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F A P TP R TT WEHREVHLVQFHEPDTYNYSA LLLSEDKDTTY PI P R I T WEPRRDVHLLVRF QEPGVSNYS ALLL G S G D DTLLY


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WYTTPRRTVGDRALRVKRFSRAGVFNYTTARLDEERQVLV


WGLTPRKTVRYHGVSVRQSWHSGVSQVMTLTLDENRGALY
 VTLG S E K R P F L R F E A E NVVSNY T S V L L S K D G R TVV Y


## $W D \quad \mathrm{~V} P$

 RKTVP $R \square S$ T T Y$P R M T V V Y N D L T S A R H$
$\square$ N C
 PRRSV $\xrightarrow[P]{1}$ PRVFHYNDRPVKYFYRDGVVNY $\square P R K T V$
$\square$

\section*{$S R P$} $R \square T V P Y D G N V L L F Q E E G V F N Y S$ $\square A R K T$ T Q Y E D NHAI T F K E Q Gl WN Y S PRMTVTFDELSGVRRFSGHSLNYT | $P R T T$ | $L$ |
| :--- | :--- |
| $P R L D K$ | $L$ |

VP R $\square K \square T Y$ QDLLLS NSCMPEGDNYT PRTTI A YKE L S S DVVRRFR S HALLNY T




$P R L Q L S H S D V S A V S W G A G V G G G Y Q V L L L D E D R G W L L$ $R L S L T F R K L Q L Q T F S L E R T C C Y E A L L V D E E R G R L E$ PRMT $\square$ S Y E E $\square S$ G $\square$ P C F K GPARNYSTLLLDEGPARLL ESADFQTLLLDEERGRLL RMKLLS Y K E L Q Q VR R F E E L E R R S C C F S A L L L D E E R G R L SAPRVHLAFKELMDTRTARPNTSDYRQLVVDPDQGRLY
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NQTDCFNYVRFLQSYNSSHLY
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PQRDCHNYIKVLLQLNDTHLYTCGTS
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 Q KRDPEDGKGRCPFDPEYRSTA MVDGELYTGTVSKFQG SLVPVPEDGKGQSPFDPAHKHTAVLVDGMLYTGTMNNFDG TLVTTTEDGRGRSPYNPTQAYTATLADGELYSAMMKNFGG REDRHDESGRGRCPFDPNSPCDSTLSRGELFVGLYTDYWG TMVSNTDDGTGRCPFNPRQKCTAMMVEGELYAGTTNNFKG SEDHRLERGRGRCPFDPSSSFTSTLFGGELFTGLYSDYWG NLLP ISENGKGQSPFDPAHKHTAVLADGMLYSGTMNNFWG REDGVFQSGRLKCPFDPGQPFASVLSDQYLYVGTSSDFLG VEDSVFEDGKGKSPYDPNHMAASVLAGEELYSGVATDLMG VMSSQPEEGRDKCPYGPTTGHTGLIVDQQI YTASQYEFR GEHGTVQSGRGRCPHEPSRPFASTFVGEELYTGLIADFGG

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 $P$ VA R V R Y H A G D RV L S LIF Q QK DLLQD F D ILLL L S D D G N T L Y PRRTTIS YGELSQUIRHFKGQAQNYSTLLLEDASERLL
 A S VPRVF LS F K E L K S T H
$P R V Q L T F K E L H F F N$
PRRTLTH

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                                    FS QDN|\S H Y D ITFL L
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S ERLLY
SS QPRLHFQHSELRLVS $\square$ SMP AGD
YRESSSY MLLDEYQERLF
PRLRTSHKEDWLTRFSQENVSHYD
VPRLKLSYKDLLLSNSCVPEGMDFRTLLLDEERGRLL $S V P R T S L P \square S E A Y L T R F T V P Q T Y N Y S V L L V D P A S H T L Y$


PRVS F P TGGRHLTR SFRGLLSDNETAHDVSNTTTLLLSDSGD
PRVR LSFKELHFFNFLLNTTDYR LLLKDEDHDRMY


$P \square P R \square T Y R A G E R A \square S \square F H Q K G \square Q D F D T L L L S G D G G T L Y$ VFVGHKGRNTTQRHRDD $\square$ QLVMVM NRTLY
R $\square$ NWGHKEVHLDHFQESETFNYSTLLLNEYKD LLY GVGNFSTFLLDRSSGMLY RTSVFYGPGFLNDRTMLLDEYQERLK PRISFPSTDRPLLHFGHGDLHNTTALLLSRDSSTLY SPVPRLKLSYRELSTVTLSVPDVWDFRTLLLDEDRGRLL

PRVQLNFKELKGTSFFL NTTDYR LLLMDEDHDRMY VHLSTLDI NLKQFKESGFDSLS SLMVREDDGQLV
 SRFPASNTEDFQRML R R NHMLY

 AHFFNFLL NTTDYR LLLKDEDHDRMY HRGFPDFRSLYL | $P$ | $D$ | $F$ | $R$ |
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RSVLFGHRGF $\square$ GFRT $\square$ Y $\square$ R
$N C L P T D G G E L K V E Q K T F Y G V T N F S T F L L N S S S G G L E F$ PKMYVQLGEDDVHHFVGNDTRTDYFRLMLRDGDSLL PPPR VRVKYAKDHVREFSC GTLYYRTFFVDSKRDALY

## ERAVNWFEAPGVSNYTALLLSQDGETLF

SAPRVRLSFKEDTDTKTARPNTSDYR LLLMDQDQGRLY $P K L Y V E L G P E D V L K F V G N E S V V D H F K L V T K D G N S L L$

NSAPRTTSDFTDLTTSRFSREHVSNYATFLLGKREKVLY $S F Q G L M S D N E T V R L G L D F Q R M L \quad R \square N R M L Y$ $P V V S \square Q A L S P L D S S F S H P G V R D Y S Q L T L D L T R N E L I$ PWVSNFTYAGAWDFSQDALDPSRNQLI
NNVPRLKLSYKEMNLVTFSGANSSSYHTFLLDEERSRLY LSHFS GS GAERLNDQRMLKVNRTLY


RSTWDARDYPVFRFTGAGGLGFQRML $\qquad$ T $\square \mathrm{D} Q \mathrm{~T}$ LY VI SSONRTLL
PGRLSPSEDADDLNDQRVLRVNRTLF



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 VGARDT FALS PFTGERPRRIDWMVPEAHRENCRKKGKK VAMKDNLLSTSLDDTTQNPRKLFWPASPDRVQECLMAGKD VGARDALLSLNVPGVMTVVKKVNWTTFNKKLEECSKGKK VGSKGNIFALQLDSLNSHRHEIHWSVTEAQHKECQKKGRN V GAKNHI FLL HLDHPSREPEKVFWPASREQVEHCQLAGKN VGVREAVLALDVQHPPQLRSMIPWPASDRKKHECALKKKS VGAREAILALDI QDVPRLKNLIPWPASERKKHECALKKKS VGCKDHVLSMDINNITHGTLKVFWPASTSKDEECQMAGKD VGSRNAVLA DDHPNSGRLVEQLDWSPSEKDIEQCSMKGKK LAGKDVLYSLTLSGPVKSESKEDTWWPGNQNREDCAVKGKS VGSKDYVLS DGADIUNREPKII HWAASPQRDEECVLSGKD IGARGKVITLSLDDITEKTSETEWMVSSGEKSECIVKGKS AGAKDHVFLLNLDNPNTKPQKIFWPAPREQREHCRLAGKN IAARDHI YTHDMDTSHTEEQFFTWKSRQGDVDTCRMKGKH VGAKNALFSLNLDRVNAHYRQIINWASTEFDEECMMKGRE VAARDHIYTVDMDTSHTEEDYFTWKSRQADVDTCRMKGKH
VGAREVTFALNSLNTSEKKQEVFWKVTENQKTRCAEKGKS LGARDAI VAVDTANLS KRLKIVWSVPEDKRKSCVAKGKT VGGRDLLYSLNDDRVNEEYREIHWPSTSVQVEEClMKGKD VGAQNALSLDVNVIRLNKKVQWSPSDKETKECRGKGKD IGAGRDQVYLVSLRESYRNYRKLTWRSGQDDRDMCAVKGKH VGSKDHLLSLDLQDDNREPLIGE

## LGARGKVLTLSLDDITKQTSENKWAVSSADKDLCQMKGKS

 GGRDAI YSLRLDQAWMDPREVLWPPQPGQREACVRKGRD VGGKDALUSLR DHDVNRNPRIIHWPVSERRRMECLVSGKD I AARDHVFAVNLSTTEQDPQQKWTWKTKDVEKCTVRGKN GDRDNLYRVELEPPTRYHRKLTWQSNPNDINICRMKGKQ I AGRDQVYTVNLNEDPKPRKKLTWRSKQQDRENCAMKGKH VGSKDYI LSLDLHDINREPLIIHWAASPQRDDECILSGKN VGGKDTLYSLWLDQPGMDAKELSWPPLPGQKEECFQKGKD VAARDHVYAVDLRRAKEDIMPKYVTWKTQDMENCAMRGKD IAGRDQVYTVNLNEDPKTEVDPTWRSRQQDRENCAMKGKH VAARDHIYTLDMETSSTEELFFTWKSRQADVDTCRMKGKH VGGKDALYSLRILDRASTDTKE YWPPLPGQTEECFRKGKD VGGRNLVYNLSLSDLNQQQ KLTWYSNEHDAKMCVMKGKD VGARNAL LLLNVSDVISDRSKVTWSPSQTDTRDCVNKGQD $V G A M D R L Y R L N M N N I S A S H C D R D S N G E S N V A Q C V S K G K S$VGAREALFALSQSGSFRPHRQLVWGADPEKKRQCAFKGKD LGSREYLVALDMHNVNKEPLITHWTWKTQDMENCAMRGKLL I GARNTVFNLSIHDLVEQQ RLVWT K G K D VGAREAVFALNAHNISRKLIHEAYWKVSEDKKAKCAEKGKS IAARDHVFAVNLTTASEQFVPQTWRSSKDVNKCLVRGKN VGARDHIVGGLDLDAPLSDEVYYTWRSSKQERETCFMKGKQ IGARDDLYRVELDHVSGDEMFYTWESNKNDIRICRMKGKH IGARDHVFALNLAASSEQTPQQKLTWKTKDVEKCTVRGKN VGARNYLFRLNSNDSLDQATEWGPDEDTRRSCOSKGKT VGARNVVYNLSGSTHEELRKKLEWFAKSEDDKMCKLLKGKT VGARNYLFRLSLANVSLL QATEWASSEDTRRSCQSKGKT VGAKDHETFSFNLVNEMLYNKMLAWEPNQNDISTCRMKGKH I GDRDNLYRVS EPAMRYQRKLTWGSNPHD DS $\square C R M K G K H$ VGAREAI YALDLKDVSKKRASMD MGARDAULAVDTNRRNQPPKKПSWEVPEKKRQSCVTKGKT

TAAARDVYAFDLQGDMVVRKKDTWKTKAMDMENCAMRGKR VAARDHVFSFDLQDWEGLVPDKY LTWRSQDVENCAVRGKL VGGRNVIHNVSLNDLELLDSTNWPSDKSDINVCIHK QK IGGGRDNLYRVELEPPMRYQRKLTWPSNPSDINVCRMKGKQ

TGAKNTVYNVSASTL QVRRKDEWNSSESDDKMCRLKGKD

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QRGECFNYIRLIMEPGNRTH\|YACGTGAYHPVCRSEEYDFR AETECANFVRVLQFFNKTHALACGTGAFHPLCALLEVVFR
 NESQCFNFIRVLVSFNATHLYACGTFAFSPVCTFIEDKNS
 ANTECYNHDRFLQRYNESHLYTCGTNAFRPLCAYVDAERF INGECGNFIRLI QPWNRTHLYVCGTGAYNPVCERKDYIFY QETECFNF:RVLVALNQTHLYVCGTYAFSPACTYDHLENF NKTECFNHIRFLQRFNSTHLYMCGTHAFGPLCAYIDEDKF PETDCANFVRLLQPFNKTHVYACGTGAFHPQCTYVHVSFN LEMDCANFLRVLERYNQTHLYACGTGAFNPRCAFIPTNDF AETECSNHVRLLQPFNKTHVYTCGTGAFHPLCTYIDLGHN
 THTECANFIRVLQPYNRTHVYVCGTGAFHPVCGYIELGTH E
$\stackrel{\text { E }}{\text { E }}$
SEDDCANFLRVLQPFNQTHRYVCGTGAFNPRCAFTATSSF ETECDNVIRVLDFLNDTHIYACGTYAFSPTCTYIDTKTF VETECNYRFDFNETIFACGTYAFDPHCIFIVNYYY SETECANF:RLLOPFNRTHVFACGTGSYQPVCAFIVLTMR NETQCFNF:RVLVSFNATHLYACGTFAFSPACTFDELHNS
NPOTECANYVKVLVQKSTTLFACGTNAFNPMCRSYQISTL FT GNGECGNFVRLIQPWNRTHLYVCGTGAYNPMCTYQDYIFY RDECYNYI KVLVPKD DQTLLACGTNAFHPVCRTYKISNF PETECANFIRFLQRFNSSHVFACGTGSYQPICAF苗HIKTG KDECHNFIKVLLQQNNDTLFVCGTNAFNPACRTYKMDSG GKYATHCA KDECHNFIKVLLKRNEDTLGUCGTNAFNPSCRNYKMDTL

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UniRef90-UPIOOO34F70E8 UniRef90 UPIOOOO34F70E8 UniRef90-UPI0003338B80 UniRef90--13IU16 UniRef90-G3N8N7 UniRef90-UPIO003C17AEF UniRef90-13J086
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K Q TECLNY TRVLQQLSDTSLY DCGTNAFQPVCDHLNSTSF EADCNNYI RLLEFLGDGRIYACGTYAFDPQCAFVNISSF PNDCANFI RVLHQYNKTHLLACGTGAFDPVCAFIKVGHW $\square M N E C P N F I H V L Q P L N S T H L Y T C G S Y A Y S P Q E A Y Q D T Q S F$ PQPKCVKFi RVRRTHARVCAFTCDTAGFH LITGCCSVAII
 CKNFIRILHKMDDNKMYVCGTNA $E V D C K N Y U R L L Q F L P D G R V Y V C G T Y A F D P Q C A F L E L S T F$

 TKEECQNYI RVIVPKTPGELFVCGTNAYRPRCRTYINGKF
 THN Y

E A A CHNY I R VIA K K A H D R VLI CGTNAYKPKCRDYVLVPS ESDCHNYIRVFARLPNDMIVMVCGTSYKPRCRNYEPVVD

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|  | UniRef90-UPIO003345 |
|  | UniRef90-UPI000298ADDD |
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|  | UniRef90- ${ }^{\text {O1LVE1 }}$ |
|  |  |
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 LEPERLESGKGKCSYDPKVDTVSALINEELYAGVYUDFMG
 AQQEPVESGRGKCPFSPREPFTAQLTGGELYSGTSVDFMG LQDEDTESGRGKCPFDPHQRTATATTDGELYAGDSSDFLS LEEPTFESGRGKCPYSPLEPFTAKLTDGELYAGTSVDFMG LESDHMESGRGRVPFHPNSPLASTVYRGELFVGLYTDYWE
 YFFFFSCDGRSRCPYDPYQKHTA LLDGELYTGTVGDFQG LVTHSLESGRGRCPYSPHEPFTGLLVDGELYSGTSSDFMG QLSP SEEGKGQSPFDPAHKHTALLVDGMLYSGTMNNF G YLLPIVEEGKGQSPFDPAHNHTAVLVDGMLYSGTMNNFLG HDDSTESGKGRCSFNPQVNTVSVMLNQELFSGMYDDFMG TMSLKADEGRGRCPYDPYQRNTALIVDGELYTGTVADYRG EQEGEEVSGQARCPFDAKQTNVALFAGGNLYSTMADFQA MDPLNVENGRGRVPHDPSFPFASTFSGGELYTGLTADFLG TMETTVQDGRGRAPFNPHEEFATMMNENTLYSAVSVDFMG AEEPSUGSGRGKCPYNPYEPFAGLLTDGEFYSGTSDDFMG DTVGEEDSGMARCPYDAKHANVALFADGKLYSATVTDFLA YLLP DSEDGKGQSPFDPAHKHTAVLADGMLYSGTMNNFLG GQETMFASGKGRCPFDPNSSCMSTLHRGELYIIGLYTDYWE EFLGDEFSGMARCPYDAKHANVALFAEGKLYSATVTDFLAG K LVGRNDDGKGRCPFDPAQSYTSVMVDGDLYSGTSYNFLG DNSVRMETGKGKCPFEPSQHYTAVMAGGVLYTAATSNFLG TEDHRUENGLGRCPFDPRTPCVATLSSGELFVGALYSDYWE SVVKTDSAKGRCPFSPFERSAVVIADGELFTATKTDFRG EFDGEEDNGLARCPFDSKQTNVALFAEGKLYSATVADFQA PQVSDSESGKGKCSYDPKLNSVSALINGELYAGVYIDFMG GEPHAMESGRGRCPHEPSSPFASTFVGGELYTGLNADFLG GQTSMYLQGRASRAAEPSAVHETLGLKGELFPGLVESGSY EQDGEEVVGQARCPFESRQSNVGLFAGGDFYSATMTDFLA EPMGDNISGMARCPYDPKHANVALFAGGMLFTATVTDFLA EYDGEEISGLARCPFDPRQTNIALFVDGKLYSATVADFLA AYAQEDMDGLGLCPYDPRHNSTAVFVEGQLYAATVADFSG GEHTSVQNGRGKCPHEPNRAFASTFTGGELYTGLTADFMG
 EYDGEEVSGLARCPFDARQTNVALFADGKLYSATVADFRA GEEKRMETGKGKCP HAFSVSLPGGELYAGLTADFLG ThEKRMETGKGKCPFEPSQRYTAVMADGDLYTAATSNFLG YVQQDKARGRCPFSPFERSAAVIIDQELFAATTTDFQG EYVPGDGMGVAKCPYDPADNSTALWVEPALYSGTNAEFTK SLEQDREDGKGRCPFDPEYKSTALMVDGELYAGTVSNFQG EQEGEELNGQAPCPFDAKQPNVALFADGNLYSATVADFQA AEPGFVESGKGKCSYDPKQENDAVLLEGNLYAGVHDDFMS NYTLETKNGQAVCPYDPRHNSTSVLADNELYSGTVADFSG QFLGKNEDGKGRCPFDPAQSYTSVMVDGELYSGTSYNFLG EQVGEELVGQARCPFESGQSNVGLFAGGDFYSATMTDFAA DGEVLLESGKTKCPYDPALRHTVVMADGVLYAATTSNLHG EVVGEPISGMARCPYDPKHANVALFAEGSLFTGTVTDFLA EQEGEEVVGQARCPFESRQSNVGLFAGERCDPAAVKTPAC GEYLIKEDGEGLCPFDPKNNSTAVEADGDLYAATVGQGSG SRMIEK ENGVARCPYDPRHNSTAVDSQGELYAATVIDFSG
 EPDGDS $\square$ SGMARCPYDPKHANVALFTGGMLFTATVTDFEAB TDEVKMESGKGKCPFEPSQHYTAVMADGTLYTAATSNFLG FEDGKGKCPYDPTKGHTGLLVDGELYSATFNNFLG QQEGSDMNGQARCPFDARQPHVGLFADGNLYSATMADFLA QQEGEELSGQARCPFDATQSTVAVAEGSLYSATAADFQA EFEGKEEQGIDKCPFDPKQNSTSVYSNGVLYSATVADFSN
 AYDNNEMEALGRCPYNPLHNSTYVFTDGHLYSATVADFSG
YEIVRDVEAQGLCYSAHNSTYAYADQLYSATVADFSG
C GRDGHQKPGEGLCPYDPNHNSTFTFADGDLYVGTVGQFSG EVHPDDVEAQGKCPYSPVHNSTYAYADGSLYSATV|ADFSG

## UniRef90 G1KD81

UniRef90－H3B8Q9 UniRet90－UPI0004574BA7 UniRef90－G3SR88 UniRef90－UPIO004548F96 UniRef90－L5JQGG
UniRef90
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UniRef90－Q1LVE1
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TDAALIFRTMGPRPRTEQHDSRWLYDPVFLLAAHIVIPDSDHN TNAALFRTPVHY 1 RTEQNQDHWLNDPLFVGAYSIIPDYNPD


| S |
| :--- |
| $K$ |
| $K$ | KDTAFTRSRGHHYLRTDEASMHYWNASSTSPCHVRESVGD SPDVRRNFPFPTLRTEEAPTRWLLEADFVGSVLLKESFND TDSAIFRTDGKHMRTDQYNSRWLHDPTFVHAQLIPDSEKN

## $\stackrel{N}{N}$

 SFPDI RRSSPSPTLRTEDAPTRWLDAEFI DFPHTEAEFVD RDAAVFRSLGRHIRTEHDDERLLKEPKFVGSYMIPDNEQD

 | $N$ | $D$ | $A$ | $A$ | $L$ | R L |
| :---: | :---: | :---: | :---: | :---: | :---: |
| K | D | T | A |  |  | TEP I I S R AVGRDW DRTET L R S WLS APAFVAAVALWGDEDG R D SAFFRS L GR RHRTE QY DS TWL QDA QFVVVVAPLSETMDNP K Q P VIS R F V G S VM DMKVE D S L G WL Q D P T FI S S T FIDP G E S G

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 KRNHFLRNYLSTEDKTSWFNDPIMDSTNVAEILKSSKNKD SDAVIYRSLGESPTVKYDSKWLREPHFIHA SSAAFFRTQLDR $\square R T E Q N Q D Y W L K E P V F V G A Y A \square P D Y N H D$ DDAVGYRSLGDSPRTVKHDSKWLKEPYFVQAVDY NDGALCRLNHHTYTRTENDRQQLNEPKFVGSAVIPNDDRD DDAVIYRSLG SEPGISRNSLQNPLRTEYAAPWLNEPHFVFSDVIRADPNS TLFDVSRATGPEQURTERSUNWLSDPEFVSSAFIQENEKN KEPTFGRSPGNSIRTEQHEASWLNDPKFVAVFAFPDTSS SDSVIYRSMGDGSRT苗YDSKWLKEPHFLHAAEY
 IDAVIYRSLGDSPRTVKHDSK WFKEPYFI HA
GEPLIHREKDR MTERSDLNQLNGPNFVSSFAY
TDAAIFRTLGKQMRTDQYNSRWLNDPSVHAQLIPDSERN RDSVI FRSMGRSSLRTEMDQRGLNDPKFVAAYLIPNDDRD
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 $K K P Q I S R F L S K R P D \Pi S L D S U S L L Q E P R F V S V S L$ S


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 SDAVIYRSQGGRSPTVKYDSKWLREP SEPIISRNSSHSPLRT
SDAVIYRSLGPVLRTVKYDSKWLREPHFDHADDY
DDAVVYRSMGGGPRTDKHDSKWLKEPHFVHAVEY

| SLLFFLKLPVY DQKNFFS SSPAEPHFLHALEY |
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DDTVVYRS DGDSPRTVKHDSKWFKEPYFVHA SHMSAVEW AEPTFVSMTQ QPE RTEOSTNWDNDPEFVSSASHMSALGD TLIFDSSATGPDQDRTEQSTNWLNDPEFVSSAFVQQSAEN SDAVIYRSLGQNPVLRTVKYDSKWLKEPHFLQVIVERD
胃 SDPLIYRENLR TEQYDLKQLNQPDFVGA VER

A DP L
GDPLI YRDR ENLRTEQYDLKQLNQPDFVGAD
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UniRef90_H3B8Q9
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 DDKI YYFFMERSSFTQSRSSHRVARVARVCKGDLGGKKIL

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DKVYFFFTETAPKVEFYEKVRVASVARVCKGDLGGQKTL
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UniRef9O-UPIOOO3EA8E55 UniRef90-UPIOOO3EDFC71 UniRef90-M3ZQ52
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UniRet90' S4R816 UniRef90_UPIO004575677 UniRef90-F1Q104 UniRef90-G3PK06 UniRef90-F1QPQ6 UniRef90-B7Q6F1 UniRef90-F71L01 UniRef90-H3A1J9 UniRef90-UP1000388A9CD UniRef90-Q4RV28 UniRef90-Q4T5N6 UniRef9O-UPIOOO392E2D2 UniRei90-G3WKN8 UniRef90_V3ZLQ8 UniRef90-UP100029D4D30 UniRef90_OOIG92 UniRef90-A0AO34VR24 UniRef90-Q90665 UniRef90-UP10002657FCC UniRef90-T1PN29



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260
270
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 QKKWTSFLKARLICHTPQ YETLRGVCSLDADTSAHT QNKWTTFLKARLGCSVPGSDGHFDELQDVYLLPARDERNP QRKWTSFLKARMVCTVPEYELHCDNLRSVFVLQGRDARSS VNKWSTFLKARLICSVPGPDGHFDELQDVFVQQTQDGKNP
 QQRWTTFLKADLLCPGPEHGRASSVLQDMALLRPESGVAP VNKWSTFQKARMVCSVPGPDGHFDQLQDDFILHGKDKKNP



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 QRKWSTFNKARLVCSXXSRGPHFDELEDVFLLRTRDGKSP Q R R WT T F LlK A QLVVC E DK A S G Q R Y N I L T D V F TAAQH G D P S S T
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DRYWTSFLKARLNCSVPGDS

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UniRef90 G1KD81
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GTFT 350
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$\square$
EGPDYRWVEYKGKIPYPRPGTCPA
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 LNRDTQRWRTRNG
ECD KWTPYSNTDPSPRPGSCITT TA品REEGYTSSLEDP LNKETYR RWM Y YKGRVETYPRPGTCPS QVSQSHGMLLLAGPLCSVGP
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$E G P S Y Q W V S Y G K U P Y R P G T C P G G T F T P N M K S T K D Y P ~$ SESAWTPVPDEQVPKPRPGS CAGDSSAAAYKSSTTFP PESTWTPVPEELVPKPRPGLCAAPGMPYNA PDSLWAAVHESRVPKPRPGS CAKHGPAENYETSDDFP $\square N S N W L R V L P E K V P E P R P G A \quad$ G EGPNYQWMPFTGKMPYPRPGTCPG GTFTPSMKSTKDYP TEGPDHQWAAYEGKVPYPRPGVCPSKTTNQPSYSSTKDYP
 PDSTWTPVPEERVPKPRPG VCAGSSSVEKFKVSSEFP ESPDHQWAAYEGRVPYPRPGVCPSKTTNQPPYSTTKDFP TCENWNSPETVPTP RPGQCLNNNLKAQGFESSLKLP
TNSNWLPVQSKVP

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SSSA WLPVVSSRVPEP DPRPGQCHNDSRTLP

MEVQDSKWREYTGKVPEPRPGSCTTDGRPGKCVNDTSSLP VNRETQQWYTVVNPVPTPRPGAV ADAAWTP $\square P E E K V P K P R P G \quad$ CCAG $\square G K A S G F R T S N D F P$ HGHNYQWTEYTGKDPYPRPGTVCPGGTFTPGDPSSKSFS TNSNWLPVNNAKVP DPRPGSCHNDSRALP
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DNSNWL WLPTNNKVPNFQCGTVDEGEGPNER DSRTLP ENPRAAWLPIANPIPNFQQC GTLPETGPNENLT
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#### Abstract

410 420 430 E Q|L|T|L|E E V|E|V|F   AQDLEGNSHLVMYLGTTTGSLHKVVVSNNSDRLVEEIQLIF VSTPAGPTYDLLFLGTADGWIHKAVVLSSGMHII EEMQV F   $\stackrel{V}{\mathrm{~V}}$  VDTE $\qquad$ $V E A E D G Q Y D V L Y L G T D N$  $\qquad$ VMAEDGQ

\section*{}

\section*{}   VMAADGNYQVLFLGTDKGTVQKVIVLPSNHSILEELEVF VQAANSRDYTVLFLDTESGYLHKAVLLQSGAHILEEVQVF VEAEDGLYDVMFIGTDDGTVLKVIALNNGNVTLEELQVF  SA GPFRNGTVLFLGSEDGTVLKVLSCPTENHLLEEVSVY A AGPYQNHTVVFLGSERGUILKFLAKMSSGFLLEELNVY VQA QD GQHYHVLYZ GTDDSVVLKVIT TYNEEVLLEELQDF SAAGPYQNYTVVFLGSEKGIILKFLGLEEMNVYNPEKCSY TQALDDGTMYDVMFVSTDRGALHKALSLESDVHI DEETQLF


TTVSNRQNATVLHLGTDRGELHRVAVVGQNATLMQELPLF $V E A E D G Q Y D V L F L G T D K G D V L K V I T I V N Q D V I L E E L Q V F$ ARAASDTQYTILFLITESGFLHKVVLLDQGPWVIEEIQVF VQAED GPYDVLFLGTSVGSVLKVI TUPTEDVI LEELSLA EA GPHKNYTVVEI GAESGVILKVLAKTSPMLLLEEIVDVE VDAADGRYEVLFLGTDHGTVQKVIVLPKEELILEEVVEVF VTS DDGQQHLIMFVGTDTGWLQKAVKFEGEDRIIEELQLF

 SA GPWGNQTVVFLGSDTGTVLKFLDRPNRGPTEQSVVLE
 VDAADGR YEVLFLGTGTHCCHLFGKEACQIHLLPKSIFF VDAEDGQ YDVMFLGTD
SA GPYGNYTVLFLGSEDGKVLKVLSGTTENSTVETLLLE SA GPHQNYTVIFVGSEAGVVLKVLAKTSPFSLNDSVLLE AAGPHSNHTVVFLGSERGUVLKFLFLEEDNVYNAEKCSI VDAEDGQHDVLFLGTDAGSVLKVVVLQKEEIVLEELQVF MGEAEDRRGAVLHLGTDRGELHQVAVANQNATLLQEIPLF VKVPG GKTYDVLFIGTDNGKI IVKVNGGVRPVVVEEI QV F
 EPALDGNLYTVLFLGTDDGWLHRAVDVQGEMHII EELQQF


 VQAADGTV SAGPHGR HTVLFLGSEMGLVLKVLSWPPPGPLLEQIDVY VKASDGRTYEVLFLATNDGRLHKAVSDGSASHIIDEKNLF TEAGPHRNRTVVFLGSTRGTVLKFLITPSPENQYSNTNTF
SAGPS KNRTVVFLGSDNGRVLKILASTEGANASFSTQLL
 IVETVNGKKYDVLFI GTDVGRVLKAVNVASGPVLVVDVGVF $V$ QAKD TDYHVLYI GTESGTILKALSTASRNCYLEELHVL EA GPFKNYTVLFLGSDTGT ILKF VDAEDGQ YDVMFI GTDNHHGH
SAAGPWGNCTVFLGER VQAADGEQHHVMFIGTEEGTLVKAVNYD VA GDS GRRGALLIHLGTDRGELHRVAVVDQNTTLLQEIPL F TEAGPSRNHTLLFLASETGLLHKVLMLSEQGLLLEEMDVGY AAGRHGNT TVLFLGTEDGTVLKVLMGNTEPVLLEEVDTY VGAGPWGXXXXXXLGCEEGTVLKFLVWPNASVVFLEEFETY



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 PRRSVFFSDVNLKLFKEP DFDGGSSMMVREDDGLLEF RPDLQTK Q DK LA HLLIGNTTDY FKILDHNDETIL PAVPHSEMEPWIVRRKAEGTVDYS QLTRDPGQNELI PVIT SEE $\square$ A P W L H $\square$ F R A E N AVV F S Q I T F D P R QK E L

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

NRTLL
Q NVT TLLTLS S D S TLY
VKRFYGNKSHFDYFKLLERDGESLL $\square P R \square K F T \square K D S P V L S F$ ENGEKSTVLFHDAGSEQLY NPEPRMYNTYSKYQUDKFSGNDSYVDYFKLLEMDSDSUL

KNVTDFSTFLLDRSSGVLY
P $\square$ AS Y QA $\square R$ P WMWEFSHPEAKDFSQLAVD LS GK QL PQARVYLTFDELRETKTSEHHPLDYR LLLMDEDQDRIY P IVAAFEDLKKPWVSNFTYPGARDFSQLALDDSRNQLI KHNRDHVREFTC GRLYYRTFHMNEDRDSLY PRLRLAYKDLLVSNSSRGDGMDFRALEVDEDRAWLMM HFKLLAADGDSLL H $\square$ RHHKDPVKDFSC GLLYYKTFHFDENNNALY HFKLLACDRNSLM
HQDL $\square$ HEFSC GHKYYRTFHLDEKRESLY RFGGHGSHSDHFKLLEADGDSLL
$G R V L S L Y D V S D A L N T T V L L L S P D A T T L E$


PRLLRLTYKLLKSNSSRGDEMDFQTLLVDEDRAWLM
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FRSDSPDDSFRILDHSGDHLL $\square S S R A S L G T R R F K G R A P D Y S I L L L E E A S G R L L$ EPTEDDNI QRVLRVNRTLE DASVLRFGNQTTADY FRLLDLDGEYL L
 $R \square R \square S F Q E \square Q \square R T F R Q E R T C C Y E A L L V D E E R G R L F$

 PRLKFTVQEPARFHFMKPEPENYMTVYHQQGSDVLY A NTSLFQQEGVTSYSQLLFDVARQQVV

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

NRTLY
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पGAKDA LDADDTNDNQQPRKVVWDVEDKRKSCDAKGKT VGARNALFRLTLNNVSLDQASEWAPDEDTRRSCQSKGKS GORDNVYRVSLEPSMRYHRKLTWRSNQHDDSDCRMKGKH VGSKDHLLSLNINNDSQEPLSVFWPASAGKVEECKMAGKD
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VGARDNDYRTTTSDSPDE HASWPAPENKTNTCQNKGQS CVVKGKD
DHVESFDDQAQEEPNKYDTWRS QDMENCAVRGKD VGGQATUYVLTFSDKKVVDMQ1| PAASDQTADDTCKAKASP VGGRGAVHVLTFTEAEVNQTRVVLPAEEKADKDCKSRPGA
$\square A A R D H D Y V D D D S N T E D Y D F V K R T V E R D T C R M K G K H$ VGARDNLFRFSLRLEEDERAPWEVPVSMRALCLQKGQS VGGKNYLASLSLDNDSKQDK
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N K

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## L Q D S HLL

QQAECENF $\square R V \square Q R L S S S 甘 V C G T N A G P R C W F \square T N M K$ KDECHNF DKVLLKKNDDTMFVCGTNAFNPSCRNYKMNTML DEACHNYVMVLQSY GSQVYACGTHAFNPRCTVRHMEDL KI YWPAPVEWREECNWAGKD $\square$ NELL DSCENVITVMQQFQDS LFVCGTNGMRPQCWNLHPQGS KEECQNYIRVLL VGGDRLFTCGTNAFTPVC

CDNFITVI QKVNDT FIVCGTNAGNP RCWMLVRG

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## EEECRNYMKVLLSQHGG LFVCGTNAFNPLCANYTRDTLL $E R G C R N Y V R V L Q S Y G E N Q L Y A C G T N A F Q P Q C S W R Q M E N L$ $R V E C H N Y I R V M V R Q S N G R S L I D C T H A Y S P K C R Y S D D D R M$

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 S MVS DEMS G DGMCPYSP H QNVTAMISS GDYFVGTAVDFSA $M D P L N V E N G R G R V P H D P S F P F A S T F S$ G G E L L Y T G L T A D F L G














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| :--- | :--- |
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| $L$ | $Q$ |
| $L$ | $V$ |




 FS LIPKKSRMS GNSAASVDQNSYFRWQNGSLGYAMSSVVEGH $N \mathrm{~V}$ T Q F D D G V V K C P F HP QA NS T S L L Q N G N M F V G T S A D F S G


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180 W K K E P Y F V 190 $\qquad$ E W | R |
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 S SAAFF RTRGVHKAA


A D S V I FR S D LY N NGRKE A NFKRTVVKYDS L DKPN FVGS FE $\square$ S D AV I YRS LSSP L R TLLKYSSRWLQQPHFVQVAP
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210

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UniRef90 V5HOR7 UniRef90-V5HOR7
UniRef90-UPI003ACC47F UniRef90-W5K6Z6 UniRef90-UP1000329C1D9 UniRef90-A8P113
-

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QRKWTSFLKARLDCPFGDEGSQSLVQDVFFDQDENNLKDS
GKSWTSFLKARLNCSMPGEFPFYFDEDQADSPVVESGSQT
EDTWTTFMKARMNCSRPGEPFNYNELQGTFYLPELELDANP

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 NKNWATFMKARLLNCS IPGEPFYFNEIQHIYKHPDDD NS
 QR R WTS F AK A QL V C Q Q GEDLQQFNKLQD V V K L S P S D S D S P
 QKKWT T F L K A QLLCARPG QLDPFNLI RHAVLLPAPGGAAA G D R WT S F L K S R L N C S VP G D P F Y F D E il Q S M S EMIV G Q R S A Q
 EKAPAEVVRDVQRWARVTPGAEDPSNSRGQAPSRFPGCRP

 V N R WT T F LKARLVCSVPGGDTHFDQLRDVFLLPQRDHRSP K N R WT S YL K S RLNCSMPGDPFYF DEIQSTSNMRYGHANSK CKK
P
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 D R H WT S F L


 V V K WT T F L K A R L VCSVPG
QNDWTSFLKARLVCGIPADSLYFNRLQDDFVQHADNEGDT
EDTWTTFMKARLNCSRPGEPFYYNELQSTFFLPELDLDS
MDSWTTFLKARVMCGAGNTQQQYNNLKQAVVLTAQDKRAG
RDNWTSFLKARLNCSLPGDPYYFDEI QGMTYAESEH


 HERWTS YVVKARLNCSVPNTPFYFNELQAVTEPVAADDGSS






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UniRef90_UPIO003C2616E UniRef90-V8NSC1 UniRef90-H3BDX5 UniRef90-W5MMT4
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UniRef90_G5C4D6 UniRef90-H9K3A5 UniRef90-E2A5X9 UniRef90_G6DRS4 UniRef90_U6DLJ4 UniRef90_UPIO003B4B0B0 UniRef90_F6W8Q3 UniRef90_UPI0003C2A213 UniRef90-M7BLQ3 UniRef90-G3WCG1 UniRef90-Q7QC32 UniRef90-M7BE70 UniRef90_W5NCK2
UniRef90 H2PF61 UniRef90-l3JHU7 UniRef90-B4LC25 UniRef90-B5DPQ5
UniRef90 V5H0R7 UniRef90-UPI0003ACC47F UniRef90-W5K6Z6 UniRef90-UPI000329C1D9 UniRef90-A8PI13 UniRef90_UPI000441B347 UniRef90-G1KSK5 UniRef90_UPI00042BB92D UniRef90-T1JFQ1
UniRef90-G3NAE3


DSVLNF TRSHPLMDEAVAHKDNEPVFYLRDLFFTRGVVDV DELISFVRSHQLMWEPVYPQGRQPVLLRVNVPYLRRLLDH DDVITFARSHPAMYNPVFP $\square$ NNRPIMIKTDVNYTQUVVDR
DSVLNFTRGHPDMDSTVTHDNGKPVFYKRDTVFTRIVVDK DSVLNFIRKHPLMDKAVDHEFGNPVFFKRDIILTKLVVDK DETLVFAKEHPLLHGAVGPAGGRPLFTHTGTRLTQLAVD DSVLVRVKKSFLLENVVHPMDKTLLLSSAEEQYTRLAVHR
 $D V S V N F V K S H T L M D Y A V P A F F S R P V L I R \square Q Y R F T K V A V D Q$ QATLLTFIKEHPLMDLAVPAYFGRPVVVHFNYRYTCVAVDQ
 DELLNFIKK THPDMDEAVPSLGHAPWIVRMRHQLTRVAVD
 DNTL $\quad$ NFAKKHPLMDEP VPP QRGRPLPLK

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UniRef90_UPI0004571B16 UniRef90-UPI0003289A46 UniRef90-H2TB22
UniRef90-UPIO0038C1700 UniRef90-UPI0003444A6A UniRef90-UPI00027420B6
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 GAFVYFLAVQPASVPAVPGTLHTRLARLSATEELGDYRGL GHHVYFL FSRTLGIQDT KNYTFISRMCENDLG GAFVYYLTVVQPSSVIDSPGAQTRLARLNALDEADLSDYREL

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UniRef90_UPI0004571B16 UniRef90-UPI0003289A46 UniRef90-H2TB22 UniRef90-UPI00038C1700 UniRef90-UPI0003444A6A UniRef90-UPI00027420B6

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UniRef90_UPI0004571B16 UniRef90-UPI0003289A46 UniRef90-H2TB22 UniRef90-UPIO0038C1700 UniRef90-UPI0003444A6A UniRef90-UPI00027420B6

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[^1]:    D $\square$ T $\square$ NFKKTHSLMDETVPAFFGSPDLTRTMYRFTTDAVDQ GAVTLLDKKGARYTHVAADR ERILQDAQRLFLMNDVVQPVSVDPYVTQDNDRFSKLVVD\| KNILNDIKDNPELEEPI QPLGHQPLYTGGKEYTKVAVTR AKTLGVI RDHPEI EDVI RPLGKQPLALLTSDHFTKMAADT QKTLGVIKKDHPEI EDVI WPVGGAPLDLDTDDHFTHVVADT
    
     DEVLTFIKAHPLLDPAVPPATHQPLLTTSRALLTQLAVDG
    
     D E TLLS Q
    
    
    
    
     DKALTFMKDHFLMDGKVSPTQGRPLLVKTDVTYTRIAVDE DTTLDFVKNHPLMEKAVTPITGRPLLVRSTAQFSRIVVDK AVNFI KTHPLMEMAVPSLYSRPLLTKVHHRLTAI AVDQ
     ERNLQDAQKF LLMHEVI QPI TPVPYFMEDNSRFSHVVVDV
    
    
    
     DAVLNFLRTHTLMDSAVPQAGGRPVFFRENVVFLSLAVHR
    
    
    
    
     DELISFMRSHQLMWEPVYPQGRQPVLVRAPMD
    E N TVV S F $\quad$ I L L H H P L L H R P I Q S
    
    
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    DDYGNHDHYTVYYAATNEGRVYKVVQWYNDEGILLDTFDT RLDAESREYDVLFGGTDDGKVLKVVSRGPEVISLEEDTVTV
    
    
    VKTPDGKTYDVLFTGTDSGKVLKAVNSESPSTVIEETQVF $V$ LJVNDEHYSVLYLGTDQGKILKVLHTSEGVFIISQYSLF

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    UniRef90-A7UTV5 UniRef90_UPIO00443DDAE UniRef90 B4MRZ5 UniRef90-H2LUB9 UniRee90-UPIOOO3EAD430 UniRef90 G1KK42 UniRee90 UPI0003AFF8B0 UniRef90-UPIOOO3991333 UniRef90-UPIO00240C4C1 UniRef90 M7C0J9 UniRef90-UPIo002ADB34B UniRef90-V9KVO3 UniRef90-HoUXX8 UniRef90-H2MQV9 UniRef90-T11UH4 UniRef90-V5 50 т9 UniRef90 UPIOOO42BBCF4 UniRef90 ${ }^{-}$T112F1 UniRef90-G3PW34 UniRef90-H2LN12 UniRef90-H2LQD7
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    UniRef90 ${ }^{-}$Q291T4
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    UniRef90_E7FAU7
    UniRef90- F1QJ07
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    UniRef90 G6DRS4 UniRef90- U6DLJ4 UniRef90-UPIO003B4B0B0 UniRef90-F6W8Q3 UniRef90_UPI0003C2A213 UniRef90-M7BLQ3 UniRef90-G3WCG1 UniRef90_O7QC32 UniRet90_M7BE70 UniRef90_W5NCK2 UniRef90-H2PF61 UniRef90-13JHU7 UniRef90_B4LC25 UniRef90-B5DPQ5 UniRet90_V5HOR7 UniRef90-UP10003ACC47F UniRef90-W5K6Z6 UniRef90-UPI000329C1D9 UniRef90 A8P113
    
    

    PLGTPVRELVISSKKNT
    PPRQPIRSLLILHSRSE

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    TAC PVRNT
    APNEAI QVME $\quad$ QTRKS $\square Y G T D H R \prod K Q D \square A$ TPGEP $\backslash$ RVMEIS KKHKSUYVASDERVRQUDM
    QKGVPIVNLL TTKENVVIVSSDETASLSV GENEPVREMGLSSQKTGSLYLAMEHSVKQDDLA TRSVPVVNLMATSDQ SRTEPVVNLLTTPRDRQLVVVSSDEVACUDV
     SSNEPLHILRI LKDTNSLYUGTGSSVMKUSV
    
    
    ESPHPVRAMETFPK YKSLYVSSDFNTKQFHLS PHNEPDRELILS QKTGSYMATDHQVKQQDLA
     HDDSPVTNMA DPKKGH LYUGTQLEVQRLPLA

    PPGTPVKNTYV ANGNLIILTDDETQSTPV PTAVPVRNI TVQRSAYEDKIIVASQSEIRAVPL REPQSVENLVISRAOHSLYVGAPSGVIQLPLS ETYRPQRLLSLELDAASGGLAAFPRCVVRVPVA DEKGGFDVKTMQFVKDTMSVY\|GSDTGVVR\|S

    QTNEPTRTLET
    KDPQPVENLVI S KAQRSVYVGAADGVVQLPLA PASQKEPDQSLQDHSGRSLFVGLNNGVLKIPL
     REPTPISAMELSTKQ
     AAGSPVRADRVAAGRDAARLTAVSDREVLSLRL SPS
    HNEGPVLNMATDSQKGH पYVGTAMEVQRLPLA
     RREAPLSGLILDASTG Y Y DGDEDKRVMGMQLDKASSSLFVAFSTCVIMVPL
    
     HNEGPVLNMADDSQKGH YVATAMEVQRLPLA
    
    
    EVWQDGEDLKMEYLKVTDSLYLGTEQA DS TP PKNSPIINLM ATNEQLIVVSADEIAAVPL EKPEPPVQNLLLVPEKGQGYYVGYSKGVLQVPVA
    AKNVSTINLRVYTGLEQGQLIVVSDDETLSTKL HNEGPVLNMAUDSQKGH LYVGTAMEVQRLPLA

    PRVVVTPRGERVYTF PRNEKYPVFYHETNSSSTY YI S Y QDLMSSRFYDPETTWYSEMLFDVSRSQVI $P \square V S F N V L R P G L Y N F S F S G A V D F C Q D F \square D L D R N Q L I$

    RWDLTDHKDNRVKF
    NVFFYHEDSEEMY
    GREDYAVT LDE GNTVY HDEGNDSIC
    PGRLTPAEGADDLNTQRVLRVNRTGF PRDSAVWKGQDHVDFSQPE PHTVLFHEPGSFSVW
    

    WVS NFTYPGARDFSQLALDPSRNQLI $R \square D F G R A E P H T V L F H E P G S P \quad S V W$
    

    SF Q G LMS DNDTVR DG LDFQRM $\quad$ R $\square \mathrm{NHMLY}$ EAKRFSYEKNETQTVFYHEDGHPALL H TVLF HEPGSTSVW PVIS YKE $\square$ GP W $\square R E F R A K N A V D F S Q L T F D P G Q K E L V$【E P H TVLFHEPGSSSVW PR I LTAPQ GEKRFHLDKNES LT T LYYQKPS LLL YTHPD $\quad$ VGS VQAT $\square$ DSAHDQLI
    $G R \square A Y R R L L L D P Q S A S T Y$ QSYTVFLLDDSKEMLVY

    VF VGSGQRRFSSLDGSGAERLNDQRMLKVNRTLY
    F A S V
    FVHHSLPDSNVFSSGHLGYRRLLLDAQSASLY

    PS S VLHYS LN $\|$ LD FSFVIF DHNR NRTLY

    RPDNLFSRGD LDYRNLVLDANSASLF
    $\square P R D K \square T Y K D L L L S N S C \square P E G L D F Q T L L L D E E R G R L L$
    

    S VPRTS $\square$ P $\square$ SEAY $\square T$ RFT $\square P Q T Y N Y S V L L V D P A S H M \square Y$ PWLSSFSFPGAEGYSQLS $\square Y P$ PRAQLL
    $P R L V N D T D G F G Q H R F F G P Q E P H T V L F H S L N S S D V Y$
    PSPRMI FTEKEKAMTRFSLPHDPPVQLLLEDQQSDTVL
    RIUTKYGDETTEQFVGNTTGPNHFRILDKDDFSIL
    PRLTLKQDNAPLI
    PGMSGEHGEFMRY

    S VPRTS $\square P \square S E A Y \square T R F T \prod P Q \prod Y N Y S V L L V D P A S H T L Y$ S QPRLQFSFSELNGRVLSLPRVGDLHSILLDEDGRRLY $M V Y S Q E \underset{N}{E} \underset{T}{G} L \mathbb{L} L$
    RFSRNDTFQHLVLHPDPSVGTVY
    DNRYLY
    $T C S K G E L Q Q Q Q F S R P G V G G C S S L L L D T Y A A S L G$
    $I D T E K E A A M N R L N L P R D P P V Q I L L E E Q P D T V L$

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     EWECDEATKKACYSKGKS
    VGGEGMDYYYNFATSETYSVEF PVENGAQCDKPGSP VGARDTLFRMSLDLEPLQRASWGATPSEDAMCQAKGQS VGSRNYLFRLSVADLSKQAVA WKPDETTRQSCLSRGKT

    RDNLYRLSLHDDRE KMPWEVTPAMRNTCLDKGQS VGGTNYVSKLNVND TGAR QATWPAAKEKTSMCQDKGQS
     IGGVNKVYILNFT VK ПPVVDQKA DDDCNKD
    TGDRDNTYRVEDEPPTRYQRKLTWRSNPSDDNVCRMKGKQ VGGRGKVYHFNFPE GKNASVRTVNDGSTKGSCQDK VGDRDNLYRVELEPPTRYQRKLTWRSNPSDDKVCRMKGKQ
    

    VGARNY LFRDSGAVSLL QATEWASNEDTRRSCQSKGKT
    

    DN $\square$ FRFS $\square R \square D V I E R \| A \quad$ WDVPYYRA $\square C \square A K G Q T$
    DPDTDS DFRLS $\square$ GDDYLLE KAPWEAPNEKDNDCQDKGQS VGSVDRFF LRDMESDFELKADDPWQPDDSDRDFC K LMM IGGEGKDYYHDFA TDENYTEDFPVKNEGQCMMPGSS
    $\prod_{V} A A R D H V F A V N D A D S S E Q D P Q Q K D T W K T K D V A K C T V R G K N$ VGGKDKLYYFDFENSGNYTEDFF WSARQEKDSECDGKPSE
    VGGRGRVYHFSFPE GRNASMQTVADGASRGACADK VGARNYLFRDQEDLS DQAVEWECDEATRKACYSKGKS VGGRGKVYRFDFSEGKNVSLQTVNПSSTKGSCQD KADEKAEKDCKKRATL VGAEGT पYSFDFERASRNTEEKK
    
    VGANGHDFRDWAYNDNDTYAHTEDPVSQSDAEECRRAGH VAARDHVFSFDLDAEEEPNKYLTWRS QDVENCAVRGKL

    TGDRDNTYRVSLEPAMRYQRKDTWRSNPHDTSTCRMKGKH AGANGHLFKLWAYN $\square$ NDTYAHAELSVSRADADECRQNG

    EWSCTETTKSSCFSKGKS
     पY F Y $\square \mathrm{F}$
    $\square G A R D D \square F R V E D N V G D E M F Y T W E S N K N D \square S \square C R M K G K R$

    RDYLFRLSLDGLALLEESR WPAADEVVRLCQDKGQS $\square A A R D H \| Y S V D \square D T S N T E E \square Y \square T W K S R Q A D V D T C R M K G K H$ VGARGRDFRDWAYNVNDSENTVNVPPAEDSECRADGNS $\square G A K D H D F L S U V D N K N F K K Y W P A A K E R V E L C K L A G K D$ VGARNYLFRLLTDLSEWQKQHWT THSAVEWGCDEPTKRACYSRGKS

    VGARDTTFATSTPFSGEKPRRDDWMVPEAHRQNCRKKGKK RDNLYRLTLTSLTDLE HASWSAPEDKVNTCQNKGQS VGARNHLFRLNLSSLA VVQSVEWRSDESTLIACDSKGRS

    ## EWQCDEATKRACYSKGKS

    VGGNNTDY DF DFAHSSNASTALDNDTS THNTHR AAGQSYLNTYNFQNHKTSHKFMQW EKCNS IS S VGGRS TVYNGSLYDLS ENEQRDEWQSTVAHRELCLDKGKS $V G G S N D V L H F D V D S Y E L E N F T L N A N L P R C S E$ VGGHNKLFHDDFTSLNQSRED
    VGSEGAVFRLWAYNINDTGDNVFVKLSDSEESECRSTASD
    VGSEGAIFRLNVNDTGENVFAKKQLVLTDSEESECRSTAS
    VGARDT TFA LSSPFSGERPRRПDWMVPETHRQSCRKKGKK AA $\square K D H L V T T S L D N D T H G V R K L Y W P A S P D R D E E C E M A G K D$
    
     $V$ GSVNRFF LRRDMESDFELKADRPWQPDDSDRDFC KRMA VGCRGY GA KLWAYNDNDTAENRTFAVSNREESEC RTDA

    UniRef90_UPIO003504806 UniRef90-L8HYI4 UniRef90-V9KZ23 UniRef90_F1NIZ9
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    UniRef90_UPI000292ABFC UniRef90 ${ }^{-}$Q9QUR8 UniRef90_UPI00027FAF9D UniRef90_UPIO003F150FF UniRef90-F1QSE6 UniRef90_UPI0003F1A90B UniRef90-G1PAV3 UniRef90_W5NAW5 UniRef90_G5BRG5 UniRef90 H3EFT0 UniRef90-W5JWC2 UniRef90-U4UDG0 UniRef90-E0VPJ5 UniRef90-D1LXD9 UniRef90-R7VNM5 UniRef90-G1NM69 UniRef90-H2RRR6 UniRef90_UPI0003C2B02D UniRef90_F6TRJ5 UniRef90-UPI000441DBE8 UniRef90_UPI000443A03C UniRef90_UPI0001CE2E55 UniRef90 UPI00029DB53F UniRef90-G3TG15 UniRef90-H9G3G5 UniRef90 ${ }^{-}$K7FGE0 UniRef90_UPI000350D387 UniRef90-K1QUJ2 UniRef90-S4PIC1 UniRef90 UPI00042BFEA6 UniRef90-A8QBD6 UniRef90_Q24NR3 UniRef90-W5NDE2 UniRef90_X1XZ45 UniRef90-B4JDY7 UniRef90_K7FLR3 UniRef90 U1NQL4 UniRef90 B6E510 UniRef90-S4RH13 UniRef90-H2LSL3 UniRef90 UPI0003DF7F10 UniRef90-V3ZBI4 UniRef90-W5KPU5 UniRef90 F7AQT4 UniRef90-A0A023FMM9 UniRef90-B6E447 UniRef90-E9GTU0 UniRef90_UPIO002739D64 UniRef90_UPI00042AB81E UniRef90_A0A016TGY7 UniRef90 G1MV34 UniRef90_C9JYT6 UniRef90-W5KZ30 UniRef90 UPIO0033375F9 UniRef90 UPI0004571F99 UniRef90-UPI0003F077FE UniRef90_U3J163 UniRef90-A6QQH8 UniRef90_W4WV88 UniRef90-S4RU22 UniRef90-U6D4Q2
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    EDNKNFITLIAKH GNKMLVCGTGACNPTCWHLAEKEK ERLCRNYVRVLHSYGENQLYACGTNAFQPSCSWRQMENL EVECQNYIRVMLI NDKKIFICGTNAFSPTCTNRQPDDLC

    EEACRNHTMVLENF GNRVYVCGTYAFSPYCSWRQMENL IEGACSNVI TVIEKFQDS LFVCGTNGNKPRCWKDYSSVN VEDCHNYIKVLLS NGKSLFTCGTNAFSPECTWRKDENU
    

    > QDCGNY TTLLERRGNG LLVCGTNARKPSCWN E LDTVD EGECRNFVKVLLLRDESTLEVCGSNAFNPVCANYSIDTL

    EEECQNYVRVL $\quad$ VT GRKVFLCGTNAFSPVCSSRQVGNL
    QQDCENYTTLLERRSEG LLACGTNARRPSCWNLVNDTV CQNYVRVLAKQAEGQVLICGTYAYSPKCRIYRYDSE EENCRNYVMVLQSF GNQVYVCGTHGFSPRCTMRQMEDLD DEDCHNYDKVLL GNGNLLITCGTNAFSPVCTWRETNV VDTECHNFIKVIEKNDENKLLVCGTNAYVPSCRYYDDYTI
    

    SDECYNY KKVLVPRNDETLFACGTNAFNPTCRNYKMATL HCDDQANYLTFIDKVNDG I LVCGTNSCQPTCWHWENHQK QESALNHSILITPRVDSRSSAQMGTHRLSNNNSAGNCQAL RDCENH TGLLCPRVGPGAVCPGWGICSDPFCFPQMDY/L
    
     $N Y L T F I G K F E D K L L V C G T N A C S P T C W N G L D W N$

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    KSDCYNF\K\LL VHKDE|LVCGTNAFDPRCTWRAADNDLD MCRRYARHPP
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    AECFNGVRDMFKEGHQTLLVCSSNAMKPQLREDDADSL TDECYNYI RVLVPWDSQTLLACGTNSFSPVCRSYGITSLL NKDTCKNYI TI MYKNNDS LFVCGTNGGAPLCCYMVCKKQ MFDCKNH $I$ RVIQPMNGTRLY LCGTNAHSPFRNLTHLPRS
    EAECRNFVKVLLVRNESSLFVCGTNAFNPVCANYSMDTL HEECVNGVRLMFKEGRQTLLVCSSNAMKPQLRELDAVTL
    EEECHNYVRVLLVR GSRLFSCGTNAFSPDCTDRTLGNM DQEPCKNVVTVIVENYRTSLVCAANGLKPQCWELVGSPS

    MPDCQSHVKF DATNSPNTLFVCATGAYSPKSYQ DNDQYN HERKRNNYLVLMV REGFKFCGTESFF ILCSNHTGDTL

    EDDCHNY RRVLH VHGERTLACGTNAFSPRCSWRPVEAT KDECHNF $I K V L L K K N D D T L F V C G T N A F N P S C R N Y K M D T L$
    AEDCQPSTRF $\square$ AQDNKER $\square Y$ VCSSVGMRPE $\square R$ VLDAVTL ANTECANF $\square R V L Q P Y N K T H \square Y V C G T G A F H P \square C G Y \square D \square I F K$ LMMDERHYFRIVSILAEKKYHCQTVLFKVSSKNKAKSTA TEECQNYVRVLLVVGGDRLFTCGTNAFTPLCTNRTLSNL
    

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    ## ESPQDGRGLAPFTPDTNSLVIVDYPNTYST】KKSQQN

    N VTSVDSGVVKCPFHPQANSTSLLPNGQLFVGTATDFSG SKVLEK $\$ NGLARCPYDPRHNSTSVMTSGELYAATVIDFSGT VT RYDKGVAKCPFSPFANNTAHMDNGKLYVGTTTDFSG $N Q P P E V Y E G I G \square S P F \square P T Q N S D S L T V E G D L Y S A A P D D A D G$ TVVTSRMTGVAMCPYSPHSNVTAILARGQSFAGTPTDFSG LSVI IN GF GRGVSGYTPKQRTTSLYADRRLYSAVPLYRNG

    QPVGDNDSGMARCPYDPKHANVADFSDGMLFTATVTDFDA SVVMSLGEMKGYAPFSPDENSLVLFEGDEVYSTIKQEYNG QPVGDNDS GMARCPYDPKHANVAL FSEGMLFTATVTDFDA ESLGEK GRGYAPFSPDENSLVLFHGREVYSTVKQEYNG S LE $\square K M E T G K G K C P F E P S Q P Y T A V M A G G \square L Y T A V T S N F L G$ HHGWASWGGGELYTGLTADFLG SRTMEK】NGVARCPYDPRHNSTAVISQGELYAATVIDFSG VPLGEM RGYAPFSPDENS LVLFEGDEVYSTIKQEYNG FKVYEQFDGEADSPYSPHDNSTAIYKTDEIIDSGTVSDFVG S SVHRDDDGVAKCPYNPHANMTALMETGQLFVGSVTDESGG DVVHGDGMGIAKCPYDPTDNSTAAVWVENGNYSGTNAEFTK QNTEEFTTGLYKSPNHPGPLNTAVANGSLYVGTAASTA RRERTAWDGRGDAPFTPDSN TLVVVDGHDIYSTAKKSQQ
    TVTSSKNCGKGUATYYPNQTSISLVVEKDLYAAAPFNGRN TISSKNGKGIATYYPNQTSUSVVEKDLYSGTAADFMG
     TLCPTVEPGVAEPGLEPRSPSSPAQVLSVMYSGTMNNFDG EPMGDNDSGMARCPYDPKHANVALFTGGMLFTATVTDFLA QA LGEH G RGYAPFSPEENALVLEDGDEVYYTVKQEYNG

    PCA LIRGGQWLLYCGTADGMDFRGWKEVYSTDKQEYNG QQDKEGHSADNVVPPLLSQEAVAVADEGNLYSAVSGKKGM ESSPARGLAPFAPNQNSLVLVDSPDIYSTINLHLDH
    TVIIDTDDADGFCPFSPKHNSTGVITSKREYSATSVDSAE NHHLEEFDGTGRCPYNPQHNSTAIFTDGHLYTATAADFSG QERSSPENVIGVCSAHVD $\square$ NTWPRRLDGPALYSATLNNFLG QQEGEELSGQARCPFDATQSNVAIFAEGSLYSATAADFQA HKVVVMFLABNDMYRDYCRFDYSVYGHGNLHVKFSVYTYV EYVPGVGLGVAKCPYDPDDNSTA乌YVHPALYSGTNAEFTK EP $\square$ GDN $\square$ SGMARCPYDPKHANVALFTGGMLFTATVTDFDA RERSSPENVIGVCSPDPNLNTTNPDDIPAIYSGDRTGLSL
     WRGSPFSYSQNSLSLLFADGDLYAAAPSEVDG $K \square S \square Q S E S G \square G M C P Y D P F D N A T A V L V E N D N Y S G T V T D F D K$ EMVGETVSGMARCPYDPKHANVALVAELVHLCPAVASRFL NSTA $\square F A D G D \square Y$ VATVGQ $V$ Y SAT SLLNFLG DVVSEWSSGVARCPYSPHSH $\operatorname{DSSLLSSGPTY\square GSPTDFSG}$ DSLGDEFSGMARCPYDAKHANVALVADGKLYSATVTDFLA
    RDRQEPRTE $\square G \square C A P D P T V N A T A V I V E W G N Y S G \square R T G M A G$ PAAPCPHCPADGQLYSGTSSDFMG
     SEIHEHISGMARCPYSPQHNSTALLTSGELYAATAMDFPG GELYAGTAADFMS

    QQVERLESGRGKCPFEPAQRSAAVMAGGADYAATVKNY $\square \mathbf{G}$ TSVTSEMSGVAMCPYSPHANVTALLSRGPSFAGARTDFSG
     D ENSLVLVFGDEVYSTIKQEYNG
     APMCDPSENIACERFNDKEGEPSVEDDSEQSAALYITHSG NHSLEEFDGTGRCPYNPQHNSTAIFTDGHLYTATAADFSG HSVVKSVEGTG $\square$ SPHSSEQNSLSLVADGDLYAAAPLYSDG GDSTR IYYGAGASPYSPREPVASGVVEQQYVGMT QDQQEPRNE $\backslash G\|C V V D P T F N S T A V V V D N G N Y S G\| R T G M G G$
    QQVERDESGRGKCPFEPAQRSAAVMAGGVLYAATVKNY $\square G$ LRPGQTECGKGKCPYDPHQRTATAIIDDGELYAGISSDFMS TVTRYDKGVAKCPFSPAANNTALMDSGRLFVGTTMAFSG QQEGEEDVGQARCPFDANQSNVAVGAEGSLYSATAADFQA
    $F S T E R P V D T Q Y V A A N D P S V S T V G L V V R P R T V M Y V G R G Y T A$ FSTERPVDTQYVAANDPSVSTVGLVVRPRTVMYVGRGYTA QNTEEFKEGLYKSPFSPGSLNTAIFAYGSGYAGTASDAMK

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    TDAIVIVRSLGDSPRTVKHDSKWFKEPYFVHA
    VE W
     $K \square P R F R R V K G D G E \quad L Y T S D T V M Q N P Q F V K A T T L R H E E P Y$ S DVAlLRTGVQSNERFLRTKQYNNNW LNGAQFVGSFEA RDFAIYRSLGNAPPTVQYNSKWLNEPNFVSAYDI MGHRSSLRTEMDQRLLNAPKFVAAYMIPNDDRD SDPA LLRADSRMLRTNQYNSKWLNDPQFVGS FEH SF LQQFRRKAGGRTSVWMY ENWVTDPTFVISASWVQRDDPD
     KNLQFRRDYGKRKQVW TDENWMKSPKFI GVVSHIKRDDPD
    
    
    $K \square P R F R R \square E G E S E \quad \square Y T S D T V M Q N P Q F D K A T D V H Q D Q A Y$
    
    RDPVIFRDPSDSRLRTRQNSKWLNEPDFVSAYEV

    RDPVIFRDPSDSRDRTRQNSKWLNEPDFVSAYEV NPEGD
    
    

    ENHLIVRPALVENGKEVHSSMRTVYTDNRYEPQFVGSFDV S SAAFFRTEVGY IRTEQHQDHWLHEPTE円GAFAIPDHNPH KDTAFTRS LGHHY RTDDSEHYWLNGAFIGTFFIPDYNPD DRSATRRTPGPPPLTPSPTFRYRKEPHFVSAYEV RDPAlYRSLGPPLRTAQYNSKWLNVGVGTQEPAGRGLLQH RDYAIFRTLGHHHPTEQHDSRWLNEPRFVHVQLIPESDNP

    TEP $\square$ IS RAVGRDWVRTET $\square P S W L N A P A F V A A M A L W G D E D G$ ADPAI YRTLASPNLRT
     $K \square P R F R R D Q G E D E$ E LDYTSDTVMQNPQFIKATDVHQDQAY SGHKFRRVAGQVE
    SGYTSSDTAMHRPQFVQATAAVHKNESY
    SDSVGIQKFGKAGVGPKNHDKEQHYVGDVLSK REEDPS
     TLLQFRRKAGKR DNVWMHDQ WVSEPTFISSFLAKRKNDS ENHLI YRPPHASTRTTYSDNKWLNEPQFVGSFDV ENHLI YRPPHASI RTIYSDSKWLNEPQFVGSFDV

    HPQRHVTWEPRDRDNCAMRGRRQPHFVQADPY
    TEP I ISRAVGRDWIRTETDPSWLNGPEHGRASSVLQDMA D RDTAFFRSLSSRHRTEQYDFKWLQDARFVKVASVSESNPE
     SHPPI STRRHLSLKKPI FSYEETAKLDAVASEYDHHFVTAFTR S VI ARS IENDDSLNT DDKTGDHDSRWLNDPDFISSSFDD ENHLI YRPALMDMRTDYTDNTWLNEPQFVASFD

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    UniRef90 ${ }^{-K 7 F G E 0}$ UniRef90-UPIO00350D387 UniRef90-K1QUJ2 UniRef90-S4PIC1

    210
    220
    230
    240
    RSHIVYFFFRETAMEFNY LEQVVVISRIVARIVCKNDMGSQRVL GNFTYFFFRENAVEHD CGKTVFSRAARVCKNDIGGRFLL EDK YYFFRSEVADEYNFKSEVLDSRVARVCKGDKGGQREL GNFVYFLLRESAVEHLSCGKVIYSRIARVCKNDAGGGRWA DPFVYFFFREHNVEADCGATVYSRVARVCKNDVGGRFLLI NDKVYFFFTEKAAESDSKGHAIFSRVGRICVNDAGGQRVL
    GEFVYFVFREAAVEYDNCGKIVYSRIARICKNDPGGTQQLL
    

     DDK YFFFR | W W1 |
    | :--- |
    | W |
    | F |

     GSHVYFFFR

    |  | D | V | $Y$ | $F$ | $F$ | $F$ | $T$ |
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    G
    D DKAYFFFLIRE
    
    GDFVLFFFRE
    GKFVFFLFRRE
    GQEVFFFLRE
    
     KNHVYFFFR
    EDRVYYF
    $F G V A S V$
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    俍
    
     TSHAYFFYRETAVEYMNCGKAVYSRVARVCLINXGGPHPF GKYVYFFFREVAIERENCERVVFSRVARICKKDVGGKNVL
    GDHVYFFFREVSVEDARLGRVOFSRVARVCKRDMGSRAL QDKVYAFGREKNLDEHPEADLWISRVDQLCRDLGGPKNDL GEFVYFFFRETAVEFUNCGKAIYSRVARVCKWDKGGPHRF WRPSPRW S LLQVVVS GSYVYFFLREVAVEHENCGRVVYSRVARLCKKDVGGKNVL DDKVYFFFTEKSQELSPYSHSRVARVARVCKRDRGGLLTL
    
     GQQVYFFILREVALEYQNCGKKVYSRIARIVKNDRGGKAVL
    EDYVYFFFRESAVEFTNCGKTTYSMVARVCPNDDGGQRSLL
     DNFVYFFFREAAVEFSNCGKAVYSRVARVCKNDLGGGQML GDY $\operatorname{GFFFRE\square AVEYNSMGKVVFPRVAQVCKNDMGSQRVL}$
    
    GEHVYFFFREDADESGGLERNVYSRVARVCKKDVGGRVVL DDKDYFFFRESSQEGSTSDKTILSRVGRVCKEN GRFTYFFLRETAVEQDCGKAVYSRVARVCQNDVGGRFLL DDK WYFFFRENALDGEYSGKATYARDG NDFGGHRS GDLGGRKTL
    DDE $\square Y F F F T E \square A R A F D S Y E R \square K V P R V A R V C A G D \square G G R K T L ~$ RQYDSMY KIYSRIARVCKNDRGGQ GHFAYFFFRERAVGDGGAGGGVVSRVARVCKNDQGGRYLL DDKDYYFFREDNPDKNPEAPLNVSRVAQLCRGDQGGESSL DDKTYFFFQENSHSDFKQFPHTVPRVGQVCSSDQGGESSL
    QNRVYGFYREKSKDNGLEREMWLPFVTRVCMADVGGPKNLJ NEKIYFLYREKAVEYMNCGKSVYSRVARVCLNDKGGPHPF
    
     DDKVYVFFTERAQEAEGSGKVLYSRVARVCKVQWRPLPFL GEFVYFLFREAAVEYIDNCGKIVAVD
    GDHVYFFFREVSVEDARLGRVQFSRVARVCKRDMGSPRAL GTYVYFLFYRRDIKSPSRD YRTYVARVCDEDTS
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    EKQWTSFLLKARLLNCSVPGDSHFYFNVTHAVTDTLEDNGRP
    EDTWTTFMKARLNCSRPGEPFYYHELQGTFFLPELDL
    
    S S K WT T F L K A S L DCDVDPA T K GN F N WL Q D V F FVVPA S N WR D S
    K E NWMSFLK A RL HC SLLPGYP YYFDEVQGMTY A A S E
    ENTWTTFAKARLNCSRAGEPFHYNELQSTFYMHEQDLM
    VNKWSTFNKARLVCSVPGPDGHFDELEDVFLLRAKDGKNP
    

    ## E <br> V

    ## E

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    NS RWT T
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     QK K WT S I L N Q N WA T Y L K A R L N C S I A GEPFYFNEI QDVYQMPTD
    
    
    
    
    2
    N VVWTS
    EKQWT
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    EDTWTTFMKARLNCSRSGDPFYYHELQSTFYDPEQD PRDPEAVGDPRFNCSRPGEPFTYNELQSTFLLPELHL
    
     QQRWTTFLKADLLCPGPEHGRASSVLQDVAGLRPEGGAGP KDVWTTFSKARLECSLDPGEPFYYDELQQGAAYHPEEG
    
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    QNDWTSFGKARLVCGUPKESLYFNRLQDVFVQHAEDWRDS
    
    
    $\qquad$
    C S LPGDPFYFNEDQGMVYSQ
    E E G
    DRHWTSF LKLRLNCSVPGDSTFYFDVLQALTGPVNLHGRS ENTWY T Y V E EI PRLVCSQSHSPRSYNLLQAAQVGHGPGLQGE RNVWTSYVKARLNCSDSAR FPFYFDHDOSVSRVEDEGD
    

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    VLY ATFTTPENS THGSA CAYNMSA $\square$ HAAFS GAFKY QDS AL F GVFTTQTNRLVLGCV
    $D L L G V F S T S D D P S H E S A L C \square F S L H E D D R Y D N S T R D L C Y T K$ D F

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    GMRYNSS
    
    ADAAWQT VNTKQRNQFQCTSSSPS ENSRSAWLPAPNPDPNFQCGTLKSGPN D PD H QWA A YEGKVPYPRPGVCPSKTTNQPSYSSTKDYP ES S LG A WHRQDAQHRDHFECHAGPTARHVSLIDSSK
    D GAA WERKHVASHSQYKCGPNS $\square$ GTPGRPGTCVRNSKS $\square$ R
     T LLPNPRPGTCHVKSQQLF E GPTHQWVSYQGRVPYPRPGMCP SKTGGTFSSTKDFP PESDWTPVPEDQVPRPRPGCCAAPGMQYNA HMGDPNPRPGMCDPKKQPIP GHGHGQKGPDFTPQ DRPGC $\square$ AVACVGVSASGCTWDT RPML
     $D G P Q H Q W G P Y G G K V P F P R P G V C P M T A Q P G R P F G S T K N Y P$ ENPRAAWLP DANPI PNFQEGREVGPGEHTY
    TS GVQDGRERGTAPLCSQCPG
    GTFTPGVRTTKDFS HMGLPNPRPGKCLPNQKP IP
    GSSQWTSL PRSEIPSPRPGSCSPDSSKLP
    SGSAW KAQEVTNRDHYECRGTSSSGR
    VSHSTQPGRKFGRFQASSSSSSRVPEPRPGTCVNNTGSLP PGAAW EKDYSQNRDHFECEAPSDTRHLI DSSK
    
    NSRETN
    RD GPNYQWVPYQGRVPYPRPGTCP
    SESVWTPVPDEQVPKPRGDCR
    SKTFGGFDSTKD $\square$ P
    FEPTTSDSHARADPTESRCPDSAPDPWSPA CSSERTP
     G

    | QDGSRRWGRYEGGVPEPRPGSC FSGSLPNPRPGTA <br> YTANMPTKRPAQCL |
    | :---: |

    VNRETQQWYTDTSPVPEPRPGTCITSHTRHDKDNSSLQMP EGARYAWERHNNKEPSLQKCPESSTLKRSSQSTETEK $M N S N W L P G P K E K V P$ M QA QK WGRYSDQVPSPRPGAC $\square$ T DWHRQN LDGSWDTTSPKNVPEHRPGA $L D G A W T P V S E D R V P S P R P G S C A G V G G G$
    SNSAWDPVMSSK\PEP
    DNS NWLPVNNAKVPEPRPGA
    TP P A WVGCPRSSVLLLPS A
    QSLPNP
    A $A$

    AHRPGC CA AGSSWTTTPPESVPPHRPGTAT EAALLQCVANSAA T KEDSNSKWTQYTGKVPEPRPGSCDTDQHRAKGINSSINLP EGPRAAWMVHPNPNPNFQCGRVSEGPN
    \N S NWLRVLPEKVPEPRPGA
     $C V K D S K$

    VDTLQTFPCDTTSPETEPGGCAVQGSKFN EGPNHQLIPYQGRIPYPRPGTCPG GAFTPNMKSTKEFP

     | V EMSDVKWVTYSGDLPVPRPGDCINNAART |
    | :--- |
    | $P$ T S T WESVHSTHAHSHCSSHHPAHSSSSSS |

    
    K EKASY $\square D \square$ I NKFYNSYFSCGTVGDGGPG
     ENSRSAWLPYPNPNPRFQCG F GGFQSTKDL
    

    AGAAW ERRPVAHHNRQRCGSSSDTA EHPRGPWSHRQNPDPNFQCGTASGEEEEGTGV HASLPNPRPGKCLPDRQPIP ENSRSAWLPYPNPNPNFQCG HHKLPTPRPGQCMKNHQHVP A E MDRPRMCVDDSTKLP

    GFSEA TPNPRPGKCVENSNSLP
    
    NGQFSVTADE EDANGQFSVTADEDPAHRPGTCSS $G T G T W \square P V P E D R V P H P R P G \quad C C A G M G T A S G V V T S G D F P$

    LGSAWHR
    QDAQHRDHYECNAGPTAR
    DGRGEGTGEAY $\square E$ YEVK S S CAN $\square P V N T \square K A Y P C G S$ AKHAW

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     SETEKIADSHPEVEDRVEPGAPRSPLFHNKHRYQKIGVHE
     DEVLHFARAHPLMSKSVYPGHRRPVLVKTQHRLRQVVVDR
    $\square A T \square N \square V K$ Y QLD QAVQP
     $P A M L Q V V K D H Q E V D Q W V Q P I G D R T P L F F G R T P Y Q K I T V D Q$
     TETFQVADSHPEVAQRVEPMGPKTPLFHSKYHYQKVVVHR $M L V A C G G R G H T W P A X P L P A L S P R \quad H Q L T R V A V D$ TETFQVADSHPEVAQRVEPTGPRTPDFHSKNHYQKVVVHR DKWPEATHH
    DEVLQFARAHP LMFWPVRPQQGRPVLVKTHQQLRQ VVDR
    $D E V V N F D R T H P \square M Y \square S V Y P L N R R P L V V R T D Y R F T T D A V D L$ TQTFQVADSHPEVAQRVEPMGPKMPLFHSKYHYQKVVVHR ESTVSFVMRNPLMHQAVSSLRGPLFVEGSSRLTQIAVPS HMSLIESSKYQLMDQAVQPLMGRPLHHAELERFSHIAI DID DTVLNF DRSHPPMDSAI MHEYEKPVYFKRDILFTRGVVDK YNDLLFFKSHTLMS DTLNPSSGYPLFTRQDYTLTQQVVDR
     DEVITFARSHPAMYNPVFPINNRPIMUKTDVDYTQUVVDR
    SETFR\ADGYPEVEDKVQP $\square$ NKKAPDFHNKYHYKKDGVHE
    A ERNLQDAQKF ILMHEVVQPVTTVPAFMEDNSRFSHVAVIVV $S L V L D F V K L H P L M A R P V V P T R G R P L L L K R N D R Y T H L T G T P$ S D RVLN
    

    DET LSF $\square K$ S HP DMDSAVPP $\square A D E P W F T K T R V R Y T A D E D D R$ DSDLHFAKSHLMMAEPVS GGVPILPTRDVVFTHIVVDV DEVISFVRAHQLMWEPIHPLGRRPVLLRANVPYRRQLLVH
    ERSLQDAQRLFLMNDVVQPDSVNPLISQDNDRFSKVAVDIT ERSLQDAQRFILMQEVVQPVSEVPAFMEDNSRLSHVVVDV DDVITFARSHPAMYNSVLPINNRPIIIKTDVDYTQIVVDR DRVLTF $\square R D H P L M D T P V L P A D S H P L L V T T E T V Y V R V V A H T$ DEVITFARSHPAMYNPVFP $\square$ NNRPIMIKTDVDYTQUVVDR
     SLEDRHKQVLMQGVVRSATGTPLY
    TDTFQVADSHPEVAQRVEPMGSKA PLFHSKYHYQKVVVHR ERNLQDAQKFFLMHEVVQPVIPDPYFMEDNSRFSHVVVDV TETFQVADRYPEVADPVYQKNNAMFIIQSKYDYTKLLVYR VE TLKKIDEKTSEMEQLVHPVGNS GLLLENHQSYTHUQIDG
    $\square P T \square K \square I K D Y P E M K D W D H P D Q K D T P F F T S S K N F T K D V V D Q$
     DNDLHFAKTHLLVADSIS GGAPILPLRDFIYTHIVDVT
     DE XKEHPLLHGAVAPAGGRPLFTRTGTRLTQLAVDA
    $H V S L L D S S K Y Q L M D Q A V H P \square T G Q P \square H H T Q L E R F G H V A \square D V$
    D H T PSPMANREP LK TKPAWHTSSGRLTA VAVSV Y N D L L F F K S H T L M S D T LT FV S
    

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    UniRef90-G3H2Y9 UniRef90_UPI0003941D9F UniRef90-UPI0003F0838D UniRef90-H3G100
     VQARDALVHIIYLATDYGTIKKVLTQTSGGCVLEEMELF
    
     $V Q G P D \quad N L Y H V I Y I G T$
    IVEAED GHYDVMFI GTEAGSILKVIALQRGNVVLEELQAF I PTKLHERVHVIYVATDAGLI KKISVLPRKSTCVVEIWRP
     $1 V G K A G L I S H V L Y L A T E N G K I Q K V V E I N E S T F V I S E I K V L$ VRGADGVLRKVLLLATGDRKI HKVVEDKHTPFNMLEI HPF
     MQASNGETFHVLYLTTDRGTI HKVVESGDQDHNDMEIQPF VGA GP WGNQTVVFLGSEAGTVLKFLVQPNASTSGTSLEEF MQASSGETFHVLYLTTDRGTUHKLVELDEQEHNDME IQPF
    VEAED GTYDVIF LGTDSGSVLKVIALQGGEVVLEELQVF
    VDAVDGR YEVLF $D G T D R G T V Q K V I V L P K E E D T L E E V E V F$ MQARNEGTFHVLYLTTDRGTI HKVVESGEREHNIMEIQPF VQSVDGGRHTVIYVGTSDGRVVKAIQIGNET VIQSALVF I PTKLHERVHI MYVATDAGRI KKVTVLPRTK VRVGAVVDYTVYYAGTNNGQVQKIVEWTNEHSDLLDDFDV LPTKLHTDVHLLYVATSDGLI KK SVLPRETCVVVEI WKPS VQTGS GTYDVMFI GTDHGQVLKVVNGQQKSNLIDVMYVG
     VDAEDGQ YDVVFIGTDGGTVLKVVSIPKETWHLEEMTVF
    VQAVNGETYNVLYLVTDKGYTHKMVEMPHGVLNDMEDQPF ARGLDGHPYLVLYLGTDSGRLHKVVVAPREAYLVEEI QLF AAGPG RNYTVVFLGSDTGTVLKFLIRAN
    
    
    
    
    
    
    

    VKRRANSSHTVLLMSLAEGLKYKVLEANGKPF\|ISEDYPF
     LPSVNHNTRK $\square$ FK L LSHWEG AVGSESQLLASYELEAS VT
    MSSGRTAVQH L LY $L A T E R G T V Q K V A A A T G C V I D E M E L L P A$ VKAADQREYNILLLATDTGLI HKVLEAGSEPFIISQTQ, I
     TNAGPHGNRTVLFLGSSRGTI LKFLVVPNQDNTLEELEGY VNAADGK YHVLFLGTDKGTVQKVVVVPSGELILEEMEVF V ETVSGKKYDVLFIGTDTGRVLKAVNVTGQPVLVEDVGVF VTAADGQSY $V A T K \square H S F V H V L Y V A S R D G L V R K Y S V L P R E A C L V E \| I D P L$
    SA GPYQNYTVIFVGSEAGVVLKVLAKTSPFVLLEEDEAY IFADDGRTNTLWKASHWRGSVWKWVEDERRT RLEAEGRHYDVLF LGTDDGKVLKVGLPGEEAVSDEEDSVT
     VQARDLLLHIMYLATDRGTIKKVLGPTAGSCLLEELELV VEAEDGQ YNVMFI GT $V$ S S L G GRDYNVLYL GTENGHLHRAVQDGRQDSVLEDLALF $V D A E D G Q \quad Y D V M F I G T D \square G T V G K V V G U P K E T W H L E E M T V F$
    
    MQASRGETFHVLYLT T DRGTDHKVVESREGEFNDMEDQPF VQGKDMLFH II YLATDYGTIKKVLNQTSSSCLLEEIELL VEYGGVFWATI FYLTTDKGTIH IVVRYEDSNSNILEINPF SPNRRTSHHTVIFLSLNNGGIHKVLHNKNDTFLIAEFRPF
    
    
    LQQ NQNVIFAFDKMWKISHWKEGNEWKWNLI EXEKAL
    $\underset{G A}{ } \quad G P W G N R T V L F L G A E D G R V L K V L V T P R Q P G D T R P P T G T$
    
    $R D G$
    HS $\square$ AF $\square$ GDSRGT $\square H$ K $V Y \square G R D G T V E V Y E N T T \square$
    

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    UniRef90_-V9KZ23
    UniRef90-F1NIZ9
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    $K$ VPVP DTEMEDSVKRQ MWYVGSRVGVAQVK $\square$ EPSSESK\|RTI QYVKETDSLYVGTDTALSRI S
    
    $K \nabla P T P \square T E M E \square S V K R Q \quad M \square Y V G S R \square G V A R Q L$
     REPTVISAMKIISTKQ

    QNRVPVQSMTLDHTRA K पY पGSDTEVVQVPM PKPTPVRELLLDPHQ

    RRPAPDQTMNDDAKR RKLY LSSQWEVSQLPL PERRQEHDRSLQLLHSQSVLFVGLREHVAKVPL REPQSVENLVISLL QHSLYVGAPSGVIQLPLS KEQEPVSSMDLDAS STSHLFADTKAEVTRLPLA PAGQPVLQLLLDHDQG
    PNGDFKPIKQLRTSKEHNALYVF ILNKVMRTPL PPGVPIKQMHVALSKTTEKLIVSSGDIIKAVTLS EPAQPI ESLVLAHQKSTGSV KSTGTVFAMTLLP GEFVYVSGEDSVAQYF■A
    KKKTYTQSMLLDSAK KKLYVGSSEEVVQTDL APNEPI QVMRLS QRYRSLYI GTDSRIKQIDL PKSEPURNLE DDGSYDDGKLIIVTDSQVIDAUQL
    QSAFA $\square$ ALL PTEF $\square Y V S A K S V S Q Y L L$
    $V Q Q Q P \square R A \square R V D P G G E A L F V G V D G G V L R D P L$
    SNNSSVQAMKLDSKK KKLVVGFSEKI STMDL KYGQAI KDLLVVHLAGEASLVVFADSEI RAVPL EQPTPVWSMSLH NEYVYLGTDTSVVQLNV NPEKII SKMV
    
    
    ESEEDRKVVSLQLDKDHHALYVAFSSCVVRDPLS AAGGPTKAMTLLP GEFVYFASRSTVSQFTLA EVPSPILDMKLSPKRQE LLVSSTQGLLQLSLS
    
    SEPQPTETMKFY QAWVLVGSRTEVTQVNTA REPTVISAMK四STKQQ LYY GSATGVSQLPD
    EVWGP पPSMT पQF पKDTQS $\square Y$ VGME $\square G \square L R \square P$
    HHPAA $\square Q A M S L D T E R$ RKLYVSSQWEVSQVPL PKSQREP IRSLQ\|LHSQSVLFVGLQEHVDKVPL QKPAPDQNILL DNTNLKL YVNSEWEVSEVPL NYTEQISFILJPSSK KLLYVNNGSQLVQLDVA

    KKKTYTQSMILDSAK AVTSKI NDVAL K I S S K I N DV A L L P
    

    E $\square$ SRESR $\square R T \square Q Y$ VKETDS $\square Y$ VGTDTA $\square S R \square S$
    HPNSP $\square$ NSDLL $\square \mathrm{DQNGGH} \mathrm{\square Y} \mathrm{\square MTKTTVERPVA}$
    DVHGKTMA SALLPHEFTYVSTSSAVGQFSTA $K Q E A H V L S I I L Q S \quad T F K K L Y V N N G S Q L V Q L D V A$
    
    PNGTHLQHLARDPSSGTLY FSH NTTKFLHLTMDSVTGTLY RTFSRNGTS FNHLAVDPRSGTVY SNYTSLLV
    S F S Y NGT
    RFRHLV RDP LS GTLY
    

    PRPRSTFHSGDPRLTHFSQANVSHYD $\square$ F LLREDEEELY
    PNGTH $\square$ Q H LVRDPTSGTLY
    PRDPVRSTPAD $\quad$ VRFHDPEVKRMNHLVVDKNTGRVY HFTANNTV FQHLALHPDPGTVY

    RFSRNDTEFQHLVLHPNPGTVY $\square$ I E H L A L HPDPSVGWVY

    S $\square$ P F S G T H
    TFVQNNTQEFNHLTMDANTGTLY RFTVPNTT FNHLAPD SIGGW Y TFIQNDTFEHLALLHPDPDVGRVY
    
     NRTLY
    S P T P R
    

    QRFSAPNGT
    FNHLALDAPSQGTLY
    S DPEDQRFSGNDSHSDDFKLILRDGDFLI
    $R F S$
    
    

    TEDSHLTVNHETGTVY NVTRYNNTKLFDFKTSLYDKNESSVL

    $$
    \square N H D A V D E A S G V V
    $$

    
    SAPGSQ FNHLVVDRNTGRVY
    SRPWKLEFFRSKT ELNHLVVDEVSGTVY
    TELNHLVVDEASGVVY
     $S F V V P N N T F N H L A Q A Q S T G G L F$
    
     PSVRWVELRGAPLSHLVLDSPSGLLY

    TELNHLVVDNASGVVY
    GRLAYRRLLLDPQSASLY RFSAPNTT FNHLALAPGPGSLY RFFAPNTT LNRLALAPG GTLYFSRSEE LKFFQS
    T D SVLV N YGGHV
    FTDPSTDKF LLHMAI NSYTGQVY SSSED $\square V A E F \square N P N A D P F E R M V I D P S T G R L Y$ NSTREGPDRENHMLLDR
    

    TELDNHLVDEASGMVY
    SQNGQEVFEKMAID PSTTRVF SFHSENRWAFNHLTVHQKTGSLY

    TELNHLVVDDVS GTVY
    
    

    UniRef90 UPIO0044100F4 UniRef90-UPI0003346A03 UniRef90-G3WU85 UniRef90-U3KE08 UniRet90_E9GC26 UniRef90-W4X4Q4
    UniRef90- UPIOOO332EF54 UniRef90-UPIO003C2858F UniRef90 H2ZZTO UniRef90_UPIO003FOD243 UniRef90 UPI0004549DE1 UniRef90- H2L6Z4 UniRef90-UP10002C34ECB UniRef90-H3B6V5 UniRef90 F7AB92 UniRef90-UPI0003834FCD UniRef90-B6E512 UniRef90-UPIO0046B3F12 UniRef90 H9KTC6 UniRef90-UPIO00440BC54 UniRef90-D2XNK8 UniRef90 G3R724 UniRef90 UPI0004443D95 UniRef90_UPIooo3B519B9 UniRef90-B7SV99 UniRef90 ${ }^{-}$AOAO44RTQ4 UniRef90-M3ZYL6 UniRef90-F7AJF2 UniRef90- $\mathrm{H} 2 \mathrm{~S} 8 \mathrm{Z2}$ UniRef90-UPI000350A86B UniRef90-UPIO003942294 UniRef90-UPIOOO333C264 UniRef90-UPI000328A66E UniRef90-UPI000440FE01 UniRef90-B6E518 UniRef90-UPIO004410268 UniRef90 - 13MB85 UniRef90-H2NX35 UniRef90-W5NR54 UniRef90-HoWM62 UniRef90-H2UK41 UniRef90-T1KQRO UniRef90-D6W8D3 UniRef90-UPI0003D6EBFE UniRef90-UP1000454BE8F UniRef90-K7H893 UniRef90-F2D167 UniRef90-W5UBZ6 UniRef90-V8POC0 UniRef90-G1K9V2 UniRet90-Q6VZT2 UniRef90-O4SW25 UniRef90-015031 UniRef90_T1HE73 UniRef90-H9JFE1 UniRef90-UPI0003504731 UniRef90 F7ANH4 UniRef90 L9JFE4 UniRef90-UPIo00443BF10 UniRef90-UPIOO04421238 UniRef90 UPI0003EC3C25 UniRef90-UPI0003F08D9F UniRef90-Q4SLZ5 UniRef90-Q29CU7 UniRef90-A8XED9 UniRef90-H9KD75 UniRef90-F6Y6P2 UniRet90_H2SFJ1 UniRef90-L5KAJ3 UniRef90-J9EG71 UniRef90_UPIooo33179B9 UniRef90-EOVB65 UniRef90-E1BST4 UniRef90-A0A016VW49 UniRef90-B7PTP7 UniRef90-A0A044TGW0 UniRef90-M3ZMM2 UniRef90-A0A022T6K1 UniRef90-UPIO00443AFOA UniRef90-UPIOOO42COD50 UniRef90_UPI0003EC2901 UniRef90-UPIOOO46BDEE1 UniRef90-E3MXT1 UniRef90 - W5MYH1 UniRef90_B4K210 UniRef90-G3W8L7 UniRef90-G3NFO7 UniRef90-E9H8X8 UniRef90-A0A034V9L5 UniRef90_AOAOB4V
    UniRef9__G3X755

    LGATNFLFQLSPELTLEATVPGPVLDSRDCPPECPQA LGATNFLFQL TSDLLLENMVQTGPVLDSKDCLPPECPQA WPADDKAVDDCQL NSQ
    VGATNFLFQLSPELQLEAMVSTGPVNDSRDCLPPVMPDEC LGATNFLFQLMSDLSLENTVQDGPVLDSKDCLPPVAKECP GATNYLFQLTA DLLAKMEVPTGPVLDSKDCTPSHCPQA IGGLDNGFRSQEGYLLKKDASLKTNGGTDTLLVSPPGY 1 GAKDHLFQLDGSNGLQDEQEET TGPVSDSKDCLNCPQA VGGKDLVYSLSUEHGGSDYREDHWPSTAVKTEECIMKGKVV
    VGARDRVLA $\square A T P G T \square R A Q A S \square T W G P T A D K A S Q C A F K K K S$ LGATNFLF QLSPRLQLEAKVSTGPVLDS RTRCRSCQSKGKT $V G A V N R L Y Q L D L S V V V K E V T G P K G D S N A C S M M D C P R E T P T$ VGARDHLYQLALDRLRLEVEEKTGPVRDSKECLPPNCPQA

    LGaknrlfoldgsdg LLeqeet ngrvidskdctesncp IGARDQLFQLD PLLQLKLRNDTGPPDCLPPVTETNCPQA

    VGATNSTYQLNLAVEMLVRTGPVWDSKECLPPVSTDCPQA VGAQDHLFQLD RFLQPEYOTDTGPIIDSRECLNCPOA VGAVNRLIRQLS PELQLEATAVTGPPDCVPFRDPSDCPQA VGARNRLFQLD RFLQPELQDDTGPVTDSRDCDPTNCPQA VGATNFA VGGQGVIYKLSERDKQVLSWGKTGPPDCLPPIDPLDCTQA I GARDDLFRVELDNVVGDEMFYSKYADSVCVCV VGAVNRLFQLSLE LQLEAVAVTGPPDCVPFRDPAECPQA VGANDNLYRVVELPPTRYQRKLTWRSNPSDVNVCRMKGKQ VGAVNHL LGARDRL IGAKNLIY VGAVNRLOLD
     GGRNHVY
    GARDNLF VGARDRLFR LGADNT TYQ VGVTNTLHIFNFUDGKETSUDFT PEKNPLETTAKTPGK $\square G A V N A \square Y Q \square D A K \square Q L E Q Q V A T G P A \square D N K K C E A S Q C H E A$ IGAVNRLYQLS PDLELVVAETTGPSTDCSVIDCPMLAVK

    ## 

    LGAVNALYQLSA DLQLEQQAATGPALDNKKCEVTQCHEA VGAKNALAGLSANNNTRKVAKDTEVQWKDCPRNDCKIDAVVH VGAVNAVYQLDFEGRLVGHARTGPNPFRDVRECPQARLM $V G A V N R L F Q L S P E L Q E A V A V T G P P D C V P F R D P A E C P Q A$
    VGGVNRLYQLDLDLHETVKTGPQNDSVECSILDCPLNAVR LGGQNRVYNVSDS SMTEDSRYEWSSSEEARKNC AADSQ AGADNRLLQLDSNLRLEEYVS WTGPRLDNPQCHATGCP
    
     VGAVNRLFQLERQLQAEAVTGPVVDSPDCVPFRELAECPQ LGAINKLYQLDLELVVISESTGPHEYSSQCSVLDCLPTIVK LGVVNALYQLTEENVVRIHVETGPRKDNKKCTPPENQCK VGGNAYYQLSSKLELQARAVMGPHLDDPGCPVTRFCPATI
    
    

    VGAVNALYQLA VGAVNSLYDLTSADLVVRRHVQTGPSPLCRDARNREDCRH IGAVNRVYKLS GNLTLLVSHNTGP TEDDNKSCVQPCTE
    VGSVNALYQL TPDLQLVHAVETGPALDNKKCEPSQCQEAA LAAVNAVYQLNAVEAEERTGPVEDNLLCHAPQLPQAPCEH AGGVNRLFQLDSSLSVEVVTGPVVDSPQCHASGCAPSSGV VGGVNYLYQLSPELELHETVKTGPKNDSVECTVLDCPAHA VGAVNMLYQLSA DLQLEQRUTGPALDNKKCTPPQCHEA

    UniRef90 UPIO0044100F4 UniRef90-UPIO003346A03 UniRef90-G3WU85 UniRef90-U3KE08 UniRef90-E9GC26 UniRef90-W4X4Q4 UniRef90-UPIOOO332EF54 UniRef90_UPI0003C2858F UniRef90- H2ZZTO
    UniRef90_UPIO003FOD243 UniRef90-UPIO004549DE1 UniRef90-H2L6Z4
    UniRef90-UP10002C34ECB UniRef90-H3B6V5 UniRef90- $\mathrm{F7AB9} 2$ UniRef90-UPI0003834FCD UniRef90-B6E512 UniRef90_UPI00046B3F12 UniRef90 H9KTC6 UniRef90-UPIOOO440BC54 UniRef90-D2XNK8 UniRef90- G3R724 UniRef90 UPI0004443D95 UniRef90_UPIooo3B519B9 UniRef90-B7SV99 UniRef90-A0A044RTQ4 UniRef90-M3ZYL6 UniRef90-F7AJF2 UniRef90-H2S8Z2 UniRef90_UPI000350A86B UniRef90-UPIOOO3942294 UniRef90_UPI000333C264 UniRef90_UPIO00328A66E UniRef90-UPIO00440FE01 UniRef90-B6E518 UniRef90_UPIO004410268 UniRef90_13MB85 UniRef90-H2NX35 UniRef90-W5NR54 UniRef90_Howm62 UniRef90-H2UK41 UniRef90-T1KQRO UniRef90-D6W8D3 UniRef90-G7Q127 UniRef90-UP10003D6EBFE UniRef90-UP1000454BE8F UniRef90-K7H893 UniRef90- F2DI67 UniRef90-W5UBZ6 UniRef90-V8POC0 UniRef90-G1K9V2 UniRet90_Q6VZT2 UniRef90-Q4SW25
    UniRef90-015031
    UniRef90-T1HE73
    UniRef90
    U9JFE
    UniRef90-UPIOOO3504731
    UniRef90-F7ANH4
    UniRef90 ${ }^{-}$L9JFE4
    UniRef90_UPIOO0443BF10 UniRef90-UPI0004421238 UniRef90-UPI0003EC3C25 UniRef90-UPI0003F08D9F UniRef90-Q4SLZ5 UniRef90-Q29CU7 UniRef90-A8XED9 UniRef90-H9KD75 UniRef90-F6Y6P2 UniRet90_H2SFJ1 UniRef90-L5KAJ3
    UniRet90 $19 \mathrm{EG71}$ UniRef90-J9EG71
    UniRef90 G3SQV7 UniRef90_UPIo0033179B9 UniRef90-EOVB65 UniRef90-E1BST4 UniRef90-A0A016VW49 UniRef90-B7PTP7 UniRef90-A0A044TGW0 UniRef90_M3ZMM2 UniRef90-A0A022T6K1 UniRef90-UPIO00443AFOA UniRef90_UPIOOO42COD50 UniRef90-UPIO003EC2901 UniRef90-UPIoo046BDEE1 UniRef90-E3МХТ1 UniRef90-W5MYH1 UniRef90- B4K210 UniRef90-G3W8L7 UniRef90-G3NF07 UniRef90-E9H8X8 UniRef90-A0A034V9L5
    

    QLTDNPNQLLLVSPQDEGALVVCGSAHQGVCEQRRDDHRG HHTDNHNKLLLVNTVQKELLVCGSVHQGLCEKRSIDHVL
    PQAQPTNNPNQLLLVSPEALVVCGSVHQGVCELRSLGQLR QAHSTDNHNKLLVNAAQGELIVCGSVHQGICEKRSIGQVL RNTDNHNKLLLVNTY RKELITCGSVFQGLCEKRSUDHLL YMKNDMQ RRTSNHNKLLLVDEKQAQELI TCGSVHQGTCQKRSVREVL GECANYVRVLHHYNRTHLLTCGTGAFDPLCAFSRVGYH QQTECANYVRLLHPYNRTHLLACGTGAFQPVCAFVYVGHR

    QETECFNFTRVLVPLNQTHLYVCGTYAFSPACTY\|LLENF ELECQNYIRVLLDVNTEVVTCGTNAFQPACDTREAGNM $P Q A Q L T N N P N Q L L V S P G A L V V C G S V H Q G \| C E Q R R L G Q \prod G$ RLVDNVNKALVI DYTTTRLISCGSLSQGTCRVRNLHNIS RPVSNHNKLLLVDP SSLQLITCGSAHQGTCQKRNVSSVL

    HSESTDNHNKLLVDPKASELI TCGSVHQGTCQKRSTKEVL KETSNHNKLLLVDPYSM ELITCGSVNQGDCQKRNINVVL

    QNTNNHNKLLLVVPSKRELIVCGSVYQGTCESRRVQTVL RITNNHNKLLLVDPYSMELITCGSVNQGICQKRSVNNVF QLTDNANQLLLVSSRSAQELVACGQVRQGVCEKRRLGDVA
     CPQAHTNNANQLLLVSPGALVVCGSVHQGVCEQRRLGQLG WKHECDNFVTVIEKVGDSMVVVCGTRAGTPKCWLLVNDST
     EGECRNFVKVLLLRDESTLFVCGSNAFNPVCANYSIDTLG
    
     KEKRCQNYIRVLALKSDGGLFVCGTHAYRPKCRDYVQTAN QLTDNANQLLLVSSRAQELVACGQVRQGVCETRRLGDVA QLTDNANQLLLVSSRTQEELVACGQVKQGVCEKRRLGDVT $P L A Q P T N N P N Q L L L V S P E A L V V C G S V H Q G I C E L R Q L G Q L L$
    $T P V T C E N Y D R T Y F E L T N G T F I V C G T H G L Q P T C A E F R R G N$
     NQCMTDNYNKFLGKYQEKVLVCGTNACKPTCWNWVN HEYSNRNY EMTDNVNQLLLLDPPRKRLVECGSLGKGDCALRALSND
    
    VDMDNVNKLLLL DRPAGRLVECGSLFKGTCALRELGNT VLTDNTNQLLLL DRPGERLVECGSLEKGLCALRALNNV
     GNGECGNFVRLIQPWNRTHLYVCGTGAYNPMCTYQDYVFY
    

    VLT DNVNQLLLLDPP GKRLVECGSL FKGDCALRALSND
    

    VDTDNVNKLLLLDRPGGRLVECGSRFKGDCADREDGND PKSLTDNHNKLLLDREQGVVLVCGSVYQGFCELRKMGNIS
    

    UniRef90 UPI00044100F4 UniRef90_UPI0003346A03 UniRef90_G3WU85 UniRef90_U3KE08 UniRef90_E9GC26 UniRef90_W4X4Q4 UniRef90_UPI000332EF54 UniRef90_UPI0003C2858F UniRef90- H2ZZT0 UniRef90_UPI0003F0D243 UniRef90_UPI0004549DE1 UniRef90 H2L6Z4 UniRef90_UPIO002C34ECB UniRef90_H3B6V5 UniRef90 F7AB92 UniRef90-UPI0003834FCD UniRef90_B6E512 UniRef90_UPI00046B3F12 UniRef90_H9KTC6 UniRef90_UPI000440BC54 UniRef90_D2XNK8 UniRef90-G3R724 UniRef90_UPI0004443D95 UniRef90_UPI0003B519B9 UniRef90_B7SV99 UniRef90-A0A044RTQ4 UniRef90_M3ZYL6 UniRef90_F7AJF2 UniRef90-H2S8Z2 UniRef90_UPI000350A86B UniRef90_UPI0003942294 UniRef90_UPI000333C264 UniRef90_UPI000328A66E UniRef90_UPI000440FE01 UniRef90_B6E518 UniRef90_UPI0004410268 UniRef90_I3MB85 UniRef90_H2NX35 UniRef90_W5NR54 UniRef90-H0WM62 UniRef90-H2UK41 UniRef90-T1KQR0 UniRef90-D6W8D3 UniRef90_G7Q1Z7 UniRef90_UPI0003D6EBFE UniRef90_UPIO00454BE8F UniRef90_K7H893 UniRef90_F2DI67 UniRef90_W5UBZ6 UniRef90_V8P0C0 UniRef90_G1K9V2 UniRef90_Q6VZT2
    UniRef90 Q4SW25 UniRef90 O15031 UniRef90_-T1HE73 UniRef90_H9JFE1 UniRef90_UPI0003504731 UniRef90_F7ANH4 UniRef90_L9JFE4 UniRef90_UPI000443BF10 UniRef90_UPI0004421238 UniRef90_UPI0003EC3C25 UniRef90_UPI0003F08D9F UniRef90_Q4SLZ5 UniRef90_Q29CU7 UniRef90_A8XED9 UniRef90_H9KD75 UniRef90_F6Y6P2 UniRef90_H2SFJ1 UniRef90_L5KAJ3 UniRef90_J9EG71
    UniRef90-G3SQV7 UniRef90_UPIO0033179B9 UniRef90_E0VB65 UniRef90_E1BST4 UniRef90_A0A016VW49 UniRef90_B7PTP7 UniRef90_A0A044TGW0 UniRef90_M3ZMM2 UniRef90_A0A022T6K1 UniRef90_UPI000443AFOA UniRef90_UPI00042C0D50 UniRef90_UPI0003EC2901 UniRef90_UPI00046BDEE1 UniRef90_E3MXT1 UniRef90_W5MYH1 UniRef90_B4K2IO UniRef90-G3W8L7 UniRef90_G3NF07 UniRef90_E9H8X8 UniRef90_A0A034V9L5 UniRef90_G3X755

    QLLLRPEDTQYVAANDPA $\square$ STVGLVGQGPGRGYTSRGVGG $F R P E S P G B T Q Y V A A N D P N R G Y T S R G V G G G \square P P D T T R N L R A$ NN $\square$ S E CFPCLDARPHSPHSHMSSLLSSGPAGTADLF IGSP
    $Q L L L R P E D T Q Y V A A N D P A V S T V G L V A Q G E P L L F V G R G Y T S$ FRPESPGDTQYVAANDPNRGYTSRGVGGG\|PPITTRNLRA
    
     $F S T E R P V D T A Y V V A A N D P S V V S T V V G L V V G G R T V M Y V G R G Y T A$
    

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

    F STDNPVETQYVVANDPSVSTVT\|PGGNRTVMYVGRGYTA
     QESS G $\square G M C S Y D P T Q N N T W L F E D G E L Y T A T T S D F A G$

    NMLLY TAASTNFRG
    FRPERPVDTQYVAANDPNVTTVGLVALSKDGSYTSKGAGG FSTERPVDTQYVAANHPNVSTVGLVVRPKPLMFVGRGYTS
    
    ,
    
    
    
    
    
     GYEYRNEPGDAALCP F GPDDQNNTAA FAETKKLYAATPTDARAG ANNATASTVAF IAPGPPNPPVSQVMYVGVTFTLGSPYRSE EVLYQAED $Q V L Y Q A E D G Q F V A A N T L G V T T V V V P G P G G R D L L L V A R G G A B G$
    
    
    ANTTYYENGSGEKSFVASND DTS LLKRGRMMFVGKGNGLND TTGP S GLGGFAPYFNSSNDDMVLVDGEDVYSTDPKYER VQGGQ $\square A S A S D \square S P A Y P S Q R S D S F P A D G S L Y S A M S S T A G H$
    
    

    SHRDFYEDSSGEKSFVASDDGDGGPGERVLFVGKGNGPHD SKRLLFYEDGS GEKSFVVASVSATAPGGERVLVVGKGNGPHD
    
    
    

    STRDLFYEDSS GERSFDVASNGEQRMLFVGKGNGPYDNGVIV
    

    SHR ITFYEDSSGEKSFV A S NDERVSTVGGVTSVGK GDSGP E $\square$ AVVEPS MLDNVAANHPNHGGSTRLLVGATYTGAGTQFFP SEPEFNDDTASTTFAF $\square$ GPE HYNPWGRSNVLYVGTTFEYRH
    
    
     T DLSS SQEVA DF RLP LINSTLPNNNWLDAAEFVASVEV
    R GP $\square$ T T R A L R P P DP QT A F S Y E ETA K L A S E Y S H H F V S A F A H $P G G D V P G V D S H S D F S Y E E T A K L A V G R L S E Y N H H F I K A C A Y$ K GP I T T R NLESHSS DPQNLESHYVFSYSEYNHHFVKSFVY
     SHPP I S T R HL S S E P VF S Y E D T A K L A A VA S E Y D H H F V T A F T R R D A A I F R S L G RLLA HRTEHD DERLL K GR
    RDPVIFRSMGRSAVRTETDQRLLDHPKFVASHLIPNDDRD MQN P QF I KAT $1 \quad 1 \quad H Q N Q S Y$
    NEP VVSRSLGTRTLLKTDAF LRWLSADAAF VASFS DP G R D P VI Y R S L G GMP P TA Q Y N S K W W $G D P P I T T R A L L Q P L F S Y E E T A K L A V V G H P S E Y N H H F V S A F A B$ VPAVSSRSLDKDRMTTGTRMYVNSLSRERYPDNYVYGFSS SHPP DS T R QLS A EPVFSYEETAKLAVASEYDHNFVAS FTH SWRP!
    S K GK S KPNFV S S Y Di
    SHPPDSTRHLSSLPAFSYEETAKLAVASEYDHNFITATTR
    
    LMKTFQRH GQNP $\square$ RNEEKETWLNDPKMLNEPHMAD
     SHPPISTRNLAAQEPVFSYEETAKJLAVASEYDHHFVSSFAH A GKLV R QLAAGPQPFSSEGLGRLVVGDFSDYNNSYVAAFAG
    
    
    

    L
    5
     $P P L T V R Q L A G P Q P F S S E G L G R L V V G D F S D Y N N S Y V G A F A D$

     | $S$ | $L$ | $Y$ | $S$ | $I$ | $S$ | $R$ |
    | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
    | $V$ | $P$ | $P$ | $L$ | $Q$ |  |  |
    | $V$ | $V$ | $S$ | $R$ | $L$ | $D$ | $K$ |

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

    UniRef90 UPI00044100F4 UniRef90_UPI0003346A03 UniRef90_G3WU85 UniRef90_U3KE08 UniRef90_E9GC26 UniRef90_W4X4Q4 UniRef90_UPI000332EF54 UniRef90_UPI0003C2858F UniRef90-H2ZZT0
    UniRef90_UPI0003F0D243 UniRef90_UPI0004549DE1 UniRef90 H2L6Z4
    UniRef90_UPI0002C34ECB
    UniRef90-H3B6V5
    UniRef90 F7AB92
    UniRef90_UPI0003834FCD UniRef90_B6E512
    UniRef90_UPI00046B3F12
    UniRef90_H9KTC6
    UniRef90_UPI000440BC54
    UniRef90_D2XNK8
    UniRef90_G3R724
    UniRef90_UPI0004443D95
    UniRef90_UPI0003B519B9
    UniRef90_B7SV99
    UniRef90_A0A044RTQ4
    UniRef90_M3ZYL6
    UniRef90-F7AJF2
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    UniRef90_UPI0004410268
    UniRef90_I3MB85
    UniRef90_H2NX35
    UniRef90_W5NR54
    UniRef90_H0WM62
    UniRef90_H2UK41
    UniRef90-T1KQR0
    UniRef90_D6W8D3
    UniRef90_G7Q1Z7
    UniRef90_UPI0003D6EBFE
    UniRef90_UPI000454BE8F
    UniRef90_K7H893
    UniRef90_F2DI67
    UniRef90-W5UBZ6
    UniRef90- V8P0C0
    UniRef90_V8P0C0
    UniRef90-Q6VZT2
    UniRef90_Q4SW25
    UniRef90_O15031
    UniRef90_T1HE73
    UniRef90_H9JFE1
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    UniRef90_UPI000443BF10
    UniRef90_UPI0004421238
    UniRef90_UPI0003EC3C25
    UniRef90_UPI0003F08D9F
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    UniRef90-Q29CU7
    UniRef90_A8XED9
    UniRef90_H9KD75
    UniRef90-H2SFJ1
    UniRef90_L5KAJ3
    UniRef90-J9EG71
    UniRef90_UPI00033179B9
    UniRef90_E0VB65
    UniRef90_E1BST4
    UniRef90_A0A016VW49 UniRef90_B7PTP7 UniRef90_A0A044TGW0 UniRef90_M3ZMM2 UniRef90_A0A022T6K1 UniRef90_UPI000443AFOA UniRef90_UPI00042C0D50 UniRef90_UPI0003EC2901 UniRef90_EPIOKT1
    UniRef90 E3MXT1 UniRef90 W5MYH1 UniRef90_B4K2I0 UniRef90_G3W8L7 UniRef90_G3NF07 UniRef90_E9H8X8 UniRef90_A0A034V9L5

    E GK\|V|FLFFREDEAEYNFMQRFTVVRVVAVVDDDNGGQRDLD
     H S SVVY L F Y R R D L K S Q S R E YK T Y I S RI CLD D S H D Q F VFFFFREVAVEVSNCGKAVYSRVARVCKNDMQQQRDK GTSAY F L F L R R R DLLKAPS S RA FRA YVVRVVCLQDQ H RTSVVFLFYRRDLKSQSRE YK TYI SRIICLDDSH R S HI Y F L F Y R R DLK S Q S RE Y K T Y V S RI CL D D S H TS E I Y IFF LELLA YENVN QFPEKYPRVGKVCQDNGGPTNTL
     R P Y I S RVCLGD Q H R S YVY FLG Y R R D I K S V S R E Y R T Y A A RACL E
    NDKVYFFFTEKAMESEVKSREGKS CK SELKNDVGGQRIL NDKI YYF FREMNPDKNPGARAVYSRVGRVCAVQNDGCKPL NDKIYYFEREDNPDKNPEAPLNVSRVAQLCKGDQGGESS
     RASAYFLFMRRDLQAQS RAFRTYLSRMCLRDQH GGFSYFMTTQMK

    ## K

    N T
    RNHVYFLFYRRDLKAASRE YKTYLARVCLD
    GS Y I Y F Y F R E T A GNFTYFFFRENAVEHD CGKTVFSRAARVCKND $\quad$ GGGRFLL R S Y VY F L F Y R R DI K S S T R D Y Q T Y VA RVCLED TS Q H HVVYFF YRRDLKSQSRE YRTYV SRV CLDDQA
    
     K S NVVYFLGYRRDLKKSQSRE YKTYY SRI CPNDSH
    RQHVYFFFYRRDLKSMSRE YRTYVSRICLDDQA ARFAYFDFRRRGARVQAE YRSYVARVCLG
    RQHVYF L FYRRDLKSPSRE
    YR T Y I S RV CL
    R T F R A Y V S R
    
    
     THSAYF $\square F R R R G A R A Q A E \quad$ YRSYVARI CLG
    GSHVYFFFREDAMEFNY LEEKFDMTQVAAVFEGRFREQKSP GASAYF LF LRRRDLQQAQSRAFPAAYVSRWC
    TRSAYFVFRRRGARAQAEYHSYVARVCLG
    HANVYFLFYRRDDKTPLRE YRTYAARLCLNDTS
    GK HV Y F FF R E S A V E F S N C G K V I Y S R VA R V C I N D Q G H P S F
    EGFSYFLTTQMRH TGSNQFISKLVRVCHDDE
    TRSAYFVFRRRGARAQAE YRSYVARVCLGDTNLY
    A HS S Y F V FRRRRGARAQTEYRSYVARVGLRDVVNYS Y
    GASAYG L F L R R R DLLKA PS R R A FRA Y V S R V C L L D D Q H
    $K K E V L F F F S S E S P M E T E$ G C GLLH K V A A R V G R V C E D D P G GR L
     N D K I Y F F F R E D N P D WN P L A P R K I S R V A QV CK S D K G G N G A F
     NDTIVT FF LIENN Q KEEMYFFF SEFNKTARVDEEPYRARI GRICTVDEGGDKTL GPYVFFVFNQ
    E GF S Y F LTT T QMK H
    QDKHPARNRTLLARMCREDP
    $\begin{array}{rlllllllll}S & N & P & S & P & F & D & K & L & V \\ R & V & C & H & D & E \\ G & G S & D & T & Y & Y & S & K & L & V \\ V & C & H & D & D & E\end{array}$
    PACCAPSPGPRAR
    G D Y VF F $\quad \mathrm{FNQ}$
    Q DK QPAKNRTVVARMCKQ
    GRYVFFVFNQ QDKHPGQNRTLLARMCKEDP
    QNKVYSFY RQKNKDTSP GSNMWWLPGVV QVCMA DVGPK KNL
    
    QPVYP LQRRP LVVRTGAPYRLTTVAVDQVDAADGRYEVLF
    GRSAYVVFRRRGARAQAEYR SYVARVCLR
    G R S A Y F V F R R R G A R A Q A E Y R S Y V A R R V C C L R R
    
    
    
    S R Y V F F L F N Q Q Q K H P P Q N R T L L A R M CK Q D P
    
    Y N N S Y V GFA D A R SA Y F V S Q A E Y R S Y V A A R V C L
    A H A A Y F IIF R R R G A R A QVE $\quad$ Y Y R S Y V A R V C L L G D P NL Y
    GGFSYFL $\quad$ TNQMKSTQASPFDSKLVRICHDDP
    
    K NEVLAFFSEPPSESE GCGLLRRVARIGRVCRDDTGGTGKH
    RGFSYY LTVVQK Q F T E Q P K P Y I S K L V R I C Q N DV H
    GKFAYFVTRRQPK GDTTQGSWPY I SK LVVRVCTS DAHF
    GD HVY F L F SRRRDMRHTKEYRTYASRLCAS
    S D Y A Y F V LVQ K Q S Y P E Q E E LG Y V S R L A R S C $\square \mathrm{N}$
    GDHVYFLFSRRDMRHTKE YRTYASRLC
    
    
    
    GNFVYFLTVQDSSGGSSSDLFYTSRIVRLCKD
    
    DHTAFKAVNQ Q Q DKQPAKNRTQVARMCKNDP
    KTYSY S DF A Y FVVVQKK S H L P GEEES YVTRLARTC
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    UniRef90_UPIOOO3FOD243 UniRef90_UPIO004549DE1 UniRef90-H2L6Z4 UniRef90-UP10002C34ECB UniRef90-H3B6V5 UniRef90-F7AB92 UniRef90-UPIO003834FCD UniRef90-B6E512 UniRef90_UPI00046B3F12 UniRef90-H9KTC6 UniRef90 UPIIOOO440BC54 UniRef90-D2XNK8 UniRef90-G3R724 UniRef90_UPI0004443D95 UniRef90-UPIoo03B519B9 UniRef90-B7SV99 UniRef90-AOA044RTQ4 UniRef90-M3ZYL6 UniRef90-F7AJF2 UniRef90- $\mathrm{H} 2 \mathrm{~S} 8 \mathrm{Z2}$ UniRef90-UPI000350A86B UniRef90_UPIOOO3942294
    UniRef90 UPIOOO333C264 UniRef90-UPIOOO333C264
    UniRef90-UPIOOO328A66E UniRef90_UPIO00440FE01 UniRef90-B6E518 UniRef90_UPIO004410268 UniRef90_13MB85 UniRef90-H2NX35 UniRef90-W5NR54 UniRef90_Howm62 UniRef90-H2UK41
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    UniRef90-J9EG71 UniRef90-G3SQV7 UniRef90 UPIOOO33179B9 UniRef90-EOVB65 UniRef90-E1BST4 UniRef90-AOAO16VW49 UniRet90_B7PTP7 UniRef90-AOA044TGWO UniRet90_M3ZMM2 UniRef90_A0A022T6K1 UniRef90-UPIO00443AFOA UniRef90-UPIO0042COD50 UniRef90 UPIO003EC2901 UniRet90-UPIOOO46BDEE1
    UniRet90 E3MXT1 UniRef90 ${ }^{-}$WMYH1 UniRef90-B4K210 UniRef90-G3W8L7 UniRef90-G3NFO7 UniRef90-E9H8X8 UniRef90-AOAO34V9L5 UniRef90_G3X755
    
     DSTWTSYVKARLNCSVPSKPFYYDHIQAAYYVQPGDTEGE RNRWTSFLKSRLNCSVTGDPFYFNEIQSTTELTSGQYGGT YYSYVELPLACQGGRYGLTMQAAAVATSREVTHGE NDK

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    E DT
    YYSFTKARL
    YY Y Y TEETP
    EDNW
    EDTW
    YYSFMKAR NCSRPGEPFYYNELQSTFFLPELDL
    S D SNK
    SNE
    QKK
    $\qquad$ GEPF
    RYGL $\square$ FY E पQ STFY पP EQD VQatavats revarge SS R $\stackrel{\rightharpoonup}{F}$ T DAN LLYSYVEVPLACQ
    
    $\qquad$ RSTGKMI QAAFLAP GG RTGK GNNLVYNLAQSAALGANHSAA
    

    LPDPHYYS LFQGEVLFVAFSSAAPP DANDYSYVEVPLTCQGQG Ll Qa A ALVP
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    YYSYVEDP ACQ
    
    

    QAAF GK
    LIQAAFLTP

    ## SAKWTTLLK

    E
    SSKWSTLLKSVLVCKDS GNRSFNKLVDVFVLQDTNGTV LDSWTTFMKARVMCGAGNTQQQYNNLKQAVVLTAQDRRAG NYYSY LDEMDLQCRDPDDHAAAFGTCLAASVAAP GSGR NYYSYTETPIEC DDSEGKRYNLVQAGYVGRPGSDQDD RHNYYSYTELPMSCTGGGGNFGYNLVQAAFVGKAGSAQHD
     FYYSYLEMDLQCRDSRDAQAPAFSTCAAASVATPGASR
    SWTSLMNARLYCGHNDNKRHFFELVDVATVHSDHWKDT QFSWTS SMNARLYCGHNDNKRHFFELVDVATVHSDHWKDT

    DANLYSYVEVP LACRGQG LVQAAFLTP
    QNTWTSFLKARLVCGFPEESLYFNRLQDTFVMHADDWHDT DSNYYSYTEDPVECSEAQGGTKFNLVQAGFLGKPSSDQDD NKEWS SYEKARIECSIEENDFYFNQFAGVAESPNS
    R

    NYDSYTEVTLQCTVDGKPQFYNQVQDAKVAPAGSDTDP DRQWTTF KRARTCSQGTTFH YYYSYLEMDLQCLDGGDAPAYNLAQAAWLGNHTGKPALD RQVWT $S Y V E V P L V C R G Q G \quad G V Q V A F L A P$ SYVEVPLNCRGQGLIDAAFLAPGMLLGAFAASLPG
     QHEWTSFFKSRAGC YYSYTEVALVCHTPE WS YT
    DRSFYSYVEVPLLCRGG
    DSNYDSYTEVTLQCNVNGTEQVY
    DRSFYSYVEVPLLCRGG
    QFTWTSYFEMDLGCOQDDDGTYDHCHSVYVTTPGESGDK DKYYSYLDMELQCGDPADPRTPFNTCLAASAAASGAGK DKNFHSYTEVPLECDR'
    RDNWTSFLKARLNCSLPGNVEYRLLQAAYLSKPGSAQDD
    RDNYSFLKARLNCSLPGDPYYFDELQGMTYAESEH RK■TESY DQMPLQCGSSGYNRLDSVYPAEDRAADGRSAEP DANYDSYTEVTLQCGGGADGQAYSLVQDAKLAQAGSTGDP
    

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    UniRef90_UPI0002C34ECB UniRef90-H3B6V5 UniRef90 ${ }^{-}$F7AB92 UniRef90-UPI0003834FCD UniRef90-B6E512 UniRef90_UPIO0046B3F12 UniRef90-H9KTC6 UniRef90-UPIO00440BC54 UniRef90-D2XNK8 UniRef90_G3R724 UniRef90-UPI0004443D95 UniRef90_UPI0003B519B9 UniRef90-B7SV99 UniRef90-A0A044RTQ4 UniRef90-M3ZYL6 UniRef90-F7AJF2 UniRef90-H2S8Z2 UniRef90-UPI000350A86B UniRef90_UPI0003942294 UniRef90-UPI000333C264 UniRef90_UPI000328A66E UniRef90-UPI000440FE01 UniRef90_B6E518 UniRef90_UPI0004410268 UniRef90-13MB85 UniRef90-H2NX35 UniRef90-W5NR54 UniRef90-H0WM62 UniRef90-H2UK41
    UniRef90-T1KQR0 UniRef90-D6W8D3 UniRef90-G7Q1Z7 UniRef90_UPI0003D6EBFE UniRef90_UPI000454BE8F UniRef90-K7H893 UniRef90-F2DI67 UniRef90 W5UBZ6
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    UniRef90-T1HE73
    UniRef90-H9JFE1 UniRef90-UPI0003504731 UniRef90-F7ANH4 UniRef90-L9JFE4 UniRef90_UPI000443BF10 UniRef90-UPI0004421238 UniRef90_UPIO003EC3C25 UniRef90_UPIO003F08D9F UniRef90-Q4SLZ5 UniRef90_Q29CU7 UniRef90-A8XED9 UniRef90_H9KD75 UniRef90-F6Y6P2
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    $R V Y G \square F S N P W N Y \quad S A V C V Y S \square G D \square D H \square F R T S P L K G$
    L $\square Y G \square F T T N V N S \square A A S A V C A Y N L S A \prod T Q A F \quad N G P F R S Q E N$ VLFAI FS $\square A V P S T M G R P L C A F P L D E V D R L A N R T R D A C Y A W$ VLFAVFSESNDPKNHSALCVYSLKAI RRKFMTNDQKCFS
    
    $T Y G I F T T V V N S I A A S A V C V F N L S A$ I A A A AFS GPFKYQ DLLGVFSPRI GSINTPALCLVFLDEVDR $1 L L G V F S T H L T S S S R P S L C M F N L E D V D R R \square N S T R D \square C Y T H$ IVYGVFTTPTNAMGGSAICMFDMDQI QNSFT GSYKHRQN
    
     TLIGGVFSTHFPPSEDSALCMFNLEDVDR TLLGAFAAGPNRAHAALCAFPLAELD RLVCVFSTSTRPSEESALCMMNLLEDVDRRDNSTRDFCYTS PVAGRTTAAAGASGASALCAFPLDEVDRLANRTRDACYSR A AGRPPAAAAGASGASALCAFPLDAVDRLANRTRDACYT ALFVAMSVGQTPTSRSALCVYSMKDLNQALKKAQLLCYTQ
     TLLGAFATGSRGAQ AALCAFPLAELD
    TVGRPPSAAAGMTGASALCAFPLDEVDRLANRTRDACYT TLLGAFAPGPRRAQ AALCTFPLADLDRNMERARRLCYTT NLLGVFSSNPNPLDSSALCDYPLDELDQHFDSTRDLCYSK
    VLFGVFSEGDPPSSNKPLCVYPDKADRR TLLGAFAAGPGGTQ AALCAFPMAEL $T L L G A F S A G T S Q A Q A A L C A F P L A D L D R$ VLFAAFSSVAPPYGTSVLCAFPLDEVDQLANYTRDACYT FYGAFRSQLAGDGASAICKFNKEHISKSIASGGKEN
     KI YGLF LDN WGYSAVCVYSVSDI SERFRMSPDK
    IL DGLEFRRMGKGSLECAMCRFSLKA I NEKMEQNREKCYMK YFYGLF MNEWGFSAVCVFSFKNI QHNFNTSPLKG VLYGLFSN AWGRKVICAYS IEDI DQAFSTSKLRG VLYAVFSRDSRSSGGPGLCLFPLDKVHAKMEANRNACYTG
    
     Q QV FAVFSKDSKGSGGTPLCLFPLEKI HQKMEENRNKCYMG
    
    
    
    TLLGAF AAGSRGARAALCAFPLAQLD GS TQAA LCAFPLAELDAHMERARRLCYTT VLFAVFSETDDSEGETSLCVYTLKSIDRMKMMENDK ELDALFSKVNKDNGSSAMCVFSLRHINEKMEKNRDDCYTN FLYGAFRSQLAGDGSSADCAYSRATVSQTMA GAFRNKKA VLFVVFSKSRDETDVYNRPGLKSALCVYALTAVHRKFTQN $V \mathrm{~V}$ YGVFVK GWNPSSQSADCVYSMAMVEKDFLNNIELCFRG
    
     KI YALFRNE WGMSAVCDYTIGDI DK DFTNSPFKGYTK VLYTVFTREDRGGGGPGLCLFPLDEI HAKMDA DRNACYTG VLYGVFWEGQEPTGKSAI CMFTMKDIETAFKQNDMKCYKG
     VLFAVFSKDSKGGSGSPLCLFPGGDINQKMEENRNKCYTG
     VLVGLFSPSPEPSHQSAVCVFSIADIVARFNENIHMCFNG
    

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    UniRef90_G3X755
    

    FSDS $\square$ PSPRPGQCLPNQQLT
    P
    EGRAMDGTEVAYDEYDVNSDCAQLPVDTL GEGHRGLEY【SPSHKC\|LTKLQT IGEDFCGLD
    DATRDLCYTQDGQKQGSKVAYIEYEVKSSCANDPRNTL
    
    
    

    WVRHTGVVPNPYPGSCINDEMRASGVRTSHDLP
     VERARRLCYTAGGRGASGT MGKE

    ## EGKGTGTNDAYD

    ## EDGTRE

    KRHVQTQPEVYETDADTST $\square$ S $\square$ CDGCAVQGSKFNSSNSFP MEQARRLCYTASGQGPSGMEEATVEYGVTSRCVTDPADSP
    ${ }_{G}^{G}$
    REGRAEDGAEVAY DEYDVNSDCAQLPVDTL GRSPSGTEEATVEYGVTSRCVTLPI DSP GHVRGKGEVAYIEYEVKSSCANLPLNTV

    KFMQN $\square$ KHCFSGKGQRGLDF $\square S S L Q C V$ MEQARRLCYTAGGRGPSGAEEATVEYGVTSRCVTLPLDSP $M E Q A R R L C Y T T G G Q G P S G M E E A T V E Y G V T S R C V T L P P D S P$

    RE GLA E N GTKVA D I A Y DVV L S D C A Q L P V D T P
    GTQYWSRVSADKVPKN
    
    
    FTGKMPSTKPGTCLTGS
    YSSPFDGQRPGVCVRKNSSPDSQNDQKN
    TREAR
    TCFNGS
    TCFSG
    EGFDHRWVQYKGRVPYPRPGTCPS
    AQGSSS ETFYKPFHGDlQCVSHGAETYDPLLRSTKDFP
    NE
    
    
    PD S C
    KFMQN IK SCFNGNGMRGGDF DSSMPCV
    

    T A
    EQQK $\square P \mathrm{~L} P \mathrm{~K}$ VDEPVARPTRCNAGVSNEAEY
    REAGRD $\quad \square \mathrm{F}$ G KRGSSGLEEAY EYAVSSKCLK LSNDSL
    MEEARRLCYTTAGRGPSGSEEA $\backslash V E Y G V T S R C V T \ P P D S P$ A TCFEG GRGPSGEEEAAVEYGVTSRCVTLPEDSP KNTS

    MFYKLFADENPCGQHGQNASKNFP NCPRANDTYEHTYD
    DNDCFNGEGVRG
    ETNKNLPWFKSTDR
    LDF $\square$ NPSTSCQ CTKTRY G G GLDDS SGQEEAYDEYAVSSKCLKKLPKE SLL $M C F N G S \square K Y R N M G Y D S G P \square Q D G E C P E A G T T G$
    $G$
    
    A E
    E L EGDKD DYYKPFHGE $\square \mathrm{QCGGPG}$
    TSGLKKNLPWFSSND
    EGNLLELNWLLGKD
    VQCTKAPVPCRFTTMPWEGDKCGK
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    UniRef90_UPIO003FOD243 UniRef90-UPIO004549DE1 UniRef90- H2L6Z4 UniRef90-UP10002C34ECB UniRef90-H3B6V5 UniRef90- $\mathrm{F7AB9} 2$ UniRef90-UPIO003834FCD UniRef90-B6E512 UniRef90_UPI00046B3F12 UniRef90 H9KTC6 UniRef90_UPIO00440BC54 UniRef90-D2XNK8 UniRef90 G3R724 UniRef90-UPI0004443D95 UniRef90-UPIoo03B519B9 UniRef90-B7SV99 UniRe990_A0A044RTQ4 UniRef90-M3ZYL6 UniRef90-F7AJF2 UniRef90- $\mathrm{H} 2 \mathrm{~S} 8 \mathrm{Z2}$ UniRef90-UPI000350A86B UniRef90-UPIO003942294 UniRef90_UPIOOоз33C264 UniRef90-UPIO00328A66E UniRef90-UPIO00440FE01 UniRef90-B6E518 UniRef90_UPIO004410268 UniRef90 - 13MB85 UniRef90-H2NX35 UniRef90-W5NR54 UniRef90-Howm62 UniRef90-H2UK41 UniRef90-T1KQRO UniRef90- G7Q1Z7 UniRef90-UP10003D6EBFE UniRef90-UP1000454BE8F UniRef90_K7H893 UniRef90_F2DI67 UniRef90-W5UBZ6 UniRef90-G1K9V2 UniRef90-Q6VZT2 UniRef90-O4SW25 UniRef90-O15031 UniRef90_T1HE73 UniRef90-HgJFE1 UniRef90-UPIO003504731 UniRef90-F7ANH4 UniRef90-L9JFE4 UniRef90_UPI000443BF10 UniRet90_UPIOOO4421238 UniRef90 UPIO003EC3C25 UniRef90_UPI0003F08D9F UniRef90-Q4SLZ5 UniRef90-Q29CU7 UniRef90_A8XED9 UniRef90-H9KD75 UniRef90-H2SFJ1 UniRef90_L5KAJ3 UniReffol-J9EG71 UniRef90_UPIOOO33179B9 UniRefofo-EOVB65 UniRef90-E1BST4 UniRef90-A0A016VW49 UniRef90-B7PTP7 UniRef90-A0A044TGW0 UniRef90_M3ZMM2 UniRef90-A0A022T6K1 UniRef90-UPIO00443AFOA UniRef90-UPIOOO42COD50 UniRet90_UPIo003EC2901 UniRet90 UPIOOO46BDEE UniRef90-E3MXT1 UniRer9o W5MYH1 Uniref90-G4K210 UniRef90-G3NF07 UniRef90_E9H8X8 UniRef90-A0AO34V9L5
    

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     VNTPLGGED PMEGTPVLT FDTHLTAVAATS NAYPCGSDHTPSPMASREPVEAEAVLDSPSARLSAVAVSV VAKLEDARKYQLMDDAVQPTQAVPLYQKHDERFTDVVVDI IDAYPCGSDHTPSPMASKVPLEAKAVWQTSAARLTAVAVSV DAYPCGSDHTPSPMASRIPVLVDTI LDSPSARLTAVAVSM ENDVVFALTHTLMDQAVSSRALF KVGTMYRFSTIAI EQ DATLLFVMNHPLMEQVVTPDTGKPLLVRSTAQFSRAVVDK DAYPWGWDHTPSPMASKDPREATPLEESVTGGFTAVAGH ESYPCGDEHTPSPGAGRQPLEARPLLQ ESARLRQVSA DAYPCGSDHTPSPMASRTPVEVETVLDSPSARTAVAV DAYPCGSDHTPSPMASRVPLEATPVLEWPGVQLTAVAVTM DEYPCGGEHTPSPDASALPLHATPA乌TRTTQ

    V T A
     ESYPCGDEHTPSPDAGRQPLEAQPLL QLGHP DSA $\square$ AA $\square Q$

    D A Y P CGSDHTPSPMASRVPDEATPVLEWPGVQLTAVADTV ESYPCGDEHTPSP $\square$ AS RQPLEAQPLLQLDQP K A Y PCGSDHTPSPMASRKPQEAKAVLEIFSHHLTAVAVSV
    STKLQTDGEDFCGLDVNTPLGGEQPDSAVPVLLFTTRLTA ESYPCGDEHTPSPI A GRQPLEAQPLLKLGQP VSA ESYPCGDEHTPSPIAGRQPLEAQPLLQLGQS
    
    
    
    
    

    ## SEHLP

    
    
    
    

     ESYPCGDEHTPS P DAGRRPLEAEPLLLLKQP TSA ESYPC GDEHTPSPDAGRHPLEAEPVLQLDQP I I I A | $P$ | $T$ |
    | ---: | :--- |
    | $K$ | $L$ |
    | $C$ | $S$ |
    | $C$ | $G$ | $C G S E H$

    $N$
    
    
    
     VETLK K DEKTSEME QLVHPVGTS GLLLFNHQNYTHI QI DD
     DVNSK $V$ G G DTPGATSATYVI DDSAQLL $G S R L$
    
    AAHLQ ${ }^{\text {C G }}$

    GE Q P $\square$

    UniRef90 UPIO0044100F4 UniRef90_UPIO003346A03 UniRef90-G3WU85 UniRef90-U3KE08 UniRef90-W4X404 UniRef90-UPIOOO332EF54 UniRef90-UPI0003C2858F UniRef90-H2ZZTO
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    MQDKDNGTFNVLF $\square$ ATDKGT $\square \mathrm{HK} V \mathrm{VESEQG} \mathrm{\square FN} \mathrm{\square ME} \mathrm{\square KPF}$
    

    TNAGPHGNRTVLFLGSSRGTLKFLVVPNQDNTAPNNNF ADG HMリAFLGDTQGQLHKVFLNSSQGQVYHSQQVG
    $\qquad$ HTTAFLGDSQGQLHRAYLGPGSDGHPYSTQVV
    
    VAATStGdFtVVFTGTATGHLKkVVVESRSSALEYGDLTV VAALQADGHMI AFLGDTQGQLHKVFLHGSQGQVYHSQQVG VAALQTDGHTIAFLGDTQGQLHKVFLNSSHGQVYHSQQVG EDGGSNHMT:AFLGDSQGQLHRVYLGPGRSVAPYSKQSID
     ENGK TVVFVGTSDGRILKVALSNPAK EYASILI KKVSHHKNIIVLYLSTNNGRVHKVVVYERGADCVMEMSLK VLAVNDEHY
    AAENNHTVAFDGTSDGRDLKVYDTPDGTSSEYDSDLV VAATSTGDYTVVFLGTSNGRLKKVVVESSTSADEYGNDLV VAATATGDYTVVFAGTAKGHLKKVVVESATSAFEYGDVVV E $\stackrel{\mathrm{E}}{\mathrm{S}} \mathrm{PG}$ NGHTVVLLGTSGGRIHKVGLRADGTSMEYGSILV
    

    VAA LQTDGHTVAFDGDTQGQLHKVF LNGSRGLVYYSQQVG VQAADQCMYNVLLLSTGFG
    VAATSTSGYTVVFVGTVDGYLKKVVVESSSVANEYASFPV SRD DSNRSFDVLYVGTNLGNLLKVVISNSEPRHAVTLKVL

    ENAGSSETMMLYAGTEDGKMLKSVL DEEMNVADQSTCAS VTTATEAGHTMAFLGDREGYLHKVLVEPDLSGHDYGSLLV E NSHTDAFLGTSDGQVLKVYLAPDGSSAEYGSILV

    ## VAALQVDGHMMAFLGDTQGQLHKVFLSNSQGQVYYSQQVG

    VAALQVEGYTVVFLGDTQGQLHKAFLNGSEAQVYHSQQVG VAATSTGDYTVVFLGTGNGHKKKVVEGSSSALQYGDEII EVDLNGHTVAFLGTSDGKVLKVFLVSSTVIGYSSLTV VAAVSTHDYTVAFMGTATGHLKKAVVESVTSAFEYNDAA VAAVSTHDYTVAFMGTATGHLKKAVVESVTSAFEYNDAA VTAATEAGHTIAFLGDRDGRLHKVLVRPDRSGHLYGSLLV ANTESHTVAFLGTNDGMLKKVLLSGSESSVYETVAVD VTAANEAGHTVAFLGORDGRLHKVLVRPDRSGHLYGSLLV SPNRRTSHHTVAFFLGSNGRIHKVLHNKNDTANEAESRPI

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    UniRef90 H2ZZT0
    UniRef90_UPI0003F0D243 UniRef90 UPI0004549DE1 UniRef90 H2L6Z4
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    UniRef90_H3B6V5
    UniRef90- F7AB92
    UniRef90_UPI0003834FCD UniRef90_B6E512
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    UniRef90_UPI000440BC54
    UniRef90_D2XNK8
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    UniRef90_G3W8L7
    UniRef90_G3NF07
    UniRef90 E9H8X8
    UniRef90_A0A034V9L5
    UniRef90_G3X755

    K Q P Q ILTTSULLS ATKG M|V|F|V|GFSEG|VI|R|V|V|S
     $Q V N S M V S$ GDLL F DQLQQEHLSVVMT QSMVVKVP H QPADRQ\|KTMQFLKVQ
    $P P T V P V R G \square K V V R A S Q D G R L V V I A D S Q V Q A L R L$
     QLNS AVSGDLL F DQAQQHLYVMTQSMVARVPL Q A N A A V G G D L L F $\quad$ F Q Q LQ E H L Y V
    
     HKPAA $\square$ QS LILDSS TRK LYVSS DREVT QVP L

    QQGSAV NRDLIFDGTFEHLYVMTQNTVLKVPVA DPGSPVNPDLL FDSQLMHLYVMTQKTVSKVKV RPGSPI NRDLLLDDSAQKHLYYIMTSNTVVKRPVA D D G Q P V K N I K L L S S Q G A A V V G S E S G I M K I S V
    
     SNRAPVKELKFVPNKPGHIIVVG
    
    QS NSAVLP DLL FDQEEKHVY LTT QSTVMKVP LS QKNAAI SSDLL LDDQNEHLKI MTPNMLQKRPVA $P P G A A I S P D L L V D S S G S H \quad L Y V L T A Q Q V V R V P V A$
    
     D GQSPVNA DLL LDDSSGRNIYALTERKVTRLPVA

    PPGSP $\quad$ SS P L L V V S N G G H L Y V LT A Q Q VN K VP VA
    Q Q GSAV SRDLIFDGAFKH LYVMTQSTVLKVPVA $P P G L A I S P D L L V D S S G S H \quad L Y V L T A Q Q V D R V P V A$ QLN SPINK DLL LLDHNGTHIVIVMTKNTVQKRPVA
    EEGSPVNPD LYFDSQLMHLYVMTEKKVSKVKV P P GSAI S P DLL LD S S D SHLYVLTA HQVDRIPVA P P GS A I S P DLLLVDSNGD H L Y V L T A Q QVVDRI LV A
    
    
     E K N K P I Q R R DL V L D A T H E N L Y V M T T N K S Y D S P I L S M ILD N S T KLLYVS Y N D T I DLLPVA
    
    $P P G S A V G P D L L \quad V D G S G S H L Y V L T A Q Q \nabla D R V P V A$
     P S N S KIT D MS LTY T K N GVE EL IVVTTEQSV S
    
    
    
    $P P G S A D S P D L L V D S S G S H \quad L Y V L T A Q Q V D R V P V A$ P P GSAISSPDLL LDANGHHLYVLTARQQVDRIPVA
     EASSPIVS LTAHVERTARKLLI LTP T QL I L L P P
    
     K G H K $\quad$ I M S D M V L S S S D G A $\quad$ S
     S YTEQI SF I LHPS SVSTSVPYI
    
    
    E I WQ A
     PAGEAVHHDMTFDPNDSNFLYVMTSHHMLRVRVA DTGGSTL LP DMLDD S DGEHVVYVS T LK I S K K V R V $R$ V G S P P I N P D $\quad$ M H F D S
    $R S P L P S S G V L L A Q Y P R A G S L R L S H M A \square D H K T R R \| Y$ D P Q T GRI Y SERRDWSLNHTVHQSTGALY F A SPNQTN NFVVDPVSRRVY SHDGHEVFEKMAlDPSTTRVF
    
    TFHSENRWTFNHLTVHRGTGAVY
    QFSEGNTFTLQTIAVDAQRDTVF
    
    FASPNLTN NFVVDPVSRRVY
    D A V VAQ F Q D P EVVERMN H LVVVDKNTMRVVY SAQKRSFLTFTAEPTEGFNHLVVDERTGHIYY HFSHLAIDHQTKRIF
    TK L L L H A A V D D E T G R V Y
    
    
     VA QF TLDN NS Y F T H L T Y Y D K H R N L L Y

    HENGSLRL LADNVES QNVY
    D DAQKQF
    S S P TII N
    N
    STLN
    SAGALHVQQFATPGRTN NLAVDRSTGSVY NFALDAAS GRI Y
    

    E F $\square$ NP N N $\square$ N F
    D P
    DPQTGRIY
    FEKMVVDPSNT R Li
    QEEEYASFHAENPWTFNHLAVDYRNGNVY VV H P A T GRLY

    P A Q KRSFLTFRGEPTEGFNHLVVDERTGHDY NETYQFNHLAVDKQS GQVY QPPPFKRF $\square P$ A DCS LTH LA $\square \mathrm{HMMK}$ T GEVY L N HL SVHRTTGDVY F THLA YDFKRKVFY
     QPPP LKR $\quad$ VPA E WGLLTHLAI HNK S GEVV
    

    F S H LTV H Q T T G A V Y D P Q T GRI Y
    

    ## LVS

    F T S P D T L LP F FSSPSETN NFAV N NT F SVT D T S $L T$ N
    

    ## L V S

    $\qquad$
    T F VRNDTFEHLALHP
    
    E GPGQNFLTFGDTDLTHLVVHRQTGDVY HFSHDKSVNISHVVVDRHSGRVY
    TSRFSLNGDTSFTHMVYDKTGNQI F
    
    VS L K Q Y E E QL R T F K T $\square A Q H F K M S L L D E T V S W L L$
    
    

    FASPNHTN NFAVDPGS $P N G T Y L Q H L A R D P T S$
    

    UniRef90_G6DG65 UniRef90 I3K0J0
    UniRef90_UPIO004438A38 UniRef90-H9GZA4 UniRef90-UPI0003C8F8F3 UniRef90-G6DPN6 UniRef90-H2LC84 UniRef90-I3KTJO UniRef90-UPIO0045737EF UniRef90-W8BX75 UniRef90-W4XST5 UniRef90_UPI00032891C3 UniRef90_G3NZT6 UniRef9O-F7EI43 UniRef90-UPI0004419493 UniRef90_B1WB12 UniRef90-H2UZR9 UniRef90-W4YQI0 UniRef90_UPI0003C129B5 UniRef90_Q4T032 UniRef90_UPIO004574BB0 UniRef90-UPI0002653EDC UniRef90-W5LCV1 UniRef90_UPIO0021075C4 UniRef90-F7ESL7 UniRef90-W4YVR3 UniRef90-M4AT10 UniRef90_Q4RC94
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    UniRef90-W5NEH5 UniRef90-Q4RJV0 UniRef90-H2PAVO UniRef90-F7ENV8 UniRef90_-W4YJA3 UniRef90_UPI00029D6119
    
     $T G^{\top}$
    $\begin{array}{llllllllll}T & G P D & D & N & R & K & C & V & C & C \\ K & D & E\end{array}$ $\lfloor L A T V N T \| Y Q L N G T L S A E V E M R \quad T G P V E D N L L C H A P C E H$
    VG A V N R L Y Q L S D T L G L E K S LTT GP K S D S P N CP P D $\square$ S S E C D VGA A NR LQL D DLQ
    
     V A TVNT Y QLNTAEVEKRTGPVEDN
    
    
    
    
     , $A G A T N R I$ Y QL NLLK QL NEA I T GP
    
    
    $L G A V N R D Y K L S S D \quad L K V L V T H Q T G P D E D N P K C V Q T C N E$
    
    
    
    
    
    
    

    L

    ## V <br> V

    LA A V N R L L

    ## I GARQRLYQLN S DLTTLKHTVDTGGQCPSP

    $V G A V N A L Y Q L S A P E A E Q R T G P V Q D S A L C H A P Q L P Q A P C E H$
     IG G A RERLY QL D S D LNLLKHTVNTEKCTD LGANNSIYQLGBSLKLQARAETGPKDDSPTCTPPASACQ
    
    
    
    
    UniRef90＿H2TQT0 UniRef90－UPIO003871139 UniRef90＿R7U9Z1 UniRef90＿UPI0002246498 UniRef90＿H2MRA1 UniRef90＿I3KIM3 UniRef90－H2Y247 UniRef90＿N6TXS6 UniRef90＿G3NII4 UniRef90＿G3NLP2 UniRef90＿I3KKS6
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    UniRef90＿F1KSL4 UniRef90＿F1KSL4
    UniRef90＿UPI00032972F7 UniRef90＿H2TB20 UniRef90＿A0A016RT13 UniRef90＿G6DG65 UniRef90 I3K0J0 UniRef90＿UPI0004438A38 UniRef90＿H9GZA4 UniRef90＿UPI0003C8F8F3 UniRef90＿G6DPN6 UniRef90＿H2LC84 UniRef90＿I3KTJ0 UniRef90＿UPI00045737EF UniRef90＿W8BX75 UniRef90＿W4XST5 UniRef90＿UPIO0032891C3 UniRef90＿G3NZT6 UniRef90－F7E143 UniRef90＿UPI0004419493 UniRef90＿B1WB12 UniRef90＿H2UZR9 UniRef90＿W4YQIO UniRef90＿UPI0003C129B5 UniRef90＿Q4T032 UniRef90＿UPI0004574BB0 UniRef90＿UPIO002653EDC UniRef90＿W5LCV1 UniRef90＿UPIO0021075C4 UniRef90＿F7ESL7 UniRef90＿W4YVR3 UniRef90－M4AT10 UniRef90＿Q4RC94
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    Y P K K T T H S Y N L L $⿴ 囗 十 ⺝ ⿱ 丆 贝$ STEDT DNVNKLL ADLD T RTLI VCGSLFQGACEKHRMSNDS
    
    
    
    
    
    
    
    
    
    
    
    
    
    
    
    
    
     S LVNNFNK LVVV SYA HD G LLI ACGSI RQGACE YS TPQFF
    
     QKTDTDNHNKLLADRA QDVLL ACGSVYQGCELRRLENVSR GLVSTNNVNKLLLITSENRLIACGSASQGICQEPHHRKEH
    
    
    
    $P L T L T N N D N K L L M D Y R E N R L L A C G S L Y Q G \square C K \| L R D D D L F$ KETPNYNKLLLLHPA KNQLVVCGSL FRGLCCSLRSLDSV
    

    ## UniRef90 H2TQT0

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    UniRef90_UPI0004438A38 UniRef90_H9GZA4 UniRef90_UPI0003C8F8F3 UniRef90_G6DPN6 UniRef90_H2LC84 UniRef90_I3KTJ0 UniRef90_UPI00045737EF UniRef90_W8BX75 UniRef90-W4XST5 UniRef90_UPI00032891C3 UniRef90_G3NZT6 UniRef90-F7E143 UniRef90_UPI0004419493 UniRef90_B1WB12 UniRef90_H2UZR9 UniRef90_W4YQIO UniRef90_UPI0003C129B5 UniRef90_Q4T032 UniRef90_UPI0004574BB0 UniRef90_UPIO002653EDC UniRef90_W5LCV1 UniRef90_UPI00021075C4 UniRef90_F7ESL7 UniRef90_W4YVR3 UniRef90-M4AT10 UniRef90_Q4RC94
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    UniRef90 H2U6B9 UniRef90_W4Z948 UniRef90_I1G2M3 UniRef90_L7LU78 UniRef90-F7DG79
    UniRef90_UPI00034F6B0E UniRef90_R7THQ5 UniRef90-H2U7P2 UniRef90_W5NEH5 UniRef90_Q4RJV0 UniRef90-H2PAV0 UniRef90-F7ENV8
    UniRef90 H2MW36
    UniRef90_W4YJA3

    130
    140
    150
    160
    
    $N \quad 1$ K D P $\square$ S WQP MVP S DE T S S V V M F $\square$ A P GYPNPASTMTSTK
     NHVIYFS DSNGEKSYVASMSYYMVGKTQLDVFLVGKGYSS
    
     E EQLYY S DNKGERTYVASSNYSRDGHFGVFLVGKGY GS LDD $Y$ LSSDN RTGTMY GVVVVPSQGQDATMVVGTAVVGKQDYF SEIAVEFPPQGEKTVFPSHGGSTRLLVGATYTGAGTPFPP
    
    
     TTVAFVANGDGNMKTLVVGSSTSEWLRGNEWTMSSRQLPS
     $V V E H R V Q E A V F I A P G P P V P S E N N V M Y V G V T F T G N S P Y R S E$
    
    
    
    
    
    
     SV E HQRIVI NANTP
     $L A V Q F P Q D G A T V F P V F R T H G G A P R L L V G A T Y T G M G T E Y F P$ YLSSVVNESGTMSGVI DEVPNGQNKLFVGTPDDGKSEYF GEP HHRK EHY LS GA QEP DTMAGVIVEQGAELSK LI $\square G T A D$ QK DVIRRESQRNVVANDRFSSTVIVFVAGPPNDGGPRDVGY
    
    $K L G E P F H K K E H Y L S G V N E S G S V F G V I V S Y G N A S P D M L F V A$
    
    $Y L S G V N E S G S V F G V I V S Y S N L D D K L F \square A T A V D G K P E Y F$ AEPEFDPESVATYAFIGPERYNSWDRSNVLYVGTTEEYRH
    
    
     DVERYDSHYA QLVVT DS DAPTVVGAVVLGADVVRNGBETVD S SVVREAGSMA GVLIA GPP GQGQAKLVVGTPI DGKSEYF Y L S SVA ES GTMS GVIDSSSHSPTSKLFIGTPIDGKSEYF $Y L S G V N E S G S V F G V I V S H N N L D D K L F I A T S V D G K P E Y F$ $V V A$ 1 LV EPSHKKEHY LSSVNETGTMYDGKLTVGTAVDGKQ DQQLYYS DNKGERTYVASNFSKDGKTFSVFLVGKGYGS LDD
    
    
     MAVSFPPPGAAVVFPLNVAANHANASTAGATYTGAGS DF FP GEPPH HRK E H Y $L$ L S G A Q E P D S M A G V I V DVMRYSKTSSSQEVVTDGDVPTVGAVVLGS DFTGVVTFKGRG E QEDYYCDSKGERTYVANVSYYKKDDKTFNVFVVGKDYRN
    
    
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     SSKVISTR LLQEHNMVEASTVQTSSFVHRYGHDFRYTFKD
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    $V$
    $V$
     TS $L R L S R G D G E A K E F E L A D T E \square S L E R K F R S S Y R \square D Y V G G F$
    T F P T $\square$ S S RK $\square$ A R N S E E D G MF A Y VF H DEFVF D $\square Y Y \square Y G F A S$ NMKLI S T R VLE E E GD WE TA A VQSNP F NVKYAHDFRFSFK S

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    SREAGR VGQVGLPYIVNPTARCQVSQVPQCSSQTNPA $G G G Q$ PSSDVQVLDSV $\quad$ QQGSGAVC $\square Q K G N \square V L Q P E Q L D C G$ RFMSNDQKCFSGDGERGLDFDSSHNCV EGT\DLAWDKVKD\PCSSALLT\DDNFCGLDMNA MCFNGSVKYRNMGYV KNGVKVIYPPYQDNTAFKCNEDAPGQTKSYPCSGEHLDNP GEG G G GIAKPLEFAGGTDCTSFQS
    
    
    LNNDPVVYNPYRNSEKFCTSEDPEDTNDKHRCGADFLLSP LCFNGTTKDRNDGYDS GTDNDGRCP VVGSLGNDYNFCSVG DGGSHDGRTKCTRNTEFTITDEYCGSDSNQPLAGSDPDEG VEDCTSKGEVE VHGDRHLQSRCNNIDLD NGGLIDNKPAVYAPYSSKSDELCLNNNQN $E G \square R G \square D Y \operatorname{SQNMPClA} T K$

    HGPNSDVQVLDSVIQGSGAECEGKGS $\square M L Q \square Q T D Q L N C G$ D GKLLSLPWLLNKE EGKLLSLPWL $\square N K E \square P C \square N T P M Q \square N G N F C G L V L N Q P$ KSAERCQQTKFSG DSGENSGVPAVDVPYSSQTYTAC DDGKPSVY $\square P Y$ Y S S P DECRSSNKKNMAVNYSCGAEELPS
     EGTLD $\square A W L K V K D \quad \square P C S S A L L T \square D D D F C G L D M N A P$
     EGTLDDAWLKVKD DPCSSALLTIDDNFCGLDMNA
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     $M C F N G T \ K D R N L G Y \square$ S GNWLGTSNDFLQNSFCDS LPDTYTPPD TAQCTAYTQDEG EGKLSLPWLLNKE SGKLSLPWLLNKE LDLA WLKVKD K
    
     EGHLELNWLLGKDVQCTKAPVPCDDNFCGLQDDNQ DS GKISGEPAVDMPYFFKTEFCTSNDADTLKNYKCGADF TSNGTPNSYLRSSMCREPPVLFTPPDSVQCTAYFKDGDL EGKLLSLPWLLNKE $\square$ G GKPGVYLPYSSKPDDCQSHQQKNMLESNKCGAEF DR EE NELGTTNDYTVGDDSVIQGSGPACKAKNDTGQNTQLDCG DNNELGTTNDYFGDYSFCKSFPDTYTLDPDAQCTAYFRDG
    
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     EMT LAALPWLL
    MCFNGSDSDRNLGYVSGLILDGKCPTAGST
    
    
    FSGNNVVVKVGPEHLVQPQQCTAMSVDVTGKYCGTVSS EGRNG $\quad$ S S C C I QYVYHGRCVHLHFEPKK $\square G$ ITKGEQAVYTPYSETLHCTSVNKVQVDQYPCGADFDPS
    PGSDVQVLDSV.
    EGK $\square S$ S $\quad$ W L LNRE $\square N C \square P T P H Q \square G D D F C G L V$
    $\square \mathrm{L} Q \mathrm{P}$
    
    
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    PLA SKAEFALSTEPSVVHKGRMTAVAV GPYQTFDENSVI I ANSVKPIGGKQLYIHNGDNFDFQVGEK
    

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     PTKLQTDSEDFCGLDVNS
     SPLGGGEQALIAL
     $G N \square P N F C E V G G V S G E M V R G M P I F T E D R D R M T S V I A$ GNDPNFEVG KLS GVTPUVTNAALVFPNVSLSAVA
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     DCGAEFLPS PDASKPEYADAVKPワYT GNDMLTAVAV
    
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    > YPLGSRD GLTATAVLQRGGLNLTAVTVTA DNFCGQDFNQPLGGGTT EG $\quad$ PRLFDDKDDGMTSVAA PDNDQTLVNNQLDGGAVLGNGGRMVPNNLFTAFTRFVVEV NQPLGGLR KGGPFEDRADGMASVA
    
    
    
    
    $\square G G \square R V I E G F P L Y E D R T E G M G A$
    
    

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    P D GNA $\mathrm{A} \mid \stackrel{F}{F}$
    A DGSAVF

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    A NNTNMA LVMETYYDPEDFSCGTVGNGVCTRHDDVDVN PPDWGENENKVLLDDEDNDLIACGSAFNGTCVLHHRVHDL GLVSTNNVNKLLVDYSGNRLI ACGSASQGПCQEPHHRKE H MWRDNINMALLVDTYYDDQLI SCGSVNRGTCQRTQSKFHC MWK N N NMALLLLETYYDH HLISCGGSVAKGTCQQRHMYSKMC
    
    
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    ## VWA DNVNMALLVDTYYDDQLISCGSVRRGTCRRHRSEVHC

    YD T E V VQTSNNVNKLLLDAA HNRLI ACGSTSSQGDCQEPHHRKE H

    PRVLT NNYNK LQPPEQGVLVVCGS VYQGLCQLRSMANDS QDQETDNHNKVLLYRDGDTLIACGSVHQGACEIYYLSGRF GTMQPNDFKVVVVSKDKDKLLACGSAHQGLCSVHSLSNDS
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     $\begin{array}{ll}P P G D T D T Q V L V L E P A L P A & L \\ P\end{array}$ $R W K D N D N M A L L V D T Y Y D D Q L I S C G S V R R G T C Q R H Q S E V H C$
    $G R V D N H N D A L V A E N V Y D K G L Y S C G S A D N G V C R R H E E V Y C F$

    ## $T L S L T D C V T K \square M H T L P G G R \square I I C A T M K Q G \square C Q \square R S T N D N S$

    
    
     VWK D NV VMAL L L E T Y Y D D QLI S C G S V S G G DCHMRHIIPP P D N Y S K DT DN QVLVVMDP F ES WL FS C GS T L Q G RC F L H ELL K PHDLSSPNSNLLLDDYPQNRLDACGSTSSQGDCQEPHHRKEH
    
    
    
    
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    $A \boxtimes A V R F P P G G S D S A N H P N A S T V G L V L R R G G G G A R A T Y T G F$
    
    
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    $S \| T V A P S D \square S A T C V S L V D S N G N L Y V A A T V T N D S P Y R E S S T$ $D V V R H E P S T N Q L V V T T S D V P T V G A V V L G A D F V R N G E G T V D$
    
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     F RT TQSSDDFQl RAPYHPDD IYNVDLSDDD HSVSDRRDKADASGFAPDFVALSVLPA HLSSYRVEVVFRS
     RSVSI RRGKGDASGFEPGFEALSVLPTHLASYHDEHSFRS
     HSDSVRRETQDGFKFLTDQSYDDVLPEFRDSYPIKYVHAF TLSLRKMKTSQNGFTFFSNRSYMDLDPSLRGNYYLRYVYS REPPNYD I G A GSLEGEAAVHVRAEYRSRFRVYFVAAFFH GGLYLFTGISDASLSDRSVSKRSVVDLGUVQQTLTPESST DEAQWULLSSRGLPSSNNEDPFTVLKDETGNAGFVQVKAD HS IS S R R K K DASGFAPGFATLSVLPEYLASYRDHHSFHA
    

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    UniRef90 G3TSI3 UniRef90_UPI0002654265 UniRef90-F7EB77 UniRef90_W5QEX4 UniRef90 UPI0002654D1D UniRef90 ${ }^{-00 P 4 P 1}$ UniRef90_UPIOOO3C19244 UniRef90 UPIo0042C3ABE UniRef90-F1SPK1 UniRef90-LBY5M6 UniRef90-V5GGC8 UniRef90 UPIoco3EbB625 UniRet90_W5K3K3
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    QLT S P
    DVGEHFFTSKI VRLCVDDP
    EGFTYFVTNQQQLEDPPADHDYDSKI NRVCQDG
    GGFVYFLTVEGVAVNSAGDLFYTSRGVRLCQDDP ATY KAGYMSSNTQQFVAAPFGSLVFNQQDKHPS NDFVYFDMNQVG NVKLGRVCET
    ПFKVPFAYLAMNVEPAPAGKENRSSVLARICLKSEPRTEP KSYSY TAMNNDAKLGDKESHP ILARUCLENKNRKKSPPET GYYVYGFSSGNFVYFDTGQPEMVSPPGSTTQVYTSKLVRGL
    
     PEFLESYPIEYIYSFSTTDFVYFLSVNANSPFQTRLGREXC GGFVYFLTVEGVADNSAGDGFYTSRIGRLCKDDP NHFIYFL DTVQKETLDAQTFHTRIIRFCSDDSGLHSYM GGFSYFLTVQRLGRSDDNSYDSRIVRVCQARNN GGFVYFLTVEGGALGAAGDLFYTSRVVRLCQDDP DGFVYFLFSRTLDGTDNKNLTFVSRLCEN
    $\square$ VYVYSFSSEQFVYYQLDTQLTSPDSTGEQFFTSK\|VRLC NHFTYFL TVQRETDDAQTFHTRIVRFCSVD SGLHSY KTYNYFiA EQFVYYLTTQLTSPDASSEQFFTSKIVRLCVDDPA EGFSYFLTGQKFGMSDNPYDSRIVRVCQERNDYH GRYAYFATRQ QTSDDDEKDQSRLVRVCTG
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    SEYAYFVLVQKKSHLA DEAGFVTRLARICVNDPNY
    NSFVYFLTVTVQGESPDSQAFHTRVGRVCSSDNEMRSY
    FQSGPFTYFLTVQQVSKDSQAYHSRIVRMCSADSVIRR
    DYGYYFITRGDSVY
    

    ## NGFVYFVMNQVG RSDNS NVKLGRVCEE

    NDFIYFL QTVQRETDDSQTFHTRI 1 RFCSVDSGDHSYM RTYVYFLTTQLTQMEAGGEKFFTSKIVRMCSNDTE
     NTAAYFLLREKSSSSSRHPRET ISRLVRVCRGDRGGLRIA
    
    
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     $Y D S Y T E V T L Q C E G S D S T L Y N L L Q A A D V M R P A S D D E H$
    $F G S L V K A E U Y C G K E P L G T P E S Y G A Q Q F W H G N K H D W H K$
     HSYMEMPPGA HLLAK Q IGGA NLDNDDI LY G V V F A R S K P D S T E P DCRFEPK RRRRGAPEGRQPYPVLRAAHAAPVGAQLAT MEMPLECDLTEKRRKRALRSEVFNVLQAAYVGKPGSAHDD DQFFESYTEDE LDQCGSHNDFQSAHI GPQLADSLNDDSTDA
    
     EHRYISYGEDEDQCNGTDNDNYNRTTAASLARERLVGVD

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

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    FYSYVEFPLGC TKDGVEYRLVQAAYRQKPGGPDDD EHYFGTMAKADLLCQSSRNGERSRFTFDSAQSAYWDADAK EMPDECDSTNKRRRRATEEVKVFNDLQAAHVTKVGNEDED DCHFSNKRRRRRRQGVSLEKETYNVLQAAHVARVESSGQK QSDDDYYSYAEVGLSCTMQNTEFNLLQAAYVGKSGTQTGD VLDCSFAPK RRRRGVPEGLQPYPVLRAAHTAPVGGEGQE DCRFAPK RRRRGAPEGGQPYPVLRVAHSAPVGAQLAT ECRFEPKRRRRN DPGEPYKD GVYNVVQAAYFGKAGEEDED ECDFTEKRRKRSTASA DCRFSYKRRRRRSQVASMEEETYNVLQAAHVAPVGSSGQK DCRFAPK RRRRGAAEGGQPYPVLQAAHSAPVGSEGQE

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    #### Abstract

     LLYAVFAESSEFTDEAADPAHSALCDYK MSELLAKFKTA MDLRCLDAGDAQAPANRVACYTGARE NLYAAFSESDSVSSNASLCMYSMADVEAAFLQAVKDCLSG NIFGMF EGKNEAALCMFP DGAGLFGVFEKSNREAALCVFTFAFIGDSIRNARKKCFEK LLFTVFSKGQKRKDESALCVFILKQINKERLQSCYRGEGT ALFAVFGALAARTAPAALCAFRFADVQAATRAARNAC MFAF LLLVAFMQENDASAGSAVCSFRMRDVEEAFRKAN VLYAVFTREDRAGGGPGLCLFPLDEI HEK DKDDRNACY VLFAAFARSKPDSPEPTVCVISVAKIREFMKQGHTKPLYH DL 1 LFTDF IFTMFSQGQKNPKESVLCILFTGKOA LYGVFAQSKPPMDGSAVCAFPVKYVNEFFNKRVNKC  VLVGAFVASADHTTRPSVCAFAMTEVEALKGTGVVHMCYAG  RLYTVFSTGEAGPHGSAI CTYDLLSIEKAFQGPDSNSNG VLFTVFSQGQKNPRQTILCLETLSNINAHTRHRTQSCYRG ILFGVFAQSKPPVNRSAVCAFPIKYVNDFFNKIVNKN VLFAVFTKGETPQQQSAVCMYKMTDIEQTFRNAI ILYGVFAQSKPPMNRSAVCAFPMKYVNEFFNKIVNKNNVR VLFAlFSKGQKQYHHPPLCAFPIRSINDRTKERLRSCYQG VMYGTVTHPDDDESDSALCMYPLNSINQQLMDIISACYG VLF TVFAQGQKNPKESVLCLITTLQKI KDKIKERISQCYRG  VLYGVFTDETY SALCSYTMKDI QDKFVDATCGCVTS VLFTVFAQGQKNRAKPPLCLFTMRQUKEK KERTQSCYKG VLFAVFSHLHQSMEDSALCVFSLRKINEKLKERLQSCYKG VLFAVFARGETPQQQSTVCMYKMSEI QQAFTNA 


    HLKSGTRFQПDDSRGTACDTQMSVIEDAFDEGDYSCY
    VLFGVFSQSKLDSPEPTVCAVGПKTINELFN KR ILYGVFAQSKEPMNRSAVCAFPI NHI CLLVNESTRWQFHS VLFAAFANSKDPTPNSAVCVITALKQI ILYGVFAQSKPPTNRSAVCAVSVRTI NEFFNKIVDKQNMK
     VLFAVFGKGRTPWQHSVVCVYKMTDUEQAFIDA SGCDTQ VLFGVFTGSRDRGPRSVVCAFPDDLLDTLYEQGV EAK GRASKDSRDYNPDSGSALCUFNLDELNSYUEEKSILCYEN
    EDFGFAARMNRAVCAFP KYVNFFNKINKN
    ELFGVFAASRDRGPNSVVCAFPIDLLDTLIEEGVERC
    LLYGVFSQSRPPTDRSALCAFPVKYVDEFFHRDVNKN
     EFRKLMKLEEDDDVLFAAFAEGKPN SKDPTPNSAVCVIDA
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     ILYGVFAQSKPPTNRSAVCAVSVRTINEFFNKIVDKQN VLFGAFADSQDPSPNSAVCAFPMKMINKA EKGM LLFTVFSQGQKNPRESALCAFTMTKIKEKIKERMQSCYRG ELLFGVFTARRDSSPGSVVCAFPIDDVDVVIEQGRCCESPA ILYAAFSESDSVSSNAALCMYSMADVEAAFLDA I LYGVFAQSRPPMNRSAVCAFPTKFVNEFFNKIVNKNNVR VLFVVFSQGQNPPRETVLCLFTLHDI NLAMRERISSCYRG ELLFGVFAESQVPQKYSAVCAFPVSKICEADDRGMTKC VLFAAFAQGQPGSPEPTVCVMSLKHINNMFK MYMQKCN
     KL TASFATS PTSRKSSICVFSMQKVKLTFWYNVDRCRSG VLYTVFSNSANPSATSAMCVYSLRDIRKKFTENIQECFSG VLFGVFVTSPSMGPSSVVCAFPVHQMDTHTEQGVNLCCES ELLGGVVTGKDGGPGSVVCAFPIDLLDTLIDEGVERC ILYGVFADSGVTEDDSALCAFPMDNVNKAISDGV
    ILYGVFAQSKPPNNRSAVCAVSVKTINEFFNSAADKQNT
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    $V A R D T$
    $V$

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    DDCNAAKPTSKVSHLFHTPGTPQDCTRYDPVDKEDLCTP MGDPQSSPDDFYKPFHGE $\square Q C G G Q G L G A G E S F L C G S E H \square P$ LS GSDLKPYNQDVFLVKAFKHYCGKHEKGYR
    LKK TKKVRDVQNCFFGYGSQGLSQFSDNLLCSYSTYRNV EGKLSLPWLLNKE NVKCLDQHFYGPNHEYCFNRTLVRNSSGCE MKCLQHLYKKNNKYCLNRTFSRNTT RASPPPQFPV GSQVKQVVLAGEPMQDNGNFCGLVLNQP E L N P WK NTPQENPANCLVPATGSYQYLQY IERSSSLSDHS PDK
    LELDNWLLGKDVQCTKAVTRVPVESCEQYTTCGECLSSGDP 1 LRSNSNMPKFDSARPNPFPKVC ERLAAGNLTTLKELTLV
     LDLA WL K V
    TQGARLSYLNGATCDGSKYSFTYANG $\square$
    CLQ MFYGPNHEHCFNRTLLRNSTGCEVRSDEYRT VEDCCTTGPERLSRGLCYFQHCENCPHELETNVSCPDQPT EGKLSLP WLLNKE T N S CLRD SI CRESPILVTPSDTVQCTAYYEEDGRTP EGNLELN WLLGKDVQCTKAPVPIDDNFCGLDDNQ

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    DSGEISGGDAVDVPYSSQTYTACTSKDSKEKRLDFFKLLE
    
    
     E GKGLSLD WLLNKE EGTLDLAWLKVKD $\quad$ S CSSALLTTDDDFCGLDMNA
    $\underset{P}{S H V S T}$ A A GMVTVLDSVVQGTGPACEPWFANKQCTPTRDN
    QGQGNRLDWNRGPGVRCKQQQSFMTE $\square M E G N F C G S P D$
    EECNTKHLYHFDNKDSKFCLNKVKLLNQSGRCDEKSEEYR TSSC
    MEKCNT $\square E P Y H F T G L D K K S C Y N V K T F L Q R A T S H C S$ C

    HFYGKDSKYCVKRTFSRNASYCEAQ
    
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    T STGTSNSYLDGSMCGESPVSQCKND
    LK N $\square$ NAMFKTYMGTCNT $\quad$ EPYHFTGDDN $\square$ SCYNGTSSDDC $V E P A A G V V A V L D S V V Q G T G P A \quad C D R K R N L Q L Q P E Q L D C G$ TN
    
     CCGPFVPSGFRRGLDFFQAPSFCPNPPVPEASSPN IISCP MKCLQHFYGKDSKYCLNRAFSRNASYCRAQDDEYRL
    CCEPGADKKRVFRGDEFFQPKGFCPGPPGEVFKDSNVTC EGRDSLPW
    PQGMRRGLDFFQAHSFCPNPPGLEVPS LNASCHHFPLLVS
    TQDARLSY $\quad$ Y D
    C L Q Q HFYGPNHEHCFNRTLLRNSSGCEVHS
    EGHLTTLP W
    CSSSFHDKDFRGDSFYQDTEYCPHNVNY SAAVV RQRQASSST EASVQPNPFPTICERFAAGNLTADELSLGG T $\square$ DPYHFTGSERTSCYNMNLTQLQNNDGYGDHEGKEGMYR

    CGSPAQQER LERGVEFFQPQSYCPDPPQT $\square$ F LDPNVSCW TDS
    $\square$ GN T G
    SGRPALQ RGLNLFQLPSVCPNTPGMVAPNTSCHHFP CESPVHPGLRRGLDFFQSPSFCPNPPGLEALSPNTS DDCCESGPEQLSRGLCHFQUCESCPHES
    CES QANQERVERGVEFFQPQSYCPDPPTLGSNVSCWNYP CESPVDPGLRRGLDFFQTPSFCPNPPVPEAPSPNDSCHY PEGRTLRRGLDFFQAPSLCPNPPD

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    UniRef90 ${ }^{-}$W4ZE39 UniRef90_UPI0003B49280 UniRef90-Q4SQ46 UniRef90 UPI0001CBB5B8 UniRef90-H3F1S8 UniRef90-UPIO003593A5E UniRef90 $\mathrm{X1}$ Y3B9 UniRef90-UPI0003594A6B UniRef90-H3B042 UniRef90_G3UNS1
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    370
    380
    S R P C C
    390
    P Qlı LV|D 400
    D $\square \mathrm{N}$
    
    DDVLCSQER
    
    AAHLQ HPDST DQMVRGVPVFTEDRDRMTSVIABAS
    AAYPCGSDHTPSPMASRVPLEATPVLEWPGVGLDTAVAVTST
    GVNNY I E GKTSLSGTRVVHLQNR
    YPLGSRKGLGICALRALSNISTRGFYEFVASNDESVATVGG LEVTRTHPRKD WFNGRFRNI LITS DDSFCGTGDHP\QAQTTVNAYDY LTGGGHGRHYTSL DNFCGQDFNQPLGGGTVTDEGTPLFVDKEDGMTSVAA VRSDEYRTEFTTALQRVDLFSGQ YCGAQDDEY $\stackrel{\text { PKALL }}{ }$

    HC G WC
    RMGTNFYYRF
    E P $\square$ T P L F G H A VVMS P S T K WN EVIG Y Q LGGLHVIEGLPLLA DSTDGMAS
    $K V D L N T V P E C S R R Y L S N P R \| G G N \square S V T T T A V R Y S N R L L T S$

    > HPLVS SAVEMSSHVP TS V
    $E F T$ MVAQPFYR VDLFNGN MKDVLLTSVLVTP DNFCGQDFNQPL GGTTTDEGlPLFDDKDDGLTSVAA $F \square H K Y$ A RSDEYRTEFTTALQRVDLFMGR YRFDN
    EFTTA $\square Q R Q D L F M G$
    G ID PLS $\square$ Y A S LIE YPSTLLTSI GVT T PLGGS TPVEGLPLFASSRDRMTAVAA
    DVSPLIREASSVLGSNDAKVSDE LIVKPSPTLSCDFLRW DDFCGQDFNQPLGGGTVTI EGTPLFVDKEDGMTSVAA A A HLQ SDEYRTEFT
     Q KPLRATPLY
    QCVVS SYDSTSYKYA QATDPLMGNPDAADDPGQSSSIVVT DNFCGQDFNQP

    WE QVECGNNVNTRTGGSEPDSAEPDIEMDDARVTSVATNT AA HLQQ HPLAG VKPVTASPGFT YSRLTAVAVAS

    MET $\square P F Q R$

    ## LD $\quad$ F M G MF S NVLLT S

    GY $\square$ NNYRV QVTQFFQR LEYWHKDLTNTLVTS
    D DEYRLEVTTPL QRIDLFMGQFNSVLLTS

    DPV
    $\square R T K S G \square Q Q Y Y G \square Y \quad \square P L A E F P G E V F T K V V T D C$ APSPNDSCRHF $P L L V S S S F S R V D L F N G L L G T V Q V T A$
    VRSDEYRTEFTTALQRVDLFMGQ
    F NQVLLTS
    CRHFPLL V S S S F LRVDLFNGLLGKEQI TALH VRSDEYRTEFTTALQRIDLSAG HFSQVLLTS

    DPHEGDHEGKESTYRQVTQLYQR $\square E Y W H K D L T N T V V T S$ AAHLQ HPLT $\square$ LQPLLKATPVF RAPGLTAVAV

    LCACRDFGKDT CGTKNDTATPCYTSSDSLITAVAA $K P T F I A M D G F K L \quad$ DLLQGR $\quad$ MSDVLLTA I F VTP HFPLLDSRSLSRVDLFNGMLGP VQVTA

    EVTTPLQRVDLFM
    
    WNFPTF $\square$ PTNSYRVDLFNGR
    D S LLR VDLF NGLLG
    TVQVT A
     Q $\$ GANF $\quad$ YYRY V VSPLFGHADAMSPTVTWSAVI GYK LQVT QFVQR LEYWHKDLKNTLVTS

    NYPTMDPTNYPRED
    LLNGHLDNVLLTA

    LLVSNSFSRVDLFDG
    CRHFPLL
    MENNATCRDHPTMVS
     K P Y Y RVDLFNRKMTNLTSLLVTT
    TMDP
    TNHPRVDLLNGHDDSVLLTA R FP $\square R$ VSSSFQRVDLFNG
    

    UniRef90 G3TSI3 UniRef90-UPI0002654265 UniRef90-F7EB77 UniRef90-W5QEX4
    UniRef90 UPIO002654D1D UniRef90-Q0P4P1 UniRef90-UPI0003C19244 UniRef90_UPI00042C3ABE UniRef90-F1SPK1 UniRefofo-LBY5M6 UniRef90 UPI0003EBB625 UniRef90-W5K3K3 UniRef90-W4YBL5 UniRef90 UPIO0038ECF32 UniRef90_UPIOO04421AD4 UniRef90 UPI0003C82E2D UniRef90-E4XUB3 UniRef90-B7Q4W0 UniRef90_UPIO00388F41A UniRef90 G3QP55 UniRef90_U6IMG1 UniRef90-G5BFL1
    UniRef90 B3RWZ7 UniRef90 UPI0003C177BB UniRef90 W4ZKK5 UniRef90_UPI0003C92202 UniRef90_W5MY80 UniRef90- UPIOOO440BECA UniRef90-W4YVR1
    UniRef90-s9X944 UniRef90 UPIO0001F356A UniRef90_UPIO001CB9681 UniRef90-S7NC56 UniRef90-UPI0003346DC2 UniRef90- I3JQ94
    UniRef90_UPIO0044329D0 UniRef90_UPIO00440C5DE UniRef90_Q2IBC0 UniRef90 ${ }^{-}$W4ZE39 UniRef90_UPIooo3B49280 UniRef90-Q4SQ46 UniRef90-H3F1S8 UniRef90_UPI0003593A5E UniRef90 X1Y3B9 UniRef90-UPI0003594A6B UniRef90-H3B042 UniRef90-G3UNS1 UniRef90 -13J7S1 UniRef90-K7GB62 UniRet90-UPI0003BD96A1 UniRef90 UPI0003F0916F UniRef90 UPIO0021A46CA UniRef90_UPIOOO45E00F2 UniRef90-V3ZTP6 UniRef90-G1L3D7 UniRef90_UPI0002C46393 UniRef90-A1X150 UniRef90-W4ZHU7 UniRef90 L5LLY1 UniRef90_UPLO00329E055 UniRef90-G5BYE5 UniRef90-A0A044TL65 UniRef90 ${ }^{\text {W }}$ WYY15 UniRef90-UPI0003F07D07 UniRef90-UPI000441F819 UniRef90-L8Y001 UniRef90-RoLPF8 UniRef90_UPIO00454BE3A UniRef90_F1QDD7 UniRef90-G1M098 UniRef90-UP10001CBAA84 UniRef90-W4YQS8 UniRef90-UPIO003FOBDB9 UniRef90-M4AWF1

    A
    SYVYNGYSVIFVGTKSGK苗K
     SAVVRQHTVAFIGTQEGDLLKVHVMSNTTGRLYETVPL
     YVYKNHSLAFVGTKSGKLKKLDDSGWEENRIQMVIDV
    $\qquad$ EDG GNYTVVFLGTVSGRLLK NLNESMQVVSRRVVTV VTADOQNMSDVAFWGDSQGQLHRVYLGPGSDGRPYSTQTI
     STLIMGRDTVAVMGTKSGR1HK
    TSTFDVGDQTVVALGTRSGKFMQVVV SRTVSSTPHVNFR
     VTNGKLLRG VLKLGRRSGSLKKVRVDGSQEAHLYETVPV
     VAAYTYHQHSVVFIGTRSGSLKKVRVDGSQDAHLYETVPV

    SAVVRNHTVVFTGTQEGDLLKVHVMSNTTGRLYETVPL TSTFIKGDLTI ANLGTAEGRFMQVELSRSGSTPHVNFHLL IINDK TVAHIGTSEGRLLQ LVLRRTSP\|IFANYSL YDYRGHTVAFAGTRSGRIKKSL
    E $\quad$ RQYTVAF GDTQGELHKLIVVNGSFGYVYEDVF L $S Y$ VYNGYSVVFVGTKSGKLKKTHHL
    TSTFIKGDLTI ANLGTSEGRFMQVV LSRTAHLTPHVNFL VQE ปSTFTKGELTIANLGTSEGRFMQVVVSRSGSSTPHVNFRL YVYNRDSVVFVGTRSGQLKKGCPRPG
    QTVGVVNHHLCSKMAVHNGHRWVLSLLFKSHHDTVELKKL YDYQGHTVVFAGTRSGRDKKLVDLSSPW
    TH VSTFDAGDLTI ANLGTSEGRFMQVVVFRSGSSTPHVNFRL LSKGNEVVALVTTSTASAATLSKI HVQPDNTGRGYETDTF YDYRGNTVAFTGTRSGR1KKLASQAQGH YVYKNHSLVFVGTKGGQLKKVRN
    ${ }^{\mathrm{T}}{ }^{\mathrm{V}} \mathrm{HGG}$
    TVVFMGTKDGRLVKTVLEDEENSFVYATEST NNYTVAFLGTASGGLLK TNLDSTMKVISRRS $\mathbb{C N}$ SV

    VA VF TQGK】TVANGGTSEGRVMQVVISRQKKPHVNFQLH■
     ISVFTKGYLTVANLGTSEGRFMQUVISRSEPTTPHVNFPLL

    VTAFNDSSHCVIFLSTNNGKTYKMLRQVSHDS\|VSQEWEL LHVTRLANDTVAHMGTADGR\|LQ VELARSDNYLLYVSNF
    TSTFDKGDLTTANDGTSEGRFMQVVVSRSGSTPHVNFRL VT CMENVTVAHMGTADGRILQVELARSLNYLLYVSSLD ISTF
     ASANNYMAVFLGTATGRLLKLSLNESMQVVSRRMVTV


    
    
    $\square H V I H Q G N A T V A H M G T A D G R \square L Q V K \square F R S L N Y L Y S N F S \square$
    LD NVTVAHMGTTDGRTLQ VELARSDNYLLYVSNF VTRLD NVTVAHMGTMDGRILQVELVRSLNYLLYVSNLG IDSK NVTVAHMGTMDGRLLQUVELVRSLNYLLYVSNGG THVIHQGNATVAHMGTADGR LQVKLFRSLNYLLYSNFSG LHVTRGNVAHMGTTDGRILQ VELARSLNYLLYVSNF LHVTRDGNVTVAHMGTADGRILQVELARSLNYLLYVSNF

    UniRef90 G3TSI3
    UniRef90 UPI0002654265 UniRef90_F7EB77 UniRef90 W5QEX4 UniRef90 UPI0002654D1D UniRef90- Q0P4P1 UniRef90_UPI0003C19244 UniRef90 UPI00042C3ABE UniRef90 F1SPK1 UniRef90_L8Y5M6 UniRef90-V5GGC8 UniRef90 UPI0003EBB625 UniRef90-W5K3K3 UniRef90-W4YBL5 UniRef90 ROLMP3 UniRef90 UPI00038ECF32 UniRef90-UPIO004421AD4 UniRef90 UPI0003C82E2D UniRef90 E4XUB3 UniRef90-B7Q4W0 UniRef90-UPI000388F41A UniRef90_G3QP55 UniRef90 U6IMG1 UniRef90-G5BFL1 UniRef90-B3RWZ7 UniRef90 UPI0003C177BB UniRef90 ${ }^{-}$W4ZKK5 UniRef90-UPI0003C92202 UniRef90 W5MY80 UniRef90 UPI000440BECA UniRef90-W4YVR1 UniRef90_S9X944 UniRef90 UPI00001F356A UniRef90-UPI0001CB9681 UniRef90_S7NC56 UniRef90_UPI0003346DC2 UniRef90 I3JQ94
    UniRef90-UPI00044329D0 UniRef90_UPI000440C5DE UniRef90 Q2IBC0
    UniRef90 ${ }^{-}$W4ZE39
    UniRef90_UPI0003B49280 UniRef90-Q4SQ46
    UniRef90 UPI0001CBB5B8 UniRef90-H3F1S8 UniRef90-UPI0003593A5E UniRef90 X1Y3B9
    UniRef90-UPI0003594A6B UniRef90_H3B042 UniRef90_G3UNS1 UniRef90 I3J7S1 UniRef90-K7GB62 UniRef90_UPI0003BD96A1 UniRef90 UPI0003F0916F UniRef90 UPI00021A46CA UniRef90_UPI00045E00F2 UniRef90_V3ZTP6 UniRef90 G1L3D7 UniRef90_UPI0002C46393 UniRef90-A1X150 UniRef90-W4ZHU7
    UniRef90 L5LLY1
    UniRef90_UPI000329E055 UniRef90_G5BYE5 UniRef90 A0A044TL65 UniRef90 ${ }^{-}$W4YYI5 UniRef90_UPI0003F07D07 UniRef90 UPI000441F819 UniRef90 L8Y001 UniRef90-ROLPF8 UniRef90-UPI000454BE3A UniRef90_F1QDD7 UniRef90 G1 M098 UniRef90_UPI0001CBAA84 UniRef90_W4YQS8 UniRef90- UPI0003F0BDB9 UniRef90-M4AWF1 UniRef90_UPIO00462E5AE UniRef90-U6HG16 UniRef90 M4AJ35 UniRef90-W4YCG6 UniRef90_G3X0S5 UniRef90 E3NEQ6 UniRef90 V4B738 UniRef90_UPI0003347073 UniRef90_Q04912-2 UniRef90-H2MH21 UniRef90_Q9W650 UniRef90_F7E2F2 UniRef90 UPI00035017F0 UniRef90-UPI00032B227E UniRef90 D4AA77

    QEGSP\|RD|LVLISPNRQ
    ${ }^{460}$ M T E K QIV ${ }^{470}$
    Y|LYY A MTEK Q|VITRDP V
     ESGQPVHHVMEFDPMDPTYLFVMTSHQMTRVKVA APGESVHHVMNFDPTDESYLYVMTS

    A Y GEPVHH DMQFDPADPGY LY LMTSHQMARVKVA QQGAAV SRDGTFDATFAHLYVMTQSTVLSVP GGIGTADEKSTAVDPNGTYAYFLTGKKVVGFPV D INKRVQDLVLSADQA SLYAMTQDKAFRLPV
    

    LDSQPVSPEVIQPDNNNGYTLATTGKKDTKПPL LDSQPVSPEVINSPGSDGYILVI TGRKITKUPL VDGSPI RDLLFSPD HRHI YLLSEKQV EDCQEIEDLELFGSAGGSSIFVSMPGCAVK LS

    पntcevrrarTs
    
    GSTP LDPDMYNDQDT S LLTANQQSLYRLAVA DSHPVSPDMTQRDNQSGYTLVVTGKKLTKIPL EQNQPVSS IASSYTSDSLLFV IGNKMDKVP

    G G G S VLQEMF LDE LK E QLT LA T S S D Q G
    

    LGTVKVLSDF LDWQ R Q S
    AAGESVHH DMTFDPNDRNY LYYLMTTHHDFRVQVA DSHPVSPEMIVQPLNQNGYTLVVTGKTITKIPL $D V G G I V L H D V H Z N Q D S E E L Y I L T T E K L M Q L A V$

    SSEPDLQDLQFSDRGN FDFALTPNNVIRWP A YGEPVHP पMQFDPSDSTYLYLMTSYQMTRVKVA
    
    SRPVTTSVALLDADRSDGA\|LMATGNKПTKVPL DSHPVSSQVIVDHSLADGYTVVATGTKITKIPL

    A DSRSVEQLY LRTEGNSRYLYATTYSRVYKFS $S L G S N G K P V Q R D V S R F G D H L L F A S E D K V F Q V P$
    DSH PVSPEA $\square H P \square N Q N G Y T L V V T G K K \prod T K \prod P L$ SNGQPVQR DVSRLGDHLLFASGDQVFQVP DSHAVSPEVIVHPVNQNGYTLVVTGKKITKIPL

    SRPVTASVALLDADHSDGA LLMATGNK $\square$ TKVPL A YGEPVHPIMQFDPTDPSYLYLMTSHQMARVKVA
    

    S $\square G S N G Q P V Q R D V S R G D H \square F F A S G D Q V F Q \nabla P$
    $S \square G E K \square P \square L R E V S K \square H D S L L F A A G N K V F Q \square S$ $\square D S S P V S A S V V L P D K \square H G A V L M A T G N K \square T K \square P L$ GSSQPVHR EVSCLGDHLFFSSGNKVFKVP
    $S L G S H G Q L V Q R D V S R L G D H L L F A S G D Q V F K V P$ DSGQPVQR DVSRLGDHELFASGDQVFQVP

    GSSQPVHR DVSRLGDHLLFSSGNKVFKVP SLGSSRQPTQRDVSRLGGHLFFASGDQVFQVP $S L G S N G Q P I Q R D V S R L G D H L L F T S G E Q V F Q V P$

    UniRef90_UPI0004571B16 UniRef90_UPI0003289A46 UniRef90-H2TB22 UniRef90_UPI00038C170C UniRef90_UPI0003444A6A UniRef90_UPI00027420B6
    

    ```
    lupas_21
    lupas_14
    lupas_28
    jnet conf sol25 sol5 sol0 jhmm
    jpssm
    ```

    UniRef90_UPI0004571B16 UniRef90-UPI0003289A46 UniRef90-H2TB22
    
    
    80 VATRNRLHVLGLQLVQSLTTGPTGDPGCQTCASCGPGPRG VGAVNSLYQLSPD LEVQSRDETGPKRDSRLCTACEEA VATRNHLHVLNLQSDESLATGPTGDPGCQTCAACGRGPHG
    

    ```
    lupas ```

