y G I I Q D C G L S F N V Y P Y T Y SA D C KT C WF Y G K DKSCRE YSTCYNCAPCSEQEDGHYNVSGENMLICADDMGS DWCCHAHDCCYGFAQECSPMI RRYKWTCKDNHVIC

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 DKT CKRLS QCYKCASMKYGKEDCPSNTHYEFTVIECDP E GS D WCCHRHDCCYTRAEQCSPKMERYS WQCVNQSIVC
D RCCFTHDCCYDCWKGTSDYLIXNYS QCKLGRAECPEWDP
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 HLCCQELDNSCWNQATTGDTYIJKSYSYFCAASVITC
D QYCQQ HK ■CYKC IS RCNPAESSSYKMNMSAYSVRCEDRNP


 D RVCLTFK QCTKCAKECISEFNRYSYSEFKNDVQCNDRGS DKKCREYKLCQQCARMCIGEF DTYDYGVEETHKVCRDPNT D S A CH A L Q E C L K C l K R C H P Y N GYK F T EYN DMVCRD A E N S D H LCH H DLHK S Y NCLKKVDYGKTTPYNWELQNDVPVCDEVGT DRQCQKHDKCYEQNGWGNTKCD
D A S CVN WQ Q CRTCVT F CDP LLLEMYPVNVTNGELSCDLTT S DSACRRHGRCNLCAEETCDQFTPYGFEAKQDPVTGGKYGT
 D R L CCFVHDCCYEK D $\square Y$ S Y S W
D R T CKRLLY NCHKCGG $\square$ CAPDAT QYK VRGYESAPTCDEEGS DTACRSWNKCYDCINQCDGDSSTYSYFAETSEDSCEAEGS DRCCQVHDRCYS QLK DCKGDKSVYFTYYKSNMNNCDTPNR

 D E A C R A WR R C S Y C DV $D$ D C E PL DTP Y QF DY DANNMYNCNKNN Q



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CAGYVCNCDKTF $\quad$ D C $\square Q K$
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CRRSLCECDKRLAEELAANEW
$\square$ © Q
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$C K K N L C E C D K F I L A E A L D D D K F E L Y K E E N H V F G G$
$C P M M L C E C D R M A A Y C F$
$C$
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CPMMLCECDRMAAYCF TWH HYNPDNYGSPK
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CSVAI CKCDRDLAMCDARQ PFHKKNRFHNRDKCFGE
C ERALCECDRRLAEKLSY LDEDTSSFDYH
CARSLCECDRNLASNLADQQYEWEESLHAKWGNFDRE
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