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TSPPVGVFLLAYGTPESLD NQKKI GLLVMA
$\qquad$ K EVRGLLVMAY
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S NT
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$M M L N L G G P E K T E D V H D F L L R L F M D P W I A K R R T P$
RA GVLLINLGTPDAPADI RKYLAEFLSDQRVIEFRPK
RTAILLCNLGTPEAPSALRRYLAQFLSDHRILRVRPA
$T P E R D G V L L V N L G T P D A P A A V R R Y L A Q F L W D P R V V P R L V W$

S P E K TA A L L I N LLGTP E E P S A V R R Y L K E F L S D P R P VWW R P R
Q NKVGILLMNLGTPETPESLSPYLRRFLSDRRVIPLRAK

E R T A V $V$ L L C C
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 DLLK QRYKA

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 K K D Q Y A Q I G G G S
 GLQKNY LQ Q I GGGS

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## QUERY

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 KTSRLLVERLGLAEDDVSFQSRFGKA E E WLL $\begin{aligned} & \text { KP Y T D E T } \\ & \text { L } \\ & \text { L } \\ & \text { E S S }\end{aligned}$ A KWLGPYTDETMMA



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TGVLLCNLGTPEAPPALRRYLAEFLSDPRIPRWLWK GVLLVNGGPDAPPAVRRYLAEFLADPRVVELRPA KVGVLLTNLGTPDAPAALKPYLKEFLSDPRVVEFRPK PRRGVLLCNLGTPDAPKELRRYLKEFLSDPRILRDRPS ALLLLSFGGPDGPADVRPFLENVTRGRGVPPERDD EKTAVVLLQMGGPDSDAAVEPFLFNLFSDREICRRRAP QEKFGVLLVNLGTPEAPSAVKRYLAEFLSDKRILPDRSP RVGVLLLNLGGPETLDDVQPFLYNLFADPDIURQRAP TAVVLVNLGTPDAPPALKRYLNLRGKNVPWWRPK
PKVGVLLVNLGTPDSYGPMRRYLAEFLSDRRVIEWRSG SAPRVGVLMTNLGTPDAPEALKPYLKQFLSDPRVVPRLIW RAAILLVQLGTPDKPEEVRRYLREFLSDRRVVERRPK KTGVMLNMGGPSTVPETHDFLKNLFMDPWI ARRRTP RTAVLLCNLGTPDTTPAVRRYLAEFLSDHRILRFRPA ALLLTSFGGPEGPDDVПPFLENVTRGRGI PRERLA

RPYDA ALLLLSFGGP EKTALLLLQMGGPDSDDAVHPFLMNLETDRRIVNKRAP EEKVGVLLLNLGGPETLNDVQPFLFNLFADPDII RLRAP ASPRQGILLCNLGTPDAPAELRRYLKEFLSDPRILRIRPR STPKTAVVLVNLGTPDAPSAVRRYLK KFLSDPRILPFRSG
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IAGVMLNM
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KVGVLLVNLGTPDGTDSMRRYLREFLTDRRVDEWRPQ
$K P K T G I L M L N M G G P E K L E D V H D F D F R L F M D R D D A K R R T P$

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 KSAAKYATI WTGSPLAVWSDRQAVGLSQALQARGHRVQVR KVRKLYEA GGGSPURRWTEAQGEAMCRRLDEMSPETPHR KIQEQYRRIGGGSPI KMWTSKQGEGMVKLLDELSPDT EVAEHYQHFGGVSPINKLNRDAMAAVEKQLAAAG RSAAAYRTVWQGSPLLTHTKAQAEQLQHQLKQQYGE KSAAKYASI WTGSPLRVWTQKQATMLRGYLAVRGHP ASAQKYASI WTGSPLLVHTVRQTKLLAGYLAKDG YDGVE KSAAKYASVWMGSPLKVWTQKQAVMLRGYLAARGHDGVE EVAEHYHHFGGVSPINRLNREDMASLERELAGRGEWDLP RVAKLYQSVWGGSPLLVISRRQHQALAARMPDT PLLHKYESDWTGSPLRVWTERQAKLLQGYLGERGHR RSAKAYRWEEDGSPLLSIARRQAAAVQTRLSGRFAG RSAEAYKTVWTGSPLLYHTEDQAAAVQHALTEDLGE RSAKLYASVWGGSPLMVHCKAQTAGVKK乌LDEKFND AVAEHYMHFGGASPINAINRALDMSELEAAMPQ
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| :--- | :--- | :--- |
| ASARKYAA | GEGS | KSAAKYASI WTGS KIEEHYKEIGGGS PPLRSWWNEELNESPLRTWTRQQADALRARFAAEYGD GVQ KVAEKYNQIGGGSPI KDWTDKQGSLMTQDLDKDSPETPHK WLAEAYRTVWTGS


 PVARLYQSI WRGS KSAAKYALIWTGS KTKHYYEVMGGKS WLAAAYAKVWTGS AVMEKYREI GGRSPI QELTRAQADTLAAKLG IUP KI QKQYADI GGGSPI RKWSEYQAAEMCKILDETSPATPHK
 KI RDRYEAGGGSPLLETTKGQAEELEKFLNQNGGN FK
 DLKDRYEAI GGIDSPLADTTKRQAEALVNKLNASQNEVEYE
 EVGEHYFLFGGVSPGNQQCRDQLAAVQTDFESAG VDLP PI DQDWNHDKGESPLMTDTKDQTAKLRAALAERYGD RVM KSGAAYDRI WNESPLRTFTRSQSDQLSARLSDLGGDNVV
 KVGKAYAEI WNESYLRTYTRNQAEKMAVSLT DMPNVV ELRNRYQAI GGTSPLARITKAQADALATRLNARHADQRFK RVAKLYQS WMGSPLLVYSRRQQQALSARLPDM
EVGEHYFHFNGKSPLNELNLEDIDHVEKELKSRG DDMP


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 VVLGMRYGNPSMASALKELTDQNVRDIVVLPGYPQYAGAT
 |LYQGMKHDAPF TEDAVEQMYQDGITEAVGIVLAPHYSKMS VEFAMRYGSPSVDSVVDKMLHQGVRKLVVLPLYPQYCAST VEYAMIVGNPSIAERLQRMREQGCSRGLVLSLFPQYAASS
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VEFMRYGN VDYAMRYGNPTKSVVQRMVENGCRKILFFPLYPHYAGAT HYDAFRYGNPSDESVIGKMREQGVERLLLLPLYPQYAASS VDIGFRYTAPLTEDTMMQMENDGVKRLVAFSQYPQYSCST VSYAMRYGQPSVSHADDELLDQGARKIVVLPLYPQYCAST SYVAMRYWHPFTESAVADIKADGDDQVVVLPLYPHFSDST VDFCMRYGNPSTKSKVEELQKQGCQKI LFFPLYPQYAGAT VELAMRYGNPSMLKGLQALRSKGAQRLLVFPLYPQYSAAT VELAMRYGNPS KSALESLQSQGCKKLLILPLYPQYSATT VRLGMRGSPSLETALEELRQSGAQRLLVEPLYPQYSGS VAWAMRYGSPSMADVQQSLFDQGVQQLLVIPLYPQYSAAT CHVGMRYWHPFTAETLAQLRKTGTKKLVALSLYPHYSRAT PYVAFRYANPLTEEMYNKLFEDGFGRAVAFTQYPQYSCST PYVAFRYANPLTENTLENVENDGDKRVVDFSQYPQYSCST VYIGMRNWAPYi RDVVKQMLEDGVEKILALCLLAPQYSTWS HYVAFRYAKHLTDDALEEMQKDGVKRAVAFSQYPQYSCST VELAMRYGNPSDRDGLRKLREEGAERGLVLPDYPQYSATT LLFIGLKHDDPFIEDAVESMSDHGIVKEAVSVVLAPHYSEFS VAVAMRYGNPSVRAGLEELRRAGARRALVLPLYPQYAAST VYWGNRFWTPLLTDTLEQMKQDGVRRVLAVPTSAYCNWSS VDFCMRYGNPSTKSKVRQMVTEGCDRILFFPLYPQYAGAT VEFAMRYGQPSDSALLQKLEDQGVRRLLVLPLYPQYSAST VDWAMRYGQPSIEDVLTRLREQGCTRIVAFPLYPQYSSST VRCAMTYGLPDTAYTVAELKAQGVDKGLALPLFPQYAASS V V WAMK MGQPSI KSRMDAMAKAGCEKILGFPLYPQYAAMT LYMGLKHAEPFIEDAVEAMHHDGTTQAVALALAPYDANAS VVLGMSYGKPSLDSAVDGLIESGVTNGIVLPLYPQFSCST V CYQGLKHARPFIEDGVEAMAKDGMTHGVGIVLAPHYSVMS

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## A

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TQSYHSRQKK $\square$ DE $\square$ GSE $\square$ K｜LITK｜I LRWFEEPKF｜LDFWANQ｜
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RTHWQQNGQAEQ E RLLLLS F H G VVPR R S L D L G D P Y H C E C H
 VQELGKF QDVPSVEL FFSAHGVPKSYVEEGDPYKEEME EQSFAEHGEP DRLVISYHGIPVRYANEGDDYPQRCR
 ERHWFTHGRA DKLIFSYHGVPLDYLKNGDPYHCECY RKQFDEHGEP DKKLVFSYHGTPQSYLNKGDPYHCLCH GEAAA QLPA DLRDAARRLVFTAHSSDPVRDVDERD GP Y SRRQVG E E GLLSEFS D R S R VT L V F S A H S L P Q S F DD D G D P Y L S H I Q RASFAQHGQP A Q T L K T K F D D E K E P D I F F S A H GVVPVVSYVVEKGDP Y K D EME RESLD Q DP S ERRRQRAELDFTAHSIMLGMSDNCN YVKQLQ RQHWQTNG S LGGDNDRLLDSFHGLPKRSLDLGDPYFCECH E K HLLA TLDS
R DHWQHHPKA

F K P E $\underset{D}{\mathrm{~V}} \underset{\mathrm{~K}}{ } \mathrm{~L}, \underset{\mathrm{~V}}{\mathrm{~T}} \mathrm{~S}$
D K L V F F
RHSWRQ S
ERALLAK F PA K E H I
QRHWKAHGRP
QRHWKAHGRP DK LVMS
 VAA A K A E A Q A L E R L P E DKR A GA RLL F S A H S VVP TAMMADPGGAY VA QL E RA AVVDRLPA GSREGARLVFTAHSIPDPPDDGGRDYSRQVA
 AKELETFSEP K R HID Q H G Q P

AEVMI FFS DKFVFSYHGTPERYGKNGGPYMDQME
QAHWDMAGRP
RQHWQQHGRA
GEAL HLCANPKD
KAHWDKHGKA
RDYWEKHGRP
S A K LD A F E EAKRGDVKVL
 NAHWANHERA D DKLI FTYHG|I P K K R Y L T S S G D P Y H C E C Y K E K LIA E F P P E D R D N I I L L F S A H S L P M D T V N L G D S Y P A E V A NQTLSSHIP ES E Q D D TVVLIVVSA H S L P E K I K E M G D P Y P A QL E

 K E K L A E F P P E $\square R$ D D VII L F S A H S L P M E I VVN L G D S Y P A E V G RRA HPTPESRPEVLVCS
RKHWQYGQRP
NKELQK FPESVRDD
 RA HWQTHPRA DKLIGFSYHGIPKRYYLDNGDPYHCCECH AEQVR LLSDVPEEAQVEFSAHGVPKSYVEQGDPYQKEDE ERAYADM ETRPDVLVASYHGVPKRYLMEGDPYHCQCQ KA HWEKHGR NEKL MMSFHGLLPKRNLELGDPYHCQCH REHWKKHGKG RRSWKEAGRG QAHWDANGRGN
K E HLQ S

$R Q H W Q N N G R A$ D DKI LS Y H GVVPLRYLHAGDPYHCQCL EAGLASFPN R T GVQLLISAHSLPQSFIAEGDPYLLEHIQ | $E$ | $A$ | $T$ | $L$ | $K$ | $E$ | $F$ | $P$ | $A$ | $E$ | $T$ | $R$ | $D$ | $Q$ | $V$ | 1 | $L$ | $F$ | $S$ | $A$ | $H$ | $S$ | $L$ | $P$ | $M$ | $S$ | $V$ | $V$ | $N$ | $R$ | $G$ | $D$ | $P$ | $Y$ | $P$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | E N HLLA K K $\quad$ K


 REHWQAHGQA EKLLFSFHGMPRRYLLNGDFYHCQCQ EKKVSEFPTEDREKLVI LFSAHSLPMEVVNRGDSYPAEVA K S S L M E DP EA E LLQ DTAAV V V A A H S L P E K I K E H N D P Y P A Q L E
 $R$ Q A L D R L P E D QR E GVVRL L F S A H S I P T EMAERS GA Y G D QL Q ERAYAAMD

S R P DVVLV C S Y H GMP E R Y L M Q G D P Y H C Q CV
E A YWQSHGRAG
E D H $\square \mathrm{AK}$ K L F D P Q
SAYWQEHGK GK
VVV A S
QA G LQQKFGAQTPAE $\square K$
EA H L A S LD WE P E L
$R T A L A V I D E D D L L T T V T$


EK HLS SLDD WK PDMLI AS S H GIIPMSYFKQGDPYYCQCQ


UniRef90 W7CJI1 UniRef90_UPI000478E1A7 UniRef90_O67083 UniRef90_J9DX78 UniRef90_IOHSR1 UniRef90_C1AAM7 UniRef90_M7X476 UniRef90_G3H5F8 UniRef90_D8HZR8 UniRef90_UPI000405E577 UniRef90_J2LBB8 UniRef90 C4ZKF9 UniRef90_UPI00047D028C UniRef90_UPI00047E578F UniRef90_D8TZE5 UniRef90_Q6D7Z4 UniRef90_UPIO003812E0B UniRef90_F9UHF5 UniRef90_A3WLN9 UniRef90_Q1YSP8 UniRef90_UPI000381438F UniRef90_B9M326 UniRef90_G9Y5C4 UniRef90_Q00YL8
UniRef90-A3ZL09 UniRef90-Q47HJ6 UniRef90_B2SCP3 UniRef90-B8KWL3 UniRef90_L8MYT7 UniRef90 EPRI0004 UniRef90_C0QRZ1 UniRef90-C9YFP5 UniRef90_UPI00047C37AF UniRef90_UPI000374B89E
UniRef90 UPI00034689AD UniRef90_UPI00034689AD UniRef90_W5THV8 UniRef90_C9P5X9
UniRef90-E8WJG7 UniRef90_W9RS08 UniRef90_UPI000368AB3A UniRef90_A6T228
UniRef90-I1DX61
UniRef90_T0DTJ5
UniRef90_K7AKT3
UniRef90_Q0AHZ2
UniRef90-W4C5Y7
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UniRef90 C5M756
UniRef90_B9E7T8
UniRef90_E5AM89
UniRef90_A1K8P4
UniRef90_C8KYK9
UniRef90_A5DYN6
UniRef90_A0A017HGD2
UniRef90_Q7NV65
UniRef90_T1K1Q1
UniRef90_B8KNZ3
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UniRef90-A2C7Q7
UniRef90_A8LPZ1
UniRef90_UPI0003B760C4
UniRef90_UPI000379D472
UniRef90-Q3JAW7
UniRef90_F1VUS7
UniRef90_D3DG52
UniRef90_C5BIF4
UniRef90_B3E8G1
UniRef90_K2RBT9
UniRef90 E0VYP4
UniRef90_UPI000465E3E9
UniRef90_UPI0003645E82
UniRef90_UPI0003F4A663
UniRef90_R4VI18
UniRef90_G8YJG7
UniRef90_UPI0003147159
UniRef90_W8KJF4
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UniRef90_LOWIT3
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UniRef90_L1NLS9
UniRef90_UPI000381ED9E
UniRef90_B9JS40
UniRef90_I4WQ11
UniRef90-H5V6N0
UniRef90-D5NV09
UniRef90_B3PZU8
UniRef90_UPI000472CD09
UniRef90_UPI0003EA8686

RTAELIAERAG|ITNFVVGWQSAGRTADEWIIGDVLDLTRE K TARLLAARLGLEQYTVSFQSRFGKA KWLEPYTEPTDRE
 K T A R L L R E K L GMDDNF KL T F Q S R F G P T K WL E P Y T E A TLL R E KTARLLRERLELDEERVTFQSRFGNA KWLEPYTEPTLRR
 A S V S A I MA RLGRNPYRLVVWQS QV GP SA WL GP QTS DAI K G
 E A A R LV A A E A GVVA E Y DVVVWQS R S G P P QP WL E P D D VD H L D A KTSRLI GEALGGLDEY LTTTGQSRFGR E E WL K P YT DETL KA K T A R L L A A Q L G L E Q Y K V T F Q S R F G K A


 ATTEALDAALGGLPKDMMTFQSRFGR EPWLTPYTDETMQG K T A R L V A E R L G L E Q Y C VT F Q S R FGGK A P WL QP YTEP T L DE $K$ S A R L I T D R L G L P R WA L T F Q S R VG F $K T T R L V A E R L G L D E Y M T T F Q S R F G R$ QTTRLVRERMGLDDKMTTFQSRFGR

K
E
E
C MARVAAAAGYDEYDQVWQSRSGPPQPWLEPDDGDHLAA ATVRLVMERLGNDDYHLAFQSRAA GPVKWLEPSTEEMMKR ATTRAVANALGLERYMMTYQSRFGR EPWLTPFTDKTIEQ

 ETTRLLRERLGLDEMRATFQSRF GPEEWLQPYTDETVVE
 A C A AL I M QRL N RNP YTLLAYQSRVG PVEWL QPYTDDA I E E
 ETVVKLI ME YFPDQP H S I S Y Y S S $D V S A Y V A E H A P G R P W K L V$
$A$ A ASAAAAEAAGFAEFDQQVWQS E A A R L C A A A A GF D D Y D V V W W S

 $\begin{array}{llllllllllllllllll}K & T & A & R & L & L & A & K & E & L & E & L & E & Q & Y & M & V & T \\ K & F \\ K & S & R & L & I & A & E & Q & L & G & L & D & E & Y & L & T & T & F\end{array}$ ES GEEEVARRLLQLNHY QFAWQS $K T S R L I A E A L G L N D H F T S F Q S R F G R$ K T GRLLA EALELDDQYQVCFQSRFGFS Q ETSEVI ASRVGITNWQFTWQS ATVHAVMKRLNRNPYRLVWQSQVGPS


 ETAELVAK QLGLEKWCVTFQSRFGD EEWLQPYTDETLSS ATVYKVMESLNFNPYRLVWQSQVGPKPWLGAQTAKII DK


 ATVIKVMEALNWSHYRLVWQSKVGB | $K$ | $T$ | $T$ | $R$ | $L$ | $V$ | $A$ | $Q$ | $E$ | $G$ | $L$ | $A$ | $E$ | $Y$ | $L$ | $S$ | $A$ | $F$ | $Q$ | $S$ | $R$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $F$ | $G R$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $K$ | $S$ | $R$ | $L$ | $I$ | $A$ | $Q$ | $E$ | $L$ | $G$ | $L$ | $S$ | $D$ | $H$ | $M$ | $T$ | $F$ | $Q$ | $S$ | $R$ | $F$ | ACTTL I MAELLENNPHSLAYQS K T S RLL KERLGWPE VVTTFQSRFGBP KTGRRLLAE E L G LLE E WVLTT Q SRF GRA K T GRRLLREALGLE ENCKVTFQSRFGR K TARLLAERLGLLEWQI AFQSRFGR KTARLL GNALGGLSKDEVTFQSRFGKA

 E EWI QPYTDEVI EQ
 E P WV E P Y T D GTGLKA E E WLK P Y A D HLL $L$
 A SR L A E ALLQLSEVIGSFQSRRFGRPDVKWLEPSTDDTLK
 ATVHLVMKELNHNPY L L A WQSKVG PVVSWLGPFTDEAI K D KTTRLLRRERLKLSDK QMTFQS LFGKA EWI KPYTDKTVVK

 ATVYAIMERLNFKPYRLVWQSQVGPRPWLGGKTDABTKK ATAELI RKHADLQNVHV GWQSEGNTPDPWLGPDVQDLTRN TTARMVAENLGGMEWQVAFQSRFGR QQWLTPYTSETIAE ATAAAI AK QCGGLSQWRFTWQSAGQTATPWLGPDILDTTLST $A D A R L V V E R L D R E P Y E V V Y Q S R S G P P Q P W L E P D V N D R I E E$
 Q S A R L L A E R L G L D D WQV T F Q S R F G R E E WL Q P Y T D H T L K A
 ASSAAIA E GAGGVSNWQFTWQSAGRTREPWLQPDDLDDTDQE K T GRLLLRERLGWP KEKVTFQSRF GPEEWLQPYTDKTVVK

 K T G RLL RE RLGGLENFMVTTFQSRF GPEEWLQPYTDKTVEK





## UniRef90 M4R7R9

UniRef90-E2CJ55
UniRef90-B7VII4
UniRef90-UP100035DC8FD UniRef90-U1IFM5 UniRet90 W6MDL1 UniRef90-LONJH8 UniRef90-C7MHO3
UniRef90 J9YZ97 UniRef90 UPIOOO3FE3456 UniRef90-UPI0003697B2B UniRef90-Q9V9s8
UniRef90-A2SIR1
UniRef90-I3DAN2 UniRef90_UPIo003671A6E UniRef90-A6FL80 UniRef90-B2WLB4 UniRef90-V5FGR7 UniRef90_C9Q7W8 UniRef90-G0JT33 UniRef90-UPI00037F567D UniRef90-UPIO003C15E2B UniRef90-FOLVE5 UniRef90-UPIOOO37CFBA1 UniRef90-UPIO00378D591 UniRef90-UP10003741220
UniRef90-UPIO00425CCD7 UniRef90-A1TRH9 UniRef90- X8LRS7
UniRef90-E6PT43
UniRef90-UPI0003A1D9E1
UniRef90_O5F9U6 UniRef90-F8JD92 UniRef90-E8RDR7 UniRef90-A0A0591NB8 UniRef90_LOEBB4 UniRef90-UP1000478E3B3 UniRef90-D7N3J7 UniRef90-M1Z5F4 UniRef90-C5AB80 UniRef90-U4ST84 UniRef90-UPI00037DEF8F UniRef90-G4CQ43 UniRef90-B4F1Q1 UniRef90-A0A059KGC2 UniRef90-K6VQA6 UniRef90-A6D095 UniRef90-A6W899 UniRef90-UPI0004682CD4 UniRef90-A7FL85 UniRef90-M1TRB2 UniRef90-UP100037EC9AA UniRef90-17KLC5

## UniRef90-E8XPSO

 UniRef90-A0A024PUF8 UniRef90-A0A017S815 UniRef90-M2Z1X4 UniRef90-E3FOD6 UniRef90-H2FWU3 UniRef90-Q6FLB6 UniRef90_W1QBS8UniRef90-LO1X80 UniRef90-W5X764 UniRef90-UP100036B6C9A UniRef90-Q20WX2 UniRef90-A3VD48 UniRef90-UP1000011C4E61 UniR Ref90-B6JZ19 UniRef90-U4LBJ3 UniRef90-UP100040ECC03 UniRef90-T1XZ33 UniRef90-F4PPBO UniRef90-UP100035E26ED UniRefto - 7 CXZZ UniRef90-E5XKJ7 UniRef90-G8AQZ3 UniRef90-Q7UFZ7 UniRef90-IODR96 UniRef90_UPI00037F729A UniRef90_A0AO11VMC5
UniRef90-UPIOOO422EF56 UniRef90-B8CNO4 UniRef90-UPIO0034D1AD1 UniRet90-UPIOOO3718E65 UniRef90-FOWYL6 UniRef90-C6CY64 UniRef90_C0XT03

K V 50
60
0
QQQrstot $\mathrm{Y}^{70}$
 KVAKLYQSVWMGSPLLVYSQRQAEKLQKKLQ KVAKLYQSVWMGSPLMVYSQRQKAALET DYLK WWTEKNESPLKTITRSQADKLAEATADHDH RSARNYQK WAGSPLLVISQRQRAALATLLAERHPEPIQQ EVAGHYRALGGRSPLNAQNRADIMALEAELASRG VNVHLP KSAAKYQTI WTGSPLLTWTQKQATLLRGWLGQAGCLI P KSGEAYKK| WTGSPLLVYTKRQGQLMEMLNARIGSEQLI KVQKKYKEVGGGSPLLKWTELQGQLMCEQLDRDSPETP RIAKNYRALWQGSPLLDISSKQKALITEYIQQRYDN VV EVAEHYDHFGGVSP:NQQCRDLLAAVGADFAAHG VDLD PLKSDWNEEKGESPLMTITRDQTTKMAKVLEDRYGDTQVM KVAKLYQSVWMGSPLMVYSTRQADKLKQKLN KVAKLYQSI WMGSPLMVYSERQRQKLSE

 KVAKLYQS WMGS KSAAKYAQVWTGS
RVAEAYATIVEGS RVAKLYASVWMGS RVARLYQAI WQGS

$$
f
$$ $\begin{array}{cl:l}K & V A K L Y G S: & \text { WMGS } \\ K & \text { SAAKYAS } & \text { WQGS }\end{array}$ KSAAKYASI WQGSPLDSGTAADARGMQASLAAKGHQVI RSAAKYRTVWQGSPLLVWTVRQAELLQQWLQARGQL VR

P DATDWNNEKNEG
KSMANYQRTGGGS
PLKQQWNHELNES
ELTARYEADGGVF KSAHGYAK WEGS
ASAKKYRSVWMGS
RVAEAYKSIWTGSPLLSISRQQQKAVQSYFNAKNPNVI
 KSAHGYEKVWFGS
KVAKLYQQI WDGSPLLVYSRAQQKALAQRFA HI P
 KVAKLYQSVWQGSPLMVYSRQQADKLAQALN


 DLKDRYEY GGVSPLATTTEKQAETLCHTLNSMTNDISYE RVAKSYAAVWGGSPLLA 1 GRRQQSALKERLATRMGTEDP
 PI LQ TWDNERDESPLRTITRDQTDG川RAALHAQFGD RVV RVAKLYQSIWEGSPLMVISRRQQAALQQALQDEG DDVP KI EKQYKE:GGGSP:RKWSEYQAAEVCKGLDETCPDTPHK KIESHYREIGGGS DLIDRYEAMGGP
 DYQKIWNNEANESPLKTITRAQADKLAATLTAHDHIV PILQUWNHDKGESPLMTUTKDQVAKLDASLKQRFGD RVV
 QIEKQYAVIGGGSPI RKWSEYQAAEACKLLDKMHPATPHK
 KSREAYRRI GGGSPLARTSAEQGRALADRLNGKEDGVHM QSALKYASI WTGSPLMVHTVKQAKLLKGLLGEKMGQ GVM
 PVKSDWNEERNESPLKTVTRAQAEGVAAALAARAHGDSVV KVAKDYQSTWTGS RSALAYRKI WDGSPLIFDTRQLTGKIASRLQAKGVITDY
 TKALDYQKI WNESPLKTVTRAQAEKLAAGIADHGH V V V



UniRef90_W6MJW1

|  |  |
| :---: | :---: |
| $\begin{aligned} & \text { UniRef90_M4R7R9 } \\ & \text { UniRefgo-E2CJ55 } \end{aligned}$ | ALKDAGCDR |
| UniRef90-B7VII4 | VALGMTYGNPSLKTGVEQLMDQGVEDIIVLP |
| UniRef90-A3D6Z0 | VHLAMRYGSPSVASTLQTMHQNGLDKIVVL |
| UniRef90-UPI00035DC8FD | VELGMTYGQPSILSAIESLQAQGCERILVLP |
| UniRef90-U111 | VDWAMRYGNPSIKERIEALAAQGCGR |
| UniRef90 W6M | VALLGMRYGNPS A SALTELRAAGVRRLL L |
| UniRef90 LONJH | VDWAMRYGNPSUASRIDALHAQGCERILLFPL |
| UniRef90-C7MH03 | -YFGNRNWEPYTAEALTALHADGHRRALALI |
| UniRef90--J9YZ97 | dTGMRYGNPSTAEGLNNLRNQNCDRIIVL |
| UniRef90-UPIO003FE3456 | VLPGMRYGQPA QQQLQAFAHQGVRRILV |
| UniRef90-UPIOOO3697B2B UniRef90-O9V9S8 | VDFAMTYGNPSLASKTA |
| UniRef90_Q9V9S8 |  |
| UniRef90-I3DAN2 | VELGGMTYGNPSMQSAVDNLLNQQV |
| UniRef90_UP10003671A6E | TYWGNRNWYPMLEDTVARMRDDGV |
| UniRef90-A6FL80 | VDFCMRYGNPSTKSKVREMVKAGC |
| UniRef90-B2WLB4 | PYVAFRYANPLTEDTYKQLIADGFGRAV |
| UniRef90-V5FGR7 | VELGMTYGNPSLLDGMQSLIKQGVEKVI |
| UniRef90-C907W8 UniRef90 G0.J33 | VELGMTYGKPSLFDGVQKLQQQGVESVVVLPLYPQYSAT |
| UniRet90_G0JT33 | VKLAMRYGKPSIAQGLAVLRDAGCRKI FVVPLYPQYAAAT |
| UniRef90_UPIO0037F567D | VEWGMTYGTPSMEATVNEKLVGQGCDRILVTFPLYMPQYSA |
| UniRef90-FOLVE5 | VELGMTYGEPSLQQG\| ERLQQQGVESIIVLPLYPQYSGT |
| UniRet90-UPIod | VELGMSYGNPSMQSAl EKLKAQHCDRILVFPLFPQY |
| UniF | VHPAMTYGNPGUVDVLDRLSAEGVEQFVILPLFPQY |
| UniRef90_UP10003741220 | VALGMSYGNPSLKSALDSLMAQGVTRLIVLPLYPQFSCST |
| UniRef90_UP1000425CCD7 |  |
| UniRef90-A1TRH9 UniRef90 X8LRS |  |
| UniRef90-E6PT43 | VRHAMRYGNPATAAVLDELHAQGVTRLLLVPLYPQY |
| UniRef90-UPI0003A1D9E1 | VLPAMRYGQPALTRVLDQLKADGCERILVLPAYPQY |
|  | VRHAMTYGNPSILDVLAELKSQGVGRLLAIPRYPQYAASS |
| UniRef90-F8JD | VDWAMRYANPTTESRARALKEQGCDR L |
| UniRet90-E8RDR | VDFCMRYGNPSAESKVQALVEAGCEKLAFP |
| UniRef90-LOEBB4 | VYQGLKHAEPFDEDGVKAMAADG\\|REAVGIVLAPHYSVMS |
| UniRef90-UPI000478E3B3 | VDWAMRYGNPTIAEKLTALLQEKGCEKVLIVPLYPQYSATT |
| UniRef90-D7N3J7 | VRHAMTYGKPAVSDVLSELKAQGVGKLLA PLYPQYAA |
|  | HTHPFIEEGI AQMREEGVSEAVGIVLAPHFSQMS |
| UniRef90_C5AB80 | AMRYGTPDIGTVLGQLKRAGTERVLLVPMYPQYSSST |
| UniRef90-C4ST848 |  |
| UniRef90-UPI00037DEF8F | VDWAMRYGNPSIASRIDALQAQGCDRLLLVPLYPQYAAAT |
| UniRef90-G4CQ43 | VRHAMTYGKPSVSDTIDELKAQGVSQLLVIPLYPQ |
| B4F | VELGMCYGNPSLNEGLTRLLAQGVEKLIVLPLYPQYSCST |
|  | GQP |
| UniRef90-K6VQA6 | AMRYGNPSVASALEKLKQQNCGRLLILPLYPQYAASS |
|  | NGNR WEP |
|  |  |
| UniRef90-UPIOOO4682CD4 | VDFCMAYGNP STKSKVEAMTAAGCEKALAFPLYPHYAGAT |
| UniRef90 A7FL85 | VELGMSYGSPNLPEAIEKLLAQGVTNLVILPLYPQYSCS |
|  | $\checkmark$ |
| UniRef90-UPI00037EC9AA |  |
| UniRef90_17KLC5 |  |
|  |  |
|  |  |
| UniRef90 ${ }^{-1221 \times 4}$ | PYVAFRYADPLTEEMYTKLLEDGFGRAVAFTQYPQYSCST |
| UniRef90-E3F0 | VDFCMRYGNPSTPAKLQEMVDAGCDK\VFFPLYPQFSTAT |
| H2FWU3 | G/VDRVI VLPLYPQYSVST |
| UniRef90_Q6FLB6 | PYVAFRYARPLTDETYKQMLQDGVTRAVAFSQYPQFSYST |
| UniRet90_W10BS8 |  |
|  | FGNRNWEPYVEDTVAAMRDNG RRAAVFATSAWGGYSS |
| UniRet90-W5X764 |  |
| UniRef90_UP10003686C9A | V Wamry grpala rloqimkdagcer ill |
| UniRef90-Q20 | VDWAMRYGNPSMRSRIDALVAQGCNRLVVPMYPQYSAAT |
| UniRef90- UPI00041C4E61 | LITGLKHITPFDEDTVKEMSDAGTKEIVSVVLAPHYSNFS |
| UniRef90_B6JZ | S GVRRAV |
| UniRef90-U4LE | VAFRYAAPLTEDTFLQLQKDGLKRAVAFTQYPQYSCST |
| UniRef90-UPIO0040ECC03 | VDWAMRYGNPSTASRLDALQEAGCERTLVYPLYPQYAAAT |
| UniRef90-T1XZ33 | GMTYGSPSLDEG |
| UniRef90 F4 | GFRYAAPLIDRALEEMKSDGVTRAI A T T QYP |
| Uniref90-Q1NV4 |  |
| UniRef90-D7CXZ8 | FYVAFRYIDPPTEDALLRAMHEDGVTRAVAFTQYPQFSCAT |
| UniRef90-E5XKJ7 | VYFGNRNWHPFVEDTVARMARDGVRRA |
| UniRet90-G8AQZ3 | AMRYGQPAVGPAI QRLKEQGCDR |
| UniRef90_Q7UFZ7 | WGNRNWDPYFADTLRQMKADGKKRSLAFFTSMFSCYSG |
|  | VGMSYGSPSLKSAI DSLIMSQGVTELIVLPLLYPQYSCST |
| UniRef90-UP100037F729A | WAMRYGEPQVGSRLAAFKAQGMEKLIVLP |
|  | VDWAMR |
| UniRet90 ${ }^{\circ} \mathrm{B8CN} 04$ | VEWGMS |
| UniRef90 UPI00034D1AD1 | VELGMSYGNPSLKSATDSLMAQGVTR |
| UniRef90-UPI0003718E65 | MRYGNPSIRAGLEALRAKNCRKLI ILPLYPQYSATT |
|  | FRYANPQTEA |
| Uni | CYQGLKHAVPYDEDGVEQMARDGUKEAVGIVLAPHYSIDM |
|  | SAWGG |
|  |  |

## UniRef90_M4R7R9

 UniRef90-E2CJ55 UniRef90-B7VII4 UniRef90 UPI00035DC8FD UniRef90-U1IFM5 UniRet90 W6MDL1 UniRef90-LONJH8 UniRef90-C7MHO3 UniRef90-J9YZ97 UniRef90_UPIO003FE3456 UniRef90_UPIo003697B2B UniRef90-Q9V9s8 UniRef90-A2SIR1 UniRef90-I3DAN2 UniRef90_UPIo003671A6E UniRef90-A6FL80 UniRef90-B2WLB4 UniRef90-V5FGR7 UniRef90_C9Q7W8 UniRef90-G0JT33 UniRef90_UPI00037F567D UniRef90-UPI0003C15E2B UniRef90-FOLVE5 UniRef90-UPI00037CFBA1 UniRef90-UPIo00378D591 UniRef90-UP10003741220UniRef90-UPIO00425CCD7 UniRef90-A1TRH9 UniRef90-X8LRS7 UniRef90-E6PT43 UniRef90-UPI0003A1D9E1 UniRef90-Q5F9U6 UniRef90-F8JD92 UniRef90-E8RDR7 UniRef90-A0A059INB8 UniRef90 LOEBB4 UniRef90-UPIO00478Е3в3 UniRef90-D7N3J7 UniRef90-M1Z5F4 UniRef90-C5AB80 UniRef90-U4ST84 UniRef90-UPI00037DEF8F UniRef90-G4CQ43 UniRef90-B4F1Q1 UniRef90-A0A059KGC2 UniRef90-K6VQA6 UniRef90-A6D095 UniRef90_A6W899 UniRef90-AOLUR9 UniRef90-UPIOOO4682CD4 UniRef90-A7FL85 UniRef90-M1TRB2 UniRef90-UP100037EC9AA UniRef90-I7KLC5 UniRef90-E8XPS0 UniRef90-A0A024PUF8 UniRef90-A0A017S815 UniRef90-M2Z1X4 UniRef90-E3FOD6 UniRef90-H2FWU3 UniRef90-Q6FLB6
UniRef90
UniRef90-LO1X80 UniRef90-W5X764 UniRef90-UP100036B6C9A UniRef90_Q20WX2 UniRef90-A3VD48 UniRef9O-UPIO0041C4E61 UniRef90-B6JZ19 UniRef90-U4LBJ3 UniRef90-UP100040ECC03 UniRef90-T1XZ33 UniRef90-F4PPB0 UniRef90-Q1NVN4 UniRef90-UPIO0035E26ED UniRef90-D7CXZ88 UniRef90-E5XKJ7 UniRef90-G8AQZ3 UniRef90-Q7UFZ7 UniRef90-IODR96 UniRef90-UPI00037F729A UniRef90-A0A011 VMC5 UniRef90_UPIO00422EF56 UniRef90-B8CNO4 UniRef90-UPIO0034D1AD1 UniRet90_UPIOOO3718E65 UniRef90-FOWYL6 UniRef90-C6CY64 UniRef90_C0XT03

$\square$

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TASVIFDAFARQAQHKKMVPFEFI HNYHNHPLYTKALANSIV

 TAAVFDKLAKSMKGKPVIPBFRFIN QYYDDKAYI DALA QSV

 CRQYREDFARRLDETGEVTIGKSRSYFNHPGFLAPVADGV


 TAPVLDVFAHALKAHRYVPFEFI HSYHDDPAYI NALANSII

 TAAVFDGLAKALRHLDIDPLQFI RDYHNHPLYI EALADSV

 TAAVFDGLAKAMKRVAVPELHFVRDYHNHPLYY QALAEKV

AGAVYDAVSKWLQQRNLPSFTVIKDYFTHPLYI NALVDSII
VAAVWDGIIADIFKGYRSPDVQFIRDYADHPAYIAALKASV




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## UniRef90 M4R7R9

 UniRef9-M4RUniRefo- 2 CJI5
UniRef90-B7VII4 UniRef90-A3D6ZO UniRef90-UPI00035DC8FD UniRef90-U1IFM5 UniRet90 W6MDL1 UniRef90-LONJH8 UniRef90-C7MHO3 UniRef90--99YZ97 UniRef90_UPIO003FE3456 UniRef90_UPIO003697B2B UniRef90-Q9V9s8
UniRef90-A2SIR1
UniRef90-I3DAN2 UniRef90_UPIo003671A6E UniRef90-A6FL80 UniRef90-B2WLB4 UniRef90_C9Q7W8 UniRef90-G0JT33 UniRef90-UPI00037F567D UniRef90-UPIO003C15E2B UniRef90-FOLVE5 UniRef90-UPIOOO37CFBA1 UniRef90-UPI000378D591 UniRet90_UPIOOO3741220 UniRef90-UP1000425CCD7 UniRef90-A1TRH9 UniRef90-X8LRS7
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UniRef90_W6MJW1

T TAKTVAKE210 ${ }^{210} 230$ MF 220 230 KTTRLMREVMGEEKVKLTFQSRFGPEEWLQPYTDKTVEQ KTTREMAAELGEEDVKMTYQSRFGGPEEWLQPYTDKTVEQ KTTRLVTEKLGLDEFVMTFQSRFGKAKWLQPYTDATLKA ATTNALRKRLGUDASRLTFQSRFGNA EWLQPYTDKTVEK
 AACRHVMDQLGHPAWELVYQSRSGAPHPWLEPDVNDVIER ETTELLARALQLDQYQLTFQSRFGRAAWLQPYTEPTLMA KTTRLVSEKLGWAFAMTTFQSRFGPTEWLQPYTDKTLEA ASVHMVMQELGTNPYSLAWQSKVGGDPWLAPATDDAGKG KTARLLTERLALKPEQVTFQSRFGKA KWLEPYTEPTLVQ ETVQAVVKQLDLNQYKQTFQSRFGS EPWLQPYTDEFLEN ETAGLVARAADYLPWDLVWQSRSGPPQPWLEPDUNDHLAD ATVYAVMQRLGMKKYR VVWQSQVG PQPWLGAQTSDTVKE A TDLAKELQLDSSKITYQSRFGR TTTRLLAEALGLPESKVTYQSQFGKAEEWLQPYTDKTMEA ATSRALARALGLEDWTMTYQSRFGR ETTRRLAAREGGSSDEQVTYQSQFGKA



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KTSRLLAEALGMPQEKTTFQSAGRTN
RTAQLLAEALGEKDYVVSFQSRFGR
ATAKAVGEKEKKASWRFVWQSAGQTPE
QTGALLMABLE
QTGALLMAALELTPCRVTF
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LTVEKLKQQLQUND M MMAFQSQFGK

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EASELIAQAAGIEDFDLVWQSRFGR EPWLTPYTDETLKS YAARLVAAAAGIDDYDLVWQSRSGSPIPWLEPDVVDHAVE ETAQLIQSRTGHNHVFNGWQSEGNTGEPWI GPDVQDLTQT DTVQALTDALQLPKLMLTFQSRFGREPWLTPYTDETLKG ATVNAVMQRLNFNPYRLCWQSQV GPSAWLGAQTSDTVQE ATVWAVQQRLGHNPYRLVWQSQVGGPSAWLGAQTAETVPN RTSELLAAELGLDQWRTTFQSRFGR EEWLKPYTDKTMEQ ATVQKVMEKLNFNPYRLTWQSQVGPKPWLGAQTAQMAEY ATVYSVMEKLNFNPYRLVWQSQV GPKPWLGAQTAKDTKK YASRLVATAAGYADYDQVWQSRSGPPQPWLEPDVADHLTA KTGRLLGEALGUDLTTMFQSRFGKAEKWLEPATDTVLAE ATVDALRERMGLDEKRLTFQSRFGF DQWLQPYTDKTIEQ KTTRLLTERLGWSKDRITFQSVFGPEEWLKPYTVDEVAR ATKDLIQARFDSGHYFIGGWSEGNTPDPWLGPDVQDLTRE ATSYAVMQQRGFNKY NAWQSQV GPTRWMAPQTMDVLTW ATVHAVMTKLGFNPYRLVWQSQV GPSPWLGAQTSKTVES
 KTIAGLEARLGRSG ELCFQSRSGPVRWLSPSTPEMLAQ KTGRLLAEALGLKEFTIAFQSRFGKA EWVKPYTFDMLNK ATTHEVMKRLGYAEYLISYQSEVGPVPWLGPSTETVIEE EAAALVARAVGERTHDVVWQSRSGPPVPWLEPDVCDHIES KTARLLAERLGWEPGRVSFQSRFGKA ESCRLVADACGAVDWDLVYYS ETAELIAEQLGLNEWLMVFQSRFGKA ATTEALRKQLGLAPDKMTFQSRFGN
KTAELVAESLGLEQWQTCFQSQFG

STTERVMDKLQN N HULAWQS
ATSDAVAK SANVDDWQFTWQS
EASRLVAEAAGUSDYEVVWQS


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| UniRef90_M4R7R9 |  |
|  |  |
| UniRef90-A3D6z0 | NDD |
| UniRef90 UPIO003 | GEAFRIPCLNDAPAHIDDMRQLVER |
| UniRef90 | GEFAAIPCLNDSVGGMDVIRQLVLRED |
| UniRef90-W6UniRef90-LO | Y Pat |
|  |  |
| UniRef90_C7MH03 |  |
| UniRef90- J9YZ97 | ND ${ }^{\text {d }}$ |
| UniRef90-UPI0003697B2B | GTFSVAPCLNDSERAI DLLETLAARELA |
| UniRef90-O9V9S8 | VEDRRAATPNDHPLEFID |
| UniRef90-A2SIR1 |  |
|  | T |
|  | YAPCLNDDDAHINALASI |
| UniRef90-B2WLB4UniRef90 V5FGR7 | VDSLNDSP年 |
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| UniRef90-C907W8 | GEFHY PCLNDRSSH1ALMAALIK |
| UniRet90 | N |
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|  | GRFVY। PALNDDALQI DLLQQLVE |
| UniRef90 UPIO00425CCD7 |  |
| UniRet90 X8LRS7 | NadP |
| UniRef90 E6PT43 |  |
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| UniRef90 E8RDR7 |  |
| UniRef90 UniRef90 | DRFERIDMLN |
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| $\begin{aligned} & \text { UniRef90 } \\ & \text { UniRefgo } \end{aligned}$ | GKYQYDPCLNADAVWLEALADLARRNLA |
| UniRet90_M1 | A |
| UniRee990-C5AB80 |  |
| UniRef90 C4GG | GTFQYiPCLNDNPAWLDALSDIVKEKL |
| $\begin{aligned} & \text { UniR } \\ & \text { Uni } \end{aligned}$ | NDSEEGMRVI |
| UniF UniF |  |
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| UniRef90 | GRFEH:PCLNDHPAW1 A ALLQAlVRRH |
| UniRef90-A6D095 | D M M |
| UniRef90-A6W899 | LPFARAATVGA AAQFVAGLVDLV |
|  | VRFA A A A P P |
| UniRef90-A7FL85 | GEFEYIPALNDDEGHIALLEQLIRHNI |
| UniRef90-M1TRB2 |  |
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| UniRef90-17KLC5 UniRef90-E8XPSO |  |
| UniRef90-AOAO24PUF8 |  |
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| UniRef90-A0A017S815 | G VKRAESMNDNPIF EALAD AKTHLQK |
| UniRef90-M2Z1X4 UniRef90- E3F0D6 | GRVRRCESLNGSPTFIVQALADLASEHL |
| UniRef90-H2FWU3 | GEYHY $\mathrm{C}^{\text {P }}$ ALNDNPAHIRMLVDLVCREL |
| UniRef90-Q6FLB6 | DKFRRCESLNGSPVFIKGMADLVKDHL |
|  |  |
|  |  |
| UniRef90-LO1X80 | LNFRRAAT NDDPAVMDALAGLSQA |
| UniRef90- Q20WX2 | GEFA ${ }_{\text {G }}$ |
|  |  |
| UniRef90-A3VD48 | AVYHRPNMPNTDSRF:QAMVN |
|  | MTVRRMPGLNDNASF KGMADL |
| UniRefgo-B6JZ19 | CEDKRAESCLNDGDDGMAVIA EVVARREL |
|  |  |
|  | N |
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| niRef90-UPIOOO35E26ED | GQYRY\\|NCFNEDG |
| niRef90 D7CXZ8 |  |
| UniRef90_G8AQZ3 |  |
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| UniRef90-UPIo003718E65 |  |
| niRef90-FOWYL6 niRef90- C6CY64 | ITLERTTMLNKDPLYMETLAESVMNA |
| $\begin{aligned} & \text { ninef90-C6CY64 } \\ & \text { niRefo-coxTo } \end{aligned}$ |  |
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UniRef90 D5RNK9 UniRef90-D5RNK9
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$\left.1 \quad K K G\left\|\frac{10}{L L V} N L G T P D S P S D V R K Y L G Q F D^{30} D E R\right\| V \right\rvert\, P F R G P$ T T GRCGVLLVNLGTPDSYWDVRRYLSEFLSDRRINPLLWQ RARVGVVVLVNLGTPDATDSMRRYLSEFLSDKRVVDRRPF NKRVGVLVMSYGTPES LDEGVEAYYTHDRRGHPPTAE QLE


 APAKVGVVIANLGTPDDTDSMRRYLGEFLSDQRVVDWKWQ


 PR R $\quad$ A V L L V N L G TP D E P P A V R R Y L K Q F L S D P R VI P S R P K
 L L S F G GPE GPD DVIP FLENVLRGKNVPRERMM




 SEM

K VGILLANL
 TKEKI GVVLLNMGGPDSLDA I QPF L Y NLLFSDHDIIRRLRAK PRIGGVLIVNLGSPDAPEAVRRYLAEFLSDPRVIEIDPA AILEASFGGPDGQDDVIPFLRNVTRGRGIPDERLE GIL L L GF G GPE GQDDVIP F L R NVVTSGRGIPDERLDE

SHGRVGVLLLNLGTPDGYWAMRRYLKEFLSDRRVPRWKWW

REK $\square G I L L A N L G T P D N Y D S M R R Y L N E F L S D R R V I P W L W Q$ ALLVLSFGGPEGNEEVVP FLENVTRGRGIPRERLE ALL V L S F G GPD A P D EVVLP F L E NVVTAG R GVVR ER L
 EKKTGVLLVNLGSPASTQDVRAFLGEFLGDPRILPBRPR
 AVLLVNLGTPEAPQAVRPY LAEFLGDPRVYP RWLW K Q

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

 SKGPTAMVFLNMGGPQTTKDVGDYLSRLFADPDIDPRRTP
 K T GVLLVNLGTPDSPPDVRKYLREFLMDGRIAPBRAP
 $P$ T G V I L L N M G G P T Q T K D V R P F L Y NL

 P Y D ALLLLSFGGPEGPEDVVPFLENVTRGRGDPRERLT
 ALLWWLS G GPD GPA DVRPFLENVTRGRGVPPDRLD
 A P S R P GV L L S N L L G T P D G Y G A V R R Y N S S K I GVVLClV N L G T P E R A K I G V L L

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


 A QEKVGVLLLNLGGPET LDDVQPFLFNLFADPDII RLAAP
 $R K A T G V V F M N M G G P A T L H E V H D F L Y Q L F A D Y D L D P F R T P$ $E R L G V L V T N L G T P D A P P A L R R Y L G E F L W D P R P I W W R P K$ K QKIGVLLVNLGSPKEPGAVRRYGRQFLSDPRWLWWRPK ALLVLSFGGPEKPEDVMQFLENVTRGRGIPPERLV $A V L F L S F G G P N G P D E V M P F L E N V T R G R G I P R E R L D E$


UniRef90 UPIOOO31C0196 UniRef90-D5RNK9 UniRet90_UTP8D3 UniRef90-UPI00047B3729 UniRet90_UPIOOO3F194B1 UniRef90-V8QLE7
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PLLQAYRRI WNESPLRSFTRAQAEKLQGEFLGDGPLI
 DLTSRYRARGGVFPGKENTNRQVAALQRTLDELAGEGRYV KLAPKYKQUWMGSPLLVYGKRLARGVQEQLDQNQ VQAT VSAEKYQK WQGS IWWPRSVWMKDGS KVAKLYQSVWMGS MIQKQYAAIGGGS KTRHYYELMGGKSPQRKSEYQSAEMCK LDKTSPETPHK RSAELYAKVWTGSPLLATTKAQGQALQSVLEQRDPGPVR RVAEAYASI WDGSPMRNIGNTQVEMLDKRLAERAAPFRVS TVRKLYASIGGGSPIRKWTDLQGEKLSKLLDEISPETPHK EVVEHYQHFGGVSPINEQNRQLLAAIKSEFADSG DELI EVGRHYYLFDGVSPI NEQNRALLAALREDFAAHG KLQTTWNTEKNESPLKTTTRAQSEKLAASTADNGRQVVV KLVKI WNWEKNESPLKTITRSQSDQLAAALAE VDERLV RSARNYASDWMGSPLMVYSQRLADGLQQYC DTHFSGQVR NVIKDYETI WNKE KTAKAYKEI WNMS RVAHAYQQI WEGSPLLVYSQAQQKALQTLLGGQ RSAKAYRKVWTGSPLLVYGQQLTEGVRQKLQEQGT PLK SITWNHDKGESPLLTITKEQTAAIAELVKAKYGD KLQEVWGHYGEGSPLLDDGKAQLEAGANKVRPHFSG RVE KSAKLYASIWGGSPLTLHTRDQAAALAEALPDC EVAGHYRALGGRSPITAQNRDLIGRLEQELAERG DDR
 PILKDYATIWNDE HVRAKYRYMGGKS
RVAK
ROKGWEGS PLKS IWNEEQGES VVGEHYFHFGGVSPLNQLNREQTDHVETEMKKRGHN KLP
 KSAHAYKTI WTGSPLIKFSQQLSTKLAK KSGEAYARI WDRSPLRVYTRSQAEKLTQRFEGE GNENLL
 KSAKAYKELWTGSPLKVYGEANELQLQDALGDE KGGYVM

 KSGALYDKIWNES K EKQYRE:GGGS RVAKAYGYKi WTG S KI QKQYSE IGGGSPI RKWSEYQCAEMCK ILAEDSPETPHK EVGEHYFHFGGVS \begin{tabular}{l|ll}
$K$ \& $E K Q Y A A D G G G S$ <br>
$P$ \& $A K A Y A K V W G E A$

 

$P$ \& $A K A Y A K V W G E A$ <br>
$E V G Q H Y F G F G G V$
\end{tabular}

 $K$ SAKTYREVWNGSPLKHYGYVVEKMVQAQLGD EVAQHY DHFGGVSPINADNRAIDDAVRAEFDVHG EVATHYRSFGGISPINAQNRALKQALEAELDRRG
SVAENYQLIWQGS


 EVATHYRANGGVS EVEVHYHH LGGGVS PI HRIWHHDRDES | $R$ | $G R S Y S R D W N K S$ |
| :--- | :--- |
| $G V A Y R S V W$ |  | KIAKQYEEDGGGS PI RKWSEYQATRVCELLDERCPESPHR K SAKNYAYMGGGSPILKETQAQADALEAYY A ANTKGDEAK EVGEHYFGFGGRSPI NDANRALKAGI EADLAAHG VDLP KSAHAYGLVVWEGPLAAlTRRQSRALQGAFGE WLAKAYASIWTGSPLVQUTQDQCNKLSALLKEQN YENVEE Al A SI WNNERNE KSAHEYKK ${ }^{\text {K W WQGS }}$ KSAKDYQTVWQGA

KSKEAYASI GGGS RVAKGYQAVWTGS K AH Y Y R A G GVS RSAEAYASVWDGS KSAEAYRKIWMGS EVGEHYYHFGGRS | $V$ | $E K H Y G E D G G G S$ |
| :--- | :--- |
| $E V G H Y Y R F G G K S$ |  |

UniRef90 UPI00031C0196 UniRef90_D5RNK9 UniRef90_U7P8D3 UniRef90_UPI00047B3729 UniRef90_UPI0003F194B1 UniRef90_V8QLE7 UniRef90_UPI0003797C74 UniRef90_V3TRM3 UniRef90_UPI00034BAF2F UniRef90_U3B7H1 UniRef90-E9EA62 UniRef90_W0DGB2 UniRef90_G4E2R0 UniRef90_Q4FUR3 UniRef90_F0ZES6 UniRef90_M5RDM3 UniRef90_V4J9M0 UniRef90_UPI0003093D30 UniRef90_H0TEF8 UniRef90-J6IXX6 UniRef90_UPIO002624D41 UniRef90_D6ZZ22 UniRef90_W9E3N6 UniRef90_C4L8U1
UniRef90_UPI0002 UniRef90_-S9Q8H1 UniRef90_UPI0004630C74 UniRef90_B2V955 UniRef90_M2U4R0 UniRef90_UPI0002629591 UniRef90_A0A031FPY UniRef90-E3HYW6 UniRef90_V5SFN3 UniRef90_D3SLH6 UniRef90_Q67T48 UniRef90_UPI000467DB63 UniRef90-C2CMJ6 UniRef90_UPIO0036D6C06 UniRef90-D5BNQ4 UniRef90_F9ZVN4 UniRef90_UPIO0046EDFD2 UniRef90_UPI00028A3214
UniRef90-UPI00004749F45 UniRef90_I2EY40 UniRef90_K2JW00 UniRef90_U1QIE1 UniRef90_UPI000375E72F UniRef90_W7TUI8 UniRef90_G0VG72 UniRef90_UPI000369F506 UniRef90_U7R3H5
UniRef90 B8MQ21 UniRef90_UPI00036DA5F2 UniRef90_C5GXR7 UniRef90_UPI0004032E43 UniRef90_B4V8P6 UniRef90-IOKE05 UniRef90_V9XCI7
UniRef90_N1UZ47 UniRef90-Q6APB0 UniRef90_UPI00035D3731 UniRef90_14BIY9 UniRef90-F6DA71 UniRef90_E4NI75 UniRef90_F0YEX2
UniRef90 C5CB89 UniRef90_UPI00041D37D0 UniRef90_S2Z120 UniRef90_W5YDJ0 UniRef90-W7E288 UniRef90_Q74ZC7 UniRef90_V4RK04 UniRef90_UPI00036296B4 UniRef90_A0A031HPX8 UniRef90_U1KDF6 UniRef90_B6IV45 UniRef90_UPI00045E9784 UniRef90_Q11PE0
UniRef90 Q487H7 UniRef90_G7J7L5 UniRef90_S2KR39 UniRef90_A4AF08 UniRef90-U7GF03 UniRef90_B5JW64 UniRef90_UPIO003648693 UniRef90_H5TNH3 UniRef90_Q6C140
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V PAMRYWKPFIETAVKESIEEGARAFVLLPMYPQYSKTTT

 VYWGNRNWAPYK EDTLRQMRDDGCKRSLAFFTSMFSSYSG

 $V$ DWAMRYGNPSMDSRLKKALQARGCERILLLVPMYPQYAAA T


A MRYGNPSIIKSKIHKLHEMGCENLVILPLYPQYAAAT


 V DF A MRYGNPS IT S RLNEMKAAGCERILIVPMYPQYSAA T V YF GNRNWEPYNAEALRAMHADGHRHAL GLVTSAYSSYSS V Y WG N R N WM P Y VT D A I D A A H A D G RT K L L A I AT T S A Y S S Y S S V D WA M R Y G N P S I K S R L E A LQE K GCDR L L I FP LIY P Q Y S A A T

 $V$ DFCMRYGNPSTRSKVVRKMVAA GCRRILVVVLLYPQQA GA T IVF GNRNWHPF GKEAVEQMAADGVRNVAVLATSAWGGYSA $V$ Y WG N R N WR P Y L A D TVV R M A D D GIVR R A A V L V T S A Y A S Y S G



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 VDAMRYGNVYWGNRNW
V WNAR V VWGNRNWAPYG IVFGNRNWHPMVEDTVARMRDEGITRNAVVFATSAGYGSAT V WWGNRNWAPFIIADFREAYDAGHRRVLALSTSAYSCYSS VTYAMRYWPPYCDEALDYLLSKGVERLVALSTVYPHYSKAT VDFAMRYGEPRGNERLDALRAQGCENILVVPMYPQFSGST
$V Y G G N N W D P Y V D T V T M R D N G G R A A V F S T S A W G G Y S G$

 VYWGNRNWEPYFPDTLKRMHADGHRRALTVTTSAYSCYSS VYFGNRNWHPLVEDTVAAMAADGVRRALVFPTSAYGGYSA VAWGMRYGQPSIKQALHELVGQGCDRILLAPLYPQYSATT VEWAMRYGKPSUEQKIEFLQQQGCDRULGMPLYPQYSATT PYVAFRYARPLTDETYQQMLKDGVQRAVAFSQYPQFSYAT


 VDFAMRYGKPPAAERLAALQAQGCERILLVPLYPQYAAAT

 VELAMTYGSPSLRESGLRLRDAGVERLLVLPLYPQFSRST VLWGNRNWNPYLSDALTEANERGYTKLIVAVGTSAYSSYSS VGFAMRYGNPSHARVLDEMQEQGVRKLLVLPLYPQYSAST VDYAMRYGEPSMASAVERLCERGVDKLLVLPMYPQYSATT VYFGNRNWEPMVEDTVAQMYADGHRRVLVFPTSAWGGYSG PYVAFRYANPLTPDTYAQMKKDGAKRAVAFSQYPQYSGST

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UniRef90＿UPI0004763D9D
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 TATVND QVFR AL RMRRQPTI R IVVPPFPDHPLYIKGLAHSV TA T A N N D H A F R T L L K L L K W W Q P A
 TGSSLNADYRYYSEMGRMKWSTI DRWPTHPLLI QCFAD HI

 T A TAAN D QA F R TLL K M K W WQ P S ll R T V T A AVVSD G L T K K A F K T M A V I P Y T L L R R T G S S L N EL W WK WR QRE GTIT WSVI D RWPA H S GVVVEAFA QN I
 T G S IIF D A LAA E SFT R WR WP E L R FI N H Y Y D A P TY I E A L A H S V







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R R A V A T L P R A P Q REAYDAAETPP SEGLERLGGGSSD VKELDHFPPEKRSEVV RAYWQSHGKPQQ
RDHWDKHNRGQL EQSFAQYGVP TDVYQP LDETP
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NKKLNEL
RRE GFAANWD
RPYWEQQP
ERAYEGDERP
REHQAEHGKP
KENL
PEDYKDY
RAGLAALD
FRPDELL LT
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 K A N A KLDFE
SGY I AEKGRP
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EAYAQMD TKPDMLVCS
KDAYAKIDEG TQARMLFTAHGMPKRYLLEGDPYACQCQ
 KAAVKKHGKP
RQHWLNHGQA RDHLATLS

EQWWATQGRG
K K H L $\quad$ A E H
ERAYAAVAK
KARDKA
EKHYAT पDFEPEL
EDFWAQHGKP
WK P


FWAQHGKP DRLLASYHGLPQSMVDKGDPYFDHCH
SKELLAQFTQEQRAEDHVLFSAHGVPQRYI EMGDPYQQQDQ
TAKLNEFPEEVRDKVVLLFSAHSLPMDVVNTGDSYPAEVA
EQSFHEHGKP
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EDQ Q ATYPEEK
EKQLATYPEERRRDVVLLFF
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ENYWSQHGKA
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LAA A A ELPAEVRDGARLAFSTHGVPKRYLTNGDPYHCECQ A
 $R$ VAAAGMPEGY
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SARLLATLDFRPQM
QTHALDKLSTP
NKT KI I F
AAKLKTGKNP QDCRLLE
KQHMAQ
RSALLAEAPAD
EMQI A A LD
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R WA V $V$ A E A A A A A H G T P
ERHLAA LD FE
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KEHVASHGKP
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REGLAKVAA QGDEKTHVLFATHSIPSTDAAKSGPESRGFG
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REHWQTHGQSEC
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UniRef90-Q4FUR3
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UniRef90_UPI0004763D9D
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 E A CRRV A D MA GA D H WK L V Y Q S R S GP P QP WL E P DV C D A I A E






 K T T R L L L K E R L





 K N T R L L K E R L G W D D T Q I T F Q S V F G S E E WL R P Y T V Q HV A H EAS RLV VAEAA G DT D Y DLVWQS RS GS P K P WL E P DIVVDHTTE



A
$W L L K P Y$ C V E V $L$ Q D $R T L T A L R A A L G L L S D E Q I T T F Q S R F$ GPMEWVQPYTAPMVEA K T T N A L R A K F P DLLK I I E S F
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## Q <br> Q

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 $\begin{array}{lllllll}E & A & A & R & V & A & A \\ L & G E & G & Y & D & V & W Q \\ A & T & A & A & L & D & R\end{array}$ QS DGA A E ITGGKRGR L C F Q



$K F G N$
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$K$
$\begin{array}{lllllllllll}E & E & W & K & X & Y & T & E & D & L & V \\ E & D & D \\ Q & P & Y & T & V & E & E & V & A\end{array}$

$R F G K$
$R F G$
$R F G K A$
$P \mathrm{~K}$
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$Q V G P S$
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$P$ DVVD R AVVE
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$P$ VIE WLLE
K S G P V V W L E P S T P DVLI Q
RF GK A
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$\begin{array}{lllllllll}E & P & D & V & G & D & H & L & E \\ K & T \\ K & P & Y & T & D & E & T & M & M\end{array}$

$\begin{array}{llllll}E & P & Y & T & D & A \\ E & A & A \\ E & D & I & N & D & A \\ M & A\end{array}$
P D I VD H $\quad$ DG A

K T AVAL R K KM GK S K E Y MVVY Q S R F G P D K W L G P N
K T T RLV QE H LGGNDCDTSFQS RFGR E E WL K P Y T DVTTLQQ

ATSRLLLAA ELGLDDQYTVTFQSRLLK DPWLQPYTDEVLLKT




K T A R LLRARLGMDRFRLT F


E E WL L GP P S T E E E V
T T S RLVAETLGLDDWLMSYQSRFGR EEWLKPYTDETLKA


K $\quad$ T $A$ A R R L L A A







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 EVSHHYRAFGGLSPI NDQNRALKASLEAELATRG IDDP KSAHAYAQVWTGSPLAADTRRQAGALQAALGD DVARHYDRFGGISPLEDATDAFVNALENELPRRHGVRVP KSAHAYSQVWRGSPLAADTKAQARGLEGAFGD PGVL KVAPKYASVWGGSPLAVYTRGLADAVAERMP QVAEHYLHFGGRSPI NDQNAALLAALRAELDRRG SVAEHYLHFGGVSPINGDNAVIEQLRGLDERGB KSAKVYKQLWRGSPLKTYGYSVKDKLQKVLGG RLAHAYRSI WT GSpLLAMSRAQQAGLQARLGA AVAEHYDHFGGVSPINGINRTLIAELEAQQE
KSMRTYEKTGGGSPLTTITSDQAKALONADREHG NDP ELISSRYKAI GKSPLTEITEAQAKKLQAKIKSHGSET NYIV PATENYALLGGRSPLLELTRQQADALEAAL SGEFEAR
 KVAKLYQSVWMESPLMVYSQRQVSALQDRLS KSTKLYQQLWTGSPLVVFANSVQKKLEARLPESD KSAHEYTKLWTGSPLLFHTVD KVAKLYQSVWMGSPLIVYSRRQQRALAERIPQKLDPNL RVAKLYQSVWMGSPLLVYSRRQQRALAERIP YV RSAAKYAWLPDGS
$K$ SAEKYAKVWDGS GSPAVYTRRLTEGLQQVMPD TWKYRSDWLSEGSPLRVYTAQQAQALQQQLNAQG YTWH RSAEAYRRI WNESPLRVYTRAQAEGLAQRFAADEDVV VAREIYANLDGRSPLLPHTQDQATALQAALKGAADEVG RVAEAYASVYKDSPMRENLFDQADYLKKSLPEKYPEFDLN RSAANYRKI WEGSPLLVYTARLAGELQHALPE KTEQQYREIGGGSPI LKWSNYQAKEVCKILDLQQPQTPHK KVEKQYASI GGSPI RKWSELQSTEACKILDKISPKSPHK AVAQHYDHFGGVSPINATNRALADALQAELP EVAEHYYHFGGASPINALNRAMDEALRRGLQARGRD MP EVRRRFQAIGGGSPLMRITQAQADALAARLGGTMGMMLP PATANYAQMGGRSPLLENTQAQAAALEGMLGADPATADAK
 EVQKKYAEUGGGSPILKWTNVQGELMCKALDKLSPETPHK VARAIYGFMGGRSPLLENTQKQADALQKYLQNTQGAKAWK KSAKLYQSDWQGSPLLLNSQKQQDALQKRFNSKN KVQNHYSDIGGGSPLLHWTRDQGSEMCKDLDKKCPESAPH ELQGRYQAIGG\|SPLMHHTHTQVRGDQAARDTLAPGRYR R RVAPNYRSI WTGSPLMAYSILQAESLSELLGGQA TAQEDYEHIGGKSPLLENTKAQADALELKLNENGNHV YK RVAEAYAQV WNDSPMREDGKQVQQLQKKLSVFNTDFDLT


## UniRef90＿E8RNT3

 UniRef90 A3YAA5UniRef90 U2TA54 UniRef90－A0Аогзсх93 UniRef90 UP100046EDFFB UniRef90－I3ZYQ4
UniRef90 H8GQV3 UniRef90－U2YTU6 UniRef90－I2GKX7 UniRef90－A1AWG9 UniRef90－AOJYM7 UniRet90－S4XM91 UniRef90＿UPIOOO3616359 UniRet90 SSVQO30 UniRef90－C6X081 UniRef90－H6RPC22
UniRef90－UPIO0046F4DBA UniRef90 UPI0003680E25 UniRef90－GOIUT5 UniRef90－KOKADO UniRef90－F8ESK8 UniRef90＿UPIO003B36959 UniRef90＿J9ZBE9
UniRef90 C7EC61 UniRef90－UPI0003826F3D UniRef90＿UPI0003661A05 UniRef90－B7A6D7 UniRef90＿UPIO003742F53 UniRef90－UPI000376783A UniRef90＿M1RF65 UniRef90－N8VKT1 UniRef90－B7HOX1 UniRef90－G2DB11 UniRet90－UPIO003819C69 UniRef90－C6HZH8 UniRef90＿UPIO003AD1ECB UniRef90－C4Y8U0
UniRef90
W8ES55 UniRef90＿UPIO0047AF674 UniRef90－MOQKB1 UniRef90－UPIO00375C3CE UniRef90－N9W4C2 UniRet90－F3NXEO UniRet90＿R4HZS3 UniRef90－UP100031AF8AE UniRef90－UP1000412BA4D UniRet90－C5COU4 UniRef90－IOS454
UniRef90－UPI000366A16D UniRef90 C6W244 UniRef90－UPIo0035FA654 UniRef90－POA577 UniRef90－M1P4V3 UniRef90－UPIO003701B5C UniRef90－UPIO0031499E4 UniRef90－A1ZL88 UniRef90－10AP00 UniRef90－B6EHK1 UniRef90－UPIO00471FE92 UniRef90－W1S4X1 UniRef90－M7YBH8 UniRef90－E9CK76 UniRef90－M5TFR5 UniRef90－Q8P3H6 UniRef90－UPIOOO3469922 UniRef90OUPIOOO2411E324
UniRefgo－F2K4K1 UniRef90－F2K4K1 UniRef90－V2TNV8 UniRef90－UPIO004635805 UniRef90＿UPIO0047B7B44 UniRef90＿12GXAO UniRef90－24X6K2 UniRef90－UP10002F3E33F UniRef90－G7H5L2 UniRef90－A9FIC2
UniRef90 V4NYD1 UniRef90－D3NYQ1 UniRef90－A9HEQ4 UniRef90－J2Z845 UniRef90－G2KLB4 UniRef90－UP100030899D2 UniRef90－O59786 UniRef90＿R9GSZ0 UniRef90－UPIOOO2ECB311 UniRef90－B3CLU1 UniRef90＿N9EEL4



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S G S S DGE WT REAA R Q G L T A D TVVVC C Y P T D P GF V R A Q A A L L


| $T$ | $A$ | $S$ | $V$ | $D$ | $D$ | $A$ |
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| $T$ | $A$ | $S$ | $V$ | $R$ | $D$ | $A$ |

## T <br>  <br> C



 T WS S L LQ Q WR K A A D A DGGDK P E S L L C C C Y P T E D G F V Q A S A K H V






| UniRef90_E8RNT3 <br> UniRef90-A3YAA5 <br> UniRef90-A0A023CX93 <br> UniRef90-UPIO0046EDFFB <br> UniRef90_13ZYQ4 <br> UniRef90-H8GQV3 UniRef90 U2YTU6 <br> UniRef90-I2GKX7 <br> UniRef90-A1AWG9 <br> UniRef90_AOJYM7 <br> UniRef90_UPIOOO3616359 <br> UniRef90_S9VQ30 <br> UniRef90-C6X081 |
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 RAQWDKQGEKR HRLFSYHGYPKRYVDNGDPYASRCH KNAVTE EDGDDPATE DRILYSTHSIPSTDAAKSGPAERGFG KNIYTSFK KPDKVIFSYHGIPVSY円AKGDPYQDRCN RKS R LEGKPPDRLLESFHGLPKRYLDAGDPYHCECH KGEDLD PAEFDKLLFSYHGQPERHIHHATCYRHQCY RQYWHDHGK HERRLLMSFHGLPEMLTKLGDPYFTHCE
AQLEKAGD
RKHMAEH
LEHQTKHGKP
 A A GLADVRAQPDAPVHILFATHSIPTRDAEEGSAYVAQHA DETLATMPADQRDDARLLEAAHSIPTSSADGTHRYSGQVL KVRLK P D E F L L F S Y HGIP DS YENQGDYYRQHCK QKTLETYPKEERDNAVI IFSAHSLPMSQVSKGDPYVNE GA A A ALLATLPAEDRDGARLVATAHSIPDTMAADGHAYEAELDM SEYWREHGRP EKLVLSFHGVPRRTRDDGDPYYYQCQ KK S WLENGQAEL K K Q MA E GDYDRYLFSYHGCASYHKKNRYCYRAQSF RSKLQEFPES DRDKVK LESAHSDPMDVVNNGDAYPAEVA ETQLEALD F V GDALASRIAPEE GDALSRIPEE EVVHLFSAHGIPEFLVREKDPYEADTN QKELDDFPPDKRKDVVI LFSABHSLPMSVVNRGDPYPQEVGG
 EEAI WRLKDP RRAAYVFTAHSIPVAAVERGDPYPRQVE RAAVAGFLDDG DAPVRVLFSTHSIPTADAERSGPRHRDLG KEHANTHGAPQKW K N S
RDYQA ${ }^{\text {D }}$ HQ
LAYQEQHGKP RHFRQAKGEPQ REAL LQQRAERGP口RLLIS REAL LQRAERGPLRILFAAHSVPDTDAATGSAYADQLL ERAL
QAS
I R RLPKNGKVPRKLVASYHGMPRRYLMEGDPYHCQCQ QAS K EKLLE EFPVEDREKVILLFSAHSLPMQVVNRGDSYPAEVVA
 DEFWRASGRP ERLLMS $\square R A V G Q \operatorname{l} P N R P V R P$ RLVFT AEGLAKI RAE LAADKTHVVFA A H S I P EAGVAALDFA MQAFMRIPPTPDEADTVASFHGMPERTLHLGDPYHCQCVV EHSFAKYGFP E A G 1 A T $\square$ D RARHREHGP RGAVGSLGGNART TAAAQTVPAD LADDESLRADDPTD KKYMAQH
RAHWQLHGRG
DYDEVLFTTHSVPMADANDSGPETRGFG RAGMSFHSIPDQYDAGDPYYAQCF
 LETANSFTPDQPQ REAEKK ${ }^{\text {RGKDYW }}$ RRAWEAAREALAPDVR KKY LIKEA KEY K E Y Y WKEKGK ${ }^{\mathrm{N}}$

NLNEFDHVLFS $R E$ DRLI LSFHGLSKRCARLGDDYPQRCK

## 031AF8AE

 00412BA4D
## 366A16D

 44 UniRef90_UPI00035FA654 UniRef90_P0A577UniRef90-M1P4V3 UniRef90_UPI0003701B5C UniRef90_UPIO0031499E4 UniRef90-A1ZL88
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UniRef90 M5TFR5 UniRef90_Q8P3H6 UniRef90_UPIOO03469922 UniRef90_UPI000411E324 UniRef90_F2K4K1
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UniRef90-J2Z845
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UniRef90_A1AWG9
UniRef90_A0JYM7
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UniRef90_P0A577
UniRef90-M1P4V3
UniRef90_UPI0003701B5C
UniRef90_UPI00031499E4
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UniRef90-IOAP00
UniRef90_B6EHK1
UniRef90-UPI000471FE92
UniRef90-W1S4X1
UniRef90-M7YBH8
UniRef90_E9CK76
UniRef90-M5TFR5
UniRef90_Q8P3H6
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UniRef90_UPI000411E324
UniRef90_F2K4K1
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UniRef90-V2TNV8
UniRef90_UPI0004635805
UniRef90_UPI00047B7B44
UniRef90-I2GXA0
UniRef90_R4X6K2
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UniRef90_G7H5L2
UniRef90-A9FIC2
UniRef90-V4NYD1
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UniRef90_G2KLB4
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UniRef90-R9GSZ0
UniRef90_UPIO002ECB311
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K TA E L I A K R L S L P R Y F V A Y Q S A G R T P E P WL G P D I N E L L R R

K S VEELI M K N F K $\quad$ N K Y M I S Y Q S K V G G P V





 T S A GLI A E A L N L L S E WQVVVF Q S R F G P P A K WL K P Y C V A A A A AV A EKAGYGTFDLVWQSRSGPPQPWLEPDVCDHL E

 DTK H A L T A A L S L LP T E Q Q V T Y Q S R F G Y P E P WL KTGRLLLGEALLGRELIDVTFQSRFGRA KWLEPATDTMLMES ASAAA A A A A A GLLE QWDVSYQSRRGKA K WLEPSTS GTLLQR $D L A A V V A G R L A A E T W E L A F C S R S G P P Q P W L V P D D V N D V L E A$







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




 $\begin{array}{lllllllllll}D & P & W & L & K & P & Y & T & E & D & T \\ M & K & E \\ K & K & W & L & E & P & F & S & D & E & V \\ I & & \end{array}$
$\qquad$ D K W W


 LTATLL A QRLN NLDYRDTFQSRFGRA A E R W WL Q P Y A E P T L W A



 $\begin{array}{ll}A T V M A V M Q K L N F N P Y R L V W Q S \\ H A T A L V A A A A G Y T D & D\end{array}$ HA SALVAAAAGYTDYD QVWQSRSGPPQPWLEPDVEA HL G G AMAAEVARRIAANPVLVAWQSRSGPPRPWLEPDIAD HLTA



 Q A A A VRA A GLDDNWMS CYQSRV GP

 K TA A AV A TA A QLDQHWS DA WQSRFG PAKWLEPATAAVE E E
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| 俍ef90－A3YAA5 | LLAKKGIK DL NVI |  |
| 隹ef90－U2TA54 |  |  |
|  | LPAKKKGMKVLVV | G |
| UniRef90－13ZYC | FPAK GVKKIAVVAPAFVSDCL |  |
| UniRef90－H8GO | KRGVKTVD |  |
| UniRet90－U2YTU6 | AGRDGVGAV |  |
| UniRef90＿12GKX7 | LATK GVKRV |  |
| UniRef90－A1AV | $L A G D G V$ |  |
|  | GV |  |
| UniRef90 S4XM | D E G |  |
| UniRet90－UPIOOO3616359 | A |  |
| UniRef90－s9VQ30 | N |  |
| UniRef90－c6X081 | K GVKK NLAL VCPAFVSDCL | SVEGKGEFLHAG |
| H6RPC2 |  |  |
| P10 | QK |  |
|  | S |  |
| UniReef90－GO | K V M | VGEYKELFIELG |
|  |  |  |
|  | FPAQGIKKLVAMPGFSACLE |  |
| UP10003B | RG |  |
| e90＿J9ZBE9 |  |  |
| UniRet90－C7EC61 | C Corgk |  |
| UniRef90＿UPIO00382663D | LASQ GTKAVIVCPI GFIT ${ }^{\text {a }}$（IEVV |  |
| UniRef90－UP10003 | GV |  |
|  |  |  |
| UP1000374 |  |  |
| UP10003 | GVK ${ }^{\text {a }}$ |  |
| UniRet90－N8VKT1 | SIQVMSPAFSADC |  |
| B7 | WAKQGVKSVQVLSPAFSADC |  |
| UniRet90－G2DB11 | WGTERLQRVHVVSPGGSADCLETLEEL |  |
| UniRet90 |  |  |
| UniRef90－UP1000381 |  |  |
| C6 |  |  |
| f90＿UP10003 |  |  |
|  | LEKNEN｜ |  |
|  | FPAK G KNVLAFSPAFVAD |  |
| UniRef90 UPIO0047AF674 | LPEE GIRAVDVVCPGFAVDC |  |
| f90－UPIOOO375C3CE |  |  |
| UniRef90－N9W4C2 | E G |  |
| UniRef90－F3NXE0 | $L P A Q G V K S V V V A P D G F V A D H$ |  |
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| UniRet90＿UPIOOO31， | R |  |
| UniRef90－UP1000412 | G | SMELIAEEAARG |
| － |  |  |
| UniRef90－105454 | A A AGTM |  |
| 㖪90－UP1000366 |  |  |
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| Uni | LARSGVRTLDAICPGF |  |
| UniRef90－PoA577 | LAGAKGNAVVCMGA |  |
| UniRef90－MP4V3 | YAKNGKKVVAP |  |
| UniRef90 UPIOOO31499E4 |  |  |
| UniRef90－A1ZL88 |  |  |
| UniRet90＿10A | K G |  |
|  | LAPK Gl ${ }^{\text {L S }}$ LD |  |
| UniRet90＿UPIO00471FE92 |  |  |
| UniRet90＿W1S4X1 | LV QE GVRN AVVTPGFSADC |  |
| 90－M7 |  |  |
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| Q8 | LAEGGVRSFDLVCPGFATD |  |
| UP100034699200411E3 |  |  |
| UniRef90－F2K4K1 | MPA SGLKRINVISPAFSDDCIETLEEV |  |
| Unip | A $\mathrm{G}^{\text {a }}$ |  |
|  |  |  |
| ＋90 | GDQ GVKR |  |
| f90＿UP100047B7B44 | GI |  |
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| 析 | AAARGVAVVG |  |
| UniRef90－A9FIC2 | LVARS VREALIAPI GFVADHVETLYD |  |
| UniRef90－V4NYD1 | K GGKS |  |
| ef90－D3NYQ1 | RAGQDGVP ILVVPMAFVSE |  |
|  | LPAR GV＇TVVAVI M |  |
| UniReef90 J22 |  |  |
| et90－21 | Q |  |
| UniRet90－G2KLB4 | $\square$ |  |
| iRef90 059786 |  |  |
| f90－UP |  |  |
| UniRef90 |  |  |
|  |  |  |
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| UniRef90－B3CLU1 | AKDDNTPVVLSP $\mathrm{S}^{\text {S }}$ SVSEHSETLVE |  |
| $\begin{aligned} & \text { efto } \\ & \text { ato } \end{aligned}$ |  | ELi |
| ef90 |  | NKEITFL |


| UniRef90 E8RNT3 |  |
| :---: | :---: |
| UniRef90-A3YAA5 | NDSDDV |
| UniRef90-U2' | VPTPGTHAKYVK |
| Un | GEFKMLSALNDDEAFIDVLEQLVRK |
| UniRef90-UPIO0046EDFFB | LRYIPALNADGIHIEAL |
| UniRef90-13ZYQ4 | FHY/PCLNDSQVFVDLL |
| UniRef90-H8GC | A |
| UniRef90-U2Y | APAVGVTDAFIEALSEAVGSAVDR |
| UniR | GQHWQV |
| UniRef90 A1AWG9 | GRFSYISALNDRDDHLKML |
| UniRef90 AOJYM7 | LSATRVPTPGTHRKFVSGIVD |
| UniRef90-S4XM911 | LPLVRVPTPGEEPFARMVLD |
| UniRef90-UP1000361 | GQYQY PA ANAEP |
| UniRef90-S91 | - |
|  | GAFARAATAGTHPAFVESMRGLDEERG |
| UniRef90-UPIO0046 | GEYHYMPALNERESWLQAMREIALDND |
| UniRef90-UPIIO003680E25 | P CL |
| UniRef90-GOIUT5 | LVPSLNSEETWVECVKDL |
| UniRet90-KOKADO | AESLNGNETFIKGL |
| UniRef90 F8E | GEFATLLQCLNDSEEGVITML |
| Un | YKFLRAPSLNTRPSFİHAL |
| UniR |  |
| UniRef90-UPIO003826F3D | VTVARAATPGLTASFAKMIVELDDEQ |
| $\begin{aligned} & \text { UniRef90-UPIO003661A05 } \\ & \text { UniRef90-B7A6D7 } \end{aligned}$ | AVRTPTAGTHPAFVAGL |
| UniRef | VRTPTPGVDPVFVAGL |
|  |  |
| UniRef90-M1R | IEEFKRVPTLQTNPTY |
| Re90 - 8 |  |
| B7 |  |
| G2DB11 | GEYAYDPALNEHPDHGMLANVCRHL |
| UniRet90 M2YA71 UniRe | LGGARTPTPGTHPAF |
|  |  |
| UniRef90-UPI0003AD1ECB |  |
| UniR |  |
|  | S |
| UniRef90 M0QKB1 | VGTDTRF |
| Reto- ${ }^{\text {P10003 }}$ |  |
|  |  |
| F3NXE |  |
|  | N |
| UniRef90 UPIO000412BA | GKLRYl PCLNDS |
| UniRef90-C5COU4 | M |
|  |  |
| UniRef90-UPIO00366A16D | N |
| ef90_C6W24 |  |
| P100035F | GELRYMPL |
|  |  |
| UnRef90-UP10003701B5C | M NDSDLLVNC |
| Ret | A Q A P ${ }^{\text {a }}$ |
|  | SNSNP |
| UniRef90_10APO0 |  |
| UniRef90_B6EHK1 |  |
| UniRef90-UP1000471 UniRefo - U1S4 |  |
| UniRef90-M7YBH8 | GERWLVPSLN |
| E9C |  |
|  | ATMRYIPCLNAEPEHARALARLAVSSLA |
| UniRet90-Q8 | ATLSY P C |
| UniRef90- UP10000411 324 | , |
| UniRef90-F2K4K1 | GEFDYIPAL |
| UniRef90-K9HP16 6 | V |
| UniRet90-V2TNV8 |  |
| UniRef90_UPIOO04635805 |  |
| UniRef90-UP1000047B7B44 | GHLRYIGAL |
| UniRet9 | TIIKRCDSLNDNMTFIINAAAELVKKHL |
| UniRef90-UPIO002F3E |  |
| UniRef90_G7H5L2 | LGYaradivgidprfiollad |
| niRef90-A9FIC2 | N |
| UniRef90-V4NYD1 1 | AKYidRVPVVGVNT |
| UniRef90- ${ }^{\text {anh }}$ | PaA DLEGLTRQELA |
| UniRef90 - J2Z845 |  |
| UniRef90-X1YFE5 | AEKDRAAAPNDHPLFDEALADVVRNHDA |
| iRef90_G2KLB4 | N |
| UniRef90_UP1000308 | N |
| UniF | R V |
|  |  |
|  |  |
| UniRei90 UPIO002ECB311 | (1) WGNASAGAVDTLGAI ARRGLA |
| UniRef90-B3CLU1 | STDLLFI KCLADLCLDH |
| Ref90 ${ }^{-}$ |  |
| UniRef90-P57874 |  |


 AAPYDALLLVNLGTPDGPGAVKRYLREFLSDPRVVEDRPK QPYDAILLLSFGGPEAPEEVVPFLRRVTAGRGI PDERLE ALLVLSFGGPEGLDEVRPFLENVVRGRNVPPERLD ALLLVNGGSPASTEDVRSYLNQFLMDPYPWPRRPV KALLVMTYGPETFEG1 AKFFTNRRGVRNDEENN KKAVLMMTFGSPETFEGVADFFTNGRRGVRPQDHEXQ KKGVLLVNLGSPDSPKDVKPYLDEFLMDERVDDTRPK KTAIVLFNLGGPDRPEAIKPFRVNLFSDRAPWFDRVW ANPKTVI LMMNMGGPASSAEVQPFLHNLFSDNDLIPRRTP
$A D D R P A L V A N L G T P A S P T A V R F F L R E F L S D R R V H P L L W R ~$
UniRef90_M2XS86 UniRef90_D8QX70
UniRef90_BOU1A5 UniRef90-UPI000262CD73 UniRef90-UPIIO003B67B2A UniRef90 FONYU2 UniRef90-A3WGM8 UniRef90-K3YQB9 UniRef90-13TR56 UniRef90-M1VBl3 UniRef90-A0AO23D5L3 UniRef90_A5CN13 UniRef90-SONT29 UniRef90-UPIO00288D375 UniRef90-UP10001BC2COC UniRef90-UPI00029B2C2E UniRef90-H91WL6
UniRef90-F8DK59
UniRef90-C2G064 UniRet90_V9ZYK7
UniReforo-KOYZL5
UniRef90-M4SIF7
UniRef90-H5UUNO
UniRef90
Q4FNS UniRef90-A0A059G615
UniRef90-K1V9Y2 UniRef90-G8Z313 UniRef90_R1FFW5 UniRef90-UPIOO036610F2 UniRet90_U2YBHO UniRef90-10WJ56 UniRef90-KoZ7W1 UniRef90-UPIO0046AATD4 UniRef90_UPIOOO3829EB4 UniRef90-S6GF45 UniRef90-P57779 UniRef90_UPI000463BF24 UniRef90-Z9JLJ9 UniRef90-UPIo0034CC3F6 UniRef90-D5HA20 UniRef90_003z41 UniRef90-HOABB1 1 UniRef90-M1LSG8 UniRef90-A8P1R7 UniRef90-UPIO003807A8F UniRef90-TOMLW0 UniRef90 B4RD10 UniRef90_LOB3P3
UniRef90 D3PRT4 UniRef90-C7NV71 UniRef90-E6TT69
UniRef90 Q6MAW8 UniRef90 A0A059E6L3 UniRef90_UP100041AFFBC UniRef90-UPIOOO478EFAB UniRef90-E8UDY9 UniRef90-UPIOOO35E1EF2 UniRef90-H6SRL7 UniRef90-E6XBW3 UniRet90_E3FDN7 UniRef90-W9G9F0
UniRef90-B7P370
UniRef90-E1VIR9
UniRef90-UPIOOO47CEE05 UniRef90-BOUUQ8
UniRef90 Dow7W7 UniRef90_1RCQ8
UniRef90_WOITP9
UniRef90-H1H1E9
UniRef90-G2IRZ4
UniRef90-UP100037AFEOB UniRef90-E6SBU1 UniRef90-F4CYB9 UniRef90_F6AAH3
UniRef90_C5NVP UniRef90-Q04KS4 UniRef90-LOK 4 W6 UniRef90-G2PQQE2
UniRef90
K5XQL5 UniRef90-A0A058Z6DO UniRef90-U1QIO4 UniRef90-K1ZZF7 UniRef90-AOAO24HEZ9 UniRet90-V6SEX9 UniRef90-UPIO0029B3362 UniReffo-C7N190 UniRef90-14AGW3 UniRef90_A5VF70
UniRef90_A4VKZ1

ESAAAY K S S A Y S Nll WR G S P|LIVYHCQDMAKCLLQEKLGEEY Y D KNVHTYEKEHNKSPLLKYTENGAKKLAKELGDKG KSAAAYREIWNESPLRTITREQTEKLQERFGD NYI
 ESAAKAYEKI WTGSPPLI I Y S K KLLQTK V V KSAQAYSKI WTGSPLADITARQAEAI ADDFGE K L RENYALMGGGSPLLPETLSQARALEAELCEGRGDDVPAK


 EVGEHYYGFGGKSPI NDQNKALLQAL REELERRGDDT QLAARYKAIGGTSPLAKITKDQADGLQAQLDQKFPG KFE EVKKK K Y S E I G G G S P LIK WTN S Q G S L L T Q A L D Q ML P E S P H K $T L Y D N Y \operatorname{V}$ R $I \quad G G T P L Q R D T K E E V D L V A T A L G N Q A S$
 RVAKLYQQVWQGSPLMAISQRQRAALEQELKREG
















 KSAK IYETI WT GSPLMHYS I I QRDLLQKSLGE NIIDDP










R

E V S R H Y L A F G G V S P I N S R N R A L V S S L R A E L D R R G VD T

 EVEEHYTPFGGVSPINARNRELIEAVRAR



 S S S N A Y K Ri WT GS PLVVI SKKAHKKV QER K S GA K Y K S I WT G S P L I V L T E K L T R K V Q E

| H | S | G | P |
| :--- | :--- | :--- | :--- | E VGAHYSHFGGRSPI NDQNRALKAAL EAELARRG $\square E L P$ K S A A E Y QK L WT G S P L LY HGGVDVA EK L Q H SL DEK SKK QK Y K S A H A Y A QVWE GS P L A A T T AR QA A A L Q A R FG GRA $\square$


|  |  |
| :---: | :---: |
| UniRef90-D8QX70 |  |
| UniRef90-BoU1A5 | , |
| UniRef90-UP1000262CD73 | T M |
| UniRef90-UP10003B67B2A | CFTAMRYWKPFADQTAAEV |
| UniRef90-Fol | VELAMRYKNPSDEFGLQQLYNKGVREV |
| UniRef90-A3V | VDYAMRYGQPSIEKRLK |
| UniRef90 K3 | VYVGMR |
| UniRef90-13TR56 | V MGMYWHPFAPEVVA EV |
| UniRef90 M1VBI3 <br> UniRef90 A0A023D5L3 | VAVGMQFGEPNLVSVMHDFRRRGIIDR |
| UniRef90-A5 | VLWGNRNWGPYLNDA |
|  |  |
| UP100 | IELGMQCRKPSLKTAIGKLRGQNCDQIIVLPLYPQYASSS |
| UniRef90 UP100018C2C0C | AEAEAGRTR |
| UniRef90-UP100029B2C2E | VFIGLKY |
|  | YVPPFTEDAFREVESDG |
|  | NKFSRP |
|  | MRYQN |
|  | VVLAMTYGSPSLDEGWQALKAQGVNRVILLPLYPQYAAST |
| UniRef90-KOY | LVIGNRNWHPFFTETMAELDAQGRNRVLCLFTSAFASYSG |
| UniRef90 H 5 U | $\\|$ LWGNRHAAPFTADALREARERGLTRLVALVTSAYPSYSG |
| UniRef90 ${ }^{\text {Q4FN }}$ | V |
| UniR | V |
| UniR | 研 |
|  | R |
| UniRef90-R1FIC | A |
| UniRef90_UPIOOO366 | CFLAMRYWKPFTKDAVNAVKEFAPDK |
| UniRef90-10W 556 | VSTAMRYGNPSLEAGMRELKSQGVTEI |
| UniRef90-K0Z7W1 | FMSETTAELVQGGARR |
|  |  |
|  |  |
| UniRef90-S6GF | VFAAMTYGEPGLTALLKNLQDNDYTQ |
|  | V DPAMRYGAPALSSALEALTAEGVRRLVVAPLYM |
| UniRef90'Z9JLJ9 | VVWAMRYGVPAFTKALDALHAQHVRRIVV |
| UniF |  |
| UniRef90-D5 | IVYSAMRYGRPFPEKVAADMEADGV |
|  |  |
| H0A | El V L |
|  | v |
| UniRef90-A8P1 | VDWAFRYGEPSIASRIRKFEKEACDK |
| UniRef90-UP1000380: | VETGMRYAEPSIEHGISKLVEQGVDKIV |
|  | VELAMRYQNPSIENALKNMEGMLLDSIRVIPLFPQYASAT |
| 34R | AFIAMRYWRPLAKETARQVAAFAPDE1VLLPLCYPQYSTT |
| UniRe990-D3PRT4 | VY |
| UniRet90-C7NV71 | TYYGMQFTEPFIDEALDAA |
| UniRef90-E6TT69 | V |
|  |  |
|  |  |
|  |  |
| UniRet90 Uplooou78EFAB |  |
| UniRef90-UPIO0035E1EF2 | WHPFVEEAVELVKEFEPDET |
| UniR | cliammy |
| UniRef90-D4YZT1 | VDWAMRYGNPSIGSRLAAMIIAAGCDR |
| Ret90-E6XBW3 | GV |
|  |  |
| N9G | LLWGNRNSEPFLPDALREAYAAGHRRVLVVTTSAYSCYS |
| UniRef90-B7P370 | Mal |
| $\begin{aligned} & \text { UniRef } \\ & \text { UniRef } \end{aligned}$ | VALAMMYGEPALKAGLQEAKAKAB |
| UniRef90-UPIootal | VYVGMRNWRPYIPEVVKQMRADGTEEAAVLCLA |
| UniRef90-B0UUQ8 | VEIAMTYGNPSMESAVEKLLKKHV |
|  | MTYGNPSVADVLSELKAQGAGRL |
| U1RC | VVWGNRNWHPFLDEALLGLAGRGARRLLMLPTSAYACYSG |
|  | S |
| UniRef90 G21RZ4 | VDWAMRYGAPALAARLAALKDSGDR |
| UniRef90-UPI00037A | $\checkmark$ |
| 6SB |  |
| UniRef90-F4CYB9 | NWHPMVEDTVAEMARDGV |
| UniRef90-F6AAH3 | Q G |
|  | VYFANKFSSPY PD SKMEDDG |
| UniRef90-LOK4W6 | MQFMEPLI TDLPATLAEDGU |
| UniRef90-G2PQE2 | LGMRYGSNTLKEGLQELKDKGVDEVE |
| UniRef90-K5XQL5 | AMRYWHPFAAETVRQVKDWAP |
|  | CFRYAPPLTEEALNRVYGPGV |
| $\begin{aligned} & \mathrm{U1Q} \\ & \mathrm{~K} 12 \mathrm{Z} \end{aligned}$ |  |
|  | T |
|  | VALAMRYGNPSMLSGLQELADKGVTEVMLFPLYPQHAMAS |
| UniRef90-UPI00029B3362 | D |
| C7 |  |
|  | VRLIAMRYQSPSIPNVLSELQAMNPKKIIVIPMFPQYASAS |
|  |  |
|  |  |

UniRef90_M2XS86 UniRef90_D8QX70
UniRef90_B0U1A5 UniRef90_UPI000262CD73 UniRef90_UPI0003B67B2A UniRef90-F0NYU2 UniRef90_A3WGM8 UniRef90_K3YQB9 UniRef90-I3TR56 UniRef90_M1VBI3 UniRef90-A0A023D5L3 UniRef90_A5CNI3 UniRef90_S0NT29 UniRef90_UPI000288D375 UniRef90_UPI0001BC2C0C UniRef90_UPI00029B2C2E UniRef90_H9IWL6 UniRef90_F8DK59 UniRef90_C2G064 UniRef90_V9ZYK7 UniRef90_KOYZL5 UniRef90_M4SIF7 UniRef90-H5UUN0 UniRef90_Q4FNS1 UniRef90_A0A059G615 UniRef90_K1V9Y2 UniRef90_G8Z3I3 UniRef90_R1FFW5 UniRef90-UPI00036610F2 UniRef90_U2YBHO UniRef90_IOWJ56
UniRef90-K077W1 UniRef90_K0Z7W1
UniRef90_UPI00046AA7D4 UniRef90_UPI0003829EB4 UniRef90_S6GF45 UniRef90_P57779 UniRef90_UPI000463BF24 UniRef90_Z9JLJ9 UniRef90_UPI00034CC3F6 UniRef90_D5HA20 UniRef90_Q03Z41 UniRef90_H0A8B1 UniRef90_M1LSG8 UniRef90_A8P1R7 UniRef90_UPI0003807A8F UniRef90_T0MLW0 UniRef90_B4RD10 UniRef90_LOB3P3 UniRef90_D3PRT4
UniRef90_C7NV71 UniRef90_E6TT69 UniRef90_Q6MAW8 UniRef90-A0A059E6L3 UniRef90_UPI00041AFFBC UniRef90_UPIO00478EFAB UniRef90_E8UDY9 UniRef90_UPIO0035E1EF2 UniRef90_H6SRL7 UniRef90_D4YZT1 UniRef90_E6XBW3 UniRef90_E3FDN7 UniRef90-W9G9F0 UniRef90-B7P370 UniRef90_E1VIR9 UniRef90_UPIO0047CEE05 UniRef90_B0UUQ8 UniRef90_D0W7W7 UniRef90-U1RCQ8
UniRef90-W0ITP9 UniRef90_H1H1E9 UniRef90_G2IRZ4 UniRef90_UPIO0037AFE0B UniRef90-E6SBU1 UniRef90-F4CYB9 UniRef90_F6AAH3
UniRef90_C5NVP7 UniRef90_Q04KS4 UniRef90-LOK4W6 UniRef90_G2PQE2
UniRef90 K5XQL5 UniRef90-A0A058Z6D0 UniRef90_U1QIQ4 UniRef90_K1ZZF7 UniRef90_A0A024HEZ9 UniRef90_V6SEX9 UniRef90_UPIO0029B3362 UniRef90_C7NI90 UniRef90_I4AGW3 UniRef90_A5VF70
UniRef90_A4VKZ1

130
140
150
160



## Y




 K QYHDRVEKELTAAPEISYTAHRHFWQQDGFQVFWSDQI
$T$
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 $V M \mathrm{GY}$ GY
TVAA ADS LLEDA DEDRYDPEFTA

TGSSSLSDWREAAAKA GDIPPVTMCLCCWFDDDPAYY EATAA MV






| UniRef90 M2XS86 |  |
| :---: | :---: |
| UniRef90-D8QX70 | KNELLKFEKP EEAHIFFSAHGVPV |
| UniRef90-BoU1A5 | KNYLQ ATDSYPDIILFSFHGLP |
| UniRef90-UP10002 | QKQLDALDE QPEVLVASFHGVP |
| UniRef90-UP10003B67B2A | DTAVAKAKELGTAAPRLLFSAHGVPKAVIKRGD |
| UniRef90-FONYU2 | KENLVATSFKVDFD |
| UniRet90_A3WGM8 | T R Q |
| UniRet90 K3YQB9 | ENELTKFSEP QKVMIFFSAHGV |
| UniRef90-I3TR56 | VERWHQAEAEPGRPMRILLSAHG |
| UniRef90-M1 VBl3 | ERVIGGPRGSRRVDHLLLSFHG |
| UniRef90-A0AO | GSTPFKPQ R A A G |
|  | GAPVDTDVElLFSTHS |
|  | KQKFLFTAHSLPERLLLNGDPYVDEDT |
| UniRef90-UPIO002881 | YVEKKP DHVLFSFHG |
| UniRef90-UPIO0018C2 | KEGLVDFGALDAGKHRILFVTHS |
| UniRef90-UP100029B2C2E |  |
| UniRef90_H9IWL6 | K EKLL DKFDE |
| UniRef90_-F8DK | DDSY KV1 |
| UniRef90-C2GO | KA |
| UniRef90-292Yk |  |
| KOYZL5 |  |
| M4SIF |  |
| UniRet90-H5UUN0 | VAAVQDFLIA |
| UniRet90_Q4FNS1 | KNFKL |
| UniRef90_A0A059C | AFDRAGRP ENVISLL LIS |
| UniRet90_K1V9Y2 | RHALDKFPDHERNDVVILFSAHSLPIEVVKPVH |
| UniRef90-G82313 | 俋 |
| UniRe90 ${ }^{\text {a }}$ |  |
| UniRef90-UPIOOO3661 | DNVPRVLSAHGLPKKVVDAGD |
| UniRef90-IOWJ56 | KEALQE K K D $k$ HLLFSYHGVPERHTKHQYCYRHQ |
| UniRef90 ${ }^{\circ} \mathrm{KO}$ | SESVKTLLDRGTVIDHLVFVTHS |
|  | QPYLDANDYDE |
| UniRef90 UPIO003829EB4 | RPSYEGS |
| RRe90_S6GF45 |  |
| UniRe90-55779 |  |
| UniRet90-UPIo00463BF | NR |
| UniRef90-Z9JLJ9 | SFHGLPQRVADD |
| UniRef90_UP100034CC3 |  |
| UniRef90_D5H/ | DEALLQRFPRHVREEVALVFSAHGVFDAQGPR |
| UniRef90_003741 | REAWAKN DYDRLI ISYHGVPESYVRRGDPYVD |
| UniRef90-HOA8B1 | KRSYDAALPQVKDGAR |
| UniRet90_S3NUE2 |  |
| UniRet90_M1LSG8 |  |
| UniRet90_A8P1R7 |  |
| UniRef90 UPIO003807- |  |
|  | RQH DIIAHFDHIVFSYHG |
| UniRef90_B4RD10 | RQTWEKAGKP SDIDRL |
| UniRer9o - |  |
| UniRet90-D3PRT4 |  |
| UniRet90_C7NV71 |  |
| UniRef90_E6TT69 |  |
| UniRef90_06M |  |
| UniRef90 A0A05 | AGEP DNVRLL |
| UniRef90-UPI00041AFFBC | AHEE AARHGRPRVLFSAHGLPEKIVRTGDPYQWQCE |
| UniRef90 UPIO00478EFAB | GLA EATAAAADAVH1LFCTHS PTADAEASGPRNREFA |
| 8U0 |  |
| UniRe990 UPIOOO35 | LKSWKAAGSPGEGVRVLFSAHG |
| UniRet90-D4YZT1 |  |
|  |  |
| UniRef90-E3FDN7 | LFSYHGLPERHMRKQHCLASAGCCDVLTEVNRHCYRAQCF |
| UniRef90-W9G9 | VESLRTUDGVPDEEVALLFVTHSTPETMDETGHLYQRQHR |
| UniRef90-B7P370 | KEELKKFPEEVRDQVVI |
| UniRef90_H1Z8K0 |  |
| niRef90_E1VIR9 |  |
| UniRef90-UPIO0047CEE | VPV |
| UniRef90 BoUUQ8 | Y |
| UniRef90-Dow7V | KLMLSFHGIPQSHYDLILDPYPDECR |
| UniRef90_U1RCQ8 | VESF |
| UniRef90_W01TP9 | QPYLQD PYDHVLFSYHGCNTCSALHETCYRAQUT |
| UniRet90_H1H1E9 | QGHLEGY DYDHIVFSYHGVPERHDHEFCYRHQCL |
| UniRef90-G21RZ4 |  |
| UniRef90-UPIOOO37AFEOB | ELEANGGSGAK |
| UniRef90-E6SBU1 | EEVALLFVTHSVPAAMDEDGHLYQRQHL |
| Uniego-4CYB | - DAA |
| UniRef90-6AAH3 | , |
| UniReef90-C5NVP7 |  |
| UniRef90-LOK4W6 | REFVDEEGVDLDDPDAFVFSAHGTPKKYLEEGSRYDQYVE |
| UniRef90 G2PQE2 | DHTLFSYHGTPERHIRHHTCYRHQ |
| UniRef90-K5XQL5 | RVLYSAHG |
| UniRef90-A0A058Z6D0 | FVLFSAHSLPMSIVERGDQYPTDVA |
| Ref90-U10104 | EQHWKIUGRPDPAGEHLLLSFHSIPQAMHDAGDPYRTECE |
| UniRet90_K1ZZF7 | SSSWEKEGRAP HLLFSFHGIPKRYIKEGDPYEERCK |
| UniRef90 A0A024HEZ9 | RPYLEQ GYDHLLLSFHGLPERHIERSDCYRAQCM |
| UniRef90 V6SEX9 | KKHLEGFA YDHLLFSYHGIPERHIRHEFCYRHQCY |
| UniRef90-UP100029B3362 |  |
|  | TDAVRRLLADHPPQVAVVMVTHSIPDTMDEDGHVYQQQHQ |
|  | QELLKTH DYDHYVFSYHGLPQRQLKNRLCYRAQCY |
| niRef90-A5VF70 | RDGLAAF HGEPDAILASFHGMPARTLDLGDPYHCHCR |
| UnRef90_A4VKZ1 | MPHLQQ |

UniRef90 M2XS86 UniRef90_D8QX70
UniRef90_BOU1A5 UniRef90_UPI000262CD73 UniRef90_UPI0003B67B2A UniRef90-FONYU2 UniRef90-A3WGM8 UniRef90-K3YQB9 UniRef90-13TR56 UniRef90-M1VBI3 UniRef90-A0A023D5L3 UniRef90-A5CNI3 UniRef90_-SONT29 UniRef90_UPI000288D375 UniRef90-UPI0001BC2C0C UniRef90-UPI00029B2C2E UniRef90_H9IWL6 UniRef90_F8DK59 UniRef90_C2G064 UniRef90_V9ZYK7 UniRef90-K0YZL5 UniRef90_M4SIF7 UniRef90-H5UUN0
UniRef90 Q4FNS1 UniRef90_Q4FNS1
UniRef90_A0A059G UniRef90_K1V9Y2 UniRef90-G8Z3I3 UniRef90-R1FFW5 UniRef90_UPIO0036610F2 UniRef90_U2YBH0 UniRef90-IOWJ56 UniRef90-KOZ7W1 UniRef90_UPIO0046AA7D4 UniRef90_UPIO003829EB4 UniRef90_S6GF45 UniRef90-P57779 UniRef90_UPI000463BF24 UniRef90-Z9JLJ9 UniRef90_UPI00034CC3F6 UniRef90-D5HA20 UniRef90_Q03Z41 UniRef90-HOA8B1 UniRef90-S3NUE2
UniRef90_M1LSG8 UniRef90-A8P1R7 UniRef90_UPI0003807A8F UniRef90-TOMLW0 UniRef90-B4RD10
UniRef90-LOB3P3 UniRef90-D3PRT4 UniRef90_C7NV71 UniRef90_E6TT69
UniRef90_Q6MAW8 UniRef90-A0A059E6L3 UniRef90_UPI00041AFFBC UniRef90-UPIO00478EFAB UniRef90_E8UDY9 UniRef90_UPI00035E1EF2 UniRef90-H6SRL7 UniRef90-D4YZT1 UniRef90-E6XBW3 UniRef90_E3FDN7 UniRef90-W9G9F0
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UniRef90-W0ITP9 UniRef90-H1H1E9 UniRef90-G2IRZ4
UniRef90_UPIO0037AFEOB UniRef90-E6SBU1 UniRef90-F4CYB9 UniRef90-F6AAH3
UniRef90-C5NVP7 UniRef90-Q04KS4 UniRef90-LOK4W6 UniRef90-G2PQE2 UniRef90-K5XQL5
UniRef90-A0A058Z6DC UniRef90_U1QIQ4 UniRef90_K1ZZF7 UniRef90_A0A024HEZ9 UniRef90_V6SEX9 UniRef90_UPI00029B3362 UniRef90_C7NI90 UniRef90-I4AGW3 UniRef90_A5VF70
UniRef90_A4VKZZ1
 ECVDFIMKDLRICEHTLAYQSRVG PVEWLRPYTDQTIRD
 KTGAAVVEKLAADEDWKVCYQSRV GPMEWI GPSTDETEE
 ECIDLIME QSCAAVMDRLDTDDWQVCYQSRV GPLEWTGPST DAEVE ATARALAQTLGLAPYSVSFQSRLTAAGPWIKPYTDEVLTI RTVAALRHALDLRDEQMVYQSRFGPTEWVKPYAAPYVEA AVAEVVMKELG DQWQLVYQSRSGPPMPWLEPDVNDAIGE NAAKAI A GRHGVLDFGHAWQSAGRTADKWI GPRVEDVTEE QTAKLI AKSLKI EKWSVSFQSRLGR DEWVKPYTEPHLKE E LMAHLLEGLALPAELVYCSRSGSPEVPWLEPDVNDRMRE GCIKAIAKAAGLAQYTI A WQSAGRTPDPWLEPDLMTTAQS STVSRTMEELGGNPHRLVWQSKVGGPDPWLQQPTDDADK DNSRLIAEDLGLEQYTNTWQSESDGGUPWLKPDVLEYLRN RTAALLAEALGLEQWSASFQSRFGK QEWLKPYTDVATIAQ EDCRRVSAALDRNEVDLAFCSRSGPPMKWLEPDDNDRLKQ E I A ELVVAAVRLDMSLVYCSRSGPPHQPWLEPDDCDHLRD



 $\mathrm{V} S \mathrm{~V}$ RLLEKALARPDLRVTFQSRFGKA KWLEPATDTVLIDE


 DSANAVAASGGLEQWSMSFQS VSASLI ASALDLSEWLLGYQSRFGR ERWLEPSTDAELDR V S A S L A A S A L D

## A <br> A

 RSVAVVERVGPDNTHQVFQSA


TTAERVAQ K
EYVETVAGLLGIDDYELGYQNHENRG

 RTATALAEASG\|PDWVSTYQSRVGR LKWI EPSTEAVI HE H TVVELI K A A L A P Q P QVVDI A F Q S R K F G R P H P W WL E P D D I N D



 ATVVGVMNE LNNSHYRLVWQSKVVGPLPWLKPETEASMRA E T T K QVVVEKLNDPKYTNTFQSRLGPDKWLQPPTDKTVNQ

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 $K T A R L L G E A L G R E V L V S F Q S R F G R A K W L E P A T D K V L E A$ D L A R V V A E R R L G H E P WD L A Y C S R S G P P Q P W L E P P D V N D D H L E A A
 RSAEAFATRMMGLEQWSVVSFQSRRLGR DK WI EPYTEARRLDE D M T K L I A E K I GLLENY T N T WQ S E S D I G MP WI K P DVLLE Y L R E E N S K L V A E K L G L E Q Y T N T WQ S E S D I Gll P Wi K P DV L E Y L R E
 ATS A AV GA RLA DVE HLVVCYQS R A T P QK WLE PS TDQA IE Q AT A S AV M E HVVRQS P WRV CWQS TVV GPRRRWLSPSTENSSLKA
 RT A E G L A R A A G L E R W S V G F Q S R L G R A



Unepopsob

|  |  |
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| UniRef90_M2XS86 | GEFFLVVPCLNSSPVWAEALI |
| UniRef90-D8QX70 | $\square \mathrm{D}$ NWRVPAL G CEPTFMA DLA |
| UniRef90-B0U1A5 | GEFVLIPCLNDSDEHVEML |
| UniRef90_UPI000262CD73 | GDQLI ADCLNASEEGMEVLEYL |
| UniRef90-UPI0003B67B2A | VPYERVRTVCSHPKFIL |
| UniRef90-FONYU2 | GEFTYIPCLNDRDDWAQVLI K W |
| UniRef90-A3WGM8 | GEQYAVDCLNVSQSGVVMLDAMIR |
| UniRef90_K3YQB9 | 1 K NWRVPALGCEPTFIS L L A D |
| UniRef90-I3TR56 | TPTTHPAFIRGLGDLVMQAA |
| UniRef90-M1VBI3 | GEFYLVPCLNDSQEWADA |
| UniRef90-A0A023D5L | GEFAVIPCLNASGPADDLLEALARQAM |
| UniRef90-A5CNI3 | LY S VRVPTPGVHAAYVDG |
| UniRef90-SONT29 | G! YGRL NMPNTHPDFIS G |
| UniRef90_UPI000288[ | GELKLVPSLNNHPEWVRALTSTI RQKL |
| UniRef90-UPI0001BC2CC | FAFTRVATVGTHPLFVSGLVDL |
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| UniRef90-H5UUN0 | $\square \mathrm{AFVRVPTVRDDPAFVIALADLLEERAA}$ |
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| UniRef90-G8Z313 | GEYVYVPCLNDSTDAI D L E E S SRKHI |
| UniRef90-R1FFW5 | 1 T HWRVPAL GVEEDFI E DL A S A |
| UniRef90_UPI000366 | VTY Y L R APALGI S DEFISSGLA G |
| UniRef90-U2YBH0 | EFAALACLNAGDAGMAMLETLVRRELG |
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| UniRef90-S3NUE2 | GKYEY\PALNEDPAHI ELLA HL |
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| UniRef90-C7NV71 | LEFHRVPDPHDDERFVGVLEDLVEPFDA |
| UniRef90-E6TT69 | GKYHYLPAANDDSLFI D CLE |
| UniRef90_Q6MAW8 | GDLHLVEGLNSHPVWI EAI K |
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| UniRef90-UPI00041AFFBC | APYLRVPTVGADDGFI A GL |
| UniRef90-UPI000478EFAB | F AVVRVPTPSVHEKFVAGLVDLVC |
| UniRef90-E8UDY9 | GEFGYIPCLNSSEEWCETLNEIVYHHI |
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| UniRef90-H6SRL7 | $V P Y L R V P T V G R H P A F I G G L A D L V E R A V ~$ |
| UniRef90-D4YZT1 | GNFVHLSCLNASQDAMNLYESLTRRELA |
| UniRef90-E6XBW3 | GDYKHIPCLNDDDSWVSVMAEWLN |
| UniRef90_E3FDN7 | GELTLVPSLNAHPTWVDAVCNLVR |
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| UniRef90-B0UUQ8 | GS FQY IP AL NAEMQHIEMMYKL\S S R L |
| UniRef90_D0W7W7 | GKYRYIPCLNDHPDWI S ALLERLVKENLG |
| UniRef90-U1RCQ8 | LS Y DRAATAGTHPAFVRSLADLMLERAA |
| UniRef90-W0ITP9 | HVPCLNDSPAYI R F L A G RVVRA WLA |
| UniRef90_H1H1E9 | GEEFRIPCMNDDDMWI DAMVTWI |
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| UniRef90-C7N190 | LT MVRVPTV GVDPEFVVGLVDLLEERAA |
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## 

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E S K N N Y R K $\square$ GGK S P L VE H T
FKLCQKLENLDDNYFY T
MYAQDWDPELGGSPLLYYTQQ




S S S K I Y RQLWNNVS P LL KN T DE LTKK L
K S Q EI Y N QI G GK S PIVGHTKKLVEKLQNRVGE
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7L3
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 valamrygsmt VELAMRYGQPA VYYAMRYQKPSL VAWANRNWTP Y EKGILQELISD
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 VELAMRYGEPSIV VGMAMRYGKPS|l
VAMAMRYGQPS VVPAMRYGQPS LYWGNRNWAPY

## V

\[
-\ll r

\] | $V$ | $Y$ | $F$ | $A$ | $N$ | $K$ | $F$ | $S$ | $R$ | $P$ | $F$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $Q$ | $F$ | $A$ | $M$ | $R$ | $Y$ | $Q$ | $S$ | $P$ | $S$ |
| $I$ | $A$ | $L$ | $G$ | $M$ | $R$ | $Y$ | $G$ | $E$ | $P$ | $S$ |

## 4


 VYWGNRHWHPL


## 

## 

 $P$ D T L R A AK Q E GRR RLVV VLTTAA YP S Y S V
## 

$V$ A M A M R Y G K P GVEMAMRYGKPSIVEKNALKELNDKGVDEVLLVPLYPHYAMSS    REAMHRLEAAGAERILVLPPLFPQYSSTT
    VAlGMSYSVPS
VWGNRNWDPY
VLWGNRNWDPYLL
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ASA EALDRQRVTELLLIPDYPQYAMST

A SALERLKSNCDTVTLPLYYPQYSSAA
VEDAMRYGEPS
LYTGGRYVAPSLL
VAMGMSYSQPS
CF GAMRYWHPFVD


VKYAFSYSEP
VRFAMTYGEPR
VEGGMSYSEPSA
IFMNMRYSPK
VEMAMRYGKPS,
$V$ VMAMRYGNPS
VVMAMRYGP
I ALGMRYGKP
A
i SLAMRYGSMT

VYVGMRNWKPF
VYLAMRYGQPS

| $V A L G M R Y G S M S$ |
| :--- |
| $V$ |
| $V$ |

$\qquad$ VGATYRYSQPF I GATYKYSQPFDKGVVQDLKGRGIIQEIVLFSMYPHFSYTT MRYWHPFTEEALEQIKRDGHTKLVVLPLYPQFSHSG YAMRYTPPFANLVAKELQSKNI QEVVLFSLYPHFSYTT VRFAMSYSQPNTAQVLQD TDIGMCYYHPYIEDSVKTHENTDYE VYVAMRYWHPFTEEAVHQDKRDGMT GWGNRNWHPFVSEGLRELADAGAR
 VYYAMRYQKPSLQNALNKIKETNPSELVILPRFPHYASAT VQFAMNYGGPTITEKMKLMHQNGDAQ1 IVLPLFPNYTQST VRYAMTYTAPSLASQADAFVAEGVREIAVLPLYPQWAPSN YYIGGRYVHPLTEEALEEMERDGLERAIAFTQYPQYSCST VYQATKHTSPFVHETVQQMVADGVTKLYAFPTSPGYSRTG VY DAMRYVPPFSKDALLECKRKRVEELVLESMYPQYSTTT TEIGMCYYKPYMEETASKLQNGDYENVYMMTMYPQYSYTT VGWGNRNWHPFVAEGLDELAQAGARRLLVLPTSAYASYSG VVWGNRNWEPYLDDVLRERAQAGDSRFI AVTTSAYSSYSS $V S F A M T Y T K P S V K D E I A R D Q V E K C E R V I V I P G Y P Q Y S S T T$
$V G T C M R Y S A P N A L T V L G D I D E Y K C K V V L L P M Y P Q Y S S A T$

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QPHLQQ
KEALDKEG


DFDHLL NVALDFGKPV $\frac{-}{A N A V A A A L A S V E P G A R V V F V}$ THSIPTAMDDASGPYVAWHQ
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TTKVL DSSFDKYGHP Sk
QPY YQQ
$K Q A L A K N A$ FQ $\square \mathrm{DTYDR}$

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RHLLDADED YDHLLLSFHG

EA
PERK DDALV

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APYFAQ
WESYQQH WESYQQH RPYYEK KQALDWLSD ENA EKE EKFRSPVENSTVIF EKELLEKFRSPDS
$\qquad$ MNAAQKLGKD EQELHNTKP KQDLETFDEKQREKVMI EF EAQLATYPEDKRDNVVLLF A AKDFNLREYDKI F
K
DESYVR
A HA L-A QLPEA $K N Y D A V I F$
$S Q T R V I L$
REHWRINGGKPS LKELDHFPLEKRSEVVIVMS RTALQWLSMENRSEMTVLF DNATKGKDTKEYTQMELIL KSALER GANDPGNHLYSAHSLPQEIIANGDPYQREIT KSASERLGVELIENCHLLYSAHSLPEYTLLSKGDVYVEQLK
 RRHREAHKAKANKPRLLVFSYHGIPQQVVDDGDPYTAHCH SEAYEKALA GNARARGLGAHSLPVSFIEKGDPYQQQLR
UniRef90 A5FLEO UniRef90-T2KQW2 UniRef90-A6VC51 UniRef90-J5KIW4 UniRef90_K2PYX8 UniRef90_UPIO00255CAEF UniRef90_UPI0003B66640 UniRef90_UPI0003B6CC00 UniRef90_GOL533 UniRef90-A0A031JEL8 UniRef90_UPI00036CAA19 UniRef90_UPI0002559B63 UniRef90-E8X3F1
UniRef90_-14XP58
UniRef90-UPI0003B595FC UniRef90-FOIDS3 UniRef90_M7PIN4
UniRef90_C4FS80
UniRef90-17L795 UniRef90-K0Z7N3 UniRef90-M7MX81 UniRef90_UPI0002491609 UniRef90-UPI0003B4AC32 UniRef90-G7UU56 UniRef90_LOB9K4 UniRef90_U4TI82 UniRef90-M7ZXV1 UniRef90-Q0BPC0 UniRef90-D4YKL7 UniRef90-N9DTX3 UniRef90-K0C4X4 UniRef90_A0A031M7L3 UniRef90_K2PPX3 UniRef90-UPI0003B44847 UniRef90-W4DC75 UniRef90-X5HMI2 UniRef90_UPIO003B6618B UniRef90-NOCDR2 UniRef90_UPIO00287E4BF UniRef90-G9ET43 UniRef90-X0PF62
UniRef90 H6Q4K8 UniRef90_UPI000377E384 UniRef90_UPI00029A032B UniRef90_D6S3T8 UniRef90-G7Y647 UniRef90-A6Q2Y9 UniRef90-S1NHO4 UniRef90-A3UIC5 UniRef90-LOIHQ3
UniRef90_L8MR54 UniRef90_U2YUA5 UniRef90-N1ZMN4 UniRef90-A2RJS3 UniRef90-D9PHE6 UniRef90 S4BQV7
UniRef90 A8GYD7 UniRef90_CON6C9 UniRef90-F3XSM0 UniRef90-WOBGW4 UniRef90-W8VWA6 UniRef90_S1RPJ5 UniRef90_E8V1B9
UniRef90-B1ZSW3 UniRef90-COBNK7 UniRef90-_18RB23 UniRef90-F8X1A4 UniRef90_UPI00047A3BFF UniRef90-UPI00046945E9 UniRef90_A0A022PVZ4 UniRef90-C5ZYX9 UniRef90-XOPDZ4 UniRef90-D4H7NO UniRef90-MOZQ62 UniRef90-G0R697
UniRef90_G9PG71 UniRef90_D4CZS5 UniRef90-KGGJR9 UniRef90-Q30S35 UniRef90-H1LFV6
UniRef90-X4RAA0 UniRef90_UPI0003C1071D UniRef90-UPI00045D6FAB UniRef90-C0Z4S7 UniRef90_UPIO00373E810 UniRef90-W6EJI3 UniRef90-D3PB47 UniRef90-L1PLN9 UniRef90-UPIO002FAE36F UniRef90_G1C9R3 UniRef90-A0A023HV76
UniRef90_W4LVL3
A3BFF
945E9
VZ4

A

C1071D 5D6FAB $73 E 810$ A

E T TR $210 \quad 220$
230
240
ETTR QVVIKLL G|LP K Y S L T F Q S R|L|A G D K W|L E P Y T D VVE|I D N $E V T R L V A E K L G L E E F S T S F Q S R L G F \quad D P W L Q P Y T D R T I E R$




 E T A Q R L A E A M GWE R WA I A Y Q S R F G P E P W L G P T T E E V L $R T A A L V A Q A L A D R D W Y F A F Q S Q G V A G G P W U G P T V E D T B K A$ NTARAFAERMGLPDWSVSFQSRLGRA KWI EPYTAEARLDE




 RSAKLFAEQAGLEQWSVSF RSAALIA QALLGLDAWTLTYQS RLGRA

E C V D L L I A E K L
RSTAA $V$ LRAMNDPDHQQ CY






 RTAQAFAQKMGIADWSVSF K TTEA IMAKVDTNPVYQTYQSK A T V
 E HAATMARLLDLEDYHI GYQN EYTTA LAHLLGGVDYVVGY



 STTQEI MAKVGPDQYFESF


 ENVE I L K S MLLKFA S DKVAY Q S K DGP DK WL E P NL Q DV L ALAEKI A QELQQLSSWRIAYRSARNKQGWLEPELKEVI RE

$\begin{array}{ll}\square T & \text { T } \\ \text { E TM M E R L }\end{array}$ A DIE AL QPALEWANADLAYC


 $K T G R L L A A E A D E L D D E Y L V A F Q S$ A VQNVMERLGYNPYRLVWQSK E L A E E V A L R A D C K K WM L A Y R S A GP A P Q K WL G P D V L A M A T I A A L A C C S K V A QI DL L C S ML G VK N Y E L A F Q S R T GP IVK WL GPETKTVVI E S $A$ LI QA M P ELLGREDYD LAFCS RS GP P QA WL E P D D N D F L R E




[^0]UniRef90 A5FLE0 UniRef90-T2KQW2
UniRef90-A6VC51 UniRef90-J5KIW4 UniRee90-K2PY8
UniRef90-UPIOOO255CAEF UniRef90-UPIO003B66640 UniRef90 UPIO003B6СС00 UniRef90- G0L533 UniRef90-A0A031JEL8 UniRef90-UPIOOO36CAA19 UniRef90 UPI0002559B63 UniRef90-E8X3F1 UniRef90-I4XP58 UniRee90 UPI0003B595FC UniRef90-FOIDS3 UniRef90-M7PIN4 UniRef90-C4FS8C
UniRef90 $17 L 795$ UniRef90-K0Z7N3 UniRef90-M7MX81 UniRef90 UPIO002491609 UniRef90 UPI0003B4AC32 UniRef90-G7UU56 UniRef90_LobgK4
UniRef90 U4TI82 UniRef90-M7ZXV1 UniRef90-OOBPCO UniRef90-N9DTX3 UniRef90-Koc4X4 UniRef90-A0A031M7L3 UniRef90 K2PPX3 UniRef90'UPIO003B44847 UniRef90_W4DC75 UniRef90 X5HMI2 UniRef90 UPI0003B6618B UniRef90-NOCDR2 UniRef90_UPI000287E4BF UniRef90 G9ET43 UniRef90-X0PF62 UniRef90-H604K8 UniRef90_UPI000377E384 UniRef90 UPI00029A032B UniRef90-D6S3T8 UniRef90-G7Y647 nirefo-AcozY UniRef9-SNHO4 UniRef90 LOIHQ3
UniRef90 L8MR54 UniRef90-U2YUA5 UniRef90-N1ZMN4 UniRef90-D9PHE6 UniRef90-S4BQV7 UniRet90-A8GYD7 UniRef90 CoN6C9 UniRef90-F3XSM0 UniRef90- WoBGW4 UniRef90 S1RPJ5 UniRef90-E8V1B9 UniRef90 B1ZSW3 UniRef90_COBNK7 UniRef90-18RB23
UniRef90
URX1A4 UniRef90_UPIO0047A3BFF UniRef90- UPIOOO46945E9 UniRef90-A0A022PVZ4 UniRef90-C5ZYX9 UniRef90 XoPDZ4 UniRef90 D4H7NO UniRef90-M0ZQ62 UniRet90_GOR697 UniRet90 G9PG71 UniRet90_D4CZS5 UniRef90-K6GJR9 UnRel UniRef90-X4RAAO UniRef90_UPI0003C1071D

290
300
GEF|L|A|I PC|L|NDDDEWCQTV|SNWDND
GEFTTVPCLNDDDSWSALLAKKUN N
GELVLIPCLNDHPAWVGALADM SGRDAR
GELEFVPSLNSSDSFVQALSDUVSKR
GELLHVVPCLNDDQDWIKVLGRWIDQ
LLAARTPTPGVHPAFVSGLVDLESERM GEYKHIDCLNESDSWVKVMASWIKD GNFAHLSCLNASPDAMVLYRRLI DREDA AEFRLAPCLNDHPAWLDFLADFARD GEFTTIPCLNDRDDWVQVVTNWLNNWL LKVSRAESLNASEPLIRALKTIAE GELVLVPCLNDDPQWAKALNALCERA LIA ARVATPGTHQAFVSGLVDLDEERD GTYNYIPCLNDRQDWVHVIAQWIEK AVYMRAQMPNCNETFLQAMASALLER GELDLVPALNDDPQFIKFTADLVQEKV GEFHYIP WANEAQPAVDALAEQARNLLA GAFHRVPTPGTHTDFVSGMVDLLAERLA

GEFFYIPALNDLDPEVELLKDMLHS

GSYSYlPALNARADH

GELQLIPCLNDHPAWVNTLGAWCE
GLVLVPCLNDHPQWMDTLAHWARTE EYI YLLSPFNDEMAFAELVKERVERK DYVRAATVGVDPDFVSGLVDAALERAAQ GNLEVAPCLNDTEEWVSFLAERV LSMARSATAGVDPAFVRTLVDRIEAAAAR VAYHRPPMPNTDSRLIAALLATIRQH GEVLYVPSLNYSNEWVDAIIDITK GELIVVPCLNEQPLWVKAIITEI GVLQRLEMPNNSEALTNAIVSKLEAALA GLFHYIPALNDQDLHIDCLASTVKKYL GELDYVESLNYSDLWADAIIDIIKK GELVLVPCLNDHPQWVQALKGMCEEA GEFHYLAPFNGDEDFAKLVKSLI


LK Y K K $\square$ A S $L$ N D D D T F C Q G L A H V VA A N L LGYERADTVSEDPEFVSSLVDIMEERAA VK RVESLNGNPVFI QGLADLAAEHL GDLDYVPSLNFSDAWVQAl GKFDAVPPMNASDDFCQFIAELSQKKDA $G K F V R V A P M N D D P A F A D V V R Q L G T R$
$G E Y H Y I D A L N E S L W H A M T Q A L E N L$

LEFVSTEFLNDSADYMDALVELTHERMKQ YEFVVVKALNDSDEFVEFISRBI E
FEYVVAKCPNDDEAFVECLKGLI
LNAKRABESTNDSDDFAKAVVNLLRERAAQ
FAFVRAATVGTDPVFVSGLVDLILERAAQ
GDYTVVPCLNDSEEHCTVLANIAMDEM
KFIRVPTLGTDPKFTECLCNLVL

UniRef90 A0A017THB8 UniRef90-E6KRN8 UniRef90-F8A0U5 UniRef90_U6HI58 UniRef90 B9TN32 UniRef90-S2WS82
UniRef90_F9VAM7 UniRef90 R7CGX5 UniRef90-E4TG76 UniRef90-V8C8F2 UniRef90-M7T0U8
UniRef90-A8ES93 UniRef90-E7G048 UniRef90_UPIO003B3A903 UniRef90-V8CJS9 UniRef90-Q5FFX1 UniRef90-K4RL04 UniRef90-I3XYK1 UniRef90_FOS1T8
UniRef90_UPIO00367BBDB UniRef90-EOUS45 UniRef90-D6GUA5 UniRef90-T0MOI2
UniRef90 F8KTV9 UniRef90_F8KTV9
UniRef90_S5A4P4 UniRef90_UPI000185DF73 UniRef90-G0ELR5 UniRef90_R9L1D0 UniRef90-LOPCI3 UniRef90-TORJE6 UniRef90-E7ACT1
UniRef90 ${ }^{\text {X8ASU3 }}$ UniRef90-Q7MXP4 UniRef90_COW557 UniRef90-DOWK16 UniRef90_UPIO002657865 UniRef90_C7M0D4 UniRef90-C1L4Q6 UniRef90-K7KI68 UniRef90-M0SP91 UniRef90-K0YIN3
UniRef90- X2GLY7 UniRef90-R5G028 UniRef90-K2BVZ0 UniRef90-S7J3F1
UniRef90 V9G5X8 UniRef90-A5V0K6 UniRef90-Q6BFD7 UniRef90-G1C9Q7 UniRef90-R5G3J7 UniRef90-E1X3L9 UniRef90-A6DEA9 UniRef90-G9PR13

1 AVVLLSCHGTVSRHEDTPAFLDHNIIRRGRPTPPELVQQ
AI ML LSYGGPNGEEDVLPFMRNATRGRG!PDERLL

$R G L L V N L G S P D S P S D V R A F L A K F L S D P R V V D F R P R$ KKRGILLVNLGTPESPQALRKYLKKFLSDRRVHPLLWQ SDET $\square G L I L I N T G S P A S P N D I R P Y L I E F L S D R P I W L P I L H$ STPKTAVLLMYMGGPDSDQAIEEPFLYNRFTDRDIDDFRSK
 ENKKALVLLNMGGARDKSELKMFLTNMFNDENI TNSRLE KEAVVLLNMGGPNHLAEVADFLKNMFADPCI DSFRLQ AILLLASGGGPEGQEDVIPFLRNVTRGKNIPDERLE
 KEAVVLGNMGGPNNLYEVEVFLTNMFNDPYVVKMRKE QKALILLNMGGPNNLQEVELFLSNMFNDKMITASRTK

 KNALLMMAYGSPERKEDIMDYLRDVYGGREPPKFAI E

 SKKKDTTILLNMGGPRNFDEI NTFLVNMFNDKKVVNK DRP KVGVVI ANTGTPAAPKAVRKYLSQFLMDPRICPKRSK SNGPTGIVFLNMGGPSKDSEVKDFLFRIFTDSDLIPLRAP

PKTKVVFVQLGSPKSPKDVRTFLKEFLGDPRVVPFRPK SSPKEAVVLLNMGGPNHDDEVALFLTNMFNDPYITKNRLQ

VLLLNDGSPDSPEDVARYLNSFDTDRR\|IPFRKK PYDAVLI L S YGGPMGPDDVLPFMRNATAGRGVPDSRLL REGVIVVALGTPASTRA IAEFLGEFLSDKR\|LKRRPG
PTRALLWLSFGSPERPED $\square W P$ F LIERVVAGRGVPRDRLA
AEEKVGVLLLNLGGPETLSDVQPFLFNLFADPD\|IRLRAP
G I L LMNTGTPDTPEATRPYLKEF LS DRNVVPNRPK SNEN IGGUVYYAYGAPQSDDDVDPYFTHVMKGKTPPPHVID

RPAYLLANFGGPRHQKDVENF LVSLLTDSCDARRRSP KAVLLLTYAS DKSDDEVPAFYTHLFHGQTPPPGKME KNQ GVLVLEYGEPATLDDVVPY LTAHYHGHPPSPEDDA TSPNTLILIVNLGTPTSPYAVRNFLREFLSDRRVVPFRPY RALLLINTGSPKSLEEVRNYLTDFLTDRRIIPSRAP RKTKVVFVQLGSPKSPKDVRTFLKEFLGDPRVIPFRPA KRAII LHNMGGARNKDELREFLLNMFKDKRI ANLRYK PYDAVLLLSYGGPRRPEDVLPFMRNATAGRGVPDSRLL RVAVLLMGYGEVESYEDFANYLNLLTAKFAPVPTWVY SSPRVAVLLMGYGEVESYEDFANYLNLLTAKFAPVPTWIY


VLFLNMGGATNDQDCEVFLKNMFNDPDITKARVK


 I AVLLMGYGEVESYEDFANYFAPVPTWDYPPLAKLL
KTGIIIGNAGSPSAPEAVRDY $\square$ ASFLVDRR $\square R P R R P V$ SSDRVAVLLMGYGEVESYENFANYFAPVPTWMYPPDARLL ATDRVAIILMGYGEVESYDDFANYLNLLTAKFAPVPTWLY
 $\begin{array}{ll}P T T P D E V E D F L F R F L Y D R G G & A K A R A R \\ P F V F D L P L P E W D R K P L G R W I ~ A K R R A P ~\end{array}$ E QRVAVVLVMGYGEVESYEDFANYFAPVPAWVYPPLARELLD

RSPTGDVLMNMGGPSKVEETYDFLYQLFADNDLDPFRTP KKVVILLNMGGADDLSQVEDFLKNMFNDPYITKMRLK TDERVAVLLMGYGEVESYEDFANYFAPVPTWDYPPDAKLL


KKALLLLNMGGANSLADVE $\quad$ K $L$ LKNMFNDPMTTKGR LIK KPKTGILMLNMGGPETLEDVHAFLQRLFLDRDIAKRRTP A YLLANFGGPRHIQDCETFLTTLLTDPDVTRDRLP AY LANFGGPRHAEELESFLTSLLTDRDIAKKRVS DGILLANDGTPEAPDAVRKYLRDVLVQKDILPKRPK $K P K T G G L M L N M G G P E T L G D V H A D P L Q N K L A P Q P A K R M M E$

|  |  |
| :---: | :---: |
|  |  |
| UniRef90- F8 | EVAEHYHHFGGASP NGQNLALQRELVAELTRRG DD |
|  | ITQEKYNETGGGGSPLIQWATCQGKGLVRV |
|  | a |
|  | PLAKLYEKIDGEFPLLTYTAAQEKNLQELWPE NVE |
|  | G |
| UniRet90-E4TG | K |
| UniRef90-V8C8F2 | SVKENYRKIG |
| UniRef90-M7T0U88 | KIQKQYAE: GGGSPIRKWSEYQNEEM |
| UniRef90-A8E UniRef90 ETC | SAWKNYEKIGNHSPINPLTEQLVNKC |
| UniRef90-UPI0003B3A903 | EVATHYRANGGVSPINQQNRDLKAALEA |
| iRe990-V8C | SVKQNYQK GGCSPLPAYTKTA |
| UniRef90-S5FFX1 |  |
| iRef90-13XYK | ANYAKLGGKSPLVGYTQKLVAKVQKKL |
| RRef90-F0S1T8 | KVKPOYEALGGSPL |
| ef90-UPIOOO367 ef90 EOUS45 | KYıRIWNHEKQSFPLIV |
| RRe90-D6GUA5 |  |
| UniRef90-Tomo |  |
| Uni | KSKDUYKNUGGKSP NDLSAQLVQALRE LDPTRHYT |
|  |  |
| UniRee90 UPIIO00185DF73 | , |
| $\begin{aligned} & \text { GOE } \\ & \hline 10 \end{aligned}$ | Al G |
| UniRee90-Lop | K1 GGGSPlHK |
| UniRet90-TORJE6 | S |
| E7ACT1 |  |
|  |  |
|  | P |
|  |  |

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

KTAARYQAFWQGSPFMDESQKQCEELERRTGELLGET VA
 WTDAGSPLLVNTLNLRDALQKKLEGSYC
 EALLRFRSMGTADPLGSVTSRMADALQRRLRQYTGEDVQ YMRERCQRVWSGTSGDSAARRLAAALDDELRQRYGSRFQ KDNKQYEKIGGFSPGFKWTYSVMVQGILMSKPQGSGF RAAKAYEAVWGTSPLSRYTYSVASKLQHALEKH G G KSRDKYAQUWRGSPLQILTE SASALATRIESESGDATFM KVWENYKKI GGSRIYTITENLCNEMQK YLS YTVVE KVWENYKKUGGSRMYTDTENLCNEMQK PPLAKHQHNNFASPHNQMFEQQRAGUEQHEQEKWGDRVQ PA RVSRAYESПWGTSPLSLYTYSTASKLQVSLQ NYP EVSGHYGRFGGVSPI NARNDELDAALRTELAARG AMQENYKKMGGKSPLNELTQSLCNKLNLKQDE PPLAKHQHGNFTSPHNKIFEAQREGIEQELKKTWGE FK PPLAKHQHHNFISPHNAIFEQQRAGIEKHLQSHWGN KVVG PLAKQHQHNHF
 ALFDRHEHHDFISPHNA乌FEKQRAGUEHELQHKWGN KVQ
$K S A D R Y K R \square W Q G S P L V I A Q D R L A S L L Q E S F A R S A D D T E V I$ AVFDSHQHGNFISPHNAIFEAQRQKIEENDQQTWGD KI K PPLAKHQHGNFVSPHNAI FERQRAKI EHQLQHTWGEKVK KSKEGYASIGGGSPLRHITDAQAEELRKCLWEKN VPAK AVRGHYAVMGGRSPLVDYMREDAELVSER TVGYE KIAKDYESFGGGSPLVSETNKQAVAIAQTLKKDTGKT WE


K TEKQYENWWGAPP TRKWSEYQATEVCK\LDKTCPETPHK SATRNYTEDGGKSPIGDDTRS A LFDRHQHDHF DSPHNSIFERQREGI ERHLQAKWGK RVS EVAEHYHRFGGVSPDNRLNREADA AVERELAEQG GSLP R I DP LYKS $\square$ WE GSPLALYTESLVSKVQALLKTTTGGEVVL

TAK HNYEQ IGGRSP TCELTAKDCDK ISS LQNEFDA $K I Q E Q Y R R I$ G G GSPI KK WTETQGEGMVKLLNEMSPESPHK LI LLH K Y N A I GG H S P I Y Q D T E T LLA N T L S S S Y L H K V L P Q Y L S L K K N WS P I Y Q D T E N L A Q A L M G L L K A $\quad P$ V I P F H



UniRef90_A0A017THB8 UniRef90-E6KRN8 UniRef90-F8AOU5 UniRef90-B9TN32 UniRef90-S2WS82
UniRef90
F9VAM UniRef90-F9VAM7
UniRef90-R7CGX5 UniRef90-E4TG76 UniRef90-V8C8F2 UniRef90-M7TOU8
UniRef90 A8ES93 UniRef90-E7G048 UniRef90_UPIO003B3A903 UniRef90-V8CJS9 UniRef90_OSFFX1 UniRef90_K4RL04
UniRef90
USYKK1 UniRef90-FOS1T8 UniRef90-UP1000367BBDB UniRef90-EOUS4 UniRef90-T0MO12 UniRef90 - F8KTV9
UniRef90
S5A4P4 UniRef90-S5A4P4
UniRef90 UPIOOO1 UniRef90-G0ELR5 UniRef90-R9L1DO UniRef90-LOPCI3 UniRef90-E7ACT1 UniRef90-X8ASU3 UniRef90-Q7MXP4 UniRef90-COW557
UniRef90-DOWK16 UniRef90-UPIooo2657865 UniRef90-C7MOD4 UniRef90_C1L4Q6
UniRef90 K7KI68 UniRef90-K7K168
UniRef90_MOSP91 UniRef90-K0YIN3 UniReffo-X2GLY7 UniRef90-R5G028 UniRef90-S7J3F1 UniRet90-VVG5X8 UniRef90-A5VOK6 UniRe90_-Q6BFD7
UniRef90_G1C97 UniRef90-R5G3J7 UniRef90_E1X3L9 UniRef90-A6DEA9
UniRef90 G9PR13 UniRef90-G9PR13
UniRef90 B4VUH4 UniRef9O-UPIIOOO474B2DE UniRef90-UPIOOO346D538 UniRef90-G1C9R2 UniRef90_J1HD46 UniRef90-A1VYL5 UniRef90-K9Y6C1 UniRef90_UPIOO0313E260 UniRef90-EOUEZ1 UniRef90-Q04NU7
UniRef90 K8GNP5 UniRef90-K8GNP5
UniRef90 D4TQJ1 UniRef90-H2RN94 UniRef90-C7MN63 UniRef90-K9YNQ8 UniRef90_K9Z2S8
UniRef90 Q944J4 UniRef90-C5A677 UniRet90-M6HXY7 UniRef90_DowH01
UniRef9O-K9RTH5 UniRef90-F3KC06 UniRet90_E7K169 UniRef90-AORNU4
UniRef90 K9F2X8 UniRef90_UPI00047AEEF9 UniRef90-A4H9A4 UniRef90-A5X6F7 UniRef90-U2F5R2 UniRef90-AOA017PKQ7 UniRef90-V8TQC8 UniRef90-K2CR60 UniRef90-UPIO00287A427 UniRef90-UPIOOO2C45546 UniRef90-Q9V9S8-2

UniRef90_H3UFG6


VHSAMCYGAPSMTDALRALKDKGCNR ILLPLYPQSAYSS VFKAFNFCAPHIDEVLAQIKAEGYDKILIYPLLVVDSTFT VFKAFNFCKPHLYQVLEQVKAEGFEKLLYYPLVVVDSUFT



PYVAFRYAKPDTAETYKQMLKDGVKKAVAFSQYPHFSYST FDYAMNYTPPFADDSLKKYKYA DEILLFPLYPHHSRTT VFKAFNFCAPCLHQVLAEDQSQGFTKLLIYPLLVVDSDFT VYFGNRNWHPMVEDTVARMADDGVRNALVFATSAYGGYSA RY SMRYGANNUASTLKALHDEFVRELVVLPLFPQYTSTT VDFAMNYTSPFAKDVLK KYENFDE TVLLPDYPHHSQTT YY GGFRYVHPDTEEALEEMEKDGDERAI AFTQYPQYSCST RYLPDTH ATTMRRLMTFKNSRIVGVPLFPHFTYSV RYLPATH MTTLEALHTLQPRSIIGVPLFPHFTYAM VELGMRYGNPS胃EQADNLQKNKCEKIVLPLYPQFANAT


UniRef90_A0A017THB8 UniRef90-E6KRN8 UniRef90-F8AOU5 UniRef90-B9TN32 UniRet90-S2WS82 UniRef90-F9VAM7 UniRef90-R7CGX5 UniRef90-E4TG76 UniRef90-V8C8F2 UniRef90-A8ES93 UniRef90-E7G048 UniRef90-UPI0003B3A903 UniRef90-V8CJS9 UniRef90-Q5FFX1 UniRef90-K4RL04 UniRef90-13XYK1 UniRef90-UP1000367BBDB UniRef90-EOUS45 UniRef90-D6GUA5 UniRef90-TOMO12 UniRef90-F8KTV9 UniRef90-S5A4P4 UniRet90_UPIO00185DF73 UniRef90_GOELR5
UniRef90 R9L1D0 UniRef90-LOPCI3 UniRef90-TORJE6 UniRef90-E7ACT1
UniRef90-X8ASU3
UniRef90-Q7MXP4 UniRef90_CoW557 UniRef90-DoWK16 UniRef90-UPIooo2657865 UniRef90-C7MOD4 UniRef90-C1L4Q6 UniRet90-K7KI68 UniRef90-M0SP91 UniRef90-KOYIN3

UniRef90- X2GLY7 UniRef90-R5G028 UniRef90-K2BVZ0 | UniRef90-S7J3F1 |
| :--- |
| UniRet90 V9G5 | UniRef90-V9G5X8

UniRef90-A5VOK6 UniRef90-Q6BFD7 7 UniRef90-G1C9Q7 UniRef90-R5G3J7 UniRef90-E1X3L9 UniRef90-A6DEA9 UniRef90-G9PR13 UniRef90-B4VUH4

UniRet90-UPIOOO474B2DE UniRef90_UPIOOO346D538 UniRef90-G1C9R2 UniRef90_J1HD46 UniRef90-A1VYL5 UniRef90-K9Y6C1 UniRef90_UPIOO0313E260 UniRef90_EOUEZ17 | UniRef90-Q04NU7 |
| :--- |
| UniRef90 |
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UniRefon $13 \times Y K 1$ UniRef90-FOS1T8 UniRef90-UPIO00367BBDB UniReffo-EOUS45 UniRef90-T0MO12 UniRef90-F8KTV9 UniRef90-S5A4P4 UniRef90_UPI000185DF73 UniRef90-GOELR5 UniRef90-R9L1D0 UniRef90-TORJE6 UniRef90-ETACT1 UniRef90-X8ASU3 UniRef90-Q7MXP4 UniRef90-COW557
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DEALLA AEPEADRNTTP|ILLSAHS\|LPRRDVIAMGRRYETEFR RRSWEALTARDTSGIRLIFVTHSIPVSMEAGSSPYVAQHH VEALAQVPEDEDNRVVFVTHSVPLTMEEAGPSYAQQHD RAEYVKAGSP $\begin{array}{cc}P & K P A A \\ D \square P A P A \\ E & D \\ D E A\end{array}$ AQRVHS
$K$ KTVVK
SOYWSWKPGS SQYWSWKPGS
SA ATHKDNAETSD
SSTLNGADSKEF

KILFSLHSIPLS CHLLESAHSLPYY STLE EK TLAEYPEDRRNEVVLLFSAHSLP $\frac{\square}{\mathrm{L}}$ SKTLQNRSAKDF SYLIFSVHGLPES RAQLEAAGKP QGRTKVLFVTHS SPTAVAERQGPYTAQHQ TNTMYKGHNP K E G F
KEALKDNEA GKELKDLKEPF

H H V E LIFSAHSSLPKY VVENGDDYVNE
 K A E L R K F S N K R VY
AKTMQGH
D D A Y $\square Q$
RRFWEESSGARGG
K NT $\square$ A DKNAEEY
R N A

## ADKNAEEY

I ETLK HTQKM
$V E K F E E L E K N G L S A N A L V L S F H G I$ $\bar{S} N T L V K R P A K D F \quad V L I V F V H G G L P T K V V L E G D P Y Q A E C D$
 RPYLLTK PR F DKLI LSYHGIPRDHLDKNVCYRYQTY

 ASFLATHDLDP EHTFVVATAHSDPVAMAANS Q YQRQLA
 QK ELLQSFS E P
$E N E L L L I F S K P$
LR SWL PRALD S S
 QRAYEWMPT GK QAQTHHVLVSFVHSVPISFAKRGDTYVET T R TDHWIWQPGS KLLFSLHSDPDNDVKAGDTYYLDAQ Q Q S LQQNPTDF LLMSYHGLPKRQIDPNNNYQQKCY Q Q F L LT H E DS N K D C C L L F S A H GL P LR Y I R N G D P Y DMQC E




 E D K I E E K I E A ELLA Q G H S Q
 $V$ E A Y G R L A E R G $\square P$ P $\square R \mathrm{R}$ L V L VT H S I P A S MER L S A P Y VE Q HR




 Q K A $\qquad$
E E EIID AK N A Y LDPSEIGGVLLMNHGCP QSELGKF GSPNQ
EK GLLAESGFENP $H \vee V L S V H S L P R K V I E G G D P Y L K S H T$ LD F F Q G L K V S N WK T $\square$ D L V F S A H GI P I RLL QK GDRYKE E DD RRCWA YRPGS K K L VMSYHSIPVSYVKGGDTYPDAAA
 TKKLQEFPQPVRDKVVLLFSAHSLPMDVVNTGDAYPAEVA K E KIIA EM N N S QI DL I F S S H SLLP K KII I E K G DLLY E T H T N $K N K \| Q Q H V A H \square P S Q T G G V L M N H G C P \quad H E A K G F T S G \square T E S Q$ RAAYERLGDP GARLVFTAHSVP
MCS S I A YVT E N A GVVKKI I DT Y H S I P VR Y VEEHDD Y P QRCK


H T F LQ S H N IP ENDCC LLF S SHGLP VKY DQKGDPYRQQCE NS F L D M Q G I P E E S CC QRSI DKNNPEF KRAHDF LPRDSKKKV LTHDQSNERC
RDELLAKFDVTKRNDVVILFTAHSDPLKAVNRGDAYPSEDG RSQKAFRP DAAIVSFHSVPISHLKKTQQYQQCR $D D A Y E A \quad G A Y D T V I L D Y H G I P T A M V R H G D P Y Q Q E C E$

 FFTVHSQIVDEAR NKPYVEAFT M K H

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UniRef9O UniRef90-D6GUA5
UniRef90-T0M012 UniRef90-F8KTV9 UniRef90-S5A4P4 UniRef90_UPI000185DF73 UniRef90_G0ELR5 UniRef90_R9L1D0 UniRef90-LOPCI3 UniRef90-TORJE6
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UniRef90 K7KI68 UniRef90-K7KI68
UniRef90-M0SP91 UniRef90-K0YIN3
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UniRef9O D4TQJ1 UniRef90-H2RN94 UniRef90_C7MN63 UniRef90-K9YNQ8 UniRef90_K9Z2S8 UniRef90_Q944J4
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210
220
230
240
A MA GAVVAER|LIEARFQ\|AFQSQGASAEPWIIGPDLIPETFAT

 ATAAAVVAKLGD DDWKISYQSRV GPLKKWIGPPTDDE IKA
 ESLLAHTAELLGGLNDWDVAYHSRFEDSRAWVTPSPDETTLDT RGKQQI I HK ILLQFAKIVLDCFQS K ${ }^{\prime}$ GPMRWIEPSTKDTI MTVPWLGPQTQSSVEE EHVKILSEELNFKSTNLAYQSKV HQVSLLKRLLKFKHDELSYQSKV




 TWSNQI ARKLGGKEFEFAFQSRGSYGDTWLEPSVYKVLEN $H H V S L L$
$A T T$ KTARLTAEQLQLEEFEVAFQSRFGPAEWTQPYMDKRLEA
 ATVYAVMEKLNFNPYRLVWQSQV GPSTWLGPQTNHVINN ETYKLIKDRLPRDLVHMTFQSRFGS EEWLTPYTDEYUCD
 RTTALI REALGGLAEEQVVFQSRVG HTEWLRPYLDERLAS $R L A E V V R E R L G M P Q T D L V Y C S R S G P P Q A W L E P D V N D H L E A A$
$A T A R A I A A R L A D V P W R S T F Q S K F G B D R W L R P A T D D T M A R$ RTADALRREMGMDDMPDTFQSRFG PMAWLQPYTAPYVEQ EVRAALNQVARTYVVEEAYQSRSGDPRPWLEPDVGDAI DR ATVHA MKQLNFSWYRLTWQSKV GPAAWLGPSTADTLYG ECI F LI MQELKANEHTLAYQ ECLALI MDELKHNHHDLAYQSRV GPVQWDKPYTDEVIVE
 QSLSETAKLLGLDDWAI AYHSRFEDSRAWAAPHPKTVLSS VTSQRIAETLNLEKYQVSFQSRLGLA KWIEPYTDRVLTE



 ETYFLIKSRVKNDDARITFQSRFGS EEWLTPYTEDVMEE SHVEI LKKKLEFKS INLAFQSRFG PLEWLKPYLNEELKK
 KLYDKVRDRLKYPLISVGWLNHDTPLI KWTQPNADLAARN ALYELVREELKYPLI SVGWLNHDTPLI E WTQPNVKLAAQN DTTRRVQERLNVPLHDVVFQSRFGK EPWDGPFLMDSDQV RLIDVVAERLGLPDHDLVYCSRSGPPQAWLEPDINDHLEA
 IL Y D LVRDKLRYPL S SVGWLNHDTPLI DWTQPSADQAAKN ALYELVREKLRYPLISSVGWLNHQTPLIKWTQPNAELAANN SNVRLLYYEKGFQGKCHTSFQSRVGBPSKWTEPNTITMMEQ



E $\square A K R V M K A F D F E \quad W E M A F Q S R F G K G D \quad W L G P E D P E V L E R$ SNVKLLYEKGFLGECHDSFQSRVGPSSKWTEPNTIQMLEE
 KTAAALARALELS RWLMTYQSRFG PAEWMQPYTDKTLEA ATVYNI MQKLKV
EHVKDI SDMLKFNSTSLAYQSRD GPVEWDGPNDSEVLSN LLYDAVRERLNYPLISGGWLNHDTPMIE WTQPNVTLAAQN

HSFHADSQQ YY P DETH CCYQSKF GWG KWDSPATQTDCAT HSFSLLSSRFPKAES LLCYQSKFGFGGKWLSPATQTGCAT
 HFAQLVATAAGVEHFEAVYRS

GRKGWLGPDVKEA $\square K A$
ASVHMVMQELGTNPYSLAWQSKVGPDPWLAPATDDADKG ATFESLKSEI GEGMMELAWQSKMGKGDDWLGPSAEECAKD TTTAGVKQYLPQTKVEMCYQSKFGPDPWLKPYLRNRLME

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UniRef90 F8A0U5 UniRef90 U6HI58 UniRef90_B9TN32 UniRef90_S2WS82
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UniRef90-I3XYK1 UniRef90_F0S1T8 UniRef90_UPIO00367BBDB UniRef90_EOUS45 UniRef90-TOMOI2 UniRef90_F8KTV9 UniRef90_S5A4P4 UniRef90_UPI000185DF73 UniRef90_G0ELR5 UniRef90_R9L1D0 UniRef90-TORJE6 UniRef90_E7ACT1 UniRef90-X8ASU3 UniRef90_Q7MXP4 UniRef90_C0W557
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UniRef90-K9YNQ8 UniRef90-K9Z2S8 UniRef90-Q944J4
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LK S K K K A L DY P TV F C DD N S E T D F E L D DE Y R K DA D Q K E




LK T E K K Y V L I VMP F G F T S E H I E T L Y E DE K D Y LTP L LTM R K


DAA NGFNAFATCELLS $\quad$ VPD MESYFE $\square$ GTQCKA VCEE $L$ N

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

|  |  |
| :---: | :---: |
| UniRef90_A0A017THB8 | LRLLLR A R A V $\mathrm{S}^{\text {L T R P R F }}$ |
| UniRef90-E6KRN8 | I P Y ERA D TVVSTDPDFVSSLVDVLEERAA Q |
| UniRef90-F8A0U5 | V K A V R A D TVGT R A VFVVS GLVDLI L E |
| UniRef90_U6HI58 | MSVRRASAPNDHPLFI Q G M A L L V A G H L |
| UniRef90_B9TN32 | GSYARVPALGVAPAFI D C L G T L V T Q A L A |
| UniRef90_S2WS82 | GKHYRVAP I N D D PVIVD V VK L L L E |
| UniRef90 F9VAM7 |  |
| UniRef90_R7CGX5 | A DVTY $\square$ P A L N H R D D H $\quad$ D L L L D E 1 K Q H |
| UniRef90_E4TG76 | L N I VR SDS L N S EDFVMSI I D 1 |
| UniRef90_V8C8F2 | V R DYRVEECLNDKEGFAKVII D L A NQALQK |
| UniRef90_M7T0U8 | HTVKRVESSLNGNP |
| UniRef90-A8ES93 | IE Y K V C S CVN D S D EF I E A I K Dil |
| UniRef90_E7G048 | V E Y L V C P CL N D H P LFVVK A I L ELVE N A |
| UniRef90_UPI0003B3A903 | LAFYRAATTGTHQEFVSGLVDI MGEYI |
| UniRef90_V8CJS9 | V E Y L L CPCMNDS LPFAKM I H T L L Q E K |
| UniRef90_Q5FFX1 | MFFRVP T L S ENEGY |
| UniRef90_K4RL04 | VEF L V CPCLNDNLNFAQAILDDLVHNA |
| UniRef90-I3XYK1 | FERYLVACPNDDDAFVACI KELCC |
| UniRef90_F0S1T8 | L N Y K R V K LD H K N L L L I K A L S S Eld K |
| UniRef90_UPI000367BBDB | GS F T Y V P CL N D S D TFV S CLA S L |
| UniRef90_E0US45 | FKD Y RVKCPNDS DLFVV A L A EVYYKK |
| UniRef90_D6GUA5 | $\square \mathrm{N}$ M H R A S C L N L S D KLI SAMS S A I V K A L |
| UniRef90_T0M012 | M G Y K R A ELP N N M M M I E T I K E CV E |
| UniRef90-F8KTV9 | $\square \mathrm{KF} \mathrm{L}$ V CPCLN A NLAFA H A I LDLI Q |
| UniRef90_S5A4P4 | GKFKTVRPMNGSPAFCAFL A T L A K E K VA |
| UniRef90_UPI000185DF73 | GELRVLPCLNASEEATAAVFAIAREQM |
| UniRef90_G0ELR5 |  |
| UniRef90_R9L1D0 |  |
| UniRef90 LOPCI3 |  |
| UniRef90_T0RJE6 | GVVHLVPCLND D Q K WCEDFAS FVENQ |
| UniRef90_E7ACT1 | VE YLV CPCLND Q S S F ARA I D |
| UniRef90-X8ASU3 | MAFARASTPGDSPA W |
| UniRef90_Q7MXP4 | GDF TY $\square$ P CLL S GANWID ALR NILEE |
| UniRef90_C0W557 | LP Y VR A A T A G T H P A FIS SLA DILVERAA |
| UniRef90_D0WK16 | GTFRRIGCP DADAGAAILAEL |
| UniRef90_UPI0002657865 | GRFSVVPCLND H D D A $\square$ A L I E A L A R |
| UniRef90_C7M0D4 | ARFWRLETI GEH |
| UniRef90_C1L4Q6 |  |
| UniRef90_K7KI68 |  |
| UniRef90-M0SP91 |  |
| UniRef90_K0YIN3 | AHFTYIPALGAD DACMD ALA HLVAR |
| UniRef90-X2GLY7 | VDFA QAEFPGDSYD T I Q ALA A IV IE A I |
| UniRef90_R5G028 | P EVVS Y I P A L N H R S D HI D L L F D EVVS K A V |
| UniRef90_K2BVZ0 | GDFHFIPCLNADEKWVERLL |
| UniRef90_S7J3F1 |  |
| UniRef90_V9G5X8 | LEFV A TEFLINDAA DYV E A L S EL I |
| UniRef90_A5V0K6 | LGYVR A A I P N AVP A LI A DLA T LVA Q T A A |
| UniRef90-Q6BFD7 | K NVIR G D SLNDHPQFI A ALSSDLVTQGLL |
| UniRef90_G1C9Q7 | GKFVYAPCLNDCDA HVRALVSVI E D NV |
| UniRef90_R5G3J7 | QLTLIECPNDSLTMANCI I D Q V N H H |
| UniRef90_E1X3L9 | GEIQRI E CLND DKKWCEDFSHFVENQ |
| UniRef90_A6DEA9 | 1 K Y K V V K C P ND DEKVAK F L VELANE |
| UniRef90_G9PR13 | I P Y VRAA TAGTHSAFVDSLVDILIDERAA |
| UniRef90_B4VUH4 | $V T Y V Q M P C V N D H P D F L A M V A D W A N P Q 1$ |
| UniRef90_UPI000474B2DE |  |
| UniRef90_UPI000346D538 | $V$ T FIIRMPCVND R P E F M H MVA E WA H P Q I |
| UniRef90-G1C9R2 | GDFVYVP CL C D C D A HVVD A L A S TVVE D NV |
| UniRef90_J1HD46 | LP Y V R A A T A G T HPALVSSLVDVLAERAA |
| UniRef90_A1VYL5 | CDY DLISSCPNDS DEFMEFILNSINS PLAR |
| UniRef90-K9Y6C1 | VNFVQMACANDHPEFLKMAANWADEQI |
| UniRef90_UPI000313E260 | V N Y I Q M A V V D N D FLLAMVA HWADK NI G |
| UniRef90_E0UEZ1 |  |
| UniRef90_Q04NU7 |  |
| UniRef90_K8GNP5 | AAFVQIAACVNDHPEFLKMAANWANPQI |
| UniRef90_D4TQJ1 | V GYL Q M P CVNDHPQFLE MVA S WA |
| UniRef90-H2RN94 | VE $\square$ R R A A S L N G P L F M K A LA D L VQ S H L |
| UniRef90_C7MN63 |  |
| UniRef90_K9YNQ8 | V N Y V Q M K C V V D D D R F C T M A A N WA N P Q |
| UniRef90-K9Z2S8 | $\checkmark N Y V Q M E C V N D N E E F C A M A A Q W V$ |
| UniRef90-Q944J4 |  |
| UniRef90_C5A677 | LRFYRAK LD HRHDYLISA $\square$ ¢ Q E L R R |
| UniRef90_M6HXY7 |  |
| UniRef90_D0WH01 | PSFTYVPALGADAAFMDA\ARLIARRR |
| UniRef90_K9RTH5 | VS Y D QMP CVNAMSEF L D MVA A WAK P H $\square$ A |
| UniRef90-F3KC06 | GDYHY $\square$ P ALNANAEFVDCLA DLVEQH |
| UniRef90-E7KI69 |  |
| UniRef90_A0RNU4 |  |
| UniRef90_K9F2X8 | VT YVQMP CVNDND D F A A M A A G WV |
| UniRef90_UPI00047AEEF9 |  |
| UniRef90_A4H9A4 | GRF $\square \mathrm{Y}$ VPCL C D S D A HVKVL |
| UniRef90_A5X6F7 | $\square R$ N WRVPALLGCEP GF I A DLA D A I IE A L |
| UniRef90_U2F5R2 | FS F Y K V VCP P F S DEFAGF I |
| UniRef90_V8P4E1 |  |
| UniRef90_A0A017PKQ7 | Y VA L R VP T I Y H S ViH WVK T L A T I M Q N |
| UniRef90_V8TQC8 | Y K A L R L P A 1 Y N A S S WPR T LA Q 1 |
| UniRef90_K2CR60 |  |
| UniRef90_UPI000287A427 <br> UniRef90-UPI0002C45546 | A A F V Q T E F $\square$ G D S F D M Y A LA H Q $\square$ Q S |

UniRef90_G1C9Q8 UniRef90_UPI0003B69CB4 UniRef90 K9UC41 UniRef90-C2ME95 UniRef90-K9QEK0 UniRef90 J9FHP7 UniRet90-D4DQS8<br>UniRef90_l2K8N7<br>UniRef90-F2CUW3<br>UniRef90-B4S748<br>UniRef90-T1APB9<br>UniRef90-C4WWA2<br>UniRef90 UPI00046CCA39<br>UniRef90-Q40IK0<br>UniRef90-J2ZSU5<br>UniRef90_UPI00046F7CE2<br>UniRef90-UPIO002EB13BE<br>UniRef90-T1CSIO<br>UniRef90- ${ }^{-} 3 \mathrm{QWM} 3$<br>UniRef90-T1CRX2<br>UniRef90-J4X0.J3<br>UniRef90-X6LRVO<br>UniRef90_B3QY53<br>UniRef90-D6ZJZ7<br>UniRef90-D4TGR3<br>UniRef90-B3QP61<br>UniRef90 B3EFTO UniRef90_A0A044URI8 UniRef90 A0A022Q1E8 UniRef90_M5J4H7 UniRef90-A8QCD7 UniRef90-AONRP8 UniRef90 X1C314 UniRef90 UP10003B64294 UniRef90-UPIO003783C51 UniRef90-B4WWE1<br>UniRef90_S9QCD8<br>UniRet90-A6FMQ3<br>UniRef90-C7D636 UniRef90-V6F4Z6 UniRef90-UPI00042A1579<br>UniRef90-B6AZW3<br>UniRef90-K2L8D0<br>UniRef90 UPI00047D067A<br>UniRef90 Q2CA97<br>UniRef90-X7E5J9<br>UniRef90-J9FCU2<br>UniRef90 D5BRB2<br>UniRef90-W6K5Z5<br>UniRef90-B9R6H1<br>UniRef90 UPI0003B35441<br>UniRef90-J9E3D8<br>UniRef90-I3TPC7<br>UniRef90 W6L813<br>UniRef90-12JPA2<br>UniRef90-S6GJ61 UniRef90-Q7V757<br>UniRef90 F8B0J2 UniRef90-B7DNJ5<br>UniRef90-COZ710 UniRef90-I0L549




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|  |  | UniRef90_K9UC41 |
| UniRef90_C2ME95 |  |  |
| UniRef90-J9F1 |  |  |
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|  |  | UniRef90-D4DQS8 |
| UniRef90-12K8N7 |  |  |
| UniRef90-F2CUW3 |  |  |
|  |  | UniRef90-B4S748 |
| UniRef90-T1APB9UniRef90 |  |  |
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|  |  | UniRef90-Q8KEC6 |
| UniRef90-UPI00046CCA39 |  |  |
|  |  | UniRef90-Q40IK0 |
| UniRef90-UPI00046F7CE2 |  |  |
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|  |  | UniRef90-UPI0002EB13BE |
| UniRef90-T1CSIO |  |  |
|  |  | UniRef90-B3QWM3 |
| UniRef90_T1CRX2 |  |  |
|  |  | UniRef90-J4X0J3 |
| UniRef90_X6LRV0 |  |  |
|  |  | UniRef90-B3QY53 |
| UniRef90-D6ZJZ7 |  |  |
|  |  | UniRef90-D4TGR3 |
| UniRet90_B3QP61 |  |  |
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| UniRef90-A0A022Q1 |  |  |
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|  |  | UniRef90-M5J4H7 |
| UniRef90_A8QCD7 UniRef90-A0NRP8 |  |  |
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| UniRef90-X1C314 |  |  |
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| UniRef90_UPIO003783CUniRef90 B4WWE1 |  |  |
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| UniRef90_A6FMQ3 |  |  |
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| UniRet90-A6FMQ3 |  |  |
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| UniRef90-UPI00042A1579 |  |  |
| UniRef90-B6AZW3 |  |  |
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| UniRef90-UPIO0047D067A |  |  |
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| UniRef90-J9FCU2 |  |  |
| UniRef90-D5BRB2 |  |  |
|  |  | UniRef90-W6K5Z5 |
| UniRef90-B9R6H1 |  |  |
| UniRef90-A5GSN4UniRef90 UPI0003B35441 |  |  |
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| UniRef90-J9E3D8 |  |  |
| UniRef90-I3TPC7 |  |  |
| UniRef90-W6L813 |  |  |
| UniRef90-I2JPA2 |  |  |
| UniRef90_S6GJ61 |  |  |
| UniRef90-Q7V757 |  |  |
| UniRef90-F8B0J2 |  |  |
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| UniRef90_C0Z710 |  |  |
| UniRef90_10L549 |  |  |


PLLDWYKHHHFMSPENEMFEKQR $\square G \square E Q Q L Q D R W G N R V Q$ FSSERYRRLLADSDGVMPLTAEMQRLAEQVAQL TQLP PTAGWLKHHHFMSPENELFEKQRLGUEEQLQQRWRN KTAARYQKVWEGSPLVVYTEHAARKLDQAMT LDKHPH SSAANYKKI WEGSPLYIYSRRQADALAQRL EAKSSYAALGGRSPLVGYTKQLIDKLEE
$\qquad$ LGVL

YF $\square$ A DYRSHNYESTLVETNR $\square$ QTGLIASR LRKSDHPVFSS
EVQKKYAE $\square G G G S P$ L K WT N DQGK LMCEK LDK DSPSTPHK YMIADYRSHCYRSRLVEDNRRQALGVEAALRRAGENDEDE RAKETYK LKK S S SPLLLETTKRQAEKLSKKTKR
 EVSGHYQGFGGASPINARNAELRDALQARLTERG STDP
 TLDANWS DDGYRSPHNQNTREQAAAI KDGLQEAAKNVHFD QSAKKYAAI WQGSPLRFHTAAQAAGLSARLEAAFPDNPPL SSSKTYKEI WYGSPLDHNTKELSKVLSDKLP RVEKQYETUGGGSPIVKWTDVQGHLDCEKKLDALSPETPHK $K R R K T W T K A G Y Q S R L N Q D N R Q Q M Q K I K P C L N T L D E P V D V D$ QVGGHYRLFGGVSPINARNAALLSSLHQRLGDELDY ALGDRHEHHDFISPHNADFEKQRAGVEHELQHKWGNGKVQ
 FCVDNYKYSENGSNUISTYSRQI



RQRFTDWP
PP $\square$ AK HQ C GNF V SPHNA $\square$ FEQQRTG
VAQALTTRFPDWPVE
 LAEKLPAYLPEGWEM


NQNAVGEFAKLAERMRERFPDVPVD
PLAKKYKYSENFSHLVSTY E K K K EVF


AKGLKARYPN】
RRRFAPVP
QSSElSLQ $\square A E Q E F S L L A K N L R Q R Y P K L K M E$


LHMWHRFVDDVVERARLRESDVARAF

C C C C C C C C C C C C C C C C C C C C C c c c c c c c c c c c c c c

lupas_21
lupas_14
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jpssm




FS SLLAWQGAKGGEKQGLVLVIHGTIVKNRKGEKPSVDETM NRALDRHPNAAILLSAHSDPKKLLKKTLDPYRNDL IEKYREAAQNGSPRILESAHS
VEAYGALAEQGVADVRLVLVTHSDPDGMETSSAPTPESDG V SA
 AA AYDELAAQPAQSVHLVLVTHSIPTSMERGSAP

FGARAFKANSRDESRALLLVLHGTLQKDTNGNPPGFHAGL

LS SVTHFDNTNSQD $\quad$ DA LIFSAHSVP



RGLVPHMPEG
A GVVLVGRGNRDEDAQRAFA
EEAGFASGEDNDD $\square$ AVLV $\quad \square G R G S S D A D A N S D \square Y$
DAAGAELADPSPAGADRAGTWVALIGRGSTD PDANAEVA

[^1]

 EHGAYEAQHLAVPPWKLVYQSRSGPPQPWLEPDINDYMNE DRVQAQLQH QYPLIS GWIDNHDMPFIDKWSQPNLEQAAKS


YNVYHARKALQFHKTHLAYQSRLG PLEWDRPY LED
ECVDLIMEELEKNPCTLAYQSRVG PVEWLKPYTDET\|!A DETSAFFEAI KTSDPRNVFHRQGCMNHSAGGQWTDDTI EK DTMEA $\square R A R L P P \square R S R L A Y Q S A G R T A D P W L G P P F E Q V I E D$
EFFR LMKEK MMADPRNVFGEVK LGCLNHSRGGEWTPETVE EVFRLTLS R L L K R P $\downarrow$ YLLS F Q K K

A S
ETAQLLFDALPPESAKEVLFQSS $\square K P H R W L D P \| I E K E M Y T$

DETLSFAEKLK LINDKRNFYGQVIPVGGKWTEPS LENALKK

EFFDLI KREILTDSRNCFQDVGCLNHKFGGEWTHETMEL ATV
ILYYEVREKLRYPLISVGWLNHDTP LIEWTQPNATQAAKK EFYRIMRDKIMADPRNSFDEDKDGCLNHSRGPETVERADA DETMAFAARHPYGR $\square$ MTAFLNH DVGGEWTRPSFEETAAA TTCFLLMEHLNVMPWKLA WFSSWDQWPVTTDESDKLQLYF

T TCYRLMEHMNEAPWK LA WFSGWDQWPATTDES TNDQLYF $K D T R L L W E G F G F G W A E T C Y$
$G H F K L I K N L L P G Y S L D E G F Q S Q L G V T F P L V G P G L E H$
$K$ $K V T R M L W E G L G F G W A E T C Y$ S KIARLLWEGFGFGWAEVAY S GVTFPLVEPGLEHV
$K \prod A R M L H E G L G \square G W \square E T G Y$ KI ARLLQEGIGGGWCEVGY SGVTFPLVEPCLQHVTR KVARML WE GMGF SGVTFPLVEPCLQHV KVMRMLWEGMGFGWAEIAF $S G V A F P L V N Q A$ S GVTFPLVEPALEH KI ARLLQEGMGFGWLEVGY S GVTFPLVEPCLQH $K V A R M L Q E G L G F G R T E I S Y$ S GVAHPRVNAGLREAM
 KLTRGVNENMGFGWADTVY


KICRMLWEGMGFGWAEVGY
KVARMLWE GMGFGWCEVSYSGVAFP LVDAGLA

 A QVA RSVA QRVVP WRLLETAYLAG KVGRMLWEGLGLGWAETAY SGVTFPDTEPALRHAVR RTFTALRTALHKNTTMTTPLDDGUDSTSTMDGSAE

 KVARLLWEGRGF IGVEPAF DS LAAEPGVPAG $\begin{array}{ll}G V A A Q V A S R D G A P L \\ K M S R L F W E R Y K A K W V E T A F \\ K & V \\ K\end{array}$


UniRef90_G1C9Q8 UniRef90_UPIO003B69CB UniRef90_K9UC41 UniRef90-C2ME95 Uniinefoo-K9QEKO UniRef90-J9FHP7 UniRef90-D4DOS8 UniRef90-l2K8N7
UniRef90-F2CUW3 UniRef90-B4S748 UniRef90-T1APB9 UniRef90_C4WWA2 UniRef90-O8KEC6

UniRei90- UPIOOO46CCA39 UniRef90-Q401K0 UniRef90-J2ZSU5 UniRef90-UPIO0046F7CE2 UniRef90-UPI0002EB13BE UniRef90-T1CSIO UniRef90-B3QWM3 UniRef90_T1CRX2 | UniRef90-J4XOJ3 |
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| UniRef90 - 6 LLRVO | UniRef90-B3QY53 UniRef90-D6ZJZ7 UniRef90-D4TGR3 UniRef90- B3QP61

UniRef90 B3EFTO UniRef90-A0A044URI8 UniRef90-A0A022Q1E8 UniRef90_M5J4H7 UniRef90_A8QCD7 UniRef90-AONRP8 UniRef90-X1C314 UniRef90- UPIO003B64294 UniRef90-UPIo003783C51 UniRef90-B4WWE1 UniRef90-A6FMQ3 UniRef90_C7D636 UniRef90-V6F4Z6 UniRef90- UPIO0042A1579 UniRef90-B6AZW3 UniRef90-K2L8D0 UniRef90_UPI00047D067A UniRef90 ${ }^{-22 C A 97}$ UniRef90-X7E5J9 UniRef90-J9FCU2 UniRef90-WBRB2 UniRet90_B9R6H1 UniRef90-A5GSN4 UniRef90_UPI0003B35441 UniRef90-J9E3D8 UniRef90-I3TPC7 UniRef90_W6L813 UniRef90-12JPA2 UniRef90-S6GJ61 UniRef90-Q7V757 UniRef90 F8B0J2 UniRef90-B7DNJ5 UniRef90-COZ710

$\square G Q R G V K S G A V P \square S F V S E H \square E T L E E \square D V E Y K E L A D Q S G$ ALEEFGYDSVVMFPYGFFADNSETEY LAAREGFRSVAMFPFGYFADNSET DYEAKKLLDRSS $L S$ RYYTELIIVPVSFTTDNTETTVEDDKTYTKIAKDCG



AMQEFGVENLALFPFGFFADNSEDDFEAKKNDQKSN
EFEQEGFESVAMFPFGYFADNSET DYESKKLLDHSS LLADSGVSNVAMFAAGYFADGNETVYYREQELRSMLPAC



[^2]$\square K H W R V P A D G C E P T E \square S D L A D A V I E S G$ A A KY IRCINGSPDFAGWLSGR\VAELN VRLERTPSLNADPKF
A DKHY $\square$ PCVNDSPVFAAWLASR\ATEDER FR $\square K R \| D C L N D D N D F \square D F L A S \square V$

GELDHIPCDNSKQEARALYFQLAEESD

R N A $\square \mathrm{Y} \square \mathrm{D}$ S $\square \mathrm{NSEPEF} \mathrm{\square SYFVKR} \mathrm{\square SSA}$

F Q N T Y DECVNDSEPFAMWDAEK I I S K



[^3]
[^0]:    K VA E S G GK A VVVCD L LSTENVEADFDCRDHCRMKAEACG DETNKKAVVYPI AFTVDNSETIFELDUEHKEDALESG LEN K K ALIVVPIS F TIIDNSETEFELSMEYAELAHRLG
     LITPEGQSGVVVVPIGFICDHMEVVYDLDTEAKETAAEDGG LAEEGVTGVVVVPFGF VSDHMEVVYDLDTEAKETADKHG L P TKA GGKHVDMVCPAFAVDCDETLEEI EMCSRGFYTEAG LRACNDNVSVVLVPDAFVSENSETLVELDDEYKALVGEK

[^1]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^2]:    lupas 21
    lupas_14
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[^3]:    lupas 21
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    ## conf

    sol25
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    jhmm
    jpssm

