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$T P V S V V N L G R V A B Y R S A D Q Q Q Q Q H Y I R R Q H F D S T$ Q NRRVSVRRLGLVDYQPAWDAQEQLLAETGATT K S NPI S V E HL GLVEYRKA WE Y Q REI Q T GVIV D R
Q NRVI RVERLGMMPYEAAWAYQEQLTRNRQAAT A EPVSSSSMA GLQL RDLGQQQDYAPVWRAMQRFTDAREEYT MT T T T S DLTVVLRAGTVDYEAAWEERRRLHESVVTDK $R R L N G V D V L R L S V V P Y R E A W D M Q R S L A E A R V A D E$
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MS A V VVGK N L GQQLTY Y E T CWQAMR DFT DTRTAAAT
H QP

MRTLTVYHLGHDDYTAAWEMQRRLARQRSSGQ

M N T L I N K K
R A Y A R D V $V$ V V R D


 NK QI I VK DLGHKDYKETWDYQE SLLFE E IVVEPT MTA V V NKKVQVQDLGFRDY KE T WEYQE NG MNTLTVVYRLGQVEYEDGLQLMKLFGETRRQGC
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 SSAPRLL


 M N R S $\square$ T S H S RYCLLYN L G LM P Y $\square$ D A LE WQR S L LQE R I K N P R D L GTM D Y K E C W D L Q Q S L F D A S V A D D $T \| R V R W L G R T D Y D D A L E L Q H R \mid L H E T$
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 NVGARRDGAPGVYVAG AKVMALGURVRGCTFHGLA GVTTGRVEGRSGVWIDDAGERKLGQI GI RVARGVALHGFA GVEAGRVDGRGVWVPGYPDSKVAALGRVTGVTMHGLA GVRTGRVKGRSGVWVPADRERK:AATGRVAQGVTMHGFA GI KASTSPDTGVWVGNN KI CAIGGHCGRYVTSHGLA GVRAGRTAGLTGVWLDAANPRKI CAMGVKCSRWVTMHGFA SVKTERYCERSGVWI DGKSDRKI AADGIRVAKGVTMHGFA GLRAGRDAGDTGVWLDAANPRKI CALGVKCSRWVTMHGFA NV VAERRDGAPGVYVGG AKIAALG\|RVRRGCTFHGLS GLVAGRDEGRSGVWVPADPARKVAAI GVVARGVTGHGFS GLATRQVDGRSGVWTTD GLLRKVAAI GVRVRQAVTTHGFA GVTAARINGRSGVWVPSTRDRKI AALGURISRGVTMHGLA GLQAGRVAGRTGVWIGRGPERKICAMGVRCRWVTMHGFA GVQAGRVEGRSGVWVAGDPDRKVGAlGRVAGGVTMHGFA GLATTTVEGRSGLWVPGAPDRKIGSI GI RVSRGVTMHGFM DI ESAAKADAPGVYVNGD KI ASLGLRVRRGCSFHGLA GII KACVSGRSGVWVDEKGDRKIAAIGIRVSKVTMHGFA GLKGERSDGETGVWVGTPFARKI CALGVRSRWVTMHGFA G DGEPRPDAPGVYVDG KKISSLGLRVRKGCSYHGVA VI AAGRIDGRSGVWVPDKRDRKIAAIGRITRGVTMHGMA GVTAGRIDGRSGVWVPPTRDRKIAALGRVTGVTMHGLS GVEAYPRPDAPGVYVAGD K KASLGLRVRRGCSFHGLA GI DAGRYPGYTGVWLDNEKARKICAMGVRCSRWVTMHGFA GLKSERSPGETGVWVGTPFARKI CAMGVRASRWVTMHGFA GLQAGRDAGLTGVWLDQKNPRKICAMGVKASRWVTMHGFA GLETRRVEGRTGVWTSDGGLRKLAAGGVRVSWKVTNHGFA GLKGERSVGETGVWLDAHKERKI CAMGUKVAKGVTMHGFA GLTGRRVEGRTGVWLDADPERKVAA GCRTARGVGMHGLA GLATTRIEGRSGVWVLGHEDRKLAA!G円RVAKGVTMHGFS GI PAGRYPGYTGVWI DNDKARKICAMGVRASRWVTMHGFA GLDNGRVPGRSGVWLPAVPARKVAAVGIRVTRGVTMHGVA GVVAGRISGLTGVWLDQERPRKICAMGVKCSRWVTMHGFA GI EAGRIPKLTGVWVG ERKI AAIGVHLSRWVTSHGFA GLQGERSPGETGVWVGKPNARKI LALGVKASRWVTMHGWA Gi KGERSEGETGVWVGTPFARKICAMGVRASRWVTMHGFA GVEAGRVEGESGTWI DRGPRRKI GAlIGIRVSRQVAMHGFA DVEAHARPDAPGVYVG EMKIASLGLRIRNGRSFHGLA GVEAGRVEGRSGVWIDTRPERKIGAGGRSHEVTMHGFS GLSSVTIPKWPGVWLGGRDARKIAAI GVHLARWLTSHGFA GLDTGRVAGRSGVWLPAGPARKVAAIGIRVTRGVTMHGVA DIAAAADPKRPGYVDG KKIASLGLRIKRGAVYHGLA GIKGERSEGETGVWIDTPFVRKI CAMGVRASRWVTMHGFA GI EGSRSSGETGVWVDTPFARKICALGVRASRWVTMHGFA GI EARARSDAPGVYVG EAKI ASLGLRDRRGASFHGDA GVTGTRVEGRTGTWVGRGPERKI CAMGVRCSRWVTMHGFA TQKVGRIAGRSGVWVPHSRDRKI AALGI RVTRGVTMHGLS GTTAGRSDGRTGVWVG ESKI ASLGUVGRWVTCHGFA NVDAARREGAPGVYVAD AKVAALGLRVRRGCSFHGAA GI QAERREGAPGVYVRD AKI GALGLKISRGCSYHGLS GI QGFRDAGATGVWLDTPRARKICAI GVKCSRYVTMHGFA GVKADRYCERSGVWVRDMGDRKI AA! GLLVAKGVTTHGFA GITAGRFPPNTGVWVGD EKIAAI GVKASRWITQHGFA ELETDRVEGRSGVWFGERRERKVCAI GARVAKGVTMHGLA GLATTRVEGRSGVWVLGEEDRKLAAI GMRIAKGVTMHGFA Gi ESYARPDAPGVYVDN KKI CSLGLRIRRGCSFHGLA DI NATRSEGETGVWI DTPFARKICAMGVRASRWVTMHGFA GVTGTRVDGRTGVWVDRGPERKICAMGVRCSRWVTMHGFA KVEAGR\EGLTGVWLDHGKQRKVCAMGVKSSRWVTMHGFA GEAYAKPDAPGVVKNQTEAKLASLGLRKGCSHGLA GVTAGRIDGRSGVWVPSTRDRKIAALGIRITRGVTMHGFA NLKAERIKGLTGVWVDG KKVAASIGVAKKWITFHGLA GVTAGRIDGRSGVWVPGAEHRKIAALGGRTTHGVTMHGLA GI KAGRIDGRSGVWVPGARDRKIAALGIRITRGVTMHGLS GLEAGRMPPHTGVWVGN EKKVAATGVASRWVTGHGFA



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DQVTSSDLVEALDGRLP
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PLAAADAI ARALDGDL



| $P$ | $L$ | $L$ | $E$ | $K$ | $A$ | $V$ | $V$ | $D$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $E$ | $A$ | $L$ | $D$ | $G$ | $L$ | $L$ | $P$ |  |

$E A V V D A V T R A L$
$D A V E A A M R G V L$
DVVETRLRQGLDGTL

EALEKNIVAALDGEL
PVLIAQLARQFG
DTVAAAVLDADD

ESVRRHLDKLL




PVVERHTLAVL
DPLLTALDDALA GRL
ARLLRHFAERFEATL
KKILKHFNDLFNTDL


PLVVERDFESL
DKI KKYFMELFKAHL
DRYSARLLELL
GPLLQALDDTLSGRM


EKK KAA HLAA L L F K M E L

PVVERHMLTAL







SRLRAQLAA ALGY
P LAKKHLDRVLD
QQLLTHFS ELLF GAEMP

$A K L T A H L Q Q Q L$ RL


$P$ LL HK SLLVRALA GD L
AILTEHFEAEFG
DVLVEEFCRQFG
DKLASRLSELLERDYP
VILLRHFSEL


PVVEKHKREVLEAAEP
PVLDDELVKLLDYQ
GPVTEHFGALFDAE EKVKKHLADLGEWE

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 GLEGGRIPGLTGVWLDQENPRKICALGVKSSBWVTMHGLA GI A A NGDVDAPGVYVDG NVTGERREDRVGVWVRGGGEDKVAAGGRVRRWVTFHGG S GVNAYPKAEAPGVYVNDGQEKKICSLGLRIRHGCSFHGLA GIEAGRDDGLTGVWIDHПEQKNICAMGVKSSRWVTMHGFA GVDGYRVEGRSGVWVRRPSE GI EAERRPNAPGVYVAD GLQAGRMEGLTGVWVDGNNP GLETTRIHGRSGVWILGE DI AAQAKPDAPGVYVGD GVEAHARPDAPGVYVQNN HINSAARPDAPGVYVDG $G V D G V R R D G R S G V W I D G S P D$ HVDAYARPDAPGVYVND GLATSRDEGRSGVWVPADPD GLEGRRHPRYTGVWVNG G VGTRSEGETGVWVGTPFARKICAGGVKFSGWIASHGFA GITAVR TKGRAGVWIEEDPARKAATGUVSOGVMHGFA G TAVRVKGRAGVWVEEDPARKIAAMGVRVSQGVTMHGFA D:QAVADPKAPGVYV DG EIKGKREKGQTGVWLKG GIKGERSAGETGVWVGKPYARK NVKGERRADRVGVWVGGMCEDKI A GLKAERSPGETGVWVGTPFARKIC GLKAGRVEGLTGVWLDFEPG GLASEFRGRNPGVWAG ERK| GI DAYARADAPGVYVNGO GLKGERSKGETGVWIDGKI CSLGLR ETDAKARRDAPGVYVDTDLAKICSLGLRMRKGCSFHGLA GVDGMRVDGRSGVWVDGGSPEKVAAI GVRVQSGVTMHGFA GVETTRVEGRSGVWKLGGDDRKLAAI GVRVARGVTMHGFA GI PAGRI DGRSGVWVPGKEHRKVAALGIRIAGGVMHGLA NIKAERLEGAAGVWIDTTRTRKIAAI GVRSSRFVMHGFA GLQAGRILGRSGVWLSGRPDRKIAALGIRVTHGVTMHGLA GVSASRLDKATGVWVDSAHPRKI CAI GVKCSRFVTMHGLA GIEARARADAPGVYVPDGEEAKIASLGLRDRRGASFHGVA NIRGERRQGRVGVWVGTDMEDKIAAIGIRLRRWVSFHGTA AVQASAKPDAPGVYVDG AKI ASLGLRIRNGRSFHGLA GIUAGRVEKATGVWLDGPRARKICAGGVRSSHYVTMHGLA GVTAYTKSDAPGVYVGD GI RGQRVLAGATGVWV GTPRAT GLKAETSPDTGVWIGNN GVMASRLAGAPGVYVDG GLNGERLEGLTGVWLKG GIKGERKKGKTGVWVKNGKS SI LAKTKCDAPGVYIND LIAKTKCDAPGVYIND EKIGAIGGRMRKGCSYHGAA

 DIEAAPRPDAPGVYTQGT KI ASLGLRIRRGCSFHGLA GVTGERVEGRAGI WLRADQDRKIASIGUVHNGVAMHGFA G| EGYPKADAPGVYVEG RK:CSLGLRURKGSFHGLA G1 EAGRVDKATGVWLEGDRARKICAIGVRSSRFVTMHGLA | K | EARTSPATGVWVGD |
| :--- | :--- |
| GII | TAEARADAPGLYVAGQ | SKICAMGUHVSOYVTTHGLA GI AAARRPNAPGVVAD GLKGERYPGYTGVWLDADRA AKIA ASLGLKMKRQCSYHGLA GLK GERYPGYTGVWLDADR QMTAVARPDAPGVYVDG

GMESYPKPAPGVYVDG K K GLKGERLEGATGVWLDPFKARKI GI EARGDVNAPGVYVG G AGRRTGLPGVWVDRKAKI

 GIVGERLDGATGVWLETQNARK:CA: GVRASRFVSMHGFA GII EAGRGEKATGVWIDTSRARKICAI GVRSSHYVTMHGLA GLAAERKDGAPGVYI AG NVTGELREGRVGVWVQRPDE GLETTRVEGRSGVWVLGEED GVKAAGKKCETGVWVGD GLETVPDEGRSGVWVEGEEE GVAGERRDGRVGGVWVKRPDE GLAGERTSGLVGVWLEG GLNAERTSGLTGVWLEGC NVDAYARADAPGVYVNGD KI CSLGLRIRKGCSFHGLA A | AK |  |
| :--- | :--- |
| K |  | GIKGEKDDKAMGVWIDPPKARKICAI GVRASRFVTMHGLA GVTGHQVEHRSGVWVTNGRDDKIAAI G RVADGVTMHGFA GLHGERSKGETGVWVGKPYARKICAMGVASRWVTMHGFA



| UniRef90_UPI0004692E61 | Q K |
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 $M S \square D T M P P D L P L V I R Q L N K Q D Y L A T W E A M K A F C D D R T G E T$ S P DTLI DR QLGLIQPWAPVSSLAMHQFTDQRNDET $R L L G L V D Y E E T H S A M K A F T R S R G A D T$ $T Q F P R V Y F N D L H R M P Y Q E A W D L Q M D L H A A T V A R K$
 KRHQCYLYNYGLVCYAEAWNWQKHLLQQRRQDP K QNRTLLLEDLGLMNYEDAHSYQDQLMQQDIAKT



 EK LQ CVL K NLKLVKYTEAWA YQRSVVDKRDNNP $M Q R \quad E K \square Q D$

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T WH GPGQLLV|AYP\|
110

TWHGPGQLVGYPVVQLERRDDVVGHVRRLEEEML$A$

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 TYHGPGQRVVYVMLRVRRGRDVVGYVRRLEGEWV GARAGF TYHGPGQRVVYVMLDLRRGRDI RAFVKALESWVI TTLADF TFHGPGQLVCYPILCLEDFLGLKAYINTLEEAVI QVCTHY TYHGPGQRVAYVLLNVGRGHDVRLFVQQLENWVI SSLAQF TYHGPGQIVGYPI FDLEQKLGVKEYI HLLEEAI I QTLSAF TYHGPGQVVGYP:LDLREWRDVRAYFRGVEQFLIADALAS L TYHGPGQTVAYLLLDMRRKLGVRELVRKIESAVVDLLWDY TYHGPGQRVVYAMLDLRRGRDVRAFVKALESWVIDALAEF TYHGPGQQVIY LDMLNIRRKLGVRHLVTAMEEAVVGLLGKY TYHGPGQLVMYVLLDLRRGUGVRALVDVLENITISGLKKY TYHGPGQRVAYVMLNLKKRRDVRLFVHSLEDWLI RALQEF TYHGPGQQVMYVMINLRRRVGVRQLVTAIEQTVVDTLAAF TYHGPGQRVGYVMLDLRRRKDVRCFVHNLEELMI RALAEF TYHGPGQWVVYVLLD R R S L TVVRGLVTAA ERAVI SLLAKY
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 GI NAYP K P DAP GVV Y GI D S S A K P D A P G V Y V E D E Q K I A S L G L R R $\operatorname{R}$ S R G C S F H G L
 R I



 GI QAERRPGFPGVWVGGEKKIASVGLGVNHWVTDHGFA GI A A T A D P K RPGVYVNG $\quad$ R KI A S L GLRI KNGAVYHGLA
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 GL K GERSEGETGVWVGKPYARKI CAMGVKTSKWVTMHGFA GI E A Y A K A D A P GVVVV QEQKVAS LGLRVRKGCTFHGLA N I D A Y P R P D A P G V Y V A G N

 KVDAYPKADAPGVYVDN K K V C S I I GLRI RRGCSFHGLA $N V \operatorname{SEETRPDRVVGVWVRRPREDKIAAI} G V R L K R W V S L H G I S$ GII E S G R V A G A T G V WL D T K N E R K I C C A I G V R S S S H F I T M M H G L A GI HA YPKADAP GVYI D E | $G$ | $D$ | $S$ | $Y$ | $A$ | $K$ | $P$ | $D$ | $A$ | $P$ | $G$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $V$ | $D$ | $G$ |  |  |  |  |  |  |  |  |
| $A$ | $N$ | $A$ | $Y$ | $A$ | $K$ | $A$ | $D$ | $A$ | $P$ | $G$ | $V$ |
| $Y$ | $V$ | $T$ |  |  |  |  |  |  |  |  |  | AI N A Y A K A D A P GVVYVT $G I$ A S H N D P Q R P GVVYVG GVTA Y P K A D A P GVVYV D RYTG G K I A S L G L R I K R G S V V H G L A


 $G V H A V H R V D A P G V Y V S G G A K I A A L G L K I K H G Y C Y H G L D$ $G L V A S R R E G K T G I W I G G B R I I A A I G V A V R W V A Y H G F A$

 HV R GERRREDRVGVWVGS P A E D KI A A A G I R L R R WV T F H G I S

 QL E A $\quad$ K T T $\quad$ E $N$ T T GVVWI G D N \begin{tabular}{l|lllllllllll}
$D$ \& $A$ \& $A$ \& $Y$ \& $A$ \& $K$ \& $A$ \& $D$ \& $A$ \& $P$ \& $G$ \& $V$ <br>
$G$ \& $Y$ \& $V$ \& $D$ <br>
$L$ \& $E$ \& $G$ \& $I$ \& $R$ \& $V$ \& $E$ \& $G$ \& $R$ \& $S$ \& $G$ \& $V$ <br>
$W$ \& $G$ \& $G$ \& $R$

 A I E A Y A KK D A P GVV Y V 

$A$ \& $E$ \& $A$ \& $Y$ \& $A$ \& $K$ \& $K$ \& $D$ \& $A$ \& $P$ \& $G$ <br>
$H$ \& $V$ \& $Y$ \& $V$ \& $N$ \& $E$ <br>
$I$ \& $G$ \& $E$ \& $R$ \& $R$ \& $E$ \& $D$ \& $R$ \& $V$ \& $G$ \& $V$ <br>
$W$ \& $V$ \& $R$ \& $R P D$ \& $E$
\end{tabular}


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 GI D GRRRVA GRS GVVWV GPVGED KI A A I GII RVA E GV TMH GFA
 GI R G E I R
 N



 $G L K A A A Q D D A P G V Y L N D$ N R GERRREGRDGI WIVDEQEKKI A S L GLLRVKKGCSYHGLS

 $D I E G S A D P K A P G V Y V Q G$


 $G L Q G D R V P G L T G V W L E G$ GLTGMRSEGETGVWVGKPYARKVAAGGIVSRWVTMHGFA

 GI RAETTQD T GVVWVGG GERKI CAI GI HASRYVTTHGLA
 GIAANARPDAPGVYVNG AKIASLGLRVRKGCTFHGLA
 GI KA GRKPKYTGVWVGB


 | E K | I | C |
| :--- | :--- | :--- |
| K K |  |  | AIIKVRRWITMHGFS A K C C S L G L R R R G C S L H G L A

 $G \vee P$ A HSHEQHTGVWVG $\qquad$
V
K
$\qquad$ GSKI A S G $\quad$ G GFSAHRDEQYTGVWIG $G \square A A A P R A D A P G V V$ G $\mathrm{G} P R S G$ AKVA S L GLRIRQGRCYHGL S GI KGERLEGATGVWIE PMRARKICAI GVKSSRYVTMHGFA
 NVVK G E R R E E R V G V WV R R M A E D K I A A : G I R L R K WV S F H G L S DI A A CARADAPGVYVG G L H A GRVVD X R S G V W W P G R P A R K V A A M G V R V



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EVLLAHGQRLL
EALLSHFLARLDTPCP GKLEACLNEEL
EPLSNAF
VA L R K T F D T V F G A E
SALMANFDAAF

| $L A D R S S F A Q \square F G$ |
| :---: |
| KVLK V N L K K V F G |
| E AI A A A F A KVFD Y E |
| A ALARNRD A F L A GL |
| GKLA EKLQARLA G |
| LA L R A GFAR |
| N ELTHLLLLEALS $\quad$ L A P P |
| AVLLHELKEQLNY |
| A ALYR S F L A T FE |
| P LL $\square$ A HFAHHL |
| SAL MRS F D A VFG |
| QALLD S LEHEF |
| PFVKRHFQEVFN |
| LVREF $\square$ R ELG Y |
| EDLPK $\mathrm{P}^{\text {P G E VF QLE }}$ |
| LQVARS F A EVFEVD |
| KI K N H F C DVFEAEI |
| M A L R S AFEEVVFGA |
| G R L V D T LT R V F D |
| GT FLD S FR D TLE C DL |
| NRLDE\\| L H N H |
| $E R V$ VA ALA EVFG |
| A ELAELLFQQHL |
| ARMAA KI L Q Q I N Q LP |
| EKMVDK F S EVFFG |
| VDIA K A F A EV F Q VK L |
| PVLVKSFNKQLGY H |
| A ALVRELMVQLGDE |
| TPLLRAFARHFQCEL |
| VAL R T S F Q K I F G P T |
| DHI EHHFSEVFEVQI |
| $E \square F V C E L L R T L E L D$ |
| E ELLP HL GQ HL G Y |
| T Q L HS LFSELF |
| ERLDGK F E EVVFGVRF |
| IKL RQA F E A I F G P I |
| TVLVES F R Q L L G Y R |
| $A T V A A A V C A A L D G V L P$ |
| $L A\|L\| R Q S \bar{F}$ |

UniRef90 K9W7C7
UniRef90_C3JBZ9
UniRef90-J3HU32
UniRef90-s9RXZ5 UniRef90-G4QH07
UniRef90-S6A9E2 UniRef90 B9M846 UniRef90- UPIO00465F74C UniRef90_U5QIR2 UniRef90-A0A059E4J5 UniRef90 B1ZMT6 UniRef90-UPI00035FD10D UniRef90-Z9JLJ7
UniRef90 SOFP07
UniRef90-UPI000474F78C UniRef90-G8PPB9 UniRef90-B6B2W8 UniRef90 UPIO0034BAE48 UniRef90-A0A024TSG0 UniRef90_UPI000255A8D7 UniRef90 M7P1E4 UniRef90 UPIO0037CD9E0 UniRef90-T1AZT3
UniRef90-U5EXR5
UniRef90-B4PTT1 UniRef90_D4TD45 UniRef90-A3UJR8 UniRef90_M7ZIZO UniRef90_F5S702 UniRef90-C7DCB6 UniRef90-F9ZZZZ0 UniRef90 A3PH28 UniRef90-W0RLA8 UniRef90-B3LY24 UniRef90_A0A031GP32 UniRef90_13CH82 UniRef90-S3X626 UniRef90_UPI000463FE15 UniRef90 DOMXR9
UniRef90 U2KAl8 UniRef90_UPIOO047B2209 UniRef90-UPIOOO3AOFOED UniRef90 B5XZS4 UniRef90-K2MDE2 UniRef90-K2JWN2 UniRef90 UPI0004781C68 UniRef90 UPIOOO30EC813 UniRef90-F8GDC1 UniRet90-H5SME UniRef90 YoKKU8 UniRef90-A0AO11VNIO UniRef90 J2KWB3 UniRef90 UPI0003778DAE UniRef90-UPIo0047AD1FC UniRef90-N6VMR1 UniRef90_UPI000462C119 UniRef90-Q3J7W3 UniRef90-U9W1R3 UniRef90-UPIOOO3728386 UniRe990_A7TDFO UniRef90-K2BA53
UniRef90 M7A400
UniRef90_E6Q1u9
UniRef90-18HZZ5
UniRef90-UPIOO03B78538 UniRef90 UPI000369F6BE UniRef90 B8KNB3 UniRef90_UPIO003621F71 UniRef90-A3TK46 UniRef90 W1NQ40 UniRef90 O07L16 UniRef90_UPI0003FB4A95 UniRet90_C8N797 UniRef90 W5M2V1 UniRef90-V5C556 UniRef 90 -A8PQ92 URe9 UniRef90_D8FC09 UniRef90-E5Y559
UniRefon - $5 R G 25$ UniRef90- НоАоНЗ UniRef90-E8RPG3 UniRef90-Q1N086 UniRef90 A0A0241K89 UniRef90-UPIo0036552F4 UniRef90-LOWIX3 UniRef90_-Q2GL91 UniRef90_UPI0004717F37 UniRef90_UP10003631D2E
$R$ R CLLDNQ GLVP AVA WDWQRSLFAQRVKD P P Y K F K DCHSIP YAEAYALQKELERQQRGEAP $R G L R S \square E V W K \square G V V N Y D D A L K D Q E K D A D R K L H R R$ MQSTI $\square R Q L G S Q S Y R P \| W Q K M Q E F T$ LLTRNLGLVEYLPTWQAMQDFTATRGPDT
MPA DQ DRQLGDT SAQRDKSECVLLQLGGVDYQTALTWQKQLLAGRSAER QSS LLSTAAAGAVVDWGRTPYEAEAVRARQETAFARADREGG MSLHQRRCLL HNLELKPYTDADMWQRTLLGDRINDP
 ASPEQVVI RQLGRQDYSPVWQAMHTFTDERNDQS

WVIDDDE VVPYDVAQKEMEERVAADAAGE
$M P E L D V V R P G L L D H A E G L A L Q R S D H A D V V A G R$ SCVIHRDGRVPYRQAWDWQQRGI $M Q \square R D L G K V N Y S S T L Q E M R D F T D Q R Q P E T$ $A L T T R F L G D Q D Y Q A T W R A M Q Q F T E N R T W D T$

 MSDNSPISPHRCLLVNE GLKPY LDDVLVWQRQLLQERDENS

A A R RVLEAWKLGVVKYGDALRLQERLVADRRAGR $M K \triangle V Q L G T R D Y E P V F S A M K Q F N E Q R T A D T$ $\square R Q L G L R D Y Q S V W R D M Q Q F T A E R T E A T$
MS AVEWS IL GLLS P YRETLEAMENRVAADRAGE
$R K L L V V D L G R M G Y G E A L E D Q R A A A R A R D A G S$ MSTSSRPLVVTVVRAGHHSYTA GLLKLQKHLDAKSKQAEF

TRTETALI RELGRRVDEPTFAAMRTFTDARTTDT
MDTVI I RHLGHVPYAP $\quad$ YYQTMQAFTDARTADT $G L \vee P Y P$ E A L A T M E R E V D L I A R G E MAMKTPQLQRKCVAYRLGSVEYETAWDWQKQLIQQRQSVE E P Y TYRDLGRI AYAEAWALQKELFEAQLDAT
 NK LI RQLGL QPYEP ISQAMHEFTDARDEDT
 QRLVVRHLGRCGYEPVWHAMQDYTDNRDADA ALHFERMGFVDYRSCLQDQQEVHDQIVAGE QHF FIVKKDGGSD YQA T WQAMKDFTDARTE ET
 ARAGSAPVEWREPGLLDYPRALAFMEAYAES IRS GA
 MSEVILKNLGLADYEPVWRRMQAFTDERDART
 $M R \square V N L L D R G P I D Y M E G D S V Q R Q \square H A E V A A G R$ $T L R I R N D G L Q D Y D T V W Q A M R D F T V R R D S A T$

$K T N E L I V R \square L N Q Q D Y L S C W Q A M Q A F T N N R N E E T$ ASSLRRSAEPLENRRLGVVDYRDTYDLQHRLAGERADGT $M G T A R I L D L G L R P Y R E V W E I Q H R L H E A V R E G E$
T S R R P VR T S WLLGQA D Y A P V V WQAMK T L T D S R D A G T MNSPVSPALIRRDGLSSDEPGWHAMKEFTEARSDTT $Q \| N I R R Q G M M T D Y Q Q A L D A M Q A F N A A R T D D T$

 $M E R R D V G L P P F H E G W E L Q R R V H A E V V A G A$


IR ELGGVQPYEPDWQEMQRLT QERTDQT $K L I \quad K K L Q Q A D Y Q T I A H A M R T F T D K R T P E T$ K PRRARAVWI GRRRYAPIHDLQKQLVEARAEGR MP DPLVSDLKTMDYAACLKLQRAVHGARVEG $\square$ $M N I, V D L G V M P Y$ S E A L A V QLDE CHERVRRQGE
$V R A L G R V D Y T P V W Q D M Q A F T A A R G P N T$ GLTD Y P V S LAAMESRIIAA IRAGK
 GRVPYRPTYEAMQAFTAARTADT
VRYF P TVVDYP T C WQA MR D F T D R R D D N R $G L V E Y E V A V N A M V S R V D K D V Q G E$
MP QAESEAEHPVDVVQLGGVMPYSLTMLAAMHHYTAQRHAAD $M P Y T V A W A W Q Q S L V A E R Q R A P$
MP T P K I $\square H R G L E P Y E A S F A A M R A F T D A R T G D T$


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| :---: | :---: |
|  |  |
| Re | YHGPGQRVAYVMLDLKRRRDIRAFVTALEQWI |
| UniRef90-11N | Fhgrhatl LYPII SLRD |
| UniRef90-S9R | YHGPGQRVVYVMLDLRRGRDVRRFVQM |
| UniRef90-G4QH07 | TYHGPGQQML |
| UniRef90_S6A9E2 | YHGPGQ |
| UniRef90-B9M8 | TYHGPGQLVGYPIMDLQRGRDLQRYLRFLEQV |
| UniRef90-UP1000465F74C | TYHGPGQLIDYCLVDLRSHLNVRQLVS |
| UniRef90-U5Q1R2 | TYHGPGQLVGYPILDLRQHRDLHWYLRQLEQVL |
| UniRef90-A0A059E4J5 | TYHGPGQRVAYVMLDVQRGRDVRTFVQNLETWI |
| UniRef90-B1ZMT6 | TYHGPGQVGYPVVSLA |
| UniRef90 UPIOOO35FD10D |  |
| UniRef90- SOFFO7 | TYHGPGQLVGYPVVDLKRNKSIKDYVYKI EDVFTSLLKGEY |
| UniRef90-UPIO00474F78C | TYHGPGQVAYFMINLRRNDGVRELVTHIEN |
| UniRet90-G8PPB9 | TYHGPGQRVAYVMLDLRRQQDVRAFVAALEQW |
| UniRef | YHGPGQRVDYVMLDVKRGRDVRAFVQNL |
| UniRef90-UPIO0034BAE48 | T WHGPGQLVAYPIVRLAAPLDVVAWVRDLEQVIVDVAASV |
| UniRef90 A0AO24TSGO | TYHGPGQLVVYPILNLPFKKDLHWYLRQVEEVVI QTLGHF |
| UniRef90-UP1000255A8D7 | TYHGPGQLI AYLMLDLRRRLGVRDLVDI EQS VALLADL |
| 77P1E4 | TYHGPGQLVYTLLDLKRMH |
| UniRet90_UPIooo37 | TYHGPGQLVVYPLLDMKRKLGVRPLVTLLEEAMIETLALY |
| UniRef90-T1AZT3 | TYHGPGQLVGYPIVDLARGRDVRRFVHKLEEMLVKSVAEF |
|  | VA |
| UniRef90_B4F | TFHGPGQLVAYPILHLGQF |
| UniRef90-D4TD45 | TYHCPGQLVGYPILNLRRY |
| UniRet90 A3UJR8 | YHGPGQR ${ }^{\text {a }}$, |
| UniRef90-M7ZIZ0 |  |
| UniRef90-C7DCB6 | TYHGPGQ ${ }^{\text {PV }}$ AYVLLDVGRGRDVRKFVQAI EDWI |
| UniRef90-F9ZZZO | HAPGQLVVYFLVDLRRADGPRQAV |
| UniRef90-A3P | TYHGPGQRVAYVMLDLRRGRDVRRFVTALEDWVI |
| UniRef90-W0RLA8 | , |
| UniRef90-A0A031GP32 | TFHGPGQVVIYLLMDLRRNLYARQFVHKIEQAII NVLAA |
| UniRef90-l3CH82 | TYHGLGQLVVYILMDLRRHWGVRQLVTALEQAII DYLAQH |
|  | V |
| UniRef90_UP1000463 | YHGPGQRVAYLMLDLRRRRDVRAFVAAIEETIIKTLDRM |
| UniRef90 DOMX |  |
| UniRef90-UPIOOO47 | TYHCPGQLVGYPILNLQRHTDLHWYLRQLEQVLI QULGSY |
| UniRef90-UPIO003A0F0ED | TYHGPGQRVAYAML |
| UniRef90-B5XZS4 | V |
| UniRet90_K2MDE2 | HGPGQRVAY |
| Uni | YHGPGQLVVYFLLDI RRRLGVRQLVNHIEDTI I TMMAEH |
| UniRet90-UP10004781C68 | TYHGPGQRVAYVMVDLKRGRDVRCFVNMEAVIDALSEF |
| UniRef90-F8GDC1 |  |
| UniRef90-H5SME5 | TYHGPGQLVAYALLDLKRKI GVRGLVTALEQATCKLLRQY |
| 8 |  |
| OAO1 | TYHGPGQRVAYVMLDLKRRRDVRAFVAALEEWI |
|  | YHGPGQRVAYVMLDLRRRQDVRAFVAALEEVIIRTLDSM |
| UniRef90-M1X2B9 | TY |
| UniRee90-UP10003778DAE | TYHGPGQLVAYPI 1 HVGGRQDVVAYVRGLEQAVI |
| UniRet90-N6VMR1 | TYHGPGQRIA Y $\\|$ MLDLRRKQDI RAFISALEQWI I QMLAQF |
| UniRet90_UP100046 | TWHGPGQLVCYPIVKLAEPIDVVKFVRNLEKGVRACIEDW |
| 23.JW3 | HGPGQSIVY\\|VDLRRRL |
| UniRef90 u9w | YHCPGQLVGYPILN |
| UniRet90-UP10003728386 | TYHGPGQLV |
| UniRef90-A7TDFO | TYHGPGQ V |
| UniRef90K2BA53 |  |
| UniRet90-E6Q1u9 | TYHGPGQLV |
| UniRet90-18HZZ5 | GPGQ VVYVLVDLHRGYGVRSLVER |
| UniRef90_UP10003B78538 | YHGPGQLVGYLLFD RAGLLGPRVFVEQVEDAL |
| UniRef90-UPIO00369F6BE | TYHGPGQVVVYPLLQLRYKMFVKEYVEGLEDA |
| UniRef90-UPIOD03621F71 | TYHGPGQIVVYL |
| UniRef90-A3TK46 | TWHGPGQLVGYPIVALQ |
| iRet90_W1NQ40 | TFHGPRQAILYPILSLREGLGARKYVENLEATMVRLLSSLY |
| UniRef90_Q07L16 | YHGPGQRVAYV |
| UniRef90_UP10003FB4A95 | T WH GPGQLTVY |
| UniRef90-C8N | TYHGPGQTVMY |
| UniRet90-V5C55 | TYHGPGQLIVYTLLDİRKLGIMRLVTLLEQSM |
| UniRef90-A8PQ92 | TYHGPGQLVVYPL |
| UniRef90_S4XV16 | TYHGP |
| UniRef90_D8FC09 | TYHGPGQLAYPIFGLKKGUGVLDFVEKLEAVMIRVLSDY |
| UniRef90_E5Y559 | TCHFPGQLVAYPVFRVKRTNGLHGFVRTLEEIVIRSAAAF |
| UniRef90_F5RC | TYHGPGQVVIYTLVDLKRGLGVREMVNSIEQAVIDLLATH |
| UniRef90-H0AOH3 | TYHGPGQRVAYAMLD |
| UniRef90-Q1 N 086 | TYHGPGQITAYFLLDIKRGLGPRQLVDAIEQSLVSLLKRY |
| UniRef90-A0A0241K |  |
| UniRef90_UPIOO036552 | GPGQRVVYLMLDLKKRRDVRAYVQALEAWI |
| UniRef90-LOWIX ${ }^{\text {a }}$ | TYHGPGQTVIYLMLDIRRGLGSRGLVNAIEAGII ${ }^{\text {PFLASQ }}$ |
| Un | SYHGPGQRVVYVMLDLR R N RCDIVRAYVRDLGVWIVNTLAEAF |
|  |  |
|  |  |

## UniRef90 K9W7C7

UniRef90_C3JBZ9
UniRef90-J3HU32
UniRef90-S9RXZ5 UniRef90-G4QH07
UniRef90-S6A9E2 UniRef90 UPIOO0465F74C UniRef90_U5QIR2 UniRef90-A0A059E4J5 UniRef90 B1ZMT6 UniRef90-UPIO0035FD10D UniRef90-Z9JLJ7
UniRef90-SOFP07 UniRef90_UPI000474F78C UniRef90-G8PPB9 UniRef90-B6B2W8
UniRef90 UPIOOO34BAE48 UniRef90-A0A024TSGO UniRef90_UP1000255A8D7 UniRef90-M7P1E4

140

 DK GA G R B A B A EQKLCSVGLRIRKGCSFHGLA
 KKIASLGLRLKNQCCYHGDS SVAAEARADAPGVYVDG EYKLABAGGKVSRWVTMQGFA NVDAGPRDGRVGVWVDRMREDKIAAI GVRLKKWVSFHGVS GLAASRRVGKTGIWVGG PRKVAA: GVAVKRWVAYHGFA GLQGERNPGFTGVWLEG RKVAA:GUKVSRWITMHGFA

 GLTSAARSDAPGVYVGQQRKICALGLRIRKGCSFHGLA HVRGERREDRVGVWVQRPKEDKIAA: GALRKWVTFHG1 S NVVGEMRCGRVGVWVQRPEEDKIAAI GI RLRKWVSFHGIS GVHAERVEGRSGAWVPGPPHAKVGAI GLHVAEGVTSHGIA DI QGERVEGLTGVWVPDFPKSKI AAVGTHASKWITMHGFA GVEAYPKPDAPGVYVN EQKICSLGRRRRGCSFHGLA GI QAHARKDAPGVYVDD | $R$ | $A A N A R A D A P G V Y V D G$ |
| :--- | :--- |
| $G$ |  |
| GAGHVSGRGVWVEG |  | KKIGS:GARIRNCSYHGLS

 Kical Gi HGSRYVTTHGLA GI RGAKATKDTGI WVADN GLVGERDSGLTGVWVEG NVTGERRCGRVGVWVDRTRED
 RKI GA GGVRISSGFTCHGLA GIVSANDPDRPGVYVG ERKIASLGLRIKNGSVYHGLA NVTGARRDGRVGVWVGTPHEDKVABLGGRLRKWVSFHGLS


 GLEGVRDAGRTGVWLAGRGDRIAALGLRVRHGCSYHGLS NVRGERREDRVGVWVKRPEEDKI AAGGRLRRWVSFHGLS DIQGERVDGLTGVWVEEKHGCKI CAVGTHASRWVTMHGFA R1 D STLKAGATGVWLDPVK ELPAERIPGGTGVW1 D
Gidgelr GRVGVWVDRPRE GI ESHPRADAPGVYVGD RKICSLGLRIRKGCSFHGLA NVTGERREDRVGVWVRRPDEDKIAA G A RVRRWVSFHGIA GVRAERREDARGVYVEGGGRKLCSLGLRIRRGCSFHGLA GVQATTVEGRSGAWVPADPDRKISAI GLQVSKRVTMHGFA
 G LIAQARPEAPGVYVDG NIRGERREDRVGVWVGSMAED NVRGERREDRVGVWVGTMAE G
G
G GiraEPRPDAPGVYVDG AKVAALGGRVRRGASYHGGA GLLAGRVKGRTGVWI TGQPDRKLCATGVRFAKRTTMHGLA NI KGERREDRDGVWVTRPCEDKIAAI GIRDRKWVSFHGIA HI KTDVVEGRSGVWIPNMQD EIETERRANAPGVYVQG GLMGERDQGLTGVWVDG G1 VANPRTDAPGVYV NIKATRSEGETGVWVGTPF Hi HAEAKREAPGVYVG RKI ASLGLRVRKGCYHGLA YKLAA G G KVSRWDTMHGVA GVTTTRVEGRSGVWVSGQAERK CSMGRVRRGYAYHGDA DITAERWSEHAGVWVGRN G A A GDPDARGVYV GIPAVADRKAHGVYVDGGR G|PACRKEKAPGVYVPGD GIQAAPDPAAPGVYVAGQ GVSARGDEAAPGVYVDR $G V E T V R V D G R S G V W V D$
$N V K V G A G G O T V W V G$ NVKGERREDRVGVWVKRPHE GLEAMRVEGRSGVWVPGDAE GI RAQSRADAPGVYVDG GI AASTSPDTGVWVGD GVTATANPQAPGVYVDG GIKAEAKKEAPGVYVNT YVEAGVVDGMDGVWVDRAAP GI RGERDDRNRGVWVKG GVEAARWEGRPGVWIGN GVASRRARKCSLGMCVRHWVSFHGFA NVRGERREGRVGI WVAGDDEAKISALGLRIRNGRTYHGVS NVEGHDRDGRVGVWVERYGESK, GAI GVRVTRWVSWHGLS
 GVTGHRVAGAPGIYVDFTGLGKIAALGKVSRHCTYHGVA NVQGELREGRVGVWVRRTREDK!AALGVRIRRWTTGHG|A GI QARNRDDAPGVYVDG

SGA
PDR
HER
AE
 A A G ANGCYHGLA K A SLGLRVRRGCSYHGLA AI DSYFSSENDGVWVNDMHSEKIAAFGIRLRRWVTYHGVA NLTAYARPDAPGVYPQQGEMKI ASGGLRIRRGCSFHGVA GLDGERDAGKTGVWLEG

[^0]

T R E










| $A$ | $K$ | $A$ | $F$ | $L$ | $G$ | $L$ | $R$ | $V$ | $R$ | $Q$ | $G$ | $L$ | $S$ | $Y$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $H$ | $H$ | $L$ | $S$ |  |  |  |  |  |  |  |  |  |  |  |
| $K$ | $K$ | $I$ | $A$ | $S$ | $L$ | $G$ | $L$ | $R$ | $L$ | $K$ | $N$ | $Q$ | $C$ | $C$ |
| $Y$ | $H$ | $G$ | $L$ | $S$ |  |  |  |  |  |  |  |  |  |  |



AKVA A GLRVRRGASYHGワA



| $D$ | $K$ | $I$ | $A$ | $A$ | $I$ | $G$ | $V$ | $R$ | $L$ | $K$ | $R$ | $W$ | $V$ | $S$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $R$ | $H$ | $G$ | $A$ | $A$ |  |  |  |  |  |  |  |  |  |  |
| $R$ | $K$ | $V$ | $C$ | $A$ | $L$ | $G$ | $I$ | $R$ | $V$ | $A$ | $R$ | $G$ | $V$ | $S$ |
| $M$ | $H$ | $G$ | $A$ |  |  |  |  |  |  |  |  |  |  |  |


K K I C A I G I H C G R Y $\square$ T S S H G L A A

A K I A S I G L L R I R R G C C Y H GL



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







| UniRef90_K9W7C7 | $\text { QLV\|A A Q F A A } \frac{210}{\mathrm{~V} / \mathrm{F}} \mathrm{D} \operatorname{V} \mathrm{E} \text { E }$ |
| :---: | :---: |
| UniRef90-C3JBZ9 | Q QVEEAFHRHF |
| UniRef90-J3HU32 | HALLSS F ENVF GPV |
| UniRef90-I1NG32 | EQLISS CFARI F G Y |
| UniRef90_S9RXZ5 | VALRRS F D EVF |
| UniRef90-G4QH07 | PKIVDHFCSLLG |
| UniRef90- S6A9E2 | EKLTVK L R Q |
| UniRef90_B9M846 |  |
| UniRef90_UPI000465F74C | A DLT Q R L K EKL |
| UniRef90_U5QIR2 | $P \mathrm{~V} V$ A A C F GRVFDREM |
| UniRef90-A0A059E4J5 | L A L K D A F E TVFEESRL |
| UniRef90-B1ZMT6 | SVLAREF |
| UniRef90_UPI00035FD10D | S HVA Q C F A E VF D VELL |
| UniRef90_Z9JLJ7 | SALLA ELAARQF GFVL |
| UniRef90_S0FP07 | ELVIKYFCCAFGYE |
| UniRef90 ${ }^{\text {- UPI000474F78C }}$ | T I L I Q $\quad$ \T H Q L G Y R |
| UniRef90-G8PPB9 | I I L R E Q F E I F GP T |
| UniRef90-B6B2W8 | $V A L R R N F E L K F$ |
| UniRef90_UPI00034BAE48 | P GVAR R V Q E A VD G |
| UniRef90-A0A024TSG0 | D A V A A SLAKVF H |
| UniRef90_UPI000255A8D7 | D NLVK HLVK K L G Y T |
| UniRef90-M7P1E4 | QQLSSLLVSAI N |
| UniRef90_UPI00037CD9E0 | S P L VEAIJTQA |
| UniRef90-T1AZT3 | G PVLRA WA A T F G |
| UniRef90-U5EXR5 | P K F L D S F S S L E C D L |
| UniRef90_B4PTT1 | GALLTS F A KVFECRL |
| UniRef90-D4TD45 | LRV A E C F A K V F GVKL |
| UniRef90_A3UJR8 | LALKRAFEGVFGET |
| UniRef90-M7ZIZ0 | HQLVQ S L A |
| UniRef90-F5S702 | EKL T A HLVREL |
| UniRef90-C7DCB6 | LA L R R T F D M Q F S N |
| UniRef90-F9ZZZ0 | V P V V H H L I K A $\square \mathrm{E}$ |
| UniRef90-A3PH28 | A ALLRTFPQHF |
| UniRef90-W0RLA8 | E A A SRAFAS LF |
| UniRef90-B3LY24 | R T L L K S F S Q F D C R L |
| UniRef90-A0A031GP32 | R A L A HELTVLLD |
| UniRef90-13CH82 | E QFA HCLCQALD Y |
| UniRef90-S3X626 | T D L P Hid E L L G K F A P |
| UniRef90_UPI000463FE15 | $\square \mathrm{l}$ ¢ RQA FEEVFGET |
| UniRef90_D0MXR9 | D A A I E A I S EVVF |
| UniRef90- U2KAI8 | H MLA S I L H R RLA ELLP |
| UniRef90-UPI00047B2209 | S QVA E T F A QVFGLEL |
| UniRef90_UPI0003A0F0ED | A A L R A A E DVFG |
| UniRef90 B5XZS4 |  |
| UniRef90-K2MDE2 | LA LKA AFEK T FGP T |
| UniRef90-K2JWN2 | EHVIR\FA D R L E Y |
| UniRef90-UPI0004781C68 | A ALLQAFTHRFG |
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| UniRef90-M1X2B9 | P IVA HVFA QVFNLEL |
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$R F P G L V E Y Q G W D F Q R E V A L V A A G E$ DQDREKGDQDYADVWEAMKAFTASRGPAT $P A V E V V R L G L V S Y R E A L R L Q Q V Y V D R H R S G P$ LESFVI RQLGLQPYEKVVRAMRRFTDDRKASS MII KDLGLISYKDAEALQLETLQSVIDGE SFLVKHLGVADYESTYQAMRDFTQQRDGDT KMHVQWRGVEPYQASFAAMRAFTDARTLNT $N M D \square R L L G R V E Y D P T Y E A M Q V F T H E R T P E T$ MQGKLSRSAEPFAYKDCGRIDYQEALEMQLRLWQERDDAK $M Q L S N P A L M P D V I I R D L G R T D Y Q Y T L A A M Q T F T A N R T A E T$ EQLIVRNLGLQPYEPTWQKMQAFTNERDENA
M N S T ELS LLEVSYLPLIEYGAA WELQKAAVQALDAGT LKTLGRVDYEPTAAAMRAHTEARTADT
STVI I RS LGQQDYVTCWQAMQNFTHYRNADT
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 MSALDPPPEWTVSPSLVDYPAALADMEARAAA IHAGT
 VIP YPTALAEMEAQARG\|RAGT AGSPDQPAPPVTVRWRGVETYEASFDAMRAFTDARTADT SPILVRWPGQLPYFTVLDAMREFTTQRDAET RTLVVRCLSPCDYQPVWQAMRDFTDRRGPET ASATGPAAA DWREPGFDDYEAGLADMERAAADAQGAA VPYPEAVAWMEARAEAI ARGA $S P Y R Y A D C G E M P Y D E A L D V Q R S L G D A L L K A K$
$M I V R D L G L V P Y G E A E V L Q L E R L A E V A A G A$ $M D T R V L G K V D Y G P T Y Q A M Q D Y T S Q R G P D T$ $R Q L E A R Y i P M D G Y A E A W E T Q K S I V R Q 1 Q E E R$
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$A$
$I$
$R L P A V R L L Q L G R V P Y E E V L E L Q E Y W L A A M A G E$
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 $Q T L Q V N Y Y P M M E Y G Q A W D M Q K S L V K Q D R E E ~$
$K P L D A Y D M L D E E A W N Q K A V Q R E G E$ TTMQAP IIDDRGVEPYDVSFDAMRAFTDSRDAAT PYRETWEAMRAFTEARSVDT VAYPDAVAEMEARVAADAAGT $M N N \square Y Q K D \square G L Q Q Y T K V F D D M L E F T S T R T P E T$ QLIWRGNEPYENTFAAMRAYTDARSAAT RRCELEDLHRGQVPLVDSWGWQKSUVERRKEDH MESSTTSSGAPAVAWQCGLQPYDP IESMAAHNAARATGA MGRHPRTLLVRTFGLVGYSDGLAMQESLHAARRAST KS DEVSYTPGMEYAAAWDKQKEVVRGUDDGQ


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LNTSM FPMENTDTSYTPTLDYGVAWEMQKQRVTSDDQGE
ПEYDHA $\square \mathrm{N} \square \mathrm{MQKRVLK}$ KKKD VTA GE MENISIRWWNPVDYEESQUIMEREIQRISLGN TKVFFEDFKNKKFKETWVYQTKGFNNIINDK GSVPYDRAWLWQQRLGHERMADS FCDLGLMAYAAVHGLQQELAARRHRGE MSDAAQQRLAPGCLRQLGRCGYQETWQAMAAFTAARDAAT


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 TYHCPGQLVGYPILNLRYYRDLHWYLRQLEEVILQTIADY TYHGPGQLVGYPLILLNRWKDAHLYLRMLEETIIKTLARY TYHGPGQQI GYFLI NLRRKTNGRQLVDMMQE VI ETLNHF TYHGPGQVVAYPLLDLQRGYFVKEYVYRLEEAAI QTLAHF TYHGPGQVVAYPLIDLQRAGYVKEYVFRIEEAVIRTLASL TYHGPGQLVAYPVVSLRAGGGARAYVEGLERFASEALRGL TYHGPGQRI AYVMMDLRDKCNVRLYVETLGEWIVKTLKHF TYHGPGQLVAYALFPVGR RVRDFLRLLEAAFVRVAGY TYHGPGQLVGYPLLMLREALNLHGYLRSLEEVIIRLLAAH TYHGPGQQI LYFLIDLRRKMNIRQLINIMEQTVI ETLNNF TYHGPGQRI AYAMLNLKQRKDVRAYVAGLEEWI RTLDAF TWHGPGQRVVYFLLNLKRNPDIRWFINNLEEIAI DTLKDF TYHGPGQRI GYVVLDLRRRRDVRNYVAIEGWVI AAL GEC TYHGPGQLVMYPI NLRRHMDLHWYLRTLEEVVI RVLSSF TYHGPGQLVGYPLLVLGKELDLHGFLRNLEQVIIDYLASH TYHGPGQRIVYMMLNLKRRKDLRCFVAALEEVIVARTLKML TYHGPGQLVCYPLEDTMNFLDDYKYLRFLEEVIVKLYYNY T F H G P G Q L V L Y P I I S L L R R R L

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$G V A K N R L D A P G V Y V G N$
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 NIKAGRKPKYRGVWVAD KKIAAI GIAADRWITMHGFA G| PGERRSDHHGVWVAG GTRKIAFI GVSVSRWVTCHGFA AI NASRLDGFTGVWVGN GIEAYAKPDAPGVYVND NLATDRKTGAPGIYVAHHDGA KKMAA GGRVSKWMTYHGLA SI EGVRHPGAPGIYL ASSEKIAALGLKVNGCSYHGVS Gil EGGRKPEYTGVWVGNV KKI CAAGGKFNKFLTSHGFA NIEAYAKPDAPGVYVDG RKIGSLGFKTRRGRSYGGA GVRGERREDRVGVWVRRPDEDKI AAI GVRVRRWTTFHGVS


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| :--- |
| G |
| G | GVTGHRVASAGGYKKICSLGLRKKGCTLHGLA

 A K I A A V G V K I S S GVVS S H GVVA G L
 SI Q A Y T K K K M P GVVYIN E K KI C S L G L R I K K GFT L H G LA
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TALQVSFRDTF
AVLGKQLASRL
NQYVNEFIELIE
PVMVKAFMDLLGY
DTVVRAFEAEFQAT
SEIIPYFGEEFGFEL
SEEVIPYFLEEEF
QRLIDAFTEVF
SALLAHTLICENLEY
ERLALTLERALS A
AVMRREFTLFGTTDP
QQYTAEFVTTLLNN
STLIGHCNTLFD
ESLTKEFAEFFQLSD
TALARHDAE QLDEC
ASMRAHFDTHFGATSP
ASLVECFARRFGY
DQTALSLAKELGGYEDP
EPFVESFCDEFDCR
LALAHKLTDRFN
DVLADA!RKRF
EALLDAFREVF
TAVITSFASTFN
RALVARF LAALE
DVLARHFQNIGF
A ALAGQL1 H QLIKGHAP
PRLAAAIAEL
QALKRTFSEVFG
RHLLQAFSDVFNTEL
KKVKEKFSLVFE
NSLATHFSELVEVAD
ESLLKEFS
FTLIAERAHQ $\square G G$
AALVPHFLNRF
QDFIEY
MALQETFEEVFGPT
KIIQTEFNKIF
PVLLNHFAKNFECLL
QDVIEY化的
QDFICYLQ
QALRASWEGVFG
SRFTTAFAEQFGYH

## AA LRDEWERAMG

QDLSRVFASVFGVEL
QVYQHIFVEEFQ
HVLGRQLQRRL
QVLGQQLSTRL
KTLARELS SRL
VRLVKAFARTF
VVLKKEFNKVFDWTDP
KETVPHFEQQF

VALCRAFDEVF
AALSATF[LPFLDAL
RETVPYFTRVF
TLI RKSFESVFGPTI
ELLLK
LLLKKYLIYFF
KA
VClRRHLAELFADE
TALAGHLARQLE
$A V E$
$G V A D P$

UniRef90 C9W341 UniRef90_UP10003802183 UniRef90-A0A022R8D6 UniRet90_K7SPB1 UniRef90 R4YRH3 UniRef90-C7LJX2 UniRef90-UPIO00471B180 UniRef90 K2RN65 UniRef90-S9RVB9 UniRef90-G7YAD7 UniRef90-D3FAA8 UniRef90-RNTM8
UniRef90_AOA016BOE UniRef90-W2ETB0 UniRef90-C9YF93 UniRef90- J4WP80 UniRef90_UPIo003FFA7A6 UniRef90-D4X4Z6 UniRef90-K9RXR0 UniRef90-UPIooo3722B92 UniRef90-L1PL20 UniRef90-UPIO00443318A UniRef90 A9U205
UniRef90-UPIO002374FEC UniRef90-S5R8K6
UniRef90 G1 QAR7
UniRef90-UP1000333CDD2 UniRef90-F4NTZ2 UniRef90 U6HMV2 UniRef90_UPIo00374F7EB UniRef90-G4VR13 UniRef90-KOSJC4 UniRef90- V5WN68 UniRef90-UPIOOO3F15C26 UniRef90-UPI000333A6C6 UniRef90-A3YVD6 UniRef90-L7EM12 UniRef90-AOAO24J688 UniRef90 G5ZX76 UniRef90-A9BE20 UniRef90-Q6KZK7 UniRef90-D8R3Q9 UniRef90-A0A024FZYO UniRef90-Q89AL8 UniRef90-R7YWS7 UniRef90 D2B696 UniRef90-M5WN79 UniRef90-M7NUV0 UniRef90'UPI00029AF466 UniRef90- G70966 UniRef90-UPIOOO37DOF19 UniRef90 UPIO0047216A4 UniRef90 U4KX21 UniRef90-M4V8Y9 UniRef90_UPI000373B57F UniRef90 Q7U8F2 UniRef90-TONETO UniRef90-11GBG1 UniRef90 A2BV61 UniRef90-A3AHF6 UniRef90-B7PKA0 UniRef90 B6BW22 UniRef90_B6K079 UniRef90-G5L6A5 UniRef90-UPI000455FF15 UniRef90 X6M3S0 UniRef90-Q05SE0 UniRef90-K1RE47 UniRef90-F7WZU2 UniRef90-W4JXX3 UniRef90-12FNP9 UniRef90_K9P678 UniRet90 Q01FX4 UniRef90-M3ARV2 UniRef90-B2VAB9 UniRef90- F2l1F8 UniRef90_QoV559 UniRef90-U1GSK1 UniRef90-B7FQP2 UniRef90 UPI00035C5CB6 UniRef90-E9BU32 UniRef90-W2SPHO UniRet90_UPI0002D58554 UniRef90-V5GM79 UniRef90 V7BB46
UniRef90 KOKF91 UniRef90-G1XCQ6 UniRef90-E5B2X8
UniRef90-E6ZZ41 $R R C D L Y D L H E V Y T E A W S W Q N A I V K E K K A D C D$

GLTP YP E ALD F MA IDRSRQ $\square Y E G E$ L LD Y HKIHERMLHFTKSRDET T K N Q K VF FENLLKKKK F QVTWK Y Q K K LIF Q K Q L K I I $R \square G H L H L C R P Q R I P Y Q R V A A L Q D Q A V A K Y L A A K$
 AKSAKD QLDWVVRLGVVPYRDALAFQEAVRVKRQDGE

RQRPLT LVQDELVDYEKAMERMAALVEERQDDR
 MTSE $\square E$ WRVV P
$N P C Y$ Y LDP 1 WQDMQAYTS QR GADT NPCYLYQAPLDPYSQAWTVQKQLVAARHTHP $M Q G \quad R S R Q Y P L T F E W L G L Q P Y T L M W Q R M Q L R A Q T V A D H R$

$T \prod A \square R M L G R A D Y A A T V H A M Q E Y T A T R G P D T$
 LP AVVRLVR LGRVPY SELLDALQERWLRRLQAEE $R R P A V R L \vee R L G R$

V S Y RKAMEVQS Y LLQMRDPAN
$P \vee I V R S L G R V D Y S R A L K L Q E S L V D L R S E N K$


 S GEPSRKDSTTDFPDP VTYE E GYALQKKL HS QVAA GR

 MTPALDA L LVEPPLPVPFDQAWAWQRELQQRRDPD G

 LT P Y D E A WA WQR GF LE R R GD D A
$K N \square K \square R N L G L R R \square Q D V C S S M N D F T \prod T R K \square S T$ MWLTHLSLVSYRHVSK $\square$ QDN LVAK L L A HK RQRPLSL DQDDLVDYEKAMEQMTELVGRRQRDE
 Q\| L L K P L R RAP Y R VI Y QAMQEFTVQRSSDT
 MSCSPASSTTRLHHLDLGRIDPFTKTGALQS LLVSKHLRAK MHKP E F QD WGGL D Y Q S A LLD K Q L E L V D S Q N D D H
 VDLGRID Y S A C LDD L Q R F L VG Q V R S G Q $L V S Y E R V G A L Q N R F V A N K V E$ Q C V $D V Y K L Q K K Y Q D A L I S S G K$
MSGGARRVLEA WRLGVVRYGDALGLQERLVTDRRAGR
S K F K $\square$ K Y F R $\square E D Y N V I F E D M K E E D K K P D D$ Q DK L L VR QLGLLQPYEAMVDSQAMHNNFTDMMRDENS LLP YARTLA LQE QLASRRTGGH $K R P L V K V I R G G R M E Y T E A L L K L Q Q Q Q I D K Y R D G B T$

VE YRDLGQMDYKACWEYQQARLFD T RAK GT


 LTA Y DDVWWA WQR GFV HAAL R Q S
 M N $\square E \square K \square S K K P$ MASPAR H S A D Y K A I ELEQRTLQVHRKEK


$F E K V L K L Q E K Y Q K S L I T G K$
$L P P V R \square Y D P G F V P Y D L G L A L Q E H L V K Q R S D A R$






## UniRef90 C9W341 UniRef90-UPI0003802183 UniRef90-A0A022R8D6 UniRef90_K7SPB1 UniRef90_R4YRH3 UniRef90_C7LJX2 UniRef90-UPI000471B180 UniRef90_K2RN65

 UniRef90_S9RVB9 UniRef90-G7YAD7 UniRef90_D3FAA8UniRef90_R7NTM8 UniRef90_A0A016B0E0 UniRef90-W2ETB0 UniRef90_C9YF93 UniRef90-J4WP80 UniRef90_UPIO003FFA7A6 UniRef90-D4X4Z6
UniRef90-K9RXR0
UniRef90-UPIO003722B92
UniRef90-L1PL20
UniRef90_UPI000443318A
UniRef90 A9U205
UniRef90_UPI0002374FEC
UniRef90-S5R8K6
UniRef90-G1QAR7
UniRef90_UPIOO0333CDD2
UniRef90-F4NTZ2
UniRef90 U6HMV2
UniRef90_UPIO00374F7EB
UniRef90-G4VR13
UniRef90-KOSJC4
UniRef90-V5WN68
UniRef90_UPI0003F15C26
UniRef90_UPI000333A6C6
UniRef90-A3YVD6
UniRef90_L7EM12
UniRef90_A0A024J688
UniRef90_G5ZX76
UniRef90_A9BE20
UniRef90-Q6KZK7
UniRef90-D8R3Q9
UniRef90_A0A024FZYO
UniRef90-Q89AL8
UniRef90-R7YWS7
UniRef90_D2B696
UniRef9O_M5WN79
UniRef90-M7NUV0
UniRef90_UPI00029AF466
UniRef90-G7Q966
UniRef90-UPIO0037D0F19
UniRef90_U4KX21
UniRef90-M4V8Y9
UniRef90_UPIO00373B57F
UniRef90_Q7U8F2
UniRef90-TONET0
UniRef90_I1GBG1
UniRef90_O36017
UniRef90_A2BV61
UniRef90-A3AHF6
UniRef90-B7PKA0
UniRef90_B6BW22
UniRef90_BKK079
UniRef90_G5L6A5
UniRef90_UPI000455FF15
UniRef90_X6M3S0
UniRef90-Q05SE0
UniRef90_K1RE47
UniRef90_F7WZUU2
UniRef90-W4JXX3
UniRef90-12FNP9
UniRef90-K9P678
UniRef90_Q01FX4
UniRef90-M3ARV2
UniRef90-B2VAB9
UniRef90-F211F8
UniRef90-Q0V559
UniRef90_U1GSK1
UniRef90-B7FQP2
UniRef90_UPIO0035C5CB6
UniRef90_E9BU32
UniRef90-W2SPH0
UniRef90_UPIO002D58554
UniRef90-V5GM79
UniRef90-V7BB46
UniRef90-KOKF91
UniRef90-G1XCQ6
UniRef90 E5B2X8
UniRef90-E5B2X8
UniRef90-E6ZZ41

GVV 130
130
(
GI HAQRRANAPGVYVGG
$G$ EAS RVEGLTGVWVGN GVEAFTRDGR S GVVWTDDDPE Gl D S A P K K D A P GVV YV Q
 GIKGMTTEHTGVW NVASERKAGAPGIYLSGPEKKI CALGLHMRRNLTSHGIA FELQAGPGGRGDVGVWLSPSKKVMAVGVMQSESITYHGUA GIEAHSRPEDGGVWVG EDRKLASVGVHVAHHVATHGFA GI EA GRVKGATGVWI GTPRERKI CAMGVRSSHFVTMHGLA GVVAGRVEKATGVWL E GDRARKI CADGVRSSHYVTMHGLA
 SI DSNFI EGAPGVYVE G EAFHAQGRDGUWTHDGRE KKI A SVGLRI SKGKSYHGIS GVA GACRPGAPGVYVPDPELAK I A A L G G V EI WGERWPGMTGVWVEG


| T $Q$ |
| :---: |

140
150
160 GLPVERDEGRAGVWLRGSRDRKICAMGLKVARGATMHGDA GLQASRPPPYTGVWLG
 ERKI CAI GVRCGRHITSHGLA NI NCKRKKNAPGVYI A NGPGAK IA A PPPAPPY TGVWLG ERKI CAI GVVRGRHITSHGLA
 RGDSFYDTGATGVWLNKHN KI MSI GLHRTRSMIHH GVG GI RAQRRDTPPGSELLTGVWRKIVSI GMRQSRGVTSHGFA KIK S YPDKQNDGDWVSGKDPMKI AAI G $\square$ RVK RWI A Y H GFA
 DIHSGRNPRHPGVWVGD AKIAAVGISDHEKTSMHGFA GLRTAHPPPYTGVWLGDF KI CAI GVRCGRHDTSHGLA GLRGARPPPYTGVWLG EDKI CA I GVVRGRHI TSHGLA RKVAAI GVGARRWI SQHGLA AKI A A I GVVALRRWI TKHGFS GURGEQLEGLTGGVWLEG YGINARTTENTGVWADDDH GVTGERRDGDPGIVWVRGB

 GI DAERVPFEAGCWDE RQRQIGAIGLRLTGGVTTHGLA GLDAAKCDGLTGAWCDGH KVAAVGVRARRWVSYHGVA

 GUA PAERRDTPPGSELTTETGRKVVSVGMRQSRGVTSHGFA CI KA S R L E G LT GVWHGT Q
 TI DAETRQDAPGVYVNG AKI A SVGLRI RRGCCYHGIA GVAAECRQNPLGLWVG VRKIASLGIHISRGVATHGLA
 GVKAFTTEDPGVWVTT GVNAQSETDETGVWIGRQ GI ESFRAPGRDGI WTHDRQEAKI ASLGUAVKKWICFHGAA
 GYPAAVGDEPGI WI QVEGEKKVASI GMAIDHGISYHGIA GLNA ITNEHVGVWVGG AKVCAIGDQVSRSVSFHGLA GI EKAHTTKNTGVWVTEND KI AAI GII HLRRNITSHGLA NIDSSTKDGFTGVWTG ERKI ASI GI GCKRWVTDHGFS GVEGACCPGAPGVYL


 HIKCFHDEEFTGVWVSRHRSDKI SAI GVGISRWKTYHGLS

 HGlAHIPSKHTGVFLNAT GVETVEPPEHTGVWADEYH TKVGSIGVQVRHRLTTHGFA KI A S I GI QVRHRI S SHGFA $G L E G E R D E G L T G V W L E G \quad R K L A A I G V G A R R W I S Q H G L A$ GCDAHRIDGLTGAWCDGH KLAAVGVRARRWITYHGVA
 K $\square$ YHDFKNPGFYI EN N $\square$ K A HADSKN $\square G \square W I D D N K E Y K I A A B G D K V K K W D A Y H G F A$ GIKAMTTDNTGVW TSEDDKI AAI GVHMR
$G V P A V E T T E D P G V W A K G G Q H K I C A I G V Q V R R G D T S H G \square G$ GID GVRDEMNTGVWVD HRKVCAVGLSSSRWITTHGFA LPSNFSVKDAPGVYVDDMEDGKI ASLGFKIKHGFSYHGDA

$N \prod D S S R K K G F T G V W C G N$
 $G \vee K A C P Q S G E T G V W V G$ GI K SEKTA NTGVWI D GIKKGTTKEA GVWVKNEDTKISSIGGQVRRSITFHGVS




LNVNMNLIPFQY I HPCGEKNTKMTQT
FNVTSEPIWFDEIVACGLADVKAGCI ERAARKAVNVEDVV VNVERAMAGFRHII ACGUVGRNMTCLQDRLDREEGVESVA
L NVDCSLEGFAAVVPCGLSGRPVGRLQVDWRPCLTPEQVA
L NVCPDLSHFAVVVPCG:DRRPVGSVAQIL
LNVDTDMGWFERIVGCGLEGKRTTSLELQ GVNVAVEEVG
VNHSVDLDKFNLI KPCNLDGYVATSLI NE GII EI ELLDELV

$L \mathrm{~N} I \mathrm{C} P \mathrm{D}$ L T Y F D T I L P C G I D G R G V T S I A Q I L




 L NVDTDLE WFKKGVACGLDGGEMWSMKKEW

E T V A A A F E A R
D LL DTE F CEVF QVEL
E AL AVTWPAHFG
A QLRHH $\square$ T Q C LQQ Y T
$T A L L A T W P Q F F A A$
$R$ VFVSVFTERLG
R DLANAL
$\begin{array}{lllllllll}P & L & L & E & K & C & L & I & N \\ S & L \\ D & R & V & A & R & F & A & E & A \\ F & G\end{array}$

| $D$ | $R$ | $V$ | $A$ | $R$ | $F$ | $A$ | $E$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $E$ | $F$ |  |  |  |  |  |  |  |
| $E$ | $R$ | $L$ | $K$ | $Q$ | $A$ | $L$ | $C$ | $T$ |
| $L$ | $L$ | $L$ |  |  |  |  |  |  |

E R L G R E L L L A DL
RVI A D A FEA

| D | V | L | G | H | K | L | $A$ | $T$ | $Y$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| K | L |  |  |  |  |  |  |  |  |
| I | S | I | D | L | L | R | K | I | F |


ALA HNLA A WH
DTWQTCFCSQL
H L L V P H L I Q
$D P G L E A F E E A F Q C T L$
$E Q L I Q S$ LAK QF
$Q L L G R Q L G T W L$
HLLFIKNF
PPF L E A F K E TYKCTL
PLFLEAFKETHKCTL
PKLSERL
$P I V A E A F E A R$


| $P$ | $L$ | $F$ | $L$ | $E$ | $A$ | $F$ | $M$ | $E$ | $T$ | $Y$ | $K$ | $C$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

NA VSTDEDTF
LMLMMKI REIF
AAFVEEFGKSLG
KS LTKEFSEVFQVRT
$S C W I K N D A N Q L G C T I$
ERMRAIVAAGLD
DAVEAALTA
PLLLAAVRRQFNLEL
GDWATELVR
NKLKKNIEDL
A A A
P LL R D A $\square$ A ARFH
KTITENFS LRFG
$P \vee L I K H L T N Q F N \square S L$

DQLVQSLARTF
Q Y L

PDVEVFGRTFD
DQLVAHFERVFQ
$P L V R E A L A H R F$

PDVVNAFGRLFE
RDYREHFAKVFGRRM
$P L L L A A F A R R F G V A L$
A GFVRMFAKRMGGV
S R TN S ILKNF
GTFAKEDADRLEGI
PAFVKTLAERLGGL
HEFIEQ


DIVKNIIKEEFN
RSYKDHFASVFGRR
EMLISCFARIF
$R Q L \vee R Q \square A S K L G V E$
UniRef90-V7BB46
UniRef90-K0KF91
UniRef90_G1XCQ6
UniRef90-E5B2X8
UniRef90_E6ZZ41

MASS $\square P P \square F Y H Y F S P \square P Y K R A F A L Q E Q \square H A D Q L E Q R$ $M G S S R P V V E V V R L G L V S Y Q E A L Q L Q Q V Y V K R H L S G P$

STDTMTVRLDDNADYQTVHESMDNHTLKRDENK
 MAYDDAMRRMAGWVAERRSGA $\square G R R G Y R E V L A D Q E T L Y K A K D E R Q$ VPYPEAVAAMEARVAA IAAGD
TMKCFYVGKRTYQSVLAVQER\|FNSKlERQ

 $\square$ Q S K $\square E R K$ L I QLLDEE Y K GTV M N QT TPRH T S $\square K V Y M L G C V D F D S L L A D Q E R A L Q E D R Q Q D$ $\square N L S T S N L T V D L G V V D N L A L E L Q H N L R N L R E R E V$
 PSELQPTNRRVKLDDLSLVPYDTGWRMQKDLLQEKILFE


$R A L H H D R \square P V V D Y A E A S K L Q S \square L F H D H L S K P$
MDAKПKRQQKQLAAAGHEMSDYEKA VVGKワLDMK LH S KII K K RQLK KL QEE H P G T LD E K E $\quad$ Q EVVI D R I L D VR H S QI D A S PP Q WVVAPATVVPYPEAVDFMERRVAAILABGE

 TRPRP I I WTYLDLVRYQDGYEFQNSLVRHK\|DHP

$$
\square E S K V R R \square E K Q N \quad Q T S S T V Q Q G Q L D K M Q Q V Q
$$ GlTS FTRVSNL QQTLTTRLLLAHK


 \PYTKALVLQEHDHAHQLHHH $M R L A H L H D P G L V S F T H A S R L Q Q L L V S R Q L A H K$ $\xrightarrow{\square} \mathrm{L} V R N L G R L S Y A R C L D V Q K T L G E R A H E G$ LP Y T R T LALLQE QLHQRRAS GT

 MRLAHLHDPNI IPPRRQASLLQQILVSRLLTHK $R \square M R L A H L H I P N L I P F A H A S H L Q Q I L V S R L L A B Y$
 EYEDNLLKK ILDMK APPRA LAAYLLGVIDFDEDSAGQRRGRYDV SGD MPVADWGRREYTASLEEMRRLRRERRAGR

```
S \squareR S
```

MRLAHLHLDPHTTPFSRVSHLQQTLTTRLLTHK
 RRLT LEHV/LGLAPYEQAEDAQEQHRARFLQWK
RRLT ILEHVHLGLAPYEQAEDAQEQHRARFLQWK D YQLLAHDFQEEMVERVYENK SDSRSPGR LLEHVHLTLIPY LGAEDLQEQHRGEHGEAP GLTSYEAAEDAQEQHRARRTADD $M L I\|R Y G G L L N F E T S W V H Q K T F I Q Q\| R K R Q K$ $I V P Y Q R Y$ LD FQENSRKNRRES
IVP LVDSWGWQKS IVERRKEDH

GFPSYAAAS A LQ A T
$M A P \square R \square R H \square H L V P Y S L A S R V Q E H L R R Q H \square D Q P$
D YMLAAHDFQEVI LDRVYADK P Y ALAS RLQD HLLRRSLLDLK

REAKTLRVLDTGLRRAAENMA LDRALLESHQAGT

UniRef90_T1B176 UniRef90-S7S0X3 UniRef90-H3BY03 UniRef90-X1DKF8 UniRef90_D5VCL4 UniRef90-C1E4R6 UniRef90-X0QVL3 UniRef90 R4LSY7 UniRef90-S9WZU5 UniRef90-W1JGG8 UniRef90-S9VM11 UniRef90-UPI0002B4613F UniRef90_UPI00037F07C2 UniRef90- J5RJC6 UniRef90-V5F8H6 UniRef90_H2YHG1 UniRef90-A6BZZ7 UniRef90 T1ATC2 UniRef90-T1B907 UniRef90-14C3B6 UniRef90_UPI00046399FE UniRef90 K8E8V5 UniRef90-E6R9U4 UniRef90_I4BAX1 UniRef90 M4V8J0 UniRef90-C5MFD8 UniRef90-A0A017FSE6 UniRef90_S8A6X UniRef90 V9LD30 UniRef90-A5DMG5 UniRef90_G8ZXJ8 UniRef90_V4NL60 UniRef90-C5DT09 UniRef90_A7TMH9 UniRef90-A0A015QGC1 UniRef90 Q1QBT8 UniRef90-E3KLI9 UniRef90-H9K4Z5 UniRef90-H8X0F6 UniRef90_Q0CC32 UniRef90-J4H2C7 UniRef90_UPI00038EBC94 UniRef90 A5GUZ1 UniRef90_B8MMU8 UniRef90-M4X4V6 UniRef90_R7SQF4 UniRet90_C5PIL9 UniRef90-UPI0002893946 UniRef90-B8P8A3 UniRef90-G3AX67 UniRef90-_J9Z2C2 UniRef90 G8JT84 UniRef90 F2SHC1 UniRef90-A6QXV5 UniRef90_O13476 UniRet90 W1BDQ0 UniRef90_Q6BHT9 UniRef90_UPIO0016C50CB UniRef90_G8YKK6 UniRef90_T1B6Q7 UniRef90-I2H7L8 UniRef90-B6HFE9 UniRef90_G7DZ71 UniRef90_G2YYS5 UniRef90-G4U2P6 UniRef90-E9EJ98 UniRef90-TOSUD8 UniRef90-M1W751 UniRef90-O19898 UniRef90 C5GPI8 UniRef90 BOSBW8 UniRef90-W5DGJ1 UniRef90-N1VP81 UniRef90-A5DVZ5 UniRef90_A0A010S243 UniRef90-G2WX02 UniRef90-M7SSW3 UniRef90-UPI0003D70E96 UniRef90_D7KQW2 UniRef90-G2Q5H1 UniRef90 FOXQN4 UniRef90-TORAC6 UniRef90-F7VQD7 UniRef90_G4NA30 UniRef90-B8GUG6

DTVI IMVV|EHPDVVTEGRHT\LEQH S DPEAVKVERGGS\|I RDILLLLQHTPVYTFGRRQTQAE $\square N V D D A E F I L T Q R G G Q L$ A HALLVCQHPPVYTTGDRHKPYPAAALDREVHQTNRGGDI ADELWWVEHQNVYTLGQASKPEHILRTDTPIIQTDRGGQV


 $P D V A L L V E H A S V Y T L G R R D T S A G L P Q D G V E V V R T K R G G G I$ PHTLLSPTYTLGKRRTDHNLLIIDGTELHYTERGGDII
 KPTIITFSPNPVYTTGRRDLPQDGSAPDAEYHPTLRGGQT TDTLFVCEHPPI DTVGRADS GDVILFLEHPPIYTVGRH PDNNNFSG\|NVIATERGGDV


PHTVLTFEFENDYTGGKKLKQDPDDPEKCSYHQLERGGDD LNMVLTFEFQPTYTGGKRIKKTDTREQDSRYEQVERGGQV PEMVWLVEHPPDYTAGVSARADD\APERFPVFATGRGGQY $P N D V L T F E F D P T Y T G G K R \emptyset K K T M T P E Q R P K F V Q V E R G G Q Q$
$P N V I L T F E F D P V Y T G G K R T K K K \emptyset T Q A P K P K F V Q A E R G G Q V$
$V$

[^1]A PRLLSFEATPTFTLGRRQEDLQQPLD $\square G L G H R T S R G G L T$




 $M L$ F LEHSPCLT GG DGAKAENLLVSKERLETMGRGGDF

 | LI |
| ---: | :--- | $\square E T D R G G L T$



P P T L I S F T P S P $\square$ F T $L G R R Q T A P L T P S E R P R L V H S P R G G L T$ P E V I E T D R G G L M H N R H T HEAYTFQPAVQSSPRGGLT


$P H T L R F L R F T P S A L L G F H Q D V E Q E L R H G D D I Q R R I T G G G G A$

## UniRef90 T1B176

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UniRef90-D3AXY6 UniRef90_UPIOOO2893946 UniRef90-B8P8A3 UniRef90_G3AX67 UniRef90-J9Z2C2 UniRef90_G8JT84 UniRef90_F2SHC1 UniRef90-A6QXV5
UniRef90 O13476 UniRef90-W1BDQ0 UniRef90-Q6BHT9 UniRef90_UPI00016C50CB UniRef90-G8YKK6 UniRef90_T1B6Q7 UniRef90-12H7L8 UniRef90-B6HFE9 UniRef90_G7DZ71 UniRef90_G2YYS5
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UniRef90 F7VQD7 UniRef90-G4NA30 UniRef90-B8GUG6

90
100
110
120
TYHGPGQLVQYY\| I N|L|KRGTNVRDLI|TK\|HDCT\|TLLLSEF TYHGPGQVGYPLI DLGRWLGARDYVCKI QKT LERQLKEG
 TWHGDGQLVVYWLFDLHRNFGVRDLVSHAEQAII DIVAHY TYHGPGQLVIYPI $\square$ NLQHRPDLHWYMRSDEDVALATMESLD TWHGHGQLVIYWLFDLNSGWSVRNLVSHAEQAIEDVINDC TYHGPGQLI GYLVLDLHERRGPDIVRQLENSLVAALGSL TWHGPGQLTVYPIVHVQHLWP VVWYSAVLERTMMS IATAH TYHGPGQRVVYVMLDLRRRPDVRAYVASLEELILRTLAAF TYLGPGQVTMYPI AN QRLWKI EWFSAVLEQSMMQVAAAH TFHGPGQAVLYPLLDLTDFHKLKCYDSTLEKT $\square A S V L K N S$ AFDGPNQSILYPII SLRDVFGDRKYVEKLERQTMACL TWHGKGQLVI YWLI DLNNGWSVRDLVSHAEQS DEDVLNDY TFHGPGQIVIYYILDLKHSFPAKCLVSClEQATIKTLNNT TYHGPGQLVGYTVLDLRRMITPRCHI RLLENSVIDVLAGY


 TVHDPGQLVLYP FKLDERKDLHEYMRNLEEV ALKVAKSF
 TLHNEGQLVGYFAFPLTVEGGLERFVRVLESTLAEVLLGF TVHSEGQLVIYPVLNLREGQGVRDYVMLLLQTTQELLRRC
 TFHGPGQLVTYPI IDLLKSHLSPKCYI RQLETAII KTLSDY TWHGRGQMVAYTLDDLKQFLSVKCYVDALLRATQDLLKKNY TFHGPGQLVAYILDLKTFKDFKCFVSSIESATINALANT TYHGPGQRVVYVMLDLRRHKDVRRFVQALEQWDI DTLWQF TYHGPGQMVAYVIMDLKDNFPARCFVSGLEDSVISTLKNL TFHGPGQMVAY I LDDLKSFDRFRNHVAAI EKATVNTLLNT MHLLEEAVI RVCAFY
T WH GHGQLVMYWLFDLDS $\square$ WSVRNMVSHAEQAI EDVVNDC TFHGPGQLVAYPI LNLGMNLNTRMYVDFLMNLLRSULVHP TYHAPGQQIMY LLDXKRKIT TRQVVSYLENCVIDTLDYY TWHGKGQLVAYVVVDLKFKLSAKCFVNRLLQSVVNVLGNF TYHGPGQMVAYTILDLRRGLTPRCHI RLLENSVVDVLRGF TYHGPGQLVGYPLLDDARWLGMRPYICNMMRTLEAHLLER THHAPGQLVAYPVVDLQRHPDLHWYLRQLEGMVLDVLEQQ TYHGPGQLVAYTILDLRRGLSPRCHISLLERSVI DLLDRY
 TYHGPGQVVGYPLI DLGRPMGIRDY CRLQKTLEAHLLEA
 TWHGHGQLVVYWLFDDDSDWSVRNDVSHAEQAIEDMVNDC TWHGEGHLVAY LILDDKKFKDVRCFVDSLLKSLQDVLNKN TFHGPGQVI DYPILNDRRKLNI DEYINKIEEDIUKVFKNN TFHGPGQLVAYLILDLKHNFPARCLVSTLESAIIKTLRDV TYHGPGQLVIYTILDLRARTGPRCHI RLLENSVLDVLKGF TYHGPGQLVI YTL LDLQRRLGPRQHI QLLERSVLDVLASY TFHGPGQUVAYVLDLKQNEPAKCLVSTIDNAAMNALKEP TWHGQGQLVAYVILDLKQFLSVKCFVDSLLKAIRETLKKN VLHQVGQVVCFPVFPLDANLSPARYLSELQADCLDCARDY TWHGQGQLVAY I LDLKSFLTVKCFVDSLQKSVQNMLQKN TYHGPGQLVGYALVDLPRGRDVRRFVHGLEELVVRALAPW


 TYHGPGQ V $\square$ WP $\square$ D $\square$ Y K YGV RKY WK

 T Y H G P G Q L V L WP V L D L Y P K Y S V $\operatorname{Si}$

 $T$ Y H GP G QL V LYYP I L N L R Q K K D L N WY QR S L E TVV NRA L Q S F






ILLFFESNPDTGTLVRSL
T Y H G P G Q I V L W P V L D L R R
 TYHGPGQAVLWPIFDLKRHFTVRCYSRLLEDTTADVLRRR

 $T Y$ H GPG Q V V I WP V L D L Q K S M G V R Q Y A DLL L Q D V T S D H L Q G K UniRef90_G0RYY8

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UniRef90_M4V8J0 UniRef90-C5MFD8 UniRef90 S8A6X1 UniRef90_V9LD30 UniRef90-A5DMG5 UniRef90-G8ZXJ8 UniRef90-V4NL60 UniRef90-C5DT09 UniRef90_A7TMH9 UniRef90-A0A015QGC1 UniRef90 Q1QBT8 UniRef90-E3KLI9 UniRef90-H9K4Z5 UniRef90-H8X0F6 UniRef90_Q0CC32 UniRef90-J4H2C7 UniRef90_UPI00038EBC94 UniRef90 A5GUZ1 UniRef90-B8MMU8 UniRef90-M4X4V6 UniRef90_R7SQF4 UniRef90_C5PIL9
UniRef90_D3AXY6 UniRef90-UPI0002893946 UniRef90_B8P8A3 UniRef90-G3AX67 UniRef90-J9Z2C2 UniRef90_G8JT84 UniRef90_F2SHC1 UniRef90_A6QXV5 UniRef90-O13476
UniRef90 W1BDQ0 UniRef90_Q6BHT9 UniRef90_UPI00016C50CB UniRef90_G8YKK6 UniRef90_T1B6Q7 UniRef90-I2H7L8 UniRef90-B6HFE9 UniRef90-G7DZ71 UniRef90-G2YYS5 UniRef90-G4U2P6 UniRef90 E9EJ98 UniRef90-TOSUD8 UniRef90-M1 W751 UniRef90_A0A024S6R1 UniRef90_O19898 UniRef90_C5GPI8 UniRef90-B0SBW8 UniRef90-W5DGJ1 UniRef90-N1VP81 UniRef90_A0A010S243 UniRef90-G2WX02 UniRef90_M7SSW3 UniRef90_UPI0003D70E96 UniRef90-D7KQW2 UniRef90-G2Q5H1 UniRef90-FOXQN4 UniRef90-TORAC6 UniRef90-F7VQD7 UniRef90-G4NA30 UniRef90_B8GUG66
UniRef90_GORYY88




140
150
160 N $\quad$ SKI A S 1 G L K K 1 KK KT T F H GFS GVRPGRVDGLTGAWANGDLGKIASLGFKIKQGFSYHG』A TISAHARRDAPGVYLDK KMMLGEMASLGGFKIRKGVSYHGMA GFAAERRPSLVGVWTPD GRKIVSIGMRIRGGVTSHGFA GIP SHPYK TGVWAE GVPHRKLGSI GLQLGSWVSMHGTG NVRGERREDRVGVWVGADHEDKI AA I GVVRLKRWVSF QIPTHPYK TGVWADGTNARKLGSI GLQLGSWVSMHGAA Y GLD A LTNENTGVWVQGQPQKKISSIGVNVRRSITSHGVS GVKAA GEKGETGVWVGD R RKI GAIGVRISNGVTSHGLA QFYAKARQDAPGVYI YNQDHGKIASLGFKIKHGFSYHGIA KMGNGSCEPETGVWVEN GKKKI AS I GIIHVRRSITSHGVA GLKGFTTEDPGVWVSDGNGKKITAVGVHLRRNISSYGVG KLHGERSP HT GVWIAND K K CAMGUNTQRGITSHGLA GIEAERHPDSADIF GRCGQFAFLGAADKSWI SYYGLY GYSCHLGHEA GI WVSDSPDRKVASIGMAIVKGVSFHGIS

 GVEGHREDGFTGAWANG SKFAQVGVRARRWVTYHGLA

 $N D E A Y A K P D A P G V Y V N D$
 GLLES FTNNENPGQVWMMSP H D DK K KPHQAKKTAETGVWITD SEKIASLGVVVVRSVTSHGVA NVEGHIRDGRVGVWVERKDKGYAVS KV DD A KLT E ETGVW TVDNKKDASGGDHVRRSVTSHGVS KLKTSKI NCNTGVWSSD.DKKLASIGVHVRRSITSHGVC GI EAGRLEKATGVWLEGPRARKI CAI GVVSSHYVTMHGLA HI SARARRDAPGVYLNT DMDGKI ASLGFKDKHGFSYHGIA

 TQKGKI AFCGVQIKNGVSQHGLS



 GLRGARPPPYTGVW QGECKICAI GVRCGRHITSHGLA GLSAERREGLTGVWLEG KKVAAI GVGCRRWVTQHGLA RVRGFTTSDPGVWVDDGEARKITAVGVHLRRHISSYGI G KIKAYTKTHHGVYILLQNKEYKIASVGLCINKGCSLHGVS HGIQHIPSEHTGVFLGBPHTKVASIGVQVRHRLTTHGFA

 HGIEH IPSDHTGVFLDAH TKVASI GVQVRHRLTTHGFA Y DLD S YL L K NPGVWME PDNDKI ASVGTNIQRGITSYGIG
 P NLQAMVNENTGVWVNNTQ KI ASI GIINVRRSITSHGIS GVKGGTTTEDPGVWVKPDAGRKVAAVGVHLRRFVSSYGVG

 GIAGTDDAERPGVRANG
YDLKTYTNENPGVWASEKDDK RLI A HI GVVA VR DWVSSYGMV DLKTYTNENPGVWASEKDDK SVGCNVSRAITSHGIS LPATRVAGRRGVWIDGQR KI A SVGI AVEEWVTFH

 GLEVLGRTENPGVWLN EGEKLASLGVHLRRNVSSYGVG HNVPSFESTHTGVFVSETE KVASI GMQVRHGLTSHGFA GVQGHRMAKYPGVWVG ERKVCSIGIHVSRYITMHGFA GIQTYTARDEPGVWVTTSQERKI A ALGVHHRRYVTALGDA YQNLNVRTDELGLWAG WQMK I A A


 $G L T L V E N P K A P G L Y T E G T N K K L I A A V G V Y A K S Y F T S F G F A$ SI KASTDEGLTGVWVG
GLRVEENPKAPGLYLAEEPKRKLDSEGDYAKSYFTSFGFA GIVSYLLDENPGI WVYSHNWRKI ASVGVKVRRGVTEYGDA RI QTYLSEDDPGVWAEGGQERKI AAMGVHLRRHISGLGTA
 SIKASRVEGLTGVWVGDQ KLAAI GI RVSQWI AYHGLA GVKARAGNEYTGVWVGD RKIAAI GVRISSGITCHGLA FGIRAFTTDDPGVWVDTGALAKIAALGVHLRRHVTALGTA S IQTYLSEEDPGVWAPGGQERKIAAMGVHLRRHISGLGTA YGVDACTTADPGLWVGEPDGRKIAALGVHLRRNVSALGVA HLENLDADNE DGL WCG SRKI ASMGLSTRRFVTYHGLA GLKAFTTED PGVWVETGPLAKIAADGVHLRRHVSGLGTA KLETVKTCD PGVWVAQQKPRKIAAMGVHLRRHVTGLGVA GVDARYRP RNDIEVDGR K SGTGGAFDGDSIMYQGTL

## UniRef90 T1BI76

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UniRef90 ${ }^{\text {N1 VP8 }}$ UniRef90-A5DVZ5 UniRef90_A0A010S243 UniRef90_G2WX02 UniRef90_M7SSW3 UniRef90_UPI0003D70E96 UniRef90_D7KQW2 UniRef90-G2Q5H1 UniRef90-F0XQN4 UniRef90-T0RAC6 UniRef90_F7VQD7 UniRef90_G4NA30 UniRef90_B8GUG6
 MNIT KELAYLDKIVACGLVDVKPGCIEVAASKPVSVEGEI




L N I S P DLK F L N T SPMCG LP DVSATSDKELH DTNTTDKDAG

$\square N V E P D L A Y L N N F R K C G L P N C E A T S D N D Q L G S N D N V Q D M A$
L NVTDEPMWFK QIVACGLE GKEATSLQGVGVPGLEVGDVA
I NI DRVRSRFAEIVACGLADVRATSVES QTGTALSVRDIV L N M DM ERGWWD RI NACGLD GKK IVS IDE QM
I N I D E P L R WF D QVVA C GLLA D
LNVSNCLRYFEYI RPCGLGSEVMASVSELSGHPVEVETII


 I NIDVVEVNPWARFVPCGLEGKRATSVAAELGRVFDLLKGLA I N F S C S K R N Y E LLI L A C GI K D

$L N A V N D L K T F S L I N P C G A K T E D M T S L L R \quad L G K E K D F P Q R R$
 L NVVDVT L N P W W R F V P C G L E G K T A T S V R A E L G R RLLSLLE WYA $L$ N I D T P L



L NVVDASNPWARFVPCGLEGKTATSVRAEVGEE

I N V D M P V V P WA R F V A C GLLE G K T V T S I R G ELLD K K L T P P P A VA
L N L T T D N N P WLR F V P C GLE G K A V T S V F L E
$L$

| UniRef90_T1BI76 | $K R \square S \longdiv { I }$ |
| :---: | :---: |
| UniRef90-S7S0X3 | PGLVRRFGE |
| UniRef90_H3BY03 |  |
| UniRef90-X1DKF8 | E QLLD S FGN $\square \mathrm{F}$ |
| UniRef90_D5VCL4 | T QL I K N I A R R |
| UniRef90-C1E4R6 | D D G SLDAAFEG |
| UniRef90-X0QVL3 | QKLIDNI AKRHAGLI |
| UniRef90_R4LSY7 | D A I A L S L K |
| UniRef90-S9WZU5 | A L F Y REMAA H L |
| UniRef90-W1JGG8 |  |
| UniRef90-S9VM11 | QLLY A NFTENLH |
| UniRef90_W6MX77 | K QVVGEFAGRL |
| UniRef90_UPI0002B4613F | E QL I S C F $\square \mathrm{K}$ LF G Y |
| UniRef90_UPI00037F07C2 |  |
| UniRef90-J5RJC6 | VS F VKE LS K L L G |
| UniRef90-V5F8H6 | R R F V A A F V D R H N |
| UniRef90_H2YHG1 |  |
| UniRef90_A6BZZ7 | ES V VRNLVQQF G Y Q |
| UniRef90_-T1ATC2 | NAI RGNL G K V M N |
| UniRef90-T1B907 | P V F VRA F R E |
| UniRef90-14C3B6 | NQISEKFAS IF Q R E |
| UniRef90_UPI00046399FE | K DLKK I I K EVF D |
| UniRef90_K8E8V5 | DRALD AFEKVFDVS L |
| UniRef90-E6R9U4 | RS IMMPRFGEMFGREF |
| UniRef90-14BAX1 | EVFFFEKFSSVFSLKL |
| UniRef90_M4V8J0 | VEWVK I FKNQLN |
| UniRef90-C5MFD8 | DL Y V K E l A K A L E |
| UniRef90_A0A017FSE6 | Q DF I E Y I K A |
| UniRef90_S8A6X1 | A $\square \mathrm{MV}$ |
| UniRef90_V9LD30 | P PLLQAFAERFNCTL |
| UniRef90_A5DMG5 | NE Y A Q Q La K ALLN |
| UniRef90_G8ZXJ8 |  |
| UniRef90_V4NL60 |  |
| UniRef90_C5DT09 | VK F VNE L A K T L G |
| UniRef90_A7TMH9 | V S Y V N EFA K L L G |
| UniRef90_A0A015QGC1 | QRLEEELRKLF Q L P |
| UniRef90_Q1QBT8 | QQLID NIA QRHAGDIP |
| UniRef90-E3KLI9 | $R P \mathrm{~T} V \mathrm{D}$ L G G L |
| UniRef90-H9K4Z5 | Q L L T D NF DK QL |
| UniRef90_H8X0F6 | DLFAE EVAEALKME |
| UniRef90-Q0CC32 | ERFVRAFVQRVNADF |
| UniRef90-J4H2C7 | E GLVATF GQVYGREM |
| UniRef90_UPI00038EBC94 | H AVLK A L N A T L M N L |
| UniRef90_A5GUZ1 | QPLAASCCKRLG |
| UniRef90_B8MMU8 | D GFVDS F VR RLEEGDFP |
| UniRef90-M4X4V6 | Q VWI K G F |
| UniRef90-R7SQF4 | P GLI T R F GR\M G |
| UniRef90-C5PIL9 | ESFVQ A F VR R V ${ }^{\text {S }}$ |
| UniRef90_D3AXY6 | P LLLDAFEKEFGN |
| UniRef90_UPI0002893946 | A Q $\$ A Q H $\square H \mathrm{~N}$ S L S Y E |
| UniRef90_B8P8A3 |  |
| UniRef90_G3AX67 | Y M Y S K E $\square$ A N NLLN |
| UniRef90-J9Z2C2 | NDLKMEF $\square$ S Q F H |
| UniRef90-G8JT84 | $\square \mathrm{T}$ FVVD M A S L L G |
| UniRef90-F2SHC1 | TRFVQAFVDRVN |
| UniRef90-A6QXV5 | ERFVNAFVSQVN |
| UniRef90-O13476 | VA F V N Q L A K L G |
| UniRef90-W1BDQ0 |  |
| UniRef90-Q6BHT9 | F QYAKELLAKLLN |
| UniRef90_UPIO0016C50CB | QKLLELIAARFG |
| UniRef90-G8YKK6 | $S Q Y V K E V A Q A L G$ |
| UniRef90-T1B6Q7 |  |
| UniRef90-12H7L8 | $\square \mathrm{AFFTK} \mathrm{T}$ LA K H L G |
| UniRef90_B6HFE9 | A A FVEKFVSRVNADF |
| UniRef90_G7DZ71 | P Q A V R |
| UniRef90-G2YYS5 |  |
| UniRef90_G4U2P6 |  |
| UniRef90-X1R0P3 | G NLLR Y F S ETFG |
| UniRef90-E9EJ98 | E D A GRWATLFD |
| UniRef90-T0SUD8 | N S L T K K L S Dilf |
| UniRef90-M1W751 | G R WA A L FEE |
| UniRef90-D5SUE3 | E A F VR HLA A A LD Y |
| UniRef90_A0A024S6R1 | R Q WA A IF E E GL |
| UniRef90 O19898 |  |
| UniRef90-C5GPI8 | ERFADAFVRRDNEV |
| UniRef90-B0SBW8 | K EFVLQFSRHFLSSLLP |
| UniRef90 W5DGJ1 |  |
| UniRef90-N1VP81 | LEFVMS F T Q T F LD L L P |
| UniRef90-A5DVZ5 | DL Y A K QVA H A L N |
| UniRef90_A0A010S243 | R R WAEEFAKRLG |
| UniRef90_G2WX02 |  |
| UniRef90_M7SSW3 |  |
| UniRef90_UPI0003D70E96 | NS LIMKEFSEVFQLED |
| UniRef90_D7KQW2 | $E$ QLVS CLA K V F |
| UniRef90 G2Q5H1 |  |
| UniRef90-E3QNW1 |  |
| UniRef90-F0XQN4 |  |
| UniRef90-T0RAC6 |  |
| UniRef90-F7VQD7 | D Q WA A T L A R N $\square \mathrm{G}$ VE |
| UniRef90-G4NA30 |  |
| UniRef90-B8GUG6 UniRef90-G0RYY8 | K R L A E S F A R A F D V S L |

MTRHSQT $\square R$ VLDTG $\square R R G A E N \square A \square N R A L L E A H Q A G T$


AKILAGEEALLDSVSSGA YNLALD EYAMKHIDEK EEYLLLHCEDK

$$
\square R \nabla D D F G Q Q P A \square R S Q A V Y H G Y A E A M G P E D
$$

AFRELRDEDE

MRY LDDGTVKRE $\square$ SQAVYHA LDAERMRPHD PY ETLSLENLDMNDPDMT

YNVA $\square \quad E A Y A F Q K \square T D \square$
EEFAFKQILDE
$\square$ QS FAYDDTFCAS VGGGE
$\square A D E S A L F E A \quad Q G K$

[^2]


PHT $\square R F \square R F T P A A L V G F H Q D V D Y C Q A H Q \square E \square Q R R \square T G G G A$ SNNQI $P P T \ I A F T P T P T Y T L G R R Q S D E L L T D D E R A R L Q S A R G G L T$ PPTLI SFTPAP IFTLGRRQTTPLSPSETPKVLHAPRGGLT
 SDTLIALQHPPVFSLPPR
PHTLRFLRFTPCALVGFHQNVEHCRAEGDD QQRRワTGGGA PDTURFLTFPPSVLVGRHQAISQELNLPACRARRVTGGGA C L Y WWQNQRTVVIGRNCRMEQLEADGGHLVRRLSGGGA $A G A L L V C E P A S V Y T A G L R E E V A R L R A D G A E V R A T G R G G L A$
$P N T L L Y R R N A P T I S M G H F E D L E A A S R H G V Q I V R R M S G G S A$ $P N T L L Y R R N A P T I S M G H F E D L E A A S R H G V Q Q V R R M S G G S A$
$D P M L R F V I F D P L L G Y H Q S A E Q E I N L L K G W H I V G R P T G G G T$


 EDYFLLWQNEPTIVVI GKHQKEQNMNFNNIINVVRRNSGGGA E ESMLIWSNKPAVVI GRHQNPWMERCNNIVELVRRHSGGGT PNTIRIVMRPSAVTI GYFQKUKDVLNDDYDYTRRITGGGA

 GDTLRLWRNANAVII GYFQRAEEEEAMGAAVVRRFTGGGA
$L Y W F D P P S V T L G Y A V D L E ~ A K R M G V N V V R R L S G G G S$ EP LLRFVIFDPTVLLGYHQNLEEVKKRGWEVGRRPTGGGT EDFFFLWQNEPSII I GKNQTTLEEDNSAFHVARRVSGGGA


 E ITLVVTVSPDPYVCVGYHQDRAFCEAHQILVGRRFVGGGA
 CHSNSVKVVVRRASGGGT

S DP $\square$ F S WVHAPT $\|V L G \square Q D G K \square P F L Q H N Y E\| I \quad$ R N S G G $\square A$
ETVRLWNFSPTDT\GRFLSVRDWQEKRVPLDRRFTGGGP QNRVLLWQNRNTVVI GRHQNAWKECDEGGRLARRSSGGGA DNILYIYQHKNAII I GKNQNAHEEIQNKGEVSRRLSGGGA

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[^0]:    

[^1]:    PDELWTVDHNDVYTLGQAGKEEH \LQTNTP■IKTDRGGQV PD WLILLQHHPVYTTGRRQLSDHQLNPRADFFPTDRGGQI PSTVLTFQFENVYAS KHHII TFTPNPVYTTGRRDLPPSNTTPQTEYHPTLRGGQT $K D D L L L L Q H R P V Y T A G R R Q E A A R L R G D G A D F V A T Q R G G Q T$
    $A G A L L L C E P A P V Y T A G L R E D T A R L R A L G A E V R A T G R G G L A$ KPTI ITFTPPACYTLGRGASLEHLHFDPQPLHRLDRGGEV
    
    R D Y L L L
    
    
    
    
    
    

     | $P$ | $D$ | $T$ | $I$ | 1 | $T$ | $F$ | $T$ | $P$ | $N$ | $P$ | $V$ | $Y$ | $T$ |
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    | $E$ | $S$ | $R$ | $L$ | $L$ | $L$ | $L$ | $E$ | $H$ | $T$ | $P$ | $V$ | $Y$ | $T$ |
    | $K$ | $E$ | $T$ | $V$ | $L$ | $T$ | $F$ | $Q$ | $P$ | $T$ | $P$ | $V$ | $Y$ | $T$ | TGR

[^2]:    lupas 21
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[^4]:    lupas 21
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