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UniRef90 C8W5 UniRef90 Q2FP99 UniRef90 B8GGE9 UniRef90-F6BANO UniRef90-K7S4Q3 UniRef90 A6TPR0 UniRef90-D8FFB8 UniRef90-Q20XW5 UniRef90-Q3AE44 UniRef90-M1 QA63 UniRef90-T4W5M2
UniRef90-P27989 UniRef90-UPIO003B379DD UniRef90-UPIO003B36CBD UniRef90_E1RJM8 UniRef90 UPI0003B548F4 UniRef90-KONSJ7 UniRef90-D5X866 UniRef90 B5E8C0 UniRef90_D5XEFO UniRef90-F3Z1M0 UniRef90_Q3A8H2 UniRef90 R4KE99 UniRef90_Q30WX4
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UniRet90_E1QGA6
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UniRef90_O2Z037 UniRef90-UPIO0037DEFEE UniRef90 - TolJmo UniRef90-B9M2M7 UniRef90_JLL588 UniRef90_D9S2D6 UniRef90-DXDDP2 UniRef90-H5VH31 UniRet90_J7IY75 UniRef90-C1DJC0 UniRef90_UPI0003B77B77 UniRef90 UPI00046CCC8C UniRef90 - 14 CO 087 EKRTVTEAVQKLLPVAEKDKI QTVWDRHKDQQPQCGFGK ERSIDPATRAMKEKAKSDGVETVWDRFEEQQPQCGFGQ K LINDAVQQMLDAKREGTQTVDRYAMKPQCGFGE ERSVDRATQEMLQRAKVERLETAWDRWEAQQPQCGFGQ
 VSATKGVAELI EKAEEEGI KTAWHRLLEQQPQCAFGQ S I DP TVLPLLEKADRE GVETAWHRYLKQQPQCGFGL EKSI DSASSQIMLQKAEDEGIV TA WDRYEQQLPQCSFGQ $K$ S I D P T V H Q ML A R A Q E L GL E T A WD RY EA MLPEC GF G E
$\qquad$ KRTVTEDGRL

K S I DKATQQEMY

K S MD P A CQEML RACEKS GLETA WDRDEKQQPQCGFGE
 EKRALDRTS QMMIEKTIEDGVETAWDRLQAQQPQCGFGQ
 EKMVVSLNTQD DQLI KKAA DEGII ETMWDRKKAMKAPCGGGE
 K SKLSVDPVIPNLYRKAREEGISTVFDRYEAQQPQCGFGL EEKTLWPDAARMLDKAEKDGVETAWDRLEQQTPHCKFCQ NGKKTIIDPASEELLD FAEENDLETAWDRLDNVEPQCBFGE
 , E E
 NERTI DELAKKVMLKHTMEEGIE ELTLWDDAKLMIEKAKADGVETVWDRLEQQTPHCTFCE
 $R S$ D S A A T L L A M K K G
 QRSVDPAAAAMLKDSDREGFDTAWSRLEAQQPQCGYGQ RSI DPGVVEMIDIAKENGMITAFDRFVAQQPQCQFGY SI WED ARAMLTKARAEGITETAHERRQQQQTPHCKFCE E EMSI WEDAHQMLRKAERDGI ETAWDRLEQQTPHCKFGE

 $M L S R D R A V Q Q M L D \square A R Q Q N V E T V W D R L A D Q L P Q C G F G E$ E QMETICDDARQMLRKAKAEGIETVWDRLAGQKAHCTFCE
 MDLLATQDMI KRAQEDGVETDFDRAENMKP
MRTVDPAALEILEYTKENNIDTAFDRWSAQQPQ NAGV RSADPA GVVEML E $\$ A ERRDRLDSVWER LDERQQPQC GYGQ KCYNSSNNCLI DKAKAEK N L L V WHRYEKMK P LICGF GE T I E E F E EATNRLLETGAKVGADSWQLRVKNQTPHCKFGE E EHSVVHVDANAMIKKLKEEGVLLVWDRLKEQEPQCGYCS TERTLWEDARQMLLRKAEAENIIPTAWDRMREQTPHCKACE V T I C E T TA E ML K K A R D A GL S T A F DRADEMSA CP I GA SMDTGVQQMLAK A REEGI DTAF DRAAKMN QCGFGS
 SPWEDAQKMI AKAGREGVNLVWDRLKDQTPHCTFCE NE TI L N Y D K VA E A S L A K A QR DGAAETMWWDR RAA A Q K T $=\underset{E}{N} \frac{T}{L}$
$\qquad$ $\begin{array}{llll}\text { E K K } \\ \text { E T } & \text { T } \\ \text { L } \\ \text { L }\end{array}$

K K MLL \begin{tabular}{ll}
C \\
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S WE D A H A MI R K A K A E GI E T A WD R LIE RQT P HCKFCE
RS AD PA A VEMLR RDA DREGYAT DWERYEKQQPQCSYGQ
EERTDDETAKP LI RLADEEG IE TA AWDRYEQQQPPCRYCA

 T $\square D T G V Q E L L G K A E Q E N J E T A F Q R A K E Q E P H C K F G L$
$R S V D P A A Q Q V F N V M D S Q G Y D N A W S R L E K Q K P Q C G Y G E$ LIDKARTD GVATVWDRHEAQKPRCGYCD


## QUERY

 UniRef90_H5SP18 UniRefe90-C8W085 UniRef90-B1L4Y1 UniRef90-Q8TKW2 UniRet90-F2NBY6 UniRef90 EEYYHPO UniRef90-B7R8Q7 UniRef90-K4LD03 UniRef90-10U942UniRef90
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UniRef90 D5X866 UniRef90-B5E8C0 UniRef90-D5XEFO UniRef90-F3Z1MO UniRef90-R4KE99 UniRef90-Q30WX4 UniRet90-M1NDP1 UniRef90-F2NIBO UniRef90-UP10003B3F9BD UniRef90-C8X1V0 UniRef90-UPIO00373BE17 UniRef90_S7V905 UniRef90 ${ }^{\text {E3PXW5 }}$
UniRet90 C6PVW5 UniRef90 E1YL48 UniRef90-K4LIDO UniRef90-UPIO0046D9080 UniRef90-M1MHT3 UniRef90-C0CR69 UniRet90-D3S2V5 UniRef90 DGMAY9
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UniRef90_UPI000472F4C9

## L <br> \section*{t}

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## 6

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G

50
60
70
TGLCCRHCLQGPCRTNPFGDEPKVGTCGATAEVIVARGDD LGLCCRDCNMGPCRIDPFGRGPQRGVCGADADTFTARHLG GGVCCRNCAMGPCR1DPFGSGPTKGVCGAGADTVVARNLL LGVCCRNCNMGPCR| D
 GGGCCRNCNMGPCR1
 LGGVCRHCLQGPCRI
 LGLCCRNCNMGCRI D LGICCRNCNMGPCR

| $L G G V C R D C M Q G P C R 1$ |  |
| :--- | :--- | :--- |
| $T$ | $C$ | LGGCCRNCNMGPCR1

 GGLCCNNCSMGPCR1 D MGLCCTNCSMGPCRIVKFGGEPRKGVCGATADTVVANFA KGVCCR1CGMGPCRVS
TGLCCRICLKGPCR1


QGVCRNCVMGPR1|
DGVSRCAMGPCR
TGVCCNRCTLGPCRI
 KGTCCRFCMMGPCRV

## E

$\stackrel{\text { Q }}{\text { L }}$


## A



## \section*{K}

Q GVCCRICTMGPCRVSPPGKGVQKGICCGATADVIASRHYA
$\rightarrow \square ん-$

## QUERY UniRef90_H5SP18 UniRef90-C8W085 UniRef90-B1L4Y1 UniRef90-Q8TKW2 UniRef90 F2NBY6 UniRef90-E1YHPO UniRef90-B7R8Q7 UniRef90-K4LDO3 UniRef90 100942 UniRef90 Q24P11 UniRef90- B8FRP8 UniRet90 S7USS UniRef90-D9QPS1 UniRef90-G7WPV9 UniRef90-C5A514 UniRef90 Fos2K0 UniRef90-Q8R9A8 UniRef90-F4COP9 UniRefe90-C8W5H0 UniRef90-B8GGE9 UniRef90-F6BANO UniRef90-K7S4Q3 UniRef90-D8FFB8 UniRef90-O20XW5 UniRef90-D6STM8 UniRef90-M1QA63 UniRef90-T4W5M2 2 UniRef90-P27989

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UniRef90_UPI000472F4C9



 RMI A A GAAAHSDHARDAVLIFKKMSEGKA GSYRIMDEAKL


RAI ASGAAGHSGHARHLAHTLKKTAEGKAPDYAI KDRDKIL
R QV A A G A A A HVD H A Y D AVE A L E L A A Q GK D D Y P I A D A G K L
$R G I$ A A GAASHSDHGRHVALTMREVGKGNASAYTIKDEEKL

RMIAA GAAAHSDHARDAVL AFKKMAEGEAEGYQIKD GAKM


RS S A A GAAAHSDHGRDVA HAFQQLIVEGKAPSYCIIKDPBEKL



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

RMMAA GAAAHSEHGRHI ALAMLLHLSQGHLHDYSIRDEEKL

R F V A G GSAGHSDHGRDCI EALHSVALGKSTDYSIKDEAKL

LMI LT GAAAHCEHGNHI AHALVEMAEGKAPDYSVKDEAK


RFV AA GAASHSDHGRDLVETLLADGRGKTRDYAIRDEEKL
D DL S T GA A A H S D H GR E I L E T L Y Y K T S V G Q A Q GY D I Q D T K K
R SAT G G A A A H DD H A Y E A V E A L Y Q A A V G K A P P Y E I
TMLLT GTGAHCEHARHI AETVLEVTEGKAADYKI T DTKK
$R F V A A G A A S H S D H G R D V L D T F A A V A E$
RMAAAGASAHSDHGRKVALLLKDVAS
LMLLT GAASHSEHASHMAKTLLEIA EGHAP YYYK OTVG
RFV A G GSAGHS DH GRDLVEVLVESVVEGSTS DYRI T DEAKL
RFLAGGAAGHSDHGRDCIEAFHAVAHGKTKDYHIQDSKKM
$R M \vee C G G A A$


RAI A A GAAAHAGHAKHLDHALHKWARGTAPDYAVREAAKLL
RFIAAGSASHSDHGRDVDETLAAVAEGTTRDFEVRDEQKL
RMVAA GAAAHSDHARDI AHVLHMSSEN

RMMAGGCSAHSDHGRELVEVLYHLAE
RMAAVGASAHSDHGRKVALTLKEVAE
$R F T A$ GGAATHSDHGREIDCHTVTV
$R A V A S G A A S H S D H G R D L V E V L A V$
RMCAAGSAAHSDHGRSLALYLENA
R F I A G GA A GHSDHGRDLIDETVEAVVE

T T V $V$ T E G T A S H A E H A R E V A H A


$R F$ A G GAA THS DHGRQQ CH L Y Q A A K G


$R S V A A G T S S H S D H A R E \| L H V R N A$ SPEGNYKI RDEQKLL
RGVAAGAAAHSDHGRDLLETLDAVANS
■MILTGCASHAQHGNHIAHTLHMVAE
RMVAGGSSAHSDHGRHI AHVLHMA
RMVAAGTAAHSDHARGI AHTMMADS


RHTVVGGTS S H S GHAR HV A ELLFREV A EGHVVDSYEVK DK E K L


D M I A T G A A A H S D H G R E I V E T $L$ Y Y K A A R G E A V G Y G I T T D P E K
R Gl A A GA A A H S DHGRH I A L T L L E V A E GHAPA Y C I K D E K K L

S L I V E GT T P HVVEHAREI L HT LLLETAE GK A P Y E E I K G K E K L


AVA A GVA A H GARGREIIMLALKAAAQGLLEM PIAGADK|L

$\mathrm{HS} \square \mathrm{AKR} \square \mathrm{G} \prod^{130}$
140
150
160
PEGQKDEDTALEVAKAALADFHEKDTPVLW RKVAAEFGI GPDTKSDAEI AKALAEKDLAEFGQQEGELTF





 K AVAS GLGI DSEGKEPDALALEVVRVAYGDMGNHHNPMKW KRIA QRLGI DWEGKS DRELTKEVADASLEDYSRQDSKDRW K RVAA E Y GI ETEGKPPHAVAGALADAMMGDFGSRRKELSM NSIAASRDGVNTD REDEEVAKDVAEDALEDFGKQDEVISF


 DRLMKEYGLDSPAD LI A AA M M EFGKQDGPI QF RRLCERYGU A LEESKDDMQLAKELSELAALEEFSRLKGESLWW HRLATEYGI QTDGRSPNDIAKDLALGILEEFGTIKNRIQ HLIA E E Y GI P T E GRDD D A A I A G D L A R G M L E E F G S I K N RI Q L

 ORVA A EYGI DTAGKDPLPLAGELAEQAMMEDYGMRQKQURF
 KQVAFTLGI DTANKTEQEIVEEMCQI IYRDFNSGATPMTY

 RRIAAELGVATEGRDALDVAADVVDACYSDFGSRRKAVNF
 RRI A A EVGIVDVDGREAKDVARDLAETGVQDFGFATEGLSF NHIAAAELGVETKNKDNNEI GKDVALALLEEFGTDKNSUKF
 HKVAKRQGI ETEGKSDTEI AKELAEQALDDFRTGEGGCKF
 QRVATRVGI ATEGKDEKQLAKELAEAALADYSRDDGESTW RRIAAELGVTVEDRSTMDIAAELDDDFYADFGSRKKEVAF
 UniRef90_UPI0003B3F9BD UniRef90-C8X1V0 UniRef90_UPI000373BE17 UniRef90-S7V905 UniRef90-E3PXW5 UniRef90_C6PVW5 UniRef90_E1YL48 UniRef90_K4LID0 UniRef90-UPIO0046D9080 UniRef90-M1MHT3 UniRef90-C0CR69 UniRef90-D3S2V5 UniRef90-D6MAY9
UniRef90 UniRef90_UPI00046D7C26 UniRef90-F6B315 UniRef90-E1QGA6 UniRef90-C7LQ23 UniRef90-R5IZ95 UniRef90-H6LD21 UniRef90_UPI0003B35A25 UniRef90_F5YDA7 UniRef90-M1E5D6 UniRef90-C8VX91 UniRef90_R4K1Q9 UniRef90-K4L146
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UniRef90 Q2Z037 UniRef90-UPI00037DEFEE UniRef90-TOIJM0 UniRef90-B9M2M7 UniRef90-J1L588 UniRef90_D9S2D6 UniRef90_D5XDP2
UniRef90_E3GG21 UniRef90-H5VH31 UniRef90-J7IY75
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UniRef90_UPI000472F4C9

## QUERY UniRef90_H5SP18 UniRef90_C8W085 UniRef90_B1L4Y1 UniRef90_Q8TKW2 UniRef90-F2NBY6 UniRef90 E1 YHP0 UniRef90_B7R8Q7 UniRef90-K4LD03 UniRef90-Q24P11 UniRef90_B8FRP8 UniRef90_S7USS9 UniRef90_D9QPS1 UniRef90-G7WPV9 UniRef90 C5A514 UniRef90_F0S2K0 UniRef90_Q8R9A8 UniRef90_F4C0P9 UniRef90_C8W5H0 UniRef90_Q2FP99 UniRef90_B8GGE9 UniRef90_F6BAN0 UniRef90_K7S4Q3 UniRef90_D8FFB8 UniRef90-Q20XW5 UniRef90_Q3AE44 UniRef90_D6STM8 UniRef90_M1QA63 UniRef90-T4W5M2

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UniRef90_T0CT48 UniRef90-C9RB69 UniRef90_D6Z6T4 UniRef90_D9QQM7
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## QUERY

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UniRef90 C5A514 UniRef90-FOS2KO UniRef90-Q8R9A8 UniRef90-F4COP9 UniRef90-C8W5H0 UniRef90-Q2FP99
UniRef90_B8GGE9 UniRef90-F6BANO UniRef90-K7S4Q3 UniRef90-A6TPR0 UniRef90-D8FFB8

UniRef90 $\mathrm{O} 20 \times \mathrm{W} 5$ UniRef90-O3AE44 UniRef90-D6STM8 | UniRef90-M1QA63 |
| :--- |
| UniRef90 | UniRef90-T4W5M2 UniRef90-UPIOoo3B379DD UniRef90-UP10003B36CBD UniRef90-E1RJM8 UniRet90_UPIOOO3B548F4 UniRef90-KONSJ7

UniRef90
D5 $5 \times 866$ UniRef90-B5E8C0 UniRef90-D5XEFO UniRef90-F3Z1MO UniRef90-R4KE99 UniRef90-Q30WX4 UniRet90-M1NDP1 UniRef90-UPIOOO3B3F9BD UniRef90-C8X1V0 UniRef90-UPIOOO373BE17 UniRef90 S7V905 UniRef90 ${ }^{\text {E3PXW5 }}$

UniRet90 C6PVW5 UniRef90-E1YL48 UniRef90-K4LIDO UniRef90-UPIO0046D9080 UniRef90_M1MHT3 UniRef90-C0CR69 UniRet90-D3S2V5 | UniRef90 ${ }^{-D 6 M A Y 9} 9$ |
| :--- |
| UniRef90 | UniRef90-UP100046D7C26 UniRef90-F6B315 UniRef90-E1QGA6 UniRef90-C7LQ23 UniRef90_R5IZ95

UniRef90-H6LD21 UniRef90-UPI0003B35A25 UniRef90_F5YDA7 UniRef90_M1E5D6
UniRef90_C8VK91 UniRef90-R4K1Q9 UniRef90-K4L146 UniRef90-TOCT48 UniRef90-C9RB69 UniRef90_D9QQM7 UniRef90-O2Z037
.

 DYFNIIMHGLRTALADWGGSMMSTELQDILFGTPNPLRAR DYVSLI LOGMRTALSDGWGGSLATEXSDHLFGTPQPKKGS DPLNLIAQGLRAALADGWSSMMATLFSDVMFGTPKPVKVW DATHLL

 $E P M N L I W A G L R C A M A D M A G S Y L G T D D S D L E G T P Q P V V T E$
$D P V N L L A T A K Q G L V D G Y A G L L A T D M Q D L E G T P A P V V T E ~$ DPVNVLGGGKGAVADYTGMYLSTELSDALFGTPAPTVTE GWQSLLLHALRNALSDWGGSMIATEVSDILFGTPKPSANT DPLNLNLQG1RAALGDGWGGSIGTEFSDVMFGTPEPVESS DPVHLLLHGLRTSISDWGGSMAATDVQDVLFGTPTPVMSE DPLSLVAHGIKTSIADGWGGSUATEFQDILFGTPKUGKGE


 DYLNLLHAMRTSLSDWGGSMMATDCSDILFGTPTPVTSL DYRNLMVAATRAALSDWGGSMLGTELSDULFGVPEPHEDE GWQSLLLQALRNSLSDWGGSMDATEVSDILEGGDPAPKPTT DPTNLILGGLRVALADLDGEMLATELSDALEGTPKPVVTT DAPNLMLHSARTCLADWAGSMUATEISDLLFGTPKPGKSK DYRHILRQGLRAALSDGWGGSMATDIQDVLFGTPEPGQAK DPVNLVFSADRVALADYTGEHI ATDFSDILFGTPQPVVSE
 NYANILLHGLRASLGDWGGSMMGTEVSDVLFGTPTDNQSQ NYANVCLHAARVSGADWGGSMIATESSDALFGTPTPRSAK DPVNLILATVKMGLVDGYGGHLATDIQDLEFGGTPSPVVSD DPVNITFSALRSALADYTGMHIGTDFSDILFGTPAPVLSE DATN/CDHAVRTALADWGGSMI ATELSDLLFGTPRPTASK DPLSLVAQSLRCSLGDGWGGSIATECQDLLFGTPTVRTIK DPVNLIFSALKVSLADYVGMHVGTDLADIIFGTPKPVVSE DAPNTLIHAARTALADWAGSMIGTELSDVIFGTPQPSMSH EYHNILKQCTRTAI SDWGGSMISTDLQDVLFGCPVPVSGE DYVN TKQCSRAALADGWGGSMLTDLQDVLFGTPFPLATE DATSLCDHSARVALTDWGGSMVATELSDTLFGTPQPRQST
 DAEPMIKMALRCGLADGWMGSMATEFSDIMFGTPHSTGTE DPVNLIFGGTKCSLADVTGEHISTDISDILFGTPKPVMSE DPLSLVLQSVRCSLADGWGGSIATELQDVLFGTPRVKTVR DPVNLLLAGLRCALGDFTGMELSTNLSDVLFGTPEPVISE DPVNLLDCLRTALADFGGSMMATEVSDILFGTPEPKMSE DAKNLYNMAMRASLGDGWGGSHATEISDLLFKTPSPVQTE DPASLLTHAARTALADWGGSMIGTELSDILFGTPMPRQST



D
 DSHVNML L Q GLRTSLGD GWGGSMLT
D Y R
 DPTNLV LGGGLRRGALSD F DGMVLAATEFDSDIMYGVPKERAS E D PVSLLLGIMKMGLVEGYDGHLSTDLQDLLFGTPRUVKTG
 D P L S L LMQ GVRC S L S D GWG G S I A T E L Q D L L F GTP TVVK SVQ


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SNLGVLKADAVNVAVHGHNPVLSDIIVSVSKEMENEARAA VNLGVLKRDEVNVVVHGHEPLLSEMLVAASPELQKLAQQK CNLGVLQADQVNIILHGHEPTLSDTLVHAAPELLAAAKEK ANLGVLREDSVNVMVHGHNPLLSMQI AEVAKDMVELAKSV VNLGVLSHDKVNVIVHGHEPILSEMI VEAAEDLLELAEEK ANLGVLKADEVNIIVHGHEPTLSEMIVAASRDAELLALAA ANMGVLKADAVNI AMHGHNPVLSDVIVSLAEKANAKAVEA CNGGVIREDAVNIVVHGHEPVLSEMLVEADPELEAGAKKN SNLGVLKEDQVNLIVHGHEPTLSEMIVLAAEELLAAAREK ANLGVLKEDYVNLLVHGHVPLLSEKIVQWAKTLSSEAEAV ANLGVLKEDAVNIAVHGHNPLLSEVVCDAAAMLNDLAKQA VNVGVLKADQVNITVHGHNPVVSEMLGQASPDIIDLAKAK SNLGVLKSDEVNVIVHGHEPVLSEMIVAAAEDMVALABEM ANLGVLKEDYVNIVVHGHEPVLSEKIVEAAPELIELAQKL ANMGVLKADAVNVAVHGHNPVLSEVIVAVAKEMEAEAKAA ANMGVIKPDQVNLTVHGHEPLLSEMIVAAAPDMIEDARNE ANMGVLNKNKVNIILHGHNPLLSEMIVAAAREMEGEAKAA TNGATLSRDVNIVLHGHNPLLSQMIVNVAEDLKKMAEEK ANLGTLSRDKVNVVLHGNPVLSEMIVKAVEEAKEAARAK ANLGVFKEDEVNLVIHGHEPTLSEAILVADPELVELAKKQ

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 VNLGVI QEDMVNILVHGHNPIVSEKVLEADPEMISLAREK
 ANMGVLDPDQVNFVLHGHNPLLSEIIVQAAREMEGEAKAA ANLGVIKKDTVNDLVHGHNPVVSEMILDAAPEMDELAKKN
 VNLGVLRADQVNILVHGHSPIVSEMILAAARDPKMLAKAA

 ANLGVIDDKDKVNI ILAHGHNPLLSSEMIVAAAREDEGEAKEAA VNLGVLRKDMVNVLVHGHSPVVSETILAAAKDQD LLAEAA ANLGVLDTDMVNLVVHGHEPVLSEKVLEWAPEMTEAARAV ANLGVIDPEKVNLVLHGHNPI LSEIIVQAAREMEDEAKAA ANLAAIKKDKVNILVHGHNPVVSEMI LAAARELIAEAEAM


 ANLGALKPEAVNI ALHGHNPVLSEVLVRVAAEMQSEAQAA


 ANLGVIDPDKVNIIVHGHNPVLSQMVVDTARELEEEAKAA ANLGVLEEDMVNLIVVHGHEPILSSEKVVEDAREEMQQRAKACK ANLGVIRADAVNI AVHGHNPLLSEDIVDVADEMQQEADNA
 ANLGVLETNQVNIALHGHEPSLSEAVVAASEDGIALAKAQ $V D D G V L D A N K V N V V V H G H E P H M L D M L C E L A E D P E M L A K E A$



 GNLGVLEKDMVNVVVHGHDPVESEMVVTAAEELTDYAKTK VNLGVLKKDEVNVLVHGHSPIVSEAVLTAVRDNDEMAKAA ANMGVLEAKNVNI ILHGHNPLLSEMIVAAAREMEADAKAA ANDGVLEDNEVNIVLHGHEPTLSEMI I QAADPEMMEDAK SAV A NMGVI EKNMVNIVLHGHEPSLSEMIVVAAPELKALAKSV
 $V N L G V I N Q E Q V N I L V H G H N P V V S E M I V A A A N D P E M L A R A E$ ANLGVLDEDAVNVIVHGHEPVLSEKVVAAAKKDEDEAKEA MNLGVLKKDYVNVSLHGHNPILSEMVVRADEDIRKLVSEK SNLGVIKKEDKVNILVHGHNPVVSEMILAAAPELVEKAKAA ANLGAI KADKVNI ALHGHNPLLSQMVVNAAKEMQEEAKAA
 ANLGVLKKEYVNIVVHGHEPTLSEAVVVAAPELVELAKKQ ANLGVLKEDAVNI AVVGHNPLLSEIICDVAGSMDEEARQA SNLGVI DPEQVNIMLHGHDPNLAEMI AVASKELIEMAKEQ ANIGGVI KKTAVNIAVNGHNPLLSEVI CDVAGEMQSDARDA
 AAVGVLEENSVNVAAHGHNPVLSEKILEWAEKLEGDADAA A NLGVI DEDYVNIVVSGHEPILSAKIVVEDKAMKEYAVSK ANLGVIRRDRVNI L L H G HNPVVSEMVARADPELVQRARDA


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UniRef90-C8VK91 UniRef90-R4K109 UniRef90-K4L146 UniRef90-TOCT48 UniRef90-C9RB69 UniRef90_D9QQM7 UniR Ref90-Q2Z037 UniRef90-UPIOOO37DEFEE UniRe90_-TolvM
UniRef90_B9M2M 7 UniRet90-J1L588 UniRef90-D9S2D6 UniRef90-E3GG21 UniRef90-H5VH31 UniRef90-J7YY75
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UniRef90_UPI000472F4C9

GATGTNVVG ${ }^{290}$ C CTGNEVLMMRGTPACTHSVSOEMAMTTGAA
GATGTNVVG ${ }^{290}$ C CTGNEVLMMRGTPACTHSVSOEMAMTTGAA

320 GAKG\|NLAGLCOANELMRHGIPDAGNFLQQELAAATGA GASGLNVCGMCCTGNELMRHGVPLAGNFLQQELALVTGA GAKGVNVVGMCCTGNEVLMREGVP:AGSFLMQELAA: TGA GATGMNVAGDCCTGNETLMRHGTPIAGTFLQQELAVITGA KLGAI NVVGLCCTGNEVLMRHGPPIAGNFLQQELAVITGA GASGINIVGICCTGSEIMMRHGIPSCTHSVSQEMAIVTGA GASG| NLVGMCCTGNEILMRHGIPSAGNFLHQELAVMTGA GAAGVNVGMCCTGNELLMRGVPVAGNFLQQELAVVTGA GAKGVQVAGICCTGNEVLMRQGVPLATNYLAQELALVTGA GAPGFNIVGVCCTGNEVMVRHGVPLATNYLSQEMPILTGA GAAGMNAGLCCTGNELLMRHGIPMAGNHLMTELVI AGA GAKGISVSGDCCTGNEVLMRHGIPTAGNFLQQELAVITGA GAKG| NVVGMCCTGLEVLMRHGIPDAGNFLQQEMALVTGA GAKGINAVGMCCTGLELLMRHGTPIAGNYLQQELAIVTGA GASGGVVGMCCTGNEVLMRHGIPACTHSVSQEMALVTGA
 GAAGINLVMCCTGNEVLMRHGIDIAGTILDQELAMATGA
 GAEGYNLAGMCCTGNEVTMRHGVKMAGTFYQQEAAVLTGA GAEG\| NLAGVCCTGNELLMRHGVPMAGNHLMTELVLSTGAA
 GAKG1 NLAGLCCTGNELMMRQGIPLAGNHLMTELALVTGA GAEGINVAGLCCTANEVMRHGVPIAGNFLQQELALMTGA GAKG| NLVGDCCTGNEVLMRQGIPLVTSFASQELAUCTGA GATG| TVAGLCCTGNELLMRQGIPMAGNHLMTELAAVTGA GAKGINLVGLCCTGNELLMRKGVPMAGNHFNQELIIATGA GASGI Ni AGLCCTGNELLMRQGVPTAGNHLMTELALVGA
 GARG| KLAG|CCTGNEVLMRQGVPLATNFLAQELAVTTGA
 GASG|NVAGLCCTGNEVLMRQGIVLAGNHLMTELALITGA GAKGUKCMGYCCTGNEVLMRQGVPLVTSFSSQEYAMATGA GAQG| NVAGLCCTGNELLMRQGI PMAGNHLMTELAAVTGA GAKGINLAGLCCTGNELMMRQG| PMAGNHLMTELA 1 I TGA GAKGVQLAGMCCSANELLMRHGIVPTAGNYLQQELA 1
 GAQGUNVGYCCTGNEVLMRHGVPPLTHSISQEMPLLTGA GAAG|NVAGLCCTGNEVLMRQGVPMAGNHLMTELALVTGA GAKG| NLAGLCCTANEVTMRHGVKMAGNFLQQENAVLTGA GADG| NLCGMCCTANEATMRRGIVMAGNFMQQELAVVTGA GAKGIGSGICCTGNEVLMRNGVPTATSYMAQELAGATGA GAKGUGVAGLCCTGNEVLMRNGVPVATSYMAQELAMATGA GAPGUNVVGVCCTGNEVLLRRG|PRASNYLSQELVIMTGA GANG| NVAGVCCTSNEVAMRRG| PMAGNFLQQENVVLTGA GAEG|NLAGLCCTGNEVLMRKG| PMAGNHLIQEEVVGTGV GAAALNVAGLCCTGNELLMRQGI PMAGNHLMTELAIVTGA GAEGINLVGMCCSGNEQLDRRGLKHAGNFMQCDAVIITGA
 GAHG\|VLAGMCCTANELCRHGLPIAGNYLQQELAVVTGA GAKGUNAGVCCTGNEVAMRQGIPMAGNFLQQENVVLTGA GAKGUQLGMCCTANEMDQRHGVPTAGNFLQQELAII TGA GAKGINIVGLCCTANEVAMRHGVRMAGNFLQQENAILTGV GANGNLAGLCCTGNELLMRQGIPMAGNHLMTELALATGA
GA
GADGINLCGMCCTANEAAMRHGV GAEG|NLVGICCTGNEVAMRHGIKIAGNFNQQELAIVTGA GAKGINVAGMCCTANEILMRKGVPVAGSVLQQELAIIATGA AAGAINVAGLCCTGNEILARRGIPMAGNHLMTELAVVTGA GAEGINVAGICCTGNELLMRQGVPDATNASQELAI MTGA GAKGVNLVGLCCTGNELQMRKG| PMAGNHFNQELVI ATGA GAAGINVAGLCCTGNELLMRQGIPMAGNHLMTELAIVTGA GAKGINLVGICCTGNEVLMREGVP $\mathbb{C A T N Y A T Q E L A I M T G A}$ GAKRVNVVGLCCTGNEVLDRQGVGMAGNESHSELAIMTGA GSAGI NLVGLCCTGNELLMRKGIPQAGNHLNQELIIATGA GAEGINVAGMCCTGNEIAMRHGIPMAGNFFQQELAIMTGA GAKGINIVGVCCTGNEVMARRGI PLATNYLSQEMAVLTGA GAKGINVVGMCCTGNEMTMRHGIKIAGNFYQQEMAIITGA GADGINIVGICCTGNEVMMRHGIPLATNYLSQEMAIFTGA GAKGINIVGI CCSANELDMRQGVSVATNYASQELAI DTGA GAERINVVGVCCTGNELSMRHGVKLAAHNSQTELILATGA GAKGVNVVGMCCTGNEILMRQGVSIAGNELHQELAVMTGA GAAGINLVGLCCTGNELLMRRGIPMAGNHLMTELVLVTGA GATGUSLGGCCTSNELMRHGIPVAGNYLQQEAVITGA


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UniRef90－Q24P11 UniRef90＿B8FRP8 UniRef90＿S7USS9 UniRef90＿D9QPS1 UniRef90＿G7WPV9 UniRef90＿C5A514
UniRef90－F0S2K0 UniRef90＿Q8R9A8 UniRef90＿F4C0P9 UniRef90＿C8W5H0 UniRef90＿Q2FP99
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UniRef90—B8DQQ7 UniRef90＿UPI00046D7C26 UniRef90＿F6B3I5
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 I Q F E E H H A LDDVA RE V V R QA I E N Y P H R N K S R V F I P K E TA E Y
 V $\operatorname{P}$ F A L VQF DKENADVESARK I L E L A V D A Y QRRDP K R V REFHPENARDLARDLVKEAVENFGRR GRVYI
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| $I$ | $I$ | $R$ | $K$ | $A$ | $V$ |  |  |  |  |  |  |  |  |
| $I$ | $E$ | $F$ | $N$ | $E$ | $D$ | $T$ | $A$ | $L$ | $D$ | $D$ | $A$ | $K$ | $K$ |
| $L$ | $V$ | $R$ | $E$ | $A$ | $I$ |  |  |  |  |  |  |  |  |
| $L$ | $E$ | $F$ | $D$ | $H$ | $H$ | $R$ | $G$ | $L$ | $E$ | $V$ | $A$ | $K$ | $E$ |
| $I$ | $V$ | $R$ | $R$ | $A$ | $I$ |  |  |  |  |  |  |  |  |


| $F$ | $D$ | $\square K$ | $P$ | $A$ | $T$ | $A$ | $L$ | $A$ | $Q$ |
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UniRef90 C5A514 UniRef90_F0S2K0 UniRef90_Q8R9A8 UniRef90_F4C0P9 UniRef90-C8W5H0 UniRef90_Q2FP99
UniRef90_B8GGE9 UniRef90_F6BAN0 UniRef90_K7S4Q3 UniRef90_A6TPR0 UniRef90_D8FFB8 UniRef90-Q20XW5 UniRef90_D6STM8 UniRef90-M1QA63 UniRef90-T4W5M2 UniRef90_P27989 UniRef90_UPIO003B379DD UniRef90_UPI0003B36CBD UniRef90_E1RJM8 UniRef90_UPI0003B548F4 UniRef90_KONSJ7
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UniRef90—B8DQQ7 UniRef90_UPI00046D7C26 UniRef90_F6B3I5 UniRef90_E1QGA6 UniRef90_C7LQ23 UniRef90_R5IZ95 UniRef90_H6LD21 UniRef90_UPI0003B35A25 UniRef90_F5YDA7 UniRef90_M1E5D6 UniRef90_C8VX91 UniRef90_R4K1Q9 UniRef90_K4L146
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UniRef90_J1L588 UniRef90_D9S2D6 UniRef90_D5XDP2
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460 A GCNNVKVP Q D Q NFTTVARKVLKQNVLVVAT GCGAGALMR

480 VGCNNPNTPHDWGHDE LTKELLKKNDVLIVVTSGCSADADAK $V$ GCNNPKYKHDQSHI NFVNELIMNNVLVVATGCAAAIACGK $V G C N N P K V K H N Y S H V T$ LAKELI KRDVLVVGTGCWSIAAAM VGCTNPKVRHDSSHVAI TKELIANDILVVGTGCWAIAMSK
 $V G C N N P K V Q H D F G H V N L V K E L I A N N V L V V T T G C N A D A C A K$

 $V$ GCNNPKI P H DRGHLLLTTEKLI K S DVLVVQTGCAA I A CA K $V$ GCN N V K I T Q D Q N F I A M A R Q L L K E N V L L L A T G C G A G A L M R $V G C N N V K V T Q D \square F H V E M V K E L L K N N V L V V A T G C S A B A L A B$ AGCNSTNTLQD RSFVVELAKGLAAHNVLLLATGCGAGALAK
 VGCNNPKVEHDEGHVEVGKKLIANDILVVGTGCWSIAAMK VGCNNPKVQHDFGHVNLVRELIANDVLVVTTGCNAIACAK VGCNNPKVKKQDHNHI KI ANELMKRDVLLVGTGCWATAAMK
 AGCNNVKVVPQDQNFTAIARRRLMENVLVLATGCGACALMR

 $V$ GCNNP KI K Q D S G H I A L G R E L I R R N I L V V
 VGCNNHKVLHDKGHEELAKELIMNDVLVVTTGCGAYACDK VGCNNDKTKHEYSHDEI MKKLI ANDVIVVTTGCAAQAAAK VGCNN PK DK H DYG H V T L T K K R L I E N DVV L V V D T G C V S V A N A K AGCNNTKTQQDSAYIAAIARSLAKRNVLVLATGCAAGAYAK VGCNNVKVKHDWFHIVEVVKELIMNNVLVVTTGCSABALAK VGCNNPKYRQDYGNVNLAKELIMRDVLVLVTGCVTSAVGK $V G C N N P E T C H D Y N H T E M A K E L I M N D V L V V S T G C S A D A D G K$
 VGCNND KGIKHDSANVGGLMKELLKNNVIVVATGGSA QAAGK

 VGCNNPKLKHDHCHVTRARELI KRNVLVLATGCATVAMGK $V$ GCNNPKKIKHDYGHI E L A K A L I K N NI L V V E T G CA A I A S G K
 AGCNSTQQVAQDSSFVTMAKKLAKNNVLLLATGCGAGSFAK AGCNNLKGVQDENHTGIILELLKNDVFFVISTGCAAQSAAR VGCNNPK LTMDYCHTNL AKELIMKDDLVVVTGCATVAMGK $V G C N N A K V Q Q D F F H L S T T R E L I K R D D L V L G T G C W A D A A A K$ AGCNNVKRLQDDSHITI AKEMIKNDVEFVI GTGCAMQACAK

 VGCNNCRTPHDSAHLAMTKELLKNDVIVLVTGCSAMAAGK $V$ GCNNARTKHNENHLTVVIKELIMKNDVIVLSTGCNADACAM


 $V G C N N P K V Q H D F G H I E T I K G L I M N D I I V V V T G C A A A A A A K$ VGCNNARTRHNEGHILVVKELIVNDVIVLTTGCNGDACAM AGCNNLEAVYEKNHTEIVKELAKNNVFMVGTGCVMQAAAK VGCNNVKVRQDSFHRELTAELIARDILVI GTGCWA DAAA K AGCNNVMITTQDHNFVVMAKTLLENND LI LATGCGAGAFAK VGCNNPRVVRDSAHI ELMKKLIMNDIVVVLDGCSAQAAAR $V$ GCNNPKVK Q DYSHITTLAKRLI ENDVVVVDTGCAADVA DA $V$ GCNNPKNPHDTCHVIDMKYLI AHDVIII VTGCAAAAAAK $V G C N N P K D M Q D S G N V G L A K E L I A R D I D V L A T G C D T T A A G K$ $V$ GCTNPRVKHDWVHYELVKELLANDVLVVQTGCSA $\quad$ TTMAK
 VGCNNARSMHDSAHLTVVKELLKNDVIVLTTGCNAMACGK VGCNNPKLKHDHVHVNLAQELIMRDILVLATGCATVAMGK
 $V$ GCNNPKQQHDYAHVKVMEELI KRDVI CVVVTGCAAAAAAK VGCNNARSRHNEVHIVKVLKELI KNDVLVLTTGGCDGDTAA VGCNNPRVRPDYSHFEI MKELLQNDILIVATGCAAQVATK

 $V$ GCNN P K V K K G D H S H I $V$ GCNNARSISNNKAHVTIMKEVI KNDILVVTTGCGASAAGK $V$ GCSNPRVRFGDLHATLVRELIANDVLVLVTGCAA DNCAK VGCNNPKFQQDSGNDGLTKALI QRDILVLVTGCVTTAAGK AGCNNTKVVTHDNKNHTEVAKGLVENDVLVCVATGCVANAGGK V G C N N P K I K H D Y G H V N L S K E L I R R D L C C V E T G C A A VA S G K $V G C N N P K V K Q D S A N V G L A K E L L K R D I L V L V T G C D T T A A C K$

 VGCNNHKQPHDSCHVTLAKELLKRDILVVTTGCGAHACVK AGCSTTRRVAQDHNFVTIARELARHNVLLLATGCGA GAFAK
 VGCTNPKVKQDWANTEVAKELMKNNVLIVATGCSAHSLGK






## QUERY

 UniRef90＿H5SP18 UniRef90－C8W085 UniRef90 B1L4Y UniRef90－Q8TKW2 UniRet90－F2NBY6 UniRef90－E1YHP0 UniRef90－B7R8Q7 UniRef90－K4LDO3 UniRef90－10U942 UniRef90＿B8FRP8 UniRet90－S7USS9 UniRef90－D9QPS1 UniRet90－G7WPV9 UniRef90－C5A514 UniRef90－FOS2KO UniRef90－Q8R9A8 UniRef90 ${ }^{-} 4 \mathrm{COPP}$UniRef90 UniRef90－Q2FP99 UniRet90－B8GGE9 UniRef90－F6BANO UniRef90－K7S4Q3 UniRef90－D8FFB8 UniRef90－O20XW5 UniRef90＿Q3AE44 UniRef90－D6STM8
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UniRef90_CoQT89
EQTPDPAVKAMLLYMEEKGCETVFDRFDAQKPQCGFGLL
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ThDLNSKALI EKAEKDGVETMYKRKLGYKVQCGFGL
EQTPDPAVREMI LRMEQDGCDTVFDRFDKQQPQCTFGE
TCASSKEVLAQAPAQNVITAYDRAKNRGMSCLFGS
E G
E
KTPDPAVREMLLHMQEMGLETVFDRFDAQQPQCNFGLL
EEGRTPDPA


EGRVSYHDSVEEMLVRHREDGMSNVFDRYAAQKDRCKFGL
EETPDPAVSEMLLKMQDMGTETVFDRFDKQKPQCTFGM
EGRTSYHDTVEEMLKKDREDGMTNVFDRWEQQKISCKFGS GRVSUHDSVQEMYEK HREGLSNVFDRFEPQK IRCNFCS

## E S

QRELTMD


EGRVSYHDSVE

MYEKAAS
RVSVHDSVQEMYERLHKDGMSN
MIS YHETVNEMYERVREEELSNVADRYEAQK NDVISFHKSINYMYKRVKEAQLSNVADR

PDPAV QQR $\$ S $\square H P S V L E M Y E K D H A D G \Pi S N V F D R Y P P Q K \prod R C N F C L$ K ER $\qquad$ ADERLGEFDRS $K$ K
SADCKLCEFLSS KK KDNMTNVWD

RTP GKIVSHPSVNELYQRLAEDQLSNCFDRFDPQKIDCNYCE EGKVSEHESLNMMYERVSKEGVTN SVDRFNAQKGRCPFCE SADKVLEDFVETLDNGLETSLHRVESQKYKCNFGK SADK ILENF\A
CESADKRLESFVA KTCKSADAVLENFISSLD SKDVETAFHRTEDQKIKCGFGLD V KNCTAA DPEVKEMVEKAKDKGDETPHTRFPNQFPKCPYGL KKVSEHDSINEMYQKLTDDKMSNVFDREEQQTVRCAFCS ADKELEKFVK QKSNLETSFNRVRPQSLKCGFGM

$\qquad$ KSDVETSFNRVPEQSLKCGFGM

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UniRef90 C0QCE1 UniRef90-D9SQ78 UniRef90-UPI000471A065 UniRef90-B8I6C8 UniRef90_UPI0003B43282 UniRef90_K6FM66 UniRef90-AOLLE2 UniRef90_C6LJC9 UniRef90-R5XLW8 UniRef90_UPI000463B3D2 UniRef90-D1BQT3 UniRef90-Q1NISO UniRef90-N9WAB8 UniRef90 W2C9H4
UniRef90 C9LYR5 UniRef90-FOSYH2 UniRef90-TODT39 UniRef90-UPI00047ADAFB UniRef90-C9KQ37 UniRef90-C2KW98 UniRef90_UPI0002555D37 UniRef90-TON3G5 UniRef90-D6SM92 UniRef90-C8PH13 UniRef90-UPIO003B75373 UniRef90-W0E9P2 UniRef90-A7ZFB3 UniRef90-M1PTL5 UniRef90_UPI0001E2D88A UniRef90_UPI000370BE31 UniRef90_U2V024 UniRef90-L0K833 UniRef90-E6MJK6
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UniRef90_UPI0003B6176F UniRef90-G2ZHG5 UniRef90-R6CAS6 UniRef90-A1HQH5 UniRef90_UPIO0047DED27 UniRef90_Q8PUN1 UniRef90-D9SNA0 UniRef90-B2A879
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UniRef90-M1YSC4 UniRef90-D9SOV2 UniRef90-T4W502 UniRef90-C6PSI9 UniRef90_A0Q3D3
UniRef90_Q58138 UniRef90-D7DRVo UniRef90_E4S619 UniRef90_UPI0003B76A92 UniRef90-LOKWW2 UniRef90_AOB8H1 UniRef90_C8W2K5 UniRef90-L8J6S1 UniRef90_R4KIK4 UniRef90-FOYU95 UniRef90_UPI000361F773 UniRef90-I7JAJ3 UniRef90-F7NMU6 UniRef90-N9Y1N9 UniRef90-Q1Q5S7 UniRef90_C0D869
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UniRef90-R6JVE5 UniRef90-H6LJC1 UniRef90-Q8TXX3

RMQAAGAAAHSEHGRH\| ALLAAMKHLGEKGLLDAYA\|IKDEAK|L RMDAGGAASHSEHARHVLHTAHAMLEGHAPDYEIKSPAKL RMSAAGTACHSDHGRAVAHLLVATARGEAPGYRIKDVEKL RTADGGASAHSDHSKHI
MKLTEGAAPHAEHGREVALALLEAAEGKA PYEI RDPQKL RETVGGASSHAEHAFE IAETLKLVATGKDKGYEIKDRKKL

 | $R L I$ | $A G G A A A H S D H G R H I A T T V L H V A E ~$ |
| :--- | :--- | :--- | :--- |
| $R A V A S G A A A H T$ | $A H G M A M L E L F R D V V N$ | RGMAGGVAGHGDHAREVLLALKNAAEGKL NTMDQGASGHAEHGREVAVALLKTAEG A NLP RSVAA GAAEHGARGRESMLA LKYASE RMVAAGSAEHNDHGMHILKLFKDVIDDGKVLDFPI EGENKV RFVAAGAASHSDHGRDLLEALEAVGHGTADDFGIKDVLKLL RMVASGGAAHTDHGMGMLDVFREVVRGNDKGYKIKNEKKL RSAAAGAAQHGMHAREVILALKWAGQGKL D LD DIDGEYKV RMCAGGTAAHSDHARDI THTLGLTTPGGA RMVAAGAASHSDHGRDLTETLGLVGEGTTTDYAVADEAKL RAAAGGLTQHGAHARELLDSLKAAANDQDDDPI LDEEKI RVVAA GTAAHTDHAREMVRGFIDTAKGEG PHQVKDVAKL

RSLA GGTAAHGAHGREVILALRYAAEGKL


MRNIMGAATYGHHAFEAFRTLRSTGEGKS PFKKI KDESKL
RSAASGAAQHGMHAREVMLTLKKVAEGEL D
$\begin{array}{ll}R S A A A G V A Q H G A H A R E I L L & \text { SMK FVAE } \\ R S A A A G V A Q H G M H G R E V I L S K W A A E ~\end{array}$
RAGAAGASQHGMHAREVILALKWAAQGKL
LHNDMGAGTYSHHAYEAFRTLKATAE
RKVVSGTAAHSDHARDMAFTLLAVAT
RKVVSGTAAHSDHARDMAFTLLAVAT
$R Q V A A G V A Q H G A H A R E L L L S L K W A A Q ~$
RMVAAGSSAHSDHGRGI AEVFYATVHGEAE

RIVAAAGTAAHTDHAREMVMGFIDETAKGKIT
Q Q T LGAGTYSHHAYEAFRTLKS $\square$ GEGKS
LRNVMGTSTYTHHAYNAFRTLKSTAGGKT

RSAAAGAAQHGMHGRELMDELKWAAESKL
LQNAMGAATYAHHAYQAFKTLKATGEGKT
$\frac{L}{R} M \square A A G T A A H S D H G R K V T E V F L A T A R G K T P G$

 HKTNMGDAAYTYHAREVAETLKATAEGKTD RMCAGGTAAHSDHARDIAHT MALTSRDG RGAAAGAAQHGMHARELILMLKWAAQGKL
 LRNVMGASTYHYHTDQT $\square R T L R E T A R N K T$ RAIAAGSACYLHVVENTATNLKNDGEGKG

 HKNMLGTEAYTYHADEAAKTLKATAEGKTD RAVAAGTACYDHVVENTARNLKSTGESNG RHTTIGTSANCYHALQAARTLRAAGSNPESGLK RAVT AGSACYLHIVENAAWNLKETGEKKG R SVAA GAACYLHILENTAKNLRALGQGKN RAVASGAACYLHVVENTARNLKKLGENKG RAVAAGSGCYI HVVETTARNVKSIGE RAVSAGAGCYLHVIENTAWNLKSTGEQKG RAVVAGAGCYVHVAENAARALKSTGEQKG $R A V A A G T S C Y V H C A E N A A R A L L S A G K G E G$
$L R N V M G T S T Y T Y H A K E A F R T L K S T A E G R T$ $\qquad$
T G G E SYEI
RAVAAGAACYDHVVENTAENLKQMAQN
$R A A A G G V A A H G A R A R E V M D T M K K A A A G E$
$L R N V M G A S T Y Q Y H T E Q T I K T L R A T A L G K T$ LRNVMGASTYQYHTEQTIIKT LRATALLGKT RAVAAGAACY $M M A A G A A A H S E H G R H \square A D A M Q K D G K G D L P$ RAVAA GAA
RSLVA GLAAHGRHAHEVILTIMAAAEGKA RAVASGSGCYDHVVENTALNVKNVAKTKG RNVAAGAACYLHVVENTARNLKEAGLGNYAT LR RNVMGASNYHYHAAQAVRTLRATAEGKT RHVTIGTAANDFHAQQAARTLKAAAQAPESGLR RAVAAGSGCYI HVIENTALDLKKMAENKEP QTVLRGTSSHLGHAIDVAKAFVAAAKG SENFP RAVASGSGCYIHVIVETALNNLKNTAQGACGGEI

RAVAAGSGCYIHVVETTALNLKETALSGGA RMVAA GTAAHSDHARDITHTLALTCPGGDYQVMGMNA L RQVAAGSGCYTHVVENTARRLKEMAELQAEGKKPKYKDSV RSVAAGSGCYDHVAEQAAKELKSAA
R A V S A G S G C Y I H I V E N T A R L L K K T A A S K GL $\quad$ L K G K



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UniRef90-UPOOO1E2D88A UniRef90_UPIO00370BE31 UniRef90_U2V024 UniRef90-LOK833 UniRef90-E6MJK6 UniRef90-D9S2A0 UniRef90-X0S876 UniRef90-D5X985 UniRef90_B1317 UniRef90-D3S1M2 UniRef90-UPIOO03B6176F UniRef90_G2ZHG5 UniRef90 R6CAS6 UniRef90-UPIO0047DED27 UniRet90_Q8PUN1 UniRef90-D9SNAO UniRef90 B2A879
UniRef90 LOGUQO UniRef90_O3AG28 UniRef90-O28429 UniRef90 W6N555 UniRef90-M1YSC4 UniRef90-D9SoV2 UniRef90-T4W502 UniRef90-C6PSI9 UniRef90_AOQ3D3 UniRef90-D7DRV0 UniRet90-E4S619 UniRef90-UPIO003B76A92 UniRef90-LOKWW2 UniRef90-AOB8H1 UniRef90-C8W2K5 UniRef9-L8J6S1 UniRef90 R4KIK4 UniRef90-FOY 95 UniRef90-UPI000361F773 UniRe990-17JAJ3 UniRef90-F7NMU6 UniRef90 NoY1N9 UniRef90-COD869 UniRef90_J1AML6
UniRef90_G5IGA8 UniRef90-R5FCG6 UniRef90-G2ZHG6 UniRef90_COFOC5
UniRef90 R6JVE5 UniRef90-H6LJC1 1
UniRef90_C0QT89
$L$ S K S L P P VT $\|$ E RLR K A G|VLIP H NDD A A|V|ANVMARTHVGCD S LNSFMTEGRRKKFLDTNIMPTAIDRSVCEITAQTAMGVDN LKR APA ARQKDWEKDGI ASRAIDREV ESMHRTGMGGDQ EKTVTPGRVEKFKSHNLMPTSVFET:ASATAQTHMGMDA VKAYAPSSSYKHWTEGGI TVNAWI PI MNAMHRTSMGNDA LTLHAQQQSDDKWDELGUTPVNVHLEISKAVTRTSMGCDA LSRAPKATQETWDAAGITPRGIDREVVDSMHRVQMGVGA LETTLTEGRRKKFKDTTIMTSSINGSIAELLHQTHMGVDS VKRVPKGTLETWRKDGIVPRGAMREIMEMMHRTHDGVDQ I EYRGHQKSREIWDKMGITPVNAHLEAFKAVTRNAMGGDA LNAFASKERDNVWSNLDIDPUSPYHEVFESLNRTGTGNDS TRRVPEATLETWRKHGVVPRGAMLEVMELMSRTHDGCDQ L LSRAPKKRREDWDAARSTPRGDDRECVEMLHRTHMGVDC MKRVPPKTLELWRKAGIVPRGAMREIMEDMHRSHMGVDQ MEACAPQERQKVWEKLDVLPVSAYHEVFEAYHKSGCGTDG IGRVPPKRRELWEKVGI TPRGVDRDVVEMMHRTHMGVDN I TAMAPAERREVWKNLDI LPDSAYNEAFDAYHRTCVGTDG MLSRAAPKRQEIWKKLGUPRRGVDREVVEMMHRTHMGVDQ TKAFAPEERQKVWRDMDI DPDSAYHEVFESLHRTNEATDG LYAFAPKERDEAWEKAGI MPLGPYHEAFESLHRTSTGTDG MAALAPAERKEVWQKLDVLPISAYNEVFDAFHRTGCGTDG

 VEAFAPEERKEVWKKLDILPISAYHEVFEAYHKSALGTDG LKRAPQKTQERWKKWGVDPRGVDREVCEGMHRTHMGVDH T ALLAPKERQEVWRKLDVLPDSAYNEVFEAYHRTGVGTDG
 LKRAPKKQQEI WKAKGVEPRGIDREVVETMHRTHMGVDQ VEAFAPKKRKAVWKKLNI YPAGTVHEEQNCVASSLTNVDG VEVFAPEKRKQKWRELGUYPVGVLHEGKDATASCLTNVDG VEVFAPEPRKKI WKDLAI YPAGVMHEIKDATASCLTNVDG I EACAPPERVAVWKDLDLVPDSAYHEVFEAYHKTGVGTDG VEVFAPKKRKEVWRKLAIYPTGVMSEI RDAVASCLTNVDG R RRAPLKRQELWRKLGVAPRGLDREVVEAMHRTHMGVDQ LAAFAPPRRQKKWQDLALYPAGTLHEVKDAVASCLTNVDG VELFAPKKRLEVWEKLGLIPDGVFQELLTAATSAMTNVDS VEKLAPQSRKDVFRKLGUGSKGPLQELVDSVARGMTNIDG ITACAAPERQKVWKDMDI LPPDSAYHEVFEAYHKTGCATDG I DAFAPRYRKKVWQELAI FPAGVLYEISDATASCLTNVDG LKYMAPEMRYEKWSKLGGLPGGAKSEVFDAVVKSSTNLSS VEKLSYKPRYEKWQELNI DPGGAKSEVFDAIVKTSTNLNG VNAFAPEKRKNLWRDGG FPGGGYSEVAYAQTMSMTNFTS LEAMAPPERLAVWRQLDIDPVGAYHEVEEADHRTGTGTDG VEIFAPEKRKELWEKLGIFPSGVFQELLTMGSSAMTNVDS VNKLGYAPRDENWQKLGUMPGGAKSEVFDAGVKTSTNLNS VEKLAYEPRYERWQELGILPGGAKSEVFDSGVKTSTNLNS VEKLAYRSRFQRWKELNI LPGGAKSEVFDAIVKTSTNLSS VEK AYAPRVNKWKEIGIMPGGAKSEVFDAIVKKSTNLSS VNKGYAPRLENWNK NMPGGAKSEVFDAVVKTSTNLNS VEKLAYAPRFENWKSLNLLPGGAKSEVEDGVVKSSTNLSS VERFAPKPRKDLWNKLDLFPAGPQEEMLDSTSSCLTNVDS LTKFLYPARYQKWEELNLLPGGAKSEVFDALVKTSTNLSS VEMLAPQERKETWKKLGGLFPNGMHSEMMRTTSSSLTNVDG TEKMAYGPRYQRWQQLNGPGGAKSEVFDALVKTSTNLS S DSATLPDKRVDLLSRGGALPHNDDATVSQDMARTHDGCDA VGNLAYKPRLKRWRELGIIPGGAKSEVFDAIVKTSTNLDS TEKLSYKPRYDKWKELGILPGGAKSEVFHGVVKCSTNLNS VEKLGYGPRDEKWKELDMPGGAKSEVFDALVKTSTNLS S IVQAFAPAKRKELWRQLGLFPGGGNSEVAFAQTKCMTNLNA VEKLAYAPRFEKWRELGU DPGGAKSEVFDGQVKTSTNLSS ALALAPKN DOKAKAGIVPQKGAAEIVQGIHSTAQGMMS TKKLAYAPRLKRWEELGILPGGAKSEVCSGVVKCSTNLNS VDLLAPAERKKVWRNLGI FPGGDYGEMMLATGSSDTNVDG UERLSLSKRYETWRKLGUQPGGAKSEVFDGAVKTSTNLSS LKR APKVRQELWNKLGUEPRADDREI ATVMHSTHDGCTA MKNTALPKRYELWEKLGILPGGAKDEI FNAVVKTSTNLNS
 VEKMAYKPRFE RWK E L G I LIP G GAKSEVFAGVVKTSTNLNS

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UniRefoo-UPI0001E2D88A UniRef90_UPIO00370BE31 UniRef90_U2V024 UniRef90-LOK833 UniRef90-EGMJK6
UniRef90 W4VAN1 UniRef90-D9S2A0 UniRef90-X0S876 UniRef90-D5X985 UniRef90 D3S1M2 UniRef90_UPI0003B6176F UniRef90-G2ZHG5 UniRef90-R6CAS6 UniRet90_A1HQH5 UniRef90-UP100047DED27 UniRet90_Q8PUN1 UniRef90-D9SNA0 UniRef90- ${ }^{\text {B2A879 }}$
UniRef90 LOGUQO UniRef90-Q3AG28 UniRef90-O28429 UniRef90-W6N555 UniRef90-M1YSC4 UniRef90-D9SoV2 UniRef90-T4W502 UniRef90-C6PS19 UniRef90-AOQ3D3
UniRef90-Q58138 UniRef90-D7DRV0 UniRef90-E4S619 UniRef90-UPIo003B76A92 UniRef90-LOKWW2 UniRef90-AOB8H1 UniRef90-C8W2K5 UniRef90-L8J6S1 UniRef90 R4KIK4 UniRef90-FOY 95 UniRef90-UPI000361F773 UniRef90-17JAJ3 UniRef90-F7NMU6 UniRef90-N9Y1N9
UniRef90 O1O5S7 UniRef90_COD869 UniRef90_J1AML6 UniRef90-G5IGA8 UniRef90-G2ZHG6 UniRef90-COFOC5 UniRef90-R6JVE5 UniRef90-H6LUC1



240 $D P V N I D F H G L K C C L A D D G G E Y I G T K L S D V M F G V P Q P I V S E$
 D PLNLLLGGLRMGLVDGYSGHMSTDLQDILFGTPTAVKAE DVTNLLLDDLKMGIIDGYPGTMSSEISDILFGTPKPVSST $D P V N L L L G C L T M G L V D F G G L H L S S D L Q D I L F G V P K L V K S N$ DYTNLLQGLRCSLSDGWGGSMLTDVSDVLFGTPSURESK DPVNIIFNGLKVALGDLDGEYLATDLSDVLFGTPTPTVSE DWENVMKQFLRCGLAFVWSGVVGSAITDSLFGDGNRSTSK DPLNLLLGSVTMGLVDGYSGHLSSDLQDILFGTPKAVKFN DWENI MK QMLRTGVAFAWSCVLGSSAMDSLFGLPVRSTSK EYENLTKQDTRTALADWGGSMIATELSD MFGSPVPLQAE DPVSI CLLAAARTALADWGGSMIGTELSDILFGTPRPATVE DYENIVKQCSRTALADGWGGSMATELGDIMFGSPEPKKAG DWRSMMQQFLRCGLAFTFTGVVANGATDSLFGVGDRVTSK DAVNI CLHAARILSLADWAGSMI ATEVSDILFGTPTPRMSK DWESNMKQFLRCGLAFTFTGVVADIATDALFGQGGRRTSK DYENMMLQASRCALADGWGSSMLTELTDAMFGTPVPRRAV DWRNCMHQFLRTGVSFAWSSCLGSSAMDSLYGLPQRSTSK DWQSVMKQFLRCGLAFCYTGVVANIAMDALFGVGHRATSK DYVSLAKKAMRLGLATMYTAQI GLEMQDILFGTPKPHEVQ DYVSLA $\square K G L R L G L S T \amalg Y T A Q I G L E M Q D I L F G T P M P H E V N$ DWKSIMQQFLRCGLAFTFSGVVAGIATDALFGVGDRVTSK DWKSVMQQFLRCGLAFTFSGVVSTAATDGLFGVGDRVTSK DWKSIMQQFLRCGLVFTFTGVLASTATDCLFGVGDRVTSK SHVSLAMKALRLGATDYNTQUGLEMQDTLFGTPTPHEVN DPDNLLLNAVKVALADWAGSMI STDISDVLFGTPHPMRGK DWRSVMQHLLRCGLAFTFTGVVANDATDALFGVGDRVTSK DYRSLLKASVRCALADWGGSM|ATELQDVLLGTPQPIRAT DWRNVMKQFFRTGLAYAWSSTLGTSAMDCLFGLPKLNDSK EYKNI MKQAARCSLADGWGASMLTELTDMFGTPVPRRAL DYVSLADKALRLGLATDYNSQIGLEMQDIMFGTPSPHEVN DFVSMAKKALRLGAATVYGSQUGLEMQDILFGTPSPHEVR DWRSVMEQFLRCGLAFTFSGVTANLATDSLFGVGDRVTSK DYVSMAKKALRAG| ATDYGAQLGLEMQDVLFGTPTPHEVD







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UniRef90 FOSYH32 UniRef90_TODT39 UniRef90-UPI00047ADAFB UniRef90-C9KQ37 UniRef90_C2KW98 UniRef90_UPI0002555D37 UniRef90-TON3G5 UniRef90-D6SM92 UniRef90_C8PH13 UniRef90_UPIO003B75373 UniRef90-W0E9P2 UniRef90_A7ZFB3 UniRef90_M1PTL5
UniRef90_UPIO001E2D88A UniRef90_UPI000370BE31 UniRef90_U2V024 UniRef90-LOK833 UniRef90-E6MJK6
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UniRef90 LOGUQ0 UniRef90-Q3AG28 UniRef90-O28429 UniRef90-W6N555 UniRef90-A4J288
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UniRef90 D7DRV0 UniRef90_E4S619 UniRef90_UPI0003B76A92 UniRef90-LOKWW2 UniRef90-A0B8H1 UniRef90-C8W2K5 UniRef90-L8J6S1 UniRef90_R4KIK4 UniRef90-FOYU95 UniRef90-UPI000361F773 UniRef90-17JAJ3 UniRef90-F7NMU6 UniRef90-N9Y1N9 UniRef90_C0D869 UniRef90_J1AML6 UniRef90_G5IGA8 UniRef90-R5FCG6 UniRef90_G2ZHG6
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ATTDGMFALAYGLYTHLSPTPPVAGGPELVKLLTEQLEGY ALAVGQYFI GSGISVGLGVYFPGADSKEFAAQVFEGLTQD
 ITSAA
GIDAALGFR【NGISSYHCVEAPTHGSSKVIEFLKEGTKET ATIDGIFAVAYGAYTHLAPPPSITGAPRLVKLLTEDVEGL
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 TVGQGVTFLAHGISNVI GFPGPIPGSNPVADFFADGLYEK


 A AADYMGVMALGIT THIGVTPKLGGSPYVIDMLTNKLES
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Refo-XKF76 UniRef90-Q3A664 UniRef90-B3QNU6 UniRef90 F8THH6 UniRef90-F8THIO UniRef90-F8TH89 UniRef90 R5BL7 UniRef90 ${ }^{-}$X1JM23 UniRef90-F8THF4 UniRef90-F8C3Q1 UniRef90 F8THDO UniRef90-F8THB8 UniRef90-F8TH53 UniRef90_F8THF6 UniRef90 F8TH54 UniRef90-XOSHQ5
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UniRef90 F8TH53 UniRef90 F8THF6 UniRef90 ${ }^{-}$F8TH54 UniRef90-XOSHQ5 UniRef90-_8TH64 UniRef90 UPI000470F84B UniRef90_U5RTE2
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UniRet90 D2RNZ7 UniRef90-UPI00047E370F UniRef90 R5NIB0 UniRef90-GOV3L6
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A GVCCKNCNMGPCRVTK
LGVCCRDCSNGPCRITPD
 PHS I C GKDVDLIVAGNAL KKADRGI CGADAHAI AGRNYL


PKASRGTCGADANATAGRNYL EETTCTLCNLGPCED $\square E N R E D L K G I C G \square D V S A V S A K D F A$ PKASRGI CGADAHAI A GRNYL PKAPKGICGADAHAIAARNYL
 KADRGICGADAHAIAGRNYL

EAAKGTGCT
PKAPKGПCGATADTIVARNYL
A GVCCRNCSMGPCRVSPPGKGVERGICGATADVVVSRNFA
ETAGCTGCTQ
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$A A N C K G C T$
$M F C F O C O$
ETAGNKGCT
EAAKGTGCT
ETAGCKGCTOS
ETAGGKGCT
ETAQNKGCT
EAAGGRGCT
ETAQNKCT
ETAQNKGCT
QTAGCTGCT
QTMGGKGCT
EGVGCEI
QTAGGKGCTKA
QTAGCSGCT
ETAGCTGCTQ
ETAGCSGCTQ
ETAKGTGCTM
EAAKGKGCL
$E A A G C K G C T$

PK S PK G


| $R G$ |
| :--- |
| $V G G$ |
| $R$ |

KVGLCGATDSTVAARNLG
VGVCGKKPDVAAMQDLL
NGVCGKKAATANLQDLL
IVGVCGKKPEVAAMQDLL
VKGVCGKTSDLANLLQDVL
ISGVCGKKPDVAAMQDLL
RGVCGKTDDVARMQDLE GVCGKKPEVAAMQDLL GVCGKKPEVAAMQDLL
SRGVCGKTSDVANLQDLL
KMGVCGKTPHVAALQDLL
VRGVCGKTEDLAKKQDLL
GVCGKKPEVAAMQDLL
SKGMOCVVGVCGKQPDVAAMQDLL
SKGVGCTLKGVCGKNSSTSAA
GVCGKTSDVANGQDT

MGVCGKKPEVAAMQDLL
$\square K G V C G K T P E L A G L Q D L L$
TIVGVCGKTPDVANLQDLL
VKGVCGKTPEVARLQDLL
1QGVCGKTSDVANLQDLL
MGVCGKKPEVAAMQDLL
GVCGKKPEVAAMQDLL
$\qquad$
S G
VKGVCGKPDNVANLQDVL
SRGVCGKTEDVAKAQDLL
 MGVCGKTPAVAAMQDLL
$R$ VGVCGKKPDLAAMQDLL
KVGVCGKTEEVANLQDLL
VGVCGKKPEVAAMQDLL
VRGVCGKTEDVAKDQDL
RVGVCGKQPEVAABQDLL
KGVCGKTEDLAKAQDLL
SKGTGCE
VRGVCGKDAELAGLQDVL
RKGVCGKDDETANRMDLL
1
IKGVCGKDDETANRMDLL
VQGVCGKKFDVAAMQDLL
KVGVCGKSADLANMQDLL
VKGVCGKTEDIAKTQDLI
VKGVCGKTSDVANLQDLL
GNTGVCGKKADTAQLQDEL
KSGVCGKTPEIANLQDLL
KGVCGKTSEVANLQDLL
GKAGVCGKTADTAGLQDEL
MGVCGKTPDVADMQDEL
$M G V G K K P E V A A M Q D L L$
MGVCGKKPEVAAMQDLL

 UniRef90_W4V0Q3 UniRef90-Q3A664 UniRef90 F8THH6 UniRef90-F8THIO UniRef90-F8TH89 UniRef90_R5BL71 UniRef90_X1JM23
UniRef90_F8THF4 UniRef90-F8C3Q1 UniRef90_F8THD0 UniRef90-F8THB8
UniRef90 F8TH53 UniRef90-F8THF6 UniRef90_F8TH54
UniRef90 X0SHQ5 UniRef90_F8TH64 UniRef90_UPI000470F84B UniRef90_U5RTE2 UniRef90_V9H8C4 UniRef90_F8THF5 UniRef90_I3VSF3
UniRef90 X1AT74 UniRef90_R9LN92 UniRef90_R6UGC4 UniRef90_B6G264
UniRef90_D2RNZ7 UniRef90_UPI00047E370F UniRef90_R5NIB0 UniRef90_G0V3L6
UniRef90-R6L9H5 UniRef90_E7NPX1 UniRef90-W6NH18 UniRef90_A0Q355 UniRef90-Q97FI7 UniRef90_Q8R6M9 UniRef90-M1YYA4 UniRef90_C2KXC1 UniRef90_D3EF86
UniRef90_R7B190 UniRef90_UPIO0046A6996 UniRef90_X5DGC1 UniRef90_A0A037Z0U4 UniRef90_R7JRB7 UniRef90_IOGMU2 UniRef90_S6ENM1 UniRef90_UPI0004640914 UniRef90_UPI000381828A UniRef90_R5JA14 UniRef90-G9YQE8 UniRef90-X4ZQW9 UniRef90_B8FWP2 UniRef90_BONIA1
UniRef90_U7UMR9 UniRef90_R5XMN8 UniRef90_C9LWK9 UniRef90_B2AOK0 UniRef90-W8T6S7
UniRef90 U5MMM5 UniRef90-K0B1S1 UniRef90_W3AKN0 UniRef90_R7PGK8 UniRef90-R6C0C6 UniRef90_C9KN66 UniRef90_Q8XHA1 UniRef90_V1CRD5 UniRef90_R5HKD2
UniRef90_C6PSL8 UniRef90_E4T2J3 UniRef90-N9WEN6 UniRef90-K5ZRV2 UniRef90_R6Q1J0 UniRef90_D4CJ12 UniRef90_UPIO003F7410C UniRef90_A7FX38 UniRef90_U6RHT4
UniRef90_G4D427 UniRef90_C4ZDT9 UniRef90_D4M8A8 UniRef90_U2Q002
UniRef90_UPI0002 UniRef90-C6PYP5 UniRef90_UPI0002F50175 UniRef90_UPI0002EEB1F4 UniRef90-R5UT62
UniRef90 X8IR00 UniRef90_R1CEV5


 RMAA GGAAAHSDHGREIAHVLHS SSADGSYPI RDEKKL
 SADG
 K
V
V E K
$R F V A G G S A A H S D H G R E D C H T D H \quad A T R A E G P Y T D K D E K K$ T RLIAAEGAATNLEHARKIAEIFRGAVT KE IPPFQIKDKKKLI RMAAAGSAAHSDHAREI AHVLLHN SSPDGNYPI RDEAKL RADCAGTSSSHSDHAREI LHVVLHEA KPEGPYVVRDEQKL
 RMDAAGTSAHSDHARE ILHVL AKTEHGGNYRVFSRKKL

 UniRef90-W4V0Q3 UniRef90-Q3A664 UniRef90 F8THH6 UniRef90-F8THIO UniRef90-F8TH89 UniRef90_R5BL71 UniRef90_X1JM23 UniRef90_F8THF4
UniRef90 F8C3Q1 UniRef90-F8THD0 UniRef90_F8THB8 UniRef90-F8TH53 UniRef90-F8TH54 UniRef90-X0SHQ5 UniRef90_F8TH64 UniRef90 UPI000470F84B UniRef90_U5RTE2 UniRef90_V9H8C4 UniRef90_F8THF5 UniRef90_I3VSF3
UniRef90 X1AT74 UniRef90_R9LN92 UniRef90_R6UGC4 UniRef90_B6G264 UniRef90_D2RNZ7 UniRef90_UPI00047E370F UniRef90_R5NIB0 UniRef90_G0V3L6
UniRef90 R6L9H5 UniRef90_E7NPX1 UniRef90-W6NH18 UniRef90_A0Q355 UniRef90-Q97FI7 UniRef90_Q8R6M9 UniRef90-M1 YYA4 UniRef90_C2KXC1 UniRef90_D3EF86
UniRef90 R7B190 UniRef90_UPIO0046A6996 UniRef90_X5DGC1 UniRef90_A0A037Z0U4 UniRef90_R7JRB7 UniRef90_IOGMU2 UniRef90_S6ENM1 UniRef90_UPI0004640914 UniRef90_UPI000381828A UniRef90_R5JA14 UniRef90-G9YQE8 UniRef90- X4ZQW9 UniRef90_B8FWP2 UniRef90_BONIA1
UniRef90_U7UMR9 UniRef90_R5XMN8 UniRef90_C9LWK9 UniRef90_B2A0K0 UniRef90-W8T6S7
UniRef90 U5MMM5 UniRef90-K0B1S1 UniRef90_W3AKN0 UniRef90_R7PGK8 UniRef90-R6C0C6 UniRef90_C9KN66 UniRef90 Q8XHA1 UniRef90-V1CRD5 UniRef90_R5HKD2
UniRef90_C6PSL8
UniRef90_E4T2J3 UniRef90_N9WEN6 UniRef90_K5ZRV2 UniRef90_R6Q1J0 UniRef90_D4CJ12 UniRef90_UPI0003F7410C UniRef90_A7FX38 UniRef90_U6RHT4 UniRef90_G4D427 UniRef90_C4ZDT9 UniRef90_U2Q002 UniRef90_UPIO00255D4CD UniRef90_C6PYP5 UniRef90_UPIO002F50175 UniRef90_UPI0002EEB1F4 UniRef90_R5UT62 UniRef90_X8IR00 UniRef90_R1CEV5
UniRef90_T0NA93
$R K S A V Q L G D S V E G K S K E E L A V E V A E D L L E D L S R V P G E H K T$ D E L L A L F GI E A E WAVAKALLGLDAE GKSVEQDCVEIADRFIDDDLQRLPKH HDT



 KL F A Y S L G I D L N LP E E K I L E E TVVK K I F Q DF S Q Q E G E L D I RVATEWGI ETEGRDDY DVAHEVAEDGLTEFGRPF GKLRC

 L WLA E L WD I P T K D R N L Y D IAA HEVVA HVGLLQEF GK DD GT QL F

[^1]LKKAFATKERDEKWKNLD\LPDGAYHEVFEALHRTTTGTDG VEFGAPQERIDTWNKLGUPPGGAKAEVFDALVKTSTNDNT L FALAPKERSELWEQLGU DPDSAYHECFESNNLTSHGTDS LSRATEERQKLWNETGIIAPRAVDRETATAMHMTHMGNTA



LERATPE RQK DWDDNE TAPRA TDREVTQS DHMTHMGNTS I HR APQNLIEKWRKYKVIPRGI EKEI LELFYKTSTIVDL LDR APEERQKLWDAEDI APRAI DREVSSSMHMTHMGNTA



LE LAPQKRRNLWAAKGVEPNGVDRMVVEAMHRTTMGVDH GVKGMA YA Y G VEPNGVDRMVVEAMHRTTMGVDH LPPSLPEKRKEL $\qquad$

$\qquad$

$G 1 \mathrm{KGMAA}$
 VSRAPKRRQE $\square$ GLKGLSA

## A

 GLKGLSA


 GIK GMAA GLKGLCA GVKGMAA

GLK GLLA A

GLKGLSA GLKGLSA GI K GMAA GLKGLSA GIK GMAA GVKGMAA GLKGMAA GLKGLAA GLKGMAA LRSLITYGLKGL GVKGMAA GK A A GVKGLAA GLKGLAA YTSHANALLREDPELDAFDQSTLAKTLD YAYHAYQLGFKDNE G I FKFMQRALLDNYSL YEKHADALLHNEEELDAFLQRALAATLN YSKHANALLHDNDEVDAFIQQALTKTLD YSKHANALLQDDEEVDAFIQSALSKTLD
 Y LKKHARNLSYEDSNIQGFMSKALAATLD Y AYHAYQLGYKDDNI FKFMEKALAKVLD YAEHADNLGYNDPEI AKFMRKTLAATMD YSKHANALLKDDANVDAF $\square$ QKALAATLD YTYHALHLEKDDHELNRFMRRALAATLD 46A6996 1 $G L K G L L A A$
$G L K G L A$ GLLKGLSA GLKGMAA GLKGLSA GLK GMAAYNHHVN

## GLKGMAA

GLKGMAA
GLKGLSA
GLKGLA A
GLKKGLSA

> GLK GMAA


YAHHAYTLNQKDDEI FAFMHKGLAATTD GLKGMAA Y

 GLKGLAA YMEHAMNLGHDKEEVGAFMAETLVKDLD GLKGLSA YSKHANALLHDNEEVDAFLQEALAATLN GLKGLAA YTKHANTLGQEAPDLDAFLQRALAAT D
GLKGMAA
GLKGMAA
GAKGLSA
GLKGMAAY VEHA

GLKGLAA YSKHANALLQDDEETDAFIQSTLTKDS D
GLKGLSA $\quad$ YTKHANALLKEDPELDAFLGQSALAKTLDD
GLKGLSA YSKHANALGYDNEELDAFMQETLSKLLD
GLKGMAA YLEHANNLGYDEDSIHAFMEKALVATLD
GLKGMAA
GLK GAA
GI RGMSA
YAYHAYVNEDEVNQFFEAGGYE
KLAA GLKGVYKHANALLQDDEAVDAFIQRALASTLN


GIR GMAA

| G | $\mathrm{R} G M A A$ |
| :--- | :--- | :--- |
| $G L$ | K |

YAYHAMVLGYKDQEVVNNFFYKALFTMAE
LRELI TYGLKGLYSKHANVLLSSDDPEVDAFLGRACAATLD

UniRef90-TONA93

|  |  |
| :---: | :---: |
| UniRef90 X1KF76 |  |
| UniRef90-W4VOQ3 | DPVEQMLQLVLNLGLAFTLYGLALGNSMNDVI |
| UniRef90- ${ }^{\text {B3C }}$ | DFESHMQAFLRTVLAYAYTTVVSTSATD |
| UniRef90 ${ }^{\text {F }}$ 8T | DAKALVMQSLRTGMADWGGSMMGTEF |
| UniRef90-F8THIO | DPEALVRQSLRTGMADWGGSMMGTETSDILF |
| UniRef90-F8TH89 | DAEALIRQGLRTSLANGWGGSMLTEITDLL |
| UniRef90_R5BL71 | DWESLMKQFLRCGLAFCYTGVV |
|  |  |
| UniRet90_F8THF4 |  |
| 8 C | DGWGSSIATDLQD |
| UniRef90-F8THDO | DAEALVRQSLRVGMADWGGSM1 GTDFSDl |
| $\begin{aligned} & \text { UniRef90-F8THB88 } \\ & \text { UniRef90-FTH53 } \end{aligned}$ | DPEALIRQGLRASMANWGGSMMGTE |
| UniRef90-F8THF6 | DAAALVRQSLRVGMADWGGSMIGTDFTD: MFGT |
| UniRef90_F8TH54 UniRef90-XOSHQ: | DPEALVRQGLRTSUANWGGSMIGTVITD\\|LFGTPTARETE |
| UniRef90_F8TH64 |  |
| 470 | DADDLVVLAMEAGKYGVQVMALDDKANTSTYGNPETRV |
| UniRef90-U5F | DAEAMIKMSMRCSLTDGWMGSMGTEFSDIMEGTPHSUDT |
|  |  |
| 析 | Y |
| UniRef90- ${ }^{\text {UniRef90 }}$ - 1 AT74 | NY |
| UniRef90 1 1AT74 |  |
| UniRef90-R61 | TADQLVELAMETGKYGVDGMAMLDSANTEAY |
| UniRet90_B6G2 | DLQDLIDLTMETGKFGVDS |
| UniRet90-D2RNZ7 | DVDDLAATLETGKYGVQG |
| UniRet90 UPIo0047 | DADELVEVLECKKYGDAMAL DKANTSAYGN |
| UniRef90 GOV3L6 |  |
| UniRef90-R6L9H5 | DAEELTALTLETGKYGVQVMALLDKANTET |
| UniRef90-E7T | DVEDLVALTLETGKYGVEGMALLDKANTSTYGNPEMMTK |
|  | DI DDLVALTLETGKYGVNGMALLDK |
| UniRef90-A0Q355 | SVDEMIGIVLECGKFGVDVMALLDKANTETYGNPEI TK |
| UniRef90_R5TSY9 | DVEDLVNLTLETGKYGVSGM |
| UniRef90-Q97FI7 | DADELVALALECGKYGVDAMALLDKANTETYGNPED TK |
| UniRet90 < 886 R 99 | DVDDYVALAMETGKYGVDT |
| UnRet90 M MYYA4 | DVDDLVALTLKTGEYGVV |
| UniRef90_C2KXC1 |  |
| UniRef90-D3EF86 | DVDDLYALTLETGEYGVRGMALLDRANTEVYGNPETTVK |
| UniRef90-UPI00046A6996 | GADELVALVMKTGEVGVKVMALLDTANTEKYGNPEI |
| UniRef90-X5DGC1 | D 1 delval |
| UniRef90_A0A037Z | DVNDLVALTLETGKYGVDGN |
|  | DAEELTALAFETGSYGVQGMALLDEANTSAYGNPEITTVD |
| UniRet90-10G | DADELTALTLETGKWGVDGMALLDKANTETYGN |
| UniRef90-S6ENM1 |  |
|  | DVDDMVA VMETGKFGVAMMAL |
| UniRef90-R5JA14 | SVDELISLVLATGEAGVKGMALLDSANTGTFGNPEDTME |
| UniRef90-G9YQE8 | TAEELTALALETGKYGVDVMAALDDANTSAYGHPEVTRV1 |
| UniRef90-X4Z | DAEELVALVMECGKYGVDVMALLDRANTETYGNPEI TK |
|  | DQLVALVLEAGKYGVDVMALLDKANTTSYGNPEL TK |
| UniRef90-BONIA1 | DVEDLVALALETGKYGVSGMALLDKANTSAYGNPE MTK |
| UniRef90 U7UMR9 | DDLVATLETGKFGVDGMALLDKANTEAYGNPETVTV |
| UniRef90 R5XMN8 |  |
| UniRet90- В2AOK0 | DVDDLVALVMECGKFGVNVMALLCKANTETYGNPEP TK |
| UniRef90-W8 | DADDLVGIMMAGKFGVDAMALLDSANTSTYGNPED TK |
|  | ETGKVGVDGMALLDKANTESYGN |
| UniRef90_K0B1S1 | DADELVALTLETGKYGVDVMALLDKANTETYGNPEI TK |
| UniRet90_W3AKN0 | DVDDLVALTLETGKFGVDGMALLDAANTGAYGNPEITTVD |
| UniRet90_R7PGK8 | ETGKYGVSGMALLDKANTDAYGNPEI TK |
| UniRef90 R6C0C6 | DAEELVALALEVGKYGVDGMALLDKANTETYGNPEIT TK |
| UniRef90 C9KN | TAEQLTAL ALETGKYGVDGMALLDTANTQAYGNPEVTTV |
| UniRef90-Q8XH | DADELTALALETGKFGVDGMALLDEANTSTYGHPEI |
| UniRef90-V1CRD5 | DVDELVALTLCKTGEYGVQGMALLDAANTETYGNPE:TTV |
| UniRef90-R5HKD2 | DVDGLIALVLEAGKYGVDAMALLDKANTESYGNPE K TK |
| UniRef90-E4T2J3 | D ADELTALVLETGKYGVSVMALLDKANTTSFGNPEI TK |
| UniRef90-N9WEN6 | TVDDLVALTLEMGKYGVDGMALLDKANTESYGHPEI TE |
| UniRe | QLTALVLETGSYGVKAMALLDKANTS SY |
|  | DVEALVALTMETGKYGVDAMAMLDEANTTAYGNPQ1 TK |
| UniRef90_S3JYF8 | ESLDLVALTLETGKAGVAGMALLDRANTGAYGNPED TK |
| UniRef90-UPIO003F7410C | DVDELVALTLETGKVGVDGMALLDKANTSAYGNPEI TK |
| UniRef90-A7FX38 | DADELTALVLECGKYGVDVMALLDKANTSTYGNPEI TK |
| UniRet90_U6RHT4 | EADELTALVLKCGEYGVKTMALLDKANTSTYGNPEI TK |
| UniRet90_G4D427 | ELVNLVLKTGEYGVKGMALLDEANTSAYGNPKL TK |
| UniRef90_C4Z1 | SMDELLQTVLKVGEIVNLKCMALLDKANTQTYGTPEPTDVT |
| UniRei90 - Y 20002 | DADEDLIRMAMRTGETSVEVMRTLL |
| UniRef90-UPI000255D4CD | 俍 |
| UniRe990_C6PYP5 | D UNDWLGLAMELGQVNFKVMELLDGANTGAYG |
| UniRef90 UPI0002F | VGKVNLSC |
| UniRef90-UPIO002EEB1F4 | ELVAIALESGKYGVDVMAMLDKANTTAYGNPEMMT |
|  | dLVALTLETGNYGVRGMAMLDTANTGAYGNPETTRV10 |
| Un | DADELVALTLETGKYGVDGMALLDEANTSAYGNPEI TK |
|  | FGVETMALDAANTGAYGNPED TE |



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| :---: | :---: | :---: |
| UniRef90 |  |  |
| UniRef90-W4VOQ3 |  | SGLSAMYRYGVIPLSNALGAELVLGTGA |
| Ref90-Q3A664 | G। KL | VGQDMQLRAGSGQAGNNFTQEALLSTGA |
| +90_B3 | RLYGM | GI |
|  | Gl $\mathrm{Nl}^{\text {T G GL }}$ | TMRHGVK |
|  | G\| NI AGL | TANEVAMRHGVRMAGNFLQQENAILTGA |
| UniRef90-F87H89 | GAKGINVVGL | TANELAMRHGVRMAGNFLQQENVVLTGA |
| UniRet90_R5BL71 | GAEGI QFYGV |  |
| UniRef90-X1JM23 | GAAG\| NI AG |  |
| UniRef90 F8THF4 UniRef90 ${ }^{-} 8 \mathrm{C} 301$ | GAKG\|NVVGL | \| RMASNFLQQENAI |
| UniRef90-F8THD | GAKGINI | Mrhgvrmvanfleqena |
| iRef90-F8TH | GVKGINVVGL | R |
| UniRef90-F8T- | GAKGINVVGVC | SNEVAMRHGIPMAGNFLQQENCVL |
| UniRef90-F8THF6 | GAKG\| NLAGL | VAMRHGVRMVGNFLQQENAMLT |
| UniRef90-F8TH54 | GIK ${ }^{\text {a }}$, NVVGL | VAMRHGI RMAGNFLQQENVLLT |
| UniRef90 XoSHQ5 |  | ElVQRHGVP AGNFLMQELALI TAA |
| UniRef90_-88TH64 | G | E |
| UniRef90 UPIO004 | E |  |
|  | GADGI NL |  |
| UniRef90_V9H | E |  |
| UniRef90-F8THF5 |  |  |
| UniRe90-3VSF3 | EGTGVDV |  |
| UniRef90-_1AT74 | G | MRQGVPVVGNFLQQELALLT GA |
| UniRet90_R9LN92 | Q |  |
| UniRef90_R6UGC4 | QGTGVDIY | THSEMLPAHYYPKFGNAWWKQKEEFEAF |
| UniRet90_B6 | EGTGVDV | ML |
| UniRet90_D2RNZ7 | QGTGVDVY | THSEMLPAHYYPFFGNAWWKQ |
| UniRet90 UPIO0047E3 | EGTGVDV |  |
| UniRe990_R5NiB | KGIGVDVY |  |
| UniRef90_GOV3L6 | D | W |
| UniRef90_R6L9H5 | Q | W |
| UniRef90 E7NPX1 | E | MLPAHYYPAFGNAWW |
| UniRef90-W6NH | EGTGVDVY | THSEMLP |
| UniRef90-A0Q335 | EGTGV | mandy |
| UniRer90-R5TSY | EGT ${ }^{\text {a }}$ | A |
| UniRe90-Q97F7 | EGIGVD | mpa |
| UniRet90_O8R6M9 | A GIGVD | GEMLPAHYYPAFGNAWW |
| UniRet90_M1YYA4 | E | MLPANYYPAFGNAW |
| UniRet90_C2KXC1 | E | MLPAHYYPFFGNAWW |
| UniRef90_D3EF86 | EGTGVDVY | THSEMLPAHYYPAFG |
| UniRef90-R78190 | QGTGVDVY | THSEMLPAQYYPAFGNAWWR |
| UniRee90- $\times$ P100046 | EGT ${ }^{\text {a }}$ |  |
| iRet90_X5DGC1 | EGTGVDV | SEMLPAHYYPAFGNAWWKQNTEFESF |
| UniRet90_A0AO37ZO | E | MLPAHYYPAFGNAWW |
| UniRet90_R7. | VNTGI DVY | M |
| UniRe990-10G | QGTGVDVY | M |
| UniRet90-S6ENM1 | QGTGVDVY | THSEMLPAHYYPAFGNAWWKO |
| UniRe90-UP1004640914 | 厚 | , |
| UniRet90 UP100038 | , | MLPAHYYPAFGNAWWKQASEFEDF |
| UniRet90-R5JA 4 | KGIGVDV | MLPANYYPEFG |
| UniRet90-G9YQE8 | $\checkmark$ V | P |
| UniRef90_X4ZQW9 | EGTGVDVY | L |
| UniRef90 B8FWP | EGTGVDVY | THGEMLPAHYYPAFGNAWWK |
| UniRef90-BCNA |  | MLPAHYYPAFGNAWW |
| UniRefoo |  | M |
| UniRef90-C9LWK9 | EGTGVDVY | THGEMLPAHYYPAFGNAWWQQ |
| UniRef90-B2A0K0 | EGTGVDVY | THGEMLPANAYPAFGNAWW |
| UniRef90-W8 | AGTGVDVY |  |
| UniRef90_U5M |  |  |
| UniRe | EGTGVDVY | THSEMLPANYYPAFGN |
| UniRef90 W3AKNO | AGTGVDVY | THSEMLPAHYYPAFGNAWWKQK |
| UniRet90_R7PGK8 | E G |  |
| UniRet90_R6C0C6 | Q |  |
|  | E |  |
| UniRef90_C9KN66 | V | M |
| UniRef90-081 | D Y | THGEMLPGHYYPKFG |
| UniRef90-V1CRD5 | EGQGVDIV | THSEMLPAHYYPAFGNA |
| UniRef90 R5HKD2 | QGTGVDV | THSEMLPAHAYPAFGNA |
| UniRef90-C6PSL8 | EGTGVDVY | THSEMLPANYYPAFGGA |
| UniRer90-E42J3 ${ }^{\text {UniRef90 }}$ N9WEN6 | EGTGVDVY | THSEMLPANYYPAFGNAWW |
| UniRe990 NoWEN6 | EGTGVDVY | MLPANYPAFGNAWW |
| UniRef90 K5 | D |  |
| Unil | Y | MLPAHYYPAF |
| UniRef90 S3J | V V Y | THSEMLPAHYYPAFGNAWWK |
| UniRef90-D4CJ12 | EGTGIDVY | MLPAHYYPFFGNAWWK |
| UniRet90 UPIO003F7410C | E | $\begin{aligned} & \text { wy } \\ & \text { wu } \end{aligned}$ |
| UniRet90_A7F338 | E |  |
| UniRet90_U6RHT4 | EGTGVDVY | THSEMLPAHYYPAFKKAWWRQNEDFESF |
| UniRet90_G4D427 | EGTGVDVY |  |
| UniRef90-C4ZDT9 | NIV |  |
| UniRef90-D4M8A8 | AGTGVDVY | THSGML |
| UniRee90- U2Q002 | EGKG NY |  |
| UniRei90 ${ }^{\circ} \mathrm{C} 6 \mathrm{Y} \mathrm{Y} 5$ | EGKGI DI Y | HGEMLPAHAYPELNKYPHLVGNYGGA |
| UniRet90- YPIO002F |  | THGEMLPAHAYPELKKF SHLKGNFGTA |
| UniRef90 UPI0002EEB1F4 | EGTGVDIY | THSEMLPAHYYPAFGN |
| I |  |  |
| Ref90-X81 | EGTGVDVY | THSEML |
|  | KDTGVDVY | THGEMLPAHYYPFFGNAWWKQNEEFESF |




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| :---: | :---: | :---: | :---: |
| UniRef90_X1KF76 | AGFSHETINYLLGGM | FRASYRPLINDITNGR |  |
| Ref90-W4V0Q3 | IGFSVEYAAVRF | GS ${ }^{\text {dVI AKALEEGK }}$ | R GV |
|  | IPQ GFGDVV | G SVQPL | K GVVGV |
| UniRef90 B3QNU6 | ELLGFSVEEIARLFE | P EKKYHGLARLLEEGK | RGG |
| Ref90-F8THH6 |  | v |  |
|  | TVGYPNEQARMGL | ERGTYKPAIDAIKA | RGA |
| UniRef90-R5BL71 | $V G F N A E N A E E N G F G$ | A | KGMVN |
| UniRef90-X1JM23 | GFTTEN |  |  |
| UniRef90_-F8THF4 | GYSCEA | P | RGA |
| UniRef90-88C3Q1 | OVGF SLCA | FRAGLETLKENVNGK | LGGAVA |
| UniRefao-rthd | TVGYPTEQ1, K HLD ${ }^{\text {a }}$ | Dhas y R A M |  |
| UniRef90-F8TH53 | RVGYSCEAl\| KQLDTVD | KTGTYGPLIECLESGV | RGAVAM |
| UniRef90-F8THF6 |  | ERGSYRPVVDAIK | RGAVA |
| UniRef90-F8TH54 | VVGFSTKQ1 RRKLD | YKPVIDAl K S | $R G A V A$ |
| UniRet90-XOSHQ5 | I AGFSYEAI NYHLGG | RGSYVPLNQNI |  |
| UniRef9-F87, | VAGFSVDA KYMLGG ${ }^{\text {K }}$ | RASFRPLNDAV | F |
| UniRef90 UP1000470F84B | IGGFAHNTVLSLADKV | VEAVKAGK | KKFF |
| UniRef90-V9H8C4 | GGFAHNQVMQL | VDaVKSGA | K K F F VM |
| UniRef90-F8THF5 | A GF SVREIKYMLG |  |  |
| UniRef90-13VSF3 | $V G G F A H N Q V L A L A N Q V$ | VDAVKTGA | K R FFVM |
| UniRef90-X1AT4 | VGGFAHAOV | VDcVK |  |
| UniRef90-R6UGC4 | I GGFAHNQVLSLADK1 | $V \mathrm{DAVKTGA}$ | KKFVV |
| UniReef90-86G26 | VGGFAHNQVIALADKI | VDAVKSGA | KKFV |
| UniRef90-D2RNZ7 | VGGFAHEQVFALADKV | $\checkmark$ davkSGa | K K F V |
| UniRef90-UPIO0047E370F | I GGFAHNQVLTLADK। | VNAVKDGA | K R |
| UniRef90-R5NIB0 | VGGFAHDQVIA | DAVKSG | RKFVVM |
| UniRef90-GOV3L6 | VGGFAHNQVLA | VEAVKSGA | KRFFVM |
| UniRef90-R6L9H5 | VGGFAHAQVLALADQ | VEAVKTGA | RKFVV |
| UniRef90-ETNPX1 | VGGFAHAQVFALADKV | VDAVKSGA | KKF |
| UniRef90- A00355 | VGGFAHNAVLSLADKI | $\checkmark$ VAVKTGA | RRFFV |
| UniRef90-R5TSY9 | 1 GGFAHAQVFALADQV | $\checkmark$ SAVKSGA | RKFV |
| UniRef90-Q97FI7 | I GGFAHNQVTALADK | VEAVKSGA |  |
| UniRef90 O8R6M9 | IGGFAHNQVLQLADK | VEAVKTGA | KRFFVM |
| UniRef90-C2KXC1 | VGGFAHEQVFALADKV | VEAVKSGA | KKFVV |
| UniRef90-D3EF86 | 1 GGFAHAAVMNVADQV | $\checkmark$ DAVKSGA | RRFFV |
| UniRef90_R7B190 | VGGFAHAQVLALADK | VDAVKAG | RKF |
| UniRef90-UPIO0046A6996 | IGGFAHNQVLQLADK | $\checkmark$ davksGa | F |
| UniRef90-X5DGC1 | VGGFAHAQVFALADK | VDAVKSGA |  |
| UniRef90-A0AO372 | VGGFAHNQVEAL |  |  |
| UniRef90 R7JRB7 | VGGFAHAQVLALAD | VDAVKSGA | KKF |
| UniRei90 S6ENM1 | IGGFAHNQVMAVADK | VEGVKSGA | KKFFV |
| UniRef90-UPIO004640914 | I GGFAHNQVFALADT | VEAVKSGA | EKFV |
| UniRef90-UPIO00381828A | IGGFAHNTVTSIADQ | VDAVKAGD | QRFF |
| UniRet90-R5JA14 | VGGFAHNQVLS |  |  |
|  | VGGFAHNQV |  |  |
| UniRef90 X4ZQW9 | VGGFAHAAVMGVADK | VDAVKTGA | K R F |
| UniRef90 B8FWP2 | VGGFAHNQVFAVADK | VEAVKS |  |
| UniRef90-BONIA1 | I GGFAHNQVMALAD | VEAVKSGA |  |
| UniRef90 U7UMR9 | IGGFAHEQVFALA | VVNAVKSGA |  |
| UniRef90-R5XMN8 | $\checkmark$ GGFAHAQVLALADK | $V E A V K$ SGA |  |
| UniRef90-C9LWK9 | VGGFAHEQVFALADKV | VDAVKSGA |  |
| UniRef90-B2A0K | PGGFAHNAVLSVADKV | $\checkmark$ EAVKNGD |  |
| UniRef90-W8T6S7 | GGFAHNQVMALADKV | VDAVKSGA | K |
| UniRet90_U5MMM5 | VGGFAHNQVLALADK | VEAVKTGA |  |
| UniRef90 W3AKN0 | VGGFAHEQVFALADK | V边 AVK |  |
| UniRef90-R7PGK8 | VGGFAHAQVLaLADQV | $\checkmark$ A AVKSGA | K K |
| UniRef90-R6COC | 1 GGFAHAQVL | A AVKSG |  |
| UniRef90-W8TM | VGGFAHNQVIALADKV | D AVKSSGA |  |
| UniRef90-C9KN66 | VGGFAHEQVFAVADK | VEAVKSGA | KK |
| UniRef90-V1CRD5 | VGGFAHNQVLALADKV | $\checkmark$ DAVKSGA | KKFVV |
| UniRef90-R5HKD2 | VTGFAHHQVLatadol | $\checkmark A A V Q R G A$ | RKFVV |
| UniRef90-C6PSL8 | VGGFAHNQVLALADKV | VEAVKTGA | KRFFV |
| UniRef90-E4T2J3 | VGGFAHAQVFA | $\checkmark$ DAVKSGA | F V |
| UniRef90-N9WEN6 | VGGFAHEQVFKLADK | EAVKNGD | KNFFVM |
| UniRef90-K5ZR | GFAHNQVMAL | DAVKSGA | RKFVVM |
| UniRef90-R6Q1J0 UniRef90 S3JYF8 | VGGFAHHQVLALADC | VEAVKSGA |  |
| UniRef90_S3JYF8 | VGGFAHNQVFALADKV | VOAVKSGA | RKFFVM |
| UniRef90-UPI0003F7410C | IGGFAHEQVFALADTV | VEAVKSGA | KKFVV |
| UniRef90-A7FX38 | 1 GGFAHNQVLAL | VDAVKTGA | K R |
| UniRet90-U6RHT4 | GGFAHEQVFALADK | VDAVKSGA |  |
| UniRef90-G4D427 | VGGFAHNQVFALAD | VEAVKSGA | K K F V M |
| UniRef90_C4ZDT9 | TTGGGGHSALL | V EAVKSGA |  |
| UniRei90-U2Q002 | LGGFAHHATH | VEAVKAGN | RK |
| UniRef90-UPIO00255D4CD | VGGFAHHQVTADADK | $\checkmark$ EAVKSGA | R |
| UniRef90-C6PYP5 | GFGHNATLSHANE | EAVKSGA | KHFFLI |
| UniReef90 UPIO002F50175 | GFAHGTVLGVADKV | A |  |
| UniRef90-UPIOOO2EEB1F4 | GGFAHAQVLALAD | A |  |
| UniRef90-RUU62 | VGGFAHEQVFALADGV | A | RKFFVM |
| UniRet90-R1CEV5 | VGGFAHAQVLALADKI | VEAVKSGA | KKFFVM |
| UniRef90 TTNA93 | 1 GGFAHNQVFATLADKV | $\cup \mathrm{VA} V \mathrm{KSGA}$ | KRFF\|M1M |





UniRef90 X1KF76 UniRef90-W4VoQ3 UniRef90-Q3A664
UniRef90 ${ }^{\text {B3QNU6 }}$ UniRef90 F8THH6 UniRef90-F8THIO UniRef90-F8TH89 UniRef90- x1 JM23 UniRef90-F8THF4 UniRef90-F8C3O1 UniRef90-F8THB8 UniRef9- ${ }^{\text {FTHETH3 }}$ UniRef90-F8THF6 UniRef90-XOTH54 UniRef90-F8TH64 UniRef90 UPI000470F84B UniRef90 U5RTE2 UniRefolo -viH8C4 UniRef90-13VSF3 UniRef90-X1AT74 UniRef90-R9LN92 UniRef90_B6G264 UniRef90-D2RNZ7 UniRef90_UPI00047E370F UniRef90_R5NIB0 UniRef90-G0V3L6 UniRef90-R6L9H5 UniRet90_W6NH18 UniReffo- AOQ355 UniRef90_R5TSY9 UniRet90-Q8R6M9 UniRef90-M1YYA4 UniRef90-C2KXC1 UniRef90_D3EF86
UniRef90-R7B190 UniRef90-UPIO0046A6996 UniRef90 X5DGC1 UniRef90-A0A037ZOU4 UniRef90-R7JRB7 UniRef90-10GMU2 UniRef90_S6ENM1
UniRef90_UPIO004640914 UniRef90-UPI000381828A UniRef90 R5JA14 UniRet90-G9YQE8 UniRef90-X4ZQW9 UniRet90_B8FWP2 UniRef90_BONIA1
UniRef90_U7UMR UniRef90-R5XMN8 UniRef90_C9LWK9 UniRef90-B2AOKO UniRef90- W8T6S7
UniRef90
U5MMM5 UniRef90-K0B1S1 UniRef90-W3AKNO UniRef90-R7PGK8 UniRef90 R6C0C6 UniRef90_C9KN66 UniRef90-O8XHA1 UniRef90-R5HKD2
UniRet9 UniRef90-C6PSL8 UniRef90-E4T2J3 UniRef90-N9WEN6
UniRef90
K5ZRV2 UniRef90-R6Q1J0 UniRef90_S3JYF8
UniRef90_D4CJ12 UniRef90-UPIOOO3F7410C UniRet90-A7FX38 UniRef90_U6RHT4 UniRef90-G4D427 UniRef90-C4ZDT9
UniRef90 D4M8A8 UniRef90-U2Q002 UniRef90-UPI000255D4CD UniRef90- 66 PYP5 UniRef90-UPIO002F50175 UniRef90-UPIOOO2EEB1F4 UniRef90-R5UT62 UniRef90-X81R00 UniRef90-R1CEV5
 TMGARYAFILNGUETYSCVQDNTLASDRFUDYVSNRLRTM

G LDAS $\square$ AFRMF G $T$ NSYHCVEPPVQGSTNVENFLKHDTKDT AVS $\square G M Y F V A S G V Y T V I A E P L P V L G A P N L T R Y L T D E \square E K D$
A $\square$ S $V G M Y F S A S G V Q V I F G A D F P F \square E S K K T T N F \square F N E M E N Y$
 AVIVLLA LLY $\square G V K \square H \square G P T \square P A F \square S P N V A K V L V E K F G$
 A VIVLLALLY $\square G-V K \square H \square G P T L P A F \square S P N V A K V L V E N F G$
AVIVLLSLLYLGVKDHLGPTLPAFLSPNVIKVLVKNFG AVIVLLSLLYLGVKI HLGPTLPAFLSPNVAKVLVDNFG AVIVLLSLLYLGVKI HLGPTLPAFLSENTAKFLVENFG AVIVLLAGLYLGVKI HLGPTLPAFLSPNVANVLVKNFG
 A V I V L L A A L L S L G V K AVTVLLABLYLGVKIHEGPTLPAFLSPNVAKVLVEKFG A V I V L L A L L S L G V N

 AVIVLLA ALL HL G VVKI HLG GPTLPAFLSPNVAKVLVDNFG AVIVLLABLYGGVKI HLGPTLPAFLSPNVTKVLVEKFG








 $\left.\begin{array}{l|lllll|lll|l|l|l|l|l|lll|llll|lll|l|ll|lll|llll}A & V & V & V & L & L & A & L & L & H & L & G & V & K & I & H & L & G & P & T & L & P & A & F & L & S & P & N & V & A & K & V & L & I \\ A & D & T & F & G \\ A & V & V & L & L & A & L & L & Y & L & G & V & K & I & H & L & G & P & T & L & P & A & F & L & S & P & N & V & A & K & V & L & V & E\end{array}\right]$



 A V I V L L A L L H L G GV K I H L G P T L P A F



 A $V$ V



 | $A$ | $V$ | $I$ | $V$ | $L$ | $L$ | $A$ | $L$ | $L$ | $S$ | $L$ | $G$ | $V$ | $K$ | $I$ | $H$ | $L$ | $G$ | $P$ | $T$ | $L$ | $P$ | $A$ | $F$ | $L$ | $S$ | $P$ | $N$ | $V$ | $A$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $V$ | $L$ | $V$ | $E$ | $N$ | $F$ | $G$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $A$ | $V$ | $L$ | $L$ | $A$ | $L$ | $L$ | $Y$ | $L$ | $G$ | $V$ | $K$ | $I$ | $H$ | $L$ | $G$ | $P$ | $T$ | $L$ | $P$ | $A$ | $F$ | $L$ | $S$ | $P$ | $N$ | $V$ | $A$ | $K$ | $V$ | $L$ |
| $V$ | $E$ | $N$ | $F$ | $G$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


 A V I V L L A L L H L

 $A$
 A V CII L L T


 | $A$ | $V$ | $I$ | $V$ | $L$ | $L$ | $A$ | $L$ | $L$ | $Y$ | $L$ | $G$ | $V$ | $K$ | $I$ | $H$ | $L$ | $G$ | $P$ | $T$ | $L$ | $P$ | $G$ | $F$ | $L$ | $S$ | $P$ | $N$ | $V$ | $A$ | $K$ | $V$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $V$ | $V$ | $E$ | $N$ | $F$ | $G$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $A$ | $V$ | $V$ | $L$ | $L$ | $A$ | $L$ | $L$ | $Y$ | $L$ | $G$ | $V$ | $K$ | $I$ | $H$ | $L$ | $G$ | $P$ | $T$ | $L$ | $P$ | $A$ | $F$ | $L$ | $S$ | $P$ | $N$ | $V$ | $A$ | $K$ | $V$ | $L$ | $V$ |
| $E$ | $N$ | $F$ | $G$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

| UniRef90_X1KF76 |  |
| :---: | :---: |
| UniRef90-W4V0Q3 |  |
| UniRef90_Q3A664 |  |
| UniRef90-B3QNU6 |  |
| UniRef90_F8THH6 |  |
| UniRef90-F8THI0 |  |
| UniRef90-F8TH89 |  |
| UniRef90-R5BL71 | LG S VM T VN T D P K A L A K Q I I E G I E E K R R K L G W |
| UniRef90-X1JM23 | $\square G G K W A F E R D P \square K A A G M M L E H \\| E K K R D A L G \square$ |
| UniRef90-F8THF4 |  |
| UniRef90-F8C3Q1 | F G G T F K $\square$ A S K A S D F VNMVID R $\square$ WQ K R K E H G $\square$ |
| UniRef90-F8THB8 |  |
| UniRef90_F8TH53 |  |
| UniRef90-F8THF6 |  |
| UniRef90-F8TH54 |  |
| UniRef90-X0SHQ5 | Y G G M WD F E A D P L L H A Q K M $\square$ A H $\square$ D K K R A A L G $\square$ |
| UniRef90_F8TH64 |  |
| UniRef90_UPI000470F84B | $\square \mathrm{G}$ G $\square$ T N V D D D $\square \mathrm{K}$ |
| UniRef90-U5RTE2 |  |
| UniRef90_V9H8C4 | $\square \mathrm{GG} \square \mathrm{T}$ N VIE D D |
| UniRef90_F8THF5 |  |
| UniRef90-I3VSF3 | $\square \mathrm{G}$ G $\square$ T N V E D D $\square \mathrm{K}$ |
| UniRef90-X1AT74 |  |
| UniRef90-R9LN92 | $\ \mathrm{~A}$ Q $\$ G T V E D D  \hline UniRef90-R6UGC4 & I S GI G T V E E D ! E  \hline UniRef90_B6G264 & I A GI G TVVE E D I E K L I K  \hline UniRef90_D2RNZ7 & I A GI G TVEE D M K  \hline UniRef90_UPIO0047E370F & I G G I T T A D E D L E  \hline UniRef90-R5NIB0 & I A G I S SVVE E D M E  \hline UniRef90_G0V3L6 & I G G I T NVEED D  \hline UniRef90_R6L9H5 & I G Gli R S V E E D  \hline UniRef90-E7NPX1 & I A GII G TVVE D D P A $\square$ S A D M L I G S V V K |
| UniRef90-W6NH18 | I A GI G S V E D D IE |
| UniRef90_A0Q355 | I A Gl G TVVED D I K |
| UniRef90_R5TSY9 | 1 S Gll D TV E H D M |
| UniRef90-Q97FI7 | I G G I T NVEED D $\square \mathrm{K}$ |
| UniRef90_Q8R6M9 | I G G I T NVEED D |
| UniRef90-M1YYA4 | I G T I S NVEEDD ${ }^{\text {d }}$ |
| UniRef90_C2KXC1 | I A G I G TVVE D D M K |
| UniRef90_D3EF86 | I G G I T NVVE D D I K |
| UniRef90_R7B190 | I A G I D S V E S DV E |
| UniRef90_UPI00046A6996 | I A GI T T V D E D I K K L A |
| UniRef90-X5DGC1 | I G G I T EVVEK DL E |
| UniRef90_A0A037Z0U4 | I G Gl T NV D D D I K |
| UniRef90_R7JRB7 | I A GI D TVVENDME |
| UniRef90_IOGMU2 | I G T I S TVVE E D I K K M |
| UniRef90-S6ENM1 | I G GII S NV E D D I K M F M E M |
| UniRef90-UPI0004640914 | I A G I Q S V E E D M D |
| UniRef90_UPI000381828A | I G G I T NVEED D M E |
| UniRef90_R5JA14 | I A Gl G T V E D D $\square \mathrm{E}$ |
| UniRef90-G9YQE8 | 1 A Gll G TV E E D |
| UniRef90-X4ZQW9 | I G G l T T V N E DVVE |
| UniRef90_B8FWP2 | I A GI T T V E D D |
| UniRef90-B0NIA1 | I A Gli G TV E E D M Q |
| UniRef90-U7UMR9 | I A GI T TVVE D L K L IE |
| UniRef90_R5XMN8 | I A Gli D TVVENDI K |
| UniRef90_C9LWK9 | IGGGIT DVE S D I K S M |
| UniRef90-B2A0K0 | D M R P N S NVDEDLEK |
| UniRef90-W8T6S7 |  |
| UniRef90_U5MMM5 | I G G I T NVEED DIE |
| UniRef90_K0B1S1 | I G GI T NVEED D |
| UniRef90-W3AKN0 | I A Gl G SVVD D D |
| UniRef90_R7PGK8 | I A GI G TVVD G D M E $\square$ T A D MLIG D $\square$ L R K |
| UniRef90-R6C0C6 | I A GI D TVVENDMK |
| UniRef90-W8TMF1 | I A Gl G TVVE D D I K |
| UniRef90_C9KN66 | 1 G GII T TVVED DI K T M |
| UniRef90_Q8XHA1 | I G Gli T NV E D D M K |
| UniRef90_V1CRD5 | I A G I G T V E D D M E |
| UniRef90-R5HKD2 | I A Gl G TVVE E D |
| UniRef90_C6PSL8 | I G G I T N V D D D $\square \mathrm{K}$ |
| UniRef90-E4T2J3 | I A P I G SV D E D M K |
| UniRef90_N9WEN6 | I A G I T NV D D D M K |
| UniRef90-K5ZRV2 | I G T I S TVVDE D DE K L |
| UniRef90-R6Q1J0 | 1 A GidG TV E E D ME |
| UniRef90_S3JYF8 | T I G T V E E D M K |
| UniRef90_D4CJ12 | IA G \ G S V D E D |
| UniRef90_UPI0003F7410C | I G Gli S TVVE E D M $\square$ T K D T $\square$ I A D $\square \mathrm{L}$ K |
| UniRef90-A7FX38 | 1 G TII S SVD K D $\$ K  \hline UniRef90_U6RHT4 & $1 \mathrm{GG} \mathrm{\\|}$ T T PD E D M K |
| UniRef90_G4D427 | $\square A G N Q T V E$ ED |
| UniRef90_C4ZDT9 | $\square \square \mathrm{P}$ P $\square$ T P E E D $\square \mathrm{KVLL} \mathrm{L}$ |
| UniRef90-D4M8A8 | $\square \mathrm{AG} \square \mathrm{GTV} \mathrm{V}$ ED $\mathrm{V}^{\text {d }}$ |
| UniRef90_U2Q002 |  |
| UniRef90_UPI000255D4CD |  |
| UniRef90_C6PYP5 | \A PVS T P E E DITK A T L |
| UniRef90_UPI0002F50175 | NI A PV T T P E E DL K T I L |
| UniRef90-UPI0002EEB1F4 | $\square \mathrm{GG}$ \D S VEADME |
| UniRef90_R5UT62 | I A Gll G TV E D D |
| UniRef90-X8IR00 | I A GI G TVVE D D 1 K |
| UniRef90-R1CEV5 | I T GI G TV D E DLE K |
| UniRef90 T0NA93 | $\mid \mathrm{I}$ G G $\mid$ I T N\|V|E D D $\overline{\mathrm{M}}$ K |

MSMFCYQCQ
MSMFCFQCQ MENQMFCYQCQ

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$M F C F Q C Q$
$M E Q Q M F C Y Q C E$
$K M F C F Q C E$
MENKMFCYQCQ
$M F C F Q C Q$
$M F C F Q C Q$
MSMFCYQCQ
MSMFCFQCQ
MS MF CYQCQ $M F C Y Q C E$ MSMFCYQCQ

MSMFCYQCQ
MEQKMFCFQCE
MEKKMFCYQCQ $M F C F Q C E$
MKESMFCFQCQ
MEKNMFCFQCE MSMFCFQCQ

RKAPEKEDTMAY
MENKMFCFQCQ
MSMFCYQCQ
KMFCYQCQ
KMFCYQCQ
$M G M F C Y Q C Q$
MGMFCYQCQ MFCFQCE
KMFCFQCE
MDMFCFQCQ
MERKMFCYQCQ
$K M F C Y Q C Q$ $M F C F Q C Q$ $M F C F Q C Q$ $M F C F Q C Q$
$K M F C Y Q C Q$
MSMFCYQCQ
MENKMFCFQCE $M F C Y Q C Q$
KMFCYQCQ
KMFCFQCQ
E

DKNKMFCYQCQ
QMFCFQCQ
QMFCFQCQ
MFCYQCQ
MGMFCYQCQ
Q F CFQCQ
MFCFQCE
$M F C F Q C E$
AENKMFCFQCQ
$K M F C F Q C E$
$K M F C Y Q C Q$
MENKMFCYQCE
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MFCFQCQ
MEQKMFCYQCE MSMFCYQCQ
KMSMFCFQCQ
MENKMFCFQCQ
MFCYQCQ



UniRef90_UPIo0036B94AA UniRef90-W7YDR1 UniRef90-UPIOOO3069356 UniRef90-E1KNS6 UniRef90_UPIO0046382CE UniRef90-UPIO0036739FF UniRef90-H1PKY6 UniRef90_UPI0004791E4A UniRef90-R6J902 UniRef90-U6RI46 UniRef90-E6MEI8 UniRef90_O8RFL1 UniRef90-UPIOOO4769197 UniRef90-N9XDL1 UniRef90_J5H1T4 UniRef90-R5J6Y9 UniRef90-LOK5X5
UniRef90- F7YTK5 UniRef90-R6PM21 UniRef90-R7FA71 UniRef90_-14DBZ4 UniRef90_UPI0003622C69 UniRef90-R6CWF8 UniRef90 R5YN72 UniRef90-R5XD54
UniRef90
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UniRef90
R5YBQ9 UniRef90-F5JЗA2 UniRef90_D1Y762 UniRef90-R5MES2 UniRef90-ЕЗНАВ UniRef90-R6LPZO UniRef90-D4S522 UniRef90_G8LWG9 UniRef90_R6QBJ5 UniRef90-UPI00040630BD UniRef90 V8CPX6 UniRef90-R6C7F7 UniRef90_UPIO00374B29D UniRef90-A8MJI5 UniRef90_UPIOOO35EB186 UniRefofo-G2FTT1 UniRef90_G5F733 UniRef90_UPIO004689B3B UniRef90-G1WBL6 UniRef90_UPIO00255C033 UniRef90-R5JEV7 UniRef90 UPIO004704E8B UniRef90-UPIOOO288E5E66 UniRef90-UPI0003648E80 UniRef90_Q01770 UniRef90-R6RM92 UniRef90-QOAUX3 UniRef90-D9R510 UniRef90-D5UAG3 UniRef90-D6XWT3 UniRef90-R5ZIFO UniRef90-R2RF96 UniRef90-JoMV56 UniRef90-U2K530 UniRef90-U2CG32
UniRef90 U2REG2 UniRef90-R5Q115 UniRef90_UPIO00361162C UniRef90_UPI000479DF26

130
140
150

| $R$ | $S$ |  |
| :--- | :--- | :--- |
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RNAIVTWYSDSEAEMDTKAHQVGVLATKNEDRSLLKELTY ELTAKGHEDPTKEHSVNYVALGVLSDENEDIRSLKELLIY DNLARELGKTPENRTDSEEAMEKKSTKVGVLSHKDEDVRS HDAASFTVNSRESMDKKANFVNVLATENEDIRSLREMITY RESALWHADNVEAFEAKAATVGVLSTENEDVRSLRELIDY PHAAKWYTEDRAQYQWMATAAEVGVLANEDVRSERELYTYY
 REELKALATDEEKKEAEKYGADLVNWENEDVRSLRELIMY TFEAKGGKDESEEMEAKAGCVGVLSTENEDIGSGRELCTY
 KKELLKKVKDTSGLSEAALWDGSGDWEVGVLSNPDEDVRS
 VPECSSCSSPCGRNDEYNMAN LWQAQEDI RSLKSLILF AIIAATWTAPAGEFEQKAASVGVLATENEDVRSLRELLTY PDAAVWKGYTAEEDDEKARHIGVLRTADEDIRSLRELLTY

 QAFAKDIPLDPEDYDAKAATVGVLREKNEDLRSLKELIMY K ILSIRNSLKNENKADKAEKIGVLSTENEDIRSLRELITY HDSATWNGSTKEEFLAKWDDAKIPAETDEDKRSLKELMIY REDKKDFGMQTTEMIMPDAATWTADTENEDDRSLRELITY FEACREQGKTPENLSGPASAWTPAGSLNDLDRQGEEVTF RRLAQQVTISEAEFEAKSKTVGVLRNENEDIRSLKELVHY ALVKAGIKVEAANDSTKSIJWRKLTGWFNEDVRSLRELLTY KVKAEKNK INTDDYDMNNLWND NN NEDIR SKAALYNEKDDDELKLKSQUIGVLNTDDDDKRSLRELITY Y AKA TMG TAKEALYNLSDSKEQULQDAKKAGDDLDDDVRSARETUKY NRDAPGCGTNTDNYDMEQDW GKNNADEDURSLKSLLLE
 DKIRKELEVNWQAETDEEIVEFSNEKKVGDLRTENEDVKS RELNNPDAI LAGAEEDLDLAGDRGEAGNEDIRSLRELITY PQAACWSYVTEDEMLAKSKTVGVLSTENEDIIRSLREMITY KRVDK GGIVLRNRLIEEAKKEYAEKAAGLMREPDEDLRS
 RUVPGCSACASPCGNTSDYDMKQWWDADEDIRSLKSLILF LNQAGDWHGDVGEFDAQAAEVGVLATGNEDIRSLRELITY MALRNRLGOSQGGRDEYAAKAEVLRESDTDLRSLKELMTY KTKLGEMGVEDDDKENDAQALEVASKVNEDVRSLRELIIY KKLSDEDREEAENRKPGKDAYNVQKDWEEDIRSLKSLILF KEAAAHWTAPRAEFSAKAKTVGVLATENEDVRSLRELTTY KQLIDKVHSLSGNTSDYDMSN LWNENEDURSLKSLI LF TDIEKYISYDDEELIRKAVEVGVLNIDNEDERSLVELITY ETLCALWNGRKDQYLTKAALVGVLSTKDEDIRSLRELITY DYQEVHWGGEKSDYSEEG\|REGVLRNENPDLRSLKELTIL EAAAREWKGEKDSFEEKATAVGVLREANEDLRSLKELLVY KLIAQESNTDALNWHTTADKYDATARVVSDLQERDEDVRS REETKKAVI DAGDHDTHDAAHWTANTVEEDVRSLRSLIVF
 AlVPGCRGCGAPCGQNNDYGMAGLWYGDEDIRSLKSLI LF LLKTHNLPCKECIDEVNWDVAENEYDTLAGQVGEEDEDVRS HIRLPQWNEVTWGGEKAEYAEEVLRTENEDIRSLKELTVL PDAALWTSSDYRGLALLKKAHLGVLSTENEDVRSLRELITY RTLNTHESVTWEADTLEAFEEKAANVGVLSTANPDVRSLR RELKKDLGMNTKEDIIPDAAHWVLATENEDDRSRRELILY KLKAADSADP DAGHDDEEMLVKVLATMHEDIGSLRELLTY SDAALWEASEKSAMDAKAGTVGVMATTDDDVRSLRWLITF TLSAFIEKTAAEPYPMKEDW

## LAQVGNPGVNTGDYDDEKLWND

 NANEDIRSLKSLILF LDLAVKNNVSLPDYQEVKWGGEKSDYEAEDLRSNKNSLLLET RVQEEKNSIVPDCRKCTSVCGNTSDYDMKNLWDAEEDIRS LEESLWTPKSKEDMDAKSKTVGVLEEKNEDVRSLKETVDY KLVPNCFTCSDSCGRNNNFDMSTLWTTDEDIRSLKSLILF SNRALWMEMDDEADEKRMQMVGVLETADEDLRSLKQLIVY DSEKEKI LAGTENYDVRQDWE RADEDIRSLKSLI RF RKFLKKEGIASENDDLVELAKKVGVLRTEDVRSLREDVLY TAAAHGDELPHDDYDAKAREVGVLHETDEDKRSLKELIVY SDAADWQSNSHEEMAEKAKTVGVLATTNEDGRSLRELVYY

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UniRef90-F7YTK5 UniRef90-R6PM21 UniRef90-R7FA71 UniRef90-14DBZ4 UniRef90_UPIOO03622C69 UniRef90-R6CWF8 UniRef90 R5YN72 UniRef90_R6H 56 UniRef90-UPIO003616CC2 UniRef90-C6PML9 UniRef90-UP10003B6DD3E UniRef90_B2TLF2 UniRef90-UPIO003600731 UniRef90-D6GU24 UniRef90-UPIo003FA89AF UniRef90-18SLP7 UniRef90-R5HLS5 UniRet90_BOSOV9 UniRee90-B2RJ1
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UniRef9O_R5MES2 UniRef90-R7CXN9 UniRef90_E3HABO UniRef90-R6LPZO
UniRet90 D4S522 UniRef90-G8LWG9 UniRef90 R6QBJ5
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UniRef90 UPIOOO3648E80 UniRef90-UP10003
UniRef90 Q01770 UniRef90-R6RM92 UniRef90-QOAUX3 UniRef90-D9R510 UniRef90-D5UAG3 UniRef90-D6XWT3 UniRef90-R5RF96 UniRefofo-R6FQ06 UniRef90-JoMV56 UniRef90_U2K530 UniRef90-U2REG2 UniRef90-R5Q1J5 UniRef90_UPIO00361162C Ref90_UPI000479DF26

GTk GMA A Ya Y 170
HAWQ GVKGMAA
GKEGMAA YAEHAMNLGQYESKEVCEFMQKALIANNDD GLKGLAA GMKAA YAEHA GLKGMAAY AEHAKNDGKKDGYK Ge AEH Y GVKGMAA YAEHAYVLGYADDA:FAAMEKALTNNAL GLKGLAAYSKHAN GLKGMAA GLKGMAA NALLEA
YTEHAHNTGKENLEI NSFMFEALAATLD
G K GMAA
YNKHA
GLKGLSAYSKHAN GLKGMAA
$\qquad$ YAEHA GMKGMAAYT EHAHNQGNLGKTSEEIFAFVEEALLGTMD GLKGMAAYLKHEAKSKNRNTADGKRDTAAFLEKALAATLN GLKGLSA LQQLI TYGTKGLY LRELITYKGMAAYTKHANALMHTDPKLDAFIQETLLDNSL LKELITYKGMAAYAYHAYVLGFKDEEIYKFMEEALSQTDI GLKGII A G। ${ }^{\prime}$ GLKGlAAY AEHA GLKGMAAYTY GI RGMAA GI R GMA Gi KGMAA GLKGMAA GLKGLAA $\quad Y \frac{L}{T}$ GVKGMAA GIKGlAA GLKGLSA GETVAGAKHMAAYMKHAM

## GLKGMAAYAEHAWN

GI KGMAA GIIKGMAA GIRGMAA YAEHAYTLGYMEDAIFAFMQKALVATTN GLKGMAA YNRHANVLGKFDDNVDEFMESTLAKLMD GLKGLAA YAEHADRLGYVDEEINAFTERALHDVTD GLKGLAA YAHQARFIKYNSDE:DEYYVKALAALTD GLKGMAA YTGHAMRLGYDNPALHEF QRTLSDVNL LKELITYKGMAA YAYHAMVLGYQSEEVN
GLKGMAA YNKHANALSKFNDEIDAFLQATLAKTVD GIKGLAA KMEHSYNLDYEDQELYDFMQEALVDDTL LRELLDYGLKGMYAEHAMNLGKTQDEIFAFDEKGLLATED GLKGMAA Y Y K HADVLGKRDEETENFMIRALSALAD GIKGLCA LKELLTYGLKGLY G| KGMAAYTHHAL VKHARQLEYYNKDDD

G| RGMAA
LKELTHYKGMAAY GLKGLAAYSKHAN
GLKGMAA GLKGMAA GLKGMAA GLRGTAA GLKGLSA
GI KGMAAYTYHA
GI RGMAA
GLKGMAA
GLKGMAA YNHHANVLGYRDEEVDFFDASALAKTDK
GLKGMSA
GLKGMAA
GVKGLAA
GLKGMAA
GLKGMAA
GIRGMAA
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GLKGMAA
YYEHAAHLGKHQDE: TAFMCKASTNPDA
GLKGLSA
ELVVYGVKGDAAYAEHAFNLGYEKKELYAFMQKALAATTD
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GIRGLAA MADGYAKVLGYQNAEMNRFFYKALSATGM
GLRGMAA KMAKIGGYSDEEVNNFFYKGMFAGGE

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GIRGMAA
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GLRGMAA
LRELLTYKGMAAYAEHANNLGFADQGVFEFMQRGLAATTD
GLKGMAA YGFHAYNLGSTDNDIYKFYEKALLATVD
GLKGMAA
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E GT G|V|D|V|Y
E GTGVDVY

| $E$ |  |  |
| :--- | :--- | :--- |
| $E$ | $G$ | $G$ |
| $G$ | $V$ | $V$ |
| $V$ | $Y$ |  |
| $Y$ |  |  | ,

$K G$
$K G$

## E G A G

 K D S Gl Oロm Q G\section*{A G} K D K GI NI I A GTGVVVY | Q G T G | $V$ | $D$ | $V$ |
| :--- | :--- | :--- | :--- |
| A G T | Y | V | D |
| V | $Y$ |  |  | | $E$ | GK G | N |
| :---: | :---: | :---: |
| E G K G | I | N |
| I |  |  | | $E$ | $G$ | $G$ | $V$ | $D$ | $V$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $K$ | $D$ | $S$ | $G$ | $V$ | $D$ |
| $V$ | $Y$ |  |  |  |  | K G E GTGVVDV $\underset{V}{ }$ mm Q G K D E GTGGIVDVY E GK GI $N$ E G T G I



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E

## K



 \begin{tabular}{ll|lll}
$E$ \& $G T$ \& $G$ \& $V$ \& $V$ <br>
$K$ \& $D$ \& $Y$ \& $G$ \& $V$ <br>
$D$ \& $V$ \& $Y$

 E GTGVDVV 

$K$ \& $D$ \& $K$ \& $G$ \& $I$ \& $N$ <br>
$K$ \& $G$ \& $T$ \& $G$ \& $V$ <br>
$D$ \& $V$ \& $Y$
\end{tabular}


KDKG1NI QGTGVDVY EGTGVDV

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 K K K GI NL Y

 $\begin{array}{lllll}K & D & T & G & D \\ E & G & T & G & V \\ D & V & Y\end{array}$
 K DKGI A V Y

$E G T G V D V$
$E N Q G V D V$
$E G T G|V| D|I| Y$

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THSEMLPAHYYPAFGNAWWKQKEEFEAF
TH S E MLLPANYYPVVF GNAWWK Q N E E F E T F

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THSEMMPAHYYPAFGNAWWKQTSEFESF


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THGE MLLPA HAYPELKK YA HLLK GNF GTA
TN GE MLL PA A A Y P K L K A A YP H L K G N F GT A
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T H G E MLP P A H G Y P E L K K K $\quad$ Y R H L L K G N F G T A
TH S E M L P A H Y Y P E L K K Y Y K H FVVGNY G G A
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TH GEMLPA HYYPAFGNAWWK QREEFAS F

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UniRef90 F7YTK5 UniRef90-R6PM21 UniRef90-R7FA71 UniRef90-14DBZ4 UniRef90_UPIOO03622C69 UniRef90-R6CWF8 UniRef90 R5YN72 UniRef90-R6H H 56 UniRef90-UPIO003616CC2 UniRef90-C6PML9 UniRef90-UP10003B6DD3E UniRef90_B2TLF2 UniRef90-UPIOOO3600731 UniRef90-D6GU24 UniRef90-UPI0003FA89AF UniRef90-18SLP7 UniRef90-R5HLS5 UniRef90_BoSOV9
UniRee90-B2RJM
UniRef90-UPIOOO47B05B3 UniRef90-F9ZAD1 UniRef90-R6GJH3 UniRef90-UPIO002E6FFE5 UniRef90-R6MD90 UniRet90_UPIO00371848A UniRef90_C3WC00 UniRef90-D6DH88 UniRef90-UPIOOO2891395 UniRef90 E6SSP66 UniRef90-SOFQQ8 UniRet90-R5YBQ9 UniRef90_-F5J3A2 UniRef90-DTM62 UniRef90-R7CXN9 UniRef90_EЗHABO UniRef90-R6LPZO
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UniRef90-UPIOOO3648E80 UniRef90-Q01770 UniRef90_R6RM92 UniRef90-QOAUX3 UniRef90-D9R510 UniRef90-D5UAG3 UniRef90-D6XWT3 UniRef90_R5RF96 UniRefofo-R6FQ06 UniRef90_JOMV56 UniRef90-U2K530 UniRef90-U2REG2 UniRef90-R5Q1J5 UniRef90-UPIO00361162C

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[^2]$\square$
 NGPILFTTNCIVPPKDSYKD

VYTTGTSGFAGVK RVYTTGTSGFDGCTH RVFTMNATGFPGWKH RIFTTGSTGFPGCKH $R \square^{T}$ T保





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N NGPLLMTNNCLVPRDSYK WONOQKEFDFPGAKLMTNRLL
 NGPILMTTNCLVPPKASYKDRVYV
WQNQQKEFDHLPAPI LYYTNCLMAD WQNQQKEFDHLPAPLDYTTNCLMADRAFTT $R A F T$
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 NGPDLFTNCCVVPPSKGAKATYKDKMFTGNSTGFPGFKH

## N

















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  WQNQQKE F DNL PA P ILLYTTNCLMADRVVTTEMMVYP EMVH
 NGPVIFTTNCIVPP AKNASYADRDFTTNATGYPGWKH




510
520
GE|l|NG|L|PR|VL|D











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- L UniRef90-D6DH88 UniRef90-E6SP66 UniRef90-D6M6U2 UniRef90-R5YBQ9 UniRef90-F5J3A2 UniRef90-D1Y762
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 AVIVLLALL L S L G I K I H L G P T L P A F L S P N V T K V L V E N F G
 A A V I V L L S L L H L G V K $\quad$ LHLL G P T L P A F L A V A I L L $A V I V L L A L L Y L G V K D H L G P T D P G F L V P N V A K V L V E N F G D A$ AVIV L L A L L Y L G V K K I H L G P T L P A F L S P N V A K V L V E N F G

 AVIVLLALLSLGVKI HVGPTLPAFLSPNVAKVLIENFG
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 A $V$ I V L L A L L AV I V L L A L L H L G V K i H L G P T L P A F L A V I V AVIVLLALLSLGVKI AVIVL ALLHLGVK $A \vee A$
 AVIVLLALLYLGVKI A V CII L L T L L H L G I K I A V I V L L A L L S L G V K I AVIVLLALLYLGVKI H AVIVLLALLSLGVKI A $V$ V AVIVLLALL S L GV K I AVIVLLALL H L G V K AVIVLLALLSLGVKI A $V$ I $V$ L L A V CII L L S L L H L G I K I A V I V L L A L L S L G V K I
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| UniRef90-G4Q819 | GLKGLAA Y |
| Ref90_G80SP1 | GLKGVSA YSKHANVLIKDDEALD |
| JW1G6 | KGMAA |
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| UniRef90-UPIO | S |
| UniRet90-A5N0 |  |
| UniRef90-U2BUP2 | GLKGMAA YAEHAGN |
| UniRet90-WoJF32 | GLKGMAA YYDHASVLGFEDESITSFMIDDTLAQLTE |
| UniRef90-R9LJB7 | GLKGMAA YTYHAYQLGYTDGRIHHFMRQALAATLD |
| UniRef90-UPIO003AOCEA9 | KGMAA YAEHAMNLGKTQEDIFEFTEKALLAS\D |
| UniRef90-H1CY | ELLIT YGLKGLYYLRHARVLHKESREVNDFLEDTLLDKHL |
| UniRee90 UPIOOO3B5A059 | G\| RGMAA A YAYHANV |
| UniRef90_D9R549 | G\| KGMAAY AEHAYN GKE |
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| UniRefo- | GVKGIAA |
| M1 | GISA YSHQARFI |
| R6 | Gla A YAYHAMVLG |
| UniRef90-U5Q9H3 | AYGEHAFNLGMEDPEIY |
| UniRet90-FORUZ8 | VCA ${ }^{\text {atKHANN }}$ |
| UniRet90-R9M0M1 | RGMAA YAYHAAVLGYTDPE DHFF |
| UniRet90_B9MR | GLKGMA G |
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| UniRef90-R7H5Y7 | GILGMAA YAYHARVLGKTDPEI |
| UniRef90 R7R8Z22 | GLKGMAA VEYAYHALMLLGFSDEEVNMFFCEALCKVDT |
| UniRet90-A6LCQ4 | GMAAY VEHAYNLGEEDTSLYAFMQDALVAT TRSDL |
| UniRet90-TOCTY | GLKGMSA YMA |
| UniRet90_R5V7N4 | GLRGMAA YAYHAMVGYRDAVIDTFFS |
| UniRef90-F7KIC5 | RGMAA YAYHAAVL |
| UniRef90-S2KXS5 | GLKGMAA YAEHAMNLGYNDEV |
| UniRef90-W1U | QTIVYGLKGDSAYGHQARELGYYDDEVDAFYIRALEAVCN |
| UniRet90 R6QZT5 | GLRGMAA YAYHAMVLGYSDQTVN |
| UniRef90 C5VRW8 | GLKGLSA |
| UniRet90_DNBC5 |  |
| UniRef90_R7DGS1 | KGAAA YTEHALNLGFEDHDIYAMIENALVEDDI |
| UniRef90 R5RU | GMAA YAYHANVLGYRDDTVNNFFIKALLGYDM |
| UniRe | QTIVYGLKKG\\|SAYGHQARELLGYYDDEVDNFYVRALEAVCD |
| UniRef90-UPIO002E193 | - |
| UniRer90-C7H7A1 | SLRGMAA YNYHARVLGRIDEELDRFCEALVGEC |
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| 5L949 | MA A |
| UniRef90_UP10002 | TUIY GLK GIYGHQARE |
| UniRef90 U7V6D5 | YYEHSVNLGYEKSES |
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| UniRet90 COEAC9 | KKGMA |
| UniRet90-E4KZU3 | GLKGMAA YTRHAKVLGYEDQEVN |
| UniRef90-R7H7J 8 | GLRGMAA YAYHAQMLGYQDDEVNDFFCEGLVGYEN |
| GH9S6 | GVKGAAA YTEHALNLGFADPDIFAMIENALAEVDID |
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| UniRef90 U2KS 73 | A M MGY |
| UniRef90 D7JG35 |  |
| UniRef90-D187H3 |  |
| UniRef90-C5EUD3 | 俍 |
| UniRef90-UPIo0047C3962 | QTVVYGLKGTYGHQSREMGYYNDQVDEFYFRCTTNNNL |
| UniRef90-Q1J | ADVHYAAYAHHALV GLEEDELYAFTHRALLDTSL |
| UniRef90 C9L | KGAYYEHASNLQQADLTLLHFMAEALAIVV A A P P A |
| UniRet90-D1AGR1 | - |
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| UniRet90-B3QLM5 | ADP DLRLAAYTDHAAVLGYNDDDIYAFYVKGLSALEL |
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| UniRef90-T3DD | ARELGYYNNQVDEFYFRALSATTD |
| UniRef90-R7G229 | GMAAY AYHAYALDYVDRNVLDFFYEGLEAIAS |
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| iRef90-F9MW66 | A |
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| UniRef90-Tol7 | MAA YAVHAAVLGKENPEVTAWFYKGLLGEEH |
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| UniRef90-EЗ3 UAO | G |
| UniRe90-DLV30 |  |
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 NGPVLFTTNCIVPPRP NSTYKDRIYTTGASGFPGFKH

 WQNQQKEFANLPAPMLDTTNCLMKDRVFTTEVAGYPGVVH WQNQQSEFHNIPAPILFTTNCIMCDRVFTTSIVSYPELVH
 $N G P L M T T N C V P S K D S Y K D R L Y A D R V T T G A A G F T G C T H$ WQNQQKEFNCLMPPKGSYAD LOMARETTEAVAFPDAVH NQPQQKEFASCAPVLYTTNCLMADRVFTTEVVSYPEMVH NGPILMTTNCIVPMKKT NTYKDRMFTTGNAGYPGVAH WQNQQKEFDNI PGCTLMTTNCLMKPRDFTTSVVGWDGVKH

 WQNQQKEFDNI PAPVLFTTNCLMADRVFTTEVVSYPEMVH
 WQNQQREFEDI PAPILFTTNCIMADRVFTTSVVSYPGVPH WQNQQKEFNCIMPVKDSYKD



 N G PII L M T TN C I T P V K D S Y R D $\quad$ T

## N

UniRef90_R7HZQ0
UniRef90 R7LUC0 UniRef90-17J6N3 UniRef90-C0EAC9 UniRef90-E4KZU3 UniRef90-R7H7J8
UniRef90 G5H9S6 UniRef90-UPI000363A1F3 UniRef90_U2KS73 UniRef90_D7JG35 UniRef90_D1B7H3 UniRef90_R5DMY0 UniRef90-C5EUD3 UniRef90-UPI00047C3962 UniRef90_Q1JWT0 UniRef90-C9LJ33 UniRef90_UPI0004643730 UniRef90_D1AGR1 UniRef90_UPIO004794A7A UniRef90_UPIO002D41BBF UniRef90-B3QLM5 UniRef90-B5YHX5 UniRef90-T3DDR2 UniRef90-R7G229 UniRef90-B8CZ59 UniRef90-F9MW66 UniRef90-UPI0004630D43 UniRef90_T01720 UniRef90-UPIO00414DE6B UniRef90_E3PUA0 UniRef90-F4LV30 UniRef90-D4J5P9
UniRef90-E3H7G3 UniRef90_UPI0001E2E6D0 UniRef90_UPI000468DD67 UniRef90_UP10003
UniRef90_B1BC86


|  | VGGFAHAQVMA | 420 | 430 | 440 |
| :---: | :---: | :---: | :---: | :---: |
| UniRef90_D4H7R2 |  |  | $V \mid$ A ${ }^{\text {V }}$ K S G A | K R F V V ${ }^{\text {M }}$ |
| UniRef90-R6YAC7 | I GGFAHNQVLQLADAV |  | V G A V K S G A | R K F I V M |
| UniRef90-G4Q819 | VGGFAHNQVLALADKV |  | $\checkmark$ D A VKNGA | K K F I V M |
| UniRef90-G8QSP1 | $V G G F A H N Q V F A L A D K V ~$ |  | $V$ D AVKS GA | K K F V V M |
| UniRef90-J5W1G6 | I G GFAHNQVFALADKV |  | VEAVKS GAI | Q K F V V M |
| UniRef90-U2LKG4 | VGGFAHEQVFALA A K I |  | $V A A V K S G A$ | RKFIVM |
| UniRef90-R5BWP0 | TTGFGHHTILSVADQV |  | ADAVKS GAL | K H I FL V |
| UniRef90_UPI000468B949 | VGGFAHAQVFALS DKI |  | VEAVKS GAI | RKFVV M |
| UniRef90-A5N008 | LVGF GHKETLSHASEI |  | $V$ NAVKKG | R HFF |
| UniRef90-U2BUP2 | TGGFAHAQVTALLADKV |  | $V E A V K S G A$ | RKFFV M |
| UniRef90-W0JF32 | VGGFAHNQVLALADKV |  | I EAVNS GA | K RFVVM |
| UniRef90-R9LJB7 | FAHHTVTRLADQ1 |  | $V$ Q AVKS GA | KRFFVM |
| UniRef90-UPIO003A0CEA9 | VGGF A H NQVLSLA D T I |  | VENIKSGA | RKFIVM |
| UniRef90-H1CYT6 | TGGFAHNQVLALADTV |  | $V E A V K S G A 1$ | K K F IV |
| UniRef90_UPI0003B5A059 | MTGFARGTVLGVADKV |  | 1 EAVKA GA | R HFF |
| UniRef90-D9R549 | VGGFAHNQVLALADKV |  | V DAVKSGA | KKFFV M |
| UniRef90-R9BUJ4 | L VGFGHNATLSHAEK】 |  | V SEVKAGNI | R HFFV |
| UniRef90-F8EWN7 | VGGFAHAAVDKVAP |  | VVVDAVKNGAI | K R F FVV |
| UniRef90-U7D7Q1 | TGGFAHNQVLALADKV |  | $V D A V K G G A$ | K K F V V M |
| UniRef90-M1MEP4 | LVGFGHKATLSHAETI |  | 1 NAVKD GKV | K HFFL |
| UniRef90-R6VH04 | ITGFGHHTILGAAPQV |  | 1 E AVKA GK | SHFFLV |
| UniRef90_U5Q9H3 | 1 GGFAHAQVFALAD K V |  | VEAVKS GA | RK F FVVM |
| UniRef90-FORUZ8 | VGGFAHEQVFALADKV |  | $V$ D A VKS GA | K K F V V M |
| UniRef90-R9M0M1 | TTGFGRHAVLSVADKV |  | VKAVKS GV | R HFFLV |
| UniRef90-B9MRG9 | LVGFAHNTVLGVANKI |  | 1 EAVKS Q | K HF |
| UniRef90_A9KP36 | IGGFAHAQVLALADAV |  | $V \mathrm{GAVKSGA}$ | K K F V V M |
| UniRef90-I5AXB9 | TTGFGHNTVLSVADQV |  | K AVKKGS | R HFFLV |
| UniRef90_R7H5Y7 | T T GFAHHAVLSIAEK |  | LI E AI R S G A | S H ${ }^{\text {P }} \mathrm{F}$ |
| UniRef90_R7R8Z2 | TTGFGHDAI LANADKV |  | $V E A V K$ A GA | S HFFLV |
| UniRef90-A6LCQ4 | IGGFAHEQVFQLADKV |  | 1 D AVKS GA | R K F F V M |
| UniRef90-T0CTY0 | IGGGFAHNQVFALADKI |  | VDAIKTGA | K R F F V M |
| UniRef90-R5V7N4 | TTGFGHGTILSVAEQV |  | V A GVRS GA | R HFFLV |
| UniRef90-F7KIC5 | KTGFGHGAVLDVADKI |  | 1 NAVKTGA | K HFFLV |
| UniRef90-S2KXS5 | VGGFAHNQVFALADKV |  | V E AVKS GA | K R F 1 V M |
| UniRef90-F0GV78 | VGGFAHNQVLALADKV |  | I EEINAGN | K K F V V M |
| UniRef90-W1UCF5 | LVGFAHHETLSHAETI |  | 1 NAVKEGKI | R HFFLI |
| UniRef90-R6QZT5 | \|VTGFGHNTVLSVADTV |  | V D AVKKGEI | S HFFLV |
| UniRef90_C5VRW8 | VGGFAHNQVLALADKV |  | $\checkmark$ D AVKT GA | K R F F V M |
| UniRef90-D7NBC5 | VGGFAHAQVFALADKV |  | VEAVKS GA | R K F V V M |
| UniRef90-R7DGS1 | I GGFAHHQVLALADKI |  | $V \mathrm{DAVKSGAI}$ | K K F V V M |
| UniRef90_R5RUK5 | VTGFAHGTVLSVADKV |  | VEAVKNGD | K HFFLV |
| UniRef90-W6S2H8 | V VGFGHNATLSHAEDI |  | VKAVKEGKI | R H F F V I |
| UniRef90-UPI0002E19382 | LVGFGHHATLSHAETI |  | $V \mathrm{NAVKEGKI}$ | R HFFL |
| UniRef90_C7H7A1 | VTGFARSAVLSHANEI |  | $V$ A A V K S GQl | R HF |
| UniRef90-R7HUE7 | TVGFGHGTVLSVADKV |  | 1 E AVKS GD | K H $\square \mathrm{F}$ L |
| UniRef90-R5L949 | TTGFAHGTVLSVADKV |  | 1 D GVKTGKı | S H F F L V |
| UniRef90_UPI00028843D2 | LVGFGHHATLSHAEDI |  | V NAVKDGK | R HFFL |
| UniRef90-U7V6D5 | IGGFAHNQVFALDADKV |  | $V$ D AVKS GA | RRFYV M |
| UniRef90-R7JZR6 | TTGFGHAAVLSHAEEI |  | I S SIK Q GHI | K H $\square \mathrm{F}$ L V |
| UniRef90_T3GIF6 | TTGFARGTVSSVQDKV |  | $V$ D AVK S G A | R HFLLV |
| UniRef90-Q3AQH9 | VGGFAHNQVLALADKV |  | $V$ D AVKS GAV | K R F V V M |
| UniRef90-D3RQ67 | $V \mathrm{GGFAHAQVMALADKV}$ |  | 1 DAVKSGA | K R F V V M |
| UniRef90-V7IB69 | VGGFAHNQVVALADKV |  | $V$ D AVKS GA | K K F F V M |
| UniRef90-A0A037Z246 | LVGFGHHATLSHADKI |  | 1 EAVKNGS | K HF |
| UniRef90-R7HZQ0 | VGGFAHEQVFALAD TV |  | V D AVKS GA | K KFVVM |
| UniRef90-R7LUC0 | TVGFGHSTVLSIADKT |  | 1 EAI K NKKI | N H DFLV |
| UniRef90-17J6N3 | MVGFGHDAVI G\\|A ${ }^{\text {V }}$ KV |  | 1 DLI K Q GKı | KRFML |
| UniRef90-C0EAC9 | TTGFAHGSVLANAEKV |  | 1 NAIKTGA1 | K H $\square_{\text {FF }} \mathrm{L}$ V |
| UniRef90-E4KZU3 | VGG F A H S QVMELA D K V |  | 1 EAVKNGDI | TK FVV M |
| UniRef90-R7H7J8 | QT GFGHGTILSVADKV |  | $V E A V K A G D I$ | S HFFLL |
| UniRef90-G5H9S6 | VGGFAHNQVIALADKV |  | $V E A V K S G A 1$ | RKFVVM |
| UniRef90_UPI000363A1F3 | 1 GGFAHEQVFALADKV |  | VA AVKS GA | K K F V V M |
| UniRef90-U2KS73 | $V$ GGFAHNQVFALADKI |  | V E A V K R G D | HK F V V M |
| UniRef90-D7JG35 | I GGCAHRQVIA WS DKI |  | 1 A A MK S GAl | R K F V V M |
| UniRef90-D1B7H3 | LVGFGHNATLAAAPKV |  | 1 QLVKEGK1 | R HFFLI |
| UniRef90-R5DMY0 | LVGFGHEAVLSNAQSI |  | $V$ D AVK S G H | RHFFLI |
| UniRef90_C5EUD3 | TTGFGHEA LLAAAGTV |  | I E GVKNGD | S RFFLV |
| UniRef90_UPI00047C3962 | LVGFGHNATLSHADTI |  | $V$ N AVK D GKı | R HFFL |
| UniRef90-Q1JWT0 | LVGFGHNAVMSVADKV |  | 1 EAVKAGD | RHFFLV |
| UniRef90-C9LJ33 | VGGFAHAQVFALADQ1 |  | $V E A V K$ S ${ }^{\text {a }}$ | R K F V M |
| UniRef90_UPI0004643730 | LVGFGHEATLSNAPAI |  | 1 D AVKS GKL | K HFFL |
| UniRef90-D1AGR1 | VGGFAHAQVFALADKI |  | $V \mathrm{D}$ AVKS GA | K K F V M |
| UniRef90_UPI0004794A7A | VGGFAHNQVA QVA D QV |  | VEAVKNGDI | K R F F V M |
| UniRef90-UPIO002D41BBF |  |  |  |  |
| UniRef90-B3QLM5 | VGGFA H T Q VLA LA D K V |  | VDAVKS GA | K R F V V M |
| UniRef90-B5YHX5 | MVGFARNSVLSVADKV |  | 1 ELVKAGKI | RHFFLV |
| UniRef90-T3DDR2 | LVGFGHNATLSNAPAI |  | 1 D AVV T GKı | R HFFLI |
| UniRef90-R7G229 | TVGFAHNAVLSNAGHI |  | VELI K A GKı | R H ${ }^{\text {¢ F }}$ L V |
| UniRef90-B3E3A0 | LTGFGHNAVLGVADKV |  | 1 A AVK A GQ\| | K HFFLV |
| UniRef90-B8CZ59 | PVGFAHNAVMSVADKV |  | V EAVK Q G ${ }^{\text {I }}$ | K R F V V M |
| UniRef90-F9MW66 | VGGFAHNQVFALADQV |  | $V$ D AVKS GAl | K K F V V M |
| UniRef90-UPIO004630D43 | VGGFAHNQVFALADKV |  | $V$ D AVKS GAl | K K F F V M |
| UniRef90-T01720 | MTGFARDTI MSVAGTV |  | 1 D AVKA GAl | K HFFLV |
| UniRef90_UPIO00414DE6B | 1 GGFAHAQVLALADKI |  | 1 DAVKS GAl | K K F F V M |
| UniRef90-E3PUA0 | VGGFAHNQVI AL A D KV |  | V D A VKT GAl | K K F F V M |
| UniRef90-F4LV30 | MT GFARNAVLGVADK |  | LI DAVKS GA | K H $\square \mathrm{F}$ L V |
| UniRef90-D4J5P9 | TTGFGHGTILSVADKV |  | VEAVK A G DI | R H FFLV |
| UniRef90-E3H7G3 | 1 GGFAHNQVLALLADKV |  | I DAVKS GAl | KKFVVM |
| UniRef90-UPI0001E2E6D0 | I T GFGHGTILSAA |  | DVVIEAVKAGAI | K H F F V V |
| UniRef90-UPI000468DD67 | I GGFAHHQVIA LAADKD |  | L A AVKS GAl | K K F V V M |
| UniRef90_UPI000374CEE1 | LGGFAHNQVLALAD K I |  | VEAVKNGDI | K K F V V M |
| UniRef90_B1BC86 | T I G F A H N T V L S N A D K \\|I |  | E A V K K G E \\| I | \|K H F F|L I | |







| UniRef90_D4H7R2 | $\mathrm{D} \square \square^{610} \mathrm{~K} \text { A } \square \mathrm{G} D \square \mathrm{~K} \text { A D } \square^{620} \mathrm{D} \text { A M A }$ |
| :---: | :---: |
| UniRef90_R6YAC7 | \TG G $\dagger$ T S V D E D |
| UniRef90_G4Q819 | I G T I S NVEED D |
| UniRef90-G8QSP1 | I A Gll S NVVED |
| UniRef90-J5W1G6 | I A Gli G TV E E D I K T |
| UniRef90-U2LKG4 | T $~ G G \quad$ TV D D D |
| UniRef90-R5BWP0 | LT P $\square$ S T P E E D L K K $\square_{\text {L L }}$ |
| UniRef90_UPI000468B949 | $\square \mathrm{A}$ G N S T V E ED |
| UniRef90-A5N008 | T FD $\square$ R P $\quad$ S T P E E D L K |
| UniRef90_U2BUP2 | $\square \mathrm{G}$ G $\square$ S S V D E D L V K |
| UniRef90-W0JF32 | DVVKPl G E V Q Q D LEL IM Q |
| UniRef90-R9LJB7 | IGGG】T NVE E D M |
| UniRef90_UPI0003A0CEA9 | I A G M T TVVDEDLK K |
| UniRef90-H1CYT6 | $\square A G \square T ~ T V E E D M K$ |
| UniRef90-UPI0003B5A059 |  |
| UniRef90-D9R549 | \A G $\square$ G T V E D D le $^{\text {a }}$ |
| UniRef90-R9BUJ4 | $\square \mathrm{L}$ P $\mathrm{L}^{\text {S T P E E D LK }}$ |
| UniRef90-F8EWN7 | $A G \square G T V Q E D \ K$ |
| UniRef90_U7D7Q1 | IGGGVGEVEQDIK K M |
| UniRef90-M1MEP4 | D I K P I S T P D E DLK Q L |
| UniRef90-R6VH04 | I S P TS T PEE DLKKKIL E K |
| UniRef90-U5Q9H3 | IAP P \GTVD D D M K L F L G K |
| UniRef90-F0RUZ8 | $\square \mathrm{A}$ G $\square$ S S VE DDLK A L |
| UniRef90-R9M0M1 | I A P I T T P E S DLEVLL K |
| UniRef90_B9MRG9 | N I K P I S N P E N DLNEILS K K |
| UniRef90_A9KP36 | A G $\square$ Q T V E ED M D |
| UniRef90-15AXB9 | IAP T T T PED DLKETL |
| UniRef90-R7H5Y7 | I T P T Q T P Q Q L ERI L S K |
| UniRef90-R7R8Z2 | I A P $\square$ T T P K E DL K A L L S K |
| UniRef90_A6LCQ4 | I A G\|l G S V D E D M E |
| UniRef90_T0CTY0 | LG GUT NVE D D L K M F L E Q |
| UniRef90_R5V7N4 | HYGIA P IT T P E A D LKALL R R A |
| UniRef90-F7KIC5 | HYNIAPI T T PEEDLIRTIL NFRR |
| UniRef90-S2KXS5 | LA G $\square$ S DVENDLVK |
| UniRef90-F0GV78 | IA G N T SVEED M E |
| UniRef90-W1UCF5 | T F D 1 K LIS T P E D D LK C CLK |
| UniRef90_R6QZT5 | 1 HPV S D P E S DLREIL |
| UniRef90_C5VRW8 | I A G\|l G T V D E D I K |
| UniRef90-D7NBC5 | L G GII T TVVDEDMKRM |
| UniRef90-R7DGS1 | T لS SVE E D M K |
| UniRef90-R5RUK5 | PTG TPEGDLKK F L M M |
| UniRef90-W6S2H8 | T F D L KVIS T A D D L K S CLQ Q R |
| UniRef90_UPI0002E19382 | PI S T A D E DLKK S SLR Q R |
| UniRef90_C7H7A1 | N L M AVTT P E Q D K K il L |
| UniRef90-R7HUE7 | I K P V T T P E E D L K E I L K R |
| UniRef90-R5L949 | NISSPI T T P E E DL K K I L N K |
| UniRef90_UPIO0028843D2 | $T$ T ${ }^{\text {S T V D D L K S CLK Q }}$ |
| UniRef90-U7V6D5 | $\square \mathrm{GT}$ T S TVE E D |
| UniRef90-R7JZR6 |  |
| UniRef90_T3GIF6 | ALTTPI STPEEDMKKIL |
| UniRef90-Q3AQH9 | VFPDI K P I S TVEA DVDA MMA |
| UniRef90-D3RQ67 |  |
| UniRef90_V7IB69 | $\square \mathrm{A} \mathrm{GV} \mathrm{V}$ T V E DD $\mathrm{V}^{\text {K }}$ |
| UniRef90_A0A037Z246 | $\square N \square T$ P $\quad$ S N P E N D L K T I L K |
| UniRef90-R7HZQ0 | $\square \mathrm{A}$ G $\square$ T T VEED M EVS K D M M I G D I I E R |
| UniRef90-R7LUC0 | IQP T T T P EK D L K E I L D K |
| UniRef90_17J6N3 | NIMP\S NAE H DLQEEI L |
| UniRef90-C0EAC9 | T Y GLQ P IT APEQDMDA L L N R |
| UniRef90-E4KZU3 | $\square \mathrm{A} \mathrm{G} \square \mathrm{T}$ S V V E D M K |
| UniRef90-R7H7J8 |  |
| UniRef90_G5H9S6 | $\square \mathrm{GG} \ \mathrm{~S}$ DVE N D M K |
| UniRef90_UPI000363A1F3 |  |
| UniRef90-U2KS73 | LGGGI T T V E E D L K T M |
| UniRef90_D7JG35 | 1 A Gli G T V D E Dilk A M |
| UniRef90-D1B7H3 | P IGG P S A E D L R $\square$ L |
| UniRef90_R5DMY0 | L $\quad \square$ S N A E D $\square$ T T |
| UniRef90_C5EUD3 | D IH PVVS T P E D I R Q L |
| UniRef90_UPI00047C3962 | T F DI R PI S N A E D L K |
| UniRef90-Q1JWT0 | NI GPIT T A E Q DLE Q L |
| UniRef90_C9LJ33 | LG G N T TVDEDLK A |
| UniRef90_UPI0004643730 | T F NLN T $\square$ S T P EKDLA T C L GVP |
| UniRef90-D1AGR1 | LT G T T DVE T D |
| UniRef90-UPI0004794A7A | V G Gli S N T K D D L E |
| UniRef90-UPI0002D41BBF |  |
| UniRef90_B3QLM5 | T F D L K P T T V D A DVE A M M A |
| UniRef90_B5YHX5 | IK P I K T A E E D K D L |
| UniRef90-T3DDR2 | - Pl S T PEKDLA |
| UniRef90_R7G229 | $\square \mathrm{QK} \square$ S T VE E D M K K |
| UniRef90-B3E3A0 | $N \square M P \ T$ T A E E D L K A L L |
| UniRef90_B8CZ59 | D I K P I G EVVE E DVK C A 1 M A |
| UniRef90-F9MW66 | I S P I T SVQ E DLD |
| UniRef90-UPI0004630D43 | $\square$ A G M G S VDAD ME |
| UniRef90-T01720 | DLDP P T T P ENDLQ T L L K |
| UniRef90_UPI000414DE6B | $\ \mathrm{GG} \backslash \mathrm{T}$ NVED D $\square \mathrm{E}$ |
| UniRef90_E3PUA0 | $\square A G \\| G T V E D D M K$ |
| UniRef90-F4LV30 | D L K P IS T P E E D LKA |
| UniRef90_D4J5P9 | TYNIGAVT T P EA D M A CLLGRE |
| UniRef90-E3H7G3 | $\square \mathrm{A} \mathrm{G} \square$ S S VGGE D M K |
| UniRef90_UPI0001E2E6D0 | $N \square S P \square S$ T P E A D L E K L K |
| UniRef90_UPI000468DD67 | IG T I S TVEQD $\square$ K E M |
| UniRef90-UPI000374CEE1 | I A G I T T V E D D |
| UniRef90-B1BC86 |  |




UniRef90_L7VNM5
UniRef90_R5AAX7
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UniRef90_C7HV81
UniRef90_UPI0003B37803
UniRef90_R6NET3
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UniRef90_Q58175
UniRef90_B8DPN6
UniRef90_D8GNZ5
UniRef90_Q3B2A8
UniRef90_D6SLN3
UniRef90_G8UNL2
UniRef90_R7JC18
UniRef90_D9SVP6
UniRef90_UPI000475517D
UniRef90_R5WBC0
UniRef90_B9CKB1
UniRef90_A1ANA2
UniRef90_A9A7N9
UniRef90_R7NAZ5
UniRef90_N1ZSB4
UniRef90_A0A017RZ17
UniRef90_K4KSX5
UniRef90_R5NZC2

130
140
E VEKEKNRLLGAENFNMRDLTW
N G NV ${ }^{150}$
VS FR S T L L $\frac{160}{L}$


 H A T Y H L P D S K T D ML K D A P M A G I M Y D K S L D DI R S L R Q T L
 AELVVPDCGGCPCGHND DYD GVESDDWNAPVDVVRSLDKS LI LDF R E KII IE K N C A T W A Y E T D E D L I I NLAANTK E E DI R S L K K ELI T Y R A L A A R A G V K T LAMRDQLNA WT GSTRREF LQQKALDTAGVESYDLNEDL RS





 L N L R D SLLK S K C S G N E L P D F A T WNA K T D L E I L E K E DVVR S L R
 VP NCSECS S A CGRSSNYDMKELWS K A K D $\square$ CN E VP EAA A E T K E E M L L R D A V K A G I M Y D Q T L D A N I R $K V$ T E EKN K L G G A E D F AP D AL F H G D P D I V S L R INQARQAGDPEEEYTAKASQVGVLRETRENLRSLKELTMLY


 UniRef90_UPIO0047AD4DE UniRef90_UPIO00361ADDF UniRef90_TOJVN0 UniRef90-X0SF08 UniRef90_B3EFP8 UniRef90_F8N6Y9
UniRef90 F8THG0 UniRef90_EONL37 UniRef90_F0SWR9 UniRef90_HOURF1 UniRef90_R7HCH1
UniRef90_D7E6V9 UniRef90_UPI0003686C36 UniRef90-UPIO00426C518 UniRef90_G0GEX8 UniRef90_B1BZ66 UniRef90_K1XTX7 UniRef90_UPI00036A7A80 UniRef90_LOGZ65 UniRef90_UPIO0047EF022 UniRef90_R6ATQ5 UniRef90_UPI00036B654F UniRef90_S6D826 UniRef90_J5U4N8 UniRef90_D4L4V5
UniRef90_A0R7Z7 UniRef90-R7B116 UniRef90_L1MJH0 UniRef90_A6LVR1 UniRef90_C7N478 UniRef90_R5BW41 UniRef90_A6UVM6
UniRef90_R6LNS2 UniRef90-E8WUE2 UniRef90-B3EAB6 UniRef90_F2JJB2 UniRef90-Q1K3J6 UniRef90_V8C9L9 UniRef90_E4TF70 UniRef90_A1VBB1 UniRef90_UPI0003B3D939 UniRef90_G9PZZ8
UniRef90_R7KR82 UniRef90_UPI000378B9DA UniRef90_F8ADL4 UniRef90_F5YJ06 UniRef90_G0VN26 UniRef90_UPI00046709A3 UniRef90_X0YW73 UniRef90_UPIO003B449AF UniRef90_C7LX47 UniRef90_W0J2K1 UniRef90_R5SIM5 UniRef90_UPIO003623CA8 UniRef90_U7VG02 UniRef90-E3GDJ2 UniRef90_R7C7C6 UniRef90-H2JBH1 UniRef90_R6EER3
UniRef90-E3HDW2 UniRef90_E3HDW2
UniRef90_D4W6C7 UniRef90_UPI00047DF11A
UniRef90_M5E2C5


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| UniP |  |  |
| UniRef90-R5AAX7 |  | DQANTESYGTPTPVTVP |
| UniRef90-EONPC0 | SMDELFHLVLETGNFGV |  |
| UniRef90-C7HV81 | D INDLTDLTMETGKHGLMAMELLD | D |
| UniRef90-UPIO003B37803 | DSLDLVALTLETGNKGVSVMALLD | D |
| UniRef90-R6N | DVEDLIRLTMRTGEMAI EVMKKLD |  |
| UniRef90-J4U2 | DMDTLLATVLETGKFGVDAMALLD | , |
| UniRef90-F4LNG2 | DQKELLPVVMETGKVNLACMELLD | D |
| UniRef90_O58175 | DADELFNLAMETGKYAVETLLALLD | DKANTET |
| UniRef90-B8DPN6 6 | DLGQWVELALECGKINLRAMELLD | DAGNTGTYG |
| UniRet90-D8GNZ5 | SVEEWLNL LEFGGVNLKCMALLD | DEANTSAYGQPTPVKV |
| UniRef90-O3B2A8 | SADELTALVIQTGATAVKAMALLD | drantst |
| UniRef90-D6SLN3 | SLEQWIEEAMECGRTNIRAMELLD | DAGNTGTYG |
| UniRef90-G8UNL2 | NGEQLTALVLETGSVGVKTMALLD | DQANTSTYGNPEMT |
| UniRef90-R7JC18 | SVNGLLAMVLKTGQ1 NLKCMELLD |  |
| UniRef90-D9SVP6 | DVNDYVGLAMELGQVNFKCMEMLD | DAANTGTYGHPEPTA |
| UniRef90-UPIO0047551 | DMEKLLPLVMEAGAVNLKCMELLD | DKANTETYGDPAPAKV |
| UniRef90-R5WB | EHTEWI ELIMEFGQVNFKCMELLD | dKantesfgn |
|  | SVDTLLSLTLEVGEVNLICM | G Y |
| UniRef90-A1A | DPMDFVGLAMECGKQNLTVMGLLD | DNA ${ }^{\text {d }}$ GTY |
| UniRef90-A9ATM | D DDe | DKANTGKYNP |
| UniRef90-N1ZAB4 | GMEELLPIVMEVGEINLKCMALLD | DKANTETYGNPAPTEV |
| UniRef90-A0A017RZ17 | GVDDLLALIMEFGQVNLKCMELLD | DKANTSSYGN |
| UniRef90-K4KS | DHDEWLELLMEFGKTNLACMALLD | DEANTSAYG |
| UniRef90-R5N | QK DELTQLVLETGKYGVSAMALLD | DKANTQSY |
| UniRef90_ToJV | TAEEWLNLLMEFGQIUNKCMGLLD | DEANTTA |
| UniRef90-UP1000361ADDF | DADELTALVLECGKYAVDTMALLD |  |
|  | EHL LDHGL RNALADG | P GPVAAG |
|  |  |  |
| UniRef90-F8N6Y9 | A ELGQLL | NTAYGNPEDR K |
| UniRef90_-F8THGO |  |  |
| Un | DLLRMTMRVGEMSVE |  |
|  | KMDDL P P VLEVGKVNLKCMELLD | S |
| UniRef90-R6NSH5 | DWDKLLPIVMELGKVN |  |
| UniRef90_F0SWR9 | SADELVALVLEAGKYGVSVLALLD | DKANTDTYGNP VLT |
| UniRef90- R7HCH1 | DAEELI RMTMRTGEMALEVMKQL | DEANTSVYGNPYPHKV |
| UniRef90-D7E6V9 | SADDLTNLVLECGSMGKTMSTLD | DEAHTSNYGN |
| UniRef90-UPI | GLNDWLGLVLKCGEDNLRTMELLD | DaANTGAY |
| UniRef90-UP1000426C518 | ADDLVALTLKTGQFGVTAMALLD | dGANTGKYGN |
| UniRef90_G0GEX | SANEL | DEANTSTYGNPE |
| UniRef90-K1 ${ }^{\text {CTX7 }}$ | DMEKYıALVLETGKVNLKCMEILD | DKANTDTYG |
| UniRef90-UPIO0036A7A80 | DSLDLMNLALETGRINYVTMELLN | NQAHVEAYGHP |
| UniRef90-LOGZ65 | ELEEMVALVMECGAVGVTAMA |  |
| UniRet90 | TVEDLFNLNMELGKTDLRCMELLD | ERFGN |
| UniRef90_R6ATQ5 | DMNTLLGVVLETGKYGVDVMAL | DKANTQAYGNPE LTR |
| Unireergo- 51000368 | VVE | dindeay gh |
|  |  |  |
| UniRef90-D4L4V5 | DVEELIAMTMRTGENALEV | ANTETYGNPS |
| UniRef90-A0R7Z7 | SLMDFVGLAMECGKQNLAV | Y |
| Unif | WL |  |
| UniRef90-L1MJHO | DVAALI DLTLRTGEYGVKAMDVLD | DRANTGTYGHPEVTEV |
| UniRef90 A6LVR1 |  |  |
| UniRet90_CTN478 |  |  |
| UniRef90_R5BW41 |  |  |
| UniRef90-A6UVM6 ${ }^{\text {Un }}$ | DTD DLTAFVLECGKYVVDTMALL | DKANTETYGHPEITEVE |
| UniRet90_R6LNS2 | GLMDYVGLAMECGKNNVVTMELL | D |
| UniRet90-B3EAB6 | GLMDFVGLSMECGKQNLTVMGLLD | d |
| UniRef90_F2JJB2 | SVDEMI RWVMRTGEMSI EVMKTLD | D |
| UniRef90_Q1 K3J6 | SVEEMI GQVLKCGEVAVTAMALLD |  |
|  |  |  |
|  |  |  |
| UniRef90_E4TF | VNELI SLVLKAGEII |  |
| UniRef90-A1VB | DLGAWIELAMECGRANLRAMELLD |  |
| UniRee90-UP10003B3D939 | D M A A M ibvik | DKANTTEFGKP |
| UniRef90-G9PZ288 | SPDA |  |
| UniRef90-UPI000378B9DA | DADDYVTLVLETGKWGVNTMALLI | DKANT |
| UniRef90-F8ADL4 | NLEDWVNMVLELGKVNLKVMELL | DRANHKNFG |
| UniRef90-F5YJ06 | MDELLPLVMETGKINL |  |
| UniRef90_G0VN26 | DWDELLPVVMETGKVNLTCMALLD | DEANT |
| UniRet90- XPYW73 | DVDELVEKLVLEAGKWNGSEAMALCM | DKANTSTYGH |
| UniRef90-UPI0003B449AF | DLGFWVEMALECGRVNVRAMELLD | DAGNTGTYGHP |
| UniRef90-C7LX47 | NLDELVGLCMECGQINLKAMELLD | DGGNTGTYGHP |
| UniRef90_W0J2K1 | SADALLAL NLRCGEVNLGVMALLD |  |
| UniRef90_R5SIM5 | VAEWLALITEFGEVNF |  |
| UniRef90_UP10003623CA8 | DLMDLVG AMECGR1 NLVTMELLN | NKAHTDRYGHPVPTPVE |
| UniRef90 M7TZK7 | SVNELVVDLTMKCGEIGGVKTMALLD | DTANTSSYG |
| UniRef90-E3GDJ2 | DMDMLLALVMDTGNVNLQCMAML | D |
| UniRef90-R7C7C6 | DMEHLLPVVMETGEVNLACMALLD | DRANTTSYG |
| UniRef90- ${ }^{\text {2JJBH1 }}$ | TVEYLVTLAMKAGEAGV |  |
| UniRet90-R6EER3 | VGEVNLQCMALLD |  |
| Uni | ELDGLVALTMEVGKHGVTAMALLD | D |
| UniRet90-D | TLEDYVSLTLELGSIGVEGMALLD | DTANTTTFGHPE1 |
| IRef90-UP100044 | DVDELIALTLETGKVGVDGMALLD | TK T |
| UniRef90_M5E2C5 |  |  |




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UniRef9-D8GNZ5 UniRef90-Q3B2A8 UniRef90-D6SLN3 UniRef90-G8UNL2 UniRef90-R7JC18
UniRef90-D9SVP6 UniRef90_D9SVP6
UniRef90_UPIO00475517D UniRef90_R5WBC0 UniRef90-B9CKB1 UniRef90-A1ANA2
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UniRef90 UniRef90_UPI00047AD4DE UniRef90-EONL37 UniRef90-R6NSH5 UniRef90-FOSWR9 UniRef90_HOURF1 UniRef90-D7E6V9 UniRef90_UPI0003686C36 UniRef90_UPI000426C518 UniRef90-GOGEX8 UniRef90-B1BZ66 UniRef90-K1XTX7 UniRef90_UPI00036A7A80 UniRef90-LOGZ65 UniRef90_UPI00047EF022 UniRef90-R6ATQ5 UniRef90_UPIO0036B654F UniRef90_S6D826 UniRef90-J5U4N8 UniRef90-D4L4V5 UniRef90_A0R7Z7 UniRef90_R7B116 UniRef90_L1MJH0 UniRef90_A6LVR1
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UniRef90_R5BW41 UniRef90_A6UVM6 UniRef90-R6LNS2 UniRef90-E8WUE2 UniRef90-B3EAB6 UniRef90-F2JJB2
UniRef90-Q1K3J6 UniRef90-R5HQX2 UniRef90_V8C9L9 UniRef90_E4TF70 UniRef90-A1VBB1 UniRef90_UPI0003B3D939 UniRef90-G9PZZ8 UniRef90-UPI000378B9DA UniRef90-F8ADL4 UniRef90-F5YJ06 UniRef90-G0VN26 UniRef90_UPI00046709A3 UniRef90-XOYW73 UniRef90_UP10003B449AF UniRef90_C7LX47 UniRef90-W0J2K1 UniRef90-R5SIM5 UniRef90_UPIO003623CA8 UniRef90-M7TZK7 UniRef90-U7VG02
UniRef90- E3GDJ2 UniRef90_R7C7C6 UniRef90-H2JBH1 UniRef90-R6EER3
UniRef90-E3HDW2 UniRef90_D4W6C7 UniRef90_UPIO0047DF11A

340
350
360
RVFT TS SVVIGYPGLRH RVFTTEVVSYPEMTH
 NGPLLLTTNCLVPPKDSYKD D

 NGPQVMTTNCLVPPKDSYKDRVYV WQNQHKEFPAFPGAILFTTNCI YKDRVFTTGLVGWPGLVH WQNQRKEFDNDPAPILFTTNCLYSDRIFTTDVVAFPGLKH NGPQLMTTNCIVPVRESY RQRMFTTGMAGYPGLQH
 KGPILFTTNCIVPPDP KNTYVSRMFTTNSSGYPGCKH WQNQQKEFDNVPAPILFTTNCDMKDRVFTTSVVAYPECRH WQEQQKEFDNIPGAILMTTNCIYMDRMFTSGVVYWPNTTH PAPVLFTTNCIMPPKDSYSD RVFTTGVVSYPGMVH PAPVLFTTNCLMPPRPSYKD RIYTTSVVGYDGMVH WQNQQKEFNCLMPPRPSYKD PGADIFNTNCIQRPDDSYKDRL NGP LMTTNCVVPPANSY WQNQQKEFDAI PGAVLFTTN
$P A P V L F T T N C L M P P K E S Y A D$ PAPVLFTTNCLMPPKESYAD RVVFTTEVVSYPELI H
 NGP 1 YFTTNCVVPDPSAS Y $\quad$ NRMYTGNSTGYPGCKH
 NDAMVVD DQCAMQGIVEVAENYHTK』ISTSPKAKDTGAMH

 WQNQQKEFDNIPPAPILFTTNCLMKDRVFTTEVVSFPELTH
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 WQNQKKEFAQFPGA ILMTTNCLQEPQDFTTGLVGWPGVKH
 NGPILLTTNCLVPPKESYKD PAAVLFTTNCI QKPKPSYED
 NGP L MTTNCI TPDKAAYRD WQKQQEEFDG\|PGCILMTTNCVQKPRIYTTGATGWPGVRH NGPVVFTTNCIVPPSPSAG YRNRVFTTNSTGFPGWKH
 NGVILMTTNC,VPPKDSYKD GMRPRMYTTGAAGYPGCKH
 WQSQQKEFEDI PAPVLFTTNCLMKDNDYTTSVVGYEDIKH
 WQNQKREFNCLMPPKDSYAD RVFTTEMVEYPGTVH PAAFLFTTNCLMVPRESYEDN NGPIVMTTNCIVPPAESY VDR V T DVGFPGLKH NGPILMTTNCVVPPKESYKDRLY PGAII IFNTNCIVRPAESYKDRL FTWGLVQWPDVKN WQDQAQEFARFPGAIIFNTNCTY $\square D R L F T W G L V A W P G V K H$
 WQNQQKEFANLPAPILFTTNCDMMDRVFTTGTVTFPGTVH
 WQNQHKEFPAFPGATLFTTNCTQKPQVFTTGLVGWPGLVH WQNQQKEFANIPGALLFTTNCLMSDRVFTTEVVSYPQVVH


WQNQQSEFHNI PAPVLFTTNCDMCD
NGPILMTTNCLI 1 PP KESYKDRVYA PGPIVMTTNCLMPPKEAYKD
PGPILETTNCLMPVKDSYSD PGAFLFTTNCLMPPRKSY WQDQREEFDRFPGA LLMTTNC DQKP NGPVLFTTNCIVPPKDSYKD
 $P$ GAMLMMT $P G A D L M T T N C I Q K P R E S Y E R$
$W Q N Q Q K E F N C I D M P R E S Y A D ~$

 NGPVLFTSNCLVPPRGTGAE Y LE
PAP LYYTNCLMPVKDSYSD
WQNQQKEFNCLMPVKPGYAD NGPGLFTTNCIVPPINEEVKS PGAFLFTTNCLMPVKPSYAD NGPVLFTSNCLVPPRGSAAD NGPI I FTTNCLVPPRQSAT
 Y $R \vee F T G V V G F P G I K Y$ RVFTLGPVAFPGVKH RVVFTMGEVAYPGMVY
D R V F T FT GLVAWP GVKH

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 RIV FTTMGVTGFPGCVY

NGPILMTTNCIVTPKDSYKNRDY
$\qquad$

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Uneququs


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| :---: | :---: | :---: |
| UniRef90 LTVVNM5 |  |  |
| UniRef90 R5AAX7 | AGCDGARAPGRNYYTEFVKQ ${ }_{\text {GGCDGA }}$ | TAACGKYRFND |
| UniRef90-C7HV81 | AGCDG RHKGRSYYTEFAEKL PED | TAGCAKYRYNK |
| UniRef90-UPIO003B37803 | AGCDG RAKGRSYYTEFAEGL PKDTVI | TAGCAKYRYNK |
| UniRef90-R6NET3 | GGCDGARPG RNYYTDFAQMVPSDCMI |  |
| UniRef90-J4UZL8 | SGCDG RMKDRNYYTDFAKALPKDTVI |  |
| UniRef90-F4LNG2 | GGCDGAR PGRNYYTEFVKK TPKD | D |
| UniRef90-Q58175 | AGCDG RHKTREYYTEFAKKDPKDT | AKYRFDK |
| UniRet90-B8DPN6 | GGCDGAK PGRN |  |
| UniRef90 D8GNZ 5 | GGCDGAK P | TLACGKYRFND |
| UniRef90_O3B2A8 | AGCDG RHASRKYYTGVAEAL PRED |  |
| UniRef90-D6SLN3 UniRet90 G8UNL2 | GGCDG AKPDRNYYTEFVVEKVPGDCV | Cak |
| UniRef90-R7JC18 | GGCDGAR PGRNYYTEFVKQ TPSN | K |
|  | GGCDGAK PGRNY | K |
| UniRee90-UPIO000475517D | GGCDGARTG RNYYTEFVQKAPKDSV | KYRFND |
| UniRef90 R5WBC0 | GGCDGAH PGRNYYTEFVKQ TPMDT | KYRFND |
| UniRef90-B9CK | GGCDGAR PGRNYYTELVEQ TPTDSV | KFRFND |
| UniRet90-A1ANA2 | GGCDGAKSG RNYYTEFAEKL PKDTVI |  |
| UniRef90-A9A7N9 | AGCDG RNNDREYYTEFAKNLPKDTVI | K |
| UniRef90-R7NAZ5 | GGCDGAR PGRNYYTEFVKK TPAESI |  |
| UniRef90-N1ZSB4 | GGCDGAK PGRNYYTEFVKQ TPKDS | D |
| UniRef90_A0A017RZ17 | GGCDGAR PGRNYYTEFAQK TPPDT | LACGKYRFNK |
| UniRef90-R5NZC2 | AGCDG RMKNREYYTEFAEADPQNTVI | K |
| UniRet90-ToJVV | GGCDGAR PGRNYYTEFVKN TPKD | D |
| UniRef90-UPIO00361/ | AGCDG RHPSREYYTEFAKKL PNDTVI |  |
|  |  |  |
| UniRef90- F8N6Y9 |  |  |
| UniRef90-F8THG0 | RGGHDVLTVE | SGGDEN |
| UniRef90-UPIIO00047AD4DE | GGCDGAK PGRNYYT |  |
| UniRef90-EONL37 | GGCDGAR PGRNYYTEFVEK APKDSV |  |
| UniRet90_R6NSH5 |  |  |
| UniRef90-FoS | KTRSYYTDFAASLPED |  |
| UniRef90 HoURF1 1 | GGCDGAKSG RNYYTDFATLAPKD | TLACGKYRFNK |
| UniRef90-R7HCH |  |  |
| UniRet90_D7E6V9 |  |  |
| UniRer90 UPIOOO3686C36 |  |  |
| UniRee90-UP1000426C518 | M | TAGCAKYRYNK |
| UniRee90 GOGE | AGCDG RSPSRSYYTEFARSLPQD |  |
| UniRet90-81826 | AGCDGARQQSRSYYQEFAKKLPQDTV | TAGCAKYKYNK |
| UniRei90 UPI00036A7A80 | GGCDGAKSGRNYYTELAEK APKDTVI | CGKY |
| UniRef90-LoGZ65 | GGCDG RHKERSYYTDVAQALPRDAVI |  |
| UniRef90-UPIO00047EF022 | GGCDGAR PGRNYYTEFAEK TPKDTII |  |
| UniRef90-R6ATQ5 | SGCDG RMKSRNYYEEFAKAL PQDVVI | K |
| UniRei90-UP100036B654F | GGCDG RDSDRDYYTNFAKSL PEDTVI |  |
|  | GGCDG RQSEREYYTEDAKEL PDDVII | A |
| UniRef90_J5U4N8 | GGCDGRRKGRSYYTEFAEAL PKDAV | KKYR |
|  | Coder |  |
| UniRet90-R7B116 | GGCDGAHSPGRNYYTEFVKQ TPMDSLI | CGKYRFND |
| UniRef90-L1MJH0 | SGCDGRQAGRD YYGDFAKAL PQDT | , |
| UniRef90_A6LVR1 |  |  |
|  |  |  |
| UniRef90-R5BW41 | GGCDGAKVG RNYYTEFVKQ TPKD |  |
| UniRef90-A6UVM6 | AGCDG RHNSRNYYTEFAKAL PEDT | K |
| UniRef90-R6LN | AGCDG RAKSREYYTEFAKALPKDTVI | K |
|  |  |  |
| UniRef90-B3EABE | GGCDGAKSGRNYYTEFAEK APKDTV | T A CGMYRFNK |
| UniRef90_F2JJB2 | GGCDGAR PGRNYYTDFAKD VPEDC |  |
| UniRe990_Q1K3J6 | DG RHTSRSYFTEVAQEL PQDAVI |  |
| UniRef90-R5HC | AGCDGARSG RNYYTDFVKQTPADSVI | CGKYRFND |
| UniRef90-E4TF | AGCDG RAKEREYYTEVAKNLPKDTVI | KYRYNM |
| UniRef90-A1VBE | GGCDGAK PGRNYYTEFVEK TPADT | RFFD |
| UniRef90-UPI0003B3D939 | GGCDGARVG RNYYTDFVKATPKDTVI | CGKYRFND |
| UniRet90-G9PZZ8 | GGCDGAK PGRNYYTEFVEK SPADTII | CGKYRFND |
| UniRef90-R7KR82 | GGCDGA SPSRSYYTDFAK LTPPDTLI | RTND |
| UniRef90-UPI000378B9DA | AGCDG RMKSREYYTEFARALPKDTVI | K |
| UniRef90-F8ADI | GGCDGAKPG RNYYTRFVELTPKDT | KFRFFD |
| UniRef90-F5YJ06 | RNYYTDFVKQSPKDS | RFND |
| UniRei90-GPIO0046709A3 |  | CGKYRF |
| UniRef90-X0YW73 | AGCDG RMKNREYYTEFARAL PGDTII | C K |
| UniRee90-UPIo003B449AF | GGCDGAK PGRNYYTEFVEK APKDTVV |  |
| UniRef90-C7LX47 | AGCDGAK PGRNYYTEFVEK VPQDCI | TLACGKFRF |
| UniRei90-R5SIM5 | GGCDGAH PGRNYYTEFVKR TPMDTL | ackrar |
| UniRei90-UPI0003623CA8 | GGCDGAETG RNYYTEFAEK APKDTV | GKYR |
| UniRef90-M7TZK7 | AGCDG RHKEREYYTDFAKALS ND |  |
| UniRet90_U7VG02 | GGCDARMQDRKYYTEFALAL PKDS |  |
| UniRet90-E3GDJ2 | GGCDGAK PGRNYYTEFVKQ TPDDS | D |
| UniRef90 R7C7C6 | GGCDGAR PGRNYYTEFVKQ TPKDT | D |
| UniRef90-R2JBE13 | AGCDGARMG ${ }_{\text {GGCDGM }}$ | Thackkyrand |
| UniRef90-E3HDW2 | AGCDARMQDRKYYTEFAEKL PKDTVI | TAGCAKYRYNK |
| UniRef90-D4W6C7 | AGCDG RHKERQYYTDFASAL PDDSVI | KYRYNK |
| 90_UPI00047DF11A | AGCDG RAKSRDYYTDFAKAL PEDTV |  |
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| UniRef90 L7VNM5 |  |
| :---: | :---: |
| UniRef90－R5AAX7 | APITTPEEDLKQLLQ |
| UniRef90－EONPC0 |  |
| UniRef90－C7HV81 |  |
| UniRef90 UPI0003B37803 |  |
| UniRef90－J4UZL8 | TNA TVEEDUK |
| UniRef90－F4LNG2 | AVSPVGTPDEDL |
| UniRef90＿058175 | STUSTVDEDUKRLV |
| UniRef90－B8DPN6 6 | N K PIT TPDEDLKAlL |
| UniRef90－D8GNZ5 UniRef90 O3B2A8 | ｜KPTTTVVEDDLKAMK |
| UniRef90－D6SLN3 | DIKPLKTPDEDLKA\L |
| UniRef90－G8UNL2 | ED |
| UniRef90－R7JC18 | NKP■TTAEQDLQE LEE |
| UniRef90－D9SVP6 UniRet90 UPI000475517D | N｜APVTVEADLKK |
| UniRef90＿－R5WBCO | L N PI TAPEQDLCALLK |
| UniRef90－B9CKB1 | 1 AP GEVSEDLAKMLA |
| UniRef90－A1ANA2 | N |
| UniRef90－A9AAN9 | SSVEDD K |
| $\begin{aligned} & \text { UniRef90-R7NAZ5 } \\ & \text { UniRef90_NIZSB4 } \end{aligned}$ |  |
| UniRef90－A0A017RZ17 | NTKPTSTPEDDLKVIL |
| UniRet90－K4KSX5 | NUTPISTPENDLTAlLA |
| UniRef90－R5NZC2 | V Q |
| UniRee90－TOJVN0 |  |
| UniRet90－UP1000361AD | S G【T TVDED】ERLINK |
| UniRef90－B3EFP8 | ПKP\GTVEedVeamma |
| UniRef90－F8N6Y9 | पGT】STVDEDMK】M |
| UniRer90－F8THGO |  |
| Uniref90－UP100047AD4DE | －TGS TVIMPİSTADEDLK |
| UniRet90－EONL37 | PTGS VE |
| UniRef90－R6NSH5 UniRef90 FOSWR9 | DGGDT NDAK■T PEEDLKNL |
| UniRef90－OSWR9 | GG■TTPAED |
| UniRef90－HOURF1 | DSNA |
| UniRef90－D7E6V9 | 发 |
| UniRet90－UPIO003686C36 | －EDME |
| UniRet90－UPIO000426C518 | TGGTDS VDADM |
| UniRef90－GoGEX8 | 1 GTiA TVDDD $\$ DDRMLGAAM  \hline UniRef90－B1BZ66 & D ED  \hline UniRet90＿K1XTX7 & V］A D  \hline UniRef90－UPIOOO36A7A80 & NI GP GTAEEDLKQ  \hline UniRef90－LOGZ65 & D K K G DVQQDVAAMMA  \hline UniRef90－R6ATQ5 & TAGNGTVEEDIKK  \hline UniRef90－UPIO0036B654F & DKANSTVEED LMEMM  \hline UniRe & ESDK  \hline UniRef90－J5U4N8 & पAG\｜GTVEDDMKSNAEDDTK  \hline UniRef90－AOR7Z7 & $\square G P \square T T V E A D M K A M$ |
| UniRef90－R7B116 |  |
| UniRef90 L－LMJHO UniRef90 A6LVR1 | E |
| UniRef90－A6LVR11 UniRet90 C7N478 | USEPD |
| UniRef90－C7N478 UniRef90 R5BW41 | APIT TVEADLA ELL |
| UniRef90＿R5BW41 UniRef90＿A6UVM6 | TGATSTVDEDPIETMPEADMKALL |
| UniRef90－R6LNS2 | ITTVQNDM |
| UniRef90－E8WUE2 | N GP GTAEGDLKQLL |
| UniRef90－B3EAB6 UniRet90 F2JJB2 |  |
| UniRef90－2JJB2 |  |
| UniRef90－R5HOX2 |  |
| UniRef90－V8C9L9 |  |
| UniRef90－E4TF70 | NJKP St |
| UniRef90－UPI0003B3D939 | NITPISTPEEDLK KALKD |
| UniRef90－G9PZZ8 | HYNI APIGGPEADLKKlL |
| UniRef90－R7KR82 | LYNITPTSEPADDLKK】L |
| UniRef90－UP1000378B9DA UniRef90 F8ADL4 | ■ASTTDVEDDMQSPET DTK |
| UniRef90－F5YJo6 | AI TPIS TP A A DLAKILA |
| UniRef90 GovN26 | NLTPTSTPEADLKKL |
| UniRef90－UPIO0046709A3 | NLMP■TTPEEDLKA】L |
| UniRef90 XoYW73 | END |
| $\begin{aligned} & \text { UniRef90_UPIO003B449AF } \\ & \text { UniRe90_CLX47 } \end{aligned}$ |  |
| UniRef90－WoJ2k1 | LkGit Tagadleaclak |
| UniRef90－R5SIM5 | AYNLQP T ${ }^{\text {P }}$（ QQDLDALLHR |
| UniRef90－UP10003623CA8 UniRef90－M7TK7 | NUGPUTTAEADLKQLL |
| UniRef90M7TZK7 | PNSTVDVEDMPKLT |
| UniRef90－E3GDJ2 | LTPMSTPEEDLKK\LEK |
| UniRef90 R7C7C6 | VAGПGTVDSKVSTPEEDLKQUL |
| UniRef90－R6EER3 | Q GTG HYADSPTSTPQQDLKKIL |
| UniRef90－E3HDW2 | GTT SVEEDMK |
| UniRef90－D4W6C7 | G｜S SVEEDLVK |
| UniRef90 UP100047DF11A | GITNVEDD |
| UniRef90＿M5E2C5 | TUGE $\quad$ VJEAD M |

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UniRef90 E0QIY7 UniRef90-R5PKW9 UniRef90-A6TN77 UniRef90-C8VWA7 UniRef90-A6LL16 UniRef90 D5EHI5 UniRef90-D4LOC5 UniRef90-M2BCV7 UniRef90_D8F771 UniRef90-14C6K8 UniRef90-T2GAY2 UniRef90-K9WNP8 UniRef90 D3L5P6 UniRef90-LOAKK2 UniRef90-M1WX68 UniRef90 C0GEQ7 UniRef90 K2E3M2 UniRef90-Q2LPX6 UniRef90_UPI0003B68438 UniRef90 C4ZOZ9 UniRef90 B8FAU8 UniRef90-WOEU83 UniRef90_D7CLY0 UniRef90 UPI00046D4410 UniRef90-A8MM63 UniRef90-U2V5I0 UniRef90 B3EM91 UniRef90-D4JZ93 UniRef90_E3DPB7 UniRef90_A5D483 UniRef90 Q30Y09 UniRef90-F3YWG4 UniRef90-C7LV12 UniRef90_D5VRY8 UniRef90 R5B6P7 UniRef90-UPI0003B76334 UniRef90_F0JI82 UniRef90 AOLNW5 UniRef90-F7NLW6 UniRef90-F7XP87
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> MSMFCYQC
> E $\square \mathrm{QNMFCYQC}$
> MSMFCFQCE
> MFCFQCQ
> KERKMFCYQC
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> MFCYQCE
> MSMFCFQCQ
> MFCNQCE
> MFCFQCE
> MFCYQCE
> $M F C Y Q C Q$
> KMFCYQCQ
> KMFCFQCQ

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MSMYCNQCE MNMYCFQCE

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M F C F Q C Q
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KMFCFQCE MFCFQCE

MFCFQCQ MFCFQCQ MFCFQCE MFCNQCE KMFCFQCQ

MFCFQCQ
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MFCFQCE
QQMFCFQCE
MF C $\square$ QCE


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4410
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 1 YQLK G ITACYAEIIKFVEDSLF
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1 WLTRGDSYWALKKKKVAEALFSTVTNVNFSFELRERIKH I FQVKG1 SCYGKVLMEIENVLFTTLTNVNFDVSQRTKEQV
LWGTKKLSEVTSYMREVSTNLFVTITNANFDEKINNGTLKA
TYALQGLSLYAVEGRKVGQAMFSTLTNVDFDEDRFVPLVR
T
V
 LYLTKGLAQVAVAARKAAKAVFSTLTNVNFDVALDEECVA VYMGLSLYAVEGRKKGITIFTTLTNVDFDYINEAVAMR VYALKGLSMYAHRARQTIEGLFTTVTNVNFDPS RLQVIL LYELKGLSLGALEADKVGEALFSTLTNVDFDPGVKLREQL
I YQLKGI SFYARHILDSGDNLF

 TYAVRGLSQVATEGRRVAKALFATLTNVDFDPAVERREAL

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 $V Y V L K G A A F A G K H A R F T F E A L F$ $V Y A L T G L A Q A A E T G R Y F A K A M F$


I Y A A K $\quad$ E D Y P P E V V T H L L A A D G L F F A T 1
 VV QLV K E I S I A V EMGE L L N K T L F M T I TNAN F D $V H$ SL Q GV S FWA S LGGRACPKAFFATMLTNVNFDFK QRDLEQKV
 IV Y A

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UniRef90-D0WE60 UniRef90_Q0SUB0 UniRef90-R5AW04 UniRef90-W2C2M3 UniRef90_C8PPE1 UniRef90_Q3A0K0 UniRef90_H1Z379 UniRef90-R5DUN9
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UniRef90_D6Z717 UniRef90_L8H505 UniRef90_EOUK52 UniRef90_E1QWT5
$R K R \square A Q V H K E T E R G Q G D D Y S M E N V W N A Q E D|I| R S|L| K S L I L D$ K A F A L R E R I M K A T K E A Y E F S K E V VQQ E K N S L K P G C R S C A N P C G M TE D L R L D S NNAHNKLDANDPNFDWEELW






 KA QCEE LGGIKVPD
 LLR R K L S Y G A E R H P Q S C S L I S S L W W GD T EA I A VR DS I P K T G DAE H DACT WVLST DNEDVRS LRRELLVY LQKVK S VK K C D S N F DVK S IWW


 KEKKAK L L A C E K S G K N P E NLGGGPAAAYADP D D DMMDR D GE K V T
 K CVAMTET LK NKVK Q GEGFGDKTDPEPNEDIHALKWT LTG


 K R D A L K A R $\quad 1 \mathrm{P}$ S DK LK E RVGVSF DHNSAN QPASDVA GLT EADDQSMQQQLLY LRLA Q LK DKARSMYEEAARANGQTPEVLGGPNGLIQQ

 K A L E L K N N E L E GE S K E V I E H G GTVLK E E I T S V L M D K N P D I R G R DV L E R F D I S T L I D K G N R L G F L I S L D L D P DV R S L Q E L L L Y K A KVA A A GGRT TFDDPAASFQPAADQALPDDQDRDEDV KS

$\begin{array}{llllllll}E & R & L & A & A & R & A & G \\ T & D & D & D\end{array}$
 K
El T A M R D D V V P R A M I E NT GRDLEGPATFEPAA DSAGLIRQDAASLMHTVRS
 E KVIDE K L N L N R E E E S D E D II I K M A N S D EVVR LIA E KNE DI R S T A K K Q Gl E L P DLDPQVEF Y ASPEDAEKS EGVLABEENPD I R G
 K A K V K A A A G G K V D A A K T L L E G L A V A Q G A N V

 K A EAA GQALDLEGPATAVPAPDYAETGLFDYPTDDPDI RS
 I GTA E K R Gll A L P D M E A E A A K M G V L

 D A LLAK E A DL P A E EY D S K G A S V G V L N T E H E D D R S L R E L L T Y

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UniRef90_R6DMK7 UniRef90-Q3AOK0 UniRef90-H1Z379 UniRef90-R5DUN9
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UniRef90-C8VWA7 UniRef90_C8VWA7
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UniRef90-M1WX68 UniRef90-COGEQ7 UniRef90-K2E3M2 UniRef90-Q2LPX6 UniRef90-UPIO003B68438 UniRef90-C4ZOZ9 UniRef90-B8FAU8 UniRef90-W0EU83 UniRef90-D7CLYO UniRef90_UPIO0046D441C UniRef90 A8MM63
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G V $\operatorname{R}$ G M A A LRE LLTY G L K K G $\square$ LKSLVLFRGMAAYAYHAMVLQKFNDELLHFLQEGLAATLD GMRGMAA GLKG $\square$ A A GVKGMSA GLKGMAA

## LKQTLIY GLKGVY

 EILVYGMKGYAAGVKGMAA

## GLKGl A A

 AA $S$
 GLLK G I A A A DKR G GLKGLAA GLKGLCA $G M K G M A A$
$T P A G Y G L L K M A A$ GLK GVSA GLK GMAA
AY MKHA

 GLKGMSA YAHHARNLSYENEDVNRWFYKGLCEVNR $G L K G V S A$ Y GHQARF NYQS D
 PEAWS QKHGEVVVYADHAHVLGMDD

 GEKVNPESRAQRWADHAQDLGKK
ALKGIAA

GQEVNITKRQENYADHAMILGHEDDDVYAFFHEALTKENP



## L <br> G

GLL K GVSAYGHQA
GLRGAAA
LKS LVLYGMK GL $G \operatorname{L}$ R GMAA
$\mathrm{G} L \mathrm{KG} \square \mathrm{A} A$
STLLL GVRGMAAYA WHA CVVLGG T S DEEVT S WLLYK GLLDGE E H




 GMKGMAA Y G A YAHHAAVLGYTD DE I FRFFEKGLLATAD GLKK GAYA Y H A R L L G Y E S D E L Y T R F E E I L D F L LMH TVLLF GLK GVVYMDHA QVL GKKDQEI SDFYHDALA GWD G
GLK GLAA
Gl K GMAA Y
$G \vee K G A A A$


GLKGIAA Y G DHAAVLGFE DE S I Y Y S F A K D A L A A A V S N
 $G L R G M A A Y$ AYHAAMLLGYQDDKI SDFFFEGRERAVEA GMRGMAA G Y A H HARTLGK VDDEVTGWFYKGLLANEH


 GVKGMAA Y Y LLCLYG LLK GAAAYMEHARVLGQTDDAIFAEYHMAFLGTDS
 $\begin{array}{lll}G L & K & G \\ G & V & A \\ L & A \\ C & A\end{array}$


 L K H T L L




UniRef90_R7N7R6 UniRef90-C5ClJ2
UniRet90 R5QM40 UniRef90-F9N395 UniRet90 E1RCU8 UniRef90-R7BEF
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UniRef90-R6DMK7 UniRef90-Q3AOK0 UniRef90-H1Z379 UniRef90-R5DUN9
UniRef90 E0QIY7 UniRef90-R5PKW9 UniRef90-A6TN77 UniRef90-C8VWA7 UniRef90-D5EHI5 UniRef90-D4LOC5
UniRef90 M 2 BCV 7 UniRef90-D8F771 UniRef90-14C6K8 UniRef90-T2GAY2 UniRef90-K9WNP8 UniRef90-D3L5P6 UniRef90-LOAKK2 UniRef90-COGEQ7 UniRef90-K2E3M2 UniRef90-Q2LPX6 UniRef90-UPIo003B68438 UniRef90-C4ZOZ9 UniRef90-B8FAU8 UniRef90-WOEU83
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 DVEDLI GFTMKTGEMSVEAMRVLDEANTTTYTNPAPQKVN NLNDWLALVLKCGEDNLRVMELLDAANTGTYGHPVPTTVP TVDELVVSLVEEAGKVAVDAMALLDKANTTEFGNPEDTKT DVEELIRMTMRTGEMALAVMKKLDEANTTVYGNPYPHKVD SLDEWVGLVLKCGEDNIRAMELLDAANTGTYGHPVPTSVE GLEDWVGLVLKCGEDNLRAMELLDAGNTGDYGHPVP TVK SLDEWVNMALKLGEIDNLRVMELLDAGNTSTYGHPVPTSVP
 TLEQCVEAGLECGRINDRAMELLDDANTSTYGHPEPTEVK EANDWLGLLLKKCGEMNFRAMELLLD GVEELIRLTLKTGDMAI EDMKKLDEANTTDYGNPSPHSVN GLDEWVGLVLKCGEVNLVAMELLDAGNTGTYGHPVPTPV

## D

D

 DKDKLFQLVEDTGRMAYRVMAELDKANTGAFGDPEPVEV

G L N D WV G L L L E C G N V N L R T M E L L D






## 

 D A D E LL GGLVMKCGENAVNTMALL DKA




 DLK QL L DTSMQ $\square G L M N Y K V M E M L D K G E T D T F G H P Q P T T V N$








|  | EGKG\|| ${ }^{\text {NII Y }}{ }^{290}$ |  |
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| UniRe90 C5Clu2 | G N Y |  |
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| UniRef90-R7BE | K GTGVDVY | THSEMLPANSYPGLGNAWW |
| Ref90-D7GRW2 | EGKGVNIY | THGEMLPVHAYPELRKYPQLKGN |
| UniRef90-S7UY | A GKGl SVY | THGEMLPCHGYPELKKHPHFFGHYGTA |
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| UniRet90-B3QXZ3 | EGTGVDVYTHC | MLPAHYYPAFGNAWWQQK |
| UniRef90-K8E7E8 | EGKGIYVY | THGEMLPAHGYPELKK YP |
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| UniRef90-Q3AOK0 | EGKGINVY | THGEML |
| UniRef90-H1Z379 | KGTGVDVY | THGEMLPAHGYPAFKGSWWHQ |
| UniRef90-R5DU |  | GEMLP C |
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| UniRef90-R5PK | EGKG N | EMLPAHGYPELGNSYKHQVGEFENS |
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| UniRef90-A6LL16 | EGTGIMVY | THGEMLPAHAYPKLKK YKHLAGNFGSA |
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| UniRet90-T2GAY | EGKGIIDI Y | THGEMLPCHGYPKLKEFKHFYGHFG |
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| UniRet90_D3L5P6 | EGKG | W |
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| UniRef90 M1WX68 | EGKG1 NI | THGEMLPCTAYPELKK YKHLAG |
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| UniRef90-Q2LP) | A GKGINVY | THGEMLPTHGYPGLKKH PHF |
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| UniRef90_C4Z0Z9 | EGLG | MLPSHGYEGLKK YK |
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| UniRet90_B3EM91 | E |  |
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|  | ADKGVDVY | MLPAQYYPAFGNAWWK |
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| UniRef90-F7NLW6 | EGKGINIY | THGEMLPAHAYPGLKK YSQL |
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| UniRei90-UPI000416B423 | KGRGINVY | THGELLPAHGYPKLR AYPHL |
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| UniRef90 Q74FD5 | AGKGIDIY | THGEMLPAHGYPGLKQKYPHLYGNFGGA |
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| UniRef90-UPIO0037E52D7 | EGTGI NIY | THGEMLPCHAYPELKKF EHFYGHFGTA |
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| UniRef90-COQE888 | EGTGIDVY | THGEMLPANYYPAFKKYW |
| UniRef90-S0FYJ2 | RGTGVDVY | THSEMLPGHYYPAFGNAW |
| UniRef90-F2NH17 | EGKGI YVY | THGEMLPTHGYPGLK |
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| UniRef90_R7N7R6 | L $\mathrm{D}^{\text {\| }}$ L |  |
| UniRef90-C5ClJ2 | L D L |  |
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| UniRef90-T2GAY2 |  |  |
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| UniRef90-S0FYJ2 | L D L |  |
| UniRef90_F2NHI7 |  |  |
| UniRef90-D6Z717 | Q N L |  |
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| UniRef90-E0UK52 | QD L |  |
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| f90－F9N395 |  |
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| UniRet90－R7BEF | dSVDADMK |
| UniRef90－D7GRW2 | MGPVTTPEEDLKAL |
| UniRef90＿S7UYN9 |  |
| UniRef90－B3QXZ3 | Gavs DDI |
| UniRef90－K8E7E8 | NTK P T T P ded a |
| UniRef90－DOWE60 UniRef90 Q0SUB0 |  |
| UniRef90－R5AW04 | ED ${ }^{\text {d }}$ |
| UniRef90－W2C2M3 | AGNGTVEDD |
| UniRef90－C8PPE1 ${ }^{\text {d }}$ | LAG【T SVDED |
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| UniRef90－A6TN77 |  |
| UniRef90－C8VWA7 UniRef90 A6LL16 |  |
| UniRef90－D5EH15 | NLMAITTPEEDLRALL |
| UniRef90－D4LOC5 | NAEDDKT CLK Q Dia |
| UniRef90－M2BCV7 | LSGUSSDEDDIK |
| UniRef90＿D8F771 |  |
| UniRef90－T2GAY2 | NIMPPSTPDEDIKALL |
| UniRef90 K9WNP8 | NLKP1TTPDODLA A |
| UniRef90－D3LL5P6 | PTGS VEKPLTTPAEDLKA |
| UniRet90－LOAKK2 |  |
| UniRef90－C0GEQ7 | NLRPISTPEKDLEMIL |
| UniRef90－K2E3M22 | N MPTATAKEDLA |
| UniRet90－UPI0003B68438 | $\Pi A G T G T V Q E D M$ der |
| UniRef90－C4ZOZ3 | L பSNPEDD\KT |
| UniRet90－B8FAU8 | NПMP【STPDDDLK A पLE |
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| UniRef90－A8MM63 | FDIQHISTPEEDLKTALK |
| UniRef90－U2V510 | DLAP A P PEEDLAQMLA |
| UniRef90 B3EM91 | D：KP：GTVEGDVEAMMA |
| UniRet90－D4J293 | D D KPTTEAKEDVAACLGA |
| UniRef90－A5D483 | NIKPTSTPEEDLKAIL |
| UniRef90 Q30Y09 UniRef90－F3YWG4 |  |
| UniRef90－C7LV12 | TFD\KPITTPDADLKA乌L |
| UniRef90 DSVR288 | Q T T VDE |
| UniRef90－R5B6P7 | T 1 T V VQQ |
| UniRef90－UP10003B76： | D K P G DVDE D A A M M A |
| UniRef90 FOJI82 <br> UniRef90 A0LNW |  |
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| UniRef90－F7XP87 | E ED MERL |
| UniRet90－UPIO00416B423 |  |
| UniRet90－F7PWJ9 | LS S $\square \mathrm{NDVQTDMEEL}$ |
| UniRef90－D4JRM0 | N\TPTDLPEKDLA KALG |
| UniRef90－UP100036208A7 | LGT】STVEEDMK |
| UniRet90＿O74FD5 | LGP号TVEADLKAA |
| UniRee90－UPIo003B79178 |  |
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| UniRef90－R5LK37 | LRAATAPEDDLRMLL |
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| UniRef90 N6UTH5 | EEDMKKL |
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| UniRef90 C0QE88 UniRef90－F8A109 | VEIKPIGGTVE EDIA A M M |
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| MYCVOCE |
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## 



 I YA TK GIIGY LLNE GKKVLEA LF | $V$ | $Y$ | $V$ | $E$ | $K$ | $D$ | $R$ | $T$ | $E$ | $A$ | $D$ | $R$ | $L$ | $F$ | $D$ | $G$ | $L$ | $F$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $T$ | $A$ | $V$ | $M$ | $S$ | $G$ | $A$ | $T$ | $P$ | $N$ | $A$ | $L$ | $T$ | $D$ | $D$ | $V$ | $V$ | $M$ |










 I Y GLK GLA YVSVK LQ EV M S A L F VYCCLR SIAA P I A L K A Y E L C E A M F S T M T N V V N W D E E I K D T I K L


 $V H L A G Q V G Q L A B R A R R V V E A L F T T V T N V N$
 V Y C L R GIA P V A L K A K E L C E S L F S T M T NV N F NKK R F GE Y V Q
 I GALVGAD F N S D QA QLI LD GLLFTTLTNVNFD DPV
I H S L K G IGGY Y G WQ F IVQAMM D T M F S T L T N
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 I YAL K S ITA F Y N S K A R A H NL L L F A T V T N T N F G F E I K D G I K K




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 UniRetyo_rulz

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 DKDRKLFGSSSDDRAAANFEMKKVWDADEDI RSLKSGL L F
 KKELFESVKDKVGTDLLHESAVWYSDDANEDDRSLRELLVI RSVA RDALKAQVGADAPQADPEGPATFEPAQTDEGLVQQ LASALREGTVREERTPAEGHARAALASVMAEADPDKRALG KVKAAGGNVNFTAPAAPTLDGQVAQGLKLDFANPDLRSLK HDMCVKDGVDVAAPAHFKVATYLAEKLTEDVTALDELITY AGDAEPAACTWAPESPAALAAKAQEIIAADLQSLRELLVY
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GLLKGLAA

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GI RGIAAY AYHAAALGRRSQAVSAFFYKALAGIAE
G| K GLA A Y DYHANALGSEDQDIDMF TQRALGQMLD GLRMLCLIGGLKAYMEHAHVLGQYDDEVYAEYHRYMLGTDA GL RGMAA GDRGYY YAYHARVLGYTDSGVDMYFIEEGLRADNN LLCLYGLKGAAAYMEHARLLEQTSVEVFTEYHQUMLGTEQ LAPHVAVNRLRLLCLYGLKGAAAYMEHALVLGQTDNAVYG GLKGMAA GKGYYHARVLGHKDKDIIAAFVDRALVATLD LKSLVLFGLKGDYTDHAAVLGFYDNDVFKFIYRGLASGTK LTVLYSLKGMASYAFHAQELGQTDERVDQFCYEALAALDLD Gl K GlAA GLKGVAA GCKGlAA YGHHAMVLGHTNKKVNSFDEEGLVATTD YADHAA $\mathbb{C}$ GHEKDDI GTKGICAYG E H GLKGlAA GLKGMAA Li MaHHAMNLGYQNDNVTTWFYKGLCEVNR LLCLYGLKGAAAYMEHARVLEQTDNDIFAEYHQUMAWLGT LLCLYGLKGAAAYMEHARVLEQQSADIAAEFHRIMDGTDS GEKAADENDRAAYADHAMLLGQEDKKVFEFGYAAMRNSKL TKKLAYAPRYAKWESLGGLPGGAKSEVFDGAVMSSTNLNS LLCLYGLKGAAAYMEHAYLGGQSCETVNAEFKGFAWLAT LKALLGIKGMAAYAHQAGVLGYTSETVNKFFLKALRALGD GLKGMAA GLKGAYMEHARV GIRGMAA $G M R G M A A$
$G L K G T A A$ YTHHAAVLGYRDER1 DSFIDEALITATED YAYHARALYAEYHEVMGWLGR LRQLVIYGLKGDYADHAAVLGDEKDEIYDFLFQGLASTTQ LRQLVIYGLKGIYGHQARELLGYYSDTVDDFYIGGLAAVTD LKLTVLYGLKGVYTFHAQELGQEDEKVYQFIEDALVKTDGL ELAAYGLKGUASYAYHAGHLGGHEDPALGAFLHEALITSLDS Q TVYGIRGLAAYADHAALLGKEDDSIYAYIHETMAEFTQ GLKGAAAY MEHAHVLGQYDDALYAEFHAFMAWLGTRPT GLKGAYDDHAHVLGYTNDADYA KIFEILAKL GLKGVGA YSHHAEVLGYEDEEVMTKLQEALDATELQ GGHMVGVNHRKEYADHARILGKESEAVYAFIHEAMAADSQ GLKGIAA

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S F G N P VP T E|V|S DVEA I RLTMRTGEMAVVEMKKLLDEANTTCYGHPSPHSVS

 S L E D WV N K T L




















 DYHNDMAWSMKIGGLMNYKVMEMLLDTGETTTFGHPAPT QVN DVDDLTGLVLECGSFGVKTMAMLDEANTATYGHPEP TE

 DV A E L V $\operatorname{P}$ L V L

 $D L N A W V G L A L K V G E M N L X A M E L L D A G H T G H Y G H P T P T S V M P$











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## UniRef90 W6N3C9

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UniRef90 A5GA35 UniRef90_D1Z2A4 UniRef90-K9YDQ1 UniRef90-D2Z642 UniRef90-E1YLA6 UniRef90-R6YPI6 UniRef90-RGQVQ3 UniRef90-K9TDN2 UniRef90-C0QCA0 UniRef90-K9T9L7 UniRef90-V5WEF2 UniRef90-S7V7B3 UniRef90-A6CUU5 UniRef90-H817H5 UniRef90-V4GU03 UniRef90-D3LSQ6 UniRef90-UPI00046976A7 UniRef90-Q6AQA2 UniRef90-Q12VG6 UniRef90-F9RYC4 UniRef90-D3PCD1 UniRef90_R6PJHO UniRef90_G5F580 UniRef90-15AUM4 UniRef90-B4F1C2 UniRef90_UPIO003B4A739 UniRef90_E1QDL0 UniRef90_UPI0003074A04 UniRef90-B4VNA6 UniRef90-UPI00030CDEB7 UniRef90 D5E6Y7 UniRef90_UPI00037C7F5D UniRef90-K9FFD1 UniRef90-LOKZ19 UniRef90-Q12X40 UniRef90_Q2FU73 UniRef90-B0VGB0 UniRef90_UPIO0041766CD UniRef90-I2F574 UniRef90_R5K0X9 UniRef90_C9QES9 UniRef90_A1S3Z6
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UniRef90-B7KLG3 UniRef90_UPI000346E701 UniRef90_UPI00047748EA UniRef90-K1ZE74 UniRef90_C6C7W4 UniRef90-UPI00037B30BE UniRef90_17LLX0 UniRef90 F8E7M2 UniRef90-K4MIZ7 UniRef90_UPIO004629BD4 UniRef90-F9H701 UniRef90-UPI0003662FB5 UniRef90-F8TH84 UniRef90_UPIO002E1D803 UniRef90_K9VEM1 UniRef90-J9G1H2 UniRef90-S6CKU3
UniRef90-E8WM63 UniRef90_R7BQC6 UniRef90-A5FZG9

330
340
340
SIV V|GWPDIIS ${ }^{360}$ WQEQQKEFD HLPGCLLMTTNCLMRPRIVSTNVVGWDGVKH

 WQNQTKDFAKFPGAI I LTTNCLMPPKLFTLGPVNWPGVIH WQNQ
 NGA LLLTTNCLVGPLKVMTKNCLMRDRVETGGAVGYPDLKH
 WQNQQKEFAAVPAPVLFTTNCIMSDRIFTTGVVQYPGM1H WQNQHKEFPTFPGPIVMTTNCIQKPQIFTTGLVGWPGVPS
 WQNQTKDFAKFPGAI IVTTNCLMTDKLESLGPVGYPHLNH

 WQDQQKQFDNLPGCILMTTNCLMKPRIYSTNVVGWDGVKH
 WQNQTKEFAKFPGAIVITTNCLMPPKLFTDGSVGYPGINY NGA ILMTTNCIVPVRDAYKD RLIRTTGVVGYPDIPH

 NGPQIMTTNCLVPVK KKENTYLSRLETTGNVGYADAKH WQNQQKEFNCLMPPRPSYAD RVETTEAVSYQGTVH WQNQQEEFARFPGPVVMTSNCIYQDRIWTRSIVGWPGVNH
 WQNQQKEFANFPGAIVMTSNCLYADRLFTRSIVGGWPGVAH NGPQLFTTNC\|VPPKDSYFDRLETMTGVGWPGVPH WQS QQKEFEDIPAPILFTTNCLMKDRVYTTSVVGYEDIKH WQNQQREFDAI PAPVLWTTNCLMPPRVWTTGVVEYPGCAH NGPVLVTGEG』1PPKDSYKDRL FTTGCAGYPGCVH WQNQQSEFAKFPGPVLMTSNCNYGDRDWTRSVVGWPGVKH WQNQQKEFMD $\quad$ PAPVLMTTNCLMKDRIVTTELVSFPELVH WQNQQKEFANFPGAIVMTSNCLYADRLETRSGVGWPGVAH WQNQTKEFAKFPGAIIVTTNCLMPPKLFTDGPVGFAGINY WQNQQKEFANFPGA VVMTSNCLYADRLFTRSIVGWPGVAH NGPVLMTTNCLVPPGDSYSN RVFTTAMVGFKGLKH




 WQNQQKEFANFPGAIVMTSNCLYADRLFTRSIVGWPGVAH
 WQNQQNEFAAFPGPVVMTTNCIQKPRIYTMGSVSWPGAVH
 WQNQQEEFSRFPGP VVMTSNCIGYDRIVTRSIVGWPGVK H
 WQNQQKEFDNLPGCI LMTTNCLMTPRIVATSSIVGFSNMPY WWKQVEEFEAFGGPILMTTNCLYGSRLYTTGPVRYPGAHH PAPULFTTNCLMPPKESYADNV FTCDCVEFDGTHH
 WQEQQKQFDNI PGCILMTTNCLMKPRDYSTNVVGWDGVKY NGP ILMMTNCUDPMK KKNTYKDRVFTTGVVSYPGTKH
 WWAQDSEFESFHGPIVMTTNCLYRDRIFTTGLVAFPEVAH
 WQDQQKEFAEFPGAILMTTNCIQKPNIFTTGLVAFPGVKH NGPVLVTTNCLVPPKDSYRD

 WQNQQKEFAKFPGPVIMTSNCNYADRI YTRSIVGWPGVTH WQNQV REFPKFPGPIVMTTNCLMKDRI FNCGPVGYPGLKH
 WQNQTKDFAKFPGA IVMTTNCYYEDKLISVGPVGYPGIAN


 WQNQQTEFAAFPGP VMTSNCLYRNRIFTAGPVGWPGRRH


|  | TVGFGHNAV ${ }^{410}$ NAO | 420 | V A AVKGGS | 440 |
| :---: | :---: | :---: | :---: | :---: |
| UniRef90_W6N3 | TV\|GF GHNAVVLSNADK1 |  | $\checkmark$ E A V ${ }^{\text {\| }}$ K G G S $\mid$ | L |
| UniRef90_R5VK07 | QVGFARNAVLSQADKI |  | $\checkmark \mathrm{EAVRKGE}$ | R HFFL |
| UniRef90_UPI0003B3F05C | MVGFARNAVLSVADKV |  | ELVKAGKI | K HFFLV |
| UniRef90-E6U9B2 | T TGFGWGTVLSVADKV |  | DAVKAGA | K HFFLV |
| UniRef90-D8G7E4 | MTGFARKAVLNLAGDV |  | ELVKQGKI | Q HFFLV |
| UniRef90-M1E7A4 | MVGFGRKTLLSTASKV |  | DLVKNKKı | RHFFLV |
| UniRef90-A9BHK9 | TIGFAHEQTAQVADKI |  | E AVKSGK | TK F Y V M |
| UniRef90_UPI000347C276 | TTGFARNAVLSVADTV |  | EAVKQGKI | RHFFLV |
| UniRef90-S7V4U5 | $\underline{\mathrm{V}} \mathrm{GGFAHNQVLAL}$ A D K V |  | - D A VKS GAl | KRFVV M |
| UniRef90-Q5NRB3 | AGFGHHTVL | D S A A V V | SAIKKGD | K HFML V |
| UniRef90-A6USL5 | VGGFAHNQVLALADKV |  | DAVKS GAl | K K F V V M |
| UniRef90-H6LIH5 | LTGFGHGTVLGVADKV |  | A AVKAGD | K HFFLV |
| UniRef90-F3YWG5 | MVGFARNAVLGVADKV |  | EAVKSGA | R HFFLV |
| UniRef90-A5GA35 | LTGFGHNAVLGVADKV |  | EGVKS GAl | K HFFLI |
| UniRef90-D1Z2A4 | MVGFGRNAVLGVAPAV |  | DAVKAGKI | R HFFLV |
| UniRef90-K9YDQ1 | KVGFGHNAVLSVADTV |  | NAVKEGK | R HFFLV |
| UniRef90-D2Z642 | VGGFAHDQVMALADKI |  | $\checkmark$ EAVKS GA | K R F V V M |
| UniRef90_E1YLA6 | MVGFARNAVMGVA GQV |  | EAVKAKAI | K HFF\% ${ }^{\text {F }}$ |
| UniRef90-R6YPI6 | VGGFAHAQVFALADKI |  | VEAVKS GA | K K F V V M |
| UniRef90-R6QVQ3 | LVGFGHKTTLSYASQI |  | $\checkmark$ D AVKS GR | R HFFLI |
| UniRef90-K9TDN2 | TTGFARHAVLGVADEV |  | A AVKRGD | R HFFLV |
| UniRef90-C0QCA0 | VGGFAHNQVLALADKV |  | $\checkmark$ A AVKSGA | KRF IVM |
| UniRef90-K9T9L7 | MTGFARNAVLSVADKV |  | E A V K GLLK | R HFFLM |
| UniRef90-V5WEF2 | TGGFAHAQVLSLADKV |  | V D AVKNGD | S R F VVM |
| UniRef90-S7V7B3 | MVGF GRNAVLGVAPQV |  | EAVKNKA | RHFFLV |
| UniRef90-A6CUU5 | TVGFGRNALMQAAPAV |  | VEQVKA GA | K HFFLV |
| UniRef90-H817H5 | MVGFARNAVLGVAPT |  | EAVKA GK | RRFFLV |
| UniRef90_V4GU03 | VGGFAHNQVLALADKV |  | VEAVKS GA | K R F V V M |
| UniRef90-D3LSQ6 | $V T G F G H D A V L S V A D T V$ |  | DAVKQGKI | R R F FLV |
| UniRef90-UPI00046976A7 | TVGFGRQVLQDASDT |  | DLVAS QKL | R HVFLI |
| UniRef90-Q6AQA2 | MVGFGHNAVMGVADKI |  | A GVK A G K | RHFFLV |
| UniRef90-Q12VG6 | VGGFAHAAVLSVADKV |  | E AVK A GKı | T R F IV M |
| UniRef90-F9RYC4 | TVGFGRNALMNAAPAV |  | D QVKQ ${ }^{\text {d }}$ | R HFFLV |
| UniRef90_D3PCD1 | T I GFAHEQVMQVADKV |  | E AVK S GKı | K R F I V M |
| UniRef90-R6PJH0 | TTGFAHNAVLSNADKI |  | SAIKS GKI | S H DFLV |
| UniRef90_G5F580 | TVGF GHASVLGVADKV |  | $\checkmark$ D AVKA GQI | S HFFLV |
| UniRef90-I5AUM4 | VGGYGREQVFSLTDKI |  | $\checkmark$ EAVKS GEI | SKFIV M |
| UniRef90-B4F1C2 | TVGFGRQTLLNAADTV |  | DLVSQKKL | R HVFLV |
| UniRef90-UPI0003B4A739 | TTGFGHGTVLGVADQV |  | $\checkmark$ Q AVKEGK | S R F F L V |
| UniRef90-E1QDL0 | MVGFARNAVLGVADKI |  | EAVKSGAI | K HFFLV |
| UniRef90-UPI0003074A04 | TVGFGRNALMEAAPAV |  | DQIKQGNI | SHFFLV |
| UniRef90-B4VNA6 | MAGFARNAVLNVADQV |  | D GVKQGK। | R H F F L V |
| UniRef90-UPI00030CDEB7 | T $\square$ GFGRNALMAAAPAV |  | EEVKKGNI | SHFFLV |
| UniRef90-D5E6Y7 | PAGFAHNAALSVADKI |  | $\checkmark$ D AVKA GQI | SRFIVM |
| UniRef90-UPI00037C7F5D | VGGFAHNQVIALSDKV |  | EAVKS GE | KRFIVM |
| UniRef90-K9FFD1 | T GFARNALLGVADQV |  | A AVKAGK | R HF |
| UniRef90_LOKZ19 | TIMGGFA H | S A LIS VA D K I | A AVK A GQ | K K F L V M |
| UniRef90-Q12X40 | MGGFAYNSVLSVADK |  | DAVKA GKı | K K F V M |
| UniRef90-Q2FU73 | IT GCAHEAVLALA GTV |  | DAVKKGDI | K K F V V M |
| UniRef90-D8F2J7 | $\checkmark$ GGFARNQVLALA DKV |  | $\checkmark$ D AVKS GAl | K R F V V M |
| UniRef90-B0VGB0 | TGGFAHSTVLSLADK |  | EAVKS GAI | K R F V V M |
| UniRef90-UPIO0041766CD | KTGFAHNAVLSVADHV |  | $\checkmark$ EAVKAGKI | R HFFLV |
| UniRef90-I2F574 | VVGLAHDQLSKVSDKL |  | DAVKTGA | K K FVV M |
| UniRef90-R5K0X9 | TTGFAHGAVLSHADK |  | A A 1 K N G I | K H $\square \mathrm{F}$ V |
| UniRef90-C9QES9 | TVGFGRNALMKAAPAV |  | $V E Q V K A G N I$ | K HFFLV |
| UniRef90-A1S3Z6 | TI GFARNALMAAAPAV |  | $\checkmark$ ENVKNGS | R HFFLV |
| UniRef90-E3D0U1 | LVGFARNAVLGAAGKV |  | $\checkmark$ ELVKAGKI | R HFFLV |
| UniRef90_Q0W3X3 | LVGFGRNTVLSVAPAV |  | D AVKNKQL | R HFFLV |
| UniRef90-A0YSQ9 | TVGFARNSVLNVADQV |  | SAVK E GKı | RHFFLV |
| UniRef90-F8THG3 | PANHGNDDTIT GV S E | S LK G D | VDLA S GA | K G V V GlV |
| UniRef90-M4UIF7 | T $\square$ GF GRNALMD A APAV |  | $\checkmark \mathrm{E}$ QVK K G N | K HLFLV |
| UniRef90-X0PVZ5 | TTGFGHNFVLSNADKV |  | GAIQKGDL | K HIILV |
| UniRef90-T0IFV6 | TVGFGHNAVLSNAGKI |  | EAVKS GA | K H F |
| UniRef90-EORQH4 | VGGFAHHQVAAVAEKV |  | EAIKAGKI | T R F V V M |
| UniRef90-U2ZMW0 | TVGFGRNALMNAAPAV |  | DEVKKGNI | R HFFLV |
| UniRef90-C7MLN5 | TTGFGRATVLSVAGDV |  | $\checkmark$ NAVKAGDI | K HFFLV |
| UniRef90-E2ZA94 | MTGFGHGTVLGVADKV |  | DAVKAGA | K HFFLV |
| UniRef90-UPI0003B67336 | VGGFARNQVLALADKV |  | $\checkmark$ D AVKTGAI | KRFVVM |
| UniRef90-R5U3W1 | PEGFAHEATLSHAGE |  | $\checkmark$ Q A VKD GQ | R HFFLI |
| UniRef90-K0NLC6 | VGGFARNQVLA LAADKV |  | $\checkmark$ EAVKS GAl | KRFVVM |
| UniRef90-B7KLG3 | MVGFARNTVLSVSDQV |  | E GVKTGKI | R HFFLV |
| UniRef90-UPI000346E701 | T TGFARNAVLGVAGAV |  | EAVKRGE | R HFFLV |
| UniRef90-UP100047748EA | TGGFAHAQVTALADTV |  | $\checkmark$ EAVKTGAl | SKFIVM |
| UniRef90-K1ZE74 | LTGFARNTVLGVADKV |  | EAVKSKAI | R HFFLV |
| UniRef90-C6C7W4 | TVGFGRQTLLSAADTV |  | DLVAQKKL | R HVFL |
| UniRef90_UPIO0037B30BE | TIGGFARNTVLSVAGKV |  | ELVVQAGKI | K HFFLI |
| UniRef90-17LLX0 | VTGCAHAPVLAIIADAV |  | $\checkmark$ D AVK S GAl | R R FVV ${ }^{\text {a }}$ |
| UniRef90_K8Z7R3 | T TGYGRDAVLSMAGD |  | $\checkmark$ NAINTGD | K QL Y |
| UniRef90-F8E7M2 | T $\square$ GFAKDQVMELLADKV |  | DAVKS GA | K R F V V M |
| UniRef90-K4MIZ7 | PEQLEEGTIMGGFAHV | S A L S Va D K I | V E AVK K GQI | K K F V V M |
| UniRef90-UPI0004629BD4 | LVGFGHNAVLGVADK |  | V GVK K G S | GHFFL V |
| UniRef90-F9H701 | TVGGFGRQTLLDASDAV |  | NLVA A GKL | R HVFLV |
| UniRef90-UPI0003662FB5 | MTGFARNAVLGVADDV |  | EAVKGGNI | H F F LV |
| UniRef90-F8TH84 | FPEHGYDNTLTGVSE | S LTK N S WK P L | DLIVS G D | $\mathrm{K} \mathrm{G} \square \mathrm{A}$ G V |
| UniRef90_UPI0002E1D803 | TVGF GRNALMAAAPAV |  | EQVKQGHI | K HFFLV |
| UniRef90-K9VEM1 | TVGFAHNTVLGVADK\\| |  | E A V K Q R K | R HFFLV |

## UniRef90 W6N3C9

UniRef90-R5VK07
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UniRef90_E1YLA6
UniRef90_R6YPI6
UniRef90-R6QVQ3
UniRef90- K9TDN2
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UniRef90-E8WM63 UniRef90_R7BQC6 UniRef90-A5FZG9

GGCDGARPG
RNYFS T 460
RNYFSEDAOKT
470
480 GGCDGAR $\stackrel{P}{\mathrm{G}}$ NYYTE GGCDGAKPPGRNYYTEFFVEDVPQDAVILTLACGKYRFYD GGCDGAAKPDRNYYTEFVEKVPKDCN GGCDGAK PGRSYYSEFVEK VPEDCVVLTLACGKFRF GGCDGARNKDREYYTNFAKDLPMKSAVILTAGCAKYRYNM
 RGYYTEFVERVPDDCVVLTLACGKFRF AGCDGGRQKSRAYYTEVAENLAPKDTVILTAGCAKYRYNK AGCDG RHKTREYYTDFAKKLAPKDAVILITAGCAKYRYNK GGCDGAKTG RNYYTEFVEKTPADTVVLTLACGKYRFND


 A GCDGAK PGRNYYTEFVEK VPRDCVVLTDACGKFRF SGCDG RMKSREYYEQFAKSL_PKDTIILTSGCAKYRYDK GGCDGARPG RNYFTDFARMVPDDCIILTDACGKYRFNK
 GGCDG AKPDRNYYTELVEKVPEDCIVLTDACGKFRF
 GGCDGDKA ERSYYSDFTAQAPEDSVILTLACGKFRFN AGCDGAK PGRNYYSEFVEK VPKDCIVLTLACGKFRF
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 GGCDGAK PGRNYYTDFVKATPEDSVVLTLACGKFRFND AGSDG RAKTRSYYTDFAKA L PKDTVILTAGSAKYRYNK
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A



 AGCDGAK PGRSYYTEFVEK VPQDCVVLTLACGKFRF
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 A GCD G RQKSRGYFTQVAEKLPQDAVI LTAGCAKYRYNK



 GGCDGSRT ERSYYTDFARSVPNDCLI MTLAACGKYRFNK GGCD GAKS G RNYYTDFAK Q VPD D DCVI L T L A C GKYRFNK


 GGCD G SK GERSYYTDFARQVPEDCAILTLLGCGKYRFNK GGCDGAKAG RNYYSDFVEKVPDDCVVLTLACGKFRF
 GGCDG AKPDRNYYTEFVEKVPDDCVVLTLACGKFRF

A GCDGAR PGRNYYTEFVK ATPDDTVVLTLACGKYREND GGCD GAKSG R NYFTEFAEKVPK DCII LTMAACGKYRFN K





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UniRef90_M4UIF7
UniRef90 X0PVZ5
UniRef90_TOIFV6
UniRef90-E0RQH4
UniRef90_U2ZMW0
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UniRef90_R5U3W1
UniRef90_K0NLC6
UniRef90_B7KLG3
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UniRef90-K8Z7R3
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UniRef90 K4MIZ7
UniRef90_UPI0004629BD4 UniRef90_F9H701

GQCNDAYSADQLALALASEFDCGVNDLPLTLV$L S W F E Q K$


GQCNDAYSADQVAVALAEAFDCGVNDLPDSMV,LSWYEQK GQCNDAYSAVQI A SAL A GAFNCGLNDLPLSFILISWYEQK G Q C N D A Y G A V CVV A LIE L A E A F N C GVV N D L P L T L V $L$ L S WY E QK


A IVVLLT LLS LGGK ITRVGP TKPAFLT DNLLNDLNEKFG AV S V L L T L L S L GI KI HLG P T LPA FVVP NVLNYLVENF
 AIVI L LT T FALGGVKI YTGPTAPAFLTDNLLAII QEKF





 A


 AVCVLLALLALGVK I RLGPTVPAFLSPNVVNVLVENFG




AVCILLTVLHLGTQNVLGPTVPAFVSPGVLDVLVENYG
A HVI L L S L L Y L GVVKNILGPALPAYLSPNVLQFLVDNFN
AVVI L L T L L H L GI K I Y Y L G P S L P A FVVSPAVLDVLV SEF
A A A V F L
UniRef90_A5FZG9
UniRef90-F0LZZ0

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MFCYQCE

M F C Y Q C E
MFCNQCE
KMFCFQCQ

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UniRef90
N9TZG3 UniRef90- V5F4U1 UniRef90 COQFEO UniRef90-R8APR2 UniRef90_A6VL83 UniRet90 C4UF43 UniRet90-B6WY49 UniRef90-D1A216 UiRe90-UVLI UniRef90-A0A014LW28 UniRef90-D8K370 UniRet90 Q2RM63 UniRef90-G7LL56 UniRef90-A4SQN8 UniRef90_UPI0002E18FB6 UniRef90 Q6ANWs UniRef90-C9P3S1 UniRef90-WOLDZ3
UniRef90 Q07X28 UniRef90 E8XTR2 UniRef90-I3BTR4 UniRef90_Q8EH67 UniRef90 UPI000329D652 UniRef90-B7JYM8 UniRef90-K0C386 UniRef90 T0E6N8 UniRet90_W9HFS4 UniRef90-S95910 UniRef90_COD661 UniRef90 G1UT13 UniRef90-A2FIM UniRef90-UPIO002882146 UniRet90_G31WP4 UniRef90- K6U227 UniRef90-O3AB48 UniRef90-T3RSY9 UniRef90-B4WRS3 UniRef90'UPI00041EC984 UniRef90 Q21AN5 UniRef90-L1QM07 UniRef90_E1Z521 UniRef90 J7Q787 UniRef90-Q6ANX0

QTAGGKGCT ${ }^{50}$ QAAQGTGCTQ
QTMR MFCNQCQEA
QTVGGKGCT
QTMR
ETAKNQGCT MFCEQC
QTAKGTGCT MFCDQCEQTDRTPVSDGCSVMGVCGKLAPVADLQDHV

EAA KGC GCTVKGVCGKDESTATLQDCL
QAMFCRQC EQAARGVGCDMGNCGKDPQVSALLDLM QTV
EAAKNTGC MFCVQCEQTDRTSAGNGCSYAQGVCGKTAETSDDQDLL MFCYQC EQTAKGAGCTVGVCGKSPAVSDMQDLL
ETARGTGCT MFCDQCEQT TSTPTTKGCSYTMGMCGKTAEVSDLQDVL
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AGVCGKTAATAQVQDEL
ETA品HGC
VKgVCGKRESTAGLQDLL
MFCEQC CEQTDQT

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$\mathrm{QT} \mathrm{Q}_{\mathrm{R}}^{\mathrm{R}}$
TPAGNGCSQGMCGKTAETSDLQDLL
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| PKTPRGVCGADADADVTRNLL |
| :--- |
| CHEVKGVCGKDETAD |

 QTAHNTGC $M F C D Q C E Q T V Q S P T G N G C Q Y A K G M C G K L A D T S D D Q D V L$
$M K N T G C M$ ETMKNTGCSM EQTASGQGCHQGACGKSPEVNGVHDLL ETMVCEQC KGEACTKTGVCGKSDEVADLQDQL EQTASGNGCHQGACGKSPQVNAVQDQL MYCYQC QT $\mathrm{D}_{\mathrm{R}}$

TPAGNGCSQGMCGKDAATSDLQDLL
NETACTVGGMCGKAACANLQDAL
ETAKGSGCT
VKGVCGKEGATAGLQDVL QT $\square \mathrm{R}$ MFCVQCEQTПRTPAGNGCAFAQGMCGKTAETSDLQDVL MFCIQCEQTMQTPVASGCQYAMGMCGKTSETSDLQDVL ETAKGRGCT
$Q_{Q T M}^{M}$
QT 1 R
DKGMCGKEETTSNLQDLL QTIRRTPAGNGCSQGMCGKTAETSDLQDL MFCNQCEQT SKGKACTRLGПCGKNEAVADQQDKL MFCYQCEQTDRSG

SKGKACTRGGCGKNEAVADQQDKL QTM

GGTGCTGGAGVCGKS SAAANLQDEL MFCEQC QThRSRGCAYA QTVGGKACT EQTASGQGCHQGACGKGPDVNAVQDLL RGVCGKTAETSDLQDLL
$K$ GAGKSAVASARQDEL
$\mathrm{QT}_{\mathrm{Q}}^{\mathrm{Q}} \mathrm{Tl}_{\mathrm{R}}^{\mathrm{R}}$
MFCEQC
SMFCHQCQETA
TPAGNGCSQGMCGKSAETSDLQDLL EQTAAGNGCAQGMCGKTAETSDLQDVL


MFCYQCEQTQHDDAVAGCHSLKGTCGKDAVTSDLQDLL QTARGTGCTE
QTAKGTGCTVA
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VGVCGKSADAAGLQDLL
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RKGVCGKMPSTANVEDEM
MFCYQCEQTDRSNADSGCATAKGMCGKDATTSDLQDLL

KTGBDAADKL

 MFC $\square$ QCEHT $\square R A P K G N G C S Y Q R G M C G K T A E \square S D L Q D M L$
QT $\quad$ SKGTGCTTVGVCGKTPEMAFLQDLL MFCYQCEQTYRSDEAAGCAGAKGMCGKDATTADLQDIL
ETAKGTGCT TPAGDGCVKGVCGKQETTANLQDLL

|  | UniRef90_D4L9P5 |
| :---: | :---: |
|  | UniRef90-K2E4J5 |
|  | UniRet90-M1SJ99 |
|  | UniRef90-Q8PS69 |
|  | UniRet90-N9XZH9 |
|  | UniRef90-V3TW52 |
|  | UniRef90-B8FG46 |
|  | UniRef90 B0JIR2 |
|  | UniRef90 E5Y3T8 |
|  | UniRef90-UP10003B47B7B |
|  | UniRet90-R5JYM9 |
|  | UniRef90-H1Z1K0 |
|  | UniRef90- ${ }^{\text {B5EHH7 }}$ |
|  | UniRef90-M1P1F4 |
|  | UniRef90 H9ULC1 |
|  | UniRet90-V5C3U1 |
|  | UniRet90-G7V7V2 |
|  | UniRef90-LOHC29 |
|  | UniRef90-C4LA04 |
|  | UniRef90-D6EAH1 |
|  | UniRef90-X1EWZ3 |
|  | UniRef90_H6SM61 |
|  | UniRet90_B1WRV9 |
|  | UniRef90-UPIO004224788 |
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|  | UniRet90-E5YCZ9 |
|  | UniRet90-A8H1E5 |
|  | UniRet90_O6LG35 |
|  | UniRet90-Q3M890 |
|  | UniRet90_F8THH9 |
|  | UniRef90-UPI00045E66BB |
|  | UniRef90 SoG462 |
|  | UniRef90-R5D327 |
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|  | UniRef90-F7XLL |
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|  | UniRef90-A3QBU2 |

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UniRef90_V5F4U1
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UniRef90 R8APR2
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UniRef90-B6WY49
UniRef90-D1A216
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UniRef90-A0AO14LW28
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WOLDZ3 UniRef90-Q07X28 UniRet90-E8XTR2 UniRef90-13BTR4 UniRef90-UPIIO00329D652 UniRef90-B7JYM8
UniRef90 K0C386 UniRef90-T0E6N8 UniRef90-W9HFS4
UniRef90 $\mathrm{S9} 9910$ UniRef90_C0D661 UniRef90_G1UT13 UniRef90-A2FIM7 UniRef90_UPIOOO2882146 UniRef90-G3IWP4 UniRef90_K6U227 UniRef90_O3AB48 UniRef90-UPIOOO3811C7A UniRef90 B5EHZ4 UniRef90-T3RSY9
UniRef90-B4WRS3

TYTTKGLSLRNTEARKTAEALFAALTNNFDVEMRDVECE
 IYTLKGLAAQADTGYFAARGLFATITNANFDLIREALNRR VAVLQGLSAWADQARALGHAFFSTLTNVNFDSQRREAVAL VHITKGUSMYAHRAREVVEALFSTITNVNFDEREKAKKLY IVYLQGVSDYAVKARSVCQALFSTLTNVNFDQQNRDSGKS

VFVVRGMA WYGEHDSFTRRALFSt $\square$ TNVGWDEALERRNAL VYCLRGLAPVTIKARELGETLFATMTNVNFERKRFNVYIR VYTLQSVSYWATLGRSYNKAFFATLTNVNFDPERIIELSH
TYGVKGTAQYAKRARAMLYALFTTLTNVNFNATDRDRVKA VAALQGLSAWALKAREVPRAFFSTLTNVNFDSERIAREAL IV YL QGVSSYAALAREVGKAFFATLTNVNFDFRNRLKAAY VFNLQGVSFWAELGRKYNRAFFSTLTNVNFRYKIQAGEAL
 MYGAQGMAQYAKRLRQFGENLFTTLTNVNFNASUKEKAQY
 VWGLKGVSVWGVKAKEIDKGLFSTITNANFDREIRDRLKL

 I YLAKGVTGNGKAGKFVAEVLFATLTNVNFDKERFHAYVR I RASQYAABYTASDEQLMNNLFFMTITNANFSTA


VAVLQGLSAWALQARELGRAFFSTLTNVNFDSQR】TGYAR 1 Y A L Q IIWTLKGISVWGLKGKEVVKGMFATMTNANFNEAVVHRQHL VYTLQGVSFWANQAYSAPKAFFATLTNVNFDPQRILELTH VAALQGLSAWALQARALGRAFFSTLTNVNDETUAQRESL IVYMLQGVSAYAVKAREVPKAFFATVTNVNFDQTYRDQLKA
 I ATHQGLSAWAVKAREYGRAFFSTLTNVNFDDELLRTALKQ VYCLRGLAPVVLKAKELGEABFATMTNVNFDKKICDKAAD THAVKGLAQVSHRARALGHALFTTLTNVNFNPVRLELLIR LDVAKSLALGLUAVPAVQRALEATVTNVNFDNARLESML TYLLRRLAALVLQARAMVEALFGTLTNVNFDPEALRKERA VQVCKDGVVSNEVGLLINKTLFMTITNANFD DNALT

## DHGVKGDAQYAKRARAMLYAMFTTLTNVNFAQVRDRVKA

RSAAKDVAAHEARMRETILTLKKAAEGDTDLSTVGERKL LHGLKGLADYADKARYLIEGLETTVTNVDFDYDLKEQVKL RAVASGAACYLHVVENTAKNLKNVGITKGVSPVKGEKTL M CLLRSLAPVALQAKAMCEAMFATMTNVNFSPSLKEESTL VRLLQGVSMYAKAARSVGUVFFATLTNVNFDUGYRDRLRL
$T Y S \square K G L G C W A D F A R Q Q G V A T F A T L T N V N F H D A R F K E Y \square S$ LYVCEGVGQYDHRARF LIFAFFTTLTNVNFNAQDRDRAKY


## UniRef90 D4L9P5 UniRef90_K2E4J5 UniRef90-M1SJ99 UniRef90_Q8PS69 UniRef90_N9XZH9 UniRef90-V3TW52 UniRef90-B8FG46 UniRef90_B0JIR2 UniRef90 E5Y3T8 UniRef90_UPI0003B47B7B

 UniRef90_R5JYM9 UniRef90_H1Z1K0 UniRef90-B5EHH7 UniRef90-M1P1F4 UniRef90-V5C3U1 UniRef90_G7V7V2 UniRef90_LOHC29 UniRef90-C4LA04 UniRef90-D6EAH1 UniRef90-X1EWZ3 UniRef90_H6SM61 UniRef90_B1WRV9UniRef90_UPIO004224788 UniRef90-C9R9K6
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UniRef90-A8H1E5
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UniRef90_F8THH9
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UniRef90-L8M1W9
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UniRef90-B8EBN7
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UniRef90_C0QFEO
UniRef90_R8APR2
UniRef90-A6VL83
UniRef90_C4UF43
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UniRef90_D8K370
UniRef90_Q2RM63
UniRef90_G7LL56
UniRef90-A4SQN8
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UniRef90_Q6ANW9
UniRef90_C9P3S1
UniRef90-W0LDZ3
UniRef90_Q07X28
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UniRef90-I3BTR4
UniRef90 Q8EH67
UniRef90_UPI000329D652
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UniRef90_G3IWP4
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UniRef90_Q21AN5
UniRef90-L1QM07
UniRef90_E1Z521
UniRef90_J7Q787
UniRef90_Q6ANX0
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 KEDAFFPADTLEGMDKQGEAYGILDDKEEDVRSLKSTLLY RCLAKNANDQLKGTDDAS LVK QADEFAGDDVMGGLRMLCLYY KLPAGTDPAEEDLPDVAKVTPEVHSTQNEDVRSLRELLTY NFNCDREQVTYKLSDSKSKLLEDAKDARLDDTDEDPDVRS




HDTCTWKPANDEAAVKKGSENGVLATENEDVRSDRELLIY RRDQKCFQMKERAKSLYQDAHEITDQALIDQGRQYGVLTW RDEDRAKVEAAGGTVTSSAAALSDAGLEDQGKANEDLRS TRLDADTLARTTGSHDAVTWAADPADWLI GVLSEPDQDLRS RESHPLAALQLAGDDMSALLQQAAQFALDDI HGLRMLCLY EESCKKAGTSPEEKGEEVTPAKGAEKRGEDI QGMHDLVLIF


RRRFLERTGAS WAEPDPEAATWVLATENPD DRS $\square R E L L V L$ QCDHUREGLKNS DEKISKKPDSWSEVSLAEQGREKDLTF TAARFQFKLPDSAEQILAYAPQVAVNRGHHELHEDVIGLR

 DMIVACRAVDANAQVDHPLALQLAGSDLATLRKQAEEFAL PEDAA QFVLPATAEEDMNFAPEAAVNRGHEELHEDIIGLR QUQATGNAVPASDTQKQDQQGKDLEFEFDSQSAKNVDIFS EALAEQQGVAAEGPGQWRPASTLAGLMIQELQQVGEDIIG RSAALRETLKERDNKDEELLSQAASVGLFSYPADNPDIL S E IDQAERNAIDASAYDIRNIWEN QQYREQLKTAYEAAAGSDVAVELPMAASEDLGGSTKEELLH KAYKQKNGVPADDKDLLAKADSGAGGWLED EDEDERS KQDQQAAGVPQTWLDIESLAEQGQD ETLKFIS QVD\FS DK K S L LVESGVVDLSNSAVNVKPEDGTSTENEDVRSLRELLTY

 QA DA LR DALPWTPKNDGDIAAKADEDASLA QKGDDDT SLLR EAACEQAGIVAENKDKHNVHED VMGLRLLCLYGLKG QQLAAERDGAFEEKLSQDAVAPQAAVNRGKDQVSEDVMGLR

 QALIYRANIELDGVSVDKLARQAKQFALDTDRAKDGEEAH AARCRLLDATANVDHPMAELQLLADEVGDD RTTALAARVPGAPSPSPLAALDLRDTADDRLSD DEDVRS RYAA WQPASDMDGLLKQASGVGVDDTAGPDVVGLRSLHLY KVNAEKAALDAGNEGAFDKVRKLADKAAANYNSGNEDVRS


EA A A LRQSLATAGDDMPTLLRQAADFALDHDKSAVGDDVH A ALAVQVGFEPGDELLAQLLAHASQTAVNRGKSEVHEDVMG

 AY IDA ACKGQGVEATSKPEILAQAAPIALLNGGGVNEDILG
 EMLSQ APISLLNKDKNNIHEDILGLRLLCLYGLKG







$N E D L A A L Q D L L I F$





TCQS LRE GLEKKS LRD K DLLAAHPAA WKLNQSYASMDQLTQL EDAA RAAGKSPEAQASEAAVRKDAADLGEDAVGVRALILY



GVKGDAA
YAEHAAHLGYEKAEDGLF IERAMAATLR LTVLYGПKGTASYTFHAQEL GQEDEKVYAFIQEALASLDL
 GLKGVCA YAHHAHVLGKESEDVYAGVEDALDFLSS A EDG DDVHGLRMLNDYGLKGAAAYMEHAHVLGQYSND Y Y A GLKGAYMEHARVLDQTSDEVAGEFHEDMAFLGEDSV LLCLYGLKGAAAYMEHANVL GQSEESI CAEYHQDMLGTDT
 LRAMLLYKGAAAYAYHALMLGYRDDDIGAGFEEADDFLAG LKHTVLFGDKGVYADHAQILGQEDDDVYHFDFKGLAAIQQ GLRGMAAY AYHALALGYTDRDVLNYFYEALLGEPS $Y A D M C A A N R D R L L C L Y G L K G A A A Y L E H A R V L D Q T D T E D Y A$
$L K A L V L Y G L K G L Y A E H A Y Q D T K S C R E D F E F L D A T L V D E T K$ LTVLYGLKGVASYAFHAQELGQEDERVYKFCYEALANLDN
 LTADYGDKGAASYAFHAYELGQEDESVYQFTQQVLAAADDS LAA QALPNRLRLLCLYGLKGAAAYMEHARVLDQTDSEVAA GLK GLCA

YLSHAAVLGFRKAELSSFVVRTVVYLLE LLLTYGMKGDSAYYTHAAVLGSTDETITTFLQTGLAATVA AAA YME HARVLGQTDADVAGSFHEIMSFLGEPS VDG LLCLYGDKGAAAYMEHARVL GEQDDAI GAEFHRDMAWLAT LRLLALYGLKGVYMEHARILGQQKEDVSAEFHRIMAENPT G $\square$ KGVAA YADHAAVLGDEKDEI YDF DMEALASTTE A DYAL NKDKAEAY LDHARVLEQQDRAI YAQFHAFMAWLGS GVRLLCLYGLKAYMEHAYVLDKFDNDIYAQYHMSWLGTHS GLKGAYMEHAHVLGQSDETI YAQYHEFMAWLGT A MQULLYGLKGVYADHAAELGQRDPDVAAFLYRGLAGTBR VLKGICA YAHHAAALGHRSAEVFSGVEEALAYLA G L K S LI GMRGMAAYAY HALML GHSSDEVNQFFVVKGLHALGE LKLTVLYGLKGLYSFHAQELGQEDDRIYSFCHQALAALEE GLKGAAA YMEHAHTHGYYQEKI YQQFHQMLLGTLP GLLRGMAA YAWHAY LLGKTDESLNAWFYKGLRALAG GLKGIAAY AYHAGELGARDPEVDAFMHEALFTTLTNVDF GL RMLCLYGLKAYMEHAHVLGQYDES IYHSLMAWL GTQPT L R L L C L Y G L K A A Y M E HA A V V L G Q Q D S E V A A E F H R I M S W

 GLKGAAA L R L L C L Y G L K A A GLKGAAA $Y$ YMEHAHVLLGQSDSAAIYAEYHRLMAWLGS

YEHAHVLGQSDNQTY HAFMAWLGT QPR
 $G L R L L C L Y G L K A Y M E H A H V L G Q H D E A I Y A E Y H Q D M A W L G A$ LTVLVGGIKGCAS YNFHAREL GQEDE KV Y S F I DQEALAASLD N
 $V L V L Y G M K G V A A Y Y H H A T V L G F R D P A I D A G D A R I L S D L A G$ GLK GMAA GLRGMAA A MQMLLFGLKGDV GLLK GMAA
 G L K GMAA
 LR S L V L Y G L K G VY A H H A Y V L
$G L K G \square A A B A Y H A R E L G A H D P E V D A F M H E T L T N V D F$ LSVVAPPER DQT WK QLDLLPVVSSSFEVSSALLKQTSDE SLDN GLKGMAA YANHACI LGKTDEEVFAFFHSALTDTDK
 LK LTT TLY GLKK GAYAFHA YEVGGQEDEA I YH F VVHRADDDDQS M $G L K G M A A Y$ A H H A RQMNRADPVVDAFTVEALAKMDA GVSS $L L C L Y G L K G A A A Y L E H A R V L G Q S D A E V Y G R F H M A F L G E D G$
GKMTS TLEHRRHVYSHHAEVLGHRDPEVDEFMARCAFLCSE GLKGAYAHHARVLGEEREAI YATVEHALD L A AR
$G L K G \square G A$
210
220
230
240
D|VEELI RWTMRTGETALEVVMKVLDDANTQTYENPSPRMVVN

 TLTEEA ELMTKTGNMSLGEVMKVLDDANTTSSYKNPEPTMVN
 SVDDMIAMVMKAGETAVNTMALLDEANTSVYGHPED TE




 D LDELV A L A L K K TGETAVVTTMA TLDDAANTSAYGKPE』 TE

 EPTEELDCAMQVGQMNFKVMALLDKGETETFGHPEPTRVN GADELLPLALRVGEVNLRCMELLDQANTETFGTPEPTGVA

UniRef90_D4L9P5 UniRef90_K2E4J5 UniRef90-M1SJ99
UniRef90-Q8PS69 UniRef90_N9XZH9 UniRef90_V3TW52 UniRef90_B8FG46 UniRef90_B0JIR2 UniRef90_E5Y3T8 UniRef90_UPI0003B47B7B UniRef90_R5JYM9 UniRef90_H1Z1K0 UniRef90_B5EHH7
UniRef90 M1P1F4 UniRef90_H9ULC1 UniRef90_V5C3U1 UniRef90_G7V7V2 UniRef90-LOHC29 UniRef90_C4LA04 UniRef90-D6EAH1 UniRef90-X1EWZ3 UniRef90_H6SM61 UniRef90_B1WRV9
UniRef90_UPI0004224788 UniRef90_C9R9K6 UniRef90-UPI0003637EDA UniRef90_E5YCZ9 UniRef90_A8H1E5 UniRef90_Q6LG35 UniRef90-Q3M890 UniRef90_F8THH9
UniRef90 UPIO0045E66BB UniRef90_S0G462 UniRef90-R5D327 UniRef90_UPIO0046EA4F2 UniRef90_K0NMP4 UniRef90_UPI0002F944E6 UniRef90_F7XLR7
UniRef90_L8M1W9 UniRef90_J1L1W9 UniRef90-A3QBU2 UniRef90_R6VVS9 UniRef90_A7VHG0 UniRef90_B8GJA5 UniRef90_B8EBN7 UniRef90-N9TZG3 UniRef90_V5F4U1 UniRef90_C0QFE0
UniRef90_R8APR2 UniRef90_A6VL83 UniRef90_C4UF43 UniRef90_B6WY49 UniRef90-D1A216 UniRef90_U7UVL7 UniRef90_D4ZZW4
UniRef90_A0A014LW2 UniRef90_D8K370 UniRef90-Q2RM63 UniRef90_G7LL56 UniRef90-A4SQN8 UniRef90-UPIO002E18FB6 UniRef90_Q6ANW9 UniRef90_C9P3S1 UniRef90-WOLDZ3 UniRef90-Q07X28 UniRef90_E8XTR2 UniRef90-I3BTR4 UniRef90_UPIO00329D652 UniRef90-B7JYM8 UniRef90-KOC386 UniRef90-TOEEN8 niref90-W9HFS4
UniRef90_S9S910 UniRef90-C0D661 UniRef90_G1UT13 UniRef90-A2FIM7 UniRef90_UPIoo02882146 niret90_G3IWP4 UniRef90_K6U227
UniRef90_O3AB48 UniRef90-UPIO003811C7A UniRef90-B5EHZ4 UniRet90-T3RSY9 UniRef90-B4WRS3 UniRef90_UPIO0041EC984 UniRef90 Q21ANS UniRef90 L1QM07
UniRef90
U1Z521 UniRef90-E1Z521
UniRef90_O6ANXO

DADTLVA LVLEAGHVA DA A MA LLDEANTTTYGAPE DSQVA

 DL E S Y V E L L L K A GE I N Y K V M E ML D R A HVVERF GTP EP T K V Q E F H H L L N N A M G I G K M M N F N V V M All Lid









 D P A E L L Q C A M D I G L L N F R V M E M L D R G E T S A F G H P E P T R V
 N PT D L L D N A M A DG R M N F D V M A ML D T G E T A L Y G N P V P T Q V N D LNELL EKALAAI GSMNFNVMAMLDAGETEHFGNPVPAMVN $D V N T L L N H A M G \| G Q M N F N V M A D L D S G E T Q A Y G H P Q P T A V N$






 DVVD L L N N A M G G KM N F S V M A M L D R R G E T L A Y G D P Q P S S V N

 D MNA L L E C A M Q I G Q M NF K V M R I L D A GE T GA Y G H P T P T Q V N




 D I N K L T


 DWQKKMNTTFRLGAAFLLNCTAGSSATDCLCGTAEHTTTK GLMDFVG\|AMECGKLNIVVMGILNEGHVERYGHPVPTKVQ

 D ALDLL G MV DELGAVGVKGMQLLDKGHTTKFGHPEPT QV




## UniRef90 D4L9P5

 UniRef90_K2E4J5 UniRef90-M1SJ99 UniRef90-N9XZH9 UniRef90_V3TW52 UniRef90_B8FG46 UniRef90_B0JIR2 UniRef90_E5Y3T8 UniRef90_UPI0003B47B7B UniRef90_R5JYM9 UniRef90_H1Z1K0 UniRef90_B5EHH7UniRef90 M1P1F4 UniRef90-H9ULC1 UniRef90_V5C3U1 UniRef90_G7V7V2 UniRef90_LOHC29 UniRef90_C4LA04 UniRef90_D6EAH1 UniRef90-X1EWZ3 UniRef90_H6SM61 UniRef90_B1WRV9 UniRef90_UPI0004224788 UniRef90_C9R9K6 UniRef90_UPI0003637EDA UniRef90_E5YCZ9 UniRef90_A8H1E5 UniRef90_Q6LG35 UniRef90_Q3M890 UniRef90_UPI00045E66BB UniRef90_S0G462 UniRef90 R5D327 UniRef90_UPI00046EA4F2 UniRef90_K0NMP4
UniRef90_UPI0002F944E6
UniRef90_F7XLR7
UniRef90_L8M1W9
UniRef90_J1L1W9
UniRef90_A3QBU2
UniRef90_R6VVS9
UniRef90_A7VHG0
UniRef90_B8GJA5
UniRef90_B8EBN7
UniRef90-N9TZG3
UniRef90_V5F4U1
UniRef90_C0QFE0
UniRef90_R8APR2
UniRef90_A6VL83
UniRef90_A6VL83
UniRef90_B6WY49
UniRef90_D1A2I6
UniRef90_U7UVL7
UniRef90_D4ZZW4
UniRef90_A0A014LW28
UniRef90_D8K370
UniRef90-Q2RM63
UniRef90_G7LL56
UniRef90-A4SQN8
UniRef90_UPI0002E18FB6
UniRef90_Q6ANW9
UniRef90_C9P3S1
UniRef90-W0LDZ3
UniRef90_Q07X28
UniRef90_E8XTR2
UniRef90_I3BTR4
UniRef90_Q8EH67
UniRef90_UPI000329D652
UniRef90_B7JYM8
UniRef90_K0C386
UniRef90-T0E6N8
UniRef90_W9HFS4
UniRef90_S9S910
UniRef90-C0D661
UniRef90_C0D661
UniRef90_A2FIM7
UniRef90_UPIO002882146
UniRef90_G3IWP4
UniRef90_K6U227
UniRef90_Q3AB48
UniRef90_UPIO003811C7A
UniRef90_B5EHZ4
UniRef90_T3RSY9
UniRef90-B4WRS3
UniRef90_UPI00041EC984
UniRef90_Q21AN5
UniRef90_L1QM07
UniRef90-E1Z521
UniRef90_J7Q787
UniRef90_Q6ANX0
UniRef90_Q6ANX0
UniRef90_UPI00036
UniRef90_UPI0003643B1B

330
340
350
360
WQEQQK QFDNLPGC\|L\|MTTNCL\|MPR|I|YTTN|VV|GWDG|V|KF


 WQ NQ QREFDDIVPGCWLMTTNCLMRPRIYSTNVVGWEGVEH WQNQQTEEFARFPGPILLMTSNCNYSDRMIWTRSVVGWPGVNH
 WQNQTKEFAKFPGALVLTTNCLMPPK L FTLGPVGYA HDNR
 WQSQQTTEFENDPAPVLFTTNCLMQDRIYTTSVVGYEGLRH


 WQNQQVEFAKFPGPIVMTSNCNYADRIWTRSMVGWPGVNH WQDQQKE FDEFPGALLMTTNCDQKPRMFTTGGVAWPGVRH
 WQNQQKEFAAFPGAVVMTSNCDYADRIYTRS\|VGWPGVTH

 WQNQTK DFAHFPGAII VTTNCLMPPKLFTDGPVGYSGINY WQNQQKEEANFPGAIVMTSNCLYADRLFTRSVVGWPGVAB WYK QKE EFEAFS GABVGTTNCVVRDRMFTT GVVVRLPGVMH WQ D Q QK DF ANFPGPILMTSNCIYRQRDFTAGPVGWPGVRH
 $W Q N Q Q K E F A N F P G A I V M T S N C L Y A D R L F T R S I V G W P G V V M B$ WQNQTHEFERFPGAIVMTTNCLMKDKVFTLGPVGYPGLQH VGMVVSEENCTDPGLTPDAEKVLVRMYCDDDVAKKPNAEY






 WQSQQQTEFENVPAPVLFTTNCLMPPRPYTTSVVVGYEGMVH WQ N Q Q QE F A N F P GAVVVMTSNCDY S D R I WQNQQQKE FA NFPG A V V M T S N C I Y S D R I F T R S IV V G WP G V T H
 WQ N Q Q A E FARFPGPII MTSNCNYADRDIWTRSSIVGWP GV QH
 WQNQQVVEFAKFPGPIVMTSNCNYGDRIWTRS\|VGWPGVNH WQ NQ QKELPAFPGAVLFTTNCDYADKVFTS GNVSWPGLGH
 WQ NQTK DFAKFPGAIVITTNCLMPPKLFTLGPVGYPDINY WQDQQQQEAHFPGPIIVMTSNCLYQQRLWTRNVVGWPGVSH


 WQNQTK DFHRFPGA IVVT TNCLMPP K L F TVG PVVGYPGLNY HGPVLFTSNCDVPPKPE HVDRIFTTGAVGVVGCAB WQNQQKKEFANFPGADVMTSNCLYAERRLFTRSVVGWPDVAB
 $W Q N Q Q V E F A K F P G P V V M T S N C N Y G D R I V T R S G V G W P G V Q H$
 WQN QQQVEFARFPGPVVMTSNCI Y D DR I WTRSSIVGWPGVSH WQNQTKDFAKFPGAIIVVTTNCLMPPKLFTDGPVGYQGINY

 WQDQQSDFAAFPGPVVLTSNCLYKGRVFTAGPVGWPGVRH
 WQNQQKELPDFPGAVLFTTNCDQNPRIFTS GNVGWPGCVH

 VDVIFAME ENCSPPADVDMYAEKY QVTLVVSVSTVIDDP GI E H
 WQDQHKE F QAFPGAIDFNTNCDYKDRLFTWGEVGWPGVKH


 WYRQQKDFAEFPGAVLMTTNCDYADRDFTTEEVGWA GVRH WQDQQKE FAEFPGPIVMMTSNCLYRGRMFTAGPVGWAGVRH


| UniRef90 D4L9P5 | I PRK ENGEKDFSEDIAHAKALGGYPEDAP |
| :---: | :---: |
| UniRef90-K2E4J5 |  |
| UniRef90-M1SJ99 |  |
| UniRef90_Q8PS69 | I HEKEDGTKDFTSLIEQAKMSKPPEQL ESGTI |
| UniRef90-N9XZH9 | K T LED GTKDFSK\IQKAI E L G GFKED Q Q VKEI |
| UniRef90-V3TW52 | LEGDDFSAVI AQAQHLLSGFPY SE\\|EHLI |
| UniRef90_B8FG46 | $V \mathrm{GDRPAGGAKDFSAAVALL}$ |
| UniRef90_B0JIR2 |  |
| UniRef90_E5Y3T8 | K NR D F APLI LKA LIELP GFAEDAP GKEVV |
| UniRef90_UPI0003B47B7B | ED D DFSAVIESA L L A D GFKY SEDPHDI |
| UniRef90-R5JYM9 |  |
| UniRef90-H1Z1K0 |  |
| UniRef90-B5EHH7 | $V E$ GWDFTPVIDKALSL |
| UniRef90-M1P1F4 |  |
| UniRef90-H9ULC1 | EAVD GRKDFSAII EQAKI CPPPTQ EETGG S |
| UniRef90-V5C3U1 | LDGD DFSTVISSAQQLAG F P Y E IEQQI |
| UniRef90-G7V7V2 | I GP DKDF TPVIEAA LAEEGFKEDAPEK |
| UniRef90-L0HC29 |  |
| UniRef90_C4LA04 |  |
| UniRef90-D6EAH1 | D A NKDFGPVIESALELLGGFAEPRAVAAEEGAAWL |
| UniRef90-X1EWZ3 | EFEEARAMEDAKQIVRSA |
| UniRef90-H6SM61 |  |
| UniRef90_B1WRV9 | L S S D D K GVP D Y S LA IJE T L K M A F T T D E A P R H V V V |
| UniRef90_UPI0004224788 | EGDDFSEVIACAEA |
| UniRef90-C9R9K6 | S D R N K P V I E K A L S LP P LP EAP GP T T |
| UniRef90_UPI0003637EDA | S D GNFAPVIQAARAL P GFKDEAGAEK |
| UniRef90-E5YCZ9 | LEGDDFSQIV A QAQVCEGFPYN EDEHM |
| UniRef90-A8H1E5 |  |
| UniRef90_Q6LG35 |  |
| UniRef90-Q3M890 |  |
| UniRef90-F8THH9 | RRYNYAEREDLSR DIVRSAADAFRERRGK VR DDI |
| UniRef90_UPI00045E66BB | 1 V G G DFAPVIEAALDALPGFSEDA |
| UniRef90-S0G462 | PD A D Q PV D R A L A M GFEE D A D K A V |
| UniRef90_R5D327 | GEEKDF TPVIEKALEC G G Y G K D HPMYGVNGGNTV |
| UniRef90_UPI00046EA4F2 | GDDFSEVIEE KALTLDGFAY D E I P HM |
| UniRef90-K0NMP4 | 1 P D REE GGKKDFSA I I M M A K C C P PEELETGQ T G |
| UniRef90_UPI0002F944E6 | L NA GVD GS $\square$ D F D P Al R K A L E Q P GFREDEVTNVP |
| UniRef90-F7XLR7 |  |
| UniRef90-L8M1W9 | LS A QVDGSLL DFTPVI QKA Q ELP GFSE ESEYRQVV |
| UniRef90_J1L1W9 | I PEAAD GTKDFSAMLRHAQGCQPPKNLHGRARPDGNRDL |
| UniRef90-A3QBU2 |  |
| UniRef90_R6VVS9 | E AVNGRKDFRCIIELAKH C C A P Q Q L T G S S |
| UniRef90-A7VHG0 |  |
| UniRef90-B8GJA5 | P A A D GSKDFSAVIARA K T S P P P TSIGNGMDLL |
| UniRef90-B8EBN7 |  |
| UniRef90-N9TZG3 | LEGEDFSAVI AKAQTLD GFKH E ELEHF |
| UniRef90-V5F4U1 | HT GHDFSAVIEE KALECEGFKF D E I P L Y |
| UniRef90-C0QFE0 | VA D R Q G K T |
| UniRef90_R8APR2 | LEGEDFSAVI AQAQAMPGFLHT E I E Q L |
| UniRef90_A6VL83 | L E E D F P V E K A LECDGFPYT ELEHLI |
| UniRef90_C4UF43 | LEGDDFSPI I D Q Q Q M G P P E H M |
| UniRef90-B6WY49 |  |
| UniRef90-D1A2I6 | ADRNFAPLI QAAKALPGFPEDGP EQF |
| UniRef90_U7UVL7 | D DN K DFTPVINKALLELGGGYAED HEMTGDNGGKTV |
| UniRef90-D4ZZW4 |  |
| UniRef90-A0A014LW28 |  |
| UniRef90_D8K370 |  |
| UniRef90-Q2RM63 | K NRDF TPVI EKAKSLL P P L E EKAGGELL |
| UniRef90_G7LL56 | LEGDDFSPVI A A A R L A G P Y S Eli HLI |
| UniRef90-A4SQN8 | LEGDDFSAVV A A A L S L D F K H T ELEHF |
| UniRef90_UPI0002E18FB6 |  |
| UniRef90_Q6ANW9 |  |
| UniRef90_C9P3S1 | E G D P N QVIECA L E C G F L H D E M I |
| UniRef90-W0LDZ3 | LEGEDFSAVI S CAQQLNGFPYN ELEHLI |
| UniRef90_Q07X28 | $V E$ GDDFSEVIN |
| UniRef90-E8XTR2 | LEG EDFAPVIA Q ALQLP GFR Y S ELEQE |
| UniRef90-I3BTR4 | D NGNYAPAlQ A K ALL PGFKEDSEAKF |
| UniRef90-Q8EH67 | V T GDDFSVVI E KALSNDGF HYDE\PHNI |
| UniRef90_UPI000329D652 |  |
| UniRef90-B7JYM8 |  |
| UniRef90-K0C386 | L E HGDFTLADEAAKAAE GFTED EEEK S V |
| UniRef90-T0E6N8 |  |
| UniRef90-W9HFS4 | DNGDFSPVIQAAKAS PGFGQNVGGGGDGERT |
| UniRef90_S9S910 | $V$ S GQDFSAVIAAA ${ }^{\text {L }}$ LEAPGFTDSASTGE H |
| UniRef90_C0D661 | GEEKD F S PVIK T A LR L G G Y R E P R C LT G $\square \mathrm{NGGGSGT}$ |
| UniRef90_G1UT13 | CKGR DFAPVIAKALELPGFAEDEP GKE |
| UniRef90-A2FIM7 | VPDRKTEGRKDFSEI I A L A A K K CPPPKQLESGG EV\| |
| UniRef90_UPI0002882146 | PKKND GTKDFSEII NKALELGGGFKED E E V P E |
| UniRef90-G3IWP4 |  |
| UniRef90_K6U227 | P Y EPSEVD KMA DKLI ELDA TENFKKRKERKIEVPKKTQKA |
| UniRef90_Q3AB48 | ANRDFSEVI K K A L EL |
| UniRef90_UPI0003811C7A | GTGNE VQT LTAENIVTRAI ESFKNRRDVKRTLPGKDVTA |
| UniRef90-B5EHZ4 | AGWHFDEVINKALE CPDLPDAP G |
| UniRef90-T3RSY9 | GLD R S K LDELLS N T L I E K H W |
| UniRef90-B4WRS3 | $L P$ P A E Q GI P D F T PVINK A L S LP GFSEDVA A A T P P K S V |
| UniRef90_UPI00041EC984 | D DRDF TPVIEAALAAPGFTDSVK TGEH |
| UniRef90-Q21AN5 | EGSDFSLAIDD KALLAMEGFAADEAPHY |
| UniRef90-L1QM07 | EADK NGVKDFSVI IEQ A K K C A TEDESG E |
| UniRef90_E1Z521 | E GEMGRTK D Y S AL I SKAQELP GFEYEPP |
| UniRef90-J7Q787 | ADENFAVVVQAAQALPGFAEDAP EKTI |
| UniRef90-Q6ANX0 | A D R VMGKAKDFSAI I K Q A G C C APEEDETGG TI |
|  |  |


| UniRef90 D4L9P5 | -VIGFGHAT 410 | 420 |  | $\mathrm{HFFl}$ |
| :---: | :---: | :---: | :---: | :---: |
| UniRef90-K2E4J5 | LSGFAHNAVLS SADE |  | GA A V S GK | KHFFLV |
| UniRef90-M1SJ99 | TVGFGRETLLNAADTV |  | D LVAT GK | R HVFLLV |
| UniRef90-Q8PS69 | MGGFAHEAALSVADKI |  | D AVKTGKI | S R FMV M |
| UniRef90-N9XZH9 | IVGFGHEATLKNADA |  | NGVKNGA | K HFFV |
| UniRef90-V3TW52 | TVGFGRQTLLNAADTV |  | DLVAQKK | R HVFLV |
| UniRef90-B8FG46 | VGGFAHHQVLALLADKV |  | $\checkmark$ D AVKS GA | K R F V V M |
| UniRef90-B0JIR2 | MVGFAHNTVLSVADTV |  | NALKQGK | R HFFLV |
| UniRef90-E5Y3T8 | TVGFGRKTLLDAAPAV |  | DAVKS G | R H ${ }^{\text {PF }} \mathrm{L}$ V |
| UniRef90_UPI0003B47B7B | TVGFGRNALMDAAPAV |  | E QVRAGNI | K HIFLI |
| UniRef90-R5JYM9 | TTGFAHGAVLSHADQ |  | S SIKKGN | K H I F L V |
| UniRef90-H1Z1K0 | TTGCAHHAVLS 1 A DAV |  | D AVKQGR | K R F V V M |
| UniRef90-B5EHH7 | LVGFGHEAVFKVAG | P VI | DAVKNGA | RRFFLI |
| UniRef90-M1P1F4 | $\bar{M} V G F A R N A V L G V A D K V$ |  | GAVKAKA | RHFFLV |
| UniRef90-H9ULC1 | 1 GGFAHDQVLALADKI |  | VDAIKS GA | K RFVV ${ }^{\text {M }}$ |
| UniRef90-V5C3U1 | TIGFGRQVLLNAADTV |  | DLVAQKK | R H VFL V |
| UniRef90-G7V7V2 | MVGFARNAVLSVAPQV |  | ENVKEGK | R HF |
| UniRef90-LOHC29 | ITGCAHEAVLALA GTV |  | EAVKK G D | KRFVVM |
| UniRef90_C4LA04 | MTGFARNALMAAAPAV |  | D QVKA G N | K HFFLI |
| UniRef90-D6EAH1 | TTGFGHGAI L | GS A D A | DAVKQGA | S HFFLV |
| UniRef90-X1EWZ3 | VA GFTAENI FTMLGG | Y R P L | VDAl 1 T G R | R GVA GVV |
| UniRef90-H6SM61 | GFAHQQVLA LAGA |  | EAVQQGA | RRFVVM |
| UniRef90-B1WRV9 | MVGFAHNTVLNVSEQV |  | EAVKK G E | R HFFLV |
| UniRef90-UPI0004224788 | TVGFGRNALMEAAPAV |  | DQVKQGN | S HFFLV |
| UniRef90_C9R9K6 | TTGFHHQAVLQHLDRI |  | D L V K VGK | RHFFLV |
| UniRef90_UPI0003637EDA | T 1 GF GRDAVL GVADQV |  | DAVKS GA | R H |
| UniRef90-E5YCZ9 | TVGFGRQTLLNAADTV |  | DLVSQKK | R HVFL |
| UniRef90-A8H1E5 | TI GFARNALMAAAPTV |  | ENVKS GA | K HFFLV |
| UniRef90_Q6LG35 | TVGFGRNALMAAAPAV |  | NEVKAGN | K H F |
| UniRef90-Q3M890 | TTGFARNAVLGVADT |  | NAVKQGD | RHFFLV |
| UniRef90-F8THH9 | PADHGNDDTLTGVSE | K G T WQPL | DLI A N G T | K G V V GV |
| UniRef90_UPI00045E66BB | TVGFGRDTVMGVADKV |  | D AVKA GA | Q H |
| UniRef90-S0G462 | MVGFARHAILDEKDDI |  | A AVKAGRI | R HFFLV |
| UniRef90_R5D327 | MTGFAHGTVLKEAGRI |  | NLVKNGK। | R H F |
| UniRef90_UPI00046EA4F2 | T $\square$ GFARNALMAAAPAV |  | ENVK S GA | K H F |
| UniRef90-K0NMP4 | GF GHNQVMALADKI |  | E AVKS GA | K R F IV M |
| UniRef90_UPI0002F944E6 | T T GFARNAILSVADQI |  | A AVKAGQ | R HFF |
| UniRef90_F7XLR7 | T A GFAHNAALSVADKI |  | D AVKGGQI | S R F V V M |
| UniRef90-L8M1W9 | TTGFARNAVLGVADKI |  | D AVK Q GKı | R HFFLV |
| UniRef90-J1L1W9 | $\square \mathrm{T}$ GCAHGAVLAI A GTV |  | DAVKAGA | R R F V V ${ }^{\text {M }}$ |
| UniRef90-A3QBU2 | TIGGARNALMAAAPAV |  | ENVKNGS | K HFFLV |
| UniRef90-R6VVS9 | IGGFAHAQVMALLQDQV |  | EAVKN G D | R QFIV 1 M |
| UniRef90-A7VHG0 | TTGFAHGAVLSHADK |  | AAIKNGD | K H 1 F V |
| UniRef90-B8GJA5 | $\square \mathrm{T}$ GAAHDAVLA $\square$ A G TV |  | D A VK S GA | K R F LV M |
| UniRef90-B8EBN7 | TIGGARNALMAAAPAV |  | ENVKS GA | K H F F L V |
| UniRef90-N9TZG3 | TI GFARNALMQAAPAV |  | D RVKS GD | K H F F L V |
| UniRef90_V5F4U1 | TTGFARNALMEAAPAV |  | EQVKA G N | RHFFLV |
| UniRef90-C0QFE0 | VGGFAHNQVLALLADKV |  | EAVKS GA | KRFIV M |
| UniRef90-R8APR2 | TVGFGRETLLGAADTV |  | D MV A A K Q | R HVFL V |
| UniRef90_A6VL83 | TVGFGRKTLI DASDAV |  | DLVKAGK | S HVVFVI |
| UniRef90-C4UF43 | TVGF GRQTLLNSADTV |  | DLVSRKK | R H I F L V |
| UniRef90-B6WY49 | LTGFGRETLLGAAPAV |  | DAVAQGK | R H I F L V |
| UniRef90_D1A216 | TVGF GRDAVLSVADKV |  | EAVKQGA | R H F |
| UniRef90-U7UVL7 | MTGFGHGTVLGVADKV |  | D A V K A GA | K HFFLV |
| UniRef90-D4ZZW4 | KTGFARNAVLNVSDQV |  | EAVKQGK | R H F F L V |
| UniRef90-A0A014LW28 | TVGF GRQQL V R |  | ELLAQNK | R H |
| UniRef90-D8K370 | T TGFGREAVMGVA GAV |  | D AVKSGA | K HFLL V |
| UniRef90-Q2RM63 | T T GFHHQAVLKLAGQ |  | DAVKAGK | R H F FL V |
| UniRef90_G7LL56 | TVGFGRETLLSAADTV |  | DLVAQKK | R HVFL V |
| UniRef90-A4SQN8 | TI GFARNALMQAAPAV |  | EKVKAGE | S HFFLV |
| UniRef90-UPI0002E18FB6 | MVGFAHNTVLSVADTV |  | EAVKQGK | RHFFLV |
| UniRef90-Q6ANW9 | VGGF GHNQVLALK ${ }^{\text {V K I }}$ |  | D AVKS GA | K R F V V M |
| UniRef90-C9P3S1 | TVGFGRNALMNAAPAV |  | DQVKQGN | K HFFL V |
| UniRef90-W0LDZ3 | TI GF GRQVLDNAADTV |  | DLVTQKK | R HVFL V |
| UniRef90-Q07X28 | TI GFARNALMAAAPTV |  | ENVKNGS | K HFFLI |
| UniRef90-E8XTR2 | TVGF GRQTLLSAADTV |  | DLVAAKK | R H $\square \mathrm{FL}$ L |
| UniRef90-I3BTR4 | TTGFGHKTVLGVADKV |  | V D AVKS GA | Q HFFV |
| UniRef90-Q8EH67 | T 1 GFARNALMAAAPTV |  | VENVKNGS | K H F F L V |
| UniRef90-UPI000329D652 | TVGFGRETLLGAADS |  | DLVSREK | R H $\mathrm{DF}_{\text {F }} \mathrm{L}$ V |
| UniRef90-B7JYM8 | MVGFAHDAVLKVADTV |  | EAVQQGK | R HFFLV |
| UniRef90-K0C386 | MVGFGRHTVLSVADKV |  | EAVKS G Di | S HFFVV |
| UniRef90-T0E6N8 | TVGYS E Q T I G Q Lid | D S P G T VK P L |  |  |
| UniRef90-W9HFS4 | TI GFARDAVMGVAGTV |  | D A VK S G A | R R F F L I |
| UniRef90-S9S910 | QVGFGHHAVLGLADTV |  | GAIKS GA | VKHFAVI |
| UniRef90_C0D661 | T TGFGRHAVLNAAGQV |  | EAVKS GA | R HFFLV |
| UniRef90-G1UT13 | LTGFGGRQTML NAAPKV |  | EAVAQGKL | R H DF L V |
| UniRef90-A2FIM7 | TVGLDAHDQVLALLT DKı |  | DAIKAGKI | K K F V S M |
| UniRef90-UPIOOO2882146 | LVGFGHKATLSHAEKI |  | KLVKEGK | K R F F V I |
| UniRef90-G3IWP4 | TVVGFGRDAVLGVADKV |  | DAVKSGA | K HFFLV |
| UniRef90-K6U227 | $\square$ AGFSTEAVLGALG | NK L D P L | VVI A A GKı | K GVVAL |
| UniRef90-Q3AB48 | TTGFHHTAVLS LAD T |  | E GVK K G K | K HFFLI |
| UniRef90-UPI0003811C7A | QVGFSLDTI DRHYGCL | D R $\quad 1$ | ASAL ${ }^{\text {d G K }}$ | K G V S L |
| UniRef90-B5EHZ4 |  |  |  | VKHFLI |
| UniRef90_T3RSY9 |  |  |  |  |
| UniRef90-B4WRS3 | TVGFAHNAVLSVADTV |  | D A VKQ ${ }^{\text {H }}$ | R HFF LV |
| UniRef90-UPI00041EC984 | LVGFGHDAVLGAADKI |  | $V \mathrm{GAVK}$ A GEI | K H F AV I |
| UniRef90-Q21AN5 | TTGFARNALMQAAPAV |  | DQVKA GN | KHFFLI |
| UniRef90-L1QM07 | $\square \mathrm{G}$ G A HAQVLALLADQV |  | VEAVKT GA | K K F F V M |
| UniRef90-E1Z521 | TTGFARNAVLGVAGEV |  | $V \mathrm{KAVQEGHL}$ | K H |
| UniRef90-J7Q787 | T 1 GFGRDAVLGVADKV |  | DAVKSGA | R HFFLV |
| UniRef90-Q6ANX0 | VGGFAHNQVIALADKV |  | VEAVKS GA | KRFVVM |
| UniRef90_UPI0003643B1B | T V G F G R E T L L G A A D S |  | DLLVIS R E K\|L | K $\mathrm{R} \mathrm{H} \\| \mathrm{I} \mathrm{F} / \mathrm{L}$ V |

## UniRef90_D4L9P5

 UniRef90-K2E4J5 UniRef90-M1SJ99 UniRef90-N9XZH9 UniRef90-V3TW52 UniRef90-B8FG46 UniRef90-B0JIR2 UniRef90_E5Y3T8 UniRef90-UPIO003B47B7B UniRef90-R5JYM9 UniRef90-H1Z1KO UniRef90-B5EHH7UniRef90 M1P1F4 UniRef90-H9ULC1 UniRef90-V5C3U1 UniRef90-G7V7V2 UniRef90-LOHC29 UniRef90-C4LA04 UniRef90-D6EAH1 UniRef90-X1EWZ3 UniRef90-H6SM61
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UniRef90-B8EBN7
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GGCDGAK PGRTYYTEFVEQVPDDCVVLTDACGKFRFFD GGCDG SEGERSYYTDLGTTIPNDWVILTLGCGKYRL GGCDGDKN ERSYYTELAQSVPQDSVILTLACGKFRFNA AGCDG RAKSRNYYTDFAKALTPKDTVILTAGCAKYKYNK
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E L R P ${ }^{\text {I }}$ ITSTAEEDLKDLLE
 LQPI T T PAKDLA A $\square K$ K S T P D E DLK K A LL
TYNLHPTTAPEQDLKAMLAGR
$\square$ TVEEDMK $V$ MV

| $\square$ |  |
| :--- | :--- |
|  | $\square$ |
| B47B7B |  |
|  | $\square$ |
|  | $\square$ |

DLGPITTAEQDLQH
$\mathrm{A} \square \mathrm{G}$
NI MPI STPDEDLKATL

NLMPITTPEEDLLKSLL
$\square G K N S T V E E D L K R M V$
T FDLRPIT TVEEDLKD\LA


TYNLQP TTPDQDLVACA
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T $\quad$ Q E EVYK V V K ME

ITSKNSTVEED
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T T G R
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MFCFQCSEA QTQNGTGCT
QTMRSD
MFCYQCQETTKN
$M F C Y$ AGCDLLRGICGKDERVANLQDYL

MLCFQCEQTDRTGLTPGCAGPLGNCGKDP TISDLQDLL
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 MF CYQCEQT TRSPAGDGCTSEPGTCGKDEATAGLQD』L
$M Y C V Q C E Q S \quad N K G G C A V K V G S C G K T A E V A D M Q D V L$ MYCYQC EQTAQGVCVTVGLCGKTAEVAADQDLL

MFCFQCEQTARQDGQAGCASAKGVCGKDETTADLQDLL MFCYQCEQTKRNDA $\square A G C A S Q Q G T C G K N E \| T S D L Q D I L$ QTKSGTGCT D $\square$ GVCGKTPEVSALQDLL

MF C VQCEQT $\square$ RTPVSSGCSYSMGMCGKTAEDSDLQDVL MFCFQCEQTDRTGATPGCASAKGNCGKDATTADLQDLL MFCRQC EQTADHYCTTQG $\square$ CGKTSETAACQDAL

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QG $\square$ G C T $\square \mathrm{C}$
GVCSKEAVVANTMDVL
MYCVQCEQS
NKGGCADK $\square$ GSCGKTAQVANLQDVL
TPAGDGCAQGVCGKTAQTSDLQDLL
MFCVQCEQT■R TPAANGCSYAQGMCGKTAETSDLQDLL


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TVGVCGKTAEVAEMQDLL
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MFCRQCEQTQ
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MYC $\square$ QCEQT $\square$ HTATGTGCRFARGDCGKTAA $\square$ SDQQDAL

ANLQDLL

ETAKGTGCT
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 $L Y$ A L K G L A A VA V R G Q E M A Q A L F A T L T N V N F D Y QL T K E TA A

 $V A A L Q Q S L S A W A D L A R E A P R A F F A T L T N V N F D L A M R D S D R T$




 $V$ HAA K R L A A A F A D TPA A A A R A L F V T V T N V N F D A D VI F A RI R I Y L L K Gll S F Y S S K L R K L G A T L F S T I T N V N F DVVRIVR G L K L

LRVM Q GVSVYA DRAA RVGHAWFTTVTNVNFDATRFEALIA IE A A K GLS Q Y A Y RLR QVLDALIFTTVTNVSFBPARLEE QLLR

TY Q LKG G GELSS RLHRDLYALFTTLTNVNFDRTVFVKLIAA VYLLQGVAQYHYRAEFTLYGLFTTLTNVNFNATIKEAEAL $\square Y S V K G L G S L A H V A R T S P A K I E D A A V N T F D N G A I T D C R K L$
 VFALEGLATWCVRARGYGLDEDGTVEQNNEMFCYQCEQTP

## $\square E S \square K$ S VS A WC VQ A R K N $\square$ WT LIF S T L T N VN F G Q A $\square R A E L Q K$

$\underline{V} Y$ A $L K G \square S$ Q Y A $V R$ A R A M F T T L T N V N F T A T R F VT L LT E A A T

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

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 LRVMQGVSVYADRAAARGHAWFTTLTNVNFDLSMRERARLL 1 HTVKS SSLWCVAAREAGATTFSTLTNVNFDEERDAEQEG

## 

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 RDTAQLATTPLANHTWVAAASFAPTSTMEELLKQH PIAA
 YEAAAASAGKAPEADAGAAAKKDAVVLGADVVGLRSLVLY KAKVG $\square$ AGGTTEAGTVAELAAQGKALNLIESLDSDVNI RS RQKLQDDNLLNEKDNLKDINTCILTTEDEDIDRSRELLIY KAYQERKGEKASGPEAWQPAEDTA GLITQGRQYGVLTW NEDLAGLQDTLLI
EAVAAS LIDPTGTEAVIQFAPSDAKEKVDDVLGAYLLCLY EAVARDTGTT LSSGPATWQPAAELAGMLEQAANKVGADII G QAADASAGDATEPQWDESLSSQGQDASLLLLQEAEGNILY HAVQPWFGSMPHPLEWNSQAVAGGEVLGETLAGLQELLMY KSYEEKYGDPEAADWFENGGKDVY LKKGEQLSEENEDVRS K EFSE LLLTVTETDAQFDAGATDEATGKJLDDMGKDREDLQY KY IAAALGVEAQAPDMDNILKQESVA VVNKDHKIIGEDAN RRDALRAGQSADGDDEAYVALGACKHSDPDDQSMRELLTY TGPAAFVPASTTDGLDEQAASHGDLAGLEQVGPDVIGLR HKAAMAAGADEPGATLAELSAAAPMASI QRFVDRDGPSIV E EAARANGLQPEAADLDGLLAQAAEARIDDTVGPDIVGLR

 KA GADLNGLPEPGTTPSELAAAAPFAAIQRFMDRDGPSIV RY LIA D LQL PAQGEA LDQRAGEFADNRHRAEDGEDVLGLVR HRIAGAAGQPVTGAAAWQPADDLAGLLAQAQTGDDAGIET HHARLSAKMAAAGVQVPASATELWNSQAAAQGGVGDMLEV $R V H A E R D S V A A S A Q V G A A P D Y D L A W N A P E D A R S L K S L V L V$
$E V V A A D P G T T A A E R D A D R D A R A A R D G D E A R K A R L G E D V T G$ KGEAKEM DEKAGGDDGDKADWQADTEDDDVRSLRELIIY SGPAL FQPADSLEQLLRQAPSVADNADVEHLGSDVIGAR RADAMRAKARACAAAVGADDHDDPEAADQRFMDRDGPSVV EAAC LIRDQLRARYDAACAARHTSPETLSGPAGEAAS NEDLAGLQDTLI F EAARRRDGDRAHFAPAADLAGLLAQANDASVRAVGEDVI G EPNHAPDNPAASFDPANSPAELLQQASIASVKAGEETVLR HAHQPWFGSMAWNSDTHVALAGVGDMLEETLAGLQELLMY A Y LIA A CFELSVDKAAMDAAAPQTMVNRGHAEVGEDVVGL$R$ DGGCTKFGV CGKDPN R】ACANAGAPTYTGEPESAATWDADDVGEDVVGLRALLLY KVLAAPTELNLAGKSTAEDPKRAAAMGNEDAFSLNE ATY A DMESLQKTLLY
QD TQSLQETLLY
VRDRVRAGVPAEGTDLLAQAAEHGVTVGLPLVGPDVVAAR
 QASKKELESS $\square E \square E D C E K Y \square K E N \square D K K R P N Q M N A D K D I Q S$ NEDIASLQDTILDF RAL TLDRERARRLAEAAGADLASLPEPATW DAIAMRLAVDPAATVANPMALQLVSSDLGDLQRQAAEFTR KAACQQAAIFTPNRDKALIGDNILSLRLLCLYGLKG GTAAVKVMDLLDGAHTSKLGVPVPTVVSQD KIEGKCIL GTAAVKVMDLLDGAHTSKLGVPVPTVVSQD KI EGKCIL NHLCHRFTAAFEAQNGVAFSEPVPDEAAWQYHALRELLVY N E D DA SLLQDTLVF NEDIASSLQDTVIY AAAKGESKSVNDFASEPDHWLEVAETYSHAARQKNELATY RQLAYEAKCKEQNDPVKNFKHQWTDEF LTEEGKKFGVLRY LAEAAGADLSAPGTTASELAAAAPFAA QR】KRDDEALIDKKGGKA PTGDVANAEM QR
$\qquad$
NEDLASTQDT\|IF


QE $\square R N R \square Q \square A L A G K P \square A \square P A \square A D A D W P F A D L Q S L Q E A L I Y$ AGGCTKFGVCGKNP

D $\square$ ASLQDTMIF
EDMHSLQELLI Y

K E LIA GKVK DEEEEFEEKSKTVGVLRTPNEDDRSLKELVHY NED I QSSLQETLLY E E LIAS IQDT IIF

REELKALATDEEKKKAENYGADLVNWENEDVRSLRELVMY LARLQD TMIY SLQETMIL
 KAYVETFGVPTPVKALYELLKQTREMGLEDEDKVYTHSEM KAYVETFGVPTPVKALYELLKQIREMGLEDEIKVYTHSEM

UniRef90-W4P8T8
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UniRef90
T1FTM7 UniRef90-18SK36 UniRef90_UPI0002D793F4 UniRef90-B8BYB2 UniRef90-UPIO0047BBAOA UniRef90 W1HYY5 UniRet90_COZKM4 UniRef90-UPIIOOO35CC76F UniRef90-E6WOM1 UniRef90_B7IGS2 UniRef90-A8AB38 UniRef90_Q6WRT6 UniRet90_A6TWR3 UniRef90-W8KH32 UniRef90-K2RT13 UniRef90-A0A015SGC2 UniRef90-V4JMW5 UniRef90-F6D5S8 UniRef90-M8DDP5 UniRef90-F6D313 UniRef90-F9ELK8 UniRet90-Q7M961 UniRef90_C7NN08
UniRef9O_A7GXH2 UniRef90-A7GPC5 UniRef90-GOEHG6 UniRef90-GOEHG6
 180 HDNDVIDA

190
AlTD HS ${ }^{2}$ LNRDQAEVGADVYSHHARTLGFRDSAVDADIVKLLLGTDP GLKGVCA

Y AHAA GOMA G1 KGI AA YAHHAMMLGRYNKKI NKFIEEALVATTD VLYGLLGMGAFAWAHAAELGKEDDE:YAF:CHALAAAAD GLKGAYMEHAAVLGQTDDVVYKTFHEIMSFLG DKPD LRA LMVYGLKGVYAHHAQVLGYESDEVYAG| EAALDF LA H GLKGAYAHHAEALGHTDPTVYADVQESLHFLCSPAA GLKGLCAYTKEA SLLGKNDAAVVNEFIRTAMCTLAGVSP GLKGLAA

YCDHAYVLDHGDPSLLAFLHOGLAATLN ALNLYGLKGLCAYDHHAAVMGYTDPAVEADVEDALLGTDT AFNLYVLKGICAYAHHAHVLGHDSAEVFAGDESGLAYLAS GLRMLSLYGLKAYMEHAHVLGQHSEAVYAQYHHYMAWLGT MQMLLYGKGISAYAYHAAVLGKDDPNLYEFDYEGLAATLS LLCLYGLKGAAAYIEHARVLGQTEAGVFHEFMAFLATEPT AAKDGIGERALVVYAHHARALGKESDAIYAGVEAALCFLLAA GLRGLAAY AYHAAALGYRDDAVSSFLHEGLAALAD GVKG| A A

YADHAQNLGHENEKIDEFDEKALSATTD GVKGVAAY AHAYARHARVLGYQSDEVDAQAEEDLDYKAS GLRNLVLYGDKAYSEHARVLGKEEAAVSAEFHRIAAFLAT LKGVAAY AYHARELGLRDEKVDAFMHEALFTTLTNVNF GLKGl AAYAHHARELGVRDEQIDAFMHDALFFTLTNVNF LRALLLYGLKGVYAHHAEVLGEQRAETYAGIAHALDVLAH GLKGAYAHHAEALGHTDPAVYADVQAYLHFLCSPAA A GLKGVAAY ATHARQLGYTDPFVDQVTHEALYMTLTNSNF GLKGVAA YATHARELGYSDDEVQEALYTTLTNSNF GLKGVCA GLKGAYAAHCQA GLKGMAA

GLKGAYAYHARVLGKRDEE
VDAFVHEALFKTLTNVDF ALNLYGLKGDCAYAYHAAVLGSTSAEVFAGVEQALAGDPS GLKGVAA YAYHARELGYTDPEVNEALVSTLTNVNF GLKGVAA YATHARQLGYSDPEVHEALYSTLTNSNF LMQAVLFGDKGVY 1 SHAYLLGEKNTDINTFI HQALAGYDN GLKGVAA YATHARELGYSDPEVQEALYSTLTNSNF NPGTTPAKGTAAYGEHARVLGFEEDAIAAELHRAFLATDS LLCDYGMKGAAAYMEHAHVLGQYNNEIYAEYHKDMAWDGA A A AYMEHAHVLGQYDNTLYATYHRIMA WLG N WPA VTKQTEGKGINIYTHSEMLPAHGYPELKYSHLK GNVGKAW VTKQTEGKGINIYTHSEMLPAHGYPELKYSHLKGNVGKAW GLKGLAS ALKGIAA GLKGVAA YATHARQLGFSDPEVHEALYMTLTNSNF GIKGACAYMFHKKQAPDAYPDQEANQVIDGGLYKIMMAALNF ALKG $\square$ A A YTYHARLGYTDPEI DAFLYSTLTNVDF GLKGMYARHARLLGEWDDS IGEDVFEILSFLDDGNKDQRH GLKGTSAY AHHARELGARDEQVDAFMHDALFFTLTNVNF GLLRLILYGLKAYGEHARVLGVEDGAVSAEFHRIAAFLAA GSKGAYAAHCHQ $\frac{\square}{G}$ SMDEDVMSGDHEVFAKLAS

ALKG\|AA
A L K K Gl A A
GLKGI A AYRVQA
Y A THARML GQYDNAIVYA QYHK I MA WLGA

ALKGIAAYR-TH AHYGADCGYSDPEVHEALYMTLTNSNF YYYHAREDPFVDTTTHEALYMTLTNSNF GDKGDSA YYYHARSLGYDDPEISYFLYKTLTNVDF LL R R AARDGEDVLCLYGLKGAAYMEHARVLGQTDTQVAA GLKGMAA ATAHHARRLGQSDAEVSAFMFATMTNVNF

GLKGMAA GVKGMAY AAHVEHAHNLGYQSPEI FAFMQHALTRNDI $A \square K G \square A A Y$

GLK GMAA YLYHAREDGYTDPEVDAFLERTLTNVNF
$\square A$ A
GLKGLSAYR
 GLKKLSAYRAHHAREMGYVDESVDATVHETLFHTLTNVNF GLKGIAAYRTHAAQQGYTDSFVDAVTHEALYMTLTNSNF LPA S SYPKLRENWGGSWVYQRQEFSEFPGVIVATSNCVVP LPA SSYPKLRENWGGSWVYQRQEFSEFPGVIVATSNCVVP

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UniRef90
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UniRet90
W2E5 UniRef90-E1SQY7 UniRef90-LOK8W2
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UniRef90- $A 6 W R T 6$ UniRef90 Q6WRT6 6 UniRef90-W8KH32 UniRef90-A0A017RVV1 UniRef90-K2RT13 UniRef90-AOAO15SGC2 UniRef90-V4JMW5 UniRef90-F6D5S8 UniRef90-F6D313 UniRef90-F9ELK8 UniRef90-Q7M961 UniRef90 C7NNO8 UniRef90 ${ }^{-A 7 G X H 2} 2$
UniRef90 ${ }^{-A 7 G P C 5}$ UniRef90-GOEHG6 UniRef90_GOEHG6
UniRef9__H8YYYB

210
220
230
240 GADALLLAVMRCGEASYKTLGLLDKANTSSFGHPEPTAV|K
DMDELLAQSLAAVGEVNLRVMELLDRANNETFGNQTVTQV
EI GPLLEEALALGGRANFLAMEALDAANTGNFGTPEPTRV



 DVGNVLDHCFKAGATNFRVMQMLSNAHTSTFGHPVPTPVS DANDIIGMALKCGEVNVRTMQLMDEGAFERFGQMAP
 DVEDLLEHALGGLGRTNLSVLDDMLNRANSGSFGTPSPTTV S






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


 D IEELLQQALAVGELNLQVMALLEKANTDSFGAQTVTQV DVGQVLDACFRAGATNFRVMEMLSNAHTDTFGHPVPTPVVTM
 NLDEHI EMAMKVGEATTRVMDLLLDQAHTDSLGVPEPVEVS HPTSLLAKAMEVGNDNLKVMEMLDDANTGTFGAQRPGRA
 DMAHLLELVLECGKMNLKTMELLNNAHVETFGNPSPVKVK
SPEDMWSTVLKAGMMNLR DMETLDQAHLEHFGQPTPAKVE $D$ D D L L G Y A L R L G T L N L A V L E L L E R A N T GT FGGQPVP HP V
 DLKA WI DLVKETGKWNFETLKLLDKAN
 DV D A L L G NAMAI GA LDNL K V M ELLLDAANT GRFGHPEPTVV D M GALL E C S M E I G QM N F K V M S I L D R G E T D K Y GHP T P T Q D M N A L L A C A M E I G Q M N F S V M R ML D A G E T H S WG H P T P T Q V N

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


 $D M N A L L E C S M E I G G Q M N F K V M S I L D A G E T T K Y G H P T P T Q V N$ NLDEHL QMAMKVGKAADKVMELLDRAHTDHFGVPQPITVS NMQEHI DMAMKV GNAAVRIMDVLDDAHTTHFGIPQPVQV S


 SVEEHINNTLVVGGQATVKVMDLLDRAHTGKLGDPTPVVVS DMDS LL E L C L R CG QM NL K V M E ML DR GHVVETFGQPAPATVVK



 NLDEHLKMAMKDGRAAI RVMELLDQAHTSRFGDPQP




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



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UniRef90_H8YYU8
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 WQNQQKEFAQFPGAIVMTSNCIYKDRIFTRSIVGWPGAKH WQDQQSDFAHFPGPILMTSNCIYRQRIFTTGPVGWPGVRH WQNQVHDFAKFPGAIVVTTNCLMSPKLETVGAVGYQGLQY WYRQKVDFADFPGAI AVTTNCVYKDNIFTINETGDAGVPH WWKQTEEFEEFGGAI LMTTNCLYKDRVFTTGLVGFDGVSH KGAQVMTTNCIIGPRKQYKD
 WQDQQVDFANFPGPI IMTSNCMYKHQIVFNGPVGWPGVRH
 WQNQQQEFARFPGPILMTSNCNYSDRIWTRSIVGWPGVRH
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 $P G A \square L G T T N C L M P \square K G D Y A D R E F A D R L F T Y G T A G L E K A T K$


 WQDQQQQDFAAFPGAIVMMTSNCMYRQRMITTTGPTAVPGAKH $P G A \cap L A T T N C D M P I R \quad K D A T Y A D R M F$
 WQNQQRELLNFPGPVVFTSNCLMKPRPYTTNEVGYAGLNH $P G A \square L G T T N C V M P I R G S Y S D \quad R M W T Y G C A G L E G V P K$ WQD QQKDFDAFPGAIVMTSNCLYGDRDFTAGPVGWNGLPH WQNQQSEFARFPGPIVMTSNCIVDDRIWTRSIVGWPGVSH WQ N Q QVEFARFPGPIIMTSNCIYDQRIWTRSIVGWPGVQH $\begin{array}{lllll}C G K F R & F N D D \\ C G K F R & F N D & D\end{array}$
WQEQRTDF QKFN GP I L IT TNSNYKDK $\square Y$ T T GMVGWPD DP H

 WWE QHGDFKAFPGAILMTSNCLYRDRDFTAGPVGWDGIPH










 WQMQKREFDQFPGPVLATTNCVYRDRDFTTRATAVVPGQR


 WFDQRTT FKKYPVAVLGTSNCVYKDRIFTLGVAQLPGVKH
 WFDQRNTTTKYPVAILLGTSNCVYSDRMFTS GVAQLDGVQH



C GKFRYN



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UniRef90-D6Y2R3 UniRef90-C5BEA9 UniRef90-K6WAO1 UniRef90_Q1MPA7 UniRef90_A0A031JLR7 UniRef90_UPI00037C84E1 UniRef90-G8M9A2 UniRef90-A8J091 UniRet90_C8WJX6 UniRef90-J6UC95 UniRef90-B5ERR7 UniRef90-A9EP22 UniRet90-F1ZBK8 UniRef90-O2RQN9 UniRef90-R4KGA5 UniRef90-A1HPL5
UniRef90 K5YY32 UniRef90- 13 CH 38 UniRef90-A81ZR3 UniRet90-W2E5X1 UniRef90-E1SQY7 UniRef90-LOK8W2 UniRef90-B2JWB4
UniRef90-D9RYH5 UniRef90-B7FZQ2 UniRef90-UPIIO00475EDE6 UniRef90-W4P8T8 UniRef90_UPIO003675530 UniRef90-A8M7L3 UniRef90-K8E9A2 UniRef90-J7IUG1 UniRet90_UPIOOO2C3F443 UniRef90_BoTDV4 UniRef90_UPIO0026313D2 UniRef90_S3JO15 UniRef90-E6WJC9 UniRef90-UPIOOO47D7E63 UniRef90-UPIOOO47D7E63 UniRef90-UP10003601C55 UniRef90-W4Q1D0 UniRef90-D9QPG7 UniRet90-L1JAK1 UniRef90-O67QNO UniRef90-T1FTM7
UniRef90
I8SK36 UniRef90_UPI0002D793F4 UniRef90_B8BYB2 UniRef90-UPIO0047BBAOA UniRef90-W1HYY5 UniRef90_COZKM4 UniRef90 UPIOOO35CC76F UniRef90-E6WOM1 niRet90_B7GKQ6 UniRef90B7IGS2 UniRef90-Q6WRT6 UniRef90-A6TWR3 UniRef90_W8KH32 UniRef90-A0A017RVV1 UniRef90-K2RT13 UniRef90-A0A015SGC2 UniRef90-V4JMW5 UniRef90-F6D5S8 UniRef90 M8DDP5 UniRef90-F6D313
UniRef90_F9ELK8 UniRef90-Q7M961 UniRef90-C7NNO8 UniRef90-A7GXH2
UniRef90 A7GPC5 UniRef90-G0EHG6 UniRef90-G0EHG6
UniRef90_H8YY U8


AGTDG RHKERRYYTQFAEAL PQDTLITAGDTKYRFNT AGCDAP GPGGKYYRDLATSLPNDTVILTTSCGKFRFND AGCDSPGSG NEYYRELAKS VPEDCVILTTACGKFRFND GGCDGREAG RSYFTDLVKQSPDSSVILTLGCGKFRFND GGCDAP GS $\square G N Y Y R D F V R M T P P D T L V I T L A C G K F R F N D$ GGCDGSENKGSYFSTRAK CTPGDSIVLTMGCAKYRFNH GGCDGARPGGRYYFHDLAMATPQDSLVLTLGCGKFRFNR GGCDG SQFDRNYFTELAEELPDDTLILTLGCAKNRF
 AGCDAP GKGGEYYRELATSLPPEAVILTTSCGKFRFND AGCDAPGSGGEYYRELATSLPNDTVILTTSCGKFRFND
 GGCDTPTRKGSYYREFVEKLDPKDTVVITDACGKFRDND GGCDGARA ERAYYADLARMLPQDTVVLTDGCGKFRL AGCDAPTKGRD YFRDLASSLPKECVILTVSCGKFRFND GGCDGAAKGGRNYFSDYAEATPDDSFILTDGCGKYRD GGCDSPK PQAKYYTEFVEKL PKETVVLTLACGKYRFND
 AGCDAPGKGGD YYRELATSL PADAVIMTTSCGKFRFN GGCDSPK PQATYYTEFVKKL PEDTVVLTDACGKYRFND SGCDGRMKQRHYYTEFAENLPKDTIVLTSGCAKYKYN AGCDAP GKGREYYRELAQRLPR
AGCDAP TDGREYYRELAKS VP
AGCDAP GKGRYY PDCVTSSCGKRFND
AGCDAP




GQCNDSNGAVK\|ALALSSALGVPLNDLP GQCNNSISTVKI A A ALAEAFDCSVNDLP GQCNDSNGAVVM A LDAL S E A T G DA V N D L P $G Q C N N S \square S T I K \amalg A A A L A E A F Q C D V N E L D$
V S I V L M WME Q K

V SIVLSWFEQK

| $V$ | $S$ | $V$ | $L$ | $M$ | $W$ | $M$ | $E$ |
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| $V$ | $Q$ | $K$ |  |  |  |  |  |
| $V$ | $S$ | $I$ | $L$ | $S$ | $W$ | $F$ | $E$ |

## UniRef90 F8ETT4

UniRef90-UPI000374C081
UniRef90-C5AM80 UniRef90_UPI0001D2E235
UniRef90_E8RGV9 UniRef90_LOKU78 UniRef90-B9M9C1
UniRef90- C3XC11
UniRef90_UPI00016A5CF4 UniRef90-UPI0003470F5E UniRef90-D8U1T3
UniRef90-B7IEB6

## UniRef90-Q2PCB1

 UniRef90-UPI0003B5655F UniRef90_E1IG05 UniRef90-K7SOK5 UniRef90-D6Y2R3 UniRef90-C5BEA9 UniRef90-K6WA01 UniRef90-A0A031JLR7 UniRef90_UPI00037C84E1 UniRef90_G8M9A2UniRef90_A8J091 UniRef90_C8WJX6 UniRef90-J6UC95 UniRef90-B5ERR7 UniRef90-A9EP22 UniRef90-F1ZBK8 UniRef90_Q2RQN9 UniRef90-R4KGA5
UniRef90 A1HPL5 UniRef90-K5YY32 UniRef90-I3CH38 UniRef90-A8IZR3 UniRef90-W2E5X1 UniRef90_LOK8W2 UniRef90-B2JWB4 UniRef90_D9RYH5
UniRef90_B7FZQ2
UniRef90_UPIO00475EDE6
UniRef90-W4P8T8
UniRef90-UPIO003675530
UniRef90-A8M7L3
UniRef90-K8E9A2
UniRef90-J7IUG1
UniRef90-UPI0002C3F443
UniRef90-B0TDV4
UniRef90_UPIO0026313D2
UniRef90_S3J015
UniRef90-E6WJC9
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UniRef90-W4Q1D0
UniRef90-D9QPG7
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UniRef90_A6TWR3
UniRef90-W8KH32
UniRef90-A0A017RVV1
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UniRef90-M8DDP5
UniRef90-F6D313
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UniRef90-Q7M961
UniRef90_C7NN08
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UniRef90 A7GPC5
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UniRef90_H8YYU8

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ATA THLS LLALG IKG L LGPTLPAYLTPTLVQKLQ
 A TAAVLLTMLHLGLNIHLGPTLPQFLTPEVLQVLVDTFGVR AVTVLLALLALGVRNILGPNLPAFITPPVLKVLVDRF A V S I L F T L L HLGGIKNII GP SAPAFLTPNVLAVI QENYNLQ

A A AVLLTLLALGLRNRLGPSLPAFLTPALLNVLVEKF
ATAVFLSLLALNVK $\operatorname{l}$ LHLGPSLPAYLTPNLLAVLQE

 AVA LLGLFNLGIDIHVGPSVPEFLSENVVEVLQDNFNLQ

 A A AVLLTGLSMGVKNILGPSLPAYVTPNVLSILQSEYNLM
 AV IVLLA L L S LGGVKI HL GPTLPAFLSPNVVKVLGDQFG

 AVAI LL GLFSLGVKIVVGPKAPEFITPGVLSVLQENFNLQ AVCILLTVDYLGLKNVFGPTKPAFLSENI CKYLKDE ACALLGGLFSLGVKNILGGRAPEFLTANVVDVLVQNFG ATAVLLTMLHLGLRDHLGPTLPQFLTPEVLGILIDRF VVILLTLLSLGVTNIVTGPTAPGFLTPNLLAVLNEKFG リVILLTLLSLGVTNIVTGPTAPAFLTPDLLA\|LNEKFG

T ILMMLLALLALNTKVRLGPTLPPFFTDTVKDRDTEQF $A V A I L L G L F S L G I K I R I G P K P P E W I T P G V L Q V L Q D$








 | $A$ | $V$ | $A$ |
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| $A$ | $V$ | $A$ |
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 A V A
 A V A I L
$A V A V L L T \square F H \square G \square K G \square L G P Q P P A F D T P N V F K L L Q Q T Y D \square R$






 RSWDMKLLERYEPFYPFCD

E G $\square E S T D E S S V V M G P T Q K R S W D M K L L E R Y P P F Y P F C D$ MEQKMFCYQCQ

REWDHKLLS YFKPFYPLC


E Y E MF CYQC E
RS WDLKLLDRYEPFYPFCD
RKWDHKLLERYEPFYPMQDF
RKWDFR LLKRYPPFYP DCD
MFCYQCQ
RKWDMKLLERYEPFYPVQDF
WDFKLLERYPPFYPI CD RSWDMKLLERYEPFYPFCD

WD RRLLERYEPI YPMQDF

 RD WDYKLFERYNAVYPMCDQ

MSMFCYQCQ
RNWDHRLLKDFPPFYP\CD
RDWDFKLLSHFRPFYPLCN
WDFNLLNRYEP $\square$ YPMCDQ
DDWSEKMGPSPKRNWDFKLLKRYPPFYPDCD

TALRNWDRMLLTRYKPGYPFCD
$M \mathrm{FCDQCE}$
A LR D WD H QLLT RYQPVYPQCDQ
REWDFKLLSYFKPFYPLCN
RS WNLLLLDRYEPLTPMCDQ
MFCYQCE
KEKQMFCFQCE
A D WDRK LIFARYR VIFP DCD
MEHNMFCFQCE

UniRef90 K2DD75 UniRef90_A2STN1
UniRef90_G2HZ87 UniRef90-G2HZ87 UniRef90 O27502 UniRef90_R6GB04 UniRef90-A4J8N8 UniRef90 D1AZN8 UniRef90-LOK531 UniRef90_F9UFC5 UniRef90_I3XV38 UniRef90 H3KEG9 UniRef90-W01665
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UniRef90-D5EBX UniRef90-UPI0004675E45 UniRef90 Q64EJ1 UniRef90_UPI0003609272 UniRef90_D7E802 UniRef90 A6UW79 UniRef90-Q0W883 UniRef90-N6V1V8 UniRef90-F8AM39 UniRef90-G5S9C4 UniRef90-K4MIW4 UniRef90 D4VGF2 UniRef90-A6UU89 UniRef90-Q8TJC6 UniRef90-K2A1T9 UniRef90 S7ISD7 UniRef90-W1U854 UniRef90_Q8TXF7 UniRef90 R5F1A7 UniRef90_Q9C4Z4 UniRef90_Q9C4Z4

MYCQQCQFAK
SMFCYQCEMGGC SMFCYQCEMGGC

Q G VCCRLCSNGPCRDSPSK
PKG VCGADADT $\square$ ACRNFL

Q T $\square$ NTPDLHGCVFRGNCGKTPETSDLQDLL


ETAGCKGCTMS
GVCGKKPDVAAMQDLL
MFCQQCEETAKNL
GCTAAGVCGKTNDTACYQDAV
MFCDQCEQT $\square$ QTPAVKGCSFAQGMCGKTSEVSDDQDVL


MCC LDTYGKCDLLN
ETAGCKGCT AC
S $\square \subset C \quad \square C$ T Y GKCD $\square$ S
KNRKGGCGDN LIEKQQAR $\square V L$

QT L H
PGGCVRAGVCSKSPEVAADQDAM
EDMSCFQCEQT
VKPSGCHTM GVCSKNPRIAALQDLI CTTCGVCTKDPEVAALQDHL
QTAGGKGCT
K G $\square$ G C T T C MCC $\square \mathrm{C}$ TFGKCD L T N

CNLCTMGPCD $\square$ SMN
$K Q G V C G K T A E V A N L Q D L L$
$G V C T K E P D V S N S M D A L$
$K K G A C G I D A E A Q Q A R T V L$
KRGACG $\square D \square K T A K A R L V T$
MCC LCTF GKCDLS


QTNKGLYCSQA KGNCGKNDAVAHDQDEL


UniRef90 K2DD75 UniRef90 A2STN1 UniRef90_G2HZ87 UniRef90_G2HZ87 UniRef90 O27502 UniRef90-R6GB04 UniRef90-A4J8N8 UniRef90 D1AZN8 UniRef90-LOK531 UniRef90-F9UFC UniRef90-I3XV38 UniRef90 H3KEG9 UniRef90-WOI665 UniRef90_C0AWK5 UniRef90-S3XR64 UniRef90-D3E0Z7 UniRef90-A5UN73 UniRef90-A71335 UniRef90-R9SP98 UniRef90-F4HK71 UniRef90-F4HK71 UniRef90 B0EM38 UniRef90_Q9V000 UniRef90-Q9V000 UniRef90 W0EOI5 UniRef90-L8J7Y2 UniRef90_SOB044 UniRef90-W4FPE7 UniRef90 A6G952 UniRef90_A1WZ74 UniRef90_A0RPF5 UniRef90 F7JYR0 UniRef90 G4E4K? UniRef90_A2ST37 UniRef90_Q2NF95 UniRef90 A7MZG3 UniRef90_A8F3Q8 UniRef90-F7JYT6 UniRef90 O27743 UniRef90-T3JCX4 UniRef90-A7HML6 UniRef90-F0T9G6 UniRef90 UPI00036D87FC UniRef90-F4BX42 UniRef90-D5VSY5 UniRef90 A0A024TCR6 UniRef90 UPI000468907B UniRef90-A8BLL4 UniRef90_K7R8P0 UniRef90 Q2PCB0 UniRef90-A9KP37 UniRef90_Q2PCB3 UniRef90-U6EE51 UniRef90 A6DAD3 UniRef90_O29165 UniRef90-A0L8N1 UniRef90 F6BF46 UniRef90-D3AL77 UniRef90-D3RWN8 UniRef90-Q57617 UniRef90 F6D6C2 UniRef90-W9DT42 UniRef90-B1I1E8 UniRef90 F2KTA1 UniRef90-Q12XL7 UniRef90_LOHHF5 UniRef90_V4JOE2 UniRef90_F9MRA7 UniRef90_LOKYY5 UniRef90_D5EBX0 UniRef90-UPI0004675E45 UniRef90 Q64EJ1 UniRef90-UPI0003609272 UniRef90_D7E802 UniRef90 A6UW79 UniRef90-Q0W883 UniRef90-N6V1V8 UniRef90-F8AM39 UniRef90-G5S9C4 UniRef90-K4MIW4 UniRef90-D4VGF2 UniRef90-A6UU89 UniRef90_Q8TJC6 UniRef90 K2A1T9 UniRef90- S7ISD7 UniRef90-W1U854 UniRef90_Q8TXF7 UniRef90 R5F1A7 UniRef90_Q9C4Z4 UniRef90_Q9C4Z4

LF TLS GLA Y RLDESADKVLEALFSTLTNVGFDKNRFHKDAL I F GLK GLSAYREHLDTMSETLYFTLTNVNFNFNVKVMNLL IF GLLK GLSAYREHLNTMSETLYFTLTNVNFNFNVKVMNLL
RQVAAGSGCYTHVVENTARRLKELAEDQAEGKKPKYKDSV

VA M $\square E S L S$ A WA MTAKAVPKAFFSTLTNDNFDPADREAEAL

TYGMKGTAAYYYHALELAEALYSTLTNVNFDKNDLEAGRV I Y GI K GTAA A Y Y Y H A L ELA EALYY T L T NVN FD K N I L EA GRV

$\prod Y A L R Q N A L V A L E A R S V G I I L F T T L T N V N F D \square Q D A E K K G K$ VDHLKHLS WYAHHDRVVLVALFSTLTNVNFDFTDTDSQEY

 VY T LQGGS F WA A R A LIEAPRACFSTLTNDNFDPELADEVVL VWVTKGLSAVTTQMRRTTKNLFTTTTNANFDLQLKNPEKL $L A C L I G T A A H A G H A R H L V D H L \quad I E R L G E D Y K I$

LACC $\square$ GSAAHSGHARHLVEYL $\quad \square E K K G D D F P \square$ VYVTKGLS AVT T QLRAEGKTLFDTITNANFDLQVQNKESL $\square A C C M G A A T H T S H A R H \quad L L E \square A L K K N P N L K L K$

1 Y GATGGFQLEEDHVLILQS DFATDTNVNFGPTVSRDEAL I YGAPLSDAPDA KIIAFWMFTTLTNVNF DEQK I YGLQSMAVFAHRA LAAGKTDPKEDDMFTSM VFQiK G $\square$ S CYAKEMDE $\square E N$ L LIFT TLLTNVNFDASVKVKESL I F DMRENALVADEAKKAGUVLFSTLTNVNFDKKRLNEFGQ LA SC $\square$ GSACHSGHSRHL


UniRef90 K2DD75 UniRef90 A2STN1 UniRef90-G2HZ87 UniRef90 G2HZ87 UniRef90 O27502 UniRef90_R6GB04 UniRef90_A4J8N8 UniRef90_D1AZN8 UniRef90 LOK531 UniRef90_F9UFC5 UniRef90_I3XV38 UniRef90 H3KEG9 UniRef90_W0I665 UniRef90_C0AWK5 UniRef90 U1ERX7 UniRef90 S3XR64 UniRef90_D3E0Z7 UniRef90_A5UN73 UniRef90 A7I335 UniRef90_R9SP98 UniRef90-F4HK71 UniRef90_F4HK71 UniRef90 B0EM38 UniRef90_Q9V000 UniRef90_Q9V000 UniRef90 W0E0I5 UniRef90_L8J7Y2 UniRef90_S0B044 UniRef90_W4FPE7 UniRef90-A6G952 UniRef90_A1WZ74 UniRef90_A0RPF5 UniRef90 F7JYR0 UniRef90 G4E4K2 UniRef90_A2ST37 UniRef90_Q2NF95 UniRef90 A7MZG3 UniRef90_A8F3Q8 UniRef90_F7JYT6 UniRef90 O27743 UniRef90_T3JCX4 UniRef90_A7HML6 UniRef90_F0T9G6 UniRef90 UPI00036D87F0 UniRef90_F4BX42 UniRef90_D5VSY5 UniRef90 A0A024TCR6 UniRef90 UPI000468907B UniRef90_A8BLL4 UniRef90_K7R8P0 UniRef90 Q2PCB0 UniRef90_A9KP37 UniRef90_Q2PCB3 UniRef90-U6EE51 UniRef90 ${ }^{-}$A6DAD3 UniRef90_O29165 UniRef90_A0L8N1 UniRef90 F6BF46 UniRef90_D3AL77 UniRef90_D3RWN8 UniRef90 Q57617 UniRef90 F6D6C2 UniRef90_W9DT42 UniRef90_B1I1E8 UniRef90 F2KTA1 UniRef90_Q12XL7 UniRef90_LOHHF5 UniRef90_V4J0E2 UniRef90 F9MRA7 UniRef90-LOKYY5 UniRef90_D5EBX0 UniRef90-UPI0004675E45 UniRef90-Q64EJ1 UniRef90_UPI0003609272 UniRef90_D7E802 UniRef90 A6UW79 UniRef90_Q0W883 UniRef90-N6V1V8 UniRef90 F8AM39 UniRef90_G5S9C4 UniRef90_K4MIW4 UniRef90_D4VGF2 UniRef90_A6UU89 UniRef90_Q8TJC6 UniRef90-K2A1T9 UniRef90_S7ISD7 UniRef90_W1U854 UniRef90_Q8TXF7 UniRef90_R5F1A7 UniRef90_Q9C4Z4 UniRef90_Q9C4Z4

P TVP GE P E E C A WT P K S E E E V VT S G LT GDD K IEED DN T R S LYY EAHTNRFGIPTPVRVPQNKVEGKAILVSGHDLEFFEKLLI EAHTNRFGIPTPVRVPQNKVEGKAILVSGHDLEFFEKLLI

AK $\square$ AK $\square L Q \square$ NCCGNSCAKTAEM $\square$ ADAVLAD $\square$ RKPDEKMTL

$H L E A M R L G U L V T$ GK A L Y E L L K Q I R E M G L E NEVVKVY T H S E M HLEAMRLGI LVTGKALYELLKQIREMGLENEVKVYTHSEM
 K A Y T E T F G L P T E G K A L Y E L L N Q I R E M G L E E E I K V Y T H S E M


 L L Y

LARRQDMMDF

 NPNVANFELPNSAEE』LAFAPQVAVNRGKDQVHEDVIGLR


D L G M D $\square D \square E$ A P
PEAALWNG
S D Y A E K A K T VGVLA TENED $\square R S$ L R E L IT Y T S R D $\square \mathrm{Q}$ V I $A$

EMML ${ }_{\mathrm{L}}^{\mathrm{T}} \mathrm{T}$
 L N MLT EMALS DT DTDFQRDFA GVQNDQYAA DRARYA GMR Y ATFATLTNVNFQPDD

 $Q P \| D M G L N \square D \square Q \quad A P \square M M T L L G K K P$

 DMFCYQCGCGSS GQTLGTCGKD DTTARLQDL $N$ IDVE A P
$R T L A M K R D L D A E A M E E K A K G \square G V L S T E D E D \square R S D R E L I T Y$


EKF GHDYP $\square D L G G$
$D \square N V E A P N \square R L V F G U K P$
$N \backsim \quad 1$ A $N V Q L V T G Q Q P$
TFGRECKI NVGGT GVEVEAP
 $\square Q L V H D R \mid Q H E G G S P S H D Y D L Q L L W A D Q E D D R S L K S ~ L L L F$

 $D$ LGPH $\square \mathrm{D}$ VE A P
$D \triangle \vee A P$
$D V G \quad P S N L K T P$ $D L G N F \square E V E A P$
SRYGS GHPLDVGGLSTEVEAP
LG N E $\square$ D VK M P

## 

$D$ LG N S $\square \mathrm{DVEAP}$
REAA QCLSVVDANAHCDNPMALQLVSDDLGEELQRQAAAEFTR I ERHGRDHP LDDLGPSNLLAP
 $N \square \mathrm{~A} P$
$\square G E S N V L T P N V T \square C T G L S P K T L G E C R A P M E$
HNLVVEAHSRVFTGTTSEMASQAAHSILSRIKKNSETDAG TTQAMDDKVHAEAAALADYDMNQMWNADEDIRSLKS LI LIF K E LRDRVG SDKDSETK E EMLLKDSKRAG MMFDQDLDA DV RS G DVEDDLGGEVVDMTP NELLAEAGCMADCGRTEDFDMNRLWAEDEDIRSLKSLILG

UniRef90_K2DD75 UniRef90-A2STN1 UniRef90- G2HZ87 UniRef90-O27502 UniRef90-RGGB04 UniRef90-A4J8N8 UniRef90-D1AZN8 UniRef90-LOK531
UniRef90
U9UFC5 UniRef90-13XV38 UniRef90-H3KEG9 UniRef90-W01665 UniReffo-COAWK5 UniRef90-S3XR64 UniRef90-D3E0Z7 UniRef90-A5UN73 UniRef90-A7l335 UniRef90-R9SP98 UniRef90-F4HK71 UniRef90-B0EM38 UniRef90-Q9V 000 UniRef90-Q9V000 UniRef90-W0E015 UniRef90-L8J7Y2 UniRef90-SOB044 UniRef90-W4FPE7 UniRef90_A6G952 UniRef90-A1WZ74
UniRef90 AORPF5 UniRef90-F7JYR0 UniRef90-G4E4K2 UniRefofo-A2ST37 UniRef90-A7MZG3 UniRef90-A8F3Q8 UniRef90-FTJYT6 UniRef90-O27743 UniRef90-T3JCX4
UniRef90-A7HML6 UniRef90- FOT9G6 UniRef90 UPIO0036D87F0 UniRef90-F4BX42 UniRef90-D5VSY5 UniRef90 A0A024TCR6 UniRef90_UPIO00468907B UniRef90-A8BLL4 UniRef90-K7R8P0 UniRef90-Q2PCBO UniRef90-A9KP37 UniRef90-Q2PCB3 UniRef90_U6EE51 UniRef90-A6DAD3 UniRef90-O29165
UniRef90-A018N1 UniRef90-F6BF46 UniRef90-D3AL77 UniRef90-D3RWN8 UniRef90-Q57617 UniRef90-F6D6C2
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190
SLLLFGDKGDAAYYSHVVVLGKTDEKVVKALASTTKNLSV ATK DKGUNVYTHSEMLPAHGYPELRKFKHKGNVGKAF ATK DKGปNVYIHSEMLPAHGYPELRKFKHKGNVGKAF YLYHARELGYTDEEVDAFLERTLTNVNF MKN【ADPKRYEDWEKLGDLPGGAKDEVFNAVVKTSTNLNS GLKGLSAYR GHANEFGANTKEVDDVIAETLYFTLTNVNF GLKGLSAY ATHARDMGYRDPDVDALVHEALYSTLTNVNF GLKGMAAY AHHARRDGKSDESVSAFIEEALFATMTNVNF GLKGLSAYR GHANEFGADTKKVDDVIAETLYFTLTNVNF GLKGAAA YLEHAAVLGVRNEDVEAKLMETLADISN GปKGTAA AAYYYHALEEVGYDNKE:GHFLYSTLTNVNF

GLKGMSAYR HHANELGANTSEVDKTTADTLYFTLTNSNF YNYHCKELGVSDESVDEFLTKTLTNVNF YNYNANVLGVKDSDVDEFLTKTLTNVNF GपKGMSAYR HHAQEDSADTKEVDKDIADTLYFTLTNSNF YNYQANHLGAKDPEVDEFLTKTLTNVNF LPAHSYPELRKNWGGSWVYQRKEFAEFPGVIVGTSNCVQQ LPAHSYPELRKNWGGSWVYQRKEFAEFPGVIVGTSNCVQQ GLKGAYACHAHLLKKDNVYQRIFEFIQVALAAGYDGKER LPAHSYPEIRKNWGGSWVYQRKEFAEFPGVIIGTSNCVQQ GLK GMAA YAHHARRLGQHDEFMEEALFVTMTNVNF GLKGLSAYR THADDLGADTKSVDDVIAETLYFTLTNVNF GLKGLCA Y LRAGRNDKGLAAYTDHSFQFGNEKPEIYHFIHEAFAFLAG ALKGMAAY KAHARRLGQTNAEVEAFIEEALFATMTNVNF GLKGMSAYRMAAYA HEARALLGRHDPEVAAFMFATMTNVNF GLKGLSA YSKHANVLLKDNDEVDTFLQKALAATLN GLKGMAAY KHHARRLGKTDPQVEAFIEEALFATMTNVNF SLLLF GLKGDAAYYSHAEVLGMTDPAVVNFIYKGL ASRF LLCLYG■KGAAAYMEHARVLEQTNNDIFAEYHEIMAWLGT YYYHARELGYKDEEDASFGYSTLTNVNF GDKGLSA KRPGSRHANVLLKEDKELDTFLQRALAATLD

YYYHARELGYHDEEDGEGLYSTLTNVNF ПMRTLDGKKPKVLGDLKEALDYLEEQMVHLLSACHTGQEG GLKGLAA Y MKHANALLUDDEELDAFLQSALAKTLD TVTGVKPETVKDYLYKARELGYSDPEVDAFIERTLTNVNF GLKGLAAYTDHSLQFGNEKPE IYHFIHEAFAFLWSPDAG GLKGLSA LTLLGMKGLCAYAEHCYKLLSFNKTELHDAMRSALTDLDL LKRYGADIGAFAYGDHALRLAGVLQIEDSPLLDALEAVTA GIKGVAA Y LIFHAMELGQDGAEVCKYFYKAHEDKDP QTIVYGVKGTSAYGHQARSLGYYSDQVDNFYILALEAVTD GLKGDCAYQL HAHVLNKDNQQ SDDFUNEALAAGYDGKER GLRGLSAYREHARKAEWKTMMEIDD
A EK
GLKGLAAYREHARELQANTLE DDDVINETLYFTMTNVNF ITRTVTGDKPKTLGDLEKVLDYCEEQITHLLSATHTGQEG GLK GMAAYLKHAAALERKAENGAVYEFLEKALAATLDQNM AEK
ПARTVTGПKPKTLGDLEK\LDYCEE VEQAVTGDKPETLGDLEEVMDYVEEQSLQLLSAAHTGQEG TVLGL KPQTLGDLRKAVEYVEREFIHLVAATHTGQEG TRIVCGTKPKTLGDLDSVLSYVEEQVTQLLAADHVGQEE LKQUALYGLRGLYTDHAALLGQSDDEVFALALLAVLTGTDG GLRGMAAY AHHAYALGYKNDDVNTCIIEGLSALNH VE GLQMVTGKKPETLGDDEDADSYVEEQLVQLLACVHMGQEG GLKGMAA YLEHANNLGYDEDSI HAFMEKALVAT TD VVGT1P KTLGDLEEILNYVNQQLVHALSSTHTGQEG LSTTVTGDTPKTVEDLDKLVYYEKEITNLLAATHTGQEG VMQTVTGYKPETLGDLEKVLDYVEEQITQLLATDHMGQEG IDRTVMGMKPKTLGDLEKVLEYCEEQASHLLSSTHTGQEG ITRVVMGYEPKTLGDLRDV1SYCEEQLTHGLSATHTGQEG RTRTVMGGKPKTLGDLEKVLDYCEEQUTHLLAAAAHTGQEGG
 GLKGMAA LEELVAYGLKAAYAEHARLLGVVEEQLVYY YAYHALMLGKSSEEVDAFFVKGLSADH LRQTUVYGLKGVYGHQARFIGYYDDQVDNFYFRCTTNDNL LEKG
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D QMVGLVMEAGQTAVTTMALLLDKANTSTYGHPE MTK DDQERIGLVLECGEDGVKTRALLDSANQTYGDPEDTSVS DQAKLMEKFTGTFVVNTNCIVVGIEGSTPTENYDFTALI E DQAKLMEKFTGTFVVNTNCIVVGIEGSTPIENYDFTALIE DAGEFIDLADEAGEMNDRTMKLLKKAHDDTGEPEP TE DPMDMLLQCLRLGDSTGNYGLILTNLMDIIMGPPQDSMDP HLQDHIDMCLKVGTACVKVMDLLDQAHTSELGVPKPVRVT DRDDHVDLAMRAGKAAVDVMELLDEAHTTELGVPEPTEVP DVQSLLEFCLECGRMNLRVMQMLDEGHVEAFGKPAPTKVM DAAKLLDTALSUGRLNFEDMEMLERANTTAYGHPFPAQVR DKNRFLELLENGRLHLEAMKLLDKTYVETFGRPEPTWVS
NFDEHTKQLLKVGEAGVK MDDLSQAHTNAFGDPSPVKIT D $\mathbb{C D L L Q L A L D S G E A F K V M K M L K E A H D E N F E P V P A E V K}$ DAEDLI NLGLEAGEANVKVMKMLKQAHIDHYGEPEPAEVK NFDEHI ERLLKVGEGGVKVMKILSEAHTAVFGVPSPVKIT


 PTKAYQDR FTVGAAGLEGVRPHEEDYDFGEPAGKRAL SFEQHIAQLMKVGGAGSEVMSRLGEAHHGRGGDPTPVCVP KVDKVVDMLMKCGQVNLTALALLHE SNNTYGAQSPGLAT DLDSLLELCLRCGQMNLRVMEMLDAAHVETFGQPQPATVS NFDEHIAQLLEVGKAGVEVMDALSGAHTTKFGVPTPVKVT DVEDLIALTMETGKYGVSGMAMLDKANTDSYGNPEDATK EKHSFAAVVMECGKVGATVLALLESANKKYGPTEVTTVS


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 KIDKVVEMLMRCGQVNLTALALLHE SNCTYGAQSPGIAT DIDELI GLTLETGKVGVDGMALLDSANTGTYGHPEDGTK TTQDLLSHALGGGKANLSVTALLDRLHADTGGVPTLCSTP QLGTLLALALECGGEANLKAMELLDAAHTGHFGHPEPTYAK TLEEEWISTMLEVGKWNLEVMKKLDEANTNTYKNPTPHKVN KLEEWLSLTLEVGKWNLETMKLLDEANNTLGBHPGPTEEL NFDEHDNQLMKVGNAGVKVMDLDANLHTKALGAPTPVEVT SLLDYESKAMHVSMADHVGMEVADDAQUVAYNFPKAPLVD NFDH HDAQLMKVGNAGVKVMDLLSEAHTHKLGVPTPVQVT DYDDFESKAMHAGMDDDLAREVGDDAQDVGLNMPKAPLVD SYPEVTALLALETGEYGVKAMA LDEANTSAFGHPED DYLDFESKALHAGMIDDLAREAGDLAQIVAYNMPKAPLTE NYMDFESKVLHAGLMDHVAMEVGDAALDLPKGSEDAPLVE AA DFESKILHGGMLDHVGMEVSDLAQDCLGMPEAPLVE SNLDYESKAFHCGMLDHVALEACDLAQVTGFNYPETPLVE
 SSLDFESKVFHTGMI DHLGMEVADIAQVSALGDPESPLAD TIDEWLSLIMNVGKANLTCDEMLDTANTSTYGTPSPVSVP SALDFESKALLGGGMLDHVGMEVSDIANSSCLGMPEAPLAE

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## D



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TT ${ }^{350}$ GNAGYPGVK ${ }_{H}^{360}$
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CGKFRYN
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## RDFTtenvafnglvin

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$P G A V L F T N C L M K P L D S Y K E ~$

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 PGAILETTNCLMPPRPSYAD RVFTTAVVGYADITH


## N

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UniRef90
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UniRef9o UniRef90-F8AM39 UniRef90-G5S9C4 UniRef90-K4MIW4 UniRet90 D4VGF2 UniRef90_A6UU89
UniRef90_O8TJC6 UniRef90-K2A1T9 UniRef90 S7ISD7 UniRef90-W1U854 UniRef90-Q8TXF7 UniRef90-R5F1A7 UniRef90_O9C4Z4 UniRef90_Q9C4Z4




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1)PERKDRKTERF
1 ITHELLSNKHKGALIKDMAKVGKVKKNQKPKQEHRNDDD
LDYDPK KAEVMAP DRDAEGDTADPTDEEFKVY DDKCVKEC
I ANYDFAPVIRAAQA
I GEDKDFTPVI
I GEAKKDGYKDFSEITDKALELGGFKESEEP
ISADKD GYKDFSEIDDKALELGGFKESEEPKLQKEAKRC
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## UniRef90 K2DD75

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UniRef90－D5FBX UniRef90－UPI0004675E45 UniRef90 ${ }^{\text {O64EJ1 }}$ UniRef90－UPI0003609272 UniRef90＿D7E802 UniRef90 A6UW79 UniRef90－Q0W883
UniRef90 N6V1V8 UniRef90 Q2FOF7 UniRef90＿F8AM39 UniRef90－G5S9C4 UniRef90 K4MIW4 UniRet90 D4VGF2 UniRef90＿A6UUB9
UniRef90 O8TJC6 UniRef90 ${ }^{-}$K2A1TC UniRef90－S7ISD7 UniRef90－W1 U854 UniRef90－Q8TXF7 UniRef90－R5F1A7 UniRef90－Q9C4Z4 UniRef90＿Q9C4Z4


T T GFSHHAlLE
EKTANKLVSLIKEGK』KN【FVV

TI GFHRQVLLDQAPT
MTGHNYKTVGLAPQVAGK
HVGWGSETVIGAAATV
ATGHHYTAVLAQAPAI
TVGFHHTVLLQHAET

| VVGFHHGAILGVADKV | VEAVQSGQIK |
| :---: | :---: |
| VTGAGHDAVLAFAPK1 | LDLVKRGK1 RHFVVM |
| TVGFGKT | KEAVLSGK｜KQFFVM |
| TTGYSTG｜VVASTDADK\｜ | KALVESGKIRHFFVI |

K LAP DRKS ITELASECTDCGNS पPVMDAVKDGDLSKCYTC PKDHGFEQSLTGVSEKNLKDSWKPLTNLI AEGKIKGVAAV
 DGGFAHEQVLHL
TTGFSTSVLLSHAAKD KELVEKGKTKRFFLV GLDDRDKQVLESDKECTECGPDKEAMDEAKKGNLEKCVGC HVGWGAETVIGAAPTV VGGFAHNQVFALLADAVVLKQPDTNVVNAVKSGAIKKFFVM DAAFAQMNTLPELTGLGFNHTLKPILEKIKSGAIKGFRFV TVGFARNTVLGAAGTV
LVGFGHHATJSYAEKI
LTGFSHHALLE EKTATKLVEAVKSGELRHFFLI $\|$ LAPERKTVQK LASECTECGNGQPMMDAVVEGDFSGCYTC ATGHHYKTVLEAYS FKKHSDEALMEEDNKCTCPHSDRVMAHAQKTGDLSKCLAC TTGHHYKTLLTLAPAV KCDPDLNEVVELAKKCTECGEVKEAMIEAKQGKFKKCYSC VGGFAHNQVLALA
 KTLPDLNEVVELAKQCTECGKVKEAMALLAKQGNFKGCYGC
 EKCHQNCANLGTAVSRAGEGDLEPLAKLF TKECADSCVHCLKCEVACPNSLSEAMTALSEGDESKCLAC VAEMAKKCTLCMQCRRACPNDL PVAQAVKSGNLSGCLGC QTGFGHQTVLSVADTC LRTGTSACVQCGACELVCPNNLPDMNAMVVDGDLTHCVAC

VQKLADECTKCGWCDRACPNSLPVKDAMKEGDFGGCMSC NDDLDIFELINKCTECEWCNRVCPAMDPDKEAFDQGCVGC PTNLSUSDAMSAAETGDFAPFEELHD TDCKQCRPVPGAlRABAARD LAPMGEVYDRKKIPVYSVM AKQCTECGWCNRNCPCAFE KDKCTLEEVRVLANKCTECGSFEVMNAMIKEGNFRKCYGC


S E L I N G CTECE WCNRVC P A M L P D K E A F K N G D L S G F S A C MLACPE ELDDP EA LDE YAAK GSYEYLE EKAA QK S I K G WVR S

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UniRef90
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UniRef9o UniRef90-F8AM39 UniRef90-G5S9C4 UniRef90-K4MIW4 UniRet90 D4VGF2 UniRef90-A6UU89 UniRef90-K2A1T9 UniRet90_S7ISD7 UniRef90-W1U854 UniRef90-O8TXF7 UniRef90-R5F1A7 UniRef90-Q9C4Z4 UniRef90_Q9C4Z4

AGCDG RHKTRQYFTDVAENL PEGTTILTAGCAKYRYNK AGCDG RDKKREYYTEFAKAL PKDTIILTAGCAKYRYNF

## GGCDSP पPRAKYYTEFVRKD PEDTVVLTLACGKYRFNS



GGCDGAKAG RNYYTELVQK $\square$ PKDS I L TCACGKFRF
GGCDGAEKG RNYFTDYARATPSDSFlLTLGCGKYRDRD AGCDKPGKPND YFRDLALSDPDDCIILTSSCGKFRFND GGCDGMK KERNYYTEDIKKLPPS SLVITTCGCGKYRFYR



GGCDGAEVG RNYYADFARATPEESVILTDGCGKFRDRD AGCDG RHKEREYYTEFAKAL PNDVVILTAGCAKYRYNR GGCDVPYKSEMEYYREFVKQL PEDTVI LCVGCGKYRFND GGCDGDKA ERSYYTDFTAEAPEDTLILTLACGKYRFNK GGCDTPTQKGN YYREFAKKLPEDTVI ITLACGKYR $\square$ ND

GRCEGERRDKDEKYRDRAGRGPAQDVVVAFVGCSNYPMAK VGCSNMTAGHDVNTVELTKELIKKDIIVLSAGCSTGGLEN


GGCDAP LKKSD YYREFVQK L PQDVVVLT LACGKFRFND GKCCERNDKLVDDYRVAAKERIKNDIVILFAGCDNYEFDK GGCDGYE GERSYYTDAAKARLPATSVVLIVGCGKFRINH
 GGCDG ADRGRSVFTRAGMECPDDKIINGGGCGRFRVNN GGCDGARPG GGCDGAKPGGRNYYSELVK LIPKDSIILTCACGKFRF GRCEGEKDSKEEKYNDRAGRGPAQDVVI AFVGCSNYP N AGCDAPGRKRD YFRELADAVPKDHII DTSSCGKFRFND MKCEQARANYDRDYNKTGKTRVGRDTVIAAVGCDNFPDEM AGCDAPGSGGD YYRQMAQALPSDCVILTSSCGKFRFND
GRCESMTTKVGEYF DKDMKFKGRQDVVVALVGCSNHPNGK
GKCEQACPKNDRDYNKKGKMRVGRDTVIAAVGCANYPDEA GRCSMTTKVGEAYYKDLAGRGPIKDVVVALVGCSNHPDAK GRCEGERFLKDQKFNDRAGRGPVQDVVIALIGCSNYPEG $G R C D G R G Q U S D P E T R E E G V N L V L G T T V V A M V G C S N Y P D G T$
$G K C E A A A A S A E K Y K V R V G R G P I H D V V V L F A G C S N Y A R R K$ GRCEQMKASYDSLVRKTGKMRPIQDTII APDIGCPNYPKAR GRCEYAKSSQRVISEEVGKVRVGRGPIVADVGCSNYPDGT GRCESAKQTLDETYCLRTGRGADQDDVVAFVGCANFPFAK GGCDGAKPG RNYYTDFVEQAPADTVILTLACGK GGCDGAK PGRNYYTEFVKK
GRCDPPKD DP LLNVIEKAAQKVIREEVVAMVGCSNYPEGT GRCEQAKASQRVIDREEKGKVRVGRGQ\|IAMVGCSNYPDGT

GRCES $\square K S A Q E \square A F G E T Y T M R A G R D T I V A L V G C S N F P F A R$ GKCSKDKDSSERYK IRAGRGPDQDDUVIAGAGCSNYEFAK GRCEGRGQVSDPEIREEGVNLVLGTTII ALVGCSNYPEGT GRCEGDHFCDDDHYNMRAGRGPIQDDIVALVGCSNYPNGD TAAAAHKTRDEKFK $\square R V G R G A D Q D V V I A F A G C A N Y P F A R$ GRCENLPTKAGDYHFTNQRYKIRTDVVVGFAGCSADPMAK GRCESMTTKVGDYFFKDAGRGPVQDVIVALVGCSNHPNGK GGCDGARG

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GRCDGRGQ|S DPE\RQEGVNLVMGTT|IDALVGCSNYPEGT
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VGCGKCMGECERE $\square D D I R \square A S K D K \square V I V L A G C S N Y E F \square K$ GRGQASDAE $\square R K E G L N L V M G T P G$ I I I DGCPNYPAGT


FREK LGD $\square E G \quad \square P R L L D L$
$H D Y$
$H D F G T V$
$E K$ L
$L D M G T \square G D$
$H D Y$
VD F G Y $\square E G T K$

| $H$ | $D$ | $Y$ |
| :--- | :--- | :--- |
| $L$ | $G$ | $L$ |
| $L$ | $D$ | $L$ |
| $N$ | $T$ | $F$ |

NTFGD
$\square$ N F

C G A M S $\square$ GE Y R DE D G Q T LY E K Y G GQ F DAK G L $\quad$ V
 $Y \mathrm{Y} V \mathrm{~V}$ T T GCGAMTLGEYRDEEGNTLYERYS GSFDAK GLVNM पD DGDTE
RGYMA A A F YKDKDGK T L Y EKY HGAFDRGGL LDMGTIGD

$T G \square P R \square L$
L


F REK L G D $\square E G \quad \square P R L L D L$ GGKDVAEMAKEF $\square$ GE YRDED GK TLLYEKYGGEFD AR GLVVNM VD F GVVPGTD DPRYI DL
 Y 1 VVAS GCAAMS $\square$ GMWK DED GK T L Y E K Y G G S F E A G G LVVNV
$K \underset{L}{L} \quad \mathrm{~T}$ L G M DT D E E G Q T LY E K T P G D F D A G G L A
 GLEVAKMAEEFDGEYRDEDGKTLYEKYSGDFDAKGLVNL



 $K D L M D L G M Y Q N E D G E T L Y E K Y P A R F Q K G N L I \quad N G$
 $R G Y M D I G L Y R D N D G K T L Y E K Y P G D F D K G G$ K DLMDL GMYRNEDGNTLYE EYPGKFDKGN E E I M S V GM MK DK D GK T L Y EKY P GEFK S G GL RRFMSI SMYRDEEGKTPYEQHPGDFDAGG

$\qquad$
$K D L M D L G M Y K D E D G K T L Y E R Y P A K F L G G N L I \quad N V$


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UniRef90 F9UFC5 UniRef90-I3XV38 UniRef90-H3KEG9 UniRef90-WOI665
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UniRef9o UniRef90-F8AM39 UniRef90-G5S9C4 UniRef90-K4MIW4 UniRef90 D4VGF2 UniRef90_A6UU89
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UniRef90-Q9C4Z4 Uniretgo_Q9c4Z4 4
UniRef90_Q9C4Z
 GQCNDSYSLVVIALTLAEACKCGVNDLP【SYN!A WYEQK
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 GQCNDAYGAI AVASALAEAFECSVNELPLTMVI SWFEQK GQCNDAYAAI RLAVLLAEKAGCGVNDLRLTLVELSWFEQK GQCNNDAYSA M AVALANEKLGCDVNDLP VSLDISSWMEQK
 $\left.\begin{array}{cc}G Q C N D S N G A & K\end{array}\right)$ GQCNDSNGATEAMALSKATGIAVNDLPEVV MWMEQK GQCNDAVAAVDVALDLCDLFECELNDLPLTUV LSWMEQK

GQCNDAYGATAVAAALAEACECGTNDLPLTLVVSWFEQK GQCNDSYGAVMI ALALSDAMGVPVNELPVNVV TLSWMEQK GQCNDTYTAFVVALKLAEAFKCGVNELPLHZILSWYEQK
 GQCNDSNGAVKUATALSEATSTAUNDLPITISLMWMEQK
GQCNDAYGATQVAVALSKAFNCGVNDLPLTLV LS WFEQK GQCNDSYSLVVIAQELAKALHVEVENLPLSFNI AWYEQK
GQCNDT $\ V A \square E \square A E A \square S K \square F D K P \square N D \square P \square T L V \quad \square T W M E K$
GSCVSNAHVSGAA $\square K \square A N \square F A Q K \square N R \nabla G A C G \nabla A W G A Y S Q K$ GPCLATG $G$ GCDDTIVADAMADDEGVKVTEDPDTLV, LT WMEQK

GQCNDA VA LEVAGALADRFGVGVNDRPDLVI SWMEQK GPCLANAHAI GAATKIANIFAKLLNRIGVCAVAWGAMSQK GQCNDSYSAVQDALALAQALQCGUNDLPLSIV LSWFEQK GQCNDS
GQCNDFYS $\square A Q L L D L S K A \square G C S L N E \square P \square Q \square Y V ~ S W F E Q K$ GQCSDVYSAILILVSLAKALDASVNALPIEFFV SWYEQK

GQCNDSYSALVVALK【AEDFNCGVNDDP पH DI
GSCVSNSHVIGATIKIANIFAKKLNRVGACGVAWGAYSQK GQCNDSNGAVHПALAVAQALGKDVNELP VSIALMWMEQK GSCVANSHIAGAAIKIANIFAMRLNRVGAVGFSWGPYSHK GQCNDSNGAVHDALALSAALDTPVNELPGVSVLSWMEQK

GSCVSNSHTTGTA TKVASTFAQRMNRTGAVGVAWGAYSQK GSCVSNSHUTAAA $K V A A \square F A Q R L N R V G A V G V A W G A Y S Q K$
GSCVANAHVIGAA KVAA $\mathrm{Cl}_{\mathrm{F}} \mathrm{D}$ YLNKVGACGVAWGAMSQK GPCVANAHAIGSA:KKAN:IFAKVLNRVGACVIAWGAMSQK GSCLSNCHITGACIKVANVFAKLLNKVGAVGLAWGAMSQK

 GSCLSNCHVTGAA KVANUFDY ILNKVGAVGVAWGAMSQK
GSCVSNSH TTGTA $\square K \nabla A A \square F A Q R M N R \square G A V G \nabla A W G A Y S Q K$
 GSCVSNAH SGAAEKVAGUFAQRLNRVGACGLAWGAYSQK

GSCVSNAH $\square$ GAC $\square$ K $\square$ AA $\square$ FAKK $\square$ NR $\square$ GACGVLWGTMSQK GSCVSNSHTSGTCHKVAAMFDYTHNRVGAVGLAWGAYSQK GSClVSNSHIS GTCHKlVAAIIFYTLNRVGAVG|LAWGAYSQK

UniRef90 K2DD75 UniRef90 A2STN UniRef90-G2HZ87 UniRef90_G2HZ87 UniRef90 O27502 UniRef90-R6GB04 UniRef90-A4J8N8 UniRef90 D1AZN8 UniRef90 LOK531 UniRef90_F9UFC5 UniRef90_13XV38 UniRef90 H3KEG9 UniRef90-WOI665 UniRef90-C0AWK5 UniRef90 U1ERX7 UniRef90 S3XR64 UniRef90-D3E0Z7 UniRef90-A5UN73 UniRef90 A7I335 UniRef90 R9SP98 UniRef90-F4HK71 UniRef90_F4HK71 UniRef90 B0EM38 UniRef90-Q9V000 UniRef90-Q9V000 UniRef90 W0E015 UniRef90-L8J7Y2 UniRef90_SOB044 UniRef90-W4FPE7 UniRef90 A6G952 UniRef90_A1WZ74 UniRef90-A0RPF5 UniRef90_F7JYR0 UniRef90-G4E4K2 UniRef90_A2ST37 UniRef90_Q2NF95 UniRef90 A7MZG3 UniRef90-A8F3Q8 UniRef90-F7JYT6 UniRef90 O27743 UniRef90-T3JCX4 UniRef90-A7HML6 UniRef90-F0T9G6 UniRef90 UPI00036D87FC UniRef90-F4BX42 UniRef90-D5VSY5 UniRef90 A0A024TCR6 UniRef90 UPI000468907B UniRef90-A8BLL4 UniRef90_K7R8P0 UniRef90 Q2PCB0 UniRef90-A9KP37 UniRef90-Q2PCB3 UniRef90-U6EE51 UniRef90 A6DAD3 UniRef90-O29165 UniRef90-A0L8N1 UniRef90 F6BF46 UniRef90 D3AL77 UniRef90-D3RWN8 UniRef90-Q57617 UniRef90 F6D6C2 UniRef90-W9DT42 UniRef90-B1I1E8 UniRef90-F2KTA1 UniRef90-Q12XL7 UniRef90_LOHHF5 UniRef90_V4JOE2 UniRef90 F9MRA7 UniRef90-LOKYY5 UniRef90-D5EBX0 UniRef90-UPI0004675E45 UniRef90 Q64EJ1 UniRef90-UPI0003609272 UniRef90_D7E802 UniRef90 A6UW79 UniRef90-Q0W883 UniRef90-N6V1V8 UniRef90- F8AM39 UniRef90-G5S9C4 UniRef90-K4MIW4 UniRef90_D4VGF2 UniRef90_A6UU89 UniRef90_Q8TJC6 UniRef90 K2A1T9 UniRef90 S7ISD7 UniRef90-W1U854 UniRef90_Q8TXF7 UniRef90 R5F1A7 UniRef90_Q9C4Z4 UniRef90_Q9C4Z4
 $A \vee L V L L A L L H L D \square K I M L G P T L P N F V S P D V L D V L V K T F G$

AAA $\lfloor$ LWS $L L S \square D L K M Y \square G P\|L P G W A N E D\| V K F L V D N Y$


A IVILLTLLALGVK\RTGPTAPAFDTPALLKVLEEQFG AVIILIALLYLGVKIHIGPSLPEFINDEILDFLVKNFN A AA L WTLLYLGTDMFI GPVLPA WANDDIL NVLVENF



A VABLLA LLY $\square G \square K N \square I G P T A P A F \square T P G V F K Y \square H D N \square N$
$A V A V L L S L L H L G V R G D L G P N P P A F \square T P G V L A D L Q Q R Y D L R$ AVLILLAALFNGI N IYLGPNPPEFVNEAIFEFLQAQFNLQ
 AVAVLLTLHLGVQDRLGPKLPAFVHPEVDQLIVDRYN


AVAVLLTLLALDVKVRDGPRLPAFVTPNVLALLQQ
ILVLLVLLALGIKNIMI GPNLPACLSPDVLNMLVKKF
AVSILWSLLALGLNIHIGPILPAWVDETILGVLVENF
$P R L L D V G Q C N D T \| V A \square E \square A E A P A W V N Q D \square L N V Q S N Y D \square R$
AAA A A TGVNRWG $\square$ PVVLGPHGSKYRRDF LGRADDEEKWKL
A $\square P R L \square D V G Q C N D T\|V A L E \square A P A W V N K D\| L E V L V K N Y$ AAA $\ A T G V N R W G D P V V V G P Q A S K Y R R L F L G R T D K E D S W R \square$
 $A V V V L L T L L S L G \| R N I V G P T V P A F L R P S I F K V L H E K F N L$

$A N I Q L L T L L S L G V Q N I L G P T A P V A L S Q N V A G \| F A E$

AAADATGVNRWGDPVVLGPHGSKYRRDY LGGRADKADSWKV IIIL $\square A L L S L G \| K D I Y I G P N A P Q F A N E D I V N F L V Q N F N$ A A SIATGFNRLGVPVVVGPHGTKYRRAY VGPWKKDKWWV
AAA $\square$ ATGVNRWG $\square P V I V G P H A A K Y R R M Y \square S D K D F E V L D K R$
A A A DAT GFNR LGVP VVVGPHGAKYRRAY DGKYFKKEKWWV AAAI ATGVNRWGI PVILGPH GAKYRRLYLSNGEKKK

 A AS I ATGFNRLGVPAVVGPHAAKYRRAFDGKVWKKEDWWV AASI GTGCSRLGI PVILGPHGSKYRRALI AKPYEEEKWKV AAA IAAGFWRLGIPVIVGPHGTKYRRMLLGRADRDSDWMV

A A A A S S IGTGCNRLGUPVVLGPHGSKYRRALIGKPYEEDKWKV
 AAAIATGANRWGIPAVVGPHASKYRRLYGGEKLREDTDKR A S Sil ATGCNRFGIPVIVGPHGSKYRRALIGKPYEKDKWTV AAAI ATGVNRWGIPVIVGPHS TKYRRMYLSDGNDEV AAAA AMGFVRLGUPVIVGPH GSKYRRMLLADREEDW
 AASLATGANRWGVPVITGPHSTKYRRMYLSDKDFEVFDKA
AGS $\square$ ATGCNR $\square G \square P V V V G P H G S K Y R R A L I G K P Y E E E H W K L$
A $V A \square A T$ GANRWG $\square P A V V G P H S S K Y R R L Y L G E E D R E \square T D K R$ AASIGTGCNDYGUPAVLGPHSSKYRRALIAKNYDESKWKV

A $\square \mathrm{A} \square \mathrm{ST}$ GF T R WG $\square \mathrm{P} \| \mathrm{V} Y \mathrm{GP}$ A G $\square \mathrm{K}$ Y Q T $\square \mathrm{Y} \square \mathrm{GD} \square \quad \mathrm{DGDWTV}$
AAA $\square$ GT GCNMYG $\square P A V L G P H S G K Y R R A L I A K T Y D E N K W K V$ A A A I GTGCNMYGIPAVLGPHSGKYRRALI AK TYDENKWKV

UniRef90_K2DD75 UniRef90-A2STN1
UniRef90-G2HZ87 UniRef90-G2HZ87 UniRef90 O27502 UniRef90_R6GB04 UniRef90-A4J8N8 UniRef90 D1AZN8 UniRef90_LOK531 UniRef90_F9UFC5 UniRef90-I3XV38 UniRef90_W0I665 UniRef90_C0AWK5 UniRef90_U1ERX7 UniRef90_S3XR64 UniRef90_D3E0Z7 UniRef90_A5UN73 UniRef90-A7I335 UniRef90_R9SP98 UniRef90_F4HK71 UniRef90_F4HK71 UniRef90-B0EM38 UniRef90_Q9V000 UniRef90-Q9V000 UniRef90-W0E0I5 UniRef90_L8J7Y2 UniRef90_S0B044 UniRef90_W4FPE7 UniRef90-A6G952 UniRef90_A1WZ74 UniRef90_A0RPF5 UniRef90_F7JYR0 UniRef90_G4E4K2 UniRef90_A2ST37 UniRef90_Q2NF95 UniRef90_A7MZG3 UniRef90_A8F3Q8 UniRef90_F7JYT6 UniRef90 O27743 UniRef90_T3JCX4 UniRef90_A7HML6 UniRef90_F0T9G6 UniRef90 UPI00036D87F UniRef90-F4BX42
UniRef90-D5VSY5 UniRef90-A0A024TCR6 UniRef90-UPI000468907B UniRef90_A8BLL4 UniRef90_K7R8P0 UniRef90 Q2PCB0 UniRef90_A9KP37 UniRef90_Q2PCB3 UniRef90_U6EE51 UniRef90 A6DAD3 UniRef90_O29165 UniRef90_A0L8N1 UniRef90 F6BF46 UniRef90_D3AL77 UniRef90_D3RWN8 UniRef90_Q57617 UniRef90 F6D6C2 UniRef90_W9DT42 UniRef90_B1I1E8 UniRef90_F2KTA1 UniRef90_Q12XL7 UniRef90_LOHHF5 UniRef90_V4J0E2 UniRef90 F9MRA7 UniRef90_LOKYY5
UniRef90_D5EBX0 UniRef90-UPI0004675E45 UniRef90- Q64EJ1 UniRef90_UPI0003609272 UniRef90_D7E802 UniRef90 A6UW79 UniRef90_Q0W883 UniRef90_N6V1V8 UniRef90_Q2FQF7 UniRef90 F8AM39 UniRef90_G5S9C4 UniRef90_K4MIW4 UniRef90 D4VGF2 UniRef90_A6UU89 UniRef90_Q8TJC6 UniRef90_K2A1T9 UniRef90- S7ISD7 UniRef90_W1U854 UniRef90_Q8TXF7 UniRef90 R5F1A7 UniRef90_Q9C4Z4
UniRef90_Q9C4Z4

P T GEVK ED TAAMM $\square$ Q A S S S VE E D L I K L

$N \square K L \square S T P E E D \square K E \square L$ $\square S$ DPEND $\square$ KA $\square$ L
K D LRTGEVIDGEPAPEHLLYAAENREEA



K DMRTGEVMDGEPAPEHLLYAAETKEEAL Y D $\square$ K S R Q K VF $\square E P$ A P D S L L VA VE T K E E A T GE $\square$ M K $\square E$ P A P E H T A E T VE E C $\square$
$Y$ D $\square K T R S K V P \square E P A P D A L L V A V E T K E E A$ TGEI LE I E PA P E HL
NDLRTGKVVDGEPAPEHLLYAAETREEA
 YD DK S K Q R M Y VE P CP DA LLVV A ETKE EA Y DARNGS EMQ』PAAPDYLL HDARTGESVYGGPVPE HLLDAAETKEEAM

Y D A R N G E E M P IP S S P E F L LE T
LD A R N GE T M D I P A A P E F L L E T I E E E
T GEVVVE GEPAPEHLAETMEEA I
T NEKVECEPAP
Y D A R N GE E LP DP S S P E F LLLS TVE
FDKKANK I I KI DPTPE HLI
YT S DP GT GEQVVYPVP E HL FI A A E T K E E A M
 SKE YMK $\square$ GPVP $\square$ T SAEN MKEC $\square$
Y D A R N GE D L A $\square$ P A S PEF LLT T VE
T NEKVKCEPAP
Y D GR D GSEMT $\square$ P P APEF LLTT TE T WQEA $\square P$

Y DARTGKECK EYCP $\square H \square K Y$ A A E D WREA $L$


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UniRef90-E3GYE5
UniRef90-K7REM5 UniRef90_A0B5W5 UniRef90-P26692 UniRef90-G7WQP5 UniRef90_KONH15 UniRef90-UPI0003B361F6
UniRef90-D9PXQ9
UniRef90-Q8TXF5
UniRef90 A0A024TD11
UniRef90-R6PRG1
UniRef90-R5SKZ9
UniRef90_R7LXB4

K S LDA AVNQVLLTAHRSRMPGVWDRAEAMQPQ

MFCFQCE
VKEEEEWDQPMGPFPKRDWDFK L LNRYR\FYAPAD
VKEEDEWDQEMGPFPKRDWDFKI CNRYKIMYSPAD
VKEVEEWDQPMGPFT $\square R N W D F K \bigsqcup M N R Y K V F Y P \square C D$

RKWDLNLLSYFKPFYPLCD
lupas_21
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UniRef90_F7NE20 UniRef90_Q49163 UniRef90-Q49161 UniRef90-E3GYE5 UniRef90-K7REM5 UniRef90 A0B5W5 UniRef90-P26692 UniRef90-G7WQP5 UniRef90-KONH15 UniRef90-UPI0003B361F6
UniRef90-D9PXQ9
UniRef90 Q8TXF5
UniRef90 A0A024TD11
UniRef90-R6PRG1 UniRef90-R5SKZ9
UniRef90_R7LXB4



UniRef90_F7NE20 UniRef90_Q49163 UniRef90-Q49161 UniRef90-E3GYE5 UniRef90 K7REM5 UniRef90 A0B5W5 UniRef90-P26692 UniRef90-G7WQP5 UniRef90-KONH15 UniRef90-UPI0003B361F6 UniRef90-D9PXQ9 UniRef90_Q8TXF5 UniRef90 A0A024TD11 UniRef90-R6PRG1 UniRef90-R5SKZ9 UniRef90_R7LXB4

QTVCGRDQYDLAA GSF 900 RKAADGA $L^{110} \quad \frac{120}{120}$ LRVITGTACHAAHGRHLLDHLDET FGEDLP DNLGQSNVL L RVI TGTACHAAHGRHLLDH L
 VACLMGTCAHTAHGRHLYH VAVLMGTCAHTAHGRHLYH I AVLMGCTAHAAHGRHLYH
1 YVLT G L S QVT DHNRFTVKA LIFSTDTDVNYDFKLDHEAVL STAVIGASAHAAHARHLVDTLIEKKPTSELHYDSS $\square$ D $\square$ KT




UniRef90_F7NE20 UniRef90 Q49163 UniRef90 Q49161 UniRef90-E3GYE5 UniRef90-K7REM5 UniRef90 A0B5W5 UniRef90-P26692 UniRef90-G7WQP5 UniRef90-KONH15 UniRef90-UPI0003B361F6
UniRef90-D9PXQ9
UniRef90-Q8TXF5
UniRef90 A0A024TD11
UniRef90-R6PRG1
UniRef90-R5SKZ9
UniRef90_R7LXB4

TKLAAQAGQSFSEQAVRD $\square^{130} 140 \quad 150$ SNDEMLA ${ }^{160}$ TNIT TSTGLSPKNLGEVK PAMEFVEEQLTQL
 $K \prod I S N D W Q L A F S Q L K K R D F Q L T S P D V V L N K L G G N G I N V E A P$ WTLDKFGDMKFDMGTD\|LVTAP

 P $\square \mathrm{S}$ T TVTG $\quad$ VE P ETPED

A A VCQAKGVAPSPVPWKRTEANVVD DELVASGKKVGVLSR DCQULKSNIKFEKFDLEQQADR RNS SLSADVKNLYEIILN KKYESLANVKDD\PESLKSVLKDDEKADII RSIKLGEQEF

lupas 21
lupas_14
lupas_28

## jnet <br> conf

 sol25sol5 sol0
jhmm
jpssm


UniRef90_F7NE20
UniRef90-Q49163
UniRef90-Q49161
UniRef90-E3GYE5
UniRef90-K7REM5
UniRef90 A0B5W5
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UniRef90-UPI0003B361F6
UniRef90-D9PXQ9
UniRef90-Q8TXF5
UniRef90-A0A024TD11
UniRef90_R6PRG1
UniRef90-R5SKZ9
UniRef90_R7LXB4

$\square^{170}$
180
190
200
ESAGL RLAA $\square$ GRHTNAA $L$ GA $\square$ CQS
R R T

 LTETVIGQRPKSLKDFGKALEYCEEQDTQLLAATHTGQEG LYRTVLGKKPKSLKXDGGEALEYCEEEMVVQLLAACHTGQEG


LRAGRNDKGLAAYTDHS DQFGNEKPEDYHF $\square$ HEAFAFLAG
 LKKADSAESRDLYKILDDESFGVDAEDGYLLLNSLNADEQ





UniRef90_F7NE20 UniRef90-Q49163 UniRef90-Q49161
UniRef90-E3GYE5
UniRef90-K7REM5 UniRef90-A0B5W5 UniRef90-P26692 UniRef90-G7WQP5 UniRef90-KONH15
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UniRef90-Q8TXF5
UniRef90 A0A024TD11
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UniRef90-R5SKZ9
UniRef90_R7LXB4



[^4]UniRef90_F7NE20
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UniRef90_E3GYE5
UniRef90_K7REM5
UniRef90_A0B5W5
UniRef90_P26692
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UniRef90_Q8TXF5
UniRef90_A0A024TD11
UniRef90_R6PRG1
UniRef90_R5SKZ9
UniRef90_R7LXB4
 PDVIVVDEQCVRGDIVPEAQKLKIPVIASNAKIGLPNRTD PDVIVVDEQCVRGDIVPEAQKLKIPVIASNAKIGLPNRTD ADVVIVDEQCVRADILDEAGKKDSLVIATTDKI GLDPMT WWKQQKEFELFPGPVVMTSNCDMKPK SMSQIKAVGV

 PGA LIMT T RCSQRPKKTIQNN I FTSGMVGWPGIHH YEPPMEDFFRFPGPVPNI TGK $\quad$ S N L FTSGPLARPGVFH $P D V V V L D E Q C D R S D V Y E V C G E M G M V V I A T G D K C S M G M G L$ ADVVVVDGACPGEDVDEAAREGGSKLVATVGABRDAD A DVQQDIA NMLDGDKPT
$M D S V Q Y D F T T F K G P V L V I R D K D Y R G R D F T T N L I A G K G M T R$
$D E N C L L D F A T F P G P I I L T R E H L Y R G L L Y T T D F A S S K G V I P$


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lupas }2
lupas_14
lupas_28
jnet
jnet
sol25
sol5
sol0
jhmm
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| UniRef90_F7NE20 | $\text { LITADYAGAVRTARQ } \quad 380 \text { S F QRRSGDET A A PAVRSAA }{ }^{300}$ |
| :---: | :---: |
| UniRef90-Q49163 | ADVNETIEELKSGA\PGCVMDDY |
| UniRef90-Q49161 | A GVEETIEELKSGAI PGAVILDYEKLGEDSVRDAQE |
| UniRef90-E3GYE5 | K E DPDVIVSKLVKREIJKGALLILD |
| UniRef90-K7REM5 | VGYNDMNKLDMDKLIVEEAKQGGFKDHCNSVFNQLNDKQED |
| UniRef90-A0B5W5 | RTNDPVDEIVD |
| UniRef90-P26692 |  |
| UniRef90_G7WQP5 |  |
| UniRef90-KONH15 | TS GFSFQPLID K K L S $\square$ P GF LEDKVQ GEVMVG |
| UniRef90_UPIO003B361F6 |  |
| UniRef90-D9PXQ9 | EDMSEENPYR |
| UniRef90 Q8TXF5 | DVT D Y PVEEAVEVLV TEEDAVYVEEP |
| UniRef90_A0A024TD11 UniRef90-R6PRG1 | EKNNFKPLVDAAE NSQGF DRDHS】A QVKV |
| UniRef90-R5SKZ9 | IKDKDFSGVIESAE KAKGFKTGRPC ETV |
| UniRef90_R7LXB4 | $V Q D D D Y T E L I N A A D N A K G F S K G K T K P ~$ |

[^5]2
lupas_14
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[^0]:    MKMCDSADVKLIDFMRSKGVKTSFHRVPDQA DKCGFGM RLTPNPASKDLLEYLHQEGVETWLDRYEAQQPMCGYGL NTCKSADKPLEDY AKLP METSHHRVEGQSTKCGFGL ERCTSADCRLCDFLDS KVEDETSFNREPKQSVKCGFGK NR\|SYHDSVRTVYERLKKDGMSNVWDRYEAQDRRCAFCQ SDDPAMREMYQHVHAQGLTNVFDRFSQQKDRCNFCS TCMSADKKhESFRK QQGIIETVWDIQAALKDRCGFGS TCKSADKPLEGYIA ELDPMETSHHRVEGQSVKCGFGLL RITSHHESVKRVYRQLHEMGLSNVWDRYEAQDQRCRFCM
    CRSADKSLETYMESLP
    TCKSADKPLECYDAGLP
    SADKVLEVFLENAP
    SADKKLQEFLESVQEDH SHRRMVQQEVKCGFGL
    MDTSHHRMVKQQNQCGFGLL KTCASADKNVETFIA HAKELSVETSHHRMEGQNVKCGFGL
    

[^1]:     HD A A V WT GKT L A D FEAK A I TVGGLLA E ENE D DR S L K S LV
    

    RESAATWTKDE
    PSAALLWDG
    
    PEAAVWN
    S E
    
    KLLNDNWSMPEDDEDAKA
    
    N H D A A DW T G S E D N F D DL K A L E E I G I L
    
    P D A A T WE S S N K D E F VVK K A A VVV G V L
    
    K K Q DS A A G GNVVNDNEKT E A V G GVL S T E N E D I $R$ R S L R E L L T
    
    
    
    
    
    
    P A A A L W WH D $\quad$ T E E D G F A A AK A A A K
    
    
    
    
    
    
    
    $P$ D A A V W F A S S V T D F D S K A E K V G V
    
    
    

    ## A

    KECAT WTATT T
    PQAAFWNG
    PQAAFWNG SEEEFESKAKEVGVLAA
    
    
    
    
    PEAALDWNGDEAQFDAKAPEVGVLATRDEDIRSSLRELI TY
    
    
    
    
    R D EA P E GE YP D Q S E T K E E ML K D S V K A GDDM Y D Q S L D A D I R S
    
    
    
    
    

[^2]:    

[^3]:    YAYHAMVLGHEDKGVMDYFYKGLFAVGY

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

[^5]:    lupas 21
    lupas_14
    lupas_28
    jnet conf sol25
    sol 5 sol5 jhmm
    jpssm
    

    REAAGVRE $\square$
    $E G V G L S F N V \quad F Q D \square K N D \square V S K \square Q T N Q \square E K \square V F \square$
    $\square A E N A V L N D A D \square L P G \square S A P A F L S E \square G T \| V K S F D T K P V T A$ EVGNDLKPFTAQADH』S SKMKKGDIRRIFLV
    $\square A$ A WA A $\square R$ VE T R LT DVVIRNVGVP
    VVA GNDPGlVVL
    
    
    
    

    GGCDGQNTGRNK FRQVSQKVGSKDLI ITGACGRFRDND

    VSCP EKSADVEEPAK $\square$ AEVLLERGYLVLVPGCLAVALGS
    $\bar{V} G L L N H A A M H S Q$ YFDVLEENDSDDHYVITT G LGAYTLEQKAYFEKLFSQVPDDVLIVSLSYCDQRDN
    
    

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    UniRef90_F7NE20
    UniRef90_Q49163
    UniRef90_Q49161
    UniRef90-E3GYE5
    UniRef90-K7REM5
    UniRef90-A0B5W5
    UniRef90-P26692
    UniRef90-G7WQP5
    UniRef90-K0NH15
    UniRef90-UPIO003B361F6
    UniRef90-D9PXQ9
    UniRef90-Q8TXF5
    UniRef90-A0A024TD11
    UniRef90-R6PRG1
    UniRef90_R5SKZ9
    UniRef90-R7LXB4
    ```

    

    ```
    lupas_21
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    lupas_28
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    sol0
    jhmm
    jpssm
    ```

    
    
    

    GQCNDVWS LIQQVKQ E E LE DPT TCES $\square \mathrm{E} \square \mathrm{ZS}$ WYEQK
    GQCNDVWS LIQQVKQ E E LE DPT TCES $\square \mathrm{E} \square \mathrm{ZS}$ WYEQK

    GQCRDPRQVVRVIRTLSDLLGAPASSLPVS LIFFSWPGQK GPCTSAAHLVGAC $\square R$ VGV $\quad$ FGKLLNRVGACVIAWGGYSEH
    
    

    ```
    lupas 21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm
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    | :---: | :---: | :---: | :---: |
    | UniRef90- Q49163 |  |  |  |
    | UniRef90-Q49161 |  |  |  |
    | UniRef90-E3GYE5 |  |  |  |
    | UniRef90-K7REM5 |  |  |  |
    | UniRef90-A0B5W5 |  |  |  |
    | UniRef90-P26692 |  |  |  |
    | UniRef90_G7WQP5 |  |  |  |
    | UniRef90-K0NH15 |  |  |  |
    | UniRef90-UPI0003B361F6 |  |  |  |
    | UniRef90-D9PXQ9 |  |  |  |
    | UniRef90-Q8TXF5 | ØDACSGEEEDP | T P E H L E A A $\square$ T A A R |  |
    | UniRef90-A0A024TD11 |  |  |  |
    | UniRef90-R6PRG1 |  |  |  |
    | UniRef90-R5SKZ9 |  |  |  |
    | UniRef90_R7LXB4 |  |  |  |

    ```
    lupas ```

