## QUERY

## UniRef90_M1SX50

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UniRef90 UniRef90_UPI00047B3990 UniRef90_UPI00037FB59F

AKPEDAVKYRSALTMASHFGRMTPVVKGQAPYDAVQ QFKKPEDAI KYRQSAFTVMANSFGKIGAVVKGEAPFNKDE QFQKPEDAIKYRKSAFTVMGSHFGRIGAVVQGKAPFDAKT DPEDAI DYRQG ${ }^{2} F T A M Y W N F G P M G D M M K G K D D W D G K D$ QFAKPEDAVKYRQAAFTVLASNFSRMQPVIRGQAPYDAAQ QFQNADKAVEYRESVMTVIGTHFGRDGAVVKGDVPYNKDE NFQKPEDAI KYRRGAFSVLGPHFAALGAMVNGRAPFDAKA KPEDAIDYRQGVFQA KWHFGTMGAMVKGKMDYDADD QFAKAEDAI QYRQEKLKAMGEQSDRLGAMVRGRVPFDAKV HFAKPEDAVAYRQNAFNLMQAHFSPLGAMASGKSPHDPAA NFDDNQEAI EYRKDVFGLDAYNFSDMKAMLKGEKDFNQQL QFQKPEDAVKYRKAAFTVMGAHFGRIGAMASGKVPFDAKV A DPEDAI DYRQGVFQVFKWNMGPLGAMAQGDIPFDREL QFAKTEDAIKYRQGALFVMGQHFGRIGAMVNGRMPFDAKE QFAKPEDAVKYRQSALSVMGTHFGRLGAMVNGKVPFDAKV QFAKPEDAIVYRQSALFVMSQHFGRLGAMANGRVPYDAAA QAVDPEDAIEYRQGVFKAFSWNFGPMAGMAQGEIPFNEEM EFLKPEEARHYRHHGMEF\GDNFKRMGHMVKGEQPYEKEA NFEDAKDADEYRQSAFSLIAYNFGDMGAMMKGKKPFEAKT QFAKPEQAI DYRQASMALI GSHFGRMAPVAKKEAPYDAAA NFDDADDAI HYRQSAFGMI A YNFGDMGAMLKGKKDYDANV HFESTDDAVEYRQAAFKLIGDVFGALGGVARGD\EYDADA NFESADDAI HYRQSAFGLDAYQFGDMSAMLKGKKEFNADV NFKETDDAI HYRQSAFSLMAYNFGDMGAMLKGKKPFDAQV DAI EYRKGAFSGIAWNFKRMAGMVKGEDPFNAEE AEPEDAI HYRQSALSVMGWQMGPMGAMAQGDIEYDADE
$\square$ FARPQDAVK FEKPEDAI EYRQAAFSMIRVQDSDMGDMLKGAVPFDAER Q F FAKAEDAIKYRQSALFVMGQHFGRLGAMANGKAPFDAKL AKPEDVI DYRQGLMMTVMAGWNFGPLAAMVKGKHPFDAAE NFESSDDAI QYRQSGFSLMAYNFGDI GAMLKGKKDFDADV EPEDA QFAKPEDAI KYRKAAFTVMANHFGRVGAMANDKAPWDAKA QFAKPDDAI KYRKASFNVMATHFGRLGAMANGRDPYDAKA FEKPEDAVIEYRQSVFSLDRVQDGDMGDMLKGKVPFDAAR KPETAVNYRQGIYHAILWNFVPMAQMVRGMRPWNQAT VVA QRMDVMKQMGQHMKALGAMVTGKTVFDQET AKPEDAVKYRQSALFVMSQHFARI GAMANDKAPYDAKA KADDAVEYRQSALFLLGNHFGRIGAVVKGDAPFNKDD ADSEGIIKYRKNVMKSSGGHMGAIVDILKNDLPLQAB QFAKAEDALKYRQGALQTVLGSHFGRVGAMANGKAAFDAKS PNEAAEYRESVFKATAWHFGTLGAMAKGEQPFDQAV QFAKPEDAVKYRKNALFVMQQNFGRLGAMATGKAPFDAKA FKEKEDAI EYRKAAFQLDRYQDGDMGDMLKGKVPFDAER NFKEADDAI HYRQSAFSLMAHNFGDMGAMLKGKKPFDSE $\square$ TDAEDAVKYRQAAFQLITRHNMGDINQMIKGEVTYDASR FNEADKAI AYRQAAFTMI AGNVSEMGEMIKGKTDWSDA


Q A N T A
V K Y R
$V$ VKERMD GMKAI GQQVKIMVPMMKGALPYDPS T ATELRQSVFKLLGGNMGPLGAMAKGKIPDDAKV
$D D A \square E Y$
RPDDAIKYRKASFTVLATHFSRVGAMANGRMPFDAKV MA DADASI EYRQS I Y KAVKWHMDPLGAMARGDKAFDADA


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A EAAVEYRQGAYTITKTHFGRMGAMVKGATEFNAGE
 D P N S PLGKRKADFK DMLK TSEDLGGMLRGRLPFDA GR ANAYTEYRQSVFTLLLKSNDGPLGAMAKGKMEYDTDD QSAD P
 E EAQI 1 EYRQAVVLTVMIGGNLVGPMGDMAQGEDDYDAER NFDDANDAINYRQSAFGLI A YQFGDMSAMLKGKKEFNQAV AESAQEYRQAGFEM\|RYHFGPMAGMVKGE\|PFDAAT DPDSP L G QRQALFK QMLLKVSEDLGGMLRGRIAYDEAR
 D K Q A K DVT EFRRQA L FNDAEKAVEYRQKALS VMKENFSAMAAMVKGEVEYNADA QFAKAEDAVRYRQSAWFVLNTHFTRDGTMVRGRLPFDARM

## QUERY

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 A A DNAA DVETMSKLPYAGFVPGTDKGDALPA WTEQAKFN AAKHAGQLDRVADMPWQGFTEGSDNTDAMPEVWMNREAFD AQDSADVVAYMAKLPWVAFGPGTNKGKARPGVWTEQAKFR AADSAELVATMAKLPWAGFGPGTDKSKAMSEVWTEQAKFK AAANAEVVADMAKLPWAGFGAGTEGGKAKPEVWKEDAKFK VVRHAQYVEMMSKAAPEGFTKGSKDTEAKPEIVTNWDKFE FI KYASLLKTLAPLPFEAFYKGTEGGDAKDEVFTDPEGFN FAMRATNVAALSMLPDEGFDEGSDKGDALAKGWQDKADFD IAAKNVEVLTVALAALPWSAFGPGTEGGETKAEAWSDAKGFK VKANA QVLSTLI AK QN GAVLETV ATLPWQAFGA GTE GGKTKP EVVWKEKAK F D FAKRAENVAALSKLPAEGFDAGSDKGDALGKIIWENQADFD


 FKMRANNAAA L NKMPWEAFAP GTDKGEALAAAVWS QNDEF I A QENADVVASIARLPWAGFAPGTDKGKAKPAVWAEQARFK FA QRAQYI S QL S LMP EEAFVEGSDKGDAKPEIWSDWNGFT A A DNAA LLAALAPLPGTAFGPGTDKGRAKPEIWTESDKFK
 A AMRAANVAALAKLPDEGFDDGSDKGEALAKI WADKADFE FARRAQNVSDMAHMPWEGFVEGTYDTDALAKI ADNPDDFQ A A D N A E I V A D MA K I P WA GF A H T T D K G K A K P E I WT E Q A K F K AADNA ELVTTMMSKLP WAAFGEGTDKGRAKPEIWKESAKYK
 AQHLAETMHQHCEHVMHMFPPGSDGSEATPAVWTNREEFD A DE NAE VVD QMAK LPWA GFVA GT DKTRAR SEIIWTE QARFK


 FEEKAGIVADLSRLPWEGFTAGSDGSHAKPAIVENRADFE A A DSAAVAEFMSKLPWGAFGEGTDKGRAKAEI WKEPAKFK

 FSKRAN QLS SQLTLMPLDAFVEGSNKGKALPKVWTNFPD FE
 FQQKRAEAA K H L S Y I P F D G F GA G T E N S D A L P S I WE N W G D F S

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 $A L H H A R Q V A A L S Y M P L E G F G E G T Q G G G A K P E I W N N F E Q F S$ $F A E G A V K L D A L A Y E P W K H F P Q E S D Q T S A T D D V W Q K Q A R F Q Q$
 LKVFANELGALASMDVSAFGPGTDKGRAKPEI WQNQEDFK ATMAA D NL H A V S M $\square P \mathrm{~L}$ I L F P E G S D GTMRA LDPA WENT D DVGG
 F QMRANNAAALSKMPWEAFYAGTDKGDALAAVWSDNETFM FKKDAEVVAMMS QIVGRGFELKTDDSEAKPNIWTDPEGFK
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 F A R N A Q RVVA D LS R M GL E GF GP HS G DT DA K T A I WDE WE EF E FASRASNVAALAKLPHEGFIPGSEKGDASANIWQDKADFD FKTNAEAVATLSKFPMHGFIAGGSGDTEAKPEIEKNMDDFK F VT G A A E L D R L S R E P WQ H F P D D D E R S K A N P E L WQR Q E Q F Q
 MQTNA I RI E QL S LMMEDYFATEDTGTAALDKI WENQADFK
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UniRef90 UniRef90_UPI00047B3990 UniRef90_UPI00037FB59F UniRef90_UPI00047901F4
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 SRMSEFQENAAKLAVAAKGTDKDAIVSAFMNTGKSCKGCH AKMK QLQQDSAALA A AAKSDDRKAI KQAFMKTAKNCKGCH K D M K A L E D G S A K L A EVVA K K G D L D A I K P V F A E V G K T C K G C H ERQETFKQEAATLAQMVDDGEESALRRQVGAVGKSCKGCH HKREVLQTH $\quad$ KAALSAAADAGD $\quad$ AAKLRAAVGAVGASCAACH $K K A T A F Q D Y A D K L A V A A Q S G D Q A D I G K A F G P W A K G C K D C H$ EHADKLEAETVVKLAAAAKTGS LDDLLKAAFGPAAQTCAACH GK LTTKFQGDLAQLANVSSEGDERATKKAFGVAAKNCKSCH
 EAADKFQFEAAKLPAAAK DLDTDK LQQVGAVGKTCKACH AKFKELQTNADALADAAKGGDKNELKKAFGAVGKSCKGCH Q K Q Q D L I D E A Q K L A EVVA Q D G DF A T S R A QL S K V G K T C K S C H ESSSDKLVVADTAKKVVAAKTGNDLAALKTAFAATAGNCKSCH TARDKMFTEMAKLNDAVKTGSLDNVKKAFGPTGGACKGCH EAADKMQAEMAKLNVAAKVGNVEALKAAFGPAAASCKTCH
 ARMRRFDAAVEELMAAAASGDKAQLLGTEFKAVGQECSSGCH EHNEK LLLSETPKLVAAAKTNNLDNLKTAFKSTAAACKSCH Q A A E K METAAVA K L NTVVAK G G DLA S I K TAA G EAA Q T C K S C H SAVVNAFVVESSKLVKVVESGDMKALAKQFRATGKTCGGCH QKAEQFQTDALALQVAAKTGEQATVKAAFGNFAKNCKACH D LA KK S E EATAKKLAEASKSGNDLDQIKAAFGPAANSCK SCH GKAQDFQDAAAELAEMAGGADQQALFAQVGKVGETCRACH EYADKMQAEMTKLAAAAKTGSLDNIKTAVSATGGTCTTCH KKAADFAKYAQALATASESGDKKVIAKAFGKWAQGCKDCH
 ERGEKL A A DASTL QAAA QTGDKNEVVRQAFGNFARNCKACH


 SKT QDLVDAATNLQKVALANDEDNYRKADGALGATCKACH $G$ LAS QL ESNAAALKTVVAANGSEEDFKGALGNVLKTCKSCH $K N D D L L T V A S S K L I I A A K S N N E S E D K K A I G G V G K T C G G C H$ ELARNFEAQAARLLEVVNSAGEREI RMEI GRLGQACRTCH
 A GMERFQEHAAELVAAAEKGELQALRPAVGQLGQTCRACH E LDAR QLEAATGELVVAS R DQPYKALTPAMQKVEDTCSACH S RAN QLDDT DAD S LVVDAA A S GS MDEEVM PAFMAAAAKNCKGC H KHAQALMDESQTLSEVVAATQDFAKI REQFAATAKACKSCH VKLTNMREALAGLQVAAGSGDKKIVAQAVGDAGKSCKACH
 QKANAFADYADKLLAVAA QSGDPKVI KPAFGAWAKGCK DCH SKLEAFQVEAANLVKAADTGDMEQIKPVFGKVAETCKACH
 DLAR QLEAATGALVQATARPDAAQLKAPMDKVENACRACH SKIT DLLK QAAANL QNVA QS GDESSKFRQADGNVGSTCKCSCH
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 EMNERMVAETGRLAAAARTQNLDQLKAAYGAASNTCKECH QRAADFQKDADNLAVAARSGDQGD\|RSAFMAAAKNCKGCH

| QL | D A Y R K K |
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| UniRef90_M1SX50 | D D |
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| UniRef90-A0A016XEQ4 | R E |
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| UniRef90-UPI0004718470 | D D |
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| UniRef90-B6ER86 | T D Y K A |
| UniRef90-W7QBU7 | D N Y R |
| UniRef90-A0Z6G9 | A |
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 DPNSPLGQRKAI FKQMLHTSEDMNGMLLGRLPFDGAQ D P N S P L G K R K A $\downarrow$ Y Q Q ML D VK E D L G GML R G RLP F D P E G K P E D Q I R Y R Q A GYS SMS WN M G K I K T N L E G S Y N K D QVI

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 DAENAVKYRQQVMKA!GGHTNTVVMVLKGEVPYS DQ RQEMMKKTGGAMGALAAI AKGEKPFDAEV
$D E P Q V V R Q A D M K G V G Q S T G A B V A D A K G E K P Y D S A V$
 K P E E Q I E Y RQA GYSFMA WNMGKI KAVVDGSVPYNKA Q
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$A K A A K L G S D T D A V L A Q L P A B D A G V G A A L G M L G K D C G S C H$ AEAENFQKVTAELSAAAAQTASDDDVMPAFKPVGDSCKSCH AEA E NFGKVTAELSAAAQTAS TKDDALTEASQGLKAVAMNGDESAYKAADGGVLRSCKGCH QASADYRQKVDALVAAAQGSDLDRDKAAVSQVEGSCRSCH ELSSDSRDAARALHAAVEAGDESEYMDRFRNLGQSCQACH KIAGNFVAAADNLSKVAAGGDQVEVSNAFGKGGETCKACH QLSTETHNAAVTLLEADEGGDENLGPRFRELGQSCTACH ARFAKDGADAA AARAADTDEASFKANFPAVVRNCGACH SKWSALGEAAEVMASAAGEGQEADGPADGEVGGACKSCH GGDKMMQERTDTLVAAVESGDKGAI GEAMQAVGETCKNCH SKSMALVTAAEA QLASMPTDQAGVGAVMKAVGGTCGTCH AKAAKLGADVDATLAQDPA DQAGVGAALGAVGKNCGGCH $\begin{array}{ll}A & E D E K F R T A V A G L K E A A G T E D V D A I T A A F R T T G G T C K S C H \\ K L A R N F T G A V D K L A S E A A S G D Q A R I M T A F G E V G K T C K A C H\end{array}$ AKWSAFGEAAGGLQQVAGDG REALGPALGPVGDACSACH AKGKAFKEAAMAMQAVAGAG QGEMAGALGTLGGTCKGCH KVAKPYMEAANEMARVAASGDLAADKTQFGKLGETCKGCH KDVVAFQKASAALVVAAKTGDMSQI GPQFKETAGTCKKCH D LARQMEATTAELVAATRTQPDAALTVPMNKVEAACKACH AEAENFQKVTAELVAAAQATSMDDVKPAFGQVGASCKSCH AK ASFGKA A AKKGKIKDLDSLKATVPAI GKECSGCH $\begin{array}{ll}D K G M A F Y Q A V A E L N G V A G N G & L E A L Q P A V G K L G G T C K A C H \\ S R G E K L A A D A Q L L K T A A D S G D Q A E I V R A F G S F A R N C K A C H\end{array}$ QAQDTYDKAVSGLAAMAKTSNDDADIRPAYTHVSDSCAACH QLADELEANTAALVVATTAKPLKSLVAPVQAVEDSCKACH EKIDELQGAT EMALASQPADLDTFKAAFGDVAQNCKSCH A AVDSHKAEVAKLQTAAAAKTLDDVKPQFGAVMKTCKTCH KKEKNFQTHVLALQKVNETGATEAFKTAAAAVGQDCKACH QAQENYQAAVSQLVKAAEGGNLDVVRTAVNDVQYSCKTCH A L A REDEAATVQQLASAVKVRPFTAVAPLVQKVEDGCEACH ALFKKFGEDVKTTQGTI TDVASLKANFPKVLGDCKSCH KEIDTFERAAELAKAAAAAKTVADVKPAFGAAGQSCKSCH ARHAA LLEAVTALQSAAGT, DLAALQGALGAVGQACSGCH A LS NELMVESKALVSLASSGDKSALQKKLGTLRDNCSSCH AAAEQYKQATLELQAAAQTASVEDI LDPAFSKVGENCKSCH TAEESFHAAVAKLNTAAQGGNLEEI KAAYGEVGASCKSCH ELAREDEGTTARLVASTTQPPLNELTLAVQAVEDACESCH A ALVKFQQDTQAAI DAA PQDMESFKQAFGMVTQNCKGCH K I AREFVGAANTLAEVAATGEAEALTAAMKVEGACEACH
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 AKAEKLGAAADTLLASVPADDQAGVGAAMKTLGATCGDCH TLGNNMNRAADNLLEQAQTGDQAKDRAAFGELGQTCKACH AKRVRFFEATDALLAAAERRTQADARSAYEAVQNSCKACH K $\square$ AHDFVAAADNLAEVAQGGDPAEVKAAFGDLGAACKACH RRRSEFISATDRLLAAASARSEAQARSALAAVQDSCKACH QAQDNYLAADDTLVQVAGSADLPGDRASVEAVQKNCKSCH AEEEKFHAAVEKLNTAAQSGNLEDVKVAYGEVGASCKACH TKLLQNFQTHILALQKVNEQGPTDAFKTAAAAVGQDCKACH SERQKFYELTDAALAAAAQTHDEASVRTAYDKVHASCKSCH AKA N F S A KA SNLATVAKEGNRGQUKKAFGQTAKNCKSCH GRAAKLEQDAK AA QAGUTDQTGLQAADQRVGQNCGGCH ARARALERLSDDFVEAAKSGDETAMTQAFKKMGKGCSACH AETENFQKVTAELNTTAQATTDEEILPALKPVGDSCQSCH KLLAMAFNKEANELAKVAATGDAAAVKAQFGKVGGSCKACH AEQDKFDAAVDKLNAAAQSGRLAADIRAAYQTVGESCKACH A IS QALIA ESKKMSALLGSSGDASALQKQLIVIRDNCASCH NERDLFYHRDDALAAAAPEASPATLKPDFGRVAESCKNCH
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| UniRef90-LONCA7 | E T Y R VK |
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| UniRef90-G2DRR6 | D T FRR |
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| UniRef90-B3PB85 | D S |
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| UniRef90_LOGX38 | D K Y R A |

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T D P A A|V|AKERETAMKSMGDAMKK\| A A YVVKNEGGT $\square E G$ $D V E K I I E A R Q S L M H L Y A F N L G T V G E M A K G N T E Y D A Q L$
 $K P E D A V K Y R Q S L Y Q V M S A Q A G V I G G M A K G E D D F D A A A$ K P E DAV E Y R Q S AF RL MS F QL G V L NP L HR RQA Y D DEA D P N S P E Y K R Q A V F F K E MLLK T S E D M G G M L R R G R I K PEDEI RYRQSVVNVIGRNFGVLGADAKGERPYDQAE
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 AEATVDYRQGVMRADGGNVASTAA VVDGADY RDN MAETQDAVDARQKTFVSMADSFNSMKKLEDGR DTDWDT DENVKERMMVMKEMANNTKVIGQMLKGKMEFDSDK EPTPAEKAVKYRQSAKTVMATHFGILGGLLKAEK FDEEAA HAASPEAYVEYRKQALKASGDHMKALSAIVVGELPLDAEA EDTRPGQPVKQRQEAFKS ILRSFEPMGVMLRDNKYQADK

D D P I E T RQQ $\square M K D V G K A T G A G A K M A K A E E P F D A A T$ D D K $\square E D N V K A R Q G F F E M L G A N M A P G A G M A K G E D A Y D E M L$ F DKPEDAVAYRQQAFGLLETHFSNLTAMTDNRIPYDPDQ KPEEKVKFRQASYTTMAWNMGKI KAMVEGSMPFS QTQ DVI K E R QD GF QTMR K Q LGGTV KA AV G G G GP A A A A DVDPAVKARQSHMQLYAHNDADLGGMAQESVEYDATEL KTEDAI RFRQS GYTFMAWNMGKI KAVVDGATPYNKDQ K PEDAI KFRQSGYGFMAWNMQRIKMNVEGGNYNKDEV

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A D A T GVV VK E

A AETDDIKTRQEGFKAMGGAMKTLHKALK RDELGTAA KPEEMVETRQAGYQFMAWNMGKI KAQVDGKEAYDQAK KPEDAI KYRKAGYSYMSWNMGKI K QTIIDNPAAYNKDQ
QA A DVDAVVIQQRKGVVMGDIGANMGFMGCTLKGACDAGPKV QD DDPHQAI EARHGFYQMLADNMGTDSGMAKGDIAYDPPA D K R $\square Q M M K E L G A N M K A \backsim A A V A K G E A A Y$ S A A $K$ K Q A VENRKAAY TLI GNYFRWFGGVAK GT DPYDEAE

V K F RKA GYGFMA WN MRK K GNLE GTYSND E VA
$\square$ V K K E G M M K Q $\quad$ G GS M GA L A A I S K G Q K P Y D A E A
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 $D L F V K M A V A A A A A Q G S D K D E A S L K A N D R P V G G T C K S C H$ AKA GAFEAETAKLVQLVGSGDKSAVQKQFGAVGGTCKACH ERSRETHEAAVALVEAVERGDDAAI GQGFRALGQSACRSCH K GLVS LETAFEDMSTAAEAQDAKALKKAFKTADRSCKSCH $K$ LSKELAAETS IVLVNS DET DD DLRPALQGDSS GCKACH
 ANAQKSADAAKALAQAAASGDTAQMGKALAALGGTCKGCH RERLAFVAAT DALFAAAQTRDQAQAKAAYEKVYGSCKSCH KAADNLQQVAAKYMADVPQDLKTFRPAFAEMTRMCGACH AKYAAL GEAATGASEAVKGGGQANVGPVLGKLGAACKACH DSARSLQQES DK ITHGAVARGDLVQLRKTLNEAGADCRKCH K $\square$ ATHFVVQANKLAEVAAMGNPAEI KAQFGEVGKACKACH A A ASNFRRAAQELADTGRSGDMDAVAAAFGDVGKACGACH
 KVAMAFNKEANEMAKVAATGDAGAVEEQLGKLGGTCKGCH
 QQill $\operatorname{DKFKAAASA} L$ ELSENTHKAAVTLLEAIEAGEQD LGPRFREGGQSCRACH A RAA K L G S DA DT L LA QV PA DA A GV GA GLK T G G N C G GC H EYAMSMETAAMDL A A A DDNEEAFASAYREVSSNCS GCH K K L S VM Q A HY S A L E Q G DK S K D K S A V E K A L K QV N S T CR S C H
 Q $I$ GRDF TAAANQLASVAASGDQAAIKKAFGDVGGSCKSCH KIARAFNAEANKLAEVAAGGDVNAIMAQFGKTGETCKSCH A E $\square$ ATFAK ADVSDAKSSVK DASTLKASFPADGKS C GSCH $K G M Q D M E E R A L D L V D A V K S G D K G S M G A A M K G L G E T C K G C H$ AKFA GLQEAATGASEAVKGGAANVGPVVQKLGGACKACH AVSKD FE QA SAA LKKA AVVETGDQGKIGAAALGATGGKTC G GC H $K K L K D F Q A H A Q A L A N A K E K G S T E A F K A A V A T L A G D C K G C H$ ELAQALNKEANELAKDATTGDVTAVKAQFGKTSDACAACH SKAAKLGADADK VLAASLPADDAGVTAAMQTMGADCAACH EVAVAF NKEANELAKVAATGDAAAVKAQFGKVGQTCKACH
 A DRDVF LKKSVDNLAA IAAKAGDLAVIKKAYGQVAQNCKTCH
 EDAREAETVAERLAGSVVSDSDLGPVLGQLGATCKACH EAAGNFAREANELARVAATGDAAAVKVQFGKVGESCKACH A HVD QLDEAAA GLVQVAGDG LEAMQAGLGPVGQACBSCH E L N A S F G K E A T E L A A V A G G G DVVA A D QYGEKYVTAVDALASTAGNGLVEELVASLGDVGKACKACH
 EHIA S FA K V I G D A K G K DT DLLDTLKA QLSVI GKQCGGCH $K K L E A L Q T A T A A L A S A S G S V A Q G D L G K H V A A I G G S C K A C H$ SKMDALHEATMAMEGAAGESLEALQGQMQALGGACGGCH
 A DAKTFQQAAAALEANTATPTADGVRKDLAAVEDACEACH
 GQRDKF LEAVDALNQAA QS GK LEDV KAAFEPVGAS CQSCH $R L L S Q M N Q G F Q E L Y Q G S Q Q G D V S L V E S G L K A A Q A T C K S C H$ K $I A T N F N A A A A S L A K A A A E G D K A A V Q K A F G E T G G S C K A C H$


 SKWEDLGAAAATEMASAA GTGGQQALGPMLGKVGGACKACH $R Y S Q D L V R T S Q Q L V E A V A S N D K G S I G A A V V A V K D S C S D C H$ A AVAKFETVTAEADAAAPADDDAFKTTYGKVAANC GVCH AKSAKLAS SAEA QLATDPADQAGVAAAMQAVGATCGDCH A A AEKFKQAATNLLNTVAQSANADQVQPAFNELGESCKSCH AA $\square$ K R F NAAASALDQAAKSGNYDAVKTAFDKVGQSCKACH $K K G M A F F E A V A A L E P V A G N G \quad Q K E L G A A V N K V G A T C K S C H$

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| UniRef90-J1QFN9 | D |
| UniRef90-B9JTV4 | Q |
| UniRef90-UPI000382374D | D |
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| UniRef90-M4X5T8 | K |
| UniRef90-UPI00036DF6A2 | D D Y R Q |
| UniRef90-I8TBJ2 | D |
| UniRef90-DOCNN1 | T |
| UniRef90_A6X2F3 | Q A P V VK |
| UniRef90-K2K935 | D N |
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| UniRef90-Q915Z5 | K K F R |
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| UniRef90-Q07M11 | D |
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| UniRef90-UPI000373076B | S |
| UniRef90-16W313 | TEFRVK |
| UniRef90-H6SNZ3 | E |
| UniRef90-A1K2A3 | D R F K K |
| UniRef90-V4RFC7 | E |
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| UniRef90-UPI00035F824A | D |
| UniRef90-H5SNY8 | D |
| UniRef90-13TH14 | N |
| UniRef90-M9RIL6 | R |
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| UniRef90-Q47AW8 | D D F |
| UniRef90-W4LJC5 | KPFRK |
| UniRef90_UPI00037778E3 | Q |
| UniRef90-C8PWA5 | D |
| UniRef90-B8GQW2 | D |
| UniRef90_UPI00037D7F97 | Q Y R ${ }^{\text {d }}$ K |
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| UniRef90-UPI00035C2525 | K |
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| UniRef90-A0L6N1 | D |
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| UniRef90-A1K801 | D D Y R K |
| UniRef90-UPI0003822CF6 | E D |
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| UniRef90-UPI00040413CF | ETFR】K |
| UniRef90-K2JXK7 | R |
| UniRef90-Q2CEI3 | R Q |
| UniRef90-D0D0W2 | D |
| UniRef90-C1DIC1 | REFR |
| UniRef90-W5IQF2 | K KFRA |
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| UniRef90-B7VPG5 | R S |
| UniRef90-N6ZAG2 | Y R A |
| UniRef90_G8PGX3 | R AK |
| UniRef90-Q0G4T3 | E |
| UniRef90_UPI000248935B | D R Y R |
| UniRef90-P00141 | Q |
| UniRef90_A3K6G2 | D T Y R A |
| UniRef90-M5DQ96 | S S FRA |
| UniRef90-UPI00047EB966 | K |
| UniRef90-K2Q298 | Q |
| UniRef90-A5WCH2 |  |
| UniRef90_G4CNI2 |  |
| UniRef90-A4WV71 | D |
| UniRef90_UPI0003B5BB2 | Q |



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| :---: | :---: | :---: |
| UniRef90_G2DP57 |  |  |
|  | VKTAAETVVTTGPKFEGLWPEGTAKSEAKAA |  |
| UniRe |  |  |
| UniRe | AQAAAD | T |
| UniRef90 UPIO0022 | VMAALKT | Q |
| UniRef90 U0EKW9 UniRef90 X7FEY | LENQSQKLANHSQTLLTLFPQGSHDSKA | WSKPDKFN |
| UniRet90-ATFEY6 | AQAAADS ${ }_{\text {A }}$ | N |
| UniRet90-UP | QQAQALAGLKD |  |
|  | AAG A HS |  |
|  | V |  |
| UniRef90-UPIIOOO46AAOC4 | VSAAAQNLASDATMEATLWDEGTEGSRAKAE |  |
| UniRef90-UP10003AB2E5E | 硡 |  |
| UniRef90-F9TS39 | V |  |
| UniRet90_11AYT2 | ASAHAADLSALSLHVVAYFAPGTGKTRA |  |
| UniRef90-UPIO00467F7FD | VQaAATNLNMLAKD | A |
| UniRef90-P00150 |  | WAERAKFD |
| UniRef90-I7ZHLO | VAQAASTLAAVANSLPKLFAAGTEKTRAK |  |
| UniRef90-A3VCR | IDAALAEIETRAAR】PERFETETPKSEARPA |  |
| G80 |  |  |
| 9E |  |  |
| V5SCB | LINATQLQQASESLQHSFPQGSEGSKASDK | N |
| AOA021X | VKASLTTMSEVAKAFPDQFPAGSEETEASPK |  |
| UniRef90_UP100046 |  | WKEKAEFD |
| UniRef90-A0Y | V YHAESVARLSKI AADVFPAGSGK | WDNPEGFK |
|  |  |  |
| Holoca |  |  |
|  |  |  |
|  | VNAALAQLEDTAKKLPTMYPASLIKGAKPSPK |  |
| UniRet90 - UPIO00476CC18 |  | WENMDDFE |
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| UniRef90 ${ }^{\text {Q6LQG7 }}$ | VSALADTSHQAADEDQSAFPKGSD |  |
| UniRef90-15BZ | G S | DAAGFQ |
|  | VLTQLQALQANAEKFDTLFPAGSDTGD |  |
| UniRef90_E8M | ET |  |
|  |  |  |
| UniRef90 B5I |  |  |
| UniRef90-UPIO003E | VQAAANSIAATANSMGALFGPGTEKSRVK |  |
| A1V |  |  |
|  |  |  |
| 88 |  |  |
| UP10004708 | AVAAAKT ATHGAOVGFPNGSG |  |
|  |  | $\dot{B}$ |
| UniRef90 UPIOOO381EE12 | KSANADAALSNAGLGALIFAPGTEQGKA | A |
|  |  |  |
|  |  |  |
| E2CFO7 |  | Q |
| UP100037 |  | V |
| UniRef90 UPIOOO377CCF1 | QTLNDDAKKFATLFPEDSKKTEA |  |
| UniR | AKAAANLAALASVISPELFPQGSEGSEALPA |  |
|  |  |  |
|  | ASTAAANLATISMLDQSHWPEGTDGTRALP |  |
| UniRef900 B5V | A |  |
| UniRef90-A0A059bRG6 |  |  |
| UniRef90-V9HL95 | A ${ }^{\text {A }}$ |  |
| UniRef90-LiNMI | QNDPQGGDA | VWQPPEAFK |
|  | ПGPSADRDDAFAARDPTLFPPGSDKGKA |  |
|  |  |  |
| UniRet90 UPI00045E5949 | A |  |
| Q47BN6 |  |  |
| UniRef90 O2W9C0 | M |  |
| UniRef90-UPI00037CAE8A | A |  |
| UniF |  |  |
|  |  |  |
| UniRef90-A0A0591MG9 | A ${ }^{\text {V }}$ |  |
|  | V |  |
| UniRef90-U4UV99 | AGAA ${ }^{\text {a }}$ TLICSGMVAPTFEANEPKSEA | WENWDTFV |
| UniF | VRTGARVFVEHSEGMTELFPEGSAGSEA | WS DWEEFS |
| UniRe990-X6D5U7 | VLTQLQALQANAEKFDALFPAGSDTGDAA |  |
|  | VNAALASIAEEASYTPSLFEVEDPKSEALPS |  |
|  | QDSKAKEN |  |
| UniRef90-UP1000262D162 | EALDPA |  |
|  | LAVAAKSVMSAGLOEKAFEKEEGKTDSKAD |  |
| UniRef90- U7FP91 | T |  |
|  | VRREAQAIAERGGDLVTLFPEGTD |  |
|  |  |  |
| 4099D | VLDALEKLNANAQDVDAFYPAGTETGDTKVK | K |
| UniRee90 N1MKY2 | VQUSARQURDYARQHMGWFPAGSG | $\begin{gathered} K \\ S \end{gathered}$ |
|  | -QA |  |
| Q28Q66 |  | $\mathrm{T}_{\mathrm{F}}^{\mathrm{T}}$ |

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UniRef90_U2ZTA0
UniRef90_B6ISA6
UniRef90_UPI0003B541BC
UniRef90_UPI00046712FC
UniRef90_UPI0002D678D5
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UniRef90_UPI00041861A4
UniRef90_B9R0Y5
UniRef90_YOKHN9

UniRef90 UPI0003AB2E5E UniRef90_F9TS39 UniRef90_I1AYT2
UniRef90_UPI000467F7FD UniRef90_P00150

 EAVSNFQAAAVVVFQTAAASGDMAATGGALRTLGGTCGACH AKWMAFGEAAKDMQASVGNG QEALGPLMGEIGGTCKACH
 QLLT QMDQSFQ D LYQAS QNKDDVMAES GLESAQDTCRSCH $S K W N A L G D A A T N L Q E V A A T G$ QEALGPALGQVGNACKACH EA $\square$ QTAVGLSEEMMAAAATGDPEAVGAQVGNLGKNCKNCH QEREQFLLQGVVDALLAAAATREAARVRPAYEAGLQQSCRSCH GTANDMETAAMSVVAAVQGGDRDQIATAFGRLAQTCKTCH KVA $\square$ A F NLEANEFAKVAETGDPDQI KAKF GKLTQSCKACH

 ERVQ A L N A A V D T M A GA A G G G L D A L A R P A M G Q


 EKA LDALDETALAATMRGTVVASPD

 $N R F K K L A D A A Q A$ A EPADT DEASSKTANWKDVGNCS GCH AKSAKLAADADAILAAAGIPADQAAVGAALGTIGPNCACCH K K LAA KFK ED A HVVFADA DEK GATAEAFKTA V A N L G Q DCCK GC H AKMDEF LVVKAD DFSAASKSGDMASYGAATKAGLGGSCCKGCH ARFTKLAADSTSALGS DTDQASFAATMPKVVAQCGACH AEVDKFKAVTAEAAAAAPAQSLEALKPQVAAI GQSCSSSCH
 AK IDDSFAKVVTEAAKAKDKDLDSLKATAPGIGKECGGCH AHAQKLADDADA LLAADLPADQAAVGAAMKTLGANCAACH SKWAALGEAATAMQAA GEGQQAAIGPNMGPLGNACKACH GERDRFF QAVVAANEAAQTSKMDDIVKAAFGAVSASCKSCH T LM S Q ME Q GYA DMLE GVVEREDTA LAAK LGGLK QVNGTCK GCH A ALD KYMTDTAAAVEASGPADLAAFQAAIGPVFGNCKSCH $T A E Q K Y Q A D T$ K A A V A A A P A DVVD S L K A Q F G T I A S N C GTC H Q LLA QMDE GFEA LYYFASKNQDYKRAQQGLDSAEQTCRNCH $K V A R N F \square A A A N N M A E V A A G G D Q A A A Q D A F G K D G Q S C K S C H$ AEID KYKEAVVALNTAAESAS DDMVK DQDAGVGAS CK S CH
 E I A GHFSKEASEL ARVA L L G DLDTVVKA QLAKVQGTCK S CH RASNE LI A A A RKLLLEVA DLGGEPTAI GNQVQAVGKTCBDCH
 A A S Q QLTEKAAAMVAADESADQGRIR EAF GDLGRNC G GCH GAMKTYISQADKVVAVAGTGNAAAI GAQFKAVGGACGSCH
 ERAAETRDAAEAFYAVVEDGTDREIMAAFRDLGQSCRACH A A A QMLVDESAKLASLAPGGDKAAI GAQAMAMGGACKGCH RFAD QLLKAA GERLGGKTA S GDRKDVA EAFKE LLGQS CK A C H KA DK NFELLASLELDNQSNTNDKDKTDNAFRNLAAGTCKGCH EKWEAVAAAADGLAAVAGDGQQAALGPALGPMGATCKSCH
 $T K D N G M Q E A A A T M Q A A A G T D L A A D Q A A M R D V G A G C G S C H$ E $\square$ EAT T $\square K E A N E L Q K V A A N G D V A E \| K A Q F G K V G A S C K S C H$ AKWADYGTAAEALAAVAGDG LEPMQAALGPLGNTCGACH RLIDANFQANLETLKTMVNNNPINADESSFTKVRQTCGDCH A AMA GFDRAVEALMTATQTASLESLRAPF LDDVGRQCSSCH EKVSNFQMAAGALATAAETGDLAVI GPAFATTGGTCKSCH
 AKAQALUQESAK ALLKVAAASGDVKAAGKAFGAVADGCKACH

 KNKQAF $\square$ AA T DTLLAAA QSKDKARVE KA YEAVHEAC K T C H KVATAF GKEANEMAKVAAAGDAAATKEQFGKLAATCK GCH
 AKFAKFGADAK AA EAKVTALDDSKTAFGDVVKNCGGCH E L A MAY YK EANE LQQKVAAGGDAAAVKVQFGK TGESCKACH DHYK T LH DA S LKMQAAAGSG QAGIQ GA IRAVGGAC GACH NRFPELKKAALAMASVVAGDKAAMGAAMGDLGKNCKGCH AADERYKQGVAA ALAAAAPQDLDAFRASFGPAAQNCGACH EMAD DLTAAAEGL D A T S L D GVVR G G L G N I G A S C G A C H A LAA E QL K VVVSE GLA E A A D N G DYA S MP A A F N MVVTATCCSAC H
 Q L L L Q Q M D K G F E Q L A GQA S Q Q Q N L S LLAAE S SLLD SAAQK T C K S C H ELANANATAAANLKTVAQSGDTNALTNGFKALGKTCKDCH GAAKK LQEEAGKLATVAM DDKDALAA QVKAVGKACGGCH A QMAKLVAES GKLVTVVNGGNVDAI GAQFKVVGGTCAGCH EVGMNFGREANK L QEVVAASGDKAAALARARAAVGETCKACCH QL MLDQMN Q GFA E L Y Q A S VVE Q D L S S A E Q G L D S $V$ V N K T C K G C H $K A N E D Y$ LISKVA A A A EAAKPQDVVDAFKAVVFGPIGASCBGCH $K A Q D G F T T Q A N A F A G V A G S G D V A K M R V A A K A L G G S C A T C H$ $A V A S A M Q V Q V S K D N Q A A L S G D M D A V K A Q V R P T G A S C B A C H$ E L S N N F S K E A T E L A K A A S A NDAS A I K E Q F G K V T R S C K A C H

| Ur | DK F K |
| :---: | :---: |
| UniRef90_U2ZTA0 | N Q |
| UniRef90-B6ISA6 | E |
| UniRef90-UPI0003B541BC | D F R V |
| UniRef90_UPI00046712FC | D |
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| UniRef90-A3WAV0 | D |
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| UniRef90-B9R0Y5 | ET FRVK |
| UniRef90-YOKHN9 | K |
| UniRef90-UPI00046AA0C4 | E |
| UniRef90_UPI0003AB2E5E | Q A Y R ${ }^{\text {d }}$ K |
| UniRef90-F9TS39 | R S Y S R |
| UniRef90-I1AYT2 | D D Y A K |
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| UniRef90-P00150 | E |
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| UniRef90-H0IOC2 | E T Y R I K |
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| UniRef90-Q0A9H5 | D D F |
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| UniRef90_UPI0003743D18 | QK F R |
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| UniRef90_UPI000377CCF1 | Q |
| UniRef90-A4WRD0 | E |
| UniRef90_UPI00036CE29F | D LIR VR |
| UniRef90-W8SRL1 | D |
| UniRef90-B5VWE8 | S |
| UniRef90-Q11M13 | E DF |
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| UniRef90-U4UV99 | K |
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| UniRef90-X6D5U7 | K T Y R V K |
| UniRef90_A3VEG6 | A D Y A E |
| UniRef90-F9T316 | R S Y S R |
| UniRef90-UPI000262D162 | N |
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| UniRef90-TOILS7 |  |
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| UniRef90-K9H6K5 | D S Y M K |
| UniRef90-A3UQ28 | R T Y R S R |
| UniRef90_UPI000464099D | E |
| UniRef90-N1MKY2 | R S F R V E |
| UniRef90-B4R819 | DKYRQ |
| UniRef90-UPI0004769880 | D |
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$V$ VVERMDLMEDMKDSVKAVSADFKGETDYSADT VVKARNGLMANYSDYLGILGDMAKGEREYNEDL DDPIGDRQAIMSSVGAAAGLGGGLMKGEDAYSPAA
$E T A Q K L R E S H M K L M A H L G V G N M A K E T E Y D A D ~$
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ADTMKQDENRQAFFKAVKVHMGALVGVAKGAPYSGET ETKI EARKTAFSGIETGDESVDDLIDGR NTDWQE EEQQRALNARQAHMGLYGFYLTPLGQMAQDRDPYDAA促 FASEREAVIWRQDELKKLERLLRQLRDLVNNR DARG KERMDGMSAMKGSMKQLTPMMQGKTPYNAET
DPDSPLGQRQALFKQMLTVSEDLGGMLRGRIAYDEAG DDPVADRKAVMQSVGAAAGLGGGMLKGQIEYTPAA
KNEDVMK RQAGYKKMGAAMKALNDQLKSGAPVKATM
 RMKQMSEMASNMKVLGAMMKQQQPFDDPD DVIEARQEAFSLIEDQLDSASDLIDGK DTKWQQ NPAVKERDALMGEDRGNFAVIGGMAQGRVDFDAAK DIIDARQKAFTALESQTKAVKKTLDG SDTDWQT
QI ESRQNAFEQUESLSKQAGKTLKG SNTDWHA DPTRAHEVRVSHMKLMGAHDGQLGGMAKGEVEYDADT $F A Q Q N V G E R Q D A F N D D D S A K Q T E E A L S K S D V N W P L$ DPVADRQALMKERGKIAAGLSKVVKGETPYDAAS ATEAVDNRQQAFSS|EELDNEVSSELLGNRNTDWQK
 FAGDADVVKYRQKNMEDMGAHMNSIAAIVKGDVT NKDQ

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 AVTTRQANFKKMGGAMKVLKDQUSGADSKAEA QYRHDVMELAKYSLSNIVQHLQGKASQEG FSAQAGVVEDRKANFKNNVT KLALRGQAGGAEYFEA VVARHNHMQLYAYNLGQIGAMAKGEIPYDADQ KPEETLKMRQGLFQAVRMNFGPIGAFAQGKGDLPADA RQEMMKKVGGATGAMAKMVKGEVDFDAAA QTETRQSAFDQIESLSKKAGKELKG SNDDWKT AVKARQSQMTLYAFNISVLGGMAKGDVAYDAKA
 E E I I K S
MADQKDAVEQD NAMRSQGKAMYVMGKMVKGETPYDQKA位

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 LR H S A R QI Q S A S K A QY GWF P A G S GK T K A K A VI WS D M A L F Q
 $V$ D A A L A QLIEA S A K KI P SLYY ASTSEYTPSPKI WEDKA GFE PRLTE LQQERTTAAQQLLDAFDDEGTHGGEARASI WE E WNEFA IR NLA NGDAFSATAAPAAFEPNTAKTTAKPDVWTNWDDFS VA A A A N AI A A VA N S LGA LYGEGTDKGRLKPEFFQKKEEVT
 A A KRAARIGFLAGQLDGEFPQDSPASKATADVWSNRAEFD QAAAAAIPSEVSDM DTWFPAGSGKTAALAVI WEERTELE
 V I F S $\square Q A \operatorname{A}$ R S Y A P QM QR WF P E G T GP T D S L A A V WD N R E A F E KTHSGDAMTLFPEGSGHSEAKPLIWDEWQRFK ALTAAKNLAAAFAATDQSLWPEGTDGTRALPKI WEDRADFD GKA A DA A M R A A S LT F G D YFP NG S N T G D A AP A I WD N R A G F D A A S A E T L A A L A S GAD GNY WVE GS A D S R A L P A I WE K R D D F D

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RKAQEQ DEASNKLNQAG $\square$ AKD DSAATAAFKADTQTCKSCH SAALVFEEASLELQNAAEQND ISLVKTADGGVGASCKACH KALLAAFLAGAEMAVKA DGGSMAAAVGALGKSCKGCH SLLNKMVVSFDQLSLASQNEDSKMAKNALKQAESTCRSCH QVQQGMVEATAALALVAGDG DDALKGAFGPVGQSCGACH AGFVDLEEKVSDLVEAAQQEDYRAATRAFSDVSDSCRSCH $E L A R Q L A T Y S E G L A L A A D N G N Q A Q L S G V F M M L S Q T C S A C H$
$K K R E D L V$ QLARELEQATAALVQA
A ELAK FAAATGAAAKASGPADDDAFKAVFGPVLGTCKSCH GQMAKLDAESGKLVGVVNGGNIDADRAQAKATGGTCAGCH K LDA A LLTKDALQLLQSSLKG PEDLRNVMATLGGACKQCH TKAGATETLAIALSQSLETPD DLNAGFMQLGASCKACH QEETRFLQAVSALQAGAASDDDATVRNKYNAVSQSCKSCH QLMAQMDQGISELYQASQQRDASMAEDSDDKAEKTCRSCH ALAAKLGADATAGAAAAAGG LDADKASATAVGQSCQSCH A I A A QLEQA A LLADDVSSLDGIKAGFGSVGGNCGACH RLMQQMQQGYQQVALGAQNQS A AVEKGRKAAESTCRSCH AQEDALSKKAMAMKQAAQNQKVSSAEAGLKQAQSTCRSCH $R Q L K Q M D D G F Q T L Y Q A S G N Q D S A V A E G G L E R A Q D T C G S C H$
$T A E G K Y L A D V K A B V A A A P A D A D A L K A Q F N T D G G G C G N C H$ QAAQRMRISAQNMTRDAADHDLHALALDTRRLGQSCDSCH Q $\square M \square Q M N Q G F \square E L Q Q A S L E Q D K S K A E R G L D S A N N T C R A C H$ GRFPEMQQAALALADAV GDKGTMGAAMGNLGKSCKGCH AGFESLRTKADALAVAAAAGDQAAIGAAVGDIGKSCKSCH ELAKQLDVFAAGLGAAAENG LAHGKGGAGMTGQS
ALMTKSSNDMDELASDIDTTD DDKGSDGKLMANCKSCH GNAQKLGSDAEAVLASMPADQAAVGKALQTLGGNCNTCH K LARDLGTAANALAAAAATGEANAVKSAFADVGAACKACH AKHE AALQQAAAGTDLASLQGAMGDVGKACGGCH A $\square$ AHH $T$ AT T ATALAKEAANAPPAEMRMGPGTMMQDCTSCH EKAVALNEAAVAMEAAAGEG LDSLKSAFGPLGGACGDCH KAAANTSAAAEKLAMDAKGGDASATGDALKALGGTCGACH S LDADDLTTYADALAKAADNNHGGGMGA
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 NADKQYNSKSKEDRKSLRGADSASVNEAFKSFAGTCKGCH
GQMKAYDAQADKMVVAANTGNVDAVTAQFKAVGGTCGSCH DRMDKYAADTRALADAAKSGDMSQI GPAFKKATSNCKSCH AKADANKQAALKLDAAAKATDSEKI MSAVQELSGTCKSCH AKSQAMGEAVAALQAAAGT D LEALRGAI GPVGASCGGCH D $\square$ RMDLAAAAEQMAAVAGDGQAALAPALGAVGKACGACH K GFPMMEEAAVKDAAAAKSGDAEAIKAAVGGVGKTCKGCH A AVAKFKASADA GVAAAPADLDALKAVFGPITQNCGACH R LMLQMDEGFMD LYHAAQRQESSLAEEGLKQSLNACRSCH EKGMALAEAADAMEQSAGAG LDALRGAIGAVGKSCGSCH A QMAKFAAEADKLVLAANTGNAAALGAQFKVVGGTCAACH SRADAFAAQAQALLAAAEGSDQAALGRAFEATGGACGACH ALMMKASDDMDKLVSVIEEDADDIGGTLTKMWSNCKACH KAAADAVTAAGALQAVVDSGDGSKMPEAFNGMYKACKTCH SKMPPVVKKI A DVK GKVNSLDDDKVAFKSDNDRCTDCH TKI EAFTSSINLALAASEAASAADVEASYGEMASQCGSCH AALDKMNNSFIKMDSADQQQDKNTAKDALKQANNTCRNCH SRAEEFRRAAETLAHAAETGNRAGAEKSFSALRSTCKSCH
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 D P N S P L GQRKA LIMK QMLLKTSEDMMGGMLR GRLDP DGVVK NPAVQARMNAMMD IAGATKVLGDMAKGVRAFDVTA
D P A A YVE Y RKSVLSATSNYMKA $\quad$ G $\square T \square K E D L A D V N Q$ IV K D R M D A M A E M G K A V VK A V T PMMMR G E A A Y D A DV

 D TVEARH G L M L Q M Q T DVAK V GAMAK GETAY DAA TEQRQNNFQHDDATADQLDDAFDNEV VDWDR A AENPAVAARHHQMQMVGYHIGVLGGIAKGEMEYDAEM MAQQEVAVQQDNLMRSQARSLYTVI LKMTKGDIPYDRKA SENPAVKARKSLMSLYAFNDSQLGAMAKGEAEYNAEV D PV T E R Q N M M TY GA SMGVL G GMAK GKMA Y DAA K A GDPV AVRKATMMQVGAAAAVSGAMMKGELAYSPAV TEP P E IVVVTRQQEMKAIA LAA A K SIIA GMFK SP ET Y S A QL | $K$ | $P$ | $E$ | $D$ |
| :---: | :---: | :---: | :---: |
|  | $D$ | $P$ | $L$ |
| $V$ | $L$ | $R$ | $Q$ | PAVGA RMHTMMSFGGAAKTLGGMASGEVAFDAAA


 ASDVI T QRQDSMQDFNKLMRSATQSLKGEDI D G VVK E R M MTMKSVA A STKVVLSR L D WSNVQQAARTS AAKARQATMQLYAFNLGVLGNMAKGTTDYDAEA QPRD V Q QRQQDMKAMANAAKSIDAMFKGSSPYDAKA A MA QDSI K A RKD GF QTSKNAMAEDKDLLGSDK VA Q Y S Q A K P AVMARQGVHR LMGAT LMDAGA IAS GQKK WN GF T VKARQASMKEMAAAAKTIAGMFDGRQAYDAAA DNVSQRQQGMKAMAAAAKTINAMFKGSSAYDAKA
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 D D IV V T V R Q A D M K A DAA A A T K S I I A GMF K V P S TY S S P E

 VVEERQQDMKAMAAAAKSI S GMFKGTSAYDGKA $\vee A Q R Q Q D M K A M A A A A K T I N A M F K G S S A Y D A K A$ D PVVAKR Q DVI A D RQA LMKDQ GKA $\square$ G S I A P I AKGEKM F DAA T TSPEDAVSARRLLMTTDGNNND』LHDTFDGYFEYSDRE AEDVVAVRQADMKAMAAAAKTIAGMFKDPTSYKAAE RFRQQSMRGTSATYRSIAEQLDYDAPFAAR SAEDQVKERVKNMKVLAQANKTLKEVAAGDAAFDAAK ED LV SRRQADMKAMAAAAKTI SGMFKDPAAYNASE D DLVVTVRQGDMKAMAFSAKIIADMFKDPPTYSSAG VVRERME GMVAMRDAMRDLLTMMMRGEAP HDQSA

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ASSDA $\triangle$ VAR QNSMKAMAAAARTI AEMFDGKREYDAGGG

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VREAADVIEARAGKLLTLTPEGSGPSEALPA\|IWQDTERFR AKK M M EMSDNYKRLDDLFPENSKKTEALPSIWENKDEFN DKTLALKNSET $\square A T L P A L F P E G S D G S R S R T T V W N K W D K F E$ VRASADVMDAHAGETMTLFPEGTGASSALPTVWEDWDGFT FRAAAAVFAAKAQDPFAHFQNDPEGGRALPQIWQQPAAFA VRDAARLFQQHAGEMTKDFPEGTGGSEAKDEVVTDWERFA


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 FKAAAETIRSQSGTALSTDFEGSAGSKASSNDETERQQFD GKAA $\square$ ASMNAAAHSFGAFYPDGTQGSSASPKI WEDSAGFE AAEAAAVIHGVSTRDPDFYPTDSEPGHADPAVWEESDAFR AKAARRVLDENTRKIPRHFAKQEPNSHAQPEI WTRWQDFE FAEGAVKLDSLAHEPWQHFPQVRDEGDARADVWER A QAAAAQI AEQATQMPTLFPENDPKSEAAAAI WQDFPDFS AELMEHSQULMSSFPEGSEGSKAKPA WDNPDKFQ TADHAKADAS DMETLPAAFPEGTAKTEAKAAD WKDFEAFK




 A A A A ANNLATLSKVDQAMWPAGTDNSRALPADWENFADVG ASEAAAALLAAASSDQSGFWEGTDTSRAKUSVWDMADDFA FKAAAET LIAHSGPSLSALFDGTPGSKASTII ETDRQHFD GKAA $\square$ ATMNAAA LSF FAFFPEGSDDTTAAPKI WEDMAGFE FEDAAMTDSERAGYMINHFATASDGSKATKVIATDHDRFA RAENMVMVAKLAPDGWVKGTENDPKGETKPEFGAKSAEFL AEAAKAALVAGSAEIAVKFAAGSDPSEAKPETWTNWDDFL ARAAAAA AA SSASVTALFSAEEQKSEALPAD WQDFETFS MDAALVQLEENVGKIANVFAVNPKDYGSSQKLWQNKADFD LSQDYDDIEAIMUNYPTDFPEDSGKTKASKNI DDRSTFN AEREATAA AVHKKIVAQFPVGSHPSEAGNRIWSEQDRFA ASAAAGNLVKLSTQDQTAYWPGTEGSRALPAIWDDMAGVS FKAAAESVGSHSGDRLSSLLDDGSPGSKASANIEAERQKFD VGPA A QRMS AFAA Q DP T L FP A GS DK GDA KA D W A N NA DF A


## F V V F

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 FKWA A NTI R D K S G S L S A HFAAASSPQSKARPNI LE ERER F D




 $V$ K A A A GNL NALAKMDGSTLWE GTD GSRAKA EIIWT DAA GFA VA D QA QLL S I F AK K IP S LFPENAKGGKAKS GIWDNF QD F S F R WA A D TI R E R S G VVLSHC A S E T A Q S K A G P N I L N E R D R F D
 V A E R A A DMRDYF AR MT GQFPA GSEGSKALDA V WS DNA GF E FKDAAETDRR HSATSVLQAFSAVTQQSEASEUI AAERRQRFA A TLQRK L M R A T R S I P K HF R R Q E P N S NARE L W WQ Q WP K F K


 $V R G R L D A I S T M L L T F P H L Y \square E A T D P A R A L P L I W E D W D G F$ FRLAADVI RDKSGAVLSHFAAVSTQSKAKPNILEERERFD L P DL A D E L A R R A A D $\sqrt{2}$ E T WF P A R D G D P GA L P A A WA D P D F A
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|  | UniRef90-LOLXU0 |
|  | UniRef90-F8UHU5 |
|  | UniRef90-A1U025 |
|  | UniRef90-UPI00029B4F3C |
|  | UniRef90-E8TV57 |
|  | UniRef90-X6DBS7 |
|  | UniRef90-X0UB90 |
|  | UniRef90-X5XJA6 |
|  | UniRef90-M2AXM0 |
|  | UniRef90-A7BVN7 |
|  | UniRef90-X5Q9G4 |
|  | UniRef90_UPI000466E8B4 |
|  | UniRef90_UPI00047D085E |
|  | UniRef90-UPI00034CC3D4 |
|  | UniRef90-UPI0003FCA6AD |
|  | UniRef90_14WU06 |
|  | UniRef90-UPI00037AF1C3 |
|  | UniRef90-K9GMN1 |
|  | UniRef90-LODSA3 |
|  | UniRef90-W4S0D8 |
|  | UniRef90-G2DFE4 |
|  | UniRef90-I3INS5 |
|  | UniRef90- ${ }^{\text {D }} \mathrm{PJH}^{1}$ |

UniRef90_14W3P2
UniRef90 F7UEB6 UniRef90 S6AC50 UniRef90_V7FDT9 Re9 UniRo-C4ZNCs UniRef90-10HLK9
 UniRef90-E1QHY0 UniRef90-D5ANE2 UniRet90-MIPC8 UniRet90_D3SFU5 UniRef90-Q3SJ60 UniRef90 UPI00036EED63 UniRef90-D5SRA3 UniRef90-M4NQ45 UniRef90 14 W 943 UniRef90-UPIO0047EEE06 UniRef90_LOLXU0 UniRe9-PUHUS UniRef90 A1U025 UniRef90_UPI00029B4F3C Uni UniRef90-X0UB90 UniRet90-X5XJA6 UniRef90-A7BVN7 UniRef90-X5Q9G4 UniRe90_UPI000466E8B UniRef90 UPl00047D085E UniRef90_UP100034CC3D4
UniRef90 UPI0003FCA6AD UniRef90_14WU06 UniRef90 UPI00037AF1C3 UniRef90-K9GMN1 UniR9-W4SOD UniRef90_G2DFE4 UniRef90 ${ }^{-}$D8PJH $\square M E R \square G R D M Q A V T G A D S K E$

D WPL
DAAT
NVDS
$\|$ VAD RMMGMMMLGEQMQADTP』INGSSDPSPGA 1 MQELSNNMQIVTDAISRE DWEQ VRARVELMQGYKAQMKLLTEAASGAQPFAADR RFRQQ MQDQGMYMEK TA GIIREDWQQ DMQDLGGNMQRI TDGI SREAPR DWER I MQDLELNMQRI ASAA DRE DLDA PEAFQRFRQQSMQGTSATYRSIEQ\|LRYGAPF AGR RAGVMVRMQKAFDWLKSNIEGKLKSEQET KAVMETMGYHVGELKNADKARQC DPVK HDLMESLESASKPLFDRSAGAADTDADT KAVMTTMGYHMHQLKGALKKSRCEAAV DA $1 V E A R Q A S M K E M A A A A K T I A G M F D G K R A Y D A A A$

RQADMQAMATAAKTMAGMFRDAGSYSSME RGDMQD L GRHMQTATA DARE DWAL EPLADRKIMQELGRNMQAITGAISQEE WVQ TRPFQEVASRKSLMKRLERAKDWLKQDVNSEMKFKSDP E WT L
IEARQASMKEMAAAAKTITVMFDGKLADNATT QLKARKASMTLRAFNDGDLGAMAKGDMKYDADK MAAAAKTIAGMFDRRQPYDAAA $\square$ ADRSPLMEYAEQLLDTLGDHTRDATTTNLDA EYLKKVMGVFRSHVKALELLTSKENKYSDNV DA DEA RQASMKEMAAAAKAIAGMFDGKQAYDAAA ALMNVMAHQSGQLRDAAKANRCTASD RAVMDVMAHHSGALRNAVKGQRCEAAA KAVMTVMAYHMSQLEHSVKAQQC DATA $R S V M A Q M Q A D T Q A A G D A I A R Q$ DWAS MRDLSKDMQGVTDGLAREDWPA


S $\square M Q V M A Y Q V R A L Q P D A D G G C \quad N P A R$




[^0]UniRef90_14W3P2 UniRef90 S6AC50 UniRef90-V7FDT9 UniRef90_UPI000479E02A UniRef90 C4ZNC5 UniRef90_Q1Q4Z1 UniRef90-10HLK9 UniRef90_M5T6T2 UniRef90-E1QHYO UniRef90_D5ANE2 UniRef90_M1PC86 UniRef90-D3SFU5 UniRef90_Q3SJ60 UniRef90_C7R6Y3 UniRef90 UPI00036EED63 UniRef90-D5SRA3 UniRef90-M4NQ45 UniRef90_L7VVD1 UniRef90 ${ }^{-14 W} 943$ UniRef90-UPIO0047EEE06 UniRef90-LOLXU0 UniRef90_F8UHU5 UniRef90-A1U025 UniRef90_UPI00029B4F3C UniRef90_E8TV57 UniRef90 X6DBS7 UniRef90-X0UB90 UniRef90-X5XJA6 UniRef90_M2AXM0 UniRef90-A7BVN7 UniRef90-X5Q9G4 UniRef90_UPI000466E8B4 UniRef90 UPI00047D085E UniRef90_UPI00034CC3D4 UniRef90_UPI0003FCA6AD UniRef90_14WU06 UniRef90-UPI00037AF1C3 UniRef90-K9GMN1 UniRef90_LODSA3 UniRef90 W4S0D8 UniRef90-G2DFE4 UniRef90-I3INS5 UniRef90-D8PJH1
 K LAADLKSYAEVLATAADEHDASTI SAAFHMMLQACTSCH TYDGETHEQAQAVGKAAKAKDGQGVILAFQK【QTSCYNCH ALARHLEDQAAALSLAADNAPTESMRMAFHLILQDCTNCH ALARH GRLT DALAAKAEQADPAKLPAELHLILQQDCSSCH GLDGQVHDAATAMGEAAQRNDGQAVVAAFSKTQQSCLACH NYVDEINKQVASLKKAADSQDSDQLLSAFTGLLKNCINCH EHAQAFEAAARALARQARPADASALRERQGRLNESCAACH A LSSRAMTEASRSVVTADIERQDFDAVRGAVGEITQSCSACH QYAQQLESDAQELARVAETQSDRSAAAVATDIAGTCSACH SFDKQTHQAAKELEKLAMRKDGKGVIAQFATLQKSCDACH QKTAKLVKTAAAL NYDKKTSQAGQELSQAAERQDG ALD A AYREAAERLQRKVESADDLENEDFQEALNGVQRHCCLACH S LD GVTHDTAMMLKEVAEKNDGDAVIKTYADLLQSCVACH E YKA AYREAAQQLQRKVESGNEDQLRAALNGVRHHCLACH KHAQNMDNASRDASSAAKEMDFGKFQQALDKVNKTCSDCH DDAAQLQE RLHQAVQAAPASCAAVAVKPVGETCQSCH GHSEQLEKGAQDVLAALTAKDTAALQAAVKTLGGACGGCH DDANHLRSALKAAVLAAPA DCPALATVLEPVGKACQTCH A LARH GRLTDAALAKAEQADEMRMGAGLAMDGGSCSSCH ALANDLRDYARALEAAASKAQLASDPAEFHLMMQTCTTCH SHDHKTHEAAHALAQAAKNKDGVAAIAAFQSIQTGCHGCH NFDAQTHEAALAMKDAAASSDGKAVIQSFAHVQESCDGCH
$N$ YAKALIDEGATEASSASAMESYEGFQRADDKVNKSCTDC H GFDGQVQDAASAMGDAAKRGDGQAVIAAFSKTQQSCLACH A $\square$ A
ESSKAFKDSAAKMAAAAGSG $\square D G \square R A N \square R A$
A $\square$ ANH $\square G A \square A R A \square A A K A Q S A P A D D M R P A M G G \square L Q D C S S C H$ ELSRAMTKSSSGVVSADERQDWDGVRASVGDVSQSCAACH ERARVNRKAAKELKGAAEDQDREKFLATLEELKSTCRNCH GLARHLGTLASALASSDAEGGSLLGKRPSLAEELQQDCSSCH
 KS S DKLQGALRRDAVAAAPGTCAALATALUPVVDNACDDCH NYDLQVVKSAAAQLRTAAQQQDGVAAARDLARMQQSCDGCH DYDRQSHDAAQQLAQAAQRQDGASAMAAFANLQGACDGCH S LDQQVHEAAKNLADAARDQDLDTAIRYHGRLVNACIACH DRDRAFHADT GDLAEAARTGDAERQRADFGEVVEACAACH SLDQQVHEAAENLADAASDRDLEMTDRYHGRLVAACDACH




| UniRef90_14W3P2 | Q Q Y |
| :---: | :---: |
| UniRef90-F7UEB6 | SK FRAK |
| UniRef90-S6AC50 | SEFRK |
| UniRef90-V7FDT9 | AKFREK |
| UniRef90-UPI000479E02A | SKFRQK |
| UniRef90-C4ZNC5 | QS YRR |
| UniRef90-Q1Q4Z1 | T K Y R K |
| UniRef90-IOHLK9 | R A Y K R |
| UniRef90-M5T6T2 | E E Y R |
| UniRef90-G4RDU7 | T VF R K |
| UniRef90-E1QHY0 | Q S R K |
| UniRef90-D5ANE2 | GRFK |
| UniRef90-M1PC86 | Q HFR |
| UniRef90-D3SFU5 | D NYRRR |
| UniRef90-Q3SJ60 | ESFRK |
| UniRef90-C7R6Y3 | Q K F K Q |
| UniRef90-UPI00036EED63 | D N Y R R R |
| UniRef90-D5SRA3 | N D Y R |
| UniRef90-M4NQ45 | QQ Y R |
| UniRef90-L7VVD1 | K EFK |
| UniRef90-14W943 | Q Q Y R |
| UniRef90-UPI00047EEE06 | SKFRQK |
| UniRef90-LOLXU0 | A RFR |
| UniRef90-F8UHU5 | R EFRK |
| UniRef90-A1U025 | Q AFRK |
| UniRef90_UPI00029B4F3C | S A Y |
| UniRef90-E8TV57 | Q F R Q |
| UniRef90-X6DBS7 |  |
| UniRef90-X0UB90 |  |
| UniRef90-X5XJA6 | S K F R R K |
| UniRef90-M2AXM0 | EQYR |
| UniRef90-A7BVN7 | R E L K N |
| UniRef90-X5Q9G4 | SKFRQK |
| UniRef90-UPI000466E8B4 | R D F R |
| UniRef90-UPI00047D085E | QK Y R |
| UniRef90-UPI00034CC3D4 | K R F R |
| UniRef90-UPI0003FCA6AD | NS YRAK |
| UniRef90_14WU06 | Q R F R Q |
| UniRef90-UPI00037AF1C3 | SAFRDE |
| UniRef90-K9GMN1 | ERY |
| UniRef90-LODSA3 | SAFRE |
| UniRef90-W4S0D8 | R D F R |
| UniRef90-G2DFE4 | R D Y R A |
| UniRef90-I3INS5 | K NLRDK |
| UniRef90_D8PJH1 | L E Y K L R |
| lupas_21 |  |
| lupas_14 |  |
| lupas_28 |  |
| jnet |  |
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| sol25 | B |
| sol5 | B |
| sol0 |  |
| jhmm |  |
|  |  |


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

