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ARAKVT ${ }^{10}$
10
${ }^{20} p$
30
40
$Y$ V S Y VA K S E V A S A L A T L T G $V$ V K S QV T R A V A ELLGA L K TA YE D CL N N GQTATN T C QI
VGRSNFAS GLSTLTSLKTNDES QIMETGTFPA
A R A QMS E ALT LA E GQK S AVVE Y Y S DHGTFPAN
 $R S$ QVA A GLAAD DR G GVVTAFEEK DNRGSTT RS QMSEAFNLAGGQKGAVSEYYSDKGVWPADNAAAG K A E M A A A LAE IA P GRTAYET LVN QGVT NGA A R S K A A A GLL LEI SALK TAMDLRLNDGKDV AK S Q VT RVMMGELSSIMTT■ETCILDEGRDTPDNTGAPT A R AKATA GLLAEVS ALKVPFEDVMNQG
A K A K L T A GLLA EI S A GKTAF E ELLRNNNVAVTAA
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ARA QMS EALTTLA E GQK SA VIE YYSDNGTFP N $K$ S QVSRVMGETA SVKTAMETCVNDGKQAADCDDGWT K A K FT A ALDAE IAP GKA GFEVLLAE GGVS P G $\square Y Y$ S K
$Y$ VA
 R S QMTEAFSLAS GQKTNVA E IVWTSEGSFNSADNGKF R GEAS S A LA S IT P L K T A V E D K L A N G T T D
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S R A KVVTA AVAEI SALLKVPFEDVI NQGTDI
R A QAT E GY E L L G GLK TP LVVEAVAASSSNAVACKGTTG
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A R A QMSEALTLAE GQKAAVVEYFSDNGVFPAN
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 A K S Q V S R VMMSETGAD
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A R A K V
A R A KV T A GLLA E DS ALLKVSFE DLLMNAGTAEPTTTLT GA G
 RA QVSEGMSLLAA GARTAVVAEYVNQRGAFASDNASYGG
AK S QVT A C LLAEDSPGKTAFE DKMNE GTASASMTTA E
 K S QVV N A GYS EI S A V KT GYE D A V N E G K $\square$ P A A L G DVGGF RSQATEALNLAS GLKGPVAEYFSQEGACPNND K S QVSRVVGEAGNLKTAVEDCYNS GRTAS IIDTGDP K S QV A A GLLA E IT P GK T Q Y EVVMVNE GK A
R S E V V S S A L A T L K S L Q TPPA E L A V QE GN TVD A
 Y VA R S QMSTAYSEI NTYRTADE ERLARGTDTDMTDTD HLL

S R T K A A A GLLEI S A L K TA M D L R L N E GK DV
ARSQFSEAHTLL G GARVSVQEKI DS G K S QVA VG LAA DI S G GK TNAEA QL S E G $\square$ S

QFAD GLSLTGMAKTAVAERLQRGESFSS $R A Q \square N A A V T Q L R Q L Q A P I A E E S F A Q Q G R C P S$ D G E D G $K A Q A V A A L R E I T \square G K A A Y E S L V A R G A G V D E Y S$ RS Q ITSAAIAELNGARDQYEVIMMDGAT SNAFTVD

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| R A K |
| V |



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| UniRef90 U2BXW2 | AKPHQ LGLASSTPRCHNDSVTPDKPGMDGDTYDTCVIR |
| UniRef90-G4CKR2 |  |
| UniRef90-UF |  |
| UniRef90-A6L | RLGFP |
| UniRef90-V6. |  |
| $\begin{aligned} & \text { UniRef90_L1NL69 } \\ & \text { UniRef90_Q5600 } \end{aligned}$ | TQSNLLGAATEKAVGFPTVTVND NGTAS |
| UniRef90-UPIO0035FD4C9 | APGAAAGEQTVDTQFGQISKDNDDGNNGDNFELII T $\square$ G |
| UniRef90-UPI0004722738 |  |
| UniRet90 | G 1 PASTTVVGKYVSGVAVQDGV ITA TMASS |
|  | K |
| UniRef90-UP100036D93. |  |
| UniRef9-UP100047E8C78 |  |
|  | D GMPTAPTG |
| UniRef90 N8v9y7 |  |
| UniRef90-UP100 | GVPGAAPSDQTVDTS FGQISK |
| UniRef90-U1T4U4 UniRef90 U2E507 |  |
| UniRef90_N9MK |  |
| UniRef90-M3G3X1 | H |
| UniRef9c | A |
|  |  |
| D |  |
| UniRef90 B2 HZX2 | ALLTVEALGLLQKSTNACSTITTSIGGTNGASNITCTLKGT |
|  | ATSCNVPENAVEGKYVASVAGGDSPVGCT VATMKEE |
| UniRef90 UPIO0031D8E7F | PTCV |
|  |  |
| UniRef90-R8AT | ATEKLLGAPKLVATTAT GTATPDSATKGAGS |
| iRef90-Z9k | LGIDNTNSCSVVEVSISA TGNITGTVAGG |
| UniRef90-S4 |  |
| UniRef90-O9PAH6 | PNAI GLRAPTPRCGT\\|VVD【AP |
| iRef90-H8Z0G | GLATNTA |
| UniRef90-D7N4D2 | Q |
|  | ADAALAASGLKAETSNCDISFVGAPTTTGA |
| UniRef90_UPIO | VGSTTGEGGNAVTGSER |
| UniRef90 C3LC | R L'GTVED |
| UniRef90-Q3K6 | VAGTTATQNCTLIAA |
| UniRet90-D2UBN3 | GANGFEANTGYAGNYTAKTDGTAPACTI TATFNAA |
| UniRef90_Z2JLL-1-2 | GLITSSST |
| UniRef90-C5CJM2 | DiGIKTDINGKYILSVGTAATTGGCTVK |
| UniRef90-G9ZEA5 | ASADNMQ |
| iRef90-E3BM21 |  |
| UniRef90_UP10002 |  |
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| M7C | LGDLGYTGSNLTTETTTSNANFPGGVGSLVATMG Q |
| UniRef90 K2W8: | ATNTLAALGTSATANPLGTLAV |
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| iRef90 V8KWH4 | ATTRCSSIIAVNLTPSAGTGT |
|  | c |
|  |  |
| UniRef90 F9F035 |  |
| P10000459 | TATDIGLRTATARCNTI |
| UniRef90_A6F1J8 | TNSNLGYVPSSLITTGS ATA |
|  | N |
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| UniRef90-14N126 | TDVTAANLGANASGNC |
| V7IBG | Q |
| UniRef90_Y0KF27 UniRef90-S6JRA6 |  |
| UniRef90-LoWKP4 |  |
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| UniRef90-E7BGCO | PTDTGLQSTTSNCKKM |
| UniRe990_G2DP84 | VAAKA |
| UniRef90-UPIO003E |  |
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| C6M3S4 | V |
|  | NA D |
| UniRet90-S6KB | R |
| 90-C8 |  |
| O-UP1000475 |  |
| ef90 DOSNE1 |  |
| UniRef90 D5 <br> UniRe90-M5 | GMPAKSSRCTDFDVSM SGTGEGSLV |
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| UniRef90_UPI0003681 |  |
| UniRef90_UPI0001CB |  |
| UniRef90-N9S1H3 |  |
| UniRef90-X2IW28 | TVDQY DI GFTESTNGKGQITVTVNK NGQVQLVATLGGK |
| UniRef90_Z9JNG7 | ATNLPNDIGLRNTTSRCGITVTIDDPAKTSTIVCTII |
| UniRef90_N9F | SDFSLDNAGTDQTRYLKSVVISTYAGADCA FTIISFNND |
| UniRef90-W6M0B6 |  |
| UniRef90-W7FYU2 |  |
| UniRef90-G2LAB6 |  |
| UniRef90_UPI000315 | GGA SDMNKLGTVVLT A A S GATDSQAKFTFG |
| UniRef90_UPI0002F5ACB4 | GVS A G S N T L G TLS I G T D K K S IE F K F N D G |
| UniRef90-N9TSE3 | A GALLA EENGFTLS GRYVKQITGAVVNGGECTLTAKFNTVGN |
| UniRef90_W0Z573 |  |
| UniRef90_UPI0002FDD560 |  |
| UniRef90_A0A059LAB2 | N A ANSQNCTITAVTGT T P G |
| UniRef90-N9C6Q3 |  |
| UniRef90-V2TT42 | AVVGQ R T T DLGIVNPTFGN】SLA Q G S NGSGNIVLSFTTG |
| UniRef90-UPI0003 |  |
| UniRef90-A0 | QAADFGAATDMSAMGTLAFVKDGDVQTGTTTFTY |
| UniRef90-Q595 | NT T T T T DGGATPRSNLMSAVALGGFKNNGAGT■T GTLGNR |
| UniRef90_Q7MHT9 |  |
| UniRef90-E1RML2 | RTDTT R CGl TVKVENT G L A N |
| UniRef90_L0T4B5 |  |
| UniRef90_B8GN27 | GLE DP T D\A G S Y VVSVDA G T S GVIVVTYG N |
| UniRef90_G0JWM7 |  |
| UniRef90-P35646 | NS R R L E F L GL NQNPNSNLIFTA SVGLNSNQFEVNATFG R |
| UniRef90-N6ZSY2 |  |
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| UniRef90_G4CKR1 |  |
| UniRef90_G7F7Z7 | N A ASGSEDGLG D A K S C S L H AVT A T T I V G |
| UniRef90-N9B6V6 | TASNII I T Q T TPGVDTDGTNKA ALSETGT\\|VGTF S G |
| UniRef90-J3CW49 | D L L T A T T K R CAVTGFTGTA APANSGGTLV |
| UniRef90-UPI0002D | SGAQPS DLGVSA GANSLGTTIGVTSTS |
| UniRef90_UPI00046AC |  |
| UniRef90_Q47AP6 | TATDVGFIGITTSAGPTFCTPTVTGTTIVCTG K |
| UniRef90_Q9L9W0 |  |
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| UniRef90_G9ZFT9 | A TNEAA GVAAAST\\|QGKYVSKVEITT G G GVITAY L R G T |
| UniRef90-B7U2W6 | DLGGSTTSANDLGTLASAI T G S G S A AVPTLTT F S F G |
| UniRef90-Q4UXU4 |  |
| UniRef90_Q59508 | Q $\square$ GLLTED DGT TPPRSNLMSAVALTGFENNGAGTIDGT】GNR |
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| UniRef90_Q3RG90 | P T T V S T DI GLLRTP T A R C AVAVDIIKTDAESTDT CTL |
| UniRef90_B6ELG0 |  |
| UniRef90-Q0AC33 | NSEDAGFi GMASDEPD\GTLS FRAD DGGDDFDF S T |
| UniRef90_W5YJT5 | GFTSSTLLL TNNEPSVSFDGATGAGTDTGVMGNE |
| UniRef90_UPI0002FCF887 | DFGAATDMSAMGTLKFTKDGTTATGTADFTFLP |
| UniRef90-DOSNE3 | T C S S l K A NVTVA GVT T I C C K L |
| UniRef90-W4SS87 |  |
| UniRef90-T5K | SEKGQ TTVKNGTPTVQLEA T L D |
| UniRef90_W5YNK7 |  |
| UniRef90_A0A059EQC7 |  |
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| UniRef90_Q5 |  |
| UniRef90_UPI0002FE93 | SS DL |
| UniRef90-W3ZQT4 | A DLAAAI GAA $\square$ DMSAMGTLA |
| UniRef90-D4T9F5 |  |
| UniRef90-T0Z0M9 | G IP QAA SLA GH |
| UniRef90-Q7M1D7 | VAS PPS DI K GKYVQKVEVAK GVVTATMASS |
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| UniRef90_UPI00036C2F11 | G GDGSMNGLGTI T L D P VGTS G G T T T F L T |
|  | Y D $\square$ GFTES T LD GS GKS QIQVTDNK D GTVELVATLGKS |
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Y $V K K S E L G A A D A T D A D K V N E D S M A T D G A F P T V A A A D M$ RAQVTEGLSLMDGAKTAVAEVYTNTGTFPASNAAAG KEQAAEALNLAGGQKAAVVETYAYRETWPQDNKEAG KRAQVSEAVQLLGGLKTPVEEWYSNKGTFPPDK RSQVSEAMELASGLKGAVAETFSQDATCP TNGTN
$S Y \mathrm{~V}$
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ASAEEYAGG
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SIISAKTIGKYVKNVDKQPGVIATYYAKMNE $G \square A T A T D \square N G K Y V A S \quad V T T A G T A A A S G G C T \square T A K M R A T$ $N D L G D S A G S S T L G T V S L L S S N D G$ WYTSSVRTGKYVSGVVPAAAGTGDAATCADTATFKAATE TKEDLTTAGGTPRSNLVSAVTLDGAFATGEGSDKAVLGTR
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A ATA A G $\square P \square D T V T D T$ GKYVAKVTAAA TAATQAQLGTUA A NK A A G GLKSAANDLGADASA PAGGNPTDTFTF $A A G L K S T T N N C S A V N V T A N G T$
$G L A S T E S I S G K Y V S S I V D V S$ ANTGVG A N
G T G
Q $\qquad$ WIKVLYEGP ATTSLAD $\square G T K T D A N P L G E \square T$ MGRFNNGHCGIVETMAVP
 DT GAAGANDPAWSGKYVKGVAAAHAGSEDSATCADTATFK DA ASNEDRGQYVVSVSAGT DDTENASSEDGLITTVTFGNQ LIEAAANIK

GLSKS

A A NLDS T D $\square$ G解 VS
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SPFIGQVRI GRFDNGHCGLEATDRAP GLASPGS TGSYVASVSAGDGLITVQY GN



S GLT TSENSATPRSNLMESVVLE GFDSNGQGS
$V G 1$ A GSNTLGTLSVGSDNT $S$ SVF E FK S G


$$
G E A G \square P P A L S \| I G K Y V A E V T V P A V T A S G G C E I T A T Y K G A
$$


 GSASHA

LGTITAAGS
K $\square$ E F T G G
 VASPPSDIKGK Y V V K E VKVENGVVTATMNS S
 TAVGATTTMNKLGTLSFE S T T S GANGTI KFLLF AAHASNLMSDGTTDSVTAVTSSVDSTATDTGTLV
 ATA GFSPAASYA GRYVLT GT DA GTAAPACTMVRFG $\square L S P A D \square S L N N E T S \square C$ S S S A N NPDNTGTAAKA V VCTLK



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NLS A S DVGLLQSSSNACS S\| SVSVAT

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SDKSSLDGASVSFSRDESNG WSCTVSGASGVAPKGC ANSSMTSNDTLTFTREDTG WKCTTNVPA KAN $\square A \square Q N Q V L V L S P A T T G G T W D C S T T L S G K Y \square P S V C R K$ NAPSSPSSASVTVTRNATSGWSCAVATKADNAPKGCPQ HNNGAVSGAAFTYSRDTSSG WTCSLDVPAPTKPKGCS GTNATLNSTNTTYTRSASG WSCNNTTGQTDKSCN N


N GAHPNVTGATIARFERTVTGGRWSCVITDWDTSYNPGNCS VKGLESKKGLVPVVNNGSWKCQTTVVTKHLPAACR SNSSVPANTTIDYVRSATG WGCTVSLKA
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 D A N K A I K T S T FVVLSA DT S T GA WS C K S TVVDP K YL P T S C R SASKDLL L VTGDRSATGGWATQTTGAE N NK S SI DTAFVSDAKTNSGGWSCSFTTSNKLIPKAC





 T G G A S N N A A T I 1 Y T K D N A T G WS C T H T IV T S VVVP A G C NAPTQQT GATLTWSRSDQ GAWSCATTASKDLDAPKS CPQ TVNTAV $\quad$ I K Y S K S S S GWVVATADTA ETKPKGCN A S R Y I GE G A WLAL M P S N A D Q K WQ C S A S A A E E L L P VG C

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SKSQMTRVAGE $\square A A R K T D V D A F F E G R T V V R G A T D D V$ RAQVTEGLSLADGAKTAVSEFYTNTGSFPTSNASAG RSQVSEAMNLAGGAKTAVAETWQTNGTWP
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 RA AVVSEAALS
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Y $\square$ ARSQA A E G L T T A D G LK
A RAQVSEALSVLSGVKAKLAEEYAFEGTFGDAK
ARAQVSEA $\square L L A E G Q K S A V T E Y Y L D H G E W P K$
$Y \square A K S Q V A E A F T L A D G L K T S I$ GTNRQSGSCFANAATSAG $R G Q V T E A V S L G G G L K S P L A E Y G A D K N A W P T A L V A P T$
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DUNTVS
$G T A S D I$
$V S Y S G$
HA QLG
GLTDTS
TDSKYVTS
ATAGSELASS

EQESDL
VASSEWTNGOLEVTAAT
K NLGLTTADDSTTPRSNLLATDGLETNANTITLTGTLGG KPPEQYA VATDQKADKGNYQKVTVAVSASQGTITATFSSTSP TTNASAGLTTNTDDEGEYVLSVTVGANGVTTAAMRNAA TELATVGINSSSIQNGTLTFTSSA ALTMTSP LDAANTANGKYVNDVAVGT ATTKPTAASLAVSGTY Lla A
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LA QLGTASDANDLGALGSTLSSAS EPVLT TT F GTAS D
APETYA GRYVAR ELLGGPKPCEITAIFRTDE TKAVPGDDGDSASTGNCSAATVAPDATTGAATDAMKCTDN QDPRQDNIGWTGSNDAAGLDVENGDLPNMTWSVRL GE TK GVEEDDGKYGKATVLEQAATGTAGLVCKFNSK VASSPSD VKGK $^{\text {V }}$ SKE VASPPTDロ KGGSCSVIVDVTE QAG【KGKYVESVTVAK GVVMKCTIR VASPPTDQAGDAANVRGYTDKVEVGTGGVITAQMRTD पGDA GLETQQSDKVVSSVWND A WTH SATMKAA SSTYVGSLGYTGVSDVLGVVTVTADNAVGGGEVVVTAAN AS $\square$ SAAT GLSTPTQTC TI ADNTGEVKNGVT NED TGKYGLAVISGTYHESKTDAKDENGCVLTITYGSGTG DLGEEELVSQARYDQSVDYYYSDQDVAIGMEMR NEA QAPEHYANDV LTSVRVGRFDTTQ CGMEAVMHAP TED DNTSAGVASASDIKGKYVQKVEVNNGV VTATMAAS VTPSANQLNATLIGKYSTVTPSIGGSYPSGVITVTMTTG GVASSSK KKGYVKEVEVKNGVGVTATMDS S
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NASSALDEGTMVYTR AATGTWACHSTDPAEYRPTGCT NANNDIHGTVISQERDAT GVWSCKTGWKDKF $\square P T G C T K$ GLPT GAKAIITRDSDLG WSCATSTKSAAAPTGCP DVNKEVEGKTVSLTPTAANGTWTCTNGVATKFLPSSCR NAAVPVKNTEVHLTPSAQTGVWSCGGTMDTYFLPVSCK AAKNAV FTYSRTTGGWSCTYSAISAAVPKGCN GAAPA ${ }^{\top}$ GRLASTAGTAVSDQ KESKGIOGATITRTR T
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ARSQLVAALAEISPGKTQFELIALSEGNKWPVKLVAPG RTQVGEGVNLMAGAKAGVADFWADKGRFPASNASA KSQASEAMTIADGDKTNIQTNDQSNSCFSGGATSAV RSK $\square$ SGGLTLASSAKTSVSEHAMSKNAYPADNAAAG MAE GQKSAVTEYYLNHGDWPGDNSSA
RAQVSEGMDAASAVRTGVTEMFANGGMNGVNAYATE Y $\square$ AKSQVAEAFTLADGLKTS GTNRQSGTCF ADGAAA


ARAQVSEVILAASAARTDLSEYASTEGQLPPNDYAVQ
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RSQVAEAFAMTSAQKTADAEYAQNNGAYPT TATKP AKSKVTAALADLASHKTQFEMEKSAGRVPTPATAGFQ
 KRSRVSEGLSLAGGAKSALTEYYASNNKWPANNAEAG
$A R T V S L L G E V N A L K S N A E S G N N G G Q U G T$
ARSQAAEGLTLADGLK DRAADHLENGSCMETANAGA

UniRef90 F5S8W5 UniRef90-C9X152 UniRef90-UPIOOO3719704 UniRef90-H1R1E4 UniRef90-L2F6B3 UniRef90-14VLY3 UniRef90-W9AS67 UniRef90_N9PWV2 UniRef90-U1JZ84
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UniRef90 L2F5C3 UniRef90-L2F5C3
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隹 GTE ELTGKYGKAV

TNASAGLAKAESTTGSYVSQVAVAD ATSIIASAAGSTSTANSLGTIISF VVPNSGEVNVTLVGKY SEMSDSVIGNYPTNTVKFLLFNDT NTDDAA NTSAGLASETDTSGGTYGALVAVGVDNGVIFTVYFTKKNN GVADKAQDTGNAVTSVEVTAEGAGNGATGAGKGVITVTFN ATGSNILDGAAQSGETLAAGTGVPQANTGAATIVATFGNS LGDLGTATDANSLGKDTVSADD DAGKTLLFTF ADDKTTGKYGTATANTDGLQETGKDNKLTCGMHYKFDQV V GGVSSGANTLGSGTDPSDN GVGQFAHNGG TEDKDTGKYGKAE QVGDGGDTKGK Y VNDIEVQTNAGDVEVQMTFATQ DNTSAGVANPTD KKGKYVESVTVTNGVZVTAKMDSS GTCGTEEDTGKYGTAKILEDKGTGTPAKLTCGINYKFNTT
 KTDGSPNVDTTAlASGTGAITVATTSKAGGGNVVLTPNAG ADATAAG|NTGALGSYVNGVAYTKTSDTVGVIEVTGTS ASPASD $\quad$ KGKYVQSVTVA NVAARSGDDTSAAGTGNCVITIPANPDTAAGSPADKCADK CGKNSASAGVASASKIIGKYYVKKVEVKNGVVTAEMAST GTSTGSCSLIAVDGDGMTCTURDPGRIGSESTI ALTYTDS S $\square$ PAASA

TNGSLTAAGTYADA
$\square K R T \square P E$

$\qquad$ GTTENANNLGTTLAASG

QNTTENCTTTTDATG
ATGSN\|LTGNAQSGETLATGTGVPQVTTGAATIVGTFGNS AAGYGGATGRYTTSVVIGG ANGLITATADAV MSATPTD TNGQYVSQVDVNAGEIVITFKGAB TQ GVVGNEDVGKAVITDNAYNPDAKEPGDENGCQVLI TYGEG GEKGNED GGKAVTSGTYNEAATEPDAENGC VTUTYGEG YGGAVGKYTASVAIGPSGVITSTGGV
ITNNALQSD SEAGE DESQYVKSDEDEE GGNDRVTFNAT TGASLGLLKAASSY GRYDFGLLSVGPGDGUITVIFKLUQ $D V Q G \square D E V S V T L D G K Y S T V S N T M E G T Y P N G T T K S T T N T G$ ATSDLGDDGGNANMNALGNATASLEGAGAASNAKSTDKFD TSTTAGD ARTGKYVASLTPESREKGFEVIAKFRNT CGQTPAPANGAAATDNTGNYVSQDAVQTGNIIITYSATAP DWPPLSSLPGTKNSGVYTSYVETGTLDDNLYYVQATMRTS GVDKSGNVASTAVDSSSGVITIMTTPKAGGGSVVLTPLGA MAAP VNLNNAQSGGGTNTD

TDNAAAGDPAPNK LPATPADINGNSVTSLGNFVQNITLENGAFHVQLGGN AVATPANGGLNATTNNCSAVTATSTAGNGKISVAVKDNIEE ETPVAEQLNATLTGKYSAVNDTVTGDYPAGVTTAKMTSG AGTDT, VSGKYGSATITTISGTAAANNLVCGITYTFKTT FSSPDTD
 TTNRITAlAVEGATGAGVVITATMASS $\square A N D Q A$

PDRAAAGLQASTANCNDT
VTSTEDECAVV ASTEDVAKGKYNPDKVMGKYGTATVLQDGTGGDHYQFNKT
VASTATDT NQTSDYVASLSWDGTDI DVASQSLSAGATGNIQLRPTDN GLAEPGSIEGGYVDSVDAGSEPGKI LVTFGGN ADNASAGLPSAGSISGNYVAAVAVRDGNGVQY GN ADAAAAGDNTAPAGSYVDNVAYAKTSDTATVSTVTATIK ПATD TA DKGNAVKSVTVTADGSGATGKGKDTVKF IA ANDTGNAVSGVTNAVSVSRDGDTAAGKGKITVTFNDK



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UniRe90_АоАоо9MVI4
 NVNNETKSKKLSLKRQNGSVKWFC
ANAKISGATLLLSAAKTTAGTWTCVSGDSTVYLPSSCT
 D SAFASTDEVKMAKDATSGLWTC TVPTGVTLKGCT GVSDLIAGKEIVLKLDETDGTLKLATSAGNQVSSKA KANTA DTKTLVLSPSAGSTSWTCNGTVSNKYLPSSSCRK SSLNGSYLTLARDSDTGWTCTTTVGTATIPK $\square \mathrm{V}$ A NGQTVFETTDGAATWTCTGTLNAKYRPNACR $\stackrel{\mathrm{V}}{\mathrm{T}} \mathrm{A}$ DTKKIVLVPDASGGSWECQTDLDSGVVPATCR GKVD NGKTLIMKGEAGSVKWTCTGDLAAKYRPSECRK ASTALKSTPTTVTWTRTTDGTWTCESTAAEKYNSSACP GATSSISAATVTFARGNSGGWVCTNSKQATVPLDGC KVSDLLKTKEIVLKLDESSGTLSKSSNIDTKYLPSA AAA GARFVYTRNTSGGWSCAYTQPTAVAPKGCAQ ANAANLAGKlLTIRPTSANGAWVCATDVPSKYLPTACR GVSDLIADKEITLKKDEDSGTLKMTNTVDSKYLPSA GVNAELAGQSVTFTGADEGGAWSC DLPDDLA NVNNEIKGKKLSLKRQNGSVKWFC GVNKE: QGKRLSLKREAGSVKWFC GVSDFLTGKQITLKLDDDSGALKGDVTVEEKYLPSA NVNNEKGKKLSLKRQDGSVKWFCTDNLNTKHLPSTCR VLSGASISIARESTG WGCTRT G SAR $\downarrow$ NGKF $\downarrow$ QWERTGDTGTWTCYTNVADELKPKNCT GAADKAG GITTDLNGKKFKMTGTAQGVAWVCTTDAPAKYLPASCR VNNKENNSTVIMTPTAENGSWDC TPGRLGAGATIQLDRSAT GLYTCSTTVAAAYKPAGC GVNKEIKGKKLSWARRQDGSVWFC
ANADALNTK TLDTDKAKNTWVCATTDDAKYDPGSC TVANAATGATTTMNAGGFACTTSVAEKFRPKGCT SA NAKVDGKTMTLTDNKDAGAWQCTTTAPPAKAPSTCN GVNANAGKTVTLTPPALTGSFSCTTTMDQKYLPKSC NGLDGETVVLSPTAQUSGWDCTGTVDGQYLPRAC GSNSSISGATVTMTRDASTG WGCELSANA NAPTQVTGAKIKWTRTSTGG WSCATTGDKTDAPKSCPQ ASTALKSGAKVTWTRTVMDGTWSCGSTAVEKYNNASCP NVNSNI NGNTLVLTYESADGAWQCNS KVSDLIKNKNVTLKLDSDSGTLAAATDTPTKYDPSA GVSKQIDSQTVTLSVQGNGSLKKTGGTLADKYVPKGCR

 NVADANGQTVVFTGDANGVQWSCEGTLADKYGPANCR
GUPQLEDKSVMLAATERGGANCCSPNVEARYMPASCR G GA
 FNTGNAAAGDIEYARTPNTPWGCTNNTNPKVSDDSCP GVSPALSGRTLVLA TANGKEWFCNDNTDPQHRPSS ALSPVVDGRQLTLRPAAGNGWDCETGPSENLLPRACC AGPNLAGKQVRNVYNYERRLWDCTTDLNSVYLPSNCR GVGDDLLTNKE DETSG SASAKVAGOTVVITASDTNGAWSCTSSAQRYLPSSCT DGNTSASGTVIMVTGAASVGVWDCTSTVDSKYLPANCR ANTNALATKVLSLDPTAKNVTWVCNTTHDAKYLPGSC KVNASLQDKYLTIRPA RVTGTWLCKTD:EPAYLPSNCR RGSATDTSGVITLTRTADTGGWACSSDITAAMAPKSCT KAAETGK ETLTYTTADGGSTWACDTTULAKYLPNA GVSSKIAAKVLALQTNDNGVLSKATTVDDKYLPNSDT AAAGVADGSTIELSPTTSAGTWTCTGDVDDKYRPANCR NVNKEIQGKKLSLKRQDGSVKWFC
GDNPQI GGAAI SNANSTGSVEWVCTTTDEAKYLPAECR NAPTQU TSAK TWTRSAT GAWSCATTANKDLAPKSCPQ GVSNLLVSKEIVLKLDEASGTLKMTNGVENRYLPSA GVNNEIKGKKLSLKRQDGSVKWFCATNINTKHLPSTCR NVNNEIKGKKLSLKRQDGSVKWFCTANINTKHLPSTCR ANNQV
AHNNISEGGSNVLAFSAVTGSWVCSTSIGSQYLPADCR RANAQISGKMLMLAPQAEDGSWSCRGAGSAAALPA NVNSTADTKKFKLTGTGAGVTWACATDLDQKYLPANCR $G V N A K V A G K K I L T P P A D S F T F A C T T A T P Q K Y L P K S C$
$G A G A Q L A$ NEKVKDNATLILEGTGNEAQWTCTGDLDTKFRPSECR VK S
DASAAVB GDTLIMEGDAGSVKWTCTGTLVTKYRPSECR
TASKLIKGKTLTLSYTQGGG
NVNNE:KGKKLSLKRQDGSVKWFC
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 $S Y V T K S E L A S G A T T V R N L L T N I D M Y Q Q E N G T Y V$

R A K I S E GLVVL L G P V KLLAV SEYYYA S H GRDLPTATNW RA QV A ES YYL V D ELLKTEI GVVYAANNRLDPDAAEVSPT RAYISEVLVAASAARTAVEEYHAANGSWPASNASAG K T R I H T A MYEDS A A K PA YE I I VT QN A A
Y VA R GKVVTEA LS LAASRAKVAVVDSYQDSRSLPADNAAAN
ARAQMSEAL NLSGGLRTAMVEDFTSTGSWPAGTGGDD
ARA Q $\square$ SEAI T L S D GQKA A VTEYYADKGAFP
ARA QVSE GLLTLS GDQRTAVAEYAMTRGEWPDDDRFDA RSQAVE GFKLTS GLDRDDIAS SVADTNAFPTAAMVAP
A RAQAA EGASI A A AAKTS I A EFWNSEGTYPGTATTDK R A K I S EVMMGLAAA GKTSVVSEYYVSMGTMPTTPDA SG R A KVT E GLLS LA SAAK LAVAADAYAAGVATASLDSTAD
ARAQAAE GLLSVTSGLRTDIAERVATGRTV


 RSRVAEGLSLAGGAKTSVAEYYASHNQFPANNVTAG



 RTKVVA EGL N LIATPAKMAVVETIASKGSADFEQAATG


MAE
GQKSAVTEYYLNHGKWPDGN
RAKMSEVLVMMEPAKDAVSETVSSMGSLAAAFDTAG
 R S R V T E GlL T TA S A MKA TVVENDMNAGGTSMPSS GNC A R A QV S E A L L A E GQK S A V T E Y Y L N H G E WP K D N A S A G


[^0]

 GSSCVGVQEVSAS NATTNVATATCGASSAGQIVVMMDTY
 D GVKREYIGL N LR
 F

GMTLADVGASQTMSGLGNLAL PTAGLTVSSAEATFTFD


 GEAA GRYVSTVTHSGAVVTVTMDDDAPVNGGQMLLTAQTT, TSNAEAGVASASTIKGKY,VTSVTIGANGVITALMNSS $\begin{array}{ll}D & D G P D G Q \\ N G A & G S \\ N\end{array}$


 $G A K N A Y N T G L G T \| V G V N G V T E V G G T V T T P G V P A T L T F T F$ ASNASLNLPGT\|QGNYVSNVTMR SAGVIQVQYGRK
 LATAN $Q$ K KGSSVHSLTVVTENADDGPGGVITVVFNNK NEDKGKYALATVEGKPADNLSELKPEDKNGCQVKIEYGNG AVEVSPSGGVGSAAARMGTYULHGGVTVEADTAKISVPFD A $V$ S A ATPNVASVVVSGGNVTSTATATTPTGCDITATYQST


IDSTLAEL
EGNYFG
AGDASLTGPG\|
 GVVGNEDKGKYGLAK IVGDYDASKTEAGNGCKVEDTYGQG VTNTAANLNGQ YFSAGGVTVDAATGEDQIVFDAGAN GTGPVDAGVATSSE IKGKYVEKVEVANGV VTAEMKSS

 VASASD KDNAGSYVK $\begin{aligned} & \text { D } \\ & \text { DA D D }\end{aligned}$ DTANWNALGAATDMTALGTLELAQVTTGTGGTITLEF

| UniRef90＿G0JWM8 | NVGTWRNN LIMLTRDSDSHEWRCWTA\｜PYDLL |
| :---: | :---: |
| UniRef90－G6F7F8 | KA KGANITLTPTYASGTWKCTTTSDKKYV |
| UniRef90－U2EQY7 | GLPP $\quad 1 \mathrm{DDDLLYLEADFEGGTWNCTAGVAE}$ |
| UniRef90－F0F165 |  |
| UniRef90－L1NLH2 | NATNTLHGTTlTTLTRDA EGGW |
| UniRef90＿N9FLP5 | GLLPSDLLGKTLVLTPDVGS |
| UniRef90－UPI0002E68AF3 | PA KEATVTLKRSSA GVWTCVNSLSSAVSLNG |
| UniRef90＿UPI0002F8BF33 | SS VNTAEIKYSKSSTG WVCATAVTTDT |
| UniRef90－F9U |  |
| UniRef90－M1GSJ2 | YN K G KVLTLT RANSDGTWTCGGTLDPKMLPADCR |
| UniRef90－UPI00036C3BC2 | EVSSKVS GA HVWLTP QATTSRWVCS GDNDTRLLPSNCR |
| UniRef90－N9RLV9 | DKSSLET T A EIY Y T R T P L G K Y S C K G lip Y Y L P K |
| UniRef90＿LOGWB0 | DAVSQLEGRSLILQASANEGAWCCSPD\｜APRLLPS |
| UniRef90＿UPI00036DBE9E | DAGDRVTG WTCSSDMEDKYLPSSCR |
| UniRef90－Q462L9 | GVADGVKGAS I L T P A A S G T WV |
| UniRef90－UPI0003676560 | AGSGAI RDTS WQFEFTEEDGSWICEGDワDSKY口P |
| UniRef90－O85827 | VIS GSNMQLIPMFNNAQWQCGGTL N |
| UniRef90－UPI0002558DEB | GVSKDLQSKNDTFTPVAASFKWT C A G SVVLQ |
| UniRef90＿K4KNX5 | GNSAASGNVVFVGT GSPDTGVWTCTSSVADKFLPANCR |
| UniRef90－G0A5I4 | GVQPN LTLLAPTFSAGQWLCAVAASSKYMPANCR |
| UniRef90－UPI00036D0C6E | SENSGDS GDMLLYPRDWDDAGWI |
| UniRef90－UPI000474E9D9 | GAGQAFEAKTVTFTR GNEAWSCAADワSSEFKDKGCS |
| UniRef90－E6PTZ0 | A NS DILG S TLLLSRTSAGAAWT CVS G |
| UniRef90－W7G729 | EPGTRIAGSTLALNYTDTVGGFSCVVTVDDKFIPKGCTK |
| UniRef90＿UPI00037D733F |  |
| UniRef90 | VAAAGKNS L VLTPSVAS $\mathrm{V}^{\text {T W W C G G TLD GRLRPSECR }}$ |
| UniRef90－K7XCS0 | NIS P LIIK GQTLVLN QLVNGSYDASST |
| UniRef90＿DOW5Z4 | K GYHK GKILTTLTRDSESGTWVCGGTI EPRSLPAVCRR |
| UniRef90－U7GQS0 | GVSKQIQSKILQLDKVRAGG |
| UniRef90－G8UYX8 | ANGDV TWTCTGTLLAKYRP |
| UniRef90＿UPI00047B098D |  |
| UniRef90＿UPI0002DF4935 | GGEAK GKTLKLVPSAANPTWLCQTALPAKYAPEVCR |
| UniRef90－UPI0003639EEC | VHS GETMTLELNAAENQWECD GLDTRFLPTACR |
| UniRef90－T7IAD4 | NVNKEIDQGKKLSLRREAGSVKWFCKDKI D T K HLP STCR |
| UniRef90－P27689 | TAGDKISGKKLVLSFVQGDG |
| UniRef90－UPI000360187E | NTETLALLPALNTTTGQ】EG WTCTTTLEAQ |
| UniRef90＿E3D501 | GVNNEIKGKKLSLKRQDGSVKWFCTADI D T K HL |
| UniRef90－UPI0004759463 | QGPVVLTAREVT GAAAGT W |
| UniRef90－D6CUP1 | NPNQAT GYTLVLQPAPGEGSWVCTPTLPSKYAPPPCR |
| UniRef90＿N9AAN5 | AKGVSI KLTPSFSSTGSVWKCTTSSDKKYVPSECR |
| UniRef90＿Q99276 | GVNKEIKGKRLSWARRQDGSVW |
| UniRef90－UPI00031B1001 | GTGTNPKGNTV ${ }^{\text {T }}$ WSCSGTM |
| UniRef90＿R1ISR1 | GSNTSLNGTEVQYEKSATG WKCVHNTGVEDL K C CT |

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UniRef90_UPI00036DBE9E
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UniRef90_UPI0003676560
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UniRef90_Q99276
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UniRef90_R1ISR1
lupas_21
lupas_14
lupas_14
jnet
conf
conf
sol25
sol5
sol0
sol
jhmm
jpssm


[^0]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm

[^1]:    lupas＿21
    lupas＿14
    lupas＿28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

