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LQALRHNYRLAREATGARALAVIKADAYGHGAVRCAEA V DLQAL RHNYQLARESAGAKALAVIKADAYGHGAVRVAQA I D L E A L R H N N Y R R A A R E V V T G A K A L A V V K A A D A Y G H G A V R R C A Q A
 I D R R A L R H N L Q Q V R A L A P P S N L I A V V K A N A Y G H GLL L E TA A T I D L A A L R H N L GVVRRRAPGRRVVMA I K S QA Y GHGML P VA Q A I RLDAVRHNYRQAKALAPARALAVVKANAYGHGAVAVARA I DLAALRHNYRLARELGGRKALAVVKADAYGHGAVRCARA I DL G A L Q D N Y L L A R RLL G G G K A V A VI K A D A Y G H G A V R C A R A I DL G A L R H NYLLA K QF S GTRALAAVI KANAYGHGAI R CA Q T I D S S AL RHNLQRIR HAPQSRVVAVVKANAYGHGLLEAARS I N T Q A L K N N I D I I K TY P G S KIVVA V V K A N A Y G H GLLYQVA S A
 I DL Q A L Q Y N L Q RI K Q Q A P S KVVMAVVKAN GYGHGSCQVAR Y
 I H LDAVLHNYRYAKRLAPARALAVVKANGYGHGAI SLARA I DLQAL RANYRLARQLGAARALAVVKADAYGHGAVVCAQA I DTQALAHNLSQIRQAPNSK LLAVVKANAYGHGLLDVAKS I D L A A L R H N Y R L A R E R H G A R A L A V V V K A N A Y G H G A V V C A A L A A IDDDALRHNYRFARRLLGGKALAVVRADAYGHGAVRCAQA
 ID L D A L R H NY QLA A G GLS GRRAFAVLKANAYGHGALEECAQA
 ID L S AL R H NLRVAR DAA GSRIVMAVIKA QAYGHGMLEVARA DLDAF QHNLAKVRGAPGAKVMAVVKANGYGHGVLIRIAEA
 I D L D A L R A N F QLAR A L LGGGKTVAAAI KA DA Y GHGAAACARA

 I S S H ALLK Q NLEEI K QAPNSK』IDAVVKANAYGHGVVFVAST

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| L | A |  |  |  |
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 I R R S ALNHNLQRLLRAAPNSKLMAAVVKANAYGHGGI RMLAS W
 I DLA A L R H N L A R V R A A P H C R VA TA AL K A N A Y G H G LL LRAA R A
 I
I L D A I S S K A L L Q N N NLA R L R R E A P G S K V V M A V V $\operatorname{I}$ K A N G Y G H G L L $V$ DLSA I RHNYAVAKRAPGRQAFAVVKANAYGHGAREVVSS $V$ NLDNIAHNVKEIRRDVDKK DMGVVKADAYGHGVMEVART
 I S RPALRNNLAKLRQAPQSKVMAVVKANAYGHGLLNVANC I S L D A L R H NLLGE F R R V L L P V S M M A V V K A D A Y GH G A V V V V C A A I D L Q A L R H N Y E L A Q S L A P S K T I P MV K A N A Y G H GA I K V S Q A
 I DI D A L Q H N F AVVVRRHPHSK I DAVLVANAY GHGLLDPVA H A I DLNAI RHNASTVKHRPGTRLMAVVKADAYGHGAVQVAKA I NLQALAHNLAQVRQAPNSKVMAVLKANAYGHGLVEIAQH I N L K A L R H N Y H Y AK S A P H S K A A All I K A N A Y GH GAAVVV A R A I S L A A L D HNFKRVKEAPAS QIMAVLKANAYGHGLV AI A K R V NLDAVQHNLSKVRSAPDAKVMAVI KANGYGHGMLRIAEA V DLA AI EHNIREIKKKVGAKFCAVIKANAYGHGVI PVARA

 I D L D A l R H N Y R L A K S M A P K K A L A V V K A D A Y G H G A P V V A K A 1 H L D A FR H N L A V I R QKV G S K I WS V V K A NA Y GH G L D R I WQ
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 I D RA A L A H N L N QLLK QLLAK T QLLMAVVVKA DAYGHHGATMMVA QA I D LDA L R A NVRTLRAAPGAALVMAVVK S DAYGHGAVRCARA I DLAALRHNYEEIKKRGGAKLCAVVKADAYGHGALAVARA



 I D L D A I N L D H V K A N Y N Ni R K KP E T K F CAAVI K A N A Y GH GA V Q Y A K V
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## QUERY

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 A DV DRYDL WPAI GSQWQLEAFVHHEWQHLTTVWLKMDSGM PVLMTNNI QTVVHCEEQLQALERAQLDTPVSVWLKDDSGM PILVTNNI QTVVHCEEQLDALEQAELDNPVVVWLKMDTGM ALADRAGLAMVVHSRQQLEWVLAARPSRPLECWIKLDSGM ALIVRYRLWTVVHSEWQLRLLEQWSGAASIKAWLKLDSGM PVLVTNNIHTVVHSDEQLEALEQAELDAPVRVWVKIDTGM A EVVAREGLWUVVHHEDQVRMLETTPMAAPIVVWLKVNTGM PVLAANNLQTAVHTWEQLEALEQAEDPAPVVAWLKLDTGM ELI AKHNL WTVIASSWQVRALAAFHSPSPI GVWLKLDSGM SLLTD YELDTVI HDHHQLYLLSKHPDPRKVNVWLKI NTGM PLIVEHQLWSVVHHHRQVQDLLGAQLGAPLHIWLKLDSGM PAI AA QRLHTAVVSEEQLAALEQATLGEPVTVWMKLDTGM HLI E QWNL WTVVHNQVQLEDLDAHDWKQSATVWLKMDSGM AAAAHLGVRSVVHEPGQLACLKAARDNSPVAVWLKLDTGM DDLLAFQLEPLLHSFSQLDULKTRKEQQALSAWLKI DTGM P LAVNNNGTVVHNDEQLEALQSSDLPNPIKVWLKIDTGM EYAARHDFHLCI HSHAQLDALERTELAAPVTVWVKI DSGM $P$ PIVQHDDWFAVGAPWQVEAVLAFQTTALLKIWLKLDSGM LI AAHYQFQPVIHHAGQLADILSASDPTPVKVWLKIDTGM A QVDAAELTMVVHCREQLDWVLAARPERPLRCWIKVDSGM EEADANELDDTIYSLDAAEKLSKERDGKNARVHIKLDDGM SFLVEYDLTQTVFSLDAVQAI SAAAAAAGKRVHIKVDTGM P LIAVNNI ETVVHNHEQLDALKRANLPSPDKVWLKIDTGM $A A A M E L G L D V S V Q G A E Q A Q R L D D C G P A R A L N V W L K K L D S G M$
$P L I D N G D F W C A B V S D A Q D E A L A R Q P K S D Q Y N V W L K F D S G M$
-

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 EEIILNDVTQTVFSHDLAEALSDAKHNRNVKIHIKI DTGM

 ETAWANGLTLNI YTHELLDAWERLAKKERPLNI HI K I DSGM K $\square A A T K G F W V M V E N H Q Q K E A D L N A D L A D P L N V W L G V D T G M$ EDLINFDDTPSVFTYEFAKALSYEAERKETKIVI KIDDTGM
 PLLLAYKIMPSVYTAEFAIRYAEAADAMGLRAHLKVNTGM PI LLANNFQTIIHDENQLRALENAKLDAPI SCWLKI NTGM PLAARYQFMDAVHNVEQVEWLEQAQLTQPLADWFKIDTGM P LLLANNFQTII HHQSQLDALMNCDLDGMLTTWLKI DTGM DELL HYQLDAVVHSLTQLEVFEAETKSGTCAVWLKLDSGM
 SVAVENDFACVLHHAQQLEWLI KTPLPYPIKVWVKVNTGM EI A ADNQFELVVHNGLQLEQLLDTRFETPLNIWLKI DTGM


 A AVDEYGLWPVVADQWQLETLDKHEWKTPVKVWLKMDSGM
 E I CATYGLSVVI HRLEQLQMLRHAA LKVPLPIYLKLDSGM
 RDIVDYDVT QVVCELPLAEAI SREAQHKTAKVGLKVETGM
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 HRMGFAP GDFAAAYA QLA ECRHVVRSVVVLMSHFARADEPDH
 H R L G L S P D D F A R A L Q Q L S A D P R I A S I V A M S H L A R A D E L D S


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 HRVGFEPAEYASTWQQLERSQNVASLTSMTHFSRADEPAT HRLGVRPEAAQAFYNRLAACKNVRQPVNVSHFARADEPDC HRAGFFPHHYAAAYTALSQSNKVGK VVKMSHFACADAAER YR LG F E P A RVHALLERLDDTGKVGTPGLMTHLACADEPGR NRLGFKAKDFSAVYARLSDCS II RQPVVNTHLANADDKND

 HRIGIMPE QVAHYVTQLSNSANVGHVGFVSHFYRADELSA
 GRI GVFPSEAPDFAEAVSRLPNIVIVGVYTHMACADEQDK HRLGVALDEVDYFYQELKKLPQIQPHGFVSHFSRADELES



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 HR L G $\square$ S P Q E V GA V Y A K L A A S K N V K N I V L M T H FA H S D H $\square$ G G SRI GFQDDESLLETICRI AK LP N I S I DGCFTHFARMDETDK




NRI GV RWDEVVEFAR QI SFHRALDDEGTFTHFAAA DCP GT



 N R L G L R A E Q L P A V R R K L A A S P A V G A V T L M T H F A EA D G D G G HRLGFK ITE L LQKVMGALQTCTWVDSI GLMTHUACADEPHR HRLGVSLQQ L E S I Y A RLSASENVKNVVLMTHFAHAD DVGG HRLGIP PE LIARAAYD QLSAMPHIDEVVIMMTHFACADELDN

 HRLGFSPEGVVAAMKSLRAHAAVRED TLLMSHFSHADEPR G HRAGFFPHNYASAYTABLAQSGKVSDIVVKISHFACADEAER



 HRLGFAPGQVESVWQRLAAAPECATGLQMSHFATADADDA SRLGGFDNE QSAETDKRI SKMPNVNMEGIFTHFTKADEKDK HRAGFFPA DYAGAYRELQESGKVDADVVKMTHFARADEP GC


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P R T E E QLAA AFS A A S Q GLEG E $\square$ S L R N S P A VL G WP K VP S D WVV
200 STSDEQVAVFEAAREGLAAETSLKNSPAVLGWPTIHSDWV ST SDVEQVAVFEAAREGLAAEVSGRNSPAVGGWPQVPSDWV

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| UniRef90-TOQDX9 | RPG\\|MMYGVSPLPD |
| UniRef90-S6BXN3 | RPGLMLYGASPLTGRDADA |
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| UniRef90-13YF42 | RPGLMLYGISPLPDGHPLATPLQPAM |
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| UniRet90-A4SQU7 | RPGVILYGVSPFPNTVAADYD |
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| UniRef90-UPIo0035CFA84 |  |
|  |  |
| UniRef90-H2FUL1 | RPGVMLYGITPFGDQQGTDFGLRP |
| UniRet90_A0A023Y7M3 | RPGLMLYGANPLPTHSVL |
| UniRef90 C4LA60 | RPG\\| ALYGISPRADSTGl| AEGLQP |
| UniRef90-G2E6N1 | RPGIIMLYGI SPFVASHPAAAELR |
| UniRef90-W8T4F7 | RPGIILYGLYPSDEVMKERL |
| UniRet90-F6CKT7 | RTGI I LYGL WPSPDVRRV |
| UniRef90-P45257 | RPGIIMYGISPT D |
| UniRef90-16ZBT4 | RPG MLYGASPFAERSA |
| UniRef90-UPIO002E1AD8B | RPG MLYGAS |
| UniRef90-D5XBX9 | RLG\| SLYGLYPSPEVDR |
| UniRef90-F4HDS0 | $R \mathrm{PGI} 1 \mathrm{MYGIS}$ ANSTP |
| UniRef90-R11EE4 | RPGISLYGISPMVERCGKDF |
| UniRef90-DOKXK9 | RPG\| MLYGADPFVGKAGAS |
|  | RPGLALYGVNPMIGGRAEQFDLKPVM |
| UniRet90-R7AAH6 |  |
| UniRet90-W6M8F9 | RPG MLYGCTPFNHGV |
| UniRef90-R5ETA9 | RPGII YGISPFEDKVGEDGGLKPVM |
| UniRef90-H0J4E3 | RPGVMLYGSDPLEVANDITRLRPVM |
| UniRef90-A8FRA1 | RPGIALYGVSPVIGDLGGNH |
| UniRet90-A0A017P | RPGIMLYGYYPSDEVRKERV |
| UniRef90-M4X5F0 | RPGIMLYGATPFADIGAAEL |
| UniRef90-W4V2J4 | RPG ALYGLYPSDEVD |
| UniRer9o-K6YM |  |
| UniRet90_R6WLS |  |
| UP100046FBB7F |  |
| UniRef90_UPIOOO24 | A M |
|  |  |
|  | GVIL ${ }^{\text {G }}$ |
| UniRef90_A4VQM5 | RPGIIMLYGATPFAELSARELGL |
| UniRef90 R4VHC8 | RPGLMLYGASPFAGQLAAD |
| UniRef90 R9KWA4 | RLG SLYGFYPCPEAYPL |
| UniRef90-E6RLY8 | RPGLMMYGVSPMLNTSGKDHQ |
| UniRef90_UPIO0037007C3 | RPGI MLYGATPVAEDLPESKA |
| UniRet90-A4C8Q2 | RPGLMMYGVSPMLNKVGADHG |
|  | RPGVMLHGISPFPDSTGRQL |
| UniRef90 UPIOOO3807588 | RAG I L YGLWPSDEVERC |
| UniRef90 A0A011 OJA6 | RPG MLYGGSPFADQDAASLDLLPVM |
| UniRef90-O5X709 | RPGI MLYGVSPFANQNAHDLGLIPVM |
| UniRef90-K6XHM4 | RPG\| MLYGLSPFDEVIDQAKQL |
| UniRef90-UPIO0035F10E1 | RPGLMLYGASPFVGSHPFGDK |
| UniRef90-D3V1N5 | RPGI ILYGASPSGKWRDADVG |
| UniRet90-A6UQF8 | RPGILLYGLYPSELVQKDKUN |
| UniRef90-AOPGN2 | RPGIMLYGASPFDDKTGNDFQ |
| UniRef90 D9SCW7 | RPGVMLYGASPFADTSAQQL |
| UniRef90-D4DMV6 |  |
| UniRef90_Q97LR2 |  |
| UniRef90-A0A01106NS | MLYGGSPFADQEAESLG |
|  | RVGLALYGLYPAPHLHP KVN |
| UniRef90-L1LSP2 | RTG AVYGISPSPELSSADLGLRPVM |
| UniRer90-C9K0W6 | RAGUSQYGMYPSADVEKERLYLEPAM |
| UniRef90-UPI0002892CEB | RPGVMLYGSDP旨ERPSEASRQLQPV |
| UniRef90-R6PGHO | RAG\\|STYGLYPSEEVDKTNV |
| UniRef90-UP10003689595 | RPGIMLYGATPLPADHAANVG |
| UniRef90- U2DWU7 | R $P$ |
|  |  |
| UniRef90 Q2SLB1 |  |
| UniRef90-E3PTM8 |  |
| UniRef90_I1YGL2 | RPGLMLYGUSPFADQSGLDLGLQPAM |
| UniRef90_08z688 |  |
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UniRef90_C0BVY8
UniRef90_Q0AVS4
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UniRef90_K9W2Z1 UniRef90_F9ZZB2
UniRef90_M1ZFB3 UniRef90_B8E9P2 UniRef90_U4TF77
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UniRef90 $14 W 5 S 4$ UniRef90_UPI00036CA3C0 UniRef90_K9TY43 UniRef90-J1ZVY1 UniRef90_S3KEX3 UniRef90_C5AJN3 UniRef90_UPI0003743ED5 UniRef90_K9VAU3 UniRef90_UPI000381801D UniRef90_C6WVY7 UniRef90_UPIO00366D6EB UniRef90_F7V6E7 UniRef90_M1NJM4
UniRef90_R6KUA5 UniRef90_W0TM70 UniRef90_R3WIJ4 UniRef90-E8K2T4
UniRef90- 3 E1C5 UniRef90_UPI0003739052 UniRef90_B7KHA9 UniRef90_B7KHA9
UniRef90_UPI0004e

90
110
QA 1 A H WK|L QPT\|ICSPQQAKTFSETNDDQK|L|P|V|H|K|L|DTGM H L M L Q H QL D AVI HTP Q Q $\square$ S L L Q Q Q Q GL Q A A L S V WL KM D T G M
 PLLVGHDIDTVVHHSSQLEMLEQTVLSKPVTVWLKVDSGM RLV ENYNFS IVI HCQE QV DWLRHHALAKPVDVWLKLDTGM
 EEAAARLDLLELVI H DRRWQLEELL A SLLLPTTAALR VWFKLDDS GM
 $A L A D R Y Q L W P V V G N D W Q L E S S L D V Y D W Q K P V T V W L K M D S G M$ E D M I K H D I R M T L Y T E E M A R E V S E L A A I G K Q A Y I H I K L D T G M E A TVVE Y DI S A SVV F S L S F A R A L S Q A R L S R TAARVVHI K I D S G M




 R E A V E A D I

 GLAL E H DI T L T V Y Y E E L L E A A S G Y A Q K P P L N I H I K I D S G M
 A L V D H Y R L T T TVV H S D WQ L E A I R A A R L D A P L N I Y L K L N S G M PLIFDKYRLTTTSLHSNWQI K AL Q N A QL Q A P L D I Y L K I N S G M
 $P$ I L A R Y N I A F A V H C DE Q I D ML E K S R LDD LP VDV H L KMNT GM A AV A A GVDDIGCSGWELDRIVAAAREQERPARVHLKVDTGL
 EAMVRYEVI RAAAVYTKE MA VGMMANAAE QDTAYFH I K I I D T G M



 A AVDA Y R L WMAVVHSRWQLDAL LAFTPDAP I PVVWLKVDS GM A E A WK Q DVV T DT L F S K EV L D A I Q H L E T GR K L K V H I K I D S G M

 I I A S NQRFSVVMHNHEQVQMLHVLGDEQRDDVWI KVDTGM AACAELDLWPVLHHARQLDWLEQQRPARALEVFLKFDSGM A A DA H WN I E P TIL C D P Q Q A I I F S Q T L S Q WP L S V H L K LD T G M D N I V K Y N L T P TVVY D Y N L A K K E L S K L G K D I K I I H I K I I D T G M K T L I E N DL T Q TVVF S Y E MA K T I S DERLGK TVVIIHLKVD T G M LLCEYY QFDTLV HNFRQMQWLKEF NGSVKAWLKVDSGM



 E D M I R Y E LVVAE QQFACVLHHPRQLQWLLNTPLPRTDKVWVKVNTGM
 Y R V V A E D L


 E TLVENEVVAATVVFDYETAEELS EAAKGKTAI CHI KVVDTGM


 DTALDHDLTLTVYDPEAAAELSAARHGRPAPVHLKM E A L V K K E A E M Q R L Q L E A A I H H DVVQLQ WLA GA A A R G R L R V WL K V D S G M A QAA E R G I E V S V A S A E Q

 EEAARLQLTVPFHAAHQFDWLKQGSLPAPLEVMLKLNTGM A VA D R Y R L T V A V H G E E Q LD M L A S A R P S R P I D I Q L K M N S G M



 E E M I







## UniRef90 K9W2Z1 UniRef90-F9ZZB2 UniRef90 M1ZFB3 UniRef90-B8E9P2

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UniRef90_K6ZFW6 UniRef90-C4U436 UniRef90-J1QGZ2 UniRef90_E1VME3
UniRef90-M2WKBO UniRef90-C3X9R2 UniRef90-L8TQ17 UniRef90_D9SUW5 UniRef90-R7CMD7 UniRef90-R6EPR6 UniRef90-UPIO00344DA0E UniRef90_UPIO003457160 UniRef90_UPIO004063082 UniRet90_W6N4KO UniRef90-V5PSE2 2 UniRef90-UPIOOO34A9A1D UniRef90-UPIO003FC7700 UniRef90-L1MV24 UniReffo-A6LX29 UniRef90-K6XSE3 UniRef90-T2JBW8 UniRef90-UPI0003669E3B UniRet90-F2JMR3 UniRef90-A5EW54 UniRef90-D4KOV1 UniRef90-UPIO00470CDB5 UniRef90-LOEH93 UniRef90-C7MUO6 UniRef90-R5XFV3 UniRef90-UPIIOOO35EA30A UniRef90 R8AYW1
UniRef90 R9LAO2 UniRef90-B0TE82 UniRef90-U3GW19 UniRef90-O2Y763 UniRef90_R5DSE6 UniRef90-Q65FQ4 UniRef90-UPIOOO3453CFE UniRef90_UPIOOO3670591 UniRef90_R7ISD6
UniRef90 U1ZIP3 UniRef90-UPIooo36AF987 UniRef90_B111U7 UniRef90 R7NGX6
UniRef90 14 W5S4 UniRef90-UPIO0036CA3C0 UniRef90_K9TY43 UniRefolo-JIZVY1 UniReffo-S3KEX3 UniRef90-C5AJN3 UniRef90-UPIO003743ED5 UniRef90-K9VAU3 UniRef90_UPIo00381801D UniRef90-C6WVY7 UniRef90-UPIO00366D6EB UniRef90-FVGE7 UniRef90_M1 NJM4

UniRef9O_R6KUA5 UniRef90-W0TM70 UniRef90-R3WIJ4 | UniRef90-E8K2T4 |
| :--- |
| UniRef90 $\mathrm{S} 3 \mathrm{ETC5}$ | UniRef90-UPIO003739052 UniRef90_B7KHA9

 NRLGFKGADFNAAYQQLLNCPLVKQPINDTHFANADDLDD GRLGFLPDEADEEIDQUSNGPNIKVEGMFTHFATADEKK GRLGFDCDYLSALYDSLKKSNKVGQLGLMSHFACADEPYH

 SRLGMPWQEAVKFVQAVQDLPHLRVASVYSHLLATADDPDP TRIGFRNQHDVPEILRISKMPGLEVEGLFTHFARADESDR HRLGFSPADYPAVYARLAACPHVGQVTGMHFSRADEPDQ NRLGFRPEQVNGIWHKLRALENVGDITLMAHFADAENP HRLGLSPDGFADAWKRLRAMPHVDGLVAMTHFARADELEC GRNGSTAAAWDAFVGDAISQQDLRVVGLITHHLAVADEPAR GRNGCQPADWPELVSAARAAEELRVTGLWSHFACADEPGH SRLGMPWQEATQFVELVKRLPYLEVASMYSHLATADSPDP NRLGFRMDEFPDVYARIRR LSVKAPGLMTHLASADQPHN GRIGLVDEEAVASISTANRLDNLETEGVYTHFAASDEADK HRLGLTAHDSAQAYQQLLTSQNVRSIMWMTHFATSDQPDA NRLGFPSEQAEAVWQWANSLSNVAEVTLMSHFANADNHDG NRLGFMPDRVHTVWQQLRAINNVSSITLMSHFAEAERP
HRLGTAPSEAASVLAELECDPKVREVVVMSHLACADLPDH NRNGVSADDLLDGLARAQAEGAIRFGGVFSHLLAHADEPHN NRDGFLPAEYSKAYERLKK王PNVRETSHMTHFANSEVSGH GRNGATWDQLVGEAMDYQDQGLLRVVGMFSHLAVADEPDR GRDGFMPDNSVEEVYKMSKLPNISIEGGFSHFSTSDEANK TRIGFDTQENVEEYKKISELPNLE: GGMFTHFARADEYDR ARLGAPWTEAVEFVQWVQRLPHLTVASVYSHFATADEVDQ SRLGVSWDEADAFVQLVRRLPNLQUASVYSHLAAADDRDP GRNGATLEAWDGEAMEYQDQGLLRVVGUFSHLAVADEPER GRMGFLPEDSVDEACKDNEQRNIDEVESLFSHESTADETDK NRLGFAPERFRAAWERARAIPGVSQLVMTHFSDADGPRG HRLGFTPDEADRTWAMLREAPQAGELMLMSHLATADARHS GR1GVVPKDAAETAKKAAALKQVELEGVFSHFAKAADERDK HRLGFPMEKVVDVFSQLKAAAQVDNVILMTHLDSVADEQHN HRLGFPLAEHAEVVARVRALAGVARVTLMTHFAQADDS SRLGMPWHQGTEFASLVKKLPYLKLNSVYSHEATADDPDR
 HRLGFTQDEDAEAFAQAHSPVNIQWQGVITHFACSDEDDL SR|GYQTEEAADEMAQLSKLPHVVEGUFTHFAKADEKDK GRLGVLPEEAVRFVERAMRTPGVEVEGLFTHFARADEADK SRNGCPAELWPTLVKAAAAEDGVEVVGMWSHLACADEPGH

 $N R L G F P A D D L T G R V E P L L A S P A L K L Q G F V T H F A C A D D H D S$
$G R V G L L P D E A V A F V R K A M Q V P H V E V E G L F T H Y S T A D E E D K$ GRVGFQGDEGVREMLADARLPGIAVEGVFSHFATADEPDK NRSGVDEAEWVECFGLLAAAPRVRVTGVFSHFSCADGAAV NRLGFTPTEFPAALEHLKANPAVRQITLMTHFACADEPRN GRIGVRPEEAGALAAAIAKLPNVEGEGVFSHFATADAKDK
 GRLGVRTKELLALVEALTASENLEWEGVFTHESTADEPDT SRLGTDWRSATEFVQLVTSLDEELEVESVYSHLATADDLDR GRDGFRVEDSLKEVIKMAKLPYVSVEGLETHFASSDSSDK HRLGFHSEQFDDVYQQLLQSKNVKPINLTHFNCADELDN GRLGLVTADRDLYRNA! ASLPHLEDEGLYTHFANADRRDK
 HRLGFAPARVAEVHARLASMTGVDPGGLLTHFSDSEVFGG
$N R N G C P P V D W P E L T R A A A R S G H P V V A M W S H M A C A D E P G H$
R
 NRLGFRPDEAPRAAAWLQARNDIRLAGLMTHFATADGD NRLGFRPSAFRAAWERASATPAVGRIALMTHFANADEGEV GR| GLRSLEEAEQLLVELRKDGAQDDGUTHFATADEANP

## UniRef90 K9W2Z1 UniRef90_F9ZZB2 UniRef90_M1ZFB3 UniRef90-B8E9P2

 UniRef90_U4T00047080DA UniRef90_UPI0003B59444 UniRef90_UPI000379B172 UniRef90_X2H733 UniRef90_C0BVY8 UniRef90_Q0AVS4 UniRef90 K9S2Y5 UniRef90_UPI00035E1AAE UniRef90_UPI0003B753A1 UniRef90_F2EVH5 UniRef90_UPI00042A50C9 UniRef90_UPI00047C0331 UniRef90-S2L0L2 UniRef90_E8W1D4 UniRef90_K9W8L6 UniRef90-T1AN31 UniRef90-C6BRX2 UniRef90_F5LMI2UniRef90_K6ZFW6 UniRef90-C4U436 UniRef90_J1QGZ2 UniRef90_E1VME3 UniRef90-M2WKB0 UniRef90_C3X9R2 UniRef90_D9SUW5 UniRef90_R7CMD7 UniRef90_R6EPR6 UniRef90_UPI000344DA0E UniRef90_UPI0003457160 UniRef90_UPI0004063082 UniRef90_W6N4K0 UniRef90-V5PSE2
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UniRef90 R9LA02 UniRef90_B0TE82 UniRef90_U3GW19 UniRef90_Q2Y763 UniRef90_R5DSE6 UniRef90_Q65FQ4 UniRef90_UPI0003453CFE UniRef90_UPI0003670591 UniRef90_R7ISD6 UniRef90-U1ZIP3 UniRef90_UPI00036AF987 UniRef90_B1I1U7 UniRef90_R7NGX6
UniRef90- 4 W5S4 UniRef90_UPI00036CA3C0 UniRef90_K9TY43 UniRef90-J1ZVY1 UniRef90-S3KEX3 UniRef90_C5AJN3 UniRef90_UPI0003743ED5 UniRef90_K9VAU3 UniRef90_UPI000381801D UniRef90_C6WVY7 UniRef90_UPI000366D6EB UniRef90_F7V6E7 UniRef90_M1NJM4
UniRef90_R6KUA5 UniRef90-W0TM70 UniRef90_R3WIJ4 UniRef90-E8K2T4
UniRef90 S3E1C5 UniRef90_UPI0003739052 UniRef90_B7KHA9


|  | $210$ <br> 220 |
| :---: | :---: |
| 21 | R VGG\|LALLYGLYPADHLQ QVIN |
| UniRef90-F9ZZB2 | RPGLMLYGCSPFAGKTGADFGLRPVM |
| UniRef90-M1ZFB3 | RAGIIMI Y GFYPSNEVDRDRMDLKPAM |
| UniRef90-B8E9P2 | R P GII ALYGVSPVT G DCGAN |
| UniRef90-U4TF77 | RPGI MLY G I S PFADKNGVDFELQPVM |
| UniRef90-UPI00047080DA | RPGIIMLYGSSPFTDQTATDLQLEAVM |
| UniRef90-UPI0003B59444 | RPGLMLYGASPMPGTVGSDLDLKPAM |
| UniRef90-UPI000379B172 | RPGYMLYGGNPFGHSQESADQLQPVM |
| UniRef90-X2H733 |  |
| UniRef90_C0BVY8 | RAGI S T Y GLYPSEEVHKENVPLKPAM |
| UniRef90-Q0AVS4 | RAGIVLYGLYPSEDMKRLGLDI $\mathrm{D}^{\text {P P A M }}$ |
| UniRef90-K9S2Y5 | RVGLATYGLYPAPHLRSV L P L R PVM |
| UniRef90-UPI00035 | RAGI LLY GL Y P S D Q VEKEPVPLKKPVM |
| UniRef90-UPI0003B75 | RPGI MLY GASPLMAPDDPSHALKPAM |
| UniRef90-F2EVH5 | RPGIILYGASPSGNWQD $\square$ A S GLKPVM |
| UniRef90_UPI00042A50C9 | RPGLMLYGATPFPAPHAQA |
| UniRef90_UPI00047C0331 | R VGGLGLYGLSPFEDQTSADLGL R P AM |
| UniRef90-S2L0L2 | $R P G V M L Y G S N P L V G D N D A T R R L A P V M$ |
| UniRef90-E8W1D4 | R T G 1 A M M G |
| UniRef90-K9W8L6 | RAGLALYGLYPAEH LRNAVELHPVM |
| UniRef90-T1AN31 |  |
| UniRef90-C6BR) | RPGI MLLYGLYPSNGVHQQNAELRPAM |
| UniRef90-F5LMI2 | $R \square G I$ A M Y GLYPSEEVNKEQ |
| UniRef90-K6ZFW6 | R P GII M $\mathrm{L} Y \mathrm{G}$ I S P F |
| UniRef90-C4U436 | RPGII ILYGASPSGD |
| UniRef90_J1QGZ2 | $R P G I V L Y G A S P S G Q W Q D V A N G I R P V M$ |
| UniRef90-E1VME3 | RPGIVMLYGGSPRNDRSAEQLGL R A V M |
| UniRef90-M2WKB0 | RPGI A L Y G |
| UniRef90-C3X9R2 | $R P G V M L Y G G T P$ GGKTAEEYGLKPVM |
| UniRef90-L8TQ17 | RAGLGIY GLSP F EGQTSAELGLR |
| UniRef90-D9SUW5 | RS GII M M GYYPSKEVNVSK |
| UniRef90_R7CMD7 | RA GI TI Y G $\quad$ Y P S SEVERDIVKLEPVM |
| UniRef90-R6EPR6 | RAGI SLI Y GMYPSEEVD |
| UniRef90-UPI000344DA0E | RVGLLALYGLYPAPHFRDNPLDLRPVL |
| UniRef90_UPI0003457160 | RLGGLALYGLYPAPH F K S TVELSPVM |
| UniRef90-UPI0004063082 | $R V G L G L Y G L S P F E G Q R S E E L G L R P A M$ |
| UniRef90-W6N4K0 | $R$ PGI II Y G Y Y P S GEVDKNAMDI KPVM |
| UniRef90-V5PSE2 | R PGI MLY Y S S PKGDVPAAELDL L P T M |
| UniRef90-UPI00034A9A1D | RPGVMLYG |
| UniRef90-UPI0003FC7700 | $R$ VG\| SLY G |
| UniRef90_L1MV24 | RAGI I Q Y GL WP S DEVTR PI D L R Q CM |
| UniRef90-A6LX29 | RCGII TYGLYPSEEVNKNA |
| UniRef90-K6XSE3 | RPGI MLY GVSPFMHDDTMQSQLQPVM |
| UniRef90-Q3SH36 | RPGIMLY G ASPFTDVPASGLGLEPAM |
| UniRef90-T2JBW8 | R VGGLGLYGLYPAPHLRSDVSLKPVL |
| UniRef90-UPI0003669E3B | RMGI ILYGLYP DNRLVDKLNLKPVL |
| UniRef90-F2JMR3 | $R P G I I L Y G Y Y P S P Y L G G K V L D L E P A M$ |
| UniRef90-A5EW54 |  |
| UniRef90-D4KQV1 | RAGI TLYGMWPSEDVDKTA |
| UniRef90-UPI000470CDB5 | RPGI ILYGASPSGRW |
| UniRef90-LOEH93 | R DG ${ }^{\text {L M M G }}$ |
| UniRef90-C7MU06 | RPGI AVYGLNPV SQPEDLRPAM |
| UniRef90-TON3E9 |  |
| UniRef90-R5XFV3 |  |
| UniRef90-UPI00035EA30A |  |
| UniRef90-R8AYW1 | RPGIMLYGASP I D G V G P |
| UniRef90-R9LA02 |  |
| UniRef90-B0TE82 |  |
| UniRef90-U3GW19 | RPGVALYG\DPLEEPTELSARLRPAM |
| UniRef90_Q2Y763 | R P GI MLY GS S |
| UniRef90-U2TDJ4 | RAGI IQ Y GLWPSGEVTH PVVLRPVM |
| UniRef90-R5DSE6 | R L GI AMYGMYPSDEVNKDKVQLKPAL |
| UniRef90_Q | RLGI GMY |
| UniRef90_UPI0003453CFE | RPGLGIYGLYPAPH LK D E I ELRPAM |
| UniRef90-UPI0003670591 | R PGVSVYGLSPSPEVTA A W WGL R P A M |
| UniRef90-R7ISD6 |  |
| UniRef90-U1ZIP3 | R P GIM M Y G |
| UniRef90-UPI00036AF987 | RPGI A L Y GVSPFENQSAQD |
| UniRef90-B111U7 | R PGGIMLY ${ }^{\text {P }}$ |
| UniRef90-R7NGX6 | R Lil AL Y GMYPSDEVDKSAVALKP AL |
| UniRef90-14W5S4 | RTGGLLYGLSVVEGSSGEDFGFRPAM |
| UniRef90-UPI00036CA3C0 | $R P G I A T Y G L N P C P \quad Q P E D L V P A M$ |
| UniRef90-K9TY43 | RVGLAMYGLYPAAHLS S SVQLKPVL |
| UniRef90-J1ZVY1 | R T Gl G I Y Gl S P S P EVT S QEL GL R P AM |
| UniRef90-S3KEX3 | RAGI IAYGYFPSEELKT L P PDLKPVM |
| UniRef90-C1DBE8 | RPGIMLYGASPFADQSAAEDGLRPAM |
| UniRef90-C5AJN3 | RPGTILYGASPTGATRHDADGLVPAM |
| UniRef90-UPI0003743ED5 | R 1 G\\| L Y GLNP SGKELSL P Y PLKPAL |
| UniRef90-K9VAU3 | RVGLAAYGLYPAPHLRS K $\square$ NLKPVL |
| UniRef90-UPI000381801D | RPGI MLY GVSP NEAFSESTRLQTTM |
| UniRef90-C6WVY7 | RPGI MLY Y A S PVGDTA A A T Y GLMPAM |
| UniRef90_UPI000366D6EB | RTGI AVYGISPSPEMSSADFGLRPVM |
| UniRef90-F7V6E7 | RAGIILYGLWPSDEVDRSRDRLKPLM |
| UniRef90-M1NJM4 |  |
| UniRef90-R6KUA5 | RAGI TI Y G $\square$ Y P SNEVERD V VKL $\mathrm{V}^{\text {P P A M }}$ |
| UniRef90-W0TM70 | $R P \mathrm{GI}$ MLYGASPFAAPVG DLQPA |
| UniRef90-R3WIJ4 | RFGILAMYGLNPSGHMLPEVYPLKPAL |
| UniRef90_E8K2T4 | RMGDSMYGLNPSGQVLELPYKLKPAL |
| UniRef90_S3E1C5 |  |
| UniRef90-UPI0003739052 | RVGI ALLYGLYPSTEVNKQVIDLTPVM |
| UniRef90- ${ }^{\text {B7KHA9 }}$ | RVGGLGLYGLYPAPHLRS TVVDLKPVL |
| UniRef90_UPI000462EB27 |  |



UniRef90 Q31102 UniRef90_A0A011NWP1 UniRef90-R6ETX0 UniRef90-B3E7F8 UniRef90_K9YT59 UniRef90_UPIO0031F5857 UniRef90_G9Y7J0 UniRef90-A9KLG1 UniRef90_UPIO0024904E7 UniRef90-L8MTR4 UniRef90-K9RMC6 UniRef90-10AK22 UniRef90-G0AH07 UniRef90-F4Y0J7 UniRef90-UPIO0036226E5 UniRef90-E3CUJ2 UniRef90_UPI0003FE2AD6 UniRef90-I3VUF8 UniRef90-R7WWU8 UniRef90-R4LGW3 UniRef90-E8N4H9 UniRef90-D3EQP8 UniRef90_UPI000377D5EE UniRef90_UPI000362E8FF UniRef90-B8HV22 UniRef90_UPIO0046EEB08 UniRef90_UPIO00374E870 UniRef90-F7NI54 UniRef90_UPI00047D427D UniRef90_UPIO0034826D9 UniRef90_H6PC40 UniRef90-D9QQZ6 UniRef90-X8IV33 UniRef90-R6Q8D2 UniRef90-K4KTY7
UniRef90 Q3B663 UniRef90_Q3B663
UniRef90_UP1000467B920 UniRef90-L8M5R4 UniRef90_R5QL85 UniRef90_R4X494
UniRef90-M4XIH0 UniRef90-D8JGJ5 UniRef90-C2CQ59 UniRef90-B8G280 UniRef90_UPIO00362ED27 UniRef90-B8KSD9
UniRef90 E8XN49 UniRef90_UPIO0035C23A0 UniRef90-S5ZX28 UniRef90-R5U5Q6 UniRef90_UPIO00378DFE9 UniRef90-A8FC63 UniRef90_W1SGF2 UniRef90-A7NKG8 UniRef90_UPIO0039BC90C UniRef90-C6PZW2 UniRef90-F0P9X7 UniRef90_UPIO004001A0A UniRef90_D5V329 UniRef90-A0L493 UniRef90-R6NPY8 UniRef90_R7PLS6
UniRef90_Q9S5V6 UniRef90_UPI0002FA7536 UniRef90_UPI0003C7EE19 UniRef90_R5K141 UniRef90-D8KKT7 UniRef90_R6WGN0 UniRef90-A3TQ26
UniRef90-K6UMD9 UniRef90_UPIO00464F6F7 UniRef90-C0M6I5 UniRef90-R6ZFW1 UniRef90_UPIO00362B250 UniRef90_D7B7P7 UniRef90_E7NSAO
UniRef90_C8PU999 UniRef90_U7KTL2 UniRef90_Q1AXV6 UniRef90-H6ROW9 UniRef9O-B8D0W1 UniRef90_V9HHIO UniRef90-A6CSAA UniRef90_Q0VMG4 UniRef90-U2USN3
UniRef90-W9GCN6 UniRef90_UPI00037A99FC UniRef90_UPI000347C609 UniRef90_G2K4Q7
 A ACSEHGLSVVI HCDDQLQMLRQARLPRCPPIVLKLNSGM


 QLI D RYRL T T T I H NESQLQMLGRARLSAPVDIVYLKVNTGM

 K A E DYLTYNLDPTVFTDKDLDFLKAAKKKNNHRVHVKVDTGM ETVVRARLDFAVHCNEQUAWLEQAALKGPDDVHLKMNSGM K A A A H WQL EPTLLCNPQQALVFSETGLNQSLPVVHLKLDTGM



 VANDHWNLEATDCCLEOAFMDSRTLSQYQLSVHLK
 PLADANDI TLTVA SLD WVMAAQEEGVDSQLTVMLKI DSGM QAI A QWQL QATLSSSPKQALIAFSRHGLEHPCPVHLVIDTGM
 GDYVVYDLTAAVVTERCLTALAEAARRKYATVMVKLDTGM

 PL L A K Y G L I P TVVSKLETAVELINA QLESRQKI HLKVD TGM DIVIEQRLTIVVGGLERAGAIANDATNDVIDCLVAIDSGM
 PSYLEHGI EMTVCDPATLRAAEAVASGAGATVHLKVDTGM
 EDMIREE RPAVFREDQAKAFSEARLGKTARIHIKVDTAM
 PA A EQKFECVI H HQQQF E WLI KYKQKYILKV WVK L N S GM ETVVKEDII CGVYQDDQILAKEAERQGKKAVIHLKVDTGM QAI AAD EELSAASLTELAEAAGATVAGKTARVHLKVDTGLD RHIVEHKLWPVIHSRHQLDYL SPEHHGTPLWLKI DTGM A IVDKYRLT TAVHSEWQI KALAQASISDPVSIYLKVNSGM








 DRIVKEDFQPTVFSMAEQLSKAAVKANKTLKIHIKKDTGM
 Q A A A RESI T LTVF QA GWLEAAQSFLEGTVLTVMHLKCDSGM A


 SLER Y A L Q P V V C P E Q
  Q Y C T A H N Q H P L V I D S E F
 A A AR
GAGワA E L L F K Y D L I P T 1 SLAASYDLSVTAGTKEWDRAE QTLTAETPLKIHLKADTGM D A L L E Y D V E P T I S T Y E M N L N N K A N A L N K T V N I I H I A M D S G M Y L A M S H D I S LTVVF D Y A W L E S A R E Y K E D G K L N L L H I K C D T G M






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| :---: | :---: |
| UniRef90-A0A011NWP1 |  |
| UniRef90-R6ETX0 | GRIGUTPDEELEFVRFLMGHPELEVEGI |
| UniRef90-C6LCF4 | TRIGFCTAESLLEIMLISRLPNIKIEGI |
| UniRef90-B3E7F8 | GRLGTPYDQVPALLNALKLLPNIYLEGV |
| UniRef90-K9Y7 | SRLG |
| UniRet90 UPY0003175857 | SRLGTNWQEATEFVQLVQR |
| UniRef90_G9Y7 | HRL |
| UniRef90-A9KL | SRI GYQPAESIDEIVRMKKLSNLMLEGIFTHMACADMTDK |
| UniRef90-UPIO0024904E7 | GRIGFRDTDELSKALNVVQGEDFNFEGIFTHFATADEQNH |
| UniRet90-L8MTR4 | SRLGVNWQEAIAFIKLVQHLLPNLEILSVYSHFATADDRDL |
| UniRef90-K9RMC6 | SRLGTNWQDCGEFVQLVASLP HLNI GSV |
| UniRef90-10AK2 | NRLGVSYKHAFDFIEYLSNQKDFII DG |
| UniRef90 GOAHO7 | NRLGFKPEAYRAAY |
|  |  |
| UP100036226 | GRNGAQPSEWPDLVAAARAAEAVKVTGLWSHFACADEPGH |
| - | ELPsLL |
| UniRet90_UPIO003FE2A | A |
| UniRef90_3VU |  |
| UniR | A |
| UniRee900-R4LGW3 | A |
| UniRef90-E8N4H9 |  |
| UniRet90-D3EQP8 |  |
| UniRet90 UPIO00377D |  |
| UniRet90_UP10003 |  |
| UniRef90_B8HV22 | C |
| UniRet90_UPIO0046EEB08 | GRLGL |
| UniRef90-UP1000374E870 | SRIGLQE |
| UniRef90-F7N154 |  |
| UP100047D427D |  |
| UniRet90_UPI00034826 |  |
| UniRef90_H6PC40 | GRIGVRSLEEAESLMANLKKAGANVEGIETHFATADEADD |
| UniRet90-D900 | GRLGVKPDEVVGFAQKLSSFPHLELEGLLTHFATADEADK |
| UniRef90-X81 | G R |
| UniRef90 R6Q88D2 | SRUGFQVEESADUCKRITELPNIFAEGMFSHFATSDEADL |
| UniRef90-K4KTY7 |  |
| UniRef90_-238663 | R |
| UniRet90_UP10004676 | HRLGFQPHEYGHALQQLASSVNVRELILMTHFANADVADG |
| UniRe990_L8M5R4 |  |
| UniRef90_R50L85 | PG\| EVEGIFTHFAKADEKDK |
| UniRef90_R4X494 | NRLGFRPADFEHAWERASAIDAI GSI GLM |
| UniRet90-M4XIHO | GGFMVE V |
| Unireo |  |
| 隹 |  |
| 退 |  |
| 90- B8KKD92ED27 | GRGGAQPHDLELLEAAQAGGHVDVG WSHLVYADVPD |
| UniF | NRLGFAPERAGAVWQQLRELKQVGEITLMSHFATADS |
| UniRef90-UPI00035C23A0 | GTVEVFAVWSHLACADEPGH |
| UniRef90_S5ZX28 |  |
| 5U506 | R GFQTEQSADELAQ1 AKLP |
| UniRet90 UPIO00378DFE9 | HRLGFAPERFRAMARLQALPQVEDIG |
| UniRee90-A81 |  |
| UniRet90-A7NKG8 | $\square$ |
| UniRei90-UPIO0039BC90C | RLGVPYEQAEVFLKEANQIESIELEGLYSHFATADEGDL |
| UniRet90_C6PZW2 | GRI GFLPT QSVEDIYKISQLPNIIEGLYSHFSTSDEKSK |
| UniRef90_FOP9X7 |  |
| UniRef90_UPIO004001 | GQWSQAIVAAQESVTVTGLFTHFASADAIGD |
| 5 |  |
| UniRef90_A0L493 |  |
| UniRet90 R6NPY8 | T R |
| UniRet90_R7PLS6 | SRIGMTPDEAADEAARIARLPGIRIEGMFTHFARADEADK |
| 90_Q9S5V6 | GRIGIRQEEMNEILERFLQKTKCFVLEGIIFTHFATADQLDT |
| UP10002F |  |
| UP10003C7EE19 |  |
| er90_R5K141 |  |
| UniRet90 D8KKT7 | S |
|  | SRLGFYCHAYEAVRDALEKNKNLKCEGVFTHFACSDEPYD |
| UniRef90-A3TQ26 | GRLGQGWTDLIAALGPVVAEGAVEVIGVWSHFARADAPQD |
| K6UMD9 | + |
| ef90_UPIO004 | Q |
| UniRef90-COM615 | VRSLIAEANQLISILSDMGVQLDGIFTHFATADDSDH |
| R6ZFW1 | G |
| UniRet90 UPIOOO362B250 | NGYMPADLPDRAAALRAEGTLAVVGLMSHFALAADPDD |
| UniRet90-E7NSAO | NRIGCKPEDADTLAAETVQLTPNLKLEGVCTHFSVADSENT |
| UniRef90-C8PU99 | - |
| UniRef90_U7KTL2 |  |
| UniRet90-Q1AXV6 | NRWGLEPGEVGAALKALGRT PDGVYTHLACADSDP |
| UniRet90_H6R0W9 | NRNGVSVTEYRDVLTALRDEQVVRFRAIFSHLAHADEPHH |
| UniF |  |
| UniRef90-S4D | GR |
| UniRet90-V9HHIO | GR1GFRKNDGLEDIUNISKLSNLKIESIVSHFSTADSKDK |
| UniRe90-A6CSAS |  |
| UniRef90_Q0VMG4 | RLGLRPNEALSAAARLSQAGNAPVGVMSHFACADMDED |
| UniRet90 U2USN3 |  |
| UniRet90-W9GCN6 |  |
|  |  |
| 47C609 | RLGTNWEQAAEFVQLVQGLPNLT A S Y H HLA TA A S AD |
| Ref90_G2K4Q7 | RLGIRTEEARRIEATSTNDHQLQLEGI YTHFATADQLET |
| UniRef90_F3YC41 |  |

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UniRef90- X8IV33
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UniRef90_UPIO00467B920
UniRet90-L8M5R4
UniRef90-R5QL85 UniRef90_R4X494
UniRef90-M4XIH0
UniRef90 D8JGJ5
UniRef90-C2C059
UniRet90_B8G280
UniRef90-UPIO00362ED27
UniRef90-B8KSD9
UniRet90-E8XN49
UniRef90-UPIO0035C23A0 UniRet90-S5ZX28 UniRef90-R5U5Q6 UniRef90-UPIOOO378DFE9 UniRef90-A8FC63
UniRef90-W1SGF2
UniRef90-A7NKG8 UniRef90-UPIO0039BC90C UniRef90-C6PZW2 UniRef90-F0P9x7 UniRef90_UPIOOO4001AOA UniRef90-D5V329
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UniRef90_F3YC41



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UniRef90-P0A4X3 UniRef90_UPI0003B44C70 UniRef90_A0A021VLE7 UniRef90-R6R515
UniRef90-M7PHH1 UniRef9O-WOEAU4 UniRef90-U1X9T6 UniRef90-K9DTE6 UniRef90_UPIO0035E4521 UniRef90-N8S7M1 UniRef90-M7NCI9 UniRef90-UPIO003FFE2A0 UniRef90-UP100036A2C03 UniRet90_V1CGW2 UniRef90_UPIO0036A1831 UniRef90-R7BP83 UniRef90-D4CMZ9 UniRef90-A0A031LQK8 UniRef90_UPI000348ED18 UniRef90-R6NI56 UniRef90-L2F7H2 UniRef90-UPIO003B48181 UniRef90-C7PDB0 UniRef90-D9SOQ8 UniRef90_U2SEB8 UniRef90-H5X788 UniRef90_UPIO0047D97DF UniRef90-IOJHZ8 UniRef90_UPIOOO3643844 UniRef90-B8FF86 UniRef90-D7WXT0 UniRef90-A0A015M2F1 UniRef90-B9MKY3 UniRef90 NODOU6 UniRef90-N0AU74
UniRef90 B0K5Y9 UniRef90_H5TH50 UniRef90-UPIO0037631E0 UniRef90-E7RK69 UniRef90-B5YF99 UniRef90_R6T794 UniRef90_UPIO00363F92D UniRef90_Q6FFR4 UniRef90_A0A023X1M8 UniRef90-Q0FKD1 UniRef90_A5CU71 UniRef90-A8M4B3 UniRef90_H7EPD5
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UniRef90_D7CT85 UniRef90_U7UQR2 UniRef90-Q82DK9 UniRef90-W8VQ17 UniRef90_UPIO003B68F5A UniRef90-C5BZY7 UniRef90-K9D319 UniRef90_UPIO00378AE89 UniRef90_UPIO00360BF59 UniRef90-D0U4A8 UniRef90_UPI00028A37DD UniRef90_W4E7T2
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UniRef90-IOJTF7 UniRef90_UPI00047AFBEC UniRef90_U2ZAA6 UniRef90-Q1WV14 UniRef90_UPI00047D9858 UniRef90_Q47LN3 UniRef90_UPI0004675923 UniRef90_UPIO003B328C0
UniRef90_UPI000378E746 UniRef90_UPIO00378E746
UniRef90-H1HW97 UniRef90_Q7U4H0 UniRef90_UPIO004788BE2 UniRef90_A4FPF5 UniRef90-V2V814 UniRef90-UPIO0047E6ECF UniRef90-X7E2K9 UniRef90_K2DYW8 UniRef90-Q05QE4
UniRef90_A4SD08

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1 NLN S|I GYNLIKEDKNSLNMK|ICC|VVIKANAYGCGSVVIKSKY



 1 NLDA $\quad$ GKNDQTFRKH $\square P T K I M A V V K A D G Y G H G A Y R V A Q A$ I HLDSMQHNLARARSCAPAKIWAVVKADAYGHGLERALRG I HPHADRHNYLN I K ALLAPSRAFAVVKANAYGHGLLRTAQA I NSAALQYNLNRVKQLAPAK VVMVKANAYGHGVKDCLAA I D L A N I R E N V K R V G E L A A P A A I M G V V K A D G Y G H G A I A V G R A I D L D A I R Y NL E S MR K N DG T K I M A V I K T D A Y GH G A V P I A Q M I D L D A I R D N V A L M R A GTTTA E VVMAVVVK G D GYG H G M L P CA R A

 I N RGA Q H NVLQTKRLLGTRLVAVVKADAYGHGAVEVAKA

 I NLDALTHNLNYYRSRPGDKIMVMVKAFGYGSGSHE IAQL V SLDALRHNYNEDKNSPGCDIIAVVKADAYGHGVENTVRE
 $V$ V $N$ L I D L D A L A H N Y Q Q AR R K P NVVK Y L G V V K A D A Y G H GA DQ

 $V$ N L D H I D $\quad$ Y N I QQQL K N K L K T K I Y A V V K A N A Y G H G D M E V A K A



 I Y L D N I V

 $V \operatorname{DLDRV} R M N V K G I K S H L P V E F I A V V K A N A Y G H G D S Q V A E A$ I D MDAL A H NYR QARRRPNVKYLGVVVKADAYGHGAVQVSRK $V$ DLGA I A GNVA LLRRERAGAAVMAMVKAEAYGHGLVPAARA I H L E A L A H NLLKVVRSAPES QVFAVVVANAYGHGIVERVYQA $V$ D L S A L R H N V R T L R R R A D T P L M A V V K A D A Y G H GA P R I A R A

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




 V SRSAI QYNVSETRRLLGCRLMAVVKADAYGHGANEVAKA I S L R A L A R NL A S LR A RTRA QL LVVPVKANAYGHGAPEVAR Q
 V DLA ALA H NFQYLKSKINTLFMSVI KANAYGHGMVRIAEK

 I DLGGA A H N Y K E I R R HLDD T K L C A V V K A D A Y G H A V A V A R K A






 V DLA AI SFNVKQIAAHIPNDVWAVVKADAYGHGAVAV T R Y

 $V$ N L K A
 ISKAALCHNMEAMQASAG $\quad$ CKMA GVVVKADGYGHGAASVCEV
 VDDG A I E Y N L E A M K N N IGGVR IMAVI K T D A Y G H G A L R I A N F I DVVDA R H NVGVLAARAGARTMVIVKSDGYGHGTVITVARA






UniRef90 UPI00037586B1 UniRef90_R8W5I1 UniRef90-P0A4X3 UniRef90_UPI0003B44C70 UniRef90_A0A021VLE7 UniRef90_R6R515 UniRef90-M7PHH1 UniRef90_W0EAU4 UniRef90_U1X9T6 UniRef90_K9DTE6 UniRef90_UPI00035E4521 UniRef90-N8S7M1 UniRef90_M7NCI9 UniRef90_UPI0003FFE2A0 UniRef90_UPI00036A2C03 UniRef90_V1CGW2 UniRef90_R6PKA3 UniRef90_UPI00036A1831 UniRef90_R7BP83 UniRef90_D4CMZ9 UniRef90_A0A031LQK8 UniRef90-UPI000348ED18 UniRef90_R6NI56 UniRef90-L2F7H2 UniRef90_UPI0003B48181 UniRef90_C7PDB0 UniRef90_D9S0Q8 UniRef90_U2SEB8 UniRef90_H5X788 UniRef90_UPI00047D97DF UniRef90_I0JHZ8 UniRef90_UPI0003643844 UniRef90_B8FF86 UniRef90_D7WXT0 UniRef90_A0A015M2F1 UniRef90_B9MKY3 UniRef90_N0D0U6 UniRef90_N0AU74
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UniRef90_UPI0003807D23 UniRef90_F8IAK8 UniRef90-IOJTF7 UniRef90_UPIO0047AFBEC UniRef90_U2ZAA6 UniRef90_Q1WV14 UniRef90_UPI00047D9858 UniRef90_Q47LN3 UniRef90_UPI0004675923 UniRef90_UPI0003B328C0
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S R|L|GF|L|AKEATKY|IKE\|NNFKNDYDEG\|FTHFAKADEKDK
 S R DGI T P D D GA D F I K E V A A L K G I $\operatorname{R}$ I E G I F T H FA R A D E K D L $G R N G V P P A E L A D L L D R A Q A E G A V A V V G L F S H L A F A D A P D H$


 NRLGFPAA QAAADAARLQACANVAGVTDMTHFATADDPAR NRLGFKVAE I DEVIQSLKAE GF TCVLAMHFANADADH H GRNGSAPADWETLLDRASSYQDMRVVGVFSHLADADEPER
 SRGGATADE WPEAAAKAQADGDIDVVGVWSHFDSSDVPGD GRIIGYLPDDERA II KKMEKDSNFSVKGLLSHFARADEK DK
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GRMGMEPSEWAA LREI ALAQ
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 GRIGGLPENAVSLAREDAGSGVLSLGGMCTHFSSFDPBGH
 S R L G Y L C D G E V E Gl C E G C L L LP G L M P P E G I F T H F A V S D E E C K



 NR $\square G G D P E D L P K V I A L L Q R N S Q I N V R G L Q S H L A S E D H D E K$
 GRSGL F LDE WLDAAVRAQAAGEEI DVVGVWSHLAASAD DAES

 H R L G L L A N E Y H E Cl


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 EFTHKQLDLFRKVCDGPLPIKHCANSGGVVQYADSYLDMV S $\square N D V Q A Q R F T A F L A Q A R E Q A H C S N S S A T M A R P D D T E D L V$ PTVRGQAAVFADAVGARLEVRHLANSAATLTDASVRYDLV EDTLCQYKCFDDAIAKEFPLRHCANSGAVI DYPDTHUNMV
SRNSAQISVMRQLVTETGLSACMANSAA: SFAREQLKTFLNVCERDIPD IRHAANSAAILQFPEAHLDLV


G
 ETDDHQLAAFADGLAVTPRYRHDANSAATLTRPDAHYDLV
 SHT MQAERFASVAEYVRRHDHAGNSAAGIDLPDHDGGML EFSFLQRERFRRFCEKLSERRHCANSAGI DAS DGGTDFFDMMV


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 A YAMH QLRRFKEACDAHIPIKHIAESAA LDDDDAHFDMV

 SYFDQQQQNF LQMLEWMPKMDHCGNSATGYRFPEKVFNVV,

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 EFTRRQLRR F LTSLASEYEHSRHAAN E F TR R QLIRD FLSLA SEYEHSRHAANSGALLSLD E


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UniRef90 W4M9D6 UniRef90-E3CMB1 UniRef90-E6J9X1 UniRef90-E3H5M4 UniRef90-A0A015A2Z7 UniRef90-A0A031GK78 UniRef90-UPIOOO3450403 UniRef90-W6KBS5 UniRef90_-c9Y709 UniRef90--J9H919 UniRef90-EEV191
UniRef90- $66 T H 35$ UniRef90-R6TH35
UniRef90 U4TDK1 UniRef90-C0ZK24 UniRef90-E6QHE2 UniRef90-UPIO0029AA6C6 UniRef90-D1CFZ5 UniRef90-C3JBX9 UniRef90-E6W1R1 UniRef90-R9N6B9 UniRef90-K9P8D7 UniRef90-10GK97 UniRef90-N9A4G2
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UniRef90 N 2 BPW 2 UniRef90 ${ }^{-} 99$ CMF8 UniRef90_12EW92 UniRef90-J9FUQ6 UniRef90-UPIO002E33835 UniRef90-UP10003618476 UniRef90-UP1000478DD23 UniRef90-G2T5Z4 UniRef90_E3B7P1 UniRef90-UP100040D1E1A UniRef90-EOE495
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UniRef90_R5NQF2



[^0] V DRSAIT DNVRALKTKLDTALMAVVKADGYSHGMLATARA I D L G A V R D NVVRALRGYAPAELMMAVVKSDGYGHGAVVRARA I SLLS N I LDH N I N E F K K C K S K K I C C A V V K A A D A Y G H G S VVEV S K F $V$ N L G A l $\quad K \quad Q \quad N$ I N E M K H R P G Q K L

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 I NLGAL R RNAKAFKA QL GVVK MAAVVKA DAYGHGAAACAKA



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

 V NLEAI RENVRNTARMAGTGVIAVVKADGYGHGAARVAEA
 $V$ N L N S I P T N Y T R DR K H V G T R VI A A V V K A N A Y N V
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| ef90-E3CM |  |
| Ref90_E6J |  |
| iRef90-E3H5M4 | GSTFEDWPALVA |
| UniRef90 A0A015A2Z7 NRLLGFKPQNYVQAWERLNNLANVSKITHMTHFSDADADRF |  |
|  | SRMGI |
| UniRef90-UP10003450403 N R G G V D WE S V |  |
| niRef90-W6KB |  |
| NRLGFQPEQVRAWTRLNALLQ |  |
| UniRef90-J9H919 | HRLGFAPEEDPALIDRLKRQTAVIPRSVFSHLLVGSD |
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| UniRef90-U4TDK1 | R |
| UniRef90-C0ZK24 GRLGVRTEDLLAVVGALEECSKLKWTGIFTHFACAD |  |
| UniRef90-E6QHE2 |  |
| AA6C6 NMGFLE HEDDELVARLKHMPSLRVKSVFSHLASDDEAHD |  |
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| er90-C3J39 |  |
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| OGK97 HRLGDSLEEVPFVFEELSKFKSVIVEGVYTHFASADSDP |  |
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| iRef90_D4YTE2 | A |
| iRef90-UP100036F313E HRSGDDEAAWYEAFSLARDTPFLTVTG\\|FSH |  |
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| UniRef90-E0E495 SRLGYVVDEIADEIKHISQFEGIILEGMYTHFATADARNK |  |
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| UniRet90-UP10003728895 SRNGCPPQD WLEAVADHAAAGEVDPVAVWTHLAAADAPAH |  |
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| Ref90-D7BHZ2 ${ }^{\text {a }}$ GRVGFPWEEAQQVKEALEQESHLKVTGLLYSHFADAEE |  |
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| S SRAGLFAQKAAEAAERMSKLL |  |
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| UniRef90-C9XQ58 HRLGFDVNDVRSILKAFKLKY LDICCGIFTHLCVSDDEDV |  |
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| Y9 CRLGFNPEDIPALIERFRHQQALRPRSVFSHFVGSDSPDF |  |
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| Ref90-R7LLT6 |  |
| NRLGLEPGEWEAVAGFALEA GPELLMSHLACSDDPDH |  |
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| UniRef90-E4RY60 | R L G I GLY GV |
| UniRef90-UPI000255C210 |  |
| UniRef90-K9EVK5 | RVGI CLY GYPPASDMAGL VDLKPLM |
| UniRef90-F2F6E6 | R F GII S M Y GLLP S S Y |
| UniRef90-UPI000408B8D8 | RPGIMLYGSSPVIDDKSASELLLK P A M |
| UniRef90-FOSAW0 | $R L G I G L Y G V D N F S$ |
| UniRef90-R7P8W2 | RLGLLGLYGI D |
| UniRef90_17LPY3 | RLGGAMYGLN |
| UniRef90-G1WI69 | RAG $\$ GLY GLQPCEKSAP $\square$ MPLEPVM |
| UniRef90-W4M9D6 | RPGLALYGVHPFEA PEANVL |
| UniRef90-E3CMB1 | RLLGLVI Y GL NPS GQELSLP Y |
| UniRef90-E6J9X1 | $R$ PGI AL Y GL NP VEGLEVDLVPAM |
| UniRef90-E3H5M4 | RCGIIALYGLSPLAGVSSKDLNLRPVM |
| UniRef90-A0A015A2Z7 |  |
| UniRef90-A0A031GK78 | RPGAALYGIGGPQG GEPNPLRSVV |
| UniRef90-UPIO0034504 | RGG\ASYGLCPDPD LS VPGLRPAM |
| UniRef90-W6KBS5 | RPGVA ${ }^{\text {P }}$ Y G |
| UniRef90-C9Y709 |  |
| UniRef90-J9H919 | RLLGI GLYG |
| UniRef90_E6V191 | RPGI VLYGSAPDFPLHDAAHQLQP T M |
| UniRef90_R6TH35 | R L G L GL Y G |
| UniRef90-U4TDK1 | $R$ PGGLLYGVGDQGKKS G D D E G L R P VM |
| UniRef90_COZK24 | RLLG\| GL Y G L Y |
| UniRef90-E6QHE2 | $R \mathrm{P}$ GI MLY GASPFIDENAASLGLKPAM |
| UniRef90-UPI00029AA | RLGI GL Y G |
| UniRef90-D1CFZ5 | RI GII GLY GVQPLQFK |
| UniRef90_C3JBX9 | RLGGI GLYGI SPSMDKH L |
| UniRef90-B6G9W6 | RAGI GLYGLQPCERTRAV LPLEPVM |
| UniRef90-E6W1R1 | RPGIM L Y G G P F A DKT V DL R P A M |
| UniRef90-R9N6B9 | RAGIT TLYGLWPSDQVRKDIVPLTPVL |
| UniRef90-K9P8D7 | RVGLALYGQPPAAH |
| UniRef90-I0GK97 | R P G\\| L L Y G I T P N H Q K |
| UniRef90-N9A4G2 | R S GI MLY GSAPDYPAHSID HTLKPTM |
| UniRef90-C0N8E2 | RPGLMMLYGVSPFSDKS GTELGGLKPVM |
| UniRef90-Q221R3 | RPGIAIIYGSAPFPQHSATDWGLQPSM |
| UniRef90-A0A022L574 | RPGI A M Y G Y P PV A T DLELRPAM |
| UniRef90-UPI000311A | RTGVSVYGLSPSPEVTADSLGLRPAM |
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| UniRef90-F9DTR2 | RFGVSLYGIIAPSAAVKKLPFVLEKAM |
| UniRef90-D4YTE2 | RFGI GII Y GLNPSSNPDSPDLKLKPAL |
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| UniRef90-D5BDK5 | RTGI GLYGYGNSAQEDK KLKPV |
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| UniRef90_H3NJJ8 | RPGLLLYGYGP HAKAWGLQPVM |
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| UniRef90_J9FUQ6 |  |
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| UniRef90-C9XQ58 | RI GII ALYGIL |
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| UniRef90-L1MSY9 | RLGLGLY G |
| UniRef90-R2XUS3 | $R \mathrm{Y}$ GI GMY GLNPSGHELPETYPLIP |
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| UniRef90-A91U63 | GI CLYGASPFADADAASFGLRPAM |
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 VDLDAS KHNDTVEKKASDQNDFAVVKANAYGHGVVEVAKA I DLGAIAENYTILSQRAPDECSAVVKANAYGMGVEKIAPT
 VDLNAVAKNLSRIKEMPGQKПMAVVKANGYGDGMVELARF I DREAI AHNVREIKARMGHQMMAVVKADGYGHGAITVAEA 1 NLASIRHNAELLKSKANCELIGVIKADAYGHGALEVCQA D DLSALAANFRVAARVAPAKCAAVVKGDAYGLGGVPTAST DLEALRSNGKMVRKLAPAKKMAGVKANAYGHGDERAYEG ( 1 DAAVANWRKLSQAVPADCAAVVKADAYGCGDAQVTRA V DIDSIRYNDAKIKKLVGTEVMPVIKADAYGLGALSLKKA VDLDALRENYLLLREVAGNPAPPVIKADAYGHGLLSVART VDLDAVSANVVRLRERAGTPLMAVVKADAYGHGAVESAAA I DYDALRHNVKEVKKLVNTKIMGVVKANAYGLGGDVACAKA ISSSNLEHNYRTLDRIVGCRIMAVVKANAYGHDAAGTSKII VDLAALADNWRMMNERSGARAAAVLKGNAYGLGVMQAAPA I DLNALSNNAATTRRLVGSKLLASVKANAYGHGLTRCSEA 1 HLDAMQHNLARARAGARGKVWAVVKANAYGHGLERAMRG ISQSALAHNLDVVRQAAGPSIWAVIKANAYGHGIEA AVA I HIDAMQHNLAVVRAAPGAKAWGVLKANGYGHGLERAMRG HQDALLHNLNVARQMPQSKVFTVVKANAYGHGIERVYDA I HASALHHNLERVRQAPDAKTWAVVKANAYGHGUERVFEG I DLNALDNNYQYIKDKPGTKFMAVVKAYGYGSDSVIIAKE VDLGAI RSNVTELARRAAAQVLAVVKADGYGHGLVPAARA I NLDHLCHNYRLLQQAADASVMAVVKANAYGHGLNLVAPA iNLNALEHNYRYLKSKDKTKFLGVVKAYAYGSDAVAI AQK VDLDAVSGNVA LRERAGAEVMAMIKAEAYGHGLVPVARA VDLDAVRANYRLLSARAGRAVCAVMKADAYGLGMAQVAPA I DLSAVVHNLNHYRSLLPPELICMIKADGYGTGAFELART IDLVAI RENYRRLKARLGNVGCAVLKADGYGVGASQVAAA I HL NRLFHNYREIKK SGKKIFAVVKANAYGHGSVRISKF VDLAAVRHVVGRLEAGRTLIAVVKANAYGHGAPQVARA VDLGAVRENYRRLKARLGVSCAGVVKADGYGDGAAPVAAA ISLSRIRENMDNIRRSLPVKLMAVVKANGYGHGDVESAKA ANLRYNTQQFKQWDGTKLLCVLKANAYGHDAVMYATF 11NTRLRKNVDTGRNKPGVKFMAVVKGDAYGHGLVPGAQE NLGAIRHNYRVIGGALGGAKLCAVVKANAYGHALAVAKEA

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## \section*{}





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 A E V V E Y R R L S S P A
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P
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 SFAA H QLKI F QES LS TFKKEVHMANSEMAI DYPESRFNMV

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| UniRef90_G5HA59 | $R L G V G L Y G \\| S$ |
| UniRef90-H9UMM7 | $R$ P GIIMI Y G Y Y P S H DVSR P L L L Q P A M |
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| UniRef90_C7NEX7 | $R$ P GLV V Y GLLSP I P R T S Q D L G V R P A M |
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| UniRef90_R7ZWN3 | R L G I G L Y GI S |
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| UniRef90-H3NE80 | $R \\| G L G M Y G Y N T D S S M M E M \quad L D \square R P \square M$ |
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| UniRef90_J4WQ41 | $R$ SGI GMYG FANDPRLQKDFKP |
| UniRef90_E2SG41 |  |
| UniRef90_UPI00020D | $R V G T V V Y G M E P S R G E L N D G K D L Q P V M$ |
| UniRef90_UPI000469411[ | $\mathrm{RLLG} \quad \mathrm{G} \mathrm{G}$ Y G $\square \mathrm{D}$ |
| UniRef90-S3Y1D2 | $R$ P GI T L Y G Y S PVE T D L D L P A M |
| UniRef90-X0R5U5 | R P GI IL Y G S A PVIDDKSAHELLDLQPAM |
| UniRef90_S7X086 | R S GII GL Y G F G N S ELLE D K Y |
| UniRef90_A3XRD0 | RS GII GLLY GY G NTQEEDLKLKPV |
| UniRef90_A7HLU1 | $R \mathrm{~V}$ GI A S Y G L Q P S D SVY S E Q L K P V L |
| UniRef90_L8XUK8 | R A GL A L Y G A S P F D D Q A A E S $\square$ GLK P I L |
| UniRef90_UPI00046AC8E8 | $R \backslash G I S M Y G L Y P S A N D R E L P F Q L Q E A$ |
| UniRef90_A8LRT3 | $R$ P GII GLY G GAPF GA A E P V VR L S IP V V |
| UniRef90_V2TZI3 | RAGILLY G S S P D Y P S S A D D L K P T M |
| UniRef90-UPI00047969C3 | R $\square \mathrm{GII}$ GMYG F GNEPKETAQ |
| UniRef90-Q163V1 | $R$ P GII G L Y G GLP F V A A LPVVQLDV |
| UniRef90-B6YQB3 | $R$ LGIIGLY G I S V C T F S H T M P Y GVK P V |
| UniRef90_UPI000249104F | $R \mathrm{Y}$ GAA GY GL N P S GTE L L P P F ELHPAM |
| UniRef90-A3J2P4 | R L G I G L Y GI G N S E Q E |
| UniRef90_UPI0004079358 | RLLGI G L Y G V E A T NTE |
| UniRef90_R6AQ97 | R E GI M L Y G M Y P D E P VENG P L K P VM |
| UniRef90-U4UW61 | R P GVGLYY G GLP F EQARAVA |
| UniRef90_UPI00036A2021 | RTGGIA M Y G L S P DVKA D S K K L G L K P VM |
| UniRef90_UPI00047716BC | RTGI A S Y GIN P $\square$ P E LT T F P EL R P A M |
| UniRef90-M8DI48 | R I GI A L Y GL S T A E D Q K L S V D L R P V L |
| UniRef90-C6CVN8 | RLLGI S M Y GLLYPS DEVSRERIKLEPVL |
| UniRef90-R7CP89 | R PGII I LYY G P H S DEMDNM |
| UniRef90-UPI000473BCF2 | $R$ VGLSMYGYSPLDAK I K K L S L K P A L |
| UniRef90-A0A033UP | R F GII S L Y G Y Y P S K Y I Q E $\square$ SLLKLK |
| UniRef90_W8YT07 | R P GL A L Y GLN S A P E GRPA D I ELR P VL |
| UniRef90_J0UUR1 | R F GII T M Y GL N P S G D ELS M P P E FKPAI |
| UniRef90-M1NZN0 | R P GI ALY GI D P HKKYPTSLKPVL |
| UniRef90-UPI00036C2317 | $R A G L A L Y G L D P \square G A \quad D V R D G L R P A M$ |
| UniRef90_R6F360 | R P GII L Y G CY P S D EVDK N Q L A I K P VM |
| UniRef90-A0JTY2 | R A GLAFY GLAPADHLAPADFGLRPAL |
| UniRef90_M1ZFK0 | RIIGNALYG |
| UniRef90-K0AEU4 | $R \\| G \backslash A L Y$ G A L P S D E M S S Y Y D F L Q P A |
| UniRef90_U5A452 | $R \mathrm{~V}$ GLS L Y G I S P F S N K N S S D L G L |
| UniRef90_D7A723 | R P GI AVY G A R P R A DVA P L L P V V |
| UniRef90_UPI00047C691A | R P GI AVYGSAPDFPAHDTAHELQPTM |
| UniRef90_R6UUF4 |  |
| UniRef90_F7QLZ7 | R PGAALY G V N P T P EADT PPMQPVV |
| UniRef90_UPI0002F8E87A |  |
| UniRef90_R5XWM5 | R P GLL I I Y G Y Y P S E $\square \mathrm{M}$ K K K KI K L K P A |
| UniRef90-S7TZG2 | R PGI AL Y GVNPFC GTP LIA HLGL R P A M |
| UniRef90_R5HQI0 | RVGI A L Y GL S TQQ DWNAAAPPLRPVL |
| UniRef90-Q6AD34 | $R L G L A I Y G L S P F G A A S A T E L L G L R P A L$ |
| UniRef90-B7C8W5 | R P GL L Y M G V T S D D H I K K T N P D Fil P I M |
| UniRef90_B3ENJ6 | R P GIIMLY G Y F P D S V K G R A D L K P V M |
| UniRef90_A6U7F6 | $R P G I A V Y G G E \quad E A V D G D V N P M K P V V$ |
| UniRef90-H8KVG8 | R L G L GLY G I D S A VK N N R L L Q P |
| UniRef90-A0Z274 | $R$ P GIIMLYGA A H S P P G A S L EAVM |
| UniRef90-A0A031GT | $R P G I M L Y G G T P S G G T S A Q A F G L L P T M$ |
| UniRef90-UPI00047CA85D | RPGI CLYGASPFADVPA GSLGLRPAM |
| UniRef90-UPI000369188F | R P Gl M L Y G G T P G GKSAADYGLRPAM |
| UniRef90-N8S2H8 | R S Gll M L Y G S S P D Y P T H S $\quad$ Q D N L K P S M |
| UniRef90_C5TBS9 | R A GIVLYGSAPDPEHTAAQWDLQPSM |
| UniRef90_UPI0004292D87 | RS Gl GL Y G F G N D E E N H L KPV |
| UniRef90_D1BBQ6 | $R P G L A V Y G L S P V P D L G P G D Y G L V P A M$ |
| UniRef90-Q0EZD1 |  |
| UniRef90-Q0BPY6 | $R P G A A L Y G \square N P V P G R \quad P N P M R P V L$ |
| UniRef90-UPI00041D9F8C |  |
| UniRef90-UPI00038054E4 | $R P G I A V Y G L T P \square P A R G G \quad F G L$ R P A M |
| UniRef90-T1W8Z6 | $R P G A A L Y G \\| N P H P G R \quad P N P L Q P V$ |
| UniRef90_R5RX73 |  |
| UniRef90-J5VWV5 | $R \mathrm{~L} G \\| \mathrm{GL} Y \mathrm{GV}$ S A T G R P GVEEP I |
| UniRef90-X6DCU7 | $R$ PGAALYGLNPTP ARPNPMLPVV |
| UniRef90_F0S451 |  |
| UniRef90_B2GJ40 | $R \vee G L G L Y G L S P F A D R T P E D F G L V P A M$ |
| UniRef90_V7FHK9 |  |
| UniRef90_C6D444 | $R \square G A A M Y G F Y P A \quad K \square A C P V K L E P A L$ |
| UniRef90_14DCG2 | R I G T L L VG HYPGEG |
| UniRef90-UPI000399F9C9 | $R V G \\| G L H G Y L P D E S M A A A P F P L H P V M$ |
| UniRef90_UPI00047B92FF | R C GLIL Y GLEHKPDEKMLPEGVSPIM |
| UniRef90_UPI000479D7DA | $R P \mathrm{GLFL} \mathrm{F}$ G Y L Y G E N R $\quad$ D L H K V M |
| UniRef90-C9LX24 |  |
| UniRef90_Q97DY9 | RCGTLLF GLEHEQGQRNMPKGIKTLM |
| UniRef90_UPI000237E6E6 |  |

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2

SLSGCRNNYRYFRSKPSTKMLVLVIKANAYGHGAVEFASM D DLSAAANWQALDALLTACETGAVVKADGYGLGADRVART VHLSALHHNLVAVRDRANSKI WSVVKANAYGHGLARVWRC VHLENLRHNLKTLLARHPS LMPVIKADAYGHGVVAVARV VDLDHLKYNVELAHSEFKRPLMAVIKADAYGHGYKEVASF I DLDALVSNWSLGKDKVGTDCAAVLKADAYGTGQDKTAAA IDLDALAHNVRLDAARAPSKLYAVVKANAYGHGADAVGRA EALRHNLGVAREAPGVSMWSVIKAEGYGHGLLWAAEA DLKALAHNYHYLRAKPETKFLSVVKAFAYGSDTQVIAKK I NLDALVYNYKKLRKFDGKKFLGVVKADAYGHGAVE: SKK I NL NALTHNYNFYKTKAKTKVMVMVKAFAYGGGADEIANH VEVGAAGRNVQTLASLIAPVRAGAVVKADAYGLGAERVAAT VEGGALGGNVGLLRERAGAEVMAMVKAEAYGHGLAEAARA
 $V$ NPA A V EANCR S L R R H L S CA L M A V V KA D GY GH GA V T V A R A
 I $\begin{aligned} & D \\ & I\end{aligned}$
 $V$ D L A A V R H NV G L L S R A S G A A T M A V V $\operatorname{V}$ K S D G Y G H G A A D V A R A

 V NTA S L R H N F S A V K S IVPPA HIMMAVVKA NA Y GA GA DKASE F VDMAKMANGHGLAVCAPE


 I DLAALRRNVAQLRLIAPAETMLAVVADAYGHGLLPIAEA I DLDAI ANNYREITQHPGARVMSVVKADAYGLGAVPVART
 I SASAI A QN $\square$ ATVVRELTGTHFDAIVVANAYGHGLAQVVTA

 I DLSAI A A NLLAVVRKRAGRKVLFAVKADAYGHGAVEVSRY


 $V$ N L D A
 $\square D T D A L R Y N F R A L Q Q A A D A S V M A V V K A N A Y G H G L A Q C V P C$ V D T A A I Q H NVELI A A R S G A GTMMAVV K A D GY GHGAVA A A R A I D L S A L R A N WN T L C S V L E Q R P A A VI K A D A Y G L G A EP VG Q T







 $V \underset{V}{N}$ L N A V V V $N$ N L
 A NLA H NLSVVLRSHAPVRHMAMVKADGYGLGLEGTAA H I NLNAI S H NLS F Y K S K P S T K L MVVVK A F G Y GS G G F E I A K L



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UniRef90－Z4WVY6 UniRef90－Z4WVY6 UniRef90＿W7CDK7
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UniRef90＿V6V131
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 $L H A G C R R F F V A M A S E G A K V R Q A V G P G P E G V F S G H M R G D T$









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 D M I G D L M L T P M L N S L D Q L T R H F E A L P G H P F G I

 DLLA A E HF L K H D I











 TS CAAMAATTPVLNSLEQDAQWSAHALDGTLTAAVQI DTGM






 DEIVGRDLMAALSSFDDVLAAAAARRGARLPVVLKVDTGM QMAFQ HNCI LVMMHCEE QL QWLLNNCPENQRP HIWLKVVDSGM S L F I K H H LTM L L N D DN QL H H WL K LCN DRNYSAGVQFD T G M
 A A A L T A D V E V S SVN N A E W A L A E V A A A R A T G R T A Q L


 $P$ LAAAARGHI LVVVRAA QLA WL QT QRWDRPL SIIWIKVVDSGM
 WE ALA GDL DLLSVSTLT QLQAVRVAAQGVVARIHVKVDTGM
 $R A$ G DA N D





 K DLID Y H L T PSVVY THRFLEGLCSELKQHNVNVHLKDNTGL
 E C C V A R S I V P A V Y S A D QL E M L GRAA A P G Q Q V D A A L K F D T G M
 ALCRQRHHLSPVIDDAT QVALLQQVGFDGV VVWLKVDTGM



 K L L L K Y H L I Q T V D D Y D Y G Q QL N A M Q L P $\quad$ P



 N T L K
 REAIAADVDVSVA GLE B A A A A




## UniRef90 R5BQ83 UniRef90_UPIO00374DD3C UniRef90-X0QCM7 UniRef90-E0WRD6

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130
140
150
160 HRLGFMTSELLEELT GF LRRDHKEVV\|VKS\|YSH|LAAAEDPED

 NRLGFPCEEAHE I WQRAAKQDAN I KHDLTLMSHFANAA HN GN



 NRLGGDPVEAE GVVARRLRAGHGSRGVHWMTHLACADPEPE H












 GRVGCPPSSAPELAALIAGSKYLKLGGVATHLASLDDKEDA NRLGLEPAD WAA V SAELDAA GPK LVMSHLACSDEPEH GRLGGNHENFARI CSMYR HK NVQVTGTFTHLSASDSABV





 SREGATEADWPAAAARAQDDGEVAVVGLWSHMAYADAPTH HRYGVQPDDAPGLARA DAQDSRLAL EGLETHFATA DAAD D
 H R L GLE P N K S I E T I K K I R A L K G L E V E G I F T H L S N A D A K DK T R V G F Q C D D S L D N I DE V F S L K N I HIMA GTFTHHATYS G D CP HR L G F A P R A L GP V F E A L S A V H S L R I L G L M S H L A R S D T P D D NRLGMEPE EWMAVRETALLD L S P NLI MSHLACADEPDH S R A G A VLE D LP A L A REARA A Q DVVDVVGLWS HLS R A DE P D S

 GRTGFFEK D WELL A GLL K ESP HI TMPVGVYTHLARAA QRDQ HR LGGFT LLEDMP RL S E RLLKS QT TVVMARSVVFSHFA GS DEPR F S R L G L S P K E FE R FLLENAT L LD AI D DK FVV D H LAA S G DE P E N
 H R L G F LDP S D M T R L G E D L A K K D A G L S l






 $G R V G \square L Q D D A V A T A R E I L S L R G L T V T G L A S H L P V A D E D C D$ NRTGASNAQALVY RLCQQRGISVRGILSHLACADTPSH SRGGA T E E D WP A LVVA DAERA G L V V R V V A V W S H L A C A D E P H H


 TRIGGIRTE ELQETFNA I NRDPRFKLHSIGMHFATADTNNE SRNGI LG D DWTE YARKHEAEGSVVVRGLWSHMTNADVAGC



 GRLLGVKA EDYQK TVVALI QSHE HLI FE GVVF THFAQADED S

 S R L G L D K K E L Q K L I K N P T DF E K A E I K Y I L S H L A N G E D A S H
 HR L G F M T S E L Q E L T D F L K D C K Y V R RV K S I Y S HL A A A E D P E D
HRVGVHPKDYADAYQRLLASGKVVRIVLMSHFARADELDA

## UniRef90 R5BQ83

 UniRef90-UP1000374DD30 UniRef90-X0QCM7 UniRef90-EOWRD6 UniRef90_E5Y6G7 UniRef90-R5Q5L6UniRef90 AONMU4 UniRef90_UPIO0037B19F3 UniRef90-A7HG24 UniRef90_UPIO0035FFE78 UniRef90-UPIO0047E4C70 UniRet90_Q6FYZ8 UniRef90-R7PQ40 UniRef90-K1L688 UniRef90-J6DKZ8 UniRef90-UPI000465B07E UniRef90-UPIOOO4648034
UniRef90 UPIOOO478BFOA UniRef90-K4IIE8 UniRef90-E3HB04 UniRef90-E1VY23 UniRef90_UPI00037791D2 UniRef90-R5ZLLO UniRef90_UPIOOO4767212 UniRef90-R9JT93
UniRef90-P58737 UniRef90-Q11LC5
UniRef90-M7N283
UniRef90-UPI0002554E7D UniRef90-D5ATN0 UniRef90_UPIO002FE1402 UniRef90-ЈЗA6A6 UniRef90-D4L817 UniRef90-A2CC59 UniRef90-XoRJV0 UniRef90 WoJDZ2 UniRef90 DoLYW2 UniRef90-B4S1A6
UniRef90 W7E3P9 UniRef90-F4CW85 UniRef90-D2SH58 UniRef90-14EKA9
UniRef90 B1BZ3 UniRef90 ${ }^{\text {B6JMG2 }}$ UniRef90_N1Z5F7 UniRef $90-$ F9ZQB4 UniRef90-A3U1R9 UniRef90-COW6HO
UniRef90 F9YPD UniRef90_UPI000377C33F UniRef90_U3P5X4 UniRef90-IAAENO UniRef90-A6WYV8 UniRef90-GOUFBO UniRef90-TOLFR9
UniRef90- Q7MVG7 UniRef90-F6GFK8 UniRef90-Q6A5H2 UniRef90-17LL31 UniRee90-UPI0004176F8A UniRef90-UPIO003615378 UniRef90-W7CPA2 UniRef90-E6YUW6 UniRef90-B8DRL1 UniRef90-R5BBU5 UniRef90-V5WDJ7 UniRef90-B4D615 UniRet90_UP1000378005F UniRef90_UPIOOO4OFE49D
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UniRef90_V6V131

170
180
190
200
EFTRGQLRMYTDNAGGYKPMWHVDNSAGIIERFPEYQYDM|V| PMNAYQLDLFRQMTDGLGVPRSLAATGGIQLGADYQFDLT TYFAYQFQKMMAVVKQRPKYVHVANTATSMWHQVCGANMV DDNEYRFDQQNCQSD PADCSSLANSAVILWHPSHFCHWV AYEKQRSLFYEMDGNCKFKYDHCCNSAAMTYHHDEKSNMG PMNRRQLKLFTETTAPFPDPRSLANSAGVLLGPEYHFDVV RFTRRQFDRDVSARLSWIPERHCAASASLLLDHEMALEVV PQNVLQLERFAAAVSPLPGHVSVANSAALEAGWEDRVGWA
 TYTENQFSLFKKVIAQUEEQRHCANTGATVTYPETYGDMV EQNGEQFAEMSRIADEFPGFDSFANSGGVLLGDAYHGVLA PS ITA ALLA AFTDMVAHRFEVRHLANSAATLTLDPEARFDLV A YTKNQI NQFYQLI HYY YGKIHI QS SYGLINYPKDKCDYV PGNATAVAGFEDAVRENPQLRHVSSSANILDRPEFHFDMV EFTKGQISKFEQARQFFENHLHICNSSGILNYPDAEYDMV DFTLDQLEKFKVFKMESVKYKHLLNSSGLLRFADTESNLV EYATYQLNRFITTADNDQPIKHALNSPGIVAYGAHQYDMV SFADKQFDEFVNFVDEKIPIHQCANSAAMMEMPKTSLSLS TATRQQRETFNTLAASAGLGVSTANSPATLGWPDTHGTWN EYTKQQUGSFYGLLEKVIPKVHIQSSYGLLNYPEDPCDYV VSNAAQLAVMRKAATAFPEPVCFSNSGGLFLGNDYHNALL EFTLNQTKAFQSITVGYKPMRHLCNTSGILNYPEAHLDMV AYTKEQLGRFSAAVEGMRRAVHAANTGALAFHEDAFFDMV PMNAMQLKNFRAMTDGLGLKRALSATGGILLGPDYHFDVT AYTHRQIERFNEVIDRHPGVLHVQSSYGILHYPDMEYELA PLNARQLARFTEAALFPDARRSLANSGGLFMGEAYRFDQA DFTRGQIDGFYNLADHNDPKLHIQSSYGFLNYPELKCSYV
 AMSYEQIARFDEAAAVRHRYQHLANSSATLDFPEARRDAV GFTASQLSAFKRVADAIGLPTSVANSPATVNWPASRNAWN PANRQQLERFQADKQQI PNCRSLAASSGDFDGQDWHFDLV PTMGAQVRVFEEAVAGARARLHLANSAATVALPDTWYDMV AFVKQQQLIFYKLVGQHEFKYIHCCNSAAMAYHQDNKSNLG THAKNQMKAFNAFLEQEFQYRHAYNSAG乌LGNENRFLNLY QFTEMQFDRFQKMI KACQQKCHCANSATTI SYPEKQLDMV PHNVRQRRERAVIGQWGERHSLANSGA LALGGARFPWM PMNIRQLRQFKAMTSGLGGPLSLAATGGLLLGPEYHFDVTV DCMQEQURQFDDCQKVDEKYFHNCNTSGIVNYPQAHFDMV
RKNRKQREMFAAVIKSFPPPLSLSNSAGVYLGADFHFDMV EAALLAEFLAEAEARGAREEVLHLAASSAGLRMPEARFALV DAFSRQCAVAVQSATPQPVMRHILNTSGDTRFTEEQMEAV AANARQLANMTALLARLPKPVAFANSGGSFLDKTYHFDLA TYYQQQVKTWHKLVDDSNTWYHLANSATSLWHEQPSHDAI TYSYEELSKFRKTLQDDIPIKSLANSSGVLDTPESYFNQA DFTRSQLLSFDAALLGYIPLRHVLNTAGVERFADYHADMIV EFTRREIDTFMTAVRGPFPLVHDANSGALLGHDLGKTSMV AYYKKQVEHWVEAANDPETYWHLANSGSA WHHEIDTNTI
 EFTKTQปSEFKEARSFFKTHLHLCNSSGILNFTEAEFDMV AYFEKQFREVVEALDTRPATVHCANSAAGMLQDQSGFDAV
 SLAPRQAALLKAAAEMAPEFVHGANSGGULFHGDDGSSMM AFTREQLDQFHQVVGQSQPVVHVENSAGIISYPTQAGDMV PLNDEQCQRFQHIKQQDPEDGSLLNSAGLCSLAQHRYHMV PSIDRQAERFQDAAAGLDPDRHLANSPATLTRPDLHFELV PMNREQQQRFVAVAQSARRRCSLANSSGDFLGADWHFDLA KFALSQTDLFEKLSSKDHPTRHILNTSGUSNFPEAQYDMV AYTRKQUMLFDQVLKDDVGVRHLQNSYGVLNYPDLKYDYV E F T K Q Q F LiN F N Q T I H H Q L Q E K V V H
 $P$ S VGGQQV T R F H D A L Q VAA H GA V H L A N S G A A L A A P Q T R F D L C


 A F S A R Q Y E LI L Q QA Y S H K



 D F T L G Q I K M F E A NA I G Y R P M L H I L N S A GIIE R F P A Y Q H D MV SHA EA QWRTFDA LP LAP P GWLRRTAANSAALEALPQARAD WV

| UniRef90 R5BQ83 | $R L G\\|G\\| Y G \\| S A / L P E V H \quad L K P V$ |
| :---: | :---: |
| UniRef90-UPI000374DD3C | $R P G V G L Y G G L P F D G A H P V V R L D L P V V$ |
| UniRef90-X0QCM7 | R Y Gl A T Y GL L P S GE IT ETPPYPL FPAM |
| UniRef90_E0WRD6 | R P GIM M L Y G A S P NGQVQA $\square \mathrm{D}$ L L L R P A M |
| UniRef90-E5Y6G7 |  |
| UniRef90-R5Q5L6 | R L GI T M Y G CSPNGEEET K K K Q V M |
| UniRef90-A0NMU4 | R P Gl A L Y G G L A $\square \mathrm{E}$ ( TEP P P M K P V |
| UniRef90_UPI00037B19F3 | $R L G I G L Y G V$ E S A GLYQHELQP |
| UniRef90-A7HG24 | RA GLSMYGYRPAPWC GT DADLRPVL |
| UniRef90_UPI00035FFE78 | R P GI M L Y GV H P A E P P E GP QVDL R P AM |
| UniRef90_UPI00047E4C70 |  |
| UniRef90_Q6FYZ8 | R P Gl A Y G $\ddagger$ D P Q G K K P T L F K P V L |
| UniRef90_R7PQ40 | $R P G L L L Y G Y \quad G E F A K K L K L K P V M$ |
| UniRef90_K1L688 | $R \square G \\| G L Y G V$ |
| UniRef90-J6DKZ8 | $R$ P GII AL Y G GAPN T G E K N P M P P V V |
| UniRef90_UPI000465B07E |  |
| UniRef90_UPI0004648034 | $R \square G I F M Y G V S S L N D Y L C K Q E L D L K P V L$ |
| UniRef90_UPI000478BF0A |  |
| UniRef90_K4IIE8 | R A GI A L Y G Y G N N P K E H K M |
| UniRef90-E3HB04 | RVGII ILH GVVPFE S ELQ K K F K P V |
| UniRef90-E1VY23 | $R L G L$ GL Y GL S P F E ED T P Q S F GLR P A M |
| UniRef90_UPI00037791D2 | RLGGI GMYGY SEYTDFMEKYLKPVV |
| UniRef90_R5ZLL0 | RAGIISMYGLYPSDEMSRENMKLYPAL |
| UniRef90_UPI0004767212 | $R \square G L G V G S D P \square H A A D Y Q A R L Q P A M$ |
| UniRef90-R9JT93 | R A GI AL Y GLLSAPGDRTRLELDNLRPVL |
| UniRef90-P58737 | $R$ P G A L Y G G P S A A GPNPMKPVV |
| UniRef90_Q11LC5 | R P G A A Y G I N P T P |
| UniRef90_M7N283 | $R$ S G 1 GLY Y F G N SEDE |
| UniRef90_UPI0002554E7D | $R P G I L L Y G Y A P V G A E Q \quad \backslash L P V K P V M$ |
| UniRef90-D5ATN0 |  |
| UniRef90_UPI0002FE1402 | R P GI A L Y GLEEADTDRVKRQVDLRPVL |
| UniRef90_J3A6A6 | $R P \mathrm{G} \\| \mathrm{SL} Y \mathrm{G}$ GGP LDVP D A |
| UniRef90-D4L817 | R T GV A L Y GVK SLPDDTELLLDDLRPVL |
| UniRef90-A2CC59 | R V GLALY GHSPNLQLQ G KV DLQPAL |
| UniRef90_X0RJV0 | $R$ P GI ML Y G S P S GETH S I GL K P TVV |
| UniRef90-W0JDZ2 | R A GI S L Y G Y Y P K K IED NP |
| UniRef90-D0LYW2 | R CGLLALY G N S Q P P ERVP |
| UniRef90-B4S1A6 | $R$ L GVGVYGGAVS T A N NVGVE $\square$ Y P A M |
| UniRef90-W7E3P9 | $R$ P GV A L Y G G N P TP G |
| UniRef90-F4CW85 | R P GI AVY GLD PLGRPVAES P L R P A M |
| UniRef90-D2SH58 | $R P G I A V Y G L D P L G G G D P A A H G L R P A M$ |
| UniRef90_14EKA9 | RTGVVAMYGLSPSADVV PVSREFQPVM |
| UniRef90-B1BZD3 |  |
| UniRef90_B6JMG2 | R P GII ML Y G F Y P S N E M K E |
| UniRef90_N1Z5F7 | R S GI I TY GMLP S DECEG R ID L K P LM |
| UniRef90-F9ZQB4 | R P GL MLY GLSPFPGQT GRDLGLRPAL |
| UniRef90-A3U1R9 | $R P G V G L F G G G L P F A D A E P V V R L D L P V I$ |
| UniRef90_C0W6H0 |  |
| UniRef90_F9YPD3 | $R$ SGlGMYG $\quad$ G GNDAEYQSNFRP |
| UniRef90_UPI000377C33F |  |
| UniRef90_U3P5X4 | $R F G \square A A Y G F S P F D D T T G A E \square G L K P V M$ |
| UniRef90-14AEN0 | R T G TLLIGG |
| UniRef90-R7DHR2 |  |
| UniRef90-A6WYV8 | $R$ PGVA L Y G V G P K S E |
| UniRef90_G0UFB0 | $R$ VGAAMY GFNPSGKEIT T D K LT P A L |
| UniRef90_T0LFR9 | $R \mathrm{~V}$ G L L Y G $\square$ Y P S LENEP T $\square \mathrm{M}$ MVKPA |
| UniRef90_Q7MVG7 |  |
| UniRef90_F6GFK8 |  |
| UniRef90-Q6A5H2 | RAGIVGYGY DPNPHADRA DLHPAL |
| UniRef90-17LL31 | $R \mathrm{~V}$ G SVLY G Y N P G T P ELTMPFKLSPVL |
| UniRef90_UPI0004176F8A | RIGGA Al Y GFYP EKLVPNDQLKPA |
| UniRef90_UPI0003615378 | $R$ A G $\$ ALLY GYNP T E H M L K AVA S L K TVI  \hline UniRef90_W7CPA2 & R F GII SMY GLT P S P E L L P LP F ELQ S AL  \hline UniRef90_E6YUW6 &   \hline UniRef90_B8DRL1 & RPGI A L Y G A N P LR G T E H L G D GLQPAM  \hline UniRef90-R5BBU5 &   \hline UniRef90_V5WDJ7 & $R \mathrm{P}$ GI A A Y GYa P DEELLTRRNMEL KPVM |
| UniRef90_B4D6I5 |  |
| UniRef90_UPI000378005F | R P GI A L Y GVEPCEDRT $\quad$ L G L K P V M |
| UniRef90_UPI00040FE49D | R P Gla i Y GL |
| UniRef90-UPI0004660521 | RPGASLF GFDPVADGEPA |
| UniRef90-UPI0004197763 | $R \square G \square G L Y G \square S N D A D E Q H$ |
| UniRef90_U5FAQ1 | $R$ P GL LF LGATS D D A $\square$ T T $\square$ THDFQP |
| UniRef90-F9EF12 | R A GI GL Y G L S P D P AVVTA A ELGLR PVM |
| UniRef90-E7GD86 | $R M G I A L Y G V S S T D D Y M K N H L N L Q P V L$ |
| UniRef90-F8HY65 | R I GAA M Y Gl D S S Q A L E K R DLQPVL |
| UniRef90_UPI000477163E | $R \\| G L A M Y G V D P F W R E G V S Q R A L Q P A M$ |
| UniRef90-T1W7Y6 | R PGAALY G I N P Q P G A |
| UniRef90-Z4WVY6 | $R \backslash G \square G L Y Y$ F S P T G R REVE |
| UniRef90_W7CDK7 | RLLGI A M Y G L S P S M E 1 K PL P Y Q L K P A L |
| UniRef90-S3XGP2 | $R$ S GIV VGF GF Y P S D EVKK S V V L K P V M |
| UniRef90-E2N0U5 | $R C G I G M Y G \quad F A N D V K L Q Q Y L T P I M$ |
| UniRef90-R5NIX8 | R L G L G L Y G $\square \mathrm{N}$ |
| UniRef90-B9DMI9 | R T GI S L Y G Y Y P S E Y VEE E T N |
| UniRef90-Q0AQD6 | RPGLLALFSGMPAP GQASPFEPVV |
| UniRef90_UPI00046CB9EA |  |
| UniRef90_UPI0003B75F59 | $R \square G \\| G L Y G \square S N D E K E Q K$ |
| UniRef90-Q6G2F2 | $R$ P GI A L Y GVDP H G K K P T P LKAVV |
| UniRef90_UPI0003B36329 | R PGI A L Y G G G P A R P P E LR L K P A M |
| UniRef90_R6SX22 | $R \square G \mathrm{~L}$ GI Y G $\square$ S A L R DV |
| UniRef90-G9ZIB7 UniRef90-V6V131 | $R$ P GLAL Y G M S P F D R T A A D L G L R P V L |

UniRef90 W8ES20 UniRef90-R6XL99
UniRef90-10EP86 UniRef90_UPI0002D4E132 UniRef90-F2J1N5 UniRef90-UPIOO04787255 UniRef90_A0A023D912 UniRef90_Q4JTE6 UniRef90 ${ }^{-}$Y5PBI8 UniRef90_UPIO0037B56A7 UniRef90-G8ALL2 UniRef90-H6RFF7 UniRef90-F4XAT0 UniRef90_UPIO00364EFA3 UniRef90_A4C327 UniRef90-U2HWS4 UniRef90_UPIO00468E6D3 UniRef90-C5QLA3 UniRef90_UPIO004778264 UniRef90_W0EBQ8
UniRef90_E4KQV77 UniRef90-Q5FP99 UniRef90-E6ZZ019 UniRef90_S2ZAZ6
UniRef90-O1NK23 UniRef90-Q1NK23
UniRef90_UPI0004799805 UniRef90-F8LC80 UniRef90-U5NCR4 UniRef90-E1GVB0 UniRef90_UPI000478EAFD UniRef90_UPI00035E9706 UniRef90_UPI0004693C98 UniRef90-Z5X8N1 UniRef90_A0A023XFN1 UniRef90_F7XV27 UniRef90-UPIO002E85854 UniRef90-T5KRP2 UniRef90-UPI000369639F UniRef90_UPI00020D99FF UniRef90_F7VET8 UniRef90-J2PUE7 UniRef90-ROBA13 UniRef90-G9ZUP5
UniRef90_R6RPR7 UniRef90-D3PDB4 UniRef90_UPIO004689D5C UniRef90-R5I5T5 UniRef90-C4FG50 UniRef90_UPIO0036B61B2 UniRef90-J9DTA1 UniRef90-R9MGK4 UniRef90-Q46Y92 UniRef90_K2P6J5 UniRef90-B9E8C3 UniRef90_L1QLV0 UniRef90-D5QEU0 UniRef90-R5V854 UniRef90-UPI0004700951 UniRef90-E2CQ73 UniRef90-F8C3W7 UniRef90-B1MX06 UniRef90_U5Q3L4
UniRef90 JOP4T4 UniRef90-JOP4T4
UniRef90 ${ }^{\text {D1BQX2 }}$ UniRef90_UPIO004728B5E UniRef90_UPI0003B35321 UniRef90_LOLYG2
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UniRef90-D4CE65
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UniRef90_H5SRI4
UniRef90_E312D7


















 $V D L K A M R D N M R H L V A Q S G T A V M G V V K A D A Y G H B L P S A A L A A$

 $\square D L D A L V S N Y R L L A B E R A P A A E A S A A V V V K A D A Y G G L G A E Q Q V V R A$ $V$ N L D A I S S N F K H l K LIHP N K T VI A V I K A N G Y G L G S V N I A K H $V$ D L D A L A R N Y R T L E TVVT G R P V N P V V K A D G Y G L G A A A V A R L



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


 I D L E A L A A N Y R LI I R D R V P A Q T G G V V K A D G Y GLL GA V TV A R T V DLAA A R D NVA EL S A RVG A A VMTVVVA DAY GHGLVPAARA




 I H P N A L T H N L Q QI $V D L A A L A G N W R K L R D L Q P A Q C A A V V K G D G Y G \square G L D A A A N T$ $\square N L N A \| Q H N V R E M K R H P$ V $\$ V
 V DLAAVRSNVVAL R GHA GAEVMVVVKAD GYGHMVPVARAAA $V$ D L A A L VA N WRLLLA A R P GA D CA A V V K A D A Y G I GLE PA T R A I N L K A V A D N Y K Th L K R Y T G R T C A A V V V K A N A Y GL G A E T I V P V






UniRef90_W8ES20 UniRef90_R6XL99 UniRef90-I0EP86 UniRef90_UPI0002D4E132 UniRef90_F2J1N5 UniRef90-UPI0004787255 UniRef90_A0A023D912
UniRef90_Q4JTE6 UniRef90_Y5PBI8 UniRef90_UPI00037B56A7 UniRef90_G8ALL2 UniRef90_H6RFF7 UniRef90_F4XAT0 UniRef90_UPI000364EFA3 UniRef90_A4C327 UniRef90_U2HWS4 UniRef90_UPIO00468E6D3 UniRef90_C5QLA3 UniRef90_UPI0004778264 UniRef90-W0EBQ8
UniRef90-E4KQV7 UniRef90_E4KQV7
UniRef90-Q5FP99 UniRef90_E6Z0J9 UniRef90_S2ZAZ6
UniRef90-Q1NK23 UniRef90_UPI0004799805 UniRef90_F8LC80 UniRef90-U5NCR4 UniRef90_E1GVB0 UniRef90_UPI000478EAFD UniRef90_UPI00035E9706
UniRef90_UPI0004693C98 UniRef90_Z5X8N1 UniRef90_A0A023XFN1 UniRef90_F7XV27 UniRef90_UPI0002E85854 UniRef90- T5KRP2 UniRef90_UPI000369639F UniRef90_UPI00020D99FF UniRef90_F7VET8 UniRef90_J2PUE7 UniRef90_ROBA13 UniRef90_R6RPR7 UniRef90_D3PDB4 UniRef90_UPI0004689D5C UniRef90_R5I5T5 UniRef90_C4FG50
UniRef90_UPI00036B61B2 UniRef90_J9DTA1 UniRef90_R9MGK4 UniRef90_Q46Y92 UniRef90-K2P6J5 UniRef90_B9E8C3 UniRef90_L1QLV0
UniRef90_D5QEU0 UniRef90_R5V854 UniRef90_UPI0004700951 UniRef90_E2CQ73 UniRef90_F8C3W7 UniRef90-B1MX06 UniRef90_U5Q3L4 UniRef90-J0P4T4 UniRef90_UPI0004728B5E UniRef90_UPI0003B35321 UniRef90_LOLYG2 UniRef90_A0A031K0V2 UniRef90_UPI00047D34C1 UniRef90-I3C3N4 UniRef90_U3AL67 UniRef90_D1BWY0 UniRef90_C4XQ91 UniRef90_D4CE65 UniRef90_U1FDJ2 UniRef90_UPI00020D9E83 UniRef90_LOWJW7 UniRef90_UPIO0035CF8C0 UniRef90-H1YFQ0 UniRef90_W1Q3F6
UniRef90_R6Q5Z6 UniRef90_UPI0003652C97 UniRef90_UPI0001D2DFD9
UniRef90-K2KQS2 UniRef90_K2KQS2
UniRef90 I4AJ09 UniRef90_D7WAR0 UniRef90_A0A059DWT4 UniRef90-G4KVB7 UniRef90_A4SXC1 UniRef90_UPIO00478A0C9 UniRef90_H5SRI4
UniRef90_E3I2D7

## A

90
LRQYH|L|EPE\|VSFEDHD 100
100
110
120

S
 A Y A EAR L R P VL G

 A E V

 E L DE HKL EA S V Y C Q D A MLLLKDIK E L N V S H Y P V H L K F N T GL F Q I CR WK L V Q TVVA D E G H G RAL

## F <br> \section*{E}

 S A SKAlQ HRVVALTVPSKAWLKEAIDEDNEKKLWLHAKLD T GM $R L C A D L G A I P V L N S L D Q I R A W S R A A L G K P L V A A L Q V D T G M$
 EF VA Q A GIVPVLLNSWHEI ES WQILCCQEKKFPAIVQQDTNM
 TTLI ER CLL L R P S
 E LLC C E L R L L WH T I H C H A Q I D M L A A H K T R T A H H V
 PAAASA E N L T I A


G




 S LMMAA N Q I S V TVVGS E E A Y D D L K S E K N S R P I M V V D E L I I D N D
 YMLR RYRLT Q TVV VDLLSYAR LLNTY GKKDKVVHLKDDTGM A L L A S L R L T T A V H G E E QL R MLLEIA S R D G RL P I C L K L N S G M AFYHE GRLLPVLNS QADLA DWEAHGWDDPRPCAVHVETGM RQASRHRLALTAPDAKWVESRYDEAEDKPVWLHI KVVDSGM A MLLKASNLR PVI NHP T QL Q T WQ A A G G G A C A $\quad$ L Q L D T G M E EFTA H DL TPVVLNSAGQVAGWRALR LDRVLPAVI QLDTGM
 $K$ TLAENGGIRPVLASTDQEWAAFCRET GQHHPAALLHVMDTG





 A DADAA DVDVSASAPWAVTEDAAAARGRTARLHLKLDS GL P E L I A A Y K L L E P S A L Y A N K Y Y V F D D A F L L I A A S E K E K K
 LLII E K NLVPFMHDFDQRLAVACTRLGRVAKVALKFDTGM
 $P$ VMVS QRELTPAV T LDA WLDEAE QLLDNS D D QL M I Q L A A V D T G M KVAID H DF GCCI H H E N QL DWH R P K Q D Q F C HT I WL K Y N T G M A DYRE A K LIPV L G S P GEI E D WGRFA RERELPAALHVDTGM




 M
P A V GIE
R V GAPTLDTLRTGDVSPHTPVHLMLDTGM




Unepo

## UniRef90_W8ES20 UniRef90_R6XL99 UniRef90_I0EP86 UniRef90_UPI0002D4E132 UniRef90_F2J1N5 UniRef90_UPIO004787255 UniRef90_A0A023D912 <br> UniRef90_Q4JTE6 <br> UniRef90 ${ }^{-}$Y5PBI8

UniRef90_UPIO0037B56A7 UniRef90-G8ALL2 UniRef90_H6RFF7 UniRef90_F4XAT0 UniRef90_UPIO00364EFA3 UniRef90 A4C327 UniRef90_U2HWS4 UniRef90_UPIO00468E6D3 UniRef90_C5QLA3 UniRef90_UPI0004778264 UniRef90_W0EBQ8 UniRef90_E4KQV7 UniRef90_Q5FP99 UniRef90_E6Z0J9 UniRef90-S2ZAZ6
UniRef90 Q1NK23 UniRef90_-Q1NK23
UniRef90_UPI0004799805 UniRef90_F8LC80 UniRef90-U5NCR4 UniRef90-E1GVB0 UniRef90_UPI000478EAFD UniRet90-UPIOOO35E9706 UniRef90_UPI0004693C98 UniRef90_Z5X8N1 UniRef90-A0A023XFN1 UniRef90_F7XV27 UniRef90_UPI0002E85854 UniRef90 ${ }^{-}$T5KRP2 UniRef90_UPIOO0369639F UniRef90_UPIO0020D99FF UniRef90_F7VET8 UniRef90_J2PUE7 UniRef90_ROBA13 UniRef90-G9ZUP5 UniRef90_D3PDB4 UniRef90_UPI0004689D5C UniRef90_R5I5T5 UniRef90_C4FG50 UniRef90_UPIO0036B61B2 UniRef90_J9DTA1 UniRef90_R9MGK4 UniRef90-Q46Y92 UniRef90-K2P6J5 UniRef90_B9E8C3 UniRef90_L1QLV0 UniRef90_D5QEU0 UniRef90_R5V854 UniRef90_UPIO004700951 UniRef90_E2CQ73 UniRef90-F8C3W7 UniRef90_B1MX06 UniRef90_U5Q3L4 UniRef90_J0P4T4
UniRef90-D1BQx2 UniRef90_D1BQX2
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UniRef90 U3AL67 UniRef90_U3AL67
UniRef90_D1BWY0 UniRef90_C4XQ91 UniRef90-D4CE65 UniRef90_U1FDJ2 UniRef90_UPI00020D9E83 UniRef90_LOWJW7 UniRef90-UPI00035CF8C0 UniRef90_H1YFQ0 UniRef90_W1Q3F6
UniRef90_R6Q5Z6 UniRef90_UPI0003652C97 UniRef90_UPI0001D2DFD9 UniRef90_-I4AJ09 UniRef90_D7WAR0 UniRef90-A0A059DWT4 UniRef90-G4KVB7 UniRef90_A4SXC1 UniRef90_UPIO00478A0C9 UniRef90_H5SRI4
UniRef90-E3I2D7
f
 DYTRAQIAAFDRMSARYPVITHAANSAAIERFPEAQFDMC DYTRAQIALFDRMSARYPVIRHTANSAAGERFPEAQFDMC PLNRQQLERFRTLSGHFPDARSLANSAGIFLGADYHFDLV $P A N G M Q K A A F E R F L A A E P E V R H L A N S A A L I A D P E T H Y D L V$
$P Q N A A Q L A A F R R T M L P A P A S L A S S G L I L G P D Y H D L V$ EANNLQAARFAEAIEFCRPCNHIANTPATLHRPDLAYQLV DSMKQQYAFFEELVTERPKYDHAQNSAGALDANCKLCNAL PSVAAQLHVFRDLLDHDPEVRHDANSPATLTLPESHFDLV TFTKTQLKDFSEIVDVFSPTHHVLNTSGVLHEPEAQYNMV SFTHTQLEQFYGAVRWNPGETHIQASYGI WNGPPQPCFWA DETMEQLNRDARKAGLKPTMHHAANTPALLSADQDERDAV AFTTGQUEQFTAKKEEYTPMLHLLNTSGVVNYPKAQFDMV AFSAQQUALFKRMSNQYMVIKHULNTSGUSNFPKAQYNMV SMNE QFEFFKTVVNQVEKPIHTQNSAASLLMDGQFCNAI EANPRQLAVLHAASGLFPGPVSFANSGGVFLGADYHGDLA TYSQEQYTRFQRGVNRLEEMKHVCNSAAFLDYPEWHHDFV DYVEYQWQRWLAGIPESVKDRHYANSAMGLWQDQPASTWV SSNDTQLTTIKTMLAQPACKVSLANSGGIFLGPDFYFDLV AGNASTANHVRDFEEGTPRIRHLSATSGILWHPEAHYDMV AAACRRQWRQVAALGGGRPRLHLANSAGLLRFAEARGDLV AFTLSQDATFERASKDYQPLKHILNTSGIINYPEAQYNMV TQRQRSTFDVAACDLPGERSLDNSAAMLAGDAPSCEWV
DDFKGGADKLQGAFPHKILFHMDNSAGMEHFPYRQMDMC GFAQRQRRVFDACLAQHPSQRHHGNSDACLRGLLDQDTHA PMNDTQAERLTAARKQHFEVAHLANSPATLTRPDLHFDVV RAQAARFDEADALLRAEPELMHLAASAATLSSPHLHYNAV PLNTRQAAHLDDCVADLRRAVHVSNSAAALTRPDLSRDLV PVNAKQLATFRSUASEFSGPAALANSSGMFLGAPFQFDLV PATVKQLQEFKKYLEFFPGKATFANSAGDFLGEDFHFDMV DAYENQLNMFYDTVGDHFRYDHCQNSASMMYHHEEKSNLA RAALAKFEEGVAAAAAFGTRHПAATAAATDLPEMRLDAV RAQLAAFERALGAARAAGLKRHLAATAGALRLPEARYDAT AYYQQQVQKFQLUTTHAQLPCHLANTGSALWHHEDNTHAT PVNAQQLERLKQAAQLPPAPLSLAASSGDFLGAAYHQDLV ETDYAQFEKYQAALQTPMPLRHVCSSQPTVKMPDCHDDMV PLTALQARRFAEAADAFPDPRSLANSAGIFAHGLTSDLG DYTKWQDNRFDEYLKRYNAETSVFNSSA CCFYSN KYTYT TYFKEQSARFKAVLPEQPRYVHVSNSATSLWHAACNGNMIG DFTLGQ|RLFEEMTGMVQPHRHLLNSAGIERFPQYAFDMV PQNARQLEGFAAAVSPLPGQASVANSAALFWGRAPGLDWA PLNARQIEVFRELKSLRGDASLANSS
 PMNQRQLESFQEAALIFPDAESSLANSATTMRHADCHADWV ALTERAYDKF DGIINDNKPY DHCQNSAATLRYDCSECNAV PLNRAQRDAFAAAAQRYPGARSLANSGGCFLGPDFAFDVV PANAQQRARLLEMAAMLPAAPLALSASSGDFLPDYHFDMV AYTDEQERRLLAVYDHQLQHLHFMNSAATVYRPNPRCTLA PRNDGQRQRFNALRQKPTLPASLAASSGIFLGTSFHHDLV PMNSEQLKRFKNLTSAYPIPKSLANSAGVFLGEDYHFDLV ELTTQDQLKKLKEALEKDPKYDHFANSGGUIFLPE KGNLV DFTLSQLELYHEMSTGYRPWRHLLNSSGTERFTYEQMDMV SHAHSQTQKFHRMVDETRAFRSLINSAGLLSVKDSDFTDA EQNAEQLDELHKLIANQHLPVSFANSSGIFLGKEYHFNLV GFTEDELDAFGAAVRGPVRHVHASNSAATLRRHRDWMTMV EQNADQLAEMRRVAAEFPQYVSFANSGGDFDGGDFHGVLA PANASQSAAFHEAVGARPEVLHLANSAAALTMPDAHFDLV AFTLQQITTSFKEITNRYKPLLHILNTSGILNYADAQFDMV SLNRRQRDAFAGLSAKYPGAVSFSNSGGCFMGADFAFDAV EFVAEQGARFARICQALRHRASLCNSAGILAHAGAGFDAR EYADWQYRRFRDGTRVSVPFMQLANTPGSIAYPNLRLSGL AYYDQQFNAWVTAVGDPKQYWHLANSGSALWHHDQDETTI PLNAQQ SKFDQALFAPDTLASLCNSAGDFNFKHQHHDWV PLNRRQLEAFAEARALLFPDPASLANSAGVLSGPDYHFDLLL
EFTLKGUMVFEKAYHOYKVMRHANTSAVTRWP VA OFDMV A YVET QWAKWOEAVPDSVTVRHYANSAMGVWFKOPVSSDE A Y TAEQHALFDKAAGHEPALVHCDNSAGVMLHPEWPRCMA PSDAAQVEAFTAAVAARPEVRHDANSAGVVNVPEAHFDLV

 PLNQTQDDRFTQLAEAFPDPASLANSAGCYLGPDYAFDQL EFTHAQAKAFYDVVAELCPKKHIVSSDGLLYYPELAENYA


| UniRef90_W8ES20 |  |
| :---: | :---: |
| UniRef90-R6XL99 | RLLGLGLYG |
| UniRef90-10EP86 | R PGIIMLY GFYPSNEVQK |
| UniRef90-UPI0002D4E132 | $R$ L GI G V Y GVS N D P VEQK |
| UniRef90-F2J1N5 | $R$ P GIIALY G G K ALDD S F D P M R P V |
| UniRef90-UPI0004787255 |  |
| UniRef90_A0A023D912 | $R$ PGYALYGG NPTPDA P P P M P P V V |
| UniRef90_Q4JTE6 |  |
| UniRef90_Y5PBI8 | $R$ L G I S L Y G Y Y P S E Y VRNEDVQL K P |
| UniRef90_UPI00037B56A7 |  |
| UniRef90-G8ALL2 | R P G CAL Y GVNPTPAA |
| UniRef90_H6RFF7 | R T G I S L G Y A N H L A D ALLK PVL |
| UniRef90_F4XAT0 | R A GI AL Y G IF S NDA H TERKLDL HPVL |
| UniRef90_UPI000364EFA3 |  |
| UniRef90-A4C327 | RII GI GLY G F GNDAKETVVLLK |
| UniRef90_U2HWS4 | RLL GI G A Y G F D M A P N S L S LQ |
| UniRef90_UPI000468E6D3 | RLLGI GLTY GVS N D D E EQK |
| UniRef90-C5QLA3 |  |
| UniRef90_UPI0004778264 | $R$ PGVALYG G T A P A E P P M P PVV |
| UniRef90-W0EBQ8 | R $\square$ G TLL 1 G HVP S |
| UniRef90-E4KQV7 | $R \mathrm{Y}$ GVAMYGLDPMDR\L L ( E E D P L Q P A L |
| UniRef90_Q5FP99 | R PGAA LY G I A P F E G S |
| UniRef90-E6Z0J9 |  |
| UniRef90_S2ZAZ6 |  |
| UniRef90-Q1NK23 | R P GL S L Y G Y P P P V A G M W W EL RPAM |
| UniRef90_UPI0004799805 | $R S G \square G L Y G Y \quad G N E A S E D A K L D P V$ |
| UniRef90_F8LC80 | $R \square G M A L Y G L C P$ |
| UniRef90_U5NCR4 | $R$ PG $\$ L L Y GSAPDPA H T $\square$ A D H A L L P T M |
| UniRef90-E1GVB0 | $R \mathrm{~L}$ G G G Y G I N |
| UniRef90-UPI000478EAFD | $R P G L A L Y G L A M V A E \quad G R A L L G L E P A L$ |
| UniRef90_UPI00035E9706 |  |
| UniRef90_UPI0004693C98 | $R$ VGVA A Y G L S PFA DKTS A Q L G L VP A M |
| UniRef90-Z5X8N1 | R A Gl A I Y GRTPVP QLG H F GLEEPAM |
| UniRef90-A0A023XFN1 |  |
| UniRef90_F7XV27 | R PGCAL Y GI N |
| UniRef90_UPI0002E85854 | $R \ G \ A M Y G V D P A G E \quad E S \nabla V L K Q V M$ |
| UniRef90-T5KRP2 | RI GVGLF GLSPFDDRSSAELGLRPAM |
| UniRef90-UPI000369639F | R L Gl A L Y G L D P LA P GA H C GI EL R P A L |
| UniRef90_UPI00020D99FF | $R V$ G S A L Y GFNP GT P H L E M P L Q L Q P A M |
| UniRef90_F7VET8 | $R$ PGAAL Y GVAPNA S G P NPLK K V V |
| UniRef90-J2PUE7 | $R \square G \\| A L Y G L S K Q G D K V K T S V D L D P V L$ |
| UniRef90_R0BA13 | RIG RVMM GL S A F S ELP TEII G |
| UniRef90_G9ZUP5 | R P G C AVYGIN P T P W LP N M R QVM |
| UniRef90_R6RPR7 | CPGRA I WGYSPLERREGHPD |
| UniRef90_D3PDB4 |  |
| UniRef90_UPI0004689D5C | R L G V S M Y G L N P S G K A $\square$ E Q P Y P L K P A M |
| UniRef90_R5I5T5 | $R \mathrm{~L}$ G I G L Y G I G P L P |
| UniRef90_C4FG50 | R P GI GL Y G Y E P D P A M P P T Y K L K P A M |
| UniRef90_UPI00036B61B2 | R P GIM L Y G A P P A SVPA D A P P DLR P A M |
| UniRef90_J9DTA1 | $R P G A A L Y G L N P M P$ A A A N P M P P V V |
| UniRef90_R9MGK4 |  |
| UniRef90-Q46Y92 | R A GIM M Y G A A P S G |
| UniRef90_K2P6J5 | R P GI A L Y G G A P V G G V |
| UniRef90-B9E8C3 | $R$ LGGIS L Y G Y Y P S E F I R A V S VKLLQ P A V |
| UniRef90_L1QLV0 | $R$ P Gl C L Y G G G P E G R P H E |
| UniRef90-D5QEU0 | R PGAALYG\APNEAT A N P L R P V V |
| UniRef90-R5V854 | $R \mathrm{~V}$ G I I L Y G L L P |
| UniRef90_UPI0004700951 | $R$ P GYAL Y G G N P T |
| UniRef90-E2CQ73 | R P G I S Y G G K A LD T M P NPMQPAV |
| UniRef90-F8C3W7 | $R P G I S L Y G G Y P N F K A R E L T I K L Y P V M$ |
| UniRef90-B1MX06 | $R$ VGSVLYGYNPGAP L L T L P I P L K H V |
| UniRef90_U5Q3L4 | RV G V GI Y G T S Y V D E S $\quad$ KLK P V |
| UniRef90-J0P4T4 | $R L G \mathrm{I}$ GL H G V D P A ER L N |
| UniRef90-D1BQX2 | $R$ P GII I Q Y G I M P S LDV P N R L G L K P V L |
| UniRef90-UPI0004728B5E | $R P G V A L F G A N P T P G K \quad A N P M N P V V$ |
| UniRef90-UPI0003B35321 | R P GI M V Y G Y S P D P \AMPEP D L H P V L |
| UniRef90-LOLYG2 | R P GII A L Y G G A P T G GV |
| UniRef90-A0A031K0V2 | RAGI ALYGGNPGTGG PNPMQPVV |
| UniRef90-UPI00047D34C1 | $R \mathrm{~V}$ GLA A Y G L S PVP Q VT P A DVGGLR P A M |
| UniRef90-13C3N4 | RSGIGLYG FGNDARFKEDFKPVV |
| UniRef90_U3AL67 |  |
| UniRef90_D1BWY0 | $R P \mathrm{Gl}$ S V Y GFS PVPPGVT A S S F G L R P A M |
| UniRef90-C4XQ91 | RA Gl A L Y GVNPFA G SAREALLGLLPAM |
| UniRef90_D4CE65 | CPGRAVVWGYSPLEKRDGHP |
| UniRef90_U1FDJ2 | RTG $\$ A A Y G Y D P N S LQR A NLR A A L  \hline UniRef90-UPI00020D9E83 & $R \mathrm{~V}$ GSVLYGYNPGAPELDPMPVALKNVL |
| UniRef90_LOWJW7 | RAG\\|ALY G S K P $\square$ T D Q SAKALNL M P A M |
| UniRef90_UPI00035CF8C0 | $R P G I A L Y G G R A Q N D G N \quad N P M A P V V$ |
| UniRef90-H1YFQ0 | $R \square G I G L Y G \square D S A \quad \square K N E A N Q L Q P V$ |
| UniRef90-W1Q3F6 | R F GI S M Y G M H P K E R S L P $\square \mathrm{DLQP}$ P AL |
| UniRef90-R6Q5Z6 | R P GI IL Y GFDPSSAVR FGLRPVM |
| UniRef90_UPI0003652C97 | $R P G I$ A A G G S P $\square$ P ELLDSAHYGLAPAM |
| UniRef90-UPI0001D2DFD9 | R P GYA LYGGNPTP L C P N M R P V V |
| UniRef90-K2KQS2 | RPG\ILLWGGNPTPET |
| UniRef90_14AJ09 |  |
| UniRef90_D7WAR0 | R A GV A L Y GLLDPAPNTDFD RAQL R P A M |
| UniRef90_A0A059DWT4 | R P Gl A L Y G G S A P G H V D L Q P |
| UniRef90_G4KVB7 | R V G I A L Y G L S T R A D E R CGIIS L E P V L |
| UniRef90_A4SXC1 | R P G I M L Y G S P T G $\square$ Y A D I E H HL K A V M |
| UniRef90_UPI000478A0C9 |  |
| UniRef90-H5SRI4 | $R P G \\| L L Y G Y P \quad E V R R P W T E P I K P I L$ |
| UniRef90-E3I2D7 |  |

UniRef90 UPI0003636B69 UniRef90 UPIOOO3779C5D UniRef90-UPIOO037CA1C8 UniRef90-E6UD01 UniRef90_UPIO0036EFED3 UniRef90-A8S1K5 UniRef90-E4KZ64 UniRef90_UPIO00475656E UniRef90-D4H827 UniRef90_UPIOOO35EA505 UniRef90-UPIO003746802 UniRef90-J5KNB5 UniRef90-F3B8Y4 UniRef90-UPIO003FA0696 UniRef90-Q72DH4 UniRef90-C0QTW6 UniRef90-C9ACG9 UniRef90-H1C6U2 UniRef90-U7VAR3 UniRef90-B5YIM9 UniRef90-W9GCW4 UniRef90-D6DF12 UniRef90-B5IPT4 UniRef90-B7A8D2 UniRef90-I3TLS5 UniRef90_UPIoo0367134B UniRef90-W2UQY6 UniRet90-HOF7T6 UniRef90 B1MWQ2 UniRef90 UPIOOO403A47A UniRef90-UPIOOOO37846A1 UniRef90-C3WCX6 UniRef90_UPIO00429229C UniRef90-BOTI84 UniRef90-G7QCE2 UniRef90-O2W5H6
UniRef90 O1RG4 UniRef90_UPIO002F69664 UniRef90-S4ZQ21 UniRef90-17L9Y9 UniRef90 S3UP12 UniRef90-A1SMFO UniRef90 R6CRJO
UniRet90 H1X768 UniRef90-H1X768
UniRef90 F4GQK3 UniRef90-UPIOOO46F108C UniRef90-M4Z955
UniRef90-D7N640 UniRef90-D7N640 UniRef90-G9PH54 UniRef90-K2QTC2 UniRef90-C6HZ47 UniRef90 TOHV73 UniRef90-A0A022LV32 UniRef90-C1DXT9 UniRef90-E7GS80 UniRef90-R7M8L9 UniRef90-UPIOOO3B55D27 UniRef90-B9YDE9 UniRef90-FORLQ4 UniRef90-C5NX45 UniRef90-UPIO0047CAC3F UniRef90-H1PR73 UniRef90-S2DRF8 UniRef90-UPIOOO3804987 UniRef90 X1L532 UniRef90_K1KZK6
UniRef90 HoQ4H3 UniRef90-X1RQG3 UniRef90-101RC2
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UniRef90- B7LUQ6 UniRef90-R6P763 UniRef90-13Z2J8 UniRef90-UPIo00361836D UniRef90-BOUL34
UniRef90-QOC490 UniRef90-QOC490
UniRef90 UPIO00427B5B6 UniRef90-B3G437 UniRef90_A3HV20
UniRef90_R6J6ST

HCSKLVHNLNAVKAQLGVKVYAVVKDNAYGHGIEGIAKY D DLTALATNLERVRTVAPAGLMLVVKDDAYGHGLEPVVRA S S DNVRDNFFAFKKMVGVKVMPAVKANAYGHGIVPCGKE I DLDKFENNMKDIGDKVGTEVMSVVKSDAYRLGALPCSQV ALEAEGKN GTARELSGTDIIAGVKADAYSHGELEMCAY I DPLARARNWRRVKDQPGQCAAAVKADAYGCGLAVTVKH DLDLIRENTLKLKNLTHSKFMAILKSDAYGHNIKKVSKA D EKI KWNVNCLRNMSGCEMMAVIKANAYGHGAVPVGKM VNLNAVVDNLNWYRSKQETKLVCMI KADGYGAGAVEIAKT VSLQSMANYRRVRYVAKKRPMPVVKSDAYGHGLEAVGMA DAAALRHNLAALGSLAGASLMPVIKANAYGHGDDEIARL D DLDNEYNDKKIKELSHDRDMAVIKADAYGMGAVTIAKE VNLKSLDHNFSKIKAHVSCKIDAVVKADAYGHGAVEVARV VDHDAVAANVRTLRTAAGTGLMAVVKADAFGHGAVPVART VDLDAIRDNITRFRALCGVALLAVLKAWAYGTELPRLAAA VDLVALADNWRSLIQKSGTRTSAVIKANAYGLGVESIART VDLGAL WANYLLLKARAQGEVDPVLKADAYGHGALP ARF I DLDALAENHARMRAHPAAEVTGVIKADGYGLGADIVGPA VDLEALQHNYKAMQYLHPAKFIAVIKANAYGLGSVTVAEY VDPDAVAHNLARLRKALPARLWATVKADAYGHGVRRILPA I SQKALKNNVAVVKRVSGAKIFLAVKSNAYGLGLDPTAKA VSARKFKDNIRYIRDVAPAKLCVVMKANAYGHGLKQLATA VQLDDALAANMAHMKNLPTPAVMGVVKADAYGHGLIPSALA I EMDNLIFNTNKTREKVNNRIMAVVKANSYGFGAKETVRY ISQKALQNNINFLRKTFGKKI DSVIKGNAYGHGDPQFARA VDMDALAHNARSI RQYLGDELYGVVKANAYGCGIVECARC VRLDHI AANYKRLAGL GGRVLAVIKADAYGHGLLETARIV IDVAA VIVNWKLSALAPAEASAVVKADCYGLGMDRIAPA

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

VKSNПKKПRHYAGVGVLpVVKSDAYGHGMDRVSQA 1 DLAALQRNYRKLSAAVAPATAAAVVKADYGLGAEQVSKA dLSAVAANTRHFAHTAGGEVLAVVKADGFGHGLDGMARA VDLSAIEANYRKCQGLAPSACGAVLKADAYGLGATRTAPF VDLDQI A ANMRATKEMVGDEVMAVVKANAYGLGSLIAIAPT VHLDNIVANWRTLAAHPKANTSAVLKANAYGLGTERVAAA 1 HLSNIVANWRALDGHPGATTSAVVKADGYGLGAGPVSRA VDLKALEANWLLLKAKARGEVDPVLKAEAYGHGALPLARF SRAA SANLKNFRALLSPKLTAVIKSNAYGHGLLETAEA VQTGHILANLEAMRKHTNDPVIPVLKGNAYGDGDVEVARL I NRAAIVDNYRMLRHAAPAQCGAVLKANAYGLGAETVAPA INKEDLRHNDNKIKEYADVKIIAVVKGNGYGMGAVEYTKF ISKSAYKKNUQFLRSEVGTTISAVIKGNAYGHGIENDSDA INLRALAANWRRLAEEAAGAECAVIKADAYGTGIDDAGPA TGNI ADNWRTLDAHPGATTAAVVKADAYGLGAMRVARA TDLKALVDNWRALQAVCGAECGAVVKADAYGGGMEPVVRA DDLNAMRCNLEQFCSASTTKMMMVVASAYGVGMKKIGKW ПDLINSLLNNYKSLKKALSGAQAAAVVKANAYGHGUTEFVKA

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## \section*{.}



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 L D L G $\square$ D Y Y Y A V A T L S E A L S S L R K K K F D E V $L A E A S D G L A V S Q L G E A R A L R A A G F R G P L L V L Q G P R D V S E A$
 LS A A GCTF FVVALP DEGVRMRAVSPEATVYVLNGLAS DLAS

 CVA GADAFAVATAAE GVRLRRGGVRGTVLVLGYSGPELA LENGVDYFAVAYTKEGI RLREAGVKTPDVVLHPLQLHF





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## L <br> 

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 LVE NVVD RLLA V T H V S E G VQQLIR R S GIID A P I L L V MA P F MA E E T







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


$V$ D A G I



 A A A GARRTF F VAALDPE E GVVA L R R A L A A E S P P I Y V L G GF F H E A A
 $\begin{array}{ll}L & R E \\ L & S E\end{array}$





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 ELYYQYHLIPT:LSEREAKAISDAASSP VPVFVKIDTGR
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 KELKHYSLDQTVVSEAHGHAL AQTSDP ECHLAVDTGM PLLARYRETQTVVSTEHARALDKACGRRLAVHLKVDTGL EAEKKN MGVVTLTDLSQLKYINEKGLSLKVHIKVDTGM EGVFKYNLIPVIFDYRQAEFLSKSRRGVILPVHIKVETGM AEAVA A G DLSSVSPADLAAV ARVAGAPRVHLKLDTGLD DKAVRWRVTPLI YSLDPAQALVRTLQSMHLEVHLEV ETGM S AFNSKLDPVISSQEQLDFYMSMLTHYPYCCALQUDTGLD ADFLAFDLRPVLNGPDDLDRWTRAAQGGPDPAALHIDTGM NKAIQHR AVTAPNDEWIKSHVKEKYDKEVWVHIKVNSGM EWAISNEISFFVFNFERIELKTAKRLNKKARIHIELETGM LLDASGLHLVITHAAQLEWLAQAPLSQRPAVWLRYAGDV ESDHHLDIEEQVGTMEAAKYLSDAKRNKKIPVHINVDTGM A QLIDHDID AVGSVQDAHRVAEAATGKQASVHVQLETGF
 GDLVRFGLTASVSDVDQDAQEARRQGRBGLPVH| KVETGL AMILGHSI TPFIHDFGQLERLRAARKRVKARVALKFDTGM EFAAHGLI PVLNSLSQMTGWASFAKKGSGAPVALHDDTGM

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 TLLDACLEPCLYNEEGFKKILLEKKISHYPVHI KYNTGL EAALRAKLDLSASTVEVLQAIVAAAEDTCAYVHLKVDTGM EQLFENDLVPVIASEEQLAFWMVLTERGPYPCALHVDTGF A ACAAVGAVPVLNSLDQUERWEASARHARLPAVLQVDSGM RDADDSAVDLGLV SNVAELQRIVDAVDQRPARVHLGVDSGL ELIFNRYSLTPVISDFSHFEVAQKLEHK KIVHKFDTGM
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NRLGFAPQVAKRVATLGAGHGCGGLHWMTHACADEPGH NRLGFRTD MSWYEFSSAYPADRPIHTMSHLSSADTDR NRLGLNAPECERLAADGTLLEAFTPSLLMSHLACAAEPAH NRLGLTFAEARELAADKAAVDRLGLTLVMSHLACADTPDH NRLGF ELDEFLK GISSNPKIKKFTLLMTHLAASKNKEE HRLGVLAENLEETEKVFNLQNLRDKGMFTHLYESDSLEK HRLGFNPKEMNELTARLKQQSALIPRSVFSHFVSDSDDFD HRLGFTEHDVSALCERLRTLPSVRPVMAVSHLLAVADDPTQ HRLGVAPD DRETVTGLYAGPSLKI TGGIMSHLGSADQLDT HRLGLPWDDTQSLTAPY SCSHLRVTGVFTHLADTDEASQ NRLGFNAEDLPELLKKFKAQSQLKIASVFSHLASEDTNEK GRVGFTVEEGKAAI DTCKEKNIEVVGVYSHLSESDEESU GRLGOYENPCETVKKIAQLDNLKVDGVMSHESRAEDLEW HRLGTRSDHTEEDSRMF QMDNLLVDGIYTHLCVSDSMDR GRLGVAPEEALAAARLLRDSGVVTVTGVMTHLAGADDPAA NRLGLSLKEATALSQKLSDEKKSTLLLIMSHLACGNDPSS NRVGFPWEEADAALRAVEA LGVRVEGVYSHLATEDEAFV SRLGFDEAGFKALAADPARLGGVDIRGTMSHLACADDPAH NRTGFLKKNINKLLSYITQNDYLDIEGFCTHFAGAESISN HHTGFAAQAYRAAYEAASAMSRRGLIGEVGHLDHYARADE GRDGFRDRQSDSEADDYVQAHRFDYVGATHFAESDSADT GRSGFFSSEDEEAKKVCADPGRSVVGIMTHFASADGKELD GRLIG LPEEGERVVDYCLENGINVMGMYSHLSDADGFNR NRTGFEKREDTWVAKMLKENAALEFEGLCTHYAGAESANL ARLGFVEADVPELLKRLEDMPAIEVAMVGSHLATADDPAF SRLGLSEPELERLAAKPELLAAMRPILVMSHLACADDSDS SRLGLNHNEVEQLINNRDLLKGLNVEYY DSHLSASEDSDN NRLGLKTKEFIDDVVALYSLPNVHFTGYYHFPVAGSDQP
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 GRIGFREATLETAIAYLKAHDDIDYQSTMTHFSEADSTEE <br> \section*{N} <br> \section*{N}

NRLGFKNDDSDEDKKIKKKNDY EGVSHFAAADTNA ARAGANLEDLLADAAQAQSQGHTKVVALWSHLARADEILI NRLGLPMADAMALVDDVSRPASLDPVLVMSHLACGDDPTS GRLGFLPSEFPLVLDRLQRMPSVKDEGLMTHFPVPEDRED SRMGLPADEDEHLLVRPELLRSDDLHFDYSHLACADEPGN RR LGFYQSDMEKLKEKDKDFEVEGDLSHFPSADTDP GRDGVKGEQLEELLDGLLPLKGLEVEGVFTHFGEAEVTDP GRNGFTPEEALRRLRPLVDEGLVDVVGQWSHLAVADSPDV HRIGTGNLDELQAMLTLLQENGALVEGIFTHFACSDNPDN NRLGASPAEAVAVGRRLQERGQLA GVFSHFSEAEEADQ GRIGTSDKEELVKIDKLLSSEKVDFEGIGSHYSNADGSDN
 NRTGMPKSEFQMALNFLKKNRHVVFEGLCTHFGGAESNSN
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 GRLGFLPEQVHELVNLLKDRPD:MVEGMMTHFASGEDLDA SRLGVPLEERSALAAELKGCGSIVELGVMSHLACSDEADN SRLGFSDDELRALAENRSGLSELPVVLFMSQLACAGEWRD HRLGSEPEDFARDVEEMFGLEGUEVEGIFSHLAEKDDAKQ NRLGLPTSMPETDGDALRAMNPVLVVMSHLACADEPDH NRVGFPWEKAKDALLAVEA LGGRVEGVYTHLATASEA ARLGFFGADLERTLSEIVS EGLKGDGLATHFASTEDLDQ GRSGFLPEEAEKAVQAAKYLKNLEDAGCFSHFSNSFGKDE SRLGVMSQQLIMRLAAIFRERNWPAPDYIISHLLANADRPDH GRYGFEWEDREALLKMLLEDHDDLKLAGLCTHYAGAESSDE HRDGM EDYAEIKACYADPGVDVSGIYSHFVSYDGDAV NRLGLSPDEALALAGGAALEDVAASLVSHLVSAEVPGD NRLGLPMD MSEKDLAALLRRLQPVLIMSHLACADDPEN NRLGLKGDDDDAAEQIGQMN SLVLSHLVWTGHGDA NRLGLDDDE PVFLNLEKYCR MMVKSYTHVAASDDPQE

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

 D Y F N M Q LQ R WH K L TADGEP E Y Y H VA N S GA AMY HA E VP H E VI



 A FVA E QFGRIVAALAGLAFEGSLCNSAGIMABADFGFETR




 S Y T E K Q T E LIDY A A A D DAA A Q R V H S L N S A G G L F H Y T P R S A LA D Y F H Q Q L H C WHA LT D GMP P L V H L A N S GAA A M Y H D E M P T D V I
 P S N A R QLAA A F R E V A S V F T G V P A A L A A S S G I E Y T K R Q F N IIF K N V T D I N I P I K H I N N S S A I L N Y N E Y S L D A V S A LC K Q I E LF E I L K I K H P P K F H L L N S S GV F N Y P E H Q Y D MV











 $S Y L R Y Q L V R F T H F V H M D V E F F H A A N S S A I F Q D P E S H F N M V$ $\square K$ NYK K F K K WF D A Q K $\square$ GK F E K Y H T A C S A A T L L Y P E T K M D L V
 S Y T E E Q F E K F T T V L N A L E K K K H V A N S A A I L D L P H M N L D MV T V E A WR LIE LIE R E KLL LPP E R F VII H A G N S S A I L M P P D LA S I WV















| UniRef90 UPI0003636B69 | $R P G$ | $R$ |
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$\square D R G N F Y H N L N Q L A L K A G S K L A V V L K D N A Y G H G L R L M G E \square$ DGDALLSNWRWLARQGGAPACAAIKADGYGLGAAGVMQR $\square R E Q A G V P V M L M V K A D A Y G H G L C K V A T Y$
$\square S L G Q F Q S N \square E Q F K S H A N T K \square C A \square M K A D A Y G N G \square R G L M P T$ NARTAAVVKDNAYGLGLEQISK S

## ID P S IIR S N I Q K LK NK T T S NFLAVIVS DAY GHMLN NUVS D

 HKQNLF DNLNKI S KIVNPNILAVIK DNAYGHGIISFSKM IDVVA YKHNGKVVKS IIGGVKLCAVVKSDA YGHGLDN


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D I IA DKNDYFMVTDFEEIEYLTGGKKGKT TDVFI KI DTGM

 ELLLQHTRSITAV HCQEQLDELRSLPAGAALKVMLKVNTGM

 ERAAA GVVPLLNSUGQUKAWSQTAGGRTLEAALQVDSGM


 DTVVSGNLTPIVWSLDQLEPLARAAQHKQLPVHLELDTGM DVAAEHRIDIAVGSVEELRQLDADAEDPVRVHLHLDTGM A ECVVYF DLVRPVLNSLDQVDVWKRLRQQSPRLDAVLQQVDSGM
 TQATRAGVELAVPSHAHLRAV ARQTPGAGVHLQLDTGM




 IEATKRGIHTAISSMQQLKF LVRNNLNP






## 

## E

8

 VA ADRYA LTPVVYHDDLMEAEAKKLGGRDVAVHVEVDTGM

 EAADD DNDEELI GTAEQAKALSKDAEDKEIKVHDALD GGM EAVVEYDLQQPLFESKTADVLNNLAGGKDAKVHLKI ETGM RI AARRGVEVAVSS $\square A Q L E A A A D A G G K A T I H K V D T G L$


 GKALSADVALTVDSFRSLDVLQKAPLGKKASVHLK Q

 RM AEK PVVPVLNSKEWLK LVVRE IVFPINIHLKIDTGM YAVSEDGLLRWD MKALQNARLNAPDDIVVKVNSGM $V Q A L A S R A R P V L C T P G Q V A R W K G A G G G A \quad C D V M I D T G M$
 $\checkmark \mathrm{V}$ K SSADD $\square$ NDEELIGTHQQDLAEDAKQSGKTLKVHIALDGGM RSLI EANLDPVLYSSNQLKLYSQLLSNHQSHCYAQIDTGF


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 NRLGLRVEEALALAGDPLDARAGIDLVVMSHLVSAERPDD GRDGFTNEIIKDP HRNGDAPEELERA $\operatorname{HQMDQKKD~} \square E L V G V M T H F R S A D E M G S$ HRDGVRPEQAEAF
$S R Q G C V P K Q L D R L L Q W F A A H P S L A L D G V M T H F A S A E \square A G S$


 ARDGAPPEQWESLCHCAERAGFVHVVGVMGHLACAAEPGH
 NRLGLLE EDELLK AI DLLKKKYPCFHLEGGVCTHYAGAESANY

 HRNGDALDELDEAFNLIKE QGLDDTGVVMTHYRSADEDSS
$\uparrow$

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 GRNGVARGDRAAALARAVERGGARVRGLMSHLASSREADL NRLGLDW















 GRMGVLLD QEPDFFDYLIDQSRHCDWE GLYTHFSTSDKR DK



 NRTGMHAKEFPKALTYLKQHQNLVFEGLCTHFGGAES DSN

 GREGFTPGQDTWGELDF LRREAGLQVVGVLSHFANTEDVTQ GR\|GIFSYD LIRFIMRIRA
GRYGFAP QK PQTIAASCFS LD G LIR DE G $\square Y$ S HFSDA S D L N H



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LQTSDQQQRFERADQQTPAWDHAGNSSTILAHTVAARPMV A A NA A A M L R MRQGRDAVLRAVHDAATSGALTDPATHFGMV PANKMQRQRFLEMAMLPPAPLSLSASSGIFLGSAYHMGLV KTTQKQ LEQFLFFLNIHPKFVHISNSGHIINYKNPQFNMV
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 LMMNSSQLEQFDTMKSYKGDEASLASSAGULDGENYHFQLTT
$\stackrel{P}{P}$
$\stackrel{A}{\mathrm{~A}}$
A QNAQQRQRFDQAIRHMPKMKSLAKSGVI FALGEEFHYNMV DAEVVRIDEKNCMNLGGHEVPVSLCNSAACVRYPRFAGNWI DFNQSAWLIENANLNRDDVLLHVSNSYTALNVPEAQLDMV
 SFNQHQWLMESAGLKREEITKLHVANSYTALNVPEAQLDMV
 $P$ LNEAQRARFAEVAAGVPAQRSLANSAGVCMGPDYGFDLT A QTES QMARFA C ALLE QVVRETVVHVGNTSSAVVVMPQLRMPMT $K$ L N L F Q WLL I D E A Q L N R D D I T L


 $G Y A L A Q Q D A F E Q L A P A R P L Q R H I A A S A A T L V L P R A R Y E A L$
 ELFWQRDKADAQAYGMPS I AFHSCNSAALLRVSSDGSDYA YADFLLQATKMLQSFLDPQPFTRHIANTSATLWGGYNADMV ARNRLQKNRFVGMCAMLAPPRSLVASAGVSLGADYHFDRV EVEHVQVERFADWSTRLMERHHAANSAATLQDDSHHCTHV EVVHEAFHQLQTKYASMHLVFHSSATSTYLNHDDNHF
PSMRNQQLLFERLTRDMDKYVHLSNSAA LSDNDTVGNTI PMNTEQRTRFAGIVDAVRPARALSGSGGACLGRAYHFGAI
 DLNPTQLARFRQLCAAVPQRYSLANSAGGCMGADYGFDLT DEFD K K L G GV K S YYPQAK KHLA S SHSLA NPHLR YDMV SYTEKQFGKFMEVLNHEDPDKHVSNSAALLDLTHMWLDLV
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 PMNASQLNKFMS I ATKYQIEASLSASAGUFLGKEYHFQLT

 SVHVERFADWSNRLMERHDIVHAANSAATLQADPRHCTHV PATKQQLAKFDEIVSQLDLPQHVANSGAAAKYPWARRDMV TYANFQLSRFRKILSQUQNMDHMANSGA LLDVLESYFDAV FTNQQTKNFLSLLKEYVKYRHAANSAAVINYKGSHFNLVV
 D TF $\square Q L K R F E E I R K K K I P Y F H L A N S A A L D K L P Y T F D Y V$ NY D NQVSK FEELVTSNKI DMVHIADRSAATMCKHKKGPYNGV
 EVQVHDFKKNCLEFEGRKVPVSICNSAACMRFPELASNWI
 $M Y A Q A Q L A L R A A V P V H E P L Q R H M A A S A A T L V L P Q A R Y D A Q$

PETS A QELLASFK QCVFDTG $\square R H M A N S A G L F N D P N S A L D A V$ ASNKTQFERFDSLCQKLNPDISIANTGCVINFPDKSMDWV S A A E QVAR R LK A S GRL P A TVVMVSSS DTMMR HPEFD F D A V

| UniRef90_Q2IX98 | $\text { RPGAALYG\\| }{ }^{210} \text { NP PEAD } \quad \begin{aligned} & 220 \\ & \hline \end{aligned}$ |
| :---: | :---: |
| UniRef90_C7NC35 | $R$ VGIIL Y G GVID EE T F P Y Y K K P V M |
| UniRef90-Q01PW3 | $R$ AGHALYGYSPAGEAPPQLLNVKPAL |
| UniRef90-R6R7U4 | $R \mathrm{~V}$ G LA L Y G Y S P Y |
| UniRef90_UPI00039F890C | $R$ P GLLCLYGASPAEHEAA $\square$ C F NLLKPAM |
| UniRef90-F8JDJ1 | $R P G Y A L Y G$ |
| UniRef90-H8GZ02 | $R P G L A A Y G F A P \quad P H L R A A A G L R P V$ |
| UniRef90_E8TGJ4 |  |
| UniRef90_W6SAK6 |  |
| UniRef90-B1ZEY2 | RPGYALFGGNPEP GQRNPMRPV V |
| UniRef90_UPI0002DB90FB | $R \ G I I \quad Q Y$ G L WP SPEV |
| UniRef90-Q9RER4 |  |
| UniRef90_A6QC54 | $R \mathrm{~V}$ G $\$ G A Y G N ELLP DVF D D I P L K P V L  \hline UniRef90-W1FSQ7 &  \hline UniRef90-UPI00047DA446 & $R S G L S L Y G Y L P V E P E Q G Y A S H L Q P \square M$ |
| UniRef90-T5L357 | $R \square G A G L V G I D P S E$ |
| UniRef90_K7SH62 | $R$ PGAALYGUAPNTEA ANPLKQVV |
| UniRef90_O51182 | R PGGIL Y G Y C Q S LK K K P A L N F K P V L |
| UniRef90_UPI000409BC9E | R 1 GIL L Q Y F F P T Q |
| UniRef90-D3D1H5 |  |
| UniRef90_D5UIE6 | $R \vee G A G L V G I D P T C R$ |
| UniRef90_A9WQG7 |  |
| UniRef90_A1ZXV2 | R V G L L Q Y F F P T Q E T |
| UniRef90_UPI0001DD05BE | R P GLA L Y G G V P T P D |
| UniRef90-B1LZ28 | $R$ PGYALFGGNPTP GAANPMRPVV |
| UniRef90_R6HSF6 | R L G A A V Y G $\square$ NT AP |
| UniRef90-I2K7C7 | $R \mathrm{~V}$ G $\square \mathrm{GV}$ Y G Y NELP D LIF DEVV LR P VM |
| UniRef90 D6GTD8 | R C G ALA M G |
| UniRef90- D4CSE5 | R A G I A M Y |
| UniRef90-E4UD03 | R P G\\| S L Y G G T P |
| UniRef90-R5IP46 | R V G S A L G |
| UniRef90-UPI00047D914F | $R$ P G A S L Y G I S P L A T G $\square$ K S V VDL |
| UniRef90-W6RM76 | $R A G S A L F G L N N$ NA RVEPNPLLPVV |
| UniRef90-R6ZF94 | $R A G S L V L G Y S D \square A D \quad G S N P M G L Q$ |
| UniRef90_UPI000225ABE3 | R PGIAL HGVNATNGK |
| UniRef90_W9BW76 |  |
| UniRef90-G4QBA7 | $R P G S V L Y G Y F P N L N E Q N V V H N F K P A M$ |
| UniRef90_U0G366 | $R$ P G GVLYGDLP T NPEYP SIVSFK |
| UniRef90_C0DC26 | R A Gl Sil Y GLY P S D EVD R E TVVHLT P VM |
| UniRef90_UPI00036B55BB | $R P \mathrm{G} \\| \mathrm{GL} \mathrm{Y}$ G\\| DQ Q G |
| UniRef90 Q8D6Q0 | $R$ P G GVLY G DL P T NPEYPSIVAF K |
| UniRef90-G8R5J9 | $R$ I G I M Q Y GFWP S T E T |
| UniRef90-X1SE73 | RIIGMG\A G L Y P S N D F K K |
| UniRef90-UPI000374AD48 | $R$ P G L G L Y G GVPRAEA Q G HVVR |
| UniRef90-E8V4K0 | RA GLALYGY ALDDLE G G A P ELLHPEPVM |
| UniRef90-B5FBI9 | $R P G G L L Y G D M P N N P E Y K R \\| V Q F K$ |
| UniRef90-W1S7L2 | $R P G L A L Y G G V P S P V A A P$ |
| UniRef90_UPI00036AAF14 | R V G |
| UniRef90_D0MCM8 | R P G G VLY G D LP T N P E Y P S $\quad$ V S FK |
| UniRef90_UPI0002554DE1 | RSGA SVLGHLAMED GREPIGLE |
| UniRef90_U1MT95 | $R L G M A A Y G V D P G D G A S A A A L G L L P A M$ |
| UniRef90-Q1NDZ8 | $R \mathrm{P}$ G\I A L Y G G V P |
| UniRef90_Q1CWF0 | $R$ VGIS L Y G L W P S P EVLGEVPVLK P V L |
| UniRef90- X1BAG9 |  |
| UniRef90-Q87KX6 | R P G G M L Y G D |
| UniRef90-W6EB59 | $R$ S G $\$ A MY G Y T T L P S S $\square$ A S F D L K P V L |
| UniRef90-R5VV98 | $R$ VGLLGLY G Y |
| UniRef90_J3BSE1 | $R \mathrm{~V}$ GSALYGLNN NAGLEPNPFKPVV |
| UniRef90_C4L2D6 | R V G I F L Y G Y S S VEP V |
| UniRef90_R7DMH3 | RII GLA A L Y G L $\quad$ D E K H T P VLS L K |
| UniRef90_A0A010PMI6 | RLLGI S M Y G L |
| UniRef90-M2TLV9 | $R$ P GLLGLY G G V P HPAAA G Q |
| UniRef90-X3XDC8 | $R P G I \quad 1 \mathrm{~L}$ Y GA SPS G Q WR D $\square$ A D G L K P VM |
| UniRef90_E6WZ35 | $R$ VGI AI Y G Y N T LP K G F E G VELK P V L |
| UniRef90-J2WV88 | $R$ P GII A L Y G G VP HP D A |
| UniRef90-R7BSU8 | R V G I K A Y |
| UniRef90-X1V9D1 |  |
| UniRef90-W7ZJ88 | $R$ VGI S L Y GL R P D P A LT L P L P L RQAM |
| UniRef90-Q9KSE5 | $R$ P G GVL F G DLP T NPEYPSIVSFK |
| UniRef90-U6B3U5 | R P G I A L Y G |
| UniRef90-A0A024Q654 | $R$ VGIGLY G L Y P E E H L K D I I N LT Q A M |
| UniRef90_UPI00037912FB | R V G |
| UniRef90-B9L5W6 | $R$ P G \A LY G G |
| UniRef90_U1N7Z7 | $R \mathrm{~V}$ GIJ F Y G Y S SVEPVVDWLIPAFR |
| UniRef90_C6YSY1 | RAGSLI Y GED L D DLQ D P K H E LR P VM |
| UniRef90-X0UGA2 | R P G I L M Y G H P S SETS HS $\mathrm{IR}^{\text {P P R QVM }}$ |
| UniRef90_X1N824 | R PGI MVY G L Y P DVNLR K K |
| UniRef90_A6Q1W0 | $R \\| G I A L Y G Y T E L D D L Y ~ E P P A L E P V$ |
| UniRef90-UPI000467B2C9 | RV G GAL Y G |
| UniRef90_UPI0004675DC4 | $R$ PG\A MY G G $\quad \square \mathrm{DGFK}$ |
| UniRef90_R5NA41 | $R L G \\|$ IL Y G FEVMHKEENTLR |
| UniRef90_G8AUJ4 |  |
| UniRef90-S7VQH6 | $R \square G V A Q Y G F W P S P D$ |
| UniRef90-I6WZ41 | R P G CVL Y G S Q Y F D Y D S E K LD LK P G M |
| UniRef90_V7PX30 | RPGCLI YG |
| UniRef90_R6MKW9 | $R \cap G S A L L G$ |
| UniRef90_S9PJH3 | $R \mathrm{~V}$ G $\square \mathrm{S}$ L Y G F WPS T E V L G R VP D L K P V L |
| UniRef90_X0YIF6 |  |
| UniRef90-R7B3S4 | $\mathrm{R} \square \mathrm{G}$ S G F T G |
| UniRef90_UPI000287EE84 | $\mathrm{R} V \mathrm{G}$ |
| UniRef90-UPI00047204FE UniRef90_UPI00041D0848 | DPGALLFGVA CPQPGGRDLVTRPAL RPGR\\|LYGYSPKGDFKKA |

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VNLK NDENNDNVIRDLINKKLIAVIKGDAYGLGSKK\AEF NRAAYDNNLTKI CAKAGGKVILVLKDNAYGHGATIVGRE DATALAGNWRALRLSGAASAGAAVKADAYGLGAARVVPV

## APTTR $\square L G V V K A N A Y G H G A V A V S R A$

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

$\square N K E N$ LEKN $\square E K \square R$ F $\square N K N \square I C V I K D N A Y G L G \square G N \square L P \square$ $N D E A V V H N Y R L F R D K T N S R C A V V L K G N A H G L G M S D V A P A$ TISKSALEYNTHKIQTLLGDKLCAILKGDAYGHDLSLVTPV ID A EAFEANIDTVRALLLGVRLCAVMKADAYGNGIALLMPS
 ID SQKYKNNLDLI TS SHLH TKLAMVVKKDNAYGHGGEEMAKHL $V$ DTEAFYSNAKKVKNQQP 1 MAVVKNNAYHYGLEAVKQF




 $\square D \square S A \square Q H N \square Q R V K Q A P E S K V M A V V K A N G Y G H G L R H V A K H$ VNRQLFKENAKNVKQ DNQDMAVVKNNAYHYGLEAVEQF I NVSNLA SNYQLLKEDPNNEALDMVKANAYGHGMVPIVKF $V N T D \square F Q Q N$ $V N T N T F L Q N A \square T V K N N Q P I M A V V K N N A Y H Y D L E A V S Q F$ VDRTKFDENVKSVID NTPVMAVVKNNAYGYGLDEAMDA VHPAA A A NVRRVTVR GHDLIAVVKADGYGHAATVATTA IN K LN L E K NLK KVR NYNNIRQNAINLKEQA QDI AVVKNNAYNLDLRECVKLJ DSKAFFHNLTADKACPTTPNLAVLKDNAYGHGLRQMAHA

 I NTSSLVRENLRRKIVKDSLDPSTSTAAVI KAN GYGHGSVVMMGRA
 I N L D N N L R F N L
 I D L D R M E R NLLK EMMQALLA G V K L R R P H T K

$\square N L D K D Q H N L K Q L C E A K G V E V T G V V K G D C A D L Q D V N T$ V I NLTSIKNNYLLGKRFCKPSVVATVKASSYGLGEANKASL VDLAVMDRNIERLAGRLGTDI QLRPHAKSHKCVEDAQR $V D L V M E R N I R W M Q E K A G V K L R P H V K$ V
 $V D L D K L E A N \square N E A Q R L A$ A A A GVVVRPHCKCHECAEIAKM TDTRAWRDHVKHVLYQLGPDVIAVVQGNGYGHGLDTVAKA $V D R D A L D R N L A R M A E S A R A R G L S$ LDRPHAKHKCVEIARQ DLDVLDRNLAAMARSAGVELFPHAKTH RMADAGRRQ VDLAVMDRNI ERLAGRDGTDI QLRPHAKSHKCDEDAQR
 $V$ D A
 $I D D A V L R R N I D T L A D W A A E Q G L Q V R P H A K T H K C A Q V A R Q$
lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm


## UniRef90 N6Z2W0 UniRef90_V7MJ47 UniRef90_F4XDQ3 UniRef90_Q13K16 UniRef90-101CX5 UniRef90-A7IOH7 UniRef90-F5T3F9 UniRef90-H7CVC1 UniRef90-B9CYZ2 UniRef90_UPI0003B3CB44 UniRef90-D3P3H4

 UniRef90-X7YLHO UniRef90-TOSYS2 UniRef90-WOBFS0 UniRef90-X1NWH2 UniRef90-B8C1E5 UniRef90-E1NQ40 UniRef90_C7NBN5UniRef90_U9VVC9 UniRef90-LOMJW4 UniRef90_V4P6I2 UniRef90-A6DBN7 UniRef90_UPIO0047DD36E UniRef90-D3UJ16 UniRef90-L7WRV0 UniRef90-XOTDS7 UniRef90-K8R2H6 UniRef90-U2DTU5 UniRef90-H1PSA8 UniRef90_UPIO0030467E2 UniRef90_K1SX07 UniRef90-K4DT16 UniRef90_K1TT14 UniRef90-A6BAV9 UniRef90_C9Q512 UniRef90_Q49XK1 UniRef90-TOBZZZ8 UniRef90-G5JHM6 UniRef90-G7ZNE4
UniRef90 R9B8V3 UniRef90-B9EC00 UniRef90_UPI00034C4C45 UniRef90_UPI00036AAA4A UniRef90_C5NUU2 UniRef90-IOZ356 UniRef90-V8CJJ9 UniRef90_A0A011RL67 UniRef90-G8PG48 UniRef90-D1RLH7 UniRef90-W1WYS7 UniRef90_UPIO0046AC883 UniRef90-T2ZC10 UniRef90_C5F1F3 UniRef90-H1DCG0 UniRef90-X0QXD6 UniRef90_UPI000472E9D1 UniRef90-X6FLU4 UniRef90_UPIO0046FED9B UniRef90 H7THP7 UniRef90-B7G271 UniRef90_UPIO002DD408B UniRef90-F212D7 UniRef90-R4UAU7 UniRef90_UPI0004641B6F UniRef90_UPIO003765487 UniRef90_X1L9Z2 UniRef90_10YW49 UniRef90-I6WU72 UniRef90-UPI0002FCE6E7 UniRef90_UPI0003668BE4 UniRef90-V6ZP28 UniRef90-A0A010Z6A1 UniRef90-H3SNZ8 UniRef90-W7Q636 UniRef90-S9S4S6 UniRef90_Q4SNW3 UniRef90_L7L7D4
 $M F P Q \square T T L A V A Q V G E G A A L R Q A G \square T R E L L D L G G V P A H L L$ AQAGVDGFCVGSPEEGVTIRRAGIDRDDLLFASTLPE DA

 AANYGIKFCVKNETEARELEPFFEHVLVLSHDPDGGESER


## 

LDGQVNAFGVASLEEAMKLRNLGSRSECVLFQGVFGADELD


L $\quad$ NNCNYFAVAY TDEA LYEEVKEFFI EELDEGLVLRKI LPPHDNIYAMAGLLSCEE MI N NV S C IGGVSSNRELKKTVRELGFKGR LMRMRSANEQEM




MMKNGVQCI GIDASNEEI RTVVRSGYTSQLMRVRNATEKEM

LQHHVDYYAVAVADEGSDLRKAGDTASVIMMNP AEMTAF LQAGCQWVAVNCYDEAEELRAAGVTM N NLLLGPQSANDA






 KEASIE SVVFVKNYEEAMASIAQLGDTAP






TQAG $\square$ TRFAVSK ITH LEK KKKANDNATTILLRTPGMSE DP
 QIDSA 1 GLTVATI REAEVFAEAGFTDLEIA YPLWVTRRLR

 LGAGFKELGVADINEADT LRQEGVEVPIHIDYQPDFDTAR ERLNSDCLAVGTAHEVATVREAGWSRDVIVLNPWRPFDET

 GA S G I T C A K V S E A E V VMA D G GM E D P



lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm


|  | R ${ }^{90} 100$ |
| :---: | :---: |
| UniRef90 N6Z2W0 | RDGFQHDMEELFGDVIEAARLAAEAARAEGRTLRYHLAGGM |
| ef90_V7MJ47 | R P ALLA GVQ G G S S R QL DELLTADTGRTATVTV |
| UniRef90-F4XDQ3 | RAAVELDLTLSVGRDELLPVLALLGQGRRVKIQI |
| UniRef90_Q13K16 | A QVAALGLTVTIQSRESLHAFINA GVAVDAFLEID |
| UniRef90_-101C | WAALAERLEFQAGDGELLDALDGRRRGLRLPVHVHAD |
| UniRef90-A7IOH7 | CEKPDFSYAINDMSHFSK】KNGSKVHISVDTLM |
| UniRef90-F5T3F9 | M T G M |
| UniRef90-H7CVC1 | KDERDN L L T LDNEE L L E L D KETKKRVHTYVDTGM |
| UniRef90-B9CYZ2 | LSLI AKFKKGARVHI AVDT $\mathrm{S}^{\text {S M }}$ |
| UniRef90_UPI0003B3CB44 | A YARATGVTPVLNSLAQVQRWLT A G G G |
| UniRef90-D3P3H4 | PALVAA GLTAAVSDGEAAQALDDAARGGVAGLHVRVRA |
| UniRef90 TOSYS2 |  |
| UniRef90-E8ZQW7 |  |
| UniRef90-W0BFS0 |  |
| UniRef90-X1NWH2 | E I L Q N |
| UniRef90-B8C1E5 | ERVAERRKEELMGDQRK】H |
| UniRef90-E1NQ40 | A A D S G M |
| UniRef90-C7NBN5 | EYA I ENDVELTDF NFSQLK\\|LEESFENTVLKIHIKVNSGM |
| UniRef90-U9VVC9 | ESFMTHRLTPCLNSLSQLEKWNFCGTNTTGDAVI HLDTEM |
| UniRef90-LOMJW4 | RQAlIEYDTEELVGNLDMAKRLDAAQQGKTLRIHLALNGGM |
| UniRef90_V4P612 | EDALP FVVEELI GNPDSAAVLQALAKRRTLPI HLALNGGM |
| UniRef90-A6DBN7 | SPTNRGAI NFSYTINSLT QLKKNRHPYI HL |
| UniRef90_UPI00047D | TFH\AI NS LDDIE K K P Q ANVHLKI D T |
| UniRef90-D3UJ16 | N |
| UniRef90_L7WRV0 | E N |
| UniRef90-X0TDS7 |  |
| UniRef90_K8R2H6 | RQAADFDTEELI GNLDMAKRLSAIA Q G K I RI HLALNGGM |
| UniRef90-U2DTU5 | EEIVRHD\\|VATVGSYDSAVVLSGIA G GKKVRI HFKFDT |
| UniRef90-H1PSA8 | F DVVKSNNT\EISANTLA ELKEFI E N G $\square$ S PR |
| UniRef90-UPI00030467E2 | EAALP Y NVEELVGNLDFAVRASLIAENHPLVVHLGLNS G |
| UniRef90-K1SX07 | KTMFDYKLEPEVVYSFHLLDALI K EAEKTNFP |
| UniRef90-K4DT16 | CGRWAVRLTP L L G L P QLKAFCASNAFNNSKLCLKLETGM |
| UniRef90-K1TT14 | VDLATLGVT QAVGSIE YARELNRAGTGLRLDAHMKLETGM |
| UniRef90-A6BAV9 | PVLVTNNI QTVVHCEEQLDALEQADLETPVVV |
| UniRef90_C9Q512 | S AVLDLNI EELI GTHQQAMELADLAKGKTIKVHMALDGG |
| UniRef90-Q49XK1 | DKIIRENQI QMTLPSLSFYYE NI NDLYY DI QV |
| UniRef90-TOBZZ8 | QEAADNRIDPVLSNESNLKYFLEQEDFRFFPLCLKFNTGM |
| UniRef90-G5JHM6 | DAIR DNDI QMTLPSLSYYYENKHHLAG I R V HLEFENLL |
| UniRef90-G7ZNE4 | NLVREHDIHMTLPSLTFYYEHK EDL |
| UniRef90_R9B8V3 | QNAASLKMEELFGNYEQAQR\\|STWAKQQG |
| UniRef90-B9EC00 | NIQMTLPSLAFYHRYQSELD G I |
| UniRef90_UPI0003 | T T A ARERVEVAVGDRATLVAVAEARSGTAVVVHLHVDTGM |
| UniRef90-UPI00036A | EYADKNNI ELTVFNFSQLKILLNKSFENATLKI HI KVNDGM |
| UniRef90-C5NUU2 |  |
| UniRef90-10Z356 | DMRFVDALCK |
| UniRef90-V8CJJ9 |  |
| UniRef90-A0A011RL67 | DELLREYQITATIPSLDYYR KYRAD |
| UniRef90-G8PG48 | QAALGG Y V QEQV GSLESALDALANLPDRCNKPAKFHLA G G M |
| UniRef90-D1RLH7 | STYAANQIEVIIPSSKNAASINMIAKWLQLKVHDMVD |
| UniRef90-W1WYS7 | ELVADTNSIPAVCEST DLDDALDKVAENHDI RVAVAVDTGM |
| UniRef90-UPI00046AC883 | S A ASDHVQEQ G G Lida RHYRSLLDGGHDLRAHLALDAGM |
| UniRef90-T2ZC10 | EDSIKNKITMTVYSLETAQKDNE\\|AKSLGEKACVHL |
| UniRef90-C5F1F3 |  |
| UniRef90-H1DCG0 | VI K A F P RI D MAI N SLE DLKEALEHGDSPK R M |
| UniRef90-X0QXD6 | EDAMQYGVEELI GSLKQAE\\|VNEDAKGKNDKFHMALNGGM |
| UniRef90_UPI000472E9D1 | RLAEKAKVRLAVDSIF HVEQMRCFGKQ $\mathrm{C}^{\text {P P V EVVMIEL }}$ |
| UniRef90-X6FLU4 |  |
| UniRef90-UPI00046FED9B | RAVRQVELIVGVDSLD GVKLLS Q A A A GRELQVRLEI D |
| UniRef90-H7THP7 | DID K I N A Y Q D T R I HLKI D T G M |
| UniRef90-B7G271 | ALVDS GM |
| UniRef90-UPI0002DD408B |  |
| UniRef90-F212D7 | SVFFKNKLTPVLNTYSQFEKWRYLKKNYQRNIMIHVDTGM |
| UniRef90-R4UAU7 | QVASRAALRVAVDSAASAQQLAEHLGDLPLTVVVEVDS G H |
| UniRef90-UPI0004641B6F | RLL L A VRI AVGVDSAEHDKMLAEAFDGRPLDVMI DI D T G D |
| UniRef90-UPI0003765487 | QQAMA YDVEELI GDKTVAEQLNNDANGKVLRI HLAL NS GM |
| UniRef90-X1L9Z2 | K L K R L KL S CVVDM |
| UniRef90-10YW49 | VMALENVIEDLSFARVLCEETTAVKREAPMQVHVKAALGA |
| UniRef90-16WU72 | ATALLDDPRVITVVSRLT DLDEELRTTHPGTRVVVELM |
| UniRef90_UPI0002FCE6E7 | A RLRALA GRVRLT DSETGARQLVEHAGTTIGVLIEI DS G |
| UniRef90-UPI0003668BE4 | RALALARRADTLFATDSVDAAVFAAAGEKVRMMLAI D S GL |
| UniRef90_V6ZP28 | QVASRAALRVAVDSAASAQQLAEHLGDLDPLTVVVEVDS G |
| UniRef90-A0A010Z6A1 | RAI R DKRLILTTIDSLEGAKALNQAAQDMILEVRMEID |
| UniRef90-H3SNZ8 | RALADARIIVGVDSAAGARALEAEARQFVLEVRDEI DT |
| UniRef90-W7Q636 | RAVASANI S QVSELDVVKALSVAAGRRGV V H CMVEDGD |
| UniRef90_S9S4S6 | AMALRCDLKLVVDNVEAAHAVHYRTHDERCEVWDEVDTDG |
| UniRef90-Q4SNW3 | CAALSERLDLFQVLLDHPDALRPLKDGRRWHVWMKLDCGN |
| UniRef90_L7L7D4 | ARLRAHALRIGVDSAAGARQLARGLGEAAVDILVEVDSGM |

[^1]


## 130

140
150
160
SRNGVVATEGRVEARALDTLQGLQLVG|IMTHFAHEDADEM NRNGVPPAQYPSMLTALRAEEALVPRGLMSHMVYADQPAN NRTGVMPGAEDAHEEWRSARNHFQIMGAFSHFADDED GRFGFLPSQWQAAFAALRDQSTVRLKGVYTHLSSPESE



 $D G M G G D G L G T G G D G R A L H R F A N L R V E G L F T H M 1 G P Y R D D P$ NRNGVGAAQYPAVLTALRADGALRLRGIMSHLVYADEPDH N RLGGUDYDRVDEVI SUI K SKGRKS Y Y HLDTHFSSSSLSMK GRLGFDPTESLEEIKRIQDLSNIKIEGLSSHFSSSDENDK HRLGFFLTKYPILWPRCLLVRGL
 GRLGGKTDQDSADGNTPLSSPEMPFYGMCTHMADANS TS NRLGFNESEDLELDEKDKKYNKLEI IS DFSHDS DAENQ NRGGLSCNEVQYLAERFQETSNLE: KGYMSHLFDDKGHDG

 NRNGUAPRELESMITKULQKD LGLFGVFAHNGYGDDLME

 GRFGFLPEEVSKAVQAAKYLDNLVLTGVYAHDSGSECKKE SRNGVEMTTAQGRRDALTKVPNLQVTAUMTHFAVEDAADV HRLGVC $N R L G L R F D E L E E A V P G L K Q R G G V D L L L H F G Q A G S V E R M A E$
$G R T G F D V H D D S H L D E M U E A L P H L N F T G V F T H F A V S D E N G D$
GRNGTDMTTEAGKKEADATQPS $\square$ NTVGMMTHFPNYNADEV HRSGLKTKEVIHHHNQNKNEHKMHI SGLDTHFGYADEFDV NRDGLRDDRVDEVVKQDKASGRNSDYSSLSMDKNKRNGAQ HRSGLKNKEIKEVLEDHQQNQNMII SGLWWTHFGYADEFDV
 AREGAEPHRWQALLDAAERAGYVVVRAVMGHVPNADRASA NRLGFDENE ILLELI EIIDKKYNKI EI IS SIFSHISS DAENQ RRAGAKNLEEVLEI IAFCKENDLKLKGFWSHFSFADEFDG VREGVRMEEAIVRLASVKDCSVLQLRGDMTHHGRLE HRNGUA $\square$ NELDSALA QLEEAEHIKLAGVFGHNGYGDNDDE NRLGFTSS SDMQAVLDDSKINVTGLWTHFGYADDFES SRDGLESHNGKAVCKQLVDLLGEQUVGVCTHFPSNEDLGQ RRDGGYESNIPDSVMELLDPNQVEFAGLSTHLDACGDEII HRDGIKPEDAVEFIK
SRDGLDTDAGKAACME $\square L A L L G G H V T G \square C T H F S S N E P A H L$
 GRNGI EEKDFKYLIREDQEK I S F
 HRCGVEPGEAVALAGEI HRFPQVKLAGIFTHEGHTYNAAD LREGIWPNDLIPTVEQILALSGVRIAGI GTNLGCFGADMP
RRTGVPYDQAEALASAI HAME GLLRLTGGI Y
HRNGVCVEDLNEALLKI K CSALKLEGIFTHFAGADEMDA GRLGFKTEPVDMLDAEINGNAPI EFYGMCTHMA EATATS $\square R E G V M P K D L P A F \square N D V I K \square R G L E \square V G L A T N F A C F G E D K M$ NRLGFQ
HRTGVAPDEA GPVAAAARSAGLNVVGDFTFPGHGYTPQE HRTGVAPEEVLELARLI LYRDSVRLRGLFTHDGHSYEAN SRNGLEVSKARGLNDAIAGLKNLTVVGIMSHYPVEDASED KRFGVLPGEALKRAKEI HQMPGIELVGIVAHESTHGE AVQGVSSEEAMELIEYI NTCSSLQLRGITTEHAEPKELEV RRHGITPQEDTSVDA GKLGFEGWTMHDP
HRTGVLPEQTGTVAQAAREAGLDVRGVFTFPGHSYTPDA

HRTGVAPDEA GPVAAAARSAGLNVVGIFTFPGHG
GRTGVPMDRAVELALALKKMKHLNLTGGI FT

HRSGITPEDALLEVGRILQAGGIEVGGVMTHAGSSYD


[^2]

UniRef90_D1RLH7 UniRef90_W1WYS7 UniRef90_UPIO0046AC883 UniRef90_T2ZC10 UniRef90 C5F1F3 UniRef90-H1DCG0 UniRef90_X0QXD6 UniRef90 UPI000472E9D1 UniRef90 $\times 6$ FLU4 UniRef90_UPIO0046FED9B UniRef90_H7THP7 UniRef90 B7G271 UniRef90_UPIO002DD408B UniRef90_F212D7 UniRef90 R4UAU7 UniRef90_UPI0004641B6F UniRef90_UPIO003765487 UniRef90_X1L9Z2 UniRef90_I0YW49 UniRef90_I6WU72 UniRef90_UPIO002FCE6E7 UniRef90_UPI0003668BE4 UniRef90 V6ZP28 UniRef90_A0A010Z6A1 UniRef90_H3SNZ8 UniRef90 W7Q636 UniRef90_S9S4S6 UniRef90_Q4SNW3 UniRef90_L7L7D4

170
180
190
200
RKDLLAEFNKQAA WLIUDEGK\| L HAANSFATGEVVJPERLLDMV PVNDVQAQRFTDMLAQAREQAHLSNSSATMSRPDDAFDMV ERTRQQYELFFDGVEQEDPQRHISASAAHEQFPQYRLDGV DVTRQQAGVFDAALADARAATMLASSRVMLAHPHDAYQAV RAAGQVAAFDRLLAQMHAVVHLCNSYAAMREPAWHRRMI DFFV QRENWRNFKDSAQKKCHSCNSAADERSEEFSDDFA

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



TYTHSQMDRFRS LLLHRVRPTISTDNSAALLTTSLTHFDFV EYFDSQFDHFKKMLRIKPKYIHCDNSAASIFNRQVDSDLV
 FKVQSQQVLA I TGLKRDEVMLHVANTFATLTVPESWLDMV
 DFFWQKVKNDCEKLLLPLPSFHSCNSAGLLRRFENLNEDFA
$D F Q N G Q Q U F Q E Q K L G F P R P R H S L N S S G T L R S R E F P D D L V$ PEYDEERSAWLNVLHYQFDYDHSQNSASYYREGQPHHTHA DSTRKQFEIFDKVCSGFSFRF
ARFNTQSAQVLKITGGKREDVHVANTFATLTVPESWLDMV $K Q V R R Q Y E T L K E M L T A L Y G V V H A A G T L P A L L Y P W L R L D A V$

 $P$ YTQ QQFERMEQATGHHFA $\square R H C A N S G A V D N Y$

RTKLAKFKESSAWLDEQDDTLHVANSYTALNVPEAQLDMV PDYNDERAAWLE VVDYEFEMIHAQNSASYYREQGPNHTHA KENWRELKSQLTAAGDEDDKSSLANSGADEQKDGDEETHD PDYDIERKQWLNVLNHHFDMIHAQNSASFYREGQPYHTHA PDYRIEREQWMEIVQYQFDLIHAQNSASFYREEQPHHTHA AVFNQQWLIKKAKLKREELTLHTANSFATGTVPESHLDMV IEYEDEKESWLKGLYHTFEMLHSQNSASFIRRDGDFDHTHV
 FYEKEKVLLDEALKNYDFEVVHLQQNSASFLRDGVFKTTHQ SFFTDKVRKWCEARNYPMPRFHSLSTSGALLRNGNDLGDDV


 EF $\square$ KREVLQFCKANS LKKPRFHFLSSSGALRAAELQDDLY
 KEEMKQ ALDTQ
TQNLGQLVAHAYKTERLSGARLDWDSGGA
SFFDQRKAKD\AKQDYKNLIFHSHNSPALFRAVKDPEDLC DFTKSQlAKFINLLKRYIPTVSTDNSAALLTTNLTHFNFV REFSSLVQQ $\square R Q Q F S L Q L P \square V S G G N S A N \square K W L M E T K N N D V$
SHALDTAAAS $\square R$ AQG $\square D P S V R S G G S T P T V G A A D D T V L T E V$ K GDCKQY

FAEKLRVAGAKFGDTGVAASPKMLRDKEAYGT\|V
P
YTPGQRAEVAA
QESHA LDTAAAS $\square R$ A Q G $\square$ DPS $V$
SADNMGELSALATLIEAR $\square G G H \square P N L A W A L V A P A G R \square N D L$ ETTD TT DQ FMEK KK DAG GTCRSS $\square G S T P S C S H P V K \quad D M A$ ARESAAREEMASLAQAAESLRMHSSPTVALAARAGADDTL

[^3]

| UniRef90 N6Z2W0 | RPGGlI I G 210 DTDPSYTEYKKVM |
| :---: | :---: |
| UniRef90-V7MJ47 | RPGUAVYGLSPVPELGDM GLVPAM |
| UniRef90-F4XDQ3 | R $\mathrm{DGRR}^{\text {R }}$ L Y M DHPTQPTGRVS |
| UniRef90_Q13K16 | DPGRLLYGALDAD WMARAP L |
| UniRef90-101CX5 | RPG\\|GLYGYEPTGERWETDARLRPV |
| UniRef90-A710H7 |  |
| UniRef90-F5T3F9 | RDG $\square$ A $\square$ Y G $\square \mathrm{Y}$ PSSEVR QDLPLKMAL |
| UniRef90-H7CVC1 | RAGNVLYGY |
| UniRef90-B9CYZ2 | RVGIAAAYGYA Q F Des Lem |
| UniRef90_UPI0003B3CB44 | RPGI A I Y G |
| UniRef90-D3P3H4 | R $\square$ GAVLYG\\|R MVEAGGAPFPFRPVM |
| UniRef90_X7YLH0 | RPGIA A Y GLSP【PERGDM GLIPAM |
| UniRef90-TOSYS2 | R P GLM M ${ }^{\text {M G }}$ |
| UniRef90-E8ZQW7 | R A Gl I L Y G Y P S M EVNK ENDH $\square$ K QVM |
| UniRef90_W0BFS0 |  |
| UniRef90-X1NWH2 |  |
| UniRef90-B8C1E5 | RCGGA $\square \mathrm{Y}$ GQRPAFKELRAVST |
| UniRef90_E1NQ40 |  |
| UniRef90-C7NBN5 | RVGMALYGME |
| UniRef90_U9VVC9 | RPG\\|GIVGG A P NEN |
| UniRef90-LOMJW4 | RVG GVFY |
| UniRef90_V4P612 | RVGGLLYG |
| UniRef90_A6DBN7 |  |
| UniRef90-UPI00047DD36E |  |
| UniRef90_D3UJ16 | RI GMAAYGYCGANFPLEDADRLQP |
| UniRef90_L7WRV0 | R VG G A L Y G S P Y S DLDEST $\mathrm{L}^{\text {Q }}$ |
| UniRef90_XOTDS7 |  |
| UniRef90-K8R2H6 | R V G G\\|F Y G |
| UniRef90-U2DTU5 | RCGSALMG |
| UniRef90-H1PSA8 |  |
| UniRef90_UPIO0030467E2 | RPGGLLF G |
| UniRef90-K1SX07 |  |
| UniRef90-K4DT16 | R P G $\square \mathrm{M} \square \mathrm{L} \mathrm{Y}$ |
| UniRef90-K1TT14 |  |
| UniRef90 A6BAV9 |  |
| UniRef90-C9Q512 | R PGGVLY G D L P T N P EYPS $\quad$ VS F K |
| UniRef90_Q49XK1 | R $\square$ G\|IALY G S R P Y S $\square$ NES D $\\|$ Q |
| UniRef90-T0BZZ8 | R PGL M M Y G |
| UniRef90-G5JHM6 | RVGI ALY G S R P Y S S L N E D $\square$ |
| UniRef90_G7ZNE4 | R\\|GIALYGSRP |
| UniRef90_R9B8V3 | RAGGVI Y G |
| UniRef90-B9EC00 | R\G\ILYGSRP |
| UniRef90_UPI00034C4C45 | $R \vee G A A L V G \square G P G H A D C L P A M$ |
| UniRef90-UPI00036AAA4A | RVGMALYGMEP |
| UniRef90_C5NUU2 | RLGIIL Y G A M P Y D |
| UniRef90_IOZ356 | RI GSALYGS GP S D |
| UniRef90-V8CJJ9 | $R \square G \\| G A Y G Y H T S E \quad \square \mathrm{P}$ P $\square$ H $\square$ A $\square$ K P $\square$ |
| UniRef90_A0A011RL67 | RCGVFLYGSRP |
| UniRef90_G8PG48 | RCGAIMYGIVKPELGFKT T M SLK |
| UniRef90-D1RLH7 | RVGGH GLY GMELEK DLHLD S P RLR QVV |
| UniRef90_W1WYS7 UniRef90 UPI00046AC883 |  |
| UniRef90-UPIO0046AC883 | $R C G A \square 1 Y G \square \quad \square K P E L G F V P T M$ |
| UniRef90_T2ZC10 |  |
| UniRef90-H1DCG0 |  |
| UniRef90-X0QXD6 |  |
| UniRef90-UPI000472E9D1 |  |
| UniRef90-X6FLU4 |  |
| UniRef90 UPI00046FED9B |  |
| UniRef90-H7THP7 |  |
| UniRef90_B7G271 | RTGGA $\square$ Y G Q R P A F DELQA V C T L |
| UniRef90_UPI0002DD408B | R L G |
| UniRef90-F212D7 |  |
| UniRef90 R4UAU7 | R PGIV YPFNDAQQLELLD |
| UniRef90_UPIO00464186F |  |
| UniRef90-UPI0003765487 |  |
| UniRef90-X1L9Z2 |  |
| UniRef90-10YW49 | HVS A A L Y G |
| UniRef90-16WU72 |  |
| UniRef90-UPI0002FCE6E7 |  |
| UniRef90-UPI0003668BE4 |  |
| UniRef90_V6ZP28 | R S G |
| UniRef90-A0A010Z6A1 |  |
| UniRef90_H3SNZ8 |  |
| UniRef90-W7Q636 | $R L G S \\| L L G C D P$ |
| UniRef90-S9S4S6 |  |
| UniRef90-Q4SNW3 | R L |
| UniRef90_L7L7D4 | R P G A V L T GVY P F N D A Q Q L EL G |

[^4]


[^0]:    

[^1]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^2]:    lupas_21
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    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^3]:    lupas_21
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    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^4]:    lupas 21
    lupas_14
    lupas_28
    jnet conf sol25 sol5
    sol0 jhmm
    jpssm

