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 TALAEGKDPQIVLRAYEMKVTVAAGYEPVLDECVSCGRQE
 LALDDGKDMEVVARIFELQYLGFMGNDPELFSCSICRRSD NLLEEGVDPE：LSRIFELKVLESAGYRPRLQGCVQCGGAD QRMDQGDDAEIITNIFEVQLQRFGIAPIWTHCVVCGETG TALDDGLDEQLITNLDELQLLRAFGVAPELQRCAVCGRTD DGLREGKDPAVVIHLFEMKILEAAGYGPQLFQCINCGSED SRLEQGTDPEILTRVDELRILSLAGSAPVLDHCAHCRQSR SALNEQKDPEVITNIFEMQLLERFGVRPEWHHCVACGETQ EKMAAGENAHVISQIFELKMLNVLGHYPEFRGCVLTGETE HQLNNGQDPEMI AR FDLKMLGIJGAKPQLDCCASCGSQD NLINDGYDAEII TNIFEVQVLQRFGVAPIFDHCVICGKTS QLMDTDNDAEIITNIFEIQLLQRFGVSPIWTHCAVCGQTE HLMAKG DTQLALRAFEAKLMWLTGFKPELDHCTGCGQSLD QLIDQGFDEQI ITNDFEVQLLNAYGVAPNWVDCTICCHRTD GRMHEGEDGEALLLLFETKMLAVSGADPELRGCVACGTTE GRMHEGEDGEALQLLFETKMLAVSGADPVLAACVSCGDAE AALQEGKDPQ TLHLDEMK DQLIAGYAPEMDRCDHCGNED $\frac{L W I N N Q D E V D \mid P V M Y E L K L Y K K A G F A P V L H Q C S R C G N Q E ~}{\text { VLI }}$ SLIDRHFDPAI VNI EVQQLNFFGVKPNLQDCVICHOTT NL KGFDAAMITH KELSGEGPQVFQCVRCGNRE
 DLINQGLDPQI I TNVLEVQLLNLLGVAPQWDRCVICGNQA QLMDRGLDYEILTNIIFEMQI LSRFGVALNVHECCVCHRVG
 RALASAYDNRLVRAVFELKALAVNGEAPNVFSCLSCGREH EWISEHDDDDI PMMMYEMKLYQAGGFAPTVDRCSNCSKTS SLMEDGLDYEI LTNTFEDQULERFG\｜SLDLHECAFCHRVG TGMREGKDPEVMMRLFEMKMLQASGYGPELEDCSASQRPG RALAKERDPSLVDDAFLMRAMSFAGWAPAVNECARCGDPG KLIDEGFDAAMITHDIE：QLLQVFGVQPHLESCVVCGRTD

## QUERY

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PEHPDPLGGQLLCSKCAALPPYPPAVLDFLRHAVRRTVRA GSFFSFREGGFI CHRCLDKDPYSPAAVKLLRLFYYFDLSR GS F F S S $\quad$ R K E G G GF $L$ L G

GTFFSIRDNGFICHRC




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FVF DSPRDGGVLCRACKHFDPVSPKALKLLRRLFAQLDLQR



 GHFFSTHADGLVCHRCFEKDPYPENVVKLLRLFYIFKLDR
 LI WF DARES GVVCNKCEHGVKVSPATLYTLQYILYSSI EK PFRFSPLAGGALCQACRHRDSASEGVWKLLRVFAALDLRR

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$G R F Y S S K F G G V L$
GRF Y S S K Y N GVVIC E K H W A A LDD D H R P R A I H F F

 GET L S I R D G G A L C L S C A S E R E N R P K T I M V M R L F Q Q A Q P E R



 LA F Y S E S Y G G L L C Q R H WH L D P S S Q R A I Y Y L R L F S V I D L F K
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PLKSDLWLTSCALYTTELINQETAE

LRSNFELLSCASYLVELVEAFSVEGDPNEYVFLLLVSVF
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UVTDYGRYTAGTAMLETAERFTDEGEPAVQQYLLLVGAL

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DUVLS
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 YA L S R A LDP P E Q I K A V F E L R L M C L A G Y E P D L S C CA Q C GA A E




 RALSDQRPPELI LDAYLLRAMAYAGWAPAI SRCARCDEPG



 ELLD Q GF DMEVVVTNDFELQQVLHRFGVSLNFSECAFCHKTGG
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 DLMES GLDYEVLTNIFEI QLLGRFGISSNFHECAFCHRVG

 RAL ESS P H ITP E L V K V V F E L K A I TII N GE GP E V F S CMM CH D K E
 $R A L E K K T D P K L I, R R V Y E V K L M A L Y G Q G M E V F C C T Q C G S T E$ H R L C Q A D D N E L V L H Y F E L R L L D EVVGY R P Q L Q Q CVVSCHS P L R A L S A A Y D K R L V RF DF E L K A M A V N GEAPNVVS CVVRCGEKE
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 RAI A K K QVVPELI R RIVYEI RAMALDGEEMQVVSCVRCGNQG Y ALDRLDNRPELVKAAFELKLMCLEGYEPLLDACAVCGAPE

 | $D$ | $L$ | $M$ | $E$ | $G$ | $L$ | $D$ | $Y$ | $E$ | $V$ | $M$ | $N$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $Y$ | $F$ | $L$ | $N$ | $K$ | $V$ | $V$ | $D$ | $I$ | $E$ | $L$ | $L$ | $A$ |


 GLLIN E E L D D P A I I T N I I E I QLLLD R F G V K P F L E S C V I C G S T G $R A L A D G R D A S L L L D A F V L R A M A F A G W S P A L G E C A R C G L S G$ R T L S G G H D A R L V L D A F L L R S LLA V G G Y A P S F E A C A R C G M P G
 R A L A D G R D A S LV L L A A F LLL R A M M A F A G W WA P A L R RTLAR GHAPRLVLDDAFLLRSSLAVNGYAPSLGDCARCGMPG Y A L A K K K P P QLVVKA A T EL R LLAA L A GY LDP ELLS GCCVVCGDPE
 TLIDAAGNDAEVI TDDIDQI QLLNSFGDA VVWDHCVVCGRR D SALVKGRNPRLI RYI FELKTLVINGEYPEFFVCRNCGTKE
 SLMDE GLDYEVLTLI FEI QULDRFGVQLNFHECTFCHRVG R ALILHSLDNRLVRRIVELKMLDFHGEYPGMFECMKCGKKE K S L A R GE H A T L V L D A Y L L R GMAFA G WA P A L A A C A V C G E P G RTLA G GHAP QLVLDAYLLRSLAVNGYAPSFGNCARCGMEG RALGEGRPATMILDSYLLRALAI A GYAPSFSHCARCGVVG

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| UniRef90-R6EAU1 | LYTFVVKENVLEELARVMKRYTD |
| UniRef90-D9S2Q9 | LAKLKKVEDGVKEELKAVLTGGVLHHMERKRTLRFL |
| UniReeg - R5TNA? | LYTFTVTEAVLGQVTKLIGYYMRQYVEK RQLILL |
| UniRef90-UPI0003B6C | LYTFKLSDEILSELRYVVKKFTDYHIQ HKFKSD |
| UniRef90-A0A0591 | GTDTVSEATRGQASGLIAAHLQWHLE RQLRTL |
| W71 | LKTELLSALL |
| W71EB3 | RREASGLV |
| UniRet90_D8109 |  |
| UniRet90_AOAC | 俋 |
| UniRef90-G2KU80 UniRef90 F8B4N3 | FAGGC A AYLQWHLEGL |
| UniRet90 O9CJD9 | ADMKGKTRQFI DGGYDE |
| UniRef90-W9EIP3 | HIQVNRETKKKLRQVLDKIYDSSVGNL |
| UniRef90-D3Q0.J9 | ASESS VRNEASGLI SA |
| UniRef90-D6S5L2 | LGQUNV |
| UniRef90 R7BMA | LYSFTVKDEVLNELTQVMHRCVDAYVDRMKSLDML |
|  | ETTSLNKEIKQQLRNUTDQLYDEYVGHLK S |
| UniRef90-A4VYJ7 | LETISIKPEMKRKLRFFIDQLYEEYVG |
| UROOO378 | N |
| UniRei90- ${ }^{\text {daN }}$ | Q IF Y G ESK |
| UniRe990 R5YEZ7 | LYSFTVSQEVLEELKTIMQAYMAHYV |
| UP100 | LYTFTVTEKVLEELKQSAKRCV |
|  | LYTFRVSKEVLKELDSVSESF |
| UniRef90 - x1v810 | ASKLLKMNPELSHEDEMMSHYLEYL |
| UniRef90-D4KNM5 | , |
| UniRef90-D2SDC6 |  |
| UniRef90-C8W3M8 | ADQGVRRQLKKILRSYVDYHLERVK |
|  | $L Y T F N V K P E V \square E K F G R V M$ |
| UniRef90 R5JS | Y Y FQVSAEVQQELNRLCTDFLAEY TDRS |
|  |  |
| UniRef90-M5PSV4 | LKVISLKPEMKEKLRLFI DELYODYV |
| UniRef90-C6PTY4 | VYRVNLSKETKDELYKVLSQFDDQ |
| UniRef90_C6KVU2 | RDATPEVVREGSGLTAAFTTWHLDRLRS |
| UniRef90 A8MG71 | KLKVSDHLNEEELKKLLK |
| UniRef90-UPI0003776B72 | - |
| UniRef90-UP100036D4215 | S EDPVRREGSGLVAA HLQ WhL |
|  | ACEERHAREGSGIVAAYLQWHLERLR |
|  |  |
|  | VEGVDVKAGVRNSSGLVAAHLQWHLER RGLKR |
| UniRef90-D6E | S |
|  | ALTGAAEKELCDAAESYLLTQLE R S Y T |
|  | DVS |
| UniRef90-K1ERK7 | A |
| UniRef90 ROERV4 | Coble |
| UniRet90-R5LL26 | VVSDEVLTEMKMVMARCMHAY |
| UniRef90 R6YIO6 | LSNNTRKEVDDFINEYYDRYSGLLK S |
| UniRef90-UPI000378FCEC | LRS SLKDDMKGKLRQFVDAVYEDY |
| UniRef90-R71L90 | QVSENVLTEFGMVMNRFLSVYTDKVHSLEML |
| 0 D9T9H7 | ADAAETGVRRECSGLVAAHLQ |
| UniRef90-UPIoo0367B2E3 UniRef90 F5XMF3 |  |
| $\begin{aligned} & \text { UniRef90-F5XMF3 } \\ & \text { UniRef90_D4J8T1 } \end{aligned}$ | TVTRDVAAATAKEASSLTSAYYLWHL |
| UniRef90-S1N | ELRKIIDFLYEEYVG |
|  | GTDSAPATLRTQASGLVAAHLQWHLE RQLRTL |
| UniRef90 N4W | GDISUKEENKHKLQA |
|  |  |
| UniRef90_VJJGB4 | ADTEAADTAVRRQASGLVAAMLUWHL |
| UniRef90-R5VHZ1 | KVQKELSRVVGRYLEANTDRKFKSL |
| Q3D8F9 |  |
| UniRef90-A5FI |  |
| UniRef90-G5JXM0 UniRef90- UPIooo3b4EE74 | S |
| UniRef90- E4L241 | KDMKKKLRYFIDDLYEDYVGHL |
| M5 | TKADL |
|  |  |
|  |  |

UniRef90 UPI000462E354 UniRef90-R6FMR9 UniRef90-D7AY19 UniRet90-E4NAX7 UniRef90-R5XGV8
UniRef90 Q04F73 UniRef90-UPI000375C379 UniRef90-C8XGR3 UniRef90-UP10003B63943 UniRef90-X0Z8W5 UniRef90_A5Z945 UniRef90_C7R517 UniRef90_-J9HGJO UniRet90-SOQON8 UniRef90-D8JZJ7
UniRef90
U6RJL1 UniRef90-UPIOOO45E96CC UniRef90-O5YZU4 UniRef90-D5GXY8 UniRef90-R5X5P2 UniRef90-UPI000381F510 UniRef90 U2YRF7 UniRef90-UP1000262AF7D UniRef90-F5YZ71 1 UniRef90-R6L5P1 UniRef90-E3IXT6
UniRef90-UPIO00470E55E UniRef90-UPI00035EAC19 UniRef90-17KLV0
UniRef90-UPIO00476EBCF UniRef90-UPI0003B4645F UniRef90-I8U2V6 UniRef90-D1CFL2 UniRef90-M1ZG39 UniRef90_UPIO0020DA169 UniRef90_W2BXX3 UniRef90-A1R6V3 UniRef90-UP1000360CFFD UniRef90-UPI000365CF2E UniRef90-M5J9J4 UniRef90-UPIOOO4249A80 UniRef90-UPI000476CADC UniRef90-R5WLF5 UniRef90_UPIO0029A2E50 UniRef90-R5XY74 UniRef90_UPIO0046F0434 UniRef90-LOEDW4 UniRef90-B6G1Q5
UniRef90 R6D8W7 UniRef90-R7R2S6 UniRef90-M3UYI6 UniRef90-R6VAE3 UniRef90-UPI0004679E96 UniRef90-UPIo003B3F5FF UniRef90-TSKVEO UniRef90-N1ZF49 UniRef90-UPIOOO464CA56 UniRef90-R7AQD8 UniRef90-R512R3 UniRef90-R613W3 UniRef90-UP100020D9AD9 UniRef90-A9KJ35 UniRet90-C4ZAV9 UniRef90_R5D527 UniRef90-KOYP74 UniRef90-UP10003B5BFB6 UniRef90_R5XIG2 UniRef90-UPIIOO23B446A0 UniRef90-D9PK38 UniRef90-A0A017RUQ2 UniRef90_R5RZW3 Uninefao-AGWDFO UniRef90-C4Z1100 UniRef90_D5XAP1 UniRef90_R6YVL6
UniRef90_C705A UniRef90-A6NVU9 UniRef90-R6QJ84 UniRef90-D6GPR7
UniRef90 R5HCV1 UniRef90-R5E4F8 UniRef90-R5ACY5
UniRef90-R7CAU4 UniRef90_UPI000463697D UniRef90-N2A162 UniRef90-Q8RB48
UniRef90 R7XYN1 UniRef90-R7XYN1 UniRef90-C5C4P4
UniRef90-E2MXAO
0


| $L$ | $S$ | $S$ | $D$ | $Y$ | $S$ | $A$ | $W$ | $A$ | $A$ | $V$ | $A$ | $I$ | $C$ | $E$ | $T$ | $A$ | $E$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |$R \bar{F}$ T







UniRef90_UPI000462E354 UniRef90_R6FMR9 UniRef90_D7AYI9 UniRef90_J0KY03 UniRef90_E4NAX7 UniRef90_R5XGV8
UniRef90-Q04F73 UniRef90-UPI000375C379 UniRef90_C8XGR3 UniRef90_UPI0003B63943 UniRef90-X0Z8W5 UniRef90_A5Z945 UniRef90_C7R517 UniRef90-J9HGJ0 UniRef90_S0Q0N8 UniRef90-D8JZJ7
UniRef90 R6RJL1 UniRef90_UPIO0045E96CC UniRef90_Q5YZU4 UniRef90-D5GXY8 UniRef90_R5X5P2 UniRef90_UPI000381F510 UniRef90 U2YRF7 UniRef90_UPI000262AF7D UniRef90-F5YZ71 UniRef90_R6L5P1 UniRef90_E3IXT6 UniRef90_UPI000470E55E UniRef90_UPI00035EAC19 UniRef90-I7KLV0 UniRef90_UPI000476EBCF UniRef90_UPI0003B4645F UniRef90_I8U2V6 UniRef90_D1CFL2 UniRef90_M1ZG39 UniRef90_UPI00020DA169 UniRef90_W2BXX3 UniRef90-A1R6V3 UniRef90_UPI000360CFFD UniRef90_UPI000365CF2E UniRef90_M5J9J4
UniRef90_UPI0004249A80 UniRef90_UPI000476CADC UniRef90_R5WLF5 UniRef90_UPI00029A2E50 UniRef90_R5XY74 UniRef90_UPI00046F0434 UniRef90_L0EDW4 UniRef90_B6G1Q5 UniRef90_R7R2S6 UniRef90_M3UYI6 UniRef90_R6VAE3 UniRef90_UPI0004679E96 UniRef90_UPI0003B3F5FF UniRef90_T5KVE0 UniRef90_N1ZF49 UniRef90_F6FXH8 UniRef90_UPI000464CA56 UniRef90_R7AQD8 UniRef90_R5I2R3 UniRef90_R6I3W3 UniRef90_UPIO0020D9AD9 UniRef90_A9KJ35 UniRef90_C4ZAV9 UniRef90_R5D527 UniRef90_KOYP74 UniRef90_UPI0003B5BFB6 UniRef90_R5XIG2 UniRef90_UPI0003B446A0 UniRef90_D9PK38 UniRef90_A0A017RUQ2 UniRef90_R5RZW3 UniRef90_A6WDF0 UniRef90_C4Z1J0 UniRef90_D5XAP1 UniRef90_R6YVL6
UniRef90 C7Q5A0 UniRef90_A6NVU9 UniRef90_R6QJ84 UniRef90_D6GPR7 UniRef90_R5E4F8 UniRef90-R5ACY5 UniRef90-R7CAU4 UniRef90_UPI000463697D UniRef90_N2A162 UniRef90_Q8RB48 UniRef90-R7XYN1 UniRef90_C5C4P4
UniRef90_E2MXA0 K Q L S K K A $\quad$ DP D L I R C D $\quad$ Y E L R T L V I N G E Y P N V F N C G K C G N T E
 K AI D S G DD A A L LTTNMVEVVQMLGFFGVKPNLVNCDVCAENQ RTLAA GHQAHLVLDAFLLRSLAVNGYGASFTDCARCGLPG

 RALE S GRGPSLILLDAFLL RAMVLAGWA PALREACARCGS PG ASSLA S GHDDPRLVLDDSYLVARALAA A GWRASFS DCARCCMS G H Y L R E S NDPKLLTTLSF KWQTMSI LGGYRPS LNHCCRCNK QK
 RTLAAS Q QVP DLI LDDSY LL RAFAVAAGYAPSFDVCA QC GAP G K V L A A E K K D A S L I L D D A Y L L L R S L DLLD Q GFDKEII TNDFEI QVLSRFGVADNCTECAFCHKQ G DAACDADNLELLARYFEVNLLAALGYQPRLGACLDCGKTE
 RAL A E A H N P GLLLDAY LL R S L SVVAGWAPSFTDCARCGAP G RAI A A K QRPELVLDAYLLRAMRFAGWAPALDECAKCATPG $K K I D S G Q D A E M I T Q Q V Q M K \square L A A Y G V E P Q L K H C D I C G K E K$ Y L L A K E E D IVVF K K V F E L K FL E Y DG F K P DV N R C S NC G S K N RAI A QAHAVGLVVDAFLLRAMSISGWAPALDDCARAAAPG RALARGHDSRAVLDSYLLRAMALSGWAPSLDACARCGRPG $R \mathrm{~T}$ LA A A R P P D L V R D G Y L L R A L S I A G WT P GFVVDCVRC GAPG


 K A L S EKVVDNK LI RCI FELK A MVI NGEYPNLFECMNCGKKE DHID R GTDPEVLTQQVQMQLLPAFGDGPQMEACDICGKK Q RTLAERHEPRLVLDAYFLRSLADAGYAPALEACARCRTPA S LLE $\square$ GHHPDTVVVHAYELRRLEERGYAPALGCCVRCGKEW

 QKL E A GLDP QVIANDFEI QLLVPDGVAPNWRADPI S GQTG


 EKMA A D F S S A AL A H Y F EL K LLLPPAF GV H DD WTHCDVVCE ET T A S LAAR GHAP QLI LD S Y L L R S L S DA GWAPSFTDDCARC GEPG

 H M L M N K K R P Q AL K A VVEL R L L C L S G Y M P DL VVC GEC GEE G


 RALQ H S L N NRLVKVIVELRVLVVNGEYPNVFSCMKCGKED QALAEDRDRQWI LDAF LLRAMSTAGWMPALDVCARCAQPG SAMTRGKSLPLVRVIYEMRMMQDEGEALELGQCLGCKSQG R ALAA A QRPASLVLDAY LLRAMSFAGWAPALDDCAQCSAP G K S L A REHDPSLI LDAFLI RSMS LAGWEPALKECAVCSAPG RAL S R GEHARSSLDDSYL L RVVMSSLSGWAPS L DECARC GTP G Q LLCK G K DP E L A S R VF EMK FLLQ A GVMPNLQQCCVCGKEA RALAEAHSPGLVLDDSYLLRALAVAGGWAPSFTDCARCABPA

 LLSSEDKRSADFLK PVGELRMLALAGYMPDLAGCQSCENPD
 R A L L

 K A L L N P HVV D LI R CVVFEL R A MAEEGYCPELASCACAARDE F A L A R R H DP P L I L L S S Y M L R S L A A LA G WA P S C F D CA I C G T Q G
 Y AL D T L D R P E L V RAA F E L R L L A L R S L S R E H DA S LVLLDA Y L L R S L A VA GYAA SF G DCARC GEA G K A L GRGASHELI RF DYEI RMVAVNGECPDFFTCHECGRED F Y L L L K DNP GL L VRAFELK LLLNI LGGYCP QLESCVHCGNAA



 KALGRKEDPDLI RRI FELKALAFDGEAMAAFSCVKCGEKQ HFLLCKGTRP QPVLA VELLRMLSEA GYMPNDAYCAECGAYE
 H K I N K GVVDP E I I T Q Q
 R A MA E E H A A N QV L D S Y L L R S L L A V S G Y A P S F D H C T S C G G V E G


UniRef90 UPI000462E354 UniRef90-R6FMR9 UniRef90-D7AYI9 UniRef90-E4NAX7 UniRef90-R5XGV8 UniRef90-Q04F73 UniRef90-UPI000375C379 UniRef90-C8XGR3 UniRef90_UPIOOO3B63943 UniRef90-X0Z8W5 UniRef90-A5Z945 UniRef90_C7R517 Uniinefoo -j9HGJO UniRef90-SOQON8 UniRef90-D8JZJ7
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UniRef90_C705A UniRef90-A6NVU9 UniRef90-R6QJ84 UniRef90-D6GPR7 UniRef90-R5HCV1 UniRef90-R5ACY5 UniRef90-R7CAU4 UniRef90_UPI000463697D UniRef90-N2A162 UniRef90-Q8RB48
UniRef90 R7XYN1 UniRef90-R7XYN1 1 1-R
UniRef90 A9WFWg UniRef90-C5C4P4
UniRef90-ЕаМХАо

PEAFSIITAGGAlVICGQCRPPVSLISEGE\|TLIAAALLTGNWKT NDYFDLEHNSVICSNCHGKIRLNPSTVYALQYIVTAKTNK EHRFAVHAGGMVCTVCRPHGSVSPDTLRLMSALLGGDWES PNFFSLQAGGVLCGDCRVPGSASPETLVLLGALLSGDWQT HSMFSPRKGGLVCTECDGGMRLNNSTLYTLQYVENSKDEH GEFFSEQYNGILSKKNYHLDHANPKA1YYLRMFSKDKUSQ QAFFSFKYSGLICPAHYHEDHLDPNVPYLLNRFQALSFDD PHRFHVPSGGSVCPVCRPPGSSAPATLELLRALFGGDWQV EMYFNDKEGGLVCNNCDAKDKVSLYFNKLLRKI LITPDST PHAFSVAAGGAVCARCRPPGSASPASGTFTHMAALLAGEW PHFFSLQGGGLVCPACKPSASASPAThDLMAHLLTGDWE PFDYSYKFNACLCKNHFDEDHLDPNVLYLVHLFQEDSLEQ TNYFANSLGGVLCPQCASRAPVAPNALKVLRFLDDHSLEQ NQWFSTEEAGVYCKDCGEQEHVSPSTLYTLQFIIAAKLER PHRFHVAAGGAVCVHCRPPGAATPAVLDHLVALARGEWAG GVFYSIKMGGVICSDHFSRMHAKPKETAVIRTVGLLPTER NSVFNIYEGGVICENCRELFEYNMKTMRLMEYILNNDILT PHRFHVAAGGAVCVHCRPAGAAVPSTLDLMDALMRGDW PHDFVAPLGGSVCDACAPAGRIAPETGARLRALTAGEWET PHAVVVQLGGVVCEDCRGSPRLDPGSTGLLGSLLSGDWE QVFFSQDLHGILCQKCASGQRISPSALYAMRFIATAPMGK PHSVSVAGGGVVCPRCRPHGSVSVTAVQLLADLLHGDWAE $P D F F S A S Q G G 11 L P Q C K D G Y T I H R S T L Q T M R Y I L D V D T R R$ EYWFSAEKSGVFCEDCYKS GVFYSLRYGGIICEDHFARMHLTAKETALLRTFALLPDER GRAFAGVAGGVVCGACRPAGAAVPATVGLMTALLRGDWAV

S
 RFDYSEKYNGULAEEHYDLDDEHLLKMIGFYLRQFSVIDDLRQ PEFFSVENGGIVMCLNCHEK IP
 PHAFSVNAGGSVCSRCRPAGAVTPDAGTLALLGALLHGDW PQMFSMKLGGLLCAKHFGQDEHRPKALYILRQFSQVSQKQ PHAFSAALGGAVCHDCRPPPAPAPETMTLLAALDSGGWPV G FYS SKYHGII CS QHFRRFHANPKA I YLLRQL NYLKFDQ SNVF DAAS GGLL CDGCRHPLHLSDDAVYTIQYINGAQLGK
 GE WF D P L L E G G I R C G E C R E L
 GPVLDI S G GFVVACGTCRGPEPM T EA G LAAALRRHVLYA DPRR LCYFSVKYRGTLCKDCGTMESLNESVLYTLQYIISVELKK PHRFHVAVGGAVC CHCRPAGAATPGVLDVMDALARGEWDH


 PHRFSVVAQGGAVVCGRCRPPGSTSSPATFELLAAALLVGDWEV PHHFAVAQGGAVVCSRCRPPGSTAPAPQTPALLAALLAGEW GHY F S M S R F G IVVCDS C V R N N E DT E S A M Y T L Q Y Y I V S S S G I E K


 P HAFS $\operatorname{P}$ Q EGGAAVCENCRPDVGASAPEAME LMGDLL S GE WGR PHAFVVQLGGGVVADHAAPPPRLDPETVHLLGSSLACGDW
DCFF SQEHHGILCGSCAKGQRISGAALYAMRYIVSAPMGK P HAF S DT E G GAVVCDNCRPDVGAASPDAMALMMGDLLDS GD WA

 $N L Y Y$ S YS R N G L C C K N CA D G $\square$ T L S G S TVVY TLQ Y I V T A Q L N R $K V R F S S R L G G V L C D K C S G H D P D Q M G S L K T M Q Q L L K W D I R R$ E FYF H P Q K A GI L C E A CYK K E P Y S G S T TY Y L L R I V A S PVK T



 S E Y F K I N R G T LYYCK DCYNGD P L S P A A L TAAMRHIVVFADEER

 N S Y F S S S C G G A V V C K D C K D A K F L PHYFNPSAGGVLCTTCKDPGSASPATDRVLSALLTGDWAC A D RYSPTLGGVLCPRDRTADPMNEPTFRLLRYLQAQPVTAA PHRFSAPMGGAL CQACRPPGAAAPAAETFLLLGALLAGDW


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UniRef90 R6Z9W3 UniRef90-E6U538 UniRef90-B1C3P1 UniRef90-J1HA26 UniRef90-17JGM1 UniRef90-G4KU30 UniRef90-R6SB67 UniRef90-C7MD78 UniRef90-GMMCG6
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UniRef90 R6VPF UniRef90-U2FOF2 UniRef90-R5LPQ1 UniRef90-R61H37 UniRef90-K1MKJ6
UniRef90_UPIOOO36F9845 UniRef90-G9PD12 UniRef90-R5G9G2 UniRef90-UPIOOO3BB5EC60 UniRef90-D1BUV6 UniRef90-D3CU16 UniRef90 R6HDR3 UniRef90-D4LJD2 UniRef90-UPIO00255D279 UniRet90_B8DSY8 UniRef90 UPIOOO3B3C220 UniRef90-X8K7EO UniRef90-R7BBY5 UniRef90-Q0AWP3 UniRef90_UPIOOO31B0382 UniReffo-L10413 UniRef90-Down47 UniRef90-A6LRQ0
UniRef90- UPIOOO36CDo00 UniRef90_L1MDS UniRef90-V9HHE7 UniRef90_UPIO0024931B1 UniRef90-R5Q588 UniRef90_UPI00041F5B55 UniRef90-A1S105 UniRef90_UPI000361C657 UniRef90-A0A037ZE49
UniRef90-UPIO0035EC955
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UniRef90-LORCR2
UniRet90-D1A9T5
UniRet90-E7G713
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 I SAEYGRFTAASAMLETTDRLTDEFDPNQRGFLMLVGAL LLNNLYKLTYSSYMCELTDUACTDNEENDEMFRNLVTTL TATDYAMFYYGFYFLETADYYGREGNRDVDMLNLEYVTM LRTDLDKLKYAAHMTK VVNDVTDENQNTYRGLQLLGNTL

 I AGDYARYTAAAAMGELVERLTNEGDPTSAHYMMLVGALD LLNDLNDLTYASYFCELTDUANDGETSSELFRYLVTCF I AYDIDAFSYATYYTKLVEGSDYENQTNNRLFVLLAQTM I VADYRSYTAATAMVETADRLTDE DGSRQQYLLLVGAL ISYDIEAFSYATYYTKLVENSLLENQTNNRLFILLAQTL MRYDLFKTAYASYWAELVYLWLEE RKDTTKTSYVSFLTDLTTQVYKGEPDRAHYRLLGAL LRCDIEKLALAQYFCDLILNLVAEEQRHTELILRLYLNS

 LREDLSR $\square S Q G Y Y V A E L L D Q M T P D E S D N P A L F R L T C E T L$ LRKDVVDLSTAVYFLELTRRLSPDEPDLSGHLRLLLNT ILMDLERVSYASFMIDLVLQVVKQND DVEVFPLLRDSL
TQKDPFLLAHASYI SQLDDASTDDNVKDVSLYQFFYKSL
MANYSAYTCAATMAETAQRLTEAE

LRTDLDKLK
MADYKYRAAAGMAEATERFGK
GDYATYTAASAMCETAADLL
DGEDPDKYFAASFALEELTDKALDPE
REDFERSLYALYLMELADEKSLMEGVADPRMYTSTLEVL



KKENLELEAYASYFMEFVLKNEEDNQPDLEVIGDTLKKSL
DYDRYTAGTVMLETADRLAEEREPSVQQFLLLVGGL
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 $H V L N S G R P P V L V L D A F L L R S I A M A G W R P E L R N C A V C G A E G$



 NS S A R Q H A P Y PI M D S Y L L R A M A V S G WG L A V T S CAALC G S E D

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 K A L L N P H E D R L V R C I Y E L R TMMVI Q G V MP QL F QCA GC GRE L SAL ARSHPPDLVVLHSHLL RAMSLA GWGDSWEACASCBRPG GALSRHHDPQA ALSY LLRAMSLAGWT RLDS CVVCGS Q D $R R L H S D E D P Y P A L R L F D F R L L D L D T G Y R P Q L Q D C V G C G R P Q$
 SHL NHS GYNPMLIRYFEMNLLVVNLGYSPDLVDCVLCGKKD SAL S R G HAPE LI L D S Y L LRAR ATAGWAPSFTDCARCGTPG



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 E H L C Q G G N N ELLTV R Y F E L H L L L N D V G Y R P Q L Q Q C V S C H Q P L
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L
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L Y
R N LiND
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LYE
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## UniRef90 R4K5W1

 UniRef90-A0A022KYR8 UniRef90-LTVQQ8 UniRef90-N9Y228 UniRef90-D4W718 UniRef90-R7GCX5 UniRef90-A5D3W7 UniRef90_D7WE14 UniRef90-J7IVJ6 UniRet90-R6H1G9 UniRef90-C2CN48 UniRef90-R61022UniRef90- W5Y25 UniRef90 ${ }^{-}$W5Y250
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UniRet90 W6JUIO UniRef90-WGUUIO UniRef90-Q892S3 UniRef90-R7CDY3 UniRef90_UPI0004798E35 UniRef90_R5Q8X6 UniRef90_K6QUR1
UniRef90 F7V5Y3 UniRef90-R6GU02 UniRef90-B7GQ05 UniRef90-R7KVU2 UniRef90-R9ST79
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UniRef90

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 YALGTRKPPVLVKAAFEMKLLCLAGYEPLVDSCAYCGRAD AAL MQRNPRLVVLSYATKLLAATGFAPQLTHCVHCGAQE YLMNKVGDLDTLI RAFEIKKLTLTGYGLNMDYCTKCRKKD GYLANSENLDKLVAAYELKLASMLGYKPDFVHCDSCGKTE ENLDNEKDRDKVNDLFELRFLALAGGSPSLDQCVGCCRSL YLLESGVNLKKLKVVFDFKLIVSLLGYTPQVIKCVICGNIN RALAPGDERTLVEI FEYKMVVLNGEGMNVMRCGNCGNKE
 YLLSTDADYELLVRAFELRLLEATGYNGELDRCCICKKKD HLLEKSYPPSLVLRIFEAKLIHNLGVSPELSGCINHGSQG EQLQTA DPTMALDAFLLQAMAHAGWAPSLFNCAQCNRPG VYLEEKKPPAVIAADMALQQLPKFGVDDRFDHCQLCEETD FCl AKKLKPDVIKAAFELRAAAEAGFMPDVVGCEGCGKSD YLMNKVVDLDLARAFELKMLSHGYGDNLEECCDCGNKD GELQSNEHTTLVLDKFILRATEHSGWGLALFDCANCRKPG HRLCDTDDGELTLHYFELNLLTH LGYKPELYHCQGCDEPG YCYAKEYDFEYVTRLFELKYLDYLGYRPEVTKCVSCGSKD ALAGGAHDASLVLDAYLLRALAMGGYAPSFHDCAQCGDPG YLMTRADDLETLARVFELRMLKTTGYELLSLDKCSDCKETS LVLSHEKDYLKLVYAFE: KYMSFLGYRPQLDSCVNCGTND

KKI DEGINETVVMNILEIKLLDYLGVGDNLNGCAKCGSTE NALARAHAPQAL GCSYVMRALALAGWTPRLGTCVVCGAAA
 KAI DTGYSYKLIYALILVFIMKDNGDEDEVDGCVHCGHTS NALARGHDPTLI RTSYTLRALALLAGWAPSCFDCAVCGTKG HVMEE RNPRLVTLAASWQLFALAGLEPACEVCQQCGEKW IALSGRTGRDELRIFFEAKALALGGYGTNFERCCECGREG DRFQQGVSPQLI ANIVMLKCMPRFGFDVDLSKCVMTGETN

 HYLENDLRPDFLKSGFELRLCTEGGMMPDLDCCCECGASD
 RSVLTKHNPRLVALSYIVKLLFLTGLLPNCQSCVNCGKPG AELNETGVVTVVLDAFLLHMMSDVGWPPSLFDCAQCGAPG TKIEQDTSAQLLSIIVLLKCMNRFGFTASFDHCIVTGNED YLLSENKRAQL KPCLEMRLASLAGYMPDLRMCRVCGEYD LKIANEGFDETVLCNDLELKLLPFLGVTLCLDGCIRCGKKE ELDEDGLDYEILTNDFEVQLLERFGVALNFHDCVFCHRVG TLFPN HNKRLVTDSTLFKLLALCGFDPVLDYCTTCGKPE ALANRRHSPDLVMNSFMLRAISMSGWAPSFWDCAVCGAPG RELQNSPVPTLAADAYLLQAMRHAGWEPELFSCVQCNEHG DALQHVKSPATVGDAAGFHLLRVAGYGVEWQHCSACEAPG YALDQTDKPLSVKAAFEVRCMTLSGFAPMLDGCAVCGKPE YALDTKKDPTLVKAAFELSLLCHSGYEPQLYACSVCGTE EQLDGGVNALLI TLKFILEFLKLEGFSDDFSKCSVCGASN HALAARAHHQTI CESYVLRALALAGWTPRLHACVVCGRTD TALDRDMDKAVLGVLFQLKFTRLSGFFPELTHCOTCRSPR HYLESGQRSEALDPDFELR MTELGMMPDLLMCRGCGVFD
 ELLGKEVNPRLCALASAYQLFEYTGCQLLHYSQCALCGSEG RAVADGRRSRLLLDAYLLRAMGAGWAPALNECARCATPG SSF EWRNPRVTATAAAFQLMEFTGLLLHYKCCVHCACAE
 LKKLESGLDPVVLTNULE IKYLEYLGVLFNDDECULCGSKN RA

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 UniRef90-A0A022KYR8 UniRef90-LTVQQ8 UniRef90-N9Y228 UniRef90-D4W718 UniRef90-R7GCX5 UniRef90-A5D3W7 UniRef90_D7WE14 UniRef90-J7IVJ6 UniRef90-R6H1G9 UniRef90- R6102 UniRef90_W610L2 UniRef90-R5BVM0 UniRef90-Q67RZ0 UniRef90-X81SR2 UniRef90-R6TFH4 UniRef90-E8LFI2 UniRef90-UPIOOO47A8518 UniRef90-UPIOO03100838 UniRef90 BoPF51 UniRef90_B8FKE1 UniRef90-R7RS47UniRet90 D9TPN9 UniRef90-UPIO0047AD93F UniRef90-R7B873 UniRefofo-R6G2U8 UniRef90-EOQJA2 UniRef90-B2A1Y4 UniRef90-UTKSP5 UniRef90-K8ZBK5

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SVYFSYQYYGGIICNQCEKGKNIISFAAFKALNYLSKILSMDK PHHADVRAGGLVCTPCRRPGATAVRQAAVEHMIFLLAGDW DTYFNFRHCGFVCEKCNTTPRVKTGAAKAIMYVLCAEPAK LTKESTRDNGFKCETCGKQDEMSESTKSAILYTISAPPKK QDTVGURQGGLVCAKCYDNTQUDAPLIPAVRALYRVDDDH NYYFSLKDNGFKCEECSRQDKMNESTKNAIDYTVVCPPKK
PLFFSSSLGGAVCGLCANPVEVNKGTLELLKALVNWPLAR PHHFHPALGGATCLNCRPPGAFDVETLHUMWLLTNGHDDA DRLFFSLEAGLLCGNCRERYSTRAGSVAFMRQLTRADDTK PEMLDVVHGVVHCGKCREKGPLTAAGLAALRYILYGDAKR PHHFHPAVGGAACHECRPPGEVDPETLHHMWLLAHGCPS PERFSPRNGVICCRECQANYELCPASLQALDYIVYASARK PHHFHPAPGGAVCVNCRPQGEVDEEVLHLMWLWQNGYEGE ETYFSQSHHGMVCHNCRDLSYVDESVRYTLQYLATVPLAK GVRFAPVLGGVLCPQCEGALRLSGGALEMKRLDDGDIRR AEYFSVSGGGLLCEDCYKRLDMRDASLEVLDYFTRTPLSG NA WFSPLQGGLICSSCRGLEPCGAETRELWQWLAQLDDYEQ NNYFSYEYYGGICPECRKSNGTSHAAFNTLKFLSKLQLDK
 LDYFLPLTGELACGECQPRMRLSAGVLAAMRHLLYAPFER ENLFSNEHGGUICSNCTNKKNLDNNEVKFFRIVRNGKLAE KVYFSPAKGGVLCNNCKSAVDLKRDTLNGLRFLLKYGFNN EQTESFFDGGVVCARCAAHHEVSAGVLQWCNTLLYSTFQE TEYYDISQGSVVCDNCSHPYRMDRNLIRFMKYVYSNDLSN NLYFDPETGGLICETCFEQFPVEKGSINUTKRMFEFPVYK PHHFHPAAGGAACHECRPPGEVDPETLHHLWLLAHNHPT PYDYSSFYHGVICERHFATDELPPQVLFYLRKFQDFNFFQ APRYDPREGGLICPRCASLAPVPRKTSAVLHLLAHADDAK
 PHHFHPGDGGAVCNNCRPQGEVQEQTLHVMWLLQNGHLAS TNFFSASSGGVLCPQCRVKEPVS円NAIKVMRFLQESDYAK GDGDQPENGSCICSDCAPHMRIDPTTLELMRYITGSEFNI PQAFNVAAGGAVCPSCRRPGSVAPARATLDLLAALLAGDW SNYUSLQF LGGLCNNCSNGMDISNASYNGIKYLNKDPLEK LVNFSFLEGGDTCSVCSHDFEVKGEVDQWIYTLLYSTFEQ NTYFSISNNGYLCNNCGFLDKSSDKTFNALKYIVSAPAKK PLDFSESYGGLLCQNHWDKDPHSPRADDALARLISTKWSA LEDFDPAGQRVVCSSCYHGTPDDASALYTLQYIVASPVEK IVTVDPDVGGYICKNCYTNEVYDERVRKMLRMYYLVEIDS PQYFLIKQGDFLCDEHKYNDEITPGMFEADREVCLSEDDR VTSFSLVDGGFVCHKHQTPQELSDDALKATRHIYKTPDAH PHSFSIPDGGTVCDTCRPPGASSPATVALLGQLLSGDWE PAGFDLAAGGVVCRQCQENFNFSEGAAELLQRFLHDQWEQ RADFKHSKGGI ACDRCARDPGDNPDTAKGLDQLQTTPLDD PAHFSFKFDGI TATEVTHRDPHSNKTDYLTYVLKDLPLDK VKAFALVAGGVLCPRCRPGQRHRAEVIEAMHGLSQAAPET EVAFSYIDGGLLCSQCSSLYELDPAILQWAHLLMYSTFEQ K】IMKINDGNFCCHECYPEDYIEKALLHAVRHIVLSDFNK PKYFSVEQGCFFCTNCGAPQRIPAAVLQAMRHIVFADFSR TYTFHPGGGRILCSACSGGRELSHGTLKMLKAAQDCPLAR DAYFSVVQGGLVCNDCHGGEELPXXXXSCRSARKRRNLWR PHVFHAGAGGALCERCRLPGSATPETLHCMQYDHVGAPAA QSQYSFKFDGTLSKNVAYQDPHSNKTLYLLDDLQKLPDDK NMLFLPKSGTIECADCHRKILLNRSSLTALRHTVYADDNK VVTUDASYGGLICKNCYRNEQVDDRVVKLLRMYYYDDGGS PFDFSHKYSGLLCPNHYYKDELDPNMDYLINRFQSI QFD DGYFSPVQGGFLCRDCAHDLDLTVKAKALVQHLLTLDFKV PSSFNVVAGGAVCEACRPPGSLAPEAMQLLGDLLSGDWAS PHYFSPALGGAVCAKCRPLRTVPTAALRLMWLLAHDYMTA QPA DVESGEAFCPTCRAGRGISLGSLRSLQYWLAQNPRK QPRLNLTGGVLHCADCGAKMPLSPGVLAALVHLVNCPGRR
$P E R L H L R A G V H C A D C R G S M P M N Q A V L S V R H V V G D G K R ~$ PERLHLRAGVLHCADCRGSMPMNQAVLSVLRHVVYGDGKR
$P W F F S U S A G G L M C D H Z R E S F D V S W N A I C Q L Q A L V D G D W G E ~$ PGF LDSQRGGVICDGCRSADRVDSAVVSQCKMVESGPMEK GTFFSSAAGGAMCMADHTPEPTNAAVLRQLRALLDGDWRT $G L A D D L L S G G L I C G D C L G P Y R L S K G A V K L L L W L E T A D V L K$
$P H R F H P R A G G S V C V L C R P P G S A T P E A V R L W L L A H D R L A V$ PKYFSVEKGCFFCTDCGAPDSLRAPVLQAMRHILFADYNR EMHFNLKSGLIECGDCTNPDSLDRTLFHITRYI ALVEYDR DCHFDAMQGGAICTSCGKQDNYSASVRLFIEHLLYLDWDN LSYFSPLAGGLLCASCAASEPVDAAAVNWLRSLIALLRFDE PHRFHVGAGGSVCTHCRPAGSTTP
DITDDGDRGGYLCSNCYQNEDVDKKTRELLRMYYYVDDKS PHAFHIQAGGAVCENCRSAGAVAVEAGAMVLLGALLSGDW PECLYFDGEGFTCQNHKGAKPLLPAVGAALSHVLENEGKQ NDAFDPDKGGYDCDNCLTNEDVDKKI IKMIRMYYYVNDDS PHRFHVGAGGSVCPHCRPAGSTTPGVLDLMSALHDGDWE PCYFSYQPYGVILVEAYNHERQSPQAVALCQRMRLITPNK
TTYFALATGGIVCSNCAPRISVRNVIEQLRNLV DSK


ПS K KK SDKVKNE DNHFhNVYYDRYTGLLKSKDF HTSIHIAASLLVQAEQTLLAYDEHLLGRMKSLQFi AVADASGQRERSQASGLVSAYATWHLEGRRLRSL HGGRLSPEALEQLDKVMRQYQQMHVGD

FAEQTPQSHRNYVSGLVAAHDQWHDE RQDKTL LGQMNIKDETFQAAKQLLHNGYKDYAGHGKSWDYL

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| UniRei90' UPIOOO3B59576 | KSNLKMLSTASGIIETAQAQT |
| UniRef90-UPIO002F99AB5 | , |
| iRef90-UP | L |
| UniRef90-Q1D7T4 | REDLSSLIARALYAVELCRELTRDHEPQPELIFALLESYGL |
| Unit |  |
| UniRef90-SOESR6 | LRTDLERLSRAAYMC |
| UniRef90-C7NH47 | I ARDYPRWVCSTVMCETADSLVDEGETSPQ |
| UniRef90-14MEK3 | PICADYTSYEYASVMLEVADAL |
| UniRef90-E8RB87 | PL R Lleyrryava |
| UniRef90-C8V | LRGDLSKVAAASALCEVARFSCDDGVEDAFLFSLLSRAL |
| UniRet90_K9CF | LTADL |
| UniRef90_UP100047CL | PLVADYPA |
| UniRef90 M5B8U1 | TDYGSYTAASAMVETADRVT ED |
| f90 - 1 | ADYDLYVAGTVIVEAAERL |
| ef90 UP | EDLEVMAYG |
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| Uni | YGA |
|  | L |
|  | A |
| UniRef90-A9AOL3 |  |
| UniRef90-X0XQ31 | QNDLQTSFTLSYFAELIEEFSPARAKDDT |
|  | G |
| UniReef90-R5B5G | P REDDDRFAAASYMLSUN AGAEETANAP |
| UniRef90 UPIOOO365BD65 | QKDLDISLTLSYFSELIEQFFPAKSKDD |
| UniRet90_U7 | F |
| UniRef90-E8QXT4 | VAELLDGLT EHHVPHPKLFE |
| UniRef90-Q4JWN9 | PIVADVDRFYAGAAMLEMAQVFAAEPSSAHSIFFLLDAAL |
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| UniRef90-D628k | 1 TADYGKYTTGCAILETATLLAPQGAPAQQLHTLTRGAL |
| UniRef90-HODEQ7 |  |
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| 25 |  |
| UniRef90-R9LXU4 | RGDVEKLSLASYFCQLTAELAPHEEPALDVLRLLLLNS |
| UniRef90-O39RG3 | IRRDLRALGLAGYAVELVDRYLPDGAPSPRLFR |
| UniRef90-UP100047B644E | DMAKNAMTLFLAELLGNSIREEEQNEDL |
| UniRef90 E6UAA4 | AAKVALJASYSELY |
| UniRef90 ROMAA4 | ASCQDNQQDAPLFA |
| UniRef90-C5C | RV |
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| P1000 |  |
| UniRef90-UPIOO029A6A18 | QERTNLPALYAGYYIAEELLGEGTQDYDPHPKLFDSSQDAL |
| UniRef90-R6AIN4 |  |
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|  |  |
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| UniRef90-FOSVD1 | - |
| UniRef90-R6ZQF | DIDRVYYGFYFLELASYESRENDGEKNLINLTYMAF |
| UniRet90-G9RZ19 | SVEHMA $\square A M$ |
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| 俍 |  |
| UniRef90-E4DCZ6 UniRef90 S7VM20 | PLRQDYSLK |
| UniRef90- E3FGS3 | RQELPLTARALYAVEMCRELTRDHEPHPELFALLEASYL |
| UniRef90-UPI000423 |  |
| UniRet90-A4 |  |
| 5LH19 | S SIIEKLALGSYFAQAVKFCTPQEQAAEGLVRFFATS L |
|  | QDLAAlGHGG |
|  | N |
|  | diarlgma |
| UniRef90-F5RP X5 |  |
| UniRef90-U3GYY2 | AGAIILEAAQKLTLHTPPDPYTFD |
| UniRef90-UPIC | A |
| 76 | - ${ }^{\text {a }}$ |
| UniRet90_E4 | LREDLDYMAHASVAAEYIERAGLEFEADQALIFSLLAVIL |
| UniRef90 U1SIN | A |
| UniRef90 W5WQ12 | PLIADVDRYYAGSAALEMAQLEASEPSAAD |
| UniRef90 B8IZ94 | RQDWRRMGLAANCLRFVEALGVNDDGADEAFALVEDM |
| UniRef90-M7MLP3 | T HVIKSAl |
|  | DYARTAALQFLAEVVEEALPEGAPEDAVFRLVLAVL |
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| ef90-V5RT94 | KSDYSLSTKCSYVVELLHKTEESGNSEDAFELLVKFL |
| ef90- XoxNS9 | RDDLGRLSRALY AAELADRFLP ERVENVPTYRLLLDT |
| UniRef90-K2FJF6 | SNLDGVSYGMYFCDVADYYTRENEDEKEMLKLLTYVSLL |
| UniRef90-C7N5M4 |  |
| UniRef90-UP10003B781A0 | DYEKYTAASAMAEAA |
| - | - |
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| ef90-R7MHZ4 |  |

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UniRef90 C7N5M4 UniRef90-C7N5M4
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 DRLDSETDSYLI LAQFTALAALKTEGDEPVVDECVLCSNTQ FLLTQSAWLDSIIYAYDIRLLE LGGYPALEYCAHCGEPL SALAVGQWPDLLLDGYLLRAMAIAGWPMMARDCARCGAPG DLLSVDKAPLKG MVFSYLHLLAASGYRPELDRCGSCRHPL KACEEEKHLDLVVAAYVFKVLAHEGWRPELASCIACGDEA TAF ETRNPRVTALAAVLQVLTAAGLQQSYERCLHCGAAG AALARNAQPQLILDSYLLRAMAAAGWQASLEHCATCHEVG RSLSREHGASLTLDSYLLRSLSMAGWAPSFQDCAVTGAPG ALAAKRRHDPTLDRTSYLLRALALAGWAPSCYDCASCGAAG

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 E E LIE ENGPAPLI LPFFFKLRLLVSGGFLSKEDLCHSCGTE L
 ,
 YFLDEDKETD LLKCVFEFRLLDELLGMRPKLVGCAFCFKY E RVLGDCPHMDLLVAAYVFKLLSHVGYRPDLSSCVACGDPA



 SFLA YGDNNPII ELCSTAKMLCLAGYKPVLTHCVRCGKQK Q Q GLD Y E I LT NIF E DQ L D R F G DQ N F F D C A L C H R A G R RALAE GRDASLVLLDAF L L RSTAADAGWAPALGGCARCGTTG LFL LE G DDPY L A QA A F SLRRLMRLLGY LPD DIGACLDCGES S K AL E A K V D P E FIIKA I F EWK
Y LLS E GRRPR LVKAVYELRAMTLAGFMPDVVACADCDKYE SLCET DNSYTVLLAA YTVKVLAAHEGYRPDLVSSCDYCGEAB
 $R$ V L G Q G R P P E MV L D S Y L L R SL S A S G Y A P DL V D CVVRCGTP G
 AALARRHAPGLVLDSYLLRALALAGWAPSCYDCARCGRGG Q WLD Q H Q R DA NF H $\square R F L M G L T R Y$ L G F Y P D Q T D S H YEAEMARDTARLACAFELRRSSCMLGYFPDDRGCCNCGEHD EHLD Q GGASPS DRRFFEANWLNDLGYRLSLDACAACGVEF


 N Y F N F T K S P I S L A A LA F E L K Y L S F $\quad$ G G Y R P K L A SLS REHRAEVI ENSFLLRRLLATGGWSPHLDNCEVICGRTV E Y M N K A E K NELLLTTVFEAKLL LLLLGVKPEI ESCTVVGEK G
 $R L L S T G L T P V S V V D R F V L Q C L D V A G W A P S L V D C A Q C B A P G$
 RTLEEAPAPALFPLFFRLRLAGALGFAPSLDVCGLCGADG Q WLD THNHYA NFHL LF L L KL T K H L G F Y P E L P DEMQVGGKVWMPVTYFALWMSRDMGWMPELGHCVVCGRGG ERIDE Q A P ATEAVLVHGLYHLLVVGGVAPSVQACYSCGEEG
 $E \| S N E E E L Q E V L T V G L L F K V M D K L G G R M E V D R C V Q C E K K E$ K ALTTK GAVPELVVYIFEMKALVVNGEFP
K A A C D A D P A QTL S L A C L L K V F S FA GF RPSFNECDVKC GS K $\square$ S A LA H GYGT DLI LAASYL L RAMATAGWQVTWTRCVGCAEPG
 NTISSAQNKVEI L I A FQLKMMIESGFSLEFDTCLHCQCEE

## UniRef90_D3QC17 UniRef90-K6ULUG

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UniRet90 V2XIX2 UniRef90-G9RZ19 UniRef90-F1T4W3 UniRefefo-BgDNL2 UniRef90-R4Z488 UniRef90-E4DCZ6 UniRet90-S7VM20 UniRef90-E3FGS3 UniRef90-UPIO004233865 UniRef90-A4CIM7 UniRef90-R5LH19 UniRef90-Q74FM9 UniRef90 M2P8H6 UniRef90_STT1L2
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90
100 110
P $\square G Y S F K F H G A I I S Q E A A Y R D P H S N K T L Y L L N T L Q Q \prod P \prod E K$ PHRFHLASGGCLCPSCRLPGSSAPAVETLALLGALLEGDW
RVFFSFTDGGLTCSCTERGNVSPGALMVMKSLMTENGED
PHRFSASLGGTVCTDCRPQGTTSTAAVQHAALLAGDWQ PMAFSAALGGTVCSACRPPGSAAPATMQLLGALISGNWDV
 QEYFSTEAGGAMCLTHRLPRSHSGQTFSQLGLLLAGDWES PFGFSPAAGGALCARCRHVFPDPADTLDALQTLRTAPPEA PHRFHVAAGGAVCPSCRAPHPDSFTMLHALGESDWGTVRG NLYFSPSAGGVMCAGDHTPESDSDETRLQLFALLQGDWHS LTYFSPTAGGALCGSCAHEDEGADEVLSWLSSLLKLTFDQ DAFFLAGEGGVLCPACRTADAFPAELRELLTGLARFDWEH PHAFVVQLGGVVADAAAPPPRLDPDTLALLSALLTGDWPH PHAFSLAEGGAVCAACRPPGAASPSAMALMGDLLSGDWAG
DAFFSLSAGGILCSECQEPGPFPDDLRRFILALRDYDWEN DAFFSLSAGGGLCSECQEPGPFPDDLRRFILALRDYDWEN PMFFSPSAGGLMCSDDRTPDRIDPDEVVQLSAAVDGDWGV SYGYDAGNGGLYCQDCHGNVRVSRGTITVLQKLSDENTLL ADHANLSTGVLECDKCCYNPELDRTMLY VRFI ALTEYER DRYLDDARGGIVCHRCGGRKPLSRGLVKQFLWVRETDLPQ PGWLSPKKDGVFCNHCASKEGAKPELGSFVQWIKKNAPPK SAAFSARFGGALCDSCASAQDISPLSLEAMRRMLIMKDSE
 EVYFSFEEGGVLCRACAHENDYWPSTLAFLRHISKLKPSR NVAFGLSGGGVICAGCRPGQPHDGGTLTALRALAMAGGE NDHFGVESGRLACAECRQRVVLGREAAQTLQLLSRSDPDV ADNFTLNPPGVILSDEAQNMPVSSKADHLCRLLANDRPNQ
 KEMTSVTLQTLVCGNCLHSDQNDLGLVQWIQTFLMLRFRD NITLNGSLGGLICRSCYOKEYLNKKTIIMIRNYANIDILK VVYFLPQSASLACGACDQRVPLSRTVLAAMRHDLYAESEK PATAERRTGAILCANCRYGASVGPEAAALLGRCIAT GR KPYFDLLEGEFVADESLNPDSLGENMYYFKTFLGDNFDA LAFFSASAGGLLCSSCASSEAVDAEAVNWLRALLPLTFDE PHALHVGLGGDVCPECRPPGAAAPETFDLLSALAAGDWAT LDYFSAASGGVMCSKDHALESDKCNDLVRLQMISLIDDWQN RMYLDVMNGSIACDNCFGNDPLSPAVLGALRYVIGCPPKK TEGFWVSEGGLICPDCYTQDSIHAGTAAALRLLAGESEQA MIAMSPMAGGVVCGPCGKRRTVSMDGLVCLNELVMGE EVAFSKVQGGTLCDYCGVGCRVSALSAEALRRMILLPDPQ PFDFSYKYSGLLCPQHYEKDSYRPNVPYLLDRFQSUSFED
DAYFLTQEGGALCVDCRASTSFSEELRALLCSGEMLDWAH P
PEVLDAETGGTLCLPCRQGSGLGAGSLALMRQLLKTDLEK VTYFSATAGGLLCASCARNVPLDAVTVGWLQSLISDRFDE GFCFDARKGRLYCGECAAKRELDPAALAAMRHIVFSGDDK DAYFSATSGGSICTSCAHLSEITPSEVQFLEFMLGSVFDK Q1 AFSFKYHGVISEQYDDRDPHSNKTLYLMDVLQKLPIDN PHQGFSPSLGAWCVLIVSRPELLIRTRRRFR
DYAFFNDESGVFEASNHGDYSVSGENLT LLKRLLGTSFDA RPRFDQAHGGAVCEPCGVRARDAVAVPAALLAGLRAGQE PHAFHIQAGGAVCAACRPAGAVDPAVMALLGALLSGDWEA APYFDLSEGAYCSKPGLNPVLADGNLEAFRNGLGTNFDA PARRAGAAGTVLCTGCRYGAPLSAETVRLLHRCLGT GR VHAFSADKGGFVCYRHTLGEDLMPTALKALRHIYKCPPER LAFLADDSGRLSCPACGWGDRLGQEAVSTLRFLSRSDPGG TVYADVTDGALLCAHCLSDAPLTPHALAAARFVREAPGSR PHHFHPASGGAVCEDCRPPTPAPGESLRICWWLGAGHTED LUFFSVQAGGMMCSTDRLLDEVSHESRVQLFALLKGRWDL LINYFSVSAGGITCSTDRFMDETSYDMRVQLFALGKGRWDL PHRFHAGAGGAVCVRCRPPGAFTPPAMRGLWMLSKGRLGE SVQFVVDEGHVRCPSCRAGVELSAGGLDLLRHVQQELPSG ESWFNLAEGTFQHHKTNMYAVSGENI LLKHLDGDNFDK TVWYSATSDGVTCGDDRGSVALSAESVATAQRIFRGTVKG EAFFSPHAGGLVCDPCRLAQRLSPSVLQALGSLPNPTLPS KEYDDAGHGGFVCVDCSHGLGFSVQAVDTLRELSGNKLSK QNFFSPVAGGTYGAGAAGSRALSVNGLKVLRLLQRASYKE DVSFSVLDGGVLVCDDCSRKEMLLESTVYTVQYVMQAPFEK AHSFHPAAGGPVCPACRPPGSLSAGAVPLLHALQHGQWHQ


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LD R L R WN SKMKEEVLQGLCFYCEGRFGRLKAWRQ
LA A APCDAPTAALLLAFAHDWAATHDDRLRALEFLL LF SFDLDAESKREFIKLAEEY LFSFSLAEHSTQLLGAVTGGRALYCVDRDRS LD E L




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UniRef90 E6MH9 UniRef90－C4V4B2 UniRef90－K1S7G3 UniRef90－BosB31 UniRef90－×1SPW7 UniRef90－KOYJU7 UniRef90－B2RM78 UniRef90－T0F6Q9 UniRef90－UPIO0047E7139 UniRef90－D5MME5 UniRef90－F2N7Q7 UniRef90＿UP10003B45008 UniRef90－UPI000367E7EE UniRef90 ${ }^{-}$K2ACW6 UniRef90＿UP10002627B2E UniRef90－UPIO0040E5646 UniRef90＿R6X591 UniRef90－14W6R0 UniRef90－E1R377 UniRef90－K1ZCM2 UniRef90－D2MQG1 UniRef90－B6GCF1 1 UniRef90－B6WRD9 UniRef90＿I3YVL8
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1
TRDDA 10 20 30
 RDDUQRLAALGCYFAEVAELLAVEGLPSPELLSLLELNSL LSQDMETYALCCYLAELTGHMTDTEEDSPAAARLLLYAL LRSDYEGAYYGMYFLEVCDYCTRENNDERELLKLLYQS

RADLEGACYGTFF TSTDVDRYYAGVAML IREDLV

## LRMQV

俭
LREKLPTDTVGLRIVELVDALMEEEDPQPAAFALVVRALL
LRGDVMKMALGSYLLELLDVFFDFYQGDPELLKAATHDL


VFDAQHAAACAPVVDLASRLTQPDLASPKMFALLSSAL
DNAKTGYASYVVELVSSFLTEGGVHPQEYKLLYAAL
LK A D RQDLPNALAAASALTEVAKLNCFED

LKSNLDT TSTTYFADE
LLKYL1 R
LKSNLDTISTTYFAIEE
LLLTEDPSTEA
LMTDYVGACYGMYFAEADYYRENNDEKD LKLLYMSF
$\square R G D \square S R F Y$ AGAYY
SD【Q【SSMASVLVD\｜VD
■RRNWQRMGLAANCLRFVEAMGVGEDAAPEAFALREDL TDILKTGLVMFLSEMLKNCIRE

## TD

 TRTYAGYYVAETLWWLDE TKNALTFFLAEMLSNSLQEA LRLDPEKLHSALEWNRMVSRYTCSGVAEDDVLIVWTM PDVRDVNVHYAGLYVAELLNSCSEQFDPAPAWYDAAVATM

## D $\square$ KNS VVFF $\square$ SETDASVLQEEEENKSMFKFПESS

 पSSDFYKF VFCE TISK ILKGDSSPLLFKLIYACF MAKNAlVLFLSEFLSNAIQEETENKELFSFI ETAß DATRLGVLSFFAEVLDEALPERDPQETIFRLVVSVL

LSEDLSAMAYGSFVAELADELFPEHEPAPDAFDRLLQFF I A S DIEKLAVAMFATETTDKV TPENSGEHGAYNHLSSFL LAKDYEDYLVATDMVEVDDADEERTADDELYNLITTSG RQDGEGACYGTFFLELVNYYTRENNEDVFLGNLLYYSSL RKNYSKFLHASYFSELLLQCEIPELDSHEYFDLLKNAM 1 RENYRLFLQAANALRFLIQALPKKEPNSELDYLLLNTL LRSDWGRTGVAANCIKFVEAMGVGPEGAADAYDLTCGML AVRWAKMLERHLIPGYPYDDLLALFYWAL LLFDVVRNAVAMYVDELLQHSLKQPEANPELFYLIEDTL LS LDL GKLTASQYLAELALDQALDDHPQPELFSLLTEHL
 TRNDYDKLLWAGLPVRAILSLLPP HVQEPALFELFLHYL LKEDLTLSTYAFHIIELVDKLTAENQENSILYENLVYVL



## UniRef90_UPIO002E04B13 UniRef90-D5BCK9

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UniRef90-B6GCF1 UniRef90-B6WRD9 UniRef90_I3YVL8
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UniRef9O-A0AO23X409 UniRef90-A2TXC4 UniRef90_Q72AU1 UniRef90-C9LT43 UniRef90-C7H003 UniRef90-UPIOOO47BB4BA UniRef90-UP10003735C1B UniRet90_E7C712 UniRef90_B5YIN3 UniRef90-Q30ZR4 UniRef90-D1Y8K8
UniRef90 O5R108 UniRef90-UPI0003FB7A44 UniRef90-K9S5N1 UniRef90-UPI0003B7BAFA UniRef90 R9.JP11 UniRef90-R6SC90 UniRef90-101PX7 UniRef90-K2CHB1 UniRef90-T2J499
UniRef90-A4BXZ
 QPFFNLLEGTFEPVK TNDYCVEGENLDLLRAFLNVVFND
 RAFFSFKDGGLTCEKCENDLETEFVVKS AVIVATNKK PHRVNVTGGGSVCDDCRAGEKLLDSTVVYAISFASGSPVEK G Q

KLLDSTRYAMGFITTOPDNK PHAFHPDAGGAVCTTCRPPGAFTPPAVRVLWLLSRG HQAVSRRDGGFVCKSCRYGDHVIPRDLKTFRLLCKAEDEH GARFSADEGGVACPACRPSESVDAATLCWAQYFLASTFDA PSRFSAAMGGVVCESCAAAEPDSHTEDEWLDALLHMTFDQ LTASLADGGVYPADGTPDQPASRAALRAYAVCARADLDT DAFFHAGEGGALCGTCAGARPFAAALRALLTDLQHLDWTD TMYFDMERGLLYCDNCADENALIFP KAYFSVDSREFLCSDCHP自TKDHDPVLKDFHTMDSKKFSN
TVLFSAAEGGVVCSRCSDAQRTPVEVLS WAHFLLMSTFDD PRWFDPADGRFVPNAPAHGRGIPPHQSTYLQLFRRDTFDN GEMSSCSHFDVICGDCRTPNPDRVGLVRLI FDCRRGRYKD EARFHPLAGGTCCVHCARRDPDPPEARDTLRQWLDGGLP EQAMSAAAGGLVLCSKCLPRAPASPESDRLRSALHGGLEQ KYFFNYKDGG YVQSTAYTLEYIRNTNVEK KYFFNYKDGGLICENCRSGNTISVETISLMRK乌DKLDLEN LIYA PQDHKFYCKNCRTGSVISPQAIKLFYFMQKNPLLK PPNFDPSEGGपRSPGYTEPNSLSSGTVIGLRRLSAGDLQW KYEASTTYTLEF: WNTPIEK ASYRYEVEQGAV RCAASSPH GVFDDTLARGFLCGHCASDLPLGPGGVRYLRFTEADPFEK SQDFSSSAGGALCEKCSEKNPVRANAIKMIRDFLKNNTGA VVSFSSKEGGFLCADHAQELRMKVNQLKTLRMAFKARLEH PGYFSAQAGGLLCASCASGEPVDANMVRWLEGLVSMRFSE DEYFNIMEGNFQSKNTSNYCLEGVQIENFKLFFGDNPST KVAFSLDGGGIVCETCRPRQSISAATLECLDGLLQAPERD APYFDLLEGAF KDAVYWSDSGFLCQNCSSNGGSSMIALRLLQAAAMDRRRN EDDRSMQQGVLLCDQCRQPEPLTGEVLTLLRELSEAPRDQ DKTWSFLEEGYLCKNCLPRDYLFPELVKVFNSNFHTNFYF NAWFDLRSGTFTPSQPLHPDCLQPEEASKLSLMMRMNYDN ENY $D$ SQS $\square G G \square C N Y C N K G D G V T Y A T Y N D L K Y I Y E A P L E K$
 KDYFSVKYGGALCGKCAGMEVLGASDYRFLYDLENLKLED ETSFSNHADGLFCHRHANDNGLSPDSWQLALRMLRSPVAE PHRFHVGAGGSVCPHCRPAGSTTPGVLDLMSAMLDGDWE GWWFDVREGLYTPHPGAHPEVMTQPSSQLLDRLLHCDVQA PHWFSYQAGGIVLNKEESVTYLDSTEVVNYVNTVEK QTHFSARSGGVMCATDRTPDAIRLQPAERLQLIALLDWAA PYFDLVEGAFI EMPGDNPVLKGEADENFKAFLGUKFDA

| $\begin{aligned} & \text { WS } \\ & G D \\ & Q D \\ & P N \\ & A \end{aligned}$ |
| :---: |
|  |  |
|  |  | DYWFDDREGVFLPGCPFHNEALLPDEARYAVDFIVNTPLEK PYQLDASLGGVRCPRCCTPSSYSPGSLAFLHVRQNAK QS KEEFYYSSGFIICKKCALPDPDSQGVIKLLKEISTWTLNF GGRAVWREGTFNCSAHGGASGMSMM SDSYFIPDHGFVTQARDNQO

## RAYSVADTQK

PVLDLQEGTFIREKPAHPYYTESRLAEVAGQLLSLQFND QAGFSIQAGGVVHPEALPRPKLAPRADAAVSTLSAAELSD KFYFSVKEGGLICYRCRQEGRLSAEQVEVLKDFSKMDLEK GDCFDLLNACFVAESPRHGMYVGPQEASHISLLMRMNYET KVRFDPESGRVRCRDCSRMDGEKSRILRILERFSGEDLQG FVNFQEG



## VGELLT $\square$ P D D K F N E Y WM F L R R Y A S Y H L G K L

$\square Y T F S V S D S V L N E L M A L S K R F D D K P L K S L E M L E T$
 A F V F R P T Q N N L E E L D HAL FVVYFRHYFGR
LE R V K I S D K L F N E M E K F L Q N H D F T V L G Y N K T WD T


LA A WDVD DENR LRRLLK $\square M R D A L A V Y L G D K P D R S$ L D H D S L N R Q $\square R$ R E L L Q AF Q T Y I A L H V GEMK SL GVL






UniRef90 L8LY74
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UniRef90-I3ZJM3
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$T$ I TRNYDNY LIFASVIISSVLESDDFNSKSYQTFVSLEKAL
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LA QDMEGTCYGSYF LELLADYYARENEDATGLLKLLYQSV 1 RKDLVALAFASYACEMAYDSAVPDDSS VLVRLLNTL $L S R D L G K L T V S Q Y \square A E L V L S L A L S E Q P Q D E L Y E L L N E H L$
D
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T GLAS GEDLETLLRQFE HRI ENSPNPTALLNQGIFHLLSLAGIAPQVYNCCLTQLPD FEELDD Y DNS I L L N RRHDPRLILHSFLLRTLAQAGWAPTFDRCARCGAPG EF DDTTTGPTHLHHHFMLELTAHLGFDPSGDWTDAT EAVAKSERPHRFIARYSLRLLDLLGSMPPAERCCLCSDED

 RALEKNFDNRLVRCIFEI KSLVINGEFPGIPTDRN EH TTTTNVWMPVTYFALWMLRLMGWMPD\|LHCTVGGEPR RALAKGLDRKLVRYVFEIRALVANGEYP ASLARKHKPEFIEASYVLRALSLAGWTPRLDACVVCGRTD

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YAVVNAIAPNVI KAVFELKLCCVSGLMPDDEDCAVCGDE RRIEQLSTPQSLLAQAVYHLLAIA GVAPVFHSCCLTHQPD IIMDDEAASEKVLIKFELFFLEYAGFSLNFENCCHCGKTG L RELGLGRPPPPVL RQFELAALLQELGGYGIDEVDBDVQS GEAD QWLDI HDEDANFHLVFTTNLTKYFGFYPETEDIH
 R Q L A RALLNPSDPRLARRVFELKSMVINGEYTE
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 $H R L E A L S N A N A H L A H G V F H L L A L A G V T P Q V Q D C C L S G R T E$
$D A M D D A E D A L A M G A A A L L K V Y S F T G F R P S F D A C V S C G R R L D$ DELASAHEFEPTLRRFEARLVEALGYGFDWGMATDSGRAG


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AVYYSPLRDGVFAAKYRPSGSVAEAVATAARDFRKPDPED GCCFDMREGCFVYA APPHADFLPPHEAEKDGLLDRLNYAT $R D A D S V Q A G G F L C Q S C M R M E D Y T V E R L K K F R L E V K A H L E H$
$P E A$ EQTMFWQHGQLVCDSCGKGMRVSAGLRKS $\square A G V \square S G$ PNWFSTSAGGTVC
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LYEFHI EHGPVVFETGRTRSPMVVHGATMDGMHRRDFS RALGVVDEGQMRCAACRAREPLSMAGLDLLRRVQQEFPSA G GVYVLVPGQGMRRARADDRDRISGATLLALAQGNRLADDQ SESLDETHFEIVCGDCGNPQPDKYGLVLFVQDCLALLRYRD RAGFSYQAGGUISQGTETVNSLNAVELNLLQQLSQATLPA
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K P L G R L E D T $\square Y$ T WE YV $\square$ A S PVEK ED CVVEGGELVPVSDAGQRASE VRVDARVAHA NFTFNTKSGYFIDEGTLLVAFKMLLGTNFDN YEGSTAYTLEFI RGAS円EK PAYWHAQADGLVCAQH LASSVLSAPSQAMAVRIFHRPLAA GRD LR YFSVESGGVMCPTDRKARKDSRDALDQLKALAAGDWKA GCFFDMLNACFVSVRPLHGAFLKPEEASRINLLMRMNYET QSYFDLQEGEFKSMLPVHPHYLEKSDASLFISLFTSPFEK
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## FADKE EWRRRYKPSTDYTLEFIGNTKPEK

 DPQCHYRYQVELGPACRADDPHADRGSDLLA SADAMPDA ALYFDMLNGIFVCQQPTHPYYLQPAETVVFQRLLKMSYEN PHHFSASDGGAVCGACRPPGALTEESLRLAWWLAHDRDAV DEAYFSVGDG\VCASCGSKTRVPTDVLKCMQNDMSGD QNFFSPVAGGTYCASCAGSRALSVNGLKVLRLLQRASYKE APPRPVSDSANYAWEYVDASPVEH AA GFCMNEDEPRCAVHAEFDPLCAAARRDVSFVCGADYSK A HWFSFDSGGTDNNNQAQNEPLTAVELTLLQQLSKKFLPK $G V P F S T G R G G A D C L A H R G A G R V D P A V L E L A E G L L A T S V V G$ ATYAY IIEGGPAALDAPGDAPPDDPVVQTLLDMAAGDFSR K DYF DLQEGQFFDQSTMNQ CDTGENLTYMKKRMLGDKFDE
 KSGYA 1 D GELL EPPRPVSESCSYAWEYVVCSQVES GDWFD $\square R E G L Y T K T R P A H V S Y M N R E C A C M L R D F L E C D V R C$ GGDFSFEAGGIIDLAALTET DNPPK DDSKLTRQELQLLQC
 PNWFSVPTGGTI CLEAWKRMPHAQTVLALLQHLSQPEDMQ
DVAFSAFDGGVLCDSCSDAVRLSAETLGWARFLLMSTFDD QHYYYDPEQGVV FDHFLVSEGTIVCPDCVSGREDSGKSLQVVLRQVQEVSPDH FPYFDLDEGEFVKEPTLNSF LEGRELFYFKSILGGSFDA GDYFDLRESVFMPMPPVHRDFLHPEEAQKVQLMMRMDFPT P D GWY R LQ T DAGLERVWLLQPG SFRWHGGKGGLVCSDCVAKDE LLEESVKDLRFARESSYED NAYFDLRSGCFTAGQPSHNDFLKPDEASRIATLMRMRYET RYRYSPERGADRAGTGECGVEVSGATLLALAATEGQGLS DRGWLSLANGNVYPRPRAGTKASREALRAFAVVARAALAD
EYFNLMDGMFENAECRSGQD QVGFSISAGGVI

NRGYSDAVK $V$ AMQH $\square S G S D L K S$
DEYQYRAEKGFD ASLVKDNLTFYGRDLDA QDYVYQPERGVRRAQASDPSSWPVVSGQTLLDMSQDDYRR NVNFSMKNGGFKCLDCATKTRQNNTYLDNLMLYAFKVTPEK SAAFVMNPGGVALPAAAQQHSDTMPAYRLLSELSSTPLSA KVGFSIPAGGTVCLQAWHQDRLNAKELFMLQHLSQPELIMA RPGRAASESAVYAWEYVDFSPVEK PHAFHVAAGGAVCVHCRPPGAATPAVFA LLDALDRGGRW KEWFDFTFQSVVCNSCSKDKEFKDEI DNIMRFLSKLDDRN GFYFDLRSGCYI SMPPFHKEYDSADDTSLLSTFCRMDYSN GSYYSULEGGLI CQKCRNLITKDS ADNIIAFMRIIDKHTDLGKK CNYRYFVERGALTMPDNHGGMKDAGVTLLAMASDDYSD
LDYVFIMEQGFVSKRNHNSSPFVVQG QVIQADNQGNFS GLYRLLVDA GL ERVWLDQPGLFSGAQLL AMAEADWEA

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YENTA $\square$ DDE $\square \mathrm{DE} \quad$ RK $\square \mathrm{FK} L \mathrm{LI}$ D $\mathrm{F} \square \mathrm{I}$
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L REARALLRRLLEPHLGGRREDKS
LK K K K T S LELLKKEADSLSNRALKPLLGRLKSEPML
NFSGEI QHLQS DEKLLRNYTEYH

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LYT F S VT
L E E
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L S E GLN R GQRVEFLNAVLVYFGYHLDAD
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DDGAR EANAWLSVEQULRQYAQYQLGRDRS
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LDT MPDARRTAKRVMRVLIDHGLRELHS

 MAQADWEPGVLAAAKRLMRQALAMVHLGG

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$\square F T F R \square S D Q A L K E L I D D T R M Y R E H F V D R L K S G E \square L$
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I DAAT DSGWLSVEQULRQYAQYHFGRDRS


MHFFKMSH $\square D R N R \square V D V V L S Y Y R \square H V P K F P E \square K S$
$\square Y N D S \square D$
$P \vee V A Q Q S K Q L M R M L L G H H L G G$
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$S E K A L P K D A R V V L E R G F A G M P V S T D A F K A V Q W L S L V A D E S$ KAGFSMVGGGVV
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$E D W V S P K S G R V C K T V A G Q P Y A N K L L T L P E F L K A P Q A R L$
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D
 EDYNYRDQKGFIASMVVGQLSFTGNELKADAALFKNSIEN
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FDMVEACFVSSSPSRHAYDEPQEADLDPLFMRMNYDT VDA QQVYVVDPERGPRPERASDQWPRVSGKTLLDM

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 $D E N F N S E H G G T L C A S C G K E N P D K A N A I K M M R L F L K N D D R A$
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UniRef90 UPIO0037F6EB7 UniRef90-R5B7Z2 UniRef90-M7NUM5 UniRef90_F8NB75 UniRef90-G8XBL1 UniRef90-G6Al13 UniRef90_UPI00037F448A UniRef90- J9H1Q9 UniRef90_UPI0003F5D68E UniRef90_A1US38 UniRef90_W5Z1A4 UniRef90-K1JWP8 UniRef90_UPI000362F3E8 UniRef90-UPIO003812D26 UniRef90_A5FM31 UniRef90_V6SCL4 UniRef90_UPI00029B4743 UniRef90 UPI00036D4818 UniRef90-W0EPJ6 UniRef90-H8KWY8 UniRef90_UPIO00318DEA1 UniRef90-L8J920 UniRef90-F4DAU1 UniRef90-D3EMU9 UniRef90_B6IMY9 UniRef90-G0EP95 UniRef90_UPI00030B6570 UniRef90_Q87LP1 UniRef90 A6VKS6 UniRef90_Q6G080 UniRef90_UPI00047C8CA4 UniRef90_Q55569 UniRef90-L9PF70 UniRef90-HOJH14 UniRef90-F8WZI7 UniRef90_R5ALF9 UniRef90-GOA9S1 UniRef90-K9W038 UniRef90_F3ZQB2 UniRef90 K9WYA7 UniRef90-Q9RH67 UniRef90_F3QX08 UniRef90_W0V4J0 UniRef90-UPI0003F58626 UniRef90-K2D4H5 UniRef90_K9ZLT0 UniRef90 N6UI63 UniRef90-Q9KOWO UniRef90-U2SWD4 UniRef90 UPI000465D910 UniRef90-Q2IWU2 UniRef90-B9JC76 UniRef90_N9U5U0 UniRef90-S2JT42 UniRef90_A8TKF8 UniRef90-K2FVC7 UniRef90-U7UGP4 UniRef90_UPI00047D38C4

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I PRLDSTNNDMKLIFDFNKILLDQNL
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 LY S F DVS E EVVLSELDE E T T K RF I D K P L K S DPATLAQSKQLMRFLLAHQLGG
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 MH LIFVMNRVERSRCLTI I NDYYS LDHPDFPA L K S L
NRPVDFDD TRNGFTLTDFFLTRHVWEPRGDKQ LADGDLSAECRR $\square A K R V T R V L V D Y L L Q G L H S R S L$ LSGEPMSPAA LRASRD LRTLI DFHLRSIHSRRIL QS $\square R$ LS GNDADTWQKMIAMVL REH

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F E

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


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 DGSAAVHLIHF

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NE LDRD P T D A G E L L F I I I
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M H L D K A D DA G N F P L Y FA L H L A S FY GF R F S DKY S E Q T
 V HL L N S P GLLENFHHFFL FNLTKHLGFFPHNNFDDSH QALAAT GSPEPALRRFELAMLGHLGYGVDFMHCAGSGEEG









 LA I A G A V D P Q I A L R R L F E L T L I E T L G Y G V N F S E D I Y S G E S G ELLLDS GEGSE NLLHLDFVMFRGTRYGLGFYPNTNEDGS


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 $\begin{array}{ll}L P F F N L E E G H F T T I E & S S S T V I S G T U L A L\end{array}$ $G R Y F D L D E G D F T E E V P D H G R Y D N A D D S R V M A R L T K M T F A N$
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 $Q V G F S V E A G G T Y R L A V E A S Q P Q R P R L T C K L N A I E L T V V Q Q$ PAKFYRYVVEQGPSPCRPGTAHALRGADLLALAADDMPDA MTYRYRPEQGF $\square A S L V R D N T A F Y G K E L L A F A A L D F S D A S V$ NSYPFL

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 MTYF Y L SADGYFVGYMEPA
 PDAAY $\operatorname{CRGPEQVPQR\text {WHGEPVQATQGRALLAMVGGDFTGE}}$
 QVGFSFDSGGIV SGKKYDDAVYMAFDKUYNLSVTK QVGFSFLS GG【V F WS I D A
 KTYRLMPE EAVMPVCEDADALSHEAGA IVEGQSLIDDLDE
 AAYKYVSEYGFIAVG REPDTDPGSM $L \square A D A N Q D F Q D$ DAY $\square F R E Q Q G F V A S \square M K S N N$ MQACS LEESHFVCGDCQTPPSDK $\square G L V R F L Q D C L L L R Y R D$ GLYVSPKSGRAVCGEAGH PWKDKLLPLPQFLAQRT ADFFDMKDGVFKRYKPDHALYLSPPHTQNFNKLLQYSFEN

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$P Q$ SYYFQPEQGVVLSADTVQNDRYLPAVMAALHHDERSKIAK GDFFDLINGVFSADRPNHSYF LSSMEAGVFYK IMRMNYNN QTYSYFAEYGFV

ADAYYLLRA EHAAQA DEPSQAVLSPDSCLIQGNLHA SACADPARGGLVCRACGGGPVLRPEPRERLDAAM LVYVSPKS GRAVSRT AGEPWRDKLLALPEFLQRGSKRQ YEYQYQHQAGFFAKQADHKQ HDVYSGQDI LALAQRDFS KAWFDMKNGNFTRYEPIHPLFLSPDKAGLLTRMMNADVYS | LDGERVEQGGVY |
| :--- |
| $G A Y V S P R T G R A V T V A G A G E \quad L G P E G M Q A L A A V L R L P G S E$ | LVYVSPKSGRAVSAS A GEPFRDRLLPLPPFRRDRDQPG QS GYFY LHQGFYSVPADSDPRFWDAGAH LDAA AAGDYSA YYEFFPTRGFVLCEKTLG

PREAIDDSGGVVCNKCLDG

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I DSAY DDSWLSVEQILRHYTQYHLGPDRS
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YHR AQTVAQSKTLMRFLLNTYLGG
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 MHRFALSHNERNRCTQLAIINFYRLHIPELKSFDVL
 $S$ APGA LAAAKRLMRQADAPHLGG

| L |
| :---: |
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S APGA $R S \square R S$
$\square$ R $\square$ WHVL PAAKRFTRQALKPYLGD
 MKLFKLSHNERNRITELALHYYRLHI PNMPELQS LRDETLSPSVLKDIKRLTLAALTEHLRGRAAKT ARSAADYDSLAAAFRLTAFF GQNRAADHESLAAAFRLTAYFLNRHVYEPR RRAADPESLARAFQLTRYFLDRHV
WASLPTARET
MR LIFRLSHSDRNRTTELTLYYYRLHDPELQSFHVL VF HV I D E I D DPADNSRLLCDILQNYCSLH I E CMNFSKTERQRLLQTLIDRYFELHLGGFRTPKSL
$\square E K V S Y S K T E R Q L V L Q M I I E Y F K \square H D D N F R K P K S L$ LA AED L S ERCRRLAKRVMRVLIDYLLGRP LNSRSL MHLIFAMSRVERMRCDTVIEQYYRLHLPDFPELKSL PLTEKQSKQLMRYLIDNHYT

PK K R RAAKRLMRDADEQQLGH RPLRS



MQQ LLKSNDERRYLIAKLLEYYSMHDENF
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MAEADWQPGA $\square A A A K R \square M R Q A \square A P H \square G G$
LYSFSLDEPAQKELAELAGRCMEFAFER HTFRSL FD $D E L V L A S A K R L M R L A L S S L L G D$
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$M N D G L Y L D T$

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 DEMDRGF ENFHLVFLLQLSFHLGFGPSSGAEVV YSP RRAGGVEEVERVLVGWLLRFLGLLGVAPEWDRCARCGREE TKLAQEDNPEPALRCFELELLSAGGYGVNFDYCEETGNPN
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PALSSGP D DAAAA L R A F E I R L L L S D S G V L P E L H L V T A T Q T P

 EDFDDATMAGAHLVRFELAMLGELGFGLDLSACAAT GTAD D A LIE E DP S S E R A S I Q F V W W H L L HELAA G DA P D L T R C P V S E R V Y K TI C C E A NHI A T L R R F E WS L L T R L G F APDLLFHD GN GNE GE K RLCDNE EVEVIL RNYEFELLNLLGFGDEFDVDATGQKPA


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AGRFDNGESLQQALQTTRMLLDFRLEGDKSRR【L
EESPDAADVAAALKLTGFFLDRHVAGPR PTTAQQSKQLMRQLLNHHLGG
MHLYYKMSRQERNHSVE VMDEYYRDHI PGFPSWM
$D Q K \square F A G T E R Q Q L L K I L L D Y Y T A H L D G F K K P K S L$
LS MTE $\square$ S DAFR LTSFFFTRHVWEPR
SAT TTLRVAKQLMRQALGVHL GD
LYAREFPDETLRAAKRFTRDALKPYLGGLKSFRQFDP
AQTV AQSKTLMRFLLNTYLGG
ADEMPV AEDLPGLRRGMRVVLMHHLGGLKSWEML $\square A T A D W Q Q E \square L Q T A K R V M R Q A L A A H L G G$
AFTMT

M H RLI L T RERRSVLLKGGVEYYLLHIPEFHTGHSL
FAEMDFSEETDQSAKRFTRDALKPYLGSLKSFQSVLP
AHELRDLERETRQKLLNELIRYFQLHLEGM

MSLYSFSRQDRVGVINRIVEYYRLHLPDFPEDKSL MHLYTMSRMERNRCVEVI LEYYKLHLPEMKSFAVL LLEGRLSRQARQEAKHMLRGLLDYHLQGRR
DSKNDFNQMQRRSLLNNLLQYYQLHLQDFREPKSL DS QLKMSREERNDLLEQLRLYYRWHLGPAFHSWEVL

A L A A DVRPED DDS LRDAMRE LVSRHVGGLRSWQ
NPLNLSKTQRMEALDHLLAFYSYNLDSFHGVRSL F EALDFSDAVRQAAKRFTR\ALKPYLGD
ADNQTLADADRRQARNLLQSLLAPHVGS
TVPDNQARVSRDFMRRLI DTHLAG RPDRT PSDLA DLLRRAMRLLLAHHLGGLKSWEML YVVK $\square S Q G D R K A F E T L V A Q Y L S Y Q G E R$
RETVVRFSAKGLALLEDLLYAYVQCSERRLKS DSFL $D V Q P D A E D L A S L R L B L R A V L A H H L G$

LS E LS P S P D Y E K VA R L I ID D
DRTAKREARLLLREVLQQLLPENASLLAS YQQLKDAHQSRKFLIEKLIDYYSGHIDDFGQVKS $F A N L S F N E E T L Q A A K R F T R \square A L K P F L G G$
MAEADWQPGA $\square$ AAAKR $\square$ MRQA $\square A P H \square G G$
$\square E N E R \square D F S F G E K \square S Q L Y R R \square$
FEQLNFSDATLQAAKRFTRMALKPYLGS LKSFQSILP
DSNAK $\square$ F TGVERQLLK I I LD YYA $\square H L D G F R K P K S L$
LAREEFPFSVWLSLERLLRQYLQFHLEQLRVPPSLI
LDKF S $\square \mathrm{DA}$ GVWRRLERILRQYI HYHLNQURS
SGVFPNNAGVEVQARQLMRAALRPHVGE RPLKS
LEALD $\square$ ND RELVSLFEFCNLLFKEYVG

$G V R V R M E E G V R R G L V R V V L E R G E E A V G R$
$M \stackrel{N}{N} K R Q \square T K E Q L R V A K R F T R \square A G K P A G G N$
LS T REFPDATLRAAKRFTR $\square$ A $\square$ K P W $\square G G L K S F R Q F L P$

$T \square K A A K R F T R M A L K P Y \square G G D K S F R Q F \square$
AREFP DPTTGKAAKRFTR DALKPY LGG PETLAQSKGLLRMLINHYLGTLQSRRVL
MFHFQFTRNERKK I DSQI LD YYY L HLGGGFSK $\square K$ SL
PNTD QAAKQ\|ARMALVPYLR
VEDDGNDPALWAEGLALTGHFLSRHL

$A \nabla A V Q L N D \square T A \square R \square R R Y M V R Y$
GS F V HQESLGQALKVTRLLIDNLLEGDKSRQVL
TS GAD E ET $\square$ A QGFA LT GHF $\square$ HR RV
$\square T E \square T L F S Q T K N K \prod E R Y C K E T M Q K Q$


| UniRef90_COBIH8 |  |
| :---: | :---: |
|  |  |
| UniRef90-UPI000 |  |
| ef90-T1B | TAL ESEPPARVVCLFERDLLVRLGYGLNLTEDVDLHQPl |
| Ref90-R9G |  |
| UniRef90-UP1000468A1C3 | T T ${ }^{\text {R }}$ |
| UniRef90-F7QP00 D D D D A PLA GVQLVK E ELA ML |  |
| UniRef90-17ZEU2 | PQRDEPSL RR |
| iRef90_S5LWX3 N ${ }^{\text {NI }}$ NNNKDPFINYLF |  |
| iRef90-UP10004 |  |
| UniRef90-D7BFQ0UniRef90A0A017026 |  |
| UniRef90 A0A017T026 |  |
| UniRet90 B5XNH2 QALATSGSPEPALRRFELALLGHLGYG |  |
| UniRef90-UP1000308CDD7 A RLRDGEPLAWTLRRFERDLLEAL GF |  |
| UniRef90-UP100037FOD14 | SALRDGTPLEVYVQWEMA |
|  |  |
|  |  |
| UniRef90-D7AAEO EHLDEPRLTGMMMARFELMMLSELGFGLDGESCAATGRND |  |
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| UniRef90-A6FMT7 ${ }^{\text {a }}$ |  |
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| UniRef90-UP1000467C: |  |
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| UniRef90-G703V9 |  |
| UniRef90 UPIO00370 |  |
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| UniRef90 W3RE64 |  |
| UniRef90 K1ZFL8 |  |
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| UniRef90 UPI0003676 |  |
|  |  |
| UniRef90-UPI00046F388C QGLASATTPEPVLRRFELAVLGHLGYGVDFLHCAGSGEPV |  |
|  |  |
| UniRef90-Q0FLS2 DLLAERELWPLAYMRWEMALLDEMGFG |  |
| UniRef90-X6L1R8 | DLLGQPTLWPLAYLRWEMRLLEEMG |
|  |  |
| UniRef90 W6LS |  |
| 矿 | G |
| UniRef90-C9Y9L1 $\quad$ RVV EHGEIV |  |
| UniRef9-B824J3 |  |
|  |  |
| UniRef90 K9W954 |  |
| UniRef90-D5X422UniRef90A5VW5 |  |
|  |  |
| UniRef90_Q0VP21 S ${ }^{\text {d }}$ | UniRet90-A3TW46 |
| UniRef90-B4SRK8 |  |
|  |  |
| UniRef90-L8JUH7 |  |
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| UniRet90-A4C6M |  |
|  |  |
| UniRef90 B6BDU5 |  |
| UniRef90-13DJJ1 |  |
|  |  |
| UniRef90-M4U2Q44UniRet90 - $055 \mathrm{SE3}$ |  |
|  |  |
| UniRef90-D4H8E3 |  |
|  |  |
| UniRef90-B30 |  |
|  |  |
| UniRef90-K6F |  |
| UniRef90-E312 |  |
| UniRefoto UPIooor2927FC |  |
| UniRef90-UPI0003F53F38 |  |
| UniRef90-O16A13UniRef90K7SP80 |  |
|  |  |
| UniRef90-UP10003817E89 A DLD R\S DTA RASWHLRLMTGLCHHLLGMPRYDGYRPG |  |
|  |  |
| $\begin{aligned} & \text { UniRef90-U6B4G33 } \\ & \text { UniRef90 C7D66 } \end{aligned}$ |  |
|  |  |
| iRef90-UPIO0035 |  |
| UniRef90-Q6D221UniRef90 E1JR13 |  |
| UniRef90-G9WJ5 |  |
| UniRef90-E4UDC2 |  |
| UniRef90-F3KZK1UniRef90-E4TVX5 | D |
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UniRef90 COBIH8 UniRef90-UPIOOO3468584 UniRef90-UPIo003801743 UniRet90_T1BUZ4
Uniree90 RgGLH
UniRef90-UPIOOO468A1C3
UniRef90-F7QP00
UniRef90-17ZEU2
UniRef90_S5LWX3
UniRef90_UP100046ACE9D
UniRef90-D7BFQ0
UniRef90-A0A017T026 UniRef90-B5XNH2 UniRef90_C6CNM2 UniRef90-UP1000308CDD7 UniRef90-UPI00037FOD14 UniRef90-R5SZZ2

## UniRef90-G7LSD5

UniRef90 UPI0003734679
UniRef90-D7AAEO
UniRef90-X1KMY3
UniRef90-A6FMT7
UniRef90-A4EEZ6
UniRef90-HOHQP4
UniRef90_UPIO00467C377
UniRef90-UPIO00365AF4D
UniRef90-UP100036745C4
UniRef90-G7Q3V9
UniRef90-Q985A3
UniRef90-UPI000370AC9D
UniReffo-G9YGJ
UniRef90-W3RE64
UniRef90-C1F1J2
UniRef90-K1ZFL8
UniRef90-UPI000348CB05
UniRef90_U2AXH9
UniRef90-Q0G3H4
UniRef90_UPIo00367602C
UniRef90_13Y6P9
UniRef90-UPI00046F388C
UniRef90-F5T7H1
UniRef90-QOFLS2
UniRef90 - X6L1R8
UniRef90-UPI00037EDD8C
UniRef90-Q8PMU8
UniRef90-W6LSA2
UniRet90-C9Y9L1
UniRef90-B5zBZ9
UniRef90-K9W954
UniRet90_D5X4R2
UniRef90-A5VEW5
UniRef90_Q0VP21
UniRef90-A3TW46
UniRef90-B4SRK8
UniRef90-L8JUH7
UniRef90_B7CAE1
UniRef90-12GLQ5
UniRef90-Q11JS6
UniRef90-E7NTM0
UniRef90-A4C6M8
UniRet90_B6BDU5
UniRef90-13DJJL
UniRef90_C7RTP1
UniRef90_M4U2Q4
UniRef90-Q05SE3
UniRef90 J5KAH2
UniRef90_D4H8E3
UniRef90 B3QRD3
UniRef90-K9SNT4
UniRef90-E31258
UniRef90_UPIo0028927FC
UniRef90-B4WKV5
UniRef90_UPI0003F53F38
UniRef90_Q16A13
UniRef90-K7SP80
UniRef90_UPI0003817E89
UniRef90_S5ZY21 UniRef90-U6B4G3

APYFDLETGCMNTDKPRGSF LDGS $\quad$ GKDVAWVQLLGMDFDK
CHYDYYPEQGWV
 $D Y F F D P L S G A R R A D T M E G W S V K G A S L L D L A Q G R L D D R$



 EIVVVSPK S GRAV S A K GAG $G Q G F S L E E G R L T E E E \quad R G V F L G S E G V Q A L R A V L F L P G S E$ SA Y A D P A R G GLVVCRACGGGRLLLRAELRE R R L A D LA S



 HSYPF L $\quad$ P DS DTESA L N L L DRYPY GTPA

| $L$ | $L$ | $V$ | $S$ | $P$ | $K$ | $S$ | $G R A D$ | $S$ | $R$ | $D$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $Y$ | $F$ | $S$ | $V$ | $Y$ | $G$ | $G l$ | $L$ | $C$ | $G$ |

A GEPWRA QLLN L P Y F L I
 LS Y V S PR S GRA V S R A GAGEWADR LLDPRPACLL
 $L A Y V S P K T G R A V S R \quad A A G A P W S G K M L A A D A F L L G N S G P R$ TYQF H P E K G
PAWFSAEAGGLV
EHYVSP K S GRAAVSR A GAVGYEDRLLRRLAP FMT GAVCHVEAGRIV CPDCRNGQPLGSGALALFDAAVAKDP GH


TAFFHSEVVDGLLCETHRRPGALSAESLALAQQFFRKPVAA LYRF Y P D E G F Q QL LD E N S N T P E HL I F S G Q S L L A L A S E QL D D QVGFS IR A G GVV
LPYFDLEAGVFV PMHNGHFLMSESESLLLKFFLTHSMEE
 R H Y V L L A H S G L RLLA QPEERR QAS A H WL A L EQ A M Q E V QP L Q RS Y R YEA ER GLLRRAAAVETGPLSSGATLLALLTR GEDLDDL

$P D Y V S P R T G R A V S$
$G L M V S P R T G R A V T R D G A G$
 $E H Y R Y V L D R G P L A H R T E L G V P \| S G Q G L L A L L R L G Q D V M P D A$
 S SNF Y RYQ GRKFCLEHRPENAV
$P$ DWF SVVDAGGTVVSPQVRGNDSLDVPT LTVLLQQLAAA ELPQ


PA A L D P QE GA QRLLSERA GERRAA ATGSALLALAA
 SEDFY D SFPEEDVEPVKQLLMNPYEQ
 N S V P F L A D
L $\operatorname{S}$ Y


 $\begin{array}{llll}M & \text { Y Y R Y R E E K G F } \\ \text { G Y C F S F E R S T F }\end{array}$


 GNSSL ELLFVVHP GGFALPGSAVPMGATPVSHYLF $\square R A L A A T G S Q$
SEFKKDSASYSYMPEK GFHATNHDNGSAQE\|LS $\square K N R S L E S$
 $R \ A F S V C S G G A V$
$Q N Y S Y$ SLDSRGFYPA Q GHS S YS GE Q $\square A Q L C N F \square G$ LI Y V S P K S G R A V S A K G A G
$N \mathrm{~L} H \mathrm{~F}$ S P S GRAV S E EAA G
$D V$ LDLQE GLFRAPRSRGEGAEAGRAEDLYRFDTEPDP



A DTMTYQY REERGFTAS LVVDNKSFTGHELHS EAVCHVEA GRLTCP DCRRGQHLAPEALSLLDESAVS GDPGA RKAVHDAWEHVLGSP LQK H S L GL P Y A S K M L V L P L F L W LS WVS P K S G G A IC
KWYHFVDNTGWLC
$K W Y$
$\square M D$

UniRef90 COBIH8 UniRef90-UPIOO03468584 UniRef90-UPI0003801743 UniRef90_T1BUZ4 UniRef90 R9GLH5 UniRef90-UPIO00468A1C3 UniRef90-F7QP00 UniRef90_17ZEU2 UniRef90 S5LWX3 UniRef90-UPI00046ACE9D UniRef90-D7BFQ0 UniRef90 A0A017T026 UniRef90-B5XNH2 UniRef90_C6CNM2 UniRef90 UPI000308CDD7 UniRef90- UPI00037F0D14 UniRef90-R5SZZ2 UniRef90_G7LSD5 UniRef90 UPI0003734679 UniRef90-D7AAE0 UniRef90-X1KMY3 UniRef90-A6FMT7 UniRef90-A4EEZ6 UniRef90-HOHQP4 UniRef90 UPI000467C377 UniRef90-UPI000365AF4D UniRef90_UPI00036745C4 UniRef90-G7Q3V9 UniRef90 Q985A3 UniRef90_UPIO00370AC9D UniRef90-G9Y6J4 UniRef90 W3RE64 UniRef90-C1F1J2 UniRef90_K1ZFL8 UniRef90_UPI000348CB05 UniRef90_U2AXH9 UniRef90-Q0G3H4 UniRef90_UPIO00367602C UniRef90-13Y6P9 UniRef90-UPI00046F388C UniRef90_F5T7H1 UniRef90-Q0FLS2 UniRef90 X6L1R8 UniRef90-UPI00037EDD8C UniRef90-Q8PMU8 UniRef90-W6LSA2 UniRef90 C9Y9L1 UniRef90_B5ZBZ9 UniRef90_Q824J3 UniRef90 K9W954 UniRef90-D5X4R2 UniRef90-A5VEW5 UniRef90_Q0VP21 UniRef90 A3TW46 UniRef90-B4SRK8 UniRef90_V5CKA1 UniRef90_L8JUH7 UniRef90_B7CAE1 UniRef90-I2GLQ5 UniRef90 Q11JS6 UniRef90-E7NTM0 UniRef90-A4C6M8 UniRef90-B6BDU5 UniRef90-I3DJJ1 UniRef90_H1PPL4 UniRef90-C7RTP1 UniRef90-M4U2Q4 UniRef90_Q05SE3 UniRef90-J5KAH2 UniRef90-D4H8E3 UniRef90-B3QRD3 UniRef90_K9SNT4 UniRef90- E31258 UniRef90_UPI00028927FC UniRef90-B4WKV5 UniRef90-UPI0003F53F38 UniRef90_Q16Al3 UniRef90-K7SP80 UniRef90_UPI0003817E89 UniRef90 S5ZY21 UniRef90_U6B4G3 UniRef90_C7D666 UniRef90-UPI00035CC8DD UniRef90_Q6D221 UniRef90-E1JRI3
UniRef90 G9WJX5 UniRef90-E4UDC2 UniRef90-F3KZK1
UniRef90_E4TVX5

VVGEMKLLSRQEKSVLLDSVVIYFELHLQQFKSPKS
AARKTAK $\square$ TRQA $\square R N L$
RS LDEARRLLALVYDAHLGRVRRW
MHLLK $\square$ SSVNRKDLLSKVLDYYRMHUGEIHSHK
LRDERFDDAALRDMRRLLNRQLKPLLGS NVEQKY $\square$ YTDL $\square A \square H N I I \quad D$ YYERTLG
A VEA LERAPLDRLLRALKVHADSTVGALNS GGEGALAPDDLRTALDLVEGALTAH
 ALAADPGPEDLGSLRRPMRAVLMHHLGGLKSWEML LLS GPADRLSLGQGLSLTGHFLRRH $V$ F DF QVA DVDNLK L D S ET LRAAAKRFTRMALKPYLGGLKSFRQFVP $P \square S R T A R N E L L D A V V A Y Y R \square H L G E \| K S \square P V L$
$\square F N \square K \square E D$
FEAREFDPATLQAAKRFTRMALKPYLGN
LGAGPAPDAEVAEGFQVTGHFLQNHL
LGDRPMPAARTRLLDALMRA
ADRAADEDAFR

WA ACRPEPAAAREFSRTVDLLVRYHMG
G $\square R$ ADPAAVEDAFRLTGFFFTRHVYEPRA $\square E Q$
$\square A E R R F P D P T L R A A K R F T R M A L K P Y \square G G L K S F R Q F D$
$\begin{array}{rl}F A P T P W P P A R A A D L R R F A L I T G E R H L E R L H S A D A L \\ L L S G R & D A K R L M R M V L Q R L L G N Q\end{array}$
VCQLRMSRTERNDLLEQLLNYYRWHLPSFHSWEVL RAADGET LRTGFT LTRYF LSRHVYEPRGL $M A Q R E L A Q G L K Q Q L R G V L H A H C G V E L L R T R K M$ A QRREAR\|LLRG ILTPYLGE
LS DREFPDDTLKAAKRFTRMALKPYLGG
LYTFRDEEGTLLDFEMLCRESFPMQFHS LK L L K S L LGRGSAPDGEILDALRTTGHFDENRL
NSKNTFNQPQRS LLLE $\| L V K Y Y Q \square H T N N F K K P K S L$ DDMPGLRRSMRGVLLHHLGGLKSWEML D G LVVPTVVLSEVKRLTRAALLAVQL

$\square T A \square L L H P E S D N E A E R V L R E Y V Q Y H Y G R \square R S$ DVALARAAKTLMRSLLHYHLGQMLRTRQLL
$\square C G G N W H P T A R K A A \square N V C R Q M \square A P H \square G N \quad R P \square K S$
DEEPDAADLAS LR LPMRRVLAHHLGGLKSWEMLERQFPPQTLRAAKRFTRIALKMYLGS

 MGHGPAPDGEILQGFEVTGQFLRNHL

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

SRALPLSQQTYGMLRRFLFYYLI T LGQGSAADAE IVQADRATGFFLEAHL
FEQQQFNDAVLQAAKRFTRUVLKPYLGN

DPRSLSEAKQLMRTLI GHYTGG RSLDAS

YRNVTVNRKQEDQVLKGLSEYSAMVIEKLKSDKTVL AACPEASPEEVSAVTALLQEYCACHLGRMPHRKHL
$\square \mathrm{DK} \square \mathrm{K} \square \mathrm{K} Q \square \mathrm{~S} Q \square \mathrm{~A} \square \mathrm{SACLD}$
S DSFRPTQNN LEELDRALFVYFRHFFGR

$$
S D E Q \square P L A R Q F C R Q L I A Q L L R E L R S F K Q \square S P
$$

$\square A D P L S R E E R N S L M T L L L D Y M T Y H F P E M G T L K S$
 DNQUID ANSLK DAFKLTGYFIDKY

LA S REFPDGT LKAAKRFTRDALKPYLGGLKSFRQFVP
WA A CRPDPAAAREFSRTVDLLVRFHLG
LYTFTLEEGSLRDFCENVELLTQESFKEFRS $\square K \square L$ KEQQNIDADSLRNAFRLTGYFLDKY
W ASKFARELCRTLLLPY ${ }^{\text {L }}$ GE
 DAFFSGFY LNELLLR LCPD L EALMCGFYLNELLLRLLPRE ACGFYLNELLTYLLYRYDPYEALEAYYAET L
 GFYVN
R $L$ V $A C G$
MADPVALAGLNAVTS
GLELSHLIISQEDDATIYDLTISY
$\square K$ S D L
DRCYWAGMGIRRLLGLLPA
RKDF
E
LGDRDALMGFSALLRASL


$\square M A D R A A L A G L S A T C A L L S F A D P E R E P H D G L Y D R S \square A L F$ DALLQAMYMNELLLRVFQ

AHYLNE ILLGLLPMDDPAPQLFYQYAQAL
Y GFAVAA AHLRLLPERDPHEGLHDAFRHLV
LAALISATALCHV
LCQDLGKLATSQYWAEMVLAVGLS
TDPAKGA
EALLSGCYLNELLMRLLA
$P$ LVGD



LSAASAICSIL
PEREAHPAL
DAEKRLTTLFMAEVVYRTIREQYRDTS
QALMSAWYVNELLLKLTAREDAMPHL




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| :---: | :---: |
| UniRef90-B9JUP0 | DHLHEPASAGELFIRFELALLNDLGFGLDLTACAATGRQD |
| UniRef90-C6XGB8 | NCHKIPSVIGKIF ELMLLKNGGGLDLTKCVVTGTQD |
| UniRef90_K6V8X9 |  |
| UniRef90-C6WX86 | ALASEQHLATTLRRFELKFLQELGYAIPLQLDVNNTPMQ |
| UniRet90-A8PNX8 | RL FDNPMFALRDFEKKLLAELGYALSLNKESRTHQPH |
| UniRef90-G8NCY9 | Gl AKHPEPLL |
| UniRef90-UPIo | ATDREALLRRFEYVLLAACGCS STETEACSTNAH |
| UniR | DP पASGELLDRFEVMMLEELGFGLDLKECAATGREN |
| UniRef90-C1D7L6 | AHLARGSAITAPVLRRFELLLLAATGYAPTLD |
| UniRef90 UPIIOOO424364C |  |
| UniRef90-W4HJK1 | 析 |
| iRef90_BOVH |  |
| UniRef90_O47EF5 | A GKVREADLRCFEKALLQEEGYGGTMNHDSDANEPD |
| UniRef90 B6A |  |
| UniRef90-B5JWZ7 | ERGDRERCLREFELDLLWLLGFSIDFSQDDN |
| UniRef90-UPIO0036BE | KWLDSEFVHPSDFAYVQLR |
| UniRef90-D7DJV3 |  |
| A8LLE2 |  |
| 33D |  |
| A1S3 | Q |
| UniF | RV |
| UniRef90-S9SKV7 | DLLGQADLWPLAYLRWEMA |
| UniRef90 D3HIV5 | NKLVSTKDLEALLRRFEWTLLRTCGYSFSLTQEARTENAE |
| UniRef90-B6JGG5 | V |
| UniRef90-Q7TTV |  |
| 50G | ARIEAER |
| UniRef90-R5ZZH1 ${ }^{\text {den }}$ | SAF HQKDAKAYGYAC |
|  |  |
| UP10038 |  |
| UniRet90-0253B1 |  |
| UniRet90 UPI00047, | H |
| Ref90_A3PGG1 | ERLOKEKPVEALANCWQVRLLAEGGGYGLPCQKCCWTGPPD |
|  |  |
| iRef90-UPI000370F9F8 | AHLDDASAAGELFVRFELALLNELGFGLDLAQCAASGRTD |
|  |  |
|  |  |
| UniRef90-UP10003816 |  |
| Unit |  |
|  | LQLPRKRQGAADLARFELLLLAEFG |
| UniRef90-K2EJN5 | DAL KGPDWTTSYVDFEVSLLEDLGYGLNFSSCA |
| UniRet90_UPIO003043718 | Q |
|  | EALASAQDSERALRRFELALTTHLGYGVDFLHCVETGEPQ |
|  |  |
|  |  |
|  |  |
| UniRef90_UPI0004644E2C | DLGYGFDLSVD |
| UniRet90-R6E167 | T |
| UniRef90- 33 JSL 1 | D G |
| UniRef90 A4WVP2 | D |
| UniRet90_A7HX50 |  |
|  |  |
|  |  |
| UniRef90-UPIO00475535C | Q A |
|  |  |
|  |  |
| effol | DDDWHPLDLA AELARFEMYLLEELGFGLDLETCAVTGHEN |
| 90-A0A059FBK1 | N |
| UniRef90 - U1KXV3 | LQLASKHQFELTLRSFEFQLLEQLGFGVEFDCDADGEAET |
| 044 C 4 B |  |

lupas_21
lupas_14
lupas_28
jnes
cont
sol25
sols
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himm
jpssm

 $\stackrel{L}{G}$ WYRYDPDQG LEEAPAQTASALPGA A LQALASGT GTHVSPRTGRAVTAS LHYQF $\square A G E G F V S D S G G \square P G E H \quad \square L A$ NRYVSPRTGRAI SEQAAGVGWAPKLLHLPP IILKGS
 $D A W V S P R S G R A V V D G H A G Q$
$D T W$
 $\begin{array}{ll}A P Y Q L R P E L G L V A W Q Q G E A A D P G A R W A A L Q Q A D D H G A L V & E \\ P T Q Q C Y R H K G M F C L E H G P E S A V S D E D L Q A L V H A K R Q D L L & H\end{array}$
 $L A F V S P K T G R A V S R G A A G G$
$G D W L D E S E G F A$
G
 LAYVSPKSGRAVSN AAGTPYADRML ALPVFLRPDMNE


 LVWVSPRSGRAVSRE AGQAYADRLLKLPRFLL




 $\stackrel{P}{\mathrm{P}}$ $P N H F$
$A A D Y S P A E D E C F C S S C R H T F P L D E E G L L Y M E Q L W R S P Y Q E ~$ AADYSPAEDECFCSSCRHTFPLSAEAFRYL LA YVSPRSGSAVSR
MTYRYREEKGFIAS LVDDHDSF TGKQLKAFACREFPD GA $\square F D M Q N G V F C R Q T T H H E H F T E E S S R \square L A Q F L N$ E AHSQYWMR PENAPFKDGSDARDNHMRDAVVVTGAT DASLLPEDGFADHSQPNSADELNPSELALLQRLVRADLRQ QAGFS $D A G G G V V L G D A K D S H F L T A T E L A A L Q E L A Q M D L E D$

 DYSFSNDDFGFVCKDHYQSDKUSASADELLYQVNKNKFN GTHVSPRTGRAVCAEVA EPYRDRLLDLPAFL

[^1]

VFVSEPDGTYVVDPESGPR PATLTAPRVSGKTLLDM SPKTGRAV RHYHFQDQEGFU QFYQFITPSQGLV DCFNQ
$K Q Y Q D A S T G F M A S N E G G$
VGEKGVEALRAILHLPGGE
 A WYRYEPEHGLHDVPARTAGAVPGGALQAL
 TFYTYRDEQGPV QHYQFQLSDGFIPITSHRSNAALLGAQIMSMQHYEKG
EVAETRYG LLRADAGFYPLASSGSESVSGSVIGK FNYRYIAEHGA TKLNGSPARVNNGIQLLGKTLIDDM LIAFVSPRTGRAVSRQAAG

UniRef90_C3X4M0 UniRef90-C6XGB8 UniRef90-K6V8X9 UniRef90-C6WX86 UniRef90_A8PNX8 UniRef90_G8NCY9
UniRef90_UP10002D25C09 UniRef90_M3JRK3 UniRef90 C1D7L6 UniRef90_UPIO00424364C UniRef90-W4HJK1 UniRef90-BOVHW0 UniRef90_Q47EF5 UniRef90-B6AR44 UniRef90 N8YA04 UniRef90_UPIO0036BB2F7 UniRef90_D7DJV3 UniRef90-A8LLE2 UniRef90_B3DX96 UniRef90-A1S3Y3 UniRef90-UPIO003635941 UniRef90_S9SKV7 UniRef90-D3HIV5 UniRef90_UPI00037F8FDC UniRef90 B6JGG5 UniRef90-Q7TTW6 UniRef90-D5QG51 UniRef90_R5ZZH1 UniRef90 K2AKV3 UniRef90_UPI00034687A0 UniRef90_Q253B1 UniRef90 UPI00047A159B UniRef90-A3PGG1 UniRef90-Q7VDI1 UniRef90_Q14P62 UniRef90 UPI000370F9F8 UniRef90- G7Y9A2 UniRef90-A0A059INZ7 UniRef90_UPI00038162E9 UniRef90_J9GP37 UniRef90-G9ZCW4 UniRef90_V4QTY8 UniRef90 K2EJN5 UniRef90-UPIOOO3043718 UniRef90-C4K3Z5 UniRef90 J6GT95 UniRef90- W7XAY4 UniRef90_UPI000365E3DE UniRef90_UPI0004644E2C UniRef90 R6ET67 UniRef90-UPI0004133C94 UniRef90_S3JSL1 UniRef90_A4WVP2 UniRef90 A7HX50 UniRef90_D2TX91 UniRef90_D7JD01 UniRef90 UPI0004755350 UniRef90 Q3AZ53 UniRef90_UPI000344F5D4 UniRef90_G4R625 UniRef90 A0A059FBK1 UniRef90_U1KXV3 UniRef90-Q8EW65 UniRef90_UPIO00474C4B8

KEEQT IDADSLKSAFQLTDYFLNKY
GADF SQPQLQLLSRLYRQMI TSLLGD RPLKS LHDDYSDEQTQQQSKQLMRYLLAHYLGD

A SAAVLREARFLNRALLTHALGTELASRALL ASGRDVPDNLARASRDFMRALIDAHLGRPLQTRGLL AGSGNAAPSDIVTALETTGHFLTHHL LIE D I I N RAVVNE VNTVFELYWEAH $E D F S D P R T R H E A K A L M R M L M A Y Y \square$
$E D P G D D P V L G R S V E F L D R I L L S C B D W R T D$ MDFNPEQLQLLGKLYRQMISALLGD RPDKS LRQRQWDEESLLAAKRICRELI AF H $V F K L G L Q N L E L K K L I N H L D V Y F K Y H L D G Y K E R R S$ ASDDYNNIQTQQQSKQLMRYLLAHYLGD
$\square A E K N L S E A D F A A A R Q L L R F L L A P F V G N$ LGEGPATDAADVTARRTTGHFMENRL
$L A Q D N L S D T A L K S A K I I M R Q A \square D H L V G E \square K S \quad R S L$





[^2]
[^0]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol0
    jhmm
    jpssm

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

[^2]:    lupas_21
    lupas_14
    lupas_28
    jnet conf sol25 sol5 sol0 jhmm jpssm

