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A S A LHVARTVTRRAERQUVQLMREEQDNQDVLIFDNRLSD A A Y L H V A R TV: R R R A E R Q TVV R L A E K E Q A AFLHVARTVVRRAERNVVRLARRQAINPFVRQYLNRLSD SAALHVCRTVARRAERRVVTLAEQEPINEEVRRYLNRLSD A A ALHMARTVTRRAERCIVSLQKAEPI NDAVLKYMNRLSD SAVTHVARTVTRRAERYIVSLGKQEEINEVVLQYVNRLSD A A YLLHLARTI CRRAERRVVALSHNEPVNPQVAVYLNRLSD A A HL HLARTVTRRAERAVTALMTEQPVNPEVLRYLNRLSD A A ALHLSRTVCRRAERRVVTLDREDKAPPAVAMYLNRLSD

 A A HLGLARTI CRRAERVVVTLATEEEVRPEILTYYNRLSD
 AASCHIARTVCRRSERIVVRLMREEKINPPVIKYGNRLSD
 SAA LLHLARTVCRRAERRAVPLDRDGTLPKDVVVFLNRLSD AAALHMARTVTRRAERCVVALMKQQQTNEVVLQYMNRLSD A ATVHDARTVTRRAERLVVTLGKTEDDSDLPLKYLNRLSD
 VSFCHI ARCVCRRAERLATALYEINPFEETTLHYLNRLSD VSYCHI TRTVCRRAERLASELNEHTPDDPQVLKYLNRLSD AALLHVARTVARRAERNTWHADHQGGVNSLTAKYLNRLSD VSFCHI ARTVCRRAERLSTALNELTPVHPQVLKYLNRLSD SAHDLLARTVVRRAERDAVTLNCSESVNPEALKYLNRLSD

 VSFCHI TRTVCRRAERLATELHAQSPIDVQVLKYLNRLSD



 AAKLHI CRTVTRRAERRVVALSQTEPVNPECLRYLNRLSD S STLHVCRTVCRRAERRAVTLGKHTDINPAVRRYLNRLSD A ARCHIARTVVRRAERATVALARAEPVRPQPIRYLNRLSD SAHLHMGRTVARRAERDAVALSAEESVNPAAVKYLNRLSD SAALHLARTVSRRAERQMVELSQDEIVTSAALKYINRVSD
 VSYCHI ARTVCRRAERLASHLNENEPFEANVLSFINRLSD AA WA HVCRTI CRRAERRVVSLSHLAEVPSHALLYG NRLSD VSYCHI ARCVCRRGERLAVHLHELEPTDKMVLTYLNRLSD VSLAHI ARTVCRRAERAMVLLSENSPVDGULLEYVNRLSD AAALHLARTVARRAERDMVELSHKEKVSAEAIKYMNRVSD A AVI H ARTVTRRAERCTVSLQKEMDI NDVVLKYGNRLSD SAQTHI ARCVCRRAER IVVQLSSLEHVDLLLLAFI NRLSD VSFCHIARCVCRRAERLSVELNDQEAINNDI LKYLNRLSD ASFLHAARTVIDRAERKIVALAKEEDI P P LAALPYVNRLSD ASVCHIARTVCRRVERRILDVAEEYPVDELLI KYI NRLSD AS ALLHVARTVARRAERRVAALAAQEEVNPVILQYLNRLSD SSYCHLARCVCRRAERNVVHLAEESFVDDKITIVLNRLSD A A A LHTARTVCRRAERLGVQASASTPLNEHALTYLNRLSD ATSLHDCRTVCRRAERSLVYLDNESEEVRPELI KYLNRLSD V S Y CHVARSI CRRAERLAYALHHHEPLEKEVLIYLNRLSD V S Y CHI ARTVCRRAERRATLLNENEPI DEKVLKYLNRLSD
 AASLHI CRTVTRRAERITVTLMKEEDVPGTVQRYLNRLSD GAGLHVARTIVRRAERKAVAVG EDVNPVVLSYLNRLSD GAAFHVARTTARRAERCAVTLG EDVNPLVFAYLNRLSD GALAHVVRTLTRRCERQLLVLAEQEQINPAVTPYVNRLSD A AVLHVCRTVCRRAERRAVTLGRHQEVNSEVLIYLNRLSD A AFLHICRTSCRRAERRSSEI LLDAEQHYEKVLIYYNRLSD ASALHVCRTVCRRAERRLVTLAREETVHQQVMKYVNRLSD GALLHYARTVCRRAERETAALMKTVEI KNPVLVYLNRLSD A A SL HVCRTIARRAERYVVRLQQEGEINPNVLKYLNRLSD AA HCHVARTVCRRAERVLVSLGKTEPVDHLALAYLNRLSD AAEDHI ARTVARRAERLVVELSEESDINAEVLRYINRLSD VSFCHISRAVCRRAERLATALYQEVPFEENALKYLNRLSD AAGDHYARTVVRRAERA ALLVGDHVNPDVLAYLNRLSD VSFTHVTRTV CRRAERGVVALKEHEEVNDLI ITYGNRLSD ASALHVCRTVCRRAERRAITLSHSKELNREALKYLNRLSD A A HL HHARTVARRAERDTAALAVTTPINEHVLGYLNRLSD ASALHVARTITRRAEREVVTLQGTAE:NKDVLVFINRLSD AAVCHVCRTI CRRAERRILALSETCTISPEVLAFVNRLSD A ATIHIARTITRRGERQIVSLVKTEAVSEVTLQYINRLSD SARLHVARTI CRRAE DEVVRLMASERINPHVMDYLNRLSD GAAMHVARTVARRAERQAVELG EEVNPLVLSYLNRLSD AVWLHLARTVCRRAERTVVTLTHTEKVNPHALDYLNRLSD ASALHVARTVVRRAERRSIQITQQEPVNGIVIKYLNRLSD VSFCHIARTV CRRAERNTVVLHEQEPI A DUCIRY U N RLS D AA QMHVCRTVCRRAERVVVTLAQSEAVHPQPRQYLNRLSD VSFCHLARTVCRRTERCVIDLMELEPVDE\|IVRYLNRLSD A A A DHVARTVSRRAEREMVALAADEPVSAAAMKYINRLSD AATAHLARTVCRRSERRMVELAEDETUNPMGAAYLNRLSD


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## M M

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$M Q$ | $\mathrm{R} \mid$ |
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| ---: | ---: |
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| MK | MR1 $M$

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| T K |  |
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 K K $\begin{array}{r}\text { Y } \\ Y \\ Y \\ Y \\ \hline\end{array}$ YTRTGDDGS

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$\qquad$ YTRSGDKG
 STR Y T VTRTGDDG

TKTGDGGDT FGLGDGQRVAKDSIR|


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E WE P L R I V E S Q V


P E A P L R L E Q D Y I D A L E A WCD H F G E G L P A L D S F I L P G G S RL


## K E D D

 MSTPDLL L E T

KMK $\quad$ SP D L L
DK P F K K I DK
$\begin{array}{llll}D & K & P & P \\ R & E & A & H \\ P & \text { L } & \text { K } & \text { L }\end{array}$ I $Q A$


| $G$ | $K$ | $G$ | $T$ | $Y$ | $K$ | $V$ | $T$ | $K$ | $E$ | $M$ | $V$ | $Q$ |
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## P


RQP PLSMRAGPVV
KEVVKWSVQEN DI T T E L L E Q T I



K QVGWP IQ

S E MVL RVVPSQVAWL


## CH


K E VA WK TA AV D R L


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A A LL L $|V| C R T|V| C R R A E R R C|V| T|L| A A E H N V|N A H A| V|T Y| L I N R|L| S D$ A A YL HL ARTVARRAERDMVNLASAEAVNPAAIRYMNRLSD SALLHVARTVARRAERSSWLLDESEGVAPLPAKYLNRLSD SAGLHLARTVVRRAERSAVAL EDELVNPLVVSYLNRLSD A A HCHVARTVCRRAEREVVALARDETVRAEAI RYLNRLSD A S QAHMARTI CRRAERRTLTLADDEEVSPDAVQYLNRLSD ATYLHMARTITRRAETLIAKLNDTEGVSPPALAYINRLSD


 SALLGHARTVTRRAERSAWAAAASHEVSGSVVGYGNRLSD A A AL HLARTVSRRAERLMVELSRRETVAEPALQYI NRLSD
 A A HLGLARTVSRRAERLAVALDSEEGCNPVAVKYLNRLSD SAVTHLARTVTRRAERLVVGLMRQEDIHPVTLKYLNRLSD
 VSYCHI SRTI CRRAERLVAQLHQTSAIDPNILAYINRLSD A A A L HLARTVVRRAERKVVALSREEPVNPEAI RYLNRLSD


## S


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 A S Q $V$ C $\square$ S F G HI A R TVVCRRAE RMVI A L QEVD FV A D LVVVQYLNRLS D SANTHI A R CVVCRRAERDIVVQLNKEDFVDKEILIDYLNRLSD A A H L L H L C R TV $\operatorname{C}$ A R R A E R L L S V SAALLHFSRAVCRRAERCVV P LVQGGEADANVAKY L N R L S D D A A HLLHMARTI CRRAERATVTL ARTEQVNPEAVHYLNRLSD
 A S HCCHVARCVVCRRAERRRAVALA QVAEVVDEKII K Y L N R L S D
 ACTAHFARTVCRRAERLII ALMPDETIDPLVVQYMNRLSD A S L L H M A R T V VR R A E R S I V S L A T E Q S I N Q Y A A I Y M N R L S D A A ALHVARTV CRRAERRVVALARDDEI PALAVQY LDRLSD SAHLHFARTVVRRAERDMVELSHDESVGGPAIHYVNRLSD


 A A A L HVARTVARRAEREVI RL AQEEEIGE HVQVYLNRVVD A ALLHQARTVARRAERSAWALVEADPTNA DAVTYLNRLS D ASYCHLAR SVVCRRAER DMTSLCQEEDVNPESVAYLNRLSD A ALLHHARTVVRRAERSAWAAIDENPDNTSVLPYLNRLSD
 A ALLLHQARTVTRRAERATWALLEDEPTNDLAAKYLNRLSD S S AL HFCRAV CRRAERRVVPLVQTGETDANVVKFLNRLSD


 A A R I H $V$ A R A I T T R R A E R C M TAA L A A Q A P V A A AFHI ARTVVRRAERKAVMVANQEEVNAAVVKYLNRLSD A A TLLHI A RTI TRRAERQTVTLLMKSGEEFPLVVQYLNRLSD A A HCHLLARAI CRRAERAVVTTLSRDNEVNDTTRRYGLNRLS D A A HAHMARTI ARRAERSVVALSRQEAVNPPVLHYLNRLSD A A RVVHVARAVVRRAERSAVALASSVEPVNAQALA YLNRLSD A ALLHVARTVTRRAERSAWAAYDAHPTSKLPAKYLNRLSD
 AS HCHMTRSLCRRAERDAVTLSNTETVSPELQKYLNRLSD SAWAHVCRTI CRRAERSVVTGSHTVAVSPVILQYLNRLSD A A LLA HVCRTVCRRAERSIVVSGKSETVNEEVRQYVNRLSD

 S S AL HVARTVTRRAERLAVGLVEELPDNPLVVSYLNRLSD A A HCHLARAI CRRAERVVVAL GHEDS INMASRHYLNRLSD A A Y L H Q CRTV A R R A ERRAVVELAAA GDVNEHAVKYLNRLS D


 A A HL L HVCRTV ARRAE RLLATD LSSTSEEVVNPAAVKYLNRLSD $\square S$ Q THV A R C V C R R T E R C C V N M Q E Q D IV E P L VI K Y L N R L S D
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 SALLHVVARTVVRRAERSAWAAVDSAPVNVLVAKYLNRLSD A A QA HVCRTVCRRAERS VVR L G WE E P L Y D S P R Q Y V N R L S D S A T|I H I A R T V


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 AALLHENARAI TRRAERAAWVAHREFPDSTAALLPYKNRLSD SCHLHDARSVCRRAEREUVPLVANGEMETEPAVGVNRLSD STHLHLARTVCRRAEREAVRLVESGQVTPEAVIVYNRLSD SALLHTARTIVRRAERSAWAAVREETTTTLPAKYLNRLSD A A AL H L A R A I SRRAERSAVAATHDMPLNPAALAYYVNRLSD
 A A MDHVCRTVARRAEREIVALKKQHTINPDVLKYVNRLSD AAVCHVCRTVCRRAERHILTLSETCTISSEVLAFI NRLSD A A RMHVARASTRAAERAVTALAELEPVNPAASSYVNRLSD A A ALLQVARAVVRRAERAVVALARVEDVNPEALLRYLNRLSD A S Y L HVARTVTRRAERELVSLMQDESINAEVLKFI NRLSD A S QL HHARTVIRRSE DCMVILNEQEKINPFCI QYVNRLSD GGAGLMARTIVRRAERAAISIGGEEVPPNVLAYLNRLSD A A HL HVVARATVRRAERSAVAAAVAHPLNPLALRYLNRLSD ASTIHICRTVARRAERMLVTLMKEEGVSPIPLKYVNRLSD A A HLHMARTI ARRAERLVTALAEREDVTPAAKRYI NRLSD SSRAQDCRTVARRCERRVVTLANEHDVDQNVLTYLNRLSD A A LLHTARVVTRRAERSAWSAIETHGVNPLTATYLNRLSD ASALHVCRTITRRCERLIVQLQKEADLHPFVLPYVNRLSD ASLLHI ARITARRAERAAWSAVESHPDTTSVLPYLNRLSD GAALHVARTVVRRAERNC MNDEEVNPLVLAFLNRLSD A A HLLHI CRTVSRRAERLAVELTDIEEVNPAAVKYLNRLSD A A QAHVVRTLTRRCERLLLGLSREEQVNPALLPYLNRLSD SAQAHVCRTVCRRAERRI CELHATHPVDLLLLRYINRLSD A A Y L H QCRTVARRAERRUVDVAHEEQUPPAALPYMNRLSD A A LL LVVARTI ARRAERASFALMEADPTSKLPAQYLNRLSD A A QL HI CRTVSRRAERLAVELTNLEPVNEVAVKYGNRLSD AS ILHI CRTVARRAEREIVTFQWTNDMNEEVLIFI NRLSD A A CGHLARTVCRRAEREVVALARAEDDRAQPQRYLNRLSD SAYLHLARTVVRRAERRVVALAQEEQI NPMVLKYLNRLSD A A YL NVARTVVRRAERAGWAAVEAHGINLLAITYLNRLSD STHLHVARAVCRRAERRVVPLSNAGDVDASVMRYLNRLSD A A LLHVCRTVCRRAERRAATLAAEKPVNDAVPAYLNRLSD AALAHVCRTVCRRAERALVALGAVEAVNEAPRQYLNRLSD ASLAHVCRTVCRRAERRIVSLAEQAEVEDPVLIFINRLSD
 GAAFHSARTI ARRAERCSVRI EDEVNPLVLAYLNRLSD AALLHQARVVTRRAERSVWALLEAERSNAETARYLNRLSD S SAI H DAR SI SRRAERRVVPLVRDGEADEAAGRYLNRLSD A ALLHVARTVVRRAERSAWAAVELHGINAEAVKYLNRLSD AALAHVCRTVCRRAERA VVALGRVETLQETPRRYVNRLSD
 SAALHVARAVCRRAERCVAPIIRSGEADPDVGKYLNRLSD A A ML HLARTI CRRAERRVVALAQEEPVADSVRRYLNRLSD VAQ HVCRSLARKAERRCQQLNQEEPLEGAGLRYLNRLSD A ALAHVCRTVCRRAERRIGKLNEMTELDPEVLQYVNRLSD SAHCHVARTI ARRAERRLWTLNRTDEVPPLILRFVNRLSD SAALLHLARTVCRRAERALCHLGKSCPMPDALRYLNRLSD A A HLHLARTVARRAERDMVTLAESEQVGMEALRYINRLSD AS LLAHVCRTVCRRAERQDYRLAETNPVEEPVLDFVNRLSD A SLLLHI ARTTTRRAERHIVGGLMATDTINTAVLRFI NRLSD A A AL HVCRVLVRRAERRVVTLSQREEIVNEVLRYLNRLSD STQLHVARAVCRRAERSVVPLVAAGDVDGVVQRFLNRLSD AAHLHQCRSVARRAERSLVPLAAADEVDAGVTQYANRLSD VSRANDARTVCRRAERLAVALNEEQALPAVVLQY LNRLSD SALFQVCRTVTRRAERQUVTLNWSTKLPPELLDFVNRLSD
 A S QLHYARTVCRRAERRVVASFKVHESNENVLKFINRLSD GAAFHVARTIVRRAERCAVSLG EDVNPLVIAYLNRLSD A A Y LHLARTICRRAERMMVELAAQESVNDAAVRYMNRLSD A A Y L HLGRTMARRAERRATELAAREDVNPAAITYLNRLSD AALCHI ARTVCRRSERRADSLSEQYPVNEFVLRYLNRLSD SAALLHVCRVLTRRAERLVVSLCREQETNVEVRRYLNRLSD
 A A QA HVARTVCRRAERAVVALAGAESVNPPVRQYLNRLSD GAAFHAARTVVRRAERCAVAI GNTNPLVLSYLNRLSD SSFDHLSRTI CRRTERRVVPLYRDGQVDEAVFKYLNRLSD A ALCHVARTVCRRTESTCVRLNHAETLAPLLLQYLNRLSD SAVLHLCRAVCRRAERSVVPLVQAGQTDASVARFLNRLSD A A QL HVCRTVCRRAERAAI EVG DDLNAEVVSYLNRLSD
 A ALLHVARTVTRRAERSAWLLIEEERTNTLAAKYLNRLSD SAHLHLARTI ARRAERDCVALVAHEVVSPPVTTYLNRLSD SAALHLARTVSRRAERDMVALARVEGVSAEALQYINRLSD GAALHVARSVCRRAERRVTTLFLDDEVDEVVMRYINRLSD NTDLHVARTVCRRAERCCVRLAQAGHVDPLPVGYLNRLSD SAALLHLSRAVCRRAERRVVPLVKDGEVDANVAKYLNRLSD A ALLHVARTI ARRAERSAWSLVEADPTGTMPAKYLNRLSD A A TLH HIARTI TRRAERQMVTLSEEGDVP LVVQRYLNRLSD A ALLHTARTI ARRAERSTWALIEADPTNVLAATYLNRLSD A A QL HVATTVVRRAERSAWAAVEHDGVNPLTAKYLNRLSD

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| UniRef90-UPI00037462C2 | LLFILARTANKEAG DVLWVPGG |
| UniRef90-D0GNU6 | CLIN $\square$ L L G K P ETI Y KRSAKVFR |
| UniRef90-W6RG19 | F LFVAARHANDR GHADVLWVPGKN |
| UniRef90-M1 V042 | LLFI L $\backslash$ A R A T N L K E G DIIKWIPGG |
| UniRef90-T1EEX2 | FL F A A R Y C S Y K GVVP E |
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| UniRef90_UPI00037F43AB | WLFVASRAANQ NGAGDVLWVPGG |
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| UniRef90-J4J7Q3 | LMFVLARCI NQHAGQKDTFW |
| UniRef90_UPIO003663825 | FVAARYVNTKLAAPE |
| UniRef90_11FQN2 | FL F NAARFEAQLE GKEEVITYQRK |
| UniRef90-S6AAH2 | LL F VLT RVI NRDSGHAETTWQRR |
| UniRef90-F6V9Y7 |  |
| UniRef90_D3F2F5 | LLFILSRGAN GGEEPLWQPGQN |
| UniRef90-LODM39 |  |
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| UniRef90-E8RQK6 | LLFVLARHAN DQGRADVLWVPGK |
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| UniRef90-A0A023G480 | YLFVAAR】CSHHENAEEVI Y K |
| UniRef90_S4Y2K8 | AL FVWS RWASALLLGTPEILWEP |
| UniRef90-UPIO004421376 | YLFVLARFAAKEEGKEEKIYM |
| UniRef90-R4LZ95 | LLFILARAANGQSG DVKWVPGGK |
| UniRef90-W4F423 | YLFAAARVVNARLNVPDTEYVRSAKVFK |
| UniRef90-UPI0003B46047 | LLFILARCAN PAGDVLWQPGGSV |
| UniRef90-UPI00047D1A5F | LLFILSRYANRDAG DVL |
| UniRef90_UPI0003A6D35D | LIMFVLARVVARQSGG EVVLWQQSEK |




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 VATCHIARTVCRRGERMTTLLAEQSPVPDTVLAYLNRLSD AA QLLHLCRTVSRRAERELVELLATVESVNPEALRYLNRLSD AAQADVCRTVCRRAERRMI SFHAHDPIQPEALQYMNRLSD AAEFHILRTFTRKLERRTVALDEEEHVNETGLRYDNRLSD AARLHVCRTVCRRAERRIVTLADSGPCPEEVLRYVNRLSD a ALLHTARTVTRRAERAVWALLETDAERSNLLQYLNRLSD a A HLHLARTTVRRAERLASQLAATGDVNPAGVHYNRLSD AAFLHLARTIIRRAERNLDRLSDEDEINEVTKRYI NRASD GATLHVARTVVRRAERTV STGTDVSPNVLAYLNRLSD SAQCHVARTVARRAERRLWTLNRTDPVEPVILRFVNRLSD SSHLLQLART HARRSERRLWTLNKQDEVPESILKFINRLSD SAQAHLCRSMARTAERRCQQLNADEPLRGELLGYLNRLSD SAHLHHARTVVRRAERLISALTAAEPVNPEALKYANRLSD AALLHQACVI ARRAERSTWALAEPESTHALPATYLNRLSD AALLHTSRTVARRAERSAWAAVDANPENTSVLPYLNRLSD AAHLHMARTVVRRAERYASALEEELNNPLAVSYLNRLSD TAFLHLARTVVRRAERSAWAALEADDVNPLTAKYLNRLSD SAHLHVATTVVRRAERSTWRAL EEGGVNAVCAAYLNRLSD AARLHFARTVARRAERAVVALLEDEPVNRLVLAYLNRLSD SAALHERAVCRAERRVAPVQMGEDADAKFNRLSD SAQLHFARTVARRAERRLWTLHRQAPGNEDLLRFVNRLSD SVSLHLARTI CRRAERRLVPLLHKNMIDESVYKYMNRLSD SASLHMARAICRRTERRLVPLVSSGDVDAEVGRYDNRLSD GAALHLACTVVRRAEREAWRLAAEEPVPEAALRFLNRLSD VALMHTARVVARRAERSAWAAIEEGGVNPLTARYLNRLSD A ATLHITCRTVARRAERQVVQLLETEAYNLYVLKYLNRLSD ASYCHMVRTVSRRAERSVVALANEEEVNPLAVQYLVRLSD a ALLHI ARTI TRRAERLIVSLAEHEMVPKHSLAYINRLSD AAHLHLARTIARRAERHICALAREENVGEQTIAYINRLSD AALAHVVRTVSRRAERAMVALGAEETVAPAPRQYVNRLSD AALCHVARTVARRAERDMFHQLQSETAPQEGLKYLNRLSD SALCHVVRTQVRRGERLLVRLLKQDNVHPSTPVYVNRLSD AAHLHVARTAARRSERALDV BGANPEVVRYLNRLSD a A WA HVARTVCRRCERRLTELDEVSPDAALQVYLNRLSD DAQAHVCRSFARSAERRCQHLNAVEPLRAEGLAYVNRLSD AARCHLARTIVRRAERQTVALARLEPVRAEAI HFLNRLSD AAQSHVCRTVCRRAERRTVTLSQMTKYPAEDLEFVNRLSD STSLLQLARAICRRAERVLTDAIQKNNASKESJLYLLNLSD AALLHVARTVTRRAERSAWAVLDADPERTNVLKYLNRLSD SAQLHHARVIARRAERRLCTLHRQDPVPQLLEFINRLSD GAKLHHARAVSRRAERRAVALATDQSVNEQA QYLNRLSD SASLLVARSVCRRAERTVAPLVAGEQVDPEALKYLNRLSD
 SCHLHVARAVCRRAERRVVSUGDEDVDPVVIQYLNRLSD SALCQQSRSLCRRAERRLVELAQTEAVNPHALLGYINRLSD AAALHVCRTVCRRAERRVVALAAVQPCPQPVVKYVNRLSD AALCHLARSVCRRAERAIVALGKQENTSPVLYQYLNRLSD AAYAHHARTVCRRAERALVALALEESVNDAPRQYLNRLSD


| UniRef90 E1Z3N3 | $\square \mathrm{L} \text { T A A R Y A A } 170 \text { K A G E P E TVVWV }{ }^{180} \text { K A A }$ |
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| UniRef90＿UPI00036827CA | LLFVLGRTFNRLAGRGDVLWQR |
| UniRef90－E6TYN8 | FFFAAARAVNARENDKDIPYERGRDVFK |
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| UniRef90－M5DVD0 | LLFVLARVLARREGGQEVLWK |
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| UniRef90－H2ZMN1 | LLFTLARYAAFVEENEEVIYKK |
| UniRef90－UPI00034C51E9 | LLFILGRHVAGD GDEVLWKPGGE |
| UniRef90－UPI000401558E | LLFVMARYEMQQQNLPEERWQ |
| UniRef90－D7CS17 | L L FVLARFVNVRSQTPETPWR |
| UniRef90＿A1SHJ8 | LLFILARHANRENG DVLWVPGGE |
| UniRef90－UPI0003FDAFBC | LFILSRAAN GADEPLWQPGA |
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| UniRef90－W0VC03 | LLFVLS RVLNRFAGGSDVLWQQER |
| UniRef90＿UPI0002FDD996 | FLFVAARFINDRLGQREK |
| UniRef90＿D8U557 | F L F TAARFTAHS DGVPEVIYKK |
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| UniRef90－R6CN24 | YLFILSRKLNQLT QHDEI Y WDK S |
| UniRef90－R2PZX9 |  |
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| UniRef90－K2HFF6 | WCFCAARI AN DDGGADVLWVPGAN |
| UniRef90－K6VMU2 | LLFVLARVANLDAGG DILWQPGG |
| UniRef90－W0SHA2 | LLFVLGRWLNKAAGGGDVLWQKGRN |
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| UniRef90－UPI00037452D4 | Y FFVLGRTAARAEGGQEVVWRGSKEVF |
| UniRef90－F7Z629 | F LFVAARY\NHCLGVKDH |
| UniRef90－UPI0004001AF8 | YLFAAARVVNARAGCKDVLYRSNNDVFK |
| UniRef90＿UPI00038241BF | HLFVLSRHVNKK GS GDVLWVPGAN |
| UniRef90＿UPI00037CD157 | FLFVAARYSN RKGEADILWVPGA |
| UniRef90－A4CMU2 | Y L FVLSRSLAAATGT $\square$ EKKWI P G |
| UniRef90－F5M3V6 | WFFVAGRIANDDGRADVLWVPG |
| UniRef90－D1VYB8 | Y LYYVLARKINFQAKVTEKKWE |
| UniRef90－U2RAB0 | YFFI A ACLINVRMGVTETDYLRSEVIFK |
| UniRef90＿UPI0004217A3D | YFFAAARTANVLA GVADTEYERGARVF |
| UniRef90－UPI000371DDC2 | ARVCNPD GDVLWKPG |
| UniRef90－E3EZF4 | WLIF TAARIAN DNGAADILWVPGA |
| UniRef90＿U2XTI4 | LLFVA GRVANN NGSADVLWQPGA |
| UniRef90－M3F910 | FLIFVAARLVNQRLGRV |
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| UniRef90－K2GQB1 | L L F V A R P V N H T LE GTE |
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| UniRef90－K5Z1W5 | RAANG】 GGADTLWVPAA |
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| UniRef90－C3ZV64 | FLIFTLA RFAAMTENKEEKIYRRVK |
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| UniRef90－V6F6L2 | HLFVMARWL N EKGASDV |
| UniRef90－R7WVM4 | LMFVLARVLNRAGGGTDVLWQRDR |
| UniRef90－D5CMF3 | L LFVVLCRVLNRSAGQAETLWQR |
| UniRef90－B3EJR8 | LFFALARAEMAGAGVEEERWNS |
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| UniRef90－E8REI1 | Y L FVVARYLNQLLGGTADKTWKK |
| UniRef90－A4XQT7 | LLFVAARLIARRQGVNEVLWK |
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| UniRef90－F8KXV2 | FLFVAAR\｜VNFISDNPETIWLSK |
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| UniRef90－E5CEP6 | LFFVMARYEMYRQHWTEEKWK |
| UniRef90－E4NNZ3 | ALFVFARLVNQRDGVPE |
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| UniRef90－C1BNT1 | FLFTISRFAARLDKMEETDYQPGEE |
| UniRef90－D5EV18 | YLFVLAKK】NFNANQSEIVWQN |
| UniRef90－F5SLW7 | WL FVLSRYCAKVEGSKEVLWDKT |
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| UniRef90－UPI00036DAF9E | LLFVCARVLARRDGGQEVYWQARNK |
| UniRef90＿UPI00047D159B | YFFAAARAANALLGTQDVEYERGA\｜VFR |
| UniRef90－C3XC56 | LFFVYARVANQLANQSDI FWK |
| UniRef90－C4ZPD0 | L LFVLGRVLNRAGGRGDVLWQK |
| UniRef90－R2RIX6 | YFFALARWVNGQAEQPEILYENSVSVF |
| UniRef90＿UPI000317E99B | LLFFLIA RVAN DEGRADVVWVVPGQN |

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UniRef90_UP100037FE203 UniRef90-D7GDG5 UniRef90-R5XNC0 UniRef90-7PHS2 UniRef90-GOLKU5 UniRef90-S8GRY4 UniRef90-B3QW08 UniRef90-UPOOOO37B1640 UniRef90-FOF743 UniRef90-UPIO003AD5EDA UniRef90-G2IM34
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TTRI| $k$ |
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K 1 Y

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$M R L Y T$
$M R 1$
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 $R V I T R T G D K G D T G L A D G S R V S K A H P R I V A L G E L D E L N S A$ KVIYTKTGDQGQTAlLIDNKRIVKHHPMVEMIGQIDDGNAS

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UniRef90-Q0FD63 UniRef90_K7RTK8
UniRef90_U7FS13


SEYA|L|R|IVQSQDDK|V|EAD|L|DA|L|NED|L|AP|L|NSF|VL|PGGSAA HSLLDEAlVAELEEKIDDRNAELPPLKNFILPGGSBA
$\qquad$


K
G
P E
P
P

L | $P$ | $K$ | $E$ | $A$ | $R$ | $M$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $P$ | $V$ | $A$ |  |  |  |
| $L$ | $R$ | $E$ | $A$ | $S$ | $R$ |
|  | $L$ | $C$ | $P$ |  |  |
| $D$ | $K$ | $Q L$ | $P$ | $T$ | $I$ | DEDDPQ\|RD GEMTLRI VPA QVVE R L A D E P WR I I A S QV E R L E K H I D


 P E Y P P R VT D E QV S QLE
 $\begin{array}{llll}D & R & N & N\end{array}$ S K L P S V D GVVY NKKIT R T E Q S D V V D L L E

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

T Y L K E V I T




## DEDDPALQEAQLAML

 DEDDPA RPAGVETVEDWI
KEVPWP

\section*{| D Y E P P L |
| :--- |
| E Y S $L$ R |}

E Y P P L R I $\begin{array}{llllllll}S & D & A & Q & V & G & R & L \\ A & Q & S & Q & V & D & R & L\end{array}$ D E D D P Q M
 F R I E S R V T P

E GVV L R 1


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UniRef90 10 AHP8 UniRef90-UPIOO047145D6 UniRef90-F7NDX4
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UniRef90 V9TR41 UniRef90-R7NSX2 UniRef90-W2C1N1 UniRef90-UP10003B46C9B UniRef90-UP1000376D44E UniRef90_-Q8XLV6 UniRef90_UPIo004161B04 UniRef90-WOK4F1 UniRef90_UPI000470B6C2 UniRef90-A0A017SZR5 UniRef90-UPIO00379F53C UniRet90-F4KN19 UniRef90-U1QVN4 UniRef90-UPIOOO393F433 UniRef90-T1B8G0 UniRef90-G2MLU5 UniRef90-C5CW19 UniRef90_UPIO0037FE203 UniRef90-D7GDG5 UniRef90-F7PHS2 UniRef90-HOJGT9 UniRef90-GOLKU5 UniRef90-B3QW08 UniRef90-UPIO0037B1640 UniRef90-UPIO00370BCB9 UniRef90-FOF743 UniRef90-UPIO003AD5EDA UniRef90-G2IM34 UniRef90-E31437
UniRef90
G8ARQ3 UniRef90 UPIOOO2FE2684 Unireigo-_OWEJ6
UniRei90_A5WEXO UniRef90-Q0FD63 UniRef90-K7RTK8 UniRef90-U7FS13 UniRef90_UPI00037A7331

SAFlLHQARTV ${ }^{130}$
150
160
SAF HQARTVARRAERNIV|AMQDVDA|V|NPMA|V|KY|I|NR|LSD N A RLH L A R A I C R R A ERTVI TF NQSEDHPHLA QTY L NRLS D

 A A QAHVARTVCRRAERSVVALAEQHPVNATVLQFLNRLSD
 A A QA HLARTVARRAEREFVQLSAREALNPVALRYLNRMSD SALLHVARTVTRRAERSAWAAIDAHPDDTSALLPYLNRLSD SASFHVARTVGRRAERRAVELQQVQAVQPAALKFLNRLSD
 SA HLLHLARTVARRAERDTDRLVEAGAVTPEADRYLNRLSD A A QA H I CRTVVCRRAERRDCQVVAQEVLVDENDMRFINRLSD A S QLLHVCRTLARQDERNAVHFAADDEVPEVVLQFFNRLSD A A I A HVVRTI CRRTERSMVRLHGTEPLSDAARRFINRLSD GAKLHHARAVSRRAERRVVALAGEESVNESVVAYLNRLSD

 A A ALHVARATVRRAERSGVTAARAVSINPLALAYLNRLSD VA QCHVARTVCRRAERRVVQMAEESDVAPWIIQYLNRLSD
 LGRTVARRAERSVVALARMAVVVNDAALRYLNRLS D
 SAHLLQVARVTARRAERRLCTLHRNDPLPPLVLSFVNRLSD ASVAHI CRTICRRAERRI CELLASQGFVDSNLLCFMNRLSD


 TSAAHI CRVVARRAERCIVRVVDEGEVEDGVLKFVNRLSD

 SAHLHLARAI TRRAERAAVALAEQEAINPPALAYLNRLS D A VFLH QCRSVVCRRAERVTVPLVEAEVTEQSVVKYLNRLSD A SLL HVVARTVA R R A E R S C WA L L E A E P T N P L L P A R Y



 A A C L H H A R S V C R R A E R SVVV L S R R Q A V S S EVVNMYVVRRLS D


 SASSLHVARTVCRRVERELVEI EAA TRQLPYBNRLSD V T H L H H A R T I V V R R A E R L A $\operatorname{V}$ V G L SAHLLHLARTLARRAERADTRLLSRREPVSPAALQYVNRLSD
 A A LA H L ARTVVCRRAERHVVHLSRSETVVD FARKYLNRLSD SAHLHVCRTVARRAERLTTELAGAEDVNAAALIVLNRLSD GARI HHARTVVRRAERRTVRLASGQEINEEVLRYLNRLSD A A Y L Q L A R TIIARRAERE TILLIA SVVETINGEVIGKMNRLS D A AVCHIVCRTVCRRAERRI LDALAGECEIEARVTAFVNRLSD
 A T H L H L A R T I V R R A E R D A AVA A G DE I S A PARBY L N R L S D S S H L H W A R T V V R K S E R R M WT L N N E E D E L P E M V L K F V V N R L S


 NTDLHLARTV CRRAERLCVALHRQEAGDTYPVGYLNRLSD
 A A L CHVCRTV CRRAERNI Y RLREESRVDDLIVVRFVNRLSD GS QLIH Y A R S V C R R A E R R V VA I P D D E Y V N E T A L S Y L N R L S D
 A S A L H H DA R T V GARLH QARAVTRRAERRAVALLEHE EANAAAVHYLNRLSD AS LAHVCRTVARRAERAVVALGATAELNDALRQYLNRLSD
 A A QL HVAR STCRRAE RAA WEAVEA G GVVSLIAVVKYLNRLS D
 A SVLH HARTV CRRAERRAVGLAETGAVRESPLVYLNRLSD
 GAKLLH HARAV CRRAERRAVSSFSEVE DMNNVAVTYLNRLSD A AVCHVCRTVCRRAERRILSLGERFEVDARLTAFMNRLSD

 A A RA HI CRTTVARRAERYVVRV A EK F P V A DEVVLIFLNRLS D A A Q CHVCRTV CRRAERRMVALSAHHDVPEVVLPFMNRLSD A A LLLHVARTVTRRRAERSAWAADEEGGVNPLVATYYLNRLSD A A RVVHLA R A I A R R A ER VVLLTASRAMA I NPAARLY L N R L S D SALFHLARTVTRRTEREVVKLQQTEAVEPRCLLYLNRLSD
 A A H L H L A R TVVVR R A ER L MTEELAEVEPVNPAAVKYANRLS D A A AVVLARAI ARRAERTLVSASHDGSINPSARIYVNRLSD A A WCHHCRTLARRCERQLLMLNDSDAVNP DS LALLNRAS D

 GA QL HVVCRTAVRTAERAAWRALETGGVNEDAITYLNRLSD


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| :---: | :---: |
| UniRef90-A4BER0 | FLFVLSRFVLKLQGGDEVLWQ |
| UniRef90-UPI00046AEB95 | YFFILSRYLVNNGNDSEKI WE |
| UniRef90-UPI00046FDBA4 | LLFVAARAMN RNGAGDVLWVPGA |
| UniRef90-A2SP27 | LL FVLA R LVNRVAGGVDEQWNRSR |
| UniRef90-A3UF39 | YLFVAARIAN EAGARDVKWlPGAN |
| UniRef90-UPI00030DB478 | HLFVMARHLN ENGARDVLWIPGQN |
| UniRef90-V8D0X4 | LLFILSRVAN PGGDVLWQPGEQRTR |
| UniRef90-A9V6S9 | YLFTLARVACHRQGEEELV |
| UniRef90-Q2N5W4 | LLFVLARVAN DDGKTDVNWVPGAN |
| UniRef90-UPI00047EA1AA | LLFILGRVANAEHG DVLWKPGGE |
| UniRef90-D9QHS1 | HLFVAARRANANGAGDVKWVPG |
| UniRef90-R5F477 |  |
| UniRef90-T0R9B8 | YFFVVARYANFQEGDAETIWQGKK |
| UniRef90-Q47AT4 | LLFILGRALNRAGGRGDVLWQKGKN |
| UniRef90-M0H100 | ALFVYARLLVNARDGVPE |
| UniRef90-UPI00036AB9F | FLFVACRAVNDSMGG DVLWVAGGN |
| UniRef90-UPI0002EA86DD | LL FVLARRVNDNGATDIVWVPGG |
| UniRef90-UPI00026CD06B | YLFVAARAVNQNAGG DV $\quad$ ¢ WRPGA |
| UniRef90-UPI000255D3E3 | YFFVLSRYLAKCHDNEEIRWHPK |
| UniRef90-C6VU84 | LFFTLARAEMDKAGVAEEKWQ |
| UniRef90-V5XAE4 | LLFILARVEN PGGDVLWQPGGE |
| UniRef90-K0MQ17 | LLFVLARHVNQAQGARDVYWASR |
| UniRef90-S0EZ53 | L LFVLARIVANQREGHADIPWURRE |
| UniRef90-W4PFY2 | LFFVMARYEMYSRQWPEEKWRR |
| UniRef90-R514P1 |  |
| UniRef90-C9MRL0 | Y FFILLSRYLNTKSDNSEKT WEN |
| UniRef90-T0CJ91 | A LFMMARAVNVRTGAVE |
| UniRef90-IOAHP8 | FFVLSRYENKVSNQPDTVWNPR |
| UniRef90-UPIO0047145D6 | YFFILARNLARMESGEE】TWD |
| UniRef90-F7NDX4 | LCFIL FRVE |
| UniRef90-E4NH20 | LFILARTANKERG DVLWVPGAN |
| UniRef90-F3WYX4 | WL F VAA RMVNQ S GAS DVLWVPGG |
| UniRef90-U9UQD1 | FFFVAARYAAMFEKHDENYYEQRRD |
| UniRef90-D3DD53 | L L F I L S RVAN |
| UniRef90-UPI00028982C4 |  |
| UniRef90_UPI000465356B | WFFVAARVANN GGKDDVLW\PGAN |
| UniRef90-B2V3H1 |  |
| UniRef90-U2KLB7 | YFFILSRYLNYDSGTGEKTWKNT |
| UniRef90_UPI0004792744 |  |
| UniRef90-A8JFX7 | Y LFTAARHAAMTQGAVEKVYQKAR |
| UniRef90-J1K0Q2 | FLFVAARHANNK GHDDVLWVPGKN |
| UniRef90_UPI00036183BF | VLELLSRHLNVAAAVPDVLWLPRR |
| UniRef90-I7BU51 | GLFTFARVVNARDGEP |
| UniRef90-K2NLW0 | FLFVAARAVN DNGADDVLWVPGQN |
| UniRef90_UPI000417718E | YLFTAARYANVKA GVPDQEYARGADVFK |
| UniRef90_UPI00030FA623 | LLFVAARY |
| UniRef90-K2J5H2 | HLFFVLGRFLN DKGAGDVLWDPGA |
| UniRef90_E1X151 | FFFII SRFANKVMKCEEVWWIPGK |
| UniRef90-A0A011NLT2 | LLFFVLGRALNRAAGCGDVLWVQGK |
| UniRef90-Q1GDV6 | WFFVASRVAN EHGAKDVLWVPGAN |
| UniRef90_V4XWF1 | LLFTVARLVNARAGNI |
| UniRef90-V9TR41 | HLEVLARWVN DKGATDVLWT P GAN |
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| UniRef90-W2C1N1 | LLFVI GRNECVRRGDDEI ITWDSKEGV |
| UniRef90_UPI0003B46C9B | L L FVLARVENAATG DVLWVPGAN |
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| UniRef90-Q8XLV6 | L A ALA R Y |
| UniRef90-UPI0004161B04 | Y L F VLS R R DN F LiEKKDEDF W |
| UniRef90-W0K4F1 | ALFVFARLANKEAGVRE |
| UniRef90_UPI000470B6C2 | LMFVLARYLNQAAGHPDVHWSSR |
| UniRef90-A0A017SZR5 | ALFVWS R WAS FLLGAPEV |
| UniRef90_UPI000379F53C | WLFVASRAANENGKSDI K WKPGEN |
| UniRef90-F4KN19 | Y FFVLARTEAVRTHGSEVTWNRG |
| UniRef90 U1QVN4 | VLFTFARLLVNSREG |
| UniRef90-UPI000393F433 | YLFTVARYVSMKEGSEEK】YKR |
| UniRef90-T1B8G0 | LL F ALA L Y ANHRLGIP E E |
| UniRef90_G2MLU5 | YLFTAARLVNQRDG |
| UniRef90-C5CW19 |  |
| UniRef90-UPI00037FE203 | LLFVLCRVLN ENGLKDVLWIPG |
| UniRef90-D7GDG5 | LL F NL SRHANYEAEHDEVLWVPDGE |
| UniRef90-R5XNC0 | FL Y 1 L A R Y |
| UniRef90-F7PHS2 | LLFVLARTLNHRAGVEEP |
| UniRef90-H0JGT9 | LLEVAARIVARRQGVSEVLWQAAR |
| UniRef90-G0LKU5 | LLFTLARVTNQRDDVAE |
| UniRef90-S8GRY4 | YFFVLSRKLNLLS GEEEK |
| UniRef90-B3QW08 | LFFVLARAEMATAGMEEERW |
| UniRef90-UPI00037B1640 | LFFTLARAEMDKQGVVEEKWKP |
| UniRef90_UPI000370BCB9 | YFFVFARYESNKTS EE $\mathrm{V}^{\text {F W W Q G }}$ |
| UniRef90-F0F743 | YFFVLSRYLNDHGGDGEKTW |
| UniRef90_UPI0003AD5EDA | LLFILCRVANAEHG DILIWKPGGE |
| UniRef90-G2IM34 | LLFVLARALNG NGAGDILWVPGA |
| UniRef90-UPI00035FBCBA | LFFVWARLCN DEGRDDLLWKR |
| UniRef90-E31437 | HLFVASRFVNGK GANDFLWKPHA |
| UniRef90-G8ARQ3 | HLFVLSRKLN ANGTADVLWVPGAN |
| UniRef90-UPI0002FE2684 | FLIVVLARRIN N ( GDDPLWVPGA |
| UniRef90-LOWEJ6 | LL F V MARLL NQRHEQPELLWQSRAE |
| UniRef90-A5WEX0 | WLFVLDS R Y C A L E Q Q EVLWDK |
| UniRef90-Q0FD63 | WFFVAGRVANN NGADDILWVPGAN |
| UniRef90-K7RTK8 | LLFI LS RVANRAEGDDEVLWLPGGE |
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| UniRef90_UPI00037A7331 |  |



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UniRef90 ${ }^{\text {C7RCM3 }}$ UniRef90_C6PQJ5 UniRef90-A5VMA2

 | 160 |
| :--- |
| $D$ |

 A A SLLHLARTITRRAERLLVALAANEHVGEPALKYVNRLSD SAACHLARAI CRRAERHLVALHQEEKI APEILCYI NRLSD
 IA ELLHLARTIARRAERTMVRLREANNLNPHGLHYINRLSD AA A CHVARAVTRRVERRLWELNEREPLNPFTPRYANRLSD SAA LDVARTVCRRAERKVVELMEGEDVGEAALKY LNRLSD A A HCHLARAVCRRAERQLIELSDAQHCFAQPI KYLNRLSD AAHAHLARTVARRAERRVMSLTRTEAVDGEDI RYLNRLSD AAFAHMARTVCRRVERVVLSLCRQEEPMKNILVFLNRLSD A A A LHVARTVARRAERDVI RLDQEEEANMHVQVYLNRVSD A S Y V HVARSVCRRAERTVVRLTRNHDHYADIVKYLNRLSD GAHLHQARAVCRRAERHLVTLYDGDASASLALRYLNRLAD A A ESHDCRTVTRRAERSMVAMSHQYRVDPLAMQYVNRLSD SAQDHVARTVCRRAERRMVPLVRDESCDPAALSYVNRLSD A GHFHLARTVTRRAEREVTELIEETETNQMSYKLI NRLSD PASLHWARTVCRRTERTVLRLQEEEPLEPLFVVYLNRLSD SASLHMARTVCRRAERRIITTLKREESLRDEVTKYINRLSD
 AS RLHFARTLARRAERRLVELSADI AVRHVLMRYINRLSD A AALHVARATVRRAERTAVGAARHVALNPLALAYLNRLSD TA HTHIARTLCRDSERTLI RLNEDNNVSHETRQYINRLSD VALMHQARVVARRAERSAWAA EEEGGI NVRTAKYLNRLSD

 ATFCHLARAVCRRAERQLITLSHSRNLSEPLVAYMNRLSD A A QLHVCRTVARRAERLVSGI EDEHEVAPQALPY YN RLLSD ASHLHMARSVARRTERRIVELDQDEELRPQVLAYI NRLSD GARLHHARTVTRRAERRVVELARSEPINEMTVTYGNRLSD
 A A NLHLARTI CRRAERLMVELAENE IVVSPEALKYVNRLSD SAYLHLACTI TRRAERSTWAAIEAGGVNPLTAKYLNRLSD
 TSQVHIARCYCRDAERLLVALSRDDNVSPISGQFINRLSD AS LLAHVCRTVARRAERSVVALGAREPIRAAARQYLNRLSD
 SANLHLSRAI DRRAERQ】VELTKTAPIRSELI QYVNRLSD ASMLHACRTVCRRAERRMVALARTGQCPEEALRYINRLSD
 GAALHHARSVTRRAERRAVELANNEPISGEALAYLNRLSD A AFLHQARAVCRRCERKVQPMVESGDVEKSVGMYLNRLSD SSALHFCRAVCRRAERRVVPLVQMGETDANVAKFLNRLSD A AHLHLARTVCRRAERLVTALMEEEKVSEAALRYLNRLSD
 A A ALLDLARTTARRGERQAI KLSKQEDVNEQVLDALNRLSD A A QA HVCRAVCRRAERSVISLSKHYDVPEVVHAYLNRLSD GARLHHARAVCRRAERRAVALAEAEPVNEHALVYLNRLSD GAHLHLCRSVCRRAERLIDHLNDEVTIRPDVLKYVNRLSD GASLQMCRSI CRRAERSVVPLVERDEVDSAVQRYLNRLSD GA QL HVARAVCRRGERLLTDLSEATDI REDLRKFVNRLSD
 SAALHRARTVTRRAERRMLTAAESRPVRPELI RYVNRLSD A A Q A HVCRTVCRRAERLITGLETGKSI HPETLAYMNRLSD A A LDAHVARTVCRRAERSVIALETAEAVNEPLKQYLNRLSD
 GAQLHVCRTVCRRAERQLVSFMKVNPVRPETERYVNRLSD AALLHTARVITRRAERAAWAACREFPETTSVLPYLNRLSD AALI HTARVVCRRAERAAWAAVREDTTSALPAQYLNRLSD AAAAHVARTVSRRAERSLWSLADEDGGSRVGCLYLNRLSD AAAAHQARAVCRRAERTIAALSAADGTRPTLQAYINRLSD AAECHDARTVCRRAERSC!ALMSESRDEP GURYLNRLSD A A F THLAARTAARRAETLVVILEEEKEKIVNPWCRDYL NRLAD
 ASLMHILRTVARRCEREIVELMSFENINENCLIYMNRLSD A A WA HMVRTI ARRAERRLVTLHAVQSQNTVSLAYLNRLSD A A H L H LCRTVARRAERAATAL AETEDANPAAVKYLNRLSD A A ALDIARTTTRRAERCLLRLAENEPVNPNVLVCLNRLSD VARCHVVRSIARRAERRLISLTHEDNVNHNSLVYLNRLSD AS GLHMARTVCRRAERAMVALSGEEAVGAPALSYINRLSD A A WA HLARTQARAAERRMVALAEKETINPVLLQDMNRLSD SANLQLARAVARRAERRLWTLNKQDEVPAAVMRFINRLSD VSQLHVARSVCRRAERQAVILQQQRPI RRTAVSFINRLSD A A HFHVARTVVRRAERK VVTLAREENI DPLIQQKYVNRLS D
 AA LLHQARTVARRAERTTWGALEVHGMNPLTVKYLNRLSD A SVAHDCRTVARRTERVIYQLLDADPGEAGVKNFINRLSD



|  | $\mathrm{inc}_{\mathrm{N}}^{170} \text { DNGRADVLW } 18$ |
| :---: | :---: |
| UniRef90-UPIO0036C5BFO | LIIACRVA HAGQEILWKPGG |
| UniRet90-UPI000407391F |  |
| UniRef90-B8EML6 | FLFVAARYVN RKGDGD |
| UniRef90-K2AVYO | VLFVAARMLAKEEND |
| UniRef90-UPIO0039EBF52 | LLFVaARRAN DDGASDVTW |
| UniRet90-F8EW81 | YLFVTARRVATHHGG D LWQPGG |
| UniRef90 $17 Z 1 \mathrm{I} 9$ | YLFVAARTLARLDGGQEVTWNK |
| UniRef90-BOSX18 | LLFVASRRAN DDGAADVLWK |
| UniRet90-S6GJ4 | YLFVAARYLNWQSKTAETLWQ |
| UniRef90-Q0 | LLFLAARLNA GADIL |
|  |  |
| UniRef90_UPI0003B5C8EC | AMARAANHAAG |
| UniRef90-K2BY88 | VYa RVIN KKNRDK ELS W |
| UniRef90 A $37 Z 288$ | VLARWSNQL GHHE |
| UniRet90 R6EX05 | S |
| UniRef90_B5YN54 | D |
| UniRef90-16T0L1 | R |
| UniRef90_FOSGY4 | R |
| UniRef90-UPIO004187EAF | M ${ }^{\text {a }}$ |
| UniRef90-A0A023BU64 | Mar |
| UniRe90-M1zJ7 |  |
| UniRef90-A0A023VF82 | Clyalara edhoahondio wrpa |
| UniRef90-UP10002883734 | VAARVNQNAGG DVL |
| UniRet90_UP100035CDF20 | FLGVGARVARADNGAEVGWO |
| UniRef90-UPIO002630D9D | FLFVAARHLNQ NGSDDV |
| UniRef90-J3JAY8 | ARVANFRNNVSDVYYENGNEVFK |
| UniRef90 UPIIOOO380CA96 | V GR |
| UniRei90-G4E2D3 | LLFUCARSATAQGHAERMWHSAR |
| UniRet90_UP10004144906 | RAGRSDVLYKRGGNEFK |
| UniRef90_HOAFC4 | LFFLMARHENFLIED |
| UniRet90_B9LSH8 | VA NAR |
| UniRet90-E8U8D9 | MARAANARAGIRE |
| UniRef90-F3ZQV6 | FFFVLSRKLNLETGQAETYW |
| UniRef90-W8FP93 | FLFVAARFAN DMGKADL ${ }^{\text {L }}$ WV |
| UniRef90-K6W8z9 | LLFl Larvan |
| UniRef90 UP10003724940 | VIYAIARY NES |
| UniRee90-w9G7 | LLFLARVANKPIGG DiLWQPGG |
| UniRef90_C8PZJ5 | WLFVLARVVARLDDGQEVLWDK |
| UniRef90- M5CJj67 | V ${ }^{\text {a }}$ |
| UniRef90-A5VAZ1 | HLFVLARWLN RAGAGDLLWKPGA |
| UniRef90-UPIO00316A31F | MLARAEVHYHQL |
| UniRe990 UPIOOO368DF4C | YFFAAARAANARLGVRDAEYERGARVFR |
| UniRet90-E4XQ21 |  |
| UniRef90-C1D7G6 | MLFVLARYLNHRSGRPDVLIWTPGRD |
| UniRef90 U1P8S88 | VLFTFARLVNARDGVPEVSYKK |
| UniRef90 CobGS | WK |
| G7Pas | theramele |
| UniRef90-G7167 | 俍 |
| UniRef90-EOI6F3 | YFFAAARSANAALGEADTEYVRSAEVFR |
| UniRef9 |  |
| UniRef90 F2G9C3 | FTFARFLNIEAGVDEVP |
| UniRef90_MOLTJ8 | FTLARVVNQRDG |
| UniRef90-UPIO002492D66 | $A R Y V D Q D$ |
| UniRer90-D8M414 |  |
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| UniRef90_K91DK8 | FYLLARYEDYLLAKVTEEVIKRYRAYF |
| UniRef90_UP1000479B1E0 | A Y A MARYLE SDLK YVE |
| UniRef90-D7GD27 | ALYSVLSRHLNMRSNVAE |
| UniRef90-UPIOOO308C80D | ARALNRAARQPDVL |
| UniRef90-31YMB1 | AARYENAVNEKADIVYLRSAHVFK |
| UniRef90-H1L145 |  |
| UniRet90-E2MZ37 | SRVANA GNDVKWVP |
| UniRef90_U3GZW1 | LLF VGRVENLDANGEDVRW |
| UniRef90 UPIO004671E38 |  |
| UniRet90-K1XQA8 | YLFVYARYLAMTNGDSDDFW |
| UniRef90-A0RU57 | LFVMAR\RNSQQDCPDVP |
| UniRef90-UPIO001D2E1FE | FLFVAARYANREKG DVLWTPGA |
| UniRef90-A0A038H9L9 | MFVLSRVLNRVDGGADVLWDSPR |
|  | Lf VARALNQRHTHPET w |
| UniRef90-S5Y801 | WMFVAGR ITAN DGHDDVLWVPGG |
| UniRef90-E8LFB3 | LCF |
| UniRef90-F3KGT6 | LCFiVSRWLSDQTEQGEV |
| UniRef90 UPIOOO464682D UniRef90 C7JN2 | YLFVAARHAN DDGRFDL WEPGK |
| UniRef90_C7JEN2 | ARHFN A |
| UniRef90-X0Q |  |
| UniRef90-UPI0003A9B146 | $\checkmark$ |
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| UniRet90_UPIIOOO37D2758 | ARHANRE VGDV |
| UniRef90-R5FVN1 | NGEVTWKRFRD |
| UniR | LLEF |
| UniRef90-A5VMA2 | F |
| UniRet90-G2G2AOO | LLFlV LARY面EQE |





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UniRef90 I3YPX0 UniRef90-I3YPX0
UniRef90-H9UAG6 UniRef90_H9UAG6
UniRef9O-F2USG0

SAALLHAARTVAR
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150
160
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 AALLHVCRTVCRRAERRIVTLAGAGPVNSDVIAYVNRLSD A A HTHVARTTIRRAERRVVALSLEEEVNPNVLTYLNRLAD A GHLHLARAIARRAERSMVAAHHAHGINPEAMRYINRLSD A AFLDVARAVVRRAERSMWRLSETEEVHESGMRYLNRLSD A A WL HLARTIVRRAERTAWAAAAVGGVNVEAITYLNRLSD A ARVHVARASARAAERRATALAATDAVNPAALGYLNRLSD GAHLHLARTVCRRAERLLTKI SEDDTFRPQVLQYANRLSD A A WA HLTRTQVRRAERRMVALSRQERVNPVLLK ILLNRLSD A A Q A HLARTVIRRAERRMI SLERMTPLAPGIPACLNRLSD AA QAHVCRTVARRAERTLVRLREQEPAPSLALRLLNRLSD SAADHVARTIVRRAERHVVALAEHEPVREVLARYINRLSD VCSCHMARTI CRRAERTIVLFNRNEQKPHLI AQYI NRLSD AAADHLARAIVRRAERSVVTMGSEAATQALAYLNRLSD A A QAHI CRTVTRRAERTIVSVAQQQNVPDICI QYLNRLSD A A QAHVCRTVARRAERTLVSLIDKHPVPPVCLTYLNRVSD SAHTHMARAI CRRAERSLVKLSKERSINPFALKYLNRLSD A A QADVCRTVCRRAERAUWRLG DEALDHETMVY NRESD A A A LDLARTVTRRAERQTLRFKEAETVTEALLISLNRLSD GTALYQATTVCRRAERETYRLNQEEPVARPVLMFVNRLSD SSALLHVARTVVRRAERCVVKLKRTEDVRPEVVKYI NRLSD AAHAHLVRTLARRAERVVVALAAAEAVNPVAVRYLNRLSD ATSGYI ATTVCRRAEREI WALNKLEKVPHAVLTFMNRLSD SAFAHVARTVCRRAERRLFSLTQLERSAPELLSYLNRLSD AAHAHLARTVARRAERRVAVL QEEQVPAETGRFLNRLSD SSQCHLVRTAVRRAERRLISLKKADPVDPYMLVYVNRLSD GAALDFARTVTRRAERRTLELAASEQINKNVLLVLNRLSD ASRMHFARTVARRAERRLVEETMETTVRNVLLBYVNRLSD GAQLHVCRTADRTTETLNNTEDMPGGVNELAITYLNRLSD GAFLHSARTIARRAERLLVRFAEQTSVRKELLQFVNRLSD GAQLHDTRAVGRRTERRFWTAFQHDQI EALVGQYLNRLGD SAVLHRARTVVRRAERRVLTAAEHEPI RPEIVTYGNRLSD SAKLDICRTVARRAERRIVSLCKTEEI ANELLKYMNRLSD SAEI QLARTVARRAERRLWTLDRLDPLPEGLI PWVNRMSD
 AAQAHVCRTVARRAERVLVALVTVVERESPLQRYLNRLSD NA QANVARTVCRRLERLLVQRQDTYPVAPVI LAYI NRLSD SAHLDYARAVCRRAERSVVPLVRAEEADPQAMKFLNRMSD AGHAHLARTVVRRAERRLATLARQED DGAD DPACMNRLSD AALLDVARTVARRAERAAWALITHDPDRTSTLPYLNRLSD A A QTHVARTVARRAERELVSLNKQHEDADNVLQYINRLSD SAVLIVAKTWRWSKERSNVPLVQTGETDANVVKFLNRLSD ASLIAHVCRTVARRAERAVVALEGQESLKDTPRQYLNRLSD A A WAHMARASIRRAERDVVALSRSVEINSALVSILNRLSD A AYLHVARTVARRAERAAWAAADAHPETTSVLPYLNRLSD S S F L HLA RTVCRRSERSVVKLLKRNRAKDVGVKY K NRLSS IARRAERRVSVSKHYAV
 ACALHDCRTEARKAERRVNDDRETAI PAELGVYMNRLSD AS RLLHFARTLARRAERRLVELAAEVNVRQVLMRYDNRLSD

 A AFLHLARTVCRRAERRIVSLQGQAYVDPNVVKFVNRLAD A AHLHHARTVARRAERLI AELNATSEADTLGLRYVNRLSD AALAQKTRAVCRRVERCLVSLGQAYQQMPAATKYVNRLSD SALLHTARVKARRAERAAWAAIAEETMSVLPAKYLNRLSD SAALHFSRAVCRRAERCVVPLVQAGEADTNVAKYLNR
ASQSHICRSVSRRSERALVALNNEEPISDLSMQLVNRLSD SAYLHVARTITRRAERALWRVLDAGEVHESNLKYLNRLSD SSSIHI ARSVCRRAERRVSTLVHDNEVDDVVMRYLNRLSD A ALSHVARAVARRAERSVVALAAEEGVSPRLQQYLNRLSD GA GLLQYARTLARQAERAVVKLAEDQQLEPAVLTYLNRLSD GASLHVARTI CRRAERQAWAAAGDVESYALILKYINRLSD SAYTHVARTVCRRAERVLVDLNQQQKLPEDLLLYMNRLSD ■AVTHVSRTVCRKAERKLVHASRDFTFACSAQAYLNRLSD GAFLDNARAVVRRAERAGWAAVHEGEDNEQVLAY NRLSS
 SSFLHVARTLARRLERELVRYKEEGEI FPENLRFLNRLSD ASQAHVCRTVCRRAERAIVTGGKAETIHEHPRQYVNRLSD SALLLHVCRTVCRRAERRVVTLAAEHPANPEVQKYLNRLSD A C A L H R CRT DARKAERKI NSVVAN VVSQALQRFFNRLSDD SAQLQYSRAICRRAERSIVPLMRDEDVDPMALKFLNRMSD ASFLHLSRAVCRRAERSVVKLYTQGKAKEVHVKYLNRLSS AADCHIARTVCRRAERRLVALNHHEALRPGSLAY NRLSD LAQSHIARVTARRAERNLWALVAEDASTEPVAVYLNRLSD A ALLYMARCVVRRAERAVWLSIEAHPVNPLTAVYLNRLS S SSWA SLLARTI TRRAERRIVSSLDQTRLAGAAAAFLNRLSD SSFTNLARTICRRAERSVVSIGKDGKANENHVKYLNRLST SASLLHVARSICRKAERVVCPLVKDEKLDKEALVYKNRLSD SAMLDLARTVAREAERRAWTLARRGSVAEVDLQYLNRISD
 VSMCHVCRTV CRRAERAALRADEKYGTDAEALMFLNRLSD SAYGDVCRTI ARRAERLVVRLSEQEQVRPEUI KYLNRLSD A A HMHLARCVCRRAERALVGLRRQGGACSAAALKF NRESD

| UniRef90 G9AAK3 |  |
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| UniRef90 J3ES90 | FMYI L A RAEDHYAQQQ |
| UniRef90-D8LH13 | LLIFAAARYASVVDGKPERPWK |
| UniRef90-F2IB59 | YLFVLSRKLAHELNADETPWKPR |
| UniRef90-UPIO0038216A4 | YFFAAARAANAMLQVEDVAYERSADVFR |
| UniRef90-UPI00047DA257 |  |
| UniRef90-UPI0003B3A308 | Y LIF TAARAANVASGTGDVLWKPGA |
| UniRef90-R5SM17 | LCFTLSRYE |
| UniRef90_UPI00037967F0 | LLFILARVAGQEAG EVLWVPGAD |
| UniRef90_A0A031JYZ2 | YLFVLARAVN R D GADDVLWVPGQN |
| UniRef90_UPI0002FFD69D | FLY ${ }^{\text {L }}$ L A R |
| UniRef90-UPI000472F5F5 | YFFVLARHFNH DGQSDVVWQP |
| UniRef90-D5QGZ2 | YFFVLGRHLN ADGRDDIAWMPG |
| UniRef90_UPI000476B267 | LLFVLARVLN EPGAEVYWDHQRDPQR |
| UniRef90_G9YVP6 | AVYALA R |
| UniRef90-UPI00029A71CE | LLFVLCRFFSNFYGCEEVYWESR |
| UniRef90-UPI00036F1675 | WLFVATRVVNG AGEGDVLWKPGA |
| UniRef90-G4QLC4 | Y F F VAARALNFRSKDAD |
| UniRef90-UPI0004049703 | Y F Y V LARYL NHAQNVPD |
| UniRef90-E7C2U9 | AFFVIARLLARESSENETLWKHER |
| UniRef90-G5GD14 | FFFLFARYLNKFMGSEEDK |
| UniRef90-T0JU80 | FCFVLSRFEA |
| UniRef90-F811R0 | F L F MAA R Y VNEVLGS |
| UniRef90-UPI000464C131 | TI Y A L A RLEEYRSSNTE |
| UniRef90-D5RLB0 | HAFVLSRVLNQ GGD\\|LWVPGG |
| UniRef90_UPI00030491F8 | VLFAAARYVNAQLG |
| UniRef90-D7A5U1 | LLFVVSRLENRADGRADVLWERGK |
| UniRef90-Q5FUH3 | YFFVLARHANN HGETDILWSPGR |
| UniRef90-V5WHX7 | TLIL M M RVLMQ E GVVS E E K WK |
| UniRef90_UPI00036FC66D | LCFVLMRTE |
| UniRef90-12W194 | CL Y AL A RVED |
| UniRef90-F3P157 | LL F VLSRTANKEDSSDEVLWVPGGE |
| UniRef90-D3UM60 | CLLYIVAREEDFRQ |
| UniRef90-M2X517 |  |
| UniRef90_U2RNU5 | AL FALARLAEHR |
| UniRef90-C5CE61 | F L F ILA R F E E H L E G |
| UniRef90-U2K3X6 | WLFVSAKWEMNQQGWPEERWQ |
| UniRef90-V2UG78 | WL F VAS R S LQLEEHGKEMYWQRQK |
| UniRef90-R6G0B4 | ACFAMAR |
| UniRef90_U5NAL6 | VLA RVCNLHET GCEAVWRGT A |
| UniRef90-W4L6E5 | FFFVYGRWASAQLGEAELLWD |
| UniRef90-W2SF93 | LLFVLGRYACMKNGNEELTYLR |
| UniRef90-W5YAR2 | YLFVLGRHLN D D GVADLTW |
| UniRef90-A4XAV8 | LLFILSRTAN PAGDVLWVPGGK |
| UniRef90_UPI0000E11707 | FLFFVLARA $\square$ N HA $\square$ N $\square$ E D |
| UniRef90-UPI0003C1AFBA | YLFTLARYTAMKEGNPEKIYKKN |
| UniRef90-Q21YE2 | LMFVLARVLNRYRTGDDVYWKSEK |
| UniRef90_UPI00047A2274 | YFFVLARHLNDDGRNDTVWTPGR |
| UniRef90-A0A022LTP2 | LLFVLGRVANPE GDVLWVPGGE |
| UniRef90-C3MR50 | LLFVLALYVNKQENVQEII WKR |
| UniRef90-LOINY6 | LI Y I L A R F V D Y N E I Y E K VKKV |
| UniRef90-H5T9B5 | YLFVLARHCNHAAGVVD |
| UniRef90_UPI00045EA62C | LVFVLARCAAGDDEEP |
| UniRef90_W8ADS2 | YFFTLA RLIANKQTGVVDVA Y VGEK |
| UniRef90-E8F7M6 | CLYALAR |
| UniRef90_UPI000361160A | LCFVMARFEAEVAGK |
| UniRef90-A0A023V3K9 | ALF SMARDE |
| UniRef90-H3LI30 | ALFAMARVA |
| UniRef90-F9MTN1 | TI YAFARY |
| UniRef90_G2TAL0 | YLLVLARFVNDR GVVA DVLIWRPGA |
| UniRef90_UPI0003B3B565 | LLFTIGRVLNKRAGDAEI M W |
| UniRef90-UPI0004779182 | ALF $\triangle$ MGRVENQ GEDVRW】PGGE |
| UniRef90_UPI0003505483 |  |
| UniRef90-UPI00036D2BD0 | YFFVLARELNRLAKRTD $\quad$ F WQKSE |
| UniRef90-TOT310 | LCFI L CRVE |
| UniRef90-V5GV36 | FLFVAARVAAQHDGAEEV】YK |
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| UniRef90_UPI000299D5BF | YL F AMARYANYLLDGEPEI |
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| UniRef90-A6GPY5 | FLEVASRWDHHKK G VR DVQ WK K G |
| UniRef90-T1T7U1 | WLFTLARFIAHKSAIAE |
| UniRef90_D1C773 | LLFILARFEDQAAGVT |
| UniRef90_C4LH97 | LLFILSRVAN D GNDVKWVGGG |
| UniRef90_UPI00047AF15D | VLYTVARYV EECYEEVVFDKK |
| UniRef90-I0XRZ0 |  |
| UniRef90-L9PP60 | LMFVLSRVLNRYAGGSDVLWQHER |
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| UniRef90_Q5WGY1 | CFFTMARSANHELAEQDVLYVGEQRLQR |
| UniRef90-Q18218 | LLFVLGRTACMRNKNEELTYL |
| UniRef90-W7KK73 |  |
| UniRef90_UPI00037A6C50 | LL FVLCRVLARHENGEEVLWQP |
| UniRef90-DOKZN9 | AL FVLARVLGDADG S LVYWRK |
| UniRef90-UPI0003B467FF | LLFVMARGANVEHG DI T WVPEA |
| UniRef90-V8A711 | YFFVLARHLN DDGRNDVLWQR |
| UniRef90-A0A031LPH1 | LLFVLALDWINKKTGYQNVI WRP |
| UniRef90-J3JUK4 | FLLTASRIAAKHDQRTESIIY $\square$ P K P D |
| UniRef90-F5RKH5 | YCFVLMRLEDAD |
| UniRef90-F4BA41 | L LIF SMAlV A NKRKGIE ERIYDIR K |
| UniRef90-13YPX0 | YFYALGRMLTAHYEVDETLWDP |
| UniRef90-H9UAG6 |  |
| UniRef90-F2USG0 | FAFCCARVCAFRTGGDETVFQSKPD |
| UniRef90_V4J1Q1 |  |



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VT K S G D Q G T T S LG D GQR $\quad$ K K NHHR $\square E C L G C L D E L N A T$ RVYTKF GDHGETSSLLYGGRVSKNNPHSEAYGITDEAVSA KI Y TKRGDKGET GLLYGGRVQKNDPRCDAYGTIDDAAIAA


 $\mathrm{MK}_{\mathrm{K}}$


T

M

 VFTRTGBDGNTCNLLKTRVPKDHPIIELI GTLDEANS F



## GRRGTSSLYNGTRVSKSDPVFLTMGHVDTLNSS

LY T R R GD D GY T D L L G G GRVPKEHLRDHALGD DDEATSA M K I Y TK TGDKGFSSTFTGERRPKDDQVFEAVGTTDELSSA


$M S V T$ TK G GDK GK T S LTY S GQRVSK D D I R IVETVGTGDELVSN $M V V Y T K R G D G G E T S L G N G L R V A K D D V R I E T N G E L D E L T S L$ MSI A T RTGDQGMTGLLYGQRVPKDHPQIEAVGAFDELNAA $M$ S I T T K R G DK GF T D L L F G G K V S K G D P Q I E A L G A V D E L N A N $M K I Y T K R G D L G E T D L I G K R T L K S D V I I D E V G Q I D E A C V R$



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130
140

160 GAMLDLARTTARRAERCACRLAETEDVAASDLVYLNRLSD GANLQYARTLARRTERSLVNLNNEQKLSENDLKY NRLSD SSHI HLARVKVRALERDLVSYSRKKSLEKGLLPYi NRLSD VANLHI ARTVVRRAEREACAM RDEVRAEIIS YLNRLSD EAFLNVARTVVRRAERSYWKLHAEEEVNEVDIRYLNRLSD A S WA HMARVVARRSERRVVALDQARLVASAVKFLNRSSD S GAFHQARTVVRRAERRVLTLAETEPVRPELI KYGNRLSD GASLHHARAVARRAERRAVALAEDEAINETVVVYLNRLSD
 SAAFDMARTVCRRAERHLVTLIDDEEVNSNGLPYLNRLSD SAKLDVCRAIVRRAERKVARLLLEYGFGEDALKYLNRLSD SSIAAHICRAVARRAERRIVELSDSEPDDESINDYVNRLSD A GWAHMARVAARRSERRLVALELSRLASAVV FLNRLSD SASLHMARAVSRRLERRIVAASKLTEINKNVLIYANRLSS
 GATLQVARSI CRRAERCLVPLDREEVIDRNALVFLNRLSD SAKLDVCRTI ARRSERRVNTLSENEETDENVKKYLNRLSD A SVLHVTRSVARRVERNAVKYTKELPDNRMI IVYLNRLSS SAAYEMARTVCRRAERAAVRFDESGGVQPTILPYLNRLSD SAWAHHARTVARAAERAVVALAGAEPVNADAVRYLNRLSD SASDHVARAVCRRTERVIVPLVNEGHLHNEALDYLNRLSD

 EAFLDFARTTARVAERRAWSLSRRGTVEDDDLRYLNRISD ATSLHMARTVCRRLERDLVKSKNEVEI PAVLEEYVNRLSS VAAVHLARAVMRRAERSATAAAADMPLNPQALAYLNRLSD GANLQYARTI ARRAERSLVKLNREEQLAPSNLKYiNRLSD SKYLNLARVVCRRLERVLVSYYFDKKVREPMLKYFNRLSD ASYGLVVRSI ARRVERNAVAYSKELNFNKWDIVYLNRLS S A AAVHLARAI TRRAERSATAAAAGAADNPQALAYLNRLSD SAKLDVCRAI ARRAERKVAKLYLEVGIGEKALVYLNRLSD AAQA HVCRTVCRRLERTWVQVMGETSGTDDA YSFLNRLSD TVRAHVCRTVTRRVERSLVRLVDQEDLPAEALPYINRLSD SAAFHQARTVVRRAEREMLRLAEVEELRPELGKYLNRCSD SAKLDVCRAI TRRRAERK ATVVLREFGI GKKSLVYLNRLSD
 AS LLCHFVRTGIRTAERELVELNQVEQVADYILQYFNRMSD
A A ALHVARTVTRRAERAMVRAAKEHPI DPLSLRVMNRLS S EAYLQMARSKCRTAERRLWTAHRQYPIDPTILKFFNRLSD SAALHFSRAVCRRAERCVVPLVQAGEADPNVAKYLNRLSD SAQAHDCRTVTRRAERQLVALNEQEPDSDVSLQLL
SAGMDMARCI IRTSERRVVALKEAGLLNDLII A YLNRLGD SSALDDSRSII RRAERHVVTLKELNLLADCVLRYGNRLSD A AFL HYARSKARTCERRMWTLQREYPLNEAVVKFMNRLSD SARLDVARSVARRAERCFKRVELQYHVDKKAMQYMNRLSD GAMLHFARAVARRAERAVVLLSDQERVNPEVVRYLNRLST SANLQYARALARTSERVCVLYADEGEVKSDSLKYLNRLSD SSHLHLARSIICRRAERAVVPLLQSGAGEKSVGKYLNRLSD SAYMDFARAVVRRAERKAVA AKADGVQPEMLKY L NRERSD CSYAHQARAVCR
AANLQYSRTLARRAERSLVELNKKQPDSPFNLEY TNRLSD AEFLDLGRAVARRAERSVVRLGADTSLDPG\|VTYLNRLSS AVYFHVARAI CRRVERHLVKEVKNNRRTDLIIKYINRLSD SAALHVARTIVRRAERDLIKASRVYKFDDIVFKTINRLSS GASLQYARALARRAERMVVELNKQQPLNDEVFEYLNRLSD SSYL HVARTVARRAERAMVALAETETLQENLLKYINRSSD SSML HLARSFARRAERAGLQALELNLI DS ETYMYLNRLSD A ALL HYARAKARTCERRLWTLRRDYPLDERVMRLMNRLSD S SHLHVCRSVCRRAES L
A A ALQYGRAVARRAERSLDQLAESQPLDSVILQYSNRLSD SSHLHMARSYCRMVEPHLVTLVDRQDCHPSSLAFINRLSD SALLHVARTVVRRAERSAWAAVDAEGVSADPAKYLNRLSD GAALDVARTVVRRAERTVTHLLHDEGANRAMVSYLNRLSS
S SAlLHLCRAVCRRAER
RLSD
ASKADI CRTVARRYERRLITVSGYDNFNPAVRKYVNRLSD GSFLHLARTI ARRAERKAVKLYREGKDEDKSYDFI NRLSD SAKI HHARSVCRRAERTLVALMEKK ICRD DWWQYLNRLSD A A HL HNARSVARRSERRIVNLDQDEELREEVLAYINRLSD
 A A ALDVARTVCRRAERDAVRFVASAPSSHVGAYLNRLSD SAQLHVCRTTCRRAERRMVEVSGMYGEQRQATVYVNRLSD SCIVNI CRATTRRTERRMVRCRDK NENALKYMNRLSS A A AL HVARAVVRRAERVMVRASREYKDDPDALK IVNRLSS S SAI HVARSVCRRAERSGSYFKNSPSLRMFGUCRRKALSN GAALHVARTVARRAERLAVKLFRSKELKEEGYSYMNRLSD ASFSHVIRTIVRRVERIFVAVIQNNS YPISYQYINRLSD GARIHVTRTVCRRCERSAVTFIHSQDDSKLLI QFLNRLSD

 AGALELARTVARRAERRLVALKSHGTVRPVVGQYVNRVAD SARI HLARTVARRAERRSWDVV DEVASAEVRIDFLNRLSD


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| UniRef90-UPI000362153A | HL FVLGRWLNGR GASEVLWRPGTN |
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| UniRef90-U2M1H8 | YLF $\$ L M R L ENED  \hline UniRef90-TON024 & VLFFHALVSNKRDGDDER\F  \hline UniRef90-W0AH82 & HLIV VTARWLAA QAGG DIL WVPGA  \hline UniRef90-D4YRL0 &   \hline UniRef90-K2DP12 & LLFVLSRYDNFMYGIDDVLWKK  \hline UniRef90-DOKT01 & LLFSMAlVANKRKNVKERIYDIGK  \hline UniRef90-F6ETA9 & LL F VLA R RL N G N G A N DVKWVPGA  \hline UniRef90-C5A6J7 & LL FVMARLI EKREGK  \hline UniRef90-R7PA35 & YLFVLARML N A  \hline UniRef90_UPI00037E792C & YFFVLSRSLSAAAGATEAQWSKPPK  \hline UniRef90-S3X5H0 & AVYSLARLAEHWHDEQHI  \hline UniRef90-13REK5 & LLFLLAREIIEIREG  \hline UniRef90-E6PGR0 & V L WLCARVVEARHGVD  \hline UniRef90-D1CES4 & $V \vee W V L G R Y E E Y Q N$ |
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| UniRef90-V4JZ87 | ALFAMAVYVSRAMGYPEEP |
| UniRef90-UPI0004153BD9 | Y L F V L A L H |
| UniRef90-UPI000395720F | YLFVLA RYAAMKEGKEEK $\square \mathrm{Y}$ Y $\square \mathrm{K}$ |
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| UniRef90-B3T117 | LLFVLARYEDREL |
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| UniRef90-D3HYB0 | Y F ML A |
| UniRef90-R6PDB8 | Y L Y $\mathrm{M}^{\text {M A Y Y ED Y K E }}$ |
| UniRef90_UPI000368B053 | LL F Q MARAVNAREKVPEDEW |
| UniRef90-Q1G7V9 | YL F VMARYANLLE GVADVKSKPAR |
| UniRef90-E9CIV8 | FLFVAARFAAQQDGQTEVVF |
| UniRef90-UPI00047EF0A7 | L L Y V L A R Y 1 D CVVY G GK |
| UniRef90-T1BF93 | LL F V L A L Y V N K Q G F E E |
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| UniRef90-Q041L0 | Y LFTLARYANVLD GYQEVK |
| UniRef90-C7DGS9 | LLFVAARRVNIDSGFKEK |
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| UniRef90-G7V7C2 | A I FALALWL ${ }^{\text {a }}$ ME |
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| UniRef90-TONA11 | LLFMLA $\mathrm{L}_{\text {L }} \mathrm{V}$ S $\mathrm{NKRQG} \mathrm{\square EER} \mathrm{\square W}$ |
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| UniRef90-UPI00036FE78B | A L WL L A |
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MK LYTKKGDRGQTSDFSGRRAAKFDPRVAAVGDDDELSAS KIYTKTGDKGFSSTFTGERRPKDDQVFEAVGTTDELSSA MEVYTGYGDKGMTDLSHTKNVSKSDDRICLMGSVEELMSH MSVYTKRGDKGDTDMARTKNVSKSDDRIQLVGALDELNSH
 MKISTKTGDAGKTK MFGRDVFKCDQRVCAYGADDDFSAT

$K \square Y T R T G D K G F S S T F T G E R R P K E D Q V F D A \square G T T D E G S A$ TKGGDKGTTSLANGERTAKDDRVVELYGTDDECQAA MKVTTKQGDTGKTKLPDGHWVSKDSEIIECLGSLDSGRN MKVYTKTGDRGTTSLVGGSRVPKTHTRDEAYGTVDELNSH KUYTKTGDKGFSSTFTGERRSKDDQVFEAVGATDELSSA SQNDTTFNALVSTEELLAQ VSTKVADNGKNKDKTGDDR KNHDICEAIGVTEELSAC RIYTRTGDEGFSSTFTGERRPKGDRIEEALGTTDELSSA LYTGYGDNGTTSMYDCKRTSKSSILTEALGAVDELNAY MNTYSKNGDKGTTNLVDGTPVPKDDPRURLNGALDETTSA MAIYTRTGDAGTTSLIFTGQRVSKTHPRVEAYGTLDELNAA MSIYTKRGDKGITDMARTRNISKSDDRIRLSGAIDELNSH RVYTRSGDRGSARLVGEHELPKFSAVFEAVGDVDELGVK

 CNGERVAKDDMR EMNGNLDELNAW
 MR』YTRVGDKGETSLIGGRKVEKCDQRVETYGTVDEAISA DSSLTRTGKGEIVDKDSSFTWYVGTIDEANAF

## VD Y E TR T D S LTT H

DSPLCDYE ITDELCAT
$R \| V T R G G D T G Q T S L G D G E R V A K D S V R D E A L G A L D E A N A V$ YTGAGDEGKTKLPLKGR】WKDDPULEALGDLDELNSV KFYTKTGDDGYTGRLGKGRLPKHH LLIDADGS DDEASAA VD YEIRTD S ASAA LQCDYEI ATDELCSQ $K T H L L D R S L V D K D S E L D K G L G T L D E A N A F$ D S PVVCDF E I A A DEELCTM YTRSGDMGVSQLFTGERRSK

DD ILFE


# MTVEALLATGDSGR 

 D $\square$ MA $\left\lfloor\right.$ LAYHVN ${ }^{M} \mathrm{D}_{\mathrm{S}}^{\mathrm{D}}$VGVALAAVKKETVEVVAV



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2739CAO






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K Y GK
PEDEATKTMMM

## YRCP

NEARLARTG

 N REAHLL F K
 $\stackrel{+}{\mathrm{F}} \mathrm{K}$ R E A HLLS $N$ NS Q P P VV






PGKCKSFESKHDS DLEEWDDTP H SRRQGASWSWSSGSTSSTP
 REA H L K RTE E P LIE L E K W W D R Y S E QL P P L R A F L P

KVS K E E

 G K R A Y K $\quad \begin{array}{llllll}L & T & S & E & P \\ I & D & A & T & D & L \\ L\end{array}$

GRVVS

| L K |
| :--- |
| V |

VL
EKLE VRLDT P K E V E E L E VQ
E K L E E V R L T Q E E V K K WV E K K K I D E I I T E




R GK L A I D E S QLLS ELLKA D Y H K L
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AVILHLLARVTVRNMERHIVVALSAEKVLDPVIMQFANRLLSS N A Y L L H I T R TK C R T A E R R L V T M R R H Y E I A D N I M A F MN R L S D A A VABVVR CVCRRTERELVSLSVAD DVQPGMMAYDNRLS D VAALLHTARTAVRRAERRLVSAVKSGTVDPLVLKII NRAS D

 S A Q I D V A R TIV V R R A E R K A T K L K E D G L I N S E IVNK Y L N R L A D A A QCHVCRTLVRRRLERLFHAAETEADSAYETPAYVNRLSD S SHLHVARSFS LVPEVVG $\quad$ VFI NRLSD SAALLHLCRAVCRRAERCVVPVVQAGQMDANVAKFLNRLSD

 A T K L Y Y A R A L A R R R A E R L L V S L S KP L T L N S S L L I Y M N R L S D

 DA A F D D A A R T T C R R R A E R G GVVGAL

 SALMHVART
A A
E S L L HVARTVVREAERYALQAAKKQALDERLVPFDNRLSD S S L L HVARTVVCRRAERRVVP LVTSGSVDPNVGKFLNRLSD SARLHMARAVARRAERSLAALDDEPRAPENALAYLLNRLSD

A A E DDVTRAVARRAERELALVSVKFGSDTGAKKYMNRLSD A A E I NVTRAVARRTERCLAQVAVKFGADTESKKYLNRLSD







 CSTDHSAKADCRRDERNVATLVQDGSVNKAAQDYLNKLQN SAALHVARASCRRCERVLISVVFDA DNGKN LLAY IVNLLS S



 A AFSEVARAQCRRAERRLLTLSEDYPDDQHALRYLNRLSD
ASELQVARTMALKSFRLVIALNDKH MEMAQFDDTLSN T A F L SVFLHQSRTIVRRVERNII LLVASKDCHDNAYKYLNRLSS
 A A A L H L C R S EA K K S Y R A L HK V S E E R E V P A I L F D Y L G L L A N


## SATLQLARAVARRAERRVVA LLREGVAKRQHESYLNRLSS

 A C ALLHVCRSEAKKTVRALHRVVLLEREVPERLFDYAHLLAN G AA A R L H I C R S E A K K S YR A L HK VS E E REVD E I LF DF L G L L A N


 ACVLLHVCRSEAKK SVRALHKVSLDEREVPEILDGYANLKAN






G A LAAHVLRRVDCKVIVRRYRHLYQGKKVDSGLLDFFNLLSG
 GAALDI ARTVVRRAERLAVA


| UniRef90_T0Z1D7 | $\text { LL FMMA L VAN R R R L G K N E R\|I \| } 170 \text { WE L R K }$ |
| :---: | :---: |
| UniRef90_UPI00042BFEC9 | FL F I LA RYA A MKEGKEEKIYY K S E |
| UniRef90-UPI000361FFDF | WL F V EA |
| UniRef90-R6ABC7 | FLF ALA R K I N S LT A T A E T L |
| UniRef90_U3TE25 | ALFAMA F ALAARAEGGLLE |
| UniRef90_F8AIJ5 | LL F L M A RVI E $\square$ R E G R |
| UniRef90-F9D1A8 | F L F CL |
| UniRef90-D9S1Q5 | F L Y L S L Y E E M G E |
| UniRef90_X1T4N5 | ML F TL A R F |
| UniRef90_R7LDV1 | Y L Y A L A K K $\square$ N A L T G CPEVPP |
| UniRef90_Q54TB6 | F L F A A A R F A A MKS GKDEAYWTSKGVT F |
| UniRef90_UPI0002739CA0 |  |
| UniRef90_J9CGL6 | YFFYL S K Y L N K I S GVEE $\mathrm{V}^{\text {G }}$ |
| UniRef90_R5WQG8 | Y L Y VLA R Y TDAllQ |
| UniRef90-K2F4P5 |  |
| UniRef90-N2AG12 | Y L Y V A A R Y A D Y LiF SVPEPE |
| UniRef90-F0Z325 | YL YVAARYADYKASAEPDES I R Q K NVMK |
| UniRef90_UPI0004650A67 | LL FVAARLIARHQGVAEVLDVAAA K |
| UniRef90-D5EQ59 | L L W L W G R |
| UniRef90-A4HDT5 | FFFVAARS $\square$ A E E D |
| UniRef90-R6EQK2 | Y L Y V A A R Y S D R |
| UniRef90_S2JI79 | F L F NAARWA A Q S Q GKEEK $\square \mathrm{Y}$ NK |
| UniRef90_UPI00035F76B8 |  |
| UniRef90_UPI000380745C |  |
| UniRef90-G7V6C3 |  |
| UniRef90_A7RLY1 | $F L F T A A R F A A K T E G R E E K I S H R$ |
| UniRef90-J7QQA7 | LLFALAARLAD L H S GHAD |
| UniRef90_UPI0003AE5EB2 |  |
| UniRef90_D4LJR6 | Y F Y V L A R Y VDV A K $\square$ E E K K T D $\square$ S E S VQ K |
| UniRef90_UPI0002EE9455 | Y L F L L A K Y V |
| UniRef90_UPI00045E1B90 | Y L F Th A R Y A A M K E G NQEK $\square \mathrm{Y}$ K K N |
| UniRef90_R7L4M3 | L L W L L A |
| UniRef90-H3ZN47 |  |
| UniRef90_W7WD41 | $L L Q A L A R T V N R R A Q T E V L T R R G$ |
| UniRef90_U1NLF0 | ALGVLGRLVNKREEDT E |
| UniRef90-N1UUI2 | Y F F V A A R F A LEENILQEP LTWTSRTK |
| UniRef90_W5M9X2 |  |
| UniRef90_A0A010ZJ71 | VI Y L L L K V D A D A |
| UniRef90_UPI00038006BC | F L F I V A R I L D |
| UniRef90_UPI00005577D7 | YLLFAlA RVIN A R LQQVK DVEYNRSALVFR |
| UniRef90-W4PCY6 |  |
| UniRef90-UPI0003441C97 | Y LF T L A R Y A A M K E G Q E K I Y K K |
| UniRef90-UPI000258E2E2 | F L LT T S R I A A K C D Q R TE NI Y $\square$ P R GEVVEK |
| UniRef90-E0VLQ5 |  |
| UniRef90_UPI0003505F33 |  |
| UniRef90_V7PZ73 | $\square \mathrm{L}$ F A L S R Y S N H L L S $\square \mathrm{KE}$ |
| UniRef90-H9UMN1 | YLFVLARHI |
| UniRef90_UPI0004785721 |  |
| UniRef90_D4LR20 | Y L Y TLLA GY A D A K N |
| UniRef90_X2LPZ2 |  |
| UniRef90_UPI00047D2067 | YFFILARYTENAE GKA |
| UniRef90_F0YFL7 | $F L T V A A R G A A \quad A Q D V V Y D V S A N V$ |
| UniRef90-K2DIQ8 |  |
| UniRef90 L8E184 |  |
| UniRef90_D4T3J3 | LLFVLARVLA R A D G R Q EVLWR H D R |
| UniRef90-D3L3N6 | Y I Y V L A V |
| UniRef90_R5FMM0 | Y L F V K A L V |
| UniRef90_H0HWV7 | FLAL T A TVVA D A S G G |
| UniRef90-F2A125 |  |
| UniRef90_UPI0002FBBCE8 |  |
| UniRef90-O28979 | L L Y L M |
| UniRef90_X1DT53 | CLY TMARFAS FS L G NA DVIYQKAK |
| UniRef90_K1T932 | YFYVLGRS L T A HFDVQETLWWP |
| UniRef90-T0CQH9 | VLYY Si S RYENKLIDNI E |
| UniRef90_R7ZAK7 |  |
| UniRef90-UPI00036B3AB6 | LFFRLTVVINRRLLGUVEPEYQS |
| UniRef90-Q8U270 | L LY L M A R Y I $\quad$ ¢K E G K |
| UniRef90-UPI000471EE06 |  |
| UniRef90-UPI00037BDE1C | L LF L L A L Y VNK K E GVENVLWK |
| UniRef90-Q5WDP4 | V L F V M A V Y A N K R Q G I E E IVPF V S K |
| UniRef90_X1RVN4 |  |
| UniRef90_F2F1S7 | VFFVMMVYMNQQHQQEEIPFIS K |
| UniRef90-N9VC04 | FFFVLTVHLLK G Q M G $\square$ P E V E Y V S |
| UniRef90-N0BM56 | L I Y L M |
| UniRef90_U0F478 | V M Y T L A S Y T N R M Q QVVE T E F V S K |
| UniRef90-UPI0002DE827D | Y Y F A L T RVLN Q D A G $\downarrow$ E E P E Y V S |
| UniRef90_K0S0V0 |  |
| UniRef90-B9YEC9 | VFF Q M A LKENRLLE GVSEDP F V S R |
| UniRef90-14X5X1 | VLFT M AVYVNQHHDVQEIPFVSK |
| UniRef90_UPI0004675E25 | Y F F VLALKKL K E K GLEETEFASR |
| UniRef90_U1FI91 | F F FVL TVVYLK QRWQVPEVPYVS |
| UniRef90-S0P8C7 |  |
| UniRef90_U3BK77 | ILLYALA SYTNR\HDVAETEFVS K |
| UniRef90_V5FBN6 | YY F AL T RVVLN QEM G ${ }^{\text {V E E P P Y T S }}$ |
| UniRef90_UPI00030DA19C | VMYTLASYINFDT S TQEEVEFVSK |
| UniRef90-UPI000317A612 |  |
| UniRef90-T1A974 |  |
| UniRef90-V5XQH1 | Y F F M $\$ A MK F N Q E D D T E $\quad$ P F V S R |
| UniRef90-Q87J23 | V I Y S L A S Y $\square$ N HVY QVE E T E F V S R |
| UniRef90_T0YEX5 |  |
| UniRef90_F9TG02 UniRef90 E8VXS4 | T F Y A L A AFENKVANDEETEFVSK VMYALASYTNQYYQVQETEFVSK |



1


[^0]


[^1]


[^2]
 UniRef90-K7J318

[^3]
[^0]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    solo
    jpssm

[^1]:    lupas_21
    lupas_14
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[^2]:    lupas_21
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[^3]:    lupas 21
    lupas_14
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    sol5
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    jhmm
    jpssm

