
PFPLALGG PRNYKDNY DFFWNNVGLDLNRDTHTNSGH TPEGDAVLDWNQTLLNAVKQDKTA

$\square Q P \square I N P E K P D H R D R T T Q T V I L W D E A A Q Q A I R N T S$ A QlDRVTETSSDVVIDWNATLLDAIR KNEPDIVTTDEYHASV DK DTNDMTHD
$\qquad$ DKLTMEVVHD VPEAQGDP P D R R $\quad$ R D D AVVLD WNAVALLDA
 A $\square \mathrm{DKVT}$
TVVTDWNTILLDAV

CTPKKEEP $\square$ K $\square$ TPE

$\square$ | VT T D E | L | H | N | S | D | D | V | D | D | M | M | H | D |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| H | M | A | I | D | K | V | T | E | I | M | I | H |

VK RVA QDNSDVILD WNATLLN A DEKSASKESVAISANNYHEALDKI TNIMVHD E P $\square$ T $\square$ S P E D Y H A S V

ELHASVDKVTEVMVHD
ESSKQDVDIEADRLHASMQKI TD』IVHD
RTGE GTQDQALFWNSKALEA RRL
SPVKATSLYQSETTNN VILWNNVALQAVRDTRM
ELHQSVQKLTDVIV
TTQDSGNAVLDWNTTLLDAVRTASTAMD D

SNEPTNTSAEDYHASV DQVSQTMTHD
 KKATPAEYNAKAADERYNMALE KLTQVVIHD ATNNKE IVSAEDLHATVDKVTQMMIHD EN NVTTAEDYHASV I DVKVTQQVMVHD





KSATPAEYNAKAVDYYNAA $\square$ NKLTDVM D
KSATPAEYNAKAVDYYNAAFAANK TDDII HD
 TT IVSD WVDDT $\square M A V E N T P D T G D P$ $\square E W N K$ KLTEVMIS D
PKASNPERYNA C $\square$
$\square$ HRSI K E V T DVVIV H D
VPFWDEVAQQAVRNTR

VNANSYDFTDFPNASIVITWNNLLLNAIHKAS


Q L | $T$ | $D$ | $V$ | 1 | $V$ | $H$ | $D$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $N$ | $V$ | $V$ | $S$ | $D$ |  |


NEP@I QSEDYHN
A I DKLTEVMVHD
LT LDP PET QLVTVADPDPS TSVVWDQVMQQAVMNTGV

KLT DVMIHD
QLATE S I I H D

P VVVTSEDYCAAV

D $\quad$ GKVIN QMADVMI HD PKSNPEEYNAKAALYHKSVVEL
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A D DFRPFLSASAFGTL
GASAEAAAASAA HRVLVNLYPQQT NGDTA $\square P E P D T K N Y E D A V V A H M E L S K R L D F S E$ AAPTGASAAAAAAAAAHQVLVNLYPLQKT DRLQRPVDENTLSNKSEADSYAAYHTLIDLFPTQT TAPTIVSAEAAAASAAHQLINLYPGQKSYF LTSDPTPDKDUQUNYQVSALIAHMDLSRKLIFSE NELTPVPAPNDTGLNLRVSSAFYELGKSLIFSEER PDASIDAAVATAAHRTLTALFPSQ
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NGLEPLPKPGAPIHWEVAAVDAY LQTGRAL $\square F$
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NKDPQVSVKATLALGNF\｜DSAFYQEAHNLNLRSPGY■YGV
DPGVSQSTATLVSDF $\square D A S S L A Y Q Q A H G L S P R S S A Y A F G A$ ATFDTALQASLAEIPDG NAETDGVNLGK
 Q DFEEVMQQLGYDPKIAIGFATDATASDANPQT\GQ DKMEVLRDSLYKVWETKNRLTYFATVANSKAYGL

DEKFRDSUYQDWEN TNPESFMRSKVYGL RALLDGRLREYLAE！PES DAKEDGRALGG DRDTEMRDS LYMQWEEQ DVLID SLYTQWENQNEKEFF
$\square E V Y R D S L Y A G W Q E L N E E E F V Q$ NPTELAASKAYGL KAKFDAAlASSLATMPNKQAKTDG円AVGL LE R R DD A LL A A T D DKFDVLQDSLFTQWKATNESEF EK L A V V R D S L Y A VWESK ETSKAYGL SEEKDEAYQNELYQELKNTGDPETEFNASLAYGE TSDYSDSLFVNWKKNNEESFIDNADGTAEEAGVAFGA TFSVDRYDAFEKDLDKKFEAAGVPSEVIERSVAYGT FRDSLYSRWSEDNEEEF SEDKMIDQYKDSLYSNWKKT NSQEFESSMAYAT SEEKMEEYRQEWHKELTNKGLDEEDFNNSLAYAQ DAALAASLAKVAEGPAKDAGIALGT SEEVMTSLGYDFTDTSTDNADGDGNLSAQALLGF SDSLYNKWKNTNERSFK DK■D【VKDSपFAKWENSNKKELDLDPESF AKSDGGKLGE PLFNAFMEKQGYDFRDSLYTDWMNEAVFNASKEYGLL TFETEFYDDFEKTFYEKYKADGVPDDVYERSMTYGE RDSLFNSWMEMDE
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$Y K Q F E T$
K
K
K
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K ANTSKSNLLRTDSLKEAIERNYIGFVDKETRSVKFGE MKNLGYDINDINLIN SGKLLDALELKWIDSLQRNGFSKLVLDNSLRYAN SEDSMRVFREKLMMEFDEDGDPGGVKERSLAYGD SGSLFEKYEQSFLDSCKKIGFASEVIENSKLYAQ
E Q $\frac{\square}{M} \mathrm{~F}_{\mathrm{A}}^{\mathrm{T}}$

NVSKAYAF AEKMFDELMQELGLDPNNTTTDTAAGIGNVSATALLEF AEKKNHRDFMCTLNFDPDDRNDENPAGLGNLCAKLII DC YNTAL

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 SAADQI $\quad$ ALRSQDGTSKADTYTPTN RAATAILEERENDGSQHDE KVADHI KEWMGKD QVAEHI AEWMKGD VVAKHAENMKGD NGTTMPKFTVNTDDPSRW VVAKHILGWADKD NYKQTRTFPKFTVND DKGRW AVADDILAFRSTDGSSNPATY DPGTTDGDWKPTAPS LVANVFKQWIDKD NYKQTRTMPKFSVYTEDVSRW EMGKAVLA YAKKDNYPQTRGLRYT EVAAFISEWMDKD NYKQTRTMSKFTVNTDEPSRW EVVDHIKSWMDKD NYKQTRTMPKFTVQSDNPERW QVVDHITAWSGKD NYKETRTFQKYT ITDQQATW AVADTVLALRGNDGAQTFVDY $\quad$ GGSTEGKW RHNDGSNQLGNGLAYSDYTGYTSVNDPD AVASHTLAWSGTD NYKQTRTFEKHS पDP EPGKW QVADQI ISLRSTDGITKVVQYTPKRTMPKFS\|TEPGSW RVAAH KDWLKOD KYYSETRTMPKFSULTDDESRW TVASQU LAARSNDGSKQQDSYAP
EVVKHVKSWMDKD NYSETRTMEKFTVDTDDPGKW EVANFVGEWMNKD NYKETRTMPKFSVDSEDPSRW RHNDGSNQLGDTGPYSDYTGYKPGNAP DEVIVKPNRW
 KVAKHINNWMKND NYAETRTMPKFTVRTDDESRW
SVABHI KRWMDKD $\begin{array}{ll}\text { SVAAHIKRWMDKD } & \text { NYNQSRTMPKFTVDTDNTARW } \\ \text { EVADFIGEWMDTD } & \text { NYKETRTMPKFSVFSDDPSRW }\end{array}$ EVAAHITTWMNK QVSEHIAQWMSKD QVSEHVAQWMSKD EVASHIKKWLSKDH IAADQULAARSADGSATKVYKETRMPKYTIRTNDPSKW KVPTPQISASKFRVNSKEGNW RSAQALLDFRHHDGSNQLNGYEDDTGYQPVNTHDTVVMRW K TSDQI। TWMNAD QYVETRTMPDYNTYTDDPSRW AVAKHVLDYAAKDGYKETRGFKHT VTNEDGTW RVADHVI AYSKKDNYH QSRSFPKYSISNDPNAW SIANQIVDYSKSDGYHERTGDTR EVGAHVIA YAKKD N YHESRSFEKYTVKNNDPNTW KVAAHIKKWMDKD NYKETRTMSKFSVYADQPGRW KVANRIKDWLHKD NYKETRSFAGYEVTTDNPGRW MMAETLMQSRRDDGSNQLNNYADTTGYQPVNDITRWTAEH $\square V G T H I L D W A N T D G \quad Y H Q R S A L S R Y Q L K L N D P G S W$ QVASHIVKWMSKD RMGYSETRTMPKFSVHTDEESRW AVAKNVLEFAAKDHYKQTRGFKHTKS DPRYSVNEDGTW FVAENLLEFRQQDGSNALNNYQDITGYQPVNDILSDRSGW QVADHVIAYSKKD NYHESRSFEKYTVTNEAHTW AVAKAI FDYSKSDGG HEGYNKNFPQD FKIAKGACVW KASKLLLENRWLDGSNQKADYNYAPRNDAQPSKLRKPDNW A SAQULPYAKADRYNRपSNY EVAAAI AYSSTD NYKQTRT FPKYSITDNPAEW TLASEILAWAAKDGY $\square R$ RTALPRYSVSDDPGRW QVSKQI LAYAKADKYNKDSNY DVVEHI KQYMDAD NY NYNQTRTMPK
 RTQDGSNQLGNDPNGTLGVPYSDISGYQPINGETINTEHW RLGDFANQYGEDGRYVDFTNYCPVNPPDP QPLKYEDRW RHQDGANQLGNPGAYSDYTGYKPTNLPLDVFDPNSDPNRW SVGQHVLDYTKKD NYHQSRSFEKYTDR NDPGSW SIAASVMNYSKKDNYKQTRGFRYTVTQKK SVAKAVLAWSKKD NYAQTRSAAKYTV PNDGTW EI ADHVIAYSKKDNYHQSR KVAEVI KKWMSQD NYKQTRTFPKFYVVSDAGTW EI ANAIFEYSKTDGG HQGWDNNFPSDYK TPDGVGDW TVVSHI KKWMDAD NYSQTRTMPK LI SKKILTYAKADNYRKDSNY SIAAHVMRYSAKDSYKQTRGIRFT RSNDGSNOLGNGDGTPYSDISSYEPDNFPGSSVNKPGTW QVAK QVAK VTNKPGTW QAADLIVNQRATDGYNTAQ VPFTPGNGDGDWQFTYR


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 P P GI R S G A G EVVT E Y D D A I R EVVYA M G G A A S L N T T K R T P H Q T
 P PVGF QEFDEQQEYD DALLRDVRRMGGAPELNSTTRLPHQT





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PPPPFSMDKNSKFYKEL
$L K$ E
$V L Y$


PPPEFSMESD
PPPEFSMEEGS
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\begin{aligned}
& \text { A P P A LG TP LG E QR A R E V L E } \\
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PADAFS LDKKSPFFKE VQEVYDDS LKMKKKGDE
RHPEFSMEPNSAFYKE LQEVYTVTNK RKNGD




EPPLKVDSPEFAQQMAE LIEEVIFHAVN
PPRCEAS $\square$ S S VMMYAQAVEVVY
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KWEFEFWRPLS
SEVNNADFARLFALVDVACTDAGIFS WK
 SEVNNADFARLLALVNVAMTDAGI FA WKEKWEFEFWRPLS AEANNAHFARLLALANVAMTDAGI DCWREKYCFEFWRPLS DEANNADFTRLFALANVAMADAGUFAWREKYCYEYWRPLS AEANNADFARLLALCNAAMGDAG|IFSWREYTFEDWRPLTM SDENNAQFLRLFALANTAMADAGGFCWDKYKYELWRPLS DENTNAEFARLFALANVAMADAGTLCWREKYHHDFLRPIS DE $\square A E N A R L F A L L N I T L A D A G I V A W D S K Y S Y D L W R P D T$
TNSD RGYSLAENARLFALLNIGLADAGIAAWDAKYTYDFWRPVT D D H S L D E DVKLLF F ML G N AVVFDAGI A A WESKRYYD Y $\square R P V S$ KGNSLDENARLFALLDTSLADAGIAAWDAKYTYNFWRPI
 VNADEMETVYVYTKTSVAALADGF AGLDVVHTLHAYTKTTIAMYDAF AENSLEENARLFALLNI GLADAG
GSDGIELLARLLALVNVGFADAA VNSDFDDTVYAYTKTSLADADAF

 ANDDFDKTVYAYTTTSMAIADAF
 AAADFEESVYAYTKTSLAIADGF EDASLMKSAQAYALTSIALADGF

SLSANARLFAMLNILALADAA
DLDTDVKMFFALDNALLDAS AGAPLMQSAQAYALTAVALIADGF AGNSLEDNARLFALLNIAEADAA DEANFSKSVYAYSKTAIAATADGF $R D L P G P E Q A R L F A L L N M A M A D S A$
$T D A N F M E T V N A Y T K T S L M A D A F$
$T$ SGADFAKTVYAYTKTSIAIADGF

DLDKDVKMFFLVGNAVFDAGA SGAGFDKSVYAYAKTSVAIADAF TNSNFDDTVYAYTKTSLAI ADAF SDYNMMNTVNAYTKTSLAGADAF
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AESDFAKTVYAYTKTSGALADAF

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SGSTLVEDARMFALDN:AALADAG
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DWKGTVEALLALTG\|SLNEAF SKADLETTIFAYTKTSIGIFESF EKVKLDKVAEVYAKVGMAVSDAF
TNSSLMETANAYTKTSLAIADAF
SNASFAKTMEVNTVVA|LGLMDAF
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STFSGAADAILSSFFGEDFCFVD $\quad$ V V D DE
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$S V V S G A S S E V L T E \cap F G$
STI T A AAATVLTKL $\square G$
SVI SYAA S ETLT S S FGDNFH
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VGDPSVNSLRKFDSFESAA

F

F
TDNDGSVRPYA PRHYSSLSEAE


GLTARHFDSFYEAS
F LDD D E VVP GHGKRE
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GDPSVNTLRTYENFTHAA
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E P G

F D $\square$

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E P G VT



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 EPVDYS QVITDGSYLSRAQDRDTEVIIHD VSSSETNQLVEAASPGPDAVLFWNTVALQAV VN DAFSNMQLEQWNN NLSKIIVRD

## V VT K WNDAA L E A $\square$ R I T T H

 PSNYEPTKV KADDLHSLMQKVTDVTVHD DEVENENSDVVLA WNDLFGE LADTD TKNASPDEYNAKAADP KI F HEATHDTDVIIDBD NTVVTQWNEAALEAl RITH IA QS TAPATKNQDVI LKWNKLALEMI QTEKT NAASYDFTDFPNATIVITWNNILLNAIHKA QI SQVLAKMT DLMVND WVE ELM NAVVRNPSTT P D P VA L S K P T $\square$ T Y S D D VA T K W $\square$ L L L R L V K T T A TMQMTDVMVHD TD N N Y T P TE $V Q \square W N R L T C D A \square H Y V G M$ PDTPPEQYNAKAA NQLLYDCSKLTD DMDHD
 $D \square G H V L T A M T D I M M H D$ TEEQALGENNVAYQWAHTALEATANDTDKFKP


PETQLVTVEDPSPTTSVLWDQAVQEAVVNTA
SPFLLAQKKQP

MKDTVIIIPWNNIFLECVRKLGGAPGP VMRD WY RLI L E L V R L HT D I IV H D LT RVI V H D $\square H$ N N V D E | L | T | Q | V | I | I | Y |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| V | D |  |  |  |  |  |
| T | D | V | V | R | H | D | L T D I MV H D

T R DEAKNVVLQWNNAALEA $\square R A T R T N G Q$
TNVNKNK V TEPTGGN NIAYKWGEMAAQATANDTARFRP $L T$ D L V V Y $\quad D$
T D Q V I N WN NVY L Q T $\square R \mathrm{~L}$ NGGAPGP
$D \square S Q V I T R M T E V M V H D$
PDATGKPADQYNAEVALKWSSLELQLVRTAS
S DAI T D G S Y L NNA QNR DT EVI IH D


$P$ LPKQEDPAKS TEWVGETLVHD
 DPKLLTTDTNLLHNNIKQ\|TEVIVME D K $\begin{array}{ccccccccc}L & T & R & V & I & V & Y & D \\ L & T & H & L & I & I & Y & D\end{array}$ PQTQTNRAADYSNDVALQWSDMHLRLVRNS D P $\square T$ QRVM $\quad$ D DRS PT T S ALWD Q AVQEAVVNTS
 $P$ D QVI N WN NVYL Q TIR S N G G A
 N N A VLD WNEHVLNTTRLSRL TEE KMT E L L M V V L H D $\square \mathrm{V}$ S P T S T Y S SEVVLD WGELI LI L S R Q LS D V I VY D
T P DPANPTENAETYTADVALKWSEMSLK LVQQS $\square P \square T P$ T E Q T S S Y DPEVVVLKWNDLLLLEVVERF T

TENVAYQWGKMALDATASDTERFK P VFALTMVMMH D
PRTQ F VTVE DAS P TVVSVRWDRVVQN AVINTGV
E N DE Q SVVA QWNEL QLQQVI R
S D $\|$ GKVT R A MT D L M DQ D

$L G A G K P A T E Y T N D V A T T W A A M Q L K M T K T S A$
A DEYNADFVLEWMDLSLK K TK K T A
VI HD WY RLVLELVRHTAT
AEPKAPQP $\square Q N D E I A N V I S Q M T D \square M \square H D$
K P VT S $\square E \square T$ EEPKKGN $\square$ A FK WG KMA L NA QAN DTERFS P $L T P A C E S Q T A Y R A A D D D A E V L H \quad$ R SVKASVDVMVYD


WS S I Y K QLF H IT E V MVT D
 EKMK G D II A WN N Y L LEAVR RLGGAP GP
 D P A T Q GVSVVEHD DPTISVLWDRATQEAI DETS AVTDPSVVIRWN QAAMDA L GRYQAAGN


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RPGPTRASRATATVHAATYDAVNSTVPRYEPY TVYTRA ITFSPPVAARIYSYSSLAAYEVAAASDPAYQS LLGQLKD APGPTVASRAYGMVHTADFDAWAAYDPTADAT GVAPTYASRGLAMQSVAVYDVLAA DDGSMPFMVAAEAAAG
 IF SPPPMVARDLAMTHTCDYDAWAAYDNKAKGTRFAGQIPG LQTPGYASRSMAMDNLATYYDAVGDATNADDASFRYYDGQDD IFKPPVASRIYSYSFLAAYEALVPGYPEYQS GGGGQLVK GPPIVARALAATHTCMYDAWAAYDIIKAKGTR PPPTVVSRSLAMVHTAGYDAWASYSDSRGVYGTNKNNTL VT GPPLASRFFAYACLIGYEVVV QNDSTAKS GFTPPIVARALGYTGGVLYETVVPGMSTYKS VTNPPLGARFYAYACLAGYEVVA TFKPPVASRIYGYSYLAAYEALRPG YTGYASMMGKLNG IFSPPVASRIYGYAHVAAYETI GLQDNNYSSLHGQVIG
 RPTITSRFDGLIFTAMFDAWSRYDEKAAT MVYDD VTNPPLASRFFAYSCDSGYEVVALNDPGKYNSLHGVLND GFSPPVAARADGYAGVTMYESVVAGDPTKRSNGVGVWQLV
PGPTUASRAYSYGCLSGYEVYS
 1 AR GAMMHDAMFTDN VLSGS VASPPVAARI YAYTNLAPYRVLQESGVNFKHADILRQSK

 IFSPPVASRIYGYANAAAYETLV GGDSRYVSLHNQANM VFTPPVASRIYGYTTLAAYEALRYEHPEYNSITHAQLKA YYSPPVASRLYAY SVAAYEA ARNGDSRYLSDEGQLKG ปYSPPVASRTYAYVSVAAYETLVP SNSNYVSLAGRVHG | $R P T V T S R F L G L T F V A D F D A W S R Y D E K A I P$ |
| :--- |
| $S P P V A S R V Y L Y T I A A Y E V V R Q G F P S E Y N T L V G O V N G$ |

## －－

I FSPPVA SRTGAILHAADYD
1
GF TPPPLAAR
GFPAR
$\square$
TYSPPVASRAFGYLGGVAAYETVASGDDGFN
GPTPDARAGAMLQVAFNAINAD
FPPMVARNYAYAN AAYEVAAGD
${ }^{1} \mathrm{~F}$
1 TNPPLA GRFYGYACLSGY
VFSPPDA保
VFTPPVASRUYAYASLASYE
AGPT GSRAYAMVHTGDYNAWAAYDPDA
VTNPPLSARFFAYACLAGYEVVS
YQNPGYASRAMAMANVAGYDSVADASGDSEDTFY PTWDSRTGADLHSADYDAVNSTEKKYNPY SPPQASRVYSYAS AASYEALRQGDTTWVS KNYTSLAGQMHE RPTVTSRYLALVSVAVFDAWSHYNASALPVYDNAGQT RPTHTSR
GFTPPVSAR
YSPPVASRAFAYLGVALAEATASGDPALRS LLAGQLNG RFPTVTR VFTPPVSSRDYVYSSLAAYEALRYAKPGNAS DTARGQG VTNPPLAARFYAYACLAGYEVVA QHNTQFKSMHGVLND VASPPVAARDYAYSCLASYGVMKQHGADFREKDF TQAS LT PPIASRQMALLHTADDDALGNC FKEQGS

## ${ }^{2}$

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UniRef90_-G3HX145

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TDADAADAFASA AVLKYLFPRQAEFFDA
NGLPQVPKPDTTKEYYFPLASAFATVTKKL
LNELPSAPAEVE DAYPVAAVAAQLKVGKSLDF
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FTSPQKPDSSLAYCYPLASTKAFATVGRTL
NNLRRPSNESTNTNKEKALSFAAHECLSDLFPTEVSSFNA VNIEAPDGT SEEAAAIAAAHRVLTALYPKQVAKGDA SNCSSLD ADKENSDKKSDSHAAYQTGKDLYPLSDDSYNQ YPNDQKPQUNKAYYYQKATSFAAYRVLSALLAMMETA NGLPTLPQPDATKEYNWALAAAQYTLIKALYPT
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DTLQRPKYEATLDNKNKAMSYAAYQTLVDLFPSETPRF D DKRRPKKEQNLKNKEDADSYAAYGALCEYYYSDKE LPSLPDPK DKNLDYNLAALYAFNEVGKKLIF
GLTPPPSLTLTGVHPALAATEALLVVGRSLVF
YPVIKKNKTLTGYNVK FTTLPQPEANQRYNWATSANAAQATILKSLFANLNDAG SEKVTFTPSEKVYPP LASLAAYYYVGTGLDF NALDPLPGRAPGAAYDEA LLHAAMSFGANAFFGNTGPTGQ NLKL KPDPGTSPEDAAVYAAHR LISRDYVNLTMTFNT LNPIPKPDKKDKПDFPFAALTAFCKVGNAV KPLSVDPSAYPKANYQLASLAAYYKVALQLDF
 VEKLPEPEKNKKYNYLLAATKAAFTV AEKDTFSA FPDMKGLKSEKKVNYELAAVYAFFKTGGKLVFSEHL
 ALPQTTPSQ TYNWALSANAAQAEVLRGLFANAT $Y$ KMEKP DYDSSLTNSSGDVSSQAAASSAAYSVLSSLYPDQQE NALTPAPEREAGAAYDEAV VMQAAMAFGVRNFFG LLEDPANPGASPEAAATYAAYTVDTSDVVYPNANFPK RNMPPVPAPDRTKEYSWALAGAFLTVSHQLTFSR D EVAPAGADMDAA】ASAAHTVL LACWGQSTNPRNH FPSTSKPNLETPSPEDLVANSALARTVEAVYALVHTASSM
 NGLQTLPQPEAGKEYHWAASANA GLKLPVADGNKTYHYPSALNSAYATDIEKLYPGVPAAQDS DVDRRPANERNDKNKEIAISYAAFGAMKEYYFSDTEMF PLTVDKSKP YDYQlAALYCMLETGRLI LPSGYM DSLQRPASEHTDANKTEAMSFAAYRVLLELEPEAETSL YSEGATSLANTEENKAEAVSFAAYTALVALYPERTAD FHVVPDFFEVSLPTKFNPAFCATYAMLEEYFYADTGRLI S EEQTLRNKEDADSYAAYYAMEEYFYADKELFAN QGLATLPQVESGKTYNWALSANAAEILRSLYPG FSPLASRDPAKTYDQTVVINAALAEAVGQLF SNTGPTGQ GYSATVNKDKQPEKYEHRI SA NGLTPVPAPDTTLADEVAAVHAFFTVGRSL
FKPMPEPEKNKSYNFTLAATKAFFTVVRG HKVVFSL YPDLHRQDSTSGYSYQLSSVLAMETASQMQP LDFPELDSNQELSSPEFAAIYAMLRVGENVMPSGYL VS FGRMPLPVAGEAYNYTLAAVGSFFRVAEAL
Y VKCEIVKPDKDADPIMMAAYAARKV DRETITELIDQQTVP QADKFQASGSGVTNFEFPADYAMLLVGEKVIPSEDASFDS DTLQRPDIIENTLENKSLALSYAAHSVLSDLFPSEVASF

F G PVVMVP K N E V Y

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UniRef90_UPI000470A023 UniRef90 ${ }^{-}$W2UML9 UniRef90_UPIO003728B6B UniRef90-UPI00036759D8 UniRef90_UPI000414E3FE UniRef90_UPI00037A403B UniRef90-L8LY95 UniRef90-K9VT40 UniRef90_UPI000402D873 UniRef90-F4MN90 UniRef90-K2Q5N6 UniRef90-UPI0003712FFC UniRef90_UPI0003B77464 UniRef90_UPIO003B3DB27 UniRef90-W0F5T5 UniRef90_UPIO002DB9BA1 UniRef90_UPI000479F21B UniRef90-C0BHY2 UniRef90-B2J5L8 UniRef90-I2GDQ4 UniRef90-W0F3Q3 UniRef90-I2GPB2 UniRef90-A3HXI4 UniRef90-G4RA75 UniRef90-14FB01 UniRef90-UPI000382B69E UniRef90_GOIW86 UniRef90-S7WXZ2 UniRef90_UPI0003C7676C UniRef90-UPI000362A06B UniRef90-UPIO0041A340D UniRef90-H1Y297
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A L Y A Y LL
R D G

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AE $\square$ PAS
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DAKEDGTVLGN $M$ VI $\square$ F DEL $\square$ MAE $L G \square D P N N T$ T T D TA T G $\square G N V S A E A L L E F$ MVT N A L LAGHS GAAYEAGKSLGE TLVPENTERFEKEYDDQDKKDGDKEEVLENS LAAYGQ

SEEKMEEWLA DWKA ELVNRGLT DDEWEASVNYAT T F S G N M WD D Y E K D L F Q K Y R D M G I P D DV F E R S TA Y G D LMT D NSTDTTTPAG $1 \mathrm{G} N$

 QPS GALFEKYE QRFLL DSLVQKGFSEEVMQASLVYA Q NAFDGLMNRQGYNPGDLSNNPTCAAGIGN TSDANKTTIDSLKLSLENSLK AGVAPDVVNRSNQFGT
 D R $\square$ T A Y Q D S LYNTWWK T NEK EF

T DF R L M VK YK E H F L D S CRK VG F DEEVVIE K S K Q Y A S
$\square M L E T L F R S K M K E L H L D P D$
E D Y K K S F L

| D S C |  |
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| A | I |

K $\square$ D E Y QN NLYA ELLQK D

$N P G E P Y Q L N M D F N T E Q F L Q D S M K N M G S S E E A R N S S R K F G E$ GYLLREKQNDWKEWG LK T K I VNTKNLEAHMAFAK RALLKRMTEKLSSEVS LKDSSEH L A GVGGEAP DLV A
D S LK K Y E A KVY A M YK D NLD D S TY GRLEGFHDKLMQEF

KDTGMPDRARSMAFGE
 D QLMTNLGYDPTDTSTDTPS GIGGVSA ETLLEEF
LF A S Y M K K L G Y D P T N T S LDDTP E GI GNLAAAKAV I A A
NKNQSF
S E D K M GK F EN NFA QK I SEKRLD DLAEKLWWQQVGKQGYATQTITASRTVGR QPS GYLLLKKYEQQFL NAD D CKNA GLDAQVIDQSHRYAT K A RVDS LVENA LVTQQLKETDDDA D NERSVAF GR S E DMMNEHRDAVY QELKKEK GDP EDVFE A SIA YGK A LD T S $\underset{T}{\text { S }} \underset{F}{\operatorname{PR}} \underset{\mathrm{E}}{\mathrm{R}}$ RAMDTMDARTATMLAE
TFPE GSMDTYVDALKDQVK D GMPTDVF DGSVKYAN



LT D S I R T I L N D FRREK D T L D S $\square \mathrm{N}$

S YED GLYS RFK S QLDD S T Y
A AYKTRVDSLEQALFNQFKTT DQEQNTRSADFGK Q ALFDNLMAELGFDPDNRTTNTPAGVGNVSAQALLEF QPSGSLLDTYQARLL

TID SFYS
NTGPTGQRAMKAMEAQLSK SKAKNNSFFETERDKAl
$S V R M Q I S R R Y E Q A L$
QALFENLMRELGHDPS DQSLDTPTPGDGVYA R S I A Y G D H
 N K I I E Y R D S L Y A S L E Q D
 $R K L M A D L G L D P D N T S M D T P E G V G N L A A K A T I E A$ LA DEQTKFLAELKGHYPDAL LF D N LM T E L G F NT GN K TVVD PSTAA G VA QSVS I GN D AL M Q D L G Y D P A T A S T D P E T P A G $\quad$ L
 FMKEEL
 APASEDNRFAVS SLE QKYE E Q Y R TKKVSAA IHKR SVVDYGR $R$ VLA R M R A K M A A RVA D G L D Q QVA A L

| $S$ | $E$ | Y | $G R$ |
| :--- | :--- | :--- | :--- |
| $S$ | $K$ | $A$ | $F$ |

 VY S T K R L D A V H QKM RAY FKK Q GVP A A VL R R SVVVYGD D S LKHFE ET TFN DFKDRMDA

S GSRLRA YEQR L LDD S CK A MDYPEKMMDNDSKRYAEV A L K R A L E C N E CKTVPRTELVA IGKS

SFSKDSLVITEKKLF DAFQQAGDPTRTYENSLLLABD S P FA A Y QVVNTGFDAKS F LDD CMK DRVMGEAHLDPS QKF GE
 $L L T D V R S$
$\square F$ A NLMQELGFDPEVESYDPT T A A GV G Y $D N M L R S L G H D P E N P R R N S P A W D G R R T A Q A V L D Y$


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200 EVAEDILAARARDGADAPMPYTPRYAPGDHRVDPLHP EVADAVIAYSKKDNYHESR Y $R S Q D G S N Q T G D D P N G T P G A P Y S D \square S G Y E P F N P D P D E D E R W$
$T V G G L V A A L R D Q D G W N$
QVGEHVIA WAAKDNYLETRALTR
HVLSNKTNTW AIADHVIA WYDGDVYKQSRT VAAKAVLDFRHEDGSNQLGDDHPAYSDYTGYTPVNTPTDU KVHQHI MTWADEDNYNETRTMSRHPLSDK EIGNTILA $\square$ RANDGSQ DDGTYEYTEE $\square G Y F K A D P \square N P D V$ SVAKHVLAYSAKDHYKEDRGYRYT VTAKAVLDFRHHDGSNQLGDLNP GAYSDYTGYSPVN SVAD R I L A L R K D D GVD A KVE Y K P R E EVVGFW RWID GSNQKA DYGGKNYSDWTNYCPKNDPQFAPDKYPDSW DVSKQILAYAKADKYNRDSNYRYTPSQKEGDWYPTPPGFF DMARNLMEFRRQDGSNQLEGYADTSGYTPVNSPDEVRDDT TMATAI FDYSKTDGG HEAYKNVFPTD YTTPVGPGLW

 KVADHILTWAKDDH YAQTRKNRRYSYNKT PGKW QVVTHMKKWMDTD NYKQTRTMPKFTVNTDDPSRW AVSKK I L A Y AKADRYNK 1 SNY RKNDGSNQYGEVEGSNGQTGYKPVNDVEPYTMDKEGAW D
 LVSKHI LKKADTDMYKQTRTY PKYT LLEEPQYW DISTQULQYAKEDGYNQTTSY S O P P RYTPVGSPGSW
 SI A DQVLASAKTDGYLQLTAMNR RVASHILKWADGD NYKETRTDLKYYTPVKGPGYW SI TAHILAWSLEDGGAKVENM GFPLEFTLGDNKDSW MVSDSILAWSSRD NYAATRKKRRYA YSKEKGKW KI GKYVLKRAAVD NYPQTRGKPRF DGNDNPGNW LI ADRII KWAGKD

 RRGDGSNQYAEEEGSNGKPFFDYTKAPVNTVDQLND $\quad$ VNHW KAANTILEWVSKDMYSQTRT FPKYT UKEEDKFW AAAKAI LKNREGDGFDDKTDYK SGHQPGDWRPTGSG
QMASHILAWAAGD QYKQTRSLRRYTPQKK PGAW
Y I S S R R I L A Y A K A D GYYNK L
AI AAAI FDYSKTDGGHEGYN RNFPANYVV
EVGDVIKAYSSKD NYHQSRSFPKFTV PG GPGLW
 AVADSILTDRQNDGSDQPPLYKPGN LVAADI MSWSKND NYAK ITRSASKFSVVTNEEGRW AVAEEI LAAYASED NYHQSRSFGKYT PTEDLGSW
 QAAAAMLNARQSDGSTAVVPY E I GKK I L K RTT TDD AVADSI LTWSAKD KI GKVILKRASTD

NYKETRAMEKF NYTKTRAKRRYA NYTKTRAKRRYA YSKQKGKW NYPQTRAKPKF LGSSEPGKW RIGAAVFEWSKTDGG HEGYSRNFPT RRQDGSNQLGTDPNGEIALPYSDTSNYQPVNSPDETR\|ID A I SKQ ILKYAKADKYNLI
 AAAQAILQNRQADGYNDNTPYTPGN QPGGDW $T \square A T H V L A W A G S D G \quad F K Q S R G M P K F S \quad \square T K Q A G R W$ RHGDGANQYGEEDGYADYTGYQPVNTA DEMTDP $\square R W$ HVAEAVLAKRASCGFD KPLPGPYSSQD AGKW
 AVGEAMAAFADTDTYQEAYA HNFPTDYVA AVAKAIFEWSKTDGGHEGFNRRNFPADYKV PMVAPGW SVVADAVVAWSQSDAVVGHAGYQRPTPADAPTYVPPRGPGDW RKNDGSNQYANGEPYSDYTNYSPVNTA $A V A K Q V L A Y A A A D \quad N Y S K L S A R D R Y R P T K A D G Y W$ LSAEALMAFRRTDGSNQ DNGYEDTTGYEPVNDSDQNDEKW LAA ANVFTARETDGSNAENGFADTTGFVPVNEENFDPNGW SISKQI LA YAKDDRYNQISNY PRYAPKGAKGSW QVAAQIVAHAKKDGYFSLS IL PRYKPSTKEVGRW RKNDGANQYGEEEGSNGTPYYNYVGKPDNSVEENVDPNRW K I A DA I F E WSKTDGG HEGYTRNFPA SYVVPTGPGMW AVAAAI ANYANSDGQEFCY QTNFPASFVVVPTGVGYW AVVAHVLDWSKDDGGATVENM GFPVEFALNKGPGNW EVSGEILKYAATDNYNKTSG
RKGDGANQYGEEEGSNGTPGYSPVNSP YKQTRDENDDPDRW TVAAH QRWMAADR DKGKQTRSASQFTV TDEPGRW
 $K V V S Q V M K L A S T D G Y R E L P A D T R$ LAADRVLRCRDNDGSTDFVDYNFSNG YSPTEAEGRW TIIARVI I A RAAHD NYKKTRGMPRYSVVFKEQGKW AVADAILTERKDDGSQDQQ_NSPMLCNGSSNRDTVP DVADFVLEYAKKDGYUQLT TVANSLLQFRRQDGSNQTTGYRPVN LSAKALLEYRYQD GANQGGYDNPTTPGDGPYSDTTGYQPAN RHADGANQLG TPAYTATTTGYQPRNAPQDA TVTK QVLRQAS QDNYAKL
V GNEI LKYARADGYRNISDY


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PPTEYSEEEGTAWWDGVLEVYNVGNGVEETEN P P Y E Y S DEQDSPFYQEMMEVYEVVKGVDK SPPDLTSEEYAESYNEVLE SPPDLTSEEYAESYNEVLE P PAKYDLDKK
 NVPSLDS PEYQQEYRQTKD $\quad$ GGSK DSKVRTPDQT

 APYPYSTDTNSDSYKDALEVY
PP TAFSESKDSEFYKLMKRNYDD
 PPAKYDLNHNSPFWK LTEEVYT DGQRQDKT $P P P T Y N L D S T S G F M Q E V L E V Y R E T N S$
$P P P E F S M E E D S Q F Y K E M E V V R N K M T E E G D D$ PPPEFSMEEDSQFYKETMEVVRN
APVAFSKDKSSPFFNFMMKNYKE P P PMVGSEQLK E EVVAEVVEL PPVPF S SEDDESSDYFKMLQEVYEEGD PSI $\square P Y S T Q \square T S S F F A Q N L E V Y$ TKG K K PPLPYSLDKDSAFYKQLMQ VYEVGSGADSN SLTQEEK PPVAYSEEKDS EFFQILEEVYHI NLNDTTR APEPF LLVDGAVDLDA QTIEFIDQANEVIEFSANLTDEEKK
 $P P D S F S M D E N S L D F K E L M E E V Y A G G G Q V E N Q G$
$A P P A Y S E V K G S D F Y Q E A F E V Y E T V$ APPAYSEVKGSDFYQEAFEVYETV PPPPAFSEDKNSQYFKQTQEVYNQ HPFTFSTTPGSNFYKDAMAV PPPSFSTDTASRFYKEANAVYYA
 PPM GKGLTSEQT
 APPEFATTTDSRFYRSAREVRDVGNQ
$\frac{1}{\mathrm{~N}} \mathrm{~T}$ T APPEFATTTDSRFYRSA REVRDVGNQ P PVAFSKSKESGFYTLMMGNYK

EMLDSSKKT
 APPPFSDQPGSEFYKVAKEVYDAAVNAGE EEQ
 RPPKYEPTNKSSAFYSAMMLVK
$P$ P PAF
P PPVAFSTDPNS EFYS LMQEVY R D D GPGGHTTMSGSSAYATQVNEVKSLGRA PPYPY SVDSSSNFFKQAKEVYNIGR PPPGYSTDTTSVFMKEVREVYH
PPPPFSNDKKSEYFQQNFRVYDQ
 APEPFLDTEAEVNL EQGTITLSNGSVLADTSANLTDEQK
SPPDSTSEEYAASYNEVKE
PPPSFSEEAGSDFHAEALEVY
$\square G A V D S T T R T A D Q T$
 PPPALDSEQCAKEDAEIVK G G $P P$ VAYSTDPESEFYA LMNEVY
PPLPFSTDPNSDFYAEAMEVYSVVN
$P P Y P V D M S K D S P F Y Q E L M$ EVYELGGEKDDG

L
SLEMNKEQR
DTMRTADQT
NLLSDSEK
 P P VAFSKDTTSAFYR MMQEVYQTGK

f APAPFSEDKKSDFYKMMLVNYQD

 MPPTFSTDKTSPFYQQALEDVFATVN PPPAYSEDKGSVFYTEALEVHDVV SPARFSTDKNSPFYK MMEEVYQV RPYDYSMQPGTPFYKQVMAVYEAVKNA RPPAYSTDTNSVFFRANK EVYTUGK PPVSFSADKQSAFFKLDEKNYKE PMAPFSLEPESSFHQQMIEVY PPPQDGTPAFESSYDEVFTYGKN PPPPYDWQKNSPFYQEVMEVY
TTALYENLLKSPDYAGQFDEVKRLGEAH A VA K NLTPEQK
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UniRef90-F4KXC5
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290
300
${ }^{310} \mathrm{~V}$ Q EH
VI GПFWSYDEAPRПGVVPRTFDQTARVVA
DIAMFWDCNPAEKKITPGGHWMSIAAIAA
320
LI AEFWEDPGGTSF PPGTWMSFGEFVS A R

AI AQFWDCNPATKKDTPGGHWVNISADAAR
VIAEYWADGP SSELPPGHWTLFAEFVSDRDHHT
E I A SF WD CNPATKK TTP G GHWM GIA K I A S V L D
EAGDFWAYDREGL GTPDADFNDVLLQVAEQQGN
ATAYFWDDNAANKKMTPAGHWLAIIRTVATDKK
VI AEYWADGPAS ELLPPGHWTLFAEYVSDRDHHTVD
VI AKFWLD
ESGTVTPPGRWNQUAADLAVQ
A AEYFGDGPNSVL PPGHWNLFAQYVS KR
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A: AEFWEDPGGTAF PPPGHWMQFGLDVSHRDNH LK
VI AAF WDCNPGMKKDSPGAHWMGITD A KKYGHKNS CLK
LI AEFWADGQDGRRATPPEQCCRQARYLSKKYGHKNSF
AI A Y F WD DNAASKKMSPPGHWLA IAT TLARQQK
A: ASFWDCNPATKKLSPGGHWMS:AGQVAESQ
A! AKFWDCNPATKKITPGAHWDGTK IACR

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ALVEFMRDGP KSVQQAGHWLVFAQDVSRRDKHT
TIASFWDCNPFAKKUSPGAHWMGITGIACEQANK
El AVWWADDPSDTFTPPGHSYNLARIA ART

LI AEFWEDGGGTSFBPPGTWMTFGQFVS SR




TIATFWDDNPATKKISPGGHWI NITA
ACRK
$V \mathrm{~V} A T A$
A ASFWDCNPATKKISPGGHWUNITAMACRQLQKD
ALVEFMRDGP KSVQQAGHWLRFAQDISRRDNHT



A AFFWANDVDGTYKPPGHLFR TVQVAQQ DALEK
EIAFFWDCNPAEKKDTPGGHWMGIAGGAA A AN
EDAGFWDCNPFALEETPGGHWMGUAUACQQ
QAALFWANDLNGTYKPPGQLFEHTQTLARQM



VKAAF WDCNPGMKKISPGAHWMG TNDA

$A L V E F M R D G P Q S V Q Q$ AGHWLKFAQEVS $\quad \square R$

| WDCNPFALLEETPGGHWMG\| |
| :---: |
|  |  |
|  |  |
|  |  |

TI AEFWSDDP QRTATPGGHSLSIAALEI
E:ASFWDCNPATKKDTPGGHWIGG|TKIAA
WI AEFWSDDCAA TFTPAGRWDAANQA
FI ASYWDCNPFAKKDSPGGHWMNDAGLVSRRDNHT TK
LI AEFWEDAGGTSF PPGTWHTFGEYVSARDSH
VI AEYWANGPRG ETPPGHWFQDAQDLALREGHGDD

A AGFWDCNPFAVTYSPGGHWI GUTGIACR
ALVEFMRDGPQSVQQ AGHWLKFAQDVS ER K
EI AVWWADNPAETF TPPGHSYSTARIA VET

UniRef90 S4XXE1 UniRef90_UPI00045EC22E UniRef90-UPI000348FECE UniRef90 F4QP16 UniRef90 UPI0004072E0E UniRef90-UPI0003808CB9 UniRef90-V5C426 UniRef90 E4TKG7 UniRef90 M5U3A1 UniRef90_UPI000479C9DE UniRef90 V5BTD5 UniRef90 UPI00034543D9 UniRef90 ${ }^{-}$FOZL98 UniRef90-UPI0003FC4739 UniRef90 B7K7M3 UniRef90-UPI0003797CB9 UniRef90_UPI0004778C5A UniRef90-UPI000248F2C8 UniRef90_UPI000399B61D UniRef90-UPI0004727B35 UniRef90-I3C247 UniRef90_UPI000470A023 UniRef90 W2UML9 UniRef90-UPI0003728B6B UniRef90-UPI00036759D8 UniRef90-UPI000414E3FE UniRef90-UPI00037A403B UniRef90-L8LY95 UniRef90-K9VT40 UniRef90-UPI000402D873 UniRef90-F4MN90 UniRef90-K2Q5N6 UniRef90-UPI0003712FFC UniRef90-UPI0003B77464 UniRef90_UPI0003B3DB27 UniRef90_W0F5T5 UniRef90-UPI0002DB9BA1 UniRef90_UPI000479F21B UniRef90-C0BHY2 UniRef90_B2J5L8 UniRef90-I2GDQ4 UniRef90-W0F3Q3 UniRef90-I2GPB2
UniRef90_A3HXI4 UniRef90_G4RA75 UniRef90_I4FB01 UniRef90_UPI000382B69E UniRef90_GOIW86 UniRef90-S7WXZ2 UniRef90_UPI0003C7676C UniRef90-UPI000362A06B UniRef90-UPI00041A340D UniRef90-H1Y297 UniRef90-10K3A8 UniRef90-K9Y7L3 UniRef90_UPIO004792342 UniRef90-M5SDR4 UniRef90-UPI000464BD23 UniRef90_-Q8YZ15 UniRef90_UPIO0047AA5AE UniRef90-UPI0004764132 UniRef90_B1ZQJ8 UniRef90_GOIW87 UniRef90-A3HS69 UniRef90_C0BLB9 UniRef90-F8EBE8 UniRef90-F4KVR0 UniRef90-UPI00035C55CC UniRef90_B4WVF1 UniRef90-A3VZM8 UniRef90_UPI0004718D20 UniRef90-F4KXC5 UniRef90_UPI000255B05A UniRef90_UPI00036A6CFB UniRef90_F4KVK1 UniRef90-H4F453 UniRef90-U5C4J9 UniRef90_UPI0003B414AD UniRef90_UPI00047A0073 UniRef90_UPI00047BB751 UniRef90-UPI00045E9B4B UniRef90-D2V7U7 UniRef90_UPI00047A9E02 UniRef90-K9XEU2 UniRef90-UPI0004068F73 UniRef90-F4Y2Y4 UniRef90-UPI00034D0DB9 UniRef90-F2RC42 UniRef90_UPIO00471C0C3 UniRef90_UPI000475E8E1

E DE NA R Y A A| |ATWD T T K Y Y NRWRP $\frac{360}{1}$ A NVDWKKTAEALAMTGVSLHDAFVACWDEKYRSVLTRPET $D D N T L D E D A Q L F F G L G N A V F D A G V A T W E A K T Y Y D Y A R P V R$
 AKADFAQTAEAYAMVSMAMHDAFISCWDAKYKHVGVRPDT

 | $E A D L M K S S Y A Y T K T S$ |  |
| ---: | :--- |
| $S$ | $M$ | L

R DNHTVEQDVKMYFMLNNAAMDSGI ACWDCKRYYDNARPAT ENVDFAKAMK H T M MVAVS LMMDGFIVSCWDEKFRSNRDRPET EDARLDRSAETFAKVTMAVSDAFVACWRAKYVYNVLRPIT AKTDFGKTLLINTSVADGLMDGFMACWDEKYRSNRIRPET

 EAYAFAA

LDODYKYFALOLLDAL
S S DDDVKMYFLNQITAMDCF


## S N A

DWK G T A E T F S L $K D A D L A E T V D V L A R L G V V L A D S F$
$R N D S L D E T A R L F A L V G L V M G D A A$
R K K A D F NTTVSA Y T Q T S I A LIF E A F K K LDD WK A T S E TMMA T TAA I Y L F D G F SNLDFYETLKDNSLVA GLMM GF

 $T H A D A V K T A Q A Y A L T A D A M F D A B$ AKADLGKAAETGARVGAVSDAFVSCWQE DNHSLEDAOLFFALGNAVEDAGVRCWKCKYLYNNERPYT DNASLAEDAQLFFALGNAVFDAGLATWEAKRFYDYVRPVR AKADFSKTMLVNTSVAVALMDGFMTCWEEKFRSNRIRPET KKADVAERADLDARLGVALADSFI GCWHAKFEYDLIRPVT KGLSFYENARLFALVGLGLGDAGI LA WDAKYDLDLWRPES ANASLLQSADAYARTAMALADGFIAAWDEKYHSGVIRPES DDHTLDQDVKMYFYNQVTALDAF
 L D E D V KMY F LTE E DT AMD A F ARLPFDQAVMVQSVVAMTLMDAF

SLDEDALMFLSLSNA|EDA ANVDFFRAMQDTMTVSVGMMDAF
 DNHTLDQDVKMYFYNQVVAMDAF EEAK DKAAEAFARVGMGVHDAFILCWRCKYTYNNARPFA RKAPAADRADLARLGVTLADAFACWNAKFTHNLLRPVS RKAPAADRADLLARLGVTLADAFVGCWNSKFEYDLLRPIT
NQVGFDKAMESNGVAMSLHDAFMGCWDEKYRSNRURPET NQVGFDKAMEINGVLAMSLHDAFMGCWDEKYRSNRURPET
DDHTLDQDVKMYFYNQIVAMDAFITANWDSKMYYDSARPYA ASLMRTAETYALTGVTLADGF SHADAVKTAKSYALTALALYDAF AELNLAETAYDHALVGMTLHDAF S G

MFKVLTSSLADAA ANLINFAETAYI HALVGLTLHDAF DNQTLDEDDQLYFGGNAVLDAG DNHTLDEDVELFGALGNSQLDSA ANDDGRSMAHALVAFTGMDA
 GV A
 SCWDEKYRSNVIRPET ACWDTKMFYDSSRPNA SCWDEKWNTLIVRPET ASWDAKMFYDFARPYA $\begin{array}{llllll}I & S & W D & \text { K F F Y S T WR P E T } \\ \text { I } & \text { C W D E K Y R S D R I R P E T }\end{array}$

ENIS Y E K S V F I |H T V V|A A T|L|MD A F|

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UniRef90_UPI00047A9E02 UniRef90_K9XEU2
UniRef90_UPI0004068F73 UniRef90-F4Y2Y4
UniRef90_UPI00034D0DB9 UniRef90_F2RC42 UniRef90-UPIO00471C0C3
 Y I NQY $\quad$ DEEWLPILQQ GPPFPEHTSG

 YIKEY !DEDWNPLIQ


EDWKPYVV TPPFPEFPSG
A

| $A$ |  |
| :--- | :--- |
| $V$ | $H A G D D D G N G D A D W V A L G A P N \quad G E D L T G F$ |
| $V$ | $N$ |

AI HF L Y A GQQ $\square E S W Q G T V$ DGADWKPYVVT
AI R A


AI RELAELELIDP QAI DFTTYQTPGANP
Y 1 K
SQU D PNWEPL



## 

T TYQTPGANP TPPF T Al $R$

KY D D E N WK P V V Q
TPPFPEHTSG

LVHEYYQD

| $A$ | $R$ |
| :--- | :--- | :--- |
| $Y$ | $V^{R}$ |

KTI KAWAGPDKGMMKGQYWRPY
VI N Q

AI READTDYNRDTTWQPGSAMLDGTR
VI NQ
H D D Q S WK P L L Q




A RYLFDDQWGGPNRGTQLIDGGDWQPYLPTAPHPEYVAA

LI NQYY
F



VINKYVNP



| $A$ | $R$ |
| :--- | :--- |
| $A$ | $R L D D G D G N T A D P N Y Q P M L Q$ |
| $R D N W Q P L S Q$ | $D N Q G G H F$ |

 AI RDLGQLGLLGEFDADLGQPDQGTER\|LA A 1 R

K Y I D P T WT PFLQ
 AI QDGNPGTVADPTWRP $V$ SA SPNPDGTRFS VI NA Y P I D EKWMPLLQ LVHEYYDEQUIEAWGGPEVGNMKGKEWRPY AI RELETARNA HWKP AI R Y V HRY $\square \mathrm{DNT}$
IINE
F LDETWLPLLQ
QPEF $\square P \square M M$
$W E \square P \square N$
WE $\square \mathrm{P}\lfloor\mathrm{L}$
1 D PKWI PFW
 AI NRY $L$ N PRWQPLLQQ TPPFPEYTSG AI RELGGSAQGTRT ILAANNFLTYQTPDGDPSPPFAEYTSG




 VIN E Y D GK H: K A WA GE GK G M M D G S E WQ P
 A A N R N R N A 1 RE Y N H H D P P WNALLQ

TNWFPF LATPPFP PEYTSG AINQKVDQSWRPLLQ A NQ | $A$ | $R E L G E D G L I G E F D Q E L G G F A D E S Y G G P P S P P F A E F T S G$ |
| :---: | :--- | :--- |
| $V I$ | $R E L G N E D L G G Y A D E A Y A G P G Q G T Q T I L D A S P P F P E Y T S G$ | LI P Y DQRGRWGGPGQGTVTMDGVDWQAYVAVPPFPATVSG VI NRD

I DKRWQPLLQ
K Y I D H G WT P|L LlQ




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PT ПF F T T K D

D S T G N N Q N D

VMTNKEDA

E S V G Q

T T A

K T


DSSGEE $\square \mathrm{DDGK} \square \mathrm{A}$ TMDNGRNSDG
$S P L S K N$

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A E HYPAA

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$\square S \square L I L A L T G T S A Q K N K K Q P L P Y \square Q \square D K A \square N A V S G V M I H D$ MTELMI HD KLTNVIVHD VFSLAMVAD
 D I A L H L F H DT EVMVT D
PEP $\square P Q G K T A D \square Y K G D \square A T Q W A A$
ATIVAQWNQALLQGVRDSKL
SDPPTATIAVTWDNMALKCVHNS
NVAYKWSQMAAKKP
VFALTMDRFKP


$E \underset{L}{L} \underset{F}{F}$ | L | F | S | S | T | T | V | M | V | T |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| l | M | D | T | D |  |  |  |  |  |

PAPNSTPNPADEFSYE DASKWADLQLILTQKTS
ELQPTVF ALTMVMMHD
NDIVLENN

NDNDAHQWA DMALEGTANDTDRFEP
NS NE Y K T D P ILLF S N TVH
Q $\mathrm{N}^{\mathrm{L} T \mathrm{~T}} \mathrm{~V} V \mathrm{~V} \mathrm{M} \frac{\mathrm{M}}{1} \mathrm{~V}$ Y D
K VTVADYDHEVVSAWNNDF LIELERYAA
DVEAQTVTVEDPSPTVSVLWDRALQEAV HQISSSVFS LS QVM MHD ADDSDHRVATAWFALLEDL $\square R Q A$
$P Q Q Q \square A D P V H Y W N D V L L Q V D R R E G G G P G P$
GDTLRDAGPIURALKAVTD I MV HD
PSPEAESAEAAQGGDNLVLQWNRATYDAMMKKAAETNG MT D $\square M V H D$
$\square S \square D P \square T$ NE $\square T V E N D N P T V P V L W N Q A \square R E A V \square N E N$
DAVSTWNTVAVQATLTAGE SNMAYKWSEIA TSTANDTDRFKP

SPKCSVITSEKD $\quad$ FNED VVIK WNNVLLSV VRDLK V
VM WN QIALDT TSMDHAPPPL
VFSVTMVMDHD
SADVATAWADMTLKLLNRSN
EAPQPRVVILWNSAALAAVRDAK

PSPENTTAVADQSARTPAVSWYQLEFKLIKLTEVMVT D
PEVAPTLPPASSYDAAVATKWSTLTVQLVRQS NTNAVID WNAlALNAlQAEGKAGRG ADVI MDWNA KADA $\square$ AAEK
AGYSNQVVLDWNQMAYEA KAGMP
VAPQPAYAALPPR PDADPVGYWNDVLLQVLE DATQSTSMEGGGPGP H D Y V M M WN S I AL ELNRRDHTNAKN NSDVVIDWNATALNAVQNTRKFA
A A ERDADRYWTNNPI L RWNEDALLEMAAKYNLIPGP
KEESLLDEPEQYSNQVILDWNLAAFEA AK MGGAS CKPKKLNSDNYRADMVTSWNKIVLEADMEDGLLTLK A VT GPPPQASSFDHVLYWNSVFLDT $\square R T \square P R P G Q D$ ADVI MDWNA KADA $\square A A E K$ NMTPVMAWSDALVQAVRDTAT

WNDVQLGVERFT
TQGVAQNEPTANDAYKWAKMALLATANDTEKFKP
$\square \mathrm{S} \square \mathrm{SCKPKETLT} \mathrm{T}$ Q

KPANAYSSGVVYDWFFLAFQLIQQT, VERR
A QREAVDYWTNNPVLRWNEIALDMAAKYNLIPFP

PDPGPPPVVTN STNVAVKWGQLTLQT


PKGVRTNTYDARLAVHWANMALRT
DDVVI S WNTTAVAVTQQDA

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UniRefon

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 NAVVQSRTDATAHVATHDALNSUDSRYERYAFKGDVQT RPTVTSRFLGLTFVAVFDAWSRYDEKAIP VVSPPVAARYYAYTMLGAY AIVAAHDKNLPALPSLVKSF $V T S P P G A A R F Y S Y S L L A A Y \square A Y N N E G N L N D L P M V E H F N A P$ GTGAHRSSRVMAGVHDAMFDALNLAMARFDSKSPDKPRYV VVNPPAACRFYSYAMMSAYSUVAAMHNKEDPDAKRFDAS VVNPPAASRFYTYCLMGAYD VAQHNKQIVPPTKFIGQGEQ
 GNSPTYASRGFGY G TMYESVGGFKAYNS KNTPTYGSRADGYLGLTMYETVVYASRRHKSVIRRLLSDTL VASPPVAAR IYAYSNLASYLLIQNQGDEFNHGPLLEKTYL GFTPPVAARALAYTGAALHEAVVAWSDNGHSLSGQLNG VA PTVGSRLMALVSTAVYDTVNAFNTLYPSYAVNVN QILPAPHSRVLSMMHVAMFEAVNATDRRYAPYKLSLP YQHSLLASRANAMVHLAMHDALNSDAPAYQTYAFYRQDAE GLGPPPVARLDALI YTSAFEAWAPYTKSAK M
MKGPTLSARSAAMLNAAHYDAESSYQLRWKGKITSEAYAH
 पP N P $\stackrel{\rightharpoonup}{Y}$ G ${ }_{T}^{1}$

 GY

 GARPTVISRAHAISVTAMYDAWAAYDARAVGTRLGG GFSPPVASRALGYMGLTLYESVVPGMPGYQS FAHPPYTCRALAYLSVAQFDGLISAWHYKYSYNRKAPYEV GNSPTYGSRSLGYAGLTMYECVVNGSPTHRS LAGQLVG GFLPPQASRAFGYVGGAYESVYSGDPNASPLAGQLNQLV QLLNAANSRGQAMLHIAMFEALNALDRRYAPYKLNL GNSPTYASREFGYLGLAMYETTV YGDADRQS

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 $G D L D P D S K A A G A S D E A A V V G A A Y Q T L I D D L Y P G E A A A A E A$ V G K $\square$ QGLTALPQAESGKTYNWALSANAATILRSLYPT YPALKKPDTDQPYDVHLSA DTLRRPANERRTANAEAAVSYAAYRCAVNVFPGD FAEYF $\square$ RSKNHTLDKKESISSAAYRDLADLWPGQVEE ERRPDAEQNLKNKEDAISYAAYGTLSEYYFTDKE DFPLVSDDTKTGYDYQVAALYCLLETGRQLLP
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LTPVPK N
DYSUEFRGSSDNVTTDVVASQAAYVVSGLYPDQQE NПNRLPEDKRTLLNKETAVSYAAFRTLSEYYYSDS FKSVSLP LANAQTDYELAALLAYDKVGEAVFPEGSMKGYR LK SVPGPEAGKEDDFPYAALLAYCKVGEAVFPEGSMQLYV K ا P VA
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 YPNFDD $\square K S K A P \square A E D F A A T Y A L L R M G E D L \square P S G Y T \square E N P$ AQKYDG WIDEGPDEERVIGRTAYNILLGLYGRNQTQF HSLlQPPPSPALGKPCDFTVAAV

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NGLVTLPK伿TQRYNWVLSLDA
GQS WlHK
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A EPD
ATLRRPASERTVENKAEATSQA DYVASTAMF AMAS AEKYAG ILEGPDEEERVIGRTAYNILLKLYGKNQTQF IDASLTPPA GGASTEGAAVSGAASTALLDLYPDFKSIVYE AEGASLEAAAAAAAYA ALTEKNKDADP円AAAVSAAYEVLVASFPAQ ACFKFEEEATAANPIAATAQAAFEUAANQFP DGLEPDPPREAGATYDEVVLQAADSTAMADLYSHTGPTGQ LPKITQQNPSDSTEATMDAAAHRVLEHLYP
PVSDADRSTSKEAAAAAAAYNILLTIYPDQKS
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$\square K A F P$ SADRATSKEAAAAAAAHDVLLA $\square H P$
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 $K$ K DLLS QVKKLGASNETVVESHALGN GYQLQD D R A AK EA RFMAEQQNTKVSRAVI DS SVAVGS QR L KRLEAAKGRLMERYRVNRWMSKKEMVASGISYA E
 TSTANKTTLDSLETALQTAFKDT DETVNQRSGDFGK $K L L A A Y E Q Q L L D E S C R R G Y D E T I D N N S K R Y A V$ RASVFDPLMTQLGFDPGNASMDVSTPAGVGNVAAARAN V LDVRMKQLGYNP K $I F A D Y M R E L G L D P D D M S T D T P V G Q G N L A A K A V I E A$
$S G Y M L E E E Q K K L L E S L L K E G Y S Q A V I D Q S V L V A Q$ AASNATVDSLETAVRIAFKE ADETVNERSVAFGK
K


 QEELLRE K K K M D DSILVLAR D SLKKMAKDHGMPKAMLANSEAYAQ SAAPAFSRQRMDSDRRAMDEQFRGAGLSKAVYERSVAYGD PSGY LLSDADMNELGFDPTDA A ADTPAG DGTVVAGELLEL GGASSDDEEKFL ASLRQYKIDTAVI NASVSVAK GGASVRESIDLLEKSIRTR YEADVAPEVLRRSIRRGR
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 AKALVISEDS $\square E R F R L K S I Q E F R K R G \square T E D E L Q Q S L V Y G D$
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 A LK SALDECNECKEVS I PYLENDGKP EEKLVLL QKKLI I APQFNELS FKKDKTPDS I R NSMAVAV $A$ LLRQGHAQKTVDQAVAVAQ $N \square Y E P T D Q L M S Q L G F S P S S V P A Q P E G \square G N L A A Q A V M D Y$

$\square 1$ KAQDS $\square N W N$ N APAASRTRIDSLENALAREYA GPDAATAERSAAYGR
$D \square K P D D D A T L S N S L A P I A D G E S K D A G D S L G K$
 AEAAPRTDE $\square L A \square L N S A L T K L G Y S P A G G G A P N T S P A G I G R$ LDAKFRERFGTEPTEFDILDVTVVN A L N G F D F N P A M S G

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KAMLDGR AESLAQVAEGKPKTAGVLGN DKKAADEAERNKWLSTVTEDNLK RADTRMAERLADGV

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$\qquad$ NYSKDSGLLRYSPIKGGKN W
 YLAARIVEYSKTDRYSAQDRYTPVKGDA QIADQVIAYSKTDGYSQLVAVVYTEKP YIAGEVMKLANTDGYNKLSTLTR KIASAI FEWSKSDGGD AGYSRNFPA AVSKRILAYAKADRYNLISNY DGANQSGSLTSGVPYADYTGFQAVNAPSARYTPDNREGCW碚 LIAA KIL RKGDGSNQYGEEEGSNGQVGYAPVNSASRYDENVDPNRW TVTKRVLTYAVADGGAGNYRGLSTKSRYRPGKGDGYW EAAQKVLAQAKADGYDQGPALTR Ki A AVILDYATEDGYRQLASSTGKYSPTKGQGKW TIAATLMNARRNDGSNQLNNYVDT DGYSTPNTPTQVVNDE AI ANAIFEWSKTDGG HEGYKRNF PVTYKTPVFPGAW RVAQAVVAYARSDNYGKLS A ARGRYR PTKKDGYW YAADQILLFAAKDKYAQLSTHTR YTPKKGEGHW TVSKHI MNWSKGD NY LQTRSASKFTVKTEDGRW E $\backslash G N E!L A V R A D D G F D E V Q Y T Y T D E V G S F Q A D P G N P N P$ AFALSMVAMAKADGYNKLSTFTR LAADMVIQARKNDGSNQYGAMNGSNGDPYFDYTNYQPNRW SVGVSVIRWSKKD NYLETRGAEKYTVKDD PGRW AVGNALLAWSKGD NYAQTRSGEKYTVIDSAGRW
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DRNSLDDDVRMFFALSNAIIFDAG EE A MQ $\square Y \mathrm{~T} N \mathrm{VA} V \mathrm{G}$ L LD A F

E Q DVK MY F ML G N A V M D A G
A K L P

| $L$ | $D$ | $E$ | $V$ | $K$ | $M$ | $F$ | $Y$ | $N$ | $Q V V$ | $A$ | $M$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $F$ | $D$ | $A$ | $F$ |  |  |  |  |  |  |  |  |
|  | $E$ | $A$ | $I$ | $M V$ | $S$ | $L$ | $V$ | $M T$ | $L$ | $M$ | $D$ |

SKADLAKAAETFARTGISIADAF A Q S F A E TAY IH A MVA M GL H D A F
 SKTTLGKAVEGFARTG $\square A V A D A F$ A K L P F F D E A V Q V H S LLA A L T $T$ L M D A F A TLLSWSETVGI HALVSMGLHDAF QK S DFNTTVSI YTEAS I ALLFD GF AK LDD WK N T L $\mathrm{H} V \mathrm{~V}$ H A L V G M GLLH D A F LD K DV Q M Y F LV Q S VAMDAF
ANADFAETVCAFAKTSIALFDAF A K A D F A T A V C A FAK T S I A L F D A F A GADPMQSASAYVRTAVALSDGF EDTDLETALLCDAKVGMALNDAA

A H L S FDKA LLLLNTVLSVTLMDAF

 SA

VNLAEAVRWHAMVGITMA DAF $R G L N T Y E N A R L F A L V S L A M A D A G$ $\square$ Q A GVLQ T L E A Y A WV A V T I N D A F EGTSLAENARLFASLNVALADAA L S E DVGKMF FTVLNLAMAD S G $S G \square D F N K A M E D T A V V A V G L M D G F$
 S N T S L V S N T S L L V E E A R L F A L L LD Q D VKMFFYNQVTAMDCF
 D T F R I S T FKVLTI T MA DAA
 A GLDLDK G I MV H ALTA AT L LD S F NKASLVKAAETYARVGMAVADAF $R$ DVRRDF F A L T T N A I F D A S
 S NTVDLVKACETYARVGMAVA DAF
 $T Q A D L G K A A E T F A R T G U A V A D A F V$ DGNTLQKKDASLFAALNTALADAVIVAWKEKY TEELQPRPPDD K GMDLVDCARLFALTS I AGNDALVAVFDAKYHYNLWRP

 $R G L N T Y Q N A R L F A L V S I A L A D A G I A D R D V K Y A D D L W R P V S$ PAASARELLLVNVAMA DA GI A A WY HK Y V Y Y QL WR P
 RKLGLLNSARLFALVNIALVDAYTAGWDAKFHHNFWRPYT EKL L L W W S A R L F A L L N MT IVY DA YVNVG DNKFHYNHWRPYT QDADAERRVEVLARLSVAMADAFI GCWHEKFVYNYVRPVT

 E DLLS L G E A V E L Y A R V G M GLLA D A G I R S WH QK F T Y N Y Q R P DD A K P S L L M K C V $K G G L D R D V K L F B T V G N A D L D A F$ KKADLGSAAEVFARLNMAMSDAFVAAWNTKYKLNVLRPVT $F N P L \operatorname{LS}$ SARAFAYMNMADMDAGIDSCDAKYYYHYPRPDQ AKADYAKTVYAYT $\square M A \square A Q F D A F$ A NADLYQTAETYARVGMAVADAF TNATLEKAVVGYAMLGVGEIDAF LD L H T T A R L F A L L D I A M A D A Y $R K M D L V D C A R L Y A L T S$ I A GA DAF







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WS A GTVL R WN E I MRGGVAK HNLP P Y P QK K T ITK Y WTNNPAVRWNEVALELIAAKYNIITPGP
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A D AVT DWNRTAGDVVVNAGM
WS A GGVLRWNEDMRELVAKRNLPPAP
 P QP P D TVA Y S S DVVTS WLTMQL RLTQTTP $P T L V V R W N Q A L L S A V R \quad G G$
WS N N P T I R WNE IA L EMAAK Y NLIDPGP


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$\square$ S LT P LA $\square$
D P A T D PI LY WN GI L L G A F K
G M
VT D P T T QLI TD WN T L WL E VD Q Y A Y GM


 V L R WN E L M R E L VA K Y NL L P P Y P
$\square$ N P VGE T L S E E A D LE K H S $\square$ A R WWNE F L L A S $\square R \mathrm{~K}$ K A D TVT D WN R K A G D LI T E WS D L WVS $\square D Q F T N N M$ ADAVT DWNQ VA A GAVGAA
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RVGPPPANRALAIANVAVFDAVNAITGRYAASGRVVLDAA VSGPTPCSRFFGYLNI SQWDSWAVFEDTA IGS GYASFISLL FANPPYTARALAYLSVAQYDALVSAWNYKFKFNRMSPAKN FARPTVHARNLFHSSVAMYD I WA $\square Y D E N A R P Y F V G E T V N G$ P $\square$ PPFIESRYYAMVNVAMHDALNNIVPKYKTLAL
$P P P R A A Y N F A L P L V A G F D A V N G \| T R N Y A E P Y G \square G Y G P V$ FSNPPYAARAFAYVSAAQYDALVAAWHFKK DYNRPAPYTV PRPGVHARNLAFLSLAMYDAWTAYGDESKPY
LPSPA YTSRMLA YLSVAQFDGLDAA WYYKYEHNRPAPYVT RVLTPQAAYNYS IATTAGFDAANGIVQAY
FSNPPYAARAYAYVSAAQYDALVAAWHFKKDYNRAAPYTV FANPPYAARAYSYVAVAQYEALKAAWYWKYRYNRPSPAKA SAAPTRLSRAAAMMYGAVYDAANSARCATASGCLGQPYLT RQGPYVAPRSFAMVQGAVYDAVNADAGTPYQPYLDA
FARPTVHARNDFHTSVAMYDAWAVYDDEAETYLLGKTVDG KPGPHRSSRAMALVHLAMFEAANVYAGTYQSMIVGVGPDS
V HPT RSFAMLHAA IVDSVVADTRDAPAAVFQLNAPH RQPPYVTGRSFAMVQGAVYDAVNTIAGTPYEPYLVAPRTR FANPPYTARALAYLQVAQYDALVSAWNYKYKYKRAAPSKV
 PLAARTAA VVHTIYNAWAAYDAVA LSTQHG $L$ ARAGAMMHLAAVYQASAGV
GFNP SRYMAYCGVALYESVLPGMPNYRT DLPPTELSRHAA LLHAAMQDAAVSVTGVGNPYRVRVVPVSY RPVATARSLAYl HLAAYEVAVADVDGNQSN VNN FANPPYTARALAYLSLVAQYDALVLAWNYKYKFNRVAPSKV QT VYAARTMGMVHAAMFDAVNSIERRYQPYLVQLPADR GQSPFAQARYGAVVQVAVFEAVNAITDDYQPY PVGPTKTSRALALI HLAAHDAYAQVTKKFK_PRDE FSNPPYAARAYAYVSASQYDA LDAAWHFKNVYKRTAPYKN KQSPATAARSFAMVQGAVYDAVNAV SGVPF FSNPPYAARAYAYI SAAQYDALVACWYYKKLYNRPAPYKT $M V H G A V Y D A V N A \square A G R P Y Q P Y L V A$
FPDPTKHSRNLYHMSAVLWDAYWAYEPNAWARVTPVFHKE

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

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UniRef90-OOIDH4 UniRef90-12ER98 UniRef90-A8UH84 UniRef90-V6S7HO UniRef90'UPI000478EE68 UniRef90-G2Z587 UniRef90-Q605W4 UniRef90-A0A011Q2Y6 UniRef90_UPIO004728B17 UniRef90-UPIO004104AAC UniRef90-W0REW9 UniRef90 UPI00037130AA UniRef90-UPIO0036F0A30 UniRef90_UPIO003601647 UniRef90-A4YMN4 UniRef90-UPIO0038317B1 UniRef90-D6TG25 UniRef90-U5VY55 UniRet90_-_8EGS1 UniRef90-UPIO0036027A7 UniRef90-A6ENL2 UniRef90-UPIO0037CB1C6 UniRef90-K0JYE2 UniRef90-UPIoo046F67D1 UniRef90-IOLOY7 UniRef90-F4AY45 UniRef90-10KC46
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DPSTKHAE पPSYPSDGAVVAAAASKTVLKAMFP DEGEYDDR FPD SVVKAEQPDDANFACLYALLRIGEELLPSGHLLVPH DEEDPHAPAPAYPSSGAVVARASREVLTAMFPLEAAY HAYVAQPDPSYPSS GAVVARVSKEDLTTMFPLEADYLAR AAGRHAALNTAIDYAAYTALRDAFPSYPV AQRGASLDMAFAAADHASLLELLPGQ
KGLELLPVADDSKEYNWVLSLNASETLKNGYVQTSEENT DPAYADNGLNSYPSDGAVVAITSRDVLSAMFPLEKEYLAK DSSTPTANPAYPSDGAVIASASRRILTAMFPLEAAFLEQ DASVPVTDLPSYPSEDAVVAEASFLVLKAMFPGEVPFLEQ SVRVA GUSRKASEDAVVAEASFLVLKAMFPGEVP
VDMRGVTKKNVQSMADAAVSQAARDMLVQLYPSATVAA
$D S L V P Q S N L P S Y S E D A V V A G V T A E M M K L L F P T E I D A F I D E Q$ DNLQVPTSEVTDENKDEAMTYAAFRVANFLLFPDQAAAFDA
 LA Y L P SHEENLDRYNWA I AANAAMADVI RSLFGNASQEHLDD LARLPEPDEGKEYNYPLAMSTGQAEI LRSLY
 RPDAPRHASKRAAAVEAAYEILVLFY
LS P LQ LPA AKPEADWQLAALLSYMKVGESVFPEGSMKAYE DFARPDSLNIDSRQFNASVALNSAVFLVDKFFIDSAPYワWM DALLPVSDLPSYPSEDAVVAEASVVILKAMFPGEVPFLEA ASDLK GANPKVAAAMACAQVLRRRYPDQ GGSAEAAVATAAH
DGTVRAALPPSYPSEDAVVAAASYTVLKAMFPGEVPFLDA

AVRHPHVSRRSSAEAAADQAAHDVLISGYPAFAT

EPASGASTDAA TAAANHAVLTELVPAQQTA TA
DANDKPLVPPSYPSEDAVVAAVSVEMLKLLFPADDAYQQQ F NGFTINSNVLEDNVNISVALNAYA I A IIDHFMHNLENGVR NGLPPLPTVVTGERY YLPACANAALAAMSRNF GALRRPPAERTEANKAEAVSYAVHLAATADYPGQRATF
 S GVSKDALAIISAGYTMMANLFPA
FNGDP NADNTQUSYSLAATYAYWQVAKRLVF
NGLNQLPQPDNQ\KYNWAVLNAGQAKIIKLI YQQTSDENT NELESLPPAQPDEVLHWPVANATLAALTQMLLPNAPPDWK PEASVEAAI AAANRATLTALVPVQ
T T N NSERASNVSLNVA L PHVSRRASTVAAADQAAHDVLVSLYPS

PAASV
EAAVAAAMR
LDSFEISSNDLAEFKEHAVRQVAMDVSAFNVVSGIETSLF DAS DQPLLPPSYPSEDAVVAAASYTILVAMFPGEV PFLD
 G A
$D A L V P R S V L P S Y P S E D A V L A G V T V E M L K L L F P T D V P A D N E$
 GEPFGMNGLGPREASDGAVIATVSRDILKAMFPLEHDYLNAB

 PRTHRGDSADAAVATAAHRVLVSLFPDQT
FEAFTPPAMPGDDEREEAI SYAAFRLLNHRF QNSPGA YVQSPVTGSPTDKKDAAAI HQAAYDVLAWLYPGLVASRVV PLKYAGTSSRPRADEEEPIDRTAYRMISQLYPGDQAY SAQPDAAAATAG
HG DSADAAVATAAYRVLLALLFPGQAES DAALPVSALPSYPSEDAVVAAASVVILKAMFPGEVLYDEA GWECKFDSGDQKTGQEEAMSYAAYRLLNARF GE K K S S PGA
DFFCEFPVESVVESRRKAMSYAVYRLMKHRF EKSPRIV DFFCEFPVESVVESRRKAMSYAVYRLMKHRFPAEKSP

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 DAAVRVALPPAYPSEDAVVAAASAVVLKAMFPGEVAYDDA ATSKD AAAAAAA
L $G$ T IVAPHGASADAAADQAAYRVLSTYFPASASM D\PARPSTLDTEATGSTALLCAGFRAATLLYPDFKEFDDT D ALIPPASDLPSYPSEDAVVSGATSEDMKLLFPTEDAYIQQ
 PAADGTESVDAAVATASFLVLNALFPDQQ
LLS ES DWGASREDARREAMSYACYRMLRQRY KAAPGASVDAAlAAANRTALAKLVPSR
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KEMEH
150
R N Q
LETLILSGEYVOS
DDAGVKTGN NKEKVQASANYAD QPF $\square$ K L AAQEEKH $\frac{\square}{Y}$ RALKLLS GE NVP GPDSP
GENVPS AKTDGQAWGK MEEEHLEALLLS KAQQDDKDKTADMPNSASS
KKDDSLEQVIYDQLASTLDK
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KEKEH
Les LLLS GefVKSD KLLAEHNSRLWAGMNVESD TLDAQLEEMDAADPASTHAGAELGK DDLSRUDEUKDSDYKKGGKHNGKQGLKLGG KAAEAEQARLMAGANVRSD
 KEAEH LRS MDDADETENLL LRSLLSSANVQSD DAGQLIGD NHTSDANKTR1DSTEKAMDNYLRET MATDVADRSQFGK PLSARFSVD SLENAMQQAYGDT VNRAVVVRSVAFGQ DSILTLAR
$\square E P S L A Q R D A S \square A$ A $\square T$
VNRAVVVRSVAFGQ
KKGLPKKVEAASRELAD EKVYALNDSVNNHFSR!I SPEAMRKSKIYGA KLAEH LLHNSACSQWDELFKQSRDAAGMNVESDMAGAELGK LLHLINSACSQWLELFEPTRPTPLRAQ
K पAEHRNSRWAGMNVASD
RSKAEEEKNFRDWSGANVKSDLV
KYQEH DASLMHAGTNVQSD
$\qquad$ $A G A D L G S$ TLDSQLQQDLAODPYGREKADGMAT KQNEH YKKKEEQKWYK■WAGAS LEALLLSGEAVPSDLDGGVK1GQ

T A Y Q A A LSRVP DGPAKVS
KADEHMDARDMAGMNTRSD QNDTNFQNEKEEELSAGLSES EVGAGVQLAR YPTTSAANKAA\|DSLEAANTVLYQKDRSVDELARSAAFGK KYKEH DALMADLGHDPAVPDSQA ARTGLAACQAVLDQ VSALLQNFNALFTELGYDPTFQNDDYSSGSY LEAGAALGN LAPSLLTTMNTRLSALPVNATTRANSLAVGS
 ARFESLERNMP $\square A$ QSADFDPA QRTPEVIIDSETHGR NVQADY DAK RTA A
KAEEHKH
ARIDS GANVRSDDEAGEALGK
 KEGIPESLVGAAQLAKNLDLSELGKKDGDLVVSDGTNIGE DAKLAEAKNAMVWAGKNV ETTLQRFDLLMGKLGYDTTYTSLLYEFG S QPVQDY $V \mathrm{NNLLIQSLNSIADGEAKTKG} \mathrm{\square ADGAAAAALGN}$ AFTTAASEAFQQPFLGERNSFFAK DPNG AAKTRGAKWGR
 KAEEHLNSLQWS AFQQPFLFERDAFLNQFPNN KAEEEKL KAAEER E A R A I I D A G A N A V R S D V K L A A ASLDAMYATSDAA DPDGRR $F \square T \square N N L N N V F A D L G G D A T F T S A D Y S T G$ KTGG $\operatorname{SPA} \underset{A}{ } V G T$ AASSDLANARLGEFDFSLQEYRRCAAELLETASAGARTGH
$K M K A A L D A Q L A A G E L S K I P D G A G K Q E G B Q V G B$ KMKEHLASRQWAGMN VTSDLTAGADLGH EESLSRFDSLMNALGYSLTNTSTHYQSGEPAHMAGLGN EVIFENMETLMEHENYDTNYLSVNYQTGDA

DAHMAALAYNPARASLTTPEGLGTDAASAALGN NRTDYPTFSLDLRARYDVARAEAGADPDGWAAAYGR EPAVTGLRDEL A YGTAVTRR $N V Q S D V D K \square D Q H K N A Q E \square R \square Q E G L N A A E V A R G E T V G A$ KVAEHRNARLWAGMNVASD QE GLSADV TILAA DDAKSASAMKEALASYDAS $\square R D D D T A L A A G A D L G A$ LSTARANSLALIPDGQPKSKGlIATGD
K VDEEKF AANFFNPNDGDCCSNLACKYGE

KTTEEE
 ARLRTQYDATVMSGAATRSD VAGEAGGR $E R \square R Y N \square D W L M E Q L G Y D V A V E T V V G N S P$ V GDVFRFRNNKEFE GDVFRFRNNKEDIDQAYQAALAKMPDGP ARASGTRLGQ MDAA DALMQNLGFNDDEESLDYSQG SAAALGN A GLDAAYHATEAGVADGPNKDEGVAAGEA

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170
EI AA KALLERASTDGMKNAQTSKAVSDS
190 LA FERFGW EVI KNFL $\square Y$ VAKDGYILKTTGYLR YTPDKEARNW EI ASKALERASSDGMKYAQTSKAVSDS $\square$ ANAAFERFGW TVAERLLATRQNDGSHAKV TPVDGETPGDWRPTPALFR EIAS IIALERAS LDDGMKDAQVNKAVSDS $\square$ ADAAFDRFGW RTAQAII AARANDGSADATPYVATEG
EAARQI LARSREDGAMQSDAYVPF
 NRPGAW A SKKALARATDGMKNAQTPKAKSDSDK NAAFERFGW AI AAKALARAAQDGMKNAQTTKAVS DS ПANAAFQR AVGAKVMARAKTDGMGTANNQAATAEMVANAKKLGVSEPW MVADAI LDDASDDGSSV TPAPFVFG
 SVAQVFI ARAKTDGAGKAGGTAVDWSKFETDCDAKNETP W
SAAEAII AFRSNDGSNQANGFADTTGFVPTNDGPTDDIEKW AVSETALTRASNDGMKNAQTPKAVSDSIK QAAYDRFGW AISS $\square A L E R A E N D G M K N A Q A$ PKSVSDSDAAAAQDRFGW LMANAY Y RMARAI FEWSKSDGGHRA AVASAI YAWSKEDGGHESYQNTYR RNFEGYV SVADA WNWRLTDGFNPPPPNPPFFGVQSVAGTPASVGAW SVSAAI DRWSKKD NYDETRGAEKYTV TDEPGRW KI A Y WI YEYSRNDGGHQSFVRTYSMGYKLPVCQSCFEINR AVGAKIMGRARTDKMGSANNQAQTAAMDANARKDGVTEPW DAI HELGKKDAE $\square$ AGVMY $\square$ P ILEPYYHNAPPNEPN TAAAWLLQARQQDGAQEVGEYAPRN EPPGD QVAAKVMARARTDGMSAANNQALTTDMDAAAKSRGLSEDW WVARKVDARAKTDGMGTAGGNQADWTKLETDCRERGETPW EVVKLAKQRASTDGMAKAQ TPKPVSDS $\square$ ANAAFERFGW DVAAAILALRSNDGSAVVP EI AA LAALTRAAGDGMKNAQTSKADSDS DP A DVAKSQPGSY A A ATKVLARFTSDGMRNADGVKA QWDSLAKRVEEKGEVAW AVADSILTLRQNDGSGQPPLYKPGN KAAKAVLAMRADDGFAAGENYRP
QVAAKVIARAAGDNMSRAVGTPAQWADLETQTAATGEMPW
 QI A A AIIFEWSKTDGNDVNTPYTPPVGAGLWVPTPPA
RHADGSNQLG GYADTTGYAPVNAPVVVAEPDTAPGRW E V V LLAKQRASTDGMAQAQTSKAVSDSI ANAAYERFGW YLASKLIEFGYQDGANENQDYNPVNSPYVDVVELDDPNRW
 QI AQSI FNWSKTDGGHR GYLKNFDKDFYREEFL GSW LLAMALMTWARTDGGHDVLGPRRTRLDA AYVSPSGPGAW KAAAGILSQRAQDGADAGESYRP YVAQQUIAYSQTDTAAESQDTDPQPFSYE P PPVGEGYW AVAQKFATRARGDRAGAAVGTPADWAKLETDCDARGETPW QTAAAMISARQNDGAFGNPTW
KAAAADLADRGGDGATAPDSYVPFS TVSSSINQYALGDGSNQLGFYADT

TDY円PSPSVY GVAAKI MAKAKVDGMSAANNQADTAGMDENAKKIGDKNPW YVAQSIDDYGLQDGSREATSYDPVNEPYVLDPPDNDPNRW HVGDKVVKMRTNDGSEPS KVNYFLRRYPRRKDILGW KVAAKFVTRAKTDGAGAAVGNATLWNALQTNTEATGEMAW RIAAAVLAFGDRDGAGEGANYTYTPVNKPLTGYHLDPNRW IVKTAALARASTDKMSAAQTPRPVSDADK QAAIDRFGW TVGRK ICEDRTNDGSEPSE VNYYLGRYRRRTDSLRW KVAAKFITRASTDGAGAAIGTPAIWAAFETETAAKGEIPW AIAALVVARAGADGTRNAVGTPAQWKALFDSTTAKGEVAW KTAQVMVVTRANDHSDDTVAYSP KTADTMI AARVNDGAFGPDTWT VGTAPGRW A A Q LAEPAFGTGETPRFNDGKFPAGQW $\begin{array}{ll}R V V R Q I N K S R A G D G S D N P D V Y \\ V I T E R L A D R A H D G S A & R G D T T T P G A W \\ V\end{array}$ ETAAAMIAARTGDGAFGDATWN AGTAPGQW AVAAKVMGRAKTDGMGAANNQALTAGMDEAAKSRGDKEPW
 YMAQQMIAFGLQDGANEDNDYANTNTDDAGNDLLEFPNRW
ARADGANQLGERTAGAVFGDYTRNPAMUVAQAAPRYAGRW LQADTVVRARADDGWNDTTPYTP GTEPGAW EVANLIFEWAKSDNAGWPTSYT $\quad$ APTGDGKW YVAEQVILYSQTDAAAESQIIEPQPYAYE PPAGEGYW QVGAKVMGRAKNDGMSAANNQTDTAGMVEKAKGLGMKEVW AVAAKILDARANDGHDAVDEYRPR
DAALDAMIALRANDGSSPPLFKVP
Q 1 ADAWIAHRMNDGSSAPQLDTLYNQA
GPPVPAEY QVAS $\square F A A R A R A D R A G K A \square G T P D \square W K N F E T T T A A R G E Q F W$ QAADAMIKARAGDGAFDTSD SYHVGTAPGQW RVAQVFI ARARTDNAGKAAGTPADWSNFETVATAKGEDPW QAADAMI AARRDDGAFGSQTW R】AAATIAETLNDGSNEANGYADTSGYAEANEPMADPNRW EAAAATLARRIDDGSTAGETYRPR $H V A R R V I A Y S E T D E A G E E Q V R D Q T P A D Y V A$
$Q A A A A I L A E R A N D G A D A P I T Y R P Y T T A G K Y Y V G D L W$ $\begin{array}{ll}Q A A A A \\ Y & A E R A N D G A D A P D T Y R P Y T T A G K Y \\ Y D A D Y U Q F G L Q D G A N E Q T S Y Q P V N S P L I L N S G D T D D D R W\end{array}$ AAAAMTLA RTDDGFMAPFEF DGGTDPGDW


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$M P W M V A N P$ Y
 QWDNVEI
${ }^{\mathrm{K}}{ }^{\mathrm{P}}$ V APTDGQVASARALLH RPTPPGNAPGAV VPTPP
VADLENT $v$
RPTPPDFT V LSL KWQNMETPQRP旨G
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## $\square_{\text {TPNENED }}$

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K P
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FARPMPYWGQRTFA KSNRADSDP
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RPTPP
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 SPTGPFYSAKPGPAFDTYMFPGHGKIKPWTMTHSAQFRVP KSLDPQNGPGPPARPPMLPLFGNVKSFLMTPANVVASR QPTVSQNGDPLPGKVQTFVGSQWGGVDPFALPDTATYDPG RPTGPFYGATPGPAFASFLRPGQGKITPWTMKSSSQFRA KSLSEVPARPPMLPGFGKVKSFLMTEADVVANR RPTGSG RPTPPTN QP位DQSGNVFPGDTP DPPGDTP SPTGEEDCKKPS RPTGE
$R P T P P$
RPTPPAFAQDG $\qquad$
 QPLADQSGQVVVGGATTFLSPEWGDVAPFALRDSAAFDPG QPLK RETNDADCDGGK
KSENGAAPAN
RPTDG
tysadeer
AVTPNWGRVRPFELTVASVVPA V
VPTADtags
QATPSPGVNGTRVGTFF R VS ${ }^{R}$ RPTPPTNVQDG YS
Y닝
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$R$ RANFWQDG ${ }^{290}$
TYTPPGHWNEFANRFTVEKK
QI ANFWDCNPGTKK円SPGGHWMGDTGDACMQKK

RTANFWQDGLG TYTPLGHWNDFANRYIVEFR
QUAHFWANDUDGTYK QPTDYYP GQQYAHTVDDFRKYRP
EAA $\square W W G D D P D V S F T P P G H S Y Y F A$

| $R$ |  |
| :--- | :--- |
| $R 1$ | $A N F W N D G L N G T$ |

RIANFWQDGLG TYTPPGHWNDFANRYIVQYK
RIJASFWSD GVGS YTPPGHWNDFANRYTVQYK K K GA TQNYWNEDAQTAADEHK QIGAFW DESVSSSMNRLARALIVQ
RI VHFWADGAGTS TPAGHWNALAA DDF $\square K$
LI AEFWEDGGGTSFYTPPGTWMTFGQYAS
RIANFWQDGLG TYTPPGHWNEFAKEFIVKYR
IIARYWADGGTGTFTPPGHMDAFTSQLI－KYR KD
AARWAD GTGTF EAA WWADDPSQTF－TPPGHSYYI ATQV
DLVIFWNGNPSTAPPGHWVR ALQLA
HI AEFWDDNPGSKKFSPPGHWMSVVGIAA AN
QIA A F W DDAATFTYTAPGHSVSILVQV
RI ASFWSD GVGSYTPPGHWHRKGAELCHENKY
II GTYWGYDGPQELGTPPRLYLQVVLSVLDDUQARN K
EI A CFWYENSTCG WNR』AANV GA Q

RIANWWEDGLGS YTPPGHWNKFAKEA【V R
QI GQFWNGNI QD FWNEDAQTAALT

II AFFWANDVDGTYKPPGHLFRITQIVAQQ
DI ARFWE EVMPPDYHGAARSIVADAPGRE
RIVHFWGDGTA TYTPPGHWNE：A
 A｜ALLFWADNPDGKSYGGGHWHSILNQLVLSRKPALLDVAT SUA A YWSDGPAS ETPPGHWCLFAQQVSARDRH S S SVK VLAEFWADGPDS ETPPGHWFTILNYVSDHPETVKQFGG LIAQFWADGGG TFTPPGHWIDITNGLIG
 RVALYWADDPG KTPTPAGHWTWILNDL LGB EI ARFWEDDEGGMVMPPDYHGVIRSVAEAPGRE WI AEF WSDDVEGDMTSPPGHQVSUANQLIGQY
 QAADWWHD ETARFWE TTQPVTYYPLARAVALQPGR
AI AEYYEGGPFTSF PPGLW WQQSDLDS
RI ANYWADGAGS YTPPGHWHRTAANSAHA
VLAEFWADGPDS ETPPGHWFTLLNYVNDHPEFEKRFQG DI ARFW
Q｜ALFWEDGPWG IDTPPGHFLYLAAQVDAQ
 KI ANWWSDGLG TYTPPGHWNRRAKEYIIKY
 A IAQKWNDGAG TYTPPGHWNA A ETFVQQ TSYVAK QAAHFWANDLDGTYK PPGQLLQHTA ITARQLPGQDQFAN EAAKWWHD R RLTEWETTRQLDAQT VLAEFWADGPDS ETPPGHWFTILNTVSDNPNLVRKFGG SI A QFWAYDGTAGLCAPPRLYNQVVDAVDESSLVPSAPNV
 EAA $\square$ WWHD RTANYWADGAGS YTPPGHWHR RRLGEWE KKRQLDAT VLAEFWADGPDS ETPPGHWFTDMNYVNDHPELVKKFKG

LI｜AKYFNDSNPG YPAGAHYLVNLKDVIEQF

RIANYWADGAGSMYPPGHWHRTAANAAHE
ENARFWLMVG
PPAYHPFVRQLVIAKQ
DVVLFYA SSSPTFVFNSAARQVARERWH
VI G｜F WGYDGANK RSA WWHD RIVQFWAD GVSTYTPAGHWDA $\square$ AA QAA WWWHD GAS LLAEFWADGPAS ETPPGHWNSLLNEVSDDERRYLGDGD NI ALDFWE EVMPPDYHGVVRSVAEVDGRE WI AEF WADDVEGDMDSPPGRQFSIANQLIEQY DVARFWQLDTGTAT Q $\downarrow$ AEFWADGPES TAADFWQ
VLAEF WADGPDS
QMAEFWADGPES

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MNTLRSARTMAY|LVNA|V|MDAG|I NKSLAETVRWHTLAGDTMADAFDSCWDAKYYYHYPRPDQQ

 NGTSF ESAKLFGLTSVVALADAAIAVWDSKYNWDVWRPAD
 LS P V RTARVFA YMNMAIVDAGI ACWDSKYYYHYPRPDQ M S T L R S A R TLLA YLN M A I M D G GI S C W D A K Y Y Y H Y P R P I Q NAY
 $R E L N G W E A A R L V G L I Q M S Q D D A W$
 A DNT A D T L D D D A VF F L A L G N A V Q D A GI A T WEA K Y D Y N Y T R P DR $L$ N P L Q T T R T LAA Y M N M A I M D S GI S C W D A K Y Y Y H Y P R P I Q NNLSGLRSARTF A Y V MA M D G G R D A D L IT R A E T Y A RVVGIA A $V$ A D A F
 HGLTLAENAHLFA LMMDLAMADGFVV
 T R L S V D D E LDD I I A M I G I S Q A D A A I
 HKY S E V R MARTLA LVGTT LMDAGVCCWETKFYYYYPRPQQ HKYS EVVRWARNYA L L N A A L M DAAAVVCWNTKYYYFNAAP H K L N P L R S A R V F A Y M N T A I M D A GVVACNW T K Y Y Y H Y P R P I E
 EK Q S EFR A A R S F A L L N S A MM D A A I S C WY TK S Y Y Y F P R P S Q $R N L S$ L V E TA A R L
 $N D L T F D R T L E L L L R L G F A L N D A A V S A W D D K Y T Y N D E R P S N$ V



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 Q N Y S Ell R WA R N M A L L N I S LIM D A A I A C WD A K Y F Y F NP R P S Q A GPE LDRDVVKTYFALNGALHDAAIACWGTKRKYDGVRPD


 QHLLTTLQTARMFAMADVANADSLI ACFNEKKYWSFWRPV


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 R G LGENDVKLLF ALSNALSDAGIAAWDAKRYYDSERP I T $R G L G Q A A N A L L V A E V A V A L A D A S I A S W H A K Y P D D L W R P V D$
 LDVVSYEQS LI MLL L KL G F S L N D A A V S T WA DK YE YMVMRPS V AK YSEVR MARTLALVGT TLMDAGVCCWETKYYYYSPRPQQ $M N$ V S E S A R L L M A L A S S V G L N D A L I A SLSENARAFALINMAISSDGSVASFFNKYRYNFWRPET

 KNFSEVRWARNMALLNMSLMDAAIVCWNTKYYYFNPRPTQ $R R L N P L Q A A R M F A M V D L A E A D A T T A C Y N E K A A W N F W R P V T$
 DLD F D Q T L E L L L R L S F A I N D A A V S A W D D K Y TYY NTARRPST
 H G LDD A D A AR LDAMTNLAAAD GAVACWNDRYHWNFWRPMA

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T1370 380 Fin KY $\square$ ERNWRPLLQ

ADTYQNAGVIH

H EGFET ${ }^{3}{ }^{390}$ GTPNFPSYTS ${ }^{40}$ TPPFPEYTSG EGFETTAGTPNFPAYTSG Ll RE P EFF AI TRAGPGIVADPTWRPQEQDDAGNS GFSPNFPTYVSG AI R NGDADGNEATTVEAGWTPFDETPMHPEYPCA FI PRFDDEEWESFWPDPPFPSFPS | T | P |
| :--- | :--- | :--- |
| L | K | GFRTLLGTPNFPAYTSG ATRAADTDKNPNTNVNANWQMNSK GFET AGTPNFPAYTSG ${ }_{M}^{A} \square R A G N S D T E G D A S W T P$ P A! RELGRLLGLIGEFQGTQTIPA DD LI ELGEGFKTHAGSPPFPEYTSG T Q YI QRy

Y

GFKTAG
FIRA NIDRTWIPFW
AI QNGDADGNAATDPNPTWTPWLDSNG

## VINQYID

Y IKRYUDNQ
INWRPYLQ QMSSKWKTSVV

CQ पD PA $\square$ KT LT G

A QMAATDNNPETDQDPTW $\square P$ P GFKT\|LGTPNFPA T A DPSTKTLTG A $\|$ RDGNLLTEADPNWQPL S AIR NADDDGNDATERDPSWVPFDDT DEEAN
yir rivmnk
पDEGFTTNपSKF PDWNAF
 A A ${ }^{\text {RYMASNGQSTPSYHPQGLPLDGTRWWPYTPPFAGYLSG }}$ AI NTCTLAVCG

 HVQ LTMDAN WVPPDME
Al ${ }^{\text {R }}$
NGDVDGNNA TERDPSWDPF $\square D$
 YIQEY DDPTYETNDYRF $\square$ NWPN AVQDGNRATVPDTTWLPLSTK
 A RQYKPD TVLSDGSLIGDWEPYLDTPPFPDUASG A $\square$ RSMAERGQGDPTWQAGVGWLLAAEDWYPYTPPFAGYVSG AI NDGNNDGNGDPDWQVLVFP AI RRMNKDGSRDPRDEC HPNWQSY DPTPPVADHPSA
 MIRYMAKKGQSLPSYSPQGLPLKPGLVELITPEHAELVSA A $\backslash$ RARA PQLGNPD PR⿴KRHPRWRSYIPTPEFPAYTSG
M DPA\KTV A $A V Q E \quad A D L D G N P A T T G D P T W M P L L V T P P F P Y T S G$ AI RALADLGQGDPAWRAGVGWDLAENWWPYSPNFAGYTSG VI RQAQLNSPAGTQWFPLGAQVSNSDG\|NDTPPFPAYPSG A RATGG ANAKWEPL AIRKANTVGNGDPTWTPLA AVP

LADTDGNPATTAD
PAWTPLLATPPFP
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- 490

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NF QQYLS DNTDTSAVSD

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 G G GP T NAS Q S F S $\square$ M H TA $\square Y$ D A QA S Y DP VA QRVS $\square D I E G D N$
 $\mathrm{T} V \mathrm{HP} \mathrm{T}$ RSFADLMHAAMYDAVVAT TNS GRPY LDFTLDVRG $R$ Q F FARPTVHA
 GAFAAA FPDPPIVARTFFHASAAMWDAFWTYQPDGWGNAKHLFHRE $\mathrm{G} V$ GGGPTNAARTEAIAFTAAHNALNADHPVVETYHFSGSGL GSTPPYAARSLSIMHTADYDAQASYMWKVAQRVS DDLEGDN A YVS I A QY $G G G P T N A S R S F S S$
$V G G P T$
$V$

APTPVAARAAAMVHLAVFDAIVAITNNQVGYRFAA FARPTVHARNLFHI SAAMYDAWAALSETGATPFLLGNTVG TLVLRFTTVITNSWFDATAPYHPTAKGVYS
F $\square$ A P T I L I R Y TCMAH NAWF D A LAA P Y H P T A VGVVY S KLE R YARPTSHARNLFHLSAVMYDAWTVYSDTESSY,LLGKTLN ERGPT DS GHFLVMTNAALFDAWAAYEPSTTGAVTDLDAGR VRGPNRASSRADVLLTS AVYDAWAVYDSSKADPS TYRYE QSK

TPP WVSAPDKALVNGAVYDA IN GIDSRAHQAYVA D

## ASGWPRAMALVSA

$P L I L D R T T T V I T A A W F D A B A P Y S D T A D G V H S$ | 1 | $A$ | $G$ |
| :--- | :--- | :--- |
| $A$ | $Y$ | $H$ | $L S G Q L S E$



 RLTPPEEAVWHAFVSAGMYNAVVGIEGRYEPYRWNARGPR FARPVVHARNLYHVSAAMYDSWGLVNKKGTTCLMGT@QA GQ A A A $\square W H G F V$ SAA VYNAVVGIVEGYAP YK WHAR G FARPTVHARNLFHTSVAMYD I WAUYDDEATPYNTLDNFNS P MAASRVLASMHI AMHDAVNAVDGRYPTH



 LQ S P P
 FS NPPYAA RA YSNVVAVA QF E ALLKAA WYYKF L Y N R QS P F KV VTN
$V L R A P D E A V W H A Y V S L L M Y N A V V G V E G R Y A P Y R W Q A R A P Q$ GATPRRYTCMAHNAWFDALAPYHPTA VGVVSD GATPPSVAT R A L S WT T L A M F E A L N A V D H R Y R S Y A GV T L RQSPTAGTRSFAMVQGAVYDAVNADA GTPYRPYLVA $L Q N$ F R NFGF I GVVGLYEAVVRPGNK GAES


 K A S P T R A A R G L A L M HV A M R D A A L A A Q


K S N S S ET S $\square$ WHAVVS A GMYNAVVG $\quad$ VE GRYEPYRWNERGPR ATGPTVGSRALAIIQTSVFNAVNAFDEDFEFYDDLDPGSA



A A R LY A MVVNDAMYDAVNG D VNVA NGWT D R E LLGK T
L L Q T S WF D A L A P Y H P TAVVGVYS R I
 TNNRRTWA $\quad$ GGWIAATRAL


 $T V A B P T \quad R S F A M L$

ALLKAQQ
A Q NSNVATA DAAAEARAVFDAVNA IVHFSPTSYYYSSAA
 WF D A $\quad$ A A P Y H P TAK G $\square F G E \square \square$
S N Q $\square$ S A KF Y A LT N $\square$ A Q Y Q A L LA N
$Y A G A P Y A A R V Y A L L S V A Q Y D A L V V A W R A K F Q Y N R P S L E Q Q$


WY DVTVVRAVAAEPS P T Q $\square$ T N N R T

AN SRIWAVSWLAADRAlASRPGGYGGSGGHGGSGG
 A A R L Y A MI GlV A $\square \mathrm{Y}$ D A VN G A T A GPARA VANPPYAARI YALL SLA QYDALVVAWRAKYQYNRPS LERQ
 H P A P P E SL DWD A YVVSTA VYNAVVG $\quad$ VEGRYTPYKWD GRAPR WF DAI AP YHP TAVG IF S


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UniRef90-X5P6T2
UniRef90-E8QWW2
UniRef90 K4L2P1
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UniReffo-D8HMM8
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UniRef90-S4XYH8
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UniRef90-D2PVD5
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UniRef90_UPIO0038165E7
UniRef90-C6VSNO
UniRef90-12GBC7
UniRef90 A8NPT1
UniRef90_UPIOOO37451E5
UniRef90_UPIO00462DF77
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RTESNYGDSDRNTAMMYASHKVLNSLMPQYAADWDQ GE LSALSDA SDTEDETAMHVAAHRVLSELYPQYQEKFDQ GSAPEAAAAQAA

PGADRRAAVTQAALVVMQTLMPERE QFSCELEAPQSLPAQQTAVSYAAYRI DEHRFF RSPGK FALVPPDSAPHRANRRAAAAAAAHAVLSALYPDMTDVYN DLTQTDWHGDRLASQAEALSHAVFTVAKERY RRTAFNH DDTASLSDSS
 DASAMVSDPSSYPSEDAVMAGASFELMKLLFPADQEKIDK AAYQPLPAAPAVIS REAAVAGAASVTIRLLF SPGLSASVEAAAIAAGHRMLTGLFPEQA SYQCEFS DEKSQSNQETATAHAAYRLIEHRFF RSPGV D DARMAEPTDNSEDNI ALSYASHKVLSGLFPHLVSEW

RPRSEARTNRNKNAALYAWRHVMKSVVPA GFSCPFDRDGSEKARETTISYAAYRLITHRF SQSPSV VNSTAFDSSGRPASQAHSMTTAAYEMLSSMDTQRALELEE

PPSAD PNDSVGAAAATASYRVLSSLDPDMASM
DGAPSL SNASRRAATMAAAHAVLSALYP
DLGRLNAGDSDSARNDA DMYASHKVLNSLMPQFASDWDA MPQMPKTEPGKAYHWPTSANAALAEVSRELF WA DS WLAAARATRSVPAGVERGAYQ FFTTPVTRAQGADPQFTALSAAAAAVLKGLFPAYAADITAA
FVSVLTPSEGNQASNNKAISYAMYRLLSERFMDELNYPIN TASSAAAAASAAHD VLLHYFP GQELPVEHDDPVAASNEAVSYAAFRML NHRYF RSPNA PSTASPEAAAVTAAHHVLDTYFPAS
ELEAFTPSESTEDSRKRADSYAMYRLLSFRF QNSPNA
MA IEPATAPYDAAVAAAVAAHDVLVGFHPDQAG\|A
AAGAAFVVLNYRFPDAERDSQ
DVPGHAAPEAAAAQAAHDVLAALYPARA
HASSEAAAAAAA RRVLLTYFPASEG
 FDGFDDSTQNDE NRKKALSFALYRLLTHRFMQEFNYNTE Y LAADDSSRESGAFQQLAVSHAAHDTLLWTFHG AGLLPFPSP KERDLAAAAACHQVLRLRYPNQASM DS STVKS LMPATGPSEDAVEATVNAALLTLLFPTSVDETNA PAGVDRSDYQDAALASAVHRSLVALAPARTE
GASAEAAAATAA YQVLVTGFP
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ADGEASGDAAVLTAAHEVLVSLYPDQ
PAGGRGYSTAAAVATAAHDVLRSLFPAQA
Y QMPAMPQADA WQKY LWSESANAA LASMFK LFLT GLSD IDRRRPSSESTTNKNDAALYANYRVIKGVEPGR RRPAREAATNRNKNDAHAWYQVRKGLDPEQDQG



SASSVAAAATAA
HDVLLH HF
GASADAAVAGAAVTALANVLPGTADLTDTVVAQESSLDLD
PPVDADGPASPEAAVIQAALLSVMQELLPERQQDLEA
KSKHESLEFQQLAVSHAAHNSALWVFHGS
EALVSSDTAPSYVSRRAAAMAAAHAVLSALHP
EQGFSCESSDAFTNREQALSYAAFRLIKHRF VRESPGA A ULITPSTPRPEDYRGAAFAGADHQTLITLAPAR RRPAEESATNRNKNDAYAMFQVVKAAFTERVPVLRQ EYTCNFNGIDTPSNTNEAISYAMYRLLTHRFFESYGYDTM LRTPAIDPRPQDYREAAVAGAVHETLTTLVPARKT NGLPALPQPDKSLDYYYPASA NSOA NALDARNR DLAF Q LAVSYAAHDALNTLFSAQ HAAVHDAVAATRSQTAAASQAAHDVLASLYPAMA QFTSLAAPGDVKVPDLFVGGAVSSIVNFIYTTS RSKHETLAFQQLAISHAAHDAILWVFQG
पs LIRYGLNAAEKDDMQEVSNTVHQPI KEAIKSRDRADGS VPAGDTDKSAAAAAAQAAHDVLIGVLP

R RPESERTTRNKN $\square A V V Y A A F T S L N A V D P E Y K D R W$
KAQDNK DNDTAVTAFAAHY TLSYYWPYKQNVF
 WA IG WL A ATRAVRRDRAVNFADAALATAVHDSLVGLVAN K $\square G A S H P E A A A A Y A G H Y V L S E I F P T Q Q S$
A $\square$ TPATPAAGASMDAAASAAAYGVLSALFPNRS HGGSGGHGGHASPGRNDTDFA

T A AFATA $\square$ H $R D F T P D A A V A T A V H D S L V Q L A P T Q V G$ $P A L V P G P G P R G G D E Q A A A A A A A H A V L V R A D P D R A V S Y D V$ $G V V A R V P I L D S Y P S E D A A \square A E A S C Q M L A Y L F P N E V N W \square K A$ KAGEPLPAVDAAV AAADDARGRSAPASPQGAVGAASATVLSALLPGDTATFAA TASSAAAAASAAH D $\square$ GRRPSSEHTTRNKNTAV $\square Y$ AAFTSLINNLYPEHKAKWRQ


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UniRef90-X5P6T2
UniRef90-E8QWW2
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UniRef90-L8H2B2
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UniRef90-IOH649
UniRef90-G8THP8 UniRef90_UPI00036EDDC1 UniRef90_UPI00036385FF UniRef90-W8ANM7 UniRef90-M4TL26 UniRef90_UPI000374E92D UniRef90-A9E0M2 UniRef90_UPI000310DE65 UniRef90_UPI0003C7798B UniRef90-UPIO003490F7B UniRef90-_R0EWQ8
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$$
150
$$

160 $\square S \square G L D P Y N Q S T D L N T P V G V G N T A G N A V V T T$

M VLSO KS DD SLETVYKNQRQAA LLT GQL
 VHTMALADELMVSLGLDDVNFVAKDY

ARLEEDLAALNPPPA $A L N P P$
$G N S P$

 | $R L G L D V$ | $S$ |
| :--- | :--- |
| $W$ | $D$ |
| $W$ | $D$ |

$R \prod G D D 1$ A DDSR
RAYEVGADAA
SAGD P DPEGAAREAGQMGK $\begin{array}{ll}\mathrm{M} & \mathrm{A} \\ \mathrm{V} \text { I } & \mathrm{Q}\end{array}$
 DH $\square$ MAEADE $\square M V V L G L D$

KNNDDSDYVNNGAVSGGN
DNLLLELGLDPDNFSTTTPDGDGNYAGRKVLEG
GMPTFRSLMNSFGLDPDDNSEDTPVGIGNDAGKAVVAA AYTLLLQSNRLMETLGLLNPE LATPSAQSGAAELGN DEPEI A EVRLAELLDAALEEQDTLIRSGLDQVEVSNTVHQ VLEAAKAKLQSLGYDPAVNGTDTKTPAGVGNFLAARIIGA
$N D A G L Y D S Q L A D D L A A L P G T Q T A D E A G Q Q W G E$ $M L L T V G D D P N D N T L D$ D GVFYDAQAAAQLEHELNQAAMLADDNPEDFTRSVAFGK RALVELAPSRAEQLDATYKKTLDAVPDGP AEEQGVAAGE


KAKNRLKAAYDASLAAVPDGPAEKAGVAFGR
 EYSQDLLDLVMAALGNYVAQTIINYGSGDGSREATLAYYQ

VLS QQ GAAL E A P L L D A GVRPAVET GRAVGA AELADLLAGQLAREAKNKGLLNAAFNVGR $R I N A A Y S A S L A K I P E G$ RARDAGVAFGE SALAA QARESRLPSGTGEDSGAAESSGPTEALALAKRLGE NTCVDYQNGDAACLGNYDAQQDIQFGFTDGSNEENDYRNK

KAAEQQQ A A LLSGRASPSDDAAGVALGN
 GMPTFRNLMNSFGLDPDDDSEDTPVGDGNGAGKAVVEA RSDLDRDYGRELDA IADGAAKAKGVAI GA DALRARYDEALAGIDDGRAKRGGIRVGA ANKAS IDDSEMANYNRF KTSCTTDVLDRSQTFGR GTAFRDLMVATGLDPDDESENPP\|G\|GNLAGKAVLAR MRELMTALGLDPDDESADTPVGUGNTAGKAUVKA ARLDRADREAGLRGPGT-GRGSTHGQ
G F T A AGLDPDDRSEDPTTP $\square G \square G N \square A G K A V V R A$ NAEERAFDRIVFELAARHRGHARDKPD EASARALSLGY LAS TDYSSGSYAALGNYGADEDITFGDQDGSNEQNGYANE KAKPRLESAYAASLAEVPDG AAEEAGVEFGR SSSEVTSLLTAAGLGAVLEAPDDDPATPPDADWDGFLLGLD
 RLYGTVDASLRAIIPAI GLDPNSKKGKEAVGQ AYDFTEADALSGLYDPQLAADLANLLGTPTFIEGGRQWGE KAELDAALATSLARLADGPSESDGLAAGR
 $S \square H P G \square S G A T \square A V D Q A L T T T L A R \square T D G P$ AEAAGVAAGR S $\square H P G \| S G A T L A R I D S L E A A N L A K Y Q Q H P G V L A N S U D F G K$ RAGEHKQSR】WG YDSMAFIV
$Y Q R \square D R \| G \square$ SYLTEIENTITPTTSESNTGRRIGE ADFAA QLARELATAHDPAPG $\square R A G K$
PHAGLIKTRENEFDRDFADRAFSESDNQESWRQGMRFGA
 NFQQNYTDDTTPCLNLCLPGDGISNGTGDYDFTDSSIYTY

NPASGTWNPTRSWLDAQLASDLAAL AAKQRL

EMMESADLDPNDTAEDPTTP
KATEHKQSR $\square$ WA A L A A E L A D T P A

GA SRGVSDVKA GEARVGA
 AQYQAAYDSYIARIPAG DAKTRGLALGA $D G \square A A Q V P A R T A E L D A A L A A T L A D V P D G K D A E A G V E A G H$ R L E S D LT RLRDAR ARDQALTTTLDRVPRG SAKDRGKAEGA KATEHKQSRLWA GASVPSDTKAGEDПAGTLTP $\square Q S A Y Q A A L A A D P D$ VAREAG QLRQQESEA
$M M$ VA
$N$ VRPD $R \square D T A \square T$ A GLDTA $L$ T GT DAE $\square P D G A A E D E G V A F G K$ $\mathrm{S}|\mathrm{L}|$
$G A S N S D P G G A T G Q$
$A N G K N P Q S G M A L G Q$ DGIIAK QLA GIPAS GASVPSDVVKA GEALAA A
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UniRef90 UPI0003497691 UniRef90-UPI000368BA6s UniRef90-A3XF26 UniRef90-UPI00036EF13F UniRef90_D9VBY8 UniRef90-17DWE2 UniRef90_UPI0002559D2B UniRef90_W4M6I3 UniRef90_B5JKM1 UniRef90_A4CHT1
UniRef90 UPI00047A66DE UniRef90_A6FN32
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UniRef90-UPIO00299D721 UniRef90-UPI000366520B UniRef90_Q82PX4
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UniRef90_KOTAJ3
UniRef90_UPI00037546D8 UniRef90-G8PKH8 UniRef90_UPIO003775BA3 UniRef90-IOYQ25 UniRef90_UPIO00362494D UniRef90_UPI0003B3CEBA UniRef90_UPIO00475872A UniRef90-A9SEU6 UniRef90-UPIO003623E28 UniRef90-D3CVH0 UniRef90_UPIO0047CB0EA UniRef90-R4LP70 UniRef90_UPIO003602566 UniRef90_A0A011MAV2 UniRef90-W0RG17 UniRef90_UPIO00262EB73 UniRef90_D9XQ16 UniRef90_A9E3K5
 $R V Q D G M N Q L G T D R P Y S D C S G Y K P T N K A E K L V N S R E K W$ AEAARLAAQSEGGFYTPVNSDPAPETRKDDARW QVANA FEWSKTDGAHQA NKNVTDPTYTPPVGPGDW LVARLLLGLRADDGSA AVPPVLTPGTAPGQY $L A A E A V L E K R A A D G A D F A S D F T P$
$H V A D C Y I ~ R Y G L Q D G A N E Q G S Y A N L F Y E H P G N P N A A D N G V Y$
$H$ KVGQQVVELRANDGSSPTQPGDTAPGAYRADWG RIGSAALTLSLDDGSNEANGYADTTGYAPVNEPDTDPNRW EAAKALLEMRQAD
RQAEAAQLAAQSDGLYTPVNSDPWNGEAEYTWHPMAPGVY RQAEAAQLAAQSDGLYTPVNSDPAPETRKARWTPEKQGIL WVARKVIQRAKTDGMGVAGGSPA $\square W K Q L E D D C V A R G E T P W$

 HIAADCYIFYGLQDGANEQFNYANQAYEYRNPQQPGNPNAW RVNDGMNQLGNEGPYADYTNFKPANTAYKLR
 PIKEA IKSRULADGSNFQQNYTDTTGYEVTSWDDPSPGVA ARLDGTNSEGDHPGSDHPNDYRHAPGQHGLVTAPTYPNYQ EAASAMLAARQNDGRNAEDETFPT GNGPGQF SVGQQDVALRANDGSSPSE
RVDDGMNQLGTDKPYADCTGYRPVNTAEKD TDPRRW AVGAK VIE WAATD $\quad$ RPWTSWPVYTDPAWEPGVW RQADLVLKSREGDG LDPASVNAPYPVKPAAPGVW

 YVAQKI I EFGMRDGSNEAGDYQN $\square$ NYPDPVNRPLVDPNHW RAAEHLI ELREGDGRFAPDEFTASPA
TINDLI NFLSPEWGNVWPTNYQRNNYTYKVYRDPGDP GYLL AAAAAI LAD DAADGTGLKEDWTEQEGAGHYRHVPGW GKGNLVVFYRKNDSSDAVFPG LVARLLLGLRTGDGSAAIPPVLP RAAEHLVELREGDGRDATVPFERAP PMPTGDCDW ATGKAVLESRRDGSRSIPPYVGATTASGVTGAREDVW KYFPTNKELVLSDRADNLKDNDPTPDFLSPEWGNVDPGSL NAARDAVVARADDGDNNFVDYEQKPA AVHQFGIIDDLSKARAAGTPDGTP SVAA II AARAANDGMKAAGGTPA $\square W Q S L V D T T K A R G E V A W$ RQARSVLASREGDG RAARHI MKLRANDG RLRDGMNQLGDKGPYRDYTGY R RGASVPFPPDTAPGVW SAAKASLRLGGRNLQVPDELYRPNTAYELND YTLPSHW EAAAAMIADRQGDGAFSDVTW
D $\square$ A TAMYNWS LITDNFNSSVGYVP
TAHDGMNQLGNGRPYEDYTGYRPVNSAYELR RLHDGMNHLGDVGRTFNGRPYADYTGYRSVNDRTSSRW NVGRAVLKARTGDPSLLATDYAP RANDGMNHLGNGKPYEDYTGYQPVNSPYKLVNPSKWQPAL EVGRQLVAYGDSDGAQH GWNGVRLQWYGEGRYYGPGSW HYSPLILEDYEDNDNDNPNKWNPFPTNDPAFLSPNDPGEP REAA GVLDRRRHDG RAAAHMV T LRKDDGFGLQVPFTASPSV GVW NAADQVLDARSGDGF DGFFQGPDDPATY DPS DFSPSEY AAAAAVLABVAQDGADFSDDYTP
 NAAAAVAQARADDKITNFLDFTY
SVGQQVVALLRANDGSSPSETQPGGSGPGEFRA GPKG
 QQAATVLADRADDG LDPASVNTPFTSSPAGAGVW RMGDGMNALGGKDRTHNGQPYEDYTGYRPVNDELVDPSRW YYTSQDLDLYEDNSVINPNKWQPTPFSDKSEDLTILNNSF QQAKAVLAARADDG K $\quad$ A A A V FE WSKTDGYDNAFPYTP $D S$ G SUAQRVITYVQNDGDQTMPDVNNAW EELRRSASYDVKW A AALLRVTNARQGDRLDN FLLYV VSKYARYDF FGPMEPGVY SAAVKVLRARAGDG
QAAEQILRARADDGSTATPPT $\square P$ DTAFRRLWNWPEDFAADATDYTPVGSHDVDPGTEPGQY $\square$ SAAKVAAARAEDRRTNFVDFHYVPGSHDVDP LNCEQGFY NTFDARLA TDAYADLAEPPLMQDHPLVEDGTDRLTETW
 $R Q G D G S N R E G D M G G Y S D Y T G Y K P V N S A Y E D R \quad N P S R W$ PYADK LIVSRVNDSTQQWADFKPASGAYAFTPNQTFVLYP T LAA AKVI DRAKVDRFGAAND PSNTWQTADAKATYDQKW A AAASII AAREGDGRGDPHPLETVPAA A QARRALAERTDDG LEPAQVNAPVVVPNPAPGVW QFAKSLLKKRTHDGSQQWDK $\operatorname{F} V \mathrm{~V} P \mathrm{SP}$ AGGP EVAAGVVARANDDRSVVLAPYVPGTAPGKFR GVNPVSRF RAARALLAERTGDGLDVA SVNAPYTPPAEAPGVW
 RARNDRFAASTDPANTWQTALVKAPYNQKW RTAAAVLAARAADGATAQESYRPQ TVGAAIVALARVDGFDLDAWTGA
RAADHVIELRRDDGRGASVPFPARP RKNDGTNRDGSAGGYADYTGYRPVNTAHQLR
Y 1 A QQDIA YSQTDTEAETQQLSPQPTSYE
T A A GVY VPNGPGYW RPGVW NPSRW
$P P \vee G A G Y W$

UniRef90 UPIO003497691 UniRef90＿UPI000368BA69 UniRef90＿A3XF26 UniRef90＿UPIO0036EF13F UniRef90＿D9VBY8 UniRef90－17DWE2 UniRef90－UPIO002559D2B UniRef90－W4M613 UniRef90＿B5JKM1 UniRef90－A4CHT1 1 UniRet90－UPIOO047A66DE UniRef90－A6FN32 UniRef90－×5P6T2 UniRef90－E8QWW2 UniRef90－K4L2P1 UniRef90＿UPIo00369520B UniRef90＿UPIO00361191A UniRef90 UPIO00381DA37 UniRef90－K0R5Y0
UniRef90－L8H2B2
UniRee90－UPI000373CC98
UniRef90－W4LU82
UniRef90－H2IM42
UniRef90－M7N8C7
UniRef90－D9X771
UniRef90－UPIO00471B213
UniRef90－M7MJ68
UniRef90－UPI000299D721 UniRef90＿UPIO00366520B UniRef90＿Q82PX4 UniRef90＿UPIo0047B9404 UniRef90－HOHNY7 UniRet90－TOMHR3 UniRef90－D8HMM8 UniRet90＿K4R2U2 UniRef90＿W7TQ55 UniRef90－UPIOOO2258756 UniRet90－S3D3H5 UniRef90－K9P9X6 UniRef90＿UPI00036FB52E UniRef90－D9W7N0 UniRef90－UPI0003C7536C UniRef90－UPIOOO3814845 UniRef90－C5AGT2
UniRef90－10H649
UniRef90－G8THP8 UniRef90 UPIO0036EDDC1 UniRef90－UPIo0036385FF UniRef90－W8ANM7 UniRef90－M4TL26 UniRef90＿UPI000374E92D UniRef90－A9EOM2 UniRef90 UPI000310DE65 UniRef90＿UPI0003C7798B UniRef90 UPIOOO3490F7B UniRef90－ROEWQ8
UniRef90－S4XYH8
UniRef90－Q2HER5
UniRef90－W4LJYO
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UniRef90＿UPIO00462DF77 UniRef90－GOSC06
UniRef90－K0тA」3
UniRef90－UPIO0037546D8 UniRef90－G8PKH8

RP NPGVPIV 1 EPHWGRIVIRPFVLIRRGSQLRPE QP DTLTSGGGIFFSQQFVTPQYGQTTPFSYDQPTLMAPI
 PPA FASAV

QPTSE DQSGNLVSDT NSWQPDQSGNLVSDTPPFLSPEWGNVLP

## QP पN

 S SPTLS
SPT
AVL
$E P T$ NTKNGDD\GAEDQ
AEFNEHSGTAPGG
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QATSTDQSGNQVSSVPKFTGAEWGNVLPFAFEDPSKFPD
GPTPSSFPKPKDGGEQFPLTPHWGGVTPFTLPESDYLDPG

APGEFRADWG SAQYRNMTPFGIIDDPVAYLSA

QPTPPAYAPGAQYGNRLA
KPFLLKTOSNFRLG
TTTMVDPDHWQP LPYQTCMTPFWGKVRPFALKTCDQFRPA DNTGTSQSSNAYKWNFSLVS WWGSHLDPWDLSPNSDGNDS RPTPPGN RPFASVWLARMRPLLMDRPDRFRPG QT LQFQSGQA $\square G D S L L A F L G A E W G H V T P F A L D E E D R T D P G$
 NLEETDASSDAYKWGFSLVSVWGSHLDPV WD SPKTLG
 DFLVVPQWRSVRPFALTAPDQFRTD RPELPGY RPFANPWLGKLRP
RPTPPAFSPGGAR
RPFANPWLGKLRPMLLDSPEQYLPG
QWKDATPYVLSSPGELR
TEADKSTLVRNGTTYYAYHDPMYKWNFSLVSLWSSHLDPD


SQDGPPRPPMGADLGGQATPLAATRVMDVPP
 QP DGDGDGDMGMFMTQVFTTPQMRL
 VPTPPAYA $\qquad$

 ${ }^{\text {H }} \mathrm{P}$ P $\stackrel{H}{*}{ }^{-1}$

PPVGPFGKDR FFVD PTPPAYA AKGMFTVQAFVGPFDKDSRPFLAYSQTADAPP

VY DQESNEDGDPYKWHFALVSGWSSHDDPADDTMDDLSPG QPTPPAYAPATQYGNRLAVV W RPTPPAQ QPFTSSWLGRLRPMLIERPDRFRPA $V W L G E Q V F A D G V L Q F G F A L S P G W A D V L T F S G V S A S D F L A N$ QPTS VMDDPADTFPGTSQPFFF

WWGDMTPWTMRDNDQF DPGAPPQATGEQYKWNFALVAQYRNMTPFADNDPVDYFSA QPTPPSYSPATQSGNRLA QPTDGGPGDKGDFTAQRFATPQLGLVAPQTYRDPARFKLA
DSYVYNDPGFEFTQNSYKWNFALVISWSLDPADDTLI QPTPPAFSPATQYGNRLA KMFLLRSADEFRLG PAYWKPTPPAFAPAALANWGKVRMIVPNADAGAEQG

QPTPPNNP
GGLS
IP TPQARYLRTFGIGNVTQFRAP RPTPPGPAPAVFTHWSAVRPFVLARASVFRPG GQT FAL
QYTPGSQPL PDTPQARFITPFAG
QSLTQTFPGAKDGGEQFPLTPHWGGVTPFT GTGSRGS DPVTGAPTGFDAEGVIQAAAGNWKNVTPFSLTDLRKQLLV QRTS QPGTSSTRD VYKDQQFATPYYGRVKPFTYDSPTEFKVS QThATPNANSPPSQQAGAAFAQYSNADTATVGPAQTFFSS TS닌 RPTPPGNGAMAV
QPTPPAYSAPDQSGNRTA QFTSNQTSAPUSGNGALYPQDGKTKPFVYKRADQFRPP RPFPAYA PAVGSGQGKGRFTLASISQFRPA RPTPPAYA QPTPPAYGPA AQYGNRVAGPGQYREVRPYALRRPNQFRPG VPTVL
RPTPPG QPNMFE

TYSHDAERG

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[^5]A $S$







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UniRef90-L8H2B2
UniRef90_UPI000373CC98
UniRef90-W4LU82
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UniRef90- M7N8C7
UniRef90-D9X771
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UniRef90-M7MJ68
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UniRef90_UPI00047B9404
UniRef90-HOHNY7 UniRef90-TOMHR3 UniRef90-D8HMM8 UniRef90-K4R2U2
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UniRef90-S3D3H5
UniRef90-K9P9X6
UniRef90_UPIO0036FB52E
UniRef90-D9W7N0
UniRef90_UPI0003C7536C UniRef90-UPI0003814845 UniRef90_C5AGT2
UniRef90-IOH649
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UniRef90-G0SC06
UniRef90_KOTAJ3
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UniRef90_M4T7F4












































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$T$$D P A F R T L A E E$
$N D S D R Q L D$
DSTQRSARQT ..... QT























PPPALD
PPDPLGS

| $P$ | $P$ |
| :--- | :--- |
| $P$ | $A$ |
| $P$ | $P$ |
| $P$ | $A$ |

AYAADLNETKGLGGGAV


$P P P A F G T \quad P R Y V A A L E E V R R G G$
PP WKSNHRNHARYARDLAB



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UniRef90-X5P6T2 UniRef90-E8QWW2 UniRef90 ${ }^{\text {K } 4 L 2 P 1 ~}$ UniRef90-UPI000369520B UniRef90_UPI000361191A UniRef90-UPI000381DA37 UniRef90-K0R5Y0 UniRef90-L8H2B2 UniRef90-UPI000373CC98 UniRef90 ${ }^{-}$W4LU82 UniRef90-H2IM42 UniRef90-M7N8C7 UniRef90- D9X771 UniRef90-UPI000471B213 UniRef90-M7MJ68 UniRef90_UPI000299D721 UniRef90-UPI000366520B UniRef90-Q82PX4 UniRef90_UPI00047B9404 UniRef90_H0HNY7 UniRef90-TOMHR3 UniRef90-D8HMM8 UniRef90-K4R2U2
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UniRef90_M4T7F4

MVAAEFYDNK $\quad$ PE
NVPAHATNLDTQL
$\mathrm{L} V \mathrm{~A}$
 AQARDAA
AlAKLHAGSGS
$V L A E F W A D G P D S$
EIIFNFWRAGGGS
ETPPGHWFVLMNDIFDHPDFERRFQG
$\qquad$
HLAAMWWKD FVENS $\qquad$ EGPPGVWNMGANQTAPQQPLTSS
MVAEFWEDGPGTSF PPGAWMRVARQVVSQ VAA
RI $\square$ NFWAD GAGTYTPPGHWNAIA A TEEF $\square \mathrm{K}$ MI AEFWEDGPGTSY PPGAWMTLAQYVSQRDGH
LI GTFWAYDGVRG $\square G \square P P R D Y N Q C L H A I A E Q$
DQARFW DAPDGTTTPVGQWNRVAD AWLRHHP
QMAEFWADGPDS ETPPGHWFVLMNDVFDHPAFEHRWRG
MKAELFDMK DFS L
VKSEFFDNK
VLAEFWADGPES
ETPPGHWFVILNHVTDHPDFERRLWG EDAEYWE Y L G DEFKYPPGWWADRANE! K I DIGGYWQQAP WDEDAAQDARRQDTFDSARN
 LFSEFYDNK IQAKYY DDPASKGYPGGAHYYSVLTQVMEQLNPPLDLAA ETATFWLGSSLTLYTEP Q 1 CEFWGDNS RTPPGHWFTLLNYVAVRFAEMLAYR VLAEFWADGPDS ETPPGHWFTLLNYVSDHPLFEKRFNG DTA历FF TKLDDQGALADRAAR VLAEFWADGP TSETPPGHWFT $\square$ L KKVMDHP LIFERFAG
 ETPPGHWFTVLNYVNDH
YESSD I GWN RIVTRVAARE
EYTAFW


ESALFW TAQPDALLFAVVGQV T
VLAEFWADGPDS ETPPGHWFTILNHVSDHEKKWNGTGN
QTAYF WR $\quad$ ESSPPGQWNRGAHAVIGNSLATNGLA ATVYKWAD GVSTTPTPPGHWDSUAAPYVSAVSY
ETANFWYGSSLTLLYTEP GHWDSLAAPYVSAVSYRDALAR
ETADF
LKAEFFDNKF LGVGKS
VARDE $\square$ QRA

V L A A A E T

DA A WWWDD
VTAAEDFDNKFLDGVGISVGA
VKAEDFDNKFLGVGLSVGA AA LEN

LMAEWFDNKLAG
$\square A \square A P S A A A B S$
A A EHWVDGHGSV TPPGHWNQ A VLAEFWADGPDS ETPPGHWFTLMNYVSMTEKRWNGFGP E A F WLGSSLTLYTEP TTVDDQGALADRAER
 E $\square$ AKLHAGSGS GAWNQLARNSSRACA
FEALWWACDGFVFSGT YAFTRQL VAD DTA YFWR GSSDT DWNRFAGALVGDAYTTKVL
 ATATFWLGSSYT $L Y T E P \quad \square R V A G A A T$
 DTATFWLGSSYVLYTAP GURGALAES T A TFWPDNA WHNVLSQV Li RIANDWAD GVGTYTPAGHWNLITEDLIRQDRQ ESSPDQWNRFAYNVI GD


EQAKFWAAP $\square W N L$
$R V G \square F W A Y D A A R F V G T P S R \square Y N Q U 1 L D T A D$
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ETAYFWRESSVTG
WNRFAGND ADRANE LAGR LQALYYYKSD F $\square A K L H A G S G S \quad G A W N Q \square A L E L F V N E A A R \square A S A S$ MASELFNDKVVTF
ETA WFWAD LDGTSTVNGHYYT
R $\square$ ASYWDNGPN TYSLSGLWNLL TEEF $\square R E$
DVA L F WN ANP LT QF
DVASFWYQGSQTGFLTP
ETAKFWEA GANTSTVNGQLFNATDAVV
E 1 ARF HTEAPPIFLTRNFGRFARTTDK
DVAKFWA QSSLAGYTA ILRGLVEQERAR
$E \vee A S F W Y Q G S P A G S S Q P P G E W \square R \square A D Q P A F Q A$
$R 1$ ANYWENGPNTYLLS GLWNFLAEDLDRQ
EIARFWE ARSLPA YHGLLRSVADVPGR
 MTAELFNNN VETFGPVG
W $\square$ A EFWSNDVE GLMMSPPGRQ
ALLAEVMDNKLWGLGYTS


## UniRef90_UPI0003497691 UniRef90_UPI000368BA69

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UniRef90-L8H2B2
UniRef90_UPI000373CC98 UniRef90-W4LU82 UniRef90-H2IM42
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UniRef90-S4XYH8 UniRef90-Q2HER5 UniRef90-W4LJY0 UniRef90-Q21GC7 UniRef90-D2PVD5 UniRef90_A7KH04 UniRef90_UPI00037ACEE1 UniRet90_UPIVON38 UniRef90_I2GBC7
UniRef90-N1QIO9 UniRef90 A8NPT1 UniRef90_UPI00037451E5 UniRef90_UPI000462DF77 UniRef90_G0SC06 UniRef90-KOTAJ3 UniRef90_UPIO0037546D8 UniRef90-G8PKH8 UniRef90_UPI0003775BA3 UniRef90-IOYQ25 UniRef90_UPIO00362494D UniRef90-UPIO003B3CEBA UniRef90_UPIO00475872A
UniRef90_A9SEU6 UniRef90_UPI0003623E28 UniRef90_D3CVH0 UniRef90_UPIO0047CBOEA UniRef90-R4LP70 UniRef90_UPI0003602566 UniRef90-A0A011MAV2 UniRef90-W0RG17 UniRef90_UPI000262EB73 UniRef90_D9XQ16 UniRef90_A9E3K5
UniRef90_M4T7F4

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ATEETA ${ }^{330}$ TR T ${ }^{340}$
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360 (LHAVA TADVITAWDAKFETDHWRPHH
 T NQDLFKAAAAYARHGDALSDAAVSTFKTKYTYNLLRPFT SRSNLLVAARVFAQLNLTFADAVIAFYEAKYHYRIWRPDT $\square P L V E E A R T L A L L N I A D T D A L V A G F N A K Y T Y Q F W R P E T$ EGDPLEWDVKAYFALGGTMHDAAISAWSDKGYYDYDRPVS VGTPLEWDV HAY LALL NGALHDAA DAAWT DK SKYDS DRP DS EGLNLWETVRSMALLNMTVYDAYVNVFDNKFHYNHWRPYT DEHDAATDALLFMTMGNAMFDAAIATWDAKVFFDYARP

DAATDA LLFMTMGNAMFDAAVATWDAKVFFDYARPVT ANFSTEALLAVLLA CNNLGMADAG1: AGDRDEWDVKYFA GGAMHDAA LA WSVQYDEQFWRPDS
 HELDLDGWVQLLMMTGVAMDDGLI ACWHYKNKYDSVRPFS AESPLEWDI KAYFSLGAAMHDSAVAAWSNKGWYDFTRPVS LN MPVKESLQDSLGVSLAVFDAGI A A WDMKYFYDSVRPVTV
 TKYSISRTVRLFALLSMALGDSAVTSADSKFTYHFWRPTT HHLSLE QFVQLDY V VNVAAFDAGITVWDNKRKYDAVRPFS $\square \mathrm{G}$ TSEGAAGQARLVALFHVALVDTQIATSDSKYAYERWRPI T RGFSLGQEDRLVRALGVALHDAMVATWDAKMTYDFARPVS QGPPLEWDVKSYFVLGGAMHDSAI TAWGDKGWYDY $\mathbb{C}$ R P I S VGDNLEYDVKAYATLGGAMHDSAI SAWS DKGKYDYARPI T HHDGI A ETARDFVAGNASATDAVVATWDAK DHYGFWRPITT QGDVLEWDVKSYFILGGAMHDAAISAWS DKGWYDYVRPIS NELDLWDSARDFALVNMGMADAYIAGWDSKDHWDFWRPVT
 RGADIVEAARLFAAANTASADATITTWNAKQTYALWRPITT EEMDLLEATRTYALASVAAVDARVADMDGKYFYSSWRPVT
 SAKFYA QL NYALANAAI ASWDSKYFYNTWRPVT QGLDGLAAARVAGAAMAMHDAGVACWDYKYFYFNPRP

 S AVQNAHMYAVLSMSLDDA DLVAEDAKMEFSVWRP HRDSPLQTARMLAMVDDATVDTMI SCYREKRHWSFWRPVT QKAKLWEAAEVYAKTGI AFKDGGINTFRSKFHYN LIRPVT GEMDLDDLVVLLEGSTVA $\square Y D S L V A \square W H Y K A K Y D S V R P F S$
 HDLDLDGWCHLYAVTALARLDDL $P L A D A R Q A L D L F A D L N M A M A D V F$
$I L D D L Q W D V K S Y L A L G G A M H D A A$
$S P A G T A E L A R Q V A L F H V A L V D T A$ AAWHWKKFNSVRPFT

 F EL D D N EAARVFALAMLTQADAMI
 AVGPLEWDI KTYFALGAAMHDAAV WGIKGYYDIRPVS HDLDLLD GWAQLVFLVCSTARFDSLIATSDTKYAYVSWRPVJ QGADLEWDIKCYLALGGAMHDSAVNDWHHKRAYDTVRP ARKPLADRVKLVALFHVASVDTQI ATSDAKYAYLLWRP EKPGLAVAAKAFTQLGIAMSDGA SDCKGKYVYQGLRPVT

## Y A A

 VAF Q TKNKYNAWRPIT DGMTAVEDARLLALSNTAMSDAANAAWFAKYEYKYARP YATNPLASAKLFAQLNYALANAGDASWDVKYAYQGWRPITT LDLPVKESLQVSLAVAMAVFDAGI A A WDMKYFYDSVRPVT
 GNLDTEQT DHYYTMSDVAF $\square D V T I A T W H Y K R K F D S V R P D S$ NDTSLLDTAE LFARLGSAQFDSN VGWY DKFYY LFWRPDT NGQNELRSARTYALLNRAMHDATTTSWRTQYTYFVPRP RGFDISETARAFALLGTSEADALISCWREKYDHPFWRPDT SRGSLADRVRLVAEFNVIAVDTQUATSDAKFAYWLWRPVT KDDSVK D L A K L FA K PLA WRTHLVATFHQVTIDAQDAGYEAKYVYTRWRPVT S P SARLVAEFNVIAVDTQI ATSDAKYAYQDWRPVT QARLDALITLALADTTVS RHDPTAAQARLDALKNRAMQDATMATVNTKYTYRHWRPAT A GQNELR ARTYA LGEAQAARALALVVMAAMDANIACYDAKYTYWF DRPYR HGFGDAETARLYAAANTAQADAVITAWDAKDHYGTWRPVT GDYDTEETVVFAAVRDDAFFDLSI ATWHFKRKYDSVRPFS NVDHESALI LF L KLGGSLDNAAVSTWADKYEYMVMRPSV

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UniRef90-IOH649
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AlI RDGNYRTS S P PDWRPL ${ }^{380}$ SADTRGRHFAPNHPSYLS ${ }^{390}$ AI A Y $\$ YGSQP $\$ SA WGGPGDMPGSDWRPYLQSANHPEYPSA


DGNPATQATPD A $A$ A AL $\mathrm{A} K \mathrm{~K} Y \mathrm{D}$ DGNPATQA!PDWSSLATTPADPAYPGA A A ALGKGYD HPTLDKMDGWTPLVAAPMHPEYPCQ A 1 RSDDTGGNYHPHGDPLGDPDAGSNWWPYSPPFAGY $\square S G$ AI RNADTDGNLATEQDSNWTQRNGSDGGS PEHTSG MI RYGQSTDQSHPSYHPSGDP $\square$ AN WSPYHPTPNFAGY VS G
 A I R D LGH L G L I GEG DDPNTGTSLGTRTIPASPPFAEYTSG
 VI RDLGH DGLIGEGLDPDTGTSLGTRT\|LASPPFAEYTSG LLRTNEAGFESDAHWAPDGAPQTNSVPRGGTPQFPAYPSG A RRA ADEDGNPQTASQTEWTPLLITPASPSFPSD A VRYADLGGMABNYHADGIPLEPGF DELVQA AVRY AVQHLYGTTELTAWGGPGVGPANEWTSYLNVGNHPEYPSA AI RAMAD LGQYHPEGLDPVGWILAENWWPYTPPFAGYVSG AI NEAFYGSTVDWTGSAPGNKVANLDDRNFSPPFPDVPSG VI PCAFFANTTAEAWMGPYQGNGSHWQPYDATPPFSEYPSG A READTDGNPATAAD $\quad$ N WLPDEDEWEHPEYPAG AI QNADTDGNPDTEQDSTWAPRNGSIGGS PEHTSG

 A 1 RTLFR QRADNNWTAKGVAGANWTPY LYTPPFPEYVSA A $\mid R Y N Q S \square S N Y D P E G \square P L Q D W W P Y Q R P S F V T P P F A G Y V S G$ AI RE ADRDGNPLTQADPAWVPFLDTPPHPDYLSG AI R WMAKNGQADPW $\square$ GPQA DDDPTTDPNFVTPNFAGYISG A 1 H

ALRNALLGQS AI A A | R | L | P |
| :--- | :--- | :--- |
| A | E | D |
| R | F | F | A V R

A I R
A L P LGN
LAGEDGNPATDGVPDWSSLATTPADP
QAHTDGNPSTGGDPTWLP


GUREAVVGKLAESSRLPLGRPDANATGAGLTPDDPSYDSG

 AI RE ADTDGNPATRADPTWEPLLTTPAHPDYDSGG AI RHVYGTNTVTAWGGAGVGPANEWASYLNVGNHPEYPSA AI R NADRDGNPATNRQADWLPLLTTPDHP | A | P | P |
| :--- | :--- | :--- |
| Y | R |  |
| R | R |  | LADTDGNPATGADPAWTPLRTTAPSP

 A RIYGSRRVTSWGGVGMPGDEWTSYLNVGDHPEYPSG | $A$ | $G H V Y G S R W G G P G K G T V R V R A D E W A S Y L P V G D H P D Y P S G$ |
| :--- | :--- |
| $G I$ | $R E Y G L D G D C D P G W L P H G A P R S N E I D P N L T P P Y P A Y P S A$ | AVHHVYGRKKIDSAWGGVGMPANEWSSYLPVGDHPEYDSA A AKQLL

 AI RTGADDPDDPGWTPLHT AI REAAD DGNPLTEADPAWEPFDVTPSHPDYPSG VI S GDFGQFTGEDDLAALGADDFDWQPLLPDPAFPDFLSG AVEALGTSYS HPDLKAGMEWESRIPAPMHP AI DHYY

P
AI HHPTPWVHSGPSWTPLLRP TSPNQEYPAG A $\mathrm{A}^{2}$ QADTDGNAATVADPTWAPRNGS $\square G G S$ T PSH TPPF
ALRAAG
HAPAGVSG
ALRAA HAEWRPLLHTTPAHPDYPSG AVRHVYGSKPVTAWGGPGKGPADEWTGYLPVGNHPEYPSG AI RYDSSLNNFDPHGLPLVDWDLGTHWWPYTPPFAGYLSG AI R TTSDAKWTPLHT Y 1 RT T TSDAKWTPL A S QLDPT!KAATE ALHYTQGNNLSDPSWEPL A A R R L A T T DGNPATTADPAWNS AI RNG TTDTRWLPVGSPKTNSSAAA AI HYPG $\square W V W S D P S W Q P L L R P$ AI NELFYGSMI SDWTGSAQHNKVANWRPY AI NANPDGSVSEYDWKPLAA NKIANWRPYSPPFPDVPSG AMEALGKTYK UKPTAKTNVEWSSLVPAPSHPSSTGG A I D Y L YK K RKVT A WGGPGQGTVDDWQGYLASADHPEYPSA A I RRGDAKHPADPTWTPLLDN


| A | R A A G |
| :--- | :--- |

VD A A WK P LR

| V I |
| :--- |
| A T |

ETDWTPLVTPAH

| A | L | R |
| :---: | :--- | :--- |
| R | C | A |

AVP LAETDNNPATSADPAWTPSLPTPNHPRYYST AIR FADTDGDPTTVADPNWTPLIATPAHPEYPSG ALRA TGLDP WTPL HVTPSH A ${ }_{\text {A }}$ READTDGNPATTPDPTWSPRAGSAGSS AVRNGDVDGHDGTARDPSTTM M $\quad$ RD A $\quad \rightarrow$ RE GTERDPSWTPLID A REMADTGNPATRADRRWEP Yi QE YGKKVVA WGGPGEGRGNE WR

| UniRef90_UPI0003497691 |  |
| :---: | :---: |
| UniRef90-UPIO00368BA69 | SASFCRAHATSTKRYLRE\VGLNKKRSND L L L W WTPDL |
| UniRef90-A3XF26 | HSTFSAAGAAVLKAFTGSDHLDAH |
| UniRef90_UPI00036EF13F | HAVVSAASGAVLEKLF GA S |
| UniRef90-D9VBY8 | HSVVS QA GALLVLS QEYGPRWTLKVTS |
| UniRef90-17DWE2 | HCTSGSAAQQVMETVFGADEFTFSFEGKDGYS |
| UniRef90-UPI0002559D2B | HSTYSRAAAEMLTLLTGG S P Y |
| UniRef90-W4M613 | QS T FARAGAT\\|LASFYRDDSVTFSFTGDNA $\square$ A G A |
| UniRef90-B5JKM1 | HSTFSRAGAEVMSLLTG |
| UniRef90_A4CHT1 | HGSASSAAMRVLSETLGT GDDYAFTMRTVQV |
| UniRef90_A6FKB3 | HSTFSAAGAAVLQAFTGSD |
| UniRef90_UPI00047A66DE | HSTFSGAAATILGYLFPQRRTDF EAMALEASNSRM |
| UniRef90_A6FN32 | HSTFSAAGAAVLQAFTGSDHLDAHDT |
| UniRef90-X5P6T2 | HATFGGLASELLEALGGGKDLVF AFVSDE |
| UniRef90-E8QWW2 | HALLAGAAETVLTSLLGD |
| UniRef90-K4L2P1 | G D SLI A G A A E H K A WR GP D Y IE DVTTS D Y A GVVD WP T F V S P P |
| UniRef90_UPIO00369520B | SASFCAAHAETSR |
| UniRef90-UPI000361191A | STTVISAEA QAARRYLNS DSLNWSYTYPAG |
| UniRef90_UPI000381DA37 | HSTESRAAAEVLTAITG S E Y |
| UniRef90-K0R5Y0 | HSAFSSSAMIVLRLILLGTNV |
| UniRef90-L8H2B2 | HSTFTAASAVVLQRFLK S DVYHGPVVVPEGASFREPK $\square$ T N |
| UniRef90_UPI000373CC98 | H NYAGGVYT RAFENFFGSDTIPGGAlSVFSRS |
| UniRef90-W4LU82 | QSTFAGAGST $\square$ MAEFYCDDNITFSFTGDNA |
| UniRef90-H2IM42 | SASFCRAHATSTKRYLQEELGLPYEAANDLSFWQPGFLPE |
| UniRef90-M7N8C7 | HAVFSSSFAHAJTTVFG D D NVS F S N |
| UniRef90_D9X771 | HNTYSGSAETVLSALVGPR |
| UniRef90-UPI000471B213 | HSVSGHAAAVVLAHFAGGPFRFSQKASPA |
| UniRef90-M7MJ68 | HS TYSRAAAEVMTLIT GD E Y |
| UniRef90_UPI000299D721 | HT T T A GALLT R TLTLLLS G R HLDDLR $\square$ T S L I A |
| UniRef90-UPI000366520B | HSTFSSAAATVMTSI TGG S P Y |
| UniRef90_Q82PX4 |  |
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| UniRef90-H0HNY7 | HSALLGAAAATVL |
| UniRef90_T0MHR3 | HSTI S GAAAPVMGELFPAEKAFFQAEA |
| UniRef90-D8HMM8 | HSVVSQAGALVLRREYGPR |
| UniRef90-K4R2U2 | HCANDGAVMAVLDRLT GGD |
| UniRef90-W7TQ55 | HAVHGEAIVEVLRRARGGGRGLGGADACDVVLTTPTVQGE |
| UniRef90_UPIO002558756 | HSTFSRAAAEVLTL |
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| UniRef90_UPI00036FB52E | HSDFSAAAADVLSYLFPDGAT |
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| UniRef90_UPI00036EDDC1 | S GGVCAAQAQATRRFFDDDVLDWTFRAPAG |
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| UniRef90-W8ANM7 |  |
| UniRef90-M4TL26 | STTLCSAEAQAARRFLGDDVLDWTYSFPAG |
| UniRef90_UPI000374E92D | HAATSGAAGRVLGHYMPDRAA |
| UniRef90-A9E0M2 | HSTFSRAAAEVLTLLT GD E Y |
| UniRef90_UPI000310DE65 | HNTYSGAAEAVLTAFFGPRTAPFELTSP |
| UniRef90-UPI0003C7798B | HTTTAGALVRTL ${ }^{\text {M T L S D HPSLDLRIA S A }}$ |
| UniRef90-UPI0003490F7B | HSTFAGAFGGVLDTLFPD VEFIPVVSQE |
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| UniRef90-KOTAJ3 | HSAFSSSAMVVLRLILGTNVFGF |
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| UniRef90_G8PKH8 | HCTS GSAAQEVLESVF GDGEMAFTFNGKGGLS K D |
| UniRef90_UPI0003775BA3 |  |
| UniRef90-IOYQ25 | HTVTAAASGQVLARWFKSDNVTFTVGSE |
| UniRef90-UPI000362494D | RAAVSSTAATLLSYLFPSDA |
| UniRef90-UPI0003B3CEBA |  |
| UniRef90_UPI000475872A | HATYAGFAEQVLTALT GPKTAPFTQTSP |
| UniRef90-A9SEU6 | F C C Clle w $\square$ T S I M Q WVR D S S S K G W W |
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| UniRef90-D3CVH0 | HTTYAGAAQRVLEAFTGS |
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|  |  |

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VEVASEA $\square P G$ GQRRFASFQE I DLLRVHSAVTGTTRTYRDSADFN S G G GARRVRGGKVEGRMSGDPPGQVAPVVTRRYASLSEVS FPGGDGEFVAKKDEFLVFEKGPSVVADVGQWATYRDAS
FDGRNRDPC口PW P R D HL T L S YGS LTMA NAQA
 YSAGSSLVEPG $\square T$ PANDYQLHWDTWTDFV R DE S LRA Y S $\square \mathrm{DV}$ VTDNAYDWRGGTPARHFGSLRAAR STMVEPGLTPGTDIALHWDTWTEFV

S GLTEPGLVPAKDTELHWDTWTRFT N A Q A FPGGMGTFD $\square P Q D N F L V F E K G P S A P F \quad T \square Q W A T Y R D A S$ T A P GVT RTY T S WR RLS

MLKKTRHYQVPGHYTSDVEG
LVPGNGDF TTSNDELFDIDDF
GD LDEPLVGTNTCGD【V
A R G V
SAAAAEAGRAR
FPGGLGEFHMQQNNFLVFEQGP
部
SGQREPGAV ${ }^{\top}$
FPGG】GTFEVEQNNF乌VFEQGPS TSRPYTIPSPTAEGFTLEWATYQDAS YTDKPYNLPGFAPRSFSSFEAAA

GRGV
LP G
L N G

GAVREFSSYGA $\square G$


TTDMSLQWATYRDAA
TAPGVT RTYSTWRQLT GVITRTYTSLDFAS VTEPFQCRFDTSGGFDGDASNGNEYTTDDFKYLSEAT LIGTNNGTGK

S S LVEPGVT PSSDDT LQWNS WTEFA

YAPKKLAPRTYSSFSEAAA | $T$ | $K$ | $A$ | $A$ |
| :--- | :--- | :--- | :--- |
| $D$ | $A$ |  |  |

T APGLTF TYRAWTEIT

GPARPDAVTSATAPGVTRTYSSWRQAT
A $\square$ S EPFDLTSTT TDSAPNGTPRTYPTFSAAA PTGKGATRRWGSADE E E AM

TSTGTSRHYRYAHEYE
$S S R \square E P G V T P A Q D M T L R W S S W S E F A$

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| $E G V I N A R$ |
| :---: |
| $E$ |
| $E$ |
| $E N S A S R$ |

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T K LTTREEDD

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20


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K D S I V $\square K W T Y L A Q R V V R Q L R L T N Q$ $T \| V V T N S T T Q L I A E W G Q L W L T L D Q Y T V G M$ I H Y WN A GPAAYRWQR!ADNL

YRWMQLTEQL A $\quad$ S K
GQVILDWNQQALDTVRDERLGAFD $T A T P D S T A A R T V S V G A T A S V R W N Q R A V A L V V A R Q P A S N G$
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$V$

[^8]

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E RMWAMSWIAA WAALSA
R R
A LNSNVATRDHADEARAVFDAVNAVDHFSRKGYYS
GLSSPPSGWYTAVVQGAVYEAAVN
GKAPQE $\square \mathrm{F} \square Y \square A F T H A A M Y D A V V G \square H P R Y E P Y R R H A R A P R$
A A RVYATLASAQYDAI KAAQGSSLG
A GGPPQQFRVLAMTQLAABFDALAPYYHETAVGVYSQDP AAR LYAMLNVAMYDAVNGLARSPRAAALVTGRG


LS SPP SGWFEA $\quad V Q G A V Y \quad \prod A A D D S R S$
$V A S P T T Q \square R \square L T Y L S V A Q Y N A I V A A E D A K Q G S G P A A S A A A$ GRGNAAQAYTASLIQVAVYDAVVADRGRYPPF SS ILMATLNLAQWHALIALKRT

WF DA APYHPTAKG $\square F S$
YEAYAGAF $V Q T A$
T NP $\quad$ RQGGY $\quad$ Y



GFAP LTSA AQPQLHLAQWHALDALKATGDCTT
GLPPTRAARGLMLISVAGNDALIISNEAAQ



WD $\begin{aligned} & R P N T \\ & S\end{aligned}$
L L NVA $\square$ Y D A T V V WD T K Y A H NR PRPFVA G $\square$ A AP $\square Q T R A L A L V A A A I Y D A T I$ AAWDSKYTYNRQHPVEI AARTYAMVNVAMFDAVNGDNRRTHKS DLA


FA Q TP $\square$ A $V R$ YS $\square$ FTF $V G E Y E A A A A C D P \square A$

P P P A A R V L A LT L G T LH D A A W $\square$ A R H


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7 7 64 2 8 9 9 9 9 9 9 9 9 9 8 8 8 8 8 7 7 5 0 3 6 7 7 7 7 7 7 7 6 6 6 6 6 6 6
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N
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S E Q ${ }^{1}$

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 $M P L G$

GL
 $I L L Q Q Q L D K W G I S D S Q V P L Y K K L I V P T I$ MAEEAAQSRVLAGVQFPSDSS

A GLELGR $N S G \square P V F S A L L E R E G L N P N D R S T D M N T P V G \quad A G L G N$ $M$ MATAGLDPAVTAEDRTTASGIGLLAAKNAMAA PF LQ Q QLESL DLLSASQKKTAKEDGEVVALRLVQSRVGG
 RATEHKQSRIWA GANVPTDVKAGEDLAT AAAVHETKDAVRQTAQAIVRQAQAQGWPEPNLRISQALGR ALLAATLDRIT TNPAAAVLDAALATTRSRLSARERAVAAGV TRLYATVDSKLKAVLAPIGDNQSSVDYQRADGQ K $\square R A Q \quad K A S T P W P E G T R D L S A G E A I G R$ TAFQDRYTAFDAADPDGAAKADGVAVGE
 ALAREAGEARVEAGAAYPSDVD AGAAIGR PYGRF $\square$ ARLGLDPYNRSTDTSTKNGWANVFAARMLTYFDN $\square A H D A S Q S R I D A G V Q F \quad$ PSDVEAGWK $\square$ E DDYDEALEDGLEALNANANKVAAGVAWGA LDFNL PRFLAAKLVALKLSKSEKKLAKRLGE




LAF I R G DDP SDSTD EAGALGV $A \square A D S V Q R M A Q R M M A S R I A A G V V F P S D T R A G F E L G K$
MA
QLDTHLNHLR $D Q A G W S R \| L A G V A F P S D V T G G M D L G H$
QLNADLAVPPWP
GRGRIARGVAWGE
 MPCTDTVSADMEAYGADVADASTDTMENDGNADGRLGGR LGRAYANE DWDYGANDGWNADGSMGGR RYAAF $\square A R V G L Q P F S M S T D E T T A E G W A R R S A Q R D E A H F K S$ PEDRAEFDSLVTPWGDNPKDSSKPNACGDDNTPWGLAFDR

$$
\text { EQDGARLARELQAGLPDDPADVDRVSWALG} \text { A }
$$ ADAREMLKARADELGDDPEGEASNATAAAAAGAGAAAAGA LGGDHPMSFMEEGEDAS DDTSTPWGTANDGWNADGSMGGR

[^10]

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| UniRef90_A8HU |  |  |
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| UniRef90-B8GAQ2 |  |  |
| UniRef90-D8LQU5 |  |  |
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| UniRef90-D8LSP1 |  |  |
| UniRef90-R7QSQ9 |  |  |
|  |  | UniRef90-R7QSC8 |
| UniRef90-D8LQU9UniRef90 UPI000349563 |  |  |
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| UniRef90-UPI00036F194A |  |  |
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| UniRef90-C1N4N7UniRef90-D8LLS4 |  |  |
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UniRef90_R7QTE4
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UniRef90-D7G662
UniRef90-D8LSP1
UniRef90-R7QSQ9
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UniRef90_A4X2J4
 REAASAVAERSGDGDDDA LDPASVNPYPAPPAAPGD QAAAAALSARQDDNAA $\$ RTTYTPSTNLFVNGSGAVAPGLW RADDNLVNFVD
RVAQDLI DLRAHDGRYAPVQYTRAPA
I I NKRLCDGSSFFANFKPASDTASPGVFRDAPGVV $\square K N D G M N F D G N P R P W S D Y T G Y V P V N T A F K V N N P S R W Q P Q L$ ASAAA ILQERQGDGSATPHPYTLAAPGPG
DVGERVVAARADDGSTPVET
$R Q A A R A V A E R E G D G$
$R G Q D G S N Q Y G K D Y G S V N T S P Y A D A Q V N A P Y T P P P D A P G D W$ RGQDGSNQYGKDYGSVNTSPYADATNYFPVNDPQMDPGNW ASAAARVAARVGDGLDIE SVNAPFTLPPEAPGDY

 $R V A E Q V I A R A K A D G S D A V W T G T \quad$ VI RAGRDTARDMA DDGWNAEGD DAGTPAQYRSPWK DSHPFRW RRNDGTNRRYNREPYADHTGYRPVNSPYEDR FPSRW DLGKDFVLDAVT DA LDDES TPAPGDYRYQSTPGAA Q A N EY IVEAKTDRTERDWEGQVPSLDSDWWTTGTPSKW DTARLMGWNGEGDDSGTPKGYRQPFLDYNTPWRLRYPFRW AVTANVLDRAKTDWFSRAQD TV PNSWQTKLASAPYDR

 KAAVNITRARSDDG』NYFVDY 1 QQPA ATGAAVLAEAATDKTDLT AAAQAVLAARSGDHFYDAAT FANPPAEPGVW GVAKRLIDKRSPDREFLVQE VRNADKTRQDRPGLFGY RKGDGSNREGDEGGYSDYTGYQPANTVEWLR SAAAKVTRARAGDGYGRYKRYE WQAPAPGVY AVAARVDARARVDGAAEPWTGA $\quad$ DPAGDGLW DGWNAQGDKTRDDFYSDSSFYMPRNPAFLPPSKLRRPLRW

 TVAVNLI RQRSPASEFTQGPVHAAVDD VINPQIGVFRH $A V G E Q I V A W A Q Q D G S D A A V$ EDALPAAGGW $F V G L R M L A N R T N D G P P N N C N N W P S P A T A A C P N S V P N S T F W$ AMAMDLLAYLETDGYSDYTGFKPQNHAEDDFSRLRRPDRW
 QVAEQVI ERAKQDGFDK
AMAVDLVAY $\square E T D G Y S D Y T G F K P Q N H A E P \square R W Q \square R R P L R W$ K 1 A EK
 LVGQAVAAYAVADGSGQVFTGTFAAS YAGEQVVDLRADDGTSPPETQPGGSGPGEFRADFGAAA

 EFNRIPFTYYTDSAGNEWNGYTPKNTPYKF KRTKRW EFNRVPFTSMTDSAGNSWTPYTPRNSPYEF TNFKKW DGWNSLGDATRADFRNPFENYRPRNPAHLSPDADRFPGRW EFNRVPFTLMTDSEGHSWTPYVPRNSPYEL TNDKRW AAADAALAFARQDGAAQPGQDGPA QPGGEGVW VIA NCVLLFARADHADRPVATRAAASA


VARAAADDLTKLSDYRAVRQNGRVTPGLLFRGD

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RPMPVNDPNA WIV
QPTPPSFTAAQQ
220
QPTPPSFTAAQQAGNRFA
$220 \quad \mathrm{RNDRPF} \mathrm{T}$ L
$R N V R P F T L P R P E Y F H T S$ R LT P G A T Q T

TPFLLDRADRYR $\square$ G RPSNGTAGDAPTGFVEGAVAGYGLARPFGLGRADRFRPP QPTPGGAPD LDED $R P T P P A F A P M A V P W L G G V T P L L D R G V$

A Q F AP P
AVHYPQVANANGFYLSSKVDAFTARLTHFTLTDPE
QAHNARRAGGGPYVTQHFVTPQ AARTKAHDFRDPSRFR ! $\square Y Q P T P P T P P P P A P Y P Q F A G W A N L V P F A V I S R R Q F$ QEAGTGPGVFRAAWFGVQYRDVRPFGTADPSTYVPG

 R LTPGA RVVGAGYGRARPFLLGRGNRFRLG
GNPSPWDPMKRQW
KKA HI FTAPAQFK



 $\frac{\square}{P S R G K R E V V N T Q E F A T P Q F G R V K P D T F D R P E ~}$


[^12]3236777766777777776665556665005667776777


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| UniRef90-A0A024FK |  |  |
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| UniRef90-F4KRI2 |  |  |
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| UniRef90-W0RDA4 |  |  |
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| UniRef90-D8LQU5 |  |  |
| UniRef90-D7G662 |  |  |
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| UniRef90-D8LLS4 |  |  |
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| UniRef90_K9WUD6 |  |  |



[^13]

 EIGYFW LIESS DTAWNRYATTDIGDSLKD DVARYWATDAPS VI WEKFMLRELAD A L VHWWENKF LS LGVIVP YY IGVLQ



SLA WQWHADVGTPTVPG\WFETADTTAVVQ
AlARFHDGNFGSQVG WAMDYVSSSG A QAHWWDNKFLS L GSFDAFYQGVYGFSDTKLVVIG DTARFWDGAVSGSGGQGSAGVTGMVQNISDA
W $\square$ A EFWADDVEGLMDSPPGRQYS TNQLIEQY AF RWEFSWPGLMSPPGRQGEVVDQKVLEYNLSN
A QAHWWDNKFLSL GSFITFYQGV
ASESVWEDLLEKK DFENNLDHNPPRAARIYADAA
HSAWFWQ PGFFQPWLQQVETEIFQNHQDGN
EIFSFWKAGGGSV RPPGEWDKIAIVAAGDQGTVR
AI A TNWNTSSGTFTA GALNLVADDVIREH




$$
\mathrm{AVI} \mathrm{AFWDN} \mathrm{~F} \text { NKFSS }
$$



A ISFF DNKFNSL $\square P$ LKIAYFLR STTR ALAEHWAAGPGSV TP $\square G W M Q E A L R L A E Q T R$ ALADYWAA GA GSVVTPAGMWLERAATDTSR MLVELADNKFALSQARFDSHWSPYDR VRVVNAPFAYR



[^14]

lupas_21
lupas_14
lupas_28
jnet_
conf
sol25
sol5
sol0
jhmm
jpssm



AI RADG
LIP P Y P D E P S G
TPA H P D Y P S G
A A R D

ADTDGDPRTAPDPTWNSFLPTPPHPEYPSG AI NADASGAVADY $\begin{aligned} & \text { DWKP } \\ & \text { AT }\end{aligned}$ AVHYPDV WLK SGRNETDTNWVPPTPSHPDYVST A 1 Q $\quad$ AATTDGNPATTADPAWTPLLTTPNYPDYVSG AI QTDHGVRAADPAWEPLLT AVRHVYGNRK $\square R A W G G V G M G T V D D W S S Y D P V G D H P E Y P S G$ AI HWSDDG AI REGNPSTTADPGWTARAGAVGGT A $\square$ REGSVD PDPTWEPLVA TPRHPDYDG

$G V G F \square N G S C W Q P Y$
QESTFVTPPFPGYVSG

A
 AVRHVYGNRKI RAWGGVGMGTVDDWAGYGPVADHPEFPSG AI RTTHGVGTADPTWTPLLA LIGERKVKVWDPS $\square$ TPLDA $\quad$ VPAPAPEYPSG LFGERKVKVWGGPGKKAVRQRAGDWQPY DRTMPHQEFSSG $A \square R H L Y P N K K L T A W G G P G R G T D T G T Q W R S Y L S S V P E Y P S V$ AYKTGDPGHAPLDPNWNAWLDYN
 WVRSFDRR WQPY LRTPKHPSYPSG
 A I R RTD DWNVSDPTWTPLLTP A A $\square$ QRADEDGNERTEPEP $\square W T$ P AFRTGDERHAPFPNWTPWA
 YTFFDPEYPSG A I T Y L G DKKVT A WGGP GKGAVND $\square$ A GKEWSADSAEYPSV A MMRRLGRKDRAYRGFKKGVGMVKAEEWEPAVPPHSEYPSA Y DTTYKPL $\quad$ DPTPPFP A $\square$ REAGTDDNPNTVADPSWNPRNGS $\square G G S$ A YEAGDARHQPWPTWTPYGR AFRSGDGTH WMN
AYRTVTPDSPAHAYVDPS MLRRLFEGKK $\square$ RADEGVGL AI QKYYN AS WTPLLG Y $\square$ TEY $\square$ DAD
Y DTTFDPLFT M $\square R R \square F E G K K \square R A D E G V G L V R A E E W E P \square V P T P P S P S Y P A G$ Y A $\square$ RNASTDGNPDTVEDASWNP A WM ATLDSSWQP DPGUALADAADPNHPSYPSG
 VVRNEI GDEYAGPDNGVQNMTASEWEPYI RTMPHSEYPSA MI RHLL GDEYAGPDQGVQTMKASEWEPFI RTMPHSEYPSA LVRRLLRGGWRGAGRGEGGVRAEEWQAA $\mid P V Q P H S E F P S A$ MVKHKLGDAYAGPGQGVQTDKA SWEPF RTMPHS

## WMS GA

 GWMEQVQPGWTPPLPTPPFPVVHGALGDETLLA WAGPGSMKGRDWQPYI RVMPFPSYPSG MIKHKLGDEYAGPGEGVQTMKASEWESFMRTNPTSEYPSA

lupas_21
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UniRef90_B8GAQ2 UniRef90-D8LQU5 UniRef90 D7G662 UniRef90-D8LSP1 UniRef90-R7QSQ9 UniRef90_R7QSC8 UniRef90 D8LQU9 UniRef90-UPIOOO3495639 UniRef90-UPI00036F194A UniRef90 C1N4N7 UniRef90-D8LLS4 UniRef90-K9WUD6 UniRef90-A4X2J4

410
420
ANCAFSGFMNSAKAFFGSDAAE
HNTYAGAAEAVLTALAGARA
HAVTAGAAEQVLSQLVGP
HSATVAAGTEILRAFFRSDK $\quad$ VPDNTPVADTTLPW
HSTFGSAAAHVIKAWNKGDRIDATWSSNVTL
Y N AVIAASSRALENVVGPRLNL
HMCTSGAALYILETHLGASTPFTSDSLSAPSA
STSDCSATSQAARRYFESDELDWT
LD T TMGAGAQVMRSYFGTNHLDYTLTA
HS S Y S GA GATVLGGFFCTDA\|PF SLA
HCTFAGAAEAVLTADAGP
HSTFSAAAAEFLQLYFGSDSFQGPACS पREEGMS $\square Y$ YPRL
HAATA GAAEQVLTQLVGP
H T TVAGS $\square$ A KVLS F L F P R D K S F F D G L A K
STTMCAAGAQAMRRYFDSEDLNWTLEFKAG
STTVGSAASQAARRFFDSDDLNWEDFEVGKS
HQCSSGAWTAINEAYFG
HSTLSTARCEILAYLIPSHAEFDRAVGK
SSCTCSALVEHAKLNAPREDLPGGI
TAVITAAGASVVQKYFDRKSMKVKPFTVVGGSLGPVCDTS HTTlVAGSLATALSFLFPQDEQFFHKTAK
SSCACTAVVEH
QAAASASAAAVLAYDFPDEAANLNAKAT
HSTISGAAATVLTYFFPEEAPTWEAMAK
HTTYAGAAQAVLEKLAGPPRASFSLTSA
HSTYAGAAQRVLEAFTGPGPLQPITVTSA
HATFGGAAAAVIRNWNGGDA 1 NITQSSNVT $\square$
HSCFTASYATVLASEFPTQSARLT
HGCYGSAMATSLRLLFGDMAVTLTSTGSQVAGWPQVPS
TVA VSTGATVLQSFFGKKDVPF STGSQVAGWPQVPS STE SSSLCLAFAQQVRRFTGTDAANITVTSNVPDAKGSSMV HAVFGGSAVEVLRNHLGSDELDPPVTDTSHVMFNNV HSTISTAAAEVFAELFPDAARTYRDKATDMGGASTGDPP SAVGAKTSCAVLEYFFPADAEQF
QSTFAGAGSTILAGFYCDDDISFTFEGDNADAGPRSFASF TTMSYGAAATVLQSYFGKKKVPFT VDGGGVFEGTSCY TVTIVSAGTGPLQKYFGKDK
HAAFSSAAANLLMVAFPQHKELF $\square K E V A D$
HSARSGGACFAFITKAFGD
SALICQASMDHLTHAA TTNFTKVNGTTAAYETD
HQG\|FGGGWSVLVRELGGKTDYTFTVKSDWPN\|AD
HATLAYCRAEVLSYDFPYDRQLFFEMAK
SALI CQAS LDHLH HAALTNF $\square K V N G T \square A A Y E T D \square$
HAAlGGVMGE LYAYFFPAESAFFRQRAKDG
HACASGASAAVLSYGYPADAQADQSMAAD
Q S
HSCMTAA LIFGVLANAFPDQRARDD
HASLSSAAASILIAAFPQHREVFAQFADD
SSCICEGFASALRLWAGNDTI
S S CLCEAFASALRVWAGTD
 SACFCAVFAESMKLFFGSDNF
S S C LCEAFARQDENFDGDDT DEPA DQFPPGPPPPGFDAPP
HATVSGAAAEVLARFFPDQARQLRRDAQD
HASVSGASARLLAAFFPGEAAKLTKDAQD
S S CI C S V I F DV A RLVA G T DE YVTV

| $S A$ | $C$ |  |  |
| :--- | :--- | :--- | :--- |
| $A$ | $C$ | $E$ | GA |

A A S I A GVIS A T LIK A YF DESF II $\square$ P YPVVPD
HGTAAAAAATVLKAWFDETAV
VDFKRGSSTA

LD N P ا Q A N

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REAYA $\square$ T S P T Q
460
GVTRTYTDWHRPT CTPMAFS TFARGDGRVVTRNYRRGTPWST TT $\angle \mathrm{LGTNNGTGQLQTP} \mathrm{\square GG}$

QDGTTRDVSTFSELQ
TLIS TAVPGTTRHYDNGAALR


GGlTRSYTRLDDAE GPATPVTDGSPDGVTRTYAYWHEMT ■KGQAGHVAGFTD $\mathbb{D}$ RNTGKNSKGSPAQDLVMCWSTFTEAA STPMAFS\|TFPRGDGT\|LTRDYRRGTTWAALT

LGP $\square \mathrm{NVTSYGALDDS}$
RSLTEPGAVPAKDLKVHFATWSEDN IVEPGDTPVENVRVSFPTWTDFN

VP K GSSKFYPGQVPEKDTREFKNDSEWS $S P G \square G$ $\square P \vee R K G S S I V E P G V T P A A D M M L T W N S Y S E W A$ PRHYDSLSAVV

PKGSSKFYPGQLPSRDTDVE $\square$ KT LSE WA

VA T DVT LIE Y RQWSEDT
 RRYASLAAAMP
GSGVFGANCV HTPGAP $\square$ G EPGVT
$\boxed{V Q T}$ QAPMGQPLSAPGTPVDVP
SAAAAEAGRAR LA G TKVK

DVPFF $\square E G G G T F N C E G F V G \nabla P V P$
 RTYTNLLDAA

VK VIK Y E T L Q A A A

A M V
DPPDGFPPPEFGGP\LEFSSWTEVS TIDPPDEQPEEDPLVTFASWSEIS


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EENSISRQFGGIHFKFAGTEGLKLGDKVAEATLKVFDKN ADVVNARDWLGI HFRTADTEARTLGDDVAD
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RTCGNSRVWGGVHFQTTVDRTVVFGEQFGDLAHEFVE
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$R V C A Q S R V W G G V H F R G T V E R S L V F G A Q F G D L A H E$
KRCAYSRVDGGVHFKKTVERSMAFGEQFGDLAH
VECGDSRLYAGVHFNKSNVDGFNLGYKVAQHIHTKY
EA GDSR WA GI HYEMDNRAGVTVGKAVAGKF DERARKDG ELCGVSRLYAGVHFEPSIQAGVDVCKGIGE
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EASYSRVVAGTHWFVDGRGGLEQGQQVARQVLEVLQK
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NDNINARVWEGIHFRGTDITGAELGRSVASYD
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EEAKLGRMYVGSHYKFSVDDGAEAGRRVAEYV
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AEAGNSRIFAGAHWAQANNDAFA $\backslash G K A V G E \quad Y \square Y D N \square D$
EATHSRFEGGVHYPSDNVAGETLGRQVGA\|VRWAREKTP $\square T$ CGKSRDYAGVHFSPSVDVGFKLGQGI GAVAQKHIQD

 ATRSRIVGGVHWVMDGAQGMALGRDV
QMCGDSRVWAGLHFEEAVPAGAELCG GDE $\square$ AVV $\square$ ASS $\square$ D EMCGDSRVWAGLHFEESVPAGVEL QVCGDSRI WGGMHFAGAVLAGAEL
RSCGVSRLWAGLHFRPAVEAGFTLGKGTGRAA
EDCGKSRLTGGMHFTASVPAGAALCAPFGRR
QVCGDSRAWGGMHFAGAVPAGAELCGSTDSFERLKVGDES


A NYA LGRGHGGDHWRTDGSAG $\square$ A $\square G E E \square A$ ANVGIGRNDAGVHWRTDWTESAKLGG



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[^0]:    

[^1]:    $\qquad$

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[^3]:    80

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