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 ri RLPERTLFATRAARLRKLAEGNPDAGYVRLMAVLVDA LPNLKNLYQRRAERFDELAKDNPFADYLEFAAEVTRA PLLANSHD PFLKKLPSHDLFTRRAARLRQLAEGNPLGGYLNLVAELCDTM PRLRMPERTVFSTRAARLRQLAGASPGGYVRLMAALADA PFLYLPPPNLFSLRAQRLEGLAEGHPLADYLRLIAGLCRV PLFNLPLQDLFSRRAARLRELAPDNPLQGYLELGAGVCDA PLLFANLKNLYQHRAERLRALAENHPFSSYLNFAADIVQA ILFANPKNLYQRRAKRLRQLAEEHPGGDYLRFAAHIVDS PLLFSNPKNLYQRRAKRLRELATEHPLADYLLEATEVVES LLESNPNGYQRRAERLRTAAQEHPMADYLNFVANGADC PLLFPDLNNLYQSRAERFQSLATENPFSEYLLFAAHVTRAA PYSDLPPERLFSLRAERLEKLATDHPMGDYLRLLAGLCRV LLPSLKDRYRQRAARLRQLADGHAMGDYLGFCAGIAEA PRVALPDRQVFAARAARLRTLADGNPVADYLLLMANLVDA PFINLPPKNAFSYRAERLEKLADGNPLRDYLLLVSGI CRA PRILLPQASLFAERAARLRQLAQGNPIADYLQFAAKIVDA SVFAERAARFKRLATAHPSGDYLVFLAHLSQD PRVLPPAASLFAERAARLRQLAEGNPDADYLLFAKI MDA PLLFPRLKNLYSRRAARLRQLAEKNPLGDYLRFVAVIATA $P R L R L P V R S V F A D R A A R L R Q L A A D N P V G A Y L Q L L A Q L V D G$ RLRQPERSVFSTRAARLRALAENNPIADYLSLMATVADA PLLFSSPQNLYARRAQRLRQLAENHPFSDYLLFAADVVEA PLLFYPPKTLY PRVRMPERAVFAARAARLRKLADLNPI AGYLRLMAAVADA PFLHLPEPDLFSRRARRLHSLAVDHPLAAYLLLMAKLCEA PRILLPQSSLFAERAARLRQLANGNPIADYLLFVAQIMDA PHVIAPDANIFATRAQRFEQLAEGHALGDWLRFLAAITRA PVLFANLKTLYQRRADRLRALAEDSPLDGYLNFAAAICDA PFVRLPDPNLFSVRAARFSSLAEGHELAPYLRFLSGLCRV PLLFANLKSLYTRRTERLRQLALDNPLSDYLDFAAKITEA PRiRLPRSVFGNRAQRLKQLAAGNAIGEYLSLMAVLAGA RVRLPTRSVFATRAARLRKLAQDSPVADYLHLMAHVADA FILLPGGELFGYRADRLRLLATGNALGDYLLLMAECEA
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#### Abstract

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## w

$\stackrel{\mathrm{w}}{\mathrm{w}} \mathrm{w}$

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WQ QLL L S A L I


 WQRRL L H S L I A ELLKP EMT GQALLAV L E N LE K V S A Q E L E A I A S





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 WR L L L S A L I A E L R P D A P E H I L L A V L D N L E K S S V H E L E L Y A D WQVVVLE QL L G H V A DA G GVPP L A Q L I A R I R R S S A N Q R D S Q A E


 FESSLFDRLLSQARAEKPEPAEAALABMLAASEAERGEMIR WR A V L






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 WR N G L A LV L D ELLK S A APP E A LA E MA K L R A Y A P E A V A A LA D $W$ W $W L A A V D A L L E R W Q G A A N P A V G E A L A Q L R G A D P D Q R K A V G V$ WH G V L D R ML D A L S GAL P A PL QP L L Q E L R A L D T A GRDE I A Q








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$P L I L G Q P Q T I F E S R A A R L R Q L A K E S F M A D Y L L L V G Q U T G V$ PFALPDDTHRFSATARLLRALATGHPMAKWLGFMALLSDA PLLFPRLKNLYNRRAERLRELAENNPLGDYLRFAALIAHA PLLRPKLDVLYAHRSARLRHLAADHPEAGYLRFAAALVDR P VLPDPARRFAATAQRLEQLAEGHPMAAWLRFLGRLARA PLILPAAQPHYRRRAARLRQLAEGPPMADYLRFAAGTAEA PFVRLPPGTLFADRAARLTAAAGHPLEAYLLFVAEVARA PFVRPADKHVFRRRADRLLQLASDHPLEPFLMFVASVARA I PADPKAVYQFRAQRLAELAEESGLAEYFGLLEQLVGA VQLPAARLYAARASRLQHLAQGHAMAEYLLWAAEEAGA PLIGGQPTTVTARAQRGRQLAQDSFMGDYLLLVGQUAQQ P HVVLPDAKVFSKRATRLRELVVQVPGDEFLAFMARLVQA PICLPDPKTRF ATASRLDALSEGHQMAEWLKFMAALARA PELRLPPADLFLTRABRLDQLAEGHTLGDYLRFMARLARA PLLRPLLATLYTNRTARLRQLAAGHAEADYLKFIAGLVDE PFVRIPPRRLFEARRERLEFLAQTSELAPYLRFIAGIAAA PLLLLPKRNVFADRALLRLRQKAADHAMRDYLMFMAVVCEA PYL HLP $\operatorname{HRALLATRETRLRELAAGHAMRDFLDFAAELAHV}$ PEVVLPQHTIFRERARRLRDLSRRPMSDFLAFAARLAQA PFALPNPDKVFAARARRFADLARGDDLAPYLLFLSGLCAA PLIIGDPATHEARAARLRQLAQDFMADYLLLAGQVQQ PLARLPPVALFTTRAERFDFLAGHSPLAPYLRFLAGI CRA PFLQQPPAQCFDTRASRLRFLAQSSELAPYLDFLADLAAL VAPDPKSMFSARAARFTALAPGHPLEEYLVFLGELSRI PRIRLPDRQLFARRAARLRALAETSPIGDYLQLCAVVAEA
 PLI I GDPATIFSARAERLRALAKDSFMADYLLLAGQIVQQ PLAFLPPARLFATRARRFDFLSQHSQLAPYLKFLGELVAL PLVHLPPQALFAARAGRFDFLAGHNALAPYLRFLAASCRA PLVRLPPVALFQTRASRFAYLAEGSALGPYLRFLSGUCAA
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## Q

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 $L V L$ GA R G G EVVDAA A A P F VMAA L Q $V$ V
 AL QHN QPERVPADLAI LLWWACI NTFTSSLLVKTTALEWWQPE NILSDTIPDDSAAPHLFASLAVQLHLARLAATLDADALVP




 A L L F S A D F S A V S S D K A P F I WA A L S L Y WA QMA S LII P G KA RA E ALLS GDSSAA GGVVAVAPFLWAA L S L NWS Q LAA A A I DGR LQAP SLWNEHLNDSQRVRAPVVMAAVQVVMMSRAARLDLKTLPF $N L L N S L L P Q Q Q L A E H V F I D G T L Q I M Y S L A A S Q L D A Q S L S$ $H A F N Q Q L G \square A Q Q D Y Q V W V N A V V Q L V Y T H A A D L L A A T T V K P$ $R L L G F D W A T L D A A E A P F V A A A L Q V Y F R A L A A R I A P A R L G Q$ RI L Q GDIP EHEKPYQUWLHAALQVAYTAQARQQSDDTVPP S L L C GE YA QVDA GLAVVLWAA LVVCWAQAVEQDQE HIQQP $D V L E A R P G E T T R G L M P L A A A A L Q V S W L R L V L A D P P P A K P G$ QLRQGEFSAVPA QYS LFFIWAGL SLYWSHWAPMVDARDVNK EVLKARPPEASRGLMPLI AAALQVAWLRLARTLPPPRRPT AL TEGRFDAVPAAVAP FLWAA L S L Q C A SAARAAPDPD S GP QLLAGEADEQHRGLMPLIAAALQVAWQRLVQALPHAARPS


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UniRef90_UPI0003B79EDD UniRef90 V6J579 UniRef90-14N1V3 UniRef90_UPI00047A718A UniRef90_UPI000375A5E4 UniRef90_UPI000395C96E UniRef90_C4KDL7 UniRef90_S3HDC3 UniRef90_A0A031GIK5 UniRef90_UPI000308FB61 UniRef90-A6X2X0 UniRef90-Q931D7 UniRef90_A0A024IC95 UniRef90_UPI00046578EE UniRef90_W0V520 UniRef90_UPI0002FF20E8 UniRef90-B8ES19 UniRef90_UPI00035F517D UniRef90_J5PCG0 UniRef90_-IOHN93 UniRef90_UPI0003704900 UniRef90_L8J8X4 UniRef90_F8J9D3 UniRef90_J0QZW3 UniRef90_UPIO002BC0DC7 UniRef90_UPI00035E54A0 UniRef90_UPI0004669763 UniRef90_UPI00047B675B UniRef90_C1DIE7 UniRef90_19CLZ9 UniRef90_L0DUJ6 UniRef90_B0TR99 UniRef90_H1RNN6 UniRef90_UPI0003694F7C UniRef90_DOYZN9
UniRef90_W8RB64 UniRef90_A0A021XHA0 UniRef90 N0B9L7 UniRef90_UPI000371C5DC UniRef90-I5CX52 UniRef90_UPI000378DD62 UniRef90_14YXY6 UniRef90_UPI000425E10A UniRef90_K9D520 UniRef90_UPI000374E456 UniRef90_F2J1C9 UniRef90_W9A9M5 UniRef90_UPI000225F47B UniRef90_UPI000423F576 UniRef90_UPI0004176060
UniRef90 UPI00036715C9 UniRef90_UPI0003704F60 UniRef90_A0A016XF04 UniRef90_UPI0003666FE5 UniRef90_Q1ZR86 UniRef90_UPI0003B392BA UniRef90_UPI000399CBAD UniRef90_S5YZ83 UniRef90_G8QJE5 UniRef90_UPI0004176D87 UniRef90_UPI00046AD94A UniRef90_UPI0003605130 UniRef90_UPI000471C016 UniRef90_K8B2S3 UniRef90_G2J4M7 UniRef90_E7RXY4 UniRef90_K4HI63 UniRef90_X2HAO9 UniRef90_C1D4J9 UniRef90_C4GHP3 UniRef90_C7JI19 UniRef90-I6Z4M5 UniRef90_AOKX03 UniRef90_UPI00037E6F6F UniRef90_Q0K181 UniRef90_UPI00028A3523 UniRef90_UPI0003806828 UniRef90_A4NZQ7
UniRef90_D7N000


LVTNTLICPVVC R S Q G Y R Y L | Q C S 190

A S E WH M $|V| R$
 LPER GLCPCCGSTPVAGVITASGVRYLYCSLCSTAWNHVR GE H R Q F C P V C G S LDPV S Gl I P L G G K R Y L H C N L C E C E WLV D E





 A A S LLA Q C P A C G S P A M A GVVVR H N G L R Y L A C S L C A C E WH V V R


 L E T G T L C P V C G S H P V $A$ A S VI G R S Q G Y R Y L LEERELCPCCGSPSVAGVITATGVRYLYCSLCSTAWNHTR

 $V$ GN GACPACGGPPVASVIQAGGTRYCACALCSTLWHHVR






 A H N S P L C P L C H S H P I A S I V

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 ANAK QHCPDLCGGAPAAS VVG
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UniRef90 UPIO003663BCB UniRef90-UPIOOOO1910FO6 UniRef90_UPIO0045EB30E UniRef90-G1XY49 UniRef90-UPI00035D84D4 UniRef90-UPIO00464A725 UniRef90-UPIO0046CEF50 UniRef90-UPI00047EAAAD UniRef90-F4GSX0 UniRef90-A0A010SR08 UniRef90-UP100035CDD9E UniRef90-UP100040C00D3 UniRef90-L1LZ78
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UniRef90-S3 HDC 3
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UniRef90-W8RB64
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UniRefto S5YZ883
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UniRef90-C4GHP3
UniRef90-C7J19
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UniRef90-Q0K181
UniRef90-UPI00028A3523
UniRef90-UP10003806828
UniRef90-A4NZQ7
UniRef90 DTNOOO K L LYQGKRPE KVFY K MLYVAKDPKLDPYADDLASLGLDLMVAEVGWLRHAPNPL KLLWQARDPAI EPVADDLASLLLDARMEQESFSRSSLNPF KI FNQQKDVSLDPFADDVGSLGLDLLMKETKFRRGSFNPF KI MYQNRNPALDAVADDI GSSGLDALMKDTGYKRAGFNPF KLMNREKEPFVDPFADDLATLGLDGLMVEEGYQRDGFNLL K F Y Q E KVLGVDAVA D DLAS L T L D MLM GDA GYS RAS G NPL
 K M M



 KLIHADRDVMADAVADDLASLTLDLLVSESGKQRHGVNMM KLVNQEKDPLAEPLADDLASLMLDLLISEQAFSRASGNPL KLIVQPKNVRVDPIADDLASVALDMLVDDAGFVRSGPNYL K LVYNKNPSLDMVADDVASLGLDTLMKETEYRRAGFDPF KVFNQEHDYNVEPLADDLASLMLDLLVGEAGYQRASGNPL

 KILNQQQDASLEPLADDVGSLGVDLLMRETQFRRGAFNPF KVFNQEHDLHVEAVADDLASLMLDLLVGEAGYQRASGNPL KIMDRDKDAAVDPFADDI ASLAVDLLMAEEGYRRDGFNPL KMLYSARDMEVDPYADDLATLGLDLLVTEAGWARHAPNPL K IVLQDKNPQADPVADDLASLALDLLMDETGFVRSGINWY KIFHQHKDPALDPVADDVASLGLDVLDGDARDVRGSVNDF KQVDQHQDPLAEPLADDLASLRLDLLMAETEFERASGNPL
 KMLY QVK DTKVDPYADDLASL GLDIMVSEAGWARHAPNP L

KAFYRERDEHVEVCADDLATLALDAAVAQEGYGRTGVSPF K PFYQDVDPKLD VVVDDLNTLILDQETENAGFSKTGLNPM $K L L Y Q D H D M Q A D P H A D D L A S F G L D Q L V A E A G F A R H A Q N P L$
 K IFYMEKDFEVDAVADDLAS LGLDLLLAEEGHLRSGPSLEF KMFFTD DNPRLEVAADDLATLVMDSHLVEQGYSATTVNPL KAFYQQADHQLELVADDLASLADDAEMEEKEDARSGUNPLD

 KIFYTTKNPSLDPVADDVGSLGLDDLMKETDFRRGGFNPY

 K If HQ HLDPAMDPVADDVATLGLDLKVREAGWARAAFNPY KILYQQKDMALDPVADDIASLGLDLLLKDGEYRRGSFNPF KAMHMAREVHVEPVADDLASLTLDLLVSEEGYDRSGTNLL K V V RMERDLHVDPVADDVATLTLDVLVSEAGFQPHGVNLL KI I HRDMEADAEPFCDDLASLGLDIIAEERDVGRSGYNPW K I VYQNRDPALDPLADDVGSLALDLMLAETGKTRFSVNPF KMLVLEKNPQLDPI ADDLGTVVLDQKLSQMEFYRSGFNPF K L Y Y N R N P SLEPVADDVASLGL DLMMRDTEWKRGGFNPF K L LY QNKNPSLDAVADDVASLGLDLLMKDTGYRRAGFHPF

 KIVNQEKDPLAEPLADDLATLTLDLLMSETPYARAGANPL K I L Y QVK NP SLDP KILTQTANHSLEPIADDVGSLGLDLLMKDKGVTRGGFNPF K LYY Y KNPTLEVVADDVASLGLDLMMRDKGVRRGGFNPF
 KLLVEKKAPGLLDPI ADDMASLALADILVSEEGYQRIGGINPF
 K LCRLDRDPHLDPWADDLATLALDLLVDQEGFERAGLNFF KMMFTNVNPELEVVADDLATLFIAGQMQQQGFHSTNVNPL



 KHLDPSRD DQLEPLADDLATLELDMAMAEQGFERAGPNFW KVFLHSQQHHADPVADDLASLALD LLAEQNEYTRGGHNPF KVFRLDYDPELDALADDLGSFALDTAVEQQGFVRAGLNPF KLAQRELHGRADPVADDLASLALDLLLAEQGYERNGYNPL $K M L F T N R L P L L D A A A D D I A S M G L D A E L N A K G Y G A T T V N P L$
 $K I$ FPRRTLDAEAEPLADDLGSLALDLLLGEEGYRRSGFNPR
 KLYRQDKQQYADPVADDLA TLGLDUAGEAGYERGGANPF


UniRef90 J1J5N2 UniRef90-UPI000477331E UniRef90-E6YJ00 UniRef90-UPI00046F16A9 UniRef90 UPI0004701B1A UniRef90-E6YSI4 UniRef90_B3RBK2 UniRef90 A0A023WSQ2 UniRef90 J6CTI4 UniRef90_UPI00046FC267 UniRef90_F7VDE9 UniRef90 G4B038 UniRef90_UPI00041FFDD6 UniRef90-JOPNS1 UniRef90-HOJET7 UniRef90- X5MGJ5 UniRef90-UPI00036DF899 UniRef90_UPI00036D2F37 UniRef90 M1NUK3 UniRef90-A7HBW8 UniRef90-J1IYE8 UniRef90-L8Y1H8 UniRef90 D6STD8 UniRef90_LORBG5 UniRef90-B4UEQ7
UniRef90 O67150
UniRef90-N6UIZ0

UniRef90-A8UVJ6 UniRef90-UPI0003758F8A UniRef90 C8WZV6 UniRef90_UPI0003B3F57B UniRef90-W6M5Y9
UniRef90 A1VG25
UniRef90-E6VV40
UniRef90-XOSQY2
UniRef90_Q314Y9
UniRef90 S7TJG8 UniRef90_UPI00035DA2C9 UniRef90-KONAK8 UniRef90 UPI0003A65EC4 UniRef90_N6YIM5 UniRef90-K6HEE3 UniRef90-UPI000379D095 UniRef90 WODFF4 UniRef90-G8ASR8 UniRef90_Q2LWY6 UniRef90_S7T2C9 UniRef90 C6C059 UniRef90_UPI0003B4FEF5 UniRef90_K4LFV0 UniRef90 COASPO UniRef90-LORIE1 UniRef90-F3Z289 UniRef90_G7QDN9 UniRef90 S0G6X0 UniRef90-C0QHA3 UniRef90-D5X7U6 UniRef90 T2G8Q3 UniRef90 C6BYV4 UniRef90-UPI0004664827 UniRef90_B9M623 UniRef90 A5FSS8 UniRef90-Q2LVC2 UniRef90-G1UNR5 UniRef90 C7LQ71 UniRef90 ${ }^{-}$V2PZ02 UniRef90-UPIO00464BBAO UniRef90_R4KEL5 UniRef90 M1WTL3 UniRef90-D6XSE8 UniRef90-B8DLC1 UniRef90_G5GRA UniRef90 B2FT10 UniRef90-D3DHU0 UniRef90_G5H470 UniRef90 F0JK11 UniRef90 Q67JR6 UniRef90-UPI0003A019EC UniRef90-C0QGJ0 UniRef90 A1RW75 UniRef90-E5Y2M5 UniRef90_A4J3J9 UniRef90 F6DQZ2 UniRef90-A8ZYN1 UniRef90-14C609 UniRef90_B1I528 UniRef90-F6B9K0 UniRef90-Q02AT3 UniRef90_D3SLG6 UniRef90 F6DTP6 UniRef90_Q2LQE2 UniRef90_U2UP46

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20
FTIDPHKNFFVKRAQRFAHLATLHPDKESLLFFACFCDA PAVLLPGRDVFAARAQRLRDLARVEALSDFLQFMAQVAQA
 PLKAADPASVYLRRAKRLEVLAKDSPLADYLELCRRLVAV


$P V L F P K L D A L Y A R R S S R L E E L A A H E V N A G Y F G F L A T L V A A$ PI I LPRLAVLYRRRAERLRQLAQTTEEEDYLGFAARLVDE
$\square L P P K G S Y Y$ P Y R L K A $\square E K A \square I K Q P E A H F D P F \square Q S V V K A$ LV I LPS KT LIFAKRAQRFAHLANTQEHKQULHEFSHFCNA $P \mathrm{P} V \vee \mathrm{~L} P \mathrm{DRQL} \mathrm{L} A R R A R R L R E L A E R S A L G D F L G F M A L L V Q A$ FVILPDETVFAKRTQRFMHLANKMPNKECLLFFADFCNA PSLLCPAADVFAQRAERFRHLATGHSLGSWLVWLAALCQT

P F VELDPAKTLFAKRAQRFTDLA\|INLTKEDLPFFANFCDA P P L R L P E A RLFRGRAERLEALAEGHAAGEWLRFLARLARG

 QPEKSLYKKRKKPLEQ KSFLPKELTQLVDFIIKN $L L A B R K K M P L E N D G D A B G P L V Q A$ $P Y L R L P P A L L F A G R A A R L E A V A A E R G G D P F L G F L G R L A G A$ LNRIDPLKEKFPES QULNFLSHILE Y P WVK L P D R E L F K K R A H R FA H L A T T S P N K E DL LF WA H F C N A LR P P GLQVFTRRAERLRSLA QGHAMADFL HCCADIAAHA D Q A A R L DQKARPS Y GPII E F Y G Q V | F $\quad$ I |
| :--- | PALRLDPAPDLFARRARRRLRQLADVGSMMEGLKFAAALAAAA K R L E R L K A L R A K N Y $\square P \mathrm{D} S \mathrm{~L} L E \operatorname{V}$ VA R T A A

 A NVSLPGPLVDLLAAVRRL LE T K R LIE R LT H $\square$ A E K G F L Q A L L Q
 $K K L D S L S R K T V L A S L L M L V A A T S R V$ K RLQRLNALAAAKPLTEVCRFYTAL $R L Q H L K A K H P E A E I L S F M E K V L R W$ E GHAMGDWLRFVATLADA
LK T IE Q Y K S $\begin{array}{llllll}S & D & S & H & S & E \\ K & L & L \\ L & P & S & G & L \\ K & V\end{array}$


$\qquad$ | $F$ | $A$ | $T$ | $L$ | $A$ | $D$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $A$ |  |  |  |  |
| $I$ | $A$ | $E$ | $L$ | $L$ | $I$ |
| $L$ | $L$ |  |  |  |  | K D A LPS GLV ELLAK AR KL A R R K K K $\square$ S E L K DKPF LEE LI A LIS T VA R I $R R L E R \quad K L A K G F L P K E L L D M V G R T A R L$ A A MLRLVADTSRA LK K R P A Y T D IL L N F Y VQVF Q A


 L LALAK RMPLENIFFDAFGPLVIAA
 $R L E R \| R Y R A A Q P E L E$
$S R R \square E R L A S L A W$
LE A VE K WVK S H P

VK NLA Q F
Q R R LDD R $\square$ A Q L R T K S Y $\square E D V I S$ L L D EV A H R
 K T D P MK S F L K F L K E S E R I
$P R \square I L P D E S L F A E R A T R L R S L A A H S A D G G Y L Q L L A A L A D A$
PMKRFLKFLAETERV $T$ LE T S R L D R LA Q L R K K S Y $\square$ A A E LI $P L L F P R L K N L Y N R R A E R L R E L A E N N P L G D F L R F A A D V A H A$ K ALETMAGNRPELEI LDAFGPLLIA EKLK E $\square$ Q K D $\square \mathrm{P} \square \mathrm{E}$


K E L L D F F T A LR R A
R R A
$\square$ D R M R K E L P L S $\begin{array}{lllllllll}L & L & D & F & F & A \\ I & R & R & R & A \\ L & \text { S A E }\end{array}$

QRRDERAGELAHESPFPELLHFYQEDARF $R \square K V L S K R H P E S H M L Q F M E R V L E F$
UniRef90 J1J5N2 UniRef90_UPIO00477331E UniRef90_E6YJ00 UniRef90_UPI00046F16A9 UniRef90 UPI0004701B1A UniRef90_E6YSI4 UniRef90_B3RBK2 UniRef90_A0A023WSQ2 UniRef90-J6CTI4
UniRef90_UPI00046FC267 UniRef90_F7VDE9 UniRef90 G4B038 UniRef90_UPI00041FFDD6 UniRef90-JOPNS1
UniRef90_H0JET7
UniRef90 ${ }^{-}$X5MGJ5
UniRef90_UPI00036DF899 UniRef90_UPI00036D2F37 UniRef90_M1NUK3 UniRef90_A7HBW8 UniRef90-J1IYE8 UniRef90-L8Y1H8 UniRef90_D6STD8 UniRef90-LORBG5
UniRef90-B4UEQ7 UniRef90-B4UEQ7 UniRef90-N6UIZ0 UniRef90_A8UVJ6 UniRef90_UPI0003758F8A UniRef90 C8WZV6 UniRef90_UPI0003B3F57B UniRef90_W6M5Y9 UniRef90_A1VG25 UniRef90_E6VV40 UniRef90_X0SQY2 UniRef90_Q314Y9 UniRef90_S7TJG8 UniRef90-UPI00035DA2C9 UniRef90_KONAK8 UniRef90_UPI0003A65EC4 UniRef90_N6YIM5 UniRef90-K6HEE3 UniRef90_UPIO00379D095 UniRef90_W0DFF4 UniRef90_G8ASR8 UniRef90-Q2LWY6 UniRef90_S7T2C9 UniRef90_C6C059
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UniRef90-F3Z289
UniRef90_G7QDN9 UniRef90_S0G6X0
UniRef90_C0QHA3 UniRef90_D5X7U6 UniRef90_T2G8Q3 UniRef90_C6BYV4 UniRef90__UPIO004664827 UniRef90_B9M623 UniRef90_A5FSS8 UniRef90_Q2LVC2 UniRef90_G1UNR5 UniRef90_C7LQ71 UniRef90 V2PZ02 UniRef90_UPIO00464BBA0 UniRef90_R4KEL5 UniRef90_M1WTL3 UniRef90_D6XSE8
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UniRef90_D3DHU0 UniRef90 ${ }^{-}$G5H470 UniRef90_F0JK11 UniRef90_Q67JR6 UniRef90_UPIO003A019EC UniRef90_C0QGJ0 UniRef90_A1RW75 UniRef90_E5Y2M5
UniRef90_A4J3J9 UniRef90-A4J3J9 UniRef90_A8ZYN1 UniRef90_I4C609 UniRef90_B11528 UniRef90_F6B9K0 UniRef90_Q02AT3
UniRef90 D3SLG6 UniRef90-F6DTP6 UniRef90_Q2LQE2 UniRef90_U2UP46

QQQLTEKFKDFAAP
${ }^{60}$ L F G A P S G P P ${ }^{70}$ 70

80 QQAALEQGVPAWKPEPEAFTDALEHGMAPLDVDALRRDVD QKKFVEQFPLNAA DAA $\backslash V R N L A K D G Y G Q I G D D T L L A L T V$ QAKLAAKEDLGLPPA WDKSEGEPLTDLGPSADSY
 QHQVLS GREPSWRPAPDAFDQALEHRMPPLGFRALSRDLD
QGR LIAHSPLSLTEAAFALLRGGNKSPEDPSQEMLENTQY QARLLRDAPLSADDATPVSALLGDSCPERPSAAMLEKSAY



QLEAQESAAPVIPDPETLTAEENLQGHPLLLRDKFPYDYE QLEAQREVRVEVPTDDGDAMRA ALGAPLLDRAEFACDRE QEENRQQLMDPISMYPSLVEKKIRHDKPLI NPNDFVIDQN
 QDKFSGD L LEKADDLLADWDGYKPDAYAPRFEQGVALLSDMEDPDLGGE QQALLDNPPALAPLDPERLRKSREHGMPPLAYDLLVREGA IDGQEERTGIHFNQPADHVQEKVRNGFPLLTTEHLEDDPF
 $M L N D R E Q Y S A P A Q V D E N L I P R K V A K G E P L I D F S S D Q F D A A$
$Q R A A R S S L P P D A A R L A V A G P G A R A Q S A P L L A A A D F P Y D P A$ QLEARDKAQPAAATQEIADPLQHSQGAPLLERANFPFDKS HLEILDSEECFPSLDAKQVEQWHK GAPMLARDAFPVDMA QLA R

 $E L T P Q Q R E A L Q S Q A R A Q Q S S A A A G A G M P L R P A N T L Q L D G C$

HRD A AVGGTPEPDQLPARAVTKTWAEKLPDLQQETYRRRMV QLAALPEARVVLPPDALTPPEAVLQGVSLI NREDFPFDRA ARALEAEDPPERLPAPEEAEAALGRGEPLI TMVEPPDDPD

 Q GE VRA S LADVSVDPAL VCGDMEHRQGAPLLAAREQFPVDAE $K M F D R F D A$
YTDA $\square R$ RTASP $\square K \square D A E V V A N R M R D G T P L L D K T A D G C D K H$ QEAFRT ILPNNNEKEYVIDPGQFRDGLPLLRKEDFTVD

QST $\square$ AGG PTPAN $\quad$ AA LLALIRRTAPDPMAQAAN GD $L T$ QHRAQATVQEDDWSRNLHI
$R N R \| L E G L Q L A E S E P L V L D D \square R F Q G G V P V I A Q Y P \square I D D D P$ $\mathrm{Y} \square \mathrm{A} \mid \mathrm{K} A \mathrm{~A} A \mathrm{~K} \mathrm{P} L \mathrm{~A} F \mathrm{P}$ A RKALDAELDAKGAFPVLQQFGLQAETV

UniRef90 J1J5N2 UniRef90-UPIO00477331E UniRef90-E6YJoo UniRef90_UPIO0046F16A9 UniRef90- UPIO004701B1A UniRef90-E6YSI4 UniRef90-UniRef90-A0A023WSQ2 UniRef90-J6CTI4
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UniRef90-HOJET7
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YESUVEDFLKHLSTPGLSTTRQEALKRTQQQKDQWRLWGD LQGELSVLLDALDLHVGEAQRPLIERLRNMPSEERDSLVV YESEVHDFLNKMSTYSLSTKQKEVLNTMHLQKDQWRLWGN WQSAYAQLMEDLRPHLQPSVATALIAALD-TPATLSGQAA WQSLLQQLLSELLPQVDESVARVLRLLMQQAPEQLSAWGQ
 WQGDLRALLDALAQHVGERQRPLLQALRDANADARQADAE

WQKAFATLVADAGDHपPAETQDGLQALAAESPQVLAAQAY WQDAFRGMVENLSPFMPEPAAAGLIDLLYADRSELAAKAA
YKQALLTMTETLLPEDNNEDKTHLIADQAEDDQQDEALIT YESGVGDFLNRGSRGQAFWATKYEALTQQQKDQWRDWGH YSSDVKDFLQRLSPPAFSATRHKALKRTQQQEDQWRLWAE

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FYSLLELCI
F LRRLLDDAEKRSPDSLSGGARDALTALAASDTDTLEALAG RASALMDALKNLAREQGDALARSVQLLEEAEKEADDAEHE QACKLVDELAELVGKEEGPIAEAIVASIKSGELDLKQAFK
 $A E G P L A E A$
$E R G G K K E ~$
QACELFKKFSTLLKMPESATDTLENLAKASETELEEMAT QALRLFGELLSVTADAGGALADASAMVRKAVEEDALDPAE RAEALFAALSRLEPHLAEAMAVIDAALAAGEPDVRDDAFF AAVQLMTTLCDIAQNQHNALSQAAVALQAADTDLRDQVFD H AAFFHLIEKITKHATTAAAKLIETAYNNKEDDLDRCID $K V K Q A L L E V C R V T V E Y R P Q V A D K L A G P Q A L A D L E E E K S Y D$ AAERLFFTLAGLLAAMPGQAGEAGRRI LLALEEDEDQEFF KYREVFMLVAGAVAEGLPATSKEVDEIVVAEVENFNDLAK WLP WLDALLAGYPAPANAAVGAALEQLREADEGQRKAWA QAVAFLTVVIEAMLQVSREGLDELSRLRQADASSRERSAV

 FYTICKNNDKSLTAELPEEVQNFFEAVKELSQDEDDDKFLD FFEVARACLKRVPEVVPESLANDMKSLLAKKDRVEDMKSAK QATALLEAFIGILVAKGGPLGDAAAGVRALDSGELTAEFF YHQALDEDADVIAVHQENLAGELKAGTEALDEETVVKWIF $R T A A T F G R L L A M M G A A A E V V R E A M E K G E L A V D D A C D A W F D$
$R A V Y L L Q A E A D V P P G M Q E S A R A Y L A A L K M B K G E K E Q L I T T$ WRDWLRTLCQHCADETGLPLRQELQRVAAADDAWLDAQAH R A VY M M Q A E A DVVP P LMM Q E S A R A V L K P L R K A A K E E F i QAESLLGKLVALVRKAGGPLGEVAEALEAGDPDEDDTAFF RFTAVLADLASLYAESRADARPLAEGLRADPPAEQRTLAE WHKLLHSLIAELKPEMSGTALAVIDENLKASDQEDEEMAS AFKG|EQDLERUEQGFSAAALDTRECIQAFVDDQ QAVL AYAAVTGYLSESLPETREPGAR DEESRKTGELRLKELSD
VAKACQKWRAGPEPASDEF
 F S Y LRQAADRMDPAMQQQLELLDKA $\quad$ RRNDSFLLKS RAR $L \vee A L K Q L D E D Q R K D L L N$
WDELLRS $L 1 D \square L Q L C V S \square G P S S \square K E R A K E F M E F D E N T L C A M V T$ E F LQ N LE S LGGEQRKELIH
WK D VVQAMDPAV QEGFPDLREDLDRLGNALQADDFDLYD RTA ASTLDAALAPSKMQDALLAA WADWAKRAKAEERQAFFD

UniRef90 J1J5N2 UniRef90_UPIO00477331E UniRef90-E6YJoo UniRef90_UPIO0046F16A9 UniRef90_UPI0004701B1A UniRef90-E6YSI4 UniRef90-B3RBK2 UniRef90-A0A023WSQ2 UniRef90 J6CTI4 UniRef90_UPI00046FC267 UniRef90-F7VDE9 UniRef90 G4B038 UniRef90-UPIO0041FFDD6 UniRef90-UOPNS1
UniRef90-HOJET7 UniRef90-X5MGJ55 UniRef90 UPIOOO36DF899 UniRef90-UPIooo36D2F37 UniRef90-M1NUK3 UniRef90-A7HBW8 UniRef90-JIIYE8 UniRef90-L8Y1H8 UniRef90-D6STD8 UniRef90-LORBG5
UniRef90 B4UEO7 UniRef90-B4UEQ7 UniRef90-N6UIZO UniRef90-A8UVJ6 UniRee90-UPI0003758F8A UniRef90 ${ }^{-}$C8WZV6 UniRef90_UPIO003B3F57B UniRef90-W6M5Y9 UniRef90-A1VG25 UniRef90-E6VV40 UniRef90-XoSQY2 UniRef90_Q314Y9 UniRef90_S7TJG8 UniRef90-UPIOOO35DA2C9 UniRet90-KONAK8 UniRef90-UPIooo3A65EC4 UniRef90-N6YIM5 UniRef90-K6HEE3 UniRef90_UPIOOO379D095 UniRef90 WoDFF4 UniRef90-G8ASR8
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UniRef9O-A8ZYN1 UniRef90-14C609 UniRef90-B11528 UniRef90-F6B9K0 UniRet90-Q02AT3 UniRef90-D3SLG6 UniRet90-F6DTP6 UniRef90_OLLQE2
UniRef90_U2UP4

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AEHLLFI $\prod_{\text {GA }}^{140}$
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 ALLDGQPPEEDRGVMPLLAAALQVAWVRLVEVLPDPKRPP ALRQGNLSAVDPGLAVILWAALSVCWAQAMSQ HEVVAG NI LINCEIPAKQVGEYLFITGGVLQUIYALLAASQFINTQITK DVLEQRADAVAAIAPLLWAALSLDRQCASAARAAPLPP保 ALLAGDYAAVDAGASVFLWAALSVFWAQAVALLAQDDATL MI S SDKAVFV WA ALSLYWLQLVQQIP YNAKQE ELIADEFNDLPQHQRLFLATALQVLLHFDTSRIQUDEDYL
 NLLNYRLPQQQLAEHLFIIGGTQAMYSLAASQLDGQSLLP A NWN

LGGRDDEADPALAPFLMAALQVGWTSRASQLAEADVPA DLLNHTDPQQQPTYYYFIAGVLQUTYSLTASQLDPHTLDP EVVGG APADLAAAPFVGAALQAHLARLAGGVSPTAVAP NLLNHKDPQQQLAEHILITGALQUIYCLAASQLDAQNLTP TLLGQGSDEDAKEYLPFLSDALKAVYVKSATLAT LPKLEV KYLEGDTPSAPRSLNFLVQSAAAPSLAKTADSLSALPAQQ A WDEDLDVDQDTLVF GTMSLKPFMVRMEADAAKVIETM GVLAGASRPEDLAAATFVGAALQVLATVRAARLDPSTVAR SFL ENGMSDD MLRFFLISYLQPI LYTFADKV KFEHE NLLNYPLSHQHLAEH FIIGALQUIYCLTASQLDPQTETP ALRTGTAAANPALQAPLLGAALQVQAVISARQRDLGRLQH AVWAEQTPDAPDALRFVIQASITPSLQAVAMGVDEQREKG EKAALDMNMPVHVLMFFVFLSMAPSLQTCASQLAVYLKKG ALLAEDRATLDLACAPLIGAALQVCWTQLATALDSAWIDAP AMWAGKMPEAPSLVRFLALGSLVPSLEAVASLLALNHDPE AS WVERTPGAPKALPFLALASLGPSIEAAAEQLVGKLPPK ASMAKEVTGEPMVLKFLTHLALKPSLNTLKESVDERUQKD AGLIAGLTPGAPRLAAFLVQASLDPALELQAEAAARDDLDA ADWAARIPESPSLVRFLAQGSLTPSLQVQTDLLEERNDEE AFWAERTGDAPRALPFLVKAALEPSLRAVAEGLSKHTRNS $R$ LLSGET DPGDLACAPLVAAADELVATVAAAGAAPAGV AVARERTPGAPRLLAFLVQAALAPRLAAVGEAVMAQPKDR SSTATAVGIQPALLEYVLATALGAGLQRCVEQGLKSEDQ EGGKERWA P RWAGDADADPEEERFIFLSFLNPFFSLMAESTDADLKN RWAGDALEDGDLAAAPFLAAAFQTAWTRHAAALDPASVTT
PLSEEEFPDEKDDVELGFLEESLRPELEKVAHQYGGRISKIL PLSEEEFPDEKDDVELFLEESLRPEVEKVAHQYGDRISKLD AYWAEKMPEAPRTLSFLVQSALTPSIKAVAAALEEKEQPA AQWAEKWPEAPRTAYFLAYSALAPGI WSAAEALAENPKAG RLSAAFSPTEQEDAYFVARQSLRPFLKKFVAQLPPEVGGA ALLNDEYSKVSADKSVFIWAALSLYWAQLAANIPGKAKTE SKWGEKTPEAPRTLNFLVQSALTPSVKVVAMELSKHSLPP ALWGQKTPGAPRLLSFLAQASLTPSLRATAEAVDRAKLNV ALLNSDGERLSSVLIMFSYLSMAPGVEVCAEQLSGYLENP A HWAERTPKAPATLNFLVRAAMEPSLTAGVTALAEWLKQE SELVEQHRLDGNLTSFVFFNVLKPFVANYARNLEGQYDKN EAFATAMPQSPRAVSFLAQASITPSLDAVAEALHPQLDLT ALWDEEWK TDDQTLAFIGTMALKPFMARMEPEAAKAIENM ALLSGQFDLDPAALVPFLGAALQVAWSHWLLGLEEGAVVE EEAAAQLEVPSPLMEFVLEDPLKTALGDYAEAISPEQV S
 SAWAGRDPQAPALIHFLAQATLTPQLAAVTDALAARDDRR A HLLNGDTPSAPRLLPMLVQAAMTPSLERAADALEARDLSQ
 QQWSKK $\square$ GLSDEVFDFLMKATLKPFLTLYSKNVMHQFKPD GПWAERYPEAPRTLAFLAFSAMIPSLEATAAQLPDMKVPV QDWAKEQGVSESLPHFLAEQALRPFMQLMAKQVADIIHE
 AVLEDDAPSVDAVAALLVMNALQVYWAVLAASFRPTDLKP SFLKDKDAPDEERFDFLTF LNPFFSKGSEEMDDKKDQ GQWAERMQDAPRTLPFLVMAAMGPSMEAAAGLLAAKKPEVK VLWAARLGVDEGLLDTLGGLALQPFMARFARAVRAVAPLH ALFASDFSLVSSDKAPFIWAALSLITWHKW
KKQAGQTGASFEVFKFVMGQLTRPFMEMQAEVFAPLTQGL A LFAGDVGVDPEILEAVDAWSLQP TFQALSDAVSSKVDFS EAWAKEAPDAPNLLPFLVYNSMEPWLEAAGEALSSAPQND ALWDKGLNVSPEFLDFIAQDTKPDLNAYGEAVLDKVEDD ALWAKLLNVTGAQLAYLAYHTFKPLLKFYGEKVSAQVSIS $N T L Q G L P P D G K H A L R F L L E E T V N P L L A L Q A G F L A D T P A F K$
$E T L A A R L Q M D S G L K F T M L Q L V R F A A K Q A E M A A V S L D A L D$ SNFVSEKDLPEEMVGFM1SLTLRPFLRHFSAQLRESLDVE KFL EDKTATDPDREFFALTF S WARELGUPLELLDFLALNTFKPLLQEYGQQVAKQLDFQ NLLRQEDQE\RASREKLSEPILRTVGWA ILAALVPDDVKS
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SQHTNLCPACSGTHTASLI DEETVKVCSC【YCGTDWHTPH AEARSICPCCGSAPVASVI QNAGARYLQCGLCATQWYLER QQKNLCPACRGTHSASSIVKEEGTRFCSCLYCGTLWHYPH VEQQSLCPVCGSHPVASVIVDEGLRYLHCSLCESEWHYIR
 AEARALCPCCGSPPVASVVHNEGVRFLHCALCATEWHLER
 E GLEARCPCCGAPPSGGLVDREGLRYLQCSLCETRWHKVR
 L
A
D D QPDLCPTCAAPPLASIV LD DVHTVCPACGTLPVASVVRYQGLRYLHCALCATEWHMVR AGAM CPVCGGTPVASVVGDARVRYIVCGLCGAEWHDPR EQQNNDCPACCGTHSANLIDEKTLKVCSCLYCATDWQTPH TFQSGHCPVCGSLPYIAELREQGFRYLHCSFCHTAYRFKR LWLK GYCPICGTFPDIS L RKGGQRWMHCSCCGHEWRFKR VE
RWFKNYCPVCG
QQNNLCPACAGTHSVSFVMDEARFLRCLD WLYVR GWLRNTCPVCGSKPSVSFLMDEGARFLRCSLCGUTDWLYVR SESAACPVCHAPPVASLLRGHAVRYACCSQCASEWHVTR TW WH GHCPVCGS LPLDGHLGKEGQQHFTCAFCRTAYRSKR SEPKGYCPVCGSHPNAAFLDPEGKRVLMCSDCAHEWHTRR ASTPADCPVCGAPPVASVVGDSGGRYLHCALCGSEWHAVR VWQHGHCPLCGSAPLISRI GKEGARYSTCSFCRHEYRTAR TPQVGSCPDCGSDPLISSLKEEGFRHASCSFCRHDYRDRR
 TWAHGHCPVCGSDPLDARLREEGDRYLTCSFCHTEYRVRR PWPYGHCPHCGSQPIASLKEKEGFKHLTCCSFCRDEYRAKR
DPPKGYCPMCGNYPDMAFLDKTGKRHLKCCFCDHEWETKR ARMHGTCPICGSMPLISRLGKEGFRFATCSHCDHEYRVRR S S DDEACPVCGSHAVASTLAEGKDRHLHCGWCNTA WHHVR
 WLKEKCPVCGFRPSVSYVMDEGGRYLSCVLCNTGWLYYR HATATACPVCGGAPVAGVLQSGGLRYLHCGUCHTAWHHVR GWNEGYCPICGKEPKIGEIKSDGRRYLFCNQCGFEWHYRR VWPH GHCPVCGS LP LI GRLLREEGYRNLVCSECHSEYRARR PRSHGHCPI CGSVPMHTLHHQQGFRYANCSFCHTEYRVRR TWNQPACPI CGEMPLISTLRKEGFRHVTCSFCRHEYRVRR GWQRRYCPVCGERPNLSYLREDGRRDLDCPDCGQEWLYRY YENRQFCPVCNSMPVASMVQTQGLDRYLHCNLCETEWHVVR ARNHGHCPVCGSDAFDTLHHKQGFRYANCSFCHTEYRVRR
 VWNFGQCPVCASPPMARLVDKVGARHLSCSFCQLEYRAKR
 RWFERYCPVCGWKPSFAVDSAGSHRRLHCSLCETEWPFAG A WHK GYCPVCGTFPDLALLKKGGQRWLHCSCCGHEWRFKR TESRTLCPACGSPPMAGII
GWTEGYCPDCGSRAGMGEIGEDGKRFLSCSSCFFKWPYKR GWDKNTCPFCGSSPRYSLAKDNGARRLFCSDCHTQWNYRR GWSEGYCPDCGKEPK DGK K A DARRYLFCSHCGFEWNYRR VWEHGHCPHCGRPPFMGELHKEGDRRHTCSFCGASYRAAR

 FDVMGTCPCCGELHRLAKLMNKGEKHLNCPRCETLUKQKR VWQHGHCPVVCGSAP LV GLVGGKEGALLDHTCS FCCHEYYAKR TWRENFCPVCGRRPVVADLRKHRERHLVCGGCGTRWDYAR A DAPGLCPLCGT LPVVTSVVQAASYRYLDCSLCACQWHYVR
 VQPVGTCPI C GSMP ISSLEQKEGFRHATCSFCRHHYR GWRR $\square$ HCPVCGASPDLCR $\square$ DPDNYRY LDCPQCDTQWEHHR

## Q WLH GYCPVCGSPA $\quad$ VA GLS GEGGKRWLQCSVCDHEWRFNR

 TWTS GRCPVCGGPTKLEYVDAGGHAHLDCQFCGTEWGYPE VWQH GHCPVCGSPAF IGHINKGGKRMHTCSYCRTTFRAKR KWSHSHCPVCGDQPMAKFSGKEGYR ILHCGRCETEWRYKR HWLKNYCPVCGDQPMAKLSGQDGHRKLYCGRCETHWRYKR EWNRGSCPV C G GKP LDMGELGEE EKKF LVVCSACRTRWPFGR SWQKGYCPVVCGSWPELLGF LGKEGRRWLRCSFCCSHEWTAMR S WRKRFCPV C G GHANFS RLREDGARTMYCS LCETEWPFAR

 HWEK GYCP I C GS F P S LAAVIGEKGERRMWCSRCGHNWR F S R

UniRef90 J1J5N2 UniRef90_UPIO00477331E UniRef90-E6YJ00 UniRef90-UPIO0046F16A9 UniRef90_UPIO004701B1A UniRef90-EGYSI4 UniRef90-B3RBK2 UniRef90-A0A023WSQ2 UniRef90 J6CTI4 UniRef90_UPI00046FC267 UniRef90-F7VDE9 UniRef90 G4B038 UniRef90-UPIO0041FFDD6 UniRef90-UOPNS1
UniRef90-HOJET7
UniRe990-X5MGJ5
UniRef90_UPIO0036DF899 UniRef90 UPIOOO36D2F37 UniRef90-M1NUK3 UniRet90_ATHBW8 UniRef90- JIIYE8
UniRef90-L8Y1H8
UniRef90_D6STD8
UniRef90-LORBG5
UniRef90-B4UEQ7
UniRef90-067150
UniRef90-N6UIZO
UniRef90-A8UVJ6 UniRef90-UPI0003758F8A UniRef90 C8WZV6 UniRef90_UPIo003B3F57B UniRef90-W6M5Y9 UniRef90-A1VG25 UniRef90-E6VV40 UniRef90-XOSQY2 UniRef90- S7TJG8 UniRef90-UPIOOO35DA2C9 UniRef90-KONAK8 UniRef90-UPI0003A65EC4 UniRef90-N6YIM5
UniRef90 K6HEE UniRef90-K6HEE3
UniRef90 UPIOOO379D095 UniRef90-W0DFF4 UniRef90-G8ASR8 UniRef90-Q2LWY6 UniRef90-S7T2C9 UniRef90_C6C059 UniRef90-UPIO003B4FEF5 UniRef90-K4LFVO UniRet90_COASPO UniRef90-LORIE1
UniRef90 F3Z289 UniRef90-G7QDN9 UniRef90-S0G6X0 UniRef90-COOHA3 UniRef90-D5X7U6 UniRef90-T2G8Q3 UniRef90-C6BYV4 UniRef90-UPIOOO4664827 UniRef90-B9M623 UniRet90_A5FSS8 UniRef90-Q2LVC2
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UniRef90-D3DHUO UniRef90-G5H470 UniRef90-FOJK11 UniRef90-Q67JR6 UniRef90-UPIOOO3AO19EC UniRef90-C0QGJo UniRef90-A1RW75 UniRef90-E5Y2M5 UniRef90-A4J339 UniRef90-A8ZYN1 UniRef90-14C609 UniRef90-B11528 UniRef90-F6B9K0 UniRef90-QO2AT3
UniRef90 D3SLG6 UniRef90-F6DTP6 UniRef90-O2LQE2



TOCTFOK 210
CKKATQNTSTHTTENITR
230
DGIVVETCETCGFYC ARCSVCDQTGKLEYLSLEDEEGNPWLPVQAETCGDCHSYL GVCVNCHSSADUQHYSLM YEKAPEQAEVCGECETYD AHCTCCGHDKEMNLWSLDDYQ ANVRTESCEACHGYT LQCTFCESTQSVSPSNFNKSSGA AEATVIVETCQ1GQRSC VKCSNCDTGGQAVYLGGDDEQGQ
SKCTNCDQTGKLVYWSLDDDTH ATCSVCDETGHIDYWSFEDTH ATCSVCGGTDHVNYWSFETT GQCTECHSNKSLYQSKIDEY AL TQCTFCGANQSISTHKSKNDPALD SKCSCCNTSAKVRYLALEDDAGK
ARCSHCESTEG』AYHVAENETARR

 MACP YCAVEK S NMCPWCESED $\square R$ CA GCQA TA GLAA YHH L TKCVNCGNVED




V A C PVCGE E
 L



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 TK CPKCGNVED



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DSLKFFTVEEAP KL T F F TVVKE EP G F R RV DVV CK T C K H Y M $\left.\begin{array}{l|lllll|llllll|l|lllllll|l}K & L & T & F & F & T & V & K & E & E & P & G & F & R & V & D & V & C & K & T & C\end{array}\right)$


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HKCPGCNDN

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


K T R D A R I G N SEVP LAA E DLAATIHLDLLA GKEGFERG KTTDRRRLGRECLPEVEDAVSIHLDSIAQNE GYQPG K I DD LRSEQEANLDVEDMVTLHLDDLABEEGYR K L A DL R E Q A E A L P A A L D D L A S L P L D ML A R QE GYSRPTP SA W KLTDRNLDRRTLPLVDDLESLSLDVAAREKKYKRPTLSAW KTY $\quad$ GE E N NSA GKE GWAS I H L D I L M K DTGGAA K G KTADREFDRVSVPVLDDDES LTMLDMAARGQGYNRPVLSAW K T V D E R IC GEVDLFCEDI A TV DL DGLALKKGGYSRR

 $K V A D R E F D R \square S \square P V L D D D E S S A M L D V A R Q Q G Y A R P T A S A W$
 K L LY L E K D P S L E PVA D D L G T L A L DLL L LAA E E GYAR A S Q NPL



$\overline{L T D D L R Q} \quad R \square D P V N M Q V A S L P L D \| L A R G K G F T P L A L T P W$ KVVD ERVVGGGVP ELY DI WS FRLDDLLA
K I A D F R E G R E S $K$ TVVDERLA GEVVDLFCEDLATVVELDRLAQAE GYQRG K T V D E R E C G E V D L F C E D L L T V E L D E L A H N E G Y QR G G

 KT I D E G K D E KI I E L F WE DVVK TV H L D L L A M Q E G Y

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


| UniRef90_J1J5N2 | \| $\square_{\text {A }}$ |
| :---: | :---: |
| UniRef90-UPIO00477331E | $\mathrm{L} \\| \mathrm{V} \mathrm{G}$ |
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| UniRef90_UPI00046F16A9 | A F P G |
| UniRef90-UPI0004701B1A | $\underline{L} \mathrm{~A}$ |
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| UniRef90-B3RBK2 | A $\mathrm{L} P \mathrm{P}$ |
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| UniRef90-H0JET7 | F 1 A G |
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| UniRef90-A7HBW8 | L A P A G |
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| UniRef90-B4UEQ7 | LP V V A G |
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| UniRef90_UPI0003758F8A | $F \square A G$ |
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| UniRef90_UPI0003B3F57B |  |
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| UniRef90-UPI000379D095 |  |
| UniRef90_W0DFF4 |  |
| UniRef90-G8ASR8 | $\square \mathrm{A} \nabla \mathrm{A}$ G |
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| UniRef90-D6XSE8 |  |
| UniRef90-B8DLC1 |  |
| UniRef90-G5GRA7 | L |
| UniRef90-B2FT10 | L W |
| UniRef90-D3DHU0 |  |
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| UniRef90-A8ZYN1 |  |
| UniRef90-14C609 | LLA S G |

$\square A R R P V L E P V L R A F E P G L S A$
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YAE $\square L Q E L H S Q A D E R P L A D V L E F F K G V M Q \square$ QAVEQLSKGVAPEHVLWLMAETLEK


E EYVQLQQDYANS
E E Y VQLQQEMF EV A E A QA LDA EPFVALAAVRRE

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UniRef90 ${ }^{-}$NOB6C9
UniRef90 $12 \mathrm{Q4X3}$
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QNE LDFRRLKKKTDSKKDADP LLKREDRP LLEFDDFEVDLT $D P D C V R P N L D K A A M E A G V P V$ TAGAADDFDLQ QGRLAATLEVLPAGRRQLTGRLTEDLARLVEASG
ENEELIKLRNVAPSQLDULRMLDETKKPVLQVNPHDEADT
 GGKSAARPERFELSAEHARARW EGSFPLLRRWEFPLDTE

RANLIES DAEKNCPAP DQEERDQQGVP LSDSD DEWAEA QLQHEGGTGIGGVLAGVDQEQRSSNGFPLISPSELRVDRL QEQ WKNSISPDSVQPKIDQGLIKTGVPIAVKTEFDFDLQ RREVAATLPEPRPGLAYDPDRFAAGTPLLANADPEGUVA QAQLADDLADSDRASGLELPEAQPAGVPLTGAAAPLRQSA PARLAQGVPLLAGADLSAGREALNKAVVVFLPADAEAFPA



QEAVAESLKKEGVLLPQAQPQRMEQGVSMLAGASFPAVR\|

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QAELRTELPLANTHGVTVDEGRFLGGEALVSFVDSEVFAA RNAAPDDLLSLVDLRDASVKDRLSRGIPLIDRPGFARLPH
 DNDYAGR|TLPMEDTDAVLNRHYGEGVSLEELVQPEDDAE VRSTLDGUGDAPAAPNDYRAEYKSGVPLLHSSALVFDEA
avrrtaetllpllcakgdv a a


$$
\text { A } \square \mathrm{S} \text { E R } \square \mathrm{E} \text { H G } \square \mathrm{P} \square \mathrm{G} \text { G } \mathrm{DE} \square \mathrm{~A} \square \mathrm{D} \text { WS }
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RGKLLDAYALSRKTKP LDGFPMFRFEEDPVCSEKSGAD GQGASLSPREEFPMDRDALRRVFEADHPVLAAGFRDDRAD QLWQESQAPEVVAGVQLA G Q


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| :--- |
| UniRef90 | UniRef90-R5EF91 UniRef90_UPI0004051FAF UniRef9O_C $4 \times N R$



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EYREAF LSFAQLLKDKREKASLFVDRTMDDKDEENDKKYF WПED GGGLLSKYQPEDETSMQSIKNLLDEETAKRWDDEAF YREVFERLLDELLRPEAGPQLLALIKNNLDKVNFENIISSFI
 AAESLLEMปAGSLPEDNVQLKGAHESLSRAHPEQRTA甘WR

## Ler

 YYAALFEYLKT TGTDGPAADSSLLRAALNSNESVLIQHAK TLVTFLAGLVTVLEAESTEGAAALRNTGEALQSERRRAPD WI DELKNVLIKSNPSLEGQFTILKDLLDENIATRWLDEAF GLLAAAPLLVDILGRRPDLAAPLAESVLNGRMEVTEA EKLLLLATLETMAPHLPALEAFLLAPAGAAKQDPREALAE ATLAAGPDLLAGLAGLFPAIAREALLLAEALAERADGLAD LNIIELSHVAVGLDHPDQEDVAALARHLLDGNEEALAQAAE FLLAAAEKLLPAMGNDFPALSREALGQLLAQGPRLAGALVA AKA पRADVAEGRMAASEGAAHVLDA DSARL CAEKLLPMLCRMDAVVPAEARRAEELVCAAASGDRDARAA WRDEFALAAKR VAPVCEVLRDIVEAMQKAFSDTDMILGL RATHFLDSVIEVMTRVGRDGKGELSLLRQADHGAREREAL
AEALRAFFLRPVENPAEGPVD SNDSRDALAE DLRARYLQLCAALLDAARARRTALERLRAADDGALDPRAV CAGPVFQLFVS FNLDAGEELAPLALALENGEVSFMQLPAD MHQSLTD RAFAANQEAATALLTALLQQDDA YKEALRAVAETGETTDLTHLMNITSQLTDENADTFDTQAF A पKAAA TGGTFRKLLTVMRQGGGERFASRAATFRSEGGEEGAVIA TLPLAAQRLLPAMTTAFPGLAGELDTLRGGTEGAALDAEAL FCKNVFQDVCA LERRRPQVGGQLKTLTEAAEHAVVRLVS PTSFLLELTERLSGELAPQCWELHAQFSMDHGSAARAMAA WDEEINTTLVKFKPELEAKMASUPSLLTEETADRWDDEAF HKAADEAFFLAPAQSRRDRRDALAEAVLAGDASTFQR TGQQFRK MMVMKQGGGEREQAYMRNTRKEEGEAREDGHF GAAA LRAVTAAVSAA LPPA $\square A T A A K A \square D E A \square S A P R A A E A A$


VVRELVEGKEDTLNAWAG EPVLELVKRLLEASERPLEELDS
 WAHKLLTKG $\square G E S E S \square N K M \square E S N D E L T T A A \square S Q D M A N A E$ PMRDVAGVLQAVAPHMEADQAFFLCPVEPGREDARDALAE
 SSSGFRKILTVMRQGGGE KEVLAQLRGSGRSERDDAYL
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RRLAAEAGLAETSLELLFGWAVIDVLVPAEAKDAAVWEEAG ENVSEQNDVAQWVPHFIAEQAI RPFL HIVSEACKSFITND ETFAENHQIASWLPYFVAEHALRPYLQKAASEDKEE, LRD DLAAGQAAVSPDFLLMALRAAYGPCLAANRPALLALAPAK RI DSREMEVPRPLLVFLIKMSLRSSFERLHETLLAVLRGL

 SYFAEGHGLEQWIVQQFLAETALLRPYLQQTLREMVQPMMNEA R HQLPIIDVLHVVLYSLLPTLQQYGQQLFDSGLEE LAAEAGLPPEVLEFVAEFVLSPPLRALADQAAPWDEAG DAVSETMDVPRPLLVYLDKMSLRMSFERLHETLIAFDRSLD AEYAQDLDDPADSLELVTRFCLSALLEAMFSGRPDNGQP LLSLMEVDEVSEHLLEAIIHALNPFLVSYSKALLGLVNQE AV S TERDKLRALALWLLQPLLSAVRLAAANGLKWSAE SWNHYRQEQKLESQELFSHFTLAVSIRLARQSLPENLRQK AVLQDEFSALQGNEPLFSRASLALAGVAQAQQLPISASVD A LCS QYGLDEKSMEVMLPLLVTPLLRSDSDKAASYAADD AMDAGRSADADVLTFVTGFVLSPVLHALVAVSMPESGEAP VRLGHSCGVDPRVLGFWCVQLVTPLAMARGRQLGGLTAEA DRVSQETEVPGPLLDHLLRMSLRMSFERLHETLRTVLRNL WAYERELDEHTL DQLLHWAAAPFRRRAGHRYQAEAELI A DFAEKNSLSPDVLDMVIAQTVKDLMARTANSLPEAPFDP SLL $\quad$ GVDPRVLGFWCVQLATPLAMARGRALAPLVEGM AEVHAAVASFLESVVLP R BABAPGDADDTA LAGEDGLRPQSLVFLTEIVATVLRAEAPGLAADADDA GLLSNAYEQEAHMVAMVGMMALRIVDLELVAKAVVKEQRKIV
 ATLAGDPDTLSRFIFPVLSWALRVFIKQKAASLDQDSLRK LVRAGDVSADLPANVLMMVPALQPAAEAAVAAYQDADDHH LSFKGDI GVSEDLLSALGIWT QP FMA RE GLSKEDK ALLAGALGVDPRVLGFFGVQVLTPLAMALGRRLGRLVADA KLAGEDPEEADEDMMAVIAGLLDNVLRRYFRNLGEDDEAK ALRADKYQ AA WFPHYUAEQGLRPFLQLDAERESGFVDK
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170
180
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200
GWDHGYCPVVGGTPS $\square$ S LVVGGGGKKFLIHCSDCGHDWRYMR D WLH SHCPVCGDDPMAKLVGQQGQRKLYCGRCETEWRYKR S WERGECPVCGAKPLLARLKRTGERFLYCGVCGMEWRFVR S WK S GRCPVVCGGPSRLLEFIDEEGHSHLKCQFCGAEWSYPE TWSFGQCPVVCGAPPMARLVGKEGARHLTCSBCQLEYRAKR PWTKGKCPFCGTPPRYSVI GEKGFRKLFCGMCHTQWEYPR
 S WLKK P E C P V C G C L P P QL A V L R P E G K R H L L C G L C C R T E WE Y R R FK HT GTCPCC GE PVVRLARLGKVGGKVLVYPRCYASWSEKR GWVRNYCPVCGRQAIMAHLRKKRARFLVCDGCHTEWPFAR DWTQSVCPVCGSLPAFALVSGGGRKYLHCGLCGHDWRVRR SWEH GHCPVVC GSSPS DS LVVGGGGKKY L H C S L LC GH DWRYKR
 QSQEARCPCC G GLPLAS QLS GHAQRYVVCSMCSHAWPVGR H WLK S S CPVVCGGRPTLA LL E K D GKR LL YC GMCEVK WRFQR R WKRRYCPVVCGGAPDFAFLDEEGARHLLCSRCNSEWLYRR QFRENFCPVCGRRPVLAELREGRTRDLIGGGCGTRWLYTR T WE Y GHC P V C D S S P T S L V G G G G K K Y L H C S L C G H D WH Y K R
 HQAR HCPFCGGAPWVAARRDGAARFLGCALCGGEWPLGR H DFSSTCPVCGSKSHFSRLQEDGQRFMFCDRCFSEWKVRY A WD Q N Y C P V C G R R P VLA D L H K G R A R H LIC G GC G T Q WL Y A R

 WQQ GS CPV CGRYPHLAARLKEREGRLLDYCSLCEAAWPYPR FWREAYCPV CGSFPD S LAA GGGGKKMMHCS CCSHQWHFRR GWHES DCPVVCGARPMAE L S G DEGERRDLCCSTCCSYSWS FRRR



 TWNK GYCPI CGS LDP EL S LLL GKEGHRWLRCAFCA GEWRFHR
 V WR Q GYCPVC GAAP TVIGWMD K G G K K H L H C G V C GA D WK F R R GWE Q GHCPV CGATPS S LVGGGGRKYLHCSLCGHDWRFKR

 VWE Q GYCPTC GA WP LLAEQQRGEQTRMLRRCGLCGS GWTYGR
 GWTRNYCPVCGRQPVMAVLRKERARFLVCDGCHTVWPYAR $M D V M G T C P C C G E P P R D A E M E K D G D K K L I C P R C E T V Y D V K K$ $V$ DVVS G GCPAC GEAP RLA A I I N K K G K K E V T C P R C L L H A WE V K K LWRNP HCPVCGSDPDLAVISSKSGELWHHCPVCAHRWRFVR A WE Y T HCPVCGAPPVIGQAMDNDHRRYYCFFCSWHWETRP P WT QATCP PICGGGPDFSRLAHGGARHLRCATCAAEWKYKR K WQRNYCPVCGSKARYGLIGDDDNKRF L QCS LICDRQWLFKR PWARGFCPI CGAWPAAAERRGARERRLRCGRCGADWAA $\square A$ QWLLS YCPV CASLPTMAQLTGQRMRHLHCPCCGTRWRFRR
 A WRQ GYCPVCCSSFPVMGWLDKGGGKK H LYCSLLCGTS WT FRR
 S QTHCPVCGS LPS S S Y L D G G GMRFFHCS LDCGHDFKTHR


 A GERRYCPI C GA WPLLLLEYRGRRSRY L R C GRRCAF GWE I S W HWTHGHCPV CGTAPKL GVLREGGQRWLVCALCDHTWRHQR A WQE GYCPVCG AFPT GWLD GGGKK HLDCSMC GAD WK F L R R
 LWD F P L C P V C G GSPAL GQALLSEGRRRYFCFFCSFSWMSRP



 NKMNHSCPVCGSTPALAKVGGERGRTLYCQQCGTEWAFER H D Q P L R CPVVCGSPAAASHVTES GNRVQYCS LDCGTQWGFER M WYRGRCPI CGGEPDAA LERESGRRRRLCSRCDSEWTFQR Y GYKPHCPI CGGDPVMARVSETNFRSLVCGTCGASWYWNR SFERSVCPVCGSPATASWVGEGRGRMQYCAMCGTQWNFDR GWNA GFCPPI C GSYTRTSSFLGKGDKV F MKCEDCGEEWEYPS A WNRGYCPVCGSWPGD MRRVPGGGEMTCSLLCAATWRFTR S GDAP LCPTC GAPAA LSSVSEGTERY LIFCSCCCGTQWPFER

## UniRef90 FOJEH8

 UniRef90-K8EOB2UniRet90 C9R7M UniRef90-S6A518 UniRef90-D8K346 UniRef90_UPIO002F9B91E UniRef90-F5RQJo UniRef90-Q11TC6
UniRef90-K6CB40 UniRef90-UPIO0040D4FB1 UniRef90 UPI0003B5D920 UniRef90 MiWY99 UniRef90-B8J722 UniRef90_E1K258 UniRef90-U1ACR6
UniRef90 A5D1K2 UniRef90-XoRLZ1 UniRef90_U2KU64 UniRef90-M1 WPL6 UniRef90-D7CNA9 UniRef90 W4RKR5
UniRef90 Q4JUV UniRef90_QOAYT7 UniRef90-J4VOH5 UniRef90-Q30VI8 UniRef90-AOLHR6 UniRef90-A7UFC3 UniRef90-C9RB22 UniRef90_UPIO0037112C9 UniRef90-B5E8K5 UniRef90-NoB6C9 UniRef90-12Q4X3 UniRef90-B8J4K9
UniRef90 G704P7 UniRef90-F3YVN7 UniRef90-K6GFH3 UniRef90-B6WSII UniRef90-AOLE89 UniRef90_S7U533
UniRef90_-15B367 UniRef90-UPI0003B2FC3A UniRef90-UPI000366E441 UniRef90-A5G6W0 UniRef90-UPIO0047A31B5 UniRef90-B8DK09 UniRef90-UPIo0047863AD UniRef90-K1YA26 UniRef90-UPI00039CC99E UniRef90_C9KL26 UniRef90-E6U1S6 UniRef90-UPIO002EAF00F UniRef90 C7LUC6 UniRe990-T6HWC5 UniRef90-D5XCL4 UniRef90-D1CAE9 UniRef90-Q11U19
UniRef90 K6E7D UniRef90-F5L7M8 UniRef90-G1UX32 UniRef90-TOXMZ2
UniRef90 UniRef90-UPIO003B492A0 UniRef90-X1J8D9 UniRef90_UPIooo363BB0D UniRef90-A2BLN7 UniRef90-W0E9X9 UniRef90-W0EMB7
UniRef90
D1CF20 UniRef90_B8DK06 UniRef90-A1VAR0 UniRef90-UPIO00467EB17 UniRef90-IOINQ4


|  |  |
| :---: | :---: |
| UniRef90-KOEH8 |  |
| UniRef90-C9R7M9 | KTVDERKHPEASLFWEDIKTVALDFAMLGKGFQNKA |
| UniRef90-S6A518 |  |
| UniRef90-E13 | ADRDLDRPSVSSLDDLESLTLDIAARNQGYARPVLSAW |
| UniRef90-D8k346 | KTTDERKLRECRPQAEDI DTAPIDMV |
| UniRet90-UP10002F9B91E | KVIDRRQRLKKEEPACVDLNTIHLDIIAQERG |
| UniRef90-F5RQJO | KTYRGPANGS DADAQDWASVHLDLLAEEKGLLHKKG NPI |
| $\begin{aligned} & \text { UniRef90-Q11TC6 } \\ & \text { UniRef90-K6CB40 } \end{aligned}$ |  |
| UniRef90-UP100040D4F | EGEEGİ YLQDWATLHFDMLGEEQN |
| UniRef90-UP10003B5D9 | LCODREYDTPPALDTVPLGLLHLDTLAQGKSLRPLAGNTW |
| UniRef90-M1W | LNVDRECEPLPHLDAIQMGLIHLDIYAQKKKL |
| UniRef90_B8J72 | KTVARE GAPDLLLADWTTLQLDALARERGYKRLGTSLY |
| UniRef90-E1K258 | VVDRDQDEPLDLDVAPAGLLHLDAVAQARGFTPICPAPW |
| UniRef90-U1ACR6 | Q1 SLLLDAGAEAGADDLASLALDLLAGEAGFARUGFNPL |
| UniRet90-A5D1K2 | KT ${ }^{\text {degkT }}$ |
| UniRef90-X0RLZ1 |  |
| UniRef90_U2KU64 | NA |
| UniRef90_M1WPL6 |  |
| UniRef90 ${ }^{-}$W4RKR5 |  |
| UniRef90-Q4JIU7 | TPEVDDLVSLGLDLWAAEEGFRRDEPGL |
| UniRef90_Q0AYT7 | KTFDERPGGDVDLFA ANIETHYLDLAQEKG |
| UniRef90_J4VOH5 | K GVDLRAETEPQMDAMALGMLHLDLVAEREGLMPKAPSFW |
| Un | WTtLhLDLLAQRAG |
| UniRef90-A7UFC3 | DSRQAF $T$ NLSVLDEFDTLMLDIIARKKGYLNER】GP■ |
| UniRef90_Q39V |  |
| C9RB22 |  |
| UP100037 |  |
| UniRet90-B5E8K: | KTRDTRKGGSEVPLVEDLLT |
| NOB | KVIDQHITKPSTPMLGDLNSIHLDYIAQEKGYKVSG |
| 2Q4 | DPDV1PAG |
| UniRef90-B8.J4 | DRERDGKPDMDALALGMMHLDMVAARKKLRPLKVSFW |
| UniRef90-G7Q4P7 | IVLNRVEDREVDPDVAPAGLSHLDAAAQAKGFVPLCPAPW |
| UniRet90-_3YVN7 | PCVDLRELGGEPPLVLSLGMAHLDLARQKGYRPAAWLP W |
| K6GFH3 | VVTNRDSDLAFDPDSLGPALLAYLAAARERGYEPVCVTPW |
| UniRet90_36WS |  |
| AOL | VSVDRTLADEVPEVARLGLLHLDAIAQRREFRPMNPTGW |
| UniRef90_S7U5 | DRECSEDVEPLTAPLGLAHLDI AAREYG |
| UniRef90-15B367 | QTIDPVNMDVAMIGLELQAREKGYSPQAEMLIW |
| UniRee90-UPIIO003B2FC3A |  |
| P100036 | DDREYEPHPHLDAVQMGLIHLDLHARS |
| A5G6 |  |
| UniRef90 UPIO0047A31B5 | , DRQYIEKPSAALLD NSIML |
| UniRei90 - UPI00047863AD | KVI RTA APTPQLCLLDLQTMHLDLLAMERAYRPPRPFW |
|  |  |
| UniRef90-UPI00039CC99E | NDA |
| UniRef90 C9KL26 | YQGCKDECEEVYRH |
| E6 | APDEDEKVVAAMVD |
| niRet90_UPlo002EAF00F | KVIDVRKKIKKESILAI |
| UniRet90_C7LUC6 | DLESSENVDFDLAALGLVHLDAVAQSRGYFPLSPAPW |
| UniRef90-C6HW | VDQREGPDLNPDI QEI LGLLHLDMAGELLLIRPLG |
| UniRef90 T2GFQ4 | CLDAEMIDDIPDTS A MLTMLPLELRARQAGYTPMALQPW |
| UniRet90-D5XCL4 | K F GEEAGNIGLKDA VFLDIAQQNGY P- |
|  |  |
| et90-Q110 |  |
| iRef90-K6E7D6 |  |
| iRef90-F5L7M8 | D |
| UniRet90_G1UX32 | VDRECGGVPDMDAMALGMMHLDMVAARKGLSPLKASFW |
| UniRef90-TOXMZ2 | VDQRAGPDLNPD\QEVLGLHLDMA |
|  | ditarder |
| UniRef90 UPIO003B |  |
| UniRet90-x1J8D9 |  |
| UniRef90-A2BLN7 | DEEKHGLPPHELYDVYTYTLDLIAEQLSSKKSGVN |
|  | DLRER |
| UniRef90-W0EMB7 | DLRERRVEDLDWENIRTLPLH |
| UniRet90-D1CF20 | TLDALDPDELDAEDLASVELD |
| Ref90 B8DK06 | LAADLRARTSDVPSVLPLGMAHLDMLLQEKGFLPGGV |
| UniRef90_A1VARO | VDREREAVPNLDALALGMMHLDMVAARRQLRPLRPSFW |
| UniRee90 UPIO00467EB17 | RTE ESLLPGLHPEVAAL |
| UniRef90 IoINQ4 | KVVDQRYEEDLDSDFQE LGM HLDLAAMEMGFHPLIGQPP |
| UniRef90-D6Z3F7 | D |
| UniRef90-E5YBSO | LEADIIRKDLALDAALVCLGMGYLDALMQEQGLLPLDG |
|  |  |
| UniRet90-LOFAY7 | DLIRELLODLVWED RTMPLNYAEQ |
| UniRef90 A1HP70 | DLA ARSEG |
| Uni | VVTAK ${ }^{\text {V }}$ |
|  | FQDLDPHAPLVVEDVVMARLDQVALDPRFK |

PTVFEHEDE
RVVFREDMKVQPFAEDVVMARDDE\AHDPRFQNA
NLINEDLLGDISREDYPMLTLKLESMLDE
AEFDAD
ATVFQ DALKSPMDYDTELIT
KII K P S H L H S A A M DDL L T L H L D Y $\square$ A Q E E G Y
$V V T N R D S D L A F D P D S L G P A L A Y L D A A A R E R G Y E P \square C A T P W$

UniRef90 FOJEH8
UniRef90 K8E0B2 UniRef90-C9R7M9 UniRef90 S6A518 UniRef90 E1JYX8 UniRef90-D8K346 UniRef90_UPI0002F9B91E UniRef90_F5RQJ0 UniRef90-Q1ITC6 UniRef90_K6CB40 UniRef90-UPI00040D4FB1 UniRef90 UPI0003B5D920 UniRef90-M1WY99 UniRef90-B8J722 UniRef90 E1K258 UniRef90 U1ACR6 UniRef90-A5D1K2 UniRef90 XORLZ UniRef90 U2KU64 UniRef90 ${ }^{-}$M1WPL6 UniRef90-D7CNA9 UniRef90 W4RKR5 UniRef90 Q4JIU7 UniRef90_Q0AYT7 UniRef90- J4VOH5 UniRef90 Q30VI8 UniRef90-A0LHR6
UniRef90_A7UFC3
UniRef90 Q39WX8 UniRef90 C9RB22 UniRef90-UPI00037112C9 UniRef90_B5E8K5 UniRef90 NOB6C9 UniRef90-12Q4X3 UniRef90-B8J4K9
UniRef90 G7Q4P7
UniRef90 F3YVN
UniRef90-K6GFH3
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UniRef90 A0LE8s
UniRef90- S7U533
UniRef90-15B367
UniRef90 UPI0003B2FC3A
UniRef90 UPI000366E441
UniRef90-A5G6W0
UniRef90-UPI00047A31B5
UniRef90 B8DK09
UniRef90-UPI00047863AD
UniRef90-K1YA26
UniRef90_UPI00039CC99E
UniRef90 C9KL2
UniRef90 E6U1S6
UniRef90_UPIOOO2EAF00F
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UniRef90 C6HWC5
UniRef90-T2GFQ4
UniRef90-D5XCL4
UniRef90 D1CAE9
UniRef90 Q1IU19
UniRef90-K6E7D
UniRef90 F5L7M8
UniRef90 G1UX3
UniRef90-T0XMZ2
UniRef90-A7HEU
UniRef90 UPI0003B492AC
UniRef90 ${ }^{-}$X1J8D9
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UniRef90 A2BLN7
UniRef90 W0E9X9
UniRef90-W0EMB7
UniRef90 D1CF20
UniRef90 B8DK06
UniRef90 ${ }^{-}$A1VARO
UniRef90_UPI000467EB17
UniRef90 IOINQ4
UniRef90 A3EUY
UniRef90_D6Z3F7
UniRef90_E5YBS
UniRef90 C4XP8
UniRef90 ${ }^{-}$LOFAY
UniRef90_A1HP70
UniRef90 UPI00046646FO
UniRef90 R6I6P8
UniRef90 C7N8F6
UniRef90-X0YGXC
UniRef90 R7IKE1
UniRef90 C7MPH5
UniRef90-B1L5Z2
UniRef90-G7Q4P4
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UniRef90-UPI0004051FAF
UniRef90 C4XNR3

UniRef90_E4U7V8 UniRef90-E8PPG5 UniRef90-H3Kl17 UniRef90-C8WHQ4 UniRef90-D9Q032 UniRef90-R5QEQ4 UniRef90 R7C155 UniRef90-K1JW72 UniRef90- X1P8F1 UniRef90_X0Y820

## LK L L A P 1 LRE

 LIAFFRELWGV
##  

lupas_21
lupas_14
lupas_14
lupas_28
lupas
jnet
conf
cont
sol25
sol5
solo
sol
$\underset{\text { jpssm }}{\text { jhmm }}$

TAK QAEAASHVDLGEVPDADSLKTWARHGEPVVSHAPVKKIEAA

QLAAEAPEWTDEEDEAARDGKETDLSDRPVRDDSERFDQT

lupas_21
lupas_14
lupas_28
jnet conf sol25 sol5 solo
jhmm
jpssm

UniRef90_E4U7V8 UniRef90-E8PPG5 UniRef90 ${ }^{-} \mathbf{H} 3 \mathrm{KII7}$ UniRef90-C8WHQ4 UniRef90-D9Q032 UniRef90-R5QEQ4 UniRef90 R7C155 UniRef90-K1JW72 UniRef90- X1P8F1 UniRef90_X0Y820

130
140
150
160
 $A A L A A G M P E V D V Q L D P V L S M A V R A M L T D Y A E A V S E D P V V D$ LIALAGEDDGMDEDAARI GAMAAALALLATAVERARREAGAD RAISGDVSQEGAKSALIGAAFQAIARAYASRYFKENGSD LWDSGDADELDDFVLPVLGETLRAYLTRFAEKASEEQKPS





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170
180
190
GPDDATCPVVCGAEADVAYMLDANGFRYAVCRIDCDSRWPVPR KD WAERCPACGGFPDVGYLDAEGRRFHVCAFCDTSFRALR FERRLSCPVCGSEAAMAVVRSGNVKQLCCDRCGSHWKFER EPHSVRCPVCGGEAAVAQVGQGRAKRLWCAQCGCAWEFER
 YSRTNTCFCCGSEPDDAAVVETTDRKLFCSTCGASWLYER T DHFNRCPVCGGLPVAGTAYHGNVKQLFCGTCGAHWPFDR TTHHNHCPVCGSAAVASVTDTNGHKQLWCTCCGAHWVFER $\square$ WRRCYCPLCGASP
GWRRGYCPICGGSPNFAF $\square$ SKE


UniRef90_E4U7V8 UniRef90_E8PPG5 UniRef90-H3Kl17 UniRef90_C8WHQ4 UniRef90-D9Q032 UniRef90-R5QEQ4 UniRef90 R7C155 UniRef90-K1JW72 UniRef90-X1P8F1 UniRef90_X0Y820
 LACPYCGEARADHLVYYE EGPYRVYVCRSCGERF IRCAHCGDEAVSD LRY $\square$ HDEADQDHRLHVCADCGETT $V R C V R C G T Q N Q L H Y F N L E G D E \quad A H R L A T C D E C G G Y T$ GSCPFCGNDNKFKLGTFMDKEWK YGLMFCQECGSYW 1 R CVRCGND VVSELTYIVDEADDMHRMHVCSKCGGAM I RCAVCGDQAVSD LSYVHDSGDESRRLHVCKSCHAAF 1 RCAVCGDQADLSSYHDETDETRGDESRLGVCAGCHAAF
lupas_21
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UniRef90_E4U7V8 UniRef90-E8PPG5 UniRef90-H3K117 UniRef90-C8WHQ4 UniRef90-D9Q032 UniRef90-R5QEQ4 UniRef90 R7C155 UniRef90-K1JW72 UniRef90-X1P8F1 UniRef90_X0Y820 PTVF V S GTFEQVSPDVEAVVL
RTVYEEDALDAFS FVEDVVMAKLDLV
RVI WDEEMASAPS IVV DVALDAMAAER
$P$ TLFAMGDE L T FSADTEAIVL
PTVFVNDGENFDQDVDG:ADSGLAAYYSEE
PTIFAGEELNFCADVEQUVMTGLEL

jnet
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sol25
sol5
sol0
jhmm
jpssm

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