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MTTLT MT TMPRD MD IIITPGKLLAGTVTAPS

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 MEKLVAGGRRLNGTVKVEGAKNAVLPVVAAASLANGTEE
 MNKIIIAKTGGLTGAITIPGDKSTSHRSIMLSGLADTPVT

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UniRef90_R5EA54 UniRef90-Q4JXA4 UniRef90-UPIOOO42345C4 UniRet90-F5RDQ9 UniRef90-UPIOOO3664F42 UniRef90-R6ITT7 UniRef90-EONZR4 UniRef90-N2IW67 UniRef90-UP100026CD097 UniRef90-B3DYW2 UniRef90-K2L6E6 UniRef90-UP100040EC10C UniRef90-UP1000377BA8F UniRef90-H5SJS8 UniRef90 UPIIOOO3796C71 UniRef90_UPIOOO2379488 UniRef90_- 9 H Q65 UniRet90 W6SIE6 UniRef90-F6CML3 UniRef90-UPIOOO3B667BF UniRef90 C4GMB9 UniRef90-F9MWM6
UniRef90
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UniRef90-X8IWPO
UniRef90-LOB505
UniRef90-F4LTX6
UniRef90-H6RBN6
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UniRef90
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UniRef9O_UPloooub1998F

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10
Plu GNIK 20
30
MAHILVRKSGPLKGNVIKISGAKNAVLPVIAATLLADGVST MEKIIVKGGKKLTGEVDVSLAKNSVLPVMVASLLSPNEVT
 MAKKLVKKSNPVVGSVKVDGAKNAVLPGAAATLLADGKSV EVLTVRPGSAAGEVPMPGSKSGSNRALLLAALSSGRTE

 KYVIKGGNRLKGEVRINGAKNSVLPALAATLLNKGVSI MNKYIIHGGRPLMGEVTVSGAKNAAVAIPAALLVDGVCR
 MEKIVINGGKRLSGAVPVSGAKNSARTMLPCALLTDEPVT $M$
$M$ M M $M$
$M$

## 

 M E
## 

 MRK DLPRLRAA MKSFSIAPTARRRGVLRVPGDKSISHRALIFGALADGAVR

EKMKLRGAAPLKG MK KYILHGGKPLHGE $\begin{array}{ll}M D K V V & \text { KGGQAGLH } \\ M E Q Y V I K G N P\end{array}$
$\qquad$
MDKIIIEGGQRLQGE MDK
M M A K
 MDKFRVQGPTR MDRFRVQGPTRRSGE

## 

 M
## $M$ $M$

MM


 $\begin{array}{lll}R & G & A \\ E & G & N \\ K & G & E \\ S & G & E \\ R & G & E \\ - & G & G \\ V & D & A \\ L & T \\ L & G & E\end{array}$


ERFVVTGGNR


40

 | VR |
| :--- |
| T |
| $S$ |
| $S$ |



Unelog pup

UniRef90_E3PUP3 UniRef90_S6FPH5
UniRet90_F2FGT4 UniRef90-F2F6T4
UniRef90_F4A7R1 UniRef90-UP100047EBDF2 UniRef90-T4VXA5 UniRef90-F2F3Z2 UniRef90-D9SF7 UniRef90_UPIOOO3B6F599 UniRef90-F9U8Y1 UniRef90_UPI000405889C UniRef90-l3VVN2 Unineffo_-R6GQ88 UniRef90-E7G8L8 UniRef90-M8D100
UniRef90 R5UIH8 UniRef90-Q2GB76 UniRef90-R6TUK7 UniRef90_C6LB33 UniRef90-UPIOOO3776CDB UniRef90 T1C3T8 UniRef90-D5WQE6 UniRef90-R5EA54 UniRef90-Q4JXA4 UniRef90-UPI00042345C4 UniRet90-F5RDQ9 UniRef90-UPIOOO3664F42 UniRef90-R6ITT7 UniRef90-EONZR4 UniRef90-N2IW67 UniRef90-UP100026CD097 UniRef90-B3DYW2 UniRef90-K2L6E6 UniRef90-UP100040EC10C UniRef90-UP1000377BA8F UniRef90-H5SJS8 UniRef90_UPIO003796C71 UniRef90_UPIooo2379488 UniRet90_- J9HO65 UniRef90-W6SIE6 UniRef90-F6CML3 UniRef90-UPIO003B667BF UniRef90 C4GMB9 UniRef90-F9MWM
UniRef90
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UniRef90-UPIOOO2376BDO UniRef90_UPIooo2376BDO
UniRef90 O81 JW5 UniRef90 X8IWP0 UniRef90-R5JIH5 UniRef90-LOB505 UniRef90-F4LTX6 UniRef90-H6RBN6 UniRee90_WOHLE3
UniRef90_UPIO00360EF7E UniRef90-M4UN50 UniRef90-Q2W5T9 UniRef90_14DCD3 UniRef90-UPIO0040117ED UniRef90-A0A023NU76 UniRef90-COQDM7 UniRef90-B1XX71 UniRef90-G9QJB0 UniRef90_Kociva UniRef90-UP10003B2F44D UniRefofo-J9A1B1 UniRef90-Q2NH05 UniRef90-UPIO004683E84 UniRef90-C6C1D9 UniRef90_UPIOOO3449951 UniRef90-E3GXY9 UniRef90-R9C8P4
UniRef90-COD8S7 UniRef90-J6H771 UniRef90_UP1000470471F UniRef90-UPIOOO37BE678 UniRef90-UPIOOO4649D08 UniRef90-UP100004738CF6
UniRef90-G417G3 UniRef90_G417G3

 EIWDLANFLNSMGAHVEGAGMGRVTIEGVESLKGVEYKP
 EVVDLADTLKKFGIKR ENKNYKEFFIKGNQKS THNNYR EVVDLANFLNEMGADVKGAGTNTVRIKGVKSLKGAEHTV EVVLANFINAMGGRV YVLMTLKLMEQFGVHAEDQGDRSTVA YVLMTLKLMEQFGVHAEDQGDRFF VPHAEYRRGTPYLV EVVDLARFLKKMGAKDSGEGSPRTEVEGVRKLRGAKHSVI EVIDLAEFLDALGARIEGAGTDRIHVQGVERLGGARYEV E II V D L HVV DLA NFLDNTCGAKI $\left.\begin{array}{l|ll|l|llllll}\text { E } & V & V & D & L & A & A & Y & L & N\end{array}\right)$ EIVDLANFLNRLGARV HIV DVANFLNSMGANIKGAGTVVIRRIR



 |  | $V$ | $V$ | $D$ | $A$ | $N$ | $C$ | $L$ | $A$ | $M$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $A$ | $H$ |  |  |  |  |  |  |  |  |
| $C$ | $N$ | $L$ | $L$ | $V$ | $A$ | $M$ | $G$ | $A$ | $K$ |  | EV ED A A H F LS S M GA K I


f


T R D H T E R L L L A H F D A R



 H I V $V$ D V A N

 Y V E L T LAA SMAR F GVVEVVRRE GWQRFTVVPA

## H

ESERMLRAFGADLSVGG

##  <br> E

UniRef90_UPI000361998F


UniRef90_E3PUP3 UniRef90_S6FPH5
UniRef90_F2F6T4 UniRef90-F4A7R1 UniRef90-UP100047EBDF2 UniRef90-T4VXA5
UniRef90 F2F3Z2 UniRef90-F2F3Z2 UniRef90-R719V7 UniRef90_UPIO003B6F599 UniRef90-F9U8Y1 UniRef90-UPI000405889C UniRef90-l3VVN2 Uniinefon-R6GQ88 UniRef90-E7G8L8 UniRef90-M8D100
UniRef90 R5UIH8 UniRef90-Q2GB76 UniRef90-R6TUK7 UniRef90_C6LB33 UniRef90-UP10003776CDB UniRef90-T1C3T8 UniRef90-D5WQE6 UniRef90-R5EA54 UniRef90-Q4JXA4 UniRef90-UPI00042345C4 UniRef90-F5RDQ9 UniRef90-UP10003664F42 UniRef90-R6ITT7 UniRef90-EONZR4 UniRef90-N2IW67 UniRef90-UP100026CD097 UniRe90 B3DYW UniRet90-K2L6E6 UniRef90-UP100040EC10C UniRef90-UPI000377BA8F UniRef90-H5SJS8 UniRef90 UPIIOOO3796C71 UniRef90_UPIooo2379488 UniRef90--J9HQ65 UniRef90-W6SIE6 UniRef90-F6CML3 UniRef90-UPIO003B667BF UniRef90-C4GMB9 UniRef90-F9MWM
UniRef90
R6Q2E4 UniRef90-B811P2 UniRef90-UPI0003633D7E UniRef90-R6AA71 UniRef90-A0A01 1NI87 UniRef90_Q0W6Q9 UniRef90-G5K645 UniRef90-UPIO0047ABDAD UniRef90-UP100047A98CA Uniref90-Q1D207
UniRef9O_R91wZ8 UniRef90-UPIO002001A57 UniRef90O-UPIOOOO37DAB40
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UniRef90-X8IWP0 UniRef90-R5JIH5 UniRef90-LOB505 UniRef90-H6RBN6 UniRef90-WOHLE3 UniRef90-UPHOOO360EF7E UniRef90-M4UN50 UniRef90-Q2W5T9 UniRef90-I4DCD3 UniRef90-UPIO0040117ED UniRef90-A0AO23NU76 UniRef90-C0QDM7 UniRef90-B1XX71 UniRef90-G9QJB0 UniRef90-Kociva UniRef9O-UPIIOOO3B2F44D UniRefol-J9A1B1 UniRef90-Q2NH05 UniRef9OOPIOOO4683E84 UniRef90-C6C1D9 UniRef90_UPIOOO3449951 UniRef90 - E3GXY9
UniRef90
R9C8P4 UniRef90-R9C8P4
UniRef90-COD8S7 UniRef90- J 6 H 771 UniRef90 UPIO00470471F UniRef90-UPIOOO37BE678 UniRef90-UP10004649D08 UniRef90 UPIO0004738CF6
UniRef90-G417G3 UniRef90_G417G3
UniRef90_UPIOOO361998F


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LTEMGCVVIEEGESTIIRVIJGPKNTMPTDTKTMPHPGFPTD LKECGVKFETGNSM|VDGRGPKKPVDVKTLPYPDMQPQMM VKNMGAN KUNENYIETKKSKTKGDTUDASECPDLVPILS IDAGLT ETGPDWVRGAMQGRPRTHEYPGFATDMQAQLM LKEAGCEVIDMDNSVRVKGPEVKPDRDKTGPHPDVQAQFM MAKMGAQUEMGDNWI EARAPVNQAIDLDCNHMPDAAMQMM
 LQRMGADLTVENERMRURAGRLKAVEVSGSDPPDEDPVLA LNECGFKVSHGNDFTKLNSTGRAKAVDMUITLPYPGFPTD LTEMGVTVEEEDDTLLVRSQPLQRTNVKTQPYPDMQPQDA LIEMGAD| TAEHVRMTVRTSTLKATH LRDAGGHVEPRKGGIVYVABDPKPVTISTAPYPDMQAQLM LEEMGLDVVYDDESVTVTYDPMNRINVKTMPYPDMQPQMG LVEIGCQVEEDDAVRVVATKRLNNTNVKTLPYPDMQPQUG LREAGAR RPGEMRSRARSVSVKTAPYPAFPTDMQAQFTA
LKEAGAVVEYDDAVRVVSNHRLRATNIGTLPYPDMQPQMA
LREAGAVI TCTDSTDELDMQGKRPRAVSLRTAPYPAFPTD LMDAGCD RTEKFEAVVDKAPEKDKAVSVRTAPYPAFPTD LIECGDDVIENDDSIRVCANGRPGKCTDKAMPYPGFPTDM LEEAGAHVSTGSNWIELDMKGNRPKAVNVRTAPYPAFPTD | AAGVTLEERGDNLLVSATGGDKPLTLSTAPFPDMQAQFM LQEAGASVTKGNDWIALQSHG RVQPVNVITAPHPAFPTD LTQMGADITGENVNESVEPRRFEVCGKIIPTMDDELPDFA LLRAMGAQIALKNEREVAHEPWGDLTVQTDPKI DDEARILA

|L
I

LAEAGALITTGEDWITIEMQQRPKAVNDRTAVHPAFPTD LETGGNVKDMGDSMRVTMNKRPNKATVKTLPYPDMQPQMG ARAMGAAI RSTPDSISVGRWPLQAI DLDCNHPPDAAMTLA LVKMGATVTRGENWI KRYGHKLHGLQADVRP: PDAAMTFA

 LEAGCEVEEFDDAVRVVASKPLRHTQVTTLPYPDMQPQMS LLEMGARIEVVNARLRVVHGPLKGFSIGADLIPDEDPVDA

|
I R K M GA QPVI G K N F I K V $L V R M G A E A R I F D G V L T V G P D R L A G I D D D L H D V G E L T P T V A$

L $r<$
UniRef90_E3PUP3
UniRef90_S6FPH5
UniRef90_F2F6T4
UniRef90_F4A7R1
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UniRef90
R6Q2E4 UniRef90-B811P2 UniRef90-UPI0003633D7E UniRef90-R6AA71 UniRef90-A0A01 1N187 UniRef90_Q0W6Q9 UniRef90-G5K645 UniRef90-UPIOOO47ABDAD UniRef90-Q1D2Q7 UniRef90-R91WZ8 UniRef90-UPIO002001A57 UniRef90-UP100037DAB40 UniRef90-UPIO002376BD0
UniRef90 ${ }^{\text {Q81JW5 }}$ UniRef90 X8IWP0 UniRef90-R5JIH5 UniRef90-LOB505 UniRef90-F4LTX6 UniRe90-H6RBN6
UniRef90-WOHLE UniRef90-UPI000360EF7E UniRef90-M4UN50 UniRef90-Q2W5T9 UniRef90-14DCD3 UniRef90-UPIOOO40117ED UniRef90-A0A023NU76 UniRef90-C0QDM7 UniRef90-B1XX71 UniRef90-G9QJB0 UniRef90-K0C2V3 UniRef90-UPIIO003B2F44D UniRef90-J9A1B1 UniRef90-Q2NH05 UniRef90-UPIO0004683E84 UniRef90-C6C1D9 UniRef90_UPIOOO3449951 UniRef90-E3GXY9 UniRef90-R9C8P4
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 AAMLLANGTTTLRNI ASWRVKETDRTHAMATELRRKVALLV ALGLMAEGETVLTGGGSWRVKETDRLAAMQAELSKFGADV MQAQFCALNSUAEGVGTVTETUFENRFMHVLEMQRMGADU LAATQAEGTTRIKDAAELKVKETNRDDTVVNQLNKLGASC
V
 VMAACAEGTTVIRDAQELRVKETDRLETITDNLAAMGCSVM VLLCLANGVSC VALALANGTSVTESTFENRFKYVD
 VVLALSEGTSVIESDFENRFKYVDELFRMDDEMMRGGGQI MQAQFAAMNTVAEGMSVITENVFESRFRFVDEMMRLGADA MQAQFMAVNTVAEGTAVIRETLFENRFMHAVELARLGADG QPQMTA GLSVADGTSFVSEGVWDNRFRYVEQLTRMGAS
$M$ GAVAEGTSVVTETVFENRGMVD MQAQFESMNAVAEGTGTVVETHFDNRFMHVYEMTRMGAQ
AMLCMAEGASVTETGFENRYMHVELARM
 MQAQFTAMNSIADGTGWLRETVFENRFMHVPELRRMGAVI VAAATANCTTDIKDAAELKVKESNRIDADCKNLKAMGADVIV ICATQAHGVTDI QDAQELRVKETDRI RAVTENLTRMGAQV A AALAEGETH RGAEELRVKECDRI RCMVENLRRFGDPV
 ALTVAQGTSMVTETVFENRFMHV
 VAGALAEGELEVRDAAELKVKESNR MQAQFMAMNVVAEGVSRVTETVFENRFMHVPELTRMGA VMTQCKGTSTADETVFENRFMHVDEDKKMKA VVLSMADGTSTHESIWESRFQYT SELNKMGAK VLLSLAEGVTITEGVWDSRFQYVDELKRM GLI GAR
 TVARFAEGPTTLRNIDAWRVKETDRIAAMASELRKLGAGV


## L Q V V <br> \section*{V}



## A

E
 F LT RAKGTGLITETVFENRFMHVDELKRMRAE





 $L Q A Q M M A L L C T A T G T S T L E E K D F E N R F M H A P E L D R M G A K V$ VAAAFADSPTTDTNVAHLMRVKECDRDEASAAEVVMAGGKA VLGAAAKGRTKI YG $\square$ RHARFKETDRI AMCAKELSK LGGKV LLATQADGVTVI KDAHELKVKETNRI DTVVSELKKLGADI AMACTAQGETVIKDAAELKVVKSNRIADMAESGNAMGADV LLSSVAEGTSII TENVWESRYRHVEELRRM AL A ALA A GPSHLRGMAHLRGHETDRLAALVAEDRRLGAGNA ALNCIAEGAVVVETIFENRFMHV QELNRLGANV LAA TQAQGTTVI KDAAE LKVKETNRDDTVVNELNKMGANI LLTKADGTSVVTDTITYSRFKHVDERRRMNA

| UniRef90_E3PUP3 |  |
| :---: | :---: |
| UniRef90_S6FPH5 |  |
| UniRef90_F2F6T4 |  |
| UniRef90_F4A7R1 |  |
| UniRef90_UPI00047EBDF2 |  |
| UniRef90_T4VXA5 |  |
| UniRef90_F2F3Z2 |  |
| UniRef90_D9SF76 |  |
| UniRef90_R719V7 |  |
| UniRef90_UPI0003B6F599 |  |
| UniRef90 F9U8Y1 |  |
| UniRef90-UPI000405889C |  |
| UniRef90_I3VVN2 |  |
| UniRef90_R6GQ88 |  |
| UniRef90_E7G8L8 |  |
| UniRef90_M8D100 |  |
| UniRef90_R5UIH8 |  |
| UniRef90_Q2GB76 |  |
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| UniRef90_C6LB33 |  |
| UniRef90_UPI0003776CDB |  |
| UniRef90_T1C3T8 |  |
| UniRef90_D5WQE6 |  |
| UniRef90 R5EA54 |  |
| UniRef90_Q4JXA4 |  |
| UniRef90_UPI00042345C4 |  |
| UniRef90_F5RDQ9 |  |
| UniRef90_UPI0003664F42 |  |
| UniRef90_R6ITT7 |  |
| UniRef90_E0NZR4 |  |
| UniRef90_N2IW67 |  |
| UniRef90 UPI00026CD097 |  |
| UniRef90 B3DYW2 |  |
| UniRef90_K2L6E6 |  |
| UniRef90_UPI00040EC10C |  |
| UniRef90_UPI000377BA8F |  |
| UniRef90_H5SJS8 |  |
| UniRef90_UPI0003796C71 |  |
| UniRef90_UPI0002379488 |  |
| UniRef90_J9HQ65 |  |
| UniRef90 W6SIE6 |  |
| UniRef90_F6CML3 |  |
| UniRef90_UPI0003B667BF |  |
| UniRef90_C4GMB9 |  |
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| UniRef90_UPI0003633D7E |  |
| UniRef90_R6AA71 |  |
| UniRef90_A0A011NI87 |  |
| UniRef9 | -_Q0W6Q9 |
|  |  |

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K
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UniRef90_-X8IWP0
UniRef90_R5JIH5
UniRef90_L0B505
UniRef90 F4LTX6
UniRef90-H6RBN6 UniRef90_WOHLE3 UniRef90_UPI000360EF7E UniRef90_M4UN50 UniRef90_Q2W5T9 UniRef90_I4DCD3 UniRef90_UPI00040117ED UniRef90_A0A023NU76 UniRef90_C0QDM7 UniRef90_B1 XX71 UniRef90-G9QJB0 UniRef90_UPIO003B2F44D UniRef90_J9A1B1 UniRef90_Q2NH05 UniRef90_UPI0004683E84 UniRef90_C6C1D9 UniRef90_UPI0003449951 UniRef90_E3GXY9 UniRef90_R9C8P4
UniRef90_C0D8S7 UniRef90-J6H771 UniRef90_UPI000470471F UniRef90_UPI00037BE678
UniRef90_UPI0004649D08 UniRef90_UPI0004738CF6 UniRef90_G4I7G3
UniRef90_UPI000361998F


 K TG D D WL S V T S P QK L L P A EVVCTY K D HRMAMS L S L A A CG GV F LLE G P S A I V H GVVK K L S G A PVVMAS D L R A S A A L V L A GLLA E G $R \| E G N V A I$ CR GVVERLTAAPVMMATDLDASAGLVLAGLAS G EATEDGMVIHGPTPLS GAEVESFHDHRDGMTMILAGLADG
 QV D GRVAAVI E GVVDHLNGA PVVQACDLRAGAALVIA GLAA Q K E E E NAMII E GVVKTLUQ G GKVSSSYNDHRMAMMEAI A S V CH H EATED GMII H GKTPLHANDVDSYGDHRDGMMLAIAAVSKG
 $K V D G R T A V I E G V Q K L S P A \quad Q I K A V D L R A G A A M V I A G L A A G$




 RLESNTAIVQQKPSLDAA PVMATDLRASASLVLAGLAEG $R I D G N T A V V T G V A R L D G A \quad T V M A T D L R A S A G L I I A G L A R G$
 $K V E G K M A V I E G V E Q L K G A \quad P V R A D D L R A G A A M I I A G L A K G$ $R V D G R T A T V E G G A L L S G A P V A R A T D L R A G A A M V L A G L A S D$





 E E LPD D GMIV E G G R P I R A A RVVSSF G D H RVVAMACSS L A L A A G
 KI E GRSAI I E GVVE ELLS G CEVV KA T DLLRAGAALI I A GLLA K G







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$\qquad$ V M A T D LRAS A SLIL A GLA E G


 VIHSKK DHR DAMSFAV A A MAE G
 $G Q W H S Y$ A DHRMA TA GA I L G L L T V P
 KVVMATDLRASASLVI A GLAK G QV $V$ M A T D L R A S V S L

 | $H$ | $I$ | $E$ | $G$ | $T$ | $A$ | $V$ | $I$ | $E$ | $G$ | $I$ | $E$ | $K$ | $L$ | $S$ | $G$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $R$ | $L$ | $V$ | $V$ |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $R$ | $G$ | $N$ | $T$ | $A$ | $I$ | $I$ | $K$ | $G$ | $V$ | $E$ | $K$ | $M$ | $S$ | $G$ | $A$ | $P$ | AVD GH T A MV R G V KV E G S S A A 1 K L E G N T A 1 CVGGEMLE G A $K V S$ GH TAMVR GVVQKLT G A EVMAS DL R A S A S L V I A GLLAR G

 TVMATDLRASASLVIAGLSKG



T TPTAD GMII KGRPPLH KELDD GLII NGGN I K G G IVVDSHNDHRLVMALTLLGL K K Q A TVD D G M I K G G K K L T G A K V D S H G D H R I GMMLLA I A S I C E G

 RV E D R NADI E GVVEKL TGA TETDDGLDI T $\square$ D GNTAFV | $A$ | $P$ | $A$ | $A$ | $L$ |
| :---: | :--- | :--- | :--- | :--- |





UniRef90 HoTSK7 UniRef90-UPIO003464D42 UniRef90-UPIO0036EF7EO UniRef90_U4TJ11 UniRef90_R628z7 UniRef90-R2Q257
UniRef90 COZCE9 UniRef90-D5CNM1 UniRef90 A4XIR6 UniRef90-F9ZDS8 UniRef90_V5XLY7 UniRef90 UPI0004164FE4 UniRet90-A3WHD2 UniRef90-Q5X5E66 UniRef90- F4A716 UniRef90-I8ALJ3 UniRef90-10LBE5 UniRef90-R2XPLO UniRet90_R2PWS1 1 UniRef90-K9ECE1 1 UniRet90-GOA4X5
UniRet90 UPIOOO3B42D78 UniRef90-R6FX85 UniRef90 K6GHJ1 UniRef90-R2Q4J5 UniRet90-A9DFM7 UniRef90-D5UBL4 UniRef90_M1ZB63 UniRef90_S7TK43 UniRef90-E3HYUO UniRef90-UPIO0034C6AE5 UniRef90-E6ME63 UniRef90-UP10003B3797C UniRef90-B3ELE5 UniRef90-R5P115 UniRef90-BOPHEO UniRef90_Q8RB11 UniRef90-A0A024K8S8 UniRef90-B6WWUO UniRef90_Q8THH3 UniRef90-NOCCB1 UniRef90-B8KIU7 UniRef90_UPIO001851030 UniRef90-G2DER3 UniRef90-D7AOV8 UniRef90-UPIO0016BFC9F UniRef90-M1F7P0 UniRef90_UPIo00465454A UniRef90-R6KVK5 UniRef90-JOYYX9 UniRef90-A8DXD5
UniRef90-F8C3F3 UniRef90-S4NJK3 UniRef90_K9AJL9
UniRef90
R3WLSO UniRef90-UPIO0047925BA UniRef90-B0VFZ8 UniRef90-A0A031M1V7 UniRef90-UPI0002881560 UniRef90_U5FA44 UniRef90-A5EYD6 UniRef90_F8FJ09 UniRef90-A0A059MN30 UniRef90-M4YK89 UniRef90-A0A016XKY4 UniRef90-R5FZJ3 UniRef90-K1YK63 UniRef90-R6WE16 UniRef90-Q5F889 UniRef90 S2XUA3 UniRe90_N4WHU3
UniRef9O-FOWXH3 UniRef90-UPI0003B4C5A1 UniRef90-UPI0003FEF007 UniRef90-U7KXM6 UniRef90-Q2RK76 UniRef90-UPIOOO46A737A niRef90_T2G8X UniRef90 UPIOOO36F2A8E UniRef90-Q1LU57 UniRef90-UPI000377CFF2 UniRef90_S2YCH5 UniRet90_R7LQVO UniRef90-UPIO004718BDF UniRef90-B5JSR6 UniRef90-W817B2 UniRef90-D5X953 UniRef90_UPIOOO35F1714
UniRef90_14X6N6
1 LIESRASGPLLTGT\|RVVIPGKSTSHRAL $\frac{30}{10} \mathrm{LGALLAVGET} 40$ MDKLMIDGGHPLEGTVQISGAKNSAVALIPAAILADSPVT
 MSKFII QGGKELAGEVRISGSKNAALPIIAATVLVKGKIT
 MQKLAI QGGTPLRGDVRISGAKNAALPDMCASLLTADTLR


 MDNFISKPVGCLKGE:TVPGDKSDSHRSIDFGAIADGTSV
 MKLLKTKAG
HGINGLTVP MDTVVIQGGNRLEGTVKVEGAKNAALPILAASLLPDGKSH MDKLLISGGEPLDGELRISGAKNAALPILAATILSEPPVS
 MEKLK KSKG
MDR $\square R \square V$
GGN
MQRПYTSGRRPL MDKLIVEKSGPLSGTVTISGSKNAALPLMACLLPTGRTE

 MDKFVIQGRRRLNGTVRASGSKNSALPLLAATLLTRGEIT MSDVRDLPHAP RGKLAAPPSKSAAHRALICAALSAMPCR

 RP:|K


TFRAQPAGPIVGDIGVP
 Q G

 NFIANPGASVQGRIRVP EVIKIEGGHKLGTVR SG MEQLKIMGGRRLEGEVTISGAKNAVLP LIAATLLVKGTTV MSKIIVRGGKKLSGRVRIHGAKNAVLPIIAASILSEGVSV MADTFSGGT EVI DLPRPTSQAQGT MEKL:IEGGRPLHGEVRI
 MQKLLVEGGHLLNGEVRI SGAKNAALALAAAMTDETVT KQVVVKNGTQANGNVRVPGSKSVSNRVLGMAALGNGTCR MOKLINGKPLRGEVTI SGAKNSTVALIPAAVLADSPVT MQKLLVEGGRPLNGKVRISGAKNSAVALLPAALLAESKVI MEVLVINGGQRLEGVVVVQGAKNAALPIMAATLLATGECR MEHLVIHGGQ QGR RVPGDKSMSHRSIMLIGALAGGTE MEHLVIHGGRELHGTVPISGSKNAALPLLFAALLFDSSVT MDKFRIQGPTQLIGEVTIA MSSYELKPTTKLRGTVTI
SQFRTSPGGKVNGTIRV
MNSLI ARRS
$M D V Y K \square K G K I R G T$
MDVYK


UniRef90_HOTSK7 UniRef90-UPIOOO3464D42 UniRef90_UPIO0036EF7E0 UniRef90-U4TJ11 UniRef90-R6Z8Z7 UniRef90-R2O257 UniRef90-C0ZCE9 UniRef90_D5CNM1 UniRef90-A4XIR6 UniRef90 ${ }^{-}$F9ZDS8
UniRef90 V5XLY7 UniRef90-UPI0004164FE4 UniRef90-A3WHD2 UniRef90- ${ }^{2} \times 5$ E66 UniRef90-F4A716 UniRef90-I8ALJ3 UniRef90-10LBE5 UniRef90-R2XPLO UniRet90_R2PWS1 1 UniRef90-K9ECE1 1 UniRef90-GOA4X5
UniRef90-UPIO003B42D78 UniRef90-R6FX85 UniRef90-K6GHJ UniRef90-R2Q4J5 UniRet90-A9DFM7 UniRef90-D5UBL4 4 UniRef90-M1ZB63 UniRef90_S7TK43 UniRef90_UPI00034C6AE5 UniRef90-E6ME63 UniRef90-UPIOOO3B3797C UniRef90-B3ELE5 UniRef90-R5P115 UniRef90-BOPHEO UniRef90-Q8RB11
UniRef90 A0A024K8S8 UniRef90-B6WWU0 UniRet90_Q8THH3 UniRef90-NOCCB UniRef90-B8KIU7 UniRef90_UPI0001851030 UniRef90-G2DER3 UniRef90-D7AOV8 UniRef90-UPIO0016BFC9F UniRet90-M1F7P0 UniRef90_UPIo00465454A UniRef90-R6KVK5 UniRef90-JOYYX9 UniRef90-WODXD5
UniRef90-A8MH16 UniRef90- ${ }^{-} 8 \mathrm{Cl} 3 \mathrm{~F} 3$ UniRef90-S4NJK3 UniRef90-K9AJL9 UniRef90-R3WLSO UniRef90_UPIo0047925BA UniRef90-B0VFZ8 UniRef90-A0A031M1V7 UniRef90_UPIO002881560 UniRef90_U5FA44 UniRef90-A5EYD6 UniRef90-F8FJ09 UniRef90-A0A059MN30 UniRef90-M4YK89 UniRef90-A0A016XKY4 UniRef90-R5FZJ3 UniRef90_K1YK63 UniRef90-R6WE16
UniRef90 O5F889 UniRef90-S2XUA3 UniRef90-N4WHU3 UniRef90-FOWXH3 UniRef90-UPIOOO3B4C5A1 UniRef90-UPIOOO3FEF007 UniRef90_U7KXM6
UniRef90 Q2RK76 UniRef90-UPIOO046A737A UniRef90-T2G8X1 UniRef90-UPIooo36F2A8E UniRef90_Q1LU57 UniRef90-UPI000377CFF2 UniRef90-S2YCH5 UniRef90-R7LQV0 UniRef90 UPIOOO4718BDF UniRef90_B5JSR6 UniRef90-W817B2 UniRef90-D5X953 UniRef90-UPIOOO35F1714
UniRefol

GGFA 90
$100 \quad 110$
110
120
GGFAQPSETLDFGNSGTGCRLVMGAVAGCPTTAVFDGDAS MPLPNG RVKKLRASYYLMGAMLGKFKKAVI GLPGGCN
 I NTYE DPENLMRKMRSSVVILAGAI I GKYNKANFSYP GGCE


NWEAPYD MVVTMAAAILVVLGPLVARFGDAKVSLDGGAA LQ S Y I A P Y E SVVRK $\square R$ A S YYL I GALL LTRFGKAEVAMPGGCN


 $Y G L K Q P Q N D I D C V N S G T S M R L L A G G L D A A Q Q F D S Q L T T G D E S$ LHS HEAS Y DL V RTMRAS VLVLVGPLL A RLLGQA RVVSLIPG G CA
 D GL A GPA HVDVGLA GTVMRFVPPVAGLAD GQVTFDGDP H QQLKAPNKNLDAGNSGTTMRLVLGILAGQPFHSQ\|SGDAS EGLTAPSGRLNAGNSGTTMRLALGILAGRPFTSEIIAGDAS



 EGLK QP TEVLDAGNSGTTMRLVLGILLAGQPFNSTIQGDSS $\triangle V D T T A P Y E L V S K M R A S F W V I$ GPLLLARMGEARVSLDPGGAA
 LNP HAPYELVKTMRASVLCLGPLLAVLGEARVSMPGGCA $\square H F T$ TAPYDLV R RMRAS FWVLGPLLA REGKARVVSPGGCA RGPVVLDVGNAGTVMRFVPPLAADADGDVRFDGDPR CDRPKAAATI YCRESGSTLRFMLPLAGMHARDLHDTGEGR

 | V |  |
| :--- | :--- |
| $\mathrm{K} \mid$ |  | PNKEAVIDDVGSAGTAARFITAMLALSDGKYVINCSE Q

SWQAREPFDCLESGSTLRFLLPVAAALGLPAAFTGGGR




 Q GLLK Q P S A P L D L G N S GT S M R L L S G L M A G Q G F D V T L V G D S S
 $N G L Q A P R G P D Y L G N S$ GT GMRLLGSGLLAAAQAFDSELVVGDAS
 LLEAQS PDDF GNS GTGARLVMGMVGPYHMKTTFVGDTS

 H GLQQP E QPL DMGNS GTTTRLI MGLLAGQDFPTELTGDAS


 $G G L L Q P A G A L E M G N S G T S T R L L M G L V A S H P D T V T H T C D A S$ NKPLIHEAVN K LIRASYYFMGALL GKYGHAEI RMPGGCY

 H G

 H | L |
| :--- |
| L |



 $\square$ GDF S $\square$ D Y D YI K K I R A S Y Y L L G A L L G K Y N K A E VA L P G G C N

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




$A S$
$G T$
$G T$
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| :---: | :---: |
| UniRef90 UPIO003464D4 | LGPRPMDQHI KGFEALLGARVTNEQGAIT |
| UniRei90-UPIO0036EF7E0 | LRTRPMDRVTVPLSKMGGSFYGRDGAN |
| UniRef90-U4TJ11 | GARP砛 |
| UniRef90-267877 | GSRPIDLHLG |
| UniRefoto-R20257 | LGPRPIDLH! KGFEMLGAKVT |
| UniRef90-COZCE9 9 | 1 AKRPMRRVI GPLRQMGAKIDGRKDGEYTPLSIURGGK |
| UniRet90-D5CNM1 | SRPVDLHIKGLQAMGAEIAGEHG YIHAKAARLK |
| UniRef90-A4XIR6 | GARPIDQHIKGFRALGADVKIENG MIKAYAEELV |
| UniRef90-F9ZDS8 | GLRPVDQHIKGLQVMGAEIHIKHG YIHARAKKLH |
| UniRef90-V5XLY7 | MGRVMNPLREMGADL |
| UniRef90-UPI0004164FE4 | I GARPVEQHLKGLEAMGAVITQEHG |
| UniRef90-A3WHD2 | GNRPIDLHLKALEAFGAEIELTQG YVKASAPEGGL |
| UniRef90-O5X5E6 | LLKRPMLRISRPLSQMGADVTT QDGKPPIVIKGGKKL |
| UniRef90-O1NUK2 | G GARPNFHLLGLQQLGVEHELDQGYVDARVTARG |
| niRef90-F4A716 |  |
| UniRef90_8ALJ3 | M |
| OLBE5 |  |
|  | ELQGQEGSEFPP |
| UniRef90 R2PWS1 1 | L NRRPMQRVMQPLREMGAELHGIEEHADLIPPLRVT GEMLQ |
| UniRei90-K9ECE1 | , |
| UniRef90-GOA4X5 | GGSPVDQHLKALVAMGADVRVENGYVGKVKRLKGCRLV |
| UniRet90- R6FX85 | L SSRPMGRIMKPLFMMGADVTSINNNGCAPLSTK NGTM |
| UniRef90 ${ }^{-} \mathrm{K6GHJJ1}$ | GSRPVNFHLDALEQLG |
| R2 | KRPMERVMGPLRQMGAVLAGNQETEYPP ITVEGGTL |
| UniRef90-A9DFM7 | TRPVDLFIDGL |
| UniRer9o- ${ }^{\text {d }}$ |  |
| M1ZB63 | LGPRPIDQHVKGFEALGAEVV GEGGALHLKARELI |
| UniRe990_S7TK43 |  |
| UniRef90-E3HYU0 | IGTRPVDLHLTGLQALGADTKL DGGYVVASAPGGLK |
| UniRef90 UPIO0034C6 | R PVGP |
|  | - |
| UniRet90_UP10003B3797C |  |
| UniRet90 B3ELE5 |  |
| 55P15 |  |
| UniRet90_BOPHEO |  |
| Q8RB11 | R V |
| OA | DLFLYGLKALGADIDIDEG YVVAKAPKGGLV |
| UniRef90_B6V | 1 GARPVDQHLKGLELMGATFELEEGYDMGHC |
| UniRef90 O8THH3 | RPNGPLLKTLNQLGASACSTRG |
| UniRef90 NoCCB1 | LGPRPIDLLLKAFEAMGAHMT M MEGNYMKLSTDGKRLA |
| 8K | GRPMQR |
| UniRet90_UPI000185 | GRRPMKRVVAPLREMGAI HGRNNGE |
| UniRet90_G2DER3 | SGRPMQRVTDPLGQMGAQIDTD EGGTAPLSIHGGR |
| 7A | DFHLD |
| UniRef90-UP10001 | FGGRPIDQHIKG |
|  | MGRVLP LREMGVQVVDAAPGDRMP |
| UniRef90 R6KVK5 | DSEIGYG |
| UniRef90-JoYYX | KRPMGRILDPLRLMGVEПEATYGN CLPLTLYGPKMAN |
| UniRef90-W0DXD5 |  |
| 88M |  |
|  | RPMDPLDESLRKLIS SHI |
| UniRef90-S4NJK3 | LSQRPMKRVSEPLAEMGANIEVTDG HLPAIINGEKLH |
| UniRef90 KgAJL9 |  |
|  | R ${ }^{\text {P }}$ |
| UniRet90 UPIO0047925BA | IGTRPTDLHLKAMETLGAE |
| A0 | KRPMGRVANPLREMGASIIDTAAEGRPPLLINGAQS |
| UPIO | LSKRPMGRVITPLSQMGAEFTASPGGRLPLMVRGMCPAI |
| UniRef90 U5FA44 | LGPRPIDLHLKGFEALGATIHYDHGAY ILDAPQL |
| A5EYD6 | 俍 |
|  |  |
| UniRef90 A0A059M | ARKRPMGPLLDALSACGVRCSS GOGGKPPVTVEGP SG |
| UniRef90 M4YK89 | M HERPTGD |
|  | D M |
| UniRef90-K1Y | PINFHIMGLERLGVTCRDEGG YVDAHVNGPMR |
| UniRef90_R6WE16 | PIDQHLKGFRALGATV NDEYGMINTFSDALI |
| UniRet90_O5F889 | MHERPIGDLVDALRIAGADVEYLGNEHYPPLHI GKRQDCG |
| S2XUA3 |  |
| UniRet90_N4WHU3 | RPIDQHIKGFEALGATVTNEO |
| UniRef90 FowXH | R PIGP |
| UniRet90-UPIO003B4C5A1 | Pl DQHILGFEALGATVE NDNGAISLKGPKEGLK |
| UniRef90 UPIO003FEF007 | LGPRP:DQHDKGFEALGAKVTNEQGADYL R RAD |
| UniRet90_U7KXM6 | G |
| UniRef90_Q2RK76 | GSRPMDLLHKGLMAMGAEJVT EKLGMIEARTTGLR |
|  |  |
| UniRef90_T2G8X1 | RPVDMHLAALE |
| UniRef90_UPIO0036F2A8E | KGLEALGAKAHIEHG YVVAEAPHG |
| UniRef90-Q1LL | RPVDLHLDGLAKLGATMTLEKG YVKAY |
| B2GL | GL R Q |
| UniRet90_UPI000377CFF2 | VNLHI QGLRQMGANI QIEGG YIKSRVSGHLL |
| S2YCH5 |  |
| R7LQV0 |  |
| UniRef90 UPIo004718BDF | GAHIET AEGGRPPIKITGAQA |
| UniRef90-B5 |  |
|  |  |
| UniRet90-D5X953 | 1 GSRPMDLHFKGLAGMGAEIELEHG VIKGKCDRLE |
|  | KRPMKRVI QPLSLMNAQIKGLYQSDFAPLSIV GKS |
| inef90 14X6N6 | LGPRPIDQHIKGFEALGAKVTNEHGAlYL |





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| :---: | :---: |
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| UniRet90-UPIOO03464D42 |  |
| UniRef90-U4TJ11 | QEAGAVIESGDHWVSLDMRHSKPVNI KTAPYPDMQAQMM |
|  |  |
| ef90-R20257 | LEELGVPMEVKEDSIEVFPVKENPV |
| UniRef90-C0ZCE9 | VKAMGGSLELLNERIVVTHSEL |
| UniRef90-D5CNM1 | LTEAGARIKVAGDT |
| UniRef90-A4XIR6 | LDEMGAEVNVYEDSIEVRCKERKTMPYPGFPTDLQPQMTV |
| UniRef90-F9ZDS8 | LTEAGAHIDSNENWITLKM |
| UniRef90-V5XLY7 | $M G A S I Q E D L M V R S A N D Q A C T D E G$ |
|  | LREAGANI HAEADRITIEMTRRPKTVPHPGFPTDMQAQFV |
| UniRet90-A3WHD2 | EDDAKGVTI KTNGAKPVDLT T APFPDMQAQLM |
| UniRef90-O5X5E6 | LTEMGADIRVLNQRLHI RYSQLKGIDIPASMVPDEFPVIF |
| UniRet90-O1NUK2 | MRAAGVTIEDGERLQVVRNGPLRGVDUKTMPYPDLQAQMM |
| UniRef90-FAA716 |  |
| UniRef90-18ALJ3 | LT V |
| UniRet90-10LBE5 | HRMGGEVTLTTAGLTVRGTGVHGLTADLSDVS |
| UniRef90-R2XF | LKEMGADIVETAMDQKIKAAPLKGVADGGEIIP |
| UniRef90-R2PWS1 |  |
| UniRet90-G0A4X5 | KEAGAETTTGDNWIELNMHGKRPKAVSVRTAP |
| UniRef90-UP10003B42 | LQEAGAVI TTGPDWIDLDMQGRRPKAVSFRTAP |
| UniRef90-R6FX85 | NTREEVKTSEDHGTV |
| UniRef90-K6GHJ1 | KLSGAA SVVFSSSISSLEMSNKTLKPV |
| $\begin{aligned} & \text { UniRef90_RQQ45 } \\ & \text { UniRef90 A9DFM7 } \end{aligned}$ | RAGVE SPEGDGIRVRRNGGD S L PVD |
| UniRef90-D5UBL4 | RMGATVA言酎VLTVTGTGEVRGVDLD |
| UniRef90-M1ZB63 | EMGVGIEEREDEIRVYGPRDIKTLVY |
| UniRet90_S7TK43 |  |
| UniRet90_E3HYU0 | LRNAGVELAETNRGIRVTRNGAALRPVTVETEPFPGFPID |
| UniRef90 UPIOOO3 | E |
| UniRef90-E6ME63 | MREMGGD Tr A A GrCAR SRLRGIEMNVSQCPDL |
|  |  |
| B3ELEE | FEHAGCK DTA |
| R5P15 | KMDGK |
| BOPREO |  |
| UniRef90 O88B11 | GMGGNVELINERLVVKSSKL |
| UniRee90-AOAO24K8S8 UniRef90-B6WWU0 |  |
| UniRef90-Q8THH3 | LKQMGADİ T ( GIVTVRGGRKLKAVTFDAGATPDL |
| UniRef90-NOCCB1 | MGVRMT SEDSIFVEGQKDKA, N1KTSPYPDLI |
|  | MGAD TVS |
| UniRef90_UPIO001851 | KMGAN VVENGTV VEYSELQG E GGDLIPD E |
| UniRet90-G2DER3 |  |
| UniRef90-UPI00016BFC9F | GVTLIEGDDYIRVIWKQ1 ITLPYPGFPTDLQP |
|  | MGASI DVSNERVRVRYAPL |
| UniRef90-UPI000465454A | LLEMGASI EI LNRRLRVRHSELKGVT |
| UniRef90-R6KVK5 | LKECGVH1 VEGNRMIVDGTGEKKPVDIKTMPYPDMQPQMM |
|  | LWEMGAQLELLNQRQTVRSSMLKGVTVPAPSMIDEYPALLA |
| UniRet90_W0DXD5 |  |
| UniRef90 A8MH | MGARME |
|  | KMGAKDEILNPLGVKVSFE |
| UniRef90-S4NJK3 |  |
| UniRef90-K9ALL9 | VKQMGGRID |
|  | MN G E |
| UniRet90 UPIO0047925BA |  |
| UniRef90-A0A031N | LRAMGGD |
|  | LRMMGASI EECDARLRVRYAALTGIDVPAELAPDEYPVLF |
| UniRef90-U5FA44 | DikVDVDRLI K G N G |
| UniRef90 A5EYD6 |  |
| UniRef90-F8FJ09 | EMGVQIEEDENGIRVYTVGPKTLPYPG |
| 59 | MGADVALGGT TVRGPERLRGLDMDLDVGEL |
| UniRef90-M4YK89 | LREVGCQ DVGDETTCTRPAEKAAE DVGD |
| UniRef90-A0AO16XKY4 |  |
| UniRet90-K1YK63 | AGLEITTETSNSISIMRWPDIKTMPYPGYPTDDQAQFMA |
| UniRef90-R6WE16 | GAKVEEFDDAVRVSGHTQVKTLPYPGFPTDMQ |
| UniRef90-Q5F8 | ADVVWGENFVEVSRPKGRAVQLDANHDPDAAM |
| UniRet90-S2XUA3 | MGCQVEEFDDAVRVKSTQ |
| UniRee90-N4WHU3 | EMGVHIKEGEEQLLVHRVDUKTLVHPGFPTDLQQP |
| UniRef90-FoWXH3 | GCETSQTPTSTTVRGPPSGLEYLDMETMTDAFMTAA |
| UniRef90 UPIOOO3B4C5A1 | PMEILKEDSIEI P |
| UniRet90 UPI0003FEF007 | S EEGDEQLLVQPGKDIKTLVHPGFPTDLQQPFT |
| UniRei90-Q2RK76 |  |
| UniRet90-UPIO0046A737A | AMGANLLVSNEREVI RYAPLKG Dil |
| UniRef90-T2G8X1 | A G G |
| UniRet90_UP100036F2A8E | LASAGA VTTTADGI RVRMDVRPATLPYPGFPTDLLPMVI |
|  | KIETGEDWISLN |
| UniRef90-B2G | GADVTLREGVFTVTGPRERGVDL |
| Ref90_UP1000377CFF2 | GAD |
| S2YCH5 |  |
| UniRet90_-_7LLQVO |  |
| UniRef90-UP10004718BDF |  |
| UniRef90-B5 |  |
|  | Q |
| Unil | LREAGAEI EEDEKVRVRRRSKLRPID K KLP MPGGFPTDM |
|  | LKQMGAQSILLNQDIKINGALLRGISIDIPSUIDELPLVA |


UniRef90 HOTSK7 UniRef90-UPIooo3464D42 UniRef90-UPIO0036EF7E0 UniRef90-U4TJ11 UniRef90-R6Z8Z7 UniRef90-R20257 UniRet90-COZCE9 UniRef90-D5CNM1 UniRef90_A4XIR6
UniRef90_F9ZDS8 UniRef90-V5XLY7 UniRef90-UPI0004164FE4 UniRef90-A3WHD2 UniRef90-O5X5E66 UniRef90-Q1NUK2 UniRef90-F4A716 UniRef90_18ALJ3
UniRef90-IOLBE5 UniRef90-R2XPLO UniRet90_R2PWS1 1 UniRef90-K9ECE1 UniRef90 G0A4X5 UniRef90_UPIOO03B42D78 UniRef90-R6KX85
UniRef90 K6GHJ1 UniRef90-K6GHJ1 UniRef90-AgDFM7 UniRef90-D5UBL4 UniRef90-M1ZB63 UniRef90-S7TK43 UniRef90-E3HYUO UniRef90-UPIOOO34C6AE5 UniRef90-E6ME63 UniRef90-UP10003B3797C UniRef90_B3ELE5
UniRef90- $25 P 15$ UniRef90-BOPHEO UniRef90_Q8RB11 UniRef90-A0A024K8S8 UniRef90_B6WWU0 UniRef90 O8THH3 UniReforo NoCCB1 UniRef90-B8KIU7 UniRef90_UPIO001851030 UniRef90-G2DER3 UniRef90-D7AOV8 UniRef90-UPIO0016BFC9F UniRef90 UPIOOO46 UniRef90_UPIo00465454A UniRef90_R6KVK5 UniRef90-JOYYX9

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UniRef90- FOWXH3 UniRef90- $\mathrm{FOWXH3}$
UniRef90 - UPIOOO3B4C5A UniRef90-UPI0003FEF007 UniRef90-U7KXM6 UniRef90-Q2RK76 UniRef90-UPIOOO46A737A UniRef90-T2G8X1 UniRef90-UP100036F2A8E UniRef90_Q1LU57 UniRef90-UPI000377CFF2 UniRef90-S2YCH5 UniRef90-R7LQV0 UniRef90 UPIO004718BDF UniRef90-B5JSR6 UniRef90-W817B2 UniRef90-D5X953 UniRef90-UPIOOO35F1714
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E\|IS GDDLIV|EGGHVPGGGVVATHMDHRDAMSALVMGLAAD KVEGRSSAI NGKTALLQGA KVRASDDRAGAALVIA GLAE G
 TVNGNTAVCQGGGALYGVPVRATDLRASASLVLAALAA Q G $N V E G R T A I I K G A K R I Q G T N V V A S D L R G G A A L V I E A L T A K$






 RID GHSAIVNGTGKLLGA KVVMATDLRASASVVI AA ALAA G KID GRCAVI E G V K K KLTG CEVVRASDLLRAGAALIL G GLAA E
 EPTEDGLII HGPTKLHGGVVDSHGDHRDGMMLQIALLTEE
 KI E S N TAA I T G I E R R L T G A P V V Q M A T D D L AVDGHTAIVTGVEKLQAA PVMATDLRASMSLVLAGLAA E


 EQTSSDGLVI T PRTM H G GVWGTYADHRMATAGALVGGLRDP $K V K G H T A I I K G M R K L V G A P V M A S D L R A S A S L V L A G L A E G$
 E ELLPD GLVV R PRPRLHGGLFHSYEDHRMATSGAVDGGAVP KEKPE GLVI RGGRPLKGGRVSSFNDHRVAMALATASVCAA KVEGSTAAI E GVVERYTGA TVSAPDLRAGAALVIAAA A E G
 DEYPDRLTIHGGG LRGGTADGANDHRVVMSAADAGMCRE



 EVLDD GI I IE G GT L S G GTVRTFHDHRDAMSFAVAALAEG









 $K V E G R T A V I S G G A R L Q Q A K V C A T D L R A G A A D I L A A L V A E G$ TETAD GLHIV PAPLHGGRWHSYADHRMATAGAIVGLVVD

 $R V D G H S A V V S G G M K G L S G A P V M A T D L R A S S S L V I A G L A A S$ KVE GNVAII E GVVTGLTGA SIITAPDLRA GAALVVA GL A D G
 KVEGGSAIVTGPVQLEGA TVKASDLRAGASLIVAGLADG
 KVEGGSAIVSGPVQLEGA KVVASDLRAGASLI AA GLMAE QV DGHHVVVRGKERLSSSTHVWSS DI RAGA GLVVLSALCA D $K$ I E G RVAAVI N GVVP GLLS GS MVEAS DLLRAGAALVIIA GLA E G
 KLSGRTAVVRGVERLNGA PVVASDLRASASVVVAGLAAS

 TETDDGLAIE PTALHGGVFHTYQDHRMATAGAILGLRVP


 $T P$ T A D G M V I E G R Q C F V $V$ G G E V V E EAPAALVVHGRPGGKGLGNATHLDHRIAMSFLVMGLASE $K$ VEGRTAAI Q GDVEKLQQA KVVASDDRAGAALII A GLLAE G




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UniRef90_K2KLG4
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GALLTEPSDVLDMGNSGTAARLLSGILDASHGMMSVMTGDAS 1 T NTTAPYDLVRKMRASVLVLGPILARCGEARVSLPGGCA I H F T R A P Y E L V K K M R A S F WV I G P L L A R C G E A Y V S L P G G C A LTNYCVPYESARRMRASYYFL GALL GRYGKARVSMPGGCP $P Q K K A R L F D G A A G T \square A R F L P G L A A G K G G H Y E V D G V E Q$
 TNFTAPK TALLDMGNS GTSTRLLMGLLSRQPFDMSDIGDSS K D KP MP Y GKIDNS L R A S Y YFY G S L L GRF GQATVGLPGGCD GGLVEASQVLDMGNSGTAARLMMGLVATHPDTTFFTGDAS

 $\square N S D E A P Y E L V S K M R A S V L V L G A V L T R R G Y A K V A D P G G C S$ $P V R K A Q L F L G N A G T A V R L L S A A D A L Q A G E G S A Y Q Q L G G V P R$ GGIP NK SATINVGSAGTAARF LTAAMLALLSDGKYFI DAS Q Q QLKTEAPFEYVRKMRASVLVMGPLLARYGHAKVALPGGAA
 GGLTEPADVLDMGNAGTGARLLMGLLASHPFTAVLTGDAS


FPVREA DLVMGNAGTADRPLDTAALAMQGGNYRLS GDVAR ELLNSILPYELVKQMRASFWVAGPLLARRLKHTQDPLPGGCA A RLLARGPAELFLGNAGTAVRPLTAALDAVLGGDYVLRGVPR GGFAEPAEVIDCGNSGTGVRLVMGAMATSPDTATFTADAS SETD Y DLVRRRLRAS IDVLGPLLARRGYVRVAHPGGDA $H G L K P S H D P L V M M G N S G T S M R L L S G G L D S A Q K F D S V M T G D P S$
 RGPATVDVGNAGTVMRFVPPMAALTDGDVRFDGDPR SALQEPESLLDVGNSGTTDRLMLGILAGRPFYSAVAGDES
 $D G L D E P K E V L D D V G N S G T T D R L L L G G L S G R P F H S V V V G D D S$ HLE Y E A P Y DL VRKMRAS IVYVL GPLV AK LGGKAKVSFPGGCA LDPPFEA $\quad$ DD CGNS GTMMRLMAGI LSAQPFYSK DGDRS






 D K N GEK II NC IES GNTLRFFIDPVAAALGKEVTFTGEGR


 GGFAEPEAVI DCGNS GTGVRLIMMAMATTPITATFTGDAS NGLLKEPKEILNCGNSGTTMRLLMGLLAGQE GNFILT GD DMS $P L H G A A V D C G L A G T V M R F L P P A A A L A T G R V F F D G D P H$ $\square$ S M H S D D D E Y $\quad$ I R R I R R A S Y Y F V EPKY QADFPAVR QFRASVEVLGPPLVARCHRAVVALPGGDA $\square T$ K T E DP E H L M R E M R S TV I MA GA L L GRRFK E V T F S Y P G G C D





 QGLRRAPVVPLDCGNS GTAMRLLAGV LA GQPFPDSTLVGDAS MIAMP LPNGKVKKLRASYYLMGAMLGRFKKAVIGLPGGCN
 $H G L Q E P Q D V I D C G N S G T T M R L M T G L L A G Q Q Q F S S V M T G D R F$ GNLREPGNVLDAGNSGTTMRLMMGLASHSDRFFVVTGDDS




 $\square N K T R A N H D L V S Q M R A S D L V L L P D L A A K F G E A E V S L D P G G C A$ HGLK AP QEDLYVGNS GTSMRLLSGILAGQKFDSTLT GDHS

 RPEVPA DVVN CENSGTTMRLVTACAALGDGLTVLT GDDS VPD H H A DFDAVK QFRA SVCVL GP LDMARCKRAVVVALPGGDA
 LSRNSAPYELVSKMRASFFALGSLLLARMGSAKMPLPGGCA

TGEVCVD DEYDRKDRATTMRLMLGLASHPDRLFTDT G DS S
$H G L E F P T$ DVLDCNDRASYYLLGGALLGKYNYAQVALIPGGCD
A LLHHQA DYDLVVRAMRGTSMRLLTGLL A G Q F FSVL S GDK Y
UniRef90_E8WJW7
UniRef90_M2WC17
UniRef90_S9SBJ9

|  |  |
| :---: | :---: |
| UniRef90 K2KLG4 | 1 GNRPVDLHVKGLTALGAEISLEEGGM |
| UniRef90-M1P3V6 | I GTRPVDFILEGLKTLGVHUALENG YVHAKAPRGL |
| UniRef90-R7F117 | LGDRPIDQHLKAFSALGAK |
| UniRef90-F5L736 | LRKRPLRPLIDALRHLGANTETYGEAGG |
| UniRef90-Q2L2S7 | MHERPMGDLVDARAWGAR DYLGQAGYPPLHIGRGDIRA |
|  | LSGRRMM |
| UniRef90 W9GYC0 | LTKRPMARVTTPLEQMGASFVSRS GGRLPLVIIGTENPV |
| UniRef90- Q927U1 | LGPRPDDQHIKG |
| UniRef90-LOANN4 | LRSRPQG |
|  | GKRPLDV |
| UniRef90-C0QT72 | GTRPVDLHLEALKKMGAR |
| UniRef90-UP1000346B92F | MHERPIGDL |
| UniRef90-R5DVU5 | MKKRPMKPLFDALESMGAQFEFTEKEGHDPVAAFGGRK |
| UniRef90-UP100041B6033 | TGSRPLDQHLKGFEAMGAKV NVGNGYIEAFTEGR |
| UniRef90-I0K005 | IGDRPIDLHISGLQK\GANID\ITKGD VVAQGGQL |
|  | SYERPLNGVIDALRVLGARLDDDGRGALPLTVHGSGALDG |
| UniRef90-UP100047555FB | RVTTPLAQM |
| UniRef90 UPIOOO4188342 | LNGRPMRR1 TQPLSEMGAA |
| UniRef90-A4SW54 | Her |
| UniRef90 UPI0003679CB9 | MHERPIGDLVDALRAMGCAVDYLAQAGYPPLRIGSG |
| UniRef90-A3PPV7 | LRKRPMGRVTDPLALIFGTRA YGRKGGRLPMTLVGAADPV |
| UniRef90-U5WCR4 | M H |
| UniRef90_C8PZ | MERVAKPLREMGAK |
| UniRef90-O5FSM2 |  |
| UniRef9-UPIOOO361B014 | SYERPVGALVEALRALGAVVDDGGRGALPLTVHGTGSL |
| UniRef90-E3DVN3 | TAKRPMKRVTDPLKKMGAHIDGRAGGEFTPLSVNGGD |
| UniRef90-Q7NLT3 | M $\square$ RVVSPLRQMGAR |
| UP100036 |  |
| UniRet90-UPIOC | 1 |
| UniRet90 B3D | RRPMNRI EPLRLMGAK |
| UniRef90-NJ94 |  |
| UniRef90- 5 SM9L6 | GTRPVDLHLQGLEKLGANİEL D DKGYVIASTKG |
| UniRef90-C4Z2Y8 | MKKRPMLPLFEALQSMGAEI EFLEKDGHLPVAAYGG |
| UniRef90-N6UJ17 | GAQ |
| UniRef90_R11 | GPRPIDLHLKALKEMGVS |
| UniRef90-J1K282 | LSKRPMGRILDPLRLMGVQVEA CEGDRLPLTLKGPHM |
| UniRet90 M1LS922 |  |
| wojkg |  |
| UniRef90_S ${ }^{\text {P }}$ IT7 |  |
| R5NNF5 |  |
| PI |  |
| UniRef90-J2HG57 | M |
| UniRet90-R5STU | FGer |
| - |  |
| AOAP597 |  |
| UniRef90_A3PBY7 | LNERPMGRVGKPLSLMGGKIFGREKGNKAPISINGN |
| UniRer90-J9SPL16 | (l) |
|  | PVDQH |
| UniRet90-F6ENM2 | 1 GSRPLDMHQAGLRLLGATSTDEHG CVVAEAQEL |
| UniRef90 R5ZPT9 | GSRPDDLHINAFKKLGVEIT |
| UniRef90 U2JIX7 UniRet90 Q9WXW3 | \| GSRPVDYHLKGFKALGCAMSQDDSTUAAAAPVTG |
| UniRef90-U1YD83 | ARKRPMGTIIEALVALGVPVRAEGGRTPPFAVEGTGEVRG |
|  | KRPMARVTGPLKMMNATVDGREN |
|  | LGARPIDQHIKGFEALGASV NTTQGK |
| UniRef90_A4Z267 | IGTRPVDLLIMALTRLGASI D ${ }^{\text {a }}$ ( DAGYVVAKAPGGLR |
| UniRef90 UPIOOO476B188 | M |
|  | DLHIL LLL ETLGVS |
| UniRef90-E6PRJ8 UniRef90-F9MR70 | ERPLGGDLADALRALGCDUEYGAQPGYPP |
| UniRef90-A1BEN1 |  |
|  | RPMGRILNPLRAMGAEIAAQDG |
| UniRef90-18AE45 | LGPRPDDQHIKGFEALLGAKVTNEQGA |
| UniRef90_C2KVC6 | EKRPMKRVCLPLEKMGAK K |
| UniRef90 K9S9B6 | LRSRPMSRVVKPLQQMGAQ |
| UniRef90-UP1000361C3B1 | IGSRP\NFHLKGLEKLGA |
|  | PMQDLLDALKPLGVTACSTRNDGKAPIIVKGG |
| 5E | MDR |
| UniRef90-B5YDB9 | VDLHIKGFESLGAE |
| UniRef90-UPI00036F222F | 1 GTRPVDLLLMALERLGATVEL DGGYVVAKAKNGLR |
| UniRef90_UPIO00 |  |
| UniRet90_UP100047E47B9 |  |
| UniRef90 K0C4S | LTKRPMRRVLDPLSLMGAAVEST DAGTSPLKVHGGAPLR |
| UniRet90-17JA57 | RPIGPLADALQALGG |
|  | RLVDLHIKGLKKLGAKIIL GEEYVIASVNGRLQ |
| UniRef90-E4NNE | LRSRPQGPLLDAVTDLGGRGESTRRNGQAPLVV GD |
| UniRef90-L7L7U3 | GSRPLDMHQSGLRALGAQSNIEHG CJVAEADRLT |
| UniRef90-UPIO003F8EAEC |  |
| niRe990 L8N1P7 |  |
| UniRef90 M2WTD6 |  |
| UniRef90-K1 | A |
|  |  |
| UniRef90-E8WJW7 | K |
| Ref90_M2WC17 | TRGLDMHRAGLEAMGAHLLTEGG YLKTSVDGRLH |
| UniRef90 S9SBjg |  |

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 UniRef90-K2KLG4 UniRef90-M1P3V6 UniRef90-R7FI17 UniRef90_F5L736 UniRef90-Q2L2S7UniRef90 K0DE47 UniRef90-G5KDN7 UniRef90-W9GYC0 UniReffo-Q927U1 UniRef90-LOANN4
UniRef90
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UniRef90-A4SW54 UniRef90-B2KDP9 UniRef90-UPIOOO3679CB9 UniRef90-A3PPV7 UniRef90-U5WCR4 UniRef90-C8PZ96 UniRef90-Q5FSM2 UniRef90-M5U5A9 UniRef90_UPIOOO361B014 UniRet90-E3DVN3 UniRef90-Q7NLT3 UniRef90-UPIOOO363B42F UniRef90-UPIO003B44C2E UniRef90-B3DUU9 UniRef90-WTN594 UniRef90-UPIO003649F28 UniRef90 X5M9L6 UniRef90_C4Z2Y8
UniRef90 N6UJ17 UniRef90_R1AX61 UniRef90-J1K282
UniRef90 M1LS92 UniRef90-M1LS92
UniRef90-WOJKD9 UniRet90_S7XIT7 UniRef90-R5KNF5 UniRef90_UPI000463616A UniRef90-J2HG57 UniRef90-R5S7U0
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UniRef90 G9WPT6 UniRef90-C8ND25 UniRef90-F6ENM2 UniRef90-R5ZPT9
UniRet90 Y2IIX7 UniRef90-Q9WXW3 UniRef90-U1YD83 UniRef90-E6TZH1 UniRef90-R5PW52 UniRef90_A4Z267 UniRef90-UPIO00476B188 UniRef90-F2NAD3 UniRef90-E6PRJ8 UniRef90-F9MR70 UniReffo-A1BEN1 UniRef90-18AE45 UniRef90-C2KVC6 UniRef 90 -O3A3D1 UniRef90-K9S9B6 UniRef90 UPIOOO361C3B1 UniRef90-FOTC38 UniRet90-B5E5M9 UniRef90-B5YDB9 UniRef90-UP1IO0036F222F UniRef90-UP1000047CCBD8 UniRef90-K0C4S9 UniRef90-17JJ57 UniRef90-O7VQSO UniRef90-L7L7U3 UniRef90-UPIOOO3F8EAEC UniRef90_L8N1P7 UniRef90-M2WTD6 UniRet90-K1W838 UniRef90-R5PCI4 UniRef90 E8WJW7
UniRef90-M2WC17
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 190 V VE E P VP T R D

 GKVRIE GHVSSQFLS GLLLASPLAA GPVHIVVEKGLVQPA


 $T G V S I P G D V S S Q Y I T A L L M A G A V T D E G \square E I G L E T E L L K S A P$

 K E V S I D DS E S T Q F L S A L M M VAA PMLDD D GLLTI HITTS K K T D G S

 $P \quad I \quad S Y$ T L P V A S A QVVKS A I L L A G L $N$ T P G E T T GI HYDLDMASA QVK S A V L L A G L Y A D G E T S V S

 $P \vee R Y T V P M P S A Q V K S A V L L A G L N A P G Q T V V$

 GEVTLDDASGSSQFVSALLLSAA RFDK GLL R L RHEGPVPS QP GINYV S PVVASAQIKSAVLLAGLQAEGTTTVVTEPHKS
 A I H WV S KVVA S A QVK S CI L LIA GL QS E GTTTVVE $M N L I G Q H G P S V G A T A N V M M A A T L A E G T T L I H$ $G I D Y R L P \square P S A Q V K S C I L F A G L F A P G D T B I$
 GAEI RFSMPSVGATHNVLMAAVLAKGETVI NHVS VS $\square$ S ESSTQF LS AL MM T S PMLDE G $\square H V H \square T$

 PISYRVPMASARVKSAVLLAGLNTPGDT T VIEP\|MTRD



 V I $\begin{array}{lllll} & E & P & Q & P \\ V & P & T & R & D\end{array}$
 GCVMGTPVASAQVKSAIL LA GLKASGTTSVVVIREATRD GEVTIDASGSSQFVSGLLLSAARFDAGVVVRHVGPVPSTP
 GARFI MDDVTTVVT GTENLLMMAAVLAE GTTILLDAAACEP GTN I D L 1 D F P S
 YVTVTLP FPSVGATEHLMTTAALLKGARV VIENAAMEP
 GTS I YMDTVV VGAT DNVMLAASVLADGTTTV DNAAKEP


 G T MAL R G DI S S Q F F S GL L FVVLPL L K E S S TVVIST TP L L E S A G


 G NIIE F P SVVSVGATKNI MMAAVLAAKGKTKII NAABEP


 A NHHAFDVVTVTGVENVLMAAVLANGDTVL ENCAKEP G 1 QYKMPMGSAQVKSCLLLAGLYAEGTTEV K A A I D GS M S S Q F I S S GA H I VM DK I S VGATVVT I MSAA T LAARGIVTII LI DNAAARA





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UniRef90_K0DE47 UniRef90_K0DE47
UniRef90_G5KDN7 UniRef90_W9GYC0 UniRef90_Q927U1 UniRef90-LOANN4
UniRef90-B1C7Z1 UniRef90_C0QT72 UniRef90_UPI000346B92F UniRef90_R5DVU5 UniRef90_UPI00041B6033 UniRef90-IOK005 UniRef90-L1L332 UniRef90_UPI00047555FB UniRef90_UPIO004188342 UniRef90_A4SW54 UniRef90_B2KDP9 UniRef90_UPIO003679CB9 UniRef90-A3PPV7
UniRef90_-U5WCR4 UniRef90_C8PZ96 UniRef90-Q5FSM2 UniRef90_M5U5A9 UniRef90_UPI000361B014 UniRef90_E3DVN3

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UniRef90_N6UJ17
UniRef90_R1AX61 UniRef90-J1K282
UniRef90-M1LS92 UniRef90_W0JKD9 UniRef90_S7XIT7 UniRef90-R5KNF5 UniRef90_UPIO00463616A UniRef90_J2HG57 UniRef90_R5S7U0
UniRef90_B9CLE4 UniRef90_A0A059INB6 UniRef90_A3PBY7 UniRef90_J9SPL1
UniRef90-G9WPT6 UniRef90_C8ND25 UniRef90-F6ENM2 UniRef90_R5ZPT9 UniRef90_U2JIX7 UniRef90_U1YD83 UniRef90_E6TZH1 UniRef90_R5PW52 UniRef90_A4Z267 UniRef90_UPI000476B188 UniRef90_F2NAD3 UniRef90_E6PRJ8 UniRef90_F9MR70 UniRef90_A1BEN1 UniRef90-B7J781 UniRef90_BAE45
UniRef90_C2KVC6 UniRef90_Q3A3D1 UniRef90_K9S9B6 UniRef90_UPI000361C3B1 UniRef90_F0TC38 UniRef90-B5E5M9 UniRef90_B5YDB9 UniRef90_UPI00036F222F UniRef90_UPI00047C6BD8 UniRef90_UPI00047E47B9 UniRef90_K0C4S9 UniRef90-I7JA57
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UniRef90-R5PCI4 UniRef90-E8WJW7
UniRef90_M2WC17
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210
220 230

240 HTENMLRHFGAQVAVEETPEGGR\|I DRLQGKPH|LDARDVT|V|

 $H I V D L A N F L N S M G A D I M G A G T D V I N I R R G V Q Q L H G A V Y S V$ $Y \vee G I T V Q L M R Q F G A V V E H D H D F R S F V V Q P G G Y T G R E T V L$ Y I E I T L N L M A R Y GVNVVVRD GWRAFTIVEGDARYRSPGS I AV


 Y V DI T L EVVLEAF GVEARHTDD GFAVDGGQSYSPE GRE YA V Y L D L T L S ML E K F G I K I I N N D Y K E FI I K G N Q E Y K A M D Y T V



 TRDHTERMLR GFGYDVVK Y ID DT LK L M A R F GVNVA CP D

S




Y V R I TAKMMEQF GCVVDHKGAE












 HVVDVANFLNAMGADI HGAGTDMINI NGVSKLHGNATY S I E I S DLA DCLNKMGARISGAGTPVIEI EGVASLHGARHTV


 TRDHSERMLQGFGQPVERHGPRACLRGGG$R R L C G Q A L Q V$ EIIDDVATLLTSMGAKIKGAGTDVIRIDDGVDHLHGCRHSII
 HSERMLT WFGADVRPFE RDHSERMLRAFGANLTVDPET
 EVVDLGNF L RMM GAEI E GLLGTS TII YI K GKKELLKPVD YYKV



 Y V D DT L E L L D E F GVE A E Q T A D G F S V A G G Q S Y D P T G G E Y E V
 $E V V D L A D L C I A M G A K I R G A G T S T I V I N G G D K L H F A D F T A$ HIVMTVGMLRDAGVTVLSPADDTWKVLPGBNVTPVDWVI

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## UniRef90 F7VB38

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UniRef90-G5KDN7 UniRef90_W9GYC0 UniReffo-Q927U1 UniRef90-LOANN4
UniRef90
B1C7Z UniRef90-COQT72 UniRef90-UPI000346B92F UniRef90-R5DVU5 UniRef90-UP100041B6033 UniRef90-10K005 UniRef90-L1L332 UniRef90-UPI00047555FB UniRef90-UPIOO04188342 UniRef90-A4SW54 UniRef90-B2KDP9 UniRef90 UPIIOOO3679CB9 UniRef90-A3PPV7 UniRef90_U5WCR4 UniRef90-C8PZ96 UniRef90-Q5FSM2 UniRef90-M5U5A9 UniRef90-UPIOOO361B014 UniRet90-E3DVN3 UniRef90-Q7NLT3 UniRef90_UPI000363B42F UniRef90 UPI0003B44C2E UniRef90-B3DUU9 UniRef90-WTN594 UniRef90-UPIO003649F28 UniRef90-X5M9L6 UniRef90_C4Z2Y8
UniRef90
N6UJ17 UniRef90_R1AX61 UniRef90-J1K282
UniRef90 M1LS92 UniRef90-M1LS92
UniRef90-W0JKD9 UniRet90_S7XIT7 UniRef90-R5KNF5
UniRef90 UPIOOO46 UniRef90_UPIOOO463616A UniRef90-J2HG57 UniRef90-R5S7U0
UniRef90-B9CLE4 UniRef90-A0A059INB6 UniRef90_A3PBY7 UniRef90-J9SPL1
UniRef90-G9WPT6 UniRef90-C8ND25 UniRef90-F6ENM2 UniRef90-R5ZPT9
UniRet90 Y2IIX7 UniRef90-Q9WXW3 UniRef90_U1YD83 UniRef90-E6TZH1 1 UniRef90-R5PW52 UniRef90_A4Z267 UniRef90-UPIO00476B188 UniRef90-F2NAD3 UniRef90-EGPRJ8 UniRef90-F9MR70
UniRef90-A1BEN1 UniRef90-B7J781 UniRef90_18AE45 UniRef90-C2KVC6 UniRef 90 -O3A3D1 UniRef90_UPIOOO361C3B1 UniRef90-FOTC38 UniRef90-B5E5M9 UniRet90_B5YDB9 UniRef90-UPIO0036F222F UniRef90-UP1000047CCBD8
UniRefo-UP100047E47B9 UniRef90-KOC4S9 UniRef90-17JA57 UniRef90-Q7VQSO UniRef90-L7L7U3 UniRef90-UPIO003F8EAEC UniRet90-L8N1P7 UniRef90-M2WTD6 UniRet90-K1W838 UniRef90-R5PCI UniRef90-E8WJW7
UniRef90_S9SBJ9

VAAAFATGTSRFRGVVEERVKESDRLUSTVALLEKNGVRT LQAQUMALMTVSKGAAMITETVFENRFMHVPELCRMGANI ALAPFADAPVTVTNVAHDRHHESDRIDVICTADRKDGDKV TMALFADGPCRLRNIGSWRVKETDRIMAMHTELAKLGAKVV
 LAAACANGLTRRAEGSSVVTDTVYPSRFKHADAELERMGGKF


 AVAALADSPSTLRGVAHLRLHETDRLAALTKELNELGGDV VAAACAEGQTILTGAEELRVKESDRIQVMADGLIICGVDA VAALLFAEGGTRRNNGASWRVKETDRUAGMAKELKKGGADV

 VVAAFAEGSTVMRGVKELRVKESDRIDAMARGLEACGVRUC VAASCATGKTVLAGAAELRVKESDRDQVMADGLKTLGDAC MQAQFMAMLSVAEGASMITETDFENRFMHVPELNRMGARV ALAALADTPSRLTGIAHCRRHETDRIAALAAEINGLGGHV LLATQAEGTTVKDAAELKVKETNRMDTVVSELRKLGAN


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

 ADAPFAKTTTVIKNDEHDRLQESDRDEAMVNELNNLGVDV LQAQFMALMVCAQGCARITETVGENRFMHVQELVRGGAHI VAAAFAEGDTHMEGLEELRVKESDRLSAVAQGLKTNGVSC VLALYADGKCFLRNLGSWRVKETDRIHAMHTELSKFGVKV



## \section*{4}

VVAACEGSCIITENVFESRFM
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पASE
 TLALLSGNSVVTESUFENRFKYVD MQAQUMANNTVAQGTATVDETVFENRFMHVPELARMGADG LQQUFATMLVKASGTSMIVENVFEARFYKY SEMLRKMGAKV AQSQFMAMMTISKGESRVVETVFENRFMHVAELVRMGAVI AYLSTASGVSVIENVFKTRFLUVDELKRM ALCALASGPSRLTGIAHLRGHETDRLAALVNETNRLGGDA VLATQANGVTVIKDAEELKVKETNRIDTMVHQLKSLGAND LQAQLMALMVRAQGASADTETDFENRFMHVQELARFGARED VAAAFAQGRTTMRGMEELRVKESDRDAVMAQGLTACGVSC LTALFAASPTLLTGLGSWRVKETDRMAAMATELAKMGAHV
 LQQPFTSLLTKAEGTSUVTDTGYSARFKHDDELRRMGAHV VAAAFAEGRTVIRDARELRVKETDRIASMCSQMGALGALV LAA QIMTGMSUAEGDSEIVKMITFENRFMHVPELNRMGANL ALGAMADGTTNMYGVEHARFKETDRMHTCSTELSKLGVSL

 MQAQFMAMAAVSEGTSSLIETEFENRFMHANELVRMGANI VAAAYAEGQTIVTGAEELRVKESDR DQTMADGLQTLGVDA MQAQFTLLNVVADGVGKVDETIDENRFMHVEELDRMGARV LQPMAIDGAAVSEGMSLITENVFEARFRFVEEMITRMGADA LQAQFMAMMCLADGTSIVRENLFENRFMHCPELSRMGADA ALAADADGPSVLRGDAHLRGHETDRLAALSTENGLGGSV ALAALADGTTTIRDAAELRVKESDRIQVMATEELTKMGAKI


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 NVHHSSAM RGVEKLRGA PVMATDLRASVSMVLAGLADG $K L D G Q T A T V Y G T D Q L Q G A \quad P V M A T D L R A S V S L V I A A L A A Q$ SVDGKVAVVEGTGKLTGAPVKACDLRAGAALII AGLAAHG E EREDGFTVYPGQPTGATLDPHDDHRQAMTFTLLGLKVP

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


 EEEQDAVKI Y PSDVKPAVVQTYDDHRMAMSFALI GLKVD


 QPTPDGIVINGGTVDGGGEVESHGDHRIAMAFS ASDATA EEGADYUVVQAPWKSPSEGIDTYDDHRMAMCFSLATLGPN EAGEDWMRVWPEADWHGASIATYDDHRGAAMCFSLASLAGPA $E E D E D T L I V H G G R V P G G A T C A T H D D H R D A M S F L V L G M A A E$
$R T D G H H A V V N G R E R L S G A$
V



 A LDESKAl I KGVSQLSGAPV MA SDLRAGAVLVAAGMAAG
 STDGHHAVI RGRPHLSGAPVRSH DIVRAGAGLVLAGGLAEG KEGRDRUEI S PANVKPGVVDTYNDHRMAMSFALIDGLRVD
 $V V K G V K E L T G A N V S A K D L R G G A S L V L A G L A A K$ K E GDDFLTVVGRKDLGGGTVITHDDHRDAMSFLVFGLGSG

$\stackrel{T}{\mathrm{D}}$
UniRef90_UPIOO0463616A
$\qquad$ 590ne


${ }^{516}$ UniRef90-C8ND25

UniRef90-F6FNM2
UniRef90_R1AX61
UniRef90_J1K282
UniRef90_M1LS92
UniRef90-W0JKD9
UniRef90_R5KNF5
UniRef90-J2HG57 UniRef90-R5S7U0 UniRef90_B9CLE4
UniRef90_A0A059IN UniRef90-A3PBY7 UniRef90-J9SPL1
UniRef90 G9WPT6 UniRef90-F6ENM2
UniRef90-R5ZPT9 UniRef90_U2JIX7 UniRef90-Q9WXW3 UniRef90-U1YD83 UniRef90-E6TZH1 UniRef90_R5PW52 UniRef90_A4Z267
UniRef90_UPI000476B188 UniRef90-F2NAD3 UniRef90-E6PRJ8 UniRef90-F9MR70 UniRef90-A1BEN1 UniRef90_B7J781 UniRef90_18AE45 UniRef90_C2KVC6
UniRef90_Q3A3D1 UniRef90-K9S9B6 UniRef90-UPIO00361C3B1 UniRef90-FOTC38 UniRef90-B5E5M9 UniRef90-B5YDB9 UniRef90_UPIOOO36F222F UniRef90_UP100047C6BD8 UniRef90_UPI00047E47B9 UniRef90-K0C4S9 UniRef90-17JA57 UniRef90-Q7VQSO UniRef90-E4NNE6 UniRef90-L7L7U3
UniRef90 UPIO003 UniRef90-UPI0003F8EAEC UniRef90-L8N1P7 UniRef90_M2WTD6
UniRef90_K1W838 UniRef90-R5PCI4 UniRef90-E8WJW7 UniRef90_M2WC17
UniRef90_S9SBJ9

| UniRef90_F7VB38 | $P \text { VE I D D T A F }{ }^{410} \mathrm{I}^{\mathrm{D}} \mathrm{~T} \text { S F P G Y F P }{ }^{420} \mathrm{~L} \mathrm{~L} \text { N S LL }$ |
| :---: | :---: |
| UniRef90_K2KLG4 | ETIVNRVYHLDRGYERLEEKLA A |
| UniRef90-M1P3V6 | GVTIN RVYHLDRGFERLEEKL A |
| UniRef90_R7FI17 | VTEI EDIVHI ERGYSNLDAKLREI |
| UniRef90-F5L736 | GIII ENPGCVSKTCPMFYSEMKKII |
| UniRef90_Q2L2S7 | A V R L D P G CVV S K T F P D Y F DVVY A G L |
| UniRef90-K0DE47 | $D V T L V G E E A M R V S Y P K F L S D L A K V M Q ~$ |
| UniRef90-G5KDN7 | RTEISNDEF I L R GY S N I V EKLT A |
| UniRef90_W9GYC0 | PVAVDDSEFI ETS F P GFV ELMNEL |
| UniRef90_Q927U1 | T TEIIH GVVEHI ERGYS K I I E KLLS A I |
| UniRef90_L0ANN4 | ETTI RGADHVDVS F P GFFETLEG |
| UniRef90-B1C7Z1 | D II I K D Y M CVR K S Y P T FFED FV S L |
| UniRef90_C0QT72 |  |
| UniRef90-UPI000346B92F | PIRIINDPNCVAK T F P D Y F ERFA A I VR |
| UniRef90_R5DVU5 | GIVI D NYECCKK T FENYFDVLESI |
| UniRef90-UPI00041B6033 | Y T R V T E L K HLD R G Y VNFA G KL K QL |
| UniRef90_10K005 |  |
| UniRef90-L1L332 | G VRII ENVATTAK TLDPDFPELWT GM |
| UniRef90_UPI00047555FB | NVGII D D ESATIGTSFPGFSALLMTGLL |
| UniRef90_UPI0004188342 | PLTTIRNCANVDTSFPGFV |
| UniRef90_A4SW54 | TLKINDPNCVAKTFPTYFAEFAKI |
| UniRef90-B2KDP9 | DTVIDRVYHI DRGYEN I E A K F A A L |
| UniRef90_UPI0003679CB9 | DVRI E D P G CVGKT F P GYFEAFARVAR |
| UniRef90-A3PPV7 | PVTVVDDGSPI A T S F P AFTDLM T GL |
| UniRef90_U5WCR4 | GVTVGEVVHHIDRGYPDFVSDLANL |
| UniRef90_C8PZ96 | T I T I H G TE T V N T S F P NFAELLVNS |
| UniRef90-Q5FSM2 | ETQLSR】YHLDRGYEGVDRKLA A |
| UniRef90-M5U5A9 |  |
| UniRef90_UPI000361B014 | GI EVED ${ }^{\text {EA T T R K T LP D F P G L W S E V }}$ |
| UniRef90-E3DVN3 |  |
| UniRef90_Q7NLT3 | T TEI A D P D C ATVVSYP QFYEHLARVRQ |
| UniRef90_UPI000363B42F | G $\$ SI Q NAEA I EVVSYPNFFEHL H QL S K  \hline UniRef90_UPI0003B44C2E &   \hline UniRef90-B3DUU9 & A SRI E DVDCI A T S Y P GFEQ L Y A L T Q  \hline UniRef90-W1N594 & E T L V D R I Y HI D R GYEC C E E K Q Q L  \hline UniRef90_UPI0003649F28 & ETIVTDV H H I D R GYa D FVA Q L N SLL  \hline UniRef90-X5M9L6 & ETTI S RVVY HLDRGFERLEDKLSA  \hline UniRef90-C4Z2Y8 & GIII DNYECCCKTFENYFEVLEK  \hline UniRef90-N6UJ17 & ETTVGGRVY HLD R GFERLLEEKL S  \hline UniRef90-R1AX61 & GVTVN NIVYHI ER GY D D F HKKLAS L  \hline UniRef90_J1K282 & PVKKI D D K R M I A T S F P E F IDVMVQL  \hline UniRef90-M1LS92 & KVKIM N P S CVNKTFPNYFSIYNE  \hline UniRef90-W0JKD9 & $E T T I Q Q G E H V D V S F P G F F G M L S S L L$ |
| UniRef90_S7XIT7 | GVEI E G $\square$ D A TA KT LP Q P P A L W A T L |
| UniRef90_R5KNF5 | GTTI D D A Q SVNK T Y P SFFDDFK QL |
| UniRef90_UPI000463616A | EVAI D DVA NVATS FPGF |
| UniRef90_J2HG57 | GVEVD T T R P I A T S FPLFETMLDGLGQ |
| UniRef90_R5S7U0 | V S EITTNVQYI ERGYEDIIG K L R AL |
| UniRef90_B9CLE4 | ETTVVSA I H HI D R GYEGFVEKLVSLL |
| UniRef90_A0A059INB6 | PVSVD D G S P I A T S F PVFEALLMS GL |
| UniRef90-A3PBY7 | GTKIMRADAASVSYPTFWEELAKLL |
| UniRef90_J9SPL1 |  |
| UniRef90_G9WPT6 | $\mathrm{G} \\| \mathrm{T} V \mathrm{HE}$ I GY IQ R G Y E HFEAKLR G L |
| UniRef90-C8ND25 |  |
| UniRef90-F6ENM2 | E T EVV DVYHI DRGYPRFIE D M Q Q L |
| UniRef90-R5ZPT9 | K S R V E Ni G Y i Q R GYENLENKLG S L |
| UniRef90-U2JIX7 |  |
| UniRef90_Q9WXW3 | VTEI S NVEHISFRGYEDV1DDKFSELL |
| UniRef90_U1YD83 | GVEVEDIA T TS K T MPEFPHMWAAM |
| UniRef90-E6TZH1 | DVKI E N TEA I A V S Y P NFFEHLLNELL |
| UniRef90_R5PW52 | ETQLFNLDHIDRGYENIEEKFRNL |
| UniRef90-A4Z267 | ETMM NRVY H L D R GFERLEDK L K A |
| UniRef90_UPI000476B188 | RVTV D D ARPI A T S F P T FVPMMRQL |
| UniRef90-F2NAD3 |  |
| UniRef90-E6PRJ8 | D I R LE P G CV SK T F P GY F LAFA A M A R |
| UniRef90-F9MR70 | ALQ L EDAQ AVVK S Y P CFWQDIQ KV |
| UniRef90_A1BEN1 | $\mathrm{G} \backslash \mathrm{T} V \mathrm{~L}$ R V V Y H L D R G Y E K DE M K L N A L |
| UniRef90-B7J781 | DMEILDCANVATSFPSFPALAAQQ |
| UniRef90_18AE45 | \TEVS GLEHI DRGYEFLVDKLVGL |
| UniRef90-C2KVC6 |  |
| UniRef90-Q3A3D1 | PVTVT DTECTATSFPGFWEDFNSV |
| UniRef90_K9S9B6 | ETQI HRAEAAA $\square$ S Y P DFT D SLLRQLC |
| UniRef90_UPI000361C3B1 |  |
| UniRef90-F0TC38 | $\mathrm{G} \square \mathrm{C}$ I K D A SVYK V S F P D FP D M K K LT |
| UniRef90-B5E5M9 | EVELDRAEAIDNTSYPSFFDDLESLIDH |
| UniRef90_B5YDB9 | GI TVVLDVE HI D R G Y VA LE D K L S S L |
| UniRef90_UPI00036F222F | ETSINRVYHLDRGFEALEAKL |
| UniRef90_UPI00047C6BD8 |  |
| UniRef90_UPI00047E47B9 | T TT T G A L H HLD R GY D S IEA K L T NL |
| UniRef90_K0C4S9 | A $\square \mathrm{K}$ I N NCENVATSSPNFVEL |
| UniRef90_17JA57 | GMAIRDPGCVEKSFPGFWEAL |
| UniRef90-Q7VQS0 | LTII D Q VN HVDRGY D N DERKL Q N M |
| UniRef90-E4NNE6 | ETTVVTGAEHVDVSFPNFFDAI E S L |
| UniRef90-L7L7U3 |  |
| UniRef90-UPI0003F8EAEC | E THVGRVYHLDRGFER\EVKL |
| UniRef90_L8N1P7 | ETTVMMGLHHLLDRGYDRIE EKL R NV |
| UniRef90_M2WTD6 | G $\square \mathrm{DV}$ D DVGGT TAK T L P GFENMWT A M |
| UniRef90-K1W838 | STTI HRAEAAA DS YPDFVGSLQQL |
| UniRef90-R5PCI4 | F S TI D D I K Y ILR G Y E DF D GKi R GL |
| UniRef90_E8WJW7 | ET TV S DVDCI ATSFP GFRELLE GVVQ |
| UniRef90-M2WC17 | E T IV G GVEHI DRGYEHFVE N L T A |
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UniRef90 K6WGM4
UniRef90--J9HC61 UniRef90-UPIo0037A7B3F UniRef90-UPIO003B4DC38 UniRef90-H1PWR4 UniRef90-H5URS8 UniRef90_UPIOOO3767E05 UniRef90-UPI00037A6FF2 UniRef90_Q8K9G4 UniRef90_UPIO00372C9C3 UniRef90-14VZ22 UniRet90-D3RTS0 UniRef90-E7GIK9 UniRef90-F61398 UniRef90-T1CX76 UniRef90 X XZE14
UniRef90 W1RUGE UniRef90-V6F8R5 UniRet90-U5N5R2 2 UniRef90-B9MQK4
UniRef90-Q1YRS UniRef90-UPI000368D8FD UniRef90-Q99z83 UniRef90-O5NLJO UniRef90_UPIo0037B9DAF UniRef90-M1LXI6 UniRef90_UPIOOO26C6F03 UniRef90-A3VMP1 UniRef90_D7GT00 UniRef90-C4V2R8 UniRef90-D5V8W6 UniRef90-R6YD63 UniRet90-UP100040CODEE UniRef90_W7C473
UniRef90 Q28U17 UniRef90-R2NRP4 UniRef90_O7VIM8 UniRef90-K9P539
UniRefo
F21592
UniRef90- Q4L7Y1 UniRef90-E4WFX9 UniRef90-K9QNNO
UniRef90 R6R849 UniRef90_C4ZBJo UniRef90-SOFMP9 UniRef90_UPIOOO3795228 UniRef90-UPIOOO3635CE1 UniRef90-UPI0004097D20 UniRef90-X6L3T3 UniRef90-C3XML5 UniRef90-U6B997 UniRef90-UPIOOO4716391 UniRef90_UPIO0034C99F2 UniRef90-E6UEIO UniRef90_UPIO00366B897 UniRef90-R500B2 UniRef90-UPIO00380BEEA UniRef90_C4Z1D2 UniRef90_R5B4Z5 UniRef90-G2YLA4
UniRef90 - R5TRHO UniRef90-B1Y2L9 UniRef90_A1T5Z3 UniRef90-D8IKL5 UniRef90-UPIOOO3771169 UniRef90-H3SC42 UniRef90-C4F8C4 UniRef90 W4QO29 UniRef90_R5NQX2
Uniren UniRef90-K6WTG6 UniRef90-V7HY93
UniRef90 D3QIH5 UniRef90-UPIO003B76AF1 UniRef90-E9EGX3 UniRef90_B9Y5J2
UniRef90 G6F2P4 UniRee90_UPIO0047BB298 UniRef90-EOCS99 UniRef90-G4QAF7 UniRef90-C3PP14 UniRef90-UPIOOO37A27B4 UniRef90 UPIOOO3B73002 UniRef90-X0PFH8 UniRef90 NoE3N9 UniRef90-R7NN65
UniRef90_BOJV25 UniRef90-A0A059FE16 UniRet90-R6VVK6 UniRef90-K9EF56
UniRef90_TORJD2

K A K $\square$ Y P S PLK G R V R V $V$ P G D K S S V S H R S L I F G A L $P L \operatorname{L} A T V V T V P G S K S H T A R A L V L G A M A N A E S V$ $P$ T P V D A TVVRLP GSK S LTTNRYLVLAAALA DGP S R
 MQKFLI E G G VAL E GEVVEI S GAKNAVLPLLAATLLASTPMT
 MDKFA I R G G $\square P \mathrm{~L}$ R GS S I PIS GS K N S S L P I L A A T L L T R E R C L
 MEQY MKGGNPLVGEVTISGAKNAALGULAAADMTDDDVV MDKFKI DGASRDIDGEVTI S GSKNAALPLLAAMLLBNGETV

 MEE IVVRGGKQLKGTVHI E GAKNAVLPILAATLLAE GTST $M D Y L Q \mid T K S P T L Q G S V S I S G A K N S A L P I L A A T L L S Q N E V T$
 MDK $\| V I K G G N R L T G E V K V E$


LKVK P S E VS G V VN I P

## MDKF I I S

MDK K I VK
K P L K GKARV

$M K K M \| V R G G Q K \square A G E$
E V I K K V R G QK L A GEVV T I
$V$ T I G GAKSNSTVRALVLAAALAGDTSR

## 

T A A GPPLDA T I T I P KI E G G HQL N GEVRIS GAKNATVALIPASILANGPVT

M D
M H

| $D K$ | $L$ | $K$ | $V$ |
| :--- | :--- | :--- | :--- |
| $H$ | 1 |  |  |
| H | 1 | $H$ |  |

EHFRVRGGAR KG
 $M D K \operatorname{Li}$ LQ T GP $\underset{G P}{V} \mid$
QIKVTAPAKI A T



## UniRef90_K6WGM

 UniRef90_J9HC61 UniRef90_UPI00037A7B3F UniRef90_UPI0003B4DC38 UniRef90_H1PWR4 UniRef90-H5URS8 UniRef90_UPIOOO3767E05 UniRef90 UPI00037A6FF2 UniRef90_Q8K9G4 UniRef90_UPI000372C9C3 UniRef90_-14VZ22 UniRef90_D3RTS0 UniRef90_E7GIK9 UniRef90_F6I398 UniRef90_T1CX76 UniRef90 X4ZE14 UniRef90_W1RUG6 UniRef90_V6F8R5 UniRef90_U5N5R2 UniRef90_B9MQK4 UniRef90-Q1YRS1 UniRef90_UPI000368D8FD UniRef90_Q99Z83 UniRef90_Q5NLJ0 UniRef90_UPI00037B9DAF UniRef90_M1LXI6 UniRef90_UPI00026C6F03 UniRef90_A3VMP1 UniRef90_D7GT00 UniRef90_C4V2R8 UniRef90-D5V8W6 UniRef90_R6YD63 UniRef90_UPIO0040C0DEE UniRef90-Q28UI7 UniRef90-R2NRP4 UniRef90_Q7VIM8 UniRef90_K9P539 UniRef90-F21592 UniRef90- Q4L7Y1 UniRef90_E4WFX9 UniRef90_K9QNN0 UniRef90_R6R849 UniRef90_C4ZBJO UniRef90_UPI0003795228 UniRef90_UPI0003635CE1 UniRef90_UPI0004097D2C UniRef90- X6L3T3 UniRef90_C3XML5 UniRef90_U6B997 UniRef90_UPI0004716391 UniRef90_UPI00034C99F2 UniRef90_E6UEIO UniRef90_UPI000366B897 UniRef90_R5Q0B2 UniRef90_UPIO00380BEEA UniRef90_C4Z1D2 UniRef90_R5B4Z5 UniRef90_G2YLA4UniRef90_R5TRH0 UniRef90_B1Y2L9 UniRef90_A1T5Z3 UniRef90_UPI000362A940 UniRef90_D8IKL5 UniRef90-UPIO003771169 UniRef90_H3SC42 UniRef90_C4F8C4 UniRef90_W4Q029 UniRef90_D9R4F8
UniRef90_R5NQX2 UniRef90_K6WTG6 UniRef90_V7HY93 UniRef90_D3QIH5 UniRef90_UPI0003B76AF1 UniRef90_E9EGX3 UniRef90_B9Y5J2
UniRef90_G6F2P4 UniRef90_G6FIOP4
UniRef90_UPIO0047BB298 UniRef90_E0CS99 UniRef90_G4QAF7 UniRef90_C3PP14 UniRef90_UPI00037A27B4 UniRef90_UPI0003B73002 UniRef90-X0PFH8 UniRef90-N0E3N9 UniRef90_R7NN65 UniRef90_B0JV25 UniRef90-A0A059FE16 UniRef90_R6VVK6 UniRef90_K9EF56
UniRef90_T0RJD2

A PMHGA DV
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120 ( PNVDTEVYTGAGGTAARFLTSALAAGHGSWT\|RGSRR G
$\mathrm{K} \square \mathrm{S}$





 $G L R A S T Q A L D C G N A G T G M R L L A G L L A G Q A F D S T L V G D A S$



 GGLLLQPRTALDMGNS GTSTRRLMGLLAASHDLTATFFVGDAS G GLVK P E EVL DVGNS GTGARLVMGGLVATHPFTTVFTGDAS

 QGLNAPCQTLNMGNSGTSMRLIAAGLLAGQPFSVKMDGDES
 GRPEVP D DVI DAMNS GTTVLRIATAVASASGGYTVLTMGES $N L \quad K A P Y E L V K A M R A S I L V L G P L L T R F G E A D V S M P G G C A$ E HPAEPDEIHTGLAGTVMRFVPLLAALRHGDVRFTGDDA
 HGLSEPMNVLDAGNSGTTLRLMMGVLAPQSFLSAFSGDAS TNYYAPYELVRTMRAS ILVLGGPLLAREGEANVSLPGGGCS $\square T K T V A P D E L T R K F R A S Y Y L I G G M L G R K K E D D V G M L P G G C N$ $N G L K P S K T P$ Y Y M GNS GTSMRLLAAGLLA A QEF DSVL T G DTS
 $Q L N V E A P Y E Y V S K M R A S V V V M G P G L A R N G H A K V A M P G G C A$


 QPKYHADFAAVARFRASVCVLGPLVARCHKAVVALPGGDA GNLQEPVDVLNA GNS GTVTVRLMLGLLDASHPGRFFVVTGDSS $\square T M N D D P E D M M R E M R S S I T F L G A D I A K M G E A K D S L P G G C E$




 LF S CRNS Y DLVSK I R A GFWLI GP L L A RKGHARISFP G GCP R G L R A P A RVLDCGNS GTT I RLLAAGLLA GQS LRAATLT GDES
 SWEAP YELLVAKMRASTAVVMGPLLGGRFGRAKIAMPGGCN



 $\begin{array}{ll}\text { S G E D } \\ \text { E A D F F } & \text { G S A G } \\ \text { L A G }\end{array}$ | $A$ | $L$ | $A$ | $K$ | $A$ | $G$ | $A$ | $R$ | $D$ | $C$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |


 $H S V H V P E D L M R Q M R S S D F L M M A M L A A R F K E V V H I G Q P G G G C A$ LRALA GATLDCGESGSTLRFMLPVACALGADATFVGSPR DGLSEPSDILDVGNSGTTTRLIMGILATRPFHSVIIGDDS







 IN N F T A D Y E IV R K M R A S I WV L G P L L T K Y G K A K V S L P G G C A QPDHRADFASMSKLRASVCVLGPLVGRCRRAVVALPGGDA

 G N L E E P L L E L D A GN S G T T DR LMMLGLA GHQDRF FVV T G D A S $K G L S S P A G V L D F G N S G T G S R L M M G V M A G H A D T A E E L T G B D K S$ TAMRFLTAYLSVTH GCHTITGTER


## UniRef90 K6WGM

 UniRef90－J9HC61 UniRef90－UPIO0037A7B3F UniRef90＿UPI0003B4DC38 UniRef90＿H1PWR4 UniRef90－H5URS8 UniRef90＿UPI0003767E05 UniRef90 ${ }^{-}$UPI00037A6FF2 UniRef90－Q8K9G4 UniRef90＿UPI000372C9C3 UniRef90＿14VZ22 UniRef90－D3RTS0 UniRef90＿E7GIK9 UniRef90＿F61398 UniRet90＿T1CX76 UniRef90＿X4ZE14UniRef90＿W1RUGE UniRef90－V6F8R5 UniRef90－U5N5R2 UniRef90－B9MQK4 UniRef90－Q1YRS1 UniRef90＿UPI000368D8FD UniRef90＿Q99Z83 UniRef90－Q5NLJO UniRef90＿UPI00037B9DAF UniRef90－M1LXI6 UniRef90＿UPIOOO26C6F03 UniRef90－A3VMP1 UniRef90＿D7GT00 UniRef90＿C4V2R8 UniRef90－D5V8W6
UniRef90 R6YD63 UniRef90－UPIO0040C0DEE UniRef90＿W7C473 UniRef90＿Q28U17
UniRef90＿R2NRP4 UniRef90＿Q7VIM8 UniRef90－K9P539
UniRef90 F21592 UniRef90－F21592
UniRef90－Q4L7Y1 UniRef90－E4WFX9 UniRef90－K9QNNO UniRef90－R6R849 UniRet90＿C4ZBMP UniRef90＿UPIO003795228 UniRef90－UPIO003635CE1 UniRef90－UPIO004097D2C UniRef90－X6L3T3 UniRef90－C3XML5 UniRef90＿U6B997 UniRef90－UPI0004716391 UniRef90＿UPI00034C99F2 UniRef90＿E6UEI0 UniRef90＿UPI000366B897 UniRef90－R5Q0B2 UniRef90＿UPI000380BEEA UniRef90＿C4Z1D2 UniRef90＿R5B4Z5 UniRef90－G2YLA4 UniRef90－R5TRH0 UniRef90＿B1Y2L9 UniRef90－A1T5Z3 UniRef90－D8IKL5 UniRef90＿UPIOO03771169 UniRef90－H3SC42 UniRef90－C4F8C4 UniRef90－W4Q029 UniRef90＿D9R4F8
UniRef90＿R5NQX2 UniRef90＿K6WTG6 UniRef90－V7HY93 UniRef90－D3QIH5 UniRef90＿UPI0003B76AF1 UniRef90＿E9EGX3 UniRef90＿B9Y5J2
UniRef90＿G6F2P4 UniRef90＿UPIO0047BB298 UniRef90＿EOCS99 UniRef90＿G4QAF7 UniRef90＿C3PP14 UniRef90＿UPIO0037A27B4 UniRef90＿UPI0003B73002 UniRef90－X0PFH8 UniRef90＿N0E3N9 UniRef90＿R7NN65 UniRef90－B0JV25 UniRef90－A0A059FE16 UniRef90＿R6VVK6 UniRef90＿K9EF56
UniRef90＿T0RJD2

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ARTRPLST\｜$\frac{130}{L D A L L R G L G V}$
VVDGDRID ${ }^{150}$ FAVKGTGSAR ${ }^{160}$




 ARVRPMTGTIQGLRDLGVKVRDDGRGRLPFLVQGTGEVHG IGSSPIDQHIKGFKALGGAVDDD LGERPLAPLDAVLGAHG M MA I Q VVHAK MKVRPIGPLVDSLRTNGVDDEYLENEHSLPNVAASGGFAG MKKRPMKPLFEALLSLGASVEWLGAAWHLPVRITGAGAHI
 ARQRPLGTVLGALRELGARVE GSALPFTITGAGTLAG





 ARQRPMGPVLRA LVDLGVAGAADVPEYLPVVVHGTGQVRG


 I GARQVDDHIAVLKAMGAEIEIEDG Y I GSRPLDMHQAGLRKLGARSEIEHG
 ARRRPMAPI LTALARMGVSVEDTGSPAHLPFVQVAANAHLK






## UniRef90 K6WGM4 UniRef90_J9HC61 UniRef90-UPI00037A7B3F UniRef90-UPI0003B4DC38 UniRef90-H1PWR4

 UniRef90-H5URS8 UniRef90_UPI0003767E05 UniRef90_UPI00037A6FF2 UniRef90_Q8K9G4 UniRef90_UPI000372C9C3 UniRef90_I4VZ22 UniRef90_D3RTS0 UniRef90_E7GIK9UniRef90_F6I398
UniRef90_T1CX76
UniRef90_X4ZE14 UniRef90_W1RUG6 UniRef90_V6F8R5 UniRef90_U5N5R2 UniRef90_B9MQK4 UniRef90_Q1YRS1 UniRef90_UPI000368D8FD UniRef90_Q99Z83 UniRef90_Q5NLJ0
UniRef90_UPI00037B9DAF
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UniRef90_A3VMP1
UniRef90_D7GT00
UniRef90_C4V2R8
UniRef90_D5V8W6
UniRef90 R6YD63
UniRef90_UPIO0040C0DEE
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UniRef90_Q28UI7
UniRef90 R2NRP4
UniRef90_Q7VIM8
UniRef90_K9P539
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UniRef90_X0PFH8 UniRef90- N0E3N9 UniRef90_R7NN65 UniRef90_B0JV25 UniRef90_A0A059FE16
UniRef90_R6VVK6 UniRet90_K9Erbb
UniRef90_T0RJJD2
 Y V EMT L K VMER F GVV V E HT WDRRF LI RGGKK Y $E V V Q L C E V L K E A G V E I X G \square G T S D L E I M G T G E A L D F K P \square R V$








 $H V V D V A N F L N S M G A N I K G A G T D V I D R I K \quad G V R R L H G T N Y S$
 H IVDLA NFLNTMGADI RGAGTDVIMINGVEKLTGGKSYSV S R DH TERMLSAF GYDVSVD GNRI SVEGGGK LTA GD I AV






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## E






 Y I R T T R RMME E F GVVEAVF DGCD YMVQAA G GYQRS G Y Q
 HI DMTV A ML REA GAEVVDGEPNTWRVEPG

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E
Y $Y$ GLTLAVLNAF GVKVGDEE GATVFTIVR QGYRTPGAMAV



 HI D M TIIA CLLRERGVQVTEPA DGVWRVAPG










| UniRef90_K6WGM4 <br> UniRef90-J9HC61 <br> UniRef90_UPIO0037A7B3F <br> UniRef90-UPIO003B4DC38 <br> UniRet90_H1PWR4 <br> UniRef90_H5URS8 <br> UniRef90-UPIO0037A6FF2 <br> UniRef90-Q8K9G4 <br> UniRef90-UPI000372C9C3 <br> UniRef90-I4VZ22 <br> UniRef90_D3RTSO UniRef90 E7GIK9 |
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## UniRef90 K6WGM

 UniRef90- J9HC61 UniRef90-UPIo0037A7B3F UniRef90_UPI0003B4DC38 UniRef90_H1PWR4 UniRef90-H5URS8 UniRef90_UPI0003767E05 UniRef90-UPI00037A6FF2 UniRef90-Q8K9G4 UniRef90_UPIO00372C9C3 UniRef90-14VZ22 UniRef90-D3RTS0 UniRef90-ETGIK9UniRef90-F61398 UniRef90-T1CX76 UniRef90 X4ZE14 UniRef90-W1RUG6 UniRef90-V6F8R5 UniRef90-U5N5R2 UniRef90-B9MQK4 UniRef90-Q1YRS 1 UniRef90-UPIO00368D8FD UniRef90-Q99Z83 UniRef90-O5NLJO UniRef90-UPIooo37B9DAF UniRef90-M1LXI6 UniRef90 UPIOOO26C6F03 UniRef90-A3VMP1 UniRef90_D7GT00 UniRef90-C4V2R8 UniRef90-D5V8W6 UniRef90-R6YD63 UniRef90 UPIO0040CODEE UniRef90_W7C473 UniRef90-R2NRP4 UniRef90_Q7VIM8 UniRef90-K9P539
UniRef90-F21592 UniRef90-F21592 UniRef90-E4WFX9 UniRef90-K9QNNO UniRef90-R6R849 UniRef90_C42BJO
UniRef90_SOFMP9 UniRef90_UPIOOO3795228 UniRef90-UPIOOO3635CE1 UniRef90 UPIOOO4097D2C UniRef90-X6L3T3 UniRef90-C3XML5 UniRef90-UPIOOO4716391 UniRef90_UPIOOO34C99F2 UniRef90-E6UEIO UniRef90-UPI000366B897 UniRef90-R500B2 UniRef90-UP1000380BEEA UniRef90_C4Z1D2 UniRef90-R5B4Z5 UniRef90-G2YLA4 UniRef90-R5TRH0 UniRef90_B1Y2L9 UniRef90_A1T5Z3
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UniRef90 G6F2P4 UniRet90_UPIOO047BB298 UniRef90-EOCS99 UniRef90-G4QAF7 UniRef90-C3PP14 UniRe990 UPIO0037A27B4 UniRef90 UPIOOO3B73002 UniRef90-X0PFH8 UniRet90-NOE3N9 UniRef90-R7NN65 UniRef90-BOJV25 UniRef90-A0A059FE16 UniRef90-R6VVK6 UniRef90-K9EF56
UniRef90-
ORSJI

330
340
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 FIAPFADGPISIITDVEHIRHHESDRLHVIVQTLRSIGITAV VAAAFASGETRMNGLSELRVKESDRLAAVADGLAQAGVAY AI LALASTPSTDTGLGHLRGHETDRLAALATELRRMGGDV
 AVAAVADSPSWLRGVSHLRGHETD MQAQFMAMNAFSQGIGVIVETIFENRMMHVAELVRMGAD MQPQFALLNSDSQSKGTITENIFENRFDYTSELDKMGAKI QAQFCALAATVPGGRELADDVFPNRFMHISELKRMGASA VAASVANGRSV RGAAELRVKESDRLATMATGLRTMGAQD AMACYAKGTTVIRDAAELKVKESNRITVMAENLIRAMGADVV
 VAAALAEGRSVFRGLEERRVKESDRDATMAQGLRADGVQV VAAAFATGTTRMFGLSELRVKESDRFAATLRGLDACGVQV VAAAFAEGKTVRDHASELRVKESDRIKTTVEMLKSFGAEC VAAACATGETVLTGAEELRVKESDRUQSMADGLVTGGMDA LLATQAQGTTC KDAQERRKETDRDQVVDILNSMGAN IVAAMAEGKSTLQGLAELRVKESDR\|AVMAEGLKALGVSLV ALNCIARGTSLIENIFENRYLHV WR QELNRLGAN ALCALADSPSRLGVAHLRGHETDRLKALATELTKVGART VVAAFATGKTEMVGVHELRVKESDRIDAMARGL

 VVAANAEGTTVMRGVKELRVKESDR AAMMADGRLNGAEV ปQLVANGTSTTTETVFENRFQHL QAQFMA LATQCEGTSVIEERLFENRFMHVSELQRLGADI QLATAEGTSMVVENDFENRLQUV MQAQFSGAQAI AHGSSKDEETVFENRFMHDEELRMNVSF GLAAIADGTSVTENVFEARFRFV VAAVFAEGKTVIRDAEELRVKESDRDTVMAQQLNKLGAKV ADAPFAKEPVGПEGMSHIRLQECDRTNADEENLAELGVRV VAGCFAQGETRLVNVPQARLKETDRISVMCRELTKMGAGL IAAAFAEGETFMDGLDELRVKESDRLAAVARGLEANGVEC ALMCLADGMS IIENMYENRLMHVPELLRMGAN
 LATQCEGGSIDEERLFENRFMHVNELQRMGANISLRGNTA VAAAYAEGETVIRDAAELRAKETDRTAAVAGELTRLGARV VAAAFAKGTTVI KDAAELRVKESDRLAVMATELGKMGANVI ALAALADGVSVIENTFENRFMF RLGAMELVRMGANI VAAAFASGETRLRGLSELKVKESNRFEADIKGLSLNGAKC GLLALCDGESRLMG|GHLRGHETDRLAALAAELTRVGAEV ALAAAAKGDTRIVNAARLRLKESDRLKSTANMLTSLGVGV VLGAVAKGTTRIRGMANQRVKECNRIKAMKDELAKFGVTC VMALYADGPSTLTNIASWRVKETDRIAAMATELRKLGAQV
ALAALARTPSELRGAHLRGHETDRLAALAAEIRGLGGVV ILQLAAEGTSITETVFENRFMHLEELRRMNADF PLLFMTDGPSVTETIYPARFRHVEELKNMGASIEAD

 QVQTQANGTSGIENMFENRFKYDYDLEKMGAKIQYI ALAALADSPSRLRGUAHLRGHETDRLAALATEUGKVGGTV PLLMKAKGQSM
PLLFKASGPSVTETTYPARFKHV ALAALADGVTHLRGIAHLRGHETNRLAALVEETVRLGGQA VLAAVANGETQUTGUANQRVKECDR』AAMKEQLAKFGVTC ALLT QA QAQFMA LLSDSEGASMITE VLLTTCDGLSUVE
 VLAAVADGTSITENVFEARFRFIDNRMEMVRLGADA VAAAHAQGRTITRGLEELRVKESDRTTVMRVALELAGARV LCATQAQGVTTISGAEELRVKETDRLSTMTGELEKMGANV VTCALLNGPFRFSGLQSLKMKETDRMAALDTEMRKLGYGL
 VACAMRGIPFHFTGLASLRUKETDRIEALKRELRKLGVVL


## UniRef90 K6WGM4 UniRef90-J9HC61 UniRef90_UPI00037A7B3F UniRef90_UPI0003B4DC38 UniRef90-H1PWR4

 UniRef90-H5URS8 UniRef90_UPI0003767E05 UniRef90-UPI00037A6FF2 UniRef90-Q8K9G4 UniRef90_UPI000372C9C3 UniRef90_14VZ22 UniRef90_D3RTS0 UniRef90_E7GIK9 UniRef90_F61398 UniRef90-T1CX76 UniRef90_X4ZE14 UniRef90-W1RUG6 UniRef90_V6F8R5 UniRef90-U5N5R2 UniRef90-B9MQK4UniRef90 Q1YRS1 UniRef90_UPIO00368D8FD UniRef90_Q99Z83 UniRef90-Q5NLJO UniRef90-UPIO0037B9DAF UniRef90_M1LXI6 UniRef90-UPIO0026C6F03 UniRef90-A3VMP1 UniRef90_D7GT00 UniRef90_C4V2R8
UniRef90_D5V8W6 UniRef90_R6YD63 UniRef90-UPIO0040C0DEE UniRef90_W7C473 UniRef90_Q28U17
UniRef90-R2NRP4 UniRef90_Q7VIM8 UniRef90_K9P539 UniRef90-F21592 UniRef90_Q4L7Y1 UniRef90-E4WFX9 UniRef90-K9QNNO UniRef90-C4ZBJO UniRef90-SOFMP9 UniRef90_UPIOOO3795228 UniRef90-UPIO003635CE1 UniRef90-X6L3T3 UniRef90- C3XML5 UniRef90_U6B997 UniRef90-UPI0004716391 UniRef90_UPI00034C99F2 UniRef90-E6UEIO UniRef90_UPI000366B897 UniRef90-R5Q0B2 UniRef90_UPIO00380BEEA UniRef90_C4Z1D2 UniRef90_R5B4Z5 UniRef90-G2YLA4 UniRef90-R5TRH0 UniRef90_B1Y2L9 UniRef90_A1T5Z3
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UniRef90-UPI0003B730 UniRef90-UPI0003B73002
UniRef90-XOPFH8 UniRef90-X0PFH8
UniRef90 N0E3N9 UniRef90-R7NN65 UniRef90-BOJV25 UniRef90-A0A059FE16 UniRef90_R6VVK6 UniRef90_TORJD2
 DERADGVTIVPGTP HGARLSSFDDHRVAMAASLMGLLVP RDEGDDLITGAGAAAGGGTVATHMDHRLAMSF LVMGLADK
 EVTEDALHVVPG PPRPATVHTYADHRMAMAAAVLGLABD SVDMNAADI RGVPRLYGA TVEATDLRAGAALVI AGLAAB RLEGNTAVVAGMPNLKGA PVMATDLRASACLILAGLAAQ KI KNNSVVCKGVPNLYSQNVFSNDLRGSATLVLAGIARG GLSANRTVIHGVARLSGA PVMASDLRASAALVLAGLAEN E ETPDGAI E GGA LTGGTVESLTDHRDAMSFAVAGLAGG TETEDGMII HGGRPLHGAVI DSKKDHRLAMSFAIIAGLASG VEGPDYCVITPPEKLNVTSIDTYDDHRMAMAFSLAACADV TLNGNSASIVGKSNLIGA DVMATDLRASSALVLAGLAQG RVEGRSAI I EGNK LLNAAKVRAADLRAGAALVIAGLTDG
 Q DDGKVAMVEGVPALSGA CVMATDLRASASLVI AALAQG Y ELENGLEI DGREKLKSAVVNSYKDHRDAMAASIMACAEG


 EELEDGLVVRGSA GREAVLDPEGDHRLFMAFSVLSLASQ T NGNSATVVGVDFLSGA TVKATDDRASASLVI AGLAQG $E E L P D G L V I T P G P P L R G A V F E T Y E D H R M A T A G A I D G L R V P$
$E E G R D F M T V H G L G P P G G G T A A A R L D H R G A M S F M V M G M A S Q$ KVEGSVAVVDGVGSFTGAQVVAPDLDAGAALVLAGLAADG DEREDGLVI HGKSE $\square$ QRARVKSYDDHRMAMSLAVLGAAGK
 TVTGDGAI FEGVEKLYGASVYSTDLRAGAALIIAGUIAAEG $Y V E G R T A V K E A A T L S G$ TVVTASDLRAGAALVTAGLASG EDGPDWWVVHGRGPGGMAGGATHDDHRDAMSFLCAGFASQ K DNNVALI KGATEGQGAEVYAT DLRAAAALVLAGLRANG SLKGNHATIKG\|SPLLGA DVMATDLRASSALVVASLVSE RMQGNTACVEGVARLSGAPVHG TDLAASAAMVLAGLAAD NITSDTATI DGPNHLQQGAAVVATDLRAAAALII AGLVAEG $T V E G R S A K I Q G K S Q L Q G A Q V K A T D L R A A A A L I L A G L V A E G$ RTDGHHAVI RGVEELSSAPVWSS D IVAGAGLVLAGLVAD
 EETENGLRI YPAECI KPCKIKTYDDHRVAMSFTLPGLKAE E E LPD DLLI RES SLKGCRVNGHDDHRVVVMALAVAGLAAG HEGEMSLTVKGSPGGKGAVVETHDDHRIAMAFLVMGMAEK TVKNNTALVVSGQSSFKAA QVTATDLRASVCLILAGLAKG
 T N G DSTLI G FITGRTARVEGVSQLRGAPVIATDLRASVSLVIAALAAK TPTEDGLVI TGGLRLRGAPVESYGDHRMAMLAVAALAADG KELPDGLEITGGNDLKGAEVDSFTDHRDAMSLADAALAQGA AA A S FGEGDDLIISGKKSCGGGLIEAKLDHRDAMSFMVMGLASE DETEDGLRI RPGALRPALWQCYGDHRMATTGALDGLADD KVEGNTAYI EGVKSFCGVQLNAPDDRAGAALVIAALAAD TELADGLIVHGTGRDAGGTVKSFNDHRDAMAAVAACAAEG
 EEGADHI RVWPGAQFKPAAIHTYDDHRMAMCDSLAAFAPV EETDDGLVITARAQMHGGVWRSYADHRMATAGAVVGLRVP KVEGNSVVLHGPTDFNGAEVAATDDRRAAAALGAVAGLVAVN TSTGTATDKPSKLQGA KVYASDLRAGACLIDAGLAEG $R V D D S T A F V R G V S M L Y G T T V E A T D L R A G A A L V I A G L A A Q$ $R V D G D A L V I E G R D Q L D G G R V N S R N D H R D A M M A A I A A V C A S$ QATDDGMI EGKAALTGSVVSSFGDHRIGMAMAVAGLTEG
1

 ASANGVITVQESRDLHGA TVVDCEDRAGVSLVGLGLSHG E EDPDGLVIRGGH LHGARVETYAADHRMATFAAVIGGAVGB TELDDGIQI S GKDRTPNVGIHCYDDHRVAMSLSVLSVVAP
 NVHGSSAII RGVHSLSGGAPVMATDLRASFSLILAGLAAG RVCGSTAVI CGKEKGSASSHLVAKDLRGGVSLVLAGLAAK RVVGNKAQI HGIDERLQQAKVMATDDLRASASLI I AAGLAAEG VVRGNKAVVRGVEMLKGA EVMASDLRASVSLILAGLSSS RTDGHHAVI RGVERLSSAPVWASDIRAGAGLVLAGLCSE

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UniRef90_Q49Z71 UniRef90_K2B7B5
UniRef90_Q3AV83 UniRef90-14C0N1 UniRef90_UPI0004687D40 UniRef90-UPIO0047CE1C2
UniRef90_UPI0003B594CF UniRef90_UPI0003B4F54D UniRef90 ${ }^{-}$R7IIJ4 UniRef90-B9JSH6 UniRef90_UPI0003A25E9C UniRef90 I6XFW0 UniRef90_UPIO0047B299A UniRef90_S4HQB1
UniRef90_F8F915
UniRef90-B6XTM9
UniRef90-A0A022LN16
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R GVVAVPGSKSATNRALVIAAAAEGPST

 MQK RVEARPLDGAAVVGDKSISHRAMMAAMAQGTSR MQKIVNRIS TSLKKGTITI PADKSISHRAVMFSSLAK GKST
 II P P G K P L T G R A I P P G S K S $\square$ T N N A L L L A G L A K G T S R







 $L K A G G R L G G R V R V P G D K S D I H R A L L A G A A I A E G T T T$
LR DQGKATLS GHVPI SGAKNSTLADMAGALLASGSSSR $M K R M I I Q Q G N R L S G E V T I G G A K N S T V A L I P A A I L A A D T P D V E$
 MDTFI K K G GVPLNGEVAISGAKNAVLPDLAATLLTSEPCV
 EVI KVRGGADLLTGQVNISGAKNSAVALIPAS LMATGSVK MS YVKVVEKASS F E LTT S IAAP D K S DSHRSAMFSLLS DEP S Q

A Q P L N A T
$K S\|Q\| \quad G G K K L T G T V R A P P S K S Y T H R A M A A G Y A E S A V I$



 M Y K R


 RPA A A A ARFM



 E HFDVHGGARLVGEVDVVGAKNSVLKLMAAALLAE GTTT MQMYEVKKPHHPKLDVVVPGSKSMTNRALLLAAALAE GEST
 $M$ GTFK I E G GHKLL Q G S
$G G P \vee A A$







[

 SPRSPRREDLLSRMRASVLVVMPLLARTGYARVALPGGCA GLWRAP E EAALDFLGNA GTATRRFGTAAAVALANAGRFATIDDGDEA


 $D G R F H G G T K V F C G L A G T V M R F V P G L A M F A D G P V D F D G D E Q$
 RGEASVD





 NFELSSDLII DCHDS GT LARFITAL YS S S GHSIITITG S A Q E $\square$ SHEAVVAHMGRLRASVVVLGPDVARCRRAVVTLPGGDA
 $R Q R P V P R A T I D V G S A G T D A R F L P C L A F G E S G E W H L T A S A Q$
 NKFKTPHQTLYTGNS



L
 Y GLSK K E NVLDDCQNSATTMRLLSGILLSAMPFDSVLSSDPS SHVP YDLVSQMRASFFVIGPDLARMGVARVPLPGBPS

 GGFAEPDHVVIDCGNSGTGVRLIMGAMATSPDTATFTGGAS GNDTA SPSPLVLGGNAGTASRFLTLANPSTVNESVLTGNNR $M P L P N N K V Q S \quad L R A S Y Y M M G A M L S R F K K C V I G L P G G C P$ E PKDVLDCGNS GTGMRDFCGLLAGDNGFFVLIGDKY

 $\square E N T D A P Y A L V S K M R A S T V V L G A A L A R A G T A T V S M P G G C A$ K GLS QPEKDLDFGNS GTGSRLMMGLVSGYP $\square$ VVEMT GDES
 $R G L S S P A A P L D F G N S G T G S R L M M G L M A G Y D L T V D L V G D E S$ $1 I H T K A D Y D I V R K M R A S D L V L G P L L A R M R M C E V S L D G G C A$

 $\square$ SHSRAPYEL VSK L R A
 LT N RPPVIDVKAAGTAMRFMTAYDAVTQGEHVITGTKR $\square S H S D \square P D Y L M R E M R S S I V F L G A \| V A R T G R A K L S F P G G C E$ A T NLLEAPY DLVVRKMRA S L L VL GP LL A A R Y R K A R V S L P G G C A $\begin{array}{llll}M & N R C D \\ E\end{array}$ LTTTAAFEYVSKMRASVVVMGPLLARFGHARVAMPGGCA
T7 ELSHRADSAAMGKLRA R LPRSQANI YVGSAGTAARFLTAMAAMSDGEFRFDAS S $\square T H T E A T Y D L V R K M R A S V L V L G P L L T R F K E C L V S L P G G C A$
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220
230
240

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 EVHDLDALLQQMGAIITVYTDRTIRIGEGVEKLSGFKHRA EVLDLIDFLKKMGADIEID NTKVIITGVEALNGCVHKI YVEITTAMMRAFGADVRREGRTYVVEPGGQSYRATTYAVV EIVDLANFLNTMGADIQGAGTSE:VVNGKQSDLHPDEYTT Y EMTLSLMRHFGVSAEFGGNT TVMPHOSYKPASFEVI EVMDLATYLNNMGGVIRGAGTDVDRIDGVPHMYAKNAHTVI EVMDLTEVLKKMGAHVKVE GRSAYVKGSENLKGFTHSV




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## V

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340

360 AVAALAPGLSQINQLHHLVAKESNRLRALQLNLRRLGDSA ALMSTAKGTSVISEKL FQAQYMALMSLGDDNCMDTENVFENRFMHVQELVRMGARI MQSQMMALMTVSDG|SVFIETGFENRFKHAEELTRMGASIV ALCALADSPSTLTGLGHLRGHETDRLAADETELGKVGVKV

 QAQLMA LDNSMADGESTUDERDFENRFMHVPELNRLGADD ALACYAEGKTLLKNAERLRIKKSDRLEAMVENLTKMGAKM AAAVFAEGTSRFYNVENLRYKECDRITDFLAELRKAGAEV A LLVFADAPTRMLG|GHLRGHETNRLKALVNEVTRVGGDA AAAAYAEGDTRFRGLEELRVKESDRFTSGVEMLRGNGVQV ALLTTVDGVSIDETVFENRFMHVD LLSCVHGTSVITETIFENRFMHV LVAAHASGITVERGVNELTKKESNRLEATIVELEKMMGVNA VLATQAEGTTITKDAQDLRNKESDRIKAVVTELKKLGADT ALDTQAKGVSVVETVEEDRFABVDELKRMSTGMMQGAD
 ALATQANGTS IERLFENRFMHVIGNMSELQRMGADI TLMCLAKGSSIKETMFENRFMHVPERNRMAKIDMNGNA
 VVAAVSQGTTTMSGDANQRVKECNRVKAMVDELAKFGVSA

fir

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 VVALFADGPTADRDVASWRVKETERMVAARTELTKLGATV AI CAYASTPSHLSGIA ALMA $\square A D G T S V R E T I F E N R G M H$
 AVS CF A QGTTVI K DA A ELKVKES DRIAVVMCSELSKLGA
 TLGADA DGDTVVIN CEHVRYKETDRVSAMAT ELDAMAASV ACLLKASGTSI
 VLAAFAEGETVVTGAEELRVKESDRIGAVVAMLRANGVDA $\begin{array}{lll}V L A & A \\ M & A & T\end{array}$ $M Q S Q M M A D M L K S E G T G V L T E T V F E N R F M H V E E F R R M N A D \square$ VIAA A ATGETRVT GAEELRVKETVRVKAVVDMLRANGVEA



 MTALANGTSVFVENIVESRYKHVGELLRLGAN

 AQMTIA QQLLATGTSTMTETVVFENRFNHLEEMRRMGAQF


 QAQFMA LAT QCEGAS I QET LFENRFMHASEL QRLGAN I
 AL L T Q A E G T S V T E N I G E N R F M H V G E L N R M G A N
VALTQAHGVSVUETVYENRFGFTEALKRMGAS DQLHRECL SAMC I A D GI SVIENIF ENRFTHADELR A $\square$ A P F A S GPVRRIE DVANTRVKECDRLEACAENLRRLGGAEV





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UniRef90_K4RIM5
 RATTRALTI GRNQLWPATVKTHSDHRLAMAFALLGLACD RVDGSTALVQGVPSLSGAPVTGS DLRAAAAMVLAGLSAC $R V S G K \square A G V Q G V K E L S G A$ HVQATDLRASASLILAGLAAK HDTEDSILWWNGERVEPSYQDTYEDHRMAMAFAPAALFIDD $K V D G R V A I V K G V K K L T G A G V N A K D L R G G A L I L A A L A A E G$

 $\begin{array}{ll}R D E D R D A L V S G G H P L \\ T & G E G D D S V T S T D L R G G A A L M L C G L\end{array}$ KEGEAELTVTGGASGDGGGITTHLDHRIAMSFLVLGLASG TVHESKAHIKGVDKLQGAKVMATDDRASASLIIAALAAQG TVIDNDSVLI EGKCFLNGDVTKTFGDHR DAMASA IAGMAKN
 EERQSEVIVMGRPQPGGVEDNAHYDHRVIMADTMVGLSDK



 WAENDNLYI EGQPDLKGLVFDSRKDHRLAMMWALA GLCRN
 $K D D G R T A M V N N S ~ K L T G A K V K A T D D R A G A A L I L A A L V A E G$
$R E E G D D L I V Q S D P A L A G Q R I D T F A D H R D A M S F A L A G L R D A$


 RTDGH HAVVRGQERLSASAPVWASDIRAGVGLVLAGLICAD

 EEEPEGMVVTGGAVRGGGRITTHGDHRDAMSHLVLGMAEE
 SEENDSVLFWNGERCKPQVI HTYEDHRMAMAFAPAALRFP

 EETEDGLVI TPRPLHAAQURSYADHRMATFGAILGLITP

 $K L Q G N D A V I N G V S S L S G A P V M A T D L R A S A A L V L A G L A A E G$ EAHDGMIVIKHTDHLHG AEVTAGEDRAGA SLTVAGLAEG

 GSALDYPSDLKGAEVYY Y S D L RAGASLLI AGLAD G

 TEAHDQLTVHGDDTLSGTHVDGHGDHRIVMALSIAALAEG QSGWQHAMI KGVKELSGA PVHSTDDRTGASGIIAALAD G $T V S G Y T Q V I Q G G T$ L EERPDGFAVQGCGGPPPGGGETRHDHRDAMSALVMGTASQ $D E F D D G \| I I F G K P E F R G A S V M C Y D D H R V A M A F A V L S C I I D D$
$K D E G R S V I M N G P S K D Q G A E V A A T D L R A A A A L I L A G L V A E G$ $K \square E G R S V I M N G P S K L Q G A E V A A T D D R A A A A L I L A G L V A E G$
$E E R E D G F T V Q G C G G P P P G G G E T R H D H R D A M S A L V L G T A A G$ $R L K G N T A L V K G K T N L V G A D V M A T D L R A S S A L V L A G L A K G$ QA GPDGLRI EGGGKLVGVTTMVQATDLRAGAALILAGGLAAT VESDDSLII DAPNTDKSCKLNSHDDHRLFMAFSLI GLNSA
 KVENDSELIWGRCDPSFE NAHGRSAAVQGVPRLSGA SVESPDLRGGAALVIAGLAAE
 EEFNDGFKIVGG KLEPAVIDSFGDHRDAMSFAIGGLLVG $R \square D S H T A V M T G A S V L S G A E V K A T D D R A A A A L I I A G M V A K G$
$T E E G D D L I V A S D P K L A G Q R I E T Y S D H R \square A M S F A L A G L K ~ K G ~$ RTDGHHAVVRGVERLSSAPV WASDDRAGAGLVLAGLCAD RETPDGALI HGGG LLRGGAVDSRGDHRCAMSFAVAGLRAK EEYEDGVKIYPGMPGQPEIETYQDHRVAMAFAVTGVRAD SLKTHTATINGSTELTGS DVMATDLRASSALVLAGLVAQ DPHRATVMGHDFKSLLKATTMVSPDIRAGVSLLIAALSAN TELEDGLRI DPRPLHGGVWRSYEDHRMATAGAIVGLVVP

 ATGPDWDEI RPGAPMTSTTDDKYGDHRGVMAFAVASGLRGG HQDRNHAUVKGVKKLTGA TVTASDLRAGAS LVVAALADG EEYAPGVFQMKPSILVNFVFRTYQDHRMAMAFAPLALLE
 TVRGNTAYVEGVERLYGS EVVYSDLRASASLVLAGLAQG


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| UniRef90-F8F915 | GLIINDAHHVAKSYPQYFDHLLSLL |
| UniRef90-B6X | GI QVKNTATTAKTLPDFANMWTNM |
| UniRef90-A0A022LN16 | GI EVDDIDSTAKTMPGFTSMWTAM |
| UniRef90_G6F140 | GVNVDDVT F $\square$ RTS FPNYFPLMNA |
| UniRef90-K0Z3J6 | GVRLDDVACTSKTLPDFPERWGA |
| UniRef90-UPI00031757D0 | Y TVVTELKHLDRGYVDFHKKLEK |
| UniRef90-L7EH68 | ETEI FDIH HVDRGYVE |
| UniRef90-R5G1G3 |  |
| UniRef90-R5DL23 | AININGFEWVDISFPEFDKLFNSLDQ |
| UniRef90-UPI0003789 | RTVI ED ${ }^{\text {CY HI ERGYED }}$ |
| UniRef90-W6R8G2 | G IT L D PDCVGKTFPTYWR |
| UniRef90-V5WN30 | D MQI STAEAASVTFPGF |
| UniRef90-B6BIT6 | GT TV HRITYHLDRGYDALEKKLEAV |
| UniRef90-C3WFR7 | ESIVNRIY HVDRG |
| UniRef90-UPI00038241B6 | GLVIEHSEAVAKSFPDYWQYVE |
| UniRef90-UPI00035F780C | GVTV WDVFHI DRGYPDFVEQLRGL |
| UniRef90_K9S7F4 | KTVI QGLNHLDRGYEHLEVKLQKL |
| UniRef90-A5H2Q8 | PVLI QERSTTGKTWPGWWDVLHS |
| UniRef90-UPI00047D8 | GI SLDHPDCVAKTCPT F FELLS GL |
| UniRef90-B4RCK3 | PVSVDEPGMI ATSFPGFVEMMRGLL |
| UniRef90-C7Q760 | HTTVSDVRHI DRGYQGLVTQLRSL |
| UniRef90_Q4L6G8 | PLNI RQFDAVNVSFPGFLP |
| UniRef90-W4UXZ7 | SI RI A EPQVVTKSYPTYWDHLRQV |
| UniRef90-W5I8U3 | PVTI RDPGCTRKTFPNYFDVLS |
| UniRef90-A0A024Q02 |  |
| UniRef90-D0MHZ6 | ETHVDRVYHLDRGYENLEGKLS |
| UniRef90-E6KRA0 |  |
| UniRef90-A0A059FG | ETVVNRIYHLDRGFERLEEKL |
| UniRef90-A3Z7H8 | DSTLARSEAAAVSYPGFWS D FERLL |
| UniRef90-G5GHG2 |  |
| UniRef90-K9SPQ9 | ETQMQGLHHLDDRGDQLETKLRN |
| UniRef90-C2ERH9 | TTVINNAGNI LRGYDR\\|VWKLNR |
| UniRef90-A0A016PGY5 | PVIVTERECVGKTWPGWWDI |
| UniRef90-UPI0003761D | RTQVNR\YHLDRGYEVMDKKLRS |
| UniRef90-S9QC37 | PVHIDDGGPIATSFPLFEDLMRGL |
| UniRef90-S7Z440 | PTLILEKECVGKTWPGWWDTMKQL |
| UniRef90-UPI000400D7D0 | VTTIHNVNHIDRGYAD\VKK |
| UniRef90-A6Q2R6 | MEVRDIECI KTS FPNFLDLL S |
| UniRef90-Q6C1X5 | PVAI EERRCVEKT WP G WWDVLS GV |
| UniRef90-B3DSQ0 |  |
| UniRef90-U1MT81 | ETII SDSEHVDVSFPSFFESLSTL |
| UniRef90-S5DWR3 | ESII T GIDDHI ERGYENIVDLLS SV |
| UniRef90-Q9RVA6 | ETVI DGVQYLNRGYERLAERLRGI |
| UniRef90-A0A059ECJ6 | PVSVDDIS MI A T S Y P D FLS HMAEL |
| UniRef90-P0CM23 | ETII EEKRCVEKTWPNFWDD |
| UniRef90-UPI00047139DA | VTRVTELDHLDRGYVNFHQKLKAL |
| UniRef90-A0A059FHF3 | PVSVDDI SMI ATS YPDFLSHMASLL |
| UniRef90-V8CCM8 | ETRVHRIYHLDRGYESLESKLNAL |
| UniRef90-M1ZKN7 | GTTI GQLHHI DRGYVRIESTLKSL |
| UniRef90_T1BFD8 | GLTIQGEESVTKSYPGFWQALK |
| UniRef90-B3V664 | EIEVVGLK SI DVSYPDF |
| UniRef90-U9VU84 | KTTLHGLHHLDRGYENDEAKLSAV |
| UniRef90-E6STG2 | RLKI DEPQVVSKSYPAYWEDLQK |
| UniRef90_D1PV79 | GLQI N NPQVVSKSYPKFWD |
| UniRef90-JOWVN0 | GI TVEEGLRHI DRGYEQMEDSLAAV |
| UniRef90-H0A3C8 | DTVVNRVYHLDRGYERVEEKLAGV |
| UniRef90-R7NQX2 | RTEI EGI K Y L ERGYEDLEV |
| UniRef90-JOLBK4 | MKI EDI ESVNTSFPNFFELLS QFTK |
| UniRef90-C8NDT7 | YTRVTELQFLDRGYFEFHEKLRAL |
| UniRef90-UPIO00476CBCE | A 1 T LDPGCVAKTYPTYWEAL R GL |
| UniRef90-D8HSU4 | GVTVWDVFHIDRGYPHFVENLNRL |
| UniRef90-T1AZH9 |  |
| UniRef90-R7K3L6 | G V V S DPMCCRKT F |
| UniRef90-IOEMN7 | GTTVHR\YHLDR |
| UniRef90-COBN28 | GTTI HNI EQI DRGYEH\DERLR |
| UniRef90-UPI0003676C06 | GVEI ENVATTAKTLPQFTQLWVRILQ |
| UniRef90-G8NUM8 | E SILDRVYHMDRGYERMEEKLRGV |
| UniRef90_UP10003B45D1A | GTRVTGIE\INRGYEHFDEKI EALL |
| UniRef90_Q73FX6 | ETIINNSHHLWRGYEAM |
| UniRef90-L1KRV8 | G I TFDDPGCVRKTFPDFHEVFAEFRR |
| UniRef90_R7LSS9 | NSUVEKLHHI DRGYENFETKLRLL |
| UniRef90-B9L9J9 | ETNVHRIVYHLFRGYEKLTEKFKAL |
| UniRef90-UPI000475A453 | P IEEI QEPEVVRKSYPRFWEDLARV |
| UniRef90-U4TKK7 | TTTITNVENILRGYDRVVDKLRGI |
| UniRef90-O67315 | ETVVRDVYHLD |
| UniRef90-D6SKZ5 | QTALDNPACVNKSFPGFWEEWENTR R |
| UniRef90-B1Y118 | E $\square \mathrm{EV} \mathrm{V}$ LGNEVVEVSYPTFYDDLKTLQQ |
|  |  |

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MENFS $\square$ KKSKPF
HPFDDT
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KE
MRTYKVSPSS
YFILEKSH YTLSGPQH MESFIIEGGHP MS TMKlQ UVLQP $\square \mathrm{KE}$
SRLVIQGGTPLRGSTAP AGP V


RYTVSAPASLHAA $S P$ V DARVRVPG MDQFIVPQVKPVNGEVEDSGAKNAVLAVMAAAGYS MAAFVIEGGHRLKGDYPQGAKNEVLQLLCATLLTHEKVT MNDQLSHPGKLVG
 MSSFRVKGGQKLKG MEYLKKVVGGRKFEEEFIVDA MDKFLIN PHELSGSURSVA MASFQVIWGG
 ПRVHAGVPLKVSVTPPG MSKFALTGGRRLKGELCPQG
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MQVLE
SQKLSGHIRVS

T T P HELLFGTVSA Ya A SKSEAHRVFIICAACADTVTD MRDTKIAPAQSFEREFD MVRYRVRGGNVLRGT QYHITAPPKTDATIVLP



## UniRef90 K2EMS1 UniRef90_S5DKB0 UniRef90_V71464 UniRef90_-S2W9P4 UniRef90_G8BHT6

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UniRef90 D5G8D9 UniRef90-D5G8D9 UniRef90-R9BLS9 UniRef90_UPI00046986D1 UniRef90-U2AT57 UniRef90_UPIO001E30561 UniRef90_UPI0003B591ED UniRef90-V8TQZ4 UniRef90_C9LEW1 UniRef90-G1XLW1
UniRef90 Q7VAC5 UniRef90_UPI0001FFFB28 UniRef90-C6W0Z9 UniRef90-D5UGV6 UniRef90-TOJWE1 UniRef90_S2ZNQ1 UniRef90_UPI000379EB06 UniRef90_Q7VJV4 UniRef90_D6Y2T9 UniRef90-L1NIV2 UniRef90-UPI0002D51DE4 UniRef90_F4F802 UniRef90-A2U2F0
UniRef90_UPI00037FEC85
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FRDRTMKPEESGSTLRFFIPI TMLFDEVFEFRCKT G QEL EVAHVS EIVQALAGSSRIPILFCPLLHRLGEAFIPDLGGCR SLFAS EKELYLGNAGTASRFLTAGVCSDNSHVVLTGNTR VWPLVR PLS | $D L L$ |
| :---: |
| $H$ | RLHPEADYDLVRRLRASICVLGPLLARCGEVRVAHPGGDA ESAHVAD DDAHAGSSRIPILFCPLLHRLGEAFIPDLGGCR K LEASAH ELYYGGNAGTASRFLTTVATLSNSHNILTGNAR $T G L K E P K D V L D A K N S G T T A R L L L G L L S G D P N F A V V T G G D S$

$N P S T E T D Y D L V R R M R A S D S V L G P L V A R C G S A R V A L P G G D A$ GHAGTAMRFLTAFLAKIVGEWEITGSER
 TAMRFLTAYLSVREGEHVLTGTDR Y LGSEEFVKKCSS LRGSVLMDGPLLARFGKAVVAKPGGDK GRLLPSRADKKLRASYYFMGALLGRFHRVEINFPGGDN GGLMQPQAALDMGNSGTSTRLLMGLVASHPITAMFTGDAS LIFPSTEEDQLFDGNAGTAMRPLTAAVVAAGGNYVLDGVPR
 DLQWETPSALVRKMRASSLVLGPLIAARCGRAIVPDPGGCA ALQAH PSPLYLGNAGTASRFLTTVAATATASSVLDGNNR
 $N$ KAPYELVSQLRASFFVIGPLLARLGKTRVPLPGGCA GKLSASREELY $\square G N A G T A S R F L T A L C S P T D A S V V L T G N S H$ TAMRFLTAYFSTMPGQRTLTGTSR LLQSELPYK LVHA LRASFVCAGPLLARIGEVS DPLPGGCR KDKDAAPAQMYFHESG
 $\square \quad R G G \square D D D C G Q A G T V M R F V P P V A A L A D G P V R F D G H P S$ $D G P A V P D D V I D C G N S G T T T R L V T G T A A L A D G G T V L T G D E S$
$D H L D E A P Y E L V K T M R A S F Y V L G P L V A R F G R C R V S L P G G C A$ LEFASGEVKKCAKLRGSVMLIGAMLGRCGQAVYAKPGGDQ DGLQAPTAPLDCGHAGTAMRFLTAYFASKEGEVVLTGSSR VDNYVAPYELVKTMRASILVLGPGLARFGQADVSLVGBAS
 R\APGPGARVDCGLAGTAMRFLTAYFAAKKGCVIDTGSKR YLDTDKFLTKASSLRGSVMLLGPLLARFGKGKISKPGGDK KTDQEAEDVLYCGNSGTVIRIGMGLLAGGDDGFFVLTGGDQY

## N <br> N

 VLF NLRRFDLNCGESASTLRFLLPLVCALGRKVELGVEGT I T T S K A P Y E L V T Q Q L R A S F F A Y LES S QE F LLQR C S K L R G S VMMV G P L L A A R F G R A LI I S KP G G D K | $\square$ | $K$ | $F$ |
| :--- | :--- | :--- |
| $P G L D$ | $V$ | $V$ | LLATTSTPD Y Y L GNA GTASRFTLTSVVVALCNNSTVLTTGNAR T GLLREPDS ILDFGNSG $T$ A S RL M C G V L A DT RTQAPYELVSKMRATAMRFMTAYLSVTEGEHTDTGGTER IT RTQAPYELVSKMRASFIVLGALLAREGE GEVSMP G GCA


 $K$ L R A C G D E L Y LGNA GTAARFLTSVPSGEHDSVVLTGNAR TI APAPGTRIDCGLAGTVLRFVPAVAALGAETVTFDGDEQ
 SNLHDPGUVLDMMNSGTVTRLLTGLDAGADLDAQDIGDDS Y LSSEAF TKQSQS LSRGS ILIL GPDLARFGYGS DPKPGGDK $Y G L K P P S S A L D A G R S G T A L R L L L G V L A S Q P F N S V L T R D E S$

 $K L S A C \quad P E P L Y L G N A G T A A R F L T S V A T D V S$
 GGRPR GAARVWCADAGTAARFGPFFAATGTAGDFTLEGGAA Y LE SDS F RQKA A A L R GSVMLL GPMLARFRK GR DPRPGGDK
 GRPKVPDDVINAANSGTTDRLCMSMASLLAEGATVFTGDAS TFF QLKK I ELP CGESGSTLRFLLPVAGALGRKVEFHAEGM
 CEPHKVL DCGNA GTGMR LI A GLL S GVVK GHFVLITGDE Y $L T S P V L P A A I A N R F R G T V L F V P A L L D H R L G E A V I E G I G G C N$
 APRSRADYDLVRRLRASDCVLGPLLARRGYVRVAHPGGDA Y LESENFKRDGSSLRRGSIMIVGPLLARFGKGYIPRPGGDK

## UniRef90 K2EMS1 UniRef90 S5DKB0 UniRef90_V71464 UniRef90-Q7V0G1 UniRef90_G8BHT6

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UniRef90-A6LMI3 UniRef90_E6MNW5 UniRef90_R6XCY6 UniRef90-W9EGQ0 UniRef90_A0A022QVU2 UniRef90_UPI0003B522B0 UniRef90_E3D053 UniRef90_G8S1J0 UniRef90_Q4WS76 UniRef90_Q1YE73 UniRef90_C5M1X2 UniRef90_D3EQT9 UniRef90_G3JPU2 UniRef90_J9CZF8 UniRef90_A9BBR7 UniRef90_UPI00036F6E54 UniRef90_R7EJC8 UniRef90_UPIO00255EAB3 UniRef90_V4ZJV2 UniRef90_C9RJU3 UniRef90-R7CV93 UniRef90 F7PVN7 UniRef90_UPIO004267DA0 UniRef90-UPI00039F9B15
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UniRef90 ${ }^{-}$Q7VAC5 UniRef90_UPI0001FFFB28 UniRef90-C6W0Z9 UniRef90-D5UGV6 UniRef90-T0JWE1 UniRef90_H8IAB4
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140
I GKRplvigahfoallekmavkivioden
150
cyll VDTAGKks LGPRPVQMHLDALEKMGAKFELDHG VLIGRTEGLK L LKRP 1 GERPTNEHI NGLRALGAEI IIDRDVVKAKLVKKKTKLFG IGDRPIDMHLDALRAFGAQVDKEDNGI RITAPNGLR MQERPIGPLVDALSSNGSELEYLLKNGGSLPLRITAGKGLK LSKRPMGRVTEPLGLMGAEFTASPGGRLLPLMVRGGCPAV ALHRPMGAMDTALRDVGVDDDDGGKWALPFIVRGHGHVRG LLKRPMHFFDEVMPKLSVDTKSKDG
 MK RP DFHLDULRRFGATVDKLEGGDGRATAPAGLR MKQRPUGDLVDALKSNGVSVDYLEQQGSDPLKVPCGGFKG GKRRPMGRVVKPLVAMGAK|DGREFGERLPGLAVRGRKLS MQQRPLSMLVDALNQLGAK VEYLGNEGCPPLKILGSHLKG MGVRPVDFHIMGLKKLGFEDDVEHGEVF VABAKKENCEK IGRRRLDTHFLGFKNLGAKFVHSEGSNTFEKKAKHSLK
 MRERPMGDLVTGLKQLGADVDCYLGTNCPPVRVVGNGGLP ARRRPMSGV QGLQALGVDLDDDRRGTLPFTVHGTGAVGG ARNRPMGPILDALRALGVRLDASPTGGLPLTVHGAGLIEG MKQRPDGDLVDALTANGAQIEYVENKGSLPKIAASGGFTG LSKRPMGRVLDPLRMMGTQVVARSGDRLDLSLAHGPRVAA MQERPDGPLVDALRSNGSEVQYLNKEGSLPLKITAGNGLK DGARPVDLHVRGLQAMGADVQUEHGVVHA CIKNNHKKLQ MKVRP:GPLVDALRLNGVSIDYLEQDKSDPDRISSGGFEG MQQRPIKLLVDALRQLGADUVYNREGFPPLHIRGKEQKC MQERPMKELCDALTALGVDVTYEVEQGFLPFVMDSAGYGK ARSRPVGPLLQALGDVGVTVREEGRGTLPFEVLGPSGAEP LRSRPQGPLLDALTDLGVRAESTRRNGQAPVVVDGPLSG WGPRPVDLHLKGLEALGAKDTVTHG YVGEATCQGRLD MQDRPDELLVNALKDLGAD S YLKEKEGFPPTKMTGKKLLK MSKRPMRRVTAPLAQMGAR:DTENQGTPPLRVHGGQRLQ 1 GARPIDLHLSALEKMGAEVKIEQG YVVCTAKKGLK
 ARARPLAPLLDALRGLGVPIENYGAGMPFRVHGGGSVAG

 LLAHRPLTPFYEELVSHGARLS B PEDSYPLSVSGQDKG MQERPQGPLVDALRSNGVDVEYLGKEGSPLRIAAAGGFEG GAARPVDLHVRGLQAMGAEVQUEHGGUCNAYVPGSNGRLQQ LGRRRLDTHFLGUSKLGAEFTYDSTRGDFPPRTQADHLK
 MKQRPI GALVDALRANGVGVKYDEKEHSLPVQVDAAGGLA MGRRRLDTHFLGFEKLGATFDYNSSEGCF RASAEKLR LRKRPMKRVVDPLSMMGAKDDGPGSGSRLP LAVRGTALN MKHRPDALLVDALRYLGADUKYDGEEGYPPLHDRGRQLEG
 LRRRPMARVAEPLRAMGARIDGREGGGKAP LAVRGGPLR IGRRRLDTHFLVLTEELGAQVKDDSAFNFPDRVSASKLM
 ARARPIAPLLNGLRDVGVRID GDGLPFRVLGHGGADG DGRRRLDTHFLGFKYLGANFVHDSTRDVYQ IVEGHHLK LSRRPMDRVIDPLNNVGANDTS NNGKLPMIIHRSQLNN IGRRRLDTHFDGFVKLGATFSYSHEHHHYSLTAPQGGLK GGDRPIDYHLEVLRRFGAVVEKLPSGVMGRMTAPNGLH MKQRPI GPLVEALRSLGADIDYTEKEGFPPLRIRGRQLRG MKQRPI GPLVDALTSNGAGLAYLESQGCLPLRVKSTGMKG LGARPIDEHIQALKALGARVEUQNDYVVAKAISPQKRLI IGRRRLDTHFLGFEKLGAEFSYDEEDGGFYRVMDAANGK MGDRPINYHLDILRQFGAVVDKTENGDSDPRQRAPHRLQ LRKRPNGPLIQALNDLGAICYSTRFNGLAPIVVQGVLQG LVQRPLAPLYGQLTEHGVRLS SPEGAYPLALSGRLSG LTRPMDFFDQVLPQLGVSVVNNGK LDLKVNGPLQP LNARPMKR\TEPLSAIGACINGRENNAYAPLSIVGAQ LQ LGSRNLDFHYNGYKRLGA $V$ VVNEESVIHIKAGKLV
 MKERPLGVLVDALRELGAKIDYLEKEGYPPLKIFGSSLQG


## UniRef90 K2EMS1 UniRef90 S5DKB0 UniRef90_V71464 UniRef90_Q7V0G1 UniRef90-G8BHT6

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UniRef90_R6RY57 UniRef90-A9A231 UniRef90-D4HE77 UniRef90-D1ZA70
UniRef90-F9Z7Q1
UniRef90-J9ZB35 UniRef90-UPI00046A289A UniRef90-E4UAH0 UniRef90_UPI00040CD744 UniRef90_B7ABT3 UniRef90-F5YNC0 UniRef90-W2C2Q8
UniRef90 D5G8D9 UniRef90-D5G8D9 UniRef90-R6E717 UniRef90_UPI00046986D1 UniRef90-U2AT57 UniRef90_UPI0001E30561 UniRef90-UPI0003B591ED UniRef90-V8TQZ4 UniRef90_C9LEW1 UniRef90-G1XLW1
UniRef90 Q7VAC5 UniRef90_UPI0001FFFB28 UniRef90-C6W0Z9 UniRef90-D5UGV6 UniRef90-TOJWE1 UniRef90-S2ZNQ1 UniRef90_UPI000379EB06 UniRef90_Q7VJV4 UniRef90_D6Y2T9 UniRef90-L1NIV2 UniRef90-UPI0002D51DE4 UniRef90_F4F802 UniRef90_A2U2F0


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UniRef90_W9EGQ0 UniRef90-W9BUY2 UniRef90-A0A022QVU2 UniRef90_UPI0003B522B0 UniRef90_E3D053 UniRef90 G8S1J0 UniRef90_Q4WS76 UniRef90-Q1YE73 UniRef90-C5M1X2 UniRef90-D3EQT9 UniRef90_G3JPU2 UniRef90_J9CZF8 UniRef90_UPI00036F6E54 UniRef90-R7EJC8 UniRef90_UPIO00255EAB3 UniRef90_V4ZJV2 UniRef90_C9RJU3
UniRef90-R7CV93 UniRef90-R7CV93
UniRef90-F7PVN7 UniRef90_UPI0004267DA0 UniRef90_UPI00039F9B15 UniRef90_UPI00030E759C UniRef90-C8PGG3 UniRef90-D4CYL2 UniRef90-H2BVS1 UniRef90-D5PD57 UniRef90_LOFVA6
UniRef90_B9L9K4 UniRef90BBLYAK4
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UniRef90_M2NNS6 UniRef90-Q10ZM1 UniRef90_W6FJG1 UniRef90-R6RY57 UniRef90_A9A231 UniRef90-D1ZA70 UniRef90-F9Z7Q1 UniRef90-J9ZB35 UniRef90_UPI00046A289A UniRef90-E4UAH0 UniRef90_UPI00040CD744 UniRef90-B7ABT3 UniRef90_F5YNC0 UniRef90-W2C2Q8 UniRef90-D5G8D9 UniRef90-W9BLS9 UniRef90_UPI00046986D1 UniRef90_U2AT57 UniRef90_UPI0001E30561 UniRef90_UPI0003B591ED UniRef90-V8TQZ4 UniRef90_C9LEW1 UniRef90-G1XLW1
UniRef90 Q7VAC5 UniRef90_UPI0001FFFB28 UniRef90-C6W0Z9 UniRef90-D5UGV6 UniRef90-TOJWE1 UniRef90_S2ZNQ1 UniRef90_UPI000379EB06 UniRef90-Q7VJV4 UniRef90 D6Y2T9 UniRef90-L1NIV2 UniRef90-UPIO002D51DE4 UniRef90_F4F802 UniRef90_A2U2F0

7C7C75
 EIVDIVNMLKKMGANISGEGTSEIVIEGVKKLNPTDHEV YVNMTLKVMEDFGDEVARDGNTFRVKGNQSYL ARDYKII EI QDLCQMLNKMGAKI YDSGKEKII DDGVHKLHGCTHKV EI MDLINVLQKMGASLSVDTDRTIRI—EGVSELRGFTHTA Y I DMTCEMMKQFGVEVIKSTSEYTYHIPKATYKNPSEYVV

 E V VI CMMLNAMGAQUEGAGTSELTITHGGVEALNPVTHAT EI MDLVDVLQKMGAII SVDTDRTIHI EGGVEELTGYRHSA
 ElVDICTMLTAMGARIDDGATSTITV Y I K L T L E LMA KFG $E V V D L Q N F L N K M G A I I T G A G T R K D F T K$ Y I DLTLCMMRDFGAI ADWTDVDTIRVAA YI QQLCKMLNAMGAKDSGDASNLLTIGEGVDKLHGADHTI EUVDGVSFLNELGARISGAGTNEIRIEGVAQLAAHQTHMV
 HI EMTIECLRARGVDVESPEPGRWIVAPGP EIVNLAETLRAMGAQVEGEGSGTLRVEGQKDLQDAEVRI HL RMTTHMLRAAGAVVDESVPDVWVVEP YIDMTTAMMRSFGIDVKKSTTEHTYHIPQGRYINPAEYVV HTEKMLQGFGAALEVETDAEGVRHDRLQGQGDLRGADFTV Y DMTCAMMKSFGIEVTKSTTDYTYHIPKGTYKNPAEYVI E V VLAANFCRSMGAKIKGDGTKR』T I S G
 EIVQDLANMLNSMGAQQ R GAGTKE: I I E
 HIEMTLDVLASVGVRVDRPDATSWLVHPGP VRAVDVTV
 Y IQQLCRMLNRMGARUSGIASNLLTI EGGVEELHGCEHTV HTELMLLQMGA
Y $\square$ NMTLKLLHYFD ILEAKFE
TRDYTERMLSAFGVGDDFAPGQA
EVVDLANFLTQMGAKI S GAGT



 EVEDLANLC $\square$ AMGANI FGAGTKRI VI S
 YLDATDATMRKFGVSVQTLDPYKRYNDSPQVY NAATFTV
 Y IQQLCLMLNAMGARVSGDASNLLTVIGEGVKELKGCHHRC Y IDDTLHLMHEFGVSAEWTDIDTISVKP EIVDFANFLQMLGVQDEGAGTAKMTIR $Y L Q Q \square C K M L N R M G A K I T G D G S N L L H I E G A D A$ TRDHTERLFRHFGLDLWVAGNRVRTAKTGPFP $\begin{array}{lll}H V Q D L C R M L S A M G A K I D G D G S N I L R D R, G V T \\ Y & R M T V G L M R R F G V V V E E S D G G R T F R V A P Q P\end{array}$
 HI GMTVSMLRDAGVTVDDSLPNRWRVEPGT Y GMTVSMLRDA GVTVDDSLP NRWRVEPGTV VAARHWDV Y UQQLCHLLNAMGARISGIGSNLLTIV GVKQLHGATHTI
 HTELMMLNYFGA


 YLLQQLCKMLNRMGAKI SGDASNMLIVEGVSELKGTEHTM
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UniRef90_E6MNW5 UniRef90-R6XCY6 UniRef90_W9EGQ0 UniRef90_W9BUY2 UniRef90_A0A022QVU2 UniRef90-UPIO003B522B0 UniRef90_E3D053 UniRef90_G8S1J0 UniRef90-Q4WS76 UniRef90-Q1YE73 UniRef90_C5M1X2 UniRef90_D3EQT9 UniRef90-G3JPU2
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UniRef90_B9L9K4 UniRef90_UPI00047C7C75 UniRet90_W9DTT5 UniRef90-B9CK63 UniRef90-M2NNS6 UniRef90-Q10ZM1 UniRef90_W6FJG1

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| UniRef90 | UniRef90-D5G8D9 UniRet90-W9BLS9 UniRef90_UPIo0046986D1 UniRef90-U2AT57 UniRef90-UPIO001E30561 UniRef90O-UPIOOO3B5591ED

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UniRef90_R6RY57 UniRef90-A9A231 UniRef90_D4HE77 UniRef90_D1ZA70 UniRef90-F9Z7Q1 UniRef90_J9ZB35 UniRef90_UPI00046A289A UniRef90_E4UAH0 UniRef90_UPI00040CD744 UniRef90_B7ABT3 UniRef90_F5YNC0 UniRef90-W2C2Q8 UniRef90_W9BLS9 UniRef90_R6E717 UniRef90_UPI00046986D1 UniRef90_U2AT57 UniRef90_UPI0001E30561 UniRef90-UPI0003B591ED UniRef90_V8TQZ4 UniRef90_C9LEW1 UniRef90_G1XLW1
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 FQEMMGAIVEF E E S S I S I E Y Q D I N S I E IA T L P F P D L Q P I F G
 FR K VGGGQFEI D DA GI RFFHP GGQETNVVHPGFMM DWQAPPLV


 $V G G A F D V R E D G \| R F Y H P G G D L H S D T N V H P G F M T D W Q Q P L V$



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UniRef90_R6RY57 UniRef90-A9A231 UniRef90-D4HE77 UniRef90_D1ZA70 UniRef90-F9Z7Q1 UniRef90_UPI00046A289A UniRef90-E4UAHO UniRef90_UPI00040CD744 UniRef90_B7ABT3 UniRef90-F5YNC0 UniRef90-W2C2Q8 UniRef90-D5G8D9 UniRet90_W9BLS9 UniRef90_UPIO0046986D1 UniRef90-U2AT57 UniRef90_UPIO001E30561 UniRef90-UPI0003B591ED UniRef90-V8TQZ4 UniRef90_C9LEW1 UniRef90-G1XLW1 UniRef90-Q7VAC5 UniRef90_UPI0001FFFB28 UniRef90_C6W0Z9 UniRef90-D5UGV6 UniRef90-H8IAB4 UniRef90-S2ZNQ1 UniRef90_UPI000379EB06 UniRef90_Q7VJV4 UniRef90_D6Y2T9 UniRef90-L1NIV2
UniRef90- UPI000 UniRef90-F4F802 UniRef90-A2U2F0
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 ALAAVSSGTAITENVFEGRFMFVN
 VYLSVAHGTSII ENVFKNRFHHVD
 VVATQARGSVVHQKMFESRLFFVDKLDDMGAQQILCDPHV
 VVALIFADGPTADRDVASWRVTETERMDADCTE
 MAAAFARGTTVMRGLDEQRVKESDRLAAVAAGLAANGIVH
 VLAA VAGGKTK K T G DA NQRVK ECNRIAAMRDQLAKFGVQC
 ALDTTAKGTSDTETVFEKRMQHV VAAAAFAVSPT TDTNVA H LVRIKESDRDQACADQQAAKTGCGGV VTCCLMD DPFRFTGLQSLKUKETDRITAALITEELRKLGYVV ALCALADSPSRLRGVGHLRGHETDRLAALVTELTRLGAGA ALGAAADGDTRIYNCEHVRYKETDRVAAMAEELERLGAAT MQAPFMATLLSIPGNSLVQDTVYNDRFKHVAELERLGAS VVATQARGSVIHQKMFESRDFFVDKLIDMGAQUILCDPAR
 $V A A A A A Q G Q T V V S G A A E L R V K E S D R L A A M A N G L R T L G V R V$ MQAQFMALNTI AEGSSSVIENDFENRFMHVQELQRMGAQI

 ALLAALAKPGSVSHGIGGLLRGHETDRLAALSAEDNRLGGDC VTATQAKGTVVHQKMFESRDFFVDKLDDMGAQIILDCPB


 MQAP FMALLSVCSGTS GLAT Q A K G S VI H Q K M F

IVNE AVVFE EN NRMR


 ACAACARGTTTMRGASELRVKESDRIRGDVSALQVLGVPC







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


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UniRef90 K2EMS1 UniRef90_S5DKB0 UniRef90_V71464 UniRef90-Q7V0G1 UniRef90_S2W9P4 UniRef90_G8BHT6 UniRef90_UPIO002488A4B UniRef90_UPI00046670A2 UniRef90_UPI00031C5ECD UniRef90_UPI0003F96725 UniRef90-UPI0004771C24 UniRef90_UPI0002F86AF0 UniRef90_C5FQ73 UniRef90_-I4BZ61 UniRef90_UPI00047D62A0 UniRef90_X5DB57 UniRef90_F4DJJ3 UniRef90-A6LMI3 UniRef90_E6MNW5 UniRef90_R6XCY6 UniRef90_W9EGQ0 UniRef90_W9BUY2 UniRef90_A0A022QVU2 UniRef90-UPIO003B522B0 UniRef90_E3D053 UniRef90-G8S1J0 UniRef90_Q4WS76 UniRef90_Q1YE73 UniRef90_C5M1X2 UniRef90_D3EQT9 UniRef90_G3JPU2 UniRef90_J9CZF8 UniRef90_A9BBR7 UniRef90_UPI00036F6E54 UniRef90_R7EJC8 UniRef90_UPIO00255EAB3 UniRef90_V4ZJV2 UniRef90_C9RJU3 UniRef90_R7CV93 UniRef90 F7PVN7 UniRef90_UPI0004267DA0 UniRef90-UPI00039F9B15 UniRef90C8PGG3 UniRef90-D4CYL2 Uninefoto-H2BVS 1 UniRef90_D5PD57 UniRef90_LOFVA6 UniRef90-B9L9K4 UniRef90-UPIO0047C7C75 UniRef90 W9DTT5 UniRe90_B9CK63
UniRef90_M2NNS6 UniRef90_Q10ZM1 UniRef90_W6FJG1 UniRef90_R6RY57
UniRef90_A9A231 UniRef90_D4HE77 UniRef90_D1ZA70 UniRef90-F9Z7Q1 UniRef90_J9ZB35 UniRef90_UPIO0046A289A UniRef90_E4UAH0 UniRef90-UPIO0040CD744 UniRef90_B7ABT3 UniRef90_F5YNC0 UniRef90-W2C2Q8 UniRef90-D5G8D9 UniRef90_R6E717 UniRef90_UPI00046986D1 UniRef90_U2AT57 UniRef90_UPI0001E30561 UniRef90_UPI0003B591ED UniRef90_V8TQZ4 UniRef90_C9LEW1 UniRef90_G1XLW1 UniRef90-Q7VAC5 UniRef90_UPI0001FFFB28 UniRef90_C6W0Z9 UniRef90-D5UGV6 UniRef90_H8IAB4 UniRef90_S2ZNQ1 UniRef90_UPIO00379EB06 UniRef90_Q7VJV4 UniRef90_D6Y2T9 UniRef90_L1NIV2 UniRef90_UPI0002D51DE4 UniRef90_F4F802 UniRef90_A2U2F0

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400 HQAV GPNQLKGRKIKSF DLRAGASLI I AALCAN
 TLKNNDAHINGVKKLRGMTLVGS DLRSSAALIIAALTSK GGTPHSAVISGPTPLHGAEITV,PDLRGGFSYLI SALAEG


 RIEGHHAMVRGRERLSSA EVTASDIRAGAGLVI AGLCGD RNFYHSAVISGPTPLRGADIVV PDLRGGFSHLIAALAAQ REHDDGDEI DGDDKVPVNGVHCYDDHRVAMSFSVAAAASQ QETDDGWII EGRTTLSGGRAKSFGDHRVAMAMAVAGLATG AEPEFGELAWDGQKEENPIINTYHDHRMALLAFAPMALAGF AEPEDGGLINPGQPEHNGAKNSHNDHRDAMADTIAAMASG KVIDGTA I EGVEKLSGAKVEG TDDRATAALII AGMADG QSVGDDELLWDGCQPSDEPIETYEDHRMALAFAPVALKRQ VIGHDHKVRLKAGR $\quad$ G G MTS PDDRAGIA LLIAALSAN


TELDDGDRDE PAPDHAGPWRAYADHRMATSGADDGD ELQGNTAVVTGVSELVGADVHASDLRAGAALVLLGLAARD TEFPDGLRI E PRPLHGASFETYADHRMAHAAAVI GLSVP REHDDGLEI DGDDRSTAGGVFCYDDHRVAFSFSVLSLAPK E EGADWLTVTGNPDGRGLDGAYHDDHRIAMSF LVLGMAER $R V E G N I A V V Q G V P F L S G A P V M A T D L R A S A A L V L A G L A A H G$
 K ELNGNTALYTGGQRCEAPTSETSEDHRMAMAFAPTALCCP

 TEEPDALT I HGSTDLRGATVDGRADHR IVMSLAVAGLAEG QLNGNTATIKGGLPLEGADLMGS DLRASAALVLAGLAEG AV V VIGHDRKFRLRGG NMASPDVRAGDALLIAAMSAD
 DETDDGATLHGG PIGGGRIDSHGDHR】AMAFADAGLSTG HLN GNTAMVTGV
TISGG K $\quad$ LNGADVMATDLRASSALVLAA $\square$ AA R G IEKKDS LI NSRENFEVNKNEKHSDHRDAMMIADATTCDG
 TETPDGLVIT ATPLRAGVWRAYADHRMAMAGAIVGLRVA

 TDEGNTKFIGGAELMSSDLRASVALVLAAVSTG IEGDDTLVIEGHGSLDGGSVDGESDHR\|VMMAAVAAFANN RELDDGIEIDGGLKRPHNAVQCYDDHRVAMSFSVLSVVAP $R V K G N H A D V K G V P K L S A A P I I G T D L R A S A A L I L A A L A A E G$ RVKGNVAFVRGVPKLSGAPVIGTDLRASAALVLAGLAAEG VI GHDRNFCLRG GNMTSPDIRAGDALLIAALSAD QENEDGLILESTENLT GAELNSENDHRLFMAFCIAGMYVG QQTDNGLDIT GRDKLHGGKFGCYADHRMAHAGALLGLVID NELEDGUEVTGDPKNPTEGDYCYDDHRVAMSFGVLSTISP
 HETDGSELSWDGERCEPMKQPTYEDHRMAMSFAPLAMKLGG
 EEGPD WLRIRGGGVRRGEVEPFHDHRDAMAFAVAGLPVG LCDPHRAAVISGPTKLSGS ELDQPDVRAGMAMVIAAMAEG TVEHDGRTLQWDGTRCPPPVVATYDDHRMAMAFAPLADVVGG AETSDGLVITAV PLHGGTWHSYADHRMATAGAI I GLRVP AVV DGVVGHDHQKKLIRAGRMTSPDHRMATAGAIAGLRVP KATDDGFIDDGPAQLTANKTHVHKDHRDAMMLAIASLTAG ILCDPHRAVVIGNDFKSKTTMTSPD DRAGDALLIAAALSAK QETEDGMVI EGGRKLTGT IVEGYNYPA DTMALCVAGLADG RNFNHSAVI AGPTELHGADIEV PDLRGGFSHLIAALTAN S NYPHSAVIYGVTPLRAAHLTIPDLRAGFAYVMAALVAG AVENDRSVTYASAPAHLQPVATYEDHRMALAFAPCALRFP REFDDGDEIDGRDKVPEGGVHCYDDHRVAMSFSVLAILDD
 RATVIGHNRETQLRGD RMTSPD\RAGVALLIAAMSAK
 VEEPDGLVITGG KLKGASVEGYDDHRVMALAVAGLAAS SVQDGALHVEGMEGLDGGEVSGSSDHRIVMMA IAAAYADG DLDSDDMRVHGGA VKGAVVHSRHDHRIAMACATAALADGG EVRDDGFSVYGGTELKRARVSSFGDHRIAMSFADAQLACGB QDLNDSELLWNGCEPTGEADETYEDHRMALAKAPAAMVYP TTNNVDDLCWDGTKEEEEDRNTYHDHRMAMAFAPACLTQG KTDGHHAVVRGRERLSGAAVRATDVRAGAGLIIAGGCAD $D P H R A T V I G H N F Q S A L K A T T M T S P D I R A G D S L L I A A L S A K$
$E L G P D T L T V H G G S V P G G G L T E T H H D H R I A M S G L$

|  | 410 － 420 |
| :---: | :---: |
| UniRef90＿K2EMS1 | GT T｜IEEIIY Q｜V｜DRGYER\｜EERLQK |
| UniRef90－S5DKB0 | 1 S SII S GVD HI NRGYEDIVDS |
| UniRef90－V71464 | KVYIDGYEAVNKSYPEFFNDFEHM |
| UniRef90－Q7V0G1 | SVSVYGLEHLDRGYENFEQKLSKL |
| UniRef90－S2W9P4 | ESIVHGIDVIARGYEHFLSKL GRL |
| UniRef90－G8BHT6 | SVLLLERSTTGKTWPGWWDULHS |
| UniRef90＿UPI0002488A4B | PVLIDDMSPVDTSFPGFAAML |
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| UniRef90－UPI0003F96725 | PVEIEAADADNKSYPDFFMHLQQL |
| UniRef90－UPI0004771C24 | GVTVRAVHHI D R GYP P FVGDL R |
| UniRef90＿UP10002F86AF0 | GTRVEGINLI DRGYEHFMSKL |
| UniRef90＿C5FQ73 | PTLI LEKECVGKT WP A WWDAL A Q TFK |
| UniRef90－14BZ61 |  |
| UniRef90－UPI00047D62A0 | GIITVQEVHHVDRGYPDFVEQLRGL |
| UniRef90－X5DB57 | SMRIDDPMVVTK S Y P GF WEDLKQV |
| UniRef90－F4DJJ3 | ESLICDTDCVRKSFPKFSQ |
| UniRef90－A6LMI3 | VTEVHNDFHV $\mathrm{V}^{\text {R G Y EN }}$ |
| UniRef90－E6MNW5 | GLQQI N NPEVVSKSYPDYWKD |
| UniRef90－R6XCY6 | GTRIDNDAQI DRGYED⿴囗 A A RLNAL |
| UniRef90－W9EGQ0 | ETTITNTDNI LR GYDNLAQKLTNL |
| UniRef90－W9BUY2 | GVEVDDTRPIATSFPDFLALLAS |
| UniRef90＿A0A022QVU2 <br> UniRef90 UPI0003B522B |  |
| UniRef90－E3D053 | ETTI HELGHDWRGYEGLVEK |
| UniRef90－G8S1J0 | GV Q L T D V G C |
| UniRef90－Q4WS76 | PTLI LEKECVGKT WP GWWD TLR Q |
| UniRef90－Q1YE73 | AVTVDDGRMIATSFPAFQAMMAGLL |
| UniRef90－C5M1X2 | PVLI LERSTTGKTWPGWWD |
| UniRef90－D3EQT9 | KTTI Q G L H HLDRGYDNLEGKLRKL |
| UniRef90－G3JPU2 | GAVITQQDCVGKTWPGWWDTMS Q |
| UniRef90＿J9CZF8 | SVRI F H P HVV S K S Y P H Y WD D |
| UniRef90－A9BBR7 | GVKI DGLD Y D R G Y E M E D K L K K V |
| UniRef90－UPI00036F6E54 | DVDLDNPACVGKSFPGFHDAWN |
| UniRef90＿R7EJC8 | QI QI DEPQVVTK S Y P A Y WEDLQK |
| UniRef90＿UPI000255EAB3 | GLEVEDVATAGKT F P GF |
| UniRef90－V4ZJV2 |  |
| UniRef90－C9RJU3 | ETTI SRDYHLDRGYEDFEAKM |
| UniRef90－R7CV93 |  |
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| UniRef90＿UPI00039F9B15 | EVEI A DVANVATSFPGF |
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| UniRef90－C8PGG3 | ESK\HRTY H D D R G Y E K Le EKLS A L |
| UniRef90－D4CYL2 | ElLLDNLDCIKKS P P FWEVFLSL |
| UniRef90－H2BVS1 | PLEIEDSGVVSKSYPGFWEDLEQV |
| UniRef90＿D5PD57 | GVEVDDIGSTSKTLPEFPELWARM |
| UniRef90＿LOFVA6 | QS I D NVEQIDRGYQY ${ }^{\text {L }}$ D QRL |
| UniRef90－B9L9K4 | MEI EKAESINTSFPNFFKLFEK】A |
| UniRef90＿UPI00047C7C75 | ETNIHRIYYL |
| UniRef90－W9DTT5 | K S Y N R I Y HLD R G Y E K DE N K L K K |
| UniRef90－B9CK63 | PTTVTHAEAI AKSYPAFFEDFRAL |
| UniRef90－M2NNS6 | GVVLDERECVGKTWPGWWDTL |
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| UniRef90＿A9A231 | NCVVTDPESVQVSYPDFVE E M N R I |
| UniRef90－D4HE77 |  |
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| UniRef90－F9Z7Q1 | GVTIHNDDQ |
| UniRef90－J9ZB35 | ESTIRGTDFVSTSFPGFSNLFNQV |
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| UniRef90＿E4UAH0 | ETVI E GMQHVGRGYEDLEDRLRQL |
| UniRef90＿UPI00040CD744 | ESVIHNDEQIERGYQDID |
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| UniRef90－F5YNC0 | KSII R NVYQl ERGYEHLLVARLS SL |
| UniRef90－W2C2Q8 | GVTI A HPEVVTKSYPRFWDDLRA |
| UniRef90－D5G8D9 | PVILQERKCVEKTWPGWWDVLS |
| UniRef90－W9BLS9 |  |
| UniRef90＿R6E717 | GTRIANIA Q I D R G Y D DENRL |
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| UniRef90－UPI0001E30561 |  |
| UniRef90－UPI0003B591ED | GTTVSNVGI I SRGYENFI GKLEQL |
| UniRef90－V8TQZ4 | SSLIENAHILDRGYYNWVEKLQS |
| UniRef90＇C9LEW1 | GLQIAEPAVVNKSYPGFWEALQSLLK |
| UniRef90－G1XLW1 | PILLHERRCVEKTWPGWWDILS G |
| UniRef90－Q7VAC5 | GTVIQGLEHLDRGYEDFAEKLNA |
| UniRef90－UPI0001FFFB28 | NLTLDDPACVAKTFPGFHEELHR |
| UniRef90－C6W0Z9 | GVIIDNTEQI DRGYQNDDTRLNA |
| UniRef90－D5UGV6 | GTSVRGISLIDRGYERFTDKLEAL |
| UniRef90－TOJWE1 | PVTILERDCTGKT WP GWWDTMS Q |
| UniRef90－H8IAB4 |  |
| UniRef90－S2ZNQ1 | PTTITNAEAVAKSYPTFFEDF |
| UniRef90－UPI000379EB06 | PVTI EEAEAINKSYPDFYDHLKE |
| UniRef90＿Q7VJV4 | G EI E D S E CI DVS FPHFLTLLS QI |
| UniRef90－D6Y2T9 | ETVI ESGYLI DRGHSAVAERMRAL |
| UniRef90－L1NIV2 | HLQ ${ }^{\text {L }}$ D PCVVTKSYPCFWDDLRQ |
| UniRef90＿UPI0002D51DE4 | ALQI ENPSVVRKSYPGFWDDM |
| UniRef90－F4F802 | GVTVSHVHHVDRGYPDFVADLRA |
| UniRef90－A2U2F0 | GTTIHNIEQIDRGYENDEAR |
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L
MAS MAKF NYKV

ms SFQ MDKLKi1GGTPLHGEITTSGAKNAALPULCAVLLTDEPIT

QAFLISPSAP YGEFSIPRSKSHSLRALLFASLSSGUCR ETEPSGPLRGTVLPASKSLSNRLLTNACLPQPVS DVLEVVGGKP MERLRI QGRNF
 QLE\|VPTGPWTGAVVVPGSKS TTNBA A $\square \mathrm{FKVEGGDLRGTARAPPSKSYTHRALLAAGYSDGAT}$

$M D K D K V I G K Q T D S G K \square Y \square S G S K N S V V S L L P A A D L S D E V V$ DTITFHGGKPLNGRLLVRGAKNFVTKAMVASLLGDEPSV LRASIDLPSSKSLSNRALLLGALLSGNGAQ MS QLLVRGGRRLEGEVTVQGAKNSVLPDLAATLLARGQVA RYKLSAPATLHTTIGLPASKSUSNRALILHALAQGCIT MLAAEIFGGCSLQGAVVVVGAKNSATKLLVASLLSNRKCI
 MDVSITPGBLFGTVEADPSKSCAHRALICASFANGTTN DVLVVTGGAPLQGEVKVRGAKNLVSKAMVATLLGETTSR

KGEVTDPPDKSTSHRAALDGALAEGVTE LEVNGGNPLTGTVRVRGAKNLVPKMVASLLAETPST QLLRNNLQITGSKSESNRSLLLQALYPNDS MGYYRVTGGGTIGGEYTVRGSKNAVLPLLAASVLSGDEVV ISLPASKSESNRALIIAALCPGGAE


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1 HNVPNI DDVNKLIELLENMGVLVTV
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UniRef90-F3AZ15 UniRef90_D3L5LO
UniRef90 $004 \mathrm{HC7}$ UniRef90-U2KHU9 UniRef90_COAZFO UniRef90-14B6Y2 UniRef90-UPIOOO4681870 UniRef90-Q11UU3 UniRef90-A3X155 UniRef90_UPIOOO475D48D UniRef90-A9WMG8 UniRef90-L9Z3C6 UniRef90-C5FOP7 UniRef90-UPIo0030B50F9 UniRet90 T4VWP4 UniRef90-AOYFE1 UniRef90_UPI00047C9D57 UniRef90-FOOT41 UniRef90-Q05X08 UniRef90-M1PB17 UniRef90-HOJG86 UniRef90-K1DWD7 UniRef90_UPIOOO40838B8 UniRef90-J9FYP9 UniRef90-U2PWH8 UniRef90-UPIO0047DOF24 UniRef90-K9EC23 UniRef90-A0A017PJJ2 UniRef90-UPIO003778CF9 UniRef90-14A1P3
UniRee90-UPI0003B518DF UniRef90-Z4X2W4 UniRef90-B1Х3M4 UniRef90-UPIO00368B4ED UniRet90 -X1DGS2 UniRef90-A4SD12 UniRef90-UPIO003623991 UniRef90-G0L225 UniRef90-R6Q1U1 UniRef90_UPIOOO349424E UniRef90-B2VVY2 UniRef90_UPI0003B625FD UniRef90-E6U396 UniRef90-R7FZ96 UniRef90-R6U6P7 UniRef90-T2KGY4 UniRef90-UPIO0038233BD UniRef90-UPIo002EB555E UniRef90_T1CR37 UniRef90-UPIO0047180EA UniRef90-W2C715 UniRef90-H7FLS7 UniRef90-Q2J6X7
UniRef90
S75N5 UniRef90-J9FWE4 UniRef90-Q2JOH2
UniRef90-G274Y0
UniRef90_G2Z4Y0
 GFVTVTRPVFCNESGSTLRFMIPLFSLTAQKVRFTGNGR
 LNCTEVSNELSRQMRASYYFGGPALSRFGVVRMPLPGGCA IARSEISTEVGGLNRADVMAI GPLECHCGEVSIPAPGGDR GTLHAPQAPLFLGNAGTAVRFLTAASALVRGTVVVGGDAN YLNSDEFFQKGAALRGSVMIGGPLAREGYAVLPKPGGDK
KLHPPPKGKQY四GNAGTAARFLTVCOKRDCRTVISGNAR RPRREA VSAGSSGTTLYFMIGLASLSDRTVSVTGQKY YGLSEPQTILDAGNSGTTLRLMMGLLAGQPFLSTFTGDTS YLQTEDFYSKSASLRGSVMIVGPLVARFGKAIIPKPGGDK II SYEAPYELVKTMRASILVLGPLLTRFGQAKVSLPGGCA GYLENPKMELYLGNSGTASRFLTMGCNSCKDNLILTGDNR
 VVDNNVPKAFTGLNRDPDLMLGPLHRAGEAFVPLVGGDP EMPAVSDVETGSGSSRIPILFGPLERARGEAFIPSLGGCR IEYEADYDLVRRLRASIVVAGPRVARCGRAKVALPGGDS
 HHAGTAMRFLTAYFAVQEGRTVLTGSPR VVPAELDRDLSRKDRGSMLLAGPLLGRAGRIVLPPPGGDV ELDEEAPFEYVRKMRASVLVMGSLLARNGRARVALPGGCA LKAPAEPLFLGNAGTATRFLTAAVALADGAVVIDGDAH DPAGPPDDVIDCANSGTTMRLVTAAAALADGTTVLTGDDS Y R R DDYCRRASRLRGSVMLLGPMAARFGVGYMPKPGGDK EGDPEPDTWLNCGLAGTVLRFVPPLAALGTATVTFDGDEQ GLKEPSDVLDAGNSGTTARLILGLISGDPNDFVITGDES DAFKDPKKPLNMGNSGTTTRLLLGGLAGQSFNTCLVGDAS TNEFCAPYELVKTMRASI WALGPLVARFGQGQVSLPGGCA IKMSELPSELVAGLRGSITLLGPLLARAKKVFLPRPGGDK DFGDTEDFKKKASARGSUMLIGPLLARFGKAKMPKPGGDK YVLSEDYVRDAQKHAGTAMRFLTAYFAAFEGRTILTGSSR TTAATTAAETHAGDSRDPLLLCGPLTHSGEAFVPDGGGCK E TVKNSEVLDCGNAGTALRLYLGLLSAQKGMFVLSGDCY N S SVKEEYMKKLRSSAIVMGAMIGRFNNDSMSYPGGCS
 FQASAVPLD CGNSGSTMRMLTGGLAATPHAYTLVGDES RFRGGEPPYELDTGESGFTLRTLTGVYSGDDGTTLLVPRGS LLQAQMP LDFSNGNAGTGACLVMGMVGSYHMKTTFIGSAA MTNPDTEYSSKRAMRFLIPPVAALLASAPVTFDGDEH M KVAHMAEDNAHAGSSRDPDLCPLLHQLGEAFIPDLGGCR पRRCEDSDVLMREMRSSAMFLGAlLARCGQADLSYPGGCE GELREPDDVLDCGNSGTTIRLLLGLAGRVPFACLTGDAS HVT QVSAQFSRVNRVP ILLGALIARCPEGDQVPSDGGDA SELVWR GHHAGTAMRFLTAYYALSKGKVILTGSKR EQNRPQNVQLNCKIRNTLLILGALTARTGRGSVPLPGGCK EQNRQNVQLNCKESGTTLRFLLPLLGVLNVNATMSAEGR保 WSFRPSGAPDECNNSGSTMRMMAGILAGQPFGSELVGDGS PTRADADDDAHAGSSR\|P\|LFCPLLHRLGRAFIPDLGGCR HHAGTAMRFLTGFFASQEGQVTLTGSKR DEKTEDSEEMVGKMRSS LLYLGALLGRTKKASLGHPGGCT DERVMDVLDAGTTMRFLTAFFAVNGQEKIMTGTER NLKASSN ELYLGNAGTAARFLTSVIALCQTSTIVTGNAR YSLKEPNNVIDMGNSGTSARLISGLLSAQNFFSVITGDES TEPGDPDALMREMRSSDVFLGADAARDGRAHISFPGGCE LSAKATSTLPCGESGSTLRFLTAIALLSQNEVTLTGTTR DENTSDETYYDCKESGTTLRLLLPLLSMFSKSTIVDCKES VKTFVPDELMREMRSSVVFLGAVLGRTGECRLSFPGGCE EQANVADTDAHAGSSRDPILFCPLLHRLGRAFIPDLGGCM LTNTEATYDVVRMRASFLVLGPLVARLGEAHISLPGGCA KKDKEPNCILDCGNAGTGMRLYAGLLSGVEGFFVLSGDKY LNYLEADPVADVLDAGTTMRFLTAYFTVTNQNKTMTGTPR YLETEGFKKEGGSLRGSIMIVGPLLARFGKGYIPKPGGDK DASLSEAYSGVNRIPILM MGPLLARVGEAVIPKPGGCR S $\square S E V P A Q F S H V N R D P \frac{L L L G A L L S R C P D G V C V P F V G G D A}{T A M R F L A Y W A T A A G E E H T G S P R}$ LKTSQAPYELVSQLRASFFVIGPGLARMGVRVPLPGGCA



## UniRef90_S9UE54 <br> UniRef90-D1PJJ8

 UniRef90_UPI00036A8FC8 UniRef90_K9Y1N9UniRef90_K1RTT1 UniRef90_D6TM64 UniRef90_UPI0004715B00 UniRef90_D5QHY4 UniRef90_W0ELO0 UniRef90_K2A4Z0 UniRef90 F4RMC3 UniRef90_H9TE88 UniRef90-U2V3J5 UniRef90_E4T2Y0 UniRef90_V8FVQ8
UniRef90 LOPA30 UniRef90_Q9PK28 UniRef90_G5GD74 UniRef90_UPI00037FD180 UniRef90_U1SHI2 UniRef90_G8LRG8 UniRef90_UPI0003738BFE UniRef90_R5Q0B1 UniRef90_UPI0003697129 UniRef90_D5BJY4 UniRef90_W0RK85 UniRef90_X1RXV3 UniRef90_E8RKR5 UniRef90_M0ELG1 UniRef90_R7JLQ0
UniRef90 F5Z175 UniRef90_F5Z175
UniRef90_F3AZ15 UniRef90_D3L5L0 UniRef90_Q04HC7 UniRef90_U2KHU9 UniRef90_C0AZFO UniRef90-14B6Y2 UniRef90_UPI0004681870 UniRef90_Q11UU3 UniRef90_A3XI55
UniRef90_UPI000475D48D UniRef90_A9WMG8
UniRef90_L9Z3C6 UniRef90-C5F0P7 UniRef90_UPI00030B50F9 UniRef90_T4VWP4 UniRef90-W0ABE3 UniRef90_AOYFE1 UniRef90_UPI00047C9D57 UniRef90_F0QT41 UniRef90_Q05X08 UniRef90-M1PBI7 UniRef90_H0JG86 UniRef90_K1DWD7
UniRef90_R5IW81 UniRef90_UPI00040838B8 UniRef90_J9FYP9 UniRef90_U2PWH8 UniRef90_UPI00047D0F24 UniRef90_K9EC23 UniRef90_A0A017PJJ2 UniRef90_UPI0003778CF9 UniRef90_I4A1P3
UniRef90_UPI0003B518DF UniRef90_Z4X2W4 UniRef90_B1X3M4 UniRef90_UPI000368B4ED UniRef90_X1DGS2 UniRef90_A4SD12 UniRef90_UPI0003623991 UniRef90_G0L225 UniRef90_R6Q1U1 UniRef90_UPI000349424E UniRef90_B2VVY2 UniRef90_UPI0003B625FD UniRef90_E6U396 UniRef90_R7FZ96 UniRef90_R6U6P7 UniRef90-T2KGY4 UniRef90_UPI00038233BD UniRef90_UPI0002EB555E UniRef90_T1CR37 UniRef90_UPI00047180EA UniRef90_W2C715 UniRef90_H7FLS7 UniRef90_Q2J6X7 UniRef90_S7J5N5 UniRef90-J9FWE4 UniRef90_G2Z4Y0
$\overline{V V G Q T \square E I V} \square_{A E}^{210}$
220
$\square M Y F K \square A G$
230
GNQQYEAKTYT
240
 E V V D L A N F C C Q M G A K I S G A G T N T I I DS G V K NL

 Y I GLTI A A MRAFGASVTSGDDASWTVAPGG


$\begin{array}{ll}S & S \\ N & K \\ R\end{array}$ Y I D M T L A MMAAF Gll SVKRDEANTYHI P DGKY T CPS GAY A
 $Y$ LQQLCKMLNAMGAKI SGVGSNLLTIVEVTMLNGCQHRII EVVDLA E LLDAMGAKITGHGSDRIIIEGVDKLHGTDYTV




## Y

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## 

 Y I D L T L GVVMQA F GAKVVS QP S D G V W W V E R T G



TRD HTEIMLEHLLGI
TRNHLEIMLNDFGADIK

HIQTLCAMLVSMGAKI S G $\square$ G S N I LIRIVI EI EDTANFLNTLGAKI HVQGDCRFLDA

Y

 EI DDLIADVLQKMMALI SVQADRTIVRVEGVVNGLGGFEDHRA Y E I L D L I ALL L QKMGAII KVHTNRVIEI E G T R D H T ERMLEIMRADLK K S P P E I K V M SRDHTELMLGLEASEVD EILDLLVAILQKMGAII SVDTDRVI RI I E Y I KM T L A L L S Q $\quad$ IGGVE N S F E G NTI
E VAA LARF L ARAC GAE I Y GE G

 E I A DLAS FLNRCGAKVRGAGESVVEI EGVVALHDFSDNV YLLITAEVVMRAFGVDVT VGERDIV DKGNSHYVPREYTV

 Y IEMTELKQMAHMGGDKYQADWATNTI AVE YI Q QLSAMLIRRMGAKISGVGSNLLTV EGVGSSLRGTTHATV Y L Q Q L CK M L N S M G A KI T GVVGS NL L T I E G V E S L G G C E H R I



Uneposes

|  |  |
| :---: | :---: |
| UniRef90-D1PJJ8 | TVIHNAGRLRLKESDRIEAMQTELKKMGARI |
| UniRet90 UPIOOO36A8FC8 | GLAALAGEASEIT GLIGHIRHHETDRIAALVAEVNRLLGGDA |
| UniRef90 K KYY1N9 | MQAQFMALLLS |
| UniRei90 D6TM64 | VLLTQARGMSVHEGIVEDRFGYTSALI GMGA HVVPCRFRE |
| UniRei90-UP10004715B00 | $V$ VATQARGSVIHQKMFESRLIFFVDRLID MGAKL |
| UniRet90-D5QHY4 | IVMAMFNETPVRFVGDENDRVKECDRTHADATQMQRDNPYA |
| UniRet90-WOELOO |  |
| UniRef90-K2A | IVLDTQAKGMSIHETTYEGRLFYTDILNKMNADI |
| UniRef90-R5F259 | VTCCLIGLPFKFTGLQTLKMKETDR\|SALQNELIKLGYKL |
| UniRef90 F4RMC3 UniRef90- H9TE88 | FLTACADGSTKVVGUANQRVKECDRIAAMVAELAKLGMRA |
| UniRef90-U2V3J5 | VAALFAEGDTI DTGAGEDRFKETDRTQADADQFNKFASGI |
| UniRef90-E47 | VVAAKAKGS |
| V8FVA8 |  |
| UniRet90_LOPA30 | A VA Cli |
| UniRef90-Q9PK28 |  |
| UniRef9-UPID0037FD180 |  |
| UniRef90-U1SH2 |  |
| UniRef90-G81 |  |
|  | MVTLAAVEGTAMVTENLFDGRFRFVQELARLGADV |
| UniRef90_R500B1 | ALAAAKHGGVFTGTHRLKIKESDRGAAMAGELAKFGV |
| UniRet90 UPIOOO3697129 | TVATQARGEVIHQKMFESR |
| UniRef90 D5BJY4 UniRef90 ${ }^{-}$W0RK85 | VTCLLGLGTACKLTGLUHTLKIKETDRLVALKKN |
| UniRef90-X1RXV3 | ALLLRAEGTSITETVFENRFMHV |
| UniRef90-E8R | VLAAFNQTPVRFVGIANLRVKECDRVSAVCDGLNALRAGA |
| MOEL | GAVADGDTRIENCEHVRYKETDRVS |
| UniRef90-R7JLQ0 | vatoakgs |
| UniRet90-F5Z175 |  |
| UniRef90-F3AZ15 | AMAALAEGTV KDA |
| UniRef90 Q04HC7 | ASLAKGRTIISGAGELRVKETYRISVVAAEL |
| UniRef90-U2KHU9 |  |
| UniRef90_C0A | MQAQFSLLNLVAEGAGMI |
|  | FPAQCSGTVLI HEKLEESRLL |
| UniRef90-UP10004681870 | ALCTQADGTS DERL |
| UniRef90-Q11UU3 | VVATQAKGSVIHQKMFESRLFFV |
| 53x155 |  |
| UP100047504 | STALVG |
| UniRer90- ${ }^{\text {Lgz3C6 }}$ | Y |
| UniRef90 C5FOP7 |  |
| UniRef90-UPI00030B50F9 | L |
| UniRef90_TVVWP4 |  |
| WOABE3 | A AFAQGRTVTTGLEELRVKESDR ATMA |
| A0YFE1 | CCAKGTITLT |
| Unip | VLAAIAPYTIR RDAKELRVKESDR A LVARNLRAMGAEV |
| UniRef90-FOQT41 | A |
| UniRef90-M1PB17 | VAAAFAEGRTTMLGTKELHAKELGRLSAVARGLKINHVDY |
| UniRef90-H0JG86 | VDAAFNETPVRFVGLANLRVKECDRVAALH |
| K15WD7 | DGP |
| UniRef90_R51W81 | GESTV KETVYENR |
|  | VACALLARPFRFTGLRSQRDKETDRTAALATELLKFGLCL |
| UniRef90 U2PWH8 |  |
| UniRef90-UPIOOO47DOF24 | VLAAFAEGDTVVSDAEELRVKESDRTRAVVQGLTAMGVEA |
| UniRef90-K9EC23 | VTCCLMNIPFRFTGLQSLKIKETDRI QALITELHKLGYVV |
| UniRet90-AoA017P | $\checkmark \mathrm{LL} \mathrm{S}^{\text {Q }}$ AQGS |
| RRef90_UP100037 | GQT SKFTGLES |
| UniRef90_14A1P3 | , |
| UniRef90 UPI00038518DF |  |
| UniRef90-42024 |  |
| UniRef90-UPIO0036884ED | QANGLSVHETVYEKRFGYTAALNQMGANI |
| UniRef90-X1DGS2 | VVATQAQGKTIVSGAKELRVKETDRIKAlVNELK |
| UniRet90-A4SD12 | VLSVFASGSFEVSNAGELRTKECDRLNALAVNL |
| 03 | AT GLS $\\|$ HeTVYENRLGFTNALVKMGA |
|  | VTCFGLGMGCHLTGLHTLKLKETDRLEALHTELSKLGADI |
| UniRef90-R6Q1U1 | CRM |
| UniRet90 UPIOOO349424E | A K GIJKGYFTGLESLRIMKETDRIAALQ |
|  | - |
| UniRef90_UPI0003862 | CDGASY RNASELRKKESDRIAADC |
| UniRef90-E6U396 UniRef90 R7FZ29 | MLGAAKSGVLTV |
| UniRef90-U2JZ54 | VVAALSRGTSILSGGKRLKYKESNRIDSTFQMLKNL |
| UniRet90-R6U6P7 | ALAKAKGTSVVVENIFENRYRHVDELVRM |
| UniRef90_T2KGY4 | VT CFGLGIIACDLSGLHTLKIKETDRLEALKTETEKLGGHV |
| ef90_UPIOOO38233BD | V |
| Ref90_UP10002EB555E |  |
| UniRet90_T1CR37 |  |
|  | VCCAMKKIPLTLTGIESLKMKEDRVLALQQELVKLGAEL |
| UniRet90 |  |
|  | V |
| - ${ }^{\text {a }}$ |  |
| UniRef90_J9FWE4 | T |
|  |  |
|  |  |

## UniRef90_S9UE54 <br> UniRef90_D1PJJ8 UniRef90_UPI00036A8FC8 UniRef90_K9Y1N9 UniRef90_D6TM64 UniRef90_UPIO004715B00 UniRef90_D5QHY4 UniRef90_W0ELOO UniRef90-K2A4Z0 UniRef90-R5F259 UniRef90-F4RMC3 UniRef90_H9TE88 UniRef90-U2V3J5

 UniRef90_E4T2Y0 UniRef90_V8FVQ8UniRef90 LOPA30 UniRef90_Q9PK28 UniRef90_G5GD74 UniRef90_UPI00037FD180 UniRef90_U1SHI2 UniRef90_G8LRG8 UniRef90_UPI0003738BFE UniRef90_R5Q0B1 UniRef90_UPI0003697129 UniRef90_D5BJY4 UniRef90-W0RK85 UniRef90-X1RXV3 UniRef90_E8RKR5 UniRef90_M0ELG1 UniRef90_R7JLQ0
UniRef90 F5Z175 UniRef90_F3AZ15 UniRef90_D3L5LC
UniRef90_Q04HC7 UniRef90_-U2KHU9 UniRef90_C0AZFO UniRef90_I4B6Y2 UniRef90_UPIO004681870 UniRef90-Q11UU3 UniRef90_A3XI55 UniRef90_UPIO00475D48D UniRef90_A9WMG8 UniRef90_L9Z3C6 UniRef90_C5F0P7 UniRef90_UPI00030B50F9 UniRef90-T4VWP4 UniRef90_AOYFE1 UniRef90_UPI00047C9D57 UniRef90_F0QT41 UniRef90_Q05X08 UniRef90-M1PBI7 UniRef90_H0JG86 UniRef90_K1DWD7
UniRef90_R5IW81 UniRef90_UPI00040838B8 UniRef90_J9FYP9 UniRef90_U2PWH8 UniRef90_UPIO0047D0F24 UniRef90_K9EC23 UniRef90_A0A017PJJ2 UniRef90_UPI0003778CF9 UniRef90_I4A1P3
UniRef90_UPI0003B518DF UniRef90_Z4X2W4 UniRef90_B1X3M4 UniRef90-UPIO00368B4ED UniRef90-A4SD12 UniRef90_UPIO003623991 UniRef90_GOL225 UniRef90_R6Q1U1 UniRef90_UPIO00349424E UniRef90_B2VVY2
UniRef90_UPI0003B625FD
UniRef90_E6U396
UniRef90-R7FZ96
UniRef90_U2JZ54
UniRef90_R6U6P7
UniRef90_T2KGY4
UniRef90_T2KGY4
UniRef90_UPI00038233BD
UniRef90_UPI0002EB555E
UniRef90_-T1CR37
UniRef90_UPIO0047180EA
UniRef90_W2C715
UniRef90_H7FLS7
UniRef90_Q2J6X7
UniRef90-S7J5N5
UniRef90_J9FWE4
UniRef90_G2Z4Y0

 HPTQD GLYIE P S RLLHGAVVHSHNDHRIAMALAVAGVSS G LVEGGDAV L RCDPATVASAPI ATYDDHRMALAFAPCA YR CT RYHDHSAAVVRGVSKLVRGEVVMPDDRAGFSAVLAAAVAE G
 D P H R A T II GL N H Q S Y L R G S I LN S P DI R A G DA L L I A A L S A K




 TEEQDALTIH GQSDLLK GATVDGRGDHRIVMALSVAALAAAE
 V


LCDPHRAVVIGPSKLYGSSRMTSPDDRAGMALVIAA LAEG KLLKGHSATVGGNSELLNAA DVMATML RASSALLI LAAAFA E G $D P H R A T V I G L G K Q V A L D R G \square S M S S P D I R A G V S L L I A A M A Q G$ SVT DKSL HLE GETNFQS DT@KTYQDHRMAMAFAPFALRA
 EVEDNVLVVDGHETGYSGTDVTATDLRAGAALSLAAVADG KELDD DGFVI TG G E I Q KAEDVSSYGDHRDAMSFAAIA G L K N G IE TVQDGVVYQLN CNDLLHQVNFA TYEDHRMAMAFAAPLAA VIDD

 E E F E D G L D $V$ P G G Q Q L H G A E I H S G G D H R I A M A F S $D E V N G I I E I E G V H E M R G G C E I D A N D H R I V M M S V I G A L A K E$ RLQGNTAVI EGVVSQLSAAPVTGSDLRAAAAMVLAAALTARG

 E V N G D T 1 $R N F V H S A V I S G P T Q M H G A D I V D P D D L G G F S H L D A A L M A B$ GVKGDDVLYT DAPRYDGTPI ATYHDHRMALAFAPAALLRCP $R V S G R V A V V T G D E R L H S A P V R C T D L R G G A L C D A A L A A E G$ E ERPD GFVVVHGPK GVQGGVVNSFDDHRQAMSFAVAGLSAR KSEEDS ILI WDGERCEPEANPTYEDHRMAMAFAPAAMRMP



 GGTPHSAAVIA GPAKLHAHDLIDPDDLRAGFSHLIAAALAAE

 $S V T$ D D L T L GLLS GTMMKA E VA I DTYND HRMAMAFAPLAAMK D QVHGRNAAVFGVEKDHGA KVRATDLRSGALLLAAALAAEG
 E EF E D GFA I K G N DK L R P A VI D T Q F D H R I A M S F S I L A A V


 $K T E G K V A V I E G V K E L Y G A K V V A P D D R G G A D A V A A L S A E G$
 RHRGATAVVRGVKRLEGA RVMATDLRASACLVLAGLAAK







| UniRef90 S9UE54 | $\begin{aligned} & 410 \\ & \|\mathrm{~V}\| \mathrm{A} \end{aligned} \mathrm{~K} \text { S Y P Q Y F D } \mathrm{H} \mathrm{4} \mathrm{~L}$ |
| :---: | :---: |
| UniRef90-D1PJJ8 | PALI SGAEAVNKSWPAFW |
| UniRef90-UPI00036A8FC8 | GVEVED\GCTSKTLP QFPELWWGRM |
| UniRef90-K9Y1N9 | T T IVSGLHHLDRGYDNDEGKLRQL |
| UniRef90_K1R |  |
| UniRef90-D6TM64 | ES QVFG\DHDERGYEHLDAKLRSL |
| UniRef90-UPI0004715B00 | GTTI DHIEEQ DRGYEAIDVRLNS |
| UniRef90-D5QHY4 |  |
| UniRef90-W0EL00 | GTRIHNIDQI DRGYQDIDKRLNAI |
| UniRef90-K2A4Z0 | KTEI DHIELI DRGYERIEE |
| UniRef90-R5F259 | GПKIIKDI SVVDK S Y P N Y WK D |
| UniRef90-F4RMC3 | GLVLNEKRCVEKTWPS WWD |
| UniRef90-H9TE88 | R STL T F P NAYRIS YPTFDDAMN |
| UniRef90-U2V3J5 | GVEIERPDCVNISYPTFYDTLLQV |
| UniRef90-E4T2Y0 |  |
| UniRef90_V8FVQ8 | K |
| UniRef90- Q9PK28 | QTLLCNTQCVNKSFPHF |
| UniRef90 G5GD74 | GLAI EHPEVVAKSYPSFWDDLKNF |
| UniRef90-UPI00037FD180 | P SRLRGVHHI ERGYHRPVEQFRAL |
| UniRef90-U1SHI2 | ESNVRGI SLI DRGYADFRGKLTAL |
| UniRef90-G8LRG8 | GTII KNIEQI DRGYENIDQRL |
| UniRef90-UPI0003738BFE | ETVVSGVHHLDRGYPDLVGVLHRL |
| UniRef90-R5Q0B1 | GS NGAQAVNKSFPDYFNKLAA |
| UniRef90-UPI0003697129 | GVTIQNSDQI DRGYERDDER |
| UniRef90_D5BJY4 | PVII ADAMVVSKSYPDFYS |
| UniRef90-W0RK85 | GTVINNVSQI ERGYERDDERL |
| UniRef90-X1RXV3 | IT RVV TELKHLDRGYVNFHGK |
| UniRef90-E8RKR5 | GVVIDNPKCVSKTFPTYWDVLES |
| UniRef90-M0ELG1 | GTTVRGAEHVDVSFPGFFDAMAD |
| UniRef90-R7JLQ0 | GTTIQNDEQIDRGYKD\DGR |
| UniRef90-F5Z175 | DVDVEDIETTGKTLPPAFPRMWAEM |
| UniRef90-F3AZ15 | EIKLDNKKCVE\S YPEFFNDLKKV |
| UniRef90_D3L5L0 | DSVIEGESCVHISYPS |
| UniRef90-Q04HC7 | T IT T N NPEAI K IS Y P NFFRDL D Y L |
| UniRef90-U2KHU9 | QSRISNVYQIERGYEHLVERLQSV |
| UniRef90_C0AZF0 |  |
| UniRef90-14B6Y2 | ESVIQNIVQVDRGYENIDARLRSLL |
| UniRef90-UPI0004681870 | TTKVHRIVHLDRGYENLEGKFSA |
| UniRef90-Q11UU3 | KSTIHNIEQIDRGYQNID TRLTNA |
| UniRef90-A3XI55 | P ILFEDAEVVNKSYPDFWEDLHA |
| UniRef90-UPI000475D48D | GTRIDNDNQIDRGYQR\DERLN |
| UniRef90-A9WMG8 | GSRVTGIDVI NRGYEHFLD |
| UniRef90_L9Z3C6 | RTTI T NAEEI ERGYDNFVEK |
| UniRef90-C5F0P7 | MRIT TAEYIN】S F P NFLE |
| UniRef90-UPI00030B50F9 | EVLVEEAMVVEKSYPHFWEDFKK |
| UniRef90-T4VWP4 | ITEEVTNDT HVERGYEHDEKTLKSL |
| UniRef90-W0ABE3 | PVTLDDAAPVATSFPGFFDLIGGL |
| UniRef90-A0YFE1 | AIFIIEGSDTVATSFPNFVE |
| UniRef90_UPI00047C9D57 |  |
| UniRef90-F0QT41 | P IT I N WEGIS K S WPAFIDWDL EKL |
| UniRef90-Q05X08 | TSKVSGLTNHLDRGYDAIEAKLTA |
| UniRef90-M1PBI7 |  |
| UniRef90-H0JG86 | G 1 RI LDP PCVGKTYPEYWNALRSL |
| UniRef90-K1DWD7 | GTVI EDPATVGKTLPQFVHLWDGM |
| UniRef90-R5IW81 |  |
| UniRef90-UPI00040838B8 | GVRVSNVGII ARGYENFLTKL |
| UniRef90-J9FYP9 | Gl Qi A D PEVVSKSYPDYWKDila SL |
| UniRef90-U2PWH8 | ETRVSQ ${ }_{\text {L }}$ CHIDRGYEDLARDLRAL |
| UniRef90-UPI00047DOF24 |  |
| UniRef90-K9EC23 | SLLIAEPQVVSKSYPGYWKDLQQ |
| UniRef90-A0A017PJJ2 | SSI I D N DQ I L D R G Y Y NW\E K L R A L |
| UniRef90_UPI0003778CF9 | EVSFDDAEVVNKSYPS |
| UniRef90-14A1P3 | EMEDKEPEVVGKSYPNFWKDLERV |
| UniRef90-UPI0003B518DF | ETVVRDAWQI ERGYDRFDEKVTSLL |
| UniRef90-Z4X2W4 | PVVI THAEAI NKSYPLFFEHFKQL |
| UniRef90-B1X3M4 |  |
| UniRef90-UPIO00368B4ED | GTRVHGVELINRGYEDFEAKLTGLL |
| UniRef90-X1DGS2 | KTVIRNSECIDDSFPGFEKTLQN |
| UniRef90_A4SD12 | D IELSDSAVVGVSFPNFFALLESL |
| UniRef90-UPI0003623991 |  |
| UniRef90_G0L225 | PLYVNDAEVVSKSYPDFWKDLEKL |
| UniRef90-R6Q1U1 | ETIVEGSAFVERGYEKLEDALTFL |
| UniRef90-UPI000349424E | PLVI EEPDVVRKSYPRFWQNME |
| UniRef90-B2V | PVLI LEKECT |
| UniRef90-UPI0003B625FD | DINI SETKSTSVSYPNFLDHLS YVS |
| UniRef90-E6U396 | VTEVTGLHHI DRGYTS I EQDLTRL |
| UniRef90_R7FZ96 | GET DNAEDVKKSFPDFFER |
| UniRef90-U2JZ54 | TVSVINAETVNKSYPRFDQDFEKV |
| UniRef90-R6U6P7 | ETSLTNDKLMDRGYDCDENAFTLLL |
| UniRef90-T2KGY4 | RVNDAEVVSKSYPEFWSDLEKI |
| UniRef90-UPI00038233BD | GTRVTGl酎LIERGYEDFQAKLEALL |
| UniRef90-UPI0002EB555E | GTTI SRVYHLDRGYEDMERK |
| UniRef90-T1CR37 | VEISDYACISDSFPNFDA L C R |
| UniRef90-UPI00047180EA | PINIEE EPGVVVKS YPGFWT DLEKI |
| UniRef90-W2C715 | GTRMDNDEQ। DRGYQH\DQRLNA |
| UniRef90-H7FLS7 | GTTIQNIEQIDRGYERIDERLRA |
| UniRef90_Q2J6X7 | TSII RGTRFLERGYEDPVGKLRS |
| UniRef90-S7J5N5 | PTLIENTQLLDRGYYNWVGKLEN |
| UniRef90-J9FWE4 | DLQQ A HPEVVSKSYPNFWEDLLSV |
| UniRef90 Q2JQH2 | CSTI HGLHYI DRGYEATDEKLRSV |
| UniRef90 G2Z4Y0 | PFTIENADVVSKSFPDFWTDLAKI |

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 MST MS TFEDEGGVPLRGTIRASGNKNA\|LPMIAACVLTDQEVI MASF $\square \square E G R H P \square R G A \square R P D G N K N A A D P M L A A C L L T D E P D T$ QYRVGRAGRVLGEVVNLPPDKSUAHRAALIGAVADGTTE MDK K TIPKGQAL HGEVVNDSGAKNAVLPDLCATLLADAPVE




$$
\begin{aligned}
& \text { QHLR VGGAKLSGSDPVKTSKNAAVGLLCAALLNKGRTT } \\
& \text { MATLRVVGGRRLKGVVEVSGSKNAALALLPAALLCRGQVN }
\end{aligned}
$$

NLKLEKSTLRSTVLADTGSKSETNRLILLKALYPE DE
$\square R V V G G R R \square S G A \square D V K T S K N A C V A L L C A A S L L N K G R T V$.
DKSLSHRAVIFSLLAKKPCF

MDKFVIQGGVKDEGEVRTS GAKNAADPDLAAMDLADTPDT NYLIEGGRPLSGSVEVRSSKNAAVALLLCASLINRGHTV




MDRF $\|$ VRGGEK LYGKPQ GYSAKNSVLP IISAS DLSEGKTE


VEDNPSK ПYGKVKAPQSKSFG\RLVLYSLL KESK

$\square R V E G G K Q L S G T D E V K T S K N A A V A L L C A A L L N K G R T T$



ПENDSNAKDTQLLFHALNEGSEVID
LDNVPD DIDVRHMLDVIVEDGGKVERSGERVSDHVASVRD
I S NYLEAEDTMNSLKI I EKLGAKVEFKNGVYLITPPKKI




L RNCPDUSDVDCMCRULQKIGATVTKKGHEDCVD ASG
VERMSNCDDTYVMWRALTQRPATVD $\square$ MAAG





 $L \operatorname{V} G V P E \square T D V K K \ L D I F R T L G S E V S M D F S T G V L E L H H H A T$


LK N VVPDLK DVRTLVKLIGGLGTTMSYEGET VIDATST
 I R NMTPSRDLLEATASSVLREFGAAVNDLESDGRLAVAVAGG




LDNVIPS DDVNVADNVVKQ LGGVSVEEGTYFKR AEDVADCDDTRALMHALSMRNGHVD DGAAGTAMRFAAAFF


LR S L A R $\square E E V N R$ VVEVLGS DGVKTRWLPGTNDLEDIPPAAK AT NLLMSDDVKAALNAVKKLGUKVNDKKKVCEIFGKGDG
 UniRef90_R5FSX3 UniRef90_R7K4Q1
UniRef90_D0RRD1

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UniRef90-A0RQC5
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## UniRef90_A3TKJ5

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UniRef90-R6ME73 UniRef90-UPI0003C15717 UniRef90-K7RNE1 UniRef90-G9YEN7 UniRef90_U2ZRZ6 UniRef90_S0AN48
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UniRef90_D0RRD1

LT DGAAPVLLEVHESGTTCRLITAVAAAGHGVFEVIRGPR IN DIVVVDKESGTSLRLLIPIMSALNINTTFIGSKK
 LNKTDAKYDIVRKMRAS LDTLGPLLARFGNCEVSLPGGCA RASTDEDNVHAGSSRDPILLCGPLLHRLGHAFIPDLGGCK TNLEWHD $K L V A D Q P V E L F L G N A G T A M R P L A A A L C L G N N D I I L T G E P R$ VF DPGRHHLPEEMRSS DMLVPPLASRFGVARLEDNVKGCT $\square R R P A N S K Q \square Y \square Q N A G T A A R F M A T V N D G N Q E P V V M G G T P R$
 K $\square P A T Q A S U D V G N A G T A A R F L T A F L A L Q P G G S Y Q L D G D P A$ LPCERAEARRMRGMAGTAMRFLTALSSGQEDEEVVITGSSR KRQFDEPDAFNFGNSGTTTRLMDGLLAAGLGIPAVVTGDDS YLDTPEFLESCARLRGSVLLI GPLTARFGRAVIAKPGGDK GLDKPEKKVIDALGSGLVFRVFAALTCFTTTPAVITGDEV
 $M N S L R A S Y Y F Y G S L L G R F G E A T V G L P G G C D$
 A SPDPMLFSQ $\square R G S \square T L M G P L L A R F G R F E V K T S A G G D D$ W ENLSEPSNVLDFG GNS G
TM R號

RTAFFAVQEGKVI TGTR $L S G S C V R K E D M E K M R S S V I L L G P L L A R Q G K A C I V Y P G G C M$
$A L D Q S R L P A E E V V R M R S S U V L T G A L L G R L G Q A S F C D P G G C V$ TAMRFMTAYFAICRGEEHDTGTER LLSAEAPLS LDVGNSGTTLYLLAGLAAQRRGPVTFDGDQS

$\square D L D A \square D V A A A R R T R T V D M F L G P L L H Q F D T F S L P Y A G G C D$ RPLPNGSVAQDRASDYLAGVLLT QF GEVTIGLPGGCP N A I PKRLMREMRSSVIFLGALLAARTGSARLCYPGGCE
 IS HI AP YELVRKMRASDCLLGPLSARLRKAEVSLPGGCV LDMEADDAEAAVRTRSIIMFLGPLLHRMERFRLPYAGGCD LK E PRK LLNCNNSGTSMRLYSGLLSAQKGLFVLSGDNS FK FKKKDTKIYVGNSGTCARLDSGLLSTHPGKFYLYGDQS


LDNQFAPYELVKTMRAS LVLGPLLARYGSAKVSDPGGCA LDDAMDLA AARKTRSDLMFLGPLMHFYDEFKLPYAGGCN LNASKDTLRADCGESGSTVRFLIPVGLLTGKEVTFTGRGR AYEPRKLDDYFYPDRTTYLLVAGQLKRSRKAYIPYPGGCN PTQCPDS\YVGESGTSYRLS\GLLVARKCKTTDKGEQQ GGLLREPAAVLDVGNSGT MVMGGMLAHSKKATVSLPGGCA GGLRREPAAVLDVGNSGTTARLLLGILAGQPFHACLVGDES
 $P V Q S T L P G Q T A A Q M R A S I L F C A P L L A R L G R A E T V L P G G C R$ $S D L V W$ TGRSIRNTLLILGALVARTGAGSVPLPGGCD ARNATAP DEVRRIRASYYLIGVQLGRFGHAHVAMPGGCN



E WRMPCDLTKK DRAS DFTVGALLARFGCAS DCRSGGCN E IETDDVIELYSGDGGTTNRFIIPLLALGKNKYSLIPSEK GLK $\square$ S DGIVHVHHAGTAMRFLTAYFSAKDGE TTLNGSKR RTKPVGTCLLDCGEAGTTMRFLTAYYACSERELILTGSSR

EKELVTPKFLYFGGSATTLRMS $\square$ P $\square L S V L G V D T \ I D G D E T$ AATEGTD


LDMDA $\square \mathrm{D}$ DDAARRTRTVIMFLGPLLHEDDHFQLPYAGGCD SFKYNKKIIINAQNSGTLGRLIMGLLVNSTYKIKIIGDNS SDFS DKVKKDRGSYYFLGSCMNYFEKDALKSCGGCN LPSRNEP LVLDCGNSGTTARLLA GVAAGLGI RAVFKGDAS


## UniRef90_U7UFAZ

UniRef90-A3TKJ5
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## UniRef90_A3TKJ5

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 GDFTIKGNDSSQFISGLLFAAPLDEGNSKIIIEGELESSP
 GADLMFDKDTVTGSENDIMAAALAHGKTRLL NVAKEP




 GEATVDASASSQULSALLLAAPAGQQGVRLMCPG$A V R P A$
 GTYMLLDEAS $\square T G T A N I I M A A A L A T G T T T I Y Y N A A C E P$



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



 AVVVHWLDY N DQKLKVPSAQLKSAWCLAALNTKGDST DE E $D R T V V L T E R G D T$
$G T D F T L R E D P S V G A$


$$
\begin{array}{ll}
V V T E N A L C A A A R H D G V T T
\end{array}
$$ ANDHWLD Y ASVTTTENFVLCAASASGVSTLVDCGRVTSQP

 VLLTERGDT

 DRPIVLTERGDTVTENALLAAARHDGVTVIRRNNASSNY ACDYESPQASAQVKSAFILSALQAQQGTSTYRESENGLSRN




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 HSENMLTFMEAPG
 EVTDTANFLNQMGAKI S GAGTDTIRI EGVVRYLRGCRYTV
 EVIA LCEEFLTACGASVEGMGSPELII HGGGD$L$ H G TRYTV Y 1 QQLCCHMLNQMGAR SGDASNLLTDEGVKVLHGAKQHRI Y I K Q TL ETLSTAG SSYDVNADYSQITVYPGHYRSA NYTI E:IMDLDGLLKKMGAKDK VVGGQKCIVI EGVVKMKGAKHVV E: IDDVATLLNNMGAHIRGAGTDUIVIID GVEKLHGTRHQV HVQDVAHLLNAMGAKISGDGTNQLSV EGVDSDHGTTYTV SRDHSERML LGMGAQU SQSGLEVEVKPLKGAYLKPLILDV HVQDLCHLLMRMGCHI
SRNHTE LMMLGMKVEALL
 YIKMTLSLLSE IGVVSDFEGNTICVQPLKNIQKKEAV
 EVVVSLC R F L N G A G A K I E E G A G S K T I R I

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 Y I K M T L A L L N E LGGVK T S FVGGNTDTVGHAERVGLHQF QLTV
 HTE I MLK S L GAN
 $M V Q D L C F Y L Q K L G V E V E G I G T T T L R V T G R E V I D D D V D Y A P$ M V Q D L C C F F V L M T L D C L E R F Gll K V E Y S K D L R E F E V S K QE Y K $\quad$ P T K Y R V

 Y I N I T L E C L R R H GVVY V E K ERE GQWLI RGNQR Y R R GE Y T L

 S RD H T E R M V R L F G GE V
 EVADLAD FLNRCGGSVEGAGSSTDIDEGRRALGGCVFSP



 E I K DLQN YL NLLGAKVSGA GSPV IK IDGGFP L YWDMTLNLI ERF
 Y I E M T L A L L E K L L A Y T S F V


 EVLDVI E L LSSMGGAI A WTEPGTLLRI R GVERLLHAAEATV
 H TEELLFC K Y L N EVIDVMNKLNSMOAB
H TE E M L S HL GAR I

## UniRef90 S7TI47 UniRef90-D8IA63 UniRef90_UPI0002D3E8D4 UniRef90_B9KG80

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UniRef90_DORRD1

MPDQDEAGTYMAAAAACGG

1 P D

EADYSNAAF LVDAFNLLDGFVKVKGALKTSSYQGDKRYKKY




PGDYALASFYASSSIVSGGEIVI EDVYELPNFDGDHIVNF
GRDWSAASYWYADAALSSGWVTLPGLRGGYRLQGDSVAAE




UniRef90_D0RRD1

|  |  |
| :---: | :---: |
|  | ITVKKMGRLHAMDIDVSDIPD |
|  |  |
| Ref90-B9 | LEQMGFSFDISEDSISINPAKEDKTSEYPGFPTDMQAQFM |
| Ref90-UP |  |
|  |  |
| UniRef90 ${ }^{\text {c }}$ |  |
|  |  |
|  |  |
| UniRef90-12FX5 |  |
| UniRef90_E6L982 |  |
|  |  |
| UniRef90-UPI000 | GLD DEGD |
| 隹 | LAHHGLRVDADTQQWIASNSTPNALEMDFNTFSDTFLTYA |
| UniRef90 A8UE58 | YQNFGVDTHFNSLSURLVKTGDSGLVFHLSDAPDIAQTIA |
| UniRef90-R6EQ14 | MGAQCTVSEEGLFVVRPKSGGHLQTGPYPEFPTDLQSAAM |
| UniRef90-H1X6B7 |  |
| UniRef90-J9FBE2 |  |
| UniRef90-14L8L9 UniRef90-K1LON5 | S |
| UniRef90-K0ZJ39UniRef90-K1LWB | G |
|  |  |
| UniRef90-C9YE81 | LGHDKHIFLSGNQRMQVTRDFDGAMPVIGDGPWPQFATDQ |
|  | LEKMGAKI TIGD ICVQYSELKS |
| UniRef90-AOROC5 UniRe90-10HYX3 |  |
| UniRef90-B3ENJ1 |  |
| UniRef90 <br> UniRef90 |  |
| UniRef90 |  |
|  | , |
|  | MGAQIVPDSEGRAGRLVSPLLLETDVYPGYPTDLQSPMLT |
| $\begin{aligned} & \text { UniRef90-R5GXQ8 } \\ & \text { UniRef90_R6AQZ5 } \end{aligned}$ | FEPLGVHTAYDTEHELVVLTKCQTYELDL GQPDLAQTLV |
| UniRef90-UPIOOO38 UniRef90 Z9JWL3 | K |
| UniRef99 | LHNDGWSVAERRGPLVVKQPFTPNTLPK】EAAPWPYFPVD |
| UniRef9 | MGFECSLSEEVDLTTVPGPLKAPLDKDHPLPFPDNLIPFFA |
| UniRef90-UPIO003 | MRAKIKIKNVGDLEVQSSNLKATTVTEKMAPRUDEYPULF |
| UniRef90-D1PLU2 | Q ${ }^{\text {a }}$ |
| UniRet90-16Y6F7 | MGQRMALSSEYPSGVTVKPSELTAPLDKTHPMPFPGLNTD |
| UniRef90-D1BEJ2 UniRef90 A0A058 |  |
| UniRef90 |  |
|  | FHQDGWSRAVREGPMRVRQPFTPNILTKIEAAPWPYLPVD |
| UniRef90_U7UFA7 |  |
| UniRef90_UP100037 |  |
| UniRef90 F4XDA0 |  |
| UniRef90 H8XSC0 | NNDNTKVKNCOLT |
| UniRef90-R7L8Y4 |  |
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| iRef90-S11JZ1 | D 1 |
| UniRef90-UPIO00372BA61 |  |
| UniRef90-E9UW94 | Q N |
| UniRef90-X1KM17 | - |
|  | LVEDGCEVEEFDDAVRVHNTQVKTLPYPGFPTDMQPQUGV |
| UniRef90 ${ }^{-}$K7RNE1 | LARMGANIDVEGNDAVVTGVEKLSAAPVMATDLRASFSLV |
|  |  |
| UniRef90_G9YEN7 |  |
| UniRee90-U2ZRZ6 | LNNATECIKIGGNEMTVDKANFKGIIVDASATPDMAPVIS |
| UniRef90-E3F1D2 |  |
|  |  |
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| UniRef90-G1 6601 |  |
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UniRef90-D1BEJ2 UniRef90_D1BEJ2
UniRef90_A0A058Z7Y6 UniRef90_UPI00037BEF94 UniRef90_U7UFA7 UniRef90_A3TKJ5 UniRef90_UPIO00377B119 UniRef90_F4XDA0 UniRef90_R7L5S8 UniRef90-H8XSC0 UniRef90_R7L8Y4 UniRef90_S1SJZ1 UniRef90_Q17YI6 UniRef90_UPI000372BA61 UniRef90_E9UW94 UniRef90_R7JGH5 UniRef90-X1KMI7 UniRef90_UPIO003C15717 UniRef90_K7RNE1 UniRef90_G9YEN7 UniRef90_U2ZRZ6 UniRef90_S0AN48
UniRef90 E3F1D2 UniRef90-H1D6E8 UniRef90_V6VB38 UniRef90_G1X601 UniRef90_R6Q0T1 UniRef90_A0A031J8Z3 UniRef90_R6M1R4 UniRef90_UPI00047056C0 UniRef90_X1C3X3 UniRef90_R6TIU6 UniRef90_UPI0002892E8E UniRef90_X1G247 UniRef90_R7G1I8 UniRef90-T0DLJ0 UniRef90_UPI0003FA40A9 UniRef90_UPI0002882F42 UniRef90_R5HEF1 UniRef90_R5THB9 UniRef90_Q96Y91 UniRef90_R7J011 UniRef90-T4VJ80 UniRef90_UPIO0036B8E0B UniRef90_C1EG02 UniRef90-W6K4E4
UniRef90- 9 YY73 UniRef90_J9YY73 UniRef90_R7K4Q1 UniRef90_R7K4Q1
UniRef90_D0RRD1

A LA A F A Q GETVI R N VVA H|L|R\|KES DR|L|AAAAANLLERAGASA
 A L M L K A T G K S I I E T I F E N R M N H D E L L N K M G A S I K L N K K K



 VILAALRIE GELLTGDESLKDKETDRVLADQNELKKDGAEL VLLAVARPSTRITGIANQRVKECNRIRAMMDELAKFEVET I AFALANGTSLLKNAKEQRVKESDRIKAMVTNGQKCGUKA
 $A L A P L L G G S V R L D G L G H T R H Q E T D R L A G M A N E L S K L G Q L V$
 LAALARSEGDSRVMDAGELRVKESDRI NTVSETLVAYGADVV GLATQARGSVLFHKMFESRALFFVDKLDEMGAQMIDCDPHV
 $P L L L T A Q G$ MS C A MKIAFHDT GLSTLKVKETDRLIALQNELKK DGVVT
 SIALVVTGTVII HEKMYESRLFFVDKLIAMGAQI
VLSACATGAFELYNAAELRAKESDRISAVVDNLERDGFVC VLAAFAHGRTEGRGAAELRVKESDRIAGMVAALRAVGVAV
VTCFGLG $\square$ A CE $\square S G L H T \square K \square K E T D R \square E A \square K T E D S K \square G A K \square$ ALMSVSGGGMVEETVFESRFK ALCCAEGNCMVSERVFNGRF
 VTCAMLRRPFRFSGLRSLRDKETDRMAALQAELAKFGDAL AAACYAPEPVTLTNVPXAREKETDRDEVMTRELTALGALV
 1 I A ACAEGSTLDHDWV LI

 $V \vee M A A A R G R S T I T G D A N Q R D K E C$

 F L A K C D GlV S L IVETDHRDRLLYYWGELQKLGAKAQEVA ENP



A 1 A A S A Q G Q T LI H D WV I A MLLFA K G K S VVVK NA K D L R S K E S D R I K A L I S NLK A L G I E C


 LAA L A A E GETi IDD R I Y H DDR GYE D $V$ IA A EAE GQTLI HDWC VLGAFSRG $\quad$ GTRRVNAKR VR LIKECDR LHA Q $M L G L M S V G K S R I H D$


 AAPPLAAAMLCAEGESSIADVIFERRFACAEGFAALGGRV



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UniRef90 K1L0N5 UniRef90-K0ZJ39 UniRef90_K1LWB2 UniRef90-C9YE81
UniRef90-A0RQC5 UniRef90_AORQC5
UniRef90_IOHYX3 UniRef90_B3ENJ1 UniRef90_C6HZF9 UniRef90_UPI000474F019 UniRef90_UPI00036B2269 UniRef90_R6ZTM9 UniRef90_R5GXQ8 UniRef90-R6AQZ5 UniRef90-UPI00038243C3 UniRef90_Z9JWL3 UniRef90_UPI00016A7C00 UniRef90_UPI000255E9F8 UniRef90-UPI000364BABF UniRef90_I4EVV9 UniRef90_D1PLU2 UniRef90_I6Y6F7
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UniRef90 E3F1D2 UniRef90-H1D6E8 UniRef90_V6VB38 UniRef90_G1X601 UniRef90_U3T9Z1 UniRef90_R6Q0T1 UniRef90_R6M1R4 UniRef90_UPI00047056C0 UniRef90_X1C3X3 UniRef90_R6TIU6 UniRef90_UPI0002892E8E UniRef90_X1G247 UniRef90_R7G1I8
UniRef90-T0DLJ0 UniRef90_UPI0003FA40A9 UniRef90_UPI0002882F42 UniRef90_R5HEF1 UniRef90_R5THB9 UniRef90_Q96Y91 UniRef90-R7J011 UniRef90-T4VJ80 UniRef90_UPI00036B8E0B UniRef90_C1EG02 UniRef90-W6K4E4 UniRef90-J9YY73 UniRef90_R5FSX3 UniRef90_R7K4Q1
 E V T D D E I Y I E G V E K LIE G GN T T S H N D HR $\square$ A M A L S
 $R L N G H I A T I N G T K E L F G A D V M A T D L R A S S A L I L A A L A A K$ NEVEP FQVI PSVTMPHEVQDHTYDDHRMGMAFMPLDLTKT




 GGTPHSADVIA GPSKLLHAADLVIDPDDRAGFABHLIAAALAAB


 KP TPDGF LI TGGVSRLQAPAESNHGDHR DAMLQQSIALLLTS N
 KVDGD M L F I K G G T P EDTDDSSIVRSDSFHPTS PVVSIATYEDHRMAMSFAPLDKLLQ




EVS DKALF LEEGG IIRQNVSDQTYNDHRMAMAFTPLML K T

 G $\square E A D D V L Y$ V V T P HYNGRPIATYHDHRMAMAFAPAAMVCE
 QA DPHRVLI F G GQADNP S TVVSP Y II R VA I AL L MVAA I S D G LMDPHRVMI EGPTKWRAGEIMCPPAL RPGVVILLAMLAA P





 QLLDP $L$ MI TGGRTAKWRPAEVMMCPPALDRPGVVV LLAMMLAAN


 SREGPSAI I CGKTKLSSGAPIMASDLRASAALVIAALAAAKG
 K DT K D S MII Y G K N K I E P Q NKK T K G D HR I CMSS II L S L VT G

 $L L D P H R L I V A G P T R W R G R E L I C P P A L R P A V C L L A A L A A Q G$ LEASVGQDT T NGPVIF NASDASATDLRGTMAAVLAALCAP
 LCCDPHRAVVISGPAQLARGSRLESSPDDRAGMAMMI AAMAAD G SSAEVMAS DLRRAGASLVLAALKS P
$E L L D Q H R V V Q G P N E L V K A N L S C P P A L R P A S L L L I G M L A A R$ QCGGDCLEVYGEGFVEGGTAKGYGDPR DTMAFAVAGLARR NTAGRVLHI RPGGALRG TRLSAPDLRGGAALVLAALAAQ $R V L N D S A R I H G G G A Q L T G A P V R A L D L R A G A A L A L L G L V A S G$


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| :---: | :---: |
| UniRef90_S7TI47 | DVRJLDDTSCV |
| UniRef90 D8IA63 | III D DAES |
| UniRef90- $99 \mathrm{KG80}$ | GTK1 H R |
| UniRef90-UPIO004 | KVLMEDPEVVNK |
| UniRef90-UF | GTRVYGV |
| UniRef90 UPIOOO2DE2308 | ETIIHDSWQUKRGYNN\\|LDK |
| UniRef90-V2H3U2 | RSEI |
| UniRef90-E4RY58 |  |
| UniRef90 - 12 FX 54 | LEEKCVEK |
| UniRet90-E6L922 UniRef90 G8S855 |  |
| UniRef90-UPI0003828ACE | GTTIAGVQHIERGYENVVGA |
| UniRef90-D5EN | ELA K P P C CGK |
| UniRet90 A8UE5 | V KGADVV |
| UniRef90 H 1 X 687 | DAPIADQAA GVSYPDFKRDM |
| UniRef90-J9FBE2 | GTR DNVEQIDRGYECD |
| UniRef90-14L8L9 | QLELL GYQDVHCSFPDFFQEFERL |
|  |  |
| UniRef | NDEFILRGYSDI IE KL R SL |
| UniRef90 K1LWB2 |  |
| UniRet90_C9YE | TVANAM QRGYEKLDEKL |
| UniRef90-10HYX3 | GIT GNVQQi DRGYQEDDVKL |
| Uni |  |
| UniRef90-C6HZ | AGTDFVETSFPG |
|  | DIICDSEVVSKSYPNFWKDVESV |
| UniRef90 R6ZTM9 | FVEQAEYIFRGYEDICRD |
| UniRet90-R5GXQ8 | KTVVENCHFIRRGYEDIVRDF |
| UniRef90_R6AQ |  |
| UP | PVRIIDPGAAAVTYPAFFTELARLA |
| UniRef90-Z9JWL3 | GTS LRVAVINRYED |
| UniRef90 - | R N A P ${ }^{\text {a }}$ |
| UniRef90 UPIO00364BABF | SFKIKDFNYVKTSFPSFTKTINK |
| UniRef90-I4EVV9 | GTSVRNVDIIARGYEQLYERL |
| UniRet90_D1PLU2 | GVTLCD |
|  | D |
| UniRef90-D1BE | VRNVYM1RRGYEDLADRLTA ${ }^{\text {R }}$ |
| UniRef90 UPIOOO37BEF94 | QSVIKNALPDIRRAHPRFV |
| UniRef90-U7UF | TVVIDGAESVA |
| UniRet90_A3TKJ5 | G |
| Pploo0377 | - Q |
| UniRee90-F4XDA | QVIQLIS HIVR |
| UniRef90-H8XSC0 | VI QDAEVVSKSYPMFWEDL |
| UniRet90_R7L8Y4 | QTHMHRDYHLDRGYDSDDKKLQTL |
|  | GTSVR |
| UniRef90 Q17Y Uni Ret90 IPI000372 |  |
|  | GTSVLRTYVIARGYEDLAERLNQL |
|  | - |
| UniRef90-X1KM17 | ETI NDAECVSKTFPQFWDLLKSI |
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| UniRef90-K7RNE1 | ETTLRDVYM |
| $\begin{aligned} & \text { Unif } \\ & \text { UniF } \end{aligned}$ |  |
| UniRef90-S0AN | FKNAEKINKSYPEFL |
| UniRef90-E3F1D2 | INNAQQIERGYERIDERL |
| UniRef90 H1 | GSIVNR】YHVDRGYESLEDKLQAL |
| UniRef90-G1 G 601 |  |
| UniRef90-U3T9Z1 |  |
|  |  |
| UniRef90-A0A031J8Z3 | R $\square$ A DAWQIERGYDKFLSKVQAL |
|  |  |
| UniRet90-UP100047 |  |
| UniRef90-X1C |  |
| UniRef90-R6TIU6 | K S GYEAVNKSY |
| UniRet90_UP10002892E8E | VSRMNUYQLERGYGNF |
|  | GSEILNVKHIDRGYCS |
| UniRef90-TOD | NLENKDCV |
| UniRef90-UP10003 | DAEVV |
| UniRef90 UPIOOO22 | DLS NDAEV |
| UniRet90_R5HEF1 |  |
| UniRet90_R5THB9 | NIHHILRGYED |
| Unit | GT EKAECVNKSNPN |
| UniRef90 T4 | GTDLNNVEV |
| UniRef90-UPIO0036B8E0B | GTRVTNLYQLERGYDS |
| UniRef90-C1EG02 | GVTVMDPTCTKKTF |
| UniRef90_W6K4E4 | GTSVRN |
| UniRef90_J9YY73 | K ${ }^{\text {do }}$ |
| UniRef90-R5FSX3 UniRef90 R7K401 | K NID S |
| Ref90_DORRD1 | $\mathrm{T} \Pi \mathrm{NDL}$ |

KRLISSRARS $\square$ A GK $\square$ N $\square$ PGDNLIS QRS LILGS LS $\square$ GETT SGGAEMPSSKSFTQRYVLASAFLNKSVV MKNVK $\square$ QP VNN $\square$ NGN $\square T \square P G D K S \square S H R A V M F G S \square A E G K T T$

PDKGEVEVGGAKNAALPDIAATLLTADECW

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


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

$\square 1$ S EK $\square$ YHMCGHVD $\square L K D N L M S H A T L V L A S Q V I G V T K$


$F Q Q V P H D A D V D T S V E L Q Q G A G C T A R W Q G S D Q T V Q G V P S T C$ $\square H G \square P P V S D \square K N M G S \square L Q Y \square G A D V S Q V S D N F T \prod D T T D V T S$ $1 H H V D Y S D D \| L T T \square D G M R K L G A H I E L E G S D V R V Q G \square$ C

## I T V K G A

TEGLLENDEVLATAKAMQSFGATVEKMGKGVHWRVVGRGV LNGGT TTNDDDVAMRDAESVGSTIT $\square$ NNRSIK K $\lfloor K G F L S G A D C L S T \square S C F K E M G V E I T Q N G D E V T V V G \quad K G L$ LENDPY TEDTRNMVK LLHHLGGVARFEGPNTLRDKATR L GNFPTLVDVEHKI RFIEELGGKVHVDHDEQILVVDAKDL $L N Y V T \square T G D D S \square A L D \| A Q R A G A N I T M N D S S U K I R T S F T$

FVhlp NGEDTKNAVIAVNEAFFNTDAESGKVSPDSVHVGE $V K Q V P G \square S D I T H L L E L L S F A G S S S S V N Q G N Q V I F Q G L H L D K$
LGNVPANADVETMLALLQQAGWHTTRPVSDPQTAVILPGH $\square D N V P A S S D V R T L L D L L R Q A G W T A A H P V S E G P T T L V L P G E$

LAFA $\quad E G T P Q D D L A \square Y T A L$ I DNDDLTGNVKVTVQALRDMGVVID DIGLNQVRVHGVGL LDNVPASSDVQTLLDLLRQAGWNTAHPGDSRTVLVLPGEA


$\square T N V C L D G G V R V T \square Q A \square R D M G V V I E T \square S E S S \quad D R V H G V G L$ $R T L G L D V E E D K A N Q R A T V G G C G G$
PSVQAESDE
D L P A DVRVLRRGVEAL
ID NVPATANVVAMNQLLQS DNVVIEFDRHQQ LLKMDATRH LSNVPDSTDVQIMLLALLQQAGWHVTQPVGEPTTYVILPTK LSPLCDNDQI TELVKAFNQAGAHLSWDGD TVESRSG



GQFYKKEYT乌NVKESGTCARFLDPUAALIGNVTIDGAQR LPRFFSEKITITGSSQ
$R \square A P$ EAAARMRAS $L \mathcal{L} F C A P L L A R L G R V E T V L P G G C R$ LTHCDPDTVAARE VR GS FLLAGPMLARYGCI RLPAPGGDR RF VPAQLTDSMRATVLVLAPLLARLGKVRVSLPGGCA
 DPKKRGSAVFPCRESGSTLRFF $\square$ P $\square$ ALLSGNDADFTGSER

GGLDEPTDVINCNNA DSNLQLLIGAAVGQPDTTFFTGNGS S SNFKCPEEI YVGES GTSYRLSIGLLAASGCVTRIKGEDS E GLQEPKAVLDVGNSGTT $\square R L M S G \| L A N T P F F S C V Q G D E S$
$\square S K A S L P \square D L A T K M R A S F L I V G P L L S R F G Q V E A T H P G G C S$ AAREMTTDELNDPDRTTYLLAAAQI GRGE IARVPFPGGCA CPSDUYVGESATSYR $\square A D G L L G S A G C \square T H V K G D P D$

SATLLRLLLPSLLRRHSQVRFFAG
NEPYTFPQALSSRLRGA $\quad$ YA $L A B P A S R G L R A R \square E S \square G G D F$ KPEAGPD LD $\square$ A AR $\square R A S Y Y ~ L V P A L L G T Y G R A R \square P W P G G C R$ TTLTPDDGEAASR $\square R A S Y Y \square V P A L I A R Y G R A R \square P W P G G C R$

LACQGGAEEVCVSESGTAMRFVCADSVTTQHPARDFGTGR KGLKA P ITA PI NVHSSSTSGYLLLPVLAGQEFEVSVTADEVV APKANGLDEDASS DRASYYLVPALIALACGRAGLPWPGGCR

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




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TGGARPVDDHLSGLAQMGVHCR
EEGAR
I GMRPVQTHLLALLRQLGANTELDSEGQY
I GARPVDMHLKALATLGADVSIDRGWD 1 GNRPVEEHUNGLRKLGACLTVTDT

$\qquad$
VASTDN Y I EAHASQLQ

GNGF $\square E A S V S G R D H$
$\square F Q R P L S V Y S N \square C L G Q G \square P F G V T E S G \square T V A G P \square E G G Y F R \mid V$

FQPQSLWQTVEPLESMGVK VVAHKGFTDPDAVIAPETLI LAKRPIEPLLMALGENGVKFE】AKRPMKRVTNPLKQMGAN】DGREEGTFTPLT IRGGD LIK
T G T RPVSVDLKGFQSMGGKVRSTSDGY I GGGPYDLHLMVWEQLGCKIL EKDDHDEVTAPQGFI LAKRPMDPLVKALEANDVHLKLNEDGFYDVD

STLLERNFDEFKDCDGCRDERHSEFDEFSRRAE $\quad$ HDLD $\square G S R S F T P H L R A L A G F G L Q V S$ GQGSAVADTGGHPR MGVKVHDAHHGFLYCEVDK K GC
$\square G E R G M E Q H F K \nabla Y E R F G D R T T V D D H G Y V V E A A G T P R A G$

 I GDRGMEQHFKVYEAFGDRVRV DDRGYAVEAGKAVPG L CQKSMREDKEPLEKMGA TVADTDYVSAPIEVESEGVR I GRRRVDTHLAALEALGAEDEVDAGYNMKVDKLRGQDGL K K L RHRLCQPVI DALHGLGAWGVCTKGDGHAPVVVRGK LLNHVRADVFDGMRAMGTELEFERKDCDP RVMKMCPTQQA
 MHQAGLRQLGADCNDEHGCVVAQAETLR $E Y Q Q T M D R D G E F M S Q M G A T M T T A N E$
$I G G A R M E L H F K V Y E A F G D R S L Q D S S G Y G D E A H A S H T G T V S$ LKQYDSRP


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 GAK $\square Y M D F P S V G A T Q N \square M M A A S L A D G Q T V I \quad E N C A K E P$
 MCAPYAKNPVTLRLVGKPISQP
 KKHVEIEGSSSQFVSSLMLYYAKKGGG EFTARNIKS TG A $\square E Y$ Y S PVASA QVKSA LLA GLRAEGVT AVTEPHIS
 GGVIDFP DSTVGGTENALLCASIASGDTKIA NAYITP KRY EVDGVSSQFVSSM FYYARKGGG EF EVVKNMRSPG
$G R V E D D G L S S Q Y V S A L L M M G A L G S R P T D V L T G D I G A K G$ PLYYSSASVSSQYVSSGLLCAPYARDEDVVLVGGQVISQP $P$ SEFSMDDKGMTATSSLASI AAASLDGESIIKK DASLET $T V A \backslash Q L D F P S V G A T E N I M L A A V F A E G E T V I R H$

## LV

 QGCELDASASSQYLSALMLLAVPLLPVGFGIDTRRYLAREP QGCELDASASSQYLSALLLLAPLLPVGFGIDTRRYLASRP PVVLALARFRSRGATDAAVLRAVVAGAPLRL A AKEP
GMPNLSP
ENAAKK SIDYEIEDGNSQVKSSUI FCALDAGGVRAVIHEKTPSRN GGRTEIDAMDSQPVSATLMAASLAEAPSET IADRAGEKP GRELILSDPSVGATENLMLAACGGEGTTSUC NAAREP

 GAEI QLEFPSVGATENILMAAVLAEGVTTIH NAAREP
 S S VEMLDDTPPEFAAALALAAWTYPQGLSLRFAEDWKGVA $E T V V I P E T L S E K A Y V A T L V A A T T W G M R V T$
$A$
$A$
$V$ $A V D Y N L P V A S A Q V K S A L L L A A D Y A K G K T T V S$
$R Y V A K D D E T K M A M D F A A L N$

[^2]

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L
LETMGVSVWPSDRGLVVSRNGDDTTEPYPGFPTDDQAQFM $L K A V G A R V D \square S D D S V T V W K A K Q P L A V D \square I T G P Y P A F P T$
 L EEMGVI I E E ENGVRVIGPETDKAVDI KTMPYPDMQSQMM L C MGCEVKQTARVRGKPTIDDTDCPDLAPVLM L RPMGCEVKQTATSTTVTGPSPGGLDIDMEPMTDAFLTAS LQQMGAKLLIEEQFSTGEPRPIHLTAEDVPAVIDELPLVAC LDLIFKNN:LINGEEDRVISGINEPVSVDADMNPDLCPPLS
$\square R N Y G A K \nabla N \square S G D E \square T V E A A K K K P \square N \nabla S \nabla K D Y P D \square A Q T \square A$
LFRNSSSVYITPECLPSGSVQPFELACGTHPGVISDMQAL


LREAGCAVTSDNGGDT LRRVRELRA DRP DHTAPYPGFPTD
K QMGADI E LPDRVRFAE LSAFQLSVVDQTCQLRTLMPLLC LEKMGAEVTWTENSVTVKGPP
QVGLRTAPAGQPHTLKVTGRPEQGLRASGKECPDLLPTLA

 $L Q S V G L T V T V K P D S U V K P E R G H S T D P V D I Q N G P E S Y F P L A$ L L QMGAS


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L L M S S I E G Q ClI TK Gli IE NQRVKECDR\| K AVTENLIIKVGVVC VLCCFATSSSYLYNARGAKDKESDRIDAITQELQKMGACI


A $\square$ T A CAEGAS $\square$ RETVFESRFMHVP E $\square$ MR $\square G V D \square$

MQAQFMA LTTDAEGTSTVTETVFENRFMHVAEDRKMGAHD A LLLCAEGTSVDETVFENRFMHV ATAAALNGVTL TGTDRDKDKESDRGQAMADELAKFGVPV VLAAVSKGTTK $\operatorname{CRG\square ANQRVKECNRIKAMKDELKKFGVEC}$
 VIGr SK Gir
VLAA HANGKS VIKDVGR $\square$ K $\square K E S D R \nabla D A \square M K T \square E V A G V K C$
$F V L L G L K G A G T S R V Y D Y R Y P E R \square A F V E E L T N L V S G D$ VI GIIF SEHGVEDDNYARLKTKESNRYEGIIDMASRFGAIV
 ILSCGKTGNTVITDTARDRGKESDRVNAMLECIRSLGGSA ALAVSAPGTSVVARGTSIFKESHYGSRFDHLVGMEKMGAR\|V A LALTVSGDTINPGRHGNLLPQLARLGAVIQELSSTKCRL ALMLTAEGTSIIETVFENRFMHV GLALGFPGTHFFSDPDNPG VAAAQAAGQSRFRGLEELRVKESDRHSNATVAQLVRMGGVV MQAQMTA IQLVAEGTSVVTETVFENRFQHLEEMRRMNAHV
 GLAAGFPGTHLFSDPDNPG FLMGLAEGESVISVGKHDDEKNANYLDAGGGAVRSVGGKC

ALACVLPAPSTLTDVG\|LRDKESDRDEGTRALVAAYGGTS ALASI ADGTSITENVFEARFRFVEEMIRLGADARTDGHHA

 MALTC $\square K$ A AS T K S P V K LDPAAPAATS LEVI QGDELLE RLGGR
$\square 1$ A A Y A DG $\square$ TVLSNVLDH $\square$ VMD KR $\square K T V I N E L V K A G \square R \square$

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RSVGGDLI IF G GA VK G GAFDGGGDHRTVMSA】LAATADG

$R V S G R V A V V T G A E R D H G A S V R S T D \square R G G A A D C V A A D A E G$ $Q V E S G C L R I D G G V P Q G G E L D C A G D Q Y L A L A M L V L G A R S K$
 K V
KYEDRQLVIHGPDK
EE DSPTCRLTGPQQLTGA GVEATD DRTGSALMDTGLARG YERGDSELTIFPGRLNWDEAWSAPTPFFGMALGQLA WLRP $D \square E G N R L I \quad$ Y G CS D $\square D W N L V D A C Y D F K M T \| L F L V I G M \square S K$


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| UniRef90-F2RCA0 | VTTILGGVDQ\RRGHADLPGKLLALL |
| UniRef90_R7G0C3 | GGEVEEDA】EADANKAFFEELNK |
| UniRef90-XOUCK3 |  |
| UniRef90_X1HET2 |  |
| UniRef90_G4KYV0 |  |
| UniRef90-F6CVF0 | TVTIEDCQTL |
| UniRef90_Q6E6L6 |  |
| UniRef90-L7UCG8 | P L V LT GPECVEKS F P G F WR Q L Q R |
| UniRef90-X8C1S8 |  |
| UniRef90-C7XWP1 |  |
| UniRef90-L1KUL0 | VT T I G G L Q L R G H A D L G K R T |
| UniRef90-LOR9G4 | G!SLENPGDLTEDLWPRFWTLLYNSL |
| UniRef90-UPIO003810440 | PLQLA NPGSIT DLMP T F WM F Y N TL |
| UniRef90-X1D0J5 |  |
| UniRef90_Q3YSR6 | NVI I K N $\square$ |

[^5]
[^0]:    

[^1]:    

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

[^5]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf sol25
    sol5
    sol0
    jhmm
    jpssm
    

