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T DKHPPKQWGD TNTLVGLDPAGQFTISTRVRCGRSLQGYP TDKHPEKNWGDVNTLGDLDPECKYVI STRVRCGRSLEGYP TDSQPPKNFGDVSTLVDLDPAGEYILSTRVRCGRSLEGYP TDQHPASTWGDLKSIGDVDPDQKYVVSTRIRCGRSLAGYP DAHPPRDFGDLETFGNLDPEGAFIVSTRVRCGRSLAGYA TDKHPETDFGDLSSFVDLDPENKYVISTRVRCGRSIAEFP KHPPADFGDKLNFPNPDPTGEYII STRVRCGRSLAGYP S DKHPARDFGDVNAFANVDPTGEFVVSTRVRCGRSMEGYP S DKQPSTDWGSPNVFGNLDPKGEFVVSTRVRCCRTLKGYP T DK QPAMD LGE IAE $\square P D L D P E G K Y I I S T R I R C G R S L A G Y P$ KHDSDMNPEHLKAPNPDPEGNYILSTRIRVGRNLHCFP QHPPTNWGDILEQFSNLDPTGDFI STRVRCGRSLNGYP T DVHPPSNWGDASKLPSLDPEGKYVISTRVRCARSLENYP TDRQPAMDFGSMNDFVDLDPEGKYVVSTRVRCGRSSVGFP DKHPASDWGDATTFENLDPEGEFIVSTRVRCGRSIEGFP
 TDKHVSDM DVSKVGNDDPTGEDVVSTRI RVGRNI RGLG
DSHHSNMEPDLLHASNPDPEGKFI LSTRI RVGRNVDNIP KHPACDFGDLSNFGDFDPSGDWIVSTRVRVGRSHASFG K QPETDLGE N L L A DLDPEGQYI NSTRVRCGRSLQGYP

GVENFPD PEGNMVSTRIRVGRSHKEFA K QPPVDLGEGKTFPPLDPKGKY KSTRYRCGRSFQGYP KHPTDDLDHTK K G GQLDEKYVLSSRVRTGRSDKGDS KHVSDM DASKLKATGEDAAMIISTRIRVGRNLADYP DKHPKSDFGDLKNFKDLNADGNMVVSTRVRLGRTVAGYG DKHPKSDFGDLKNFKDLNADGNMVVSTRVRLGRTVAGYG
T DKHPESCYGS
TDVHKT DL KHPTDL DNSKIGGGNFDEKYV S QHPKSNFGDLKSLSFTDLNGNLVVSTRVRMGRTVRGFG KHPASNFGDVSKFGDLDPSGKYIVSTRVRVGRTHQGFG HPTDL DSSKLKGGDFDDKYVLSSRVRTGRCDRGFS DVHPPLDWGDPEKLGNLDPDGEFI I STRIRCARSVNGYP KHPPSNFGELGELKDLDPDGKYI LSTRI RCGRSLLGYP TMKHHTDLDDASVTHGNFDERYVLSSRVRTGRSVRGLR DKHKSNLNDDNLNAPDLDPKNEFILSTRIRVGRNLKDMP HPPSSFGDLSKFKDLNADGNMVVSTRVRLGRTVEGYG HPPSSFGDLSKFKDLNADGNMVVSTRVRLGRTVEGYG
TDKQPATAFGDGNAFGHNLDPDGDFVVS
T DRHPRSDFGDLSTLG
TDKHPRSDF GDASKGGYOP
TDKHITDD DASKLEGGDDDPNYVLSSRVRTGRSTKGLPC

MK H P T D L
K HRTCLL
K HRTCL KHRTCL DASKLHSGMFDEHYVLS

P A C DLG DASLIVGGDNDSNYVL

DTHPTDM DAKVFGDLDPTGDFVI S
DSSKI RGGVLDSNYVLS DK QP P VDLG

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T DK


## TDKHKTDLL

T DKHVSDM
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D L
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## QUERY

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## Q



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 KISFVTNDRFGYLTFCPTNLGTTIRASVHIKVPRLSKNMD

 QLRFARHERLGYLTFCPTNLGTTIRASVHVRGPKLAADPQ
 LI EFMWNQHLGYILTTCPSNLGTGLRAGVHVKLPNLGKDKR
 K IPFSYSYHL GFI TSCPTNLGTAMRASVHI ALPKLSQDME
 S L P F S R R D S R L G WL T F C P T N L G T T 1 R A S V V H: KLSFAREDRLGFLTFCPSNLGTTLRASVHIVIXNLAABK KVPFGRDERLGYLTFCPTNLGTTVRASVHIKKLPKVSARRK NMEYMWNEHL GYVLTCPSNLGTGLRAGVHI K I PHLSKDEK VAKF SHDQHLGYI TSCPTNLGTALRASVHIRLPKLSLKKE
 KI EFSRDERLGFLTECPTNLGTSIRASVHIKLPKLNADKE NVEFMWNEHLGYILTCPSNLGTGLRAGVHVKLPKLSTHPH


 KI PFSRHRRLGYLTFCPTNLGTTIRASVHARFPKLNTNPE QVPFARDDRLGYLTFCPSNLGTTIRASVHIRIPKISAKP GWE Y M WN ERLGGYVLTCPSNLGTGLRAGVHI R L P Y L S K D P R
 TLKFAFNSRFGFITGCPSNLGTTLRASVHARVPLLS SLP
 KLTFAHHDQLGYLTECPTNLGTTCRASVHDKI PKKAAESD QLQFNRDERLGFLTFCPTNLGTSDRASVHIKLPNLMCDPD RI PFSRDDRLGYLTFCPTNLGTTI RASVHI KLPKLAANRT CI KFMWNEHLGYILTCPSNLGTGLRAGVHVKLPLLSQKPY
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 QLGFAHKETHGYLSGCPTNLGTGMRASVHVKIPKASEHPD QLGFQHTDAHGYLSGCPTNLGTGMRASVHVKIPKASAHPD NLGFARHQRYGYLTECPSNLGTTMRASVHVRIPMVS SLP NLGFARHQRYGYLTFCPSNLGTTMRASVHVRIPMVS SLD KLTFAYSKRHGYLTECPTNLGTTLRASVHIKVPKLAKNEE GWEFQWNPHLGYITTCPTNLGTGLRAGVHLRLKHFAKDPR V A K F A H $\quad$ D K H
 VAKFAHDKHLGYITSCPTNLGTGLRASVHVYLPQLGKKKE
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 LI T YMWNEHLGYVLTCPSNLGTGLRGGVHLKI PKVSAHP
 EMKS GWNNHLGYILTCPSNLGTGLRAGVHVKLPKMS THE GVE Y A YNDHLGYI HSCPTNCGTGMRASVHVKLPNVSKHPD GHEWSWSERFGFLCTCPSNLGTGMRASVHLQLHKLSKDPR
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QUERY
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UniRef90-Q6XGY4 UniRef90_G3UTB0 UniRef90_X5FKX6 UniRef90-E4U9T2 2 UniRef90_J9G9S7 UniRef90_J9G9S7 UniRef90-R7TKL7 UniRef90_UPI0001CB9D95 UniRef90-B5MGP4 UniRef90_C3ZVJ6 UniRef90_B0L6Z8 UniRef90-10E0A7 UniRef90_UPI0001CB9AE4 UniRef90_UP10001CB9AE4 UniRef90_UP10001CB9AE4 UniRef90-UPI0001CB9BAB UniRef90_17M9E4
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## スス

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## I

VLEDTASKFN ${ }^{210} \mathrm{~L}$ QVRGTRGEHT
230
VLEDIASKFNLQVRGTRGEHTESEGGVYDISNKRRDGLTE KLEEI A GKYNLQVRGTRGEHTDAEGGIYDI SNKRRMGLTE

 KLEEIASRHNLQVRGTAGEHTESEGGVYDISNKRRMGLTE


 K FEETAAKYNLQ RGTSGEHSETTDGIFDISNKRRLGLTE


NFHAWCDKKLRLQQPRGTGGVEDTASVGGVVY
AFKA IT DKYHLQQRGIHGEHS

## 

 NFE QI CEKY N I QAR GTHGEHTA KMQQLADEYHLQVRGTSGEHSEAKGGVHDL FNHILEQLRLQKRGTGGVDTAAKGGIF $K F E E A L Q K M R L Q K R G T G G V D T A A V G G T F$
$N F K E D C E K H G I Q R R G T H G E H T E S V G G T V$

N

## N

## R



##  <br> 

F
 K F D EVVL G K L N L Q K R GTGGGVVD TA A E G GIIF
 KFNDMLDNLRLQKRGTGGVDTASTNGIFDVSNADRLGYSE KFNDMLDNLRLQKRGTGGVDTASTNGIFDVSNADRGGYSE KFNDMLDNLRLQKRGTGGVDTASTNGIFDVSNADRLGYSE





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T D K HK T DLL ${ }^{10}$
A 20
K H T T D L
K H T T D L K HTTDL T K G G D D|L D P D F V L S S R|V|RTGRS|I|R G Y A $H V T N L F A D A T H L A R G G D N D P K Y V L S S R V R T G R S I R G L A$ $K Y \vee L S S R V R T G R S I R G Y G$
 K HPTDLNP TKLKGGTF HTTNLNPAD DDANDPDPTNKYIVSTRIRVGRNLADMP H P T D L T DTHPNLEWGD FSTLK DLDPD GKYI KS T R RVRCGRS I K GYP HPEPT F GQQIK ALENNIDPEGNMVKSTRI RVARTLAGYP


DKQPKENFGELNKFENLDPKGKYILSTRIRRCRTLKGYP
TDKHPPPE

| $H$ | $P$ | L |
| :--- | :--- | :--- | :--- |
| $H$ | L |  |

T DKHKTDLNP
T D K H K T D L
HTTDLNP
K H
HKTNLNFED DASKLVNAKMDEKYVKS

$\qquad$ DS S KIIKMDAPDSNYV SS A ANVK G DGQFD P N Y V V I S S S E K Y V F S S S N Y V V S T
HPDPNFGDGKNFGNDDPSGEMIIS

 $\begin{array}{cc}T & R \\ C & R\end{array}$ | $V$ | $R$ |
| :--- | :--- |
| $V$ | $R$ | $T G R$

TM $\square \mathrm{HP} \quad \square \mathrm{N}$ LDAS Q $\square \mathrm{NGGGKFDEKYVLSSRVRTGRA} \mathrm{\prod RG} \mathrm{\square P}$ HPAPNFGDLNNFNDLDPEGKYVISTRVRVGRSVDGIP HPDADFGNADEDENLDPERRYI KSTRIRI ARNIE GYP HPKPD F G DVVDN F GDDLDPS G E L I V S T R V RVVGRSHA S Y G
K QPAK DLGEVAELVNLDPEGAFI NSTRIRCGRSLQGYP
 T DKHPPKNWGDVNVFGNLDPCGDYVVSTRVRCGRSLEGYP QHPWS
KHNTDLEPSHLKGGDNDPNYVLSSRVRTGRCMRGYS T DKHKT DL NHE NLKGGDDLDPNYVLSSRVRTGRSUKGYT



QQPELS WGEPS E LGENPDPE GQYVVVSTRVRCARSVVEMP

$K$ HPTDLL DYTKLLDTDPSQNYVLSSRVRTGRSIMGFT
$K$ H P T D L D Y T K L L D T D P S Q N Y V I S T R V T D T HK T DLS DG L V MEEPFDP D YV F SVRVRTGRSIR GYA T DK HP DWMRGDGPESDDVI SSRI RLARNLNSDP T DKHPATCFGYGSDFPNLDPEQKFIVSTRVRCARSVEGFP
 DVS KMK E D GP D S D VVLS S R R RLARN L E Q Y T DMHHTDLL DVSKLQNADKDFNYVQSTRVRSGRNIRGMS

HVT M DV
S D T HPIDM D GHPSDFSL $G L$

SW Q E A L D P S G E F I L S T R I

 K HVVTDM $\quad$ DVT $\mathrm{KHV} \mathrm{T} \mathrm{DM} \quad \mathrm{DV}$ T $N L K V G D P G G G E S L G$

MKHPTDD DESK DKHKTDLDPAHLN

$M P V K V R T G R S E$ SWMKNEGPHSDVVLSSRIRLARNLENHQ K WMKASGPDSDVVI S SRI RLARNLMELS
QK D P D F G N D E $\square E N L D P E R K Y I L S A R I D R L A R N I D E G L P$ S WM N N D GP D S D I V L T S R I R L A R N L K N Y L L WMRSDAVDSEIVI S SRVRIAARNLQUFP
K H P T D L DVDKISDTK KDPTGKYVLTSRCRTGRSLRGFR TQSHKSDLDPSKLAFTEEQQTAKYVKSTRVRAARNUS GFS T DKHPPKNWGDVNTFGNGDPTGGYVISXRVRCGRSMEGYP T DFHPP LDLDDHTKLLDLDDEADAFIKSTRRIRFARNIMGMP
 WMS QE GP D S D I V L S S R I R L A R N I V D F R WMRAD GPEDEMVMSTRVRLARNLANLP
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PPLCSRRHERREVER VSTALGNLSGEFSGKYYPLKGMT L P P W W C T R R G E R R R K T E K K I I I T E A A L S A A L D G P F NPRMTMAEYY R M E

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HPPMCSRAERREVEKVTCDALKGLPADLAGTYYSLKSMTD FPPLINLQQVKDCEQRLVSALKTFQGDLSGQYYSLEGMDE






 L P P H C S R G E R R A I E K L SVVTA L N S L E G E FK G K Y Y P L K A M T E FHPRMQEDQYE EVYE KVREAVQDLD E E LQQ GE LHLLAA A LDA $F P$ L LAS R E Q S E EVLE QLAPVV Q GSA D F GS FE L L R L D E L G E

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 FN P C L T E E QX K EME QKVVS S T L S GLLE GXLLK G T F Y P L T G M S K
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 F P MLA A T E GQMDEVVLERVNRALRHPSVQQGHEMLLPMNRVVE


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| $K$ | $N$ | $F$ | $L$ | $V$ | $W$ | $I$ | $N$ | $E$ | $E$ |
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| $K$ | $N$ | $F$ | $L$ | $I$ | $W$ | $V$ | $N$ | $E$ | $E$ |
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| $K$ | $D$ | $H$ | $M$ | $R$ | $I$ | $I$ |  |  |  |
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| $K$ | $N$ |  |  |  |  |
| $K$ | $F$ | $L$ | $V$ | $W$ | $V$ |
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GHSFMWNQHLGY\|LTCPSNLGTGLRGGVHLKVPLLSKH K GHSFMWNQHLGY LTCPSNLGTGLRGGVHLKVPLLSKH K

 $T V D D M W N K H L G Y V L T$

 KL K F AKRDGYGYLTFCP TNLGT TVRASVMDKLPKIGGDLD K L K F A K R R D G Y G Y $\operatorname{L}$ T $\operatorname{T}$ F C P P T N KVSFAKD DRLGNVTF L MK F M WS ERLG Y L CT SIIK F M WN P HL G Y V LT CP S N L G T G L R R G G V S I K F M WN P H L G Y V L T C P S N L G T G L
 GKE YMMHSSK H L G G F I L T C C P S S N L L G T G M R R A G GV KAFMHSEHLGYI S S CPTNLGTAMRASVHIKLPKLGLDMV






## GWEF QRSDNLGYILTTC

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$G L E$
$K A P$

KAPARDERLGYLTG | $K$ | $E$ | $F$ | $M$ | $W$ | $N$ | $E$ | $H$ | $L$ | $G$ | $F$ | $L$ | $L$ |
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| $R$ | $L$ | $P$ | $F$ | $S$ | $H$ | $H$ | $E$ | $R$ | $L$ | $G$ | $F$ | $L$ | $\begin{array}{llllllllll}Q & V & N & Y & A & F & D & E & K & R \\ A & Y & L & T & S \\ A & E & F & M & W N & E & H & L & G & F \\ I & L & T\end{array}$ $\begin{array}{l:l}G H P & F \\ E & M\end{array}$ GHP F M WT E H L L G G Y I L L T $K$ I P F QRDERLGG L T F C P






 SLLK F S R D A R L G N L T F C P T N L G C T I R A S V H I K L P L L A S N R R

 SIIKFMHNDHHGFLGTCPSNLGTGLRASMFVRLEKLGTDPH SI KFMHNDHHGFLGTCPSNLGTGLRASMFVRLEKLGTDPH
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 KLDFAFHEKSGYLTSCPTNVGTGMRASVMMHLPALTQQMN TL L Y A Y H D QY GY L T A C P T N V G T G I R A S V M M H L P G L A L T G G
 GFTFMHNDHHGFLGTCPSNLLGTGLLRA

T9Y2 GFTFMHNDHHGFLGT AVDVYA F D E K R GY L T GWEFMWNERLGYY LT C P QV D Y A F D E H L G F I L T C P GHGLDMHN D A R G G Y Y Li $R \square P$ FSHHDRLGGLTF GWEFMWNERLGYI LTT C KVVP Y A F D E K I G Y L T T S C P T

 TLAFARHPRYGNLTACPTNLGTTLRASVHIRRDLLSKDPD
 AV DYAFDDREGYLTSSPTNVGTGLRASVMMHLPALVMTHQ
 A A E L M Y K E NL GF L GTCPSNL GT G L R A S VVMDTLPELDNKDP H $R$ VP F S H N D R L G F L T F C P T N L G T T V R A X V
KV D Y A F DE K L GY L T S CP T NV GT GLLRASVMVHLP ILTRRMN YLQFSHDPHLGYI ASCPSNI GTGLRASFHI HLPLLGQRKD K L L D F A F F D E K R R G Y $\quad$ L Y V N Y A F D E R L G Y L T S C P T N V G T GLL R A S V M M H L P A L V LT Q Q



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 KFDDILSKMRLQKRGTGGVDTASTDGTFDISNLDRLGSSE RFDQVLRALRLQKRGTGGVDTASTDGTFDI SNLDRLGTS


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$\square I L Q A!T Q V G L V V R G L Y G E G S E A V G N L F Q L S N Q V T L G M S E$ FGDILLKLRLQKRGTGGVDTASTDGIFDISNLDRLGHSE KFEELSRLRLQKRGTGGVDTAAVGSVFDVSNADRLGSSE
 KFEEVLKRLRLQKRGTGGVDTAAVGAVFDISNADRLGFSE RMEEAAATHKLQRRGHGEHTDTGDGVLDVSNKRRLGDTE MLLSAVNQVGLTVRGIVGEGSEAVGNIFQ\|SNQDTLGQTE KLKAMADELSRGQRGTGGEHTQUEDGVMDSNRRRLGGSE DFKDISKSLHLQARGGAGVDSASVGGGWDUNSDRUGKSE KFDDLLGKLRLQKRGTGGVDTASEGGMFDI

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 K LEEVAATYNLQVRVTRGEHTETEGGTYYFS $F P K U L E N L R L Q K R G T G G V D T A A T G G V$
$M I V$
$R \square I P A D N Q L G L V V R G M Y G E G S E A \square G N D F Q \prod S N Q \square T L G K S E$ EFEAlASEYYVQIRGANGEHTETNDHIYDVSNKRRLGSSE RILPAVNQLGLVVRGDYGEGSEAQGNLFQISNQDTLGKTE




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 WLK QDGPDSDIVMSSSRIRKARNIERUP
TVNNPYSKWLDASGPESDVVISSRVRLARNLAGFP

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 WMNSDGPDSDIVLSTRIGRLLARNFEDYV
DKHK $\mathrm{D}^{2}$ DDANNTKLTAEQAKDQYVI
IR RAGR S $\square R G L$
WMKDGGPEDDVVTSRVRTARNLEGVP
NWAKGDGPESDIVISSRIRLARNISGA WMQEQGPDHDIVLSTRIRLARNFSNVIP WMSQEGPDSDIVLSSRVRLARNLKDIV WUNSTGSEGDVVISSRVRLARNLKDVP WMRHDGPDSDIVLSSRIRLARNFSSQP
NPYTKWMEGKGPYASIVISSRVRLARNLVDYP GCSKWMNATGPDGEIVLSSRVRLARNIREVP MHRSDMNPE NFKGGADFDEQYVLSCRICTGRNVEDYS WMRSGGKESEIVISSRVRIARNLQNQP WMNEEGPDSDIVLSSRIRLARNLKDUV
HVSD TNPTKVKHGKFDENFVLSCRVRACRSIKGFR HPTDGDVRKLSKTPVDPTGKYVLTSRCRTGRSVRGTR WMSSGAQDGDVVAASRRHARNLEGDP WMKNEGPESD VISTRVRLARNEAHTA DDDPSGEFILSTRIRVGRNLARYA
NPYSPWMNGSGMDGDVVLSSRVRLARNFSDP
HTTDLDFSKVSDTP DPTGKYVMSTRVRTGRSVRG\|R WMEGPGPEGDALSTRVRHARNLEQYP

MKHPTD
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SDEHKTD【NPE WMGA

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KHVTNLDVSQ TSKTP KHVTNLDVSQLSKTPI DVSGRFVLTRCRTGRSVRGFK KHVTNLDVSQLSKTPI DVSGRFVLTTRCRTGRSVRGFK

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 FPMLATSSSSSEVVRRVEMALREESVLKDAEDIVMDDLSD

 FSTVVYSNEEAQRIVDVVFQNGFSSFPS DGELELLKMMELQP

 F P NVAT A E Q A K A V VS QVERA I K D A A VEGDLIFVNLEELAP





 F P TLLF S K E QAVEVVRVFEQVFQKNENTNQWNLHKMNELQP F P IAA M D D E VA S K I K A QV R D S I L K S N T V LD F E Y T D L E K T T P

 F P L I A A Q E E G D S V V T F V K E K I M N R P T R WD F ELL L E MK E L E P LPGTN RAQR RKVEKLLRKGLSRMGGAMLAGRYYALKSMTE

 FPTLLASGDDLEQVVELMKENRSFNPNLGQFELIGMMDLEP FPHLLLNGSQAE EVI YRVEAFTSNAVLAKDARLYLMEDL SE FPTV ARGEPLEEVLSFMDEHFSSFREYEGLQLVKMDDLQP FPHVQNRDAGKKVAFLVRDAVLDPRFRQQVDFVFLNELSP FPYLAS DS QADDVTRQIRQTSSELQDEMGMRFFPIIKNIPP
 FPMLATN QQSEEVLNQLQSVLEDEQMEQFGQLSPLAELDE


 FP QR A N GE Q L S QV V S Q L K S S L C D L N S N E Q S D Y M DL E K L P L




 LP P A CSRA GRGGG
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FP F K M N R E D A E K V V E R V K D A M L
 FPDCAS E E D AK RVNEAVDQAVATME EHHFAGTSMS DLS P
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| $K$ | $N$ | $L$ | $F$ | $V$ | $W$ |
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$\mathrm{K} N|\mathrm{~L}| \mathrm{F}|\mathrm{V}| \mathrm{W} \mathrm{V} \mid \mathrm{NE}$

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 F P GWS S E R QRVVDL MNEVRP VVAGGMEMKD GFNEEYPNLTK F P GWARKNERI RI LS MTLPEVSSLLAEVKAAIIDSMDRFSP F P HK LDD D D NA A A V I D K I E R GL S G Y E Y S F K K I K L N D Q D Y FPNMANES E L M A V EMAAANEAK Q S L S E E Y Q M T Y V K M S D L D R






 FS L KLLDTPDAHKMI GEAAQK LIRVLPEFKDFHEYHFENLE E F PIYEQKE GTMDTISAVF DNNFTLFKMNEI S K FPPHVGNADRSRVEQLAVDALLKFEGDLKGRYFPLGELTK F S G
FPPHMKSAERD
F S LKLLD GK S A S D EQ NVMGAVK RLDPSEFGGEYISSLDGLAP


 $F P G W A T R Q Q R E E T L K L T S G E A R Q \| P V M K G G Y Y A E L S G L T Q$
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F P HLLLNQES GQKFMQLI Y WQKSEFKE LK QME LVTFENLSA
F P HML P VENAE QVIHAVKAAVSNENFINSFELVWMSELTP

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 L NP G GSKE S RLLE I DDLMAKVYDSLGGDDLA GNLYR HT TMTD

 L N P T GSKE SRLAADDLMER LIFQNLQGGLTGGFYRHTEMS I




 LPP HCSRGERRAI E KLAVEALSSLDGDLAGRYYALIKSMTE

 H P L M F S E Q E GY RVI NEVQD ALS NL F S AKMTPKHQAALVKRMQSDISEYSNYGKLMFADMTSMHP FPNKATLSEKEKI I DE LQNNLNFLKDKNFHLFKMEEFSS H P L M F S E Q D G F R V I N E V Q DV L P D L D $\quad$ V
 FPGWAKKPERVRI LDDQI RPAVETLPEMRGAFSESMDNLST $F L S R A N N S T K T E I$ ERLLLRTRTEDSTEEKS GQYVEVNNLSK F SPMVTAADQDRVIE EVVLKAAQSGRYMGDATFFKMNAL QE

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 F QERMNRESA $\square Q L V T K V T G L T K D L E E N Q K F Y H C N V N K L R D$
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GLD Y A F C Q K F WF TPSHGHLTCC


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 $N 1 T$ Y AF DNDFGYLTACPTNTGTGMRASVMMHLPALTMTEN KLDFAF K E K F GYYLTACPTNVGTGGRDSVVMILDPALVMTNQ SLLK F A F S E Q L G Y L T Q C P T N L G T G M R A S V M L H L L P A L R K C C G M

 LD YAFNCERGYL S S C P T N T G T G L R R A S V M L H I P GIV V HV G
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230 I V L JE A|L|GK|L G MA|V|RGMYGENTEAS GNMFQ|L|SNQTT|L|GKSE LLAATVSKLGLVIRGAYGEGSSPRGDTYQLSNQITLGMSE
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 IVAAEGRFGLVMHSVYSDGNKSAGDVYQISNQITAGVTE AIHEAAARYLLQI RGTHGEKTGVENDVVDISNRYRLGITE KTVEADRRYGFVVRGMYGEGSRPASNIFQ:SNQVTGGTE VLERLARLHNLQLRGTGGEKTAVQEAVFDISNRIRGGRSE KLDEETKKLGVAKRGNLGEHSSTDQELUDVSNVKRLGUSE
 KVLQGASQVGLTFRGLYGEGSEVVGNFFQLSNQSTAGOSE IEFNAVSKMGMTVRGDYGEGSKGYGNIFQUSNQDTEGPTE KFSEVLKRLQLQKRGTGGVDTAAVGGVFDVFNADSLGFSK IVFNAVVKLGLVVRGMYGEGTQVSGDLYQISNQFTLGKSE QVLGALANLGLAVRGLYGEGSQAYGQMFQVSNQTTHGKSE IVLSAVAKLGGTVRGMYGEGTQALGNDFQUSNQITAGQAE
 KVVRAVNQGDAVRGLFGEGANGAB KVGYAVNQLGAVAGLFGEGSDASGSIF 1 Q LGAVGKLGLDVRGVS VLRELRKLGYIRGRY KVFHAVNSFAMSITGMYGEGSDAHGDLYQVSNQTTLGKTE KVFQALQKDNLAVRGLYGEGSQAMGDFYQI SNQVTLGVTE AIDKICRERNCQARGSTGEHSEVIDRT DVSNWRRIGFPE FENLDRRLKLEARAVYEETDRRYTG|FDIANSEALGKSE RLVRNITQL GYSVRGLYGEGSQADGNIYQISNQVTMGDSE RVISAATQLGGLAVRGLYGEGTEAAGNLFQVSNQLTLGPKE $R V \operatorname{RAVSQLGITVRGLF}$ RIAQAVARLGMTVRGSY TVLRAISNFERNURGITY

 NIMTAISQLGLAVRGLYGERTEALGNIYQISNQLTLGRTE
 KFPEVLKRLRLQKRGTGERATG
KFEETLKRLLLQKRGTGGVDTEAVGAVFDTSNADRLGFSE KFEETLKRLLLQKRGTGGVDTEAVGAVFDISNADRLGFSE IVLKAANQUGLAVRGYYGEGSQAKGSVFQISNQRTMGRKE MV LESCTKLGVAVRGYYGENSEAVGDMFQVSNQTVGRKD VVLGAVGKFGLITVGVF RI AQTINRFGFTIRGMY III QSVNKLGLAVRGLYGDETQNRSDIYEISNNQTLGUTE VVFQAMQKMGLAVRGLY RVKHGLTKMSFAVRGFY SLINSAYKLGDTVRGTY INRVIAGSLGDEVRGLY QVLGALTH|LGLAVRGLY KFEEILSRLRLQKG
K FKKLEENLRLQKRGTGGVDTATTGSTFDVSNDDRGGKE $K L D T L A R S K C Q A R G S S$
$I L V R S I V Q L G Y S V R G L$ HVABCNRVGDTVRGMYGESDALGHMYQVSNQRTMGIISE DEKRACGRYGAQURGMYGEGTKAGGCLEQVSNQVTLGLSE
 TVLEAISSFGMNTRGMYGENNQVQGDTYQUSNKQTLGITE LLLKGLNQVGMTLRGLYGEGSKGEGNIYQ: SNQVTLGVTD KVVRAVNQLGMAVRGLFGEGSDASGSIFQISNQTTLGESE KFNETLGRLGMQKRGTGGVDTASVGGVFDI



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DTVISSRIRLARNVKGLN
LE WDDPKGDDQDMVMSSRIRVARNLKDRP
VN WYMQNGKESDVIISSRVRLSRNIKGDP NENAEASKLEDMRKSUVVSSRVRLARNLEDYN K WFEEVANDASNIVSSRVRLSRNWEEYK WMEQUGSESDVVVSSRIRLARNDDKVP YMSSWMQQNETTPVVMSSRIRLARNLNNHV LS WF GTKGKDTDVVLSSRVRLARNLVGVP KWFEEDDSKNSNV YSRVRLARNWDEYV
DLSYDSKWMTRANDLPVVMSSRIRLARNGQKYV TDKHKTDLNHE NLKGGEDLDPNYVLSSRVRTGRSIKGYT WFEEVKNENSSTVASRTRLARNWEEYR MNEH $\square$ SDWMKETEDTP VVMSSR $\mathbb{C L}$ ARNLQDEV WRNSGHDHEDVVVSTRTRTARNKKHC SWLSKDGDDADVVLSSRVRIARNFEDEL WLRGGGEAADVVLSSRARIARNGAGQL ■K WYEKTGKNTDVVLSSRMRLARNTTEYP WQDGTGKFNDIVIDSRVRLDRNLKKYV WYKETSKDSDVVISTRLRFARSIDGYK

TRVRCXRSLEGYP
NNWDHKSNNENDND VLSSKIKGSRNFKDDP WYDSVDNKSSNIVYSRIRLARNWDEYT LRWFEQKDTGRPGVISSRIRGVNWQDYR KWFEQTDCTGSNVVYSRVRLARNWDEYA
$N N T S P W D E V V D A P V E M S A R V R$ RARNLHVP
TSQTPESDLNYDNGKGGDLDRSYAVRCEVSVVRGUEDFC DKM DCRKNNSR $\square$ AVTSR DRLARNGAGK
Y $\square K W \square G D K D N N R E V V S T R \square R \square A R N D E D F V$ GGDDLLDPYVLSSRG
AEWTNRRGPLSDIVISSRMRLARNVEGDP KWYTAQGNNSDVVVSSKIR RARNLADAP LPWFGAAGQDSDVVLSSRVRLARNLVRDP


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IIS SRTRLARNDQEYP LE WF SARGDLAEVVMSSRI RFARNLKDRP
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UniRef90
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UniRef90 U2IZV3 UniRef90-W7AUD7 UniRet90-E7C4M9 UniRef90-R7BHI9 UniRef90-R6U772 UniReffo-SgYUP3 UniRef90-J7GS82 UniRef90-C5ETW9 UniRef90-D9R8W1 1 UniRef90-C0D1P6
UniRef90 O8MV5 UniRee90-UPIO00369B9D5 UniRef90-l3KGQ8 UniRef90-E3CVG3 UniRef90_R7L828 UniRef90-J7GUA4
UniRef90 B5YF82 UniRef90-UPI000333DDA4 UniRef90-X0S486 UniRefofo-RRBJU2 UniRef90-C4VOP1
UniRef90 UPIoou47E774D UniRef90-V712B3 UniRef90-J5H777 UniRef90-D1L911 UniRef90-R5L165
UniRef90 FOY266 UniRef90_UPIO003644F8D UniRef90 A8WFZ6 UniRef90 UPIOOO3BCA851 UniRef90-R5L3W8 UniRef90-R5XV72 UniRef90_F2UC54 UniRef90-R5FVB1
UniRef90
W4V8F6 UniRef90-UPIO00467AEAO UniRef90-D1B6J3 UniRef90-G5IIFEO UniRef90_G3TMZ2 Unirei90-G9YJM9
UniRet90-EOMPS UniRef90-UP100047D3AC4 UniRef90 A6LPN2 UniRef90-X1RLMO
UniRef90_R8VSV3


FSNKLNEDEARENVGFTYQUVKSELKDESCDYQLWNEDK FPGRLTKEQSAELSEKLLGGLTGIMDRMQYRFTHLERMGD HP LMFSEAEGHRVINEVQDVLTDLNVL FPGKMTKEQSVEMTGRLMNGVKESGSGSRSRYDYLDRIPD冋PGAMTKDDRVNLEKKMCEAFDKLKPEYGGGYNSLDHISE LDGAMTKDDRVNLEKKMCEAFDKLKPEYGGGYNSLDHVSE FETKCNETKKEELTKLIEEAMSGNKYGMK LKLKLKDMDD FTEADDPDQEEETTKKVHAAIDSWPETYYTYPLKQVSD FPTNFKQFEHTALLRFVQKARATVESLTDCDFYFMQSDDE FVSKCSNDELKAVYTKMKEITPALGYGLK FIVPLKDVDE FPSRLEPDEARTMIARLKQNFRDLGDRDGYEYEDLELMEK HPDMFTDVEGQKVINEVQDALPDLKVLDNMQTTTH FPGRADGGQLAEIVQQLGDAFADLDKELGFDRGEDRRLST
 LIPPHCSRGERRAVEKLSVEALNSRPGEFKGKVYRFKLLRF F P G S LT P E E A REM S R L K K E L R G L P D Q E D CE Y LDDLERMP D
 FNPCLTEAQYKEMEEKVSSTLSGLTGELKGTFYPLTGMSK FPGKMNEEEAQAVENQIAAGAEHLPME YVHQKLSRMDK F FVHRAAPTDGRLVLEACRDVLTAANLGTQSTWVNLHESPA

FPNUMKKKEKQNLLDKVKNSUN LIKEYNFFKTEDUDE

FNPCLTEKHYREMEHKVSSTLSGLEGELKGTFYPDTGMSK
 FPSRMTREQCGEMLERMKDGLKD GDGMEYRYGQLDEMQD FPAALDDKESGEMVRKLEFGLKDLGKDEGYEFSMLGELEE FPAKLDQKQAQELLERLKEGLKEUGGLDGNTYRDLNQUKD FPHVQADKE FPTHCSRGERRQLLTLARQALEQLEQKLAGRLLLL FANAASREEMGEILRRVCAELGKTRKFKNGAFFNMSEISD
FPSQLLESQRKR LLNKVEWVYKNETRFSEYDFLKLEKLPN QTQHCSRGERPPRHRLAEEALSSDDGDXAGRXHTLKSMVE

 FPHMLDRRERARDVVSKVEDFYVSSADKSDYSTHRMWDGGR FPSKLSDTEAKKLIDKT $\square G E L S N \square S T D L G M Q A D \square L D R \| S E$

FADK $\square$ SEEDAAKM $\operatorname{TNS}$ VAKRFET DYPEEFRCDYMKECSE


FPNULTKQEK LNVTNKDKESTK_DDDFRLIYMSNLTK FKSKLSSEDKRNTVKKLYACIKNSELAGDFTLVDLQGASP


## FPAKLDDKVSTELVHRLEFGLKDVGEEKKFKFALLNEMEE

 FPTFASPEDLTSAQEEVMSLLLSVEHLRDSAVYHIDQLDS

 FPNKLNY GKGRENGKEVYNVLKNELDNEEDTGYEIWNTKE

|  |  |
| :---: | :---: |
| UniRef90-G3VM21 | QLIDDHVLFEKPVSPLLLASGMR GILWHNEN |
| UniRef90-W7DBG5 | ALLVEKHLISPYL MNKSKFG |
| UniRef90-B1ZUY8 | LEKQILVERHLISRELSG GKNGSGVVISKD |
| UniRef90-D3ROU5 | LTVNSLVEKRLLSEDMLNKRASGRA |
| UniRet90-G7W71 | LEQQVLIEKHLISPNLGA SSGARGVALAPD |
| UniRef90-M12 | KEDNSLLEKHIISFNLINNDDKA |
| UniRef90-R5TXA9 | LDRAALRERRILNR AAVEKKAPAGIILSED |
| UniRef90-G5H4W1 | LQRDVLDEKRLISEK FAEAQPHRTAYISGD |
| UniRef90-E7GLH3 | LDRVALRERRLLNKTLV EKKTPGSIICSDD |
| UniRef90-UPIO0047A0AA9 | LNRKVLVEEHLISPALLNNTNNS AFLLSKD |
| UniRef90-C4Z479 | YQKMGMRERHVISPY |
| UniRet90_W7BHJ8 | RALLVEKHLISPYL |
|  | XXXI D DHFLXKEGDRFLQTXXXCRFWXSXRXXXHX |
| UniRef90-D5LG82 | EVQQKLIDDHFLFKEGDRFLQAANACRYWPSGRGIYHNDN |
| UniRef90 R6QZXO | AKKNALKERRSISSYLV |
| UniRet90_F4YCW3 | SVQQQLIDDHFLFKEGDRFLQADNACRFWPTGRG\| |
| UniRef90 B9E8S6 UniRef90 W4OH82 | ERLMVAAKHLMSKELLLDN ADHANGGAVYLNDD |
| UniRee90 ${ }^{\circ} \mathrm{B2TIE}$ | NSYLDKQLISKELTKN KDKTAFVL |
| UniRef90-D7 | ALLERRAINRSVIKK KKDPTGMILSED |
| UniRef90-E8SIZ5 | KYKLVAKHLISPELT ${ }^{\text {S }}$, KQPASAVLLNED |
|  | R A AL |
|  | EAYQQLVXHPMFKDMPY |
| UniRef90 ${ }^{\text {W WormV4 }}$ | AERQLLHERHLVSKEILAGLEGGQGVR |
| UniRef90-R7F7V | VTDNSLTEKRLISPDF VRGKEKSKA |
|  | TKMSLIEKNLISPE YAVHNEDGAI |
| UniRef90-F9MVP0 | LSRLLHFVEQQWI SP GMMERTQGASFFLR |
| UniRef90-R7K88 | KRQSLIEMHLISPNLAKN PM, |
| UniRef90 Houpas | SRQVLVENRMSREAK ALAQGGPGRS |
| UniRef90 E3PU28 | KEYLLENHLISKEMSE SKAKGAVFINEQ |
| UniRef90-R7A | RTALRER |
| UniRef90-LOK | RMMLVERHLISPEYAKNVQNRLL |
| UniRet90_K8NA37 | LVAKHLISKELIEQ PASAVLLNDD |
| UniRer90-G5GS84 |  |
| UniRef90 R5EXD6 6 | ALRER RILNMACVSRKEPSG |
| UniRef90-K9B0V5 | KHLVSPSLTKQ GFETEPASAVMVNED |
| UniRef90-G1 QN48 |  |
|  | AEEHQMREDHFLFQEPDSTLLSSGMGRHWPDARGIFANDQ |
|  | ALRERRLINR SMAEKKTPGGLILSDD |
| UniRef90-A0A033UK39 | LDQNKLVFKHLISPALTKQ |
| UniRef90_B8PSE0 | EVQQKL DDHFJLFKE |
| UniRe990_ 212 ZV 3 | NDAKVLMEHHLISPE |
| UniRet90 W7AU | RALVEMS SPYL |
| UniRer90-E7C4 | ROCLYEROL SAHFAKGLGTDRKSNDWPAVAFGL |
| UniRef90-GOVQ46 | SMMAVKHF SSAGHDEHPKHRGVLLRDD |
| UniRef90-R6U772 | VEEHLISKELLDL SDGTA |
| UniRef90-SgYUP3 |  |
| UniRef90-J7GS82 | DXFL PXXDRFLXXANAXXFWPTG |
| UniRef90-U5ML16 | KNL |
| UniRef90-C5ETW |  |
| UniRef90 C0D1P6 | RMALRERRIL |
| UniRef90-Q8MV | AEQEQL ${ }^{\text {S }}$ SHFLFDKPSPLLLSSGMARDWPDARGIWHNDQ |
| UniRef9-UP1000369B9D5 | EDKALLVEKYLISPLFTKQ |
| UniRef90-li3KG88 | EQQSELNL KAPTS |
| UniRet90_E3CVG3 | LSRQVLVENRISPEFSR GGDGRFV |
|  | RELLFEDRAISREL |
| UniRef90-J7GUA4 | KLIDDHFLFKEGDRFLQAANACRFWPSGRGปYHNEN |
| UniRef90-B5YF82 |  |
| UniRef90-×0S486 | LESQFLVEKHLI S |
| UniRef90-R7BJU2 |  |
| UniRef90-C4VOP1 | VQREVLIGKQLISEKF TADQPHRMA YISAD |
| UniRef90-UPIO0047E774D | PDRALLVEKHLISPNFAKH GNRFINND |
| UniRet90_71283 | TDULVGFEKHLVSAKLA |
| UniRe90-DiL911 | LQAANACRFWPSGRGNYHNEN |
| UniRef90-R5L165 | GKNNGAVILSED |
| UniRef |  |
| UniRef90-UPIO0036 | KEQEQLIADHFLFDKPSPLLLAAGMARDWPDARGIWH |
| UniRef90-A8WFZ6 UniRef90- UPIO003BCA851 | ES EDRKVVMEFPPASLIK】GVARDWPDARALUWLSKD |
| UniRef90-R5L3W8 | FVEKNLISKEFA NKEDGAL!VNSD |
| UniRef90-R5XV72 | AYAERQLISPEFAK |
| UniRet90- R5FVB1 | LERNALVEKHLISRGLVARDQ\G |
| UniRef90-W4V8¢ | ES R TESGVIISAE |
| UniRef90-UP1000467AEA0 | LDRLALKER RVLNSSALTKKRPSG |
| UniRef90 G5IFEO | K |
| UniRef90-G3TMZ2 | QLDDDHFLFDKPSPLLLASGMARDWPDARGI CHSKT |
| UniRet90-G9YJM9 | ALMNVPEHHAVIVRED |
| UniRef90_EOMPS6 |  |
| UniRef90-UP100047D3AC4 UniRef90-ALLPN2 | RALLVEKHLIS S P |
| XIRLMO |  |
| UnRef90_R8VSV3 | QEAMQLIEKHMTSPEFAK KGGKLIASDS |

UniRef90 E7C4J3 UniRef90_G3VM21
UniRef90_W7DBG5 UniRef90-B1ZUY8 UniRef90_D3R0U5 UniRef90_G7W7K7
UniRef90_M1ZP13 UniRef90-R5TXA9 UniRef90-G5H4W1 UniRef90-E7GLH3 UniRef90_UPI00047A0AA9 UniRef90_C4Z4Z9 UniRef90-W7BHJ8
UniRef90 B8QZZ1 UniRef90-D5LG82 UniRef90-R6QZX0 UniRef90-F4YCW3 UniRef90-B9E8S6
UniRef90 W4QH82 UniRef90-B2TIE4 UniRef90-D7GXA0 UniRef90-E8SIZ5 UniRef90-R6RKA2 UniRef90-A9UNP9
UniRef90 A9UNP9 UniRef90_WORMV4 UniRef90-R7F7W2 UniRef90-R6HC98 UniRef90-R7K886 UniRef90-HOUPA8 UniRef90-R5NQV1 UniRef90-E3PU28 UniRef90_R7ABJ0 UniRef90-K8NA37 UniRef90_G5GS84 UniRef90_R5EXD6
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UniRef90_UPIO0047E774D
UniRef90-V712B3
UniRef90- J5H777
UniRef90-J5H777
UniRef90_D1L911
UniRef90_R5LI65
UniRef90_F0Y266
UniRef90_UPI0003644F8D
UniRef90-A8WFZ6
UniRef90_UPIO003BCA851
UniRef90-R5L3W8
UniRef90-R5XV72
UniRef90-F2UC54
UniRef90-R5FVB1
UniRef90-W4V8F6
UniRef90-UPIO00467AEA0
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UniRef90-EOMPS6
UniRef90_UPI00047D3AC4
UniRef90-A6LPN2
UniRef90_X1RLMO
UniRef90_R8VSV3

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 E NI C I M M N D E D H L K K EVVIMMVLE K S V S V MI N | G | $\mathrm{L} L$ |
| :---: | :---: |
| S | S |
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ESLSIMVN
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 | $Q$ | $R$ | $l$ | $N$ | $L$ | $M$ | $V$ | $N$ |
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| $E$ | $E$ | $E$ |  |  |  |  |  |
| $L$ | $L$ | $S$ | $I$ | $M$ | $T$ | $N$ | $E$ |

E

## K

 ESVSVVMVN KNTSAMUNE
 E T S V Sil M MGIGILVNE
 EDISIVING EGTSVLDNG KKK $K$ I WFGE
KTFLVWVN GSLAVWVNM KTFLVWVNEEDHLRVISMQKGGNMREVFTRFCTGLTKIER



GEDTGUVLNEGVVGIVLNCDDHIRIQMLGAGLYLEELWEKADKLDDYINEGVVSAMVNEEDHLRLQVLDGGLNLEEALSVASSSLDRVDEKVIKIIVSKYFHEGVLTPDRHDINSFYGFERLDSNKLSGAVSVMVNEADHVVVQTAAAGFTVQKAADDALRVDDALEE RDTII WVNEEDHLRIMMIRHSTALGALLDDLMTRVAMLEG


RFDYAYDEQYGYKTTYPTNVGTGLRAGYTLHLPALSQTRK R 1 PFSHHDRLGFLTFCPTNLGTTIRASVHIKVPKLAKDYA KLTMAFDEHYGYLTTCPTNI GTGLRASVMLHLPGLSNRMN RVTYAFDEKRGYLTSCPTNVGTGLRASVMMHLPALAMTQQ RVHYAFDENLGYLTSSPTNLGTGMRASVNDHLPALNFNDE RFDYAFDEKYGYLTSFPTNVGTGLRAAVVLHLPMLSKNFN $T L Q \square S Y D E Q L G Y L T T C P T N V G T G M R A S V M L H L P G L S K R M N$
 GLSFAMSPDYGVVTSCPTNLGTGMRASVHIGLPNLTADDA RVPYAFHSEFGFLTACPTNTGTGMRASVLIHLPVLTKEDS
 DLDFAYDRQYGYLTACPTNVGTGLRASVMVHLPALE DSGL
 FDPYSFHHQYGYLTACPTNVGTGLKVSVLAHIPALELTGN NLRYAFRENLGYLTSCPTNLGTGMRASVMVHLPALVEMGF
 ALDDSFDEDLGYLTTCPTNI GTGMRASVMLHLPGLSKRMN RLDLAFDETMGYLTAYPTNLGTGLRASAILHLPGLVYTRN


 RIPYAFNEKYGYLTTYPTNVGTGLKASVIVHLPTLSKKFQ HLT TSYDEQHGFLTTCPTNIGTGLRASVMLHLPGLSKRMK RLPFSHNDRFGFLTFCPTNLGTTVRASVH
SLDYAFSDDYGYLTACPTNVGTGLRASLMVCLPGDVANNQ

 HLDFAFRDDFGYLTASPSLTGTGLTAGVTIHVPALMKRFN KLKFSYSDKYGYI TSCPSNVGAAMRVSVMLHLPALARLGP LFEFMWNPHLGYI LTCPSNLGTGLRAGVHIKLPHLGKHE RIPFSHHDRLGFLTFCPTNLGATVRASVXIKVMKLA NLNYAFDEKLGYLTTKDENLGTGMKASVVI HLPALKMSDE RFSYAFDEKYGYLTSFPTNVGTGLRACVVLHLPTLSQKFQ RFAYAFDDRYGYLTSFPTNVGTGLRASVVVHLPMLSQKFQ

 RHPF DWKQQLGWVTSSPANVGTGLRDSVLI KLQHLPKHKH EMDFAFDPSLGFLTACPTNLGTGLRASAMLHLPGLMQTMQ HLEFAFSSNYGYLTACPTNVGTGMRASVMLHLPALVMSMD RLPFSHHDRLGFLTECPTNLGTTVRASVHIKVPKLAANKT
 KVGM
 RLDLAFDERMGYLTAQPTNLGTGLRASVIVHLPGLVYTRN KI EYAFDEQYGYLTACPTNI GTGMRASVMLHLPALTATNK RLTFAFDKNDGYVTACPTNLGTAMRASVMVHMPTLADKDK HFEYAFNEKYGYLTTYPTNIGTGMRAADVLHLPTQSKGFS
 G DS FAKDDTYGYVTSCPTNDGTGMRASVHVKIPNLTKDDT NHGFMWNEHLGFILTCPSNLGTGLRGGVHVKLP RHTF $\square$ WK THL GWVVSSPAEVGTGLKASVSVNLDNDAKNKR GHEFMWNEHLGYILTCPSNL GTGLRAGVHVKLPNVSKH E
 GLSFAMSPDYGVVTSCPTNLGTGMRASVHGGLPKLTADDA
 RFEYAFDDRFGYLTSFPTNVGTGLRASVVVHLPMLSQKFS

 TLNYAFHEEFGYLTASPSMAGTGFLAGVTLHLPGLAKRDH
 NFDYAFDETLGYLTASPENIGTGMKASVVLHLPALSMSEE


## UniRef90 E7C4J3 UniRef90-G3VM21 UniRef90 W7DBG5 UniRef90_B1ZUY8 UniRef90_D3ROU5 UniRef9_-G7W7K7 UniRef90-M1ZP13 UniRef90-R5TXA9 UniRef90-G5H4W1 UniRef90_E7GLH3 UniRef90-UPI00047A0AA9 UniRef90-C4Z4Z9

 UniRef90- W7BHJ8UniRef90 $88 Q Z Z 1$ UniRef90-D5LG82 UniRef90-R6QZXO UniRef90-F4YCW3 UniRef90-B9E8S6 UniRet90-W4 UniRef90-B2TIE40 UniRef90-E8SIZ5 UniRef90-R6RKA2 UniRef90-A9UNP9
UniRef90 AgUNP9 UniRef90_WORMV4 UniRef90-R7F7W2 UniRef90
UnGHC98 UniRef90-R7K886 UniRef90-HOUPA8 UniRef90-R5NQV1 UniRef90-E3PU28 UniRef90_R7ABJO UniRef90-K8NA37 UniRef90-G5GS84 UniRef90-REXD6
UniRef90
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UniRef90_R6U772 UniRef90-S9YUP3 UniRef90-J7GS82
UniRef90 U5ML16 UniRef90-C5ETW9 UniRef90-D9R8W1 1 UniRef90-COD1P6
UniRef90 O8MV5 UniRef90_UPI000369B9D5 UniRef90-I3KGQ8
UniRef90 E3CVG3 UniRef90-R7L828 UniRef90-J7GUA4 UniRef90-B5YF82 UniRef90-UPI000333DDA4 UniRef90- XOS486 UniRefigo-R7BJU2 UniRef90-UP100047E774D UniRef90-V71283
UniRef90 - J5H777 UniRef90-D1L911 UniRef90-R5L165 UniRef90-FOY266 UniRee90_UPIo003644F8D UniRef90-A8WFZ6 UniRef90-UPIOO03BCA851 UniRef90-R5L3W8 UniRef90-R5XV72 UniRef90-F2UC54 UniRef90-R5FVB1
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220
230
240 $K|V D Q G L G Q| V G L T F R G L V G E G S E V I G N F F Q|V| S N Q T T \mid L G K E$ KFGEIMKKLRLQKRGTDGVDTAAVGSVFDISNTNQLGFSV KMAEATRSVGFVVRGMYGEGSHSLGHIFQISNQVTLGKTE KVVRAVNQLGMVVRGLFGEGSDASGSIFQISNQTTLGESE KYLDSCRKAGLAVRGQYGENSEATGFVFQISNQMTLGLDE
 ALINAMSQRGMAVRGVYGEGEENFGSLYQEVSNQKTHGQSE DLLGDMSRFGTTVRGVYGRGTENYGDLYEVYNQKTVGMNE

$\square$ GTELGRFGTRMRQVYGDEEDSFGNपYQVSTQKTLGQDE KLEEVAGKYNLQVRG RIAQAlNRFGFTIRGTYGEGTQALGHTYQVSNQLTGKDE RILPAINQLGLVVRGIYGEGSEALGNLFQVSNQLTLGKSE IFSKGLTQQGMDMKGLYEEGNKAYGNMYKISNQVTLGLTE SLVADMGRFGTQVRGVYGEGAENFGSLYQISNQKTEGQTE SLTSDMGRFGTLVRGLYGEGEENPGSLYQUSNQKTLGQTE KAKEVCRPGGLSVRGGGGEHT
 IVLETNNFGMNVTGUHEGSKSEGADYQUSNKQTEGISE KVFYTINNFGVNIVGAYGENSKELGDTFQISNKRTLGVTE KLNKSLAKMGLVLRGFHGEGSKSVGGTYQVSNEQTLGFTE KTPEFAKREGFTFRGAYGEGSEALGNVFQLSNSLTLGMSE AVSNECQKLGVVRGAFGEGTPSHGAIFQSNQVTLGPSE KI LNVVNNLGUSIRGVNKEEDNDKGQLYQITNNQTAGVTE IILENATQIGLAVRGLYGEGTQFIVGSLFQVSNQLTLGFKE ELLGDMGRFGTTVRGVYGRGNENYGDLYEVVNQKTLGDTE SLMGVISKLGLAVRGLYGEGTDTIGNLYQ1SNQVTVGNSE IENDVNTSPQLGLAVHPGEGIGEGAHLYKVSNQLTLGYSE SVVADMSRFGTAIRGLYGEGSDNYGSLYEVSNQRTLGQSE RIVATVNRFGFTVRGUYGEGSKVYGHMYQVSNQLTVGKSE DFKDISKSLHLQARGGAGVDSASVGGIWDVSNSDRAGKSE RUGQADNRFGYTURGUYGEGTGALGHVYQUSNQLTLGKTE
LK S W L G K L GVIVRGMYGEGSGVY GDMYQDS NQRTLGFKE KVVDALRSIGFVI RGDYGEGSRSESNDFQISNQDTLGKTE
 RIVQGITKFGFTVSGMYGERNECDGNI FQDTNQDTGGVTE



[^1]| UniRef90_E7C4J3 | $\text { EYMLVEHLDK } 250 \text { V }$ |
| :---: | :---: |
| UniRef90-G3VM21 | V ELVQMV LDAMKLLI EMVKHL |
| UniRef90-W7DBG5 |  |
| UniRef90-B1ZUY8 | DEII KRLGSVLTSIVEHEDNA |
| UniRef90-D3R0U5 | STAI KELQTVVEQLI KREHEA |
| UniRef90-G7W7K7 | ED L |
| UniRef90-M1ZP13 | VEI M N N L K A VIK Q I IN |
| UniRef90-R5TXA9 | KEIADVVVTK A A DQL T |
| UniRef90-G5H4W1 | A EMI ENLRTAVGEI A A HERRA |
| UniRef90-E7GLH3 | QETI ELVSSVAVQLSQQERE |
| UniRef90_UPI00047A0AA9 | EGI I K K L K RI L L Q I I EKEQEA |
| UniRef90_C4Z4Z9 | K DII D NLDNI AEQI |
| UniRef90-W7BHJ8 |  |
| UniRef90-B8QZZ1 |  |
| UniRef90-D5LG82 |  |
| UniRef90-R6QZX0 |  |
| UniRef90-F4YCW3 |  |
| UniRef90-B9E8S6 | ESTIE DLQQVVEQT |
| UniRef90-W4QH82 | Q DIVEDLQ GVVAQLI Q Q R R VA |
| UniRef90-B2TIE4 | EEI I DNLKGAVLNVIS EEKK |
| UniRef90_D7GXA0 | REI D DVR R K A A E L |
| UniRef90-E8SIZ5 | QEI I DALT ELVDQI DHEELALL |
| UniRef90-R6RKA2 | KEIVDLVAKAAAELDAQERRL |
| UniRef90_A9UNP9 |  |
| UniRef90-A9UNP9 |  |
| UniRef90-W0RMV4 | E ELLDGLA RVVQKVIEREEEA |
| UniRef90-R7F7W2 |  |
| UniRef90-R6HC98 | KEUI ENLKVVTEKI I EQERKA |
| UniRef90-F9MVP0 | K D Yi HRLEKAVLEIVSMEEA |
| UniRef90_R7K886 | T DIVRAVT GMALLEI CQLEERA |
| UniRef90-H0UPA8 | EELEEKTTGVVRRLCEEEKRA |
| UniRef90-R5NQV1 | KEITKNLKLVSSQKI IE QERDA |
| UniRef90-E3PU28 | EEIVNSIMGITRQIIEKEDEA |
| UniRef90-R7ABJ0 | QEILELVANVAGQLSAQE |
| UniRef90-LOK4G9 | EEI I ENLLEVTHQI I NKERNA |
| UniRef90-K8NA37 | EQ I I ETLTEIVQQI IA E E |
| UniRef90-G5GS84 | A EMI ENI Q T AVGEI A A HERRA |
| UniRef90-R5EXD6 | K E IVELVTKAAAQLNNQEMR |
| UniRef90-W0EJ19 | EDTLTHLDAVTRQLME |
| UniRef90-K9B0V5 | REDIRNLNDLIHQ |
| UniRef90-G1QN48 | VEQVQLVVD GVKL MVEMEKKL |
| UniRef90-C5L844 | VELVNIMISGCSKIVQMEHAL |
| UniRef90-R7A5F5 | KEILELVENVAVQL |
| UniRef90-A0A033UK39 | E EII E DL T Q I VEQ I I S E EQ |
| UniRef90-B8PSE0 |  |
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| UniRef90-W7AUD7 | E E I V S DLT Q TME QV |
| UniRef90-E7C4M9 | EQLLGELNDILPEV |
| UniRef90-R7BHJ9 | EDII HNLDSVVQQIVRQERTL |
| UniRef90-G0VQ46 | T DI L D QLS |
| UniRef90_R6U772 |  |
| UniRef90-S9YUP3 | VELVQMVVD GVKLLIEMERRL |
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| UniRef90_C5ETW9 | REIVELVTKAAAQ |
| UniRef90-D9R8W1 | REI I D TVVSKAA $\square$ Q L T N Q R K $\square$ S |
| UniRef90-C0D1P6 | REIIDLVTKAAAQ |
| UniRef90_Q8MVP5 | $\underline{V} \mathrm{E}$ L V P M V |
| UniRef90_UPI000369B9D5 | EDI I Q L L E L K S QVVEEE |
| UniRef90-I3KGQ8 | VALT QLVVDGVKLLI I M E K R L |
| UniRef90-E3CVG3 | E ELEDKVTRVVRQLVGEERKA |
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| UniRef90-V712B3 | EDILTNLESTILSSILDEEQ |
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| UniRef90_UPI0003644F8D UniRef90 A8WFZ6 |  |
| UniRef90_A8WFZ6 | VELVQMVVDGVNLLVEMEKR |
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| UniRef90-A6LPN2 | ENITNKLKEAVWSII IEENK |
| UniRef90-X1RLM0 | EEI I DNLEKVNQQI I N |
| UniRef90_R8VSV3 |  |

NNVSPWDEESAELDVEMSARVRLARNVRHVP


KWYSGEGKNSDVVVGATVRLARNLADAP
PADGQLD LQK G G LGKE $\quad \square S M R V R \nabla G R N \square T A F P$
SDKQPPKDFGD DNTF DDVDPDKKYVISTRVRCGRS $\quad$ HVR SDFNYNNLKGWDEDDSQCVVSCEVRAGRCVEGFS

 T DKHPPKNWGDVNTFGNLDPTGEYVISTRVRCGRSMEGYP

HDWN DPVDEYVLTK DDPK LEKVSM RARVARNVKGWN TSKTPESDSNYDNLKGGDDDDRSFAVYCEVSVTRAVEDFC PEGDFNYDNLKGTCDFDSSYAVRCEASVVRGVEDFC AKWYENVKLSTDYFVSSRMRLSRNLEGYV




KELQFDSKYVKSTYFLISRCLHGFR
DDHKTDLKPD N LQGGDDLDPNYVHPG
F C
 KHTNDLDPYK ITKTQUDPTGKYVLSSRVSIVRSIRGYR


 K WYEMEACNQGP $\square \mathrm{IGGQVYLVRN} \mathrm{\square MGYP}$

$$
\text { D P K Y VLS S R VR T GRS } \square R G \square C
$$

T DKHKTDGNFE N LKGGDD $\square$ DPNYVLSSRVRTGRS $\quad$ KKGFT



S WLKK SVGPENDVVISSRVRDARNFKEWN NLDTSGKYI TGCVI ECARNLDAYE DNSIVIASKVKILRNIKGDK
 WY T D DGPDSDVVLSTRVRLARDLASFA

DLDPPAKYVQAAVVECCRNLEKYT WQYEAAPEAD VVLESRI TLHRNLTSYA WYTYSGNDNDTVLSSRVRVRNLKNYR VLRYRVRFVRNIAGFP WLEARGEESDVVLSSRVRIARNLPNKV WYNESGPENDVVLSTRLRLARNFANFP
$\square T$ K DDP A DEKV SM RARVARNVVGYN
HPDTLAGQEA WYAYEGPEQDVVLSSRVRLARNLANFP GDDLDPKYVLSSRVRTGRSIRGFC

PNDLLLKFANKKHA $\square$ PANK $\square$ WP $\square$ T T FS $\square S R N \square S \square A K$
NLDTSGKFTTGVVIECARNLDEFD DLDPDAKFI QA GVI ECARNLVNYT VP WYSCAGVDGDVVVSTRVRLARNLADFL

WYNEAGAENDVVLSTR $\square R \square A R N F V N F P$
A D W $\square Y N K G S E D N \square V L Y S K V S \square Y R N L E N \square R$ DLDPQARWI I S GTLDCTRNLGDFE AS WQEHAQAAYDVVLESRVHIHRNIRSYA HDTLDEVTVSSGNDLDPPAKYIQAGVIVCCRNLENYT
 VIK S KVDISRNLNGYS


UniRef90-I0R571
UniRef90-R6XSS4
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50
FPSRL 60 YPYYALE NMQQ
 FPQKGITVEEVAYLVKCADKAADFEHQLVF VABCDRD FPNKLNYIKGRENSK\|IYNTLKNEF $\square \mathrm{DEE}$ ITMMEDWNTKN S GLE GEDKGTFYPLTGMSK FP $\square$ RMNNE $\square$ RRNTVKK $\square$ FAAVKNSPYAGEFDLVDLSAVSS
$\square P G \square M T K A D R V N F E K T M S M T P N D V W K E V T G D A E N P N L I S A$
$\square C P C P A V S G R V P P V T G V P S A L N S D D G E F K G R Y Y P L K A M T E$ FNPCLKKQQYEEMESRVKGQLESMSGELRGKYYPLTGMTK FPPHCSRGERRRLLSLAKTALSHLDGEAGGTLYSLQELAG FPTHCSRGERRQLLTLAKTALDQLGEEFPGKFYS

 F NPCLTE P QYKEMEQKVSSTLLAMEGELKGTFYPLTGMTK
$\square P P \square M S K E E R \square N F E S K M V Q A F E N F G \square$ K GKYHS $\square N Q \square T Q$ FPSHCSRGERRHLLSLA RVSAQKDEAELPGQLFLLEELSR FPTHCSRGERRQLLTLARALLRLEEEELPGRFLPLEELDQ
 FPHKCSDDEGKDI VEKVYNVVSEYK E E D L K LI S L T DAK K
 F L GR S T R S HQRELEQRLWLEILDSGVGEGGFYVDVNAAGQ

FPASCSRAERNVIELHLKTALLALTGSNTGTY DHLTDMTS LPSHCSAGHRKSVEAL A A L E GDLDNRQYCALKNMTK FPHKLSQSESQVI ANKISNIILEESEDQEDFDAYNI NDISQ LPP SI S F QERRRDVERLAVQALKTAFPDHLHGYYKPLLGSRS LPPSISFQERRDVERLAVQALKTFPIHLHGYYKPLLGSRS FTDKLEVEDAKKNVDKLSNVI FSK LDDDEELKIIKKWDNHI
 FPGKASAAELQAVLTEAKAQVQRLQQTGRYEYLELGKLS FPEK LTVADGRKNVET $\square$ YNSUKDSFESDDLE LYYEUERDK
FEAKMNEEEQKVLMAAVCYAVRQSEEQKKFVFTNFSEVRED


LPPHNSRGERRGDEK LS DEALSTLDGEFKGKYYPDNGMTD


D L N P D N LK D M T E FPERASAEDKAVVCEAARACDPGDNEDGKGQYEALNDMSD FNPCLTEENYKEMEDKDRKVLCGFSDELKGTYYPLTGMTK FPNKINLSDSVDVVSLVFSFFCS $\square G D S S Y F K K L K L R A M D P$

FSGAGLE $\quad$ LLERTREVFGDGEFPLLEMRDLSL $F P G N G$ G $\square A Q L E Q V E R L I T A R V L S M D E T E D G T Y Y S M N E D L E$ FTKILNEDEFNDLLSMVLGCFKEDD LLDKCYVVKLKDGEE $L G T S I$
$F$
$F$
$F$


FPLTLTVNQLEEVERVITMMAEGSSEDEPGTYFTDNEDMD FSPFLSPEGRRQLSTRI HSCDSRLAS GEAQTWQWWDTASV
 FP VVYLQKEQTIDSVFGSLDD SFQLLKMNDMQM FPSRFTRDDGERDQNLVFDAFSHLENPERYQALSVKKLDR
 LPP HCSRGERRAI EKLAVEALSSLDGDGAGKYYSLKSMTDD LI Li


FPLNLSTAQLEKAER\|LTSK\|LSMGEEELGTYYTMNE\|LE


FPSCFSRDDGERVQTLVFDAFSRDEHPERYQALSVKKDDA
FHYHMDKDEDDKVDS LLKKNDEEDN $\square N N T E D K D K N D D$
 FPLVATAEVLSKVYQDIKQALARETEFYCLQWDDDDSLTA


FPHKLSSQEAE IIDQKVKN FSDSKYD

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| :---: | :---: |
| UniRef90 R5J1G8 |  |
| UniRef90_10R571 | VERMSMCERNILNDTL AKKETPTGIILNDN |
| UniRef90-R6XSS | VDRQALVERHLISPDLAKKDLGALLI |
| Ref90 M1M7N7 | DFSKQYLDRNLISE |
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| UniRef90-R1BQ | DKYKELVAAHVMFKDMDPY |
| UniRee90 P8669: |  |
| UniRef90 | QQQL DDHFLFDKPSPLLLASGMARDWPDARG\| WHNDN |
| UniRef90 W5NEW | DiPSEAMLRTGVARDWPDARAKWTSQD |
| iRef90-W5 | E |
| UniRef90-A6 | V |
| UniRef90-F6YF | KDLEQL AVVFKQPISTSQPTIFARDWPDSRGF |
| UniRef90-H2Z954 | KGKSQLP |
| UniRef90-U5LLX4 | QQKLIDDHFLFKEGDRFLQAANACRFWPSGRGIYHN |
| =4 | ( FQEPDSTLLSSGCGRHWPDARGI FHNDD |
|  | MD |
| UniRet90-H2LE | SAYQLRCGVARDWPDARAVW |
|  | RKEETGL |
| UniRef90-G2FX | VLVEKHLISPSLGG STGARGVA |
| UniRef90-W6S5J2 | LDKLELISKS VSDNV KGSSAVIINEE |
| 70 | QEQQQLMDDYFLFDKPVSPLLASGMSQDWPDGRGI WHNDR |
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| Unit |  |
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| UniRef90-T2MH | RG |
| UniR | QEQQQQIDDHFLIDKLLSSFLLASGMAPHWP IVMND |
| UniRef90_UPIOOO3694415 |  |
| UniRer90-C5 | FSTENNGSDETHKKEEDGPLLSSSGIGRHWPDARGVFHNDT |
| UniRef90OUP10003FD6705 | DY㑑SYEAKLLVTKEVKRKDRA |
|  | ETA A |
| UniF | AP SQPGTG |
| UniRef90-ROACE3 | LDKNLISD |
|  | DWPDARG\| WHNHQ |
| $\begin{aligned} & \text { Unil } \\ & \text { Unii } \end{aligned}$ |  |
| Unit | ARG |
| Uni | LVTRELLGPEGSVPATS AA |
|  |  |
| UniRee90 M4AU888 | AEQEQLIADHF |
| x1V | F |
| UP10001E46B76 | EEQQQLIDDHFLFNKNSPLLKASGMARDWPDARGIU WHNDN |
| iRef90-E2ZCN1 | EGKL |
| UniRef90-UP1000161 | DVQKQLIDDHFLFKEGDRFLQAANACRYWPVGRG |
| UniRef90_M2CCW4 |  |
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| B57 | LQRGMLVERHLISPELMRR HEFGAVMISED |
| UniRet90-Q5TP | D |
| iRef90_Q0SQA7 |  |
|  | G |
| H7ELE2 | VGRRILCERGVMEQSVP |
|  |  |

Unipg Pubs

## UniRef90 R5J1G8 UniRef90-UPIOOO2D29141 UniRef90-IOR571 <br> UniRef90-M1M7N7 UniRef90-B5TY46 <br> UniRef90-R6J1D3 UniRef90-R1BQX9 UniRef90-P86699 UniRef90-UPIOOO395BD31

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GHPFWWKEHGGYVLSSPAQVGTGRRASMQVRKHLHQHKQ RHPFIWKPHLGWVVSSPAEVGTGLKASTTVQLVHVVRHKR LINFAHSKEFGVVTSCPTNIGTALRASIHLKIPKLMENEK GVEFMHDERYGYIATCPTNVGTSLKVGVVLKIPKMMKYCR K ITFAFHPEYGYLLSCPSALGTTLDAVASVKLPRTDRHDR
VLDFMHSEHLGWILTCPSNLGTGDRAGCMVKVPHFSA RP GLEFAEHPVYGVTTTCPTNMGTGKRQS LGKFPNDTKDEK KHPFDWKQQLGWVTSSPADVGTGLKVS HLKLQLLPQHKR RHPFTWKQQLGWVSSSPADVGTGLRIRVHLRLQULPGHKR KFRYAFDEKYGYLTAYPTNVGTGMRANIVLHMPLLSKSFS KLDFAYRESHGYLTACPTNVGTGLRASVMVHLPGLVITNQ TYDYAYESKYGYLTSSPMNLGTGMKVTVVMHLPALVMKKQ FYRTSQDARTKALSDSNPNQCTGLYAGVHIKLGHLDKHGK NLKFAKSKKYGYLTACPTNDGTGLRVSVLLHLVGLGNLGL RIPFSHHDRLGFLTFCPTNLGTTVRASVHIKVPKLAANRA $G H E F M W N E H L G Y V L T C P S N L G T G L R A G V H V K L P N L S K N R Q$
$N L K A Y H C D Y G Y V S C P S G G T A L R A T V S V D L P N T I R H E R ~$ NLKFAYHCDYGYLVSCPSGUGTALRATVSVDLPNTVRHER KLDYAFDDKLGYLTSCPVNAGTGLLKSUIVVHLPVLSLDRK
 YITYSFHEDFGYLTSTPSKVGTGMKASVILHLPALSMSEE QNEFAFDQQLGYLTAFPTNAGTGMRASLLLHHPALSKQMG
 NVKYAFDEEFGYLTSRDENVGAAMKVQVLI HLPAITMSEE KIEFMWNEHLGY LTCPSNVSTGLRAGVHLKNLLFSQDPR YLKYAFSKKYGYLTSSPLYMGTGMSASYLLHLPYLEKKMH HMEYMWNPHDGYVLTCPS EMPYAYHQEFGFLTSCPTNVGTGLRASVFMHLPVLTKEDS

DLEYAFNETYGYLT S CPTNLGSGRRASVLLHPGLVFTDE KLTFARDDRLGWLTSNPSSLGSAINASAEIFLPKLSK KS LFEFMWNEHLGYVLTCPSNLGTGLRGGVHVKLPNVSKH E

KПKFAEDRDLGFLISNDMGTGTGLKFSVLCSFPGTSNCDG RNEFMWNPHLGSILTCPPNLGTGLRASVHIRLPHLGKHE NREFMFNDKLGYINTCPSNIGTGLRASVHIRLPRLTHHP KMPYAFDKRLGYLTTCVTNVGTGLRASVMVHLPGLVATKQ WIDFKHSYFLGCLDSRPSFLGTGLKFTLTLVLPHLCKEKE K $\|$ HYSFDSELGYLTSNDKNLGTALRAKVFUHLPLLSSNNK

KVEFATDEDFGYDSTCPSNAGLGFTCQVVLELETGRRQSD TI QFAANYDRGYLTSSVADCGSGMKVSCRVHLPTMSGNVK NL DYAF DPQWGYLTSCPTNTGTGMRASCMLHLPADAVTHK QLGFQYTQQHGYLSSCPTNLGTGMRASVHVKIPHAAEHPD RLDFKRDKKLGFLSARPQAIGNTLRFNVIVKFPELSKKFD VLPFAFHDEFGYVTANPARLGTGMEVSVLLHMPALVGS TLEFSAVQDFGYLSSDVMNVGSGDKCSVLCSLPGHSLTNK KLDFAYDEQFGYLTSCVTNVGTGLLRASAMVHLPGL IV QFA A SVEF GYLSASVHNLGTGMKDS LIVVHLPS L S FDDH


KFRYSFDDRLGY $\square M S S L S N L G T G L K V S V T L H L P A L T M L D K$ K $\square E F A F S S D F G F L T T N P R E C G T G L K S Q C F L H A P A L V Y S K E$ RHPFDWKQQLGWVTSSPANVGTGLRDSVLI KDQHLPTHKH K LEFAFSSDFGFLTTHPRECGTGLKSQCFLHTPALDYSKE
 K HFKHSYFLGYLVRPSFLGGLMTLFLELPHRKERE
 DLEYAFNETYGYLTSCPTNLGSGLRASVLLHLPGLVFTDE IVQFAASVEFGYLNASVDNVGTGMKLSCFVHLPSLTKGLT KYEFMWNPHLGYI LTCPSNLGTGLRAGVHIKLPHLGKHE KVDFSFDKKLGYLTGSPQKDGTAMNLTVSMADPDLCKTPN HLEFKRDEKLGYLSARPTCVGNTLQFNFTLRFPNLSKQPD VLPVAFHRNLGY TA ASPA LLGTGLKDNVLLHDPGUVQQQR RLKFKRDRKLGFLSARPYAGGNTLRFNVLI RFPELSKEFD
 HLEYAFDKDLGYLT TCPVNVGTGLKVTNTVHIPS DEKQVD
UniRef90 R5J1G8 UniRef90-UPIOOO2D29141 UniRef90-IOR571
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UniRef90_R5X7V7 UniRef90_Refond
 RLSGNLNRFGFTLRGIYGEGSVPLGHTYQLSNQLTLGQGE KLIANAGRFGVSDRGYYGEGMENFGTLYESSNSKTHGQGE

ILTVMTGK GGLSDQPGYDGHGS FYR TNQVT GDTE KTIEA RRRYGFVVRGMYGEGSRPASNDFQISNQVTLGKTE
 KFEEILKRLRLQKRGTGERGG
 R DSiLDRLRLRMEDNHLSG DAKAFIKSLGMSVRGKGGEHTAGADGLVDISPSSRFCITE


DFKAVCGKMGLQTRGSAGVDSASTGGTWDTSNADRDGKSE KhKDIARQFGLQARGMGGEHSADHEGTADISPSARFGVTE LQDVLRRLRVCMHATTGSEGRASPALYCVSNAATFGRSE NLLGLSRFGVSIKGVYGEGQENCGSLYDISNSKTLGHSE QVLGALTRLGLAVRGLYGEGSQAFGHMFQV DIEENINKIGVGINSLYG NEPESNLYEVYNKDTLGLTE KFGEVLKMLRVQKRGTEGANTAAVGDVFDISNAD GGFSE DKRAAGDMHLAIRGLHGEGTAATGDFFQL
KLEEVAGRYNLQVRGTRGEHTES
FEEILKRLRLQKRGTGGVDTAAVGGVFDTSNADRLGFSE FHEI AENLRLHLGAKDQDALKKGWLDVYNKDRLGFTE KFGEVLRKMRLDQRGTGDMDTVAVHGVFDSSKAHQLGFSE VYSNI AHKLGANIKGISNEKSNILGNMYETSNQSVIGRSE DFERI 1 RRIGLKAAGNTQGDK FHHTLFVENLDVLGRSE
 NVGQMVAKVGLNIRGVYGEGAEADGNIYQUSNQVTVGRTE KIL SMMGQLGVNIRGVYGDGKENHGDLFDLSNTRTLGVSE NLSKRLNNKGLEIVKGYCREGSDSLGNIYII SNKASLGMSE FEVILERLRLQKRGTGGVDTESTNGLFDLSNVDRGGKSE KFLNAARDMNDAVRGLFGEGTEAAGDFYQDSNQVTLGUSE
KAhRGLGERGTFRGYGEGSEVIGNFFQDSNTTRGRE
 DFVETCEKLNLRVSSASTNSSGVPNGYYFISNKDSLGLTQ KFGEILKRLRLQKRG
R $\square \mathrm{MQG} \| \mathrm{TK} \mathrm{F}$ GFGFSGVYSGRSTHVGNVFRVVNQMTपGDSE
SVLELTKQNNLNVAGYYSPNSKSTGALFLTSNAVSAGDNE FSEVLKRLWLQKXGTDGVDVAVVGGVFDVSNADLRGFSE AFKGVVTKLNLECRGLDGEESGIEGGVQDISNELRLGYSE


NAFSLLDSKGFEVSACFGQRLQNEDDCYQDSGKGCFTGSE NLKDKAKSDGLQARGIGGEHSSVDQETADUSPSARFGVTE

TTKVSDENNNLCDEGLYGEKGYSYGNLYKTSNKWCLGASE LND IVDEDTEVACSGULPATPGY DGNMLVLSNKYSLGLTE LKDVDKRDRINM DKTDSPELYNISNMATFGFTE LQNLI DEDAEI FCKGMDPASSELVGNIDTLSNKHSGGGTE FPK DENLRLQKRGTGGVDTAATGGVFDSNLDRLGKSE NLRHLC VVRGLHLTSDDQSRVRMSNMRSLSQTE NLRHLCVVRGLSVRD AVLNGVRAKGLDVFSVYGSGGASLGAYYDATSSSLSGSE KVLKGAVQUGMAVRGIYGEGTEIKGGLFQ:SNQHTLGLKE KFSEVLKRLRLQKRGTGGVDTAAVGGVFDVSNADRLGFSE NDDYFISKFSKLGFDRERDEKNDPGI FNITNRVMIGTKE NLRHLC

 DYYKЏAHK

| UniRef90_R5J1G8 | $\text { RE\|I I E LV\|NKAA/VQ } 260$ |
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| UniRef90-UPI0002D29141 | E El I Q NLDELK S Q |
| UniRef90-I0R571 | REII I D T V T K V A N Q L NENERKL |
| UniRef90_R6XSS4 | SRI I ENVSGVVSEMCASEQ |
| UniRef90-M1M7N7 | E NI I R K L K E AVLSVITT E E N K |
| UniRef90_B5TY46 |  |
| UniRef90-R6J1D3 | K A A ID NVNADCD Q V R Q ERNL |
| UniRef90-W7BM97 | LEEV Q D L S DVMEQVI MQER |
| UniRef90-R1BQX9 | A ELV T KLLY N GILKLLL EKEAEAA |
| UniRef90-P86699 |  |
| UniRef90_UPI000395BD31 |  |
| UniRef90-Q4CRC5 |  |
| UniRef90_W5NEW0 | VELLQLLVDGVKLLLLMDK T L |
| UniRef90-W5KAZ8 |  |
| UniRef90-A6XH11 | ARIVATLYKGIK TII E K E |
| UniRef90-F6YFT9 | VEI L E L V I E GVQ FLI D CEERL |
| UniRef90-H2Z954 | VEIL G L V I D GVVQFLIDCEERL |
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| UniRef90-U5LLX4 |  |
| UniRef90-E4Y3S4 | VQLVN\FDEGVA Q I I R WE Q A L |
| UniRef90-A0DI85 | AVVTK RLYE GL I K L Ye $\ddagger$ E A QL |
| UniRef90_H2L698 | VELT QLV V D GV KLL 1 A M E K R L |
| UniRef90-G3Q7M7 | $V G L T Q L V V D G V K L L V A M E K R L$ |
| UniRef90_G5GKR3 | REI ID QVTR VAM QL N S Q A K |
| UniRef90_G2FX89 |  |
| UniRef90_W6S5J2 | $E E \square M A N \square K A V V E E \square C S K$ |
| UniRef90-F7D217 | LELLVQKVVDDMK L L 1 E M E |
| UniRef90-R5T9X6 | EDI I N K V S MVVS SI I E Q E R R A |
| UniRef90 X0YYJ5 |  |
| UniRef90_C6H0K3 |  |
| UniRef90_A0A028K6P9 | VELLM Q M V Vid G VKLL DEMEK R L |
| UniRef90_T2MHG3 |  |
| UniRef90_G3VG18 | VELVQREVVDGVKLLI E M E K H L |
| UniRef90_UPIO003694415 | KNI I E S L R S L K Div T K E K E |
| UniRef90_C5KCM8 | V Q I A D TVIE G C A R L V E WE Q A L |
| UniRef90_C5KCM8 | V QI AD TVI E GCARLVEWEQAL |
| UniRef90_UPI0003FD6705 | DEI I N NLEGVVENI I Q E E |
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| UniRef90-H1HRL0 | EEIMALVQKTAMRLNNEEEK |
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| UniRef90-R0ACE3 | ENI I CTMKE EVLKL I A D E |
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| UniRef90-X1RY02 | GT I IS QFEDAVIE I VE Y E N A A |
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| UniRef90_M4AU88 |  |
| UniRef90-X1VCD4 |  |
| UniRef90_UPI0001E46B76 | Y E A V K Q M Y D G |
| UniRef90_F6NIF4 |  |
| UniRef90-E2ZCN1 | E D L L R A E TVVGH I IE E E R E |
| UniRef90_UPI000161CF4E |  |
| UniRef90_M2CCW4 |  |
| UniRef90_UPI00027450F8 | VVLVQMWVGII K L L I E M E Q |
| UniRef90_UPI0003F0B57D | $V Y L V Q S L I D S I N L L T E M E T R L$ |
| UniRef90 W7D9N7 |  |
| UniRef90_Q5TP29 | WQLFPQDFSSADT NVVALE K E L S |
| UniRef90_Q0SQA7 | K DI LD S L I S ITN KL I LRE K N |
| UniRef90-E4YTH7 | V QLVQDMYN GVRALI TAEKSL |
| UniRef90-L1JFT7 | NEAVQNII EAI Y EIV V Q |
| UniRef90-H7ELE2 | $\square E \mathrm{Q}$ L A S L V G A V K Y L A T T E R R L |
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| UniRef90_UPI000258E25F |  |
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| UniRef90-H2KQF5 | S Q I Q S L R R ICK |
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| UniRef90_A0C714 |  |
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| UniRef90_S7KJL2 | EQILS TL RIWSSSKI S SAEDS A |
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| UniRef90-Q17MS1 | WQIFQDY T GAI T NIVALEKELS |
| UniRef90-E2BRG5 | LQ TLLQ DFSSRAVHNI I T L E K ELLS |
| UniRef90_S3K5H6 | FDQTA SVEESAGKYL AEAERK |
| UniRef90-X1H5Q6 | EDLIE TIA K L T H M I M D $\square$ EK K A |
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| UniRef90_R5LH40 | K D L L K M I E I V N I L D K E K K |
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| UniRef90_S7J2P3 | EQ\L S S LR $\square$ GSSKL SVA E T S A |
| UniRef90_G0R022 | NQLI T DI Y NADNSVIQNEKFA |
| UniRef90_R5X7V7 | ENI I Q SVES $\square$ SNDLSKRE |

WLA GVVS ${ }^{20}$ E NEVVLUSSS ${ }^{30} K \square V R N \| K N \square^{40}$
K LRNKMTPNGYTLDQCDQTGVDNPGHP NANPQKLTNTSDDPHYIVEARIEVRRNLSGMR N NKNLI S S SVVL FRNVKGDN AE WTS GQGPLSDUVISSRIRLARNVEGUP
A N W $\square Y K K G E D D N \| V L Y S K \prod S \prod Y R N \prod D D \prod R$ WYSETGEQNDVVLFTRCNIARNI SGFL RDLDPSGKYVMAGLIECTRNLAGHQ WYACAGLEQDVVVATRATLSRNLANFP


WWKEEVYGAPVSILTVGTLCRNVAGFF RNLKEFE DDESQLVTRCUVEASRNLDQLE ANWTYQKGNDDNUVLYSKVS $\quad$ KYRNADNI R TMKHTTDDDASKIRSGYFDERYVLSSRVRTGRS RGLS QKNDLNPDH

 | $R$ | $R$ | $G L$ | $S$ |
| :--- | :--- | :--- | :--- | :--- |
| $T$ | $W$ | $L$ |  | WYMETGPD\DIVLSTKVGISRNLDDFV MTKNSDFLIQQKKPWANNHNTIWLATTATLNRNGEKFK TDKHKTD DNHENLKVSG

 AKWDYKKGLEDNII LYSKVVSIYRNMIDNDR KNKMP LDPFSLAGQNDDIVFSTKIRLSRNLADFP PNDLLETLVKRKESPQANKVWPVTTFSLARNLSVSK
 $\begin{array}{rl}W D R K T D & A S A L L A V R L K\end{array}$


पK s s Vk LLRNLQG
T DKHKTD $\square$ NHE $\quad \mathrm{N} \square \mathrm{K} V \mathrm{~S}$ GPK
DDPVIFTRLALFRNTKSTR MILYNAI RIHRNVEGKN ENNUWLASTI SLLRNIDKYP
 MI I VS Gll RIM R NI S GF P
 TDKHRTO $\quad$ NHE $\square K G G T G E A S D V L Q V T S E R R N L S S Y A$ DOMVVATTMELSRNLADLDP M LLPWKKTLPS LGVVREKTQVLARNLEGLP PSDVLKSFVEMKSALPKGSPWPDT TLSLCRNLSVAK
 DLHPKFDFGDLEKLNEMQDALEKILKHFKVKIFRNISGFN LuPKFDFGDLEKLNEMQDALELKHFKGARRNKGTP


EFTKESYF L R RNFKS PP EFI KESYFILRRNFKSiP


 WFDGSGPAGDVVLCSRAVYSRSLQP $\quad$ PP


CFHRNFASFA

[^2]

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UniRef90-H9J7B4
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UniRef90 G3WTR1
UniRef90-E4Z443
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UniRef90-F8L4L9
UniRef90
R7CTM
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NSLEGEFKGKYYPDKNMTE FPMRMSEEEKQRLEDLVKENSLRLEGTSVDDY\|SFAGSSP LPKSLSPSELETVERVITNVLLSKETARSGVYFTMNEVLE LPDNLLTDGQLEQAERLMMGRIEADGETESGSYYTHTELME hP PACTRAERREVERVVVDALSGLKGDLAGRYYRLSEMTE LPPHCSSRVPRHREA FCGTLASQEDDLKGKSYDLKNM LPPCTTFQERREVERVVVKSLLSMTGDLAGEYFPLAGMSH FPDKLSSEQKKQIISSVSHDLLQSNQDTDPVLIRSEELGP NRDGGTDXEADSQENVPRAALNSLTGEFKGKYYPLKSMTE

 FAKNLKKLSDLEKVEVVLTTWLTDYMGENTGLYYSLGELDN FPSQASLMEKSMVFQEVTTASQRLSP QYEVLN SSLHD FVPKMKKQDFDHVKEEVDSAMKGLPMEDEGGKIDLTKMEQ F VPRMDSKENKRDVLETDAKEFSNDEGEEFFVSYELNGTDD FPSKLETDKRKQVVSLLYKDLLKNDLLKKSQLFKAEDMQP FPSMD FPSMLQGSEKAKAAGKDDEAVRYUNDHGFGPFDPMESDNE FPRKLEGNKRGQI DSLVSRP LQSSHDNKPFMDKSEDASP FPAACGRDDRRQUEQAVQSALKRLKGEFKGKYYSVVDLPE FVPRISSTEAEELSLKIH DLLDNKGYEREDSRMTS FSPKLSETEEQQLLSLIEPTLSKTPPVKEGFDFREADLST
 $Y$ LGSTWGVHGDSWGHLGGAKMSHPMSPRCPQCPPVAVMSP
$F$ NGKDRDGPNLEVRRRVEEAGTALSGD FNGKDRDGPNLEVRRVEEAGTALSGD YYAIDGV
 FPTHCSRGERRRLLTLARQALQQLEQELAGRLLELTODCQ
 FSPLMTREAKLQVERKIVEVL GELYGQYTQLARLDE

FPNTMNEKDSLE II ESFREDYGDDLILIDE LDE FVTAMTDEELRENLNFVEPULKDL GYTKVDLANTS S



 FAWVCSPNERREIQNVVKQALDS LKGV EYYKLARISS

 LKSKMNDEEFQKVDQKLLQF
 FGSTLQNDRQALTKELFQVLSKQSIINYSLHNDDLSAMAQ FVNKMNEDELKGNLDFLDPLIQK PAGQGYKTEIESASS


lupas_21
lupas_14
lupas_28
jnes_8
cont
sol25
sol5
cont
sol2



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| :--- |
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| UniRe90_U7D |

130
140
150
160





 GS LYTGI NMEDHINISSSFAAGFDVHAALAPASDLEDRMQN A D L A V W W V N V Q D H L R V V C C S S P G QM G R A Y V R L A A R L V D A L D R

 ESTS CLVVNESNHIVKI SAFVS GLDCEK AMEKVVYKVDEFLLQN GWGHPRVGGTSRMGLNGMGVGDQ\|EEDFKKA
QRFSVMVNAGEHIAFRVVFAGLQVEKVWELLNQMDDCMSS Y T LA V Y V V N V LD H I R V V T C A S H S N I G NL Y S R L C R L M A L L D R H NMALWL NCQE HLLRVI SASSSPADMGAAYTRVGRAVT YL ET QSLSLLI NSNEHLEI QTIARGLELEDCFNRAYKIENELDK K S FLI WVNEGGSYTGHLHGEGWQHE K T F L V WVKKED D H L K I M S M K QNLFVWVNEED QMRIVSMEKGDNVKQIIERFAKATTEI QK GAIAATSNIRDHLHLLSFSAGFAPEQTAKTILHVENILSK



 G D V SALNVVFVNFNEHLTVEARSAGFDLDVADRADKFASML ES GNRAFLVNSQDHFSLLLSFMPGFQPN LQYQT LEKMDDILEQ


 E DIMKI F LMMGEDHMVIDTTMGK ENLLLE GYRKGSRLDDDEDSS GKFLTTINVDNHINFELIDCEGELETAWNKMIKIETSSGGQ
 I F L MEE DHLVI T D S L R GL HL K E M WE KI N GI D D FI S E GFFLVVRVE GDE HLI LTVCLEPASSWKTKWENLIS SFERAI GQ
 K T F L V V WV NE E D H L A R V DS ME K G G N M K E V F R R F C V G Lik Ki E E

 RSLLVWVNDDEHLRLVSMREDANVAEAFQCICISLDK
 RSFVVLVNFEDHLEI I I LDPEKNNI KDGLQRMDKLLQ TFE
 S T WLL L A L L
 TTTLVI

 E K C
 K D LA A WVNVVLDHFRLIVTSNPANLGDSYTKAGRAMHYLE E
 E N L K I L G N L D D H L I I V L N N I T Q D D D I I E S L L V E L Y Y K I Y N K L K E


LFLI NKNSHVFFSQIGPGFLALDDSQELLTLDETLDT



 N NLHIWWVNYLE HVVHILSVERNVHVVRCLSEAKKKDDETKG



0

$\square F K T K \square D S H \square G Y \square L P C P \quad N \square G T G L C V G \square H \quad L S K R E K$ CLK
 VVTYAFSPNFGFLTTDPSQCGTALTVTVLIQPSALIQTGE R P P
QLHFKESYLLGY LQSRPSFLGTGLKMTTIIRLPNDMKEMD GLDFEFDERLGYI TPSPAKLGTALAFS LDVFTPATSA R KIDFAFNKKFGYLTSSPEKIGDAMNVTVSMADPADIKTPD KLQFAASHDFGYLTSQDKDCGTGLKISYRDFI PVLSGQFD
 YLPYAYTDKNGFLDSRVKDCGTGLSVEGTMHLPALVLTDT KLD DSFSEKYGFLNSNLTDTGTGLRIFAMVNIPGI CRNER RFSYAVSMDLGYLRSKIERVGNGIQAD $\square$ WLLHLPALSRNFS
 DVAFAFDSEFGYLTTRPDNAGTGLLINYKLHLLPALNFYDE RAALLREEQWGSMDYRPSNLAQPVC
LLD DAFDKEFGYLTASPQFTGSGMKMVSLLFDPGFADHDK KINYAFDKDFGYLTTEPSVVGTGLQAFVVISLPATKYFGD
 NVDYA YREDFGYLTANPQMCGTAMDVT GYFHLPATAYFGQ NLKYAFDGEFGYLTSQPQLLGTGGELGVLMS:PALNYYMD
 KLDFAFADDMGYLLSDISASGNALFHSAWLFLPALGWNGN GHPFMWTEHLGYILTCPSNDGTGLRGGVHVRLQHLSQH RLSFAVSLRLGYLSPRDHRAGTGLTAGAVLFLPALHQGAQ
 KLSFAFSSEFGFLTVDPQRCGTALQGRCFLHVPALSKELP
 KVKFAYSEKFGFLTSNPNLCGNGMSASVLLHLPATSYFND




 SLDFAFSPEYGYLTQDGRNTGNGLEI FVKKCFFFAMVDDEK
 AL EYMHSVVYGFLVSSPQEVGTGLRISVNVKLPHL KLNFAFDIDFGYLSDDFYDSGCMMNVSVCMNLKALEYFKK
 KLNFKESYF LGY L S S R P S F L G T GLK K S TVV YVPNLMKEME

 KELVSFDDKF GYHTVKPQFSGLGLTFTLKFKLDQQS $\ N K I$
 HLPVRAR DDF GYI PRTVRGDGEGLQLSAVLQLWGLGLTRT ELDFSFNTNFGYVFEDINLIGNGLKMDSVLHIPSLYKTTE NLDFVWDHKLDVSTT
STGFVCHDKIGYMTSSPQFFGTG
$K \square D F S F N T N F G Y V F E D V N L V G N G L K M T G V L H \square P S \square R Y T T D$ KEEFAKHKDFGYLTVDPLDCRLG
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UniRef90-E2ATE6
UniRef90- GOEHU4
UniRef90 S5ZVU3
UniRef90_UPIOOO2246D9A UniRef90 F2NTJ8 UniRef90 W5XCX2 UniRef90-H9J7B4 UniRef90-UPI0003B5BEA4 UniRef90_UPIOOO39921C4 UniRee90 UPIO0036EAFEF UniRef90-U4U728 UniRef90_B4KPC2
UniRef90 D5U905 UniRef90-17GH63 UniRef90-G3WTR1 UniRef90-E4Z443 UniRef90_ETNPW
UniRef90 D1R6H4 UniRef90-UPIOO0454520F UniRef90- UPI0003C3672F UniRef90-W7TR94 UniRef90 J9UXL7 UniRef90-10X9U9 UniRef90 Q9Z7K4 UniRef90-T1HYR5 UniRef90-U7DCU5 UniRef90-W0FSV8 UniRef90-V5WEL7 UniRef90-Q9PLP9 UniRet90_O6MAO1 UniRef90 D8FH29 UniRef90-G3HPD8 UniRef90-H1CZE2 UniRef90-EONLN9 UniRef90-D6YT78 UniRef90-A7RG45 UniRet90-D7N8X9 UniRef90 U7UM32 UniRef90-F8L4L9 UniRef90-B7CTMO UniRef90 E1R1B2 UniRef90_UPI00039573D2 UniRef90_UPIO0036B0A40 UniRef90_UPI000370F4CB UniRef90 F4DKG2 UniRef90-UPI0003EC3F32 UniRef90_UPI0003178326 UniRef90 G4D5A7 UniRef90_J9G7D4 UniRef90-R6GK31 UniRef90-FOGYA1 UniRef90-UPI00031ECCEC UniRef90-B9PGR5 UniRef90-GOGFC8 UniRef90 C2BFA2 UniRef90_C2CJ79 UniRef90-R7PQM1 UniRef90-FOGX82 UniRef90-A7S2W4 UniRef90-B0S3X8 UniRef90-E4KXD8 UniRef90 C7RFB7 UniRef90- T1GFR8 UniRef90-17MFD0 UniRef90-17MFD0 UniRef90 K1SBX0 UniRef90-F8F1Q4 UniRef90-AODFG3 UniRef90-UPIOOO2897F59 UniRef90 H9U107 UniRef90-F5TB97 UniRef90-GGDSC2 UniRe90-_6N37 UniRef90_S7WBS8
 C SAVLKRQQLQKQGTGGVDMAAMSRVFDI DSVDHLGFSK FSKILENLRLQKRGTGGVDTAAVADIYDISNIDR GRSE KFGELCKKLHLAPAGKYGEKGWQSGAWKLTNLPSLGGVPE
KLEEVAAKYNDQVRDTRDRE
NIDYUISECN KKGDEVNVKNGLLNTSNNTMDGVTE SVVEFARECGLNVSGYYAANSESIGFLFAISTGLCAGGDE DLKQLCVLRGLRIHPTLRRDT GVGRGNQQSGSGGE SIVKNISGDGFNLLACYGSGGTSLGGYYIVVPKSSAGGSE AVLTALSAMGVSVRGLFGESSRALGAFVQV NMKHLCAMRGLQYRETLSPDODADFCLARUSNYQCDSTTE KFEEILKRLRLQKRGTGGVSLSAMGAVFDVSNADR IMLWAIPKHLIEQGFHSSLSSETVGSLFVIGNRYTLGFSE NLLSLCS VRTLSYSRNSNCPDVFKVANRVSVGVTE NLRHLCS CAKMGGLSMVTNRLSKLTVRLDNMQSMGVVE

F GEपKKRGTGCGHS SGGG VD पSNANQपSFSE
LQEETLAELGFETHAYYAADSKLLGWLYLTSYGSSAGRTV LiEIIARLGNLTITSLQGNPNEIIGDLIAURNRYTLGVTE

N【RHLCS VRGLALTTNRQSKLSVRLDNMQSMGSVE ELDEIERQYDVVL DWAGSAHHGEDVPCIVFNKFSLGVSE NI EYFINKASKKGFDTSTRAGRTMPVVNITNRTMMGISE SIIGLVQEKKFCISPVFQVSDSANFFIFDLYPGNAADGTE FTNLI DEEVEIITSSLLLGVTGFPGNIVVLSNRCSLG SLRQLCVDSNVL GVEVVCQQYDWKLAAPFKRAGAA GIFFI LSDAMLGVSG EVLAHAQREGMQLSSFGSRGDSSLGQVYQLSCRGVLGDNE LSELLVPQREFACSSLLPLSQESLGDILCLSNDCSLGVSE NVSRSLLRLGYSLDSYKDKSGKSLGNIFNLFFESTIGYSE
$\square$ GSLSEF LELRGFHLSPAAGKAPFY LLENTRS GDRE KNTSKSINRMGYRLEPFKVNNSSLNNTFVLKNMVTVGESE LHFALKCLNMKRCRQGKILA
SSLVSSLSKLGYKVSTLSSGAASVGSTYKTSHERVIGLEE SLSRSLLRMGFSLDRMEKSGKES KDIFVLTNEKTIGIGE LDEVLVKNLPDEVTFHGLGGGEYDGDFITLKNQFTVGVSE ILARAVERQGFSURSLTGNDSWNSAFGE:YSTQTIGVQE
G $\square P R R A K E G G L Q G S P R V M \square R A D S H P S \square Y R \square T C R A S E G E S E$ VLQWFRERQEFIVSGYGGTREPVAHVFEITNRYTLGVTE TLLEPSTEDSSSGLLPSSPADFSGNVVV LTNTCSLGLTE
 S LIG SLK RLGYRVDRLNSERGS DDSILKLSPDRTDGDT NIDKEVNDEITYGKNISVVNRDSDGKHADUKSEQTLGYTE IGGRYMRS LMMAEGVLMEATETEDFTVYLSNKRTLGVTE
 EFESLCQNHNLGFKFVHPQNKGSTAMVWVMSTVSLGVTE



DDD QQDVARYRGYMFERAFNSNTKSSTYRLTTNGHLTDPE NIAKGLSRLGYTLGSYRDSSKKALASIYTLSFESTLTEEE AYFSLLHERIY IDDKFLPKYYKRYADDIYTLKNDGNYWKDM NLRHLCS VRGLNMVPNSFDNTIQAVNMQSLG

FERAVLSLYQGEQSAEDSARTETSFPLVYLRYSVSPGMSE KSNNNNLSSKI QNKVFNVQTKEKDKYFTIKSERCTGLTM NMARGLSRLGYVLGSYRDSSNRALASTYTLSFESTFGEEE


F $\square E K K M K K \square G \square D F Y S \square S K \square G \square C E D F Y \square A E F C N Q N A \quad E E$




VELVQMVVDVVKLLIEMEKHL KAQTS FFHSYMQS LIEKERTA ENVIASLRSFVTKLI VEESTA

H\|LFQDYCTAVT N L L S LIE K



ПD SFK Q F ПKAVNS I IE A E K K EETMAQAEDVFASVAEKEKEA SGIKENGRQL I REI IDDERK
 ENLISSLRTLATKLALEEKS EA YIKKMKT VVKE IVMEKEA
VDYVSEDDK L LQEDTEEEKK L LTI I NKI T S I SKKEI ERTVE ENI I STLARLFVTVKLMEENNA VQLLQGMVEGINKLSGLE MEYI DKLLGIAREIVDIEE Q

 DES $\square$ NKFAHMLE LL VHYEKK

E ETTAEDAALVERLVYYERKA E E TFRGMSWIERKVI QWERS EQULSSLRIWASKLLVAEAAA
DEYLENFEENLD!I IRNERR
$N \square Q \square M Q F D E S V Q S$


$Y$ I GS YIE K LKKLISDEI ADVERE EEAMDKFEKALDDLVRNERR

QDGLEQTRNADNGLIKGERA
K Q Y V ELC C Q L S L F E
 FSA $\square R K M D K Y!S E I V N D E$

FSA $\square$ RKMDKY $\square$ TE $\square V N L E$

[^4]

| jhmm |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| jpssm | 1 | 10 | 20 | 30 |


| jhmm |  |  |  |
| :--- | :--- | :--- | :--- |
| jpssm |  |  |  |
| $\square$ | 90 | 100 | 120 |


|  | 170 | 180 | 190 | 200 |
| :---: | :---: | :---: | :---: | :---: |
| jhmm |  |  |  |  |




[^0]:    

[^1]:    पDDTLDRTRDQM ETTSDPGVYKTSNDQTTGVTE KFGELLKRLRLQKRGTGGVDTAAVGGVFDISNADRLGFSE NLLEQASSGLCVHGYGEEFKSIGNMYVVSNKTLGOE KLA LLVGKLGFTLRPLYGESGA FYVLTNHVTLGI TE KAKEVCKPLGLSVRGGGGEHTPDEGGVCDISPRARFCITE HVARLLGQKGLTVRGVYGEGSDAEGRLYQUSNSCSMGVTE SLE GMSREGACVRGVYGDVEEASGNMYQVSNOVTLGGTE AVSLECQKLGLVVRGAFGEGTPSQGALFQ:SNQVTLGPTE ILHGFMANFRKSDFAFCGVDTAAVGSVFDVSNADRMGSSE RITQGITKFGFVFMGVYSSRNTYIGNVFQITNQVTHGVTE QLKAAANDLGLDLRGVRGEHSDAEDGTVDLSPAARLGVTE RFHNNLTRFGFTLRGIYGEGSKPDGSVYQLSNQVTAGFSE
    

[^2]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf sol5
    sol0

[^3]:    lupas_21
    lupas_14
    lupas_28
    jnet
    sol25
    sol5
    sol0

[^4]:    lupas_21
    lupas_14
    lupas_28
    jnet
    sol25
    015
    sol0

