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 Q Q A I EKI I E K WD N RNEMD F T E LTVFS S G DP GVV L L LA R E
 KVLLE V V N QK D NV P L I P WK S TA L S H G DP G I CMLY G
K R V K E I V L H K D NV S S H P WG A S T L



S K T
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K S EKNY $\square E \square Q G K K \square N R F N E L R F$
H P WHDVT
QK K VQNK历K DLLQQMEEGLKT R RILQTK K K C M
 K F V N K V L

IV V V GK K


L I N N I E Y V VK QVARK LQ F P P G T
D SLAS GALGIVLFYA
M E R V L L L K N Y LN Y P N S PQSLLA Q GAA GTAL L H

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


I E S D G M K DIE RWS DE S L G S G F T GI C L L M G
 QK KVQNKIKDLLQQMEEGLKTDPHDFSAYTGWTGI

WE G I EF
QR L N N K $\square R E L L Q Q M E R G L K S$ D
NPFNEMGFPAWA
PETKY HP WGELT L D R GLA GI AVMFH
NHVDK QEEFNWND DSLATGFPA I S I L Y G D NTVT AVVA DRLDAVPP T P P N QPE Q A Q S L A E GAA GI A L L H I QHLNNK $\quad$ NRELLQQMERGLKSDPRDCTG
 GE $\square T$ QT LGSPMTLALS GLDPGTALLYG GE E T Q T L S P M TLS H GYP S LCI L $\underset{\sim}{\mathrm{F}} \mathrm{S}$

LLNNK TKELLQAMEKGLKSDPGDYTVYTGWAGПALLY L KVDSI I MADVDRELLRELKSNSLSSGYPGVCLLLG


K S K D L L Q Q M
D P TD QP WWH QSLLAH GAPGI ALLHI
P P P E D R P WA A Q T LA T GAA GTA L L D GVPE GVWAELTLGSGSPGLSIAFS
$\square R N K \square G E L L Q E M E K$ G L L K S D S G D C T S S Y T G WS G I
$N$ L A K K L A K I V E EVVLA L N E T Y Y K P C S V A V S Y P A L A V L Sll S S K I S E L L A I L E N GLLK N D P R D C T G Y T G W A G I A A L L



WS PATLSHGFPGIAVEVA
VP D N L M H Y P G D P QP VWD P LQ L S D GHP GVA L L A

 QR LQSH $\square$ S QLLQQ MENGKKA GRT DC T Y T G SA GI A L L Y L WP Q SLA G GAS G I AL L HI

D N L M R Y P GDPQPVWDPL

| S WE QA |
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$P$ Q SLA A G A A GVVALLA

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80
SKLSTYGLLT GSLYY GA


 ELTSSLTSERKYSARTGKYVNFMVKQMRNYGVLSDSLESGGV




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## $\stackrel{\mathrm{E}}{\mathrm{E}}$

 RAH VLSENYPTEKWDVVAH ELANEQGEDD R RDALRPWAAAMLKGPIQAAAEACGLYEGA EMDRFDPKGEWDLVAHHHLLALLQKGIQENGDYSWSSFSGM QLHRVTCEASHLQRALDYVKRTLRILNGRKVTFLCGDAGP ELDRIYPEDGWDII GHQYLEQI QMFVEQQGLHNDSLYSGL $E W D R Q A P D E G W D \| V A H S H L L A L Q E G L R Q N G C S N I S M F C G L$
$E R A H A S A E R W$
$E P V Q Q W L T A A D S G H L S V A M N S S L Y A G A$ ELDRLYPDEQWDVVAHNYLVHVQAVINADMFDSFSLWSGLD ERAHTRQGTW DQAHRWITAATTGQVSAADTTGLF LGA

 ERAHCGEGGW QTAHSWV TAAAGDGVSAADNANLLFGA QLD QLYPDKGWDMVGHSYLQRMQQVI EQQGTH TLGLLYSGA HLYRATQEVSHLQRSLDYVKRTLRNLNGRRVSFLCGDAGP $H L Y E V Y G D P V Y L Q M S H E Y V K K S L N T L T A K A T I T$ QLDRLYPEDGWDRVGHQYLERDRLVMEQQGTHDLSLYSGL
 KLMECCPEDKWGRFAHNYLS LMVEELNKKGFQSLSMFSGA HLHDVFGDPAYLQMAHRYVKQSLNSLTKRSTTFLCGDAGP ELDRLEPDGQWDVAGHRYVVLMQQALERQGIESLSGWS GM QWRATDPSYDWNRA $\square H S N M A Q \square Q S S L A K N G L H D L S L Y S G W$ RLSTVVLKDERLKEYAHSYLLSTTRESLKKSGAS LSSLCWEGLD
 HLYDVYGDSSFLQMAQEYVKKSLGCLTKRSTVFLCGDAGP QLDQLFPTEDWDVIGHEYLVLLNKHMQENGINDLSGDNGLD HLYDVF GDPAY LQKA HGYVKQSLNYLSKRSUT FLCGDAGP N G GIT D DERWRTVAHRHLQAAAGAMAASPSH G GLF S GP QQGRLTPDGRLNNKMGELLARMENGLKSADPGDCTGYTGW QQGRLTPDGRLNNKI GELLARMENGLKSADPGDCTGYTGW
 HDSDTYGDS SLQTK AKDLKLQQMEEGLKTADPHDCSAYTGW ALDNMDPDGEWDIVAFEYLKRVQAHLQTGSFHSLSLFHGL ELSR DDPALRPTAHARLAAAAKTIGSAPGSGHGLYDGL ERAHTGQGTW QQAHRWI KAMVAE QVSAADT TGGLGGGV QLDYLYPKNGWD VVGHQYLERIRMVVEQKGVHDLSLYSGL
 ERARTGHGTWHQAAHTWVKDTVATDISAADT SGLYLGA GVSHRAAEQAPRAHAYLGVATRAVASGTVAPSGLFKGP HLYNVIEDPSYLQRALQHVGKSLSCLTKRWMTFLCGDAGP ERAQARTGPW KLAHRWINHAAAG ELDATDTAGLFRGV VRAHAGRGDW DTARTWISQAASD DLTAAPNAGLYLGA
 ERAACGLGSW QRAHDWLAVATRQPFTSGSDSHPFYGAP H $\square Y D L F G D P A Y L Q M A H G Y V K Q S L N C D T K H S \square T F L C G D A G P$ ERARTDQGPW QRAHDWLACAAAEPAVGGPDSH LYYGA EYATQGRSPW SPAHRWI AQAAVG DVSAADTTGLYLGA ElASGYGGSW RSAHRWITSAASGPISAADQTGLFLGVP ELGRIDPAWS AFAHRHLRAAAAAVETAPSGGLFAGP ELAVTDPA LRHRAHAH YLGALTEQKRYTALAKAALVTMQRQVESSREYILGGFSGW RLSTIFPHDEFNRVAHHFFLKTQEAMRNTEGVSLSLWSGL VGAAAGAGNADAMR PWASDMDRSPDVAASRHGIGLYEGA HLDNTHYEQSFLQKSLEYVTKSFNRSFKLGETFLCGDAGP ERARTGHGDW STAHTWLNAAVHG E LGDKEKAHRFDARAAE DTKTQQPRGAFEGL EDPEARERAHRYLELS LDADDPRGTQ
N $\mathrm{RA} A \mathrm{H}^{2}$ De ARERAHGHLSAGLA



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 LSNLANMEDKLLKFYIKKNNQMSERENNVYPTGCLNLGLA -
LVSLTEERFGYPNFHIS

SQELTCPDETVPGWYVP
$\frac{C}{L}$
LVTLTODGENLP
LVKMTMNEELPGWVVG
CEPDTFEAQRLPGWWTGDSPDLRPTPRKTWPGGHGNFGLA
LVRKSEPGQKVPGWYVPRRYQFTEQERKTYKEGCFNLGLS

[^0] | S |
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| L |
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VDAKEVAGQIVPS WHISS
LVRLTHDDETLPGWWVF
CGEKDYQGHR1PAWHMP
VTA VVESGKNLSKEEKKSERCPLEHEKVQYPNGNFNLGLS CDMVVSSGEGLA RWWT R CSDRIRNGHSVPGWHDSSEHQFQENEKLQYPQGNFNLGLS VNADI ESGKNLSKEERKVDRCPLDMMYWHRKLYVGAA LSKVVTA SVESGKSFSAEQKKSERCPLLYQWHQKQYLGAA CENVTKDGQVVPGWYDPVQNQFSELEQDLYPKGNFNTSLS


 CETVLISGENLARKRNFTSKTPL MYEWYQEYYVGAA

 $H Q$
QR

## 







 IQQI S EAVLTSGGETLAKKKSFA SKT PDMYE WYREYYVGAA

 TEP T V V GHEVVPGWWVPSHLQP VEQDRRDYPRGDLNLGLA
 LAAA AQCGERLDT TAKPMEYGVGWTT QDAELKPMTGGS
 CSAVLAS GEKLSSKKSSRSPLDYEWYNEYY VVGAA $L V R L T E P L P H L P P W W T D V A \quad P S G V L H P D Y P G G H G N I G L A$
 A E DLT R H G S R L P P WWUT E GLD H GLLA E HVN L GLA


NLKS QS P L M Y E WY RE Y Y VG $\frac{L}{P} A$ EN
 G R R $R$ R WH GH T LP $P R R G$

## E V E T

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## QUERY

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UniRef90_H2D757
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250
260
270
280
RKKQFDWKDGLVADELKKEKVIREASFTRDAWCYGGPGTS KDKQLIWKDGIIIDELRDKKILYEPNFIRDAWCYGSPGIS NSTGPVWAHRVGVKEADANK $\qquad$ YEPN F
Y T V I D E
$H Q A N F$

E

D A CGIMW
KNQKI I WPAMLT LLENYLTN
DEYGI I WRDRVGLEEELG
G S
D S G
 NAVNF GEHGLYWPSAI SFEQETVHE GQSEHSRQGWCYGDPGVAA DENGSYWGTHVSDEEYKNGSVL NKDTRDAWCYGTPGVA DRYGPFWPQRVAWEEQQTGGDLGGSGWQREAWCYGSPGVAA SDTGTWWPYWI THHTYKRGHH DQTHPERPSWCYGTPGIAA SETGSFWSFRVDWDEFDAGEGKKQNSASRAAWCYGTPGVA TGSRAWWPDLI TRAEHRRGELQRPGPR RPSWCYGTPGI A
 YVRHKKFRSGNYPSSLSNETDR LVHWCHGAPGVV SGNYPSSDSNET DRLVHWCHGAPGVI K GTNQWNGMDGDEEYDNGAKNSDA VRDAWCYGTPGIA EKEGDIWPGRISFEEWVSDYLLHDCERYRDSWCYGVPGIA $\begin{array}{ll}G E H G H F W P S V I & \text { SF EQETAQEGEEDQRTRDAWCYGSAGVVA } \\ \text { SPSGPSWPQWI T RADQQAARPAQPGP ARPSWCYGTPGIA }\end{array}$
 T DPGPWWPEHLTTAHDLATGGTTHQPGPTRPSWCYGTPGIA
 SETGTFFAGRIS FE E WE QERLLDP S E EYRDSWCYGVV GI A S GNYPSSLSNET

| $A$ | $D$ |
| :--- | :--- |
| $G$ | $P W W P Q W$ |
| $G$ | $R$ | GEA GTFWPGRVAVE EVVLQGELHPSSTRDWDSWCYGVPGIA RS GNYPSSLSNESDRLL

S GNYP
SGDGPLLWPTHLTL GLLWTASCPSSRP P L L S
DKEGII WP GRVS FEEWLDDQPLPDAQNHRDSWWYGAPGI S
S GNYPSSLSNET
SGNFPSS
DGERDFWK GQ QD F DEVVNKK
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D E Y GP F WP A HV V WQ E Q A GA A
DEQ GH Y WP DA VAALEDWAS GTASSGSPPREAWCYGGP GV A


 S G N Y P
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D DA GPYWPARVPRDETASGSCVDDTRDLLVHWCHGSPGVI Y DNN W NWPARVPR DETAS GSKRPSALTRTRTAWCYGTPGVA GENLSKKKSRHQERS P LLMYE WY QEYY V GA A H GILA G ITY GENLSKKSRHQERSPLMYEWYQEYYVGAAHGLLAGI Y LS REERKAERCP LLYQWHRKQ LS REERKAERCPLLYQWHRKQ A C $\square$ G D RRDL

Y V GAAHGMTGI Y SGNFP
DEG $\square \mathrm{KF} \square \mathrm{P}$ NV V K F E D H I DD T Y T D G F N H
 AERGPWWPEHLTTAHDLATGRPHQQGP ARPSWCYGTP GIIA A DVE G I I WP GRIIS F GE WLD G QLLSSTRRNYRDSWCY GVV G I A A
 GPA GPWWPEHLHLGELRAGHPAQRGP ARPSWCYGTPGI A DGHGVFWPAHLSLAQWLAGPEGYGEPAGWPSWCYGAP GVV F V R HL K F P S GNYP P
GERGPWWP LHLLTLDEFSSGRTHQRGAG
DDTEPWWPGFITFDQAAEGH VEPAMLRPRPSWCYGTPGIA $G \square I V Y \in A V R P R P S W C Y G V A G T A$
 S GRGPAWSYW $\square T$ RTE $L R$ D GRPALYVPR RPSWCYGTAGVA S G N Y P
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D DT GAYWPCRIS WDEQDA A VRPDASFTRTAWCYGAPGVC
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VGN WPDLRDFSSSILADKDDNQPTCMTAWCHGAPGIG
S DF GVRWP LVVSYGEANLHEDDNQKN REAWCYGSPGVA
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LLY LYGG La $\frac{290}{}$ L L Y L Y T GLLALNDEYLILLK SKNGLEKSVKRKGGGLDSYMLCH
 LALVKAGKAL QNTELINDGVQNLRYTDSDURGI FSPTICH


 VALLYAGKALEKEDIIDDSRQSIRSIYSKEEGLFSATICH RSLYLA GEAMQDSSYCNLADQSYEDVFKRPWNLYADMFCH RALYLA GRSLKDQKAMK IALSSYQDTLEEEWDLSSPTFCH RSIYLA GKAL GDTAADRSAVGAYQDDIKEEWELVSPTFCH RSLFLAGQSLQDDSLCQWGI RGFDAIVFSRQWNVDSPTFCH Y S L L A GK TLNNQS Y IDDCAVSGMKLASKRLYNI FSPSFCH RTLWLAGKALDESGWKQTSLETF DALAHRPWNLHAPTLCH YSVLI A GKYLNNMEYDDEAVNAMKGA
 RAQQLA G AALGDRDRQRQAEQALAGCLADDAQLTDASLCH Y S LIFLA G Q LL NNKEYMNYA DEAMK IAGRRDKGAVSPTFCH Y SLYLA GQALGVEEYKKSGFEGFRAIFDRPQNLDGPTFCH HMLIMAHKVFKDEKYLKDAVECGEVI WQRGLLRKGYGПCH HVLMQAHKVFKEEKYLKDAVECSDVI WQRGLLRKGYGUCH Y SLLGSSYTLKNNSLYEMSCEAMKESVKKENGLFSPSFCH RSI WLA GQAVHNEEW $\square E T$ GLTA $\square E K R L H R K G G L S S A T L C H$ RSLFLAGRALGDELFCRWGVRGFDSIFARPWRLDGPTFCH RALQLA GDAT GDTTRQNAAEQALAACLTDSTQLTEAGLCH RAGQLAALAA GDTERQRLAQQTYHSLGQRSLSFESPTFCH
 RSLLWLAGKALQNEKWLEDSLRAYMESAHRKGGLTSGTLCH HMLLHAHKVFKEDKYLKDAVECSEVI WQRGLLRKGYGICH RAQQLAA DATRD DARQQRAEHALSRCLSDPDQLNDSSLCH RAGQLAAFATGDRRRQQLYEDALHQCLADPDQLTDAGLCH RS $\square$ WLA GQAMHNQEWSAlGGQAIIENRIQTMGGLTASTLCH HMLIMAHTVFRDEKY LRDALECGELI WQRGLLRKGYGLCH YMLVQAYKIFDEEKYLNDAFKCADVIWKYGLLRKGYGLCH RAVVLA GLALDRPEWLDLAHRSLLTTDPDTWRVDNPTVCH RSI WLA GQAVQNEEWI ETGLSAIVEKRLYRNGGLTSATLCH HMLIQSHKTFKEEKYLKDAUECSDVI WQRGLLCKGYGIC H HMLLMAHQVFKEDKYLKEATECAEVIWLRGLLRKGYGUCH YAIVSAGNALDNQRLI DYG $\square E N D R L T M N N \square K G I F S P T F C H$ YMLIQAYKTFQGEQYLNDACQCADLIWQYGLLRKGYGDCH RTLWLA GQALGEPAWRQAA $\square E S F L G T A R R P W N L H S A T F C H$ RALQLA GLLALDRPEWCGLARESLLSLLADPWGVVDSGLCH CSLELAGKALHNENLQKLAVKACVGAISYEDEMDSSALCH RSLFLAGRSI GDRSLEVLAVNAFKS IYKKSWNDYSPTVCH RAQQLA GFALNDPDRRRLAENTLVSCLTQPRQLRDTSLCH RALWLAGRALDRDDFKQLA IDDAMEAVFRRP\MIDSPTFCH YMLLQAYKVFGEQKYLSDALQCAEVI WQWGLLKKGYGLCH RALWLA GTATNDEKWTEDALNSFLEIDKRLGGLASATLCH YMLILQAYKVFKEEQY LS DAYQCADVI WRY GLLRRKGYGLCH AALHRAGCALGEEPWCRAAVTALETALRRDWAIEGPTLCH FS SLLTAAEALNDRELSEDAKQAMKDLIGNEQKIFSPSFCH YFLMQPGFGVSEDKLVRLVKPSVDYVCQLKFPSGNVHWCH YFLMQPGFGVSEDKLVRLVKPSVDYVCQLKFPSGNVHWCH YMLMQPAAKVDQETLTEMVKPSI DYVRHKRFRSGNYHWCH YMLMQPAAKVDQETLTEMVKPSIDYVRHKRFRSGNYHWCH RTLWIS GNI CKREDWKSEALILCKSTFQRSWKVVSPTFCH RAMQLA GAALGEEEWVRSATDAMHAVHRRPGGLTDPGLCH RAGQLAADAI DDQARQRFYEHALEACLSDPVQMRDGSLCH RSITWLA GQAVHNEEWDETGLSAI EKRLHRKGGLSSATLCH RALHLAALALGDEMRRQDAEDALISALTDPAQVSDTSSLCH HMLIMA RAGQL RALQLAALARRDGAQRLFEDAMARCLTDPVQLSDAGLCH $R A L Q L A G L A L G R Q D W A A L S R A S V E R L L T H D W G I H D H A L C H$
$Y M L I Q A Y K V F G E D G Y L Q D A L Q C G E V I W Q R G L L K K G Y G L C H$ RAGQLA G A L GDRGGQHMYEVAGYLSLTDPALDRDTSLCH RAQQLA GLALHEPARVRAAENAMLAALRDPAQLDGDGLCH Y S LLIA SKLLDNDEMNKLADDAMKLSLNRLREVISPTFCH $Y M L I Q A F K V F G V R Q Y L E D A L Q C G E V I W Q R G L L K K G Y G L C H$
$R A Q Q L A A L A L G G D S Q R Q I D A E N A L V G A L T D A A Q L K D H G L C H$ YMLIQAYKVFKDEQYLHDACRCADVTWQFGLLKKGYGLCH RVQQLAA LALKDPARQHAAEFALLRAMTDSGQLDDMSLCH RAGQLAGLALNDPALQLTYEDALHQCLSDTAQITDTSLCH RAGQLAGIALRSPTLQKFYEDALYRTLSDPAQLTDSGLCH A ALHRAGLALGVTEWREVAVTALLDGLRRDWRVDGSTVCH RAVHLAGTALDRPDWRAEAEAALCGTLAGDASI RDSALCH RAGQLAALAL GDRHRQAAYEQALLACLDDPARLVDPGLCH LGRLRSLPHLDDAK RTEDDTALKTTLEHGFGGSNHSLCH RS LWLA GKAL GD DSLQTLATDAFDA IFKKPWSDYSPSICH RAQQLA GRALGDTSLQEHAEQALAGCLLDPEQLSDTSLCH YMLIQAYKVFKQEKYLQDATQCAEVI WQRGLLKKGYGLCH RAQQLA GLALGDPARVAMAENALLAALQDPLQLDTLGLCH RALLLAGRALDRTDLVESAAEAMRAMLARPWGITDHSLCH RSLQLA GMAL GEVRWLDCSRDALLAALRRQQDIRETGICH RAVHLAGTALDRPEWHADAHAALLGALTDDGLI RDSALCH RALQLAGRAMGNSAWDRTADASVEAVLRDRWSVDHWSLCH

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 GFSSGI A Y DS NR F Y E V T T K Q Q D F K K A A D D
 GWAGLI QTVSRAAADALDDELASHLRRLNVRLNKHLDHHG


GYS G L A Y I S Y K F Y C K T K D K L F $G \square G G L L H L V Q R M Y S D T G H E R L G M \square R D K L L Q D V L N M F D A N S$ GHCGL MQMTLRMAQDTGEERFKGYVDRLLDDVLRYYEPDS
 GWAGLYQTVWRMARDATFPTLADHLPRRAAQLLRHADP


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

 GTAGNAYAFLLALYNLTQDKKYLYRACKFAE WCLD Y GE HRT GF A G L L Q M T QRMMA DA GTAAE LI P L R D R L
 GWA GL ALTTA WRTAMDAADSTMSDLLPGVIDDLLHHAE A T $G \bigvee A G L L A D T M R F A N E T G S P L F R D E C Q K L T E Q I L R N L E H G G$
 GAAGNAYAFLALYNLTHDCKFAEWCLDYGEHGCR

 GAP GVI HMLLMQA Y K V F F K E E K Y L K D A M E C S DV I WQR GLL L R K


 GWA GVY QTTWRAA HDAATSALAAHLPGLAASSAHYA E GTT $G \| G G L L H L V Q R M Y S D T S H E Q L G R \square R D R L L E D V L D M F D R L A$
 GWAGVYQTAWRAAHDAATPALRATLPGLAAALTQHAR
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 GLS GLCCLARKFHEYTNDDNYFYEMY K L L L K K I L D L Y GAAGNA YGF LADYK DT Q D PKFA DWCMNY GRHGCR GTA GLLA H $\square A F R M S G D A H A G Q L R S L V P A L L G S V C A L A L L H D$ GF A G L A H DT RLLA A D D A LTT P G L T A C L P R L L A T L A D S L I S P P
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$K S L L S S E D N K L I E K K N E R N W D P G S D A L G N G P P G L V L L H A$ $R N W D N S N D Y S V Y T G Q A G U A Y T L Y$ LRNPYHD YDGNPACAAFFD



 KKR\IHLVNLIVEKQKCTSEEADCDGGLYVG』SGIAYMFN DLDTVVAE $\quad$ AA A $\square R D D F P A A G L G M G A S G A A L L L S$ EH $\square Q Y V L G R K Y N Q S L S R G Q A E W S M S S G L A D G L P G G V L L L S S$ $A \square R \square K D E V V E E T W T R A R R Q V T D Y T L A T G A A G K T A L L H L F$ DK LIKATNHQLLM Q
$N D V S W \square G L N F D E R N Y W T F T P L G L Y N G M P G \square T Q F L A$ PAYGQHLAYGPPGIALLHI H HVHSVVNQADNVSPHPWADTAALSHGLPGNAQLLS RAA LRRIKDKVMEETWTRARRQVTDYTLYTGALGTALLLF KKSAGK LLQDISSSLDSFTEKDATP GLLGGYTGAALFYA LKEQVEKVIDDLGKKSKNSSMNQELLFAGLPSUNGLMG $R Y A L S \square K D K V V W E T W E R S G K R V R D Y N L Y T G V G T A Y L L F$

 EDNKRQWYSLEDTSLYTGLLPGVAYTFY QRYA LS LK DTVVRETWERSGKRVGDYSLYTGVLGTAYLLF




DGRAEPVWAELDTLYQGSAGVVLFLA KRVAFDLKETVVKETWVCKRGRVSDYTVYTGALGTAFLLF K HLKKAVTNKLLLQWEKNVKTNWDDSSIYTGTSGYALLYF $K$ K RGHVSRMLDADENGLSKDWKNYSVYTGTYGVAYLYF $K S S A L D L K E T V V R Q T W G L S G K R V E D Y T L Y T G V L G T A F L A F$ TEK VVNHTNNLSPSRGNPPWNPGSLAD G GUVPGVFALLS
$R N L I P E \square L Q K \square S K N C P P N S R S N \quad R D G G L Y V G P A G V A Y A F Y$
 SPSSPRWQGQSLAEGAAGIAVLHG

## UniRef90 Q0RC62 UniRef90-B5G9T5 UniRef90-UPI0003598A53

 UniRef90-T1FM49UniRef90_T1FM49 UniRef90-UPIO00347BDB6 UniRef90_UPI00036AB3EA UniRef90-F8KVZ4 UniRef90-DOWLY9 UniRef90-KOETVO UniRef90-E8VJC5 UniRef90-I3K6U8 UniRef90_UPI0003824075 UniRef90_UPI00037CF484 UniRef90-F6T922 UniRef90 C3ZME3 UniRef90_UPI000375C9AA UniRef90-E9JCA4
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UniRef90_UPI0003667DE9
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UniRef90_W7THS4
UniRef90-C3XRV8
UniRef90-UPIOOO2653729
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UniRef90-D1A671
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ERALAGGGDW0 ETVSRHGGSW
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E DSAH GAARTGTDERTAR ELNGH NLINARDVAHAYLSAATRAASTGATSASGGIFKGP LLARS DPRCDQLAHRHLQAALE SATWNSQGGLMGGP
 HLD DVFREPSFLQKALEHVTQSLKCLETKRHDVTFLCGD ERARSGHGSWH TARTWLTAAASEEVS $\square G R N$ ATLGYGA QLYRVTSDQAYLLRSLDYVKRTLRNLNGRRVTFLCGDAGP YVAESGNKEAYLQKAKEYIDDVNFQFLVRHRSMLPSFLLGN

 SHGRITAEQRLSSKI SELLAAVLENGLRRADPGDATVYTGW

 A L S HTAPE

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HAEDAAADGRWAAVAHGQ $\square$ RRAAE $\quad$ MSSQASN $H A E L A A A D G R W A A V A H G Q I S R A A E L M S S Q A S N$
$R L S D V L Q D T S Y L N R A L D L V E R Q L S N L K G R R F$ QLGLLWDKPDLLSEAEELVKLLPPDLKGRRFDDSFLCGD




 | $H V A Q T G D D K K Y L L A A E K Y A K V S L N E D K K M D P S R N G I G A S$ |
| :--- |
| $E R A L A Q P D R W$ | HLAQVFKDGARDDFLKKALEWVQPGLKHLKRKRLTFLCGD HLYTLNKTEEYLSRGYEYI KRPLQHLKGRRVTFMCGDAGP ERARGGAGPWV TAHTWLAAATDDELSAGANAGLDFGA ERA L SGQAPWTEAHA $H$ L 1 RRRVA AGPDDGGDHAGLYYGA

 KAYQVTKNQNDLNLCSDIIKACDSVSRDSGR VTFICGR



 Y LA SATGDDFFTKQALRYLGPTDDYANSDEKNDRLSSVAY

 KSFQVTGDRADLSLAGD LVKECDAASRGLPRRFLTFICGR


Y $\square$ GT T T HQKNYTELAK LTLAKFQHQ DDRNSFTS DGGFTGW ERAARGLGSW QRVHDWLASASRQPLTSGPDSHPFYGAP ERARCGHGTW DTARVWLSAAAGDDLSTGRN ATLFYGA LWKNDEQDPHWQSSDHANLVHDQKHDASFGDSDPSLYSGW KSFQVTGNRADLALAGDIVKECDAASRGDPRRFLTFDCGR
 KLYQVYD ENEDDKKLACLENVVLLNGRISEYCNDISSGYGGY Y LGKITKQKRYTSLAHLALVTLRHRDEDRKITGI GAFNGW KYGKCFNEPVY DDEAMELLNVClGKF
 HYGKYFEDQSYI SRSTELVGKCDEKDRKRHVTFLTGNAGP
 Y LGGKISGDKDFNRLAMQTMESGLQQPIQEK SFASAFHGQ LLAA S NPHYCELAHRHLQGAVRSDS WNTRGGLMGGP HLSKTLSTEQSQELIEKAFPYVEKSLGRDKGHRYSFLCGD VRAQTEHGGW EPVRAWLRRASAETLNNGTGAGLWFGAP QLDRLGPDHGWAVHSHACLTAAARTAERAERGRLGLFGGL YLGEI DRADRYTELARSAMKTLQHQLAQSRDSQI GGFSGW
 KAYQVTLDKNDLVLCSDUIKACDS ASRGSGHVTFICGQ EAGKILNSAEYLEQAFFMAEKCTMHLHKPNVKSLTFLTGA
 EWGYLEPDQNWAEHVHSQLRYLDANSSLLLPRISSGYGT ERGTCCPDG HVATSGQREKLLNTAWEYIQVRLELKTQHGGDGASFLLGH LRAR DGSAGWERPARWFAAAVREPDAAAGG A GLWHGA


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| UniRef90-UPIooo3598A53 |  |
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| UniRef90-UP1000347BDB6 ASVLA AVQACNQRVPGRYRTLRCEDQGRRLRRAASRREAG |  |
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| LAAAQTCEGHYPGLIRRKLA AWLADDQLT RLR |  |
| iRe990-13K6U8 ${ }^{\text {a }}$ A GPLA VA AVVYY |  |
|  | OEEHPEYYNLISENNYK |
| UniRef90-F6T922 ${ }^{\text {L }}$ LAVGAVVYHKLKSDSEAKECVAKLDQLQRTIVSSDSDLPD |  |
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| UniRef90-UPI000375C9AA PAVAFALI CAGR TA YASAVTTLDQHDGRIVTRRLADAH |  |
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| UniRef90-E9JC |  |
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| UniRef90-H2TCD3 ${ }^{\text {a }}$ (GPLAVAAVVYHRLQRAPETDECINRLLQ |  |
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| UniRef90-G6A9G6 |  |
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| UniRef90-L7MIF4 P GPLLATGADLYNRLGRSQDSHTLIKRLVG |  |
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| UniRef90_B5G | PAVAFLLSTTLIPSVEHYADARATLHRHITELAHRRTDAAF |
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| UniRef90-W7THS4 | R |
| UniRef90-C3XRV8 AGPLAVGAVIYYRMG LKEAQEGCLSKLQALSP |  |
| UniRef90-W7IVX3 PTLAFLTHAAADQPGKDARALATLDTATSNLTRTRLATAH |  |
|  |  |
|  | AVAFLLHAADTDRGRYEQALTTLDRHVARLARRR |
| UniRef90-M4A0C4 ${ }^{\text {a }}$ ( TGPLAVAAVVYTRLQRVQEAEDCISRLLQYQQ |  |
|  | MAVGV |
| UniRet90 U5GTF8 AGVCALGAVAAKHAGDGRLLE DHYLAQFKELKL |  |
| ef90- Q2JBZ4 |  |
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| UniRet90_UPI0004047D4E | AVTHALTIAMPHARPAALDVLDHAFDDLVECRLAAATARL |
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| UiRef90-UP1000472B71D T G\| A Y AL RVAAEATGGYSTIDRQLNDHILSVLENWLQSMH |  |
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| V C ALGam $\square$ AKHSD |  |
| UniRef90-UPIO0037675A7 |  |
| UniRef90-EOV943 $\begin{aligned} & \text { UniRef90-R8T9A6 }\end{aligned}$ |  |
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| UniRef90-R8T9A6 |  |
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| UniRef90-F4IEM5 C C ALGAVAAKCLGDDQLY DRYLARFRG\RL |  |
| iRef90-UPIO | GGI IYTLVHLSELWQQP ELLLNEAEALVALLP |
| iRef90-UP100021A6F9B VGPLALGAVVFHSEGYSDVAQNMDS |  |
|  | PALAFVL AGTDQPGLARATATAAAGTATLTRRRLGAAH |
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| ASALLYTLSAFDALYGENPNW |  |
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| UniRef90-U1RJQ6 AGLLAAAQGASGAGAQYRGLREKLTAWLTAVQMRMVREYS |  |
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| iRef90 D9T2 |  |
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| UniRef90-M3CWQ8 GALAFAVLVAHRTTGGYVSADERFDAYQRDLVRTVLPPVE |  |
| UniRef90 M1AXA0 |  |
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\section*{UniRef90 Q0RC62 UniRef90－B5G9T5 UniRef90－UPIO003598A53 UniRef90－T1FM49 UniRef90－UPIO00347BDB6 UniRef90－UPIO0036AB3EA UniRef90 F8KVZ4 UniRef90－DoWLY9 UniReffo－KOETVO | UniRef90－E8VJC5 |
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| UniRef90－ 13 K 6 U | UniRef90＿UPIOOO3824075 UniRef90＿UPI00037CF484 UniRet90－F6T922 UniRef90－C3ZME3 UniRef90－UP1000375C9AA UniRef90－E9JCA4 UniRef90－H2LAT1 UniRef90－H2LAT1 UniRefefo－G3PPE6 UniRef90－H2TCD3 UniRef90 L7ERJ2 UniRef90－UPIO00464474F UniRef90－G3H4X0 UniRef90＿G3H4×0 UniRet90－G6A9G6 UniRef90－UPIO0047C6ECD} UniRef90＿L7MIF4 UniRef90－K9XSY9 UniRef90－K9XSY9 UniRet90－UPIOOO3665E44 UniRef90＿UPI000371A54F UniRef90－B5GVE4 UniRef90－UPIO003667DE9 UniRef90－T2MBE4

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UniRef90 ${ }^{-}$G2P354 UniRef90－UPIO00472B71D UniRef90＿UPIo00374E555 UniRef90 J3N3S3 UniRef90＿UPIooo37675A7 UniRef90－EOV943 UniRef90－R8T9A6 UniRef90＿R8T9A6 UniRef90－UPI00034DF6D4 UniRef90－I2N381
UniRet90＿UPI0003FD030C UniRef90＿UPI0004704B33 UniRef90－Q337G9 UniRef90－C7PRP3 UniRef90－UPIOOO3F12493 UniReffo－DgSND 1 UniRef90－F4IEM5 UniRe990－UPIO002DF66E2 UniRef90 UPIOO021A6F9B UniRef90－Q0RMA6 UniRef90＿K71T28 UniRef90－V4KS14 UniRef90－A0AO23PFY6 UniRef90－Q2JTS UniRet90＿U1RJQ6 UniRef90－T1J8J0
UniRef90＿D9T2K6 UniRef90－K0EMQ6 UniRef90－K9UFX8 UniRef90－O83VY7 UniRef90－M3CWQ8 UniRef90－E9HPY3 UniRefofo－D7V638 UniRef90－M5WI82 UniRe90＿－EORBJI
UniRet90＿UPIOOOO3727F97 UniRef90－A7S2P7



160 TR】PAFAEYDLFYGLTGLGAYLLRTDPEGLPRVLKYLVAL
 NRAPSFIAGGAGPYCVGAI I FKADKKQDESEKCLKKFMDL KPGVDADAYDVIKGLSGTGRILLDAAEAPDRDTLQHLVTL
 EDGVHWLAYDTMHGVTGVLRVLMDEPSKDARSAVEATNGY GPGLSWECYDIVNGLSGTARILLDSLDDPVYDTLQYLVQL
 IK Q ISPTDYDI EEGVSGVLVYLLAQEQGKNDYVINRITNF ARRPLLAEFDLFRGLAGLGAYHLRHHRRHAHAVLDYLVRL VNFLRCGSDELFVGRAGYLCGVIELRRRLGVQVLPQTGDA DRIPALREYDLMSGLTGGLGAYLLHRGRDLGDTLRDVLTY LDKSTGISDELLYGRAGYLASLLYVNTNIA
 $V K G S G N D P N E L L Y G R V G Y L Y A L V F V N Q Q L G Q D T P L Q Y I Q Q$ RRIPELAEFDAII RGLTGYGAYLLRRDPPTMRAVLNYCVCLL ERGVSVSVFDVIGGVSGLGRYLMERAPRHNQDLLAETLSY KRSUT FLCGDAGPLAVAAVLY DN D Y
DPGVSWAHYDVVNGLSGTARLLLDAGPEARPESLRYLVSR VPSTSDTPDELLYGRVGYLYALLYVRKHVSPTAVDDALNV PASESKPLTGLAHGAAGII ALALLELWAVTGQKRFKTAA
PASESKPLTGLAHGAAGI ALLALLELWAVTGQKRFKTAA
ERAEHYANFDLISGLAGLGRYLLRREQDSPEDVCAYFGAL
ARMPLLSEFDTIRGLTGLGALLLARDPQGFRDVLAYLVRLV
俍
AERPVLAEFDLIRGLTGLGAY HLLHAPEHPVTADVLAY SDLPDEVLYGRAGYLYALMFVRKNLGHAVEEKLVDK
TRRPALAEFDLIRGLTGLGAY HLRHDPAGELTKAVLSY
GEHAQFSEYDLFYGLVGLGALL LSGSRQPGSDVFGDVLRY
LS G S S GLIPDELLYGRVGFLSSLVFLNQQLGPDVPLHWIQQ PSDLPYELLYGRAGFLWACSFLNKHI GKETISTSRKR LDKHSGVPDELLYGRAGYLTGLLYLNSNIPAPVEADLYKQ GRPAGFHEYDTEYGLTGTGAYL LRRSPSGTAMARVLAY NLIEQDTGFDI ISGAAGCDSSLDALYKCKPTD ASRPSLSEFDLVRGLTGLGAHL LRRAPDGPLLRRVLAY DHYロTKGSDELLVGRAGYICGATILNKSFKDNKVIP EGV GRGADREHFDVVSGVTGLGRYF LAEPSDPEAVHDVLRY VRPSKLNEYDVI SGFSGLGRYLL GREADADPRAQKIAELL CPPYTSTNVELLYGRAGYLWACLFLNTHLGEKLIPHVLSV ASLDSNLDDELLYGRVGYLYSLMFV

DLISQDKYFDIGGGAAGCLSSLSLYHCRPSQ RRLRRLAEFDALRGLTGYGAYLLRRSPDGPTTVLDYCVRLL RYGVPMQTFDVISGASGEGOYFLEYSSESSMM TEAGLLKY
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 KNVKNGLPHELLYGRAGYLWACLFLNKHDGKDTVSSARMR ERIPGFREYDVFFGLTGGGALLLNRRAPQGSAMERVLAY KKGVHWFAYDLMNGVTGVLRLLDETSPDAREAVK STDY TPD ELLNGRVGYLYALLFAQKHMGEACITITKNV GARPALSEFDLVRGLTGLGAHLVRRFPDGGDLLRRVLAY $P Q 1 E Q D T Q L D I V R G S A G C T G S L L A L Y R Y V P T D A A M L C G D R$
 DRPPTDGHYEVVRGLTGVGRYLLARAETCEEPLTAVLRY TNSSSGLPDELLYGRAGCLYALLFMKQYCKEKVDGDLIVH
 TDTEFSRQMD1 NGLLGVGRYLEVAEDKTMCDLSRQLLDT GELPDKGEYDLMAGLTGLGTYLGLRRHGPGPLLRDVLT RRRPEPGEYDLVRGLTGLGVHL LLTGDPASPHLRAVLSY LE VTPTNYDIGGFSGGGYLLNRYNNAKKALLKHLNY

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UniRef90-UPIO0044383B9 UniRef90-L7F470
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UniRef90-Q83VY7 UniRef90-M3CWQ8 UniRef90-M1AXAO UniRef90-E9HPY3
UniRef90_R7V638 UniRef90-M5WI82 UniRef90-EORBJ1 UniRef90-UPIO003727F97 UniRef90-A7S2P7


L I HL NK ID P HAPNE
LIHLNKIDPHAPNE
LSNLIIKDEMLSSFYTKSENLMSDAERKMYPपGCLNMGML CEPVVVEGTGVPGWWVPAELQPVAADARQYPRGDFNLGLAA
 1 AEPVKREGHTLPGWWSDRPMNPSTEDSSAFSGGHINGGMA LVALTRPHRGLPGWWVDHG PNREHSADFPGGHDNLGVA VHPREQDGRLLPGWWVPHDPDPTLPTY PGGHANLGMA LCSVVITESGRRMSQYFHHECPLLEYSYYE VVQVIVTSGQALSR

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 LVRLTRPARHLPGWWVTHDPDPTLP VSEAVLASGLQLSRKLRLQNQ SPLMYEWYGHANLGMA GEVILTNGKMFAKSHQFPCPLMYEWY AVVDEI DKAGRLTRKGKCPLLYEWHGKRYW VVSCIIN SGDSYATSNRSQSPGMYSWHDTEYDGAA TQPPASGDGLPGWWT DDDPSGASSRDYPHGHGNAGMS LVQLTPMRHLPGWWVDHQPDLTPST LVRLTEPGRFAPGWWSADAADREGSEQ MFGGHANVGMA LLALALSSTKSGREYSVRKGLKNDCPDMYCYYGTDYLGAA LVALTEPVRALPGWFSPPWPAAVDPRRREW VLDLGLA
 LVRRTEPDGCLPGWWCRHGPA MRORPSPVGGHGNQGDA AKD IEEGRKLSNRV SCPLMYEWHGKKYW

 LDVAIQCGVHGISHDQPMKKGVGWDPGLKSLSEKPLDGFS LVRLTEPLPGLPGWWT EVSPNGAVTAEFPGGHGNDGMS LVQLTDYGKVVPGWYTPPKFLFHDADQRRFPEGYGNCGMDA AKDIDDEGRKLAK KGNCPLMYEWHGKKYW R K K GAA
 VVEEIFRAGRQLGNKGTCPDMYEWHGKRYW CGD VIALIIKSGNLYSASRK YKTPLMYVWHGSEYDGGA LVRLTDP NGGLPWWCPHGP TRDQPAPPGGHSNHGLA SVVEEIFREGRQLGKRGSCPDMYEWHGKRYW
 LVALSLDGQTLPGWWVNHDPH RRASPAYPGGHSNLGLA VEAVLISGQRLATDEEFPCPLMYKWHDSYY $L V R L T E D A D D A A G R L A P G W W S A D P P D D G T E R G G Q A N V G M A$
$L T A C G T S D G V N W H T P A A M V P N S P M A A Y P T G V F N G L A$ LLALATPMARG■GWRपEG T WSWPPSAADANKPTGFS AEH DRHAE LVRLSHQGVQVPRWWADDAPRTGSE RAFPGGHLNLGLS VAEVIKSGRKMGKGRC PDMYEWHGKRYW GAA UAEALIESGKRLAKELQHKGHKTPPLMFEWHEQK Y LGPA RVYETV
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HGMA G I Y Y V L M Q P A S NV D Q E T LIT E L L K P S I D Y V R HK K F R


H GLA G L L Y L L L Q A R R L Y L TQ A Q DD N Y I K P S L Y Y L K K L Q F


 H G I T G A L A L L A



H GA AV Gl G L A A R L H S L L T Y L D D D A

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H GMTG GYYMLMQPAAK VDQET LTTEMVKPSIDYVRHKRFR $H G D T G P L L L L A R A D R Q G V S V D G Q E D A V D T V L D W L D T W R Q D$
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H G $\quad$ G G M L $H G L A G \square M H V L M H T E L D E D D E K D D V K N T L L Y M I D R$






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H GAA GMAWAL L E L L A A L LTA E E R F R K A A L $H G L G G Q L Y$ L L L Q A Q Q Y LT Q T Q L Q K D



H G V T G V I A V L T T V A E R E GL T P A M E DA I R GA V D WI L L WR Q E
H GI C G L L Y ML L Q A R D Y I S S S QM D K LI $\operatorname{R~P~T~I~D~Y~L~M~T~L~Q~Y~P~}$

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H GLL A G

H GLSSS LLQMLLLSFP QF LTSSRPEVESTVLREAVEFVVLRCER


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I DENI
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                                TPPA
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$G L A G N G Y A F L L L F R D T R D E K Y L R R A R Q F A A F M E F K S N S R V$ GAAGLLHTTCRVAADAATNDLADHLPTLDAALLRDQVITI GAAGNGYAF SMYRDTKDKKFAEWCLDYGKHGCRV $G T A G N A Y A F L A L Y Q A T K D E K F A E W C M D Y G K H G C K L A$$\quad$ TR GMAGLYQTAYRAAGDSTDPALRRRLPGDSTDPALRRREHT GAAGNAYTFLGLYRLTWDPKFADWCMNYGRHGCR
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$K$ VQTKRLIDQL EENEHQWTYHDDYSVYTGSAGIAYMFY $W$ VP L S L A N GFPAVSLAFS
 $R A R \| V A V I E A L R Q N V V P$ SPQACEGGVYVGDAG\|AYALL K R S A F ELDRDMVVK TWGLS

$\qquad$ K T I RMPP DPSTCS

 $R$ VHTKRLLDRLKEK KKHHWTYNDDCSSVYTGGTAGIA YMFF QNAAKKNLHKILQRIVDKEPPERADGGLYVGASGISYAFD TEK VVHHRNN LSPSRGTAPWNPGWLADGVPGVFVLLDA K R T A LDLLKET L LTETLGATGQHVHDFTLYSGALGTALLLF
 LLK F ME K I DK D I E K A DK PRNGND GL Y LG TA GI S YM Y Y M S WD G D D Q P L W WV D L K D A WREH $\square$ NS SVNA $\square$ NNDVCRSMSDGGGVVGSAGGVA YMLV RS S A L E LIK D TVVRETWVLS GKRVQ DYTVYT GALGTA YLAF
 $R$ VD A APQSLGAGQLG\&AL LHD $D V L S A P P E Q D P A P A W G Q S$ L A A G A L G P A L F H L ERAALDVKDAVVRETWALAGKRVQDYAL

Q E VLK K N S QVK Q T D WNLLS L
EGHA

KND DS WMDMN I IGEK T ND WN G LDD LYS G VS G L L IF Y $\square$ D G GL Y VGASGI GYMFY

## $\square \mathrm{E}$ K $\square \mathrm{K}$ T VP $\square \mathrm{AT}$ T P

DGQS

R VVAESANKALIDDEPKY Q
E E $\square$ MKREVKSATSQFENKSEC
S
N
H
C


SPSSSRW








ATIE AESNAD W

$\square Q R \square L D K$
E P Y E H A ET D G G
R T R A L WH P Q S
$K S S A L D L K Q T V V M Q T W G K$
$R D V I L Q Y A N A L V Q K M P P$
$R$
$T$
$F$
$K$
K S A S S
S
$K P K I L T E L E S T L L K R \square D A H Y K S S A S S D Q S V$
A P L S L A Q G D L
KRTALDLKETAVIETWGLTGQHVRDFTLYSGVLGTAAYLDR RESVLELIKKYVDIIDQQNVNSKMRD DLYVGIAGDAFMFW

 | $\square T$ | $S$ |
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E $\square$ A R

## GDDGWR

ERARTGEGPW
 K S Y HVTCNTNDLALCSQIVKSCAA K S YNVTQNANDLTLCSQI I KAC ERARTGSGGW $\qquad$

$\qquad$
SYAVTRNKDDL LKLCLE I VEAC ERARTGYGDW YVAQSEKESEYLELAAEQYI IQALDD KAYQVTKNENDLNLSSQIVKACDS
 RLTAAFAG RUSSKUSELLAVMENGLKSADPRDCTGYTGW YLATHEERQEYLEHAFMYVKVNTDYIRMRSDPLPSFLLGQ $R V Q Q A H A G T A D R Q E L Q R A I A A M T G R G V A G H P D T A S L Y Q G V$ SRVTRDPVNAALAHGHLARSEALRQEADRTEVGLYGDV ETGNWP RFLDNDNESQFSNQAEEYLSVALNYAESKHNRYPGFLLGP
 QYGKCFNEPAYI DEATELLRDCVSKFRGKREVTFLTGI RLAKHAEADKYLSSAERYLRSSLAMVQRRGGRSSPGFLLG EWGYLK PDQNWAEHVHTQLLYLHRN SLILLDPDVSLYYGS
 ERAATGAGD PATAHAWLQAAAGEPVSATARAGLLYAGA HLAKFKNDPSYDNKADKVLKLKEDSFNRKKSNQ G F I CGN HLSK LEHRNRFLTKAVEYLAPAFNAMRNSSRDVPSFI LGN GSTPRGPEHAARAHAHLGKAMEVLAGERFPAAGIFTGP Y I S SHENKSKY LELAQSIYKNLQYSTRSKPADAVSFVLGA YAAEVFDEDRYFKAGQLHLRHTAELSAAAPDRAPGLYLGT KAYQVTKNANDLKLCLELVKACDS ASRDSSRVTFLCGR
 ERTRTSSGDNAGTCRNWLATAAPR P LC G D KAYQ $\square$ TNNRDDLKTAQAWLAAATRSPVSRHPE ELAR DRSWLRAAHAHVSAAAQALAN GTASVGLHMGP
 YLFKATNNERYLHVVKQCYETIRNYFYKKEKFSFGGFSGE HISKSSKKEDFLNKCLE I IKTCLASTKKSRNAEATDKCGF ERADT GTGDW TAARHLVAQATGDRVDAGRHAGDYYGA

 ERALAGAGSW A TA ELAASGLGPW QRAHDWLAAASRQPLTSGPNSHPFYGMP ETGN ETGN VVAR DQGD WPAAYAALEEAVA GGVSVA ESASSYYGA VVAR D DQGDWTAAHAAAKA SSQPITAHPAHASLYRGA
 RLHENGLGADALQYAKQYVANAKSKAVRYAARAEERCSYL $K F Y Q V T H N K N D L T L S S E V V K A C D S G A S V H S R D V S F M C G R$
$E R A R N G A G D W$ ERARNGAGDW Y LGKESK DEEFTK\SRACIETALQERLLTRAEYDSGYLGY

 S LYKVTKDERYLTFSNIYVEKLVDIISRDGDESPSLYAGT
 ETGNRPAAHAALRAATANGVSIAAGA ERGDFDGARALI DRAVAGGVSVAAN RLAERLDEDNHLALANCYLSSSLEEVQR ALA H GSPEYARTAHAHLSAAVTGVQRREGRAGTGFLLG
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 ILLAKETNDEKYKKYAVAGLNYIEEKVTHTNDHSTSAFSGY $\underset{\mathrm{E}}{\mathrm{Y}}$

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MMNHF

## 100

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 SAAAYALLIAHRATGGYREALARLDAYHRDLVREALPPVP AGVCALGAVAAKHLGDD QLRDRYLLACFSEDRL PALAFVTSLAAAASSRYQRVLERLDTATATVTRSRLAAAR AGVYAVASLLYRADGKEEKVQEYGGKY AGLAGMCCQP AG VYALGAV $\mathrm{D}^{2} \mathrm{AKHAGDERLLDHYLTRFKED}$
AGQALLYLHLHTVYGDPS FLQRAFDHVSRSRKCLT AGLALLYLHLHTVYGDPS KFKFCQRAFDHVSRSLKCLT AGVMSLCSLLYKTAGDEKDFKQYCAQYAQFAEECKKMDFC
 CGLSFAMECARRATGGYGRALASLDPQVAAQADGWCELVR AGVYCVAALFFHKQGDMKN RDHLIQQFAKYSTECLK SGlVGADDVASDKQYSYQGVLKQDDHLIDQYVIDFFNNNE AGVCALGAVAAK DWGT LAVGAVLATVRGDEKTANEFVTRYAESAERCKE TGVAYGILLASNNRANYQQLLNQDNDYURT QWVKSPVIN AGVCALGAVAAKHDGDSASLDYYLTQFREDK【SRNLDP ALAFTLATVAAHQPRAYRATLHSLDAVVAQDTQRRADAAH PALAFVLDIAERSFGRYTPHRDRLLDLVVQAAHQRLDTAG
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 SGUAFSMD A ASQNGRNYQKDLNNDDDVIVNEDESDIDQQL PALAFVLHTAGAPVPAGVEEAVEELA LRRVGDAHDRDDA A A AVLAAVQACAPLGGHYPRLRSRLVAYVADVAAERAAAAR AGVGFAI NYVSNNGKYYQELLNQLDSKVRQNVKRNAAVCN LTAVAAVHHKMKN
TPIDYSLIILEKEDGEFFDDNE LLGDAGTYAVAAAAFNASGQEREAEACLNYYKEMGNICIP PAILFMLNAAADGRDRYTAARQHLTPHVRRLVRDRLTDAH AGUYAVAAMVYKALG AGTYAVAAAVFNATGQEREAEAC HGCLSYYKEVGSICDP AG SSLALREASDSGKYYTKLLSSWHCLLKEQTQEKLSNIDD SGVAFSIDVISDNTMHYQSALQTLDDYLDEFDNRKMKCLD PAMTYVLHLAATDSDRYAGALHTLDGDVAAHTRRLAAAQ AFAHALSRTADHLPGSYQRALETMDRQIAVDVRHRLDTAH
 PAVAYVLHDABRHPAYTRALAQLDAEVVALVADRLAAAH APAVALALTAAAPPGCYQNAAQRLRTSVERLVERRLMAAH CGNA GIYAVSAVICHKMGQRQEMDEDLRNFASGDTVCKK AGVCSIGAVVAKHMG PAMAFVLHLAADGTDRYAGADHTDDGVVASHTQQRLAAAH VSCDYVLMHLSRLW AGIYALGAVVAKYKGDNQRKDFFLNDFCEVAQERALLVGP AGIYALGAVAAKNNG AGIYAVAAMIYKSLG DADFVKPLSRFRSLWEVCAP AGVCALGAVVAKYMGDDQLVFYYVSQFKE TK LTKDLPD AGI ALAIKEAS $\square S G K Y Y P K L D S S L N C L L K E Q I K D K L S N \square E$ PALLFMLNAASDGRDRYTAARQNLTHHVRRLVRERLTAAH AFAHALSCAADHLPGSYQRALDAMDAQLAVDVGRRLDAAH TPNQPGLTRARS $\downarrow$ AATGTATVTRRRLHAAHRRIDS PALEFVLSAATAHGLPVPALSAVQAATDRWVAARDEAAR DWGILAVAAAAAAAERRDEAA NKLVQRYLQTGVRCKE AGVCAFGAVAAKHAGDGMLLDHYLSQFKEIKLYSDLPN SGGVYAGGVAAKHAGDGMLLDAYLSQKKY AGPLADAAVCYHKLSRSSESLECI RRLCSMYSENK PALAFAACCAAQHEEEYTALLLDGLDSSVFAIVRARLDEER PAVAFTLAH TPPGHYQQARAAVRDYLHQMTVQRLEAAH PALAFAACAAAHRDGEYATLLAGLDAALFGTVGALLDEER AGVCALGAVAAKHNGDERLMNYYLTQFNETKLPRSLLPD SGIAAVSAAIANEMGKLQEMENDLESFLQGCP R PC AGVCSLGAVAAKHAGDDESLRYYMAQFEKIKLLSKDLPD
 SSПSYAYAYLGK】WND QKLIDKSREYITKПDSLLIEN


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 K WI HK K E MF DLI GGVS GTLLVA LRRLYK LTG L E KARS $\square$ $D M \operatorname{DSSDQQLDVIDSGAGTLDMAVVDMYS~QKALDDVADRCADR}$


 Q S L
 S GTTRLLLDSAE QALTESSHHLVRRL $R G L S G L G A L L L S G C G P M P L V Q R V L S Y$ Y GK A GY L WA C S F L


 DEPVDNAEFELI RGMSGLGRHLLAARGESAAEETRADVGGUL

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 GKN GS DELEVGRAGYL CGVLALLQQKT GHKVI D DV L TA A E H A G L G E Y D L 1
 $L N$ Y M K D G S D E L F V V G R A G Y L C A L

 LDECSDLPDELLYGRAGYLF SLLIFINSNISPHPIED■KQV VNF L K C GS DEFFVGRAGFLYGALWLNRTMQKVVVP T $\square$ T E F S K Q M D | $D$ | $L$ | $H$ | $G$ | $L$ |
| :--- | :--- | :--- | :--- | :--- |
| $L$ | $L$ | $Y$ | $G$ | $K$ |

R R R P V L A D F D V V R GV

 $M Q F L N C G S D E L F V G R A G Y V L G A L W L A K E T N T E L P K N E \square F \square$
 $\begin{array}{llll}P & R & F \\ A & C & G & S \\ A & D\end{array}$ A G H Y DVI GGAA GWLAALLKAADDATRQAADRLVDY


 $E G G V R W A S Y D A I A G L C G T G R L L L T A L V E G G A E A L R D T L D Y$
 LS Y TSF G GDELVVGRAGYICCGALWLNKEFKKQVI DLLI SRVV

 KR I DE PG DY DMVN GF S GIVN Y LI L E R E Y F F E E L K Q I G T Y L





 ID F NKNGSDELLFGRAGYLSGI YWLHQTIDKKLFAH



 EL L Y G R A GY L W A F L FI N K H I G Q GTI T Y T A A V


 ARMAGYLLSGLRLLLAAG
$M D Y$ LGCGS D $\begin{array}{lllllllll}\text { R R } & \text { L } & \text { D } & \text { T } & V & R & A & F \\ \text { Q } & 1 & D & S & F & T & E & Y \\ \text { K R A } & \text { P } & D & S & T & R & F\end{array}$ $\begin{array}{ll}E F L V G R A A \\ E L L & Y G R T\end{array}$

T N V K G T D A D
ELAGLA GLGRYLLCRCPASAQALLREILDY
EVLVGRAGYL H GASWL N A A
LS F LD C GSDELVVGGRA GYLVAA LI LKQKLGVQQVLS K


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W4XEU5 UniRef90 B977M7 UniRef90-W5KPL6 UniRef90-W5KPL6 UniRef90-K1PPK9 UniRef90-UPIO004773B01 UniRef90-B4V1A1 UniRef90-UP100037ACAC0 UniRef90-V4C0B3 UniRet90-A3QNP5 UniRef90-B9RW22 UniRef90-UPIO00258EOFD UniRef90-E1ZYF8 UniRef90-W8TUL9 UniRef90-M5WSJ4 UniRef90-UP1000376DBDC UniRef90-UPIIO0041604AD UniRef90-UPIo0046BB06B UniRef90-D6WR42 UniRef90_UPI000382329A UniRef90-H5WY90 UniRef90-UP1000359EDB7 UniRef90-UPI0002DF2C6A UniRet90 W9R905 UniRef90_-J9K0R7 UniRef90-A0A019YP84 UniRef90-UPI00047E6FD9 UniRef90-UPIOOO368692B UniRef90-EOCSN9 UniRef90-S4AZ79 UniRef90- M21Z76 UniRef90_UPIOOO3339723 UniRef90-UPIO0040642E6 UniRef90-A0A023F7L6 UniRef90-D9T2S5 UniRef90_W5MM88 UniRef90-R4G4V9 UniRef90 UPIOOO35FAF87
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HGI GGPLALLADAARAGVSVPGHTAAIATMCAWLDQWRTD H

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 GLLS G V A F I Y D L I G R S Y S S N V






 GVA G S G Y V F L L L Y R LTA D P K Y L Y R A M E Y L T H E E F I R Y A R N

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370
380
P D TPFSLLIFEGTAGT\||HF|LADLDDTKA PDRPFSLFE GLAGVI Y FLVDMQQP
G D R P Y S L F E G L G G MA Y T C L L M M D D P
$N E E T P G L M L G L A G V G F G L L R L A D P Q L V P$
$R Q Q \square P G L M L G L A G I G Y Q L L R L Y N R D L D S$


A TS G $\square G L L E G A A G T G L A L D T L S R S S S V$

G D S P H S L F E GVGGGMA Y L F L D M V N N P

PDRP F SLLFEGLA GTIYF LDD DQQP
$G A D V P G F L D G A A G T A L A L D A Y A N G G R A A G W D M A L L V N$
GDRPFSLFEG 1 GGMAYMFLDMNDP
LD P
PDAPFS LF E GWA GAVCYLT DLLQP H N A
GDRPYSLFE GVGGMAYLFFDMIEPSEA
LK K GYGLCHGAAGNAYCFLSLYKLTQDP
$\frac{L}{L}$ K K G Y G L C H GA A G N A Y C F L S L Y K L DTPFSLYEGFAGTVCFLADLIQPDKA
VGHD GFLE GNSGI QLDD HIPPAGAVRWDACLLL

P D S P S SLYYEGWAGTLCF ISDDLMQPEKA
E ENNFGGLEGQQGVLLSLLD YIDDTQNRSNWKDMFLI
GDSPYSLFE GIGGMAYLFLLDMID P
PDRPFSLFE GLA GT $\quad \mathrm{C}$ Y FLIDDMQHPATA
PDSPYS LYE GIA GTACFLADLIEPDKA

GDSPY S L F E GVGGMAYLL LDDMIEP
D P P GP GLLE GAA GVAVAVQTPATASPHTRWDACLL
SNR S L L G GTA GIALAAMQLAADATSTTGWEQCLLL
$P D N L Y S L Y E G L A G T V C Y L S D L T Q P E K A S$
$P D N P F S L Y E G I A G T A C F L G D L L C P Q Q A$
GVDVPAFLE GAA GVALALDAYAEGRATAGWDQALL

HE HNP GLLLT GAA GVLLA L L G AVVSD TAA GWDELLF L
GDHPYSLFEGDGGMAHLFLDMTEPSEA
P D NLIYSLYY GLLA GTVVCY L S DLT QPEKAS
E DHKVGGLEGEDGVYLTMMTLQNTLNEKNWTNAFLI

CTGSGLLEGSS GKALTLCS
TTANSAWDACLL
GDRP Y S L F E G $\square$ G GM T Y L F L D M $\quad$ IE P S E A
P F CFP GI LQ GAAGIGASLLS LTA S DGPA H WDR VLLL

PDTPF S L F E GMA GTIVY FLAD L L VP
WK C GP GFMVGGA G I GY GLLLKVVNPS LPS
P D MP Y S LYY E G Y A TVVC F L S DLL E P

## H <br> S <br> S

SENSVGILQGVSGIVLTLLNPYSDEELLWERMF



VE E

TAB A GFLDGAA $\qquad$ G 1 L A

GWRDT GLID GAA GIAAVLHADATDTGA
PDRPFSLYEGYAGTVCFLLDLLRPERAS


GDHPYSLFEGLAGTAC
GDHPFSLFE GI G GMACLFLDLVEP
G S R S L S L F E GLGS T DC FLVVDL L QPD Q A
G DTPYS L F E GI A GMAY LFL D MP DP K N A





PVHRPGFLDGAS GTALLALLDPSAPTSELPWYAALLL
GDRPYS LFEGVGGMAHLFLDMTDPSEA

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

PTDEPGFLTGAAG 1 AL A MHAYADPKPASGWDSVLL
E PGLLEGHAGTHLAL K K T Y Y T T GWSRVLLL
$N E \quad D P G L L T G T T G A A L A L L H T H G T G T P S S G W D G V L L I$
GDSP Y SLFEGSGGMAHLFLDMIEPSEA
PD R P F S L Y E GLA GTVC VLVD LL T P
GDRPYS L F E GL G GMAY L FL D MI D P
LD N M Y S L F E GLLS GTVVC $\operatorname{L}$ L V D L L QPEKA



WD R T L
GWAGFLLEDE

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[^1] AS TPDPNALGPRPPSSLLAGDAGUALLLR EKVVKETVWRNGRRVKDFTLVTGALGTAFLLLF
 R D S L N E MVLLRI SKEFPATDRNAAD K R A A LD D K E TVTT LD T WG LT GQK V S D F T N QREDQFK $\square$ SAANSS

GLV G GIVA GVIA Y MLIV
$G \square Y G G / V A G A Y M L Y$
K K S A LDD L K D T V V K E WV C K G K R V G G D Y S L Y T GA L G TA F L L F

$P$ TNES LY D G L LG $I S L F L A$
 $R$ D TVQRVVAHQGTAFD DCGLYVGVAGVAYMALL
 E E HVV K N L I C C T Y I D A I M E G N A E E E D H R G D


 RQAAL NLLKETVVRETWTLSGRHPQDNTLYTGALGTAFLAL

 E E Y $\square$ K R L I A T Y V S T LDP R L R R H DERGNLYVGNAGI A YMF W
 PELLQP A WQPAS LLLLGHPG $\quad$ L L H T WEA GSLNRGHPALALLYA
 E


Q
 $K K A A L D L K D T V A R E T W A V G G K R L Q D Y T L Y T G A L G T A Y L V F$

E E P $\square K D L I S T Y V K S I L E T C K P Q K E D G D L Y V G N A G D A Y M F W$ ENQGEPDLCWISTVLEGSSEIIWDGEDLYNGSAGVALEYA NRQHLAAFGPTGI ALLDH
 WI STVFNGSEENDWSGVDLYNGNAGワA IFFA $E G R \square L S C V D H V L K G L Q P$ THKNAGG
 NLD NNEQF KLS P I GL Y N G SLLG:V L F L G
 $\square T S T \square E R \square L Q E V P P G A G \square S C C Q Q G G Y D G L G G M S L F F Q$

E



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EDGSREPWQT LS
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 DES IEFRPMTTSGYDGLAGMAFVFA
$K D E V L S Q \square N E H \square K N \square T K R \square Q P N R K N V G L Y V G U T G \square S Y M F Y$
KSALALKDETVQVTWGRGGTRVKDP\FYTGVLGTAYLCL





$D H \square K G L I Q S Y$ VNLIVENTKPDRNRGDLYVGDAGDAYMFL


| UniRef90 D3DB17 |  |
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| V |  |
| D3T |  |
| UniRef90-B4V7B9 | GDAPHEERWRRAGHAAL LRAV |
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| iRef90-UPIoo | Y LGSITGE |
| iRef9 | KAYQVTN |
| UniR | KHFNKD |
| f90- H8XKY8 | RLSNNEKYTKLSKKALVAVHKNMSAS |
| UniRef90-UP100037254B4 |  |
| UniRef90-E1C809 |  |
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|  | KSYQVTSNRSDLGLCNEIVRACDQ ASQGSPFVTFICGR |
| UniRef90 J7L7R |  |
| UP100038 |  |
| Q9 |  |
| 370 |  |
| UniRef90-UPIOOO3A6E UniRef90 B5DYK2 | N |
| UniRef90- ${ }^{\text {AOAO3 }}$ |  |
| f90-F2CE | KVTE |
| UniRef90-_11MYQ1 | QvTGCRND |
| UniRef | E |
| UniRet90-UP100040 | E |
| UniRef90_Q8VZC |  |
|  | K |
|  |  |
| UniRef90_A8L984 | ARARAGLIDGW |
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| K4D |  |
| e90 |  |
| UniRe990 S3AX |  |
| Q09 | H A ARTGRADFEALARAALEPVRRKLGQHGGTEVGVFVGR |
|  | ELDRLFPGEDWDVIGHSHLVELQCII QAQKLSSLSLLWGGL |
|  |  |
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| 8Q |  |
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| A0A059BVM9 |  |
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KLSRSRHTRDपWPTALQHASTFTRKAKRSS回QSYFLCGS YLFK\TGEKRYQEDAYKALRRSVAQFQHHPNWS $\square$ GAFNGA ERAAAGHTPW QRAHDWLAAATHQPFTSGPDSHPFYGAP ERAHSGHGDW GTAHAWLSAAASD DLTAAANAGGYLGA RSYESTGRQQDLLLCAETVDSCA VTSREFTRHVTFLCGS YLSKLTNRDVFKKASYIALNSTRETLKNNDFENLGAFDGW YLAKSGHKEKFREAAKSYVDVSVEYYEQRPCNQVGFLLSN YLNKVTGNEKYLEVAHKALKSAMNPLSKAKGLDLSTFLGK VLAKETNDEKYKKYAI AGLNHVEEKVKHTKLHSTSAFSGY QLYRVTCDQTYLLRSLDYVKRTLRNLNGRRVTFLCGDAGP FLYLETKNEEYLKKCYGALKYYNGNSKNDKLNNFGYYSGK R
A
YLWKVTDEQRYREFVLDTIDPTY
保 HAAQAPSREAYLRAARRLVDACVRYEEEWGEPDADTRAGF RFDGSEGE RAAHRCLTAAVRELEHADVRPPGMFDGL ALSKDTGNSDFRDAALGAVQQVRKNLQDEKHRSYSGATGA WLGELTGKGHYTEVAWETLASIRQRLEEDKSLPGTFGFGD NLYHLSKNHSFLEKSLDMMELSVDKLKSSDPYDDSLGHGD YLDAIRPHPEFRLAAEQALDHAVKRPTVGDREMIGAYQEK RSYEATGDHRDLRLCAEIVDACAAATHDSNRHVTFLCGR RSGALTGKEKYSTVARRALKMLRGAVEFHGFFNUGVYNGL YGAGVFGSDAYADLARRSLAPMAAELEAEARNGTGGYSGLD

KSFEVTQKKED ADCSEDIDHCAAAAQSMKQYVTFDCGQP YYYKYSQDEKYLEKVYQUMSSALNEDDQEKS SUL YLGEATGDARFTALARSTLRTQTRLLAEEPQSVLGLINGW ALARVTGKTLYRDLALRAIQPLQNYLQTSDNLGIGGATGL HL LEEFFDFNILTLCHS
YLSYFTGEREKEAAEOA VP DNDKLNDTWS YLSYFTGEQRFKEAAEQALVPILNDMKENPTWSLGAYSGV ALEKMTPGAGFRDLALSALLPIRQMLQNSQSYSMGGAVGL RVAQAGDRARLLTKAQTYLGHALSYCDQPQVRADAMQSAF RSYEATGNRQDLVLSSEVVDKCVTYVERASTRHVTFLCGR KLHDAGFGQEALQYAKQYIKTLAARYAVRPEERCSFLCGN
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UniRetoo 85133 UniRef90-Q9KFM4 UniRef90-F8K1N7 UniRef90-D3DOT2 2 UniRef90-J7XLR0 UniRef90-F6VZA9 UniRef90-B9J4P0 UniRef90-UPI00046FD431 UniRef90-M4HLF7 UniRef90-SgWFJ7 UniRef90-UPIO0042A60BA UniRef90-N6U5GO UniRef90-MOLDN7 UniRef90-W3A851 UniRef90-UP10003D07B23 UniRef90-KOEUV4 UniRef90-UPIO0034AE096 UniRef90 S9NW96 UniRef90-L8K103 UniRef90-K9WYY7 UniRef90-UPI00036FOF11 UniRef90-A0A022QWU8 UniRef90-D6TJ70 UniRef90-UPI00034B6405 UniRef90-G6D8F4 UniRef90-D8G9Q3 UniRef90-D8G9Q3 UniRef90-D8R5G6 UniRef90_A1ZILS UniRef90-B2JAK4 UniRet90-F7FKV2 2 UniRef90-R9TSD7
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QELLDYYLS QFKELKLS
EQLLKNELYSALNKDD GGVYALGANAHMN DEQLRNRYDTRFKEDK AGVCALGAVVAKEAGDEDLLRHYLRSFREDKMPGDVPN PALGLLTTUAATSPARLARARARLAGATTRLTLDRLSQAN AGVAYGYYHLGA AGIYAVSAAISQALKETEEDSDDLANFKSGDPCSK FLLGNAGVWALAAVVANQAARDDCDNYVARYAALADFCS P AFAHALACAADHLPGSYQRALDSMDRQUGПDVRRRLDAAH AG DYAVSAADSMAVEDTKTLANDLAVFKMGMPASLEKMH AGMFAVSAADSHDLKHMEELSDDLTSFKSGDPSSK SGISLAVREASMSGKYYTKLLNSLHYLLKEQVREKLANTD GGVYALGAVVANYMGDLQKRDLFLGLF EVAKERALPVGP

 AGVC ADGAVAAKFANDGRLVDHYLAKFKDIKL
PALAYDTHRAASAASRYDRIILERLDTATLTVTRNRLAAAH PAVAYALHTAGHR AYDAALLATLDEADATVDRRRLEAAH AVAF VLTATDHPRLTQARADTATGTATITRRRLDAAH PALAFVL AGTDRPGLARATATAAAGTATLTRRRLEAAH AGI AFVFQHLRNMGLLDADDDLNLSQL AGIYAVAAVISQACGDPQELAQDLANFKLGLSASKAKL
 GDLLLPARLHAQEHGGYTRLLARGAEVHAGYVQAHVARLH GALASAVRVAAGEGGYTSLLRRTDARMAAYAHRLAALH SA GAAVYVLGHLAALWKEP AGVVYLFNECSRGSTRYTNVLSQTDDN
SGUAUAVRALSRGGURYQGFIQTLQGV GSQCFAVNAFCQESNLLQKFAKSMNQLLFLAMDKKLSQAM TPRIVYALLLLEKELNEYFD PALRFVLHTAADGEPRYQHAARTLDRHLHRDTRSRLDTAQ AGIFAVSAADCHRMGQRQE MDEDLRNFASGTTVCKR GSMIYALVKISQFLGD ETLDQDAQALASWTTSELIAGDK TGLISGKFNSKNSGDELLDYYRFKEQLPRDLP AGTYAVSAATSEALKDPRSARQHLDTAVANMDERRLAAAN SGYLYAMGTIAALF NDERLKHEVTRSTPHDE ALAHALACAADHLPGSYRHGLGLLDRQVTADARRRLDAAH PALAFTLHTAAGPSRRYNRALGSLDQAVVAMTRTRLAAAH GGVYALGAVVANHDXDYQRRDMYLDLFLEVAQERALPVGP TGGLYSMYIVAD CWNDRELLEEVHNGIDLIN
 SSTSYVYAYLGEIWND RKLI DKSREY! LS D L NKLDSLL LAVGAVVYHKLKSDCESQECITKLLQLQRSVVCRESDLPD IGAGYTVWRIGKKLA
 ASLLYPILHFHKNFG SNEYDWK EEDKEKDKQNVQ LLGGAGIYAVAALIYRALGLPEFARPLGRFCELCAVCAP GSIVYALVRISQFLNEPDLLDSARIIASEDHREMI CGVLHALAHLGALWNEPR TGI GWILEKLNK TGLDYTLTHLAQDWQQPQ AGLGFALDLARRAGGGYETSLATTDALIERVRRLLHDVRT GGVYALGAITANYCGDQTKRDFYLDRFLEMAREKALPVGP SSYVYLLSHLGTLWNEPALFSE

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| :---: |
|  |  | AGTFALATVAGKEMGD

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THSGKTYKSL

## G TYALGMVAAKSRGDQQRVDFYLNLFEEVY

SGI GWV QHL GGULYALTHLGVLWG GSIIYSFVKI SQFGEVPQLCADVQRFANLITPTAI SA IIREATWLHLVSVQGTLLKVRT NDSSLHPGCSLHLLQLLN GGNLYALVRLS GLLGEP NDSSLHQQVEKALPGY GSLIYALVRSSQFLGE PTLLEDAKHLASLITPNLIA LLGSAGVWALAAVVANEVGRSDDCDNFLARYAAVADICMP GGVYA GAVVANLIGDHQRRDGYLNLFLEVAQEKALSVGP AGIYAVSAAIAHRHODNAKQEMDEDLRCFATGDEVCKR
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UniRef90_H9IZT4



150
50
D $\bar{L} L / R D \sqrt{L} T$
160 FDHTKYGCDEMLVGRAGYLAGCYWLNDVMPPESITIIXVV VGGPRFEDYDVLGGASGVGHLLTQAPDRTDPAPVHALI DD VGGPRFEDYDVLGGASGVGHEQAPDRTDPAPVHALIDD YDVLGGAAGVILVLLQVYKRFG

 QELADKREFDLIGGLTGLGVYLDLHRSTTDDALCEALRRY LS FLLECGSDELFVGRAGYLCAALVLKQRLGMEVLTPA
 TRGPS RAEFDLI QG L FMHTKYGCDEVLVGRAGYLS GCYWLNDPEKKDTDDDLVS $\square$



 PSD回PNLLY QERPPMEEFDLI QGLASGLGAYCLFLNKHIGQNTINNFMRS RRDPHAGEYDLINGLTGLGALLLHHDRESARDVLAYLVRLD REKPHYAEYDLI RGLTGLGVVLRRLGD NDLLRQVLDY
 VSFLECGSDELIFVGRAGYLCAALVLKQKLAQEVLTPA $E D G G F G M S Y D L L Y G R A G F L W A A L F I R K Y L G V E V P D D S L M P$
$G P G L T A G D Y D A I S G L A G E G R G L L L A A D H G D E R C A R A L H D V$

 ENGVHMGDYDVFEGFTGUGRYLDAFAEQPECEVKEYQVRGL


 ELLYGRAGFLWAGSFLNKHIGKETI SAAMRAA
 PMDH TGGCDEILVGGRAGYLSGCYWLNDVLT DQKIPD RRIPALAEFDAI RGLTGYGAYLLRRDSTGPATVLDYCVKF

 ERLKE E E E F KDQDYLDLADMY

## DEEDADYEVD

 DII SGAAGSISVLLKLY QY QD D TMY KDEV K FDFLGGAAGICHLLMNAYEWTSDR $\frac{\square}{R}$ HGLECGSDELFVGRAGYLCAALVLKQKLGMEVLTPV RHGLPFESFDLVSGDTGTGAYLDLRRNAYPAALRSALTG ALIDKDKKHDVEGGAAGCILLLRCRPSSRARELAVRCGEQ KNDKLRGSYDLFYGVLGKGVYFLERDPDGASE
$P$ LIS QDTYYDMIN GVVGVIPVMLGLAEANSHSNKAMRC TPLDTMARFDVLDGLDGFARYLLLRGGGDTTPPEVEEELISSL EEGGFGMSYDLLYGRAGFLWAASFLNKHFGGQIPNDVITP GQVPT DEMMDVVAGSASAIAAFDSLYQQTGLDAADACGER PKFLKCGGDEFFVGRAGY LDAGA LDWISRELKTE

GGLGMPYELLYGRAGFLWASLFVNMHDGNETI PWTTTG $\square Y D K Q Q D N Y D L M H G Y \square G K L I Y$ L $\quad$ S SHKLSSKQEY I LE F $\square D Y$ PLDEADRVLDVGAGAAGCLLTMLVLGEHRPWAAAAACGQR $K L D P R A A D E L L Y G R V G Y I Y A L L F V N R S F G Q E R V P Q D Q Q V$ AMINEDT M I DYIGGATGALDILLCI FHRTGS 1 Q EAIGTDQHFDVMGGSAGA LGGLALHNLTAEPA
VKF LDCGSDEMFVGRAGYLTGLLYLRSRLGREVLPD
EEGGFGMSYDLLHGRAGFLWAALFINKYLGQEVPSDLLMP


GR
$P K F \square K C G G D E F F V G R A G Y L A G A L W L T R E L Q T P \ L D E W F Q L$

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UniRef90_MOSXT3 UniRef90-UP100046ED29E UniRet90-W1NIBO UniRef90-U4UHG5 UniRef90-UP100042B6B1C UniRef90-H8XKY8 UniRef90_UPIO0037254B4 UniRef90-E1C809 UniRef90-A0AO22QIP2 UniRef90-MOSXT2 UniRef90-J7L7P9 UniRef90-UPI0003817EB3 UniRef90_Q9YOY7 UniRef90-B7QMW6 UniRef90-UPI0003A6E399 UniRef90-B5DYK2 UniRef90-A0A034WYF8 UniRet90_F2CEC4 UniRef90-I1MYQ1 UniRef90-UPIOOO408D5FA UniRef90-Q8VZQ6 UniRef90-UPIo002B42551 UniRef90_L1KTR3 UniRef90-A8L984 UniRef90_UPIO0035C35B1 UniRef90-UPIOOO36354B5 UniRef90_UPIO0036F8F93 UniRef90-B5DMC2 UniRef90-Q6ZV70 UniRef90-K4D5H8 UniRef90-UPIO0037BE28E UniRef90_S3AXU0 UniRef90-Q09A14
UniRef90-M1FQK9 UniRef90-W2E5R1 UniRef90-R5HD90 UniRef90 E1KU4 4 UniRef90-A0A023PGP1 UniRef90_18Q156 UniRef90-BOWHC2 UniRef90-B21ZX9 UniRef90-A0A059BVM9 UniRef90_C3DC31 UniRef90-19K181 UniRef90-Q9KFM4 UniRet90-F8K1N7 UniRef90-D3DOT2 UniRef90-A5BN66 UniRef90-J7XLRO UniRef90-F6VZA9
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 LVKD FKEGRRLSHSTRSPCPGGGPLVYVWHGKKYWGAA AVEVI KNGRQLAKKGGGSPLMFEFYGEKYW YQEYLGAA LI QNI NVMEKGVGWKVPANPTPA LVCLTQPHDGQPGWWAAHGPTGSGP AWRDGHGNLGMA AVVDETIKSGRNLAKGNCPLMFEWHGKKYW LMYEYGGA GEDLILDGKRLPADKGSCPLMYEWYGEKYWGGHDGGA KNEHLTNLSNKCAQHLINSNQEKDKSQRLLTGFS
$\qquad$ VTSGRESKQNNSPCPLMYQYHGTEY TEPTREFGEDLPGWWTATG PSGRPDDKFPGGHANTGMA CQMLASGREYSKDRKSPSPAYGHHGTQY GGYAA CQMI INSGREYAKKTNAPGPLMYQYHGTEYMEFEDDGAA I DDAVLAGGRAGASD【KDCP पMYRWHGTRY LVQRAQPQAHGVGW LKY TYQLINFFEESSTEYNNTTYWECENNQEPKHVNLGLA EVA QETIKKGRSMAKKGSSPLMFEWYGKRYW GMA VVDEVIEAGRTLGEKSKSPLMYEWHGKKYW GAG LVR RTPDPAGLPPWWMNVAPPTGSPHTDYPGGHGNFGLS TRPRVDGRDLPGWWATGSPD RRASARWNAGHAGFGMA LVRLTEPLDGLPGWWCRNGPNHTPPPS VGGGHGNGMA
 VVEALLAGGRAGASDNSACPLMYRWHGTRYW WMEYLGAA LGF GAGDGSRMPGWWCAPERYLVPRDRAEFPNGDFNVGVA HAPLRVRGVQVPGWWYGATSR TRVAEEFADGQVNFGLA CATATPQPGGGVGWKGEVGMQPL AGKLDAVLLK LLQLITDAVGKLRHFGEDPEQTDYYNAGFS SENKTVDGQSVPGWHIPASHLVLPQEKLDFPSGNYNCGVA LVALTFEGKSUGKFHVLQPNQNPNFNQEKFKRGNDNFGLA YADKIMKDENALAWKSSFAKQPLG DSNNYPGGHDDGGFA FDQLNNKVNKVPGYFDSEGNQLNN DS STNYPGGHDDGGLS ETLTVIAGVMI ESGKRYSAAHRSPVPGMYHCWGDEYGGAA $L K A I A C G Q H L L A Y R Y S E T G A T R A W Q T L G K D P L G A G F S$
$V V D V I K Y G R L A K G G K P L M Y E W H G K Y W$
$V$ LIKLGAFTNDSKPCWFDEYAQLSDDEKETFVGGFYNNGMS LVRLSEPGLTMPGWW NGDLPVGASVDAFADGHADLGMA पELATACSEHLMKNAIKTDQGDGWKPP WEVTPLTGFS TEPVTRDGEQLPGWWAPTGGPSGRPDSRFPGGHANHGMA VVNAVLAGGRAGASDNTTCP TMYRWHGTRYW GHNGA CANKIVN NVTANKNSNYWQSPHAYTGFA IRKDIRAAVQSGEKFRSHVNLEGEPPLMYAYYKTMSLGAG LAENVSULENGDAWKNKHTNSYDG I LHLINALKNSAKDDKRGYFWMYEDHKAEKGWGANGSGS VA $V$ DII ESGKALSREEKKAERKCLKQTSHQTKTNTLLTGLA VDAIIESGKALSREEKKAERCPLLMMTVGWHRKQYVGAA LRIVVDGBDGKAWKGTMASNPGMTVD

NALGYS SVRGVSAMDHSGEKLAKHLK DEKECPDMFQWHDSQY GGAA LSAAEKCGDHLLESRAETEGNVRTW KSFDDSPPLTGYA

LEOVCR
LLASAQTMEQGLGWPTPLGPSPL
QGLK QVVDTLWYMYEKHGWQDKFNKKDCPSDTVYNLGLLA AI ASAEHLLQNAVQVGDTLAWPYNPESARGYF TGFA VAPVEHAGRHVPRYWSTVPPNWRPEMGESLRRHHDNGGLA V VDAVLAGGRAGASVNTACPLIMYRWHGTPYW GAA LLEKKVQLEVGIGWITKTEDAPL CAERLEATGVGVGGGTAWPSAPGGP
CDIIVASGRQFASAHNSPSPLMYHYYNTKY GKEIAQRADRGANGSATWITSLEYMPNAQRLQLQSDEVGAA GKEIAQRATRGANGSATWISSLEYGPNARLQLLQSLEYGLY FHEKSKKENDHADFWTQSNSVINGKDNKVC LGLA LMETATPQARGKAWDCEAAGNRY LKQADACGQHLLK VKGALSCGKHLMKHGRVMKSGGMGWPSVL DGSVLTGYS LEQATICGNHLLKNRVASDTGSRTWDSLD GGGKLLTGFS EKIDALLLHSVVQSGREYAKKHRSPCPLMYAYLGAA
 ALWKTMVASGRKGALEEQTSRPKSPDMYTYHGKEYLGAA


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UniRef90 D3DB17

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UniRef90_MOSXT2 UniRef90-J7L7P9 UniRef90_UPI0003817EB3 UniRef90_Q9YOY7 UniRef90_B7QMW6 UniRef90_UPI0003A6E399 UniRef90-B5DYK2 UniRef90_A0A034WYF8 UniRef90-F2CEC4 UniRef90-11MYQ1
UniRef90 U2U679 UniRef90_UPIO00408D5FA UniRef90-Q8VZQ6 UniRef90_UPIOOO2B42551 UniRef90_L1KTR3 UniRef90-A8L984 UniRef90_UPI00035C35B1 UniRef90_UPI00036354B5 UniRef90_UPI00036F8F93 UniRef90-B5DMC2 UniRef90-Q6ZV70 UniRef90-K4D5H8 UniRef90_UPI00037BE28E UniRef90-S3AXU0 UniRef90_Q09Al4 UniRef90-M1FQK9 UniRef90-W2E5R1 UniRef90-R5HD90
UniRef90-E1KUX4 UniRef90_A0A023PGP1 UniRef90_I8Q156 UniRef90-BOWHC2 UniRef90_B2IZX9 UniRef90_A0A059BVM9 UniRef90_C3DC31 UniRef90-19KI81 UniRef90-B5D133 UniRef90_Q9KFM4 UniRef90-F8K1N7 UniRef90-D3D0T2 UniRef90-A5BN66 UniRef90_J7XLRO UniRef90-F6VZA9 UniRef90-B9J4P0 UniRef90-UPI00046FD431 UniRef90-M4HLF7 UniRef90-S9WFJ7 UniRef90-A9DKD0 UniRef90_UPI00042A60BA UniRef90-N6U5GO UniRef90-MOLDN7 UniRef90-W3A851 UniRef90-UPIO003D07B23 UniRef90-KOEUV4 UniRef90_UPI00034AE096 UniRef90-S9NW96 UniRef90_L8K103 UniRef90_K9WYY7 UniRef90-UPI00036F0F11 UniRef90-A0A022QWU8 UniRef90_D6TJ70 UniRef90_UPI00034B6405 UniRef90-G6D8F4 UniRef90-D8G9Q3 UniRef90-D8G99Q3 UniRef90-D8R5G6 UniRef90-A1ZIL5 UniRef90_U2U2Z7 UniRef90-B2JAK4 UniRef90_F7FKV2 UniRef90_R9TSD7
UniRef90_UPI00034BEC42 UniRef90 UPIO002F19A30 UniRef90-L7ML24 UniRef90_UPIO0046E212A UniRef90-W5JE85 UniRef90-K1Q213 UniRef90-B5DIB2
 SGNFPSSDENKSSDKLVMHCHGAPGWI QDDEGNFP VALEDLKSGREKR $L V H W C H G A P G A V$ DEFGVIWPGEIPVG PDGRHTDEHHPARSAWCYGVPGIA SGNYPSSQGS WA D DRKEGPAAY NS D K $\qquad$
 EGNFPAATDD $\square$ GHES

KLV HWCHGAGGVF
 VPPKAWWPEVIGHADHARGAVHQPGPARPSWCNGAAGI G
 SGNYPSSEGSEYPSSEGFDTDR NDRLVHWCHGAPGVA
QNHFPSGNYPSSEGFDTDR

NDRLVHWCHGAPGVA GPRGTWWPYY LTPQRWENGPTTAACE QRPTWCYGTPGLA YEKRFYSAKESNWKDLR FSEKGSYSSFWCHGAPGI G QDSDGNFP VADEDLRSGRDKR PKGNFPCDLDDVTRPRRSQDELVHWCHGAPGVV TGRGATWPYWDTRSELRTGRCAAPKDR RSAWCYGTAGLA QDSVGNFPVSM EDLLTGRDPERRLVHWCHGAPGAV QDSEGNFP VA LEDLKS GREKR DK $\quad$ WWPGK 1 Y SNN L HSGNYPSSEGNPRDKLTHGGGGGPSFMVQWGHGATGMA SPVARNWPDLRENTGTHGGGGGPSFMYGWCNGAPG1G ENDSSFPSKVS LDNNDDYDNKED ISRRAWCYGDDG\|A KNRFPSGNYPASEEDKK KDLLVHWCHGAPGI A KNRFPSGNYPSSEGSE SDRLVHWCHGAPGVA DE DAPWWP GY $\square$ SMQQAT DHH DHSADRPRPSWCYGVT GTA QRRTGWWPEA IDHDELLRTGSAASPGPPARPSWCYGSPGDA TDGMPWWPENDTADELHHATPAQRGMPDRPSWCYGTPGUT

QEQNCNWPPELGETDERENELVH
HS GNYPVSEGNPRDKL
DEGGTQWPGRVAHPEASGERSREAGARSRDQWCYGTSGGAA DEAGPYWTPYLPDRYYADRDGHGTPDPARPSWCYGAAGTA PERG $\quad$ QWKD DRAPDTEGHFMAMWCHGASGDA WNGTVVIPNMFTPDEE SAETSRNPGYHRDAWCYGTPGAS
$D R Y G P F W P Q R V A W E E Q Q T G$
LGGSGWQREAWCYGSPGVA NEEKPCWPGPMTVEEYWNGTCNPENLHDSSSWCYGNAGVM DSVKNWSDRRETDDGDRYDDL
DQEGVWWPTKIINFNEFINEDFIQK
SDDGPWWPQWLTRDDLRAGHPAQPQDLIYGGWCYGTPGVA DGNGN WPVSH FPVTLQDY LQRS

VHWCHGAPGVA HRGVEYIPNTDNTNTFNHRDAWCGTPGVS
 QEENWLTPNKETP
TGRGTTWPYWITHDELRRAERLTPSAPR RPSWCYGTAGLLA GDAGPWWPGFDTHRQVREGQVAATLRP RPSWCYGVSGTA HSGNYPSFEGNPRDKL

GLAFERNHYDSSENNWKRSSTEDTDQYSWCHGAPGI L KQGCYN $\square A T D L E T S L S S D G G T H L V H W C H G A A G V V$ KEESAW
DENGSSLFPGWVYPEMEK
DTQDNW $\quad$ LDLRGEKNLEAPTNNRLA WCQGD L
RSGNYPSSLSNETDRLVHWCHGAPGVIHMDMQSYGSRLFN
NEQAQNWPDLRQYEG KKPLNYGTMWCHGAPGIAA
TEKMNWSDYRETDSGПKYKD VENDP
FPTGNFPSSLGPGKQDK
SEAAGNWPDLRSW
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DEKGAWKDNRSTENQYV
QEQNCNWPPEDGETQERENELVH
DAHGPNWPTGUP LPGTAAVETRS
WCHGAPGIA
EQSVFSP DKGNWPDGRSFT DKNENSYSMSSWCHGATGGIG
A GN
Q $\mathrm{L} G \square C R Y P S V I V N G D \square$
TTEGNWYDLRTSVMTKQA
SSYGDLSWCYGDDGVVA
DRYGPYWPDVVSLLEEFDAGR SDAPKFGYFWCNGAAGIUG
QSGNYPVSEGHTRDEL
SPQHNNWPD L RAEADGTEKDEQKKYDMAAWCHGGAGIA YDQS $\square A V P G R D A W R D L D T W R D R T G M A D V H P A W C H G A T G U G$ EGN WPCCM EEVGLSDHKLVHWCHGAPGTV PLGQULQDEKSQFVSRMVKEVGIGGASGLGSIV $P L G Q I L Q D E K S Q F V S R M V K E I G I G G A S G L G S I V$
QSGNYPSSDGNQRDKL
QRG
RERN WPD LRAGAKELSVDG DGAEHFMWAWCTGAPGIG ENALFYPSVGNWREDTPVYDPASLPVFWSTWCHGAPGIAA SGNYP PCVGDTRDQLVHWCHGAPGVV
K EKNWRTPGRDTSS
PEAGNWPD
YERQVFSPTAGNWPDFRPHA LRFEKPSFKTSWCHGAPGI G保 RGNFPC SSEGNPRDKFEDVTKPRRSQDELIHWCHGAPGVM EGN FPTTDQDCDRRARSEPLVHWCHGAAGIV EYNGNYPSSMGHAD PQHRRPEEKELVQWCHGAPGVV $\begin{array}{ll}K \\ E & T \\ E & T \\ \text { G }\end{array}$
Uneposply

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UniRef90_M1FQK9 UniRef90-W2E5R1 UniRef90 R5HD90 UniRef90 E1KUX4 4 UniRef90-A0AO23PGP1 UniRef90_18Q156 UniRef90- BowHC2
UniRet90 B217X9 UniRef90-B21ZX9
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UniRef90-D3DOT2 UniRef90-A5BN66 UniRef90-J7XLRO UniRef90-F6VZA9
UniRef90
U9.44P0 UniRef90-UPI00046FD431 UniRef90_M4HLF7 UniRef90-SgWFJ7 UniRef90-UPIO0042A60BA UniRef90-N6U5GO UniRef90-MOLDN7 UniRef90-W3A851 UniRef90-UPIOOO3D07B23 UniRet90-KOEUV4 UniRef90_UPIO0034AE096 UniRet90_S9NW96 UniRef90-L8K103 UniRef90-K9WYY7 UniRef90_UPIO0036FOF11 UniRef90-AOAO22QWU8 UniRef90-D6TJ70 UniRef90-UPIOO034B6405 UniRef90-G6D8F4 UniRef90-D8G9Q3 UniRef90-D8G9Q3 UniRef90-D8R5G6 UniRef90_A1ZILS
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330
340
350
360
 GDAGNAYGF SMYRTTGEEKHLYHAYMFATWCMEYGNHNT GVAGNGYVFLLLYRLTHEPKYLYRAMELLTNSEFKQRART GUSGNTYVFLSLYRLTGRVEYLYRAKAFACFLLDRARMHS GDMGNSELLLLSGLKLGRPEHTEMARLLADQML RERKEHG GVSGNAYVFLALYRLLGKEEFACFLLDCGGRLISSGEMHG GUSGNAYVFLSLYRKTGNVEFLYRAKAFACFLLDRAEMHG GWAGVVHTAWRASRNFHNDQLAATLPRLLRGGLNALLGREK GVAGSAYVFLLLYRLTGNSKYIYRAQRFAEFLEFKAGSRA GI SGNAYVFLSLYQLTGKSEFLYKAKAFACFLYDRAQMHG GVSGNAYVFLSLYRLTGNKAFTCFLLDRANKLTAEGKMHS GWAGLLHCAWRINTDAPDTPLTQDLDRIATTLLDRLEGE GNFGNVE LVQMAQLLNLQDLGIQATQMALKLVHNFDGSN GVAGNGYVFLLLRRTNEMRYLYRAHELLLNAEFKGRART GLAGSGYVFLLLYRLTGEDRWLHRARQFAEFTDEFKQART GFAGLTHAAVRTAADAHPSTVGRLRAADPELLAAVVDNDLM GVAGNGYVFLLLYRLTNEMKYYYRAVKFMELLTNPEEARM GLAGVAFVYDM GNKNTNKELISFANDGRQR EKDGNDLI GDLGNALFLLEAARALRDDDLLHRAYRLAGGLLQSLDAHG GSFGLAL FKKFYDRTKDDSLEAYDYWLNDGLSKHRGDNK GISGNAYVFLALYRATGRSEYLYRAKAFASFLLDRGEMHG GISGNTYVFLSLYRDTGDLMYLHRAKAFACFLHQNAEMHS GMAGLLHATWRMATETGNAETSAELPRLADRLITALDQDD GWAGLLLTAHRAAADTSTGELSAALHAAETHRHRYLRGNS GTAGLLTAARRITADALTPDPLGPLARLHQQTTAAANE GSTGIIHQYHQLYKLTKHDAFESATQRWLDITMNQFYKPG GVSGNGYVFLLLYRLTKEPKQLYRAHKFMLMLSNPMFYNS GVAGSAYVFLLLYRLTGNSKYIYRAQRFAQFLFTEEFKAG GASGNAYAFLSLYRLTGESDYEERAKAFASCLYQNAEHNE GWSGMLHLLTLFELDHPEAGFGPAADEMAARLLGGFTPAA GDMGNLEVLHLAGTVLGERQWTQAALRCATAVLRQGREED GYAGLLLIDHHFSRTAADPFKNDFLHRMLSYLEGSVDDPD

GFSSLVATQMCAYSSYRNPKLLTNLERHDQKMDAGYRKNG GDLGNIEDLNYASRVVEKRK KEKCDDYMEYDKEDGMKGN G SGILHLTHLMYDESFDKELLSFKNNLA EEKLQYYD GLAGUYQAATRVAADADTPAGGHLPELAATLTMAQAGA GVAGSGYVELLLYRDTSNPKYLYRALEFLTHEEFDRYARN GNMGRVEVLLVGAQRCDRSDWHQDALQNATNVVARANRTG GDSGNAYVFLSLSRLTGNAEYDYRAKAFACFLQDRAKMHG GFAGLLMLCLRLAEYVSDPELLELANNVFQKLEIGENKRV GVAGNAYVFLLLFRLTHDTVYLYRAHKFMELLEFKQKARV GDFGQLELLRFAAEVLGDSYLQEVVNNLSGELYNLEKTEG GFAGLAHLTARUAADAAPATADQLRATVTSLLAVLFPPLEE $G T A G L L Q S A W R M A A D S H N P Q D A A E L P G L S A R L L A Q M D R T V$
$G V A G N A Y A F L S L Y R D T G E P V E E R A K A F A S F L Y H N A H A G T$ GNFGQDELKKACQLTKNGQLAAQDKNMLDYVLHDMRIKG GVAGSGYVFLILYRLTQDEKYLYRADRFGGFMFTEAFSVG GVFGDVT F F YMYKETEEVIFKQTADFWMNEALKMDTHKD GDFGNLDFLLTYAKMTKNNEYDDTSKRDGENGKWNFDQNG GAAGNGYSFLS SHHTQDEEFAEWCLEYGAHGCRD GLAGNAD LLYASQLLENPEYVQ ARNAANLGISQYDATG
 GNFGNTELFLQAASHFRKSDFLEEAKRRGYNHMLQKEARG GVAGSAYVFLLLYRLTGNSKY VYRAQRFAEFLEEKAGSRA GNFGRIEMLLVAASELLRPELQKTAQKQAAQFCFFAGNDR GDLGNLEFLMLAEKVLGQSALGHERQRLAAAILTSMEEAG GSAGDAH FKRIDQATHYHEFERCSHYWIEQTLTVGRSYS GKSGNSELLLRFALLKNEPY $\square Q M E A N V Q A T A Q W R N F E H A G$ GWAGALHLLGYF TDGPDGHLVRQCRDRVVER VRAVD GTAGNAYALLSLLRLTGERVYEERAESFASYLYHSARKAS GDFGNMELFALADAVLPEAEWGERRDTMAGRLRDVLGSRG GVAGNGYVFLLLHRLSGDEKYLYRAKLFADFMDFLRDARL GAAGALGLLSLHVIKEPVVLDTACGYHLLKAGQSDE GAAGALLGLLSLHSVIKEPIVLDTAIACGYHLLKAGQSIE GLFG\|LYQFHILYKMTQEP IFKSTVEYWLNDALRQNTDKE GDLGNVDFLLEAADRLGDASLRERTDRVAGGILQGGREHG GNLGRCEVMLVAAQKLHNPDWYQAAQQLAA DAVARATRKG GAAGNAYAFLALYNLTQDVKFLYRACKFAEWCLDYGEHRT GDFGQLELLYAKQVLQDRELVYYESVRSQLLEDVKQM GNFGRIELLLDAAQQLSRPELIETAQKQAAWVVTRAEQAG GNLGRIDVLLTASLKLNRPEILEKDHKQVSWIVNRAEREG GIGGSGYAFLLLYRLTTELRWLHRARQFAEFTDEFKQART GVAGNAYAFLSLYRLTGETUYEGRAKAFABELVTVGDTHG GVAGSGYVFLLYRLTSDPKYGHRALEFGTHEEFDRNARN GVAGSGYVFLLYRLTGDFKHLHRAQQFAEFLEFEKFERE

UniRef90 D3DB17 UniRef90 V3YYZo UniRef90-D3TR44 UniRef90_B4V7B9 UniRef90_UPIo0046ED29E UniRef90-W1NIBO UniRef90 U4UHG5 UniRef90 UPI00042B6B1C UniRef90-H8XKY8 UniRef90_UPI00037254B4
UniRef90 E1C809 UniRef90-A0A022QIP2
UniRef90_MOSXT2 UniRef90 J7L7P9 UniRef90'UPI0003817EB3 UniRef90-Q9YoY7 UniRef90-B7QMW6 UniRef90 UPI0003A6E399 UniRef90-B5DYK2 UniRef90-A0A034WYF8 UniRet90_F2CEC4 UniRef90-11MYQ1 UniRef90-U2U67s UniRef90-UPI000408D5FA UniRef90 Q8VZQ6 UniRef90_UPIO002B42551 UniRef90_L1KTR3 UniRef90_A8L984 UniRef90 UPIO0035C35B UniRef90-UP100036354B5 UniRef90-UPIO0036F8F93 UniRef90-B5DMC2 UniRef90-Q6ZV70 UniRef90-K4D5H8 UniRef90 UPI00037BE28E UniRef90 S3AXUO UniRef90-Q09Al4 UniRefol ${ }^{-11 F Q K 9} 9$ UniRef90 W2E5R1 UniRef90-R5HD90
UniRef90 E1KUX4 UniRef90-A0A023PGP UniRef90 180156 UniRef90-BoWHC2 UniRef90-B21ZX9 UniRef90 A0A059BVM9 UniRef90 C3DC31 UniRef90-19K181 UniRet90_B5D133 UniRet90 Q9KFM4 UniRef90- F8K1N7 UniRef90-D3DOT2 UniRef90 A5BN66 UniRef90_J7XLR0 UniRef90-F6VZAS UniRef90-B9J4P0 UniRef90 UPI00046FD431 UniRef90-M4HLF7 UniRef90_S9WFJ7 UniRef90 UPIO0042A60BA UniRef90-N6U5G0 UniRef90 MoLDN7
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UniRef90-H9IZT4

370
PSGFILTGLAGA
$380 \quad 390$
390
PDRPFSLEEGMAGTMYFLADLLAP
PDRPHSLFEGVAGTVCFLDDLLDPEQA
PFDNPDFLCGAAGVAAALWTVSTPVSR GWQRALLI
GDRPYSMFEGQAGMAHLFLDMIRP
AYRTPGFF LGYSGDGYQLLRLADPERVPS
GDRSLS LFEGMAGTAHLFLDMTKP
PDCPFSLYY
NNESPSLMMGYAGMGLGLLKMFAPTEVPS
PPSECGPLTGATGVMLAQRVARTNTPPTQWDTCLLLND LESVYSLYEGFSGTVCFLTDLLQP
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NMES LGLMNGTSGI GYSLLRFHNP
PDRPHSLYEGVAGTVCYLVDLLEPEQA
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ERAATALVSGT GAGPGLLDDTAAPPQSAWDSCLLI
PDRPYSLFEGVAGTVCFLIDLLDPDQAS
PDRPHSLYEGVAGTVCYLI DLLNPQQA
E L E SVGULQGVSGDVLFLLDAYYDEKLLWKKML
A ANGYSL FQGLAGTACLWFDLLAPDN


GDRPYSLFEGIGGMAYLFFDMVEP
HDP
DPTAAGFLDGAAGDALAHAADTSGSADPDWDRCLLIN ADEPAGLLDGAAG』NLA
 PDHPQSLYEGWAGAI CFLI DLLDPDRA
SESDYSLYEGFSGTVCFLIDLLQP
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PVHNPGLLDGAAGIALVLADYADADEVNGWDAAFL
PLDMPGFLDGAAGIALALHSYAAGAPASGWDTLLLLN


Y DNSPGUMVGLAGIGYGVLKVYNPTDPS
AENPLGFLDGVSGILAVLNSINSNE IPE W
TDGSTA LLTGDTGVQLVLARRAAAPPLS GWDSCLLL


PASPPGLIEGTAGLAAVLHSLTIDTTAT WETALLL
PDRPHSLYEGVAGTVCYLVDLLEPEEA
YQS GT GLMVGLS GF GYGLLSAAYPSAVPS
GEAGAGLLDGAAGTALGLLAADSAEPPTAWDACLLI
LDPELLDGAATAGTGAA
$\square E N T Q G L M N G L A G Y G Y G L D S Q S T A D K \square P S \quad M L M \square$
PDRPHSLFEGLAGTDCFLNDILQPTKA


PDRPYSLFEG
QQENPGLMLGMSGTGMFYLR\AD
WK C GP SLMS G ITA G $\square G L G L L T L N N P S \square P S$



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

GDRLPT
EDLDYSLFQGFAGSACLFFDLLKPEN
WDSGTGLMLGDTGAGYTWLRLAFPDKMPS VLLLDPP
F DNVF GLMMGKA GVALSLLRLAAPGRVPS
PDNPESLYEGTAGTVCFLSDLLVPDKA
SK LLTGFSHGAAGDAYALLRLYKSTSDP
SKLLTGFSHGAAGUAYALLRLYKSTSDP
GDHPYSLFEGLAGTAFLWLDLQRPEEA
WRDDPTLLGGAAGDGLVLLDYYFPKPPENWAK LLLL
HTETPGLLVGLAGIA YGLARLAVPERLPSLLAV
RYENPSLFQGAAGI GYQLLRLAYPEELPS VLLWE
PDTPFSLFEGMAGTIYFLADMLVPPKA


AEHAYSLFQGLAGTACLLFDLHMPENA
PDCPFSLYEGYAGTVCYLIDLLRPEKA
PDSPFSLYEGFAGTVCFLVDLIQPDKA
PDRP H S L Y E G LDA GTVCF LVVDLLEPEKA
$\square$

UniRef90 S9QHM7 UniRef90 UPI000375BE3A UniRef90-A4IQ10 UniRef90_D8G6F9 UniRef90 Q54124 UniRef90-D3PVN5 UniRef90-UPI000472AF59 UniRef90 U1NVM3 UniRef90 ${ }^{-}$U1NVM3 UniRef90_A0A023C163 UniRef90_K9QMM6 UniRef90-16ZQX1 UniRef90-UPI0003695DD9 UniRef90-A9TEG3 UniRef90_X8JZW4 UniRef90-UPI000289F152 UniRef90-V4HZT8 UniRef90_U6HS40 UniRef90 W7TA93 UniRef90_F0VD38 UniRef90-J9K067 UniRef90-TONJD2 UniRef90 TONJD2 UniRef90_UPI000474DD9D UniRef90-UPI0004093E6E UniRef90 D6TJ67 UniRef90-L8EV60 UniRef90-BOWFI8 UniRef90_D3D9G0 UniRef90 U1LIA9 UniRef90-E3E6W7 UniRef90-UPIOO0348681E UniRef90 B3RTD6 UniRef90-Q16N67 UniRef90-F7BWS3 UniRef90_C2R1T4 UniRef90_UPIO0034CD9D9 UniRef90_UPI00036599F9 UniRef90 UPI00036599F9 UniRef90-B6IZK7 UniRef90_UPI0003626571 UniRef90_A8PZA9 UniRef90 A8PZA9 UniRef90-A0A014LIV8 UniRef90_V4RXE8 UniRef90 G8UHL4 UniRef90 ${ }^{-14 D N I 7}$ UniRef90_H8MJN9 UniRef90_J5GIW0 UniRef90 UPI000465C439 UniRef90- M2Y1F0 UniRef90-UPI0002659B76 UniRef90_B9H4R1 UniRef90 V4YR89 UniRef90_UPI00047AB1E0 UniRef90_G3W7J0 UniRef90 U5MXU8 UniRef90 ${ }^{-}$U5MXU8 UniRef90-A0A044TF36 UniRef90 A0A044TF36 UniRef90 B2J1F5 UniRef90-UPIO00364022A UniRef90_C1L5F2 UniRef90 A9AUI4 UniRef90 H 3 V943 UniRef90-UPI00034B0379 UniRef90 UPI000345BD7F UniRef90 B3RTD5 UniRef90-Q2JGJ7 UniRef90-UPI00037A8768 UniRet90-UP10002 UniRef90_UPIO003FDB5CD UniRef90_C1BVU5 UniRef90 K9UES4 UniRef90-UPI0003468805 UniRef90-UPI0003468805 UniRef90-E1FMQ2 UniRef90_J7L4E0 UniRef90-E5AK52 UniRef90_UPIOO03112901 UniRef90 UPI0003112901 UniRef90-D8FUB0 UniRef90_S5VEY1 UniRef90_UPI00031DEEE2 UniRef90 C9LBZ9 UniRef90-H3ND58 UniRef90_H8MHS2 UniRef90 H2KSY7 UniRef90-M4DR58 UniRef90_D5WV06

 $N$ VID S Y
ENLIFKNK RREASRLIDSITTG RHPESDDYHGGAYTGVAGDGYGVIF RREASRLIDSITGGRHPESDDYHGGAYTGVAGDGYGVF QLRNKLKEISKVLDAKAKNNQEVGVLSGVSGVADFQF


 K DRMSHAWEQILRQTDPQKE


PSDLD
KPLILKLVKDYVERILTGTWGGWYPP

S
RTKLLQYワD
KGKVIQLVKNYVQTILTETKKSAHKLDL

## Y H $\square \mathrm{Y}$ D G S C G $\square \mathrm{A} \square \mathrm{DF} \mathrm{L} \mathrm{A}$

F T D IDD L Y R GVA GVA L A F A $D G Q S L A T G G V G P A L L A \sqrt{1}$
KQEAANLVEED MEWRYSMDDYDGGVYVGIAGNGYSVL KQEAANLVEEI

LIAEADFGKKQQG

QQGKTLGLYMGEYGILLFVF
 EK $\square$ AKFM $\square D K S \square L N \quad D D K T Q \square N W \square D P Y M Y N G L I G I A A I F F S$ KHTYES $\square$ QS $\square A Q \square V Q H R V K P E R K D P T V Q Q G A A G V L S V L T$
 $K N Q V V E V T W E R D G K T G T G \square D P$ TVYTGGLGTAFTCL NPKKGSTVYVGSPGDAYAFL GLLY S GVVAGVA YMLA KKAATEA TEPTIRYLDELKDTTNEKDGAFSGIISGWLYSIF KKAAIEAIIEPI IRYLDELKDITNEKIGAFSGIS GWLYS I F
 GLY D GRS GVALDL LA
$N \square P N K L V E L L H V L N S N E K L S S S D V S M Y T G \square S G V G L F Y Y$ LD F Y D GLLPG|IYFLA S D $\square$ NE E VN K N $\square$ E S N GSHD $\square Y$ K
$N L Y E G R C G V S L A F A$

DPTVYNGLLGTAVTCL
SNKEFQSFT TYNGACGFALLFL
 LIENEAEQLLKK $\square$ MNRPSSNDDHGGAYTGGAGワAYALL


 M Y T GLA GI GLFF L


A LIWTVTKDNQYRS LALKGLQPLRQYDENLSPEKPGACVGL
 E QALNGTANWKAAHRLVTQAASSPDDAGRHAGGLYYGA YASRLLPEEQYANFCNKMVEEQLKQIQHSGHHKDGQYLLG YASRLLPEEQYANFCNKMVEEQLKQIQHSGHHKDGQYLLG ERGD ATBARRHLAQAVAGGVSAGGN ASLFHGA RSYEDTGNQQELDLSAEIIDTCASVVRDSTRHVTFLC GR YY LKKYSKNKTHILLVDKYVETLINRLSEEMRLYT FCDGLD RRHLKNPDDNYLKLALQYID
 GLYKVTKKMEYRSI LYK I L STI D Y NMQND L C E D I SAF S GV

 RSYEVTGNEQDLLLCSETVDTCSVSARTSSRH DTFLCGR KLATI DQKQASLDTAQKLLEAGVEQARRHRSLGPSLLCGP HLNDLRPRPEFERTARLALAHAVEHPADMSRDGAYPGD HVSQAPSRERYLRLAKKLIDACTRAPDADTRAAFLLGGAG HI GHTLKNQKLLDYVQKGI S I MKELTKKTQCHDII SGYAGA HIGHTLKNQKLLDYVQKGISIMKELTKTQCHDIISGYAGA Y A S R L EKKA K Q Y A D F C S K V V E D D L K Q l K K S G C R K D D G Q Y L L

FLSHSTCEGNATECSEKLLHRCLRHTDMKTRKNTSVFTSP YLGADS GVERYTQAAERALQTLELLLEQHQLTDVGAFVGW EAYKLTKDFTYYQNCHYYI SETLKLI KNNPVYSTSLFTGD
 QLSKMMQDQNYLRKAENLLQVSFKHLKK DKNQVSFMSGV

RSYEATGNHQDLVLCSD IVDKCTVVLARASHRHLTFLCGR
 E L Y R V T K R E K Y R I A V


RASSSSFNHNQEESMKYGRH\|LMQHLEAARKEES
 YL G K V S GEKEFNTLALQQTMES ILLQQPDHEKA FASAFHGQ
$Y \square G A V T K Q D R Y R E L A Q A G M R S V L H Q V E Y E G R L I I G A F N G W$
 YLGGQI T QEARYT QL A QAA LRALQNQLKRDKSQDIGAFS G W




UniRef90 S9QHM7 UniRef90＿UP1000375BE3 UniRef90－A41Q10 UniRef90－D8G6F9
UniRef90＿Q54124 UniRef90－D3PVN5 UniRef90－UPIO00472AF59 UniRef90－U1NVM3 UniRef90 U1NVM3 UniRef90－A0Ао23C163 UniRef90＿K9QMM6 UniRef90－16ZQX1 UniRef90＿UPIO003695DD9 UniRef90－A9TEG3 UniRef90＿X8JZW4 UniRef90－UPIO00289F152 UniRef90－V4HZT8 UniRef90＿U6HS40 UniRet90 W7TA93 UniRef90－FOVD38 UniRef90－J9K067 UniRef90－TONJD2 UniRef90 ToNJD UniRef90－UPIO00474DD9D UniRef90－UPIO004093E6E UniRef90 D6TJ67 UniRef90－L8EV60 UniRef90－BOWFI8 UniRef90 U1LIA9 UniRef90－E3E6W7 UniRef90＿UPI000348681E UniRef90－B3RTD6 UniRef90 Q16N67 UniRef90－F7BWS3 UniRef90＿C2R1T4 UniRef90 C2R1T4 UniRef90－UPIO0034CD9D9 UniRef90－UPIOOO36559F9 UniRef90－UPI00036599F9 UniRef90－B61ZK7 UniRef90＿UPIO003626571 UniRef90－A8PZA9 UniRef90 A8PZA9 UniRef90－A0A014LIV8 UniRef90－V4RXE8 UniRef90＿G8UHL4 UniRef90－14DNI7 UniRef90－H8MJN9 UniRef90＿J5GIW0 UniRef90－UPI000465C439 UniRef90－M2Y1F0 UniRef90－UPIO002659B76 UniRef90 B9H4R1 UniRef90 V4YR89 UniRef90－UPI00047AB1E0 UniRef90－G3W7J0 UniRef90－U5MXU8 UniRef90－U5MXU8 UniRef90－A0A044TF36 UniRef90－A0A044TF36 UniRef90 B2J1F5 UniRef90＿UPIO00364022A UniRef90－C1L5F2 UniRef90－A9AUI4 UniRef90－H3V943 UniRef90－UPIOOO34B0379 UniRef90－UPIO00345BD7F UniRef90 B3RTD5 UniRef90－Q2JGJ7 UniRef90＿UPIO0037A8768 UniRef90－UPIooo2B49BF4 UniRef90－K9WEE4 UniRef90－UP10003FDB5CD UniRef90－C1BVU5 UniRef90＿K9UES4 UniRef90－UPIOOO3468805 UniRef90－UPIOOO3468805 UniRef90－E1FMQ2 UniRef90－J7L4E0 UniRef90－E5AK52 UniRef90－UPIOO03112901 UniRef90 UPI0003112901 UniRef90－D8FUB0 UniRef90－S5VEY1 UniRef90－UPI00031DEEE2 UniRef90－C9LBz9 UniRef90－H3ND58
UniRef90 H8MHS2 UniRef90－${ }^{-}$2KSY7 UniRef90－M4DR58 UniRef90＿D5WV06


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GGLTYALSTFNRFDP PAILFTLNATATDHDRYAAARQHLTPHVRRLIRERLTNGH TLG｜YVIKAlLD YE円KKFVNTTU DDKVKSLAEVIC TLGIYVIKALLD YEIKKFVNTTUIDKVKSLAEVIC PALEFVLSRAGHAGPEVREAVDRVVDARLAAARRRQASGH GGl YAl GAVVANRMGDRSRRDFFLNLFLDAQERADPAGP TGVLYLL DFMRDNDFLRVDISRIQPILDKYITTLM AGPLA ATVSYRMGNNRPKLPDYNTLAQRLLDLISLK A ANVYVLGHLAVALG TSLVYGYYYIG RGTAWALYDAGRAVDD

LQQRDKALL rgiawaly iagrald TGVYLVAFLISDAI SDNKELCQHFYSKVISLTDSWL $V G P I A V R A V L H H R L G L Q K E V K T D D D L L D K K L A S G C$ GGLYALGAVAASYKGDRRRRDFFVNLFLEVAQERALPVGP AGLFVVQALLGWQQGLPFASQSAVFQGAVQSYKQYFDYAV GGLVYTLLHLHRLWDEYVQPLGKFREELCLDQAVALADGLA LGVMLSI YEKTENKELKMELISLCNTIFKELKDSTVVLKN LGVMLSIYEKTENKELKMELISLCNTIFKELKDSIVVLKN
 MGUGGGAGLGSLDY AFVKVRQFLNDETLLADAQALAEWM DGPLCLGALSVVKHGTENAEAKKFLEETLSASNYALADAB GGLSYLYWHLSSLWQQP
 SGVGSTIYTFVKDSQFDDDAT AGLLA【ACVIYDRMGDKNRKAEC［LKQL•

RRLDSLC
GGVYALGAVVSHYMRDPQKपDFFFNTF LKAAEEKADPTGP GGLTYTLTHLGSLWR MSVVFTLIKANEMLSKKEYLDEAL SGPLAFAAAYSDNKKRYLKYLDALL
TG GGGAAGLGAT $\square Y \mathrm{TFVKVSQF} \mathrm{\square GDRTLLQDA} \mathrm{\square A} \mathrm{\square SAW} \mathrm{\square S}$
TCYLLGS【S TYYVITLLYEEKNERSKRLIDR\｜TEDGRLIAS PAVAFVLAHTS SEHYRQARATVRDHLLRMTVHRLKAAH ASKLYALSHFDA $\quad$ YGENKDW NGY

AGLIYTLTHLGSLWQQP EMLYMAVEWMESLP RGTAWALYEAGRAVAE
GSILYALNLLYE TPDYALT YEEEDGGDFDL TGVAWAAEHVHQELGGIF CLAF
AGVCALGAVAAKLTGDS
EMLYMA VE WMESLP ELLALAARWVKECQ K Y KAla Ar w k cio $\square \mathrm{YDDS}$ F EKY的ACAKEACDLNS

GSVLYAVIHLGPLLQFPGW

UniRef90 S9QHM7 UniRef90_UPIO00375BE3A UniRef90-A41Q10 UniRef90-D8G6F9 UniRef90-D3PVN5 UniRef90-UPIOO0472AF59 UniRef90-U1NVM3 UniRef90 U1NVM3 UniRef90-A0Ао23C163 UniRef90-K9QMm6 UniRef90-16ZQX1 UniRef90_UPIO003695DD9 UniReffo-A9TEG3 UniRef90_X8JZW4 UniRef90-UPIO00289F152 UniRef90_V4HZT8 UniRet90_U6HS40 UniRet90 W7TA93 UniRef90-FOVD38
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UniRef90-TONJD2
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UniRef90-UPI0004093E6E
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UniRef90 H8MHS2 UniRef90-H2KSY7 UniRef90-M4DR58 UniRef90_D5WV06



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UniRef90_TONJD2
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 MALLTDATDHLLTQYPEPDKDPDSDENKYSDQP

 IVDAVLAGGRAGATANTACPGMYRWHGTRYW GHGNGAA LYNTAIKDKK SCYFKWGTRIINEKKSVY N NLADS EKVIANILRSGRSF SAQMKSESPLLWQWHDK DYLGAA CGERMLQ

TASDSEHGGRAWVVPAAGRALTGLA
LK DA LKCAEFLIENVTKNDK IFGW KSFYDGKVVSGFA
LTAAARREQSGIVSWPVPAEAVVEEAGKR YLGFA LFENGRKTANSSNWSRHCPLLYQW HNKFYLGAA VVQSVLESGQLLAAKMNCD $V V D A V L A G G R A G A S D N A C P L M Y R W H G T R Y W$ GIG LSMKMLESGEAYGRRTGASPLLYSWHDREY LGAA AEHLLKTANTNGKEYDCDGDAMSWPGDDGGAALADLTGFA DSGSYERSMFDEKSNNWKKQLTKDEGSYGWC
 LEKAIACGQHLLSRQVSYKGAPKAW QTDGEQPLTGFS
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 LQRATACGQHLIAHQASYEGSPPAWSTL MGAKPTGFS IKIVINSGMNYAQVNSCHSTLMYKWHDKEY IGAA
 VVDAVLAGGRAGASDNPDCP DMFRWHGTRY CGDHLLGGAKGNRIISQNQAMEQGRAWMPGDGTNPGTGAS QQEVISUILHKGSSSSNSETLYYEWYGEEY QQRAM QAADGSVTWIVSHGAGYAPKAERMQGEPLGDGLY QQRAI QAADGSVTWL G GMGYLPKAERMQLQPLGDGLY LVRLTHEGRSFPGWWTRHGPLVGHRDPDFPHGHANIGMA AKETQKRADHTANGSVTWIGMEYNPEAGRYQLQP TGDSLY AKEIQKRALHTANGSVTWIGMEYNPEAGRYQLQPIGDSLY
AADRLAAAAQAEPSGVSWPVPAEAVSQEA LEAAI ACGEKL FEFKPAGTGFA LQKALQIAEQL!EDMVTDKGKVGWKSEVVP EVLAGFA QYAEQIIDNYIEMDNNSIAWIGGIASRNALGGFA LENSSERDGLGARWWTVPAKQAPHLRTRYNVPHLNLGMA VDAVLQSGLRTAKRYLMRHSNDAMPPLMYEWHDKTYLGGA


UniRef90_S9QHM7 UniRef90_UPI000375BE3A UniRef90-A41Q10 UniRef90 Q54124 UniRef90-D3PVN5 UniRef90-UPIOO0472AF59 UniRef90_U1NVM3 UniRef90-U1NVM3 UniRef90-A0A023C163 UniRef90_K9QMM6 UniRef90-16ZQX1 UniRef90_UPIO003695DD9 UniReffo-A9TEG3 UniRef90_X8JZW4 UniRef90_UPIOOO289F152 UniRef90-V4HZT8 UniRef90-U6HS40 UniRet90 W7TA93 UniRef90-JVD38
UniRef90-TONJD2
UniRef90-TONJD2 UniRef90-UP1000474DD9D UniRef90-UP10004093E6E
UniRef90-D6TJ67 UniRef90-L8EV60 UniRefofo-BOWFI8 UniRef90 D3D9G0 UniRet90- ILIA9 UniRef90-UPIOOO348681E UniRef90-B3RTD6 UniRef90-Q16N67 UniRef90-F7BWS3 UniRef90-C2R1T4 UniRef90-UP100034CD9D9 UniRef90-UP100036599F9 UniRef90_UPIO0036599F9 UniRef90-B61ZK7 UniRef90_UPIOOO3626571 UniRef90-A8PZA9 UniRef90 A8PZA9 UniRef90-A0A014LIV8 UniRef90-V4RXE8 UniRef90-G8UHL4 UniRef90_14DNI7 UniRef90-H8MJN9 UniRef90-J5GIW0 UniRef90_UPIO00465C439 UniRef90_M2Y1F0 UniRef90-UPI0002659B76 UniRef90_B9H4R1 UniRef90_V4YR89 UniRef90-UPIO0047AB1E0 UniRef90-G3W7JO UniRef90-U5MXU8 UniRef90_U5MXU8 UniRef90-A0AO44TF36 UniRef90 B2J1F5 UniRef90-UPIO00364022A UniRef90-C1L5F2 UniRef90-A9AUI4 UniRef90-H3V943 UniRef90_UPIO0034B0379 UniRef90-UPIO00345BD7F UniRet90_B3RTD5 UniRef90-Q2JGJT UniRet90-UP100037A8768 UniRef90-K9WEE4 UniRef90-UPIOOO3FDB5CD UniRef90-C1BVU5 UniRet90_K9UES4 UniRef90_UPIOOO3468805 UniRef90-UPIOOO3468805 UniRef90-E1FMQ2 UniRef90-J7L4E0 UniRef90-E5AK52 UniRef90_UPIOOO3112901 UniRef90-UPIOOO3112901 UniRet90_D8FUBO UniRef90-S5VEY1 UniRef90-UPIO0031DEEE2 UniRef90-C9LBZ9 UniRef90-H3ND58
UniRef90 H8MHS2 UniRef90-H2KSY7 UniRef90-M4DR58
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 HGLMGLLQMLLSFP NLLDAQAVRDIEASLDWLLSIQTA HGISSMVNFLSRIAEHKEFYDDVREMLQQSVRYILHCKNK
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HGVSGI MAALSSLYRETRN
HGTSGIA WALGKLYEYVEDKRYVDVIEKALS R YEDLLYK HGVSGPLALLALAWRAGVRVEGHAEAVERIMALLTRWRTA HGVPGM1 A ALLPACLKAPSLQARVTKKVVGACDWLLENQTG
H G
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$H G V P G V A A A L A A A W E A G H R R P G H L E A L D T D T R W V R D Q A G F$
H GLLCS S L H ML L E SP WF G E G S G A S ET K L A D I R G S V E A F L E
H GAA GI GWALIMMGTRTGRE EY I I EAGMEA FRYEK SHFD

HGAS GI GWAL DRLGCYT NSPEY DEAGRQAFAY EKT QF
H G L S GI L Y ML L K V G


NGLS GI SLLFFSYLYHLTGRNDYKLTAEKSI Y

 HG ITTGFTVALAKANEF LH D DKK DESWIKNALAYERCRFD
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UniRef90 S9QHM7 UniRef90_UPIO00375BE3A UniRef90-A4IQ10 UniRef90_D8G6F9
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UniRef90_U1LIA9 UniRef90-E3E6W7 UniRef90_UPI000348681E UniRef90 B3RTD6 UniRef90-Q16N67 UniRef90-F7BWS3 UniRef90_C2R1T4 UniRef90_UPIO0034CD9D9 UniRef90_UPI00036599F9 UniRef90- UPI00036599F9 UniRef90-B6IZK7 UniRef90-UPI0003626571 UniRef90-A8PZA9 UniRef90 A8PZA9 UniRef90-A0A014LIV8 UniRef90_V4RXE8 UniRef90 G8UHL4 UniRef90-14DNI7 UniRef90-H8MJN9 UniRef90_J5GIW0 UniRef90 UPI000465C439 UniRef90- M2Y1F0 UniRef90-UPI0002659B76 UniRef90_B9H4R1 UniRef90-V4YR89 UniRef90_UPI00047AB1E0 UniRef90_G3W7J0 UniRef90_U5MXU8 UniRef90 U5MXU8 UniRef90-A0A044TF36 UniRef90 A0A044TF36 UniRef90 B2J1F5 UniRef90_UPI000364022A UniRef90-C1L5F2 UniRef90-A9AUI4 UniRef90 H 3 V943 UniRef90_UPI00034B0379 UniRef90-UPI000345BD7F UniRef90 B3RTD5 UniRef90_Q2JGJ7 UniRef90_UPI00037A8768 UniRef90-UPI0002B49BF4 UniRef90-K9WEE4 UniRef90_UPIO003FDB5CD UniRef90_C1BVU5 UniRef90 K9UES4 UniRef90-UPI0003468805 UniRef90_UPIOO03468805 UniRef90-E1FMQ2 UniRef90_J7L4E0 UniRef90-E5AK52 UniRef90-UPI0003112901 UniRef90 UPI0003112901 UniRef90-D8FUB0 UniRef90-S5VEY1 UniRef90-UPI00031DEEE2 UniRef90_C9LBZ9 UniRef90-H3ND58 UniRef90-H8MHS2 UniRef90 ${ }^{-}$H2KSY7 UniRef90-M4DR58

PSEPARSAWCYGDPGAV
AQD WYDLRTVAGGPTRGGRHYANAWCNGASGIG
KKEENWLVLSDDGDYYGNSM
YERSVF SPKAGNWPDFRNSVSRNGEPSFTNTWCHGAPGIGG
ENGTIY $\square$ PN $\quad D \square E S P N D Y R D A W C Y G L P S V A$
$P G D G T W$ QDVRDPDGKAMTCAWCHGAVGIG
DKTSATFPNWVVEGEVNEG
SGNFPTASDEI GYD
SGNFPTASDEIGYD RGEDELVHWCHGATGAV
RGEDSRLS WCYGDLGI G

YESSYIIPNFRHFS KENDNHRDAWCYGTPGVA

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

ADVKNWSDQRETEDGDKYDDL ENNDPVAWCHGASGIL
DG YWPHLITTRAHLDDGELSEHG RDSWCYGTVGTA HNHAPSCYGSCAGEDE

PNSRDGWCYGDIT TA
DTGND PVAT
SGNYPTRPS
ESKNHNWP
S GNLPVSLC
RSASDELVHWCHGDAGVV
AVVGETGDYKVCHECHGATGAV
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TKNNGFGNNPSLCHGDLGNL
ETNGNWHDDRKFNSKAQPG
TAAANWPD LRQHQPR

YERHLFSPDANNWPDLRSGSKPGDENYKMVACHGAPG A | DAYGPTWSDGTPVDEHGREGTAG CGHDRDAWCYGAAGVA |
| :--- |
| QDENGNFPTRLVGSDKK |

EAEQDWYDLRASIITMYPGRR
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H F
NHDRLGWCYGDLDT: A
NYPAT DDPGPKFSYFWCSGSAGI G
QDADGNFPTRLFNSDKK
QEQNCNWPPELGGVIERENELVH
PVINSLQRLPEQRMFNTGTFSGVSGSI
PEAGNWM
PVINSLQRLPEQRMFNIGTFSGVSGSI
 $D G V G W A V P E A V D P D G G S S G D A S A G G G K R Y L G F A H G T A G I G$ AKKNN WPDVRTADREH AQTDNKFMIAWCHGAPGIG SAHGPWWPQWLT RDDLRTGRPVQESPG RPSWCYGPPGIA NGNFPPS
NGNFPPS
YWTTRDQLSAAQPPEPEPAR

R S R

GGFMTAWCHGSPGFVV
NSYYNKRFNNWDNEKDMVNKEKDTVFWCYGATGIGG
VGDAAQWPAQAT
RTNNYFSSLDSRRSEL
SGNYPSS
HSGNYPSSEGNPRDK $\square \quad \square G S T S D R L V H W C H G A P G F L$
HHN WP AVRGETDDYLCHFCHGATGAV
DEVQDWYDLRSSP GGPIGNDRHFANAWCNGSAGIG
QEQNCNWPPELGEM $\square E R E N E L V H$
MD Y C
MDYC
NGN
FSPSVDEDGワNRGSNELVHWCHGAAGAV
NGN FSPSVDEIGINRGSNELVHWCHGAAGAV
ESQGN WPDFRSAE MNQPPGFPVRWCHGATG\|G
 QQN WRDIRTA KTKGNQQSDDLVICMAAWCHGASGIG
 SESHANWPDFRGAGQAGQHS FLTQWCHGATGIGG


 RKNWSDLRTLIH DDEFYNEHDKFEETKFVLGWCHGAPGUG SGNFPPSVQSIGNDRL SASHANWPDFRELEHTGQ PNFLVHWCHGAAGDG $N G N \square P P$
DEAGSWWPRWFT
SQNCNW ADLRNGH
PNSSNQP TFMQEGTGAGS
PNSSNQPIFMQEGIGAGS
VKN WPDLRFERD RTQFFS DGWSHGAPGI:G
VGEAVQWPAQAT
D P P TA P Y WC H G S A G I G
$F$ T NEVA T WCNGA P GQ G
YENSLYSEKNNNWTDLRKFPEEDQNRDQPIAWCHGAAGIL
EDDKNWVDRRETEEGUEYNNL
E EKASRFPAWVARS
SGN WPSSLGRSM
S GNY L S S E G S E S

$G N D V L V H W C H G A T G V \frac{A}{V}$
PEAGNWLDLRHEGD
$A A D R S V S W C H G A P G\left|\left.\right|_{G} ^{A}\right.$


UniRef90 S9QHM7 UniRef90-UPI000375BE3A UniRef90-A41Q10 UniRef90_D8G6F9 UniRef90 Q54124 UniRef90-D3PVN5 UniRef90-UPIO00472AF59 UniRef90_U1NVM3 UniRef90 U1NVM3 UniRef90-A0А023C163 UniRef90_K9QMM6 UniRef90-16ZQX1 UniRef90_UPIO003695DD9 UniRef90-A9TEG3 UniRef90 X8JZW4 UniRef90-UPIO00289F152 UniRef90_V4HZT8 UniRef90-U6HS40 UniRef90 W7TA93 UniRef90-FOVD38 UniRef90-J9K067
UniRef90-TONJD
UniRef90-UPIOOO474DD9D UniRef90-UPI0004093E6E UniRef90-D6TJ67 UniRef90-L8EV60 UniRef90-BOWFI8 UniRef90-D3D9G0 UniRef90_U1LIA9 UniRef90-E3E6W7 UniRef90-UPIO00348681E UniRef90_B3RTD6 UniRef90-Q16N67 UniRef90-F7BWS3 UniRef90_C2R1T4 UniRef90_C2R1T4 UniRef90-UPIO0034CD9D9 UniRef90-UPIO0036599F9 UniRef90-UPIO0036599F9 UniRef90- B61ZK7 UniRef90_UPIO003626571 UniRef90-A8PZA9
UniRef90 A8PZA9 UniRef90-A0A014LIV8 UniRef90_V4RXE8 UniRef90-G8UHL4 UniRef90-14DNI7 UniRef90-H8MJN9 UniRef90_J5GIW0 UniRef90_UPIO00465C439 UniRef90-M2Y1F0 UniRef90-UPIO002659B76 UniRef90 B9H4R1 UniRef90 - V4YR89 UniRef90-UPI00047AB1E0 UniRef90-G3W7J0 UniRef90-U5MXU8 UniRet90_U5MXU8 UniRef90-A0A044TF36 UniRef90-A0A044TF36 UniRef90 B2J1F5 UniRef90_UPIO00364022A UniRef90-C1L5F2 UniRef90-A9AUI4 UniRef90-H3V943 UniRef90-UPI00034B0379 UniRef90-UPIO00345BD7F UniRef90-B3RTD5 UniRef90-Q2JGJ7 UniRef90_UPIOOO37A8768 UniRef90-UPIO002B49BF4 UniRef90-K9WEE4 UniRef90-UPIOOO3FDB5CD UniRef90-C1BVU5 UniRef90-K9UES4 UniRef90_UPIOOO3468805 UniRef90_UPIOOO3468805 UniRef90-E1FMQ2 UniRef90-J7L4E0 UniRef90-E5AK52 UniRef90-UPIOOO3112901 UniRef90-UPIOOO3112901 UniRet90_D8FUBO UniRef90-S5VEY1 UniRef90-UPIO0031DEEE2 UniRef90 C9LBZ9 UniRef90-H3ND58
UniRef90 H8MHS2 UniRef90-H2KSY7 UniRef90-M4DR58
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GLAGFGYSLLKFYK
GNLGRVEVLLVGAQRCSRHDWHQAAVQNATNVVARAKQTG GNFGRIEVLLVAAQKLSHSQLLETAQKKAAWVVARADKDS GDLGNMDILLSAAQVLERSEFLECDEQATPKLLDTDDRQG GLAGLVMLTLDFAPWSPAARLDAYAPDRPLGFADVEEPGR GRSGNAELLLRFARLCEEPPFQLEARRLAGDPAWLRRDGD GFFGLVTVYQLLNKVMPHPKLQQAALTWLDYGLSQYQEHG GSDGNDELLILAGQALNRPEWVAEAKKQGNDALSYFFEHT GVAGNAYAFLCLYRLTKDPDHLYRATRFAEWCMDSTNHHA GIAGNGYAFLLMYRLTGERKYLYRAAKFTEFLTSLDGART GVAGSAYVFLLLYRLTGHSKYYYRAQRFAEFLFSDEFKAG GTAGVIGVLIALYKDSGNKEYLKLLNQASEYLVNAAYHHP GNFGI DDLLEASNRLSRPSLLKDAQQRAASVVSKARHYN GSAGUGFLVRLWQATGDDRFG DARASTRAVAERA GSAGIGGFLVRLWQATGDDRFG Y DLARRSTRAVAERA GDLGNLDFLLEVSQRNPSKRQLAYQARAAFVVERILQILKG GFAGLHATAYRAARDASTDIAAQLPALAERLRRVPSP GVAGGGYAFLLYYRLTQKAE
GVAGGGYAFLLYYRLTQKAE
GWAGLVADARAVADDSSAPRFTPLVEDपNRRLAAGMKQL GAAGNAYAF DSLYRDTGETDYVERANAFAQNLVTSGHTRG GSSGISMIFRRMY ETQQREFADAWDYWIDEKLKTYVLNG GDVGNLEVLHLAGEVLGDEAWKEAARSRAARVLAGGQDGA GNFGSIDLLIETGYIKEAREKVNLLIEMSNKHGWDMGTAQ GLAGNGDFLLDMAEATGDPAHRARAEELLARLIVSERSHRG GIAGNAYCFLRLFRCLKEKLLFQCIDQRAQMGSFLINMRT GVAGNAYCFLRYKLTMEDCYLYRAARFAEFCCAYGTHRV GAAGNAYAFLSLYRLTGESTYEERANAFASF LYH DGDARG G $\square$ SGSGYALLMAYKLTRDPIWLDRAADFALKMFDQADSRV GRSGNAELLLRHALLREEPAFRVEANLHAQNQWRNLAEAG GPTGlGYGLLQFYK
GPTGIGYGLLQFYK
GVAGGGYAFLLYYRLTQKTKYLKYAQCFARTACDRKNART GVAGGGYAFLLYYRLTQKTKYLKYAQCFARIACDRKNARI GNLGRTEVLLVGAQRCSRSDWHQDALQNAANVVAKAKQTG $G W S G M L H T T W R M S Q T H D V R L R A Y P P M L I D R V T K R L A Q Q Q$
$G S A G S G F A L L E D Y Q T Q D P K Y L Y A M K F A E W C T D C F K N A T$ GDFGNLALIQAAAKHYADQQLADQAQTПASELFAS円QRDG GYSGIAII NKILGNYKVSEYLKFLFENIDFNGEKYI GNFGRVDVLLEASRRLSRPELLETVPQHDAWVVERAKQTG GNLGRVEALLVGAQRCSRSDWHQTAFQNATNVVSRARRTG GVAGNGYAFLCIYKTTTDPTYLYMACKFAEWCMDSSSGHT GTAGLLATARRIAADARTPDALAPLLRLHQDTAAAA
GWAGLLLTTWRMAADAPSDEGLDVLMHRLRNDVARYDRRN GVAGNAYAFLSLYRDTGESVYEERARAFGTYLYHNANQVG GMLGNDEFLLQVSQTPNYSTWHSPVTRDAASILESLRQQG $G V M G N A Q L L L A V A A D K E E P E Y R D A V L R A S A H V I E E K V R R G$
$G S S G N G Y V L A K S T R N K Y F Y R A L R A E W C N F E N P E T$ GNMGRVEVLLVGAQRCSRADWHRVALHNATNVVAKAKHTG GAAGAI LGLSFYQASSDPAVLDRATALGHLLRAWATLE GAAGALLGLLSFYQASSDPAVLDRATALGYHLLRAWATLE GWAGLVLLVRAVAADSPEPQWRFTPPLEDLITRGADGVN GDLGNSELFHMAGSTLERPEWNRMAHAVAMNVIKEKQEAG GAAGTILGLLSLYTIKPEPAILEQAVNCGHHLL NNT GDLGNLEFLNCDRQILNTSGYREDNNDALNAIESDAQYG GDLGNLELLLQMHEHT SKNCDKEDQLITAMI WESTNQNG GNMGNLLELKRYAEDFDDKQVRSDCEQLGEFLNDQNVLPT GMAGLGHVFNRLYQATGEPRLLDAARGWFSRTLEVFQPEA
GSAGSGYTLLDLHRYTKDPKYLYRAAKFAEWCTDCFKNRT


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VDF Y QGLLS G $\|$ A L LVLلA ${ }^{40}$
EQA TKTVAGK $\ 1$ ND $\square D D E E M S D F G P \quad Y T G \square S G V A F A L N$ NSLLMKKINKSVYEFDKNS DYSTYTGYSGIAFLHY

$R L L Q L K L D D \| I Q Y L L N V N D E H C T S C T V Y T G S T G L A B L M L$ SPGLLT GNAGIAAVLLF ETYSYKPDSTGLYDGVAGMALTFA KETLKQEATNLVEEDMKR RHDLDDYGAYVGUAGDGYSVL



 $N R Y K D V G F T L Y T G A L G T A L L L F$ QEDADEVGDRLLRSVRDGPGMLLDGHPGVAAVLHA

D S C T Y S G S A GI CL F L A


$R W R P Q S L A Q G A A G V A L L H T$
 E S G $\square \mathrm{N} L$ Y P A D N S L L F W G T G Gll



$N P C T V Q Q G A A G P \square A V L T$
 $S L T R G L A G T A L L H A$

 $G L K L V P T D P S L Y H G R G G I A L T A A$ $D$ L Y T G S G Gli A L F A $\mathrm{L} C$


$$
\mathrm{D} \nabla \mathrm{D} \square \mathrm{Y} \text { G G } \mathrm{V} \mathrm{~S} \text { G } \square \mathrm{VL} \mathrm{~F} \square \mathrm{~A}
$$

 LEKKWHDTLAQF

 EKEDKM IVDK DRNRT DENNYPNWNDCSLYSGLSGNA LIFA

MEKQ DD LAARTEEHCQKENGQDYGGNSGDALF LA

 $S L Y S G V A G \| V Y F F M$

S $\square$ S WF TESLIDNDK $\square D V L D V R M Y S G T S G \| G L F F / L$


PAFTD DS Y K G I A GI S L VFA

 PGDHSLYSGRSGPALLGA

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


ALASSGERPWSRAQQWA QAAAGEGLQVGEEAHLHYGA YLARETNNCQYEKLSRGA!KTVIRKAGDKPLNPSSAFSGE KLQRLTENADVCQFVQTANELI GKAYKRRSKSRLSERISV ALAKUT Q DSQWSN LASHSLQQPL LRLAARFTRKMGLGGATGL Y L A DV T Q D ARFTRLARATLRTQARLLAEESASVVGLGILN
 YLWRETKNKRYLDAAYACMDDVIA RIGEDSCYLIGBFNGLL Y LGA $\square T R E G R Y T A L A Q A A L T A T R R \square Y D Q S S D T T V G G F V G W$ HLYQKLNDDNSSDYLLAKAVKSIN MTKRWKTRTPTFLCGT YLARSDHKERFLLNAAKSYI ESALEYDRSNKRKQ IGGLHGE



RYFELTADPRLPRLLSAAGHWTADRTHPRS TRPGLHFGD QMLLEKKDSTDERIISSMAQTLVGQIGKVPDRCDGMYGGD RLAH $\square$ DPRFARAAQQHWTAAAAHLKNHRHGFSGDAGGQ

$K V H Q T T G S \square E D D D D C C N D V D S C A V A A E S M K Q Y V T F D C G Q S$ ALYRVTGKDRYRRVTADVI EPLVERVNDDEFTAGLGGMLG AL GEATGRTDFDEAAARCGRWLAETAPAVPRPMPGLYFGD S Y Y QHTKNFKYYKLANKYLEKTDDLISSVPIYSTSLFEGA TLYK $\square$ TNE $\square$ QYRELCDVLI RSANNRLA $\square S D V N Y S C V G T G K$

YAARTLGDERYDDLTRTVKLVGYDRYDAEHRTGAYSGM YLSELTANNQYKNUARKALQPLDEDMRDKCRSNIGAFGSD KLKKDPE EI GEGKWSHYSSAG LOMHRSVVCOESEDPDELYG EIGEGKWSHYSSAGLLQMHRSVVCQESELPDELLYGR EDQRGRPQLGHGGHAERLIHQAALALEEKPLL PWLHGGF ERGDT

ASLFHGA
 YYSLR NKSYKEKAEELLDQLTESLSTSSYYQFGYCNGLL KSYEVTRNHQDLLTCAEII DTCANVARATTRHVTFLCGR
 ELGKRTNDPKYREAMVEGARWLDKYCTDNKTSYYAFYTGR

Y LWK A S GKK TY LDAA Y A CVHGVIHRDDEYSSY LIGPFNGL YLWKYTGREKWLRAAENVMSGAEELGYTKPKADVSFFTGA ERARRGLAPW QSVHRQLAAVGPLIDGDDASLFLGA A LDAKITGKNQFKEVALASIFSLRKAIKQGQLPLTLGIIGY YAASLFESKPYERIARLGLNSLIEEVFSEQKKEAIVSMGVG RAA HTTTEPRLRYTLHRAVEWLRDRAAAEPVVLPGLHFGR RLANCDDNEHLYNRVNYYLHELLK S IKKLNSRNNDSMCYGF


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UniRef90_G1KQF6

## G G|I L Y A L IT HLLGA|LWGE <br> LGVYVT QMSNADLREDLVSKDEK】ADVLARD <br> $L A L G A L D Y T K E N N S E E$ $R G T A W A L Y D A G R A V G D$ $T S I I Y V L L L L K T R M P E$ H F N

## S R L L K L P <br> 

AGFNWAVNHLISN
$\square \mathrm{A} \| \mathrm{A}$ TVI SH

## HVNE

AGGLLYALDHVVANETGEPT
GLIEGDSNELFSEDDPFLYSVM KLGTRRPNYLPDYRELSVRLLN GFIDQENDELDEKFDNYLCEQA AGLAABADEDLPWLA
 AGAGWVLDHL EQEEFMDADNDDLLPEDDQYIHTFM SSYLYAI GKLNELVGEYTNY贝EQSLAVVHKLIKK
A G I Y AVAAMIYK SLGG LADFVKPLTKFRNLWEVCAP LGGSTGLGS I LYA WVRLSQFLQQPD LVEDALRASNLDTP SGCLLGLVHFYHHTKDLPLVFKFDDRLLQNCRRDSVYWDL

 $G G T I Y S L V K I S Q F L E E S \quad$ SG
 A GL YLLTHLAQLWDRP

 CGYFYALFHIGK GSYQRALDDD DKEFLDVVYGKIGULS PALAYTLADARDGGADLWCLRAVHRDARDRDARARARMEE GAFLYGLVHLG FTSDYTAPCLIDMASKASNALKAFMGFIRASRCAKYAE

 $N$ Gl GS Y IVYl I S K Q S GYIY VMSKFY A GIYAAATLVSQALG GGVIYTLTHLGVLWDQP GGS YAI EALVHR
 ELLKDARQA GG VHAVAALVFYYDGDSKQDAIASSALEKLIAMAN $A G P D A L A T V I S Y R L G N K R P D N L P D Y K S L A Q R D M N L I S G L N$ VQVAWVMHHLGAHLLDPQLGAE SGPLAFGACFSNHK
AGLLYALDHVAHATG GHYQQARAADR
LGTA WALYEAGRATDD GQLAFSIHT GKENTGEDKETSELDNRFLALVDHALDLAL


G $\quad \square Y A L G A A A A K C K G D Q K R \square D W Y \square S L F N A$ G CGAALLYLRLARAT SNP A WHTHARSVAGA F GVI FSLLICSDDGNNYSELLSEYKK DASDEDRDLKKN DK TSLLYPLVQIVKEEPE TEYKQYLNQIIDDEGC

GSPVY $\square \mathrm{F}$ TH H $\square \mathrm{G}$ VWDRP

A G LLYT LD HVAHATG
G G GV F A TYQLSRML


 LAVA YLYF F LYK Q GFGETYYKKGVELLTQHERQULDN
PALEFVLSRAGCADRDVQDAVDHVVAVRLAAARRRHACGA

AGFGIGMHLLAEG GFDEDSPDMLDDIDDVVNHYL
G GVYT LGAIVANYRGDQSKRDFFDGLFLELAEARLPA GP GYMCYAVELYSKNTGRLKRFSKSMHTLLMEETKAKTSQKN VGIA WVAE V GVSADSAGAEGTEEGEDGNADED DQADLGGLV MGVAYLMLQLAEYFKD
$S G Y \square Y$ VF SKFY
LEAKDENMLGLVEEGLLRMK A GLVYLWYNFFALTGDTSYVDKDNSYLKECLVK $P A M T Y V L H L A A T N S D R Y A G A L H A L D T S V A A H T R R R L A A A Q$ GGLLYSFTKISRFLEES TLLEDGKKIVNFDTKKAITKDH AFTGLGGLIYALSVFDQF
SGTAWA
S GYVYALKLLPKRSKEYSKLLETLET SGYFYTLNKLSNLEG
GAVAYGLAVVGELVDEQT

DTYKEKAL

LVDHLVD $\angle V D H L V D S M T P A D D R R L W P V S$ DASLLGEDEAALPWLR WNDEELLQUVK E Y

A G LYAVAALVRHARGAPDWAEPLAKSVSLCSSLVI I KLE


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UniRef90_I3R9P1
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DYPSDETLVGRAGF LS GVLWTRQTTDPSLVSSVQKV ERVSNYPD ELLYGRAGYI FALLFLRKHLGNVIPEDYLKQ APQHATPSHDITHGTAGSGLAALHLWSRTGDP R A AER KGYRYDENFDVLVGSAGA I HLLNVFEVTRDEELLILAHD






ESDPYMQEVDVIDDGSAGSLIVCLDLYKQTGDED
QVIDRDNKFDIVFGVAGVIPGLLQLYDQTNDRTIDDI
RDRPA A A DYDVI TGLAAGKGRLLLALGGDRCLTALEGVLER QAl]A GDQTLDILGGVAGAJLGLLSLYQETGEPAI
PRIDPQDKYFDLLLGVVTGVIPVMVGLANTTSGQGRDSADDC APQQSTPHHD THGTAGSGVAAV HFWHRTGDE LVVDAADR KFQEDYPSDEILVGRAGFLSGVLWIRKTDGPSLI SN VSAPSDESHDVMSGTAGLILGLLAVHAVAHDDAVLRDAAE


 DDITDADSLDVVAGVAGTLHGLLAYHERYGND PLVEKDTVLDVGAGAAGCLLALLVLGEHRPSDTLWATVDA VSCDDK GNYDFLHGADGDAFYFI ERFDQTKSAHIKSVLDF ERDEAASEMDLVAGASGMLAVLLNVYSEDDDKLIKEKVKP KIYFRDTNFDVISGSAGAMVVCFSLDENFEGEVRSKAEEL
 ETENEDLPDELLYGRSGYLYSLMLVRREFGNF A E

YDELFVGRAGYLLGVLLLQRHLKTEVLPS EAPD GELYGKSGYLYALLFFVNKHIPGKEIDHDEKV



 $R T D L T W D V Y D A L T G L S G I G R V L L A A Q S S G Y D D V E S G L M A A$
$S H V T N D E T F D V L E G A A G T M L G L S A Y Y D R H G D E V$ $N L L Q L D R H Y D I L G G V A G L L L V L I M K Y E D T R D Q D D L E V A K L$ LECGSDELFVGRAGYLCAALVLKQKLGMEMLTPV
GGLGMPYELMYGRAGFLWAALFVNKYVGEETIPWSVTG

 VNLNEVNDYDWIKGSTGFIVQIMDVYSETKTEKYPSLY DY $M D V T R E Q V L D A A L R V G E R$
 TKAGETDPCTVQQGAAGVLAVLARYCEHVDDPRIAPLLAT
 FDPSSDDPNEYLYGRAGFLFAVLYVNKHVSPVPFEEGRK




UniRef90_Q1CYL1 UniRef90_UPI000345D881 UniRef90-UPIO00345D881 UniRef90-U6PTU8 UniRef90 T11B17 UniRef90-B5GTR1 UniRef90-G6PTF4 UniRef90-UPIo0045492BA UniRef90-C6YOL7 UniRef90-G6DOI9 UniRef90-A0A015WXP6 UniRef90-UPI00046FE151 UniRef90-E1FMQ3
UniRef90-Q9KFM7 UniRef90-A9DQ65 UniRef90_W7CCC9 UniRef90-UPI0003BD3793 UniRef90-B8HR22 UniRef90-D2QKP7 UniRef90-C3B598 UniRef90-Q7X7D6 UniRef90-K9VOY1 UniRef90-UPIo00262912A UniRef90-F4XJP5 UniRef90 ${ }^{-}$F4XIP8 UniRef90-F2R819
UniRef90-W2T8J7
UniRef90-F6EL28 UniRef90-B9MRA4
UniRef90 UniRet90-UPIOOO34C31A1 UniRef90-R9TR38 UniRef90-U610A2 UniRef90-K9RMT5 UniRef90_l3R9N7 UniRef90 Q1D8F5 UniRef90-UPIOOO37A77C9 UniRef90-D9SN97 UniRef90_UPIO004116319 UniRef90_UPIo0044213D3 UniRef90-I4ELE5 UniRef90-E5SFZ1 UniRef90 F6SJY8 UniRef90-UPIOOO34F5C19 UniRef90-H8MNE5 UniRef90-C1C1A4 UniRef90- C4NFI1
UniRef90-UPI00036EF70F UniRef90_UPI00037FC079 UniRef90-R9MRH3 UniRef90-D3PVS9 UniRef90-MOGAD9 UniRef90-R8GD40 UniRef90 UPI00042BD767 UniRef90-A9RX77 UniRef90-17CMV7 UniRef90-M3A1J1 UniRef90-O54223 UniRef90-K0FU01 UniRef90-U2U3M8 UniRef90-U2U3M8 UniRef90_UPIO0037801BF UniRef90_UPIOO042702B0 UniRef90-UPIO0042702B0 UniRef90-D8V3N6 UniRef90-C2U789 UniRef90-D7E186 UniRet90_UPIO003332FF9 UniRef90-UPIO003332FF9 UniRef90-S9PB64 UniRef90-UPI00037D8711 UniRef90-UPIO003636990 UniRef90_W2EUR6 UniRef90-J8KWD5 UniRef90-R5V024 UniRef90-D7MTA2 UniRef90-UPIO00287FF84 UniRef90-DOLSA7 UniRef90-L8JK93 UniRef90-A0A024YYY7 UniRef90-A0A024YYY7 UniRef90-R91ZY3 UniRee90-UPI0001C37409 UniRef90-M3FJ63 UniRef90-B7JYUO UniRef90-A9KE85 UniRef90-UPIOOO35CD538 UniRef90-B2IRN1 UniRef90-U1U5K7 UniRef90_l3R9P1 UniRef90_I3R9P1
UniRef9o_G1KQF6

C GEKLLQTATPQSHGMGW LSPATGGQALLCGLA LLDAVISDRTTGLWLSSSVNNMLHQDIKAVRFYEVRRSAN LLDAVISDRTTGLWLSSSVNNMLHQDVKAVRFYEVRRSAN LNHMI ISGTRTAKTANSMCPLKYDWHGENY G GAA VVDAAGRLAAAAQHGPFGVSWPVPAEAVSEETGKRYLGFA LVSHLEKNSTMAKKTVEGQDGRAWKGTMASNPLYAGFA VEKSAETGDKKGAKWWRSLVNQEGLKEKKEYEWYQEYYVGAA VASLILKSGKEFSQHTKSESPGLWQ WHDKVYLGAA CGERAVDVEGTAGWYATRTGVMDG Y
 TT LLKEFMDLLKDLSEDDGDGKIKWESEETKERGYNLSLS
 LENRTLCHLSKLSNQMYSELRURMEQKQVLPLCSVSSGAA QAENYHFQPHKLNWPDFRKGSYSNKDLYPFIKEKFMFAWC QAENYHFQPHKLNWPDFRKGSYSNKDLYPFIKEKFMFAWC
 LVAITCGNHLLASRSNTNPRAWITIESKKPLDMTGFS LDTA TACGNRLLSKRSNTVPRAWKTDCKDPLGDTGFS LVAAGRRDRSGVGWPVPAEAASPE GGRPDGGTGYLGFA C SCIQRKVLSAMTLSGRRYSLQRKSPCPGMYEYLGAA ПCTKDLYADNEKSNKCKEG AEMCEPGPDGLPGWWTP DAPNARPMPDFPAGHSNTGMA LHELSEKVASRPGMYSEMGKPPSCPPLMFMWHEKFYLGAA LDLAINCGEHLLKQQDSVNEYKTWKT, CGQRLDE LMRK KESATVFKDKDKS $\square$ YAWCTKNKNGQEVFDLSLDA LLYMLFYK DQ EN
 LATA ${ }^{T} Q C G K S L C Q A V L E S G K Q Y A L R K R K P V P L M Y E Y G G A A$ TDKTFQKILKTGKKFRSKGLDAALAKLLYKWHGTYYLGAA LLDVSELGPQGRAWRTRPELYPTTRKTRHDGGYNGGAA
 LVR【THQGHSYPGWWVHHD PWGRLNPDFPHGHANTGMA LASARGDPSAVSWPVPAEALSGEAGKRTMKQGHTYLGFA LTALTPRDTGRPGWWMPAENHPN ELARDHPSGAATTGGA LDRAVACGERLLDGRVLEDGYRVWRTAEDEPP QK LTGFS -NQA QURSICQAKLESGKQYAMKKRKPCPGMYEYLGA PVVDAVMAAGRAGASHTQCPLMYQWQGTRYW GMA LEQALRCGDQLLESRVDVNGYEVWKTDGKSPPD YGGFS LNIESSQLSSMLEKLVYEYNEDDNEQNTDFS DLGGA
 LVRSARHGPHGVSWI GLAWTSTKGWWLRPLEYDLY VDA VRCGDHLLATALPAGDTLGWPSPMA

 CAE LGHLLQNAQTLPDGSMAWLTTMYPNRKPYVGYS SIDYLRHKRFRSGNYSSLSNETDRLVHWC
 LEERSTRAGSGLSWWTPPHHLDPPQQRAMYTAGC FNLGAA ARPVESDGRLLPGWWSADGPG HEPVVGGHSNNGMA
 DLINLANHCFNTLKESTVQFNERDGETMPGGHGNNGVA VKYLEQTADSTPQEDTLK WEVVNWHLPHQAHTKYNDS $\square$ S IVAAlLAGGRVGAADHEACPLLYRFHGTRFW LVKLTYKDEMIYNFHDQSQQQFNDEEKVLYPNGNFNFGMA LKKIEHFTEHLLSRAHFGKQGLYWDRSSN NDTGLCGFS TAWALYEAGRVLDDRVLVEHATALARAPQEPAPHHD DQLLTSHLIAQKKVWKDGS $\square A W Y S G L N D$ AK HVYSGYA SAELSPKGQPLPGWWVEHAPA HLAERFEKGETEVMTGFA LDTAIDCGNHLLSQRTETFPKAWLTVSQ SKKPLTGFS VAKHILTQ CADALSGAARQAGDLTLW PMVPKDFDSRLAGAAHLGFA LAGVINNKPTHCEHLYPEYMPNEKLKRKFPNGYDNLGVA C

|  |  |
| :---: | :---: |
|  |  |
| UniRef90 UPIOOO345D881 | TG |
| UniRer90-UP1000345D881 | HGLAGILQ TALGFHDLDSESDERAVRESADWL |
| UniRef90-T11B17 | HG\|AG| |
| UniRef90-B5G | HGLAGIGC |
|  | GVSGI VW |
| UniRef90-UPI00045492 | GLA G I |
| UniRef90-C6YOL7 | HGMAS |
| UniRef9-G60019 | HGMAGILYI |
| UniRef90 A0A015W | HGMSGTSLEF |
| UniRee90-UPIo0046FE151 | HGSAGUAWPL |
| UniRef90-Q9 | HGAAGF |
| UniRef90-A9DC | HGMSSV |
| UniRet90_W70 | A G |
| UniRef90-B8HR22 | GII AYALLQLYHATDNPTYLQAAQQGIAY EQRVF |
|  |  |
| D2 | G\| |
| UniRef90-C31 |  |
| 90-K9VOY | AGISSLOTYDATKNTAFLEAAOEADAY EQSVF |
| UniRef90 UPIO00262s | HGITS GPLALLSLAHRHGLRVAGMTDAMRVVVDWLLRWS WT |
| UniRef90-F4XJP5 | H |
| UniRef90_F4XIF |  |
|  |  |
| UniRef90 W W T8J7 | HGLAGM LQ MALGFYDLLSDSEERAVHESADWLISTQDD |
| UniRef90-F6E | G A ALGK HEM A |
| UniRefy9-B9M |  |
| UniRef90-UPI00034C | HGILAGVLALLASSANTGTAPPEAVKAMER |
|  | GY |
| V910 | QGAGGIAYALNDCKITAREFFLQAAKEA AYEKSCFC |
| UniRef90-I3R | HGSSGl A |
| UniRef90-Q1D8F5 | HGAAGI S |
| 0037 | HGCSHILLCL |
| UniRet90 D9SN97 |  |
| Unil | HGLSSI LQMLLSYY EEYLPPADQELVWQSVDFLMD |
| 4EL | HGAA |
|  | 退 |
| 6SY8 | NTR M KPS |
| UniRe |  |
|  | HGYAGILSTLLRA KAYLNPSQLTIIRDKINELAQDQMP |
|  |  |
|  | A |
| UniRef90-UPIO0037FC079 | H |
|  | GIDHAADWLDD WR |
| UniRef90 MOGA |  |
| UniRef90-R8GD |  |
| P100042BD767 |  |
| UniRef90-A9RX77 | HGLAGIMHVLMHFPLNHEDMKDVKGTLRYMIKG |
|  |  |
| UniRef90 O54223 | H |
| UniRef90-KOFU01 |  |
|  |  |
|  |  |
| UniRef90 UPIO00378018F | H |
| UniRee90-UP100042702B0 | $\stackrel{\text { H }}{ }$ |
| UniRef90 | HGSAGILWALHELAAEFGDRD |
| iRef90 |  |
| niRef90 D7E186 |  |
| Un | HGAPGVIHMLMQAYQVFKEEKYLKEAMDCSDVI WQRGLLR |
| UniRet90 UPI0003332FF9 | HGAPGVIHMLMQAYQVFKEEKYLKEAMDCSD |
| UniRer90-S9PB64 | , |
| UniRei90 - UPIO003636990 |  |
| UniRef90-W2EUR6 | HGlA GPLAVLSLAARRGVQVPGQHDADEVV |
| UniRef90-J8KWD5 |  |
|  |  |
|  | NGLAGILYVLDHFPLSEEDVKDV QGTLRYMMSNRFP |
| UniRef90-UP1000287FF84 | ${ }^{H}$ |
| ef90 | H |
| UniRef90 A0A024YIY7 | HGRAGSGLAAAHLWYRTG DQRFAELVVDAA |
| ef90-A0AO24YY | S |
|  | GSCGIEEALTSVYER YPSDELKEVLDRSHAFVKK |
| C37409 |  |
| UniRef90-M3 | ARICHWDDR $\square$ R |
| 9090 |  |
| ef90 A9KE85 |  |
| ef90_UPI00035 |  |
| iRef90_B2IRN1 |  |
| UniRef90 U1U5K7 |  |
| G1KQF6 |  |


| UniRef90 | $\text { RFSPE } 250 \text { GDWPDRAD }{ }^{260} \text { VHDGPAFMCGWCNGAPG\| }{ }^{270}$ |
| :---: | :---: |
| UniRef90－UPI000345D881 | WDDTTPDKQL PGLHFGEAGVA |
| UniRet90－UPIOOO345D881 | WDDTTPDKQL |
| UniRef90－U6PTU8 | EGN FASSVKW $\square$ GRERGDDQLIHWCHGAPGV1 |
| UniRef90－T111817 | GGNFPSSDGSRH DKLVQWCHGAPGFV |
| UniRefoto－B5GTR1 | VGGEAQWP |
| UniRet90－G6PTF4 |  |
| UniRef90－C6Y0L7 | APDPEYGSYFPSTDSVNGDPP酸ASRLAWCYGDDGLG |
| UniRef90－G6D0 | SGNFPSS边HSSGDRL |
| UniRef90－A0A015WXP6 | NNNSTSLFPTFALPQYTFCQYPVESRLGWCYGDLGVA |
| UniRef90－UPIO0046FE151 | DRRLYVPSDRAWRDLRPEMADVDGHPAL WCHGAAGIG |
| UniRef90－E1FMQ3 | EENGNFAPS VEEVGVKRGSNELLHWCHGATGAV |
| UniRet90－A9DQ65 | EEN PFSTFPSWITENKEDENGQSRLAWCYGDLGVA |
| UniRet90－W7CCC9 | SDISLGWCNGTPGl |
| UniRef90－UPIOOO3E |  |
| niRef90＿B8HR2 |  |
| UniRef90＿D2QKP7 | N K T WL NDLEMA |
| UniRef90－D2QKP7 | GNKTWLNDLEMAITSTSHDLDNTGUNSYCLCCHGGAGNA |
| UniRef90－Q7X7D6 | FPSGNYPVTEEDKHDRF VHWCHGAPGI S |
| UniRef90－K9VOY 1 | DASVKNWPDFRMSGETNQA NFLHTWCHGSAG |
| UniRef90－UP10002 | DESGVGWPSRVGFDAQVRGSAVPAS RSA |
|  | QSARN WPDFRFLEKTNQ\S |
| Uni | REQKDWYDLRKSVM VADRNEPHFANAWCNGSAG |
| UniRef90－F2R819 UniRef90 W2T8J7 | TGGAAHWP FASSVKWTGRERGDDQLVHWCHGAPGVGI |
| UniRef90 F6EL28 | DS QVQNWPDLLRPVPGRRRGVSFEQAWCHGGPGIA |
| UniRef90－B9MRA4 | N NWRRSLLEDGFSFGWCHGAPGIL |
| UniRef90＿NOD4B6 | T |
| UniRe990 UPIO003 | GPCCPWWPYWTTPD GGGERPASGPRRPS |
| UniRef90 R9TR3 | YENTFYDPATGNWD SAAASENQKRKRVYWCHGAPG｜ |
| UniRef90－K9RMT5 | NW QDDRTENNQYQVSWAHGAAG |
| UniRet90－\3R9N7 |  |
| UniRef9－ 1 Pl00037A77C9 |  |
| UniRef90－D9SN97 | SELLSYERDHFYSKEEKDWVMSDDEVNYSKAWCHGAPG |
| UniRef90－UP1000 | VKKVSNWKTIMGRDAFSNAW |
| UniRet90 UPI00044213D3 |  |
| UniRef90－44ELLE5 | GNYP AVAQEGRDGRHS FVTAWCHGAP |
|  |  |
| UniRef90－UPI00034F5C19 | VQ |
| UniRef90－H8MNE5 | AFAYY GDDEVRRSQVARGA |
| UniRef90－C1C | GNFP PSMESLDDDR |
| UniRet90＿C4NFIT | FDRDLYVPAAGAWRDLIPPEMAGTDSYPAL WCHGAAG G |
| UniRei90－UPIO0037FC079 | VGETAQWP |
| UniRef90－R9MRH3 | E |
| UniRef90＿D3PVS9 |  |
| UniRef90＿MOGAD9 | TREALAFESALYDPNQNNWAKSHEDPSYDDKWCHGRSGMA |
| UniRef90－R8GD40 |  |
|  | GNYPSSEGSTRDRLLVELVWCYGAPGMA |
| UniRef90－17CMV7 | GLDFESTLYDPSRNNWAKSHHDRSYDDKWCHGRTGM |
| UniRef90－M3A1J1 | W NTDAGSTASSGATWCHGTAG |
| UniRet90＿O54223 |  |
|  | G |
| UniRet90－U2U3M8 | DGWT G｜ |
| UniRei90 UPI00037801BF | RGN WPDL |
| UniRef90－UPI00042702B0 | EPSGVSW ATPAEALSGEVGKRYLGFAHGSAGI G |
| UniRef90 UPIOOO42702B0 | EPSGVSW |
| UniRet90＿D8V | FDRRLYVPAAGAWRDLRPEMAGTDGYPALVWCHGAAG G |
|  |  |
| UniRet90－UPI0003332FF9 | KGYG！CHGTSGNG |
| UniRer90 UPIO003332FF9 |  |
| NiRef90－S9P864 | V |
| UniRef90－UPIOOO37D8711 |  |
|  | VARPSWCYGEIGI A |
|  | DEESLKYEKTLYCEETNNWYNSDEKENRAYGWCHGAPSIL |
|  |  |
| UniRet90－D7MTA2 | 硣 |
| UniRet90－UPIO00287FF84 | KNG\｜SYWPGQLSFEEYKNNKVEEGSIHYACSWCYGNIGALI |
| UniRef90－L8JK93 | YENWPDFRKGDYDEKSFKEHREQYAAGDMSAWCHGAPG |
| UniRef90＿A0A024 | EPSGVSWPA PPEVVTGSVGERYLGFAHGT |
| UniRef90＿A0A024YYY7 | EPSGVSWPA PREVVTGSVGERYLGFA |
| UniRef90 R9IZY3 |  |
| UniRef90－M3FJ63 | DHRGTRWPRWDT |
| UniRef90－B7JYU0 | G |
| UniRet90＿A9KE85 |  |
| UniRee90－UP100035CD538 | DGDTAWWPQG |
| UniRef90 B2IRN1 |  |
| － | SESERNWPDNRSWS |
| niRef90－G1KQF6 | QEQNCNWPPEDGGMDERENELVH WCHGAPGTA |



| UniRef90_Q1CYL1 |  |
| :---: | :---: |
|  |  |
| UniReego-UP1000345D881 | GAAGQGVA |
| UniRef90 U6PTU8 | GVGGNGYALLMLYRACGDEEWLQRARCFGLMMLDNNA |
| UniRef90-T11B17 | GVSGNAYTFAHLYQKTNQQLHLHRLA |
| niRef90' ${ }^{-15}$ | GLAGNGDFLLDVAD |
|  | G |
| Unirefo chyol |  |
| UniRef90_C6YOL7 | G |
| UniRef90_G6D019 |  |
| UniRef90 A0A015WXP6 | GTAGlALIFKKMYQETHLDIIFRETSLYWLSETLNM |
| UniRef90-UPIo0046FE151 GDF GALALLDLA ARTAGQAGHDALLAGSVVRDILQDSGGLTG |  |
| E1FMO |  |
| $\begin{array}{ll}\text { UniRef90-Q9KFM7 } & \text { GDF } \\ \text { UniRef9-A9066 }\end{array}$ |  |
|  |  |  |
| W7CCC9 |  |
| UP | GVAGSAYVFLLLYRLTGNSKYIYRAQRFAEFLEFKAGSRS |
| B8HR22 GTMGRIETMLVAAQKLARPELT WVVNRAKAEGTYQLIFSNL |  |
| 90-D2QKP |  |
| UniRet90-D20KPP7 |  |
|  | G N |
| UniRet90-Q7X7D6 G ${ }^{\text {a }}$ G S |  |
| UniRef90-UP1000262912A GDAGLLQVSVRMADRIADR |  |
|  |  |  |
|  |  |
| ef90-F4XIP8 |  |
| $\begin{array}{ll}\text { UniRef90-2R819 } \\ \text { UniRef90 W2T8J7 } & \text { GLA GNGD } \\ \text { G }\end{array}$ |  |
|  |  |  |
| UniRef90-F6EL28 GRFGLVDTLLTAGRARGLTDLVEEAQLSATQLIEAAQARG |  |
| UniRet90_B9MRA4 |  |
| UniRef90_NOD4B6 | GFAGLTQIAVRTAADAHPSTVGRLRAAMPGLLTADARVTG |
| UniRef90 UPI00034C31A1 GRAGLARIARAAETDGPGRGFAQAARTLMAPLRDGGAEAA |  |
|  |  |
| U610A2 GSAGSGYAL |  |
| UniRef90-l3R9N7 GNFGRVEALLVGSRRAGADELASRCLARRERILSLPGHTR |  |
|  |  |  |
|  |  |
|  |  |
| UniRef90 UPI0004116319 | GDIGNIELIRRIARTVRDDELLKECECTYKQMAAI |
| UniRef90-UPI00044213D3 | GVAGSAYVFLLYRLTGN |
| EE5 GDLGNLGYALLEASQMLEDPQWPDAVRHISAMLLESGGRDG |  |
|  |  |  |
| JY8 |  |
| UniRet90_UP100034F. |  |
| H8 |  |
| UniRef90-C1C1A4UniRef90 C4NFI1 |  |
|  |  |  |
| UniRef90-UPI00036EF70F GWA GLVNLAHAVAADSRTPRFASLIE DLL |  |
| UniRef90_UPI00037FC079 |  |
| UniRef90-R9MRH3 |  |
| UniRef90-D3PVS9 GYAGFLQSAPDNHPVAGAEAISAYFDSSHRFGFQHRDQGQ |  |
|  |  |
|  |  |  |
| UniRef90-UPIOO042BD767 |  |
| UniRef90-17CMV7 G |  |
|  |  |  |
| UniRef90 ${ }^{-}$M3A1J1 |  |
| UniRef90-O54223 |  |
|  |  |  |
|  |  |
| UniRef90-U2U3M8 ${ }^{\text {a }}$ GTGAI APLLGLHRASGEPR |  |
|  |  |
|  |  |  |
| UniRef90-UP100042702B0 GAAGIGTFLVRLWQVTGDHRFG D |  |
| UniRef90-D8V3N6 GDFGALALLGLADRAWHDERAGAVVRDLGETGLRCGLGNG |  |
|  |  |  |
| UniRef90-D7EI86 GVS GNAYCFLELYQTTEDEKHLYRAVRFAEWYNKNHVEHP |  |
| UniRef90-UP10003332FF9 GMAGAIHFLSDLUniRef90-S9PB64GAAGLGHIYNRLI |  |
|  |  |  |
| UniRef90-UP100037D8711 GWA G V LT |  |
| UniRet90- UPIO00363 |  |
|  |  |  |
| UniRef90-J8KWD5 |  |
|  |  |
|  |  |
|  |  |  |
| UniRef90-D0LSA7 |  |
| Ref90- $180 . \mathrm{KA} 93$ |  |
| UniRef90-A0AO24YYY7 |  |
| UniRef90_A0AO24YY7 |  |
|  |  |  |
|  |  |
| UniRef90-M3FJ63 |  |
| $\begin{array}{ll}\text { UiRef90-B7JYU0 } & \text { GTFGRTELFVVASQKLNNQEWLQDARKQAAWIVARRKENQ }\end{array}$ |  |
|  |  |  |
| UniRe990-UPIO0035CD538 |  |
| niRee90 ${ }^{\text {B2IRN1 }}$ |  |
| UniRef90-U1U5K7 |  |
|  |  |  |
|  |  |



## UniRef90 Q1CYL1

UniRef90-UPI000345D881
UniRef90-UPI000345D881
UniRef90 U6PTU8
UniRef90 T1IB17
UniRef90-B5GTR
UniRef90-G6PTF4
UniRef90 UPIOO045492BA
UniRef90 C6Y0L7
UniRef90_G6D0I9
UniRef90 A0A015WXP6
UniRef90 UPI00046FE15
UniRef90 E1FMQ3
UniRef90_Q9KFM7
UniRef90-A9DQ65
UniRef90 ${ }^{-}$W7CCC9
UniRef90-UPI0003BD3793
UniRef90-B8HR22
UniRef90 D2QKP7
UniRef90-D2QKP7
UniRef90_C3BS98
UniRef90 Q7X7D
UniRef90 K9V0Y1
UniRef90-UPI000262912A
UniRef90 F4XJP5
UniRef90 F4XIP8
UniRef90- F2R819
UniRef90-W2T8J7
UniRef90 F6EL28
UniRef90 B9MRA4
UniRef90-NOD4B6
UniRef90_UPI00034C31A1 S S G G
UniRef90 R9TR38
UniRef90-U6IOA2
UniRef90_K9RMT5
UniRef90_I3R9N7
UniRef90 Q1D8F5
UniRef90-UPI00037A77CS
UniRef90-D9SN97
UniRef90 UPI0004116319
UniRef90-UPI00044213D3
UniRef90-I4ELE5
UniRef90 E5SFZ
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UniRet90
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Y LFRYYQNERYGEQGVA LDEEVVQHDQDKTSPYYPFSFGD
HSAVNGP SAGRLTPEQRLNNK TRELLQQMERGLKSADPRDGTCYTGW AVDHLTNSDRYREPVLAALQPFRQLLHRQQRMGLGGSSGV
RLARFDCATAATRRTQTAVQWLLVNDEAPDKQLPGDHFGE ALFSTTKNETDRHLALQALQPLKNWDNHSQQMGQGGATGM LAHDDD FAHAAHRHWTAAAELLKNHPGGFSGIDGGL
ECFEGFDDQRWDENTYLILQELKSNLSGNYNDGDGYDTGW NGYTALRNEAMANKARQLVDKLDDELQANEVTH SYCDGU YLGETTQKQKYTKLAKDTLETI LIQQDFDQDLIAGGFDGW QLGALTGEARFTGAARGALRQLTWRLEKAPAHVSGMLNGW ALSA GDPADAALAERHWDTAAELLTGRSPD GUHSGP ALQQSDFDKAFETMMFQYTDDMLERSTDDEKESSGAYAGE K
 ALAKVTGQSEYKDVALAA SSPLLRSDQKRFVEPGLGIIGD QLYRVTGDQTYLRSLDYVKRTLRNLSGRRVTFLCGDAGP

RAAE पFADDRYロDARRCAVPVVAHKDTSHE पAGAFDGD
VLGNDDEEPWIQECDQ NAHRLDSSFVNEEVFAEHLDRLQQGLPDQSFE LSNGL HLHEVTKETRHYDSADHYLEDLYDQLENDDPDSYDFSSGL
QAYSVTKDDRFLELAMKYGDHLCVHADRNDVPLGGLAHGV QAYSVTKDDRF SLYKRDLGLVGKDQLKQNFHSMNKNLSS FHGLSMSSGL YLYDDTKNHKYKNAADQALKDLDQLTKKETVLEIGGFSGL NAGKFEDDCVGDSFLNEKMELLQAQLAKQSLEESGSSGL

YLSRFAKRPEYSHTTEQCVFATQRALNELKYADSGAFTGV RLINCDNKELDYNRVNYYLQELDKSIKLNSTNNDSGCYGF Y LGAVSANAAHTR $\square A Q K C L N T I L T H F D Q P F \square Q S \square G G F N G W$ ERARQGTGSW ETAHQQLTDUGPLLDGN ETGLFLGA

पAVLAGPDQEVRRAAHGHLAAAVRAP GAMRGGGLYSGA ALSRVTNQDRFGGLALGALQPLQKFLYSHDRPQLHHWGGA EAGRVLNNKKYTDISQKILSLIQDSEQTYMTTSISAYNGV YLAELTAKSEYKRMARKALQPMLEILRDKGLNEVSGGDGA KLSENGGHVEQLYDIVLSRTLGHLDGQHHRLPGLYFGF
 MRYLIPTSSGYLDLCRDLYNCLTRQKKRSSKKRITFLSGD
RA $\square G A E P G P Q \square R E A D S T A A D W \square G R V G R E P R A P G \square H F G R$ AAARESCCQGGLYSGV TQYLVPTSCKY LNRCKELYNHTNNNKKKTSSNRITFLEGE ALEHVSGQG RRMALAALSSLRRFVVTGPPYTLGAATGV SLKRKDRRENDKKRLFQYTDAGLQSLEHDQTQNTGDYEGE
 ELYKTENNEQYLLIANGLADKLYKVLKANFNMLTGLAHGY ELYKTENNEQYLLI ANGLADKLYKVLKANFNMLTGLAHGY YYQRHFGLTSDDHLWDRISACL HAVETGNLQQSFAYGV ELSSMGLSEFNKINDQLLSRVMN PKNKALNGISFYSGL RADQLDDRPDLRAVDARVAAW TGRPGTAPRLLPGLYFGR Y DDKYDNRDDFSKVTME:VNTDMEKDK VTTGFECGAFTGD YYGKYYNDSAY KTATD LKKCATNFKSKHKVTFLTGGVVG RAAQADPGPGLDDAIRRTAHWLDARLRTVPK LPGLYFGR ALAETTGKDRYRTAVEEDLEPVVESVREHSNLKLGGURG| TLGVELKEQKYVRLAEQFLNYQLSN TVSFNSISAFTGL RAVRCGARHDLKPALRTAARWLDRRSTRPDRVLPGLYFGR ALNKLNPCHDYSVICNAYTDEICDRSTGLDQEASGAFSGE SLWVVTKNDRYLNLGLDDLEDLCTRMGKKELIPDGAFTGA QLGHVTGEQDYTDTALAALESTLHKLPALKLKFPSAFYGQ ERGD HYSNCEFADVDTESFHSELESDQTYFQSQGRDVSLSDGL ALYDATGRDYYRQQVSDI LSPTVESLFEGTLKCLGGDRGU

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S GFGYAMS LL DEEEIID DDFEGQLREFDE LIFQAADPDLY FGGLGABASLARCVNASDEVQARLDARDAEHARWLGTALD SAQSF GMRKLSEFKTVLSTVKSNFASSI FTALKKSVKJIHL

$A G V A V A D A E A D A S G$
SSIIYALVK ISQF LDEDQTWLEE
A $\square E R N P R \square D T F \square F Q$ ATRVAELL
$G G L \sqrt{A} A S L I S Y G P D T H H H P A T A P G A T W L S T C A S D M A D L Y Q$
CNDSFADS LLKNKSNHFKK DNDT DEKY KYE LLE DT Y T GVGYLLSYLSETDLLDVDV DEFLEDVDKHVLNETS AGI A WA LHDAADA LRDHPAA DDAVGLAK
 $G A L A A S L Y L L R A R H G L L D P A V A W L T A R A Q A V H Q R R R R A A G$ ASV 1 Y VYEVLYK TTGKQKYL
 RGTA WALY A AGRAVDDP GGIIYSLVK】SHFLAE PELLRNAQELVKSITPEVIA LAAVGAVIVHKLKSECESQECITK LLQMHRTVVCQESELPD $A \operatorname{AVYAVAAADYHADGRTEKSRHYVDQDVAISAQFLDV}$

## A G L L Y A $\square H H M G S V T G$

D L VY R A H $\square$ E E S A S LLL



S GYLYFLQHAGT $\quad$ VQKKNEWDELIM EALPVLE TGYVVALEFLSKNCKGYDKLLDTLET LLLALTKDRLREIK GGLIYTLSH $\square$ GH $\square W Q Q P D \quad \square W Q Q A L N W S E K \square P$ PAMAYVLH WAADDSDRYTGALQT $\square D R \square V A A H \square R R R L A A A C$

A AVLFAARVMARGPGEYRGLVDTLTPRVAESAAGRAAADR TGLGS I IY ALTK T S DLLLQDRSLHQDALIAQLITPELDAAD G IVVYLYTYLGKLWGN RELLKRAEAVTIEI CNQFIQEKQ F GNG N N G G GlFVAYQLSRLWNDGQLLQLVKEYLPYYC SGTAWALYDAGRALGRP


S GTA WALLDSAEVLGN DADAGAAADLAR A GVAYMLYHVSQCPKKLIDACTRAEEWGEPDADTRGLYSG $N G L L T I G I I L G D L I N D N N N N I D L K N Q W I K L L N E \| I I D N Y N$ GSFLYVLCRSSALLGEP $\quad$ GSVI YTYLLMYQEGEEYLDYAQRHVRMLEDATRAAGLITP
 AADGQPRYQHAARTLDRHLHRITHSRLDAAQ S GTA WAL H DAARHLGD N CAM EEMAQQA DDLAL
 A GVA WALYHIVNNEDYINCAMKCIIEEENMYYDSEKNNWKD

 AGYMYFLQHAAKN QNKKEWDNE GYR MLDPLLR P LALAAAVILYSQGKKEEMEQLIFNGVSYSSSNHCQSPLMY GGLI YLYFSL WKRLKLPQYQK LY LDQIKEFS
 GSVVYTFSVIAD
GSK Y $K C Y$ NMYK
SGTA WALYEAARTLGD
LFDMDDYRQVALEASLFVSK
 S GTAWALYEAARTLADDALAERAAAYALAI
GSLLYTYE LLYS $\square$ TGE EAYLNYAKKHVAVVS

ASVLY ILSHL A EALLGGDRESWKQHRADLLDNLET PALEFVLSRAGRSERAVCDAVDRVVAARLAAARRRQAAGT S GFA WLL EHFDENDEYDSEDTEDUDAYDKQVM
A GVA WGFLHLFNHGLVQDDDLDP NEVVEDLDEPLFEVA GSVDYVFSVVAELLDEEY YRKYAEKATHLVTENRLAA
GS L VYS $\square S$ VA A DLLDRPV
YRERAAAHARAVT T MQ


## UniRef90 B8HL08

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D3PWP1 UniRef90-H2MZTO UniRef90-G1WWP7 UniRef90-D2QPM4 UniRef90-A4FGX1 UniRet90-K9PXR5 UniRef90-F8CEE5 UniRef90-12N4F7


RVVKDETSPDVINGLAGSATVALGLERRYANSAFREAAEV DYPSDEMLVGRAGFLSGVLWI RTTDDHTLIDCVQKV SKLFHESPEEFLYGKAGFLFALLLVKKN NPEFAEIDDV GSLPWDGEDEMVLGLAGYTPYASRRAKFSDQEKLEVIVDG ELNQTNKVHDYLTGEAGVILVCLRTYEKFSNEQALSIA HKNNQYCDSHWCNGVTGGGMAQLALWNEWGDGHPQMSHEV HKNNQYCDSHWCNGVTGAGMAQLALWNEWGI GHPQMSHEV YQMLDEGAFDFFYGPIGI LHYFDYTKNDKLCEAI EFSEMNEREDITSGVSGAISVVLSLYKNIDKKDRQET QNDVWLGEDETH LGLAGYTPYTARRARFTDQTRLSEIVRA


AVIEQDENCDIISGSAGADMVLMSपYEQLDDPVFDK\AEK SSNIVKEEYDVIQGVSSVARYLLSKEESTSEQELKEILNY PLILKDESFELLYGRVGYLEALLYVRKHVSPTAVDDLLRX GEPTTFAEYDLLRGLTGLGALLLRRARES DELKGVLEY

ADGLRAHTFDAVSGAAGLGRLLELAPD GPGTAEVLSAL QQ PKKSDF SGLAGLLKVVINLYDNYPTNGVKUCLEH QLVKKDVEFDYISGAAGAIDILLHIYHGTGWEALQGAEKC SLI MA WPNPDVTHGLSGLGTCFLYLAGETGDAELAR
PDLIKKSSFPIDDGLASSLLGLLALSKT
RVS RWPNPD ${ }^{C} H G S A G A G M T Q L R F W E A T G E E D F$ VAGVAYMLYHVSQCPLGRPDYVQPLGKFREDCTDCAPVSF SLFESYPGELLYGKCGYDQNLLFIRKYCFDTLVS TNQ EGDEADAQFDVMSGVAGALLGLLALHQATG FDILIGA ARPGTFDEYDLFYGL TGLGLILLRTAPASDTLAAVAGQ AVPVEWPNPDVCHGVAGTLTQLHMWRATGRTEFLDRAVRG KRNGSSESFYWCYGAFGTGIARLKMYEDAHNDTLDKDIEK KRNGSSESFYWCYGAFGIGIIARLKMYE\|AHNDILLKDIEK MQLISEGDYDYLHRGLGAGPYFLERTPSDAGYVEQLVGQL

 SQSLEEQNDDYISGVSGGLVVLCNUYNVEQNKTVYHLINR KRLAADETFDVMEGAAGTALGLSAYYDRFGNS YENCSK DFVTGTAGLIVVLLNTFEKEQDRDWLEKAEL R【PGDWHNPDVCHGLSGAGFAQLHLWRRTGDQRFAARAAE EATMGDTGFDICFGNAGAILALLNLYKLTNDQ K K QLLQKDKEYDI $\operatorname{SGGVAGALVVLVGSYEDENDRDFDEVAKK~}$ RALGGTKAYDIVAGSAGCALVLLALVDAG LD D G GAAA DSVEEDTFFDLLGGAAGVIQVLLNEFVFHHSEKALKV DPHLLTAEFD Li GRGLAGLGALLLARGPVSERALEEVLAY

 LDENSGLUDELLYGRAGYLFSLLFLNSNDFPAPDEDEL EQLAADETFDVIDGTAGVLLGLLAHYERYGGS

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UniRef90-R9IZY9 UniRef90-R5LUA4 UniRef90-V6JIE7 UniRef90-V6JIE7 UniRef90_O65DC3 UniRef90_R5ZJ19 UniRef90-A0A023FVX3 UniRef90-UPIO002FE23AB UniRef90 L1KSS8 UniRef90_UPIO003800A35 UniRef90-UPIO003800A35 UniRef90-E4N542 UniRef90-B8HVI2 UniRef90-UPIO0034D1A33 UniRef90_UPI0004760E1A UniRef90-M2PMC5
UniRef90-K9Z1×7 UniRef90-H3D8S2 UniRef90-Q841L9 UniRef90-UPIO00273A74A UniRef90-F4QBF0 UniRet90_E3FPC1 UniRef90-R9N9M2 UniRef90-UPIOOO3770141 UniRef90-UPI00037A52ED UniRef90-W7SQRO UniReffo-DgSN94 UniRef90-12GB84 UniRet90_C2XJA6 UniRef90-G8SEX5 UniRef90-UPIO0034B92ED UniRef90-E2AOR7 UniRef90-S55EA84 UniRef90-UPIO003741A77 UniRef90-U1MYH7 UniRef90 - E8ZV82
UniRef90 W5WEW UniRef90-UPIO0035CA6B4 UniRef90 UPIOO047124BB UniRef90-R8ROD7 UniRef90-U5YL19 UniRef90-UPIO0047200FE UniRef90-LTKSIO
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UniRef90_R9MH49

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VELAAPTDGPDPRWWTAAAPDPEPVPAPEPSRGHLNFGLA CGQHLLANQEKGGAWKNFAEQPL $\square Y Q R L K T N C D L L M K N K D E D E \square Y T G F A$ AEHVLQNAKTLPDGS $T A W$ UTKTDDEP RAVHCAESVLAAANPGPDGLLWT TPMSFDSDYRSYGFA DE ELASASIKSHSLKDAKECGEYLLQYQQTDDKNDKTGFT LRRADKAAESVAAAAVRRDGLLLWPVPRDWPSHLAGLGFA LECGSDELFVGRAGYLCAALVLKQKLSLEVRTPLLPMCAA LLRGDKCVYDLVDHDVEQGRLYSKQNSMYEWHHSQYLGGV LEKAKLCGEHLLKHQLPCEPGAAWRTKKGWPL M AGEA GIDVAHQCAKHLLQHAKSENGTLSWPHNPPELVRGNLGFS LHRLTTQPLTLDGLHAPGWWATRDPDPSPTPGGHANLGLA GDAMLAAAEHRDGHVYWPVPAGLDSLDSGDTH NKYNGGAA
 AQVAVRFPNGDVAWKFTNFNKFDQTNAFDY WGENGUGLS LNRIISDYHDFNSDNSUKNSERASSVNKNFWGEYVDUGUS LDRARQAGEALLAGATEADGRVYWTVPDNLDSTLVHLGFA LKPSLYYLQRLLQSSGNFPSSTGNPSDKLIDQWC LS LVETVQRRQEGIFWR LGRDLYQ CADRVLSLTGTAERGVDWMPLGPEHRGELAGSALYGFG CEEASKAGYVLLENQQHGERGVSWLGKG CAEHLIKNS $A$ GUEDDEGGUSWUGTSDVPL AlTRYGDHLIKYGRKSETGMSWISSVRGARPLYGFA LVSLSRDGRELPGWWSAVGPG SSRLINMSTETSVGDCWETPNHSPFFDPSEGNPNFNLGLAA SGCAVRFTDGGISWRFDNFGQHTPTDPPVY KYNVGLS
 VAEVVKSGRKMGKGRCSDPLMYEWHGKRYW LGNTLYQCLEKNGKY

| ef90 B8HL08 |  |
| :---: | :---: |
| ef90-MOWV3 |  |
| -UPIOOO35 | HG |
| Ref90-UP10003784A83 | , |
| iRef90-UPIO002C4324E |  |
|  | H |
| UniRef90 S7MG | G Y YMLMQPAAK VDQD TLAEMVKPSIDYV |
| UniRef90-UPIOOO362? | HGVIS |
| UniRef90-14HPL1 |  |
| UniRet90-D3PWP1 | D |
| iRef90-H2MZTO |  |
| G1W | HG\AS YVFMGNAYDQLDEPTDCAGVMEAIENTYQMFRVS |
| D2QP | HGASAYLVFLARYLTQFPGHPRALDVMSRLVNYMKTFYRP |
| UniRet90-A4FG7 | HGAAGISLALLKLAAFTGDQRYO |
| UniRet90-F8CEE5 | HGGAGlAL |
| UniRef90-12N41 | H |
|  |  |
| UniRet90_u9 | HGFAG\| |
| UniRef90_UPIO0047B5B3B | HGAAG ${ }_{\text {HGA }}$ |
| UniRef90-UPI00037C6B15 | HGASGI |
| Uni | HGMAG\| |
| L8GT |  |
| $\begin{aligned} & \text { UniRef90-UPIO0022F5B4F } \\ & \text { UniRef90- G2P7E22 } \end{aligned}$ | HGLSSILQMLLSYHEH |
| UniRef90-A0A016TTK8 | HGLAGl LQ MALGFYDLLSDTEERAVRESADWLMSTQDD |
|  | H |
| UniRef90 A9DWM4 |  |
| UniRef90-G9QDW5 | WPL |
|  | AG\\|LQULLKVNEKLPQEGALETD\|LPTVKWLAKLQLR |

 HGSAALVAVLLNI YQRGVCVDYTKE\|IIGILDNMLLFRKD HGSSGISATMMQLYP
 H GTA G IVVYLLTKYYEVTKDEEYLKYAVQG YNFLKEIGNC

 H G I L G P L Y V L A L G F E K F N D T K H I P S I E K G L M Y Y E N T F F T H G L A G I F Y M L L Q V
 GTAGSGMAALHLWWQRTG DPRLAAALAEDAADRLAAAARR GTAGSGMAALHLWQRTG DPRLAALAAEDAADRLAAAARR $H G \square P G P L A L L S L A A G R N V R V P G Q D E A V E A L A D R L I A H Q L P$ HGAA GIALLAL LQLAAAQTGEEVYRQAAIAAGIS Y
 $H$ GVVSGI DA PL S ALLY RVT GVAGI GAF LLAAA GAAGREDFADAARRCGDTLLTAS SV H GLA GI SY SFFRLLFALTDDKRF LEAGK QA LQ
H GLAA GI L Y M L M S L E M $\square$ S $\square$ N Q E K K R S $\square$ D S D I R E S L D Y L V S T GLS SVLVMLLSY QDVLS GAEKDLVWQSLDFLMS GVA GTGAFLLAAGRATGDERYLELAGEAARTLVSAARHD H GL S S I L Q MLL S Y HE H H GLLA GI L Y I L M N CEELDD DES DK KLLD I SNDI K G S L D Y L M S T


 H G V A GV G Y A L L T L A A R D T G E E R Y L T T T A V

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260

$$
\text { ENP QLMM }{ }^{270} \text { S }
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QEQNFFSPDDKNWA
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QEQNCNWPAE पGAA $\square Q R E K E L V H$
WCHGAPGVI QEQNCNWPPELGEMDERENEAGPSGGARRTNWCSGSSGG G G RLESGNFPTR PDNTNDRLVQFCHGAPGVI SEGN WPDFRHARE GTPSFMNAWCHGAPGMG YEESDYNSEMNNWMDVREGKQKDDDDGAM AWCHGAPGAL
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 HMLLQAYQ
LLLHRAYEVYGKSTYLHEAEAVSDVVWARGLLRKGVGLCH YLFAKAYLVSKKPQYLDTCURCGELTWQKGLLKKGPGICH LSRLLDAGRRADTGVLAEAEAALHAVYEGGFG ENHSLCH LLCLTMWKRYGDQKYFKAAERCGELI WNKGVLKKGPGYCH DLYLLSYDTFQDHKY RQDADKCLDVIWERGLLKKGFGLCH TVLATTSFALLKDVLUKKVVTMLIHTTHRKDMMNDAGLCH PLIMLAAYKVTGDRDYLQRAERGGEVIWERGLLTKGCGLCH

RATY乌AGKATKKQKY DDDALYSLKT TSKEDMQLTSPMFCH FTLFKAA LNRILLKANGYDDKF TDEIERAIETTIEKGFGNNSTLCH L TLMRVGVAGNMPHYVERALGAARHAAKRSGYVKDAG|CH G GYYMKQNRFYSKYQNSLDEMIQSMQVKKQDGFNDSLCH UTVREDYLATGDKEYLDFYNRLTEALIKHSAGYWNNCICC WALLDAAEALGDDTLABDTADLARRPRRWPNPD:CH LSRILRENGVNDPGLHTDILNALETTVKHGLGNNRSFCH RVLYNIAKTIDSQKLREMAMDVFTSSIDYSSETLNNGTCH HLLLLAHLVFKEPHYLQLAKKCAEVIWHRGILKKGYGICH LARLGG\|NGLDSDEDQTEDKVATETALEQGLNWENHSLCN RAQQLAALALNDPDRKRMAERALLYCLADPTQLINQLTNRG CF LLLSAAASGRQDHRRAVETGEHLLRSGDEPTADYWCH CFLLLSAAASGRQDHLRLAVETGEHLLRSGDEPTAPYWCH RALFLAGRALGRADWQQAAVAALDNALADSWNLNGPGLCH LAR AGGLDSYATAADQQEIELALQTTQKQGAYGLDHGCC GRTKLQMELPYLSNQDKIEEALQGTLQVS EYNNHSICH LSRVRLDENYDASDAQE NDALETTLKLGFGTE PVYCH TFLCRLYSETGDERYLEASIGAARAVMATR QWAGTAYCH PTLVKAYSYFNDPKYQEDANNALLETTQKYCFGEVD NKLCW YLFAKAYLINKKPQYLDTCTRCGELVWQKGLLKKGPGICH YFLLRASQHDKDARVREGAELAAVAVRRSRWQAGTSH CH PTLAKKAHSVSKKPQYLDTCIIRCGELTWRKGLLKKGPGDCH DARISGLAFLDSVGIRRDIEAAVSSVKRQGLGDKD GLCC YSRLKCYKYVKDQKWKERLGKDVCRALKEYWRRDSWCLCH RALQLAADALADPARQADAEHALATCLAGPAGLPDAGLCH TFLLRLWQETGDAEYLSLTEQAAMAVRQARWSSATAACH

NAFWLAGEKDGRPDWQTLAVQTПHKAATRDAHTSDGGПCH STLYLSGRYLGESTVKTLALNALLSQRKENTNFDSPMFCH STGLYLSGWQALGESTVKLDAALNALLSQRKENNNFDSSMACH MARNRLRQYDDNEHTTNSAKFGAESTLENGFGHGRCQCH YTFDYLLGQTKDVKYLYRACKFAEWCFHYGCPDRPFSLLE LTRYRESKWLNDKELKNNYEMAKQTVLNNG YDNSDCLCH TFAVRLGLVTEEPRHLELARQAAAAVRQDRWY SLDPVACH LSRVK QELLDDNTITDDLLNGLENL KTYKCKTDSACH TELIRLWRATDEPLFLAHAERAARAVHDDRWRLGASACH LGRSKMYPYCSSEQLLQDMKLAVNTTVASGL SHNDCLCH $\frac{1}{M}$ SRLELTEYYDFKILTADLKVALNNDLEDGFGRE HSLCH LGLI LCRPYMQEQQAVEEIETAVFATQNHGFGHSHCICH RTQQLAALLALSDPARRLAAEDTVVHTLTDPGRTTDASLCH
 NAFWLAGEKLAVPEWQMIAIMRTVQQAAGRDTLITDASLCH MLFCLAYE YENKNYLKTALQCGELIWSRGVLRKGYG1 CH LARLGDGSVLDDEALLTEANQLLSATASADRNQYDQ LCC


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UniRef90_R9MH49

330
340
350
360
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 GTAGNAYAFLTL YNLT Q DMKYLLYRACKFAEWCLDYGE HRT GTF GR DEEVLL LAA E L S GESNWQD

 $G N F$ GRI E L S L T A GQ I L N R P QLI E $\square$ A R QKA T Y $G Y A G \square V Q$
GTAGNAYAF LSSLYKLTQDCKFAEWCLDYGTHGCR】
 GTTS SMAQAYRDWYRAS GNQAFKKAYE HWUTLTTLEMGRTP K GLTGNAEFVLDMADFLDEPAYVATAHRMARDGRTVFTDPE

 GNLGNTE ILLEYSKECNDEEVRHMMLSARTQQAMDIDNEN $G \operatorname{G}$ S G N A Y P F L S V Y Q L T K D Q K Y L Q Y A F E Y A E IVCI N WE E F V V $G N F G R M E V L L D A A S K L S S S E L W N T D Q K Q A A W L V T A R K Q V G$ GLAAGNGDFL LDMA DATRDDTHRADAQRAHRHGHLVFPNEY GSLGRTELGVLAAQRLNNQDWLTFARKNAAFVVARAHLAD

 GSAGIAMLYRKLFQLTGENKFNEWIEKTIDLLEKEYSQYS




 GTA GNGYAF LARMYQVVTRDCKY LEWCFDYGQHQCRDA

 G S A Gll G T F L V R L R Q V
GSAGI GTFLVRLRQVTGDDRFGDLARRSAPAVTERASR $G T G G L L R D V Q R M A A D S G S A A L A A R L P A L A T A T A R L T A A L A$




 $G L A G D G E F L L D M A E A C E Q P R Y A R W A E E L A R H T V R E G R V L A$
 GQA GR D EF L L A A A R A NE DKA L E E L A L R QA SVVVVREARERG
 GLAGVYQATSRAAADADTPGIGAHLPGLAAALTARAS


GAGGVSYLFRRFAHRTNRPLLNEAADYWFEQLLTYAGSEG

 $G L A G V I Y F L D D V Q Q$
 GLAGNAEFLLDLADATGDARYAGWAGELARHALHDGRMVV GNAGRVEAMLVGARHTDLNHHHATALDAGLLDARRVLSLPG GTF GNIDDIILEEIGKDKKMDNLIDNLAKKDFANTQLTYIQNNG $G V A G N A Q L L L D L A E I T G E R R Y R D W A A E S A T C L W V R A A R R D$ GVA GNA EL L L DLLYAATGDERYRSQAHDDGRXAVAAAHRHG




 GNAGRAEAALVGSRYTDDNR SRALELAGRMMLARRNDDG $G D S G N A Y T E L D D K Y L Y R A C K F A D W C M D Y G T H R K K \emptyset$
$G T L G Q A T A L L E S A R R T G R D E T D A R A$ L $L$ VDRCVARQEQSG GVS G N S Y V FL S LY R LTG AK A FA CF L H A R A Q A LI S E GVVMHG



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UniRef90_R9MH49
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NDTRYTLLEGFVGAS LVLLSAVSEENY A WDRDFLL
$T L D L P G L L E G A A G V A L A L L M Y G R D P P A T D W D T L L L L$
PDTPFSLLFEG1
$P D Y H P G F M Q G T A G \square G Y Q L R R V E P T D P S \quad V L L W$
PDRPYSDFEGMAGAGHFADDVLAP
HQPTADLMVGVSGII HF FLRLYFQEENDSF PLLL

PDRPYSLFEGMAGADHFLSDMEKPE
KDAKFGFLEGSSGlILVLVSLL KNETNFQKLLLL YDRDTGLLDGATGI GLVLTDYLEQDK】 DWERFLL GHVSAEWADGVSGVLAFLLRLRYGG
YDCGLGLMTGLAGMGYELIRLAFCDRDPS VLLL
$H L H G P G L M V G L A G D A H G L A R L A A P E R V P D$
$A G L D D G F L G G T T G S V L A L A E A A G L L P H T S W D A L L L L$
A GLD DGFLGGTTGSVLALAEAAGLLPHTSWDALLLL

$D V Y N P G F F Q G T A G 1 G G Y E L R L A Y P E S L P S$ VLLWE
GDVSTSWSDGSAGI LAFLLRLRHASP
VLIWE
PDEPYCLFNGLAGSAWFSADLL
SESTYSLYEGFSGTVCFLDDLLQP
RVDVPGMMDGTAGDCLGLMRLAAPERVPS
$P D S P F S L F E G L S G A L C F L V D L L$
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PDRPLSLFEGLSGTIMFLSDMMHPGEA
PFDDYTVFGGVISVATVLLQFT KKKSTEWESVFVIN
SPEDIQLLTGFCGSSLVLESHLTNTSFSEFENLFL
DNHLFGLMMGLTGGYGY

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DRVHYGFAHGVAGTGTFLLAAGRATGESAYTE
$G V D S A G L M L G L S G V G Y G M L Q C Q Y G E E D P$

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APLSQCHGLAGNGDFLLDLSTAT
ADAPATLLEGTAGAALALHGHLNSPEGTDWDACLLL
GYRNPNFFQGDAGVGYQLLRLTHPNQDS
EAELLGLF LGGEAGFGYGMLKLYDNRVPS K $K D V T S G Y G A G I S G Q L A F L T R L R F G G R$
NFQNPSFHHGSSGILGYQLLRFAHPDLLPS $\quad \| L L W E$
PDNPFSLFEGLGGLAWLLNDILN
SRWPSSLFEGLSGTVCFLVDLLQPEQA
PDETTDYGTGLGGVLAFLLRLRHGGP
SESDYSLYEGFSGTVCFLIDLLQPGEA


TDGSTALLTGATGVQLVLETARAAPPVSGWDSCLLL
$P D E S A S Y N T G L G G A V G F L L R L A H G G P R P$

TDDNVSLLDGEAG L G L V L L S E LGGQ THWDRFLLL
D S LPMGF

$Y T R V F N M M V G E \square G \square A Y Q L L R Y D S N Y E V P S \quad L L L L D$
PDQSAGYNTGLAGVLGMLLRLRHGGP
HSVNPTFFDGVAGVAYTLCRLQDPDTLP
Y LMDYSFMQGISGI GYSLVRLANN
GEVDASYQ GLA GVLDFLLRLSHGGGRS
$L L L V P D Y G V G M A G V L D F L L R L V H G G P R S$
GHKTPGFMTGLAGMGYSLLR
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TYNTPGLWLGLAGIGYQMLRDSSTVSLPS PKPGFLEGRAGAQLALD D
LD
TLSSPGFFDGVVGVAYTLLSARGSDTDPSWDRFLL

GDRPYS DF GGIGGMAY LIFFDMIDP


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UniRef90_X5WVL2
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$P M G D T L Y E G L S G V V Y A M A$
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 EGRLEFGVTDMALYEGRAGTAVFLA

EQT $\square$ RRK $\square$ NEYAFK $\square$ NNEMERHSSQS $\square$ Y C G $\square G G \square L Y M D I$ DPCNVYHGAAGVLATDT MELELYNGRCGVALFFA DNAS GDIYSGLAGIALFYN
E $\square$ ERTDHEDWSDFNFYNGASGAA $\square$ F $\square R$ ERAFPNPFADYDKSLATAYFD ERAFPNPFADYDKSLATAYF D

$$
D M Y \text { Y S GVM G }
$$

 $D L Y N G R G G V A L E L C A$ $S Q \begin{gathered}Q \\ S \\ Y\end{gathered}$ $N P D N V A Y G A A G V A L F L$ $P M G L Y D G M A G L A A L A F A$ $D T S \square Y \square G S G Q V Y T Y$ $D L S V Y$ TGSP G QL Y M Y Y
$K \square S \square H D G G \backslash Y V G G \square G V A W A A L$ SPRAAPTLCYGLAGTALLHA RSAPMGDTLYNGLSGMAMMYL N Y NLYDGI GGDGDYLM N L Y D G T L G V A A A Y A A
E QMDRRKDNEYAFK LNNEMEHH


ENTLYDGRGGDGLAAA $D G L P G T A L L H A$
$D G F S S T H L F L S$
$\square \mathrm{SNK} \square \mathrm{DE} \square \mathrm{Y}$ L I M
KENVHCNNWGVLDGFSST@LFLS

KGNSTYKS 1 GLVSGSSAYLLYFY

NPLS PRSLLPEGDPCNVQQGAA GVLAALLDD
NQTGTEVSWYIVQFTSKTGMRWNNMYLYDGLAAGMMLLMY

 PATD』S F S GKLGHVLLYA LDDRLVAAARPHRVPRCVRPDLADGGAGPALAYH


VNPVNLYRGAAGIGL
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 $D$
$G L Y N G M G G L A A I F Y L$
$T F L K G K L G L I Y Y Y S$
$N L H D G Y G G V A L F F A$
\D GK L H L N P M NDS L Y D G L S G T S LMY L LQQDAAEGRSIYYDEDCMYAGASGI IVFLL LY S GTAGI ALALW
 LR H LLLDTGRPDDPERLWPTTMPCNLYYGSAGLLGVLA


 $\overline{R V V A V V R R D A R V L A A L P I A A D W I D D R G K D T V S F L E G P}$ ALFKVAPDLGFGESARAAADADVRRWDATARNPVPGVGYGR YLWKVSKNSKYKK I S QE IIAASILETLPKEEDFKHGAFN GL

Y L G R AT GEKKYT DAAYELIE P I I S VMEAGNFNYVGAHTGD S SGRDTPE QHLNNK ITKELLQQMERGLKSADPRDCTCYTGW
 L L S R L L E S E EEFFEKA K S L I S E GLIK K I N N G Y N D P S Y G N G

 A YA LIF TK D DEDMMFAEAALDAGMEEA PLDEKAALSSSVVFGGF $R A Q G T V P T A L L R E A L D R E A D A T A D N E H P P G L Y V G T$ QAGKVLNEQVVYT DTARSMDEEDQQKEESYQNGNSHSAFFGT D G DSRYA E F AR SAVVGPI R DA V R T QRFENGLG GALGGV









 QLY S CT GEMKYK A A YK A I EP I R K F I N S QL P F P L G V F S G T

 RLYELPDQTNALLERAEEYIRRIAHRLIDEKEKMDPSETGGB

 RGM CGR

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 ELLHHHDRAEAADLARDLAYWATGFLAMREHRPGLYTGD
 QAARAGRD VLETVELAARWTLRRLPAEPRLLPGLLFGR AVAAVTGDERTGELARAAFDQVAKRSPGADEFGIGAFGPF

 TLIFDATLDARYKEACLNSSLSPVVFDILDKYSWTFSIGGGLTGL

 S LIFRAS GAT R Y L Q E A E R I L V G I SK S Q G HFAS ETVVSA Y F G L

 GLYQTTNDVSYLQEAEEAATYI RYRFDKRNFSKYAFSSGW $R V$ A A A T GDS ICRFTARGA I A R S LVMLPVRQNGYYAGC E YLLHEHAQGRADAVAE GTLAVLRATVDQVPTKTVGAA LGGL

A LY D A T GEQRYRRVVSETLD PLLEDLSSGDFSSLGGGVGLL E YLA EVRAGRADEVADGALVVLRSVEEDTETPSAGAFSGA $N L N K I K P S Q S Y Q E V D A L N N Y L F K E N P F K P A N T D M F S G L$ E LAA AT GHQA Y LDD DARAGARY LARTWPEQA D L T L $L$ Y H GL

## UniRef90 C7PQJ8

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AS $\operatorname{LGVGSAYQAMYRDTGEM}$
Vf LeyaekhsoLLp $D D L R Q S A R S A A A V P L$

SG DYSLASVLHYYDENHSSVDTYロQFLVTYLRDKKEELV SGTAVALCAAGRVLDS ERLVRVGTQLFG K VVA DGDAGQFRRRVGVLLDDGGLVEEAVGAARRIGP

AGYFYVLNKFAEDDD
AG円ALLYFHLHEVYGDPS AGIALLYFHLHEVYGDPS TGFFWALQFL
A SVYGYLFFYKRTG

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AGSAWHYSELGSPQEA DDSLDERARNLEMAS
AAFASVLR AATNAPEYRQRLDAADARVDTIVQARLKTAR GSVA GGLSVIGT MIIDDREMLEDATRVANRFPEARLAE
AGLFTTGLMYYKKLGDQDQMETMVGKILKHF G
ASVLYVLAQLENLVGE REAKKHRLHLLDNLS PGVWLTAAYLYQLSGEVVERDRFLGLYLAPVFASLQPGNT LIA ALIIGTGYLPGTPYDKTLPRATRWLALAQHHHQRSAL

VAQGLGUARELDEAPLLAACLDAAGQLLERLPED
YSLATVLHYYLENHSSVDKYI QFLVTYLKDKNDELVS SGAGTACLEMAKYDSNYLKLLTQLSLITTNKVEKAVEKYQ GSLVYTLSVAAE GLAASLIASYATSTTRATHWLSAQAVALAEHHRAALVHGS
 AGGVVLALVLHQLGLRPLSVSELERYRSALADMSLAFDK ASQVWI WSTL HDLGTVPGALDDARERAAALTPQVLDA SGYLYALYKTGILLG GGMIYSLAE AA HLTGDVKN
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SSYIYFVNKMRGTGLYSEN EVNSMCKAYLEKLR
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TGEGFFAETLYQKTGE
ASIVYVYLMLYQQ SWKNEYLDYAKKHAV ILR
SSVVYTFLLLYEDTGEYMENHSSVKKYLDHAEKHFAALK
SG LYSLADLHYYMENHSSVDKYDQYLVTYLKDKNE AGVCALGAVVAKHAGDEAGVAHYLSAFKE\KIQSKLPD ASYVY

GLAFAAWSLSHGDQA PHRRVVDEATARARRAA SGYLLFMYDANKDF EKQGFDEDQNPQUDKEDDEMGDVIR TGTAVFVAAAGATLGDDGGVPEVHDSVLRQALVTARGMAR GGLAGLALAAWLVTGDPGVLPEVHDSVLRQALVRA／VEALD AGTAVSLYEAGELLD GGA YALAHAAVRHDRP EYAEAAATLLPA！D GSYIYLLLSRQQITG DGVVSLSCVLNEYDENDKGVDTNDNTLIQNLRDNSEELLQ GSLI YGLVVVYHTYGNDPELIEKNSDEALNYMNLILDKYY SGTAWALADAGRALQDP SGVA WAFSELG
ASQVWTWLTLHDLLKRP

| $D L V S R A V N L A L$ |
| :---: |
| $D G G V D A L D K A S$ |

TSYLYVLYQIMTGRQTYQASTDETVLQLADFPRE
AGFGYAL NAMSLQGFLQFEVNDELENLDEFLYRSALDLIA
TGVGSLLYCLSH
SSDYTVLNFY
SSULYTVLNFY AS QVWTWSSLYELQGEPW GGYUYLFNLIAPSLRTSK

MLERARARAALLAE
S G TGTGYATNCSDNKNQKIQNLKLKFNKLVVQKYRKALLKTS GSVVYTLSVIAEVGGWDWDPLLDDDAYRAGALLAATQKVTA GSDLYDYTQLCKDSKN EDD D DY पGKARTMVEDLDE

|  |  |
| :---: | :---: |
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| Ret | DR |
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|  | Y Et V G |
| UniRef90 FoSR42 | DidmKGVAGL |
| UniRef90-O8YVF3 | , |
|  | M |
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| UniRef90 U5WZ83 | EMVNGDKAFDVLGGGAGAGLCLLACWR |
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| UniRef90-UPIOOO4 | KRS T T K M Y FLCGD |
| UniRef90-A0A |  |
| UniRef90-UPIo0046 | NFVDNCPN DFVGG |
| UniRef90-C1AEK3 | QDIARDDQLDVIAGVA |
|  | SGIKAFDVVAGS |
| UniRe990_UP1000 | C |
| UniRef90_Q096B3 | DQPNQTQNPDF AGD |
|  |  |
|  | G |
| UniRef90_J9FGU0 | YVEDEVLYGDSGYL |
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| M9M0L9 | KVIFSQGSDEFFIGRAGYLC |
| iRef90-UP1000363 | GEGTPWAVYDVIKGLAGIGRVLRGYGTEAEPGL |
| nRef90-UP100047E |  |
|  |  |
|  | Ll |
|  |  |
| UniRef90_UP10004691 | AVYDLENGSVGLDFLFA |
| UniRef90-M01K50 | WH Tu ${ }^{\text {dV }}$ |
| UniRef90-A0A016N486 | IN |
| UniRef90-UPIO002888B |  |
| UniRef90-JoLH67 | GMDAELFNG |
| UniRef90_H8MVT0 |  |
| UniRef90-G8U |  |
| UniRef90 ${ }^{\text {a }}$ 5M | ELILRDTSNDLI SGNTGLLAVILKLVNSDS |
| UniRef90-UPIO0036D? | v sal |
| UniRef90-M1KLJ7 | QETAQITHTDFLGGLAGLLKVVIQLGRYYRTELMEDTARA |
|  |  |
| M3C | LE WDNPDVCHGLIGGAGLAQLHL WHATGDPRFAERAAR |
| iRef90-R5W7 | NLVMGDGSTAVYWLQLADQKYVTYAKELID ${ }^{\text {a }}$ |
|  | D |
| 隹ef90-B3L | GECE |
| , |  |
| UniRef90-UP1000400 | D |
|  | QANLLQDRNIDFLYGSVGALNYLSTRLGHNPAAALRILLLQD |
| UniRef90 G1 | AGAYLLCRDDPA AAEALRTV |
|  | Still |
| UniRef90-UPI00046965E2 |  |
| UniRef90-UP |  |
|  |  |
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| UniRef90-K2EPG9 | DVVSGTSGTLLALTSLHDREKYL |
| UniRef90-UP100036D4C1F | DVTHGLIA |
| UniRef | D |
| UniRef90-J3H | GDEF |
| UniRef90-C7PT74 | AD NFD |
| Ref90-K9Y8K5 |  |
| UniRet90-G8UOL4 | V |
| UniRet90-UPIOOO349A323 UniRef90-R52P8 | VI SGMA |
| UniRef90-Q0 | IGGSAGAI AALLDAARRTRRCA |
| UniRef90-U2TRU3 | DRLLDVLDGVSGVVVPLLNLREERWRDV |
| UniRef90-R2NL17 | D |
| Ret90_UP1000377 |  |
| Ret90 U4 |  |
|  |  |
|  | RMLAEDREVDLLNGVAGALLGLAATGRPEWLPVAAAVGNR |
| UniRef90-R3TSK1 | S SLLQPDWVGGLIGGFLKVLVELYK |
|  |  |

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UniRef90_D8HWW8
UniRef90-R3TSK1
UniRef90-W2EKX4
UniRef90_X5WVL2

L F K LIEEKKEHPIYGSYWLLQKKLYPVADGVTGMSGEDLSGM CADYLI AS QQADGSWIM $C$ CAGERLLHVHKPTHTGHRAWFVGE HQYALT GLS LS SARAEPNHIINNS NKTKKGDHWPRIGES L $\square$ ARAEPDGDVLSWPLTDG

SAGPALTGFA
VTA VIESGKNMSAEEKKTDRCPLLYE
WHKKQYVGAA
SQAA A GMS
$\begin{array}{ll}A D H C G N R L L Q A R V P T A S K R R A W R D P T & E G R P L T G F S \\ A Q Q L E Q Q A D R G K D N S V & T\end{array}$ AQQLEQQAI RGKDNSVTWIGMGYLFEAQRFQLQPVGNSLY
LTERAERRDGVLVWPVPHDYDSRYAGSVDY
CYE Y Y K L NNKK IK LEGKPGDSWTK EGFVGYS
AVEV VKNGRQLAKKGGGSPDMFEFYGEKYW

## $\prod A R L L H$

I A RLLH
INELISFDDNSKDENQKGFMWESSKSDPRVPDEMLYGGRM

## A A GRLIKAAVKTEDGLCWKNA

पGKE पY R
AEKELYYRGQQLLRNAERREDGWAWTTSPGRSENQDLITGLA

YTSHLNRSVKKNKTLW STR



 ASMYGNHLLKNVQECNKGSYW KSTALPEVYUGLG ET DFA CDADID SGRAYAKRHYSQCPLMFAYHG $T H M D L T P H G A R P G W W L P A A E H P A P T V R V H P S G A A T T G D A$
$C G T Y L M E N R V N D N E E Q V S W D G D A E Q P$ LVNKAHNQE GLLFWKFDT RQRACRYGRRLI ALASKTPHGWHWPADDQ SKPYGGLTGFS


 LDKNKQNQKDGSCMWTTQVYNGGENEA


TSKLVQNKILHHESKKVVELEKHGLHQHPVFK DQ LDRAVAVGGHLTEAAHREDGLAHWPDASR LIQACLE SGLDARAQIGAEAAGSRPPDMYTWHGEKYLGGA
 ILTMKKDQPDGTSYWRFFDDHDYFPED PA AGGDLPNFA



 CAENEIDDEEGLRFRN AFYHKEPDENNHDNFGLA - V A ERLAAGGLERVAGGGAPDYDDCGAVSRTDGYS
 CAELATRQETADGWGWATP $\square$ NPEQP AGFS MVDY K S E
 LKKAIVKDGKGLAGWNSVEKPPLMW PYWKGKEYLGGFS
 AAQRLEAGAIVDERGARWPTSGSPHPSN



 LEMAARHGDLLIAEADREADTWAWQTDPDHPPV TGFS
 CVVABNALDNNLIESEGKGSYWESSV EKKLILGFS


$A V E A G Q R I A N L V V P G H R F G G D S C A D L P V D A V T P G F L$
LQAAIGCADHLMALPRYQNGLGGRSWIGQAPGGLALAGMS
UniRef90 C7PQJ8 UniRef90-C7PQJ8 UniRef90-D3HRG8 UniRef90-A0A021WBJ2 UniRef90-UPIO00479884C UniRef90-D2JC60 UniRef90-UPIO0034553F0 UniRef90-M4ARQ9 UniRef90_U2ASJ1 UniRef90-FOSR42 UniRef90-Q8YVF3
UniRef90 Q8YVF3 UniRef90-A5K9A4
UniRef90-KOEZZ88
UniRef90_U5WZ83 UniRef90-UPIO00463416F UniRef90-UPIO0042B1B02 UniRef90_UPIO001C37408 UniRef90_UPIO004420E3D UniRef90_A0A023BY55 UniRef90 C0C561
UniRef90_UPI0004632B07
UniRef90-C1AEK3
UniRef90-D7C3R2
UniRef90_UPI00047D5C92
UniRef90_Q096B3
UniRef90-Q65DC5
UniRef90_D9VIV4
UniRef90_C7P006
UniRef90_-J9FGU0
UniRef90_J9IGG8
UniRef90_M9M0L9
UniRef90-U6J7G7
UniRef90_UPI00036344C1
UniRef90_UPI00047EE7FF
UniRef90-R8QZM6
UniRef90-K1DT14
UniRef90-W7A5G8
UniRef90_UPI000469EA4F
UniRef90 MOHK50
UniRef90-E3IWB5
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UniRef90_JOLH67
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UniRef90-C3H397
UniRef90-A5MTS6
UniRef90_UPI00036D2293
UniRef90_M1KLJ7
UniRef90-L8GM15
UniRef90_M3C8N4
UniRef90-R5W7U3
UniRef90-UPIO004703A08
UniRef90-R5WS79
UniRef90-B3L608
UniRef90 D0ABH4
UniRef90_UPI00040DBC2B
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UniRef90-G1XZH2
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UniRef90_UPIO0046965E2
UniRef90_UPI00037BA9A3
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UniRef90-C3H394
UniRef90_UPI00037BE5FA
UniRef90-W9FUG9
UniRef90_UPIO0037C7810
UniRef90_Q4Y158
UniRef90_U9UMW7
UniRef90-K2EPG9
UniRef90_UP100036D4C1F
UniRef90_UPI0004162B84
UniRef90-A0A021W9B8
UniRef90-J3H2X0
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UniRef90_G8UQ14
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UniRef90-R5K2P8
UniRef90-Q01SM9
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UniRef90_UPI000377242F
UniRef90-U4QD07
UniRef90-E7QZ77
UniRef90-D8HWW8
UniRef90-R3TSK1
UniRef90_W2EKX4
UniRef90_X5WV2

$1 \mathrm{GNAGTI} \mathrm{HF} \mathrm{T}^{210} \mathrm{LV} \mathrm{V}$

HGNAGI GAALAGHAALSGDEAADQLARDALR YERNAYR HGTAGI AYALFRDYAATGMERFKEAAEEGLRYETAVFHTE H GVT GVLTSLSLYYYYKP QKNILDLDKSGUQFEDSFFSD

HGGSGFLPGLAKLDYLLKSTEYEPVLSEALAY
HGAAGVAYALTELDDGTGNEDYVIAAGEADAFENEHFVSA


H GAAGI AYALAALGGATAEREFVEAAREAVRFEASESSPE
H GNA GI DA QL Y RLYYD IT NNMNDLARLIDEAL LLYER

GY L S A LL F V NKHF GEEKIP QNHI QQVSEAAMASGENLAKK
 H GLSS GYA WALIDKLGKFTNNQTYDDF GLDELI R K



D GSAGILLALLSLAWCDGVRDPGMDVAIKSLAEWYRRHLRT
H GVS GI AYALVRLWDATGNQSY LDAATEALAYERDAYVPE

HGSMGIAWSLFRLAAVTGNAAYQTAAENALQ
$Y \vee R S H D S$
TEYLVTPPDTGNLPVATDEL
$H G V A G P L A L L A D A H T A G H T C P G Q A D A D Y T A A T W L L D N Q E S$
$H G N A G I V Y A L S M L N D Y L \quad$ QDETMFKVIDKGMNYENS
H GQTGI CYAMSEYYT円MTSESEEKNGVLNTIQSALSY
HGNS GI A LLAFAA LQREAPTAP DWREALDRGALDDYEGFWY LP

$H G Q S G I A Y Y A L A R L A A A T D D N R Y E A A A R D A L A Y E S S V Y D$
$H G \square A G P L A L L A D G H Q A$ GCTVDPGQRDADTQAAAWLLDRWR
HGMAS II I FLA Y Y H SK T NNPKAKRLLQQADEFYKRNTNP


HGMTGILLLLLIVFENGYR】 VAPTILKVCKFLLENRFT

H GNAGI HSYYLKKAMKY LGDSRAEE LQQESL
$D G A A G I A L F L L A L H C A T G D L A A D L E L G R A A L D F D L A Q V V A G$


 HGNS G I L M M P I I I L L WA R T K K G E K Y R E L A E E V V WK Y E E S L M N A




 H GVAGLAHFLLAAYRTATGDTACEPVVRKGYDVLAGHMAP $H G D S G P L A L L C L A A D S G V V V P G Q H E A I V R L$





 H GA T G A A WA L A R V V A A GA G D A QQR A $\qquad$ RWS $\begin{array}{ll}\text { A } L\end{array}$
$H G D S G V L H A L G K V W E V T$ K A P G L A E LI A QV

 H G N A G I F A L H L L N K H I N S K K I K D I I N K
$M$ GT GGU GFVLL NL YEAS G DQRFLLEATK GDADFMDA QAVK
H G T A GI G WAL L E L WRAT SE
H G A T GMGWALARLT LSSGAGTQQ AERQSWLDLAHAAFD



HGYS GULTALNSFAQQAGYTENVKE
K I WQA A QEWL
HGASGFAYAL GCLAAKTN RSDLRIAAAVECDEY

UniRef90_C7PQJ8
UniRef90_D3HRG8 UniRef90_A0A021WBJ2 UniRef90 UPI000479884C UniRef90-D2JC60 UniRef90_UPI00034553F0 UniRef90 M4ARQ9 UniRef90_U2ASJ1 UniRef90_FOSR42 UniRef90-Q8YVF3 UniRef90-Q8YVF3 UniRef90-A5K9A4
UniRef90-KOEZZ88
UniRef90_U5WZ83 UniRef90-UPI000463416F UniRef90_UPI00042B1B02 UniRef90-UPIO001C37408 UniRef90-UPIO004420E3D UniRef90-UPI0004420E3D UniRef90_A0A023BY55 UniRef90 C0C561 UniRef90_UPI0004632B07 UniRef90_C1AEK3
UniRef90-D7C3R2
UniRef90 UPI00047D5C92 UniRef90_Q096B3 UniRef90_Q65DC5 UniRef90-D9VIV4 UniRef90_C7P006 UniRef90_J9FGU0
UniRef90_J9IGG8
UniRef90-M9M0L9
UniRef90-U6J7G7
UniRef90_UPI00036344C1
UniRef90-UPI00047EE7FF
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UniRef90-W7A5G8
UniRef90_UPI000469EA4F
UniRef90_M0HK50 UniRef90-E3IWB5 UniRef90_A0A016N486 UniRef90_UPI0002888B13 UniRef90_J0LH67
UniRef90-H8MVTO UniRef90-C3H397 UniRef90-A5MTS6 UniRef90-UPIO0036D2293 UniRef90 M1KLJ7 UniRef90-L8GM15 UniRef90-M3C8N4 UniRef90-R5W7U3 UniRef90-UPI0004703A08 UniRef90-R5WS79 UniRef90_B3L608 UniRef90_UPI00040DBC2B UniRef90-W8EZM7 UniRef90_G1XZH2 UniRef90_M3B312
UniRef90_UPI00047AF678 UniRef90-UPIO0046965E2
UniRef90_UPI00037BA9A3
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UniRef90_UPIO0037C7810
UniRef90_Q4Y158
UniRef90-U9UMW7
UniRef90-K2EPG9
UniRef90_UPI00036D4C1F UniRef90-UPI0004162B84 UniRef90-A0A021W9B8 UniRef90-J3H2X0 UniRef90-C7PT74 4 UniRef90_K9Y8K5 UniRef90_G8UQI4 UniRef90-UPIO00349A323 UniRef90_R5K2P8 UniRef90_Q01SM9 UniRef90_U2TRU3 UniRef90-R2NL17 UniRef90_UPI000377242F UniRef90_U4QD07 UniRef90-E7QZ77
UniRef90 D8HWW8 UniRef90-R3TSK1 UniRef90-W2EKX4
UniRef90_X5WVL2

D D S $\square \mathrm{MWWT} Y$
QRGQRWYD DFEPAAE
RHN WPDY
KKYNWYSDHLSS
SRHYDRAEQDWYDLREIDPAKRVSAGRH
SGNFPSS
ERS $\square Y$ SEKWHNWAD LRRQE
$S R N$ WEDLQRSL
RKTLNGKSSRQPRTLSMWCNGAVGI G
RKTLQDPHDDLQQKLI GQMGIGGATGLASIV
E DMNLY LTEDCNVYSS TKKNKSQKKNDTLVQWCHGNVGFV
T DVGALWP $V G$ G
$K N N W H D R R E V R Y P G M T V D Q P G F G V F W C H G A P G \| G$
SGNYPASEQ
E N G
SMYSD\|DQDWYKA

RNFTAKSPLMYEWYQE
RNFTAKSPLMYEWYQE
SKNIISFPTYQYASQTKEFH
EDKCYDPGLKNWTDFRAVKSADRKLA
ENSYYEPSEYNWRDLRDDHQ
AANG RWPDYRR】A
DAEAGNWPDF
QRNWL
QNGQLVW
EEDRYFQKDH $L$ NWDD $\square R N D$ QPPEGGWP RAEAVSPFRSLDWCHGAPGIl $\begin{aligned} & \text { G } \\ & \text { A }\end{aligned}$

EEDRYFQKDHLNWDDGRNDSRSSHDAVHSP
DERGPWWPEVVTDPEPRPELDHLREASQLVPGWCHGAPGIL
ADNWIDYRPW TMDRPDQWCYGRSG A
SGNFPSS LGKKDDLLVHFCHGSTGAV
PEGHFNYADKRKELDSENDYP
DEYGNWVDSYV
GGTVANWCHGASGl ${ }^{-1}$
T PP P R R S AS DELVHWCHGDAGVV
A D
TWPPHVSGNDLGTGSAARHTPGRRDAWCYGTAGI S

## QMDQNNWMDKRKATDEASVA

EDQFYNPDQKNWDDNRNGKFYSD PFWCHGAAGIL RQRN WPYLFAEDASSFDDRPQNCGM AWCHGAPGUA
TDENGYLTEDCNVYSS
RNNKTLYPECDTAVKNTS
PERSNY
DERTGTWPPHDTGDELDAGRADPPVGRA
NNFYSMYSNWIKI
$\square N N V L Y W P V K L N L D D \square Y N K$ KYS NLSESRLDAWCYGDLGIA
DNGNLPSSGGSPLDDLYNKKYKLDLENYKSSWCNGNLGIL
DNGNLPSSUGSPRDEL
FVDGLYRPDVGNWTDLR
RPEATDQLT
KRETSFFPSVMKRDGEK $\square D S G I$
NWY AWCYGLMAS
KLNNFYSPVQQ NWYNSNQNNDDSNGWCHGAPGIL NYEKKCFSSHKNDWYKSKDEKQISYTWCHGSPGIL
AGGRDSFPATVATDD
K I K K W
KPVMVVRHYWDHGTAGVLI
K
RGDNYVWPKGPGRTE

YENS DYSEEKENWLDLRSPE DEKKVMNAWCHGAPGUL
DEEKYKSCRSNTMQKLNKKNKQHKKNDTLVQWCHGNDGFV
EERNDW KDNRKDYTAYSYPFWCHGAAGTL
NGYHSFFPARFDDD $\square A P S D P L N R V K Y N N R M G W C Y G D L N V V$
DT S S DRWDD
DAWGPHWTG
VEKENWF
PDDDAHRDQATWCHGAPG』
$\qquad$


D N N
WT D $\square R E F \square N T E S$
DGDAAFWPSGEDDSEADSVR
ARSASAKPMH
A A RQVE ELP
GGRTGCSGASGVG VFESENRLTRDGFWLDLRDKENPGHLTKWCHGDGGUL DEYNVYSSVRRKQKSQEISNTIDNGNNYLIQWCHGNVGFI NGNYPSS

KRNNNWPDYRY
DPVNYKAVSWCHGADGIV
AHGAAWWPQRRGWAQAGGARVGPEPHSRLPHWCSGASGVVG
SDAAFAFQESCYDETLRNWLDSREGSFNFPTWCHGSVGI G
LQAENRDT DDGFWLDLRETAKSASTVKWCHGDAGIL

QPQLSLFPTFCTS

A LGAFAYERSSFHPGGGWPDLRGDAPVYQSVWCHGAAGIA
FEETLFDPDVGNWRDARNGV GSRFLTNWCHGSTGIG
KNGVWF DTRGEKWDEQNTFYCNGD
DRGALRWTAG
PDDTVPLTNWCSGAS GVG
FEDKI WWPTRKASNDSTC YSKFPRASWCYGSPGSV
AREALDFESSLYAPDRDNWASSSAVENYRDRWCHGRAGIGA
EEGNWFDARIGSEE DREGTSSWCHGSAGII



## UniRef90 C7PQJ8

 UniRef90-C7PQJ8 UniRef90-D3HRG8 UniRef90-A0A021 WBJ2 UniRef90_UPI000479884C UniRef90-D2JC60 UniRef90-UPIO0034553Fo UniRef90-M4ARQ9 UniRef90_U2ASJ1 UniRef90-FOSR42 UniRef90-Q8YVF3 UniRef90-Q8YVF3 UniRef90-A5K9A4UniRef90-KOEZS8 UniRef90-U5WZ83 UniRef90_UPIOOO42B1B02 UniRef90_UPI0001C37408 UniRef90-UPIO004420E3D UniRef90-UPIOOO4420E3D UniRef90-A0A023BY55 UniRef90 CoC561 UniRef90-UPI0004632B07 UniRef90-C1AEK3 UniRef90-D7C3R2 UniRef90-UPI00047D5C92 UniRef90-Q096B3 UniRef90-Q65DC5 UniRef90-DgVIV4 UniRef90_C7P006 UniRef90_J9FGUO
UniRef90_J91GG8
UniRef90-M9M0L9 UniRef90 U6J7G7 UniRef90-UPIO0036344C1 UniRef90-UPIO0047EE7FF UniRef90-R8QZM6 UniRef90-K1DT14 UniRef90_W7A5G8 UniRet90-UPIOO0469EA4F UniRef90-MOHK50
UniRef90 E31WB5 UniRef90-A0A016N486 UniRef90_UPI0002888B13 UniRef90_JOLH67 UniRef90-H8MVTO UniRef90-G8UHM2 UniRef90-C3H397 UniRef90-A5MTS6 UniRef90_UPIOOO36D2293 UniRef90-M1KLJ7 UniRef90-L8GM15 UniRef90-M3C8N4 UniRef90-R5W7U3 UniRef90 UPIOO04703A08 UniRef90-R5WS79 UniRef90-B3L608 UniRef90-DOABH4 UniRef90-UPIOOO40DBC2B UniRef90-W8EZM7 UniRef90-G1XZH2 UniRef90-M3B312
UniRef90-UPIO0047AF678 UniRef90-UPIO0046965E2 UniRef90-UPIoo037BA9A3 UniRef90-W5WDP8 UniRef90-C3H394 UniRef90-UPIO0037BE5FA UniRef90-W9FUG9 UniRef90_UPIO0037C7810 UniRef90-Q4Y158
UniRef90_U9UMW7 UniRef90-K2EPG9 UniRef90-UP100036D4C1F UniRef90_UPIOO04162B84 UniRef90-A0A021 W9B8 UniRef90-J3H2XO UniRefigo-C7PT74 UniRef90-K9Y8K5 UniRef90-G8UQI4 UniRef90-UPIOOO349A323 UniRef90-R5K2P8 UniRef90-001SM9 UniRef90-R2NL17 UniRef90-UPIO00377242F UniRef90-U4QD07 UniRef90-E7QZ77 UniRef90-D8HWW8 UniRef90-R3TSK1 UniRef90-W2EKX4
 GAPGVIYMLLQAY GS $\square G N L L M L Q E Y C K F T G D K E A E H T R Q R N L K Y V Y E K L K D P Q ~$ GSFGNIDLLDEDGKSRHMDRWVSLAEDVAKDELADVQKNG GMLGNYALLHDAARTTDGGUTRDESDFIATRVLESIDRAG GRVGNLDALSTIDAKNIGDRKLLSLCRTLIVEEEQQLKREG GMAGLGHFLDDMKKAQEEKYRQEAFRFARDMLYALEREG GPQGAEFI ALRMAADESDDDACRLLGAAAAMRADTHDVKS GSAGRAAFLLALQRRRQRHEGAARRSRRANGHYRTLSETA GISGNGLAL HSMYRFMNDDLWGERGATFDEDDQKIVAEYD GDLGNVELLLLAGKELNRPEWDEMARRYGTQAIDYYQSKG GVAGSGYTQLAALRVTGEQRYAERARACAAFLHSLREARR GD GGNAITLIEYARQANQPSVTEMAQNLMLESVENGAQNG GTLGNDDILNEDKGHFNGEDLESWISNYLQSTNNDGWQNG GPAGNADMLLDAAHYLLAQPHWERLARDVARRGWRSGLGVA
 GTLGRATALLEATRKAGREESDARARYMEGGDAGALSMPG GHAGVLRTAHAMHH
 GYSSVISITDY
GAAGNAYALLE $\quad$ TR DPGRALAMA LHAADWLEREGTLLR GHSSLLLIYKRGYELTCDKSFQQRHLEWQEKTKMLLEAKLL GDLGNLEVLNYASKLLNKKNLNNLCTNFYQELEWDKKNLK GTSGLGNVLLDAYEFLGDAELLAEAERVAESLCMADERPE G1 A
GVAGNAQFLDDVELTGDAGYRARAAEAAFCLSARAARRD GSAGVF LTHVDGYRLTGEKRYQQLAEKVADKLIGDAYKNA GICGNMWILEKAKRFYGEVKGEG KRLPGNSVRLL PQ GLAGRMLIMKKY LEQHKNPEFRKDYNQKURELIFMMEQED GIPGNGLAFLYUKYTGERSWYIKALKYALFCIGYFDREY GLLGNLDILLAERNAPRKQEDEQIIETWI NKGVSEMEETG GSASLVMCYNALLREMPLACYSEAKKYWLHRTTTYMDELT GSMGLMDIADTAGAV NMGGRSQVDSIAW QRFSSNAP GVTGLLHITARFAHDTGDPELTAAARLAAGPLPSGGGPG GDIGNDDIDGAAADVMGDESLKKRCHAFDKNLTRMYRAFR GSAGAAQYKSMYQLSNDENYLNHYEFWDDRTNKITDADE
 GVFGNLDLAEDNKYKCETLRHFWDSTFSNYDDNDTKFG GDIGNLLIIDAATRADQEPEVAGLLPKVWKTLLHEGRENG GDFGNLICLYDWYRDSGNHEGVTRVEKAFEQVAHNFFEGD GDSGNGIVFLYLYNDTNDKKWYNMALKYALF SUKYFDK G NSLGNAYSFLLLYLVTKNEEQLSRALAFGFYASQWEKETE GNAGRGDYL EDARGLGDVDYKQLAYRKNKRFSCYSNFNT GVSGLGNFLLDCYQFTKEELYMQQAYRVANGVLFTDQRPT GDMSLRELLVAAAADDPEQCATDPDEATAQIVSSDEEHRG GDFGNLMCLLRMYRDTRNEQGDARVERAGSQVTQNFFNED GAAGLAQFCKTLYNERGLEQYRKGYEYWIERTILLLEEEDG GTAGLALI FRRMYLYTNDEEFKECSEYWLEQTLLDAKYKD GDDGNALIMLKYAQHTQEDKWNVILQDY
GTAGLLNMYLGLWAAFGDETYLEQAKRCGRFADDRVAPDV GSAGNGDLMI YATEVLGEQEWMAAAERVGQDGI ERYDRPR GD GGLWELLERGRRLDPEAVGADRDGWDAADLSGLEERG GFLGNMWLYRHFFDHHNDKSYAFLLDDWNAYLDKDNESCLD GLSGLLLCIENMNQKMHNANLECFEEKIDYNYKFRERNY GNLGRVETVLVGARRA DGDLDAAETLLGRCLTRVLSLPG GDMGMWEMLDADRQA EPSWDPDRDELDAELLTGLEQRG GNYGNVEFLDQLSESYADKELKRRDNQYKEQLLASYKLLG
$N \nabla A T A D L M V G S S G D L H F F D R L L H Q G Q H \square G \quad V P L L L N$
$R E R P L G L M V G L A G \| A Y G C L R L A D P A N A$
HHSDIGFYRGISGIGYTLLRLCD N YGLMT
GDFFPGLMLGLSGLGMHF $\square R$ RADPASTPS VLLL
PDRPYSLFEGTS
EKYARGLMS GMS GDGYACLKLA GFTTDP D
YRVNPAFFTGLSGI GYQLLRLTEPSRFPS
NAEGLGFSHGAAGI AYALLQLYAATDEPIFASA
NAEGLGFSHGAAGI AYALLQLYAATDEPLFASA
PDRPNS LF EGYA GLVVFL
SGYGADYAVGVAGWVDFLLRLKHGNPRAW
DFRSPNLFMGAAGVGYELLRVAYPDDLPABLLL
EKEYNGFMVGLSGLAYEMLRIGRENEIPN
GDRPYSLFEGI GGMAY LIFLDMEP
DSSEMGUMLGLSGDGYSCLR ETDDSDPD
PDTPFSLEEGMAGT1 Y F LADLLIP TKA


SLSDF SFMQGLGGIGYALVRLAN
VQCGPGLMT, $R$ RSETPGLLT G VGHQLLRFACPDQVPS VLLLH
AKRSMSFMLGMPGI GYGLLR
GLVFPGLGTGSAGI GLFLDRLLKQDGDPY LD
DVVS LGMFVGTAGI AYGLLRLLDESVPS

PDTPYSLMEGLGGQIVFYCELLRKD
PDHPYSLMEGNGGVISCLADFA GWDE
K Y NDQ GL WLGLS GI GYQLLRDASDEFCPS
PDNPASLFEGRAGTSLILLADLTHPE
$N V G E P G F$
$Y K C G V G \square M V G \square A G \| V Y G L \quad A F A C D E R D P N$
DFSSPSFMMGKAGQLYALDRYKDPSVP
DGHAQGLMLGLAGTGYFLLRCALGE

HSENPTFFNGSSGVAYSLLRFASRDDLP

## C VLLME

VNS SFSILTGLSGVGLSLLSS\|EDKED NWNELLLL
GDAPSS LMCGLAGADCLWADML
$P V A G P G L M A G L G G V I M T L L R M H \quad P E S R L V S P L L L$
TEENDSLFTGFPGSFLSL FASDDENDRWSK■LLL
H S Y S F S L M I G IT GA GLLAL
SSNTYGLMVGLS GWGYSMLS
GIVFPGLASGSAGVALFLDRLRTARPGMRTNGNFLLDD DHSGLGMMLGKTGQLYALLRLVNKEDPT

EDAYTGLYMGSAGGASALLS $\square$
E $1 \mathrm{~V} N \mathrm{PGL} \mathrm{MNGYGG} \mathrm{\square L} \mathrm{G}$ Y
ETRNPAFMNG $\mathcal{P}$ SGVAYAL $D K \square Y T$
PDRPNSLFEGYAGLVVFL
GDKPYSLFEGQAGMAYLFLDMDNP
D F S GLGLMLGKAGQLYTLLRWKN PNTSDPSVLLL NKHAPGLLMGMPGMLLILVTVEMLDTPTSWEQLFL HTFRPGLMTGLAGMGYGLLRMADPSTP

FLDGAA GVALALLGAATDV APRWDRALLL
GGDVVGLMLGSTGFGYSALRCAASEKVKS
KPEHASLLEGLIGTALVLNSYKNNDDP WKS IFLL
DESSPDWSTGTSGUVTFLRRLRSGGAARLWLDPLVL

GDVVAAFANGYAGALSFLLRLYHGGERP
WLCGPGLMTGLAGIAWGLARKAAPERVPD
QVPD DSLLTGUS GVGYALL
PDRPNSLYEGYAGLVVFL
PDRPWSLWE GLA GGVIFWGDLST
 PDESADYQAGVAGVIAFLQRFTYGGPRP WDACL
G ${ }^{1} A F P G L A T G S A G V G F F L H R L L H G K P$
$M V G G P G L M T G L S G A 1 H G L N R M H \quad P Q S G L A S P L L L$
$T I P D P G L M L G I A G V G Q A L L H A V A D G$
 $N D L S \square D L L N G U S G U G L V L L S V A S D D R S Q S$ WD E CLLL
LSTP $\square G L F D G A A G \Pi G A V L L Q L A S A E$
ALWPSGLMRGTAGI AYFYL RLA GAAAPT



YPTPFGLLTGSTGVILTLINKKYKNNDAWLKMLALY
 $P V G G P S L M S G L A G V V H G L L R M H P E Q R L P S \quad P L L L$


## UniRef90 C7PQJ8

UniRef90 C7PQJ8
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UniRef90-A0A021WBJ2
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UniRef90-D2JC60
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UniRef90-UPI00042B1B02
UniRef90-UPI0001C37408
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UniRef90-D7C3R2
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UniRef90_Q65DC5
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UniRef90_E7QZ77
UniRef90_D8HWW8
UniRef90 R3TSK1
UniRef90-W2EKX4
UniRef90 $\times 5$ WVL2

RAARRDKDKVVEETWVKAGRQVT DYTLYTGALGTALLLF NN IIVLEAKEYI IDNLKKSY@SG

NTSQFHYDNDGLFGGKLGLVWQSY DEADSQKLMDNSFYNGFSGLSVFAG E EWNKDVDGLDLYDGNSGVALFFT
 E ER DH $\square V D G D M Y F Y N G M S G U A V F L Y$

EMDRSNQVVFRT LS $L Y G G V A G D G H F D A$ $R K Y P S P M D H G L Y S G L A G Q G L F Y L$
 KYS $\square E G S A N S D P Y F D E \square S L Y S G S A G \| I H F L L$
QRLE QYVNMTLINAPPDFKCDYYGQWLFVGSSSRALTFW
$\square E P S \square N S G S \square C S G D A G V M T I L N$ DLFEGRTGIALFFA GDPG $\square P \mathrm{~V}$ L
$D \square Y$ A G S A GPA $\square F \square A$
$E Q D \square Y G G \square A G V A A M M M$ WPGRAKNTPGLLGFSHGTAGHAAALA WPGRAKNTPGLLGFSHGTAGHAAALA $R D T \square N T L L A D T D K V S T S V R D A N L P H G G L S G L A G Q L L A L Y$ $T V Y V G L A G M A L T Y F$


MEEGLKTDPHDCSAYTGWTGDALLYL
EQDLYGGASGVALLVG

 PS LLRRAEDLALEI TRHEPVQTNISHGAAGLGLMLL


 $\square E N N T W N G L A S L D L Y N G T P G I L L V W H$ $S$ VY G G VP VLA ALVA
WDNGYWS $\quad$ K P C G GLYDGDA GUVLGL

$\square E T D \square T A A V H R \prod A R S D A S P A N S L G Y S K G V L G Q V L F W S$ KERKRE\ILQUEKKASEQDHVNPDYTFLLDYVILSY ERLVHALVAEAAQASHRRY PPGMYVGLSGMA WSLL ERLVHALVAEAAQASHRRY PPGLYVGLSGIA WSLL

K N T L K T D $\square \mathrm{N}$ W $\square \mathrm{I}$ S $\square$
GT $\square \mathrm{H} \square \mathrm{SDMFLYEG} \mathrm{\square AGM} \mathrm{\square VFFA}$


UniRef90 UPIo00362BAC UniRef90-UPIO0035E418E UniRef90-UPIo0047B321F UniRef90-T1ZE53
UniRet90_G87709
UniRef90-U7FWFO
UniRef90-UPIO003DED3DC UniRef90_F2TYV1 UniRef90-UPIO003B3E405 UniRef90-B2IYS5 UniRef90-UPIO001CBC0D1 UniRef90 K1UVU2 UniRef90-UPIOO0468C9A2 UniRef90-A0A059B7S2 UniRef90 K4AB73 UniRef90_UPI00028895C5 UniRef90-F8EE54 UniRef90-C3X9L1
 $V L A E R C P H A R L D V A L M E D C V Q R L L G A \square P Q L E H G L Y Q G A$
 RAKKTGFDTQASDLVQKALDLITKYIQRDDDASPSDHFGA A L A QRTQASRFYQLSEN $\square$ FTGLLDSAATWSEELDNRHGGL DMGEVGDEERYWQRAAD VVPQALERDS PRRLASFLEGR HLQQTGARHTDPVALLRSAHAAYLAAPDSGELVPSLYLGE $A L A S V T N K A E F G D L A L G T L Q S L R K G L Q E R D P E K Q M G M G G A$
$R L A S S D K K S E H L A R A Q E Y L D L Y L K K S R I D H R Q Q A G L L L G N$
 KSFRVTGDRGDLALAAD VVHCDDASRGLPRRFLTFDCGR IT E DDVS E EVVENILIKYFQYLKEDIE EYGDEEYGLI GGK YYWQATREYAHQEQCLRVLGELFENLNQDNPQGASGSVGA ALYQSTGQQKYRDYARKWLEKCFQDAGRKGKQHGGVTNGL



E LA YRTQRDELAATADGAMRQAL VTAEPDGPGGDYDGT SLFKVS GQPVFLSRMDQVLYSLEQRFGFFKTDTVSAYHGLD RRGDA ATARALVDFHTRNGDAPPTLDCSLLCGA
 LLYQHTKQNEYREYTYNGVSEALNNVTS LSYSSSLSG G I


RLADEFPDDRALFRGAAKE LLNNLLSSEEDGDNSLFSGT


## AMAAATRDGDY LEAALGTGRWDWEAPPGYARPMPGLYFGE

$N \square A E R \square G D P A Y \square K R A D P L V E T Q L K G L K E R R F S F L C G D A G P$ A YARETQAGRALD DAEEKRRVAESRALK LRPRS GAYDGL KLHQATHDNRFLEGAKAALHHERAHFDSSGSFMTSWCHGA KLHQATHDNRFLEGAKAALHHERAHFDSSGSFMTSWCHGA KAYEYDASLVDEALFTEKLEALQEGGLDQQSFEMS CKGNGLL
 ELHHATGDARYLREAQSGARALVAALEGVGAAGAGLYTGL

 $\begin{array}{ll}G Y G R A D P V D G L E P L L A S L V H T L T R K G I R L R P P P P G A Y D G L \\ R L A E Y & D\end{array}$
伿 GMEHVCGEGREMADARRFVASATPRRAAQEGYPLGAASGL HHAES EAVAADLARWTVRMTPPARDPSADYFGR E I Y R I G GRPELLARAEELGVYILEQSDKKGHHSLGFSHG1 EIYRIGGRPELLARAEELGVYI LEQSDKKGHHSLGFSHGI


QLYKTTGKQQY LEQAEKSYPY DEYRWREKPD LS LAFSSGF GCHADDPAGEWKTLALAADEAPRATTAQLGSVGGFEGF
 ATDSGSGSGSAASAARRAVAAWVTTVGRGPGHHALYNSGL
 VVGRRLQRMDFLAFSTEUAQQTACQLEAMPYATLGAYTGT

YYAYFADDSTAQERVKTLLVESVQRV TQPYAGHSFTKEL Y LSVFFKTNKYF LKGKTVLDNGI EDINKYQ DP LGAWYGY AYRRESAEGRADPVIDHCLQACVTTLARFRPLPPGGYDGLD ELGQ REAAERLMAMGVDSPLLG HGADLFYGD ELGQ REAAERLMAMGVDSPLLG HGADLFYGD ALWRVTKKEKY WD DAEKIMKDVI SRPDEDSSMSVGAFSGD HLKRISQEPSMDESLDRQAMQELAESADASAAEYASFFCGQ ALLNEAVPTRAYLEVQNGLLNKLLEYTNSSSKAYSGAFCGE

QTVQNHVPEAVRQWVREQP\GANTAPGLLSGL AHSAMTGDASSEALARAAVAGLRKNLVSRNPAR LARSL A LYHATEDQKWWDLLMNRVSTLVEVLRTHRFDQGGLLGGL Y L ST LDKKQEY LK IASEYUS AMMQYTRSDPKTTVGFLLGN

[^2]UniRef90 UPIo00362BAC UniRef90-UPIO0035E418B UniRef90-UPIO0047B321F
UniRef90_T1ZE53
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UniRef90 K4AB73
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UniRet90_F7K9L6
UniRef90 A4FJJ9
UniRef90-Q01SQ5
UniRef90-G8PWX5
UniRef90-FOYG24 UniRef90-D2AWE3
UniRef90-A1ZZX7
UniRef90-UPIO002ECOA6E
UniRef90- J91P02
UniRef90-M3CDJ8
UniRef90-I1PN92
UniRef90 W4QL66
UniRef90 X 6 PG 84 UniRef90-A0A022MN77
UniRef90 D2AQX6 UniRef90-UPIOO04792543 UniRef90-M1MUG7 UniRef90 M1MUG7 UniRef90-B7QE43 UniRef90-A0AO21W9A9 UniRef90_Q05U57 UniRef90 Q05U57 UniRef90-U1KGR6 UniRef90-IOYPB4 UniRef90 C 1 ACH 8 UniRef90-E8ZV81 UniRef90_LTKX79 UniRef90 17M6F8 UniRef90-F8CQG3 UniRef90_C7PTK0 UniRef90-D2V6A5 UniRef90-U2SNY7 UniRef90-A4FIK7 UniRef90-UPI000312E3D9 UniRef90-UPI000312E3D9 UniRef90 -W4LLQ3 UniRef90-W4LIQ3 UniRef90-A0AO23CYI6 UniRef90-UPI0003B4CB1F UniRef90-U4TPL1 UniRef90-l2MUB8 UniRef90-F3P6Z2 UniRef90 UPI000468F7B9 UniRef90-ЕЗНЗҮ3 UniRef90-ЕЗНЗҮ3 UniRef90- UPIO003685D9E UniRef90-FOPQ25 UniRef90-V7Z9T5 UniRef90 E3FSX0 UniRef90-E3FSX0 UniRef90-M1KTM3 UniRef90-M1UY33 UniRef90-R91HD9
UniRef90-B8LCM4 UniRet90-H8H3N6 UniRef90 G8RHV4 UniRet90-C0XTM9 UniR Refo-T1JC93 UniRef90 ${ }^{-}$F5XOH1 UniRet90-N2ANZ8 UniRef90-N2ANZ8 UniRef90-RFFRJ9 UniRef90-B8L246 UniRef90-J8GEJ7 UniRef90_J8GEJ7

TGLLGWVLFLLKKYE LTGAEYDDFKTEDDERUYKRALLDET100 ${ }^{120}$ EGVMYAALELDRHFGFGLAQDAACD FDDYLHDCLR
 TGIAAVLANATNDG LIEAQTIYFEWINQLLDR VGRTALLFAL QHALQLIEMPTLKTGLATLRNGTSSA LGAKDERFQUCWNLKGRQTDVELVAKERALPVGP AGC YALHAAEASAKQLCNLWDKGEEAQQVRTDEQPDGHH



AGVCALGAVIAKHCDDQLRVTQYLSSFDEITITEKVPN GFDLII VNFFRNKYGGMTTFYNKFENIDKEANLHQQDLLE AGFCYVVTMLHREGWLEFDLDETLADLDEFAYESALEMDA GGLAYSLNKIA LLTKDLSSHAVESVLDLID PGLVYTLTELSHEPRFKNGAUTALNRITAQASNGGAGGW

LGTVLTATRAARALGDSKLL EQASAMARRARLDAG GAFIYLLINRRQVTGD ASHDERIDAGLLAQLIEV TGLDVVAATLAPDDETFRFRAKRVLSRAQVARGDKLAA AGVMFALAEAGWATGESSFEVEAGAVADHIVRSAR
 AGปAWVLRELGRP EAAAELLRRAG
AGLLIALLTFYGSQTVKQWYПSRAHDYFDELLAEP PHDP AYGIUGIVQALFFVGEYVDEKSYKENALSLLYQVTVLNDQ SGGAYAVRAV CYHYQGNKEKVESY AGTLVGLRLGARLHP ALDQVADRLAAHLGTRLPAYR CGPGLLYLAGASGAVWALVDAAALDDAGLARYAVRAAS CGPGLLYLALAGLTGDDGWARRARAVADRVHAMPA

ПAVGAVLYHLLGREEDSQKLVRNKH GSQ1 WT HLVLAHWGRDGGQGV G\|GLARARALADR\P WQTELIWDEQCRDEMHAAlRTTS AGQAWLLEYLNQADP WQTELNYDPECREEEVDELFRESL
AGEDHAEVYLQR
GGY品YVLEQFH
TGIAYVLQLVQERAP
GGLDYVINKIAVL
LAVGAVI YHKLKSDCESQECTTKQDSTLEDCIVGDYDVME $V G$ VYLVSMIYYNEVKDQKKFDNNLQKILEFTPEIIKNQN GSQL WARLVLADWKQDAGDGVARAVRLAEA $\square P E S A A A A$
TSLVYLCLQLYEATGDGRYLERGLALVAHYQEGVLQKVV GSVDGPLYALA MGLFSLLSAAYD LGKTEKAKITLHNA A ADHFPKACFIN GSFLYVLCRASSLLGE PSLLEDASRAASLLTPEADEA TGTALYLATARR
 AGIGYYLLALAERTGKEANYSA VKRIVDTLDRTSLWPAS A GTVVALCQLGTEEARLHAQDAASHDERSAVWPAADKCAW

AGVAYAVSEDYT TTHNKKYKKFVEEVVAETIKNAKPADD GGLVYVLVRCADDAPELRDEAVRMSEWI DDVAVDADKAL VGCLYVYIDTSENLLEELPVIQVALQK AYGAGA A SA AGTLVGLHHAAALHPPLLRLADRLRGHLLTTAGQREPWR S S IVYV Y L I LYE IT G Q E K WIIK N A Q K H F E V V A
 ETLEHUAALDEANLEEQMQQUW

AEFGDFLEYANAN SLVELDTNALLTGPDQLLAATM TGDAYIUNAYGGSDEYYNFLRKLNSFIKFQSHKMLSSYN GSQLWAYLVLADFG $1 D A V L E H A A A L T Q E F P D A A Q$ AGVGLAHLFFLKRLGDPRSLRHALEAFDATRLEETREGLR AGVGLAHLFFLKRLGDPRSLRHALEAFI ATRLEETREGLR S SUVYTLMYMYTKREKYKQNAKQUAQLIPSL AG VYYASVLVENARANTEACKAYMEQFIRMGQYAVPDTQ
AS IIVTYLVLYK

AGMAVGFAQTGERKERAYQLARRHDHLYARVH
GVGGGLGLGSIVYGLAVIAELLRDDAILGDAHDCAALMTD SGMAYLLTVSRHNEEEFSNALSSLDSRISTLAERKLWDLH MG GARLVGTVGALIKSAQGNHEQFRNLIKLIAKKAADTCGP

|  |  |
| :---: | :---: |
|  |  |
| RRet90 UPioos | A ERDSDAYFD M |
| Ref90-T1ZE53 | NNSISMSEYDIIGGTS |
| G8 | DNQNAGFMNGIAGQGIAHLLCSDFLPAELIKERLDR |
| Ref90 | QFRPSGSSAD |
| Ref90 | EEGGFGMSYDLLYGRAGFLWGALFV |
|  | HSEMAPGECELLYGRAGYLYALLFV |
| UP | LANGGPALEPLWGASGTMLAALHLWRLTGQARWRDAYMQ |
|  |  |
| UniRet90-K1UV | ( L Y A SilQkVVDALIYY |
| UniRef90 |  |
| UniR | GMSYDLLY |
| UniRef90 <br> UniRef90 | ELLYGRAGYL WACLFLNKHLSEKT |
| UniRef90-F8EE54 | DFWHGAFGVL |
| UniRef90-C3X9 | LELSPEPDYMSGLAGYIMALDRTGAR |
| UniRef90-UPIOOO46 | KNIYHDTNYDLVG |
| iRef90-AOYFH8 | , |
|  |  |
|  | VFDLVYGNAGAI |
| UniRe | AYDVI SGASGIGR |
| UniRef90-Q01SQ5 | N |
| UniRef90-G8P |  |
| UniRet90-D2AWE3 |  |
| UniRef90-A1ZZX | DS |
| 002ECOA6E | GEGAYWSGSFGILADSGTLLYALDF |
| UniRef90-M3CDJ8 | DVLHGLAGYGTACLREWRDGY |
| UniRef90-11PN92 | C |
| UniRef90 G7HYH5 | SGAAGHLRALSLLYEDFHTNCLAVVREA |
| Re90- 46 | T G LP |
|  | - |
| UniRet90-D2AQX6 | LLPTDHPSPDVTHGLAGCGMAVLRVALRSGDPALRQRAAT |
| UniRef90 UPIO004792: |  |
|  |  |
| 9-MINUG7 |  |
|  |  |
|  | KSTGQLRSDHLCCGKAGLAIILEMLCD |
| UniRef90-005 | , |
| UniRet90-U1KGR6 |  |
| UniRef90 IOYPB4 UniRef90-UPI0002F9 | YQQH |
| Uni | SGTAGLALALVWL QARDRASASPWRDS |
|  |  |
| -9KX79 |  |
| 7M | D DAHDVSGTAGA PR A A ARATGEAROVEDARA |
|  | SGHAGNLLVLTQLHAYTKDDSLRVLDRQ |
| UniRef90-UP10003 | L LSAALPRSLGAGSLAAAAG |
| UniRef90-D2V6A5 | WLGRDGYLYTVLFLQRYFK DSKVLPDNY |
|  | AVSGTAGALLGLLVFHQATG |
| A4FI | GI GAGHLVLHDLAPGEGHLDIASE |
| UniRei90-UP1000312E3D9 | CNGSAG\\|GRFLMAAADILQDPLCTRLGLQ |
| URe9-W4Lic3 | G\| A Y A L |
| UniRef90-W4LIO3 | PTLANRPQTGFSHGQSGIAYALDRLDFCTVSATYRKTVR |
| UniRef90 S4MFP2 | GLIA ALLLSRR |
| UP10003B4 |  |
| UniRef90-U4T | GIVLGL |
| UniRef90-12MUB88 | GTLLALYATSP |
| UniRef90-F3P6Z2 |  |
| UniRer90-C6JFU8 ${ }^{\text {UniRet90 UPIOOO468F7B9 }}$ | , |
| -3 | SAFVSPYPPDR\\| |
| UniRef90_E3H3 | S |
| UniRef90_A8J2 | EAMDSENDEFLYGRAGYLQAAA GPGTIPDEIIEGVATE |
| P10003 |  |
| UniRef90-V7Z925 | dVL GGAGA |
| UniRef90-E3FSX0 | YVNQGEAYCGLAHGSAGIGYFL |
| 3FSX 0 | QGEAYCGL |
| M1 | $\overline{L D I}$ |
|  |  |
| Ref90-B8LCM4 |  |
| $990-\mathrm{H} 8 \mathrm{H}$ |  |
| UniRe990_G8RHV4 | DVIAADNQLDILGGSAGAILGLLRLHRQTGDGDALRIAEK |
|  | RDYDYA ${ }^{\text {a }}$ (LAGAAHYL FVADE |
|  |  |

UniRef90 UPIO00362BAC1 UniRef90_UPI00035E418B UniRef90_UPI00047B321F UniRef90_T1ZE53
UniRef90_G8T709
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UniRef90-UPI0003B3E405 UniRef90_B2IYS5
UniRef90_UPI0001CBC0D1
UniRef90 K1UVU2
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UniRef90 K4AB73
UniRef90_UPI00028895C5
UniRef90_F8EE54
UniRef90_C3X9L1
UniRef90 UPI000467C24D UniRef90 ${ }^{-}$A0YFH8
UniRef90_UPI00046A13D7
UniRef90_F7K9L6
UniRef90-A4FJJ9
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UniRef90_G8PWX5
UniRef90_FOYG24
UniRef90_D2AWE3
UniRef90_A1ZZX7
UniRef90_UPI0002EC0A6E
UniRef90 J9IP02
UniRef90_M3CDJ8
UniRef90_I1PN92
UniRef90_G7HYH5 UniRef90_W4QL66 UniRef90_X6PG84 UniRef90_A0A022MN77
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UniRef90_C7PTK0 UniRef90_UPI00035D9EFA UniRef90_D2V6A5 UniRef90_U2SNY7
UniRef90_A4FIK7 UniRef90_A4FIK7 UniRef90_UPI000312E3D9 UniRef90_UPI000312E3D9 UniRef90-W4LIQ3 UniRef90_W4LIQ3 UniRef90_S4MFP2 UniRef90_A0A023CYI6 UniRef90_UPI0003B4CB1F UniRef90_U4TPL1 UniRef90_I2MUB8 UniRef90-F3P6Z2 UniRef90-UPI000468F7B9 UniRef90_E3H3Y3 UniRef90-E3H3Y3 UniRef90_A8J2N1 UniRef90_UPI0003685D9E UniRef90_F0PQ25 UniRef90_V7Z9T5 UniRef90 E3FSX0 UniRef90_E3FSX0 UniRef90-M1KTM3 UniRef90-R9IHD9 UniRef90-B8LCM4 UniRef90_H8H3N6 UniRef90_G8RHV4 UniRef90_C0XTM9
UniRef90_T1JC93 UniRef90-F5X0H1 UniRef90-N2ANZ8 UniRef90-N2ANZ8
UniRef90 R5FRJ9 UniRef90_R5FRJ9 UniRef90_J8GEJ7 UniRef90_J8GEJ7
$A Q G L L S S R P A G \square D Y \square K N E Y \square Y R K L K F T V E D D L N F G L V$ L G A MAS R DERGAS WF TP PA WV H GLLPM GQA YPLGCVDMGVA

 Y MTGP
 $L V R A V V$ HA I I QEGARNGSRDD APFVLTYFWHDSLYLGAA
 SQYSTEDKQEAVVPNWHMQK DNVF P Y E ERES YRSGMDN FGLS $L Y \square N A D K S D D E \square K W K N I F P R K Q N Q$



 $L L E V A E P T E D G L R W L M M V D M A F P F T A P N \quad R \square S$ G G A $L$ N EVVS S L I D R LIAA E AR I S E Q GLLK WDY S S SKK A Y D SMT GF S LKEAEKAGD IVVAAHAVSQGTGFGWDNKA SQAVLAGMS TAPVAAHGVTVPGWWVSTVPNPARPHBDFPCGRLDLGGAA LVESAAEYADTGCSWSNP LI ESTANLT GLLS MVD Y I K D Q $\quad$ LL I E D G QL L R R S D R S
 $\square \mathrm{N}$
 $D F A V Q A G R V L L E Q G K D F P R G G R Y F E G S S F G G K I I P G F P$ A Y H L F DYG YQHRDDNGTLIDPEPFPDTRTSLGFG LDAA A RA GERDAETRLLHGPRGPYWPDAE


 T
 L R E A I AA A A A F PLSSVV DSPVLLKKASSAFPDWHPLVLHRWYARCWSPVSGCR

 VVQQULDEGRRGARRVKNTPLMWAWHSKYY LGAA
 $V$ N A II I E S G K A L L R R E E R KA E R C P L L LVECIE K DF T I DA GYTMKEDD DGFR LTYNF HQREYLGGA




 $A A D A \vee A Q A$ $A A D A V A Q A$ | A | $A$ | $I$ | $A$ | $F$ | $E$ | $D$ | $D$ | $H$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| A | I | I |  |  |  |  |  |  |
| A | I | A | $F$ | $E$ | $D$ | $D$ | $H$ | $L$ | A HPLRSDDRMLPGWWSAAGP EDGSNWQDLRFDTQGVVFGQQ EDGSNWQDLRFDTQGVVAGWC $\square D$ V A GR LLDGQKKKYSEGGYYFEGSQFNEQ IVPGFP LD R A I MCGKHLDA



$$
\begin{aligned}
& L V G L \\
& L \\
& C T A \\
& C
\end{aligned}
$$ V V DLA Y R V L K A N S D ALLRENTL VDLA YRVLKANS DALLRENTL V G YA LTATNHPGGREEDAWTWLAPTPGLWQQHLS LWNTEVVGDD



 LERARALLDHDDGQGREYGGQWCFSRSEREPVLYPYWAMG



 CALLARPRVGQPGARTWVSPAFGRPLN GIS FA EL S LQQPLP HS FWT GAADLDPAMEHTPELGNGMRDLGFA
 FGEF LLAKKGKDAPRGGKYWNVVDLTIIDFPKDVFWVNFA GERLL QLAKNLNG KTYWTYTDGNKDTGENELNDG MQDAA A K T Y WT Y TD GNK VT GENE LD $\square$ GGGFA RWP TP

| $L$ | $S$ | $R$ | $l$ | $S$ | $T$ | $D$ | $Y$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $A$ |  |  |  |  |  |  |
| $S$ | $R$ | $I$ | $S$ | $T$ | $D$ | $Y$ | $A$ |



|  | $30$ |
| :---: | :---: |
| UniRef90_UPI000362BAC1 | E N D K S $\square$ P P T N Q MLS LP A E D P Q NVGFY T Y R M G WCYGDLNQV |
| UniRef90_UPI00035E418B | TGQKSHF GVVAGDADAARCAWCYGDLGMA |
| UniRef90_UPI00047B321F | RRRWLD ARPESLERGRFYPAHWCHGAAG\A |
| UniRef90-T1ZE53 | K NEVI K WP S Q LD Y R K F S K G $\square$ T I REK DVYY P S WCYGYVSI S |
| UniRef90_G8T709 | RGNKIQWRS |
| UniRef90_U7FWF0 | W $\square$ P EKRNWKVSAEQDAPADSDGWAHGAAGIL |
| UniRef90-UPI0003DED3DC | HS GNYPSSEGNPRDKLL V W WGHGATGMA |
| UniRef90_F2TYV1 | NGNYPSSYGSDKDDK VQWCHGAPGVI |
| UniRef90_UPI0003B3E405 | AGDGVNWP P $\quad$ P Q AHAPGTAPTPTKWLMQWCHGAPGIV |
| UniRef90-B2IY | QS CS 1 A A D K L S PLA N WCH G LP G |
| UniRef90_UPI0001CBC0D1 | D GNYAPSVVSECYSKRPVDNELVVH WCHGAPGVV |
| UniRef90-K1UVU2 | QPD GEVYYWPSADT GEEYLK P AL S $\square$ SP HKRLS WCY G S L S L |
| UniRef90_UPI000468C9A2 |  |
| UniRef90_A0A059B7S2 | HSGNYPSSEGNPRDKL V V W W H GATGMA |
| UniRef90_K4AB73 | KNRFPS GNYPSSEGNE SDRLVHWCHGAPGVA |
| UniRef90_UPI00028895C5 |  |
| UniRef90_F8EE54 |  |
| UniRef90-C3X9L1 | HREGKGWP D L R L S D D A A D G M M C F C T G G A I G |
| UniRef90_UPI000467C24D | ERH\FY A P EMPGGHSSLKKGEMDNNWCNGVS G |
| UniRef90_A0YFH8 | QQGHL VCHNEEQQPPTLFY LGVCHGPA GTG |
| UniRef90_UPI00046A13D7 | WLDL RLG P H R L N K P DL H Q WK L E T F LPEMT DA WA H GA A G I G |
| UniRef90_F7K9L6 | YEDSLYSKEYHNWADLRQE GDERYQACAWCHGFGGIT |
| UniRef90-A4FJJ9 | $R G Q \quad W P G T V A L E D \\| V L D G E N D P V E$ |
| UniRef90-Q01SQ5 | SEKHSNWP D Y RLLSRDGTKHLL R Y T NFWC |
| UniRef90_G8PWX5 | EGENRLS R D G F WLDLRNLGPAD H T S K W W H G G Gl L |
| UniRef90_FOYG24 | DGN WP AVAGEARAPLVHFCHGAPGMV |
| UniRef90_D2AWE3 |  |
| UniRef90-A1ZZX7 |  |
| UniRef90_UPI0002EC0A6E |  |
| UniRef90_J9IP02 | $P D G Q V A D C D Q P G M E E R V Q W C H G A P S A L$ |
| UniRef90-M3CDJ8 | GTEFEGFPAMVPLETEADAS V V A A CYWDFGSAGVL |
| UniRef90-I1PN92 | SGNYPV |
| UniRef90-G7HYH5 | GASLDWPS GF GLGGFENSLT S T HRVAWCYGTP GV S |
| UniRef90-W4QL66 |  |
| UniRef90-X6PG84 | SGNYASSP $\quad$ R S L N K G K D T L V H WCHGAPS FV |
| UniRef90_A0A022MN77 |  |
| UniRef90_D2AQX6 |  |
| UniRef90_UPI0004792543 | P CLP D GTGLTWSASGDPGSPRAVYWCHGAPG |
| UniRef90_M1MUG7 | QELGKNFSKW A A S G G S GVG |
| UniRef90_M1MUG7 | QELGKNFSKW A F S T GYS GVGG |
| UniRef90-B7QE43 | AFVSLQYPS GNFPSSLGSE T DKLVHWCHGAPGAA |
| UniRef90-A0A021W9A9 |  |
| UniRef90_Q05U57 |  |
| UniRef90_Q05U57 |  |
| UniRef90_U1KGR6 | QQS T DCTS HSCFGSSAGGEH H S |
| UniRef90_IOYPB4 | LAASLQQ NNGNLPSTWGYEDDR LVQWCHGAPGFL |
| UniRef90_UPI0002F9CBD2 | NENNHFDLEQGNWSDLRDGHKEKDA |
| UniRef90-C1ACH8 | D G $\square$ TT T SPS G A R K $\square$ F HSEP G NES LYY Y S WCHGPA GTG |
| UniRef90_E8ZV81 |  |
| UniRef90_L9KX79 |  |
| UniRef90_17M6F8 | S GN FPS GTHRKE T DFLVQFCHGSPGAV |
| UniRef90_F8CQG3 |  |
| UniRef90-C7PTK0 | VFKNWLD L R LT S THLQET D $\square$ M G WQ $\square$ A DFRRYWAHGAA GI G |
| UniRef90_UPI00035D9EFA | YEDSLYDPALP GWS DRRPGA DAPGAATA WCHGAPGI G |
| UniRef90_D2V6A5 | WLVSEQFSDGNFPSSVGSKSSRLLQFCHGVTGVM |
| UniRef90- U2SNY7 | REGALT $\mathrm{T}^{\text {F T N T WCHGAA GVG }}$ |
| UniRef90_A4FIK7 | $\checkmark$ V VM R R P A A R P M A A S WC Q G M S Gl A |
| UniRef90_UPI000312E3D9 | QEDMWMWP LEDMESFSPDYM T GYMGI Y |
| UniRef90_UPI000312E3D9 | QEDMWMWP LEDMESFSPDYMTGYMGIY |
| UniRef90_W4LIQ3 |  |
| UniRef90-W4LIQ3 |  |
| UniRef90_S4MFP2 | GAHYWSTTA H L D A EPPPAAEPARQSWCYGQP GTA |
| UniRef90-A0A023CYI6 |  |
| UniRef90_UPI0003B4CB1F | ERSLIFDPVENGWPDLRGEKPVRDP V W W C H GAAGI G |
| UniRef90_U4TPL1 |  |
| UniRef90-I2MUB8 | D D R S VRSWA A G H D GTPPAPGPWPRQAWCYGNP GVTT |
| UniRef90_F3P6Z2 | R N T WVDMRRD D G LP S A N WCHGLT GL M |
| UniRef90_C6JFU8 | Y ED L M S EDLK NWID LR D P D GRKTMRGWCHGAP GIL |
| UniRef90-UPI000468F7B9 | ETSFRTPQGWPDLDHND\RNTSWCHGTTGFG |
| UniRef90-E3H3Y3 | P I A Q DVFF A D R L F S IP P E T C D Gl S C GE T G |
| UniRef90-E3H3Y3 | P IA Q DVF A D RLIF S I P P E T C D G I S C GE T Gl A |
| UniRef90-A8J2N1 | APGGGHYPTKMAMSPPEPPPPGEAGGATEVHWCHGAPGAVV1 |
| UniRef90_UPI0003685D9E | Y Q Q I G FFPDIVHEKLVQS |
| UniRef90-F0PQ25 | SQDLFM P T VLJKKED D GKFSPQYLRRSSWCYGSTGIL |
| UniRef90_V7Z9T5 | PSYDNW R R L RMLIAGNPTAAAWCHGAVGI G |
| UniRef90_E3FSX0 | R G Q Y SVFPSHFY GMA GL G |
| UniRef90-E3FSX0 | R GQY S V F P S HFY G M A G L G |
| UniRef90_M1KTM3 |  |
| UniRef90-M1UY33 | EPDGFYDTRVKLQERSRFQELRRSTDSKRLVQWCHGSPGAL\| |
| UniRef90_R9IHD9 | NQRS R RKI YWCHGAA GIV |
| UniRef90-B8LCM4 |  |
| UniRef90-H8H3N6 |  |
| UniRef90-G8RHV4 | EDSTYDSGQRGWADLRDGADATSP CKWCYGAPGIG |
| UniRef90_C0XTM9 | $\square$ IEHNHS GPSYFQTPSPASNPPRPSTKSRQAWCYGTPS |
| UniRef90_T1JC93 | NGNFPCAMDEVRRKRPESDELVH W W C H GAPG |
| UniRef90-F5X0H1 | DENAVLIP Y L L L L RGPSTEFYY LSTCHGPA GTA |
| UniRef90-N2ANZ8 | TE T L D I S NRPEDVPENAGRTGMFDGEFSIV |
| UniRef90-N2ANZ8 | TEE TLLDISENRPEDVPENAGRTGMFDGEFSIV |
| UniRef90_R5FRJ9 |  |
| UniRef90-B8L246 UniRef90-J8GEJ7 | F QA ALFEPHTGHWRD $\square \mathrm{H} \quad \square$ QDGQKNFPTWCHGSVGIG |


|  | $290 \text { - } 300 \text { — } 310 \text { — } 320$ |
| :---: | :---: |
| UniRef90_UP | MLLYR A G S V L G N P G W $\square$ S $\square$ A G R L G S R C L K R K T QVDNP H\|L |
| UniRef90_UPI00035E418B | GALRLAAAAALAAPA L D W W D RLL H S M R R P L GFVDP WL CH |
| UniRef90_UPI00047B321F | MARVSAAVSSLDDDTLYDQAAFGAQETAA GPGLPADDS L C H |
| UniRef90-T1ZE53 |  |
| UniRef90-G8T709 |  |
| UniRef90_U7FWF |  |
| UniRef90_UPI0003DED3DC |  |
| UniRef90_F2T |  |
| UniRef90_UPI0003B3E405 | TALAGGFPVGQDPRLDALLLQAAGEVVWAA GPLAK K G P G L C H |
| UniRef90-B2IYS5 |  |
| UniRef90_UPIO001CBC0D1 | YLLLAKA YLT WNDSKYMEACLR C GELLT WQRGLLRRKGPG |
| UniRef90-K1UVU2 |  |
| UniRef90_UPI000468C9A2 |  |
| UniRef90-A0A059B7S2 |  |
| UniRef90-K4AB73 | LTLAKAY EKA DEFIAEGAMHGGGDRPFSLGE |
| UniRef90_UPI00028895C5 |  |
| UniRef90_F8EE54 | LLMYRAA DFLQRPDLRRRQADLCGVSTVRRRTLVSDSHLC |
| UniRef90-C3X9L1 | L ALD M T G $\square$ S REDDEWMLD N I GFA |
| UniRef90_UPI000467C24D | LS KLL L R F G Y H D ELLDMEIGKLA Y DLTILKNSFGYNLTYCH |
| UniRef90-A0 | RFMYLLY NIT GDDDYFDWDTANFLGLLSTGALDWNNHGQCC |
| UniRef90_UPI00046A13D7 | 1 A REMAFNLTKSKNYDVDCQN L L D R CLS DKFNRTDFTVVS |
| UniRef90_F7K9L6 |  |
| UniRef90-A4FJJ9 | P G L C |
| UniRef90-Q01SQ5 |  |
| UniRef90-G8PWX5 | I ARRQLMESMGDQTVHDDIRRCESNLWAHGFGEGYNLC |
| UniRef90_F0YG24 | FAFFEGAKVFKDAALKTAALDDAAYTTWKYGLLLFKGPGLCH |
| UniRef90-D2AWE3 | RMFYELLYRVAGDAGDLD WVERLARGIVRSGTPWNVACQCC |
| UniRef90-A1ZZX7 |  |
| UniRef90_UPI0002EC | RYLYED Y K VTEDSTNLDE@KQLLHS V V L L GAYWHT\AYC C |
| UniRef90-J9IP02 |  |
| UniRef90-M3CDJ8 |  |
| UniRef90-11PN92 |  |
| UniRef90-G7HYH5 | LSFKLLAECFQDLGLMRFARQSMRHALKRTSGLISPTECH |
| UniRef90-W4QL66 | LARLTM F QKADISFQRDLLKRALAFTEWS SVQGVDH LC Y |
| UniRef90-X6PG84 | LLFCKAYHALPSSTDRGYAEECSEVVWKRGILHKGPGLCH |
| UniRef90_A0A022MN77 | WALLWDAA DALDDPVTAD WA LAAFRTLTDHGTPADRLGLCH |
| UniRef90_D2AQX6 | SFLVRYWHATGDPKA LDLLARGAAAAVHRTRWQ S G PVVPC |
| UniRef90_UPI0004792543 | RFLVRAFEVTGEAALVDAAERAGRTVVA GSVVWCGTS |
| UniRef90-M1MUG7 | Y VI L E L Y NVTK D I N Y M NLVVEII E KI I K EKPAVNGNGFY W |
| UniRef90_M1MUG7 |  |
| UniRef90_B7QE43 | HLLALAR TVFPDARYLEPL RKSVDVI WR R G L L K K G Y G |
| UniRef90_A0A021W9A9 | LA HVDLDP RLA DPATRLLLRRAAAATWRMGFGA NHGLCH |
| UniRef90- Q05U57 |  |
| UniRef90 Q05U57 |  |
| UniRef90-U1KGR6 |  |
| UniRef90-10YPB4 |  |
| UniRef90_UPI0002F9CBD2 |  |
| UniRef90-C1ACH8 |  |
| UniRef90-E8ZV81 | LGKLLL K E Y Y H D DLIDD E DKLAF D S V L K T S G M H L S Y C H |
| UniRef90-L9KX79 | HVLMQAY K K K Y L R A CKFAE WCLI Y GA H |
| UniRef90-17M6F8 |  |
| UniRef90-F8CQG3 | LAHVDLDPRLEHPHTRLTLDRAAAAATWRLGL GW NHCACH |
| UniRef90-C7PTK0 |  |
| UniRef90_UPI00035D9EFA | $L$ VRHALGRSADLRLTTLDA ALLAHYDSARADKVQLGNLSLC |
| UniRef90-D2V6A5 | PI LLDDMYK IT K DEKYLD SAKKA GACMWK F GL L K K GL G L C H |
| UniRef90-U2SNY7 | LARLS G L S L L D S AVRRDID DAVSRARQQGL GERD GVCCC |
| UniRef90-A4FIK7 | SALVFAGRALDDDRLLALLAKEGARACMVLAP Q A WVVS Q C C |
| UniRef90_UPI000312E3D9 | T F L L R |
| UniRef90_UPI000312E3D9 | T F L L R |
| UniRef90-W4LIQ3 |  |
| UniRef90-W4LIQ3 |  |
| UniRef90-S4MFP2 | R A Q Q LA A L A L G D T A R R R A A E D TVA VI LT D P LR LTT D S T LC |
| UniRef90_A0A023CYI6 | R Y F Y L Y QETGEAKHLLEVVELLLDSIVAA GAYWNTVAQCC |
| UniRef90_UPI0003B4CB1F |  |
| UniRef90_U4TPL1 |  |
| UniRef90-I2MUB8 | WALLWDAA DALG DERTA A WA ATAFDYHLY GELPADRLGI CH |
| UniRef90-F3P6Z2 | LAARCRWLD L DERAAVSDELLLLTADGVEKYGLGGLDTFAVCH |
| UniRef90_C6JFU8 |  |
| UniRef90_UPI000468F7B9 | FSRAQIRRPFMSEKTYHEDIA A V VRRRLGEQQESLCLCC |
| UniRef90-E3H3Y3 | FVLA A A E E NLRDTRFAEAAVKVGDRTAARLA Q V E HPGYLD |
| UniRef90-Е3Н3Y3 | FVLA A A A ENLRDTRFAEAAVKVGDRTA ARLAQVEHPGYLD |
| UniRef90_A8J2N1 | FLWCKA HEVFGDAEYLAAAARAGEVVWQLGLLRRKGHGLCH |
| UniRef90_UPI0003685D9E | Y SLLR A G QVL N D HLI GEEGLLAVFFTFSAT RESGIR D A GILLY |
| UniRef90-F0PQ25 | RALLHLIGNMLGRRDIVSCVEQQINLMGKTEFGLECPTFCH |
| UniRef90-V7Z9T5 | LA HADLDPQLTHPRTREVLR |
| UniRef90_E3FSX0 | HFFVDLHQHTGEPEALRFAERALLFAMDRPTGWVTPGYAT |
| UniRef90_E3FSX0 | HFFVVDLHQHTGEPEALRRFAERALLFAMDRPT GWVTPGYAT |
| UniRef90-M1KTM3 | LSRLELKKDS K H P D I A EVAKKDLVKTVSNDFYDREQSLCH |
| UniRef90-M1UY33 | FLCAA TQRRYPHPNLSEEASLDAARVT WQEGLLRRKGPGLCCH |
| UniRef90_R9IHD9 |  |
| UniRef90-B8LCM4 | LLLVK A Y EVFEDVQFLDERAETVARSVMRRGLLDRKGVGGL C |
| UniRef90- H 8 H 3 N 6 |  |
| UniRef90_G8RHV4 | LAARIA MT RLA GQPPRTADDIERAAD CVEEHHWPVSTCTLCC |
| UniRef90-C0XTM9 | AEI SAA GCQPLEQQLNS SLVMHGED Y F D P QLG F N S GLLCH |
| UniRef90_T1JC93 | YVFLILLYRLT NEKKHLYRAQRFADFM |
| UniRef90-F5X0H1 |  |
| UniRef90-N2ANZ8 | YA Y L L L Y El DKKEEYL HLDAELHAKKSLVLLREDKS Y DLL G |
| UniRef90-N2ANZ8 | Y A Y L L L Y E I D K K E E Y L HL A EL H A K K S L V L L R E D K S Y DLL G |
| UniRef90_R5FRJ9 |  |
| UniRef90-B8L246 | $L A A A D L Y A R T G D P A Q L R D M R R A V A D A T A G K W G F S H T L C H$ |

UniRef90 UPIo00362BAC UniRet90_UPIOO035E418E UniRef90-UPIO0047B321F
UniRef90_T1ZE53
UniRef90_G8T709
UniRef90-U7FWFO
UniRef90-UPIO003DED3DC UniRef90-F2TYV1
UniRef90 UPIO003B3E405 UniRef90-B2IYS5
UniRef90-UPIO001CBCOD1 UniRef90 K1UVU2 UniRef90_UPI000468C9A2 UniRef90 ${ }^{-A 0 A 059 B 7 S 2 ~}$ UniRef90 K4AB73 UniRef90-UPIO0028895C5 UniRef90-F8EE54 UniRef90 C3X9L1
UniRef90 UPIO00467C24D UniRef90-A0YFH8 UniRef90_UPI00046A13D7 UniRef90_F7K9L6
UniRef90 A4FJJ9
UniRef90-Q01SQ5
UniRef90 G8PWX5
UniRet90-FOYG24 UniRef90 D2AWE3 UniRef90-A1ZZX7 UniRef90-UPIOOO2ECOA6E UniRef90 - J91P02 UniRef90-M3CDJ8
UniRef90-11PN92
UniRef90 G7HYH5 UniRef90-W4QL66 UniRef90-X6PG84 UniRef90_A0A022MN77
UniRef90 D2AQX6 UniRef90-UPIO004792543 UniRef90-M1MUG7 UniRef90 M1MUG7 UniRef90 B7QE43 UniRef90-A0A021 W9A9 UniRef90_Q05U57 UniRef90 Q05U57 UniRef90-U1KGR6 UniRef90-10YPB4 UniRef90 UPI0002F9CBD2 UniRef90 C 1 ACH 8 UniRef90-E8ZV81 UniRef90_L9KX79 UniRef90 17M6F8 UniRet90-F8CQG3 UniRet90_C7PTKO UniReigo UPIooo35D9EFA UniRef90_D2V6A5 UniRef90-U2SNY7 UniRe990 A4FIK7 UniRef90 UPI000312E3D9 UniRef90-UPI000312E3D9 UniRef90-W4LIQ3 UniRef90_W4LIQ3 UniRef90 S4MFP2 UniRef90-A0A023CYI6 UniRef90_UPIO003B4CB1F UniRef90 U4TPL1 UniRef90 l2MUB8 UniRef90-F3P6Z2 UniRef90_C6JFU8 UniRef90 UPIO00468F7B9 UniRef90-ЕЗНЗҮ3 UniRef90-ЕЗНЗҮ3 UniRef90 A8J2N1 UniRef90-UPI0003685D9E UniRef90-FOPQ25 UniRef90_V7Z9T5 UniRef90 E3FSXO UniRef90-E3FSX0 UniRef90-M1 KTM3 UniRef90-R91HD9 UniRef90-B8LCM4 UniRef90-H8H3N6 UniRef90 G8RHV4 UniRef90-C0XTM9
UniRef90
T1JC93 UniRef90 ${ }^{-}$F5XOH1 UniRef90-N2ANZ8 UniRef90-N2ANZ8 UniRef90-R5FR.J9 UniRef90 B8L246 UniRef90_J8GEJ7

GSSSLATTFQHLKQYAGYEGGVAFWENETEKYQDK\LHDD GSAGAGWLLRQLGADLADMAAACDALHLHEDAGGVVARDE GALGNLLALREVGKVDVRRYRDAVLSRLQERAPRSGLPEG GIAGEILFLELMLRI IRNNSNEKFYYRKKYSLISNSEDFG GLSGLGEVYLEACRVFQEQEWNERAAWITAQHLKKEHHEFG GNCGLIDMWLLLGEPQTAGHLASRMLQRHQSQLSWTDPGG GVGGNGLALLAMYRETGQP IYLHRARAFAHVGLKSQEQLV GTAGNGQAFLVLHQRTGEARWLDRARRFAMHA\|AQCAQQR

GYSGALILFESFYRDTHETAFLDADERLQRNTDWIKGKYN G TSGIISVYSSTYRRRKNPDFKDAAEFWYNELDKLYNDYD GISGNAYAFLSLYRLTGERIYEDRARAFASFLYHDANKHV GKAGMAYLLLDM
GYSSVINEI I SFYKETGDEDFTRRMDKD GASGVAQLYYRGYKLTGHESYYRAYLLWUDKTDALLDQDG GNMSRVHFLVSAGDRLDRPDLDDVAARKRFGHYILNTKA GDLSALTII RYYAKTMNNDQLESCINVFQQLFDRIKDNWE GDAG\|GDYALFLYHETSNQHYLDYALRTARELINTADSDQ GYCGLIPFLDDKVRNMGSQULVFILNKAAELHQKTKSYN GRAGALHLTSVLAHDTGDARLVAQLPRLA GDFGNLICLYDGYRHSDNPEMGRVREALDEVSRQFFEGPY GDAGNGYALLAAFRATGDVKWLHRACVFAETGDTDAMSHT GTAGLVELFVGLWAATGRQTHLEFAHELGVNLIGRATRHG GSAGFLNAFLSAWQVTGDQAFLDYAKRTALQLLTDGQPYG GTSSNUYMLLYLAAMTQNLKYKYYADEMHKFALDTPTLTD GLSGMGNALLDVWRFTGEPRYREAAWKVAEGVLDFRVDSA GVAGNAYT GNAGRLDFLLEASVVMNNDHLFHTARQKQKWVIEQKRVRG GVGGNGFTFLTMYRSFNRLRYLYQAFCFTSFLLNDSKYAT GAAGVLCVADALYRHAGLPAAGALAERLVRHLAARLPGGP GLPGDGEFLLDMADLTGDDRYHRWARDLAACLEILVPDAQ GLAGNTEALVDLWQGTGDDRWLRQAWELGDNLADWPTEYR GDSGTLLFLKYAADKLNQSKWKEFAMIAGKSFLSESKKYD GVAGNAYAFLRMYQLTRELKYLHRAAKLDRLCLQ GDLGAWELLDRADALGEAPRGLDREQVLASILTSDEDHG

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 R
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$\square$ TKK VQF DEFAKKHMNGVLQ $P A D R F R A V R D A V L P A L R$ $L R P Y P M D N \square N S$ L P


S S Y DY T LFKCAKYMQD EK LMNQC L N H D S L R Q Q V
S GVIFAVA ELYKFTKK DVYKTF EEVVDGIIADVK F A AVY P L LY SYSYTHNLK L L KAAES $\square A$ A HYMTSY


 D A NI A ALGVFF $\square K A T E$
 CGAGFVLREVYKKDARYEEGFQRTLKLMLNAADTRGE


 Y S V L Y P L Y H K Y K L E K K E E D
 A G V Y S A S NI Y PI LK HMDGSFRGKRYKRVLTQFIN SLES
$T G \square G A A C M E A A E Y D N K Y Y S L L I K D T R \square V E K V N I V F T K S D \square$ $L G T G W$ QTRSWLLLGDAGVLVFWWKTAPS E PVVLSALAEA I A GVA WVLADAAVALGEPH
 A GLAAAMAERS IVDERLLPSARRFHQVVVTQLGAGTPPPQ
 A GGGYVVYLLYY ETKD EKY Y L N Y A L DVVS

 F GYF YLL V I L S REGI L S K Q T I E K I Y Q F DT RIT F D RMYE GSEVLAAQLALRAA IDQDHS LVQKLCSYESTVNAA


 AS LIVYTYLLLYYK ITEDDSYLLIMAQKQADKMME P AL EFVLSRAGRAGGDVRDAVDRVVDARLAAARRRQESGA A GVA F SLDELGKAS GNYEQAALALLTEKDAASAKPVES GVI GS Q $\square W T R L V L L D W T R D A G E G L A R A E A D A D A D P E S A S A A$ G G G G


 M GAALLAMRLAPASPL A D

|  |  |
| :---: | :---: |
| UniRef90 UPIooo36 | VCAGPAGAIVPL |
|  | N |
|  | ELDAQDTHIDVLS GVAGLLVPLVGL |
|  |  |
| UniRe90 S9P4T1 | RSPLLFESADLFYGSGGFGLTNGFFFDRLGEE |
| UniRe |  |
| iRef90 |  |
| UniRet90_UPIO00381C4B5 |  |
| Unit | TAVA EDTAYDVI DGAAGYVLMCLL |
|  | GLGYSWSSFPGVVGDAGTVLFLCAL |
| 俍 | LDKKDY\ITCDITDGIS GLLI |
| UniRef | ENDD\\|CDYLLGSAGA\|NVFVNMFELTGNKKY近\S MS |
|  |  |
| UniRet90_UP10002F |  |
| Uni | A |
| UniRef90-DoL | GTAS |
| UniRef90- UPI | QETGAWSEQDG\\|VADSGTALLLLKLADKYEDTQAKSV |
| UniRef90-UPIod | EKESVESYDWNGGTASD |
| UniRef90-J8DB77 | KNDSYDTQFDVISGSAGLL |
| iRef90-T11120 |  |
|  |  |
|  | RNKDKHADFSI FSGALATGNYLLHAKRSAKNDLLAEIVEA |
| UniRe | HSFDASPKFELLDGVSGAILPL GLADATGEARWLAL |
|  |  |
| UiRet90-F4KX | WGQUN |
|  | A |
| iRet90 R 5 KH | S |
|  |  |
|  | Y |
| UPIOOO4724 | ADNQFHPLTGLAHGQTGY |
|  | NEDDHTVKADWVNGVSGLI QVLLNYYELTKRQHFLEKAEL |
| UniRet90_UP100040 |  |
|  | REEMSEDGCEVLYGRAGL |
| M1 | EKLPKDLPN |
| - | FEEKDTNYDWLSGlG |
| - |  |
| UniRe990 V7PWF6 | E |
| UniRet90_UP100 |  |
| UniRef90_UP10003648 |  |
|  |  |
| H0 | EANNGLPVRELMWGLPGSMLAALHMAEMTQEPRWR |
|  | APSLLCGVAGNMLVHA |
| -V9L | D EL |
|  |  |
| UniRet90-UPIooo34B8FC0 |  |
| UniRef90-TON5U9 | DFDFSKSEDDVI DGVA GLSLMGGNI Y EKENDDMLLELMEK |
|  | LEEDSCSODVG GKAGAAWVFLGM |
|  |  |
| UniRef90-W5W8F2 | - |
| UniRef90_W4WON5 |  |
|  | SHPLKHDSNDIYTGTAGIGLTNLFFWKETNNQ T |
|  | A |
|  |  |
|  | NLENPTLEALWAAPGTMLAASWFYDKTKKDEWRE |

 AENTEDPALELMWGAPGTMLAALALYRASGSARWADLYRA AENPTSWPAND MAGGLAGAALTHLHVGQLAGHRGRRGDGPY KAEDERGDDDPMYSSMGGVFYLAK YAALYPAGLRYDKEL SGFADGSPHDVISGTAGQLLYLSAMPRPDDRAVASGLMDV GEGYYWSTYPGIVVGTAGLLNAAEKLGREDWKEFAVKAGRY SADDGSDYWSGNFGILGLLLYLIWUIYEKTGREEYLLAAKF
 ${ }_{\mathrm{N}}^{\mathrm{N}} \mathrm{V}$ SSTDHTSGLA
SKDLDITSGLAGGLAVQLTVEEACSEN
GGSDEWLYGRSGYLYYL
VSFLECGSDELFVGRAGYLCAALVLKQKLAQEVLTPA
$V$ SFLECGSDELFVGRAGYLCAALVLKQKLAQEVLTPA
EENGRLFWYGGIIGEGGLILYLVDSYERYGDEYIQAAAKA EGNGAGGNDDGLEGVGGAVVPLLQQLADARWDDLAAQAGRC SDAFKDDGDDLLSGKAGVII AYLELYGVTDSR WTGFSGANHD DGAAGTVVYLLYASNHFKADEEWRTLAAE
 LDPYDTGQDQUSGAAGAGTGLLTHAQRARTAGREEEARAA NANLDDTNVDAMNGLASQLRAYAELAEYMEDGRPEVRPN EKNAALPGWELEYGLIGVGAYALEAGSSS CDRCLARV


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UniRef90_UPIO003/
UniRef90_S8P708
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 LQRAMHVFDTLKPGDQSSEQGDFFENNGDVYHGLAA HYFYEGI A
$\square Y N M V R K G \square H L C G \quad G \square G W K S V E N L P P$
AAD HLAARAEPAGAGLGWRHAGIPAPGPLTGLA ESGKNFFGQRREAGDGKYWYQGVDPAYFGAKDDYDDPNFP
 LLD HIEKSARVAGFPDSIAWKSDMASDP LAGLS $\square D \| L$
$F D R Q D W R D F T V K T G R V L L N K G D G K Q L S K N K D N D V K L S G F A$
 LLLDLDLTKDTQG FGDYYLSKRQVDSEGQVYYVGDND DYVGGPHGKFNT LAFAKQLLLDLDSEKITQG LAFAKQLLLDLDLEKDTQG CGWSFENPSDPNDDFYYYGYA
 IDAKADQGASRGDCW SRFKSGNP VARVVQA

AA IVDHDGARWPSPQF GRTVIRAFPETQRNADESDDMP

## CNWLITHAKRVNAEQWKWSMWPGAPTTMP

LMSTAVEVEGGALVW ETGAERARDGFLD AM AVEVEGGALVNGGKFWKLDD DSMLIGAERARLGGFS AADR IGAQDALPAPNGGKFWKLLDLSMDDFAKDTTFPNWS LERA INCGQHLLNHQVKVAGIPQAWNILQQGQHP GFF
 LSTV WDKEEVKLC GNC
GF A LVGVAKSSFDEFFWS DAVPHEVVQQEPKA AFGULDFGQA LVDDIVERGAAGAKEYAHELNGNGPPDMWSWHGKRYLGGA
 FADIL IRQKTEVFAD HELALKAGGKDLNE GQEKEGQMTWPTDNPDPEDSVMPNYF LY NVMNSDFEYGLTKAEKHFNNTFDSLYFKWHKQLY LGGA L ERTAVVDDRGARWSTAMFPEGDG KAPTDQNRVYFGFA $\begin{array}{rl}V D R L A Q Y D E V G G A F W & K\end{array}$



 $L K R A V K C G E H L L A Q P$ R $\$ GVEGRRSWAVLGAGLEADTGMS L EKSAKKQECGI GWUTE GGMPP

 $Y E D A A D M E K D L W K K G Q E T G N G Y G W R L K G T$
$F E Q D T K T M N V I D A T L Q K T V R R I L S T T Q P W S W H G K C Y A G M S$
$C H A$ LDRAVEAAGAVADVADQSDGGLLWRVPADFSSGAAHHGFA FVENAEYLITKLKEQSDENLDWQQDLYGKKVRYTGAG
LVRDSVIDTKCFSFLPAEELPKSGYAHQLLPKGALLIGEA GARALEA SFQRDESLGADDWTQTLYGERAQYLGPV LERAAEYAAADRAAAVPGANGPTWPDPATFDSQATHYGFA
 FLTRGRDMGNGMDCYTGVDPTYFGAGKD
TTAQAEEAPDGDRWYVMDTEAFGLGGSHGFFP YIDPNFP
IT HPSVVRPDSGLP
HPSVVRPDSGLP DELLYGRM ПS NKQFDH G GARLL LVD GGSAATVRACPPDPGDHDATTSHLGDA SELFK LCKRLSSDIVKYFITLYKNEGLWDP G GDMGYS FEDASKSTEMID TAA HKTVQRULRSKSPWTWHGKAYVGSA Q AAY $\triangle$ LDKKEPAPDGGYRWYVMPTETFPT $\square G K P G G Y F P G F E$
 F NSGQSND GFA
GMA SRPTPLEDRKLPGWWSAEGP GGRADISTGDSHGVDQVEYKGFKNPDLRPDAPETDYPNFAA
 LERATNCGRHLLAEHRVGPVGRRSWP

GAA
RLAAAAEECVRGLLAARAGRPRAEPQSSAADSEAAFTDGFA LRELLARVTRRVTRKWLRN
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UniRef90 UP10003 UniRef90-UPIOOO381C4B5 UniRef90-M3C3Y9 UniRet90-R5WDJ3 UniRef90-UPIOOO3B5D925 UniRef90-C3HC25 UniRef90-A5N300 UniRef90-UPIO002FD3757 UniRef90_UPIooo376AE03 UniRef90-DoLkS2 UniRef90-R2TJE8 UniRef90-UPIO002E93D1D UniRef90-UPI000471FE61 UniRef90-J8DB77 UniRef90-T11120 UniRef90-T11120 UniRef90-UPI0003F9AF43 UniRef90 AOAO23Y3W7 UniRef90-B3DPV7 UniRef90-F4KXF1 UniRef90-A5CSG0 UniRef90-R5KHS2
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UniRef90
W5W8F2
UniRef90_W4W0N5 UniRef90-UPIOOO4268C03 UniRef90-UPIO00415FD76 UniRef90-W9Y8M6 UniRef90_R4LB53 UniRef90-E1X5Y5 UniRef90-V8NHN6 UniRef90-C7Y3P4 UniRef90_S9QN33 UniRef90-UP1000360D1AD UniRef90-UPI000472BB64 UniRet90_BoRJ73 UniRef90-R7AJW5 UniRef90 R6QUA3 UniRef90-Q32NG8 UniRef90-UPIOO041F6209 UniRef90_UPIO00348F86F UniRef90-G2GV30 UniRef90-V9DDI5 UniRef90-UPIOOO3595B50 UniRef90_UPIO003595B50 UniRef90_R5JN16 UniRef90_UPIo004668539 UniRef90-R9MDW4 UniRef90-12NGK5 UniRef90-U5YK5 UniRef90-AoDLY9 UniRef90 ${ }^{-}$A0A024JU33 UniRet90-17BSS8 UniRef90-EODEP4 UniRef90-A4Z115 UniRef90-UPIOOO3A841CA UniRef90_S8P708

HG $\backslash A G \| \bar{V} L A L A A E L W R \prod T K D R S F D D A M \square G A M H Y E D L T F S H$ HGASGI GWALARLALATGDARAAETARA HGLASIDNFLAKAYNYDFDDADLKQKDQTCDSDACSFLIN HgVAGVGWALARLGLAAGDQ YGASGI ALLFKRALGEPPEPLVHALAREAASTSNDTFAYI YGASGI ALELKRALGEPPEPLVHALAREAASISNDTFAYI HGASGLGYFCLKLHQATGRQEGHLEAALRLLDFDLSSADW GIVVYLYALERARKQRQETQGQAELQ
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 LGPGGVAYTLLKLWEYTGERRFLEGANGGVDEYKHYSU D HGLSGUIPQDYRSFLITNNDEIVDKSVKKMDMLYDNF
$\mathrm{H} G$
H GH G
HGFV G A A M A Y G K I C C D C L G E K D K K Y I WY D R A L N F M S S T S M I GFS GMIY A S Y SLLFCIT GNEKHRDRVKKYLKLENRFF
 H GLLA GIDMHVLDMME LDKADEVEDVKA TL H Y II R H GI T G T C Q FL L Y C Y K M N V E K E K C L E L L T G AL N Y L S S N K T E H GL S GY L L S L K N V N L N I E R E D V Q N L I L E I E E K L I K S Y D S

H G
Y

H G

 HGNA G ILMPVVLVLWELDTKKKEYGWLAEK DWEYEESGVYR




 Y GRS GYLY ALLLY LNPQSVVDKEPAANVERETLMMELLKPS I D $H G L A G \square L G C L G T G Y K \square F P S S$

H
M
H

 H GI T A I I K V L S L V K H E NF K K E E L L L N $H G L A G V T H A L L C L D A A V G D P A A R A E A T A G L V V L$


 Y GA A G CGY I LA EVVYKHVA GNREVVKA PDLPLSEYDEAA K GA

 Y G T A G M S Y A L A K L Y E E T G D R D F L LEA A E K G A S Y L I S DA S P V HGTTGMMGWAL TLL GRATGTSRYAELAQE AFAFFEDALBDE $H G \square L G V$ Y F H L K D E Q G L L Q M L E S DQVT LD H L DK 】 HG G R A GVI H F L H A Y HR F T G D P A A GAA A R Q D L A E L
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HGFA GNVIP L LLLGWDWLLT GAQQAHVA DFVPKALEANAWR $H G V P G A L A L C S A A A C L G S A R G A L L A A E S A A A K C D L A B H$

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Y
Y 1 RGGREPHA
DRGRLTWP
PR
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Q GKT $\square$ T VP H
ASERGRFPSVI SA
KERTTFDPVQKGWLDLR


 ERTFDPSQNGWLDLLR WP TPMIPMVNDLWCYGSTGI G ERNWPTSSSV
GEVWNRGILVKG
GEVVNRGULVKG NPKGLV

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GNDSLL
L

DGRVWKDLREGKNAVSYWCHGTDGDG SPG $\square$ PYY $\square$ CGHPESESWLNDEPGSGPTARNGWCYGLP I

 NLS GWK F K
EGDNWLFPHSFPY LK
DVHYLGLLCHGAAGTI
EKDVTDNFKKKL
QP $\square$ GL
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SDVGATW
CGTRCPLMYQWYGEE
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TGAGARWAAG
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Y VRHKKFRSGNYPSSLLSNETDR
LVWWCHGAPGVI
RDDRVLYP EYVLVSKNDTPE $\begin{array}{ll}\text { SAHGINWAPRT } & \text { GARRSGAPLLVQHCHGAPGMV } \\ \text { DGGAAWWPVGG }\end{array}$ DGGAAWWPVG
TEENFDFPRSVSNKGVPLS MRAGKLLP H
KDRH
RNLKSQSPLMYEW

YREYYVGPAHGLAGIIY
 KGYE IN NTYYY DPRS LHQKEVLMPNWRAVLA WSNSDLNYS

S GNFP
K G
$K G Y M N \square A Y S E D R Y$ P
$P$ G C H GVA G S A

 YEDTLYDAKLCNWDDI RECDRYGEGKD MAAWCHGCGGUY
 Y Y QNGN $\square P S S$ AQNEKNL
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 Y S Y L L L Y Y $l$ D D K K E E HLL H L A E L H H A K K S L V L L R E D K S Y D L L G


 LAR LAAVKRNCANNDLVERDDDR LAAIDSDIKRMGNRDQNCLCH

 A AL HLA GRAT DNAAWLARATELALDE AARPA GVVDVGLCH
 RYFYQA Y LTTTKNK QY LTENFKQSVDGG SRSEGYWQVNNYCC

 Y A L L K A G L TV V D D Y L V A EAARE IL N V C LAA R R Y L T Y D G S M T Y LAAHADLYARTGSE QHLLRGLRRAVADA S GKWGFSHTVCH WA R NE E A R FFE DENGRAF P DK A DIDT A L L G N A D WD D D GV C H RLYYVLGN SYK K D R WKK A WDES I N T L L LK S P IP WN NVS QC C MA R A DAA ATLDRPDLLELLALVGARETAS DALPSDD SLCH


LS RLYYLLKCFD DA QVRKDLFSCLDNVLN AEMKEAGTCH L E I Y M A N Y G L A DP K RL E L S F T S P E Y V D P R T G G F D GP G L C H I LI A L A HP DLEE S LLSAARKAAELVYRRGFLRKGVGLCH LT T T K A A K VWSN NYKRQ FMMLF H A S Q I LDD N D D Y LDD LS HE V I K H F IT K K E II I D A S L L Y




 TTFAEA PIDSPDFDA LLLDAGRFTWSAGPLTKGSNLCH HQLLMAREVLKDEGWEEVLVKSLDYIIACRFDSGNYHFCH HQLLMAREVLGDE GWEEVLVVSLLDYI IACRFDSGNYHFCH

LA R A A WRSVD G G A GLEA ALGLMERSAPGASLNLCH L S R A I S K E Y L K E N DLDDR DI DLLA V S K T L E Y G F T S D N Q S L C H LS R L W C Y E KV T D S K WK K RLLKKDID RA Y QK T WK R D S WS L C H




 T F L V R L WQ H D G D DRWLE LL DQAARAV H GA RRHA GPGQCH NSLLKR YPQNDD VVVESLLVVKA GEVI WRA GPDLTK GDVGICH H M L M Q A Y T VFFK E D K Y LiK D A M E C S D V I WQR G L L R K G Y Gi C H Y S L L L S S E S I S D D K FVVDQA K K F L L S N N WK S DI R R D S LL I M C H
 Y SI L KA GNVLQN R DHLLR F GNEVLTTSFLNYNLPDQEANECH

 Y F L L
$\qquad$ QVFGEQ TVVHSLPERFKTKDRIVKANHDAEMSDFREGYVSDYRFFF QLLHGGSHTGQPHLTELAVSAARRCRAHAPRVAVTGQCC QAKYY L WK N GYK D S Y L L L E E I ML L C S E I D S L D DV S V V D Q S I C H
 Y V F L L L Y R L T G N S K Y i Y RA QR FA Q F L F T E E F KA G S Y S L Y E

 RAQQLAALALGDPVRRQAAEDTVVRTLSSPARDTAATLCH $R L F V L L N R L T K N Q K Y Q N F Y E E L I V R G I I A T G A Y W N C H S$ Q C C LAA HV DLDPRRFERPQTRDRLRRAAAATRQLGGGW NHCAC H

 $F L A A H L C D H D D T R A A G E S L L S A D R P G G L A P V D H L G L D S V C H$
 $V A V A L A A G G A V L S E A A T R A A K A A A A R T F E Q S G V V D V G L C H$

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

GYSGLYSLMRTFYQYTKETEYLENADFWHKKILDSNQNET

 G DLGLLEL LHRL R GLKGYEG PSAAEADAEDLLTDEQRG GAA G L A GV F D K L Y R L S N D P MLLA A A A N N WYA S I M K Y AK P T G
 GTS GNGYAF L K L Y R RTNDT DW LDDRARQFAMTAIDRSTRVAV
 GAPGAVFMFLAAFRAFPHERYGRFALVYRDLLKKVPTRQU.
$G L L G N A Q V A E R L R R A A S D G Q A R E A R D R V H R L V S G L G G P A P$ GSFGNDDCLLSVADKTKDLELLERVLTVDAECEKIIKNGD GNS GNLWWLNLADRMLGKERKER



$G L A G L G N V L L D A E Q F L A E K D Y R G Y A L K V A D S L N M F L G D Y L$ GMS GNLLI MKKY L R KY GNKKMKE QYEALCD CLLLFQLLDHPT $G I A G N A L A L D D E A E F Q H F \quad V A Y M A S E V L E N Q G W L D Q A G R$ GLA GDADFLLDLAEATGRERYRSWAED
GT D GNGFSSFL Q L N KR T GNEMWWLERARKFAMHCLS $\quad$ R GTAGNGYSF L S L Y H LTT QDCKFAEWCDDYGAH GCR $\square$ $G \square A S Q \square Y \square A N V L N K T Y D D L H F E K \| I T D F V V H A A N W K E K Y Q$ GTA GNAYAFLKLFERTGDDEWLARARSFAMHADQQSEAEA
 GAA GMLVL H S LTTS G GTTVVPSTRWAAND ALLVSRMLRSDD GTA GLLL NMY L GLLWAAF GEEHDLEYARRCAKF ALDDRVAPER GAA GMIEHFLSVYRLTDEDRFFAAAGAAVDTLLWNRHLPG GAAGNAYSFLALYNLTKDVKFLHRA
GAAGNAYSFLALYNLTKDVKFLHRA
 GLA G V GE F L L D TA T H T G D TAHRDAALGGVA GLILVVRSD D H T
 $G \square S G N A L A L D D D A E F$ EHFLARTTNDSLEALGWLKAAGR

GAAGMLEHFLNVHKLTGDDRYLSAAYDAAETAWNRHEPET
 GS L GI Y A L L GWAGLVALARAVAADSPTP GTAGILNLFDGLWDESGKKAYDRFTPLVTDLNTRLAGDLP

 GTLGSDEFLWEAADVLSRPDLRDTATQRLLAVAQTAR STG

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


UniRef90 F2DLS7 UniRef90 H1HV12 UniRef90_U2CUJ5 UniRef90_U5WZQ9 UniRef90 H1ZAV7 UniRef90-R5SF75 UniRef90-Q09150 UniRef90 U5WZ78 UniRef90- H8MUA4 UniRef90-UPI00037C7F51 UniRef90 UPI00037C7F51 UniRef90 R7AV02 UniRef90-Q4S0J8 UniRef90_UPI00035FEF3B UniRef90_D2JC98 UniRef90- D3Q613 UniRef90_UPI00037CE330 UniRef90_UPI000375C3FE UniRef90 A0A036X6A4 UniRef90_UPI0002F69FC8 UniRef90_UPI0003C16F0D UniRef90_B7GP22
UniRef90 E1MFEO UniRef90_UPI00030155E9 UniRef90-A0A014MR22 UniRef90 D7AZ99 UniRef90- S4XL39 UniRef90_A0A021 W8Z5 UniRef90_J7TEU9 UniRef90 C2XM84 UniRef90-A0A021W5V4 UniRef90_B2HRR3 UniRef90_UPI00037C8CB3 UniRef90 C4FFZ4 UniRef90-UPI00046611E5 UniRef90 H2JAUS UniRef90 UPI000365D36F UniRef90-UPI000376F506 UniRef90_UPI00037BCD75 UniRef90 R7YQU4 UniRef90-D1A2F7 UniRef90-W5XG61 UniRef90-A1ZMJ3 UniRef90 A0A029SV11 UniRef90-V4EZ66 UniRef90-P37609 UniRef90-R5JYK9 UniRef90-D9X2K UniRef90_A0A017T645 UniRef90 H1Z6W0 UniRef90 UPI000406D513 UniRef90-UPI0004779CA5 UniRef90-KOJUA5 UniRef90 E3BRX8 UniRef90-UPI0003B356C6 UniRef90-I1LS06 UniRef90-M2RBS6 UniRef90 E3H3YO UniRef90_G0S8R0 UniRef90-N2AFQ2 UniRef90_W9X0L3 UniRef90 U9VME1 UniRef90-A0A022M198 UniRef90-UPI00036F5EC2 UniRef90 UPI00041B450B UniRef90 C7PXG2 UniRef90_Q9L3F1 UniRef90_U1QG17 UniRef90 A0C467 UniRef90-W8EVN9 UniRef90-UPIO0036AE1D5 UniRef90_M5A0N0 UniRef90_B8PA55 UniRef90_C2VM05 UniRef90_G7J385 UniRef90_W0FGI9 UniRef90-C8XT94 UniRef90-UPI0003787D2A UniRef90 L7F038 UniRef90 UPI000468ADE5 UniRef90-UPI00044077C8 UniRef90_H2TCD1
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 ERTEA GIHWFEDPMHPEGETVMGEFSVYSGMPGPDLFLL $\begin{array}{rl}M D F Y & D G \\ G L Y & G \\ G & G \\ S & A \\ G & F \\ G & L \\ L & L\end{array}$
E LIE E I I L A $\square E$ QE $\square$ NHN F S D S S I E Y G R M G GA I F Y Y D D A S L Y A GA A G I A L L Y L


EADLR\|S GMDLSFYNGKAGMAVFLD
 PEPAPLYAGSAGIVLFFL $L V E R V L A Q L V S R A N R \| V D D P G V Y R G A A G L G L D$ $P M G A G L P T G Y T G V A C D L A$



P A GMDDL Y N G L A A G $\begin{aligned} & \text { Y }\end{aligned}$
$P A G \square S L Y D G V S G \square A L G L A$


KRAA LDDLKET V I E T WGLS GQQVR DFTLYCGVLGTAF LLF



WPVRPSDDTVDPQLYNGTAGVVPVLL NPLGVAHGALGVVYALD
LT NQTRR ILTEVPRTE QVGVDGC VYRGGAGIGL

 S VE Y E D D G N PASP GLS G GRLGAFLDG H PNDDRDTFYA G $\square A G L A P A L A$ $\square D D \square V A D A \square A H F D P D T F W P A H P P S F Y K G A A G V I W A L D$ D ALIA G A Q R V H R H R T R A P G V ET F L K A A $\square$ S L K D E VVVEVNWNDP TVVYT GLLLGTA FT C L DKHWKIVPLDESLYGGLSGIALFFL | 1 | $S$ | $V$ | $T$ | $Y$ | $G$ | $S$ | $A$ | $G$ | $I$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $Y$ | $A$ | $L$ | $Y$ |  |  |  |  |  |  |
| $N$ | $A$ | $H$ | $G$ | $A$ | $A$ | $G$ | $V$ | $L$ | $Y$ | $A$ |
| $L$ |  |  |  |  |  |  |  |  |  |  |

S Y G G I A GLAP P V LA
 LK N P Y H D

Y D G N P
ALLF D LD DPESPDDHRHALYEGAGGVLWTLR


ERTEEHERWLLDAVGRVERPPP $N V Y A G S A G V G M E L L$ ERTEEHERWLLDAVGRVERPPP GFYD GAA GI A YVLD | $G$ | $F$ | $Y$ | $D$ | $G$ | $A$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $G$ | $G$ | $D$ | $G$ | $A$ | $A$ |

UniRef90 F2DLS7 UniRef90－H1HV12 UniRef90－U2CUJ5 UniRef90－U5WZQ9
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UniRef90－E1MFEO
UniRef90－UPIOOO30155E9 UniRef90－A0A014MR22 UniRef90－D7AZ99 UniRef90－S4XL39 UniRef90－A0A021 W8Z5 UniRef90－J7TEU9 UniRef90－С2хм84 UniRef90－A0AO21 W5V4 UniRef90－B2HRR3 UniRef90－UPIO0037C8CB3 UniRef90－C4FFZ4 UniRef90－UPIO0046611E5 UniRef90－H2JAU5 UniRef90－UPI000365D36F UniRef90－UP1000376F506 UniRef90－UPIO0037BCD75 UniRef90－R7YQU4 UniRef90－D1A2F7 UniRef90－W5XG61 UniRet90＿A1ZMJ3 UniRef90 A0A029SV11 UniRef90－V4EZ66 UniRef90－P37609 UniRef90－R5JYK9 UniRef90＿D9X2K7 UniRef90＿A0A017T645 UniRef90－H1Z6W0 UniRee90 UPI000406D513 UniRef90－UPIooou779CA5 UniRef90－KOJUA5 UniRef90－E3BRX8 UniRef90－UPI0003B356C6 UniRef90－I1LSO6 UniRef90－M2RBS6 UniRef90－EЗНЗҮ0 UniRef90－GOS8RO UniRef90－N2AFQ2 UniRef90－W9X0L3 UniRef90－U9VME1 UniRef90－A0A022M198 UniRef90－UPIOOO36F5EC2 UniRef90－UPIO0041B450B UniRef90－C7PXG2 UniRef90－Q9L3F1 UniRef90－U1QG17 UniRef90＿A0C467 UniRef90＿W8EVN9 UniRef90－UPIO0036AE1D5 UniRef90－M5AONO UniRef90－B8PA55 UniRef90－С2VM05 UniRef90－G7J385 UniRef90－C8XT94 UniRef90－UP10003787D2A UniRef90－L7F038 UniRef90－UPIO00468ADE5 UniRef90＿UPIO0044077C8 UniRef90－H2TCD1 UniRef90－IOHPL8 UniRef90－C9RM72 UniRef90＿D9WM92 UniRef90＿UPI00047729FB UniRef90－C7Q6Y8 UniRef90－C7Q6Y8 UniRef90－UPI000421A144 UniRef90－UPI00047766D8 UniRef90＿UPIO0047766D8 UniRef90＿UPIOO047766D8


S $\square D \mathrm{DTR}$ RTLDPGVINYTNNYTKEDQGNFPVHQLGAFTGV EYYEFYPNINTKKILKLIYKNISKDFTNNEPQNYGFYVGL NLYQLTEDKEVLKTAKEALALICRDFRSDFTYQHGFYFGIU AAGRLDDEGRYRDLSAQAFSTTAEDLATESYETFGGYTGM HYYLHTDNPKFLELTGKYLNKCFLYLKESQDEYFSTYD ECYDILNDNDKKRVKETVLRHTDRNAYKQYSDNYSLYVGK


KSYRVTGNGND【S LCSE IVKAC DAASARSRDVTF $\square$ CGR QAAHTDENEEYAQAAYRVFDPDADVVFSEDMSFDTAFMGE QVSSR KPELTIAGRTVKDWARAYIGSTPSRGHNLRLGS AVISAGGSREFDGLFDRYTERCLESKQTVSSGQTGMFAGE YLQTVGADDSTFDVATHLAATLEQN RQDYSHHSPYPQQ


















 RLGhsaEAREGRADG RLGHSAEARELLDRA
RLGHSAEARELLDRA
80
YCGEYGECDLLEQEDFEYTESVTDGKQKAAFTDTG\｜LCGE
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UniRef90 F2DLS7 UniRef90－H1HV12 UniRef90－U2CUJ5 UniRef90－U5WZQ9
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UniRef90－E1MFEO
UniRef90＿UPlooo30155E9 UniRef90－AOAO14MR22 UniRef90－D7AZ99 UniRef90－S4XL39 UniRef90－A0A021 W8Z5 UniRet90＿J7TEU9 UniRef90 С2XM84 UniRef90－A0A021 W5V4 UniRef90－B2HRR3 UniRef90－UP100037C8CB3 UniRef90－C4FFZ4
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UniRef90 WoFGl9 UniRef90－C8XT94 UniRef90－UPIO003787D2A UniRef90－L7F038 UniRef90－UPIoo0468ADE5 UniRef90－UPIO0044077C8 UniRef90－H2TCD1 UniRef90 $10 \mathrm{HPL8}$ UniRef90－C9RM72 UniRef90－D9WM92 UniRef90＿UPI00047729FB UniRef90－C7Q6Y UniRef90－C7Q6Y8 UniRef90＿UPI000421A144 UniRef90－UPI00047766D8 UniRef90＿UPIO0047766D8 UniRef90＿UPIOOO47766D8


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TGLLFALCEAGRILREPGWVKAAQD GGAVYTLTHLAAL AQAGWTALLLARERGTEPSGLGAVDDAVLRWDADY AG TAWSMLEGG GESALLTACCLARPDARKADRLLEELI MGVLYTLKKLSKEVG

KDLDNWVNIEIDNVI MHAVSRIKN
GSRDWAWLVLHDLLGRPQLLANACACAAV
GSIAYALAVMAKCLED
AGI SWGLAELGRTEEAELWF
 LLSQUYPALMLDKSD\LTNSALQTMDRLERYVKDERLSKVG SSAUWVKAKLNKLKKSDLALVDMLDKNVKKAVKLGLLYVK $G G Q M W G W L L L R R L G G Q G P D P E A D Q R T Q S D A T L V P$ GAAVRTWLALGATSGR QSYRDALRHAERASDLLA GGAVYHLAHAYAVHGEWPGVMEVGLAALRRCDDQSTREA SDDIMALLADGAASAKDADMVTELCNYAAVATDEDASN TGMAVFIVAEAATLGD ETLLKIAEP AARPVLSRDTAT

 YGYLYTLCVLREEG GGVGSVIM IAADDVIGDP品YRKTIEEIVEY四DQTKVE AGlLFALSAAGRDLGE AK DSTRAAQGAVP
QTRSWLLGDAG ILLFTSWKTGVEPRLD LGMLITLNKI ESFFNLDTNNLDELDELRNIC GSUVYGFTVISTLLND RSLLSDALSAAELFSDDLIEA GSQUWCWLALDRLGLAADDEGDPVPDALFLARQLPAADAA F G

$P G \square A F A D A G A A E C L N D P R$ RKEAADLGNRTAER DAQA HGCG\｜GDERLAYEAVRCSVFAGEDSDTDRQNVKTFVRSVM GSVVYAYLLLYRLTGR
GNEVLAQLAI RAAMEQDPSLVQRILCSYEGVIND
SSYLFGELPLLLLQYKLSPGDDKANQ凹AESUHKND


TGTA TF LTTAGVPSPVGAELTGEERA
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TtAAERTAEHLIERLR


## UniRef90 F2DLS7

 UniRef90-H1HV12 UniRefofo-U2CUJ5 UniRef90-H1ZAV7 UniRef90-R5SF75 UniRef90-Q09150 UniRef90-U5WZ78 UniRef90-H8MUA4 UniRef90_UP100037C7F51 UniRef90-UPIO0037C7F51 UniRet90-R7AV02 UniRef90-Q4S0J8 UniRef90-UPIO0035FEF3B UniRef90-D2JC98 UniRef90-D3Q613 UniRef90-UPI00037CE330 UniRef90-UPIO00375C3FE UniRef90-A0A036X6A4 UniRef90-UP10002F69FC8 UniRef90-UPIOOO3C16FOD UniRef90- ${ }^{-1}$ GPP22UniRef90-E1MFEO
UniRef90-UPI00030155E9 UniRef90-A0A014MR22 UniRef90-D7AZ99 UniRef90-S4XL39 UniRef90-A0A021 W8Z5 UniRet90_J7TEU9 UniRef90 С2XM84 UniRef90-A0AO21 W5V4 UniRef90_B2HRR3 UniRef90-UP100037C8CB3 UniRef90-C4FFZ4 UniRef90-UPIO0046611E5 UniRef90-H2JAU5 UniRet90_UPIO00365D36F UniRef90-UP1000376F506
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UniRef90 M2RBS6 UniRef90-ЕЗНЗҮ0 UniRef90-GOS8R0 UniRef90-N2AFQ2 UniRef90 W9XOL3 UniRef90-U9VME1
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## RQYD $\square T Y G N A G A \square L A F C N Q Y R \square T G Q K R S \square Q W A E Q$

 GRAVRGPGWVPVRRPGPQAEAGDG GGPGWTGDPAKEKПPTKDY QRGDGGIVLGLLRAATALG MNGHAGIIHLLSNIYRKFN
DVINGAAGI GLGHLLLNEWDPREKARSIAC GLTPDADQFSYTEGAAGGLAAMQAVDHPDAAQLAKRYADE HTSEFHDLLTGPPGAITALLRLSEDDGHQEWTR RNKVNDYDYDLISGLSGLLCYLNKHDKKVIDDMA CLADY DEHVQKFEFDYISGLAGILHLIEKINKKVSNQIIKIIEAI K RWMT NAPDSSEYYDVI SMVPYDKNYDVISGSAGVLYGMRFRSDGLRLLSRQCRF SMVPYKNYDVSGSAGSI FLLANSLJPDDYQEAVNKLIDRQ EQLGPENTPEVISGUSGGIATMIASSGGDHSLDDAL
GRFAGDREDDVQGTAGAADALAALHRTRPDEALRLAAAT RDNRDNPAREALWGAPGTMLAALABPAGFRDKASVLDV RDNRDNPAREALWGAPGTMLAALFLHEATGDERWAALIRD
WNSPT

 DLIETDRQLDVVGGSAGAILGLLRVYRDTGS
ESKLKFEKLDIFFGAAGIGVTALRLFHVLKCE KANRFTYRMDYLAGASSITLYLRIWELLRDDDDLIQLSQL SAVVNQKDISLFSGLSGVLAVILAHYKNKHFSDLKVNLLA EAVHTSEFHDLLTGPPGAVTALLRLSEDDGDHEWTRIAAS QDSILDVAGGAAGLVVPLLALAERTGDDRWRGVAQSAGTL ELGGGLAGTVLAVLSVAAVHPGSDALDVARQ
PCDNPDLTIGRTGVLLSCALALEHFRKSSHDDALRP KNDLKHHNYDLLHGLIGKLLILGRAHRTMPNPETKAAIER KGRLEPYDYDMVNGFSGDTNYLLLEQEFFSVELNQTGNYL RQLRNDDNLDVIGGLAG|LGVLIMLDDSSRVTELTQKLSEG EQGDYWGHQTGLDGDPGVILFLDEAAEKYQDKKAKELALR SVPPGKDPLDVISGAGAMSCUTAGGPHANAAVTALTSM
 SEGP DRQLDVIGGSAGGLLGLLRLYRDTSREELVEAKEV SEGPNPDDLVVGTAGAIVPLLLLAERTGDDQWVDLAAH

NPSQWDVLLGASGQG|YQNFKI PAA E ELLYGRVGFGWACLFLNKHLGGTVPSNYTAV
EHPSPDY【TGQVGAAALLLGYDLADDREALLGVLDR QDMDAVSEYELLYGRAGTLYLLRMVRTW AAEEQDTSYDLLSGNAGWLVVLLKLYQETKEEAYLSYAVR

TGGSDEWLYGRSGYLYFLLKLYQETEEAYLLARCG
SQPVRELMWGMAGSMLAAYFMHQWTQAPRWQEITKA PVTGPVPDVVHGTAGAGALARTGDERFRERMARCAEG DGVRWGVLFELMGGNAGDGLGALAAGDADEAVRALEPY NHPLLLECADLEHGVSGFGLAWMKTGQSEFLKTALDVGTF D S P

VSTSSYDTLAGHSAVIVYFGCYEQDUFSRETLSSIGE


SEP RDDGG
SEPRKDNGFDVLGGSAGGLYAGVKFY YELVPKYKLQALVGD
EEQTNNMDMDYVSGKAGVKLLISAYRESKNN ENGGLA ARQAPCESLDLTLGRSGVLLGSAFLLNADKGCKYLDAAP

 MCLTRRHDVTFLCGDTGPLAVAAVVYHRDGGARWRSLAEA WASEADLMADGSYAFFFAYVYRKTKDKKYLIEAAKKVVAF
GPDAGP GPDALPPDDYVSGMAGTLAVCMALYGRAESADEKRAVEE PLVMATNPWSVGYGAAGVVRALHRITGEVPEPVRDWMRRS PLVMATNPWSVGYGAAGVVRALHRITGEVPEPVRDWMRRS

RPEEGRYRAGLMHGFSGPALFFLRLYEHTG
RPEEGRYRAGLMHGFSGPALFFLRLYEHTG
UniRef90 F2DLS7 UniRef90-H1HV12 UniRef90-U2CUJ5 UniRef90-U5WZQ9 UniRef90_R5SF75 UniRef90_Q09150 UniRef90-U5WZ78 UniRef90-H8MUA4 UniRef90_UPI00037C7F51 UniRef90_UPI00037C7F51 UniRef90-R7AV02 UniRef90-Q4SOJ8
UniRef90_UPI00035FEF3B UniRef90_D2JC98 UniRef90-D3Q613 UniRef90_UPI00037CE330 UniRef90_UPI000375C3FE UniRef90-A0A036X6A4 UniRef90_UPI0002F69FC8 UniRef90_UPI0003C16FOD UniRef90-B7GP22
UniRef90 E1MFE0
UniRef90_UPI00030155E9 UniRef90-A0A014MR22 UniRef90_D7AZ99 UniRef90_S4XL39 UniRef90_A0A021 W8Z5 UniRef90_J7TEU9 UniRef90 C2XM84 UniRef90-A0A021W5V4 UniRef90_B2HRR3 UniRef90_UPI00037C8CB3 UniRef90_C4FFZ4
UniRef90_UPI00046611E5 UniRef90-H2JAU5 UniRef90 UPI000365D36F UniRef90_UPI000376F506 UniRef90_UPI00037BCD75 UniRef90-R7YQU4 UniRef90-D1A2F7 UniRef90-W5XG61 UniRef90-A1ZMJ3
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UniRef90_UPI00041B450B
UniRef90-C7PXG2
UniRef90_Q9L3F1
UniRef90_U1QG17
UniRef90_AOC467
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UniRef90-M5AON0
UniRef90-B8PA55
UniRef90_C2VM05
UniRef90-G7J385
UniRef90_C8XT94
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UniRef90-H2TCD1
UniRef90_10HPL8
UniRef90-C9RM72
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UniRef90_UPI000421A144
UniRef90_UPI00047766D8
UniRef90_UPIO0047766D8
UniRef90_UPIO0047766

 LDRAARCGEHLLRQPRDGSAGRRSWSGQGSGSDDLNGMS 1 VKAVIKDK IILNEEEVYWNSPTFNNSVYLGLS AKY F E ELLKQYDSNNNY DYWGKEE LEETAEPTAQGLRWPMPPNYGRLYGDPRAFPRGVYTLGVA
 AAELLLETGGKDQDGEDWWEAKRYPERCGGGAA D S E QR SDE $\square H L S G H H R V W A P V R Q E E E E A D P A H V L L L R D G$

CLEALGEPGAV
$L V T A V E L G V R$ RNGLSAAT FDPAEEAEVPGRDTTLGVS
TAASIGEHMRGLATLTPAGA
FNFKEYNNLQSLPFY DKNQKNAGDGPTAWWPGQLDTVGAS EY $\square \mathrm{NSEGEMDNLSHS}$ LK E K $\quad$ K T Q K D K S L N S
EKESEQCIDSQLLR WHS SVVK DESKVPDE
$C E L L A T S N F H A F G S L S A T S G Q D S V A Q K T T T$
S IDKILSAAQVTADGAFWPAQDS
LAKAATEVDGGTGARLLDHVEEPSGSWWEQS
SAAALWE SWTHDEALGVWLWE QDGYGRRVRVLGAA
SAAALWE SREDSWTHDEA LGVWWWEQDLYGRRMVRYLGAA
YIKQAKEKDNFVFWGNEQSN

LESKVRVDEQGTYWLTAG $\operatorname{CHADP\square G}$ EK K $\square$ NND C S S G G
LARAI RCGEHLLLRQPRVGPHGRRTWHR QVPGSCDLNGMA LE QA ID 1 A D QMLQLRRI $\square A E D A Y K N I L V N M D T I S T T P$ T $V S D L C H Q \square \quad$ SNNQVNTENS $\quad \square G F G$ I GEHMRDRATLTPAGTGDGPAAWWPGQLD ADRLGGAS $L V E R A V V E D T E H G \quad R A A R W P T A L F P Q G D G \quad G F A$ AASKLLDQLGGLDRLDARRPAKAGAGPASGPLSGFRPGMA


 VVQK】LEKYKKDGFWDENDP

 GGDY $\square E T Y R E E T P Y G \square K C D T K P L \quad Y G S D C P N$ | $L V D S F Q G G A S G$ |  |
| :--- | :--- |
| $G A R A L A A$ | $S A D D D G G V H \square W T Q N W L G P V L A Q S G F G$ | TSDSSIIDTDDS $\quad$ YYWTFPSAQLGQEVRVK LLNTVCFNEDGNAFWNK DSKPNVS LIA LTRAIKCGDHLLERHRGDGKGD WDAQGNGNDALNGMS $\begin{array}{ll}A G R A & V A D A V V T G \\ L V K A & K K D K S G Y S W F D D S H Q R A H W P A P N W P G G I G \\ V & G F A \\ V & G\end{array}$ I INRLMVMQHKDGSWKTGSPSTDMKRFKV VGFS $\vee V D E V D K N G R A D G R K G R C P D M F E W Y G E K Y W$ WHNK GAA $V A D V I A R G Q V G A R A Y V K E Y G E A G A P P L M W S W H N K R Y D G G A$

$H A D D I D A G R V E E W W S H S$ VSGCDDLDGPAIVEVENAMLGNAPNWKWRGKRYLGAA AGELLWEMETGCGWLCASEKAPL FEEGSKASEMIDDATIRKTVQRILASKQPWTWHGKAYLGAA QTAL LLAAATDGPSGPRWTVPSEDGPAARPVVHH LTAEPTQGGGVT W
LT SVAKWDENGPY W
CAEHVLIAN
LSPDGRRFGYA
FCD $\quad$ LS SWGVKGEYFSLNSFKDDDMKRNFNYASFA QLDLTSHDFNLCKMIILNCGGEGDMKCKFY

 QAARLLSELEDTPQGPGWTQDEYGAKDRFDGPV | VVRRGWLGAS VYAEELDAETQQRAPRDMWSWHGKRYLGAA |
| :--- |
| $L K V A E N L G D Y V V N M Q T H N E F V Y W K A H D T L N L D E S L K G F V$ |
| $K$ | $L K V A E N L G D Y I V N N M Q T H N E F V Y W K A H D T L N L E D S L K G F V$

$I D D A V A G G R A G A S D Q K D C P L M Y R W H G T R Y M G A$

 TDQL $\square$ DA GUTQSVESVDKRDMEA GEDGAEAYKRYYWHDKFY LGA G LQRAPETDECINRLLQLHQAVVKGSGNLPNELLYGRVGYLL AVARLQA TLIADPETGTPVWEQDLYGRRVRWLGAG
 TARLSESVRAGLARAAPVADGHRLQS APSLAKIPPGLYTAWTLHDIGETEWSREAASWPDMPASAA
 LATATECARRLLAGDFTEPDALPEQLLAFEPSGVGDTAY AERALRRELEACKWTQKDSTLQVDEGWRVLPY

UniRef90 F2DLS7 UniRef90-H1HV12 UniRef90-U2CUJ5 UniRef90-U5WZQ9
UniRef90-H1ZAV7 UniRef90-R5SF75 UniRef90-Q09150 UniRef90-U5WZ78 UniRef90-H8MUA4 UniRef90_UPIO0037C7F51 UniRef90_UPI00037C7F51 UniRef90-R7AV02 UniRef90-Q4SOJ8 UniRef90-UPIOOO35FEF3B UniRet90-D2JC98 UniRef90-D3Q613 UniRef90-UPI00037CE330 UniRef90-UPI000375C3FE UniRef90-A0A036X6A4
UniRef90_UPIOOO2F69FC8 UniRef90-UPI0003C16FOD UniRef90 B7GP22
UniRef90-E1MFEO
UniRef90-UPIOOO30155E9 UniRef90-A0A014MR22 UniRef90-D7AZ99 UniRef90-S4XL39 UniRef90-AOA021 W8Z5 UniRet90_J7TEU9 UniRef90-С2хм84 UniRef90-AOAO21 W5V4 UniRef90-B2HRR3 UniRef90-UP100037C8CB3 UniRef90-C4FFZ4
UniRef90_UPI00046611E5 UniRef90-H2JAU5 UniRef90-UPI000365D36F UniRef90_UPIO00376F506 UniRef90-UP100037BCD75 UniRef90-R7YQU4 UniRef90-D1A2F7 UniRef90-W5XG61 UniRef90-A1ZMJ3 UniRef90-A0A029SV11 UniRef90-V4EZ66 UniRef90-P37609 UniRef90-B5JYK9 UniRef90-D9X2K7
UniRef90 A0A017T UniRef90-A0AO17T6
UniRef90-H1Z6W0 UniRef90-UPI000406D513 UniRet90-UPIOOO4779CA5 UniRef90-KOJUA5 UniRef90-E3BRX8 UniRef90_UPI0003B356C6 UniRef90-I1LSOO6
UniRef90 M2RBS6 UniRef90-ЕЗНЗҮ0 UniRef90-GOS8RO UniRef90-N2AFQ2 UniRef90-W9X0L3 UniRe990_O9VME1
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UniRet90_C2VM05 UniRef90-G7J385 UniRef90_WOFG19 UniRef90_C8XT94
UniRef90 UPIO003 UniRef90-L7F038 UniRef90-UPIIO00468ADE5 UniRef90-UP100044077C8 UniRef90-H2TCD1 UniRef90-IOHPL8 UniRef90-C9RM72 UniRef90-D9WM92 UniRef90-UPIO0047729FB UniRef90-C7Q6Y8 UniRef90-C7Q6Y8 UniRef90-UPI000421A144 UniRef90-UP1000047766D8 UniRef90_UPIOO047766D8

YGLAGIMHVLMHTELLKLDEQDDVKNTLRYM

H GA A GYA Y A LA S LA EA T G I DE FA DA A A E C I A F
 Y GA A GCGY I LA S V Y E Q T HQ E E Y LDD A K K A A Q Y
HGNAGDEDSLLYLAGK DNSRDAKEMYEDAKKFDDKQKDD
HGAAGFAYALAALAAATGREDFALLASECVAF
HGMPGGLALLGALHAHGDARERVGALLEGGFAWMASVAGP
HGLAGAGLTSLHFWRRTGDDGFADRVRACADELAHRVTY
HGLAGAGLTSLHFWRRTG DDGFADRVRACADELAHRVTY HGGSGYLLCFERLSDCEGGQGGRGDMDKDRKHEER Y $A G G A G T A F L L A R L Y G Q T G E S R F L E A A G R G A G E V R E V S V V T$ HGIS GY
HGEGGVVEFLRHHHRLAPSEESRRRDNTRVAVFAEQVRRF RGYQGI AWAL GQYGVPGDKYREAA
HGATG| GWALSQL
 HGLSGIILLALASCQEVDKE
YGRMGYLSSLVFVNEQFGQEKDPKQYDQQDCNTVLISGEN H GASGI AAALAVGGKASYRVEECAEMIGAALEWERRHFDF HGVAGVLHALATLPDRPGH RVDAALGVLTDRLESFYVP HGASGFALALARAAELTGEDHHYRLCEEALRDFERHGLD HGWAGNLYALWRAHALLLSPEQRSQLRARTLEGLGRLATD



 GLE GI SVA LWRLYAAVGDTEFAD DAQK $\square$ WEKAMAKHK

 $G L A G I V H F L R D H H A A T G E T A T E A A L H K G C D T$
GWS GLLCY GARLRWHNATGTPPP EADDAVQT RDEQQLELDAQV




 HGAAGFAYALSSLAAASGRTEFADVAMECMAFESRSFA


 H GI SAS SI F AL SRWNRQMPSSERAQHAVNILL ERLREF



HGFASNLVVPLLDVGRSLLSSDEEFAEDAAKAMATVVQTAMVT




 GFA G NVIP L LL G WD W LTAAA QQADVAEF VP KALEAANA WH






UniRef90 F2DLS7
UniRef90－H1HV12 UniRef90－U2CUJ5 UniRef90－U5WZQ9
UniRef90 H1ZAV7 UniRef90－R5SF75 UniRef90－Q09150 UniRef90＿U5WZ78 UniRef90 H8MUA4 UniRef90－UPIO0037C7F51 UniRef90－UPI00037C7F51 UniRef90 R7AV02 UniRef90－Q4SOJ8 UniRef90＿UPI00035FEF3B UniRef90＿D2JC98 UniRef90 D30613 UniRef90＿UPI00037CE330 UniRef90－UPI000375C3FE UniRef90－A0A036X6A4 UniRef90＿UPI0002F69FC8 UniRef90＿UPIOOO3C16F0D UniRef90 B7GP22
UniRef90 E1MFEO
UniRef90－UPIO0030155E9 UniRef90－A0A014MR22 UniRef90－D7AZ99 UniRef90－ S 4 XL39 UniRef90－A0A021 W8Z5 UniRef90＿J7TEU9 UniRef90 С2XM84 UniRef90－A0A021 W5V4 UniRef90＿B2HRR3 UniRef90－UPIO0037C8CB3 UniRef90 C4FFZ4
UniRef90＿UPIOOO46611E5 UniRef90 H2JAUS UniRef90 UPI000365D36F UniRef90－UP1000376F506 UniRef90－UPI00037BCD75 UniRef90－R7YQU4 UniRef90－D1A2F7 UniRef90－W5XG61 UniRef90－A1ZMJ3 UniRef90 A0A029SV11 UniRef90－V4EZ66 UniRef90－P37609 UniRef90＿R5JYK9 UniRef90－D9X2K7 UniRef90－A0A017T645 UniRef90－H1Z6W0 UniRef90 UPIO00406D513 UniRef90－UPIO004779CA5 UniRef90－KOJUA5 UniRef90－E3BRX8 UniRee90 UPI0003B356C6 UniRef90－I1LS06 UniRef90－M2RBS6 UniRef90 ЕЗНЗҮ0 UniRet90＿GOS8RO UniRef90－N2AFQ2 UniRet90＿W9X0L3 UniRef90－O9VME1
UniRef90 A0A022MI98 UniRef90＿UPIOOO36F5EC2 UniRef90 UPIOO041B450B UniRef90 C7PXG2 UniRef90－Q9L3F1 UniRef90＿U1QG17 UniRet90＿A0C467 UniRef90－W8EVN9 UniRef90－UPI00036AE1D5 UniRet90＿M5AONO UniRef90－B8PA55 UniRef90－C2VM05 UniRef90－G7J385 UniRet90＿WOFG19 UniRef90－C8XT94 UniRef90－UPI0003787D2A UniRef90－L7F038 UniRef90－UPI000468ADE5 UniRef90＿UPIO0044077C8 UniRef90－H2TCD1

EGEKVLTPFCLIPNPEQ
ENSLYSLENRNWVDLRY
ENANFDPHRHAWADLDSNG
Y品DGY FPHYF
YLDGYFPHTFIQDE QN $\square A D Y S E D G E A A L V K Y N D T Y$ YTLYYLGVCOGPGV Q WHSEDGEAALLV
ENSSYDPGRHNWPDLRGDEDMR GE HPGFPHYDHGDEPVVDARALLEGGFAWM DDGGPRWS TPATFDSRLAGVTH DDGGPRWSIPATFDSRLAGVTH LGFAHGSAGUA ELADRGEKGLEREVLPSWCHG GG GGAGSRHPEGEGAGALVPRRSRYWLSVRVVRACVGPAGVA SKYRN【IKY $\square$ NK DENEKTALYNEDNLKNDGYWCNGKLGMI VEA SAKPSAVPLCTSWCRGMAGMG
 K S
LSKKRNYASRSDRDLESKEM
RNYILPYSSSDYTMYEWNQE
D P
WEDLREESQSKEOSEOLQAWCHNMPFY
QERNWSTNSA WEDLREESQSKEGGFSTGWCHGAAGIA
TGRGN WPDL RHEVVPRGSFMDAWCHGAAGGG
 DN LQRREHGWVDNRNFSHSANWCHGATGVL KKE EFKDLNFSWCRG\｜LGIL AEGAFAFQDSDFDAAAGNWRDVRMKDTVNPTWCNGGVG1 G DRQRGGWPAL $\quad$ DVDGGKGWPAQWCHGAPGI G PEGALCWLAG

A QPVRSSRERGKWCRGTVG
KRFSNK

## LIQ FTSDELSNKH

HEESTYEPEDPGWRDMRKPDRPTEAA FQENLYRPEAGAWLDGREA

WPS S
$\qquad$ $\square Y D D$
$A M D P$
$R L Y$
LLEHDPPLLEAARAVSAKPMHASCHGAPGVV YQKGLRWPYSIAHE HSSTGWCNGHAGWV EGNHIHVNLQNYFS VHQAVEPSTRHTLSWCNGGLGVC DK LWPGKDYTSNILDLDLNY NTPTRMAWCYGTPGTA LCGKNGFPGR
SKGRRGWTDSRKVD
NNAKYYSWYNGVVGVV
SSYSSWCHGASGQA SSYSSQWCHGASGQA
GFFDAEERNWHTDDRPTSF
YQGFRTFPYADFPEYEE P
PEYEEK
VTNPKRPDA D


DN ANSKWPDL SRKLLNQGWLDIRNSSHSANWCHGSTGVL ARGAAAYEETWYSAERGAWMDPREPDTVAAAWCHGADGVG SEGKEAGDSG
DRGKLTWP VS
SGNYPVSEDKAGHGSKASWRPS
DNGESWESQDSGQGSRNGV
DGN WPSSEEAASLGGGKG
KERN
SGNFPSS
DNNGANWPAVY GLPPGSDKLVQFCHGGPGAV
DNNGANWPAVY
DRGALRWTAGGLVPHSDPHRP
QGGYロSFPEE
ADRDAAQSVRPTAPLA
KEEKEDYVEKF DWKDMRAHHIVHS
STESNSSLLPYSSGNLQAGLSVG
TLDYLTKIVNKQGNIPPSAEDLQSTEDF
NGLN F
DEGGFVVPHTDPDSTRDVEPLTYTWCHGPTGTSYGFSALE
保 GPRSKREKRLIFICQHCHGAPGMV ASRHMHYAAGGAATSRTAKRVSVEDGDALVQWCHGAPGVL HSGNYPSSEGNPRDKL
DSYKWCW
SGRAARW
DDGALH
AWN $\square R Q S G S T A D A N A F M P G W C N G S A G F V$
DDGGFVVPHTDPPSKREVEPVTVEGWRSLPYMCHEGGAGVA
YANNLHW
DGH
QNHSPLMYEWYGEQYMPSA
QRGAWNWHPMIDAARVAGR【PLLQD
DENGALIPPYLYNPEKGRFHD
DERDGDWPREW
AGRGLLWP
DGQGLHWP
DGQGLHWP
VKAG
GYYDSTCHGPVGTT

QAGLFNGRAAKSAEALTDE凸ASPSGRPMGASWCQGMSGVA
QAGLFNGRAGLSYLLHTGFAPGDEVVRHLRHFGWHAVP

$L S R I K E T G C K S ~ P D A Y G D F A V R M D E G D I D A G A Y W N V V C M C C$ L S R L K L I S L K E Y S G N N EVAAR D IAAS S I LIF S N WK R S GMC LLC H
 YA I S S N A L R L L E DE N F D E R I N E L L I S T S K R R L N K N D S S I L Y
 I S R LIK IL L S I Q E E S L L V V D I Q H A I K Q II L I G F DM N N F T LIC H
 Y F L L V A GRYA GRSDWTE LA V RTGRHLLLTRRVVSNGAA L C S Y FLLVAGRYA GRSDWTELAVRTGRHLLTRRVSENGAALCS LGRCLLDQETDPAE Y LF A KA P LI IN K KP Q Y LD T C DRCGE LVVWQK GLLLKK GP Gll C H $R M F Q E L H R V T G D R G H L E W V E R D A G G G V R S G V P W N T A C Q C C$
 $R V V L A A G R Q L G D S S L V D L A V E C A D G C L R W L P Q L A T A G Q C C$ LARYSAGAPADLDAYLKSA $\square M L R R A T D P A S R D R W T D V L R R A A Q A S W P A G M G T A N H T A C H$ KTFYESSSLITKNKMYQSIDNQFFENDNDEYKDLDSPSDCH Q A R DE VLDK Y F E S K D DE E QLDKP L V S K F E K E L D D DIP D D T L C H Y F $\quad$ L $\quad$ M $F L S L M L K P V$ IAR DID DI A E S LL N A A I A P L K VNIGGLDDNSICH MA LQ A A A RYM



 I A ELEEIMNILDNEKH SSVVEALEPLLLNMDMSGNDGLCH
 AVA C R L F ETTTDSKF YR DACK S I A L L G C S I K Y A A G S GLL L WACTAC GRRFFDDAGKPFPEFSSVKQQIDDSCDWVDDSLCH
 I MLRRRAT DLAASRERWT DVL RRAAAQASWPAGMGAANHTACH $L A A W D L Y V R T G B P T H L D R A L D A A A A T W R T G F G W$ D Y T L C C H




 RFF Y T L Y R A T G E A V Y H D F S D DE L C K GV L A T G A L L WN NVV Y C C


 L A I S R L I WY K L N K K Y K I L N E DN H S V N D I I D K GL S I K N F S L C H LTFMKA YEVLGASNYKE IATEVLCY HPFH\|TSNYCAFGN L T LVKA AKVI D N
I S RHLDPLTDEFQNALLDALKRGGALVYERGLLRKGVGLCH

 L A L R S L R P H F P Q S K I D S A I NA A Q E D T WA R GLLLTM Q P C L C M TA L A T L P Q GM N E ECDDR L L E Q G GE L T WR A G P L K K G S N L C H


 MA RL DWK K F GF DK K F A E D DE E E N E E L L N K K F Q S K N Y S L C H LLS QLLDPDVDPTRA QVLADLAVVAAHGADRNDFGMDDNSIICH
 F ALL Q T S Q A L A E E T L H T A A L A V LT S A A YRE CRVP DA SLI Y
 S T T T D S S L D A A A L R D G G R R F A WA A G P L
 IT L S K A A QV I H
QA RLK L S P E CVV K K E L N L L I K R F K N L L N Q M MNE D S LC H $F$ LWTLAH QMLDDRPEYGSLLAEAAADDAWQTDSPI GN LGC VVL DLLYRAHRDDERFRTAAS GLLASSSSSQFYVQS GLF N HAGVTEVSGLDVGEDRQRCMTSILTSRRDRPGFWDNDGRCC

 LA R L A DAP RTP E WDE L L LAA A GEAAVWLA G PLLN K G P S L C C H

 T F L L S S L F C V
 TALLHAAAAYNDDTYLSLATR DADACTQVAPRAWVTS QCC Y A

UniRef90 F2DLS7 UniRef90-H1HV12 UniRefofo-U2CUJ5 UniRet90-U5WZQ9 UniRef90-H1ZAV7 UniRef90-Q09150 UniRef90-U5WZ78 UniRef90-H8MUA4 UniRef90_UPlooo37C7F51 UniRef90-UPI00037C7F51 UniRef90-R7AV02 UniRef90-Q4SOJ8 UniRef90_UPI00035FEF3B UniRef90_D2JC98 UniRef90-D30613 UniRef90_UPI00037CE330 UniRef90 UPIOOO375C3FE UniRef90 A0A036X6A4 UniRef90_UPI0002F69FC8 UniRef90_UP10003C16F0D UniRef90 B7GP22
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GTASLLNTDTGFYDATGERKYAEDAERSGRYLLGQFTDLG GMAGNYWUMKQYEKVFGVDYFDTWNNFIGEVLDWNKMLPQ GTLGSVEFLSEAGTVLGRDELRDLAARHLAGVDSAAATRG GCSGLYYLYKDLYNRTNNEIYLEYLYWFECITFEKFNEAD GAAGMLEHFLHVHKLTGNSVYLDAAQHKVRNWYTSWNRHE GVGGNLDALTYYNNLYGGEELEEEDNSEYRRMLSFGGKYG GTAGTALLFTRLFHATGRPDFEEAAVRWYEHTLADRQPGQ GGSGMGTLVRLWQATGERSFGDVALDAATAVYRRRWHPA GNIGNLLMVKELAK RQSGLEQRALRFEQLTEKGVLLAG GVAGSAYVFLLLYRLTGNRKYLYRAQRRETLLLEAEFLFT GTFGILNLLISLSKLIDDEVIRKTRDRLLEEITKKINYQI GVAGI GELFCDL V/SHDDRFLAAAESAATQLL ILNADA GELGAVEPLLWLTERDHQAGEAVRRRRRAGLVLAAVQQYG GELGTWELQRHMAQGVASPGLDPGEWLNARLLTGMEDFG GTGGILKTIEELYKYSSDDKWRLKSQQUYANVKENSLSRG GAAGNAYGFLALYKLTQDCKFAEWCLDYGKHGCR GTVGNLLIQRAKGMYSDDEFNALLSATLSRAERDGWRFG GDLGNDVVRRDAQELSERAAAVEARRLAEKLLADTGSRYA GDLGLVAALLAAGPALGEPRVARLVADRVLAGDVRPGVPM GAAGLVWFGRRAHDDHGLPEGLECVRRWTGWLAERFNPAG GTDGNGAALLEDYRTQDASWLDRARAFAMWALAQSEAEH GTAGDAEMYLDMARFPRWEALAATRRLLAGAMLFPVERAG GVSGNLLTLVHTQNFFDENNINYNLKKFVRENFYKI HLYG GNDAVTEYFLKKYEYSNNEEDLKMANRHNRENRFMLRYAK GDFSLWELLVRASALDPQGAATDFDEATAEVVSADEEHTR


 GLGGDUDFLIDMSEQYPDNKYISEVLHYKKNQHVLLNE GELGTWELQRHAMAHGVAPAGLDQ EWLDARLLTGMEDFG GDLGSWELLDTLLQGAPEHLRAHVRDHLNALLLTALETYG GDLGNLEFLDAAAERRNDTGTALRLRRAVAALCARGRTHG GLAGDGELFLDLCQVTGDRTYAQWADRVADLILARAGGSP GSAGKAYALMDMYNVSKDPRWLKRAEQVGMDAI GLAGVTFI YDLIGKNYSSERLTRFAEEARQQU CWNEPFLGG GSIGNLVI LDSUGGYSVDUENRDATESSSYLLDK STETK GILGNLLILNTYQENFDNKNDNYSVCNYGLNKGWDCGEGT GAAGLLHYEISLYUTEQDAQYLELAKTCGETAFARADKDG GTAGNAFAFLKLFARTADALWLDRARAFAMHADAQSEADA GVCGNLLSLSYCIRNDTPDNLKTFIUNSGQKNGWMCGYGT GSLGVVEFLHEASIALGRDELNAAAKRLMGSVVEDARSRG GDLGTWELLTAALAAGVAPDGLDRAGGDAMVLGSLEANG GLI GLGEIYLEAF RVFGDEE WLLRAKAVDNGUCYWLDGTQ
GVAGSVYALLAVSD\LERPAQDEWLMRAARADEEKGEMRT GDLGTLDILEWVVNHVPDGPDAEKIRD LTNGTSLLQETL GIFGNALTLARGRDHFLAVAVPENVARLKAQDPTVFERAD GLAGKYMILCEAAKALGRDELRKESAKIRRRDLELERVPQ GIAGNALALDDDARFHHF LACMSTEGLESVGWLKEAGR GTGGNGYAFLKLFDRTGNQLWLDRARAFAMHAIEQYRLSQ GVAGNAELLLDLADATGEDRHRGRAHDAVEAVLSRTALRG GTAGVLA ADRIAEQGDSPGFARTLADLASRATRDADGAR GLAGLGNLLLDYHMLMGDSDALDVAKA A RGMSLFKVQR GLSGI GNMLI DVAGRDGDERYREAARAVVAQLLVRVRDHP GRAGVLDGLD PSPVSADFDSTQIRLVEDIDYTLD YQVTKNEKLKKYAFQFLQYKQKFHDRYN GASGNSLIFFKYLYQTMQRPAFQEAAAYWHQQAHHLSQQPG GTAGVGDMLLDAYQDGMGDELLPQAQRMATGACWRFDEHR GVAGSVYALLAVADSVQEPAGYWLARAAHLALERKGDMRV GLMGKLDFLLELRGMLERNEKQUVMKVTNNFLNNFADEDF

GNGS IIT TMKMDYMYTQDTEWNS LDNDWDSNDSYSTPKDG GFAGQAYGLLNMYKHTGHTAWLYAQAQTQRAARSILDMAS GRAGMLAHLTAVSPVRPTSDDPLVAAQDDADSWHAMEYQG GTAGVGDVLLRGARVMGDALVERAVRDGAGARWRFVEYRQ GNTGLDDMLLTLGTHLAANQGRKVLVQKQLTNNYQLMDDP GDT GNAWLLLSARSHKGTAEGDTALSYSLAFFLKAMELPT GAAGNAYTFLALYRQTQDPKHLYRA
GTAGNALALLRLAERSGDDRWRERGLAMLAHAAAQVETAR GAPGVLAHFVKTAEVLNDESYDEQARRWFAAWTRKLPGFV GDLASAD LAEAERLVGDVAEDDYPRLFAEVVEQYEKRAD gLAGRAYALLAHHARTDDPIWRARARLLAGHAAARVREAA GAAGMGTALIRFCRVTGDPRLRAVLDQLMRS RVAG GAAGMGTAAI RFCRVTGDPRLRAVLDQQMRS RVAG GLAGDGEALIDVAQATDDNTYWAHAEQUAELLIRSGGPHE

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UniRef90 E1MFE0
UniRef90_UPI00030155E9 UniRef90_A0A014MR22 UniRef90 D7AZ99 UniRef90- S4XL39 UniRef90_A0A021W8Z5 UniRef90_J7TEU9 UniRef90 C2XM84 UniRef90_A0A021W5V4 UniRef90_B2HRR3 UniRef90_UPI00037C8CB3 UniRef90-C4FFZ4 UniRef90_UPI00046611E5 UniRef90_H2JAU5 UniRef90 UPI000365D36F UniRef90_UPI000376F506 UniRef90_UPI00037BCD75 UniRef90 R7YQU4 UniRef90 D1A2F7 UniRef90_W5XG61 UniRef90_A1ZMJ3 UniRef90 A0A029SV11 UniRef90-V4EZ66 UniRef90_P37609 UniRef90 R5JYK9 UniRef90-D9X2K7 UniRef90_A0A017T645 UniRef90_H1Z6W0 UniRef90 UPIO00406D513 UniRef90-UPI0004779CA5 UniRef90_KOJUA5 UniRef90_E3BRX8
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UniRef90 UPI000468ADE5 UniRef90_UPI00044077C8 UniRef90_H2TCD1
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EDARTGYYDGNAGEAMQLLEL
E V V S L GLLMNGlVGVGCVLL
$D Y R N P G M F Q G L A G V G Y T L L R R D D D$
K SATFSFYWGIGGIGGTLMK EGLATLPDLNELLLI
P D R S VG LYHGSGGCAAS L LALAA
NF D S Y GL M T G L A GlVVY SVSK Y L K S D
D Y R NPGMFRGLA GVGYTALR
GPG GYCF LQ F GA A G $\square A L A L L A G A T D Q E P D W D E C L L$

$E K Y$ S Y G MMD GL A G $\square G Y$ G C L K L S G K $\square R L P \quad E V L L L$
E EFKS GLFEGLS GTVCF LVDLLQPEQA
D R A D T GYMVGAA GI GAALLHLDDAALDPRRARRVILLPDNP E T GQF GLF $\quad$ G $\square S G I G Y T L L R T K D P$
P P A P P GWASGAAGVLDFLTRLRDLTP
$P Q C G P G L L T G L A G I G Y G L L R L G F T G R V P S \quad V L L L$
AVA GPGLLNGI A GI A Y QLL RMHP QCPLD
Y L D K N N F L T G S L G I Y Y S L D L Y H
Y K D $\square$ K G L F D GRA GV GS S Y L S
P D TP F S L F E GMA GTIMY F LAA D L L Q P M N A
GFLE GDLG TL AVRALEYTDSIAHLDAFF


$G V T$ T P G L M T G S A G I GY GLL R VAA P D RVP D
MI R DASFLEGDAGVALALL YAATGARPAWEQLVL
HRA GY S LLT GDA GLACY L LDC LDD G
GLAFP GF GT G GA GV A L VMDRYR
L Q N GYALF T G I S GI L Y A

QAFTPGLMTGLAGAIHALNRMH PDCDLASPLLL
D Y R N P GL F R GIIA GIGYAALR
TRMSFDYGTGSAGIAYFFHRLQN
$K \boxtimes C N M S V F L G P D G V A Y A M L R V Q N P D V P S$
N DENMSLMKG I S GYGHMLL R
$G F R D F G M Y T G L S G V G F D L L R S \square S P D L V P S \quad A L L L$

$T$ Q D S L G L M Y G L S G $\square G Y N L L$ R L A LDP ERVP S
SDDPSSLWCGEAGRAWT
E A P VF GWS $\square G T S$ G VVS F L R R L G D P A A P RLW
GQT GYS LYYK SM G GIVVMASDLTLPE
WDYMS GLLNGAA GYGLL L L S Y
E L E S $\square$ GI L Q G VS G I VLVLLN P Y S DE ELLWQR\|F

VDVK Y S F Y D G S T GI A T S L I E L
D THTNSLLVGTAGIVLHL
GRRRYALWTGDVGVACFLWECLHA
Y Y N G Y S YA Y G I S GI G L F L M H
SYESLGLF T GIIS GI I FA
$D Y L N V G L F R G L S G L G Y T L L R Q L D P$
$P T T G P S I M S G S G G I A Y Q L L X M H P D S D L P S \quad V L L L G D$
WLC GVGLM T G L A G I L Y GI I K $\square \mathrm{Y}$ Y D D N
LDP S P D F WS G NA GVL H F L L R F E HP DE $\square$
$P D R P Y S L Y E G V A G M C C A$
E D K S P S YMVG T S GVLS WLSRR $\square G G T R \square$
Y GRSYS LT T
E YYNAS LMA G $\square$ S GA A L A L C E A
D DQFVALYTGEAGRAWA
K T Y G Y P L WT G D LG L A V Y L WD
WE P Q T GWAMGNAG I ARELLR
DDHSADFSTGAAGI GLFLWRLRNMTSNFN FLLDELD G E Y S A S WA Y GVA GI L S F FRRLSRGGGP
A $I N S \square G F M V G E A G I Q Y T$
$E V N D G G F D E G D L G T \square A V R L A L E$
S DNPFS LMLGSVVGEMCAMMDFDNYKRMPGYE
A S A HY SLLF E GVP GY GLLA L L E Y E T D
NDEPTSWMQGAAGVA TF L L R L A A
GRGRYS LDW GDVGGA $\quad$ GY L WDC $\square T G E P$
P EK P Y S L Y E GVGGMCCA
$N P H K \square A L F T G L G S \square L Y F L Q R L E N D K$
DVT $\square K G L F D G \square C G \prod G W L Y \square$
GLR P D S L Y K GELLGVAL
$H L A F P G L A T G S A G V L L A L G S A L H T G P A$
E SPPPGWMQGAAGI AAYLFRLA
S Y P D $\quad$ S LIF T GLLS G I GY Q F L R L S Q N K N M P S
P D H P L S L F E GLLG G AVGCA WL D A
A H H GP S L WT G DLLGVA WVLAEALAG
ETY TGGYDGAAGVGTALLY L
NK Y A Y S L L V G QA G L A WS L L R HLD P VS Y P S
$H \quad R P D S L H K G E V G V A L L V G E L D T \quad$ D R WARMPL
1 S V S P A L F N GMA GMANVALD YA
1 SVVPA L F N GMA GMANV A L D Y A
AP TFPGWATGTAGVLTTLLRRLTTRTPSRLWH

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K L I RHFDELI LDN NPD N QRED
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QS NRPWPPYD $\square$ Y TGRVGPA $\square A \Delta A$
 NSVGI A YGAAGVLWALS

$G L S N G Y P G V A L F D A$
SFYF GATGMI WALIN
SKYS G S GFA GVSLALL
 EKLLIDYPDSNLYHGTAGLFVFFY
ENHWGLK WK F H H G G Y Y Y GP T S S

$\square$ T WD $\square$ S Q S F K G P WR Y Y DEASMYA GAS G VK F Y D
GGLNVAT GAA GVLELAMA
$\square D \square Y T G S V G P A M A L A$

WPVQPSADNVDHMLYWGTPG VVAML

R R Q LDEASLTRLVTDHPPASVKPGG GLFKGPVSVAYVFL KQAKKIANKLINNLDCNEKNKWSDESLYSGLSGI SVLFL YRSVDYPNSYYTGSVG| LRGIL

PMDDSVYDGLAGMA $\underset{G P A}{ }$
ENTTKKFNDYLYHYDFNELDEDDGLFEGKLGDVYYLT RHRSSKPSVY $\square$ GVGGHLL $L$ M Y W $D L Y G G A L G D A V F L A$
$\square K N S V D \square 1$ K K N CQRPT DASAYGNTYGGTPG\|ILTLL
 $\square E D L Q P V D D R Y W A V P M G A G L G D G Y C G V A V F L A$
 K Q $\square$ MAS S DR LI DQYPPHHVPPGG GGFYGPISVAFLFY MDDTIYKGIAGIKLAFL

NPDSYYSGSVG $\square L R C L L$
$\square G E \square V T D A \square A S \square D P V H F W P A H P A S F Y F G A T G M \square W A L D$ WEFHGLYTGPTSVAYLFY
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NPLSLAYGALGVAYVGH EPGDDPSQSALPLYHGAAGVIWALR GLY A GS SGUGQFF L GDPGПPVLCA EA V VDPVRAA QLNVPTSVDVYSGSSGLGL

HALALDHGAAGVLYAWH DLYK GLS GI GI $A$ LL

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ELDHHDGPP ${ }^{50}$ VIGKA DDGGARRTATHPASRTVSEA ${ }^{60}$ LLIYTGR ${ }^{80}$ GLARATGRQDFRDTALAVLDPLERGFADDLPSPPGAYGG\| KLAKSAETAQLLEHATKYI HQAKTLAAKKGKNSDSFLCGN HLVREGAASPGRCFA EFLPDTQRRNNRQMLESEAWRKA HRATDARAMGLDHAPRPEGPPAAGLYGE ESMAKAMTLFRAGRDHEPWLYGGV AAGRVLDHPAYRGLATQ $\square F S A \square A E G L D T R Q T A P Y S A Y T G S$ $R V A G Y V P A D L \square S S A V S R T S Q Q L T P P H A A S S V A F G G T S V G$ RLGKAAPD TIUSNSNNYGEYIDKLIKDI EEDVEVI CQKGDLEVSAYNG1
 QLGALTGAGRYTAFAREADAPVPGLLRSFAADTSGAFHGL YLK WVGATKASFDFSPILPRLI ENNRAEFAERDYSAHGSL $K S S C L E N S E W F Y A D A R E K Y D S V L R K L K D G M S F R A G L F N G T$
$R A A A A G A G A D V R D A V A E L T E W T R R G L T G D G T L L P G L H F G R$ RAAAAGAGADVRDAVAELTEWTRRGLTGDGTLLPGLHFGR
$R L Q Q V E D G E E A P R L A S G F Y E R A Y S R U S E T S H L R P G R L S P L$ HLNKLSPDNSYKQILQILEHEVFA RANYASELESAEYGT
 ALYQVTGDRRYKQFTLDTVQHTRAAVDGRRSDTPTAVTGE RLDHQVKAFSNKDVGLDFRRLASEQULPHGPDUPLFPGRL
ELAKDSGDQRYपDTAVAAGHELAARALAKEPQLDKAFSR ETG SGAMPDYEDWL $\quad$ KRALAPVSGTPLGFYDGL EFRRALGDDGAPSAARDSFREAMGLLRSASNVGPWLYRGA QAAHTLGNAEYAQAAHRVLDPDARLFSIPPETCDGVSGGE KSYQLANNTNDLSLCLALVDACNS ASFSSRDVTFLCGR EGQRHFGDDRYGDAAARGATAMAAA TDCEGSSLYTGT

VLQQMYPDMVIEGHALAYDKHAQDNDTSYPGPSVGKC G ELYMRTEEKIYFKYYQMLI HTADEQAKNTGFE SAFTGW DLDEILESDEYVTKIVKDIKDDIAQTIELQDENTGAYNGD YLGEITQNYHYTRLAQVTIKTLQQQLDADSTKFIGAFSGW


YTNKTYEDEKNTSTDYE ILNLVLENDSSQKKFПPC\|LSGD HLAVTLPE LDQPCAAPTVEVVLFPLTHADSSAHTSFLE AYAQCSGAQWARELALRGAQPTRRAANADSPQRDGGFVGV
 HCTGAPVDPGHVRWLVDAVGREPRR VLQQIYSDLLVEDWSAAYLHHAQEHTASYAGPSPGKC GI QLGALTGDPRYAELIARRAVRPLPALLAAFHAEPAGAFQG QVSARLPDLIVSQPALHWAQCYISGSRGHNDRGGSHGCGV TLHNDYPDLKLDTWSAAYDEQAQANLKKFPAPSPSKC GVV LSSRNFGMSSDKVILDRUNKSLVSFSDYTLURESFYEGT

LLEKSGYKD $\square P \square N K \square \square S D \square E \square D \square D T \square \square N Y G D T S \square G A Y N G Z$
YLRQVGADSVPFDFGPVLPRLDENSRAEFAKRNYSAHG RLSSVYPDQSLLDWAKEYLDLGSRVDHKSPTPSHC RCAVQHKALGMTEDVQALLHKAKALLDAAGPPNPSHTSGR RLERQYPSQDYFQLASDLIMQTPSDIEQDDGRLSPLASEV LLGKYFKDQKSYNLSKELFEKDSNDLNSESFDKGGAYSGU MLIFDATKEDRYFDMYKSVMKSADDFANKCPDVVSAFEGC EGSTVLEWEDGПHYAVPWLHRLNRLISTDDAF $\square$ APERGLA

QLGKVDPAVR
AGLFTGT
YLHEAGAAPGARRTTEQFDQWI NQRQDDSHSSSVGLYNGLL RLDNCDNKEGLYNRVNYYDQELLNS $\square K$ LLNSTNNDSLCYGF QLHDVTGEDQYLQEAKDA AEYILNTYEGVPGWGTSVYVGP
A LAAVGEPSRARRTADAVARALWARTAGAGRRHPGLYGGL ELLHHAHRPRVRAAVTALARWTAEQ

SGNLPPGLYTGR SDDELNPMLYSGT H DTGQVPE AMDQWFTRRLQQTTELLPGLLLNGA KYYEDNKNLKDMSRLKKILSSHYSNTNSSKEKDLSFFNGE ESGYEAPEGAD EWLLAAVGRSSTNQPGFFDGL

ELVRHLHRPGVPAAVAALADWTARQ HRTLPAGLYCGR QLASLTGESRYADTARAALDALHQRVDDLGPLGSGAFAGL RTQGIEGEQWFRERA Y LNSUQKNEDTENFTKGLTRDVRYY KEPVENTVFKGG AAGRHRGRSDWLNLAAKALLP RHRAADGTASLAQAFG QLARATGDSSYLKDARAGGDYILNELTKVNYNYTFY IGGF

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AGVAYALATAKRLLGHDSGAGSG
 LGGGW QTRSWLLGDAGILTFDWKDSLSDEILLHLADTV AGVGTALLAAGRALDDPSLCAAAEAR GRF A HVGWLADQLANESGADISGLHRIDDMDM, AGMLFALAAAGRLLGQPBQVADWVRAAQLADPDVLDLVA PATLLLQAKLRASSGQDVQALEKHWASCVQLLEAAVQLAS AGIAWVL
ASFL
$R Y Y N D F Y K F G R \square$
LAHAAVRACTTKDLDHVRSFLVSLP EEFYSRVTMLIEQUD TNVANLCGMLNSEFGTYSTFLEQLDNKVEENVMDVVKSNLD LGDLGSLLLVMRLQPDAAVASQDYDRA
VGVAMAAYEVFSREECH
SGTA AALLDAAMLLGDG SCKDTAAFAAYHFDK

NKKFYDYL TQATEEAG GVAHRALLVIAGDHGEPDRELLDFGTVHQLPR
ANERLT QLAIRAAMEKDPSEAKELCSYEKVI LSPLYPLLL AGGCVGLGSVAYGLGAVGSLLDEPABVDDAVACTEYVTD

YAFTTGLSGVAQALDWDNQEHHESVFDDADTK RVLNGDV TGVAHVLHRLGRHQEALDUADICLREDWERLGDN
AQAGWVAIQLARQHGTEASGLAPDDIVLQ
AGMALSLASAA EYLDDPRLKEAATMDGDRVAAA AGVCALGAVAAKHAGN QELLDYY LDSQFKEIKKLS



SGFGVMAHETKKHQLLGDED DNEПSDTNDYLLDKAD TG GTAALVLAQHLRTPSGSTNQREKAATRVIANAVKTAT GAQUYGLVTLARLSGESA LVSEADALAATUELDAUAA
APSFMR LAYCEQFNLRPEADLTPDPEDFKVFSQAVERAT HGVALTLDRLGHP
TDDILALLAIGAASSKDADMAANLCDYSAEVIDDPETEN SGLSYALARLSTLLGD PEFRSWLDRSLLLVGRTA SDERLAFEAVRAALTKDGSHVRDVATVEQVAE
SGLLWTHYKAGE SNDLMSLLALYAVTAGDSDTVKDLCDHAAVMLE
FGVLWSLHCHYSAAGDNGGLLSQLPSYKETSK HSVLWS HCHYSAAGDNGGL ERLKSLANKM AGIAWTLDRLGHRETA GGQLLALMAICATNTAPSAASAGREDASRLLEGLD ASAVAGLGHAMQLEPRLRPVAEAARDRLVQWTRQAVV AQYLRYYAY $\square Y K N N N F S V L L K R \square H Y L$

SLLF GDLGSLLLMMRLRPDAVVADQTYDRA ANEDLARDAGSAAHEQETSFVEELCAY DSPLDSSPGLAFVKILYSLYAPGGSADSQDLAADERAVHV GQSFMRRLAYCEQLNLQQEADTSPDPEDFRIFNQAVERAT SGMLWTLYKAGEDSQNEEWMRVSKISWKFVAEEDIIDGDF SQDSSPHRLYHDACGIDLLTALVGSRLGLANVNESVKRYA

AGFVWVLAEFARRDPRYGRS पRSVTGRपA ERTPGPPE AGNAWCAYE\|GE
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AGTLVGLRDGSTVQPALRRAADRDDAGLLGSAADRAPTPG $T G V Q L F L A E A E A G S G E G P G E A P G T D A D G R S A R P A L P D R$ AGIVPVLLEAWRHFG DDSYADALRAARGLA AGIVPVLLEAWRHFG

DDSYADTALRAARGLA
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GGTADDGSGDQTGGAAGRGTYLLDAREAGADGDETRAAAF RTLDGCTESDLVGGAAGALAVLLSLHRNCADARERERTAR AQADGYDADEVLVGRAGYLHGAYWLNQVEPKPDENTVIND AKNTDDPSDELMWGAPGTMLVALEVYRSTNWRDLYCAGAG TATLPFVSPDLYNGAAGRLRFHLWLWREEHDDAALRAGAH LEFPDDRDVDLPFGLLGLGVYLSHPVARVRADLTDALLTV
 QNIDSDKSLDILDGTAGAALSIIASNEIDFDNRLRTLS SRQADPFPTDLFYGRAGALYLLRHWVPQSAPLVEYWIVLL SN S LDPLKGVFGGARFLTNFYHKTLSEKLVYI ERE V PANTVEGWAGGLAAMLAVHAE EANSSLPDRELMWGMPGSMLACLHMHE
A VP VD WP DDYSLYSGLISGIGMALLSLGA
$K$ QGTVL
G GDEAL
SWD RGKSSLIALLVTIYE
SECEMLYGRAGYLSSLLWIVKQLSAERLVDVERV
NGSSGGSNEWLYGRSGYLYLLRLARSG
$M K D L S N D D S D Y$ SGMSGVIVLLQQUNUVYPYKISSKTADLD EFLATDDTYDVVGGLAGTTLGFAGLYDRRPDDAVLDAARR HGDGMMGTDEVLYGRAGVLWVVLSVRAHKYDERATGLLDRL
EDTIMADLLYEITSGQSGMMHAALALYRKTGENCWKEVFVKK TDQKQDGSWSGQDGQVGMMHALLALYRKTGENCWKEVFVK TAFPDDDDTDLESGLLSGMGLALAHLGEATGESALRDAAAR MEQVEHPMPGYLDNQVGAATLLLGYNLATNRAALLEVLEK FDGTRWGEDELLYGRAGFLWACVFLNKHLGEGTIPSTTTR FDGTRWGEFELLLGNAGVALGAKYCGD GTENELLYGRAGYLYLLRMVKASFMDDPKT
DDDTKKASADYISGRSGUVRLLSLIQMTFGDNYMSK ALIVQDQQLDII AGAAGCI ASLLSLYQVFPDDLI LDDVEH VDLDVSTADFLSSFTNEVVALVRNSDGKDGNLNQALDK TSPLRYPDYDVISGGAGLALAGVKRGE
$\square$ HVQNNVFDY乌GGSMGLYYFLTKD【KKADIT
HEALDDDGCEVLYGRAGLLYALLFLRKHSGGDADSDVLEQ DRKLDVVHGSAGLILALLALDAAPHASPENRAAR ERTANDEALDVMLGCAGTLLALLALHERRP SANAQGRTP LGHPSDGGDELIFGRAGLLWALLTLKKHVGTRATEDLTTH DLATGLPGIGLTLLHFAASTGDSALA
 EDLQNPKQWDALLGASSTGIYQNFKINPTFKEIIEQYADY
 ERWLTNAALDLYEGATGLGGALDMLA ESNAGLRIAMTIGAR
 NGFKNDEKLDVLDGTAGVILTLUEGKGLDLSDCLNNRVIK EANDS DP ПRELMWGMPGSMLACLHMHDMTREARWR NSSKDDGSNEWLYGRAGWL Y LLRLCRAAFQQSGTKAETT AKEDDSETNEILYGRAGLLYALCELRSRSGVQPDQRLVQL
 SAIVDDECVDWINGLSGGMALMC IEQFRSGGLNLAHGAAGVLYALDRWPDHEDWLVRRATAPA DEQRSGGLNLAHGAAGVLYALDRWPDHEDWLVRRATAPAA AHPQKTASPYLFDGMAGLGMTCLKFHQWTRQPHYDQQAEA EGNLDHPARELMWGAPGTMLDASFLHERFGDARWAELFRR SSNVVKEEYDILQGVSSVARYLLSKEESTSEQEWKEILNY R


UniRef90 F8JTZ8

## UniRef90－UPIOOO34B155A <br> UniReffo－W5JDC8

UniRef90＿14Z1 Q0
UniRet90＿A0A017T279 UniRef90－UP100037537B6 UniRef90－D7C1P3 UniRef90－хомTG8 UniRef90＿S8FII9 UniRef90－E6PH38 UniRef90－UPIOOO2DDE181 UniRef90＿C9SC50 UniRef90－E3YTR1
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UniRef90－U1HDS8
UniRet90－R6P7C1
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 AARLAADTELHLLADTGPDGRATGH LCNVIVKRGRLY SLEASFAYDERVGCHDWTQULYGRSGQ
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LLDALRPDAHHP
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GYA
AALCAADGLDGLLRTHYPEHPQLGWLDGR DNTGTG VDDIMKRGRI GAREYQEEDASLRDPPDMWRWHATRYTGGA
 DEKLNKKQAFSSDYUEKEF DKDDEKEDFPFGY品DGGA AARLIAANPGGD MQAARLLSEDEDTELGP品WR QDLYGHHHRWLGPA LSKVYERCDCGLLAAAEDPAGVIWPTSQDMLSSKADFTLM RAVACAEAIVAAAEDHPAGVIWPVPATFDSN VTIILESGRVGATDYEDAYGDQDVLPLMWPWHNKYYAGAR LLSDI EDMN
CRNTVRDTADESHWREDHFH WEWYGKAYLGAA

## F

CGDALLDGR DDRVIDKTVDR\LSAKQPWVWHGKCYVGAA CGDALLDGRQGREDETYDGRQMWDLRVFSDRPLITGFA GDALIKGGLQGREDYLEEYGERNALPLMWHWHEDRYLGAV GATSLMD MVALKQVDEHGQSFYVGLDLLKFVGGDPEDSGGGKFNTGFP MVELCAERLGGPG SEDVPEDSGGDHPRAGLL HALDIVAGRVEENWWNVS SEARRADQSAGCR\｜IGVAA AVEVIKNGRQLAKKGGGSP的FEFYGEKYW GAA YLRTAEPTEHGVQW EHRPGAESRMHHFSHGTRGTA AKKLHGVAYALEALGRRQDALDVAELCRQSWEHDDLS Y AKKLHGVAYALEALGRRQDALDVAELCGRQSWEHLDLSLY
 LDNQAQCMDDG GWIQCPSGGKQPFP FEQSNKKFFTGYA LDELKIISEDFSSW SHLDRLGRGGHEGDPDSGWUQESNVGUA DHLDRLGSLRVGGHEGDPLSGWUQGGMDTGMA VDVVARGEAGAKAYADANTRQRVPADMWRWHGKRYGGGA L SRVRAACAHLLAQQQAHEPWRGAWMRSDSPVPQ SGLA LELALLGQRLLDRRVDVAEGFRAWAHAGASPMG ANTALQSIPQLVNAIIAGGKQGSRPLIMWQWMEGYYALGAM LQLITDTQEDVIDALLDSP REETAAEVVSRLADRFPPQAAGDAGADGGPSAGGGDPGA AMAE MANTNNGLGSPGKNGSPREDRRAKWDWHGTRYGGAV GYEQILNVDE GEDTADEVDE NTMASPRPWKWHGKAYVGAA LVISLQKNSITNGYSWFDEEHQDL LDSLAESTSRGCSW CGRLVAGAAGPGRDRPGGRR LVHDAC LALCSGDLSRLRHGWQEPSPDTAWNAG LVDDIIKRGKTGATYYQGDLSGKDKERMWMWHGKRYGGGA
LQAELLIR $\quad \square K D M Q S E K Q S T G F A$
LFKLLGAGDRVSSSADRAFSQTERQDRMKLESGTMFLGLA SGTRCGFYDGLHGVAYALDHLGRRQDCLREPLDGLDHSLA

TAVYRDGGAYW LAERVAES $\square A$ SGRFPRVAGIRSEAEDGLVRKSKGPAGLM LAATVHSGTAPEDPWTWVSPVPSQHHHGLWNTDVLQTDLY AARHLATATACRDQLINGTAKLTPPVIARAGDAALTGGLA CAERAAAAPLPAAGGFADGAAG $\square G W A L L R Y A G$

## VQRAL RDAEQLRAR <br> VIESICNNNDNQVNTCS LIWRPRRGQPV VGFG

GGRADMATGVALDLDRVLYKGYQNPVINPDFPDTHYPNFA
LA LLCDSPGLERLRAGNDUDP R RSAFNVGRDNTGLG


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UniRef90_C9SC50 UniRef90_E3YTR1 UniRef90_K0KA31 UniRef90_U1HDS8 UniRef90_R6P7C1 UniRef90-UPIO00299E237 UniRef90_C5GUK7 UniRef90_N2A7J8 UniRef90_C5KRU1 UniRef90_H6C283 UniRef90-UPI000420988E UniRef90 U1PQZ0 UniRef90_G7XSW7 UniRef90_Q12MS0 UniRef90_H3RNE1 UniRef90_UPI000369CE09 UniRef90_UPI0003467E7E UniRef90 IOUS31
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UniRef90 IOL741 UniRef90_UPI00046517C4 UniRef90 K2JZP9 UniRef90_A9FXN0 UniRef90_F5U6I1 UniRef90_UPI0003FF172F UniRef90_F9ECH5 UniRef90_UPI00030687BB UniRef90_UPI00037E6659 UniRef90_S5VJ16 UniRef90_S5VJ16 UniRef90_I1E011 UniRef90_Q75V17 UniRef90_UPIO004758837 UniRef90_IOUSF3 UniRef90_IOUSF3 UniRef90_E4N6S3 UniRef90_G2NC49
UniRef90_UPI0003467475 UniRef90_D9SSP8 UniRef90_K2JPU9 UniRef90_F5YK81 UniRef90_UPI00035EA39D UniRef90_C4RET2 UniRef90_C4RET2
UniRef90_I3TNC8

210
A Y H R $\square$ T G
220
230

H GTI 1 I A P HL L E Y A AVF GD

HGVSAVAPHALLESSHWFTATESGKFENCPSSMDTDERARGM
D Q A A GA
 HGAAGDADCLLDLAEASGETHFLEAARGAARWLTAQAVPA H GNA GLVS Y L A S A A M S G L P S Q D R A A A L L T E S L R WLLTR QR C

 HGSSG I L M A LYKVGK F G $\square$ D S S D F $\square Y K V L Q T E R E L$
 R GRA G VGWAMLRYARHA
HGYAGNMDPLLRRGWSW LEEEQRAS LT T $\square M P Q T L T R N A W R$



H
H GA G GVAFALARLGGGLTGADRFHEPVGDLVAYEADAY



 H GLA GI MHVLMDMEL
H A LA EIIGAAANRPDFTE LALAGGVADVVAR

H

HGAAGFASVLLELAHTTGKQEFQSAADKAINNYERRHFSPE HGNLGVEVALLCLAG NLERPEALQLGRKAKRFDDRAR
HGAA GVLTA A RPNRELADWLAA ESYR

F
H

## H

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\mathrm{H}
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## H

 $H G A G G I I T Q Q V L$ I

H GHA GA LAASAAMLCDLHSNR DRLESSVVSRLFSQFLS FRE HGASGAALLHDRLYERSGDPALLDRLAADALHRDLDRCVHG





 H GLS GECYSLMAWCL VNRQPTPEILQPALDFVEEKFVP



 HGAAGTAYLNALVYEVTGEQQY LDRAKE VVKFLSA DAQG H G NA G I G T ALLVAGVTTGRREYVEVGLAALQTD
H GA A GV A A A LTASVRRCGRTA EQEQA L RTLLCEWLRRQSFT $H G E A G V V S F L L$ EHSF LL DHDGATGAAEAAG $G L G A L L A$

GL GALLA | $G$ | $D$ | $A$ | $E$ | $L$ | $A$ | $V$ | $L$ | $A$ | $V$ | $E$ | $P$ | $Y$ | $L$ | $R$ | $T$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $R$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $G$ | $D$ | $A$ | $E$ | $L$ | $A$ | $V$ | $L$ | $A$ | $V$ | $E$ | $P$ | $Y$ | $L$ | $R$ | $T$ | $A$ |
| $L$ | $E$ | $R$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |




HGDAGVAHFLLAHAHATGDPLSDRHALRA
$R G P S G P A L L F D R L Y E A T R E H A F D D V A A E A D R R D L A K C E T D$ HGLIGGLYALLV
HGQSGMAVALASAFNATGQQ
YGAS GMCYALARLYEETRDRDFDDAAEKGANY LIRYLAA
H GVT GVVAA L RHAVE Y LDP D GERYS QALSN ACEWLAREVFV $N G L S G I$ ALLNLAE LAGRTGETALRDAADKATAAVVDREADD $N G L S G G A$
$H$
$H$
$H$

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| :---: | :---: |
|  |  |
| Ref90 UP100034B155A | GLLLAHGAAGAQDPRD |
| UniRef90－W5JDC8 UniRef90 142100 | YLLSLQTSSGNFPTRLLRKG |
| UniRef90－A0A | LADG SGRA |
| UP100037537 | D |
| UniRef90＿DC1 | DPAED |
| UniReef90 X0MT | GQSFVDARGURSWDGAGPEAAPPGGARR |
| UniRef90－S8 | QEPPGNWPSKAGRHEAKQEAQATDDRHEL |
| UniRef90－E6F | A D |
| iRet90－UP1000 |  |
| UniRef90－C9SC50 UniRef90－E3YTR1 |  |
| UniRef90－KOKA | GVAGRANLRADHALRQRLLDVGEADHSWCS GLS GAV |
| UniRef90－U1H5 | A |
| UniRef90＿R6P7C1 | ADNK ERPMYYVDHLLKN KPRTMLYL |
| UniRef90－UP10002991 | GNGRAVWP |
|  | UENGGDLPSSLPURSSSRYAS Y Y V |
| UniRef90＿N2ATJ8 UniRef90 C5KRU1 | P |
| UniRef90－H6C |  |
| UniRef90＿UPIO00420988E UniRef90－U1PQZ0 | P KLS NQYKWC |
| UniRef90－G7XSW7 | RSSPLV |
| Ret90＿Q12M |  |
| UniRef90 H3RN | HGKGLLLPHYHPDTEH |
| UniRef90－UPIO003467E7E | ATWCSGDPGV |
| UniRef90 IOU | EGWRAQLSERSGTGDAHTGGT PRKRDVIVHCSGSAGUA |
| UniRef90－D30178 | DEAG PDGFLVPHSDPWDDTRQASRYNYGWCHGPAGDA |
| UniRef90－W2F2B2 |  |
|  | VAGRLGGPDDVPE VSGGANPHAGLMHGSSGPA |
| UniRet90－M3A | S G |
| UniRef90－FOVU | KFYDSSKKGWFKDNSRSEYCWGWCHGIPGTL |
| UniRef90－G6FPI5 | A G N |
|  |  |
| $\begin{aligned} & \text { UniRef90-W5WG } \\ & \text { UniRef90 UPIOOd } \end{aligned}$ | DGLGVLSWARRA REGAPPPPHAVNRQA |
| UniRef90－W4T4T9 | YMGDHSKLYFPYNKFLENDQUVIHKNN RLGWCNSDLSVA |
|  | SGN WPHKAPHYAQAAGEVAPGDEELVQWCHGAPGLL |
| UniRef90 U2UBN7 | RFLNSWCKGAPGL |
| UniRef90－B6Q820 |  |
| UniRet90＿G2G |  |
| P1P000381D4D9 | RGG |
| UniRei90－B2AV22 | QQHDGNWPS可GHTSPGKG LVQFCHGAPGFV |
| UniRet90 UPIOOO3665D47 | HKNEILVYNSQNESNITSN |
| UniRef90 E4ZW07 | SGNFPSS |
| UniRef90－M2KTR4 | R |
| UniRef90－H2 | AGGALQ VDEGW |
| UniRef90－E5AUX4 | NDG WESRFSLADGGNDALHH SWCHGLAGVA |
| UniRet90 UPI00037DF8A6 | CSRGVITWGRGDLAESVDGQ RNYRQAWCYGTPGVA |
| UniRet90－6TS80 |  |
| UniRef90－UPIO003F |  |
|  | QFESGNFPSS VPGSGHDRLVQF |
|  | NDGH |
|  | KGGHFPMSTPDRPDALTRPSPF VQL |
| UniRef90－C204W7 | KDQRWCW |
| UniRef90－11X4K9 |  |
| iRef90－10L741 | A |
| UniRef90－10L741 | 促 |
|  |  |
| UniRef90－A9FXNo | EGRMASWPAQLADQGEA PYPR鸟QFCHGAPGFV |
| UniRef90＿F5U611 |  |
| UniRef90＿UPI0003FF172F | $\begin{gathered} T \\ A \\ A \end{gathered}$ |
| UniRef90 | APASSSHWCHGA |
| UniRef90－UP100037E6659 | EPGAT |
| 㖪ef90－S5VJ16 |  |
| UniRef90－11E011 | GFVA RRTNASILYPYLGYGTAGVA |
| UniRef90－C75V17 | NE ETYSVS |
| ef90＿UPI0004 |  |
|  |  |
| UniRet90 loUSF3 |  |
| UniRef90＿G2NC49 | A |
| UniRef90－UP1000346747 |  |
| $190$ |  |
|  | LIF NATGNWPDPNGKGRPSTAWCHGAPGVA |
| UniRet90－F5YK81 |  |
| C | RTGAA |
|  | $A$ |



## UniRef90_A9FXN0

UniRef90-F5U6I1
UniRef90_UPI0003FF172F UniRef90-F9ECH5 UniRef90_UPI00030687BB UniRef90-UPI00037E6659 UniRef90_S5VJ16 UniRef90-S5VJ16 UniRef90-11E011 UniRef90_UPI0004758837 UniRef90-IOUSF3 UniRef90-IOUSF3 UniRef90_E4N6S3 UniRef90-G2NC49 UniRef90_UPIOO03467475 UniRef90-D9SSP8 UniRef90-K2JPU9 UniRef90-F5YK81 UniRef90_UPIO0035EA39D UniRef90_C4RET2 UniRef90_C4RET2
UniRef90_I3TNC8

UniRef90 F8JTZ8 UniRef90 UPIOOO34B155A UniRef90-W5JDC8 UniRef90-14Z1 Q0 UniRef90_A0A017T279 UniRef90 UPIIOOO37537B6 UniRef90-D7C1P3 UniRef90-хомTG8 UniRef90-S8FII9 UniRef90-E6PH38 UniRef90_UPIOOO2DDE181 UniRef90_C9SC50 UniRef90-E3YTR1
UniRef90-K0KA31
UniRef90-U1HDS8 UniRef90-R6P7C1 UniRef90_UPIOOO299E237 UniRef90-C5GUK7 UniRef90_-N2A7J8 UniRet90_C5KRU1 UniRef90-H6C283 UniRef90_UPIo00420988E UniRef90-U1PQZO UniRef90-G7XSW7
UniRef90 O12MS0 UniRef90-H3RNE1 UniRef90-UPIO00369CE09 UniRef90_UPIO003467E7E UniRef90-IOUS31 UniRef90-UPI00042B5078 UniRef90-D3Q1T8 UniRef90-W2F2B2 UniRef90-W2F2B2 UniRef90-M3AQN9 UniRef90-B1R9S5 UniRef90-G6FPI5 UniRef90-C6SU55 UniRef90-W5WGl9 UniRef90-UPI00046F61A2 UniRet90 W4T4T9 UniReffo-K5UTA2 UniRef90-DOLVR1
UniRef90 U2UBN7 UniRef90-B6Q820 UniRef90-G2GB82 UniRef90-F9XAA0 UniRef90-UPI000381D4D9 UniRef90-B2AV22 UniRef90_UPIO003665D47 UniRef90-E4ZW07 UniRet90_M2KTR4 UniRef90-H2HQ81 UniRef90_UPI0003671862 UniRef90-E5AUX4 UniRef90-UPIO0037DF8A6 UniRef90-16TS80 UniRef90-S7RG59 UniRef90-UPIO003FCD802 UniRef90-W3XA52 UniRef90-G4T992
UniRef90 B8LUK2 UniRef90-UPIO0040D3A8A UniRef90-C2Q4W7 UniRef90-11X4K9 UniRef90-10L741 UniRef90-10L741 UniRef90-UPIO0046517C4 UniRet90-K2JZP9 UniRet90-A9FXNO UniRef90-F5U611 UniRef90-UPI0003FF172F UniRef90-F9ECH5 UniRef90-UPIO0030687BB UniRef90_UPIooo37E6659 UniRef90_S5VJ16 UniRef90-S5VJ16 UniRef90-11E011 UniRef90-Q75V17 UniRef90_UPIO004758837 UniRef90-10USF3
UniRefololousf UniRef90-E4N6S3 UniRef90-G2NC49 UniRef90-UPIOOO3467475 UniRef90-D9SSP8 UniRef90-K2JPU9 UniRef90-F5YK81 UniRef90-UPIO0035EA39D UniRef90-C4RET2 UniRef90_C4RET2 UniRef90_I3TNC8
 GDLGTAEVVLLAARERPDLFPAGTVDGLYERLDAVLERYP AKFAEFLASNTC SAQLFA
GTAGNGFAFLK LFDRTGDSRWLDRARSFAMHADMQSDAEA GLAAGNVEFLVDMF QETADATYLADAAVLFRLLQAFADEHP $G A A G L V W F G H R T A D D H G H D T X A Y V T D W V A D D A R R R A A G P G$
$G D L G N H D V L S T V A A V A D V E R T W L R P E V F T R K A G D T R S R Y A$ GAAGVLAVADALHRHARLDSATALRARLLAHDDA H GV A G NV Y A L L A V S D F LDD S G N N T Y WL A R AV H L L E R K G D M R V
 $G \perp L G N A L, ~ F$
 $G E L G V L E S L A V L A E R A G H D L A T A M L T R R A G L V L G A Q D Q Y G$ GYGGNGYA LKL F R RI GDAHWLERARSFAMTAIA QCREAR
 GIA GNAWPLLLLHDEYGNERTEDAKLSFKDRTGSDASAEE


 GTAGQAEFCLEA
G $\square$ T GSAWP L L L L H DSFEYDK MQAARERYMGRTQ GTAGNGYAFLYMYRRTGQAVWLERARKFAMHACQKARAHY GTAGILQLFTGAYLVTNNQDYLKSAQQTAT LLVERATQND
 G D L G T L E V L N W I I A RVP DVVS GA E D I R A A VK N G RA TLDD K S

GTASVLDALADRLVERDDDPAFAQVLDDLAQRAEHSADPSE GSAGI GLVLDRYLAHRDDGRFAEALAAI R P AVGRDS GSAGIGGVLDRYLAHRDDGRFAEALAAI RPVGRLS G $\square$ S GNAL AL E DKEFEHFLTYTTGHEMKSMEKDG


GTS GN L L A L S YY Q S Y LPEN DA QR L L H AF G LTK GWMCS F NT GAA GVLLVVADAFA RHAD LGEAA SLLRDRVVEY LLDRRLDDTVR GAS GI A HL L L L R L Y L E T N N MLLF F E TA E Y WY A K Y KR WIE R E I GTSGVAMMY
$G V A G S V Y A L L D A S R K A R D P R A L A H L A R S Y Q Q L E A R G E M S T$ GGMSVVDALLEFHHSDPTKPLLALAAHERATWWLRAA KTRG GNFGRVDALLEAGARDSDPGTQAAAHQLASEALDRAEKFQ GLT GNAWSL L H L H NVYE

 $G E L G V V E A L T A L T R \quad R R P D L L G A A E R G Q A R V L G A L D R T G$ G IFG N ALLCF
 GIMGNLIALNEYSLAFSNQKDQQLVQSTLIDLCSVGMKKD
 GA A G M


 $G V A G N A L A L D D$
 $G L T G N A W S L L S L H N G Y E$
 GDVGGAFALSGLLADELLGDGKWQQRARELYDRT LLDAYT

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

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| UniRef90_F8JTZ8 |  |
| :---: | :---: |
| UniRef9 | 1P1000 |
|  |  |
| UniRef | 4Z |
| UniRef90-A0A017T279 |  |
| UniRef9 | 37537B6 |
| UniRef90-D7C1P3 |  |
| niRef | X0 |
| UniRef90-S8FII9 |  |
| niRef9 |  |
| UniRef90_UPI0002D |  |
| UniRef9 |  |
| UniRef90-E3YTR1 |  |
| niRef9 | KOKA |
| UniRef90- U1HDS8 |  |
| niRef | R6P7C1 |
| UniRef9 | UPI000299E237 |
| UniRef90_C5GUK7 |  |
| niRef9 | N2A7 |
| UniRef90-C5KRU1 |  |
| UniRef9 | - |
| UniRef90_UPI000420988E |  |
| UniRef |  |
| UniRef90 ${ }^{-}$G7XSW7 |  |
| UniRef | Q12MS |
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| UniRef9 | UPI000369 |
| UniRef90_UPI0003467E7E |  |
| UniRef90_IOUS31 |  |
| UniRef9 | UPI00042B50 |
| UniRef90-D3Q1T8 |  |
| UniRef90_W2F2B2 |  |
| UniRef9 | W2F2B2 |
| UniRef90-M3AQN9 |  |
| UniRef90-B1R9S5 |  |
| UniRef90 F0VUW5 |  |
| UniRef90_G6FPI5 |  |
| UniRef90-C6SU55 |  |
| UniRef90-W5WGI9 |  |
| UniRef90_UPI00046F61A2 |  |
| UniRef90-W4T4T9 |  |
| UniRef90_K5UTA2 |  |
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| UniRef90_U2UBN7 |  |
| UniRef90_B6Q820 |  |
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| UniRef90-UPI000381D4D9 |  |
| UniRef90_B2AV22 |  |
| UniRef90_UPI0003665D47 |  |
| UniRef90_E4ZW07 |  |
| UniRef90_M2KTR4 |  |
| UniRef90-H2HQ81 |  |
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| UniRef90-E5AUX4 |  |
| UniRef90 UPI00037DF8A6 |  |
| UniRef90_I6TS80 |  |
| UniRef90-S7RG59 |  |
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| UniRef90 W3XA52 |  |
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| UniRef90_C2Q4W7 |  |
| UniRef90-11X4K9 |  |
| UniRef90-I0L741 |  |
| UniRef90_I0L741 |  |
| UniRef90-UPI00046517C4 |  |
| UniRef90-K2JZP9 |  |
| UniRef90-A9FXN0 |  |
| UniRef90-F5U6I1 |  |
| UniRef90_UPI0003FF172F |  |
| UniRef90_F9ECH5 |  |
| UniRef90_UPI00030687BB |  |
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| UniRef90_S5VJ16 |  |
| UniRef90_11E011 |  |
| UniRef90_Q75V17 |  |
| UniRef90-UPI0004758837 |  |
| UniRef90-IOUSF3 |  |
| UniRef90_IOUSF3 |  |
| UniRef90_E4N6S3 |  |
| UniRef90_G2NC49 |  |
| UniRef90_UPI0003467475 |  |
|  |  |
| UniRef90_K2JPU9UniRef90_F5YK81UniRef90_UPI00035EA39D |  |
|  |  |
|  |  |
| UniRef90-C4RET2 |  |
| $\begin{aligned} & \text { UniRef90_C4RET2 } \\ & \text { UniRef90_I3TNC8 } \end{aligned}$ |  |

A R P A P SWATGGAGVLT F LRRRLRDRGGP
A R WD T S LMLGGP GTAWSILRHLE P E A F P S
$P D R P Y S L Y E G L A G A$
GRRRFSLLWTGD $L G L A C F L$
$G \boxtimes R V P A F Q V G Y A G V A A C L L R L G D P A A A P H$

HTN SLLVGTAGMVILLVNRLDP
$P D D P Y G L Y E G V A G M C C A$
$G L D P B G Y A T G S A G \square A L L L H R \square I N G G$
GTESVGLMVGLMGVVEFL
S K L $\quad \mathrm{N} F$
A R CS A G L LT G L S G $T$ GY G L L R L GFPERAPS VLLL
SELGY SLWT GDVGLLAVYLWDCLT GDP
Y K C S M D L G T G S A GV L L A L S D S GR S GEWGS W MP VLENED F




$T T N T T V L D T G L T G D Y F L S R A L A$
GQGRFTLWTGDAGLA】YLVHCLNP
RTAALGFYDGAA GI A S Y L L QL


LEPQ T GWA M GNA G VVRE LLR YS

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

$P D R P Y S L Y E G V A G M V C A W A D I$
HF S D L S L F Q GL A G V GY G F L R L A Q P E S L P P C L


S SAPESLFFGEAGRAWT
$P R C G P G L L T G L A G \square G Y G L L R L A Q P E V V P S$
NS N G Q GLLT GNTGALLY L L
S D NPSALWY GEA GRA
WLC GVGLM T G LA G $\backslash \mathrm{L} Y \mathrm{Y}$ G I $\mathrm{K} \square \mathrm{Y}$ Y D D N
$\square$ SH
RLLAFPGLATGTAGCLLALGAALHHAPV
GKH H L GLMNGLS G $\quad$ G GLVLTD
R S D S V T F L A G S G G A CL
GTETIGVMHGLVGVATF LDS
$P D R P Y S L Y E G L A G M C C A W G A L$
S E L G Y T L WT G DVG L A V Y LDWD CLLT GEP
NEESAS LYTGEAGRAWVWAVAEMNLPRT
A D HP Y SLGE GLA GAVC
SSDGQGLLT GNT GALLY L
Q $\square E P$ V G L F T G $\square S G G G L$ S L L
EPDPVSSLFKGQAGGAL LDA QLEA DVPD
F Y A Q S G L F A G R A G I I A Y L A A S T D D A D R R E L D A
F Y A Q S GL F A GRA GI I A Y LAA A T D DA DRRELLD A
$\mathrm{G} \square \mathrm{AFPGYGTGGAG} \mathrm{\square CMMLQRYQQRSASP}$
R RYGYSLWTGDLGLAMYLWDC $\square R A E P A$
$R K N P T G L Y G A A G A G T S L L Y L$
WRC GYALMTGLA GVLHAL HVHA GPRP T
ERAHMTLLGGAGGVLTALLTTAAAA
ARSSATWAGGSAGVLAFFRRLRDRGGP
$P R \quad P G F W D G T A G V A L A C D R I A E Q Q D P H D F A H V L$
$P R \quad P G F W D G T A G V A L A C D R I A E Q Q D P H D F A H V L$
TKVNT DYADGSA GTAL F LDHRLNQLDGP
$N F Y S F S \square M T G \square S G \square L Y A F L K Y K T H D T E L G$
EVVFPGFATGNAGULLGLKSALSGT
WWV Q S G F A T G M S S S I F A L K R W S Q D M P S P
WWVQS GFATGMSSSIFALSRWSQDMPSP
DRPSPGHATGTTGVLAFLRRLHSPAPPPD

QFRN Y GL F S G L S GI GYSMLRTMLFPDDKDPS
A A P DP CLFK GVA GIVVLALVQAEVP K LAP
$\square T A A D G Y F K G A A G I G$
E ENDMTILGGAAGI A
F Y A Q S GL FA GRAGI IA Y LA T LIP DADGRRELDAQL


UniRef90 F8JTZ8
UniRef90 UPI00034B155A
UniRef90-W5JDC8
UniRef90-14Z1Q0
UniRef90 A0A017T279
UniRef90-UPI00037537B6
UniRef90-D7C1P3
UniRef90 XOMTG8
UniRef90 S8FII9
UniRef90-E6PH38
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UniRef90 C9SC50
UniRef90-E3YTR1
UniRef90_KOKA31
UniRef90_U1HDS8
UniRef90-R6P7C1
UniRef90-UPI000299E237
UniRef90_C5GUK7
UniRef90 N2A7J8
UniRef90-C5KRU1
UniRef90-H6C283
UniRef90 UPI000420988E
UniRef90 U1PQZ0
UniRef90-G7XSW7
UniRef90_Q12MS0
UniRef90 H3RNE
UniRef90-UPIO00369CE09
UniRef90_UPIO003467E7E
UniRef90 IOUS31
UniRef90 UPI00042B5078
UniRef90_D3Q1T8
UniRef90-W2F2B2
UniRef90 W2F2B2
UniRef90 ${ }^{-}$M3AQN9
UniRef90-B1R9S5
UniRef90 FOVUW5
UniRef90_G6FPI5
UniRef90-C6SU55
UniRef90-W5WGI9
UniRef90 UPI00046F61A2
UniRef90 W4T4T9
UniRef90-K5UTA2
UniRef90 DOLVR1
UniRef90 U2UBN7
UniRef90-B6Q820
UniRef90-G2GB82
UniRef90_F9XAA0
UniRef90 UPI000381D4D9
UniRef90-B2AV22
UniRef90-UPI0003665D47
UniRef90 E4ZW07
UniRef90-M2KTR4
UniRef90-H2HQ81
UniRef90 UPIO003671862
UniRef90 E5AUX4
UniRef90-UPI00037DF8A6
UniRef90-I6TS80
UniRef90 S7RG59
UniRef90-UPI0003FCD802
UniRef90-W3XA52
UniRef90 G4T992
UniRef90 B8LUK?
UniRef90_UPI00040D3A8A
UniRef90_C2Q4W7
UniRef90 I1X4K9
UniRef90_10L741
UniRef90-10L741
UniRef90 UPI00046517C4
UniRef90 K2JZP9
UniRef90-A9FXNC
UniRef90-F5U611
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UniRef90 C4RET2
UniRef90-I3TNC8
$Y G G G$
$Y G G G$

UniRef90 D2B0E1 UniRef90-V6W9M9 UniRef90-W7Y4J3 UniRef90-E2PW36 UniRef90 B4VDE2 UniRef90-FOKD34 UniRef90-UPI0003F6BD5F UniRef90 UPI0003660B65 UniRef90-A0A023B7U0 UniRef90_F9G2G3 UniRef90 S3B3E5 UniRef90 D4J454 UniRef90-H2A7G4 UniRef90-IOS739 UniRef90 UPI00022B5608 UniRef90- S4B5Y3 UniRef90_L8EXK4 UniRef90_UPI000319301A UniRef90-UPI000319301A UniRef90-W7J6G7 UniRef90_B4SKB6 UniRef90_UPIO00428E1D1 UniRef90 D6T2E4 UniRef90-E7G8H4 UniRef90_Q4WJ98 UniRef90_L8EVD0 UniRef90 L8EVD0 UniRef90_A0A016PU39 UniRef90-UPI0003780A6E UniRef90 A1CQY7 UniRef90_UPI00029A4996 UniRef90_C7Q158 UniRef90 A0A028YKB5 UniRef90-UPI0003C774B5 UniRef90_UPI0003FF537F UniRef90 C1GY92 UniRef90 UPIO002379B3C UniRef90-F8TUI3
UniRef90-S8H2D8 UniRef90 UPI00034CFAFF UniRef90-UPI00034CFAFF UniRef90-W1NQU3
UniRef90-L1KX51
UniRef90 F7VY74
UniRef90-D9VSE3
UniRef90-D9VSE3
UniRef90 R5NLC4
UniRef90 UPI0004764E6A
UniRef90-E7PW94
UniRef90_G3JAD7
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UniRef90-Q813L1
UniRef90-E3H3Z5 UniRef90 L8ENU1 UniRef90-K4R041 UniRef90-H3NEQ0 UniRef90_A8NND4 UniRef90 C7QC14 UniRef90_UPI000262C60F UniRef90-UPIO0046EA744 UniRef90-H5WUZ0 UniRef90_C7YLT9 UniRef90_V9PX18 UniRef90 UPI00037DFF60 UniRef90 B0E554 UniRef90-W7S8K0 UniRef90_NOCVV4 UniRef90 UPIOOO3783570 UniRef90-APIOOO UniRef90 UPI0002628D53 UniRef90 N2A3B7 UniRef90-B915J7 UniRef90-S8AP89 UniRef90-UPI00037AF087
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QP 30
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 SPFRAAS LS DGAPGI ALLHA
 DPEQFEVGGLGLAHGASGVLYALA


V IY G K D G WTKA GK A D I Y LY N G L S G IF LF F E
 $M N K N Y E D S P M D Y N$ Y G G T S S GMIL G I S VG A VA K N G N N G WT P Y DL Y S GRIGGPA LVL S $L V Q A V V E G G P E A T S P A Q D R D S L Y A G \square A G L A P V L A$

NPVSLQFGATGVAFFLL
FENLS FMSGALGRAVFL
$\mathrm{G} \square \mathrm{FM} \mathrm{M} V \mathrm{~L} \mathrm{G} \square \mathrm{A} L \mathrm{AF} \mathrm{L}$

KELLTYALELVVRHTPPRKYHEHHDGGLFTGYTGLAY LIL $N L P D P E G E L G L F M G V P G A A L A F Q$ RNVP T S I

PMGAGDAQGYCGVADF $\square A$


YF GLLGGVAVA L A MNKNYD $\quad$ S PMDYS $L Y N E T S G M \| L G \ S$

EEVVENTWRKSEGGTEDPTLYTGLLGTAFTCL LS S A L E D $\square V A N Y P$ PRSRYSHH $\square Q G \square W S G P T G \square A L L M L$

EETREK $\square \mathrm{K} \square \mathrm{L} \mathrm{L} N \mathrm{~N} \square \mathrm{HD}$

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S \(L G T G Y C G V A L F L A\)
E HE \(\backslash\) RDDVGDTGLFSGS LGI LCALV
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``` D D P PAP GARSVNAYWGATGVVWALR
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DGASFAHGAAGVLWALS
GGQSFAYGAAGVLYALH EDA $\square R$ RNVQK VQQMMGARDGQGKRE S $\square Y \square G D V G I A F M E M$

DMSLLYEG GGLIWSMY

DPSQFTHDG $\square G \square A Y G A A G V L W A \square H$
$P G G G \square N L A Y G A A G V L Y A L S$ RPGGGINLATGAAGVLYALA
$D L P N F T V Y E G G G G M L L F L A$
$R P G S T L A L Y A G A A G V G L$

UniRef90_D2B0E1
UniRef90-V6W9M9
UniRef90-WWY4J3
UniRe90-E2PW36
UniRef90-B4VDE2
UniRefon_FOKD34
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UniRefo_UPI003660B65
UniRef90-A0A023B7U0


AMWQKKHENFYHSVVEEHTDILIQNGSNHQSDRMGLFDGE
 HVSQAAARERYLRSAKRLIDACARAGEPDADTRAAFLLGG

 A LIEKRFEYKAYRDKAYAClSEELSVLPGNDTMDDSLACGL

K E L L L LVNNKDYYFQNNYS LF D G RLDHQTCSPDYRK LATER HGPKTPGMPGRQSPLGSRSPLL

QLSELHPN LQ $\square$ S GQKLIS WA QRY LEGDRGT LVKGSCGD
$R \square H H Q A N P P N Y Q K L A N E R D T K \square G R N \square P L L P G R L S P L S S G P$ ELLHHTHRPQVRAAVTALARWTAEQSRNLPGPGLYTGR $D V T G A G R F P Q Y E D W L L R H A K D \quad P G D G A R P G L W D G M$

QLGALAGARRYTDLARQALAALAGDPSLGAAAGPGADHGD
 RLS Y $\square A N E D E \square P S L A S E L V Q Q A S S R D N P R T R S L S P L A A S G T$


LSHRATGNGED LQ QASD VVDCTVVVRTTKRRVAFDCGRA Q $\square$ S A R QP GQTAHHWAKAY $\square$ S GSRGHN LR $\square$ GSRGCG $\square$ Y DEK

QLAAVTGDCRYADQARAALP QLVAALDKRPDLVAVIGCGG EVYYELVDDDR QQRDYNCLIRRIVMTLAYYSTQNQSYYVGK QLSELHPDESLRQLAERYIKVGSDAPMLKQDDECGLISEK
 QLA ALTGASRYAEAAREALDTLHGRADELGALGSGAFAGLD RLA QLYPDASYLE LGSSYITSGRHGREPVDPDHCGVANET M $\square$ YYYL GNEKYVEY LINLLINHLIIKYKNDNVNSECELLYGK RSGVIFEEPAWVSAGESFFQKTLANLDANGDWHHGAQSGV EAWRHFGAGRYEETGEEWLRGRRQTAPPPPGT EA WRHFGDDTYADTALLRAARGLAAAVEET HEQKYLST $\square D Y M D Q R E K V L K Y L W H N L K N N P \square Y$

QAAVGDADYARAARQAVP QLAA AT QUR S AT R LS E F LDDQAT LWASVLERGRGKRRHRMLGFLGV SQYNHTKDEYYKQRALELFNKTVEVFAEHELNY SLIHGF DLA SQGAVTLARDYTRWDERFPERARLEAADEQHGT
 L Y A VH T GRKRY【DEAREAFDHACDMIDGDPRAYPQDFTDLL

SAGDPTERKHREWLLHKA SVPVERPGFFDGV E TGAPRCEPAEEWLLRQAKAPASGSP R RGGYDGLL S I A QVEPEEDDDVLSDRHLSSLIQEASLTPRNHLSFLETP YYSKFRNDEKYASLADEYVEKSINA ISLKDYDDKIFYFRE EAGRVLDDPRLLDLARRALRP TSARVRAGAAGAIATGCG LLGDHPASRAALRAWLRAI PRCSD
CYARETENNQLMKQCLALLESAEDKQDKMAVESTSVYAGD KSYQVTGNENDLF LCCLELVKACDS ASRASRDVTFDCGR $R L G Q N S N P S E F L E Y A L K R V P S G L P D M P L I P S R R S P A G S F S$
$R T G H$
$G R F D D H E K W L V T S A L K L R Q G G A G F C D G L$

S VGA
P VA P D H VE WLLEAVARRPCR PG DYTGA RDGAHLSFLETP
SANKПD ETCMEWVKSNCDFSEYDEWGLFTGR
ACGNLD
K

ATGAGRYPKFER WMLQRSLTPKT
K TGAGRFPEYEDWLREHALTT CRGPA L H GGF
ETGPGLY DGLL ELAAVTGEAKYAKLARAGDPDPARWPADDPKADVSVFSGA ELLHHLDRPGVPKAVAESARRTAAHPES GALSGALYTGR QLAAVTGDHRYAEQARAADPQLVAALDKRPDLVAVIGCGG A G QATDKQRDDDYVDVKKRDL NTMLVIPSVPKASAFYGN
 UniRef90-F9G2G3 UniRef90-S3B3E5 UniRef90 D4J454 UniRef90-H2A7G4 UniRef90-IOS739
UniRef90-UPI00022B5608 UniRef90_S4B5Y3 UniRef90_L8EXK4 UniRef90_UPIO00319301A UniRef90-UPIO00319301A UniRef90-W7J6G7 UniRef90-B4SKB6 UniRef90_UPI000428E1D1 UniRef90_D6T2E4 UniRef90-E7G8H4 UniRef90_Q4WJ98 UniRef90_L8EVD0 UniRef90_L8EVD0 UniRef90_A0A016PU39 UniRef90_UPI0003780A6E UniRef90-A1CQY7 UniRef90_UPI00029A4996 UniRef90_C7Q158 UniRef90-A0A028YKB5 UniRef90_UPI0003C774B5 UniRef90_UPI0003FF537F UniRef90-C1GY92 UniRef90 UPI0002379B3C UniRef90-F8TUI3 UniRef90-S8H2D8 UniRef90-UPI00034CFAFF UniRef90_UPI00034CFAFF UniRef90-W1NQU3 UniRef90-L1KX51 UniRef90 F7VY74 UniRef90-D9VSE3
UniRef90-D9VSE3 UniRef90_UPI0004764E6A UniRef90-E7PW94 UniRef90_G3JAD7 UniRef90 G4FMC3 UniRef90-M9TS41 UniRef90-G0Q9H7 UniRef90-W2S2N4 UniRef90 L8P4T5 UniRef90-Q813L1 UniRef90-E3H3Z5 UniRef90_L8ENU1 UniRef90_K4R041 UniRef90-H3NEQ0 UniRef90-A8NND4 UniRef90-C7QC14 UniRef90_UPI000262C60F UniRef90_UPI00046EA744 UniRef90-H5WUZ0 UniRef90_C7YLT9 UniRef90_V9PX18 UniRef90_UPIO0037DFF6C UniRef90 B0E554 UniRef90-W7S8K0 UniRef90-NOCVV4 UniRef90 UPIOOO3783570 UniRef90-A8ICH1 UniRef90_UPIO002628D53 UniRef90-N2A3B7 UniRef90-B915J7 UniRef90_S8AP89 UniRef90_UPI00037AF087 UniRef90_K9ARR8 UniRef90-C9ZGD0 UniRef90-K5X3Y6 UniRef90 C7RI16 UniRef90-U1PXL1 UniRef90_UPIO003709B64 UniRef90-UPI000367CAED UniRef90-D2PYC8 UniRef90_UPI00037F4D03 UniRef90-UPI0003660614 UniRef90_A8LZB3 UniRef90-C2ZHW7 UniRef90_R2QFM4

 AS Y GY DY VT CVLRQKGDKTVDNSE A GVYAVATLVYHALGRSDYV S GLLWAMYHAGT\|TNNQRWKNVA IN S W

$S G L V A G L G L I A G V R P D V G P A A Q R A A R S L A T A A D R R \quad P W R$ G GVALLL CAGRH

$P$ LLS LLFLINKD VVGKYVSDQKQLLELIQSMK DD A ATVMRVLAAAKLGHAVSDTDVDTLRDAVAIALKHGHVIP

ASEKLSFQAVRVCVTKEEDHLIEFLSNMPILDGGYT
 HGAAFALDHLGHRAEA

FLAEAGAEAGARPGHPVLPGR
GGDVYAVARDA



$G \nabla Y V L G A M V A N Y R D D Q Y R R E L \quad F L N \square F C E V V E E R A L P A G P$ $\square$ AFEAVRAA $\square$ FNDDTTHVRTFVSCVSQ LEVEE

EKYKNYVIKVADDLLEAYT
LDGLGGDAYGLTRDGTLLDDHALTDAAARSIRDAGVAATP $L G Q L S A M D R I Q S I T G Q E I P V S I F D$ $L G R E A L T A C L S G D E K D V E R F I A S T A D \quad$ I ASPP GG ILLGLQQLGRRAWVDVLVDAALPRFПAADQQ
SGAFAGLGGIAYALTEVGTLLD DSRILDWTGPATRLAC GGDAYALTEVGTLLG LSQLAVRAAL LDEDSGAQQLCSYSTA DNAQ

| $H G \\| A Y A L D H L G H R$ |
| :--- |
| $C G Y D Y S F L F C K N D W D Y K E K K Y \square I D K Y \square Y Y V A M K V L D M A L$ | C GY Y S F Li C K N DWDNYKEKKY I LK Y LYY Y IM K

ESFLWAAMEVFELLGDKQGHQKAVLKYLVADAQC S GVAWVLDRLGHRDRASH DDDSASGAADRAMALEQVL $T G M A$
$S G V G L Y R A V H D D$
$V$ A GFLYALLLLRKEVEKVKGL KAYREEMEEGH WAGLGG』SYGLAHIGALISELEFAEAA LLATDLAARAAAD GGQLFAFSTGARLAPHRWNNA A S YL F

 R Y
T
D DPNVFLSDIVDSLLS KMRAELLSAGN

HGVAHVLDHLGYRAEAAGLVVRAADLVAET
TGI A WALHRUGRTAEAADLTRIVLDQPLE GLTA
VGIATLVLKKYPLGGNRV FVDAPWQKCRDFLLRGVEVTM I IE E G L FVVFVKNEG LLTRDDAA ILDKLDKQIGVFM AGYAQGLGGLI A ALCWCADLLDDPGLMDDAVALAR ETPQ A GVLA GL RLAARVDPALGPLADRTTERDAPGG A GSAVYILFNIYMDTG
AGVCALGAVAAKH
 $S G \square A Y V L G N F G H E D E A$
$H G V A L T D D R G Q Q A R Q A N L D R L D$ VGIAALVLKKYPLVGN RAFVDAPWQKCRDFLLRGVEVTM T G
 $A G V L A G M R L D S S V$
$N G V A F A D D E L G H D$ HGVAHVLGELGHR


 DSALTDAAARTVPLAM
GALIYP LLL

## UniRef90 D2B0E1 UniRet90-V6W9M9 UniReffo WMY4J3 UniRef90-B4VDE2 UniRef90-F0KD34

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UniRef90 D9VSE3 UniRef90-R5NLC4 UniRef90-UPIO004764E6A UniRef90-E7PW94 UniRef90-G3JAD7 UniRef90-G4FMC3 UniRet90_M9TS41 UniRef90-GOOQH77 UniRef90-L8P4T5 UniRef90-Q813L1 UniRef90-E3H3Z5 UniRef90-L8ENU1 UniRef90-K4RO41
UniRef90-H3NEQO UniRef90-A8NND4 UniRef90 ${ }^{-}$C7QC14 UniRef90-UPIO00262C60F UniRef90_UPIO0046EA744 UniRef90-H5WUZO UniRef90-C7YLT9 UniRef90-V9PX18 UniRef90-UPIO0037DFF6C UniRef90 BoE554 UniRef90-W7S8K0 UniRef90-NOCVV4 UniRef90-K9HB43 UniRef90_UPI0003783570 UniRef90-A81CH1 UniRef90-UPI0002628D53 UniRef90-N2A3B7 UniRef90-B915J7 UniRef90-S8AP89 UniRef90_UPI00037AF087 UniRef90 KgarR8 UniRef90-C9ZGDO UniRef90-K5X3Y6 UniRef90_C7R116 UniRef90-U1PXL UniRef90-UPI0003709B64 UniRef90-UPIooo367CAED UniRef90-D2PYC8 UniRef90-UPIO0037F4D03 UniRef90_UPIOOO3660614 UniRef90-A8LZB3 UniRef90-C2ZHW7


TSAVGFTDYDLVSGPAGTLLAQPAGTPPGGAAAHDAALAA EDASALLLPGLYFGAAGVGLLNLHAWQGGGDP SPDFYLGLSGYI YALCELYDDEADSDAS DYETV | $H D V L G G N A G F I F S L A D M N T D Y T H V L I Q E A A Y S$ |
| :---: |
| $V$ |
| $V$ |



SPQDDAFPSEDPYGRAGA पYLLRMVRHWMPRSTESPGRRD EADTADDLDYLNGLGGYLVHLAEYDDPGAPRLPGYGPED ESNHNVGGDGULYGRAGLWSLDEASTNALRPLFEAVPQL APDGGPPEADLIAGAAGVGLGRLLLARHALRAGRRHLADR
RDNWAYASDLAGGLSGUGLNLHLAERGENGLAEAGLR

GDDPAGDAAGQPDGS DDVPAGLADGLAGAL DNLDIIGGISGILGVLLKVNSTFKGNL
$K Q G T M L G G D E A L Y G R V G L L W A L L Y I R Q H C L D E E N M D V L I L$ VDLPMGLLGLGVYGLA VGFADEPFLDITGGAGAlVPLLEADPRWLALAADAARR


GEGVLGMPYELLFGWAGF $\square W S A D \square N K H \square G D G T P Q S L L M$

## YPDE【LYGRAGT■ YLLRLVRHWVPESNKLVDPA

EEGLDWSNEEDVVADGGFVFFLVQVYEHFGDEKY LDAARK EAPAGWSA GGAGCLAALTTVQTDNDPEAGDVARR
 LDVIGGSAGLI GSLLAQKSEGALRLAMTAGDH AASSAEEGLGVRGGAAGGLVSLLAVHRTTGRTEAWRGAER AASAAEDGYGVRGGAAGGLVSLLAVHATGRPEAWRGAER GEQWQRGSDEWLYGRAGYLYLLRLVRFAFPASSHSSLIDT GEQWQRLGPDGSGGLILGIGLNLQHFAAATGDPALRDAAFS पSKSTLYDLDVSSGYAGVVLAFSPHIDDSSTGTLADLVAF AEKWHRLAPDLNGGLAGVGLALEDLARTRGERELREARA
 KEGLEVVVSDKMLGVAGGVESLIARGRYGAKAYEGED E GLEHGVHGGTAGGLAALLAVHQTTGSAQAWDAATA AADDGDDWFDFTMGDAGGAVGCEHFLRARVAEDQQHCARR EYDLKHQNYNVLHGCLGKIQYYLYSKNVDTQKAARUVDRV SEMP TGGGBDGHSTGGALGYGLYFSYYNRERAQPVVEELVLG TLQQVVES
TDLT LFSGLAG $\square$ GLNLLHLHDKRGAGHLARALEL DLHSGYAGUGLALDDLARTASAAEGALAAA EDDRNFGEDDVLYGRAGFLYALDFLRNFVCQKNDATLRNV RVKIQEGELNHFGAMFAGEYFLTRVQPQTADHLTDLVDA ALAASTGVPDLMQGAAGLALGLGLLHQSAGDDASPF ERLDTDES DDYMHGDSGYVVLLSKMLEKEKHDYLLRIFEK EL DRNHPDELLYGRSGFLWACLELNKHEGQGYVPDTF TR HGDHRMGGDELLYGRAGLLWLLLNVRAHQYHEETRELLSP SMVPAMRDVTLFSGLAGLGGLTYLHFAAVDEALREADRL KEPDDGQGGD LAGGLPGVGLTLLHFAATTSDSLLAGAVDV EDDRNFGEDDVLYGRAGFLYALLFLRNFVCQKDGATLQKV NKLDTFNDDSULGMSGMGLFLLSYYHKAPLERREEIMDV
 SSEVGFTDYDLVSGPAGALLALTTGEPTPMARHLAELAABR GEKWEQLGLDLHGGLAGAGLNLRRFADDTGEPALRQAALR ADDLGSRELGLHSGLAGLGLNLANFAEPGLQGKAVRLLDLV EPGPYDHTGDQIGGAAGAGTGHLLLARQAHRAGRVEQVAK AAATPGASLGWSAGLAGCLAALTAVHTEEAADAARRCADL TFEVEKSN DWLTGQTSLIAIFKQLADVTKNP

| UniRef90_D2B0E1 UniRef90-V6W9M9 UniRef90-W7Y4J3 UniRef90-E2PW36 UniRef90_B4VDE2 UniRef90-FOKD34 UniRef90-UPI0003F6BD5F UniRef90-UPI0003660B65 <br> UniRef90_A0A023B7U0 <br> UniRef90-F9G2G3 <br> UniRef90-S3B3E5 <br> UniRef90_D4J454 <br> UniRef90-H2A7G4 <br> UniRef90-IOS739 <br> UniRef90_UPIO0022B5608 <br> UniRef90-S4B5Y3 <br> UniRef90-L8EXK4 <br> UniRef90_UPIO00319301A <br> UniRef90-UPIO00319301A <br> UniRef90-W7J6G7 <br> UniRef90-B4SKB6 <br> UniRef90-UPI000428E1D1 <br> UniRef90-D6T2E4 <br> UniRef90-E7G8H4 |  |
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IVDLLCADR $L^{170}$ G P
ELALVQKD
LIDSCNKKEDGVFWKYYLQNQ
ADHCADLAARSLTAAPPSPR
SRPVRTHDRGLPGWWVALDGASYQPVAPA RGHANLGMA LIR CMEKDTG
LKELGVNNNDY $\square$ CW
AAELVAAHNDRDTGGTTSG
TERMMAT DDDGRGNWEWH G

KRYFGAA AHVMSEE CQKLPENDSELEQLMRQFMRDYKNSSEDKNGFA $C V N D A Y E K D N E D D S Y M T S$ LLRAADRTEAGLDWGMTPGAASRAPN DRTAQPPSGMPLGFS DRTAQPPSGMPLGFH
EPDDA
$\square A$ GLR $\square G A H R D H P L V G W T Q G D$
LA VAARDGDTLLAAGQRAPQGRYWKAGDRTG LGGLG L GKIE EAMDFLLSCKTLDFQTAWEVNPETVLLWKP DSGLGG KKKKMICEEGILRWP【GNEVR KANASFA L IEFIMKHVH 1 KVI I EAGRQGHRDYVQAYGNTDADPLMWTWKESRYLGAV ERDDRLFPGDI EQFHGQGGGVNFA ERDDRLFPGDIEQFHGQGGGVNFA
TER\MSTNDDGRGNWEWHG KRYFGAA LVRRLVEVDGPPG EHSGEHQGELGLA $1 R A D I D A G R Q G V Q D Y T R K Y G S V A D P \square M W T W M E S H Y G L G A V$


A AT LAAHRTGAAPGAAADAHRDAGRDAGAVAKPSGDPGFA
 LFTMI TLRIVNTNVNSYMDNRVSYYLCGHGMVNTT VLDVIDRRAERDGDALFFRVNDTEPRRREGSVGCRLLGMA LEATAHRDERGAYWLSPAFPDPDGGFGHGGFGMG
SD DSNLADTMAKD【VK RLI ITYREKGYWVENDPGYA $\square G L A$
$P \square V E A V I S G G R \square G A T H T T C P D M Y Q W H G T H Y W \quad G A A$ $\square A E \square T$ NT $\square$ L NRGPNWT WHD HAPADEHVSWLTDATARAADMGPGLY HAPADEHVSWLTDATARAADMGPGLY AADYПAK DALPAKNGGKYWKL CADLLDAP $N$ NLIGSDNPPGHRAPTETDRPGGSGPASGGFA


DTQGLLGFS CAERUVAAA
 $V A D I L A D R L G B A D G A A D D T A D D A F P H K P Y G A V$
 SVNSLVQGAQALDVAS LQ
LEAAGHAADRLDACGKRA
YSEAAEQTAAGVQWAHRPGATGRMHHVS
LVLETEKFVDKIMHDRVAYFF IENGDGDNATS DTYNLGDS GGAAAQEGHGLPPLMWK WHGRRYLGGA CADMADQAGAGADHIAPDHPDPAPHHHPEPSDPTPPTGFS

 TERDMATDDDGRGNWEWHG KRYFGAA
 I I R GKHGSRDYSQEFRNHRTPPDPPDMWDWHGKRYLGGA GLRVGDALESGQPCGDDRPPGRLGRVRD SGTNGGLL AGRCTALAVRALVDGPPSPR
 FEKFAIKDEKGYSWKWPFAKR DKGYLGMV CGHA LLEGSGLEANGTRHWPDGPQP

PGGFR $\square G G A A P A W A R G G V V T G L A$
SCE LCNLMKC
Y R T ETA GIA A
AVANEIIKNGRADAKKGGSPDMYEWYGERYW VLAKIPQLIRVIDF IQNHGRDDAHPLMYA WMEGHYGFGAA 1 AALDDPQAQGIDAVAGQARQSAGS

RA GLL
ADR LAARDMDEPGG
VHS 1 I RRGRNGAKTYRFEFGTAKSPPLIWAWHSGRRPGLLD

 $A A E \square$ V $V$ A QRDGPVDAVAEISGGQNPPAGLM

ASVLLERAGELPAVH
HLAAANACAKALLDRCHDPEHAEDDLPPASSRAAYAHGYA LVAPLTESDGVPGLMYRTHHGVS TDRAGGAWPASGGFA
A Q A VT CQEMT

## UniRef90 D2B0E1 UniRet90-V6W9M9 UniRef90-W7Y4J3 UniRef90 E2PW36 UniRef90-B4VDE2 UniRef90-FOKD34

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UniRet90-L1KX51
UniRef90-F7VY74
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 RGGAGRALLLLRTYDDTGDSGYLDQAAVALRADLRRCRVR HGD G I TQVTLTCALLDRTHWGSLQPKIISKLKTLLELS H G A A GVV A A L S AVV R R L G P R A DV V S S A L R Y A C R WL R G E S F D
$H$
$H$ H GYS GMA V A M A L L G RY T G E G N Y K E V L E
 HGNYGVITQLFKYKLCNEESDEKNNDIFCTQDYLNKERSQ HGLGHLLWFFSIINQR DKDNKIKKLIIDIDTAIKKNYTN HGTAGVAAALAVAGAALDREDFVEAAVAGARHVLSVGSL DGTSGTAWVLDRLGHRDRSMDDLHSGTAGTGLALDCLAAR DGISGTAWVLDRLGHRDRSMDDLHSGTAGI GLALDCLAAR HGAAGVLAALSAVDPT EEEAVRAVAHLSTWLVAGLYV DGQSGIALFLTYLGKVTGDRKYLAAAAEALSDFDIAHGLD HGMLGI AVVATKGSERLKKS AIPVSKEKMPEY DKAFH HGNAGI GLSLLKAGIVLHNEEYVDLGLKATKTD
HGIDAGLLLVLSKAFKAGFQMLGMKSIIWHLQRDLITHYFH HGMTGILAALLACKTEELNDASHDYFPWDAETVLGLCRLC YGASGVLWALVEAGLAVPDDNSTSRLTEPPPGFYDGLSGV YGASGVL WALVVEGLAVPDDNSTSRLTEPPPGFYDGLSGV HGRFGRVAALSAGDTAGADPDGAREHLEALTGAYLRYRWR HGEAGVVCFLLACYGA ATGDPDT YLISUAGTIVGLCRLCIG HGEAGVVCFLLEYGAATGDPDT

MLGGPMSLMALCVDKGGDSRFLDCAAEALQRDLRRCVVR HGDAGTGWALLRFAAVTPTGPAGSAGPAPESYASLGTTLL HGNYGVIVQLYKYSLSLSTDSNGRKMIIQCVQDYLRKE HGAAGIVSYLASAALDTGAAARARTLLDEAVAWLLRWRSD WALARLARSQAGSED DRKRWRELAAAFA
 HGAAGVLYALSVSGHSRHTEPEEWKTWVEWIVRRVRAQRP
$H G A A G V L Y A L S V S G H S R H T E P E E W K T W V E W I V R R V R A Q R P ~$ QDLAGIMHVLLHFPDSLRTSP
PSIATPAFAEPSPMAHGVLHEDSREDREAAPHSANEGDTA HGDIGILTQVVL TSPETAPQLEPVLDRLDRLQHP DGLSGVAYALDRLGRTDEAAAVLDRVRRAPLEDADHSLFG DGLSGVAYALDRLGRTDEAAAVLDRVRRAPLEDADHSLFG


HGTAGYAAALARLHVATGEERFRRGAEAALAYERSFFQAD
DGAAG $\square$ GWALL $L$ R A GAGGG
RHRSTGLAA L RRATAGANRATAVGTAPEPAAR
HGS $\square$ G $\square$ I TQQ L LSS ATPNQHAEQLGSR $\square H A \| L D L$
RGATGPALMFLRLHEDTGDPEFLDLADRALRQDLRRCVVR
NNDENNNDDN Y I K N T V M N K L D E Y V N N L I Y K V




HGPA GI GWALTRFADAGGGSRYAEAGLTALRRAVAQH
H GWA GIVVVALAAAKDR A ARAAAFELES ILNR
NGHP TVLVKFLVRLKK ELGYHSDQ DDEMDNTLDTNULLLSSLDQ
$H G L A G N A Y A L R A A G Q V D A T V A D Q R C F D T L A A T A L Q T V T A G$

| $H G D M G G I T$ |  |
| :--- | :--- |
| $R G W$ | $L$ |
| $R$ | $L$ |



R G WS G P A L F L L R L Y E A T Q D RV WL D Q A V RAV H R D L D
H GAS GVALLLLVRRYETTGDTALLLDLAAAVALRRDDLDRARAG HGAA GI L QML L S CPF S II S S YMPE V V T I D WL VCV

 $H G S S G V A L A L S F L V K H T C D R S Y L K S \square E K \square L C$
H GLLA GI M N VLLLDV ELLR P DE F E DVVK GTLDK YM M
HGAT GI LSSVLLS CTADELSSEYI PEI GGTITALCKLADAH

 H GA A G I L Q ML L S CP F S I I S S

 | $R G M V A G H$ |  |
| :--- | :--- |
| $H$ | $G$ |





$H G N S S V Y Y$ V K A L M D K K Q S $P$ S $I$
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UniRef90 D2B0E1 UniRef90-V6W9M9 UniRef90-W7Y4J3 UniRef90_E2PW36
UniRef90_B4VDE2 UniRef90-FOKD34 UniRef90_UPI0003F6BD5F UniRef90-UPI0003660B65 UniRef90_A0A023B7U0 UniRef90-F9G2G3 UniRef90-S3B3E5 UniRef90 D4J454 UniRef90-H2A7G4
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UniRef90-L1KX51
UniRef90-F7VY74
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UniRef90-Q8I3L1
UniRef90_E3H3Z5
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TKGNYF
$P D G S L Q$
YK D DF A RWDRR L LIT LMMGRTGKK
QK LGEGWDDKRNGETSAN VDE GWRTMPY L

WCHGSTGVL D NGVLE

SLQEGWFPSSEDSSS
GDKLVQFCHGAPGLV
DGN WPSSLRSLKEGKGAS DARDDRTWAGCGLD GERRPPGAHARQAWCYGTPGVS KEDQLFDCSMNNWLD DREGR E HPRNTVAWCHGSAGUL
LKTDK\VP पQR
QEQNCNWPPELGET LERENE VHWCHGAP K GAGFVVPHTDPPSRVIETY LTE QNEHVSSSWCNGLSGLL $K D A G F V V P H T D P P S R R E V E P V T Y T W C H G P A G T S H D F T A L A$
$T G D T A L S D A A T R C A D L S A R P P A E D A P R G R A G L L Y G A T G S A$ TGDTALSDAATRCADLSARPPAEDAPRGRAGLLYGATGSA DGAGIVSWRYAAGGE PPEAVAHRQGWCYGNPGVS $\square A G R L V W P T H V E G A \quad A G A P A S P H T R F G S A G V G$ DALKKEYHTYNSDLHDWPD LRPKATDLHGDCSGAAGUG
 AYTLDRLGRTQEARELLGRVADLPDEDADHSLFSGRAGI G AYTLDRLGRTQEARELLGRVADLPDEDADHSLFSGRAGI G

 R A GKAAARLAAVTPDDIAAASEPGATRRYGSWCRGLAGGIG DKQAMH
NHERWDQRYDLISSERN HFNF $\square R N G W C Y G N T G Q V M$ RSALVGAPHRAGGD
 DFPHGVFPH SPRERYQPA $Y \mathrm{~V} Q \square \mathrm{CH} \mathrm{HSPGLL}$ FQDSLFDPVSGNWHDVRMVDSVN YQPARPTWCNGGVGI G LGREKVIPLRE PHRLGGYDGLHALETLETAAHGEDRNAK PHRLGFYDGLHALETLETAAHGEDRTTLADGLFSGLSGI A

GQRRFTEPSVREQGRLTADPVSPHGPDLGPRTMDLGNDTV AGN WPSSEHHAHTGKG GLA G G L T H L H F GDTDEAARPGGVAGRPRPGLLRGASGGA GLA GI GLTHLHFGDTDEAARPGGVAGRPRPGLLRGASGGA DEEAALIPYQDHP

VTGPTNDKFY L GTCHGPA GH T SHQK LSN GW $\square D K R N N S T S A N W C H G S T G V L$
DGN WPKYMDEGETESD IVQFCHGAPGFV
QGN WPDFRDPL KAADAQPSFMVAWCHGAPG A
$P R H R D A G L D A L R G A V R G A G A G R S W C E G T S G V A$ A ATGPA WCD GVA G
QLES G N F P S S S L P E K T T S D R
EGGAME
VD E GWRTLLDYF C H G A P G:
$D N L N \backslash Y S S \square K \square D N M S S R Q N A K K K R K E \quad \square L L Q W C H G N \square G Y$ $D G G Y$ RFGDEGTPEAKGWCHGLPGHH KDGAL VVVDE GWRTMPY LGGGGSVG $\square$ G DEAG PDGF LVPHSDPRHAPEHTARHNYGWCHGPAGDA S S R K Y T D D Y WY WN D E $\square$ T LIDWK HK $\square$ K E VS TFTTWCR GMVG DGNFPSKAPSLSRPNPDNE $T D A P G T D P S W C R G L A G V A$ A G R Y P E L L L K F G R G W
K K G V TIRGKD INK GNEYFDVAELHGNLT I A PD G GVVSVANWHPVTEERDAAALAAGQRPLVQDCHGAPGVV

A GNWPTKAPSNYREGHQVNE $L V Q W C H G A P G M L$
YEDI S L G

Q D R VG N WS T R A P
L N QT TS GENDLVQWCHGAPAML
PDPGYFPAKAGSMDKANA
A EAGTW
T GE GRASRLHHRMSSWCHGAPGI A
D E LGGVVSWRS $R P D G P R R A V V R R Q A W C Y G T P B G A$
EKDNMFWCRGTAGSALAKAQ LIKNLKDMCNDSDY LD DK
NNCFPSGNYSTSEE
D RKR DVL V H WCHGP PGI
DGHLPKTLPPFGAKE
VD GSLQ
D S E G G WK D LR P NSDGRNNH
ADGTLQ
QDRVGNWSTRAP
P
G D G S 1
D E L G V V S W
$\begin{array}{llll}S & D & G A & L \\ P & D & E \\ L & \text { Q }\end{array}$

$L D K S L D I D S$ GK RILLDY ILGGGSAGII
VD G D F RLL L P Y L E $\square$ G S A G I A
VDGY YWHGSAGIA


REEDTHWNENHWRD
KLEWYQAKFES
$R P G A A R H F G S W C R G L A G \square G$
GDRGEQVAA GWCRGTAGAV

| $P R P D K P N C V H A V C H G S$ | $G$ |
| :--- | :--- |
| $K$ | $L$ |
| $S$ | $L$ |

## UniRef90 D2B0E1 UniRef90-V6W9M9 UniRef90-W7Y4J3 UniRef90 E2PW36 UniRef90-B4VDE2 UniRef90-FOKD34

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S8H2D8 UniRet90-S8H2D8 niRef90 UPIO0034CAFF UniRef90-WINQU3 UniRef90-L1K×51 UniRef90-F7VY74 UniRef90-D9VSE3 UniRef90-D9VSE3 UniRef90_UPIo004764E6A UniRef90-E7PW94 UniRef90-G3JAD7 UniRef90-G4FMC3 UniRef90-M9TS41 UniRef90-GOOQH7 7 UniRef90-L8P4T5 UniRef90- Q83L1 UniRef90-E3H3Z5 UniRef90-L8ENU1 UniRef90_K4R041
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 VARLALLSHSERMELENDMKHAAKQLEGGFDMTNFSLCH FGLKRLNEHTNUISLNKEVVQDDEFIVNNLNNYTNPFFCH
 LVLGE YQLNDKEELRRDVEHAVKQII EDGFDMTNFSLCH LVLGEYLARRPDEQFTAEASRGI ELAASSPMYIMDGLFS
 WALRALAGEVSGDRDLADWAGAAFTSFFHEGFHLEGDGLCH TSEYLLYTUSGDKTFKENLLNHIPRLMTYMIDLSDYCLCH
 DAYYEAY KADALPKVSVITSVNQLKTDPISCVPVLCH HAGVTEVAGHGVDELRHRCMTSILTSRLRPGFWDNDGRCC LLELRLYERTGDAGLLDLARDALRRDLSHCVRGAGPYLGA LLFLRLYERTGDAGLLDLARDALRRDLSHCVRGAGPYLGA WALWAAGRALGGEDLCDLAVRAADVHLDGDRDSDRLGVCH MACLRHYVATGTERFRDVALDCAHSVGRPRDTNKGWQDS
 HAIVQSTQULKFNFLSTLFKEQLKSIVQDKNNYKSPNFCH LTLGHFARRDGESAFLEHAVRLADRITRASGLRQRPGLMH LTLLHFARRDGESAFLEHAVRLADRITRASGLRQRPGLMH YSLQSLRPYF PELQSRDDSADEKTWRHGLLTKEPSLCH FALAKALIAVLGRDADGEEAERAAHKVWQGPVTGDUSMCH SVLVRAAGHLGEPGYDDLARRAARACAALAPRMPLVTQCC VALVAYAAVRPDDEDPKFAEAATMPVAAHSPRYALPGQYS LILALDALPPADTAGHADRWVRRLLDGADKANAADLSLCH KAKHYLLDNLSDKLLSEEVEYYSKDLLTNGANADN SVCOH LALSVAARATGSAELTELVCAVAAKVVSQPPRVLDGCMCH LAAADLYARDGDAGALDDLRRAV ALTRGQWGLTHTLCH KVHYLL NRLHFRRLGDRSLLDTAVNDAQLLADRLAQGPAHGAGH


SAQQLAALALNDPDRKRMAERALLYCLADPAQLDNRGLCH VSLLSLRQHFPEDKDDAADRGGREC\|WVEGLLKKEPSLCH LLLMLRLYEATGGPKYLHVAGELLRYDLAEDAAWKVPFLAF LLMLRLYEAGGPKYLHVAGELLRYDLAEDAAWKVPFLAF LLFRLLYEDTGEEEYKDWMDRISRGTYRAGAPWNAQCQCC
 AARLHUIDKTKRSELEADMKHAASQIIEDGFDMTNFSICH LGRACLWGTDLWDQQCEEE\KIAIQT\SAQPEPRMDHLCC LAVADSPEALADPELRDWAERAGDVATAEP QADDSLCH LAUADSPDALVDP ELSGWLAARSAELAGGGPLADD SLCH SLTSLAPYYDLSTRIEQAISSAQPVLERGLLTKPPCLCH ILLMKLLKYDNVPTYEEYLANMGLLITWEKGLLTKGLGLCH LAHALLHHYATDSPFTDADLQVESERDRNTCFGGNDSLCH TVLDDYLRHRADEEFERARTAULPAAMSRFY WVPGLFR QVFRLLRDTLGDPAWSALADRCWHTVVDSGLPWDNNGRCC TSQLFTLSSDLRSRFLSSLKRGADLIYERGLLRKGLGLCH LaVADCPRAQTDPDLSGFLAAAVHRVRELPAPA DPGLCH RGVW AVHPTWSPSVAEEFERSCLHLQERLATSDSHRFCC CRLATAP YSLLRPYFPHDQDRDDSAVEKGQSMIWRAGLLTKEPCLCH YTL LRTGTAFKNAEWSKEGRAGLKNCASRHGGVQNAGGLS LLLTTLLRRAPRDKVISSGRCGAAVVYEQGLLRKGVG|GCH LVGDMVSRHTADERVLAALGPLSRAC ESMFVMDAQLEN ALLSTVLAMSVTPRFVVSLQRGCAHVYMRGLLRKGVGLCH CGLWNAWKVTKREDVKNAVDRTLDLCCIIRHMGVSDAS LIM WALWTAGGAFADAGLRAMDTLCAAYDEEVHLSDHPDSLCH
几TLVKA
LLGVALQNCWHPVWDQTLYQATARVWEEGLLSKGGSLCH LVAAEIDHRRPDPAMRAAVDALSLACMPEF VIGPQLFN LSRLHI LKNDGPNKLVEDLQUATRAILDDGLKSKDHSLCH AVLHAVLRHRPDAGLRQSLQQARLAA AEPEFIVQPSLFN YTLSDEKNDTDEEFEVYKNKILKVINSRCFYKGVGLGR LAMLRFREYRKRPGDKEALRRIVRCA DPEFADQSTLFN WALWTAGCALRRAGFDESLCDAALAADRTFCDAYDACLCH MVLDEYGKRRDSAEFADAAEAASLAAQSRMYDLDPGLET LVLSRYLQHRPDEKDATQLHAAALRVTHCAYYVQPGLLM TVLIAAGSPAREPELLELGLRCARLCHALDAPMSLVSQCC

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## UniRef90 D2B0E1 UniRef90-V6W9M9 UniRef90-W7Y4J3 UniRef90-B4VDE2 UniRef90-F0KD34

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UniRef90_R5NLC4 UniRef90-UPI0004764E6A UniRef90-E7PW94 UniRef90-G3JAD7 UniRef90-G4FMC3 UniRet90_M9TS41 UniRef90-GOQ9H7 UniRef90-W2S2N4 UniRef90-L8P4T5 UniRef90-Q813L UniRef90-E3H3Z5 UniRef90-L8ENU1 UniRef90-K4RO41
UniRef90-H3NEQ0 UniRef90-A8NND4 UniRef90-C7QC14 UniRef90-UPIO00262C60F UniRef90-UPIOOO46EA744 UniRef90-H5WUZO UniRef90-C7YLT9 UniRef90-V9PX18 UniRef90-UPI00037DFF6C UniRef90_BoE554 UniRef90-W758K0 UniRef90-NOCVV4 UniRef90 UPIO003783570 UniRef90-A8ICH1 UniRef90-UPI0002628D53 UniRef90 N2A3B7 UniRef90-B915J7 UniRef90-S8AP89 UniRef90-UPI00037AF087 UniRef90 KgarR8 UniRef90-C9ZGDO UniRef90-K5X3Y6 UniRef90-C7RI16 UniRef90-U1PXL UniRef90-UPI0003709B64 UniRef90-UPI000367CAED UniRef90-D2PYC8 UniRef90-UPIO0037F4D03 UniRef90_UPIOOO3660614 UniRef90-A8LZB3 UniRef90-C2ZHW7


DDMGDEVLKHTAADLSDEKDNSCTKTFNELVKKKDKPTD GTSGNLLALSYYLNYMENCQSKKLLHSFGLEKGWMCSFNT GRAG VLHYLAARPGDRLADPLVRRQVRGLAWHALPYG GMSGNLLALEDPHQ

RQHYMQA $\square C Q Y \vee D E Q$ G $\square F G N A L V L P R$ GAAGVLAVADAVRRCGGPPAGAVLVERMDSHLVAHEEE GQAGLLIVERYIRHVEGYEE EKWYENAAKYLDKRLS GSFGVLDFLLTLKELLPKEFHDEYVKLEKYHLEMLTQCRT GNVGNLTVMSSLAMGDNSEDNKKI LSESELYLLDKLT GSDGVLTALEYVHESFP EETKILIHNDKNTFCYIVEYFK GTAGVGDVLDDAAQCRAPERRQTLLRAAHRMWRFLEHRE GSVG| GMVLDDYLAHRADEQFERARTEVVAAQAMF GSVGI GMVLDDYLAHRADEQFERARTEIVRAAQAMF GAAGVLLVADAFARHTGSAPAAALDRWLTGHLHDRLDRVA GNAGFGEYLLDLACLLQDERFSNAAYQAEADLPHALDCEG
 GYSGGIVFARLYEVSSKELLLEQIEFFYDHECLSSFYDQ GRSGSALFLLRLYEQTQDRKHDALRHDLALSGWASGQPAA GRSGSALELLRLYEQTQDRKHDALRHDLALSGWASGQPAA GAAGRIAVLAWLADRLDWPEARTWAKELESRFLDRHADGG GTAGNAWPLLILHKLTGD YFLSRALAALLHAREAPPYNA GLAGVGD MVDVAEASASEEFRDAAETVALLILRPVFPDT GRAGILYLAGRTPERHRDPLLAAQVRSLTWHTLPYGGGTA GSPGSLELLAALAERGHDRARDALTRRTGEVLGGLEEYPG GNVGNLVILDSIDPVQTNQFENALHQESNQYLLEKMTYET GISGNAWPFLMLHDEYGQENDAQAK LSFRDRTGIIPSEEE GAAGDCWFGTRMHADFGVPGASEFAAHWAGHLDRERAPAG GDFSQWELLVRAAALDDPQGCAGEREAATMEVVSGDEEAG GNVGNLVIVASHGGESNTLVEKDASESSSYFFDKIAFECD GPSGSALLFIHLHRETGDHGYLDLAQQALEQDLRACAHNE GPSGSALLF $\quad H L H R E T G D H G Y L D L A Q Q A L E Q D L R A C A H N E$
GTAGLLRVVQRVTQDADEPR AFTGY仅QLSERFLAAEP GIF GNALAL
GGAGLAMVLHEAARLLPDPEFTRARDALREQA GPS GGAGLAMVLHEAARLLPDPEFTRARDALREQA GPS GTAGLLEHFVHMYEFTGEKEFDDYARRTARVLISDSSVSD GELGVTEVLTQLAGSDRRTVATRALRRRTGLVLDVLRRHG GTSGNLLALSYYCSYLSGNE REELEK LDDEYRKLHSFG GПMGNALALPR
GGLGLMAVLEAVLAALKANRYRASVLDRCSGGKDDDRCFQ GELGVLELLGHAALPRLRPHWLRRLLAAADRAQSHCGTPG GESGLLELLGHRALPAARPAWMRRAGTLLASADRAGPQPG G $\square$ AS NAMAL ASDDDNRFLEFLSHMGARMSWMAEAGR GMAGMILCLSRPHAAQRDPVVAEHIRRLSRHALTHRGHFA GISGNGIVLLYGYNYTQNKIWYSRAYKYALFCLKYFDKF GDDGNFWVLLDASRLLNYPEMADYVER LDPVALKDVNRHT GTAGVLALADRIIAEQDDAPDFAARATRDAAGVRWSNEEYR GSFGUIYTMMNKFNYYNEDFTKELANMMAGMDVVIS GVAGSVYTLLAASTILDLPEHAIHLAHLDATLADQLVEEGA GGSGVLELLAAMGE
GEFGSLD LDDVDAQPSRDTGADQLLQPSTGTAVSNP GLGGITTYLFKLNNWIQDSKIKEWENEFLNNVTKLLS GTAGNAMACLKLWQRFAEPPWLERARRLAMHATAQVEQAR G GIFGNALVLPRGREHFLALATADAVEKVRRHDPNLFENAS GRAGLV TYLAHRRATGTGPGADLDHRLARLLATLPDQAV GATGLALLFDRAAHLTNDVAMEHAANFWYTQLDRFDLNAD GRAGLLAILSGLSRSGHASLISERIDHLLAKLRWHLLEYHG GSAGLLLHLAATPRCDEETRDGADRLHTRLLSSHALLYEG GVAGSVYALLAASGDLDEERFAPYFTQAAHLAHQAGEMKT GTTGLALRFDWLYTATGEEKLRSTADFWYAESMRQRKFDN GAAGVLLIADAFAR NSPVGGPLRDRURFLHTRAPDVL
GDSGNAWPWLLLHDVFE
GRAGLLATLRRLSRRHPDNHRLSTARHDERDGWHADTYEG
 GVAGSVYALLAASGMLDEERFAPYFTQAAHLAHQAGEMKT GAIGLATLLPYRDDLNDRNKRDCGEKLNLFDKIFTPGD GRAGFVYFLTQLAESNDAERHANLLGTYAVLNRTGMHFPG GAAG L LVADAFDRQASFSPAAVLRERLDGFLRERLPERL GRAGLLLTAAELLGDSTDD LLVRGLGWHALPYEGGLIFPG GEAGDARALADACRLIGDEDGAHRAHERLMRTLRDVRVHG GLSGVGELLVDAALATGDDEYWRAAENLARSGGTVRRPLF GELGVTEVLAQLAGSDRRTLAAQALRRAAGLVLDVLRRHG GTAGDUELLLTLYQPLLQQKVSQLLANYYEYGAFRLQGYE
GTYGN
 UniRef90-F9G2G3 UniRef90 S3B3E5 UniRef90 D4J454 UniRef90-H2A7G4
UniRef90-I0S739 UniRef90-UPI00022B5608 UniRef90 S4B5Y3 UniRef90_L8EXK4 UniRef90-UPI000319301A UniRef90-UPI000319301A UniRef90-W7J6G7 UniRef90-B4SKB6 UniRef90-UPI000428E1D1 UniRef90 D6T2E4 UniRef90-E7G8H4 UniRef90-Q4WJ98 UniRef90_L8EVD0 UniRef90 L8EVD0 UniRef90_A0A016PU39 UniRef90_UPI0003780A6E UniRef90-A1CQY7 UniRef90_UPI00029A4996 UniRef90_C7Q158 UniRef90 A0A028YKB5 UniRef90_UPI0003C774B5 UniRef90_UPI0003FF537F UniRef90_C1GY92 UniRef90 UPI0002379B3C UniRef90-F8TUI3 UniRef90-S8H2D8 UniRef90 UPI00034CFAFF UniRef90-UPI00034CFAFF UniRef90-W1NQU3 UniRef90_L1KX51 UniRef90_F7VY74 UniRef90-D9VSE3 UniRef90_D9VSE3 UniRef90 UPI0004764E6A UniRef90-E7PW94 UniRef90_G3JAD7 UniRef90 G4FMC3 UniRef90-M9TS41 UniRef90-G0Q9H7 UniRef90_W2S2N4 UniRef90-L8P4T5 UniRef90-Q813L1 UniRef90-E3H3Z5 UniRef90 L8ENU1 UniRef90-K4R041 UniRef90-H3NEQ0 UniRef90_A8NND4 UniRef90 C7QC14 UniRef90_UPI000262C60F UniRef90_UPI00046EA744 UniRef90-H5WUZ0 UniRef90_C7YLT9 UniRef90_V9PX18 UniRef90_UPI00037DFF6C UniRef90 B0E554 UniRef90-W7S8K0 UniRef90-N0CVV4 UniRef90 UPIOOO3783570 UniRef90-A8ICH1 UniRef90_UPI0002628D53 UniRef90 N2A3B7 UniRef90-B915J7 UniRef90-S8AP89 UniRef90_UPI00037AF087 UniRef90 K9ARR8 UniRef90-C9ZGD0 UniRef90_K5X3Y6 UniRef90 C7RI16 UniRef90-U1PXL1 UniRef90_UPI0003709B64 UniRef90-UPI000367CAED UniRef90-D2PYC8 UniRef90_UPI00037F4D03 UniRef90-UPI0003660614 UniRef90 A8LZB3 UniRef90-C2ZHW7

GLAFPGFATGTAGVLFAMGTALHDRPV
LENGYGLMTGVS GIL
SLGNANLLS GSTGUILTLLKF
ELAFPGLIATGAGVLLALGSAYHDTPV
$N K E N D S L M N G V V G L A Y S L I R \square S S E K F V P$
KYNVYGLMTGUPGI L
GRLSMDLATGTAGVLLALGTVLHDEPV YEEPQSLYCGLAGKALVICT

DKK DVS LFT G $\square$ S G L
YDCDWGULTGELGULMA NVNETGRAMLNNVLLLN
ETLSPGLMSGKAGALLHLCKLANSDLKDS PLLL
DPPPPGWMQGAAGDAAYLDRLA
YAQPGLYRGVAGMVLYLGRTTATGPGTG
YAQPGLYRGVAGMVLYLGRTTATGPGTG


RFQS LGGLMTGLAGIK\FLDELSNDK
YDASYSFLDGSISVLLSLL FVEGYNTVIWEEMLLL
PDRPYSLSEGLAGTICAWADA

RRHNPDLFE
WRCGPSFMVGLS GWHYAR LMLDQDA
SDRPYSLSEGLAGTVCA
$G L T G P S W A G G S A G V L A F F R R L R D R G G P$
$F P G S M D L A T G T A G V L L A L G A A L H D E P V$

HVPSPGLLTGLSGI GHQLLRLAHLDEVPS VLLL
$D$ WGVLTGEMGULMAA
D DT P DYFLS RALSLLLYAQKTPP
MMPNASFLEGDAGAALALLHAATGVP PCWEELLL
$\square V G G P G L M T G D A G A V H G L I R M H \quad P Q C D L A S P L L L$
D WGV $D T G E L G I L M A$
ADDTLGVADGSAGI GLVIDELRHRDNPT
ADDTLGVADGSAGIGLVIDELRHRDNPT
PVE $\quad \square G F L D G A V G S T L A F Q D \square Q E G \square P T S D W D A C L L L$
FMLNAGLFHGRAGALLALRHLHDGSAAT
FMLNAGLFHGRAGALLALRHLHDGSAAT
EEPDAGLYVGSAGCASALLSL
GVRSPGLLTGLAGDGYGLLRHAAPQQVPS VLLL
LENGYGUMNGLSSGUYS
TQEGPGLMTGLS GMGLLA I M

NDAFVGLYAGEAGRA
FPGDTDLATGSAGVLLAVGSALHDRPV

$\square T Q S L M V G T G S P L A F L G K \square R H E D R S P D W$
HLAFPGLATGSAGVLLGLGAALHDRPV
NEAETGWAMGNAGI ARELLR
S DEDYSFLQGELG
PDRPWS LYEGLAGMCCA
ERVFASTYQGRCGM $\square$ Y TAAR LLNHD $\square$ PS
ARHGQGLWTGDLGVACVL
YGHKASVL
PSHGMDVATGTAGVLLAVHTALHGGP
GYAGYKVLE
PDHPWSLYEGVAGMCCA
HASFPGFSTGNAG\|! AA $\square \mathrm{NST} \mid 1 \mathrm{RPGVP}$

ETAGFAFHEGDAGDG\|GLM
APGDAALFRGWAGVGHLMVRRLAP
$V M T D L S L L T G A T G V L A A L L T V E G A D R \quad D W L R L L A L$
DYMLETFMLGSSGPAYAMLRMHHNKYPS
HLAFPGVATGSAGVLLALGAVRDPD
YKS G DNFMDGKY GL AYAI LIK YENS
HAAFPGLATGSAGULLALGSABADTPDPFW
FSYRLSLFSGSAG\|IAVLLDLI NKEKI SW
DRDSTDWSTGSAGVYAALERY
GDTDQSLLSGATGV
FPGSMDLATGTAGVLLALGSALHSEPV
$N R G S T D L A T G S A G V L L A L G T A L H E R P V S$
YRGGTTFMLGLTGVGHALLAPAGTP
PDNDPGWATGGAGVLSLLRRVRD
$S L C G P G L L T G L A G 1$ GYGLLRHAAPQRVPS VLLL
$T \ Q S K G M Y T G V T G V L Y T L L R T L N P T L P S$

UniRef90 D2B0E1
UniRef90 V6W9M9
UniRef90-W7Y4J3
UniRef90 E2PW36
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UniRef90-L8EXK4
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UniRef90 UPI000319301A
UniRef90-W7J6G7
UniRef90-B4SKB6
$\square \mathrm{G}$

UniRef90 D6T2E4
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UniRef90-Q4WJ98
UniRef90 L8EVD0
UniRef90-L8EVD0
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UniRef90-A1CQY7
UniRef90_UPI00029A4996
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UniRef90 F7VY74
UniRef90_D9VSE3
UniRef90-D9VSE3
UniRef90 R5NLC4
UniRef90 UPI0004764E6A
UniRef90-E7PW94
UniRef90 G3JAD7
UniRef90 G4FMC3
UniRef90 M9TS41
UniRef90-G0Q9H7
UniRef90 W2S2N4
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UniRef90-Q813L1
UniRef90_E3H3Z5
UniRef90 L8ENU
UniRef90-K4R041
UniRef90-H3NEQ0
UniRef90 A8NND4
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UniRef90-UPI00046EA744
UniRef90 H5WUZ0
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UniRef90-V9PX18
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UniRef90 UPI0002628D53
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UniRef90 UPI00037AF087
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UniRef90-U1PXL
UniRef90-UPI0003709B64
UniRef90 UPI000367CAEL
UniRef90 D2PYC8
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UniRef90-UPI0003660614
UniRef90 A8LZB3
UniRef90 ${ }^{-}$C2ZHW7
UniRef90 R2QFM4
 $T \| Y$ D G H L G TVV L $\underset{\mathrm{M}}{\mathrm{M}} \mathrm{M}$ LL VA Y G T A G V L H H A L GGLAFAHGAAGVLYALA

$F S L A H G A L G V A L A L D$ G GVNLAHGAAGVLWALA D G T S V Y T G V S GYVMMVQ

TFAHGAAGVLHTLA


NK L I R D C L E N F
PMGAGLTNGYDGTALFLA TNYNDVSLLDGSSGFLLFLL TPSGGLGIAYGAAGVLVALS GGFTVANGAAGVLWALR
$E N T \square A P G T \square Y S G Q L G V A D M F L$

$K \square L N A A D H R T S N \square R Q T G S Y S A G L A G \square L Y V L S$


S LY D G D A G V V W A $L T$
PMPADLAAGYCGPALFLA
 $V L P E A N D K V G V A Y P G D D L Y E G S A G I V Y L G V$

LYN G T A G V VPVL A E RLA ELVADRTPGGYAARPRPGLLHGATGAALFLL A E R L A E E V A A D R TP G GYAARPRP A ERLAAELVADRTPGGYAARPRPGGLLHGATGAALGLL KVLQA GS QAPVNSADHSSVVSGTA GVVLAFL


PMGA GL A Q GYCGVALFLA
$\square Q A A L E D \square V T N Y P P R S R Y A P E A L G L W S G P T G M A Y$
$G$ ETVSPLGDQHG\|AGLMLG
$G G Q S F A Y G A A G V L Y A L H$
$S \square Y$ T G D N G $\square A / V M A T$


VA Y G S A GVLHAL $G G Y G M A H G A A G V L W A$
$N P D S F Q H G L D S G Y$
$N$



ENLVK ESSLR Q I D A HPP P LR A YTK D Q CGFFR GP T S L A Y L L L $R N N I K R \square V D T M V N N \square D L N S D R \square F K G H N V L T G A Y G C D Y A L S$ H P Y LA Q S L Y Y G SPGTAI F L Q


WG VG GF F LG NP GITLAFL TPVGGQCF GTGAA GVLIHA L H


$G \square Y E G Q L G V A D F A A$
PAGMAFGTSGTATALL
$P G G G T T F A Y G A A G V L W A L S$
EKIIN QCELVIN NTTRNINSYHGLRRDTF FLS
$L S E A L E T I V R D Y P P Q D S Y G Q P L K G L W N G P T S D A Y L F L$
EK L $\square H$ G D $\square R Q Y E S K A G K Y N V Q N G G T G A A L A F F$ D S L Q K S D Y S G D SLLAA G SMGHCI CQH


## UniRef90 A4FHY3

 UniRef90-C5P5H5 UniRef90-T4VY93 UniRef90 S1SLL1 UniRef90-G2QGN2 UniRet90-O87238 UniRef90 U2YSQ2 UniRef90-R4LN68 UniRef90-V2XFI1 UniRef90 W5W0G7 UniRef90-HOBBZ6 UniRef90-D2PYF6 UniRef90-E8K8J9 UniRef90-D9VIY3UniRef90 - D2BE78 UniRef90 ${ }^{-}$x5E6G8 UniRef90-A6QWI1 UniRef90-GoRMM2 UniRef90-C7PLD6 UniRef90- Q5BA76 UniRef90_UPI0004621497 UniRef90-K2T060 UniRef90-H3EV51 UniRef90- B6H927 UniRef90_UP100037CF56F UniRef90-UPI000375498E UniRef90 E3CLY6 UniRef90-H1YBU9 UniRef90_UPI000367BFCC UniRef90 UPIO004770F2F UniRef90-UPI00036FC5E0 UniRef90-АЗТІТЗ UniRef90_D6B3V8 UniRef90_Q838G2 UniRef90-R3U1D7 UniRef90-D3Q5U7 UniRef90- Q9FCE6 UniRet90_M3FHN2 UniReffo-M3FHN2 UniRef90 M3FHN2
UniRef90-A0A017S8w9 UniRef90-UPIO00289F629 UniRef90-A9DQD0 UniRef90_D5ZY41 UniRef90_G2R8T6 UniRef90-KоЈYH6 UniRef90-U4TNA2 UniRef90 UPIO00379160A UniRef90-M3EBF9 UniRef90 M3EBF9 UniRef90-U6SKW3 UniRef90-E4NA19 UniRef90-D8QM16 UniRef90-UPI0004192259 UniRef90-UPIOOO349D221 UniRef90-E1LQD2 UniRef90-B8NNG6 UniRef90 UPIOOO400C165 UniRef90-D8PBS9 UniRef90-S4C823 UniRef90-W5WC27 UniRef90 ${ }^{-T 0 C 103}$ UniRef90-A0A010Rot7 UniRef90-UPI00036FD615 UniRef90_R1CK45 UniRef90-Q0CTPO UniRef90-G7THG2 UniRef90-A0A017SR38 UniRef90-I2NB19 UniRef90-UPI000370123F UniRef90_K0TSZ1 UniRef90-E9F551 UniRef90-UPIOOO35E0875 UniRef90-C9ZDP4 UniRef90_C9ZDP4 UniRef90_L9VEEO
UniRef90 K7M2D3 UniRef90-GOPTF1 UniRef90-R4LEQ3 UniRef90-UPI00037AB7B2 UniRef90-R3GPX8 UniRef90-W3WKB2 UniRef90-D8Q514 UniRef90_UPIO0035E14F7 UniRef90-UPI000468A79F UniRef90-H8E8V4
UniRef90- UPI0003803AC5
 RLQRQAKYFRAENMSVNSLVSETQRLASSRLNPHSPLDSA YYGKENKDKDAIDCSVRLTELLDNNYKNKRKFNLSVYTG\| ESGAGRDEDG
 EQWLLERTKRPPSGMPGFHDGL AAGRVLKDKDSIEDSADGFNKSSQULQEKTYDFDGGFSG\|



$R \square Y \square G G N K A E T D A L I S S A H S \square A K E R \square S P H L V E T H P G H G S P$ HTGDVP SDADRWAKEYLNE ETLSELDDGLLSGR RERSRATAAVAAHWDERHCADEPVVLPGLLDGR

RMAGHPPAPALVTRDRD ES $\square$ A GWRD DPPGLLFGS RAG GLERSPELEAWLVAASRRDRSPHPGFYDGV
 RLERTEPGRAPLDFGKGARERIVPHLKSGFLSPLGSFSPV RKALVHSSAETLALADVWSDRAAGYLTPS VGLSSGYHTPD
 QLAELT GAPRYVDLAVDALRPDPALLSSAANRELGAAVGS

[^3]R【AHQPPDFRKDTNERTYSGPDLPLLPSRपSPGGSLSPПP ETGA R HVTGAGRYPDOTHNEQWLLDAVRRDPPRRAGFFDGS RTAQEHAGLQVRGHGCKYWAERYMAGDRGAQETQDRNCGL STGTHYPERD EHLDWLVRAAQRLPATHLGLYDGLL

VVADQLHRDDARETA $\square E L T G P \square R D A \square R T N G A E A D D G G \square D$ KAYQVTKDGNDHNLCSEIVKACDS ASDDSRKVTFICGR RASGRHDDPALLAWAHRALAGLADRPDGLARHPGAASGAE RGGHHVPEE $\quad$ HVZWLVDHAMRLTDVGPGFFNGL EAWRHFGDASWADLALRAGRGLTAAVDSLDDD SLYFGR SLIKVTPNELIEEKIIRNTNSIDEYVEGI DTSPGLWHGL HVAAARPELLVASRPARHWAQAYTRDPEAMVLEPSARCGl
RSGTVSEKTN HWTENELMKNTDS DEQGGLLTGK


## UniRef90 A4FHY3

 UniRef90－C5P5H5 UniRef90－T4VY93 UniRef90＿KOFAZ6 UniRef90 S1SLL1 UniRef90－G2QGN2 UniRefefo－087238 UniRef90－U2YSQ2 UniRef90－R4LN68 UniRef90 V2XFI1 UniRef90＿W5W0G7 UniRef90－HobBZ6 UniRef90－D2PYF6 UniRef90－E8K8J9 UniRef90 D9VIY3 UniRef90－D2BE78 UniRef90－X5E6G8 UniRef90 A6QWI UniRef90－GORMM2 UniRef90－C7PLD6 UniRef90－Q5BA76 UniRef90－UPIOOO4621497 UniRef90－K2T060 UniRef90－H3EV5 UniRef90 C0MP58 UniRef90－${ }^{-16 H 92}$ UniRef90－UPI00037CF56F UniRef90－UPI000375498E UniRef90 E3CLY6 UniRef90－H1YBU9 UniRef90－UPIO00367BFCC niRet90 UPIO004770F2F UniRef90 UPI00036FC5E0 UniRef90－АзтIT3 UniRef90＿D6B3V8 UniRef90 Q838G2 UniRef90－R3U1D7 UniRef90－D3Q5U7 UniRef90－Q9FCE6 UniRef90 M3FHN2 UniRef90－M3FHN2 UniRef90 M3FHN2 UniRef90 A0A017S8W9 UniRef90－UPIO00289F629 UniRef90－A9DQD0 UniRef90 D5ZY41 UniRef90 G2R8T6 UniRef90－KоЈYH6 UniRef90＿U4TNA2 niRet90 UPIO00379160A UniRef90－M3EBF9 UniRef90－M3 EBF9 UniRef90 F2PMY9 UniRef90＿U6SKW3 UniRef90－E4NA19 UniRef90－D8QM16 UniRet90 UPI0004192259 UniRef90－UPIOOO349D221 UniRef90－E1LQD2 UniRef90－B8NNG6 UniRef90 UPI000400C165 UniRef90－D8PBS9 UniRef90－S4C823 UniRef90 W5WC27 UniRef90 ${ }^{-T 0 C 103}$ UniRef90－A0A010ROT7 UniRef90＿UPIO0036FD615 UniRef90 R1CK45 UniRef90－Q0CTPO UniRef90－G7THG2 UniRef90 A0A017SR38 UniRef90－12NB19 UniRef90－UPI000370123F UniRef90 KOTSZ1 UniRef90 E9F551 UniRef90－UPIOOO35E0875 UniRef90－C9ZDP4 UniRef90＿C9ZDP4 UniRef90－L9VEEO UniRef90 K7M2D3 UniRef90 GOPTF1 UniRet90－R4LEQ3 UniRef90－UPI00037AB7B2 UniRef90－R3GPX8 UniRef90＿W3WKB2 UniRef90－D8Q514 UniRef90＿UPIO0035E14F7 UniRef90 UPI000468A79F UniRef90－H8E8V4UniRef90－UPI0003803AC5

AGDLDHVTQLíGHHSGDP
100
110 120
RLLRARAEALLD SFGAAVVR】LAAGRGLADGQCR\HKRDDAEVQDAMHVALH GALMYTTYNFYK AGIA WVLDDLGERDAALTLLAAANGHRLA A GLA WTLDRLGHR HGCGIADEKMAYEAAAKEGESSSSPGGDRDRALDLAELLL TGLDFWADAAG NILNND DWGKTSNQSMLLLNEN

AGAVWACRRLGLTDE ATTLSERLQSVE
HGVAYALHRLGRKEEA
I GTAVLVITHVLDAGKPPETTTPFCSE\｜LQCUTDAVEVN HGVVHVLEQFGHSAELADELLAEYA GGI AYALTEVGTLLG D D D DEVLDLAGPAVRLSC GGI SYGL SRLAELLDDSSLLSWLDLSLQLMENAA
$\square G L S Y V I N L W G R Y S C N F K N L D L Q L T E A S K K \| I D T Y L N E E \square$
HGIAFALDRLGHR TAAANLLDRSA

 SCEKLAYEALKACDSQDANDVQVFLSNDPTVVGPYADG $S G \square A F T \square$ GKS $\square E T S L I S D D A K Y R Q W I K E L I$

A D L I E NAVE $\square$ A $A$

$G D V V A S L H L D A D P A A G V Q S V R G F L D Y Y L D D L L D E R V A D$
A GV A HVLD RLGRADE ARELMEHA



$H G V A H V L N E L G H \quad E Q D A L D L V E R T L$ A GMAVAL $R G V H R T L G D T A A G A A A D R A L D V L R S R E$ A QA GWT ALQLLARARGTEPSGLGPVDDTVLRWDADY
$A G V$
$G G I$
$G$
 GMRLTV AFFVT RLLDDEKHRLYLKK SVQNLK LVRVLESN NGAAFTLDHLGHR
$T G L A L V L R T V H A E L G D \quad P A S G E A A D R A L G L V R S R F D G T R$ A GTAMVVSDVLPHLPSPDPALHDALPLLHS
 A G T A M MVVVS DV L
 S GVACVL HHLGG RTDAAELM A GI G WL V LIHLLKEQEFVDD DD D DF LDD T S VD T Y LTYETM GGIVYAVLRLSALLGPGP
 S GYAWALHSINR
TG G $\square \mathrm{A}$ WTLNRIGRTAEA
ERADSHLASVVAA LL NKAV


T GSAHLGAAFARTFAAAANMTSRNGSVCRDYSREAFDHAC $A G \square A G V L Y Q \square G \quad F R E K A N K I F N E!T I D R$
A GTA WALF DAADALGD PGLAERAAGLAARLDLDWPDPGL
A G I A WVLA QEGE
WD A AERLLRHAG

A GLA YVLDHLGHR

 S GVDLVQVLVSQAAGDYGSYYNAVHNFLVHASQ
A GV A V A L A L C G QR LLHN QK Y LVAA KK R FESAACANSR
 GGFHGLGGICYALARLSGLLAGANLTD TLRLALDLA T DLEE

 $T G I A Y G L R A A G D S S E L F A T A A S T V E E H V V L S R V A P F S S R B$ A GAVPRMFEAAMTGGAVSTDD $\square$ R RVLQQTVETALKTGNLVL

A A VLRR ILAAATSNSAVSKDD DQHFYQADEDALKNGH VVPH A GI A WTL NRLGHR
S GVVAVLEEFGYRDEAS
A C L K L A F A V K E R L NLI HG ILP Y L KNRTYSKI QECY
 D D A A ELLDRCR

GLGGATY乌VVGTVLNASECDAAAEDLVDTFEPDR■SEG A GVCA LGAVI ARHSGDERLLDYYQRHFI
TAAAGGGWHGALGVLGARVAVAHALDDMRESVERYLREHR A GVAYALEELGRHAEAT ELMDRA A GVVA LMLLH T L H E E L G S S Y G Y L CA EL N D NYEKKN QKLSNMVE LLLSKNDGE IVK】K S L SSEVLAWQAVRASLSGDPAHVAAFLSHVPAVVD
A G $\square \mathrm{GT} T \square Y \mathrm{E} \square \mathrm{GYKKEAMN} \mathrm{\square FANM}$
SGFTSVI A YL DEQEVFDDSVLTELTDDDQUIFKGATLQAN A G GA WML R RVVRHAEA
$H G\|A Y\| L \| D R|L| G H R$


## UniRef90_A4FHY3

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UniRef90_R4LN68 UniRef90-V2XFI1 UniRef90-W5W0G7 UniRef90-HOBBZ6
UniRef90 D2PYF6 UniRef90-E8K8J9 UniRef90-D9VIY3 UniRef90-D2BE78 UniRef90-X5E6G8 UniRef90-A6QWI1 UniRef90_GORMM2 Uniinefoc C7PLD6 UniRef90-UPIO004621497 UniRef90-K2T060 UniRef90-H3EV51 UniRef90-B6H927 UniRee90-UPI00037CF56F UniRef90-UPI000375498E UniRef90_E3CLY6 UniRef90-H1YBU9 UniRef90-UPIO00367BFCC UniRef90 UPIO004770F2F UniRef90-UPIO0036FC5E0 UniRef90-A3TIT3
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UniRef90 ${ }^{\text {S4C823 }}$ UniRef90_W5WC27 UniRef90- ToCl03 UniRef90-A0A010ROT7 UniRef90-UPIO0036FD615 UniRet90_R1CK45 UniRef90-QOCTPO UniRef90-G7THG2 UniRef90-A0A017SR38 UniRef90-12NB19 UniRef90_UPIO00370123F UniRef90_K0TSZ1 UniRef90-E9F551 UniRef90_UPIOOO35E0875 UniRef90-C9ZDP4 UniRef90_C9ZDP4 UniRef90_L9VEEO
UniRef90 K7M2D3 UniRef90-GOPTF1 UniRef90-R4LEQ3 UniRef90_UPI00037AB7B2 UniRef90-R3GP X8 UniRef90_W3WKB2 UniRet90-D8Q514 UniRef90-UPI00035E14F7 UniRef90_UPI000468A79F UniRef90-H8E8V4 UniRe90-H8E8V4


LDVGAWGS DLASGLAGTGTAL LDASGSPDDLARATDT AEPRDGLSLDLASGLAGIGLTLGWFADQTGDPRLADEAEH QDDDTDDGSEVLYGRAGLLYGLLRTRRSLRHTSVARLSAL PVLHTVHDHSLFGGLSGIALNLLDLADRRRDNDFRDQALL AASAAEDGYGVRGGAAGGLVSLLAVHRATGRPEAWRGAER

SRSEGVPSYVEGAAGGLTAVQALGSGPRTTKL
KNYSDSTTYDLYGLAGIITFIKYHPLFKTERNLDQCLSK
 GDGMDRRDYSYATGLAGVAHRFLVAGRNE RLAQRIADL KQGTTVGGDEALYGRAGVLDALLQLRQQCKDDAFTMIPRLD

NPENSSLNLSHGDAGQGLAMLDLLQDTLDTSYAMTTASE YHGHDLGAD
GEELDDDGC
 AATGATDNSLYRGLAGIG
NEPLKMGGDEMLFGRAGLLWVLLNVRAHNFTQVLEADPEL KEPLDAQGSDLAGGLPGIGLLTLHFAGTTSD SVDAAVTAVGLYSGLAGSGMNLLRFAERTGDTAHRDAGLR

RQTTT TLNDADGVAGQLLATLLISKPDQQDETANRTAV ADEFETRELGLHSGLAGIGLNLHFTSEPS贝RAADHVIDL DGEGWNDSYELVGNAGUALAALECGD GEDDLAQRAVAR
EGS
GVGAGTAGG
LKN DLTDGLAGLLSLARARRHESHAASD


DESYGLGYDDADSGRAGLLRAVLAFRHFRSYELVFKNVPF AHGAAGA GLAQLRAHRATGARDFDDRAARCARH
RHPLVTRSATLGGGSAGLALAELS पYCRTGEESADDRARA DTGADHEGDSLFSGLAGTCANLAHFAGRGYGT ALI DH LGYNDDSEQDFVLGKAGVLLSLMRYYELEG Q G D K M M G G DE LI YGRPGLLLWS I FN NRRKKRLQPVFDALPNL PCENLDLTLGKSAALIGGSLILENMPSYDRFTKNDL
N SNTKTF
RTTGTDEP KNVIYOKPADVAE NEDDQP CRYDKNDDYEMLFGYAS GGILGYSFLRMYKKTRNEKYLRLSKD GGAL HHDRLMGADDTLYGRAGLLWALVNLRVRQFDEETSASLRP VDHGVAG ALVWQQVEKDVPDSLKEWMAR L DGNDLGGD EI DYGRAGLLWSILNI RAHKFDDATEKALKP EQPRDRLTPDLHSGQAGUALAFDELARDASGSDATAFAAA ENRDNRSDYDLISGLSGIGLVKHVVNNNIDHDIANCLKNY AREKAFPS EMLYGRAAVLYMLRMVRRSSAGPVDEAUGRI TGLHDQHGPGLHSGLAG\|GLALLRTGTPAPDDALRDGDRL

GPYDVMRGAAGVVLGCLVLHEHRPTSSADTVAR GПPHDDPYELLYGRAGYLIWAF
RYCTPTAPLDLTHGLASCLL MDAHLLPVVRTEAADD AMPDDQVDGSLADGWAGLGLAALHLAEVRGDPAYLAVAEE AMPLDQVDGSAMGNAGLGLAALLAEVRGDPAYLAVAEE QQITRNHKWFDIFYGVTGIIVYLGRVERFESAKKLIYMLTAD GPAEAEWHSGRAGMLVYLLRMICHWVPESAPLLQEAT

[^4]UniRef90_A4FHY3 UniRef90-C5P5H5 UniRef90-T4VY93 UniRef90-K0FAZ6
UniRef90_S1SLL1 UniRef90-G2QGN2 UniRet90-O87238 UniRef90-U2YSQ2 UniRef90-R4LN68 UniRef90-V2XFI1 UniRef90 W5W0G7 UniRef90-HOBBZ6 UniRef90-D2PYF6 UniRef90-E8K8.J9 UniRef90 D9VIY3 UniRef90-D2BE78 UniRef90-X5E6G8 UniRef90 A6QWI1 UniRef90_GoRmm2 UniRef90-C7PLD6 UniRef90- Q5BA76 UniRef90-UPIOOO4621497 UniRef90-K2T060 UniRef90-H3EV51 UniRef90_COMP58 UniRef90- $\mathrm{B6H927}$ UniRet90-UPIO0037CF56F UniRef90-UPI000375498E UniRef90-E3CLY6 UniRef90-H1YBU9 UniRef90-UPIO00367BFCC UniRef90 UPI0004770F2F UniRef90 UPI00036FC5E0 UniRef90-Азтіт3 UniRef90_D6B3V8 UniRef90 Q838G2 UniRef90-R3U1D7 UniRef90-D3Q5U7 UniRef90- Q9FCE6 UniRef90-M3FHN2 UniRef90-M3FHN2 UniRef90-M3FHN2
UniRef90-A0A017S8w9 UniRef90-UPIO00289F629 UniRef90-A9DQD0 UniRef90_D5ZY41 UniRef90_G2R8T6 UniRef90-KOJYH6 UniRef90-U4TNA2

| AARHVRRLLRREERSGSDGCT180 ${ }^{170}$ IDSMMSGGKLGARDYLELYGE SINKLDHDFEI <br> LLDAVPDGAALRHALGPDHPS CAELA ADGLPGGSVPADRV |  |
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|  |  |
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200
TGFA IDSIMSGGKLGARDYLELYGEREYMPLMWSWHDKYYTGAD SINKLDHDFE! DKYDGV G A CAELAADGLIGGSVADRVSRGRAR TDCLLTEMEK

DETS
A GLL

VDR【se
RWGLDERSAPMTIPPASRRRGGLM VAT VALRLRAAPPAAADSGGKHPRAGLN CQSTHRGRVGASDYRKGDSNVKLPPLMWSWHSKRYLGAA LGQRLADKLSLA A PPGPRGRAGLDC AAQYADELLAAVNDHपQQAEP AGFA LVNKIITKNNDNFKLFFSNFE SKEAKNLDKTVIINASLS AARSGDASAREAATHDAAAVAGRLADPLASPSRPGPIGLM GERLAAELGDGDSGMFAPQ FADLS GRPFPYGFWTPPCLLGDRVLEREPEDSFDLGFG ATVI DETGKVGASDYNDLYGGQDALSLMWPWHGKYYLGAG $\square A Q V A E K \| L$ ADSDDGDEGGWTFHKKKYLGAG YVHRILAAQEKNGTWT

ADSUDGDEGGWTFHKKKYLGAG
VRSTIDAGREGAAKYKRHGKVDADPDMWPWKPGYYGVGWA VDDIIKRGELGAVRYLEADERGKAPPLMWKWHGSWYLGAA LDDTSDEIIDAI 1 EKLLANGRKCAGDGACVGGGEDGPPLMWCWHKTNYLGAA LLHFARVTGEASFAAAAEETAGRVVANLRRKTEGAYRAGLM RVIVDAGRQGSKEYTKNGAQDAHPLMYAWMEGHYCFGAV LHAVAIDVAERLAARLKPDSGNAGPASARRP
IAARLAARLSQAAAARADPARSVQRPDG
দFQLLRDAQLPDGSWNVGNG VADRLGDVDDP
YARTAETTAAGVQWETRAGAVPR\|HH VEDRVEHDGDGLFVRLGDSPARRADQSARC
$P D G K I P V G F P$
$T R V G L G$ VEDRVEHDGDGLFVRLGDSPARRADQSARC RVLGA VAELRHRSRKEGWGRSWPDLRLPGDSARPLC RGLA AERLLAAG
LLSEITEDEKYRKFS
PPAGTG
YAS ETEDEKYRKFSLEDFEKLSEEPYFNFR
$E D S G F A$
$A G L M$
AELVAAD DGELAEATDSSGGGEPW
YLRTAEQTAHGVHWPHRPDTDSRLHHVS
HRHLTAFGWHAlPYAGHPAFLGDQTLRLSTDLA
HRHLTAFGWHALPYAGHPAFLGDQTLRLSTDLAA

VKMDIDGGRRGARDYVKNGEKGALPLMWVYKDERYSLG
LAERLVESAAGQ
LAERLVESAAGQ
WKHPEYPFEEDSMCFQLSSLSND

AEDSNTDLNRGPRWTWHGRR
ADKLLASTVHSFTAM TNHQQLMPSWQD
AGRCTALAVRALVDGPPSPR
PGD AAQFTAGGGLALG
PGDIAQFGTAGGGLAFG
LVDCDEAGK LLATTRDEPPGTLWPVPADFDSARAGTARLDHPHGAAGGG MWSWCGKRYLGGA

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UniRef90 A4FHY3 UniRef90-C5P5H5 UniRef90-T4VY93 UniRef90-K0FAZ6 UniRef90_S1SLL1 UniRef90-G2QGN2 UniRet90-O87238 UniRef90-U2YSQ2 UniRef90-R4LN68 UniRef90 V2XFI1 UniRef90-W5W0G7 UniRef90-HOBBZ6 UniRef90-D2PYF6 UniRef90-E8K8J9 UniRef90-D9VIY3
UniRef90 - D2BE78 UniRef90 ${ }^{-}$X5E6G8 UniRef90 A6QWI1 UniRef90-GORMM2 UniRef90-C7PLD6 UniRef90- Q5BA76 UniRef90-UPI0004621497 UniRef90-K2T060 UniRef90-H3EV51 UniRef90_COMP58 UniRef90 ${ }^{-16 H 927}$ UniRef90_UPI00037CF56F UniRef90-UPI000375498E UniRef90 E3CLY6 UniRef90-H1YBU9 UniRef90-UPIO00367BFCC UniRef90_UPI0004770F2F UniRef90-UPI00036FC5EO UniRef90-АЗТІТЗ UniRef90_D6B3V8 UniRef90 Q838G2 UniRef90-R3U1D7 UniRef90-D3Q5U7 UniRef90- Q9FCE6 UniRef90 M3FHN2 UniRef90-M3FHN2 UniRet90_M3FHN2 UniRef90 A0A017S8W9 UniRef90_UPIOOO289F629 UniRef90-A9DQD0 UniRe990_D5ZY41 UniRef90 G2R8T6 UniRef90-K0JYH6 UniRef90-U4TNA2 niRef90 UPIO00379160A UniRef90-M3EBF9 UniRef90-M3EBF9 UniRef90- U6SKW3 UniRef90-E4NA19 UniRef90-D8QM16 UniRef90 UPI0004192259 UniRef90-UPIo00349D221 UniRet90-E1LQD2 UniRef90-B8NNG6 UniRef90 UPIOO0400C165 UniRef90-D8PBS9 UniRef90-S4C823 UniRef90- Toclo3 Uniree90--AOCAO3
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UniRef90_UPI0003803AC5
F D R A CEWERS C GP A A MK $\quad 260 \quad{ }^{250} \mathrm{P}^{270}$ WCN G A A G|L|A

RACEWERSCGPAAMK A LCNLCDLNHGHLPSSVPHRSSSRTSP LVQ】CHGAPGLL
D S GTWE EK D $\square Y$ T WCN GK S G $1 \quad L$
PVGALGF
$R$ VSD T DRRNMPYLACGSAGYA
A G G A L
VDE GWRTMPYLGAGSVG $\mathbb{C}$
D G N
WPS SEES GARGK G
NS YGE $\square E C Y Y$ P T
D GHSKSTSWCNGTSG L L SAGVDWVLRAHDRSGEEPSGKADDRAESTGAWCDGLAGDA G D G S L Q
D N G


QDPHGNWPTKAPSHVSDHHSSH $P N G T V Q V R D G$ $A M D V N E G W R T M P Y L A E G S T G V G$ TP DGAPYGGLRTLPYLEVGSAGIIA TPD GAPYEATAGTPEGATAGATREAASGAVAGPAWCGGVA ERAE QTTAANPGWCS GQA GTLL $\square D N \square A W D P E Y V E V D L Q C N K D V L Y Y S R D N E N F S W C Y G V V Y G H Y$ $L A A A A L D L D L H A S L E P A P G S W A L I R T P R P R M Y$
$P D G G F C$ $H G R G V S S Y Q V A P L A G E Q P A A S A P S T P T W S T G L P G V E S A V A$ NAGNLPSSVPIRSSSLHDP GN WPIARE $\square$ DESRH
 HNGHLP TKIPLRSSSRQSLLVQMCHGAPA L Q D PLGNWPSKASLPDSKRLGVDEEHDDALVQWCHGAPGFL
 $S T L Q Q D E G W R V L P Y V A T G S V G I G$ TNGHLPMTLPPYSSSQRSSE $\begin{array}{lll}\text { T } & \text { D G T } \\ \text { L } & \text { L } \\ \text { P } \\ Q\end{array}$ RNGSLLS

VD DGSRVL
L
0 DRAESTGAWCD GAAGDA D GETVSVP
$D L T G Q V G E V G V R T L C Y L D G G S A G L A$ D P D G MLQ
 DEAG PDGFLVAHSDPQQEHEK IERHSYGWCHGTA GDA DP A R G GWP DLREGDVT A Q G G

K T G A LE
SYF WCHGRAGTA
SYFEEEPKNNSWCKGTVGEL




QTEGGNWPS TAEARERADR VQRFHGAPGF
DNGNLH VR D GA R R L F Y L D E G S A G I A

 SNQRANWPDR
NNRFPWGNYPS S E G S ENDRLVEH
D P A GLG WRP GWES SWCNGAT GIA
CCHGAPGLT
SD A R $\square A G \square D S L Q A D R R D G P G L T G S A G M A$
KNSSYHKPDGGFLVRHSTPQFRPDLIDP DSYGWCHGPAGDA
QKQDGNWPVNEQVD
QDEDGNWPS
KAPAHTA
TKKEDKST LQQTDDDSNRLLDYLS G GS L G I G LKE Q T L S E Q S VF P $\square K \square E K T G S T P$ T Y S A SQ S WS Y G D F GV L D D G S L ${ }^{H}$
$V R E R N R \square M P H \mid L G \square G T A G M A$

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UniRef90 R4LN68 UniRef90-R4LN68
UniRef90 $V 2 X F I 1$ UniRef90-W5W0G7 UniRef90-HOBBZ6
UniRef90 D2PYF6 UniRef90-D2PYF6
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UniRef90-M3FHN2
UniRef90- A0A017S8W9 UniRef90_UPIOOO289F629 UniRef90-A9DQD0 UniRef90-D5ZY41 UniRef90-G2R8T6 UniRef90-KOJYH6 UniRef90-UPI000379160A UniRef90-M3EBF9 UniRef90-M3EBF9 UniRef90-U6SKW3 UniRef90-E4NA19 UniRef90-D8QM16
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UniRef90 K7M2D3 UniRef90-GOPTF1 UniRef90-R4LEQ3 UniRef90-UPI00037AB7B2 UniRef90-R3GPX8 UniRef90-W3WKB2 UniRef90-D8Q514 UniRef90-UPI00035E14F7 UniRef90-UPI000468A79F UniRef90-H8E8V4
UniRef90_UPIO003803AC5
290
300
310
320 Laramlv DRGSGRASLVRDLEDAVGSCLSAELGRR HTLCH 1 LLSNARKNYWRPEWDEAI CLASEKVWEQGLLYKGGSLCH LTRKLIYDNLKKDDFEEELNKYNSWI FDDEFNLDNMCLCH MVLDDYLAHRADEEFARAANETVAAAQA MFYAQPGLYR LSLLALRPHFPEDRDDAADERGRECDRMQGLLKKEPSLCH VAYUEGYKANIVDK SSVYHUINQLNVEQLQHDNPIMCH LGQ AAARLPDPGHARDLDRTVKR LTDGAPLKDLSLCH LVLAQYLAHEPDDELDDALRGIVRAA SAPFVVQSGIFA LVLDQYLRHRGDEEFRAASAAIRRS ARSPFYAQPGLFA LVLGELSDHLPEARSVESLCPGLHTALLPEFVIF PGLLA GVALAVADSPDDPELSRWL AARSGELAGDGPLADDSLCH I FQRNKGLNFSTYLKDRLLVRVNEFTNNETLETNNVCFCH LVLNRYLAHRADD RLTAAVAADARPLGSGYHSHS GLFT LVLSQYLGRRAEPGFADVVDGVRRAC RAPFVRHPSLGM ILLAQAMHSFWEPDWDKA TR LGSEQVWERGLLFKGGGLCH YSLHAMRPCFPEDEDDAAIARGQEAI WRQGQLRKEPSLCH LLLLKAYEVLGASQYKDYAQKILMALKKPQUNNNGYGG GLLGCALKHTWEPNWNRAVCLATDRVWEQGLLSKGGGLCH MLFACPLPDTDRTSUVAAMTRAGDLVYSRGLLRKGVGLCH ASLQSIKQYFPKDRUGRAIVKGQECILERGLLTK GFLHEFLRHRPAPRFTEAQEGDRRAAA PAYFVQSGLLN ILLGAALKNHWDPSWDQA MYMGTQRVWEEGLLSKGGSLCH APLHALLRHRPDPQRHRSLEQMRGAAEPEFIVQS GLEN RGUVELYKHTEDDRLRTALPGLLRACASEGAVWHQPALFH LVETLAFKQYGDQQHLLAAERLLRKNEAFPVYVDNGGVAF QVRLLSQITRADDSAWPALVDRCWHTLVERPGFWDNNGRCC LALHTAAGATGDPRDAGLARATAGAVVTRPCGITDGCLCH AVRLRAAAGLDLPWSLDTTRAEAEMAVQRDAVAGGWTLCH

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VRPADTGVRPDLSLGQ LSLLALRPHFPHARDDAAVGRARECDRTQGLLRKEPSLCH LLFLALHRAGVAEPPLVWHRRCLHSVRTSGLPWDNDGRCC AVI DAYLAHRPDDAEDEAAGRALLPAALSAFYVQ PGVCH LALDSLAAATGESALRTAARRCAELTARSGAGRGRAGLLH LALDSLAAATGESALRTAARRCAELTARSGAGRGRAGLLH VLLARLASLEWEPCWDHADYLASQRVWEQGLIFRGGGLCH LLAMIQYKNVSGSDELWQKELHGD GVAANSKTFFGPGLFR AFLLRHWRATDSADSRLLALRAGRAVLDARWHRDTTA H MLLCRSLRHHLLPELTHALDKATSLYRHGLLRKGLGACH hVLARYLA WRPDPHLADVDRCVRGLRVRFTIGGGGLT LVAKDLLEYREDGRCAEDLPALERSCHTSMFAQADGLH LYLCLVEPLIGKYSKLISEARVVILNHHLSMET CYCH LPLLLMHDSFEYD VELMQTAKRNYTMRTEPDETKFLED FLWTALFHFTSDEHYLDLATKTANHFLNAAEPGMNGSLCC WALLQA YSFNLLERTNHFNKQGRLFVSSLLYLVKNNIIFKSSTFCH LA LCMDELFNYGYNRDDLKSITMDNDPLLLETEKESFSLCH LSVVHLEKFFPDEKIGRALQLGRDFUWKEGLLRKEPCLCH RLFVSLHRATHDAVWLDRLALAARAVAALVPPWSNLGQCC LLLACALRNTWTPEWDGALCLASERIWEEGMLSKGGGLCH LFLLYGlATGKDGYDSAMQGLDCDIAHGRTVNGPYLSA LFLLYLGUATGKDGYUSLAMQGLDCDIA HGRTVNGPYLSA $L$ MACARRNHWQPEWDQADQLATERIWEEGLLSKGGGLCH
VVLDEYLIAHRPDERFEAARETIAPALRAAFYVQPGLYR EQLARLRP DARSARCLTALRVACRSEFVLH PGLYN

FA LQS $L$ RPFYPRERDDEA TAKGRRVIWARGLLVKEPCLCH VAAHTLLHHGERP WLRDIVTTVRRTVDVEFVL LIPGLFH LSLLHFGH LDAAERLADLVADRTPGRPRPGLGH LSLLHFGH TPDRDDAAERLADLVADRTPGRPRPGLLH
 LLLLTAADALGTPAYVEDAERALHVAVTGEPRGYD LCC MVTAA LDREHPDAELRRDHDVLLGRVRSQFLLAG GLFT Q1FRLLGGSNRNTAWNALADRCWHTVTHSGLPWDNQGRCC IQLLSVKDPLFDSDNRDYLKKNTNDRLLKEQDDMNFNFCN QSLKSURPLFPDDEDSRATTLGNELVWREGLLKKEPNLCH MLLSRALDHSSAARYLRAVDRAANLVYRHGLLRKGPGACH IAAVYLNHVSDKKRYERELGSLITNLYRVRCSDSGGLYD


## UniRef90 A4FHY3 UniRef90-C5P5H5 UniRef90-T4VY93 UniRef90_KOFAZ6 UniRef90_S1SLL UniRef90-GQQGN2 UniRef90 O87238 UniRef90-M2XNT5 UniRef90_U2YSQ2 UniRef90-R4LN68 UniRefo- V2XFII UniRef90-W5W0G7 UniRef90-HOBBZ6 UniRef90-D2PYF6 UniRef90- D9VIY3 UniRef90-D2BE78 UniRef90-X5E6G8 UniRef90 A6QWI1 UniRef90-GoRMM2 UniRef90-C7PLD6 UniRef90-UPI0004621497 UniRef90-K2T060 UniRef90-H3EV51 UniRef90_COMP58 UniRef90- ${ }^{-16 H 92}$ UniRef90_UPI00037CF56F UniRef90-UPIO00375498E UniRef90-E3CLY6 UniRef90-H1YBU9 UniRef90-UPIO00367BFCC UniRef90 UPIO004770F2F UniRef90-UPI00036FC5E0 UniRef90-АЗТІТЗ UniRef90_D6B3V8 UniRef90_Q838G2 UniRef90-R3U1D7 UniRet90 D30547 UniRef90 Q9FCE6

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${ }_{P}^{R V P C H G L L T G D S G I G H G L L R A G F P D R M G S ~ A L L L}$
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D A P A P GLA T GSA GVLATVEAALGGHPL
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ELA YPGVATGSAGVLLALHAVTA
TDAP $\square G F Y E G A S G A A S V L L Q L A S A$
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$H V P H A G L L T G L A G T G H G L L R A G F P D R V P S$
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PD R P Y S LYY E GLDA GEMCA
VRLT T DLATGAA GVLLA
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50
$\frac{60}{V}$
70
80
 $\begin{array}{ll}A A G R & Q D C A A T R A A A G G L L A D L L T L F E L A G P P G P G Y D R G M \\ H M R D I S E N G R & L I\end{array}$ HASGVPVRPEWRDRLRAELAEIL
 ESGA E TGAPPCEEAEEWLLRHAKDPASGSP
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$L$ R H SKEASGTPDGFYDGL
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LLGETVDQP
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 Q GENLNSAFRNWL NWI QTGHRSPEHE QLCDFDESPTLLKENALFNWLLDAVRRGGDHPPGFCTGAA KLS QVGNNDYYIEHLMKA IEAIHTADS IGGDDGDAFY DGK AAGQ GRFPEHERWLVESVRREPPKEAGFFTGA QVGALTGASRYTGPAREADAPLLARFEADPELALGGFHGM
$W L S K T H P D ~ L L I N S K S P A E Y C T A Y L S G D Q D K Y G P A E T Q R$ E Y E QWLLA AVRRQPPARPGFFDGS R DAKYLGGTKAETDAERLSPHLVDVHPQHGQVSPTGSAHAL QRFQALKNVDDFKKTKDI DGHCLKNLD DGFGETSFFLGP RDHAVYPNMKLPAVVRTAAKYTAKRCERESMVLPGLHFGQ
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LHGYS LLF GK $R L A Q Q V P G M D A D A U Q T A L L Q P L V D G R R R W W R D Q P L G L S G C$
$R A N S I I N S D D V$ NSDDV ETGA RTGGDDN ATKKWVEKYSSDKYLKEDDSGLETGR TLS IKHPGDEDEGKLP VDWCKAYDELGHDSVPTLLNES $\square A G R D V P D E V L S R F R R E G L E G G A T A A B P G D H S G S$
Y $\square S Q Y \square N N V Q \square K D F \square R K S V N Y C \square A G \square I N N \square Y P Q K G \square D V G Y$ ETGAEP LDPAAEEWLLRSTKNLPSG NPDGFYDGL


D DLPTDTLESVLEWTEHQVDSDTQPKFGFFDGD KFYH GRSEKDKNLITQVNE VNNLDAPFEYENSLLFGR RAYLVTANKTDLGLCSEUVKACDST SFGSKDDTFICGR


E LIE E $\square \mathrm{F} D$
पK VIE QQ\INSKD VGLIDG
E $\quad$ TGAPPCEEAEDR L L R HAKD PASGSP $\quad \square G F Y D G L$ HATGAEVRPEHERWLVERALRAAGDVPGFFDGLL HAT GAEVRPEHERWLVVERALVRA GGDVPPGFFD GLL RAAGREIDPAVSNRLR A A DALRERRATGPGLLFGN $\square Y$ LK FNEEKY K IV A D GLLLK GFESMMEDETNRNFSAFNGD

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LLAP L H D R P G
 VMPPEHLRDP LD WITHTAAT ETSTSPGFFDGLL HVSQATARERYLRSAMRLIDACARAGEPDADTRAAFLLGG EAGRSEPGEEWLL
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LGFY G G
E S G S
P S CP GAEEWLLLRHAKAES GTPLGFY DGL
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90
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R■MRRL

E GMAWALLRMGRPDEA
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A GAAWTLDRLGRG
LGTS L S YVA
A GI A WT LDRDGHTQEA
A G I A TVVLYQAGYKDRA $\square$ NMFDA $\square$ NL
GGI ALILYELGHKD
H GVAHVLDHLGHH
G GLLYIDY LFVKNFGTEH
LIHRC DAATPLLERAT A G L Y TLA SLI Y NS YNEPVKTETYLKSLLSCDPAAL
HGVI HVLDRFGH
HGVAVLDRFGH EELAAKLVEDYR $G G I C Y A L A R V G R L L G D D P E D A G W L A S A V R V L G D A A D E P W E$
$S G C S L$
$N$ Y G l A Y V L E E F G yateadella a a GAAFARTFAAAANMTSRTGGVCR DHSRDVAAASELLSGAA LGVVWSLYLA EEVFKKTI IDDNRDDAILLQY LVVEQKE SGAVWALLDAARALADPK
 LE LLYATKMVCKKTGFYNSLKEDAYQ AGFLFGDLDRYEKTKE RYLDDISKRLVDHLM GGTLLALALQGEQAMANSLLAAALPRFIEADQQ
$S G I G L V A F E L G E L E T A H E L L F S T Y$ T GI GWL L H RL GHADEAVGLA A G\| A CLLYELG TNEFLTSNADKACDRAKELINSTAD DADR HGI AYVLENLGHHDEA A GIA WVLA DHGMVEEANALLAEAE

 S GYL WS L

$\square K D \square I E \square S N L I M F Y \square Q K E V L D K E D \square S F F Y E T F D P \square I E E E \square$

## YASLLLYKNLSNS P <br> 】K E D D

T G T A WT LHRDGRTAEAADLLR\|ILDQPLEGLAP
H GVAHTLARLGHR
EAALQVLETVS
H GVAHTLARLGHR EAALQVLETVS
AGI A WVLDDLGEHDAAAELLAAAGAHRLATESPGWGGGAA GSV VY VYYCLF ILTSE PDYHEKYKFYL AMMEKQDDPGDQ
S G $\Pi$ GWESGALGQARAAAVVAEAHGDPALAGSSRRLGGLAVV AGI AATLYELG
S S LLT YLI A YQYKKE
YGI AYVLEELGYRDEAT
SGI AITTLL
AGUTVARAAVTGAGGP
$S P T G S V T F A A A A N M T S R N G G V C R D H S R D V A C V C E A F D H A C$

KLLASSS A GAAHLLRRYHRDHSA

$\frac{\square}{\mathrm{P}}$
TGIA WTLHRIGRTAEAADLLR\|ILDQPLEGLAP


 $A G L G G \| V Y E \square G D K A W G R Q$ LI W


UniRef90＿UPIO004789B51
UniRef90＿J0US75 UniRef90＿A0A024YJF6 UniRef90＿U2K9Z8 UniRef90＿D2PW88 UniRef90＿UPI0003793718 UniRef90＿UPI0003A2910C UniRef90＿R2NR16 UniRef90＿V6KN47 UniRef90＿R1FBY4 UniRef90＿G7YUD8 UniRef90＿A4FHH4 UniRef90＿UPI0003450B64 UniRef90＿UPI00035CC5CB UniRef90＿UPI00034D194F UniRef90＿UPI00034D194F UniRef90＿UPI00034D194F UniRef90＿U2R065 UniRef90＿E4N1M5 UniRef90＿UPI00040D49E2 UniRef90＿U2QYW4
UniRef90＿M4F5Z2
UniRef90＿F3ZB46
UniRef90 F5CP64
UniRef90＿E3BQS8 UniRef90＿C6WPH3
UniRef90＿D8MSF1
UniRef90＿I1FKH3 UniRef90＿C6W9B1
UniRef90＿C6W962 UniRef90＿W7IGL1 UniRef90＿D9VAB8 UniRef90＿UPI000361F89B UniRef90＿C5FHN1 UniRef90＿TOSS33 UniRef90＿W7SSD7 UniRef90－H1VDE2
UniRef90－G1WWP9 UniRef90＿G1WWPs
UniRef90＿G9MQ24 UniRef90＿B2IRC8 UniRef90＿A2CBI2 UniRef90－B7GNX2 UniRef90＿UPI00040692FE UniRef90＿L8FXH7 UniRef90 UPI0002379BE7 UniRef90＿UPI00029B03B3 UniRef90－X7YBF4 UniRef90＿H3NME4 UniRef90－UPI0003619789 UniRef90＿R2TCJ5
UniRef90＿F2RG48 UniRef90＿UPI0004776E8E UniRef90＿UPI0004776E8E UniRef90＿C3JMV4 UniRef90＿E8QAF8 UniRef90＿UPI000198593A UniRef90＿KOJXC7 UniRef90＿D9V0T9 UniRef90＿UPI000419CE6A UniRef90＿UPI00036D479A UniRef90＿UPI00036D479A UniRef90＿UPIO00466235C UniRef90＿U1GAM4 UniRef90＿B1W1K1 UniRef90＿W2EK71 UniRef90＿W2EK71 UniRef90＿UPIO00360DDC9 UniRef90＿H7LEG0 UniRef90－V6T7P1 UniRef90＿W9GEN3 UniRef90＿E1UNR2 UniRef90＿B0NIJ5 UniRef90－R4SW65
UniRef90－K1LEI6 UniRef90＿UPI000255E921 UniRef90＿D4B323 UniRef90＿F6ESD8 UniRef90＿G3RPR1 UniRef90＿UPI00035C37B9 UniRef90＿XOMIL7 UniRef90＿W9FV04 UniRef90＿B1V0D7
UniRef90 B5HK70 UniRef90＿UPI00042A5295 UniRef90＿U7PC19 UniRef90＿J8DDA1 UniRef90＿F0HW39 UniRef90＿I2F0Q0 UniRef90＿UPI00036B5C15 UniRef90＿UPI000300EAB7

130
140
150
160
GDECGG\｜SLIFS GMA GVCAALV｜HLSRGGAGDA RQPGNQPT DLLNGQAGLLLAWLHCQRRWPGEAAFLAAAT
 RRAVAKRDHTFHHGLAGVGHFFLRGRDPHDLAAAQRCARA QETGAWSEQDGDVTVSGTALLLLMLADKYEITQAKSVLIR



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


ARG【PDADCPWWNGTAGTAAVL
DRAGRTDEPSLRNGLAGIGLTLHRLHRATGDGGLRDALDR HAVGACVVDPGFA DGAA GALAAAAVAAAEATGARQALDELADA T L HLLP S L P S DLYYS GLS G I GIDCLMRHNQHHYDETIAAMHEV $\square R L S S Y I A N E L L Y G \ V G Y L W A C L F V N K Y V G A E T L S S T T D H$ RE P L H A LAP P S L H G G Q A G I A L V L D T L A A H A D S A E A A R L R A A
 NSTHNALDI SMYS GLTGGLGVNLVLY LTSTNKNNYMRVAKQ ARTGELTA LGLATGLAAGAGLNLLHFARSRDDRALRR S LIFNRNK KFDVISGAS G ILI LCCRVVYSKFPNNKLLS I IS Y
 $\begin{array}{ll}V R G N R G P A R G G R V Q G G P G R G S W G S A V A G G G V V G G G M V A G V \\ V & E\end{array}$ TVLT L R P A F DE VLLF GRA G L L S LI R T I K Y F Y P A P E V A A I L D P

 F L N H H S GVLD F I Y GVT GWYI I YPY L N S S

 $R V Y D N \square S N L D F A L G K S G I L L S L M K Y C T$
 E H WK E T R N L D L
 $N L E T D P T Y C E W M K G R A G A L Y Y$
$L L V T$ QTRDHGFAAGLSGMALNLLHFAGSREDREFRE
RHP ILDTRVATVGEGAA GVAALTHLAALYGHDRDEAHLDAARR

 T T S VT VA N

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


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

】PNDDFTEFD【IDGVGGLILYLIFDKNPKFVD\VELLGEV E WL Y G R A GYL Y L L RLA K S G F A P N N DL E MLD R


\section*{ARPWRDL GP GLLYGGLLSGI GL} ATMAAPAR | $N$ | $Q$ | $C$ | $C$ | $L$ |
| :--- | :--- | :--- | :--- | :--- |
| $N$ | $Q$ | $A$ |  |  |
| $C$ | $L$ | $G A$ |  |  | GVAT THLL


 RRVVDRPDADLMMGGLAGVLAGGDRPDESARADAVTLLVDR


 $R L A G S S D H L D G L S S$ GLLLAAALTMASPAEMTTP DESYG L G Y D DALLS GRA G L L R A VLAA FRAFRLDDRETAA S Y E L RLDDFERYSSHLLYNGLA GUGCHLI DEAATHPAPATADRALA D
 A E N WQ A LA S H L H G GLAA GA GLLVLD HL A A A C GEP SLL H D H A L R A QP WQALAPDLHGGLA GLGLALDALAASTGERALHDKALR LE D I I F T Q Y DVV DD G L A G Y I L L
 GLAAG $\square \mathrm{GL}$ A LLSAS YSGNDWIA HSI GLIPD L L E L LNNI KGEKTYENITK KI
 S A Q GNS A D L S L R S GLLA G LALAA K A LA K E E G

LA K
D H P L L T T S S T L G G GA A G T V L G L LA H H R VT K E Q Y W L D R A C R

UniRef90 D7B029 UniRef90-UPI0004789B51 UniRef90-JOUS75 UniRef90-A0A024YJF6 UniRef90 U2K9Z8 UniRef90-D2PW88 UniRef90_UPIOO03793718 UniRef90-UPI0003A2910C UniRef90-R2NR16 UniRef90_V6KN47 UniRef90_R1FBY4 UniRef90 G7YUD8 UniRef90-A4FHH4 UniRef90_UPIO003450B64 UniRef90_UPI00035CC5CB UniRef90-UPI00034D194F UniRef90_UPI00034D194F UniRef90_UPI00034D194F UniRef90 U2R065 UniRef90 E4N1M5 UniRef90_UPIO0040D49E2 UniRef90_U2QYW4 UniRef90-M4F5Z2 UniRef90-F3ZB46 UniRef90-E5CP64 UniRef90 E3BQS8 UniRef90_C6WPH3 UniRef90-D8MSF1 UniRef90_I1FKH3 UniRef90_C6W9B1
UniRef90 C6W962 UniRef90-W7IGL1 UniRef90-D9VAB8 UniRef90_UPI000361F89B UniRef90-C5FHN1 UniRef90-TOSS33 UniRef90_W7SSD7 UniRef90-H1VDE2 UniRef90-G1WWP9 UniRef90 G9MQ24 UniRef90-B2IRC8 UniRef90-A2CBI2 UniRef90_B7GNX2
UniRef90_UPIO0040692FE UniRef90_L8FXH7 UniRef90 UPI0002379BE7 UniRef90-UPIO0029B03B3 UniRef90-X7YBF4 UniRef90-H3NME4 UniRef90 UPI0003619789 UniRef90-R2TCJ5 UniRef90_F2RG48 UniRef90-UPI0004776E8E UniRef90_UPIOOO4776E8E UniRef90-C3JMV4 UniRef90-E8QAF8 UniRef90 UPIO00198593A UniRef90-KOJXC7 UniRef90-D9V0T9 UniRef90_UPI000419CE6A UniRef90_UPI00036D479A UniRef90_UPI00036D479A UniRef90_UPIO00466235C UniRef90_U1GAM4 UniRef90-B1W1K1 UniRef90_W2EK71 UniRef90-W2EK71 UniRef90 UPI000360DDC9 UniRef90-H7LEG0 UniRef90_V6T7P1 UniRef90-E1UNR2 UniRef90-B0NIJ5 UniRef90-R4SW65 UniRef90 K1LEI6 UniRef90-UPI000255E921 UniRef90-D4B323 UniRef90_F6ESD8 UniRef90_G3RPR1
UniRef90_UPIO0035C37B9 UniRef90_X0MIL7 UniRef90 W9FV04 UniRef90-B1V0D7 UniRef90-B5HK70 UniRef90-UPI00042A5295 UniRef90_U7PC19 UniRef90-J8DDA1
UniRef90 F0HW39 UniRef90-I2F0Q0 UniRef90-UPI00036B5C15 UniRef90-UPI000300EABT


90 QAGEQLLARARRTPDGLAWPQGR
MEF $\square R E K$ K
LHDTARRDEDQAYWLTGACARGP
FGDYILSKRQVDSEGQDYYVGLND DYVGGPHGKF LA GLG IVDEVADRLGGP
CAE
LTASALAATAPEGGGTGRRGRRAGLL

## ASRCTADAVRALVDGPPSPR

MYK KGTKTQWGGGGDF $\square L R D F \square P \square Q Q K D K Y P N G H F D \square G L$


TRRAGA
PGNSARAGLL
$\square G D R \square A D A L R V$
ST HSDCDA $\square$ LQS GVNYARAHRSPCPLMYAY LGGAG
CAEDAAHGSTVPGDHDPPGTDPATAPPLEAPPERRRAGLL
VT D RVVTRSTTPGLHLPPGTDPATAPPPQLPERHGTAGLM

DKAGAALERADFTRMAGQRYFRGDUTQFTTPGGGLSFG
T A F
VADVLAPAASQGG
MLDRFDEDRSSVVREVNGTATAAVGKG
QVTEEIIKKESRSMTKNEKSPLMFEWYGQRYW
AARCAEAVAHSVREAAAREKRPAGS RAGLA

A A LLAADRDADADERTESTPDKAPTGGEGKAGLVM

NLDGAMRQMFDTLIASGQQGHKK ILRYFYYGSDYLGAA

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

G F G
KGR DEKMDGAGPGWTWRG L $\square H$ H HYYRQK GEGWVIKCKNQ REEDKDIFPEGS DDFGMA AQVSQK L

 IA DFETMFNNNVEITSKD DDFIPKPGAARDGRPRAGLL LPNLTTAVNEVITLLIED ILLPQQPWSWSDRRYGGL

R A S $\square$
$L$
D R A A R C GE H L L R Q P R $\square$ G S A G R -

 | $C$ | $A$ | $E$ | $Q$ | $L$ |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $T$ | $Q$ | $E$ | $I$ | $T$ | $L$ |
| $C$ | $A$ | $E$ | $L$ |  |  |
|  |  |  |  |  |  |





AVVSSEII K N G I RRLAN K GRCPDLMFEWYGEKYW


$F K V G \stackrel{L}{F}$
$F$ LELLTKDQEQ


| $L$ | $D$ | $D$ | $A$ | $L$ | $E$ | $T$ | $A$ | $D$ | $L$ | $V$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $A$ |  |  |  |  |  |  |  |  |  |  |
| $D$ | $D$ | $A$ | $L$ | $E$ | $T$ | $A$ | $D$ | $L$ | $V$ | $A$ | $A$ |








 A A HEAATGTAPAARAGLL
A ARCTALAVRALVDGPPSPR

LE ILL LE K D $\square$ T VR T R D VD A $\square \mathrm{P}$
 $P$ VPARAGTGRSTRRTGLL
$Y E S D T L P E N S D N I G F A$
LE K S I E
MNRVKNE $\square$ A E L I K $\square$ G R E $\square$ A A G Y Q K M Q

Y Q E EP L
I A A F $\square$ N E Y A E K N K E $\square$ K T K D WS

 HGGSGY A $H$ G
 SGQAGVAMFLLEMHQDSGEEHHLEEGREALAWEMARTAAG

 HGLLGVISALKKAQ

 DGWAGPALLFTHLHDDTGDRGWLELADRALQRDLDECVAT
 PGWTGVAAVFCLRRHDDTADPALLDLAGRALAADLAGSRRT $Y G A A G V L Y A L A E S G A A R C P E A E Q E P G S G T P L G F F D G L S G L$
$Y G A A G V L Y A L A E S G A A R C P E A E Q E P G S G T P L G F F D G L S G L$ YGAAGVLYALAESGAARCPEAEQEPGSGTPLGFF H GWA GVGLAALLPLRSDGPSVGQAAAALR

DGAA G $\square$ GWALW
QGMAGQALYWICSHEFTGDDTDPDRASTALDRDLALLVQT
H G L A G IMMHVLMDVQLKPDEAEDVKGT LKYL
HGASGAALLLVRRYERTGDTGLLDLAATALRDDLAHCRPG
NGWSGASLFFCLMYKYTKDEKFSKYANEFLKIDDGLLKEE



HGWS GPALLFTRLHQRTGEPRWLE LAERALERDLAECMTA
RGRAGVGWALLRYARAAG DERCAVAGRALDRADRALR
HGDDAUVVNLVRSKPS
S GWS GPALLFL RLYEHTGEPSWLTLADRVLDRDLEECAPA SGWSGPALLFVRLFERTGEHRWLGLADQALQRDLEECVPA PCRGGILA LLECKLDGDPENNHLPI IGRTMDQLCKLVIA

H G D I G

| $H$ | $G$ | $D$ | $G$ | $L$ | $T$ | $Q$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $H$ | $L$ | $L$ | $L$ |  |  |  |
| $H$ | $G$ | $G$ | $A$ | $L$ | $F$ | $F$ |
| $H$ | $D$ | $G$ | $I$ | $T$ | $L$ | $A$ |

$T$ T P A LAAPK LAP K L R A L L N L Q K D
HGRSGAAYVLKAYTD】FGDSRYQNHLQK





H GA A GYA YA LAA S LAA EA T G DDE FA DAAAA E C I A F





 $H G L V G I M H V L M R M E L I D D E K E M L K H$
H G WS GPA LL FTRRLHELLTGERRRWL D HAERAALERDLAECMTA
F GSA GPA L L F LH A Y E Q T G D L G L L D R A E I A L R Q D L R R C I R A
 HGAA GVLDHA LAA H P E H E T W L V V D S V R R N P P R R P G L Y D GA H G I H GA A G V L H A L A HP E H E T W L L V D S



 HGSS GVVLLA L GH WLAATDPR GP LV DA VRR RL R R A


$H$ GA T G V A L L C L R M A E R T G D A G L L
 H G S A G R A L F F V V R R Y E RT G D T A L L D L A A A E A L S D D L S R C V H G D GWS G V S L F F S V L Y K V T N D K H W L S L S L A T I Q K D I D K C V L E HGMS N I Y Y I D Y L L G K M G N D N H K N I F K Q E D A F L Y G G H K K N E




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## UniRef90_UPI0004789B51 <br> UniRef90-JOUS75

UniRef90_A0A024YJF6
UniRef90_U2K9Z8 UniRef90-D2PW88 UniRef90_UPIOOO3793718 UniRef90-UPI0003A2910C UniRef90-R2NR16 UniRef90-V6KN47 UniRef90-R1FBY4 UniRef90-G7YUD8 UniRef90-A4FHH4 UniRef90_UPI0003450B64 UniRef90-UPI00035CC5CB UniRef90-UPI00034D194F UniRef90_UPI00034D194F UniRef90-UPI00034D194F UniRef90 U2R065 UniRef90 E4N1M5 UniRef90_UPIO0040D49E2 UniRef90-U2QYW4
UniRef90_M4F5Z2
UniRef90-F3ZB46
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UniRef90-E3BQS8 UniRef90_C6WPH3
UniRef90-D8MSF1
UniRef90_I1FKH3
UniRef90_C6W9B1
UniRef90_C6W962
UniRef90-W7IGL1
UniRef90-D9VAB8
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UniRef90-C5FHN1
UniRef90_TOSS33
UniRef90_W7SSD7
UniRef90_H1VDE2
UniRef90_G1WWP9
UniRef90-G9MQ24
UniRef90-B2IRC8
UniRef90-A2CBI2
UniRef90-B7GNX2
UniRef90_V6L6R5
UniRef90_UPIO00040692FE
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UniRef90-UPI0003619789
UniRef90-R2TCJ5
UniRef90_F2RG48
UniRef90-UPI0004776E8E
UniRef90 UPI0004776E8E
UniRef90_C3JMV4
UniRef90-E8QAF8
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UniRef90-D9V0T9 UniRef90_UPI000419CE6A UniRef90_UPI00036D479A UniRef90_UPI00036D479A UniRef90_UPIO00466235C UniRef90_U1GAM4 UniRef90-B1W1K1 UniRef90-W2EK71 UniRef90-UPI000360DDC9 UniRef90-H7LEG0 UniRef90-V6T7P1 UniRef90-E1UNR2 UniRef90-BONIJ5 UniRef90-R4SW65 UniRef90-K1LEI6 UniRef90-UPI000255E921 UniRef90-D4B323 UniRef90-F6ESD8 UniRef90_G3RPR1
UniRef90_UPIO0035C37B9 UniRef90-X0MIL7 UniRef90_W9FV04 UniRef90_B1V0D7
UniRef90_B5HK70 UniRef90_UPI00042A5295 UniRef90_U7PC19 UniRef90-J8DDA1 UniRef90-F0HW39 UniRef90_I2F0Q0 UniRef90_UPI00036B5C15 UniRef90_UPIO00300EAB7

$\square D G S T Q V R D G N F \quad R T \square P Y D D \square G S A G \square A$ QTEEGNWPSCEEEEQSDAKD SDGSLQVRDGTL RMLPYAAVGSAGIL NEGHLLVPSSLDPNSLSRHSPLVQVCHGAPYGFIGSAGVA RNEMLHRVKTSLDSDFELARTFGGNDYTRQDWCHGMLGVLJ DRTAARWPSGPGES $\square$ PLGGG QQPSGNWPT

WCGDAAGVG

G N
WP $\square$ AKE $\square \mathrm{DETRH}$ EDSDRVYCELVQFCHGAPGFV

FSDGISELDEEK TSSFSK DDNGGLSWCHGMSGF
AGN WPDYRS 1 SR DSDSSDEPSFMASWCHGAPGIA
PNGMRG $\square$ K DK H
VS GAL
SNGSLQVLDEM
AVNE GWRTMPY L G G G S V $V$ GI G

DDGVLQVRDGHA

$R T L \sqrt{P} Y A V G S A G l \sqrt{A}$
PGGGI GF
ENANFDPHRHAWADLDSNG NYYHNNFQF L NTKYEEKK 1 GGTLQ VEEKLKWYQQRFEKQLYKEDSLN ASGTLQ

## Q

 DGLHADETDETAAPVEGWRT PHRLGFYDGLHALETLETAAPDEEHDALADGLGAGSSGGA PHRLGFYDGLHALETLETAAPDEEHDALADGLFGGRSGIA $P D G S M Q$LLT GF DK L K S LD
$\begin{array}{r}D R E K R R T M P Y L G S G S A G V G \\ Y S W C E G F S G L I \\ \hline\end{array}$
LDG STQVRDGTLRTLPYVGПGSAGTA
EDGTVQ
ST QVRDGT $\square R T \square P Y V G \square G S A G \square A$ $S \square K G C Y N P K G F F \quad S F P F E \square T S L D Y S S S S L N L A Y G D L G V S$ A HVLEDLGRHELADELLTEFDPLLPGLTRHGLGSGLSGIA A HVLE EDLGRHELLADELLTEFDPLLPGLTRHGLGGS GLS GUA RDNIMLYPGS
DSGN WPSS
DEG
ADGS $Q$
LPAGRRDRLVQVCHGAPGVV

ADGSLQ
ELLVVEGKRLMPYL GSGSAGI A VNEGWRTSPYLGGGAV GII A RMSATDRRNMPYLSCGSAGFA
 EETNTLQTY

D DGS LQVRDGET
D T Y QYGYPSNLADD RTLP Y A GVGGSAGVL WWWESGWSDRVLGWPDLREESPTHPVMWCHGTAGVA NEGHLP PSSLPHNPLARRSP LVQDCHGAPGFL TDGSLQ QEQNCNWPPELGET $\square E R E N E L V H \quad$ WCH G
$R T G G L$
$V V D E G R R T M P Y$ LIG G S A G D A $\square V N E$ GWRTMPYL GAGSVGI G
LVVEGKRLMPYVGSGSAGIA
WCNGLLTGY
$Y$ LLAGSAGI VDEGWRTMPY LGAGSAG G VKDDARFVPYLAGGSAG: G
DEKDDISRYSSGA
A GGTLQ
$D S G L Y Q$
${ }^{\mathrm{T}} \mathrm{N}$
DVT GVL
QTVDNKNRLLPY LSGGSUGVA LAEDGRRMPYLANGTAGLA
SEFLNFFPDKYDRNTNE प $\square$ MT N N
P VDALGF
$K T S T K A R R V Y P Y$ LFAGSAGYA

## UniRef90 D7B029 UniRef90_UP10004789B51 UniRef90-JouS75 UniRef90- U2K9Z8 UniRef90-D2PW88 UniRef90-UPIOOO3793718 UniRef90-UPI0003A2910C UniRef90-R2NR16 UniRef90-V6KN47 UniRef90-G7YUD8 UniRef90-A4FHH4 UniRef90_UPIOOO3450B64 UniRef90-UP100035CC5CB UniRef90-UPI00034D194F UniRef90-UPIO0034D194F UniRef90 UPIO0034D194F UniRef90-U2R065 UniRef90-E4N1M5 UniRef90-UPIO0040D49E2 UniRef90_U2QYW4

UniRet90 M4F5Z2
UniRef90-F3ZB46
UniRef90- E5CP64
UniRef90-E3BQS8 UniRef90_C6WPH3
UniRefofo-D8MSF1
UniRef90-I1FKH3
UniRef90 C6W9B1 UniRef90-C6W962 UniRefefo WVIGL 1 UniRef90-D9VAB8
UniRef90_UPIO00361F89B UniRef90-C5FHN1 UniRet90_TOSS33 UniRef90_W7SSD7 UniRef90-H1VDE2
UniRef90 G1WWP9 UniRef90-G9MQ24 UniRef90_B21RC8 UniRef90-A2CBI2
UniRef90 B7GNX2 UniRef90-V6L6R5 UniRef90-UPIO0040692FE UniRef90-L8FXH7 UniRef90-UPIO002379BE7 UniRef90-UPIO0029B03B3 UniRef90-X7YBF4 UniRef90-H3NME4

 RYFYQAY
LVLDRY LRHRPDDEDATADEP LDRKVT RCGYFVQPGLFM


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


 LSLVLMDINLDAPNIIRKKYSNI WETIQKDVGSFCTYQCC


LA LDNELVRVAPGTRLAGRDSELVGSC,TGEFVDHPALTL LAHTGQVGQAADAHTLH VDRCLNALAVHEP LRDLSLCH WCLAALRRYFPPALQERIDAAIEVVWEKGLLTKEPCLCH
 MVTEQLAPHLPGASSVVKLMGGRQAC, RGEFVIMPGLVF
 $S F L V R A W L A T G D E R Y R K V A D A A A A A V R A D Q W T M A T A S$ CH SSLVH $\quad$ ERLFPDEQ $\square G Q A \square A L G R E C I W R E G L L R K \square P C L C H$

FS $\square R A \square R P H F S H D Q \square D A A D A S G Q E A \square W K \square G L L R K E P S \square C H$ LYLCLI DKERYSETIYKSQLEMVQQ YEAMGTSFCH LGRCLWGTADWDEECTKELGDGLQTTAAVSAVSTDH LCC MVLDDYLQHRDDERFEQARQEIVRAAQAEFY AQPGLFR IAL HILNKYSDKSGFKDKFGQTLGNVNNGC SYNSGLFR LVAEELAARHPDASCLRRQSDLLRGCVGGEFVIHPGLLF SVAAR YLPVADEDLARSVDEAMRATTDASTYY AGALYE MLLVRLYIVTKKRDYYEELTRTIKFMDDEVTYMATYS K K MVLDDYLAHRSDAEFERARIEIVRAAQAKFY AQPGLFR EVCHVLNRSFPNKNDMGDEDESREE SCLCH MVIDDYLLHRRDDDLDRARQE IVRAAQATFY AQPGLFR LNRLHFFRRLGDRSLLDAAVNHAQRLADRRGAREAAGLLR LNRLHFFRRLGDRSLLDAAVNHAQRLADRRGAREAAGLLR


LALDDEFARVAPDAACSARLPELVSGLTCEFVIQPAFMV LVLERYLRHRPDEELGELLARLGRAVTRSAYFVQSGRYT LNLLRFGERRADPARLDQALALGERLLAASRGKGRANLLY
 $V$ SEYILLFK ISNDSKYLDKVLSNUDYLMNKDSETEDYSLCH VSLLGIGKYFPNPLL ANQDVHGAGAGMGGSGLCH
 WVLGDLLHYRPDPDLAAARARLDLAARAPFYL QSGLLA LVAARYLGRRPDPELAELLRTCVRAVD\RF TASPGLFQ LAR R K


$M V A E E L A K H R P D A K A L K S L P G L R E A C \quad R G E F V D H P G L L F$ AVLLRYF LITKRKDYLDWI NCLAPADDVKFSVDSPGYFE A ARLELARLADATALRSEAEAGVLLCREQDPGDAGLTLCH VLLARAASLEWEPCWDHADYLASQRVWEQGLIGKGGGLCH

TVLDDY DRHRDDEEFAAARAAVLPAARMRYYYQPGLFQ IVLDDYLAHRPDEEFAHARSEIVRAAQAKFY AQPGLFR AVIDAYLAHRPDPDLEAAGRALLPAAL SAFYVQPGLDR VSEYDMYKDTNKETHLLKKIIDNLDKLFDFAYKDDDYCLCH LAMMMЏRKDQNSSVWENELQS $\square A$ LLTKSKCFY SRVMSHKYTISNKTLKEVM FLRKDNTLCH STWFLNHVSGQDLYREEMDADLKLSKTRCTLRKSGGLCH LVLAAAQDEPKEDRYQKIIDQAAETLLD SFCSYMGGLET

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GRAGVLLAAAQDEPSASEQLIAGLGWHSDPYGDGDAFPGN GAA GMVLHLGRTTA GGPGTGEAAVRRQLDALGWHAMSYRG GSAGLLMHLAATPLCDEADRQRAlARHTDLLGSHALAYGD $G \square S N L Y H V F K Y K H K Y Y N Q N E L V S Y I L L K Y G H Y G E C L E F K D W D$


GRCGGLLAALAAANRRAPDPMWTDAVSRHLTADGWHA $\square P H$ G

 G G A G V A L L C L L R L Y E R T G D T A L L
 GRAGLL LAALRALA PGDRVSAEHARRLLWGCTRVLGRAG GRAGLLAALLAEMRDRPGTAEPLARQRRLLGWHAVPYG

 GAAGFLLIPTDMENTASNKIDEASKNVHELLKVFLAQFS



GRAGLLAT LAHGSREAVDRHLAALAWHA $\square$ PH GEGTAFPG】 GELLGVVEAVAVLAERGHDRAEATRSRRAGVLLGGLDEQGPG G I T G NAFALAE
$G R C G L A A A L \quad S F A E E P D R E A \square D L H D A R L S W H G D P Y R G$ GRGGLMTALAMGADRGPDPDAERAVELDHLSRLLAWYAVPYR G I A G N A WPF LMLLHNLFEA DQY LSRALAFLLHARKT』QYRM G L
$G V V E N V E F L L D M A E A T G D G R H R D W A L K T \square G T L A W$ $G \vee L G N S L A L$

Gl L G N A
GLSS LLQTTDY NKNQK VEQF $\square K L L T R S Y R N N D R L L Q F Q G$ $G S L G L M V L L E M L S K$ G I A GI LVANHFAS T WS PNNRLLDELNDYSLSWENTLQFPG GAAGMVLYLARTTAGGPGTHAVDVRRQDGALAWTAMPYRGB
 GDT GNALVL EPRQKEHFLDCLAP EKVAQGVAD GVF E K GRCGLLAALAAAHRRAPDP $\square$ WWAEA IARHLSALGWHAI PYG GQSGLV FALCEHAS LTGSATSRAAALKTAQALGCHAVVGG GTVLGSVVF L S E A G T V L G R R D E LLR D L A A A R H L A G V I S A A A T R G
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GRAGLLAT LAA QA GREAVDRHLSALAWHAVPYQEGLAFPGV GRA GMLLAARPSADDTLVRGLGWHAVPYADGLAFPGBCL G VT G $\square$ A SYFR LIFNNDF NAD S FKNAA DY W GWSGPALLFLRLFEHTGERRWLTAAEDANEHGALLVRDGA

 $G V S G N A \quad L A L A E G D L D A F L A H A T E E R M G P L I E A G V M E P$ GSAGLLLHLLAATPLCDEADRRRA DARHTDLLIGSHADPHGG GRAGII AYLCRDRAGGWGREDPEAARQLAALSWHAVGHE G GRAGI I A Y L CRDRAGGWGREDPEAARQLAALSWHAVGHEG GQAGMALVQADLAARFPDPAARPTALFKYAIADRWLGTS G



 $G \square A G L G Q V N L D L Y Y Y L G E N Q Y L N Q A E A Y K D G K Y L F P S Q P \square$ GLGGPLDVVASAT DAWGATEQLEVAGAAALAVAEVLGDDR

 GAAGMVLYLSRTTATGPGTERADLDRQDDSLSWGAVPYRG GSA GLLLH L A A A T PLCDPA DRRRA DDRHT DLL G S H A L
 GLS GFIV L GNAMDSEF GDKKSTY L E H T I Q T L N L Y L L Q D G D $G N S A L L E L L I D S S L L D A E Q L I R R Q M L I P F Y K N K R L N V Q Q G D V$
 GYT GNAMMUYHYF G S MY K N T K Y L $G L T G G A W T L A D A G R R L D R P D L V D A A V T S A R G L V R W L G E P G$


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| UniRef90_UPI000371F0A3 | PDGTMLAGEM GGRALPYLRNGSAGVG |
| UniRef90-UPI00046EEDBD | EEVLVLQAMDEKKRVLPYLS G G S 1 GI G |
| UniRef90-T0CI72 | KNNY $\square$ DLRDNTYDKYFI CYG |
| UniRef90-G0J084 | NLGNC $\quad$ LSLLYGM |
| niRef90-J3X015 | GVYH VDDDYRVLPYLA G G S CGLA |
| UniRef90-G0K4C7 | LE T GVT T FPS S PEEVNTYEPYLEQGTAGIA |
| UniRef90-M4X807 | DSK L L La Q $\quad$ K E Y S $\square$ GYKRLI P Y L GE GA A GI |
| UniRef90-D6B0F3 | PDGSL |
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| UniRef90-L8ET40 | EDGSLQ VDGGFRQLPYLEVGTAGIA |
| UniRef90-S6FDT6 | DVTGVL QTLDDRNRLLPYLSGGS $\mathrm{VGV}^{\text {L }}$ |
| UniRef90-S8AGB4 | DGN WLACEDGGSDVVQWCHGA |
| UniRef90_R2PY62 | QKDMMQYSQGH RVLPYLSMGSAGLG |
| UniRef90-F7XB98 | S GNANDRASVQSLLQHSSEAFWRFGPRAGSEWSCG I A |
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[^5]
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$P E N E M G F \square Y G \square T G \square H Y A L L$
Y L Y TPG
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YRLSLDLQTGNSGLLLAALSD D DSDKWS S WLP LLEF $\square D K F$ ERLSMDLSTGTAGVLLAL A ATHGEPAAH
HKLLPYLAEGSAGVAFAALALPDAQAASLGADAL
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## MR $\square$ T TD D A S GF A GVILA LES ST S D D <br> DPRHLGLFTGVAGIGFAQIR <br> DK L T T DilS TGTAGIILTLVS $\square R \mathrm{R}$ G K



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[^0]:    

[^1]:    $\qquad$

[^2]:    $T \square F T Y S H E W Q H E E \square A \square G \square F R Q \square C E N R D T \quad \square H N G \square$ A YGRADPVAGLEPAIEGADAVFQTMCERHPAEDDGGFVGT
    

[^3]:    RVHESHPE $\square R \square Q G Q S Q Q$ WAAAY $\square A A E R D G E D S A P C G L$ K YMDVRSVFEKWDMDNSDFSSFDDCGLFTGK QLAA LPEADAWRGVASCALAAARSSVPSSLRDFGGFYYGL RLAHQAGADTDEATLSSVDYQLAREVRADRLAPGGSPTPL

[^4]:    $N \square N S S D L S L R S G \square S G \square G L G F V S L Y L E E K D E C V L D K A \square F$ LGHT
    GP Q
    
    

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