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 A AQSAALRDPRFEPVSPRELKDIVGVETV A
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 FSLINEEEKNWLLKRARQTLNLVVRGKSPREPEGELSGALK
 MRHTDEERKTLLSAAREVITAATEGRTPRLPEPPPRLL LNKKQGQTLIKMARKT:ADKLGMKNNPENDDSKDKNFK पTVEQGRSLLRLARQTVA AK DGVETDVEAVNDPALD RLASDDGVRAVELGRESVDAGVERGQREEEPGSMRDAFY LELTEDEKQCLLQEARESUASQLDGRPPQYERPDSVEALT FGLTADEMRTLLGLARRTVENGNNGGQPCDTTKLSETLK FTINSEERKALLGDARETIAARLENRPPLQSPGDGSSALL MNUSKEAKILLLKAARQS:IGTMFGGKEPEKPDYEKYPELKK
 MALSDEDRKTLLELAREAASAEVTGSAPPSPPEPKGGLG GLPPDAGTILLPIARAAIAEQL GESAPEPDRTAPFLA FGLTEEEKNYLRGLVGQSICTSRLDASKPSAPPEPPTEKMK

 FSGNDQEKQWLLNRARKTLEAVVRYQQPEAPSEALSVALKK GPTLLDLAWTSI RHGLAHGKPAPVPAERADRLS K MSAAEKKSLLKIARVT|AEYITDGK
MSETARKKLLAIARQALTDAV NGRPVSREKVNDPELQ DKKRREKESPYVRLAREALETYVRTGKTVTPPDPLPE:FK DADKEFLLRTARGAVADGLREAHPAAPPPECSAVPQ FEDTDGEKGYLKELVVQSIASGLGGDGPSGPPAPPSDKLR FSEQNKKMILDVARKSUAHGLEQGKPLKDSGDFDEVLR FADTGREGEALVKAARASIELHEKSPRFDRIVKNSLSGFK MPNKESQLALLYLAREGLKHYL
 FShNDEEKKYLKDLVKFSILSKLKGDKAVEDPEPPTTHLA LTSEQKKELLSLARNAISARFKH QSVSLPED PAFS LYVALARQTVETYRQGKVIKPGKDLIPDELT QLLLALARETLEKTLGEDRSKTRENNPSEAMK
 LTEEEDGARTVELARESVEAFVRNGQREQPGSMRDAFY LS SEDGVLAVRSARAAAEAETEDRDCDVGDFPETFR GASA EFGPTLLRLARTAAAHNGRGPRPSDEDAERH $\square N S A N K K L L L Q L A R E A I T D T V Q T G K G K M Q Q V S D A K L L$ YVKWA DRVIENYVRYGKVIEPDESVPEEFK

DGKILIKFARENIAHGLKTSKKAITPDETEKNYS VEAKKTVEYVKTGKILPTIPDKIPPEMN GRDLYQLARRALSEAAEHGRRFEPSRDWPDKLF LDSETGKRLLAYARAVVEAVVTDESPPETPEGDSVLG K $\square$ TAREKNQLLKLAREAI TNCVRE VIPKKKEVTDENDQ RLTESDRKELLKLVRKTLEFYFTKNKTPNVSDQVTLAME RFSTGEEDPYVKLAKESLEYYVKYRRPMPVPEGLPEEMR LLKIARNTVVKVSKQKVPEPTEDLTLNK DTLGPALLVRARNA1 AARLQQPTQAEPD HPALAA VKLARESI RYFLDHGKIMKTPHDLLPELK VRLARESI AYYLKHHSLMTVPKDLPEDLQ YLPALARAALESHLRGQRYRVQPADVPEEFR FELTEDDKQTLLGI ARKSIEAAVNHNKLLRDNRDLSENLQ FSLTSEEKDRLLSLARNTLQTYTRTGIPPPIERTVTPKLK

 YNDGARAVELARESLKSYVLHGQR EQPGSMRDSFY LSATERAALLGIARGAI LGHLGIAPAPADPSSGP
 TTYLGGAPAPA PS SGBP



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140 DLDKLRPSVDGVVLIKQGFYQSTYLPQVWEQFSSKEMFlL A HLE QL RPRTDGLI I EDGGRRALFLPSVW EQLPDKHAFL



## E L LT

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| LD P K$\text { K Y GV } 1$ |
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## ND $\square$




EREE KVVEVGR H GLL I V V
 LD P S LDPS KYGLVVEK GYRRGVLLPD ELLAAQ $\quad$ E P HR H GLVLTTYGARRGTFLP QVW LD A K

## LD P K

 ED HQFEP GHDGI L L S LGP HR GVF P
$\qquad$
D
E D L K Q I
$\qquad$
 LD P K

 | $H$ | $D$ | $L$ | $R$ | $R$ | $I$ | $R$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $N$ |  | $G$ |  |  |  |  |
| $N$ | $D$ | $L$ | $E$ | $K$ | $I$ | $K$ | LD P K

 R $L$ | $K L L T$ | $K$ | $R P G G$ |
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| $V G P G$ | $V$ | $V$ |
| $V$ | $V$ |  |




## 

A
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A
$\begin{array}{lll}L & D & P \\ L & K \\ L & D & \text { P } \\ H & D\end{array}$

IEVGT


D
D
DRRAVTKVGSHGVAI A

| $R$ | $R$ | $A$ | $V$ | $K$ | $V$ | $G$ | $T$ | $H$ | $G$ | $L$ | $L$ | $V$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $N$ | $R$ |  |  |  |  |  |  |  |  |  |  |  |
| $N$ | $R$ | $R$ | $E$ | $R$ | $G$ | $I$ | $H$ | $G$ | $L$ | $I$ | $I$ | $R$ |



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GT T|L L A L A R T A|I A H R|L|GRGPAPV| |PD D PR|L|N $D P Y V A L A R A S V E G F V R T G N P I A V P D G L P P E L S$ Q E D A Y V Q L A R Q T I E E HVVRTGR K I QV P K G L P WE L S RपGSVERDTLMAVAFESIAYGLDNGCAPEKLDTYPEPLQ ПEPTENQKRELLRLARKTISEGCTRGLPPEQKEDQPDFFL FY TVDEEKKALKE:AKTALYEAVINNQKMALDESGRDKFK RSPHVRLARESHEYYLRTGKDMPVPDPVPEGME YLVRVARQSLTSYLEGHWKDPASYDVPEEFA VALARKSLEYYL QHGRPMPEPADMPAELR ENEDPYVKLARQSLEYYVEHKKPLPDPDGDPEELK NSEEKQLLKIADEAIKFGLEKHRVLPIKEDYPEKLR D A YVVKLARESVVEKFVVTGQYAAIPDDDLPEEMQ K L L A D H G A K M I DLAR Q S IR H G I THGGP L R I P A S V S P E L L ARNSIA SHFGLA GMPVAD LTELG $Y$ VQLARHAIET IVRTGEPAARPQGLPSEMA $T T D L G P R L L A R A R Q A I A H E L G G L A A P A D A T E P E L T$ D E Y I K L A R K S L E T F V K E G RVI E VP D S L P A E M K
 K D P Y V A L A R K S L E T Y $\quad$ DR T G E A M E V $V$ P E G L L P E E DRRRLLVI ARDSIAD GLAHGRAASVPTGESPALQQ
 MEKRRERA ILLDDAARSI A HGLAHQRPLDLPAEYPESLR MEKRREREDAYL ALARYSLEYYVRNGKRAPLPDELPAELT LD TEA GK QLLEYARAVVAAVVTD GSPPPAPD LPDVLS
 QES Y L V QV A R R A i E A Y L N R G E R L E V G P AL L A R A R N T M A A A L G L P D L Q T E P P C $\quad$ C A LA LSATDYYLVLARTALEYYVLTGDVLEDPSDVPEELD D Y Y L V L A R T A L E Y Y V L
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L

D P Y V K L A R K T I E T Y I K D G Y V I
TRKEEDEYVRLLARASLEHYVRHKERMEIPD DLIP PKMY AGDVLPLARGAITRRLDA TPPVVPESTAAWLA $R L P D A D R Q Q L V E A A R Y G V R F G I E H G R P P R V Q A G L S P T L T$





 FTITPVEQKALLKDARETIAAKLEGRKPRYERSPELAKLA

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 LT E N
$\begin{array}{llllll}D & K & Q & Q & L & N \\ K & N & N & V \\ R & R & I\end{array}$
LD A A A R G L L L E VA WES I R H G LAAVGAPDRPPADYP DV L R $M K I D S A E R Q R L L E L A R A S L S H G L S S G R A L P I L Q E W P A H L C$ D A YVVRARKALETYVRTGKMPVIVPDDLLEEL R
 FELTTQEAK T RLLQMVWQVLDEALDRGNGQLPPEPDLK F VLT S E EK D

DAYVRNLARRL $R L P P D A G L V L L P L A R G A I A R R I R T G R Q M K M P G G L P E M T$


 G NA Y CEI A F K TI K T Y LIE T G K VI DLDPK DV P A E L K D A Y V G L A R K TI E E Y $\$ R S G K RI E AP E GL L E E MY LS A E EK Q T L R Q I A F Q A I R S R C F GEP L P EP S P ES P G L K


 GPLLLEDARAA INGRFAPDHPVDAHADMPALLAA LA R K T I E V Y DK E GRQI K E L T D L P E E L K

R VT R D HP SREKS LELRQRE A $\vee \stackrel{1}{2}$ QRE D $\square K L R E$ E Q E D A Y V $V$ R L A R R E S L




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 AI S A G T G D P R F WP V $\operatorname{E}$ L L D E L P P A I S A GF E D P R F Y P V E K N E L Y E L E Y S VV DV L M P P E A V R S K S E
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 A T E A A T A D P R F P P V S P D E L E T I T V V S V S V ARAAAFEDPRFPSLTLREWAGAALHISVLDELTPCP AYRAAFHDPRFPPLMAGELADDLGLS LSVLLTPAMPFPVDSE
 AFQAAFEDPRFAPLTAAEWPGLSVEVSVLSPPVPFPVRDE A V S A GTE D P R F S P I K L N E L A A D L E I S V D V L E T P E Q I D S IDD D AVSAG $\square$ H DPRFSPVRKSELLDDLEYNVDVLSDPEPVASPDE AVAAAHEDPRFPPLAAEEI ARLTLSVSALGQPRRMAGPGE AI S A ATK DPRFEPVTQQDELDKM EYSVVDVLGEAQDDDSK
 A WKA AF GDRRFPALTAEELDR LDVVSVSILSVPHPFAFENE A R A A A F E D P R F P P P V G V V E E L M A L

A I A A A S Q D PRFP P L D A DEFA QV EVV EVVSLLSEPEFIDD F A D E
 AVEAGQYDPRFYPI E E E ELS DLDDISVDVLTMPEKAS AV A A AFRDHRFAPL GQDELPRTRVEVVLLTPAEPFPVLSE AVAAAFSDPRFPPVRRDEMDENLVEVTVLTKPQVLEVVDR
 AI E A A F G D P R F P S L S S DEFPRCSI EI SALSPMELCP ACSSAFEDPRFPALTGAELGDLEIVEISVLTTLKEVAG A K A A A F G D P R F P P AYAA A D PRFPPVSPSELARLDGVWLLSGLETVPEQGA A A A A A F S D P R F S P L T L L E E WR KA E L D D S A H A A A F E D PRF QPVVSVG E LD D DQQ A Y R A A MEDGRFSPLTEEELSRTRFSI SLLTGFERVPYWDE A $\square$ A A A F S D P R F P P L R REEFQDVVIVVVTVLTKPEVVDVPKT AFAAAFRDPRFGRLEPWELEDLELDCSVLTPPRPMTFRDE A Y A A GTRDPRFAPLRPAELAEAVVEVSVLTPPQALSVASE AVSAGCRDPRFTPVKEEELD QLVYSVDVLGETEEI ASPEE A V S A T N D QRF D P I Q P Y E L D N M T L L E V S
 A Y A S GF Q D S R F L P L T L S DRS GL NV D I SVLS NLLKPLTNH GE
 AVSAGVRDPRFP PVEKE ELAELLAYSVDVLGDTEEDQGPEE AVAAATRDPRFPPLAPHELADTVVEVCVLSAPAALPVVDE A L D A A F N D P R F E A V G R D E L L N A L T T V K
 A V A A A L L E D Y R F P P P V R P H E V D H L

 AV E A A F G D P R F C A L Q S D E L D RVVI E I S V L T R L E RI S D T
 A Y A A A FR D T R F S P L S L A E L D Y T E I E I S L L S TMMP M
 A I S A AVHDPRFGPVRVEELNKI EVSV DIVTAPAKVNN RNE A I S A A V R D P R F Y P V T E D E L P D L E I S V D V L Q E P E P V E S M A G
 A WA A A T R D P P R F A K
 AV S A G M H D P R F P Q V T P D E L P K L V Y D V DV L S E P E P I D S P K E



|  |  |
| :---: | :---: |
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| UniRee99-C8WHS0 |  |
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| UniRet90-UPIOO035F023F | AHLKNKAGMAPGSW PEDMECFRYQC |
| iRef90-EOURY4 | RSCCEKAGDAPEH CKDAT YYY |
| UniRet90-M4YM | SELCYKAGMRPDAWRNNRLTFETFRGEIFSEDEPRGKVER |
| UniRef90-K4LXL7 | SlARQKAG |
| UniRef90-UP1000420EF78 | LQLRRKAGL |
| UniRef90-X1EHP5 | DICRQKAGIAPD E |
| UniRet90-F6B5T4 | AVAKQKAGIGPD E |
| UniRef90-A1HQQ2 | AI AMQKA |
| UniRef90 UPIO0047A83A1 | S A ALRKAG\| RSG |
| UniRet90-C9LVU2 | KHARKKGGIA |
| UniRet90-K2M2D3 | AQLKRKAGLSTDHWSD |
| UniRef90-Q1Q7G1 | QHLCKKAGLPDNAWRDNDMEFFVFTAD\} |
| UniRef90-Q47EL5 | A HLKQKAGLPADYW GPNVQLERYQVKK |
| UniRef90-J4J3B0 | R IARKKGGiPEDA AIRIWRFEVT |
| UniRef90-A1K641 | AALKRKAGLDP LR RAANLMAARYQVQKWLE |
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| UniRef90-14CCF1 | EETCKKAGLSRSAWQDKETKI YVFSA |
| UniRet90 UPI00046E6003 | AG\| RED |
| 俍et90-H8Z691 |  |
| UniRef90-UP10002F5908D | DELCRKADLPRGSWRDADAE |
| UniRef90 UP10003B57C97 | D NLCLKAGVPPGSWKLPG GAQLFWYEAVV |
| UniRef90 D3RQ98 |  |
| UniRef90 $10 \mathrm{GPS4}$ | DIARARKNGGP WGQEAVKLWRETVA |
| UniRef90-G1UUT0 | ENLCSKAGLPGGSWRAPGARLFWYEAL |
| UniRef90-K9НОАЗ | RHLKQKAGLPAHHW SPTLTVERF |
| UniRet90_C9RAW2 | RRKAGI GPH EPVEIYRF |
| UniRef90-UP100034CC807 | SALKRKAGLPEDFWAD DLTLARYQVQAFEE |
| UniRef90-uk2B1 | M M M |
| Ree90-UP10003B5F561 | AKRKAG S |
| UniRef90-UPIOOO3B370EE |  |
| UniRef90-M1Z3R4 | R\\|ALNKAGIPE FEDFKLERFEI |
| UniRef90-H5UV26 | LRAKAGLPPDFW DEDVLLSTYT |
| UniRef90 A8TX41 | TQLKRKAGLPPDHWSD ThLRVFRYT |
| UniRef90-C6HUY9 | RHLKAKAGFPPVGWPEGVAVSRYIVKKWSE |
| UniRef90 C7LRL8 | AQTCVKAGLPKGTWRKSKTEUWWFEAVIF |
| UniRef90-N6YJN9 | A A LKRKAGMPVERPVD G |
| UniRef90-UP100047A808 | SHLRRKAGLPAGY RGRDVVIEDYTVT |
| UniRef90 A0A017RRT6 | R\\|ALRKAG| DED EDYQ| EKFEV |
| UniRei90-H2C6B9 | ETCIKAGLMPDCWLDKSVKIKKFQGVIFRESEPEGDVK |
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| UniRet90_E1R763 | SHLCLKAGLRPMAWAESGMHFFTFQAQVFS |
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| UniRef90-×5D9Y3 | GRAKNKAGI GWDGW KTAELYTYEV |
| UniRef90-X0TXS | SNLARKAGLPPTAWRQPGVSV |
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| UniRef90-V4KSL7 | HHLKLKAGLAPDHW SKELRAWRYRT |
| UniRef90-W6MB12 | S |
| UniRet90_E8NOT4 | SHLCQKMGAPASLWRKKKLDVYTYEVEEF |
| UniRet90_R4KEAO | A ARQKAGISPG Y EKIRLERFKVVRYR |
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| UniRef90-K2L852 | TQLKRKAGLPMDHW SANMRAERF |
| UniRet90 LOH262 | A |
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| UniRet90-V6F6R7 | A HLKAKAGMQPAHW SPSFKASRFQ |
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| UniRef90-R9MBT1 | QKAGI GEH DK |
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| Unif |  |
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F LVRTARETLESY円K
 $M Q A R K E K E D C Y V R L A R K S L E T G V R T G R K D E E K E T D P R E M T$ LDPADAGLLLLPLARRALARHLDTQENAALPAEDPSWLR
 K A E E S A Y LV K KLAARRK NAGP LLLLARSAIASR GSV

KTYTAYAFETVYS
MDSQAKK LLLQ
RSIYVE WA WHVIESSYLRN E
D TVLKICKDS L LS GFQLGE PATS

 MSEEEREDVVWLAREALAHYLKTGEYLPVPA HLHPRLQ RDAYVALARESLAYYLDTGREMPVPEHLPDVMN FS L SVANRKELLVRARASITSYFDGTATDDLPVSETPSLQ IS EQQGQMLLKMARDSI AEKLGLSVDKSQIDLNQSFLE
 R A R LT G L A R D A I R H A A G D GP A P QVVR G E T E P A L N

 LPP LVRRHLAQVLEAGLSAEQLVQTQPQLG $\square Q \square N R D \square C R R L L D V A R Q A D I V G A E S G Q V L E P D E H V P K V F R$ K E K E D A Y V VRLA R R A A V

RREMCLFCFDVLHRHLNSQEPPPAPKTFP FSLINEEKQWLLDRAHQTLKMALTGQTMQDPGKLSSENLT REMVVFCFDTLVAHYNSEEAPPPAFD E Y V KWA DEVI ENY L L H SKV KEPPNSDPKELF $\square E \square P$
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 NLSEVDGVKLRDIADTAIRSNLSGMMAYHPRIDDPVLK ENE S EVVVKL A R QA V E E Y I K N R N II I DPP P S K DD P E L A $\square E \square T$ A S DKACLL KEMVVYCFDTLVAHYTSEQAPPPAFDAG
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 MRTLRENEDPLVRLARTSLEHYVHERTALILPDDTPAELL RETLIDMARGA ERQFGMHHREQATGELAK WL A T E QTEESAQVTLARAAVETFVREKKVDTPSVELAAELS



KEHED

KEHEDDYVRLARTTI EHYVKEKVEIIP


 QEDAYVALARRTVEEYVRTGRQ\PVPPQTPLFTN D A YV CLARKS:E HYVRTHAYMPLPHELPREDT


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 AI A A ATKDPRFPPVQPEELNNLVISVDVLSEPEECK
AL DS A L Q D T R F H P I S KR ELLP T L QAA V T L L T D F E EAAD D M H D A HAAAFADPRFNPLTLDEYNKI SDSVSLLSKPERDEDKDE A IS ASTRDPRFDPITADELKFLDISVDVLGETEDIDSMSE
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 A R L A A F K D S R F A P L A R DEFD QVDL EV SLL SPPEKFESKAK A WA A AT R DPRFSRRITP S E LPA L A L S V A V L T R P H RMRVID E AVSAGTGDPRFPEVREEELDQLVYSVDVLGQATPVDSLDR AVAAATRDPRFPPLTTDELPGLDYSVTLLGPSESVEADDD AV A A A T A DPRFHPM G A A D I A HYK L E I S L L S P LEK K A D T A L A A A F E D P R F M P L S E E E E L T G V R F S A I I S A F K D S R F D P I T L L H E V E H L H C A V S I L V N FE K A R A L L A A LLH D P R F L L P L V K N E L D T 1
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 AVSAGCRDPRFPPVSDDELDELVYDVDVMGTPEPVTSIDE

 AVS A A A H D S R F E P I A VVE ELDRLVYSVVDVLSTPEPI T SAEE AV A A A TR DPRFPP LTAPELAAGL EYSVVTLLGPSEPLEATSR | $S$ | $E$ | $A$ | $A$ | $M$ | $H$ | $D$ | $P$ | $R$ | $F$ | $P$ | $A$ | $V$ | $S$ | $E$ | $E$ | $E$ | $M$ | $E$ | $D$ | $I$ | $D$ | $I$ | $S$ | $V$ | $D$ | $V$ | $L$ | $M$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | AKSAAFRDPRFAPLSPEEFSEI R\|EVSLLTPPQLVEYSSK A LAA A N R D PRFFPVVRAAELDEDLQYSVVDVLSPDE PVVE AI S A C S E D P R F D P I T E E ELD NLII SVVDVLGEIEPVVE AISSASTRDNRFNPI SPEEIPDLEINVVDLSAPEAI DSPDK

 A Y A A A F E DPRFP R L RP E E FP S L D L H L S V L S P P E PL H F S E E ALLA A A FADPRFSPLVAAELEHTEVEVVSLLSAMQAMQFENE AVSAGTNDPRFWPVKSEEMGELAVSVDVLSEPEPDISSLDD
 A I T S A LLK D S R F T P I T R E EVVM R L TVVSV S L L Q H F E E A E H Y L D AVSAAVKDPRFEPIVRE ELDRLVISVDILGDMEPDQSEAQ AV S A A A H D G R F N P I A E G E L N R L V Y S S V D V L S A P E P I S S A A E
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EYSQTERETLIRDAHAADDSALHDRPMDDTAPTP HDE YCFDSLYCHLNNCEPAKPT FTN D P Y VK LA Y Q S V V S Y L LK G K K L A L P G NLP S ELN
QEMVVFCFDTLVAHYNNQEPPPPAFD
 LSAPARERLLQLAADABRAAHDHAADGDALAEEPAPLA TSRRGEVLIAAARDAI AREAGGMGATGRDPEADERADE QYCCAVI HS SRELRGERPPEPPADUP



FS SEERQR LREDAHDS RHGLERGEPDPDEDSYPPLIQ
 D A WVRLARESAEYFVWNGHEMELPA WVP P ELL KKAAEDPWVKLARLSLETFVKTGERDDQPKGLPDEMT ELGQULLARARHAIAHELGAERN PPNGDPRLE DEMCYFCFETLYRHLHN EAPAPSPKFTD K QEAEDAYVSLARKSLEHYVHTRRMDPVEEGMPGELK LQKENPYVYVARKALEDYFQQTKTLLTQEDLPSEMF MVVFCFDVLHHFLHGNEPPKQPVFVNKEF
DA Y V QLA R A SV E S WV RYRKR LA MP DGLP E E MT KQRDED $\square Y$ VKLARFSLESYVSGGKTLHLKENLPDELS
 QDPYVALARKALETYVKEGR\|LRDDEVEDKTLQ
 $\square R Q T A A R E D A Y V K L A R L S L E H Y V K S G R V A G L P$

D P Y VK LA R Y S LE S YVT GGKTIDEWK D DP D LCRYCFDTLSNHFSSRHPVAPPS VQFCFKVLLAHLKEEPLPKPTYP
DAEKYTTDLARKAVEEY VNGNEVEVNEEDPE N QENQEDLLRIAAHSILLSGFKRGRPLYVRESYADDLS
 YVLT DDEKRELLRI ARATLREYFHTGR IPPGKPHRDSLT KFNKGEDTQLLDIAREAI RGHDSTGVIKTPQDDDHKKLL LPAPARERLLQLAADAI RRAAHHPARPDALEQEPDPLS LK QKQADEDPYVRLARFSLESYDTMGKRIDRWKDLPEEFK SIELDERRAMLTLARNAIKAHWMPDTDTE TAAILPHGE MEERRAAEDDFVRLARSAVEAVVTAGEPAPRPPELPPEMT SLKEKRAYVKLARESLEYYIKKQKY $\quad$ KIIPNYVTDELN TPSHGEVLLKLARAADRERLHDEHPTAADSTASPWLN QKTYPGLARKTHEMYVKEKRKPTKDESPEEALD DFMVYCFDTLQSHFGGGAPTPAADVACVFQ E DGP ILLARARQAIHHEVAGDAAPAD A B DERLA DRHGESLLRDAAKVIRDALAGGKGMKLLKDFPPELG R REMCYFCFDVLHNHLRNLEPPPTPKTEP N

 DALVRLARLSLETYYAKSHVMVSPPDDLPQELVM $L V R L V K K T V E A Y V R K G E V F Q P K R L T A E M K$


 YCFDMLASHLYRVKEPSRP HFTN YCFDVLVA YLEGRMPDEPEF $N \square N K G E L T Q L L D D A R E A D R G H F E E G P K S P Q L D L Y G K K L L$
 VDLA WRS IR HYVQQRTLWQGPGELPEEWM LVKLARQAVEEYAYKQEA $\square E P P S E L D P K L A$ TPSLGPVLLAHARTALAGRLGKQAADSAPDHPALHE

D A YVRTLARYALETEVRTQVRAAVPQEVPEALR LRRSNESYGVVQLARNS:|ESMILGKSMDMDTGQAPPEFR RQKDSDAYVKLARESLTSYLSVGKQMKKPGYVTEEMN CFDVIAAAVNNHSDPPVPPSIP N N
 IVLRVAKSA ILSRFDSSYSFDKKEDEYPFLKK TNQEQALLLWLARESVARGVYGKGVESLIEDVSVRDK





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K Y L


|  |  | V｜T WK ${ }^{50}$ KV VGGEPR |  | $\text { GTLEA }{ }^{70} \text { RCLFNGFKD }{ }^{80}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |
| A0AO37ZE18 | KKRGVFV | G V | RGC | GTfaP T |  |
| UniRef90－G0 | PrimV | RYGW |  |  |  |
| UniRe | DPYPLFV | TWKT GRDKR |  |  |  |
| UniRef90－D6 | V |  |  |  |  |
| UniRef90－N6Y | ERGATFV |  |  |  |  |
| UniRef90 U5EU58 |  | WKTDKGKDK |  |  |  |
|  | DPFPLFV | WKKKHHGGD GR |  | ${ }_{\text {G }}$ |  |
| iRef90－A8 | RHVGCFV | TLF $\quad$ LDGD |  | GDi G GrP |  |
|  | AKLPLFV | TWKK GAHHD |  |  |  |
| UniRef90－FOR | LEEGLFV | TLKT KGGA |  |  |  |
| UniRef90＿R5FN | QQAGV |  |  |  |  |
| UniRef90 J9K9E1 | DPFPLFV | T WET GVDKKL |  |  |  |
| UniRet90－E9EC39 | APLFV | TWNTVS GDDVSL |  | Q ${ }^{\text {P }}$ |  |
| B8 | APGASFV | TL RSAGGDL |  |  |  |
| UniRef90－N9VF | N E LiACFV | TLHK AGR |  |  |  |
| UniRef90－14D1V8 | F V | TLKKQNGQ |  | GT T TP WQE |  |
| UniRet90＿M2CBT0 | A |  |  | G L M S S |  |
| UniRet90 S6GJE0 | CPA CF V ${ }^{\text {d }}$ | SLLAM NNTDAEA |  | GTLGA M M |  |
| Unef90－E7NOX2 | TRAGTFV | SLKK GREGRL |  | MN |  |
| UniR | VRRGCF |  |  |  |  |
| UniRef90－D8 | SRCA | WNTLSGGGHWK |  |  |  |
| UniReef90 UPIOOC | QPGACFV | TLT LNKQL |  | G |  |
| UniRef90－R7L | TRAGAFV |  |  |  |  |
| UniRef90－T2MB | DPYPLC | D |  |  |  |
| UniRef90 Q336P8 | GITPLF | WKKATNGSEPR | R G | RQ |  |
| UniRef90－E4TY62 | EKKACFV |  |  |  |  |
|  | V | SLKK AGQ |  | GT LP TMNN |  |
| UniRef90－AOAO17 | $v$ | D |  | P |  |
| UniRef90－U2YQ | G | GRGR |  | D |  |
| UniRef90－A9UNN6 | QSCPLFV | WKKWSSKQE |  | － |  |
| G4 | RGVFV |  |  |  |  |
| UniRef90－F7V11 | HRAGAFV |  |  | GTATPVRNVA |  |
| UniRef90－M4F | HDGACFV | TLH EQGD |  |  |  |
| Ref90－Q0E |  | Q GR |  |  |  |
|  |  |  |  |  |  |
| UniRet90－X1PH73 |  |  |  |  |  |
| UniRef90＿B2W8S |  | T W WTKGS KSGE |  | G Preab |  |
| Uni | VRRGCFV | TL KQDGN |  | GT TEPWQDN |  |
| UniRef90 UPIO0036FEDC9 | S |  |  |  |  |
| UniRet90－N1PC92 | T S Y P | WFK |  | GTFSSMK MPD |  |
| UniRef90－T1MWX | KHSPLFV | TWKKATNGSE |  |  |  |
| UniRef90－R88R | EEYPLFV |  |  | PL |  |
| 促 | RGVFV | SLKK NGNL |  |  |  |
| UniRef90－UPIO00365FE9C | EKGGVFV | SLKKKFonagk |  |  |  |
| UniRet90－MORN68 | QKAGAF |  |  |  |  |
| UniRef90－UPIOO00465B0E2 | SKKACFV |  |  |  |  |
|  |  |  |  |  |  |
| UniRef90＿G2R |  | R G |  |  |  |
|  |  |  |  | GT M P Lidenva |  |
| N6 | V | TLTEG |  | GSLVA ${ }^{\text {a }}$（ |  |
| UniRef90－D3 | CacFV | StKNL DGS |  |  |  |
| UniRet90－G7VA58 | G | DGS |  | D |  |
| UniRef90 R7U7Z3 <br> 相 | D | T WK】 GRDKR |  |  |  |
| UniRef90 ${ }^{\text {M2 }}$ | P | WNTI |  |  |  |
|  | GAFV |  |  |  |  |
| UniRef90－G3H | V | T WK FGQDER |  |  |  |
| G3 | PL | NKLDAD |  |  |  |
|  | F | RGR |  |  |  |
| UniRef90 G7YJB7 | APYPLFV |  |  |  |  |
| Uni | EYGASFV | T L E |  |  |  |
|  | EKRGVFV | SIHKKP ${ }^{\text {a }}$ |  |  |  |
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| ef90－B0T | D |  |  |  |  |
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| UniRef90－11C4E2 | D T Y P | YGH |  |  |  |
| Unil | 兂 | WNIFDRYND |  |  |  |
| UniRef90－Q0 | QRAGAFV | SLKK NG |  |  |  |
| UniRer90 OPIOO | EPAATF | HRLD ${ }_{\text {d }}$ |  |  |  |
| UniRef90－XoNY96 | QPGAC | VNNE |  |  |  |
| UniRef90＿D2z |  | $\mathrm{RGQL}$ | $\mathrm{RGC}$ |  |  |
| UniRet90＿U1F8L9 | GV | DGM |  |  |  |
| UniRef90－D8K3Z9 | GVF |  | RGC |  |  |
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| ef90＿S9Z | R | NGE |  | GSVRRTRSLGED |  |
| ef90＿G1X |  |  |  |  |  |



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 ELLATLRPGDDGLWLTGGGRKATFLPAVWREQLPEAQEFV LDPW RYGVVVRRGGKSGLLLPH LLEGVPEEVFL

$$
\frac{L D}{H L L E L L E}
$$ WEVGVHGTRIEFINEKGSKRTATYLPEVSKEQGWDHVQTI

## Lid pow

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NELK Q
$\qquad$
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LDPKRYGVITESL LDEK VDLRQLRPGMDGLLLSGSCRSATFLPQVWGEQLSE AQLEASLVPRHDVIDDGRGHRATFLPQVW DQLPHPHDFV QDLARLRPGDDGVVLHFGMNRATFLPQVWEQLPEPAQFL LINPR KYGVIVNKGWQKGLLLPD
DPMDWETGTHGLRISFRRYGSTYLPDVALEQGWTKEEAL

## LDPW

 WEVGKHGIEIDFRPYSGTFLPEV LDPW RYGVVVRQRGRSGLLLPH KDPGDWTLGKHGIRDRFRGYGATYLPDV WEVGKHGTIFEYNDYNSTFL ADAMDWEI GTHGLRISFRRYGSTYLPDVA LE GGVDTAETQAL


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 AAAAAQRDPRFPPVREAELAGLQLELSVLGPAQELEYTPE SHKAGFADPRFPHLTSAELEDVSLSISULSPLEPLHFSDE ALTSALRDTRFDPVSREELATLQCGISLLTNFEDAEHHDD A CAAAFGDYRFKPLQATEFEMIAGAVTVLAPFKPVGDAD AMISAFKDSRFSPITLSELPRLNVSVSLLVNFQ A ASCNDRRFNRMKINEFDQTTUSVSCLSVPKDDTNP S S S AINDPR

A

## 

 T LT S A L K D S R F P P L T R E E L P K L F C S V A I A A A R E D P R F P P V G A D E L G A L T V E V S I L T P P E P L P G EPA A SLSA A 1 T A AFAAARHDPRFPPL TTHEVISGLELSV


 AV SAASKDYRFQPI SUEELTDVKIVISVLTDPKPVKDUSE AI A A AF QDSRFPKVKEEELPTLRCCFSLLHTFEPCSA AVKAATRDPRFDPVTQEEIGHLTFSIDVLSPLERVTN ATTSAFKDSRFNPITRDEFSKLHVSVSILRNFE DG A $\square T$ SA $\square H D M R F P P V E A S E \square P S L E V A V T L L T D F E E A D$ TYSSALNDRRFAPI EMPELASLDVSVSLLVKYEPAQHWED AKTSAFHDSRFKPI TKEEVPSLQCGVSLLINFENI A I S A ATRDPRFSAVQPSELSELVYDVDVLTTPEPIESMDE AI A A ATKDPRFLPVVSDDELPLISTKVSVLSFPQKLEYKPE ALTSAFKDTRFKPI PEKDLPKLHCAISLLVNFEQAKDCWD
 TLTS A L R DRRFNPIQAKELPYLRCTVSLLSCFEQAATWSD


 | $T$ | $K$ | $L$ | $H$ | $C$ |
| :--- | :--- | :--- | :--- | :--- |
|  | $S$ | L |  |  |
| S | $C$ | $S$ |  |  |
| $L$ |  |  |  |  |

 ALDSAFEDSRFPPIKESELDKLSVSVTLLANFEPDD



 AI A S S LQ D T R F S P I K K T E L P S L R V T TV T L L T D F E K V D


 A L T A L T S A F D D T R F S P i P A A L L P P A L S C S L T L L A D F E P C K AI E A GTNDPRFYEVDF QELMDID F SVVDVLTVPEPA Q K DE A I



 A L DA A F E D D P R F P P A S S S A F S D R R F L L L V E S QL K P L CIIE: SL L S Q M S P I E V K D Q AFAAARHDPRFPPLTTNEIA GLELSIAALGQQEPLAPTSR





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$\square E L T$ FEEKS QLLRLSRDTLQQHFAPQTNPAASTDLVHELD
FTKEQEKF LIKKVRECGRNE KKGERTREYKEEAEK $\square G G$ L A R S A V E F F I K E G K R I D P P P A S L P P D F F E

K E MVVFCFDTLHHHFFETEEPKAGFDTSTSF CFDTVANHFSLLAAAA LPS FATHA LQ A KEFY LKEAK DPI A E WVD K QK GA DVVTEN S

MCA WMFETLI AHFRGGADPSPPASVLS
$K T D P A L A R R Q A 1 A A H Y F A T G Q Q V L P A P E E E D P P H W R$
K A L C L Y Y F D T L Y S E LIK H S K PL A LA S EAP D S F P


S PTPP TPV

$L$ C L F A F D L L I S R LDR H V S E P T C P P A S V




A F Q S LD D K VH GRAPR A VD H LIP D DV
$Y \square F L A K Q T V E N Y T K E K K \square N P L P D G L P E E F S$
E LT QLLDD $\square$ ARNA $\square$ QDHFS DRP $\square$ NAPNHYTRKMQ

RHTTQLSPPRS LRDW
Y A F D T L Y C ELTTGSEP IP P T

$E L T$ QL LDD $\square$ A R D A $\quad$ R G H F S E K T S A P K LD H Y T R K M A F D A L Y C A LT G S D P $\operatorname{l}$ P T K F A D AF D T L Y C ELLTGRERVKP T FP D
$R$ LA REA $\ R E Y$ L R T G K V I S L P A Q $\square P K E F Q$ K E LLLKLAK EAI ENYLENKGII KTPE ETLK E LDD
K S L C C F A F E S L L Y Y K L G LiE S S L K P V D Q G D S K K L


LN E P E L T Q L F N CA YCF DVLIA SLQKKEVPK PTF QEF DV

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 $Y$ VDFARLVLMDLLDN RLPD\P LLVREVWD
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 $\square \mathrm{V}$ LA R A T $\square E$ E WVG K G Q QLD Q K D F V Y E LD R

K EMVVFCFDTLHHHFFETEEPKENFDTS $\square$ S F
P DPESPSFD DR L L QTIDERLYQ GKGVK PE

A F D ALYYCALTDDDPLPAPFR


## (



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EKRGAF|V|T|L| K|V|NDQ|L|RGCПGYP|L|PRKPLWET|I|SDV


 D C G GCFVVTYTLH K K S GVFVT LET ADGALRGRAGAFEPTESVAAEIVKS
 HSRGTHTYHETQXRE ENLEL RGCDGSLRPDPIMK L K D Y





 S S PLLFVT WN THSHQNSPTDRGCDGTFSS EPI ITSSLPEY K Q A GAFVSLH Q R GKLRGCIGTYLPQQNVASEVVKN
 KSLACFVSLNDHSG L RGCVGTTVANGRLDNN VWY


|  | GTFS MNLHSGL |  |
| :---: | :---: | :---: |
| LFV TWSARGSRRNYSLR | R GCll G TLS R A NLD D AV |  |
| VPH GVVFVTI | R G CRGS P D P G DV DE Q W R |  |
|  | $R G C \square G T Y E P A K N V A E E V$ |  |
| FVTWNTRSSRPGRRLR | R G CI G T FEAL P L REG |  |
| R L | R GCI GTFNAMHLHA GL R E |  |
| CFVV L Y T L $\quad$ NGQL P | R G CI G T $\square \mathrm{E}$ P T R P I A LEI A |  |
| FVV WN TV S R S G H K S L R |  |  |
| S LH $\quad \square \mathrm{DGEL}$ | R G CII GA T N N DRPLA Q S I A |  |
|  | R G CII G |  |
| P GRRL R | R G CIG NFD P M P I $\ddagger$ D G |  |
| S L I K A G Q L R | R G CV G SVQPQQSLA K EV |  |
| L R | R G Cl G S L K P $\square$ P $\$ M K L K D Y  \hline L ${ }^{\text {P }}$ | R G CI G H P L P Q M P L D A V I D S |
|  | $R \mathrm{G}$ DV G S P Y P $\square$ R N |  |
| P L F V T W K K N S Q L R | R G CII G T P E F PVES GVRK |  |
| T WN K L S S R G K R L R | GSFDP |  |
|  |  |  |
| L | $G T L M E \square K$ |  |
| Q S S S S S K R L R | CIGNFTA AP L G T GL R E |  |
| A R C P L F V T WK KL S R HGQ Y QL R | R G Cll G T F A E CEIIEQGLTR Y |  |
|  | R G CII G T LE P F R E N Y E EI W G N |  |
| C P LTV T WN $\quad \mathrm{K}$ K S G R S S S S L R | R G CII G S F PQ TLHA GL |  |
| K TSLFVTWKKAKHSDDYVLR | R GCIGGTFAKP PVVQGI |  |

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UniRef90

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 AYSAAFHDPRFPPIKKAEVKDLSVSVTLLDNFEQUN SDESSLNDTRFNPITGRDLPYLVTITYIFNFEKCEHVYD A EAAFHDPRFDPIPAKDFADLTCVVSIMSMPLPLQDSEE ALTAALKDSRFPPVQMKEVTGLSCTVSLLTNFEDCSNAYD ALHSSLRDARFEPIQYSEIPHLMCKVSLLHSREDARHCLD ALESALRDRRFNAVTGDEI PDLCVSVSLLVCYEECETCLD SLLJALLQDSRFSPLGATELPKLKCSCNVLSNFKSTYADGT ALASAFQDPRFTPLSKKQLSSLSVEVSVLLLDEEVLVVA ALVSAFHDSRFRRIQEYELETLECGISLLTDFEDAANYDD
 SLI AALQDSRFPPVEVGELAKLKCSCNVLSHFKTVEEEGA T LTSADKDSRFPPLTREEMPKLFCSVSLGTNFEDASDYDD ASYAAFRDSRFDPGASEVDELKVGVSVLSGFEKASHVYD A CSSATRDPRFPTVTPGELADLDYSVDVLTTPEPVEGEAE ALDSAFTDSRFRKITESELESLECGLSFLTDFEDAKSYGD AAAAAFEDPRFSPVKPEELPNLKISVDVLSPDEDAS ALTSAFDDTRFSPIPASLMPALSCSLTLLADFEPCRDAMD ARQCAFADPRFPPLTEAELARCHISISVLGPKRPGRATDR ALDSAFRDSRFRKISKNELETLECGVSLLTNFEDAQSYDD AVAAAVHDPRFRPVQLDELDQLSYVDLVENLADLKNKAA ALISALQDSRFSPITKEETPQLKCHVSLLHSFERAK AISSATHDPRFPSITPEELPEVETEVSVLSKPEVIEV A RYAAFNSPKYSPLSGSEVKRIVIVVIVNNQPRQVS TMSSAFQDPRFSPISTKEVASLEVDVTLLDKFQPISDYND ALISAFRDNRFRPIQQSEFESLECAVSLLDNFEDAQSYLD A MAVTEDPRFYPLRKNELKDVETKVDVLHKLVRVESUEE ALSAATTDPRFPAVRGSELDELEUSVDVLSPPEPVSSKEA A EISAFKDSRFNP:NSAELPRLQCSVSLLTHFEEADDYLDD ALIAALQDSRFSPISEKELALLSCGTNLLSNFKTDYKKPD


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K Q $\square \mathrm{P} \Pi \mathrm{F}$ VK WMK TLETSYY EMAGVMV KSAPLFITWNK YPLFVTWNTLSSSGHKNLRGC GTFSDDPLESGVSKF TPRKVYVSLYNIET_HELRSC KSRQGAKNGESIVKA
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GD|I Y D WEDVG|L|H G|I E|L VFKHC
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ATFLLPEVV ${ }^{150}$
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$W G G L$ WE VGVHGI H

WEVGVHKGI GTMEGII WEFTHPDSTR WTVGDHGTTDSFCRRATYLP DQNDWKDGLNGLKDEGGHYSGTFLPSVVAEEEGWDKLTTGL

## A

GDV
A L Y D WE I

$R N Y \square D$ WTV GV H GI Y I H G GNEDATY L P DVVIP D Q GWTKQEA I | WT | G |  |
| :--- | :--- | :--- |
| WE | I | G |

WT LGTHGL
WN DWVI R $\square$ SFI YRGRRLLGATYL WEVGPH GVVRIDDFYDSRNKQYSSTYGLPSVAVEQGFNHLKTV WELGTHGI RDSFDHRGRRYG WTVGVHG LWIKF DHYEATFEL DWRDWEI GV HGLII T F DMLLTATFLDEVA HQEEWNHEETG WEVGVH G I R I E F I NEK GS K RTATY L P EVVAKE Q G GDLSNFAWGREGVYVEAGERRFVVLPQTIIERRLFGEALL A D ALAA A LD GEDGLI L RYGAHCATFLPQVW EALPEPSRFL

$W \square$ I T H G I
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 1 R $\quad$ GI D GVV L N K G
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## E Q L

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GRLARKAG $\square G R A G W Q D P E V R \| S R Y D T L H F R E V F S$
DY LVDKAG $\frac{\square}{L} R \square A D F \square E A S V V I T R Y Q T A T S S A D Y A E$


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REL

NE $\square$

R

E EL
$K D \square$
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| N | S | 1 |

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LVSHVRSAMLNKLRG GSELIAHVRSAMLSRLRG

## LPVPESHPVLSQ LPVPERHPVLSA


KFSTARKQALCDLADRAAEDFFAGQDFAAPVQNTAGPE $\square S N H E K D F L L T L A R Q T V V K A V N Q P D P T N D A D L T D A M K$ AVI EHELNPSSHPTPTPPFDDEGQ

GPEAVRRAREADREALGFTRGRPDDRGDPAVWR $\square V$ S D L N Y ALD HNGQR $\triangle P D Y Q L T N E L Q$

A LVRLVKKTVEAYVRKGEVFQ PKRDTAEMK
RREMCYFCFDVLHNHLHNLEPPPAPKTFP
K
N
AYCFETLSARLDGRRQPAAPATIPAGG MKATRE $\quad \square C Y Y C F D T V V S H L E K Q K Q C A P P E F Q$

LT Y Q DREYLLS LCRTMLNSF LHESKPPKVQA VR WAFD\|LISGLQNGEATRLPSGIVQMRR Y AFDTLYCAL TKEDPVD DDYFQEY LK
$E V S P K Q L E N \square S T Y A E K S L C D A L Q A S E D P R R D Q L Y \square P G K$


Y C F DVID S K $\square$ N S T S $\square P$ A P E F D G K $\square Q$
A A MVVYCFDTLQSHFDGGTEPTPRFDVHEE
 RFTATESSALVEYARACLLAR LDGVS $\square$ PPPP PCATR
 AI ARKVI EMYLNEQKIPTMEESSHPEAQ EVAYQA IDD YFSGSGESDESLFLEKYND
RSVLLQLARESTQEVLEDQRTTDKATNEHPLLN
 EF DPKK K
DF
DEKFK

St Thar LDD PAVK RLVGFARRTVESVVRNSTVGSTTRMLDGEVS
 TPENMRAALESVSERVVAAMLAGDPl DEDAPARALLK KDKFVDLAY DSLVYYLDTGKYLDDEYDEEFK

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| UniRef90-UPI0003B73A08 |
| UniRef90-K2CT36 |
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| UniRef90-L8H8P4 |
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| UniRef90-L8WYQ1 |
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| UniRef90-V6TS81 |
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| UniRef90-G7VBS9 |
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| UniRef90-E3KS72 |
| UniRef90-K2AXM2 |
| UniRef90-F2L2M7 |
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| UniRef90-W5XAK9 |
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| UniRef90-X1M140 |
| UniRef90-D7FTC2 |
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| UniRef90-M8AXU7 |
| UniRef90-E4TXF1 |
| UniRef90-LOAJU4 |
| UniRef90-K7S6Z4 |
| UniRef90 E0UT68 |
| UniRef90- X1EC72 |
| UniRef90-14B1W1 |
| UniRef90 ${ }^{\text {C2BEJ7 }}$ |



$\square R A G V F V T V V R S G G Y E R R E V R G S L G D V E P F K D L A F D S A K V$ MRA GVFVSUVRSGGYQRREVRGSLGTVEPFQDLAYDLAKI
 D P Y LLL F V $V$ WK R GRDKWLLCGCi GNCSA MNLHSGLREY

K N Y G $\square$ A $V$ R F
QKGASFVTLTK
RNAEEDRGCLSLYEGVAEEFEQAVQF


EPRGVFVTLRRY PSAELRGCDGFPRPDRPLDEALREA NAYACYIWLL $\quad N Q G T L R G C Y G S A V A G Y R L D Y H L A D T$ VRTPAFVTWMKRRREDNVDLRGCDGSLKPIPIMK LK K

 DSCPLCISWAKRVKKVDAEARGSLITMTPVQLHSDQFLRT
$K N V I V F V S L Y E N D N L L A \quad C G H K Q G \quad K T L E E S$ RRCPAFVTWYQRDSEDGYELRGCDGTLSADPP ETI GQY GEFPLFVTWNTVSSRSLGRLRGCIGNFEA MSLDDGIKEY RQRGVAVRFVSGYED RGCMSFYSGVDDYRKAVQLA YKAGVFVTLVRSNGTERREVRGSLGVVQPVRDLAHDSAKI NQRACFVT FF

VKRQVMACFGSFTPHATLFDEDSDN
$K D K N Q Q L R A C D G S D K P D A D M K$
YPLRVVTWNIKSRSSDTRGRGCIGNFEPMK G GTGLRDY

 TKNLSFVTLYK


 DNRKVFI GFRDNGDKK GSADAVENNLAKSVYK EK A F F V R WETMDRGGRFTPRGFMGSFTP S T P F R R A L A A E Y
EK S
KNS
GKS



EPMATQTTLY
ANSGAFVTLER LGGTIIRGSAKTQTAERSLLEDIIYN


TRKGMFVS F DKKT RRLRGCMGS VAQRNDYDEVTHW

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UniRef90 K7E7T7
UniRef90-UPI0003B73A08 UniRef90-K2CT36 UniRef90_I2FNC6 UniRef90-E9IK41
UniRef90-TOZQF7 UniRef90_UPIO0035C3A72 UniRef90 U6LYG9 UniRef90 ${ }^{-}$X1U2S5 UniRef90-G4VT79 UniRef90_H3F5V4 UniRef90_Q2GQP1 UniRef90-K2CF81 UniRef90_F0VM20 UniRef90_L8WYQ1
UniRef90_E1RAP7 UniRef90_V6TS8 UniRef90 G4RLQ8 UniRef90-B3E768 UniRef90_U6LUV2 UniRef90 U5H0Q7 UniRef90-D0MT08 UniRef90-K2F4L2 UniRef90-E3KS72 UniRef90-K2AXM2 UniRef90_F2L2M7 UniRef90-W5XAK9 UniRef90-X1JP77 UniRef90-K2G639 UniRef90-X1M140 UniRef90-D7FTC2 UniRef90_T0JC35 UniRef90-B6W8M5 UniRef90_UPI0002F8A9C0 UniRef90-M8AXU7 UniRef90-E4TXF UniRef90-LOAJUZ UniRef90-K7S6Z4 UniRef90 EOUT68 UniRef90-X1EC72 UniRef90-14B1W


N SHQR
AK T A AFQDENFDPLVTSEYDHATDHLT $\square$ FSPEGELSHQSD ARQATLTDPRFSPVEPHELETVTV
AKVAAFQDENFDPLVTSEYLHTTVKLT LFTADGELSHQSE AKKAAFEDPAFVPLSTSEYLHCEIEL LDDPEGIDSEKD



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UniRef90-W2SI48 UniRef90_F1LDL4 UniRef90-K7VXS7 UniRef90_Q8ZYD2 UniRef90-UPI0003F09F83 UniRef90_UPI0003D7619B UniRef90-UPI0003AEA9CA UniRef90 K7E7T7 UniRef90-UPI0003B73A08 UniRef90-K2CT36 UniRef90-12FNC6 UniRef90-E9IK41
UniRef90-TOZQF7 UniRef90-UPI00035C3A72 UniRef90 U6LYG9 UniRef90-X1U2S5 UniRef90_G4VT79 UniRef90-H3F5V4 UniRef90_L8H8P4 UniRef90_Q2GQP1
UniRef90 K2CF81 UniRef90-F0VM20 UniRef90_L8WYQ1 UniRef90_E1RAP7 UniRef90_V6TS81 UniRef90_G4RLQ8 UniRef90-B3E768 UniRef90_U6LUV2 UniRef90_G7VBS9 UniRef90 U5H0Q7 UniRef90-D0MT08 UniRef90-K2F4L2 UniRef90 X1KZB6 UniRef90-E3KS72 UniRef90-K2AXM2 UniRef90_F2L2M7 UniRef90_A1ANK1 UniRef90-W5XAK9 UniRef90-X1JP77 UniRef90 K2G639 UniRef90-X1M140 UniRef90-D7FTC2 UniRef90_T0JC35 UniRef90_B6W8M1 UniRef90-C7HVY5 UniRef90_UPI0002F8A9C0 UniRef90_M8AXU7 UniRef90-E4TXF1 UniRef90-LOAJU4 UniRef90-K7S6Z4 UniRef90 EOUT68 UniRef90-X1EC72 UniRef90-14B1W1 UniRef90_C2BEJ7

160 WT $\square$ GMHGI R $\square$ HFM DGS $\square R$ RDAVYLPEVAYEQGWDHDET T WVVGIH G\|RM DGSFEWGREGVYVIAGNKKLVVLPQTMIERRLLGPALL LD GFRWGVEGVYAlVS GSRRFVVLPQTMI ERRLI GPPLL WEVGIH GIIRIQFI SEKGSKCTATYLPEVAIEQ WEVRTAAFGTLHLSLHLGSGRGP

 VD YLLD WEVGVHGI RI EFHNRTATYLPSIVAEQGWDQIQTI


W
QK LDD DEVGKHG\RILFKQYSKVYPPET\|LARGWNKKEAD


WEVDAF
 WTIGQHGI YI H
FD $\square$ K NWA $\quad 1 \mathrm{~L}$ SQTLWKA WVI LP NDA NLLVSTPRDLE WLSNRHGLILSFKDGAGRHCQSTLFPETURKAGWNKERAG LIKNSMV

[^1]UniRef90_V4U9T0

NNLIEKGGYRGDEGFRLS LQVTRFQSSKVMDSYDD
$\square$
D S VVRKAGYQRTES LRKK $D K$ VTRYQSTDYTMHY GEYV
RYI ESMVGAPE RMYKFATRI FYELRPEGEVI E
RYVESMVGVPD KLYKFKTRIFYELRPEGDVIE
D S LLRMVT FPTTSEFRKTTKLTRYQSE
DSLLRKGGYPDTNEFRKTIKLTRYRSEKMTMSYAE ARLSNKAGLGFDGWKKNALHFYRAQT $\square$ TYTD

DSA\RKAGFDGK\TED
DSLLHKGGFKGLVTPDRSLKLTRYQSE
AALKEKANWPEHGWTSA MKAFTFTT A S L

EEGDRKAGYTGDLTFMATVEIIRFETS VS LMRKA GWRKDRWE EVELSVVRYQGRKVGDEYAE I KLAQKCGLKRDLVQSKKATLSKYKTDEFRED
 ET LNRKAGFEPEYWKEHDVTV
L H L LHKGGSELTADVLKSLSCTRFESSVEHMTFSE RYVASKVGVPE KVYVFSTQI FYELRPEGQVIE RSALQRLGLNE RSSG $\square R L Y R F K A E Y \square R$ AS LVRRG

E $\square$ Y R F Y T R $\square$ F Y E $\square$ RPEGE V $\square E$

S LVCKKA G LDD DS $\square K E E D Y V L Y R \square Q S T V F S D$
S IACQKGEIDP QKEKII IYRFTTEKY
TLVCKKAELDPATLKEEDY LLYKDESTDFSD
$R \bar{Y} V M S N V G V P E$
ARL GENDPSSVRVSRFRA
K WA Y QKA GVP VGSAVTLQRMVAERWR
ELVCRKADПDPATVKEEDYYLYS DESDQYSD
K RLCEAAGLDENCHQDENVNIYYFPIIHF
EAlYQKAGYWRTRKKRSE

DS $\square$ MRKAGYNGT $\square$ T $\square R K K \square R \nabla T R Y Q S T \square Y T M H Y N R G E \square N G$
$S \square T C Q K G G \square E P T \quad E E K \square L I Y R F T A E K Y$ KMISQKLQNSAEA EGSEYFR $\square$ HAERFG


| UniRef90-V4U9T0UniRef90 W2SI48 |  |
| :---: | :---: |
|  |  |
| UniRef90-F1LDL4 |  |
| UniRef90-K7VXS7 |  |
| UniRef90-Q8ZYD2 | R E L |
| UniRef90-H6QDA0 | REL |
| UniRef90-UPI0003F09F83 |  |
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|  |  |
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| UniRef90-FOVM20 |  |
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|  |  |
|  | R E L |
| UniRef90-B3E768 |  |
| UniRef90-U6LUV2 |  |
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| UniRef90-U5H0Q7 |  |
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| UniRef90-X1KZB6 |  |
| UniRef90-E3KS72 |  |
| UniRef90_K2AXM2 |  |
| UniRef90-F2L2M7 | R E L |
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| lupas_28 |  |
| jnet |  |
| conf | 289 |
| sol25 |  |
| sol5 |  |
| sol0 |  |
| jhmm | - |
| jpssm |  |


[^0]:    lupas 21
    lupas_14
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[^1]:    lupas 21
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    sol5
    sol0
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    jpssm

