

QUERY

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 KVRGI RAALVWNE ETARDAREHNDANVI SDGARMHTPEEA K FK G V R A A L CLDN E Y M A RMSRLDHNDANVVLCLGBRRVIGEEELA KVKGI RCANVSDTFSAKMSRAHNNCQMIALGERVLGA GLA $K V P G I R C A L V H D V F S A K A T R E H N D S N V L A M G E R V I G P G L A$


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 K V K G KVVK GI R C A L V H D C F T A K A T R E H N D S N V L A M G E R V V G P G L A


 KLPGI RSAVCTDTFSARMAREHNNANVLALGGRVI G $\square G L A$
 $K V P G\|R G T L C T D S T M A R L S R Q H N N S N M L V L G G R\| V G D T L A$ $K V P G A R C A L A Y N V E T A Q L A R Q H N N A Q L I$ GVVGRMHTTEEA $K \bigvee P G D R G A L C T N E F M A E M S R A H N D A N V L V L G A R V L G E G L A$
 $K V K G I R C A L C S D P V S A Q L T R L H N D S N M L A M G A R I D G D E M M$ K V $\underset{V}{ } P$ KVKGI RACVCSEPYTA KMSRLDHNNANVL CFGARVVGSELA $K V P G V R A A L A W N D E T A Q L T R Q H N D A N V V G D G A R M H S A E D A$ $K V P G A R A A L A W S V E T A K L A R Q H N N A L L A G I G A R M H T V E V A$
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 KV P GI R CA VVVSDVF S A K M S K A H N D A N ML S L L G E R V L G R G L A $K V K G V R A C V C S E P Y T A V M S R R H N D A N V L C F G A R V V G S E L A$ RFRGI RAALCHELFTTKMARLDNDANVLVLGGRVI GAALA

 K 1 $K T K G \| R C A L V H D T F S A K A T R Q H N D S N I L A M G E R V I G B C L A$ $K V P G A R C A L A W S P Q T A Q L A R E H N N A Q L I G D G G R M H T E E E A$
 $K \square P G I R C A L V H D D F S A K A T R E H N D S N V L A M G E R V I G G S G V A$ $K$ FPGI RAVV CSEPYSAQLSRQHNNTNILAFGSRVVGLELA KVPGVRCGLVHDLFSAKATREHNDTNVLAMGERVI GPGLA
 $K V P G V R A A V C S E P Y S A K L T K Q H N N A N I I A F G A R V V G T E L A$ KFPKVRAALVYNEYTARMAKAHTNANILVFSGRVISSEYA
 K V T G V R A A L A WS E D T A T LAARE HNDANVI S I GARMHS QDEA $R V K G V R A A L V W N D S T A R L A R E H N N A N V V S I G A R Q H S D V E C$ KFKGI RAAVVSDCFSAKATREHNNTNVLCLGERVIGKGLA K V K Glil R A V V CS E P Y S A K L S K E H N N T N I L A F G S R V V G S E L A $K V K G I R A A L V H N E F T A R L S R L D N D A N V I A D G A R V L G B E L A$
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 $K I H G I R A A V C S D Y F S A K Y T R L H N D A N V L C L G G R V V G P G L A$ $K V P G I R A A L A W N D D T A Q L A R E H N D A N V I S L G A R M V T Q E E A$

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K $|V| K G|I \operatorname{RCA} L| C T E E F S A R A T R Q H N D S N V L|A| L A R \mid V D D A P K A$ KVKGI RCALVHDTFSAKATREHNNSNVLAMGERVI GA GLA
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 KV DGI RAAVVSDTFSARATREHNNSNVLCLGERVI GE GL A KVKGI RAALCGDCYSAEMTRRHNDANILAMGARVLGPGLA
 $R$ YK GVVAALCLYPEMARMTRKHNDANVLVLSGRLI GVELA K HK GI RAAL CHDHYTAKMARLDNNANI L CF GARIV GLGVV KVEGVRAALCSDCFSAQATREHNNANVLCMGARTI GPGLA KHQKI R CALC WMPEDA T LAARQHNDANMI SMPARFI S K E L A K HQ GVVRSALCWTVE VA KLAREHNDANDLSDPSRFVSEELA

 K ViP Gil R A A L C H D T Y S A E R A R K S N N A Q V L T M G A R V I G P E L A KI K GI RAALVHDLFTARAAREHNDANVLALGGRLI GPD A A KI HGI RAAL CGDTYSAEFARRHNDANILTLGERVI GPGLA
 KV P Gil RAFPCSEPYSAAMGRRHNNANVLALGARDVGVEA $K V R G I R C A T V G D T F S A R M T K A H N N A N M I A L G E R V T G L G L G$ $K V K G V R A A L V W N E Q T A A L S R E H N D A N V I S I G G R M H S R S E S$ $K V K G I R A A H C T D C F S A K M C K Q H N N A N V I V L G G R I T G P E L A$ KVRGI RCALVHDVYTARVTREHNDSNVLAMGARVIGVDLA

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 KVKGI RCALVHDTFSARATREHNDSNMLALGERVI GPGLA $K V P G I R A A L V S D K F T A K A T R E H N D S N I L C L G G R V I G E E L A$
 $K V K G I R C A Y C F N E E S A R L G R L H N D A N A I S L G Q R L I P E E M A$ $K V D G I R A D T A H D T F S A E M A R R H N N A N V L T M G E R V V G P G L A$ KHRGI R A ALC WLDPEDS RLARA HNDANVDTDPGRFVSE DTA KVKGI RA ILA WNEDTA QLGREHNNANVISIGARQHTKEEA RVKGVRAALCWNEESARLGRQHNDANVI SIGERMMDEETA KV T G V R A A L A WS TE TA QLARE HNDANVI GLGARMMHTLDEA KVPGI RAAVCSEPYSAKLTVEHNNANIIAMGARVVGPELA KVKGI R CALCCSDTVSAKLTREHNNANVLALGAGIVGPNLA


 KHPKVVRCALCWNKEDAVLAREHNNANVIAIPARFTADVQA KVK GI R A A V V S D T C SA K M S R L H N D A NI L CL G E R V V G E L A KVKGVRRCALVWSQETASLAREHNNANVI SMGARMHSLEDA $K V K G V R A A L A W S T E T A E L G R L H N N A N V V S V G A R M H S E A E A$
 KVKGI RCALTTHDVYSAKLTRQHNNSNVIALGGERVIGPGLA KV P GVRCVICSEPYSARLSREHNNTNVLSFGSRVIGDELA
 KYKEI R CALCCWT KE DA A LAARQHNDANVVSDPARFTA I E QA KVPGI RAALCHDTYSAERARKSNNAQILTMGAQII GPELA K H Q Gll R A G L V WD K Q DA H LIDRQH N N A N V I V L P A R FI T N D Q A $K V K G L R A A L C L T P E F A E L A R L D N D A R V L S L G G R F T A D E E A$ $K V R G I R C A L C T S V E M A H L A R Q H N N A N I L A L G G R T T D K D L A$ K HPEVRAALCWEPEDAKLAREHNNANVLCVPARFVSVEVA




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 KCKGI RAAVCTDCYMAKYTRDHNDANVLCMGGRVI GPGLA KFKGI RAALVDNDDNAKLTREHNDANVLCMGAKDVDLELA $K \square H G I R A A V C G D C Y S A E K A R E H N N A N I L C L G A R V L G T G L A$ RFPFI RAALVHDAFGARLCREHNDANVLVLGGRTTGPEVA $K V P G V R A A L V F D E Q M A A L A R R H N D A N V I D L G A K D T A P E L A$ KVVGARCALAWSVETAKLAREHNNAQLI GI GGRMHSESEII $K V P G V R A A N V F D P A D A A L A R E H N D A N V L T L G A R F L D L A B A$ KVPGVRAAQCHDVYSAERARKSNNAQI MTMGALVVGVELA KVPGIRCALVGDTFTAHATREHNDSNVIALGARVVGSGLA


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| UniRee90-R6DS3 | LKIVDTFLNTEFSGE | ERHRNR\|DQ| E |
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| UniRet90_R6X1T7 | VQI VELWLKTEYAG | G |
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Unipeor


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UniRefgo- 4 ROM UniRef90-BoPG25 UniRef90-X0YFV7 UniRef90-UPIo0030AA89F UniRef90-R9M984 UniRef90-UPIOO03612AB7 UniRef90-A6LCK7 UniRef90-UP10004294360 UniRef90-UP100041DCF2D
UniRef90-A3TFS4 UniRef90_A3TFS4 UniRef90-F5T7D9 UniRef90-V3TKS3 UniRef90-UP10002C3DD2F UniRef90-F7NRR5 UniRef90-DOYRB8 UniRer90-W0EQ09
UniRet90 ${ }^{\text {GOUCB3 }}$ UniRef90-JoxS17 UniRef90-F2UUZ6 UniRef90- W1SHN7
UniRef90 R5BAR2 UniRet90-R5BAR2 UniRef90-LBJUZ5


90
100
110
120
 KVHGURACLCHDVFSAKATRNHNDANMLAMGQRVIGEGLA KVGG| RACCCSEPYSARMSVRHNDANLLCMGARLVGEDLAA KHQGI RAALCWNEDLAALARQHNDANVIAIPARFVAYDLA KVRGIRATVCHDLYSAERSRKSNDAQIMTMGAQLIGPELA KVRGVRAALVWNEETAQLAREHNDANVISVGARQHTEEEL KVPGIRAGLAYNPELARLTREHNDARVVAIGARMHTQEEA K $\ddagger G G \operatorname{RAALCHDVF} \mathrm{SAKMTREHNDANVLAMGERVIGPGLA}$ KHQDIRAA C WLEEDAALARQHNDANIVCDPARFISPDLA K】KGIRAALCTDCFMAEATRLHNDANVLALGGRVIGPGLA KHQG| RAALCWDEEDAALARQHNNANIVCLPVRYTTDEQA KHQGI RAALCWMPEIAHLARQHNDANVLVMPGRFDDNEMA KПKGIRAALCGDCFSAQMTKEHNNANVLCLGARVI GSELA KVKGVRAAVCHDTYSAERARKSNNAQILTFGSRVIGPELA KVKGVRCALCTDPYMAKMTRLHNDANMLALGQGIVGKNLA KVHGIRCAI TSDVYAARMSRAHNDANALALGGRVVADGLA KIKGIRAALDYNDETASLAHRHNNANVICFGGREVSEDQA KIDGVRCALCHDAYTAEFARRHNNANILAFGGRTTGDETA KVPGIRAALCFDHYTAVMARQHNDANVVCLGERTTGPAVL KVPGVRAALVWNRETAELARQHNDANVVSIGARQHGVEEA RNPGCRCALVSDHLSASLSRQHNNANVIAMGARLIGIDTA KFAGMRAT CNDLYTARFSRLHNDSNLCLGGRIIGPDLA KVKGI RAAVCSEPYSAKMAREHNNANMI AFGARVVGEDLA K $\downarrow$ DGVRAAPAQSDDEVKFTREHNDANVLTLGAKYLDEDRA RYEGIRAANCTNSFMAEATREHNDANILGMGARVIGVGTA KVKGi RAAVCTNEFCAEMTRRHNDANILAMGGRVI DEKTAA KVKGIRCALCSEPGSAEMTRRHNDANMLALGAGLVGPNLA KVKGIRCGLVYNEDVAKLIRQHNNANMMSIGAKFTPGEEA KFKGVRCA CFDAYTAKMCRQHNDANDMALGGRTTTDDRA KVKGl RCALCSDTVSARLTREHNDANMLAMGAGIVGTNLA KVKGIRCALCSEPHSARLTREHNDANVLAMGGALI GPDMA KHQKI RAALCWNTEDVKLAKEHNNANILSLPARFI SLPQA KVNG| RAVVCSDPYTARMAKEHNDANVIAFGARVI GIETA KHQGVRAAVCWNKEIVYALARQHNDANILASIPARFTKQQQA K DKGARAALVFSDDTARLAREHNDANI SLLGARQYSVEDA RFPKVRGTLCNDMYTAKLCRQHNDSNI LIMGGRVIGMGLA KVPGIRAAVCHDPFSAERSRKSNNAQIMTLGARVIGIELG KIKG\| RCALCTDVTMARLTREHNDANMLAMGQRTMGIETC KVKGIRCALVHDMFTAKATREHNNTNVAMGERIVGPGVA KVKGI RCALVHDVFSAKMTREHNDTNILAMGERVIGPGLA RVPGI RA\|LAWSVETAKLGRQHNDANVISVGGRMHTVEES KHQKI RAALCWTKEDSALARQHNNANVISIPARYTSIQQA KHQGIRAALCWLPELAALAKQHNNANLVMPARFDSYDQA KFPRVRAALVTDSFMAQMAKEHNNANILVLGGRVLDENAA LVKGARAALVWNEDDAVLAREHNNANVI AVGARQHSKEDA KI KGMRAACVSEAFSARMSRAHNNANVLCMGARVIGSETC K】SGVRAANIVSPEFAKLCREHNDANVITLSGRFVPLEEN RHPGI RAALVHDVTTARLARQHNDANVVALGARII GAEDA KVKGIRAAVVSNEFCAEMTRRHNDANILCMGGRVINEEQA RHAGIRAALCHDETLARLSREHNDANVLVLGARTTGDEVA KHQGVRAALCWIKEIAVLAREHNNANVIAIPARYTSENQA RFEGI YAALCDSVEITKLAREHGNANVLCLGAGFTNNELA RFSNI RAALCNDVFSAIISRKHNNSNVLVMGARVIGETLA KVPGIRAAQCHDTYSAQRARKSNDAQI TLGARVI GPELA KFPGIRAALATDVFMATMAKEHNNANILVLGGRVLDTGKA KHRGI RAALCTTEFEARMTRAHNDANVLCLGQRVVGAGVA HHRKVRGALCWTPE1AALARQHNDANIISLPARFIEASIA KHQGIRAGIAWEDELAALTRQHNNANVICIPARFIDYDKT KMKGI RAANIVREDFAVLCREHNNANVLTLSGRFVSIEEN KVGGIRAALCHDELSTQLSRDHNDANLLCLSGDQVGEVLL KVKGVRAANVCNPEYAALARQHNDANVLAFGARFNDDSSA KNSGVRCA
 KVAGIRAALCHDTFSARMAGEHNMANII TMGARVIGAGMA KI KGI RAACCSDYFSAKYTRLHNDANVLCMGGRVI GPGAA KIKGIRAALCHDTFTAKQARLHNDANVLCDRGEEI EASEA KHQGIRAADCWEPEDASLARKHNDANVCSMPARFDDRDTA K ПKGIRCAHCADCLQAELTRRHNNANMMAIGAGFTGKNMA KFKGIRATPCYDEYMAEMSRSHNNSNCLTLGGRVLPDDEA KHRGVRAALCWREDTAKLAREHNDANVLSMPGRFISKEEA RNPAARCALVSEPLSASLARQHNDANVVALGARLI GLEMA KHQG\|RAALCWIPEISSLARKHNNANVLVMPGRFVSEEEA KVAGVRAALCYNDELAQLAREHNNAQVI SIGGRMNTVEEA KIKGIRACVCSEPYTAKLSKMHNNSNILAFGARVVGEDLA KVTGVRAVLAWSLDTARLGRQHNDANVIADGARQHSVDDA KMTGIRAVACSEPYSAKLSREHNNTNILAMGARVIGSEMA KDDGVRCALCHDHYTATMCRRHNDANII AFGARVI GVDVA KMKG\|RAALCHDVFSAKMSREHNDANILAMGERVIGQGLA LVDGI RAALVWNPEVASLARLHNDANVISLGARQHSDAEM KHQGI RAALCWTEEDASLARQHNDANVLVMPGRFDSADLC KVAGVRAALCHDHYTAVMCREHNDANVLCLGERTTGLAVL KYPHIRAALCWLPEDASLARQHNDANVLALPARFDELEAA KVDGVRAALAWSIETARLARQHNNANVVALGGRMHDLGAG KIPGVRGAVCWDLSSVINSKEHNNANVLSIGGQFMGEGLA KHQSVRAALCWGTELARLAKAHNNANVLVMPARFISYQMA KHQG| RAA CWNEELAELARQHNNANVLCLPSRFMVYDLA KVPGIRAALCHDTFSAERAQKSNDAQIITMGSRVIGPELA





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UniRef90_UPI0004761167

KVKGARCALLAWSEETARLLARE
H N N A QLL I KVKGVRAAVCSDVT TA HLVVKEHNNANVLAFGARVVGVELA KI QGVYAGVCHDTYSAHQGVEHDDMNVLCLGARIVGEELA KVRGVRAALCYNELSARLARAHNDANVLALGARLLGHDLA KVKGI RAALAYTVEDAELARDHNNANVVSLGGRMQTQEEA KIKGI RCGVCSDTTTAHLVKEHNNANI I AFGARDVGLETA KVKGI RCAHCADTLEAQLSRQHNNANILADGGGFTGSKDA $K V P G V R A D L V W S V E T A R L A R A H N D A N V A G F G G R Q A S A A G A$ $K V K G I R C A L C R D V L S A E L T R K H N N A N M L A L A G G F T G P A E A$











 $K V T$ GI R A ALLAYNTEDAR LAAREHNDANVLSLGGRMQSHE EA


 $K \| P G I P R A A Q C H D T F S A E R A R K S N D A Q I I T T L G E R Q I G P E L A$
 R H P A ARRCALLVS E P L S A A R L C R E HN DAN A I A M GAAR LI G I E Q A
 K VP GI R A A L C H D TYTA K L T R Q H N D A N I L C F G E R V VGGKGVI

 $R \| P G I R A A B C T C E F H A R A T R Q H N N A N V L C L G E R V R G P G V A$

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








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



 RNPACRCAALA GEP LSAALLSREHNDANVLAMGARGI GVDMA


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


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


 RHPGI RAALCTTELHARFGRRHNNANLDLGARMTGVELA

 K F K G G $\quad$ R C A



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



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




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UniRef90 ${ }^{\text {C4LDY5 }}$ UniRef90-W7CUK8 UniRef90_Q02AT9
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UniRef90 G2SOF2 UniRef90-J3BML3 UniRef90_S7ULX8 UniRef90-X6L5E4
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KIVIP GARAALITWSVTTARLARRHNDAR|LAA 110
GARMHDVDEA KYNNVRAGLCWTKEDTELTRLHNDANIICIPARFTSLPQA
 $K$ VKGlRAAVCHDVHSAHQAVEHDDVNVMCIGAQVVGPWLA KVTGI RAALCHDTYSAERAQKSNDAQIITFGARVIGPELA RFEGI RAALCTTEFHARMSRAHNDSNVLVLGGRVTGSELA K $\square \mathrm{PG}$ GI RAAVCHDVFSAERARKSNDAQII CFGERVDGVELA KTKGVRAALAYQPEDASLARQHNNANVI CFPARYMNESEI KHKGVRAALVWNPEIAQLTRQHNDANILVMPGRFDDNKTA RYSGVRAAVCSNEFHARLARAHNDANI CMGERVTGDGAA KVRGVRCGVCADTFSARMDRRHNDANMLSIGARVVGEGDA KVKGI RAALAWSDETAKLGREHNNAQVVAVGGRMHSLEDM KFPGVRAALCHDELTAEMSRRHNDANVLCLSADLLGERDT RHKGI RAALCHDAYTATLTRMHNDANVLCMGERVVGLGVV RVPGVLAAKCNNVVEAKSAREHNYANVLTLGAKII GENMA KYPKVRAGLVYSAKVAEMTRLHNNANIMCLPGRELSKEQL KHQGVRAGLAWNKD』AELIRQHNDANVLVMPGRF DDNRA KVEGVRAALVWSDATAKLAREHNNANVI SIGARQHELEEA KVAGVRASSITSVPFAELFRQHNNGNVVCLSGRFVDLEVN KHRGI RAAVCSDLFSAEMTRKHNAANVLCMGARVLDDEKI KVKGI RAALVWNHSTAVLAREHNDANVVALGARQHSAQET K I PGIRAA QAHDTYSAERAALSNNAHIITLGARVVGTELA RNPACRCALVNDPVSATDGRAHNDANVIALGARLVGLDVA $R$ VRGVRCGLCWNEQVAKWNRSHNDGNVLSUGQRTI SEAEA RNPDCRSALVSEPGSAELARSHNNANIIAMGARLI GDEQA KVEGIRAASVSDPVSARLAREHNDANIICFGARIVGPEMA KHASI RCADCWTKEDAALARAHNDANVVSDPARFTADEQA KHQQI RAGLCWDPEIAHLDRQHNDANVLVMPGRF DDTDMA KFKNVRAVLGFSEDNVRLSREHNDANVLSLGSAFVDFEKA
 KVHGI RCALPQNIFAATMAREHNDANFIAFGGRVVYPEKP KFDGI RAALCHNEYSAQMAREHNDANVICLGERVSGLGMV RFKGVRAALCADLLSARLSRQHNNANILALGGRLIGDVLA K IPGVYAATCHDTYSARRARKSNNAQILTMGARVIGPMLA KVKGVRAALCYNLKTIINSREHNNANVLTLGGPLHAPDEL KHQHI RAAI CWLKEIAELARDHNDANIICI PARFVSPELA KVKGIRCALCTDSLQAEMTRRHNDANMMALGAGDTGGNLA KVRGVRAALVWNESTAELAREHNNANVISLGARQHTVEEA KVPGI RAA QCHDPFSAERARKSNNAQII S FGARVIGTELA KVPGI RSAQCHDVYSAERAQLSNDAQIITLGSKVI GLELA KLKGURAATCHDSFSARQCVEDDNVNVFCLGARVI GTELAA K LDPGVRCGLAHEPYSAHQAVEHDDANTIAlGAWLVPHALV KVPGI RAAVCHDPFSTERSRKSNDAQIMCMGERVI GVELA RFAWVRAVNCHDVTSARLSREHNDANVIAFGERVIGVEVA KVRGVRAALAWNLDTARLARNHNDANVVALGGRQHSLEEA KLRGIFACVCQDPFCAQLSREHNDSNVLCIGGKDIGSADA RFKGI RGARITS EEDAKLAREHNNANILLFGGRQITDEQA KFKGI RAALCHNVDDARLSREHNNANVI CFGGRDSTSEEV RFAHVRAALVHDSYGARMCRLHNDANVLVLGGRTTGPEVA KVKGI RAAQTHDAYSAQRAELSNHAQIIVIGGQVVGDELA K I K GI RAA LCADSFSTRFTRMHNDTNVMCMGARTLGCGLA RHKGI RAALCYAENCVELTRQHNNANVLCLGARVTDDETA KHQGVRAGLAWMPEIAQLDRQHNDANVLVMPGRFVDNKTA KVHGVRAVNAHDVEEAEMSRRHNDANVVTLSGARLSGDEA KFRGI RAALCYDHVTAQLSRQHNNAHILCIGVRTSGMEVI RNPKI RCALCHDALTAKLAREHNDANILAFGGR\|LGSAEl RVRGVRCALCMDENMAELSRRHNDANMLADGGRLLDVEKA KVKGlRCALVDNEKDAVLSKQHNNSNVLAFGAQQVSILTA KVKGARAALCHDVFTAHQARAHNDANILADGAWIVSPERM KVTGIRCGVCSDTFSAQMDRAHNDANILSLGARVLGAGLA KVAGVRAGLDHDVFSAHQGVEDDDMNVFCLGGKVI GAALA KVAGI RAAQAHDTYSAERASRSNDAQIITLGSRVIGVELA RHAGIRAVVVHNTTEARLTRAHNNANLACFGARTMGPEAV
 LVKGVRAALVWNEATAVLAREHNDANVIAMGARQHTMELA KVEGI RAALVWNLETAKLAREHNDANVVAVGGRQHSVDEA KYKEVRAGLCWSNE VVELDRQHNNANILCIPARYTSIPQA

 KVKGIRAALIYEDQTAELARQHNNANILATGARLI ANDKA KVDGVRCAHVSTIKETKMTRDDNDANVIADSGAMSSFKAA RHPDMRGALVHDAYGARLCRQHNDANILVLGGRTTGSEVA $K \square P G \square R A A V C H D \square Y T A H Q C V E H D N V N V I A!G A Q \square I G P T I A$ KVQGARAALVYEEQDAK LSRLHNDANILATGARFI AVDKA KIKGVRAAQAHDTYSAERARKSNDAQILSIGARVI GPEDA RFRGI RAALCHNEFSARMSRAHNDANVLCLGERVLGAGMT KVPGI RASVVCHDAHSAHQCVEHDDVNVMCIGAAQVIGP WDA
 K I Y GVY Y A V C Q DPFCAE LARSHSDTNVLCLIGGKI I GSAA A KYPGI RAALCHDTYSAERAQLSNNAQIMTMGAQIIGVEVG KVPGI RAAVCHDAYSAERARKSNDCQIMTLGSRVVGEELA KI HGIRAALCHDQTTARDTRLHNDSNVLCVGYGVVGKEVL KVPGARAALIHDDYSAHQGVEHDDMNII CLGSLVVGYAQS KVRGlRAALCHDTFSAERAQLSNNAQIITMGARVI GSELAA KIPGI YAACAHDTYSAERAKKSNNANVLTLGRHIVGPELA RHRNI RAANCSNI YTAKMSREHNDANVLCLGARVLEPSDA



## UniRef90 FOSRD8 Uninefefo-M5B8L3 UniRef90 S 4 PGF UniRef90-K7YHI6 UniRef90 $-13 C 8 N 4$ UniRef90 UTD7G7 UniRef90-Q1Q779

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UniRef90 S 4 W 5 Q 4 UniRef90-C5C362 UniRef90-UPIO0047AAB57 UniRef90-UP100040BDF7C UniRef90-D8JZX5 UniRef90-D3Q0X3 UniRef90-UPIO003B4C252 UniRet90-E8TCA8 EDRCDYPDYAHPMAQAIQSGDLQVGlSGCGSGNGGSMVMN ATDDYSDIIIPLAKAISEGKDERGUAICGSGVGVSVAAN EASVDYPVYAQKVARAVAAGEYGAGLVICGTGLGVSIAAN
E

 GKQVDYPDFVHPTAEFVNQGKANFGUMI CGSGNGAAMAAN GTSCSYSNNG\ELAEAVVADKDSLGIVLCGTGMGПSTAAN GAAEYYAGDAERASDALLEGRFDRGULICGTGLGVCI SAN SESVDYPDYAHKVAKKVKTNNNHAGVVVCGSGMGMN:AAN
 GNTVLYPNVAYTVADAVASGGFQRGULLCGTGDGMCDCAN AASVDYPDFAHPVATAVENGDFDLGLEICGSANGVAGTAN

## T


 EARCD Y P D F A V A VA K E I LAA GRADKGI MV C GS GVGGVSVAA N

 A T A V D Y P D DA S R L C R L V A D G V C Q R G I D NPV DFPD\AK GV CKA LIKKDAERGIMVCGTGVGAAIASN
 GEDVD Y P HVGVQAARLI A Q GQADRGLEVCGTGMGMAMSAN E D S V D A GA YA LIVC E DV A N N D T K Y GI LI C GTGGIGMSMMAN
 AE DDYPAYCFRAAEAVAAGREALLGVVLGGSGNGEQI TAN SDDP DYANTADKVAEAVASGKY DRGU LVCGTGDGVMM A A N DEHTPYPDIGAAAARDVAEGRADRAVLVCGTGIGMAI SAN GDKTAYPHVAVDAARKVAKGEADRALLI CGTGLGVAI A A N CNAVDYPDVAFEVSQAIRAGELNRGILICGTGIGVCIAAN
 D DGANYPSVAFEAARRVAAGEA DRALLVCGTGLGVAISAN ATTPYYETATVVAQRVGNQQAERGILVCGTGMGMAIIAN


,
GE Y A DIAA A SVVGHE I LID GNYS Q G Al

QERVD K V P A Y P H I AVD A A QLVASGDADRAILI CGTGLGVAISAN KVPANYAEFGLKVA EAIK SLEVEKGVMVCGS GVGISLAAN
 ,

E EK SCDYP D F A HLL T S KI DEK S SFGI LI CGSGIGGISIAA N A A D D Y P AFCIIEAARRVVADEGSLGIVVGGSGNGEQI A A N DPSTAYPHVAVAAAGLI AD GKA DRALLVCGTGLGVAI SA N P N R A D Y A DLA QK LCKKMLDGE QEYGILVVCGS GI GMS I S A N

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 V E S D D Y T DYA K IVVA E K V S T S S S D C F G I V I C G S G V G V D V TV N

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




## UniRef90 FOSRD8 UniRef90_M5B8L3 UniRef90_S4PGF2 UniRef90-K7YHI6 UniRef90_13C8N4 UniRef90_U7D7G7 UniRef90_Q1Q779

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UniRef90_14E0W
 KVEGARAALVWNDSTAVLARQHNDANVISI GARQHTVEEA KYSHIRAALCWSTE $\square$ ARLAARQHNDANVLSLPARFVTEAEA RYPWVRAALCHDVTTARLCREHNDANVIALGGRLLGLEVA KFSGVRATLITENYSAHQGVEHDNMNLMCLGGRVI GSALI RFAGI RASLCHSTEYARLTRLHNNSNILALGGRFLTEEEG K A GVVSALDTDSFSARQGVEDDNMNIMCLGGRDTGSALA KI DGII RCALAHEPYSAHQAVEHDDANAIAMGSWLVPRALV KIKGI RAAVCHDTYSAHQSVEHDNVNLMCVGGKIVSEWLVA KVKGI RAAVAHNKFTATATVAHNNANVLCLGARVLDSKTA KRAGI RAAVGHDVYSAHQCVEHDDVNVLCDGAQIVGA WLA KYKKIRAALVWKKE $\square A$ VLARKHNNANI I SFPARFI NQNEI KVKGARCGLVYETQTAALDKEHNNCNILATGARLIAVDKA KVPGIRAALTHDTYSAERAQLSNNAQI I TMGARVVGPEDA RHKNI RAA QCFNLKSTKLSRLHNNANIITGGSRLLTKKTA
 K P PGVYAAVAQDPFCAGLARSHSNTNVLCLGGKLI GPADA KI H GVYAAVCQDPFCAQLARQHTDSNVLCIGGKI I GSVLA KVPGI RAAVCHDPYSAERSRKSNNAQI MCMGERVI GAELA KHQGIRAAI CWNEELASLARKHNNANIVCDPERFVSFDMA KVKGARVALDYNESSAKLAKEHNNANVITI GARENSDEQD RHKG R AALCHDEFTAEMSRRHNNANVLVLGGRVLGKELA RYKHI RAALCHDAYMAKMARLHNDANVLCMGERI SGVGEV K $\square Y G V Y A A 1$ A QDPFVASLARSHSNTNVLCLGGKVIGSADA K MKGI RAAVCHDVHSAHQSVEHDDVNVMCIGAQLVGAWLA RHHGI RAARIASVEDAMLAKQHNNANVLVLGGRQVSFELA KVKGVRGALCLYPSMAEYARKHNDANVLVLAGRLMGDDLA KVAGVRATVAHDSYSAERSDKSNDCQVITFGARAIGPELA RYKKVRAALCGDVQSAKLAREHNDANILCLSGRSLTVAEC KVPGVYAAVCQDPFCASLARSHSDTNVLCLGGKII GSAI A KVPGI RAVTAHDTFSVERA ILSNDAQVLCFGQRVI GDELA KVHGI RAAQTHDTYSAERAMKSNNAQI I T LG S RVI GPELA RHKKIRAADCYNVEVAKLAREHNNANILCLAARYI NYEEA
 KI AGI RASI CHDTYSAHQGVEHDDMNVLCIGGR\|IGSEDA KVAGI RAALAWNDSTAQLAREHNNAQVVAVGGRQHEPAEA KVKGI RAAVCNDLFSAEYGRRHNDANIVTMGERIIGAGVA KHVGI RAALCHDAYTAEMARAHNDANVLCFGQRVVGLGV1 RHKGVRAGLAWNKDVAGLIRQHNDANILVMPGRFVDNKTA RYTAIRAALCHEPFSARMSREHNDANVLCLGARVI GPGLA KFKGMICAEVSDEHSAKMTRSHNNAMAISSLGSGIVGEELAA K IP GI RASVCHDVYSAHQCDEHDNVNVMCIGAQIVGNKLA
 KV V G GVRTALVRDMTSALYSKEELNANVVSFGGKVAGELFB
 KVRGI RAA V CHDLUSABQCVEHDDVNVMCDGAQIVGSWLA KVKGI RAVTAHDSYSVERSVLSNNAQVLCFGQRVVGLELA KVRGI RAALAWNLETARLAREHNDANVVGLGGRQHSLQEA KVKGAYAAVVNNVYQAQRAQLSNNANII TIGAQVTGIEVA KVSGVRATTAHDSYSTERSVLSNDCQVLTLGQRVIGPELA KVPGI RADTAHDPFSVERALLSNDAQVLCLGARVI GLELA KYPGI RAALAHDTYSAERAQLSNNAQII TMGAQII GIE I G
 RVKGVRAAVYYERD $V$ R $L$ SREHNNANILSLGARFI $K V K G V R A V T A H D V Y S V R R S V L S N D A Q V L C L G Q R V I G L E D A$ KHPGVYAAVCENPNAAEKSRSINNSNILTLGGFI TSPEDA RVHGLTAVVCCQDPFCAGLAREHTDSNVLCCGGKIDGSAABA KVPGVRATTVSDSYSCERSVLSNDCQII SFGQRVVGLELA RFTHI RAALCTS DEMASKSRKHNNANVLALGGRVLEDNLA KVPGI RAALTHDTYSAERAAKSNNAQII TMGARVI GPELA KVPGI RAACCHD
 KVPGI RAVTAHDSFSVERAVLSNDAQVLCMGERVIGVELA KVPGVRAAACSEPCTAKDAVEHSDINAIAMGVCIVGPEEA KIPGAYAALCADAYSTERSIKSNNANIMTLGSQVTGPELAA RFKGlRAALCDDAYMAKMTRLHNNANVLCLGEKISGDGVA KVHGI RAVTAHDSFSVERSVLSNNAQVLCFGQRVVGI ELA KVPGI RSALVRDMTSALYAKEHLNANVIGFGGAI TGKLLL KIRGVRAALCHCVFTAEIARAHNDANVLVMGAKVVAPDLA RHKNIRCALCSESLSARLARKHNDANVLAFGGRLVGFDLA KVKGARAGLAWSVETAKLTREHNHAQLI GVGARMHTTEEA $K V P G \square R A V T A H D S F S V E R S V L S N N A Q V L C F G Q R V D G L E L A$ RFVGI RAALCTSAYMAHDTRAHNDANVLCDGARLSGEGEV KVPGI RAVTAHDSFSVERSILSNDAQVLCFGQRVIGIGLA KVPGVRAVTAHDSFSVERSVLSNDAQVLTFGQRVVGLELA
 KFANI RCGLGFNQEQAKKKARQDDDINILALASDFTTFKEA K $\square$ NGIRAAVCHD RFKGVRASLCTDSYMGKDTRAHNDSNILCLGGKITGELEA RFKKI RAARITSENDAYFAKLHNNANVIALSGRFNSKDES KVPGI RAVTAHDSFSVERAVLSNDAQVLCMGERVVGVEDA RFKKI RAAVCYNQDSASLARMHNNANVLCLGARLI NFKNS RHKNI RAARVTTVQDAELAKLHNNANVLVMGGRLLSFDEA $T V P G I R A S V A H D S F S V E R L V L D N N A Q V L T L G Q R V I G G E L A$


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| Ref90-S4PGF2 | AlVEAFFSTDFEG GRHUERINK\AEYETTGA |
| Ref90-K7Y | DCLEAFLTTYFC |
| UniRef90-13C | ELTETFLNATFHEEERFKRRLNKVLEDEKNN |
| UniRef90-U7D7G7 | A V TWL ETSYEGGRHDQRLAYL |
| UniRef90-Q10 | GELVQUFINARFKNEERFLRRLNKVSVLERN |
| UniRef9- UPIO00368EA53 | EDLVERFIKAKFSADEDFRRRVAKLIEMLDNSFS |
| UniRee90-UPIO0030FCB52 | VDA DCWLKTPFE HGRHQKR |
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|  | RDLVSAYLSAEFSTSEEFRRRVEKL |
| UniRef90M4ZTT6 | E F |
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| UniRef90-UPI00036D539C | RACVSAFLSTDFLG GRHCARVDKL |
| UniRef90-E7RY63 | EVIVDTWMTTDYLADPRYTQRVDKVV |
| UniRet90-UP10003 | El VKTWMHTEHQGAEKYARRVQKV |
| UniRet90-UP1000 | KTLVDTWLIPCEFAGGG SAPKVAE1 |
| UniRet90-B5ZAH9 | MIDDFLESKFVG ERHOKRLDITEYEKNQ |
| UniRef90-10XUH1 | AQKWLNTSFEAGRHERRVGQLD |
| UniRef90-12FC65 | ESILEAFVDFEFEG GRHAQRVEKL |
| UniRef90-UPIO003E | NEIVKTWMNTNYSNDKKYVNRVNKI |
| UniRef90-A0AO2 | VSSYLSAEFSTDEDFRRRVEKL |
| UniRef90 N9TS | GRHQQR ED ELSEENC |
| UniRef90-A9BGA2 | WVGYTFDPSSPSAKVAH1 |
| UniRet90-X5HJB7 | VQVFIDSKFSFEDRHKQRIEKID |
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|  | 硡 |
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| 5CD | V |
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| UniRet90_D3Q | EWLGYEFDPASPSNSKVSVISAYERR |
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| UniRef90-L8FEW4 | W |
| UniRef90-E6L90 | F |
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| UniRef90-V8CCA1 | ESILEAFFTSEFEGGRHSQRV |
| Ref90 A20CB3 | KKLANEWVTYRFDPKS |
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| UniRee90 UPI000386B012 | RRLAKEWLGYEFDPSSASAEK |
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| UniRei90- U5LEEZ | K ELVEAFEV |
| UniRef90-R5TE88 | VDLLENWLTTEFEGGRH |
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| UniRee90 UPI000047827EF | QKINTESTKFEG GRHTARVKKLDK |
| Un | KAVVDKYLETNFEGGRHQARIEASDK |
| 隹e90-81Св08 | WLDNDFVEGCKSQSNVDEVKLD |
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UniRef90 H3NDS4 UniRef90-KoUSP5 UniRef90-F2B117 UniRef90-DIAUS1 UniRef90-101HS2
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| $\begin{aligned} & \text { JniRef90_W8AJC1 } \\ & \text { JniRef90_X1B2H9 } \end{aligned}$ |  |
|  |  |




 MTI GLASDHRGYKAKKFLKDSLYK YDVIDYGTDTEN $M R V V I G A D S D G M E L K E W L K D K L V Q E G F E V E D K S \square Q P$

MT I L LGS DKNGFD LKEV KKE Y LT NE GYS $\square Q D V$

$P \square R\|V M A G D D A G Y D Y K N T L K Q H L E K S P V E S\| V D V G D T S T$ $M K I G I A S D H R G F E T K E K M T K Y L I E K G Y D V I D Y G G T Y$ $M \mathrm{~K}$ I A I G S D P N A V E E K Y R L I

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

MRVVIAS DADGMSMKES DKEMLIAD GHEVVDYSETP
$M R 1 V V G A P G N G T V L K K A B K E R L E A C D R V V V D L S A P$


MK I A I GCDPN A ENEK QA L M K F IIE N K GL K K V T D F G
$\square K$ NKI I I T S D H A GHKMKMDLADKLRREGYVVETRGSSNED

M S T K I A IAA C D D $\square$ G F N R K E E I K E Y L T E K N A E I V F D P VK T K E

NMMDV I I G A D K D GF A M K E Q V K K Y


$M R I V I G A P G N G A A L K D A M K A W L E A D D R V S E V L D L S T P E$ KI FIG N D H A A LDD YK N T L L E Y S K K K G Y DI E DLGG T H T MKKKVCFGFDHAGKDLSFFLMEKLLDKGNDVLCPQRTCME

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


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

$M K V Y \square S S D K D A \square K \square K D A D I E E L E N K S D A Y E D D D G F D F V$ KI I A GADP F GAP LK D ALLVTHGREALHEVEDLGTGPYY K I I A GA D A F GCTLK D TLV SHLR S LDNDEVEDLGTS S Y Y MK MQI LVVA A D F G G F E L K E E AVVV K H L K E R G WTVVT DVVGMKA DT
 MK L AM GCDPAAYRFY QKL LERMRDEGYD I DDI GCESE Q K $\square$ A GAD DF GCSLK DSVLSY LS SHG GP FEDLGTNKYY $A V V E E L R E R G H Q V T V H G A L E P$


## UniRef90 JgVFV2

 UniRef90-A0AO37UPA6 UniRefefo-F3YBM2 UniRef90-C7RF63 Unireigo-R6N2J82UniRet90_R1YUR UniRef90-R6BF64 UniRef90-B9DVA8 UniRef90-Q07U54 UniRef90-F5YG99 UniRef90-G2PI22 UniRef90-E4S×03 UniRef90-A0A033VGJ1 UniRef90_E8SEE5 UniRef90-G2NI28 UniRef90-BBHAFO UniRef90-UPIOOO3641924 UniRef90-B4U1F8 UniRef90-U2PHEO
UniRef90-BOC678 UniRet90-D9WFE7 UniRef90-R4Y109 UniRef90-G2KLT8
UniRef90 U5P300 UniRef90-Q4UM83 UniRef90-N1ZZW8 UniRef90-S5ZG90 UniRef90-10IGR2 UniRef90-EOD4U9 UniRef90_K2CMH1
UniRef90 E4Z183 UniRef90-A7X579 UniRef90-O8E344 UniRef90-UPIO00348153F UniRet90_B8M8U3 UniRef90_R6CVL3 UniRef90-J4UCIO
UniRef90 D4LR66 UniRef90-UPI000368A987 UniRef90-E8RAD1 UniRefoto-Nov3566 UniRef90-X1GA83
UniRef90 R6A3N6 UniRef90-UPI0002D3A003 UniRef90_UPIO0036515FC UniRef90-HOE970 UniRef90-B3WBBW9 UniRef90-F7W8J5 UniRef90-REBQJ77 UniRef90-K2E6F4 UniRef90-K2BHR6 UniRef90_UPIO004721A8A UniRef90 N9SRB4 UniRef90- B3WBX0
UniRef90 CODRV6 UniRef90-J0MXJO UniRef90-B1BU29 UniRef90-14AVC5 UniRef90 W9GNJO UniRef90-AOAO23DY27 UniRef90-D9XX43 UniRef90-K1YLX8 UniRef90-J3ACR9 UniRef90-D1AK30 UniRef90-UPIO0047683F7 UniRef90_G7LOV6 UniRef90_E3BU99
UniRef90 A9NK44 UniRef90-V6KPL2 UniRef90- $\mathrm{X1JT92}$ UniRef90_UPIo00476814D UniRef90-E4RMQ8 UniRef90_UP10003831347 UniRef90_S1LL45
UniRef90 E6SR88 UniRef90- N2AlA1 UniRet90-B9RES2 UniRef90-H3NMB9 UniRef90-UP10002C32EBD UniRef90 UPIO00466086A UniRef90_C7RF62 UniRef90-AOAO58ZSC4 UniRef90_U5GAP0 UniRet90_U2B198 UniRef90-K4B0G7 UniRef90-R5V7L6 UniRef90-W1PCB8 UniRef90_W8AJC1
UniRef90_X1B2H9
 KVKGlRAALCNETVLAKLAREHNNANVLALGARVI ANQNA K KGMDAAEVSDERSAYMTREHNNARMI T GEKIVGEELA KAFGTRCALVRDCATAMYAKEELNANVIAGGGMLVGRDLAB KMKGVYCAKVSNESEAILCKAHNDANCIAMSEEDLDEDLM KVKG|VAAEVSDERSAYMTRDHNDARMLTMGAATVGKELAA KLKGMVAAEVSDERSAYMTRGHNNARMITMGSEIVGPLLA KVPGVRCVVCSEPYSALMARRHNNANLALGQRVVGVELAA KFRGIRAAVCHDTYSAQRSTLSNGNIACFGERVI GTELA KVPGIRAVTAHDPYSVRCSIVSNNAQVLTFGQGVVGLSVA KIKGMIAAEVSDERSAYMTREHNNARITMGKNIVGEGLA KVKGMVTADVNEERTAHMTAMHNGAKAI ALGSGVVGPDLA KIKGMIAAEVSDERSAYMTRSHNNSKMITMGAALVGQTLA KVPGVRAVTAHDSLSVRASVLSNNAQVLTFGAGII GLALA KVEGIRATAAHDSFSVERSVLSNDCQVLTMGQRVVGUELA KVRGLRAVTAHDSFSVERSVLSNNAQVLTFGQRVVGLELA KYQGVYSALCESIETARLSRVINNANVLAMGGIVMTPYMA KFPGVYAAVCENTHAAKKSRSINNSNVLTLGGMFTTPILA KVPGVRAVTAHDSFSVERAVLSNDAQVLCFGQRVVGLELA RFPMVRAALCANDTMARLSRQHNDANVLALGSRIVGFEVA RFPAVRAALCTDATMAHLARQHNDANVLALGGRII GVQVA K $K K G M A A E V S D E R S A Y M T R G H N Y R M I T M G A Q I V G D Q L A$ RSSEDRAALCHNMLTAENAKAHNDANTLILGAKTVDYKVV KVKGIRAALCTDAKNARGARLWNDANVLALSARLLSEEVA KLRGIRAAQAQDEDAAETARGYLDVNVLCLAADLLGPRLL KIKGMIAAEVSEERSAYMTREHNNSRMI TI GSEIVGEQLA KFSNVRAVVYYQEQMPGLTREHNDSNILSLGARFLTDKGA KVPGIRAVTAHDSYSVERSDLSNDCQVLCMGERVVGDEA KIKGMIAAEVSDERSGYMTRGHNNSRMITMGSEIVGDTLA KVKGMIAAEVSDERSAYMTRAHNNARMITLGSEIVGPGVA KVKGVRAALAWSEETAVLGREHNDANVVAIGARMHSGEA KVKGVRCGKПNTVKEADHAKENDFVNI IA DSGEGDFENN KVKGAYAALISDIYSAKRAVLSNNANIACMGAFTDGEKLR KHRGVYAALCESLYQARRAKVVNNTNVLCMGGFII GNEMG KHHGIVVAELSDERTGYMTREHNNARVIAMGSEIVGRELA $K V K G V R A A L V T D A R N A E G A R K W N D A N V L A L S A R L T S E E L A$
$R F K N I R A R V T N E E E A R L S K A H N S N I L C M G G L L S A N E V ~$ KVRGIRATVCHDLYSAERSRKSNNAQIMTMGAQIIGPELA KIKGMVVANISDERSAYMTREHNGSRMVTMGPGVVGTEVA KVAGARAATAHDLLTARGAVENYDAQTLCMGQNVIAAPAA KVKGAYAA VVDTYSAKRSRLSNDANILCMGVFTI GDKVR

 KVKGAYAALLTDAYSAERARLSNDANI ACMGAFTTGSKER RFKQlRCARVTNSEEARLARLHNNANILSFGGRLISLDQA KFDGIRAAIGKNVLQVKAGRTDDDMNILVIASDFTLEKEA RFTHVRAGLGFNEAVTKQGREHEDANVLVLPAEWMSEEEA RYKNIRCAHVSSEEEARLSKAHNDANLLCMGGRMLDAQKV KVKGMVTAVVEEENTAHMTAEHNGAKAI ADGTGDTGYDRA KVRGIRAATAHDLLTLRGSVENYNAQVLCMGQNVIAAPAA KFEGVYAACCESTYAAEKCRAINDANILTMGGWII AGILG KVFGARAALVRDVSTADYVKKKLNANVIGMGGRLLGLGLI KVKGARCALAWSVETARLAREHNNAQLI GLGGRMHSEEEA KVAGVRAATAHDLVTVRGSVQNYDAQILCMGQNVIAAPAA KVKGI RCGQVNDYDSTLKALED GCNVISFGARTVGDEDA RYLGIRAALCKDTSDAVLARQHNNANLLVLAGRTLHPDSA KVKGVRASIGYSTEGAEGAKLHDNVNVLCLAGQFISFEHA KVPGVRAATAHDLITVRGSVENYDAQILCMGQNVIAAPAA KYKKIVCAQTADEHSAKMTRDHNNTSIISTGYEITGENLA KFRGVYAVVADTVFAGERGRXTNNSNVITLGGWITAPFLG KFPGVFAATCLTPSDAVNARSINNSNVLAVSGKYTSPETA KNDGVRAAMVGDVAQAKYAKRELNANLLGIGGIVLGRDFD KFPGVYSVTCDSVRDAQNCRSINNSNVIAVGGMHTTPEEG K TAGIRCGLGHDVYSAHQAVEHDDANAI AMGAWLIGPAMA KIKGI RSAVCWNEETARFARDHNFANLLCLGARFLSLEKC
 KFPKI YAAQVYDCYGAERAALSNDANVITLGSRITGPVEA KFAGVRAVVCSEPYSAQLSRQHNDTNVLAFGSRVVGLEAA KFNGVHCAL CESTETARLSRVINNANVLSMGGDVVTPYLG KVPGIRAVLCYDVLPAVLSKNDNNGNILCTGAWMMGDEFT KFPGVYASTCDSTGDAANTRSDNNCNVLAVSGLFTTPESA KCPGVRTGNVDNVSAADRADEGNDVNMLSMGGFYTAPQDG KVFGIRAAQAHDTYSAERARKSNDAQILSIGARVIGTELA KHKGMVAAEVSDERSSLMTKRHNGARILVMGSGIVGEDLA
 KCPHVHSAVVETVPAALRCVTANNCNVMAMGGYYVAPRTG KFPGVYAATCLNTDEARNARSDNNCNVLAVGGMNTTPEVA K DPGIRAVLCYDVFPAVLSKNDNNGNVLCTGAWFMGDDFT K FPGVYATNCTSVDDALNTRSTNDCNVLALGGMKTSPEEA



UniRef90_UPIO002554EBA UniRef90_U9WI90 UniRef90-M2QAL1 UniRef90 F5Y9Z3 UniRef90-A0A034UDH4 UniRef90-D9XXD8 UniRef90 S9VLR9 UniRef90-K2D2T9 UniRef90_E9UWS7 UniRef90-A4ALX3 UniRef90 UPI00035C2D9F UniRef90-N6XAY7 UniRef90-D3Q9M4 UniRef90_W8GNN0 UniRef90-K1SK19 UniRef90-X1IAE2 UniRef90-C7QDS3 UniRef90 C0W642 UniRef90-E6PF12 UniRef90-A0A033V2Y4 UniRef90-UPI000478EA27 UniRef90-A0CWS7 UniRef90_U2CPN8 UniRef90-R6MUY0 UniRef90_Q21N53 UniRef90_UPI0003610917 UniRef90-IOR4L5 UniRef90-UPI00040C3AED UniRef90 W7XIL7 UniRef90_UPIO0041AC029 UniRef90-K6YB82 UniRef90 A9KI44 UniRef90-A0A058ZRD6 UniRef90_UPI00042A10E1 UniRef90-K3XJ29 UniRef90_G1WHE8 UniRef90-R9KYP5 UniRef90-J9YC13 UniRef90-R7GL50 UniRef90_R5J085 UniRef90-A4E8R8 UniRef90 B1I939 UniRef90 F6CZ54 UniRef90-F8AWK2 UniRef90_DOZEJ5 UniRef90 UPI0003B5A7CF UniRef90- UPI00037386A6 UniRef90-W4TR07 UniRef90-W3AQV9 UniRef90 W9BX64 UniRef90-R9NLN2 UniRef90-D4JXW5 UniRef90_UPI000371E997 UniRef90_G5HKA4 UniRef90-R7EYH8 UniRef90-D2MQK4 UniRef90_G5HMA6 UniRef90_UPI00036BE1A7 UniRef90-A6CWZ4 UniRef90-D9QFF7 UniRef90_UPI00036C20EC UniRef90-M7E5X7 UniRef90-G5HMZ0 UniRef90-D3HGR1 UniRef90-XOSCJ8 UniRef90_UPI0003F5E109 UniRef90_Q8LHG8 UniRef90_T0VJF9 UniRef90-A0A023VMY5 UniRef90_UPI00046EFBAD UniRef90-I6T9L9 UniRef90-F4GM08 UniRef90-R6B2D9 UniRef90-A0A059D398 UniRef90_R5QRB8 UniRef90-F5U1V3 UniRef90-S1RWZ5 UniRef90-17KGZ6

MR TAFSADDRNATTDAVQAFLAEAGHEV $\quad$ HP VLVGADFAGFPLKEAVVSHLKAKGWNVTDDGVKAKD ELVAELAARGHETVLHGALSDT

Y $\square$ AS DHGGFE $\square K K$ QLLE F LQENGMEAKDMGPFT $\square D$ $M R T A F G A D D E N E T T R A V L A E L R G R G E V E V V$ VVVGADFAGFPLKEAVKRHLEARDWTVTDL TPTD

 MKiGICSDHAGFELKEYVRGWLEAKGWAYKDFG TYS $M R \square A V S A D E A G V A \quad A Q \square G P E \square E R R G H T V L L F G A L V P G$ $M \mathrm{M}$ A VGSDER HETADAACEELRRRGYEVRPFGAD DE MKVFINCDRKSSPLKDKIIQELSHFNDEWIDLYDETLE $M K I G I A S S Q A N K N I Y N T V I K Y A P K G S E V I N F G C T L D E$ MK $\square$ A $\square$ AAKNAQVE VVHCKKKNYQIDDKG
 MK $I A L M N S Q A G K N A A N E L N A V A T E K G Y P V F N V G M S D E N$
MK $\square$ AL $\square$ N ENSQAAKNT I IEVVEPMGHTVVNYGMYAED MK $\square$ A LINE EAGKN $\square$ FDA $L K E \square A D N K G Y E V V N Y G M Y S E D$ MKI ALMNEFSQAAKNNDILPQLEAHGHQVFNVGMSDDD MKI ALDNENSQAAKNEMI AKALTDMGHEVFNYGMYAED KI IVGATPSGAPLKDALVPRIREEGDEVQDLGDGF
 $K M K \square A L A A K N A \quad M \square C E T L K K V V E P M G H E V F N Y G M Y T E D$ MKTAVVQASSQVSKNEELTSVVADSLGHAVVNVGMNSET MRIALINEQAG KNEAGGVVEPMGHVVDNYGMYSAD
 MKIALMNSQAG KNAVIEVAEPLNHHVHNVGMSDEN
$M K \square A L A A K N A V V L \quad N E L N A V A Q D G G H Q V Y N V G M C D E Q$ MK $\perp A L M N S Q A G K N V L N E L N N V V L P Q G D S V F N V G M S D E N$ EQLQAVASAQGHTIFNVGMDGDQ
$M R \square A L I N E N S Q A A K N A L K K V A D E K G Y T V D N Y G M Y A A E$ EALTDVADP LGHEVFNYGMYTED $M K D A L A A K N G \square I E$ AAALKKVVEPMGHEVVNYGMYADD MKIAI GSDKN ETLVRITKKVVEPDGHEVVNFGAF EE
 MKI ALDN ENSQAAKNAIKEEADKKGHDVYNYGMYSAE MTMKI ALMNEWSQAP KNEI IABADKYGHSVYNVGMVKED MKIALIN ENSQAAKNSIIKEAEKAGHTVVNYGMFAED
 MKI AVGSDKNDI VRAVKKVVNPLGHEVVNFGVFPDE
 HEVVNFGMFPNE MK $\square$ A VINETSAGDKNKD $\square$ AA $\square D$ GF GHQVFNVGMKES G
 $K \square F A A A D A F G Q P \square K D A V V A H L R A H P A D V V D L G V D K Y Y$
K HEVVNVGMSKD $N Q L K A V A D Q K G F Q T F N Y G M Y G V E$
$M K \square G V I Q A S T R T D L N Q L L F E A V K Q N Q H E \| V N F G V F P Q E$

 KNS LYECTKEYGEVTNFGCFEEN N NGTIFEE


lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm

lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm
$K$ C P R V $\mid$ H C G V V
 $K V P G V R A A L A W D T W D A A G A R K W N D A N V L A M S L K R L A P D V A$ K CPHVHCGVVESVPAALRA 1 TTGNGVNVLAMGAFYVAPQMG KVA GI RAALCGDATTAAGARKWNDANVLALSLLRLTSTAAEL $K V R G I R A V T A H D S F S V E R A V L S N N A Q V L T F G Q R V V G L E L A$ KV V GI RAALCHDHVTTA LTTRQHNNANVLCMGERVSGLEV KYKGI RAALSWEPKHASSTRNDDDTNVLTTPA $K V P G V R A A L A A W E P W D A R G A R D W N D A N V L A L S L K R L A P D V A$ $K V P H V H A A V C E S A P A A L R A A T A N N C N L L A M G A F Y I G P R L G$ $K F Q G V C A F A S E S V R T A E M C R K V N G A N V L C D G Q M D V D P E L A$

 K HQGIRA
$K V F G V K A A L C H N K F T A C Y A K R H N N A N V L C L G A R D I S E E V A$
 KVPGAYCACVADVYQAQRASLSNNANLISMGSQVVGPESA $K$ I R GVRA A L C A D A A T A A G A R R WN D A NV L CAS LRRSTSVVAVL KHKNI IAAASVSDDRSAYMTARHNNTKIMILASEDVGSTLAB SMPGVICGYAPTPRDAYLFAQDNNGNAISLDLGWTGIDNF

 AYPGVFCGYCIDPADAYLFAQINNGNALALP

 K Y K GIVRA GLVVSTYYLAAVMTRMHNNANDMII GTXHTGKKA G


 Q Y P G V F C G LI S T SLLD A WL F T QI N G G NCI S L P K Y P R V Y A T H CA S PA DAVNTRSSI NACNVVLAL S GMATPP DAA M Y P GVVCGYC DEP T DA YLF L Q I N D GNAL S L P S F P K V LCG H I E S P LD A Y L F S QV N D G N C V A L P N F G W G G E L N
 SFPNVVCGHVSNPSDAFLFAQVNDGNCVAMP S F P P G V V L C G H V V A D P L D D A Y T F A Q QV N D G N N A V A M P P F A L W G Q E L N S F P G V V C GLAAVDP T D A Y L Y S QI N G G N A L S I P GF GWGA E L T A HP GVICG Y CLE P S D A F L F NQINNGNAIA M $K$ VRGV RAATAADAWTARGARLWNDANDLALLSLKRLAPDVA



AMPGVFCGLVIDPTDAFLFGQINDGNAISMP
$\square H P$ GVVCC Y CID P A D A F L F A Q I N N G N A L S L P



## S

## 36BE1A7

## A

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##  <br> T


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A Y P GV I C G Y C I E P TD A Y L F L Q I N N G N AL S L P
 S FPGVIA GHIVDPSDAYMFA QI NDGNAVS FP

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

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jhmm
jpssm


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UniRef90_D9XXD8 UniRef90 S9VLR9 UniRef90_K2D2T9 UniRef90_E9UWS7 UniRef90-A4ALX3 UniRef90-UPI00035C2D9F UniRef90_N6XAY7 UniRef90-D3Q9M4 UniRef90 W8GNN0 UniRef90-K1SK19 UniRef90_X1IAE2 UniRef90-C7QDS3 UniRef90 C0W642 UniRef90 E6PF12 UniRef90-A0A033V2Y4 UniRef90-UPI000478EA27
UniRef90-A0CWS7
UniRef90_U2CPN8 UniRef90_R6MUY0 UniRef90 Q21N53 UniRef90_UPI0003610917 UniRef90_IOR4L5 UniRef90_UPI00040C3AED UniRef90-W7XIL7 UniRef90_UPI00041AC029 UniRef90-K6YB82 UniRef90_A9KI44 UniRef90_A0A058ZRD6 UniRef90_UPI00042A10E1 UniRef90_K3XJ29 UniRef90 G1WHE8 UniRef90_R9KYP5 UniRef90-J9YC13 UniRef90-R7GL50
UniRef90 R5J085
UniRef90_A4E8R8
UniRef90_B1I939
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M D I AA D A F|L|E N N F D G Y E D H K
CDI DDAFI KAEYKETEENKKLI AKI A HLDESHHA VEE TE VF L S G $\square$ AP D A DESANIARLGGEMDE MD I A D A F L E
REELDDA WF GTNPSTDPVDQANVAHLGED RRLAA E WLTYRFDETSASAAKVQLMCDYENDEA Q D M $\square$ Q T F L N T P F SEEAR H $\square R R$ R $\quad$ E KVT A LE K Q

VEVT RAF LDE P DPDPDEA DA $\square R R$ RLDEL
MAMADAFLENNF GDG
CE IVTAFLNAEF
MA MAD A F L E S E
$E$ E LD A WF G Q
E E I LDA WFGGQPSTDADDAANワRHLGELERR



V E MLL D A WF S T A P S A E P E D R A A V A D L E A
$V \operatorname{V}$ V CAA K A F G E S S S Y D A A G R
EK TII E A LIF S E P F S E A E R K L K D T E KL K E
$K Q 1$ D T F L S


L E Y F E K L F LIE ES G Q G Y P R E R


Y D $\square$ F R A W $\square$ K T P F
A A $\square$ A D T W $\square$ ATPF
$L E Y \square F E K \square F C T P G G G G Y P K E R V$
E E T $\square$ K A L F L E P F G G G S E A K R K VA K L K E $\square K A K$
LEYT F E K L F G F G S G N G Y P A E R VE
$L K L M F E R L$ FA E EM G G GYPRERV
VE C VR A F L E T E P D P E E
VR Y $\square$ K A F L T G E
$R R \square A H E F \square G Y T F D P S S H S K A N \square D L I N A Y E$ VY $I F E K$ LIF S QP F G G GYP P ERR

EY S IIE K L FD GEF

LD Y T F E K L F S E P F G G GYPKERV

E Y C LE K LF D G D F D M A E R K VK R VK N F N A LS K K

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lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm
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