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T GP L Q GMKVI E LA H I MA GPVCGLDMLADMGA DVI KVIEKPS G

## S

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T
A
A
G A LA G $V$ K $K V V$$G P L S G V R V V E L G G I G P G P H A A M M L S D L G A D V V R V R R P G G$
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G
 A
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TGAL$P$ L
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 V N PVVERARHRVGGDLKSEE GKAFCREAAAKADVLI E GFR
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 PAFVVHDRGRRS DA DDLK S P EGRDALLDDLVE EADVLEFGNR GDPMREWGQGDRPAWWRTDEGQQLARDLI GKADVLVENFR YFQSVNRNKRSDAVDLKTVEGLALARKLIDGADIVVENFR GF LINMNRNKRS I AL D L K T E A G K SVVVLDQLAK DA DI L V E N Y R
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 SDET R R WGPPF QT LDDLK S QE GDT QIK NLVKNS DVI I N NFR GDLSRNFFGEPSEEAMKSEAGRRMIYDLVAQSDVVVDNFR GDDTR GWGPP F VTTIDMGSPAGQALI RDLAARCDVVLEN K K




 F Y R CVVNRNKR GL R L D L K Q A Q G R E VV F L R L V R D A D IV V V E S F R D Q C R T WR N K K G I T L N L K T E R G K E IV F Y E M V K E A DVVV E N F R
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P

## P

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K GTMAK LGGL S Y E VLLA ETNPRRLI YCEIISGF GRTGPYA ERGG
$P G V V E R L G V D Y A R V Q E Q N P K I I V C S I T T G Y G Q T G P M R D R V G$ VGGLLK K Y G L D Y D S L R A I N P RLVYCA I T GF GQTGP YA QLP G

## P

## P

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 $P Q V M E R L G L G P D V A L K R N P R L I Y G R M T G W G Q E G P L A M A A G$ $P G V A E R L G V G P A A C H A R N P R L V Y G R M T G W G Q D G P L A P R A A G$ $P$ GTMEK L GLLGYEELKKVNPKIVYGAVSGFGHYGPYKDRA G $P G T M E R L G L G P Q A C M A R H P G L V Y G R M T G Y G Q D G P G D E D A G$
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 K G T L E K L GL GY D T L S R ENP GLI Y CA I S GY GRTGPFA DK G G
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 V G GLLK K Y GLD Y D S L K A I K P NL I Y C S IT GF GQ D GP YA HRA G $V$ GKMA E WGLLD Y P D L V E S N P P D L V Y V A L S G Y GE WGP DK D Q P A $P \mathrm{P}$ VMMER L G L G G EAALMARNPRLVVMGRVVGWGQDGPDARAA G
 $P G V M E R L G L G P E L L L A D N P R L V Y G R M T G W G Q E G P L A K A A G$ VGGLARYGLDYDSLAATSPGIVYCS\|TGFGQDGPYASRPG $P$ G K L A E M G L G Y K D I K K V A P H I V Y C S I T G Y G Q T G P V V Q R G G
 VGVVM
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 $V G V L S A L Y E R E R S G K G Q V V D A A M V D G S S V L S M M M W A F R G M$ TGGVLAA L LE S K V S GR G QVVVDA A IVVD GTA HL STAJIH GFMA G $\square G V L A A B Q H A R S G G T G Q V V D A A I V D G T A H L T A V L H G M M A A$ FGMVCAVLEA QRSGKGQVVDSSMVEGSAALMAMFYGLKS Q $F G V L A A B Y E R N T S G K G Q V I D V A M V D G A S L I G Q M Q W D F R G Q$ $\square G V L A A A L H A R T P G G G Q V V D A A D V D G T A A L T A M M H M M V A A$ T G L A A M L
 AVAAALHRRNQT GQGA HL DDS LL D GQVVSLL T Y L A Q Y Y L I $T G I L S A L V E R Q S S G L G Q V V D A A M V D G S A F L M S M I Y E Q R E R$
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 A GMLAALLHARSTGEGQVVDAAIVDGAAHLLGMITTMHNN $F G V L A A L Q E R V S S G R G Q V V D A S M L E G S A A L L V V I H S M L A R$ $V G V L A A B L R V A R G G A G Q V V D A A D V D G T T H L A T F V H A M L A A A$ L GI L LAAL F QRTRS GK G QVI DA S MVV G TA Y L S S F L WK S Q QV T G L A A L L E RQS S GR GQQVVDA A MVVD GSAALLMSMVHEDRAR
 $N A I Q A A L L A R H R T G E G Q Y I D M A L F D C S L A M L A N V N M N W L V$


 Q GVVLLA LVVSRART GE GQ KVVEVTMYDSMLLHMQMQEACMMQLN $M G I M V A L V D A R Q R G Q G R H V D V S M T D A A F A H A D F P D A E V L A$
 NSI MAALLARAR H GVLAALYQ




 F GI ACALVERNRSGLGQVIDASMVEGTAVLMTSMFGMYAA F GI A A A L V E R E R S GLGGQVI DA A IVV GVTS MMS F F S G L Q K N

 YATLAA YIGAKNTGQGQYVDAADFDSAMAFSVWDTADWWG
 $G L V S A V L E A K S S G L G Q V V D G A M L D A A A L T M N R F L G L H A E$
 $A$ AV A A L Y H R A Q T GE G Q YI D T S MLL G G QV A L L T Y Q A G I Y F A

 QGILAALLARAKTGRGQKVGVSLYDSMIAMQMQEAAQWSK VAVLA ALAHRDRTGEGQYIDMALLDVQVAVLANQAMNY LA






 QSI LM A Y DY K LLR S GE G QY I DV S L V E S GILA WTVVWEAAA Y F G GILAALLEREVGDSGGQKVDISLFDGQVAWMTYMASNYFA
 Y GVLLALLIERERTGEGRVIDDAMVDGAATLFAMFYHGVQS GAL A ALHHRSKTGEGQVVDSALYEAVLQVMESTVADYS

 H A AlLA A Y $\square$ G A K N T G E G Q Y|I D A S L F E A A L A F S V WD $\square$ S E Y W G

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GMWTDTRGANMLDGGAPYYDTYECADGRYVAVGADEPQFY GVWTDDRESNLLDGGAHFYDTYECGDGQWVSI GSIEPQFY DYWRDERGVNRLDSGAPWYNVYETKDGRWLSLGSNEARFW GAWSDRRGDNRLDSGTPWYSVYRTRDDRYVSLASNEPRFY GLWSDERGTNMLDTGAPYYDTYETADGKYVAVGADEPQFY GMWRDERGVNLLDTGAHFYDTYETADGKWISSVGS: EPQRY
 GGWQDRRGSNLLDGGCPFYGTYETADGGHMAVGALEPQFY GMFTDNRGTHMLDSGAHFYEVYETADGKYVSVGS: EPQFY GGWQDRRGANLLDGGCPFYGTYETSDGQYMAVGALEQQFY GGWSGPRGTNMLDGGAPFYDTYETADGKYVAlGA GPKFF GRWTDGRGVNYLDGTAPFYGVYRCRDGQYVAVGALEAPFF GGWTDERGDNFLDTGAPWYDVYTCADGRHVSVACDEPQFY SGRVPTRGNRHPSDTPFTSVRASDDYLIVAVGNDALWE TGRVPGR DGTANRMAAPYQAVRASDGHFVFGANNDRLFA GLWPGGRGRNLLDGGAPFYETYRCSDGKYVAVGAIEPQFY GTWRDARGSNLLDGGAPFYDVYTCKDGGHIAIGAIEPQFY GS WSDQRGTNLLDTGAPFYDVYRTADDRWMSVGGLEPQFW GAWNDTRGTNYLDGGAHFYRVYRTADDRFMSVAAIEAKFY GRWRDERGANLLDSGAPYYEVYEASDGGYLAVGALEPKFY GSWSDERGTNYLDTGAPWYDVYECADGRHLSVGCIEPQFY TGDKPEPDGSAHPDNA PYQAFKTSDGWDNVGAANSNWE TGRVPVRSDGTFSHRYACYNTYGTADDRYLTIGAVEHRFW GGEVPPRLGNAHPNUVPYQVFRTAGDSHFILACGNDKQFR GVWSDERGVNLLDGGAPWYDTYECGDGRYVAVGALEPQFY
 GFWENQREQNLLDGGAPYYRNYLCKDGRSVSVGAVEPHFY RGREVNWAAMPLSGVFPTADGAVCMVGAFKENPLRDDSTA NGRVRPRGEDLLDGGVPCYGVYETADGRHMAVGALEEKFW PFITTERGKGMLGGAAHFYRCFKCADGKETSLGAIESQFY
 AGEVAVPAGSGHVSAVPDGAFKTQDDHIVIDANGDKFWR GAFSEERGTHLLGTGAWFYDTYRTRDDQWVSDGADEPQFL EGRVPQRDGNRYYSTYPYDSFKAMDGGVVIGAANDKLWQ GRWTEQVGTNTLDGGAHFYRPYKCACGNYMSIGATEPQFY GGWQDRRGANLLDGGCPYYAVYETADGGWMAVGALEPAFY
EGRILPQRIGNR YESTYPYDSFKANGSVIGAANDKLWQ GLHAAPRGHNLLDGGAPHYATYACADGAYIAFAADEPKFR RSISSLERSKNLLGGAAPFYRCYECADGKQVAVGALEPQFF GMMRAERESNMLDGGAPFYAVYETADGGWMAVAPDERKFY SGFMRTRTGADLPKDA PSNAYPCKDGEFLDGGNQDPDFR TGKAPGPEGGTANKMTACPYQAMACSDGYFVMGANNQKLWV GSDRDERESFLLDGGAPFYRCYETADGGYMAVGSDEPQFF GRWNNQRGENLLDGGAPFYDTYACADGKYVAVGAI EPQFY GKWRLSRQSNYLDGGAHFYDTYACADGRHVAVGPIEPQFY TGESPGPSGSAHV LATPYQAFPTQDGHIINEKNWARIAQ TGEAPKRTGNAHPIVAPYQTFRSA DGHVNIDAGNDADF



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HREVLNWAAMP LT S GKAPGRIGNAHPNIV PY Q GTWND RREEANKHPTIVA

$\qquad$ $P S N V Y P$ T T R D GK W I L L A A A N Q D T V P Y Q DFA T R D GQV L L A I I G N D G Q F S












## QUERY

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A A M L A G LGGLD A A E LDP P Q NDRA R WP ELR A 260
 K QLLDLCGVSDPALQVQMEPAQWPQLRATLAEVFRTRTRD RETLALLGLSDTPLPDQHDRHGWPVLREHFTRVFATKTRD AELLDRLGLDPAALPGQNDMARWPELRATFTEVFKTRSRD AELRR LAGUEDAAFDAQMDPKGWDALKDKLTAKFKTRTRD RNLLTLLGLTDEPLDAQNDPEYWPILRTRLTEIGRTRTRD AEMLK GI GLLDGADLPDQNDMSRWPELREAFTKAFAAHDRD A ALLKGLGLDGADLPGQHDRDRWGELRDRFAATFAKERTRD
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 KLLI EGLGLKSDELPNQMSMTDWPEMKRRFAEVFAKKTKE AEFLERTGLAGEELPGQWDPAGWPRLRERFAEVLRTRTRD
 TVCQPALLADPRFATNQQRVHYRDVLVPQLAQAFLQRTVD AALLT GLL A IDVVPDRDDPANWPELRKRFTEAFATRTRD
 ALLIKQIAGLSEADFGSQHDRSQWPAMKEKDAAVMLQKSQA AQLLDKLELDFGATDYQMNKAAWPERRAAMAARFLGKTRE HMLCDALERPDLKPGHLAVGEDGKRVRDALAADFRSRSQQ AELDAKAGAPEELAQGQMNPANWDDYADKLAABEDTKTQAA
 ALCEAI ERPEWAGDPRFADRAHVDELMA LLQEIFVTRPGD A ELCDVLQLPDE LDRDNFDTA L WDDFREVLASRLAAFDRD SLCEVMERPD DAEDPRYDRVAHHEEDKPIVEEWTEKHTVE AEL R RITGMTDPAFDDQLNRSKWPELHQKLEAGFGTKTRD AEFVRLLGMPE DAPDRGDLGRWDELIRTLI AARFASRTRR K LCVI MGGGEKAEFDTNWKRVQRHEEVKVLVEAWTDTKPVK AVFAERTGLPPEALARLDDPSTWQEGRAMLAELFATRTRG KELVERMGAPVDWLADQNDPATWPERTQVMAAI FRSKTQA AEFLDVLGLGSELLDVQWDTATWASTKERYAEIFRGRTRS $R L C D A M G R R D P R F A T H L A R G E H Q A E D D E D V S D W T R T L T V A$
$A A D G H P E L G T D P A F S T N A A R V A N M Q Q V I D D L D E D T S G R T K$ $A A I G H P E L G T D P A F S T N A A R V A N M Q Q V I D L D E D F T S G R T K$
$Q L C T L M Q R Q D P R F S T D S L R L A N R P A L Q D E L E K T F K D H P K B$

 RLMAA GGRPDLGADPNDGRTARAAMLDEVIAGWSRTAR VLGHPEWVEDPRFRRNADRMRHRDTLLPEMAGILMTRPSA TRMCRALGLDDRFATNAGRMTNLPELVERDESVTSTLTTA VLCHPEWKTDARFTTNALRVKNREDIDKLI EDLTEQRTTQ KLAAVVGRPDPRFATNAGRVRHREELIPLLEALFRERPAQ SLLKGLDLGDDPDFTAQDDRSRWPSMVHRLQAGFGSRPRD QRLCQAMGRPERFATHQARGRHAEELDEDIQSWVGTLDAA RD DCAALE DEDLSADYPNQRANKPYLQGRFRDAFATNTTA RFCRPELAEDERFRTNRSRVQNRADLVPEVAGMVARKTTA EA TNRPDLTADPRFETNADREHREALDEDLAETLATVSTA
 RFCNPEWARDERFATNTARVHHRSALLLALMEPVLRERSTG ARLLEATGSDDPLFDDQNGPDGDEERRARLTDUFRRKTRE TVCKVGAPDAYATNTARVAHRGELVPVIAERLARGATA

 NLMEKPELIDNERFKTNDLRCQNPDLKNDIVDWIKDKNKK
 RFCREDLANDDRFSTNADRVANRDALDSLLADEFAEYETE AEFRRVLGLEDARWDQQMNPSAWPELKQELTAMFRTRTRA
 RLAAAMGRPDERYATHRARGARQEELDALIGEWTRTMTDA QLA LEGLGLKSDELPNQMSVADWPEMKKKFADVFAKKTKA RRLMLTMGHADLADDPTGRDARRDEDYALIDRWVANQNET




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UniRef90-A8L1P3 UniRef90_UPIO003829DC2 UniRef90-H0J5V1 UniRef90_A0A024HCV6 UniRef90-F6F1J3 UniRef90-K1KM08 UniRef90-F7BZS2 UniRef90-AOAO59KGU8 UniRef90-UPIOO03631444 UniRef90-N8Z5R3 UniRef90_Q1LLH2 UniRef90_A3VK92
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UniRef90 A3PFW8 UniRef90_A3PFW8
UniRef90_UPIO003B48C45 UniRef90-E6V2F1 UniRef90-M1NRC2 UniRef90-W6MA67 UniRef90-A0A037Z2P9 UniRef90_A8TY17 UniRef90_UPI00035EE74E UniRef90-Q0KC97 UniRef90-A0A052J7K8 UniRef90-UPI000471502F UniRef90-U6SI82 UniRef90-M2YF15
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UniRef90 C5BFR6 UniRef90_IOWIK6 UniRef90-B4UK48 UniRef90_UPI00046AD5A4 UniRef90_U4K1E5 UniRef90_B3TCG3 UniRef90-E9DIQ7
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UniRef90_UPI0001FFEFB5 UniRef90_UPI0003645FBB UniRef90_UPI0003F9E17A UniRef90-UPIO003603313 UniRef90_UPIO002E50C1E
UniRef90_D5WXT5 UniRef90-J2XMY0 UniRef90-UPI00046E5DC8 UniRef90-A7HAJ2 UniRef90_U2WS93 UniRef90_JOKJ76 UniRef90_J2W402 UniRef90-V8QRQ6 UniRef90-Q6N8F8 UniRef90_Q022N1
T
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 RFEP
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$P$ PGW
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PMGG

UniRef90 UPIO0035DC163 UniRef90_N4VTF0 UniRef90_UPIO003830EC8 UniRef90_F61E86

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 DGKGGGDPMRNWGHGDAKLWWQEIVRKLVAHADILIENFK GDEARKWNRNKRSDCDDUKRGTQLLHRLAEDSDVLVENYV DTDRQVGPMRNPGMDLKTEEGREACLHEVREVDVLLYNVR CFFQINRNKKSGALNLKTNEGKEVFYQLAKEADVVVENYR YFASFNRNKRSMTLDLKSDAGKAVLRRLLADADVLVENYR GDPMRNWNKKSTCDLRDAGQELVKQLAHADVLVENFR WWQVQSRNKRSLALDKAAEAQA VRQLAEADVLIENFR WWHVQTRNKRSVALDLRSEEGQRLVRQLATEADVVVENFR MHAYLNRNKRSIALDLKRPEAVEVVKQLVREYDIVLEQFR
 TDGPLQRNRRTLTLDLKSPDGLAGLLDLVAKADVLVEGYR GGTKWIGGGGVKWLARKRPEGVTVMRKLCRQVDVVLEPYR
 <br> \section*{\section*{}} <br> \section*{\section*{}}

GD D T R MWGP P WMTVVD I GD D L R T L G P P WVV WWPVQSSRNKK F V T L N L R E H R G Q E L M L




 G D D TR T W G P P WW W N K N $\quad$ P N R G R Q L I A L D I R S P E G R E NA L


 PF LLWTN RNK Q SVVA D L K S P E GVEVVARDLI RTADVVVENFS RWP GDS R N K K S I T L D I R T L E G K E L F K E Li K K A D I L I E N F R


 WWA A QS R R N K R S S L T T L Y F L A $\quad$ N R N K R S L T V D F K T K E G L Q I L H K L V S R S D I L V E N $\quad \square$ D QN R K N GP GH NP D M N L K Q A E C R E A L L K L L V E T A D V I V V S S M R






 GD MF WN R N K R S

 Y T MLLYNRNKYGATLDTRHPDALGVLEQLVRWADVVVENYR YF A CTNRNKRS LLCLDFTEPDDLAALLLRRLVERADVVLVNFR DTMMRAVGPMRNAAMDLKTSSAGQAEACLLQLI RESSDVLLVYNLR





 WWSVQARNKKS IT L NMKHPEAREDIARKLALEADII I ENYR Y F V WL $N$ R G K E S L T L D L K D R E A Q A I L H R L L A D A D V L V Q N L A D AVR S M G S H K N I S I DLLR Q S K G R D L V R T L C E R A D I V I E N F K

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$P G V L G M G L D D T L R E R Y P R V V G R I N G F G S G P Y R D R P A ~$ PGVLGKMGLDDDTLRERYPRLVVGRINGFGSTGPYRDRPA PGVMDSLGFSYEAFKKVKPDIIMCSISTFGQKGPYSQRVG AGVPAKLKMDYPHLSEENPRUITCSVTGFGEDGPGANRPA VGGLKQYGLDHESLRALNPRLIYCSVTGFGQDGPYAERAG TGVTKSLKI DYDTIKALNPGVYCSISGYGQTGPYSHRGG TGVTKSLKIDYDTLKALNPGLVYCSISGYGQTGPYSHRGG PGVVEKLGVDYKTVAEKNPKIVYCSISGYGQTGEYRDRSG PGTMEKWGLGPDVLHETNPRLIIVRVSGYGQTGPYSSRAG PGTLERYGLGYEQLRKVNPKLIYCSMTGYGSVGPYAKRPG VGQLKKYGLDYASLRAVKPDLVYCSVTGFGQTGPYAHRAG PQSMERMGLSYEAVSAVNPKIVYVGAYGFGNDGPYAGKPA PGVTKSLGI DFESLKKINPGLVYCSDSGYGQTGPYSHKGG PGVTERLGLGPDDCWGRNPRLVYGRMTGWGQDGPWSQAAG PGVLAAMGFDRAALDATNPRLVVGSVNGYGSTGPYRDRPA PGTLERWNLGYDTLSSINPGLVLVRVTGYGQDGPYSQRAG PGAMEGWGLGPDELLALNPRLVMLRISGYGQTGPYRDKPG
$P G T L E N W G L G Y A L S K L N P R I M A H I S G Y G Q T G P Y D K P G$ PGVMDKLGVGYEALSKAINPKLIMASISGYGQTGPYRDKPG PGVMERLGLGPDVLRGI NPRLVYGRMTGWGQTGPYSQMAG TGTMEKLGLGYETLKEI NPKLIFCSDSGFGRTGPEKNRAG $P G V A E R L G F G P D R C A G L N P R L V Y A R M T G W G Q D G P L A A A A G$ QGVMEEFGLGPEILQKDNPRLIYARLTGFGQSGRLSKVAG VGGLRAYGLDFDSLHALNPRLVYCSITGFGQTGPYAPRAG VGGLAKYGLSYEDLKEEFPQLIYCSITGFGQTGPYAPQAG VGALLARYGLDYESLKADNPKLVYCSITGFGQNGPRAEEPG PGTMEKWGLGWDVLHADNPKLIMVRVSGYGQSGPKRDEPG TGTLARYGLGYDDLAKDNPRLIYCSITGFGQTGPYSDRSG PGTLERWNLGYEQLAAVNPGVVLCRVSGYGQTGPYAGRPG VGTLARYGLGYDDLREANPGLVYCSVTGFGQTGPYRHDPG PGVMDRLGLGYETLRDGHEALIYCSMTGFGANSPHSDKPA PGVMESWGLGPDVIKADNPNLIYARISGYGQDGPYSNKPG VGGLAKYGLDWPSLQKVNPRLVYCSITGFGQDGPYAHRAG PGVLDRLGVGFSVLHERNPRLVHCAISGFGQTGPLRDRPG VGALARYGLDYASLSARNPRLVYCSITGFGQTGPYAPRAG PGVMERLGLGPEVCHARNPRLIYGRMTGWGQNGTLAQTAG MGVTKKLGI EYETLKETNPRIIFASGSGFGQYGPISNRPC PGADERMGLGEDVVRAI RPDI YVSMSGFGESGPYAHQRV PGTLEKWGLGWEDLRKVNPALVMVRISGYGQTGPYKDRPG DGTLERWGLGQDSLRERFPRLVHCRISGFGADGPYGAQPG TGVMERFGLGYESCRQITRPSIIYCSVSAYGREGPFSDRDG PGTLEKWGLGYDVLKSVNEGLIMSRQSGYGQTGPFAEKAG VGGLAKYGLDYPALKAVKPDLVYCSMTGFGQDGPYAGRAG PGTMEKWGLSYETLSKENEGLIMVRTSGFGQTGPYKNRAG PGITEKLGLGGPEVCHQRNPKLVYVRMSGFGQTGPYKNRAG PGTLERWGVGWEHLSDVNDGLVMLRMSGFGQDGPYAKRPG PGTLESWGLGWDTLHALNPKLIMMRVSGYGQTGPYRDRPG
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PGVMERLGGLGYELRRQNPSLVYCAISAYGQTGPYKSRPG PGTIEKMG|GYERMTELKPDIVLTSISGFGQTGPLSRRAL $C G D L A R H G L D Y A S L C A R N P R L V Y C S I T G F G Q T G P Y A Q R A G$
$P A A M A R L G L D Y E R V A A A N P A V V V G A G G E D G P Y A R P A$ PAAMARLGLDYERVAAANPALVYVGAYGFGEDGPYAGRPA PGTLEKWGLGWEQLHAANPRLIMLRVSGYGQDGPRRDEPG KGVLEKYGLDSVTLVRQYPSLVYCSLTAYGEAGKDQWKPG PGALEKLGLGWDVLHALNPRLTLVRISGYGQSGPYRDRPG PGVLEGLGLGWTALRAANPRLVLCSITGYGQDGPYAARAG PGVLEGLGLGWTALRAANPRLVLCSMGGYGQDGPYAARAG PGVAERLGVGPEALRGVNPGLVYVSVSGFGQTGPLAHLPA PGVLEKWNLGYEDLKQVNPAVIMVRLSGYGQSGPLRDLPG PGAAVRMGLDFDSLHGKYDKLIVCDISGYGDSGPYRDKKA $P G K L E Q W G L D Y D S L A A V N P G L I L V R I S G Y G Q D G P Y S R R P G$

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$Y D L M V Q A M T G M M S T G R E P G G G P L V G V A V I D L F G M Y A S ~$ FALMVQAMTGMMSLTGREPGGGPLRVGVAVIDLETGMYAS FDLVAQGMSGLMSMTGEPGRRPLKTGVAVYDIGAGITAV HDVNYLALCGVLDLDGDKDRPPAIDGVQFADIIAGGGMSAA
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 FDF
$F$ GSAMSGFMSVNGSQESGPMRAAP
GAL FGVVAEAMSGLRHLTAEPGRVPVRVGVSIGDDTLASLHGV FGVIGEAMGGLRYLTGQPGEPSVRVGVSI G DSLSALYAV HDVNYLALAGVASYTGRRDTGPLRLGVQLADLGGGSLYGV HDLNYIATSGALHAIGGADDRPDPPLNLVGDFGGGALYLAA H DI D Y L A DA GALLE PLGGRSGQPP H A P VN L LA D FA G G GMLLA HDINYLALSGVLSKLGRSNETPYAPLNLLADFGGGSLTCA


## F

 YA YLVGAMGGQMAVTDGMTGAGPMRVGVPGADI AGGNNAV YASVAEAMGGLRYISGFPGEAPPRSAISLGDSLAGDFAAY YDFVFQGMGGLMSITDDLPGGGPQKVGI AVADITTGMYAS FGALAESMGGLRHVTGYPDLPPPRIGIS:GDSVAALHGVI YDFITQGMAGLMSVTGAAEGQPQKVGVAVTDIFTGIYAA $H D M N Y L G L N G V L A L N G V R G G E P V N G G V Q V A D I G G G A Q M A V$
$F G V V A E A M G G R H E T E G G V P V R G V S I G H G V I G V L M A M$ YDFLIQGMGGLMSTGRPDHEPGGGPMKVGVALTDLLTL HD NYLADSGALHADGRAEGGPTPPDNLI ADYGGGAMLLA YDVVAQSMGGMVNLTGFPNTPPAKVGPSIADNVTGMY

Y DA A E SMGGLRYVSGYPDRPPVRSGVSIGDTLAS LYGVI FDAAVQAMSGLMSVNGEADGQPLRMGVPVIDLVTGLNAVI FGTPATAFSGYTYLQGFTPRHPGSPALSSLSY STAMMAS



 Y DVI IEAEAGLMHITGEAGRQPCKVGVA ATDIATGLYAH




 WEQLA QAVSGI QVRRGGRDGAPITLPYPMNDYGTGLLGAY Y D I A A A E G GL L HV T GEA Q GP PTKP GVGL T D L C T GL FM H







 HD I NYVA Q S GVLS ALGRA A A APFPP INLL GDYAA G GA VGA
 $F G R D A N A F S G I T S Y L C G E P D A P P A S P G T A T L S D Y M S G V Y A A$ Y D I VQAMSGLMESTGDPDGAPTMVGEAV SDVIAGLAAS $F G A \operatorname{GES} M G G L R Y V S G H A D R P P V R V G I S I G D S V A A L H G V I$
 Y E NVAQCTGGAAS TTGFREGLP LVVGAQI G DSGTGLLDA



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C8

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 SGTPPVRWGNAHPNIV PYQTFQTSDGWIVVAVGNDGQFR DENAPAGSMGYSRLL AEHRKPYQTLDGYVIVNDRHWQQF L EGTDP EAT GWRHRVSA PY QAVKTKS GYMMLGCAN QRTWE
 ADFRRERTGS ILPGVA PSNVYTAA DGAEILDAANRDTIF
 A C GVV E P DMEN QALD G GSFY DYYR TRD GRWFSVVGS LIE P QF M GRWTDS RESNRLD GA A H Y Y DVY E C A D GK WI S IA S I E P Q F Y E GTYPKRMGTA HGSLVVPYRAFKTGDHDVVI NDGLWNKMCT GQWPGGRGEN LLDGGAPFYDTYRTADGGYLAVGAIEPQFY GLLWSQPRGKNLLDDSAPFYETYRTS DGKFMAVGAIDEPQFY

SGTAPKRMGNHHPNIV P
F GAVRQPAGGALPGIAA PSNAYDCGCGEYVLIAANGDADF
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S GKLPKRQGNAHAN AVPYQVFDSLDGKLIVAVGNDSQFA S GESPQPDVGTQUPPSVV$\quad P Y G S Y P T A D G H V I V A C L T E R F W H$
$Y G M V R E R T G A S D P G I V D P$
$T G V A P R K M G N E H P N L A$
$L R G Q P Q R R G E T L L T G A H L$

 GQWVD QRASNFMD GGAHFYDTYQCADGKWLAVGPDEP HF Y



S GKVP QRVGNRHPNICPYDSFETRTTPDFLRVGNNRQFCK TGTDPQRHGNTSPDTCPSGVFQATDCTFYINCGNDK】FQR D QLGKVRERSMLHGHSSPAGDYKTNDNYWMVMVCSTQKTW
 A GAIIRERMGNTLPGIAAPSNDYLTKDRTFIVIGANADGVF



 TGK】K E R SGSSASNTVSPRNVYRCNDGKFVALSGSTCQTVA

 $T G V A P E R T G V A H P$ T $\quad$ C $P$ | $R$ |
| :--- |
| $G$ |

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 RRLMAAMGRNDLGEDPALARNRVDEIDAATTAWTKTQTVA LAEVLGHPEWATDEKYARSRDRLANRKQLMTEALSHHGKH AYCRAVGKPELATDTRFAKVTNREVLLPMLVDVMRTDSTA NFARCIGRDDPRFAAYEARLANRGALEPLI HEAMAGEGTA RLMLA GRDDLANDPALAHNPRTVEI DGAI A A WLASATDD RRLMSAVGRDDLANDPRMRVECENE IDQVLADWCRSQRCE RLCTLLGLPGLATAPAFLTNADRVANRAELTRALTAVTSG RAFCEGVGREDLIPRQFDPPGSDAHMREVEADARGRTRK
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 RRFAHVMQRPELADDDQWGRASIDAVNALVQDWIGARDR $F R$ IIFEVIGRPEMFASNAGRDKNRDLVDAAVAQWFLTRSRD

 SLA NALDAPDPRFTTNTDRMANAVQLRKVLGGLIGGWQRE



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S DETRTWGPPFKTVVN|LIK TEGKE\|I|EK|LVQKSDVILINNFK WWPVVARNKKS ITCNLLRDPE GQALI R RILI DTADIVVENFR G D E F R Y Y P P A H P A L D L K H E D G R R I A R E L I A T A D V V A E N F S
 D D T R QWGPPFVERDEDKTAEGQQKLLGLLEDADILIENFK

 Y Y L I CN R G K R S V T V N L K S S Q G Q A L I R R MA R D A D V V L E N F K
 YFANYNRNKKSVTLDLYTAQGKEVLADLLIASSHVLVDNYR D Y Q C CN RNKR GMVL DLK STE GREAF L KMV E QA D CVVVENFR
 DNTRYNRGKRSVVLDLRSPEGKDDLRALIAADADVEI HSMR WWSMHGRNKRSVVTVDLKSDKGRALILRRVAGCDVVVENFR $D P$ VR QQ GA I DEGMSWYRSDQGLETL RALL R DADVLVENFR YF TMLNCNKRS DTLNTKTPRGKELLTELIARSDVLVENFG DVFR HVTP QRHRGMSHKTATGK DQLHKLL LTTADVLVVNMR
 FF V WCNRGKESLALDLK QPGSMPVLDRLLERCDVEI QNLA WWYVQSRNKKSLTI NLKHPAGREIVHQLVAEADIVVENFR
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 WWLNDARNKKCI TLDDLRERGADLFRKMVASADVVVENFR
 P P T P M Q R S R R T V $V$ T L GDETRAWRPPVDAADGTSTYEGRERARRLDADSDVVVVNFR
 D S L R S M G WN R C I T L K L S A P E GA D I L K K K I I A D A D V F F V N F R WWRS LGRNKK SVVTLDLKTDQGKALARRLMVGADVVI ENFR GDELRRWRLHSVTLDLRTDEGRALCLDLI RECDVVLENFR YFHSCNRGKTSVVAADFRTPEGQETVVRDVVRDADILI ENFK GDDTR DWGPP WMA L NDASPE GQDLLRKMVAECDVLI ENYK WWQV Q S R NKRS LALDDLRQTEGQAIVRQLAS EADVLI ENFR SWDVN A R GRRSVGGIDLKHAD GREAVLDRLVEHAEVLI EGFR

 A H DV V SRGKRSI A LDL K N P A GRKLL FELVATSDALI EGFR GDDTRRWGPPFIA IDDIT DKA QVELVVKKLVA DSDVVI ENYK
 Y Y MACNRTKRS $\square T V N$ MR HEEGRKILRRDLAA QA DVLVENFP DSTRRTGPATE DGMNDKRPEAQAALHRLLASAADVFV HSMR Y F F C C N R GK R S LT LDD T V E Q G R A V L L E L V K K A D I L V E N Y K GDD T R HWGPPF ■TLDMAKPEGQALI RQLALQQSDILVENFK
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 $M L L Q M G N S K K G L T L N P M K P E A R E V L R R L V K S S D V V V A N D P$ QFMAVVNNKRSSLADDKHPHGKAALRRLI PGADVLLSNVR
 WWQVQS RNKRSIIALDLRVPEGQDIARRRLDARADVLI ENFR




 WWKTLGRNKRTVTANLGSDGGREVFLDLAAAADVVVENFR WWKTAN RNKS FAT LDL RTPD GLLALFKRLLPRFDVLI ENFR
 DETRTWWGPPF DI A L DLLT QPADRERLL LGLL E HA DA I V E N F K
 YF LCANRNKESLTLNLKSEMGKDIL KKLVSHADIVVVNFK D NLR Q Y P SKRGUVLDLKRAEDHAALLDLVRDADVLV HNFR GD LT R T Y S P E Y E TL L L T S E E G Q TVVL H DL I E E A DVVMMQNFS
 DETRGWGPPF GMTLDLSQPA GQELLRRHLLADADVLVENFK HF A WVN R S K E S LT L DL K Q LDP A LD AL HALVVARADVLVQNLA WWKMLGRNKRTITLDLSKPGGRTTLLRLEATADVVIENFR $P D P$ L R E WGA A R H R GRTVWWE GR D A L L R L

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UniRef90 A0A011QFH5 UniRef90_UPI0003809A86 UniRef90-UPI00026281C6 UniRef90-E3HQZ7 UniRef90_Q0K0E4 UniRef90-A0A017HE91 UniRef90_W4LBT3 UniRef90-B4REL6 UniRef90_UPIO003F9A242 UniRef90_G6E7Z0 UniRef90_UPI000468354A UniRef90-I1ER94 UniRef90-I3X184 UniRef90_U2WS90 UniRef90_UPI0003654AD4 UniRef90-L1KV51 UniRef90-I7DQ76 UniRef90-R4T197 UniRef90-F4CUM3 UniRef90-QOVRD8 UniRef90_A3U250 UniRef90_-Q8YB81 UniRef90_UPI00031E65B8 UniRef90_E3JAV4 UniRef90-E310H1 UniRef90-H6R674 UniRef90-UPIO0037D07C2 UniRef90_UPI00046AC9C5 UniRef90_UPI00026270D9 UniRef90_G9ZW60 UniRef90-L2EJ93 UniRef90_UPI000313F4EF UniRef90_Q21R36 UniRef90_UPIO00455F9E4 UniRef90-Q46S66 UniRef90-NOCNT6 UniRef90-E4PGW6
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 $P G A M E S W G L G P D D I K P E N P G I I Y T R I S G Y G Q D G P F A A K P G$ $P G V M E R N G L G P E E C A A L N P K L V Y G R I T G G W G Q D G P L A A R A G$
$P G A L K K Y Q L D Y E S L R K I N P R L I ~ Y A S I ~ T G Y G Q T G P Y S K R A G ~$
 HGTAERMGVGYERLLRELINRRLVYCSISGYGSFGPYRDRPG $P G V L Q K M G F G D E R L K A L R P D L V R C S I T G F G P S G P Y R D R P A$

 AKA1 TKLGGFGYDDVAA INPAIVYTNCYGYGRRGPDADRPA $P$ GQLRKMGLGSEVLRGVRPDLIVAHVSGYGQDGPGANRAA
$P$ GVMD QMGLG WDAL QALSPGII HTSINGFGTTGPYAKRPA $P G A V D R M G F T W E R I Q E I N P R I V Y A S I K G F G E E G P Y T G F K A$ ASAMRRLGLDYASLRERLPTLIYCSCYGYSEKGSYAGRPA PGVVERLGI GEHEVRSVNPDII YVSISGFGEDGPDSHKPV PGAAARMGLDYDSLREKYPRLIVCVISGYGEGGPYSDKKA PGVLEKLGLGWETLSAINPGLVMLRLSGFGQSGPMAQQPG LGVMERLGLGYEVLREVNPALIYCSITGYGREGPDAKKGG
 PGAARRMGLDYETLRADFPRLIVCDISGYGDDGPYRDKKA PGVMD GFRLGHETLCQANARLIVYSINGFGDDGPYAARPA
 VGVLERLEDDHAVLVRHNPRII TCADSGFGETGPARNRPA
 $P G A M E R L G L G P D V C L G R N S R L V Y G R M T G W G Q D G M L A Q S A G$
 A GVTKKLK I DYETLSKVNPRII TCTVTGFGETGPACKRPA PGVAERRLGFGPETIEKINPRLVYARMTGWGQEGPDADRAG $P$ GTME K L G L G P A E L L A A D P R LVVYC S IT GF G T G P GAA AP G P GVMER L G Y GWEALVARFPKLVYGAVSGFGHTGPDRELPA
$P G A L S R L G M N Y A D L A A R N P G L V Y A H A Q G F R G D S D R A G H A A$


 A G S L A K Y GLL D Y E T L SAA NP GLVY CS V T GF GQT GPRAP EP G PGSMMEGWGLDPDDLDKINPRLIVLDRISGYGQTGPYRNKPG $P G V T E R L G G L G P D D C L A R R P G L V Y G R M T G W G Q D G P Y A A Q A P G$
 $P G V T E R M G L G P D E V L A R N P R L V Y G R M T G W G Q F G P M A D R A G$ $P G V A E R L G C G P D D C W Q V N P G L V Y G R V T G W G Q S G P L A H T A G$
 VGAL A R Q GLL Y E DLLKD DFPDLVY CSS S GF GQYGPMRSAKG $V$ G T L A R R G L D WP S L Q A VNPRRLI Y L S CTGFGQSGPYAKRKG

 $P G K L A T M G L G W E D C H K I N P R L V Y A S I T G G Y G Q T G P Y S A A A G$
 $P G V M D R L G I G Y E A L K A V N P R L I V C S I T G Y G Q T G P Y K D R A G$
 $P G V I E R M G L G E E Q L R K V A P N L V M V S I S G F G D T G P Y S Q R P V$
 P A A M A R L G F G Y E D CCA L N P R
 $P G T L E G W G M G Y D T L A P L N P R L V M L R D D S G Y G Q T G P Y R D R P C$
 $P G V T E R R L G F G P E D V A K V V P R D V Y G R M T G W G Q D G P L S D V A G$ VQSMHRLGLSYEALQAVNPRLI YCGVYGFSENGPYAGRPA
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$P G V M E K L N L G P E V L C T S N P R L I V A R L T G F G Q Q G P L A A R A G$

$P$ GTLD R WGL P K E V L WS DQ P R L V I L R AT A F GQ D GP Y R D R P G $P G A A E R M G L S F Q A L H D D F P R L I V C D D S G Y G D G G P Y R D K K A$
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 $P G T L E K W G M G Y E T L A A R N P G L I M L R I S G Y G Q D G P Y R D L P G$
 $P G T L E K W D L G W P E L S A A N P R L V L A R V T G F G Q F G P Y A H R P G$ $P G T L E R W G L A P E T L W E R N P G L V V A R V V G F G Q T G R N R H R P G$

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 $F D P P$ L G P A V Y P R A VTP N R R P Y E T K D G H I A A L I Y N D K H WN
 $F$ GTE VP R S GNA S G G GQ P G W A V R CA P G G P N D Y V Y V





 $F V P P \| G P \quad S G Y K R M K E$


 DLWED R RAA NFFD G GAP WY N VY E C Q D G N WI T I GALEP QF W






 Y GVVIER E R T G S A L P G GVVVP S N T Y R C A D GK Y A V I I S G N G D A I Y G $1 P$ AR GN











 $G G Q E Q K P E R A D L N G G S \quad F Y D Y Y$ Q T R R D G R W L S G V G S L E P Q FA

 | $F$ | $V$ | $H$ | $E$ |
| :--- | :--- | :--- | :--- |
| $L$ | $V$ | $P Q$ | $E$ |
| $L$ | $A$ | $A$ | $S$ |
| $L$ | $L$ | $Q$ | $D$ |
| $L$ | $L$ | $I$ | $Y$ |





 $M L F P$ K P R GK N WLD GGSSA Y Y D T Y Q T K D G K Y M A V GA LAE P Q F Y

 $\begin{array}{llll}L & R & V & P \\ Q & R & T & G \\ R & S & A & N\end{array}$
 $G A S P P G R S G A A H A \quad T I C P Y G P F Q T G D G L T V L G G Q Q N E R E W$






 GQTPPPRRSGASHA T $\quad$ G P G P



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UniRef90 E6PWF2 UniRef90-C3AJA0 UniRef90-A0AO23NXD2 UniRef90-17CTU0 UniRef90-HOTJL6 UniRef90-UPIO003B60D1B UniRef90-D4X7X2 UniRef90_UPI00047BDC29 UniRef90-D9X214 UniRef90_UPI0003713FCC
UniRef90_G7DJV5

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260
270
280 HLCHPS L A RDGRFSTNAQRVENRDELLTK\|LUKLFLTKETA GRLAVAMGEPERYATHSARGAAMAELDDHI ARWTSGRAAE RLASQVLEMPELAADPNGRDARRDELFRDLDEAFDRHPWA TLCRAVERPDLVEDPRFSTNADRDRNRPVLAALDAEHPTS RLC IDDMAHDLDYASNADRVANRPAMNARLEAATRKFTSD KRLMIEVGRPDMAEDPEDEHNHQDRDDQALADWCAGDDST AELLAKLGLAGKDDPEQGDQDGWPQLHTTFEEVFRTKTRD ILLCRPEWKTDPRFVTNDVRVENRDVLEPLIEEMTRTKTTQ KL CHPDMAQDERFRNNAGRVTHLAELDPWLDEQLLQHDKA K CDVDHEPDWKTDPAYATPAHLNE EVLNDDWLR SLSDYNDGHTHRDEVYRHI RHAFEHETTA ALGLPMLREHPDFETNAKRMRNRPALKALI EERTRQHDSA

 AFIDRVQWNSPEYASLEQRARQDDTVYGLVAQTLKERTTA AKLMTLVGHGEGYASNPERVANVDTLDQLI GAWTRTGSAG A LGLIHLIDDSRFSSNASRVSR RAE I NSSI NEVVCTQPRS QRFFELTRRPDDADDMRFRTAHFPELYRYVEQVLVERTK AVGHPEWLNDERFDTPALRDRHADARLNMTQQALLDKSAE ADFCPGMVDDPRFASNLLRVSNRAELDALLEECFDSLTRE K RLM R L I GRED QLA D N AGRDARRDEI YALI DA WVEA H DEA

 MFDRLDLIDDPRFAGVKERRDHCEAMWDEIRHSARRLDTA RACGVLGLDDARFATNGARVANRAALSDAMATAFAGWRRD
 DLLDDEELRRPEFDHQPGRLLAEKAYI EARVQAAFERETCE RLAADMGRPDERFATHGARGANADELDGLIGGDWTSARDSA RWT QL M WLLEDPRFATDDQLRGENGA IL SERMARWCAGRTT Q A RLLARVME QPELLADPKESRLAKRDEVNAAVRAWTEGLDRK



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

 QQFLADVAIDDPSLQSQQPADWAVNKHQLK Q IVGRRTQA $F C R A P E L G C D A R F R A N C D R V E N R N D L A K G I T E A L R A D G A D$
 $A V L D L D L S G D E R F R G E Y S R F V H R E Q L A G L L Q A R F R T A P R D$ QLCAAL GLLS QLA EDPNSGRVEHRERVMAAMSDALARLPRG
 ANGCQA A GCADRFATNAERVVNRAQQ DPLLRERILDAKTDD

 ERRVMR LVVGRPD LIDDEPWFRAE HTEE LD GAVVGHWISRMHSRE
 $A$
V G D P E F G A R P D Y A D N A R R R G R R P E


 R LMQCI G G N DPALA S NA GR DERVA EI D MAI A A WS A S R S V D RCAQA IGAPHPDYATAPARSKNRDALNAEIAKRTVTK STE


 EIL KERLQLPPDLSQFGDEHQMHGKQLLTDDFLTKNQD ERVMRLVGRPEWFASGVERAQHADLLDEAVGGWIARRTR D A ANCRAIDRPDRFADNASRVTHATELNADFAAWCAS HD LE ASFCEVVLEQPALADDPRYASNVLRHEARAEDVFATLTS G VLGTRDWLD DPRFADNRARSANRAALRTLLETALAGHDGA AI QKP E L L E D D R F A T A S L R R D H NALA L K A L FE D WLAA A P S R D KRLMRAIGR DDMAEDNQGRMQRVGEIDAAIQTWAGQAAAA KFCLLLGRQEERYKTNASRDQHKDELVNMIADEMKKKKKE K T GLLERLRRD D RYDTVRKRAEHYNDIVPQLHEALSARSAL
 ASGRTDLLRDDPRFRTFAGRAANDDLVYAELARIFLTTRTTA $R L M A A D G R D D L G E A P D L A H N A R V D E I D A A I T A W T V Q R P V A$ $M A Q V L E A P G L A A D A R Y A T N A D R L Q N R Q A L R D E L S V D Q N A A$ KAFCEKVLLQQPRFDSNAKRNEHRAA LREVIVQAFGALTSE ERVMRLVGRPEWFAT GAERARHADVLDEAV GSWDAART RT





## UniRef90_v9wuo1 UniRef90-D6KDH3 UniRef90 U2WV09 UniRef90_UPIO0036F9220 UniRef90-Q82NF2

 UniRef90-UPIO002DAAOBC UniRef90_D9VIF1 UniRef90-L8EDH6 UniRef90_UPIOO02EB3BFF UniRef90_Q3INV6 UniRef90_Q0CTJ2 UniRef90_G8ASK5 UniRef90-B8G8H6UniRef90 E8TRY2 UniRef90-EOXS60 UniRef90_UPI0004787E3F UniRef90-I2N7Q7 UniRef90_G7D983 UniRef90-A0R5S4 UniRef90-D6V8R9 UniRef90_UPI00037362D8 UniRef90-EODPN6 UniRef90_UPI00035E1FD7 UniRef90-G2NU26 UniRef90_UPI0002D39CE7 UniRef90-F5YRV4 UniRef90-S3BWU5 UniRef90-10H9W3 UniRef90-A0QTZ7 UniRef90-A4FC53 UniRef90-N1PGG9 UniRef90_UPI0003F88D73 UniRef90-A1VMJ0 UniRef90_UPIO003614F7D UniRef90-E8TWF7 UniRef90_A0A059E5A7 UniRef90_E9J8N5 UniRef90-D7B5J2 UniRef90_UPI000372FCE9 UniRef90-M0ASI9 UniRef90_Q11Z73 UniRef90-B7RZD3 UniRef90-B3RBQ2 UniRef90-K8PT74 UniRef90-R9P3G9
UniRef90 D5RN74 UniRef90_UPIO00465D40B UniRef90-IORS16 UniRef90-B1HY54 UniRef90-D0D621 UniRef90_H6SSJ8 UniRef90_K9GT67 UniRef90-UPIOO03ACDB6B UniRef90-M0MPH4
UniRef90_B1M7T9 UniRef90_B7RMT6 UniRef90-B8IFZ2 UniRef90-HOJC48 UniRef90-C5CK44 UniRef90_LOIUQ9 UniRef90_Q0K9T7
UniRef90_V8QZ54 UniRef90_VQQZ54
UniRef90_HOQU97 UniRef90-D9XA97 UniRef90-F7QR04 UniRef90-A915Y3 UniRef90_19W593 UniRef90-M1T5B5 UniRef90-K6E1C4 UniRef90_G8MGT3
UniRef90-Q1LGP7 UniRef90-K3WG76 UniRef90-E8TW12 UniRef90-UPIO003670BE8 UniRef90_UPIO004793939 UniRef90-M7CXN4 UniRef90-W3RJK3
UniRef90 QOFJQ9 UniRef90-W5TGH3 UniRef90-A0A031HT06 UniRef90-A1WC68 UniRef90_UPIO0036D7F1F UniRef90_H1V168 UniRef90-D816D1 UniRef90-MOCDM3 UniRef90_V8QWN2
UniRef90_UPIO002D63291 UniRef90_UPI0003B7B596 UniRef90-W8HAX5 UniRef90-F8GQI7 UniRef90-W0Z8X2
UniRef90_EOXT92


## UniRef90_V9WU01 UniRef90-D6KDH3 UniRef90 U2WV09 UniRef90-UPIO0036F9220 UniRef90-Q82NF2

 UniRef90-UPIOOO2DAAOBC UniRef90-D9VIF1 UniRef90_L8EDH6 UniRef90-UPIOOO2EB3BFF UniRef90-Q31NV6 UniRef90-Q0CTJ2 UniRef90 G8ASK5 UniRef90_B8G8H6UniRef90 E8TRY2 UniRef90-E0Xs60 UniRef90_UPIO004787E3F UniRef90-12N7Q7 UniRef90-G7D983 UniRef90-AOR5S4 UniRef90-D6V8R9 UniRef90-UPIO0037362D8 UniRef90-EODPN6 UniRef90_UPI00035E1FD7 UniRef90-G2NU26 UniRef90-UPIOOO2D39CE7 UniRef90-F5YRV4 UniRef90-S3BWU5 UniRefofolioh UniRef90-A0QTZ7 UniRet90-A4FC53 UniRef90-N1PGG9

UniRef90 UPIOOO3F UniRef90-A1VMJ0 UniRef90-UPIO003614F7D UniRef90-E8TWF7 UniRef90-A0A059E5A7 UniRet90_E9J8N5 UniRef90-D7B5J2 UniRef90-UPIOOO372FCE9 UniRef90-MOASI9 | UniRef90_O11Z73 |
| :--- |
| UniRef90_B7RZD | UniRef90-B3RBQ2 UniRef90-K8PT74 UniRef90-R9P3G9

UniRef90 - D5RN74 UniRef90-UP1000465D40B UniRef90-IORSI6 UniRef90-B1HY54 UniRef90-H6SSJ8 UniRef90_K9GT67 UniRef90-UPIO003ACDB6B niRet90 MoMPH4 UniRef90-B1M7T9
UniRef9O-B7RMT6 UniRef90-B81FZ2 UniRef90-HOJC48 UniRef90-C5CK44 UniRef90-LOIUQ9
UniRef90
UOK9T7 UniRef90_V8QZ54 UniRef90-HOQU97
UniRef90_D9XA97 UniRef90-F7QR04 UniRef90-A915Y3 UniRef90_19W593 UniRet90_M1T5B5 UniRet90-K6E1C4 UniRef90-G8MGT3
UniRet90-Q1LGP7 UniRef90_K3WG76 UniRef90-E8TW12 UniRef90-UP10003670BE8 UniRef90-UP100004793939 UniRef90 M MCXN4 UniRef90-W3RJK3 UniRef90_W5TGH3 UniRef90-A0Ао31HT06 UniRef90-A1WC68 UniRef90-UP100036D7F1F UniRef90- 881601 UniRef90-MOCDM3 UniRef90-V8QWN2 UniRef90 UPIOOO2D63291
UniRef90-UPIOOO3B78596 UniRef90-UPIOOO3B7B596
UniRef90- W8HAX5 UniRef90-W8HAX5 UniRef90-Woz8x2 UniRef90_E0XT92

PNAMAR|L|G|L|SYEQVUA\||NPR\|I YCGAFGFGQRGPYAERPA PKAMARLGLSYADARTINPGII YCGMHGFGQNGPYADRPA PKAMEKLGLDYQAVKKVNPDIIYCATYGFSKKGPYGDKGA VGDLKRYGLDYAALSALNPRLVYCSDTGYGQEGPSAHKPG PGALARLGLAHADVAARNPGLVYAHAQGFRSDSDRAGNAA A GVMERMGFGYERLAEDNPRIICAFGTGFGMSGPDAGKGG GDVPA RMRIRYDDLKELNPAVVCCSGSGFGMTGPRAGEPG
P GVAERLGUGPDACLERNPRLVYGRMTGWGQQGPDAATAG PGAVERLGMGPADALA LNPRLI HVSDSGYGRGGPYENKKA

$P G V A K R L G V D Y E S L S A V N P R L I Y L S I S G Y G E T G P Y V Q R P G$
$P$ GTME EWGLSWPTLQSVNPGLI MLRVSGYGQTGPYRRRSG
$P$ GVPERLGUGFGQLTELHPRLI YCSVTGYGQQGPDKAKAG
$P$ GAMERMGFGWEQI QKLNPRMI MASVKGFGGPGPYEDCKV $P G V M D K L G L G Y D V L K E I N P R L I Y A A C S G F G S Y G R Y S Q R P G$ $P G V T E R L G L G P G P C L E R N P R L V Y G R M T G W G Q D G P G A Q A P G$
$P G T L E Q M G L S P E E L L R D E P K L V I V R I S G W G Q T G P Y H R R P G$

## P

PGTLEKWGLDPEDLIAANPKLVVVRVSGFGQTGPYRSRPG

$P G V A T R L G L G A E A L R K A S P R L I Y C S D S G F G Q E G P F K D G P A$ PGACERMGLDHASLAADKPSII VCDISGYGADGPYRDRKA PGAVDRLGLAARTLRPAHPRLI TCALISGYGNSGPYREKKA PGTFERWGLSYAELAERNPALIMLRVTGFGQQGPYATRPA PGATARLGLSATDMATRHPNVIAVEI DGYGSGGPLSHKRA A GTLARWGWPDEELRTRFPALVHCRITGFGTDGPMGGRPG
 $P G A A Q R L G I G G E E L R S T R P D L I I D C D I S G Y G \square G G P H S D Q K A$ PGATQRMGLDYQTLSKNHPTLIVVDISGYGSTGPYASKKA $P$ G VMD R L G L G F E A L S S DN P R L V Y C S I S A Y G Q T G P R A K E G G P G A L N N K L G L G Y E E L S T R N P K L V V Y C S V
 T GTLLKKYGLDAASLRLLNPRLI YCSITGFGQTGPYADQPG PGKLNSFGLGYEDVARVAPRLIVCSLTGYGSHGPYASRPG
 A GTMEKYDLUGYETLUTEFNPELIVYSSI RGFGDPRERQQQPS
 VGGAAK Y G L D Y T T L S E L N P GLVVYC S I T G F G Q D G P L A A N P P G
A GVMERF GLGYERLAE ENPKLVYAAL RGFGDPRAYAGWPA
P GTLKRFGLAYEDVRAFNPKVVYASLSGYGQTTSWRNRPA $P$ GKLLA S M G L G Y E DLK K V K P D I I Y A S L T G Y G Q T G S Y R D K A G $P G V L E A M G L S P E A L L D A N P A L V I V R I S G W G Q D G P Y R H K P G$ $P$ TVVMER LGGLG P DVCHATNPRRLTYARMTGWGQEGPDAQEA G
 VGGLAK YGLDFASLAQVNPGLI YCSI TGFGQDGPYAHRAG PGTLEKWGVGWEDLQALNPRLVMLRISGYGQDGPYRDRPG $P$ GTMEKWGLGWEDL RAVNPRLVMLLRVTGYGQDGPYAQRPG




 $P$ G A I E RMGF GWE EL QR I NPRMI FA S I K GF G D GPY T HYKA VGTLE RWGMGY D DVLDSRFPRLI HCRVTGFGAT GP L G G L L P G PKGMERLKLAYEDLAEVNPQIVYVSLVGFSQRGRYARSPA $P G V L D R L G F S A A E M H A L N P S L V V L S S V G F G H D G P E S R R S G$ P GAA GRLGGLDATVTGRRPGLI PCTI S GWGTTGPWADRKA
P DVK S KL GI D Y E SMRA DNPRLVYASI SGFGQDGPYAKRPG PGAAERLGLSFETLHARHPRLIVVDISSGYQGGPYERKKA PGAAARLGLLSYEALHARYPRLIVVCDISGYGSDGPYRDKKA
PGTMERLGYSWEVLHQRYPKLIVTSVSGFGQTGPYSKRPA
P G $\square M K K L G \square D Y E E V R K R N P E I I F C S V S G F G Q T G P Y R D \square A A$
P GALD K L GL GYEALSARNPRLVYCSIISAYGHTGPDAHRAG
PGAADRELGGFRALHTRFPKLIVVCDI SGYGDHGPYRDKKA
$P G R M E K W G L G P D T F E A T N P A L V Y A R V S G F G Q D G P Y S T P R G$ P QAMARDGL S Y EAVRED NPRIVVYCGAFGFGQNGPYADRPA V G A L K K F G L D Y E S L K A I N S KL I Y C S IT GF GQT GP YA ERA G
 P GVMDRLGGI GYETLKA I NPALI YCSITGGGQTGPYRDRAG T GVVAERLGI DAGTLQAANERLIVCSI SGFGRTMPLKNSPG PGVMARHGLDWDTLHGRFPQMHYASVVGYGQTGPDAKRPA $P$ GAVEA L G L G T DELTRRRHPDLIVMNIVDGYGPGGPDSHKRA

 PGATERLGLGYNTLRETHPSLIVCDIVGYGSDGPYRDKKA
 $P G T A E R L G V G Y D D L A A R S D G L V Y C D I S A F G A T G P W S E R P G$

 $P$ GTLLERWN GPEQLQAANPDVVLVRISGYGQNGPYAQRAG S VVIK E R L G L T Y E R L L A A I N P R VI L A A S I S G F GQ D GP Y C E R P G

## UniRef90_V9WU01 UniRef90-D6KDH3 UniRef90 - U2WVO9 UniRef90-UPlooo36F9220

 UniRef90 ${ }^{-}$Q82NF2 UniRef90-UPIOOO2DAAOBC UniRef90-D9VIF1 UniRef90-L8EDH6 UniRef90-UPIO002EB3BFF UniRef90-Q31NV6 UniRef90-Q0CTJ2 UniRet90-G8ASK5 UniRef90_B8G8H6UniRef90 E8TRY2 UniRef90-E0×s60 UniRef90-UPIO004787E3F UniRef90-12N7Q7 UniRef90-G7D983 UniRef90-AORSS4 UniRef90 D6V8R9 UniRef90-UPIOOO37362D8 UniRef90-EODPN6 UniRef90-UPIO0035E1FD7 UniRef90-G2NU26
 YDDL: QAAVGMPVLQSRKAGPPDYVATAVADDRVVGMAAT LDDSIQAASGVAMLMKMVEGEPRYLPTVGDKTTGLNVAN YDETVQAASGLVDVANRALGTPAYLPT IGDKVCALTMVY

Y HMLVQCES GLIMSVTGTEQAPAAAKVGISIADICAGMYAY $Y D V \operatorname{V}$ V $\square A G L L D M T R R G T D E A P R V P G Y Q V A D M A G G L L A A$
 FA HI AHAFS GLS YLAA GFPGETPDLPGTAP L GDYIA S LFGA
Y D QVLQ TMTGMCAMQGKAGGPP EI LYGSVVDYYAAALVA
YENV A QCA GGAA STT GF LD GP P TVVT GA QI GDS GT GLLHLA L Y D I I S Q GM G G L M S $\square$ T G $\triangle P$ G GEP T R S GNA M G D I L G GMNMV
H
F

## F

## F





 Y


Y DLLI QCETGLVVITGTEEVPS KVGLSIADIATGMYAY


Y D F I D A A M S GFM S I T G DK D S GP QK V G DA




## F

F



APTVQAETGLTAIVEEHFGNALSEPRGDACSHYTGLQGV
 HD I NYLA LT GALH CLG DADRPPPPPLNLVADLGGGALYLV Y A SVI EAASGLRHLNGFPGGPPPRLALSLG DSLAGMFAA HDNNY LS L LA GVLDDYSRHKDKKPVSMGIQLADDAGGTMAAA Y D Y I I Q GMS GFMS IT GNP DGQPQRTGVAI T DLFTGLY SV FARI A H AVGGLTHLA GMPGGPPVTPGSTSLADYMS GLEGA FARI A H AV G GLTTHLAGMPDGPPVTPGSTSLGDYMTGLYGA

 $Y E N V A Q C A G G A A S T T G F W D G P P T V S G A A L G D S N T G M M H A A$ F GLIA E AK S G $\square$ MQMVVGTPGEAPPLLR DSLGDMYTGAHAVA ENVAQCA GGAASTTGFEDGPPVVTGAQIGDSGTGLHLA
 Y D A AV Q A L G G I M S I NG D P D G T A T R V GV P I V DVT T G L S A VI

 $F D Q I A Q G M G G L M S I T G L P G Q G P V R A G \square P V A D L T A G L D C A$
 $Y D M V V Q A M G G \square M S L T G Q P G G P P T R V G V S D G B D L G A G L Y A M$ YDLI I Q GEGGAMSVTGERGGRPLKPGVPQA DVFGAMVAS $F G L I A E A K S G D M Q M D G E P G S P P P L D R V S L G D M Y T G \square H A V$ Y DL L DQ A A A GL DS VTGGGE DAP S R A A G I S I A D I A A GMYA Y FA SVVCEAMGGFRYVNGFPDRPPVRQNLSLGDTIAGDHTAL

 H D INYLS IA GVS SHC GRADS GPPPMGDEIADVAGGSHHAV
 YDTVVQARGGLMGLTGTPDEP RRAGSSVGDLAGGMF LV Y DLLI QAEAGVCAVTGTAGTPAKPGPPDADVCSGLYAALT
 YENV AQCA GGAASTT GFWDGPPTDSAAAL G DSNT GMHLAA Y DLLVQSEAGFILSVT GNGPEPAKA GISIAADDAAMYAY








## UniRef90_V9WU01 UniRef90-D6KDH3 UniRef90-U2WV09 UniRef90_UPIO0036F9220 UniRef90_Q82NF2

 UniRef90-UPIO002DAAOBC UniRef90-D9VIF1 UniRef90-L8EDH6 UniRef90-UP10002EB3BFF UniRef90-Q31NV6 UniRef90-Q0CTJ2 UniRet90_G8ASK5 UniRef90-E8G8BH6 UniRef90-E0XS60 UniRef90_UPIO004787E3F UniRef90-12N7Q7 UniRef90-G7D983 UniRef90-AOR5S4 UniRef90-D6V8R9 UniRef90-UPIOOO37362D8 UniRef90-EODPN6 UniRef90-UP100035E1FD7 UniRef90-G2NU26 UniRef90-UPIOOO2D39CE7 UniRef90-F5YRV4 UniRef90_S3BWU5 UniReffollor UniRef90-A0QTZ7 UniRet90-A4FC53 UniRef90_N1PGG9UniRef90 UPIOOO3F UniRef90-A1VMJ0 UniRef90-UPIO003614F7D UniRef90-E8TWF7 UniRef90-A0A059E5A7 UniRef90_E9J8N5 UniRef90-D7B5J2 UniRef90-UP1000372FCE9 UniRef90_MOASI9 UniRef90-Q11Z73 UniRef90-B7RZD3
UniRef90 ${ }^{-1} 3 R B B_{2}$ UniRef90-B3RBQ2
UniRef90 K8PT74 UniRef90-R9P3G9 UniRef90-D5RN74 UniRef90-UPIO00465D40B UniRef90_10RS16 UniRef90-B1HY54 UniRef90-H6SSJ8 UniRef90-K9GT67 UniRef90-UPI0003ACDB6B UniRef90-M0MPH4 UniRef90-B1M7T9 UniRef90 B7RMT6
UniRef90 B8IFZ2 UniRef90-HOJC48 UniRef90-C5CK44 UniRef90-LOIUQ9 UniRef90-Q0K9T7 UniRef90_V8QZ54 UniRef90-HOQU97
UniRef90 D9XA97 UniRef90-F7QR04 UniRef90-A915Y3 UniRef90_19W593 UniRef90_M1T5B5 UniRet90-K6E1C4 UniRef90-G8MGT3
UniRet90-Q1LGP7 UniRef90-K3WG76 UniRef90-E8TW12 UniRef90-UP10003670BE8 UniRef90-UP10004793939 UniRef90-M7CXN4 UniRef90-W3RJK3 UniRef90-QOFJO9 UniRef90-W5TGH3
UniRef9O-AOAO31HTOE UniRef90-A1WC68 UniRef90-UPIO0036D7F1F UniRef90-H1V168 UniRef90-D816D1 UniRef90-M0CDM3 UniRef90-V8QWN2 UniRef90 UPIOOO2D63291
UniRef90-UPIOOO3B78596 UniRef90-UPIOOO3B7B596
UniRef90- W8HAX5 UniRef90-W8HAX5 UniRef90-woZ8x2
UniRef90_EOXT92

TFVPALLGDWGYARMTSPERRPFPTDDGYIVTDRHWQRDFE TFVPAMGDWGYARMMNPDRRPYRTLDGYIYDDKHWQRFFE VFEPPLAPAGYTRLMSKHRRPYKTKDGYVAVLPYWDNHWA NEKVPGRYGNAHASLVPYQVFAVA DGEIVVAVGNEGQWQ LQRGKDFSWGAYPLTGVFRTRDGAIVLVGAFKTNPL EGFEPPRTRRSAHPSLVPFQVFPAADGWLVVGCAKEKFWQ GGWQDRRGANLLDGGAPFYGTYETADGRHMAVGALEPRFY GGAPPSRSGAHHASDA PYGPFETSDGTVFFGIDNEREWE AGEDPRPGETPLAGAYPWYDVYETADGRYVTGGALEPQFW SGEKDSGRWGTEHPSIVPYRSYKTRDGNILFGGGNDRLFG FGKDREREGAGSFIAVPHGHFRTKDGKWVAUACTTDKMF EPREVGRDMRSGGITGIHPTQQGHLYGSANTQHFWAALCH TPRAGNDSGGGQPGRILKCKGWETDPNAYTYFDTQAAAWP GQWTEGRGSNAFDGAAPFYRTYRCADGLVMAVGCVEPQFY TGVV KPRSGSRSSGSVPRNVYRTLDGGWVCLSASTQGMA TNKPPTR QGSRTGFNVPRECYRTRDGRWIALSGATTATA俍 GAAPPPRTGAAHATIYPYGPFPTGGDGASVMLGLQNEREW GGAGVVRSGARHPSIS PYGAYRCGDGAQVFLSVQSDREW LGMDQQRTGNRSQNNAPRNLYRTKDDHWVAVSTSAQTDA ADGRVRPRTGSAHPSIAPYDSFEAADGPLFVGVGNDRQFA GGTVPFRMGNAHP SLFPYEPDPTADGELTVIAGNDGQFR YGVQRQRVGGRMEGIA PSNAYPCADGTSIVVAGNDADY GGTAPARAGASHATAAPYGPFTAGDGVTINLGLQNEREW GASPPAMAGAEHA SATYPYGPFECRDGTVMLGMQNEREWK
SGRNPQALGSAHPRNA PYRVFRSQDGYFGMAAGNNALWR SGRNPQALGSAHPRNATYRVFRSQDGYFGMAAGNNALWR
GGTELPVQTGHDLPQSTVYGVFSAKDGYLVIAAGMTDTWK SGQTPEPLGNSHPNIV PYQTFQTKDSDIVVAVGNDRQFA SAQPDRPDGNGHPLLCPFGIFPASDGYVSLGVGNDREWE TGENPERMGNAHPSIV PYDVFSTRDGHIINDLQFDDLCE GNKEATRWGSEHESUV PYEAFPTKDGYMTIGVGSDLQFK AGVEPVPVGNENATAAPSGTFATADGALNIAANKQEQFE TGTPPTRQGNSHP TALFPYNAFETADGYAVIDAAFGTNHWT TFEPPSGGAGYVRLLSPGRRPYETSDGY CALVYNDGHWQ SAQAPGPEGNGHP LLCPFGLFPASDGYI SLGVPNDRFWR DGEPDADSANESH FELSDGRRDT $\begin{aligned} & \text { IAGSPIYSPMFSRYCA }\end{aligned}$ AGQEAGRHGDKHPSIVPYQTFQAKDGRDMLGAGNDGQFR GSWTGRRTDNDVDGGAPF
 TGRVRGP EGAGTVNACPHGHFVCGDGRWVAIACTNDKME EGTV RGAEGVATLNACPHGHFECADGAWVAIACTNDKMF
 GNAGGGGQPGWVLKCKGWETDPNAYDYFTIQGHAWAPDCR GNEGLPGQTGHDMPTSTWYGVFRAQDGDLVIDAAQVDDSWQ DFGDCVPRSGNASGGGQPGWAVKCAPGGPNDYIYWEPIAH AKAPMRSGNGHPNIAPYDTYATATEPDYAVGNNGQFQRLC
 GGTQPPRIDGTQHATIAPYGTYPAADGKEVLFSIQNEREWA DGDVPQQAGNNHPTSDPGVFKTSDSFIN A TTMWARFAQ GAAPPMRAGAAHASSYPYGPFPVGDGATVMLGLQNEREW DKK TPQPDGSRHPSITPFDVFKAKDGWMVVAAGNDMLFQ SGNVGKPMGTAHSLMVPYQSFPAKD\|E\|NVAVLNDRAWKH MQGILPEQTGHDMPASTLYGVFRAADGDLVIAAQVDDAWK GGTPPARHGDAHPSDA PYGHYRTGDGGSVI FGLQNDREW DYSGSMRECSGSTDTGDVPSNTYTSDGKNIVDAANTDTDF TFVPPIGDWGYERMTAPERQPYRTADGHVYTDRHWQRLFA IDAGTEPKPHGNDNFTAAPSGTFRTGSGPLNI AANKQDQFE GGПEQKPETGLLNGGSFYDYYQ TRDDRWLSVGSLEPQFS ERGVQPPKCGSSHESLCPYQAFEAADGPDMIGVANDNDWR NDTA PSNATRHPSVAPCEAVAASDGPFVLAAGTDAQFE SGVTPARVGNAH A SVMGAYPTADATVVGTTNDREW LGHDPARYGNAHPS VVPYGMYESASDGPLI JAVGNNAQFD LDRVGYGQPGWVLKCKGWEKDPNAYTYFTIQEQNWGPTCK DAPGLARSGAAHASTYPYGPFETGGGGSVMFGVQNEREWT
 GSGNNPRKMGSAHPRNAPYQVFRCKDGYFGMAAGNNSLWK AGVVPRAMGNRHPSTA PYEVFDAQDRPLVLAVGNDRQFR GGLVAT HQGRAHVSIPTYNTFATKDGSEIVIAANTDKMW DAYAMVRERTAGNLPGVVPSGSYPCADGSVLIAGNASGVF


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 RVFCDRVLDDERFASNSRRAANRDALRALIVQAFAGLTDD AAFCTTVLGQARFNSNTQRVAHQAELRELITAAFAGKTSA FCKKTEWIDDDRFLTGGDRVENRDVLVPLIEEITMTQDAN RFAAVIFATDERFHTLNGRNANRVEILATVKSWVAARAVA QRFCLNVLNDPRFTTNLERVNHREALDVEVGKHLNRMTRD AVGRADMAADPRYADVHARARHMGELYDLLHRTFATRPSA RLCELRLLSAVADDVRFKTNADRVRHREELTSMMEARTRT ALARVIGRPELITDPRFAERENRPALNDAD ESAMVHRTAT ARLCDTLGLSEMKDADSQKPADQNALKEA AGKVREKDLA
 KLCLTLQLPDPRFADNAARLTHARLLKRLIEAVTLEFPRS CALAGDDADDPRYASNALRLANREALFAQLTAATRTFARD
 NLCRDVLGDEALARDPRFVSRHRDELKAVICGVFARSSAE RRALEAVGRPERFAEAQQRLRNAAEDDGMMAAWIAERTLD GFCEADERPDPRFETNADRVEHMDELEAELASTLGERTTE SVCEVVQRPELIDDDERFATTSLRAQHQEIMESIFAGADAH RSLCTALGRDDRFATPTARLANKDELGAALAGPLAGRTAD ARLMNAVGRPDLASDPDKRYLRDDDLDEAIVAWTTTRSTR NFCRTVEAGWLLDDPAFQTATGRAAERHRLDEATNRCTAA

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 QWAKLMTEADIPFDEMNTPESLLTDPHMKEVGFFVEEEHP Q WAK AMS EADVVPHMEMNSEDEDDLMQNQHMLEVSEFWEMHQHP EWARVCAK
 $\begin{array}{ll}\text { V VV } & \text { E R L } \\ \text { V A A S A }\end{array}$



 DWTARFDGTETCVTPVLDWTEAARHPHNAGRGTYI TPDGY DNVAFFEAAEVTIGPVNDTVRLMNDRHVQARGLLADYPDE DVLAMFESVGATAGPVYTAADIVADPHFTERGSIVTVDHP EWIAA $L D A K G Q P C A D V L D Y S E I L S N E Q V A H M G L V R D M G A T$ ELTAALRAREVPVGEVNSVREALEDPNTVARGMVGHFEHP EAVAALAAQGLPTAPI WNIAQAANNEHATARRLVSQLAHP QVVERLQEAQI ANARVNTMQEVWEHPQLRARARWRDIGSP GLIALLDGAGUANARLRDDAEFGAHPQFDARDRWGEFGSP EVVEAFEDAGAAVAPVYRPSDLLTDPQVVATDMVTTVDDV KI QHAADAAGIGNARYNTAGDVLAHPQLSERDRWRSIDTP ELAGRLLDEGIPASPVHDVAEALSSPQVAHRGMVVEHDGY EWFRDLLAA GVPCAPI NTIDGGVALAEELGLAPVVTVEGV EALKDLDEAGVPSGPIYTAADICDDQQYEARNMIQEPQPV EAMRRLDAAAI AYARQRTVAEFAEHPQLRARDRWRPVPTP EVLEKLQNAGIA NAEVNDMEKVWEHPQLKARGRWTEVETP QWLDRFRAAGVPCAPVNNYSQVLADPQVDFMGWVQAVEDP


 EWSA I L E GASFPYGAI NNDREVFDDP HVKDDKLVQEVDHP





 E WVAA A M GCDACLAAVLDSDEAPSHP QMTARSAYAVVAGV
 A V V AVVMEACLA E EV PA G S I NTIAADI FEDPHFAAR GN L HRAR E V

E
E
E
E
E WE E I L A A A E V P A A R V R S L D E V V V Q E E Q F A A R D L I S E I Q G R



 E I L K DL E A DGI A C A GVVNDVAA A FLD H P VLAA A R GRWT E V A V P

 HWI NL L VEN NI P TGEYNNLA QVLES P QI QEREMLLDDVRKL

 ELI ERLD Q G GI A NAP L NDMH DVWNHPQLAARQRWRDVATP
 EWV A L LT EADI PAIAMNTPETVLDDAHMRAVGFFGEQEHP


 H WLA KLLTA A GI P C A P I Q S M E QV M K D P QLLAARNMIV DVLD R TVQATADAAGIGNSRYNTPSEVNAHPHLAARERWRQVGTP $D L L A R L A A A G V P A G P D N S V E Q A L T D P Q D A A R G L V D G S D P D$
 EVLAKLDGAAI ANANVNDMQGVWNHPQLKARARWTDVETP D AMTVVFEEANVAAAPVVYAE QLLAADPQLLQAREVVYPSIIPDA
 GWF E E LTAA G V P C GP I NDAA F GL A D R L GLAAP QVPESAA GP $D$ L E E A L V D G E V P A A P V N S V E E A L T N P QVV L H R D M V V R V Q H R
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 WFR S M A R N K K S V C I DL K T E E G R R L V K R L A E E S D V L I E N F K
 H F V W W C N R G K E S L A V
 H G DVVQARGKRSLA LDDLK QPQGAAVLRRLCGAADVLI EPFR G DDTRHWGPP FVVTIDMA SAEGGQALI REMALRADIVVVEFK


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



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UniReter UniRef90 HOTEK5 UniRef90-A0A051TVP8 UniRef90-K9AL09 UniRef90_IORQR3 UniRef90_E8TCT3 UniRef90_A1UJM0 ASALDRLGLGYEQVSAAHPALIYAHASGYGAQGPYAGRAA VGDLARKGLGYDDLRAKNDRLIYCSDTGFGQTGPYSHRAG $P G V E D K L G L G A E R L Q A L N S R L V V C S I T G F G A S G P Y A S R P A$ SGKLAEMGLGHAHCAEWNPALIYASISGYGQTGPFRKNAG PGAIERMGFGEDVLRENNKKLIVVSVIGGGESGPYSQKRV PGALARLGLGRERLESLRPGLIVAHVSGYGQDGPMRDRAA
PGAAARMGLSYEALKAHNPKLIVCDISGYGADGPYRDKKA
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 PGADDRLGLGAAELERRHPDLISLSIDGFGAGGPDSHKRA $P G G L A K Y G L D Y D A V S A G N P G V V Y A S I S G F G G S G P G S D V P G$
A GVVKKLGVDAETLCGLNPRLIYCSLSAFGQTGPGSVKAS
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$P$ GAMQRMGMDFDSLHEKYPRLIVCDISGYGEGGPDSDKKA
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PAALERLGLDHATL $\square R S N P K L I Y C G I L A F G S A G R Y A N R P A$
PGAVARLGFGADELMACHPELVTVDMSGYGSSGPYHDKRA
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$P G V L Q R L G F G W E R L R E L N P R L V Y C A V S G F G A T G P M R G R P A$

$P G V V D R L G 1$ DCETLTEYNDELVYCSLTGYGQDGPWADRAG
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$P G V T A R L G I D F D S L K Q H N P K L I Y A S I S G F G Q D S P L A N Y P A$
A GVMEALGLDAATLRAQKPALVHASVTGFGTQGPSRTRPG
$P$ GTFERWGL GPDVLHELDNPGLILVRVTGFGQTGPYAARAG
$P G T$ LIE GWGVGPETLRETSPGLVVLRVSGFGQTGPDAERPG
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$P G V M T K Y G L D Y A A L S P V N P R L I Y V N H T G F \quad L P G P Y E H R T A$ $P$ GTMEK WGLLGPEDI YPANPKLI YTR I SGYGQTGPYSKRPG
PGVLEKWGLGPDRLTALNPGLITDRVTGFGQEGPYAERRA
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 $V G G L Q Q Y G L D H A S L L A L N P R L I Y C S V T G F G Q D G P Y A E R A G$
$P G A T G R M G G A D D$ $P G A T G R M G L G A D D L A L T H P R L V V C D V S G Y G G D G P W Q T R K A ~$
$V G G L K K Y G L D F E S L S A L N P R L I V C S V T G F G Q D G P Y A T R A G$ VGGGLKKYGLDFESLSALNPRLIYCSVTGFGQDGPYATRAG PRVVME HFGLTTAEVLDGVNPRLVFARMPAFGQTEGPWRERSVGG PGAMDRLGLGYDELSADNPGLVYVSTTGFGQTGPDRSRKG PQAMQRLGIDYQRLKA INPRI I YAGLYGYSEKGPYAGKPA $P G V M Q R L G F D Y P A V R A D N P K I Y Y S V S A F G Q S G P D A H H P A$ PGVVERLGVGYEDVTEYNDDVIYDNISGYGRDGPYEDRKA
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UniRef90-F4CUP7 UniRef90-F4CUP7
UniRef90_V4XU43 UniRef90-V6M4E1 UniRef90-UPI000477B3EC UniRef90-W5JBK3 UniRef90-D2B3Q1 UniRef90_F4CT56
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UniRef90_K8XG98 UniRef90_K8XG98
UniRef90_UPIO002F5F4FB UniRef90_A0A034UPS3 UniRef90_A1WS90 UniRef90-A4ALT8 UniRef90_M4UQE3 UniRef90-H0FFN9 UniRef90-K0HQM6 UniRef90_S2JT17 UniRef90_C1AV84 UniRef90_D8IYV7 UniRef90_UPI000378A557 UniRef90-C1BBC6 UniRef90-L9WMH2 UniRef90-HOYUN7 UniRef90_UPI00036AE1B5 UniRef90_UPIO004672154 UniRef90_Q1GJP4 UniRef90_M0EB05 UniRef90-H8IPE0 UniRef90_UPIO001FFEED8 UniRef90_UPI00037BE93A UniRef90_UPIO002D2E405
UniRef90_LOJLK9 UniRef90 HOTEK5 UniRef90-A0A051TVP8 UniRef90-K9AL09 UniRef90_I0RQR3 UniRef90-E8TCT3 UniRef90-A1UJM0

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HD $\square \mathrm{N} Y \square \mathrm{~A} V \mathrm{~V}$ A G VLS LLGRRGENPDFPGNLLGDFAGGGMDCA
 DNVGQAASGWLSMFHAGAD
YDPV EGEA GLMHDTGEPDRPPSKVGVAATDDATGLYT

## T <br> $\stackrel{L}{\mathrm{~L}}$


$\square$

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

YDLMVQAMSGLMSLTGDPDGPPYRAGDSVFDVMAGN HAV
HDMGAQAFTGFLALNDNGDEKPVVPGMPSA DMASALTGLL
YDHlA GAEAGLLHVTGEHNGPPVRPGIGM
FGLI AEAKSGIMQMVGNPGEAPPLLRISLGDMYTGDHAVA
YDLLDQAVAGLMSVTGTPDQP PARVGIVIDADIAAAMYAY
FGAI AESMGGMRYVTGDPAHPPMRSNLSLGDSI AALHAVM

YDLLI QGETGLLASVT GTPGSPPRAKTMIIPDADIGAGMYAF
$Y D Q A Q G E G G L M S I T G A T E P T K T G M P I A B D L L A G M Y G A$
$Y D L V 1 Q G E T G L M A M N G E E G Q G P L K F G I A A V D M F T G M Y S A$

Y DLLVQAESGVCSVTSGQPGRDAKRPINPMLFFFADVLSAV






$Y D V V A Q A M S G L M S V V G F P Q T G P T R S G E S I$ GDVCA GIFAAW




H
Y






##  <br> Y

## F <br> F

Y


 Y DLL DQSEA GFLLSVTGSPDAPAAKA GNSVA DIAA GMYA Y
 LDEVVVQMMGGGLAYMTGRPGMPDRMKAGSSVNDIMMGMFAGA


## Y

## 

 K YDLMIQAMSGMMSVTDDQPGGGPARVGVALTDLFTGVYAS $Y D L L V Q A E A G L L S V T G A P B G E V A K A G I S V A D V A A G T F A F$
$Y D F L L Q G M S G L M S I T G A A D G E P K V G V A I V T D V T G L Y G S$


 AQAL TAALYARARDGRGQFIETPMLECMVSFNMVEHLFGH $F G M L A A A L L A V R G G A P G Q V V V D A A M V D G A G L A D A M A F W G F R A G B$ LGVVLGALV E RA QT GRGRKVEVSMM EA MDAMACE PMAAMMA





 SIV VA S L C G R L R R GPGPGT TVAVSSLFDTMAEMMGYHLTY AR



 SIGFALFRRASTGRGEAIVVPMFENMASFVMSEHMGPATF


 S I L A L L TARERGRTGGAQVSLSSLFDTMADMMGYHLTYTRH $M A V C A A V V R Q R R T G Q G A H L D T S M L D A A L T S M G W V V S N H L V$


 GGVAS ALGYEREKS GE GQYVGU S LLLRAALTMQSARMVWAD N A I SSALFAREAHQEKAQYI DVAMVDVLLSMQLTGLSNLFA







 QAVGAA LYQRAMSGKGQHI QLSLMEVGAA LQSNAMVD
NATLAA L LEREHS GLGGQEVQQVPMLETTFAHF DQGDHLYGHT S N IL S A L L QR GKD GQ GCHI D I S MLLESMVEWMGFPMYYA Y D




 SAVLAALYERERTGRGAVID DAMLDVVAEMMGFALNQVIM



 GVLLS LVGGNQAERTGQVVDVA YE SMLNMMESVVPE YDR
 IA AL I K R GRE GRE GR G S HI DL S ML E S L A E WMS F P L Y Y A Y Q $A G V L A A L V R R G T T G R G G P V E E S M L D S S L A E W M G H P L H H A M H$ WGIVSSALVVGTR ES GVGGQHLDVVAMFDSMMLAMLPTAHS QLQAA





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UniRef90_UPI0002F5F4FB UniRef90_A0A034UPS3 UniRef90-A1WS90 UniRef90_A4ALT8 UniRef90_M4UQE3 UniRef90-H0FFN9 UniRef90-K0HQM6 UniRef90_S2JT17 UniRef90_C1AV84 UniRef90_D8IYV7 UniRef90_UPIO00378A557 UniRef90-C1BBC6 UniRef90-L9WMH2 UniRef90-HOYUN7 UniRef90-UPI00036AE1B5 UniRef90_UPIO004672154 UniRef90_Q1GJP4 UniRef90_M0EB05 UniRef90-H8IPE0 UniRef90_UPIO001FFEED8 UniRef90_UP100037BE93A UniRef90_LOJLK9 UniRef90 HOTEK5 UniRef90-A0A051TVP8 UniRef90-K9AL09 UniRef90-IORQR3 UniRef90-E8TCT3 UniRef90-A1UJM0

210
220
230
240
G $\square$ WG NARGSNVLDSGAPFYETYRTKDGKYVAVGA DESQFY VSEPPVGPMGYPRLFNAGRRPLRTGDGY IAVLPYDLAAWR $D G N D P K R D G N A H P T I V P Y E T F P A S D K D F M V A V G N D A Q Y Q R$
$G G W S D R R E G N L L D G G A Y F Y A T Y A C A D G R F L A V A C V E R R F H$ TGQAPSLHGRAAMSQS YVVTCRDLDRIGLHLSSPEKF VAGQEASRHGTAHPSVVPYQVFRCKDGFIMIGAGNDKQFA GDMEFDVTKLQGTQDLIYETQDRYDTAGAISDKEWAGMCR NGEVPGQSGNDHP TSSPTGVFSTQDGHDNIAAMGNAMFA $L G \| V R Q P$ VGSRDT TAAPTNAYPSSDGRWVIIAGNSDLLF
GAPPPPRTGASHA SIVPYGPFAAGDGKTVMLGLQNEREW GGGDPGLEGNDHP VAAPYGTFRARDGYLNIAIANEQMWR LGLDDRQATLNRASGYAPSDDFKARDGWFITQVDGQAMFK SGRVPQRTGDFHPTVVPYQVFCAKDGDFFVSAANDRQFRS
LSIDDRQATGNRSPIHG PSDIFRTRDGWIIVQVIGQPLFR ADGTILPKMGSANSTSAPYQVFRTADGWUNIGAANQANYE HSGIDQQPLGMSSPAVAPYGAYGTADGQTVVLGTTNDREW GGVVPYRMGNAHP SVFPYEPLPTADNDLIVAAGNDAQFR
QRIPPTMRTHRSIGGSAFYNIYETADGRHIALTGRELKFA NLGIEAQRWGCAHPS IVPPYDAFKTKDQY LGCGATNDAQFV GGKEVPVQTGHDMPNSTLYGVFRAQDGDVVIAAQVDDAWK GGTAPARSGLTHPSDAPYGQYTAGDGQSLIFGLQNDREW GGTVRERCGSSDAGIVPSNVYRSAA GEWVQDSGNGDADF DPPVGPTGDNRLL SPDYRPLATKDGYPNTDAQAFAFFD
 NEGDPAKFGNSHPSVV P YGVFEAAD GPLV IVAVGNNS QFR
 S Glle QQP LGMSSPAVAPYGAYPTADGQTVVLGTTNDREW TGQEPVPMGNENMTSA PSGSFATADGMLNIAANKQEQFE
 A NKEAKRWGTAHESIV PYEAF QTRTGY ITIGCGSDA QF V
 EPREVGRDMRS GGI TG $\square$ HPTKE GYLY DSANTPHFW NGTAPSLVGNRHPVSTPFDTYQAQDGLVVIAIASEKLFQ


 P $\square$ WGK P RGENMDDGGAHFYDTYETRDGKFVSVGAIENRFY A GYAPARTRHSAHPSLVPFQVFETADGWWVVGCAKEKFW GGTAPARMGTTHPTVAPYGAFPTADGTPVLVAVQNDREW NGKRPAAT GNAHPNI APYDTFPTATCEDFI AGGNDGQFRK S GVVRPPRTGARHATIA PYGPFLVGDGKTVLLAVQNDREW DGDVVPAQEGNDHPTSSPMGLFAASDGMFNL GEGNWKRFC Q GWWDNDRGCNALDSGAHFYEVYETDDHKYI SVGADEGPFY NKE $\square$ PVQTGNFHPTLS PMGSFHSKDGLVNIAASTDRMFG E F M R Q G S P TR P LTVP GGTYATWDGYINVTA LHDRMFE
 $F V P S Q G R$ A GYE RMMNPA R
$N A P G P L P A G A S H A$




 D GAEPEPVVGMGSPMVAPYGAYPTADGGTAVLGTTSDRREWR





 $G G E S P A R T G V A H A V I \mid A P Y D A Y A T A D G G Q V L L S V Q N D R E W R$




 L GGEPP EGETGYPRLLVQERRPYPTSDGHLCVLIVTDRHWQ

 A GETPPLPGGNHHPS LSSPYGLFASSRDGAVQLSVGNESSLWQK



UniRef90 L8HA58 UniRef90-BOTGGG5
UniRef90 G8PQF0 UniRef90- X5ITH1 UniRef90-UPI000468E542 UniRef90-D8PZM8 UniRef90-H3NU18 UniRef90-UPI0004703938 UniRef90_F2J6M2 UniRef90-A1 W297 UniRef90-K0MB38 UniRef90-Q0RXB4 UniRef90-A0A038H2J3 UniRef90_U7DTS1 UniRef90-W5TJE0 UniRef90-W2ET56 UniRef90-B8KU02 UniRef90-W7F4Z0 UniRef90-J2KGW8 UniRef90-A9BP93 UniRef90_UPI0004766E19 UniRef90 G9ZZK9 UniRef90_UPIO003696F22 UniRef90-D2PNL6 UniRef90-C5D0R8 UniRef90-G8NSD0 UniRef90-A3K7Z0 UniRef90_UPI00036131F0 UniRef90-D5ZRQ4 UniRef90-L8F7N2 UniRef90 L9WDV4 UniRef90-X1Y605 UniRef90_G6ECK1
UniRef90-A0A059E4H: UniRef90-H1S0W2 UniRef90_10DW69 UniRef90-H1SAY3
UniRef90 F4CUP7 UniRef90-V4XU43 UniRef90-V6M4E1 UniRef90-UPI000477B3EC UniRef90-W5JBK3 UniRef90-D2B3Q1 UniRef90-F4CT56 UniRef90-A5FZ16 UniRef90-A4SX74 UniRef90_IORX03 UniRef90-D3BV77 UniRef90-V8QXA5 UniRef90_A9ICD5 UniRef90_UPI000471B848 UniRef90-W6Q0A5 UniRef90-J5EIY4 UniRef90_Q46RV1 UniRef90_A4ALU1 UniRef90_UPI000467C340 UniRef90_Q9KJE9 UniRef90_K6VY26 UniRef90_S5YY51
UniRef90_K8XG98 UniRef90_K8XG98
UniRef90_UPI0002F5F4FB UniRef90_A0A034UPS3 UniRef90-A1WS90 UniRef90-A4ALT8 UniRef90-M4UQE3 UniRef90-HOFFN9 UniRef90-K0HQM6 UniRef90_S2JT17 UniRef90-C1AV84 UniRef90-D8IYV7 UniRef90_UPIO00378A557 UniRef90-C1BBC6 UniRef90-L9WMH2 UniRef90_HOYUN7 UniRef90_UPI00036AE1B5 UniRef90_UPIO004672154 UniRef90_Q1GJP4 UniRef90_M0EB05 UniRef90-H8IPE0 UniRef90-UPI0001FFEED8 UniRef90-UPIO0037BE93A UniRef90_LOJLKM UniRef90_HOTEK5 UniRef90-A0A051TVP8 UniRef90-K9AL09 UniRef90-IORQR3 UniRef90_E8TCT3 UniRef90-A1UJM0

250 260 270

280 HNDKGLELLDKDESLPHQFDTAQWPTLKQTFTERFDSRTRD RLLQALNLESSLIDDPVYFGPSGPRLCPRLEAALQSASAE FCEVLGCPTDPRFATNADRVRNRSELVPRLLRQFTQKQGAQ
$D L L V E R L G L D P A V Y T H D R D P A Q W P A L R A R L A A L A T R P R D$ WRGLAAAI ERPDLLAAYPTRAERVERYPALAEVFAGQDRD SLAKVLALC E LDPENTMFANNQQRVKNRSIIANKLMEEPRD ALNREDLI EDPRFKTAGDRFVNVEERKQUTAGEIKKWASD RLCDVLDLTELKTDERFDSVISRARHRAALNQA INEKTRC QRLMRLIGREDLGASNRGRIAHVDEDDQAISQWSRQYDAR KAFCDTVLQRPRFCSNAQRNAHRDALQALI LQEFSTGSAA RLGHPEWLDDPRFRSNADRVANRSDI NAALEEADQADSVA RWTRLVERPDARFADDRLRGEHGEVLSAIMSDWCGDKTLD $L T E V L G V P E L A T D P R F V S N G E R Y A H R H D L D A D L S E R I S G Y$
$R W V R M I G E P A L M D D P R F R R G E N G A A L S E M M S A W C A S R T R E ~$ $R L V E A L A D P Q L K A D P R F A S N A D R M E H R E D L N E V L V A R T T D$
$Q R D R P D L A A D E R F R T N P G R V A H R G E L D A A I G T W C A R N D L A$
 GALLKALGREEFEFAKQDPGPDQQQLDAEMQA DFKQRNFE S LCHLLDLLKDERFATNPKRVENRQLLTPMFNTAFQTKTTS RFGPAGFGTDTMDHTSAGRNAQRTGILEVVKPWVSARPVA HSFClGVLQQPRFATNLQRVAHRAELDAVI ASVLAHDSRE RRLMLAI GREDLAATNPGRIRAAAEIDQAIQQWVGRHDAP AI GRPELRHDPRFSSAAARTAHAAEYFVVRAEGLAQRTTD RLGRPDLAEHPEFATNLARCRNRATVDATVAEATRTDRTE FAP VGGLDPDVRFATNAERAHRDELTAAI EQAFAAEPAD KFCDEVILCPEKFATNTERAKHRHELDPDLDGRDAAEPABA
 QRGRPDLAEDERFRTNPDRCRHRELIDAEI RTWCARYDDA TLCKVLHREELVTDPRFVTREDRKRNRELLRDELKEKTAA
 D $\square$ CREELAQDVRFANNRARVEHRRELVELLATILKGKSSA RWAQPHWLEDERFSSDEKRGENGEELSARMARWVAERTVA VMGAPEELQDERDADRKGRFFNQDYMMSRVQEYFDKQTTE RFCECMGRNDPRYKDDPTRTLYQAELRKEI ERWTSQRTVE RLCGADRRHDARFATNALRVQHRPALLEDLRDAFRDLSGE ERVMELVGHPEWFATGAQRAEHADLLDRYVGDWDAARTRD MRTFDAI DRPDRFADNESRLANVAALDRIVGAWMADHTRA ENLFKAI GREDRFATNEDRLKHVEELDAIIGGWDREREDD
 RRLAAAVGRPEWAEPDSPYGTFARRTEPLLEEGFRSRTAA RRLCEVVLGDPARADDPDFATNHDRDAHRTAARLAADPTA LCERPDI AADPRFATNADRLANRAAMTAALTEALAAHDGE KRDMTVIGREDDSSDNDGRVKRVAEDDQAI GEWAKLLNTD
 SELLK GMGLAERDLPDQTDQTQWPRMKQLFKEIFAKKTRD GI CRPE WPGDPRYARAEARWENSKTiNAVLNEAFGKEPSA


 SADDRKELAMDPRFANGTMREMPHTLDPDI EAWSSRRTVAD
 VVLLEVLEDDPELAE GREDPSNWPALREAI GAADRTRTRD RLCAVLGLPALAEAPDYLTNALRDANREALTAVTKTWKRD RLATDLLGRPDLAADPRYARNADRVRDEIVAAWCGQRTDA RLSHPEWAEDSRFDSPEKRNVNRDELLRPLLKEEALSHKKGKE QRYMQVIDRPDLDAADPEGRWRQHERLDAAI TA WTSRHTRA QLFCTQCASDPRFDTNARRSEHRAALQADI EQAFASLGSA LELVDECRDPALDADTMPARKDREDELEEEVVAAWTAGQDGD AFCRVIGRTDERYATPGQRNRNRDALIPEEAQAMLARTMQ QTFCDAMGYADLKADNNDRVRARPTLMPVLRERLAQHTAD VRLMNADGRSDLVSTGEKYKVNSDRVKEQAAAWTSERTTD ERVMRLVGRVDWFSSAGERSRNGDLLDDAVGKWIAARPFD RLA QQVLGRPESFATNTARVEHREKTDAVVGEALAVLTAA

 RFCRPEWALDERFVTNTLRRKHRDTLIPLDMAELTRSRNTA NLCAGILNRPELVDDPRFNAANRDELEKIITMDDQRFGAD RLCDVLNLDDPRFSTNQLRVAHRADLTPLLAAALAQWSQS EALDRPDLPADERFEMNADREHGDELEAEI EATLADKTTD
 MGQAQLFEQDPRFASILGARTRHINDLYRMVAQAMSTQSTA TVLLTALDRAD DPLGEADAGPAQAPLVAFLRETFATRTRD
 QNVAALLGENADYATVDQQRANRGRLDELLRKWVAEHSCA CAAFDIDPATPGMADNAARVANRQAVDDVI ESRFSEFDSA $M V D C P Q L T E D P Q L R F Q \square G R W E Y R D L I R E L I G P W L A E R T V E$

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UniRef90_H1S0W2
UniRef90_I0DW69
UniRef90_H1SAY3
UniRef90_F4CUUP7
UniRef90_V4XU43
UniRef90_V6M4E1




 R LAA A ILLAAEAADV P S TLLI Y TAA A E I A E D P P Q QVVERLEAAGLANARVNDMADLWAHPQLAARQRWRTVGTP NWV ERLSRAGVACGPI WSVGQALESEPVEHCLVVRTVEHA ERLDEQAEEAGVPAGRVNTVEEALQSAQVRHRGLFLESEDY EADAALEAARIPAGPVYSPREALDDPALHASHAFDWVDYP EWMVLFDS LGLPAGPVLDDAAALAHPQTKARGMVVETEHP
 EWREFLADVEVSWAP DNMAEAFDHPHARAREMLFDDGGT
 QAMQRLDAGGIANAPLNDMHAVWNHPQLQARQRWREVATP QVVQAMREADVPASRGYS ITADI CADEQFRARGMDERHADP



 HDQKTADDAGI GNSRYNTPAEVIAHPQLSERDRWHEI DSP EWDEVLLDTGVPAAPVVSVPASLTSAQVEHRELISEVPMP DAMAIFDAHEVAAAPVYDIADLLADEQLKHREVFVAVDDD EWETMLDDVDAAFAGVYTPAEMVDHPQFQARGLVVRPDDP

 EVCDLLLDAGVPASPDHDLQQATQSEHAKVRAVLTHLDDG RARALLEQHGVVVGVVRDYSQVAESEDVRAGGMLDTVQDG EVAEAFAAAGAAVAPIYDASDIVSDPHVRATEMVTKVEDP EALAAFDDADAAAAPVYDVPDVLADEQYRARDAAVAVDDP EVLEILHGSGAVVGPMYDVSQLDQDPHFHYRESFVELGEM DAVKMLTDAGVPSSEVVSVRQAWMSSQANHRSMYTTRDGG RWLALLGTPAGVPCGPVNTVEEQALAEPHTAARDLVVVETDHP QAQALLDEAGIAQARINDIA DLDTHPQLVERDRWVDTPTP A LAERMDRAGIPAGPVRPVDAALESAHARHRGMVAELDGV KVLAA LDSVAVPAGRIYTVVDIANDPHYRARENIQSIDGS ETTRRLDAAGVAYGRMTDATGLFSHPVLTGRDRLRQVSAA HWVGLLNEAGVPAGPVYTVPQMFDDAQVRARRCQAWQGGE EWEQIFMGTDACVAPVDEMHELTGHPQATARQLVFKGDNG
ELIDALNPSGIPCGPI YN DGQAFEDPQARHLKMVTPAEHP HWLRLLSEQGVVCGPISDYRDFLDDPQARHCGIFRTIQQG
 ETI A RLDEASHANASVNDMKNVWDHAQLQARERWTRVKTP

 EWGALAAAHTDACLTPDVLSLAEAAGNPQVVDAREMLVAVPDD WLMEALLKAGVAAGEVRDAREADEDEHLRRRGFWAY LDHP EWARCAEGTDACLTPVLDLSEAPAHPQVAHREVLAAGDGH D LLA A LDEAE GVPAGPI NEMADVFADPQVVARGMKDMPEGV
 DADKSLEAAGIPCGPIVTAADIVADEQYKARNMIQEPKTV QVMARLDQAQI ANARVNDMAGLWAHPQLAARGRWQDVPTP ALAARLMRRGIPASPVRNASELLDASSLRARGAFEWLDHP
 ELAADFERHGLPFAPIRRPEELFDDPHLQATGGLADIDGE EVLEVLEKVSVPAGK YDAKDVVEDEHVNARGMIENI TVG E V ATEFERVGAALAPIVDVE QLMKDPHVLARDMDTTVDDE QVAAR LDEAQ A NARVNTMQELWQHPQLAARQRWTEVATP E AVARLE EAGI A CARLNTLDTDAA HPQLAARERWREVASP
 EWCSVFDSTDACVTPVLSFEDAASHQHNKERNSFIKNDEE DWDTLLEDKAVPCGPIND $\square$ GRAFDDAQVQARGLAVTLPQ Q ELAA RLEESAIAANARMNTMAQLWEHPVLAGRERWREVETP DLLAALEAATVPAGPDNTDGQAFEDAQIKHRQMQDAPEGV
 $P L V K A L Q T V D V P A G E V R S V R E A L A D P H V T A R G V V H P T E G E$ VWMARLNEADIPCMPMHDIDSLLQDPHLQAVGMLQAVDHP E WVA WFEDKDVAFSPVLDFAEAFASEHVETRGLLVEAGGA Y WA ER LA A A Gl P WGDVNELDDVLDHPQADHDDLVVEFETE EWEAALNDAGVPAGRVLSVAEVLQEKQLRDRHFVETLPAE






## UniRef90 X0Q392

 UniRef90-G8RW36 UniRef90-A0A011P2G9 UniRef90-D5P7W4 UniRef90-E2CD52 UniRef90-W4L9G9UniRef90 A9HXVO UniRef90_10WKV8 UniRef90-Q122Z2 UniRef90-UPIOO021928EC UniRef90-B306K6 UniRef90-E4X1s4 UniRef90-KOCBW2 UniRef90-UPI000415BB62 UniRef90-M6D8F6 UniRef90_UPIo001FFF23A UniRef90-K2KNV5 UniRef90-UPIOOO36B1661 UniRef90_UPIOOO46F89A4 UniRef90-F4CVM1 UniRef90-UP100037DAD0A UniRef90-UP10003B7025A UniRef90-J4J8.J7 UniRef90-AOAO34WBJ3 UniRet90-A4SYN9 UniRef90-N6WP76 UniRef90-FOSU70 UniRef90-N1ZX31 UniRef90-UPIO003627AF2 UniRef90_UP10002DAB6C5
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UniRef90-X5LMJ9 UniRef90-G411T2 UniRef90-G1PYV6 UniRef90-UPI000375EE80 UniRef90_K6W1G4 UniRef90-A0AO24JSR6 UniRef90-F1YP93 UniRef90_UPIO0035F1292 UniRef90-B2UAX6 UniRef90_UPIOOO3B50715 UniRef90-V7L751 UniRef90-UPIO0035C6657 UniRef90_IORP08 UniRef90-A0A031JRD4 UniRee90 UPI0003B3AF53 UniRef90-F7UHX1 UniRef90-V1CHY5 UniRef90-F1ZAW9 UniRef90-A1SP28 UniRef90-E8TX75 UniRef90-BOT762
UniRef90 EOE2R7 UniRef90-Q0K2Y5 UniRef90-K9CL65 UniRef90-V4K2W7 UniRef90-C9M2D2
UniRef90 Q46UD4 UniRef90-D5ZRR2 UniRef90-UP1000369FC4B UniRef90_UPIO0046F1551 UniRef90-W9BZJ5 UniRef90-UPIOOO35E6EOB UniRef90-AOQDZ UniRef90-D816H0 UniRef90-B6QKQ3 UniRef90 UPI000364AD5C UniRef90-A0A022FP37 UniRef90-MOEAOO UniRef90-H81N05 UniRef90-UP10003765655 UniRef90-W5TQF3 UniRef90-M2Y6Q9 UniRef90 F7UZZ5 UniRef90-H1S613 UniRef90-X0PZ01 UniRef90 UPIIO003A7E98D UniRef90-Q1N311
UniRef90 U5WTG9 UniRef90-G5GF63 UniRef90-UPIO002D680F8 UniRef90-LEFJH4 UniRef90-X5LJOO UniRef90-L9WLX9
UniRef90_BoY2Y0 UniRef90_UPIO00464990D UniRef90-E8TW91 UniRef90_V7D574
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## GALDGVRTADFSWVGAGPRSTKDLADNGATVVRNHDASA

 LKDVKI TDVSQLLPGPHATSLLLQLGADVIKVEQPGA MTVLELGHLIAGPFCSMLLADLGAEVIKVEHPKG GVLRGVRVVELASWTYVPSAGAALSDWGADVIKRPDADF A QVFDGITVVDFTRGMPGGDATMVMSDFGAEVIKVEAPSD ARPFEGLRVLDMGVVVFGAELGRQFADYGADVIKIENSNF RP保GVVVEMATFI AVPAVGRILADMGAEVIKIPHEDT LEGUKVVDFSKWLPGQYCGMLLGDYGADVI KIVEMSY GALHGLRVIDLTTVIMGPFATATLADMGADVIKVESLDG GPLVGVR1LDMATVIAAPFSSALCADLGAEVVKLELPDG AKP DGFRVLDFTQNVAGPLAGQVLADLGAEVIKLEAPGG TGP EGGRVLELTHMAMAAAGMFMADLGADVIKNMYENT TLPLAGLKVLDLSTLLPGPGATLMLAEAGADVVKLERPGR

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UniRef90_l4BM999
 DPYRGNRGKRSVALDLRQPQGLDVLHKLLESADVLLTSLR YFERGNRNKRSLTLDLKQSAGVEAFMRLAENADVLVEGFR YFELVNRNKRSLTLDLKQSAGVEAFMRLAANADVVVEGFR SFLAQNAGKKSVTVNLKKPDGKALFEKLVATADVLVENFR VFLYLNTNKRSITLNVETPTGRELGRELAATADIVVESFD
 FFPTFNRNKKSIALDLKTPEGVEAALRLI ATADIVSENFK
 DFAKYNRGKQSISLDFKREDHRD LLRLVERSDVLVEGFR FHRKMNRNKRSVLLDRTAAGRAAARRLAAEADLLVENFR AFVTTNRGKRSVVLDLKEQGRRALAALGGDDVFIHNVR GDELRNWRDYKGDTSMRSDAGRQAVLELKOCDILLENFR MDATRVMFKKENTLNLKREKSKELLFKLLEDADILLEGFR
 VETARYMQPFVNGVPSRTGEGRAVAHDLVAKWADTVVESFS GQPSKERGRRDVHLDLKSGADQAQVRALIAEHDVLIEGMR DFARNYDTACGDVSSYFA WDNRGAAHRLVETADVVLANGG
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 GDYARDMMRTEMRLDLKRAEDRDALIEEVRHANVLI ESFR

 GDDTRSWGPPFDSDGVATYFNVARARELVAGADVVVENFR GDDTRAWSPPSVGRHSSTFEGRKLIADLVATADIFIHSMK
 GDAMRAYEPQSLALDLKTSEADETLWPLIEKADVVIEQFR DWELLENANKRCLSLLNKDPEGKEAFLKKLEEADVLITTNWR FFETFNRNKRSLSLLDLSTEAGREVFHELVRVSDAVYSNLR EVMRNSHAPGEKAVDRQPEGADVVAKARTADVFIENFR DTMRFVGDQWCFPTDEKENEGVEVIYKLLDDADIFLTNTR
 AYAAKELTRKWDRKRSVELDVADADDLSGADVFI HALE YFR $\square \mathrm{CN} \mathrm{V} G K E S \| A L D \square K D P K D H A L V E K M \backslash A K A D V V V E N F R$ PDWWRGANFTEEFYRERLYEKNTNFHLMNARADAVIENYS D D A R G WGP P F VG D S S V S F H M M H K V F L D L I R D A DV FI H N L R
 YF QAFN LN KKSSLTL DLQSER GREVILRAALAATSSHAMMVNNLR
 SPLRELASWPSVTLDVHNDADLDRLRGLGQRADVMVNTMR FFAQTNTSKMSVT TNLGDARGVEVAKRLVAWADVVVENFG VFAQFNRGKQSIALDLKSAEGRSAFLGLVRDADAVVEGFR SFNYVNRNKLGVTLDKSDEGSAVFADLVEESDVLIENFA EKFRKSPGADQWNRGKKTPQGREKAHKLARDSDVVIESFR
 NFDLENANKKGVVLDLRSDKGKEVLEKLLDDADVFLTNWR WHLMLNRNKRGVALNLKKDGGRDLLLKLLQEADVFLEGFR AGWAGNRGKRSVVANLKTPEGRETVLRLIEGADALIEGMR HWKVTNGAKRGI SLDVRKPRGRELELKLLRHADVLVENER
 TWDLENGNKRCISIDIRKPGGREAFFKLLDTADVLITNWR FFPSFNRNKRSLCLDLKRPESLELVRRLAAEADVVLENFR GDEMRTYEPKFYAVDFKDPTQRDRVLELAADADVVVEQFR YFDSVNRNKHSVALDLKSDAGQRAAQRLIADADVFVESTK VFQTINRNKESFCADLKNKSNFAAVKKLIEKADVMIENFR YWMTYNRNKKSFAVDKKSEEGMAAVKKLI ATADVVTENFR

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UniRef90 U5WTG9 UniRef90-G5GF63 UniRet90-UPIO002D680F8 UniRef90-LEFJH4 UniRef90 - 5 LLJOO UniRe990-BOY2YO UniRef90_UPIOOO464990D UniRef90-E8TW91 UniRef9_VID5744
UniRef90_I4BMM9

PGAVIDRGGVGAKESLRVINPALVYSSIISGYGTGGPYQDKKA PGALDRLGLDADAVRERHPQLIYARGNGFGVRGPDADQPG $P G V V D K L G V G Y Q A V A A D N P R I V Y C A D T G Y G Q D G P Y R D R A G$ PRVFDNFAITWEAVREQNPRMVMVRMPAFGDDGPWRNNVG PGVMDR पGVGYEALKQTKPDLIYCATSGFGQDGPWVHRPA VGVMGAMGL GFDTLETLRPGLILTSITPFGQTGPWRHYQA SGSMDRWGLDUETLHRANPRLIVVRLTGFGQTGPYRSRAG PGAVDRIGLGADHLTRRNPRLIVISNSGYGTPGPYAGKRA
 SGVVASCGI GPDVMCAVNPRLIYCSVWAFGKAGPLSKEPG PGVLARLGLDYARLARANPRLVMCSISGFGQTGPYAQRPG PGVMAAFGLGPAEMCALNPELVYVSLSGFGASGPWAARRS ADALAR DGFDYASVKALRPDIIYAHCVGFGSGGPYAGLQA PGTLEKWGLGPDVLNEVNPELIITRISAFGQTGPMSSRPG PDGLSKMGLGYDDLKEKFPRLIYCGIYGYGDSGAYKDFAG PGALARLGLAPDAVSQRFPRLVHVRAQGFRSDSELLADRAA PGVMDRLELGYDVLSKVNPGLVYCA TSGFGQSGPMKKLPA $P G Q M A R W G L D Y A T L A R D R P D L I M L S T S L N G Q T G P L A K L A G$ PGVMERLGLGPADCHALNPRLVYVRVTGWGQDGPLALRAG PGATARLGLDGDTLRARLPRLVTCELTGYGDGGPAAGRKA PSTMARLGFPAEELQKLYPRLIYASSSGFGSDGPYRDYPA SGVMEKLGLGYAALKARTPRLIYVSHKGFGLPGPYENRTA PGVLESVGLGPHLLCKENPRLI YARLTGFGQYGPLAKRAG PSAAARMGLTADLLQKENPKLI LLCDISGYGNNGPYRDKKA PGVIERMGFGEEAVRKVAPDIVYVSISGFGETGPYADRPV
PGAADRAGFGWKDVHALNPRLIMASLKGFNQGSRFENVKA PGTAGRLGLGFEDIAAVNPRAIYLSVSGFGNTTPYASWPA PGVMEKWGLTYDELDRLSPNVIYGRMSGFGHDGPHHRYKS PGAAERLGLGAEDLRRDHPELI HCSTSGYGSSGPYRDAKA PGASARMGLDADAVARKYPQIVTATISGYGQDGPWKDRKA PRVLDSLGLDYAAVQQDRPDVVMVRMPGFGLDGPWRDNPA HGVMEKLQLGPEILQKENPRLIYARLSGFGQSGRFTTAAG $P G V M D R L G F G Y E S L Q I R P D I I Y C S I T G Y G Q T G P D K Q R A G$ PGRLAAWGLDYASVAPDNPALIMAHVSGFGQDGPRAADRG PGALLRRLGLDFESVSARYPRLVYGLI TGYGQAGPDADRAA PGTMERLGLGYDAVVAANPGVVYCLI TGFGGHND PGVMARLGVGWDTLRAANPALVMCSISGYGQDGPLAQAAG PGVMARLGLDYESLAADFPHLYYCSVPAYPSDSRAADRPG
$P G T L E S L G F S H E L A R L N P R V V A D S A F G A T G P W R R M G$ VGVAARLGIDYETLRLRKPDIVYASVSGYGQSGNYSRLDG PGTMERLGLGYEDLRQLRPDLIYCAITGFGGRDGGAALPG PGSAERRGLGWDDLRKINPKLVYSAISAFGSSGPLSSLPG PGVMDRLELDYDVLSKVNPALI YCAI SGFGQSGPMKKLPA
 VQALERAGLDYETLKKKFPKLVYGMITGYGETGPKAGKAG LGGLVKYGLDYKSLNALNPRLVYCSITGFGQDGPYAPRAG GDVPSKDGITYDDLKHLNPRIVCCSLTGFGMTGPRRSEPG PGVVARYGLGYEDIRALRPDVVYCSISGFGQQGDWARRGA PAGLARAGLNHEALKAVNPRLIYCSLTGYGDEGPDADRPG QKALDRSGLNYEEVKKRAPHIIYAHLDGYGENGPAKDNPA AGVMEALGLDATLRAARPDLIHASISGFGTRGPSRTRPG EGEAKALGLDGESLARDYPELVSALTAYGADTPFADRPR PDLMKRLGFSTDEMVKKYPKLIFASISGFGQYGPWSKQAA AEVLPKLGLDYEALRAVNERLVMVSMPAFGLGNAWSNTRA PGVEHKLKADAETLRAVNPRLIYCSMSAFGHTGPMANRPG PQVAERLGVGYAALAAQRPELVYVSTSGYGPDGPYADYPA PGGLAKYDLDYDSVAATNPAVIYASVTGFGRENPADDPG GDLPARDGLDYAALADTNPGVVCABLSAYGRDNARAKWPG PTTAERLGLTHDALSERYPRLVVATVTGWGSTGPFRDYKG PGARAKLKIDVEDVRETNPDIIYVRGSGFGARGPESTKGG
PGSLKKYNMDYESIRKLNPRLIYASTTGYGQTGPYSNRPG PGYMDRTGLGWDVLQEINPGVILASVSVAGRSGPMAGFRG PGVMQRLGLGYDTLAAVNPAIVLCSISGFGQTGPYADHAG
 PGVTRRLGDYANLGANHPELIYASLTGFGAQGPYANYKG

P
 P GY L A RYGLDYTSVHK DNPRLVVCSIITGFGQESHKPA HDLD $P G V M E R L G L G P D V C L A R N P K L V Y G R M T G W G Q D G P M A A A A G$ P R S R Q K L Gl T Y E RLS ENN P GLI LICTA QAY GS ETAFR D Y P A $T G T M S R W G L D L A T L H A A N P Q L T V L R V T G F G Q T G P Y A E R P G$ $P$ GVMAR L G L D Y D S L K V DN P N I Y C S I T G Y G Q T G D L K D R A G $P G V M E R M G L G P E D L R A R N P K L I M A R L S A F G G N G P H G N R P G$ VQALE RAGLD YETLKKKYPKLVYAICTGYGQYGPDKDLPG P GAMD K L G L G HA DL S A L N PRRLI Y C S CK GF LDPGP YE HRAA P G VA D R L G L G Y D A V R E R N P R P S A R A K L N D DVD DV R RVNPDII YVAGSGFGMHGPDSDSGA
 $P G V M K K D G L D Y D A V T K D N P R I V Y G T V T G Y G T V G P W T K K P G$ V G TL L A K Y G L D Y A S L A A I N P GL I Y L

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| Ref90-A0A011P2G9 | GLDQUGVAGSAPA IPNFQIGD |
| Ref90-D5P7W | QTMEQMTGMAWV |
| iRef90-E2CD | DQ DQGASGVMSITGNKESAPLRVGYPDAD |
| UniRef90 ${ }^{\text {a }}$ | TDLITHATSGLSAVNRVNDGPPLQQPGYQTD |
| UniRef90 A9h | FARVFEAMSGFTNLTGEAGGSPL |
| UniRef90 Iou | YDALVQAESGAVAVTGNK EVMVKPGFS |
| UniRef90-Q122Z2 | LDEVVQMMGGLAYMTGRSGDP LRAGTSV |
| UniRef90 UPI000219: | YDEVLQAETGOVDSLQRGGPE |
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| Koc | YDDVIQAASGMTDLVGRYDGDGRPRYVPVIADKVGALYAS |
| UniRef90 UPIO00415BE | FAAVAEAYGGFRNLVGDPDRPPVRVGVSIGDSIAGLYAGF |
| UniRef90 M6D8F | HDLNYLS |
| 1 | YDELVQASSGMVDLM |
|  | YDQVQGLSGIMM |
| UniRef90-UPIOO |  |
| UniP | YDALMQSEAGLLELTGD GPVTARAGISVADIUAGVQVH |
| UniRet90-UPIOOO37 |  |
| UniRef90-UP10003B7025A |  |
|  | EVQ |
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| UniRef90-A4SY | GLSGLLASVQAGSDE |
| UniRef90-FOS |  |
| N12 | G |
|  | YAPVAEGMAG |
| UniRef90-UP100035CFEE5 | YDALIQAESGLVSVTGT EEEYPAKAGIPAADTGAGMYAF |
| 人5 | EAGLLSVTGSPTE VARTGV |
|  | AGI SWLTGYPDRNPYEPYS |
| G1PYV6 |  |
| P1000375 |  |
| UniRef90 | Y GVAAFWSRAGVALMLTPRPGPTPPFQRGGMG |
| UniRef90-F1YP93 | YDLLVQAVGGLMS |
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| UniRef90 UPIOOO35C6657 | HEQNYQAMSGLTAASGGGG |
| UniRef90-IORP08 | YDLLVQAVGGLMSVTGPEPGV |
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| UniRet90-F1ZAW9 | YDF 1 |
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| B0 | MDVAAFWSRAGVGADTAPKGAEPFPIRTGMGDHVTSLATV |
|  | LDIA AQAESGMMSVTGEAGGQPLKAGFALIGDAAAGLATG |
| UniRef90 K9 | GEGLAAALLGTMIIDKSSPFREGPVYLGHPALHYGQAFLGV |
| UniRet90-V4K2W7 | GL |
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|  | YGGTLEQASGLPLATGHPDGPPAMTSYAYG DPVGGFNAG |
| Unit | YEPLLQAFSGLIANEGPS |
| UniRef90 | A |
| UniRet90-W9BZJ5 | YDYLMQAEAGFLSLTGEPDGPPVRFGLSUVDFMTGTQMA |
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| $\begin{aligned} & \text { Unif } \\ & \text { UniF } \end{aligned}$ | YDVVIQGMSGLIMSVTGEADGGPV |
|  | FDYTAFFARSGW |
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| UniRef90-H1S613 | HD |
|  |  |
| UniRe90 UPIO003A7 | A |
|  |  |
|  | FDFTAFFARGGYLDSLRRQRGSVPMNVVPGIG GHNVGMNLA |
| Ref90-UP10002D680F8 | LDEVVQMMGGLAYMTGLPGKPMR AGSSVNDIMGGLFGV |
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UniRef90_X0Q392 UniRef90_G8RW36 UniRef90_G8RW36
UniRef90_A0A011P2G9 UniRef90_D5P7W4 UniRef90_E2CD52 UniRef90-W4L9G9 UniRef90-A9HXV0 UniRef90_IOWKV8 UniRef90_Q122Z2 UniRef90_UPI00021928EC UniRef90-B3Q6K6 UniRef90-D4XIS4 UniRef90-E3J2Q5
UniRef90 K0CBW2 UniRef90_UPI000415BB62 UniRef90-M6D8F6 UniRef90_UPI0001FFF23A UniRef90-K2KNV5 UniRef90-UPI00036B1661 UniRef90_UPIO0046F89A4 UniRef90-F4CVM1 UniRef90-UPI00037DADOA UniRef90_UPI0003B7025A UniRef90-J4J8J7 UniRef90_A0A034WBJ3 UniRef90_A4SYYN9 UniRef90-N6WP76 UniRef90-FOSU70 UniRef90-N1ZX31 UniRef90_UPI0003627AF2 UniRef90-UPIO002DAB6C5 UniRef90_UPIO0035CFEE6 UniRef90-X5LMJ9 UniRef90-G411T2 UniRef90-G1PYV6 UniRef90_UPI000375EE80 UniRef90-K6W1G4 UniRef90-A0A024JSR6 UniRef90-F1YP93 UniRef90_UPIO0035F1292 UniRef90-B2UAX6
UniRef90_UPI0003B50715 UniRef90-V7L751
UniRef90_UPIO0035C6657
UniRef90-IORP08
UniRef90_A0A031JRD4
UniRef90_UPI0003B3AF53
UniRef90-D5WHX1
UniRef90-F7UHB4
UniRef90-V1CHY5
UniRef90-F1ZAW9
UniRef90-A1SP28
UniRef90-E8TX75
UniRef90-B0T762
UniRef90-E0E2R7
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UniRef90-E8LD47
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UniRef90-E8TW91
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UniRef90_I4BM99

GGQPPARTGASHATTAPYGPFDCSDGVVF|IA|QNDREWTR
 $R G H A V P R G E D L L S G G M P S Y G V Y A T S D G R H L A V S A M E P K F W$
$Y G S L I S R G L G N R S D A A P Q G L Y E C A G A E R W L A G S V A T D E Q W$ A GVEPSANGNENPTSAPSGTFETAEGLINIEANKDEQWLD AGRSPGMRLGFDPCKDGY DTDNVRSD DA DAWHDLWA QLGQVRRAAGNRTTYTSPSNMYRSKDGVYFSGVASSQAVY
$H G S P A E R I G L G H P S L V$
$H$ ATGHAAAPMPSRTSAWAVYDVFTVKDGEQIFLAAVSDKQW
 DGEPPVRHGTASGTLAPYQVFETA DRPIVIAAGNDRDF MNGPAGAD IEQLSHVMPDNDVFETADGRHLALGILEEAFW TGQDPPRDGNRSRHGGVQGVFRCAGDDAWI AVRLAGRRDL FQPPTSEEAGYFRQLDPHRNPFPTADGHDSIVPHNDHCWD Y GVHRERVGGRLQGlAAPSNAYFCKDGSSIVI A GNGDSDY TGKNPEGGNELLSGKLDPNYSTYKTKEGRWVALGALEEMFF
 AGKEPTANGNDNF TSSPSGAFATADGQDNIVANKQEQFE
$N G T V V E R L G N A D R E F A P H G V Y P T A V R S R F V A V A V T S D S E W$ GS WRDQRGVNMDDGGTPWYSVYQTACGGYMAVGAIEPQEY
 SGRAPARLGNAHPNISPYEVVPSA DGFLI LAAVGNDNQFR MTGNAPAPMPSRDSAWAVYDVFTVKDGEQVFLAVVSDKQW $P \square W K S Q S G Q S M L D G G A Y Y Y D L Y E T K D G K Y M T V G A L E P K F F$ GAEPPPRNGASHA T $\ Y P Y G P F K A G D G G T V M L G L Q N E R E W ~$
 LDNPHYAVYPNYKWGKAVPRAENTEGGEVI GWTYKAKGWN GLKDP GLDPLINHSFRAFDGYFLIDCARPHMFE NGVATRRPGFPAQPAAPHGVYPASVSDTWI ADAVFDDEQW SGRAPVRAGTSHAADA PYGSFAAGDGQEVVLSIQNEREW GGTAPDRTGARHPTIAPYGPFAAGDGGTVLLAVQNPPEWQ YGAVLERAGNRGPTASPQNLYEFGRDDSWVAIAVATDEQW
GLWEPTLGITTVLDGGAPFYTTYRMADGEFMAVGALEPQFY ESCDPKLEMELLNGGS FYDYYQTADDRHLAVVGSLEPQFA GGVTRARSGSTLPGVAPSNVYTARDGVEVLIAANADTVY TGQPDA $\square G Q R E T M G N P C M N N Y A A G D G R R F W I V G L E G D R H W$
 RGKASPAGTDLLNGGVPCYGVYRTADDRFMAVGADELKFW $Q D V Y Q S L M T K T Y P P G V H Q P E V I M T A D G W D Q S V A G A T Q K R G$
$K H D P L V A E G N Q R C V V V P A G V F P C A G D D E W C V I V V R D D D D W$
 $A A V V P D \square M G N R H P S V V P Y Q T F A T A$ DRPDAVAVGNDKQF SGEVVPRKMGSAMAMTAPYEDFTAADGSVFIAAGNDRLFA LIA GQQPTANNDNFTSSPSGAFRTADGQUNIAANKQEQFE
 PEIGVVYPMNIRREATNPLNAAWETSDGRYLQTCMPDYNVA SGISPKRMGNAHPNDA PYAVYPTRDGWFILAVGNDGQFG AGFTPVRTRHSAHPSLVPFQAFEASDGWLVVGCAKEKFWA HGTEPRRVGNRGYTGSPAADTYRCADGWLSTAANTPAQFR RFGKLASTRPRREA $\square Q P L A N F F K T R D G R W I C L L A R Q G S T D$ GYRMPITRKNPPN PINTTFKCADDRWVAFMQYDKWFP SGADPVRSGNSQPKAAPAADVIAVADGHDVLSAYDDEHWT $\square K A G D S G A V D R F G R T R L V T G M F E C G D G L F L Q D H T G G Q G G F$ PHEVPHRDGNRHPDMYPFDTFD CKDQPDAI CCGNDHDW SGTVAPRRGNRHPVNVPHGCFRCAGDDAWVVLTVPDAHWP LLEHADGGPSAAGPVSAPNGVYASRDGSLTLDALNDAQFG AGVNPTRMGNAHP SLLYPYQPMATQSGEIIVAAANDGQFR EGDVTPRAPRSAHPSVTPSQMFRSADGWMFVMAQDPKFWS GGVVPQRMGNEHP SLLFPYGPRTADRELIVVAGNDRQYR
 SGKPDSGRWGTAHPSVVPYQGFKTSDGDDFLGGANDRLFG

 ETHPPDPRVGDGRPNPTGYLPARTRDGRWIQLGNQVERDF SGKEPARLGTAHPRNAPYQGFTAADGDFTVAAGNDRLWAA
$E P G S I G A P G N A D P N S A P S G V Y A C A G D D E W C V V T V R D D T D W$ EPGSDGAPGNADPNSAPSGVYACAGDDEWCVVTVRDDTDW
$E F N G V S Y P F D R R D N P L P Y Q P A V K T K D G R F L Q V M P N Y G D Y F$ CRETGEKPFGR DAHYYNDYRTADGRYMTVGTDEPKFW $G L V T G A R G E N V H D S S H F Y G T Y R C A D G G F V T$
$T$
$T$
 TSNDRPKPEQPPQPKRRKGVGFATQDGYLLISAYVPKHWQ DGDAKNYPDDVRESANPFNAAWKTADDRYIQTCMPDYNTY QNPPSFGDPAMVKPWSVYDVFDTADPGEQVFVGVVTETQW $G G G W P R P N S E L L T G R S P R Y H D Y P A A D G R H V A C A A L E Q K F W$
$W G G P L P K D E R R T Q A P G N P T G A Y R T S D G R F V Q L S M L Q P T R Y$ SGDPFPR LGTHHPS IVPFGKYECADRPDIVAAGTADFWR
$P$ GWNLPRGENMLDGGSPFYGTYECKDGKYFAVGALEPQFY $P L W N L P R G E N M L D G G S P F Y G T Y E C K D G K Y F A V G A L E P Q F Y$
$G H K Q P Q R S K Y N N A H A Y L S A P Y G D Y E T R D N Y I D A L A M G S V T D$ SGESPARDGNTHPNDA PYEVFACADGHVIGNDTQFVAFC
$M L G R P W R D A R R L T V P G I A R A E D G L V D \quad G C G T A Q Q W F D$

## UniRef90_X0Q392 UniRef90-G8RW36 UniRef90-A0AO111P2G9 UniRef90_D5P7W4 UniRef90-E2CD52 UniRef90-W4L9G9 UniRef90 A9HXVO UniRef90_10WKV8 UniRef90-Q122Z2 UniRef90_UPIO0021928EC UniRef90-B306K6 UniRef90-D4XIS4 UniRef90 E3J2Q5 UniRef90-KOCBW2 UniRef90-UPIO00415BB62 UniRef90-M6D8F6 UniRef90-UPI0001FFF23A UniRef90-K2KNV5 UniRef90-UPIIOOO36B1661 UniRef90_UPIOOO46 UniRef90-F4CVMM UniRef90-UPIO0037DADOA

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UniRef90-X5LM, UniRef90_G411T2 UniRef90-G1PYV6 UniRef90-UPI000375EE80 UniRef90 K6W1G4 UniRef90-A0AO24JSR6 UniRef90-F1YP93 UniRef90-UPIOOO35F1292 UniRet90_B2UAX6 UniRef90-UPIO003B50715 UniRef90-V7L751 UniRef90 UPIO0035C6657 UniRef90_IORPO8 UniRef90-A0A031JRD4 UniRef90-UPI0003B3AF53 UniRef90-D5WHX1 UniRef90- F7UHB4
UniRet90 V1CH5 UniRef90-F1ZAW9 UniRef90-A1SP28 UniRef90-E8TX75 UniRef90-BOT762 UniRef90_EOE2R7
UniRef90_OOK2Y5 UniRef90-K9CL65 UniRef90-V4K2W7
UniRef90_C9M2D2 UniRef90-Q46UD4 UniRet90_D5ZRR2 UniRef90 UPIOOO369FC4B UniRef90-UPIO0046F1551 UniRef90-W9BZJ5

FCAEVVERPD ${ }^{250}$ TTEDVRYADNARRVQNRSELLEATTRSLLRR ${ }^{260}$ WAEFCRTADDPRFVDLVARRANAEACVAELDAVFATRTLS QTLCDT DRPDLRPCAFATGAEGQRIRGELEALFARRSLA HLGLLATLRPRPEYKDRGRAEAHDQLKALEQWACRHESS FFGHLEGAEDERFLTVKDRRQNQAEMEAYIMPQLAKFTMA VRLCNAVGKPEWFDTLPKRVQNMDALDGALAQWFASHAFA RLAEKVIARPERYATNVARARRRDEVDTLVATACREFTAA AI FCKAFGLDERDKTNNDRVRAREWMMP LIRSHCAERSAA KLLLTATGDELADDPCWDDSAAFTRGMDRILATSTRLTDD ARCADVLGHPEWSTDHRFARAHRPVLIPLMQEVLRTRGAT RNLCCPELAQQRYQTRAGRLQDKRALNDRLRALFASRSLA ERLAEVTGLDGLARAARTGPRDDAAAEALIAGYTATRDKH LLGCPELTERPEFSGQPERRANDSLLYKEMAQRTPQKTTAA KTFLRQSGLDTHLEKTPGAETHFAEWKKILTEYFASKTLA AAGREDLATDERFAGSEALSRHQPELYALI GELAPSRTVA RLLGRAMGRHDLGDTASVRRACARELDGAVADVLVGRQTD $R V F V Q A L G L D E A A L P S R D D P A N W D A L R Q R F T Q C F L A R T R A$ ARLCAVVLGDPRFVTVRDRVAHRDALHFEDDRRLATDTAE RLCTILRLDDERFSTNKARVVNRDEVRRLISTETLKWQKA DIFCRAFGLGEWLADNNDRVQARDWLMPQLRSHLAGYRAS DFFKSNLELPELCQFPENQYEKDDTVDQVKQAFLKKTQA ALEKEEWAEDPRFDDAELRQQNDDALLELTQSVLRTNTSG AMGADEGDPDEKFDDRQARQLAKEELYPLLEAYTKQYDKY ARLVAVLGEPEWTRDPKFRVAHQDELDEEHYSRWTAQRTSH
 RSLRQALGDPDWAADPDGRRAREDFIDDFLGAWCRERSGD
QLLVKGLGLKSDELPNQRSMADWPEMKKKFAAVFAKKTKA EAFFVGIGHPEWEDRDFDETQQNQLKQDTGANIDQRELI RRLCQAMGRDDRFATHQARGVNAEELDALTSAWATQLDGE PPLCRVVGHPEWLDDPRARFVNGPELIAELDETEATRSGD AFARPAMADDARFATNSARVENRDVLIDEVTRLLSTDTAD RACEAMGCQDERYTTNAGRVKHRAELVPQLQRALLARPTQ QAMCDVIEKPEWKERHWALGQRVGGDDARAAARFLTATQA TTlHDVFDLPAGLPPQ RRLVRVTDVFDHLQTCAGRAVRRA QVYPELARDYRDRKRE STFCTAVGAEDVAADYTDNEARAEQIRGRLATIFAKRTRD VAAMHAIGDDERFATNSARVAHRDELCARIEVALKARGAD KVCGGLGAEDPRFKTNPERVHHRHELHAELSRLVRTRPVA AVCDVLELDALKADPRFLTRSDRLSNRKLFERVLQTGRTD YLKAMRRMDLAHDPRFCTAERRLQNYKALHAVIVTWMRSF LEEVEDIGLPASLREASAPATVNETVALAERDGRKTAA KFCCPQLLGDPRFVGNAARLAHRDVLEDAVRAATSQWARD RLAVVVGRPEWPYATFSGRREHSGEL $\ A E L E R \| F R G R T V D$ LLAGVLGLEALCDDAGFVVARDLPALQERLRAAFAGRSAA NFCNTVIERPDKYSTMKSAVNYVEEFVEILEKEFDKRPDD RLCEAIGQPALAHDPRFACNANRPALLAILHDAMRHLSGD KAAMDQDGFGDRVSAVKGAAEMYHDARVEI FDAFKARPRA ETLCKVTGNDPRFKSNENRVKNRDQLISILQEVFSRNTRE SLLTNALGHPEWFNTNDLREKNWQDVKNAMQSVLETKDAA ALCRADGREDLAADVQLAHRTQQDR\|DAADTAWSAGRDPE KLCHADWLEDPRFADNAARMAHAALLDPLVVAECVIGRRTVS TLAEVVGRPDWCDDERFAQAKNRNANRDALEEALLAAHAH LLVDAGGRSDVKDDPRFRTPAHRDALTQVLDAVFETQPAQ
 WPEFCRLAGRERFADVSQMMANASAAAETVAEMTGARTFA AREVLDWPAEDRFATAGGRKAAEAELDALVAGMVAGRDRD

 ERLCGVLGRSDVVDDSRFATAHRAEVDEVLAEWLATRHKPT QRFCDAI GCP ELEKRPYFCDQKKLQDYDLVQEGFQQKTAE LLLERLGLKDDARFTQQWDRKRWPELHRHFTEVFGSKTRD IGGRADLVNNPRYASVNDRHTHMGELGSAMREAVPSRTTR
 YKKFDTVIGREDMAEDEDYFPVQNMQYDEVMSALAGKKTAA RGFCEAFGLSDLLRDPALATQAQRRYLPRVAEVFRRLSKA DRLVK VGLDEKHDDTGQEQ AVIAALTEVFASRPSG
WPEFGYAADPRFASLQAMAENADLAYGIVHDTIAKLSFA GFCRADDRPDDRFATMDDRADNRAELAEVVEPILRGEESD AALIKGLGFETGDLPAREDRANWPALRAAFERRFKEKTRA LGRYLHDDELARYTDQNEWFTKREELKQLGGAKLKSETTG VSFCQAFDFPELGGDAELIRNNQDRIDPLVRERLSGMDKG
UniRef90_X0Q392 UniRef90-G8RW36 UniRef90-A0A011P2G9 UniRef90_D5P7W4 UniRef90-E2CD52 UniRef90-W4L9G9
UniRef90 A9HXVO UniRef90-A9HXVO
UniRef90_10WKV8 UniRef90-Q122Z2 UniRef90_UPIO0021928EC UniRef90-B306K6 UniRef90-D4XIS4 UniRef90 - E3J2Q5
UniRef90 KOCBW2 UniRef90-KOCBW2 UniRef90-M6D8F6 UniRef90-UPIoo01FFF23A UniRef90-K2KNV5 UniRef90_UPIO0036B1661 UniRef90_UPIOOO46F89A4 UniRef90-F4CVM1 UniRef90-UPIO0037DADOA UniRef90_UPI0003B7025A UniRef90-J4J8.J7 UniRef90-A0A034WBJ3 UniRef90_A4SYN9 UniRef90_N6WP76 UniRef90-FOSU70 UniRef90-N1ZX31 UniRef90-UPIo003627AF2 UniRef90-UP10002DABEC5 UniRef90-UP100035CFEE6 UniRef90-X5LMJ9 UniRef90-G411T2 UniRef90-G1PYV6 UniRef90-UPI000375EE80 UniRef90-K6W1G4 UniRef90-A0AO24JSR6 UniRef90-F1YP93 UniRef90-UPIOOO35F1292 UniRet90_B2UAX6 UniRef90_UPIOOO3B50715 UniRef90-V7L751 UniRef90-UPIO0035C6657 UniRef90_10RPO8 UniRef90-A0A031JRD4 UniRef90-UPI0003B3AF53 UniRef90-D5WHX1 UniRef90-F7UHB4 UniRef90 ${ }^{-}$V1CHY5
UniRef90 F1ZAW9 UniRef90-A1SP28 UniR Refo-E8TX75 UniRef90-BOT762 UniRef90-EOE2R7 UniRef90-QOK2Y5
UniRet90 K9Cl65 UniRef90-V4K2W7 UniRef90-C9M2D2 UniRef90-Q46UD4 4 UniRef90-D5ZRR2 UniRef90 UPIOOO369FC4B UniRef90-UPIO0046F1551 UniRef90-W9BZJ5 UniRef90-UPIO0035E6EOB UniRef90-A0QDZ7 UniRef90-D816H0 UniRef90-B6QKQ3 UniRef90-UP1000364AD5C UniRef90-A0A022FP37 UniRef90-MOEAOO UniRef90-H8IN05 UniRef90-UPIOOO3765655 UniRef90-W5TQF3 UniRef90-M2Y6Q9 UniRef90-F7UZL5 UniRef90-H1S613 UniRef90-X0PZ01 UniRef90-UPIO003A7E98D UniRef90-Q1N311 UniRef90-U5WTG9
UniRef90-G5GF63 UniRef90-UPI0002D680F8 UniRef90-L8FJH4 UniRef90-X5LJOO UniRef90-L9WLX9 UniRef90 BOY2YO
UniRef90 UPIOOO4 UniRef90-E8TW91 UniRef90_V7D574
UniRef90_l4BM99

EVIT DRLLDSATIIANATLIRTMEDFSAHPQLLEARGRWRQIIDSP EWKETLAAMDAPWSPIQSTEEVVDDPQVDANSYIGEVSTE EWTAVFDGADCCVAPVLALEESVDNAQLRAREMLVEVAGV ESAKDLNRDGVPSGAVLSVPEVLSMPQVADRGFLAHFEDV ELFDALQPKRILVGMALDIPHLLDNPHLKARELFVEAEHP D C CAQLEPHEIPFTKVYDIEDIKADPHFQARNAIVDPDHG ELRAVFEANELPFAPVVRPELFGDPHENTGGLAPVDGS
 DWEAVLHGRDIPWAPVLRHDEVEDDPHVQHRAVTSDSATG RTAALLQDAGLEAFAVLGPAELLADDHLRARGFFVTARPG EWMTLCRTASIPAMPVCPFDRVLEDQHLWATGLFHPSEGD EALEALDAAGVPAGPIYSAADISADEQYSARGMIQKFDDV DLEPREQNPDSCLTPVKTLDEVSKDPVMKEKGMLDDYGDY EWGELCADHSIPFAPVLSVDDAEDDPYVTGGGLLAEADHP EVETALQQVGVPAHVSASSKDFCLDAQLLDHRGHLDSLPHP HWSAVFEPLDACVSPVLSLSEAPLHPHNQSRAVFTTADGS RAGELLDEADDAWTRVGLVADAPAHPQLVARDRWRQVGGA DL LKACEENAVPAGAI NTIEEMFADPQ TKARGLRIDDPDA ELAARFEQEGLPFAPITRPEQLFDDPHLKATGGLAPVTDP EWSDIFENNDACVYPVVEWEDVAQYGHNKFRTSFQRLNNM QLI ARLEKAQIANARLNDMGLWKHEQLQARNRWAKVDTP YWLARLEAERVPCAPVLTRHQMIRHPQVEATGIVREYEHP HWAGVLKERDI PFTRLAHDKDIATDEQ| WANGWLEKREFP ELTRRLGEAGIPVGPVLDWHELENDPDLNEDGTIVTDDQG QACAALSGVGVASGPVYNPGDVDEDEHVRNRNMIVEMEPV ESMELLQHAGVPAGAVQNARDLDEDPQUAHRGTFFELDHP QLVERLEEAGIANARRRTLDQVDTHPQHEERGRFVEVGTP ELEARLDEAVVAHARMNDVERLSDHPVLTGRDRWQTPGGH EIVATLWPAGVPVAKVMQPHRQPEDEQLTARGFFEVLDHP EWCRVFDGTDACVTLVLTFEEVAHHAHNKERSSFDDGEQG
EWITRVEKSDACVEDVLSFNEAAESSLMQERKMLLTANGV QLEKLLDDYEDPRGRIYTPGDTADDAQYAARQMI TRLAAP EWAQAFAAEPFFWSP NS IEDVVADQQFHAAGGQVDVPDG GWFKRFASVGVPCGPVNDVAEAFALADRLGLQPVAEVVDP A WVA AFDAAGVPCSPI LDIAAQVFDDPQVRARGLRAPEASG EWTARFADADCCVTPVLRMEEALQHPLFVERNSVVKENGP ELLEELLHENLDQTAELDPTRDALKHPQVVFNGMAVTVNGP LVEETLQAVGVPASAMVRLPEELTHPQLLARDSFHTLEHP EWVAFNAELNLGGSPVLDLAEEVDDPRVVRDGMVNEVQHP $H W Y E V L T A A G V P A G P I N N L A E A F A F A E R L G D E A V V S V P G S$
$E V V A C L R A G G P C S E M N T V D K M L T P Q I E A A G I V R P A D H R$ DWVLAFNAVGVPAGAVLTVPQALSLPQQAARGMI ADVPGV RDLLAQLDEAKIADGQURTLKELAETDWAKQWGAVHEISDR EWRSLFDGLDVCCSDVSTLEEAVADHHVTERGLFSEVKDP EWNKITTEADIAFSIAQSWEEMLEDPQAWDNDCFYKMAER DLLAALAAAGVPAGPDNTVADAFSDPQDVSRGMQLDLDGT DMEARLNAVGVPAARVRRLGEFLD EARDTGALRPVRYG DAKAALDAGDITWAPWQTPRDLVGDPQAQAAGCFVETPDG EWCARLQAAGI PYEKLATTDEVLVDEQCWANDCLIKHEGV AARTLLERHQVVVGVVRDYHQVNASPDVRASGVLQAVDDG E WI ALFQAADVAALPVLEPAEVLLDEQVEFVGQRIEFGTD KWNQLLHDAGVPAGLVLNVDKTRRLDQIDDRGMVKTLPDG TAMQSLQQAGIAAGVVRPMSQVLQDKHLHARGFWQRVDGP DWDACLERAGVPCAPVHSDPQVLEHPQTAAMDIVLDGADD
 EWAELLTRAGLPCGPVNDVRRGVEMATVLGLGPVVDVEGV
 EWLELLEGSGLPYAAVNDVLGTLNHEHTKARGMVQEDDHP ELAQVLAEAGVPAGPVTDGRDLATDPALTEAGHFVUVPHP EWTDAFA ALDLPFSPSLSAQELFADPHVQARGMIRALPGE $E W I D R L R N A G V P V A P V N D T Q D V 1 D D P Y L R A L G T V H A T E G D$
$H W Q R V L A D E P G V W G A L A T P R E T L N P Q V E P N Y V V T V D D H$ HWQRVLADEPGVWGALATPRETLNDPQVEPNGYVVTVDDH
 EAMETLQAAG|PAGAMVRLPELLTNPQLVARGAYTELEHP EWLELIGGAEFCVTPVCSLEEALDSKDTAQEYILQEADSD EWCAQMENTDVCFGPVLSPQEAAQHPHNVARGUYFEREGL EWLDLCQTQGIPASDLLDLAHAHENAYVLDQGLITKREHP ELSAALTEHAVPFSKVYDLGDVLRDPHFQARGAIDRLPDG HWCEVFAK $W D C C V E P V L T F A E A A Q Q S H A K D R G W V T A S E D G$
$E W V E L D Q E A G L M A C L P Y T W K Q V V D T P D A E N E L A V E V G R G$ EWNKIFREADIPFAPAQNWMEIMHDPQAEANNCFYDMDYG ELMARCEALGLSFAPDARPGDLFDDPHLRNSGGLLDTEGG YWRELEAAEDVCTVVVNTWDEAVEAGLVDIGASARVSHP YWIDDRFAEDVPAGP YDTKSVWDDDHVQRRALHKTMEDA EWEAMFDGTDACATPVLEQAELEQSGYEQRPAVHLVDTP HWLDILEANGYWCSDVYSWNRLIESDGFQALDFLQNVKRP ALGRALDEHGTSWGNVNDMEQVFAHPQVRHRQMLQTVDHP TVMDLCEKAGLDFSPIERPEDMFEDEHLNLSGGMAKLGGE

|  |  |
| :---: | :---: |
| UniRef90-G8 | DGQPPHLDRAPEHGEHTETVL |
| UniRef90-A0AO11P2G9 | KQFAPPFKDSEHPVARHGAPGAGEHSAEILGE |
| UniRef90 D5P7W4 | VVGVPADP S SVEWHRCPAPTLGQHNAS LGDLLG |
| ef90-E2CD52 | PGVGRAIDVATTPNVGSPPPQLGEHNDELWADL |
| UniRef90 W4L9Gs |  |
| UniRef90-10W | G |
| UniRef90-Q12 | QSKVPLMPFGKRPGIRLQPPLLGEHSRELLDEL |
| UniRet90-UPIO0021928EC |  |
| UniRef90 B3066 | LKVAGLPILLGQRPDPELATPKLGAHNHEVL |
| UniRet90-D4XIS4 | RVAGFPVKF SKPLSAPSDVPELDQ |
| Unirefo KOCBW | YVEMPLPRFSARAPRPARPAPLGQHTDEV |
| UniRef90-UPI000415BE | GFPGVVPVIGETSLPVRLGPDLGENTTE1LGGLL |
| UniRef90_M6088F66 | QFGSPFPFSESKVTYRTPPEHGEHNREL |
| UniRef90-K2KNV5 | PGADRDIRFILRTPSVSAPPPELGQDNQDIL |
| UniRef90-UP | VVEGPRYLLSETPGAVTAPPAFGQHNHQVLADLLG |
|  |  |
| 4 C |  |
| UniRef90 UPIO0037DADOA | VVQQSPLRFGGSPRELLT P SRALGADTASVLAEV |
| UniRef90_UP10003B7025A |  |
|  | RVPVAPSPTLDGVQPPG |
| UniRef90-A4SYN9 | AGSLPPPGLNNSEYRMD |
| UniRet90-N6WP76 | G |
| OSU | VGLIRPPLQSRNLGAYNPAPKLGE |
| UniRef90 N12 | GSRGKPFSLSNYKPAYKRAPDLGENNDEVLADL |
| UniRef90-UPIC | GVAPIRFTRTVQENWRAPLLGEDNDYVFGDILG |
| UniRee90 UPIO0035CFEE6 | N |
|  | AQALPPPGLAGUEPVLGDVPALGAHSRKLLGEL |
| UniRef90-G1PYV | VSPCLAPLLSNTPATPSRDPLIEEHTEEILKEF |
| UniRef90-UPI000375E | $K Q \square N T P F H F G N E K S Q Q H \square A G A L G E H S K G L$ |
| Unip |  |
| A0AY24 |  |
| UniRet90- UPIO0035F12 | RPPGVLTPMGQRPMALCPPPGL |
| B2UAX6 | VQDALPLRFAD |
| UP10003B507 |  |
| UniRef90-V7L | PRPVPRFSSUPPGLRPAPTPGEHTREVCSSL |
| UniRef90 UPIO0035C6657 | L |
| Rer90-0RP08 | V |
|  | VRA |
| UniRef90-D5WHX1 | RGGGYPWHFSDDELGMRSAPAFGEHNEQVFRE |
| 7UH |  |
|  | TLVRLPVKFAEMGPEYKKGPLIGEQSEDVLKEL |
| UniRef90 F1ZAl <br> UniRefo | VQLASPVRVGNERPQYRRAPRRNEDFDHVLRETTG |
| UniRef90-E8TX |  |
| UniRef90-B0T762 | K |
| OE2R7 | NTPVMFTENK |
|  | EGGLPFTMASMPAGAMPAVPRLGQHTTEVLAEL |
|  | YQAAPAVRFDR |
| UniRef90-C9M2D2 | SPMKYGTWNSYGDSPKLDEDG |
| UniRet90-046UD4 | V L $G$ |
| D5ZRR2 |  |
| UniRef90_UPIO00369FC4B |  |
| W9 | RVLASP |
| UniRef90-UPIOOO35E6E0B | PMVRNPVTYSLTPPRYRRPPALDNAGESI RAWL |
| A0Q | RQPSTLIHAEGKPT |
| $\begin{aligned} & \text { UniRef90_D8I6 } \\ & \text { UniRef90_B6Q } \end{aligned}$ |  |
| UniRef90-UPI00036 | VMPAPPMRLSATPWEVGPSPCLGQHNKEVFEGLLG |
|  |  |
| UniRef90 MO | GGDIDVPRYPARSTRFDRPPELGEDTDAVL EALG |
| UniRef90-H81N05 | etpasarapepgoht |
| UniRef90 W5TQF3 | GQDARLRAAPRLGGD DDVYDEWCG |
| UniRef90-M2 | PLPHFAALPWPLRPAPLAGEQTREIAEDTL |
| 7 | VP |
| 8L | SEDAS |
| UniRef90-H1S | QVRTPGPAPRRGEQSEEPL |
| UniRei90- UPIO003A7E98D | PPPPRTGPAVGEHT |
| UniRef90-Q1N311 | D |
| UniRef90 U5WTG9 | DDAVTVIRTSFSAV |
| UniRei90- UPI0002D680F8 |  |
|  |  |
|  | PGNLERAPQFAEHTDDVLreL |
| UniRef90-L9WLX9 | DVIDHPVHFTALTTQLEVAPRLGESTDSIL |
|  |  |
| UniRet90-UPIo00464990D |  |
| V7 | QVKVPM MPFGQRFGA RLNVPELGSHSKELLAEL |
|  |  | UniRef90-V8QTD6 UniRef90_A3UEX9 UniRef90_A0A011K8M9 UniRef90_A0A059KKK6 UniRef90-F4R542 UniRef90-M3UI30 UniRef90-U5WRQ3 UniRef90_M5AL55

UniRef90 D3CZ70 UniRef90_M2V336 UniRef90-A9ALL8 UniRef90_UPI0002F82BA0 UniRef90_Q18IQ3 UniRef90_UPIO003B327B5 UniRef90-J9RFI6
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UniRef90_A8LFS8 UniRef90-L1KW77 UniRef90-W8INI4 UniRef90-A0A031J1F8 UniRef90_UPI0003B4F3BC UniRef90-E5WK26
UniRef90 G4HZ43 UniRef90-W4LC18 UniRef90-W6W8T2 UniRef90-RODVL5 UniRef90-T1EF38
UniRef90-W4LWZ5
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UniRef90_B2AHB0
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$G V L A G V R V A D F S R V L A G P Y A T M M L A D F G A D V V K I E S P A G$




S
S
T
$P L S G L R V$
STFWA GP LLGVKVIDDSSVVMGPYTSQLLADMGADVLKVESVDG
 A G GLVV ADFGRVLA GPYATMLLADMLGAEVIVKVERPGV


## G P


$P$ P L

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








 MP GA $\square$ C T L V MA DY G A E V I K V E P P P G G
 RPMEGVRVLEVAQFTFVPSAGAVLADWGADVVKVEHFAP

6C06F8


```
A K
```

T
T G P
$G \square R V$ P L A G V P L A G V R V A E


 A P


 GALS GLKILDDSGSNIA GPLGGGLLAECGATVIHFEGPKK



 GLFAGLIVVIDCASF!AAPAAATVLADFGADVI KIIEPPGY SKPLEGI RVLEVAMYGFVPSAGAVLSDWGADVVKVVEPNP A P A LA G V V




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UniRef90 11 1c578 UniRef90-A8LFS8 UniRef90_L1KW77 UniRef90-W8IN14 UniRee90-A0A031J1F8 UniRef90-UP10003B4F3BC
UniRef90-E5WK26 UniRef90-E5WK26

UniRef90 G4HZ43 UniRef90-W4LC18 UniRef90-W6W8T2 UniReffo-RODVL5 UniRef90-T1EF38 UniRef90-W4LWZ5 UniRef90-UPIO00476377D UniRef90-W5WMF5 UniRef90-MOQQ08 UniRef90-UPIOOO3803031 UniRef90-K8XE46 UniRef90_CYTV5 UniRef90-H5TE84 UniRef90-B4W8K7 UniRet90_A1WQ19 UniRef90-UP1000370CFD2 UniRef90-W4LP44 UniRef90 X6J700 UniRef90-B5WE00 UniRe90-A91Cl8 UniRef90 A4YXBO UniRef90-E7C3Y6 UniRef90-UPIOOO16C06F8 UniRef90 R7BNE7 UniRef90 J2HE15 UniRef90_TOLKU9 | UniRef90-Q9RB45 |
| :--- |
| UniRefolano | UniRef90-A3TZV5 UniRef90_UPIO00371083F UniRet90-E3IWR6 UniRef90-A7EEQ3 UniRef90-F8KOK1 UniRet90-UPIOOO46452BE UniRef90_W9AL38 UniRet90_J4SHZ9 UniRef90-UPIO002FA726C UniRef90-G4Q469 UniRef90-UPIOOO255B5FC niref90-M5R5 UniRef90-F7UX11 UniRef90_W9AXZ8 UniRet90-X5LDE6 UniRef90-UPIO003B37341 UniRef90-G7E5Y6 UniRef90-UPIOOO372E2BB

UniRef90-UPIOOO36DE1 UniRef90 UPIOOO36DBE13
UniRefgo- B2AHBO
Uniref90_B2AHBO
GDDTRGWGPPFVRPEHKDAGDHATLDRMVISRADVLVENFR ${ }^{60}$ GDDTRAWGPPFISVNDKDPKGAHVIKDLASVCDVLVENYT YFDSCNRNKKSLALDLKSEAGKKVIYDLSKQCDIWVDNFM GDDTRGWPPFQDALDLKSAHGRAVVQRLAAWADVVVHSFG DDTRAWRPPVDASGESTYFASVNRNRRMATADVVVENFR YFPMFNRNKRSHCDDLKSVAGRDAADRGVRGADVVIENYR DWVRYNRGKRSUAIDDKDPRGLEVAEKLVADADVIIQNMR LIVQGTNLINKRDVTLDLTSATGRELALRLLAAEADVVVENFS FFQTFNRGKRSMALDLKDRGDRRIFERLLATADACANNLR DVFRYTAPSKHPTMNLKKLEEKASLLKLISSADVLLYNIR DKTRRLPGGGMGFFRTFNRNKKSVVRALVASADVVLENFR GDDTRSWGPPWVGDESRDPADLDRAREVVKRADVVVENFM N EHANRGKRSIGDDMSVPEGKDVLYE ARRSDVFLTSFL DVTRQGTGGSHQFTGTKTEAGLQALYRLASTADVFLHNMP RMASLNRNKRSIDALDLRLESDRETFLRLVATADAVVEGFR RSSAPDADRSRDGDDLKSAAGREAALDLVAHADALIEGLR GDPRRAYDPYDEAEGGSEPDDRAAYVRGVRADII ENLR YFWSVNYNKQSVELDLKSEAGMEAFYDLAHKADVIIQNFR SMLVRGRDKESVTLNKHPDDYRAFMTVVERADILVENFS SRSRHNANKNLVILDLDSEAGRSRFRELVGGADILVETMS
 HAYGAGRGMRRMRVDLKAPNGRTLIRHLASCADVLIESYR MWETTNRGKRCDGVDQRTEQGQKIVAELARGADVFINNLL
 QFQATNRGKRSVALDLKNPAGRQLLSRLDAASDVFVTNLR PDGWGHRNKRSLGLNLRDPEGVGLEKRLAAAADVVLSNFK GDPYNNRGKKSVAlDDKTAAGREVLLRLIDTADVFLTSLR SGDYLRDIGGPYFIDGDNKNEGKIILQKLVENADAVCNNLR VFAANNRGKKSHTLNLKSEDGRNAALKLISESHAVLESFR PDDFRKPHAVYGRNNMKHPEGVGLAKRLVADSDVAAESFR AAPPGMPERSIVALDLKNAQDLQUAQELIATADGLIEGFR GDPGRNRGKRSUGIDGKTDTGREYLGRLDATADVELTNWL DPFRFQPAWDSWNRGKKGDEGREQADQLAGEADVLVESFR
 DMEGPNRGKRSVGI ALDRPESRPLEELVRRSDVFLTNFL DETRGWGPPFDMALDLGQSAARTVLLDLLADADVLVENFR TSARAVPTEDMLARHKKSRGVALVKRLASKADVIVDPFR VQNGRNRLSFTLNTNMKYPESKEIFLSLIKNADVWLENVV CWEFSSRNKRSIALDLKOSGGRDVLERLIEQADVFVTNFT DWMAFNRGKRSLACDARHPEGRALLALLAARTDIVIQSFR WF LSVNRNKRSMCLDMRGQAGDVLFKLLETADVFIENDN SFNSHARNKRSMTCDLMTPEGREALLRLIEHCDVLVENNV FIDEQPNRGKRSVAIDVSHPDGLELLMKLVEQADVFVTNLL AFERHWRNCRSVALDLKTAQGREVVLKLVASADVIVDNFR
GDDARNWGPPGINGESPWFLSVNRKKSLAQADALVVNMN YFVWLNRGKQSLVADGKNPDDAALLHRSIARADVVVQNLJA



## $\frac{1}{Y}$


P D NQRGWY GYPQNHRNKSEEGRKDFLDLIKWADIVWVESSK


 AASRRAGPRPGDSLPFETPAGRDRLRELVSRADIVVESAP TADLLTRHKSSDAVDLKSSAGDSFIKSLVACDVIIDPFR
 NVEHANRGKRSGGVMSVAEGREVIYDUARRADVFLTSFL
 PDMSHYRGKQS LLDEKDKKDMDFFRKLVKSADVVIQNFT DVMRHNSNKKFLSLDKKEKGKTVLLDLGSHADVFITNDR
 DMMRKLTDDCDFEANNKNKQDVQAQQLIREADVVIESFR PDVVRAGYGYTVQGDRRNQRNVSLFGRMLENDDVEVEASK
 NFNSDTDCRGKESISDSPKDLITKNQQGWKGVDVII DPFR EFWHYNTSKRGDTLNLESENGKSFFRELASGADVI:ETFD
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$P G T A E R L G D Y E S L R E H N D D I V Y C A I S A F G Q T G P W O E R P G$ PGVTDRLRI DYETVKASNPRIVYCSISGFGQDTTYGSAKA
$T G S$
PNARGK
PGMAGKGGI TLEDIRATNPDIIYVSGSGFGTEGPDCEKGG STMRMGVGYALAARNPALVYVSISGYGHAGPMANMPA
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PGVMERLGLGPTQMHQKNPKLVYGRMTGWGQQSPRATQAG
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PGVTKKLG

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UniRef90_B2AHB0


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 HELNNFLGGLSGFF AVVPGCTVDGVVTVPGDRAGBDLVGSMYAA $H D L N Y V A L T G M D S L S A P C D G R P G D P P T V V G D A G G A D G L A F$
$F D T A V Q A M G G M M S V G G E P S G P P G P T V T G F A D D Y T A V Y A S$


 $L D E V V M M G G L A Y M T G P A D G R P L R A G T S V N D D M G G M F G A$
$H D I N Y Q A V S G Y L A C T A L D A D G D P A P G A T I A D G A G G G M H A A B$ HDLNYVAVSGLLDEMTPDGETPRDPPPLFADVAGGGHAALD FDHDFWARTGMAHAASQVSDEFVPQPGPALGDLASGAFLA

 Y GPVVVRAST GLLSD L WRYPDDPD GHSDSDTDYP DHVV GRVG





F $\begin{array}{ll}Y & E \\ L & V \\ L & A \\ V & A \\ V & M\end{array}$
 YDSTAFWARGGSAFGTTPAGSDRVSFMPAGAYGMTIA GGM

Y

## H

## F

370CFD2

## 

 Y DLIVVQAETGLCAA T GNQHGP AR RVGVVSVCDISA GMTAA $F D L A A F W A R G G I G E A Y T S S A P D A Y P P V P A F G D V V A G F A D A$
 Y D L L V Q A E S GLA GI T G H P A GP GRVV G GV V V C D A A G M A A H


 HD IN Y L A V S GL L G L LGREGEKI QP P WN L LADFAGGGAVLF



 $F$ D STAY WAARSGGLMDMVRPD GEAAPPARSTPPGM GDHPSAMMAL
 HGMLMTALAGANPVIRADDGYMHPVPPTMGGEATAAAAVH



 VD Y TVNA GLGFPDVT GPAGLDVPVNHVLPAWDVACGLYAA

 S DL DHLS M GCCGYY NEEDVA DPPPDAGGGGQAWHMGSHYAY


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UniRef90_A3UEX9
UniRef90_A0A011K8M9
UniRef90_A0A059KKK6
UniRef90_F4R542
UniRef90_M3UI30
UniRef90_U5WRR3
UniRef90_M5AL55
UniRef90_D3CZ70
UniRef90_M2V336
 TAKKEAKKWGTAHESIVPYQAFKTKDGFLVICAGNDQQFS MKTVSKRYGTAHAS VVYQDFPTKNQNQYLCVAATNDCED
 TGTPPPRMGNAHPS $\square A P Y E L F H A A D D R E F V V A V G N D R Q F$ TGQAAAPMPNRDSAWADYDVFETLNPDELLFVGVVSDGQW TGIPLVRRGNGQPGVAPAADLIQTSDGHIVISGYSPHHWK TGSVRPREGNRHRCYAQGVYTTSNADEWVALSVRDDADWD $E L G L E H R Q G N R D M R F S P F N S Y R A A K D G Y I A L G A A S N A E W T$
$E G K C A E R Q E R S A H P S V A P S Q L F R T A D G W I F V M C Q A P K F W$ FTDNPKPNMGYGRVLSKSRKPHQTKDGYPYTSAQWERFF I SGEVPPPFPSRVSAWSVYDTFTDAGDEQLFDGAVSDKQFE NSNENGQRWGTQHPSIVPYQAFETSDAYMUVGTTNDRQFQ
AGVVPSAMGNSHPSIAPYAVFHAA DRPFVLAVGNDRQF LGQRMQPPGVHGAPNNPLVGLYPTSDGRYISFVMMQPTKF FVPAKSPMQSRLAASRFRRPYRTSDGY VVLTQVQWERFA EGTEPRRMAFGAHSFYVPAQDFPTADGY LALRVTHDGFW IENPTDSPTVQGDND I FETSDGCLLSLATFEDKFW ANGQLDGAQPSLFHDAPFYDVYRCADGECVTVGADEPPFY FAGESPSRMGTKDPVLAPYQTLQTADGYINIACLNQKLWH E $\square$ GCSGRTGQFVPRLIAPFGVFQSSDNWVAICAHTDHALFT A AGRRDDFPRDRPDAANFYPVLRCADGQVRICRQWRAMFA RGEADPAQSAQRRSAAAGNPAYRTADGRWLQLSMLQAGRY
 TGEETHPGSGVLTGKYAWYGVYAARDGKFVSVGAI EGHFF QWARRQRAGSTAKLERPYYRLYQTADDRYLAVGCLEETFY
 LVWNDERGKNMDDGGAHFYETYKTKDGRYMAVGADEPEFY LNGPGGPVAARSRYEASNMLPYRTADGRVIVLQMLAPDRY AGEWLNPGSLHAGAVTADLVVPCAGDDQWCVI GIRDDADW
 TDFKSERLDRSAHPGLVPCQLYKTKDGWIYLMCNKESFWP NETGYSNGLSVLSGEIVAYSIYETKDARFAALAALEPKFW $N G R D L T R D G N R G D V C A P Q G V Y R C A G N E N W L A M A D Q T D A H W$
$L G T M P E R N G P S Y N W V G Y P R R L N F P C A D G H V S M F L V G D D W G$ GGIV ERLGNDDYRRAPHGLYATDKPDRWLSDADGTEEQW GGFGETRGENLLDGPHWSRTYACKGGGYUAVQCFEPKFYA
CGQDAKRMGSGHPSIVPYQSFKTKDNGYFII GAGNNDQFE FGGDGDPGAPPGLAGNPLVNRYKTKDNRWLQLVFLQPDRY
 $A G V I G V A Q G N K H P S D A B P E V F R T A D G S I A I A A G N D S D Y Q$ A LPAQSPHRRSASAGNPDSGAYRTADGRWLQLSMLQARRY AGPAQSPRTGNAHPAGNPYDGAFATASAPGFVGNDAQFRTFA DRADPHRQSRHPQ AQNFCLHTASDGVIA IHDSSSQKFW PLGERGRGRNLLDGGCPWYDTYETSDGKYMSVGADEPQFF LGIVKERFGNKVPGF QPGGVYRAKDGRYVSLGAFGPAVY

 NGRDTPTQGNRHCWHTPHNVYPCRGKDNWI AI DVGTDEFT SGYHTVRAGVKHPS LAPYGAYR CADGKEVILSLQNDREW VTGQNVPKFNLAESPNPAVGFFPTSDGRHLAFRFWEDFCT GGFQKSK DDRAHWFHAAPYGVYRGADGKLMADSNVDPVNF TGQAPARMGLAHP SUCPYGAFATSDGSQVLISSQNEREW GNDAPGAGADLLTGGSPRYQLYPTADRQHLAAAPLEEHFW
DHTLPTRAKVNNAHVYLPAPYGDYATQDSFI ALAMGSLPD
 GTVVRRRGNADEALVPHGVYPCLPERGRYVALTARDDEEW TGKAAAPMPARISAWA IVDVFETRDEPVFIGVVSDADWQ $T G K A A A P M P A R I S A W A$
$P L G D A G R G K N Q L D G G C P Y Y D T Y E T K D E R Y V F I G V V S D A L W Q$

$M$ TDGVSVPKTGNKDAQAALFSFYTCKDGRTDFI GMTGAEVC TGRPAAPMPARDSAWGLYDVFEVQGGEQIFLAAVSDTQW | $L G K E T P R V G L N H T$ |
| :--- |
| $S$ |
| $S$ | AA GRTEDFPRGRPDAADFYPVFAARDGHVRLCRQWRAMFG PMWNKPRGENTLDSGSPYYDTYKTKDGKYMAVGALEPQFF AGAVPG LGNRHPSVAPYEDFAAADRPDVVAVGNDRQFA DNAQFPPRPPRTHVLNPDSNSYRCKDGRWFI LSMVNEARQ

$M$ MPMTAPVPGAHGAPTNPLSGLYATADDRYLSFVMLQPAKF $M P M T A P V P G A H G A P T N P L S G L Y A T A D D R Y L S F V M L Q P A K F$
$T G A L L H R D G N R G P V A A P Q N L Y Q S A R D D S W V A V I V Q S D E Q W$
 QAHNTPSASSAALGMHALYRLYEARD RMVIAADEDKFWVEV


 $G V V D R E H N R D M S N G A A A Y G S Y R C K D G V E D Y T L V F G V G V V$
$M V N G D D R P R D G N A D Y G Q Y G Q Q F T S A D G A A F M D V A L T G R H F$ TGETMRSMPDDATSVNPFMANYRTSDGGTINLCYIRDAFE GTEPVRMGNRDRDRAPQGLYRCQGDNRWLA SVGDDEEW P $\square W S E K A G D N V L D G G A P W Y G V Y E T R D G K Y M S V G A D E S Q F Y$ TEEEVRRNTGRHTGFFQTKSQLMCKDGKYMNASIAPEWMD

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UniRef90_V9KV39
UniRef90_X6NX70
UniRef90_UPI00037CDA81
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UniRef90_A3UEX9
UniRef90_A0A011K8M9
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UniRef90_M2V336

RFCSGFGLDDARFATNADRVAHHTELVESLVRVFSTWKS D
 WREAMKALNFFDVLSEFESEKKKTEILDKLAELFSTDTMRD RAFCPELASDPRFATNAQRVANRAQTLAATRALLAARTRG A A F A E T G T D DRFATNEARVGHRAA LRALLEPALA GRSAA
 A L D S D LCG DPRFATAAARRENHDDFFDVLTTSWTCRRTAA TLLKA MEREDANMMDDGWRDAHNDEVDRIVVAWTQTRTK G GAFCKA DGREDAYADMAARRMNREKLQNELDAF L STRTTAA A L C Q V L G R D D L R T DP Q M A T N A L R

 A L I GK P E LLLA D E R F E NV D S R R H S D E F F Q Y L D TVVF VE G T T D KKFSTEAGVTGGFETMAERAARREEVVLAVVVTALAAGTTAE

 DLCDA I N R K DLLLDDDRFETNADRVNHDDELLEKELEQTFRE AI GSPE WMK GTPF Q NREERVVAD S DT L HR LI E E WTKVV S S T



 ETVDRTVDLTTDPRFATAAGRAENPACDAVLDEDFASRDLAA

 NRLCAVVGHEDLAADPEGRRAGRRRDAEALSSWTASRSPR
 VLCKK I GREDLSEDPRFETFACRQKNRDEITEEIMKKNTSD

 RAF LQQDFQMDPRFTDAASRHANRRILDDIVGTWCAKRNAD
 WAGFCERATDERFVPSSNLIANASEACALVGAADASQDLE HLKA $\square G L G H L L E D E R F K S V P A D S E E N R E L L R R E Q L E K T A D$
 ALCRCMDREDPRFATNSSRVMHRLDLVAELEHTLGTKTSK WPEFCRADGHDRFATDELINRNHAEAFDDFADII GAESLD R VI G A E A L A T D P R F T N N A L R A H R D A L R E A I E A A L A G LD GV



 R R A CHQLGQQREDLRTNAAGRRANRDEVVLGLFRDRLQTMMSSE $A L C Q V L D A Q N L I A D P R F G S A Q M R R E H V E A L D E A L D T T L T R E$
 RMVREDLI NDERYS DQKVRFVNRKDCIIEEIRKAFGAHPGA
 RRFWPEVGENPRYASNADRRAHRDEVVEKIAGILCSRPRD RNFCRVVMEHPHYTSNNARVANRAEVDGHVGSVFATMTRD


 RALVQQGLELDDRTWE ERRFDRDNWPELRELLLTRTGKSRTRT K R GFPVI GFPEGFTGWM $\operatorname{CNT}$ T PVGQRMEKAMEAFVAERTMP A LLCEAFGWRDLLKDDNNDRVRAREWLLPLLRRERFGGFAAA QRFCEHILSDDPRFHDNTSRLNNKPAL EALI KAEFAA HERA AFFAA IGDLAA A F EADARARAENYDAI YGYLAGVLATRTSA WLGEPPEFADPRFDTDPARFRAADRLHPRIAALFRDRPCA
 Y APFMTGDLVERYAVQA DRQKHSPELVEI FDKLFAKK TME WA DVCRHA DDPRFADAAK DAENTAEAVAVLREVVKKRTLA Q A L R S A L GAPDWACDPEGRRAAHDA LDERLAA WCRARTGD

 ENLFAKLGRPELAEDCKRAPGEQSEADAY LQAEFARRTLA GLCRALNREDLI NRQFDKEAI SELSSKELSKYTAA RNFCDAVGKFEWYEGHLSAACDDNP LFLDMKQLFRTKTFQ K H ACE LIF GLD Y GS DLDF PAKSPKFDAMEQAMVEYCAS HTA Q RDLA A V T G NAEDFADEEQRYRHRDALTGGLTPWFSA HTAE H L GLPP ELA D D PRFS DVLLP LIDENASE GVELIAKADGSKPFE


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UniRef90 LOFYX0
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UniRef90-E3J897 UniRef90_A0A058YKL5 UniRef90_D7WBR4 UniRef90_G5HIK8 UniRef90-G5ZWI5 UniRef90_Q742X7 UniRef90-U2E738
UniRef90- X5LZH0
UniRef90-X5LZH0
UniRef90 LOIWH8 UniRef90-A0A024QVS3 UniRef90-Q0CAZ1 UniRef90-C9SFG2 UniRef90-W0F1A3 UniRef90-UPIO00373930E UniRef90_G8AJI9 UniRef90-F4CVS1 UniRef90_Q0RJYO UniRef90-M2Z046 UniRef90-G8T1P1
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UniRef90-A0A010QF86 UniRef90-G7CLZ5 UniRef90-W9GJJ9 UniRef90-UPIO003634E64 UniRef90-K5BCW8 UniRef90-C4JLZ4 UniRef90_UPIO0036D7DA7 UniRef90_UPIO003690452 UniRef90-F5YRT3 UniRef90_UPI000471E575 UniRef90_V4P5L2 UniRef90-F7V0S8 UniRef90_UPI00037695B0 UniRef90_M2SCF0 UniRef90-R6H961 UniRef90-G1X487 UniRef90-A1SP88 UniRef90-R7X1SO UniRef90-D5P3W7 UniRef90_UPI00047E0E4A UniRef90-Q07IJ2 UniRef90_UP10001DD0578 UniRef90_UPI0004675BC7 UniRef90_Q47018 UniRef90-J8S8J0 UniRef90_A0A058U0H7 UniRef90_UPI00040797A2 UniRef90-C8WPU9 UniRef90_UPIO00427CC5B UniRef90-B1G4W5 UniRef90_FOFX60 UniRef90-IOS258 UniRef90-HOTN62 UniRef90-I8QEU7 UniRet90_AOQTN1
UniRef90_F0GH12 UniRef90-K8PB21 UniRef90-E3HRV5 UniRef90-H0E2F8 UniRef90-C5KM51 UniRef90-C1B5L6 UniRef90_UPIO003828248 UniRef90-G2QRP2 UniRef90-G4HSL1 UniRef90-G4MN30 UniRef90-E3J6J2
UniRef90 X0R6H9 UniRef90-A3W1Z0 UniRef90_L8F2B8 UniRef90-R4T5N8 UniRef90_C9YBV7
UniRef90_D0WJQ3 UniRef90-U7Q743 UniRef90_UPI000262A766 UniRef90_A0A010ZZQ1 UniRef90_UPIO003689E15 UniRef90-UPIO003B4A8B3 UniRef90-KOZCE2 UniRef90_UPIO003746298 UniRef90-F9WZW5 UniRef90_X0QPW1

S G P MS GVVRVLEVAQFTYVPVSGAILADWGADVI KVEHFAP


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



$G \| L Q G \prod R V L D L A S G \prod A G R V A A L L L A E S G A D V V K V E S S E A$ T QALEDLRIVDFSRVLAGPFATMVLADLGATVTKIERPGT PLKGFR MDVTNVLSGPFCGYQL GLLGAEEIVKVEAPDG TAPLNGLIVLEFSQYLSGPSGGLRLADLGARVIKIERPQG TAPLEGYTVLDLTSGIA GGYATKLIADGGADVVKVEAPDG $A Y P F S G L R I L D D G V I V A G G E L S R L F G D L G A E V I K R Q A P P G$ A GPDSGLRVVELSSFVATPLCGLTLAQLGAEVIVREPMGG
 $P L Q G V R V V E L A G L A P G P F A G L L L S D Y G A S V L R V D R P H P$




 $G P L A G V K I V D F G Q I V$ SAPMAAMWLAEQGAEVVVVEPPSG L E GLVVVV E LLG D YVVAMPA CTRAAL GEM GA TVVYKI E P D N P

 $L S G V R V L E V A A W T F V P S A G A V L A E W G A E V I V K V P R E G$ GIF H GLKVLDCASFIAA P A A A


$P L D G V V V V E L S D S A S A P F A G Q I L A A L G A D V W K I A R P T G$
$M Q G \bigvee R V L E V A Q F T F T P A A G G V L A D W G A D V I K I E H P H T$
AGPLAGワRVIDFGSFVAGPFSGRLLADLGADVIKFESLQG LDGVKVVDMSAFVAAPMAAEILAEYGADVVRYNGDAP

$P \square A G T R V V D L S T T L P G V F C T Q F L A D S G A D V L M V E P P G G$ GIFHGLKVLDCASFIAAPAAATVLSDFGADVIKIEPPGG SSPLAGLRVIDLSTTMPGALATRFLADAGADVVGVEPAGG PLE GLLRVDLGVIVVGADTGRLFADLGADVI KI EFPDG GALAGLRII DLSRVLGGPYATQULADHGAEVIKVVRPSG PLEGLTVIAVEQAVAAPFCTSRLADAGATVFKVERPEG PLSGI AVADFSELLPGPFLTQNLLELGAAVTKIERPPH

$R P L S G T R V L D \square S R I D A G P V A G R T L A Q H G A E V L L!N G P H L$
$P \mathrm{~L}$ A G I KVLEFAGLAPGPFAGMLLADAGASVLRIDRPRS LEGVHVVEFAQLMAGPLCAVTLADLGATVTKVESPHG RPLAGIKVLDVSRIDAAPT IGRILAEYGADVLKINCPHLL MRGVRILEVAEHTFVPAASALLADWGAEVIVIVEVHV

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

ALA GLLVADFSRVLAGPLAAATLADLGADVIKVERPVT




P LDDEVRVLDLTDGL GESCGRYLADLGAEVVRVEPPGG MEGIKVLEVAQFTFVPAAGAVLADWGADVIKIEHPHT G P GPLDDVKVIFSAVEDAAPTAAGLMAEWGADVTWMENDWW $S R P D A G L K I V D L T A R I A A P T I S R C L A E M G A S V M R V T S P B A$
UniRef90 LoFYxo UniRef90_UPIO0037C25E1 UniRef90_F6ILA4 UniRef90_UPI00044081DD UniRef90_B1M3W1 UniRef90_X8IZJ1 UniRef90_E3J897 UniRef90_A0A058YKL5 UniRef90_D7WBR4 UniRef90_G5HIK8 UniRef90_G5ZWI5 UniRef90_Q742X7 UniRef90_U2E738 UniRef90-X5LZH0 UniRef90_LOIWH8 UniRef90_A0A024QVS3 UniRef90_Q0CAZ1 UniRef90_C9SFG2 UniRef90_W0F1A3 UniRef90_UPI000373930E UniRef90_G8AJI9 UniRef90_F4CVS1 UniRef90_Q0RJY0 UniRef90_M2Z046 UniRef90-G8T1P1 UniRef90_UPI0003B68871 UniRef90_UPI0003081526 UniRef90_UPI000262CC12 UniRef90_UPI00035C4D9A UniRef90-A0R1R9
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UniRef90- X0R6H9 UniRef90_A3W1Z0 UniRef90_L8F2B8 UniRef90-R4T5N8
UniRef90 C9YBV7 UniRef90_D0WJQ3 UniRef90_U7Q743 UniRef90_UPI000262A766 UniRef90_A0A010ZZQ1 UniRef90_UPI0003689E15 UniRef90-UPIO003B4A8B3 UniRef90-K0ZCE2 UniRef90_UPI0003746298 UniRef90_F9WZW5
UniRef90




 RMF D G N R G K R S VA V D L R H P R GL E V L R L L A A H A D V L V E N E R GVA R G GARARELVAGADVLVEGFR


 A A D Y H R WP K R S V A AD F R S A E G Q D L V Q R L I A D S G I LI T N

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



 MRRLVAEADVVI ENFK A Q NTQSPGRLTWDRSKRTADGREQLEALLSAADVVIHEYG GDDT RAWGPPYDEAGQRSDEGRAEARRRVAGADVVVENFR D L A R QLGGANAHWA DN L K T D D G K Q IF K DLL L K S S DAV I E N F R NFHA INNRNKESFTADLLKNKED LEELVKKLLIRKADVI THNFR

 GPDRRTRWP L A P N G T S S L R W N R G R Q V V A D D

 GDTARRREPPFDNGVPDPEGSTRELLLDRVADADVLI E S YP

 WF A HL L T S K H S L A LID MK K P E S R E V L D P LI I D WA DVVVVENF S


 ALLP E L A M G K R Q D


 NRQSY LDDFGMSVVSFDLRSERGREVVFLDLVARA DVVVSNFK



 P HSEHNFAWMLEARNKKKPDAREVLYKKLVSEADVGITNMP FHAMNHGKESISADFGDPACARSI RDFIVENADVVLQNLR
 S WPAFGRGKRSTVVDLKSGSGADELDAGLRDADVVVTTTFS YPRSEHNYAWH LEARNKRPEAQA ILLQRLVADA DVVI TNFP

 Y F VWL N R G K K S V VI DL A T D E GRK TLLESLL A GA DVLV Q N L K


PNDAPLVIDNGRGKRSREAQGRDALRSLAADADVFLQSYR


 LLDPWRGPAAQPTTTREMKSEEGGKTYAHTLVARSDVLVVNFS $V$ F Q GWNTNKNS DA LDDLKSEEGREAF LAAARSVDAVMNNLR GDDTRSWGPPFAADGTAAYGDAAAARELARRADVLIDENFR
 GF D MA N M H K R F i A L
 K QPAA REVF LDDLLVRHA DVVVEN YA SRSRRAEPVVDGVSDP FALRNANKLGVITLDPRSGRLIRELI
 VK EMERRNMRSIISI HPFSDEGKEALLLGLVKDADIFI ESSK



UniRe990_LOFYxO UniRef90-UPI00037C25E UniRef90-F61LA4 UniRef90-UPIo0044081DD UniRef90 B1M3W1 UniRef90-×81ZJ1 UniRef90-E3J897 UniRef90_A0A058YKL5 UniRef90-D7WBR4 UniRef90_G5HIK8 UniRef90_G5ZWI5 UniRef90_Q742X7 UniRef90-U2E738 UniRef90- $\times 5$ LZHO UniRef90-LOIWH8 UniRef90-A0A024QVS3 UniRef90_Q0CAZ1 UniRef90-C9SFG2 UniRef90 W0F1A3 UniRef90-UPIOOO373930E UniRef90-G8AJI9 UniRef90-F4CVS1 UniRef90_Q0RJYO UniRef90-M2Z046 UniRef90-G8T1P1 UniRef90_UPIOOO3B68871 UniRet90-UPIOOO3081526 UniRef90_UPIOOO262CC12 UniRef90-UPIO0035C4D9A UniRef90-A0R1R9 UniRef90-A0A010QF86 UniRef90-G7CLZ5 UniRef90-W9GJJ9 UniRef90-UPI0003634E64 UniRef90-K5BCW8 UniRef90_C4JLZ4 UniRef90 UPI00036D7DA7 UniRef90-UPI0003690452 UniRef90-F5YRT3
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100
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$P G V M A R L G L D Y E Q A R A L N E R L V Y V S L S G Y G Q G P Q A R Q P G$ PG SMARLGLDYEARALNERLVYSLSGYGQDGPQARQPG TSTLQKSGLDYDSLKDRFPKLVMSQLDGYGEKGDEASRPG PETMKRLNLDEQTVTALHPHLIYCSLTGYGRGDAQGNVPA PRVLDAI GLDFATVQSI RADAVMVRMPGFGLTGPWRDNPA PGVTQSLEVDYESIKQLNPGIIYASTSGYGQTGPYANKGG PRVREKLGLDPATIRTRHPHLVYALGTGQGTRGEEAGKGG VAGREWHSYGTLTRLRPDVIHVEVSGR PRVIDQ\|GLDFESVRQMRDGIIMLRMPGFGDDGPWRDNPA PGKLEKFGLGYEVFRQTNPSIIHASISGYGATGPFAQRPG
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 FA YVI E S A S GLLSWLT GYP DRTP Y DP Y Y S I G DP CA GVV A L

 FA YII E D A T G LLSWLTGFPDRTPFEP YSVGDPNAGI HAL

HE

 $\square D A L I Q A E S G L L T G L T G A D G R P L L P A P T V V D A A A G H V L A Q Q$

 Y DLLL D A V G G L M S DT GEPE GEP Q KV GVVA LVVDVLS GLL A A A V





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 VD GT GA A LS GRTF LTGWPDRDPVIPGAVPYGDVIVP YVMA

 WQQDS DA C C GVSMA Y GKAMGNDEAVPVFPNSDYCCGVVGS H DIN Y L A V T G V L G CLLGPA GEPAVVP P I NLLVA DMGGGGGL WA A

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 YEGLVMAKLGMFHAKRRLVSRPGPAYCSVAFATWGAAHTA

 HD I NYLATAGALALLAGS DPAMPAPGAGLPVADLCGAMYAL VDYTVVNPATGFPWATGPRNLSEPDLNSVLPAWDIAMGELAAA
 $F D S L V Q A S G I A W T E Q A A A R T A M P K P L P C Q A D D H A T G Y L A A$
 WQ Q I A D CVVT G L A WE Q GR F L G DE PVVVP P F P I S DY GT GCMMGA Y D AL A F WAR S GT A VS R P E Y G QVVMP P A P GF G D S L G GMT DA


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UniRef90_X0QPW1
A

170
180
190
200
$G \square L|A A L V| H R K R T G K G S R \mid I S L S L L E S L L L D M Q F E V L T T Y F A S$ GGI A A ALFARAQTGEPSIVDVSLLASGAWANAMSIDALAG GHVAA A L Q R R R E T G Q G G HI D A S MYE DCDVQQMRD F L A MARA L G I L LA L Q S R NT T GK G Q IVVETBMVS GSRYVS SFPPLNDNAK
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 M GMMAATVVSAVLAARQT GKGDRVVSLS LYGTAVWLAN IVVS F A V S S A L F Q R G RTG Q G S F DVDV M M L E T A L T L M S S T V T D Y L K



 Q GLLLAVVARHATGRGQTPLGS
QAVLGAL I R RQKK GVGAY IVELSLLESADSLQFELFTTEFH $P$ LA GAVAAMAVSA SLA RVAHTGVGSFVVDVLDDVAT WMLS
 A GGIAAAALFRRERSGEPSVVDVVLLAAAIWQLAPD IVGAG LGGVAA A R R R D RTGEGAY L ELAALEDVAVSAVASMGWLAEA IA I QS AL DMRARTGKGQHIDMALFDCMSGVLANQAMNYLA AGVIARLMVRLDTGRGGPAHTSLVQGALVPMGMHWARSET
 Q G I LMM A L




 A MASAALARRHET GRGCHI DAS MYE DCDVQQMREDEI LAA A Q T
 Q AVTAA LYERERSGRGQHLELAMLDAALAFHWPDGLLWHET
 $F G V L A A$ L HERSRTGRGRFVDASMVDGVLSMMGTWMTAWGT QAVLA A LVFAQRTGRGRWLDDSMTHEVFRANLVPAVALHR
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 G GRWN GKT GE E CQ S GQ G QMDVDVAL Y E SVVFNVME S LVVPE Y D

 T GVV A A L F E R E R T G R G Q HVVGS S L L E S LVVSLLSVG GQR Y L S $H G I L A A L H E R D R S G L G Q Q V D A D L V R G V H S I D A D N W F G E M V$

 A A I L E A L DGRS HS GQ GA DI R DSMF DVMAD WLADVPL L NA E SSLAA LMQRQHTGRGQHLDVSLTDCVAHWMNPRLGQFSS $\square G L L A A E R R R T R T G E G T L V R L A L S D V A F A M V G N L G R D A E A$
 F GAMAALLRRANEGGSWHVRVS
$A D F A G G G A T L V L G V L L A L L V R E R N G G R G Q V V E A C M V D$
AVTA A LMQVQRRGRGGRFLDCAMLDAAAALTAAPAALALSG $\square$ AA LT GLY HRAK S G GS WHCRAS L MH Y
GG IMGALVHRERTGEATEVDVSLLGTGMWAMGQAFALS LL
 L G L L A A L R K A GQT GE GCDV DV S LFDVVALH QLGYA GT WY L N TAVLAALRHRDRTGQGQHVEVNLLSSLLGSLVNQTSGQLAA

 $V G G V L A A L A A R Q Q T G R G Q V V E A N M V D G A S Y L A S S P R F A D K T$
 AA LLA YHQRCDS GIGQEVDVSAFEAMVHGFDPAFGT QGTA G GIS A A LIF H R L R T GEAK ELDDVS LLDSTAT WAA GANMA QETG S S SLLA AL H K A RAT GQGESSI DLAMMYETMMR DGSYY YMDYMN


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UniRef90 - XOR UniRef90-A3W 1zo UniRef90_L8F2B8 UniRef90-R4T5N8 UniRef90-C9YBV7 UniRef90-U7Q743 UniRef90-UPI000262A766 UniRef90-A0A010ZZQ1 UniRef90 UPIOOO3689E15 UniRef90-UPIOOO3B4A8B3 UniRef90-KOZCE2 UniRet90-UPIOOO3746298 UniRef90-F9WZW5
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$M V N G T A R E R I G N S V Y G Q Y G Q D F T S S D G T S M I V A L T G R H F$ YGALLQRDGNRGPAAAPQNDYRCADDDEWVAVAVATDAHW NLGKEGKRWGTAHPSUVPYDAFKTKDSLLVIGAVNSRQFK KQEGDRRSKINNGNPLLGAPYGVYKTADHFLSLAMMDLQQ GMPGRFSGVESGMGWAAGRRLYRCADGRWVTVAAAEPRTW $R G E V P A R G E A L L S G G A A C Y R G Y R T A D G R F A T L S A L E A K F W$
$A P E H A H L T E T G R A S L A V A P S G P R A A D G W M L F A Y V P R H W$ VTGAPDPKFQLEEMPNPVANDYRTGDGRFLADRFWADFCT EDRGAGRERQGNALYGSYGSDFATADGRAVMVVGLTAGQW SGKSPKRMGNAHPNIAPYQTLSVS DGYFIIACGNDGQFG PSVPMAVGMPKHGRGS QATLVECSDGVWVHLMKCPDMQK AGHVAGRMGNAHPSGA PYEPLPTAEGELVLAVGNDRQFR NHNEPTRVGNENMTSA PSGAFKTQDGLINIAANQDRQWE RNSDHRSKVNNGNPLLGAPYGDYKTADHFLSLAMM EDR PEGMLGRPWRTERRPTVPGVAQAADGLVALGCGTAQQWWD
PLGDNGRNMLDGGCPYYDTYETKDGKYFAVGALEPQFF TYVLEAARSAGLPVPAVHGVYPCAGDDEWCVISLRGDDDR LGANPERTREGNFMYGGFGRDFTSSDGRRFMVVALTPRHW AGHNQHRQPRSAHFSGTPCQLYRTKDDWWYLMCNKEKFW APAAPEPAHDGNGLSALYRDYDAGEGRVFLAAPQPKEWVA PMWNRPRGTNVLDGGCPYYGTYETKDAGNYFADGPDEPQF TGRSPKR GGSDGNVMDGMHLSTKDGEVTDTTRPMEAWS LGVPWTPPPADQQRMNPLSGNYLTSDGRWLSFTCDQAGKY DGVEPQRHPHGAHSYYVPAQLFPTAAGYVALFVHDGFW GAPPQRRGNDEAGVFWQTVLPARGDD
GCKHPKDRMNNSYVSEDGVWFLMCFGNYNKYCQLVFDTDE TGVSPGRMGNAHPSISPYETLDAA DQADALLAVGTDGQF FPGVGADYPPYARLNRPVPAKDGAVILGAMQYKEAQALAR PFGVPFPKSRKAVPCPTNNSYMTADGVWFLICYGTYDSWY TWKELWSRHGSPVFRHYQPMQ
SIMPARGEGLMSGKAPFYRCYRCGDGEWVAVGA DEPRFF QGHVSRAGTDLLNGGVPCYQVYRTQDERYMAVGALELKFW AAAGVPRDADDTSDHAVYPC AGDDEWCVISIGSDEEW HGGSSUPKYSHADAPNPLVGTYRTKDDRYVQMMLQLDKFY TGRQPQRMGVSHVSIAPYDTYPTADGDULIGVQSDGGWRA VGAEFPERRPRERALNAVANHYRCRDGRWLILSLLNEEKQ FAAQDARGGDAGESAAGRLVFAAAGDDEWCVVDPQTEKQR ARAAGHSDDTGDTAFDGVFPCSGDDEWCVISDRSPSHH ADGDTGGRHGSGVGF\|VPHRAYDTADGHLVVSCANDRLFA TGVLTRNPMPGSGGAARNPFMYQTSDNGTVNLCTDSPTGH VAGVDRERTGGALPGUVPSNTYTTADGQNVIAGNGDADF QKPYNNLWPKGRENVLPFSCMYRGSDDRWI MWHKDWPRFV CGAKFSKRRPREHALLAVTNHYKCKDGRWI LLSLLNEERQ
 GIRWPDAYENVEAWTEEGTPQSPTKDGHWLQFAQVSPHLEO TVEATTPAGDPVSALDYPLLAAPTRDGHWLQFAQVEPRLF LQRQGHARSDEPVHDAP WGLLFPAEGEDKWVAVTVRDTTDW SGRTPVRTGNAHPNDTPYGVFTSKDDRDLTSTQSEREWK AGLASLAAQRQDVLNKPAYGVFRTRDGACVAIAALEDHFW QLGARDQAKDGNYLYGAFGHDFETRDGRRVMVVALTGRQW GGVACARMGTGHPN VAPYGAFPTADGHVVNDAQWKSFCN TRVPFRPQGGGHPQLVPYQPFLGSDQKYFVLACDSDKFWQ

DNVP WVPPP DEMARANP LVATYQTADGRWLS CCLQAGHY NGTTEPSTTGNAAPGAFPHDAFPANNDEWIAIAIHTHEQW EGLESSRVARGSHMSVSPVQTFTAQDG WI YVMCMTERFW TGRDPGPMGNRHPSIA PYETLACRDGEPLAVAVGNDRQF AGTEPERMGLSHSSUAGYOAFPTRDGQML LGVQNDTGWR GNAAAPMK RREPWGVYDVFSVKDHEQVGAVVGDGQW PLGDHPRGQNLLDTGCPYYDTYETSDGGFMA GPDEPQFF TGVAPGRMGNAHPSMAPYETFAAA DQPDALAVGTDGQF LLGAPTRTGRTLPRLAPFGMFPA KDGWVALCAPTDTFA AAGRAEDFPRGRPDAANFYPVFRCRDGHVRICRQWRAMFS AVGRNSMPRSGGSSRNPFMGNFRTSDGRTINLCIMEDTFH EGLVWPRPGNRHQ NLCADGEWECKDGYDGLCVYGVPQNK AGHNPQRMGSAHPN IVPYGSVFTDKNGQPLVLA GGDDRQF DWREVWSRHGSPQFHNYHAMSY

## UniRef90 LoFYX0

 UniRef90-UPI00037C25E UniRef90-F6ILA4 UniRef90_UPIo0044081DD UniRet90_B1M3W1 UniRef90-×81ZJ1 UniRef90-E3J897 UniRef90_A0A058YKL5 UniRef90-D7WBR4 UniRef90-G5HIK8 UniRef90-G5ZWI5 UniRef90_O742X7 UniRef90-U2E738UniRef90-X5LZHO UniRef90_LOIWH8 UniRef90-A0AO24QVS3 UniRef90-Q0CAZ1 UniRef90-C9SFG2 UniRef90-W0F1A3 UniRef90-UPIOOO373930E UniRef90-G8AJI9 UniRet90_F4CVS1 UniRef90_Q0RJYO UniRef90-M2Z046 UniRef90-G8T1P1 UniRef90_UPI0003B68871 UniRet90-UPIOOO3081526 UniRef90-UPIO00262CC12 UniRef90-UPI00035C4D9A UniRef90-AOR1R9 UniRef90-A0A0100F86 UniRef90-G7CLZ5 UniRef90-W9GJJ9 UniRef90-UPIOOO3634E64 UniRef90-K5BCW8 UniRef90-C4JLZ4 UniRef90_UPIO0036D7DA7 UniRef90-UPIOOO3690452 UniRef90-F5YRT3 UniRef90_UPI000471E575 UniRef90-V4P5L2 UniRef90-F7VOS8 UniRef90-UPIo0037695B0 UniRef90_M2SCFO UniRet90_R6H961 UniRef90-G11487 UniRef90_A1SP88 UniRef90-R7X1SO
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UniRef90_xoQPW1
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 QRLCRALGSPSWAMDPEGRRTHQDFUDKQLAA WCECRGRD RFCNDVVNKPEWDDD
HDDRPDLIDDPRFHNADARRANNRECTAVLREDFGARTDA RDLDELTGTDANFSDEGERYRHRGALSGLFTEWFSQHTAE KALREALGAPEWTATHAGRVAQHDLIDEHLADWCATRSGD TMCKY 1 KALIRGLGLEGQWEAKRQDPQVWPAMRALETEVFLSKSRT QALCRVLGAEDLVERLRAGADEQVAMAERFEKVFVTRPAA QGFCEAVGRPDWIA RQADPLPQAALDAELDALFASRCLA RLGRTDLIDDPRYSDAKVRFANRRECDAELRATFESAPLS RGLVEVTGTAEVFAALERHRAARDETTALLRPWFAARTLA AFAEMGEANVAAANEAAGASNFGYPNMGANIVAMRTRPSQ SLAAVLGRPELADDPRFADNDLRVSHRGELRDALAGRPAA DLAAALDWE ELNAFDQQDVFQKRDENKTLIAKKLKNNTTR LCAMSGHDEWIDETTELTVTEQANLHAEELYAWLREQRVD DRLAAGIGAPGPTD TELLQMTGLAEDFSDEGERYRHRAVLAGLVAEWFSRHDGP TELCKADEHPERFLDFKTRLLKNRDQLTELLDMILSKKTTN FEALLRGLEPPNSNGRREDPANWPHMRGVLEKRFKERTRK EFLEEPRLDDPKFATRQSRMENWEELHSLVAPTLARWNNL WAPMCEVITDPRFADHASLLANSGEADALLVEVFAARPLA SKFATEAGDDGFATMEERASRRSEVLAVVTAALAGDTAA RWIA SSAATAEDDRLLALAGGPLEAWTAQHDAH MDPKYYTDPEYNTLEALAENGKYTEVDAATHQACKKFPFE ARLCEVLGVPELAADPRYRVAHRAELRTALEAPLRTRPAA AVGMPQLMEEERFSTLEKWRANGGDFWRALKAKVAETPVA PFVARLIGLEEYADDPRFTNCDNATVVNMMAEAFAKHDWA
RELWRVVG LDPGEPDHपDPAGWPDGGARपEAVFATRDRD QTLCDVLGRSDWK RCDHHEWADDPRFATGEARLANRRELVELVAAWTRKRTPV PEAMRATGEDERFASPAARFANRTELISLMDEVFAKRTLA VLGIPDLVDDPRFDSNTHRVEHRHECDAAVAGQTRRWTTA WPVVATCLDDPHFASKADRHAHSDDLDADFDQVFASKDLAA LALAELLGVTD AALAALLGRTEDPTSRAELRATVSH WTSTRDKG RLCRPEWATDPRFATNDGRLRHRAQTDGLIGGRLAEHPRA



 RLCERELDPHDPRFATNDARVANRDALKALLESRLRTRGKR AAMLTEFGMMELLADPKWKGFYKEFWSIMLLAKVGERTLAE AAMLAEFGLTPLDDDKWAGLPVLETQELRTELWEDMDRK

KLCAEVMAMPDLPNDPRFCNMVERVRNRKLTDVFKTMTRD LRLVQAFLSTAETSSYHQRIVTLATDINHAIAGHVAGLDAP SALQDATAAHEACRTESGRFEGRDLI AALLRPWFAARDALA VLGRPDLEQDEKFKTNEARCNHRDELNGLLNEVGKTKRTE
LELVRRLGDRGWEQGRRHDRRDWPALRRELEEVKTKTRD RA CTTUAREDRFASNSDRLGHREFLHGELAREFRRESAQ
WP LLCAAVDRPRFADHAADMSNGVEAGEA KKAVFAARP पA RALCDVLGWDDWRDDSTDRRELNQIITDRITHSTATAAKS ELMVVKLGRNDLKTDPRFVNQHRDALTEVLDAEFAKAPAE RALAHALGAPGLADDERFARNQDRVRHRELEERLAADTPA TLVTDVLDAPERFTTNVQRVAHRDECDTAVAARTSLWSNS RTFCEAFGYADLFADPRVTTNNDRWLDPELRTRLAQFSRA WPRVMKLIHREDLAEHPDYSDVQAVNTDILDEGFAQFTRD QVLVDKLGGGQQWETRRYDRTQWPSLRAALTTAFRSRSRA ARLCDALGDPERFATNPQRVAHRVALRAELETADRARSAA AGVFRAMGTPELAEDPRFRTRDQRVGHARLDEWTGTRTRD WLGEPAEFADPKYDTMPARFAAADRLHPLIARLFAGHTRD HVGRPEAAADPRFKDVLSLIEHADAASELLVQAFGEKSFD YLLWGTEDYPEDTSALWLNGPKADLIQQKLTEYGKTQYKK

UniRef90-U2E738
UniRef90-X5LZH0 UniRef90_LOIWH8 UniRef90_A0A024QVS3 UniRef90_Q0CAZ1 UniRef90-C9SFG2 UniRef90-W0F1A3 UniRef90-UPI000373930E UniRef90_G8AJI9 UniRef90-F4CVS1 UniRef90_Q0RJYO UniRef90-M2Z046 UniRef90-G8T1P1
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UniRef90 C9YBV7 UniRef90-D0WJQ3 UniRef90_U7Q743 UniRef90_UPI000262A766 UniRef90-A0A010ZZQ1 UniRef90_UPIO003689E15 UniRef90_UPIO003B4A8B3 UniRef90-KOZCE2 UniRef90-UPIO003746298 UniRef90-F9WZW5
UniRef90 LOFYXO
UniRef90-UPIOO037C25E1
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UniRef90_UPI00044081DD
UniRef90-B1M3W1 UniRef90-X8IZJ1
UniRef90-E3J897
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UniRef90_D7WBR4 UniRef90_G5HIK8 UniRef90_G5ZWI5 UniRef90 Q742X7


DWTTR R RT DKGVWSPVRTADEAHDDPQVIANGYDPTVDTAA EVTAGLSGTSVLWERYRTFAETAADERVLANPMFSRLDQP DIVETLWTAGVPVAKVMQPHRQTEDPQLQHRRFFEYVGHP
 Y WLE RLREKGLWASEI YNWNDLRQSEGYQEQQLQVGQKTIT
 EWVQVLTAAGVMASPVRTWRSVDRSAAFTEAALAVTVGEG HWEKALADFDGVWDAVRTAPELHQDPQVQANGYLPKITDG E TEKELSGSRVLWAPYRTMDEVAAREYVIERVEQPGVGAV DLLAAELAK $\square G V P A G P \square N T V A D L F A D P Q F K A R G M K \ D P Q G V$ E WLA DFWANDI AA APAMNFGDVLDDEQSRANSYVI EVDDP A WI RELGDAGVPAGRVNDDAGAFALAESLDLAPDVEVDGT E WL DRLSTANIPAGSVLSVKESLELQQVREREFTLALDHP HWLDRLRRNGLWAAAVYSWKDLDQTEGYQVLKMEQELQVG DVRDLASAFRIPNSPVGNGENVTRMDHFVERGSFVHHDGF EWEKVFDGTADCCTPVLEYHE LETEAARERPAVTLVETP
AVAEACQQAGVPAAPMLRAVDVPADPQVVHRGVFTDMEHP AVESALARTRLLWSPYRTFAELAGDDALREQPI FSTDDQP

 DLMRETMARGLVIGLVQNPQQVVGSPHLAERGYFVEMDHP EWRERLATFVGQWTVVQDTLEAAADPQSUANSYVQEADGDG GWERRLRPLGIDPAAAVVTMPEALKKEYHHA DLA H RLQAEGFAAAPVQDIEDLMEHPQVAARQSLVDIEHA DEAEKRFRANDMPA EKVQTVADVLADEEAFANDDQFTENDDY
 Y WKEVFD A N DVPYAVVCNMDDVLEDEEAYVNDMLRPIDHS

EWADLASDEC CLTPVLAPDEVRRHPHHRDR LDQG D WTLRFADADCCVTPVLRDEEAMTHP RAA QLLQSSGVAAGPMNRPPD LLEDPQLLERKLYAEMRHP QWREQLAELSGAWGVVQTPGELCDDPAVTANGYVANTATY A LDAALAAAGVPAAQVNELRAVAEHPQLTARGRWRTVATR QWRTILDGKGLVFGVVGILDDIANDQQMLDNGVLVPFEDT KAAQALQQAGIPAAPMLRVADLPEHPFYTERQFYRVEDHP $A V A D A L Q Q L G V P A A P M H R A A D V A A D P Q V V F R T L F T D M V H P$ HWQQVLGAAGLPCAPVQTTSELVNHEQTRALGGTGKPSGD YWRQHLKTFSGQWAPI QSFHELLTHDEQALANDMIVEVEGA





 AAMELLQKAGVPAGAVLHAGEVPNFGYYAERRAFREELHP
 DI I ARLEAADVPVSLVEEPLALRGTPHARARGLFDGHAEA



EWRERLADFAGQWSVVQDTLEAAADPQAVANGYDQDAGAP DLANALQNAGVPAAPVQNGQNLFEDPQLRCRNWFAEITHT HWLETFRGLGLPVAPVLSVRDALENPGUEEVGMISDVPHE AWTERLTAASVPCGPVNTVGEALRLAGRLGLEPVVPVGAD ELDERLAAAGVPAAQLKDVGQVADHPQLRARDRWRKVGTE ELLDMFGKNDMPCEPAQTPDDVYEDQNALVNEYIKQVGGR A WEAVF DGT DACCTP VLGFPEIEAGRTSGAR EWDDACTAANDPAGRVNS DSQALDDAESLGDAPVATAEHA EVVAVLAEHGVPAAPVRAPAEAIHDGLVRQRGEVVDLEHP ELVAEGAARGVPVGGVLGVREVLAADHFAESGALTDAPGV Y WREQLRGMKGQWAPI LTLDELAEEEEQDKANDHI LEEVDA A


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| :---: | :---: |
| UniRef90 LOF | $\square T$ NGQS $\square$ K TNRCP |
| UniRef90_UPI00037C25E1 | ERELVPVQFDETPAAPGRAPQFAEHTDEI |
| UniRef90-F6ILA4 | LHVATPMRFSRDRMQPFRAPSMGEHSHEI ARSLS G |
| UniRef90_UPI00044081DD | PIPAPHPILSE SQPAPPKPGQHTEE |
| UniRef90-B1M3W1 |  |
| UniRef90-X8IZJ1 | RMVAPAVHYNGKRMPITRPPPLSQHTDEVLSKDLG |
| UniRef90-E3J897 | LVPRTPIR】RDEDGPRYPPPPAGAHTRAVLEE |
| UniRef90-A0A058Y |  |
| UniRef90-D7WB | RVPFVSNPLDMSSGGDKAAPGLDEDRGDVL EW |
| UniRef90_G5HIK8 | NGQEAALVRSMGLPPFKRGPMLGEHTVGIL |
| UniRef90_G5ZWI5 |  |
| UniRef90-Q742X7 | V NGPARLSTVPMRTAPAPLLGQHNQELLS G |
| Ref90-U2E738 |  |
| UniRef90-X5LZH0 | EVAANPVRFNETAAMPRAAPTHGQHTEEVL |
| UniRef90-LOIWH8 |  |
| UniRef90-A0A024QVS3 | VNSAAPIALSRGPAEFHRAPTLGEHNQELLAQL |
| UniRef90_Q0CAZ1 | AVLG\PVKFSGTPGSDRAPPSLGLNTDEVLR |
| UniRef90-C9SFG2 | $C L A V V A A R Q G Q G P G V P G A P L R P G D G G E A M L Q E W L$ |
| UniRef90_W0F1A3 | KNSSKPAPALGQHRTAII KELL |
| UniRef90-UPI000373930E | LVPAAPFRFGDGEGRRAGPPVLGGDTDD |
| UniRef90-G8AJI9 | ETLMGLRVNGGTPPE RAPLRESTAAAVLAAW |
| UniRef90-F4CVS1 | A RTELAVRTPARPAGTTPTPRLGEHTDAVL |
| UniRef90_Q0RJY0 | SVAASPVQFDEKHLDLTAAPEHGQHTEEILLEL |
| UniRef90-M2Z046 | PTARSPLRWDGAYTGARPAPQHGQHTREVLAELLG |
| UniRef90-G8T1P1 | PGLRTPI RFSDADLKLDRSPKLNEHGAAI RAELD |
| UniRef90_UPI0003B6 | R $\square$ TVPGLPLT $\dagger$ DPPQQRPAPDPGQHTAEI |
| UniRef90-UPIO003081526 | SAPRNPIRLSATPPTYRAPPA |
| UniRef90-UPI000262CC12 | VERTDVVTNGKRLKPASRVETLGESTDS\LQEL |
| UniRef90_UPI00035C4D9A | GK T |
| UniRef90-A0R1R9 | TAPNHPYRLDGVALRPPAAPKLGAH |
| UniRef90-A0A010QF86 | CLAVAAPRGVEGGGYVGVPLTPGDGGEEALEEWLG |
| UniRef90_G7CLZ5 | EPMPRYRR\PAPLLPAPTAGEHTREVCQKVLG |
| UniRef90-W9GJJ9 | GVPGSPVMVDGHRGGPRPAPQVGQDTRTVLTDVLG |
| UniRef90_UPIO003634E64 | KQLAPPI R CDKEM |
| UniRef90_K5BCW8 | LRFTPLVAMSRSEVRAPGG |
| UniRef90_C4JLZ4 | GRPFSAQDGGWSPKALRPSTGGEET $\mathrm{S}^{\text {P }}$ L SRWLG |
| UniRef90_UPI00036D7DA7 | GAPGPGFLMDGVNPGSKAAPALGEHNSEII GGELG |
| UniRef90_UPIO00369 | PFQLVPVQYDEQPAPPRRAPQFNEHGDEILAEL |
| UniRef90_F5YRT3 | RLVGSPI RVA GYEPAYR |
| UniRef90_UPI000471E575 | VGQIPLPRIP GFDGFEEGSPHVGENSAEVLQ |
| UniRef90_V4P5L2 | HLGVTPLILSRDA |
| UniRef90-F7V0S8 |  |
| UniRef90-UPI00037695B0 | RHVATPILLSDTPARYTPPPAVGEHQT ADWL |
| UniRef90-M2SCF0 | RAPRHPARFGRTPVAGPK |
|  |  |

## A DVAPAELFPRVDWLSANPVADGDETEA!LR

LVTAPAPFQH $\quad$ PRAPQRPAP $\square P G Q D T V D V C R R V L G$
SLPTNPVQFDERAVVPPGAPEHGQHTEEVLME
RALLPPVTFADVEAAMGDVPALGEHTAAVLREV
LLTIDSP DWGSAKTRPRHPPALGQHSDEILR
WL QRCVAKTEDIPAPPTRPPLTGEQSEEVLKDWLG
LLDRPIPAFTRIPADLRPAPMPGEHTHDI CRRVLG
DLALVGLPLSKRPGPLSAARDVGQDNADL
DGGAPPVQWNGEAVETTRSPQASEHTEIVLME
DGPAVVPKMSLTPGSTRWGPRLGEHTEAVLK


RTTTVALPVSRRPPLPGNTPGLGEHNH
TVVTPLGAMDDTPRTHRAPPLLGEHTVGVLRE
RQPSTL 1 HTADGPLRQPPAPRLGE
$M L T \| S S P D W G A R K V R P R K P P G V G E H S D Q U L R D V$ $R R P T T L V H A D G A P L S P P R P P R P D E H G A E L R A A A A G$
$H A A E P F ~ H S D R V A P P L G Q A P L L G E Q T R E G A A E L L G$

A YPAPAS V $\square$ GEQRHYGAVPAVGDSTGE $\square$
$R Y$ VRYPVRL
LAPASPLDFSAGRVAVGPAPRLGEHTDELLLGVLG TVVGPAVKFEPAPSKEEPPPALGEHTKWVLQRCLG THPNNPIRFAAADTGPRGAPDLGEHTDEVLHE
ETP LLAVRKGASDVAHGQGPEPGQGGEETXREWCG DFA IPLATLVPGEPRAVRGPRGGEHNAE LAE

FRLVAAPRFGGSAAVPSRAPEFNEHGDEVLAEL
$Y P G L P L T T A G Q L L Q P T G S A P L L G E H T$
MRPSNPIKFNGERLSQRPGSAFGAGRAE
$R \square P R S P L R \square S T P V A A P C A P P A L D E H G E P G L R A W L$
FARVPPVTFDDFEACMGDVPALGEHTRALLVE
DGRQTQVP
WCPTVPVQFELNETAELEPGMMGSSTEAVMVEL
LRPAVALR
LRSVSTPILSETPARYEPPPGTGEH
AGPGLP IRFSESAAGFDPAPRLGEHTDDILRELLG
RARVPSGY VGERAGLRTRAPAPGEHNDVV
$D G S D K P L K L S R S P V E A T R S P Q P S E H T E L V L M E ~$
DGSDKPLKLSRSPVEATRSPQPSEHTELVLME
DGQGVFPKFKNNPGRQWRPPKLGEDTRYLL
GVRQVAFKGTGDAGA $\square T P P P A Y A Q D N A H V L E H \square A G$

UniRefigo B5JuJs UniRef90-A1T762 UniRef90-X1LLQ88 UniRef90-D3RWQ5 UniRef90_D5PG49 UniRef90-B3R8J5 UniRef90 K9KFB9 UniRef90 X0RB49 UniRef90-B3Q8C8 UniRef90 V9D684 UniRef90 UPI0001F272A7 UniRef90-K0V1Y0 UniRef90-UPI00037A5026 UniRef90 X4QXW6 UniRef90- E9IAY6 UniRef90_Q0RGR9 UniRef90_V7NYT3 UniRet90 UPI00035C6C44 UniRef90 R5FRF UniRef90-KOUL19 UniRef90-K2SCB9 UniRef90 DOKQV8 UniRef90-K2RAN6 UniRef90-W2S776
UniRef90 K8RI12 UniRef90-W6MDG7 UniRef90-QOVOE UniRef90-J3KJ40
UniRef90 Q89QU4 UniRef90_UPIOOO2D39067 UniRef90-B7RZQ9 UniRef90 K2JE92 UniRef90 K8PR02 UniRef90_A9V5F7 UniRef90-X0PZ59 UniRef90 C7ZEB2 UniRef90-B9QZ09 UniRef90_UPI0003775A7F UniRef90-।2IIZ7 UniRef90 B9KUK1 UniRef90-A3VLQ2 UniRef90_G0R6I6 UniRef90_B7RTX6 UniRef90-F7UUR7 UniRef90-W2SJL4 UniRef90 UPIO00380FC79 UniRef90-UPI0003636D91 UniRef90_UPI00036B81EF UniRef90 Q2NDF6 UniRef90_UPI000470862C UniRef90-A5VIT9 UniRef90-E1ID40 UniRef90 Q9KJFO UniRef90-H1V451 UniRef90-Q2UQC1 UniRef90 A9WST5 UniRef90-D7GI42 UniRef90-V8QUFO UniRef90-UPI0001FFE69F UniRef90 G0R8N3 UniRef90-W4LSR0 UniRef90-UPI0002E8E549 UniRef90 ${ }^{-}$A0A052IES4 UniRef90 K6VTZ5 UniRef90-A0A011P7J3 UniRef90-Q07IK3 UniRef90 W4L208 UniRef90_B2AFH5 UniRef90-R5IJI1 UniRef90-X8AGT0 UniRef90_UPI00031B87CF UniRef90-W4M5Y5 UniRef90_UPI000372FA53 UniRef90 J3A1K0 UniRef90_UPI000475C5FD UniRef90-X8CKH6 UniRef90-V8D5G8 UniRef90 G9ZWD9 UniRef90-W7VVL1 UniRef90_E7C566 UniRef90 LOA9Z5 UniRef90_UPI000366908E UniRef90_W4MES1 ARPLAGVRVVEI SSFVAVPLAGMTLAQLGAEVLRVDPVGG
 P L E G G V R V L D



$P D Q G L R V L D F G A F D A G P F A P M L F A D L G A D V V P G R W G D W$ $P$ FA GL RI L DLG I IVVA G GELSSRLFGDLGADVI KVDYPD G $P L K G L K V V A V E$ QAVAAPFCTSRLADAGAEVVKIERPEG GPLS GVVRVELLAEWVAAPAAVRCLGEMGAEVIVVENPA G






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





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


 $G V L D D V K V V Y A A M E L A V P R A C G L M A E W G A D V T W L E N T G A$

MRVVDLTRLLPGPDATRHLLDLGAEVLKIEGPAA





 T G C L K G L A GVVYA G L

## $P \square D G \square R A \square G M G H V I A G A G V G R A L A L H G A D \square L N \square W R P N E$

$R P L D G L V V V A V E Q A V A A P F C S S R L A D A G A Q V I K V E R P E G$ GALA GVRVLDLTWVRAGPWAT RWLGAFGADVI KI EWPEG
 P N P
LS DLS IVEVSSFVASPTAGLYCAQLGAEVIRVDHKAG
 $G A L A G L I V V E T A E R V S G E Y T G K L L A D L G A Q V I K V E R P G G$ $P L S G L \sqrt[R I V]{L} L L S S F V A T P L C G L T L A Q L G A E V I V V E P M G G$
T S P L K G L R $\square V E V S S F V A A P L A G M T L E A L G A E V I R V D P \square G G$ C TMRLA DA GARV I K I E R P E G



UniRef90 B5JUJ8 UniRef90-A1T762 UniRef90-X1LLQ88 UniRef90_Q0RJTO
UniRef90-D3RWQ5 UniRef90_D5PG49 UniRef90-B3R8J5 UniRef90 K9KFB9 UniRef90-X0RB49 UniRef90_B3Q8C8 UniRef90_V9D684 UniRef90 UPI0001F272A7 UniRef90-K0V1Y0 UniRef90-UPI00037A5026 UniRef90 X4QXW6 UniRef90- E9IAY6 UniRef90_Q0RGR9 UniRef90_V7NYT3 UniRef90 UPI00035C6C44 UniRef90-R5FRF1 UniRef90-KOUL19 UniRef90_K2SCB9 UniRef90-K2RAN6 UniRef90-W2S776
UniRef90 K8RI12 UniRef90-W6MDG7 UniRef90-Q0V0E UniRef90_J3KJ40 UniRef90_UPIOOO2D39067 UniRef90-B7RZQ9 UniRef90 ${ }^{-}$K2JE92 UniRef90-K8PR02 UniRef90-A9V5F7 UniRef90_XOPZ59 UniRef90_C7ZEB2 UniRef90-B9QZ09 UniRef90_UPIO003775A7F UniRef90 $1211 Z 7$ UniRef90_B9KUK1 UniRef90_A3VLQ2 UniRef90-G0R6I6 UniRef90-B7RTX6 UniRef90-F7UUR7 UniRef90-W2SJL4 UniRef90 R4XUS1 UniRef90_UPI000380FC79 UniRef90-UPI0003636D91 UniRef90_UPI00036B81EF UniRef90 ${ }^{-}$Q2NDF6 UniRef90-UPIOO0470862C UniRef90-A5VIT9 UniRef90-E1ID40 UniRef90 Q9KJF0 UniRef90-H1V451 UniRef90-Q2UQC1 UniRef90_A9WST5 UniRef90-D7GI42 UniRef90-V8QUF0 UniRef90-UPI0001FFE69F UniRef90-G0R8N3 UniRef90-W4LSR0 UniRef90_UPIO002E8E549 UniRef90 ${ }^{-}$A0A052IES4 UniRef90-K6VTZ5 UniRef90-A0A011P7J3 UniRef90-Q07IK3 UniRef90 W4L208 UniRef90-B2AFH5 UniRef90-R5IJI1 UniRef90-X8AGT0 UniRef90_UPI00031B87CF UniRef90_W4M5Y5 UniRef90_UPI000372FA53 UniRef90 J3A1K0 UniRef90_UPIO00475C5FD UniRef90-X8CKH6 UniRef90-V8D5G8 UniRef90_G9ZWD9 UniRef90-W7VVL1 UniRef90_E7C566 UniRef90-LOA9Z5 UniRef90-UPIO00366908E UniRef90_W4MES1


VKEMERRNQRS $\square$ S $\square$ HPFSDEGKE $\square$ I AK LIIE DAD $\square$ F $\square$ ES S K PFVGCQRGKRAVADDLKSEAARPAVEALLRWADVVHHNDR $\square R Q A R A G E A M S E S F A W T H R N N R T D F A R L V A E A D A V F A N F K$ DFARGYDAVAAGQSSYFVWLNRGRLEELI AGADVLVQNLK DPQRTQCYGFWISLNLKTEEGMAIFMDLLSTADVFVNGVR
 PDDPVVDRDRTVQLDIMSAADKEELLHLIARSCDVFIQGYR



PDVPFFQ DDVNMGKRTKSEEGRAKFEELLADADIILDGYR PAI PWLTIDTTTFIELKKEAGRAQMRALLKDVDI FSQGYR FGLHAHRGKESILLNLRSGEGQDVLARLIAEADVVTMNGT LYHNVNRGKRSLALNLKSELGVEIICKLAEQVDVVLQNFR RIDYNRWPQTDDGKSLYWA GLNK PS SPWLVIDTGRFADLKTEQGRNVLRDLLASADIFSQGYR KQEREREALRKMVASSDVLLHNFT
SDVPFF QVDGNMGKHAKSPEGREDFERLLAEADVVVDGYR GADRQRWPKRSVAVDLRSAEGAALVADLVAASDVVIENFV GDPTRTMMQRETRLDLKSEAGRNVLCALAAEADVLIESFR RFDTTGANKRSDTVNIKTAEGRALLEALVRDGDVFVENYR

 DTQRTQGPCFWLSLNLKSEEGMA ALKKLDGEADVFMNNMR




AGQDDGSRQMGLTPQDRMSDGVAELLALARDADVLIEGFR Y Y LDQ LNANKKSLTLDDKTPEGQK MMYDLLKKADVFVENDR DPMRVMPPKEHLALDLKLAEDVARLRELAQTADVLVDGFR DPLRRVGPWFRFAVDLEHEAGREVFRTLCSGADLLVESCR PGGRPRLDREFSRGKRTMQLDDKARLLELLRTADDVFIQGYR
 VKEMERRNQRSLSMNDFSDEGKEILLFKLIAEDADVFVESSK

 HFWHYNVNKQGIT LDLTHADGQALFRSLIPTADVLI DATP NYDPWNTVVFGMSSARNKPEGRDVFNRLVREVDVIVMNAP
$\square E H D A T Y G V R S A T \square S P Y R A E G A E R \square R Q L L A G A D V F Y A N R R$ DFARGYDHAANGQSSYFVWEGRNDLEDLIATADVLLQNLK QFTDTNANKRG\|TLNVRSEKGLADVKQLVAKCDVVIENFS PDMSVLQGK $\square T T C L D L R D P T D R D K L Q E S L A E A D V F I Q G F R$ MF HLLDEAADVFITNNR NTEHANRRKRS $\square$ G $\square D D S V P E G K E V L Y E L A R R S D V F L T S F L$ $G L D Y N R Y M L T A E G R S L S W E N L N R A G R E L L V E L A G A V G Q C I T$
$D W A R E N R N K E S L A V D M S T P E G R E V V Q H T A R L A D V V I C D Q T$
APTRAMGPFRDVLDVENPDERALLRRLLDRAHALVDDHDE APDRGRWPLWTGLNRGKRGVEVDLSRDEGRALVSDLIVEG RDDEAKQQIMRLVDTADVVLEGFR A A DYHRWPVTDEAVDFRDPEA DTARHYDKAAQGVSAYFAWLNRGLAERMLAKADVGVQNDA

TFPY LNYNKKS IS LDDFKEKGKEAFKRLIKTSDVLIDNDS K DVT RTWKKEYLFLDLMNQEDKASFLKLI ADADLLI MNFK Y WHAMNTSKRSVTLNLETDKGRDLLHRLLATTDUVVESYN

## UniRef90 B5JUJ8

 UniRef90-A1T762 UniRef90-X1LLQ8 UniRef90-D3RWQ5 UniRef90-D5PG49 UniRef90-B3R8J5 UniRef90 K9KFB9 UniRef90 X0RB49 UniRef90-B3Q8C8 UniRef90-V9D684 UniRef90 UPI0001F272A7 UniRef90-KoV1Y0 UniRef90-UPIO0037A5026 UniRef90 X4QXW6 UniRef90- EIIAY6 UniRef90-Q0RGR9 UniRef90-V7NYT3 TNVAGRQWHSYDALRQIRPDLIHVEVSGR HDGGTG LGTMERHGLDYDTLKGLNPRIMYARGTPFGPRGDKAYWPG PATLAADRLTAADLAADHPRLVSASDTGFGPGGPWRDDPG PGTFDRWGI GYRQLSKDNPRLI YVSMQGFGNWGEDWERPS $P R V V E Q F G L D Y D A L A A L N P A V I A V R M P G Y G L R G P W R D Y V G$ $P G V M A R M G L G F D A L A A V N P A I V L C S V S S F G Q T G P Y A S H A G$

PGVLKGMGDDAKThHA $\square N P K L V M V S T T G Y G \square N H D W A D K A G$ PGSMDKDGFARERLRKDYPKLIICTISGYGDEGPYAHRKA PGVLDKYGFSQDLVTDRERGIISVRENCYGWNGPWEYRSG PGVLEKLGFGRDAVDELVKDRPYVRENCYGWHGPWQGRSG PGSDAEKADAARTLRAEHPGLVILS $\square$ SDFGRDTSYRGWQA GPAWARKGПTDEWMWETNPKLVIVHVSGFGQWGDERKVNA

VPAARRLGDDEQAVRAVNPDVVFCHTSSYGPDGARANWPG PGTLAALGFSYEQLRAINPRIVLAESSAFGDDGPWSTRMG HGAMARLGFATERLRTDYPRLIVCADSGYGEDGPMADRKA DKALKRMGLDYETLHEKFPRLVWAQMRGYGEFGEMRDEPG PGVAEALGMDHATLREDNPGVVVVDSSAFGPTGPWAERDG


$\begin{array}{lll}P G V L & D K Y G L G F D E L A R K R G R G I Y V R E N C F G W N G P M K H R S G \\ P G G I & A S L G F G P D E V A R H R P G V V Y T S L S A Y G A E G P W A A R R G\end{array}$ TNLRVRGWMDYEHLKQHREDLIMMDVLGTRDGGP

MDYKTVCK $\square$ NPKIVYASITGYGQTGPYSNRAG
PGTFEKLGYGPEAAVKRGKGYVYVNENCFGYEGEWAYRPG PHADAGLGFSPEEAAEDNPG\|VYVTLSAYGHAGPWAERRG DAQRDALGLSPERMKEINPQLILVQLDAFGGQGPKSNHDG PGVAKRLGVDYESLREYNPNLIYLSASGFGDQGPYKDKPA $P Q S D A A L G F S A E D A A R D S P G I V Y V S M C A Y G H A G P W A G R R G$ PATAKKLGVDYDTLGALNSRLIYCELTGYGSSGPDANRPG T GVLDRLGFTTERLAELNPRLVVLSUSGFGHDGPEGGRAG $P G A L E K L G Y G A T A A K E R D K G F V Y V N E N C F G Y E G E W A G R P G$

 VGSFEALGLGYEDLKKINPRLI YCSLTAWGQEGPRRGQTS RLTLA QMDRLGAAARDANPALVFAEILPFGRGAPYQDYAA $P G V L E K V G I G P Q D I Q$ NDKLIYARVTGYGQKGPDSK LAAG PGTMESLGLGYEALREDNPGII CAESSAMGSTGPQARTMG T GALEKLGLLDYPTLSKEFPSLI WAQMRGYGEFGEFAHAPG PGVLEKMGLDPVNLLEENKGLVVCRLTGYGQTGPDAQEAG $P G G M A A L G F G P Q D A A R L R P G I V Y V S L S A Y G A V G P W A N R R G$ PQGLAELGVGPEAAARARPGIVYATLSAYGHVGPWAGRRG LGGGVERGGTDDATVRGQSADVVHLYLNAFGTEGPWARDRG GGTWAKKGLTDEVLWSVNPKLVIVHVSGFGQTGVPEMVTR

MERLGLGPDVCLDRNPALVFGRMTGWGQDGPLAQTAG PGVMAKLGLGWDVLHAANPKLVVCADTGYGQRSAWAHRAG PGAATRAGFGWKKVVELDNPRLIMASLKGFNKGSRFANVKA $P G V L E R L G L G A A T L C A A N P R L I Y C A I S G F G A A P G D S L L A G$ $P G Y L D G L G L S Y E E L S R D N A R L V Q T S V T P F G R T G P D A A Y P G$ PGSLAAHGLSPAELAAANPGLVVANLSAFGPDGPWSGRRG PGSLASRGLSPDVLARRHRGI I CANLSAYGPSGPWSDKRG $P G V M E R D S L G P E Q A L E A N S E L I F A R V T G Y G Q G G P D A Q D P G$
$G P A W A R K G U T D E M L W E R N P K L V I V H V S G F G H T G D P V R V N S$ $P$ GSWEGRGFGAQQAAA DRPGIIYVSVSAYGDSGPWATRGG $P G A L S R K G F D Y E S L A Q H N P G L V M I S M S M L G Q S G P L S G D R G$ PGSLAAHHPQDVQQQDINPHIIYANLSAFGPYGPWATRRG

 $P G Y \square A K \square G L S P Q E A A Q T R P G \| V Y A T A S L N G E T G P W S Q W V G$
PGSMDK LGGFARERLRKTYPALI ICT DSGYGDDGPYAHRKA SRVMQNWGLGYEELCQ DRPDIIVVSMAGFGHTGPQHSYTT P S ALLDK Y GL S Q H DI LDKRNK GVVYVI ENCF GPA GVYA SRP G L K S L V V R S G L D Y E S L K D R F P K L I Y GL V T G Y G Q T G P DV D A P G
 T NLPE QSFLSHAAMQARRADMISLRVMGW HDGRQAMDFT AK QA A QA DCDYAA LVVELNPSLI YGLLTPFGEHGPWAEHTA
$T G V R R L G L D P E Q V A A R H P A L V H T L V T P F G Q G A P E Q F Q N G$ D GAERRGTLGVDALSERRPDLVHATLVGRRDGG

T A
PGVMERMGLGPDELQSRNPKLI YARLSAYGGNGPEGSRPG A A GRD WL D Y D S L A A $\square R P D L I$ HVQVLGRAD GS G
$P$ GAS A R L G L G A Q DLIRR R Y P G L I A L D I V V Y R Q S TPARE K R A $P G V M E R L G L G P A P C L A H N P R L V Y G R M T G W G Q G G P L A H T A G$

RGTLQNAGLGYEELKK DNPRLIYAS IKAYG YGPYENRKS
 $P G T L A R W G L D F D T L H A Q Y P S L I M A S I T P F G Q T G P Y R D Y R A$
UniRef90 B5JUJs UniRef90-A1T762 UniRef90-X1LLQ8 UniRef90-D3RWQ5 UniRef90-D5PG49 UniRef90-в3R8J5 UniRef90_K9KFB9 UniRef90-X0RB49 UniRef90-B3Q8C8 UniRef90_-V9D684 UniRef90- UPI0001F272A7 UniRee90-KoV1Y0 UniRef90-UPIO0037A5026 UniRef90_X4QXW6 UniRef90- E91AY6 UniRef90-Q0RGR9 UniRef90-V7NYT3 UniRet90 UPI00035C6C44 UniRef90-R5FRF1 UniRefifo-KOUL19 UniRef9o-K2scbs UniRef90_DOKQV8 UniRef90-K2RAN6 UniRef90-W2S776
UniRef90 K8RI12 UniRef90-W6MDG7 UniRef90-QOVOE1 UniRef90_J3KJ40 UniRef90-UPIOOO2D39067 UniRef90-B7RZQ9 UniRef90 ${ }^{-}$K2JE92 UniRef90-K8PR02 UniRef90-A9V5F7 UniRef90_XOPZ59 UniRef90_C7ZEB2 UniRef90-B9QZ09 UniRef90-UPIO003775A7F UniRef90 - 121127 UniRef90-B9KUK1 UniRef90-A3VLQ2 UniRet90-GOR616 UniRet90-B7RTX6 UniRef90-F7UUR7 UniRet90-W2SJL4 UniRef90-R4XUS1 UniRef90-UPI000380FC79 UniRef90-UPIO003636D91 UniRef90_UPIOOO36B81EF UniRef90- Q2NDF6 UniRef90_UPIO00470862C UniRef90-A5VIT9 UniRef90-E1ID40 UniRef90 ${ }^{-}$Q9KJFO UniRef90-H1V451 UniRef90-Q2UQC1 UniRef90-A9WST5 UniRef90-D7GI42 UniRef90-V8QUFO UniRee90-UPI0001FFE69F UniRef90-GOR8N3 UniRef90-W4LSR0 UniRef90_UPI0002E8E549 UniRef90 ${ }^{-}$A0A052IES4 UniRef90 ${ }^{-K 6 V T Z 5}$ UniRef90-A0A011P7J3 UniRef90-Q071K3 UniRef90 W4L208 UniRef90-B2AFH5 UniRef90-R5IJIT UniRef90-X8AGT0 UniRef90-UPI00031B87CF UniRef90-W4M5Y5 UniRef90_UPI000372FA53 UniRef90 J3A1K0 UniRef90-UPIO00475C5FD UniRef90-×8CKH6 UniRef90-V8D5G8 UniRef90-G9ZWD9 UniRef90 W7VVL1 UniR Ref90-E7C566 UniRef90-LOA9Z5 UniRef90-UPIO00366908E UniRef90_W4MES1
 VDYTVNAADGFPLVTGPPELTTPVNHVLPAWDVTCGMYAA FDLLGAATSGLMTTTRWDDETRPHPVGAADCDQVGSMLLA YDAYAQG\|TGLAEIT GFEEADPVKSQAWIGDFLSGTVAA WALNFEQTSGMSAVTGYPDGPPCNPQGPADPDVGVHAAVA HDLNY LALLAGYWATPVQVHDAVSRPRVRVSDYAASGYAA PLNLLADFGGGGLMCA HDTNFMAMSGVLDQDKTASGEQAMPNVQFADLAGGSDTAV YDLLIQAESGLASGTGGPESASRVGMSIVDVATGA TAH WQQ SDACVGISAGFGRAMGLKDDEPVTPVFPNSDYMTGD
 TTPVLHALTSELSRSGIDGREPLVPPAGQLPYHVAAAQAA AAYDLTVAAYAGLVAQNGTPERPTNLHPYTADYVNSLMVV YDQLEQSSLGWEQMGGGEGNPPMWHRFGFMDHQCALSSA YGPLVRATTGVTRLWTSDDAREHDDDGRHAFYDATTIFPD YDLLIQAESGLCSITGGPSEP ARVGDS VDDATGATAH YDAVCWGSRGGVNAVFRQAGESPATAPQGFGDFNAAAIFA
 FDSLVQTCSGMNVSEAEHYGGGQRILPCQALDHGSGYFLA WQP VDCLVGHSWLDQGKGLGEDEPVPADRNSDMQTGYTGA WQPVSDAHTGVSWRFGQAMGLQEPVPVFPHSDFQTGMAGT VDYTVNPSMGFPYATGVEGGSDPTCHVLPAWDCDTGGMAA
 FDSLVQTTTGFNHAEGKAAGDGPKELPAQLLDHATGYLMA YDDLAQAATGVMDRFGGGMDTPEEHAHFGTDDVLTGYCAC YDAVIQAFAGVSRSQEDPHTGEPVQYYOLFADKLTALTAS RDDDYTVNCASGFPMVTGDGTQPINHAIPVWDINAGLYAB FDSLVQTSTGFNHAEGKAAGDDGPKELPMQDDHATGYLMA YDLIAASLSGLMHLTGEPDGPPAKTGVAMTDVVTGLYTH WQQAADCVSGIA WEQGRFMGEPVVPPFPI SD YGTGCIGAI YDSAVQADSGMMSLTGFPETGPTRIGFMLVDVTTGVSAAY HDLNYIGYAGVLDQLIGGRDGAP LPNFQPADDLGGALSAV
 HDDNYLGFSG LSTFSPFQYRHDPPNNLLADFAAGGGFGA YGPLVRASTALSGLWRYPEKEMFGDCVTIFPDHFAARVSA HDINYVADTGLLPTDSGHCQRPWPPVNLLADFAGGGLTAA FDSLVQAAGFNQAEAAAAGQEAPKPLPMQILDHASGYLMA FDSLVQATGFNHAEAQAAGSAEPGPLPAQALDHAAGYLLA YEDANVATGLTNHVLGDGAEAPSGALPTVDFPRWFYTDYA
 $H D U N Y A M A G V L E Q D A T A D G E L A L P N F Q U G D L M G G T Q A A V$
$F E P V A Q S A G G A A S A G W N E G D A N I P T S A G D S N S G M H T$ FEPVAQSAGGAASATGWNEGDANLPTQSAAGDSNSGMHLT
$H$ DLNFVRSGFLAMTGVAGEPAM PGAQLADLTSGLMAA SDLTCSALSGFLWLAGUDGDKPVRAPDNQAYRMAEAYAAV FDSLVQTCSGMNVSEAEHYGEPARPMPCQALDHAAGYFLA HDINYIAQSGALNAFRRGSGKPMPPDNVAGDFAGGSMHGV AAYDLTVQDYAGYVYQNGTPDQPMTAAPYTGDYFNSLMVV YAPVMSGLAGLDSVVGYDPAHLLGTYNPALGDPNGAGHAL
FDSLVQTCSGMNVSEAAHFGETARALDCQALDHAGGYLLA FDSL BLACSGMNVSEAAHFGEAAKALPCQALDHAAGYLLA YDDLIQATTGDMLRFGGGMETPEEHAHVGTIDVMCGFAAA FDQTAGSLAGMMLLEGGGEVPALPPIMVVNDYIVSWLMT YDLLIQAESGLASTT GGPESASRVGMSTVDVATGAAA MGPSAQALSGLTYLSGLPDKPPAGWGWSYLDDTGGMYGAM WQQMADCASGVAYVMGRGYGEPVLPSLPVSDMTCGLVCAV YDGVAF VNAAAGYPLMCGPEDWDPATAPPVNQVLPAWDFITGAYGA SELVVQAASGYPRYDGTYGGDPVRIGADVASTMGGVF GL FDQUQGMGGLMSVTGAPGEGPMRVGDPVADLTAGLFCAM
RPINVIUAGGWAYHSPSETPRGPPLKGAGRFLSDYEAGU VPYTVQAAGGFPLASGPTDHEGPVNSPVPTWDLAAGEYGA VDLMVAAESGMTTGMPTPTGKPQVIPFQLVDAASGHVLAQ YDMLVQAESGMCSVTGTAEEA VKVGVSVGDVGTGMNAH LDYPDEVHSGLAYMTGLNDRPMRDGAS VDDVGAAMFAV YDLVLQGESGFMSMNGTGDSGPVKMPUALIVDVAAHMHLK

## UniRef90 B5JUJ8

 UniRef90-A1T762 UniRef90-X1LLQ8 UniRef90-D3RWQ5 UniRef90_D5PG49 UniRef90-B3R8J5 UniRef90-K9KFB9 UniRef90-X0RB49 UniRef90-B3Q8C8 UniRef90_V9D684 UniRef90-UPI0001F272A7 UniRef90_KOV1Y0 UniRef90_UPIO0037A5026 UniRef90_X4QXW6 UniRef90-E9IAY6 UniRef90_Q0RGR9 UniRef90_V7NYT3 UniRef90-UPI00035C6C44 UniRef90-R5FRF1 UniRef90-KOUL19 UniRef90-K2SCB9 UniRef90_DOKQV8 UniRef90-K2RAN6 UniRef90-W2S776UniRef90_K8RI12 UniRef90-W6MDG7 UniRef90-Q0V0E1 UniRef90_J3KJ40 UniRef90_UPIOOO2D39067 UniRef90-B7RZQ9 UniRef90-K2JE92 UniRef90-K8PR02 UniRef90-A9V5F7 UniRef90_XOPZ59 UniRef90 C7ZEB2 UniRef90-B9QZ09 UniRef90_UPIO003775A7F UniRef90-।2IIZ7 UniRef90_B9KUK1 UniRef90-A3VLQ2 UniRef90_G0R616 UniRef90_B7RTX6 UniRef90-F7UUR7 UniRef90-W2SJL4 UniRef90 R4XUS1 UniRef90_UPI000380FC79 UniRef90-UPI0003636D91 UniRef90_UPI00036B81EF UniRef90- Q2NDF6 UniRef90_UPIO00470862C UniRef90-A5VIT9
UniRef90-E1ID40
UniRef90 Q9KJF0
UniRef90_H1V451
UniRef90_Q2UQC1
UniRef90-A9WST5
UniRef90_D7GI42
UniRef90-V8QUF0
UniRef90_UPI0001FFE69F
UniRef90-G0R8N3
UniRef90-W4LSR0
UniRef90_UPI0002E8E549
UniRef90-A0A052IES4
UniRef90-K6VTZ5
UniRef90-A0A011P7J3
UniRef90-Q07IK3
UniRef90-W4L208
UniRef90-B2AFH5
UniRef90_R5IJI1
UniRef90-X8AGT0
UniRef90_UPI00031B87CF
UniRef90-W4M5Y5
UniRef90_UPI000372FA53
UniRef90-J3A1K0
UniRef90_UPIO00475C5FD
UniRef90- X8CKH6
UniRef90-V8D5G8
UniRef90_-G9ZWD9
UniRef90-W7VVL1
UniRef90-E7C566
UniRef90-LOA9Z5
UniRef90-UPIO00366908E
UniRef90_W4MES1
 LSVVVALRHRDATGHGQQI S I P LENVALATAGNLSLLTEA VAVVTAALFVRERTAVGQLVDVSLFGAMLCLQSWEVDSAS FTTLAALYWRNKSGKGQFIDVVSAEVLMRAMDWTWLY IDS LL A ALEEHRRRTGEGQLI EI A QDDKVAACVAAEPVI E YSM LSLAVADMSARANGQGQHLDVSUHDAVLSWTAHGAWTART L GI MMALFERTRSGKGQVIDANMVEGTAY LSTF LDWQQEM $\perp A L L A A V F A A Q R T G K G R H V A V S M T H S L Y Q H M D M P K A T K S F$ AA LEALIGRGRTGQGADI RISMFDVMADWLTVPLLNAEA TGULCALMRRAEEGGSFKVDVALNYYNQWLADSVGEYPDD CGUFDALIKRAESGGSUYVDTAGNYYSQWLVNSVGEYPAD $V M T V S V Y L D R D R T G E A D L I D F S I L D G A M Q T L D P P H G T V G T$
 F GII LAALYERTK SNAGQVVDASMVEGASAYLGSWLFRSQKT

 | $H V V G R V T A D A A L A A L I H R D R A G A G A H V H I S Q A E V V V N Q D D$ |  |
| :--- | :--- |
| $A$ | A | GGIVAALEDRTNKVTTNLYHVALWGHSHGIQSRQFGAQYP TLAALALLLRRERTGTGGAASISQAEVMLSHLAADIAAEA TGVLAALYKRAVEGGAYRVDVS

VMILWA LNKGGPTFIDVPMDYTQFYLTLEDAYMYDN AATI QA LYMRTKSDVTFDVDVSLTQYNTWLYRLGQYTEEQ CAVLQAL DQRSEAGGSFLI DTALNYCNSWFVKEVGEYPED FGAAAALWKQQREGGSWHVEVSLAQTGHW
LG LLAAERHRRLTGEGQSVEIALKDVALAMLGNLGDIGEV NSVMAALLARMKTGRGQHIDVALSDCQVATLANIASSCLI $\square$ A A LT GLYHRATKGGSWHGRASLMQY
FGAMMARARQAREGGSWHVRVSLAQTGRWLWN
VALGGA LDKLRRTGEGS DARAALAGAGNLIQAEFMYDFNG QAISAALFARERGAGGQHIKLSMVDAVIGFLWADVAGTAA TGTLAAVQHRLATGKGQEVSIALSDVMLATVGNLGYDAEV FGAMMARLRQAREGGSWHVKVSLAQTGRWLWN
GALLAALYEREHSGLGQKI ETSLLEAQLSVMANTGVNADQ $G V V A A L Q E R E R T G R G R V V R T S L L A G V V G V H A F Q G T K W T V$ TALI GLYHRATQGGSWH
A AAAALYRRAMTGKGQFDDVAMYDTADQLMCCQGADYLV VGLLAAERQRRRTGEGACLTVADEDVALATAGNLGYLAEA TQULAADWHVSRGGEGRFVDVSMTHVTYAHNVVAQVALAN A ISSALFQRERTGRGQR DACLTDVAFMMMGAQDTDALRT
 TAILAKLIQRKTTAVGGGFI DTSQAECIINAGASEFDGESD A GIL GALVNK LRTGKGDKVVVNLYHAALWAGG■GDCAQQF FGlVAALLKREKNGGHGC
FGAQVALARQATEGGSWHVRVSLAQTAHW LGVMAALYRRATEGGSWHVRVSLAQTGQW
TGVLGAFGA ILGLYWRQKTFVETS LTTRATMLEQDLWIVEA SSTLGALHKVAQTGRGEADDVAMYETLLA IGQYYLVDYLDN VGLLAAILSARESGKGQVVDAAIVDGSAHMMNLLLSLKAT SGVLAALVGAQRTGKGRLVDDSMCHEVLRHHVLASVALKA ØA LAAALQREHTGKGSYVYQSMQ
A LGALQARQRTGRGGVVDVPMDAAMRWLMEPWYAVEQA GSAIALFSAQRTGKGQLVDVACDEAEAMALENAAQFWDLL S G I SAALYKRATEGGSWVVNVS
SGVQAA LYKQATEGGSWEVNVS
 T GVMMALMRRAREGGSYHVKVSLTRTSMW
AALLAALVGRQRTGRGSYVDLSQVEALLSVLPGP ILEWET T GI LAALHRRTTEGGSWVVDVS
$M G I Q A A L F E R D D S G L G Q F I D L A H D C C A L L T E M S D P Y Y D H$ LGGVATALYRKHHSGQAYRARTSLASLGNLVQDPFCYDYSG

 ${ }^{\mathrm{H}} \mathrm{C}$

GAMMGLLNRAREGKS W
GGICAALEDRVRTGKGDFVETSLFGNAVWLCGTMFEQYGY GGIAAALLKRERTGEPS IVVDVLLGSGLWSLGHTVALTVH FAMLAAL RHRDRTGEGSEVRLPLGDVAIGTMANAGLLAEVV
 DAALCASLLRDRRTGQGQSIDVSEVEVQLNRDDCVLDRML TGILAAVHHRSATGQGRRLRLALEDVALATAGTLGHLAEA AVLAALLNRERHGVADVVRVAMYDVAVSLQASQLTIHLNK LSSVTAAV DRRSETGAGARVVLPDEDVALATTGHLGYLAEA AAIMQALYERERTGRGQAI EIAMFDTLAEWMAVPFLHYEQ



UniRef90 B5JUJ8
UniRef90-A1T762
UniRef90-X1LLQ8 UniRef90_OORJTO
UniRet90_D3RWQS UniRef90-D5PG49 UniRef90-в3R8J5 UniRef90 K9KFB9 UniRef90 X0RB49 UniRef90-B3Q8C8 UniRef90 V9D684 niRef90 UPI0001F272A7 UniRef90-K0V1YO UniRef90-UPIOOO37A5026 UniRef90 X4QXW6 UniRef90- E9IAY6 UniRef90-Q0RGR9 UniRef90 V7NYT3

M $\square \mathrm{NGTSRQR} \mathrm{\square GNAVYGTYGQNFTSSDG} \mathrm{\square SYMVVALTGRHF}$ NNALVPQAGRGHPYIRGLWSVFEAKDGWIADAGVRQDVWH VVKAFNAAGEVQGPLVYPLLTAPTKDGTWLQFAQVEPRLF TGENRRRYGNRDPAVVVSCIAKAKDGFVAIAAVRDDEYLA TGVVSPRRGNRRRGY LQGVYPTAEDGVWVALSLPDD
HEASPQASPTVMP ENDLFETRDGRHLAMGLLENKFW GLWEQPRGQNMLDGGAPFYTTYRTADEEFMAVGAI EPQFY S GQQPAPQNDFLGGLLPCYRLYKTSDARYMAI GSLEDKFW GNPP KRDGLAHPSIAPYGVFTSKDGKD\|LISIQSEREW VWQDVWERNGKQVFRCYHNMNY
VWEDVWQRHNRLSFRHYDNMPVM
ASVALSRQRRDWNAERLRYPIIACKDGHVRICLLAKRQWH $K G Y Q P Q R M P D S S H P S Q V P F Q V M P T K D S W I V V A C A K E N F Y R$ DGVKYPRPGARHQNLCA $\quad$ G I YECCCYGVDQNKYLLETDGL GI WENPRGKNILDTGSHFYDTYETKDKRYMCVGALEPQFY A LAPVPMLDQAQLTTTPGRRLLACAQGWVAMAATADSDVA TLYVTQGVAQ $\quad$ RPDTGDHAVYPCAGDDEWCVISTRSDDEW GHS P R RVGMAHPSIAPYGVFETSDGVQVLISVQSDREW GSRAKANNPFNNTYQSKDGIWFLICDPDYNRYFPSMMRML LQRAGHTRTEPRMPDAPWGLYPSAGEDQWVTVTVRDEADLL
 QRELRQRNSVFHARHSDRVQALLAKTYQAVAHTRPD 1 FEH VWRAVWAKS GKQVFRHFNNTGM

MVNNFDRPKYGNY LYGAYGNEFDTADGRKVMVVGLTRRQW S GQKDTGRWGTSHPS $\|V P Y K A F K T S D G D\| L G N D R L Y G V L C$

RAPFDEPAGREADGWDAFYHCYKAADGWMFFAAPKERQTA F L G G G KQGEEVKEGLSVSKGARLTKDGYGDASPVTDAQFY QMTGRQRPA IGNHLYGGFGRDFATKDGRAVMVAAFSDRQW

AQQPGRRHGSAHPS VIPYQSFPAKQGH $\square S \| A A T S E R Q F Q H$ A GEVGEAQGNHHPSISPYGLFR TADGAVQDSVGSEGLWK
$R G H \square P P D M G N E S P M T Q P T A G T F E T \square D G M L L L A T \square T S D Q Q E$ QLRDDPRGRDGNQVYGDFGRDFRTADGVRIMVLVLTPRHW DGAVPAAGGSLLNGGVPCYNDYRTLDNRWLAVGALEDKFW GRE MTYEGLEHGSPTYNQFQASDGKVMLAAAKHRQYA LGLNEMRGGAIRKERANRFFTWETKDGYIFFGPVGGGGGA GLWNKQRGQNTLDGGAPFYRTYKCLDNKYLTVGCIESTFY APGSLKSTGNQSAFDAPNSLYPCAGNDEWCVISVTNDDQW GADYPKSRRDVPSPFNNTYKTADDKWDYICQPEHNRY

STHPESRGTNERRAQGWGPNQR LYEASDGWVFVGATENQF A GVIWPRPGARNQNLCADGEYKCCVYGVPQNKYLLETDGL GHFVNERGRSILDGPHWYSTYRCADDRY!SLGSLEPKFYT T GRMPAPGRDLLSGGAPCYAVYRTADGRHLAVGALELKFW
$G V P V R H E H G H \square L A G E \square A C Y R D Y R T A D G R H \square A D A A D E A H F W$ EGKIRRGRGRTLHPCADGY $\square$ ALVA $\square$ MGRNKDMWTPFVRWM

## A G $\square E Y P R A R N Q N \square C A \square G Q Y K C R N G V I G L C V Y G V P Q N K Y L L$

AGSVPVP GNGHRRFAPYGTFACRDEDTWVSLAARTPREL
TQQ LVRQTNRHAYYPMLPASFPTRDGKHDWIVRF $\square G N \square G$ RAPFNEPSGRDVVGYSDLSRFYKTADGWDYLDACEQELHK DGDVPVQEGNDHPTSSPMGLFR ARDGAFNLGASGEGNWK A A EVAGQTHGDHHYLDPETFTADTPDG
GAAPPPRAGAAHATDYPYGPFAAGDGKLLVLGVQNEREW AGNPPQR\GLAHPS IAPYGVFRSKDGKDILIVSUSEREWK

HYPKKRSEMGALYTFYKCKDGEWLH LADVTQHDRYKP LAE LGQRLEARPGVHGAPNNPLVGYTTADNRYDSFVMMQPTKF LYRGGDRERLGNADWGAFGRDFRSRDGVRFMVAADTPKQW GYHCWGPYDSPDTGWQTKDRPLVFSFGEFTGGGPDKQSQW ENHVAGQAGNNHPT SVVTGVFKTSDGS INGETDWKRFAE AGDADPSEERTAYDMGGPGTSFACADGHVFLFMTTSQHWK
QCPESPREPDGNHVYGSFGRDFTSADGERFMVVALPPRHW PNAEPKPSDSTPKPKRRKGVGFATQDGYVVISAYVPKHWD A GHVMPRTGLSHA SIDFPYHVASCSDGDIVIVVQNPAEWR GQWQDRRQSNLIDGAAPFYDTYACADDGHLAVAADEERFY GGKTPPRNGLSHPT IAPYGVFECADKRA ILASIQNEREWA
 $V V A P R M G T T \square M F G A G K A \square P \square S F A C K D G H V Q A \square P A L S W E T F$

UniRef90 B5JUJ8 UniRef90 A1T762 UniRef90-X1LLQ8 UniRef90_QORJTO UniRet90 D3RWQ5 UniRef90-D5PG49 UniRef90-B3R8J5 UniRef90 K9KFB9 UniRef90 XORB49 UniRef90-B3Q8C8 UniRef90_V9D684 UniRef90 UPI0001F272A7 UniRef90-K0V1Y0 UniRef90-UPIOOO37A5026 UniRef90_X4QXW6 UniRef90- E9IAY6 UniRef90-Q0RGR9 UniRef90-V7NYT3 UniRef90 UPIOOO35C6C44 UniRef90-R5FRF1 UniRef90-K0UL19 UniRef90 K2SCB9 UniRef90 DOKQV8 UniRef90-K2RAN6 UniRef90-W2S776 UniRef90 K8R112 UniRef90-W6MDG7 UniRef90-QOVOE UniRef90_J3KJ40 UniRef90 Q89QU4 UniRef90-UPIO002D39067 UniRef90-B7RZQ9 UniRef90 K2JE92 UniRef90-K8PR02 UniRef90-A9V5F7 UniRef90-XOPZ59 UniRef90 C7ZEB2 UniRef90-B9QZ09 UniRef90_UPIO003775A7F UniRef90 121127 UniRef90 B9KUK1 UniRef90-A3VLQ2 UniRef90-G0R616 UniRef90 B7RTX6 UniRef90-F7UUR7 UniRef90-W2SJL4 UniRef90 R4XUS1 UniRef90-UPI000380FC79 UniRef90-UPIO003636D91 UniRef90-UPI00036B81EF UniRef90- Q2NDF6 UniRef90-UPIOOO470862C UniRef90-A5VIT9 UniRef90 E1ID40 UniRef90 ${ }^{-}$Q9KJFO UniRef90-H1V45 UniRef90-Q2UQC1 UniRef90 AgWST5 UniRef90 D7G142 UniRef90-V8QUFO UniRef90-UPI0001FFE69F UniRef90 GOR8N3 UniRef90-W4LSR0 UniRef90-UPIO002E8E549 UniRef90 A0A052IES4 UniRef90 ${ }^{-K 6 V T Z 5}$ UniRef90-A0A011P7J3 UniRef90_Q07IK3 UniRef90 W4L208 UniRef90-B2AFH5 UniRef90-R5IJIT UniRef90 X8AGT0 UniRef90 UPI00031B87CF UniRef90-W4M5Y5 UniRef90-UPI000372FA53 UniRef90 J3A1K0 UniRef90-UPIO00475C5FD UniRef90-×8СКН6 UniRef90-V8D5G8 UniRef90_G9ZWD9 UniRef90-W7VVL1 UniRef90-E7C566 UniRef90 LoA9z5 UniRef90-UPIO00366908E UniRef90_W4MES1

RDLTALTGTTEDFSDEGERYRHREALSGLFAEWFTSHTGV GFC
 LCEAMGREDLEKFVDYEKRVENSEEIYKAVEEWVKNKSVE GRLDHDMFDELVAGWTRTQTAA DNLCFPALRDPRFATRAGRSGHKVAVNDLMAAVFRTRDLA ELLIKGLGLKSEELPNQMSITDWPEMKKKFADIFAKKTKA QGLCEALALPALKNSHWQRGVMPNTSESQAAAKFASQTDE KKLCSDVLRQPDLPNDPRLCNNREYTDK IVADTFASLTTRD

GMFDWMGRPAEFADPSFDRDRVRDSSPELLAAVGRFCTRA SLVQLLGAPELADDPRFRGFENREALVPLLKDLFRQRTTA GHLWGTEEYPEDTSALWLNGPKADLI QDKLTEYLKTQNRY ETFLLEKLGLSSDEVTQYNNFE ENRRRITEIFKTKTQA AAC RALGCGSAAQDAAAAAVRPAGEVLDLLAG RRAASVFDHAEWADDPRARLAHRRELVELVSAWTRTRTPV RKLCDLFGTDPRFASNVARVQNRAETDALVAEGFARRTEA GQEDLIEDERIITLAAMAEHGLQEYVVSKI GEGFARKDYD HADADVDGFTAGD GANADAAVRAWTAQRSRT

LCKADNREDLCKFDTLQKRVENRDY LIKEGGKDFEKNTRD PEYFWTMSGKEW

DGLCQVTGLKAEFDAEGDRFKAREDTTTLLKPWF LARAVD NRUGKPELINDERFKTNAVRQNRDTLEGIIERETKQKTTQ
$\square A A V A E \square S D \square A D R E T E Q P A \square A E R F A T Q P A A F W S A D S G$ CRAFGFDEKDSKLATLAGRNTHPEELMALVRRTNATASRT QSLLRATGTEERMADEAGRYAARDA IVAVLAPWFAARTLA
LCCQLLQCDHDAQDERFASNADRVQHRDALITKDTDTDAQR RFCAGFHDDPDTMATNPERVENHKQVLELVEDAFGAYTSD

GAFKALGLAELLEDPRFARHKHHEEGRELIRPVLRGQTTQ RDLLAATGTGADFTRAADRYRHRDVLAGLFGAWIEARKCD ETLCMADDRPEWATRHWSLGQADGGPDAELADVIGKRADE RLWRALGHPERADRSEAERLAGREEELALLNEIFLTRSAQ ARWMNEDGFDDPILTKNDWNEDYDAVTAVIMSFIKAKTTE DRFLQD DQNKELFLQQQFDQDKWLQTSTLFENDFIDKKTRD QGLCRAMNRADLADNTNYQTEHRGDTEDVVTWCKPRSPY

```
HRVASS DGVDYEDDPTSG ESSKEVQNAFRTDTTD GELWGTPDYPEDCSALWLSSPKAHLIETRLEEFLATRNVA LLCQKLGMADQPDFANGYDPACWPDLRHRFEELFRRRTRD RSLCDAIGRPDWAQLHW
ER \(\square C G A \square G R P D \square A A H H^{D}\)
EAEGVEEWPLFDDDKWDDYAEGYTTFCRVFERYTRSRSKA
```

EA $\square G \square G E \square W G T E D Y P E D T S A \square W L S P K A E \square E E Y L L A R D V E$ RAVADLVGVTDDDEAVTAWAAGHADVEAADELQRRGVPAG MADDW■ADERFCDPEF पATYEARELIVDRVATYपARHTAD F A RFCQALGRGDWLADPDYQNVRHRQRपNAEDQAVFEREPVA QLFCRQVLERPELADDPRYAAARDEDQALIVEHFSCLSSE KLCAEVLRQPELLASDPRLCSKNRAFTDQSVAADFGSLTRD

A $\square$ NVPELAEDERFANAALISKNRAQLIPLLEEAFSHFNYN WADVCRHADDPRFATDEQIAANTAEAVKILSEADATRSDA S GLVKAFGVEHFADRDTPRFNHRHALFALFQSAADTMDYA PAFCHA GGLESLLDDDNCDRADASAYRAVYEAAFQDKSAA AVDKGEWLEMDEFKNAKERLKNRDYLNKLDEEVTITKTSD ALCGWAA AFREDWLEFDCTPANVASFRAGFSE WIALQHKL
$T E L V E A A G L G E V V E H E G E R Y R H R E A L A A L L A S S W G R T G A E ~$
 RFCVGVMHRPERFADNPSRVANREALGAEIAALERRHTRQ RQFERTDLAGEALLQPQHDRSGWPQQKQRIAAVLRTRSRD NLCAPELATEERFASNNARVANRPALETII QEVFSRFDRD IDFCNDICNDDRFKRNEDRYKNRSFLIPYLNKI DNSFNSY EKLCMALGGLSDKFKTNQNRIVKYREELIAALIAQQTAKLQSK $\square P$ WiEE EGG

UniRef90 B5JUJ8 UniRef90 A1T762 UniRef90-X1LLQ8 UniRef90-Q0RJTO UniRef90 D3RWQ5 UniRef90-D5PG49 UniRef90-B3R8J5 UniRef90 K9KFB9 UniRef90 $\times 0$ RB49 UniRef90-B3Q8C8 UniRef90_V9D684 UniRef90 UP10001F272A7 UniRef90-K0V1Y0 UniRef90- UPIOOO37A5026 UniRef90_X4QXW6 UniRef90- E9IAY6 UniRef90-Q0RGR9 UniRef90-V7NYT3 UniRef90 UPIOOO35C6C44 UniRef90-R5FRF1 UniRef90-KoUL19 UniRef90 K2SCB9 UniRef90- DOKQV8 UniRef90-K2RAN6 UniRef90-W2S776 UniRef90 K8R112 UniRef90-W6MDG7 UniRef90-QOVOE UniRef90_J3KJ40 UniRef90- Q89QU4 UniRef90-UPI0002D39067 UniRef90-B7RZQ9 UniRef90 K2JE92 UniRef90-K8PR02 UniRef90-A9V5F7 UniRef90-XOPZ59 UniRef90 C7ZEB2 UniRef90-B9QZ09 UniRef90-UPIooo3775A7F UniRef90 121127 UniRef90 B9KUK1 UniRef90-A3VLQ2 UniRef90-G0R616 UniRef90 B7RTX6 UniRef90-F7UUR7 UniRef90-W2SJL4 UniRef90 R4XUS UniRef90-UPI000380FC79 UniRef90-UPIO003636D91 UniRef90-UPIO0036B81EF UniRef90- Q2NDF6 UniRef90-UPIO004708620 UniRef90-A5VIT9 UniRef90_E1ID40 UniRef90 ${ }^{-}$Q9KJFO UniRef90-H1V45 UniRef90-Q2UQC1 UniRef90 AgWST5 UniRef90 D7G142 UniRef90-V8QUFO UniRef90-UPI0001FFE69F UniRef90 GOR8N3 UniRef90-W4LSRO UniRef90-UPIO002E8E549 UniRef90 A0A052IES4 UniRef90-K6VTZ5 UniRef90-A0A011P7J3 UniRef90_Q07IK3 UniRef90 W4L208 UniRef90-B2AFH5 UniRef90-R5IJIT UniRef90 X8AGTO UniRef90 UPIO0031B87CF UniRef90-W4M5Y5 UniRef90-UPIO00372FA53 UniRef90 J3A1KC UniRef90-UPIo00475C5FD UniRet90-X8CKH6 UniRef90-V8D5G8 UniRef90 G9ZWD9 UniRef90-W7VVL1 UniRef90-E7C566 UniRef90 LoA9z5 UniRef90-UPIO00366908E UniRef90_W4MES1

EVAAALSATSVLWERYQTFGETAAAPRDTDPLFTEDDP
EWEEVFAANDTSAEPFRRGADALVHPQLVHEGRRVTVTDP ETLRKAEESGFAASKVMNSKDIYESEHYRKRSAVQIIFFDP MVVKSLQEQGDPAEQVVTGERMYDGDQLDARGYYEEFVHP EWVDFFAPFDIPFSPVLGAGELFDDPHVRAREVVRRVEGG
$E W C R I F D G T D A C V T P V L L E E A V Q H G H K E R G S H T H E Q G$
HWQQVFALVDVCVTPVLSLSEAKAHPLFAHQD
DLLE HLAAADIAFAEVNAMEDLSHHPHLRRDEVDTPNGKV
 EWLELLKG EVPCAPVNTVEEAFHDPQVAEDEMVLEDPHP DVERDFSEHRIAAQVVMEFEDILAEEHVAARENFIEWENV EWCAIFDGTDACVTPVLSLKDATLHAHNKQRQTFTTVRDD AGVAAEEVRLDQRDAFFDSADNDAAGLIARYRHHDWGGF RAAELLQAAAVPAGPMNRPPDILEDPQLIARNLYRPMRHP EATEALLQADVALAAVSDMARLAAHPHLRRDEVDTPNGPV



DFGPAFDEHNVT WSVFRTFKQAVTEECSTWHPMFDLVEQP E WLDTLEGCGMRYAADNDVQDTLNHEHVRARDMVTEVDHP
 PVAEAIAAMEVPCAMAQSLADLPVHPQILACDTFATIDNP DIRQAFEGSGVLWGPFQDFRQLVAEDCSTANPLFREAEQP

SACEWVSEAKFAYGEVLNVCEAYAQPQAQARDMVQSVHDQ ELLVELDRDGVPAGRVRTISEVYEWEQTKSQGLLDDVDHR

DWLKLLKAYGVPVQAVRDLGQALSDPQLDHRGLLVEAGDP EVQSVLRPTSVLWSRYRTFAELARGSTLSRHPLFGPVGGY EWVAMLEPDDCCVSPVLTPAEAARHP
EWEDFLQAHHVPAVRQRSVREALADPQVAHRRAFHRFEGY ELMERAVRERILLAPDSSVAGVFENRQFRARGLFRKLDDP EWIETFLPLDCCVGPVLEISE
EVMNLCQNQEVPAGNMLRLSEFTENPHYNARNFEQKLHQP EWLPGLAEWQVPSQKVFRFTD IVKDEEAYVNDGLRKVEYT

G $T$ AE DCRAAGAASHSVLTVPEVMEKGGTADRDASNEFGTV DVEADFSAHRDAAQKVMEFPDLVAEEHLAARGVWQEWQTT EWMTLLEGTDACFAPVLDPDEAASHPHMAARQUYKKПDG\|

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

DVEADFTAHKपAAQKC【SFED【LAEKHVQERGNF $\square$ E WQDV AVVGYETALFGERAMAREVGTVTDHPWLGEQT EVYHEAQRHQFAWGAVRRPEDNSDPHपQERGSFQWLSHP HWVELLNAAGVPAGPVYTVPQMFEDAQVRHLGVARRCGER EL!ARTDAARTANARTNDMHEVWQHPQLAARGRWTEVETP DLLQHLADADUAFAEVNSMADLSTHPHLRRDEVATPSGPV

E TAARLKERD VVFRMRHYRELATDPQAVANGFVYESGHP
 TLEARMAAEACTFERYRTAYEAANDPVLVAGNPLFATPGG ELVELIRGLEGAAYPYHTHETLLADEQTQAMQLLQSTPAG PWTEAAQKAGVAMVPVNTAADLPVHEQFVHRAYFQPADHP DVRAALGATRVLWSQYRTFAETAADDPLFHEAEQTGVEPH
 EMVGRLEGHQLAWAQVSSLQDLAVHPGLTRLDE IDLGNG DWVRVFEGSDACVTPVLTLGEAPQHPHHRARG
AMAEKLEAAKDAYGRLSTMEDVKHHAQN RTVTVETPTG ELIKLLDKSNISYSILNKPWDLLNDEHAKDKMLNVLYQKR DLLDTLRKEHVPAGRUMNDKEVFETERAQ

UniRef90 B5JUJ8 UniRef90 A1T762 UniRef90-X1LLQ8 UniRef90_QORJTO UniRef90 D3RWQ5 UniRef90-D5PG49 UniRef90-B3R8J5 UniRef90 K9KFB9 UniRef90 X0RB49 UniRef90-B3Q8C8 UniRef90_V9D684 UniRef90 UP10001F272A7 UniRef90-K0V1Y0 UniRef90-UPIO0037A5026 UniRef90 X4QXW6 UniRef90- E91AY6 UniRef90-Q0RGR9 UniRef90-V7NYT3 UniRef90 UPIOOO35C6C44 UniRef90-R5FRF1 UniRef90-K0UL19 UniRef90-K2SCB9 UniRef90 DOKQV8 UniRef90-K2RAN6 UniRef90-W2S776 UniRef90 K8R112 UniRef90_W6MDG7 UniRef90-QOVOE UniRef90-J3KJ40 UniRef90 Q89QU4 UniRef90-UPI0002D39067 UniRef90-B7RZQ9 UniRef90 K2JE92 UniRef90-K8PR02 UniRef90-A9V5F7 UniRef90 XOPZ59 UniRef90 C7ZEB2 UniRef90-B9QZ09 UniRet90-UPIO003775A7F UniRef90 I2llz7 UniRef90 ${ }^{-}$B9KUK1 UniRef90-A3VLQ2 UniRef90-GOR616 UniRef90 B7RTX6 UniRef90-F7UUR7 UniRef90-W2SJL4 UniRef90 R4XUS1 UniRef90-UPI000380FC79 UniRef90-UPIOOO3636D91 UniRef90_UPI00036B81EF UniRef90 Q2NDF6 UniRef90-UPIO00470862C UniRef90-A5VIT9 UniRef90 E1ID40 UniRef90 Q9KJFO
UniRef90-H1V45 UniRef90_Q2UQC1 UniRef90 AgWST5 UniRef90-D7G142 UniRef90-V8QUFO UniRef90- UPI0001FFE69 UniRef90 GOR8N3 UniRef90-W4LSR0 UniRef90-UPI0002E8E549 UniRef90 A0A052IES4 UniRef90 ${ }^{-K 6 V T Z 5}$ UniRef90-A0A011P7J3 UniRef90_Q07IK3 UniRef90 W4L208 UniRef90-B2AFH5 UniRef90-R5IJI1 UniRef90 X8AGTO UniRef90 UPI00031B87CF UniRef90-W4M5Y5 UniRef90 UPI000372FA53 UniRef90 J3A1KC UniRef90 UPIO00475C5FD UniRef90-X8СКН6 UniRef90-V8D5G8 UniRef90- G9ZWD9 UniRef90-W7VVL1
$R V A G \square P \square S \square N G A Y P A A V P A P A L G D D T A A V L G D W \square$
VQPSTLVHADGHPLRLAPAPRLGQ
I YEELALHFSNAELKVWSMRPVGFDNEHVFKRTLG 1 HRYPGWP LRDTPGPRSAPPTLGQHNDEVLAGL I AVDFPVKFSGLPEGEDFVAGVGEH
VSPRPAPLLSNTPPSSKRDPFVEHTEE पLREF
SYPAPAA $\square$ F VGDERRYGAVPG $\square G$
SAPVPA
RQVAGPTK $\square$ SDSKTEHHRGPK■GEHTDEVLRDYप RGLNTVPKFARNPGGFWRPPALGADTRDIL IIPNPSPRLSRTPGGTHKNPQAGEDTRQLTEL EQPGALWDLGDTTQLHLAPPVLGEHTVEVLTEV LIDNPLPAETGPAPFRHIPPA
SYPAPAARVAGEARRYGPVPPDG
RVFNTAPRF
GSYGDPPLVGYHTERFLRD YGAAPF $\square H C D H \nabla A P P \square G Q A P L L G E Q T A E \square A A E L L G$
KY $\square \mathrm{DFP} \square \mathrm{N} \square \mathrm{T}$ SNKS KAPR G GENTKEVLLE

पMPGTPFEFGQFERSAPPAPTLGEHTDETLSDLLG ALVNTPVKWSESPGVRMPPPTLGQHTDEULSDVLG

QHPMGAVRPERSR $\square$ A $\prod P$ LLPKYGQHTRETLTRD LEPNSPASFLGTPPPLRPAATLGQHTDEILKE LTPH TPLSFGAAPGNGVPAPALGQHSEAVLADVLG
SVPG $\square A V K F A R T P A T \square H G P P D L D Q H R S L \square A E F$ TLPGPPLRFFETRTQHTAPPVLGADNDTVSEWL

VTLLGAPFVANEDGPHQPPFQVGQHSREVLEEL LAPGPPLVLDGRQAGPSPAPELGAHTGEVLAELL
SVPLAPFTFAEGGPRTDPPPPLRRDTQDTLSAL ARGLSVANLSTPADPRPAPAPGADTDALFA

TVGRGPVAFSDPPPQПQPAPALAEHTRELMS TTP $\square R Y G N F G D P P M \square S K P$ GGYHAEYLQK $\square$

VMPGPVARDTRTPMPGAPGPFGSDFDEVMATF DGLGVFPRFSEHPGRTWRPPEHGYDSSDVLTRL ПQAMPSPRFSNTPPPEPTVKSAG

TYPGAPYEFGE LQWQLGRAPR】GEHTRE $\mathbb{L V E}$

KGLNTVPVFKNPGQFWRPPPGYDTADLLA VVTVP WKVDGHGFRAMGPAPSLGQHTDVVLTEVLG GEP $\square$ PA $\square P$ YA $V$ T P W $\square$ APPAPH $\square G E H N A T V Y G A \square$ T LIT QPVT LTRTPAEDRTAPGWGEHTDEVLRE AGP $\square P A L L N S G F T P R M D A \Pi P A L G Q H T A A L G E L$ SYPAPAAIFVGEGRRYGAVPAIGESQDD

FMMMPPVHMSVGETGPGRGPKPGEHTDE\|LKQL ELVANPVQFDVTAPESGPAP PAPANPSGFGRDAGDPAPAPY回GEHSEEVLAEKLG
TQLVGQPNLSRSPS TMKRPPEKGEHNEDVLSDL TLPGACYRMSATPARVRPAPTLGADQREV LAPAAPVALDGEHTPPAPAPRVGEHTHAV EDAVTVIR GTPARYDPPPALGQHTEEYLG R DPTTPMTFEGAHPPARPAPANGDDTAHVLAEYL KSCTLPTSPM■CAKKAGRVPGLGEQGA\|RKEF
PVTMLAPGFDGKLPEFGRVPALGEDTDAVFAEF ElVVPKPPF YTS $\square K S N V A P D L G E N T Y E!L R E L$



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B
B B
\(\begin{array}{ll}B & B \\ B & B \\ B & B \\ B\end{array}\) \(\rightarrow\)
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170
$\begin{array}{lllllllllllllllllllllllllllllllllll}9 & 9 & 9 & 9 & 9 & 9 & 9 & 9 & 9 & 8 & 7 & 5 & 1 & 7 & 8 & 8 & 1 & 0 & 3 & 2 & 1 & 0 & 2 & 2 & 3 & 2 & 1 & 1 & 1 & 2 & 2 & 7 & 8 & 9 & 9 \\ 8 & 8 & 6 & 2 & 3\end{array}$







