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UniRef90-V5BZK1 UniRef90-A8MGJ9 UniRef90-UPIOOO3672418 UniRef90-Q492H3 UniRef90-UPIO0029A93AC UniRef90 U7NUW9 UniRef90-A4BSZ2
UniRef90 A0A023C UniRef90-AOAO23CTR7 UniRef90_LOLET4 UniRef90-J2TR15 UniRef90_UPIO0046F2635

Fer36a

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DE880

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MA

## K R R

 \begin{tabular}{l|l|l|l|l|l}$R$ \& A \& L \& G \& I \& E <br>
R \& V \& A \& L \& G \& I <br>
E
\end{tabular}

M
Q K
$K$
$R$
$R$
$R$
$R$
$R$
$M A$


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

$M \mathrm{~K} R \mathrm{~L}$ K L T $\mathrm{T} V \mathrm{~V}$ A
 $\begin{array}{rl}R \mathrm{Y} & \mathrm{A} \\ \mathrm{R} & \mathrm{L} \\ \mathrm{R} & \mathrm{C} V \\ \mathrm{~L} & \mathrm{E} \\ \mathrm{E} & \mathrm{V} \\ \mathrm{E}\end{array}$


$M R N$ I

P P
P

| $M$ | $R$ | $R$ | $I$ | $K$ | $L$ | $T$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $M$ | $V$ | $A$ |  |  |  |  |
| $M$ | $R$ | $V$ | $K$ | $L$ | $T$ | $V$ |
| $A$ | $A$ | $A$ |  |  |  |  |

P

| M R R | A | $L$ |
| :---: | :---: | :---: |
| M | $G$ | $V$ |
| $L$ | $G$ | $E$ | $\begin{array}{ccccc}K & K & F & A & L \\ G & G & G & \\ V & R & V & K & V\end{array}$ MRRIIKCTV Q | M K K | I | $K$ | $L$ | $H$ |
| ---: | :--- | :--- | :--- | :--- |
| $R$ | $A$ | $L$ | $G$ | $I$ |

M K

| $N$ | $K$ | $L$ | $I$ | $I$ | $E$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $R$ | $A$ | $L$ | $A$ | $F$ | $E$ | MR N I I K L K I Q Y D G T D Y H G W Q I Q K N D V T














 RVAALI E Y H G S GY N G WQA Q N H S IT TV Q C E L E S A L S K I
MKRIKLTVA
 M N V K I L E Y S GTA Y R G WQR QP G V R S $V$ V MPRYK V V V E YNGTNYAGWQIDQK GE P S S I Q QE E V LA L G I E $M P N D K$ A
 $M K R I V K L V A B Y D G T D Y C G W Q V Q P S G \square T I E E V V L R S L S E L$ MPRYKLTVEYDGTPYAGWQRQENGHTVQAAIEQAIIFKF
 $M R N I K L V I$ E Y D GS RYD GWQRLLKDSQTI Q GKI E KVLNEM R RVAL AVEYNGSTFRGWQSQAGGGTVQDVLEQALTGI
 $R L A M A V E Y D G S G Y C G W Q R L K H A A S V Q G A L E A A L A R V$ PM RVALGI E

KRMKCTLA
M A
QUERY
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 A N T R I E L S C A G R T D A GVV H A T G Q V V H F D T D V K R D M R A W M M


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 $A N Q P V S V L C A G R T D A G V H A T G Q Q V V H F E T A S A F R P E R S W T L G$
 A D Q AVETVCAGRTDAGVHATNQVVHFDVSTQRRAAAWTLG
 $T$ GE E I H V TGENI ETIG GASRTDAGVHALGNVAVVDTEMRMPGDKFSFA A A AP I A LHCA GRTDCGVHATGQVVHFESPVARPLKAWVMG A A EPI TVVQCAGRTDAGVHASGQVVHFDTRADRDAKAWTMG ANHPVSVSCAGRTDSGVHATGQVIHFDTDAERSERGWVYG A HESSIQVCCA GRTDA GVHATGQVIMEETSVIRKDSAWTMG

 ADEK I EVHCAGRTDAGVHA $\square G Q V V H F D T K S A R L G R A W V Q G$
 A D Q P V V L V C A G R T D A GVVHA S Y Q I A H F D T G S I R N L R S WV M G
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 A GTA I PVVVAGRTDTGVHALLCVVVHFDAPVQRSAESWLRA A DAPVTVTCAGRTDAGVHATHQVVHLDPPVPRPERAWVRG TGQTVKV G A S S RTDAGVHARGNVAVFDTESS DPPERFLAA $M R E P I Q V I G A S R T D S G V H A R G N V A V F D T E S Q M P P D K D C M A$ TNEDVVDIGSSSTDAGVHALHQVANFKTCTNDPTSKIPNA



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| UniRef90_UPI0002FB736A | LI DVDYPTHYQLPREPLGPL |
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| UniRef90_R6EFL0 | LMRI E Y EKDLD |
| UniRef90-W4V8M8 | LVEVY |
| UniRef90-UPI00037DE6BD | FVDVRYPAHFELPPSPDGPYF |
| UniRef90_Q5X5Q4 | LVQVTYPKEF GLL |
| UniRef90-M1Z1W5 | LVEVFYD |
| UniRef90-K6Y5F | L VKVLYPEHFE $\mathrm{P}^{\text {P D } ~} \mathrm{P}$ P L GPAFF |
| UniRef90-R5NKZ2 | L I G 1 V |
| UniRef90-A3WQ39 | L VEVDYPKDWQLP K A E P GP LTF T |
| UniRef90-D4MYJ3 | L IQI E Y P E D R |
| UniRef90_R1CWP0 | L Y R V Y Y N N |
| UniRef90-UPIO004652622 | $L \mathrm{VGIE}$ Y |
| UniRef90-R6NRE1 | L MKIQ |
| UniRef90-H0J7H0 | L VDAEYPESTPVPKRPLGPLTL L |
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| UniRef90_UPI0003B357D2 | LMEVGY |
| UniRef90_UPI0004670F82 | F V NALYPEEFELLPRTPL |
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| UniRef90-M7D445 | L V DVGYPS Q Y GVP S A E C GPAFVS |
| UniRef90-R6N1G8 | L K EV Y |
| UniRef90_E7GHK3 | LVSLEYEKE |
| UniRef90-UPI0004101E62 | FI K A Y Y P E E Y E L P K E P LT P $\square$ WL |
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| UniRef90_UPI0002F0AECE | L VNVD Y P D P |
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| UniRef90-N1ZWG9 | M I GI N |
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| UniRef90_A0A031MJH8 UniRef90_D9RZP5 | LVDVTYAEHFDLPKRYLGPHFLS LEKVIY |
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| UniRef90_J2VY97 | LI GVD Y P |
| UniRef90-D4IY89 | Ml G\| E Y E E |
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$R T I \quad K A T V A Y D G T R Y Q G F Q R Q K N G V G V Q Q V L E K A L T E V$

$M K N$ I K L T I E Y D GK E Y N G WQ K QPN K L N I Q GEEI ERA I Q N I
$M R R V R L C L E Y D G T N F A G F Q K Q T G T R T V Q G V L E E A L A R L$




$M P R Y R L L V E Y D G T P F N G W Q R Q D K G L S V Q G I L E K A V E K L$
$K R N D K V$ KI A YRGTAYMGFQRRQNSVAVQNVVEGVL SRLL
$M R N I A L V I A Y K G T R Y A G W Q R Q Q N A V S D I D E T I G B A I A A C V$




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

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

$M R N$ G $M L V$


$K Y F L K S Y D G T D Y N G F Q T Q P G G H T I Q D Y L E E A I H R L$
$M K R F K A V I$ QY DGTEFVGYQDQPNGRTVVQEIIEKALLDRM
$M P R Y K L T V E Y D G R P F S G W Q R Q A N A P S V Q A V I V E A V V A B C$
MPRLKLTLEYDGTRFVGWQAQPQGPSIQSVLESALERLL


$P R V A L G L A Y D G A P W Q G W Q T Q P G G G I V Q Q D T L E A A L G R F$
$M$ R N I K M I V Q Y D G S N F K G F Q R L K N N D N T V Q G K I

$M Q R V L V K I S Y N G A Q F L G F Q Q Q N Q G R T V Q G Y F E K \| L K R M$
RI AF GVEYE GSSFCGWQSQRGVPTVQATLE EAVSKV

K R NVKLI I E Y D G S NYSGWQK Q K H S I T V Q Q KVEE EA I S E I


$M R N I A L T L M Y D G T A Y H G W Q V Q K R D V T V A E T L E K A L A B V$
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 TAAQVSVNGCSRTDTGVHANEYYFSFNTEHSTPCENIIRG
 HK Q S V K V HA S S G R T D A K V H H A L G Q V




 A K N P DS I I G S GRTD A GVVHA L N Q V A HF DFP Y H I P E Q S MVRA A G H A V EV I G S GR T D A G V H A K G QV A N F H I E E H F T E G K I L S Y TGE NV R L H S A G R T D T GVVHA L A MRSMMMD I E K D DE P F R L M E A

 $A N T P V Q A L C S G R T D T G V H A T R Q V V H F D A P V S R T A R A W L F G$ A Q T S L H T TVVA GRTDTGVHGGLGVVHFDTDLDRADFSWVRG
 $A R V P L H V V C A G R T D A G V H A L G Q V V H F D T T E E R S M Y S W V R G$



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ANAGLLPEPVALLLWARLVISRNFHARFSAQGRRYRYVI ANQS L N A RLREEGGVAVLSLVPDTFDARFSARKRHYLYRILNRR MNGWLPHDVVVRSAHEMPEAFSSRKSADRKTYRYSI STGK ANVNLPPDVAVRWAHPVEADFHARFSAMARHYRYRIMVQR LLNSVLPHDIAVVSAAEADMDFHARFSAKGKKYDYKIHSRA MNTLLPDDVAVLGCTEVEEDFHARYCCTGKEYIYKIVNAE LNSKLPKDISUIUNAEEMPLDFHSRYCAKGKTYRYMIYYNQ ANTALPEDVRILWVRETEPHFHARLSA DARYYRYEI LNRP TNAHLSQNIAILRAENVDNNFDARFSAKKRHYRFIILNRR CNALMLPKGDAAVVSAGYVADDFNARFSAHARSYRYCLYNNP GNSHLPDD:R1VTWAQQAQGDFHARYSADARAYRYVI LNRP VNRFLPPDIAVOWAHPVADHFHARFSAFARRYRYVLLNRP LNSVLPPDIRVLESQEVSHEFHARYSAKAKQYRYSICMRP VNALLPPAVVVRWSTEVGDDFHARFLACERQYRYILHNAP

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 LN GLLP P DLVV LSAALAAD T S F HARYGAVGKRYSYLILNSR $V$ N S H L P A D D A V V WA K Q V G E E F HA R F S A F S R S Y S Y F L L T H P

 MNRYLPDDIIVQEVREASMRFHARYNAIGKTYCYTVEDGK LN Y H MK P K PVVVVA A E L V D E D F H A R F S AVGGRA Y L Y R I V N R R



 L N A RLPEDIVVQQKSCEVPPDYHPRHCSTIKTYEYHILNRT

 L NS QL P LDD I IVKKAE IVSNEFHARYNAHRKRYRYRVT Q GE L N H Y L P D D I AV IA V E QV DERFHSRYAAKKK TYRY HII HMGE L N A QV R P D PIV TH C GVV P D D WHARFSCTGGRSYVVYRIANRR L N GVLPK DVVVLNAREVDNSFHSRYHSLGKKYVYTIVTGN
 T N A K L P R D I A V V R WVV P V A D D F HA R L S A L A R R Y R Y V I L N Q P T N A F L P P T V A V Q WAK P M P D T F H A R F A A F E R TYYY Y A L Y V H P
 MNS RLDPDDI VI R DAWEAPESFHARFSAKRKTYRYSILLARR FNS F L P H D IV I KEVSVVVPM GFDARRSAGKK TYRY T I L L A R S


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 L N A L L P S S V A V Q WA C P V D D S F H A R F S A L S R T Y V Y IV R Q A R
 L N C R L P E D D RV L R S M E A E E D F H P R F N P H K K V Y E Y R I D R S R
 CNMNLPPEVVVLWAQPVDETFHARFSAVARHYRYVILNRR $V N S H L P E G V A V R W A Q P V A E D F H A R F S A R G R R Y R Y L L L N R P$
 I N S KLDPK DIVI KK S S E V P LDD F HAR F H S K GK K Y V Y T I L N R E L N GK L P P A I A VV V CAEVVRADFHARFDSRGKHYRYAL HTRA L N A T L P H DI RVVRNAWDMPQAFHSTLDTKSKRYRYVI DNGR
 V N T R L P G D I V V T K A T QV P E D F NA DG S C QR K E Y T Y R I Y N S R


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160 V V R P A L LQARG|V|AWWRYP|LDAERMHEAAQA|LV|GTHDFSSLRA

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 ERLS L GH Q Y L Y H Y K Y N L N I HEMGKACQYF G G I H DF RA F M S

 IR S P L H R L T S WHVA G GL DVEAMTQAA DALVGGHDFAAFQA HADVFKRHYAYHVPYELDTEKMKEASDYLI GTHDFTS FCA ERDVFRRNQTYHVPTPLQLDLMREASQSLLGTHDFSSFCA EGDLFRRNHCYHFTEMLDGEATKEAAQHLLGKHDFSAFCA MRVATRRFYTYHFSMPLDADVMNEAAHYLEGQHDFTSFCN VRSPLRRDFSWHVREPLDTDAMQLAAHHFPGRHDFAAFRA LiPDPTQRNTTWEVREKLDVEAMNRAAALLLGKHDFTSFKN $R P T A L W R S R C Y Q Y P Y S L D L T A M R L A V Q F F H G E H D F Q G F S A$ VRSCLLLAGKVGWYHQPLDVEAMREAAAHLRLGRHDFSSFAA
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 FVDPFKRNYTA HFKYPVD DA HMNRAAQDLVGTHDFTSFVA IS D DVF E R K Y E Y Q Y E K T L DVVERMK EA A S Y L I G THHD F T S F C G AP LTMLERNRLWQVP QDLDHEAMDRAA KALVGLHDFTTGRS NRPVI GRQYVYYFRRKLDDDKMKNACKYFI GTHDFSAFKK




 YPSALLLYR RCLFVP FS L D IS A MRRAKNY LI GKHDFTS FRA
 $\square K D P F S \square H K S Y Y F K K P L D V D L M N E A A K L L L N Y T N F K C F S K$ FFDPFARHFSLHFPYKL DVGRMREAADVLTGEHDFTSBCA
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RHIV $\overline{\text { V }}$ LIVIV ${ }^{19}$
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 VNCQAKSPVRTLERLDVVRPGDEVHI HASAQSFLHNQLRS AGSTKKSHVRTVYEVRIERDGPDLHLFRTGNGFLYNMVRIV TGGSENTSVRTVHSAELTKSGDLEELHVSGDGFLYNMVR S G S S V $\operatorname{K}$


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 ASCQSVSPNRLMHQ QCTSSRTMPWR N L

 P G S S I K T TVVRNVTVELYI E QK G D KI K DF DT A D G F L Y N M V R I A E C Q A R T P V K T L R R L D I R R D G Q MVV C C D FA A D A F L M H M V R N



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 S G S S V E D K V A ECCAADSPVKDMQRADI RRHGD LVVLDFVATAFLHHMVRN

PK S PKLTNVVRTIY

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## T <br> A

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 V K G D T K H Y R C N AECQANSPVKT SQCQAASPVRTL

P D QKTEVE SK TRR







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 MAGVLMAVGAGKRDPAWVGELLAMRDRAKGGVTAPPDGLY

 MAGVLMEVGMGRRPEDWTAELLETKDRSKAAMTAPPHGLH IVGSLIQNDNTKKNYDKK LDKKDRNYAGPTVSARGLY

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| :--- |
| I $V$ GTLIE |

## 











 IMGT LI EVVGE GRRHPD DMRDVI EAKNRAAA GA TAMSKGLM














| UniRef90_L0DV65 |  |
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| UniRef90-W8T1B9 | LSEVYY |
| UniRef90-C0EG84 | L NRVFY |
| UniRef90-T0D463 | LK K V P |
| UniRef90-SOPCB9 | L K EV K Y D |
| UniRef90-Q604P1 | L G GVCYPEEFGLDRDAVFEHLPAD |
| UniRef90-J1K121 | LTQVDYD |
| UniRef90-UPI00036C3F99 |  |
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| UniRef90-UPI00035FB101 | L A AVFYPEHYA |
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| UniRef90-Q8K9U4 | L F FVKYPMCFNLP |
| UniRef90_UPI000471553B | L EKVYY |
| UniRef90-Q1LTA6 | L VNV Y Y P S E F A L P S VP VE LIF F L |
| UniRef90-C4KB86 | L CGVA Y P PR WSLP |
| UniRef90-E3PTS9 | LKKVSYNLD |
| UniRef90-K6TYE6 | L E K V F Y |
| UniRef90-UPI0003740A69 | L A GVS Y P A E F GLLA S E P |
| UniRef90-Q0AGX7 | L A GVRY ${ }^{\text {a }}$ A R WNLP |
| UniRef90-K6CDE1 | L WEVFYE |
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| UniRef90-K4LXM1 | L VKV Y Y P GE |
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| UniRef90-R6FYR6 | L K K I E Y |
| UniRef90-R6H4K3 | L V CVNYN |
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| UniRef90-Q2Y7R2 | L A GVA Y D A R WKL L P EPPL |
| UniRef90-C5R8U6 | L MDVKY |
| UniRef90-C7XVU2 | L VNV ${ }^{\text {V }}$ |
| UniRef90-R5HNW5 | LMEVHY |
| UniRef90-A5PBC1 | FVA ATYPDE |
| UniRef90-D8GIM2 | LEK ${ }^{\text {L }}$ FY |
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| UniRef90_A0A024PSI1 |  |
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| UniRef90-G4HN26 | L WEVEYD |
| UniRef90-A0A023BRS3 | LTAVTYPND |
| UniRef90-W7BGE5 | L WEVYY |
| UniRef90_U7GJ02 | L T R V D Y |
| UniRef90-U2SFA5 | L E EVF Y G D |
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| UniRef90-R6QLA3 | L M NVEY |
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| UniRef90-U2W384 | L LALLCYEGDSPLPE |
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| UniRef90-Q47HQ7 | FRGPVYEPHWGLPDP |
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| UniRef90-DOLWH9 | L VEVFYPAE |
| UniRef90-LODDA4 | L L VVRYGHPDEVA |
| UniRef90-R6QUV7 | L N QV ${ }^{\text {d }} \mathrm{Y}$ |
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| UniRef90-S0J2H7 | LDEVFY |
| UniRef90 A9WH95 | L T A V R Y P P |








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| :---: | :---: |
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| UniRef90_W4F739 | L E S V F Y N D |
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| UniRef90_L0F5X1 | L S YV H Y G E E L P K D $\square$ P P E F |
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| UniRef90-UPI000472D201 | L M S V T Y G E |
| UniRef90_X0PEV6 | LK K V Y Y E S E |
| UniRef90_R4YMQ8 | FVGVEYPAEFA $\mathrm{V}^{\text {P P S H A WGP } \mathrm{V}} \mathrm{F}$ |
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| UniRef90_A8UHK6 | L A K I VY P D |
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| UniRef90-UPI000416CD5E | L I G Y F FPGED |
| UniRef90-I4WVE9 | FMGPRYEA HWGLP |
| UniRef90_F3Y832 | L V QV I Y E E |
| UniRef90_UPI0003F6D875 | L T SVL Y P E |
| UniRef90-H8FNA7 | LT GVVYP Q P P G WT A K P Q G |
| UniRef90_M1PBG2 | L T K V D Y |
| UniRef90_D6V4Q8 | L VKVD Y |
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| UniRef90_V2ICW3 | LA GVR Y P E P Y G $\square$ P A A P A G S LF |
| UniRef90 G2FR70 | L A Y V N Y T E Q |
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| UniRef90_D7N3L6 | LTGVVD Y P R E F G $\square$ P K |
| UniRef90-C1FPE1 | M T S V D Y E |
| UniRef90 UPI00047CD8EF | L E K V Y Y |
| UniRef90_A4SWX4 | L A K I K Y P E EFA $\square$ P QP WLE N A W $\square$ P |
| UniRef90_R7CW95 | L VDV E Y P E E VFI |
| UniRef90_R6P2Y2 | L NRVFYEED |
| UniRef90_A6GNW6 | L WNI E Y P E Q Y G |
| UniRef90-D3FRP1 | L WS V Q Y N D |
| UniRef90_Q73G93 | L VKI D Y |
| UniRef90_YOKGG7 | LTGVQY GAEWGLP |
| UniRef90-UPI000225B60D | L WKVT Y |
| UniRef90- Q6I4Q2 | L WQV N Y N N |
| UniRef90-UPI00047BB9D6 | L Y K V K Y |
| UniRef90_K0AY89 | L L EVE Y K N |
| UniRef90_R2NT72 | L A EVKY |
| UniRef90-M1WSN2 | L A SVL Y S S E |
| UniRef90_F9ZFZ4 | L A GVVKY D S S WCMPELSS S $\square$ P |
| UniRef90_R6BAB9 | L E K V M Y E |
| UniRef90_M1SNI5 | L A Q I A Y P D E F Q $\square$ P S P C L A N S W $\square$ P |
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| UniRef90_D8J1Z2 | L A RVD Y P D A WALLP Q E S R A WP WL |
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| UniRef90-14X7P5 | L E SVT Y |
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| UniRef90-F9V6T7 | L K E V $\square \mathrm{Y}$ LD |
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$T K Q K V N I F A S G R T D A G V H A L G Q V L H F D L G C F Y E P S K L M N S ~$ TNHPSPVQAAGRTDAGVHGLAMTAHIDVAREFTPFRLMEA LREPIVTVGAGRTDAGVHARKMFAHFDFHAEDDTKQFTYK EHRPVTVHGAGRTDRGVHAHGQVASVF TTREMSEAEWQRA LGEEVQVVGAGRTDTGVHALLQMYAHFDTTKELKEEVVFK
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 A P LTFERGLAWRI PAALDVAAMADGAARLVGRHDFTTFRS A P L T L E R G K A WMV P K P L


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 K A D V F L R R K WV E VIP E E L D L A K M R E A S K L L I G T H D F L A F C G VPNVF ERRYAARI PSPYDI KEMKKAAAYLTGEHDFKSFCD

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THTDVK TFi CKI YKAHWEK DDKQLVFTI DADRFLRNMVRA




## P




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R6MUF UniRef90_R6MUF7
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| UniRef90_G9ZF59 | LS G IT Y P P A Y H L P P T P H A W |
| UniRef90-R6MUF7 | L N RVNYD |
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| UniRef90-F4BQW6 | L D EVYY |
| UniRef90_U4KMI3 | L E Y V L Y D E |
| UniRef90_X4ZRV1 | L WNV S Y E D |
| UniRef90-R7F3Z5 | LVKVNYE |
| UniRef90-UPIO00289F510 | L K D V V Q ${ }_{\text {L }}$ |
| UniRef90_A9EB77 | L T C A K V T T Y P P A E |
| UniRef90-Q893H3 |  |
| UniRef90-E2N2B8 | L T T H I E E Y P E E L F $\square$ |
| UniRef90_D3IDT7 | L E K KVV E Y Y |
| UniRef90-V7EID3 | LTGVSYP |
| UniRef90_UPI000288D0C3 | F L R A D Y |
| UniRef90_A0A031K0A0 |  |
| UniRef90-FORSD5 | LV DVGYPEHLT $\square$ |
| UniRef90-X5HIY5 |  |
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| UniRef90-J1F2V9 | L K K V Y Y D $\square$ E N N |
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| UniRef90-E3HZZ0 | FMTVD Y |
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| UniRef90-G8R5Z9 | L T R V V Y P K E |
| UniRef90-U2UX68 | LERVWYDRE |
| UniRef90-R7QXF9 | L VGVD Y E |
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| UniRef90-R6ZNJ9 | LVII G Y P E L F NLDE |
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| UniRef90_UPI00041FEA88 | LCKVIYPE |
| UniRef90-UPI00028A4104 | SLS V I Y P E |
| UniRef90-U2KM53 | LWNVCF |
| UniRef90-A3SYP3 | LSHVTYETD |
| UniRef90_B7K222 | L $\square$ RVGYEE FPFPPSQPLFLD N |
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| UniRef90-D6ZZF1 | L A EV T Y |
| UniRef90-J9F4B9 | LVDVA Y P D E I F L |
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| UniRef90-Q5FGS1 | FVKV ${ }^{\text {V }}$ |
| UniRef90-V7HV20 | LS GVRYPED T GLS T S Vebli F F P S |
| UniRef90-G5HTR3 | L EKVEYGE |
| UniRef90-R5HEG8 | L K DVF Y |
| UniRef90-W8W018 | L T R V K Y P E E |
| UniRef90-K9ANQ1 | L E K I Y L S D |
| UniRef90-UPI00034DFAE2 |  |
| UniRef90-R9LM68 | L MEVYYGEQ |
| UniRef90-J8VX21 | L E AVGYP E E L Y L |
| UniRef90-U2Z1Q7 | LAAVGYPDPFD |
| UniRef90-UPIO0036449DE | LKEIS Y D D DVHSRPLG |
| UniRef90-X5K5Y7 | L V DVG Y |
| UniRef90-R6C857 | LI EVR Y |
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| UniRef90-G9WQY1 | LI HLDD Y G |
| UniRef90_UPI00040EF8E7 | L MQVDY |
| UniRef90-R5ZPB0 | LMNVIY |
| UniRef90-A8GUM4 | Fl ${ }^{\text {A A D }}$ |
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| UniRef90-R7NIA0 | LQQVNY |
| UniRef90-H3NJ41 | M M EV Y Y P N Q |
| UniRef90-W7C9G3 | LM NVFYDE |
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| UniRef90-R6GDS4 | L ERVF Y |
| UniRef90-W2BW72 | LVEI Y Y |
| UniRef90-UPI00036046BC | FVKVD ${ }^{\text {V }}$ |
| UniRef90-F8EVE9 | FTQAIY |
| UniRef90-D1W4U6 | LEDVEY |
| UniRef90-H5SFD1 | L L R V R Y |
| UniRef90-U2Y4W0 | FVGARYPE |
| UniRef90-UPI0003791770 | LTA T K Y |
| UniRef90-E4L460 | L K E 1 Y E N |
| UniRef90-H2BS13 | LT G\| E Y P |
| UniRef90-U2P5W6 | L E DVEY |
| UniRef90-D5SSD7 | L WHVDYPATQS LDPTGD\PP |
| UniRef90-UPI00020DA0FE | LDEIYY 1 Y EP |
| UniRef90-Q21XI4 | F LGPRYAPHWGLPDR |
| UniRef90-UPI00036902ED | FAGPVYAPEWGLPERTAAFDWL |
| UniRef90-E0XWL6 | LT K 1 K Y |
| UniRef90_G5H981 | LTT R V D Y P D D |



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| UniRef90 ${ }^{-}$W8RSN3 | EEGVPSIAAAGRTDAGVHATGQVAQCDMARDWDPFRLSEA |
| UniRef90_UPI00047CE0FD | A GRSIEVTCAGRTDAGVHAACQVAHFDATVQRDPRGWMLG |
| UniRef90-B71HS2 | FKERIYTQAAGRTDAGVHANGQVAAFNCPIERTETDIKNA |
| UniRef90-E0MLY3 | GEPDPIVQGAGRTDAGVHALDAQVAHSDLTRPWTGFRLAEA |
| UniRef90_UPI00036B1E1A |  |
| UniRef90-R5BGM5 | TGHKCALHASGRTDSGVHAAAQVAHFDTDCRIPAEKFAFA |
| UniRef90-D5QCU9 | TGGRPVIS\T GRTDSGVHATGQVAHLDFPDDIPLSSTAVR |
| UniRef90-E0S1L5 | IT GEVNLIGAGRTDAGVHARAMTASAVLDTHLSEAETQSY |
| UniRef90-J6IGQ0 | LRTEISIVGAGRTDTGVHARDYYAHFDHEASLPEN |
| UniRef90-Q8GB97 | TGEEVKITCAGRTDAGVHARGQVVDF |
| UniRef90-H1D1K5 | TGAKGQVIGAGRTDAGVHADGQYANVHLQEEYDLKMLQDA |
| UniRef90-S3JQM6 | HKHPVELFGSGRTDAGVHACGQAAHFTDIARDKPESFIPA |
| UniRef90-H1PJR1 | CRKPIKVFGTSRTDAGVHALDACCNFKENDDIPTDRIAHA |
| UniRef90-D7N6X8 | VKHEIKLYTAGRTDSGVHAMGQCVNFYSETTINDGNLPKV |
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| UniRef90_UPI000372 | VGYPVVI HAAGRTDTGVHAAAQVAHFDVMTLIPAHRWADV |
| UniRef90-E7NVA1 |  |
| UniRef90-K9S572 | RV HAAGRTDT GVHAAAQIVHFDAKTLIPAHRWRDVV |
| UniRef90-M5RDT7 | TRQRVHVTGSGRTDAGVHALAQVASLRTPNWRASATDLNA |
| UniRef90_UPI0003747ABA | LRQPIAIVGSGRTDAGVHATQQFAHLDLDT PLPEHLLRS |
| UniRef90-U2S4B5 | HKKDVRI YMSGRTDSKVHAYGQVLHFDSDLNDSSEAWKRA |
| UniRef90-Q253C0 | LGKPIVVSSSGRTDSGVHAYGHFSQPDHPLFSQPQS $\mathrm{L}^{\text {L K K M }}$ |
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| UniRef90-A5VDL9 | TGERAVI HAAGRTDARVHGRAMTAHADIAKPDTPFRLKEA |
| UniRef90-K97848 | LQHPVSLIAAGRTDTGVHAAAQVAHFNQKSTIPASRWAVI |
| UniRef90-S3XXW2 | VREDIRVTVAGRTDAGVHASGQVVHVDIPYERWQRMPGRR |
| UniRef90_R6A7F3 | LRDNCSVTGAGRTDAGVHAHMMVAHFDSSSEID GS WLT DK |
| UniRef90-Q2JUJ7 | AGHPVALYGAGRTDTGVHASGQVAHFDTTSGIPPTEWARV |
| UniRef90-W2CVE1 | QPTPLTGAGRTDAGVHARRMAAHDDTDVPI D DPAGVGR |
| UniRef90-UPI0002FFCC85 | SSRDVKTFAAGRTDAGVHAAGQVVHFESDFVIAESRWADA |
| UniRef90_Q04G54 | AKTKIKVIGASRTDAGVHANGQVINF |
| UniRef90-Q0F2X2 | EGEPLTVVAAGRTDAGVHAEALLVHADVSAARWQRSPRAY |
| UniRef90_C1F1S9 | TGERVLPQGSGRTDAGVHALGQVASFVLKAPDPAENLHRA |
| UniRef90-UPI00036A | VGSHINLHGAGRTDSGVHAAAQVAHFDVASPLPPHKWAPV |
| UniRef90-H1HQ75 | LRRKTEVVGAGRTDTGVHARLMVAHFDHPETIDGPQLTYR |
| UniRef90-G7Q5C0 | CGEPVRIFGAGRTDSGVHAMAQVAHVDVPEGRAADPWQKA |
| UniRef90-A8IC | S GEEAHVAGAGRTDAGVHATGQVAHIHLARDWRPDQVRDA |
| UniRef90-UPI00047CF415 | T GERVLPQGSGRTDAGVHALGGQVATFILSAPIPPPNLLRA |
| UniRef90-R5WFS5 | DCDFVRVYAAGRTDVGVHSRGQTVHFDTDKKVNTFKLCLG |
| UniRef90-W7SXS4 | FRQPLTLTVAGRTDAGVHAGGQVAHVDLPAESDVDGLPKR |
| UniRef90-C6BW69 | T GT TVRVHGSGRTDS GVHALGGQVAHFDVDSCFASVKWQRA |
| UniRef90-Q2G494 | TGEAVALNAAGRTDTGVHALGMRAHFDLSRAFDPFRMMEA |
| UniRef90-UPI0003B7 | TGEAVDVHASGRTDAGVHARAMPAHADIAKSLTPFRLMEA |
| UniRef90-K9Z0B8 | VGHKVTI YGAGRTDS GVHASAQVAHFEVCSPIPAQKWAKV |
| UniRef90-W4QHD0 | EGKEIEI IGSSRTDAGVHAYGQVANVKLSKPRSSEELQRY |
| UniRef90-R7HLS1 | SGKKI DI HASGRTDAGVHAMAQKIHFDLDMNDTLEKLAKG |
| UniRef90-R6Y0W5 | LKTDVIIKGAGRTDAGVHAKGQVAHFDSTQFVPPTNLKK■ |
| UniRef90-F9D5D6 | LRQPIEVTGAGRTDAGVHARQMACHFDTLQPLDTDQLAYR |
| UniRef90 ${ }^{-}$W8FAQ5 | LRQPVYCLGSGRTDSGVHASHQHFDADLPAGLDVPTLLYR |
| UniRef90-K0KF55 | LREDVTLTVAGRTDAGVHAAGQVAHADLPSGVDVAGLPRR |
| UniRef90-G2lJ39 | VGAPPVVHCAGRTDAGVHALAMRAHVDLDSAI TPFRLMEA |
| UniRef90-C2KVQ2 | NEEGVEI IGASRTDAGVHARGMCANVFLDTELSEEEILD Y |
| UniRef90-W1TYB6 | LGEKTTLYFVARTDSGVHAWAQECTFYTTGTIPGERFASA |
| UniRef90-D8ICF0 | YSKKSTIYGCGRTDAGVHALGQVANFRVEKMVPDERVTRA |
| UniRef90-R5VQ24 |  |
| UniRef90-R6SQU3 | FGFDCDITGCSRTDSGVHAEMFCATVSGHGTDPAYRIPDA |
| UniRef90-C5C0F7 | LPEPPRLTVAGRTDAGVHARGQVAHVDLPREAYLAAPGRR |
| UniRef90-UPI0003A6B1C5 | NSQPVKVIGAGRTDSGVHARAQVAHFDLESAHSAETDRRA |
| UniRef90-A9HKQ8 | SGRVVPSITAGRTDAGVHATGQAAHDDFPGDVRLNDSTVR |
| UniRef90-J7GK91 | P SVRSPSSSPGVPDTGVHALCQVVHFDSPVVRPPEAWVRG |
| UniRef90-UPI000400DEE5 | A A Q E IP T ICAGRTDAGVHGLMQVVHFDTELDRAANSWVRG |
| UniRef90_D3PL02 | PGARPKIWPCGRTDAGVHALAMPVHYDTLDNDPTEKIPHA |
| UniRef90-I3YRA3 | LREK\EVTGAGRTDTGVNASYYVAHFDCEEPVPDPQVVYK |
| UniRef90-R5B8W7 | CGEPIKVVGCGRTDAGVHAKRYCANFRTDCTIPDDRVPLA |
| UniRef90-W2V2Y8 | F NEPIVLFVAGRTDASVHALHQVAHFDSNKEYSVNTVKNA |
| UniRef90-UPI000465110B | WGRPI AVTGASRTDAGVHALRQAASFAAPRKLTPEELARA |
| UniRef90-UPI00046656F0 | CDRPVRVLGAGRTDS GVHALGQVAHCDVPESRTGLDWQKS |
| UniRef90-E6JAl5 | LR HPVVLTVAGRTDAGVHARAQVCHLDVDPA WLDQRSVRR |
| UniRef90-G8LR45 | LKTPINIVGAGRTDKGVHAKQMFAHFDIEK KISNNFIKK |
| UniRef90-F4LL00 | LLKTPVALTGSGRTDSGVHAFAQAANFSPFDSVPPENYVPA |
| UniRef90-F9MPY7 | LHTPIRIYGAARTDAGVHAYGQVVNFYGTDPMPVERLPFA |
| UniRef90-G1WJD8 | \|L R R DVELTCAGRTDAGVHADSQYVSFPAYEE\|LRKRWMRA |
| UniRef90-UPI0002EDC631 | VGHPVTLYGAGRTDAGVHAAAQVAHFNVTSKI PAYKWATI |
| UniRef90-14F3Q7 | L R H DVDLTVAGRTDAGVHAVGQVAHTDLPAELFAAHESRL |
| UniRef90-B5YGE4 | FQREIKIRGAGRTDAGVHALGQVATFKAELKMSLD\LKKV |
| UniRef90-UPI00035C133F | TGERVLPQGSGRTDAGVHALAQIASVALTSPDPQPNL |
| UniRef90-W3ATA5 | VYFPVTVIGAGRTDAGVHARAMTANVILDTDKSEDEIVREY |
| UniRef90-D6THB5 | SGVQITVMGAGRTDVGVHASGQVIHFRTESRLTVEVWRRA |
| UniRef90-UPI0003635B22 | TPHDPVVVAAGRTDAGVHAEAQVAHLDLAREI DPRRLREA |
| UniRef90-Q110D3 | INEPVTLHGAGRTDAGVHAAAQVAHFDVSGPIPAHKWATI |
| UniRef90- ХОТАТ4 | FGQKIKVIGAGRTDTGVHATGQAAHFDCPVNENADNVTRS |
| UniRef90-F3BD07 | VGYPVEI DGSGRTDGGVHAGGQVANVRLS GKVEEAVFQEK |
| UniRef90-F2JRW7 | TEEQVEI DGCDRTDVGVHAENYVASFKTECTLSTACMLDY |
| UniRef90-B6IPI0 | D A GV HALLAMVASVDLLAREATADKVQAA |
| UniRef90-E8RFH0 | PITLHGAGRTDAGVHALGMVAHFHTRAA】PVVAFFKG |
| UniRef90-K0Z528 | ITPCQLTVA GRTDK GVVALGGQVAHVDVPAEAFERLGRTG |
| UniRef90-L1MCD9 | VPTECVGAGRTDTGVHASMMVAHFDTDQILDEEAFAFR |
| UniRef90-A2C4X5 | DPRPVKA A A GRTDS GVHASGQVVHFDCSGPIPDHKWASA |
| UniRef90-UPI0004125F01 | $F R A P F A L T G S S R T D A G V H A L Q N F F H V D T A L E L T D K H V Y N$ |
|  |  |



## UniRef90_W6U3Y8 UniRef90-F5RPJ2 UniRef90-W8RSN3 UniRef90-UPIO0047CEOFD UniRef90-B7IHS2

 UniRef90-EOMLY3 UniRef90-UPI00036B1E1A UniRef90-R5BGM5UniRef90-D5QCU9 UniRef90-EOS1L5 UniRef90-J6IGQ0 UniRef90-Q8GB97 UniRef90-H1D1K5
UniRef90 S3JQM6 UniRef90-H1PJR1 UniRet90-D7N6X8 UniRef90-D4TV57 UniRef90-UP10003728FBA UniRef90-E7NVA1 UniRe90_K9S572
UniRef90_M5RDT UniRef90-UP10003747ABA UniRef90-U2S4B5 UniRef90-Q253C0 UniRef90-C8X4C1 UniRef90_A5VDL9 UniRe90 K9T48
UniRef90-S3XW2 UniRet90-R6A7F3 UniRet90-Q2JUJ7 UniRef90-W2CVE1 UniRef9-UPCOO2FFCC85 UniRef90-QOF2X2 UniRef90-C1F1S9 UniRef90-UPIO0036A36B2 UniRef90-G7Q5C0 UniRef90-A81QL3 UniRef90-UP100047CF415 UniRef90_R5WFS5
UniRef90_W7SXS4 UniRef90-C6BW69 UniRef90-Q2G494 UniRef90-UPIIO003B72F1C UniRef90-K9ZOB8 UniRef90_W4QHDO UniRef90_R7HLS1
UniRef90_R6YOW5 UniRef90-F9D5D6 UniRef90-W8FAO5 UniRef90_KOKF55
UniRef90-G2IJ39 UniRef90_C2KVQ2 UniRef90-W1TYB6 UniRef90-D8ICFO UniRef90-R5VQ24 UniRef90-R6SQU3 UniRef90_C5COF7 UniRef90-UP10003A6B1C5 UniRef90-A9HKQ8 UniRef90-J7GK91 UniRef90-UPIO00400DEE5 UniRef90-D3PLO2 UniRef90-13YRA3 UniRef90-R5B8W7
UniRef90 UniRef90-UPIOO0465110B UniRef90 UPIIOOO46656F0 UniRef90_E6JA15
UniRef90 G8LR45 UniRef90_F4LL00 UniRef90-F9MPY7 UniRef90_G1WJD8 UniRef90-UPIOOO2EDC631 UniRef90-I4F307 UniRef90-B5YGE4 UniRef90O UPIIOOO35C133F
UniRefgo-W3ATA5 UniRef90-W3ATA5 UniRef90-D6THB5 UniRef90-UPIOOO3635B22 UniReftoo-O11003 UniRef90 XOTAT4 UniRe90_-F3BDO
UniRef90_F2JRW7 UniRef90-B6IPIO UniRef90-E8RFHO UniRef90-KOZ528
UniRef90-L1MCD9 UniRef90-A2C4X5 UniRef90-UPIOOO4125F01


## UniRef90_W6U3Y8 UniRef90_F5RPJ2 UniRef90_W8RSN3 UniRef90_UPI00047CE0FD

 UniRef90_B7IHS2 UniRef90_EOMLY3UniRef90_UPI00036B1E1A UniRef90_R5BGM5 UniRef90_D5QCU9 UniRef90_E0S1L5 UniRef90_J6IGQ0 UniRef90_Q8GB97 UniRef90-H1D1K5
UniRef90 S3JQM6 UniRef90_H1PJR1 UniRef90_D7N6X8 UniRef90_D4TV57 UniRef90_UPIO003728FBA UniRef90_E7NVA1 UniRef90_K9S572 UniRef90_UPI0003747ABA UniRef90_U2S4B5 UniRef90_Q253C0 UniRef90_C8X4C1 UniRef90_A5VDL9 UniRef90_S3XXW2 UniRef90_R6A7F3 UniRef90_Q2JUJ7 UniRef90_W2CVE1
UniRef90_UPI0002FFCC85 UniRef90_Q04G54 UniRef90_Q0F2X2 UniRef90_C1F1S9 UniRef90_UPIO0036A36B2 UniRef90_H1HQ75 UniRef90_G7Q5C0
UniRef90_A8IQL3 UniRef90_UPI00047CF415 UniRef90_R5WFS5 UniRef90_W7SXS4
UniRef90 C6BW69 UniRef90-C6BW69 UniRef90_UPIO003B72F1C UniRef90_K9Z0B8 UniRef90_W4QHD0 UniRef90_R7HLS1
UniRef90_R6Y0W5 UniRef90-F9D5D6 UniRef90-W8FAQ5 UniRef90_KOKF55
UniRef90_G2IJ39 UniRef90_C2KVQ2 UniRef90-W1TYB6 UniRef90_D8ICF0 UniRef90_R5VQ24 UniRef90_R6SQU3 UniRef90_C5C0F7 UniRef90_UPIO003A6B1C5 UniRef90_A9HKQ8 UniRef90_J7GK91 UniRef90_UPIO00400DEE5 UniRef90_D3PL02 UniRef90_I3YRA3 UniRef90_R5B8W7 UniRef90-W2V2Y8 UniRef90_UPI000465110B UniRef90_UPI00046656F0 UniRef90_E6JAI5
UniRef90 G8LR45 UniRef90_F4LL00 UniRef90_F9MPY7 UniRef90_G1WJD8 UniRef90_UPI0002EDC631 UniRef90_I4F3Q7 UniRef90_B5YGE4
UniRef90_UPI00035C133F UniRef90_W3ATA5 UniRef90_D6THB5 UniRef90_UPIO003635B22 UniRef90_Q110D3 UniRef90_X0TAT4 UniRef90_F3BD07
UniRef90_F2JRW7 UniRef90_B6IPI0 UniRef90_E8RFH0 UniRef90_K0Z528
UniRef90_L1MCD9 UniRef90_A2C4X5 UniRef90_UPI0004125F01
UniRef90_X5L7H4
170
180

200 A GGAPMSPVRTLDEDRLDEEGGRFSCYLHGNGFLYHMVRN
 KGKDEKNPVRTMYR IIRI LT LKK GLII RVVEGRSFLIRSMVRN


 V N T D V R T Y I C H L T E A Y WR QQ G A L L I F R IT A D R F L R N MV RA


 RHA IVKDT, R R ${ }^{2} 42$ A GS SSASKSRY FSAHFFDEKDFLVFEI SANAFLWRMVRS VGGSPRRKT T T R N VVKV C E I I IR E P S M S H V




## A

A
$P R$
LHTEDATTVRTLHEDT WERPET GVVATVTADAFCHHMVRS
RGSDTK T N C RVVVAHWSKID DDWQFEITADRFIRNMVRA

 A GCQAA HAEKHI RSLEUVQHGHCIVIDVSADAFLYHMVRN S DPDEESHVRTI FAS GWAEED DLLI YRVVGNGFLHHMVRN A NSKRAMSIVEVVQAAECNRDGAFLNLEI QADGFLYGMVRLL S GADNKTTLCAVRACWVQTSGHSWYFEITANRFLRNMVRAB

,
$\square$ EGATTIRELQRLSWERSGDVLTAFVSADAFCHSMVRS
 N N S VIP S N P V R T I Y D I M L E E A G D L L K $\quad$ V Y V T G D G F L Y K M V R N







 VGTVVQSTVRRVHGVVPQGPEHELVWQFRAEGFLKQMVRN R R EGGAT TII R E L Q R F E WRTEEP D P WTA SVVSA DA FCCWS MV R S K R N E K K N N I C E I Y D A N WL L K N T Y F C F TII E A N R F L R N MV R S AGDPCESKKRYLEKAVFYADGDKLVFEIAANAFLWKMVRS



 V D P D R A D N V R T L T L S E WR DEG D L L D Y S V R G D G F L H H M V R N NSHMKKSTVRNMDNDE DTENGPYIRFYYHGTGFLQNQVR】
 A GSSCRP H S WVVDVV Q E V





 $H R P G \quad A T T \| R D L Q R L D W V R D G V Y V T A H V T A D A F C W N M V R S$


| UniRef90 W6U3Y8 | L VS/V TY P 250 |
| :---: | :---: |
| UniRef90-F5RPJ2 | L L RVDYGNEDD |
| UniRef90-W8RSN3 | LTGVGYPED |
| UniRef90-UPI00047CE0FD | FLGPRYPAEWHLP |
| UniRef90-B7IHS2 | LYKVLF |
| UniRef90-E0MLY3 | LTSVTY |
| UniRef90-UPI00036B1E1A | L WNVDYGDL L P Q |
| UniRef90_R5BGM5 | L A RVEYEN |
| UniRef90-D5QCU9 | LTGVAYPED |
| UniRef90-E0S1L5 | MMKVDY |
| UniRef90-J6IGQ0 | LEEVLYS D |
| UniRef90-Q8GB97 | L L E V W |
| UniRef90-H1D1K5 | LVDVVY |
| UniRef90_S3JQM6 | L WS I EYPQQ |
| UniRef90-H1PJR1 | LAEI YFEDLIF G |
| UniRef90-D7N6X8 | LMKI Y Y |
| UniRef90-D4TV57 | L LRVGYND |
| UniRef90-UPI0003728FBA | L LRVGYPD MPFPPELWF |
| UniRef90-E7NVA1 | L WHI T Y P E D |
| UniRef90-K9S572 | L LRVGYPTS P F P P E W |
| UniRef90-M5RDT7 | L K R V ${ }^{\text {P }}$ |
| UniRef90-UPI0003747ABA | LTEVGYD |
| UniRef90-U2S4B5 | LKCVEYNNE |
| UniRef90_Q253C0 | L H HVCYPKPYNWFCTP |
| UniRef90-C8X4C1 | LRKVKYGE |
| UniRef90-A5VDL9 | FMEAVYPAE |
| UniRef90_K9T848 | LLRVGYPE FP F S P |
| UniRef90-S3XXW2 | LERI DYPEEAEWAARA |
| UniRef90-R6A7F3 | LVDIK ${ }^{\text {V D }}$ |
| UniRef90_Q2JUJ7 | L V DVGYGDPFGRRFAHSPPFW |
| UniRef90-W2CVE1 | LVEVHYPADLFL |
| UniRef90-UPI0002FFCC85 | FINAKY |
| UniRef90-Q04G54 | LDEVYY |
| UniRef90-Q0F2X2 | FTDAWYDDFY |
| UniRef90-C1F1S9 | LYSVCY |
| UniRef90-UPI00036A36B2 | L LRVGYPD F A VPKE |
| UniRef90-H1HQ75 | LEDIE Y |
| UniRef90-G7Q5C0 | LVVVEYGEH |
| UniRef90-A8IQL3 | LAAVS Y P EQ |
| UniRef90_UPI00047CF415 | L VSVNYEA |
| UniRef90-R5WFS5 | L EKV Y Y E |
| UniRef90-W7SXS4 | LVRVD P P |
| UniRef90-C6BW69 | MA GVY Y G E |
| UniRef90_Q2G494 | FVSAQYPGE |
| UniRef90-UPI0003B72F1C | FI GAS Y P E |
| UniRef90-K9Z0B8 | LLRVGYPE FPFPESVWF |
| UniRef90-W4QHD0 | L EKIE |
| UniRef90-R7HLS1 | L K NVFY |
| UniRef90-R6Y0W5 | L WK V Y Y E |
| UniRef90-F9D5D6 | L WEI A Y |
| UniRef90-W8FAQ5 | LCRVEYPAE |
| UniRef90-K0KF55 | LVRVDYPEDALLAERAL |
| UniRef90-G2lJ39 | FVAAFYPGE |
| UniRef90-C2KVQ2 | L M K V L Y D |
| UniRef90-W1TYB6 | L L HVYFDA |
| UniRef90-D8ICF0 | FRRAFF |
| UniRef90-R5VQ24 | L LKVEYD |
| UniRef90-R6SQU3 | LTKVFYPED |
| UniRef90-C5C0F7 | L E EI G Y P P D E E L A ERA |
| UniRef90_UPI0003A6B1C5 | LWSI E Y K EQ |
| UniRef90_A9HKQ8 | LTGVGYDPD |
| UniRef90-J7GK91 | FVAPRYPAEFELDPVDAVDAGFL |
| UniRef90-UPI000400DEE5 | FLGPVYDEKWGLPSTTAAFDWLP |
| UniRef90-D3PL02 | $F \vee R A G Y$ |
| UniRef90-I3YRA3 | LS DVVYP P |
| UniRef90-R5B8W7 | L NRVWY D |
| UniRef90-W2V2Y8 | LENIKY |
| UniRef90-UPI000465110B | L $\quad$ R V Y Y |
| UniRef90_UPI00046656F0 | LYAVEY |
| UniRef90_E6JAl5 | L I GVDYPADDELAA R NL |
| UniRef90_G8LR45 |  |
| UniRef90_F4LL00 | L WNVDFE |
| UniRef90-F9MPY7 | LEEVFY |
| UniRef90-G1WJD8 | FMNVEYDDGVLLP CP |
| UniRef90-UPI0002EDC631 | LLRVGGYPD FPFPPEDWF |
| UniRef90_14F3Q7 | LVRVDYP P D ELIA A R AL |
| UniRef90-B5YGE4 | L EKV ${ }^{\text {¢ }}$ |
| UniRef90-UPI00035C133F | L H SVS Y A |
| UniRef90-W3ATA5 | L M K V D Y D |
| UniRef90-D6THB5 | L VRVEYPEKFGV |
| UniRef90-UPI0003635B22 | LTAVRYPAD |
| UniRef90_Q110D3 | LLRVGYPE FPFPQEVW |
| UniRef90-XOTAT4 | L E HVHY |
| UniRef90-F3BD07 | L K EVE Y K V K E S L K |
| UniRef90-F2JRW7 | LVEVKY |
| UniRef90-B6IPI0 | FTEAWY |
| UniRef90-E8RFH0 | LERLLY P P |
| UniRef90-K0Z528 | LEEVGYPDEGE |
| UniRef90-L1MCD9 | LVDIQ Y |
| UniRef90-A2C4X5 | L I RVGYE E K |
| UniRef90-UPI0004125F01 | LEAVDYPD G Y |
| UniRef90 X5L7H4 |  |

UniRef90_UPIO0036F5EDA


4279199 UniRef90-UPI00042

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UniRef90_W9DWS3 UniRef90_B2S1K1 UniRef90_F4KXG6 UniRef90_R7KEA5
UniRef90_UPI0004639893 UniRef90_UPI0003B4006E UniRef90_I4JMN2 UniRef90_Q4L88 UniRef90_A0A022KXT8 UniRef90_M4V8H5 UniRef90_UPI0003484D69 UniRef90_Q6A6S8 UniRef90-L7FC10 UniRef90_D2MMG6 UniRef90_R5W4J2
UniRef90_AOYJR8
UniRef90_R5I5Z8
UniRef90_Q3Z951
UniRef90_B9Y957
UniRef90 D9Q6K0
UniRef90_W7ITB2
UniRef90_UPI0003452D11 UniRef90_UPI000347DD5D UniRef90_UPI0003770E80
UniRef90_Q6MQH6
UniRef90_TOSNW4
UniRef90-L7VJD8
UniRef90_10HZI3
UniRef90_F3B9E8
UniRef90_R4Z211
UniRef90_K7RZ54
UniRef90_Q2S4S9
UniRef90-A3H4L3
UniRef90_D9XVE8
UniRef90_UPI000319B380
UniRef90_B6WXZ9
UniRef90_S5XQP6
UniRef90-K9P784
UniRef90_K0V0B4
UniRef90_P73295
UniRef90_A1ZTP5
UniRef90_E8N3Q3
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UniRef90_R5SB53
UniRef90 E8V7A7
UniRef90_UPI0003B7BA59
UniRef90_UPI000361E83D UniRef90_UPI0003689A85 UniRef90_UPI00037F4FA1 UniRef90_C8W7W7 UniRef90_F8F005
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UniRef90_UPI000475D813
UniRef90_U7D5I5
UniRef90_D1BBS1
UniRef90_R7BG34
UniRef90_UPIO003767B25
UniRef90_G7GQG0
UniRef90-T0RYD9
UniRef90_UPI000303AE6B UniRef90_UPI000348C98C
UniRef90_F0RK88
UniRef90-R5FCQ5
UniRef90_R6TBQ4
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UniRef90-F4KWH8
UniRef90_B4D9U5
UniRef90_R7BTN7
UniRef90_D6YVG3
UniRef90_F2KPN0
UniRef90_UPI00036A1094
UniRef90_D9V3K9
UniRef90_G0HGR2
UniRef90_D3L417
UniRef90 M1UDH4
UniRef90_UPI0003A777BD
UniRef90-B7AWQ3
UniRef90_R7Y0X7
UniRef9-R6PERB
UniRef90_R6W780
UniRef90_A4SE87
UniRef90_D1Y6B2
UniRef90_UPI00047EB6BE
UniRef90-Q4ITC5
UniRef90_Q4JTC5

```
.
P E
MQR
P
P G
```



```
\(R \square L V N T S Q G S Q F L G F Q \square Q Q Q G R T V Q Q Q F E K \square L K R M\) TKRYFLELSYKGTPFHGWQIQGNAYSVQECLENALSTY
```




``` \(M\)
F \(R \| R\) D D A
```



``` MRYFKA AYDGTKF
```




``` LIVYEGTRYS GFQVQDKGATI Q GELETAI RKL T TVRIIR A V V S
```



```
\(R L_{R}\)
```

$\qquad$

``` RYF RL MA MTRWRLDVAYDGSGFRGFAVNDGDRSVAGELQGALAKM TRRWRLDI A Y D GADFSGWAAQPDRRTVQGELERWI PRVV MPRYRLLVEYDGTDFHGWQDQPTVPTVQGALEEAVDTV
```

$P G F \square R \backslash R L D L S Y D G A E F S G W A R Q A G G R T V Q G E \square E D A L R T V$ TKRHFI SLSYKGTAYHGWQTQPNALAVQEVLEKALKVF $R \square R L L L A Y D G S R Y C G W Q \square Q D P P P T V Q A A V E A A V G R I$



## M N

 MARLRLDI AYDGSGFHGWARQRPARTVQETLETALALV
 $N Y$ K $V$ V




P P WTRVLLTVAWDGSAYGGWQSQPNAPSVQDTLHAARNRL $R Y L A T I R F D G T A Y H G W Q D Q P N G M S I Q E K V Q Q C L S L L$
 M Q

 $R V A L K$ L A Y DG T D F A GF Q Y Q P D E R T V E G E L F K A F E S I



RLRLDVSYDGADFSGWAAQPARRTVAGVLAEAFERLL
 MPK YS I IV E Y DGTNYSGSQVQPDKVTI QSELNKALSTL MYNYKLVI QY DGTRYDGWQRMESINTIEYKIAE ILRKM

 $R V R L E V A Y$ DGTDLHGWATQSGGRTVAGVLQEKLRTV

UniRef90 UPIO0036F5EDA UniRef90_D7BC75 UniRef90-W9DWS3 UniRef90-B2S1K1
UniRef90 F4KXG6 UniRef90_R7KEA5 UniRef90_UPI0004639893 UniRef90_UPI0003B4006E UniRef90_I4JMN2 UniRef90-Q4L882 UniRef90_UPI0004279199 UniRef90-W5T8W3 UniRef90_A0A022KXT8 UniRef90_M4V8H5 UniRef90_UPI0003484D69 UniRef90_Q6A6S8 UniRef90_L7FC10 UniRef90-D2MMG6 UniRef90_R5W4J2 UniRef90_A0YJR8 UniRef90_R5I5Z8 UniRef90_Q3Z951 UniRef90_B9Y957
UniRef90 D9Q6K0 UniRef90-W7ITB2 UniRef90_UPI0003452D11 UniRef90_UPI000347DD5D UniRef90_UPI0003770E80 UniRef90_Q6MQH6 UniRef90-T0SNW4 UniRef90_L7VJD8
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UniRef90-K9P784 UniRef90-K9P784 UniRef90_P73295 UniRef90_A1ZTP5 UniRef90_R7HAE7 UniRef90_E8N3Q3 UniRef90_C0VZ39
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UniRef90_Q4JTC5

MVVHFDTHADRPDFSWVRG $P G A D P K V V A A G R T D A G V H A L A M P L H Y D T D D P D P P E K D P L A$
 F T DKVEVYGSGRTDAGVHALGQVAHLAVDTKMPVKMIRQK NNEKVVKVVASGRTDKKVHAYHQVAHLDMNVSISPKQVKRA
 SCA GRTVDALVVHAS GQVVVHFDTSVVERSMHA WVMA HRRHVRIHPSSRTDRGVHAYEQFFHFDTDLNDEPKQWKYA

 F GHP I S L F AS GRTDAGVHALN QVCHFD TEWP ESRFDDLKRA $R V P E V Q L T V A G R T D A G V H A R G Q A A H A D V P A A V W G E R V P R R$ LRQPTPLTVAGRTDAGVHARGQVAHVDLPDNVDTSAMLRR

 E GKPVMV HGAGRTDAGVHARGQVAHFHSEKVYTAGQDNEY




 LRTEAALTVAGRTDAGVHASGQVAHVDVPESALDQRSVR R

 TNEDVELFCGARTEVGVHAYA QIVNFKTTSDMKLGEIMQY
 $V G T A C R V T G S G R T D A G V H A R G Q V A H V D L P E T R D P Y R L R G S$ $M V H F D T T A E R Q M V A W T M G$ $T R T V Y E L T V A G R T D A G V H A R G Q V A H V D D P R E V W A E H H T K R$ F R T DVVETLGC G R T D S GVVHAS Q F FA HLDD P S E I E IVVQEK F L
 D PHRPRAVAAGRTDTGVHAAAQVVHFDAリGPDPVTRWAKA FRSPVVTRAAGRTDSGVHATGQVAHVDVPSEALSHAPBRR VGQPVTLHGA GRTDAGVHAAAQVAHFDDPVQDPPHRWSK

 $L$ N E S I T I T GA GRTMDTKVNADN Y IA H F DAESSHEDDDMDF LR

 $F R T R V R L F A A G R T D T G V H A T G Q V A H V D V P A A A L K H A Y T R R$



 FF QE LDELNGSGRTDDAGVHAACQTANFDMVDMSTPAAAMDE





 $L G T E L E E T H G C G R T D T G G V H A R Q Y F A H F D D F E G E F P A E F V R R$

 NVK A SNYK CA GRT DAGVVHAFS QVVADD V S DA KKVL PRVV
 $P P G P K S V V V A G R T D A G V H A T G Q V V H V D V V P F P D L T R M R G R$ FRTPVELTVAGRTDAGVHATGQVAHVDQRSLEQPSDVVRR
 $V G T P L G L T V A G R T D A G V H A T G Q V C H V D L Q A D A W A D L E G R R$
 $R \square P D V R V V C A G R T D T G V H A R G Q V V H F D V D P A D V A R S A V R R$ QKQII KTIF S GRTDA GVHSKGQVVHFESSKPDVASRFLNS TGEEI QIF C GCRTEKGVHARGQVINFKLDEQKKPYEVKNY




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UniRef90_Q4JTC5
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 AN MNL P G DI S V TWAKVMMAHFDARFSAMARRYRYVI YN D Q
 $L A R F L P K D V R V T G L R T A P P E F D A R F S A V R R H Y A Y R L T T A P$ $L V G L L P E D V V V$ HA AREVPAAFDARFGALLRRRYRYRIISDSP






WN A H L P P S I A V R C V R E A P E G F H P R F D A V S R TY Q Y F V WWQ Q




L N ALL L PA DV RVVLYWQEAAPDFHARDSADRKTYVYDFWQEK

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$T$ D F NL P S DI RIT S I R PV S A GFHSRKSAVSKTYTYYTILSG
L N A RL P E D V A A K Q V E E V P G DF H P R F N A I E R A Y L Y R I I V A E
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 APNL F LAP WSWHRYQWLDEALMARCLEALLGEHDFSAF QR YGAEPQARYVTAWPRPLDVPAMSDAARELLGLHDFAAFC WPNLFAD QFSWHYYRFPLQEKT DQAA MELL GKHHLAAFHR
 TR D P L R R Y A WR L WP P L EA P EA LQQSAA QA L C GTHDFSAF GT G R N P L
D P A E S VCSPERARWVWQYPAPLDVAAMMQAA ERFVGTHDFTSFAA IS V N R A Y A WQVK Y S L T RE L LKEA T R P L C GVVCSLE G F S K A Y DPDLTRNHVLDHWPRPD DLLEAMNLDAAA DLLLGLND YT S F C K
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 HRTAF GKRYVWWI R DHL E L K K M Q A A S R L FA GFHDFS S FA D





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 S GP E D K K TVVR R V N WTRRLG DR E D R LI F N I E A N S F L T H QV R N S R A E MP D Q A R T I T R L E L A E E N D Q L R L I Y E G S G F L R Y M V R M





AP QEDESTERCVMAAFWRYRGWRLVFTITANAFLRQMVRT

 TQSETENRVCTLTHLRWVDRRGCWRVEVVGTRFLHGMVRA


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## A

## R

R H R D G A T T T I R E L L Q Q R L AGSARRHSWVEVVQGVVCYRRGPMVYLEIQANGFLYGMVRIL
 P PVE G GSTLR HI Y QAE WRENGDEWLFEVVRGNFLYMMVRR
 NDPERKDNI RTLYSSAWTLCGDELSYQVRGSGFLHHMVRN KNDDDDYAT IVYNN GWTFNENLMDFEVCA DRFFQHAVRT A REGAT S $\square R Q V N R \square G W A R D A R G T A T M T V L A D A F C H S M V R A$ R H REGAT TIR DLQQRLDWVRDGDLVTAHVSADAFCWSMVRS RREGASTVRALQEFSWRRTAPGLVEATVDADAFCHSMVRA
 DK S K S N R V R T I T D D H F E WA V P E L H I Y Y T A D S F L WN Q V R K R M D K Q A P TRVKVVEATLHASGDVIFFRVTGSHFLWKMVRR ARP HATTVVRQLTHLRWSEEPELVIRARVTADAFCWNMVRA



## F

R R

 R K REGAT TI RELLLRLEWERTADYLVRGTI QA DAFCHNMVRA ATKEDRQTVRELQRLAVTASPLPYGQRVTGESFLRHMVRG

 AKP HATT QI F QWEDVSTATEPATYLAHVVADAFCWSMVRS


 K F G E GQ S C V R T I Y N N V E L R V N G D F L I F E I E G N A F T W N MV R C



 VN T Q A E T T V R T I Y S
RR E GATTVVRTL LE FE WT RTPADDEGRVVADAFCHTMVR S MRTANPAKDCIVYKAECKKEGDII TGEI AGNRFGYNMVRT AKKS_KSTVRTINSDD\|VENGDKVK\|IISANDFLHNMARY TH S K $\square K$ D T R R T V V

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230
I M G C L L M|I G Q GLLK P P E WMA QVLIEARSRDAAAPTFSPD G|LY

 VVGSLVEVGAGRLDPDKFKEWLEKPSQEPAKFTAPPAGLG
 LVGAL L MV GDGRREADWPA QVLAARVRDS GVNVAPA H GLLC
 FAGVL MTI GA GERPVE WARQVLQTRDRRTGGDTAHPYGLV

 $L \vee G T L L P V G E G R K G E D W P A Q V L A A R T R Q S A A P L C P P Q G L G T$ $I V G T Q L L L A R K G L P A E T M R E I L S A Q D R R R A G P P A P P Q G L G$ LI G AMLLAVGD GRRRPE EWPAEVVLAA GVVRPAVMVVAP HGLS

 LV GTCLEVGGRGKLTDEEVQRMLNDPSRHYATKKAPA QGLCC $L T G T L V A A G T G A M T T A D V M Q V L E Q K D R K L A G P T A P A B G L F$



## $-r-r+r$

## V

IV GT C L QV GSGKRDVDFAATLLGQDSRSSK DQVAPAN GLG




 LV GAVLTVG G G R R DEGFASCLLLQERSRSSKVPVAPACGLN


LVGC L LIVG E GRQPP GWA A EMLA GRSRDPSMTVVVHPRGLT IV G T L L MI E H NK K E P E FMK QVLEAK DRTK A GP TIIS P D G L T
 $M V G T V L Q Q \quad L S$ GRDKE PVADDIGSHDRSRAGCTVPARGLV IV G GMLS A GR GE LDP E E Y L G ML G G G G G GMRVV PAVA S G L F $\bar{M} I$ GNLDAVAS GRRTLSWLEGLLDGASRGDSAMTAPPNGLIF

| UniRef90_UPI00036F5EDA | FA GPVY GP QWGLLP ERT P A Y D W WP |
| :---: | :---: |
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| UniRef90_B2S1K1 | L D KVFYE |
| UniRef90_F4KXG6 | L E R V Y F P K E |
| UniRef90_R7KEA5 | L K N |
| UniRef90_UPI0004639893 | L E Eli R Y P D D D S L A R R A Q E |
| UniRef90_UPI0003B4006E | L A DI K Y P |
| UniRef90_14JMN2 | L VRVVEP D E F E L P Q R Y LG P H F LS |
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| UniRef90-UPI0004279199 | L S K I D Y R K E $\square$ Y L |
| UniRef90-W5T8W3 | L $\square$ AV D Y P A D A DL A |
| UniRef90-A0A022KXT8 | L D HVVEYPADADLA |
| UniRef90-M4V8H5 | L M R V Y Y P |
| UniRef90_UPI0003484D69 | L E EVA Y P LD T D L A A R A |
| UniRef90-Q6A6S8 | L E EVGYPSDEDLA QRA |
| UniRef90-L7FC10 | LEEVAYPAD DQLAARQL |
| UniRef90-I1PU08 | LMSVNYDKEM L Q P P E GAP H |
| UniRef90_D2MMG6 | LK EVS Y |
| UniRef90_R5W4J2 | L Q Q V K Y D |
| UniRef90-A0YJR8 | L L R V G Y Q D |
| UniRef90-R5I5Z8 | LTRVHYPD D |
| UniRef90_Q3Z951 | L VRVNYREPFG |
| UniRef90-B9Y957 | L V EVVY Y |
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| UniRef90 ${ }^{-}$UPI0003452D11 | LEEVRYPPDEELAERA |
| UniRef90_UPI000347DD5D | L E EI R Y P A D T DL A T R A |
| UniRef90_UPI0003770E80 | L T R V D Y P S A E L A D R A |
| UniRef90-Q6MQH6 | L M K V Y Y P Q D L D |
| UniRef90-T0SNW4 | MVNV E Y E A |
| UniRef90_L7VJD8 | L K K I C Y P |
| UniRef90-10HZI3 | L E R V T Y P |
| UniRef90-F3B9E8 | L Q EVL Y E |
| UniRef90_R4Z211 | L WEVGY |
| UniRef90_K7RZ54 | L E EVGGYP D E D G L A A R A |
| UniRef90-Q2S4S9 | L E AV R Y E Q P D GP G D P L VP |
| UniRef90_A3H4L3 |  |
| UniRef90-D9XVE8 | LEEVGYPADELLA |
| UniRef90_UPI000319B380 | L T Q I N Y P |
| UniRef90-B6WXZ9 | L A HV E Y P D |
| UniRef90-S5XQP6 | LT E A V Y P |
| UniRef90-K9P784 | L L R V G Y P E P |
| UniRef90 K0V0B4 | L V GV D Y P P D A ELLAARTLL |
| UniRef90_P73295 | $L \mathrm{~L} R \mathrm{R} V \mathrm{GY}$ E NFPLP |
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| UniRef90_R7HAE7 | L T DVT Y P |
| UniRef90-E8N3Q3 | L T GVRYAENRQEAKNWMRSLL |
| UniRef90_C0VZ39 | L R A V D Y P P |
| UniRef90_R5SB53 | LTECAY |
| UniRef90-E8V7A7 | L L EVEYGSED |
| UniRef90_UPI0003B7BA59 | LVKVDYE GE |
| UniRef90-UPI000361E83D | LEEVGYPS D D E L A |
| UniRef90_UPI0003689A85 | $L \mathrm{~V}$ GV D Y P P D D QL |
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T GEENR\|I IA S GRTDS GVVHANEMYDNFDTAK\|IRADKFHFH FRRTPTLVVAGRTDAGVHAAAQVVHLDLTAEQVRSLRHYR T GEEAELVCGCRTEKGVHAYGQVANFKLNSRQNCMELRNY $R G R H A D L T V A G R T D R G V H A W G Q V A$ LGGDPRLVVAGRTDAGVHASGQVAHLDLDDAQQARLPRRR ERHELCLVVGASRTDTGGVHAWGQVVQFVVPFSYDNLENLHAA
 I R R P VRTVVA GRTDA GV HARGQVVHFDLTEAEWLGVTRRR


 TQ Q D D E TFAAS R T D K GVVHALH QVLHF DSDIE LTS D Q WV D A $F T R W G E L T V A G R T D A G V H A T G Q V A H L D L T P A Q W D A L A A K R$ VGGSPRLVVAGRTDAGVHASDQVAHVDLDEAQSERMLARH RRAPTELTVAAGRTDRGVHAVAQVAASYPGGPVDLYG

 $P P Q G P L L V V A G R T D A G V H A T G Q V A H L D L D D E V W A G T A R G R$
 VPE P V R L VVA GRTDA GVVAR GQVV HA DLDDPEAYAADPGRR


 TGETVVDMYAGSRTEKGVHALCQTANFKLEKEVKADE I K K K K Y SPEKNDFKGASRTDRGVSAFFNVVSF V P SERPDLARPEV



## F

 NPEKANFLSAA $T R R T Y D L T V A G R T D A G V H A R G Q V A H V D L P A E V W A E H A E R R$


 V R R P V V VTVA GRTA A GVVAARGQVV HIDFTSAEWLGLTRS R $L P E P P K V V C A G R T D A G V H A R G Q V V H L D D D P A V P D P E R R L D G R$
 F $\square N N$ N DEREVRVVTVAGRTDTGVVALGQVMHVDHMQANGVEALERR



 LRSPE EI MGCGRTDTGVHASEYFAHFDF T GEFPKGFLSR
 II G QPV S I S L S S R T DA GVVHAASNVVHVDVVRPHDSSVVRRA


 DPHRPQAVAAGRTDAGVHAAGQVVHFDCCGPDPAQRWAPA


 $L$ EK S F R L L G T S R T D S K V $\operatorname{L}$ A N Q S A F M L

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





 L L R R L R G A I V V H R A E P A PVVGF D A RF S A L WR R Y S Y Q I A D D P DND GAESDVVVTGGARHVTGDFDARFSAVWRSYEYRLLADAT SR R M S D V WI WG DA E V P E D F H P R F WA NT K V Y R Y Y L A S


L N E ILLPCDDI S V T D L K QV DE K F H A Q K S A K K R Y Y R Y V F I N R K


L N R Y L P R D I A V M S V T E A D EREHS QL N A K S K DY E Y R L D T G N
L NHHLS DVWVLGIAEVVDDFHPRFWAKFKTYRYYLVNE G
MNAVL PADVWVVADAHEMRPEFHARFRAVARRYSYVVGTDE
L R S L L K T D L H I L S A V K A P V N F HAARFSAA GRRY V Y R V I D R S
V N H F L Q K $\quad$ D 1 $V \mathrm{~N} E \mathrm{NL}$ P D D I R L L E GK R V S LDD F N I I Q D DV T A K E Y R Y S F T S G E
 LA GRMAPDV RVWRAE EAPA GFNARFSADWRRYAYRVVADRP L N R LVP L Y I Q V DDD MN G ML P K D
 GMNALDRGLSUQGITEVPLEFNS QFSCTAREYEYLLLNAR VNSRLPTDVWAWAWAPVPENFSARHAALWREYRYHLPGG $V$ LG DLT GAI E VIHDAGLAPE GFDARFSALWRRYSYRIIA D GT



 L K H V L P D D I V I R S I S RAP DGF DARFSALLERTYVYR I CDGR
 I LGRQD GAVWV HEAERAPEGFDARFSALAARRYSYRIIADGQQ
 I LNA KLK DVWVLSAVKVPSDFHPRFWARSKVYRYYLPS L NK F L P K DI A I R R I FPVA D DQHARFDAHYRAYQYHLLT WQK





 L N G R L P GTI RVREAVE RP LDH WHACHSASYRRYRYTIVYNGR
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 L N SFLP Q S I RI LKKVNKVKDTFHARYDVVSKQYLYRIQNTA I N S K L P N S I WA WA HA E V P Y D F DP R R D A N S R V Y R Y I M S GE Q F N K NL P Q DI RALLS IEEVVDKFNDIQHSKTKEYAYLFS IG D MNRTLPDDI YVNNVVTVDDDFHCRYDCVGKRYRYKVYQAQ VNHFLQKDVMV DDVQSVPANFHARYKAQERTYFYRLLSGA
 L N R V L P P D I R R V L S WA A VP P S F S A R F S C R S R T Y R Y L F P C A

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 F N Y NL P Q Di R ALLS I K E V D A K F N I I N N S K DK E Y L Y L F T Y G D
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 AYEPLE RLRTTSVRASLDVDAMHAAAQRLI GLHDFAAYCK






 TPSPF GRRHALDWWPYRLDEDLLRAAAQAVLGKHDFTAFTP
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 WGEP LR R H DTLAA WP S R L V A NVFRRKYAYHTY DK P
EAMSPFRRGRELAFRRPDAR EPSPQNRYGVYRVNAFLQDYRMRRAASGLI GLKDFGAFCK

 $\stackrel{\mathrm{F}}{\mathrm{Y}}$
GVDPLVRGHVLDHDRPDDVVAMMNAAAARMTGEHDFAACYCK



GLDLEAMREAA GELLGVHDFRNLSS


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 QR WD PT R QL T T WH R E E L D DV D DLDVEKVKECSKLFLGVHDFSAF D P F R Q D T GF H L H R A Q HCDQA L M Q E A A ALL L L E Y NE F L P F C K

 E PSVVFEKDRAWHVTEELDLHAMQEACKVLVGCHDFSSFRA SVIP WP TA R Y VA II E R S L S WVT L N QAA RLL IV GQHAB WA F R S | 1 | D | I |
| :--- | :--- | :--- |
| 1 |  |  | KLKACA EAFLGRHDFSNF A LTENP LLSK K HF VLKE DDFDRLKD DEHKLVGRHNF LS F S K KNHPFCAPFMANILEDLDDDDMTKAAALFVGTHNFKAYTA

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 YD DS R I R S A
 HRDPFQS GLKTF IPPEPLDLDKMNRAAQQFDGTHDFT GF CS EPSTFEKDRAWHVPEELNLVALQEACKVLVGHHDFSSFRA
 REPS $\square F E R K Y$ VA G L A DA DEA K L S E A L K T F Q GRHDF SHF L K KNHPFCAPLMANFQKDLDDESMDKAAKDFQGTHNFKN NP VAYAHELPYCWHIARMPDIHLLNQYAATLKGELDCTSTAA ACHHHLDVFERNLCWALPADRMQDAA QHLLGGHDFRSF Q S V M N P F R K L Y S Y HI R G P FN EK L L Q T A S Q H FV G T H NF T S F A N

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 A REEATT TRTLLEYDWRRGDDGILIANVRADAFCHSMVRA $R G D R V V N P V K E I F Q F K V I E M G A L L Q L E V E G S G F L Y R Q V R N$ KREGATTVRTLQRLEWVRRADGILEATVQADAFCHNMVRS PR DGATTIRELQDFAVTRDDQVITARLQADAFCHNMVRA AREGATTDRTLQAFSWRRDAEGVLLGEVAADAFCHSMVRA PSENKTDYNREVLSAEDCFPHKIYYFQITGTGFLHHQVRM PKDPSESRNRYFFHAGFFMQGDTLIFEVQANAFLWKMVRS ARPHATTQRFEWFDVSTAEEPETYEAHVTADAFCWNMVRA PNKEHKPPDKTVYSFDYKETKTHYVFSIHGNSFGRYMVRG PR EGATTIRTLQEFRWDREPDGVVARLQADAFCHSMVRA PREEATTIRTLLEFDWHRDAADVLVANVKADAFCHSMVRA TQTQHVHFRRRLRAQWVRRGSFLDLWI EGDAFMRHMNRI

s．
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 AKK S K STEEKT I K K I S V E Y E GARA Y I R I EA D D F L H N MAR Y

 A GCQAKSPIRTLDE LHVCSREPEVDLPDDSNSNSDDEVRL PRPGASTVRFRWLDIS TDDE P ELYEARVVADAFCWSMVRS

 K F G E ERRR | $K$ |
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 EKRG PS DRNDLMKLDLTEERGIVVIDVRADGFLWNMVRK PREGATT IREELQQFSFSRGADGUIVATVQAADACHNMVRS

 A H T A PD H H R C I H HAA WVPREGGWVFEVSANRFLHHMVRF A G A QVQTTVRTI Y S L E V V E C

SELLTMTI R RI N WV K I K R D T H LI I Y

 P REGAT T I RELLQRFEFARAED GAIV ATVQA DAFCHNMVRA PRPHATTI RTLQEFTFTRGADGLVLAHLKADAFCHNMVRA

 T GS S A K T M H C E L L R R S E WE F NE GE WV Y H I A A N R F L L R G M V R R
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 K E GE K S TVVRTIEKVVDIRVS GTLTTKID QANSFLWNMVRK








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 LI GA AV Q V G S GEQSES WL E ERRL EAR L R D A RSVVLAP P H P L V
 $L V G A V V P V G E G R R K V G F P A E V M A G G \square R D G R V K V M P A B C L G$

 LVVGAMLAAVGDGRRPAD WPA GLLLTRRRERASEVVNVAPA H GLLT


 $L V G V L K C V G T G E L T T S D V E R I L N A K T D T A A S P M A P A P G L C Y$
 IV T A L KL C G L G I I K A E D I R R ML N R K T N K RL L P A A P P E N L V IVSAL REVVGSGHRSVEWFEDMLNPERHRERIEPAPAYGLI



 L V G S TL L RVGE GLLEPP E WL HE RL LE R A R DP K S L LAA A P H P L V

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 I I T A L KL C G L GVVLS I G DV E L MLLK E KVVDK KLPPPAPP E NLV







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 MA A ALLLI GTHEREPELMERLL SGKCRR NPPAAPAD GLV LT GTLLHCEKKRCSVREFVRILHAKDRRDQGPP




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पK PVLTAPFVWWNRHHVCMDDMNAAAQALIGEHNFESFCK ERYNPF LUSYVHFYPKINDQDAKKDASLLEGEHDFKLDGK VMDP TYYNYKANFPYPLDIEKMQRAKECFIGKKSFKSFMG

DPSGYDVEAMKQAAQYFVGEHDFTNFCK ETRPWMFPYTVNFEEELNFNLMAEAAKLFVGEYDFKNYCY EPSTFEKDRAWHVPEELDLAMKKACSGLIGSHDFSSFRA QRMPLFAERVWHLNGGLDLAAMKDASGCLIGDNDYESFRA KKNKNLEIDKVLSATASFAGEYNFSNFA FDVFSSNYKVFLPKFD!KKA NE LSNFVGEHDFSSYMK PRDPGQRHRTVELPGALDAAVLQEAADALLGLHDFAAYCK CHQGLNAAAMHEAAQEFLGRHDFSAFAR HADLDVALMNAAAQKYVGTHDFRNLCK PGGTLD DRMNAABLYLGEHDFRNFCK CHRGLNVEAMGNAAARLKGVHNFRNFCK FAPPESPAEESYRDTEERIGEVNNVLALYKGCHNYHNFTS APAADETGYVWQVFSPLDVNUMREAAKHLLGKHDLSSFRS ANRGEENEPARDGRAAVDDDRFRAACDALSGTHDFHNLTP FAKPTEDTNAAFR $\square K K E T \square D E \square N H L L S$ YKGTHNFFNYTS KDEELLRAC ASLFEGTHDFTRFC EGLDDESMKKAAPMFEGVHDFRNFCK EKDPFLNNLSWQLRDRPDVGLMNQAAQUVMEYTDFSCFSK DVDRFVSGPVDDQRWAD AVDALAGTHDFHNLTS NDDDDAMNKAAKYVVGDHDFRNDCK ARDAFSARYSWQVLKKLDFEKLEELIGMLRGEDFCAPFCS पNDM LLINLIM QLSVFERNLCW VMN AA Y DLDVESMNSAAQKYVGTHDFRNFCK QHHTLMDLCWALRDTRLNI DAMREASALLLGTHDFSTFRS $\square$ QNFEHNYFPKL VRGNLDIELMREAANRFLGTHDFRNFCK AHGGLNDDAMARAAGFLGTHNFRNFCK PARSDGGDRPHAVDDDRVRDADARLSGEHDFHNDTS YPYNTH HEKTSTPVLLNIEHMQQAAQYFLGEQNFRNFCC EPSTFEKDRAWHVPEELDLLAMQAACKVLVGHHDFSSFRA WVSPLRRRDTLAWTRPLDVEAMNEAASQLLGLHDFAAFCK AWTLPDPRAFPDGEARLDVAAMSAALAHAVGTHDFTAF A ARNPLTRNTCWWYGAPLDVARMHEASAGLLGTHDFAAFCK KNNMNI EAMQRAAQYFVGTHDYRNFCK
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L L T D DK T N NCRI YKA GWEREGELLVFTIQADRF LRNMVRA ANSEFKSP ANSEFKSPIKTGQQADINPS
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$M V G L A \prod A \prod V R G C L S D T L T K A W C P C \quad R \prod D \prod P \prod A P G L G L V$ LVSLVREI GAGDSPLEKVDRVLADEPGPEGVGPAPPEPLV LVSLACEI GTGESPLAKLERVLEPEPGPEGIAPAPPEPLV MVALLFLVGQGLEKPSVVTDLLDVEKNPRKPNYAMAEPLV MMAILFLVGRKQEEPSUVTELLDVQKNKPNYEMAPDYPLV MVGAAVEVATGRSSLESUKDLSGDGVTGTPRLGKVPGKGLV MTGALVAVGQGRLTPQQUKEFLENQDPNLGNFVAPPHGLF

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L N K M T F K D
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\(L\) & \(L\) \\
\hline & \(Y\) & \(Q\) & \(V\) & \(N\) & \(Y\) & \(L\) & \(A\) & \(P\) & \(Y\) & \(L\) \\
\hline
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L E HI A Y P A D G ELLA A R A
L K D V D Y P DE WE V
LEK \(\quad\) D Y
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|L N R V F Y

L LE CH F E N Q WN
L Y D C E F E N
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L Y T I D
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UniRef90 L5LTF5 UniRef90－LLLL75 UniRef90＿A0A034VXN8 UniRef90－A4WHI1
UniRef90＿H9GKP4 UniRef90 ${ }^{- \text {B1YAT9 }}$ UniRef90－S4A9E7 UniRef90－D3TB52 UniRef90－IOZ8C0 UniRef90－F6ZG84 UniRef90－M4DTZ7 UniRef90－EOVFC8 UniRef90－MOD417 UniRef90－F2UFZ2 UniRef90－ $\mathrm{LOH} \mathrm{HN7} 7$
UniRet90 G2RHK UniRef90 UPIOO02657087 UniRef90－B4MXC6 UniRef90＿UPIO0046705EF UniRef90－G3BDS2

KNKNFKTTGTSKTDSGVHA ${ }^{60}$ QK VLLVIH ${ }^{70}$ KP LEVVFTKKA DRKKCAYQSCSRTDKGVSAIGNVASLKCKUPKNLCEL
LKED $\square Q \square F C A A K T D P G V H A R G Q \| L S F Q T T S S L L P S A L K S S$ NKKESQYSRCGRTDKGVSSVGQVIALEDRSHEGETDYVRV NWENCSWNRSGRTDKGVSAFRQVASVIVRSNEPELQYVKM $V \mathrm{~V}$ VRFTDS SRTDAGVHALSNAAHLDVQRRSGQPPFSEA NREGSCYSRAARTDKGVSAIENVVSLTVRSHDIPPDYPRQ1 TPSKMWFQRGSRTDKGVSAVGQTF SLKAKLVPDFVQK
 FK $⿴ 囗 ⿱ 一 一 厶 儿 V V I I G C S R T D A G V H A K E F Y F N D H D N F R V S C V N I K N A$ TKNEYKILGASKTDSGVHALDQKVLVTDEFEPDLTRESKA


 NSAS $\square K \square T G A G R T D S G V H A L G Q \square A H F D L K T D L D T C T L M R A$

HKDQVK $\square$ T A S GRTDAGVHAKGQVFHFDTGLSDPEEKWPTV


 DMKKMSFQRCARTDKGVSAAGQ\｜V SLKVWLIDNULEK

T IQ Y T HFQRAARTDKGVSATRQDCSVKLPEYST\ED\NK
 DF DCCE YS K C G R T D K G V V S A F G Q V I


 G $\mathrm{I}_{\mathrm{K}}^{\mathrm{K}} \mathrm{N} \mathrm{L}$ K SASRTDRGVSALGNVIWIKTDDDGKE
 DMKKMSFQRCARTDKGVSAAGQIV SLKVWLIDNDLEK $\square G Q P V K D F C S S R T$ D P HEPDVVQKAVNH NILETSNY QK C GRTVDK GVSAFS QVI S L D DVR S K L E N P N H C S M HATPVGYAAAGRTDAGVSAVAQTVAFEAPT$W$ TVTPRA $D \square K T A D Y S R C G R T D K G V S A Y C Q V V S L V V R S N L N E C R Y T K \square$
 CLI WWE YS K C G R T D R GVVSA F G QV I A $\operatorname{R}$


EPHKMTYKSAS RTDKGVSTCGQVA SLDLRLDENVVGL TG Q S T Q L F A A V K T E P G V H A A H QI V S F Q L E K E S F S D N T K M K
 GDEVAEYSKCGRTDTGVVAFGQVI GVRVRSNRPLPP YPQ I
 RKKESNYSRCGRTDKGVSSTGGQVIRALFLRSRRGEYDYVRV RRETSNYHRCGRTDKGVSAFSQVI SI DLRSNLTE GPYVKI



 D M R K M S F Q R C A R T D K G V S A A G Q V V S




 $F D Q K \square G W S R A A R T D K G V H A A G Q L L T A K D H V E E G D E N F V A K$

 R P N E P T L K L L S S R T D T G V $\operatorname{K}$ H A L H N T V

 K CN K I Q F QRAA RTDK GV S ALLGN I Y F LTFD Y L FVVTLD DVVDV PGPKMQFQRAARTDKGVSAAGQVCSSLDSVF NFNKNKFMRTTRTDKGVMAVCNLISLKMI
 RPTP $\quad$ KFYVSSRTDTGVHALCNSAHLDVQRGVGKPP

EPPNDHVSSSRTADSGVMALLCNTAHAADFDPD SIVHADNRS


## UniRef90 S6G3T0

 UniRef90-E4XB01 UniRef90-B2GJ222 UniRef90-K7LKT0 UniRef90-A0A044R611 UniRef90-J9P592 UniRef90 M2Y7P4 UniRef90-UPIOOO3597095 UniRef90-FOY1Q4 UniRef90-H0YYDO UniRef90-H7D1T6 UniRef90-UPI00047D5EB5 UniRef90_UPIOO04634FOE UniRef90-G7YVP0 UniRef90-V7PN44 UniRef90-D3TR57 UniRef90-H2RY29 UniRef90-M0s830 UniRef90-UPIOOO3621FA8 UniRef90-C5XVS88 UniRef90-A6CU99 UniRef90-F7VPN4UniRef9O-D6WB40 UniRef90-V4T8JO UniRef90-K71LU7 UniRet90-G3WJ74 UniRef90-COW6F8 UniRef90-A0A022T5H8 UniRef90-Q59069 UniRef90-J9NC48 UniRef90-A0A034VXN8 UniRef90-A4WHI1 UniReffo-H9GKP4 UniRef90-B1YAT9 UniRef90-S4A9E72 UniRef90-10Z8C0 UniRef90-F6ZG84 UniRef90-M4DTZ7
UniRef90-EOVFC8 UniRef90-MOD417 UniRef90-F2UFZ2 UniRef90-LOHJN7
UniRef90 G2RHX UniRef90-UPIOO02657087 UniRef90-B4MXC6 UniRef90_UPIo0046705EF UniRef90-G3BDS2
 VNAHLPDDIRLTSFEQVTKGFCAKKRCTHRTYSYYCPTIC LNQVLPQDTAVLDARQVSERFHAELLPKHCDWELCLKTGP LNRVLPNDIRI MGWCPAPVDFHARFSCLSREYKYFFW L SALPTNI RVLA WAPVLKDFSARYKCTQRTYTYAFPRAN LNAHVHPAI RVLQAFRVPSDFHARHAATSRTYLYRLVVTGC LNGVLPSGI WI TGWTSVDPDFHARFSASYRVYHYYF MNENLPEKDRIMGYDRTTNAFDSKNFCCSRTYMYMMPTFS LEELLPDDARVHDLRPAPAPWHALANAKRYAYRLTARRGS LNTYLPYDTRILDVFYVDEKFHSRYDALKKEYEYKIFNGD

 SCLEKEDDYCGIMNRVLPKNDRC\|NNGWMPRNHLFSAR LNKVLPGDI RVI GWCPVPTDFHSRFSCLSREYRYLFWKG
 LNSKLPPEVVVTSAEEVEEGFHARFSAVKKEYRYSVYQTK


NEQLPHDIRAHGYARVAGSFNARTACTSRVYSYTLPTF
L IGRLNANLKHMYFHSFANLDUNRYARIRWYRYHLLD
INSHLPEQRVLGFTRVTNSFDARKHCDRRRYEYDLPAAA NSHEPSQQRILGLKRVTGGFNSKNNCTARTYFYMLPTAA FLQKNEGDVMVIDVRCVPSNYHARYKAKERTYFYRMLSGP FNGHLPGSVRVWAAADVEGGFHATHDAVQRTYRYHEYAPE LNGLLPPEIRVVDWGAVDTDFSARFSCNARHYKYFF
NRHAHPAVHVKFVSSVKDDFHPRYDATVRAYRYVVNHGE
LGVLPPY!RVLAWTPVPFHFNARFSTLYRTYKYYF
NRGLPKDVRVAAWCPHPPTFSARFNCQQRHYRYFFTNPA
NNGVPPDRVEAWAPAEPSFSARFDCQARTYRYF RPKG
VNSLLPDDIVGKKIEKAGPSFDARRDARLREYSYFIVNKK
FNSELPSSVRVWASADADPDFHATHHAAWREYTYFLHAPE
VNSALPTDVRVNQMVTVTKNFNAKMMCDQRTYEYVAPTFE

$$
\begin{aligned}
& \text { RDALPGDVRVLSCRQAPASFHADTSASSKRAYYL} \\
& \text { NQAALGKLRVISVSEVSRVFHPNESAKWRHYLYMFPNGE }
\end{aligned}
$$

LHMGRTDTRGMNCRPVSPTFSSRHQALGRTYゆYRVPESVG

UniRef90 S6G3T0 UniRef90_E4XB01
UniRef90_B2GJ22 UniRef90-R5U746 UniRef90_K7LKTC UniRef90-A0A044R611 UniRef90_J9P592 UniRef90 M2Y7P4 UniRef90-UPI0003597095 UniRef90-FOY1Q4 UniRef90-HOYYDO UniRef90-H7D1T6 UniRef90_UPI00047D5EB5 UniRef90_UPI0004634F0E UniRef90-G7YVP0 UniRef90_-V7PN44 UniRef90_D3TR57 UniRef90-H2RY29 UniRef90-M0S830 UniRef90_UPIO003621FA8 UniRef90-C5XVS8 UniRef90-A6CU99 UniRef90_F7VPN4 UniRef90-D6WB40 UniRef90_V4T8J0 UniRef90_K7ILU7 UniRef90_G3WJ74 UniRef90-C0W6F8 UniRef90-A0A022T5H8 UniRef90_Q59069 UniRef90-J9NC48 UniRef90-L5L7F5 UniRef90_A0A034VXN8 UniRef90_A4WHI1 UniRef90-H9GKP4 UniRef90_B1YAT9 UniRef90_S4A9E7 UniRef90_D3TB52 UniRef90-IOZ8C0 UniRef90-F6ZG84 UniRef90-M4DTZ7 UniRef90-EOVFC8 UniRef90-MOD417
UniRef90 F2UFZ2 UniRef90-LOHJN7 UniRef90_G2RHX6 UniRef90-UPI0002657087 UniRef90-B4MXC6 UniRef90_UPIO0046705EF UniRef90-G3BDS2
UniRef90-R6LQR5
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UniRef90-Q6MSQ4
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UniRef90-G5AWTO
UniRef90-H9K7G2
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UniRef90_G7DSZ4
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UniRef90-F0Y220
UniRef90-V7CQ33
UniRef90-V4C133
UniRef90_R7UL32
UniRef90_H2B1T9
UniRef90_B3M0B3
UniRef90_RZZ3J0
UniRef90_UPI0003890BCF
UniRef90-C3ZCR5
UniRef90_11H501
UniRef90_C7NTIO
 FSKEDWDRPSSFRIS TEKLEGVRELLKKYIGTRSYHNFTS
 TPDVFRQKYTLFLPDLPDPLRMQEAFSFLKGRHDVRCFSP KENLN QAMESAGNKLVGEHDFRNFCK HRPFERNRCWPLRADCLDVDAMQEAAQHLLGTHDFRAFQS RPEHLNLSAMQRAAQFFVGEHDFRNFCK FAPVEKFDTNEYRTGPEIIERVREVLKRFLGTHKFHNFTS ADPLGRLYRGHVAYRDVDFGRLDDALSCFVGEHDFAAFAN A HHFEQDLCWAPAGGPLDVAAMREAAQFLLGTHDFSSFRS


 FSPKDFDAAGTAPSFRLQPET LQRVNHLFAHYHNFHNFTS NLDVSAMQQAAMKFTGEYDFRNFCK
TNPGYKNQSWF DPELDUDMLNS DSKNLLGTHDFDSFSK $\square$ MDPFHNRYAYHSAYKLNPHAMQEAANYFVGTHDFTSFAN TADPFKRDFALHYPFPLNDE
FAPMPSSAKKQEKQGWLDI GKMREAAKMFEGVHDFRNFCK FTPHDQLMVQKGFRLDDSTLNRDNDLKYLGTKNFHNFTSK RENDNLSAMESAGKKFVGEHDFRNFCK FAHKDHD DQDERYRSPETL EKVNQLLAGYKGTHNFHNFTS A YDPCRRGQVLWVGQALDVESMALSARGLLGEHDFLSYCK FAPDDPKPYTDFRATQELLDKVNSVLKLYEGTHNFHNFTS Y FTPEPSAGGARNGWLDIEAMREAAKRYEGEHDFRNFCK LSVFERNRCWALRADCLDVAAMQEAAQHLLLGTHDFRAFQS
 FAPYKSMTWDYR HWGEDLDSMREAAELLAGTHDYASFVQ MGQDMDRLKEAAMDFQGEHDFRNFTR AAAAEAAGSRQCRFSAEQQARLNEVLGAFEGTHSFHNYTA FAHKDHDPQDETYRLSPEERVNRLLACYKGTHHFHNFTSQ DPLSDFEKDRAWHVPEELDLRAMQATPYFPPDTERTWSSQ SGSESGSDRTRRDPEHAVDDDRFRAAASLLGGEHDFRNLCCKMLT HRANMDTAAMQAACDHLVGEHDFRNFCK Y FTPLPASLDPDGTRGWLDLKKLKYAARMFEGEHDFKNFTR RGRLKVESMREASRLLEGENDFRNLCK
 FADYSYKDTEDAKEGLDLDLLQAAAAKYKGSHDFRNFCK AA AFSRYT
 NPAGLDI EAMKEAGNHFLGSHDFSNFCK
 PEYKAPRSFDVAKVDKI IRQLEGKMLSYKI FARDTQASRS RQNL NLSAMDDAGKKFI GEHDFRNFCK
IPVEELDRCHFLHKAPLVVQRMREAAKLLVGEHDFRNLCK
HRRDF PVFERNLCWADPADCGQEAARMFVGRHDFRTFKS FWSNLGKRLKSSHPFWEGVDETED $\mathrm{A}^{\prime}$ ASMFEGSHNFWSYRD
 LAHKDRDVQDETYRSAETLQQVNRLLACHKGTHNFHNFTS FSPKDYDTENDAAFRTETLQKVNQALFALYYKGTHNFHNFTK FAAHDEEVSVETYRAPEDRQKVQETLKLFEGTKNFHNFTS FAPNEEKVDIQTYRLPERLARVNEVLALYVGTKNFHNFTS YAPLPGGKPWENGKGFLDIEAMNVAAKKYEGLHDFRNLCK ADVDRAR
SEVDPRRGCVLTVDEALDLELMNRAASLTIGLHDE
LRPVLQDKHCWHLPAPLEIAAMAEAGAMLVGKKDFKSFAS ECNIVQPQSDVGKVDKI I RQLEGKSLSYKMFARDTQASRS VMDPLSRQHRWHPDNVDAYAQLTRLLKHYEGTHDFRAFAS TEESRVR RAVDTLAGEHDFHND FAKRSRCTHKAFRMNEDTLKVLDSTLQQFVGTHNFHNFTS EYRDREAFKSEKNDFCDDQSGMQTGCKP MFARDTKASRS DPDEEQDRCYFDGHPQFSI DTFSRDARMFEGKHDFRTFMA PADFNARCEWVYQQHS DD QAMRTAAAHFIGEHDFRNFCK GFSEDAARYSWQAPPGLDVGRVRRGAALLVGERDFRAFCA SCDISKYNEMHDSSSKDGIENQEKSLSYKMFARDTKASRN

 FASSEEK KEDLHDTYRDTPELLRETLK LYEGTKNFHNFTS
 YHP $\square$ PEVNRSWG GKERLDIVAMQEAARSLGGTHDFSTFRS

## UniRef90_S6G3T0 UniRef90-E4XB01 UniRef90- $\mathrm{RGU746}$ UniRef90_K7LKT0 UniRef90-A0A044R611 UniR Refo-_jpps92 UniRef90-UPIOOO3597095 UniRef90-FOY1Q4 UniRef90-H0YYDO UniRef90 H7D1T6 UniRef90-UPI00047D5EB5 UniRef90_UPIOO04634FOE UniRef90-G7YVP0 UniRef90-V7PN44 UniRef90-D3TR57 UniRef90-H2RY29 UniRef90 MOS830 UniRef90-UPIo003621FA8

 UniRef90-C5XVS88 UniRet90_A6CU99 UniRef90-F7VPN4 UniRef90-D6WB40 UniRef90-K7ILU7 UniRet90-G3WJ74 UniRef90_C0W6F8 UniRef90_O59069 UniRef90-J9NC48 UniRef90-L5L7F5 UniRef90-A0A034VXN8 UniRef90-A4WHI1 UniReffo-H9GKP4 UniRef90-B1YAT9 UniRef90_S4A9E72 UniRef90-10Z8C0 UniRef90-F6ZG84 UniRef90 M4DTZ7 UniRef90-EOVFC8 UniRef90-MOD417UniRef90 F2UFZ2 UniRef90-LOHUN7 UniRef90-G2RHX6 UniRef90-UPIO002657087 UniRef90_B4MXC6 UniRef90_UPIOOO46705EF UniRef90-G3BDS2
 GKRQHILDFRDQGDPFTCNEWEYVELRVVGQSFMIHQIRK PRAGATTVRELQRATVDRDEHGMLVALTADAFCHHMVRS MDAANVHNYRRRIKLIFRNDNQLWVIKI RGSAFLWHQVRC DDMNKMNYVRTITYADTSFRYEFLQFTIKGSGFLWHQI RC AGSPTTSSVRTLRRASVSPDPHFWNLEFESRSFLYRQVRR ACASRYMDKFECSDPYVRDGVEFVTLHVKGQSFMLHQURK SGAARSTTRADRSATLLDEGGGDATLTFELDGALYKMVRN LHAEAQSPVRTLQQLQLQPAPGFLQQHVKSRSFLYRQVRR SNS S
LTTE EMQ LRKTYRKDDS VVERKVE DIFKGKGF $\square R Y Q \square R M$ TPNPGGTTIREVKAACW
DNDEHEDPVRLEDTSVMCDPTTMCETSTTGSGFLYHQVRC KRKNNTSFIRTIHKFEINDDQNFYYFKIKGTSFLYNQIRH MDVHNTNYVRHIEAANVRLCPHMHYLEVKANAFLWHQI RC QKAPNDPSARRYTHMLCGEPFFAVITVRGQSFMLHQ1RK WNKELKN
WNKENDKNRRSTDTRFDVTEMGAVLQLEVEGTGFLYRQVRN
ПDPQ TTNFSRRПFESDTVEHPKVYYFHVRGSAFLWHQTRH KQATDPSAKRYMKTLICEKPFVKDDVEFRGQSFMLHQIRK MDAANVHNYKRHVTSFETSPCYICAIKDRGSAFLWHQVRC MDNGVVNFFRNIVNAQVTCIYDMCELSIKSNAFLWHQIRC QKGPKEPSARRYIMEMHCEAPFMRVI K KGQSFMMHQIRK PREEGATTIRTLRRLDWQPDAGLVTLTVVADAFCHSMVRS RRAMRYIIKCHCLETHISNNVEFATVSIKGQSFMLHQIRK RRTKEKSPIRTVYDGKVSENEFYLTVDVEGESFLWNMVRK DDPQITNFVRTVYEADIEEYPKVYSFNVRGSAFLWHQ1RH VGRQHRYTVRTVDEATLKPDYDYWEVEFKARAFLYKQVRR ASSEAKNPVKTVDQLERPSSGFLMHHFTSRSFLYKQVRR VRIDNAQAMRVMQSCTVNDHDEMVTMVIEGQSFMYNQIRK VR KNTVIEIVKIDDVNKRGSIITIDFYGRNYLWNLI RR SDPAAKRYILSFKCAGTMNGQQWVRMVVVGQSFMLHQLRK KGPKDASGMRYDMEMYCEEPFVREGMEFKGQSFMMHQIRK
 DETGTV RDLDARATREGDALVVELSADGFPRALVRR ADGGVTNFVRTIKEARVCPDFDLWEFN DGHAFLWHQVRC AR KNTVVRIDKDSVKKEGNMIYDDFFARNYL WNLIRR VDKQTTFKRRVFEADVVTHPKVYYFHVRGSAFLWHQURH VGNGVTQFRRRVEKCWI EAPDDMCCFVI RSNAFLWHQIRC VSRQPMFTVRKI DEDNVRPGHDHWE:EGKAKSFLYKQVRR ID K QTTNYRREI YHSQIIPWDDEFVMDLKGSAFLWHQVRY MSAQRFIIEFEHGDPFLVQNVEFITLTIKGQSFMLHQIRK NGRTRKSTVRTVETDKINREDQLIQQQLTANSFLRHMPQL GGSDRKSPVRHVSKAFCYERGERTIIVFKANGFLRAQVRLD LDKQUTRFDRVI HHADI NNNPKVYYFELHGSAFLWHQVRH LKENEWNQYRTIDDDKVLRDNNKVVIQFKASGFIRYQIR DGPATECFMFHSRAANCKESTPVMCVELVANRFLRKMVRV MDANVHCYTRRVTFFEVSPCQNSCTFTMRGSAFLWHQVRA VGNGVTRYVRRILSTELYDGYQMLCDEVVGAFLWHQVRC
 RSSQRFMKKLT QQDPFLVEGNEWUSVRFYGQSFMLHQURK

QK GPHEPSARRYVLEMYCEPPFFAVIKVKGQSFMMHQDRK $K R A K R Y$ V V Y F R CII ETF I A N NMEFVVLDVQGQSFMLHQIRK DDLEVKSFTRVILSFDI QPVESMYVATICGYAFLWHQIRC QKAPSDPSARRCGEPFVRNNYEFAVITVRGQSFMLHQURK RKEFLDPSVKRFIMSFECDPPFFATDKIKGQSFMLHQIRK VDPQITNWERRVFHAGMHEVGPHYYFEVRGSAFLWHQVRH

AADQRENSVRT $\square$ FRCDVTRENDW
VGPPTECFMFHSRAACEEGTTRADCDELVANRFLRKMVRV AMEQLEKHVRTVYSVNVVPNEGDVRiDFVLKGALYKQVRN TPDSAGTRRTLSTSLTREGPFLRVRFRSDGFPRQLVRR KEPTNPQAKRFDMSFFVQNDMEWVRLRVVGQSFLDHHIRK \GPPTECFDFHARAAEAYDPCKIMCVELVADRFLRKMVRV KDFRDRSAQRVMKQVIVSDPFEWISI KLHGQSFMLHQIRK VASRGCAMTCGHNREQTERYYDYWDVHICGRSFLYRQVRR PDVATVRSFRRRILSFTVEPHQVYALTVRGTAFLWHQVRC PGRKCGSTVRSLRSVFVGRVRGLLRIAFDGDGFLKHQCRK DGPPTECFVYHARAMEVKLPTTDCCVEVVANRFLRKMVRV ASANRFIIKFEADKPTIEDDIEF ITLKKVTGQSFMLHHIRK PSAHRYUISFKMGDAF VDGIEFAVI TVRGQSFMLHQURK KKNFLDPSAKRFDMSFVSSDPFFVTLKVKGQSFMLHQLIRK VDPQLTNFQRRIFHADLEEQPKLFAFILHGSAFLWHQVRH VSSEKPFDIRPSSGFMSHHYEYFWEDEFKSRSFLYRQVRR KTPETKDPVKTMKVVEVRRASCFLKEHFKSRSFLYRQVRR MDA A NVSNYRH TVDFDUSAYDEWAMNDKGSAFLWHQVRC

## UniRef90 S6G3T0

 UniRef90_E4XB01 UniRef90-B2GJ22 UniRef90_K7LKT0 UniRef90-A0A044R611 UniRef90_J9P592 UniRef90-M2Y7P4 UniRef90-UPI0003597095 UniRef90-FOY1Q4 UniRef90-HOYYDO UniRef90 H7D1T6 UniRef90_UPI00047D5EB5 UniRef90_UPI0004634F0E UniRef90-G7YVP0 UniRef90_V7PN44 UniRef90-D3TR57 UniRef90-H2RY29 UniRef90-M0S830 UniRef90_UPIO003621FA8 UniRef90-C5XVS8 UniRef90-A6CU99 UniRef90-F7VPN4 UniRef90-D6WB40 UniRef90_V4T8J0 UniRef90-K7ILU7 UniRef90_G3WJ74 UniRef90-COW6F8 UniRef90-A0A022T5H8 UniRef90_Q59069 UniRef90-J9NC48 UniRef90_L5L7F5 UniRef90_A0A034VXN8 UniRef90_A4WHI1UniRef90-H9GKP4 UniRef90-B1YAT9 UniRef90-S4A9E7 UniRef90-D3TB52
UniRef90-I0Z8C0 UniRef90-IOZ8C0
UniRef90_F6ZG84 UniRef90-M4DTZ7 UniRef90-EOVFC8 UniRef90-M0D417 UniRef90_F2UFZ2 UniRef90-LOHJN7 UniRef90-G2RHX6
UniRef90-UPI0002657087 UniRef90-B4MXC6 UniRef90_UPIO0046705EF UniRef90-G3BDS2

$\square V G A A \square S A Y Q G K R \square S T S D \square K N K \square Q G \square G E K S T \square V I E A K G L I$
IVALLVTПGRGYESPSLTDDLLDDEKTKPQYQMAADYPLI MVAALFLVGKGQLDEQDI KTMLENNSKNKNYKDADECGLL WMTVLLLVGQEKEEPSVINELLNVEKNPCKPQYTPAMGLN MVAVLFMVGHGFESPDVIDVLLDTKKRKPQYNMAPELPLI
MVA LLLQVGKEA $\square P P D\|P A \square I A\| R D R K E A K V A P P H G C$
MVAVLFLVGQGLEPPSVQQLVEKNPRKPNYVMADEVPLV MVGLLIAVVK GYTSEDTLDLAFGMDKVNDPKAPGLGLL MVAVLFMI GQGLESIDDVESLLDTNPRKPQYNMAPEIPLV MMAGLLLVGREQEKPEVVTDDLDVEKCPRKPQYNDGHPLN MIGLVIAVLKGYVPESVMER SWGEEKVDDPKAPGLGLV MMALVISVVRNLVPDSTIEE SFKPEKLETPTAPSLGLV
 MTALLVAVGDGALTPTQVKVILESRDGRHQTRVAPABPGLF MAGALAAGRGRLKASDLRELVENRPRPGAVPSAPAEGLV『
 $\stackrel{\mathrm{L}}{\mathrm{L}} \mathrm{AG}$
MMAMLLLIGQKKFPTTTIKDLLDTSSAKPSYEMASETPLV MTA TLFLIAQGLEQPSLVTEMLDKNPRKPMYDTANDRALV II ANCLNAYLLNHKISTTKLVEMLQGDGKKTPFIIDAKGLV LVATSLREAAAGADEDALLNLMEATCRRATAPPAPAEGLC MVALLFMVGQGLESPDVVSKLVEAHPCKPQYGMASEIPLV IVGSLIALATDRLNEKCVYE PSKHNWDPRLQVAPAYGLY M DFMLVNVVRTGTPASLIP
T T Y T DLDP IVVPKAPGLGLL
$M V G L V V A D V K G Y A P E S V L A \quad C S W G E A K V D V P K A P G L G L V$

 $M V G L T L A V V R G L T P P E T I \quad M K A F E E T R Y G V P T A P G L G L V$ $M V G L T I A V V R \quad G L A E S D I D E K A F G Q D R \quad Y G \| P T A P G L G L V$ L V A L F LV GQ G H E Q P S VV D D L L NVQ K T P GK P H Y E M A S P L V



| UniRef90 S6G3T0 | E K\| Q F 250 |
| :---: | :---: |
| UniRef90-E4XB01 | L R Q V H Y D |
| UniRef90-B2GJ22 | L D AVA Y P D D A L L A ERA |
| UniRef90 R5U746 | L H D I V Y |
| UniRef90_K7LKT0 | LQS CEF D N |
| UniRef90_A0A044R611 | L F D CVVY D |
| UniRef90-J9P592 | L K S V L Y E N L G G N P |
| UniRef90-M2Y7P4 | L S Q I G F |
| UniRef90_UPI0003597095 | L E EL H F D |
| UniRef90-F0Y1Q4 | L E EVVYYD D |
| UniRef90-H0YYD0 | LQ RVE Y |
| UniRef90-H7D1T6 |  |
| UniRef90-UPI00047D5EB5 | LE K DE F |
| UniRef90-UPI0004634F0E |  |
| UniRef90-G7YVP0 | LM G A E Y P P |
| UniRef90_V7PN44 | LYS F K F S D |
| UniRef90_D3TR57 | L Y HCEFRDKSE |
| UniRef90_H2RY29 | L E K V H F D |
| UniRef90_M0S830 | LR F CEFEDLLEFI |
| UniRef90-UPI0003621FA8 |  |
| UniRef90-C5XVS8 | $\square \mathrm{M} \mathrm{S} \mathrm{VN} \mathrm{Y} \mathrm{D} \mathrm{E} \mathrm{E} \quad \mathrm{L}$ K P P E G S |
| UniRef90-A6CU99 |  |
| UniRef90_F7VPN4 |  |
| UniRef90-D6WB40 | L D Y VHY ERYD |
| UniRef90-V4T8J0 | LQS CDF D |
| UniRef90-K7ILU7 | \|L F Y CE Y D |
| UniRef90_G3WJ74 | L E RVHF E |
| UniRef90_C0W6F8 | \|LE EVVY P P D S ELLA |
| UniRef90_A0A022T5H8 | L N HV V Y D |
| UniRef90_Q59069 |  |
| UniRef90_J9NC48 | L WDCI F P GLD A A P VD P LD WVY L A D |
| UniRef90-L5L7F5 | L K S V L Y R L E D L |
| UniRef90-A0A034VXN8 | L C RVVHY D E DLKL P F |
| UniRef90-A4WHI1 | L L D I D Y G I E F EV |
| UniRef90-H9GKP4 | L K N V D Y |
| UniRef90-B1YAT9 | L LDI D Y G VE F Q VD Y P S L |
| UniRef90_S4A9E7 | L ERVK F R D |
| UniRef90_D3TB52 | L M D I Q Y F Q F E |
| UniRef90-IOZ8C0 | L D E CVF E |
| UniRef90_F6ZG84 | L E R V H F E |
| UniRef90_M4DTZ7 |  |
| UniRef90_E0VFC8 | L F E A Q F |
| UniRef90-M0D4I7 | L WDVT Y P D |
| UniRef90_F2UFZ2 | L Y D CKF D |
| UniRef90 LOHJN7 | L M DVR Y P F P F E |
| UniRef90 G2RHX6 | L WDCIF P |
| UniRef90-UPI0002657087 | L Y D S E Y D |
| UniRef90 ${ }^{-1} 4 \mathrm{MXC6}$ | L CQVHYR D R D |
| UniRef90_UPI00046705EF | L K K I ${ }^{\text {a }}$ |
| UniRef90-G3BDS2 | LYD CVYPE M W WL VP S D |
| UniRef90_UPI0000523944 | L E K V H Y D |
| UniRef90-R6LQR5 | L T DV |
| UniRef90-M5IS84 |  |
| UniRef90-F4PSG5 | LY D C G Y E D LEF |
| UniRef90_D5GLN7 | L WDCDF P D |
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| UniRef90-W5HAV7 | L V DVGYE D |
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| UniRef90 ${ }^{-174752 ~}$ | LYDCQFE |
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| UniRef90-H2N914 | L K SVLY G NLGA A S C T LQ G P Q F |
| UniRef90-14YHS9 | L E K P F |
| UniRef90-X1EYM8 |  |
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| UniRef90-H9K7G2 | \|L H F V H Y |
| UniRef90_D3BUW1 | L F D C G E D |
| UniRef90_M3ZFI9 | L ERVHFD |
| UniRef90-B0XKE2 | L S R I H Y E |
| UniRef90-Q7QC20 | L S R I H Y D |
| UniRef90-M3D8Q6 | L WD C I F P S VEELL |
| UniRef90-M0MZZ7 | L T DVS Y P |
| UniRef90-I3B686 |  |
| UniRef90-X1SUX4 |  |
| UniRef90-Q654A2 | L V DVGYED |
| UniRef90-B7G141 | L ENVYFGDDEDCEF |
| UniRef90_U1NYW7 | LTNVS Y DLS F |
| UniRef90-M4BXA0 | LAQAHFE |
| UniRef90-S8CMX9 | LVDVGY T E |
| UniRef90_G7DSZ4 | L E Y P E |
| UniRef90-W5JSH5 | L C R V E Y D P N D L L $\quad$ DP E G |
| UniRef90-A8I8K9 | L Y A CGF P |
| UniRef90-F0Y220 | L ERVD Y |
| UniRef90-V7CQ33 | LVDVGY T E |
| UniRef90-V4C133 | L CQTH Y |
| UniRef90-R7UL32 | L D K V H Y D D |
| UniRef90_H2B1T9 | L |
| UniRef90-B3M0B3 | L D TV ${ }^{\text {H Y E }}$ |
| UniRef90-R7Z3J0 | L WD Clf P EP F |
| UniRef90_UPI0003890BCF | L K S V E Y D D |
| UniRef90-C3ZCR5 | L C NVE Y N E K G E L |
| UniRef90_I1H501 | L R S CKF D |
| UniRef90_C7NTIO | LT A V E Y P |

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UniRef90-K2DNX0 UniRef90-B8BZK0 UniRef90_X7Y9R9 UniRef90-W2SGN8 UniRef90-Q4P5K5 UniRef90_W5CN46 UniRef90-XOUFT2 UniRef90_M2RKZO UniRef90_N1QIW7 UniRef90_A2DE30 UniRef90_D8SNZ9 UniRef90_LOPEW5 UniRef90_Q4D3D3
UniRef90_D8RMK1 UniRef90-B4L908 UniRef90 B9I6V0 UniRef90_UPI0001758939 UniRef90_E9GMA7 UniRef90_K0S0R9 UniRef90_B0WVR9 UniRef90-F1L9G3 UniRef90_C5Z7C1 UniRef90_W7TSW1 UniRef90_O04502 UniRef90-M0UT37 UniRef90_Q22RZ3 UniRef90_C4VAT4 UniRef90_G4YJ60 UniRef90_UPI000180C481 UniRef90_UPI0002B42D62 UniRef90_U6LJ97 UniRef90_W4GST8 UniRef90_B4QKT6 UniRef90_A0A024U417

K K K $\square$ A L F F GYNG D GY Q G M Q R N P G A K T I E D D LE S A V V A $P R Y L L R F A Y L G T R Y R G M Q R Q S T R P T V Q G A I E A A L V C L$ P T K R RYGL WVAF CGKNYS GMQMNEGVKTIEAELERESNYG
 PSRKIALRFCYDGGSYSGLAAQMGQPTVEETIWEALCTA

RFNFK L L LS Y H G G S F D G WQK QP NLNTVQSVVEVS LGKF TRFDAL KFAY LGQRYNGLEHANGNPTIEEEMETKPYY I P K R R V A M M L G Y R G T G Y Y GM Q Y N P P R E T I E S T LLAN A L V SV


 PRRYVALRLMYFGQRFYGFASEAQLPTVESEIVKALEKT

 T R F $\underset{F}{ } A$

 PKKKVALLLAYSGKGYYGMQRNPGSRTIEDDLVAALHAE $R Y A M L L A Y Q G R E Y F G M Q V Q K D H P T \square E G Q L I N A M N K L$
K R RVA $\ V A G G Y N G S D Y H G V Q L N P N V P T V E D E D R K A M Y H \square$ $R R T Y V M Q V S Y L G T D F S A V Q R C P G V R T V Q E E V E K V L E S$ L

YKAVLS YKGTRYF GWQK TNMGPSUQDTVEQALLRV
 PRCRRYWMVLSYEGGGFHGWQKQEPLRTVEGVLEERLRPV PKCRVAMIVGYNGSNFCGSQKNPNIRSVEEEIEKALYRLL

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

 PKKKVAVMI GYS GT GYHGMQLSSPTEKTIEGDLFAAFNAA K I K I I F F S Y D G S A F L G S A S Q P H K K G V Q D A L S GA L S HL
 PKR KVAV MVG Y S G T G Y K G M Q I N N E E K T I E G D L F K A F V A A
$R Q R V L L K D A Y N G E A Y A G L A A Q A N \square L T E G E L E K A C L I P$ PKRQHAVLFAYS GTGWNGLQYHPGAVTVENTIFDALVVV

P K K K VA L L M G Y S G T G Y S GMQL NEQQRTDEGDVFTALVNV $K V A L I I G Y D G T N Y H G L Q Y S V N V K T I E E V I L K N L I M L$
 $R R K \square A \square F L T Y C G V G Y Q G M Q K N P G A K T I E G D L E E A L F H A$
 P K R K VAVM $\$ V Y C G S G Y R G M Q L N P P H K S $\square E G D L F E A F N S T$ PCRKIALRFSYD GAGYS GLAAQNTTPTVEGVLWDALCTL

MGFCGAGYNGMQ IQPG $\quad$ GKTDEGTLFNALVKV PKRKVAVLIGYSGTGYKGMQUSAKEKTIEGDLEQAFIRA I ILL YR Y $\square$ GT Q Y H G L Q Q N DD T H T V V K E L $R K$ I AI FVSYSGYGYQGMQRNKGCKTI E GDLEEALFKA



 MQRYL I KFS Y SGTRFRG LQRQPGE DSI QT L EK G L LRF
 RRYLLWUSYDGSRFPEMAKGGSGYGVLDTILLRSSFPN
 $P M K S K V A\|L V A Y T G T P F H G \square Q Y Q R G V P T I E Q N L D K R\| N S T$

K K K V V L R I G Y VG T D Y R G L Q M Q R NQP T I E Q E LE D A I Y K A VQ R L L L KIA Y N GEA Y A A EA S G I S T V E GELLFKALEKA P GKKRVALVTGYTGTGYHGVQDQENVPTIEHEVRAESNYG MHR YLL NIS Y DGTTFRGI QKTVNTNSIQ GCLEDALDQVF

UniRef90_UP100023B27AA UniRef90-K8F2K7 UniRefefo-LTM1U0 UniRef90 ${ }^{-}$W4ZFI4 UniRef90-A8PZK2 UniRef90-O8CXS6 UniRef90-G7LIU9 UniRef90-G7XB13 UniRef90-GOWFT9 UniRef90-A8WP84 UniRef90-E5R091 UniRet90-B7G5E6 UniRef90_S7XK88 UniRef90_A0A059A9V6 UniRef90_O3IMP6 UniRef90-M2TISO UniRef90_UPIo00455EC21 UniRef90-Q4WYK4 UniRef90-L2GEW4 UniRef90_U5FKW5 UniRef90-D8Q182 UniRet90_GOVEK2 UniRef90-Q4T6BO UniRef90-A2ADA5-2 UniRef90_W6NH5
UniRef90 D4B5P6 UniRef90-FOWUQ6 UniRef90-L1IR33


VDENK T $\square$ Q GCGRTDK GVT A L Q QVCF Y T WK K D $\square K P R E \| E D A$ NWDGCEYSKAGRTDRGVSAFGQVTGDRWDDVKDEDPYVSM DADSEKLMRTARTDKGVHAAGNLIMKDPNTLNELKTKLNG HWDGCQYSKCGRTDKGVSAFGQVAGIRWDDDADELPYIGQI NVEAFRFRFAGRTDKGVHARGQVQLPIVVEPTELWRVHKA NIDESEDEYAGRTDSGVSA VGMVISIFLYMSENMKIDLI DGRPPGYAAAGRTDAGVSARAQTVAFEAPA
NWDGCEYSKCGRTDRGVSAFGQVIGVRVRSNKPLPLPRA
NGIVAL NWDGCEYSKCGRTDRGVSAFGQVIGVRVRSNKPLPPYVQL DPVKVSDGRAARTDAGVHAAGNLVSMKDTADPGVPDF:ER NFDCEYSKCGRTDRGVSAFGQPTEGDADTPMEGTAEKTE
NE KEQCKPLEGCGRTDKGVSALQQVCFYTWRKDVKPHEKEDA GCHKNGFMRACRTDKGVHAMVNVISVKMSKYDEPHDKDMD DMKKMSFQRCARTDKGVSAAGQVV SLKLWLDDDLAEK SVDPVRFTDSSRTDAGVHALSNAAHDDVQRRPGQSPFSKA TQSGVSDTGEAKGWDD MADELPYIQQ

 TQEPTAVAAASRTDRGVHAMGQVVQALREPWEPAKLLAA HSSGRTDSGVHATRQ!VHFDPPVPRSQKAWVFG CYPRI
DLERWEYTKCGRTDRGVSAFGQVVGVRVRSNRPNDQRDDT LAQRVKFWPAGRTDAGVSARGQVAQFDVNAADPPDARKGS GRKKI GWNRATRTDKRVHADQNCFSFKIHDENEDEDFRVV

 CGVPT RVHGSGRTDAGVHATGQVAHCDIAKDFRPDKLRDA VDERKAQMVAGRTDKGVTAVHQVCFYTWRKDVKSQDITVAA DKKKLKFSRAARTDKGVHAALNILATRNVWTFDEKKNVKA

 R NRAACNFSRCGRTDKGVHAAGNYI SLDEEKEGDCRVYVLL DPYKLKWQRAARTDAGVHALANVLSAQLC VVPNLVEN YARRFTLITSSRTDRGVHSMGTVSLINLVSE\|YLFQACQY



WPSKYSWSNSARTDKGVHAAAQVVSMKGEMDFHSDTMREK FRTP $\square R$ L RAA GRTDAGVHASGQVAHADVPVHPEFRPLVRR

DPKKSSSVRCARTDKGVHAAGNVISLKLIIEDPEDIPBK GMDGAGFSRCGRTDRGVSAAGQVVALWVRSKK $\square N Q W P D R L$

ASRTDKFVSARGSAFSF ${ }^{1} T \mathrm{D}$ K $\square \mathrm{P} \square \mathrm{L}$ ME $\square \mathrm{NSA}$ NPTKVNLGRAARTDAGVHAAGNLVSMKITAIPGVDDFVGR
 $N \square N R \| K W S E A S R T D A G V H A C A Q V L S F K A S K G D C D A D D P D L D$
$D P R K U D W A R A A R T D K G V S A A G Q V V S G R F F V$
$D$ DPKKSSLNRAARTDRGVHAACNLISLKMI DEQQNLLET VQQKLNWERASRTDKGVHALLRNVI SLNVMTEYDPQEARRII HLDKVRWKRSSRTDKGVHSLCTVVTMKWLNDVDGDK DADA RPNEI QTVLSSRTDAGVHALHSTVVVDLERNDGKCYDTTI NDNKISWARSSRTDKGVHSLATTVTMKMEDPENAWKDDKH NPTNDPVVYSSRTDSGVHALNSTCHVDLYRSNELEYEPKT LQ HKKSVQFSSRTDQGVHSFCNLAHVD
HPSKCGWSNSARTDKGVHAASQVCSFKGEMDCWNDQMRLI RPNEFKDK LSSSRTDAGVHALLNNAVHVDLDERYNGKPYEPDK

 DVER $\square$ SKRKPGEVLPPHEPGVVQRA LVGACRTDKGVHAAFNVIVVNLERGCYDEFIRRF HKQLQEFANERRKHDDIDK IDNA

$G G \square C D S W A R S S R T D K G V H S K M E \square P G S A W \square D D P C G \square S L A D Y$ CLI PSR DMSKIGWSRSSRTDKGVHASS VLSGKLLVHDDRIDDRSG HPTNI HTVLSSRTDAGVHALHSTVQVDLERTNGQPYDTTI

UniRef90_UPIooo23B27AA UniRef90_K8F2K7 UniRef90_L7M1U0 UniRef90_W4ZFI4 UniRef90_A8PZK2 UniRef90_Q8CXS6 UniRef90_G7LIU9 UniRef90_G7XBI3 UniRef90_GOWFT9 UniRef90_A8WP84 UniRef90_B7G5E6 UniRef90-S7XK88 UniRef90_A0A059A9V6 UniRef90_Q3IMP6 UniRef90-M2TIS0 UniRef90_UPI000455EC21 UniRef90_Q4WYK4 UniRef90_L2GEW4 UniRef90_U5FKW5 UniRef90_D8Q182 UniRef90_GOVEK2 UniRef90_Q4T6B0
UniRef90-A2ADA5-UniRef90_A2ADA5-2 UniRef90_W6NHI5 UniRef90-D4B5P6
UniRef90 F0WUQ6 UniRef90 ${ }^{\text {L1IIR33 }}$ UniRef90_UPI0003DF7BAD UniRef90_K2FC39 UniRef90-W7PZA0 UniRef90_M1VU00 UniRef90_G1XKC7 UniRef90_S8CD41 UniRef90_J9IRD9 UniRef90_B0CU40 UniRef90-J4DQD3 UniRef90_F6R255 UniRef90-M9YWV7
UniRef90-M5XEM7 UniRef90 ${ }^{-}$C5KAM9 UniRef90_B8M1I1 UniRef90_E6RXQ3 UniRef90-C4A002 UniRef90_UPI0003EC4830 UniRef90_UPI0003D0C6D1 UniRef90_U6M727 UniRef90_UPI0004415962 UniRef90_Q4UA31 UniRef90-B6H289 UniRef90_S7W952 UniRef90_H3G2C1 UniRef90_B9H5D6
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UniRef90_A0A024U417
$L|N R V L| P K D|I R V M G W C P| V|T G F H A R F S C| L S R E Y K Y F F W R G$ I NEHLPR GKIVAFGARVTGGFSAKNQCDRRKYEYVVPVRTB


 $\square$ N DAAP GKLRVVVSVYEVVSRAF HPNFSAAKWR RYGY LIFPNGE
 L NGIVLP KT I R V F A WA PVAPTFNARFDCNRRTYKYSFPKA $L N G A L P E D I R V L A W C P H P A D F D A R F S C R Q R R Y R Y F F T Q P A$

 L NGELPASVRAWA A A DVGDAFHATHDATARAYRYF LYYAPE


 NKLLV P K GI I R VWD I K M V N K R F N C R R A V S S R WY E Y L L P T Y V I N Q H L P P Q i R V L G V K R V T Q G F N S K N N C D A R T Y A Y M L P T V A L N TH L H PA I R V L KAFRVVPNDFHARHAATSRTYQYRGLATGC L N NLL P QDI RVI A MCRATNAFHPQKMCCARTYSYTLLPT FA L N G A L P E D I R V L A WC P H P P D F D A R F S CRRQRRY R Y F FT QP A


 L N RLL L P D D I R I LA WC P SP PDFSARFSCRERQYRYFFTQGA L N RLL P STI RVLAA WCPNPPNFSARFNCQARTYHYFFTNPP




 I N S A A P G K L R VVV S V T E V S R A F H P N F T A K WR H Y L Y IV F P F N D

 L N K VLPP D I R V LA WA PV DPDFS ARFS CQQRTYKYFFPKG

 I N K LL L P P D I R L L A A T L V V P P T F D A R F D C L L Y R V Y K Y F F S L T G






 L N R IL L P S Sil RI QA WSPVRSNFSSRFDCDVRHYKYFFPAGP

L P K H
V N E E L P P E I R L WGVVVRVQK S F NA RTSCDS R KY T Y Y F P S H P
 V N S HL P K QI RVLGGFTRVTGTFSAKNLCDRRRYEYVLPVFA I NAALPESI RMWS ITRTMGSFNPKTFCDSRDYEYLVPSYV

 $V$ N S Y L P D S I R V L S I LPA Q K S F D PRRRECDIR K Y S Y L L P A E V L

 | $L$ | $T$ | $Q$ | $G L$ | $N$ | $R$ | $T$ | $F$ | $R$ | $V$ | $L$ | $R$ | $T$ | $R$ | $H$ | $V$ | $P$ | $L$ | $F$ | $H$ | $A$ | $R$ | $L$ | $C$ | $A$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

 L NRVLPLDI RVLGWAPVPDGFSARFCCSYRTYRYFF



 1 N S YL P D N I K V F GlV VPA QK R F D P R K E C D V R M Y S Y L L P


N $\square \mathrm{L} \| \frac{1}{\mathrm{~L}}$
140 M E S A GKK 150
150
160

UniRef90 UPI00023B27AA UniRef90 K8F2K7 UniRef90-L7M1U0 UniRef90-G4YF UniRef90-A8PZK2 UniRef90-Q8CXS6 UniRef90_G7LIU9 UniRef90-G7XBI3 UniRef90_G0WFT9 UniRef90_A8WP84 UniRef90_E5R091 UniRef90_B7G5E6
UniRef90_S7XK88 UniRef90 A0A059A9V6 UniRef90-Q3IMP6 UniRef90-M2TISO UniRef90_UPIO00455EC21 UniRef90 Q4WYK4 UniRef90-L2GEW4 UniRef90_U5FKW5 UniRef90-D8Q182 UniRef90_GOVEK2 UniRef90-Q4T6B0
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UniRef9- K2DNX0 UniRef90-B8BZK0 UniRef90-X7Y9R9 UniRef90-W2SGN8 UniRef90-Q4P5K5 UniRef90-W5CN46 UniRef90-XOUFT2 UniRef90-M2RKZO UniRef90_N1QIW7 UniRef90-A2DE30 UniRef90-LOPEW5 UniRef90-Q4D3D3 UniRef90-D8RMK1 UniRef90-B4L908 UniRef90_B9I6V0 UniRef90_UPIOOO1758939 UniRef90-E9GMA7 UniRef90_KOSOR9 UniRef90-B0WVR9 UniRef90-F1L9G3 UniRef90-C577C1 UniRef90_W7TSW1
UniRef90_O04502 UniRef90-L2GUA0 UniRef90-MOUT37 UniRef90-Q22RZ3 UniRef90_C4VAT4 UniRef90_G4YJ60 UniRef90_UPIO00180C481 UniRef90-UPIO002B42D62 UniRef90_U6LJ97 UniRef90-W4GST8 UniRef90_B4QKT6 UniRef90_A0A024U417

F DRRFPKKRKPYVFTEEERTKVNDILKHFVGTHNFHNYTK A WLPDAELNRCHVVPPLDLGRVHEAMELLSGEHDFRSFRT LD TKMDVGNGVVKFVRTVRSAEIRKLDDSGHCKDDHCSNF


 FCPTPGARGIVRAPGWLDGEMREAAQYFVGSHDFRNFCK KA Y NMDSPCLWLCPWVLDDSK LY E LCQRLQGQHSFRFVHR TKKMKECVEKIKN KKNYY LCKKSKEKEFKKKNDLM

PSADTTRA RDNLD IRAMESAGQKFVGDHDFRNFCK

## $\frac{\mathrm{F}}{\mathrm{F}}$

 PGFSARFSCEERQRATSTIEAMDAAAQLFVGDHDFRNFCK GENREEDEGEGGQENFSSHENCEKQLSYKMFARDTKASRN LKEPYYNEDCYSVPDLRDGGKLESVLNHYLGTKRFHNFTTG FAPKDSDAASDAASFRLQPETLQRVNRLFKGTHNFHNFTS
 FCPTPGARGDRPREGWLDI EA MREAAQYFVGSHDFRNFCK LSASCDT ENRQKMRGQMMVQQFLSAMLEQE GDHDFHNYTR I G A G RFDVVEAEVVDSMLVGLEGRRRHYNS FS

 QAKKRKMDPSRYQPGWLDDIEAMRNAAKRFEGEHDFRNFCK APHNPGEP PRVLDIDDAMKTAAKYYEGPHDFRNLCK
 GVGEDRAGG
SFQDD L R R K R CWRT GQEQVQQKLRELDAKGEGTHNFHNFTK DPSLLERRNYYWQIMSDKHFEKLEEAGKVFHGTHNFEGYRK A F V R G S MD DE LMNEAA QKFVGRHDMRNFCK SNLALLEVGRVWRVPQRLDSDAMHAAAQRLIGGRHDFTTFRD EEDMEQSNQENYHEHKNGCDQCNEA LSSYKMFARDTKPSRN LD GKA DA A K LE EVMS QYVGK NKNFFNF TA K F L P P H P S T H
S S Y S P F M A S Y VHF Y P K F D LD K A NE L LGFF VGKK DLK F F C K $N L D G Q S M H L A G Q K L V G E H D F R N F C K$
L L P P H P D S F L W
SHHTDWDLCWSLLRNTELNVDAMHEAASLLVGTHDFSSFRA FAPKDLDPQDETYRSQETLEKVNRGLACYYKGTHNFHNFTS L DLLQKMQKAASRFTSARESLC\LYHVMHVCVGRC LRPPVPGSPLHAQDHKFPPEKMRELTSPFIGKHFYHNFTA NPS LFERNHYWQlMSDTHFEKLKEAARDFHGKHNFEAFRK LVPPHPSTY
 FAKPTELTNSSFR】SESTLTQUGEVLAQYKGTHNFFNYTS $\square$ N P CSHR
Q N QP LLER Y A WR $\square W P P$ L E GK L L N QAAAPF $\square G R Y D F S S F G R$ F S S REEDCCAF Y RVNDDQMERLRSGLKVFEGTHTFHNYTR TEWCRSWRAM
$F$ LPTP GP $\square$ GMP $\square R E G W L D \square D K M R E A A K K$ L E GTHDYRNLCK FLPPHPESTLAKTC WEYAEKEGDLENYLARQKDVE HWW PRLLFYPRSKT $\quad$ KNGEDR LD DA LMRDAARRLLGEHDFRNLCK K R GL DV S KM Q K A A F K FI GE H DFRN FCK Y L K S S I S V K N VKK K A C K A L E G R H D F R N F S K F WT KLEANKRAFRASPERVQALRETAKKFEGTHNFHNFTV F L P P HPS S W
FSSNS $\square E H L N Y$ Y L T S $\quad L P \square F \square G W \square N Y H N F T S N K S A S N P S S$ LDPASHRVESPTDEAANPGDNPGEADTSEDVEEDTTSTTG F LP P Y P K S F L A Q R $\square$ T K H R E I I N K E K N S V W I Y G N E Y MLLYCK L M
1 G $I N N E S S S E D V D Q R \square Q D F R R T L K S L E G R H A F H N Y T V R R L$ L P V E E WD R C Y F L Q N N NF D DERRLI A A S R M L I GV H D Y RTF M S

 LMPPD
P ID E H D R C Y F I A N K N F D P D R L K R A A A L C E GY H D FR T F M A LMHYA ER D Y A W LIP P GF D L Y K A Q Q A C S I F K G TH N MA S F F K S S K L L E N S E H NILKPQS F DVA KVDK LLKTLMFARDTQASRS HCRYFY R D R CWHVVPE E L N N L R FMMQEACRRVLV GS H DF S S F R A
 VMDPFHTNYAYHSAHKLNPHAMQEAANHFVGVHDFTSFAN YQKYDDDIA GTPMTE EFEQKTMQRVADKFKGTHNYHNYRQ
 A D $\square$ T AMNEAAK LIFC GLLHDFRNFGK


AMKPGSSTVREVETSQWTEKDNGWTYEDKANAFRYHMVRR
RGSDNASASRY\|ISHVVDGTEWHPVQ\|VQSFLLNQURK

## 

DDKQTTNYRRRTDGVSTDREEHMYVLNLRGTAFLYHQVRN MDANVSNYKRYITDFNISACDQRWSMNURGSAFLWHQVRC QEKEGEKTVRDLLLAKMSDDGDFIILDFKSRAFLRQQURR RSTQRHMKLIEUADPVVYGSTEWISVLDFHGQSFMLHQLRK

DKK D $\square$ WD L E K Q H H
YRKSQRR
VSRQPMFTVRK $\quad$ DE $\square$ N $\square R P N Y D Y W D \square E \square K A K S F \square Y K Q V R R$ YRRKYP
RGSHDPDK ${ }^{\text {GTR }}$
GRPPGYPTVRT $\square$ DAFH $\square$
$\square Q Q M P T Y T \square R R D E R T T V D R Y E Y W D \Pi R D K A R S F D Y N Q R R$ HRERDRRKENEYPSAIRHMRHVFYDFSIISTSFLREQVRR VGPPTECFMFHSRAAVAKLHMMVMCVELVANRFLRKMVRV $M D T T V Q S F V R V V R E A T V L T A G E W C C L Q U Q G Q A F L W H M V R C$ AGCQVKF
NKRGSARLTKSTEVREAAGTSEWYETKTSGQSFMMHQTRK AVHNDRVPIKKISRFDVTKMDA ITQLEVEGTGFLYRQVRN MKAKDPRCMRYVLDNPQNGMKF, RFTLVGQSFVYHQURK SRSYFYKM
VNVVNCVNYRR $\square$ NHFE $\square$ SFCYRMCFAR $\square I G S G F \square Y H Q V R S$
VDKKQERWRR $\|$ I RFD $\square$ KEEGEGFAVAT $\|$ VGVF $\square W H$ QVRF QRRFFYKQV


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 MVAVMFMVGQGLESPD LVAAVAAVARGERPLSFLGRALDDDPLSGADAAAPPEPLL LVA ITLELIGQGLESPSLPVLLDANPTRPKYEMASDAPLV MVSALVLVGQGLIEPPTIVRDLLDKNPCKVFVPKMPALEGLV MVSLLFLVGQRLEKPELVAELLDVEKRKPNYDLANDTPLV $M V R V L V A T A A A G A Q E D A L L K L M D A T C R R A T A P P A P P D G L C$
$M M S A L V L S V R N D T P A S V M D E L Y G A B R T S T D P K M S L G L L$ M WWAATIARSNDQDEYVDK F LQDSR $\square Y \| P N A P A T G L L$ MIGLVIAVVKGYAREE $M T A V L V A V G L G \| L A P Q V K V I L E S Q D G K Y Q A R V A P A R G L F$ MV
MVG LLFLVGQGLEHPS WVPELDKNPRRPVYEMASDSPLV MIGGAISFATDADSSTVFEASLYTDQUVR\|P DAPAEGLL LVATAI RAAAFPEEENSFTKDLEACDSSRSAPPLPSDGLC $I V G A L I A L G S D K \square T E K D \square S Q V P G H H N Y \amalg P Q \square Q T A P S Y G L Y$
mVaVLfLVGQRLEDPAVVSELLDTQRPCRPSYVMAEPLV MVAILFLVGQKLEKPDVVKELLDVQNMPTKPFYNMADPLV MVALLFLVGQGLEKPEVVKDILNUQKTKPFYNMADDRPLV

MMSMLVMTCRTETSPQ\DELY GPRNVFVPKMPSLGLL MVSHLILAGFNVIKPDQI KATLETGSEDPNVPYAPAHGLY MMS ILGRUGSGEUPPSTUDEMVEKNPKKPSFKSWTPLNLT
MVRVLIREAAAGADEDALLKLMDATCRRATAPPAPPDGLC MIGLAVEVCRGSAPEGATEECLAAKERKH DHLAPAEGLF

M TGLVDA VVKGYTAES DMERSW GEEKVDVPKAPGLGLV MलA $\bar{M} L M E V G R G A E T A A A I R E V Q T Q R E G R Q G L S P A P A C N L V ~$ MAAALVLCTRTDTPGAVLRALMDRRPGRTHVPRAPAPGLV【VSHLILAGFNVIKPDQUKRALDNATE 1 PNUPYAPAHGLY
MVGA $\square \square \square$ Y $\square F E N E N \square F D \quad \square A F K K K K \square N \square P K T P S K F L L$ MIG
LVYMQVQFARGALSFEDLVK GLSERVIIKPGLAPSHGLV MISAAVDGARGTVTHEQUQQSLKKGSR MKVNVAPAQGLF
MVAVLFLVGQGLEQPRVVDQLLDVESNPKKAMYEMADPLV $\square M A \square L F L V G A R L E P P S V I E E L M N T E S G R \square A$
MAAVLFFVGQGLESPCVVDSLLDKTPRKPQYTMAPEDPLT MVAKLLEFGLGIIYEEFVDLF NPAKSVSYQPADPFGLI
MTATVISASHNYDGAEEVKRCDSEEGWS TKMCPGDGLM MUGLAVAVMRGDAPETIFERAFRRDTK DGVPMAPEDGLF
$\square V G T L L A \square A E G R \square D E R C \square Y Q M$
$M V G A W T A A A E A R T T E R D V Q Q M$
MI G IIVAHAYGRVSRELI EWLLKNPHPTRRLLDAPAQGLF LVATAI REAAAGAGDDALLNLMEATDRRATAPPAPPEGLC $\square M A V L F A V G R G Q E E V G V V D D L L D V S R Y K P L Y A L A S E H A L V$
$M T G F V L L I V N Y H G K D E \square V Q K \square F A F S P R L L N \square P K A P A H P L F$ M V
MMGMDCMMDQEDYPDNFMDSSFFHNVMR DWLAPAHGLEF M $\square Y F$ SVLLCRYKRNEFSTDFEKVFSDEY $\square$ HVPKGPSQYLL

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【VGALIALGNGRपDERCDYQM

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LE HPDF
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LDDAEFEED



LS K ViA Y E
LWDCVFDSPEDGGRGK $\square$ D WVYAGD

LRSCLFD
LWD I NY
L E Y P ■ F D
LD HVDY
$\mathrm{L} D \mathrm{D}$ E CDDY
$L L V G Y D G S G Y H G \square Q F N K E L D T \square E K K V V D C L L S V$
$P \square T S A L L H V S Y D G R Q F Y G W S S G N D V R S V Q G E D Q Y C Y G N \square$ KKKVVMRVGYVGTDFRGLQDQRDEHTI EKELERDSNFG KKKVVMRVGYVGTDFRGLQMQRNEHTI EKELETADFKV KKRVVLDVGYVGTEYRGLQKQRELSTIESVLESAIFKA

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