QUERY
UniRef90_C3W1V0 UniRef90-R4R7E8 UniRef90-U5J407 UniRef90-Q06J26 UniRef90-Q9MSZ0 UniRef90 UPI00047947B8 UniRef90-D5MHI3 UniRef90-P31196 UniRef90-V5K459
UniRef90 UniRef90-B9SD19
UniRef90_Q9MSZ2
UniRef90-Q9GE64
UniRef90_Q85ZK2 UniRef90-UPI0004062AF8 UniRef90 X7ZWK2 UniRef90-P96486 UniRef90-A0A023PKS2 UniRef90_K7R0G8 UniRef90_B6CJW4 UniRef90-Q71N76 UniRef90_UPI00032A86D4 UniRef90-UPI00041A0830 UniRef90-K7SF39 UniRef90-B2JX50 UniRef90-G1E770 UniRef90_A0A058ZJW7 UniRef90-K21JY5 UniRef90 A8CCW2 UniRef90-F5BVU2 UniRef90-E1IGS1 UniRef90-W8E4X1 UniRef90-Q9MTS2 UniRef90_U6CJN8 UniRef90-H9AF25 UniRef90-W8CQU5 UniRef90-W8CQ36 UniRef90_Q9MT11
UniRef90_Q9GG55 UniRef90_Q6Y2Z8 UniRef90-R4P2Y9 UniRef90-I1QRU1 UniRef90-Q33263 UniRef90-Q6Y2Y0 UniRef90_UPIOOO2B44982 UniRef90-J7H4E4 UniRef90-J7QBK8 UniRef90-P92351 UniRef90-R4S8X0 UniRef90_Q95AZ2
UniRef90_Q95D19 UniRef90-R4P4Z1 UniRef90-K4DG80 UniRef90_Q8HDG5 UniRef90_O46985 UniRef90_C3RTI UniRef90-Q95GW4 UniRef90_G4WS99 UniRef90_Q9MTS8 UniRef90-M4I249 UniRef90-Q33197 UniRef90-Q9MSY9 UniRef90-B8PRL9 UniRef90_G7JOY9 UniRef90-H9LJ74 UniRef90-Q1EGL3 UniRef90_B6CJW5 UniRef90_K9MP45
UniRef90-J7QKJ3 UniRef90 Q6XAR1 UniRef90_Q9XEQ0 UniRef90_Q8MAK8 UniRef90_J71007 UniRef90_O46930 UniRef90-W5QKA8 UniRef90_I6TJ34 UniRef90_U6BNI2 UniRef90_-Q9BCF7 UniRef90_Q8MCW3 UniRef90-O78531 UniRef90-F4YBI3 UniRef90_UPI00047423B5

VGFKAGVK 10
20
20
30
40 VGFKAGVKDYRLTYYTPEYQTKDTDILAAFRVTPXXXXXX VGFKAGVKDYKLTYYTPDYKTKDTDDLAAARVTPQPGVPP AGYKAGVKDYKLTYYTPDYTPKDTDLLAAFRFSPQPGVPA VGFKAGVRDYRLTYYTPNYKTKDTDILAAFRMTPQPGVPP A GFKAGVKDYRLTYYTPDYKVKDTDILAAFRVTPQPGVPP GSKAGVID HRLTYYTPDYETKDTDDLGGSDPSNSSTRIPA YKS GVMEYKMGYWEPDYEPKDTDVI CCFRVDPQDGVDP VGFKAGVKEYKLNYYTPDYDTKDTDILAAARRVSPQPGVPP $L G F R A G V Q D Y R L T Y Y M K D Y K V D V H D L L A A F R V D A Q P G V P A$
 KAGVKDYRLTYYTPDYETKDTDDLAAFRVTPQPGVPA LGFKAGVKDYKLTYYTPXXXXXXXXXXXXXXXXPGVPP VGFKAGVKEYKLTYYTPECDTRPHEGLIGFHATLHAEI PG YKA GVLK Y RMGYWRPDYQPKATDVI CLFRDTPQEGVEP YDAGVKEYRDTYWTPDYVPLDTDLLACFKCTGQEGVPK
YESGVIPYEMGYWDANYTDKDTDVLAALFRITPQPGVDP K G GVVEYKMGYWQPDYEPKDTDTIALFR\|TPQPGIEP VGSKAGVKDHRLTHYTPDHQTKDTDILAAPRMTPQPGVPA
 YSAGVLKYKMGYWMPDYVPKDTDTLCLFRLTPQDGVDP

VGFK A GVKDYKXTYYTPDYETKDTXILAAFRVTPQP GVVP YES GVLPYRMGYWEQEYK IKHTDILALFRMTPQPGVDP
 Y D A GVVK D Y R S T Y WE P E Y S V K E T D D L A A GVK D Y R L T Y Y T P E Y E TKET DI LAA A FRMTP QPGVPP M G Y Y D A D Y Q P K D T D I L C A F R IV VP Q E G V D P
VGFK X X X K D Y X E X Y N N P K X X T X X T D I XA A F X V T P Q P GV P X

 D Y R L L T Y Y T P D Y Q VV L D T
 $A X V X X Y X X T X X T X D Y V X X D T D I L A A A R V T P B P G V P B$






 ES GVIP Y K M G Y WD P N Y V DK E T DV L A L F RVV P Q P GV D P D Y K L F Y Y S P D Y E TKD T F I LAAFRVTP QPGVRR FKAGVKEYKLLTYYNPEYQTKDTDILAAFEVTPEPRVPP Y E S GVVIP Y X M GY W D A N N N V V K V YES GVIDRYKMGYWDP XYVIK DTDDVXALXRVTPRPGVDP
 Y W D A D Y A $V$ K K G Y K L T X Y T P D Y E T X X T D I L A A F R V T P Q P GV P P

F K A GXK D Y R L T Y Y T P D Y Q V L D T D V L A A F R M P P QP G V



VK D X X V LA X F R VT P X P G VD A DI PA A SRTT P QP GXXX GFKAGVKD YR LTTYYTPDYVVKETDI LAAFRMTPQPGVPX K D T D I L A A A F R V T
VGF K A DVK D Y K LTTYY T P E Y K T K D T N I LAA F RVTP QLGVP P
 P D Y Q T X D T X $\ddagger$ X X A X RVTTPXPGV| $\underset{P}{P}$ X
VGFK A GVKD YK LTTYYTPEYETKDTDVLAAFRVTPQPGVPP
 $D \quad 1 \quad$ AA A F R G T P R S GV


## QUERY

UniRef90_C3W1V0 UniRef90-R4R7E8 UniRef90_U5J407 UniRef90_Q06J26 UniRef90-Q9MSZ0 UniRef90_UPIOO047947B8 UniRef90_D5MHI3 UniRef90-P31196
UniRef90 V5K459 UniRef90-W5THP8 UniRef90-B9SD19 UniRef90_Q9MSZ2 UniRef90_Q9GE64 UniRef90-Q85ZK2 UniRef90_UPI0004062AF8 UniRef90-X7ZWK2 UniRef90-P96486 UniRef90_A0A023PKS2 UniRef90_K7R0G8 UniRef90-B6CJW4 UniRef90-Q71N76 UniRef90_UPI00032A86D4 UniRef90_UPI00041A0830 UniRef90-K7SF39 UniRef90-B2JX50 UniRef90-G1E770 UniRef90-A0A058ZJW7 UniRef90_K2IJY5 UniRef90-A8CCW2 UniRef90-F5BVU2 UniRef90_E1IGS1 UniRef90_O9TID3 UniRef90_W8E4X1 UniRef90_Q9MTS2
UniRef90_U6CJN8 UniRef90-H9AF25 UniRef90-W8CQU5 UniRef90-W8CQ36 UniRef90-Q9MT11 UniRef90_Q6Y2Z8 UniRef90-R4P2Y9 UniRef90-Q8HTA7 UniRef90_I1QRU1
UniRef90_Q33263 UniRef90_Q6Y2Yo UniRef90_UPIO002B44982 UniRef90_J7H4E4
UniRef90_J7QBK8 UniRef90-P92351 UniRef90-R4S8X0 UniRef90_Q95AZ2 UniRef90_Q95D19
UniRef90_R4P4Z1 UniRef90-K4DG80 UniRef90-Q8HDG5 UniRef90-O46985 UniRef90_C3RT32 UniRef90_Q95GW4 UniRef90-G4WS99 UniRef90_Q9MTS8
UniRef90_M41249 UniRef90-B8YI69 UniRef90_Q33197 UniRef90_Q9MSY9
UniRef90 B8PRL9 UniRef90-B8PRL9
UniRef90_Q9MSY8 UniRef90-G7JOY9 UniRef90-H9LJ74 UniRef90_Q1EGL3
UniRef90_B6CJW5 UniRef90_K9MP45 UniRef90-J7QKJ3 UniRef90-Q6XAR1 UniRef90_Q9XEQ0
UniRef90_Q8MAK8 UniRef90_J71007 UniRef90_LON867 UniRef90_O46930
UniRef90_W5QKA8 UniRef90-I6TJ34 UniRef90_U6BNI2
UniRef90_Q9BCF7 UniRef90-Q8MCW3 UniRef90_O78531 UniRef90-F4YBI3 UniRef90_UPIO0047423B5


50
50
60
70
DGLTSTDRYKGRCYHTEP
80
蹅
X X A G A A VA

EEAGAAVA
E EAAAVA
ERSRGCGS
V

V ASAAVA cococos | S |
| :--- |
| S | GT

GT
GT
GT $W T$
$W T$
$W T$
$W T$ $T$
$T$
$T$
TV
TV
V
V $\begin{array}{ll}D & G L \\ D G L L \\ D L L\end{array}$

 EEAAAAVA
 EEAGAAVA EEAAAAVA EEAAAAV A
V

ECAAA EEAGAAVA EEAGAAVX EEAGAAVP | $E E A G A A V$ |
| :---: |
| E |
| $\square$ | XEAGAAVA EEEGSAVAA $\begin{array}{ll}\text { EEAGAAVA } \\ \text { E EAGAAV } & \text { A }\end{array}$ EEAGXAVAA AEAGAEAAA

EEARAAVAA EEAGAAAA
 DEAGAEVAA EEAGAA
$V$
$V$
EAGAAVAV EXAGAAXA
E ETGAAV

 | VEASA AV |
| :---: |
| EEGGGGV | $\begin{array}{ll}E K D G A V L A \\ V & E A A A V A \\ V & A\end{array}$

VEAAAAVAGXS VEASAAVAGESSTATWTVVWT
 EEAGAAVAAESSTGTWTVVWTDGLTADDRYKGRCYNVEPDV VEAA A A A A EXXXXAVA
EMASPTVA EECAAAVA AEASAAVAGES
 GHTSE

## 

|  |
| :---: |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |



| QUERY |  |
| :---: | :---: |
| UniRef90 C3W1V0 |  |
| UniRef90-R4R7E8 | RALRXEDLRIPTAYVKTFQG |
| UniRef90-Q31NB3 | RSLLRLEDIR FPVALVKTFQG |
| UniRef90-U5J407 |  |
| UniRef90-Q06J26 |  |
| UniRef90-Q9MSZ0 | RALRLEDLRI PPAYSKTFQG |
| UniRef90_UPI00047947B8 | K GLRLEDMRLPTA Y VKT F N G |
| UniRef90-D5MHI3 | K ALRLEDMRFPVAYLKTFQG |
| UniRef90-P31196 | CALRLEDLRT |
| UniRef90-V5K459 | KCLRLEDLRIPVALLKTFQG |
| UniRef90-W5THP8 | K ALLRLEDMRIPVAYVKTFQG |
| UniRef90-B9SD19 | YGCPL LDCTI K P |
| UniRef90_Q9MSZ2 | RALRLEDLRI P P A Y S S F P G |
| UniRef90-A9P777 | RALRLEDLRIPAAYSKTFQG |
| UniRef90_Q9GE64 | RALRLEDLRXPPSYSKTFQG |
| UniRef90_Q85ZK2 | RALRLEDLRIPPAYTKTLQG |
| UniRef90-UPI0004062AF8 | K ALRLEDMFLPEAYDKTFDG |
| UniRef90-X7ZWK2 | KALRLEDMRIPSQYVKTFQG |
| UniRef90-P96486 | RHLRLED I R F P M A F K S C Y G |
| UniRef90-A0A023PKS2 | K ALRLEDMRMPYAYLK T F Q G |
| UniRef90-K7R0G8 | RALRRLEDLRTPVAYLKTFKG |
| UniRef90-B6CJW4 | RAPRLEDPRIPPAHPKTSKG |
| UniRef90-Q71N76 | RALRLEDLRI PPAYAKXFQG |
| UniRef90-UPI00032A86D4 | CTLSLEDLRILSAY品KTFQG |
| UniRef90-UPI00041A0830 | K A ARLEDIRIIPVAYVKTFKG |
| UniRef90-K7SF39 | KALRLEDMRFPVALLKTYQG |
| UniRef90-B2JX50 | KALRLEDMRDPVAYLKTFQG |
| UniRef90-Q31868 | XXXXXXXXXXXXXXVKTFQG |
| UniRef90-G1E770 | RALRLEDMRFPDAYLKTFQG |
| UniRef90-A0A058ZJW7 | RALRLE DVRVPLA Y V VT C G G |
| UniRef90-K2lJY5 | RSLRLEDVR FPI WFVKTCFG |
| UniRef90-A8CCW2 |  |
| UniRef90-F5BVU2 | X X X RLX DLLRIPPAYVKTFQG |
| UniRef90-E1IGS1 | K SLLRLEDMRI PPDYTKTFQG |
| UniRef90-Q9TID3 | RALRLEDLRIPVAYVKTFQG |
| UniRef90-W8E4X1 | QALRLENLQIPTSYIKTFQG |
| UniRef90-Q9MTS2 | XALRLEDLRIPPAYSKTFQG |
| UniRef90-U6CJN8 | K CLRLEDMRI P Y A Y LK T F $\square$ G |
| UniRef90-H9AF25 | RALRLE D LRI X X A Y XKTFQG |
| UniRef90-W8CQU5 | RAFCLEDLRIPKSY\KSF@G |
| UniRef90-W8CQ36 | RALLRLEDLRIPPSYIKSFYG |
| UniRef90-Q9MT11 | TSSTSGGSANSPAYSKTFQG |
| UniRef90-Q9GG55 | RALRRLEDLRTIPPAYSKTFQG |
| UniRef90-Q6Y2Z8 | RALRLEDLR P P VA Y VKT F Q G |
| UniRef90-R4P2Y9 | RALRLEDLRFPTSYSKTFQG |
| UniRef90-Q8HTA7 | RALRPEDLRIPSSYSKTFQG |
| UniRef90-I1QRU1 | RALRLLEDLRI P P T Y SKTFQG |
| UniRef90-Q33263 | RALRLEDLR I P P A Y S K F L G |
| UniRef90-Q6Y2Y0 | R S L R |
| UniRef90-UPI0002B44982 | L N L K |
| UniRef90-J7H4E4 | RALRLEDLRTPPSSSKTFQG |
| UniRef90-J7QBK8 | R A L R L E DLR $\\|$ P P A Y $\square$ K $\square \mathrm{F}$ Q |
| UniRef90-P92351 |  |
| UniRef90-R4S8X0 | R A L R L E |
| UniRef90-Q95AZ2 |  |
| UniRef90_Q95D19 | K ALRLEDMRIPVA Y L K T F Q G |
| UniRef90-R4P4Z1 | RSLLLEDLTI PFSYSKTFLG |
| UniRef90-K4DG80 | P AL RLE DLRI PPSYVKTFQG |
| UniRef90-Q8HDG5 | K ALRLEDMRIPFAYLKTFQG |
| UniRef90-O46985 | K ALRLEDMRIPHSYLKTFQG |
| UniRef90-C3RT32 | K A L RLEXMRI PVAYLK T F Q G |
| UniRef90-Q9TLI7 | X X L R L E D L R I P PAYVKTFQG |
| UniRef90_Q95GW4 | X X X X X X X X PVA Y L K T F Q G |
| UniRef90-G4WS99 | K A L R LPFMRWRE |
| UniRef90-Q9MTS8 | X ALRLEDLLRIPPAYVXTFQG |
| UniRef90-M4I249 | KALRSEDMRIPVAYLKTFQ |
| UniRef90-B8Y169 |  |
| UniRef90-Q33197 | K A L R L E D M R \PVVA Y LK T F Q G |
| UniRef90-Q9MSY9 | RALRLEDLRIPPAYSKTFQ |
| UniRef90-B8PRL9 |  |
| UniRef90-Q9MSY8 |  |
| UniRef90-G7J0Y9 | RALRRLEDLRDPVAYVKT F Q G |
| UniRef90-H9LJ74 | RALRLEDIR FPVALLKTFQG |
| UniRef90-Q1EGL3 | K ALRLEDMXIPVA Y L K T F Q G |
| UniRef90-B6CJW5 | XALRSEDLRIPPAYSXTFKG |
| UniRef90-K9MP45 |  |
| UniRef90-J7QKJ3 | $R A L R L E D L R \square P L A Y \square K T L Q G$ |
| UniRef90-Q6XAR1 | RHLRLEDI R F PLLAFIK T CMG |
| UniRef90-Q9XEQ0 | HALHLEDLRIPPAYVKTFQG |
| UniRef90-Q8MAK8 | RALRLEDLRIPPTYTKTFQG |
| UniRef90-J71007 |  |
| UniRef90-L0N867 | RALLLEDLRIPTAYTKTFQG |
| UniRef90-O46930 |  |
| UniRef90 ${ }^{-}$W5QKA8 | VATS L L L K R FRVP NTK T F Q G |
| UniRef90-16TJ34 | RALRLEDLRIPVAYVKTFQG |
| UniRef90-U6BNI2 | RALLLEDLRI P PAYI ETLGG |
| UniRef90-Q9BCF7 | K ALRLEDMRLPVAYLKTFQG |
| UniRef90-Q8MCW3 | RALRLEDLR V P P A Y I K TFQ G |
| UniRef90-O78531 | RALRLEDLRI P T S Y SKTFQG |
| UniRef90-F4YBI3 | PALPPEEPAISPTYVKTFQG |
| UniRef90_UPI00047423B5 |  |

UniRef90_GOKUV0 UniRef90-X2D105 UniRef90-Q32033 UniRef90_Q32372
UniRef90 Q8HDG6 UniRef90-A8U1K5 UniRef90-B2ZWK1 UniRef90_U6BNI3 UniRef90-R4V517 UniRef90_Q31956
UniRef90 H9AG40 UniRef90-F1D877 UniRef90-Q32247 UniRef90-I2E988 UniRef90_R4IUI3 UniRef90-Q32326 UniRef90-G8E629 UniRef90_LOHEQ2 UniRef90-F5BVZ0 UniRef90-A2BK54 UniRef90-T1RQZ1 UniRef90_Q85VL1 UniRef90_T1RQX6 UniRef90-Q5J9Z0 UniRef90-Q5UV74
UniRef90 Q33480 UniRef90-O46972 UniRef90-Q32298 UniRef90_D2REY6 UniRef90-C5Y6V7 UniRef90-I6R3Z3 UniRef90-O58677 UniRef90_L7Q176 UniRef90-Q95FY5 UniRef90-Q0PN19 UniRef90_Q33084
UniRef90 LOHPH2 UniRef90-H2Cl18 UniRef90_UPI000375BC3D UniRef90- O28635 UniRef90-Q36628 UniRef90-O46920 UniRef90-F2KRW1 UniRef90-Q8MA97 UniRef90_Q8THG2 UniRef90_O93627 UniRef90_A4Q8T2 UniRef90_D6C639 UniRef90_A7I7B2 UniRef90 F8AM17 UniRef90-Q8MFS6 UniRef90-D0ETD5 UniRef90-16TJ28 UniRef90-D3RYU4 UniRef90_Q93A95 UniRef90_E8RAK5 UniRef90-A3DND9 UniRef90-G7K0U1 UniRef90-M3AF08 UniRef90_A7U3R2 UniRef90_Q0ZH73 UniRef90-D5U228 UniRef90-C9DSA3 UniRef90-C5HUU3 UniRef90_C6A4V2 UniRef90_C9RGZ0 UniRef90--13TDF0
UniRef90 UniRef90_F6BEM0
UniRef90_G9M5K1 UniRef90- Q36797 UniRef90_A1RZJ5 UniRef90-Q9MVS4 UniRef90-X0U416 UniRef90-G3EZV0 UniRef90_Q42813 UniRef90-EOWMP2 UniRef90_G0HNE1 UniRef90_E3T308 UniRef90-E0SRG9 UniRef90_C9R9G7 UniRef90 D7E762 UniRef90-G2DBN8 UniRef90-V6EXN2 UniRef90 N0BMV6 UniRef90-F3KC42 UniRef90-Q8KQA2 UniRef90-E3T318 UniRef90_Q21YM9 UniRef90_Q6ST43
UniRef90_UPI00035ECE15

10
TYYTPEY ${ }^{20}$ TKDTDTLAA ${ }^{30} R$ RTVTPQGVP $P^{40}$ TKDTDI LAAFRMTPQPGVPA
TPXYETXDTDILAAFRXSPQPGVPP $K M G Y W D P D Y V I K D T D V L A L F R V T P Q P G V D P$ YEXGX DPYXXXYWDXEXLXXXTDVLALFRXTXQPGVDP

GYWDPNYAVKETDVLALFRFTPQPGVDA
TPDYXTXDTDILAAFRVTPQPGXPP VLA LIFRVTPQPGVDP
 Y L E F VDESYKPGKDEVIA VFRDTPAQG $\square \mathrm{S} \square$ $K M G Y W D P D Y V I K D T D V L A L F R \nabla T P Q P G V D P$ RVTPQPGVDP AFRMTPQPGVPP S GVIPYKMGYWDPEYAVKETDVLAALFRVTPQPGVDP Y T LK K T DVLALFRLTPQPGVEP
EMYFEYVDKSYEPSERDLIAVFRVKPSEGVKD VGFKADVKDYK $\operatorname{VTY}$ YTPEYKTKDTNULAAFRVTPQLGVPP

E WY LD F VDLDYEPGRDELIVEYYFEP NGVSP

FRVTPQPGVDP $M T Y D E D D Y E P K D T D D L V W F Y A E P P A G R D M$
$R L D L R E E D L D S G G R H V L V A Y R M K P K Q G Y G Y$

YRE YVDKSYEPQKDDUVAVFRITPAEGFTD
 RRDYVDPGYSPKDTDDICEFH LIEPAAG $\mathbb{V}$ SF YVDKGYEPKKRDIIAVFRVTPAEGYT I

【D WYNEFVDPNYKPANDDLVCLFYFEPAAGTTD MDYLELGYEPKDNELLSCMVVKAENL

LT Y Y T P D Y D P K D T D ILAA A RVT P QPGVPA YVDESYEPNKRDVIAVFKITPAEGYT $\square$ YVNRDYNPPDNDVVAVFRVKPAPGFTT Y I D K N Y VP DENDI IA VFRIK PAKGFT』

EADLIAGGRHVLCAYRMKPRPGFGY $\square T$ Y Y T P D Y E TK DTPLKAAFRVTPQPGVPP

YVDKNYEPNKRDTVAVFRTTPTDGYTI MDYINLNYTPKESDLLSCMIIKGDDL YVDKKYQPPDTHVIVTFRVKPASGFTV MDYVDLNYTPSENDLLSCDRVKAKNLMKV
 Y $\square$ N $\square$ N Y K P D E N D L I A M Y Y VE K A P D C D D D L VK N GKHVLVAY $\quad$ M $N Q G G Y D Y$
 WVEKSYTPDLIKGGKHVLCAYTMQPAAGYGY DFVEDNYTPSPSDCLACFYVEPAEGVDi REDYI ETEYKPKPDELVCEYYMEPADGVSF




UniRef90_GoKUvo UniRef90-X2D105 UniRef90-Q23033 UniRef90_O8HDG6 UniRef90-A8U1K5 UniRef90-B2ZWK1 UniRef90-U6BNI3 UniRef90_R4V517
UniRef90-Q31956 UniRef90-H9AG40 UniRef90-F1D877 UniRef90-Q32247
UniRefol - 2 E988 UniRef90-12E988
UniRef90-R4IUI3 UniRef90-Q32326 UniRef90_G8E629
UniRef90 LOHEQ2 UniRef90_F5BVZO UniRef90-A2BK54 UniRef90-T1RQZ1 UniRef90-Q85VL1 UniRef90-T1RQX6 UniRef90-Q5JgZ0
UniRet90 - 5 UVV74 UniRef90-Q33480 UniRef90-O46972 UniRef90-O32298 UniRef90-D2REY6 UniRef90-16R3Z3 UniRef90-O58677 UniRef90-L7Q176 UniRef90-Q95FY5 UniReffo-QOPN19 UniRef90-Q33084
UniRef90 LOHPH2 UniRef90-H2Cl18 UniRef90-UP1000375BC3D UniRef90-O28635 UniRef90-Q36628 UniRef90-O46920 UniRet90-B5T187 UniRef90-F2KRW1
UniRef90_O8MA97 UniRef90-Q8THG2 UniRef90-O93627 UniRef90-A4Q8T2
UniRef90_D6C639 UniRef90-A777B2 UniRef90-F8AM17 7 UniRef90-Q8MFS6 UniRef90-DOETD5 UniRef90-T1COV4 UniRef90-I6TJ28
UniRef90-D3RYU4 UniRef90-Q93A95 UniRef90-E8RAK5 UniRef90-A3DND9 UniRef90-G7KOU1 UniRef90-M3АF08 UniRef90-A7U3R2 2 UniRef90-Q0ZH733
 UniRef90-C5HUU3 UniRef90-C6A4V2 UniRef90-C9RGZO UniRef90-I3TDFO
UniRef90_F6BEMO UniRef90-G9M5K1 UniRef90-Q36797 UniRef90-A1RZJ5 UniRef90-O9MVS4
UniRef90- xO 416 UniRef90-G3EZV0 UniRef90-Q42813 UniRef90-EOWMP2 UniRef90-GOHNE1 UniRef90-E3T308
UniRef90-EOSRG9 UniRef90-C9R9G7 UniRef90-D7E762 UniRef90-G2DBN8 UniRef90-NoBMV6 UniRef90 F3KC42 UniRef90-Q8KQA2
UniRef90 E3T318 UniRef90-E3T318 UniRef90-Q6ST43

50
60
70
EEAGAAVIAAESSTGTWTTVIWTDG|LTSLDRYKGRCYHIIEX 80 EEAGAAVAAESSTGTWTTVWTDGLTSLDRXXXXXXXIEPV EEAGAAVAAXSSTGTXDTVWTDGGTSUXRYKGRCYXUEPV VEASAAVAGESSTATWTVVWTDLLTACDLYRAKAYKXXXX VEAXAAVAGESSTAXWTVVWTDXXTACDIYXAKAYRVDPV EEAGAAVAXESSXGTWTTXXTDGLTSGXRXKGRCYHIEPV VEAAAAVAGEYSTATWTVVGTDLLTACDDYRAKAYKVNPV

T WTVVWTDRL
EEAGAAVAAESSTGTWTTVWTDGLTXLDRYKGRCYHIEPV EEAGAAVAAESSTGTWTTVWTDGLTSLDRYKGRCYDIEPV VEASAAVAGESSTATWTVVWTDLLTACDDYRAKAYKVDKV XEXGAAVAAEXXXGTWTXVXTDGLTXXXXYKXXYXVEPX VEASAAVAGESSTATWTVVWTDLLTACDDYRAKAYKVEPV REAAGRTASESSTGTWTTLFSM

AAVAAESSTGTWTTVWTDGLTNLDRYXXXCYXXXPV KDAAGRリAAESSVGTWTTL SVKPSWFEKLKAKAYRFHDL VEASAAVAGESSTATWTVVWTDLLTACDLYRAKAYK
 EEAGAAVAAESSTGTWTTVWTDGLTSXDXYKGRCYDIEPV VEASXXVAGESSTATWTVVWTDLLTACXXXXXXXXXXXX
 EEVGAAVAAESSTRTWTTIUTDGLTSBDCYK

TWTTVWTDLLSDMEYYKGRAYRTEDV
 TVVWTDLLTAADLYRAKAYRVARV
 KYVADRIAEESSIGTWTDLKTLLPEDWEKLRARVYEI
LETAAHFAAESSTGTNVEVSTTDDFTRGVDALVYWUDEAN EKVANEVAAESSTGTWTKIKTMKKEVYDKLKPTVYEDNENG

VAA A SS TGTWTTVVWTDGLTAC
E EAAGRVASESSVGTWTTLA
VWTDLLTACDKLPERDKRLMAK
EEASTHMAGESSTDSWTEISTLSPEDAARLKPHVFYLDA
EQAAGAVAAESSTGTWTTLWYEQERWADLSA KAYDFHDM
TWTTVWTDLLTDLHHYKGRAYRIMEDV
KEAAGRDASESSTGTWTTLAT KKAANDIAGESS $\mathrm{K}_{\mathrm{G}} \mathrm{T}$ WTELKTMKSEDYKKLKPRVYEINEM


EEAGAAVXAESSTGTWTTVWTXXXXXXXXXXXXXXXXXXX KECAGGVAAESSTGTWTTLYP WYEEERWKDLSAKAYEF GVWTDRXTACELYRAKAYRSELV EDAAGGVAAESSTGTWTSLYSWYDTRVRRLSGKAYFFRDL EDAAGGVAAESSTGTWTTLWYNTERVRKLSGKAYYFKDLG WSKLHEFSRDSRTGWT I GWYASRSWMSRCRTLHWCLLSF VETAAHFAAESSTGTNVEVCTTDDFTRGVDALVYQVDEAA EEAGAAVAAESSTGTWTTVWTDGDTSLDRYKGRCYHDEPV DDAAGGVAAESSTGGWTXVYNNXYDRERVRRLSGRAYEF VEAAAAVAGXXSXATXTVVWTDLXXAXXRYRAKAYXVVD P EQAAGAVAAESSTGTWTTDWYEEERWSDLSAKAYYFHD K K DA NEI A GESS DGT WT KVQTMKSD YYEKLK PNVYE DKED EDAAGGVAAESSTGTWTTLWYDVSRVKKLSGRAYYFKDLK


## STATWTVVWTXXLTA

EDAAGGVAAESSVGTWTTLWYDKSRD DRLKGKAYYMESL
K Q A CEE $\square$ A KESS $\square$ G T WTE $\square$ A T $\square$ S
LATAAHVAAESSTGTNVNVCTTDDTLDFYKGCYRIEDV EAAAGAVAAESSTGTWTV KAKADSA KAYDFHDM LEVVAAMAAESSTGTNVELCTTDDFTKGVDALVYYCNEAE YEAAGAVASESSTGTWTDVATMKPRDWEELRARVYAD EKACNHMAGESSIDTWSDISTDSPEKAQELKPHVFSIDKE LEAAAHFAAESSTGTNVEVSTTDDFTKGVDALVYEIDEAK DATAAHFAAESSTGTNVEVCTTDDFTRGVDALVYEVTEQA LATAAHFAAESSTGTNVEVCTTDDHTRSVDALVYHADKKT FTGTAHFCAESSTGTNVQVVTTDDFTKNLDSHCYFVDEEK LEAAAHFAAESSTGTNVEVCTTDDFTRDVDALVYYVNEAT

## UniRef90_GoKUVO

 UniRef90-X2D105UniRef90-Q32033 UniRef90-Q32372 UniRef90_Q8HDG6 UniRef90-A8U1K5
UniRef90 B2ZWK1 UniRef90-U6BNI3 UniRef90-R4V517 UniRef90-Q31956
UniRef90 H9AG40 UniRef90-H9AG40
UniRef90 F1D877 UniRef90-Q32247 UniRef90-12E988 UniRef90-R4IU13 UniRef90_Q32326
UniRef90-G8E629 UniRef90-LOHEQ2 UniRef90-F5BVZ0 UniRef90_A2BK54
UniRef90 -T1RQZ1 UniRef90-Q85VL1 UniRef90-T1RQX6 UniRef90-Q5J9Z0 UniRef90-Q5UV744
UniRef90 Q33480 UniRef90-O46972 Unii effo-O322988 UniRef90-D2REY6
UniRef90_C5Y67 UniRef90-I6R3Z3
UniRef90-O58677 UniRef90-L7Q176 UniRef90-Q95FY5 UniReffo-QOPN19 UniRef90_O33084
UniRef90_LOHPH2 UniRef90-H2Cl18 UniRef90-UPIO00375BC3D UniRef90-O28635 UniRef90-Q36628
UniRef90 O46920 UniRef90- ${ }^{-15 T 187}$ UniRef90-F2KRW1 UniRef90_O8MA97
UniRef90_Q8THG2 UniRef90-O93627 UniRef90-A4Q8T2
UniRef90-D6C639 UniRef90-A717B2 UniRef90-F8AM17 7 UniRef90-O8MFS6
UniRef90-D0ETD5 UniRef90-T1COV4 UniRef90_16TJ28 UniRef90-D3RYU4 UniRef90-Q93A95
UniRef90_E8RAK5 UniRef90-A3DND9 UniRefofo-G7KOU1 UniRet90-M3AFO8 UniRef90-A7U3R2
UniRef9O-QOZH73 UniRef90-D5U228 UniRef90_C9DSA3
UniRef90_C5HUU3 UniRef90-C6A4V2 UniRef90-C9RGZO UniRef90_I3TDFO
UniRef90_F6BEMO UniRef90-G9M5K1 UniRef90_Q36797 UniRef90-A1RZJ5
UniRef90-Q9MVS4 UniRef90 XoU416 UniRef90-G3EZVO UniRe90_-Q42813
UniRef90_EOWMP2 UniRef90-GOHNE UniRef90-E3T308
UniRef90_EOSRG9 UniRef90-C9R9G7 UniRef90-D7E762 UniRef90-G2DBN8
UniRef90_V6EXN2 UniRef90-NobMV6 UniRef90-F3KC42
UniRef90-Q8KQA2 UniRef90-E3T318 UniRef90_Q21YM9 UniRet90_O6ST43 UniRef90_UPI00035ECE15

AGEXXQY TA YVVIXXXXXXXXXXXXXXXXXXXXXXXXXXXX AGEENQYIXXXXXXXXXXXXXXVTNLFTSUVGNVFGFKAL AGXXNXXXXXXXXXXXXXEGXXTXXXSXVGNXFGFKAL XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX SXXXXXFFGY ${ }^{\text {AXXXCDXXEXXSXANXTASTXGNVXGFKAX }}$ AGEENQYXAYVAYPLXLFEEGSVTNMFTS|XGNVFGFKAL
 PNVSDQYFAYIAYDIDLEEEGSIANLTASLIGNVFGXXXX XGXENQFXAYVAYPLDLEEGSVTNMFTSXVGNVFGFKAL AGEENQYاDAYVAYPLDLFEEGSVTNLFTS
PNSDDQFFAWISYDIDLFEEGSIANLTASTIGNVF
AGXENQYXCYVAYPLXLXEEGSVTNMFTSIXGXVXGFKAL
PNTTDQYFAFI AYECDLFEEGSLANLTASGIGNVFGFKAV
PNTTDQYFAYIXXXXXXXXXXXXXXXXXXXXXFGFKAV
PGEADQYIGYVAYPLDLFEEGSVTNMFTSVVGNVFGFKAQ
AFHDEGNVVKIAYPIELWEEGNTVQLMSGIAGNIFGMKAV

PGRPGEYFAWVAYDTIFEEGSTANMTASTGNVESFKP PNPPEQXXAYIPYDXXXXXXXXXVNLKASIIGNVFGFKAV AGEENQXDAYXAYPLXLFEEGSVTNLFTSUAGNVFGFKXL XXXXXXXXXXXXXXXXXXXXXXXXXXXXX


PGDKAAFYTFTAYPDDLFEEGSVVNVLTSLVGNVFGFKA
 PSSNEVYFAYIAYDI DLFEEGSLANLTASIIGNVFGFKAV

PNSSEQFFAYYSYDIDLFEEGSIANLTASIVGNVFGFKAV EGMKIAYPIDLEDRNLLDGRAMMVSFLALAAGNNQGMGDV




 AFEFDGHYVKVAYPLALWEEGNAVQLLSGAAGNIFGMKAL


 VEHDGSWUVK AYPYHAFEERNLPALLASIAGNVFGMRRV D ClPRHNIVLVADFLLDLFKEGSVTNMFTSIVGNVFGFKAL ELMK【AYPVELFDRNIIDGKAMUASFLTLTVGNNQGMSDV AGEESQFIAYVAY
PNTCDQYFAYIAYDTDLFEEGSTANLTAS DGNVFGFKAV LDKDGSWIVKI AYPVELFEEGNIPGLDASIAGNVFGMRRV PNXXDQXXAXIAXECDLFEEGSLANLTASI IGNVXGXKAV
 DGKYKDGLIKIAYPGYDFETNNMPGVLAGIAGNIFGMK DA D GEEGESGLIKIAYPLDAF
PNSADEFFAFIAYECDLFIDENPGTLAGIAGNIFGMKIV PNTSDQFFAFIAYDTDLFEEGSDANLTASIIGNVFGFKAV GDGSYDRVAYPVELFEEGNMPAFDASVAGNIFGMRRV KAHEKTWFAY:AYDIDLEEEASDANLTASU1 GNVFGMKAV N PGDKEAFYAF A YPLDLEEEGSUTNVLTSLVGNVFGFKALV

 RG GVVKVAYKQDLFEDDSVPQILSAIAGNIMSMKLV


 PGDDTCFYAFVAYPDDLFEEGSVVNVLTSLVGNVFGFKAL EDMRLAYPLALFDRNGDGRFMLVSFLTLAVGNNQGMGDVGOD

|  |  |
| :---: | :---: |
| UniRef90 GOKUVO | XXLRLEDLRIPPAYTKTFQG |
| UniRef90－Q32033 | RALRLEDLRIPVAYVKTFQG |
| UniRet90＿Q32372 | KALRLEDMRIPVAYLKTFQG |
| UniRef90＿Q8HDG6 | KALSLEHMRIPFAYLKTFQG |
| UniRef90－A8U1K5 |  |
| UniRef90－B2ZWK1 | KALKLKNMRIPFAYL |
| UniRef90－U6BNI3 | R A R E D R |
| UniRef90－R4 | KALRLEDMRLP |
| UniRef90－O319 | X X X XLEDMRLPVAYLKTFQG |
| UniRef90－H9AG40 | RALIRLEDLIR |
| UniRet90 F1D877 |  |
| － |  |
| UniRef90－12E988 |  |
| UniRef90 R4IUI3 （13232 |  |
| UniRef90－G8E | RALRLEDLRV |
| UniRef90＿LOHEQ2 | RNLRLIDVALPPAYLKHFQG |
| UniRef90－F5BVZ0 | RAL RLEDLXXPXAXV |
| UniRef90＿A2BK54 |  |
| UniRef90＿T1RQZ1 |  |
| UniRef90＿Q85VL1 | E |
| UniRef90－T1RC | K A ARL EDIIQ P |
| UniRef90 Q5UV74 | XALRRAHMRXPPXYVKXFQG |
| UniRef90－Q33480 | XALRLEDMR $\square$ PVAYLKTFQG |
| UniRef90＿046972 |  |
| UniRet90＿Q32298 |  |
| UniRef90 D2REY6 | VYLPK |
| UniRef90＿16R3Z | RALRLEDDRFPVAFVKTCNG |
| UniRef90－O58677 | R |
| UniRe990＿LQ176 | EmRF |
| UniRef90＿Q95FY5 | KGLRLEDMR ${ }^{\text {K P }}$ |
| UniRef90－Q330 |  |
| UniRef90－Lor | NLRVLDTRFP他LLSEYPG |
| UniRef90－ $\mathrm{HzCl18}$ | K Y AKMLDF Y P P |
| UniRef90－UP1000375 | KGL Lid |
| UniRef90－O36628 | KALRLEDMRIPVAYLKTFQG |
| UniRef90＿0469 |  |
| UniRef90－B5T187 | SLRLEDVRFPLPYVTTCGG |
| UniR | K N L |
| UniRet90＿Q8MA97 | KALRLEDMRMPVALLKTYQG |
| UniRef90－08thG2 | D NLRLQD |
| UniRet90－093627 | 俋 |
| UniRet90＿A4Q872 | R SLRLEDV |
| UniRef90＿D6C639 | RALRLED |
| UniRet90＿A717 | L |
|  | N GL |
| UniRef90 O8MFS6 | E |
| UniRef90－DOETD5 | E |
| UniRe90－TCOV4 | E R P ${ }^{\text {a }}$ |
| UniRet90－16TJ28 | RALRLEDLRXPA |
|  | KAALRLEEDLY |
| UniRef90－E8 | EALRLED |
| UniRef90－A3DND9 | EGLRLEDIYLPKKFLQYFKG |
| UniRef90 G7KOU1 1 | CALLRLEDLRIPVAYVK |
| UniRee90－M3 |  |
|  |  |
| UniRef90－D5U228 | EGLRLEDMYLPGGF |
| UniRef90－C9DS | XALRLEDMRIPHSYLKTFQG |
| UniRet90＿C5HU | RALRLEDLRISKAY |
| UniRef90－C6A4V2 | KGLRLEDLYLPEVVRDFSG |
| UniRei90＿C9RGz0 | K GL |
| UniRet90＿13TDF0 | EGLRVEDIVYLPKQFLQYFKG |
|  | DGLRMLDYRFPEKFVKAYRG |
|  | K A |
| UniRef90－A1RZJ5 | RSLRVED\YLPEAFL |
| UniRef90－Q9MVS4 | Q SLRLEDMRLP |
| UniRet90 XoU416 | KN |
| $\begin{aligned} & \text { UniRef90_G3EZV0 } \\ & \text { UniRef90- } \mathrm{Q42813} \end{aligned}$ | R Y G Lli m d |
| UniRef90－EOV | KALRLEDMRLPVAYVKTFQG |
|  | EWLRLEDITYLERFLRNYPG |
| UniRef90－E3T308 | KNLQMQDFYMPERML |
| UniRef90－EOSRG9 | KYLRVEDIYMPYDFIKYFKG |
| UniRef90－C9R9G7 UniRef90 D7E762 |  |
| UniRef90－D7E762 UniRef90 G2DBN8 |  |
| UniReigoo－V6E | EYAKMLHDFWVPPAMLL |
| Refgo＿NobM | KGLRFEDFEVPASFAKHFKG |
| UniRet90－＝3KC |  |
|  | AGRREDVR |
| UniRef90－E3T318 | AKM1 DFYVP KRVIRMFDG |
| UniRef90－Q21YM9 | 俍 |
|  |  |
|  |  |


| UniRef90_T1AP56 |  |
| :---: | :---: |
|  |  |
| UniRef90 Q32635 |  |
| UniRef90-Q93A92 |  |
| UniRef9 | -Q59462 |
| iRef |  |
| UniRef90_Q32793 |  |
|  |  |
| UniRef9 | D3SZI3 |
| UniRef90-E6VVI6 |  |
| UniRef9 | D9J1X1 |
| UniRef90_UPIO003623C3E |  |
| UniRef9 | E4NPX6 |
| UniRef90-J3EY65 |  |
| UniRef90_O28685 |  |
| UniRef9 | O46973 |
| UniRef90-F7XNN2 |  |
| UniRef9 | X1CJN1 |
| UniRef90-UPIO0036E78AA |  |
| UniRef90-K1YIJO |  |
|  |  |
| UniRef90-UPI000374280B |  |
| UniRef90-A1AWY1 |  |
|  |  |
| UniRef90-C7P079 |  |
| UniRef9 | P92212 |
| UniRef90-K4MAK |  |
| UniRef90-13R375 |  |
| UniRef90-LOLOG3 |  |
| UniRef9 | M1E6K1 |
| UniRef90-UPIO00378C4E4 |  |
| UniRef90-K2A722 |  |
| UniRef9 | Q31QW8 |
| UniRef90-UPI00037E9CB7 |  |
| UniRef90-K4LFC4 |  |
| UniRef9 | UPI00037D82 |
| UniRef90_UPI00046F3AD0 |  |
| UniRef90-A0A011QZQ7 |  |
| UniRef9 | E6MJM2 |
| UniRef90-H1Z445 |  |
| UniRef9 | UPI0003649D4D |
| UniRef90-UPI00047B52AB |  |
| UniRef90-B8GJ69 |  |
| UniRef9 | X0V2V8 |
|  |  |
| UniRef90 Q6Y665 |  |
| UniRef90-D7AAR4 |  |
| UniRef90-14Z1F0 |  |
| UniRef90-UPI0003CFFD2E |  |
| UniRef90-A2SQX6 |  |
| UniRef90_F4BTL5 |  |
| UniRef90-K1YYQ0 |  |
| UniRef9 | -UPI0002DDE955 |
| UniRef90-UPI00046641E6 |  |
| UniRef90-R2XGK1 |  |
| UniRef90-B8IMG |  |
| UniRef90_W1JTC5 |  |
| UniRef90-K9DA60 |  |
| UniRef90_Q12TQ0 |  |
| UniRef90_UPIO0037E3117 |  |
| UniRef90-E6UYG1 |  |
| UniRef90_D3EED5 |  |
| UniRef90-B0MD38 |  |
| UniRef90-M4YJA6 |  |
| UniRef90-FOZO4 |  |
| UniRef90_B0U7K1 |  |
| UniRef90_G8MLZ7 |  |
| UniRef90-K0VLR8 |  |
| UniRef90-R9T8T7 |  |
| UniRef90-M9R7V1 |  |
| UniRef90-W9H4Q3 |  |
| UniRef90_Q2FSY4 |  |
| UniRef90-T1XIJ0 |  |
| UniRef90-M9SFF0 |  |
| UniRef90-A7IJG7 |  |
| UniRef90-TOY8T3 |  |
| UniRef90_UPI00047B1B93UniRef90-Q32034 |  |
|  |  |
| UniRef90-B1C5R4 |  |
| UniRef90-LOL1H0 |  |
| UniRef90_UPI0004776E1F |  |
| UniRef90-Q32260 |  |
| UniRef90-IOBLM9 |  |
| UniRef90-H81700 |  |
| UniRef90-UPI000371E21EUniRef90- A0B9K9 |  |
|  |  |
| UniRef90-R7ZRC1 |  |
| UniRef90-F4CCC3 |  |
| UniRef90_Q1YDM7 |  |
| UniRef90-UPIO0047DDCDC |  |
|  |  |
| UniRef90 ${ }^{-}$W0F514 |  |



## LTLTEEKLVADGNHLLVAYRDKPAAGYGF

 LDLKESDLIAGGKHILVAYKMKPKAGYDY■EY
 MRPKYP\AVDY DLIK GQNHILVAYTMTPAAGYGY YEDFLDLSYEPDESDLVCTFRDAPAEGMDV YEDFLD L S S Y TPTETDLVCTFRIAPAEGMSM FR\|XXEPGVDP YVNLNLEDPENYLLGVFHL 1 PGGKMN NYVNLDYKPNDNDLI A MYYVELSPDCKD RATLNSHQAAYVNLDLPQNGEYMLCAFHLVPGEGLNF EAKLIAAGNHVLCAYRIQPKPGHGF EARLI AEGNHVLCTYRLQPKPGHGF LI KEGNHFLVAYTMTPMPGFGY $D$ GIDLEKYII ASYTIKRPKGMNV YEDF LDLSSYDPADS DLVCEFYVVEPAADQDA

 YTNFLDLSYVPKKNDVLAAFYVEPASGTDD KEY LK L GF DP YADFLDESYEPSDDDLVCTFRLVPGEGISV MEYSEKYL
 PEGLEKERFIIATYYCAAKRNTNM MKPKAGYGY PENLRDDHYVDATYYCATGRNTNA DLFSYYYFRPRSDTKP ETAYDP ETAYDP
DVTA $\square$ YYFRPRADTSP ENYLDAMYFMEVEASVDP
YYSPEYHVKDTDXXAXFRMTPQPGVPA
ETAYDP

A S $\square$ NP H Q A A Y $\square$ NMD $\square K$ D PRNYM NDLIATYYFKPKSGVTP
 K Q NRMDLLNPLYEGCDLENLCTYYLGAETGDEDP DFLI ATYYMHSEKE P D ETAFP
TNGEF LLDAVFHMDPGGDLNV


VNED F LTAVYYMNSAREPDLL IDRDAYVVTKYRVS TDLPM PESVDKDTHIICTYFCEGYTS DVLD ETGV $\underset{M}{V} \underset{P}{D} P_{P}$
$\square D P D D Y V \square C K Y K \square A T N \square E M S$


KMTY DPDNDDRDNF\|IATYAYQGKTTTNA

 MMVRATYHVEAEAPLL RYRVETDLPM
$Y \square L R T A G D P$


## UniRef90 T1AP56

 UniRet90－A1VNQ9 UniRef90－Q32635 UniRef90－O59462 UniRef90－O84917 UniRef90－K7X6T7 UniRef90＿Q32793 UniRef90－D3SZl3 UniRef90－E6VVI6 UniRef90－D9J1X1UniRef90 UP10003623C3E UniRef90－E4NPX6
UniRef90－J3EY65
UniRef90－O28685 UniRef90－O46973
UniRef90 F7XNN2 UniRef90－X1CJN1 UniRef90－UPIo0036E78AA UniRef90－K1YIJO UniRef90 UPIIOOO465DDA1 UniRef90－A1AWY1 UniRef90－X1FFH6 UniRef90－C7P079 UniRef90－P92212 UniRef90－K4MAK9 UniRef9－13R375 UniRef90－LOLOG3 UniRef90＿UPIOOO378C4E4 UniRef90－K2A722 UniRef90－Q31QW8 UniRef90－UPIO0037E9CB7 UniRef90－K4LFC4 UniRef90＿UPI00037D8298 UniRef90＿UPIO0046F3ADO UniRef90－A0A011QZQ7 UniRef90－E6MJM2 UniRef90－H1Z445 UniRef90－UPIIO003649D4D UniRef90－UP100047B52AB UniRef90－B8GJ69 UniRef90－XOV2V8 UniRef90－Q6Y665
UniRef90 E3T313 UniRef90－D7AAR4 UniRef90－14Z1F0 UniRef90－UPIO003CFFD2E UniRef90－A2SQX6 UniRef90－F4BTL5 UniRef90－K1YYQ0 UniRef90－UP10002DDE955 UniRef90－UPIO0046641E6 UniRef90 R2XGK1 UniRef90－B8IMG3 UniRef90－K9DA60 UniRef90－Q12TQ0 UniRef90＿UPIo0037E3117 UniRet90－E6UYG1 UniRef90－D3EED5 UniRef90－BOMD38 UniRef90－M4YJA6 UniRef90－FoZO43 UniRef90－BOU7K1
UniRef90 G8MLZ7 UniRef90－K0VLR8 UniRef90－R9T877 UniRef90－M9R7V1
UniRef90
W9H4Q3 UniRef90－Q2FSY4 UniRef90－T1XIJO UniR Refo－MMSFFO UniRef90－ATIJG7 UniRef90－UPIOOO47B1B93 UniRef 90 O 32034 UniRef90－B1C5R4 UniRef90＿LOL1HO UniRef90－UPIO004776E1F UniRef90－Q32260 UniRef90＿10BLM9 UniRef90－H81700
UniRef90＿UP1000371E21E UniRef90－Aов9к9 UniRet90－R7ZRC1 UniRef90－F4CCC3
UniRef90－Q1YDMM UniRef90－UPI00047DDCDC
，
E

60
70
VEAAAAVIAGESSTATWTVVIWTDRTTACDSYRAKAYKVIEPV LEAAAHFAAESSTGTNVEVSTTDEFTKGVDALVYYLDEAT VEASAA YKGRSYR1 EDV
－$\quad$－
EVAAHVAAESSTGTNVEVSTTDDFTRGVDA RVY
 EAAASRVASESSNGTWAALHVDEDEL VEVAAHFAAESSTGTNVEVCTTDDFTKGVDAVVYEVSDAS
 DMGAT

## L

## L

## $\stackrel{\mathrm{L}}{\mathrm{L}} \mathrm{N}$

## 

## L

L




## $R$ $R$ $E$ $V$ ＜mココ

 \begin{tabular}{l}$R$ <br>
$R$ <br>
\hline$\frac{L}{E}$ <br>
\hline
\end{tabular}

\section*{| M |
| :---: |
|  |}

A

V
 LQAAAETAAESSTGTNFKVNTETPFSKTMNALVYKLDLE

 EKVAKE：A AEQSTGTWTDVVAERDVAEKLGARVV RKAAEAlAAEQSTGTWTEVRGAES

MAGEQSTGTFVKIPGETGELMEKYAAKワEELAAS
EKAALTMAAGEQSSGTFVSVPGETEDLKRRFAARVESVMPK
HRVADIIA GEQSSGTFIAI


## ris <br> Fen



UniRef90 T1AP56 UniRef90-A1VNQ9
UniRef90 O32635 UniRef90 Q93A92 UniRef90_Q59462 UniRef90-O84917
UniRef90-K7X6T7 UniRef90-Q32793 UniRef90-D3SZ13 UniRef90-E6VVI6 UniRef90 UPI0003623C3E UniRef90-E4NPX6 UniRef90-J3EY65 UniRef90 - O46973 UniRef90-F7XNN2 UniRef90-X1CJN1 UniRet90 UPIO0036E78AA UniRef90-K1YIJO UniRef90 UPIIOOO465DDA1 UniRef90_UPIO00374280B
UniRef90-A1AWY1
UniRef90-X1FFHE
UniRef90- C7P079
UniRef90-P92212
UniRef90-K4MAK9
UniRef90-13R375
UniRef90 ${ }^{-}$M1E6K 1
UniRef90-UPIO00378C4E4 UniRef90-K2A722
UniRet90 UPIO0037E9CB7
UniRef90-K4LFC4 UniRef90_UPIO0037D8298 UniRef90 UPI00046F3ADC UniRef90-A0A011 QZQ7 UniRef90-EGMJM2 UniRef90 UPIO003649D4D UniRef90_UPIo003649D4D
UniRef90-UP100047B52AB UniRef90-B8GJ69 UniRef90 XoV2V8 UniRef90-Q6Y665
UniRef90 E3T313 UniRef90-D7AAR4
UniRef90-14Z1F0 UniRef90-UPIO003CFFD2E UniRet90_A2SQX6
UniRef90-F4BTL5
UniRef90_K1YYQ0
UniRef90-UPIO002DDE955 UniRef90 UPI00046641E6
UniRef90 R2XGK

| UniRef90- $881 \mathrm{MG3}$ |
| :--- |
| UniRefo - W1 JTC | UniRef90-K9DA60 UniRef90-Q12TQ0 UniRef90-UPI00037E3117 UniRef90_E6UYG1 UniRef90 D3EED5 UniRef90-B0MD38 UniRef90-M4YJA6 UniRef90 FOZO43 UniRef90_B0U7K1 UniRef90 K KOVLR UniRef90_R9T8T7 UniRef90-M9R7V1

UniRef90
W9H4Q3 UniRef90 Q2FSY4 UniRef90 T1XIJO UniRef90-M9SFFO UniRef90-A7IJG7 UniRef90-UPI00047B1B93 UniRef90_Q32034 UniRef90 BC5R UniRef90 ${ }^{-}$LOL1HO UniRef90-UPIO004776E1F UniRef90_Q32260 UniRef90 IOBLM9 UniRef90-H81700 UniRef90-UPIOO0371E21E UniRef90 A0B9K9
UniRef90-R7ZRC1
UniRef90-F4CCC3 UniRef90-Q1YDM UniRef90 UPIO0047DDCDC UniRef90-M1ZKA3
UniRef90 WoF514

QHAK $\square$ YDFFMPPRA $\square$ Q $\square$ FDG
RSLRLEDVRFPDAYVKTCGG EGLRMLDFLVPEKMVKRFDG EYGKMI DFYVPERA】QMFDG LagGLLN
 DAlRLEDCKWPESTTSGFPG A Y AKMHDFYVPRQYLEGFDG EYGKDHDDFIPPNFLRLFDG HQLQMVDFWIPETKLHLYDG DTARLADCQWPEALVSSFAG

K A
SALKLLDVWFPPAMDEQYDG KYLRLLD
VGLRLLDFMDPETMVKKFDG NALKLLDVRFPSSMLEQYDG VGGRLLDVYVPPKALTLFDG QCARLQDFWUSRKFLEIFDG GGKLVDLAFPKEYLKEFKG

KALKLMDVWFPPSMLEQYDG
DSi RLMDCEWPEPVVSSYPG SRLKLHDIIFPP
ENLRLLDIVLTQKFLDEDKG
KKLDLEFPHKFLKEFKG
KAIKALDCWFPPEMLKNYDG
ETI RLLDCEWPAVIARSFPG
RGVRLEDVFFPQSMLREFKG
LKLLDKFPKSFLKSFKG
EGLRMLDFQVPECMLTKFDG
EHGKIHDAVPERASQFDG
AKRLDLEFPKTFLGQFKG SGLRLLDI RLPQAFAQAYGG SGGRLLDVRLPAFAAAYAG EAVRLLDVEFPRELV TFSG R XLRLEDLRLPPALLTLXKG VHAKMYDFYVPPKFLALFDG SGLRLDDRRPHAFADAYGG SGLRLLDMRLPTAFAQAYPG EAVRLLDIDDPK
KALKLLDIUFPPSMLEQYDG SALKALDCWFPKEMLEHYDG SGLRATGRRDPPAFAQAYQG
 TGLRLLDIRLPAAFAQAYPG
 QALKLMDI WFPPSMLEQYDG

 KGVRLEDVEFPSSILKKYKG LKLIDIDFPKVFTDAFQG TGLRLLD RLPEAFARAYPG
SGLRLTGRLPDSFAKAYPG
TGLRIVDIRFPPPYFQKYKG
 SGLRLLD GLPEAFAARYPG AAVRLVDVEF
SGLRLLDLAPQAFVDGCPG KGVRLEDVFPDSFLROYKG SGLRLIDLKPPSFTNAFA SGMRLLDi RLPPQF LSAY AADKLMDLDLPPAFAERYPG XXXXXXDMXXPVAYLKTFQG KALKLLDVWFPSSMLEQYDG PYLRLLDUDFPAKFVAKFKG KALRLEDMRTPVAYLKTFQG SGLRLVDLELPEAFAAAYPG
 KKVRLVDVDFPESLVRAHSG S GLKLLD:RLPDSFESVYPG TGLKLLDIQFPASYEAHFEG AAIKLVDLELPQAFAQRYPG




[^0]


[^1]|  | $A K L \square D \mid I Y M P K K F T D M F D G^{140}$ |
| :---: | :---: |
| UniRef90_UPI0003669E53 | S GLRRLLDVQLPGAFADAYAG |
| UniRef90_UPI00046ED4B5 | S GLRLI DLELPNAFMEQYPG |
| UniRef90-B1C9J3 | ARLKLLDLEFPKEYTDHFQG |
| UniRef90-UPI0003645BC8 | SAIKLVDVDLPPAFAERYAG |
| UniRef90-S2KHX8 | SALKLLDLTLPMSFAKAYPG |
| UniRef90-D1YXL6 | KALRLEDVDFDP LVKYYKG |
| UniRef90-G7WRF3 | KKVRLLDVIFPQRLVEAHRG |
| UniRef90_UPI000376EB84 | S ALRVLDLKLPERFASTFLG |
| UniRef90-A5FXF1 | S GLRLLDLRLPASFAA |
| UniRef90-G8TNH2 | T GLKLID ${ }^{\text {LIELPASYAQHYKG }}$ |
| UniRef90-J3C013 | T GLKLMDFEVPDSFATHFKG |
| UniRef90-H5WV30 | T GLRLLDLALSPAYAAGFAG |
| UniRef90-R5GJK0 | P Y L KLLDI DFPKKYVDKFQG |
| UniRef90_UPI0002D69357 | S GLRLLSLQLP E AFAKAY L G |
| UniRef90-Q12HD2 | S GLRVLDLKL PASFAAAYPG |
| UniRef90-Q0W7E3 | K A CRLMDVDFGP LT K Y Y N G |
| UniRef90_UPI00035E3BC3 | S GLRLTGLR LIP P S FAAAYPG |
| UniRef90-E6MG22 |  |
| UniRef90_Q28MT2 | S GLR V |
| UniRef90-X1NUM3 | RMRLLDVFFPEDLV |
| UniRef90-W1N853 | S G L RLLDL SVPDAFADAWPG |
| UniRef90_TODTY1 |  |
| UniRef90_Q9FPV9 <br> UniRef90 UPI0003787B3A |  |
| UniRef90-B8IBH6 | S GLRLTGLSLPPSFTAPFTG |
| UniRef90_H1YB65 | T GLKLMDI DLPPSYSDHFVG |
| UniRef90-C6Y121 | T GLKLMDLELPAS |
| UniRef90-G4F6H9 | S ALKLLDLSLPDPFAEAYPG |
| UniRef90_UPI0003704DEF | T GLKLMDI HFPEHYA |
| UniRef90-A1R5Z1 | Y A CRLQDI ALDPEDFVAAHPG |
| UniRef90-LOFXC5 | T GLKLMDLEVPASFAQHFAG |
| UniRef90-X6L4C2 | A GLKI TALDLPEAFLK |
| UniRef90_UPI00036E538A | T GLRVVDLKLPEAYRGVYPG |
| UniRef90-A3X9D1 | SAIRLIDMQLPSAFATDHPG |
| UniRef90-X6FVA4 | T GVRLEDVDIPASFADRFPG |
| UniRef90-B9KXE5 | SAI RLVDLDLPDEFAQAYTG |
| UniRef90-UPI0003687D4A | S GIRIV DMKLPEAFATAHPG |
| UniRef90-B1Z1A0 | T GLRLLD\DLPATYA |
| UniRef90_G9EEI8 | S ALKLLDINLPSAFADAYPG |
| UniRef90-A9CVC3 | SAI RLLDI GLPKEFALAHPG |
| UniRef90_U7GFY8 | SALRLLTDIS F P E E F AVAYPG |

```
lupas_21
lupas_14
jnet
conf
sol25
sol5
sol0
jhmm
```



```
ssm
```


[^0]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    jhmm
    jpssm

[^1]:    lupas_21
    lupas-14
    lupas_28
    jnet
    conf
    sol25
    sol5
    jhmm
    jpssm

