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UniRef90
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UniRef90- $F 6 C N N 7$ UniRef90_UPIO0035F5C9C UniRef90-E7GCZ1 UniRef90_UPIO00360E5E6 UniRef90_B9Y7V8 UniRef90_V2Y9E9 UniRef90-F9ZFA5
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## UniRef90_Q1Z360

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UniRef90_K4LTI4

1
 $R$ VGRVGEQVKKEI SQLLQSEIKDPRIGFLTVTGVDVTNDL

 RAHRVGEQMKKELSDLIMRELKDPRUSFVTVTGVDVTGDL
 RANRVGEQMKKELGBDI S RKIMKDPRVGFVVTVTADVQVSRDL

 RAERVGEQMKKELMDI NNKVK DPRIGGFITI TMDVQVTNDL
 RTQRVADQIQKDLAQLI QRQIKDPRVGMVTVSHVKVAKDL
 $R$ VGRVGEQLKKEISDI I RNELKDPRVGFVTVTGVEVSGDL $R T D R V A Q Q U Q K E I A D I L Q R E I K D P R L G M V T V S A V E V S R D L$ RSNRVAEQMKKELGELIARKLKDPRIGGVTVVTVVEVTGDLC RADRISEQQQRELAELLRKGLKDPRAGWIVTVTSVEVVTRDY

 RTQRI GDQI QRELA LLI PQEI KDPRLGLI T
 RSNRLAETLKHEISQLI REDLKDPRI GFVT RSDRVAEQI QRELADLLQFEVKDPRVSMVTVTEVEVADDL



 RADRVAEQMKREIAIILQRELKDPRVKMCTVSDVRVSGD

 RRDRI CE QI R REELAE I I R TEELRRDPRVGGMI S L T E V H I S A D Y

 RTYRVAEQUHKEI SDDIMRGLRDPRVGFVT

 RTARI A EEI RKVVVSTML RNLRINDQIQRDLSELI SGVKDPRINMVSV RTVRVADQI QRELALLI QNEIMMPRVGMVTL RAQRVSHEI QKEI ALILQQREIKDPRVGMVTVSSVKMSRDL $R$ VRKMQEFIKQEVSSMLLREVKDPRLGFVTVTGVHLTGDL RAQKVAEQMKKELADTLQHELKDPRIGFVTITRVEVSGDL
 RPHRVGEQLQKEI SALLLKGLKDPRVGFVTI TAVSVTPDM RKDRVSSQMQKELSFGLQREVDDPRLGFVTINEVEVTRDL RTARVGQQLQRDI AVI LQREVKDPRVSMVTVSDVEVSRDL
 RGQRVGDF: KRELSSGLI QF QVVRDPRVGMV SV RANRVAEEI KKVMGEVI SHKLKDPRVGFVTI RPERLAEII KKEVSDMLRDELKDPRI GFVTI


KQERVAE
KNVRINSEL



$R$ VARVA ELI K R EVVTMLLHEI KDDRVGMTSVTGVKMSKDL

 K N T R V N A E V H K E L A Q RTSRI G D QL Q K E L A S L I Q F EVVK DPRRLGVVTVNEVRVMADL
 $R$ VS R V A E LI R R E I S Q ML L N GIIK D D R V GMVVSVTNVNV S G DL RTDRVGEQLAHELALLI QREIKDPRLGMVTVNSARVSRDLD
 K S NRI N S EVVREISQI I REEIKDPRVNLTSV RVRKI QEFI K QEVSRIVL R L G R I

## QUERY

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## UniRef90-Q1Z360



 A HARVYLSVFGEQEQK AYAKVYVTFFLDN
 GHAKVFITVMGQDGTDAVP

 SQAKI FVSVMGSEEEKK
RHAKVFVSVFGT DKEKE

GHAKVFI TVMMGDSPEVI K
 AHAKI YYTAAAGT RQAKVYVTF $\square G G$

EKNDQ
KFCKAYDSVLGSEE
RHAKVFVSILNG
KYCKAYI SVLGDAESGA
SHAKVYVTVMGDDNAEVVK MYAKVYVTFL DNTPENVKIDADKVNKAVGFVRTMVGKAM
 A HAKVYFSSLAGS AHAKVYFSSLAGSEHILD
 S L A S V YVTVLG
QQAKVF 1 SVLGDENKK
ATVGLG KDSEREA KYAKV YV RMGNEEEKK NSLEGLKSAAGF RREVGHR RYA Y Y Y TRLSGFDE AHAKVFYT TGG
A YAKVFYTTLGGDENDQLVE
AYAKIFVTFLNDAPDHHHADGDKALQEASGY AEA VYV FGSEKEKK
QHAKIVVSVYGPEAEKEA

 AHAKI Y FTLLKDSA EEVR


SHAT WWTVMNSSTREV
SYAT YVSFLGKEERK
KTAKVFVSVG DEKKQK
ANARVYFTMLLDDKPETVKKTLDGLLEHATG
S Y A YVYVS ILGGNKES

QHAKIFVSIYGTEE
AYATVFVTFLNFMDEDHNSEGTKVLNDDSGYI RSLLGKEM RYAKIFISVLGDEEQQS SSIKALERAAGFVRSELGRR

 QHAKIYVSIYG DDAAKAETMAGLKSATGYVRSELGARM

 REATVYVSLFGSDEEKK NTLAALSKAQGYDRSEVGKRL RHAKI FLSVGG EESVKQ KTCKAYISVMGNE


| QUERY | $\square R \square \mathrm{VPE} \square \mathrm{RF} \square \mathrm{YDQS} \square \mathrm{VEGM}$ |
| :---: | :---: |
| UniRef90 F5LDI2 |  |
| UniRef90-UPI00037090AA | RL R H T P ELLFHDDQSIE Y G |
| UniRef90-S9SZD7 | RL R H T P ELL F K I D S Sile Y G |
| UniRef90_U1YAF6 | RL R H T P DLL F K F D E SVEYG |
| UniRef90_D3FU02 | RLR K TPEI TFEFDESIIE Y G |
| UniRef90-W4C951 | R F R HVPEL $\quad$ F K DDE S I A Y G |
| UniRef90_UPI0003656584 | R M R S IP QL R F IY D D P P R G |
| UniRef90-C3P5L3 | RLR K TPEI SFEFDES I G Y G |
| UniRef90-UPI0003FFC6D0 | RLRKTPEI F F K F D E SVEYG |
| UniRef90-N9U4Z1 | RL R V VPELRFFYDETLVEGM |
| UniRef90-U3TW10 | RL R I V P ELT T F F Y D N S L I E G M |
| UniRef90-B9DPD6 | RLRIV P E L Q F E Y D H S I EY G |
| UniRef90_D6XU11 | KL R K TPELD C K F DESIIERG |
| UniRef90_UPI00037948BE | KL R VMP QL R F HFDESVDRG |
| UniRef90_Q1IF42 | QL R SVP QL H F HF DESV S R GV |
| UniRef90_Q3SKX2 | QL R VV P K L T F V Y D R SVEH G M |
| UniRef90_UPI0003771FE7 | $R L$ R L TP EI LIFELD T S L |
| UniRef90-V4HVV3 | R ARIIMPELKFVLDNSLMEGM |
| UniRef90-UPI000408C6D9 | RLRKTPELMFELDKSFDYG |
| UniRef90-G2IVV1 | QI F T TP QLHFVYDES IERGM |
| UniRef90-M1ZI54 | EL R HVP ELIF KLLD T S I D Y G |
| UniRef90-E4RKT5 | KI H H TPEII I F R Y D D SIE E Q GV |
| UniRef90_UPI00046A29B8 | EL R HVPELRFHYDESVVRG |
| UniRef90-F6DUM1 | KVRHAPELIF K L D T S L D H |
| UniRef90-UPI0003B33779 | KLRSVPSLHFHYDES T R G |
| UniRef90-UPI0002E7D572 | KL R IV P P L R $\quad$ DY D N T L VEGM |
| UniRef90_UPI00035DA084 | KV R SVPPQLHFHYDES A R G |
| UniRef90_LOFAG0 | R L R Y A P EIV VF K Y T S |
| UniRef90_UPI00046F2DC7 | LL R TVVPQLHFNYDASI D H G M |
| UniRef90-D5BXS8 | EL R A I P R L R F V Y D D Sil ER G |
| UniRef90_Y0KDI6 | LL R TVVPQLHFVY D A SII D N G M |
| UniRef90-E9SNW3 | NLRNTPELSFILLDQSIE Y GV |
| UniRef90-UPI00036E641B | RL R H T P EVIF RYD D SiET G |
| UniRef90-R5PID8 | NL R N TPELTTFVLD T S I E Y G |
| UniRef90-M4X0Z5 | KLRTVP QL HF S Y D A S R R G |
| UniRef90_UPI0002555D70 | K L R VV P E EIK F Y H D S S L E K G M |
| UniRef90-Q2BH43 | KLRIUMPQL R F HFDETI E |
| UniRef90_Q67P85 | QL R Y M P EL H F A LD E Sil E |
| UniRef90_M4U668 | R L R I V P EVRFCFDETL |
| UniRef90-A0A011QER5 |  |
| UniRef90-W7CJC8 | RL R K VPELFFEDD H SVA Y G |
| UniRef90_UPI0004730E50 | S I H TLPALHELYD S S TARG |
| UniRef90_B9EBF7 | DL R IV P DLK K K Y D E S I D Y G |
| UniRef90-Q1K0G2 | K L R HVVP DLVF K Y D T S I A Y G |
| UniRef90-W4VFH2 | RL R K TPELMFDFD D T I ER G |
| UniRef90_UPI00046FCEFE | RL R K T P El D F A FDESVA Y G |
| UniRef90_G8LZT7 | QL RYTPEVQFEDD NS I E H G |
| UniRef90-11XIB3 | K L R \M P ELQ L R Y D T TLEEH G F |
| UniRef90_UPI000463B8B4 | KL R Y I P El If K F D D S L E R G M |
| UniRef90-V5PSN4 | HI H TVVPTLHFHFDQS |
| UniRef90-Q82WC9 | RL RVVPQLQFVYDESVERGM |
| UniRef90_C4K3E9 | CL R I V P HL T F I Y D D |
| UniRef90-R7PPN1 | K I Y Y T P QI SFEQD T SLLDY G M |
| UniRef90_C8WWJ0 | HMRMAPELVFR L D E S GE |
| UniRef90_UPI000379C318 | K L R V M P Q R R HFDESVDRG |
| UniRef90-Q3A4A5 | R M R Y VPDLVFEFDKALE Y G |
| UniRef90_UPI00036FCF28 | RLRHI A ELR R H Y D D S FD T G M |
| UniRef90-K2J9J7 |  |
| UniRef90-N9WG01 | K LR AVPPQI I F ELLDESI D Y G M |
| UniRef90-UPI000476D41D | NARTTPKMRFYFDASVVNG |
| UniRef90-K9D901 | H $\$ H T L P S L H F V H D T S TVVR G M  \hline UniRef90-K0J7L7 & RL R K TPELIPEIDDRA  \hline UniRef90-F6CNN7 & RLR Y APEI SFKLDP SIQR G I  \hline UniRef90_UPI00035F5C9C & HI H T LP ML H F VHD T S T S R G M  \hline UniRef90-E7GCZ1 & T I R K C P EL HFVLD T S LE Y G  \hline UniRef90-UPI000360E5E6 & KVFKTPELHFEYDESLERGM  \hline UniRef90-B9Y7V8 & S I R K VP DL $\quad$ F K L D D S L E K G |
| UniRef90_V2Y9E9 | NLRNTPELRFHLD T S I E Y G M |
| UniRef90-F9ZFA5 | KL R L VP QL HF I Y D E S V E R GV |
| UniRef90-C3X4B7 | HI H TLLP QLA F I Y D N S I A E GV |
| UniRef90_T0CKZ0 | KL R H T P El $\quad$ F KLLD D S I E K G M |
| UniRef90-E0NYH2 | R L R F T P Eli S F SLLD T SL N |
| UniRef90-S7TRE2 |  |
| UniRef90_K9SEZ8 | SL R RTPEILLFKEDRSFEEG |
| UniRef90-J7U4K1 |  |
| UniRef90_UPI000382481A | RL R Y TPEIVFK L D Q S A Q G |
| UniRef90_R6VM27 | $N \mathrm{~L}$ R NTPEI RFILDESI E Y GV |
| UniRef90-A6VU30 | KLRVMPHLR F H Y D Q SVVNG |
| UniRef90_H1D1Z3 | KI Y Y T P EI S F A ED T SL D Y G M |
| UniRef90-R7GFP6 | NL R N T P EII I E L D D S E Y G |
| UniRef90-K9V7Q6 | S L R R T P EVI F IE D N SIE E G |
| UniRef90_UPI00036B0D0D | QLRHVPELRFHYDESVT R G |
| UniRef90-N6YG74 | RI H TIIP ELHFNYDRSVEE G |
| UniRef90_Q1Z360 | RL R V T P ELL T F TFDESLTE GM |
| UniRef90_UPI00047EE965 | NL R NTPELKKFILDE S S I E Y G V |
| UniRef90-E2ZCQ7 | GI R Y S P Q I E F K EDES L E Y G M |
| UniRef90_D9S3L5 |  |
| UniRef90-K0AZ68 | NL R Y T P E PLIFIL D N S I E Y Gli |
| UniRef90-R5KAR9 | NL R N T P ELTFILDD SIA Y G |
| UniRef90-A9KNW3 | NL R N T P ELLFVV D Q SI E Y |
| UniRef90 K4LTI4 |  |

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UniRef90-C2BHN

1
10
20
30
KNTR|| NGEVVQKELLST|I|RNE| K DPR||HMTSVMAVEEVAPD|L
 RPDRVAQQI QKEVAVILQREI RDQRLGLTTVSEVEVTRDL RПDRVKEQVMRELAELVRTGLKDPRAG RTDRVAEMMQRKLSQII QQEIKDPRLAFITISAVKVSADL RGGRINEEVRREVSNI QNE:KDPRLAMVSVTAVKVTK RTQRTAEQMQRDLAKLIQLEIKDPRI GMVTISFVKVARDL RPNRLAETLKEELSQLI LVELKDPRIGFVTVTSVDVANDL RTDRVAEQLHRELSMLVRDRVKDPRVGMVTLLDVEVSKDL RSDRVAEQVRRDLADLI RSELKDPRVGMISLTAVELTPDY RVDRLSQQMKKEMAVILQRELKDPRLHMLTVSDVEVSRDL MK ELS Q KUKRLESNLVKEISY LSQEVKDSDI KFVTVTDCHLTNDL RGGR1 NEEFKREISNLIQNEIKDPRLAMISVTDVKVTKDL RARKLAER QKDVAQMLDTRVKDPRLGFVTVTDVRVTGDL RTQRIGDSLQQELARLLQFTLSDPRLKMVSVTGVDVSRDL
 RSEKVAEAI HELVVGLIVKGMKDPRIGFITITGVKVTDDÍ RADRVADLVKMEI ADILLRRIRDPRVSRLTVTGVKVSDDL RARKLADRI QQIVAEMLERRI KDPRLGFVTVTDAKVTGDL RADRVADLLRREMADLLLRRIKDPRVSKVTITADEVTDDL RGKRINEEVRKEVSDII RNQIKDPRLAMVSVTQVEVTKDL KNDRINEEVMRELSNII RNEIKDPRINFTSIVAVEVAPDL RRRKVEERI QNTVARLLERRIKDPRI GFTTVTDCKVGDL
 RSGRINEEMKKEISNII RSDIKDPRVAMVSVTKVDVTKDQ RVSRLNEETRKEISDI I RNDLRDPRIAMTSI IEVDVTRDL RIDRVADQIQKELALLVQREIKDPRLGMVTINAVKVSRDL KNTRINMEVQRELSE:IRME:MKPRIHMTTVVAVSVTPDL RPARVAEEFRHELSALLARGLKDPRI GFVTVVGSKMSPDL KNDRINSEVQREMSQLIREDIKDPRIHMTSVMACEVTPDL RTARIADFLKRELGSFI QKELRDPRLGMVSVIDAEVSRDM RVRKMQEFIKQEIGQMLLRDLKDTRLGFVTVTEVAVTGDL RARKDADQKVIVASTIERRLKDPRLGFVTVTDVRVTGDL RNLRLSDQU QKELAEMLQRE: RDPRLGLVVTMQSVSLTPDY KQDRMDQLLKKEISRILQFELKNPKLGFVTVTDVECTRDM RTERVGDMLQRELASLI QTEMRDPRVAMVNITGAQVSRDLL RSDRIAQQLQRDLAELI RAELDHPKASLITI RADRVGMEVKREVNELLQRHIRDPRVQGVTITDVQMLGDL RDGRINEEVQRELSELIRSLKDPRVQMLS R RSERVAARI QEELSDLLKKKVQDPRIEELVTVSSVRLTSDLL RADRVAQQVQKEAAQILQRDLKDPRIGMVTISEVEVSRD RTQRVAQQLQKELAMLLQREVRDSRLGMVTISDVEVSRDL KNSRINGEVQRVLAEVIRGEIKDPRIAMTSVVDVEVAPDL RSSRVADQI RRDLAELI

 RVERVAALIRKETSELLDNGURDERVGMVSMTSVVEVAGDLL RGIDRVAEQI QKDLAELI
 RVSRVASLIKREVSQVLDYDIKDDRVGMVSITEVEVSGDL RAFKVADQI QRDLTELI ARELKDPRVGMVTI RSNRVAEQVRKEITQLLTKDVKDPRVKPITVTGVEVTGDV RSDRVADALQRELATTVRQEVRDPRVGMVNVNDVTVTRDM RVARVAELI KREVSQLLDSEIKDDRVGMVSIVDVEVSNDL RAERVSIQUQAITELLSKKMQDPRMEMATISGVKMSPDL
 RVRKI QEFIKQEVSAML LREIKDPRVGFVTVTDAKITGDL RAERVAKRIQQVAQTINTRMKDPRLNMVTITDTRVTGDL RTRRI GEELRKIVSTMLDNGDKDPRI NMVSVTDVEVTSDL RTQRISQEMQKEI AIILQRKITDPRLAMVTISGVKVSRDL RNERIAEETKKGISEI NSDLKDPRIGLSVTKVKVTKDL RVGRLEQEI QREVNDLLLKRI RDPRVEGVTVTGVEVTGDL RAEKI QELIKQEVSKIILNDLKNPHI GFVTVTQVEVTNDL
 RSERVQELLLKEISALI QRGLKDPRIGFATVTTVDLSNNL RKERVPALILKNISELI QYEVKSKSIGFVTV
 KNTRINSEVLKELSRI SREIKDPRIAMTSVVSVEVAPDL RSTRIADQUARDIAE RDRRVGQE: MREVND

RDRRLLAQEVEKEVND
RTARISSEVKEIS

## UniRef90 R7CNJ2

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60 KTCRAY|ISULLG EKEAKEATI|KGLLNSAEGY|IVRQLLARNLL

70 SHAKVFVTVMGGEPQEGVDQSIKVLNDASGFLRMQLGKAM AYAKIHVTFLTTGDQTA EAGLEALNEQAWYVRTLLGKAD AYAKVFVTFLND DAESVKGGMEALEEHGPY:RHMLAKQM SHATVYYTVLSG

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A HATVHFSVLPD
AHAKVWFDVL
AHAKIFFATLNS
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KEATVYVSI HGGDD
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QATLEALVS

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AYA TVYFSVMGE
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QHAKIF VSIYGTEEELA
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|  | RL R |
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| UniRef90-EFRX20 | RIHTTPELHFVHDA |
| UniRef90-13BRP2 | KLRVTPALHFFYDD |
| UniRef90-K2G3L0 | HILTLPELHFTY |
| UniRef90-11E246 | QAR\VPHIRFVFDESL |
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| UniRef90-D1AA | G\| R HTP T |
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| UniRef90_UPIO004774E0A |  |
| UniRef90 ${ }^{\text {B8 }}$ | S |
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| R2N | I Y K TPEL |
| C2B |  |

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UniRef90_XOU8M4

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 R A G R L A Q E I Q K D V S D L L L K R V N D P R V Q D V T V T S V

 R Q G R L G E E I R K II I G S ML DH Q I K D P R L S M I S I S G V D V T S D G
 $R$ QR K V E D R I Q Q T V A R L L E R R I K D P R L





 R A E R V G D Q I K R E L S K I L Q R G L R D R RVVA QEI LK KVVNDILHKKVRDPRVEGATI
 $R$ QLLRAGELVRHALTDILSREFRDPDLEMITVGEVRCSPDLD
 $R A R R V G D Q i \quad Q Q E L A G L D R D Q V R D P R V G S V T V$ R S DRVRRKALIGEISDI I QRHVKDPRIGGVSV






 $R \square E K V S S L I$ KREVS QMLDSEIIKDDRVGMVSI $R A A K L A D R I K V V V A Q A L E R R V K D P R L G F V T V$
 RTTDRVVAQQI HK E V A S I L Q N E F K D P R L G M V T V S G V E V S R D L
 RTDRI A D Q I Q R E L A R V L R F E MK D P R V D M V T I Q D V R V S R D L



 RRQRVA QELHKKI A FIL QRKI R DPRLRMITVVGVEISRDL




 $R \vee N R L A E Q I K K E I T Y V L T T K V K N H N L G F V T V$

 R A A R L A D R I K V L V A K I L E R G I R D P R L G F V RAK QLA DRI QVLVAELLERRVVDPRLGFVTVTDARLTGDL
 RPARVGELI KREVVBMLDK Q DK DLRMIGMVSV

 RMLRVAELI RHTLSDLLSRSINDPVLEGITVPDVRMSPDL R V Q R R V S D El Q K VI Q S L L N T K I R R P R L K W V S V T S V E V S R DLL
 RNEKI N GLI QRE L S LII I DH K MK D S R I K N V S I





 R D L R V A D F V R D E V S R I L Q R DI R D P R V G F V $\operatorname{S}$ V V N D V R V S K D L






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UniRef90_xoU8M4


QHTK|FVISUYGSDEVRA 60
$60 T \mathrm{~K}{ }^{70}$
70
GY|VIRSELLGKR $8^{80}$ GYADLYFTVMGESDAEARTQTSRIGLNDAAGYLRSELARGL QYCKVYVSCLGSEE SDGKTDEGLKAAAGFLRRELARSL
 REATVYVSLFGSSKEAEKQQSLETLRRSAGYFRSELGKVLV KHATVFVTTLTGTGMDT VARAALRRAAPFLRSQVARAVV SYATCYVSVLDMNETGQEKEALEGLDSASGLMKKELGKKV QHATLFYTVLGSADEAA KSAKALESAKGLI RSEVGKAL
 QQAKVFYSTLDDSDKKKAATQEGLEQASGLIRKELGQYL AHAKIYVTFFGETDEEKLKDANQAMEDNKGFFRTLLAKRM RFARVYVS LVNS KSKUKTMEGLQSASGYURGQAAKK SHATVLVSVLQDGDQEHADDTLAGLRSAVGYLQRRVGQEL QQAT TYYSTL DDNPETFDEVQKGFEKASGLIRKELGGRL SYATVYYS LLTEDGNKEKEVAEGLEKAKGLMRHLLGQEL
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SYAKVYFTVL
SFADVYFTLLGGDADA
$\qquad$
QHASVFYTVMGSEEER

TNAQD
SYAKMEFTCLNEENHKDIQD
 KTAKVY乌SFL
S DATVYYTVLG NV DLAGTQAAL

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 KLA AF MPLGGKD SAAKVYFSSMGG
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REATVFYTVMGKED
SYAKVYVSAVGG
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$\qquad$ S $\square A Y V Y W T I Y S D \square A S S G E K A D A G L Q A A K G Y I R S T L A R E M$ KTCKAYVSVLG D DEQAQKDTLEGLKAAKGYI KRQSARKA SYAQVFVSFDENGNQRNVDKVLIVLNNASSYMRKLLCKKM


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| :---: | :---: |
| UniRef90_K9UK96 | RLLRRTP TVITV VEDKS F D R A |
| UniRef90_M5DV48 |  |
| UniRef90-A0A023VLU6 | T M Y K M P DLVFEK D N S $\$ A Y G  \hline UniRef90_G9WNC3 &   \hline UniRef90-K1ZJU1 & TMRYIP TLLKFFLDESFDNA  \hline UniRef90_UPI0002196049 & TVYKIPEIHE\\|LDNS I Q Y G  \hline UniRef90_F9N6R8 & QLRHIPSIAFDAD TS L D Y S M  \hline UniRef90-R7F0N5 & NI R N TP ELLRFVY D D S ide Y G  \hline UniRef90_UPI00047DE75A & RLR Y TPQLLSFQADTSFDYA  \hline UniRef90_R6F1Z6 & $R \mathrm{MRRVPPQLDFKMDHS} \mathrm{\square EYG}$ |
| UniRef90-E6PS57 | R $\$ H TVVPTLHFVFDQS TSKA  \hline UniRef90-S2WS04 & GI R L T P TI D F Q A D  \hline UniRef90_UPI00035F05D7 &   \hline UniRef90-K6PY50 & RL R HVP ELL DF RLLD D S A A Y SV  \hline UniRef90_UPI000361771C & TTYYHTPELLF R R D ES LEYG  \hline UniRef90_Q31GK4 & $N L R \square T P E V R F F Y D T V A E N A$ |
| UniRef90_K6YT56 | RMRAVP AL K F Y Q T S |
| UniRef90_R7L5T6 | NLRVTP DLQ F ELDDESMEYG |
| UniRef90-R6HMK7 | RLRFAPALDFAKDTSMEY |
| UniRef90-UPI0003B68C95 | GLKHTPVLK K E LD T T D R A M |
| UniRef90-D3R081 | $R L R \\| V P E L H F K P D N S V Q E G L$ |
| UniRef90_V6Q3Y4 | S I Y K TP ELLFFQRDESVA Y G |
| UniRef90-A7NID0 | NLRFVPELRLILLDTSVDYSL |
| UniRef90-D6S5Q1 | TVYKVPELIFKRDTSVQYG |
| UniRef90-A0A059FD08 | DL R Y TPELHFIADKS Y D D A |
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| UniRef90_G8AFH4 | NL R HAPTLS FEADTSFDYA |
| UniRef90-U5T335 | TLLRKVPVLR F Q M D P T F D R G |
| UniRef90-K2EEN2 | RTRNTPELEFIRDDSLERG |
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| UniRef90_U7HZL4 | NTRTTPRLRFHYDLT P E H A |
| UniRef90-X4QSZ5 | GLR L T P T I E F VLD |
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| UniRef90_G4D5P4 | KLRAMPELIFI I D D S I ER GL |
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| UniRef90_D7N5W0 | KI R A I P EL $\square$ F V K D D S I E $\square \mathrm{GM}$ |
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| UniRef90-R6TR74 | DL R K TPELRFKYDESLAYG |
| UniRef90-Q3K301 | T M Y K $\square$ P DL Q F VK DE S $\ddagger$ E Y G |
| UniRef90-U2SBL2 | K IR K F P ELIFEYYDT T SEYALL |
| UniRef90-D2MPT2 | DI R R T P ELIFQMDQAEERG |
| UniRef90_C9RKT5 | KI FKVP ELLKFVLDENLEHAM |
| UniRef90_UPI0004158FCC | NI RLLVP TLLE FV HD A L P E N A |
| UniRef90_D2Q1L7 | GL R H TP SLA F FLD AVPENA |
| UniRef90-R6MB89 | E I R K M P ELT T V VY D E S IE Y G |
| UniRef90_K2GMS2 | NTRTTPRLRFHYDKLPEEA |
| UniRef90-U5QMN6 | RLLRYTPEI S FVQD H SLER G |
| UniRef90-G4QH67 | R M R A VP AV HF F R D E S I T E G I |
| UniRef90_UPI00047C191C | S L R Y TP ELIF CAD D SIN K G |
| UniRef90_D1VSB2 | KL R VMP ELI F $\square$ N D D S I E K G L |
| UniRef90-B2IIJ6 | HL R FAPDI RFKADESFDYG |
| UniRef90_UPI0003690840 | S L R IT P V L R F DH D D S L N Y G |
| UniRef90-UPI00047D94CE | HI HTVPTLHFQFDRTTERA |
| UniRef90-A0LE17 | KLR HAPELRFELD HVAD Y |
| UniRef90_UPI000417E607 | TVVHSVPALDFEIDD S I E Y G M |
| UniRef90_R5JB43 | DI R Ql P ELLTFVYDESIIKHA |
| UniRef90-Q0AYI7 | KVRHAPELEFRLDRSI E H G |
| UniRef90_F9UG90 | RLLRTIPQL H F VFDES I G K G |
| UniRef90_UPI0002D3DA4C | KTRFI PVLEFILDDEGMKNSM |
| UniRef90-M1Z2W1 | Y LKA P ELL P F KLLDAS G D Q |
| UniRef90-UPI0002557921 | NLKFTP DL R F R P D D T F D R |
| UniRef90_UPI00036033EF | T V R L T P T L E F V A D Q |
| UniRef90-D7GEK1 | GLR Y A T L D F V P D A T |
| UniRef90-E6U8F5 | HVRKTPELIRFVADDSMEH |
| UniRef90-E0XQB6 | NMRVTP K PRFHYDELVERG |
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| UniRef90_Q04GM9 |  |
| UniRef90-N2BDN3 | N LR H TP QI R F $\$ M D Q S I A Y GV  \hline UniRef90_R6ZQ93 & D WRVVPELD F R $\square$ D R S T DEA |
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60
A D A L T R A A A
ALTRAAAF|RGK|L|GRE|I $R \square A E I F Y T V S G D A E H R R K V Q T \quad G L E K A S G F L R S H I G R R L$
 AYAKVYVS SF DETAAR K HATVVCAPLADQNHE $\begin{array}{ll}Q \\ G & V \\ E & \text { L }\end{array}$ GLL E L N GlLA GF
 QHATCYVAPLGGDESAQE
 $S Y C K V Y$ L $T L$ S Y A K V F I T F L N Y D D
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A HAKVYFTVLGSDPA A HAKVFVTALLG REATVVYTVYGDDEERA QVAEVLFTHPEGRDKE A HAKVFFTCFPDDQESETQ

 DQKAKED S Y A Q V $V$ V V S F Lick A H A K V F F S VLVG TSAKVFFSI $\qquad$ L DVN ESH K R A TVYFSIL DVNNDNDK HDATVYYTVLGENSKPDFPGAAAAAGMKA GFFRFNLSQT



 $K \square A T A Y \vee M P L G G G$ Q S A K IVYVSVFG | S Y | $C$ | $N$ | $V$ | $F$ | $Y$ |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $R$ | $H$ | $A$ | $R$ | $V$ | $Y$ | $V$ | S $\mathrm{V}_{\mathrm{V}} \frac{\mathrm{M}}{\mathrm{L}}$ K E Y EK SDP GTYYEEAAAA EPDRQQEALD REATVYYTVLGDPTEQDASRA


 $R E A T V Y Y T V L G D V T E$ K TARI YYSMMGSE $K \_A T V Y \vee M P L G G$ Q A QERKS

S V A K I Y V S HL EH D K V V E H D K V D K A L D A L D R R H K K L L R SFMRVYVS CEPESYDRTLAAFNRAKGRIRSLL GHSL REATVYYTVLGEDAEPDYEGAAQGLEKAKGVLRSTVVGAGT RL A K I F V S SNLS
SHCKVYIS HLDGME SYCKVYFTSLLEMDKKS SK
REAT Y YTAMGSMAKKSL QQASI FYTVFGSEN K NAKVYFVCL N NEEREETAAALEA RNTV
 QHASIVYTVLGDDEQ REKAARAFASAQGLFRSRVGKAL


 REATVVFYTVYG DETGUA DSAKALASATGVLRSTVGKQT S F A K V Y V $V$ T H V L K L A TVVVMPLGGKDEKP KI A T A Y V C P L G G Q G GEDL SVAE VMLTTYSGDEERHKQVE $A$ $A L A K N K S E R$
 VDATVFYTVYG DETARQA GI C T A Y L S IF P SEK GE KI A EVLYTMSGGPEREA K 1 A E V MFTMAAGDKE S I A K V Y I S IF P SIIATCFVLPLGGK S A A C $F$ VLPLG $\begin{array}{lllllllll}\text { S V } & A & R & I & F & F & T & V & F \\ L\end{array}$ $K \bigvee A T V Y \vee M P L M G S$ S Y A F I YV S FI Q D SHAKVFFTTL DPAEKEP QVVKVYVSVFGDDRGKEV
 KHTVGVSRLG Q TADKELLEALKRSQPYLRTQVAKAV R H A T A F V C R L G R S D $\quad$ VD QV L P A L K R VA P F L R T G L S K A L
 $K N A T A F V M P L G G G \quad H P E Q I K A L N R D S A Y L R S Q V A K A M$
 S Y A KVVFVTGF E E D S K LVVE EKLEALTTASGYVRSLVAGRM HDATVYYTVMGPDVEPDYESAAAGLEKARGQLRSKVGAGT REATVFYTVLGDEDQ VKSSAAALERATGHLRTTVGRARL $R \vee A K V$ Y VA $P$ L G R G D S A $K$ QAKVVFTVPAGKDS GP QVARVYVSVFGDERGKEV RQA R I F V S Hil G S E E EK $K \square A T A Y V L P L G G \quad K N P D E$ $R N A K \square Y \vee M P L G G G$ $K \ A T A Y V L P L G G R D V E V$ K V A A K V F L L I F G S R K S S A

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| UniRef90_E4WGC8 | G V R F T P T L T F V A D TVPD T A |
| UniRef90-R6YHE4 | S L R HVP QL LF KA T D S $\quad \mathrm{E}$ Y G |
| UniRef90-C6XRX3 | D M R T TP QLRFLLSDDSYTEA |
| UniRef90_E0NM52 | K LR Q MPELIFILLDETLD |
| UniRef90-G7QCN1 | RMK V VPEL R F A R T Y L |
| UniRef90_UPI0003B35FE8 | D LRKTPELTFVLDNSI DEG |
| UniRef90_Q057K0 | Y L R V V K L F F V Y D S L I N G |
| UniRef90-D6ZIA5 | GTRLLTPTLEFVSD |
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| UniRef90_UPI0004131123 | R M R HVPELHFHYDDSVDKG |
| UniRef90-M3BC37 | $\mathrm{G} \\| \mathrm{KF}$ TP T L T F VP D A L P E N A |
| UniRef90_C8X0G5 | RLLRFVPQL R F T WD T FLLE |
| UniRef90_W9VAI3 | RLLRTI P Q L H F V H D S S I A Y G |
| UniRef90-UPI0002260607 | RLR】APEIHFQPD T ALLD Y A M |
| UniRef90_UPI000424BEB0 | NLK F A P DLVFRYDDR |
| UniRef90_UPI0003B31E9A | QL R F T P K FIF K R D D S L D S |
| UniRef90_UPI0003B6B66E | RI RHVPTLHFTADMALREA |
| UniRef90_Q8K9H2 | NLRIIPIIVFFHDDS F F K G |
| UniRef90-UPI0004281706 | QI H TVVPTLHFVYDRTSERA |
| UniRef90_UPI000367C296 | D L R H T P SL N F I Y D |
| UniRef90_K2C716 | EL R H T P QL HFLY D A S L |
| UniRef90-UPI0002626972 | GVRFTP T L T F V A D T I P D E A |
| UniRef90_Q8D2X7 | R L R I DP KL T F I Y D Y S L $\quad$ K G |
| UniRef90_F7VET6 | RLR R AP EL HF QPDT TL D Y A M |
| UniRef90_17A180 | RVVR V VPELEFFDDDTLD |
| UniRef90_U2W745 | NLR HTPELS FVADRSAEYG |
| UniRef90-C8RXF9 | T L K H T P D R F L P D E T F D R |
| UniRef90-H3NN30 |  |
| UniRef90-D0WDY7 | TWRVTPEL R F L L D P SV DEA |
| UniRef90_UPI0003B68AF0 | R L R I A P EI D F RPD K Gl E H G |
| UniRef90_UPI000381ED2E | GLRHSPSIT F VA D QVQD |
| UniRef90_Q1LSK9 | HL R I VP K L T F V Y D Q S L S H Gll |
| UniRef90_UPI0004296EAD | GL RLLT P EL Q F I Y D |
| UniRef90-IOHGP4 | GLR HS P SLAFVLD NVLD N |
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| UniRef90 B8EIA6 | S L R F A P DVRFKA D P GFE Y |
| UniRef90-R6S6S9 | D I Y K V P ELIP I K D D T L D K |
| UniRef90_U2VFM1 | GWRVTPELTTFTIDKT T DEA |
| UniRef90-K0F4E3 | GVK F T P T L A F V L D K |
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| UniRef90_R7KZE8 | HLKK C P ELK K I A D D S |
| UniRef90_R7P743 | E I R H T P ELLK FI Y D E S I S Y G |
| UniRef90_K7S5Q8 | GL R Y A P T L T F VR D A T A E T A |
| UniRef90-K6VIH4 | G I R L T P S L E F V A |
| UniRef90-D5U5T3 | TI R Y VP NL T F H Y D K N L |
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| UniRef90_UPI000255D0F3 | TI R L T P T L E F $\quad$ PA D E $\square$ P E N A |
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| UniRef90-A5EWY8 | SI R K V P EL Q F Y Y D Q S VE Y G |
| UniRef90-Q2J2J8 | NLK Y A P DLRFRIDERFAEA |
| UniRef90_UPI000371C9C1 | TLKKY T P NL R F R I D E T F D R |
| UniRef90_S7U439 | QMKKT P EL R F S F D D Y LE |
| UniRef90-Q2J730 | G VKVT P T L T F V H D R |
| UniRef90_D8DT41 | QL R IVPEL R F F $\quad$ D D S L D Y |
| UniRef90_UPI0003B39D56 | $K L K Y$ P Q L R F S R D Q F L E |
| UniRef90-C6C0D1 | R V R Q I P ELRF V H D N F L E E |
| UniRef90-F0RGU0 | K L R RVPELL L F FIDD D S L E Y |
| UniRef90-M9RCT7 | K L K V T P DL RFRID DMY R |
| UniRef90-UPI0003A3813A | GVRFT P T L T F V A D |
| UniRef90-K1YBU4 | GL R F T P EL Q F R Y D |
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| UniRef90-A0A023D0P1 | RL R V A P EI HF QPD T ALLDHAM |
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| UniRef90-C0EAK4 | HMRKCPDIMETPDD S I E Y |
| UniRef90-B1KRQ9 | K L R V M P EL R F V Y D A S L VEGM |
| UniRef90-D5UM55 | $\mathrm{G} V \mathrm{R} \mathrm{F}$ T P T L R F EPD |
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| UniRef90-Q0AK66 | EMKFTPELHFHADNSFDTA |
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| UniRef90-G7J7U0 | KL R L T P EI R F LEDESFERG |
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| UniRef90_UPI000225AC16 | T TK Y VP AL K F Y S D A F D Q A |
| UniRef90-Q2CKF7 | TLKK F AP DL R F RVDETFDR |
| UniRef90_G8UL15 |  |



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| UniRef90 V8G2E7 | IHTVPTLHFHHDNQLAHGD |
| UniRet90-R5TB18 | KLRLIPDITFK1DDSMNYG |
| UniRef90-R5W | RLK |
| UniRef90-D7B4J6 | G1 R H TPS |
| UniRef90-B8ZRT3 | GVRFTPT |
| UniRef90-D3PEG0 | RLKKDPSLEFYIDDVVDEGL |
| UniRef90-C7NH19 |  |
| UniRef90-UPI0004652E60 | KLRHVPE |
| UniRef90 UPIOOO36A6209 | QLK Y A P D |
| UniRet90-F8L9T5 | VMRYFPSLKFLLDRTVDKQM |
|  |  |
| UniRet90 H8XRN |  |
| UniRef90-R7N | DLRHT |
| UniRef90-R7J | RLKTVPE1 |
| UniRef90-UPIO0034DB46C | Gl RHTPS |
| UniRef90-EONVB5 |  |
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| 俍et90-A3U1H6 | K F |
| UniRef90-A9WPV9 UniRef90 R6AM17 | DLRLTP P P |
| B6B |  |
| Ref90-D8JY85 | LRYAPDL |
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| UniRef90_S6G703 | DWRSVPNLNFEYDESLDRA |
| IRe990_K2EQC7 |  |
| 隹ef90-UP100035E | R S |
| UniRef90-R6R66 | TLLRHVPALTFIDATDS |
| J3AMV5 | GMRFTPDLKFVHDQSFDNA |
| UniRef90_S7UM20 | k |
| UniRet90_R9LCE5 | K |
| UniRet90-v4P |  |
| UniRef90_UPl0004199 | E |
| UniRef90-A4QEZ | GVRFTP |
| UPI0001C373A6 |  |
| UniRef90-A0AO23NNV6 | RLRRVPELRFKYDDSVDKG |
| UniRet90-W6JYN9 | Gl R L |
| UniRet90_A0AO22K | GVRL |
| UP100037586 | K |
| UniRef90-F8EN19 | RLR R VPELAFYLDDAEYA |
| UniRef90-F9 | QMR\\|VPELRFFVDDSGDY |
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| UniRef90 U4TFP2 | NLRATPKLRFEYDGSTEQG |
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| NoE317 |  |
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| Q6 | R |
| UniRef90-O65 | KLRLTPEVRFUEDEAMERG |
| UniRei90-I3TRJ3 | SLKFTP |
| UniRet90-C2GKY4 | SURFTPTLSFELDT |
| UniRef90-Q8UJ52 | RMKYMPELRFRDD |
| UniRef90-UPI000382BF40 |  |
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|  | KYMPE |
| UniRef90-K2BLL3 | QLRDAPQL |
| UniRef90 R5CQ12 | N R R NT |
| UniRef90 R5BBE |  |
| UniRef90-UPI0003B41E6D | G\| R |
| UniRef90-U3 |  |
| UniRef90-UPI | DLKFTPKLRFEEDTRFEEA |
| iRet90_A0A0 | ALKHTPDLKFQLDV |
| P10003C | G |
| X1N1E0 | K |
| UniRee90 UPIO00475FCE0 | RK |
| UniRet90-C1EAK4 | G |
| Unit | PKLTFVADFSMKEG |
| Ref90 Q493T6 |  |
| UniRef90- F2CY77 |  |
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UniRef90 A8PNLO UniRef90_UPIOOO372767A UniRef90-UPIO003B56236 UniRef90_UPIo0036085FF UniRef90-C6HXK3 UniRef90-UPI000255AO17 UniRef90-UPI00036D7BF9 UniRef90_10X9W8 UniRef90 UPIIOOO29AF68D UniRef90-UPIo0035C8F9B UniRef90-14BWB2
UniRef90-UPIOOO3B57736 UniRef90_UPIOOO36C8771 UniRef90-A9DXZ3 UniRef90-UPIOOO4292F41 UniRef90-M2SBN6 UniRef90-Q2S1N8 UniRef90_UPIOOO36F9910 UniRef90-G4ABV2
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UniRef90-L7LIV1 UniRef90-R6X3W9 UniRef90-R6E2C1 UniRef90-D5BEK4
UniRef90 R5GEA5 UniRef90-D4MJE8 UniRef90-B6AUZ4
UniRef90-D3SM15 UniRef90-UPI0003194C32 UniRef90-A6CF42 UniRef90-G4R996 UniRef90-A0A022LX31 UniRef90 A7HZ944 UniRef90_UPIOOO3781905
UniRent UniRef90-A4EN50 UniRef90-J9YYO5 UniRef90-D5BU75 UniRef90_C8XJC1

UniRef90_L1MG39 UniRef90-H9UJA5 UniRef90-UP1000472EEAD UniRef90-UPIO0042A885C UniRef90 A6EL54 | UniRef90-D9V4H6 |
| :--- |
| UniRef90 | UniRef90-W7Y3E8 UniRef90-FoP135

G H A R 50
60
VAK GLIE CK ${ }^{70}$
70
80 SAATVYYYTVFGSEEERAATAAADEESAAKGLIVRSEVGRRTM










 $S Y A K V Y Y S V L G S E E Q V A K D K$
$S V A K T Y$
$V$ $K$ SA Q I Y V A V D G G VK E E E




 $A Y A D D Y V S$
$A H A K V V F$

RHAQVRLH LGKQPGEQQ

G $\square$ C T A Y LSVFPSE
RIIATAFVLPLGGKDKE


GIA KVY LSVVFPSDK

GQAKAYLSVFPS EKMEE
$\begin{array}{lllllllllll}S & D A & K & V & Y & L & S & F & P & S & N\end{array}$

GE I K AVTKNTPA
$\begin{array}{llllll}\text { R S A } & K & V & Y & V & V M G \\ A & H & A & K & V & Y \\ F & T & V & 1\end{array}$

 S I A KV Y L SVF S P GRDEK P $K$ I A T A YVLP L G G
ELATVYFTALNNNKEF

## RHATAFVKAIGGSDEAM




D
$G \vee A T V V F F T$ I $N$ G D K T S AP E K
KTSAPEK
$N N A H L Q Q E$ $\qquad$ K SL

HDATVFYTVLGDDAEPNVAEALEGI RSNKPLIRHELS QRT

 SSARVVYLSIFRD ERAEEMMKWIVENASTVVYDDGNRM


 $K L A N V Y V M P L G G E N A E D \quad V V S A L L N$ QHASIF YTVYGTEEERADSAAALK
R HATCFVA PLGKGDAAALAAAL
SQAKVYI S VFP HDKASE ILKKE
 RI A T A F V L P L G G H N Q G K Q E T KI AKAYVLPLGGKD ADEVI NKLKEYSFLIRKII SKKV



 S $\square$ AKVYVSVEPTTNAAAI VKEINDGKSKIKHQVAQRH
 GYA DVVYVTM M E P M T M S N HE E S DK VL N K A A G F L R T E L S H S L


|  |  |
| :---: | :---: |
| UniRef90＿K1YU42 |  |
| UniRef90－UPI00014C3967 | Qi RRVPVIQFRFDESV |
| UniRef90－Dol | TLK |
|  | VK H |
| UniRef90－G6A1 | HLRRLPVLK |
| UniRet90－T2GB | RSRAL |
| UniRef90－M5EE | RMK Y |
| UniRee90－UPIO003B3FOE2 | KMKYAARLKFLPDQSFDVG |
| UniRef90－E1VUD4 |  |
| UniRef90－A5P | GLK FAPK |
| UniRef90－10R2X6 | G｜RMTP ${ }^{\text {a }}$ |
| UniRef90＿U2KGPE | K RRSPA |
| UniRef90－H1GSV2 | KMRKVPDLLFYVD |
| UniRef90 UPIIOO047AFCE7 | RLRRMPNLEFFIDD |
| UniRei90－UPI00040A3B97 | QLRITPELAFYLDD |
| UniRef90－UPIo0037E5668 | SLRQıPK |
| UniRef90－J1K11 | RMKYMPEFR |
| UniRef90 R5SZ93 | RLRVTPE K |
| UniRef90－UPIO00410FD20 |  |
| UniRef90－W8JF17 | VLK YFPEL |
| UniRef90－UPIo0047E4BAC | RVRK门PEL |
| UniRef90－C1M |  |
| UniRef90 G9RTIS | HI RKAPEFRFVADD |
| UniRee90 UPIO0046F6EC1 | RLRY |
| UniRet90 W6 | EVKFVPELE |
| UniRef90－D2R906 | GLR R M P PLL |
| UniRee90－UPIO002555225 | RLRQTPKLRFHEDQGTREGF |
| UniRef90－E8UD11 | HIHTVPTL |
| UniRef90 UPIO0035D911C | NLFRVPELH |
| M | RMp elt |
|  |  |
| UniRef90－G1WEM5 | Y |
| UniRef90－S9RIB1 |  |
| UniRef90＿A8PNLO |  |
| UniRef90＿UP10003 |  |
| UniRef90 UPIOOO3B | HTRF |
| UniRef90 CPIOOO3608 |  |
| UniRei90－UPIOOO255A017 | K K RMP |
| UniRef90－UPIO0036D7BF9 | KLRKVPNLVFFITDDTLDR |
| UniRef90－10x9W8 | RIRQFPHJQFlVD |
| PIO | － |
| UniRef90－UPIO003 | H |
| UniRef90－14BWB |  |
| 㑑 | KFLPKLTVED |
| Re990－UP100036C8771 |  |
| UniRet90 A9DXZ3倍 | RLK K S P |
| UniR | STKYTPELKFRLDESYAEA |
|  | RE\PELKFFHDESLEEA |
| UniRef90－UPIO0036F9910 | GVRF |
| UniRef90－G4ABV2 | RLRUV |
|  | ¢ |
| UniRet90＿UP100046 | LKYMPERFR |
| iRef90＿Z4WW27 |  |
| UniRef90＿K6GH | Q R RVPKLIFKYDESLER |
| UniRef90－R6114 | Q |
| UniRet90－A5CXX7 | R P P V R |
| UniRet90 A8UFU5 | RVRETPQ RFE |
| UniRef90－L7LIV1 UniRef90 R6x |  |
| UniRet90＿R6X3W |  |
| UniRef90－D5BEK4 | KLRKMPDLSFFTDD |
| UniRef90－R5 | QLRHTPELTEEIDNSEAYA |
|  | KMRKL |
| UniRet90－B6AUZ4 | ALKHSPDMRFRLDETEDK |
| UniRef90＿D3SM15 | DIKYVPNMRFKFDKEL |
| UniRef90－UPIO003194C32 | E |
| UniRef90－A6CF |  |
| UniRef90－G4 |  |
|  |  |
| UniRef90－A7HZ | TFKYMPDLTFEPDTSFDKA |
| UniRef90 A3XRF3 | RMPEL |
| UniRef90 UP1000378 | GVRHIPELI Y |
| UniRet90＿A4EN50 | F AP |
| UniRef90＿J9YY ${ }^{\text {S }}$ |  |
| UniRef90－D5BU75 |  |
| UniRet90－C8XJ | Gl K F |
| UniReef90 L1MG3 | GVRYT |
| UniRee90－H9UJA5 | NTR |
| UniRei90 UPI00042A885C |  |
| UniRef90－A6EL54 | QLRRMPELH |
| UniRef90－D9V4H6 | TP |
| Un | G |
|  | N |
| UniRef90－FOP 135 |  |
| UniRef90＿K7YNT1 | KFTPSLT |

UniRef90 UPI00002933FD UniRef90-R7FM43 UniRefefo-M1LS38 UniRef90_UPIo00299F1AB UniRef90-UP10002E22D96 UniRef90_N9TTT4 UniRef90-UPI00035C8B4D UniRef90 UPIOOO4709B0B UniRef90_A0A023BYF4 UniRef90-J9GRP4 UniRef90-D5SQ07 UniRef90-Q1AW53
UniRef90-I3Z2E5
UniRef90-F4KNG8 UniRef90-UPIo0047B33AA UniRef90-EOY132 UniRef90-W7BX33 UniRef90-UP10003B5DD6D UniRef90-R9GN10 UniRef90-Q7NBZ3 UniRef90-W5SQC1 UniRef90_U2J7A2
UniRef90 O8RJY9 UniRef90-Q11P01 UniRef90-C6X0X9 UniRef90_A8JOVO UniRefofo-A5IIHO UniRef90-BOVFC2
UniRef90_K5C8R UniRef90-UPIOO047AA131 UniRef90_UPIO0047C5E13 UniRef90-S3Y5K8 UniRef90_W8VP39 UniRef90-S5LW58 UniRef90-UPIO0036FC824 UniRef90-UPIOO041EE2D2 UniRef90_- P10003
UniRef90-Q8KFTO UniRef90-R7LWG9 UniRef90-GOIWV2 2 UniRef90-M7Y6B5 UniRef90 - 10 IPR2 UniRef90-UPIIOOO36CC347 UniRef90-17JVN6 UniRef90-UPIo003B6638F UniRef90-W5HIR4 UniRef90-A8GNF9 UniRef90-R6Z2K5
UniRef90-W9UQ86 UniRef90-QOSM49 UniRef90-X5K727 UniRet90-UP1000301700C UniRe90_-E4KE2 UniRef90-UP100037CAB54 UniRef90_LOFV75 UniRef90-V9TVF0 UniRef90-A0A023HXX3 UniRef90-A6DGZ4 UniRet90 U2RB52 UniRef90 R4Z5Y1
UniRef90 JoPZ12 UniRef90-Q26H81 UniRef90-U6B4J2
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UniRef90 H2CAZO
UniRef90-X5DGF4 UniRef90-F4QJL3
UniRef90-B3ELN9 UniRef90-Q0YSJ7 UniRef90 X5J773 UniRef90_ELTJD9
UniRef90_A9NF13 UniRet90-G2LFH7 UniRef90-EOQIC1 UniRef90-UPIOOO40D9223 UniRef90-Q98PP7 UniRef90-A0A011 QDTO UniRef90-F21048 UniRef90-Q3YS02 UniRef90-UPIO0037123DF UniRef90 UPIOOO369DDB1 UniRef90-A1BDF2 UniRef90-UPIOOO36427A2 UniRef90-TORYC3 UniRef90-AOAO160MF6

RSERVVQQV KKKRVQNLI ARNNDLTREMDLRKYGFITFSSVKMTADL


## R

 RLAKKASQAVLETVSLTVMRHMRDPRVKNVTVLSAEVAPDM RQQKYSK LI QKELGEDFQKEAKPVVGNMVTVVRV MMSPDL RQQKIARLI QKEMGE FRPLTQQLRGVLVSVTLVRVTSDL


## 

 R K S K L E S L L V Q Ell S N L I S K G I


 R I P R L Q A ELK K L F N I A A L S Q K L N D P K L A WV Q I T D V V I S K D L



 R

RTDKVSSLLQREL
RNERVRKFLMRD SAIFEKEL
RQQKYSKELIMRE SE
RQQKYNKLI QKELGE F
RAD RVSKEI KEVV A I L F S R Y A K H M I G N F L T V S R V I I S P D L
NRVANTFSEEI GAMLEGELSSDPRIAAPSYVTNVVLAPGG
 S SLTTIA DVELSNDL

$R T D R V S D Q D Q R D L A M L I Q R E\|K D P R L G M V T\| S Y V K V S K D L$


 $R$ Q R K IVA Q I I Q E D F S ELL F R K Q A A D D S K A Q RQQKYSKLI QKELGDDFQRESK P LVVGMVTVTRVLMSPDLL

 R K K G L E K E I S R II G M TII L T E V K N E K I N L V T I H K T E LLT K D G







 $R P E Q V Q S Q L L R V L S D A I S Q \quad L R D P R V P M V T V E R V A V T S D Y$



UniRef90_UPIo0002933FD UniRef90-R7FM43 UniRef90-M1LS38 UniRef90-UPIO00299F1AB UniRef90-UPIO002E22D96 UniRef90_N9TTT4 UniRef90-UPI00035C8B4D UniRef90-UPIO004709B0B UniRef90_A0A023BYF4 UniRef90-J9GRP4 UniRef90-D5SQ07 UniRef90-Q1AW53
UniRef90-l3Z2E5
UniRef90-F4KNG8 UniRef90-UPIO0047B33AA UniRef90-EOY132
UniRef90 W7BX33 UniRef90-UPI0003B5DD6D UniRef90-R9GN10
UniRef90-O7NBZ3
UniRef90-W5SQC1
UniRef90_U2J7A2
UniRef90 O8RJY9
UniRef90-Q11P01
UniRef90- C6X0X9 UniRef90-A8JOVO
UniRefofo-A5IIHO
UniRef90-BOVFC2
UniRef90_K5C8R
UniRef90_UPIO0047AA131
UniRef90_UPIO0047C5E13
UniRef90-S3Y5K8 UniRef90_W8VP39 UniRef90-S5LW58 UniRef90-UPIO0036FC824 UniRef90-UPIOOO41EE2D2 UniRef90-UPIO003754A14 UniRef90-S5R3W6
UniRef90-Q8KFTO UniRet90-R7LWG9 UniRefigo-GOIWV2 UniRef90-M7Y6B5 UniRef90 - 10 IPR2
UniRef90-UPIO0036CC347
UniRef90-17JVN6
UniRef90-UPIo003B6638F UniRef90-W5HIR4 UniRef90-A8GNF9 UniRef90-R6Z2K5
UniRet90-W9UQ86 UniRef90-Q0SM49 UniRef90-X5K727 UniRef90-UPI000301700C UniRef90-13ZKE2 UniRef90-E4T9NO UniRef90-UPIO0037CAB54 UniRef90-LOFV75 UniRef90_V9TVF0 UniRef90-A0АО23HXX3 UniRef90-A6DGZ4 UniRef90-U2RB52 UniRef90-R4Z5Y1
UniRef90-JOPZ12
UniRef90-Q26H81
UniRef90_O6B42
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UniRef90-H9UA09
UniRef90_B5W1 W9
UniRef90_R4RLX3
UniRef90_H2CAZO
UniRef90-X5DGF4
UniRef90-F4QJL3
UniRef90 ${ }^{\text {B3ELN9 }}$
UniRef90-Q0YSJ7
UniRef90_X5J773
UniRef90_E4TJD9
UniRef90_A9NF13
UniRef90-G2LFH7
UniRef90-EOQIC1
UniRef90-UPIOOO40D9223 UniRef90_-998PP7 UniRef90-A0A011配TO UniRef90-F2048
UniRef90 Q3YSO2 UniRef90-UPI00037123DF UniRef90-UPIOOO369DDB1 UniRef90-A1BDF2 UniRef90_UPIO0036427A2 UniRef90-TORYC3 UniRefofo-AAAO16QMF6
UniRefon

KHATLYYS VLNPTKK DE TVN
${ }^{60}$ DRERIEP ELN ${ }^{70}$ 70 ELNLLVPVFRKFLLSASIL SHAKVYVTHL
AHAKVYFTVFG
RNATVWITRLGGGDATDL LAA A $N$
$N$
N
K
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A | SK |
| :--- |
| K |
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| L |

NAHAGEI RYKLGARI
 SHAKVFVTFS SFAKAYVTLS STAKKVYMSVFPHOEGNKN STAKVYMSVFPHQEGER RYSKVWLSVMGLQDEK SHATVFYSLLAGGDPE SVAKI NLSLLLANN SKAYi Y Y Sill P SKAYYYLSIFF PSPNP ERAD
ALARVYVLTPLGG QQATVFVSVL EEREQKDALAALEKAHGLLKSEVA A ARVESFLGNPN VQTALHTILKS AIARVFLSFFNSQDAALALSTIKA HSNELRYKLGSR


 QVVKVFVSVYSDDYGKRV GHVKVFLAFSSKEN HYAKLYFSHY NNPASHDQ SVAKVYVSVFPADKAEA1] AIAR|YLSFMGTNDKEGL GHAKVFYSFM DDTEKAKN NQTKVF TSAMPENQSE ELAKVYYTFLFSGENDNEKTVLSLLNRQIYE:QQELNKRL TSAKVYVSTFPT K KGKEELIASGNHASGFFSRKLGKVL SYAKLFFTTF NKDDSDKNTLDNLSKAKNYDRFKLSKKL
$\qquad$
SFARVIYSVLGSE AQDEKTKEVIEKNTPKIRYNVGKVL

KSARIYYTVFPGVDRK
KSARVFVAVHGNEEEEA STLEGLTTARAYVRSQLRDRM GVARVYLSQLLMREGSGQEMLDMVHDNQKLIRQALAKRV QVCKVYVSVFGDERGKKVNAMAGLKDKYKYVRSQUGKRM KFAKTFDSVFGNEEEKE KTMEGLKKSASFARMQLARRM GYSDVY TVMPLGDQTADEQSLAVLNHAAGFCAKNYRKAL IGNKVF:GSI KEGASLDNAVKALNNAKGFIVQSQUIKRIM SFSNUYYTLGKD DKETVALAAEVLEEHKKEDRMELAKKD
 GYADI YVTVMETMAKDFHEESLQVLNKASGFLRTELSHDL GVAKI YLSFLLANNQELLEKIDAH KKEIRKHLGKRI RNATVWVTPSV NEQTEKI DRLKRASGQLSSEVARAV RNATVFVVVRG KGVDGDEVVRALNASSNVVRKSVFKYL RYGDLTFSILDLKNNVNKEKILEELEKLKGFFRKTIGSQL
 GYAKAYLSVFPADKAAA
 RYADIFVSVLGDENKK QHAKIVVSUYGTEE ARRS SFANVYYTLLSDSPDLLKLLAS SEARVHCSURPS EFANDTWEAVKMA

## 

NSNVQA
EKE RKT
SKE
SLAKVYLSFSLNEDQEGL SLARVYIRSFDGTDMEVLR SYCYVYYTII DDSVEAKKKVQDELDDAKNF
TAARVYVSGDGGRESNLALTVRVLNEATDF
KYAYVY:SVLGEAQGQEEI:A
SHCNVYVTFS
GVAKIYLSMMDAKDKPAL
RHADVYFIPLSGDKSEDAFKTVKEL
KHAKI LLGHVGSVTQQKAA QQAKVFISIFGDDEQQE
GTAKVYVSVTGSAKEQA
GI ARIYVSSL
ALATLYWDTE
$G L A R V Y V S A M G$
$S L M U V G S M$

|  | 90100 |
| :---: | :---: |
| UniRef90_UPI00002933FD | NLR S T P T L K F F Y D D S |
| UniRef90_R7FM43 | DI Y K IP EL HFVQDELYDQ G |
| UniRef90-M1LS38 | K I H TV P T L H F LY D K H $\square E K$ K |
| UniRef90-A8TZ00 | KLKYAPRLQFARDSAFD |
| UniRef90-UPI000299F1AB | R V R V VP ELT F F VD D T N E Y |
| UniRef90-UPI0002E22D96 | GVKHTPSLEFVPD |
| UniRef90-N9TTT4 | DWRKVPELHEELDTVDDGAM |
| UniRef90_UPI00035C8B4D |  |
| UniRef90_UPI0004709B0B | K WR K VP K I DF L L D NVID H G I |
| UniRef90 A0A023BYF4 | K L R R M P ELS Y FID D SLLEY |
| UniRef90_J9GRP4 | NL R Y T P EL |
| UniRef90_D5SQ07 | E TR Y T P V L T V L D Q |
| UniRef90-Q1AW53 | R L K R T P RL R F EPD P TVER |
| UniRef90_I3Z2E5 | GVRTIP EII A F F M E S A S Y A |
| UniRef90-F4KNG8 | QLR I I P ELE Y R I D D S LD Y |
| UniRef90-UPI00047B33AA | K ARIVPPQLDFFLDDTSDY |
| UniRef90-E0Y132 | S L K Y S P DLK F V L D R F P Q |
| UniRef90- W7BX33 |  |
| UniRef90_UPI0003B5DD6D | K VR I I P Q Le F F VD D T S E Y |
| UniRef90-R9GN10 | RARVVPSSLEFFIDD TSEY |
| UniRef90-Q7NBZ3 | T IR R I P QLVF Y Y D D S I S K G |
| UniRef90-W5SQC1 | RVRNTPKLNFLRDDTIS K A F |
| UniRef90-U2J7A2 | K AR\\|VPDLEFFLDD T NEY |
| UniRef90_Q8RJY9 | N L K R V P H L R F V |
| UniRef90_Q11P01 |  |
| UniRef90_C6X0X9 | Q V R I I P DVK K Y L D T L D |
| UniRef90_A8J0V0 | RLRRLTPEVRFVYDDAEEEA |
| UniRef90-A5IZH0 |  |
| UniRef90-B0VFC2 | $\square \mathrm{MRT}$ T P ELS F Y Y D D T E D R A |
| UniRef90-K5C8R0 | HL H T N P K F T F V W ${ }^{\text {N }}$ |
| UniRef90-UPI00047AA131 | QLRRKMPDLS F Y ND D S L E Y |
| UniRef90_UPI00047C5E13 | RAR V VP EL EFYVDDTAEYA |
| UniRef90_S3Y5K8 | T A RLLTP SLE F F ED T |
| UniRef90-W8VP39 | RFRRMPELQFYNDDSLEY |
| UniRef90_S5LW58 | EMRSVPELTFEFDKTLENA |
| UniRef90_UPI00036FC824 | K M K F I P K I E |
| UniRef90_UPI00041EE2D2 | N M R A V P D L K F $\square$ Y D T S LD N A |
| UniRef90-UPI0003754A14 | K TRNTPHLT F EYDRGFDH |
| UniRef90-S5R3W6 | H $\square \mathrm{H}$ T L P $\square$ L NFFY D N S $\square \mathrm{EN} \mathrm{A} \mathrm{M}$ |
| UniRef90_Q8KFT0 | RFRRIP ELLEFYEDRLIFEQA |
| UniRef90_R7LWG9 | R L R L TP EL R F VY T N GLLE E |
| UniRef90-G0IWV2 | GVRVVIPELAFFLDESAAYA |
| UniRef90-M7Y6B5 | GARIVPELALLMDESGSYA |
| UniRef90-IOIPR2 | PMKSVPKVQFFPQEEAEE |
| UniRef90_UPI00036CC347 | $\mathrm{G} V \mathrm{R}$ HVP ELT T F A I D R S |
| UniRef90_17JVN6 | S V R F TP TL A F ELD D |
| UniRef90-UPI0003B6638F | R L R V V P DLVFFL D D S A A Y A |
| UniRef90_W5HIR4 | KL RLT P Ei RFIEDESMERG |
| UniRef90-A8GNF9 | NVKFS PDI R F HYDHGFDNA |
| UniRef90_R6Z2K5 | NLR N T P ELLT F VLDE S $\square$ E Y GV |
| UniRef90_W9UQ86 |  |
| UniRef90-Q0SM49 | K V R S T P K L L F VK D D S L K S F |
| UniRef90_X5K727 | QVR\IP QLSFFLD T S L D A |
| UniRef90_UPI000301700C | RIIKKI P NL DF K Y D Q S L V Y G |
| UniRef90-I3ZKE2 | GV R HL P EI SFH ID S S |
| UniRef90-E4T9N0 | QVRRVIP QL S F Y L D T S LD E |
| UniRef90-UPI00037CAB54 | R TRTTPRLRFHYD |
| UniRef90 L0FV75 | G VR S \P ELVF Y P D D S S A Y A |
| UniRef90_V9TVF0 | RMKFTPRLI FKRDTAFD |
| UniRef90-A0A023HXX3 | K L R Y V P R L H F K LDVE F E N |
| UniRef90-A6DGZ4 | RMKFTPVI HWHCDDDTPETA |
| UniRef90_U2RB52 | S $\square$ R F VPEI R \( |
| ) H LDD D S I E Y G I |  |
| UniRef90_R4Z5Y1 | RARKTPQI SFERDTS I EA GLL |
| UniRef90-J0PZ12 | R M K M P EL R F RLDDS SFDN |
| UniRef90-Q26H81 | R LR R M P ELQFFNDDS LE Y |
| UniRef90-U6B4J2 | RLLK Y VP Di R F R Y D K S L Q N |
| UniRef90_G8QW25 | K TRNTPVLHFKADDSLREG |
| UniRef90-H9UA09 | R M Y VA P EL R F K E D G I E |
| UniRef90-B5W1W9 | R LR R T P EVVFLEDRSLERG |
| UniRef90-R4RLX3 | K F R K I P DL V F K Y D K S L S Y G |
| UniRef90-H2CAZ0 | RLRQTPHFIFSKDDSIREG |
| UniRef90-X5DGF4 | GLLRVIP D L EFY |
| UniRef90-F4QJL3 | D MKF TPALRFLHDESFNEA |
| UniRef90 B3ELN9 | RFRR\P E L E F Y E D R L Y E K A |
| UniRef90- Q0YSJ7 | RFRRI P ELEFHEDHLYERA |
| UniRef90-X5J773 | KlY K I P HL K F l L D D SVGQ |
| UniRef90_E4TJD9 | K I K K V P S L S F FVV D T L D Y A |
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 $K Q R Q V A A M I Q R E F S V V L Q N E G R L I Y G A L V T V T R V R M S S D M$
 $R$ QK QV A AL L N E E I N S I F QK G L N ML L D G G M V S V S G V K V T P D L







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


 $R$ L RVVL N G L L Y K S L T E L L S Q E V Y D L K Q Q R T E SLL Q E V L S L A L S Q


$\square N H \square A R E K L A H \square L L F D T A D P N L S L V V V S D V E V S V D K$



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




 KKERL GE QI K E II I A S F VVVENA PT D L GVVVS








 QVC K Q A E R T L R T R V L K K L R T E S II L K ELI P EALA H L D D A NL KNL CVVDDVECRKGR $R T V R Q A R L L Q S Q L E E F L S A E V L H G M L G G V S I V H V E Q Q T T R$
 KI K R TE SLLLLE LI PEAL G QL N DNRLLHELDIVVEVKCSRGR

 R Q Q R VGLMMLEGFIQDVIL RETDLCQGSQVWVTSVMMS P D L $R R L R T Q S V L K Q L I B E A L A S \quad L E D E L L R G L C V T D V V E C K R G B$ $R C R V L N G L I$ HKAVLEMVS QEFYDLLKLE $R$ V R MV A K QI Q R E L A D M L T R D P V M Q R A S L T T T V A D L




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conf
sol25
sol5
sol0
jhmm
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