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L L Y G S D E E T L P Q A VGRRL L A E R GMTV S T A E S C T G G L V A K W



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 S N E D K E L Y E V $\operatorname{L}$ A S K L L L L E K K V

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| $D$ | $T$ | $V$ | $G$ | $A$ | $L$ | $L$ | $K$ | $Q$ | $K$ | $Q$ | $L$ | $T$ | $I$ |
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| $A$ | $V$ | $V$ | $G$ | $K$ | $L$ | $L$ | $L$ | $Q$ | $R$ | $Q$ | $Q$ | $T$ | $V$ |
| $S$ | $V$ | $V$ | $G$ | $E$ | $L$ | $L$ | $R$ | $Q$ | $A$ | $G$ | $Q$ | $T$ | $L$ |

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| $V$ | $Y$ | $A$ | $T$ |
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| $V$ | $F$ | $G$ | $E$ |

$D \square L P$

| S | E | V |
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| E |  |  |
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$D E D \square A L E K A D L D N M K E K G L L T L S T A E S C T G G Y I A B L D$

M
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 V
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 A $T A$
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$G G L$ | 1 | $A$ |
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L$A D D D$
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V
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$\qquad$ ADEE

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| UniRef90_G0VNY0 | $\checkmark \mathrm{H} \mathrm{YV}$ |
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| UniRef90-F3Z345 | A ERI |
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| UniRef90_D7DL74 | I D R\|N |


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 S S FVVAI E M A DGVVRK DY Q C D L S I A I T GYA GP GILGER GE EP G S E Q T A L E M A A G A L E R S R A GL T L S V T G DA G P D G G S A E K P V


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 LVYIAISEPSGTQVYEE HFEGDRDFIRNKSVLKAMIHT LVWFGVALKGQAPRAEHRDFKNRGRDYVRHQAAYHADELA TVCFGLAFPDGEVLANLHHFEDMGRDFIREQSVMYALHWA TVWFGYAAAQGVPFSQLM HFEGDRDAVRRQAVHFALTTL TVWFGWNVDG CS DSELQQFAGGRFAVRAATLRHALAGL

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 $T V W L A V A L D G A V Q A R R F L F P G D R A A V R L A T$
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 TV WF GWQVAGRT FGEHHLLAGDRAQVRAQTVQIALAGL TVCFAWASRGGNTTVIETRHFEGDRTQVREQAASYLLAGL AVWFAWGSAEN ISTGLKHFDGDRDQVRRQAVIFAIESV TVCFAWAFRGNHHYYCETRRFEGERNEVRLAAAHHALERL
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 LV WF G LA MTGKPVVVEKC DFDNRGRDYIRRETVKHAL RMG TVVWA WGSSDKLRTRCLCWPVE RS LFQTMIAAA GLDMI



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| UniRef90_R5MJ74 | A |
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| UniRef90_A9BRJ3 | N A L I S A |
| UniRef90-G8PHZ6 | ENFIE |
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| UniRef90-R7PR73 | LE Y I |
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| UniRef90-C6M1H9 | AK HL |
| UniRef90-M1FGR8 | R R F L S |
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| UniRef90-Q5X4B3 | LS TLK |
| UniRef90-UPI00047D1408 | L K V |
| UniRef90-E6ID86 | R R R |
| UniRef90-UPI0002FC8FEA | WRKLQG |
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 MV WAAYA I KNTPTLTQKYLL KGDRQHIREAVIERVLIDL

$\stackrel{\rightharpoonup}{L}$



 TVWI G L S I VGGKPTL A Y RYVVFQRDRNYNRRRAVEKEGFALI T I WI GLSVK GYETEAFQFVYGRDRNHNRRRAVKQGFQLI



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$L A E Q V G G S L Q Q K Q Q T L C T A E S C T G G G 1 Q Y A$
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 AS DS PVVERRI GDALREADATVVVAESCTGGLI GSL
 TECVSDEEKVILK LREKGMHVTCAESCTGGMI A A S




MSDGDRELADDFLEACTRHGIMAATAESCTGGMI DAA $T V Y G M G D E P L V A V I$ SGLLEERGATI AAAESLTGGLIIAAE

$\square 1$ S DKNENI EDKVEQELKKRLNYHISSFSESCTGGGLAGK

FY G G E Y E T L L S TVSELLK N S GLLS A S A E SL T G GL F S S T
A $\square F$ S S Q GES L E EVV L M MMEMR HL T L S SVA E S C T G GLL L A Q R

D E QLLSVLARETGDALARAGVRLVTAESCTGGWIAKLL
MMSES PDVLAAVEVSRRCREKGVVRLVLVEACTGGVVVAR


LYSEDGARVDDLI A HLLAA A GRRIA TAESTTAGLLAA R




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FGENEN


S LE ERTVEK LDEKRGLYYT TA E
D DESLSKEVQQNYDTGQTLGTAE
MS A P G GHDDVE Q A A WV V
SLAAQLLELAVQKNVMIACAE
LG QALAQAVDTALAQRQWTLATAESCTGGLLAGDE
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 SKEVA DAMAK GAKEKLLQTNYAVAVTGNAGPTTDDTDK SLLG SEEVA REMAEGARKAAEADLAVAIVGGAGP GGSEHKPEG
 SEPTA $\square$ WMA DQA R R $\square$ MDK D L A V S F T



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\begin{aligned}
& D \\
& \mathrm{~S} \\
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\end{aligned}
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 TVY I Gl A S SE G
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 $L V F V G V A Y A G S S F V S V N R H V F D G D R A A V$

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| UniRef90-F6DBG6 | 1 GLV |
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| UniRef90_UPI0004639E58 | TRL |
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| UniRef90_U7NHE6 | VRRL |
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| UniRef90-R5CRN3 | LQ Y L |
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| UniRef9 | _-M4S3C7 |









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MQ2


[^0]TVIWF ALLA GP ${ }^{130}$
LVIR
150
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LVRTWKVLFSGDRVLI QTSAEEEALLRKL TVWIAWGSPAG VDARPCRFAGDRDTVRRASVAEALNGV
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 TVCFGFYLUNGQLASSQLV FRA
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DFGRDINLSDATNQGLRLL AGDRAAVRQQA THYALKQS

 VYCAVADAHGTRIVEWQYPSFDRGMIRLRAVKDTYFLL MVCFGFCVQDQVQTYT CQFGNLGRNRVRESAVEFVFSKL | $R$ |
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$R$ RVCF G LA R C G GP T C V
TVVFARARRGEDPVEAELKLFADGRREVRRQ
 TVCFGFS DNGKSYTERKQFGNGGRNVVREKSVSFSLEKA TVH ATARSNER MMHRQELFAFETREEI
TVFGAAPDGTVAATK FKFDGDRQQVRQQSVAAAFDLL TVCFGWA $D A D G R \square R S E T R H F D G D R E A V R R Q S A C H$ TVVWI A WAVA GRTEA R S HRFATRGREWIVRHDSACSALDRL LVYLGCYCMGNTFV ERHIFKGDRSEVR
TVWFGFA $\square N G D$ VSTACQCFSGDRHEVRSKADEYALS QL TVFIGFSTPEETVAERFDF
TVYI AVATPEGEYVSG FVFGGTRAEDRSRTVREALR TVVI GLAGAGVRTVRTST FSGDRPAVRAASVDAALDLL TVVHI A VATPGGSRVESVLI DGDRAAI RTETAARAVRLV

LI Y I GLS
LVWCAWA LPGGRVMSA AEQFAGDRDAVRRQA LVLALTGL THALHAPHGVWSKKLNY PGSRSTARIRAVHAALD WL $T V Y L G L S G P S G A T V R$ MLDRLDGDRAAVRAGAVTAALREL $\begin{array}{ll}L V V F A R A A L R G Q D Y F T Q R I Q F E S T D R G A & R H A A T L F A \\ T & L \\ W\end{array}$ EVWCGVSYLDGVTAVRLPVNREGSRAEI RRQAVVLALALL
 TVHVAVSGPSGAAKTAALLR NGGREEVRKESVRRVLABL TVY Y A K G E VRAFHLFLPGFERNDVNFVSQK ETLL VV F VAl D GPQRKV TV WIAVG DESDVKTFKLSEDFGRD INLA


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| UniRef90_R7G6H3 | LK Fil |


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| UniRef90_R6B8T3 | E P LE Y S I Y GLL K K Y Qil TI T T A E S AT G GMI A S T |
| UniRef90-D0YVC2 | DS P QLVATLLLA QLA R R G WKL A GAESLLT G G M I T S T |
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| UniRef90_R5GTL3 | KIVSKDI NEMMWRA GK TLLCTA ES C T A GRila SVV |
| UniRef90_UPI0003901CF1 | E DLPL E E AVLRLLLR DRRHRLSSAESCTGGLFA ELL |
| UniRef90_W9GG90 | S ASARVVHRLTELGQTVACGESLTAGLVA A T |
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| UniRef90-H2J2B2 | MDETLLNAAKRAVQSLKKRNLTLSSAESCTA GMISMA |
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| UniRef90_UPI00047B2B57 | DLANCLQKKHWQLTTAESET G GLI IS A A |
| UniRef90-UPI000474B706 | DS MA G GVLA LLAERGQTLAVVAESLTGGLVAAE |
| UniRef90_A0A031HJX5 | TLLPRELIDAA TRVVEANRAAGRTVALLAESCTGGLVAAA |
| UniRef90-A0A016XDB7 | $\checkmark$ VHI A A QLQ ARGWMLA TAESCTGGLVAA A |
| UniRef90-M2UN21 | SFPPEELRRLIVQEVATLLKERKETISVAETVAGGLISAA |
| UniRef90_Q1YR86 | $\triangle$ A TLGNALS QCDAKVTAAESCTGGGVAHA |
| UniRef90-F5YKI4 | LTL A A A ESCTA GLVADR |
| UniRef90-UPI00035FADB9 | E EQLLSLLKQRAWKINTAESCTAGGI A A R |
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| UniRef90_A9KLS0 |  |
| UniRef90_S7W6G2 | EEELA TKIVT LLTTEQRQTIALDAESLT G GLL L C A S |
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| UniRef90_U3H873 | VE QVVSFL EKY QL SLVTAES CT G GLLMA S L |
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| UniRef90-Q5NY20 | EDIAA A MKQNGLVLVTAESCTAGLIAAAR |
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| UniRef90_V3P2N3 | EL T K K L A S K LT DLGL R L T TA ES CTG G K L S VA |
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| UniRef90_H6R3Y4 | A AELVA ALTA A GQTVATAESLLTAGLLLSAT |
| UniRef90-F9ZTG0 | E WALL QLGLLR H GVTLA TAAES CTA GSVA A R |
| UniRef90-Q5H9Z5 | A K ICVVT GLID N NLKVVIIT E S C T A GLLMS F V |
| UniRef90_T5KUF2 | R R G WTL GVAES L S G GALCA D |
| UniRef90_R7WSN4 | V VA ALLTR D GA TVA A A E S L T A GLL T A T |
| UniRef90_UPI00034AAC27 |  |
| UniRef90_UPI0003681DCC | E ELVALLNSRGETVSLCESLT A GAA C A E |
| UniRef90-Q3YQP1 | E $\square$ LEKAK T CVVLKL VENNSKI VIA E S CTA GLMMSF L |
| UniRef90_UPI000288A744 | CYGTNDDSLSSSKLTRMLI DNELTI A A A E S LTTAGLIMMAE |
| UniRef90-M2NGD0 | EKLGKLLIE K G Y SL S S T ESFTVVGGFA S Q |
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| UniRef90-B7C8F7 | A R QLV SLCTENHLTI S SCESLTTA GLLFTS T |
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| UniRef90_C5DS35 | M DFPPKRAEALVNRI SEILKSRHETV AVTEAACGGLLS S Y |
| UniRef90_K0YPX0 | A VELIQQCSLNHVTV SVVAES LTT G G K L C S T |
| UniRef90_R6XYZ1 | NTVEKTLVELLL L K N M T I S FAES CTGGGMLAS T |
| UniRef90_UPI00036A3BA7 | A RLVARLTTEAHETVACAESLT A GLVAA T |
| UniRef90_UPI0004721086 | MAESELLT A T A R R I I S T C S Q $\square$ G $\square$ S L A S A E SLT G GRFVAS |
| UniRef90-W8R7U7 | AEIVVQFFSDKQMKLTTAESCTCGLMASLL |
| UniRef90_R5ZJV7 | LVS MV F S IMEKRKLT FCS CES LT G GL F G A T |
| UniRef90_U7UVE8 | F T FEENSLEEAIVKRLID K GLKIIS F MESIT G GRLA S S |
| UniRef90_UPI00047B82DF | DALA GEI LA Y CER R QVVKI A A A E SLLT G GLLLA D A |
| UniRef90_R7LDI3 |  |
| UniRef90-A7ELL7 | D FPP Q KVR EVVLSEVVGLLKERGETV SVA E T A A G GII SA S |
| UniRef90_W0J158 | CYGQD PL AKVVAELLIRS QEQLLAVAETAT G GALVS A |
| UniRef90-UPI000382633E | AESCTGGLI A A T |
| UniRef90_UPI000466EA1B | LA AVI LA R C K L L G A K I A A E S LTT G GL L A D A |
| UniRef90_V5PGA3 | A $\square$ AVL D A CRKA G\M I A T A ESCTGGGLI A A A |
| UniRef90_J7LPK7 | MTPDDGASAAEQAVA |
| UniRef90_UPI000372501B | VA EILALLLRTS GRTVATAESLTGGLVGVL |
| UniRef90_W0GM76 | K ELVESLILKQKLT I A A Y E SLT G GLEFTSL |
| UniRef90- J2A1J9 | $R G Q S L A V A E S L T G G L V A G A$ |
| UniRef90_E7GAE1 | ELA EIL I E R D I S I S SVESFTVGGFANR |
| UniRef90-M2XF35 | LLE KLA R L A A A R GVVTVGTAES LT A G A I A A R |
| UniRef90_V5SGH5 | ETVETLARRIVERLAKS GLTLTTAES CTGGALA C T |
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UniRef90_N1MPQ7 UniRef90-C6X1D1 UniRef90_UPIO003687321 UniRef90-R6B8T3 UniRef90-DOYVC2 UniRef90-B5ZAR2
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120 SAEVAQEMSSGCQQLFKTDIALSTTGVAGPNSDEFNNEIGG NVYTAEHMATGALRLFSCDVALSTTGVAGP GPDGDDPAG
S SETAADMAASAAKTAATMAAVSVTGVAGPDGGTKECPVG SGECALAMAAGARKDFGAEDAFAATGVAGPGGSDQGNPG SEQTAKEMCLQTNQKFNTVDADSVTGNAGPQGYSENKEVGG
 DARVAVAMADGARVRDGATWGVSTTGVAGP GPAEGKPAG
 DA QVAQEMADGVAQLLGADVALATTGVAGPGPADGHEAG SSECASYMARGVKELFNTDVSVSFTGNAGPEAMEG KPVG SEDVA LAMAQGADRHSRAQVAVAVTGVVGPSGGSAAKPVG $D A E V A R R M A Q G V R T V L G A D W G L A T T G V A G P E P Q D G Q P V V G$
 TPAVVSGGLAEHTRSKLGSTYAVSESGTAGPTGGSTNRTPG
SEAVVVRSMVAGAAVAADADYAVAISGIAGPGGGTEDKPVG SRETACAMADGALEKSGAHVAVSVTGLAGPDGDGSGQPVG

 HPDVAAHMATGARDVLQATYGGATTGGVAGPEAHEGKXPGG
 SEAVARAMALGAARHSDANVAIANTGVADEPA DGTPAG SKVI AYAMASNVLNLMNSDISIATTGIA GPGGGSKNKPVG HPEVARQMAERVRAVLGADVGVATTGVAGPDPQDGQPPG
 SEETAAEMAKGAI AHSDAS LAVADTGI A GP GGSDHKPEG SVETAAAMAKGALADARQGYALAVTGLAGPAGGTPQLPVG SEATTRAMAEGIVDRLGATWGLATTGNAGPASQDAQGPVGG

 NS ITAA QMTLGCRKVCGADVGMACTGVAGPDPQDGEQAAG










 SPRTTVEMM Y RGVLNNDNPGTYACAMVSGIAAGPGGGSTEKPDVG
 S $\square$ Q C C L A M V N N L S Kl


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## UniRef90 N1MPQ7

 UniRef90-C6X1D UniRef90_UPIOOO3687321 UniRef90-R6B8T3 UniRef90-DOYVC2 UniRef90-B5ZAR2UniRef90
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UniRef90 E7GAE1 UniRef90-M2XF35

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140
NDGRGGIVIR
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TVYYSVRDKD VEQTNRLYDPHMERNDFAAFVSQRVLQDL TVYVGCALSTGEVETQECHFSGNRPQ RRASVVAALELA LVFVGCYLNGKTVTRERHMFSGSRMDVRKSATESALSGL
 LVY AGI SARKGMEASVYKTLQAGGSREMVRLRAAKHAMYMRL TVYVGLLVQGQEQVVCLHLFGLQERNAARRNGGVADCAEGGMA TVWFGWYLGPGSQQQEVRHFDGDCEAVILQASIFALERL LVYUGLCLN QTFFSFEYYFKGTRNEVRKQCVDEATKKL TVYVAVAAPGATAVARKLRSAVGRSGEIRTESVRGALELL TVVFARAEKGGDVHADRKAFGDLIGRGGI R TVWFSWGARVGLLLRAERLLLPGDRAAVRAAATEHALRGL YVALAVAREGGDTATREAETGSSEREGNMVAFAVEALKLVI TVWFAWHSPAGVKAKKYLL AGDRAAVREQADEDSLQEL
 AGSRWD TVYUSCYYKEKTHVI TVFIGGAANN FVETRNFEFVGDRDAVRQQAVQAALECL TVHVALAGAG KAGGRTHHUAGDRAAVRRGAVEAALRLL TQCYAWAFKAGPTIYTETARFDGARNETRRDSARYALERLD TVYVAVSSPRGAEVR HLHVPGDRTAVRAGT MVWVAIAGP VCQSTELSLSGERESVRNAATASATATF RVCFGUAQRDQDQTST VEFGSDGRANVRMAACDYTLDLL TVCTACAANEHTSVYSEKYLFSGTRDAI REQTYTAAVQML TI HIALAGPAGTQTIQY SLPGFRSDIQSRAAAWAMDFL TI CFAWAYRHGRSVFSQQERFFGTRTQVQLMAAEHALKLL TVGFAVSTPLGSRVESQILEGDRD
TVYIGLSGPNGEASTS NSTGSHDRAKNMSEFAK $\square G L S F L$ YSCMAVAGSRQQVITLET GSSDRQANMQAFAKAALELL TVF AVVYRGAPVVRHLQL EGSREEDRRGTVERLLDL VWFA WNF R GA DDAQK VL F S G G G Q DV V E K S V R Y S L A MLL



T
 TVVHI GVATP A A A MRT TA FR F LGD R






 VVYSCDCYNNKTYPFTFNFNSNLTRSEI KLADVQAVCTEL V $V$ V $\operatorname{F}$ S $\operatorname{V}$
 $L V H S A V A A R A G N M D H L E Q R L E G L A P E T L R$

| UniRef90_N1MPQ7 |  |
| :---: | :---: |
| UniRef90_C6X1D1 | V SLL |
| UniRef90-UPI0003687321 | L R |
| UniRef90-R6B8T3 | K K C丁IE |
| UniRef90-DOYVC2 | HEVL |
| UniRef90-B5ZAR2 | $\square \mathrm{ELI}$ K |
| UniRef90-R5GTL3 | R D FLK |
| UniRef90_UPI0003901CF1 | WT L L K |
| UniRef90-W9GG90 | A E Q $\mathrm{L}^{\text {D }}$ |
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| UniRef90-H2J2B2 |  |
| UniRef90_U1PJG7 | L E L L |
| UniRef90-R6R1H1 | I E L L |
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| UniRef90-UPI000474B706 | Y DEL |
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| UniRef90_Q1YR86 | L H |
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| UniRef90-S3K7B3 | LQ HLK |
| UniRef90-UPI00047CEC81 | R R RL |
| UniRef90-U7DWC7 | PDFHR |
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| UniRef90-D7BN81 | L R L I K |
| UniRef90_V3P2N3 | L A AL |
| UniRef90-U2YPP8 | RQ |
| UniRef90_H6R3Y4 | L R CVR G |
| UniRef90-F9ZTG0 | 1 A ML |
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| UniRef90_Q28Q62 | A Q |
| UniRef90-V5WG56 | 1 H |
| UniRef90-B7C8F7 | IQ T $\square$ Q |
| UniRef90-V8RB91 | PD Y HR |
| UniRef90-UPI000429991F |  |
| UniRef90_UPI0003B379A8 | A A F $\square$ R |
| UniRef90_V2JM10 | PR Y |
| UniRef90-JOSUK1 | R D VLD S |
| UniRef90-B5HFA9 |  |
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| UniRef90-F2BGM5 | AQT |
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| UniRef90-UPI00036A3BA7 | V E |
| UniRef90-UPI0004721086 | D E F V R |
| UniRef90-W8R7U7 |  |
| UniRef90-R5ZJV7 | L |
| UniRef90-U7UVE8 | L LI |
| UniRef90-UPI00047B82DF | RQL |
| UniRef90-R7LDI3 | LD FIK A |
| UniRef90-A7ELL7 | R D VLR G |
| UniRef90-W0J158 |  |
| UniRef90_UPI000382633E | VS WL |
| UniRef90-UPI000466EA1B | S EL |
| UniRef90-V5PGA3 |  |
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| UniRef90-UPI000372501B | GT L L R |
| UniRef90-W0GM76 | LKı |
| UniRef90-J2A1J9 |  |
| UniRef90-E7GAE1 | LN L K |
| UniRef90-M2XF35 | V D AL |

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UniRef90-V5SGH5
$\underline{\mathrm{V}} \mathrm{A} \mathrm{L}$
UniRef90_UPI00047CA878 $\square \mathrm{HD} \backslash \mathrm{L} \mathrm{E}$

UniRef90 B6BPT8 UniRef90_U1U306 UniRef90-F4GT64 UniRef90_UPI00047010CD UniRef90_V9XNF4 UniRef90-F3SEG7 UniRef90_UPIooo36D333B UniRef90-U2KXB3 UniRef90_M1UFU6 UniRef90-A4FLY8 UniRef90-X8IPJo UniRef90_UPIOOO37C564A UniRef90_UPI00034D7B5A UniRef90-UPI00026252AC UniRef90- R6BTI3 UniRef90-FOM817 UniRef90-DINT63 UniRef90 S5SV40 UniRef90_UPIO00291A905 UniR Ref90-C6XV68 UniRef90-U1R7T6 UniRet90_OOKBK0 UniRef90-R7GQ85 UniRef90-A5W359 UniRef90-G8Y6L5 UniRef90-UPIOO04638B5F UniRef90-R6UMN4 UniRef90-A6V645 UniRef90-S2WDC6 UniRef90-N1PMM8
UniRef90-J2ZDC6 UniRef90- Dowoz9 UniRef90-UPIOOO4667835 UniRef90 R6B7F2 UniRet90_UPI0003FB804F UniRef90-AOAO22KWL5 UniRef90-R5RC26 UniRef90-U2U1Z7 UniRef90-D2QB46 UniRef90-C5MF92 UniRef90_Z9JTX9
UniRef90-UPI000421DD6D UniRef90-C4LJ62 UniRef90 UPIOOO3829996 UniRef90-UPIO0036ADA08 UniRef90-U2FT80 UniRef90-UPIO00249011B UniRef90 R7IVR0 UniRef90-UPI00047DF99E UniRef90-C5DFJ1 UniRef90 WOEAR2 UniRef90-UPIO00462BEBC UniRef90-H5UNS3 UniRef90-R7D8H6 UniRef90-R5IXG6 UniRef90-UP100046E9BCD UniRef90_C2BFMO UniRef90-UPIO00372AAAD UniRef90_UP1000478C70A UniRef90-M7SSZ7

MLPDTLLARIPDAARLASRAKGCRLVCAESCTAGTLAAR DKTLAADAVHRLVERHETFATAESCTGGGVAAT $\square E Q L A A K V Q Q L K A K H Q T L A F C E S L S A G L A S A Q$

SQLLRLLCEERGETLAVAESLLTGGLVAAA
$K A G G P R L A L A E S C T G G G L A A R$
LHHLSKGIQEMLYNSDKTVGTAESCTGGRIAEA
DELSABPLIEWCAELADKI ACAESLTGGMLSADA DDADLAKRCGKLLDQHQATIAFAESATAGRISAE

DTLAKTLLSSCREGQLSICCAESLTGGLLADA
EDLVRLLIKKNVTISSVESFTVGNFAAT
MEFPPRDVREVVSK TAE LLRQRNQTLAVSEAACGGLLSAY
AAALE WCAERGVRIACAESLTGGLLADA
KALLEERGKKDRLTMGSCESLLTAGLFAST DNMAFASDVVKFTKNNLKLADAESCTGGYISNA
TFPPAEDQS LTEEVTVLKSRHETISTAETAAGGLISAS
LATEVLAEMAERSMTLACAESLTGGALCS
ADFEQNVRNKYKEVVKKLIKNKET:ASMESCTGGYFAST

$\square T Q A A S Q L V K T D A T A K G L L Q L G S V E S$
MAFPPEDTSUVQEIATILRSRNQTLS\|SEAACGGLISAY
MSDQDLPAGPDLVIARASAAGLMI ATAESLTGGALVSR MDAPREQLASARALLAMCEERGMSLATAESLTGGMLVAR

TRLVMKLK
FTGELSAAARQLVAQALADRDVRLVCAESCTAGLLASC

AVIKKLIAGRKTISTMESCTSGLIASM
FPPLEASK VVSRMSQMLDQRNETVAVSEAACGGLLSSY
AERLVELLKKLSLTITTVESCTGGSIDSA
EFARAVVEI AVARGLRVAVAESLTGGLLADA GPRDREPAEFLLELLRNRGETLAVAESLTGGLVLAT

MEKIVQKII ETLKDQKLKLASVESFTGGMFANE
LLTTEDKSREEVLIDELRAKGEFVSAAESTTGGVVASS
TK KFKKDEARHLTMSACESFTGGAFSNA ETVLDDATDVVRLLRTAGETVGVAESLTAGGVMAA


QIVARYMADHALQLVTAESCTAGLIAST
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FPPAPLRPLLTTDAALLTERKQTVAVAETAAGGLISAS
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MSFPPDDDERLVTKUAALRSRKENLADSEAACGGLLSAY TERSETLAVAESSSGGLISAA
 KKLFNFLKANNYTHSSCESFTGGLFGSD GEVLESVARRI SAAAAHSGVRVAVAESDTGGADSTH SDURNDYKKLTKLLIELGMTVTTMESATSGQLASLL


## UniRef90_B6BPT8 UniRef90-U1U306 UniRef90-F4GT64 UniRef90-UPI00047010CD

 UniRef90_V9XNF4 4 UniRef90-F3SEG7 UniRef90-UPIOOO36D333B UniRef90-U2KXB3UniRef90-M1UFU6 UniRef90-A4FLY8 UniRef90-X81PJo UniRef90-M9SN49 UniRef90-UPIO0037C564A UniRef90 UPIOOOO34D755A UniRef90-UPIO0026252AC UniRef90-R6BTI3 UniRef90-FOM817 UniRef90-D1NT63 UniRef90-S5SV40 UniRef90-UPIOOO291A905 UniRef90-C6XV688 UniRef90-U1R7T6 UniRef90-OOKBKO UniRef90-R7GQ85
UniRef90 A5W35 UniRef90-G8Y6L5 UniRef90_UPI0004638B5F UniRef90-R6UMN4 UniRef90-A6V645 UniRef90_1K1K734 UniRef90-S2WDC6 UniRef90-N1PMM8 UniRef90-J2ZDC6 UniRef90-DoWQZ9 UniRef90_UPIOO04667835 UniRef90-R6B7F2 UniRef90_UPI0003FB804F UniRef90-AOAO22KWL5 UniRef90-R5RC26 UniRef90-U2U1Z7 UniRef90-D2QB46 UniRef90-C5MF92 UniRef90-Z9JTX9 UniRef90_S3Y928 UniRef90-UP1000421DD6D UniRef90-C4LJ62 UniRef90-UPIOOO3829996 UniRef90-UPIOO036ADA08 UniRef90_U2FT80 UniRef90_UPIO00249011B UniRef90-R7IVR0 UniRef90-UPIO0047DF99E UniRef90-C5DFJ1 UniRef90-WOEAR2 UniRef90-UPIOOO462BEBC UniRef90-H5UNS3
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UniRefgo- F4MPU0 ViRe90 - V5RJ73 UniRef90-W6A6P3 UniRef90 UPIOOO3B51167 UniRef90 C4JDE7 UniRet90-C4JDE7
UniRef90_UPI0003821DFE

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UniRef90-A3LXE2
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UniRef90_UP10003B51167
UniRef90_UP10003
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UniRef90_C4JDE7
UniRef90_UPI0003821DFE



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


EVWIGlla GPa TRESEQQVILAEQGRNF
TVHLGFAGPSGATVRSVHLGGD
NAFIGYSCGGKDGNKRELNTKRNDRKWNRNYFKDRMLLTV
TVYIAVAGPGGGKSAALRLNGDRTDVRMESVRRV





## 

## 




 LVF $\operatorname{lig}$ GSTEKDTIVEKHQF

 $T V W V A C T G K L G E R A R L C R F H$ GGRSDVRAQAVEAAVDLL









HSWVAAAGPGG I A TAHLLTGDDDRTANMEVFAVRALELI

$T V W \square G L S M$ GERARTVELALSGDRGEDRRDSV

$T V H V A V A A A D D R \square T$
VVYFCI RVKDKENTFEVHEVAGMNRHEDKQMYTDMVFEK L









TVY G F FDVPCFSHSVIDQERDAGSRELVRHLDTVACVLGKM

 EVMWLGIIFSDVISRTFSFTL
YVALAMASADGTVTREVETGTAGREKNMDKFAEAALKLF YVALAVDGPNGTVTAEVETGHGNREQNMVEFAVAALKLL TVWLATATRTTTASVRVNFTGDPP TVVKKAVGAALQUL









| UniRef90_B6BPT8 | K S [ı] |
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| UniRef90-U1U306 |  |
| UniRef90-F4GT64 | 】Q\\| I E |
| UniRef90_UPI00047010CD |  |
| UniRef90-V9XNF4 | V E |
| UniRef90_F3SEG7 | L D |
| UniRef90_UPI00036D333B | S DTLR |
| UniRef90-U2KXB3 | ERI |
| UniRef90-M1UFU6 | $\square \mathrm{KQ} \mathrm{\\|}$ |
| UniRef90-A4FLY8 |  |
| UniRef90-X8IPJ0 | Y N L L |
| UniRef90_M9SN49 |  |
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| UniRef90-R6BTI3 |  |
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| UniRef90_G8Y6L5 | LK S L Q |
| UniRef90-UPI0004638B5F | RQ |
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| UniRef90-A6V645 | PEFHQ |
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| UniRef90-J2ZDC6 |  |
| UniRef90-DOWQZ9 | TELL |
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| UniRef90_A0A022KWL5 | L R ALEAG |
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| UniRef90-D2QB46 | S S L |
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| UniRef90-C5DFJ1 | LQQ |
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| UniRef90_UPI000372AAAD | EKLL |
| UniRef90-UPI000478C70A | NKMV |
| UniRef90-M7SSZ7 | R D V L |
| UniRef90-UPI0003B348C8 |  |
| UniRef90-H7EZT1 | P EM |
| UniRef90-K5WAQ4 | LQ V L T G |
| UniRef90-Q8FQJ3 |  |
| UniRef90-K5V0R6 | LQVLK G |
| UniRef90-V8QTI4 | P H Y |
| UniRef90-Q2HD18 |  |
| UniRef90-M3GGV0 | Y D R ${ }_{\text {L }} \mathrm{K}$ |
| UniRef90_W2RWJ0 | R EVV |
| UniRef90-D3R5V8 | REF |
| UniRef90-F8F0P1 | LQ 1 |
| UniRef90-R5NR23 | M R L F F |
| UniRef90_UPI0003FCA609 | LK L L |
| UniRef90-S0F775 |  |
| UniRef90_UPI0004407441 | L E V V Q G |
| UniRef90-M7SJI9 | KQA E |
| UniRef90-UPIO003617820 | LRTLES |
| UniRef90_R7IF55 | YEII K |
| UniRef90-A3LXE2 | LDQLE |
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UniRef90_MOP2K6 UniRef90-B9L1M7 UniRet90-D8ME41 UniRef90-S7QNB9 UniRef90_UPI0003FB7697 UniRef90 C1CXY3 UniRef90-LOA4S8
UniRef90 D6SUTO

EPEQLA QEI SDGASRDGRRI AVVESLTGGLVSSD




DEDDE QVVERTAE LADLRAGRTDAVA ESDTAGHVSAB


D A MELS G $G R \longdiv { V } \mid A$ ESITTK TAAAR GIVSI



$\begin{array}{rl}T & L \\ l\end{array}$
A A D V $\mathrm{V} A \mathrm{~L}$ K R R GQHLA CAES LT G GLEAAA A QI A E LL DKNK LTTIAVAESCTS GLLLQNK

 $E$ Q A V H F L E K Y N L V L S T A E S AT DTNPERMVRLLEKNGEQLLTADESCTAGRMAAT
EVVKKCSNTIAA Q GWNI AFAESASAGRMAA E
 $V Y$ S E D G A S V D E L V V A K L L MP TP LE QAAARLAAGKL ADSKQRLILDESCTAGLVSAT
$M S E P L A D D G \quad A R A L V A L L T A R G E T V A T A E S L T A G L L A A T$

 $R G Q T V A T A E S L T A G L L A A T$

FYGYGETGLEARVIEQLKQKQLTLSAAESLTAGLFQAT LIWGEDDDEL A GLVLAALRARGETLATMESLTGGLLLGDL
 A AVIA A ARERGWLLATAESVTAGAVVAR LA S E I L D F CD A H S L Hi A CAE S L T G GLL S D S

F P P A E L R E IV HE VVVELLK DRGETIS CGETAA GGLI SAA
T A A A D LVATLAARRQTVATAESLTAGLIAAT


A LDDVARLLRARGEK LAVADGATGGLIDA S Q Q C C QL L E D L QLK V A FI E S A S S G Y L T S Q $\square L K$ Q C C D A L E Q NLL L T A A F I E S A S S G Y L A S Q AKILAKRKLKVFTIESASAGYILHR



AVSLIEFFREREERTTLAESCTCGMAAAL QHCCQILETRQLKIAFIESASSGYLTSQ $K N L N L A T M E S C T E G L L C S T$ D D L V S K A D R DGAA LTT K R GQ T I A VA E S S A G GLVV S A A
 $M S \square Y T P V M N E K A E S F D K G D G A T A E S W T G G Q V A A T$


D Q $\square$ T G LIA D T LGGKLLDAMNA QVT TA E S CT G G G DA E A Q N N LT I S VCETFTTGNFMTM
 FYGGEHSTLEKVVAQLLQEEEKTIAMTEVFTRGLVQST

GDDNS LVK TVATLLEEEKQSLGULEHGTGGLLQAE LWGED T D T L A GA V T R ALLD S R


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UniRef90_S7HWX4
UniRef90_CODON1
UniRef90-UPIOOO34D3D53 UniRef90-UPIO00470D444 UniRef90-G2RZGO UniRef90-O98QN4 UniRef90-C6X520 UniRef90-R8ZB75 UniRef90-S5DQ90 UniRef90-UPI0003B78969 UniRef90-D2R7K4 UniRef90-UPI0004092C7B UniRet90_W4L7A5 UniRef90-A0A041PN93 UniRef90-D4JC56 UniRef90-D5SXD7
UniRef90_TOI6X9
UniRef90-Z5X448
UniRefefo-S3DFE8
UniRef90- F7S7K4 UniRef90-UPIO00381CE77 UniRef90-M3VDJ2 UniRef90-W5TLG2 UniRet90-X1QBC7 UniRef90-L8DT71
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UniRef90-M7YSD2 UniRef90-N9QV69 UniRef90-UPIIO0029A18BE UniRef90-UPI00046631E3 UniRef90-F4Y206 UniRet90 R4KCJ7 7 UniRef90- X1KCY6
UniRef90 UPIO003EF197C UniRef90 W4TB24 UniRef90-K1DUX0 UniRef90-F3POE9 UniRef90-S6VQ89 UniRef90_S6G3U3 UniRef90-MOPKK6 UniRef90-B9L1M7 UniRef90-D8ME41
UniRef90-S7ONB9 UniRef90_UPIo003FB7697 UniRef90-C1CXY3 UniRef90-LOA4S8 UniRef90_D6SUTO
 LAAAPGSSEWFRGGVVAYDRTTKHGVLKVPDG PVV LLSAPGASAYYRGGGVAYTPRARAALVNVTKEEMEADGGA LLTVPGALDFFVGGGVVYSRRARDVLFVLPREAYRGMRGT LVDTEGASAVLKGAFVTYSNEAKVKQNVPADVIKKFGVY LVRDPGASMVFLGSAVTYDVQAKASVLGVDRGLLEREGAV LGAGTDAATWFKGAVVAYDEGVKFKVLGVTPG LVAVPGASAVVRGGVVAYATPVKHTVLGVSEALLASNGAV LLSVGGASAYYRGGAIVYTPKARAALMGVTKDEMGEMRSA SDLEDNSGDYFLGSVVCYHDDMKDSSLGVDPKLIKKAGAV LTDTEGSSALLKGAYITYANEAKIQLQGVPENGNEYGVY LLSAPGASSVYKGGLTVYTLDSRITVTGWTPQHLENYSGP LSSQSGSSKYFVGGLTAYSTPMKVTLLGVDHEEADRSNAV LVSVGGASRAFSGGDVSYDTALKQSLEGVDEELLASKGAV
CTKRSGASAWFAGSAVTYSEQLKHELGVPMEVIAQEGVV TTNTANASQVFIGGSFVSYSNDFKNNV1GVDQQIIKKYGVI

## T

 RIPGSSGWFEAGYVTYN LVKNPGISKYFIGSDIVYGNQKTLQLEVPESLFPAVGAVV




7
RV9

LSRAQNSGAWFAGGIVAYRP
$L L A V P G A S A Y F V G S A V V Y T R E A K H G L L E V P P G D M K G D V V$ $M Q K T L Q L G V P A Q L F E Q V G A V$


LAEEPAAGQF LRTAT ILTSSQPPLDSSL
LQNVVSNTELVTGGFNG
MS ALLDLT DDEDEDS GDN
 LADEP TFLDAAVTQDHRRLITLGLTPVTLHAQGLV $L T H Q L A L Q G F S G G T V V G$
$A T G T E A G S K A L L L A R V V$

UniRef90_14D6K2 UniRef90-UPIO004763880
UniRef90 K8P7B6 UniRef90-K8P7B6
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UniRef90 $\mathrm{S5MB16}$ UniRef90_UPloo026299F9 UniRef90-E3DA57 UniRef90-DOS9M4 UniRef90-K2SMN7 UniRef90-A0A059MRV9 UniRef90-H6MYF9 UniRef90-Q6N953 UniRef90-W9TWC7 UniRef90-A3WBM4 UniRef90-N8QV18 8 UniRef90-N9DR14 UniRef90_C8PV63 UniRef90-K6VYF5
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UniRef90
S6VO89 UniRef90-S6G3U3 UniRef90-R5GTL5
UniRef90- MOPRKK UniRef90-B9L1M7 UniRef90-D8ME41
UniRef90-S7ONB9 UniRef90_UPIOOO3FB7697 UniRef90-C1CXY3 UniRef90 LOA4S8
UniRef90_D6SUTO


| S |
| :--- |

S LDECAKAMA 90 A GQKNTA 100
ARCAKAMAIAGQKNTQADFSI GIVITGTFTTIDDHEDSEPG AEPAVRAMAENAAEMFGADVVVAVSGAGGPDPQD DQPPG TEPYATLLANRARELLNTTWGLSETGATGPSGNRYGDAAG TPAVVSGLAEEHTRSTHGATVGVVAESGSVGGSSHPSGAPAGG SEETALEMADAAGRAYDADVSVGVTGMGNADPANYDSTPG
 TDSCARQMAEGVRHLLGADLAMVGDTGGVGGPGPEEGRPAG HEEVASQMAEGARRATTHDWGVGTTGVAGPDKQDGQKAVG
S

## S

 SELVARQMVDGCTK SAQTAEEM
ELVAQQMAAGARRACAVD DG $\square$ ATTGVA GPDPDQTGQSPG SARVA E LDMALGVRKLFHSDLALATTGLAGPTGALPSYPVG
 SREVAAAMALLGARDRTGADWGVGTTGAAGPEAH GGQPPG

## S






 S A E C A K E M A E NVV
S K G C A Q A M A E Q
I


## 

 S EKT A Q E ML M GVLA S A A A DVGLATTGYAGPGGGTATEPCG







 SP QVTE EMCKLGQTLFQADLIVSCTGLLKS GGSEAEMPVG NTQUAKAMAETARRNLKTDIGMGVGGNMNPDKNSGD SETYAMLLLARTVRERHGATWGVAETGAAGPS GNRY GDAA G
 SQETALAMAE GVL T KLLEANIAMADTGI A GPS GATVTP GFN
 AMERAGHMASMVVRKQFGTDIGGAAVAVQRS GGDDAAVAEY
 SNKAC $\begin{array}{lllllllllllll}T & V & K & F & C & I & F & S & C & T & Q & A & 1 \\ T & M A L & N & V & K & L & Y & E & S & D & W & S & 1\end{array}$ A T T GYCT PIRNSDYK
 $S Q P V V E X A G R Y G$
 $H P E V A R Q M A A G T A Q L Y R Q T D G L A T T G V A G P G B D G D K P A G$ A E QMA A GARDDRAGTTVAVATTGIAA GPDGGTAEKPVGG E EVAR D DLA QRTADVAA GS DC GLAADIVVRIDP GPTA DRSVGG
 E EA S R DAR E E L Q A D L G L V V SVVAVVKP E S TVVDNVLA S E


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 EFHIGGETVDGLRSHASSHFEPGDREQV
E $\square Y$ AS $\|$ N $\square$ ADKVHAFSFQ $\square T E A P T R H D Y K \square Y V A D K \square A D K L$

QAFGUKVNGD廿R
TVWVGVS SPAGERSV
SVWI AI SYREH LESEYLFFRGKRECFIEQVSQEVLRRA FAYI SI CYKDKLITYNIKSKDPISRNCFKNYAVNFAIKKD


$T \square F \square C \square S N G D K T V I T D \quad H K M N G N R E E \square L Q R S A N K A Q W E V$ AMCFACATREHQGVTSETVTFPGDNNE
 YATIAHRYEMRPPTTFK LRGKADSRDDRQLRATHLALGHCLI TVCIA IVATAD VASRHSRLAGGRDWVRMGAAEMGLDSLL
QVYFA $\quad$ V $\square N G D M K S Y Y \square E \square A V Q P T R \square T Y K \square A V A K E \square L D V L$ EVHAAIVFRDSNHLSK
LVY YALAHPEGDE TKKNFV GSRESVRNMUVETALNML

$T V F \square G L A T A D S \square E S H \square I K D N G R S R S D V R E D A V L H A F D Q V$ TVWFGLDHRGR VSATCKEFDGEPEEVLAQTVGFALEGI
 $T$ TIGGLSVK GHETEAFQFVYGRDRNHNRRMAVKQGFQLI
EVHLDVYYR GERSTRSLQLPPDERNWVRERAAFGALSLL
 TVR G GARRGGATLTRLVHLP GDRAAVRAQSV

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$T V F V G F A G T G D R V A W T T E L R \square D G S R W E \square R S G A V V A A L R D L$ VVNAAVSIR
$\bar{N} L Y$ YAADCNGRDMMKKVLWSGE RDEMAKRASTVALVLL
 $T V H A D$
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TCYAVVVFSDDGWDWFE TKFNNYN DDNDRKDSVEFDAQQT LVY GCSLPCGRQTAAYELRLKGDREAVRHETVQCILEKL LVYVGVAYAEESFVRAERVVLDGDRAAVKRKAVDAALGAG QAALAVSTP ATVVTRTHQUTSHPQEIRRRVGLWAAEFL KVWFGLFDNQQQLMVTSQD FAKDHQDNDEEAIFVALDLV
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$V A L S G P L G E$ RSLCDDWPAERSLVAERAASSVLMDM

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