## QUERY UniRef90_Q94AH6 UniRef90-B8LQB22 UniRef90-UPIO002B42CFD UniRef90-K4CV45

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 QFEDRWEGMRPTVLKLLRQENVSRNEWHDLFWEVYSVCC DTVEEAWAQLRGAVVAIQQSQPUSTSQEEGYQAVENLC DD D EQUWSDLRQGIEKVYNKQAMSKKQYMDLYTHVYDYC D D E TWA VLEAGVSQIMEEKGMSYVRCMELYTVIYNYC VNLLSDTWDDGEKGПFHVYSWOSFTADEYVMLYTTIYNMC RTWEKLERALHEIYNHNA SGDNEEELYSAYNMV
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 பS LEQMWEDLKSGMDDVYQRRYMNKIRYVELYTHVYNYC $\square \mathrm{DA}$ DQTWDDLRAGI QQVYTRQSMVKSRYMELYTHVYNCC


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A Y I VEWRKFFTQCDTLPKPFCQLEVTLLGKMEDS\|VRKLM


 E L V E R WA N H KVVMVRWLS R F F Y Y L D R Y F I A R R S L P S L H T V G E F V E LVKK WS NHKV MVR WL S R F F H Y L D R Y F I S R R S L P A L R E V G
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 E L V K R WA N H K VMMLR WL S HLLF Y Y L D R H LI A C R S L P S L K E V G E L V K R WV E L V K R WA N H KVVMVK WL S R F F Y Y L D R Y F I A R R S L P A L N E V G F Y T K Q WE D Y Q F S S R V L N G V C A Y L N R H WV R R K G I Y E E I I Y S L A
 F Y I R E WD R Y TV A A K Y I H HLLFRY L NRHWVKRRNVYDVV T L H

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 ELVKRWGNNKVLVRWLSRFFDYLDRYYIPRRALPSLNVAG F Yil R E WD R Y T T A A K Y V N H L F R Y L N R H WVVKR K N I Y DV Y T L H FYIRREWDRYTTAAKYINHLIFKYLNRHWVKRKNIYDVYTLH F Y T Q Q WED YRFSSKVL NGICAYLNRHWVRRECDEGRKGI Y E L Y K R W G N H K V M V R WL S R FF N Y L D R Y Y I T R R H S L H S L
 F Y T Q Q WE D YRF S SKVLN GI C S Y L NRHWVRRKGI Y E I Y S L A
 F YTR QWEE Y QFSSKVL NGVVCSYLNRHWVRRKGI YEI Y QLA

 Y Y TRRWE D Y QFS SKVLN GVCA Y L N R H WV R R K Gll Y E I Y S L A

 F YI K E WK R Y T T A GMYNN H L F RY L N R H WV KR K N I Y D I Y T L H FYTVVQWE EYQFSSKVLNGVCSYLNRHWVRRECDEGRK Y Y T K Q WT RYTAAARVVNNI FMYLNRYWVKRE IDEDRKSDV
 Y Y TREWDRYTTGASYVNRLFTYLNRHWVKREKDEGRKNVY FY $\quad$ DREWDRYTTAAKYVVHLFRYLNRHWVKRKHDFDVYTLH E L NKKWNEHNKALEMIRDI LMYMDRTYIESTKKTHVMPMG F YTKEWEKYQFSSKVL NGVCSYLNRHWVKRKEVYEI Y HVA F Y $\square$ RE WDRYTTAAKYVNHLFRYLNRHWVKRKNIYDVYTLH F Y T Q Q WE G Y K F S S K V L H Gll C A Y L N R H WI R R K D V Y E


 ELVERWKNHKVMVRWLTRFFHYLDRYYVSRKLLDPLKELGB ELSRRWGHYKVGVKWLSHFFNYLERFFISQRNQPPLLEVA
 SLMSRWENHKIMVRWLSRFFNYLDRYYVQRHHYATVNQVG






 EVVSRWW W $\square$ N K DMV R W L A Y IQ E WR KF FTVQCNY L P T P F R Q L E S Q K K N Q S E E S LVV R KM Y Y S M E WK N Y T L G A GFil H H I F R Y L N R H W V

 F YTEAWE GYQFSSRVLNGDCHYLNRHWVKREHDEGKKDVG

 ELVGRWKNHKVVMRWLSRFFHYLDRYYVSRKLLLDPL NELG AYIA E WRKFFT QCDYLPTPFRQLETSKKPRNEESIVRKLM

 FYTKQWENYQFSSKVLNGVCSYLNRHWVKRKNIVEIIYS LA FY T Q Q WE D Y R F S S K V L N G I C A Y L S R Y WV L C K Y Y G G R K A i E L $\square$ K R WD H H THSMQMVRDI LMYMDR $\square Y V Q P N G L K P V V D L G$ KL NATWNDHSSSMTTIEKVFGTLDSTYFPTKGFDLVYHLG K L N A T WN D H S S S M T T I E K V F G T L D S T Y F P T K G F D L V Y H L G




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UniRef90 T2ME24 UniRef90-D8RP07 UniRef90_Q0DKQ0 UniRef90-A8IW43
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UniRef90_T1IW13
 KVQHELLVVFASQLLEKEHSGCRALLRDDKVDDLSRMYRL KVQNELLSQYESQLLEKEHSGCHALLRDDKVDDLSRMYRL KVQLELLVTHANQLLEKENSGCHALLRDDKVEDLSRMYRLG KAQHELLSAYCTQLLEKEHSGCHALLRDDKVDDLSRMFRLL KVQNELLVVYTNQLLEKEHSGCRVLLRDDKV EDLSRMYRLC

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 VLAKKCEKVMDEKHL EVFHFEFQHLLDDDKNEDLGRMYQL AAQGELLARHIDQULKKENSGCKVLLCNEKVEDLSRMFRLC PLKRCCNQALI ADHSALLRDEFQFLLNNDREEDMARMYNL IVVQDELLVVVAKRLLEKENSGCSALLRDDRMEDLSRMYRL R RLAKTCERVLI QKHLELEHSEFQQLLDADKDADLGRMYSL PLMKTCQRVLIQEHKTLLHDEFQVLLNNDRQDDLKRMYNL
 ALAKTCEKVLI EKHLELIFYAEFKNLLSDDKDEDLGRMFQL KVQNELLVVVAKRLIENENSGCRALLRDDKMGDLSRMYRL PLKKACNTALDADHSA LLRDEFQVLLDNDRYDDMARMYNL PLKKCCNNALI A DHSAA L L R DEFQLLLLDNDRYDDMQRMYNL
 EVETEVLEHYESELLEKDNSGAASLMRDDKKEDLARMYRLC


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


$K V Q N E L L V V V A K Q L I D E N H S G C R A L L R D D K M D D L A R M Y R L$ $K V Q H E L W S V Y E S Q L$ FEKEHSGYHALLTGDKVENLSRMVRV PLMKTCEEALIM DHSNMLRDEFQVLLDNERQEDLGRMYKL

 $K$ K K C E E V L V K N H A GKM Q E E F Q R L L D Q E Q E G D L K R M Y L L $A L K R C C N Q A L I A D D H S G I L R D E F Q Q L L D N D R E D D M A R M Y N L$ VVEKK M M A N HMQR L V H MEN S G L V N M L L N D K Y E D L G R M Y N L PLMKACDKVLIENHLEIGNTEFQHLLDLQKKEDLARMFRL
 V V D R E M I G H H M K L L V V M E N N S G L V S M L
 VVVE D E L I K K H M R T I V
 R KVE QQLLE QYETELLEKENS GCAALLVDDKKEDLARMFRL VVVEK E MI E S H M H T L V H M EN S GLVVS ML V D D K Y E DLL Q RM H N L
 A


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


 KCEHVLI DEKYL EMFHSVGNSSLLSQEKNEDLARMM ML




 RCEE ELLTAPMRQTLSMPGS GLSAMLVRDGVDELKLVYKL


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 FVRKLIELHDYMAYVTNCFANNSLFHKALKEAFEVFCNK FVRKIIEHDKYVAYVTDCFQGHTLFHKALKEAFEVFCNK YVQGLLDLKSRFDRFLGESFNNDRLFKQTLAGDFEYFGNL FIRGVIALHDKYMEYVQDSFGNSSLFHKALKEAFESFCNK YVDALLEVHRKYNDMVTTAFRGEAGFVASLDKACREFVNR LI RKI IELHDKYVEYVTDCFENHADFHKALEEAFEVVCNE
 YVQTI LDVHKKYHALVMTAFSNDAGFVAALDKACGRFITNN YVRKLLDLHDKYMAYVINSFQNHTGFHKALKEAFEVVCNK YVDALLEVHTQYQGLVLTAFKGEAEFVRSLDNACREFVNR YVDALLETHTQYQGLVKRAFNDEPEFTRSLDNACREFVNR LVRR1 ELHDKSMLYVFECFONHTLFHKALKEAFEDFCNK YVQTILDVHKKYNALVLTAFNNDSGFVASLDKACGRFTNS YVNTILEVHKKYNALVLVAFNNDSGFVAALDKACGRFINA YVDALLEVHEKYSSLVKIAFKEDTEFVRSLDNACREFVNR FVRNVIELHDKYMAYVTNCFQSNSVFHKALKEAFEVFCNK YVDALLEIHGKYQQLVNVAFNGESEFVRSLDNACQDFVNH YVATLLQVHRKYNALVLTAFANDVGFVASLDKACGKFINN LI RKLIELHDKYMVYVEECFQQHSLFHKALKEAFEVFCNK YVDALLETHTQYSGLVKQAFKDEPEFTRSLDNACKEFVNR YVQTVLDVHKKYNALVMSAFNNDAGFVAALDKACGRFINN YMKTVIDLHDKY LQYYVVESFNNSSGFHKALKKACESFCNK YVDALLETHTQYQALVKKAFKDEPEFTRSLDNACREFVNR YVDALLEVHGKYQQLVNVAFTGESEFVRSLDNACKEFVNR YVQTILDVHKKYNALVMSAFNNDAGFVASLDKACGRFINT YIETLLQVFKKYNDLVTGAFRCDTGFVASLDKACRRFINE YVDALLQVHTRYQNLVDDAFNGDSEFVRSLDNACREFVNR YVSTILGVHKKYNALVDTAFNNDTGFVAALDKACGRFINN SVRKVIELHKYLAYVNSCFQKHDLFHKAFEETFEDFCNK YVDALLSVHTRYHSLVKEAFNGESEFVRSLDNACREFVNR FVRKVIELYDKYMSYVTSCFANHSLFHKALKEAFEVFCNK YVQTVLNVHKKYALVMTAFNNDAGFVAALDKACGKF TNN LIRQLIDLHDKFMVYVDECFQKHSLFHKALKEAFEVFCNK FMRKLIELHDKYMAYVNGHFQNHLLLHKAFKEAFEALCNK YVEALLDVHTQYQDLVNKAFNGESEFVRSLDNACREFVNR YVNTILEVHKKYNALVLTAFSNDSGFVAALDKACGRFINN YVDTLLEVHKKYNDLVQTAFSGEAGFVAALDKACGEFVNR YVDALLETHTQYQALVKRAFTDEPEFTRSLDNACREFVNR YVEALLSVHSNNAELVQKAFKGDQGFVGSLDRACREFVNR YVDALLEVHTQYQGLVKRAFNDEPEFTRSLDNACREFVNR FVQRLLDERDKYDKIINTAFGNDKTFQNALNSSFEYFIND YVNTILEVHGKYNTLVTHAFNNESGFVAALDKACGKFINC YVDALLQVHSRYQKLVNAAFAGESEFVRSLDNACREFVNR YVTTMLGVHRKYYALVVSAFSNDNGFVAALDKACGRFVNA FVQRLLDEKDKYDRIIRSSFSNDKTF QNALNSAFEYFING YVRAVIGDHDKYLQYVSTCFCNSSLEHKSLKEAFENFVNK FVQNLLDLKDRSDHFLDHSFNNDKTFKNMVSSDFEHFLNL FVRKAl ELHDKQLAYVTDCFQNNSAFHKALKAAFEDFCNK LVGKTI DLHEKYMVYVMGCFKNHAFFHKALKEAFEVFCNK YVETLLQVFKKYNDLVTGAFRSDTGFVASLDKACRRFDNE FIKDILALHDKYKLVVQEQFGGNSLFQKALKEAFVEFVNK FTRSAI DLYDKYSGYVNDCFGSNALFNRALKEAFEYFCNK FVQRLLDLKDKYDRVITMSFNNDKTFQNALNSSFEYFTNL YI DALLQVHSKYKNMVDVAFAGESEFVRSLDNACREFVNR YVQTILEVHKKYNALVLTAFNNDSGFVAALDKACGKFINT YVEQLLVLFNKFSSLVKDAFNDDPRFLTSRDKAYKHVVND YVERLLELFRRFSKLVHDAFSDDPRFLTARDKAFKAVVND YVEQLLMLFHRFSRLVKDAFRDDPRFLTARDKAYKAVVND YVERLLELKHRFSNLVKEAFNDDPRFLTSRDKAYRHVVND YVEQLLDLFKRFSKLVKEAFNDDPRFLTSRDKAYKQVIND MVQELLDFKDQMDQVVNHCFHRNEKFVNSLKEAFEYFINQ YVRKLDLHDKYMAYVTDCFQNHTLFHKSLKEAFEGLGCK YVERLLEQFRKFSKLVKEAFDDDPRFLTARDKAYKLVVND YVDALLSVHSTYNALVATAFQADPEFVKSLDNACREFVNR YVIIIIFVSKMCNYYFIMSFKNDAGFVAALDKAFGKFINS FVKKAFELHDKYMVYVKNCFADNS ITFHKALKEAFEDFCNR YVSALLNTHTKYSNLVKESFAGDSGFMTALDKACGRFVNV FVHWLLDEKDKYDKIVSSAFDNNQTFQNALNSSFEYFINL FiKDILT HDKFRSUVNEQFAGNSLFQKALKEAFVEFVNK FVRKVIELHDKQQSYVINCFQNNTVFHKA KKAFEIICNK YVERLLGLFNQFSCLVREAFNDDPRFLTARDKAYKQVVND FFQSLLDLKDKYDRLHKEAFYNDKQFQHSLFRAFEYFI NL MVQELLDFKDAMDNVGCCFKKNEMFSNSLKEAFEHFINQ VVK AELHDKYMAYVSDCFMNHSSLRVAIKEAFEADCNK YVQTVLEDVKKYNALVMLAFNNNAGFVAVLDKACGRFINN YVEGLLRMKDKYGGIVDAAFDGDRQFVNALHLSFENFVNL

| Q | T DF KAEN |
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| UniRef90-B8LQB2 | G V |
| UniRef90-K7KG94 | T V |
| UniRef90-UPI0002B42CFD | S V |
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| UniRef90-M7YQS9 | G V |
| UniRef90_UPI000440B0F0 | N PRS P |
| UniRef90_C1N337 | G V |
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| UniRef90-D3B2W9 | N AVTQA A |
| UniRef90-S7Z946 | NRICQSTS |
| UniRef90_T1IGL9 | N A |
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| UniRef90-C8VU45 | N K $\square$ C K S |
| UniRef90-K4CR34 |  |
| UniRef90_R7T491 | NA VT R M A |
| UniRef90-Q9SRZ0 | T V |
| UniRef90-A0A059D229 | G V |
| UniRef90_R7YP79 | N K V C K S |
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 IGLA A A WD TL
L R P G V V D TWKLLKTAMRQI HQQNASNLSFEELYRNGYNMV VTFEDKWPSMRPIVLKLLKQEAVTQTEWQDLFGAVVHVC DLEGTWKFLEKGVSQUMEEEGLSFSSYMENYTVVYNYC QQ TWDLLKRAI QEI QRKNN S GLSFEELYRNAYTMV DKIWAVLKDAI HEI NHRNASGLSFEELYRNAYNMV E ETWDRLAEAVVAI QTSRS SE YS LEDLYQAVQNMC $T V D V E A G M A V L K Q S V T K L D P E M P F N T M E Y M L L C T T I Y D F C$ EQGWAIMEEGIAKLKNESQFSSEEYMRLYTLVNFVY MRPTVLKLLHQEPVVTREEWQDLFWSVVHSVC

DKTWIILENATHQTYNHNA SGLSFEELYRNAYNMV $\square D \square D Q \square W G D L N C G U R Q V Y N R E N M S K K R Y M E L Y T H V Y N Y C$

$\qquad$ QETWLKLQEAVGA STSVYNLEEL
 ERIWSLLKNAI QEIQKKNN SGLSFEELYRNAYTMV TTMEEGWEKLNEGLQDRQRRDLFGPREYVHVYTDCYNMC
 ПA DEEGWNNLEEMLNNGFDQKSFAPKEYVQTYTTCYNMC FDKTWSVLEHATHEGYNQND R L
 DNTWLLLES A N
D S T WP Y DQ S S TNKMMTQ
D SGLSFEELYRNAYNMV RGIDMQMYMGVYTAVHNFC EGLDMTSYMGYTAAVHNEC DELWDNI RAGI QQVYARQSMVKSRYDELYTLLYNHC ISGEDGWNVLEDHLNRGFTSQLFTPKDFMSTYTTCYDMC VRFEEKWPEMRPVV DQLLQQEPVTQNEWQDLFYAVHLVC IGL
$\qquad$ EETWMKLRGAVQAIVKSTSSMKYSLEELYQAVENMC
$\qquad$ ERTWGKLKEAVQAIHKH

## TADL

 S K SLLEEL$\qquad$ EDKWPSMRPTVLKLDRQESVP NQ LWW HLLK
NFEETWVKi KEA
N RTWOT
NADDETTWRFLEEGVDHILNKNN SGLSFEELYRNAYTMV




SSNFTDQWPKMQP IVVKLLKQQEITRQEWQDLFWDVHTVC ETWQK QEAVQALQNSTSUKYNLEELYQAVENLC
$\square K F E E G W S F L E K G V T K M 1 R E P P F E S N Q Y M N L Y T A Y S M C$
NLNGNWPLLRSGIAQTLEKDGMTTARYMELYTADHNYC TDED WDLLSTALGEVHNKNAMSSLSFEELYRNAYNLV QVWEMLKKAIQEIQRKNNSGLSFEELYRNAYTMV


## UniRef90 T1IW13

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UniRet90 V4SRSO
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UniRef90-G7KDU2
UniRet90-U4ULSO
UniRef90-G2QKS5
UniRet90- W5MUF3
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 ADASKLGEALYNNLVLYLSKYLEQLRQQLPFYDSAEDALE SVEFVGLLDLYNHLKHFFQNYVENVYQKGRDLSGEDELN $\stackrel{T}{T}$ HKYGERLYTGLKQVVEDHLRNYVRKVVESLDSGNFLEE

## UniRef90 T1IW13

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 YYTKQWEDYQFSSRVLNGVCSYDNRHWVKRKNIYEIYQLA E L N R C WN D H K T S M M M I R DI L M Y M D R T Y V D Q S K V A P V Y D L G EMQRKWNDYNKALKMI RDI LIMYMDRTYIIPTNKKAPVMEDG
 A Y DS Q WA K F F T Q C S Y $\operatorname{L}$ L P K P F F A T L E S S S K R P L A E S S I TVV Q K L M YYTREWDRYTTGASYVNRLFTYLNRHWVKREKDEGRKNVY E LVVRWGNHKVLVRWLSHFFSYLDRWYVRTKNDPKLKEAG Y Y T K H WT K F TVVSVVT T L N H DF G Y L N R H WV K R E DDEGHK T DY A Y DA E WGKFFTQCNY L PMPFNQLHNSTQKK DQESSVVRKLM E L N S S W $\quad$ N H H K T S M L M M R D D





 A YI A E WS K F F T Q C D Y L P K P F G Q L E A T LI GK G S A R P NK T P M

 E L T K R WE R H GVLVVRWL S RFFQ Y L D R YF V QR Q S L S S L K N V G
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 | $F$ | $Y$ | $R$ | $E$ | $W V$ | $R$ | $Y$ | $T$ | $T$ | $A$ | $A$ | $K$ | $Y$ | $V$ | $N$ | $H$ | $L$ | $F$ | $R$ | $Y$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $N$ | $R$ | $H$ | $W$ | $V$ | $K$ | $R$ | $K$ | $N$ | $V$ | $Y$ | $D$ | $V$ | $Y$ | $T$ | $L$ | $H$ |  |  |
| $E$ | $L$ | $N$ | $R$ | $M$ | $W$ | $D$ | $D$ | $H$ | $N$ | $K$ | $A$ | $L$ | $Q$ | $M$ | $I$ | $R$ | $D$ | $L$ | $L$ |
| $M$ | $Y$ | $M$ | $D$ | $R$ | $T$ | $Y$ | $I$ | $Q$ | $T$ | $I$ | $K$ | $K$ | $T$ | $T$ | $V$ | $Y$ | $E$ | $L$ | $G$ |



 T L N N A WT DHQTS MVM, R D ILMMYMDRVVYQQQNDVDNVYNLG EVKRRWENHK IMNEWMRKFFMY LDDRYYVKHNNLTMSLHVS G ELVKRWANHKVMVRWLSRFFFYLDRYFI ARRSLPPMLNEVGG KI D R C WQ NHCRQMDM』RSDF LILD RTYVLQNSMPS I WDMG
 EMNRKWNSHNKE LQQI G DI L M Y M D R T Y V P K N G K I S V H E L G

 L N Q K W T D H Q I I


 F Y T Q QWED Y QF S SKVLN GI CARLNKHNNEGHNVCEI Y S L A
 E L V R R WS N H K DM N Q WM Q K F F Q Y L D D R Y Y V V K H H S L P S L K E A G A YIT E WR K F FTQCNNYLPTPFRRQL E NS LTTGK S S I G SKKKCNM FYTQQQWEDYRFSSKVLNGDCAY L NRHWVRRKGUVEDYS LA



 Y L N S C WT D H Q T G M A M I R D

 YYAREWDRYTTGANYINRLVTY LNRHWVKRKGVYTVYTGA A Y DA E WGKFFT Q C D Y L P K P F G QL ETT L T GKA HSTMQK K NM
 T L D E C WR R D H Q T S M V M I

 Y Y GAEWDRYTTGAQYVNRLLAYLNRHWVKRKHVYTVYILA RYTRRQWKSYQFSSTVLDGIDNYLNRNWVKRECEE GQKGI Y YYTTQWSEFRFSSKVVVDGIFSYY NRHWIKRENDYMIYTLA
 Y YASEWDRYTTGANYINRLFTYLNRHWVKRKGVYPVYTLA F Y Dik E WD R Y T T A A A K Y $\quad$ H H L A Y ILKEWTKFFT QCQYLP LPFQSINKANKKRQEGNKVQVLM

 A YAA SWKKYTTAAGF LNH LFRY L NRYWV KLK NQ Y DVVYT L C D L S Q Q WG D H QVTMMQMV R DI L M Y M D R T Y V S F N K K M P V Y E M G
 V INEA WS D H T T A MVM』R D L L M Y M D R V Y V E Q N K V E QV F HL G

Y L N K Q WD R Y K $\square$ A S K V L N H L F A Y L N R Y W $\quad$ R R K NV V E $\square Y K G A$


## UniRef90 T1IW13

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AKII FRDQVIURY|VICDTLLQKTLRDII LIFEQKGYDVVNMLLAIVIEK LELFRTHVMFHVQKRTVDGLLQLIKRERTGEAVDRQLI KS LDLWQSIFMNUKHRLQDSAMKLVHAERNGEAFDSQLVIG LVRWKEDMFGSTQNAVMDAVLRLVEKQRNGETTEQSKIKD LDLFRDTDNYPDQNHLDEVLLQQIKDERENEDIDRTNVKA LVTWRDNLEKCLNKQVTNAVLKLIERERNGETINTRLVTG L NLFRDNV HH KDRLTNLLLEMIKKERSGEMI NRLLIKN
 LDTWNEGLISSSVKNRGQSSAMKLVHAERNGEAFDSNLVKR LVVFRDKVYEKVKSNVVGCVIDVLGKERGGEQI DRGLLKN EIYWRDH|IFQRLQEKVIKAALKTV KQRNGETVDTGLLKT YLIFRDNVAHCUKDRLDTHLSMVQKEREGEVIDRRQLITKN LVRWKLDMFNDI HEKVTETLLKIIGRQRNGELVNTSLLKN LTCFRELVYQEVKVKVRDAVISLIDEERERKQI DRALLKN LALWRDHVRPSIKNRVRATLVNMVAAERGGEIINRMGVKN
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QNTWNFSIVSNI LIIFRDQVYGCI RDHLRQTLLELVARERRGEVVDRLAI RN IKFFKEQVYDVVKPDVVQAMLAMINLEREGQVIDRALIKS ELDFRAHI IQKVQTKTHDGLLLLIERERNGEAU EQRFLEE LKHFKTLVYNEVKKDVVNAMI GLIDAERDEKLI DRGLVKN LKLWRENCSNQVRTRLLNTLLEMVCSERAGEVINRGLERN
L LDLWRDVVNRRVRDRLLGMLLDMVGRERAGDVVDKGLVRA LVQWRDVLFQAVCKKVMDAVLKLVERQRLGETVEYTQU荷
 LKHFKTLVYDVVKSTVVNAMLDVI NKEREGTVIDRPLIGS LDSWNQS|LNDIKQRLQDSAMKLVYLERNGEAFDSQLVIGG LDLFRQHIDSDVQTKTVDGLLLLIERERNGEMVDRSLLKS LELFRQHI HRIVEARTVDGLLLLIDRERNGEVVDHSLLKS GDSWNFSGFSN| KDKLQYSAMKLVHAERHGEAFDSQLVIGG MTVFCNYVLRYI RDHLQKTLLDMVRRERRGEVISRSQIRD
 VOWKONFANHI RNYGAKTLLELVDKERQGEVVDRGAVKN LDSNQSIFNNIKHRLQDSAMKLLHARRNGEAFDSQLVKG LILFKEQCHPPIQENLRETLLSLIERERKGEVVNRLAVKN
 LVQWRRVLFEQVSTKVMEAVLKLVEKQRNGETIEYGQIKQ LVQWKEHMFKHVQNRLVNALLRQIERQRNGEVIESSLVKN KI YWK GHMFQVLNEPVTKALLKSI EEERNGKLINRALVRD LVIWKRSLFMESKERVTDAVLDLIRRERNGETISRKLI RD LVQWRNNFFDH QQKLAGAIVLRLVEDQRNGDTVDQGLVKK
 LQTWNRS FADVRSQLLSAAMSFLYKERSGEAYDAQLVIGG LELFRTHVVSDVQNRTLDGLLLLLERERSGETV LCFNNLVYREMQSTATEAVIALFHKEREGEQIDRELVKN LVSWQQHIFQYVSKDLLQDLLRLFTKGRHYEPVDMKDVKD LVVFRDTVHDKVKGRLQSLLLEQNI ADERASRLI DRDLMKT LADFRDLYQDFDHDHLRTTMLSLI QQERRGAVVNWGGIKS PTFKSKVVYQEIKGKVKSAVISLI DQEREGEQI DRALLKN

UniRef90_T11W13 UniRef90-K1PXH6 UniRef90-Q172K9 UniRef90-U9V7D7 UniRef90-G6CMT5 UniRef90-F4PH56 UniRef90-K7TQJ3 UniRef90_G7EB16 UniRef90-A7SC24 UniRef90-M7WRB3
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UniRef90 R1DW98 UniRef90-R1DW98
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UniRef90_A8PBU7 UniRef90_U6NNX3 UniRef90-R7WA52 UniRef90_E9C936
UniRef90-E3L30


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UniRef90 U6NJX3 UniRef90-R7WA52 UniRef90_E9C936 UniRef90_E3L305

## YO

QQLVKDKEIDY|INR
QLMQERDVPEYLAYVDKRLHEEMERLLHYDDMSTKKPLVS E QLQ A D GVK S FM E Y A D A K L R E E E ARRA E R Y L E P G


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| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $R$ | $K$ | $P$ | $L$ | $I$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $S$ | $W$ | $L$ | $T$ | $D$ | $D$ | $S$ | $T$ | $P$ | $L$ | $Y$ | $L$ | $K$ | $R$ | $V$ | $E$ | $E$ | $A$ | $L$ | $T$ | $Q$ | $E$ | $R$ | $Q$ | $R$ | $V$ | $S$ | $R$ | $Y$ | $L$ | $N$ | $A$ | $S$ |




 AFLAENPVTEYMKRAEQRLVEEQRRVQMYLHETTS

 GWI E T D S T P A Y L L K A E A A L E E E K A R V A N Y L NWI L E D S CP DYMLKA
K LMQE REVP E Y L H H V N K R L E E E A D R LIT Y LD Q T T Q K S LI A


 A T L $\operatorname{D}$ D $V$ A T T C A E Y Y L








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CVEKQLLEKHLTQLLQKGLDQL
ALAQCCVTVLI GDHLPTLLAECPPLIEGRETERLQLMFRL PLMKCCEQALI AKHAVTLRDEFQVLLDNDREADMARMYKL DVEEELISKHLKTVIEMENSGLIPML RNEKMDDLGRMYKL RLAKTCDRVLIEKHLEDFHAEFQKLLDGNKNTDLGRMYSL VSEKQLISNHMKTLVKMENSGLISMLTDDKDEDLKRMY SL VLTMTCEKALVLAHAEAMQEQFQTLLDNERDDDLRRMFKL －
『トく RVHHELLVVHARQLFDKEDSGCRALIRGDKVEDLSRMFRL TLDTTCETVLIKNHTGLIQDEFQALLDNDRVDDLSRMYS


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CVEKQLLGEHLVNGLQKGLHQL
KLVETCEVVLIEKHLDTRRSEFQNLLDENDKNADLKLLYYNK

TLIGKCEQVLIK KHAE MMWEDFQNLLDYDKDEDLQRMYAL


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 $P$ L S K T C E K V L I E A Q L E L F Q N E F GA L L E A N K D D D L A R M Y K L

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FSRVKDGLKEMCTAFATY円KVTGKTIVMNP DNDAEKDKD LDRVAGGVDPMLRDLENHIVQAGLADMVAAADVITQDSEK LARVPEGLDPLRTRFESHVRQAGLLAVEKDDDAKDGDPKA VARIVSGLCEMRKLLEQHIHTQGLLAAIDKCGDCVHTDPKV FTRVPDGLNLMKDVISKHVREDGRETVMDEEKTKEQGT
 MDRVKGGVDPMIDSLESYVVTTGLNDMLAAAETVTTDSEK

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 LS FKHVKDGVKTLKEMMAEHVKEEGKALVLDPEKG

 FRRVEGGLDLMRGVLGDHVKETGRKLISDPERDT FSRVEHGLEPIADLVQQHITAAGNAVVCKRIQEDAACDPE


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FSKVK G GL ALLQSWREYIKSVGAET


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F S R V K G G l Q V L L Q H WA D Y I K V F GT T D M K

L S R TAD N G L



UniRef90 T1IW13 UniRef90-K1PXH6 UniRef90-Q172K9 UniRef90 U9V7D7 UniRef90-G6CMT5 UniRef90-F4P 456 UniRef90-K7TQJ3 UniRef90_G7EB16 UniRef90-A7SC24 UniRef90-M7WRB3 UniRef90 UPIOOO2C2F5DC UniRef90-F4PAX7 UniRef90-V4C903 UniRe990-Q54NZ5 UniRe90-LOPBN5 UniRef90-A0A059D1Y0 UniRef90-F1KX09 UniRef90-C1MIW6 UniRef90-A0A023F9wo UniRef90 MOS3C6 UniRef90-A0A022S2X7 UniRef90-T1G913 UniRef90-K8FDI2 UniRef90-UPIO0026574A0 UniRef90-A0A059LR83 UniRef90_-10YKQ3 UniRef90-T1KFD1 UniRet90-FoWS96 | UniRef90-U1MJQ4 |
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UniRef90_E3L305

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 FVQRLLNMKDKYDNILNVSFSNDKSFGNALNFSFEHVINL
 YVDSLLAVHKKNSELVGKAFRGDQGFVASLDRACREYVNR YVRNLLELHDKYMAYVNGCFMNQSVFHKALKVAFEVFCNK YVEQLLDLFNRFSKLVKDAFLDDPRFLTSRDKAYRTVVND YFQSLLDLKDKYDNLLQNALYNDKQFIHSDQQAFEYFIND YVERLLDLFRFSTLVKNAFMDDPRFLTGRDKAYKCVVND Y INALLEVRSRYNALVLTAFKGDMEFIKALDNACREFINR FMKKVIELHDKYEAYVDDCFQNHTLFNKAFKKAFKTLCDK Y VQSLLDLKDRFDHFLMNAFENDKSFKQKIQSDFEHFLNGL MVQELLDFKDKMDNVVNVCFKKNEKFSNSLKEAFEHFUNQ LMTTFIELHNKYSAYTTGCFCNNAVLHKALKQAFESFCNQ FVQDIIKCHDKYIDAFVSECFNDDVVFQRAFKDAFERFCNK
 FVHKLLEEKDKYDRIIGAAFNNDKSFHNVLNTAFEHFLNL MVQELLDFKDQMDLIVNQCFNKNEKFVNSLKEAFEHFINQ
 YVSTILEVHKRYHQLVTCAFKNEPGFVQSLDKACTAFINR YVQELLDIHDKYTELVKGCFQGHNTFHKAMKEAFEVFVNK FVGKILELHDKFMAYISTCFGDHKLFDMALKEAFEVFCN YVRKLDLHKYKAYVINCFQNHTLFHKALKEAFEVVCNK
 YVNTILDVHRKYNALVLIAFGNDSGFVAALDKACGRFTNT YVDALLEUHTQYQGLVKRAFKDEPEFTRSLDNACREFVNR MVQDLLDFKDKDDRITESCFQKNESFVNSMKESFETFINK YVQNLLDLKDRFDHFLHNSFNNDKDFKHMDASDFEYFLND FVKALLSLHDKFVGVVNAQFEKNSLFHKALKEAFVEFVNK LVRKI E ELHDKYMTYVNDCFQNHTLFHKALKEAFEVFCNK MVQELLDFKDKVDHIIDDCF DKNEKF DNAMKEAFETF DNK
 FVQRLLDEKHKYDKIVNFAFNDDKLFQNAFKSSFEYFINL YVQTL EVHKKYHGLVVMAFNNDNGFVAALDKACEKFINL FVEKLLALREKFVGFLSDCFFDDPQLHKSiKQGFEAFMNT FVENLIALREKFVFFLSDCFFDDPQFYKSIKQGFEAFMND WVQRLLQEKEKYDALISRAFSHDKDFVAALNSAFEHFVNL YVDALLEHTQYQGLVERAFNKEPDFTRSLDNACKEFVNR YVDALLEVHTQYAALVHSAFAGESEFVRSLDNACREYVNR YVETVLNIHKKYNALVISAFRNHADFVAALDKACSGFINN LVESLLELKDKYDKIISVAFNDDKHFRAALNSSFEHFVNL FVKELLALHDKYMAVVNDQFAGNSLLQKALKEAFVDFVNR YVEQLLLLFHKFSNLVREAFNDDPRFLTARDKAYKQVVND YVQTVLDVHRKYNALVMSAFNNDAGFVAALDKACGRFINN MVQELLDFKDKVDNGLQSFSSNEKFINTMKESFETF:NK YVQT EVVHKYNALVLTAFNNDNGFVAALDKACGKFINS MVQELLDFKDKMDYG NHCFAKNDKFVNVVKEAFETFINK YVEQLLELFNRFSQLVSDAFSDDPRFLTSRDKAYKTVVND YVDALLEVHKKNAETVARSFRGEAGFVASLDKACREFVNR YI QDLLQLRDRANDLLVRALLNQTIFRNQINSDFEYFINL FVKGLLALCRKYQSG1QGAFSGDKTFFNALNSTFEYFI NG MVSWLLDLKARLDALWDESFSRNETFANTLKDAFEHLINL YVDALLEVHKKNSETVDRSFRGEAGFVASLDKACREFVNR YVDKLLELFNSFSLLVKEAFKDDPRFLTSRDKAYKEVVND FIQKLLDLKERFNMFLEKSFNQAVLFKQTVSGDFEHFLND YVQTILDVHKKYHALVLTAFDNDAGFVAALDKACGQFINQ YVQSLLDLKDKLDYFLYNSFASDKMFKQTLSSDFEHFLNL Y'QSLLDLKDRFDFFLVHSFNNDKMFKQMAAADFEYFFNU YVGALLDAHRTNDTVNASFRGEAGFLAALDKACRDFVNR YVQTILDTHKKYNALVLTAFDNNNGFVASLDKACGKFINS YVTTILAVHNRYSSLVGNAFQNESGFIQALDKAATTFINK

YVDALLEVHTKNAETVNRSFKGEAGFVASLDKACREFVNR YVDALLTVHTQYQGLVKRAFNDEPEFTRSLDNACREFVNR YVQTVLDVHKKYNALVMSAFNNDAGFVAALDKACGRFINN Y EELLKLFKLFSELVKDAFGDDSRFLTSRD MVQELLDFKEKVDVIVEVCFQRSDKFINAMKEAFETFINK YLHALLSVYERYRKIVTSAFNGDSEFTKYLDNACREFINR FVQGLLSLRGKYDSLVNDAFRGEKRSQKRLKEAFEDFINT FIEDLLEKERFDEFLLMSFQRDKMFKNRIQTEFETFDNL FVRKIIELHEYVAYVTDCFQGHTLFHKALKEAFEVFCNK

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| UniRef90-Q172K9 | \TVFFKLE |
| UniRef90_F9XLT6 | N K V C |
| UniRef90_U9V7D7 | N S K S P |
| UniRef90-G6CMT5 | N S VT K A A N |
| UniRef90-F4PH56 | N PKS P |
| UniRef90-K7TQJ3 |  |
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| UniRef90_A7SC24 | TK\ILKLLE |
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| UniRef90-F4PAX7 | NLVCKTS |
| UniRef90-V4C903 | T SVVFRLE |
| UniRef90-Q54NZ5 | N P K S |
| UniRef90-G6CLK1 | T TVFKLE |
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| UniRef90-A0A023F9W0 | RTNKPAE |
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| UniRef90-K8FDI2 | SEVT@AELLL |
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| UniRef90-C5XKK6 | TVACS S A EL |
| UniRef90_E9R1Z4 | NKVCK S S S |
| UniRef90-G7KDU2 | N P |
| UniRef90_U4ULS0 | N A VT R S A N |
| UniRef90_G2QKS5 | NEVCKS |
| UniRef90-W5MUF3 | R P NKPAE |
| UniRef90-E9H0V9 | T S VFRL |
| UniRef90_G6DFU6 | N NKSPEFL |
| UniRef90-I2CQT5 | DVK F K N D L |
| UniRef90-W9R8A5 | TV |
| UniRef90-S7NNE6 | R PNKPAE |
| UniRef90-F0XVV7 | DV |
| UniRef90-I1JE36 | NPRS |
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| UniRef90-D0N5M3 | N TVC |
| UniRef90-K3WJ65 | NTIC |
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| UniRef90-E9EYM3 | NEVGKD T S |
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| UniRef90-M2MXR6 | N EVCK |
| UniRef90-G3N0Q3 | NAVTKMA |
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| UniRef90_D7FY17 | DVKFKNADL |
| UniRef90-J9K1Q5 | T TVFR L |
| UniRef90-UPI00032AED9D | NAVTKMA |
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## DQ $\square E E G W N N \square E K T D D G F D T C F E P K E Y R \square Y T T C Y D M C$

 ETTWSKLREAVVAIQTSKS $\quad$ A YS LDEELYQAVENMC DANATWAFLEPGI DLMMTKEGMTYPRYMELYTVAYNHF ■EATWQFLEGGI EVMMTREGMSYERYMQLYTAAYNYC
 T A DLN ET WDFLNRGVEHUMLEKGLSFSHYTNLYTTVYNYC

> QRПWAQLRDAVSETYNKNA SVLSFEETYRNAYNLV VDFEKI WNGLQEGVANIDTLTGVKG MPMIEDTYKLC 1 GLDQUWDDLKSGIQHVYTRQSMAKSRFMELYTHVYNYC
DQTLTMLQDAI KEIQRKNN GGLSFEELYRNAYTMV VDLEEGLELVQKGITKLTNEPSFDTDECMMLYTTDFNDA TADLDQTWAYLTSGVDH1MTEAGLSFADYTNMYTTVYNYC NAD LATTWAYLEEGVDHIMTQTGVSYSKYMSAKYVSYNYC EETWQALRCAI KEIHGHNA SLLSFEELYRNSYNMV EKTWK』LEHA UHEYYNHA SGLSFEELYRV
D पQQTWDF पKEGTNH पMTRDGMTFEKYMQ पYTVAYNYC
DVTFEKLKDAVSATHLEHSTSY SLEELYKAVENLC $D \square K A T W K Y L E D G\|T R\| M T E Q G M D M Q$
EETWQKLKEAVQAVQNSDSVKYSDEEDYQSVENपC LDLDVEWRHVEQWVVKLKNDTPLSSEDYMMAYASVYNMC I GLDQIWEDLQKGISQVYARQSMEKKRYMELYTHVYNYC 1P E GWNKLEAMLNGGLKSNMFGPREYVQYTTCYDMC
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UniRef90

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UniRefoo- 19 J 8 BE UniRef90-H9J8B6
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 Y YIKEWDRYT TAAKYi H HLF RYMNRHWVKRRNTYDVYTLH SLVMRWENHKIMVRWLSKFFNYLDRYYVQRHHFPPLKDVG YYIKCWDKYTVGAQYINHTFNYLNRHWVKRKNVVDVNTMC FYTKEWDSYRFSAKVLDGVFSYLNRHWIRRKERYMVYMLS MMNDCWQSHCQQMILIRGIFRYLDRKYVQNPGDMSLWDMG ETVECWQKHCNQMSLIRSIGLYLDRTYVQSSNVCSLWAMG YYTTEWENFRTSSKVMDGIVFAYLNRHWI RRENTYMVYTLA ELVQRWSNHKVMVRWLSRFFHYLDRYFITRRSLTALRDVG SVNNVWNDYCQAMFYIRSTFDYLDRTYI QTAGVSSLWDLG FYTLQWEEYQFSSRVLDGi C SYLNRHWVKRECDFE YQLA FYIJKWDRYTVAAKYIH HLGRYLNRHWVKRKNDYDVYTLH Y N NCWKDHQTAMPM RD LELMDRDYVAQKKLDN YKMG SLVKCWQDLCDQLLM RGI ALYLDRTYIQTSNVRSLWDMG ELVKRWNNHKILVTFLTNIFHYIDRYLVPRTNIPSLDEVG RLDALWQEHCQQMVMIRSVFLFLDRTFVLQNSTVSGWDVG RVDSVWQDHCSQMLLTRQLFLYLDRTHVLQLSVKSIFDMG AYIVEWRKFFDQCVYLPEPFTQLEKSKKKQEQNTIVRKLM CLSCQWKDHQTAMVMIRDILMYMDRVYVQQHKVENVYNLG ELQRRWADHDKALQM RDL LMYMDRTF QSSKKTPVFEHG TMNRVWSEHQTAMVMIRDI LMYMDRVYVQGNEKLNVYDLG ELNRKWNDHSKALRKIRDILMYMDTTYIPKTNKTPVYELG ELSRKWDHYKVFVKWLSHFFTYYERSFISYRNYPSLDEVA KLDYCWQAHCRQMIMI RSTFGFLDRTFVLQNSTПSIWDMG YYARQWDRYTRGALYVNKLFNYLNKHWVKREKDEGRKDVY TLNAAWNDHQTSMVMI RDILMYMDRVYVQQNGVDNVYNLG ELKHRWTNHQDMNKWLKKFFTYLDRYYVKHHSLPTLEQAG FYIREWNRYTNAAKYI HHTFGYLNRHWVKRKSVYDVYTLH ELQRKWDDHNKALQMI RDVLMYMDRTYIPTHKKTAVFDLG RMDDCWRAHCRQMIMIRSHELDYLDRTYVQNPSDHSUWDMG LLYSSQWDRYTSGANFVHRMLVYGNRHWVKHEREHTVYTLA ELLAAWTDHTLTMSMIRDVLMYMDRNYALPKRKLLIYDVGG
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UniRef90 E3MPT1 | UniRef90 EegGDK1 |
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UniRef90_G2XG36 UniRef90_IOYPX5 UniRef90_V4B481 UniRef90_G1KPA4 UniRef90_Q2H329 UniRef90_UPI00045417AB






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 K F LA E N S A S V Y I K K V E Q R I T E E A E R A K H Y L D P S T E K E I V R








## A

 AFLASSSSVTDYMKKAEERLGEEEARIDDLYMHASTLRPDMD


 AF I S T N GVVSSYMKKAK | E |
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 KFHEEN S V $V$ T D Y M I I K V V E T R R L R Q Q E K D R
## E


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260
270
280 VVQEEMTGKHTRA VEMPNLGGVVHMLKNNKTEDLDCMFRIL VVEEELIKKHMKTLVEMENSGVVHMLKHQKTEDLACMYK KVQDELIRKHQTTLLNMDGSGLVALLKTDKHEDLSRMYTL VLDEELINKHMMTDVEMDNSGVVHMLNNDRDHDLRRLY IL PLAKTCEKVLI EKHLEDFHSEFQNMLNGDKNEDLRRMFQL
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 VVEDELI KEHMSTI VDMENSGVIHMLKNDRVEDLGCVYKL VVEKEMI ENHMLRLICMENSGLVNML GDDKYKDLERMYNG
CVEKQLLEQHLLQLLQKG
 VVEDEILQKVQTNLLEKEGSGCTVLLANDKTDDLKRMFQL QLKKACNQVLDEDHSNLLRDEFQVLLDNDREEDMARMYSL VVVKEALTNHMQRLFLMEDSGLVNMLVEDKYEDLTMMYNL VVERQLLGEHVAGILGKG WELAALLDAPRLADLATLYTL VCRNELVVRHRDR LLWDQFSSLLENDRTDDLARMYRL IVERELIANHAKALVEMEGSGCDAMFRDDKVIDLRRMYVLI CVEKHLLENHMKQLLQKGDDQL LLDENRVADLSLLYNL DLDSRCENVLIREHLELMQDSFQRLLDYDQDEDLQRMYAL NLTETCLDVLVTSHCNLDRDEFQPLLDAERQDDLARMYR KLKRECDTALLIERHKDLGQGVECKTYLADDKRDDLSRMY K


UniRef90_T1ED68 UniRef90 N6UCE3
UniRef90-D2VT99 UniRef90-T1PP72 UniRef90_A8NPM6 UniRef90-T1KPLI UniRef90-UPIOO02653DE9 UniRef90-Q5B150 UniRef90_S3CT85 UniRef90_Q015Y9 UniRef90-06C9B4 UniRet90-E3MPT1 UniRef90-E9GDK1
UniRef90 L1ISW8 UniRef90-A817H0 UniRet90_Q17389 UniRef90-M7YRV6 UniRef90-L8HCT6 UniRet90 OP10002658BD9 UniRef90_R8BHX6
UniRef90 U61207 UniRef90-W1NUM2 UniRef90-D7MJV8 UniRef90-F1KTC7
UniRef90 A8JHY5 UniRef90-H2ZM42 UniRef90-E4X7F3 UniRef90-M8AAJ6 UniRef90-I1F1C6 UniRef90-G7ZY96 UniRef90-M4EX27 UniRef90_V4ANR1 UniRet90-A7SM65 UniRet90_KORBC5 UniRef90-B2ASL5 UniRef90-111179 UniRef90-H9J8B6 UniRef90-M5E5M0 UniRef90-A0A024UW69 UniRef90-E9BZ15 UniRef90-UPIIOOO3599C3A UniRef90 D8PNF UniRef90-A0AO22TP11 UniRef90-FOYHJ9 UniRef90_L8HJK9 UniRef90_UPIOOO3F096F0 UniRef90 H3F5G1 UniRef90-MOU169 UniRet90_K5X9W2 UniRef90-J41A J9 UniRef90-T0RG05 UniRef90-A0AO22Q7G2 UniRef90-J3LH23 UniRef90-F4S1K6 UniRef90-UPIOOO3441075 UniRef90-UPIO002B42901 UniRef90-G0R9Y4 UniRef90_H9JJH3 UniRef90-Q1WF16 UniRef90-A0A059D1T1 UniRef90-F6PW28 UniRef90-B7GG01 UniRef90-C4Y1B7 UniRet90_FOVFL5 niinef90-F1KWA6
UniRef9O-D8U878 UniRef90-O13790 UniRef90-V4MGC2 UniRef90-ROI6V1 UniRef90-K4A5W1
UniRef90_L8K5R2 UniRef90-B4Q6D1 UniRef90-UPIO003EBEC5E URiR90_Q7QJY4 UniRef90-K5V40 UniRef90-V9MGA7 UniRef90-C6HTF2 UniRef90_B7QNO6
UniRef90_H8X5P8 UniRef90-A8P644 UniRef90-G2XG36 UniRef90-IOYPX5 UniRef90-V4B481
UniRef90_G1KPA4 UniRef90-Q2H329 UniRef90_UPI00045417AB

330
340
350
360
 F V Q S L L D L K



 $M V Q D L L D F K D K M D V I V R T C F E H N E K F T N S L R E A F E F F I N Q$ YVDALLETHTTYRNLVKQAFNDEAEFTRALDNACREFVNR
 YVDTLI GVYERYVHLVEVAFSNHTSLDHKVLDAACLAFINK YMSTLLEVVHERYQGLVDRSFSKEPGFMKSLDSAADEFVNK $M V Q E L L D F K E K L D N L V V T C F G R N E K F V N S L K E S F E N F V N Q$
 YVKTLLEVHERYQSLVNRSFKNEPGFMQSLDKAATSFINN $K K E M V G M Q$ $M V P T L L E L K T K \square D T V L R D S F H S T D \square F A H A M K E A F E H F D N T$ YVAAI LDVHKKYSLLVETSFKNDAGFVAALDKACGKFINN Y V D A L L E I H T Q Y Q GL V K RAFN DEPEFTRSSLDNACREFVVNR

 M | $L V$ | $A$ | $D$ | $L$ | $L$ | $V$ | $M$ | $K$ | $G$ | $K$ | $L$ | $D$ | $N$ | $I$ | $L$ | $K$ | $S$ | $C$ | $F$ | $E$ | $N$ | $N$ | $E$ | $K$ | $F$ | $V$ | $Q$ | $A$ | $E$ | $K$ | $D$ | $A$ | $F$ | $D$ | $Y$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $M$ | $V$ | $E$ | $R$ | $L$ | $L$ | $D$ | $L$ | $K$ | $S$ | $R$ | $L$ | $D$ | $E$ | $V$ | $V$ | $A$ | $G$ | $A$ | $F$ | $G$ | $R$ | $S$ | $E$ | $A$ | $F$ | $A$ | $A$ | $T$ | $L$ | $K$ | $E$ | $S$ | $F$ | $E$ | Y I E LLL L S L F N R F S DL V K K R S F D D D P R F L T A R D KA F K HVVVND

 $M V Q Q I L D F K E R V D N V I E V C F Q K N E K F V N A M K E S F E H F I N Q$ Y I Q S L L D L L R D Q Y N V Y Y L E K S F N N D P T F R Q A I G V D F E Y F I N
 $\bar{M} V Q K L L D F K D K \square D N I I D V C F G K S E K F V N V M K E S F E N F \square N Q$

 FVK S L I DL HEKY LGVI RETFASHHLFQKALKNSFEE IVNH Y V DALLEIIHTQYQGLVKRAFNDEAEFTRSLDNACREFVNR FVVQRLLN E K D K Y D N I I S D $M V \operatorname{T}$ YV H A ML R V Y D H NVRTITTTSFDAEAGFFAALDKACRVYMNR | $F$ | $V$ | $T$ | $A$ | $L$ | $A$ | $L$ | $Q$ | $D$ | $K$ | $F$ | $N$ | $V$ | $F$ | $L$ | $A$ | $S$ | $C$ | $W$ | $A$ | $D$ | $K$ | $A$ | $F$ | $Y$ | $K$ | $C$ |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $M$ | $V$ | $Q$ | $D$ | $L$ | $L$ | $D$ | $M$ | $K$ | $Q$ | $Q$ | $L$ | $D$ | $T$ | $L$ | $L$ | $S$ | $Q$ | $C$ | $F$ | $G$ | $H$ | $N$ | $D$ | $R$ | $F$ | $Q$ | $N$ | $C$ | $M$ | $K$ | $E$ |
| $S$ | $F$ | $E$ | $A$ | $M$ | $N$ | $N$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $M$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

 Y V D A L L E V H RKNS ETVVQRSFK GEA GFAA S LD KA CREA V NR $Y$ V D S L L QUV H G K Y R S MVV D E A F A G E T E F V F L E GLLLL RSKY DAVV T LAAFRGETAAQKR L KEAFE QF L NA


 YV D A L L EVMHRKNSETVVQRSFKGEAGFAASLDKACREFVVR
 $F V Q A V L V L K D K F A M F L T Q C W G D D K A F Y K C I Q R G F E A F L N T$ F V E S L L D K K D K Y D K VI A S S F N N D K T F Q N A L N S S F E Y F I N L
 Y V D A L L S V H S K Y LD L V K K S F R S E S GF S A A L D K A CR D F V N R



 F V $V$ K A ll Y V S VI L N V H K K Y N A L V A V S F N N D S GF V A A L D K A C G GFi N N
 FVTNFLALKAKFDQIVIRAFGESKDAFGALVAAFETVLNT Y V E QLL SMF SRFSSSLVATAFYDDPRFDTARDKAF QDVVND
 $M V Q S L L D F K N S L D T I W E Q S F S K N E S F G N T I K D S F E H L I N L$

QVVVNE LLQ D K Y M V Y I I K C F
LL D FK A S LDD K L E E S FAAK N E A F S N T $\square$ K D S F E H LI N L
 $M$ I A S A WTLKKKPKQHFVCFCF $M V Q D L L D Y K D K M D N D V N T C F E R N E K F G N S L R E A F E Y F D N Q$ YV DALLDVHHKNTETVNRSFRGEAGFLASLDRACREFVNK
 $M V Q E L L D F K D K M D G I V S E C F G T S D K F V L D A L K E A F E H F I N Q$ Y I DALLQVVTKY QAMVVMAFAGESEFVRSLDNACREFVNR YV E QLL DL FERFSLLVKEAFNDDPRFLTARDKAFKQVVND
 YV DALLEVHHKNSETVARSFKSEAGFAASLDKACREFVNR YV DALLEVVHTQYSGLVSRAFREEAEFTRSLDNACKEFVNR
 FVESMLEVHNRYKDMIKNVFNGDQQFVGALDKACABVINY YVQTVLDVHKKYNALVMSAFNNDAGFVAALDKACGRFINN


| UniRef90_T1ED68 | NSKSP |
| :---: | :---: |
| UniRef90-N6UCE3 | NPKSP |
| UniRef90-D2VT99 | EVVS P |
| UniRef90-T1PP72 | T SVVF K Lie |
| UniRef90-A8NPM6 | NPKS P |
| UniRef90-T1KPL7 | NS LT K $\mathrm{l}^{\text {a }} \mathrm{N}$ |
| UniRef90_UPI0002653DE9 | RLNKPAE |
| UniRef90-Q5BI50 | RANKPAE |
| UniRef90-S3CT85 | NEVCKA A S |
| UniRef90_Q015Y9 |  |
| UniRef90-Q6C9B4 | N A |
| UniRef90-E3MPT1 | NAV T |
| UniRef90-E9GDK1 | RLNKPAE |
| UniRef90_L1ISW8 | RQNKPAE |
| UniRef90-A817H0 | $N V R S P$ |
| UniRef90-Q17389 | N A V T K |
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| UniRef90-L8HCT6 | RENRPAE |
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| UniRef90-R8BHX6 | NDVCKS |
| UniRef90-U612Q7 | NPKSAEFL |
| UniRef90_W1NUM2 | R Q R P A E |
| UniRef90-D7MJV8 |  |
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| UniRef90-H2ZM42 | Y S VF N $\mathrm{L}^{\text {E }}$ |
| UniRef90-E4X7F3 | NSKSP |
| UniRef90-M8AAJ6 |  |
| UniRef90_R7TLY6 | R Q NKPAE |
| UniRef90-I1F1C6 | NDKSP |
| UniRef90_G7ZY96 | NPRSP |
| UniRef90-M4EX27 | K V |
| UniRef90-V4ANR1 | RQNKPAE |
| UniRef90-Q5K745 | N A A C |
| UniRef90-A7SM65 |  |
| UniRef90-K0RBC5 | D V |
| UniRef90-B2ASL5 | N EVICKS |
| UniRef90-111179 |  |
| UniRef90-H9J8B6 | R Q NKPAE |
| UniRef90-Q4PFM6 | NKATGAS |
| UniRef90_M5E5M0 | NQATGAS |
| UniRef90-A0A024UW69 | S R L C |
| UniRef90-E9BZI5 | RQNKPAE |
| UniRef90_UPI0003599C3A | RQNKPAE |
| UniRef90-D8PNF5 | NAATGTS S |
| UniRef90-A0A022TP11 | N A L C T T S S |
| UniRef90-FOYHJ9 | D A R C |
| UniRef90-L8HJK9 | NP ${ }^{\text {P K }}$ |
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| UniRef90_H3F5G1 | NKRSP |
| UniRef90-M0U169 |  |
| UniRef90-K5X9W2 | NAATGASS |
| UniRef90-J41AJ9 | NDATGTS |
| UniRef90-E3MJ05 | N A VTT |
| UniRef90-TORG05 | T R TC |
| UniRef90-A0A022Q7G2 | N P R S P |
| UniRef90-J3LH23 |  |
| UniRef90-F4S1K6 | NVIT G K S S |
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| UniRef90_Q1WF16 | R P NKPAELL |
| UniRef90-A0A059D1T1 |  |
| UniRef90-F6PW28 | N A V |
| UniRef90_B7G601 | NV |
| UniRef90-J9.JPI2 | NL VTT R |
| UniRef90-C4Y1B7 | NVI |
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| UniRef90-V4MGC2 | RQNRPAE |
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| UniRef90_L8X5R2 | NAATGTS S |
| UniRef90-B4Q6D1 | N NKSPEYL |
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| UniRef90-D8Q067 |  |
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| UniRef90-C6HTF2 | NALCNTSS |
| UniRef90-B7QN06 | TSVFRLE |
| UniRef90-H8X5P8 | NVI |
| UniRef90-A8P644 | N A A T G S S S |
| UniRef90_G2XG36 | N E I C K |
| UniRef90_I0YPX5 | RSNRPAE |
| UniRef90-V4B481 | R S VCK S P EL |
| UniRef90-G1KPA4 | N AVTKMA |
| UniRef90_Q2H329 | NEVCKS |
| UniRef90_UPI00045417AB | R P N K P A E |

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UniRef90 C5LHP8 UniRef90-B0D7N3 UniRef90-H2ZFM0
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UniRef90_G3B7Q7 UniRef90-I1CNC5 UniRef90-A0A024JG26 UniRef90 S8DPB8 UniRef90_UPI0004407C16 UniRef90_UPI0004623D9D UniRef90_A8X279 UniRef90-E3QKD1 UniRef90_UPIOOO4416509 UniRef90-KOKSIO UniRef90-D7KXR5 UniRef90-Q4RTC1 UniRef90_G7KDU3 UniRef90_B3RTK6
UniRef90_UPIO00258E093 UniRef90-A7RI48
UniRef90-Q23639 UniRef90_D6RLT9 UniRef90-A0A044V961 UniRef90-K5VW89 UniRef90_V2X7L1 UniRef90-F1P2W9
UniRef90 A8XSK6 UniRef90-U6PT65 UniRef90_G9MW51 UniRef90_G3AR94 UniRef90_UPI0004407CFD UniRef90_K7H786 UniRef90-W7TB39 UniRef90_UPI00026598AC UniRef90-C1G1Y9 UniRef90-UPIO002653A47 UniRef90-T1KKM8 UniRef90-E9BX25 UniRef90_D8Q468 UniRef90-C7YHNN6 UniRef90_A0A016PYE1 UniRef90_S7Q3S4 UniRef90-L1JF47 UniRef90-UPI0004412007 UniRef90_E2C3F0 UniRef90_G0N928 UniRef90_S8AHQ4

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$\qquad$
 TAELDETWAFLDKGVDHI MNEEGMTFPNYTALYTTVYNYC DLNATWSF UQPGLEF LLGDQGVTPKMYMNCYTAVYNYC NADLTTTWAYLLHGVDGTMTKDGVSYTKYMGLYTTAYNYC WDLLKKAI QEI QKKNN GGLSFEELYRNAYTMV KTSARLKEAVNSI HQKQPFNCTQ QALYNDVENMC FDDE WVKAEPIVNALLHQKSVTPAEWQDLFFYVYKDT VNFEETWAKLKSAI CAI FLLKRRDDSCDLEKLYQAVNNLC VDFDATWKLLRETLEGVITCGSVQRVTWNDRFSDVYKLC NADLQTTWAY WEEGVDHMMTKDGDSYSKYMNGYTVAYNYC E DT WN K L E A A I T A A V H R K Q T T S F S R E E E L Y R S S V E D M C
$N V Q \square D Q \square W T D F K T G V E Q D Y D R T S M S R T R Y M Q L Y T H V Y N Y C$ $V D F D E Y W E V L A Q S L R E I Y A K N A$ S H L S F E EVVYRNAYKLV L TFED QWPSMRP IILKLDQQEPVTQNEWHGI FYSVHVVC $\square T$ LIE S TWSK $\square Q P G L V K V F R R D P M D P K E Y M S L Y S C V Y N Y C$

QDTWEF LRAAMREDFSHNA S QLSFEELFRSSYYLV
EDTWLKLRDAVGAI QNSTS T QYNLEELYQAVENLC FEGAWPCMRPIILKLLKQEPVTQGEWQDLFYSVHQVC MYMGUYTAVHNFC
DLLKS T WAF LDE E TDDHTMTRDGMTYSK
DFEESWRMLSNAVDAVHQKRPVS VR VDFSETWGKI LATVRGVDTLSKVPRPTWNDRFSDVYALC

D
DEQWKFI Q
DLLNATWSFLOR GQCNALQLSFEELYRNAYSMC


DLEETWTELKGGIDHIDMTNETVPPEGYTRLLYSAVYNYC D A WK KL EDAVAAI HRS SFIRYS LEELLYKAVENLC

EDTWAKLSRNIVEIQNHNA ANDSYEENHRFAYNMV

## VD F

D R T WLLLLRDATIEDQHQNAGSGLSYEVLYRNSYNLV
DKE WTEAKSTVISLDNQRGVS
E Q T WE KLQEAVI AI QTSK SI RYS LE ELLYQAVENMC
 D L N A T W S F I Q P P G L V D F R Q T WDVL Q E TVVK GVI T L A D V PRA T WN D R F S D V Y S L C $V$ D F D E T W D V L



IDE T WTKLSRNIVEDQNHNA ANLS DLRATWQLLEEGI NDCMRLTDMSNERYLADFDTAYNLC $\square S M D E T W T K L A R N I V E \Pi Q N H N A$ ANLSFEENHRYAYNMV QTWE LLLKRAI QEI QRKNN S GLSFEELLYRNAYTMV TSDFEQCWETLKQALTDI HNQN CSTLSFEQLYRASYKVV
 $\square E F E$ Q G W S N I Q K GI T K L I R E P E FH S D E Y M N I Y T I I Y D M C

EEWWNQLREAVRAI HNRCPISYNR EDLHKAVGHMC
 V NF DE T WA KI L K T L K A V V TLLE KII ERADVNDRES DV Y A L C MQF DEEWSKADP IV H ALLH QK SVTPAAWQDLFYHVYK I T

EKTWN A L S Q N I R E I Q N H N A A S L L F E E NY R Y A Y N MV
 V S ID E T WA DLSSKNI REI LNRDNVSNMSFEVNHRYAYNMV




VWGE पS GA $D$ E FRKNA SNLSFEHIVRNAYN V


VNFEE T WGR LLETVQS VIQLGD\KRGTWSDRFSDVYALC V D F N E S WN R L R S TLLESVI LL N N NVNKKE WN ERFS DVV KMC SI NFD DK WREL R QQME LIVGEQS SEVVGMDFHEDVYRVC I S I D Q T WA ELA RN I REI QN NNA SNLSSEHNYRFAYN MV DLDATWKYLEA GVVKVMLQ


 $V$ SVDE T WAKLS QNIIEI QNHNA A NLSSEENHRYAYNMV



## UniRef90 B9H410 UniRef90_V2XMW9 UniRef90-A3LP00 UniRef90-M5FTG7 UniRef90-H2ZJ75 UniRef90-T1FMN4 UniRef90-W9SH67 UniRef90_UPIO00359A56B UniRef90-L1IJD4 UniRef90_G4T934

 UniRef90-K3WVG7 UniRef90-UPIO003F4941C UniRef90-B3RQE1 UniRef90-D5GF98 UniRef90-T1HBM2 UniRef90_G0P035 UniRef90-B8BQ40UniRef90 FOWC08
UniRef90-H2V4F7 UniRef90-UPI00022477A1 UniRef90-M7SDY4 UniRef90-I4YE63 UniRef90-C1ED14 UniRef90_C3Y4H3 UniRef90-B9WDD6 UniRef90-F4P9D3
UniRef90 Q6BRL6 UniRef90-V4MHH2 UniRef90-C5LHP8 UniRef90-B0D7N3 UniRef90_H2ZFM0
UniRef90_UPIOOO2657617 UniRef90-M2VU16 UniRef90_M2QAT6 UniRef90_A0A059D2P2 UniRef90-E9C7H4 UniRef90-A8QF27 UniRef90_E2All3 UniRef90-J4I8V9
UniRef90 S4RCX6 UniRef90-A5DBB4 UniRef90-K7J9J0 UniRef90-T11044 UniRef90-E1FV36 UniRef90_J6ET83
UniRef90_G3B7Q7 UniRef90_IICNC5
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UniRef90-A8X279
UniRef90-E3QKD1
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UniRef90-KOKSIO
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UniRef90_V2X7L1
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UniRef90_A8XSK6
UniRef90_U6PT65
UniRef90_G9MW51
UniRef90-G3AR94
UniRef90_UPI0004407CFD
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UniRef90_C1G1Y9
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UniRef90-T1KKM8
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VFPEPHSERLYNVTKLFLEEHVDNLRKQVAGAGE
 VAKPPYPEELYEETKKFIDTHVQKLHSQULRVQMGDNLLV
 GEKLYNGVKQLVAENLETLAQERIDPQESE\|LLK


 LYKN GOKLYKGSTQLVVAENLDKLAKEYUKAQESERLLIK VYPEPGADRLYNETKRFLDNHVFQLATEEVRAQQES NLLQQ


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$G Y D K E W N R F Y R Q S S D R L P F K K L D R V K S E Q H F E P G R V V M$ SLVRCWQDLCDQILMMRGAALY DRTYRQTPNVRSLWDMG MYHKHWERFNTGAGYLNQLYGYLNNTYDKKQKYSEADMNY EFAKRWKNHKLLVRQMWKLFVYLDRFYIKRDSGLPDKAVG YYAAEWDRYTTGANYVNRLFTYLNRHWVKREKDEGRKNVY AVHQLWEDHCEDLLVIRTIFMYLDRTYMQTPHDASDWDMG AYAKRWEQYTQGATYVNKLFNYLNKHWVKREKDEGRKEVY TLNSAWNDHQTSMVMI RDI LMYMDRVYVQQNNVENVYNLG YFTAEWERFKFSSKVLDGI CCAYLDNRHYIKRHDYFEIYCMA LKK VWEDHQLCMGMMKEVLMYMDRVFCADHKDPSUYVSC TYDAEWRKFFTQCDYLPTPFRQLETSLAGK
FYRSEWLAF DFSAKVMDGDCAYLNRHW円RREQDFMTYTMA ELLKHWSNHQIMNKWLKKFFTYLDRYYVKHHSDPTLEQAG FFNQKWNDYQVIITMMRDVLMYMEHNYVPQKRKTPGBQRS

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GVSKVWEEHCNQMKLIR RITELFLDRSFVLHNAPRSLWDMG ALRRVWDDHTSSTSKLREVLAYMDRVHTKTANVPQ WDAG ELVKRWGNHKVMVRWLSRFFYYMDRYFIARRSLPPLNEVG LTRAWSEHTTAMKM RDILMYMDRVYVESKNPHLRREQH KMNECWQSHCRQMDMIRSTFLYLDRTYVQNPSTSSI WDMG AMKKVWDDHTSSLSKLRDVLKYMDRVYAKTAQVPEVWDSG FYVRKWTRFTDGAGYLNNVFDYMNRYWVQKERSDGRRDVF AYHRAWTEYSQGDNYLHQLYYYNQQHIKKQKQKEDGELG NYYNAWNEYSQGI NYLHRLYLYLNQQHIKKHKQMEI GELG NLNVLWLEYCEQLINNRSVFLYLDRTFVHNPTVISLWDMG YYARQWDRYTMGARYVNKLFNYLNKHWVKREKDEGRKDVY FYVRRDNRFTDGAGYMNNVFDYMNRYWVQKERSDGRRDIY T IKRVWDDYTTAVELLQVLTYLN DRLPKYNDPGVYDMG
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L L K M F T S LG ${ }^{170}$

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LLKMFTSSG I YAESFERPF|LECTSEFYAAEGM $V V F S F V S G G L D N S D C L D V Y K E H F E A S T I E A T E K Y Y K Q E S E$ A 1
 VVGSFVS L G L DE Q D NLLSVYEAAFQTPFLDATENYYKAESE T CMM L M TLS L NGRD I RESFVGLN N QF G S D LL L V Y Y E Q E F L L K MF TALG VVTSF V V Y Y S ESFEKP F L ERTSEFYAAEGM V V N



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210
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A RFARNGDVGEYLAHCETRLDEEQRRCDDYLESGTRRALVQ RYLTGTTCSEYMEKVIQRLSDEEMRSRKFLHPS AFLASHNVVDYMKKCETRLAEEVSRSNNYLEERTKKPLCD K F L S Q H NVVDYMKKCDTRLSEEVSRSNNYLDNHTKKFLLE S WI QE D S FL E Y ITRK S E E CLLKK E K E R V S H Y L H P S G EP K L V K A WLVVG D S $L \mathbb{L} P E Y$ L V K A E S A L M A E Q K R V




 S L I E T C D A S D Y L R RTE S R R FD S E E S R A H H F LL S S Q T A L P L R R $R L L Q T C N C S Q Y M Q Q V L G R L K D E E V R C R K Y L H P S$
 HLS Q S LEV P V Y L K HVVK K RLE E E T K R V D Y Y L D F T T R K P L L A AFVASNSVPDYMKKAEERLAEEADR\|NLYLHDSTRV




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 K F DIE C C D C G D Y L K K K V
 D L L A E E N P C S V V Y D Q K V

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 Q Y LA E N GVI I N Y M S Y A D R MLLE E E E QRA K K Y L N P N P E R S V A QFVAENTVVEYMKKAE K F LAA E H N V V V D Y M M K C E A R R L S Q E I S R S N N Y $L$ L E E H T K N P L L L QFLQSGGNTDYMLKVEKRLDEEDGRCQLYLNSSTKT
 C WMR D D S G H D Y L F H V N R R L E E E K E R S E F Y L i d H T T R K P V D H

 RLAETCDSPE Y L R R RAESHFLA EEDRIHHYLHHQTEPALRS

 K L V $\operatorname{D}$ T C D A P E Y L L R R V E A R F E S E E S R T H H Y L
 QL L NEL GVLLE YMVY A D K K L D E
$P \mathrm{~S} \mathrm{~A} \mathrm{P}$

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EERRCCNQALI ADHSLLS
TLLN NALIKNHAQE
$\square$ L E D TLLSP HLPT I I QK

A V E E Q L L L
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310
LSRIP E GLEPLRKRFEGHVK QAGLLAAVMKLANVENMEPKV
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 $R I K N G L V E L C L D N N C Y$ I K K K G K T IVIDDPEK D KT

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




 F V K V V P T G LiP C L R R Al K D T L A T R G K E I N S P P G A QL L Q V A L K $F$ N R V P S T L E P L A K KF S D Y I E T Q GLLN AID D L L Y HP I P QRLGRVADLFKKHI TEERNALI KQADDATTN
F S R V R S G V V Q $V$ L LDQ H W I E Y I K A F G S T I V D N P E K D K T
 $L A R V N G G L D E L C K R F S L Y I$ QERGTS MVMDTERDKT








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 FVGEAMLKVYYKFKELIAADVFNNDQAFTGALDKACSAVI NK YAQQLI ELHDQYLALVNGPFGNNTLFQKVLKEAFEVVVNK YVDALLEVVRKNQHTVQRSFKNEMGFVAALDKACRDFVNR

 Y V Q L L DLK D R F D HFLHKS F G D D RLL K Q TI S GDFEYF L NL WV K A L S V Y S K Y H N LVVVSSS D Q N S GF MA A L D KA C G D F I N C
 YVER L L G L F N Q F S S L V R E A F N D D P R F L T A R D K A Y K QVV N D Y M T L L EVQERYHGLVTKSFKQESGFIAALDRAAVNFVNA F VK S L I D L H E K Y L G V I R E VFA S H H L F Q K A L K N S F E E II N N $F V D Q L M N L R K P F V V D W Q Q C F Q E D P E F Q K S G K R G F E A F B C D$ $M V Q D L L D F K D K M D N V A Q C C F A R N E G F I N T M K E A F E T F I N K$ YVERLLDLFRRFSNLVKEAFDDDPRFLTARDKAYKVVVND $\left.\begin{array}{llllllllllllllllll}\text { Y } & V & E & A & L & L & E & T & H & T & K & Y & Q & G L & V & K & R & A \\ Y & F & A & D & E & P & E & F & T & R & S & L & D & N & A & C & R & E\end{array}\right) V$ V

 WVEAMISLKDKYDTMLDACFARDKTFQNDI NSSLETCI NL
 LI R K V V E I H D D K Y M V V Y V T D D C F Q N H T L F H W A L N E A F E V F $\bar{F} V Q K L V D M H D R F K S I V A E C F Q S D G L F Q K S L K E A F E T F I N R$ YVAALLEVVHKNSETVVNSFKGEAGLAAASLDKACQEFVNR $M V Q D L L D L K D K L S N V V Q K C F C K D P K F V E A L R E A L E S S V V N K$
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 YV DALLVLHSKHNDI I RTSFDNDNQLIAALDKAFRSIIND WV Q DVLNLKDKFDTAWEKSFQSNRDVESTLNEAFGTBINM YV DALLEI HT QY Q GLVK QAFKDEPEFTRSLDNACKEFVNR
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$V$
$V$
$V$ DLEATWNFVKPGIDQILDRDGDSPRMYMEVYTADYNYC LNFEEGWSYMQKGITKLIKEPPFSSATYDKFYETIYNMC TFQSLSSAMDEIHNRNA STLSFEELYRNAYNLV

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$\square D F N Q A W E T I A Q Q V Y L L L T$
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 ELLK Q WE K H RTSVVSMVRDI LMYMDRNY VK Q F K K T P VVYELGG

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$\qquad$茄
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 LQVWQTNMIWPLGHRLVKLLLEAJDDDRAGKAIMHDDAVRG GGCFRDLVYNKLQCKMREAVLALVDREREGEDIDRKLMKQ LEKWKDGLLNYHIQRLLDNVMELIDEEKRNHDYNGQLITN QEDWKEDLVKEDLPALVKLLDAADSDRKGNYPQANVVSG MALFQKEVLNNVLSLLEMVLLDMI KMERNNETDDRPLVRG MAL FRDNYEGLLTGVFNAVALDLINMEREGDVI DRNLLRK MALFRDYVLHTVGDVLKSTILFMIHEERFGHVI DRALIRH LNLVRNNLVQRMETMLIDALLELVEAERQGKAINRT UGLFRDHITFDVFEVIGQLLLDFI HMEREGDVVDRNLMRQ
 GGLFRDHLTFSIWELCAVVLDHVNMEREGDVVDRNLIHR
 LMTWKNVMFDPNSDTVVNELDQUGQDRGGNVNKDVIAG LKDFREDVITKVQSRLLCQLLDEVKKRCGEAVDRQLLRT

 MNLFRDCISLTVLALNGDLLDQLQMERDGDVIDKHLICS LELFLDRTYVLQNSMLPSICCEGEDHKERSGEMDDRSKMRR LVAWREALFEKIKDKLRDALLELVRDERTGGMI NRNLI ST

 LMTWKEVMFETHKTELLVHELEQLDLQRRGELVNKTAITV LTCFRDLVYREMHSTAKEAVLALIHKEREGEHIDRELVKN LYGRRVSPTNVTSLLLLRVVHQDRMDRLDDAPQRALCKS LTLFRVAGNTGLDUKIVKGMLRVMERQRNGEAVNLALLRS LMTWKEVMFDKNVDLLVKEVLEQ ELQRDGHVI DQTDTTV IKTWNDHFFCNVSKRLTVMLIDQUQEERKGNQLNSSLVKS MALFRTQVTDTVLSLLETVLLDMIRMERKGEIIDRPLVRA LDTWKRLMIEPLKETLLKLILNEVSRDRMGELVNQTVVHG
 MALFRDDAESMVADVLKSTVLFMUQLDRSGQMINRPLI RH VVYWKDELFKPCSRALMSAVLSELERERRGDNIAATRLCT

 | $\stackrel{\rightharpoonup}{P}$ |
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UniRef90_F8PWU6 UniRef90_C4QWR6
UniRef90_G2QYA3 UniRef90_G2QYA3
UniRef90_UPI0002C327D2 UniRef90_U1HJG4 UniRef90_G0RXJ1 UniRef90_UPI00046E0903 UniRef90_J9JZH3 UniRef90_V4U2P3 UniRef90_G4TPV3 UniRef90_E5SHP9
UniRef90_J4UVV2 UniRef90_U1MHC8 UniRef90_E9EE40 UniRef90_G2XJG2 UniRef90_U5EWS4
UniRef90 C5G0Z5 UniRef90_C5G0Z5
UniRef90_C1N9Q1 UniRef90_T1IZT0 UniRef90_E5AFD3 UniRef90_W4WSU4 UniRef90_A0A058ZTN3 UniRef90_T1JK90 UniRef90_M4El27
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UniRef90 M4DQB3 UniRef90_B3RYE9 UniRef90_E3LYG7 UniRef90_V9CZ21
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UniRef90 U6PTU5 UniRef90-G8ZZG3 UniRef90_Q5BZ84 UniRef90_D7FQS5 UniRef90_B0DAD4 UniRef90_A9NR74
UniRef90_M2XUV9 UniRef90-M7TN82 UniRef90_R7YPM6 UniRef90_G7KDW7
UniRef90-UPI00032 UniRef90_UPI0003289AF8 UniRef90-D8RP10 UniRef90_A8XQB5 UniRef90-F4R9P6 UniRef90-W8AYD1 UniRef90_U6MRP9 UniRef90_U4L4D1 UniRef90_WOTEK3 UniRef90_R0HXN9 UniRef90_B8CER2
UniRef90_W7TPT8
UniRef90_J3KIP9 UniRef90_C5E264 UniRef90_Q675W7 UniRef90_G8C265 UniRef90_W9X765 UniRef90-K1PCI8
UniRef90-Q54CS2 UniRef90_Q174D9 UniRef90_B8N4J9 UniRef90_U6FVI3 UniRef90_G7XAV5 UniRef90_R7QH02 UniRef90_FOZULO UniRef90_A0A015IQ27 UniRef90_M7C5V9
UniRef90_M7C5V9 UniRef90_F7VTG0 UniRef90-H2UDT0 UniRef90_D2V6E0
UniRef90_M3D4D2

CVVDVF $\square$ Q 170 H D P S I 180 180

190
200
LEPSVLESSEAFYSNEGK A I K S F V S L G F D $\square$ N D N L S V Y $\quad$ T D F E K A Y L D A T L K F Y T E E S D
 CI CMLE ELGYGQEEESSKLYLTSSFEPKELGESSRIFYHREGQ

 V I N S FVVV EFRKKYPLELY QSYFEQPFLEQSSEHFKREAA

 CSRMLSSSLYEDENELTKLY LVLFEPRFLENS QAFYSRECQ
 VI QSFVLVQYKKKGSLKLYQDLFETPMIQASGEYYTGEAQ
 $L L R M L D S D L Q I$ YHDAFETKFLQATARLFAAEGQ

 $V V H S F V N V E Y K R K C P$ LDELYET IFETPFLTATGEYYLLEA Q

 CVDS I T S L S F D K A D NLLS SY K T FF E QR F I S S S R EFY GTEESS

 V



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| :---: | :---: |
| UniRef90-C4QWR6 | LETNGVVEYMKKVDTRLAEENSRAN\\|ILIEHTKRPLAD |
| UniRef90 G2Q | LLegnasawlurtoqrat |
| UniRef90-UPIo002C327D2 | SWIEEYSYADYMVKAEECLRKERESASHYLPPSSEQKLVR |
| UniRef90-U1HJG4 | DLVANADAGTFCRHARKRLREEDERCQQTLSTLTDQ |
| UniRef90 G0RXJ1 | ESDASTWLR |
| UniRet90-UPIO0046E0903 | WL DEDFCFDHLVKAEECLRRERARVSHYMHSSSEQKL |
| UniRef90-J9JZH3 | LLQESTVSDYMVK |
| UniRef90-V4U2P3 | NWILS DSCPDYMIKAEECLEKERDRVSHYMHSSSAQKLVE |
| UniRef90-G4TPV3 | RLLDSCDAAEYLRRVEQRLDSEEARAYHYLSSSTSGAV |
| UniRef90-E5SHP9 | RYLTENNASAYUQKVQQRINEESARARHYLDAMTEVK |
| UniRef90-J4UVV2 | ELLQVADSCRWLRHAKKRLEEEKDRCGTT EPET |
| UniRet90_U1MHC8 |  |
| UniRef90-E9EE40 | A |
| UniRe990_G2XJC | EGDASVWLPQTERRLIS E EVDR |
| UniRef90-U5EW | KLLQKCSVSQYMEEVIKKMEEESKRAQKYLHIUSTEAKIP |
| UniRet90-C1N9Q1 | RAAQSSDAAGFLTHCEARLAEEEDRASTYLDASTRRTLTR |
| UniRef90-T11ZT0 | QLMQQRDVPEYLAHVDKRLNEESERLLHYLDQSTKKAL |
| UniRet90-E5AFD3 | FLLRDSDAGAYCKHARRRIYEEDERCKQTLLES |
| UniRet90_W4WSU4 | Q S DVT RYUEK |
| UniRef90_AOA0582 | DSCPDYM |
| UniRet90_T1J | S DCS |
|  | WI QEYSYFDY\\|RKSEECVKKEKKRMS |
| UniRef90-H6C986 | ALLAEADASTFCMHARRRLVEESERCQQTISPVTEN |
| UniRef90-G3J8G1 | ELLEVADACRWLRHTKKRLEEERDRCG |
| UniRet90-S9Pu50 |  |
| UniRef90_T5A850 | A |
| UniRef90_M4AL60 | A SVY KKVEAR1 NEELERV |
|  | Y T SHSCYAFLQKANMRLNEELERVLNYLDSSSER\\|LIQ |
| UniRef90-E9HAB9 | YLQECTISLYMEKVLQRRDEEDLRSRKFLHP |
| UniRef90-8722H4 | ( |
| UniRef90-U4UXQ9 | FLQ KNM |
| UniRer90-A8Q539 ${ }^{\text {UniRef90 }}$ M4DQB3 | EWLA |
| UniRet90_M4DQB3 | SWALQEGSMDDY Lith |
| UniRef90-E3l | AELSCSAYMEQVIIMLEQEEDRAK |
| UniRef90-V9 | ADATTFCTK |
| UniRef90-R8BM17 | RLVRDSDAGTWLRHTQRRLFEEQERCETTISKLSAAN |
| UniRef90-EOVS5 |  |
| UniRet90_Q0CKE9 | RLLETADATVCKRAQERIAERERCTYTLSPLTEPKIKE |
| UniRet90_M4BK01 | AMI ECVSVSQFLVAVEKRLHDEIERVNNYLDVSTKKQLVL |
| UniRet90_GOSHP | KLLREGDARAWLRHTQRRLREELERCTTSLSTLTTENITR |
| UniRef90 M1AHT2 | EDSCPDYMLKAEDCLKKEKDR |
| UniRef90-G2Q5 | KLLREGNASAWLRHTQRRLREERDRCETTLS |
| UniRef90_-3PP763 | W |
| UniRef90-UP1000359 |  |
| UniRet90_B2WNM6 |  |
| UniRet90_K5W3E1 |  |
| UniRef90_U6P | M |
| UniRef90-G82 | HSVTEYIIFKAREVI |
| UniRet90-O5BZ | NVPEYLLHVDKRII |
| UniRet90-D7FQS5 | DVPHFLQHVEERLQQEADRASLY |
| UniRef90 BoDAD 4 |  |
| UniRet90_A9NR74 |  |
| 俍ef90_M2XUV9 |  |
| UniRet90_M7TN82 | MREGDASAWLRHTQRRLAEEADRCQTISPPTHGKIAN |
| UniRet90-R7YPM6 | DAGA |
| UniRef90_G7KDW7 | KYIECCDCGDYLKKVERCLNEETDRTHHYLDPKTEKKI ${ }_{\text {I }}$ |
| UniRef90 UPIO003289AF8 | RLMQEREVPEYLNHVSKRLEEEGDRVI |
| UniRef90-D88P10 | QLLACGDCSAMLKRVERRLKEESMRVSRYLSEKTGPKISR |
| S2J028 | RRIGYGTUPEYIYHAGRRTQESEERVKNYLNPDTKQALIS |
| A8XQB5 |  |
| UniRef90-F4R | QLLSSCNASEYLKKKVEKRLAEEETRSQ |
| UniRef90_W8AYD1 | KYMEEVIKILDDESKRAQKFLHTSSLIWKL |
|  | SEYLQLAEAALEAEARRCERYLHSSSSSKLLG |
| UniRef90-U4L4D1 | CDAATYLRRVDKRLREERDRCADTI SSSTAPRIQA |
| UniRet90-WOTEK3 | EFLQTHSVSEYIEKANECITFEEKDMVLYLDSHTTAPLSA |
| UniRet90_ROHXN9 | RWIQEDSCLDYMLKCEECLEKERDRVTYYLHSSTEPKLVE |
| UniRet90_B8CER2 | SRLSQGAAMEYVHHAQARLVEEKARAALLLPAQTRIVNLMN |
| UniRet90_W7TPT8 | A |
|  |  |
| UniRef90-C5E264 | VTEYTFEAQEKIKDEETKIVLYLDEHTKKLLSE |
| UniRet90_-2675W7 | RFLDSNGLKEFLKKAELRLDEEQVRSDRYLH YSHTK |
| UniRet90_G8C265 |  |
| UniRei90_W9x765 |  |
| UniRet90_K1PCI8 | EYMEKVIMRLDNEDFRSRKFLHPSSYN |
| UniRef90-254CS2 | MYLLKYVICERLNQEGERLMRYLEQSTKK |
| UniRef90_Q174 | QVCTVSSYMEEVIJKLDEENRRALKYLH NSSIP |
| UniRef90-B8N4.49 | (1) |
| UniRef90-U6FVI3 | QFLK S S SVT P Y LK WVEA |
| UniRef90 G7XAV5 | ETGDAAT |
| UniRef90 B3EX44 | QEREVRWS |
| UniRet90_R7QH02 | S ESDIP |
| UniRef90_FOZULO | S SGVS SYMKKAEARIEEEHHRSQKY |
| UniRef90-A0A015IQ27 | TVIANASISEYMKKASQRLDEEVTRNSKYCHKSSH D |
| UniRef90-M7C5V |  |
| UniRe90-M7C5V | N |
| UniRet90-H2UDT0 | Q |
| UniRef90-D2V6E0 | EYFESSTATDYLKKVTLRLKEERERVDRCMDPDTKPKIEA |
| Ref90 M3D4D2 |  |

## UniRef90_F8PWU6 UniRef90-C4QWR6 UniRef90-G2QYA3 UniRef90-UPIo002C327D2 UniRef90_U1HJG4 UniRef90-GORXJ1 UniRef90-UPIOOO46E0903

 UniRef90-- 9 JJZH 3 UniRef90-V4U2P3 UniReffo-G4TPV3 UniRef90-J4UVV2 UniRef90-U1MHC8 UniRef90-E9EE40 UniRef90-G2XJG22 UniRef90-U5EWS4UniRef90 C5GOZ5 UniRef90-C1N9Q1 UniRef90-T11ZT0 UniRet90-E5AFD3 UniRef90_W4WSU4 UniRef90-A0A058ZTN3 UniRef90-T1JK990 UniRef90-M4EI27
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 UniRef90-K2WNM6 UniRef90-U6PTU5 UniRet90_G8ZZG3 UniRef90-O5BZ84 UniRef90-B0DAD4 UniRet90-A9NR74 UniRef90-M2XUV9
UniRef90 M7TN82 UniRef90-R7YPM6 UniRef90_G7KDW7 UniRef90-UPIO003289AF8 UniRef90-D8RP10 UniRef90_S2J028 UniRef90-A8XQB5 UniRef90-F4R9P6 UniRef90-W8AYD1 1 UniRef90-U6MRP9
UniRef90 U4L4D1 UniRef90-WOTEK3 UniRef90-ROHXN9 UniRef90-B8CER2
UniRef90 W7TPT8
UniRef90-J3KIP9 UniRef90_C5E264 UniRef90-Q675W7 UniRef90-W9X765 UniRef90-K1PCI8 UniRef90-O54CS2 UniRef90-B8N4J9 UniRef90-U6FVI3 UniRef90-G7XAV5
UniRet90 $\mathrm{B3EX} 44$ UniRef90 - 77 QH02 UniRef90-FoZULO UniRef90-A0A015IQ27 UniRef90-M7C5V9
UniRef9O-M7C5V9 UniRef90-F7VTGO UniRef90-H2UDTO Unirergo_-_2Vbe
UniRef9O_M3D4D
 VLNNALIVAKERGVEMYEEFNNLLDQKQTEDLYRMYSL VVEQELIVAKDNEFLAMEGSGMKSML
VVDKELTGAHIRDVINMEGTGVKHMLDNDRLEDLSNVFDL VVEEKLILGHLNDFLAMEGSGLRWMIDNDKIHDLSILYRL $K V Q Q E L F E P L A N V F K Q K V S A E V K T L V Q$
LRGRCRQHMVADHLNFLHGESEAMI KEERRNDMHNDYLL KVEHELLVVNALQLFEKEQAECRALLKEDRVDDLSRMCRLL VVEGNLLGPLLETI DTMESGGVAMLDGNRMEDLNRMYKL V E GELYLKNGEEFLNMDGSGVVWMLTQDRYEDLNAMYLL
 VVEAELISRHLDEFLALEASGLKAMLDHNRIQELSNLFGL
 CVEKELLGEHLSNLLQKG GDNLLDENRLNDLSLMYNL
 $K V R A C C E D K M V A A H V D L L H S E A E M M I K N E S R R D L A L L Y P L$
$K V Q H E L L S V Y A S K L L E E S S G C R V L L G N G G E D L S B M F R L I$ $K L A Q E C Q L R M V A D H L Q F L H D$
$K V E H E L F V V Y A N K L L E K K H S$ KVEHELFVVYANKLLEKKHSEVKYMDDEKVRDLAVVFDL VI DQQLI DKHLAEFLDMEGSGLRWMLDNAKSEELSILLYSL AVEDELITKHAE VEVGHNDESRMLDENCHNDIVRMYR VI VIEKTLISAHLQDFLVMEGSGLKWML DNDKVEDLSGLYKL TVLKEYUEQHSLSLINMEHSGLIHMIKNEKYHEIACLMHDL KVRSECEKRMVADHLAADHNECPTMVQQELQQDLRNAYAL KVESRCEQHMVAEHLQFLYSSECTNMVKYEKKKDLANMYEL VCRAELVSAHQD
VVEHEFFFVHENQLLEKTHSEKQLSFGS KVISLCQRVMI KAHKEKLHSVCHDLITNEENKDLRNMYRL VVEKELISANVKDVINMEGTGVQNMLDNDKNQDLANVYE VLDNECETHAHISEVI NLLAGTGV VVESKLLKPHVATLLERG VVEQELISAKLDELLARGGSGMELMQEGRIGDLKRMYAL


 KV DRLCQDVMINAHKDKLHAVCHELITNEERKDLRNMYRL
 TAESQLLKPHTQALLERG SGGSLMDSQRLPELKVMYQL KVQNELLEK
VVQDELVTRHMETDLDMENSGFTHLVRNDCTQDLATMYNL VVEQELIVKHLDDFLNLEGSGIRAMIDNDRLDDLRILYQL VVEDELVRNKLRE LEMESGVRHMIDNDRSADLRLMYDL AV EKEMI ENPMLRLINMENSGFVNMLCGNKYEDLERMYNL CVEKQLLGEHLTALLQKG TGLDHLLDENRVPDLTAMYQL VVVDRLVYAKTETIVNG

AVKEAFDEILKKD
IVETELIERHAKTLVEMEGSGFADNDDHARTADLAAMYEL

 KAMKECEKAIIGGRKDVFVQTFVPLLEHSQTADLARMYRL VVERELISAHIRDVINMEGTGVRNMLDNDKVQDLANVFEL




## UniRef90 F8PWU6 UniRef90-C4QWR6 UniRef90-G2QYA3 UniRef90-UPI0002C327D2 UniRef90_U1HJG4

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UniRef90 C5GOZ5 UniRef90-C1N9Q1 UniRef90-T11ZT0 UniRef90-E5AFD3 UniRef90-W4WSU4 UniRef90-A0A058ZTN3 UniRef90-T1JK990 UniRef90-M4EI27
UniRef90-H6C986 UniRef90-G3J8G1 UniRef90-S9PU50 UniRef90-TTAA850 UniRef90--J91K19 UniRef90-E9HAB9 UniRef90-R7Q2H4 UniRef90-U4UXQ9 UniRet90_A8Q539 UniRef90-M4DQB3
UniRef90 UniRef90-B3RYE9
UniRef90_E3LYG UniRefofo-V9CZ21 UniRefefo-R8BMI7 UniRef90-EOVSS5
UniRef90-QOCKE9 UniRef90-M4BK01 UniRef90-GOSHP6 UniRef90_M1AHT2 UniRet90_G2Q5T7 UniRef90-J3P763 UniRet90_UPI00035993F8 UniRet90_B2WNM6 UniRef90-K5W3E1 UniRef90-G8ZZG3 UniRef90-Q5BZ84 UniRef90-D7FQS5 UniRef90-BODAD4 UniRef90-A9NR74
UniRef9O_M2XUV9 UniRef90-M7TN82 UniRef90-R7YPM6 UniRef90-G7KDW7 UniRef90 UPIO003289AF8 UniRef90-D8RP10 UniRet90_S2J028 UniRef90-A8XQB5
UniRef90 ${ }^{\text {F4R9P6 }}$ UniRef90-W8AYD 1 UniRef90_U6MRP9 UniRef90-U4L4D1 UniRef90-W0TEK3 UniRef90 ROHXN9 UniRef90-B8CER2
UniRef90 W7TPT8
UniRef90-J3KIP9 UniRef90-C5E264 UniRef90-Q675W7 UniRef90-G8C265 UniRef90-K1PCI8 UniRef90-Q54CS2 UniRef90-Q174D9 UniRef90_B8N4J9
UniRef90_UGFVI3 UniRef90-G7XAV5 UniRef90 B3EX44 UniRef90-R7QH02 UniRef90-A0A015IQ27 UniRef90 M7C5V9 UniRef90-M7C5V9 UniRef90-F7VTGO UniRef90-H2UDTO UniRef90-D2V6E0
UniRef90-M3D4D2
 LQRVPPTLEPLLTKFEAYVKQQGLKAVAELKQSQAAAPKL VSRVDKSKNALKVILQSRVMELGLEDEQALKNTDFSVPGK NSRVDPKKAALKDAVQKRIVSLGSETNNMSSGAVVPPPNK I AARVDDEKTALRDILQKRVVELGLEITLNPAAQQTAAADK QAEYAANNQASDRASGMLEQV $\square R E \Pi K D G M T S L V D \square F R E H T K Q H G \square R V I E S L R Q E Q T Y V H$
YHRIPNGLEQVASAFKQHVIVECT LKRVPNGLNVMSSAMSNYLRQQGTALVHELTTNGISTSPVQ VARVDKNKTSLQRULQNRVVEMGLEGEKLQNTQTAAADK LKPIPRGLTVVDREFESFVRKSGLDADSGLHGENV PHQ ISRVDDKKTALRELRKRVVELGLEMENPAAQQTAAA KK LKPVPDAGKTLIQTFLDHIKNEGUETISNLKGETV A HI Q ISRVDVKKAALTKVVQQTVVEYGTAVNAAQEFQTAAA!K FSKVKNGFQELCSYFSLY $\mathrm{F}_{\mathrm{KK}} \mathrm{R}$ GRTIVINPEKDKT NRRVDDKKTDLTNADQKRIVEMGSEINNDADNQQTVAADK
 LKPVHNGLGVLVKEMQDHTQAKGLEAVSNLKVDNU PAQ





 LDRVNGCTDNVLEALSSHILEEGGEDNKATNDQVASAKEQ LKPIQAGLSVMVKEFEEYVKAKGLDEAVSRLSGDNV PQQ 1 SRVDPRKGALRDV
 LARVDDADNEKTAFSDYIRKNVSKLVMDEKOEATSKN VSRVDKTKNALKGILQKRVMDLGLEEVKTLKNTDFSVPDK TSRVDKGKQALRTLLQSRVMELGLEVEQTLKNTDTAAABK $\frac{1}{L}$ LKVDPTTEALKNGLQNRITAQGAE EKSLRDQQTAAAUK NARVDDRKMELTRADQQRIVEMGSDVNKDAGNAQTVAADK FTMVPTGMPALRRALRDSVVRRGKELAVDEAEDFKQLALK MQRDTTGLPELANAYEEYYRKSGKAAITNGSGEEHSLSPKD


FHQVQGGDELLRSRLKKERTQGNDIDDV DNRNDPDR VSRVDLRNVALRNALSVR DELGTE EKNAAAQQTAAAAK俍 FSRVKGGQQILLQHWSEYIKTFGTTIVINPEKDK KDPD LLQSPK MNLLRSAFGAYVKEEGMKIIKDPKSDPT CLRVEKGMEALRQALQDYVYKVGREALEQRCQEALQDPKD LLR:PEGLNSLKEGVKDWI:KERGNRINEEPQAGNNSTAGQ


FSRVPSSVNHLRDALSERTRDDGRSVRDQETNVAPPAA ACRKPGGAEELKAAFNAYI RRRGGELVGDDAREKE DSRDDLQKTALTAEVQARU DEDGNQUNKAAKEYQTAAADK MQRDILLLPKLAQAYEEYVKKTGEQEDKKSAAGPAVPPNE


 SARVDSKKTPLTAAVQKR|VEMGDEVNKKPVNQQTVSAIK LIRFEEGEARLVQTMELYVDEVGTAALKDVCQDAKSNPKV
FSRVKGGQHVLLQHWSEYIKTFGTTIVINPEKD KD
LSRANDAHEMMKARVDAYVKGVGRFIVMDREKDS


TSRVDSTKSALKVILQRRVRELGQETEKNPAQQQTAAATK



WVEAVIRGRQKYMNVVCHAFGSDKKLLQTVNDSFEWFLNQ WVNDVLVLKDKFDR】WSECFEEDLILQTALTKSFSDFINQ WVEDVLNLKDKYDSFWKFSFDSDQGMQKA SSSFTDFINS FLQRLLDDKDKYDKIINMAFSNDKFFRNAFNSLFEFFTNL
 MITSLLDFKRK DDNLLKSCFFNDDVTFVNALKESFEQFINT YV H TILEEVHQRYQGLVERSFSKEVGFVKSLDTAADAFI NR WV S DVIALRDKF LVI LSESFSANKLLQSCI DEAFSSFI NA FVENMLKVHQKYQELIADVFENDSLFLSALDKACASVINR
 YLHCLI R VYKLFYNIT IDCFDNHPAFAKALDYGCRCFINN

F VKGVLAMRERFHAVVTEAMKGEKKAQKRMKEAFEDFLN MI EDLLAFKDKCDVILSEALGGNPACLAAMKDGFEFALNV WV D DVL QLKK RFDHVWENAFRKDQGMQASGTKSFSDFIVV YVKKLI EVYETFDKITRDCFQNGSLFTKALDNACRAYINA FVGKI L HI YERFSRINQDCFDNE FKESLDRAATKFINK Y I K KLI EVVYK IFLDNITQKCFNNDPDFTKALDNACRSYVNV WAE QILAAKAKLDRLWDEAFQKDT\|LEKGLENAFQDFI NI FVESMLEVHQKYTEMI QGVFHLDQQFVGALDKVPGQFV
 WV DDVLGLKTKFDKI WEESFRSDPTMQSAITTSFSEFINS
 WVDDI L RLK QKFDNIWENAFESDQVLQSAITSSFSEFIIN $M V Q S L L D L K S R L D E L V Q Y S F N G S D T F H N A V N L A F E F F V N A$
 YVEFLLDHHSKYLTVCQKVFVNDAAFVAAVDKAFRTIVND

WVDDVLQLKDKFDR LLSDCFCDDLLLQSADTRSFADFDNS QI QNLLDLKAQRDHFLAEAFNNDKLCKQTITGDFEHIFNL


| UniRef90_F8PWU6 | $N S L F \square D E N L$ |
| :---: | :---: |
| UniRef90_C4QWR6 | NS I |
| UniRef90-G2QYA3 |  |
| UniRef90_UPI0002C327D2 | A V |
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 L NK N A D K L H A GFR Q IV S E H L H NVNK IVLQQKSYS K DF L R




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UniRef90-E9F3M4
UniRef90 -ivavis

FTASLV VAMGLDDKE
180 NVYLLEGLYDNEVEEAK Y G

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\section*{| L |
| :---: |
| C |
| A |
| A |} QNVVRMLLELGRADFQANVYHEFETAFLSTTLEFYYQESG

L VI YMLEALYDDENENEKLYETEGF

AL YSLV A VEQHKKRNLQYYEDVF
VI NLYYDMGKGRMD MYYVNDFEEAMLR R SACHYSRKAS
CVSMFESLEDEPRTDTEGWRGQFEPALLMDSSRVYFERLAQQ
VLDVMQSGAGTV SQVYEEHFEDFFLQQTASYYSHKAS

VMHSFVEVQYNKDGS KKYQWLFECPLLLASGEFYATEAT


LIGGMLSSV E G L G G

## A N A <br> $\stackrel{N}{\mathrm{~N}}$


AI KSLVVALGI DPQDNDNVYDQVFEKPFDKNTEEYYTKYNP



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| A |}




CMSMLERLYDEEAENDKLYLTMFEP VIHSLLGLSUTPPNTPSSYNLSLEPQLELECVKYYNQEAS VI QS FVQQVEDKPKVNFELYRQSFENKVLLENTSNFYKNESN
 $V$ VELLVEIGNGKMDA

QVALYSLVQHKKRNALKYYEDVFEKPFLKKTEEYYTSYSQ QRALS VLG
 CI Y VLEGGLYETEEEEEKLYLTSFEPAFLESSREFYGAEGQ


 WT4

 VVECDTEL
 C OMLEGLYETEEESSKLYLTEFEPAF ETSKEFY
 VINSFVVVEQYKKK VVFMYI GLDANG LSSYQREDEDYLLPESRDYYARVSA


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| :---: | :---: |
| UnRe90－F9XEH2 |  |
| UniRef90－l1 1 H X 1 | RMMSEFTLPDY的SHDDKRLSQENDRLIDQYLHKTTKKPL |
| UniRef90－F2TU31 | RLLATADASTFCKRVAERLQEEEDRCRYTLSPATEDKIKQ |
| UniRef90－B7G6R3 | SFLSNNTADDYAAKAASRLEAEARRAKTLLPVTTEGPLM |
| UniRef90－A0AO24J6F2 | DLLTESQNGADYDKTAQWLQAEEERCNLYLSUQS |
| UniRef90－L8GUU44 | NFLSSNSTSSDYMTKAEERIKEES |
|  | RLL MADAASFCRIASNR｜ |
| UniRef90－UPI0004411691 | TLTQSLSVPEYLQRVDSRLTSEENTNFMICEATWE |
| UniRef90－C5DTL2 | DYLTTRSVTEYITEAREDISREEKAMAVYWDDHT R |
| UniRef90－D2A5E2 | KLLQEKNVSLYMERVKGRIEEELLRARRFLHTS S S |
| UniRet90－D2V6Q8 | $N \mathrm{NL}$ DKLNVPEYLQYVESRLRQEVDRVTNY |
| UniRef90 W9C1F1 | RDSPASTWLRQAKKRLDEETDRCNT |
| UniRet90－K2SLL1 |  |
| UniRef90－Q01EU9 | EFLKTNSVMEYMKFVVLRLGTEWKFAQDHLHES |
| UniRef90－F62726 | ELRDDSTCSEYMNKILSLLTDEEMRSRRF |
| UniRef90－K4C3Q1 | CP |
| UniRet90＿W6ML50 |  |
| UniRef90 UP | QARTHHYL |
| UniRet90－M4EUT8 | WI QEYSCPEYMMKCEESLEKEKERVTRYL |
| UniRef90＿H2YZB9 | QFLAANPVTEYMKKAEARLQEEERRVQLYL |
|  |  |
| f90－T1PHU8 |  |
| UniRef90＿J7R3W2 |  |
| N1J7C3 |  |
| UniRef90－Q61 | DYLTTHSVTEYIIFKAHEDISREEKGMAMYWDDHTK |
| UniRef90－B7Z1Y1 | NLLQESNCSQYMEKVLGRLKDEEMRCRKYLHPS |
| UniRef90－LCMFY7 | NKLDAMEVPAYMKFVEKSLAEEEKRANSYLES |
| UniRef90 UPIO0032AEFD1 | KFLAENSASVYIKKVEARINEEDERVMHCLDKSTEEPI |
| UniRef90－M2MGW0 | RMLKESDAGSYCRHAKKRIDEENDRCRSTLSESTSAKIQA |
| UniRet90－W6MS | EFLQNNSVVDYITTKA |
| UniRef90 A8Q7 |  |
| UniRef90－T1 1995 | KLSEEEERGIKYFKLSS EVSQ |
| UniRe90－COVF55 | 俍 |
| O－GOV8z0 | HSVTDY FEAHELI |
| UniRet90－UP10003F | ERGDASRYL |
| UniRe990＿L8G847 | ESDAGTMLRQTQKRLMEEAD |
| UniRef90＿G8JWW8 |  |
| UniRet90＿UP10002C34 | SWILEKSDTDYMSKAEECL |
| UniRef90 G1NY57 | R |
|  |  |
| 56 |  |
| UniRee90－H2APV | 㑑 |
| UniRef90－F4NRV9 | A AMSSLS SDFMIKAHYRLDEEAERSKRY |
| UniRef90＿Q12018 | DYLEKHSVTEYMEEAHESLKREEKAM |
| UniRet90－R4XC56 | KTI HELSASGYLQDVDRRLKEEDERILHYMSPETQSRLRH |
| UniRef90－S3DHX2 | ALLRDSDASTWL |
| UniRef90＿R9AKY4 | NFILASNDITPSYLRRVEDRLIEESNRCSHYL |
| UniRef90－＿2MDG3 | RILEFCNCSQYMEKVDSRLAEENLRVQRYLHPST FE |
| UniRet90－H3EKK8 |  |
| UniRet90－UPIOOO20 | SWI DEYSSPDYMLKVDECLRMERERVAHYLHSSSEQKLVN |
|  | SYLIQVSNRLEQETQRCEGY |
| UniRet90＿Gow | NYLASHSUTEYIFEAHEL NREKGMAMYWDDHTKKPLSE |
| UniRef90＿H2YFG2 | ELLNDSTCSEYMNKVLSLLTDEEMRNRRFLHDSSYKKTT |
| UniRef90－U6IMQ1 | QYVNQHGTRNYLQYAWTKLAEEEA |
| UniRet90－14YDM1 |  |
| iRe990＿S7ZMX7 |  |
| UniRef90＿C4JFZ4 |  |
| UniRef90 M2Y1M7 | S |
| UniRef90 S2JAV4 | REMASGSISNFMQKANERLQQEIMRNNQYCHSTSHGRIVK |
| UniRef90 U6ISQ6 |  |
| M2YTH8 |  |
| UniRet90＿V5FNY7 |  |
| UniRet90＿N1PM46 | QHAKRRIDEESDRCRSTLSESTAN |
| UniRet90－R1GDU9 | A |
| UniRef90－A0AO24TWT4 | DLL GSVSLIAEYL |
| Uniref9o－G4N | K M |
| UniRefo |  |
| UniRef90 RIGAE7 |  |
| UniRet90－W4YZ44 |  |
| UniRef90＿UPl00046DF132 | S |
| UniRef90＇H8WVG4 | DYıAYNSGSKY |
| UniRef90－11C5J7 | RLLNSLSAWKYIQHAFQRQQEEVIRISRYLHПQTKQP |
| UniRet90＿J91T98 | ELLQKASLSElLHIANKYYQEELLRCDRYLVFDIK |
| UniRef90－H3EB09 | NLSRDLEITAYLNHVKRRLDEEFDRDQVYLDVGTKKPL |
| UniRef90＿Q22346 | ETVIE YMITVE |
| UniRef90＿E2A1H0 | MHGVENYMRYADSKLREEELRAQKYLEPNTA SMQ |
| UniRef90－D3BL03 | S SYMKKAEIUR DEEYLRSQKYLNSTSHERLKR |
| UniRef90 A0AO24GKF9 | R |
|  | KN |
| UniRefo－M5 |  |
| UniRef90－T1J146 | E S |
| UniRef90 S7PMW6 | FPLKVLGRIK K EEI |
|  |  |
| UniRef90＿E9F3M4 |  |
| UniRef90＿H9．JVI5 | K F LIA E NS A AVYY |


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| :---: | :---: |
| UniRef90_F2U888 |  |
| UniRef90-F9XEH2 | LVEDELIRHKMK GLDEMDSGVQYMVDNDKFNEL |
| UniRef90-11GHX1 |  |
| UniRef90- ${ }^{\text {B7G6R3 }}$ | WI QRHSRVLVDMEPSGFSAMLQDDTKVQ |
|  |  |
|  | ALNFALIENHMESLQATFKSMLIAD |
| UniRef90-A1 | VLDQELTARNIEEVINLEGTGVRNLLDNDRVDILRD |
| UniRef90-U6P8V88 | RAEKCLISDHMQEVVDNGLSLL NDNRV |
| UniRef90 UPIOOO4411691 | EEHLI ${ }^{\text {a }}$ S HVPTILGGLEPLLD |
| iRRef90-C5DTL2 | PLSSETLNSVLIT EHASKLESEFIVLLDSR |
| UniRef90- D2A5E2 | KVSQRCETHMVAEHLDFLYSECVAMVQGERKKDL |
| UniRef90_W9C1 | VVEQELISSHLNEFLAMEGSGLQAMIENDRYEDL |
| UniRef90-K2SLZ1 | VVEEELIENKIHDLIESESGVKFMIDNERIEEL |
| UniRef90_Q4R968 | E |
| UniRef90 F6Z726 | KFLQAGCRQMI RHNSATDLHHM |
| Ref90-K4C301 | VLIT Y TNQLLEKED |
| UniRef90_W6M | MNALISTNLETVMGFENGGLRSWI SENDYNSLSLLL |
| UniRef90-M4EUT8 | QNQLLFLGAKQFLDKGQSGCGALLRDDKKDDLSRM |
| UniRef90-H2YZB9 | EHVLIEQHLEQF HAEFQTLLND |
| UniRef90-FOZZ578 | EKQLIEKHVDITL |
| UniRef90- J7R3W2 |  |
| UniRef90-N1J7 | VVETEMISARLSEFTAMEGSGMKAMIENDR |
| UniRet90-Q6FN | PLSETLNEVLVKSHIEKLESEFIVLLDSRDNSKISALYSL |
| UniRef90 B7Z1Y1 | KVIHECQQRMVADHLQFLHAECH |
| UniRef90-E4Y197 |  |
| UniRef90-UPI00032AEFD1 | RELISKHMKTIVEMENSGLVHMLKNG |
| UniRef90-M2 | VVEGELIRHKMKGLIEMENSGVAFMVDND |
| UniRet90-W61 | PLLHCLNNVLIWSHSEEINAQLHPLLDQVRLDDV |
| UniRef90-T1 T1995 | ALMRILPDLLVKPFTQSILAECSDMIKHNDDKNL |
| UniRef90-EOVHF5 | RLSKTCERV |
|  | PLSETHNVLIRNHLDKLEADFITLEDSRDHQK SALYS |
| ef90-L8G | VIDTEMIGSHLNEFIQLESSGVKSMIMNDRFDE |
| iRef90-G8JWW8 | LITERAEELKKEF ILLLKSRDENK ISTLYK |

UniRef90-UP10002C342BD UniRef90-G1NY57 UniRef90_A0A017SFR2 UniRef90-D5GHM8 UniRef90-H2AP W4 UniRef90-F4NRV9 UniRef90-Q12018

UniRef90-G7DZB2 UniRet90-R4XC56 UniRet90_S3DHX2 UniRef90-T2MDG3 UniRef90- ${ }^{-}$НЗЕКK8 UniRef90_UPIO002C3728F | UniRef90-F4NZJ9 |
| :--- |
| UniRef90 Gow | UniRef90-H2YFG2 UniRef90_U6IMQ1 UniRef90-I4YDM1

UniRef90 S7ZMX7 UniRef90_C4JFZ4 UniRef90-M2Y1M7 UniRef90-S2JAV4 UniRef90 U6ISQ6 UniRef90-M2YTH8 UniRet90_N1PM46 UniRef90-AOA024TWT4 UniReffo-G4NOJ, UniRef90 W1QBV7 UniRef90_W4YZ44 UniRef90_UPI00046DF132 UniRef90-A8Q4W0 UniRef90-H8WVG4
UniRef90
$11 C 5 J J 7$ UniRef90-J91T98 UniRef90-H3EB09 UniRef90-Q21346
UniRef90-E2A1H0 UniRef90-E2A1HO UniRef90-A0A024GKF9 UniRef90-E3MUK7 UniRef90-M5WX73 UniRef90-B6HUX5 UniRef90-T1J146
UniRef90 ${ }^{\text {STPMWE }}$ UniRef90-B9QE00 UniRef90-E9F3M4 UniRefo_H9.jvis

## UniRef90 F2U888

 UniRef90-F9XEH2 UniRef90-IIGHX UniRef90-B7G6R3 UniRef90-A0A024J6F2 UniRef90_L8GUJ4 UniRef90-A1DMM0 UniRef90_U6P8V8 UniRef90-UPIOOO4411691 UniRef90-C5DTL2 UniRet90-D2A5E2 UniRef90-D2V6Q8UniRef90 W9C1F1 UniRef90-K2SLZ1 UniRef90-Q4R968 Unireforo-QIIE UniRef90
UniRef90
K4C3
K47 UniRef90-W6ML50 UniRef90-UPIOO0455F6FO UniRef90-M4EUT8 UniRef90-H2YZB9 UniRef90-FOZZ57
UniRef90

U1PHU8 UniRef90- J7R3W2 UniRef90-N1J7C3 UniRef90-G6FNT4 | UniRef90- $\mathrm{B7Z1Y1}$ |
| :--- |
| UniRef90 |
| $7 M F Y 7$ | UniRef90 E4Y197 UniRef90-UP100032AEFD1 UniRef90-M2MGW0 UniRef90-W6MS85 UniRef90-A8Q7G8 UniRef90-T1J995 UniRef90 EOVHF5 UniRef90-GOV8ZO

UniRef90-UPIOOO3F UniRef90-UPI0003F495F7 UniRef90-L8G847 UniRef90-G8JWW8 UniRef90-UP10002C342BD UniRef90-G1NY57 UniRef90-A0A017SFR2 UniRef90-D5GHM8 UniRef90-H2APW4 UniRef90-F4NRV9 UniRef90-Q12018
UniRef90-G7DZB2 UniRef90-R4XC56 UniRef90-S3DHX2 UniRef90_R9AKY4
UniRef90_T2MDG3 UniRef90-H3EKK8 UniRef90-UPIO002C3728F UniRef90-F4NZJ9 UniRef90-GOW3J3 UniRef90-H2YFG2 UniRef90-U6IMQ1 UniRef90-14YDM1
UniRef90 1 S7ZMX7 UniRef90-C4JFZ4 UniRef90-M2Y1M7 UniRef90-S2JAV4 Uninefigo - 61 ISQ6 UniRef90_M2YTH8
UniRef90_V5FNY7 UniRef90-N1PM46 UniRef90-R1GDU9
UniRef90-A0A024TWT UniRef90-G4NOJ9 UniRef90-W1QBV7 UniRef90-R1GAE7 UniRef90-W4YZ44 UniRef90-UPIOOO46DF132 UniRef90 A8Q4W0 UniRef90-H8WVG4
UniRef90

$11 C 5 J J 7$ UniRef90- J9IT98 UniRef90-H3EB09 UniRef90-Q21346 UniRef90-E2A1H0 UniRef90_D3BL03 UniRef90-AOAO24GKF9 UniRef90-E3MUK7 UniRef90-M5WX73 UniRef90-B6HUX5 | UniRef90-T1J146 |
| :--- |
| UniRef90 | UniRet90-S7PMW6 UniRef90_B9QE00

UniRef90_E9F3M4


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EARVDPRKSELTRAMQRLVTEMGTDTNNKPLSQQTVAALK LSRVPTTLEPLLNNFEDYVKQQGLKAIVELGRKPEVDAGS LKPVNGGLSVVIREFQNFVKKTGLEVVKDMHGDNIVPQQ MNLVVGGLEPVLSFLEEYVLSVGLCDMVAAASTIVEDCDK MQRDFTLLPKLATAYEEYIVKSGERDIVALASDASSMPPKS FLHVPKGRIALRDALRADAEDRGRTVNENPAEEQTMDACK MQRDFSLLPEEAKSFEEHVKEVGHSEVSYLLAKHADPPRD FSRVKGGQQLLLQHWSEYIKTFGTTIVQNAEKDGDSPEQV NSRVDKKKTPLTLAVQKRIVEMGHEI NEKPMNQQTDSADK LDR】GEPSSYLRLAWEKHILTVGRSDDEDESRENE 1 QRDFTLLPKLAKAFEEYVKITGENEVSKELATQHVSPKD SRRDFTLIPRMASVFENYVKKTGENEMSAGMTAHSLDPKD




NKRVDKKKQALTNMVNKRIVEMGKEDNEKPQNQQTVSADR MLFVPDGVARMIPHFEEFVMCVGLADMVAAAADVVEDSAK LRAVSTGLPHMIQELDNHVHDEGLRATSNLATQENMPTD


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 UniRef90-F9XEH2UniRef90 $11 G H 1$ UniRef90-F2TU31 UniRef90-B7G6R3 UniRef90-A0A024J6F2 UniReffo-LBGUU4 UniRef90-A1DMM0 UniRef90_U6P8V8 UniRef90-UPIOOO4411691 UniRef90-C5DTL2 UniRet90-D2A5E2 UniRef90-D2V6Q8
UniRef90 W9C1F1 UniRef90-K2SLZ1 UniRef90-Q4R968 UniRef90-OOIEU9 UniRef90 - 6 KZ726
UniRef90

K4C3Q1 UniRef90-W6ML50 UniRet90_UPIoo0455F6Fo UniRef90_M4EUT8 UniRef90-H2YZB9 | UniRef90-FOZZ57 |
| :--- |
| UniRef90 |
| $101 P H U 8$ | UniRef90- J7R3W2 UniRef90-N1JTC3 UniRef90-G6FNT4 UniRef90-B7Z1Y1

UniRef90-L7MFY7 UniRef90-E4Y197 UniRef90-UP100032AEFD1 UniRef90-M2MGW0 UniRef90 W6MS85 UniRef90-A8Q7G8 UniRef90-T1J995 UniRef90-EOVHF5
UniRef90_GOV8Z0 UniRef90-UPI0003F495F7 UniRef90-L8G847 UniRef90-G8JWW8 UniRef90-UPIooo2C342BD UniRef90-G1NY57 UniRe990-A0A017SFR2 UniRef90-D5GHM8
UniRef90- H2APW4 UniRef90-H2APW44
UniRef90 F4NRV9 UniRef90-Q12018 UniRef90-G7DZB2
UniRef9- 4 KC 56 UniRef90-R4XC56

UniRef90 S3DHX2 UniRef90-R9AKY4 UniRef90-T2MDG3 UniRef90-НЗЕКК8 UniRef90-UPIO002C3728F | UniRef90-F4NZJ9 |
| :--- |
| UniRef90 Gow | UniRef90-H2YFG2 UniRef90-U6IMQ1 UniRef90-14YDM1 UniRef90-S7ZMX7 UniRef90_C4JFZ4

UniRef9O_M2Y1M UniRef90-S2JAV4 UniRef90-U6ISQ6 UniRef90-M2YTH8
UniRef90_V5FNY7 UniRef90-N1PM46 UniRef90_R1GDU9 UniRef90-A0AO24TWT4 UniRef90-G4NOJI UniRef90-W1 QBV7 UniRef90 ${ }^{\text {R1GAE7 }}$
UniRef90-W4YZ44 UniRef90-UPIO0046DF132 UniRef90 A8Q4W0 UniRef90-H8WVG4
UniRef90
$11 C 5 J J 7$ UniRef90-J91T98 UniRef90-H3EB09 UniRef90-Q21346 UniRef90-E2A1HO UniRef90-D3BL03

UniRefono-AAO24GKF9 UniRef90-E3MUK7 UniRef90-M5WX73 UniRef90-B6HUX5 | UniRef90-T1J146 |
| :--- |
| UniRef90 | UniRef90-B9QE00 UniRef90-E9F3M4 UniRef90_H9JV15

FIVETLLQVVHEKYLKQTNLIAFENDTLFVEAMDKALKDVVNR WVEDLELKDRFDRTERTSFNNDQADSTALTRSMGENI N MVQELLELKDKVEKI DQESFQNENKFHQVVRDSFENVI NR
 WVEDVLALKDKYDMLLTKCYNGSTGAREAVESSFSQFVNK
 WV DVLATKDKFDRLLKTAFNNDLLDQTSGTEAFESFINS FVENMLAVYKKYKLLIQEVFKSDQNFMGALDKACSSVINH


YVQT LLAVHKKYQTLISTDFDKDSGFLVALDRACARFVND FVETILEVHKRFHDVIRDTFHSDKLFVSALDRACTAVVN FVKKAFELHDKYMVYVKGCFADNSIFHKALKEAFEVFCNK WIGSLIELKDKYDUMLDASFERNVLTSKTVDSAFSELVNL WVQDVLDLKDKFDYLWKQSFDGNREIEGTLNEAFEDFVNL
 FVEDMLKVHQKYTQLIDEVFENDPLFLSALDKACASVI NR WVDQVLKLKDKFDKIWAECFDQDLUVQTALSNSFSHFI NL Y K K LLK V NTFKNIDRECFPTDPLFAKALDNACRAYI NI FVESVLEVHGKFVQLINTVLNGDQHFMSALDKALTSVVNY

WVEETLRLKDRFDKПCTTSFSSDQTVSSATNRSMADVVN Y 1 RTMVSVNKFANVVATSFGFSDYFVKSLDTACSAFINV FIENVLQVYNRFSSMVTKVYYDDGDFVGALDKALQAVVNY YVQQLLDLFNRFTLLVDKAFSSDPRFLSSRDRAFRNLIND YVNTLEVHKKYNALVLTAFNNDSGFVAADDKACGRFINS YVKKLLEVYGIFRSITTDCFRNEPLFTKALDNACRGY: NS
 YIKTLIDVYTDFSKDSQECFKNDSLFTKAVDNASRYYINN LVRNLIKLHDKHMAYVNHCFKNYYLFRKALKEAFEDFCNR MVKLLMLGEEFVSHLIRNC(LHKDDTFDN WVDD LALKSKFDRLWKESFKLDQGMEGAMMNSFSDFTNS MVQRLLELKDSDDSFVRVPFKGDDTLAYALRESFGTFLNA Y KKLLEVYEIFRLITNECFDNDPLFTKALDNACRSYINN YVDTMIETHSRLMKLAVDVFKGDSVFTAEADKAFRDVVNT WVQQVGDLKDKMDRU WSSAFAEDKSFATAANNEAFKTF WVQEVLDLRNKYDLILVEAFQLDQNVKNTMTRAFSLDFINK WVEEVLKLKDKFDVMWENCFKQDLLLQTALTKSFADFINM WVKQTLQLKLKFDNLWQKAFKHDEDVQTYINEGFENFVNM

$M V Q E L E F K M R D D D L K N A F Q S T E S F D H T K E S F E K F T Q$ YIKKLLDTYADFRSITTECFKNDSTFAKALDNACRSYINN FVETILEVHKRFHDLTRDTFNSDKLFVSALDRACDAAVNY YVSTLMDLYNRNSSVIEECFQNEFSFLTIRDKAYQRLVND
WVRGTLTLKLKMDNLWHTSFKGDRDIVTSINEGETFINM WVRQTLTLKLKMDNLWHTSFKGDLDDQTSINEGFETE:NM
 LIETLMELHERYDEVUTTCLGSHTRFYRALKEAFESFLNQ FVDTVIEVQLKCDNLLQNAFSKNASFSRAMDKGCERFIGNR
 WVDD:LALKQKFDNVWRKAFASEQGLQTSATTSSFSDF:C WVEDVLALKDKFDRIWKRAFESDQAMQTALTRSAAEFINS YIETLVAVREKFYAVVKTAFELHPLMRTALDQACRSFTN

 YVQDLLELKDRFDMFLRDSFGTDRKFKQTASGDFEYFLNG WVNQVLDAKNRLDGDLHSFHSDKSCEAANEAMDAFDNM WVEAVLNYRDSMLGLWRESFDENLVVEQTLTYAMRDF:N MVTSLLEFKEELDKVLHDCFQNDDQFANTLKESFEYFINT MVPDLIKFKNKLDRIVSTCFGNNDKMDQSLKDSFDYCVNA Y ITKLLEVHEDYFNLINKAFDRNALFMQSLDKASKDFIEA YVERLLDLFHRFSTLVKEAFDDDPRFDTARDKAYKLVVND YVETLLELYQRFSAVIRKSFNNDVSFITALDAACHKIFNQ YVSKLLEVHGRYSSLIRASFFTDSTF DKALDNAADNFUNK
WVDDTLG【KRKFDNTWENAFASDQGMQGSTGASFANFПNM YVEQLIEEFNRLSKFVKDAFSNEPRFLSSRDKTFRSIVND FVESVLEVHGKFVQLINTVLNGDQHFMSALDKALTSVVNY FVQQLLDLHERSKKVLEECFLLDPDFQKSLKEAFEHFVNR

| UniRef90_F2U888 | N A VT |
| :---: | :---: |
| UniRef90-F9XEH2 | NFNRGSE |
| UniRef90-IIGHX1 | RQNKPA |
| UniRef90-F2TU31 | NSLIF F D E L L |
| UniRef90-B7G6R3 | D A |
| UniRef90-A0A024J6F2 |  |
| UniRef90-L8GUJ4 |  |
| UniRef90-A1DMM0 | N S L F F D E NL |
| UniRef90_U6P8V8 | R G NKPAE |
| UniRef90-UPIO004411691 | NPKTP |
| UniRef90-C5DTL2 |  |
| UniRef90-D2A5E2 | K PVCKSPE |
| UniRef90-D2V6Q8 | VPNKPSE |
| UniRef90-W9C1F1 |  |
| UniRef90-K2SLZ1 |  |
| UniRef90-Q4R968 |  |
| UniRef90_Q0IEU9 | N D V T G A |
| UniRef90_F6Z726 |  |
| UniRef90-K4C3Q1 | S V |
| UniRef90_W6ML50 | NP KVAEYL |
| UniRef90-UPI000455F6F0 |  |
| UniRef90-M4EUT8 | KVAKPSAEL |
| UniRef90-H2YZB9 | N A V T |
| UniRef90-F0ZZ57 | RQNKPAE |
| UniRef90-T1PHU8 | R P |
| UniRef90-J7R3W2 | N |
| UniRef90_N1J7C3 |  |
| UniRef90-Q6FNT4 | N |
| UniRef90-B7Z1Y1 | R S V C K A P E L |
| UniRef90_L7MFY7 |  |
| UniRef90_E4Y197 | RKNRPAE |
| UniRef90_UPI00032AEFD1 |  |
| UniRef90-M2MGW0 |  |
| UniRef90-W6MS85 | N A $\square$ |
| UniRef90-A8Q7G8 |  |
| UniRef90-T1J995 | T T V F K $\square \mathrm{E}$ |
| UniRef90-E0VHF5 | N SVTR |
| UniRef90_G0V8Z0 |  |
| UniRef90_UPI0003F495F7 | N P R S P |
| UniRef90_L8G847 |  |
| UniRef90_G8JWW8 | N |
| UniRef90_UPI0002C342BD | A V |
| UniRef90-G1NY57 |  |
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| UniRef90_H2APW4 |  |
| UniRef90-F4NRV9 | R |
| UniRef90-Q12018 | N |
| UniRef90-G7DZB2 | N K |
| UniRef90-R4XC56 | NSLLFTDENL |
| UniRef90-S3DHX2 | VSLIIDENL |
| UniRef90-R9AKY4 | NT |
| UniRef90-T2MDG3 | K K P CKS P EL |
| UniRef90-H3EKK8 | REDNK |
| UniRef90_UPIO002C3728F |  |
| UniRef90-F4NZJ9 | RQNKPAE |
| UniRef90-G0W3J3 |  |
| UniRef90-H2YFG2 | S QPCKAPEL |
| UniRef90_U6IMQ1 | T T $\square \mathrm{F}$ A M |
| UniRef90-14YDM1 | N P |
| UniRef90-S7ZMX7 | NSLIF FDENL |
| UniRef90_C4JFZ4 | NSLIFDDENL |
| UniRef90-M2Y1M7 | GSVTCAELLL |
| UniRef90-S2JAV4 |  |
| UniRef90-U6ISQ6 | N A 1 T E A |
| UniRef90-M2YTH8 |  |
| UniRef90_V5FNY7 | N S L F F D E NL |
| UniRef90-N1PM46 |  |
| UniRef90-R1GDU9 | A A P R S E |
| UniRef90_A0A024TWT4 |  |
| UniRef90_G4N0J9 |  |
| UniRef90-W1QBV7 | D NKTAEYL |
| UniRef90-R1GAE7 | SKKTSA |
| UniRef90-W4YZ44 | NTK S P |
| UniRef90-UPI00046DF132 |  |
| UniRef90-A8Q4W0 | NV |
| UniRef90_H8WVG4 |  |
| UniRef90-I1C5J7 | R K N K P E |
| UniRef90-J91T98 |  |
| UniRef90-H3EB09 | RQNKPAE |
| UniRef90_Q21346 | N A VT M L A |
| UniRef90-E2A1H0 | A TVFKLE |
| UniRef90_D3BL03 | N HLT K |
| UniRef90-A0A024GKF9 | Q S SRPAE |
| UniRef90_E3MUK7 | N A V] |
| UniRef90_M5WX73 |  |
| UniRef90-B6HUX5 | N S L F F D E NL |
| UniRef90-T1J146 | TSIFKL |
| UniRef90-S7PMW6 | RSVCKAPEL |
| UniRef90-B9QE00 |  |
| UniRef90-E9F3M4 | LDVCKL |
| UniRef90-H9JVI5 | $\bar{N} \bar{N} K S \bar{P} E F L$ |

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UniRef90 J9JQY8 UniRef90-A0A022S0X1 UniRef90-A9VDN7 UniRet90_ToS455 UniRef90 O9V9R2 UniRef90-J9ING1 UniRef90_U7PW69 UniRef90-H2KQAO UniRef90-FOYKY7 UniRef90-FoYNZ8 UniRef90-W5JH47 UniRef90 Q01CM4 UniRef90-Q0UZL5 UniRef90-G7ZY87 UniRef90 G7ZY87 UniRef90-B7Q9Y2 UniRef90-W10126 UniRef90_O54XF7
UniRef90 C5KOBO UniRef90-W4X4Y6 UniRef90-N1PV82 UniRef90 - W5D153 UniRef90-W4H2K2 UniRef90-B3RQS9 UniRef90_M7NL86 UniRef90-U6KEV6 UniRef90-C4JRB1 UniRef90-M7BIR1 UniRet90-O961EO UniRef90-R8BPU7 UniRef90-R7U038 UniRef90_UPI0002658BCF UniRef90 V51812 UniRef90-C5LU04 UniRefofo-B5RTAO UniRef90 Koklou UniRef90-082002 UniRef90-Q6CFU9
UniRef90-T1RX8 UniRef90-W3XMX9 UniRef90-T1FSG44 UniRef90- M5E5T8 UniRef90-U9SY88 UniRef90-G7YMN3 UniRef90-R1D515 UniRef90 UPIo0042B26F0 UniRef90-D7FUY8 UniRef90_C4ROG6 UniRef90 LOPCE9 UniRef90-B2AAN3 UniRef 90 OQ4P7L4 UniRef90-DOMZB3 UniRef90-B8LZ17 UniRef90-M5Ws27 UniRef90 UPI0002C35C28 UniRef90-N4UTW3 UniRef90-SSRA21 UniRef90_G8YI42 UniRef90 A7SKY8 UniRef90-A0AO22RZR8 UniRef90-C5PDC7 UniRef90-ROIC88 UniRef90_D2Wow7
UniRef90-A4RUG3

DWKESWSVLSSA $\square Q E \square F$ QKNTSK $\square$ SFEE $\square Y R N A Y T L V$ पT DEDWKECEKPFQDDHGKEGLTKEKYDKDYTNVYNYC L D Q T WA K ID K A L D T I F R QE DUD F S L E ELLYR GVVENIC E F E T QWD ILLS SAL REI HTKNA SALSSFEQUYRASYK I V VEFGEDWNPLSRTVESLDTDRAVDRKVWNACFSDVYTLC IE WDQGWNFIQEGIMNLKRENQVSAAEIVDMYTTIYNMC


GWGK $\square$ KNG $\square \mathrm{DVLMETQPFGNKGYVS} \mathrm{\square YT} \mathrm{\square SYRMC}$
ESTLRALRDGTTKLLRLET SGLSFEALYGSAYALV VDFEETWAQUELAFREIHTKNA SKLSYEELYRHAYRIV
 FEKVWS QLDSALTALLTGQKMEQSLEELYRWAENVC

## 

EKAWKSLEVSLLCLQNKSESAAVSWEELYGLVTDLC
 D WN DS WN FLS QAI R DIVYKKNS SVLSSFE E V Y R NV Y N SUI


T WAE LD TA $\square$ T A $\square$ FSSSQ PRQP $\square E R \square Y R G \square E D L C$
FEEVWTNLRKTVNSLMTGK VDREAWHNSYGDVYHLC
 $\square D Y D L S W S V L S N A \square T Q \square Q N K N \quad V S K \square S Y E Q \square Y R K A Y \square L$ MDFEKS WA VLAAA $\square$ RE $\square E N K N A Y E \quad \square S F E E L Y R K S Y N L V$ SVSFDKS WE ILLASAMTKTQDHES SPLSFELLYRTSYQLV KI LDHQKTFTMDEWDDLIHNVHLVC D F E F N WQ K

[^0]UniRef90 R7QFX1 UniRef90-R7Z7K0
UniRef90 V8POH5 UniRef90-86K6K0 UniRet90 W8C9K2 UniRef90-F4Q2G4
UniRef90 E4ZZB5 UniRef90_K1WSN5 UniRef90-B4KF20 UniRef90-M5WEI5 UniRef90-L5LZ10 UniRef90- JgjVSo UniRef90-UPIO004409FOB UniRef90-UPIO001CBAAE9 UniRef90-S8DX60 UniRef90-H2YFG0 UniRef90-ROIR27 UniRef90-Q4RV94 UniRef90 UPI0003D29454 UniRef90-K7V5F9 UniRef90-K3W7H7 UniRef90-C1G8T2 UniRef90-Q7PQH5 UniRef90-O4T150 UniRef90-W5JME3 UniRef90_J9JQY8 UniRef90-A0A022S0X1 UniRef90-A9VDN7 UniRef90-ToS455 UniRef90-Q9V9R2 UniRef90-J9ING1 UniRef90_U7PW69 UniRef90-H2KQA0 UniRef90-FOYKY7 UniRef90-FOYNZ8 UniRef90 W5JH47 UniRef90-Q01CM4 UniRef90-G7ZY87 UniRef90-G7ZY87 UniRef90-B7Q9Y2 UniReffo-W10126 UniRef90-Q54XF7
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UniRef90_R7U038 UniRef90-UPI0002658BCF UniRef90 V51812 UniRef90-C5LU04 UniRefofo-B5RTAO UniRef90 ${ }^{-}$KOK104 UniRef90-O82002 UniRef90-Q6CFU9 UniRef90-T11RX8 UniRef90-W3XMX9 UniRef90-T1FSG44 UniRef90- M5E5T8 UniRef90-U9SY88 UniRef90-G7YMN3 UniRef90-R1D515 UniRef90-UPIO0042B26F0 UniRef90-D7FUY8 UniRef90 LOPCE9 UniRef90-B2AAN3 Unireftol-Q4P7L4 UniRef90-l2GW84 UniRef90-DOMZB3
UniRef90 B8LZI7 UniRef90-M5WS27

RQGH AAELSULLKDKCSSYVRSGLKEPLLERTNVDLLR

STQNEGVLKFYPRTSNLTKQKAKETMEKA DGLPNDDLLL RQN LAKDVKERLVIKCRDYVGGSIKSKVKERTNVDVLR L KKQGDKLYDRVKEFEEQWFAGEVMPKIRRDTGEEFLQ VQPEPMADRLYTETKNFLESHVRDMLANKVNTNSRPDLLQ TQKPPYQYTLYDRYQRTFEEHITSTVLPSLKAKPDEFLLIQ

NKQGEMDYNGVLSLITENTGSDAEQFDESQENERLLK DTKGVLSRFI SVQHVHLHTCYSQGSYMN



## $\square$ RKQGDA $\square$ YDA $\square F G A V T D H C Q H V A \square S V A N E G D V E F \square K$

 LKKK GEQLYNKVHEFERDWLRTEVRAHIQQLLSPNLLAVFPEPLGDRTYQETKKFLNAHVQYLYELVLSGDD LLA TAASSRGGELYAKLKTYLKHYLEN SSNEKALIDFYDPKVKVLVAQKAVEDMSRSESYPNDALLL RQGK AAVLAKRLQVRCEEHVSRTSLKTLADGNDVDUL

NQGGAStLFSRLEGRCRSHVERDMRDPLEKSNVTVLK HQKK AA WLYELLQKHLAAYVERTLKSACEEHESAVFVE TSSSEYDERIYNDCKEFLDSHITHDKKELTGVYSQ ALLK L HK Q GKLYDGTKSIVQEHLENISNFEIQPAYNSYYLQ RQKRNLAQKLKDRCKTYUSNYVVPTLVAKSKNNDNDDTLR

RSGQ AEKVYDMDRQRCEDHपHGEVLQK VTPESQAEKLYEATKQYLNEHVHNLHAEVVRRAEQVGFLA YYPKSMMDRLYGETKQFLDDHVALLDNKVQEDGEHKDVVK $H K Y G M K L Y K G V E E T V A L H L M E V S K R C D E S A D E ~ D L L A A$
$R K Y G A K L Y D D V S S L I V Q U L L Q K R Q N L A G L N S S D F M K ~$ $\square \quad R K Y G K Q \square Y E S V K \square L \square G D Y L L G \square K D H \square N K E Y D K \square D Y \amalg K$


TQKPPYDHRLYEKYQESYVEYLTTVLPSLNEKNGELMLR RQKQSLAKKLQERCKVYISESVLPSLLAKSKDSDDUVVLR $T Q K N N Y S Q Q L Y Q K Y R E V I E D Y I V Q T V L P S L R E K H G E D M L R$
$L$
$N R H G E S L Y E N V E A C M L E Q V E F T L S S V K K C P D E L F L K$ AVLAA WAT WNRQLKTIHWlFCYLDRSYLLQKGR SLQEDA TLNQAWNDHQTAMVMARDI LMYMDRVYVQQNNVENVYNLG A V EKCWSEHTVAMYMUASVLKYMDKTYSKEAGELPLYDMG FFRNKWNDWKFSSRVLKNLLEPVNKDYTSDGGKTQQQQSS ATLQA WAT WNSQMKYLDWI FCYLDR AY LLPR RESLLRENS GLKAA WEDHDMTMNMTTDVLMYMDRVYCTDNRKPSUFTTS RYYT T WTEYSQGDQY LHKLYNYLNQQHDKKQK DTDTDTMY EFVKSWGDYKVMLRWMSRSFAYLDRYFLNRPSRPGLKEAA MYHRYWEEYSKGADYMDCLYRYLNTQFIKKNKLMEI GELA MLMMRSI FLFLDRTYVQNPNVNSIWDMG ALTKVWEDHTSSTQKLSHILKYMDRVHTKAANVPEVDPAG $K L Y G Y L N S Q F D K K Q K L S D A D D Q Y G Y G D D D N E Q L M D I G E L A$ ELVKRWQNHKI MVRWLSRFFHYLDRYFISRRSLPALKEVG SYAKNWETYSQGAVYLNLLYHHFNHQYVTKSKQNDADDEY
 EL VKRWENYKRMLRWLE IGFHYLSRYIDRRDGDPTLNDVGG ELVQRWSNHKVMVRWLSRFFHYLDRYFDSRRSLTPGKEVGO

 RYHEVWKEYSEGSKYLNNI YQYLNNQHIVKQKKMEI GDLA HYCTYWQKYSKGTKLLDSLYQYLHRSESDEPKMMMUGELT
 LYCSHFNVYSTGSNYVSELFAYLNRYWIRYAHVYPVPELAA RYY TT WMEYSQGIKYLHQLY $\square Y$ LNQQHI KKQKITDTES FY
 VANSWEVYCKKMLLI RNI FLFMDRQLISNSQYVQIWDLA RFSHHWENHKVEVKWMQQLFRHLDNGYVANSSISTI TSVG RFSHHWTCHK』FLKWMQQLFRHLDNGYVANSS』ATLTSVG
A LETGFLTHRKGTQMLVDVFNYDDRVHLPRSNLEPVGKLS ELKQAWGDHQVCM TNPARLKDRVYCADHRRMSIYNAA

T Y Y K H WLE YS QG DD Y LN K LYM Y LN T Q H DK K HK LS EA DELG FY I R T WERY LIGGSTRLNDVLDYI NRYWVTKERGDGHREIY FFRNQWNEWKMSSNVLKNLLSPVNKIHSSNQNESVVYSDT SVEEAWSTWNTRLVITRSŋFYYLDQSFLLHSADNPHYEMG
A VLAE WAR WT QQM $\square$ T $\square$ RA $\square$ FFFMDRSY LLQSSKPT LEQFA
$R \square V G \square W E E Y C S D L L M \square R N L C D Y L D R T Y \square Q T S N D A S \square Y D M G$ KYYEYWDKFSSGASYLNSMFTYLNRSRNYMHGSDSSYEQM TLKNVWNEY ILSTNMMSHDMKYMDKVYTRQANKDQDYD SS ELLCRWENHRTLVKWLQKFFAYLDRYYVKMYMEAPLVKRG LVEAAWATWSLRLVTIRSVFYYLDQSFLLRSEHPTIYYMG

S VYKHWKT WNAQSVIIRSTFSWLDRSFLLNSKTLPQNDMA
YHKHWQHYSRGSGYLNQLYGYLNSQFI HKQQHSEADDNY A YHEQWDEYSQGDRNLNTLY YYLNDEHVRKKQAEEAGAYF NYF LY WSQYSVSSQYLNDLYLHLNEQLLRKKRQMVIGEDA RLKIE WEDHKMSMGMI RDILMYMDRNYVRQHQCVPVYDMG
 D I K DK WEDH LLAMRMISDVLMYLDRVYAKENHLPLI YDVGG
 SYIDREWDDFFASSDRLRMAFSPMQKILLQNETDDYDSTFM
 ALKDAYQDQSMCMNMITDVLMYMDRVSSQDGRVPS YTQA ALTDLWDDHGSCMSKLRDVLKYVDRVYVPNQQRVPI WDLG VLKPVWEDHTTCMLMM RDILVYMDRVYTRNANVPRVYDLGG AYVHHWTTFHKGLTYYLDNLYRFVNQQYMADRHTMEILEVGG ELEKRWSNHKMMTRWLSRFFHYIDRYFVAVKKVPSVQEVA RYRTSFHNYSVGMHYGSDWFKYLDRHWINTNHCETVREMS NMSTEWNDHLLSMRMDSDFAMYLDRVYVKEAHLPLI YD DG
 GI RKIWEDHNTSMNLI ADMLMYLERSCVETK QASVYATT A I RDT WLDHRSCMSKLSEVLKYVDRVYVENHKVPSINRLG F YVRRWKRFT $\square G A \square F L N H A F D Y M N R Y W V Q K E R S D G K R D I G$ HYCTSFEAFTTGTSYI SE LFRY LINRYWISYSHCYPVTELS A MRGA WEDHQLCMGMDT DVLMYMDKAMNNDQRPSSIYT S S DFVK S WE D H K VMLRWMSRAFAY LD CF F LRRQR RLPCLK EAA SVL Q H WR DWNGQ


E LVIRWSNHK DMVDCDSKFFHYDDRYYVVR DY LIPCKEVG AVEAAWSAWSSRLVTI R S $\quad$ FYYLDQSFLLRSEHPTDYEMG ELVKRWKNHE LLVKLLSNVEQYIDKFYIYRAGEPRLRKVG T C NVWE K Y K TE TSVVVSSVLMY L N T NYALKK HTDFVYDNG
UniRef90_R7QFX1 UniRef90_R7Z7K0
UniRef90_V8P0H5 UniRef90 B6K6K0 UniRef90_W8C9K2 UniRef90_F4Q2G4
UniRef90 E4ZZB5 UniRef90_K1WSN5 UniRef90_B4KF20 UniRef90_M5WEI5 UniRef90-L5LZ10 UniRef90_J9JVS0 UniRef90_UPI0004409F0B UniRef90_UPI0001CBAAE9 UniRef90_S8DX60 L UniRef90_H2YFG0
UniRef90 R0IR27 UniRef90_ROIR27
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UniRef90 Q4TI50 UniRef90_W5JME3 UniRef90_J9JQY8 UniRef90_A0A022S0X1 UniRef90-A9VDN7 UniRef90_T0S455 UniRef90_Q9V9R2 UniRef90_J9ING1 UniRef90_U7PW69 UniRef90-H2KQAO UniRef90_FOYKY7
UniRef90_FOYNZ8 UniRef90-W5JH47 UniRef90_Q01CM4 UniRef90-Q0UZL5
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UniRef90_C5K0B0 UniRef90_W4X4Y6 UniRef90_N1PV82 UniRef90-W5DI53 UniRef90_W4H2K2
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UniRef90_T1FSG4 UniRef90_W2RV08 UniRef90_M5E5T8 UniRef90_U9SY88
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UniRef90_C4R0G6
UniRef90_LOPCE9
UniRef90-B2AAN3
UniRef90_Q4P7L4
UniRef90_I2GW84
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UniRef90_A7SKY8
UniRef90-A0A022RZR8
UniRef90_C5PDC7
UniRef90_ROIC88
UniRef90_D2W0W7
UniRef90_A4RUG3

Y MCFKKEVFDS|I|APD|V|RRAALLI|IV|RRERDGETVVRALLIKA

 L D S WN ENIIFRDI K D RL QE S AMKIV HAERS GDAYDAQLV DG SD QWR DA AFK P L N S R L L T A L E T I I L K D R N G D S T N L Q V L S D
 S N Q WR VI MVE YLA E DL VRHIL EGI A A DRAS DSHR VQVI N G V K Y Y R D L V Y R E V N A DV R E A A I R L I D K E R E G G E IDDRA L L K N






 L E I WN Q Y MI Q R L G N ELL V D Q L S GI NA ERVNN S S S T E V I R G

 L L K WR E HL F K A C E P K L I R A ML L D MV E R D R N G E A V S T N L L R S
 L Q F F K E K C F N Q V V E E H L R G A L L

 | $L$ | $N$ | $L$ | $F$ | $R$ | $E$ | $V$ | $H$ | $D$ | $K$ | $V$ | $E$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| K | L | F | F | D | I | V | F | D | $R$ | $F$ | $K$ |

 MT L WR E CVV F P R NK H RL Q E S A MKL V HAERRNGEAFDS QL V IGG KRRMRSCVLDLI RRERDGERIDRDTLRQ $M$ V Q F R D E I L

 DISSWRD Y K F H T NLDD L M S E L ME QU R D Q R L N K IE S I G NL S V
 $P Q$ R R WVFSH LK MK $V$ V M V A R E LV
MVDNEREG
A A D T Q AK A
 P Y S S Q E N L







 | $L$ | $Q$ | $L$ | $R$ | $K$ | $H$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $H$ | $L$ | $S$ | $R$ | $D$ |


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


 L E M F R D C V I Y P illlll Y Y


 MAFRKMTFPSRRDPNESAGGRALRGGYELVSYDRTGDER






## UniRef90 R7QFX1 UniRef90_R7Z7K0 UniRef90_V8POH5 UniRef90-B6K6KO UniRef90_W8C9K2 UniRef90_F4Q2G4 UniRet90-E4ZZB5 UniRef90_K1WSN5 UniRef90 B4KF20 UniRef90_B4KF20 UniRef90-L5LZ10 UniRef90-_J9JVSo UniRef90-UPIO004409FOB UniRef90-UPIO001CBAAE9 UniRet90-S8DX60

 UniRef90-H2YFGOUniRef90_ROIR27 UniRef90-Q4RV94

VLGTFVEMGMGK पDVVYQEWETPFLEATAEFYRRTSA TM CLE MLILLPSKTKNTTLYDSFFTPLLLETSRTFYAEEAT VRESYVNLCSNPEDKLQI YRENFEAAYLKATSAFYRLKTT TLECYVQLGQDK NKLQVYDDHFETTFLKSTEDFYRIESA TI YMIEGMMFHEMQVYTREFEPRLMEFSQDYVVKWAA YMLEGLSNDETEGDKLYVTTFEVAFLDHARAFYQKECA VI HSFVEVENYEKPNLKLYQEHFEGPMLEASGAYYMIEAN VIDDFVEIGEGQRDA YEKDFEGYMLTDTRDYYCRKAS VI NSFVHVEYKKKFPLKFYQEDFESPFLTETGEYYKQEAS LLRML OUS NKDLIYQDAF VILSFVNVEYKRKDQLKLYQDLE ALYSLVAVEQHKKRNLYYYEDTFEDAMLRDTAAYYSRKAS $T$ | V |
| :---: |
| V |
| V | VGIFAEIGRGE VLDIFAEGRGE MEYYVSDF

| T |
| :---: |
| C |
| C |
| V |
| V |

## F

$\stackrel{V}{\mathrm{~V}}$ AVIFIEVQEFNKQC AVDCLCSLQQHEQQRMKYYENDF TI NGVIHQDYKKTGSLKLYQELF CVAMLEALYDEEQEDEKLYY CVEVFPVMGLNTQPDLTVYEADF VRESYVNGCSNPDDKLE

## T TMLMDLGP

 $A$
$S L K C Y V Q L G F D V N D N L S V Y Y U N D F$
$A$ A ACQMLMLLGTNMFNRQVYEEDF VVG\|YLEDGQGMFHALGGYYESDFESRFLGLSQQY DDEWSN LVRMA TALHMYTKHVERPFLAASEVFYAQEGQ ENDRKEEQGVIHSFGKFFYQSVFEARLLEETKNFYAREDA CTNMFNSLPDKVNTTKTVFEVDLETYILLETREFYAKESK LVCMYTGLDPEDEGLGLYQRELEDLLLASTKQFYDRKAR
 LVRML FDSPLDRDVTMMGDENVYIKSF

## $\stackrel{\rightharpoonup}{\mathrm{T}}$

ALSSFVEVGYRETDQLQLYQELFEEPFLNASGENYKRDAT $K D I N M L E L G N D L Q Y G E N Y Y Q R Y F E P T F L A G S E T F F Y N L S Q$
$N V D M L A D L T Q H K E D P S V Y S I D F E P A F L Q T S A A F Y S A E A D$ II NMFESLDEDEKNDENYYLKYFEPFYLNKTFEYYEKQSN LLKMFTALGGGYGESFEXFLERTSEFYAAEGV VLSMLDLLPQSKSNKESVLVHCFSDQLVAATTNFYSQAAR
 CCYMLEGGYENEDEATKLYYTSFEPKFLEASREFYFKEGQ VTDMLLALSHTP DVSVYVHDWEPLFLRASSEYYVAESQ VIDMLLELLTDASTKDTHYADDFENKFLEASSEYYRVEG SVESFRRVGDNERAGMDLYNKDFQAPLLESTKTFYTSWAA VLAVYVDVGQG SDKYYEKDFEEAMFEDTAAFYSTKAS LLKTYETLGFEKRDRSHLFQTELEDFLVTDTGRYYSRRGS CVNMF SSLPNKTDEAGNYYDTYVEPDFLEDSRLYYEKKVSS ITGMLEQLYDEEKENEKLYTTDFEPRFLAASEVFYKAECE
 TVQTYFSGGLCRQDQMSLYREELEQPFEEDAARSYSTKAD
 C DDM NSLPF ESTNESLYDVIFTPKFLDVTRTFYQGEAAQ LLEMLADDGMGEMD QMYEDAFESKFLEATDVLYSQEGN AL VLDTYVENGMGT VVRMLCEM
UniRef90_R7QFX1 UniRef90_R7Z7K0 UniRef90_V8P0H5 UniRef90_B6K6K0 UniRef90_F4Q2G4 UniRef90-E4ZZB5 UniRef90_K1WSN5 UniRef90_B4KF20
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UniRef90_U7PW69 UniRef90_H2KQAO UniRef90_FOYKY7 UniRef90-FOYNZ8 UniRef90-W5JH47 UniRef90_Q01CM4
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UniRef90_R8BPU7 UniRef90_R7U038 UniRef90_UPI0002658BCF UniRef90_V5I8I2 UniRef90_C5LU04 UniRef90-B5RTA0 UniRef90-K0KI04 UniRef90_O82002 UniRef90_Q6CFU9 UniRef90_T1IRX8 UniRef90_W3XMX9
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UniRef90_A4RUG3

210
220
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240
K WAEEDSFPEFMVKADAGFAEEQERAAQY|LNAQTQDR|LL|R











S S WI L E D S C P D Y M I K R L T K L S V A E Y L R E V E L L C N Q E Q R R C E G R M H R RLATADASTFCKRVAERLREEEERCRYTLSPATEHKIKQ

 KLSEELDTVSEYMTRVLVIMKEEGDRANTYLHESTYNKLQS
 D L L S R R L S I A E Y Y L A H V E A L C K Q E E R R C $\quad$ C GWL $W$ CN F N C P E Y
 A F L R L M S VP D Y L V H VD K RI K E E E D R L V S Y L E P N S T R K L D WL G A K S TP S Y L R K A E A A L D S E R E R V S R Y L H M S S Q Q K L L G

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 K QASHCGLAATVERCHLLADREMARCDLFLDRSTKQSI SQ
 1



 ERSS GHSSLK DY R A CE K L L R E E DFRCCNAFFDSTTTKR QL L D QLLDD D C T C S E Y M D K V I Q R L D D E D M R S R K F L H P S S Y C K


 E I L D L Q N G T D Y



 $R L L A T Q Q A T H Y L V Q A E R R L A E E E A R V V A C F S P R T W P A L Q A$ V G EYD T S E YMKE

## 

 A EMNARDVPSYYLEHVASRLSREEARVAHYLHGSSRKPRMA

 $K L L R E S D A G S W L$ RHTRRRRLLE E E ERRCVTSSVSNSTKDNI AA


 S W L K D Y S D T D Y VL L K V E E C C L R L E R R D M A S H H Y L H P S S E Q K L V L
 RYMQE T DVVP NEANS S Y L A A $\begin{array}{lll}R & W \\ D & L & E \\ A & E & S \\ S & C & C\end{array}$


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UniRef90-K3W7H7 UniRef90-C1G8T2 UniRef90-Q7PQH5 UniRef90-Q4TI50
UniRef90 W5JME3 UniRef90-W5JME3
UniRef90_ J9JQY8 UniRef90-A0AO22SOX1 UniRef90-A9VDN7 UniRef90-ToS455 UniRef90-Q9V9R2 UniRef90-J9ING1 UniRef90_UTPW69 UniRef90-H2KQAO UniRet90-FOYKY7 UniRef90-FOYNZ8 UniRef90-Q01CM4 UniRef90-Q0UZL5
UniRef90 G7ZY87 UniRef90-G7ZY87 UniRef90-B7Q9Y2 UniReffo-W10126 UniRef90-O54XF7
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UniRef90 G7YMN3 UniRef90-R1D515 UniRef90 UPIIOOO42B26F0 UniRef90-D7FUY8 UniRef90-C4ROG6 UniRef90-LOPCE9 UniRef90-B2AAN3 UniRef90-Q4P7L4 UniRef90-12GW84 UniRef90-DOMZB3
UniRef90 B8LZI7 UniRef90-M5WS27

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 E VVVVDHSFLHGESEAMLREERLNDMHNUYLL KVQQEFSSV
ACNDALTRHQDPDFNGETDTYQQQERNEAGDTSCHHDYVL QARQTCCRVLVEEHADRICEHVDAFLAANQTADLRRLFTLL VIQNEGUEK QAQNLVDKDTGCDQMFQHKKDEELANMFRLL VLEAELI AAHLEEFLAMDGTGGKAMDDDERTDDLALI LYDL TCERELLSKHKEVLI EREQSGLIAGLLKAKEAKEDLKRMF VCEYELLQTHKDALVDRENSGMIVLLAQDQNDDLMRMFNL EVRQQLLKEMSQSLLHNTTSGMVHMLRTSQLDSLSCLYK
 V
 MLDRYLVVSDHTN TLLMKEDDVIVELSKNNKKAPLEQLYY LLEDHLVEQKETDL TVEYAALKSLLDNNAMSNLTAMYAL
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## IVEHELLVFYKTQ

KV QHEL
AAHGLLTNNYSEKLLNGES DSKLLAENETESMKALYDL A A G G Li N Y SEKLLNGES IMNNILIRDKIDSIMTDPYEQFDQIGESDYKNELNILYNL CVEKQLLGQHLTSULQKG FDNLMLSNRDADLALMMYQL VRLKRLMVQFYAK
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$\square R A V S T G L P H M \square Q E L Q N H V H D E G L R A T S N \square T Q E N M P T L$ LTRVKKGLSELC!NFNSYIKKYGRT VVIDPEKDKT

 A S



TS Y L E DGMKALEEVVRDHVRSVGLTVVKDDGKAAVVTS DD
 IS RID K SKNTLKTSLMGRVMELGLEDIEQTLKNTQTAAAI K FSKVSGGDTTLRLALKSYVGAKGKLINDAVTSQQAATAI R FSELENALDSFKNGLKRYIERSGMEVVQKQQEETTKNPEG NARUDAKKSALTKS $\backslash Q \square R \| V Q L G N E I V A A A K N Q Q T A A A \square K$

## FKPDAEKFKQKVISEGK LVQDAVENNAMPEHV


 FGRVRKGMEELCAAFSGF IVKKGGSIVLNPEKDKT

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UniRef90 RoIR27 UniRef90-Q4RV94 UniRef90 UPI0003D29454 UniRet90_K7V5F9 UniRef90-K3W7H7 UniRef90-C1G8T2 UniRef90-Q7PQH5 UniRef90-O4T150 UniRef90-W5JME3
UniRef90 J9JQY8 UniRet90-АоАо22S0X1 UniRef90-A9VDN7 UniRef90-ToS455 UniRef90-Q9V9R2 UniRef90-J9ING1 UniRef90 U7PW69 UniRef90-H2KQA0 UniRef90_FOYKY7 UniRef90-FOYNZ8 UniRef90- W5JH47
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| :--- |
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| 1 T1FSG4 | UniRef90-W2RV08 UniRef90-M5E5T8 UniRef90-U9SY88

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UniRef90 B8LZI7 UniRef90-M5WS27

FII QSLLLALLHDRYMHTVISDCFGSHAVVFTKAMKEAFERFIVINE ${ }^{360}$ MVIKLLALKRQLDTUWRपSFHRNTELGHALRETFETFUNK
WVSSVLALWTK【TSTLTESMNNDRLIHNT\SDAFTSFTND YVERLLELENKFSSLVKYAFNDDPRFLTARDKAFKTVVND LIGHLLETYNRFNRLIRESFSNDTTFLAAMDRSFAHVINE MVIKLLTMKRQLDTLWKVSFHRDAELGHGMRESFETFMNK FVENMLKVHHKYQELIADVFENDSLFLSALDKACASVINR
FVESVLEVHGKFVQLINTVLNGDQHFMSALDKALTSVVNY MVQELLDFKDKMDVVVKKCFQANEKFGNSLKEAFENFVNQ


FVETLLEVHKRFHDLIRDTENSDKLFVSADDRACDAAVNY MVVHLLTLKRQLDTWWKTSFHRDEELGHGLREAFDKFMNK QUQNLLDFKAQCDHFLSESFNNNKLCNQTIDGEFEHDFNL

Y TEALVQVRNKYFDLIKETFGFNADMRRADDQACRAFANS WVNDVLQLKAMFDRVWEMSFNADQGMQTSITTSFADFTNA FVENMLDVHRKYEELTHTTFKSDPGFRGALDKACARDINN MVQELLDFKDKVDYV DDCFVKNDKFVNAMKEAFETFINK FVENMLDVHRKYEELIHRTFRSDPGFLGALDKACARIINN
YVEALLQVYEQFNALVRNAFNDNPRFDESRDKGCRTFVNS YIEALVRVREQFVDLIRDAFGFHALMRTALDQACRAFAN
 FTAKLLSLKQEMDEMVEKSFLNDURFQKNRDVSFQN MI QNLISCRDY LSELIAVCFSHDANFTRVLQEAYEEFTNQ MINCLLALHAKMSTLVFDLFDGENQFQRALKEAFQDVINT TVEKLLSMHRKMKTMVAELFGQDNRFQRALKEALQDVINT YVERLKKLFRRFSDLVKEAFNDDPRFDTARDKAFKTVVND
FVEELKKKGKYDDI REVAFANSRVIESQCNQAYQYVAND WVEDVLLLKDKFDKIWVEAFGSDPLLQQACTNSLKEFINS
 FVEAVLQVHSTYQNLVKEVFQGDQQFVGALDKACATUINN YI QTLLKVYHKFQNVVKESFENNEAFVKALDSACQSFIVY

 FVRKAIELHDKQLAYVTNCFQNNSAFHKALKAAFEDFCNK MVSALLSFKVDLDEMLESAFEMDQAFVHALKSAMEAADNA WVNS TFLLKDKYNKILKLAFQGNKCПQNT\SDAFSKNINT

MVVRLLDFKQDLDDTLDNSFQKNVLGRTLREAFETFTNK MVQELLDFKDKVDHIIEACFQKNEKFDNLMKESFETFINK MVQDLLDFKDKMDVIVRTCFEHNEKFTNSLREAFEFFINQ MVVRLLERRRTLDIMIRDAFNKDEDFTYGLREAFGNFIND FVESLLEVHAKYSDLITEVFKGDQHFIGALDKAFAAVINH FVEAVLRVYDDFHRLVSDVFKNDQQFVTALDRACDSVINS IHNLLTVFKKYKRLIQETFKSDQKFMEALDKACSFVVNH FVEKLLALRQKFEGIVSQAFRGSLEFSNQMKVAFEKSLNN WINSIGEYQNQFSMIVKESFSGDVAGEQCDTMGMREFING
 MVPSLLEFKASLDTD WEESFSKNEAFSNTVKDAFEHFIND WVTDVLTMRDEFAEITAKCFDNDVEVVKSUDEAFVEFVNK YVQQLIDLFNRFSELVKDAFFNDPRFLSSRDKAFQNDVND WVADVLALKDRFDGLLKQCFADDLILQTALAKSYTDVVN WVEQILQLKTKYDNLLERAFKNDATMEKALEQAFQDFIND WVEQVLALQAQLDDGVLYTSLAGDKSCEAAINEAMESLVN
 MELISFKEKLDT
VVAAMLEVYEHYKGLMADSFDSSPGFRAVLDEACKSFVN WI ESTLTQRDVYERILQNCFNRDDHTAKTIDASFALILNA WVNNILQLKDKYNKILKFAFQNDKNI QNTINDAFSRNINK WVDDVLKLKGKFDSMLENCFSNDLIIQSAITKSFADFI N WVEEVLEFKNKFDSILQVALLANDTGCETAI NEAFESFINT YI KKLIKVHDTFFNITTNNCFLNDPLFTKALDNACRAFVNS


LVRNLIKLHDKSMAYTNDCFKNYCPFHKALKEAFMVFCNK MVQRLLELKRSLSLYVRDSYSGDADFVNELKNAFGDFMND WVVKVLELWEKLRELVLKSMKEDRYVMNSLSDSFSNFVN $M V Q E L L D F K E Q L D T M U A E A F M K S E K F V N A M K E S F E S F I N K$
$M V V R L L D F K Q N L D D \square L A K S F Q K D E L L A R A L R E S F E T F \square N K$


| UniRef90_R7QFX1 | R V |
| :---: | :---: |
| UniRef90-R7Z7K0 UniRef90 V8POH5 |  |
|  |  |
| UniRet90- whçk |  |
| UniRei90-F4Q2G4 | N P K KLe |
| UniRef90-E4ZZB5 | TKKTNAS |
| UniRef90-K1WSN5 |  |
| UniRef90-B4KF20 | R P |
| UniRef90_M5WEI5 |  |
| UniRef90-L5LZ10 | RSVCKAPEL |
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| UniRef90_K7V5F9 |  |
| UniRet90_K3W7H7 | HPKLP |
| UniRet90-C1G8T2 2 | NSL |
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| UniRef90-UP10002658BCF |  |
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| UniRet90_C5LU04 | SPKC |
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| UniRef90-M9M3F6 | NSLIT $\square$ DENL |
| UniRef90_K0K104 UniRef90 O82002 | N |
| UniRef90-O82002 | RQNRPAE |
| UniRef90-O6CFU9 | HA RVAEYL |
| UniRef90-T11RX8 | T T $\square$ F KLE |
|  |  |
| UniReigo-_IFSG4 | Sp |
| UniRef90_W2RV08 | R S |
| UniRet90_M5E518 |  |
| UniRet90_U9SY88 |  |
| UniRe990 G7YMN3 | RT |
| UniRef90_R1D515 | RQNRPAE |
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| UniRet90 C4R0G6 |  |
| UniRet90_C4ROG6 |  |
| UniRef90-LOPCE9 UniRef90 B2AAN3 | NS $\square$ F $\square$ NENL |
| UniRef90-B2AAN3 |  |
| UniRef90_Q4P7L4 | NSLIF $\square$ DENL |
| UniRef90-12GW84 |  |
| UniRef90-B8LZ17 | NS $\square$ FFDEN $\square$ |
| UniRef90-M5WS27 | NStariont |
| UniRef90 - YP10002C35C28 |  |
| UniRef90-N4UTW3 | R SI |
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| UniRef90-A7SKY8 | RPNKPAE |
| UniRet90 A0AO22RZR8 |  |
| UniRef90-C5PDC | S Q |
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UniRef90
UKG18 UniRef90- UP10003EDB9D9 UniRef90- D3B617 UniRef90-H6BKE6 UniRef90-W3WRB1 UniRef90_G2X6W3 UniRef90-B8LSU8 UniRef90-M7TNP4 UniRef90-UPI00046222B7 UniRef90-МзКот4 UniRef90-S4NWU6 UniRef90-C5FQW4 UniRef90-A0A059D1L1 UniRef90_-J3P3K5 UniRef90-Q4TBZ8 UniRef90-Q9XIE8 UniRef90_-F9X345 UniReffo- W4KB999 UniRef90-х6M700 UniRef90-UPIOOO3959F02 UniRef90-U4TPY8 UniRef90 UPI00021A3E89 UniRef90-UPI00034FD160 UniRef90-H2KQS3 UniRef90-F6SBC7 UniRef90 Q09760 UniRef90-A0A016PKI7 UniRef90-H2YZC5 UniRef90'UPI0004623F42 UniRef90_M7T6F2 UniRef90-X6NUF8 UniRef90-M5BNR1 UniRef90 - B9RT31 UniRef90-X8J052 UniRef90-C7YYS5 UniRef90-Q0CWD4 UniRef90-F2UL68 UniRef90-U1G5U1 UniRef90-U6IL21 UniRef90-HOZWC8

QK S WEKLEKA LVRTFARDHQD D T WT KLSHAI REI QNHNA F D K V W A Q L FEKTWAEEDKA L D A I F GNEK E S LDWK NIE P SLQ S L VS A Q T DT H E VI S A D DE YEERAAVM
 D S T LD R L K E A I Q QI Q Q H NVS QLS F EEHY R YAY N LV F E R D H A K L REAVVFAVIHNNRII

## VD

 LIE K IDWE QV DEA L A V I F K D GII
$\mathrm{N} \square \mathrm{T}$ L
YQESWWT HLDARA LD QVVFSPSSRRRPLSSYMAIVTIVYNYC
DFNKSWDVLSSA IVQTQNKN VSNLSYEQLYRKAYTLV DWNLLK N AI QEI QRKNN S GLLSFEELYRNAYTMV

TWESLK SAI QQIHNHNA SHLSFEELYRNGYNVV DLD Q H LDD K L E Q TTVVKI LN Q Q S L LI QN WD DL L H NV H MV C | $S \square D$ | $F D$ |
| ---: | :--- |
| $F$ | $D$ |
| $F$ | $D$ |

 LT R A VR A $\square$ Q S R P P Q T P E S LQ T LY G L A E A A V

F Q K T WDELD GALASVF NQQPVT P LE VLCRGVES\C DF DQNWNLI QDALVDIHDQNA GRLSFEQLYRASYK』V E E L L H G L D G MY R RE NMGP GLDWMS QH QLI Y N Y C VWD D L K S GI D D I F K L K T LLK K A R Y M R L Y T H V Y N Y C




F R K T WNE LD D A LD S VF NK QPVSPLE VLCRGVES IC
 F E Q DWVVQED K A L D A I F N K E K E A Y S L E E L Y K GA E N V C


$\square Q$ D T WQK L L E A V K A LV G S P S E P GK S T K L L K
ESWLQLLENAVNCI HMKLS $\square$ QLDTLE DLV RMVENDC
F E Q I WT Q E D K A L D S I F S N E K


D F D A N WV V I S T CI Tr RIMRGED DD


F D K VWS HLDSALTA $\square$ FNHEK LP Y S L E E L Y R G VE HVVC
$D ~ D L E A A D A E V F R E R R \quad P R L P L D R L Y R A V E D D C$



DTWAK LAAAA $\square R E \square Q N H N A \quad S R L S F E E H Y R Y A Y N L V$

## S T $\square$ F T M C

F E D K WVHMRP IVLK LLK QEAVS QAE WHD L FY DVVH LVC VDF DEKWKDLSATI SAVVELDRPVKRLTWNNNDS DI YALC VDF QET WA NLKETVSRHVRQKAVDRIVWNTRFSDVYALC

VD F A T H WEVLQRADGDTF QK STSQLSFEELYRNAY LLV KELDD S ALLES I F A GR T P DVVP LE RLLYR GVVEDVC

K D L E EA LEA $\square$ F D D R R P A VP LE R L Y R GVE DVC A A DLTTT TA YLEEGI DQTMSGGD■SYYTFMSLTTAVYNYC
 E F E A G W

WEKLS A S V Q QLY AKNAAS LS F E ENYR HAYNL V
$K E L K D A L D S V F A G K T \quad P D V P L E R W Y R G V E D V C$

D T L W W K L D N A I T LI Q E H R E S S K L
$F$ Q NVWD QL D TA LA TI FGD Q N A K K S L E E L Y K GA E NL C C


## UniRef90 M5WDIO

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UniRet90 S2JOD8 UniRef90-D3B027 UniRef90-M1 V962 UniRef90-H3DYSO UniRef90-W4YTNO UniRef90-C5KPZ9 UniRef90-T1J697 UniRet90_C5M4Q66 UniRef90_Q5BHE3
UniRef90 M2Z918 UniRef90-B8NKX3 UniRet90-ROHXV2 UniRef90-M7XG05
UniRef90 ${ }^{-}$GKCK3 UniRef90-G2YQZ1 UniRef90-FOXS11
UniRef90_A8XQB4 UniRef90-G7YDM6 UniRef90 G7YDM6 UniRef90-U5HBY8
UniRet90 Q 5 B 691 UniRef90-B6AD65 UniRef90_V4S3Y3 UniRef90-T1H3H7
UniRef90 G3REF9 UniRef90-A7ED37 UniRef90_U4LFD1 UniRef90-W9Y4G9 UniRef90-M3DBM8 UniRef90-E3Q2T6
UniRef90
TOKG18 UniRef90-UP10003EDB9D9 UniRef90- D3B617 UniRef90-H6BKE6 UniRef90_W3WRB1 UniRet90_G2X6W3 UniRef90-B8LSU8 UniRef90-UPIO0046222B7 UniRef90-МзКоТ4 UniRef90-S4NWU6 UniRef90-C5FQW4
UniRef90 A0A059D1L1 UniRef90-Ј3Р3К5 UniRef90-Q4TBZ8 UniRe990_Q9xIE8 UniRef90_F9X345 UniReffo- W4KB999 UniRef90-X6M700 UniRef90-UPIOOO3959F02 UniRef90-U4TPY8 UniRef90_UPI00021A3E89 UniRef90_UPIo0034FD160 UniRef90-H2KOS3 UniRet90-F6SBC7 UniRef90_O09760 UniRef90-A0AO16PK
UniRef90-H2YZC5 UniRef90-E9ETX4 UniRef90_UPI0004623F42 UniRef90-M7T6F2 UniRef90- $\times 6$ NUF8
UniRef90-M5BNR1 UniRef90-B9RT31 UniRef90-×8J052 UniRef90-K4AWX6 UniRe90
UniRef90_OOCWD4 UniRef90-F2UL68 UniRef90-U1G5U1 UniRef90_U6IL21 UniRef90_HozwC8

L HRYGELLYEGLERGFHYQAQLVRSTVQSRAHRSEVLE LYKH GDQLYTGVKKLVAEHLDQLAEAVEQAVEGDRFLR RQGRADAKKLQERCKEHISGKLRQGLLSRSADGDNVEILR VHKRGDDAFEDFRAGGDARSEKVLVELEKKKDGDSMVFLR RHGH SADLYHNLCDKCETHLNNLRDKПKREESDTDCLK
 RQGRTLAKKLQDRCHEHICENVLNSLLLRSEDGNDVD L K LYKK GHLLYNAVAELDSAHLEKETRDK VPTFPHSFLD NDDSMIVKLYETLKSVFTDYATWDLKMLLSVGTPDAKK VYPEPLGERLYMETKTFLENHVRHLHKKVLDSEEKILVMM
 LGANLYERDKK YYERGREQEDTSNKEGNEYDH SSQNDGVLKFYPKiENLLASKAAEVIKGADDLTDYDLLLY
 RRGKEKADELYRHLENRCHTHIKDNLLPADSRNGDSSTVE RGGK APEMFELLKECCDRYVARNMILHQVGGDVVQVVR
 RQG GASALFSRLKKRCTMHIQQEVQDRLASEDNVSVLK RRGQDHELELYEDLRRNCEEHLAHGVLRSIKFRGGNDMLR
 LCGN ATNGYKKLSELIEKHVKHSLKSLVSTSDLVDYLGG RQGK APELYSRLSKKCESHLTDNVRDR|RRDEEHSVLR RHGQGQELYRTLQELCEAHLKQATLRSUDDPSNI DMLR RQGESLAKKLQERCKTYLVDNLRQNLVDKTKNASNUDTLR TCSR MPSPDLYUNHLTEFYEDHLQQLSQEAERHTGR ALLD RQGR AANLAKNपRERCMGHDSGKVMESLATGDETVVLR
 TSVHQSSQELYKRLKEFLKNYLTSLLKDGEDAEGAEC VLK AYKNP QQLYDKYRELIENYAIQTVLPSLREKHDECMLR RQG GASTLFSRLENRCKSHDERDVREPLAGLDNVTVLK LFKH GDQLYNGVRTLVVEHDDRLAEAVERATEGDRFLK UQREPYSSALYSKHTEALTDHFKKKFVPCLKEGVGYQFLQ
पWDEKGPAK RDH DHEDVQFTKQAQSRVLAQREEEALLK AAPKSFAEKLYESTRSLLEDSVTALAEVL WVGGAAWV VHPEPGADRLYDETRNFLEEHVASLLERLEQSDHNDGLLD
$\frac{\square}{\text { RKGKYGEKLYNHVQDVIRSRLKYSTSWSRSLEAAHRFLS }}$ RKGDP AKVYQMLNERVDAHLQRIILPK DQKNSNLDTLK
RRGGAAKVYRLLKERTDRHLQLVVLPRDRRQSNDEMLR TFFPPPGTSYD RHGK SEELYNRLRRRCETYLNNDLDNSDKAESNDDMLK TLKK GK


RKGDPAKVYRMVKDRTEAHLQRVVHPRTGRNSNDDTLR RQGRALVKKLQDRCREHVSGKLHDTLVAKAGSGSNIDTLR VQSHD QELVKRVTNKLKARANKLRQGDEECIDRVAFLK RQGK SPDLYTRLRARCESHLAGKIREGLAQLSNVDLLS STVEPNGVELYKKI DQFFKNHVASLEKEMSVLEGVDLLE

## UniRef90 M5WDIO

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UniRef90- W6V2C7 UniRef90-W6V2C7
UniRef90- V8PF18 UniRef90-M2NGN8 UniRef90-B8AKX8 UniRef90-S2JQD8 UniRef90-D3B027 UniRef90-M1V962 UniRef90-H3DYS0 UniRef90-W4YTN0 UniRef90-C5KPZ9 UniRef90-T1J697 UniRef90-C5M4Q6 UniRef90_Q5BHE3 UniRef90-M2Z918 UniRef90-B8NKX3 UniRef90-ROHXV2
UniRef90-M7XG05 UniRef90-G7KCK3 UniRef90-G2YQZ1 UniRef90-FOXS11
UniRef90_A8XQB4 UniRef90_G7YDM6 UniRef90_G7YDM6 UniRef90_U5HBY8
UniRef90_Q5B691 UniRef90-B6AD65 UniRef90-V4S3Y3 UniRef90-T1H3H7 UniRef90-G3REF9 UniRef90_A7ED37 UniRef90-U4LFD1
UniRef90 W9Y4G9 UniRef90-TORE94 UniRef90-M3DBM8 UniRef90-E3Q2T6
UniRef90-TOKG18 UniRef90-UPI0003EDB9D9 UniRef90-D3B617
UniRef90-H6BKE6 UniRef90_W3WRB1 UniRef90_G2X6W3 UniRef90-B8LSU8
UniRef90 UniRef90-UPIO0046222B7 UniRef90-M3KOT4 UniRef90-S4NWU6 UniRef90_C5FQW4 UniRef90-A0A059D1L1 UniRef90_J3P3K5 UniRef90_Q4TBZ8 UniRef90-Q9XIE8 UniRef90_F9X345 UniRef90-W4KB99
UniRef90 UniRef90-X6M7Q0 UniRef90_UPIO003959F02 UniRef90-U4TPY8 UniRef90_UPI00021A3E89 UniRef90-UPI00034FD160 UniRef90-H2KQS3 UniRef90-F6SBC7 UniRef90_Q09760 UniRef90-A0A016PKI7 UniRef90-H2YZC5 UniRef90-E9ETX4 UniRef90_UPIO004623F42 UniRef90-M7T6F2 UniRef90-X6NUF8 UniRef90-M5BNR1 UniRef90_B9RT31
UniRef90-X8J052 UniRef90_K4AWX6 UniRef90_C7YYS5
UniRef90_Q0CWD4 UniRef90-F2UL68 UniRef90-U1G5U1 UniRef90_U6IL21 UniRef90_H0ZWC8
 EYLKQWAKFSVGAHGCNINDNWVNKKMMGQPNVYTITNLA SDRTRWQLYKNADRMVRSVFGFLDRTYVLQNSMLPSWDMG SVKSVWDDHTGSMRKLKDILKYM VYTQSAKVPTIYDVG AVVA AWNTWNSTLVTVRWI FYY RDQSFLLHSKDFPLHEMG
 HYCTQFNAFVTGTSYTSELFRYGNRFWLKYSHSETVDELA HLLTVWKKYRKAACTMRDLLLFLDEQWVERQSTHDNKELG ELEKRWASHKLMVKWLLKFFRYLDKFFUKRAEVPALNEVG RLRDAWDDHDACMSKLRDVLKYLDKVWTNPSSGVPVYDLG
YHRNWDEYSKGADYMDC AVLAEWARWKQQMVT 1 RAIFFFLDRSYLLSSSKPTLSELT ELDWDMGLKLFCKHLS


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AVEAAWTQWNVRLVT TRSTFYYLDQSFLHSPNNPVIYEMG ELVERWGNYKFMVGTFYRVSHSLDLYF IARRSLPHLTEVG MLHRYWEEWSAQSTTVRSIFSYLDRTFKNNKEYMVLNDLF FYTQQWEDYRFSSKVLNGLCAYLNRHWVRRKGTYELYSLA ELAKRWNAHKLLVRLFSRRLVYLDDSFLSKKGLPSLREVG AVLLEWARWTEQMST RAREFFLDRSYLLSSSKPTLDQFI AVKGVWEDHTGSMRKLKDVLKYM AMHAPTAGVPPVYDLG EWTKRWRDGKWCVDGMTRMFMYLVRVCKKKEDLLNTSEQG
AY $\square$ A E WR K FF T QCNY LPT PFRQQENNKPNSSDEC\|VRK LM
 $R$ YVS A WRE Y S Q GVVA Y L N S LY S YLNLQ HVVR QKVSDAE E L G

VN M R CI FLVLDRTYVLQNSMLPSWDLG

SVRGEWNDVNAQTDTLRSTFSYLDRTFLLRESLPSDNDMA Y YA AE WERYATGAYSVNRDF DHFDKDWI QRKDVYPI YE LAA

 VF R E V W D D HESSSMS K I S D L V K Y M D R V

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

 S Y L E A W S T WS G R L V T Din S

| UniRef90 M5WDIO |  |
| :---: | :---: |
| Ref90 F4OFN9 |  |
| UniRef90-L9JA | NHITKMVQSRTIDGLLLL |
| UniRef90-M1VIU5 | MSAFRDDVLQTFATQLVDAMLDVV |
| UniRef90-J4U664 | LEDFWSHIVYPTHTHLMGTLLSQVQLERDGQSTQRSTVRD |
| UniRef90-V5HYW5 | IQFRSHIVFSDLKPKILQGVCDLDRKED |
| UniRef90-A4RVG7 | EHLENSAKSVKGKVVRGLLDLDERER |
| UniRef90-V9D3C8 | QFRSTLFHFIKQKVLQGVITLMDSDRKGNENDRGLLRQ |
| UniRef90-FOWHK | HLWSDUVFTRVNSKVLYSVTQLFRYARDSKSTSADYI TR |
| UniRef90-D2V8H7 | FIFREEVLIKLTDRVQSIMLSI RKERDNEPA |
| UniRef90 C1GV61 | LVQFRTAMFDTLRPR LOQACQL ELLDR |
| UniRet90-E9NAZ8 |  |
| UniRet90-W6V2 | VVLFRNTITMHVQP |
|  |  |
|  | Fre\VFSNL |
| UniRef90-B8AKX8 |  |
| UniRef90-S2JQD8 | NFNRYV |
| UniRef90_D3B027 | NAWKKAAFDKL |
| UniRef90_M1V962 UniRet90 H3DYS |  |
| 仡 | YKDCl $\mathrm{I}_{\text {KYVGTRIDNTLINEI QKNRNGEIISTKMY }}$ |
| UniRef90-W4YT | LK1FRDQ |
| $\begin{aligned} & \text { UniR } \\ & \text { Uniin } \end{aligned}$ |  |
| UniRet90-C5M4Q6 | FKDNVDHEIGFKVID |
| UniRef90-Q5BHE3 | RQHIYPTLQEKILQGACDLDRSDENGI |
|  | QTVFRNLTGK |
| 880 | Q |
| UniRef90-M7 | QRVTSCLLHLVEQERNGN |
| UniRef90-G7KCK3 | , |
|  | QFRQ |
|  |  |
|  | WRKSIIDFFQDRLVSAVL |
| G7Y | LITWREHLLKPHARVLISSLLRED DRERRGEVLL |
|  | Stir hlo |
| $\begin{array}{r} -\mathrm{USH} \\ -\mathrm{Q} \end{array}$ |  |
| UniRef90-B6AD65 | MVIF YESLFSHLKDDIAVAFGEA |
| UniRef90-V4S3Y3 | LSCFRDLV |
|  |  |
| G3 | LVT WRP FRPLINKQVRNSVSKLIEKEGNGETINTKL SG |
| UniRef90- 44 | GSMFRKHVENKEKRLQNGVFELFKQDRQSDSTNT |
| UniRet90-W9Y4G9 | ScVFQFitakV |
| UniRef90-TOF | LACFQEHVLPALEAKI TTSFLIREIVERERHGETVQRQHLKS |
| M3 |  |
|  | DPAL |
|  | ITQFRRMTFPSREDRALRGMYDLISYDRTGERFDAALLKE |
| UniRef90-UP10003EDB9D9 |  |
| 㖪f90-D3B617 |  |
| UniRet90-H6BKE6 |  |
|  |  |
|  |  |
|  | ILLWHKEMRTDSVQLRDSVLELVEKQRNNETVEYGQMRE |
| UniRef90-UPI00046222B7 | FFLPVQQKLSSAILQVIERERNGETI DQD |
| UniRef90-M3K | DQLFNQYVIKYIGSKIDETVIDEISKSRVGTVITSSMYI |



## UniRef90_M5WDIO

 UniRef90-F4QFN9 UniRef90-M1VIU5 UniRef90_-_4U64UniRef90_V5HYW5 UniRef90-A4RVG7 UniRef90-V9D3C8 UniRef90-FOWHK3
UniRef90-D2V8H7 UniRef90-C1GV61 UniRef90-E9NAZ8 UniRef90-M7XNY4
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UniRef90
B8NK UniRet90-ROHXV2 UniRef90-M7XG05
UniRef90-G7KCK3 UniRef90 G2YQZ1 UniRef90-FOXS11
UniRef9O-A8XQB4 UniRef90-G7YDM6 UniRef90-G7YDM6
UniRef90-U5HBY Uniinefoo-O5B6911 UniRef90-B6AD65
UniRef90_V4S3Y3 UniRefe90-T1H3H7 UniRef90-A7ED37 UniRef90-U4LFD1
UniRef90 W9Y4G9 UniRef90-TORE94 UniRef90-M3DBM8
UniRef90-E3Q2T6 UniRef90-TOKG18 UniRef90_UPI0003EDB9D9 UniRef90-D3B617 UniReffo-HEBKE6 UniRef90-G2X6W3 UniRef90-B8LSU8 UniRef90-M7TNP4 UniRet90 UPIO0046222B7 UniRef90-M3K0T4 UniRef90-S4NWU6 UniRef90-A0A059D1L1 UniRef90_J3P3K5 UniRef90-Q4TBZ8 UniRe90_O9xIE8 UniRef90-W4KB99 UniRet90-E6R877 UniRe990-_6M7Q0
UniRet90_UPIOOO3959F02 UniRef90-U4TPY8 UniRef90-UPI00021A3E89 UniRef90-UPIo0034FD160 UniRef90-H2KOS3 UniRet90-F6SBC7 UniRef90_009760 UniRef90-A0AO16PK17
UniRef90 H2YZ5 UniRef90-H2YZC5 UniRef90-UPI0004623F42 UniRef90-M7T6F2 UniRef90-×6NUF8 UniRef90-M5BNR1 UniRef90-B9RT31
UniRef90 - X8Jo52 UniRef90-K4AW×6 UniRef90-C7YYS5
UniRef90-Q0CWD4 UniRef90-F2UL68 UniRef90-U1G5U1 UniRef90-U6IL21 UniRef90-HOZWC8


VLSMLVELSPSPMQSANDYYSWFETNY LALDRDFYTREAN VRKSYUNLSTDTKDELLVYRDYFILTDYIESTRAFYRDDLP K I NMMELSSEYFYGDTYYQVYFEPKFLQSSEDTFQTLST
 Vi KMFMDपGE FLLLRTFSQQSYTTL FDSAMKDLGDAT HHDSVYETLFEDPFIEVSAEFYRGEFQ CVAGLEALYDDEHEDDKLYYSUFEERFQDUSSAYLENFAS TIECLVELGTKSDTH
II ECLVELGIKSDTH
AI EILCELKDLPNGLSPYRTAWEQAFLGQSADFYREESA C GLNLFVEDDEGKMH CYEKDFEEHMLQNTVAYYSRKAS ACWMLMSLGMNSR NTVYEEDFEKPFLQQSASFYNMESQ FDSVLLRASIATDHDLGVYTSDFEKQFQKDSSAYLEQEAS

 VYWSLLKSLLSMLSDLQVYKDSFELKLLEETNCLYAAE LIKMMKSLH SLLRQSVDAGHELSTYTSSFEPVFVSTEKFFRSWRE FDARLLKESVRMFNVLNVYQKSFEPAFLHDSVNFFHEEA FLARKASEGHD VVDSFVSGGLD
ADPTDRSSTMLE ADPTLLRSSIKKLLHDLKI YTAHFEPCMLENSATYYKNWAA VLDLLFMEDCM EQMDYYKNDFEAALLKDSAAYYSRKAS FDPKLLQESVNMMHVFNGYGKLFERRLLEESEKYFDEFSE VIDVFVENGMGT LKKYEEDFERLMLQDTASYYSSKAS SV RVLLQS DMLHSLSTYSASFEPSLLGRSQHFVAEWSD CI DILLRLHVPEREGASVYQQDFEPEFLRRSGEWYEYEAG SI AVFVELGQKKKVELQUYKEDFHQALVAQTREYYKQKSR VINSFVHVEYKKKFPLKFYQEDFECPFLNETGEYYKQEAS V

## A

 VVDSCARLSSDVLGADKALYERLVELE CLLDMLNSLPSENKKET SI MMLYVLG VLR Si RMTYVLG SYGMLMVYKEAF VVDSFLFLGDDKHLSYDVYHEHL FDAALLRDSUSMLHILNUYGKS 11 QM CVDVLLTDRDTSTKAVTVYKDNDESEDASTKYYENEGN UVSIYVEMGDDSNKGYYKODFEAADLESDTYYTNRAK CVNVLVEMGIDDSNKAV KYYDQDFEAALLQDTATFYSEKAS NYYENDFEAAMLKDTAAYYSGKASSMMMLHVLG
AIIELF CTSMLVQLGADTSDGLDVYSSNFEPLFVSESSKFFASWAQ LLKKSIDAMFHDLGIYFSDFEPSFSKLSETFFDKWAA


## UniRef90 M5WDIO

 UniRef90-F4QFN9 UniRef90-LLIJAY1 UniRef90-J4U664 UniRef90-V5HYW5 UniRef90-A4RVG7 UniRef90-V9D3C8 UniRef90-FOWHK3 UniRef90-D2V8H7 UniRef90-C1GV61UniRef90 E9NAZ8 UniRef90-M7XNY4 UniRef90-W6V2C7 UniRef90-V8PFI8 UniRef90-M2NGN8 UniRef90 B8AKX8
UniRet90 S2JOD8 UniRef90-D3B027 UniRef90-M1V962 UniRef90-H3DYSO UniRef90-W4YTNO UniRef90-C5KPZ9 UniRef90-T1J697 UniRef90-C5M4Q6 UniRef90_O5BHE3
UniRef90_M2Z918 UniRef90-B8NKX3 UniRet90-ROHXV2 UniRef90-M7XG05
UniRef90 ${ }^{-}$GKCK3 UniRef90-G2YQZ1 UniRef90-FOXS11
UniRef90-A8XQB4 UniRef90-G7YDM6 UniRef90_G7YDM6 UniRef90_U5HBY8
UniRef90 Q5B691 UniRef90-B6AD65 UniRef90-V4S3Y3
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## V

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 XSCVKHGQQILLQHWSDPIKTFGTTVVISPEKDKA L

$\square G R F D D E Y Q L R \square R \square K E G \square L K Q G A D P E Y \nabla K A S D E N F A T R$ FSRIVKDGLNELCNHFNAYI KKKGRTIVIEPERDKT LERKGMGVDVVSAFSKYITEEGSTIVFDEAREAE FSKMPNGLDPITNDFEQHVTAEHTAFVKQVEDA
LQ MTGLHSRLRGPWDRYISTQGSGTVNDVA
HTDD
DKRRRDGSNLRPSFDKWVDTTGTSIV FANQADD FSMVPEGLPCLRKSLKGSVQEKGKARPPNPNAQSLA MALK FGKVPQGVEALKKALRLDIDARGKSITKPKPTPPLTLALQ YSEVANGLVKISEAMKRHICDLGNNYDQKSKENQEEKGHT LRAVSSGLPHMIQELQNHIHDEGLRATSNLSQE NMPTQ

## LSRTPKTLETLTKEFKEKVTNDGLVCTKAMSSKQSVEALE VRPLPAALRPLVDAALAHAQAHGHALLSSADQHHKDEHIH I RRVENGSERVVHFEQYVNQVGLDEDI RQNAETMLIKDANK FSAVKDGMQSLCTHFNKHVKNVASLIVLDVSNDHT FSRVELGVKSLKKYLAKYVAHHGKLI NETTSQANATMATL L R S SGIQKKMKAPWGEYIIRTAGAAIVGDKEKGDE SSK K DGLGELKTLLIEAH:| HTQGDVAIKQCADTALDNDKL

L K S G DQKR KKVP WEDYTKEAGAA VNDTARGDE LFSVQE VDALQQHFSEYGKKRGVDI ISDPSLDDAN

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 LVKGLLETWNRFNRLIKNCFNNDSRFHSAMDQSFSVVINN FVQTLLEVHNRYSNLVSGAFQNESGFVQAADKAATDF NK WI GS $\ddagger$ LYKAQFSK』VKDAFDHDYSMEQC! 1 SA DQEF QVSSTRMLK
FVEKLLSLRERFERLVSQAFRGSLEFSNHMKMAFENSLNN YVQQLIDLFNRFSEFVKNAFSDDPRFLSSRDKAFQSIVND WI DTVLKYRDQLLLVWKNSFDENLMIEQTITFALRDFIN MVVRLLSFKKQLDDI WNESFRRNEGLGHALRESFESFMNK MLISLLSGKRRLDSUWKTAFQRDESLGHGLRESFETFMNK
 FVQELLDMKDKYDSILNLAFNHDEEFHGVLDSSFEYIINL MVVRLLELKRSLDTVIRDAFNKDGTFTFCLRDAFGQFIND WVTDLELKDKFDRLWLECFNKDIVLQSAMTSSFTE YVRTLLNU DDRFQS I DDSFSMDPHFLKSLDTAAMKFVNE

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CUQTMLYLYDYSQSISLKCFQQDPQQKAUKEAFEIIINR
FVQNLLDLKDTFDHFLTNSFNNDRTFKNMTSSDFEHFLNL YVQKVLDVHKKCDALVMSAFNND\|GFVAALDK CGCFINN MVVRLLELKRSLDVI LRDAFNKDSVFTFCLRDSFGQFIND MVPRLMDFQGTLTTIWHSSFFKNSTIEYSLRESFTSFI NY MVVRLLEFKSRLDHFLKYSFQNNEVI GNALHKAFETFINK MVASLLQLKSDLDVMLRDAFHSETTFVHALKSAMESAVNA MVVSLLSLKRSLDQI WKTAFQRDEGLGHGLRESFDVFMNK MVQRLLEKRSLGLVRDAYGGDSDFVNDLRNAFGDFMND MVRRLLELKRSSLIIRDSYGGDSDFLNELKNAFGEFMND MI QDLLDFKDRVDHVMEVCFQRHKKFINLMKESFETFDNK
 MVVRLLEFKSRLDRLLKYSFHNNEALGNALHKSFETFINK MVMRLEERRALDLVVRDGFRGDEDFGYELRHAFGAFMND MVVRLLNFKQKLDDTWTESFHKDETLGHTLREAFEHFMNM
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WTEALLKYRDQLLTWKESFDENLMVEQTLTFAMRDVING MVAELLEFKEQLDNVVTACFQRNDRFLYSIREAFEHFINQ MVIDRLGFKQSLDHIWKFSFHNHEQLGHALRESFEAFINQ MVVRLLVLRRKLDVVVRDAFVGDEEFTYSMREAFRRVIN

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$M V V R L L E F R R A S D \square M V R D A F S K D D D F T K A D R D A F A F F \square N D$ MVASLLKFKAKDDRVVNESFHNHRTFHHTI RNSWEYFLND WMTDVLALKDHFDRILADSWSGEVSVQDAINEAFESFINL
WMNDVLNLKDHFNRLLKNSWGGEVSMQTATNEAFESFTNQ FVRKVVELHYKYLAYVNNCFQNCTHFHKALKEAFELLSNK MVLRLLELRRSLDMI RDAFDKDEDFLWGMREAFGKFMND MVARLLDFKQQLDETWNNSFHRNEELGHTLREAFETFMNK MMQA LDDRKRFDGVVSVA SFDPAVHAAI RQGFEDFVN MVVRLLDFKKKGDHFHRYSFHGNETIGNGLHKSFEYFINK


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 UniRef90-UPI0002C30D3A UniRef90-A5DRP0 UniRef90_UPI0002C353F6 UniRef90 Q4WVM9 UniRef90-C5LNU4 UniRef90-L8G310 UniRef90-B2AW01 UniRef90_UPI0003D287B9 UniRef90-B6HMC6 UniRef90_UPI00042B9D31 UniRef90_A0A017SD36 UniRef90-G0QZY2 UniRef90_C9SJ92 UniRef90 W5FQQ2 UniRef90-A7RQY8 UniRef90-M1CAZ9 UniRef90_U6IA33 UniRef90-E2BZZ5 UniRef90-E9H4S7 UniRef90_Q237B9
UniRef90_UPIO003DE7C51
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UniRef90-12FTX2
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UniRef90 Q4YT13
UniRef90_Q4YT13
UniRef90_V5ESZ3
UniRef90_V5ESZ3
UniRef90_I3SL73

 Unere_3SL/3

 Q TWEKLKESVEALORSTS T RWS S LQFEDKWDFMHPUVLKLLRRQESVTKQQWFDLFSDVHAVC LDQTWQKMDGALDTVVAHAAVDF S LIE ELGYRGVENLD QETWQKLKEAVEAI QNSTSII KYNLEELYQAVENLC


## E T T R E A

QDAWNRLKRATSSTKQDEAQHDSLEVLYQLCENLC FDKVWLQLDAALMA IFDGRK PDSSLEELYKGGENVC

VDFSSKWTELGDVCFKLDRCEYVPNTDWYKSFSDVYALC KNLDEGLSAI FAGQK PAVPLEKLYRGVEDVC

 F E E G MVVI Q E A V V D R A I N V V GF S S E D Y M R Y Y T T FEKTWRETDKALDA IFRNEKDDPSLEELYKGAEHTC

FESSWGILDHATDATY DNQVNTLSFELLYHTVYSMV


VDYNAHWDVLHNAVQD■FHKSTSQLSFEELYRNAYKLV MSKSSSEDDNMQLYMMVYSMC TVDFTQNWNLIRDA LDDTHNQNA GRLSFEQLYRASYKAV DETWQKLKEAVEAI QNSTSIK NVDFQET WATLKETVAGVVGLRAVERAVWNTRFSDVYALC AI KFEEGWSYLQKGITRLI REQALKTQHCMELYNTAYHMC
ILLE EGWEFMQKGVTKKKKQDSFNSEEYMMLYTYADYNMC


 KTWSDLESALADHFNKT RQPLERLYRGVEDLC
 IIE KKWQHLEAEIVTI FNTSNYTNDE ELLYRIDAE ELY A S WN TI E CLL RRILSS GDNLNEEECDQFSKSVRSFC $S \square R \square S Q A \square V T L T R A A R A Q L A V Q P$ TPESLQALYGGLCQQVV
IQLDEGLVI IDEAFQKAKKETKFTTEEYMKFHACVYTLC
 $F D K V W A Q L D A A L S A V F S S$ GKPE $\square S G E E G Y K G A E N V C$

F DKVWS Q LD A A LTADF EGRKP DS S LE E LYK GGENVC EEI WQKLKEAVQAI QNS DSV KYSLEELYQSVENLC




VSNGE YMPCYNAVIKAC ID F D K N WS VLS S A IS Q IQ T K N V S N L






[^1]| UniRef90_A1CBL2 | RLQDRCRAHVSGRLIRDDLLTKASGGNNVDTLIR |
| :---: | :---: |
|  | WWD KM |
| UniRet90-Q0TWY | 俍 |
| iRef90-UP10003E | AKLYKQLRAVCEDHIKAQI DQFREDADSVLFLK |
|  | QLYDKYREVICNYTIQT |
|  | L K NLKD R C |
| 俍ef90-MOU5NO | v HRRAAEAFEDF |
| UniRef90-M1WGD0 | RVYR |
| Ref90-E9EEZZ | V |
| UniRef90-I1CKK7 |  |
| iRef90-UPIO004560 |  |
| UniRef90-UE |  |
|  | $Y$ VLV $V$ SKHTKSIWD |
| UniRef90-FOX |  |
| D0 |  |
| ef90-11 | A D |
|  | SREKV |
| W | H SADLYEHLSRKCEENVRDRIRREEANSSDID |
| UniRef9- F U $\mathrm{UHT5}$ | VGPHAPS LYLDVATFAAKATVIRTELARSAEDGFLL |

UniRef90-K4AW×0
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UniRef90 $\mathrm{s9x} 9 \mathrm{BBO}$ UniRef90-B8BNR8 UniRet90_F7VYB8 UniRef90-S3C3L7 UniRef90_UPI000328F642 UniRef90_G6DHR7 UniRef90-D7KXR1 UniRet90-Q711G5 UniRef9-G9N3D2 UniReffo-O236H3 UniRef90-ROGE88
UniRef90 G9NUJ9 UniRef90-S3DUF 1
UniRef90 S3DA04 UniRef90-Q7RZU1 UniRef90-G7E7N2 2 UniRef90 W2S1B3
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UniRef90 Q4YT13 UniRef90-C5×6R0 UniRef90_V5ESZ3 UniRef90_13SL73

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UniRef9O_W2S1B3 UniRef90-D6X1T0 UniRef90-U618N8 UniRef90_S7ZP42 UniRef90_U5GZ77 UniRef90_K4EB29 UniRef90_UPI0002C30D3A UniRef90-A5DRP0 UniRef90_UPI0002C353F6 UniRef90_Q4WVM9 UniRef90-C5LNU4 UniRef90_L8G3IO UniRef90_UPI0003D287B9 UniRef90-B6HMC6 UniRef90_UPI00042B9D31 UniRef90-A0A017SD36 UniRef90-G0QZY2 UniRef90_C9SJ92 UniRef90_E5SER1 UniRef90 W5FQQ2 UniRef90-A7RQY8
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UniRef90_G1WYU3 UniRef90-G1WYU3
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120
 I MI R SI F LF L DRTYVQTS SVMSI WDMG A Y V VE WRKFFTQCDILPKPFCQL ESNKKSNMEDSDVRKMM ATLQAWAVWNEQMKYLDWDFCYLDR AYLLPRHESLRDLS KIDKCWQDHCRQMIMIDSIFLFLDRTYVLQNSMPSI WDMG ELAKRWNNHKF LVRLFSRFLLYIDSSFVSKRGLPSLREVG A VEAAWTQWNA RLVSDGSIHFLLSRSIPAFSNNPVIYEMG ELNRKWGEHTKALQMDRDILMYMDRTFDTSSRKTPVYEGG KFDETWGDYCAQALTLRSI FLY LDDRANGGGKSSTLWDVS

 AV DEA WLA WHSKLVTVRWI FYYLDQSF LLHSKEQPDREMG AI RDTWLDHRSCMSTLSDILKYADRVYVPQAGVPSTNKLGG I Y NHHWNVFRRGLQDLDNLFKFFNGQYVRPKRPSEADMCY NVLAE WKLWNSQTVLIRRTFSYLDRTYLLREALPS $\square$ NDMT AVYRQWQVWCDK STLIRSTVSYLDRAYVLNRSLQPTNDML ELVKRWTNHKDMMKWMTRFFMYLDRYYVKHHSLPTLDDAG LYLAKWKNFA G L R CVVADFDYLNRFWI RSHCYPSVLEMG EIVVRWS LLKTMTLWLFRFFNYLDRYFIARRKLPSLQQTS SVLGEWKTWSAQAVTIRSTFCYLDRTYLLRESLPSINDMA AFVNAWQNWQKQLQTVRQDFFYMDQTYCRTPDKTSVLQMG

YREAFSKYRDACKFLNDNLLHQDRAKKQTRLSSWNRVHD
DF LRVWEKQCDCLDRVSDFTMYLDRVYCKENRVPYVYDLG RAL NVWEDHLKAMKFISDVLMYL NRVYVKENKKMLI YDLG


AVRAVWDDHVACMKK LRDVLKYMDKVYTTSPSMPTVWDGG ELVNAWKEHLVSMQMISSVLKYLDKVYSKISGVMPI YDAG RLVDRWRNHKKIVISETRFFFYLDRYY DSRKSLVPLEQLN AVLAA WKRWDA QLLVIRWIFSYLDRSYGGTTAADGKGKSS GI KEAWERHNTAMNMVADVLMYLDRGYAQDCNRPFDYATT QI HQFREDSLDSVLFLKKI
RYVSAWREYSQGVGYLNSLYSYLNDQHVKRQKVSDAEELG ELVKRWNNHKLMVRQLAII FGYLEGYFFRWKRINSSREVG
 VLRREWKTWNSQTILI R STFSYL DRTY LLLLKSLSSI NDLA
 STLAE WKT WNAQTILVRSTFSY LDRTY L L LK SL P S A NDMA A VYSHWDT WNA QSVLLRMDFSFLDRSYLYNSKSLSQLEDQ

 AFVHE WHTWKKQLLTVRQUIFYYMDQSYLLRSEHPSVTDAG
 AVIDA WSA WHLDRLTVV WVFYYLDQSFLLHSKDFPDQEMG
 K LKLWNHYKVLMKWNMRAFAY LSRFY VNCSKPSLQQVA


 RLKVEWEDHKMTMGMI RDI LMYMDRNYVRQHQCVPVYDMG ALLDAWKDWNAKAMRIRAI FGFLDRSFLLNSKEYPQNDMS ALMGVYRRWNARMLIVRKVYSYLDRSYLLLQSTDGKEDKG ELVKRWNNHKIITRWLERFFHYLDRHLVPRRSLPSLQETS AVIDEWSAWHSRLSFLLH $K M D K C W Q N H S R Q M S M G N D F D F D D R T Y F Q D L M D S S$ WDMG


## Y Y CTQWENYRFSSK VVNGLCAY $\quad$ N R H W $\square R R \square N D E E \square Y Q L A$

 EFLRVWANYKAMVKCLGGFFLYLDRKCSDQKSSAPLKEVA NYARHWDNFHTGLKCLDNLFRFVNSQYVAPRRPCEADMLY FYTRQWEEYQFSSKVLNGVCAYLNRHWVRRKGDYEDYQLA
 SILLQEWSEHLQAMKFI SDVLMYLNKVYVAEHKKLLI YDLG A Y HQ A WT E Y S Q G $\square$ N Y L H R L Y L Y L N Q Q HII K K Q K Q M E II GE L G EFRDSWSNHLIVTHWMERFFGYLNKYHIKDAGEGSLMMEGG K VLDTVWK H Y K V L M K WN M R A FA Y L S R Y Y I V N N F K P S L E QVA I DE G VWK R WQE R LR VI R N I L TMMREWAE HLDQSMK FI S DV L M Y L N R V Y V K E N K RLL L I Y D L G


QLQS $\square$ WS NWCES LA LVVRDVLLPDDRHLLQTTSVPTSAANG HYRREWDDFES QLA YI P E P FRALE DE FLERTDEELS DE F L QL V K M W S N Y C T M V K CLV S GF F S Y L D R C F i E Q R K L P P S L E D T A AL I D A WY K Y S F Y TN WMN K F L H Y L D R Y Y V E Y N S S L C L K A Y T




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UniRef90 ${ }^{\text {Q711G5 }}$ UniRef90-A9UYT5 UniRef90-G9N3D2
UniRef90-Q236H3 UniRef90_Q236H3
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31

 FT K KNNPTKLSHKYMY A 1 HSTVHVSFRVRAPLSLYERLVLEPFDAAAGAQHSRRAA VIHVFVENGMGSD KKYEEDFESFMLEDTASYYSRKAS
 REPELLKDS LMMLYVLGVYTKQFEPVYLQHSEAYFKEFGE RIDQMSVDDGMKANIQLGTUYEKYFEKGYYLDCSEKYFK E E G Q


 FDSQLLRESVAMLRLWGVYGKELEPKFINESREYVRRFAE
 NELLQHSMCDGQELGVYSTDFGPAFRTSSEKYFRNWRA II NSIIA

 $A M$
$L V$$T M$
 RKQ S N R S L E D D TVD QL M I Y K K Y F


D F

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## V



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 AVEKQLLGEHLTATLQKDGNGT

MACERAF $\square E E Q K P W \square Q S \square F E A L L Q D D M R E Q L W R \square Y A L$ VVEQELLNAHANE
SAHADLI ARYSDKLLHAGS LSHLLSDKDVKSMKGLYDL


VAE NDI IKDK
DSAHEILDERRSNILLDENSDAK IIDSNADVSLKILYNRLI IVEKQLLGEHLSAVLQKGKDVFEAFYKKD
 DLQSELMIAPGEPH
NAYQTLIFNYAEKLLDSGS VAKLLDANDLDSMKALYEL




VVHLKL
E $\| \frac{1}{1} L \operatorname{F} N E \square F V L Q Q L D Y \square N S C \square G E F V R T E Q K D V L G K F Y Q L$
 RIEQUVIQQQSETLANNEQTGLYYSMLKEKKENEMKNLYKLL LMN NIMI K D KID NMILS S NQGLE Y WVN

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



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UniRef90 F2RZ67 UniRef90-M0U5NO UniRef90 Q01BJ3 UniRef90_M1WGD0 UniRef90-E9EEZO UniRef90 I1CKK7 UniRef90-K9FPT0 UniRef90_UPIo004560D7D UniRef90_U6HXS6 UniRef90-J5JXE1 UniRef90_F4PRC5 UniRef90 FOXS95 UniRef90 DoMX24 UniRef90 L119D2 UniRef90-U5G3H1 UniRef90- T5AIC8 UniRef90_W9XH99 UniRef90-F2UHT5 UniRef90-K4AWX0 UniRef90 C5DD00 UniRef90-A5DRG7 UniRef90-K1 $\times \mathrm{QF} 3$ UniRef90- 55 U 819 UniRet90-U6HUW9 UniRef90-J3Q7D3 UniRef90-s9X7B0 UniRef90-B8BNR UniRef90 F7VYB8 UniRef90-S3C3L7 UniRef90-UPI000328F642 UniRet90 G6DHR7 UniRef90-D7KXR1 UniRef90-Q711G5 UniRef90 A9UYT5 UniRet90_G9N3D2 UniRef90-Q236H3 UniRef90-RoGE88 UniRef90 G9NUJ9 UniRef90-S3DUF1
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 320 FSRVKDGLKEMCTAFATYUKE
$\square E R R K \square G A S \quad \square R P G F D K W D D D E G T A V V F N E K E Q E$ N

$\square R R \square D G A \square D G G R T S G F E L I S R E G T A A M A A L E E G E D \square D P S M$


L KLS GIQ K RLK G P WE QY I R K T G A A I V S D T A R G D



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Derra\GTK\KPAFKNYTVEEGSQTVFDEEKEAE
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DRR D पT पE पKPAFKKYVIEEGEA IVFDQERET D
DERKDGGG CLKSAFGSY\VEEGSGIVADEDKEGEV FKQLDESYNDFKNCFFQYVVKKGSE MCARKNDHDT LLRUPEGLDALRQKFETHVRKAGLGADQKVASENTEKPKV FQRV DADEMDKQALSLYURGTGQGIIMDEEKDKDLVPF
$\square A P \quad$ TNQCTELIKQFGLLVKSKVNSVLLS $\square P N D R T A P S Y$ LK S
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FSYFSEA $\square \mathrm{DG} \square K K T \square G E Y \square K S E G N K \square K E K A E Q K N E Y \square L C E$
VK S $\square D R \square S D \quad \square R K A F A E Y \square K T H G A S \square V N D R A D D$

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MVTRLLAFKQS $\square \mathrm{DH} \square \mathrm{WRFSFHNHEQGGT} \mathrm{\square RESFETF} \mathrm{\square NQ}$ F V QRLLNEKD MVDRLLTMKTAVDEVVSKSFGRNDDFDNGVKESFESFDNC MV $\square$ RLLELRRSLDRMI RDAFGKDEDFSWGMREAFAKFMND YVGPVC TQYHDLVRWASNEDMQWTRSSNDVCRELISQ KMNVLSTFKKKNEYIVDHSFEGDEQFLDGLKDGTEYFIND MVIHLLQFKQKVDDLWANAFESNEELGHTVREAFGAFMNH ALRWVEEVLEKFDAILASSYQNDAGCETSINEAFESFVNT FVDNLLLTRDHFTKLIDEVFDGTCTYRNEMDRAFEQAINS MVIRLLELRSLDLMI RDAFGRDEDFLRGMRGAFGGFMND


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M $\square 1 \mathrm{RLLQ}$ RRA $\square \mathrm{DVM} \mathrm{\square RDAFHRDEDFTHG} \mathrm{\square RDAFGFF} \mathrm{\square ND}$ MVQELDDFKK四DT\DTCFGKNEKFПNAMKEAFETFTNK FVSAMLSLHSKYNALFADVFQGAQPFVGALDKACSAVVNR

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MVVHLLQFKQKVDD $\square$ WTSAFESNEE【GDAVREAFGAFMNR
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F VNNLLA $\operatorname{VRNYFTQF\square DQ\nabla FDGTSTYRNEMDK\nabla FEQA\square N}$
FVEGMFSFHSKYKE! IKTVFSNDQLFSSADDRACAEVVNH FVQKVFALKKECDHLVQDVFNQD TT $\square Q K A R D N A F Q N F L N K$
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Y $\square$ H D LIK $\square$ H DYY HS $\quad$ FNFSFVNNTNFKECLKDYFESFV
M $\square E R$ LLEFKSF $\square \mathrm{DA} \square \mathrm{V}$ TGFQRDGDFVHAQKDSFEVFVNK

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LA K A WD L L K P A DK I I L D K K P G DVLC F T T DF R A VK R A C YENTFRKLDNALDLILSGGKDHGL QDLYKGCENLV NVNFESGWKIIEEAIEKIHNKHLFSATEYTRLYTVVYNMC QLECKWKKDEEPVWA LIMQKALDPASTMKYYYYVYTAA YNDVLEKLDMALIDSIFERKKVV WSDQELYKGVENLC (IDFEEEWNEFRKSLDKAFLQK WPKDDYTAQYSRVYKDC LSFEEGWKVLEQGWSKVLTSTRPTVAEYMNYYDCSYRMA DFQTGWKEDDPVIQK LLDQQSTNKПEYSNTYTLTYNLC

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 N $\square$ NFESGWKII EEAIEKI KNKNDFSATEYTRLYTVVYNMC


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DEEWTT LRRAVQA $\square Y A K Q A \square N Q T \square Q S L T L L V E R L$ DSEEGWDYLERGFTKL $\square Q E R A F N D E D Y M M L Y T \ V Y D I C$ TFERRMNHYNTVYTAA
S L S F E ELLY RYAYTAL


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I IWS YLKKEGLDDIM S GVDMSFQKNMSLYSTAYNYC

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A DLD A A LS S पF AGRP T A QPMERGY RGGVE DIIC
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SVNFESGWK I IEEA DDK I DNNNDFNAAEYTRDYTVVYNMC FEETWGLLAKAIDAVYMERYGPFTGESI YRLVY M FEQSWK I R HA I D HI YNDD MAD DS FEQVYRTI YTIV


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 ELVMRWKNHKTLVKKLRMFFCYMESRFI PSLS $E \vee G$
 F Y V R R WK R F T I GA I F L NHAF D Y M N R Y WV QKERSSDGKR D IG F YT Q Q WE D YRFS SKVL N G $\square$ CA Y L N R H WV RRK G I Y E I Y S L A

 AV HT QWLVWVK QS SVI R S VF S YL DRAFLVNERSGPQNDML KV LS DWD HY KVLLMK WNIK AF S Y L S R Y Y I V N H S K P S LLK QVA
 ELVKRWENYKRMLRWLF IFFHYLSRY DDRR $H V Y N R W L D F K R K M S L V S D V A M Y$
 ILIDDAWFKYSFYTSWMNKFL RYLDRYYVEYNSSLCLSAYT KI LDVWGRYK VLDN WS M WA F S Y L S R Y Y I V N H S K P T L R Q VA
 TVVHY QYKNF Q $\quad$ Y L L H WL H K L F Y Y LDD N F Y L K N K N T N L H S E G F
 R I L K V W E R Y K V M M K WN V N A F A Y L S R F Y I V N F S K P P L R Q Va

 K I I Q K WD TY QI F L R F M T R F F S Y L D K S Y $\square E H N N L Q K L K Q I G$

K K F AL A A EYMSRGCCYL DRMNNSKYKRQNVEAVA
 A L H A V WH D WY H Q L R L I R S ML V HL D R F I LAARSHEMP I WE L G ACIVEWRKFFTQCD LLPKPFCQQLEDTMMGKQGSNKKRK L M E LVVK R WK D Y K R M L R WL S IFFF H Y L S R Y Y I P R R S L P T M N D V G D Y H K N WK D Y K F S I R V L N GVVA Q Y L N K H WV Q R E K E H DVV H S M G $M L Y R C W K E W S A Q S T T I R S T F S Y L D R T F K N N K E Y M V L N D L G$ IL LT N WR K Y K H Y IH IL T G IF A Y L D R F Y VP L A VQPTI Y E Y G



 K $\square N$ T C WQ D H C R Q M $\square \mathrm{M}$ I
QLEK M WS N Y C $\square M \mathrm{~V}$ K C I S GFFNY LD R C F VE Q R K L P C L E D TA
 ELVKMWSNYCVMVKYTTGFFAYLDRCFVVQRRLPS LEDTA
 K I L NVVWGRYK SL M N WS I WS F S Y L S R Y F IV N H S K P T L Q QVA

 L L $N$ N Q V W W E K Q K V $V$ Y L S Q

 K I L D V WWD H Y K I L M K WN M R TF GY L S R Y Y I V Y H S K P S L Q Q VG AL I N S W K H H S V VN M R LLA S D V L M Y L D K N F V P S H G L T P V V Y T M G LI Y Q Y WVVK Y K S Y ll N I L K G I F F S Y L L R R F Y V

 ELLLK R WE GHK DMAR WL S RVVFH Y L N R Y Y L

 $K$ VK E E WQ N L Q L Y L F WL K FIIF T K F D Q S Y K A L H G Q S L S G K T GVVARWRRWNEVVFVIRRGYSYGDRGYDGGKGKQG\NEMG

ME DVVNNLYK Y LN D K Y IK P H C M M I I E E LG


 A VA H C W GL Y CK K ML L I R N I F L F M D R QLI L D P Q N L Q
 IVVH Q Y WK D WS R K A G K D H D L N D D T D DT S F R R V I Y G P R H S D G

 $F \mathrm{Y}$ T N Y K L Y L I S CQ Ki S H V F S Y L D R F F I K Q Q K N P V F K H C M
 FYTDEWE GYRFSSNVLNNVCRYLNLHWAKRERDEGRKDDY A L I D A WY KY S F Y T N WM N K F L H Y L L D R Y Y V E Y N S S L C i k a Y T

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UniRef90 T1J7E6
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UniRet90
S9W2N3 UniRef90-T1GRJ4 4 UniRef90-Q4XZN4
UniRef90 GOVGH9 UniRef90-J4UOB7 UniRef90_UPI0002687A2C UniRef90_WOT9H2

DoDFsthill $\frac{130}{1 V 0}$
140
150
160
LQLIF STHI IVDFRSRFLSG|VFKLYEKDRKGQAIIDSTNLL FLSFYNLVYDEMHKQAMDAVLAMLCRKHAGEEIDDETLVHN I KCYRDLVYREVNADVRVAA
LTRFRDLVYGEMQSTATEVVLAL
$\square$
TDREVVET WIGFRDMVFDKLKSTLTTTVI GMINDERNGLLI DRALLKN DVNWKDVMFDPNCELLTNELLEQUTLERDGNTVQRNNVTS LVTWRDCLFRPLLNKQVTNAVLKLIEKERNGETVNTRLISGG LVQWKTHFLIPQHQKLVRTLIMSLVQDEREGLKVDTSS KT LRIFHEQVLRKNAPALIRVTHELLTAERKGEVVNREHLRE LS DFLEQIFKKEAPLISGVMQEMLVKERAGEAVNEEHIQN
 QKDEHKLLPTLNDGLTCFDNLIDKEREGEQIDRALLKN QKLFHKQMAPQLQDQVITGDLRLITDERLGKAANNT KNAFKRTEFNDLREVKRALIVYQLMSSFDECRTLQNGKYRQ LGIFFERIFKLHADVLSRVTQDLLDKDTFEHSTNRTLITS FRSCAMMRSUQTKLVDSLLFLIHQERSGEDUYHELLED KNYREDYFNDINKKLEKTUVHFQIFLREDQT\PREKVKK FEKWRLKVIRMSDKLVDCLTLKEMRSGELIQRGQVHT LRDFHEQVLKKYVPTVVRVTHELLTAERKGEGVNREDVRE
 YYLYLK QVHDHLKDNTILAFQQETEKDRNNYKSDLDMLRK LSQWKQNVLFVIRDHLFYQVEEWI RQDRNGDNAPHNIIKS H LLKKH LD SACHWL MMHLLQLIENERNGEQDDRELLKP LDLFRKNVWNPNSLSLSVVICQQVTLERSGQTVPVGLLQS TCFDNLVYKELSSK VAWRQNMYMKNLEPMMDQDMRVIQKERENEADNSHLLKT MALFQRLIFEPYKDFGKSVVLNALDSKRSGGVDNPSLDAD MKMFRNNI ISDEMDXSKIIDVILLMKD GEAVNRNLLXE DALFRKAVFGSUKKVVLEGLCRLVDYARQGDVDQPTPDER
 LELFRDUVAKPMADKUVSSMMEMNARKSLVDVDUSTLIS ATSFFSTVFSFFSHEVSEAMLQLVEAERSGEAVNRYLLKH LLSSYDLVYVEMHREVMDAILAMI DRKWAGEPIDETLVHN ATSFFSPVFSYFNNEISDVLLTLIRQERDGCNVDMDLL LEKWNETVFINNGEPGLDEALRLVKEERDGNDI DSNNIDG LSMFDEQVLKKHAHVIVRVAQNVLAERRGEIINREHVRE MQ FQKTFFPNDFKEFKATKLFNALYMAMQKIMQRYPVDS
 SRLFLKEVVEHVSGTVKSSLVDEI NQARESAAQYSDDLKN QLFKEHILQEDKDRVTRALLDEL QKERTGQLANAQLRPL LSTFLEQVFKTNADVVSSITQKLLDKERADRVVSTNAKQD LSNLFFKDKF RRPRFRAFLMEK KKQRDAEGEGVELGLVRG
 ANDSADACPDPIWDLGLDIFGHRILKDPTLASMILSRII A HSVFHDLVYSEMNGDMDAVLSLVDRERDGERIDKSLMKE LAFWRLYL DDCNKSRLSSCLMREVGNVRLGMCGQQNCIQP LVQWKSHFLIPQQQQLITLLHLIEVDRESGQVDNGLIKK MHLWSDUVFLKIRSRIFHSVSQLFRNARDSKSVGSDYISR DALVRKAVFGSSKKAVLEGACRLVDYARQGDERADDVLLR पH DWKKYVIAPLKAEMLTLVLGALHDDRTGLSMEKEIING ATTAATDDTGRGSDWUSDAALSRGULDRGVAAVDGERKVS LESFKKHVINPLKENSSEAMLSDINKVRSQGSLQVPHADT VSLFREHLFMDLS SGNDLFFSDIFTURATRSYSLDFMKA LKLEREDVVTKVQSRLLCQLLDE:HKERCGEAD PLAGRKDELPGLK VMRGMLQLVTLDRAG DRTFDGP FEKGYDLGGMNLGERVMTDMCDLIDYNRSGKTPDESLFRE LDLFKKHVLNPAREKVNEAMLLDI NKARSEGSLEVTHSST SLFWCDFLRANATNIVENTMNLLLAER\|DNNTQNRELIMGG LSLFRDLASKAI QVPFLNDVLKLYEDIHCAKPI DRSCLQE EIYWKTFMFEKLNMQVSPAVLELIEKERNNDQINSSLISG KNIFKDTLFDETRECIKSDIYNIYDSMRTSDDKDNEKLIR


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UniRef90_WOT9H2
 TLSFYSEDGERARKKEPLDABADTMIEENAPFYCDEAS VIQSFVRVEEYKMKQVDMYQEIFETPFLEASGEFYMREAA FQKDFEGYMLTDTRDYYSR $\square A S$
VLEVYVENGMGTK
ERYEEDFERVMLQETVSYYSPKAS VI HMCNKFGDSQLNSYPEY AI KSFVA LGGDDPQDNLNVY $\square$ QNFEKPLLKRTQEYYENFSN $\mathrm{V} V$ QS Y ITDS LASVGYSPNTNGEVYKEDFETPFDDATEDYYTSDAN TSQML EDLGRDE YEAVLEEPY AATREFYAAEGA
 A V
 AA E LIFSAMKVDG SQNLYRETFLLPY DQRTKEDYEKLL L VRESFVNLGVDRADKLYNYRETFEKDYMNAMREFYRIQIS $V L C L F I G L G G K G T T N$ Y YEKFEQDMLAETAAYYSELSM $V L G \mathcal{F} A E G G G E$ MEYYVSDFGDAMLRDTAAYYSRKAS S SLLKNLMDMFRMQWQCTYVYKDPFLXSTSKFYAEEAE D L
 $P N I H L L Q S S \square K M D N S D N L Y G S L F E P K F I Q A T E D Y Y N N K A L$
 AIELLS SVTVEQRQ E G Y Y EQF LK QYL ELTK Y Y YVALVA $S \square R \square L N L G$ G FLTDCPRCIKGCYNGAGALIYQIEE
 $V V T S L V Q V N A F T D Q P L Q \square Y \square E E F E R P Y L V H T K R Y Y A A E A A$ LTQLVFF TAFGATGFTNLLISTSLQQKASTESYYETNEGN





 N I VELYKELDNESNEKMYEHDDEKKIVVNVNNFYKKKAE $P$ L K NL I E ML
IV D M M Q I L N E G

 | $I M R G I$ | $C R$ |  |
| :--- | :--- | :--- | :--- |
| $A L L T$ | Y | S E | ALTTFYSEDGESTGKN



 SEVVKSFMRNAVVQQTYAYYSRKS S IR E S F VA | $A$ | $V$ | $E$ | $M$ | $S$ | $S$ | $M T$ | $G$ | $E$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $E$ | $K$ | $Q$ |  |  |  |  |  |
| A | $L$ | $F$ | $S$ | $S$ | $L$ | $R$ | $S$ | $C$ |
| $D$ | $D Q$ |  |  |  |  |  |  |  |

 DPKHFAETTIKENATFYTM
 A 1 A $V$ L N S L E L K E GM S R
 D Y F Y Y S R K S M
T T WANLLK SVF DMLEFEPFLLLDSTEAYYKNNDHS
 V L D L F VE DE VGKM H







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ELLQKSDVTHYMERVTWRLDQEELRAHKFDHTSSVPK RWILEDSYTSYMMKAKECLRRERDILSRYLHPSSEKMLVG MWMKEYSSSDYLLKCDECLKREQERVIHYFY囚TTEPKLVE
EY $\square$ NTHSVTEY $\square$ FEARN $\square$ Y REEETMAMYWDEHTRKP $\square$ SE
A DS KVCNVSEY KKWEDRLRDEGDRVDRMVETMT
A REQADDVPSYLKHVEARLSEEADRVHALLASFSEAKVAG EWSRCSTQTELLRQIEQAYDDENARCSYYFPQEDKQTIMA ERETAADLRQY KACAALLVRESDRCNAFFDSSTKKQLLN QWMSDPTATDFLERTQSALGEEKKRARYFLYDDEKF GMSN EWWWRDSLTSYLRKVDWCLVQEEARAEVYPCKTTKTKLLE SWIVEDSYSDYMLKVEECLKKEKDRVSHYGHVSTEKKLLE QVLQRSDUSHYLKYVERTFLAEEEKCDK HYYFFSSSRS
 ELTEKSYPEEYLSHUKEQLNKEEKFCKEFFSEQTKSKVIR RWLAQGDVGNY ARVLDDIKTEDRRAYSGFDRSTIQKQKE
 KEAERGDVGRYAKECASQUQKEDARVEKFLETNTRADLDA
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 NWVVEDSSSDYMLKVEECLKKEKDRVSHYLHVITEKKLLE ERSEGCSLKDYYRAARGLDQREDERCNDYFDSTTKKQTDD RLI QERGGLEYYNGI CRLLEEXRDSVITYGEHKTKEQLLA DVSAAYGLKDYGGAVGALLERESARCDGFFESTTKRQLL EWI NDYPFDDY IISTENAD EEYEKNKSLNLNDDTCEKVTN ALVPVLTCNEYMEFAEDQURRYSNLIKLNFDEPSALLKEVQ RपMQDREVS



E WDAVADAAVF LRSVHDALTHERS $\square$ CRRYFSTQDEER $\square$ MT QCAQNSTVAE

 ERIET
 KLLSRDTDAEYLQUVEVICRQEQQRCEGCLHSTTMLHARK QWLEDFSVPEFVKNAKYALEREKERSQQCFKWSYKLYMD
 ASUATLSPIAYVDHADRR\SEEAQRSEWCLVTDQGRRDNV

ПNYRELLPVEY LETMKKLKSYEFS LDQKF TNGDSTVKVTT RSDES GFPDEYLSYDKKTLNKEENFCSEFFLEQTKSKVIH LLTTRTLNVPEYLLHVDKRI DEEEDRLGVYLDANSTRGLLM ELSSALSVDAYSSHAERRLREEDGRASLFLVEASRQPLLD EKSENYDLKDYVASVRALI NREDMRCNVYFDSTTKRELMMS

 YF KNYGITEFLEKTDE DELDERQRSQLYVAANDQREFGE






CVEATLVSPVTRRKLVDSPSGVRAMLRSRDEAQLKMCNSF
T ILLTSLL YNQQDKDNSKLKELNT LIFDTYQTNDLKLIYKL
 $N V A$ EARTQLVTQHADK ILAGLPHLISSKQLQELAKVYLL VCNSFLI
SMQNLFQE IIVEQRDNF $\square N M N V R Y V \square A E E D K S \square T F D F C$
 TCELI LCCRVLVEHHAER DCEHVETFLRNNQTEDLRRTFLL TCEKEIISNNAKELIGNKSSGLANMIKQDKYQE QELYNL DAHHVLI EKYSEKLLETGS GVAKLLEAQDVESVKALYEL K VRRDCEERMVVDKLEATQNECPTIVQNERKDDLRNAFKL AAAR QQLVAEHASRLLAGLPDLIAAQQLDGLARLYGL
VLESVL!W TEQFMEADP LLIRDSDTNNNVELLKELCSL VIKTQLIENHSEH【IDNSFEELIVKEKVESLKDLYMLLRL QL
LVRFHLIGQHVD VLSAVPSLRSLAEARKTAELGRLYTL DI QRDAI QDHTDKLLDVT EVGRLIGEADDESLKGLYEL DLAYSHLI I GCS DILLEKSG LQKLIDQDS Q $Q L M E V L A S R L L E A H A G F L E E G F M L L M D E S L I D D L R R M Y R L C$
$V L E N V L I$
$V$
 CTLQKRLIQSHLSTLVNGIQKFVQERDLNSCKLLYSL
CCE
 VLEKVLI WKKLGSVLLLLVNEALKNDDFLLLQELFDL
VLGNVLI WGKL DNVI EDLTHEAMKLSDEKLLQEI YDL


UniRef90 S8A8B0 UniRef90_UPI00032AA76F UniRef90-H9KFJ2 UniRef90_M5WDQ1 UniRef90 R0GG29 UniRef90-B8AF96 UniRef90-ATTF20 UniRef90 UPI0002039BAE UniRef90-F8QHT4 UniRef90-A0A059LI94 UniRef90_GOUSI7 UniRef90 U7Q2D7 UniRef90-S9U3N7 UniRef90-T1J7E6 UniRef90 ${ }^{-}$K9LNU3 UniRef90 M1B6D9 UniRef90-Q9SZ75 UniRef90_R4XJ77 UniRef90 A5JZR9 UniRef90-W6KM48 UniRef90-E5SH15 UniRef90 M7NQ87 UniRef90 GoQMB2 UniRef90-E4X7G0 UniRef90-C9ZW70 UniRef90 K3XKK4 UniRef90-W7HWM1 UniRef90-A2WU91 UniRef90_Q23618 UniRef90 - 1 BR95 UniRef90- $\times 6 \mathrm{MHI7}$ UniRef90-E3JUD3 UniRef90 K9KEJ2 UniRef90-K4C318 UniRef90-E4WVQ1 UniRet90_M4G5L8 UniRef90 LOB240 UniRef90-UPIO00265532D UniRef90-G2RAK8 UniRef90 UPI0000222DF6 UniRef90 $\mathrm{Q} 81 \mathrm{AU5}$ UniRef90-GON9C8 UniRef90-G8JMF1 UniRef90 E9PXT5 UniRef90-E1ZQW6 UniRef90-F2DIL4 UniRef90 G7JKC2 UniRef90- J3L7K9 UniRef90-K7ILC6 UniRef90_GOU15 UniRef90 W6KYA7 UniRef90-Q17392 UniRef90-G0S608 UniRef90 UPI000455EB2 UniRef90- 06 CSS5 UniRef90-J9ISH4 UniRef90-A9UTU7 UniRef90 V4RZZO UniRef90 A41137 UniRef90-U6KL07 UniRef90-J4C957 UniRef90 R9P2F2 UniRef90-T1H2F9 UniRef90-E6ZRX1 UniRef90-s8CS15 UniRef90_G4VFB7 UniRef90-D7LN85 UniRef90-F8NZG5 UniRef90 A0A024FXK UniRef90-17M8N4 UniRef90-G2QBR6 UniRef90 ${ }^{6} 646 \mathrm{H}^{2}$ UniRef90 E9HS81 UniRef90-M9MGY6 UniRef90_J3PR04 UniRef90 C5E098 UniRef90-LOPBP3 UniRef90-Q86EXO UniRef90-FOVP4C UniRef90 L7IFH8 UniRef90-N1JHM9 UniRef90_ROH780 UniRef90 S6EBV2 UniRef90-C4M4E3 UniR Refo-B6JY81 URR90-S9W2N3 UniRet90-11GRJ4 UniRef90-G0V6H9 UniRef90- J4U0B7 UniRef90-UPIO002687A2C UniRef90_wot9H2

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G LE C VR D T F E R R L K K A F VS A LS E G A T G G S LD S K K
LSRRPKALAYLAELTKDGDAKEGAEKDKQDSESRDVDFRR $L L Q L P G L Q R R L R T P W E A Y I D A T G T T V V T D V A R G D E$
 $\square$
FSMVDS ED Y I D R L L RA Y L LAKGE GARQE G LS LVVD D I A L M R NAYA D Y V K K T GLLE I L S D K EN D K T F S Y F P E AI E GLLK K MIG D Y VK T E G NNL KEKT Q QK DE YA L C G




$\square K R \ G D A G R \ L K P T W A K F \square K E K G A T T V T D Y E R D G E$
FS RII S G GLL LSMA DAF QQHI R D IGAAHMEKGKEPSNS VEVV YKNLNDNFEELRQTFGDWVYKIGSNDFEDQKKKKHATDHE LS R I P D G L K T L L D D E N Y I T K L G K D I L S Q L G A G V S K N P K P L C N V Q E TVA A Q Q S F H E Y I K K R G L E V V A S E A G K


 LSKLLEGAHQSI SEQLDKRAI E E
F I WVV K GRQP LLLLXHQSEYY I K X LG T TFADNPEKDKEVVQP



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

FSRRPKALECLSNVAKDEDALEGDEKLRRACGGGSVDFKS

 IS S S Q K D K NV I F D Q L S Q F I V K E I T S I I D T S A K K K S VVA A VA

IE RVERRQ Q FQSALSKYVELKGAEIVGNPDNDKE
F S R R Q S G $\square$ A L LAA G LIVK K E $\square E T E G L E L C E R K G E E A S \square D V V A$
$T H K \square N N \square N E R \square A N S L K E Y \prod \quad \square G N \square K E N$ VHSSISRLS D L RKAFAEYIK $\square H$ GAA IVNDRERDD D


FSKMDLLGQ LNDALNSY LQQ GQK MLLKEDSS
FSELLSNDQTSFKS ILKAY IER IGGDVVRKFEHDGTKHPEE




LS QVDK LDDVLRLRFVEAVRDSGGHLLAQLQEGKELKGKE L RMT GQHMDL R GP WEEYAIDAS GSKI I S DTERGBE





F S Y F S E A $\square \mathrm{D}$ G L K K $\square 1$
SSN E Q Y K Q G I D S I K K Y I LQQ G K K $\square$ D A T $\square R K K \square S \square A \square E$ FS E E K Y R IT I I E S I K S Y I A Q DA M K DFK D G GRKK G Q N A I S


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UniRef90-F2DIL4 UniRef90- G7JKC2 UniRef90-J3L7K9 UniRef90-K7ILC6 UniRef90 W6KYA7 UniRef90-Q17392 UniRef90_G0S608 UniRef90_UPI000455EB21 UniRef90 Q6CSS5 UniRef90-J9ISH4 UniRef90_A9UTU7 UniRef90 V4RZZ0 UniRef90 A41137 UniRef90_U6KL07 UniRef90_J4C957 UniRef90 R9P2F2 UniRef90-T1H2F9 UniRef90_E6ZRX1 UniRef90_S8CS15 UniRef90_G4VFB7 UniRef90-D7LN85 UniRef90-F8NZG5 UniRef90 A0A024FXK1 UniRef90-17M8N4 UniRef90-G2QBR6 UniRef90 Q646H2 UniRef90_E9HS81 UniRef90-M9MGY6 UniRef90_J3PRO4 UniRef90 C5E098 UniRef90_LOPBP3 UniRef90-Q86EX0 UniRefo- 71 IFH UniRef90_N1JHM9 UniRef90_ROH780 UniRef90 S6EBV2 UniRef90-C4M4E3 UniRef90-B6JY81 UniRef90- T1GRJ4 UniRef90-Q4XZN4 UniRef90_G0V6H9 UniRef90- J4U0B7 UniRef90_UPI0002687A2C UniRef90_WOT9H2


F VDTLLDVRQKNMEVITNKFGGEAGFMA乌LDKACSDVVNG CVLDTMKLQDEFQDLSTECFAGHATMKRAVKEGLEKV $M V V R L L L L R R N D D V M D R D A F T R D D Y F T H G L R D A F G R F D N D$ YVQEMMKL QEVYPK!KA CCFQMDFVLSKS VRDGDESVFN YVEK IGGDLFNRFYKMVK IVFNDDPTFVISRNKAFRVVVDD

$M$ VPRLLA LKKRSLENDLAVSFGKDVEDTHTLRESFETFDNK FVLRIMKVLQKYEAHVINNFDNHILFRKALDENFRMICNR FVEKLFNEYKEMNNMIVQNFNSDANFYMSFKAADDKFLN F V DQL LA L H S KYY QVNS QVFESHS LIF TAAVDKAFRT』VND MVSLLLKFKAKLDRVVNESFHNDRQFHHAI RHSWEHFLNV MVERLIEFKTKLDGIVVGCFAEDREMFFAIKEAFETFINQ

Y DDA VLTVYKKYAKVVLDAF $M V \operatorname{V} L L \operatorname{V} L R R K \square D V V V R D S F \square G D E D F T Y A M R E A F R R V I N$

TDLLDFKHKEDHMDKVTFQPDG $\mathrm{V}^{\mathrm{L}} \mathrm{F}$
 LVSELLAFKKKIDFIMNGSFSDSTKMRQCVSDAFETFVNK YI EQLI K LUNHYDNI FK LS FFNDPNFNECLKDYFESFV

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

CVSDTMKDQEEF DHTLNECFRGQ\|VMLSAVREGLEKVYSG YLTSIIKLQEVFQHLVTDCFQSNFRIARAVQEGLVRIFN LVSELLAFKKKVDFIMTGSFKNDPKMRQCLSDAFESFVNK
 WI QELI KLKDKYQELGSHLNSAQAAGFKCZNEAFGKAFSQ
 YTTGMMHLQEVYPQLLSRCFQLEFTLSKAVREGLEA
DSDHMDKFYNKY $\square$ Y LI QFSFDNNNY I LNVYHS $\square F K S Y V N S$ MIERLLEFKSS\|DTIVSSGFKRDGEFVNAQKDSFEVFVNK FVENMLKV
MIERLLDFKTF DDA VVSSGFQRDADFVNAQKDSFEVFVNK
$F \square E S$ L $L N D R S R F D E Y D D D V F D G K T A F R N Q M D K A F N D A V N G$ LAELKKS IDK DCHTCFSEDA LLEK TAK QCFKD

Y I E A LVQVRNRYHKMDHGAFNSHSLMRTADDQACRAFANS YI REVISFYKKDDGII KEQLNKEQDIQMARDRGFREFLNK MVDRLLELRRSLDVVIRDAFSKDDVFYYALDESFAHFIND MVSCLLEFKASLDTIWRKAFSKN
FVEGGI I N DH SKYTLFTNTVFSNDPVFVSARD DAFSAVVNQ MIERLLEFKALIDAIVSTGFAHDGDFVHTQKDSFEVFVNR

WT T K VIE $\square$ Y N YYQSLLS TVFDGDNSSLNLINEVIGKYLNQ 1 IPSLLKFHSTLNS I I FECFSSNESFIQTLRECLEFFINS

FTAQLFALKDAHEAAWFFAFNRNPQFS $\square G G K E A W E K F L N H$ MVVLLLELQRKLLNIIRDAFGGNDDFRKNMRDAFCRFMND $M V I R L L E L R G L T D K V I R D A F R M N D T F T Y S L R D A F R N F D N D$ SLHDLHTRIANIWRQCFREDDLLDKTIRDSFE WTTKV $\mathrm{I}_{\mathrm{L}} \mathrm{Y} N \mathrm{~F}$ YKAFL
I I KVI I EYYED TTNLI QECFRNHPSFNAGFGRAFRE\|INS LI SELLEDHDFLKDVLKHAF LGDEALSYSMRKSFETFLSS $L V P N L L S L H T F L Q S V V E N A F S N D E A L S Y A M R K S F E T F I N N$

WVS FTDEKLDHYTN ILDRR
WSS GVVNL
 FVESVLTVHGKF DRFDNTVLNGDQHFLSAFDKALTSVVNH

| UniRef90_S8A8B0 | K K |
| :---: | :---: |
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| UniRef90-G0USI7 |  |
| UniRef90-U7Q2D7 | R A V T K A |
| UniRef90-S9U3N7 |  |
| UniRef90-T1J7E6 | S S K C P |
| UniRef90-K9LNU3 |  |
| UniRef90-M1B6D9 |  |
| UniRef90-Q9SZ75 |  |
| UniRef90_R4XJ77 | R G DVPP A E |
| UniRef90-A5JZR9 |  |
| UniRef90-W6KM48 | R V |
| UniRef90_E5SHI5 | KSAKVNELLL |
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| UniRef90-E1ZQW6 | R T D K P A E |
| UniRef90-F2DIL4 |  |
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| UniRef90-J3L7K9 |  |
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| UniRef90-Q646H2 |  |
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| UniRef90-J3PR04 |  |
| UniRef90-C5E098 | D A V |
| UniRef90-LOPBP3 S $\$ N N P S ELL} \hline \multicolumn{2}{\|l|}{UniRef90_Q86EX0} \hline \multicolumn{2}{\|l|}{UniRef90_F0VP40 D V} \hline \multicolumn{2}{\|l|}{\multirow[t]{2}{*}{$\begin{array}{ll}\text { UniRef90-L7IFH8 } & \text { K A A } \\ \text { UniRef90-N1JHM9 } & \text { K N N }\end{array}$} |  |
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| UniRef90-S6EBV2 |  |
| UniRef90-C4M4E3 | NV |
| UniRef90_B6JY81 | LP S TRRE |
| UniRef90- S9W2N3 |  |
| UniRef90-T1GRJ4 |  |
| UniRef90-Q4XZN4 |  |
| UniRef90-G0V6H9 |  |
| UniRef90-J4U0B7 | TVNKPA |
| UniRef90_UPI0002687A2C | REVCKASE |
| UniRef90_W0T9H2 | $\square \mathrm{K}$ V F P |

A VDFDE GWKTLQLS LRR $\square$ FS K Q Q T T H Y T Y V I T C C G V L Y N M C
 YEQRWPKVNT I VKRILDTENVSRDEWQNMFADVH YIV

WAVLS DNVYAVLEDRKTTSTLEMLFSKVRAVC
 Q Q LD $\square$ A L Q VIM A G L G L K T G Y Q E L Y S GVVENL A T A K F VT MLDD F L E E GVVD QIM T K G R $\$ S P Y Y Y S S


DEKWE I R ETVLS ILNK VMS QYSFQQVHHSVFQMC $D \square A E L W A L L Q P S L L D Q L I S S$ Q RLDP T H T Y S QL Y S V V Y T V C

E L V R A VR H L L A L S S T P A D S L E S L Y A $\square$ T E LQL

QS GF T DLQRCTINTLS LDEPTPDPYERDFSTCLHLV



F E K N WLE D M WESLK K AVVRASYGRD GRGNRSLE ERYRIV DT I C


V I F Q R K TK A L S Y E L L Y R T V Y K LT
 LS FED GWKVLE Q GI SK L LE GSTGTRAEYMNCYS CAYRMA


E E L R K A T T S C L R D G NVQ TENLT KYHSLVYALC F E K $\square$ W A Q L L
 K K M M L Q G N $\square E T N S A Y E L$

 FSNEEYSELGTLLVYKMS

NY DAALEEIIDDAFEK\YA NNTEEDSFEKTYHVVYNLV $V R V L L N K Q G S D P A S Y E Y Y Y R A C R S V V$


A $\square$ D H $\square Y$ S D DMA D L S FE QVVYK T $\square Y T \| V$ ACY LI S K EVVID S GE VMLL Y Y N I V Y S S I C WK Y LDD DACY LIA EHQTKQLSSFQELYN HAYKL I

$K \square L L T R G A E H Y S \square H D T F E G \square Y N R C$
$S V S L E E L S E N L C E P D H K \quad$ STTNRHAYYMV
 KRA A
LE K T WK E $\quad$ E PA I H I I L K N S P L D S R M Y T Q T Y S K V Y N Y C $L$ L E K L K K i D D Vi T Ki M D G H P F T S A E K M I A Y E CVV Y T L C KWA IISSDAVRA IVN NNESHYSFQQVHHSVFQMC

K D $\quad$ L $S$ T VD F D E K WK DLLS A T $\backslash$ S A V V E L R P VK RLLTWN N N
 $N$ L E T Q WA S I E A RI D QI MT E P GT S Y A Q S I S I Y T I I Y N Y S LS S S P K P N VN F I N C G Y L I D K T C

T TE YNK L WK F $\square$ D S N LVLLIFS SEP TK $\square$ SEME L Y HF VY VI S ND H T WTRRDLMA FHRR@CDLCC

UniRef90_A3GH14

TRRDGSYEELYRRYRETTGSFLRRKIKPFDEASEEPMFMR
 VRGK SWQESATPA』ISSLTETVKESIMRVQQLVMRNQDESSLLV

DKNQSKNLYDLIVVIINNYAKTLRESLLLDDNCEQYLMM

QQQGS GLLFDHLEA L A THVNS ICDRLLSVTSENFFK $T K A E C H Q D Q L Y K R V G Q F V D G Y C R E R L A P Q L R G L P P D R L V P$
TANAAG $\square D D \square Y$ D $\square K \square E M E R Y \square A A S G T T D E T P D S A \square S W \square A$

 L HKHGDFLYKGLLEELTEHLQGV

CFLDDYAFMSEEXIIV

RADQASRCQHHMSSG $\square$ QLLKDSAESFDQLEGTETDTNACT DNEFDELLYKKLEEFYRLKFNVILNDIAGQPE DFDN RNGREDGELGDLLRSELKNDVFSIVKSISECKVDDSATN

 TSAGT GAHDLYMHVRSHLVDHLARHMLPRADHYDAMDLLN

 $M C Q H G L G S K L Y G Q L Q E E C D R H A Q N A L A Q L A S R G S L P A L A$

$\square R G K A P E V Y E C V Q T H \square A T W V K E W G R V S D V K D K N D E S Y S$ AGSYDNS DWLYERFKETMEQTVDS LVLPSLINKCNAPLLR TTTNAQTQKLYERYRTTLEDYI SAKVLPSLREKSNETLLGG



ПYKR SDDLYNHLKELFTSKLTELKSQFSDLNQDWETLQ



LNKK GP LLYNRLKDYL $\quad$ QK $\square A L L R E T I V K D N H D Y E F L G$


## 


L HNFGEK LYSK VVATMTSHVKEDAK SVEASEGSSFDE VCNARDGEALHGRLKAELEKSVGQLQRFLLETPDGLSWLY I GNT NENGELLYKHLKEYLVERLTSSMVETLMPEDPPNQEE GNRDEGTQALYHLLRDV RKHLTSTVLRHLENSPCPELLE
 TRKRRDSCSLVNKYTNCLSERMQERVLPVLMDKHGTEELTV
 $\square R G D D A L T T L Y T K I N V E L Q A Y V S R G V R D S R A F L M E K N W L G$ AAPKSFAEKLYESTRSLLEDSVTALAEVHLNKYRPQD
WWSK S S GETLYK LLIE ECEDY SAAADQYFESHCDDDVFDP TSLGSSGPSLYDKI TRYLVVRVGEIQSHSDSLQGE ALLR TSVHTLAEELLVKLEQRLKEHAVHIVQVLAGACETTTTSM $V Y H R L C E M U R \square R L S N V V E I R L R E A P H P F L L E$

T DQFN LIGNWHKEQ $\square \mathrm{L}$ NYVNS $\square K \square D \square D S N V P E E E Y \square K$



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UniRef90-17JBT0 UniRef90_Q4P2V0 UniRef90_A7TKA1
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UniRef90 C5KH05 UniRef90-C5KH05
UniRef90_Q6FTV0 UniRef90-Q4CX33 UniRef90-11BXC1 UniRef90-Q4N1Y3
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MAI VVWTKFKTYDRVLGAAFSYLDRFYVEDYGLMDLNGLA MAI V WTK K KTYM RVLGAAFSYGMRFYVELYGLMDLNGLA
 SY Y A QWNKFSKQSEYLPQPFSHLNGPNKRHLQESTIRKLM
FYTQQWEDYRFSSKVLNGDCAY LNRHWVRRECDEGRKGDY KFGSIWESYPDK $\square \mathrm{NLI}$ RNI FILYLDRTSSTDSEIVPLWESF F TSNLWTEECRCFKLVSDI MLYYLDKI YCKPNRILLSVYDQC
 YYAE EWDRYVDGASCVGRVFSYLDNRFYVNQARCYPVFTGA E LLGGK WKTHSTAVAMINDVVRYMDAVFVPKRGKVPVRELG ELLVGK WKTHSSTAVAM NDVVRYMDAVFVPKRGKVPVRELG

TLSDAWT GWLDRVSLVQSVLLPLDRHASSQSQTSRTWDLA WTSFRRALHLVLQVFAFLEQHFVAYSNEGSLDDVS
 YFVRMCRMFEGRI RLLQNLLAYGDRVYMDEDKGSEGDENM EMYALWQRHHCCLKKAVGDVAVYMDYSFGHDQGD DVVSYG
RYHRYXEDYNEA DY $\quad$ RXFYRY $\square H T Q F \square K K$
FYAVEWRNYSKNAQVIDAMCAFHNDFLVTNDKKKSTNSTF MYVKYWEDYHRGLTYLD DLYRYMNTQHVKNQHTME $\backslash E V G$
VVVGC WNK WLERVE VQNDFYYMDKTFDSHHDYPT DEE DS KIEKEWDKINRCLI L SEI FKQFEGSYLYKTKTPSFDN FI EAVECWNRHRKDL GLVRNI FLPDDNFLAATKDSSRTRKNLJ EMGELWKKQSDDLKTI SDLTIYMDKVYSKPNRVPEDHELG R LVHVWGHYRDAVAELQEVWVYLDRWYDSRMHAVRSDDGL TMNCVWNDYMTAI ELI MQMLMY L LIIEYWDRYNNF K K L NGUFSYLNRFYVQLSQQPNDYQYS Q QAKMWSNYC DMVKCVSGFFNYLDRCFVEQRKDPCLEDTA LVYNCWLDFKRKMMLVSDKDFHKQLSTAPQ
FFVESKETFYMMCLKLSHVFSY LDRFFVKHQNEVVFKHCM
$F L D Q C W E T H C E Q L L L T R Q L F L Y L D R T H V L Q A S S R S I F D G G$
 DFVQQAFE EVQHF SKLLAAGILLYMEKS Y I L Q K S L K T I K T I C A VEAA A WS A WS S R L V T Ti R S IVF Y Y Lid Q S F L L R S E H P T I Y E M G


Y NL Y
$\square$ WM T M WK R Q CE Y F K L L S D VM $\square$ Y M D K VY CK P EK K L E T Y D L A
 EFF R R WR N H K I M T K WL S VFF Q Y L S R T Y I QMK NLP S L L E V S


KVAEFWK DQRENFNLVADLMDY LDRVYCKSNRLPEDVDLA



TMARLWEVQCHCFKDTGDLMMYMDKVYCKPNRMCMEVYVMC
 D F V $V$ K A Y E E VQ Y F S K L L VY LT E WR T F I I A V N H L

$E L D N T K W N D Y Y K A L E M$ R D I L M Y M D R T Y $\square P S T K N K P V Y E L G$ RFVVDVCAWFET QLS LL Q S LLTTF LDDRDYSTD GSSQSSVRGMA


 E I T T R L W WL L E Y K E F A S F







MCSQNDPNNNSGTSGFNEFG LIS K H Y Y DF Q L LVMWWQ K F LM S HE T FYFK A QLQQTTCFK K S KL N D R WS WW L R R I R V L R S AL V Y L D VA Y LA TNED K T I Q D A A LYY $\operatorname{L}$ Q E Y L K K Y E H A L K K M E K I C K Y


|  |  |
| :---: | :---: |
| UniRef90_A3GH14 | DNVMK |
| UniRef90-17JBT0 | RKLFMEYRDMFSSSUIEKYDNLRELPAVD |
| UniRef90-Q4P2V0 | RISITRDLGLKEFHHILKDATLFRTFLKCIVGAIDG |
| UniRef90-A7TKA1 | LELFKTNLLNPAKEQLLKADI TDTNNDRNLKSINND |
| UniRef90-Q5BVX0 |  |
| UniRef90-A0AO22U258 UniRef90- ${ }^{\text {TONSE8 }}$ - | D R |
| UniRef90-E3LQF8 | MQIFQKAFFPDVFKEFKTIKLFSALYMAMQKM |
| UniRef90-GOWI34 | LELFKLHLLIPNSDTLNRA |
| UniRef90-UPIOOO4408 | AVQLYK THVFFQ |
| UniRef90-S9PXI9 | LSLFREELTKTIQVPFLNDLLKLFEGDHSG |
| UniRef90-BODCL8 | MVQWKDNVFLPFQHNLTSALLKLDEAERNG |
| e990-11J2G | HRAWRKAVVTPVGATLRAALLEISRRERAGGA |
| UniRef90-ROFFJ7 | LFHKQLSMSPQLQDRVISG |
| UniRef90-D8PPT9 |  |
| UniRet90-L8GUK9 | VNSFRLLVVDPVVEELSNAVLNGLQAARAGSVAEPDQL |
| UniRef90-T1K | Q |
| UniRef90-UPIO00456- | RagTapyhkiha |
|  | LGKDFEASLVNALLRAIELHRTGDVAWQDD |
| UniRef90-M1UXA5 |  |
| UniRef90-UP1000440C020 | AYGLFTEA LERESGGVQRMKKG EEWVTAERLNPDTPHP |
| UniRef90 R9XC66 |  |
| UniRef90-A9L | V |
| UniRef90-UPIO | KLMVEP LQA EI XMLLQEIKNDHCGEERIQKVIQG |
| UniRef90-U61 |  |
| UniRef90-O5C2N6 | RLYLIDY! |
| UniRet90-X6MHG |  |
| UniRef90- Q24DT3 | H |
| UniRef90-C5KH05 | PVGLREMGLGMLKKYMCS WEKKNNERSIISRA |
| UniRef90-Q6F | EL |
|  |  |
| UniRef90-11B | RQGCVIDRNA |
| UniRef90-Q4N1 | FQRYKGCVRRYLLNL |
|  |  |
| UniRet90-D7M0 | RLGKAANSGL |
| UniRet90-UPIO002C3ED13 | A T Y REL |
| iRef90-A0A059LEP2 | LAYFRTHLARHVQEKLLHDLLALTESGRGGAA】DELLAR |

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UniRef90 O5C3S3
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UniRef90 C5KH05 UniRef90-C5KH05
UniRef90-Q6FTV0 UniRef90_Q4CX33 UniRef90-11BXC1 UniRef90-Q4N1Y3
UniRef90 A0A058Z7Y: UniRef90-M8АЗН2 UniRef90-D7M0E7 UniRef90_UPI0002C3ED19 UniRef90-A0A059LEP2 UniRef90-K7M625 UniRef90-M2Y1U9 UniRef90-A0BYN1 UniRef90_UPI0000D882D4 UniRef90-B917Q7 UniRef90-D2V6Q7 UniRef90-G8ZTF4 UniRef90-B9RF83 UniRef90_A0A022RVE5 UniRef90-I2H6T8 UniRef90-F8PBJ1 UniRef90_A0A023B1R0 UniRef90_J9HX84 UniRef90-H2AX25 UniRef90-S8FDQ8
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UniRef90_GOTSE8 UniRef90-F9WJ74 UniRef90-A0AO58ZHI6 UniRef90_V4W5R6 UniRef90_Q23CK5 UniRef90-G4TBB6
UniRef90 C4MAF7 UniRef90- Q2MAF7 UniRef90-G0UJT1 UniRef90_B3L7A5

K 170
180
190
200
KLINMLELLLVESQYGENYYQTTFEPAFLLGNSETFFYNFSQ SVSLEI YNAI DPDNVL FKMDDEKVLIERTNDYYDKDSR LTYGKLHHDLLTMLGQLQAEDALDDAVSKATDVFYQAEST

 WSS VVAMMTVMAEKYTYFDTYFEPFLLKETEEFYQNL



 VSQMFVELGLDK $\quad$ LFFYQENUEQPYGTQVRSUIDKE


 | $\mathrm{V} Y \mathrm{Y}$ |
| :--- |
| $\mathrm{Y} Y \mathrm{~T}$ |

[^2]A V

| S |
| :---: |
| T |
|  |

SRPTDQNLIAHLHRHA
T


| $V$ | $M$ | $S$ | $L$ | $V$ | $L$ | $L$ | $P$ | $Q$ | $T$ | $C$ | $A$ | $W$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

 $T D H A Y L Q D A M L M L H R T E M Y S S V F V P M Y L V M L S R F Y D T E S S$



 $V L S S F Y D V F F D E R N D R D A Y V D Y F E Q F F I Q D T V E Y Y T R E A R$

 EYTK S L IVLH S VMD S D G L Y V S S FE E P Y L K QLTT E E T E T WDA




 S

## VT K M LI D L G P

QKNT $Y R D N D L E$
$G Y Y S H E F$

LFHMMETI SAEKLNQTHD
EI GQAESSMLAE KND D P
WL N S N N R L A L H S K LI T S I V S Q FL K A K WL T K P E T Y F Q N A L S A K S F V L L GF DVND NLLSVV INDFEKN F
 QIA E L DKY L I N H N QY R T

 $V L Q S F D E V E Y D K E R P Y$ GYY QRVFEDVVGLSEDSSDYRKGAS L M N M I I K V L WVL LH GP WF NDY N Q D F K D V F F L Q Q S N E Y Y Q N L S K K AVDAFLALCDNKKVPYKVRLHHLEALFLDAAETAHCAATS


## VLDIFVVMGKGE

SNS SYSRIST




## UniRef90 A3GH14

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UniRef90 Q4N1Y3
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UniRef90_G8ZTF4
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UniRef90-W4JY75
UniRef90_J7S737
UniRef90_GOUD49
UniRef90-A5DLK8
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UniRef90_B3L7A5


EY L VD Y EESVRGAVYLEPFS LDALDND ARMAQASVGGYLDAYDTRVREETERGAWLLSDDAGRKRN E LSVADTVGEYSSYAERRLREEDARASAFLSEASREPLDD



 $\begin{array}{ll}N L L Q K S N C S K Y M K K I L D R L K D E G M P C R K Y L & Y \\ K Y L \\ K\end{array}$



 MWHDGESAEVFFQQVGCFLQEGRRRVQACLEANTMSKLEE
 AFVD
EWIVQYP DQDY LAK VQDCMEKETMRDMSYDS DAEGDSTED




 QKVEVDDPQDFLHHCDARIKEEEGRAKTVLLEGTVNAVAE
 A LDN KADD A ERYDSLDAREFLKHCEVRRTEEKERAKAVLPEASWDAGVQ

 AIS K VVCNVVSEY KK WL E DRLVRDEGDRVDRMVVETMT
 LLNLNKMTDEEYY LFVEKRYQNEVERVQSCIPKISHQK

 KYIE
RLSADKDASAFLLHCTSRDDEEVARSREDLPKSSWGAKKA VDWT DYTALQTFEKMGAMI KFEKAFMEGLI NPDSSHK I I D

E W
K N LDEMSVDDY DSWVQGVTKEAQCDVLK LVSDKMDRA DEQQ AKVESDNPKGFFNLI ES RIKQEDERSRELLQVGTWS IALE AVVAGGTGTEYVSWADAKEAEEAERSSVFFSDPSE QLVTDLLSYPQYI KEVSN
QQETNFNLPKYLCEI EYRLKLENNLIEKYDSKSTSKQLIE
 EALADVNKTTAFLEAEGWLW RLWQNGTTAEFFPLVEGFLQEDRRRVD\|CLDSNSLLK DEE



 TLFRS LLESDLREELQ
$M W \square N E L P A E D F F A R V D Q L L Q Q N Q E R V R S C L V P H S D P A L E G$





LCDLELLKNMQKRLLEMSGSGVK\LIRDEKFDDLKRLYRL VLDKVLLWNQ NFLEAAPSLIRLAIDEGNVDLMKELADL

ILDKCLVE WNNDMDKVPAYVKDLIQVSNNDQLKKDYSL TARQALLEAGRLEWLAKTAVGPLMGKKKVENLTPMYGL S UTDVCI TAQLQKLLSKPDGDYSMLEKDDLDDNAGCYQL S TEEFALSEKFDVIFVPGIETTLKSCNKQLLFEVYSLINE

 V L E N V L I


RTTTE TYGRVSDAWPSGTPK $\square M K S E D \square Q G \square S R \square Y H D$ LLTNTFVSGK LK C I L G E RVA DVLI D E QL SF LS QYMASWIMEDNTDQL TK LYS L KTILYLLQPESKNQLQVLYDFCRTTKSDYAFDSITMF

CMEE LLIKQNTQKLLLSC $\square G N S T T M A D \square I N N M S V R Y L A C A$ TTETALLDGGRVDFLSTSLVPLLLGESDDDTLGALYSR VVKSLRLAVAHPASEVVRPALDEAMYRDDTEALSRLY V

TAQTS LLDAHGVA ILERD FPRLAENESYGCFS LA WK L $P$ VVQQRI SEVI IDD GEL E F LDD D F DY V S I I E S K H S Q L R QL H T L
 KVQHELLVVYATQLLEKEQSGCGALFRGNKVDDLSRML
 $\square L N D \square W L K K$


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UniRef90＿K7M625 UniRef90＿M2Y1U9 UniRef90＿ARBYN1 UniRef90－B91707 UniRef90 D2V6Q7 UniRef90 G8ZTF4 UniRef90＿B9RF83 UniRef90＿A0A022RVE5 UniRef90 I2H6T8 UniRef90＿F8PBJ1
UniRef90＿A0A023B1R0 UniRef90＿J9HX84 UniRef90＿H2AX25 UniRef90＿S8FDQ8 UniRef90＿Q5C3S3 UniRef90 UPI0002C3EF5A UniRef90＿Q4U989 UniRef90－F8NZG4 UniRef90＿P53202 UniRef90＿BOECW4 UniRef90－A0CT81
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UniRef90 K1VRY5 UniRef90－11EMD2 UniRef90－GOQNQ6 UniRef90－D7LN71
UniRef90 S8E648 UniRef90－G0TSE8 UniRef90＿F9WJ74 UniRef90－A0A058ZHI6 UniRef90＿V4W5R6 UniRef90＿Q23CK5 UniRef90－G4TBB6
UniRef90 C4MAF7 UniRef90－Q2M0C4 UniRef90＿GOUJT1 UniRef90＿B3L7A5

YSK DPRGDDPDSNDFKQHVTDDGMALVKH AEDAASNKKV LSRVPGALKPVQDSLKTVLIDWGSESLGPFKERTESNMMS FVKSSEFDLFVKTFSQUIIDDGQ\｜LNQNANTLQGFDKL
 SSE ERYA $\square$ NILDCDKKCISDDANAIIDTGSRKKAQVATQ

SLNEEYKGK\DSTVSECDLDALKESTDNNDNDNTQMSGN

 TSYRSRLLEEMDTVVFNTVRGIVKKIVEESSKKRVQVASE
FSRCSNSREMLTD LNEGYTTKDMKEALDEYKPTKNTNYDG VSKCENVNEIVSTLTKFV FSK GLECVRDTFERRLKKAFVSALSEGATGGSDDSKK
FNKCSNSNELLTGLFGEWMSSTFKKTLNFTCNEPNDTGTE
 QQUKESQQKLRNAFGIWMKQUGNRQVYETSEQREKEDEE
 LSSVNGGVKVMFDGMRPYFREVGESVVRGTRKMYDFNTC
FFRV DGGKELNGQFKAYVEKQVKAVVRDAARDD TSEDEEYRRDLVEGVKDYIRDFYSDKLDEVTRKKADAAAK LTKSSSGLNELRQVFKKCVCDRGMKDVSTACEEALNSNKD VFCWGEYリHKLVVSS】HE TPKGE

## LN RVGE

TDAF DDA LVTTAKTVVEDDDEAAGEPVD LNRV DA自
FCKEGGLVPVFAGALRSHIEQRMKQLISDPANDEPB
$\square N R \square D K$ VDF $\square K K S W N S Y G N Q G \| I I \quad$ NNENQVE $\square$
LA HVQLGRQCSD VFRDYVLRESSNDIAAPAKGTDGDPFA LSKSENGLKRLKDKFRNCVAKEGLRRIDLACKEVGRCAGD VSFVPEGLTSFQTTGQAHVTQEARAVDGEPNTAKTTFS LCRVKESDAQLGQKVRTYYQSCDSQKCKDAKEKDSAFADE 1 GRLTSVSTTWKTSPSDALLAHYRNDVFERVKGDTANESS

DAKYVRDGKEFGAAFRGYVLQEGLAMMKLTKPPEGEMFG


UniRef90 A3GH14
UniRef90-17JBT0 UniRef90_Q4P2V0 UniRef90_A7TKA1 UniRef90-A0A022U258 UniRef90-TONSE8 UniRef90 E3LQF8 UniRef90 GOWI34 UniRef90-UPI0004408E98 UniRef90_S9PXI9
UniRef90 BODCL8 UniRef90-I1J2G6 UniRef90-ROFFJ7 UniRef90 D8PPT9 UniRef90 ${ }^{-}$Q4DZU8 UniRef90-L8GUK9 UniRef90-T1K5U9
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UniRef90 B6K9V6
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UniRef90-R9XC66
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UniRef90-A9UYC2
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UniRef90-Q4CX33
UniRef90_I1BXC1
UniRef90-Q4N1Y3
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UniRef90-UPI0002C3EF5A
UniRef90_-Q4U989
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UniRef90-A0CT81
UniRef90-F4RRK6
UniRef90_Q4D5L7
UniRef90-A7ANW5
UniRef90_V2XKV0
UniRef90-J9L637
UniRef90-G7KDX1
UniRef90-W4JY75
UniRef90-J7S737
UniRef90_GOUD49
UniRef90_A5DLK8
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UniRef90-K1VRY5
UniRef90-I1EMD2
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WI DTVLIRYREQTFK|LISESFQSDP\|TEQT\|TYAMRDF\|NG V HWVLGLSDKFGKIVDHCCLADKAIHKSFNRGDEWVLNH $M \perp E G L L A F K S S D D R V V H H S F G G D D D F V L A Q K Q G F E F C I N K$ WASSLIEDYNYYDKFLND

MVTRLLAFKQS LDH $\square$ WRFSFHNHEQ LGHT LRESFETF $\square$ NQ LVTELLAFKKK DNVIMAGAFHNDPKMRQCLSDAFEFFVNK
WV NSLLUQKYDYYE TLLLKT $L V P N M I S D H T F L Q S V I E Q G F S N D E A L S Y S M R K S W E T F \square N G$
DERMLS GEKDRYREMDDGVFHGEVSFHAALDSCF
L REDHTS DEK I WRQCFQDDYLLDKTI RDCFES $M V D R L L Q F K N H A N R I V E E C F A P N Q S F V Y A L T D A F G K G F Q A$

$R V E K L F N \square F T K Y S T L V K E A F M \quad M T \square A F K Q V V N D$ MIERLLEFKAADDRIVADGFGREPSFVHAQRDSFEVFVNR FTAQLFALKDSHDLAWMQAFNRNPQFSLGDKEAWEKFLNQ
$M V S R L D S F K H F A T T T \square S T S F A S S P D F N Y A L Q D A F T T G F K C$ WVKALA QLREKYMDAFKKYTDANGRYLKTISDALATVLS
F $\square$ ARVVDLHAKGRELTNDCFQSSSKFSESLDRSCATIVNT
 FIESLLSLRSRFLDYDDDVFDG
LVSRLTALYTLHDSMITTCFKNHPHFNKALKDGYTHUVNR LVQELLSFHKFLQVVVDESFLHDETLSYAMRKAFETFIN
 LTAERVLATYKKCHEVVVRKSEADNETETGAVK SAFETFMNS



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 FVNAAWNi Y $\square$ HSRKLVEEAFMNDEGFILALEQGCNKFFNS Y EK $\square F S L Y D K \square A Q Y G N N$ EHQYKFHKA $\square K N A F E Q V I N K$

NNNDLLELHQKMKNDTNGSFSRNVIFHKAMSEGFKQFVNK WTTSLIALYDKYHDFLGQLDFRHLTFQKLLNDVFSNYLN

WIS SVLEDYNKYKALLS
MVDKLLEFKVFTDTA TTTSFADNQEFAYALDDAFQKGFRA FIK SLI DYHVKYAENLASCFNNDFQFKVKFKEAFNHDMNK AVKKLFEDKELTDKILNVCFENRDEFKYAQKEGFES LLN WVSQVIDFYLKYQDLID
$M V Q R L L E F K A F C D K L C A E A F$


LLNNYDSCYMKVSEVLK DFNGNALFGEELKQRLNQFLNS
 MIE KLIEFKDKMNDLVK LCFESEREMFHVVKEAFESFINQ TVDDIMQYWLKYKELVDYCFSSNELEKAMLSGLEKL

$M V D R L S E T K N L G E T V I K S A F R P D T D F D H A D N D A F T S G F K A$
$V$
$V$
$M V D R L L K F K A F D D R A L Q D A F A D N R D F G Y A V T D A F G V G F K A$ WVSDLVEKFEQYSSFLKKGAKAMDDGDEEA
WUQPLVDLYNRLEGDCQHSFSGDDDFDFELRNSFSKAFNE
SLEKTLTLKNHLESLIK
$M V E R L L D N R L A H K A L D Q A F V K D Q E F \square Y A M E D A F N R G F R F$ M IDSTLKFKRFADGAVGQDFGG

VVKGIIALMNRGKSIVSNGFARDKDFSSQLLAADEEGLRE

 WVKGLI EFKDTVDNQWSTLFSNDLELQKARDNAFQ


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## MDCVLRHEALVASSNEELYRSVEDLC

 FSDKWS I IDEET $\square$ RCIFKKE VSKNSFQRIHHSVFQQC DFETCWNFTAAGVKRTVHFRSDSDQYYGLLYNTTNNCC YESMWDNLRELLKQUFDEH IDFDSQILKFHTHVYDFC HEA DDLVFNSEPL KYGYSFYYQKVEADC
 $\square Y$ VE DA WTMLKPAIVAGFLDEPQDFA CSGLFNAV NKS WD LLADAFENTHAQRTLE LEFALPFRECYRFA DF GSAWKSIEKELRKLSSGGLCSGLE AGYNGYTVC


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## LLRE GD WLCDQTVRWHRDMLQADWAKQFKGVNQRSEKA 

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UniRef90 B9EZ23 UniRef90-W7TEJ5 UniRef90-B8C1U9 UniRef90 A4ID94 UniRef90-E9BJU8 UniRef90_A0BLH1

R LA HAWGHYY $\square A V A E L Q E V W V Y F D R W Y F K T H A V K S D E G \square A$ EMYALWERQHSCLNAVWGVTMYDDSSAGHSHGNDTYSVAL DLETQWEDFSAALRRISDALFYLDKNYTNNQKTDSQMGES DYVAEFANYQNALKHTEKFCKYLTTYY LVNGESQSECG PF NRACDWFQKRVVLLES LLTYLLDKEYVL KYPKFSS $\quad$ H
lupas_21
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VF SETWKGYWPA R MVADVLQPADIRSQKYDEHSFDNACV


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UniRef90_Q6BUS5 UniRef90-Q9STG3 UniRef90 A0BJA6 UniRef90-M4FJE1
UniRef90-EOS809 UniRef90-UPI00044122C1
 MK MQNLI LAPVLPRIVRYMLDELNRARESGQAVNMQTY LIFYAGVLKNEVISNTFVSSVRQSLEFGFAGQNSQKSLKC KRDWLDTVFT QHSKE MMGEAMELI HKDRDAKTPNDTRGKS DLAFELFSAG $\square F G D T \square M G T K \square Q D G L R N W N H E R T M R A E H K L$


$R P L \vee V_{R}^{R} R$ ERIFCTLGNPEVSACLIASIKQLIHVPAAESTI DUALRKWSSVVLTPRMVSQLRKELRALLADDERAGHGAPDL DNI FVQELQMVFKSVLFKCVVDMGKTACEEEQKQLKDSDLC



 $M T L F V E T L R K H L Q L L K K V G E F E D I R D L K L A K H V S T V L V K L$ SELSPKHLFQKVRDKLLSIILQLIRDQRSFMSVDMTQLKN



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[^3]UniRef90_C9ZK01
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 SCIPFMVHDKNLKQFEI I Y DYCGRSLDEYQLDAMS

VFICEMLEQNVDQ\|IQNPYQQFLQLRNSSDLSP\|LKLYQL LIVETVI RPYINQVLRRDSSGIESLLSNASVRELAII YET RLPVEILDKISKEMEHDKHREVGGYRTNDFYERMSVLYRN TAEEAFMEKRME WVCEAALKEYMELPPDDAPTVLSGLRDLD
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330
340
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AVGKV T T RNNLOQVEK

MVPKLVALHGFCKKLLEDAFVDNRAFFDADKDAFGSGFKA AL DRLVNYK LINDDRVI I ISFRYSSFFTNKWKEVFEHFLNK Y F NI ENDKNRCKFLLDDCFRGYPDFAQTDNLAFEEFLQK MVERLLECKSFAETAGSTAFQPHKEFGYALDDAFQGGFKA FVLDRMKVLQKYEAHVINNFDNH LLFRKALDENFRMDCNR TI QTMLDLYSHYLT LVRVTFKDDSRFAKAFKTACEHFINA VI PDLLAFKSHLNSSLHVI AFRSDELFGATVRS ILDEDLN GVQKMLQLIERFLRVIRNVLGNDTRFMETL


YFTRMLEVMEKAQS LLKNQLQDEPE $\square$ QKS YS GAFMLVINK WCSCILEI YQAFEKLLND
ALEKVISVYRDFQ LPMKAFGDKGDFEKELDDGDHNVL VIVNLVKVYEKYRTVVETKFKKNEKFEFEI RHS FSRSIN LVESNL KYKSIAGDKFNKNELDEFEVRKSFTKSFNE
Q $\square D N \square Q K T Y E Y C \square R L V Q N C E G S H R F R N N M E L A F K E K L N Q$ WTMGMMRLERKAEDIVRRAFRSDEKL
GIETLY I FHCMLLRHVVDVGFDGDHEYFK LLKREFSTSC



RRSKPAE
G THAEN
RRKKPAE
NPN MSESL

NEKSPM

K K $\square$
A D R F

GKTKPAE


[^0]:     TVNFENEWKDMQPRLASLVTGTPLTNEKWDKMYSGIYK TCC NFEAVWGVLGSALREIHTKNA S SLSFEELYRSSYKIV GEFERGWNS QEGMMNLKRENQVSAAVNVD YTTVYNC
     DYES S WQVLSNAIK QUQNKN VSSLLS YE QLYYRKAYMLV
    T $\square$ QF DEGWNFVQKA $\square$ TKLLPEPQFTTQENMMDYET $\square Y N M C$ FEK DWAQLNTALTAA FNEQK PSFSDEELYKGAENVC
    

[^1]:    
    LS F E D G WR V L E Q Gi $S \begin{array}{llllllllll}L \\ V & \text { S F E D G W R }\end{array}$
    

    FEEMWP VLQ T A V|D R L $\square$ N Q S C F T Y E D D CM S Y F T T T V Y R

[^2]:    

[^3]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf sol25 sol5 sol0 jhmm
    jpssm

[^4]:     $D L S N N L S$
    $E$
    $M$ DLREVWSQ DYDDYVHKTLKK ISK IITTFFKECGQPKDFCE K I S REMTFFKDCGYEREFLDEFLSKLKWULIFQNFNTMDR QFKEQSD $\square P \mathrm{~L} Y$ Y K R V V
    TWIARGSSTEYVKQANQ LIEESLREQLYQKFSRSNDTMK RLVPACSAFEFCNAAKRRMLEEEWRCHNILPPCMGDKVKL KI WYEKS IDREKWEKMEE LIEEVF ILNKRYLFE DYK DMSMH VLCEQYSARAFDDKWKVFAASEDDRAKAVLLPTSWHDAER

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

