UniRef90 E8T212 UniRef90-M1PK14 UniRef90_D5EEL6 UniRef90_B7J3G0 UniRef90-C00T62
UniRef90
UOL4W1 UniRef90-Q1JW73 UniRef90_U2ZNE4 UniRef90-S3JTY UniRef90-UPIO002556A6B UniRef90 A0A023х2B8 UniRef90 $\mathrm{Q609L} 3$ UniRef90-UPI00039C3761 UniRef90 KON325 UniRef90- В5ЕАНО UniRef90- ${ }^{-15 Z H 35}$ UniRef90-17LHO2 UniRef90_S3XXE6 UniRef90_O0A505 UniRef90-11XEQ6 UniRef90 B9JRY6 UniRef90_UPIo00371EAB9 UniRef90-A9D151 UniRef90-B8CXG6 UniRef90-K5B8N1 UniRef90_16YTY9 UniRef90-G2FIL8 UniRef90-A0A059IPBO UniRef90_UPIO003B3C514 UniRef90-UPI000349CC7A UniRef90 R6PJI2 UniRef90 C6HZF5 UniRef90-UPIOOO3FDC093 UniRef90_D1BA54
UniRef90 F21X52
UniRef90-A4A9Q8
UniRef90-W6K823
UniRef90_F6CQJ5
UniRef90 R7IHS4
UniRef90-N6W2M1
UniRef90-S7V9H7
UniRef90_D5XEHO UniRef90 UPIIOOO479AAE3 UniRef90-UPIO0039FE639 UniRef90_B0TF65 UniRef90_UPIO003AD4735 UniRef90-K1JJZ2
UniRef90_D3Q6D2 UniRef90_UPIO0046EC110 UniRef90-E5Y3Z5 UniRef90-A0A024PII7 UniRef90_-9EEOG9 UniRef90_U7A3N5 UniRef90-V4KRY7
UniRet90 - A3DH53 UniRef90-B2HYW1 UniRef90-D7CLD4 UniRef90-UPIO003B34C36 UniRef90-UPIO0036B6D40 UniRef90_UP10003668209 UniRef90-AOLUK8
UniRef90-Q2LRB1
UniRef90-A1HT72
UniRef90_R5T5A7
UniRef90-C7LZJ2
UniRef90-R5W707
UniRef90-R6CM57
UniRef90-UPIO00472B2A1
UniRe990_B2J7Y8
UniRef90_U1PEG4
UniRef90-FOT270
UniRef90_UPIO003779AD9
UniRet90_G8QF93
UniRef90_DENL6
UniRef90 O28LW5
UniRef90-H7EK12 UniRef90 UPIOOO36E2C5B UniRef90_U2KZZ3 UniRef90-B5JX19 UniRef90_UPIO003757074 UniRef90-Q2NTJ1
UniRef90-RET1T1 1 UniRef90_UPIO00382CC40 UniRef90-L2F5U7
UniRef90-L7VRR8
UniRef90-K6WRW6 UniRef90-Q83BE4
UniRefol_Lofgso
 S K W A N N $\quad$ K H K K K G A A D A SKWANI KHRKAAQDAKRGNLFQKLVRABI


 SKWAN I QHRKGA QDAKRGKLLFTKKLDRE


SKWANIKHRKGKQDALDRGKLFTKI GKE I





SKWANI KHKKAANDKKRGKI WTKLI REII
SKWANI QHRKGRQDAARSKLLFSKFAKE




S K WA N I K H R K A A Q D A K R G K M F T K

SKWHNI QAKKGKADAARGAVFTKI GRE II

SKWANI KHRKAKQDAQKGKI FTKGGKE



S K WA T THKHKK A A DD A K R G K L F A K L I K N V





S K WA N $\quad$ K H K K A R S D E K K G K V F T K I A K E I
S K WAN I QHAK ARAK A A S K WA N I K H R K A GQQDA K R G K I F T K M L R E ll


SK WAN KHKKEKNDAKRG
SKWS TII K R K K GA LDD A K R G K I
SKWANIKRQKAVVDAKKGKTF
SKWATTKHKKAANDAKRGK■FARLIKN
SKWANDKHKKARTDAAKGKLLY T K L A A R
SKWASIKHKKAAQDAKRGKAFTKIIRELD
SKWANI QHRKGRQDAKRGKVFTKLIVE
SKWATI KRAKGAADAKRGKLVSVLSKD
SKWANI QHRKGRQDKLDAKVFSKMSKE I
NKWSTI KHAKGAADAKRGALLFTK\|IGE
 SKWANI QHRKKAVDAKRGKI FTKLVKE SKWKNIQNRKNAQDAKRGKVFQKLAKE
 SQFKNIMHRKGRQDAKRAKVFTK\|GRE
 SKWAN』RHKKEKTDAQKGKI FTKLGRE SKWATTKHKKAALDAKRGKLFAKLIKN
$V A A B E G G G D P S$ TV A A R A G G GDPA $T V A A R Q G G G D P E$ $T V S A R M G G G D A A$

TVAAK $\square G G G D L E$ TVAAKHGGGVPA S I A A RMGGGDDPN $T V A A S Q G G G D P A$ $T \vee A A R E G G G D P E$ $T \vee A S R T G G P D P G$ $T$ I A A REGGGDPA $T V A A R M G G G D D P E$ | $T$ | A A K L G G G D P D |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| $T V$ | $A$ | $A$ | $R$ | $S$ |
| $G$ | $M P D P A$ |  |  |  | QVAVKEGGPNPE EVAARDGGPDPA $T V A A R M G G P D P D$ $T V A A R M G G G D P A$ E V A ARTGGGDPA TVAAKAGLD DPT $T V A A K T G A P D P G$

$T V A A B K M G A P D P A$ TVAAREGGGDPE EVAARVGGGDPA $T$ I A A RQGGGDPE T V A A R M G G G D $\square \mathrm{G}$ TVAAKMGDPDPE $T \vee A A R L G G P S E A$

$$
\mathrm{E} V A A R T G G G D P D
$$

IVAAKMGGGDPA
SI A A R L G G G D P D TVAAREGGSDAD IAAAKA G G G DPN TVAAKHGDPDPA $V \vee A A K Q G G P L P E$ $M \vee A A B L G T P D P D$ $1 \vee A A R L G G G D P D$ AI A VRDGGANPE $\begin{array}{lllll}T & A & A R Q G G A D P N \\ T & A & A & R & M G G G D\end{array}$ $T V A A R M M G G D \square N$ TI A AK Q G G G D P P D $T V A A R L G G P E P A$ EVAARTGGGDPD V $V$ A A R M G G GDP E EVAARTGGGDPD TV A A K T G L P D P D

| $L$ | $T$ |
| :---: | :---: |
| $l$ | $T$ |
| $I$ | $A$ |
| 1 | $V$ |

 A A

$\qquad$ IVA AKMGMPDPD $T \vee A$ A R Q G G G E P G ITVVKKGGGPDPE IA A R D G G G D P D LAA A K A GGGNPE $\vee A A R A G G S D V$ $V A A R V G G P D P N$ $T L A A A R L G G G D T E$ I A ARMGGGGDPV | $E$ | $V$ | $A$ | $A$ | $R$ |
| :--- | :--- | :--- | :--- | :--- |
| $S$ | $E$ | $G G G$ | $G$ | $T$ |
| $A$ | $A$ | $R$ | $L$ | $G$ |
| $G$ | $G$ | $D$ | $E$ |  | AVAVK E G G A D P N $\vee V \vee K Q G G P D P A$ $S \vee A V K D G G P D P$ $\vee$ A A R S GVP D P A $V$

$V$
A A A R T G G G D P A I A A RMDGGDPD V A A K M GGGDPA LAARSGGGDPG TVA AKMGDPDPD I A A S M G G G D Q N VAAR $\square G G G D P A$ MVAARDGGADPE TVA A R M G G G D T D Y V A A K S G G G D P D TA A R L G G G DVG VASKLGGPDPA VAVKGGGSDPG VA A R T G G G DLA $V$ SAAKA GDPDPA $A M A V K A G G P D P E$ $V A A R T G G G D P T$

UniRef90 E8T212 UniRef90-M1PK14 UniRef90_D5EEL6 UniRef90 B7J3GO UniRef90_C0QT6? UniRef90-A0L4W1 niref90_Q1JW73 UniRef90_U2ZNE UniRef90-S3JTY UniRef90_UPIO002556A6B UniRef90 A0A023X2B8 UniRef90 O 60913 UniRef90 UPI00039C3761 UniRef90 KON325 UniRef90- B5EAHO UniRef90- ${ }^{-15 Z H 35}$ UniRef90_17LHO2 UniRef90_S3XXE6 UniRef90-Q0A505 UniRef90--11XEQ UniRef90 B9JRY6 UniRef90_UPI000371EAB9 UniRef90-A9D151 UniRef90-B8CXG6 UniRef90 K5B8N1 UniRef90_16YTY9 UniRef90-G2FIL8 UniRef90- A0A059IPBO UniRef90_UPI0003B3C514 UniRef90-UPIO00349CC7A
UniRef90_R6PJI2
UniRef90 ${ }^{-}$C6HZF5
UniRef90_UPI0003FDC093
UniRef90 D1BA54
UniRef90 F21X52
UniRef90-A4A9Q8
UniRef90-W6K823
UniRef90-F6CQJ5
UniRef90 ${ }^{-}$R7IHS4
UniRef90-N6W2M1
UniRef90-S7V9H7
UniRef90 D5XEHO
UniRef90-UPIOO0479AAE3
UniRef90-UPI00039FE639
UniRef90 botF65
UniRef90'UPI0003AD4735
UniRef90-K1JJZ2
UniRef90-D3Q6D2
UniRef90 UPI00046EC110
UniRef90-E5Y3Z5
UniRef90-A0A024PII7
UniRef90_J9E0G9
UniRef90_U7A3N5
UniRef90-V4KRY7
UniRef90-A3DH53
UniRef90 B2HYW1
UniRef90-D7CLD4
UniRef90-UPI0003B34C36
UniRet90_UP100036B6D4
UniRef90-UPIOOO3668209
UniRef90-A0LUK8
UniRef90_O2LRB1
UniRef90-A1HT72
UniRef90-R5T5A7
UniRef90-C7LZJ2
UniRet90_B5YHS2
UniRef90_R5W707
UniRef90-R6CM57
UniRef90-UPIO00472B2A1
UniRet90_B2J7Y8
UniRef90_U1PEG4
UniRef90-FOT270
UniRef90-UPI0003779AD9
UniRet90_G8QF93
UniRef90-D5ENL6
UniRef90-Q28LW5
UniRef90-H7EK12
UniRef90-UPIo0036E2C5B
UniRef90-U2KZZ3
UniRef90_B5JXI9
UniRef90-UPIO003757074
UniRef90-Q2NTJ1
UniRef90_R5T1T11
UniRef90-UPIO00382CC40
UniRef90-L2F5U7
UniRef90-L7VRR8
UniRef90-K6WRW6
UniRef90-Q83BE4
UniRef90_L0F9S0

## QUERY UniRef90_E8T212 UniRef90-M1PK14 UniRef90-B7J3G0 UniRef90-C0QT62 Uniref90-AOL4W1 UniRef90-U2ZNE 4 UniRef90-S3JTY4 UniRef90-UPIO002556A6B UniRef90 A0A023X2B8 UniRef90 $\mathrm{Q609L} 3$

 UniRef90-UPI00039C3761 UniRef90 K0N325 UniRef90- В5ЕАНО UniRef90-B5ZH35 UniRef90-17LHO22 UniRef90_S3XXE6 UniRef90_O0A505 UniRef90-11XEQ6 UniRef90 B9JRY6 UniRef90-UPIO00371EAB9 UniRef90-A9D151 UniRef90-B8CXG6 UniRet90_K5B8N1 UniRef90-16YTY9 UniRef90 A0A059IPBO UniRef90_UP10003B3C514 UniRef90-UP1000349CC7A UniRef90_R6PJI2 UniRef90 ${ }^{-}$C6HZF5 UniRef90-UP10003FDC093 UniRef90-D1BA54 UniRef90 F21X52 UniRef90-A4A9Q8 UniRet90-W6K823 UniRef90-F6CQJ5 UniRef90-R71HS4 UniRef90-N6W2M1 UniRef90_S7V9H7 UniRef90_UPIOO0479AAE3 UniRef90-UPIO0039FE639 UniRef90_B0TF65 UniRet90-UPIo003AD4735 UniRef90_K1JJZ2UniRef90
D3Q62 UniRef90-UPI00046EC110 UniRef90-E5Y3Z5 UniRef90-AOA024PII UniRef90_J9EOG9 UniRef90-U7A3N5 UniRef90-V4KRY7
UniRef90 A3DH53 UniRef90 ${ }^{-}$B2HYW1 UniRef90-D7CLD4 UniRef90-UPI0003B34C36 UniRef90-UPI00036B6D40 UniRef90_UPIOOO3668209 UniRef90 AOLUK UniRef90_Q2LRB1 UniRef90-A1HT72 UniRef90_R5T5A
UniRef90-C7LZJ2 UniRef90-R5W707 UniRef90-R6CM57 UniRef90-UPIOOO472B2A1 UniRe90 - B2J7Y UniRef90-IPEG4 UniRef90-UPIO003779AD9 UniRef90-G8QF93 UniRef90-DJENL6 UniRef90-H7EK12 UniRef90-UP100036E2C5B UniRef90_U2KZZ3 UniRef90_B5JX19


## QUERY <br> UniRef90_E8T2I2 UniRef90-M1PKI4 UniRef90_B7J3G0 UniRef90_C0QT62 UniRef90-A0L4W1 UniRef90_Q1JW73 UniRef90-U2ZNE4 UniRef90 S3JTY4 UniRef90_UPI0002556A6B UniRef90 A0A023X2B8 UniRef90-Q609L3 UniRef90_UPI00039C3761 UniRef90_K0N325 UniRef90 B5EAH0 UniRef90_B5ZH35 UniRef90_I7LHQ2 UniRef90-S3XXE6 UniRef90-I1XEQ6 UniRef90_D2S9I5 UniRef90_B9JRY6 UniRef90_UPI000371EAB9 UniRef90-A9D151 UniRef90-B8CXG6 UniRef90_K5B8N1 UniRef90-I6YTY9 UniRef90-A0A059IPB0 UniRef90_UPI0003B3C514 UniRef90_UPI000349CC7A UniRef90_R6PJI2

 UniRef90 ${ }^{-} 6 \mathrm{H}$ ZF5 UniRef90_UPI0003FDC093 UniRef90_D1BA54UniRef90 F2IX52
UniRef90-A4A9Q8
UniRef90-W6K823
UniRef90_F6CQJ5
UniRef90-R7IHS4
UniRef90 ${ }^{\text {N6W2M1 }}$
UniRef90 S7V9H7
UniRef90 D5XEH0
UniRef90_UPI000479AAE3
UniRef90_UPI00039FE639 UniRef90 B0TF65 UniRef90_UPI0003AD4735 UniRef90_K1JJZ2 UniRef90_D3Q6D2 UniRef90 UPI00046EC110 UniRef90_E5Y3Z5 UniRef90_A0A024PII7 UniRef90_J9E0G9 UniRef90_U7A3N5 UniRef90_V4KRY7
UniRef90 A3DH53 UniRef90-B2HYW1 UniRef90 D7CLD4 UniRef90_UPI0003B34C36 UniRef90_UPI00036B6D40 UniRef90_UPI0003668209 UniRef90_A0LUK8 UniRef90-Q2LRB1 UniRef90_A1HT72 UniRef90_R5T5A7
UniRef90_C7LZJ2 UniRef90-R5W707 UniRef90_R6CM57 UniRef90_UPI000472B2A1 UniRef90_B2J7Y8 UniRef90_U1PEG4 UniRef90_F0T270 UniRef90_UPI0003779AD9 UniRef90_G8QF93 UniRef90_D5ENL6 UniRef90_Q28LW5 UniRef90_UPI00036E2C5B UniRef90_U2KZZ3 UniRef90_B5JXI9 UniRef90 UPI0003757074 UniRef90_Q2NTJ1 UniRef90_R5T1T1 UniRef90_UPI000382CC40 UniRef90_L2F5U7 UniRef90_L7VRR8 UniRef90_K6WRW6 UniRef90_Q83BE4 UniRef90_L0F9S0


| QUERY | Q K |
| :---: | :---: |
| UniRef90_E8T212 |  |
| UniRef90-M1PKI4 | M E Q |
| UniRef90-D5EEL6 | MEQ |
| UniRef90-B7J3G0 | M A R |
| UniRef90-C0QT62 | M E K |
| UniRef90-A0L4W1 |  |
| UniRef90-Q1JW73 | $\square \mathrm{A}$ |
| UniRef90_U2ZNE4 | E Q |
| UniRef90-S3JTY4 |  |
| UniRef90-UPI0002556A6B | M A Q |
| UniRef90-A0A023X2B8 |  |
| UniRef90_Q609L3 |  |
| UniRef90-UPI00039C3761 | E Q |
| UniRef90-K0N325 | F |
| UniRef90-B5EAH0 | M E K |
| UniRef90-B5ZH35 | A ER |
| UniRef90-17LHQ2 |  |
| UniRef90-S3XXE6 | A A Q |
| UniRef90-Q0A5Q5 | Y |
| UniRef90-I1XEQ6 | M A Q |
| UniRef90-D2S915 | LE K |
| UniRef90-B9JRY6 | MAR |
| UniRef90_UPI000371EAB9 | LQK |
| UniRef90-A9D151 | M A K |
| UniRef90-B8CXG6 | M E |
| UniRef90-K5B8N1 | A A Q |
| UniRef90_16YTY9 |  |
| UniRef90-G2FIL8 |  |
| UniRef90-A0A059IPB0 | A A Q |
| UniRef90-UPI0003B3C514 | M A K |
| UniRef90-UPI000349CC7A | MEK |
| UniRef90-R6PJI2 | MEK |
| UniRef90-C6HZF5 |  |
| UniRef90-UPI0003FDC093 |  |
| UniRef90-D1BA54 | E Q |
| UniRef90-F2IX52 | M A |
| UniRef90-A4A9Q8 |  |
| UniRef90-W6K823 | ME K |
| UniRef90-F6CQJ5 |  |
| UniRef90_R71HS4 |  |
| UniRef90-N6W2M1 | M D |
| UniRef90-S7V9H7 |  |
| UniRef90-D5XEH0 |  |
| UniRef90-UPI000479AAE3 | ME Q |
| UniRef90-UPI00039FE639 | Le Q |
| UniRef90-B0TF65 | M E Q |
| UniRef90-UPI0003AD4735 |  |
| UniRef90-K1JJZ2 |  |
| UniRef90-D3Q6D2 | M E K |
| UniRef90_UPI00046EC110 | M E K |
| UniRef90-E5Y3Z5 | M A Q |
| UniRef90-A0A024PII7 |  |
| UniRef90_J9E0G9 | MEK |
| UniRef90-U7A3N5 | A A Q |
| UniRef90-V4KRY7 | MER |
| UniRef90-A3DH53 |  |
| UniRef90-B2HYW1 | $\square \mathrm{A}$ Q |
| UniRef90-D7CLD4 | ME K |
| UniRef90_UPI0003B34C36 |  |
| UniRef90-UPI00036B6D40 | L Q |
| UniRef90_UPI0003668209 | M E |
| UniRef90-A0LUK8 |  |
| UniRef90-Q2LRB1 | MEK |
| UniRef90-A1HT72 | L A |
| UniRef90-R5T5A7 |  |
| UniRef90-C7LZJ2 |  |
| UniRef90-B5YHS2 | M S K |
| UniRef90-R5W707 |  |
| UniRef90-R6CM57 | E E |
| UniRef90_UPI000472B2A1 | Q E |
| UniRef90-B2J7Y8 |  |
| UniRef90-U1PEG4 | LS R |
| UniRef90-FOT270 |  |
| UniRef90_UPI0003779AD9 | $\square A \mathrm{~K}$ |
| UniRef90_G8QF93 |  |
| UniRef90-D5ENL6 |  |
| UniRef90-Q28LW5 | M A Q |
| UniRef90-H7EK12 |  |
| UniRef90-UPI00036E2C5B | $\square \mathrm{A}$ |
| UniRef90-U2KZZ3 |  |
| UniRef90-B5JXI9 | F E |
| UniRef90-UPIO003757074 |  |
| UniRef90-Q2NTJ1 |  |
| UniRef90_R5T1T1 | M E K |
| UniRef90-G2KPK1 | M E R |
| UniRef90-UPI000382CC40 |  |
| UniRef90-L2F5U7 | M T Q |
| UniRef90-L7VRR8 |  |
| UniRef90-K6WRW6 |  |
| UniRef90-Q83BE4 | L |
| UniRef90_LOF9S0 |  |

UniRef90 UPI000363F946 UniRef90_UPIOOO2D96431 UniRef90_U2ZOP9 UniRef90-UPIOO03F7CE61 UniRef90-UPI00036CF794 UniRef90-UPIOOO366D3EA UniRef90-B1C6Q4 UniRef90-F8B308 UniRef90-UPIO0036891A5 UniRef90-D6ZHF9 UniRef90-DoLZE8 UniRef90-K2JZC4 UniRef90-FORZ25 UniRef90-UPIO003B4D04F UniRef90-K1WW51 UniRef90-Q6LT52 UniRef90-D5SQ04 UniRef90-DOKY59 UniRef90-13TIZ8 UniRef90-E6SIW4 UniRef90-D1KBR2 UniRef90-UPIO0034AD638 UniRef90-K5Z1Y9 UniRef90-Q1QWG1 UniRef90-M1Z3C6 UniRef90-R5E3B1 UniRef90_S9ZHEO
UniRef90 D7BNP7 UniRef90-UPIOOO4039913 UniRef90-B4U7S UniRef90-B0K951 UniRef90-R6MZA1 UniRef90-UPIO003488F88 UniRef90_D2Z3E6
UniRef90 R6QK53 UniRef90- R6U1Z3 UniRef90-ІІЕСҮ3 UniRef90 UPIOOO3823DF0 UniRefololi3BTE UniRef90-R7PS36 UniRef90_E3GP39 UniRef90_UPIOOO3B36101 UniRef90_COW1Q5 UniRef90-H1G0X6 UniRef90-Q65GN7 UniRef90_UPIOOO3B30607 UniRef90_UPIo0040143EF UniRef90-B6INM1 UniRef90-XOS6E5 UniRef90_UPI00036D39C1 UniRef90_U7V8U0 UniRef90_E6UDD5
UniRef90_A1WZ62 UniRef90_UPI0002882D47 UniRef90-F5XJF6 UniRef90-Q07H94 UniRef90-Q838A9 UniRef90_UPI00037A2244 UniRef90-D2RLD7 UniRef90-R7KB42 UniRef90-W4VIK6 UniRef90-UPIO004295188 UniRef90_QOF941
UniRef90-D1Y1P0 UniRef90-F6DN42 UniRef90-19BHQ4 UniRef90-R5FIH6
UniRef90 K8ZAG7 UniRet90-F7YXPO UniRef90-D8JSE4
UniRef90
A5EXG2 UniRef90-UPI000421374C UniRef90-B7K817 UniRef90-J9ZAVO UniRef90-UP1000370CC7B UniRef90 AOPZUO UniRef90-F4A2A7
UniRef90 U1LED8 UniRef90-B1ZSR1 UniRef90-B8EIB7 UniRef90 Bos1s1
UniRef90 R5AHDO UniRef90-G7WCQ7 UniRef90-Q08W67 UniRef90-O3ABX7 UniRef90-D8F3Q5 UniRef90-UPIO003FDAEC0 UniRef90-UP10003B799E9 UniRef90-K8EST3 UniRef90_R7B0P8 Uniref90_UPIO003626C67

S


SKWANIQHRKGRQDAKKAKFFTKAAKD
 SKWANTKHRKAAQDAKRGKVFTKIIREIV SKWATTKHKKAADDAKRGKLFARLIKNVE
SKWANIKHRKAAQDAKRGKIFTKLIRE SKWATIKHKKGDADAKRGQKFTKLIKE SKWANIKHRKAAQDAKKGKVFTKVARE

SHWANI AHKKGRYDQKRGKLLFGKLSKA SKWANIKHRKARQDNKRGKVWTKIIRE SQFKNIMHRKAAQDKKRAKVFTKLLREL SKWANRKHRKARQDAKRG

S
S
S
S
S
S
S

S K WA N I I K N R K GK E D A R R A K E F T K L G R Y
SK WA N I Q HRKKGR QD ERRRGAAF S K L AK E


S

NKWSTIKQKKGKNDAARAKI FTKIGREI


S K WA N K N R K GK Q DAA K GKVVF T K MA K Y
SK WK N I Q H R K G R Q D A L R GK M F A K L G R E
S K WA N I Q HR K NA Q DA K R GKLLF T K L I K E
S K WK N I QRRRKNA QDAK R G K I F M K L A K E
S K WA SIIKHKKA IVDSRRRGQAF T K L L S R H
 SKWANI KRHKWAQDAKRS
SKWHNDQAKKGKVDAKRG
SQFKNDMHRKGRQDAQKGKLFAKLIKN


SKWKNIQRRKNAQDAKRGKIFMKHAKD

$=V A$ AK Q G G G D P D
TVA A K M G G G D P S
IA A K E G G G DP G
A A R N G GP D P A
$T \vee A A R M G G A D P T$ $A V A D V K A C G A D P D$ IVAAR LGGGGNPE $T \vee A A A K S G T P D P B D$ $T \vee A$ A R H G G S D $\square N$ $F A A V R E G G D D P H$
 $T L A A R L G G G D S G$ ILAARD GGSNPD $\begin{array}{llllll}A & A & V & R & H & G \\ E & \text { G } & \text { N } P & E \\ A & A & K & I & G & G \\ A & D & L & S\end{array}$ $\begin{array}{llllll}E & V & A & A & I & G \\ T & A & D & L & S \\ L & A & A & K & A & G \\ G & G & D & N\end{array}$ $T \vee A A K L G L D P B N$ $T V A V R E$ G GA D P E $A$ I AVK E GGGD P A LI A S R A C G GDVN $T \vee A A R L G G G N P D$ $M V A A R L G G G D P E$ II A A R S GVP D P N $T \vee A A R M G G G D P E$ $A V A V K$ E G GPDPS $T \vee A A K S G G G N P D$ $Y M A V K$ S G GP D P S

UniRef90 UPIO00363F946 UniRef90-UPIO002D96431 UniRef90-U2ZOP9 UniRef90_UPIOOO3F7CE61 UniRef90 UPIO0036CF794 UniRef90-UPIOOO366D3EA UniRef90-B1C6Q4 UniRef90- F8B308 UniRef90-UPIO0036891A5 UniRef90-D6ZHF9 UniRef90-DoLZE8 UniRef90_K2JZC4 UniRef90-FORZ25 UniRef90-UPIO003B4D04F UiRef90-K1WW51 UniRef90-Q6LT52 UniRef90 DoKY59 UniRef90-13TIZ8 UniRef90-E6SIW4 UniRef90-D1KBR2 UniRef90-UPI00034AD638 UniRef90-K5Z1Y9 UniRef90-Q1QWG1 UniRef90-M1Z3C6
UniRef90 R5E3B1 UniRef90-S9ZHEO UniRef90-D7BNP7 UniRef90-UPIOOO4039913 UniRef90-B4U7S7 UniRef90-B0K951 UniRef90-R6MZA1 UniRef90-UPIO003488F88 UniRef90_D2Z3E6 UniRef90-R6QK53 UniRef90-R6UIZ3 UniRef90_UPIO003823DF0 UniRef90-13BTE2 UniRef90_R7PS36
UniRef90_E3GP39 UniRet90-UPIO003B36101 UniRef90-C0W1Q5 UniRef90_H1G0X6 UniRef90-Q65GN7 UniRef90-UPI0003B30607 UniRef90 B6INM1 UniRef90-Xos6E5 UniRef90-UPI00036D39C1 UniRet90_U7V8U0 UniRef90-E6UDD5 UniRef90_UPI0002882D47 UniRef90-F5XJF6 UniRef90-Q07H94 UniRef90_UPI00037A2244 UniRef90-D2RLD7 UniRef90-R7KB42 UniRef90-UPIO004295188 UniRef90_QOF941 UniRefono D1Y1P0 UniRef90-19BHQ4 UniRef90-R5FIH6 UniRef90-K8ZAG7 UniRet90 F7YXPO UniRef90-D8JSE4 UniRef90-UPIO00421374C UniRef90_B7K817 UniRef90-J9ZAVO UniRef90-UPIO00370CC7B UniRef90_AOPZUO UniRef90-F4A2A7
UniRef90 U1LED8 UniRef90-B1ZSR1 UniRet90_B8EIB7 UniRef90 Bos1s1
UniRef90 R5AHDO UniRef90-G7WCQ7 UniRef90-Q08W67 UniRef90-O3ABX7 UniRef90-D8F3Q5 UniRef90-UPIO003FDAEC0 UniRef90-UPIO003B799E9 UniRef90-K8EST3 UniRef90_R7B0P8
UniRet90_UPI0003626C67

GNMRLLKLIALGKARENNVPKDNI QRAIIQKGQGSLEGSNYEE GNPALDLAVSKAKKASVPNDNI DRAVKRGAGTGEVVDYAE KNPRLRMAVKEAKSVSVPKDVIDRAIKKSQGG DAESYDE GNPALELAVSKAKKTSVPSDNI DRAIKRGSGQGEAVDYQT DNSALRLAI QKAKQVNLPKDRIENAIKKGTGEDAGGDINE ANPRLRAAVIAARQANMPKDTVERAIKKASGEGGTEDYVA LLAKKKDAI AKAKSNNMPNDNIERAIKKGAGELGNSVFEE GNPTLADAI AKAKSQSVPNDNIDRAVKRGSGEAGGASYEE DNPGLRAVI DKALAANMKRDTVDKAVARGAGTNDEDNYEA GNPTLFDAI QKAKKSSVPADNIDRAVKRGSGESGGADWQS GNARLRMAVDKARGANVPKDTLQRAI DKGSGAGAGDDWEE TNPRLRAAVDKALSNNMKRDTVDTAIKRGSGELDGDNVEE TNARLRTAVDKARAENMPKDNIDRAIKKGAGELDNSTYYE MNPRLRDALDKAKQVNLPKDNVERAIKKGTGEGSEASFED GNARLRSAVLAAKEENMPKDNIDRAIKKGTGEAGGAAYEE NNPRLRAAVDKALSNNMTRDTINRAVKRGAGGDGEADLET ANDALRYALDRAKKSSMPADTVERADKKGTGEDQADNYEQ ANPRLRSAVAAARVANMPKDNIERADKRGAGGADGDNYE ANPRLRLALERARQFSMPAENVERAIKRGLGESDADNYEE NNPSLRMVIDKALAANMKRDTIESAVKRGSGDLDGENYDE ANFQLRNAVAKAKAAGDPNDNIERAIAKGSGTFDGDALEA ANPRLRAGI AAALKQNMTRDAI DRAIKKASGAGGTENYES DNPRLRAAI DKALANNMTKDTIQRAIERGAGNTDGDEMEE YNPALKAAI EKAKAANMPNDNIERAIKKGSGELGADSYED MNPRLRLSLLKARAANVPKDTVKNAILKGTGQLEGANYEE FNPRLRLAVDKAKGVNMPKDKIDNAI KKGTGELEGVSYEE GNPTLYDAI QKAKKNSVPADNIDRAVKRGSGEGEQVNYEN GNPRLRLAI QNSKAANMPKDNVERAIKKGSGS DGAVYTE ANPRLR IAI EAARKVSMPMDTIEKAIKRGTGNDKEGALEE TNSKLRDAI EKAKANNLPNENI QRAIKKGTGELGGANLEE NNSSLKDAI AKARSNNMPNDNINRTIKKAAGDTDGDNYES ANPRLRDAVEKAADANMPKDNVQRAVTRGSGGVDGANYEE TNDRLKAALDRAKAASVPSNNIERAIKRGTGEIEGATYEE NNAKLRDVIAKAKONNVPNDNDRMLKKAAGESDSTNFEE TNPSLRLVIEKAKAVNMPNENI QRAI NKATGVGSSAKYEE GNPRLRAALEARRNSVPKDNERALKKAQAGGEGEDYEE AHPRLRGAVDKALGANMPKDTIDKACKRGAGETGAENYSE MNAKLRDAVAKAKAANMPNDNI DRAIKKGAGELQGAVYEE
 TNPRLRLAVDKALDANMTKDTIERATKRGAGELEGVNYEE SNASLRLVIDKAKNANMPNDNIDRATKKASGSQDGKSYEE GNPA ALAVQKAKDASMPKDNI QRALDKGTGGADAASYEN SNPRLRAAI QAARAENMPKDRIERAI KQGTPGADGANYEE TNVKLKTA
 GNAKLRDLI AKAKANNVPNDNIDR\|IKKAAGDGDKNNYES MNARLRLALDRAFAVNLPKDRADAA!KKGAGLEEAEAYEE TNAKLRDVVAKAKAANMPNDNDQRAIKKAAGELINAVDYET GNPTLYDAI QKAKKSSVPNDNI DRAVKRGSGEGGGADYQT MNARLRSAI DAARQENMPKDNIERAIKKADGS DGDNYDE MNPALRDAVDKAKSANMPNDNIARAIKKASSAGEGEHYDE VNPRLRSAVLAARSKNVPNDN:EKAIGRGTGDLDGVEYEE SNSKLRDVISKAKAANMPNDNITRSIKKASGEGSTVNYEE MNAVLRLDVDKAKSDNMPNDNI DRAIKKATGDLDGANFEE ANPTLYDAI QKAKKTSVPNDNI ERARKRGSGEEGGADWET KNPRLRDAVKEAKSNSVPKDVIDRATGKATGGDDENYDE MNVRLKAALERARAASVPNDTITRAIKRGTGEDEGVSYEE GNRRLKTAVEKAREANIPNDNI QRAI QKGAGGGEGANFEE GNMRLKLALQKAKENNIPKDNIQRAI QKGLGSLDGSNYEE SNAKLRDVISKAKANNMPNDN:TRS:KKASGELGAVNYEE TNPRLRAAIEKAREASMPKENIEKAIKRGTGELEGADYQE MNPRLRLAI QEARAENMPKDNVERAIKKAAGG DLANYEA ANPRLRLAVSKAQAENMTKETMERAIKRGAGEDDGVQMEE tNDRLRMAVTKAKAENTPSDNTERTIKKASGEAGAVNYDE ANLQLRTAIEKAKAAGIPNDNIERAIAKGAGTYGNDNDEE GNPRLRTAMLKAREENMPMDN:KKAIQRGTGERPGAHYEE TNAKLRDVIAKAKAANMPNDTIDRAIKKGAGELEGDTYE ANSTLRDAI AKAKANNMPNDTIERIIKKAAGALDSVNYEE GNPTLVDAVQKAKKTSVPNDNIDRAIKRGAGTGESVDYTT GNARLRTLLLKARDANMPADNVDRAVKKGTGELPGVVFEE MNARLRAAVIAARVENMPKDNIERAIKKASGA DAENYDE YNPSLKSVIEKARAENMPNDNIDRAIKKASGDGDSANYEN NNSKLRDVIAKAKANNMPNDNI NRSIKKAAGEGSSVNYEE DFRLKIIAIENAKAQNVPNENIQRAI QKGAGGAEGANYEE GNARLRAAI GAAREANMPSDTVARAIKKGTGELEGESYEE ANPRLKAAIARAREANDPNENIQRAIMKGTGELAAESYEE GNPRLRTAI AAAKAENMPKENIERGIKKGTGELEGVNYEE NNFKLATVI AKAKANNMPNDTIERGIKKASGEGGAVDYKN TNPRLRTAGTAKESNMPQDNIDRAIKKGTGELPGTVYEE TNPQLRMMMDKAKSANMPNDNVKRAIAKGSQSGEGENYEE NNSKLRTVVAKAKANNMPNDT:ERAIKKAAGS DASNYES


UniRef90 UPI000363F946 UniRef90_UPI0002D96431 UniRef90_U2Z0P9 UniRef90_UPI0003F7CE61 UniRef90_UPI00036CF794 UniRef90_UPI000366D3EA UniRef90_B1C6Q4 UniRef90-F8B308 UniRef90_UPI00036891A5 UniRef90_D6ZHF9 UniRef90_D0LZE8 UniRef90_K2JZC4 UniRef90-F0RZ25 UniRef90_UPI0003B4D04F UniRef90_K1WW51 UniRef90_Q6LT52 UniRef90_D5SQ04 UniRef90_D0KY59 UniRef90 I3TIZ8 UniRef90_E6SIW4

## UniRef90_D1KBR2

 UniRef90_UPI00034AD638 UniRef90_K5Z1Y9 UniRef90-Q1QWG UniRef90_M1Z3C6 UniRef90_R5E3B1 UniRef90_S9ZHE0 UniRef90_D7BNP7 UniRef90_UPI0004039913 UniRef90_B4U7S7 UniRef90_B0K951 UniRef90_R6MZA1 UniRef90_UPI0003488F88 UniRef90_D2Z3E6 UniRef90_R6QK53 UniRef90_R6UIZ3UniRef90_I3ECY3
UniRef90_UPI0003823DF0 UniRef90-I3BTE2
UniRef90_R7PS36 UniRef90_E3GP39 UniRef90_UPI0003B36101 UniRef90_C0W1Q5 UniRef90_H1G0X6 UniRef90_Q65GN7 UniRef90_UPI0003B30607 UniRef90 UPI00040143EF UniRef90_B6INM1 UniRef90-X0S6E5 UniRef90_UPI00036D39C1 UniRef90_U7V8U0 UniRef90_E6UDD5
UniRef90_A1WZ62 UniRef90_UPI0002882D47 UniRef90_F5XJF6 UniRef90-Q07H94
UniRef90-Q838A9 UniRef90_UPI00037A2244 UniRef90_D2RLD7 UniRef90-R7KB42 UniRef90_UPI0004295188 UniRef90_Q0F941 UniRef90-D1Y1P0 UniRef90_F6DN42 UniRef90_I9BHQ4 UniRef90-R5FIH6
UniRef90 K8ZAG7 UniRef90_F7YXP0 UniRef90_D8JSE4 UniRef90_A5EXG2 UniRef90_UPI000421374C UniRef90_B7K8I7
UniRef90-J9ZAV0 UniRef90_UPI000370CC7B UniRef90_AOPZU0 UniRef90_F4A2A7
UniRef90_U1LED8 UniRef90 B1ZSR1 UniRef90_B8EIB7
UniRef90_B0S1S1
UniRef90 R5AHD0 UniRef90-G7WCQ7 UniRef90_Q08W67 UniRef90_Q3ABX7 UniRef90_A0ZGY9 UniRef90_D8F3Q UniRef90_UPIO003FDAEC0 UniRef90_UPI0003B799E9 UniRef90_K8EST3 UniRef90_R7B0P8
140 150


GEAGSVA WMFNKKGVITTFKKESYSED DLLMEVGGLEAGA E D

 ASGCVSYMFQTKGII TYDTEKYSEEQIFEVALENGADDVV


## UniRef90_UPI000363F946 UniRef90-UPIOOO2D96431

 UniRef90_U2ZOP9 UniRef90_UPIOOO3F7CE61 UniRef90-UP100036CF794 UniRef90_UP10003 UniRef90-F8B308 UniRef90-UPIO0036891A5 UniRef90-D6ZHF9 UniRef90-DOLZE8 UniRef90-K2JZC4 UniRef90-FORZ25 UniRef90-UPIO003B4D04F UniRef90-K1WW51 UniRef90-Q6LT52 UniRef90-D5SQ04 UniRef90-DokY59 UniRef90-13TIZ8 UniRef90-E6SIW4 UniRef90-D1KBR2 UniRef90-UPIO0034AD638 UniRef90_K5Z1Y9 UniRef90-Q1QWG1UniRef90 M1Z3C6 UniRef90-R5E3B1 UniRef90-S9ZHEO UniRef90-D7BNP7 UniRef90-UPI0004039913 UniRet90-B4U7S UniRef90-B0K951 UniRef90-R6MZA1
UniRef90_UPIOOO3488F88 UniRef90-D2Z3E6 UniRef90-R6QK53 UniRef90_R6UIZ3 UniRef90_13ECY3 UniRef90-UPIO003823DF0 UniRef90-l3BTE2 UniRef90-R7PS36
UniRef90 E3GP39 UniRef90_E3GP39
UniRef90_UPIO003B36101 UniRef90-Cow1Q5 UniRet90-H1G0X6 UniRef90-Q65GN7 UniRef90-UPIIOOO3B30607 UniRef90-B6INM1 UniRef9-B6INM1 UniRef90_UPI00036D39C1 UniRef90 U7V8U0 UniRef90-A1WZ62 UniRef90_UPI0002882D47 UniRef90-F5XJF6 UniRef90-Q07H94 UniRef90_UPI00037A2244 UniRef90 D2RLD7 UniRef90-R7KB42
UniRef90 W4VIK6 UniRef90_UPIO004295188 UniRef90_QOF941
UniRef90-D1Y1P0 UniRef90-F6DN42 UniRef90-19BHQ4 UniRef90-R5FIH6
UniRef90 K8ZAG7 UniRef90-F7YXPO UniRef90-D8JSE4
UniRef90_A5EXG2 UniRef90_UPI000421374C UniRef90-B7K817 UniRef90-J9ZAVO UniRef90-UP1000370CC7B UniRef90_AOPZUO UniRef90-4A2A7 UniRef90-B1ZSR1 UniRef90-B8EIB7
UniRef90- 0 BOS1S1 UniRef90-R5AHDO UniRet90_G7WCQ7 UniRe990-Q08W67 UniRef90-AoZGY9 UniRef90-D8F305 UniRef90-UPIO003FDAEC0 UniRef90-UPIOOO3B799E9 UniRef90 K8EST3


## 




$\qquad$ 7
Q
$\square$
-
6 C67

SVEDEEVEVV $\frac{170}{L T}$ S PEAFAAVVQ 180
190
200
EAEKVTILSAQLIGLFPD VLSGDEFEILSDPSDRRAVAEALDAAGIDYESDETEFVPT KDEGETFEI HSEPQDLPAI RAALAEAGDEYDTDEAGFVPS IDEGEMDSVHCAPSEYVAVQQAFDEAGMTYESSEMQQVPE ESGEGGHEVTCAPEDLFAVRDALAARFGDPEEAKLDWRPK
 NANDDGMDVSTAAFEDFIAVVKEAMSAAGLTVASADLSWLPS EDAGEVFVTVTEPTDLVAVRTALQDAGDDYDSAESQFVPS

## 

R

 ESDDETHVVYTRPDALQEVRTALEGNYGDPQEFKLGWVPL K Q E E G A FVVVYT D P D DL H R V R E A L E K A GVV P V E D A A L R MV P K

V
AA

## 

## 

## 



 ETSEELFEI YTEPEQFEEVKKSLEERGYKLATSEITMVAA

## V

## 

## 

LDSGD NF E V G I S S D
LS


 NDLGEEFEVVSDDTDLMKVRDALKEAGDEYESADPDYRAN ESTEDGHDVYCASTDLNDVSKALEGAGGESETTKLVWKPT KTEEDSFEITTAPEDFEKVCEALKQQGDPLADAELSMVAQ

 D S D E S WF Y I QT E P D DF E EVVK K T L E E LGGY S F A K A E I I L F P D EDEEQGAEVFTEVSNLETLNQTLQEKGRVKEAELRWMPN RLHENGDDLDTSPADFSTVLESVKSRKVVPTFAEETTMUPQ
$\frac{5}{1}$ K



## UniRef90 U9VMR8

 UniRef90-A7HM20 UniRef90-UPIOOO2F82946 UniRef90-loGPSO UniRef90-TOBDN6 UniRef90-T1CNR8UniRef90 K4LIW6 UniRef90-G5GGZ1 UniRef90-T2GE74 UniRef90-F5YC99 UniRef90-UPIO0035EDTE1 UniRef90-UPI00026C7D55 UniRef90-H2CCN2 UniRef90_UPIO00362AC11 UniRef90-E8QYY0 UniRef90-R5C9W3 UniRef90-D3R358 UniRef90-R6GML4 UniRef90-X5JNQ6 UniRef90-UPIOO03B3730F UniRef90-Q0AX12 UniRef90-LOKB70 UniRef90-C8W4C1 UniRef90-Q38W22 UniRef90-12F359 UniRef90-Q30YX4 UniRet90-A8TXE2 UniRef90-T5K119 UniRef90-O6A8LO UniRef90-R616W0 UniRef90-U2EY866 UniRefofo-D3FDY1 UniRef90-F7XXF7 UniRef90-R7KOR9 UniRef90-UPIO00370C0C5 UniRef90-H8MQS9 UniRef90-Q03EU1
UniRef90-LORF20 UniRet90-LORF20 UniRet90 UPIOOO3B4E1DA UniRef90-A1BDW8
UniRef90-R6HBGO UniRef90-D4MMM2 UniRef90-H8YZ41 UniRef90-UPIOOO377D67C UniRef90_R7FVW5 UniRef90-UPIO0036AF21C UniRet90-UPIOOO37BE114 UniRef90-W2EAW1 UniRef90-KgVDJ3 UniRef90-D3LSM4 UniRef90 A3UGWO UniRef90-UPIO002F1041B UniRef90-U2QUZO UniRef90-UPIOOO416C883 UniRef90-UPIOOO4772982 UniRef90-Q2RVF8 UniRef90OUPIOOO411F463 UniRef90-UPIOOO40E6324 UniRef90-R5HD02
UniRef90_G3BMS2 UniRef90-D5BPN2 UniRef90-UPIO0020D97C9 Unii effo-G5ZZ866 UniRef90-C9RKP0 UniRef90-Q189Y9 UniRet90-N1WXP7 UniRef90-B5JPX0 UniRef90 UPIIO0029AD315 UniRef90-UPIOOO364E7D1 UniRef90-A3XPB1
UniRef90-K2D5N4 UniRef90-Q4JVD6 UniRef90-UPIO002492719 UniRet90-UPI00036E7E6F UniRef90-K1ZAF3 UniRef90-UPIO002F6FB42 UniRef90-R7ERN9 UniRef90-UPIOOO2899826 UniRef90-X2HA11 UniRefolo- R2GIM1 1 UniRef90-R6VB41 UniRef90-UP100036D7D3D UniRef90_14B5Y2 UniRef90-UPIO0035CEA45 UniRef90_W9A7J7 UniRef90-A9WIH5 UniRef90-EOXYU2 UniRef90-H8L156 UniRef90-UPIO0047CE701 UniRef90_Q2GBA6
UniRef90_G8NT55

SK WA NDK R QKARVDAVKGKVFA K|L SRE
 S K WA NI QHRKGRQDAKR GK L WT K I I R E I
 S K WA N I K H K K A A A D A K R G K V
 SQFKNDMHRKGRQDVKRGKAFTKAVKE
 S K WANI KFRKGDQDAKRGK川F TKILI R E SKWAN I KHRKD GADRRRGRIIFTKLLSKE L


 SKWANTKHRKAAVDAKRAK DNARY DK Q I


 SKWKNI QHRKGRQDAKKSKAFTKVAKE
 SKWATTKHKKAAIDAKRGKLFARLI KN S K WS TIKRKKEKTDNQRAKI FTK』GRE S K WN NI KRKKEKTDGAKAK FTKCGRE SKWA GI KHKKA VVDARRGAAFTKLARA I SKWANIQHRKGRVDAQRGKMWSKLSKA

SKWANIKHRKGRQDAVRSKQFTRAAKE NRWSKLKRRNAVLGVAK GK LY SKA I K K I I A AK I G G DA

 S



S K W A N I K N K K A K T D A V K G R I F T K I G R E




 N K WS QIK R K K GAL DAKRSKIIFTKILIK E S K WA NI K R Q K A RVVDAVVK G KVVF T K I SRE
 S K WA T TK HKK A V D D A K R G K L F A K L V K N S K WA N I Q H RK GA QDAK R GK I F T K LI R E I S V A A R T G G G D P A
 SKFKNI QHRKGAQDKKRAKIFGRLIGELTVAARSS TDPD SKWHN I Q G RKNA QDAKR GK I F Q K L A H D L Y V A A K A G G A D P E SKFKNIQHRKGAQDKKRAKIFTRRLIKELAVAAR GGTDPA S K WATTKRKKAKTDVARAKAWNKLL K E I I

 SKWANIQHRKNA DAKRGKLFTKLIR D AKRGKL F A KLL I K N
S K WA N $\square$ K HRKG A Q D KKRAKQFTRAI K E S K WA T IK
S K WATTK
SK WHN I
HKKGA DAKRGQVF

SKWAN I
KARKSK

SK WS NI K HK K E K T D A QK A K V F T K I G K E I
SKWNNI QHKKNAMDA $\square R G K I$ FMKLLSKD SKWANI QHRKGRQDAKRGKIFTRLIIKEII SK WA T TK HKKAA DDAKRAKAFA KYIGKG SKFANDKHKKEKNDAARGKVFT ILGREL SKFANIKHRKAAQDAKRGKIFTKLIRE SKWKNI QHRKGAADAKRGAMFTKLAKE S K WA N I K H R K A A Q D A K R G K V F S K I DR E L S K WH T I R R TKGVNDQRRGQLFTKLARD S K WS T 1 K R K K GAAA D A A R G K V F S R L V K E

S K WHN


40

- 30
$V$ A A K H G G G D P D

$\vee A A R E G G G N P D$ TV A A A R A A G P D P D T I A VR M G G G D P T Y L A AKEGGGNPE $T V A A R M G G G D V G$ MATARRGGGDPE AVA VK E GGPDPN | II A A K T G G D P A |
| :--- | :--- | :--- | :--- | :--- |
| TI A A M G G G D P N | QI A A RSGG DPD TVAARMGGGDES $M \vee S A R L G G S D P D$

 VI A V K E G GPDPA | $Q$ | $V$ | $A$ | $V$ | $K$ | $S$ | $G$ | $G$ | $P$ | $D$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $P$ | $N$ |  |  |  |  |  |  |  |  |
| $A$ | $V$ | $A$ | $V$ | $K$ | $M$ | $G$ | $G$ | $P$ | $D$ |
| $P$ | $P$ | $S$ |  |  |  |  |  |  |  | IV A ARNG IP DPA EVAARNGGPDPA $\begin{array}{lll}T & A D R S G G G D P E \\ T & \text { V } & \text { ARE G G G D P E }\end{array}$ I A A A R Q G G A D $D N$

$F M A A R S G G P D P S$ MVSAREGGSDPN A A KGGGDPV $Q$ A A K A S D DPA EVVA A K L G G P D L AVAVREGGPDPV $S \vee A V K$ E G GP D P A TVAARE GGGDPE IVAAKMGGGDPD $V$ TA A K L G G G D L $A V C \vee K E G G G D P N$

 EV A A R T G G G D PA T I A A K M G G A D P G | $T$ | $A$ | $V$ | $M$ | $G$ | $G$ |
| :---: | :--- | :--- | :--- | :--- | :--- |
| $I$ | $P$ | $D$ | $P$ | $T$ |  |
| $A$ | $K$ | $E$ | $G$ | $G$ | $G$ |
| $D$ | $P$ | $N$ |  |  |  | $T V S A R E G G A D P G$ $T V A B R B M G G A D P G$ $\begin{array}{llllllll}A & A & A & K & G & N & P & D \\ T & P & Y \\ T & A & K & S & G & P & D & P\end{array}$ IVAARNG■PDPA FV A A R Q GGPNPE $\checkmark$ A A R S GVP D P A TIIAVRMGGADPV $M \vee A \bigvee K M G G P D P D$ $M V A A R T G G G D V$ EVSARVGGGDPA TVAVK E G G A D P D

 $\begin{array}{llllllll}A & A & A & R & G & G T D P & A \\ S & A & A & L & G & G & G & P \\ A\end{array}$ | $A$ | $V$ | $A$ | $K$ | $E$ | $G$ | $G$ | $A$ | $D$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $T$ | $P$ | $E$ |  |  |  |  |  |  |
| $A$ | $A$ | $K$ | $E$ | $G$ | $G$ | $D$ | $D$ | $P$ |
| $E$ |  |  |  |  |  |  |  |  | TLAAKNGGGDAD $N \vee A A R \square G G G D \square N$ EVAARTGGADPD TVAD $\quad$ K E N N Q D P D VMSAREGGADPD EVAARTGGGDPS Y MA A K S G GP D P D

$V$ I A A R G GAN P E $T V A A K Q S$ Q DLS Y V A A K Q G G A DL A A V K E S G G D P A F L E ARHGGGDPD T I A A RLGGGDPN EVAARMGGADTS AVAVKEGGPDPA TVASKEGGPNPD MVA A K LGGGGES $T V A A R B G G E N P D$ Y TA A K Q G G G D $\square \mathrm{A}$ T I A T REGGSDPD $T V A A A K C Q G G A D D S$ TVATRAGVPDPA | $A$ | $A$ | $A$ | $K$ | $D$ | $G$ | $S$ | $N$ | $P$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

UniRef90_U9VMR8 UniRef90-A7HM20 UniRef90-UPIOOO2F82946 UniRef90-loGPSO UniRef90-TOBDN6 UniRef90-T1CNR8
UniRef90 K4LIW6 UniRef90-G5GGZ1 UniRef90-T2GE74 UniRef90-F5YC99 UniRef90-UPIO0035ED7E1 UniRee90-UPI00026C7D55 UniRef90-H2CCN2 UniRef90_UPIO00362AC11 UniRef90-E8QYYO UniRef90-R5C9W3 UniRef90-D3R358 UniRef90-R6GML4 UniRef90-X5JNQ6 UniRef90-UPIO003B3730F UniRef90-COAX12 UniRef90-LOKB70 UniRef90 C8W4C1
UniRef90-O38W22 UniRef90-Q38W2
UniRef90-I2F359 UniRef90_Q30YX4 UniRef90-A8TXE2 UniRef90-T5K119 UniRef90-Q6A8LO UniRef90-R616W0 UniRef90-U2EY866 UniRef90-D3FDY1
UniRef90 M5RSI9 UniRef90-F7XXF7 UniRef90-R7KQR9 UniRef90-UPIO00370C0C5 UniRef90 H8MOS9 UniRef90-Q03EU1
UniRef90-LORF20 UniRef90-UP10003B4E1DA UniRet90 A1BDW8 UniRef90 R6HBGO UniRef90-D4MMM2 UniRef90-H8YZ41 UniRef90-UPIOOO377D67C UniRef90-R7FVW5 UniRef90-UPI00036AF21C UniRef90-UPIOOOO37BE114 UniRef90-W2EAW1 UniRef90-KgVDJ3 UniRef90 D3LSM44 UniRef90-A3UGW0
UniRef90-UPIO002F1041B UniRef90-U2QUZO UniRef90-UPIOOO416C883 UniRef90-UPIOOO4772982 UniRef90-Q2RVF8 UniRet90-UP1000411F463 UniRef90-UPIOOO40E6324 UniRef90-R5HDO2 UniRef90_G3BMS2 UniRef90-D5BPN2 UniRef90-UPIO0020D97C9 UniRef90-G5ZZ866 UniRef90-Q189Y9 UniRef90-N1WXP7 UniRef90-B5JPX0 UniRef90 UPIIO0029AD315 UniRef90-UPIOOO364E7D1 UniRef90-A3XPB1
UniRef90-K2D5N4 UniRef90-Q4JVD6 UniRef90-UPIO002492719 UniRef90_UPIooo36E7E6F UniRef90-K1ZAF3 UniRef90-UPIO002F6FB42 UniRef90-R7ERN9 UniRef90-UPIo002899826 UniRef90-X2HAIM1 UniRef90-R6VB41 UniRef90-UPIO0036D7D3D UniRef90_14B5Y2 UniRef90-UPIOOO35CEA45 UniRet90-W9A7J7 UniRef90-A9WIH5 UniRef90-EOXYU2 UniRef90-UPIO0047CE701 UniRef90_Q2GBA6
UniRef90_G8NT55
 TNPRLLRAVLEKAREANMPKDTVERSIKKGTGELEGEKYEE
 GNMRLK LAALSKAKANNDPKDNI NRAI QK GLLGASE GSNYE E TNFRLKVAI ERAKQSNLPADNIARTIAKATGTLEGVTYEE



 A NS R L R T A I T A A K A V S M P A D NI K R A I M R G T G EL E G G Q D D E SNPRLRDAVKKALGANMKRDTIDNAIVRGVGGLDGEAMDA A NPRLR $\operatorname{li}$ AMTKARSANMTTDTIIERAVKKGAGELEGLDYED

 S N S K L K DII A K A K M N NMPND NI QRSI NKAAGDGSDTNYE E T N S K L R DVI A K A K S N N N M P N D N I T R S I K K A S G E L G S


 ANMRLKAAVQRAKEANDPNENI KRAI QKGSGELAGVNYEE

 A NPALRSAI DAARKENMPKDNI ERAI KKGS GGGD DSNYED
 SNSKLK DII SKAKANNVPNDNI DRII KKAAGDGNADNYEE SNS KL R DAI ANAKANNVPNDNI ERVI KKAMGEGGKDTYEE

 SNSRLRTAVDKALANNMTRETLNRAIARGVGSDDETHMET N N S K L N N P R L R S AI A A A K A V V L P K D KI E N AI K K G T G E LAA G D DY E SNARLRVAVALARESNIPRDTI ERAI KKGTGELAGESYEE

 GNPRLRRLADDTARSNSMPMENILRAVKKGTGELEGDVYDE
 $S N P R L R D A M D K A D G A N M P K D T V D R A I K R G A G A D D G D N Y E E$ GNMRLKKLALSKAKANNDPKENI QRAI QKGMGAADGSSYE E T N S K L A DVVI A K A K A A N M P N D N I K R S I A K V A GE L G NVN Y E T G N F Q L ANFALLKNAI DKARHDQMPNDNDIERAI KKAQGDHNSENFEE GNFQLRRTAI EKAKAASIPNENI ERAIAAKGAGLAGGSSELE GNMRLKLALQKAKENNIPKENIKRAI QKGAGATEGQNYEE MNPRLRRLAVQNAKGQSMPKDNI ERAINKAAGG DAEEYFE A N P R L R L A ll E K A K A A N N M P A D T I K R N V D K A T G N L E GVV Y E E GNPTLYDAI QKAKKNSVPNDNIDRAVRRGSGEGDAVSYEE ANPRLRLAI QMSKGANMPKDNIERAVSKGEGGDASDYS Q A NFQLLRTAVDKAKAAGDPNENI ERAI GAGK LGAGGDS LEA A N P R L R A A I L L A R A Q S L P K D NI Q R A I D K A T S G G D A A N L E E GNPTLYDAIVQKAKKSSVPNDNIDRAVKRGAGEGDAVNYET N N P R L R T A MD K A L A A N M T K DVI E R A V K K A T G E L E GVVS Y E E

 M N A S L R L VVVDKAKAANMPKDNN QRALDKAS GA G GA KF E E
 Y N A A L K T A 1 E K A K A D N M P N D N I D



 SNFRLLRLA DKARAQSMPKDNI DRALKRAAGEKEGEDYEE ANPTLQDAITK AKK S SVPNDNI ERARKRGS GEEGGANWET
 $T N S K L R L A D D K A L A Q N M T R D T I D R A I M R G S G E D A N N H M E E$ T N A A L R LAV D K A K S N NMPNENI ERAI K K AA GN LIE GENYE E T N S K L R DLLI Q K A K A N N V P N N D NI I D R T I ANPRLRLAMDKATEANMPKDNI QRAI DKGTGNLEGVEYVE GNPALELLAVSKAKKNSVPNDNI DRAIVRGAGTGETVIDYTE N NSRRLRDVI AKAKANNMPNDTI ERGIIKKAAGBAASVVYE E DNPRLRAAVDKALGANMKRDTVEKAIARGAGGTDGENYDE ANPRLRTATLLKARQNSMPKDNI ERAI KKGTGELDGDVTYE E D N P R L R A A M D K A L G A N M K K D T I D K A V A R GA GN A D GEN Y E E TNASLR LVVDKAKADNMPNDNIDRAI KKATGTLDGASFEE LNFRLRLAI EKARANNMPNENI QRAI DRGLGKSNEAALE E L N P R L LNAKLRDVI AKAKASNMALDTIMRAVKKGAGEDQQDVNFEE


UniRef90_U9VMR8
UniRef90_A7HM20
UniRef90_UPI0002F82946
UniRef90_I0GPS0
UniRef90-T0BDN6
UniRef90-T1CNR8
UniRef90_K4LIW6
UniRef90_G5GGZ1
UniRef90-T2GE74
UniRef90_F5YC99
UniRef90_UPIO0035ED7E1
UniRef90_UPI00026C7D55
UniRef90-H2CCN2 UniRef90_H2CCN2 UniRef90_UPI000362AC11 UniRef90_E8QYY0 UniRef90_R5C9W3 UniRef90_D3R358 UniRef90_R6GML4 UniRef90_X5JNQ6 UniRef90_UPI0003B3730F UniRef90_Q0AX12 UniRef90-LOKB70 UniRef90_C8W4C1 UniRef90_Q38W22 UniRef90_I2F359 UniRef90_Q30YX4 UniRef90_A8TXE2
UniRef90- T5KII9 UniRef90_T5KII9
UniRef90_Q6A8L0 UniRef90_R6I6W0 UniRef90_U2EY86
UniRef90-D3FDY1 UniRef90-D3FDY1
UniRef90_M5RSI9 UniRef90_F7XXF7 UniRef90_R7KQR9 UniRef90_UPIO00370C0C5 UniRef90_H8MQS9 UniRef90_Q03EU1
UniRef90-L0RF20 UniRef90-L0RF20 UniRef90-UPI0003B4E1DA UniRef90_R6HBG0 UniRef90_D4MMM2 UniRef90_H8YZ41 UniRef90_UPIO00377D67C UniRef90_R7FVW5 UniRef90_UPI00036AF21C UniRef90_UPI00037BE114 UniRef90-W2EAW1 UniRef90_K9VDJ3 UniRef90_D3LSM4 UniRef90_A3UGW0
UniRef90_UPI0002F1041B UniRef90_U2QUZ0 UniRef90_UPI000416C883 UniRef90_UPI0004772982 UniRef90_Q2RVF8 UniRef90_UPI000411F463 UniRef90_UPI00040E6324 UniRef90_R5HD02
UniRef90_G3BMS2 UniRef90_D5BPN2 UniRef90_UPI00020D97C9 UniRef90_G5ZZ86 UniRef90_Q189Y9 UniRef90_N1WXP7 UniRef90_B5JPX0 UniRef90_UPI00029AD315 UniRef90_UPI000364E7D1 UniRef90_A3XPB1
UniRef90_K2D5N4 UniRef90_Q4JVD6 UniRef90_UPIO002492719 UniRef90_UPI00036E7E6F UniRef90_K1ZAF3 UniRef90_UPI0002F6FB42 UniRef90_R7ERN9 UniRef90_UPI0002899826 UniRef90_X2HAl1
UniRef90_B2GIM1 UniRef90_R6VB41 UniRef90_UPI00036D7D3D UniRef90_I4B5Y2 UniRef90_UPIO0035CEA45 UniRef90_W9A7J7 UniRef90_A9WIH5 UniRef90-E0XYU2 UniRef90_H8L156 UniRef90_UPI00047CE701 UniRef90_Q2GBA6
UniRef90_G8NT55


160 A E S G S V A WllF E R K G All E I S A S K ll D M D E F T L L A I D A G A E D I

 GEA GCVAWMFDRKGFLLADPKDGLD LDDELMLLLI EAGAE DV GEAGCVGWMFSKK GVFVFPKEKYTEDQLMEIVGLEHGAEDV GEVGSVAWMF ERKS QVVVDGENATE DQLVMDTLDAAGAD DI



 A DPGSVAYMFQRKGVVNVPKEGLTEDDVLAAVLEAGVEEV


,

4E1DA



##  <br> 

## 

[^0]A

,A

,

G E


1


## UniRef90 U9VMR8 UniRef90－A7HM20 UniRef90－UPIOOO2F82946 UniRef90－10GPSO UniRef90－T1CNR8 UniRef90－K4LIW6 UniRef90－T2GE74 UniRef90－F5YC99 UniRef90－UPIOOO35ED7E1 UniRef90－UPI00026C7D55 UniRef90－H2CCN2 UniRef90＿UPI000362AC11 UniRef90－E8QYY0 UniRef90－R5C9W3 <br> 

 UniRef90＿D3R358UniRef90 R6GML4 UniRef90－X5JNQ6 UniRef90＿UPIO003B3730F UniRef90－COAX12 UniRef90＿LOKB70 UniRef90＿C8W4C1
UniRef90－Q38W22
 UniRef90＿Q30Y×4 UniRef90－A8TXE2 UniRef9－T5K119 UniRef90－Q6ABLO UniRef90－R616W0 UniRef90＿U2EY86
UniRef90 D3FDY1 UniRef90－M5RSI9 UniRef90－F7XXF7 UniRef90－R7KQR9 UniRef90－UPIIOOO370COC5 UniRet90－Q03EU1 UniRef90－LORF20 UniRef90－UPIooo3B4E1DA UniRef90－A1BDW8
UniRet90
R6HBGO UniRef90＿D4MMM2 UniRef90－H8YZ41 UniRef9O－UPIIOOO377D67C UniRef90＿R7FVW5 UniRef90－UPIO0036AF21C UniRef90－UPIOOOO37BE114 UniRef90－W2EAW1 UniRef90－KgVDJ3 UniRef90 D3LSM44 UniRef90－A3UGW0
UniRef90－UPIO002F1041B UniRef90－U2QUZO UniRef90 UPIOOO416C883 UniRef90－UPIOOO4772982 UniRef90－Q2RVF8 UniRef90－UPIOOO411F463 UniRef90 UPIO0040E6324 UniRef90－R5HDO2 UniRef90－G3BMS2 UniRef90－D5BPN2 UniRef90＿UPIOO020D97C9 UniRef90－G5ZZ866 UniRef90－Q189Y9 UniRef90－N1WXP7 UniRef90－B5JPX0 UniRef90 UPIO0029AD315 UniRef90－UPIOOO364E7D1 UniRef90－A3XPB1 UniRef90－K2D5N4 UniRef90－Q4JVD6 UniRef90－UPIIOOO2492719 UniRef90－UP100036E7E6F UniRef90－K1ZAF3 UniRef90－UPIIOO22F6FB42 UniRef90－R7ERN9 UniRef90－UPIOOO2899826 UniRef90－B2GIM1 UniRef90－R6VB41 UniRef90－UP100036D7D3D UniRef90－14B5Y2 UniRef90－UPIOOO35CEA45 UniRet90－W9A7J7 UniRef90－A9WIH5 UniRef90－EOXYU2 UniRef90－H8L156
UniRef90＿UPI00047CE701 UniRef90＿Q2GBA6
UniRef90＿G8NT55

## ー


m

## Q

## 

## 

## 

## D

## 

## E

## 

$$
t
$$




170
180
190
200
EEDTPGAEVLCPPGDLETLSDHLKAESYQVKDIEDRWVPS E E GDPVIVYVAPESLTAVKEALAKNGFEGES KITTYKPK
 EESDDAFLITTSVESFRDVRGAI ESMGI DYEDAELTYVPS H HEDDSFEVVTPPYDFSAI RQVLEKSGFKAEFAEVTMKPQ
 VDDGDAWEVHSTPDTFDALQAAFEAAGMEAERAELSMVPQ AASDGUVEVTTAPEDFEAVANALSEKGFETMSAEIVSMVAD



 DEHEESFEVQSEPSDLHDVVKGLEEAGVSYDNDEVAFVSD


## いエ














UniRef90_U9VMR8 UniRef90-A7HM20 UniRef90-UPIOOO2F82946 UniRef90-10GPSO UniRef90-TOBDN6 UniRef90-T1CNR8
UniRef90_K4LIW6 UniRef90-G5GGZ1 UniRef90-T2GE74 UniRef90-F5YC99 UniRef90-UPIO0035ED7E1 UniRef90-UPIO0026C7D55 UniRef90-H2CCN2 UniRef90-UPIO00362AC11 UniRef90-E8QYYO UniRef90-R5C9W3 UniRef90-D3R358 UniRef90-R6GML4
UniRef90 - $\times 5 \mathrm{JNO} 6$ UniRef90_UPIooo3B3730F UniReffo-OOAX12 UniRef90-LOKB70 UniRef90-C8W4C1 UniRef90-O38W22
UniRet90 12 F359 UniRef90-Q30YX4 UniRef90-A8TXE2 UniRef90-T5KII9 UniRef90-Q6A8LO UniRef90-R616W0 UniRef90_U2EY86
UniRef90 D3FDY1 UniRef90_M5RS19 UniRef90-F7XXF7 UniRef90-R7KQR9 UniRef90-UPIO00370C0C5 UniRef90 H8MOS9 UniRef90-QO3EU1
UniRef90-LORF20 UniRef90-UPIO003B4E1DA UniRef90-A1BDW8 UniRef90-R6HBGO UniRef90-D4MMM2 UniRef90-H8YZ41 UniRef90-UP1000377D67C UniRef90-R7FVW5 UniRef90-UPIO0036AF21C UniRef90-UPIOOOO37BE114 UniRef90-W2EAW1 UniRef90-KgVDJ3 UniRef90 D3LSM44 UniRef90-A3UGW0
UniRet90-UPIO002F1041B UniRef90-U2QUZO UniRef90 UPIOOO416C883 UniRef90 UPIOOO4772982 UniRef90-Q2RVF8 UniRef90_UPI000411F463 UniRef90-UPIOOO40E6324 UniRef90-R5HD02
UniRef90-G3BMS2 UniRef90-D5BPN2 UniRef90-UP100020D97C9 UniRef90-G5ZZ86 UniRef90-C9RKP0 UniRef90_O189Y9 UniRef90-N1WXP7
UniRef90 B5JPX0 UniRef90-UPI00029AD315 UniRef90-UPIO00364E7D1 UniRef90-A3XPB1 UniRef90-K2D5N4 UniRef90-Q4JVD6 UniRef90-UPIO002492719 UniRef90-UP100036E7E6F UniRef90-K1ZAF3 UniRef90-UPIO002F6FB42 UniRef90-R7ERN9 UniRef90-UPIOOO2899826 UniRef90-_2HA11 UniRef90-R6VB41 UniRef90-UP100036D7D3D UniRef90_- 4 BEY ?
UniRef90_UP10003! UniRef90_W9A7J7 UniRef90-A9WIH5 UniRef90-EOXYU2
UniRef90 $-\mathrm{H} 8 L 156$ UniRef90-UPI00047CE701 UniRef90-Q2GBA6

NTVDVTDTDQAKSLLKMMDALEDGDDVVSIVTANFDVISEEII NTVKVTGSD AEKVLKLIDALEDNDDVQEVFGNFDIDDAE NETELAGDD AEKMQKMLDMLEGLDDDVQEVYTTA AVFDEA NTVKLSGEDAEKMQKLEDALEDNDDVQNVYSNYETDED NEVEFSGDEABVRMQKLI DALESLDDVQAVYTTAVLSE STVPVTDRNTAEKVLNLLDALEEHDDVQRVYANFDITPDED NKVVLSDENDTKNMNRIIELLNAEDDVQAVYHSWD NTVAV DVESGRKLMKLVDALDDNDDVSNVHVNFDLPEEL TEVSLENEATAKAVKLIDRLEENDDVQNVYSNDAIPD NTVKLEGKNAQAMLKLYEVLEEHDDVQNVYSNYEVDE TLVPI DDSSAETLLKLIDMLEDLDDVQEVYNNAEFSEKQ DGTEVPDAEQASKTMKLLELLEDHDDVQAVYHNMQMSDEQ TTVDL DVELGKKMLKLREALDDNEDVQNVYSNDNLPDELL TYVELTEEKAVKDLQKTLELLEDDDDVTDVWHNWD TKVTVDDPEVAEQLEKLI EGLEEHDDVMAVYHNWD
TTVAL DNEGVEKVQRMLNWFDDNDDVQNVYHNAELP NSVEVTDTEQARSLLKLIDTLEGLDDVQDVTTNF ITKVDLELLDDAKFLRLHDALEDLDDVQNIHTNADLSSET
 NTVKLTGDD ADRMLTLMDLLEEHDDVQNAYANFDIEE NTTPV DPPKKDEQFQRLVDALEDNDDVQDVYTAGELEEEE
 LᄂKVE FTQRVEDA SYTRLENEDDARKLYRKMLDALEDLDDVQNVFNVD PA A EV TTTHLDDPDQIKKMGLLIDHDEEDDDVQDIWHNWDEED TRVNLDEDQATKLLRLI DALDENDDVNEVHANFDVDADV TMVDVEGS MAKSVLRLLEALDDHDDVQNVSTNLNITDEM TRVNLTDAESAPKLLRLIDMLEDSDDVQDVYHNGELSAKL NT円EL DADGARKMLRLIDLEENEDVQNVFTNMDVSDDV NTVKVEG DNAKRLLKLMDALDDNDDVQHVHANFEIDESL NETMVP EDKVKQYTGLIDELEDNDDVSEVYEAATLPED

 TMAEL DEEGVAKVQKMLDLLDDLDDVQDVYTNADLPDDD TYTTLTDEDQIKKMGLLLETLEDNDDVQNVWHNWDMD TNVEL DRDTAEKLLKLI DTLDDLDDVQDVYHNADTSDDD TTVKLEGKDAGKMMN LGEAALEEHDDVQNVYSNYDIDEEE DKVTL DEEQEETFRKMLDAFEENDDVQDVYHNVDLDDDE NTVEVTDSDQARSLLKLIDMLESLDDVQNVTANFDMSEEQ NTVAVEG ENAEKLLKMMDAFEDNDDVQDVYSNFEDSDEE N K N
 AEKMETLIDDALEDLDDVQDVYHNWD $N S \| A L G G D D A V K M Q K L D D V L E D L D Y V Q N V F H N A E F E D$ FNQTVDDVDEATKLERII DAVEDLDDVQNVYSNAEYSPQV TNGKVEDPEAVRKVLRLIDSLEDDDDVQQVYHNLELSEEV VQVPV DADTVPALMKFLDULDDCDDVQRVAANYEDDDA YDTDV DAETAEKVERII DALEDCDDVQNVFANYNAPD NDVAVEG ETAQQVAKLLDWLEDLDDVQNVYSNAQLGEDA NYVKLTDAGDIKNMEKLIDALEDNDDVQNVYHNWE
OTVELDGKAEQMLHLMEQLEEHDDVQNVYANFNDDEKT
 NTLDVN EDQARTLDKFIDTLEDNDDVQSLSFNFETSDDV DPVKLGHD
 TLT TNAA EKVERLLNMLEDLDDVQQAVYTN MQVEL DEEGARKMFKLIDALEDSDDVQNVFANFDVSDEV NTVELP DNQAQQVLNLAEKFEDDDDVQNVFATLELSEEL MEVPSAD TTVVEVPD TTAKKVFNLI DALE
$\qquad$ TOVPL DK NYTPVSDEE STVDLDDEEDRKMGLLI EKLEDDDDVMNVYHNWGNCDEE LIE KMENLMDTLENNDDVQDVYSNLLE NETVLQGAEGAEKMQRLLDALEDLDDVQNVYTSAVLETE TYVTLTDENDTKQLQRTLDLLDEDDDVQDVYHNWD TTVEL DVETARKVLKLIDALDDDDDSNVFHNAETPDEA TTVIGVEG EKAKEALEELIEAALEDNDDVQNVYTNLDELTDAMM TYSALNETEESK MLTLIETLEENEDVQDIHHNLEES TLIQPPDEKDALLAALRLIEKLEDLDDVQKVYSNLDDTAEL S Yilk LQ GS
$\qquad$ AKQCLKLMEKLE LESFLDMLDRLEDLDDVQDIYHNADLPAD ILVTLKDEDCEKVQNLIDKLEADDDVQSVYHNAEFPE MKTSVKLED CEKVQNL:DKLEADDDVQSVYHNAEFPEE

| UniRef90_U9VMR8 | L |
| :---: | :---: |
| UniRef90-A7HM20 | L E |
| UniRef90_UPI0002F82946 |  |
| UniRef90-I0GPS0 |  |
| UniRef90-TOBDN6 | E E |
| UniRef90-T1CNR8 |  |
| UniRef90-K4LIW6 | M |
| UniRef90-G5GGZ1 |  |
| UniRef90-T2GE74 | $\square \mathrm{A}$ |
| UniRef90-F5YC99 |  |
| UniRef90-UPI00035ED7E1 |  |
| UniRef90-UPI00026C7D55 | L |
| UniRef90-H2CCN2 | M E |
| UniRef90-UPI000362AC11 | M A |
| UniRef90-E8QYY0 | S D Q |
| UniRef90-R5C9W3 |  |
| UniRef90-D3R358 |  |
| UniRef90-R6GML4 |  |
| UniRef90-X5JNQ6 |  |
| UniRef90-UPI0003B3730F | L A |
| UniRef90-Q0AX12 | 1 A |
| UniRef90_LOKB70 | - A |
| UniRef90-C8W4C1 |  |
| UniRef90-Q38W22 |  |
| UniRef90-I2F359 | M E |
| UniRef90-Q30YX4 |  |
| UniRef90_A8TXE2 | M A |
| UniRef90_T5KII9 | Q A |
| UniRef90-Q6A8L0 | A A |
| UniRef90-R616W0 |  |
| UniRef90-U2EY86 |  |
| UniRef90-D3FDY1 | L E R |
| UniRef90_M5RSI9 | F E |
| UniRef90-F7XXF7 | A A |
| UniRef90-R7KQR9 | E E |
| UniRef90-UPI000370C0C5 | M A |
| UniRef90-H8MQS9 | M E |
| UniRef90-Q03EU1 |  |
| UniRef90-LORF20 | M A |
| UniRef90_UPI0003B4E1DA |  |
| UniRef90-A1BDW8 |  |
| UniRef90-R6HBG0 | E E |
| UniRef90-D4MMM2 |  |
| UniRef90-H8YZ41 | M A |
| UniRef90-UPI000377D67C |  |
| UniRef90-R7FVW5 | E E |
| UniRef90-UPI00036AF21C | L K K |
| UniRef90-UPI00037BE114 |  |
| UniRef90-W2EAW1 | M E R |
| UniRef90-K9VDJ3 |  |
| UniRef90-D3LSM4 |  |
| UniRef90-A3UGW0 | M A |
| UniRef90_UPI0002F1041B |  |
| UniRef90-U2QUZ0 | E E |
| UniRef90-UPI000416C883 | M A |
| UniRef90-UPI0004772982 |  |
| UniRef90-Q2RVF8 | M E K |
| UniRef90_UPI000411F463 |  |
| UniRef90-UPI00040E6324 | Y A |
| UniRef90-R5HD02 |  |
| UniRef90_G3BMS2 | M E |
| UniRef90-D5BPN2 | $\square \mathrm{A}$ |
| UniRef90-UPI00020D97C9 |  |
| UniRef90-G5ZZ86 | M T K |
| UniRef90_C9RKP0 | M D |
| UniRef90-Q189Y9 |  |
| UniRef90-N1WXP7 |  |
| UniRef90-B5JPX0 | L E |
| UniRef90_UPI00029AD315 |  |
| UniRef90_UPI000364E7D1 | M E K |
| UniRef90-A3XPB1 |  |
| UniRef90-K2D5N4 | M A |
| UniRef90-Q4JVD6 | $\square \mathrm{A}$ |
| UniRef90-UPI0002492719 |  |
| UniRef90-UPI00036E7E6F | LE |
| UniRef90-K1ZAF3 | L |
| UniRef90-UPI0002F6FB42 |  |
| UniRef90-R7ERN9 |  |
| UniRef90-UPI0002899826 |  |
| UniRef90-X2HAl1 |  |
| UniRef90_B2GIM1 | M A Q |
| UniRef90-R6VB41 |  |
| UniRef90-UPI00036D7D3D | M E |
| UniRef90-14B5Y2 |  |
| UniRef90-UPI00035CEA45 | LA Q |
| UniRef90-W9A7J7 |  |
| UniRef90_A9WIH5 | V A R |
| UniRef90-E0XYU2 |  |
| UniRef90 H8L156 |  |
| UniRef90-UPI00047CE701 |  |
| UniRef90-Q2GBA6 | M E |
| UniRef90 G8NT55 |  |

UniRef90_R5J4H2 UniRef90_I3I7U2 UniRef90_UPIO00362DC60 UniRef90_Q04YE4 UniRef90_M5E2S2 UniRef90_I5AQR6
UniRef90_D1BSJ6 UniRef90_UPI00037341E8 UniRef90_G2T1K7 UniRef90_Q1GYR5 UniRef90_W7YDC9 UniRef90_UPI00037AD813 UniRef90_D9SCL0
UniRef90_B3ES20
UniRef90_T2JAY5 UniRef90_K4ILV4 UniRef90_UPI000466E989 UniRef90_W7E0G9 UniRef90_UPI000288F433 UniRef90_Q88V33 UniRef90_L0EBC9 UniRef90_F7NX62 UniRef90_E1X4B8
UniRef90 R6S037 UniRef90_UPIO003479A00 UniRef90_UPI000363D917 UniRef90_W7BE47 UniRef90_UPI0003B59BE9 UniRef90_R8W1K1 UniRef90_UPI0003B5E99E UniRef90_E8U6P4 UniRef90_UPIO0021970E5 UniRef90_D4M634 UniRef90_F2NME7 UniRef90_A5N210 UniRef90_Q2RHT3 UniRef90_R7KBF4 UniRef90_UPI00037F2132 UniRef90_A5V1E4 UniRef90_UPI0003B3EC96 UniRef90_UPI0003B535FA UniRef90_L1QPY5 UniRef90_UPI0003B438A1 UniRef90_F7TCB3 UniRef90_E4UCR6
UniRef90_K9S457
UniRef90_A1QYH8 UniRef90_E6U5E8
UniRef90_R6FJV9 UniRef90_UPI00030E6CFD UniRef90-UPI0002626C31 UniRef90_R5IKF3 UniRef90_UPI0004726D77 UniRef90_C1A617 UniRef90_R5Y8U2 UniRef90_F8KW03
UniRef90 K9PVG8 UniRef90_A0A059ECT8 UniRef90_G4D5D4 UniRef90_A5V885 UniRef90_C2BIC1 UniRef90_UPI0002F6C1A1 UniRef90_V1CPN6
UniRef90 Q8Y978 UniRef90_UPI0003B58282 UniRef90_U6B6B1 UniRef90_S9T898 UniRef90_UPI00036158C5 UniRef90-UPI000287B6C2 UniRef90_X8K699
UniRef90_D9PMF3 UniRef90_D9PMF3
UniRef90_W7BCG7 UniRef90_R5ARX9 UniRef90_R6XYE5 UniRef90_L8M3D0 UniRef90_D0RPS7 UniRef90_C7HUX0
UniRef90_B3CTY9 UniRef90_-17Z8E9 UniRef90_Q9A3G1 UniRef90_G4L4A8
UniRef90 C7MMH4 UniRef90_M5JAE4 UniRef90_R6C1P7 UniRef90_UPI000374AD08 UniRef90_J9YXY7 UniRef90_R5ICA6 UniRef90_R5KYZ0
UniRef90- Q5GRW6 UniRef90_W0GL62 UniRef90_O84463
UniRef90_B1YHH3 1

K F K L FK D R K GK A D Q A K N N Q F V K L A R E I Y V Q A K K G G P N P D
SHWATIKHKKGASDAKRGQLFTKLAREVTVAARVGGENPD
SKWANI QHRKGKQDAKRGK FTRRLIKEITVAARMGGSDPT
S K WA N I K HR K GANDAK K A K YF G K L I R E I AA V K Q S G N D De
SKWANI KR QKERVDAKKGKTFAQLSRAI IVAAKHGDADPA
SKWATTKHKKAAIDDAKRGKLFAKLIKNIEIAARTGGGDPD
SKWANDKHKKA A ADAKR GKVVWTRRI K E I QVAARMGGGDP D
SKFKNIMHRKGAQDARRARDFAKII REITVVAAKTGLPDPA
SKWANI KHRKARQDASRGKVWTKVIVEITVAABKGGPDPD

KFK LFKDRKGKADQARNNKFVKLAREIVMHARRGGPYPE
SKWANMKHRKARQDAKRVKDFTKLIRELTVSARDSAADVD
SKWAN I RHRKGAQDAKRGKIVTKKLIKEITVAVKTGGSDPE
S K F A N I K H K K E KN DAA K G K V F T R L GK E L M V A V K E G GP D P N
S K WA N I K H K K A A A D A K R G K V WT R L D K E I T V A A R L G G G D V N





S K F A N $\quad$ K H K K E K N D A A K G K F F
S K WA QI K R K K A A NDAK R GKMIT K HL R AI QAAARAGGPDPA



SKWHNI QRRKNAQDAKKGKIIFMRHAKNI
SKWHNVQKTKGAQDAKRAAAFTKVIDKEMIVAVVKEGGGBDPA
SKWAN QQHRKKA QDARRGKDVTKKLIREVVTISARDGGGGDPA
S K WK TI K R A K A A T D NKRGALIFTRLIREIITMAAKLGGGDAG


S K F K N $\quad$ I M H R K G A Q D K K R S A
KWSK KNKKGSEDAKKGK FTKHARN
K WN NI K D K K A E K D K N T S R $\ddagger$ Y A K F G K E

K WA N I K EKKKASSK K T N S R $\square Y$ A K F G $\square E$
SKWHTTR HKKAA LDAK R A K M Y A N H I K A


S Q FKN
K WK

| N | Q |
| :--- | :--- |
| T | I |
| T | A |
| N | K |
| N | Q |

A GRKAAQDSKRAALFTKYAKA

1 T A A S M G GPDP D | $M$ | $A$ | $V$ |
| :--- | :--- | :--- |
| $T$ | $V$ | $E$ |

SKFKNDMHRKGAQDKKRSALFSKLSRE K WN N TVAAREGGLDPE Y V A A K K GEPDPE $T \vee A A$ KNGGDPE Y V A A K S G DPDPH E V A A R A G GP D LD T I S A K L S G P D QL
 SKWHND QKTK GA QDAKRAQAFTK I A REM

## $\begin{array}{ll}1 & Y \\ I & T\end{array}$

S K WH N A A K K GKA DA A R GK DF T K L G R E

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


SKWHNI Q GRKNAQDAKRGKI FQKI SRD
SKWHNDQAKKGKADAARGKVFTKLGRE
 RK ERKFK RWGNMARVVTRIIGKE


 TVAVK G GPDPD | $T$ | $A$ | $A$ | $K$ | $M$ | $G G S$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $T$ | $V$ | $A$ | $A$ | $K$ | $Q$ |
| $G$ | $L$ | $P$ | $D$ | $P$ | $E$ | $S \vee A \backslash K K G G P N \square E$



## UniRef90 R5J4H2

 UniRef90-1317U2 UniRef90-UPIO00362DC60 UniRef90-Q04YE4 UniRef90-M5E2S2 UniRef90-I5AQR6UniRef90-D1BSJ6 UniRef90_UPIO0037341E8 UniRef90-G2T1K7 UniRef90-Q1GYR5 UniRef90-W7YDC9 UniRef90-UPI00037AD813 UniRef90-D9SCL0
UniRef90-B3ES20
UniRef90-T2JAY5 UniRef90-K4ILV4 UniRef90-UPIO00466E989 UniRef90-W7EOG9 UniRef90_UPIO00288F433 UniRef90-Q88V33 UniRef90-LOEBC9 UniRef90-F7NX62 UniRef90-E1X4B8
UniRef90 R6S037 UniRef90-UPIOOO3479A00 UniRef90_UPIOO0363D917 UniRef90-W7BE47 UniRef90-UPIo003B59BE9 UniRef90-R8W1K1 UniRef90-UPIO003B5E99E UniRef90-E8U6P4 UniRef90_UPIOO021970E5 UniRef90-D4M634 UniRef90-F2NMET UniRef90-A5N210 UniRef90-Q2RHT3 UniRef90-R7KBF4 UniRef90 UPIIOOO37F2132 UniRef90-A5V1E4 UniRef90-UP10003B3EC96 UniRef90-UPIO003B535FA UniRef90-L1QPY5 UniRef90_UPIO003B438A1 UniRef90-F7TCB3 UniRef90-E4UCR6
UniRef90 K9S457 UniRef90-A1QYH8 UniRet90-E6U5E8 UniRef90-R6FJV9 UniRef90-UPIOOO30E6CFD UniRef90 UPIO0002626C31 UniRef90_R5IKF3 UniRef9OOP10004726D77 UniRef90-C1A617 UniRet90-R5Y8U2 UniRef90-F8KWO3
UniRef90-K9PVG8 UniRef90-A0A059ECT8 UniRef90-G4D5D4 UniRef90-A5V885 UniRef90-C2BIC1 UniRef90-UP10002F6C1A1 UniRef90_V1CPN6
UniRef90 O8Y9Z8 UniRef90-UPIO003B58282 UniRef90_U6B6B1 UniRef90_UPIO0036158C5 UniRef90-UP1000287B6C2 UniRef90 - $88 K 699$
UniRef90 D9PMF3 UniRef90-W7BCG7 UniRef90-R5ARX9 UniRef90-R6XYE5 UniRef90-L8M3D0 UniRef90-C7HUXO UniRef90-B3CTY9 UniRef90_-17Z8E9 UniRef90_O9A3G1 UniRef90-G4L4A8
UniRef90 C 7 MMH4 UniRef90-M5JAE4 UniRef90-R6C1P7 UniRef90_UPIO00374AD08 UniRef90-JgYXY7 UniRef90_R5ICA6 UniRef90-R5KYZO
UniRef90 Q5GRW6 UniRef90-W0GL62 UniRet90 B1YHH3

YNASLLKAAlIVKAKSDNMPNDNIIDRAIIKKGVGGGDGENYES ${ }^{80}$ DNPRLRAAVEKAYLNNLKKDVVERAI ARGAGTNESDAYEE DNPRLRSAI EKALNANMKRDTII DKAI ARGSGPGEGDNFE GNPRLRDAI LKAKSVNMPKDNIERAIKKGTGELEGVVYEE MNSDLRMAI QKAKDNNMPNDNIERAIKRGTGNLEGMSYES NNSKLRDVI AKAKAANMPNDTIKRGIEKAAGAASADNYEH GNPTLFDAG QKAKKTSVPKENDDRAVKRGSGGSEAVNYTE NNFKLAQVIAKARSNNMPNDTIERGIKKAAGDGNSVNYEF FNPRLRAAVAEAKEQNMPAENI DRAIKRGTGELEGVNYEE ANFALKTAI ANARHDNMPVDNIERAIKKAAGAGDDVDYEE MNVRLRLAVQKAKDNNMPVENVDRA:KRGVGLGEAGALEE GNPRLRLAMDKAYANNMPKDNVERAIKRGSGELEGVQYME GNFQLRTAIEKAKAAGMPNENIERAIAKGAGTYENDDYEE GNPTLYDAIVKAKKSSVPADNI TRAVKRGSGEEAGANYET SNPRLRDAMDKATDANMPKDNIKRAIDRGVGGAEGANYEE FNPRLRAAVAAARAVNMPKDNVDRAIKKAAGSGEGDNFQE DNPRLRLALDKANAANMPKDNIKRAIEKGSGTGDTGALEE SNAQLRLVMDKAKAANMPKDNIKRAVDKGSGSGAENYEE ANLALKNAI ANARAEQMPDENIERAIKRATATAGGEDYEE MNPRLRDALQNARGQNLPKDTIQRAIDKASG VGGDDYDE NNSKLRDVI AKAKSNNMPNDTI DRSIKKAAGDANAANFTA SNPRLRLAI DKATDANMPKDNIQRATQRGAGGLEGAHYEE GNFQLRTAIEKAKAAGDPNDNIERAI AKGAGKLGTDAPLE TNASLRLVVDKAKAVNMPNDN:KRA:DKASGNANAEHYDE INGRLRMVI AKARAANMPNENITRTIKKAKGQGAELQYEE GNSRLRAAI AAAKAVNDPKDKIEAAI RKGTGEDAGGDLTE ANLSLKNALAAAKTDTVPADNIENAIKRAVGSGEGTEYKE GNPQLRLEMEKAREANMPKDNVQRAIDKASG VGGAKFEE NNSRLRDVIAKAKANNMPNDTIERNIKKAAGEGTADNYER ANVQLRNAI EAARRDDVPQDNI DRLLAKLRGEGEGAQYEE
TNSKLRDII AKAKSNNMPQDTI NRAIKKGSGEMEGVNYEE GNMRLKAAI AKAKAANMPNENIQRAI MRGTGELEGAAYEE ANPSLRLVVEKAKAANMPKDNIQKAI DKAKGASDNEHYDV
 GNPRLRLAVKNARAESMPKDNI QRAI DKGAGGDSG DYFD NNFKLAQVVAKAKANNMPNDTIERGIKKAAGDGNAVNYEQ MNPRLRLAVNNAKAESMPKEN:ERAMKKASGGGEVDMEE ANPRLRTAVDKALSSNMTRDTINRAI ERGVGGGDDTNMET ENPRLRDAI QNAKSQSMPKENIERAIKKA GNNDDNNYTN GNFQLRTAIEKAKAAGDPNDNIERAI AKGAGTLGSESADE SNSRLRLAVNKARVSNMPKDNIEKAIKKGSGDDNGSEYFE SNSKLYDLIVKAKANNVPNDN:DRDIKKAAGGQEKDDYED GNAQLRLVMEKARAANMPKDVVKRALDKATGAGGQKFEE MNATLRTAVDKAKSDNMPNDNIERAIKKATGDLDGVHYEE YNSRLATVITKAKAANMPNDNIKRVLEKAAASGSGDNYET GNSRLRLAMEKAYAGNVPKDTVERADRATGEAGADT旨EE
 ANPRLRUVLQKAREANVPNDIIDRNIKKASSA DQADYDE GNFQLRTAIEKAKAAGIPNDNI DRAIAKGAGTFNSGDYEE ANPRLR乌AI QNAKGQSMPKDNI QRAVDKGQGG GGEDYVD YNPQLKVAIDKAKAENMPNDN:ERAIKKGSGEDSAESFEE MNARLRQAVDTARKEGLPKDN:ERSIMKAAGG DGANYEE LNQALKAVLERAKTYNVPKHIIDRAIEKAKGAGGGEDYDE YNVSLKHAI DKAKADNMPSDNIKRAIKKGTGEDAGENYET SNQKLRFVIERAKTYNVPKHDIDRAIEKAKGTGDETYSE
 MNARLRAAI DAARAENVPKDNIERAIKKASGA DAESYDE TNSALRLVIEKAKGANMPNENIDRAI QKAAGNQDGSSYEE YNAGLRVA EKAKADSMPNDNITRAIKKGTGELEGVSYEE ANPKLRVAIANAKGVNMPKDNIMRAISK GEKDEAGLQE NNSRLAAVIAKAKAANMPNDNIKRTI DKALGSGNTDNYES GNSKLKAVI AKCKAANMPNDTINNAIKKASASNE NYEE GNFQLRTAI DKAKAAGDPNDNIERAKGAGTYQEDGVVFEE MNPRLRSAVQAAKEANMPKDNIDRATKKSQGGDE ANYEA YNPALKAAI DKAKAENMPNDNIERAIKKASGDTSGANFER YNPRLRAAISAAKFNNLPKDRIEKAIAHANNKDNYENYFE GNPRLRLAVSRALDVNMTKDKI ETAIKRASGEGADAQ QE MNPRLRLAVNNAKAESLPKDVIERAIK KSQMGDAADYSE TNSSLRMVMDKAKSANMPNDNVERAIKKATSSTDGANYEE NNASLAAAIEKAKGYSLPKDKIKTAI DKAFGGKDAASYET SNASLRLVMDKAKAANMPKENI QRALDKASGA GGANYQE GNSKLKDVIAKCKAANMPNDTI NNAIKKASGAGNAENYEE SNSALKFVLERAKQAQVPKHIIDKAIDKAKGNTDETFVE MNPRLRSAI QAARSANMPKDNIERAI D KSSAAAGANYEN NNPRLRTLI QTARSENMPKENIERAIKRAVEHDAGDYEE TNSKLKDVI SKAKAQNMPNDNINRGQKAIGDSNADSYEE
 SNPSLR LVLEKARANNMPKDNYEKVI KKAA GETTTNDNYE E


UniRef90_R5J4H2 UniRef90 I3I7U2 UniRef90_UPIO00362DC60 UniRef90_Q04YE4 UniRef90_I5AQR6 UniRef90-D1BSJ6 UniRef90_UPI00037341E8 UniRef90_G2T1K7 UniRef90_Q1GYR5 UniRef90_W7YDC9 UniRef90_UPI00037AD813 UniRef90_D9SCL0
UniRef90-B3ES20
UniRef90_T2JAY5 UniRef90_K4ILV4 UniRef90_UPI000466E989 UniRef90_W7E0G9 UniRef90_UPI000288F433 UniRef90_Q88V33 UniRef90_L0EBC9 UniRef90_F7NX62 UniRef90_E-E1X4B8
UniRef90_R6S037 UniRef90_UPI0003479A00 UniRef90_UPI000363D917 UniRef90_W7BE47 UniRef90_UPI0003B59BE9 UniRef90_R8W1K1 UniRef90_UPI0003B5E99E UniRef90_E8U6P4 UniRef90_UPI00021970E5 UniRef90_D4M634 UniRef90_F2NME7 UniRef90_A5N210 UniRef90_Q2RHT3 UniRef90_R7KBF4 UniRef90_UPI00037F2132 UniRef90_A5V1E4 UniRef90_UPI0003B3EC96 UniRef90_UPI0003B535FA UniRef90_L1QPY5 UniRef90_UPI0003B438A1 UniRef90_F7TCB3 UniRef90_E4UCR6
UniRef90_K9S457 UniRef90-A1QYH8 UniRef90_E6U5E8 UniRef90_R6FJV9 UniRef90_UPI00030E6CFD UniRef90_UPI0002626C31 UniRef90_R5IKF3 UniRef90_UPI0004726D77 UniRef90_C1A617 UniRef90_R5Y8U2 UniRef90_F8KW03
UniRef90-K9PVG8 UniRef90_A0A059ECT8 UniRef90_G4D5D4 UniRef90_A5V885 UniRef90_C2BIC1 UniRef90_UPI0002F6C1A1 UniRef90_V1CPN6
UniRef90 Q8Y9Z8 UniRef90_UPI0003B58282 UniRef90_U6B6B1
UniRef90_S9T898 UniRef90_UPI00036158C5 UniRef90_UPI000287B6C2 UniRef90_X8K699 UniRef90-D9PMF3 UniRef90_W7BCG UniRef90_R6XYE5 UniRef90_L8M3D0 UniRef90_C7HUX0 UniRef90_B3CTY9 UniRef90_I7Z8E9 UniRef90_Q9A3G1 UniRef90_G4L4A8
UniRef90 C7MMH4 UniRef90_M5JAE4 UniRef90_R6C1P7 UniRef90_UPIO00374AD08
UniRef90_J9YXY7 UniRef90_R5ICA6
UniRef90_R5KYZ0 UniRef90_Q5GRW6 UniRef90-W0GL62 UniRef90_O84463
UniRef90_B1YHH3



## 1



100
 $L T Y E G Y G V N G V A F I V E C M T D N R N R T A G D V R H A F D K K G G N L$




C


## 



## >

>2
1
-
$\left\lvert\, \begin{aligned} & I \\ & I \\ & I\end{aligned}\right.$


| $L$ |
| :--- |
| 1 |
| 1 |
| $V$ |
| $V$ |
| $V$ |
| $V$ |
| $M$ |
| 1 |

TYEGYGPGGTAIMV
TYGGYPGGVAVIV
TYEGHPGGVAVIV
-
-r-- <br> \section*{- <br> \section*{- <br> -}




UniRef90 R5J4H2

| UniRef90-1317U2 | MEQ |
| :---: | :---: |
| UniRef90-UPI000362DC60 |  |
| UniRef90_Q04YE4 |  |
| UniRef90-M5E2S2 | R A |
| UniRef90-I5AQR6 |  |
| UniRef90-D1BSJ6 | M A |
| UniRef90-UPI00037341E8 | Y K K |
| UniRef90-G2T1K7 |  |
| UniRef90-Q1GYR5 |  |
| UniRef90-W7YDC9 | ME R |
| UniRef90-UPI00037AD813 | LE Q |
| UniRef90-D9SCL0 |  |
| UniRef90-B3ES20 |  |
| UniRef90-T2JAY5 |  |
| UniRef90-K4ILV4 | M A Q |
| UniRef90_UPI000466E989 |  |
| UniRef90-W7E0G9 | A E |
| UniRef90-UPI000288F433 |  |
| UniRef90-Q88V33 |  |
| UniRef90-LOEBC9 | $\square \mathrm{AK}$ |
| UniRef90-F7NX62 | M ${ }^{\text {A }}$ |
| UniRef90-E1X4B8 | M E |
| UniRef90_R6S037 | E E |
| UniRef90-UPI0003479A00 |  |
| UniRef90-UPI000363D917 | M |
| UniRef90-W7BE47 |  |
| UniRef90-UPI0003B59BE9 | M E R |
| UniRef90-R8W1K1 |  |
| UniRef90-UPI0003B5E99E |  |
| UniRef90-E8U6P4 |  |
| UniRef90-UPI00021970E5 |  |
| UniRef90-D4M634 |  |
| UniRef90-F2NME7 |  |
| UniRef90-A5N210 |  |
| UniRef90-Q2RHT3 | M D Q |
| UniRef90-R7KBF4 |  |
| UniRef90-UPI00037F2132 |  |
| UniRef90-A5V1E4 | A E Q |
| UniRef90-UPI0003B3EC96 | LE |
| UniRef90-UPI0003B535FA |  |
| UniRef90-L1QPY5 | A AK |
| UniRef90-UPI0003B438A1 | L E |
| UniRef90-F7TCB3 |  |
| UniRef90-E4UCR6 |  |
| UniRef90-K9S457 | M A |

UniRef90-A1QYH8
UniRef90-E6U5E8
UniRef90-R6FJV9
UniRef90-UPI00030E6CFD
UniRef90 UPI0002626C31
UniRef90-R5IKF3

| UniRef90-UPI0004726D77 |
| :---: |
|  |  |

UniRef9- R5Y8
UniRef90-F8KW03
UniRef90-K9PVG8
UniRef90 A0A059ECT8
UniRef90-G4D5D4
UniRef90-A5V885
UniRef90_C2BIC1
UniRef90 UPI0002F6C1A
UniRef90-V1CPN6
UniRef90-Q8Y9Z8

| UniRef90_UPIO003B58282 | L E |
| :--- | :--- |
| UniRef90_U6B6B1 | $\perp \mathrm{D}$ K |

UniRef90_U6B6B1
UniRef90-S9T898
UniRef90-UPI00036158C5
UniRef90 UPI000287B6C2
UniRef90-X8K699
UniRef90-D9PMF3
UniRef90 W7BCG7
UniRef90-R5ARX9
UniRef90_R6XYE5
UniRef90 L8M3D0
UniRef90 D0RPS7
UniRef90_C7HUX0
UniRef90-B3CTY9
UniRef90 I7Z8E9
UniRef90-Q9A3G1
UniRef90_G4L4A8
UniRef90-C7MMH4
$\frac{\square}{E} E$
VAK

UniRef90 M5JAE4
UniRef90-R6C1P7
UniRef90_UPI000374AD08
UniRef90_J9YXY7
UniRef90-R5ICA6
UniRef90_R5KYZ0
UniRef90-Q5GRW6
UniRef90 W0GL62
UniRef90-O84463
UniRef90_B1YHH3


UniRefgo－V5XMO3
UniRef90－UPIO003A6E939 UniRef90－XOYDI1 UniRef90＿Q113G4 UniRef90＿G2IHL5 UniRef90＿G9XC35
UniRef90＿Q1D2J3 UniRef90＿Q4L491 UniRef90－B3QTP5 UniRef90＿UPI00024931E6 UniRef90－K2FLM6 UniRef90－D6XXM4 UniRef90＿R5ZG27 UniRef90－K2C154 UniRef90－UPI00040361E6 UniRef90－K2A9M3 UniRef90＿R6T786 UniRef90－JOL774 UniRef90＿Q5FHN8 UniRef90－W2C2R7 UniRef90＿UPI0002001C64 UniRef90＿UPI0003B3DFB6 UniRef90－UPI0004171EE2 UniRef90＿C7PUA6 UniRef90－F8NA88 UniRef90＿C4XFK9 UniRef90－H8KY50 UniRef90＿UPI00047CFA7B UniRef90－UPI0003479E45 UniRef90＿Q4A636 UniRef90＿C6X235 UniRef90－W8A1U0 UniRef90－UPIO0016C5375 UniRef90＿UPIO004039BC8 UniRef90－K1MR30 UniRef90－10KBS2 UniRef90＿E1QZB4 UniRef90－UPIO0037C1606 UniRef90－F4KL36 UniRef90－R5W5A0 UniRef90＿UPI00016B2491 UniRef90＿UPI00041BCB48
UniRef90＿UPI00037A417A UniRef90－X1KXI6 UniRef90－K4IIM4 UniRef90－K2EJ28 UniRef90－H3RQA4 UniRef90＿V5RVT5
UniRef90＿X1THK44 UniRef90－X1C0P1 UniRef90－C0BH80 UniRef90－F9QDQ5 UniRef90－H6L4Q5 UniRef90－A3D200 UniRef90－A1SWFO UniRef90－K1YKD3 UniRef90＿UPI0003B73C7F UniRef90－A5GN83 UniRef90＿UPI000237D5EE UniRef90－UPI0003762DFE UniRef90－W8VXS5 UniRef90＿A6DP35 UniRef90－W0EZU2 UniRef90－U5Q5V8
UniRef90_UPI0003751D74
UniRef90-A0A031MGB3
UniRef90-S8FGP0
UniRef90-Q2W2A1
UniRef90-E9RSN4
UniRef90-LORW83
UniRef90-E6PJ48
UniRef90_UPI0003FD4518
UniRef90_15C779
UniRef90_Q1N2D1
UniRef90_R5SIE6
UniRef90_UPI00037A63EC
UniRef90-TOC4A0
UniRef90-UPI00037A6192
UniRef90-E4KND6
UniRef90-UPIO00429D065
UniRef90_UPIO0036385C9
UniRef90_UPI0003B3C6D8
UniRef90-Q2RZ66
UniRef90-Q0VNJ7
UniRef90-K2E4C6
UniRef90-W0T7Z9
UniRef90_U2IYK6
UniRef90_UPI00046FE394
UniRef90-S2JME1
UniRef90-K7AW34
UniRef90_UPIO0028994F8

SKWHNI QARKSKVDSKRSKI FTKLVKEI
H T I E N RK GK QDAKRAKI F TKYARLI
N

N
S
S
S
S
S SKWATTKHRKGAQDAKRSALESKLLSRN S K WS K DQ HKK GKA D A Q R G N L F T K L C K A S H WA Gil K Q R K GVVNDAAK RA NV F T K Y G R L

 RKARKFK RWGNMARVVTK L GKE S R WA Q I K R T K AVVVDAKRGAVVTRRLGRE NKWSKI KRQKAKEDKKKSKVWARLSRE SKWANI QHRKGRQDKARSKLLFSKLAKD RKATMFARWDRMAKQFTR I GKD
RKATKLKRWGHMARTRTKLGKE
S H WA G
RK K K ANDA A RGK F QKMF K E
IE GRKNAEDAKRAKV F TKGLIR E
RKARKMKRWSTMSKTFTRIGGKD
SHSAN
RA ARKNAQDAARG

SHAKN MRHKAVVDAKRGKLFSKDGRY
S K WA NI K R Q K A RVVDAVVKGKV FA K I S R E
K WM N $\ddagger$ K E K K A Q K D K D T S R V Y A K F G $\square E$
S K W A T
TKARKMKRWGQMA

S K WA K RKGRKMKRWAAMSKAFTK $\square G K D$ RKARK L K R WGNMARVVF T L L GKE RKATKLKRWGHMARTF IK R DK GAN DAK R GA $\square F$
$R K A R K F K R W D K M S K A F$
F QNRKESMAKTAAAKTKVYSRLGKE $S K W S Q \square K R Q K G V A A A R R G Q L Y S K Y G R E$



SKWK T IK HKKSKEDAKRGRLFSKLTKV RKARKMKRWSAMAKTFTRI GKD SHSAN $\square A H R K G A Q D A A R G K \square F Q K L S K E$ RKERKMKRWSQMAKVFTK』GREI
$Y Q N K K E S M A K T A G Q K T R I Y S R Y G K E$
$Y Q N R K \square S M A K T A G A K T K V Y S K Y G K E$


SKWSQDKRTKAVVDAKRGAVFTRDGRE RKARKLKRWGNMAKTFTKI GRE
SHFKN

FENRKHSMAKTGAMK $\quad$ K $\quad$ GY TKFGKE RKATMFARYDRMAKQFTRDGKE RKERKFKRWGNMSRVFTRLGGEE K FEVVRKASMAKTGGAKSKVYAKYGKE


 $V M A / V K E G G Q D P N$ YVAASA GGPDPE A LAVK E G GPDPE Y V VA K Q G G VE P D $Y \vee A A K N G G F D P D$ $\vee \vee A A R E A G G D P D$ $Y \vee V A K S G G A D P D$ $T V A A R \quad Q G A D P D$ S I A VR N G G P D P A | $T$ | $S$ | $A$ | $K$ | $L$ | $G$ | $P$ | $D$ | $P$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $E$ |  |  |  |  |  |  |  |
| $V$ | $A$ | $A$ | $K$ | $E$ | $G$ | $G$ | $P$ | $D$ |
| $P$ | $D$ |  |  |  |  |  |  |  | $Y \vee C A K N T S S D P D$ A I A VK A G GPDP H T I A AK A G G G D P D $Y \vee V A K N G G V D P E$ $Y \vee C A K S G G V D P N$

SKFANDKHKKEKNDAAKGK】FTKDGREDAVAVKEGGPDPA
 SKWHN I R L R K GKVVDAQR GA L F T KL L S K E

K WNNIKEKKAQKD QNTSRVYAKFGRE
MSKVFT R LGKE YVAAKK GEPDPE
Y Q NRKESMAKTAAQKTKVYSKYGRE RKERKMKRWGHMAKTFTK $\square$ GKEI RKAAMAKTAGAKTKVYSKYGKE

RGQVFTRALKD | $K$ | $W$ | $N$ | $N$ | $I$ | $K$ | $E$ | $K$ | $K$ | $A$ | $N$ | $K$ | $D$ | $A$ | $N$ | $T$ | $S$ | $R$ | $Y$ | $Y$ | $K$ | $F$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | K |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | RKERKFKRWDKMSKVFTRLGKE

F Q NRKESMAKTADAKTKVYSKYGRE S KWATTKHKKAVVDARRAKSWAKLIDN K WAKVKRKKQKDDRRKSKVWARLSSQE

Y Q NRKESMAKTSDMKAKVYSRYGRE S H F AT TMK R QKA A ND S A K G NL F S K LA R A K WANI K DKKAAKEQTTSKVNAKFGLEL SKWANIKHTKAKNDAERTKIVYNMANQ RKERKFKRWAKMAVQFTRLGKE I
RKASMAKTQQAK】KVYSKYGKE NKWSKVKHTKGAKDAKKSIMYSKMSLE K F E VRK $\square$ S MAK T A GAK T KVVY S KY GK E
 VMA VK G P P $V M A V K A G G P D P A$
$Y V C A K K ~ G S P D P B$ T I A VK Q G GP DV I YVCAKNGGADPE F L A SKSGSGDPE $Y \vee A A K K G E P D P V$ Y A A AK Q GEPDP E VMAVK T G GPDPN YVVAK A G G S DPN $E \vee A A K L G G A D L Q$ EKAAREGGGDPD Y V S A K S G GVDP T MI A A K S G G D P D Y V A AK Q G D P D P S $T V A V K L G G S D P A$ A SVVKEGGPHPE $Y \vee C A K N G G P D P D$ $V$ SA A R A G GID P S K WN NIIK EKKAAKDKDTSRINAKFGREIVVAAKSGEPDPE

UniRef90_V5Xм03 UniRef90-UP10003A6E939 UniRefofo-XOYDII UniRef90-Q113G4 UniRef90_G21HL5 UniRef90_G9XC35
UniRef90 Q1D2J3 UniRef90- O4L 491 UniRef90-B3QTP5 UniRef90-UPIOOO24931E6 UniRef90-K2FLM6 UniRet90-D6XXM4 UniRef90_R5ZG27 UniRef90-K2C154 UniRef90-UPI00040361E6 UniRet90-K2A9M3 UniRef90-R6T786
UniRef90- Jol 774 UniRef90-Q5FHN8 UniRef90-W2C2R7 UniRef90-UPIO002001C64 UniRef90-UPI0003B3DFB6 UniRef90_UPI0004171EE2 UniRef90-C7PUA6 UniRef90-F8NA88 UniRef90_C4XFK9 UniRef90-H8KY50 UniRef90-UP100047CFA7B UniRef90-UPI0003479E45 UniRef90-Q4A636 UniRef90-C6X235 UniRef90-W8A1U0 UniRef90-UPI00016C5375 UniRef90-UPIOO04039BC8 UniRef90-K1MR30 UniRef90_10KBS2 Uniree90 E1Q
UniRef90-UPIOOO37C1606 UniRef90-F4KL36 UniRef90-R5W5A0 UniRef90-UPIOOO16B2491 UniRef90-UPIO0041BCB48 UniRef90-UPIo0037A417A

## UniRef90 X1KX16

UniRef90-K41IM4 UniReffo-K2EJ28 UniRet90-V5RVT5 UniRef90-X1THK4 UniRef90-X1COP1 UniRef90 CoBH8O UniRef90-H6LUQ5 UniRef90-A3D200 UniRef90-A1SWFO UniRef90K1YKD3 UniRef90-UPI0003B73C7F UniRet90_A5GN83 UniRef90-UPIO00237D5EE UniRef90-UP10003762DFE UniRef90_W8VXS5 UniRet90_A6DP35 UniRef90 WOEZU2
UniRef90 ${ }^{2}$ U55V8 UniRef90-UPI0003751D74 UniRef90-AOAO31MGB3 UniRef90-S8FGP0 UniRef90-Q2W2A1 UniRef90-E9RSN4 UniRef90-LORW83 UniRef90-UPIOOO3FD4518 UniRef90_-15C779 UniReffo-O1N2D1 UniRef90-R5SIE6 UniRef90-UP100037A63EC UniRef90-TOC4AO
UniRef90 UPIOOO3 UniRef90-E4KND6 UniRef90-UPIIO00429D065 UniRef90-UPIOOO36385C9
UniRef90- UPIOOO3B3C6D8 UniRef90-Q2RZ66 UniRef90 QOVNJ7 UniRef90-K2E4C6
UniRef90 W7CVY9 UniRef90-WOT7Z9 UniRet90-U2IYK6 UniRef90-UPIO0046FE394 UniRef90 S2JME1 UniRef90_K7AW34 8

50

AN Q K|L|RFIVI|ERAKTYNV|PKH\|I|DRA|I|EKAKGSGD ETYS E S NPRLR QAVKKAKALNMPNSNI DKAIVKGVGELDNVIIE E
 GNSKLK KAIIEKAQYNNIPKETIERAIMKGAGELSGDNYEN Y N A A L K N A I D K A K S ENMPNDNI DRAI KK GAGGGE GDNYE S
 SNQAL RLVLERAKTYSVPNHDIDRAIDKAK GAGDENYDH GNPRLRRLAIENARANSMPAENI KRAVQRGTGEDDGANYE E S N A A L R L I V D K A R A A N M P K D N I K R A L D K A E G G S E E H Y D E
 NNASSLAAAVAKAKAQSMPKD KI K SAAIDKAFGGADAA VYE N MNFSLRDAVEKAKEENVPKDNIDRSIVKGTGEKDGEEDQE SNQALKVVLERAKTYSVPKHIV MNFKLQMAIDRARLENMPKDT ERA

 SNPRLRVLMQTAKKENMPKDNV GNF RLRVLMQTAKKENMPKDNVDRAIVKASSKK Y T DYY E


 N NPRRLRAII ATCKKENMPKDNNI QRAIIKNAMGK DQSEYK E MNPALLKLAIAKAKSKNMPKANI ERALAKAKGGKDASAYTE S NARLLRVIMQNAKGANMPKDRIVAAIMRAT DKDTSNYEE ANPRLRAAVDKALAANMTKDTIERAIMRGSGAEGGADMHE T NARLRAVI Q NAKAANMPKDNVERAI KRATSK DTENYKE MNSALKLAI SKAKAKNMPKDNIERAI SKAKGDKNSNSFTE A NPA L R RCI Q NAKGANMPKDNVERAI KKASGA EAENYEE

 L N Q K L NNASLAAAVARARMVSMPNAKI QAAI DKAFGTGDAVVYKE S NS H L R AVVI Q NAKAVNMPKDNI ERAM KKAS DKNTENYKE TNPRLLRVLVQTAKKENMPKENVERAIKKATDKDSNTDYKE SNTRRLRLLI QNAKAENMPKDNI ERAI KRADSK DTS DYKE M NPALA LAI EKAKAANMPNSNI QRAI DR VNDKNAAADE E TNSRRLRTAI QNAKGVNMPKDRI EAAI KRASSKEEK DYE E GNLALR GLI DKAKKDQVPTHVI EKALDKAS GA GGEDFAA ANFRLRLVVQKARDNNMPLDNIERAIKRGSGHAEDAALAE
 NNPQLRLVI DKAHAANMPKKNI QRAI EKATGAGGGAKFEE MNPALABAI EKARQANMPKENI QRSIDDRVADKNAAVLEE
 NNSRLRAVI QNAKAANMPKENVERAIVKASDKDTG DFKE S N P A L K L A I S K A K A K N M P K D N I E R A I Q K A K G D K N S S S Y DE

 TN NK L R MA A E K A R S A NMP K D Ni D R A V A R GA GTGGG S A LE T
 GNFQLRTAIAKAKAAGVPAGNIERAIAKGSGGGEADKLES G NPRLRMLI Q NAKTANMPKENVERAI KKATGK DPSDYKT M N P R L R A AV Q A A R A A N M P K D N I E R A I K K S Q G N S N S K L R A VI Q N A K A V V N M P K A N V E R A I K K K A S D K D T K N Y E T


 NNSRLRDVVIAKAKANNMPNDNMDRASIMRGAGGEDGTNYEE MNPALK LAA AKAKSKNMPKDNI ERAI AKAKGSKNSDTYTE ANYRLKMAVEKARANNMPRENI ARAI ARGGGSGNEREDE E A NQALKVVLERAKTYSVPKHII $\begin{array}{llllll}T & N A K & R & T \\ A & V & Q & \text { Q A K G A A MP K D R }\end{array}$
 T N L S S L T N FLLL K VAIDD R C K K F N V P K D N I

 GNDLA L R R GLDMERAAK K D Q V P P S H V I
 ANVALS QAL ERAREEDMAKDTI A NLA L R SLLI E RAKK D QVP G HVI M N YKLRREI DKAREAGMPK D NI E TNRKLHAVI ERAKTYNVPKHV






## UniRef90 V5Xм03

 UniRef90-UPIOOO3A6E939 UniRef90-XOYDI1 UniRef90 ${ }^{-}$G21HL5 UniRef90-G9XC35 UniRef90-Q1D2J3 UniRef90_Q4L491 UniRef90 B3QTP5UniRef90 YPIO002 UniRef90-UPIOOO24931E6 UniRef90-K2FLM6 UniRef90_R5ZG27 UniRef90-K2C154 UniRef90-UPI00040361E6 UniRef90-K2A9M3 UniRef90_R6T786 UniRef90_JOL774
UniRet90_Q5FHN8 UniRef90-W2C2R7 UniRef90-UPIO002001C64 UniRef90-UPI0003B3DFB6 UniRef90 UPIO004171EE2 UniRef90-C7PUA6
UniRef90-F8NA88
UniRef90_C4XFK9 UniRef90-H8KY50
UniRef90-UPIO0047CFA7B UniRef90-UPI0003479E45
UniRef90-Q4A636
UniRef90-C6X235
UniRef90-W8A1U0
UniRef90-UPI00016C5375 UniRef90-UPIo004039BC8 UniRef90-K1MR30 UniRef90_10KBS2 UniRef90 E1QZB4 UniRef90-UPIo0037C1606 UniRef90-F4KL36 UniRef90 R5W5A0 UniRef90_UPI00016B2491 UniRef90 UPIOOO41BCB48 UniRef90-UPIOOO3
UniRef90 $\mathrm{X} 1 \mathrm{KX16}$ UniRef90-K4IIM4 UniReffo-K2EJ28 UniRef90-H3RQA4 UniRef90-VRVVT5
UniRef90-X1THK4 UniRef90-X1COP1 UniRef90_COBH80 UniRef90-F9QDQ5 UniRef90-A3D200 UniRef90_A1SWFO UniRef90-K1YKD3 UniRef90-UP10003B73C7F
UniRef90 A5GN83 UniRef90-UPIO00237D5EE UniRef90-UPIo003762DFE UniRef90_W8VXS5 UniRet90_A6DP35 UniRef90-W0EZU2 UniRef90-UPI0003751D74 UniRef90-AOAO31MGB3 UniRef90-S8FGPO
UniRef90 O2W2A1 UniRef90 E9RSN4 UniRef90-LORW83 UniR Ref90-E6PJ48 UniRef90_UPI0003FD4518 UniRef90_15C779 UniReffo-O1N2D1 UniRet90-R5SIE6 UniRet90_UPIO0037A63EC UniRef90-TOC4AO UniRef90-UPIo0037A6192 UniRet90_E4KND6 UniRef90_UPIO00429D065 UniRef90-UPIOOO36385C9
UniRef90- UPIOOO3B3C6D8 UniRef90-Q2RZ66 UniRet90-QOVNJ7 UniRef90-K2E4C6
UniRef90 W7CVY9 UniRef90-WOTZZ9 UniRet90-U2IYK6 UniRef90-UPIOO046FE394 UniRef90_S2JME1 UniRef90_K7AW34
 DEVVGLEEDNQKVEKLLEFLDDLEDVQNVFSN STVPVNDDKTAKKI HTIEVSDPEQARSL LK LMDALDDDDDVQNTTANFDDANKL TNVFLDSDEKDNTIEKFIDALEDDDDVQEVFCNAE NYTT DESNEKMMERLLDSLEDDDDLQNVFHNAK NTVAL DVDTVKKLLKLLDALEENDDVQNVHGNYEDEDAM TDIELSEDDQATFEKLIDALEDLDEDVNVFHNVDL
 QKTTLSPDDQTDY EKLLETLDEQDDVQEIFDNL TEVTLQPEAKLQKFDKLVDALEEGDDVQQVYHNVNMADE TPTEVSGADTAKKVQRLYDRLEELDDVQDVYSTMDMTDEL NDVTLP EDGLAKFEKMLDVLEDDEDVQRVYHNVDGGE QKTEL DADSKIDYEKLLEKLDENDDVQEVYDNL
 NITTIDDEELQKRILNLMDVLENNDDVQHVDSNF DLKDVTPPEQRETLDKLHERLEEDEDVQNVFHNMKESEEE

 DLTDIPAADQRETVEKMVEKLDDFDDVQNVYTNLKPSE TYKEVTAEQEAE VVKLIDKLEEDDDVNAVYHNMAPREE MDVKHLNEEQRADVEKLLEKLEDDDDVQHVYHNMAEEE

K E V S
TEDSL $\qquad$

 TRTEVTEEQEEEVLSMLERFEEDDDVQAVFHNM
NTTVVESOKVSQYKHLYDEETONDDVADVYEAGVIEDD
APVENNDQETADKVMKVLDALDDVDDVVNVHTNADV
AMVEELNEEKAADQVMKLLDKLEGLDDVQHVSNDDFSDST
NYKLLDESKTLKALL
\TKKLNPEAQEEVLSLIEKTEEDDDVQQVYHALDTQE LF TAL DDEKKEKLLNFANDLQEDDDVQDVYHNLEI ASKKLEDPDQDAEDENLIDKFEDDDDVQKVFHSMEI DMTKVEGEDVA MFEKFIAABEDCDDVQNVYHNAEIED DDHDVA PE HVDKFEKFMAMLEDCDDVQEVYHNAVLPDE EPVAVSESDSMK LINQDYEALDNLDDVQNVFT NTAPIS ADDLPMFFKFMDMLNELDDVQNVYHSAELPED T N
N
V
V SKVNL DKETFDKVVNFLEQTEDDDDVQNIFTNFEVDEKL VQKELTPEQQEDVDKLLEKLEEDEDVNNVYTTITKDADD NMHAVATADAAR FEKFINMLDDCDDVQEVYHNAEVE TTVPVTD EQAEEVSKLIERLEODDDVQKVFHNM TELLKELNEEQKADIEKLIERFENDDDVQNVYHTMAD
 TTVPVADEETARTLDKLLDTLEDNDDVQRVQANFEDPDDD
MYVEY DEEKEKKLLDFVEKLKDDDDVQDVYHNDED TPIALEGERLGEAL AFYDALEEHPDIVRVFINLD NEVNLEDEDQEKFEHLTDVLEDLEDVSNVFHNVNL $T Y T I A$
$T$ TTQPIP EDDMPMYEKFMDMLEDDDDVQKVFHNGELDEE
 TFVTLPNEEAEAQFDKLIDALLEDCEDVQQVYHNVEFAD TLTELLTEEQEELDHKLIDRLEEDDDVNQVFTNM


$$
\begin{aligned}
& \text { TIVELEEKAAVE } \\
& \text { VTKGLSEEEK EDVDKLLEKTEEDEDVQNVYHTME }
\end{aligned}
$$

UniRef90_V5XM03
UniRef90-UPI0003A6E939
UniRef90-XOYDI1
UniRef90-Q113G4
UniRef90-G2IHL5 UniRef90_G9XC35 UniRef90-Q1D2J3 UniRef90_Q4L491 UniRef90 B3QTP5 UniRef90_UPI00024931E6
UniRef90-K2FLM6
UniRef90 D6XXM4 UniRef90-R5ZG27
UniRef90-K2C154
UniRef90 UPI00040361E6
UniRef90-K2A9M3
UniRef90_R6T786
UniRef90-J0L774
UniRef90 Q5FHN8
UniRef90-W2C2R7
UniRef90_UPI0002001C64
UniRef90_UPI0003B3DFB6
UniRef90 UPI0004171EE2
UniRef90_C7PUA6
UniRef90-F8NA88
UniRef90_C4XFK9
UniRef90-H8KY50
UniRef90_UPI00047CFA7B
UniRef90 UPI0003479E45
UniRef90-Q4A636
UniRef90_C6X235
UniRef90-W8A1U0
UniRef90_UPIO0016C5375
UniRef90_UPI0004039BC8
UniRef90-K1MR30
UniRef90 IOKBS2
UniRef90_E1QZB4
UniRef90-UPIO0037C1606
UniRef90-F4KL36
UniRef90 R5W5A0
UniRef90-UPI00016B2491
UniRef90_UPI00041BCB48
UniRef90-UPI00037A417A
UniRef90 X1KXI6
UniRef90-K4IIM4
UniRef90-K2EJ28
UniRef90-H3RQA4
UniRef90 ${ }^{-}$V5RVT5
UniRef90-X1THK4
UniRef90 $\times 1$ C0P1
UniRef90 C0BH80
UniRef90-F9QDQ5
UniRef90-H6L4Q5
UniRef90 A3D200
UniRef90 A1SWF0
UniRef90-K1YKD3
UniRef90-UPI0003B73C7F
UniRef90 A5GN83
UniRef90_UPIO00237D5EE
UniRef90-UPI0003762DFE
UniRef90_W8VXS5
UniRef90 A6DP35
UniRef90-W0EZU2
UniRef90-U5Q5V8
UniRef90 UPI0003751D74
UniRef90-A0A031MGB3
UniRef90_S8FGP0
UniRef90_Q2W2A1
UniRef90 E9RSN4
UniRef90_LORW83
UniRef90-E6PJ48
UniRef90 UPI0003FD4518
UniRef90-15C779
UniRef90_Q1N2D1
UniRef90-R5SIE6
UniRef90 UPIO0037A63EC
UniRef90-T0C4AO
UniRef90-UPI00037A6192
UniRef90 E4KND6
UniRef90 UPI000429D065
UniRef90_UPI00036385C9
UniRef90_UPI0003B3C6D8
UniRef90 Q2RZ66
UniRef90-Q0VNJ7
UniRef90-K2E4C6
UniRef90 W7CVY9
UniRef90 WOT7Z9
UniRef90-U2IYK6
UniRef90-UPIO0046FE394
UniRef90 S2JME1
UniRef90-K7AW34
UniRef90_UPI00028994F8

## UniRef90 K9PC94

 UniRef90－O5QWI9 UniRefefo－F3LHM3 UniRef90＿UPIO00470BA67 UniRef90－13ZYO1 UniRef90－UPIO000EOE5D4 UniRef90－W8G1K5 UniRef90－UPIO003710813 UniRef90－A7BLA0 UniRef90－S6APD4 4 UniRet90－O2BM71 UniRef90－F7RXK1UniRef90 K4KP95 UniRef90 ${ }^{-K 1 Z S 04}$ UniRef90－R6S4M5 UniRef90－NOAWB8 UniRef90－A0Z517
UniRef90-13UBD7
UniRef90-A6GXW2
UniRef90-N2JEU1
UniRef90-G8ZTD3
UniRef90-A0RN42
UniRef90-A0A024UDE6
UniRef90-C5BQS3
UniRef90-K1E2T1
UniRef90-G2QER4
UniRef90_V9EF69
UniRef90-V4JBJ3
UniRef90-A9NEA6
UniRef90 C1BXQ5
UniRef90-LOB5N0
UniReffol-SgYG98
UniRef90-C5FKT8
UniRef90
B3PBN5
UniRef90_S5M1K8
UniRet90-UPI0004656A3F
UniRef90_X1FAE1
UniRee90 UPI000388B1CF
UniRef90_UPIOOO46E9074
UniRef90-X0TCB5
UniRef90-V9DAF8
UniRef90_UPIOOO33415E6
UniRef90-CONHI8
UniRef90-M5RRC7
UniRef90-A3UAM7
UniRef90 B6HDP3
UniRet90 A5GV27
UniRef90-A5GV27
UniRef90-UPIOOO467DE1B
UniRef90-C9P7R0
UniRet90_E5A0GO
UniRef90-Q30QR5
UniRef90-W6MW58
UniRef90-UPIo00273B5DB
UniRet90_W5WYP9
UniRef90-A0A014MJC1
UniRef90-Q5AYN1
UniRef90_B9Y793
UniRet90-R6CUL8
UniRef90_B60213
UniRef90-B9KCW4
UniRef90-K1XIU5
UniRef90-F8F616
UniRef90-COFYHO
UniRef90-A4BIH11
UniRef90_R4ZZ76
UniRef90_A2U314
UniRef90-Q6BTS5
UniRef90-IOYN65
UniRef90_V9L6DO
UniRef90-J2KZE5
UniRef90-V5FSE7
UniRet90 L LJJDV
UniRef90_K8ZBS2
UniRef90-A0A024JPT3
UniRef90 ${ }^{-}$C1FEH2
UniRef90-UPIOOO303B94E
UniRef90-H2SB31
UniRef90-H2SB31
UniRef90-E8JM91
UniRef90-।12K677
UniRef90-W3WGG1
UniRef90-FOBAJ9
 YQNRKDS $\frac{1}{M A K T A N A K S K V Y S R Y G R E: Y V G C A K G G G G D P D}$ RKVSMAKTAGQKTKVYSKYGKQUYVMAKNSGADPV RKARMFKRWDKMAKTFTRTGKDIVLAVKNGTADPA RKAAKFARWDRMAKQFSRIGKEI AMAVKDGGPDPD RKNAMAKTAGQKTKVYSKYGKE YVVAKNGGPDPD YQNRKESMAKTAGAKTKVYSRYGRE RKARKFKRWAQMAKTFTRLGKD

AQWKAKKEAAANARGKVFGKLVKE YQNRKESTAKTATAKSRVYSKYGRE YQNRKESMAKTADMKSKIYYRYGREI
SKWATTKHRKGAVDAKKGKAFSKLDKL MAATSAAKSAMYMRASKE K WNNDKEKKASKDANTSRIYAKFGVE $Y Q N R K \mathbb{R} M A K T A A V K T A V Y S R Y S R E G$
$F E K R K S D F K T A A Q N S K V Y S K Y S K Q L$


KFEVRKゆSMAKTAGAK DKVYSKYGKETYVCAKNGSLDPD RRAAKEKRWGKMSRIIFPRLAKAI TMAAKEGGLDPD RKERKFKRWAKMAVQFTRIGKDI VMAVKEAGPHPE SKWAT DK HDKGKNDAAKNKQRSVFSHE ANASKFYGPDPN RKERKFKRWTKMAVQFTRIGKDVVMAVKEGGPHPE AQW KTKHKMDAANA RGRUFTKLAKEUMVAAR NGADPS

RKGRKMKRWSAMAKAFTRワGKDVVMVKEGGPNPE A QW KAKHKEAAANA KGKDFGKLSKEIMIAARSGPDPD NKWST $\square$ KHDKAKNDAERNKLFSKFAQRISLAVKAGGDDPQ RRASKEARWDKMSKLFPKLSKAITVAAKEGGIDPD T $\square$ AGKKSATDAKKA LLFGKLGKELVVTSKATNGDVN YENRKASMAKTGAMKTKLYSRYGKEIYVCAKNGGAEVD SKWAT TK HKKAA DDAKRGKLFAKLIK NI EVAARTGGGDLA NKWSK TRHDKAANDMKKNAARTLFCKNI TLYSKLYGPDPN

TIQGKKNATDAKRTTTNAKLARE
 NKWSKVKHDKGPKDAARSRMFMRLAMM SKWANI QHRKNRQDERKSRLWTKIIRE NK WS KVRHDK GPKDTERSRGFSKLSLDS AQW KAKHKEEAANA KGKLFTKLTKEI
 SKWHN Y M A
V I S VISA

K WS K VKH DKGPRDAERSRLFQK LTMLLRVAVKEGGPNPD FENRKASMAKTAAAKTKVYSKYGRELYVCAKHGGPDPS

SKWAK TKHDKGKND $\square$ AKSKARTHLSAD I IMASR LGGPDPS
 SRWSTIKHDKGKNDAAKSKERVLHARDLINASKLIGGPDPA RKVSMAKTAAQKTKVY SKYGKQIYVMA KNGGGPA RKARKMKRWSAMSKAFTRIGKDIVMAVKEGGPDPD NKWSTIKHDKARNDKAKSRERQIVGKEI ASATQMWGPDTK SKWS QIKRTKAVVDAKRGAVFTRLGREI SVAARA GADPD AQW KARHKEVAANA KGRVFGKLSKEI MVAARA GADPD Y QNRKDSMAKTSNMKAKVYSKFSKEI YVCAKNSGADPS RKASMAKTQGAK $\square K V Y S K Y G K E I$ SKWSS $\square K H D K A K N D A G K S K Q R S L M T R D I$ RKASKDKRWGAMSK【FPKLGK』I SRWSTIKRDKAKNDMERSKVYFKMSQKI NK WSKVRHVKGPKDTARSQVFTKLSRLI WKN A GKMEKAQQKGQI FTKLARE NRWSQDKHGKAKNDKAKSRERQMVAKE LYSRYGKELL SRWST $\mathrm{D}^{2} \mathrm{KHDKAKNDKAKSKERG乌LTQELDNASQLWGPDPK}$ RRASKEARWDKMSKDFPKLAKA RWHS $\square$ A ARKASWDAKKS QAYAKVGK】I QI AARKWADPK KWNRIREK $\square$ ASNDAGARS DYEKFGREIYAVAKRGEPDPE

FQNRKES $\square$ AKTSDMKSK $\square$ S SKYSREDYMCAKSGGTDPD MAATAAKKSKLYSDYAKEIYQAAKGNPDPT RKARKMKRWSAMAKTFTRIGKDVMAVKEAGPNPD SKWANIKHDKAKNDAKKSREAYSIATRIVSSVKAGG VVE AKI AGRKGAQDAKKAKVWGTLAKKIVQAAKAGGADPA NKWSKVKHDKGPKDAEKSTMFAKFAAMI RYADKEGGSNPE A QWKAKKELAANARGRLFGKDAKEIMVAARNGADPA SRWSTIKHDKAKNDKAKSKERAIVTKEI INASQMWGPDPK SKWHNIRHKKGAEDAKKSILYTRISSQI RNALDHGGNVP AKNAARKGKSDALKTKVYATYGKKLVMAVKAGGPDPE NKWST■KHDKAKNDAQRNKVVNKCASQI AVAARVGG■DPA

NKWSKVKH $\square K$ GPKDDARARVFMK $\square T M M \square K \square A V K E G G A N P D$ MSREI FVAAKAGGGDPS RKAAKMKRWGTMSRDFPK LGKIITMAAKEGGQDPD NRWSK $\square K H E K G A A D K K K T A E R N F F A K N L T L Y S K L Y G T N P E$

## UniRef90 K9PC94 UniRef90-O5QWI9 UniRef90-F3LHM3

 UniRef90 UPIoo0470BA67 UniRef90-।I3ZYQ1 UniRef90_UPIOOOOEOE5D4 UniRef90_W8G1K5 UniRef90-UPIO003710813 UniRef90-A7BLA0 UniRef90_S6APD4 4 UniRef90-O2BM71 UniRef90-F7RXK1UniRef90 K4KP95 UniRef90-K1Zs04 UniRef90-R6S4M5 UniRef90-NOAWB8
UniRet90 A0Z517 UniRef90- UPI00016C49DA UniRef90-J9E5S7 UniRef90-Q6LGY8 UniRef90-G8R2N8 UniRef90-C6XU40
UniRef90 R7YIW4 UniRef90-UPI0002D921D2 UniRet90_DoKZM9 UniRef90-J1Q3X8
UniRef90_IUUBD7 UniRef90 A6GXW2 UniRef90-N2JEU1 UniRef90-G8ZTD3 UniRef90-A0RN42
UniRef90-A0A024UDE6
UniRef90-C5BQS3
UniRef90-K1E2T1
UniRef90-G2QER4
UniRef90_V9EF69
UniRef90-V4JBJ3
UniRef90 A9NEA6
UniRef90-A9NEA6
UniRef90 LOB5NO
UniRef90_SgYG98
UniRef90-C5FKT8 8
UniRef90-S5M1K8
UniRef90-UPIo004656A3F
UniRef90 X1FAE1
UniRef90-UPIO00388B1CF
UniRef90-UPIOOO46E9074
UniRet90-XOTCB5
UniRef90-V9DAF8
UniRef90_UPIO0033415E6
UniRef90-CONHI8
UniRef90-M5RRC7
UniRef90-A3UAM7
UniRef90-B6HDP3
UniRef90-A5GV27
UniRef90-D9SCYO
UniRef90-UPIOOO467DE1B
UniRef90-C9P7RO
UniRef90-E5AOGO
UniRef90-Q30QR5
UniRef90-W6MW58
UniRef90-UP1000273B5DB
UniRet90_W5WYP9
UniRef90-AOAO14MJC1
UniRef90-Q5AYN1
UniRef90_B9Y793
UniRef90-R6CUL8
UniRef90_B60213
UniRef90-B9KCW4
UniRef90-K1XIU5
UniRef90-F8F616
UniRef90-COFYHO
UniRef90-A4BIH1
UniRef90-R4ZZ76
UniRef90-A2U314
UniRef90-QBBTS5
UniRef90-lOYN65
UniRef90-V9L6D0
UniRef90-J2KZE5
UniRef90-V5FSE7
UniRef90_K8ZBS2
UniRef90-A0A024JPT3
UniRet90_C1FEH2
UniRef90-UPIOOO303B94E
UniRef90-H2SB31
UniRef90-H2SB31
UniRef90-E8JM91
UniRef90--12K677
UniRef90-W3WGG1
UniRef90_F0BAJ9

GNFQ|L|RTAl|EKAKVAG|L|PNAN\||ERA|V|KGSGQGGGGADLFE GNLALR GLI DRAKKDQVPAHVI EKAI DKAQGGAAGEDFSP
 $N N S S$ L R A LI D K A K R D QV P A HVVI E R A L E K A K G VGG G D Y VA TNSRLRALLQNAKAVNMPKETVDRAIKRASSK DQDDYKE

 A NS S L R AVVMQNAKAANMPKENVERADVKASSK DTS EYKE A N P R L R A A I D K ALLA GN M T K D T I E R A V K R GA GA QEGDN YE E MNPKLRLAVHQAKKASMPKDTLERAIVKGAGSGEVVNYER GNLALA GLI ERAKKAQVPAHVI DKALDKAKGGGGGEDFSE TNI SLR GLI DRARKDQVPAHVI ANALDKASGVVGGEDYSP
 S NLAL R AVLE KYKGQ GVVTKDVI ERAI NKAK G G E V T A Y E A

$S N L S$ L K R R L
I E K AKKD QVVPSHVI
TNSALRTA
TNSRLRTA QNAKA QNMPK DNI

T N S K L A L A A S L A K K A GV P K A N I E S A I A R G Q G S A S G A A LE P
G NLA L R S M I
$M N A K L R S A D E A A K K A S M P K D T L E R A I K K G A G L L D G D V Y E T$
A N S R LRAVI
D K A T A A N M P K D N
MNPRLRLVVEQAKKASMPRETL

 $N \prod R L A S V V D K A K T F N M P R D K I D A A M K R G V D G K S A A A T E T$ SNLS L R RLI E KAKKE QVPSHVI DKALDKARGGGGEDFVT
 $N N V R L V A A I N K A K A A N M P K D K I E A A I K R G V E G K D G S N A E A$ T NL S L R R LI E K A K K D QVVPA HVI E K AVVEKAA GGAA GE D Y S P T NQALKRVI ERAKKEQVTADII KRNI DKAKGGSD ENYA E FNDALANVVEQCRGKNMPKASIEAAI KGAEKSKAGTQ
TNPQLRRSSLEKASNANDPKENI NRAI HKGSKESDTVKYEE $L$ N S S L A S I L E VICR S K QMP K S TII E G A L K SNPRLA LVIA NAKRSGMPKPTIEAAIARGQGTAA GAALES MNPRLRLAVEAAKKASMTRETLERAI KKGS GQLDGNNYEK A NLA L R SAI DKAKS K QVPADVI QRAI K KAEGGGDADN Y S S N NHS L K I I I D K ALADVNMRRNTI ENAVMRGNGBFD GNNYEK $G N L Q L R L A V Q K A R D N N M P$ LIENI
 MPK D N
 SNARRLALVI S KA K R S G M S K S T I A N S S L R S L I E K A K K DQVP A HVI S N S R L R AVI Q N A K S VN MP K D NV

 A N LA L S HL I E K AK Q N QVPA HVI
 $M N A R L R T A B I D A K A E N M P K D N$ I
 L N S N L A NLL K L C R S K N M P K S T A N S RL R LAA D A A K K V S C P N D T S N A R L R M A I E A A R K A S M S K E T L
 GNLSLRHLI EKAKKEQVPADVI NNPRLQLLAI AKAKQSQMPKAIIIDNAIDARVNSGADDESYTS
 M N P S L E LAL S K A K Q Y N L P REVVEEKAILLK WS GNFE GENLE E
 G NLALSSSLLERAKKDQVPAHVI QKALDKAAGGGGGEDYSV S N DVL R RVI E K A K K E QVPA DVI NRNIDKVKKGV TENYET T N S R L R A V I Q N A K A A N M P K D NV E R A I K K A S D K D T A D Y K E
 GNTQLAANLI EQCRAKNMPKMSIEAAIMKGAKGKATSY S N A R L R LVVV E Q A R K V S M P K D T L E R A I K K G A GTGGD TVVH F E H F NPRLNLAI TNAKRTGLPKASIEASIARGQGSVSGEALES
 VNRALAVMI REAKAQGVPSDNVQRAIQRGSNANE ADYKE

 MNANLRMVLDKARAANMPKDNI ARIVVEKSKP
 $L N A Q L A K T I V E A K K S G M P K A N I E D A B A G Q G S S T G E K L E T$

## UniRef90 K9PC94 UniRef90-Q5QWI9 UniRef90-F3LHM3 UniRef90-M5U359

 UniRef90_UPI000470BA67 UniRef90-I3ZYQ1 UniRef90_UPIO000E0E5D4 UniRef90-W8G1K5 UniRef90-UPI0003710813 UniRef90-A7BLAO UniRef90_S6APD4UniRef90_Q2BM71 UniRef90-F7RXK1 UniRef90-K4KP95 UniRef90-K1ZS04 UniRef90-R6S4M5
UniRef90-NOAWB8 UniRef90-A0Z517 UniRef90_UPI00016C49DA UniRef90_J9E5S7
UniRef90_Q6LGY8 UniRef90-G8R2N8 UniRef90-C6XU40 UniRef90_R7YIW4
UniRef90 UPIO002 UniRef90-DOKZM9 UniRef90-J1Q3X8
UniRef90-I3UBD7 UniRef90-I3UBD7
UniRef90 A6GXW2 UniRef90-N2JEU1 UniRef90-G8ZTD3 UniRef90-A0RN42 Unirefigo-AAAO24UDE6 UniRef90_C5BQS3 UniRef90-K1E2T1 UniRef90-G2QER4 UniRef90_V9EF69 UniRef90-V4JBJ3
UniRef90 A9NEA6 UniRef90-A9NEA6
UniRef90 C1BXQ5 UniRef90-LOB5N0
UniRef90 $59 Y G 98$ UniRef90_S9YG98
UniRef90_C5FK78 UniRef90-B3PBN5 UniRef90-S5M1K8 UniRef90_UPIO004656A3F UniRef90- X1FAE1 UniRef90_UPIO00388B1CF UniRef90-UPIO0046E9074 UniRef90-XOTCB5 UniRef90 ${ }^{-}$V9DAF8 UniRef90-UPIOOOO33415E6 UniRef90-CONHI8 UniRef90_M5RRC7 UniRef90-A3UAM7 UniRef90-B6HDP3 UniRef90-A5GV27 UniRef90_D9SCY0 UniRef90_C9P7R0 UniRef90-E5A0G0 UniRef90_Q30QR5 UniRef90-W6MW58 UniRef90_UPI000273B5DB UniRef90_W5WYP9 UniRef90-A0A014MJC1 UniRef90-Q5AYN1 UniRef90-B9Y793 UniRef90-R6CUL8 UniRef90-B6Q213
UniRef90-B9KCW4 UniRef90_K1XIU5 UniRef90_F8F616 UniRef90-COFYH0 UniRef90_A4BIH1 UniRef90_A2U314 UniRef90-Q6BTS5 UniRef90_IOYN65 UniRef90_V9L6D0 UniRef90-J2KZE5
UniRef90-V5FSE7 UniRef90_V5FSE7
UniRef90_L1JDV5 UniRef90-K8ZBS2 UniRef90-A0A024JPT3 UniRef90_C1FEH2 UniRef90-UPIO00303B94E
UniRef90-H2SB31 UniRef90-H2SB31 UniRef90_E8JM91 UniRef90_I2K677 UniRef90-W3WGG1

1092102<br>\section*{}



90


110
ARYEGYGPGNCMVIV ARYEGYGPGSTMVIVDCLTDNPNRTFGDVRGCFTKTKSNG
ARYEGYGPGGCAVII DCLTDNNMRTITDVKNCFTKTGSKF


A

## UniRef90 K9PC94 UniRef90-Q5QWI9 UniRef90-F3LHM3 UniRef90-M5U359

 UniRef90-UPI000470BA67 UniRef90-I3ZYQ1 UniRef90_UPIO000E0E5D4 UniRef90-W8G1K5 UniRef90-UPI0003710813 UniRef90-A7BLA0 UniRef90_S6APD4 UniRef90-F7RXK1 UniRef90_K4KP95 UniRef90_K1ZS04 UniRef90-R6S4M5 UniRef90-NOAWB8 UniRef90-A0Z517UniRef90_J9E5S7
UniRef90_Q6LGY8
UniRef90_Q6LGY8
UniRef90_G8R2N8
UniRef90-C6XU40
UniRef90-R7YIW4
UniRef90_UPIO002D921D2
UniRef90-DOKZM9
UniRef90-J1Q3X8
UniRef90-I3UBD7
UniRef90-A6GXW2
UniRef90_N2JEU1
UniRef90-G8ZTD3
UniRef90-A0RN42
UniRef90_A0A024UDE6
UniRef90-C5BQS3
UniRef90-K1E2T1
UniRef90 G2QER4
UniRef90-G2QER4
UniRef90_V9EF69
UniRef90-V4JBJ3
UniRef90-A9NEA6
UniRef90 C1BXQ5
UniRef90_LOB5N0
UniRef90_S9YG98
UniRef90_C5FKT8
UniRef90-B3PBN5
UniRef90_UPI0004656A3F
UniRef90_X1FAE1
UniRef90_UPIO00388B1CF
UniRef90-UPIO0046E9074
UniRef90-XOTCB5
UniRef90-V9DAF8
UniRef90_UPIO0033415E6
UniRef90-CONHI8
UniRef90-M5RRC7
UniRef90-A3UAM7
UniRef90-B6HDP3
UniRef90-A5GV27
UniRef90-D9SCY0
UniRef90_UPI000467DE1B
UniRef90_C9P7RO
UniRef90-E5A0G0
UniRef90_Q30QR5
UniRef90_W6MW58
UniRef90_UPI000273B5DB
UniRef90-W5WYP9
UniRef90_A0A014MJC1
UniRef90-Q5AYN1
UniRef90-B9Y793
UniRef90-R6CUL8
UniRef90-B6Q213
UniRef90_B9KCW4
UniRef90-K1XIU5
UniRef90-F8F616
UniRef90-COFYHO
UniRef90-A4BIH1
UniRef90_R4ZZ76
UniRef90-A2U314
UniRef90_Q6BTS5
UniRef90-IOYN65
UniRef90_V9L6D0
UniRef90-J2KZE5
UniRef90_V5FSE7
UniRef90_L1JDV5
UniRef90_K8ZBS2
UniRef90_A0A024JPT3
UniRef90_C1FEH2
UniRef90_UPIO00303B94E
UniRef90-H2SB31
UniRef90_E8JM91
UniRef90_-12K677
UniRef90-W3WGG1
UniRef90-F0BAJ9






## 



GAPGTVAHMFDHAAVFVFPGK
SVMLD DHAVT SF
AESGAVAWMFKRQGQLEVPKN DEEKVMEAMFAADVE EVV
AESGAVAWMFKRQGQLEVPKAGVEGDELMMLALEAGABAV


UDE6

GTPGTVVMHQFDHAADFRSSSGELD
GS S G SVVSWDFKHLGQQEAVPT SADAD
GQDGSVAFMFKHCGQFIFS


GA
8
$4656 A 3 F$
$388 B 1 C F$
$46 E 9074$
7


UniRef90_K1E2T1
UniRef90_G2QER4
UniRef90_V9EF69
UniRef90_V4JBJ3
UniRef90-A9NEA6
UniRef90-C1BXQ5
UniRef90-L0B5N0
UniRef90 S9YG98
UniRef90_C5FKT8
UniRef90_B3PBN5
UniRef90_S5M1K8
UniRef90_-UPI0004656A3F
UniRef90 X1FAE1 UniRef90_UPI000388B1CF UniRef90_UPIO0046E9074 UniRef90_X0TCB5 UniRef90 V9DAF8 UniRef90_UPIO0033415E6 UniRef90_CONHI8 UniRef90_M5RRC7 UniRef90_A3UAM7 UniRef90_B6HDP3
UniRef90_A5GV27 UniRef90_D9SCY0 UniRef90_UPI000467DE1B UniRef90_C9P7R0 UniRef90_E5A0G0 UniRef90_Q30QR5 UniRef90_W6MW58 UniRef90_UPI000273B5DB UniRef90_W5WYP9 UniRef90-A0A014MJC1 UniRef90_Q5AYN1 UniRef90 B9Y793 UniRef90-R6CUL8 UniRef90_B6Q213 UniRef90-B9KCW4 UniRef90_K1XIU5 UniRef90_F8F616 UniRef90_COFYH0 UniRef90-A4BIH1 UniRef90_A2U314 UniRef90_Q6BTS5 UniRef90_IOYN65 UniRef90_V9L6D0
UniRef90_J2KZE5 UniRef90_V5FSE7 UniRef90_L1JDV5 UniRef90_A0A024JPT3 UniRef90_C1FEH2 UniRef90-UPIO00303B94E UniRef90_H2SB31 UniRef90_E8JM91 UniRef90_I2K677 UniRef90-W3WGG1
UniRef90_F0BAJ9




 E D E N N R L I V Y T E H T A T K S
 $I T$ D D D S I DVVITT T P E D L D E TMK K I Y H N A D I



E
D

## -

UniRef90 K9PC94 UniRef90-Q5QWI9 UniRef90-F3LHM3 UniRef90 UPIo00470BA67 UniRef90-।I3ZYQ1 UniRef90_UPIOOOOEOE5D4 UniRef90-W8G1K5 UniRef90_UPIO003710813 UniRef90-A7BLAO UniRef90-S6APD4 4 UniRef90-F7RXK1
UniRef90-K4KP95
UniRef90-K1ZSO4 Uniree90_R6S4M5
UniRet90_NOAWB8 UniRef90-AoZ517 UniRef90-UPI00016C49DA UniRef90-J9E5S7 Uniinefolocelays UniRef90-G8R2N8 UniRef90-C6XU40
UniRef90 R7YIW4 UniRef90-R7YIW4
UniRef90-UP10002D921D2
UniRef90_D0KZM9 UniRef90-J1Q3X8 UniRef90-13UBD7 UniRef90 A6GXW2 UniRef90-N2JEU1 UniRef90-G8ZTD3 UniRef90-A0RN42 UniRef90-A0A024UDE6 UniRef90-C5BQS3 UniRef90-K1E2T1 UniRef90-G2QER4 UniRef90_V9EF69 UniRef90-V4JBJ3
UniRet90 A9NEA6 UniRef90- C1BXO5 UniRef90-LOB5N0 UniRef90_S9YG98 UniRef90-C5FKT8 8 UniRef90-S5M1K8 UniRef90_UPI0004656A3F UniRef90- X1FAE1 UniRef90-UPIO00388B1CF UniRef90-UPIOO046E9074 UniRet90-XOTCB5 UniRef90-V9DAF8 UniRef90_UPIOOO33415E6 UniRef90-CONHI8 UniRef90-M5RRC7 UniRef90-A3UAM7 UniRef90-B6HDP3 UniRef90-D9SCY0 UniRef90-UPI000467DE1B UniRef90-C9P7RO UniRef90-E5AOGO
UniRef90 Q30QR5 UniRef90_W6MW58 UniRef90-UPI000273B5DB UniRef90 ${ }^{-}$W5 WYP9 UniRef90-A0A014MJC1 UniRef90-Q5AYN1 UniRef90_B9Y793 UniRet90_R6CUL8 UniRef90-B60213
UniRef90 $\mathrm{B9KCW}$ UniRef90-K1XIU5 UniRef90-F8F616 UniRef90-COFYHO UniRef90-AABH11 UniRef90-A2U314 UniRef90-Q6BTS5 UniRef90_10YN65 UniRef90_V9L6D0
UniRef90_J2KZE5 UniRef90-V5FSE7 UniRef90 LLIJDV5 UniRef90-K8ZBS2
UniRef90-A0AO24JP UniRef90-A0AO24JP
UniRef90- C1FEH2


TKTKLDASDELVHFTELLEALREYPDVQAVYSNVTMSDEQ EFlDLEG EQRETFDKLIDALNEDEDVNQIHHNVN THVE ENEDDDANFEKFMGMLEDCDDVQNVYHNA
 SLVHLNQEESIK MNKLLDDLENDEDUQSYTNA TKVRLADPDLEQAAQLI QALGNHDDVDHVYDNDE QDVKI ESEEALSTVENII NSLRDDPSVQDIYVNCDTS

tTV LLEENKTVQALNFLDELEGLDDVQRVFSNTDFSEAT ARVRLTDEEMERASQLLSMLGDCQEVIRVYDNIE

EDSVVTSEEQEDEVQSILNSLEEDPSVHNLYVNA
TTVQLAERD LIEQASQLIQALGLHEDVIQVYDNDE
KDVELQSGEDADKDEDLLNTAREDSSVQDI YTNSTD TRTEIP ADDMPMFDKFITMLNDCDDVQEIYHNA VTKKLT PEQQEDVEKLLEKLDDDDDVQNVYHTMDESED SMVEVKDEEQAKDLEDLLSALREDPSVQEIYYN NSIDLHQSDQARQCLQLLEALEAGDDVRSVSCNDEFPE NPVKLTDAE REEVEAFLESIDADDDVQNVY
TYTLLQGED LETFDKFLDLLNDLDDVQEIYHNVEVED NRTAVTGED AEKFQKFLDLLDDCDDVQQVYHNADVE
TKVPLDDEGSAKEDASFLDGLQEVQGVQGVYMNWNUSDDL
SPISLTEQQQADIERIIDKLEDDEDVQKVFTNI
MAVEVTDEDVLKRVEKLTDFLHDDDDVSDVYDNMK
MKVKLSDGD MEAAA HLTEALNNYEDVIRVYDNDE
NDTELTD DQRKEVEEFLAFAEDLDETHRVHATL
NPVSMSSAEQQEEVQAFLAGLDNDDDVQHVF
QDTLVEKDEQVQELEETLAFLRDEAGVRDVYZN
EMVTLDDGEDK ENFDKLLNMLDDVEDVQKVYHNVNL
TMVKVEDPEQLNQLEEVLAALERESSVQQDIFGN
NMVKLDEENKAKLYV LLDMLEEDEDVDHVWHNL

NYVELSADEDDTNGNRLLDLLDDDDDVQQVYHNWD
DSVKLSDEDKEKFEKLLAMLDELDDVSNVYHNVELS
TTVKLNEDQKADVEKLLEKLEEDDDVNSVYHSMEES
SDTHVEFPEAHEKLKKALELLLDEDPELTNYYSNDKDDE RIVQLADAD DETAFKLI QVLNSNNSVVRVYDNDE $N P 1$ SPA S LSAAEEVEAFLAAVDANDDVQNIF
KDVKVEDEKDVQQLEDLLGDI REEPSIHGIYロN
TPIEVS EDARDAISSFVEDLEGDGDVEAVYHDA
LLMDCSDEDFEGNMSVIEALEEDDDVDSVEHNVAMDE
EDTALSDAAQRAAFEKLCGALDDIDDVVDFYTNL
PLVEVDVEATANTNQDLTDKL LEELDDVAVYT
NDVTLPEDAQAQ FEKMVDALEDLEDVQQVYHNVDGGE VVVNLN EDLLIAA ASTLIDALLSDYPDVVRUWDNU



| UniRef90 | K9PC94 | ME |
| :---: | :---: | :---: |
| UniRef90 UiRet9 |  |  |
| UniRef90 | M5U359 |  |
| UniRef90 | UPI000470BA67 |  |
| UniRef90 | I3ZYQ1 | QE |
| UniRef90- | UPIO000E0E5D4 |  |
| UniRef90- | W8G1K5 |  |
| UniRef90 | UPI0003710813 |  |
| UniRef90 | A7BLAO | M A Q |
| UniRef90 | S6APD4 |  |
| UniRef90 | Q2BM71 |  |
| UniRet90 | F7RXK1 |  |
| UniRef90 | K4KP95 |  |
| UniRet90- | K1ZS04 |  |
| UniRef90- | R6S4M5 |  |
| UniRef90 | NoAWB8 |  |
| UniRef90- | A0Z517 |  |
| UniRef90- | UPI00016C49DA |  |
| UniRet90 | J9E5S7 |  |
| UniRef90 | Q6LGY8 |  |
| UniRef90- | G8R2N8 |  |
| UniRef90 | C6XU40 |  |
| UniRet90 | RTYIW4 | WA |
| UniReef90- | UP10002D921D2 |  |
| UniRef90 | DOKZM9 |  |
| UniRet90 | J103 ${ }^{1} 8$ |  |
| UniRef90 | 13 UBD7 |  |
| UniRef90- | A6GXW2 |  |
| UniRef90 | N2JEU1 |  |
| UniRef90 | G8ZTD3 |  |
| UniRef90 | A0RN42 |  |
| UniRef90 | A0A024UDE6 |  |
| UniRet90 | C5BQS3 |  |
| UniRef90 | K1E2T1 |  |
| UniRet90 | G2QER4 | WAK |
| UniRee90 | V6F69 |  |
| UniRef90 | V4JBJ3 |  |
| UniRef90 | A9NEA6 |  |
| UniRef90- | C1BXQ5 |  |
| UniRet90 | LOB5N0 |  |
| UniRef90 | S9YG98 |  |
| UniRef90 | C5FKT8 |  |
| UniRef90 | B3PBN5 |  |
| UniRef90 | S5M1K8 |  |
| UniRef90 | UPI0004656A3F |  |
| UniRef90 | X1FAE1 | LE K |
| UniRee90 | UP1000388B1CF |  |
| UniRef90 | UPI00046E9074 |  |
| UniRef90 | X0тCB5 | M |
| UniRet90 | V9DAF8 |  |
| UniRet90 | UPI00033415E6 |  |
| UniRet90 | CONHI8 |  |
| UniRet90 | M5RRC7 |  |
| UniRet90 | АзUAM7 |  |
| UniRef90 | B6HDP3 |  |
| UniRef90 | A5GV27 |  |
| UniRef90 | d9scyo |  |
| UniRef90 | UP1000467DE1B |  |
| UniRet90 | C9P7R0 |  |
| UniRet90 | E5AOGO | WE |
| UniRee90 | Q30QR5 |  |
| UniRef90 | W6MW58 |  |
| UniRef90 | UP1000273B5DB |  |
| UniRef90 | W5WYP9 |  |
| UniRet90 | AOAO14MJC1 |  |
| UniRef90 | Q5AYN1 |  |
| UniRef90 | B9Y793 |  |
| UniRet90 |  |  |
| UniRef90 | B60213 |  |
| UniRef90 | B9KCW4 |  |
| UniRef90 | K1XIU5 |  |
| UniRef90 | F8F616 | QE |
| UniRef90 | COFYH0 |  |
| UniRet90 | A4BIH1 |  |
| UniRei90 | R42Z76 |  |
| UniRee90 | A2U314 |  |
| UniRet90 | -Q6BTS5 |  |
| UniRet90 | -10YN65 |  |
| UniRef90 | V9L6D0 |  |
| UniRef90 | J2KZE5 |  |
| UniRef90 | V5FSE7 |  |
| UniRet90 | L1JDV5 |  |
| UniRer90 | K8ZBS2 |  |
| UniRet90 | A0AO24, ${ }^{\text {a }}$ 3 |  |
| UniRet90 | C1FEH2 |  |
| UniRet90 | UP1000303B94E |  |
| UniR | H2 |  |
| UniRef90 | E8JM91 |  |
|  | 12K677 |  |
| UniRet90 | W3WGG1 | w |

UniRef90 ToD378 UniRef90-T1JEQ5 UniRef90-G4AHM4 UniRef90-R5ZkB6 UniRef90-I1K9D8 UniRef90-D2A3W5 UniRef90-A3LT61 UniRef90-HOVSB4 UniRef90-A0A059LQ59 UniRef90-X1NJK2 UniRef90-U1FWE1 UniRef90-L8JPX1 UniRef90-UPI0004703D8B UniRef90-A0A017SJ66 UniRef90_F7ROEO UniRet90-K2FUT5 UniRef90-B5Z9T6 UniRef90-U5F9E2 UniRef90-V2Y2N3 UniRet90_O88JU7 UniRef90-X1UTG1 UniRef90-K2BFX5 UniRef90-S9WX04 UniRef90 M5XXE2
UniRef90 C3XOY7 UniRef90-UPIO00462DFBD UniRef9O-UP10003D057E2 UniRef90-A5DKP6 UniRef90-A2C730 UniRef90_J9VT80 UniRef90-Q2SRP7 UniRef90-H6BZA8 UniRef90-A0A022PY90 UniRef90-Q7MRV4 UniRef90-R5ZE77 UniRef90-12K178 UniRef90_P53212 UniRef90-R5RDBO
UniRef90 S 6 G 3 T 1 UniRef90- R5HDH1 UniRef90_C9SP87 UniRef90-B7PNA4 UniRef90-R5MX34 UniRef90_A71377 UniRef90-R7NGW8 UniRef90-UPIO003DOBE81 UniRef90-T1CJA9 UniRef90-U5D130 UniRef90-UP10003EF34BC UniRef90-K7SC53 UniRef90-UPIOO04412781 UniRef90-AOAO23FQC2 UniRef90-V8CFD6 UniRef90-B9хСК6 UniRef90-K2BB01 UniRef90-K1SINO UniRef90-A0A023EM74 UniRef90-C5DNW5 UniRef90-G7SPU8 UniRef90-C7YQK0 UniRef90-A0A016PDC0 UniRef90-R6Y2V5 UniRef90-K1TLU7 UniRef90-UPIO002DE9873 UniRef90--FOXU95 UniRet90_V7AU89 UniRef90-U4L5F1 UniRee90-UPI00047330AC UniRef90_UPIOOO4417C96 UniRef90-UPIOOO4794204 UniRef90-T1G569 UniRef90-D0J8S7 UniRef90-K2CUT8 UniRef90-D8QP01 UniRef90-M4FK31 UniRef90-UPI00036CC2DC UniRef90-V9NZH9 UniRef90-Q6FOR9 UniRef90-K0TBN3 UniRef90-UPIO00382252D UniRef90_-M4ZT25 UniRef90-D4A601 UniRef90-F8KRZ2 UniRef90-UPIO001745392 UniRef90-U6P8D3 UniRef90-K1ZC46 UniRef90-W7WJD6 UniRef90-ㄴ416M2 UniRef90_UPI0004411AAF UniRef90-A8NH04 UniRef90-E5SVB2 UniRef90_Q9VL11
 NKWSNIKHDKASKDQAKSTLHNKFVRLI RMAVKDGGNDPK















RKASTOKTGAAKGKDYSTAAKE


 K




E
S
Q



```S K WANIK H T K A LIKDGARAALFAKILSRQIRMAIQENSADPA
```



## UniRef90 ToD378

 UniRef90-T1JEQ5UniRef90
G4AHM4 UniRef90-R5ZkB6 UniRef90_-11K9D8 UniRef90-D2A3W5
UniRef90-A3LT61 UniRef90-HOVSB4 UniRef90-A0A059LQ59 UniRef90-X1NJK2 UniRef90-U1FWE1 UniRef90-L8JPX1 UniRef90-UPI0004703D8B UniRef90-A0A017SJ66 UniRef90-F7ROE0 UniRef90-K2FUT5 UniRef90-B5Z9T6 UniRef90-U5F9E2 UniRef90-V2Y2N3 UniRet90_O88JU7 UniRef90-X1UTG1 UniRef90-S9WX04 UniRef90 M5XXE2
UniRef90 C3XOY7 UniRef90-C3XQY7
UniRef90-UPIOOO462DFBD UniRef90-UP10003D057E2 UniRef90-A5DKP6 UniRef90-A2C730 UniRef90_J9VT80 UniRef90_O2SRP7 UniRef90_H6BZA8 UniRef90-A0A022PY90 UniRef90_Q7MRV4 UniRef90-R5ZE77 UniRef90-12K178 UniRef90_P53212 UniRef90-R5RDBO
UniRef90-S6G3T1 UniRef90-R5HDH1 UniRef90-C9SP87
UniRef90-B7PNA4 UniRef90_R5MX34 UniRef90_A71377 UniRef90-R7NGW8 UniRef90-UPIOOO3DOBE81 UniRef90-T1CJA9 UniRef90-U5D130 UniRef90-UP10003EF34BC UniRef90-K7SC53 UniRef90_UPI0004412781 UniRef9-AOAO23FQC2 UniRef90-V8CFD6 UniRef90-B9хСК6 UniRef90-K2BBO1 UniRef90-K1SINO UniRef90-A0A023EM74 UniRef90-C5DNW5 UniRef90-G7SPU8 UniRef90_C7YQKO UniRef90-A0A016PDC0 UniRef90 R6Y2V5 UniRef90-K1TLU7 UniRef90-UPIO002DE9873 UniRe990-FXU959 UniRef90-V7AU89 UniRef90-UPI00047330AC UniRef90_UPIO004417C96 UniRef90-UPIO004794204 UniRef90-T1G569 UniRef90-D0J8S7 UniRef90-K2CUT8 UniReffo-D8QP01 UniRef90-M4FK31 UniRef90-UP100036CC2DC UniRef90-V9NZH9
UniRef90
O6FOR9 UniRef90-K0TBN3 UniRef90-UP1000382252D UniRef90_M4ZT25 UniRef90-D2A601 UniRef90-UPIO001745392 UniRef90-U6P8D3 UniRef90-K1ZC46 UniRef90-W7WJD6
UniRef90_1416M2 UniRef90-1416M2
UniRef90-UPIOOO4411AAF UniRef90-A8NH04 UniRet90_E5SVB2
UniRef90_Q9VL11

 INMRLATALEQAQKNNVTKKVIENAIRKGSGVPPGEKPTE TSYRLRKAI DNAKSMNIPKETIERTI QKAS QNNTKNYKS F NPQLASAA AAATKASIPKNLIEGAIARGQGSASGAQLES ENLALRSAIIEKWKAQDVTREVIERAIAKAKGG NNPSLRATIANCKRENMPKDNI ARAIKNACGK DTSDYKE MNQGLKKVIERAKANNVPADVIKRAI DKAKGG STDSYTS
 SNLRLNAA AAAAKKAGMPKDRLNTALQRGLGKSTGVALEP LNQALAVVLKRVKAQGVPKENTERADERAAGTGKKADDQQ SNLSLRAVIDKAKSNQVPSDVIQRALKRAEGG DAESYTS

SNLQLAAVLQRAREDNVSKENVSRALDRGLGKLPGQTLEE GSPQLATAVTAAKKAGVPKAVMDAAMARGLGSATGAALES VNTKLIRAA:ATAKAENMPKDN|DKA:|ARATAK DAVSYTE LNPRLRSA1 FAARKENGPKDKIETAKNATGNVAGENYEE DVGLQSSLAAARAVRLPKDRIDRAVERGSARDGDKVYER
$M N P R L A Q A C E K A R K A S V S K D V I E R A V K L K G G G G D A P T L S S ~$ NSRFRNATLNARSANDPKNTIEKAMKKALGGQDKTDNFK NNSSLANLLEVCRSKNMPKST:ESALKS SNARLAAALAVAKKQSVTRDTDEAAGAKGSGTGDAVQYQT
 GNFQLRTAMEQARKVSMPKDTLDRA:|KKGAGTGEAVNYEH DNSSLANALKRSKAAGLPKDNIENALKRVAGAASRGGGA QNAQLAAVLKNYKEQGVPKDNLEKALAKAGAGKEKGGGES TNPHLNRDLEKCQAKNMPKVSIDRAIERAVSKPEKGGQT

 UniRef90-T1JEQ5 UniRef90-G4AHM4 UniRef90_R5ZKB6 UniRef90_I1K9D8 UniRef90_D2A3W5
UniRef90_A3LT61 UniRef90-HOVSB4 UniRef90-A0A059LQ59 UniRef90-X1NJK2 UniRef90-L8JPX1 UniRef90_UPI0004703D8B UniRef90-A0A017SJ66 UniRef90_F7R0E0 UniRef90-K2FUT5 UniRef90-B5Z9T6 UniRef90_U5F9E2 UniRef90-V2Y2N3 UniRef90_Q88JU7 UniRef90-X1UTG1 UniRef90-S9WX04 UniRef90-M5XXE2 UniRef90-C3XQY7 UniRef90-UPI000462DFBD UniRef90_UPI0003D057E2 UniRef90-A5DKP6 UniRef90-A2C730 UniRef90_-J9VT80 UniRef90-Q2SRP7 UniRef90_H6BZA8 UniRef90-A0A022PY90 UniRef90_Q7MRV4 UniRef90-R5ZE77 UniRef90-12K178 UniRef90_P53212 UniRef90-R5RDB0
UniRef90 S6G3T1 UniRef90 R5HDH1 UniRef90-C9SP87 UniRef90-B7PNA4 UniRef90_R5MX34 UniRef90_A71377
UniRef90_R7NGW8 UniRef90_UPIO003D0BE81 UniRef90-T1CJA9 UniRef90-U5D130 UniRef90_UPIO003EF34BC UniRef90-K7SC53
UniRef90-UPIOOO4412781
UniRef90-A0A023FQC2
UniRef90-V8CFD6
UniRef90-B9XCK6
UniRef90-K2BB01
UniRef90-K1SIN0
UniRef90-AOA023EM74
UniRef90-C5DNW5
UniRef90-G7SPU8
UniRef90_C7YQK0
UniRef90-A0A016PDC0
UniRef90_R6Y2V5
UniRef90-K1TLU7
UniRef90_UPIO002DE9873
UniRef90-FOXU95
UniRef90_V7AU89
UniRef90_U4L5F1
UniRef90_UPI00047330AC
UniRef90_UPIO004417C96
UniRef90-UPIO004794204
UniRef90-T1G569
UniRef90-D0J8S7
UniRef90-K2CUT8
UniRef90-D8QP01
UniRef90-M4FK31
UniRef90-UPIO0036CC2DC
UniRef90-V9NZH9
UniRef90-Q6F0R9
UniRef90-K0TBN3
UniRef90_UPIO00382252D
UniRef90-M4ZT25
UniRef90-D4A601
UniRef90-F8KRZ2
UniRef90-UPIO001745392
UniRef90_U6P8D3
UniRef90-K1ZC46
UniRef90-W7WJD6
UniRef90-1416M2
UniRef90_UPI0004411AAF
UniRef90-A8NH04
UniRef90_E5SVB22
UniRef90_Q9VL11


DC0

2DE9873

GTSGCVVSMFDKKGQ\| LIEANDVSEEELLMD IALLEAGAED AE GISKSAFTHKGVI IVEDNGSSLDKAVDVAGQAGAEDT GTEGSVGYLFSKKA GDSGCVDYLFTQTGVFDFEGEEDKSEEDEMGLLDAGDEGV ADSGSVTFKFKRVRVVNTKATNADKDQLLDGALDAGAEDV

S PACLYMFAKKGEVIFEPLNNEEDDGLEVAI D DGAEDV TEGARHSFNKKGVVTVGVEDREVSLERALELA EAGAEDE
 $\begin{array}{r}\text { T } \\ \hline \mathrm{P} \\ \hline \mathrm{P}\end{array}$
T

\section*{T

## T <br> TP

GETGSVAFMFD
WETWSVASSFK
$V$ SNGSLEFMF
 $T \mathrm{PI} \mathrm{G}$

GASGSVAWDFNHVGLIEATPASADADPEMAAAI EAGAQDF

SN ARFLFTKKGKIPVDRPSMELGNVLDDAIEAGAEDD

ASK GARHNFEKKGVVSVKQEDVSMDRAEEVAAVEAGAEDD
 GESGCVAYLFEQRSEVYLSAQSAQDADLENLLELEADGYQ

| DGKVNFLFEDVAMFAFKNKKEDEVLEALMSDEVE $\quad$ ND |  |
| :---: | :---: |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

TVTPTAFLFEKKGRJVFEEQDKGVDDVLEKADDAGALDII

G

SGSVYMYENLCLVSFK GLSEEDTLNALI LNDVDDI
 LDPNGSLTFMFSRKSVFEVEYPKRDLEAVELDLI DYGLTEM GTSGSVAFQFQRSGVVAVDSAGAAEEKVLEIALEAGAD

L
A
A RGGVKEQFQQKGFVRVSSREDDP
WETWAVGFWFKFMGVILAVNLDNKKL

TPT
C
SDSGSTTFYFTRRGRAVFKAKEGGPEVLDEAV EHEGLEDV
SDS GSAAFHFEDAGVIEFVGNDVDALTETLILNEVDVKEV
GTTGSLSFMFDHKAVFTFKKKEGLDMDEMILDDLD
TGTPTKFFFSRRGRVVLPPPDVSADDLLDDAIEAGAEDV
 GTDGSVSYLFKKLGVIHINK DYSEEILMENVI ESGAQDF A PVLFQFKRLGSVRVAVDEVRMEKLIEAALEAGAEDF EGKVAFDFQDAAVFAFEGFSLEETDENLMMNDDDVNDV ADAGSCCHMFDYKGVDYVPGTSTDNDKAFELADEAGAEEV CHNGE LVHLDNR RGVFSIRKKDVSMEDFELMVI DFGAKDL

 MPSGGLEFMFTRKAVVKFKKPEGQLEEVEDELI DHGLEEL
 $\square$ GAPGSNKFLFDGVGMVEAAHREMAEVDLEEAACEAGADDIG KEGDSTS
VPNGSLEFMFGRKSVFELANLPLSLEDMELALIDYGDESL GTPGSVAWMFDHCGLVEAHHPEATTDDEDLEAEADNVEPM

 GETGCVGWMFDHKGVI RLEGT DDEDKLLEASLEGQAQDS A D V G

## A

UniRef90 ToD378 UniRef90－T1JEQ5
UniRef90 G4AHM4 UniRef90－R5ZKB6 UniRef90－11K9D8 UniRef90－D2A3W5 UniRef90－A3LT61 UniRef90－HOVSB4 UniRef90－A0A059LQ59 UniRef90－X1NJK2 UniRef90－U1FWE1
UniRef90 L8JPX1 UniRef90－UPI0004703D8B UniRef90－A0A017SJ66 UniRef90－F7ROEO UniRef90－K2FUT5 UniRef90－B5Z9T6 UniRef90－U5F9E2 UniRef90－V2Y2N3 UniRef90＿O88JU7 UniRef90－X1UTG1 UniRef90－S9WX04 UniRef90－M5XXE2 UniRef90－C3XQY7 UniRef90－UPIO00462DFBD UniRef90－UPIO003D057E2 UniRef90－A5DKP6 UniRef90－A2C730 UniRef90－J9VT80 UniRef90＿Q2SRP7 UniRef90＿H6BZA8 UniRef90－A0A022PY90 UniRef90－Q7MRV4 UniRef90－R5ZE77 UniRef90－I2K178 UniRef90－P53212 UniRef90－R5RDBO
UniRef90 S 6 G 3 T 1 UniRefefo－S6G3T1 UniRef90－R5HDH1
UniRef90－C9SP87 UniRet90－B7PNA4 UniRef90－R5MX34 UniRef90－A71377 UniRef90＿R7NGW8 UniRef90－UPIOOO3DOBE81 UniRet90－TICJA9 UniRef90＿U5D130 UniRef90－UP10003EF34BC UniRef90－K7SC53 UniRef90－UP10004412781 UniRef90－AOAO23FQC2 UniReffo－V8CFD6 UniRef90－B9хСК6 UniRef90＿K2BB01 UniRef90－K1SIN0 UniRef90－АоАо2ЗЕМ74 UniRee90－C5DNW5 UniRef90－G7SPU8 UniRef90－C7YQK0 UniRef90－A0A016PDC0 UniRef90－R6Y2V5 UniRef90－K1TLU7 UniRef90＿UPIo002DE9873 UniRef90＿FOXU95 UniRef90－VYAU89 UniRef90 UPIO0047330AC UniRef90＿UPIO004417C96 UniRef90－UPIO004794204 UniRef90－T1G569 UniRef90－D0J8S7 UniRef90－K2CUT8 UniReffo－D8QP01 UniRef90－M4FK31 UniRef90－UPI00036CC2DC UniRef90＿V9NZH9 UniRef90－O6FOR9 UniRef90－K0TBN3 UniRef90－UPIOOO382252D UniRef90＿M4ZT25 UniRef90－D4A601 UniRef90－F8KRZ2 UniRef90－UPIOOO1745392 UniRef90＿U6P8D3 UniRef90－K1ZC46 UniRef90＿W7WJD6 UniRef90－1416M2 UniRef90－UPI0004411AAF UniRef90－A8NH04 UniRef90＿E5SVB2
UniRef90＿Q9VL11

DDGENAFQFFSDPGQFWNVRTNQELNYVIQSSSVQYDPT

|  mmzmbosmmommosmm＞סดாmomס <br>  <br>  |  <br>  <br>  <br>  <br>  |
| :---: | :---: |
|  |  |
|  |  |
|  |  |
|  |  |
|  | のサくヤのनロのく |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
| ＜－1「「「＜－＜－＜＜＜r－＜ |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
| mo－mmoxzomれのmoc |  |
|  |  |
|  |  |
|  |  |
|  |  |
| os | $0 \ll 1$ 1 |
| m刀スm－mm「0mol＜「ス！ |  |
| －m＜スロス－ |  |
| $\rightarrow 0$ |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |



EVEGEYMNTNVEPSDपYKAKEATEAPDVKFDVLELTMDPN ETDEDGNVVIWTLANQTIVVKVAPKFSLATLSAETIWTPN DEEDDYYKIVGSSENYSSILSKLREEGUDFEDNGSELLPN
E

## V

 QEEDDFFEVTTDPNQFNKVDDFFKENDIQY DNAELTLRAD VEEDTAVVVYAPFKSFSQVKASLDEMGVKKESSALEYRPT VEEDTAVVVYAPFKSFSTVKHSLDEMGVKYLVAETKMMPD IKDEKMVYIYTDFEYFGTMKNHLERLNGFHQSIVKRIAK EDNKQMYLVYTEGLEELNTMGNK TQAGYEVESQAMVMKPN DEEDRVFKVVTKAEDYUPVKSKLVEAGFPVVDSGLELVSN EDLGEEAVAYGEFTSFGSLSKGVEELGLETVAAPERDAN EENDELYI 1 TCEVKDFGKVRDAFYEKFGE EVEEDMIIVTAPYKSFNAVKHSLDEDGDEYDMSEDKLIPD DFADDDERVRCEPNDLLKLAGALREAGFDLADFGTRWRDE K KANDNTFI CDASSLHQVRKKLDSLGLCSVSCSLEFIPH EVIDQSFLVLGDYQHFKQLQEGFESLQIPIQKACLQRIPT ELDDEEVRFFCPMASLDSVQKALKAQGWLVTYSELGYQPK SELDDVVEVWSNLEEDEEGVTVFLTDPTDLDLVSRALPAQGFTVLSTK LGYKPK EDEGGGAKVFTD
EQTESEWEVQLPPENVDEFTRADTAEGLNADESEVAQVCS EQTESEWEVQLPPENVDEFTRATTAEGLNADESEVAQVCS


UniRef90 ToD378 UniRef90-T1JEQ5
UniRef90_G4AHM4 UniRef90- $\mathrm{R} 5 \mathrm{ZKB6}$ UniRef90-11K9D8 UniRef90-D2A3W5 UniRefefo-A3LTG1 UniRef90-A0A059LQ59 UniRef90-X1NJK2 UniRef90-U1FWE1 UniRef90 L8JPX1 UniRef90-UPI0004703D8B UniRef90-A0A017SJ66 UniRef90_F7R0EO UniRef90-K2FUT5 UniRef90-B5Z9T6 UniRef90-U5F9E2 UniRef90-V2Y2N3 UniRef90-Q88JU7 UniRef90-X1UTG1 UniRef90- S9WX04 UniRef90-M5XXE2 UniRef90-C3XQY7 UniRef90-UPIO00462DFBD UniRef90-UPI0003D057E2
UniRef90-A5DKP6 UniRef90-A2C730 UniRef90-J9VT80 UniRef90_Q2SRP7 UniRef90-H6BZA8 UniRef90-A0A022PY90 UniRef90-Q7MRV4 UniRef90_R5ZE77 UniRef90_12K178 UniRef90-P53212 UniRef90-R5RDB0 UniRet90-S6G3T1 UniRef90-R5HDH1 UniRef90-C9SP87
UniRef90 B7PNA4 UniRef90-R5MX34 UniRef90 A71377 UniRef90-R7NGW8 UniRet90-UPIOOO3DOBE81 UniRef90_T1CJA9 UniRef90-U5D130 UniRef90-UPIO003EF34BC UniRef90-K7SC53 UniRef90-UPI0004412781 UniRef90-A0A023FQC2 UniRef90-V8CFD6 UniRef90-B9хСК6 UniRef90 ${ }^{-}$K2BB01 UniRef90-K1SIN0 UniRef90-A0Aо23EM74 UniRef90 C5DNW5 UniRef90-G7SPU8 UniRef90-C7YQKO UniRef90-A0A016PDC0 UniRef90_R6Y2V5 UniRef90-K1TLU7 UniRef90_UPIo002DE9873 UniRef90-F0XU95 UniRef90-V7AU89 UniRef90-U4L5F1 UniRef90-UPI00047330AC UniRef90_UPIO004417C96 UniRef90-UPIO004794204 UniRef90-T1G569 UniRef90-D0J8S7 UniRef90-K2CUT8 UniRefofo-D8QPO1 UniRef90-M4FK31 UniRef90-UPI00036CC2DC UniRef90_V9NZH9 UniReftol-G6FOR9 UniRef90-K0TBN3 UniRef90-UPIOOO382252D UniRef90-M4ZT25 UniRef90-D4A601 UniRef90-UPIO001745392 UniRef90-U6P8D3 UniRef90 ${ }^{-K 1 Z C 46}$ UniRef90-W7WJD6 UniRef90-416M2

VKQPपTDDD $\square$ S $\square$ AEK

| 价 |
| :---: |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

PDTATTNEQAKDQMQNपTDETYDTDDVMYTHTSA ST PE DDEALDLNKELMSKL DELDDVDAVYT
QTLPLTG DLLEQASTLVRELSNRDDVLKVYHNTE DSAQLSDEE MERASQLLEALRDCMDVVGIYDNI NEVSVSGED LUDQLHTLVDALENDEDVDKVWTNVK T T S QADQK SEDQCLQLLDALDELDDVHHISSNLE DPLKVLEEETMESVMRLVDGLEEENEVVKVWTNLE EDTVVPTPEQQEELERILDSI EEDPTVQGLYVNA TPVEVDDEAMDLNKEMMAKLLEDDDVDAVYT TPVEFSEEQLADLEKLIDRGEEDDDVQAVFTNDDNDD MKVEISNPETKESF
MEVFVQGDETLEKLQKDTTALEDDDEVTSTYTNA
DTVELEGED MELFERLMNNLNDCDDVDQIYHNVANYDE
DEIVI SDEETKKQLQTLLDKLDDLEDVQNVYHNAEL EKVELNKED LE ITFERLVVMFEEVEDVSHIYHNV TKVKVDTEDDAQGLADLLAALQEQPEVQGIYANVSDSDED VPVTVS E EHMGVVGRLCDELEEHSDVVAVHTNIG EEVELNEEDKM KLFERLYNELDDDDDVTDVYYHNV DEVELNSED LEVFDKLYKMLDEDEDVQDVYHNVK

TTDEV DDEADDLNKELMYKLLELDDVDAVYS
TKADM DAETAPKLMRLDDMLEDCDDVQEVYHNGEDSDEV SPVEFSDEQMADIEKLIDKLEEDDDVQAVYTNI EPLEELDDETGEGLDKLDQAlENADDTLKVWTTAD VPATVP EEHLDVVGRLCDELEEHSEVVAVHTNGD SFTDVEGNARKEVTDFLNALDDHDDVHRVYA
 NYVALTXDEAVKNLQRTLELLEDDDDVQAVYHNWD
DP
HP KLLSKENSKKTYNFTEKTKENENTRNTYSNTK EDTMVSVDKSAEVLDLLENGLKEYPEVKADYANVTDEDEE TKVRIDTADQDESLDALFNGIKEYPEVKAIYANVAI ADED DVVDLDGEEK QKLKNLLDALDEVEDVQSVFHNANU
EYCTLEGDDK ELFQRLLTLLDDVDDVQNVWHNVE
EDTPVGEGDEDRRLTELVTLRTYPDVRAVYANVEASDES TMVEL
TMVEVVPGDKSEGLLQETEKDEESPEVVSVYTNAK
$T$ VVDLDDDMSEKVLNIMEFMDDLDDVQEVHTNAEFPE EPAP QDPELKATI DELVDDLEANEDVLSVWTTLD DYMETSNEEIQKQLQLLLDRLDELEDVQNVYHNA TFVNJEKENVDVALKLVGQLEALLEDASQVFHNDQVA APVQUEDAETAKKVLEFAEKLEGLDDVQKVYANFDDEESL A QVEV DDEAMELNKGLMEKLLELDDVDAVYS
TMMAVVVDSS D EAAK R L A E L L S A L R R E H S E V V Q S I Y S S N A T R G D S L NSNEFTEEQLEEDEAFLDKLEDDDDVQNVFTND


NP $\square \mathrm{DPGSAEALEEVEAF} \mathrm{\square AA} \mathrm{\square DDNEDQNVFA}$
VT
TRVHDEEKQLVVEACFKADENVESVAKTFDNDEPSEDV


UniRef90_T0D378
UniRef90 ${ }^{-}$T1JEQ5
UniRef90-G4AHM4
UniRef90 R5ZKB6
UniRef90 11 K9D8
UniRef90-D2A3W5
UniRef90_A3LT61
UniRef90 HOVSB4
UniRef90 A0A059LQ59
UniRef90-X1NJK2
UniRef90_U1FWE1
UniRef90 L8JPX1
UniRef90_UPI0004703D8B
UniRef90-A0A017SJ66
UniRef90 F7R0E0
UniRef90-K2FUT5
UniRef90-B5Z9T6
UniRef90 U5F9E2
UniRef90 V2Y2N3
UniRef90-Q88JU7
UniRef90-X1UTG1
UniRef90 K2BFX:
UniRef90 S9WX04
UniRef90-M5XXE2
UniRef90-C3XQY7
UniRef90 UPI000462DFBD
UniRef90-UPI0003D057E2
UniRef90-A5DKPG
UniRef90 A2C730
UniRef90-J9VT80
UniRef90-Q2SRP7
UniRef90-H6BZA8
UniRef90 A0A022PY90
UniRef90-Q7MRV4
UniRef90_R5ZE77
UniRef90 I2K178
UniRef90 P53212
UniRef90-R5RDB0
UniRef90-S6G3T1
UniRef90_R5HDH
UniRef90_C9SP87
UniRef90-B7PNA4
UniRef90-R5MX34
UniRef90 A71377
UniRef90-R7NGW8
UniRef90-UPI0003D0BE81
UniRef90_T1CJA9
UniRef90 ${ }^{-}$U5D130
UniRef90-UPIO003EF34BC A A
UniRef90-K7SC53
UniRef90 UPIO004412781
UniRef90-A0A023FQC2
UniRef90_V8CFD6
UniRef90 B9XCK6
UniRef90 K2BB01
UniRef90-K1SINO
UniRef90-A0A023EM74
UniRef90 C5DNW5
UniRef90-G7SPU8
UniRef90_C7YQKO
UniRefgo A0A016PDCo
UniRef90_R6Y2V5
UniRef90-K1TLU7
UniRef90_UPI0002DE9873
UniRef90_F0XU95
F Q Q
UniRef90_V7AU89
UniRef90-U4L5F1
UniRef90-UPI00047330AC
UniRef90 UPI0004417C96
UniRef90-UPI0004794204
UniRef90-T1G569
UniRef90-D0J8S7
UniRef90-K2CUT8
UniRef90-D8QP01
UniRef90-M4FK31
UniRef90 UPI00036CC2DC
UniRef90-V9NZH9
UniRef90-Q6F0Rs
UniRef90 KOTBN3
UniRef90 UPI000382252D
UniRef90-M4ZT25
UniRef90_D4A60
UniRef90 F8KRZ2
UniRef90-UPI0001745392
UniRef90-U6P8D:
UniRef90_K1ZC46
UniRef90 W7WJD6
UniRef90-1416M2
UniRef90_UPI0004411AAF
UniRef90 A8NH04
UniRef90_E5SVB2
K K K

UniRef90_G3JAX0 UniRef90-UPI0003F49878 UniRef90-A0A059CLJ5 UniRef90-A8XML4 UniRef90 U6HIR7 UniRef90-F7WZD0
UniRef90-B7TVS6 UniRef90-G4TG49 UniRef90 ${ }^{-}$H1DBP2 UniRef90-S8BKP8 UniRef90-G0WA90 UniRef90 R7FVV1 UniRef90-C1BR21 UniRef90-Q019M1 UniRef90_B7TVT0 UniRef90 B4LQE3 UniRef90-UPI00036229EA UniRef90-H3FC53 UniRef90 K1XG49 UniRef90- A9V954 UniRef90_UPIO0022CA785 UniRef90_N6TUG4 UniRef90 E0W206 UniRef90-A0A034TLT8 UniRef90_Q057N0 UniRef90 H2KRE6 UniRef90 UPI0003DF502B UniRef90- XOTED2 UniRef90 G4LV96 UniRef90 K7HD96 UniRef90-A7EUE9 UniRef90-E2C7B9 UniRef90 X0WPA9 UniRef90 C1LFS4 UniRef90_W7I716 UniRef90-A8NI59 UniRef90 UPI0003F06FDA UniRef90-K2SF93 UniRef90-F9FQ92 UniRef90-J9ENV3

1
NKWSKTKH TKAVVTDKKKMVERTAFTKTIITMYSRTYGDD ${ }^{40}$ RWSKlRHKKGAADAQRSVLFSKLTNDIHTADRPNSSDPN
 SHWQNIRHTKEAKDRERARVTSNFLDQI DAADK LGGRDPK SKWSNTKHRKSSQD $\square K R S R \| F T K L I R E \square T \square A S T K Q G Q D P K$ NKWSK $\square$ RHNKA $\square$ QDSKKNVLYSR $\square A K D \square L I A A T V G G S D P T$

N SKWQN $\square$ RNTKQAKDN【KGS I ISRHCNLIRワA TIQNGKDPK TDAARTKLYGRYGKLIVQTVKQGGSDPVV SKWAN $\square K H \square K A Q K D G \square R A A \square F T K \square A R Q L R \square A V Q E K S A D P A$ VYSRYSKEIVVAAKSGVPDPD SKWQNDKATKGKNDLIKSQAMNHLLKKVTAATRKGGFDDK SHAANVKHKKAANDKKRAKVFSKLIKAI STAARDE ANPQ SKWANIKHQKARQDKSRSILFARLHRDIVIADKGNGANPE SKWQNIKATKQEHDTARAQI FNTLSKMKAVAI ESGNSDPN SKWANI RHVKGTKDAQRGLLEGKLSRQUKVAVTEGGUDPT SKWSNIKHVKMAKDQARASLGNKLSYKISLAAKE GENPE
 SHWQNVRHTKEARDKQKSKASQIYIRAVNNAIKAGGRDPK SKWKNIKATKEAQDGEKSA DFRSLAFKMKAVIRETGNDPT
A HWQNVKH ${ }^{\prime} K E A G D R E K A Q N A D Y Y V K A V Q R A D R E G G R D P K$ $S K W Q N I K A T K G K N D L D R S K A T N Y L L R K V K G A V S R G G F D L K$
SKWDN $\square R H \square K A E K D Y E R M L L F K S \square K \square Q M K \nabla A \square Q E H G T K P D$
 MSERITEYTKRYGPDPK SKWDN $\square K$ T TK $\square A A M \square N K T K T A E Q \square M A K M K R \square V R T G G P D \square K$

```
lupas }2
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
```



```
sm
```

| UniRef90_G3JAX0UniRef90_UPI0003F49878UniRef90_A0A059CLJ5UniRef90_A8XML4UniRef90_U6HIT7UniRef90_F7WZD0UniRef90_B7TVS6UniRef90_G4TG49UniRef90_H1DBP2UniRef90_S8BKP8UniRef90_G0WA90UniRef90_R7FVV1UniRef90_C1BR21 |  |  |
| :---: | :---: | :---: |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |



DTTSLNNLVELAMKSNTPKRVVENADKDGTDGDGSENNNL


 $M N Q P L K K A I A R A K A N S V P T D V I K R A I D K A K S S A D$
$M$ SNDRLKTALAAARNADMPKDKVEGALRVGKG E EGVQAQV T NLKLANLVEAARKANMPMSTLKGALIVGIKGVRTGES KNPKLKQI I DQCKRFNMPSATMQSVLIKSCSADK
TNSKLKAALAEAKQANMPNAT TQGALKKAKDSLAEKPYWL
KNFQLRR LLEKANLYNLKKDLIQKADNRGKDKNKNKKSFN LNSQLASVLAEAKANSVPDSTLERFIKAEFTTD

KNSK LDA AVLAEAKSKAVPFSTDEKQLNT, DNEDEP



VNLTLAAVLAEAKSKS DP FSTDEK QLN A D D NEVKP TNPQLKVILEHAKKSGMSGTSMENAIKRGQGDSMSGKPLE FNKDLVQLQLEYRNANFPDETFQRALKNVQLQPVKTAKIT TV

K A QK T K DV H
lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm


| UniRef90_G3JAX0UniRef90_UPI0003F49878UniRef90_A0A059CLJ5UniRef90_A8XML4UniRef90_U6HIR7UniRef90_F7WZD0UniRef90_B7TVS6UniRef90_G4TG49UniRef90_H1DBP2UniRef90_S8BKP8UniRef90_G0WA90UniRef90_R7FVV1 |  |  |
| :---: | :---: | :---: |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |


| VIYEAVGP G G |  |
| :---: | :---: |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

[^1]


[^2]| UniRef90_G3 |  |
| :---: | :---: |
| UniRef90_UPI0003F49878 | KEGEKEYEI IVPPTELS SCVQ |
| UniRef90-A0A059CLJ5 |  |
| UniRef90-A8XML4 |  |
| UniRef90-U6HIR7 | TETEKGFEFHCGVNDVNNVRQSLESRGVNVYESFCPY LAVV |
| UniRef90-F7WZD0 |  |
| UniRef90-B7TVS6 | EEVYVITCAXKD |
| UniRef90-G4TG49 |  |
| UniRef90-H1DBP2 | T DEGDSFEVVTDYTQLQTVAENLKAAGYTYMEAETSMVPD |
| UniRef90-S8BKP8 | SEDEVYVVTTS QEDFGTVREALEAEGLEFLEAEIKMVPD |
| UniRef90-G0WA90 | EGDENIIVGDPADTS QVANELQREGFT\\|EQNKY\AKDD |
| UniRef90_R7FVV1 |  |
| UniRef90-C1BR21 | VSEEGHYEFIT DSLS F A QVRDRLEFPSYEYLEAEVVYSPT |
| UniRef90-Q019M1 | S DGEDGWDVVCQLDDFAAVQDACRDAGLKDEETGLVKCDV |
| UniRef90_B7TVT0 | EKNDGLCII TCKTKD |
| UniRef90-B4LQE3 | EIVDVTVNFFCSPVLLS GLS R T L E Q G Y S IENSEHVFTPN |
| UniRef90_UPI00036229EA |  |
| UniRef90-H3FC53 | E DGFEMLCEPKQVN\\|VEEGLSSQGLVIESAETEMRPK |
| UniRef90-K1XG49 |  |
| UniRef90_A9V954 |  |
| UniRef90-N6TUG4 | EDK\FSFLCNKDHFAQAQDNLEKFGYQ11易ASVDYiPQ |
| UniRef90-E0W206 | ECGENTIVFECLPEKLQASSNKLSAKGYEIS DAFTEITFH |
| UniRef90_A0A034TLT8 | GSIDVY T P P G D G G VK D ALD A A GFEAENAEVSLIP S |
| UniRef90_Q057N0 |  |
| UniRef90-H2KRE6 | EE GQ ${ }^{\text {a }}$ A KFYCDPSNVDQMRLLLEDHADQPMSVEDVLVPK |
| UniRef90_UPI0003DF502B | EENNECFKFKGEFLQPEKIITQLENLGYTIHSTKNECIPN |
| UniRef90_XOTED2 | K TEGDYMEDS T K P EDMEKVRTALE Q N NLP P A S SEMDM T S K |
| UniRef90_G4LV96 |  |
| UniRef90-K7HD96 | EDSAKKFELLCESNNLLLVENGLSKQGFSVLSSEDEFRAV |
| UniRef90-A7EUE9 | EVDDEG\\|IVWTEPNMVTAAGDALQKKD\|KIASSDILWDPD |
| UniRef90-E2C7B9 |  |
| UniRef90-X0WPA9 | RTEDSRVEVYTAPTELYKVRRALEEAGLPVATAEL |
| UniRef90_C1LFS4 | KFEEQVYHFYCEVDEIDMLRESLENHQIPVVNTNVVYTPK |
| UniRef90-W71716 | TLEETSTWEVKVEHSDPPQIVEEMQEAGWSVTKT G |
| UniRef90-A8NI59 | KFEEDGYELVCVRKKFAQLLALVEKEGFSVKCSALELRAVV |
| UniRef90_UPI0003F06FDA | VETENLLFKFICDVSSLHQIR K KLD SLGLCSMSCTLEFIPN |
| UniRef90-K2SF93 | EDEEGAIIVYTDPAETKAAAEKI E ETGLEDASMDIVWVPD |
| UniRef90_F9FQ92 | EELE GDFLAWTQPNTLTAMTEALKK E ELELILDS DIVWAPD |
| niRef90_J9ENV3 | KFEEDGYELVCVRNKFAQLLA IVEKKGFSVKCSALVLLRA! |

[^3]

UniRef90_G3JAX0 UniRef90-UPI0003F49878 UniRef90-A0A059CLJ5 UniRef90_A8XML4 UniRef90 U6HIR7 UniRef90-F7WZD0
UniRef90_B7TVS6 UniRef90-G4TG49 UniRef90-H1DBP2 UniRef90-S8BKP8 UniRef90_G0WA90 UniRef90 R7FVV1 UniRef90-C1BR21 UniRef90-Q019M1 UniRef90-B7TVTC UniRef90 B4LQE3
UniRef90-UPI00036229EA UniRef90_H3FC53 UniRef90 K1XG49 UniRef90-A9V954 UniRef90-UPI00022CA785 UniRef90_N6TUG4 UniRef90 E0W206 UniRef90_A0A034TLT8 UniRef90_Q057N0 UniRef90-H2KRE6 UniRef90-UPI0003DF502B UniRef90-XOTED2 UniRef90 G4LV96 UniRef90_K7HD96 UniRef90-A7EUE9 UniRef90-E2C7B9 UniRef90 X0WPA9 UniRef90-C1LFS4 UniRef90_W7I716 UniRef90-A8NI59 UniRef90 UPI0003F06FDA UniRef90-K2SF93 UniRef90-F9FQ9? UniRef90-J9ENV3



A GAEEMSEESRKALSNLVEELEENPECVGVWCSDD NKVEIT DLLETAKKVMLLFDSLDDLDDVQEVYSNFDDPEEL TYTAI DEDTATKFQKMLDVLEDDDDVQNVYHNAEFPE MKVNI DDENVMERDQKLI SQLEA DDEFRGFYTNCD TYVTLTNEDDLKHMELLLDHLEEDEDIVNVWHNWD QTVSVSPQE L ELVNKIKANLKERDEVISVHDNDVAEEE AEIEVSDEDAA INEKIVDALLALDDVDAVYT

NLVLLAEDEQ KAYDAFVQKLRLVPGLEDTYDNVE EEVVELEGE ELDLFKRLLTLLDDDVDDVQNVYHNV HPISLSEADQ
 KTQRLNESEFA AYEKLMGKLYEMTEVVRVFDNAEPS NYVKI TSDEMSR VKKI TDRIEEFEDLLRIADNDKRDE


CKVQVDSKAYA NLLEMYERDRDHEYVDR\|IDNVTVVDD
 TLVII H P EVVRQTLNEMYEKI KTLEYVDRIFDNAII HPITLSEAD ARRLENLYDMLQ
TNVPVDAGDATDRLDSF $\square E S A R D N S D V Q G \square Y$ AN $\square$ N $\square E D G Q$
$N V V T L D E K S A G Q V L R L L D T L E D L D D V Q K V F S N A D F P D S V$ ILVPI L PEVNEKLNEMYEKI KSHEYVDRI F DNTTD TFSSMEDDEAGENYRNLMAKLEENGDVFEIHTNLRWSD SPVEDEKHETEK IQQ YQMLRENEGI TQVYANI




[^4]c c c c c c c c c c c c c c


| UniRef90_G3JAX0 | WE |
| :---: | :---: |
| UniRef90 UPI0003F49878 |  |
| UniRef90_A0A059CLJ5 |  |
| UniRef90_A8XML4 |  |
| UniRef90_U6HIR7 |  |
| UniRef90_F7WZD0 |  |
| UniRef90_B7TVS6 |  |
| UniRef90_G4TG49 |  |
| UniRef90-H1DBP2 | L K Q |
| UniRef90_S8BKP8 |  |
| UniRef90_G0WA90 |  |
| UniRef90 R7FVV1 |  |
| UniRef90_C1BR21 |  |
| UniRef90 Q019M1 |  |
| UniRef90_B7TVT0 |  |
| UniRef90_B4LQE3 |  |
| UniRef90-UPI00036229EA |  |
| UniRef90_H3FC53 |  |
| UniRef90_K1XG49 |  |
| UniRef90_A9V954 |  |
| UniRef90_UPI00022CA785 |  |
| UniRef90-N6TUG4 |  |
| UniRef90_E0W206 |  |
| UniRef90_A0A034TLT8 | A A |
| UniRef90 Q057N0 |  |
| UniRef90_H2KRE6 |  |
| UniRef90-UPI0003DF502B |  |
| UniRef90-X0TED2 | L E K |
| UniRef90_G4LV96 |  |
| UniRef90_K7HD96 |  |
| UniRef90_A7EUE9 | WE |
| UniRef90 E2C7B9 |  |
| UniRef90_X0WPA9 | L |
| UniRef90_C1LFS4 |  |
| UniRef90 W7I7I6 |  |
| UniRef90_A8NI59 |  |
| UniRef90_UPI0003F06FDA |  |
| UniRef90_K2SF93 |  |
| UniRef90-F9FQ92 |  |
| UniRef90_J9ENV3 |  |
| lupas_21 |  |
| lupas_14 |  |
| lupas_28 |  |
| jnet |  |
| conf | 407 |
| sol25 |  |
| sol5 |  |
| sol0 |  |
| jhmm |  |
| jpssm | - |


[^0]:    ,

[^1]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^2]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    SOlO
    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

