## QUERY

UniRef90_C6IVS5
UniRef90-D4LCS8 UniRef90_UPI0003AF37B0 UniRef90 - 13 DZ81 UniRef90-UPIOOO36F4523 UniRef90-A6P2B6 UniRef90-W2E411 UniRef90-D3BDE5 UniRef90-R6V4555 UniRef90-R5E8P8 UniRef90-W7YE00
UniRefofo_NoAYG1
UniRef90-L7WXD2
UniRef90_UPIO001E890CA UniRef90 M1Z4A9
UniRef90 UPI00036DAD4F UniRef90-A8FD59
UniRef90-KolYR2
UniRef90 R5INC5
UniRef90-UPIO0036E464F UniRef90-H3SF22
UniRef90-WTYVV6
UniRef90_UPI00046245DB
UniRef90-I1G896
UniRef90_A0A023CQ13
UniRef90-G7WEC5
UniRef90-G3J4B3
UniRef90_UPI0002D4F362
UniRef90_KOABL3 UniRef90-V6T3Q8 UniRef90-R7Z4B1 UniRef90-D7GWS6 UniRef90-W4PYL7 UniRef90-UPI000471CBFE UniRef90_R7MNV3 UniRef90-UP10002193621 UniRef90-Q17KK7
UniRef90-F7KLF6 UniRef90-UPIO00413AADC UniRef90-A0A010ZWY1 UniRef90-R5JHE7 UniRef90_R5UTM9 UniRef90-UP1000225AD2E UniRef90-T3HWC8 UniRef90_UPIOOO255C667 UniRet90_U2PTBO UniRef90_W8CB73
UniRef90_IOGPN1
UniRef90-D4KN00
UniRef90_I5AQE1
UniRef90 M1K0F5
UniRef90_G9QMN5
UniRet90_FOPBN4
UniRef90-R6M5P4
UniRef90-Q7ZAM6
UniRef90-R7B3F0
UniRef90 UPIOOO2653CC4 UniRef90_COCHF7
UniRef90 H9KFVO
UniRef90-B7GGE7
UniRef90-B4JB18
UniRef90-R7IWD2
UniRet90 U4UG66
UniRef90-UPIO0046493F1
UniRef90-I2FY48
UniRefofo-R7BK16
UniRef90-R5P4R5
UniReffo-R5XT35
UniRef90-H1HR67
UniRef90 F7KQN2
UniRef90-TOC5V6 UniRef90-A0A024QD62 UniRe90_R6LJV UniRef90_R71764 UniRef90-R9CC57 UniRef90-M5E4M9 UniRef90-U2KJR1 UniRef90-B4Q7F6 UniRef90_UPIOOO4070760 UniRet90_-R5XYG7 UniRet90-UPIOOO42A01F9 UniRef90-A6CS75 UniRef90-FOSUE9 UniRef90_U2EZ79

1
10
KVIDATDEKKSGRTPGTVGRGOTAB 30
GVKEVLKAAKRSTLGVHGAVAELIRVPEYDIATSSC GRSIKKLLRAGKSGRISGIHGSVAQLVSVKPEYGVAI ETA GKVLDALMQQKKSGRIPGIYGRLGDLGAIDEKYDVAISSS QGVKEVLKA RQSKLQGI DGAVAELTRVPKEYEVAIETA GVKAILQAKERGQLNDVHGAVAQLIQVPQDYVTAMETA
KAl KVVMGEAERGQLRGIHGPVAGLLHVEDQYTVADEDA GVKEVLKARQSESLKGIRGAVAELVKVPEDMEVAIETA NTVLDRLMRLKETGQIPGI HGRLGDLGAIDKKYDVAISTA GNS RRVME QKKR V PGI HGVVADLIKVEKNYETAI ETA KSVKTVVNAQSHGKVHGI CGPVSRVISVPKEYGVAIETA GNSI RRVMEQKDRQPGIHGVVADLI GGVKEVLKASRKSVLSGVHGAVADLIRVPEKLEDAVETA QGVKEVLKAK NGVKHILKAKDK ELGIHGAVAE QGVKEILKARDENRLTGITKGAVAELI GVKEILDARGKS LSGIHGAVLEL
GVREVLKAAKRGQL
QGVKEVLKAKER
GVKTVLKAREVGKLGGI HGAVVE
KAVRLVMQDAAAGKLRGI HGPVSK
QGVREVLKARD SQLHGIEGAVAELLTVPKKYEVAMEAA
QGVKEILKHRNQS LS GNSIRRVMEQKKNN NRVL GRVLEALMEQKMSGRGP QGVREVMKAKKKGQCO GNVLAALMRMRESGR NGVKHILKMKDN
AVKMVLKQRDR
QGVKEV KARD
GNURLQGIEGAIAELIHVPKQYETAIETA GVKEVLKARDRKVL
GNSIKRVIMEVRDR
GGVKEVLKA RGGGKL
QGVREVLKARNTGK
QGVRNLMKAKEN
GKVLDALMKQKNEGRDP GGSVKRVMERKSSN
QGVKEILKERDRT FQ
GNS:KKVVEQKTNN
QGVKAVLKAREDRKTT NRGVKEVLKNK KKNKK GNSIRRIMERKADT NKVLDFLMRQKNEGKVP GKAVKAVLKSQESWR
GNSIMRVMEQKDRHK GNSIRKVMELKDRN $Q G V K E V L K Q K E \quad Q \breve{L}^{P}$ QGVKAVLKAK N GKAVKRVLKADKSWQ GVKSVLKAREDKKLQ

SALMEQKRLGKIV GNSI RRVMEQKSRE GDVLSGLTRQAELGMDK

GGRL GSSIRKVMEQKEKNK G GNSI RKIMEVKEQKK
 G G
GI L G RL GDL G
 FDDRF IDAM GI HGVVA D DPKEYEDA IE T A
 GVVYGTVA Q

 GVVHAVAELI TVVPQKVETAI ETA

 SIHGAVIELI DVPKTYUTA: E Gl H GVI $\begin{array}{ll}P & G \\ P & G\end{array}$ VGAVAE QVK LGRLGDLGAI DSKYDVA ETA K GVVAGAVA ELI DVPRRDYVTAA EVA | G |
| :--- |
| H |
| K |
| Q |
| Q |
| N |
| P |
|  | GI $C$ A

 GNSI RRVMDNKDKE GVRTVMQQASRNRLS
GVKAVLTARENGKLS

$\qquad$ GL GVVAD GN NKVLTSLMRMQQSGRI NGF GDVLNSLVVRAELGLLS NKVLDFLMRMKMEGKDP GVKEVLKAREDKELSG:DGRLGDLGGMDAKYDIAASTA GNSIKRVMNNRDHE PGLLGVVADIVKVDKEYEIAVEAA Q GVVK E V L K A K Q S S V L S G I E G A V A B L


QUERY
UniRef90_C6IVS5
UniRef90_D4LCS8
UniRef90_UPI0003AF37B0
UniRef90_I3DZ81
UniRef90_UPI00036F4523
UniRef90_A6P2B6
UniRef90_W2E4l1
UniRef90_D3BDE5
UniRef90_R6V455
UniRef90_R5E8P8
UniRef90_R6G301
UniRef90_W7YE00
UniRef90_N0AYG1
UniRef90_Q65JQ4
UniRef90_L7WXD2

## >


50
60
70
80 G A M Q H
 LG G A M Q

 | $L$ |  |  |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $A$ | $A$ | $L Q$ | $Y$ | $V$ | $V$ | $V$ | $D$ | $T$ |
| $E$ | $E$ | $A$ | $G$ | $K$ | $A$ | $A$ | $I$ |  |  |


 L G A L Q HVVVMEN EADVSRQA I S F L K QR QL
 LGALQHVI VEDEKDGRQAI

 $\begin{array}{lllllll}L & N & Q & A & Q & H & V \\ L & V & V & S & N & Q & A \\ G & G & R & K & A \\ L & Q & N \\ I & V & V & S & S & E & E \\ \text { G } & G & K & T & A\end{array}$


 | Q |
| :--- |
| Q |
| S |
| $A$ |
| $A$ |
| $A$ |
| $Q$ |
| $T$ |
|  |

 LGAMQHIVVENE EVARKAIMVLKANAYGRATAGMMNVIQA LGAMQNVVADNEEAAKSAI A YLKSHQLGRVTFLPLDVI QY CGAALDNFVTE TVVES GQQC I



71CBFE

 | $L$ | $G$ | $A$ | $L$ | $Q$ | $N$ | $V$ | $V$ | $V$ | $A$ | $D$ | $E$ | $Q$ | $V$ | $G$ | $K$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | $\begin{array}{llllllllllllllllll}L & G & A & A & Q & H & V & V & V & K & D & E & A & T & G & R & K & A \\ L & G & A \\ L & L & Q & H & V & V & M & E & N & E & A & V & S & R & K & A \\ G & G & I \\ L & Q & N & I & V & T & E & D & D & T & T & A & K & K & M\end{array}$



 $\begin{array}{ccccccccccccccc:c}L & G & G & L & Q & V & V & T & Q & D & T & D & T & A & K & A \\ L & A & I \\ G & G & Q & N & I & V & T & E & D & E & E & T & A & K & Q & M\end{array}$ $\begin{array}{llllllll}L & G A & L & Q & N & V & V & T \\ L & D & N & E & A & T & A & K \\ G & Y & L & I \\ L\end{array}$ L G S A Q H I V LGAMQNVVTK DTMTAKSA




D2
046493F1

## ■






 E F L K K N R Y GRA T F L P L N V I K P R Y L K E QR G GRAT F L P LT S V K G | $S$ | $Y$ | $L$ | $T$ | $Q$ | $H$ | $R$ | $L$ | $G$ | $R$ | $V$ | $T$ | $F$ | $L$ | $P$ | $L$ | $T$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $D$ | $I$ | $R$ | $K$ |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $D$ | $Y$ | $L$ | $K$ | $K$ | $S$ | $D$ | $I$ | $G$ | $R$ | $A$ | $S$ | $F$ | $I$ | $A$ | $L$ | $E$ | A Y L K Q R N L G R A T F G Y L K Q R Q L G R A T F L P L DVIR P


 Q F L R R N K S GRAT F L $\operatorname{L}$ R L E Y L K K N R Y GRA T F L P L T S V S P

 Q Y L K Q N S F GR A T F L P L T V M K P
 T L K Q Q H S GRA T F L P L T T I K P
 D HL K K N R Y GRA T F L P L T S M A R S F L R Q N N $\square \mathrm{GV}$ V T F I CLD K 1 KH T F L L R N D DGRRA T F 1 Q $L K$ Q NKYGRATFLPLDVIQR
 A F L K T H D $\quad$ GG R G VF I A L D Q Q E H

 E Y L K K N K F GRA T F L P L S S I A N



QD62

UniRef90-A0A024QD62
UniRef90-12FY48
UniRef90
UniRef90_E0VMV1
UniRef90_R5P4R5
UniRef90_R5XT35
UniRef90-H1HR67
UniRef90_F7KQN2

UniRef90_R6LJV5 UniRef90_R71764 UniRef90_R9CC57 UniRef90_J7S7Z3 UniRef90_U2KJR1 UniRef90_B4Q7F6 UniRef90_UPI0004070760 UniRef90_R5XYG7 UniRef90_UPI00042A01F9 UniRef90_A6CS75 UniRef90_F0SUE9 UniRef90_U2EZ79
UniRef90_Q5WFM8



VANNDDQATR 130 Y QR DRRWR 140
150
160
 FASDLERANKMAARLQYRFRIVTLEGDVVNAGGSMTGGSQ
 I AKDLKSANEMAKLLQYRYRIVTLEGDIVNPGGSMTGGAA $V T$ Q S L K E A N A VA K Ql NHRYRIV TLV G DVVNPGGSMS GGA K I A E DMD CA DA MA R K Y S Y R F R V V T L D G QV L N P G G SMT G G S A

 I A E DL N C A T T I A K K Y S Y R F K VV T L D G QVV NA G G S L T G G S L









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



 I A R DLK GANDI A K MLLQYR SRRVVTLDGDVVNPGGSMTMGAV $V A \operatorname{K} D \mathrm{D}$ E Q A N R I A Y G A A K R WR V V T L D G Q L I D K S G T M S G G G M I SK S L T A A NRFA Q Q T GRRYRIV TLD GDIVNPGGSMS GGAK

$\qquad$
71CBFE , VA E DI D A A A I I A K K Y G Y K F R I V

 $V \square D N V D N A V R I A R K Y K Y S L R M V T L E G E L F N P G G S D S$ G GA Y $V A T D L K V A N G I A R Q V R Y R F R \| V T L D G D V I N P G G G M T G G S M$ $V$ A E T L E DA N GI A S R L N Y R Y R V V T L E G DVVVNA G G S MT G G S Q

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



 LAADLTS A NQLAKLVNYQYRVVSLE GDVMNPGGSMTGGAN










 VANNLD QAVRI A Y GKT RYRVVTILTGDLI E $\quad$ GA GTMTGGGN V VD HVDNALII ARKYNYTLRIVTLEGELLNAGGSMSGGAF
 $V$ V D T I D H A I A I S K K Y R Q S Y R L V T L E G D QL N P G G S M T G G T F VVDHIDDHGTAI AKKYKQALRIVTLEGELINPGGSMTGGAF $V$ A D T L E H A N A L A R V L Q Y R V R I V T Y Q G DVV A P G GV M S G G H H I A Q S L K D A NEI A N MVMRRFRIV TVLEGDVVNPGGSMS G GA Q

 $V A K D L K Q A N R V A Y G K R \quad R F R V V T L D G Q L I D \square S G T M S G G G S$ VAKDLA QANRIAYGARRWRVVTEDGQLIDRSGTMSGGGS $V A E D L D T A T A L A K A Y Q Y R F R I V T L D G Q V I N A G G S F T G G S$


 I T A D L K GANALAKLA GYRYRFVTLDGDVVNPGGSMS G GAT VAENLDCAVELAQKTGHKVRVVTLQGDQVNPGGSLTGGSS IV V E D Ll D T A V

| QUE |  |
| :---: | :---: |
| UniRef90_C6IVS5 | HRKNSN |
| UniRef90-D4LCS8 | A HSS |
| UniRef90-UPI0003AF37B0 |  |
| UniRef90-I3DZ81 | K Q ${ }^{\text {T N }}$ |
| UniRef90-UPI00036F4523 | K N S Q |
| UniRef90-A6P2B6 | S |
| UniRef90-W2E4I1 | QQKKTN |
| UniRef90-D3BDE5 |  |
| UniRef90_R6V455 | K N S N |
| UniRef90-R5E8P8 | NR |
| UniRef90-R6G301 | R N S N |
| UniRef90-W7YE00 | HKKNN |
| UniRef90-N0AYG1 | K Q T N |
| UniRef90-Q65JQ4 | K K K S S |
| UniRef90-L7WXD2 | R K |
| UniRef90_UPI0001E890CA | KQKSN |
| UniRef90-M1Z4A9 | K QKGN |
| UniRef90_UPI00036DAD4F |  |
| UniRef90-A8FD59 | K K K N |
| UniRef90-K01YR2 | K VT N Q N |
| UniRef90-R5INC5 |  |
| UniRef90-UPI00036E464F | K Q N |
| UniRef90-H3SF22 | NKKNAN |
| UniRef90-W7YVV6 | KQSQS |
| UniRef90-R5KKT8 | R NS S N |
| UniRef90_UPI00046245DB | S V |
| UniRef90-I1G896 |  |
| UniRef90-A0A023CQ13 | AKKAN |
| UniRef90-G7WEC5 | QRK G G N |
| UniRef90-G3J4B3 |  |
| UniRef90_UPI0002D4F362 | R K T K S |
| UniRef90-K0ABL3 |  |
| UniRef90_V6T3Q8 | K Q S S |
| UniRef90_R7Z4B1 |  |
| UniRef90_W4VER6 | K N N Q |
| UniRef90-D7GWS6 | K S S N |
| UniRef90-W4PYL7 | KQKQ |
| UniRef90-UPI000471CBFE | KQGN |
| UniRef90-R7MNV3 | QK |
| UniRef90_UPI0002193621 | R N Q G N |
| UniRef90_Q17KK7 | S MQR |
| UniRef90-F7KLF6 | K N S N |
| UniRef90_UPI000413AADC | NKKKN |
| UniRef90-A0A010ZWY1 | NR R |
| UniRef90-R5JHE7 | R N N S |
| UniRef90-R5UTM9 | K N S S N |
| UniRef90-UPI000225AD2E | K K N N |
| UniRef90-T3HWC8 | K T N G N |
| UniRef90-UPI000255C667 | K Q R Q |
| UniRef90-U2PTB0 | R N N S |
| UniRef90-W8CB73 | T Q |
| UniRef90-IOGPN1 | Q H |
| UniRef90-D4KN00 | K N T S N |
| UniRef90-I5AQE1 | K F N N |
| UniRef90-M1K0F5 | KKKNN |
| UniRef90-G9QMN5 | K Q K |
| UniRef90-FOPBN4 | KRGNQ |
| UniRef90-R6M5P4 | Q S |
| UniRef90-Q7ZAM6 | K K S NQ |
| UniRef90-R7B3F0 | K N S N |
| UniRef90_UPI0002653CC4 |  |
| UniRef90-C0CHF7 | R N N S N |
| UniRef90-H9KFV0 |  |
| UniRef90-B7GGE7 | NK Q S |
| UniRef90-B4JB18 |  |
| UniRef90-R7IWD2 | R N N S |
| UniRef90_U4UG66 |  |
| UniRef90-UPI00046493F1 | KNSSS |
| UniRef90-I2FY48 |  |
| UniRef90-R7BK16 | K N S N |
| UniRef90-E0VMV1 |  |
| UniRef90-R5P4R5 | R N S S |
| UniRef90-R5XT35 |  |
| UniRef90-H1HR67 | R N N S N |
| UniRef90-F7KQN2 | K N S N |
| UniRef90-T0C5V6 | Q R K |
| UniRef90-A0A024QD62 | K K N |
| UniRef90-R6LJV5 | K N S N |
| UniRef90-R71764 | K N S N |
| UniRef90_R9CC57 | K Q K Q |
| UniRef90_J7S7Z3 |  |
| UniRef90-M5E4M9 | R |
| UniRef90-U2KJR1 |  |
| UniRef90-B4Q7F6 | R |
| UniRef90-UPI0004070760 | K K |
| UniRef90-R5XYG7 | K N S |
| UniRef90_UPI00042A01F9 | KQKAS |
| UniRef90-A6CS75 | KQNKS |
| UniRef90-FOSUE9 | RSANN |
| UniRef90_U2EZ79 |  |
| UniRef90_Q5WFM8 | K Q N Q S |


UniRef90_S1NJP3
UniRef90_R2RDY6
UniRef90_F4PQ93
UniRef90_K9E8L5
UniRef90_UPIO004700767
UniRef90_R9KHB5

L
L
L
L
L
L
L
L
L
L
L
L
50
L|GAAQH|I IVQDEAAGRKG|l|
${ }^{60}$
$\mathrm{T}^{60} \mathrm{~F}$ K Q R A GRA ${ }^{70}$
80

ENEAAGRKG
VLLK QN
R
$K$
Q
Q $\stackrel{\text { s }}{ }$ GRGT LPLLSTIQ
656FB5 UniRee90-E4KNW0
UniRef90 UPIOOO2656FB5

0464BCBB UniRef90_UPIO00288BE9A UniRef90-UPIO00370E737 UniRef90-R6FKC7 UniRef90-R5EDJ2 UniRef90-R6IBYO

UniRef90-B7ANQ0 UniRef90-V2Y9Q9 UniRef90_R6PW14 UniRef90-X2GIL7 UniRef90-D7EAF5 UniRef90-D9QRN7 UniRet90_D4YGJ7 UniRef90-R71ATO UniRef90- ${ }^{-19 K 6 Q 2} 2$
UniRef90
G5JWH4 UniRef90-M31AU5 UniRef90-F9XMF5 UniRef90-C5RAC9 UniRef90-P41004 UniRef90-R6VNNO UniRef90 E6LDW9 UniRet90-F1KR40 UniRef90-B11183 UniRef90-UPIo00289CCF9 UniRef90_G8JTM1 UniRef90-D4MYX3
UniRef90_D9s347 UniRef90-R2RP00 UniRef90 UPIOOO3B48229 UniRef90-F2U3W0 UniRef90-C8NEF4
UniRef90-S4PX97 UniRef90-R5CXD6 UniRef90-M0тBP0 UniRef90_UPIO002E45537 UniRef90_C9LW80 UniRef90-A0A024JB19 UniRef90_RJJHA3 UniRef90_R2Q820 UniRef90-UPIOOO3623918 UniRet90_R7GCF2 UniRef90-H3RNL3 UniRet90_R5WGR7 UniRef90 R5GBU3
UniRef90 R6MYA5 UniRef90-R6QF17 UniRef90_C4L5Z7 UniRef90-R4XGW7 UniRef90- ${ }^{\text {URRR }}$ UniRef90-I4YID8
UniRef90-TOJYL4
UniRe90-B4N7D
UniRef90-B1BE28
UniRet90_J8THM9
UniRef90_Q04GL1
UniRef90 UPIIOOO360A749 UniRef90-UP10003B71DE2 UniRe90_TOE917 UniRef90-UPIOO0463EB98 UniRef90-F4A9C6 UniRef90-A0A022R5IO UniRef90 UPI00047C089A UniRef90_Q5A4Y2
UniRef90 W7CSS8 UniRef90-M5G1F7 UniRef90-K6U9Q7 UniRef90-G5K200 UniRef90-UPIO0047B4F2E UniRef90 UPIo003A46953 UniRef90 R4W878 UniRef90-F8HCJ6 niRef90-C9RZR9 Uniree90-A8NOS4
UniRei90_M4SHU7 UniRef90-G4T9N3 UniRef90-U4LMU9 UniRef90-F3A995
UniRef90-R6Al16

## UniRef90_S1NJP3 UniRef90-R2RDY6 UniRef90-F4PQ93 UniRef90 U9E8L5

 UniRef90-UPI0004700767 UniRef90-R9KHB5 UniRef90-R6YGL7 UniRef90_UPIO00464BCBB UniRef90 UPIOOO288BE9A UniRef90-UPI000370E737 UniRef90-R6FKC7 UniRef90-R5EDJ2 UniRef90-R6IBYO UniRef90-B7ANQ0 UniRef90-V2Y9Q9 UniRet90_R6PW14 UniRef90-X2GILTUniRef90 D7EAF5 UniRef90 D9QRN7 UniRef90-E4KNWO UniRef90_UPIO002656FB5 UniRet90_D4YGJ7 UniRef90-R7IATO UniRef90-R9K6Q2 UniRef90-G5JWH4 UniRef90-M31AU5 UniRet90-F9XMF5 UniRef90-C5RAC9 UniRef90-P41004 UniRet90-R6VNNO UniRef90-E6LDW9 UniRef90-F1KR40 UniRef90-F2KNS5 UniRef90-B11183 UniRef90_UPIO00289CCF9 UniRef90_G8JTM1 UniRef90-D4MYX3
UniRef90_D9s347 UniRef90-R2RP00 UniRef90-UP10003B48229 UniRef90-F2U3W0 UniRef90-S4PX97 UniRef90-R5CXD6 UniRef90-MOTBPO UniRef90_UPIO002E45537 UniRef90-C9LW80 UniRef90-A0A024JB19 UniRef90-R5JHA3 UniRef90_R2Q820 UniRef90-UPIOOO3623918 UniRef90-R7GCF2 UniRef90-H3RNL3 UniRef90_R5WGR7 UniRef90-R5G8U3
UniRef90 R6MYA5 UniRef90-R6QF17 UniRef90_C4L5Z7 UniRef90-R4XGW7 UniRef90-W7CFC5
UniRef90 UniRef90-I4YID8
UniRef90-TOJYL4
UniRe990-B4N7D
UniRef90-B1BE28
UniRet90_J8THM9
UniRef90_Q04GL1
UniRef9O-UPIIOOO360A749 UniRef90-UPIOOO3B71DE2 UniRef90-TOE917 UniRef9O-UPIIO00463EB98 UniRef90-F4A9C6 UniRef90-A0A022R510 UniRef90 UPIIO0047C089A UniRef90_Q5A4Y2
UniRef90 W7CSS8 UniRef90- M5G1F7 UniRef90-K6U9Q7 UniRef90-G5K200 UniRef90-UPIO0047B4F2E UniRet90 UPIoo03A46953 UniRef90 R4W878 UniRef90-F8HCJ6 niRef90-C9RZR9 UniRe990-A8NOS4 UniRef90-G4T9N3 UniRef90-U4LMU9 UniRef90_F3A995
UniRef90_R6Al16

RKLLIPEYQLLQTMTGFI GVVASNLVIRHNDETTATVIENLLLGTTL RSHQYQALKDEAGFLGVASELVSFPENVAPVMENLLGAIV
 RQVQAKLLQEAQTYGGLASDLVTYDQKLTQUVHNLLGTTL
 QEFKTPEVLQEQGVIGMADSVVRVEKAYENVAKTMLGRIV NPI NLKAVKTKNKAGGLASELVSYDDKYKNLLVSVLGRTV RSIMLSKVQGHPAYLNTADQLVEVDPAFSDIVKNLLGHV KTNFAPDALEEKGVVGLASDLVEIKKEYEGVAKYLLGRVM RNNEFSNKENEPGVIGLAKDLVKVHDKYSAVTNHLLGRIL RNTGEKDACNEKGVVGDASRLVRVSFEYENLVNYLLGRLL AGDRQNEALQEEGVIGLANTLVKVEEDYRGLAEHLLGRTV RKDNPSADQEHPAFVQMADALVTFDEDNRSIVENLLGNVI RRQREEEALEVKGALGTAADLIDYQDKFSPVVKNLLGRI
 KTLYGNERNKLPGCLGVASELVQCAPEYRGIVENLLGRTV GAPANQAALSEPGVIGLGSDLVQAGSQFEGLKKYLLGRTY

 K NLARIQTPENVPRLFDLLRFNDQKFAPAFYNVLQNTL RVNQAQNI LQEPGVVGFGSSLVHAEARFDRLVEYLLGRFV RQLRPDQUTTVEQFVGMGSDLVKTKDDYAKIMQNLLGTTV RPLMAKPDHTPENVPRLIFDLI RVADRAVLPAFYYALGDTL
 RS $\square$ D RVRAQAHSSFIGPADELVACDSRFHAVI AHLLGHVM F NMAKVTTPENVPRLFDLTTPKNEDFAPALYSVLRDTL KEFARKEVLLEPGVIGAANQLVIYDEVYKDLEASLLGQVL

 KQVPDTVLNQAKKVIGLASELVSSDKKYASIIKNLLGTTL GVMKDAPVNDP GFVGVAYDLVHFEPKYDGDFASLLGRTV LRRLKDKVKTPESVPRLFDLVTVKDEKLKLAFFAALGNTV $R F D P D N V V N Q D K N S P G F A S E G V Q F D E Q Y R N L V E H L L G S T$
$R R S Q D E A A K R E V G A T G F A N E L V G A D A K Y R K V V D F L L A R T L$ NK以K
 KKMAKHKIETAPGFLGLASDLVTYDAKLANIVQNLLGVTA

NVSTDSPVLEDEGVIGITATLVQVEERFQALVESLLGRTV

R F VP F D R L D SMNGFVGVASELVETDASYETGKKSLLGSVL



HRRNANRIVQTPENVPRLFDVVQVEDERVKTAFYFABLKDTL

$R Y$ LPANQLDQEKDFIGI GAALIRSEKKYSNIIENLLGTTL









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

R


## UniRef90 S1NJP3 UniRef90_R2RDY6 UniRef90-F4PQ93

 UniRef90-UPI0004700767 UniRef90_R9KHB5 UniRef90_R6YGL7 UniRef90_UPI000464BCBE UniRef90 UPI000288BE9A UniRef90_UPI000370E737 UniRef90 R6FKC7 UniRef90 R5EDJ2 UniRef90-R6IBYO UniRef90_B7ANQ0 UniRef90_V2Y9Q9 UniRef90_R6PW14 UniRef90-X2GIL7 UniRef90_D7EAF5 UniRef90 D9QRN7 UniRef90 E4KNW0 UniRef90_UPI0002656FB5 UniRef90 D4YGJ7 UniRef90 R7IAT0 UniRef90_R9K6Q2 UniRef90_G5JWH4 UniRef90 M3IAU5 UniRef90_F9XMF5 UniRef90_C5RAC9 UniRef90_P41004 UniRef90_R6VNN0 UniRef90-M5J8T4UniRef90 E6LDW9 UniRef90_F1KR40 UniRef90_F2KNS5 UniRef90_B1II83 UniRef90_UPI000289CCF9 UniRef90 G8JTM1 UniRef90 ${ }^{-}$D4MYX3 UniRef90_D9S347 UniRef90_R2RP00 UniRef90-UPI0003B48229 UniRef90_F2U3W0 UniRef90_C8NEF4 UniRef90_S4PX97 UniRef90_R5CXD6
UniRef90 M0TBP0 UniRef90 UPI0002E45537 UniRef90 C9LW80 UniRef90_A0A024JB19 UniRef90_R5JHA3 UniRef90 R2Q820 UniRef90_UPI0003623918 UniRef90_R7GCF2 UniRef90_H3RNL3 UniRef90_R5G8U3 UniRef90_R6MYA5 UniRef90 R6QF17 UniRef90 C4L5Z7 UniRef90_R4XGW7 UniRef90_W7CFC5 UniRef90 H2KRH7 UniRef90-I4YID8 UniRef90-T0JYL4 UniRef90_B4N7D UniRef90 H8I5T0 UniRef90_B1BE28 UniRef90_J8THM9 UniRef90 Q04GL1 UniRef90_UPI000360A749 UniRef90_UPI0003B71DE2 UniRef90_T0E917 UniRef90_UPI000463EB98 UniRef90_F4A9C6 UniRef90-A0A022R5I0
UniRef90 UPI00047C089A
UniRef90-Q5A4Y2
UniRef90-W7CSS8
UniRef90_M5G1F7
UniRef90_K6U9Q7
UniRef90_G5K200
UniRef90-UPI00047B4F2E
UniRef90_UPI0003A46953
UniRef90_R4W878
UniRef90_F8HCJ6
UniRef90-C9RZR9
UniRef90_A8NQS4
UniRef90_M4SHU7
UniRef90_G4T9N3
UniRef90_U4LMU9
UniRef90_F3A995
UniRef90_R6Al16

I A E D|L|ASANQ|I|AKALQYRYR|VV|S|L|EGD|V|MNAGGSMTGGAN I A K DL N C A N QLAR QL R Y QVVRVVSLDGDVMNAGGSMTGGAT
 VAKTLNGASEIAKLSGYRFRIVTVDGDVVNAGGSDTTGGGS
 IV D N M E T A I I L A R Q N K Y S FRRVV T L K G DV I NPS GA I T G G S T I VENMDTAIGGFANETGHKFKIVTTLDGEVLNDGGSLTGGS L , AKELEGAKAIANACHYRYRVVTLDGDVVNAGGSMTGGST
 V V $V A Q D M D A A L E A A R R S G F R M R V V T L Q G D V V N A G G S D T G G S R$
 $V V K H D D H G V A L A K K Y K Q T L R I V T L E G E L I N P G G A M T G G A F$ $\vee$ A A H L E G A S Q IA R L C GF RYR V V T L E G D V V A G G S LTT G G A A V M D S L E N AR I A DNI DAAVTISKKTGQRVKVVTLEGEVVNPGGSMTGGSS
 $V A D E D D Q A T R V G L H G Q Q R F R V V T L R G E D I D P S G T L T G G G N$ VA D NLDNARAI AKALYSRYRIVTLESDVIDNAGGSMTGGAT I A D NLD H GIP IIMRAGNHAFRLVTLE GDVMHS G GSMTGGSA $V$ V D H I D H A I S LA R KY Q Y S LIR I V T L E G E S L S P G G S M T G GA F VVETVVDQANEAARQLRYQVRLVTLDGTEIRPGGSFS GGAN LAKDLKGAGQLAKLVNYRYRVVTLDGDVVNAGGSMTGGAT $V A N E S Q Q A D R V A Y G A A K R W R V V S L E G K L I D K S G T M S G G G T$ IVTDMSAADQLAKELQYRVRLVTLDGQIMNAGGSMTGGAT $V A K N L E Q A N R I A Y G K T$ R WRVVTLSSGQLIDKS GTMTGGGT V VDHIDHADALAKKYKHSLRIVTKEGELLNPGGSMSGGAY I MD T L D H A V QAS RALQQQRVRLVTMDGQVMNPGGSMT G GA N I A E D L A S A N R 1 A R IVFRF R Y R IV VAD DIA TATRVGVGGRERHRVVTLKGEVVEPSGTMTIGGGR

 $V A K D L A Q A N R V A Y G T R \quad R F R V V T L D G K L I D \square S G T M S G G G D$ V VK D M D A G I K I A N K Y H H S VR IV TVD G D SL NRGGAMS G G A F
 LA D LA SANA A A GVNYRYRVVSLEGDVMNAGGSMT G GAT
 $V T T N L Q V A Q L L A K Q L G Y R Y R I V S L E G D V V N A G G S M T G G A S$ VAEDLDQASR\|AYG STRYRVVSLDGKVIE』VGTMSGGGK VAETLAD A VRMSKANGNRLRIVNLDGQLINAGGSMTGGS $V$ A E D L D Q A Tr R DA Y G R D Q E F R V V $V$ VD TLD H G L A A I E K K M G WR LIR IV T L D G E L L NP G G S L S G G GR
 LAK DLASANALA QT LGGYQYRVVSLE GDVMNA G G S MT G GAN II F D S I D H A NQAARDVRY QVRMVTLD GTELRRPGGSFS G GAN
 LVDTLD HAMSI SKKYHYSVRMVTLDGELLNPGGSMSGGAF

 $V A E T L E V A N R I A Q S T G Y R F R V V T L E G D V V N V G G S M T G G S R$ $V A N D L E Q A N R I A Y G K A$ R WRVVTVLDGQLIEASGAMTGGGT I A D TLVSANQLAKLANHRFRIVTLEGDVVNPGGSMTGGAM VTDNMDAAVQIAFKQRQRHRVVTLQGQLIETSGAMS GGGG $V A K D L S Q G N R I A Y G K Q R W R V V T L Q G N V I E A S G A M S$ G G G Q I A K T I $\quad$ N A A L LA I A R N S G F S V VR IV VCDNLEDASRIAYG AMRYRVVTLRGDI I ELIAGTMS GGGT

 I A A NLNAAFRI SKLLNQRYRVVTIDGHIVNAGGS\|TGGAN I A Q D L K S A T A L A R E N H R Y KVVVTLI E G DVI NP G G S MT G G D S


 $V A K D D D Q A T R \| A Y G G K K S W R V V T L D G A L F E K S G T M T G G G N$ LVSDLDCG■AMARQFRHRFRIVTLDGQVLAPGGAMTGGS V APNLNE AKKVAYG AK R WKVVVTLD GKVVVDTS GTMS G G G N

 I F D T I D QANQAA KALQ Y K VR R V T L D GTEL RPGGSFS GGAN
 II FDTIDNANKAAHQLHYQVRLVTLDGTEI RPGGSFS GGAN VVEDMETARHYM
 $V$ T A D L K G A N E L A K L L H Y R Y R L V T L D G DVVV VANDI T TATRIGMGGSRRYRVVTLKGEVVETTGSMT
 $V A K D L Q Q A N R \| A Y G$ A K R WRVVTLAGQLIDTSGTMSGGGN $V A E S T E Q A K R L A Y G Q K K R W R V V T L Q G T L F E T A G S M T G G G K$


| UniRef90_S1NJP3 | Q |
| :---: | :---: |
| UniRef90-R2RDY6 | $K Q G N R$ |
| UniRef90-F4PQ93 |  |
| UniRef90-K9E8L5 | RSQQS |
| UniRef90-UPI0004700767 | K V Q S |
| UniRef90-R9KHB5 | K N S |
| UniRef90-R6YGL7 | TVKTNN |
| UniRef90_UPI000464BCBB | K TNGN |
| UniRef90-UPI000288BE9A | NKQN |
| UniRef90-UPI000370E737 | F HR |
| UniRef90-R6FKC7 | K N S N |
| UniRef90-R5EDJ2 | K N S N |
| UniRef90-R6IBY0 | Q Q K |
| UniRef90-B7ANQ0 | R N S S N |
| UniRef90-V2Y9Q9 | R NTSN |
| UniRef90-R6PW14 | R NSSN |
| UniRef90-X2GIL7 | KQQS S |
| UniRef90-D7EAF5 | Q Q R |
| UniRef90-D9QRN7 | Q NKN |
| UniRef90-E4KNW0 | K N R Q |
| UniRef90-UPI0002656FB5 |  |
| UniRef90-D4YGJ7 | KRNNN |
| UniRef90-R7IAT0 | QS KVSN |
| UniRef90-R9K6Q2 | R NTSN |
| UniRef90-G5JWH4 | RQNN |
| UniRef90-M3IAU5 | K Q G S |
| UniRef90-F9XMF5 |  |
| UniRef90-C5RAC9 | RQH G N |
| UniRef90_P41004 | R V K K |
| UniRef90-R6VNN0 | KNNNN |
| UniRef90-M5J8T4 | K Q N G N |
| UniRef90-E6LDW9 | KRQQQ |
| UniRef90-F1KR40 | S EQR |
| UniRef90-F2KNS5 | ER R R |
| UniRef90-B1II83 | K HR |
| UniRef90-UPI000289CCF9 | K K N |
| UniRef90-G8JTM1 | R K Q S N |
| UniRef90-D4MYX3 | K NKSN |
| UniRef90_D9S347 | K K S |
| UniRef90-R2RP00 | K K G N |
| UniRef90_UPI0003B48229 | K N S N |
| UniRef90-F2U3W0 | $\mathrm{K} V \mathrm{Q}$ |
| UniRef90-C8NEF4 | $K N S G Q Q$ |
| UniRef90-S4PX97 |  |
| UniRef90-R5CXD6 |  |
| UniRef90-M0TBP0 |  |
| UniRef90_UPI0002E45537 | EKKAS |
| UniRef90_C9LW80 | Q G Q |
| UniRef90-A0A024JB19 |  |
| UniRef90-R5JHA3 | K VN S N |
| UniRef90-R2Q820 | K R G N Q |
| UniRef90-UPI0003623918 | R NRN |
| UniRef90-R7GCF2 | S K K T V N |
| UniRef90-H3RNL3 | R S Q R |
| UniRef90-R5WGR7 | R N S N |
| UniRef90-R5G8U3 | R H S G N |
| UniRef90-R6MYA5 | A R |
| UniRef90-R6QF17 | K K S N |
| UniRef90-C4L5Z7 | K Q |
| UniRef90-R4XGW7 |  |
| UniRef90-W7CFC5 | K Q N K |
| UniRef90-H2KRH7 |  |
| UniRef90-14YID8 |  |
| UniRef90-TOJYL4 | G R K |
| UniRef90-B4N7D1 |  |
| UniRef90-H815T0 | S |
| UniRef90_B1BE28 | Y H K S N |
| UniRef90-J8THM9 |  |
| UniRef90-Q04GL1 | R HQS |
| UniRef90-UPI000360A749 | A GRN |
| UniRef90-UPI0003B71DE2 | K N A N |
| UniRef90-T0E917 | RTNGN |
| UniRef90-UPI000463EB98 | K N S N |
| UniRef90-F4A9C6 | Y HKNSN |
| UniRef90-A0A022R5IO | K P R |
| UniRef90-UPI00047C089A | N P K |
| UniRef90-Q5A4Y2 |  |
| UniRef90-W7CSS8 | A Q GK S |
| UniRef90-M5G1F7 |  |
| UniRef90-K6U9Q7 | K G K N S N |
| UniRef90-G5K200 | RQNNS |
| UniRef90-UPI00047B4F2E | KNNNN |
| UniRef90_UPI0003A46953 | RQN |
| UniRef90-R4W878 |  |
| UniRef90-F8HCJ6 | K Q N N |
| UniRef90_C9RZR9 |  |
| UniRef90-A8NQS4 |  |
| UniRef90-M4SHU7 |  |
| UniRef90-G4T9N3 | K |
| UniRef90-U4LMU9 | S R |
| UniRef90-F3A995 | NKNNN |
| UniRef90_R6Al16 | K K K E N |

## UniRef90 H27796

 UniRef90-R6PB61 UniRef90-Q3D912UniRef90 A5DFY3 UniRef90-W6S3K4 UniRef90-F216B2 UniRef90-B9DRH2 UniRef90-T1Z4T8 UniRef90-K8DZI1 UniRef90-B8CCA2 UniRef90-A0A034SJ06 UniRef90_G6DFN1 UniRef90_D5E4P4 UniRef90_UPI0003465AE4 UniRef90-FOWMJ9 UniRef90_UPI00047BD65A UniRef90-G7EA48 UniRef90-R6MKT6 UniRef90-UPI00035F4B81 UniRef90_R5ZIK7 UniRef90-Q8R9W7 UniRef90_UPI000377F5FE UniRef90_UPI0002492938 UniRef90_UPI00037DFD85 UniRef90-D7UVJ4
UniRef90-K5X8N5 UniRef90-R6LW89 UniRef90-A0A024JD19 UniRef90_UPI00030EB534 UniRef90_U5F8Q2 UniRef90_G2KTJ8 UniRef90-W1PTT0 UniRef90-UPI0003812331 UniRef90-X0QDN4 UniRef90_C1GNQ8 UniRef90-R6J413 UniRef90_LOFAY3
UniRef90-P73340 UniRef90-UPIO0040A5A6D UniRef90-D8TXU8 UniRef90-R6G501 UniRef90_UPIO0036A511F UniRef90-E8JPI8 UniRef90-B7CD38 UniRef90_R6THE5
UniRef90-E9C034 UniRef90-S8AZ47 UniRef90-A7RFF3
UniRef90_R7K6P7 UniRef90_G3IAUO UniRef90-NOBKP2 UniRef90-WOKOZ4 UniRef90-W1PPC1
UniRef90 A0ZKA9 UniRef90_A0A037Z7M3 UniRef90_C2KW19 UniRef90_U1PE27 UniRef90-K8Z874 UniRef90-D6GTV4 UniRef90-Q46EXO UniRef90_UPI0002F8BD40 UniRef90-R5DL78 UniRef90-R7FX02 UniRef90_E8LDF8 UniRef90-F6DT07 UniRef90_V6Z419
UniRef90 U5QM36 UniRef90- J5TJ75
UniRef90_UPI00036A46A5 UniRef90-U9VLQ3 UniRef90-F8AFS8 UniRef90-F5RM58 UniRef90-F6BDA4 UniRef90-UPI0003B3FF64 UniRef90-K9VZW5 UniRef90-UPIO0047176A3 UniRef90-UPI0003091E3C UniRef90_UPIO00418195C UniRef90_UPIO0044174BD UniRef90-LOPBL6 UniRef90-H3NGQ7 UniRef90-Q0AYV7 UniRef90-A9UYC9 UniRef90-A6UQ42 UniRef90-K2C5E0 UniRef90-F8AND7 UniRef90-A9U123 UniRef90-K9UJX7 UniRef90-K9YNN0

1
GKIVTS FMM 10
GIV GVK AVLSQRDKS GFEGI CGAVGELITLDKKYETAI EIDA
 NRAVKTIMNDIRNNKINSFAFVLGEVINVKKEYEVAITTA
 $G V K S V L Q E A D R \quad L G G U L G A V S E K L R F D P H Y Q T A L E L I A$ KPVRELLKAARDAELTGI CGAVADLIVVPRGMETAI EAA
RVATA I K KASKKGEKCGVMGRLGDLATIDGQYDVAISTA GVRAVLQNAK Q $\$ GGILGAVSEHLNFDKDYQTAMEVA GRVLDCLMKEKREGRLPGIFGRLGDLGGDDAKYDVADSTC
 NRMLTALLDASKPGNAAGLRGRLGDLGADDTKYDVAISTA GSAVRTVMSIKDNEK GVIGVVADIIKTDPAYETAIETA $G A V L Q S L L K L R D Q G R D P G F H G R L G D L G R D D D K Y D V A D I S T A$ K S V K A V L K A E E LDK K
 $N H G V Q A V M K N Q D R \quad L A G I H G L V S E L L E C D D E Y D S A I T T A$
 GKGVREVLKAKTE G GIGALVELVTIPEHYQTAME A VHNVISELINVESRYGTAISTA GAVLTSSLMDLSAAGKDDGFYGRLGSGGSLDPMYDVADSTA
 QAVKAVLDA NL NGI L GVV
 GSVLKAILEAKESKR|EGI EGRL GDLGAIDGKY DVAVSTA


GYGปKTVLQSQEPWR
S G $K G T K N V V E N A$ VMRELMAAKSRN
N R VMRELMAAKSRGELS GTYGRLGQL GAVIDTKYDAAV STA GVKKAVMLQNSEA GVRSVMQAKNS KAVKLVCQAK G
 K EVRDSMKR LLFPGVHGRLDELECEPHKKYNDAVETA NS $V K R L L K A A L S S K D E G V$

| $V A$ | $L$ | $\square K$ | $V$ | $P$ | $A$ | $H$ | $L$ |
| ---: | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $T$ | $A$ | $V$ | $E$ | $A$ | $A$ |  |
| $G$ | $D$ | $G$ | $A$ | $I$ | $D$ | $E$ | $K$ |
| $Y$ | $D$ | $\square$ | $A$ | $I$ | $S$ | $S$ | $C$ | KAVELILEAKSRKAMPGVFGTVSQLCEVDEKFAVALEVA GKAVTTILNSEQN

RGLNSVRRDCQTHNDS
NKSVKT $\square \mathrm{MQH}$ UHK GNAVRFCMREKAREK
GRAVTAVLDA
$Q G V R T V L A Q$
A I KPLIKDFK
RAVEMII GAARQE
GRAVDTVIAA



NRAVEAL
GRDVQTVLQAKEGWR

KGTKTMLENI GVRA:LEMNR GVRAVLKNKDS GV G V


 WE G | G | Y | D | V |
| :--- | :--- | :--- | :--- |
| G | V | A |  |
| G | N | G | T | A

$A$
$A$
$A$
$A$
$A$
$A$
$M$

$M$ GVV HA PL QVV G G | 1 |  |
| :--- | :--- |
| $V$ | $C$ |
| $V$ |  |
| $V$ |  |

$\qquad$
NSVLTGL!RDKESGR Q GVRAVMNQRDH AVKSI IK A R GRAGDEGTVADLIQVPDAYQEAI ELA VLVALKRFAAKNNLSGFHGRLGDLGTVDDAYDVAVTVA
$R A V K N V I D A K \quad L P G I I D I A G N L G K T D A E Y R V A V E N A$




$G R A \backslash S T V L N A$
50
60
70
80




 LG S S Q HI I V K DEVVAA K S A I S F L K Q N R Q GRA T F L P L T T I K P


LGASQ H I V V E N E VA A K N A I A Y L K Q N R Q GR A T F L P L T T DK A
 L G A S Q N I I V V D E E A A K R A I R Y L







 LGGGAS Y L V V D TPS TA K E L I G Y L K D N N L GRA T F Y P L S V I N G


 LGAA Q NVIV E E E S H A K A A I A F L K R T R Q GRA TA L P L T T I K P




 $V G A L D N V L V E T A S D A Q R A V E H L R R T N A G C A T F L I L E K Q A H$ L G A I S NVI TQ K E D D A K K LI V F L K T K G L G R A T F L PIL N I I K G

 L G GLL Q N I V V D R E E D A K A A I G F L K Q R S G G R A T F L P L T A I R G


 GNSLQ YLVVENEDDADRCIKYGK Q DDGGRATFIPLINGKK
 G G R L G H I V V E D D S V A A A G I E L L L K Q K R A G R A T F L P P


 GGRMAHIVVDDEHVASTCI




 GGSLFHVVVDTDETAATLIKIMNQDKSGRVTFMPLNRLKS



 LLQ A I Y H I V T K K D E A S A R E A I G Y L K K R N R S G R A T F L P L
 L S SLLQ H V V V D D N S E S A V K A I
 CPS L N H MVV V TVVEVGQQCI E Y L R T N NLG R A V F I I I L S R L P S
 C G A L L N N MVVV D T A R E A K L L C V E F

 G N S L F H V V V D N D E I S T R I I R Y L T S E K G G R V T F M P L N Q I R Y A GAMGNLVVEDDGVASRAIE ILK QKRGGRATMDPLNKINA


|  |  |
| :---: | :---: |
| UniRe990-R6PB61 | INNKDILKNTGVIGIAKELISYDVQYENI |
| UniRef90-Q3D912 | QHYLSKLQSSQGFLGI |
| UniRet90-A5DFY3 | RNFNLDPISVPPNSKRLFDML |
| iRef90-W6S3k | KVIDNNNVKNTKGYVGIASEL |
| UniRef90-F216B2 |  |
| UniReef90-B9DR | RFNQLHQVQQYQGFLGTAESL |
| UniRef90-T1Z4T8 | HLPD H HIEKSTGFLGLAS S |
| 90_K8D | P |
| B8CCA2 |  |
|  | FQKQLETSPGFIGTAQSLVSYDSKLDAIIKNLLNVTA |
| UniRef90-G6 | YCENRTTPENVPRLFDLVRVKDS |
| UniRef90_D5E4P4 |  |
| 00 | REHHRQTIQSSQGFLGVASELVRFDQDFETIYKNLLGTTA |
|  | HHPFQGPRNSTKAPRLYDLLVRIQDEKYRVAFYFA |
| UniRef9-G7EA48 | K KMSPPAALS SMPAGRLYDLITPSNARFAPAFFQVLGNV |
| UniRef90 ${ }^{\text {R6 }}$ | REDNVGETSKQKGF ${ }^{\text {a }}$ GLGS |
| UniRef90-UP100035F4B81 | AKDAVGFADDLVKFDERYRAA |
|  |  |
|  |  |
| UniRef90-UP1000 | Q Q A A A S AG LIGVASDFVRCLDVYEPL |
| UniRet90_UP1000 | A ADKLANTVGVFGVASQLVKMGPDDQNV |
| UniRef90_UP1000 |  |
| UniRef90_D7 | LPAKQLEANPAFEAVASQIVT |
| UniRet90-K5X8N5 | NGMKKI QTPENAPRLFDLI KSKEARFAPAFYKAL |
| UniRee90 R6LW |  |
| UniRef90_A0AO |  |
| UniRef90 - Plooo3 | RSAKEQEVLKDKSVINADLENTNEEYRVIKFLLGRI |
| UniRet90 G2KTJ8 |  |
|  | F |
| ef90-UP10003812331 | QSQLETSAGFLGTAEQLVSYEEH |
| UniRef90-X0QD | QVPGIASEL |
| UniRef90-CIGNQ8 |  |
| UniRef90_R6J413 | RRSEEEALAKLPGIRGFAADLIGYDIKKLAPIFKFLLGRVL |
| LOFAY3 | NVAKEVANDPGFIGLAVNL |
|  | GQNPNLSYAGY DLAVNLIDGDR |
| UniRef90-UPIOOO40A5 UniRef90 ${ }^{\text {D }}$ (XU8 | HEAR QTQKGFLGVASELVTAEKQYDVLRK |
| UniRef90-R6G501 | NVKNYEGYLGIA S DLISFDEKYKD\1DYS |
| UniRef90-UPI00036A511F | KLLQQAGFLGLAKDLVSYDSRLNNIMGNLL |
| UniRef90-EEJP18 | QQNLT SSQGFLGVASGLVSYDKRLENLFQNL |
| UniRet90_B7CD38 |  |
| UniRef90_R6Th | ERGVE |
| UniRef90-E9C034 | LLNNAIASUPTPEGAPRLFELVKPRDKKLIPAFYHAMRDTL |
| UniRef90-S8AZ47 | PRASDPML |
| UniRe90-ARF3 |  |
| UniRef90 G31AUO | AKKMTKI QTPENTPRLFDLVKVNNEEDRQAFYFALRD |
| UniRef90-NoвKP2 | FKLDRSVLKEKGVIDYADNLIKCEKKFKPVFNFVYRD |
| UniRet90-Wokoz4 |  |
|  | EV |
| UniRef90-A0ZKA9 | NGFVDYAVNLVECDRRYQDVFSYVFGN |
| UniRef90 A0A03777M3 | (1) |
|  | RDEKYDSLKKEAGVIGVFADLIKVPDSSKGLENYLLSRVL |
| UniRef90_U1PE27 |  |
| UniRef90_K8z874 | RQFPYEK\ALMDGFUGLI A ELLQRAPEYEVLSAYLVGQIV |
| UniRet90_D6GTV4 | N |
| $\begin{aligned} & \text { UniRef90_Q46EX0 } \\ & \text { UniRef90_R5SXU3 } \end{aligned}$ | RLENLSYENGVIGYAl\|DLI QFDSGFEPA |
| UniRei90 UPI0002F8BD40 | PHFQEISLRQARGFVNYAI ELVYCEPRYKKIFGYVFGN |
| UniRef90-R5DL78 | KAPTRLQLPRDKGVIDFAINLVDFDDEYDDAFYYAVGD |
| UniRef90-R7FX02 |  |
| UniRef90-E8 | EALAKLPGLLGYAVDLI GFKPEAENAVRF |
| UniRef90 F6 |  |
| UniRef90-vzz419 |  |
| UniRef90- J5TJ75 | SNVQYPKSND AVPMIQKLRFDRM YTMAFEQV |
| UniRet90_UPIO0036A46A5 |  |
| UniRef90 U9VLQ3 | KLGRWERPDGFI DYAVDLI ECDDIYRDV |
| UniRet90_D3EQ04 | VDVECNSKYAKV |
|  | RSVEAE |
|  | GVVGWANTLVQADGKFQK |
| UniRet90-F6BDA4 | GVVGRA |
| UniRef90 UPIOOO3B | SKEQASQSKGYLGWAN |
| UniRef90 K9VZW5 | RFSETAALRYANGF NYAVNLVECEPRYRNIFA |
| UniRe | RDSYLMVVVENSHGEAQVANADIAVADHEYEDVNH |
| Uni | HDVKSLEASNI DYEVLSEVAD |
| UPI00044174BD | NVPRLFD |
| UniRet90_LOPBL | ERIETPENVPRLFDLI TPKEKKFAPAFFNALT |
| UniRef90-H3NGQ7 | AGLIGVA |
| UniRef90-Q0AYV7 | 俍 |
| UniRef90 A ${ }^{\text {A6U }}$ |  |
| UniRef90-K2C | PPTVANPGVKGCVGVALDLIQFDARFYTVMSNLLGRIL |
|  |  |
|  |  |
| UniRef90-K9UJX7 | Q |
| iRef90_K9YNNO | RLHQLGGIQYAQGYIDLAVNLITCEDKYRPIFAYVF |
| Ref90_M0MM32 |  |

UniRef90_H2Z796 UniRef90_R6PB61 UniRef90-A5DFY3 UniRef90_W6S3K4 UniRef90 ${ }^{-}$F216B2 UniRef90-B9DRH2 UniRef90_T1Z4T8 UniRef90-K8DZI1 UniRef90-B8CCA2 UniRef90-A0A034SJ06 UniRef90-G6DFN1 UniRef90_D5E4P4 UniRef90_UPI0003465AE4 UniRef90-F0WMJ9 UniRef90-UPI00047BD65A UniRef90_G7EA48 UniRef90-R6MKT6 UniRef90-UPI00035F4B81 UniRef90_R5ZIK7 UniRef90-Q8R9W7 UniRef90_UPI000377F5FE UniRef90_UPIO002492938 UniRef90-UPI00037DFD85 UniRef90-D7UVJ4 UniRef90-K5X8N5 UniRef90-R6LW89 UniRef90-A0A024JD19 UniRef90_UPIO0030EB534 UniRef90_U5F8Q2 UniRef90_G2KTJ8 UniRef90-W1PTT0 UniRef90_UPIO003812331 Uniref90_X0QDN4
UniRef90_C1GNQ8 UniRef90-R6J413 UniRef90_L0FAY3 UniRef90-P73340 UniRef90_UPI00040A5A6D UniRef90-D8TXU8 UniRef90-R6G501 UniRef90_UPIO0036A511F UniRef90-E8JPI8 UniRef90-B7CD38 UniRef90-R6THE5 UniRef90-E9C034 UniRef90-S8AZ47 UniRef90-A7RFF3
UniRef90_R7K6P7 UniRef90_G3IAUO UniRef90-NOBKP2 UniRef90-WOKOZ4 UniRef90-W1PPC1 UniRef90_A0A037Z7M3 UniRef90-C2KW19 UniRef90_U1PE27 UniRef90-K8Z874 UniRef90-D6GTV4 UniRef90_Q46EX0 UniRef90_R5SXU3
UniRef90_UPI0002F8BD40 UniRef90_R5DL78 UniRef90-R7FX02 UniRef90-E8LDF8 UniRef90-F6DT07 UniRef90-V6Z419 UniRef90_U5QM36
UniRef90-J5TJ75 UniRef90_UPIO0036A46A5 UniRef90_U9VLQ3 UniRef90-D3EQ04 UniRef90_F8AFS8 UniRef90-F5RM58 UniRef90-F6BDA4 UniRef90-UPI0003B3FF64 UniRef90-K9VZW5 UniRef90_UPIO0047176A3 UniRef90_UPI0003091E3C UniRef90_UPIO00418195C UniRef90_UPIO0044174BD UniRef90-LOPBL6 UniRef90-H3NGQ7 UniRef90-Q0AYV7 UniRef90-A9UYC9 UniRef90-A6UQ42 UniRef90_K2C5E0 UniRef90-F8AND7
UniRef90 A9U123 UniRef90_K9UJX7 UniRef90-K9YNNO

130
140
150
160
V|ADD|L|ADAK|V|AYDRKRRWRVVVTLQGELIIDTAGTMSGGGN
 II F DTVVDNANVAARQLNYQVRLVVTLDGTELRPGGSYSGGAN I A ETLDTALNIAKLTGYS DRIVVTLQGEVVNAGGSLTGGAT
 II FDTVVNARAAARKVRYQVRIVTLDGTELRTGGSYAGGAH
 VAPDLETATRWAYEFGKRWRVVSMDGKLIETSGTMSGGGQ
 VVEDIETANKVANDLDKYMVVTKDGDVVRVGGDIVGGSK IV FDTTENAQRAARAVRYQVRIVTLDGTELRPGGSYAGGAN VASDLDQATPDAYQKQCRYRVVTLDGQMVEDSGAMSGGGN $V V D N V D N A T A A A R K Y H Y S V R M V T L E G E L L T P G G A D S G G A F$ $V$ AGNLAEAKLVAFGKQ RFRVVTRDGNLI DTSGTMSGGGN V VDNVDNA DAMSRYFGYKFRVVTDEGEILNAGGSMSGGSV $V V D T L D Q A R \quad K L M G G V R L V T A G G E L L E A S G A M V G G$

 I V S NL EVALQAVKVSNHAARIVTLKGEVI NAGGSMS GGTG
 LAKDLKGANELAKLVHYRYRIVSSAG GDVVNAGGSMTGGAT
 I VDNIDTANKVSTNDNKRYKIVTLDGQVVNVGGSDTGGSQ VAENADQARRIAYSNRRWRVVTLQGMLIDKSGTMSGGGR $V$ V D N LD D GF KI S R R L G N S L K I V V TLA G DV I N A G G S V $V V D Q L V N A N E I A K V L R Y G Y K I V T L E G D I V N K G G S M T G G R T$ I A D S L K S A T Q I S N ICN H RVKVVVSLD G DVVVNAGGS $\quad$ T G G K N $V A \operatorname{S} D L N Q A T R I A Y$ GDNGEFRVVTLEGALFEKSGTMS II F D T L D NANQAARRTRF QVRIV TLD GSEIRR GGSFA G GAN I A D T L DNA DQ DS QRDH HRTRRVVSLDDGQVVNAGGGS LT G GA N

 V V D M A ATRVARASGYRARIVTVEGDQVHPGGSLTGGSY | $V$ | $F$ | $D$ | $V$ |
| :--- | :--- | :--- | :--- |
| $V$ | $C$ | N A R N H L |  | VFDTLENANKHLSKLEKRYMVVTLEGDVVEASGAMSGGSR A A E QASR A Y GQDRRFRVVTLQGQLI ADS GTMS G G GR



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

 V VE DIDD T A K RLMM GR $\vee V E D M E T A R D L M G D Y$

$\checkmark \operatorname{F} R \mathrm{~N}$ I Q E A R P N I $G$ G L
T H G LDD

 LVK SME E A L SLLEKKYH H S LLR IV T L E G ELL L Q A G G A I S G G A Y VAED DETAR ELMMEFRLVTLD GDLVEKS GAMT GGS K


 | $V$ | $F$ | $A$ | $T$ | $L$ | $N$ | $D$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $R$ | $R$ | $H$ |  |  |  | $V$ VE DLE S A K

 I A E N I D A A LAA A A K A GR Y R L R VVVTVLD G DVV NA G G SMS G G S K
 $V$ FRTLDQARRAL I CDDLTVAAAQYT RSGRYRIVVTLAGELLEKS GAMTGGSLL

 $V$ VE NME EARPY $\square$

$V$ ME T L DE A L I A A K Q E GY R L R I V T T T
I V E NL DVAA K ELLS K K Y R R R V R F V T T L E G DVV I E P S G A MVGG G V
 $V$ VE N I E Q A N K I S K I L E K K Y M L V T K D G D IV R P G G I MVGGGTK $V T E N I D D A G A L A R Q L N H R A R I V T L D G E T I M P G G A M S G G S K$ $V$ VKNMSDASALARATNQRVRIITMDGETIMPGGAMS GGSK

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

$V$ AK D L N Q A T T V A Y K G S R R M H R VVV T IVK D L N DA K K L S K K E H K A R FV T L E G E V I E P S G A M DG G H S
 I CRDLEVAT TVSRTAEV
V F D R L D R A R
$V \operatorname{V} S \quad D L E S A R N F D$
$V \mathrm{~V} E \mathrm{M} A \mathrm{~T} A R E / \mathrm{L}$ GD Y

| UniRef90_H2Z796 | R |
| :---: | :---: |
| UniRef90-R6PB61 | S K R S |
| UniRef90-Q3D912 | RQN N |
| UniRef90_A5DFY3 |  |
| UniRef90-W6S3K4 | N N K S N |
| UniRef90-F216B2 | K R N Q |
| UniRef90-B9DRH2 | RQNN |
| UniRef90-T1Z4T8 | R N N |
| UniRef90-K8DZI1 |  |
| UniRef90-B8CCA2 | S VQR |
| UniRef90-A0A034SJ06 | RQS NS |
| UniRef90-G6DFN1 |  |
| UniRef90-D5E4P4 | ERSQN |
| UniRef90_UPI0003465AE4 | R NQQ |
| UniRef90-FOWMJ9 | R A |
| UniRef90-UPI00047BD65A | K S S N |
| UniRef90-G7EA48 |  |
| UniRef90-R6MKT6 | NK Q S |
| UniRef90_UPI00035F4B81 |  |
| UniRef90-R5ZIK7 | K NQS S |
| UniRef90-Q8R9W7 | K S T N |
| UniRef90-UPI000377F5FE | RQQS N |
| UniRef90-UPI0002492938 | RQKH |
| UniRef90-UPI00037DFD85 | RQTHS |
| UniRef90-D7UVJ4 | T K G R S |
| UniRef90-K5X8N5 |  |
| UniRef90-R6LW89 | $\square K ~ S ~ N ~$ |
| UniRef90-A0A024JD19 |  |
| UniRef90_UPI00030EB534 | S S N Q N |
| UniRef90-U5F8Q2 | R N |
| UniRef90-G2KTJ8 | QR Q N |
| UniRef90-W1PTT0 |  |
| UniRef90_UPI0003812331 | R N N N |
| UniRef90-X0QDN4 | K S A Q |
| UniRef90-C1GNQ8 | D S Q S |
| UniRef90-R6J413 | QQK |
| UniRef90-LOFAY3 | QRKGAN |
| UniRef90-P73340 | NQR |
| UniRef90_UPI00040A5A6D | S Q |
| UniRef90-D8TXU8 | P Q |
| UniRef90_R6G501 | Q G K N N |
| UniRef90_UPI00036A511F | RQK N |
| UniRef90-E8JPI8 | RQN N |
| UniRef90-B7CD38 | K N Q S |
| UniRef90-R6THE5 |  |
| UniRef90-E9C034 |  |
| UniRef90_S8AZ47 | D S R Q S |
| UniRef90_A7RFF3 |  |
| UniRef90_R7K6P7 | K A ESVN |
| UniRef90_G3IAU0 |  |
| UniRef90-N0BKP2 | Q K S K |
| UniRef90 ${ }^{-}$WOKOZ4 |  |
| UniRef90-W1PPC1 | D Y R R S |
| UniRef90_A0ZKA9 | NQRS S |
| UniRef90-A0A037Z7M3 | R S K N N |
| UniRef90_C2KW19 | K N S S |
| UniRef90-U1PE27 |  |
| UniRef90-K8Z874 | R K |
| UniRef90-D6GTV4 | S K K V N |
| UniRef90-Q46EX0 | S SKS |
| UniRef90-R5SXU3 | R K |
| UniRef90-UPI0002F8BD40 | S S RH |
| UniRef90-R5DL78 |  |
| UniRef90-R7FX02 |  |
| UniRef90_E8LDF8 | K H K |
| UniRef90-F6DT07 | V K N |
| UniRef90-V6Z4I9 | RQK N |
| UniRef90-U5QM36 | D G R R |
| UniRef90-J5TJ75 | D VRRS |
| UniRef90-UPI00036A46A5 | R ER |
| UniRef90-U9VLQ3 | R R Q G R |
| UniRef90-D3EQ04 | P Q R |
| UniRef90-F8AFS8 | R P R |
| UniRef90-F5RM58 |  |
| UniRef90-F6BDA4 | K R K S R |
| UniRef90-UPI0003B3FF64 | RHQS |
| UniRef90-K9VZW5 | NQK S S |
| UniRef90-UPI00047176A3 |  |
| UniRef90-UPI0003091E3C | N T K G S |
| UniRef90_UPI000418195C | NRKGS |
| UniRef90-UPI00044174BD | R V N R |
| UniRef90_LOPBL6 |  |
| UniRef90-H3NGQ7 | HKARQ |
| UniRef90-Q0AYV7 |  |
| UniRef90-A9UYC9 | K |
| UniRef90-A6UQ42 | R K K S |
| UniRef90-K2C5E0 | ARKS |
| UniRef90-F8AND7 | RRSSN |
| UniRef90_A9U123 | D Y R S |
| UniRef90-K9UJX7 | SQKS |
| UniRef90-K9YNN0 | SKRN |
|  |  |

UniRef90_S7R9G9
UniRef90 M4YMK UniRef90_M4YLK6
UniRef90_K2EVF3 UniRef90-D2MPY8 UniRef90-F4RTD0 UniRef90_M7XQG4
UniRef90_U9SSL5 UniRef90-UPI00035DCOA5 UniRef90_C7P804 UniRef90-M7NJZO UniRef9O-KON5H9 UniRef90_R4M5K
UniRef90-MOS7X5 UniRef90-TONOS3
UniRef90-UPI0002D2ECA8 UniRef90-K8GN89 UniRef90_UPIO00370FB70 UniRef90-W6A869 UniRef90-K7UQ21 UniRef90-R5VLT1 UniRef90-D1PPW1 UniRef90-TON7W5 UniRef90-R6Y5T1
UniRef90 D6S4Q2 UniRef90-B0JSN6 UniRef90-B6JZ09 UniRef90-R6BKY4 UniRef90_UPI000347358D UniRef90_U2D971 UniRef90-K9IEE2
UniRef90 F2QRV0 UniRef90-M1 X499 UniRef90-Q5CNS5 UniRef90-K9S7V7 UniRef90_Q049R2
UniRef90_U2N5X7 UniRef90_UPIO00440B973 UniRef90_UPIO00476543C UniRef90-B8HST0 UniRef90_F6UJH6 UniRef90_UPI0003478677 UniRef90-A0A037UJH0 UniRef90_F5WTA0 UniRef90-A8SMU2 UniRef90_D6RP77 UniRef90_C5YWM6 UniRef90-V9H339 UniRef90-W0DED8 UniRef90-L7EMH9 UniRef90_X8K519
UniRef90_14ENJO UniRef90-L9VMLO UniRef90-U5H272 UniRef90-N9VBZO UniRef90_X8JGT9
UniRef90 I1FQ05 UniRef90-E4L804 UniRef90-N1JND9 UniRef9-W0GMF1 UniRef90-W6AA39 UniRef90_Q017K9 UniRef90_U6HMN1
UniRef90 Q7V5H6 UniRef90-R4KCJ5 UniRef90_C1MPE2 UniRef90_U4LD32 UniRef90_A8PX53 UniRef90_D5GBC2 UniRef90-E1RII6
UniRef90 AOYTB3 UniRef90-AOYTB3
UniRef90-S9PSK2 UniRef90-A7HMD4 UniRef90_U4LAP2 UniRef90-TOZDH1 UniRef90_UPIOO04561443 UniRef90-D4YS68 UniRef90-D8PZC5 UniRef90-M4SHU2 UniRef90-F4A2S1 UniRef90-Q2JQX1
UniRef90 R5LG60 UniRef90_M2QKH4 UniRef90-R5T2X2 UniRef90-S3D1F8 UniRef90-M5G8Y6 UniRef90-G2X7V0
UniRef90-W3Y4S4 UniRef90-A2DUX0 UniRef90_UPIO0047C5F7C UniRef90_B817R8

L K E V 10 10 20
40
 GGLKAVVEHQSSSNGLDGVIGQLDQVQPNYEEADSTA AALKRTFPGVKGRLIDECKPQQKYGVAVTTV
ATK\|VLQA

G

| G | $V$ | $K$ | $N$ | $I$ | $K$ | $N$ | $K$ | $N$ | $V$ | $L$ | $P$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $R$ | $G$ | $N$ | $S$ | $V$ | $N$ | $R$ | $I$ | $I$ | $K$ | $D$ | $H$ |
| $N$ | $N$ | $R$ |  |  |  |  |  |  |  |  |  | K SVKA LDARNRGE RGVFGP LELI

Q G V K A L L E VK D S
$G \vee R A \vee L Q$
QLILQ
$M N^{L}$
GVKNILENKK
G K K V V N K K

| $A$ | $L$ | $K$ | $A$ | $L$ | $L$ | $Q$ | $A$ | $K$ | $E$ | $S$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $V$ | $K$ | $S$ | $V$ | $L$ | $N$ |  |  |  |  |

$V L$ S Gll G A V S E HLL
 $S V K N V L N N \quad N P K L$
$G \vee R N \perp L N H L D Q Y Q$
Q LLLDQS DLD

| $G$ | $I$ | $H$ | $G$ | $V$ | $L$ | $G$ | $K$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $L$ | $E$ |  |  |  |  |  |  |
| $G$ | $I$ | $G$ | $A$ | $V$ | $G$ | $E$ | $L$ | $L$ |
|  | $C$ |  |  |  |  |  |  |  |
|  | $G$ | $L$ | $V$ | $Q$ | $L$ | $G$ | $E$ |  |


 Q GVRAVLQQRFR NTVLCKLMNLRK K I I L L Q S Gll
ETVMKYFSANKKS



 $N L G V R A L M K Q L S G I$ RGVTAELMDVPK GYELAA E TA GTR A V L D A T R G G K L T G I V GL L S S L I T V P A E L E R A V E A A
 K GTKTVIENKAYFGKP LKGTV ADLDKVEPEYIRAIDAV






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

GHS $\square$ R K $\square$ F E N K D $\square$
$N M M D$
$G M P$
Q S G L P


FP GVVRGRV I DLCKP QRKY DLA I S TV

 NRSVK LI MRLLRDAKMNKGI YGPV GR LIQV DA EYETAAEAAA $R A T Q A L L S A \quad R L P G V L G L V A Q L G Q V D P Q Y Q L A L E I A$ K S VKEALEYSKNN SNVYGTLASLIDSTEKYEYALEIA GS GLR A I DK $\square A E R P G F D G V Y G P L Y R L B E V D E K F N T A V E T A$
 L K E T L D E L L R R L F P G V R G R V I N L C K I A R K Y D T A V S I V
 NEALDAI MSL NLP G K A MS LA K N N


UniRef90_S7R9G9 UniRef90_M4YLK6
UniRef90_K2EVF3 UniRef90-D2MPY8 UniRef90-F4RTD0 UniRef90_M7XQG4
UniRef90_U9SSL5 UniRef90_UPI00035DCOA5 UniRef90-C7P804 UniRef90-M7NJZ0 UniRef90-KON5H9 UniRef90-R4U5K6 UniRef90-MOS7X5 UniRef90-TONOS3 UniRef90-UPI0002D2ECA8 UniRef90-K8GN89 UniRef90_UPIO00370FB70 UniRef90-W6A869 UniRef90_K7UQ21 UniRef90-R5VLT1 UniRef90-D1PPW1 UniRef90-TON7W5 UniRef90-R6Y5T1
UniRef90-D6S4Q2 UniRef90-B0JSN6 UniRef90-B6JZ09 UniRef90-R6BKY4 UniRef90_UPI000347358D UniRef90_U2D971 UniRef90-K9IEE2
UniRef90 F2QRV0 UniRef90-M1 X499 UniRef90-Q5CNS5 UniRef90-K9S7V7 UniRef90_Q049R2
UniRef90_U2N5X7 UniRef90_UPIO00440B973 UniRef90_UPIO00476543C UniRef90-B8HST0 UniRef90-F6UJH6 UniRef90-UPIOOO3478677 UniRef90_A0A037UJH0 UniRef90-F5WTA0 UniRef90-A8SMU2 UniRef90_D6RP77 UniRef90_C5YWM6 UniRef90-V9H339 UniRef90-W0DED8 UniRef90-L7EMH9 UniRef90_X8K519 UniRef90_14ENJO
UniRef90_L9VML0 UniRef90_U5H272 UniRef90-N9VBZ0 UniRef90-X8JGT9 UniRef90_11FQ05 UniRef90_E4L804 UniRef90-N1JND9 UniRef9-W0GMF1 UniRef90-W6AA39 UniRef90-Q017K9 UniRef90-U6HMN1
UniRef90- Q7V5H6 UniRef90_Q7V5H6
UniRef90_R4KCJ5 UniRef90_RC1MPE2 UniRef90-U4LD32 UniRef90_A8PX53 UniRef90_D5GBC2 UniRef90-E1RII6
UniRef90 AOYTB3 UniRef90_A0YTB3
UniRef90_S9PSK2 UniRef90-A7HMD4 UniRef90_U4LAP2 UniRef90-T0ZDH1 UniRef90_UPIOOO4561443 UniRef90-D4YS68 UniRef90-D8PZC5 UniRef90-M4SHU2 UniRef90-F4A2S1 UniRef90-Q2JQX1
UniRef90_R5LG60 UniRef90-M2QKH4 UniRef90-R5T2X2 UniRef90-S3D1F8 UniRef90-M5G8Y6 UniRef90-G2X7V0
UniRef90-W3Y4S4 UniRef90-A2DUX0 UniRef90_UPIO0047C5F7C UniRef90_B817R8
-

50
GRIIDAVVVIDEEKTADDCl
${ }^{60}$
${ }^{60}$ Y M R N QRAGQA ${ }^{70}$
F|I P|L|D T $\square$ QV 8 AGNMRAVVVKDDDVAATCI KFLKDNRLGRVTFLPINKMMP


##  <br>  <br>  <br> 

## A

## >





UniRef90 S7R9G9 UniRef90-M4YLK6
UniRef90 K2EVF3 UniRef90-D2MPY8 UniRef90-F4RTDO UniRef90_M7XQG4
UniRef90 U9SSL5 UniRef90-UPI00035DC0A5 UniRef90-C7P804 UniRef90-M7NJZO UniRef90-KON5H9 UniRef90-R4U5K6 UniRef90-MOS7X5 UniRet90-TONOS3 UniRef90-UPI0002D2ECA8 UniRef90-K8GN89 UniRef90-UPIO00370FB70 UniRef90-W6A869 UniRef90-K7UQ21
UniRef90 R5VLT1 UniRef90-R5VLT1
UniRef90 D1PPW1 UniRef90-TONTW5 UniRef90-R6Y5T1 UniRef90-D6S4Q2
UniRef90-B0JSN6 UniRef90-B6JZo9 UniRef90-R6BKY4 UniRef90-UPI000347358D UniRef90-U2D971 UniRef90-K9IEE2
UniRef90
F2QRV0 UniRef90-M1 X499 UniRef90-Q5CNS5 UniReffo-K9S7V7 UniRef90_Q049R2
UniRef90_U2N5X7 UniRef90-UPIO00440B973 UniRef90_UPIo00476543C UniRef90-B8HSTO UniRef90-F6UJH6 UniRef90-UPIOOO3478677 UniRef90-A0A037UJH0 UniRef90_F5WTAO UniRef90-A8SMU2
UniRef90 0 D6RP77 UniRef90-C5YWM6 UniRef90_V9H339 UniRef90 ${ }^{-}$WODED8 8 UniRef90-X8K519 UniRef90-4ENJO
UniRef90_L9VMLO UniRef90-U5H272 UniRef90_N9VBZo UniRef90 X8JGT9
UniRef90 11FQ05 UniRef90-11FQ05
UniRef90 E4L804 UniRef90-N1 JND9 UniRef90- WoGMF1 UniRef90-W6AA39 UniRef90_Q017K9 UniRef90-U6HMN1 1
UniRef90 $07 V 5 \mathrm{H} 6$ UniRef90-R4KCJ5 UniRef90_C1MPE2 UniRef90-U4LD32 UniRet90_A8PX53 UniRef90-D5GBC2 UniRet90-E1RII6 UniRef90_S9PSK2 UniRef90-A7HMD4 UniRef90-U4LAP2 UniRef90-ToZDH1 UniRef90-UPIOOO4561443 UniRef90-D4YS68 UniRef90-D8PZC5 UniRef90-M4SHU2 UniRef90-F4A2S1
UniRef90 Q2JQX1 UniRef90-R5LG60 UniRet90-M2QKH4 UniRef90-R5T2X2 UniRef90-S3D1F8 UniRef90_M5G8Y6
UniRef90_G2XVV0 UniRef90-W3Y4S4 UniRef90-A2DUXO UniRef90-UP100047C5F7C
UniRef90_B817R8

V/CDTMDVARYVIC VDSSIDHARSIM I VEDMNVAR VVENLEKGNTLSSL vandltoan ila lihr
 VCDSMQDARHVCYDRGQEVKAVTVEGTVIHRSGTDTGGTS VCDTLEIAKYICYEKNQQVKAVTLDGTVIHKSGLVTGGHS VVENIDIAKELAKKYR ISRTLKGANE:AGKTGHRYRVVTLDGDVVEASGVMVGGTF MVDTLPHADAIANTTHHRYRIVTTAGDILNPGGSLTGGQV LVDNLDNALSIARKYKHSLRIVTLDGELLQAGGALSGGAY I CDNFDSAQEVGQLLNFKYNIVTLEGETRPQGAITGGSR CRDRDVATSVA RNNS DDCIT EGDQVSKKGGMTGGFY VVKNLEIAKKHMTGMHVRIVTLDGDVFESSGADSGGFL VFETLSEARRYLGEH
 VANDLDQASRIAYTAAKEFRVVTLGGELFEKSGTMSGGGK IVKDLDTLNKVGRQMKYKYKIVSLDGEVQYTNGALTGGVY LVDSAEDAKKYMTG VRIVT VVDNDDNANLISKKLKNRYKVVTMTGEVVNASGASTSGGFM VADTIDNA MK NSARYRYRIVTRDGDVISPGGSMSGGAK VFEDIDSARYYINQY RNGVTLDGELLEMTGAMTGGSQ
 । ASNMDYALSIAKKTDYSYKIVTQTGETLNPGGSLTGGSU ADNLDHALQISQRTQRRYRVITLAGD
$V$ VSSIEQANNIFASK RSRIITLKGELVEMSGTLTGGGR IFSTLQLARQNL GKHRIVTLEGELLETSGAITGGYV 1 VDDLDIATKISYNGKQRWRVVTVNGELIDSSGTMTGGG
 GQFRIVTLEGELLETSGAMTGGSV ITDTMDGALRVAKETSYSYKIVTLTGEIVNPGGALTGGNY VCDTIEVAKYVCWERGQEVKAVSLEGTVIHKSGLITGGRS VFDRLDNARTVL VFNNINQARRYLGQY GKARIVYTVGELLETSGAMTGGAS VCDNVEDARRIAFGGHQRHKTVALDGTGFKSGVISGGAS VFDRLDKARLHIGMGKYRMVTHDGELGEVTGAIVGGSA
 I CENMDDANKLSNKFKNKFRUVTVDGDVINSWGSMSGGYK CRRDLETATKVAAVRSNGLDCLT VARDMESALK SKAKGGNY I AENMNSALEISKKSNFRFKMVSLL \|VKDMDSALRLSMKVSQGLRFVTPEGEVVNPAGGALTGGSN
 VCDTINVAKHVVYEMGQEVKTVSLDGTVIHRSGLITGGAS VASDI DNANKISNILERRYMIVTLDGDTI RAGGII VGGAK IVCENLQVAS AYVGSHGLNTITLEGDKVDRKGALTGGYH VCDDMEEARRVAFGSAERKKTVSLDGTLFQKSGMISGGAS ITENMTVARKLSDKYNHTLRIATLDGQU1 HAGGSLTGGSL VCQNFDSAQEVAKLISYKYNVLTHEGELATRPQGAMSGGNR VVNNFDEAREIAKLINYKHNIATLDGERILPNGAIVGGSR VASDVEQASRLAYG EKRRRVVTLEGQLEEMSGTM I ADNLDVAVDWAFKHKNRFRVVTLQGQLI
VFSNLKSARLQL GRTRAVTLDGELLEKSGAMTGGSF IAEHMDSALEISKKSNFSFRVVTLAGEIVNPGGALTGGSI CRNLDVAVKYAGSTN DDCVTMEGDCVSNRGAISGGYQ LCPDVLVGAHFARTNQ LNAVTLTGDQAEKKGALTGGYH IVCDTLDVARNDCYERGQRVKAVSLDGTIDHKTGMITGG VCPDLNVASQYA RSHGLSAITLAGDRADKKGALTGGYH VVDKMDTARKMI GRYRMVTLDGDLVEKAGAMTGGS VVNHDNNARRYIGQH RMVTGDGELETSGAMTGGSQ I VKN DNARDLSKSKHANAKTVTLEGTVIHKGGLITGGSS VCDDLQVAKYGCFEKGLQVKAVTLDGTVI HKSGLMTGGR
 VCDTMDVARTVVYDKKVEVKAVTLDGTV FKKSGLISGGAS IVDDMESALAVSNRDG RYRVVTVDGDVISPGGSMTGGVK VCESDEDARKLAFEGSERHKVVSLDGTLFQKSGLISGGSF ICDDLAHADDIARAFKYSFQLVTLEGDVV
VCDDLAHADDIARAFKYSFQLVTLEGDVVETSGATTGGTG IVDSI ENALALAKDFKNTLRIVTLSGELIAPTGSITGGKS VVCDLTDA AAYVKSHGINTITLDGDRVDRKGSLTGGYH VSTNI ECANNDAKK】NHAYKVVTDGNDINVGGSITGGSN VCPSLPTAAGYA RSHGCNAITPDGDTANKKGALTGGY VCDTMKIA ADVCYNKGLDVKAVTLDGTVIHKSGLITGGSS VCRTLAIATQYA RSHGVDAITPEGDQASKRGAMTGGYD VVRSMDDA GGLQKKYHALRVVTGGEQFQPGGSDTGGVT


| UniRef90_S7R9G9 |  |
| :---: | :---: |
| UniRef90-M4YLK6 | S T K N |
| UniRef90-K2EVF3 | S R |
| UniRef90-D2MPY8 | KQETN |
| UniRef90-F4RTD0 |  |
| UniRef90-M7XQG4 | QQ G G R H |
| UniRef90-U9SSL5 |  |
| UniRef90-UPI00035DC0A5 | S SRS |
| UniRef90-C7P804 | K S R |
| UniRef90-M7NJZ0 | DRGN |
| UniRef90-K0N5H9 | K Q GRQ |
| UniRef90-S2LME2 | R N S S |
| UniRef90-R4U5K6 | NAKQ |
| UniRef90-M0S7X5 | D F R S |
| UniRef90-TON0S3 | ERRQRN |
| UniRef90-UPI0002D2ECA8 |  |
| UniRef90-K8GN89 | N T R Q |
| UniRef90-UPI000370FB70 | R HNN |
| UniRef90-W6A869 | K V K N N |
| UniRef90-K7UQ21 | R V Q R |
| UniRef90-R5VLT1 | K N N |
| UniRef90-D1PPW1 |  |
| UniRef90-TON7W5 | NRSR |
| UniRef90-R6Y5T1 | K K S |
| UniRef90-D6S4Q2 | NQRNN |
| UniRef90-B0JSN6 | P T R S |
| UniRef90-B6JZ09 | R NNNRH |
| UniRef90_R6BKY4 | K S N S Y |
| UniRef90-UPI000347358D | R R Q R |
| UniRef90-U2D971 | F H |
| UniRef90-K9IEE2 |  |
| UniRef90-F2QRV0 | H 1 R S |
| UniRef90-M1X499 | RHRSS |
| UniRef90-Q5CNS5 |  |
| UniRef90-K9S7V7 | S Q A S |
| UniRef90_Q049R2 | NQRNN |
| UniRef90_U2N5X7 | G G K N S |
| UniRef90-UPI000440B973 | S H D G S |
| UniRef90-UPI000476543C | RGNASH |
| UniRef90-B8HST0 | PSQQS |
| UniRef90-F6UJH6 |  |
| UniRef90_UPI0003478677 | P S Q S |
| UniRef90-A0A037UJH0 | R T R |
| UniRef90_F5WTA0 | K N NQQ |
| UniRef90-A8SMU2 | S SKNS |
| UniRef90-D6RP77 | DVRRS |
| UniRef90-C5YWM6 | D SRRS |
| UniRef90-V9H339 | Y K K N |
| UniRef90-W0DED8 | ESRAS |
| UniRef90-L7EMH9 | Y K K F N |
| UniRef90-X8K519 | K K S AN |
| UniRef90-14ENJ0 |  |
| UniRef90-L9VML0 |  |
| UniRef90-U5H272 | S N S N |
| UniRef90-N9VBZ0 | DKSES |
| UniRef90-X8JGT9 | D VRRS |
| UniRef90-11FQ05 |  |
| UniRef90-E4L804 | K K E N |
| UniRef90-N1JND9 | D PRRS |
| UniRef90-W0GMF1 | K TKQ |
| UniRef90-W6AA39 |  |
| UniRef90-Q017K9 |  |
| UniRef90-U6HMN1 |  |
| UniRef90-Q7V5H6 | S GRS N |
| UniRef90-R4KCJ5 | Y N K |
| UniRef90-C1MPE2 | D S G R S |
| UniRef90-U4LD32 | D PRSS |
| UniRef90-A8PX53 |  |
| UniRef90-D5GBC2 | D P R R S |
| UniRef90-E1RII6 | Q K R |
| UniRef90-A0YTB3 | S S R S |
| UniRef90-S9PSK2 | N T R S |
| UniRef90-A7HMD4 |  |
| UniRef90-U4LAP2 |  |
| UniRef90-TOZDH1 |  |
| UniRef90-T1FP99 | D |
| UniRef90-UPI0004561443 | G Q |
| UniRef90-D4YS68 | NQRNN |
| UniRef90-D8PZC5 | D PRRS |
| UniRef90-M4SHU2 | E L R Q |
| UniRef90-F4A2S1 |  |
| UniRef90-Q2JQX1 | PQR |
| UniRef90-R5LG60 | VKK |
| UniRef90 ${ }^{-}$M2QKH4 | DVRRS |
| UniRef90-R5T2X2 | DK N N |
| UniRef90-S3D1F8 | D S K S |
| UniRef90-M5G8Y6 | R H S K |
| UniRef90-G2X7V0 | EPGRS |
| UniRef90-W3Y4S4 | KRKR |
| UniRef90-A2DUX0 | R Q |
| UniRef90-UPI00047C5F7C | NRQKS |
| UniRef90_B817R8 |  |

UniRef90_UPIO004794EF4
UniRef90-ETMPU9 UniRef90_W9WG06 UniRef90 Wol7w6 UniRef90_O66878 UniRef90-K9P7V1
UniRef90 - 2 K2L
UniRef90_M1RS12
UniRef90-R5J8L7
UniRef90_T2MDB1
UniRef90-Q5FJJ8
UniRef90-U7VDX3
UniRef90-UPIO004623B2D
UniRef90-V9DB30
UniRef90-A0A022R8F2
UniRef90-U1GAB5

UniRef90-A0A058z3M0 UniRef90 W1 W 7 K 1 UniRef90-SOFN40 UniRef90-KgYTU1 UniRef90-UPIOOO29A19F1 UniRef90-G8ZR43 UniRef90-B5ZAX3 UniRef90-Q01109 UniRef90 C 4 XDU3 UniRef90-R4XAV1 UniRefofo-O28714 | UniRef90-G4VHB4 |
| :--- |
| UniRef90 |
| F2JS8 | UniRef90-Q7U9B7 UniRef90-E5S134 UniRef90-M4B2S4 UniRef90_U6ISO6

UniRef90_A2BZM5 UniRef90-M7PEX6 UniRef90-K3W6.J97 UniRef90-S6EPW7
UniRef90
D3SQ87 UniRef90_W9WM34 UniRef90-E7A2D6 UniRefoto-C4R276 UniRef90-M3D511
UniRef90 M7TTT6 UniRef90_UPIo00361F633 UniRef90-E3L531 UniRef90-Q01CC9 UniRef90-R7IFU2 UniRef90-F9EL13 UniRef90-K0KFW6 UniRef90-G7EAL5 UniRef90-L8FT10 UniRef90-E2ZLO1
UniRef90 - $88 G 556$ UniRef90-UPIOO02883994 UniRef90-I4YFC4 UniRef90-G7E609 UniRef90 UPI0004560937 UniRet90-S8AGL9 UniRef90-FOW7R5 UniRef90-M0X823 UniRef90-Q552D9 UniRef90-C7LMR4 UniRef90-C4M777 UniRef90-U6PZI4 UniRef90-B9L135
UniRef90 E5BG UniRef90-Q7VEE2 UniRet90-S2KYM1 UniRef90-R7QJ47 UniRef90-Q2RJX0 UniRef90-UPIO0016BFC88 UniRef90-M5FPF7 UniRef90-UPI0001FE6E5C UniRef90_M7NML7 UniRef90-12F2NO UniRef90-TONEVO UniRef90-F9QCF1 UniRef90_K6PYU0
UniRef90-A5DN12 UniRef90-E1ZGE5 UniRef90-M3J5AO UniRef90-MOTOG6 UniRef90-Q2HOJ5 UniRef90-A0A024TB86 UniRef90-GOVD28 UniRef90_WOTE78 UniRef90-EONMR3 UniRef90_R4XG69 UniRef90_Q6F1N4

10 10 ${ }^{10}$
${ }^{10}{ }^{\circ}$ s N
Y
an
 $\frac{20}{V}$ 30 GVVGLLSLVKVEQAYQTAISVV GRMRETUTMLKRTY LR LLLEAGL


# A VK NVLNNT ETVKKLKELY 

$\qquad$ R PAGVGGLVDLCEVHKRYAGAITKA GVRNVLNHLND FAGVIGAVGELITFPAELEAAMTTA KGVKEVLNAK IIPGVEGAVISLITVPENYQKAIEAA GTGLRTIDR】AERPNFDGVYGPLYRLFEDDRKFNDAVETAA
 GSLLTGLMQFAKEQNMPGVKGRVSECKKKY KRLRENCSSLKF

NRA目EF


RGVKSIISAQKS RGMAAVQR\VKEHNIEGVHGPL

KGTKNILENKAYFG AK QELVENLKKRAST RAVREDENGKR PGVRGRLVDLCKDQRKYNMAVTVA RGTNATTLLLESG LEGLHGPVANLGEVEDRYR IVALEVA NYGLTNAKK\|AERLDLTGYYGPLYELFEVDDRYKTAVETA RGLQAVREMGERGRFSGMYGPLDELVEVDERFCTATEAA GUKSVNEDAEKMK R CVVFGTLGELIKVNDKYKTCAEVV RGLDAVRRDKEQYKLEGCYGPLAELIDVPDQHTAVEVV GNDLKEVERAKDQRILPGVRGRVVDLCKVQRKYDTAISTV RGLASVKRDANRLGLKGVYGTLGELDEVSHKYRVAAEVVA

QGLDMVQLLMARGDV
PGI
PSVHGRL


RGTATVRRGKREQNGVRGRLVDLCKPTEKYKLAISTV

NRGKAADEWAERNGRTGFTGLVQIIRVPPTLETAIEVA
NRTVKSFMNFTSKNNIASGYGPVAEKFNVEKRYEKAIVVA GLRAVADITQEYGRQGVYGPLCELFTVEDRYKTAAEVT RGLQAMRADKAAKNMTGVYGTIADLCQVEDVYRTAVETA RGGEAVREMTTQMKDKGVYGPLDDLVPVDERFCTAVEAA NDGVSAI DNNAK QUGGVVGVLKSLITVDPEYQIAISTS GVKSLKRLR KGEFPGVHGRMTELCRPQKKYNLAVTVA GVSAILNNOK KE!AKI I KVIQ KALIAKAKSEGLL

EGKLKGGVGRLGDCGTVDKKYDAA:ISTA K GVREVLQA NiPGVAGVFLE LRLLEASLE NSK DGI EGVFI SLGTVPEKLEKAIEAG K GVKEVL NSKLIGIEGGVFISSLVTVPEKLEKAIVEAG GEGVRAILQARSRGECAGVLGVVVEKIEVPGELTRAIEVA SVKDALKDGKTRGVGGVADRVDVVKGYEDAI ATA NGLKAVDSAAQRLKLTGVYGPLYRLEEVTODPYNTAVETA KAVREVFSKES FPGVRGRI
FAGLRDVVANI $\quad$ QVPESFETAATVL KALRE: NTMMEDDRFKGYGPLAKLIEYKDEYANA:|MAA GVRAVLAGRDGGDYREVIGAVAELIGVEPRLERAVEVA QGLAAVSRLTQQLNLDSVYGPLAELFHVNDKYKTAAEIDA QGI A AVKQDASRLNLTDVYGTVAELFNVNDKYKTAAEVA NRMLEALWKASQRGS $\underset{F}{ }$ RGFVGGLGGDLGTVPDAFVAALEAA NFDRSKVKGLVAQLFSLDKQFTQAATALEIA NRMLKSLMNATKPG

UniRef90_UPIO004794EF4 UniRef90-ETMPU9
UniRef90 W9WGO6 UniRef90-W017W6 UniRef90_O66878 UniRef90-K9P7V1
UniRef90 - 2 K2L UniRef90_M1RS12 UniRef90-R5J8L7 UniReffo-T2MDB1 UniRef90-Q5FJJ8 UniRef90-UPIO0004623B2D UniRef90-V9DB30 UniRef90_A0A022R8F2 UniRef90-U1GAB5 UniRef90-A0A058z3мо UniRet90-W107K1 UniRef90-SOFN40 UniRef90-K9YTU1 UniRef90-UPIO0029A19F1 UniRef90_G8ZR43 UniRef90_B5ZAX3 UniRef90-Q01109 UniRef90-C4XDU3 UniRef90-R4XAV1 UniRef90-028714 UniRef90_G4VHB4
UniRef90 F2JS80 UniRef90-Q7U9B7 UniRef90-E5S134 UniRef90-M4B2S4 UniRef90_U6IS06 UniRef90-A2BZM5
UniRef90 M7PEX6 UniRef90-K3W6J9 UniRef90-S6EPW7 UniRet90-D3SQ87 UniRef90_w9WM34 UniRef90-E7A2D6
UniRef90_C4R276 UniRef90 ${ }^{-}$M3D511 UniRef90_M7TTT6 UniRef90-UPIO00361F633 UniRef90-E3L531 UniRef90-Q01CC9 UniRef90-R7IFU2 UniRef90-F9ELI3
UniRet90 KOKFW6 UniRef90-G7EAL5 UniRef90-L8FT10 UniRef90-E2ZL01 UniRef90_UPIO002883994 UniRef90-14YFC4 UniRef90-G7E609 UniRef90-UPI0004560937 UniRef90-S8AGL9 UniRef90-FOW7R5 UniRef90-M0X823 UniRef90_-2552D9 UniRef90-C7LMR4 UniRef90_C4M777 UniRef9-U6214 UniRef90-E5BGJ8 UniRef90 Q7VEE2 UniRef90_S2KYM1 UniRef90-Q2RJX0 UniRef90-UPIO0016BFC88 UniRef90-M5FPF7 UniRef90-UP10001FE6E5C UniRef90_M7NML7 UniRef90-I2F2NO
UniRef90 TONEV UniRef90-F9QCF1 UniRef90 K6PYUO UniRef90-A5DN12 UniRef90-MЗЈ5АО UniRef90-MOTOGG UniRef90-Q2HOJ5 UniRef90-A0AO24TB86 UniRef90-GOVD28 UniRef90-WOTE78 UniRef90-EONMR3 UniRef90_R4XG69
UniRef90_O6F1N4

AGAMNSVVIMKSNVDVKKAVVEFLLKRNNAGRCTFLIPLLDSLINP LGAMNHIVTVDEQAARDAI RFLNRNQSGRATFLPLTVCTP LGRFDSVVVDTEATAKQCI EYLRDHRSGQATFIPLDTMQV
 GGRLAQVVVEDDRIAARAI ELLKSRRAGRLTELPLNRIRG


## ーП

GNSLLFHVVVDT DETASRVL

$\stackrel{\rightharpoonup}{\mathrm{Y}}$
LLGALQNI ASTEEDAKKA
LGASSSII TETEKDAENAIKFLK DNS LGGYDNVVVEDDRVAEKA1 QLKEKRGGRATFLPLNKIRQ LGRFDSIIVDNDAVAQECIA YLKKQRAGIASFIPRDTI EV LAGTNNIIVKNNQAAENCVDFLKKNNAGVATFLPIENLQA AGNLFHIVVDHDDIGSRIIEYLNKEKGRVTFLPLNRMNA GGAISNIITRDENIAKELINYLKDNKGGRATFLPLNDKG LGRDDSIVVDSEQVARDCI EYMREQRRGDATELPLDTLTV GNALQFVVVETEDDAVSAI N LLGG|QNLVADKEDDAKNMI QVMKQRGIVSRVTFLPLDTIKP AGALGQVVVDDDRDAAQA:ALLKSRRAGRLTFLPLINKIRA
 AGALGQVVVDSDQDAAKS! DLLKRKRAGRLTFLPLNKIVF GNSLEHVVVDNDVTASKIIDLNKEKGGRITCMPLNRLSP

 LGGRDADVVDYEKTADDCDEYLRNTRSGQATFLPGDRIQA GGSLFHVVVDNEKTASLIMEELIREKAGRVTFMPLNRLTS AGALFHYVVDNEQTATYLANALQKQYGGRITFMPLSNLRV
 GNALFHVVVDNDGTAQRALEVLAKEKKGRCTFVPLNRLKP
 LGNFDSVIVENSAIAHQCITYLKEQRSGVASFIPLDTIDA
 LGALQNIVVENEAAAKAAIALLRNDNAGRATFLPLDTVQP GGALQHIVVEQWRDAEDAI AELRRSGVGRATFLPLDTLRR GGSMQNVIVSSTSETSEMLRVLEKNKMGRATFLPLDRVVG LGRVESVVVDDEATADQCLDYMKAQRVGSATYLPLDSLQVV GGRLYNVVVEDETVGSKLLANGRLKK RVTLIPLNKINA GNSLFHVVVDNDRTASQLISEISQRGPGRITCMPLNRIRN GGSLFHVVVDTDDDATKLMRELERKNLGRITFMPLNCLKV
 SGHMNSLVMKTDQDVKKAIEFLKKNNLGRVTFLPLNTLTP CGMLDYIVVESDEGAQKASEDCKERQLGRVSLITLEKMKV LGGLSDDVVEQWSDAEAADAFLKATKAGRATFHPLDTMRS AGAIGQIVVDDDLIAAKSIELLKRRKAGRLTFLPLNKIKN IGNLQDIVVDTGDTAKKAINFLKERKAGRASFLALDT:KV ASNLDCLVVQSAENAQACIQFLRRKNLGRATFVLLDKIRA
 RNSLFHVVVDNDETARKVVEVMNKERTGRLTFVPGSKLKT


 LGA Q LLITRTAAGAEAAIEALKRARAGRATFLPLDTIRP GGSLFHVVVDNDKTAA DLMDELDKTKSGRVSFIPLNRMNP CPALDYIVVDTTSAAQRCVELLRQRQLGVATFLTLEKQQH GNSLFHVVVDTDATAASTMEELVRSKGRVTFVPLNRTDS AGSLDHLVVENDDDAQACDEMLRENKMGRATFI ILEKI RY
 CGALDNLVVETYHGAQLCVAYGRQHNLGRATFI ILEKMTY GGRLFNIVVDNERTASQLLEHGRLRK RVTDIPLNKIAS




| UniRef90_UPIoo04794EF4 | RSQN |
| :---: | :---: |
| UniRef90-E7MPU9 | R RDT |
| UniRef90-W017W6 |  |
| UniRef90-O6687 |  |
| UniRef90-K9P7V1 | QQRSG |
| UniRef90-S2K2L7 |  |
| UniRef90-M1RS | KQHSN |
| UniRef90-R5J8L |  |
| UniRef90-05FJJ |  |
|  | NQRSN |
| UniRef90-UPIO004623B2D | DVRRS |
| UniRef90-V9DB30 |  |
| UniRef90-A0A022R8F2 | DYRRS |
| UniRet90_U1G |  |
|  |  |
| IRef90_W1Q4 | PN |
| UnRee90-SORN40 |  |
| UniRet90-K9YTU1 |  |
| UniRef90 UPIO0029A19F1 |  |
| UniRef90_G8ZR43 | K D S ${ }^{\text {N }}$ |
| UniRef90-B5ZAX3 | SKK |
| UniRef90-001199 | DSGRS |
| UniRef90-C4XDU3 | NTAQS |
| UniRef90-R4XAV1 | E |
| UniRef90_O28714 |  |
| UniRef90 G4VHB4 |  |
| UniRef90-F2JS80 | KNQS |
| UniRef90-Q7U9B7 |  |
| UniRef90-E5S 134 |  |
| UniRef90-M4B2S4 |  |
| UniRef90-U6ISO6 |  |
| UniRef90 A2BZM 5 |  |
| UniRef90 M7PEX6 |  |
| UniRef90-K3W6.J9 UniRef90 S6EPW7 | DPQRS |
| UniRef90-S6EPW7 |  |
| UniRef90 W9WM34 |  |
| UniRet90-W9WM34 UniRet90 E7A2D6 | -R S S |
| UniRef90 C4R276 | DFRS |
| M3D511 |  |
| M | S |
| UniRef90-UP1000361F633 | G A |
| UniRef90_E3L531 | ETRRS |
| 俍et90-Q1CC9 |  |
| UniRe990_R71FU2 | K K N |
| UniRe990-F9ELI3 |  |
| UniRef90 KokFV |  |
| UniRe90- | DPRKS |
| UniRef90-E2ZL01 | QR |
| UniRef90-B8G5 |  |
| iRef90-UPI0002 | S |
| iRef90 14 Y |  |
| UniRef90_G7E609 |  |
| UniRef90 UPIO004560937 |  |
| UniRef90-S8AGL9 | DK |
| UniRef90-OW7R5 |  |
| UniRet90-G2RYY9 |  |
| UniRef90-M0x823 |  |
| UniRef90-O552D9 UniRef90 C7LMR4 | SKKK |
| UniRef90 C7LMR4 | R N |
| UniRet90-C4M777 |  |
| UniRef90-B9L135 |  |
| UniRef90 E5BGJ8 | RGRer |
| UniRef90-E5BGJ8 |  |
| UniRet90- S2KYM | GN |
| UniRef90-R7QJ47 | GP |
| UniRef90-Q2 |  |
| UniRef90-UP100016BFC88 | K N |
| UniRef90 M5FPF |  |
| UniRe9OM7NM1 | $\mathrm{O}_{\mathrm{H}} \mathrm{V}^{\text {N }}$ |
| niRef90-12F2N |  |
| UniRet90-TONE | K N |
|  |  |
| UniRet90-K6PYU0 | SRRQ |
| UniRef90 A5DN12 | DYKRS |
| UniRet90_E1ZGE5 |  |
| UniRet90_M3J5AO | DYKNS |
| UniRet90-M1VFG1 |  |
| UniRef90_MOT0G6 |  |
| Un | NS S |
| UniRef90-A0AO2 |  |
| UniRef90-GovD28 |  |
| UniRet90-EONMR3 | R |
| UniRef90_EONMR3 | KN |
| iRef90_R4XG69 |  |
| UniRef90_06F1N4 | NK A S N |

UniRef90 Mocz31 UniRef90-G6DCD6 UniRef90-F6SH99 UniRef90-J9MP04 UniRef90-G0QHH2 UniRef90-B3TAJ6 UniRef90-M2QG27
UniRef90 D9SLC7 UniRef90_C4YQ39 UniRef90-E3BQYO UniRef90-Q6FUN1 UniRef90-KOTOG4 UniRef90-B5RUJ6
UniRef90 C5DBH6 UniRef90-D8LRP2 UniRef90-G0S6B9 UniRef90-V2Y9D9 UniRef90-G4T7M5 UniRef90_R5BMF0 UniRef90-R9P916 UniRef90-C4Y429 UniRef90-T5AKW4 UniRef90-H3D891
UniRef90 E0S7Z1 UniRef90-A8P2T7 UniRef90-H8MQX8 UniRef90-J7SB46 UniRef90-F9X8L7 UniRef90_UPIO004739B1C UniRef90_LOA7J5 UniRef90-V4Y4R1 UniRef90-UPI00034F768C UniRef90-E1F887 UniRef90-W5X8G7 UniRef90_A9S6L3 UniRef90_A2SS75 UniRef90_G3JDB2 UniRef90-P41003 UniRef90-A8XX62 UniRef90_R6SU87 UniRef90_UPI0003F15B4D UniRef90-GOU381 UniRef90-D7BH70 UniRef90_Q6Cl88 UniRef90_V4Y934
UniRef90_B4UDF6 UniRef90-Q6CRP2 UniRef90-E6PGH3 UniRef90-V4U6L6 UniRef90-11BNA9 UniRef90-A2BU14
UniRef90_H8GVP8 UniRef90-Q6C5S3 UniRef90-B0DHC4 UniRef90-B7FTA5 UniRef90_UPIO00185E261 UniRef90-J7S543 UniRef90-M7WGL1 UniRef90-B0S1M4 UniRef90-F2E3E6 UniRef90_UPI0003A668E5 UniRef90-E4ZHU7 UniRef90-H2LIA5 UniRef90-U5H9U5 UniRef90-E7FEF9 UniRef90_UPI0002B4401E UniRef90-E0QGM1 UniRef90-M7T1Z0 UniRef90-V9K7S4 UniRef90-G1XCH7 UniRef90_-14BV06
UniRef90_Q74ZH1 UniRef90-A7TQR4 UniRef90_Q6FS78 UniRef90-UPI0003600E9F UniRef90_UPIO002BC8816 UniRef90-C4QZK9 UniRef90-E1ZRU9 UniRef90_R8BUM2 UniRef90_A9SLI2
UniRef90_S9QH72 UniRef90-E3FUD4 UniRef90-W4V8Z1 UniRef90-UPI00035A2783 UniRef90_UPIO0036594D1 UniRef90-K9RTG1 UniRef90-H2AMJ9 UniRef90_F7DH69

1
 NFDSNKVSGTVCRLDDV RDPKYCTALE TA
 $R G \square A T \square E R M K R E K D D P G A Y G M L A D L M E V N E A Y R D P A E V A$ $R A V D A V L S D$ D LA ALTRLRQSGEDNGLLGSLGELAPRDPAHEGALSNA
 Q GI A A V K Q IA QRLDNLSDVYGTVAELINVVNDKYKTAAEVA GlVKFILDNM NKKA GAIGVVGDLLNFSPKLEAALIVS
 $R \square L N T \prod G A \square K R H$ VTMLKKLFPKGAVKGI


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

GTRN ALLA A K E P WQ Q D L L



 $R G \square R A V M R A A E A A R E Q G D F G L V A D V L T V N A R Y E R A V V E A$



 $R P V S A V$ HF D R A R V A G TVVCKV D

 R DFDRSKVKGVVARLL LKVKDPSTMTALETA M D GVV F G T V S S L G K V D S S A Y A V A L N A A A
 NF D R S KVVK GL V A Q L LT L N E EN Y D K Q TA L E TA GK T TKVMY QLKES GKFTPFIGRLGDLAHVDEEYAMTAVATA



## UniRef90_MoCZ31

 UniRef90-G6DCD6 UniRefofo-F6SH99 UniRef90-Ј9мр04 UniRef90-GOOHH2 UniRefefo-B3TAJJ UniRef90-M2QG27 UniRef90-D9SLC7UniRef90_C4YQ39 UniRef90-E3BQYO UniRef90-Q6FUN1 UniRef90-KOTOG4
UniRet90 B5RUJ6 UniRef90-B5RUJ6
UniRef90_C5DBH6 UniRef90-D8LRP2 UniRef90-G0S6B9 UniRefto_-V2Y9D9 UniRef90-R5BMFO UniRef90-R9P916 UniRef90-C4Y429 UniRef90-T5AKW4 UniRef90-H3D891
UniRef90 E0S7Z1 UniRef90-A8P2T7 UniRet90-H8MQX8 UniRef90-J7SB46 UniRef90-W3X436 UniRef90-UPIO004739B1C UniRef90-LOA7JJ UniRef90-V4Y4R1 UniRef90-UPIo0034F768C UniRef90-E1F887 UniRef90-W5X8G7 UniRef90-A9S6L3 UniRef90_A2SS75
UniRef90 G3JDB2
UniRef90-P41003 UniRef90-A8XX627 UniRef90-R6SU87 UniRef90-O5A021
UniRet90-UPIO003F15B4D UniRef90-GOU381 UniRet90-D7BH70 UniRef90-Q6C188 UniRef90-V4Y934
UniRef90-B4UDF6 UniRef90-Q6CRP2 UniRef90-E6PGH3 UniRef90-V4U6L6 UniRef90-A2BU14 UniRef90-H8GVP8 UniRef90-Q6C5S3 UniRef90-BODHC4 UniRef90-B7FTA5 UniRef90_UPIOOO185E261 UniRef90-J7S543 UniRef90-M7WGL1 UniRef90 BOSTM4 UniRef90-F2E3E6 UniRef90-UPIO003A668E5 UniRef90-E4ZHU7 UniRef90 H2LIA5 UniRef90-U5H9U5
UniRef90 O6CYH7 UniRef90-E7FEF9 UniRef90-UPIO002B4401E UniRef90-E0QGM1 UniRef90-M7T1ZO UniRef90-V9K7S4 UniRef90-G1XCH7 UniRef90-14BV06 UniRef90-O74ZH14
UniRef9O-A7TQR4 UniRef90-Q6FS78 UniRef90-UPIO003600E9F UniRef90 UPIOOO2BC8816 UniRef90-C4OZK9 UniRef90-E1ZRU9 UniRef90 R8BUM2
UniRet90 AgSLI2 Uniref90_A9SLI2
UniRef90_S9OH72 UniRef90-E3FUD4 UniRef90 W4V8Z1 UniRef90-UPIOOO35A2783 UniRef90-UPIOOO36594D1 UniRef90-K9RTG1 UniRef90-H2AMJ9
UniRef90-F7DH69
 QPLSRETVALAQKIGGLALDLVDFPPSRRAMSWVFGNTL R LKASAETVATAQT APLALSSFVDYDNE DATAMEYVFGNTL RNKSAQMALKKKGVDDYASNLVEYNKKYEKAMNNVFSDTL SRPQGRSLADNPGVI GFAHDLLDYDSEDDTAVRYAGRNTL NVMPDRKLQTAMRLVRLADSSVGYEQEVANAMAFVFGDTL
 NKIPDRVIKSMDKVLGVAEELVTPDKDISEVINYLLGNVI ATPRMPVPESETYT PRLANTVEYKDDLVRAMYYVCSDTV
$P S P E S T E R A E N D K R Y R L A D D V I G A N D E Y R N A V L Y A V G N T V$ DSLNLNYRRSVHPAQPGIDDLEYDDTSGEQALQYVVGDTL KPISESLRSL GPSHRLCADIMQGGD
AHDAPDITSKI YDP SMPAANDPASGDADPLLSKI SYDPAH
 K TPTTFPE $\mathrm{R}_{\mathrm{S}}^{\mathrm{R}} \mathrm{P} \mathrm{V}^{\mathrm{L}}$ N SPLNE SEPRTV
RTIDPA ARGYVEPDLSRPGVLAHALKEVSCEPA
 NAVSNALKSDQGARLTIDTIGDFDSSLERAMTYACGGS QKKNYFENNRENGFTDKAINLDTFDEVYSDVFRYVEGDTL
 ASYELKRLLGERGVVGRASELVSCRAHBRPVIDSLLGRVV

 QNV EEEMRAAGFAMAVADTLVQCDARFSDVVSALLGRTV KPINE RLREIKGCKMVIDVIKTQFPQLKKVIQFVCGNGL KTADDRLRTLGGTCKPIVDVVRYDVQSELAVQYALGQTL AARPRRDWS QEKGVRGLARELVEVRG YPQVGATLEGETL

 RDARAMELSSIPGVIDYAHRLVRTDARYEGVVRFLVGNVL
 FRVSAEKLAAAEKLAPLALNLIGYDEEVFAAMEWIFGSTF
HRKNRFENSKENGFVDKAFNLI DCDDVYTDVFRYVFGETV RPRRDAALLREDGVVGNLADLCPTDPPL VGEALLADTL MPVNSSLRSRGRGAVLALDALGSFSSQYERAFQYVCGSA PSPDSTERLRAHVAKDLVADVIACDDAVHRAVQYAVGNTV DLTGFMQRSDAFPLPRLIDLISFKKERYRVAFYKAVGDTV DSGVTFPPQDQSAACTPLLKKIKYDAKFEKAVKHVFGKTI QMPNLNQDKQAKEПGGYALDVVQCEPEFDPIMKYVFGNVL
 NKREFK QNDSGVLGIAADLVKDDSKYKKVVDFVLGNLL KRASAEKIGAAQRLVDIALSLLGGDEEVTKAMEYVVGST$L$ SVASKETLRTVSKVSPLALSMVGYDDELNAAMEYIFGST PILNE RLDEVQGAKMVVDVVQCSQNQLKRVIQYVCGNSL KSIDERLRRDSSSSVKLVYDVIRYPSKLEKAIVFAVGNTL SFLNYNDKGVK K PTNERLREGKGAKMMIDVVQSVSPQLKKVIQFVCGNAL
 RVINTDALNKAPGAVELALNLTGYEAEVARAMEFIFGGSL RKLNDKTLNDAKETVELALNLIGYEEDVAKAMEFIFGSSL GNQNDDYPSDPNIPCTPLIKKIKYDMQFDCVVKQVFGRAL NQDPPVHLNGNPGILGKALNFI ECEEEYQQVIEMLLRNVV YPVPPRHQNAAARLVGVALSLVGYDEELKSAMEYVFGSTF
 NAVNSAVKGTSG ARLTIDTIDFDQSLQRAMEYACGSSV KPVHEKLRADGGSAKLVYDVIQYPFNALERAVLYAVGNTL LPPEDQPDRSRPGVLARALDEVTCEPALLPVVRLLLGDVI LPPVVAPDFSRPGVLASAFTEVKYEESLQPVMRLLLGDVI KYLDDNQLKGHEGFLGVASDLIEYDEQYRGIVLSLLGKVV RSPKGKSLKNAPRLMGLILNHIEFPKETEAAVTYVFSDTV -R PRNKS


UniRef90 MoCz31 UniRef90_G6DCD6 UniRef90-U7Q0T1 UniRet90_J9MP04 UniRef90-GOOHH2
UniRef90 B3TAJ6 UniRef90-M2QG27 UniRef90-D9SLC7 UniRef90-C4YQ39
UniRef90 E3BOYO UniRef90- Q6FUN1 UniRef90-Kotog 4 UniRef90-B5RUJ6 UniRef90-D8LRP2 UniRef90-G0S6B9 UniRef90-V2Y9D9 UniRef90-R5BMFO UniRef90-R9P916 UniRet90_C4Y429 UniRef90-T5AKW4 UniRef90-H3D891
UniRef90 - $00 S 721$ UniRef90-A8P2T7 UniRet90-H8MQX8 UniRef90-J7SB46 UniRef90_W3X436 UniRef90-UPIO004739B1C UniRef90-LOA7JJ UniRef90-V4Y4R1 UniRef90-UP100034F768C UniRef90-E1F887 UniRef90-W5X8G7 UniRef90_AS6L
UniRef90 A2SS
Un UniRef90-G3JDB2 UniRef90-P41003 UniRef90-A8XX62 UniRef90-R6SU87 UniRef90-UPIO003F15B4D UniRef90-GOU381 UniRet90-D7BH70 UniRef90-Q6Cl88 UniRef90-V4Y934
UniRef90_B4UDF6 UniRef90-Q6CRP2 UniRef90-E6PGH3 UniRef90-V4U6L6 UniRef90-I1BNA9
UniRef90 A2BU14 UniRef90-H8GVP8 UniRef90-Q6C5S3 UniRef90-BODHC4 UniRef90-B7FTA5 UniRef90-UPIO00185E261 UniRef90-J7S543
UniRef90-M7WGL1 UniRef90 BOSTM4 UniRef90-F2E3E6 UniRef90-UPI0003A668E5 UniRef90 E4ZHU7 UniRef90-U5H9U5 UniRef90-Q6CYH7 UniRef90-E7FEF9 UniRef90-UPIO002B4401E UniRef90-E0QGM1 UniRef90-M7T1ZO UniRef90-V9K7S4
UniRef90_G1XCH7 UniRef90_l4BV06 UniRef90_O74ZH1 UniRef90-A7TQR4
UniRef90-O6FS78 UniRef90-UPI0003600E9F UniRef9O-UP10002BC8816 UniRef90-C4OZK9 UniRef90-E1ZRU9 UniRef90 R8BUM2
UniRef90 AgSLI2 Uniref90_A9SLI2
UniRef90_S9OH72 UniRef90-E3FUD4 UniRef90 W4V8Z1 UniRef90-UPIOOO35A2783 UniRef90_UPIOOO36594D1 UniRef90-K9RTG1 UniRef90_H2AMJ9
UniRef90_F7DH69

130
140
150
160

V VEDMETARSLLMGD FRMVITLDGDLVVR VCSSLEAARRVTFDPRVRCRSVTLDGDVFDPAGTLSGGAR VCESAEDARKVAFGQKHKTQAVALDGTLFQKSGVISGGAT | $V C P T V S V A A Q$ |  |
| :--- | :--- | :--- | :--- |
| $I$ | $C A D A R S H G V D G I T P E G D T T K R T G T M T G G Y V$ |

 L V Q M G I ARRNM
$\qquad$
 VCDDAETAKLVTFSREGGARSVTLDGDVYDPSGTDSGGSA I AEELDAATAI AKASNYSYRIVTLQGEVV

 $V C D T L D V A R D I C F S R H G R I K A V T I K G A V I S K A G T M T G G V T$ VVENI EVARSHKWGSGKKNKMVTLEGSVIMKSGLMTGGQQ

 VCRDLSIA A A Y VK SHSINTITDDGDKVDRKGALTGGYH I CKDLATAAKYA RSHDLNTTTIEGDKVDRKGALTGGYH $V V E T M E Q A D A L Q K K Y K Q Q L R L V T L G G E Q F Q P G G S L A G G V T$ $V C Q N L E D A S B A Y V R S H G V N A V T L D G D K V E R K G A L S G G Y Q$ $V C P N L A V A S Q Y A \quad R S H G V D G I T A E G D T T N R R G A M T G G Y I$ VCETI KEAKAVAFDRRERNKTVSLDGTLFSKSGVISGGSS VCEGLEVAERLAFGKT RKRVVTVDGKVIEKSGVMSGGKG IVQDLVAAREYAESTPVPVTLVTLDGEVFRADGSTTGG VCKDAEAAKMVTFNPKI RTRSITLDGDVYDPEGTLSGGSR VCADASTAKKVTFDPSVRLKSVTVEGDVYDPSGTLSGGSA VCDTLD DAK DVCYNRR $\ Q V K A V T L E G F V I H K A G L M T G G R$
 $V V E E M A T A R D L M G D Y$ RMVTLDGDLVE
V CRDLDTAKRVTFHRAVRRRCVTLDGDVFDPSGTLSGGA LCEDMNLANKLTSGKGATQRIVTYEGDVFDPSGIVSGGGD IVCTDMDTAKQVAFHKDVMTRSVTLEGDIFEPRGLLTGGSR VVETLDAGR RGMGRYRMVTLEGELLERGGAMTGGSI VCETLDDAKHTCYAKKGPVKAVTLEGYVIHKAGLMTGGR LAKDMEEAVKLDKKGGGRFRVCTMKGGLDERSGALTGGGS I FDTVENATAMAKSLRYRVRAVTDDGQQU NVGGSFTGGSV
 $V C D T M S E A R Q I A Y G R G Q R F K V V T I D G T V L M R N G V V Q G G$ $V L E S L E A A L L S L A K R Y P D A P R M V T R E G E L L E P S G A L T G G G$ $V C I N L Q V G A D A D Q R N H N D N A T L G G D R V D A K G V L T G G F H$ $V$ VDNTETARAYMGQY RMVTLDGDLVEK

I CDNLDLAKKELKWSRNVKAKLVTLNGALI HKAGQMTGGTA V VD T L Q T G I HLVRERKL RETIVTLSGEQ
 I C E D A Q T A K DVVT F N K S I G IV S V T L D G DVV DP H G T L S G G S K

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




 $V \mathrm{~V}$ K S LIDD G A S L A A K E Y K L N A I T L L $V$ C E T L K D A R R I A F D G P E R L Q T V A L D G T L F R K S G V I S G G S S







 I CKDASTAKKLAFAREVNTRCITLEGDDFNPGGTLTGGGSR
 $V C D Q L D E A K R L A W G S E R H K V V T H D G G L L A K S G T M T G G G S$
 $\vee \vee$ D S M
IV CS DLD TASKVAY DAK $\square$ MRKCVT LEG DTVDPAGTLS GGA
 $V$ FEDLA TARRYIGQH


UniRef90 M0CZ31 UniRef90_G6DCD6
UniRef90-F6SH99

UniRef90 J9MP04 UniRef90-G0QHH2 UniRef90_B3TAJ6 UniRef90 M2QG27 UniRef90-D9SLC7 UniRef90_C4YQ39 UniRef90-E3BQY0 UniRef90 Q6FUN1 UniRef90-KOT0G4 UniRef90-B5RUJ6 UniRef90 C5DBH6 UniRef90-D8LRP2 UniRef90_G0S6B9 UniRef90_V2Y9D9 UniRef90 G4T7M5 UniRef90-R5BMF0 UniRef90-R9P916 UniRef90_C4Y429 UniRef90- T5AKW4 UniRef90-H3D891 UniRef90-E0S7Z1
UniRef90 A8P2T7
UniRef90-H8MQX8
UniRef90-J7SB46
UniRef90_F9X8L7
UniRef90 W3X436
UniRef90_UPIO004739B1C
UniRef90_LOA7J5
UniRef90 V4Y4R1
UniRef90-UPI00034F768C
UniRef90-E1F887
UniRef90-W5X8G7
UniRef90_A9S6L3
UniRef90_A2SS75
UniRef90-G3JDB2
UniRef90-P41003
UniRef90-A8XX62
UniRef90_R6SU87
UniRef90-Q5A021
UniRef90 UPI0003F15B4D
UniRef90_G0U381
UniRef90-D7BH7C
UniRef90_Q6Cl88
UniRef90 ${ }^{-}$V4Y934
UniRef90_B4UDF6
UniRef90_Q6CRP2
UniRef90 E6PGH3
UniRef90_V4U6L6
UniRef90-I1BNA9
UniRef90_A2BU14
UniRef90 H8GVP8
UniRef90-Q6C5S3
UniRef90-B0DHC4
UniRef90 B7FTA5
UniRef90_UPIO00185E261
UniRef90-J7S543
UniRef90_M7WGL1
UniRef90 B0S1M4
UniRef90_F2E3E6
UniRef90_UPI0003A668E5
UniRef90 E4ZHU7
UniRef90- H2LIA5
UniRef90_U5H9U5
UniRef90_Q6CYH7
UniRef90_E7FEF9
UniRef90_UPI0002B4401E
UniRef90-E0QGM1
UniRef90 M7T1Z0
UniRef90-V9K7S4
UniRef90-G1XCH7
UniRef90-I4BV06
UniRef90 Q74ZH1
UniRef90-A7TQR4
UniRef90-Q6FS78
UniRef90-UPI0003600E9F
UniRef90-UPI0002BC8816
UniRef90_C4QZK9
UniRef90_E1ZRU9
UniRef90 R8BUM2
UniRef90-A9SLI2
UniRef90_S9QH72
UniRef90_E3FUD4
UniRef90 W4V8Z1
UniRef90-UPI00035A2783
UniRef90-UPI00036594D1
UniRef90 K9RTG
UniRef90-H2AMJ9
UniRef90_F7DH69

D LK R
D PSRS
PNSS
KKSRGN
SRTNRN
PSSN
D YKNS
NQRTN
KEDSN
QQKSN
KSSGN
DMRRS
DVRRS
D L K R S
KRRK
DPRRS
DYKTS
DPRKS
$D \square R S$
N GR
PQGN
N NTSS
A Q G N
$\square \mathrm{N} K$
DSGTSH

K T K
A R Q
K
K
R
R K
NK
VNRGR
NRNGS
QQKSS
D

D P K K S

QK N Q N
R
PNSS
VNK
R
QKGHH
R
RERS
DQRK
PKSS
K P S N
$\stackrel{R}{\mathrm{Q}}$
PQAS
SQSAS
SQ
${ }_{\mathrm{D}}^{\mathrm{D}} \mathrm{Q}$ YKSN

PENK
D L R
PTSS
PSQSRN
SHTSS
NMNSS
EQSK
DEKN
R
PN
NKGGS

AHSAS

DYHKR
$D \square R$

UniRef90_Q1PZG8 UniRef90_S9TS49
UniRef90_B2B4W9 UniRef90-H8X2S7 UniRef90 C4Y3W5 UniRef90_C5DWK8
UniRef90 D8LEU4 UniRef90-G2X318 UniRef90-H3B892 UniRef90-A7EP81
UniRef90 L1IBV8 UniRef90-s3D7T2 UniRef90-F4PGN9 UniRef90-S9U2E7 UniRef90' C9ZYY9 UniRef90-12H3K5 UniRef90-A0A024JN37 UniRef90-W6MRU8 UniRef90-L7M269 UniRef90-D6X4W0 UniRet90_A7APV2 UniRef90-K1R916 UniRef90-A0A058Z213 UniRef90-HOUMK9 UniRef90-A0A034W2Z9 UniRef90-H2YJF6 UniRef90-O4DOW6 UniRef90 UPIOOO359DDC4 UniRef90-B7GAL2 UniRef90-UPIO00462377F
UniRef90-G1SPE4 UniRef90_V9DLA5 UniRef90-IOYIK0 UniRef90-H8WVW2 UniRef90 H2AY75 UniRef90-UPIO00441CE86 UniRef90-UPIOOO36B9217 UniRef90-E1YBS2 UniRef90-F2UGW9 UniRef90-A0A024U5Z4 UniRef90-F9MTI5 UniRef90-Q90988 UniRef90_W6KF52 UniRef90-U6HMJ9 UniRef90-S9TVR3 UniRef90-C4Y3G7 UniRef90-FOYFIO UniRef90-L7KOF5 UniRef90 E9GJ33 UniRef90-UPIOOO361BC37 UniRef90-B7XIB6 UniRef90 G6DP83 UniRef90-A0A059F221 UniRef90-GGCQ53 UniRef90-D1AYK7 UniRef90-S9WAZO UniRef90-A3FQK9
UniRef90 AgUW UniRef90-UPIO0038701E0 UniRef90-E2APE9 UniRef90-R5AGE5 UniRef90_U1M4J8 UniRef90-W4WAGG UniRef90-H9KE58 UniRef90-UPIO0038328DD UniRef90_G9PY95 UniRef90-I1LYK3 UniRef90-G3AHY6 UniRef90-M5C195 UniRef90-FOH273 UniRef90_UPIO004575D58 UniRef90-A818N8 UniRef90-D6WWG2 UniRef90-A0A026VX58 UniRef90-W2SFC6 UniRef90-Q55Q12 UniRef90-A0A034WPC9 UniRef90-E2AIG6 UniRef90-C9ZPM3 UniRef90-T2M2Q5 UniRet90-_33P5B9 UniRef90-K7LXH6 UniRef90-BOXGI4 UniRef90 A9AOM3 UniRef90-W6L618
UniRef90-M7ZH89 UniRef90-E9BFE4 UniRef90-Q5TS71 UniRef90_E9IUAO

VS MLR
 $V$ S MLR NMVKE GAI K GL MHELVNC S QKKYEMAL QTV G L D A VEA EKFDPNSVKGVAA QLFTLS
 P SVGR!GDLC

 | $F$ | $P$ | $G$ | $I$ | $R$ | $G$ | $R$ | $V$ | $M$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $D$ | $L$ | $C$ |  |  |  |  |  |
| $H$ | $G$ | $R$ | $V$ | $G$ | $E$ | $L$ | $C$ |  |

 NFDRRKVYGLVCNLFD D $L$ TKD L

 NFNDSSVK GVAA QLFSVVSDESLDDYASALEAA
 KY $\|$ M GLS A S GKI R G $\backslash H G R L G D L G S I A P E Y E N A M A A A$

 NFDRTKMRGMVGKLFNV RDEKNNLALMTA $\left.\begin{array}{llllllllllllllll|l|l}V & K & G & L & V & A & D & L & V & D & V & K & D & A & N & A & T & A\end{array}\right)$
N Q TVETL
 S L Q K V L VR
$K S \square F$ S F R

 NF DRTRVVKGVA QLETADKDKSMAGTALEI A
LS T L K R


NQSVKHILNEK
GVVKA I M K H C
Q GLLASVE QVV
$R S \square K S F \square K \square K$

QS LQ EVLK KNWNP
 NFDRRQVYGVVAKLEDL
Q S LKE $\quad$ LA



V E GFil G R L G DL G RVV N S K Y D I A IT A A



QE VVS F K R $\square$
 K N I V V D S V S S N L L Q S L R E I LTTE LDK D E R DS S V F G P L DD L I TVVE E GYEAA A V T A $V \operatorname{V}$ T L L D Y NF D R S K VK G L


 N F N H N S V V K G V V V KNWNPNHVKKGVV S SIIT VED SKA K A L E A A V R H L L S A A K L K RLDDA DP HA A I D V L S AP A N LAA A L EA Y


 $V H G P V A T B V N V D P S A A D A L E V A$ NFKRSSVIGVVCRLFEV KDEAAAYALEMAA

 SVRKVLDNFERGSPKSYYGPVI ENFSCDKTVYTAVETA
 Glide S V
 GVQAL MRNAARAAEDGILGIAADMVRPQPGYETATEAV
 $R G L N S V S R \square I R D H G \| G G V F G P V L E L V D C E E K F F T A V E T A$ R A ME F L L A Q R S L K GYY G T L R QL G R DD

 SNAWGFHVVEDRATATAALQLLKEHNDGRATMMVISEMEK
 LGNiDAIVVESTAVAYKCI ELLKERRAGTATFI PLDSIVN GGRLFNVIVDDQNTASQLLERGKLRKGRVTIIPLNKIAT AGNVFNVVDNDHTAAKLMHMLERRKLGRVTFMPLNKLAT
 MGNMDAVVIDKEETARRCIEHLKEQKAPAMTFLPLDTLTA LGGFDSVIVDTEKTAAECLQYLKEQRHMPMTFIPGLDNVKV MGRLEAVVVDSTEVADGCVRYDKEQRFPPMTFLPLDAVQG AGGLYNVVVDNEDTAKKLLQHGHLKK RHTIIPLNKIRG LGNLEAVVVDTSETAHACVRYGKERRDPPDTFLPLENSVNG
 LGNMEALVVDSEKTGRACI KYGKEQMLEAETFLPLDY:KP GNRLFHHVIDSDKTGTQLLKEMNRQKLGEVTFMPLNRLNV GGKLYNVVVDTEDTGKKLIQKGELLRRGRTALAPLNKIAA GGRLYNVVIENEVVGQQLLRHGQLRRGRYNFIPRLNKVVP GGSLYSYVADDDDTSKKILQKGQLQ GRVTIIPLNKITS GGRLYNVVVDTHETGAKLLKNGQLKRGRCTMIPLNKVAA MGKLDADVVDTEETLLSCVRYLKEQLLGVATFLSLDRLQQ GSRLFHHIVDTDRTGTILLKEMNRMHLGEVTFMPLNRLEN GGKLYQVVVDEADTGKALLDRGKLER RVTIMPLDKIKP


 GGRLYNIVVDTEVTGKKLLEKGELKRGRYTVIPLNKIVA LGYLQYVVVEDQNTCKSLI EFLQENKAGRSGFVPLSN: KK GGKLYHVVVDSDQTGKQLLQHGNLUK SRVTIIPLNRITR GGKLYNIVVDTEATGKKILEKGQLKHRYT\|IPLSKISA GNALFNVVVDTFDDGAMVLEKMNKSRKGRISFFPLDUCKG UniRef90 U6HMJ9 UniRef90_S9TVR3 UniRet90-C4Y3G7 UniRef90-FOYFIO UniRef90-L7KOF5 UniRef90-E9GJ33 UniRef90-UPI000361BC37 UniRef90 B7XIB6 UniRef90 G6DP83 UniRef90-A0A059F221 UniRef90-G6CQ53 UniRef90-D1AYK7 UniRef90_S9WAZO UniRef90_A3FQK9 UniRef90-UPIOOO38701E0 UniRef90-E2APE9 UniRef90-R5AGE5 UniRef90 U1M4J8 UniRef90-H9KE58 UniRef90-UPI00038328DD UniRet90_G9PY95 UniRef90-I1LYK3 UniRef90-G3AHY6 UniRef90-M5C195 UniRef90-FOH273 UniRef90-UP10004575D58 UniRef90-A818N8
UniRef90-D6WWG2
UniRef90-A0A026VX58
UniRef90-W2SFC6
UniRef90-Q55Q12
UniRef90-AOAO34WPC9
UniRef90-E2AIG6
UniRef90-C9ZPM 3
UniRef90-T2M2Q5
UniRef90-G3P5B9
UniRef90_K7LXH6 UniRef90_B0XG14 UniRef90-A9AOM3 UniRef90-W6L618
UniRef90-M7ZH89 UniRef90-E9BFE4 UniRef90-O5TS71 UniRef90 E9IUAO

## UniRef90_Q1PZG8

 UniRef90-S9TS49 UniRefefo-B2B4W9 UniRef90-H8X2S7UniRef90 C4Y3W5 UniRef90-C5DWK8 UniRef90-D8LEU4 UniRef90-G2X318 UniRef90-H3B892
UniRef90-A7EP81 UniRef90-L1IBV8 UniRef90_S3D7T2 UniRef90-F4PGN9
UniRef90_S9U2E7 UniRef90-T1JGX2 UniRef90_C9ZYY9 UniRef90-12H3K5 UniRef90-A0A024JN37 UniRef90-W6MRU8 UniRef90-L7M269 UniRef90-D6X4W0 UniRef90-A7APV2 UniRef90-K1R916 UniRef90-A0A058Z213 UniRef90-HOUMK9 UniRef90-A0A034W2Z9 UniRef90-H2YJF6 UniRef90-Q4Dow6 UniRef90-FoZPY7 UniRef90-UPI000359DDC4 UniRef90-B7GAL2 UniRef90_UPI000462377F UniRef90-G1SPE4 UniRef90_V9DLA5 UniRef90-IOYIK0 UniRef90-H8WVW2 UniRef90 - H2AY75 UniRef90-UPI000441CE86 UniRef90_UPIOOO36B9217 UniRef90-E1YBS2 UniRef90-F2UGW9 UniRef90-A0AO24U5Z4 UniRef90-F9MTI5 UniRef90-Q90988 UniRef90-W6KF52 UniRef90 U6HMJ9 UniRef90-S9TVR3 UniRef90-C4Y3G7
UniRef90_FOYFIO UniRef90-L7KOF5 UniRef90-D3BQ59 UniRef90-E9G.J33
UniRef90 UPIO003 UniRef90-UPIO00361BC37 UniRef90-B7XIB6 UniRet90_G6DP83 UniRef90-A0A059F221 UniRef90-G6CQ53 UniRef90-D1AYK7 UniRef90 SgWAZO UniRef90-A3FQK9 UniRef90_UPIO0038701E0 UniRef90-E2APE9 UniRef90-R5AGE5 UniRef90 U1M4J8 UniRef90_W4WAG UniRef90-UPIOOO38328DD UniRef90_G9PY95 UniRef90-I1LYK3 UniRef90-G3AHY6 UniRef90-FOH273 UniRef90-UPIOOO4575D58 UniRef90-A818N8 UniRef90-D6WWG2 UniRef90-A0AO26VX58 UniRef90-W2SFC6 UniRef90-Q55Q12 UniRef90-A0A034WPC9 UniRef90-E2AIG6 UniRef90-C9ZPM3 UniRef90-T2M2Q5 UniRef90-G3P5B9 UniRef90-K7LXH6 UniRet90-BOXGI4 UniRef90-A9AOM3 UniRef90-W6L618
UniRef90 M7ZH89 UniRef90-M7ZH89
UniRef90_E9BFE4 UniRef90-Q5TS71 UniRef90 E9IUAO

Q S SRNE ${ }^{90} 100$
110


## NTSN

 $N V L G A A$ DQI NLNYLRSHEDARPAIDVI RF


 $K P P D E$
$S T P N$



 $R \mathrm{R}$ L


 R


## 4

## N <br> $V$ V

R

## ロー

PNIVTYYAK

DSRPRRDDWSQFPGVRGLARELVGFAHP APKNNNQLLDRNKIR
R $\quad$ DMVYPNNNA!
 KPGRERDVKEPKNVKLLFDVLRFEPAAGHRAVLFAVTNAGL STKLNKVPDGNGVIDFARNIVKTKEDEYEKVVDHI FSNAL





## 







 TKIA A E K LIA A A H R VA P LA L D D V G Y P E DVV A AMA Y V F GR T F

 SKI NFDPI FKPAMQLAFGKML



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

## UniRef90 Q1PZG8

 UniRef90-SgTS49UniRef90 B2B4W9 UniRef90-H8X2S7 UniRef90-C4Y3W5 UniRef90-C5DWK8
UniRef90-D8LEU4 UniRef90_G2X318 UniRef90-H3B892
UniRef90 A7EP1 UniRef90-L11BV8 UniRef90_S3D7T2 UniRef90-F4PGN9
UniRef90 $59 U 2 E 7$ UniRef90-T1JGX2 UniRef90-C9ZYY9 UniRef90-ㄴH3K5 UniRef90-A0A024JN37 UniRef90-W6MRU8 UniRef90-L7M269 UniRef90-D6X4W0 UniRef90 K1R916 UniRef90-A0A058Z213 UniRef90-HOUMK9 UniRef90-A0A034W2Z9 UniRef90-H2YJF6 UniRef90-O4DOW6 UniRef90-FOZPY7 UniRef90-UP1000359DDC4 UniRef90-B7GAL2 UniRef90_UPI000462377F UniRef90-G1SPE4 UniRef90_V9DLA5 UniRef90-IOYIK0 UniRef90-H8WVW2 UniRef90 - H2AY75 UniRef90-UPI000441CE86 UniRef90-UPIOOO36B9217 UniRef90-E1YBS2 UniRef90-F2UGW9 UniRef90-A0A024U5Z4 UniRef90-F9MTI5 UniRef90-Q90988 UniRef90-W6KF52 UniRef90-U6HMJ9 UniRef90-S9TVR3 UniRef90_C4Y3G7 UniRef90-L7KOF5 UniRef90-D3BQ59 UniRef90-E9GJ33 UniRef90-UPIO00361BC37 UniRet90_B7XIB6 UniRef90-G6DP83
UniRefo-AOAO59F2 UniRef90-G6CQ53 UniRef90-D1AYK7 UniRef90 SgWAZO UniRef90-A3FQK9 UniRef90-UPIO0038701E0 UniRet90-E2APE9 UniRef90-R5AGE5 UniRef90 U1M4J8 UniRef90_W4WAG UniRef90-UPI00038328DD UniRef90_G9PY95 UniRef90-I1LYK3 UniRef90-G3AHY6 UniRef90-M5C195 UniRef90-FOH273 UniRef90-UPIO004575D58 UniRef90-A818N8 UniRef90_D6WWG2 UniRef90-AOAO26VX58 UniRef90-W2SFC6 UniRef90-Q55Q12 UniRef90-A0AO34WPC9 UniRef90-E2AIG6 UniRef90-C9ZPM 3 UniRef90-T2M2Q5 UniRef90-G3P5B9 UniRef90-K7LXH6 UniRef90-BOXGI4 UniRef90-A9AOM3
UniRef90-W6L618 UniRef90-M7ZH89 UniRef90-E9BFE4 UniRef90_-05TS71

V VENLLEAA ${ }^{130}$ WLNSQGD 140
150
160
VVDTLVAAREVAFGGKKRYRCVTLNGELFELDGTISGGRK VVDTLVAAREVAFGGKKRYRVVTLKGELVEPSGSITGGG VCDNLEVAKEVVYGKKIVQVKAVTLQGYVIHKAGTMTGGR VVASDDAARKLKWNSNTSNKMVSLDGSVVHKSGLMTGGSQ LAKDLETASKYSERKECDMDVVTMNGDEFNRKGSISGGYH VCETVKEARHI AF EGPERVKTVALDGGLFLK GGVISGGLS VCDDIATAKDICYRKKLQVKAVTLDGVMI AKAGNITGGRV I CDSMDVAKNIVYQKRLPVKAVTLEGFLI NRSGTMTGGRM VCDTLQEARMMAFS AERHKVITIDGDKITKSGLMSGG MCDNVNEAKSVAYGRNERFKVVTLDGTMLLKNGSVQGGDA VCPNMDVAKRVAFHPDVQKRTVTFDGEVFDPAGTLSGGSR

 VCRDGDTAEKIAFHPKIRTMCVTVDGDTYEPGGRLSGGAR VCETADDASRVAYDGNKRYDAVALDGTYYQKNGFLSGGST LCRNLDVATKLARTTG IVCSDMNSAKKVTFDDKDMKKSVTMEGDSFDPAGTLTGGAR VCDDAATAKQVSDDPGLRLRSVTLDGDLYDPRGTLTGGSR VVEDY ATGAALSRGAHFSVVTLEGEVFSPSGAVSGGKS VCRDLDDAKQVTYHRNDHSRSVTLEGDVVDPQGTLSGGSR VCDTMENANKVAFNPNVKTRTVTLAGELFDPSGTLTGGAR LVRDLSEAREVAFGGPHRARVVTVRGELAEPGGSITGGGN VCESLGEAKMLAFGAERVKVITMQGDRITKSGLMSGGG
 IICDDAATAKQITFSREVGDKSVTLDGDVYDPSGTL VCDNMDNAKKVAFDKRIMTRTVTLGGDVFDPHGTLSGGAR ICQDAETAKKVTFDPSVRDKSVTLEGDVYDPSGTL IVCKDATTAKSLAFHKEVRTRCVTLEGDDFNPSGTLTGGSR VCKDADTAKKVTFHPNIRTRSITQQGDVYDPEGTLSGGSR VCDNMDNAKRVTFDKRVMTKTVTLGGDTFDPQGTLSGGAR
VVENLEVGTVQLKKGFNDRTVTLGGDIITSGGRMGGHS VVENHEVGTSQLLKKGFNDRVVTLEGDVISRGRMTGGHS VCRELKVAQRVADQHN1VQDAVTMEGDRVSRKNVIKGGWV CVDSDVAKQVTFHRDVQTRTVTLEGDSFDPAGTLQGGSA
FVESYDDGLFLS RNYRKKLSVLKETSFTPKGQLQG VCSSMDNAKKVTFDKRUMRKTVTVQGDVFDPQGTLSGGAS VCPTLDYARRVAFHPG VVTSLDVGTRLSKEAQ I CMDPNTAKAVTFDPKDRARSITLDGDIYDP VAEDDDEAVKLAYRPNSRWRVVTTDGKLDD
LCNDLDEATSVAFDRKTRRRTVSLQGDLIEKSGTMS IVAKDKKQAHDVAFDPAVRVKTVSLDGDEYNPAGTLTGGSK VCDTQEDAMKVAYEMGDRYDAVALDGTFYQKSGLISGGSR I LQSLEAADELARRHRDHPRLVTLEGELGEPSGAITGGRV I CRNLECATELAGKQFHLDCVTLEGDQVSSKGSLTGGYF VTETINEAKVLAFGK DRRRVVTLDGKLIEKSGLM VCETPEDASRVAYDKNSRYDALALDGTFYQKSGIISGGS VVSSLDVGAKLCKELS CODVVTTEGDQLGKKGAVTGGYK
 VCNNMENAKRVTFDKRIMMRSITFDGDVFDPQGTLRGGG II CKDMETAQKIAFHERIMKKCVTLEGDLFDPAGTLSGGA
 VCETNEHAKMLAYDKQEAYDCVSLDGCFYRKNGLMSGG C CDNMDSAKKVTFDKRUMTRSVTLDGDIFDPQGTLHGGAS I VDSYDDGK ELVRSGFKGPVVTMEGDVFQP
IVENMTVARQLKWTGGSRNKLITLQGSVIHKSGFMTGGGS VVKNDDDAKKSLSNK D KGYRIVSMQGSLYDPSGTLSGGSA ICRSMEVSTQLAARAFNMDCITHEGDQVSHRGALTGGYY CKDMDVAKQVAFDNRIRRKCVTLDGDVVDPAGTLTGGSR VCETAEDTRKLAFEDWHRYNCVSLDGCLFGKSGLISGG V V CRNLERATELAKSTG GDCVTLDGDQVSSKGSLTGGYF IVRHLEAATTLARDSG IVVTS VDADGENVSKKYACDAVTLDGDQVSRRGGITGGY VCETVKKARSVAFDGKMRDKAVAQDGTLFTRAGVISGGSS VAKDLDQATRIAYGGNTEFRVVTLDGALFENSGTMS ICRNLERATELAKSTG पDCVTLEGDQVSSKGSLTGG LAPDLETADWHSSNGSGRRPVVTLDGDLITDRGILVGGSK VCDSLEEAKRVAYGSGERFKVVTLEGTMLDKNGVVQGG I CRDLEATRVA RSNSDDCITLDGDQVAKKGGMTGGFY $V$ VETLTEARETAFGGQQRHRVVTVKGELVEPSGT\TGGGA LCEELETAARVAQQ

| UniRef90_Q1PZG8 | Q G Q |
| :---: | :---: |
| UniRef90-S9TS49 |  |
| UniRef90-B2B4W9 |  |
| UniRef90-H8X2S7 | R N N |
| UniRef90-C4Y3W5 | GQKS |
| UniRef90_C5DWK8 | N NKS |
| UniRef90-D8LEU4 | DER |
| UniRef90-G2X318 |  |
| UniRef90-H3B892 | D LR |
| UniRef90-A7EP81 | PDGRGN |
| UniRef90-L1IBV8 | SHLQS |
| UniRef90_S3D7T2 | P D Q K N |
| UniRef90_F4PGN9 |  |
| UniRef90-S9U2E7 | S VQ S R |
| UniRef90-T1JGX2 | QQS G S |
| UniRef90-C9ZYY9 | A TRSR |
| UniRef90-I2H3K5 | N K N S |
| UniRef90-A0A024JN37 |  |
| UniRef90_W6MRU8 | R S K S S |
| UniRef90-L7M269 |  |
| UniRef90-D6X4W0 | NSNRS |
| UniRef90-A7APV2 | K A RK |
| UniRef90-K1R916 | A H N |
| UniRef90-A0A058Z213 | Q S |
| UniRef90-H0UMK9 |  |
| UniRef90-A0A034W2Z9 | P K G S N |
| UniRef90_H2YJF6 | P K |
| UniRef90-Q4D0W6 | T PR |
| UniRef90-FOZPY7 |  |
| UniRef90-UPI000359DDC4 | D T R R S |
| UniRef90-B7GAL2 |  |
| UniRef90_UPI000462377F |  |
| UniRef90-G1SPE4 | S Q |
| UniRef90_V9DLA5 |  |
| UniRef90-IOYIK0 |  |
| UniRef90-H8WVW2 | $\square \mathrm{R}$ K S S |
| UniRef90_H2AY75 | NTTRS |
| UniRef90_UP1000441CE86 | S Q A S |
| UniRef90-UPI00036B9217 |  |
| UniRef90-E1YBS2 | D N |
| UniRef90_F2UGW9 | D D T N |
| UniRef90-A0A024U5Z4 | P S N S |
| UniRef90-F9MTI5 |  |
| UniRef90_Q90988 | S H |
| UniRef90-W6KF52 | D K R N |
| UniRef90_U6HMJ9 |  |
| UniRef90-S9TVR3 | D K R S |
| UniRef90-C4Y3G7 | K Q G S S |
| UniRef90_FOYFIO |  |
| UniRef90-L7K0F5 |  |
| UniRef90-D3BQ59 | S Q G S |
| UniRef90-E9GJ33 |  |
| UniRef90_UPI000361BC37 |  |
| UniRef90-B7XIB6 | ENKHEH |
| UniRef90-G6DP83 | NQSRS |
| UniRef90-A0A059F221 |  |
| UniRef90-G6CQ53 |  |
| UniRef90-D1AYK7 | K N K |
| UniRef90-S9WAZ0 | D K R N |
| UniRef90-A3FQK9 | P S N Q R |
| UniRef90-A9UWJ6 | S S |
| UniRef90_UPI00038701E0 |  |
| UniRef90-E2APE9 |  |
| UniRef90-R5AGE5 |  |
| UniRef90-U1M4J8 | H $\square$ R S R |
| UniRef90-W4WAG6 |  |
| UniRef90-H9KE58 |  |
| UniRef90-UPI00038328DD | S Q |
| UniRef90-G9PY95 | QK S G R |
| UniRef90-I1LYK3 |  |
| UniRef90-G3AHY6 | SQKS |
| UniRef90-M5C195 | P Q |
| UniRef90-F0H273 | K S R S N |
| UniRef90-UPI0004575D58 | D TRKS |
| UniRef90-A818N8 | GNR |
| UniRef90-D6WWG2 | EQTES |
| UniRef90-A0A026VX58 |  |
| UniRef90_W2SFC6 | D T K R S |
| UniRef90-Q55Q12 |  |
| UniRef90-A0A034WPC9 | NTSRS |
| UniRef90_E2AIG6 | NTLR S |
| UniRef90-C9ZPM3 | ESRS |
| UniRef90-T2M2Q5 | D L S K S |
| UniRef90-G3P5B9 | Y L R T R |
| UniRef90-K7LXH6 |  |
| UniRef90-B0XGI4 |  |
| UniRef90-A9A0M3 | D Q |
| UniRef90-W6L618 |  |
| UniRef90-M7ZH89 | D S R S |
| UniRef90-E9BFE4 | A PR |
| UniRef90_Q5TS71 | S P T A S |
| UniRef90-E9IUAO | AK S G S |



GVK QVMEMHADGTVSEFFKPVSEVVEPADYEDAMEAA
F D R S RVKGTDA S S S L R VQD MA NA TA L EAA
DRSRVKGTVATVDENVNKNEKAALEAA

 GVREVLRMSNAELKKDLVGVVADCFSVDRQVAPLIAAAA

F S KVVY G QVVN E L Y T A N N K R Q S T I S LAA




GQGVRTLLTA
 VE GVVGTVE ENVEVDERYLEAVYTV EGFKKRFRGMVADVVETGETYEAAVEVA $R V P G L L G K V A T L L T V E P G A E V A L A A A$ DDGLLGPMSELVTVEPPGYETAACAA
 DS A DKEAKKIGGKGGLAELISAAVGSYPALESA TVAK LKEDSEKLGIEGLVYEMISSWDKQYERSILAAV



|  |  |
| :---: | :---: |
|  |  |
| UniRef90-B7GBQ |  |
| UniRef90- UP10002C3E045 | DEMENSSRSEN |
| UniRef90-B4Hg | KPERLRNTSDPR |
| UniRef90-UP1000252BB97 | EPDKERGITEPKNVKLLYDVL |
| UniRet90-F1KR | KPRKETIDSEG RPL |
| 俍90-AKB |  |
| Ref90- |  |
| iRef90-W7T3Q8 | KPVSSYP DSADVVPLLSAALTYPRHVDKAMRQI FGLKKL |
| UniRef90 H7D | FNNEVKLYKGFINFAINLVKYDSKFS |
| UniRef90-G8ND10 | PRPPRAPGLWGPAFRLAR |
| UniRef90-A8XSV8 | N |
| UniRet90-D6GVZ9 | SYNLDKVDKEG VITDYINLVNSESYSAAMKFIFGDT |
| UniRef90 B9T1A8 | RLRTLGGTAKL NYCTFDPVLEKAlLLA AVG |
| $\begin{aligned} & \text { UniRef90-KOSQQ66 } \\ & \text { UniRef90-17J5L5 } \end{aligned}$ | GVGRFTAAMESGMAKRLMEQCIKPTEERFKICMEHAFSGK |
| UniRef90-UP10003AF3CA1 | ETNDADPMISKLRYSSN |
| UniRef90-X07 | GFKLLRDHI TVSERFRPLIESFLGNAA |
| UniRet90--C2CH54 | ERPDEEEVIAMAYDLIEAPDNLANII DHFLGSTV |
| UniRet90-F1KRD4 | RELTEPRGVKLVFDVIQCNNPVA |
| iRet90_T1HYT8 |  |
| UniRef90_99K5B6 | LKERLRNITSRPNVKLMYDVLEFDP EIDRVVLIFATNAAL |
| UniRet90 M4SKW1 | D EALINLL |
| UniRef90-A0A016U9G1 | HPUNERELLSYPKGVKLVVYDVIQCNHPAARKALQFASGN |
| UniRef90- ${ }^{\text {B707 }}$ | RDVEPAVMKKAESLVGKALSLVDF |
| UniRef90-H2VGK3 | VGDRDRPAPPDRYPVSRLFDLVEC |
| UniRet90-T1ASE3 | KQENKKDLDSLISHITTYDKKFAKVAEYV |
| UniRef90-16ZT96 |  |
| UniRef90_UP100026 | RSAKQLVGDEND |
| UniRet90-A9BHT | EVRLPKNFLKEPGTIDFVINLVNYTQE |
| UniRef90 W5N | RLLEVKGAKMAVDVVQSASPPLKRA |
|  | SNFNNELRCLCQHRSALDNVHISDERIEPALS |
| UniRef90-M4X819 | YPNTTDAEAII KLLK Y |
| UniRef90-14COU7 | FESNKEGSPGPEDAl RL-SETVSFRAGCEELGSFL |
| UniRef90_EOS987 | KEENEI EDSNVISLTSQLKCNQ QYKPLLRYITKNFY |
| UniRet90-D0A4G9 | M |
| UniRet90_H3F6 | QVDDEDARSMI EIINFD |
| UniRef90-GOUX | RI ASKMGAFVAVAKDLTTVKDENYR\TGEFVYGNFF |
| UniRef90-TOMD79 | KRAPGKVNLGD NYGNVKAMEYVEGSTV |
| UniRef90 M7NM98 |  |
| UniRef90-E1ZHP2 UniRef90 E3M171 |  |
| UniRef90-E3M171 |  |
| UniRet90-H3DS | DGGG |
| UniRef90-C5LD | R1PTPQQUSGAKRAAAPALDAVDCPECYTKVVEYLFGATF |
|  | V |
| UniRet90-D2VX81 | SEILALAEKRGAQLALNLTSYDKKVENAMKYCFGNTL |
| UniRef90-A5JZH3 | RDVNEKTVEECRKYVGLFLDIMEYDKKLEKLIKYLFNG |
| UniRef90-A0A059E |  |
| UniRef90 FOYLT2 |  |
|  | ADSGQQCGKYGFLFPNSKDENYEKI |
| UniRef90-XOSGU0 | K K Dillill |
|  | QDYPEDPDSPMISKL TYE |
| UP10001745 | GGTERQFMPNGGVAWALDKVKSQPH |
| Ref90_S9VQBO | ABKKEEAQVH |
| Ref90_G0MVT9 | Q |
|  | NKLLDLGQGKVWYAKDLIEYDPEFEPAMNFVFGGAF |
| UniRef90-H5S | PPAPAGVEGVVGWARDLVRCPPLVERSVRAGLHGTL |
|  | DVISLTSQLRCGQ QYKALLRCVVKDFY |
| UniRef90-X1DAA7 | S SV QGEGVLGVAAELVFTTPELRPAVDLLLGRTL |
| UniRef90-Q0YTQ3 |  |
| ee90-T1A7L7 | KGKSLIA AQSAVGFAIDLVKFDESLRPA |
| Re990-M4 |  |
| UniRef90 UPI00036CCD7E |  |
| UniRef90 R1D | SPaQLQQVHKLVGAAVS |
|  | AI DLVEFDSKYKKAMEHVFNGYF |
| UniRef90 L2GLD4 | VPYSCIN ALDAISFNTKYDKAFKHIFSGFY |
| UniRef90_UP1000365BA83 | V |
| iRef90_V6LR19 | Q QYLNLSLPDDSVQLSSLLL SVDDQFQTLIQCLFGRVI |
| UniRef90_H5WZD7 |  |
| UniRet90-Q7UQV4 | D C EVELEPLVRHLLGNTW |
| A08 | SVERFVLNNTL |
| UniRef90-Q5CT. | DKRGNSTVMEANMRSLLAKDNLHSSDERILPVLEFCLFGVI |
| UniRef90_C4LTU9 |  |
| UniRef90_B2HJJ8 | DANDHRAAGGLPSGTLWALDLIEVPSRLLRPAMTAMLSGVV |
| niRef90_1CGT4 |  |
| UniRef90_B3S903 |  |
| UniRef90 V5T9S5 | PNVGAHLLVQGHQARRLAAHCVQHNEKFDRAVGFLLSGT |
|  | SVLKElESRGGVSMNLLRFDNSVRKAIEFVFGNFF |
| UniRe990-A5G | GFKAFVEPLLANTR |
|  | AGSAQVQRDALPEGARYAADLVAPESLAKAVRHALENVV |
| iRef90_J9SDQ4 |  |
| UniRef90 D5 | $\checkmark$ |
| UniRef90 UP100035D236C |  |
| iRef90 L7J |  |
|  |  |
| UniRef90-13D337 | FNLTLPKISG TVGVLSDYVDCDAEYSALKTFLFGNIV |
| Ref90_K4BIK2 | VGVAISLVGYDEELKSAMEYVFGSTF |
| NiRef90 UPI0003B53E93 |  |



| UniRef90_E2ABT1 |  |
| :---: | :---: |
| UniRef90-B7GBQ1 | D T S K S |
| UniRef90-T1L479 |  |
| UniRef90_UPI0002C3E045 |  |
| UniRef90-B4HGH3 | D |
| UniRef90_UPI000252BB97 |  |
| UniRef90-F1KRQ2 | DVKRS |
| UniRef90_A5KB20 | L N K Q |
| UniRef90-P47540 | K T |
| UniRef90-W7T3Q8 | D ERNS |
| UniRef90-H7D2T7 |  |
| UniRef90-G8ND10 | R |
| UniRef90-A8XSV8 | P |
| UniRef90-D6GVZ9 |  |
| UniRef90-B9T1A8 |  |
| UniRef90-K0SQQ6 | D T ERS |
| UniRef90-17J5L5 |  |
| UniRef90-UPI0003AF3CA1 | D T R K S |
| UniRef90_X0TK51 |  |
| UniRef90-C2CH54 | K N R K N |
| UniRef90-F1KRD4 |  |
| UniRef90-T1HYT8 | K N $\square$ R S |
| UniRef90-J9K5B6 |  |
| UniRef90_M4SKW1 | D T K |
| UniRef90-A0A016U9G1 |  |
| UniRef90_UPI0004660F92 | R R |
| UniRef90-B7Q750 |  |
| UniRef90-H2VGK3 |  |
| UniRef90 T1ASE3 |  |
| UniRef90-I6ZT96 |  |
| UniRef90-UPI0002656F6B |  |
| UniRef90-A9BHT9 | K Y D H S |
| UniRef90-W5NKF9 | D L R R |
| UniRef90_B6AH99 |  |
| UniRef90-R7LYR0 | T A $\square \mathrm{N} N \mathrm{Y}$ |
| UniRef90-M4X819 | D Q K |
| UniRef90_14C0U7 | D S S R |
| UniRef90_E0S987 | R R N |
| UniRef90-D0A4G9 | K H $\square$ R N |
| UniRef90-H3F6Z4 | D A |
| UniRef90_G0UXI7 | Q Q M R N |
| UniRef90-TOMD79 |  |
| UniRef90-M7NM98 |  |
| UniRef90-E1ZHP2 |  |
| UniRef90-E3M171 | D K K R S |
| UniRef90_H3DSN0 |  |
| UniRef90-C5LD22 |  |
| UniRef90_Q7RJK1 |  |
| UniRef90-A0A059EY65 | E K R N |
| UniRef90_D2VX81 |  |
| UniRef90-A5JZH3 | K N $\square \mathrm{N}$ |
| UniRef90-A0A059EXM4 | R N N |
| UniRef90-FOYLT2 | EDRDS |
| UniRef90-Q4N620 | E R N |
| UniRef90-XOSGU0 |  |
| UniRef90-T1GMH3 | N |
| UniRef90-UPIO0017450E0 |  |
| UniRef90-S9VQB0 | S Q LR N |
| UniRef90_G0MVT9 | SFNR |
| UniRef90-J9FP03 | K N |
| UniRef90-H5SKN4 |  |
| UniRef90-Q8SQJ6 | K R N |
| UniRef90-X1DAA7 |  |
| UniRef90-Q0YTQ3 | K N |
| UniRef90-T1A7L7 |  |
| UniRef90-M4V939 | D S A S |
| UniRef90_UPI00036CCD7E | NKN |
| UniRef90_R1D653 | P K G N |
| UniRef90-TOL529 |  |
| UniRef90-L2GLD4 |  |
| UniRef90_UPI000365BA83 | R D Q S |
| UniRef90_V6LR19 |  |
| UniRef90-H5WZD7 | K |
| UniRef90_Q7UQV4 |  |
| UniRef90-UPI0002C3EA08 |  |
| UniRef90-Q5CTJ4 | R NQMSN |
| UniRef90-C4LTU9 | EKS K |
| UniRef90_B2HJJ8 | R K |
| UniRef90-I1CGT4 | D S R R S |
| UniRef90-B3S903 | D ER |
| UniRef90_V5T9S5 |  |
| UniRef90_E0S516 |  |
| UniRef90-A5GAU8 |  |
| UniRef90_UPI00036FB787 | G K Q S |
| UniRef90_J9SDQ4 | R R |
| UniRef90-D5UD23 |  |
| UniRef90-UPI00035D236C |  |
| UniRef90-L7JWV8 |  |
| UniRef90_V6TQ43 | N F K R |

UniRef90 13 D337
UniRef90-K4BIK2
UniRef90_UPI0003B53E93


 K V
 SHELPGLLGSVAALLTVEPGHEVALAAA
 ENQQE GLS GLL A GHL TV E P GYE I AV A V A NVP NYYGRI GTLCSTYKEYENAL SCA
 $N R Q D G L L G P L S G M V R A H S G F E A A V A A A$
$G Q G \square R N L L S E R F A G R F G G V$ LADAVETGADYETALEAV K R Q R K RA E V L E H L K R L YP D S V K Y QL A V T K L M K S K $\square K$ S $\quad$ LP GV I G F V N D L I K C N E K Y E V A I K A I

 | $R$ | $W R$ | $P$ | $A$ | $G$ | $M$ | $L$ | $G$ | $V$ | $V$ | $A$ | $D$ | $L$ | $L$ | $E$ | $V$ | $P$ | $P$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

 $L S S D L V L V D Q D Y R V A I E N Y$
 G【VQEULDNRAR R S P LLP H V L $K G V H G F V F E L F S V D D E L C L A F E T V$
$S G L P G V V G P L T E Q L T V A P G D E V A V A A A$ $V Y G T I A B L V E L P E A N A A A A T A L$ $S Q L P G V L G S V A A L L S V E A G D E V A L T A A$ QF DRRSSVK GTVVAL F TVVDEKN MK SVVSA L E VA LA D LGERD DVLGSLAABTTVVTAGYEAVASA


$\square Q K N R S G S G \square F G S \square G E F \square K \nabla R G G Y E \nabla A V A A D$
VGFLLDLLTDPDAFRVATEQT
 $G V K G R V A D D T V$ V V E P G Y E A A I A A A

E GVLGSLAALITIE PGYEAAIAAA



L A K A
VM Q A

$R$ LTGVRGLVAEHDRVHPGYEAADAAA R D F D K S K V K G V V A K L M K M M K D T S A A VA A E VA $A L L E A G E R \quad V P G L L G S V A T L L S V E P G F E V A A L A T A$ $V L_{1} L \mathcal{L} V A$


 H G C L L S D L L S S L E D V V H R K A A I N S A V

 LQKNHS GA GLFGTI GE Y LKVQP GHEVAV A TVV G | 1 | $V$ | $G$ | $R$ | $L$ | $A$ | $D$ | $S$ | $L$ | $T$ | $V$ | $S$ | $P$ | $G$ | $F$ | $E$ | $A$ | $A$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $I$ | $Y$ | $G$ | $S$ | $V$ | $G$ | $S$ | $L$ | $I$ | $K$ | $V$ | $A$ |  |  |  |  |  |  |  |
| $K$ | $K$ | $S$ | $F$ | $T$ | $T$ | $S$ | $D$ | $D$ | $F$ | $S$ |  |  |  |  |  |  |  |  | $R$ R V H G G Y E A A V A A A GYH G Q $\square F D V L G L N E S Y S V P I H V L$


$V$ F G F A A D C I R P S A R F A A A A A A A
$P R Y F G Q V Y E I L K L S E E Y S D P D H V L$
H G DR G P I G GL I TVV E K GYEAVAA A M
K GVVLGTVVSAL L DVVS P G S E N A DA S A






VK R L F T A $\square$ A R N Q A N D L VGVLA D F L E VD S QYEKA T E E F $V L$ GKI A H LAA A E D DRAAVVI S L
$Q G \vee R G L V G D A V Q V R A G Y E A A \| A A V$

## UniRef90 A1BDT4

 UniRef90 AOAD58ZE04 UniRef90-B9M6FO UniRef90_UPIO00372E684 UniRef90- Q811U7 UniRef90 UPIOOO428ED49 UniRet90-D5SU17 UniRef90-R1IEV2 UniRef90-B8HAA8 UniRef90-UPIOOO4784809 UniRef90-L8DQL1 UniRef90-J9DLE5 UniRef90-IOR156 UniRef90-W5TT78 UniRef90-L2GW29UniRef90-D7AHR3 UniRer90_D7AHR3
UniRef90_UPIO00359ED97 UniRef90-C4V9K2
UniRef90-GoIV79 UniRef90-E4U8A8 UniRef90--J9.J9M1
UniRef90-LOAYI2 UniRef90-UPIo00361B593 UniRef90-F3KIB8
UniRef90-FOSK29
UniRef90-O09591 UniRef90-_99DRD6
UniRef90-U6NS92
UniRef90-H6RWL8
UniRef90 M7WNB2
UniRef90-UPIOOO3B4F1D4 UniRef90-C4R6W0
UniRef90-UPIO0046D0362 UniRef90-H9BWR4 UniRef90-L7JXF6 UniRef90-UPI00036B2A87 UniRet90_WOF1P6
UniRef90-GOSYB1
UniRee90-UPI00035F60A4 UniRef90-H2VWIS UniRef90-A7AMS2 UniRef90-E4TVF1 UniRef90-H1XZF8 UniRef90-UPI0003B3A8D5 UniRef90-A4H486 UniRef90-LTLCDI UniRef90-A1R7H8 UniRef90-FOW5U7 UniRef90-A3HSMO
UniRef90-G8SJT6
UniRef90 A5CQQ2
UniRef90_13EHT2
UniRef90-C5M057
UniRef90-U6L517
UniRef90-UPIO0046AB507 UniRef90-S8DZL2
UniRef90_UPIOOO3825213
UniRef90-UPI0002DA462D UniRef90-D8PBL7
UniRef90-W7A178
UniRef90-D2V718
UniRef90_M7Y8Q2
UniRef90-A0AO24G2Y8
UniRef90-B3ЕМ83
UniRef90-UP1000365DCB2 UniRef90-UPIOO029A2C99 UniRef90-B4GYQ7 UniRef90-X5LYF2 UniRef90-A0AO22LVT1 UniRet90-J7G7R4 UniRef90-UPIOOO46672A4 UniRef90-J4DAQ4 UniRef90-UPIIO0046D7B87 UniRef9O-UP100040CDB07 UniRef90-U6GWL4 UniRef90-Q4N2EO UniRef90-UP100029CCB21 UniRef90-A9WMX7 UniRef90-UPIO003B551B9 UniRef90 A1ZE63 UniRef90 F8A056 UniRet90-E8×400 UniRef90 Q4SDI4 UniRef90_14AM37
UniRef90-D5EMYO UniRef90-U5E4Y1 UniRef90-UP100047C5EOC UniRet90-F6UB51 UniRef90-UGLRLO UniRef90-UPI0003819E61 UniRef90-UP10003FOCBE4
 GGR HYVVVADDSVAQAFHDWSRSGRQGAVTFAPLTAGST
 LGDMLNVVVKTLDEAQRAAKDLKENDKGRATFIPLDQLAA





































 LTPYNFYVVQTEDEARKALSLLTENEKGKANFFVLDKLES
 LGQMEGVAVSGVEAAVEAVVHLRDEDGGRAGLLVGGADAD ASDMDCVVTLSTDAARRIFDETQ पHEDEYVVVHDWQDAERGMDLLRSGGDGRADFLVLDETVRA

80

$\frac{1}{K}$

[^0]

[^1]





Ete




O

$\square$ I















为

$\qquad$ -

## UniRef90 A1BDT4

 UniRef90-A0A058ZE04 UniRef90-B9M6F0 UniRef90_UPIO00372E684 UniRef90 Q811U7 UniRef90 UPIOOO428ED49 UniRef90-DDSU17 UniRef90-R1IEV2 UniRef90-B8HAA8 UniRef90-UP10004784809 UniRef90-L8DQL1 UniRef90-J9DLE5 UniRef90-IOR156Uniinef90-W5TT78
UniRef90-L2GW29
UniRet90-D7AHR3 UniRef90_UPIO00359ED97 UniRef90 C4V9K2
UniRef90-GoIv79 UniRef90-E4U8A8 UniRef90-_J9.J9M1
UniRef90 LOAYI2
UniRef90-UPIO00361B593
UniRef90-F3KIB8
UniRef90 FoSk29
UniRef90 009591 UniRef90-_99DRD6
UniReffo-U6NS92
UniRef90 H6RWL8
UniRef90-UPIO003B4F1D4
UniRef90-C4R6W0
UniRef90_UPIOO046D0362
UniRef90-H9BWR4
UniRef90-L7JXF6
UniRef90_UPIO0036B2A87
UniRet90_WOF1P6
UniRef90-GOSYB1
UniRef90_UPIo0035F60A4
UniRef90-H2VW15
UniRef90-A7AMS2
UniReforo-E4TVF1
UniRef90-UPI0003B3A8D5
UniRef90-A4H486
UniRef90-L7LCJ1
UniRet90-A1R7H8
UniRef90-FoW5U7
UniRef90-A3HSMO
UniRef90-G8SJT6
UniRef90 A5CQQ2
UniRef90_13EHT2
UniRef90-C5M057
UniRef90-U6L517
UniRef90-UPIO0046AB507
UniRef90-S8DZL2
UniRef90_UPIOOO3825213
UniRef90-UPIOOO2DA462D UniRef90-D8PBL7
UniRef90 W7A178
UniRef90-D2V718
UniRef90_M7Y8Q2
UniRef90-A0AO24G2Y8
UniRef90-B3EM83
UniRef90-UP1000365DCB2 UniRe990 UPIOOO29A2C99 UniRef90-B4GYQ7 UniRef90_X5LYF2
UniRef90 AOAO22LVT UniRet90-J7G7R4 UniRef90-UPIO0046672A4 UniRef90-J4DAQ4 UniRef90-UPIO0046D7B87 UniRef90-UP100040CDB07 UniRef90-U6GWL4 UniRef90-Q4N2EO UniRef90-UP100029CCB21 UniRef90-A9WMX7 UniRef90_UPI0003B551B9 UniRef90-A1ZE63 UniRef90-F8A056
UniRef90 E8X400 UniRef90-Q4SDI4 UniRef90-14AM37
UniRef90-D5EMYO UniRef90-U5E4Y1 UniRef90-UP100047C5EOC UniRef90-F6UB51
UniRef90 U6LRLO UniRef90_UPI0003819E61 UniRef90-UPIOOO3FOCBE4
UniRef90-UPIOOO2F4D7F8

90
100
110
SVPKNRAVPENEADRVTDLLQFPP ELLDNVLALMLLHETY AAGPDEEWSYPDSCRSFELELRPYQPRFHPLLRMLFAGYA TYPVKE E NDKNGSLFDEVKKR
FNEFNYP LEVGPTVSTTK SDFROPAWQ FTADTHSWPGTREVVTRADRLIRQERGVHGLAAAVLADTW PEGHPPAQALPAGAVLAAS LVDTADAYTPLVRHLLCRTA ПKPDNQVK IKNKNDCGFACELINYSQKYQNLFKVLLGNVL QANSRAGLPSG ARWVLDLVGYPDRLAGAMAALLDGVV| SMGNKFNKNKSRMTTCLLLDCIEYEKKYSKVFQFVEGSTI SEVETGKLAQRAGLVNASTLVSAPKSVLA LLEHFY GDDAATA ELPAGARRLADVVEYPDRLRGAVAALTAGTV VDNREEESRSMVP LKKHLIKTKKEYSRLKNYLFKDVY G\|PADDRSSVTGATPLLDRVSDAAAWRPLIEPLLADVH
 QTYVQKNLDKDLVSPALETEVIDCPDNLRNVIENLEGNVS RTGDLGPWLGREGVVGAAREIFAVRGERKLTDALFGDTL NDNSAKELKTEGNLVYDVIEVSRKHHHDERAVRYFLGDKV RQUSEMLKRFSKLNYVFAUHCIDFSAEYKPLFEYLLGDVI YQGGPALLPPGTGRLATDVVKVDKVFQPLGDHLLHNVL AQADQSQLAEEPDVIGRADRLVRCEAGYQPLLTELFGKTW ARRAKEITAEKYNDTVTKMIDDLEYPDFGVSNTVLNAVGQUL SDKNDNTRKS YVADKERWP EAPEGGRWALDAVQAPEPLRPALARALERVA GTERHTDRSEWPPDPRWAVDLVTAPANLRGAVAQALSQVA YCDDPRKVQQAKELCPLALNLITYDKDVEAAMKFTFGGRLL EPTGDVDPATPPELLIPAAS LVETPPEYTAMVRRLLRDYV
 AEDDPSGWPQLPPGARYAVDVVTAPSQVLPALVRLLRKVA HRGSCRKYRSFATRAYDALDVITFDSSVEKAMQFACGNAL ANGSEPAVPGPDGADWAADVVTVPDRLRGADTAMLSGVA TGTDRGKASGDDLNRDEAMPLDECVRYIQPALRSLLGSFC

 AD Q VRGAEQRQGGPGGAVWARDVVTAPESLAGAADLVLDREV EEDVRANAALPAGSRWAADVVKIADPAAQGALALLARTAV

 QLAIVP YKPSSGPVAAASVVEAPDGVRRIVDRLEAVV QAASNSTYKPAVPLPSLAQYI SSSEKHASLVDRLFGR REMAPEPSLSPVGSLLLTDVIKSPDWA ECAVKEVWGK AVVPEVDLSGVPRVVPARSVVDAPPGVLG VLACTA HSISPRVQIA AEKLVGVALSLVAYDEELNSAMAFVFGSTF SASERTGWPDPGPEARWAVDLVEAPEELRPALLNLLDRVA LAEGVDTLTADRW
 YSDFTYP NDKNMVPLINCVNYNTKIYQFLLKSLLFKTV FHPGQTKDFANALDPATEIVEYDEKYGKLVGFILDNVY PEMDASPADNGTIKI DPAAPADAQRRASAARWLVEVIDCPA KNATLATYEGLIS GSAPSGP LPDGAD WANDVVSVP FFPNRVLCETFPFFTTLSCLSYNTNFLKSGLASFIRGEIK DSGGRPAL PGSARWLADVVDCPDDMRGAVDALTAGTA NYLLTEEKEDERRVLGYW EVVEYEEKFRKLAQYVSGNCV RVMDQRTDEDAQNLVGAADELTEYPEETRAAMHWIFGNVF
 ANGGHLDSGAVNGVGMVDVIDCPAELRTGLAALLGGVV RAKEARAAAAEVEGAKAALDLVKAEPQSAAIGNALAHVV DVDRSAWPQLPGYAVWAADTVGAEDPGLVRAVTGLLARVA
 R
VIPNDPPDDNAV AADAVIQFDENYKKDAYSLEHNVY A AVGTPKVK LP ESVVPAASVVNVRDDSGFEPAQRLGSGCY RSAWPPLPQDATWLV DLI TVDDALVGSFTRLLDRVA HLLRNGKNYFRPLGNPVFARDLLTFPENIEHVFGMLLGDTI QQMRSSSSSSEQQHDRWAVDCI SCEQHLRPVVEFVLSDCI KAGAGSEPSAENGIVTRLRDILHFINGLTHAPFDLVARCY

 $V A D D L E S A R T A A D A F A S R D T L I T R A G D V L T R \quad F V L R G G S G$

V V D GLE HAEALVERHPE VRAVTRQGDLL
$\mathcal{I} V \operatorname{D} L A$ QAREYAADPETGFQFVTRRGDLLRADGTLSVG



 $V A D D L T V$ VATVLAADPGLRVVTRDGDLABGSGWLLGGS D

IV C
$\mid V V T D L P \quad A G V Q L V S S R P D L R A V T A D G D L V G A G W D S G G S D$ $V A E T D D L D L E A V L T A A P Q A T V V T R S G D L V R A V R V T G G G E$

 $\square$



 AV D D L A A A R S L V G A LP A AVTAVTRE G DVVAR WYA A G GS G IL D NLDAANHYRKEVVK ITHCPTMEGDRI RSNGKF GGLQ $V V P S L L I A Q Q L K N S H F S R Y R F V T L E G E R L Q H S G V F S$



## UniRef90 A1BDT4

UniRef90 A0A058ZE0
UniRef90-B9M6FO
UniRef90_UPI000372E684
UniRef90 Q811U7
UniRef90-UPIO00428ED49
UniRef90-D5SU17
UniRef90-R1IEV2
UniRef90- B8HAA8
UniRef90_UPIO004784809
UniRef90 L8DQL1
UniRef90-J9DLE5
UniRef90-IOR156
UniRef90-W5TT78
UniRef90 L2GW29
UniRef90-D7AHR3
UniRef90_UPI000359ED97
UniRef90-C4V9K2
UniRef90 Golv79
UniRef90-E4U8A8
UniRef90-J9J9M1
UniRef90-LOAYI2
UniRef90-UPI000361B593
UniRef90-F3KIB8
UniRef90-F0SK29
UniRef90 Q09591
UniRef90_-J9DRD6
UniRef90_U6NS92
UniRef90_H6RWL8
UniRef90- M7WNB2
UniRef90_UPI0003B4F1D4
UniRef90-C4R6W0
UniRef90_UPI00046D0362
UniRef90-H9BWR4
UniRef90_L7JXF6
UniRef90-UPI00036B2A87
UniRef90 W0F1P6
UniRef90-G0SYB1
UniRef90_UPIO0035F60A4
UniRef90 H2VWI5
UniRef90 A7AMS2
UniRef90-E4TVF1
UniRef90-H1XZF8
UniRef90 UPI0003B3A8D5
UniRef90_A4H486
UniRef90_L7LCJ1
UniRef90 A1R7H8
UniRef90 F0W5U7
UniRef90-A3HSM0
UniRef90_G8SJT6
UniRef90 A5CQQ2
UniRef90_I3EHT2
UniRef90-C5M057
UniRef90 U6L517
UniRef90 UPI00046AB507
UniRef90-S8DZL2
UniRef90-UPIO003825213
UniRef90_UPIO002DA462D
UniRef90_D8PBL7
UniRef90_W7A178
UniRef90_D2V718
UniRef90 M7Y8Q2
UniRef90-A0A024G2Y8
UniRef90-B3EM83
UniRef90_UPI000365DCB2
UniRef90-UPI00029A2C99
UniRef90-B4GYQ7
UniRef90 X5LYF2
UniRef90 A0A022LVT1
UniRef90-J7G7R4
UniRef90_UPI00046672A4
UniRef90 J4DAQ4
UniRef90-UPI00046D7B87
UniRef90-UPI00040CDB07
UniRef90-U6GWL4
UniRef90 Q4N2E0
UniRef90_UPI00029CCB21
UniRef90-A9WMX7
UniRef90 UPI0003B551B9
UniRef90 A1ZE63
UniRef90-F8A056
UniRef90_E8X4Q0
UniRef90 Q4SDI4
UniRef90_-14AM37

UniRef90-D5EMY0
UniRef90 U5E4Y1
UniRef90-UPI00047C5E0C
UniRef90_F6UB51
UniRef90-U6LRLO
UniRef90 UPI0003819E61
UniRef90 UPI0003F0CBE4 N K
UniRef90 UPI0002F4D7F8 R S R
K $R$

N A R R
SKN
K K K

K R E S
K
SKNSEN
R R
A K V S S N
K
E N K
EN

T N
T L K N S

D P G N
KRKS
DKR
D A P S N
S S
RQES
ENK
QQGGRH
R K
D N Q
D
$\stackrel{\text { Q }}{\mathrm{H}} \mathrm{H}$

ATRS
K S
R
AK Q S R

K K K

R

R K
R V T S R
K EN
R
K
K
LS Q S N

K
R Q

K S T T N Q
K K S S S
R
R Q
N K
 GEGAKAVLQGRLDGALAGAVSPGTHGLAVKPEFGKAVEAC
 RRVCSDPNNFSGPDVLGVVGHLA LI EDDEAARVA SWHLL PLAHVVRAPQGSEALVERL LADMI EVDERYRAALGSA
AFLEELRRMKFKGVVGPI ANEI KLREKWYKPVSII
PDVLGKI A H LA A QVEDDDAAKVI S
GLFGSIA QLVKVRSGYAALAAAL $A L L G A K D R \quad \square T G L L G P A A E H L T V T P G Y E V P L A A A$

II GRLASYVTVAPGAQAAIAAA
PDILGKVGHLAHISDEDASWVIDSL
GVLGSVAALLGI EAGFEDAVAAA



PDVLGMVGELAFVADEDVARVIS W
 PEVLGKVAHLAQVEDDAVARVLSM



[^2]
 UniRef90-G8RPA0
UniRef90 E3ENT0 UniRef90_17J8Q3 UniRet90 UPI0003B5234F UniRef90_E3B5Z0 UniRef90 ${ }^{-}$B1ZZB8 UniRef90 X1EGT5 UniRef90_UPIO003818CD3 UniRef90-R7BQD3 UniRef90 G0QPB1 UniRef90_UPIO0047C8829 UniRef90_UPI0003B781DD UniRefo- UPAOO329C85 UniRef90-AH2M63B
UniRef90_H2M6M6 UnR UniRef90_Q3ATI3 UniRef90-J9D1G4 UniRef90-D5XXR UniRef90-UPI00037905AC UniRef90-K4R3C8
 UniRef90 D3DC79 UniRef90-UPI0003B526D UniRef90-UPI000373244C
niRef90 Q5YS25
UniRef90 Q24BX8
UniRef90_UPI000374EA7D
UniR
UniRef90-E8UZJ7 UniRef90-A7SI31

[^3]

[^4]

```
UniRef90 UPI000466AB06
UniRef90_G8RPA0
UniRef90-E3ENT0
UniRef90-17J8Q3
UniRef90-UPI0003B5234F
UniRef90-E3B5Z0
UniRef90_V9K866
UniRef90-B1ZZB8
UniRef90-X1EGT5
UniRef90-UPIO003818CD3
UniRef90_IORN07
UniRef90-R7BQD3
UniRef90-G0QPB1
UniRef90_UPIO0047C8829
UniRef90_UPIO003B781DD
UniRef90 UPI000329C85A
UniRef90_А0А023В0М0
UniRef90-H2M6M6
UniRef90-F7UUJ7
UniRef90-Q3ATI3
UniRef90_J9D1G4
UniRef90 UPIO00440A5A4
UniRef90-D5XXR4
UniRef90-UPI00037905AC
UniRef90_K4R3C8
UniRef90-W5MYZ4
UniRef90-D3DC79
UniRef90_UPI0003B526D2
UniRef90_UPIO00373244C
UniRef90_Q5YS25
UniRef90_Q24BX8
UniRef90_UPIO00374EA7D
UniRef90-Q2S457
UniRef90-M3ZIZ6
UniRef90_E8UZJ7
UniRef90-J9DIH5
UniRef90_A7SI31
lupas_21
lupas_14
jnet
conf
conf
sol5
sol0
sol
jhmm
jpssm
```


[^0]:    
    

[^1]:    

    

[^2]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^3]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^4]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

