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 M T KSDFLTELESEVLLFDGAMGTQLQKGTDDEEELNT KKPVQQRLEEKILVLDGAMGTQLQGAEVDGCNEALNV RRNEFFQLLQERVLFLDGAYGTEFFKRGVNGLIELLNI HPIEEQLQKRILIIDGAMGTMLQQENFDGCNEHLVL
 M D N C E R
 MT DRKTLEDALARRILILDSGMGTMMQNRKLEENNDLLVL MS N
M $M S T L A T$
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K S L MNKTTLL K K K L L L A A K R I L

EIEAAASKRLLL
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 MTRTDEI EALLRERI MVLD


 NSRAQLTAQLKERILVROGGMGMLQNRKFKGNNDL N
TKAEFKKLVENGPVILDGATGTNLQKA GMPVCPEQWIL

M P K Q H P
LT QLLAD HI
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KTPF Y S LL K K R I L V M D

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M S R T D L L L H S L L L A Q R R I L L V L D D G A M G T M











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A A MAEAMKEVAPRKP
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| $R$ | $A$ | $A$ | $Q$ | $V$ | $D$ |
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| $R$ | $D$ | $P$ | $P R V I P D R P D$ |  |  |

RALAEALKDYKPRQP
A AL REAVVADCVPRPDPERE
RA A A E VV K GKAPRADVE
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RTLVDVLKDYEPRKRKDRH
EALADEVALLPPRTVP
RAI ANAVKDIAPRQVPE
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A A L A DAVKDYAPRKIVKREV
REI AEAVKKCKPRVPP
A AVQQALGELRPRA L RPRR
KAMKEALASLKPREHHERE
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K S MVEYDGNQKPKSKEPSK
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K A MVEGVRPLSPRTR
A A 1 AK AVEGVAPRVPP
QAIAEAAAKYSPRTPKE
RAMAETMSRYAPRGR

| $K$ | $A$ | $V$ | $A$ | $D$ | $A$ | $V$ | $E$ | $G$ | $L$ | $P$ |
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| $R$ | $P$ | $R$ | $A$ | $L$ | $P$ | $E$ |  |  |  |  |
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$A A A V$
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## UniRef90 A6Bz53

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 VHDLNVGARIAREEGRRCFVAGAGGPTNRTAPGYRAI T
 MVYDLNRDGARLAREDGRRRFVAGALGPTNRTAPGYRAVS KQEELTKTLVGLTKEADRRSYVAGDVSMTGQQLEPDGSMP EVKRINQAA RLAKERGTGTY:FGTI GGDNGAVDARPAAP EEAVDAAVKIAKRAKGNSNTYVALDUGPUGELLEPMGTLS RVRDLSERGTRMARDHGTPRYVLGSMGPGTKLPTALGHAP LAYELNVAAAKLAKEGRDRAYVAGALGPLNKTDPGYRALT WAYKINREADWSARTPERPRFVAGILGPTNRTAPGHRNIY VAGKNRELVRMSKQASQGRVLVAGDMSPTGQLMEPFGSYS LAEEDNIAAAKIARKAVDPRFVAGAMGPTTKTLSVTGGTT SLQEVVSAVRNVKKASAQAAVHGDVGPTGKLLKPMGDLE LA YELNVEGADAAATRDKPRFVAGAI GPTNRTAPGARNTD MAYRLNYESAMVARETGVRRFVAGALGPTNRTLPEYRNDT LIAFEMNVAAAYTAKNPDKPRFVAGALGPLNKTLPGFRSVS

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PNAFGGYDLGAEEMATYIKEWAELGLNIVGGCCGTTPEHIL

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TD G/VFGY D
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VD GEYRY GETPDV
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PNEF
TKDGAHFPLDAAGDADAQESFREYGLSUVGGCCGTT

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| UniRef90-F4PVY7 | R A FVEATR GVQPRRI |
| UniRef90_F6BPK4 | R A I A E AVA K Y P P R R V P E R R M |
| UniRef90-R7CAH7 | QKLVSRLK EKKAREISERK |
| UniRef90-S5M0G2 | RALRKGLETTKP ILEKEVR |
| UniRef90_M1LR44 | K ELAARVK L K K L A P |
| UniRef90-W5TFN8 | REVAD AVAETA PLVRRPEH |
| UniRef90_T0RED9 | A SIVKKHLK D I K P R K I |
| UniRef90_G8T7I9 | K HI A D HVRNFKPRPL |
| UniRef90_L0GVF5 | R AI A A AVERHAPRTVPE |
| UniRef90-E9C2V3 | R A I A N AV R G $\square$ A P R VP N K T Q |
| UniRef90_L7VST8 | QKI SK I AK G R K |
| UniRef90 L5N9Z2 | R A I A D AVRPYQPRER |
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| UniRef90_UPI00036F2EFF | A E I A S ALQQ GYVPKPLHE |
| UniRef90_E0TI34 | R A FAARVSGVPPRQRPARPV |
| UniRef90-T1FXB5 | K A ${ }^{\text {PA D A V K S F T P R L P P A }}$ |
| UniRef90_C7PK49 | R H\\|A E HVK TVVSPRRL |
| UniRef90_A0A024K889 | R A FAEVVVAKYP PRKVPVVE |
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| UniRef90-H2BVT7 | KAMA DVAKEYKPRK】ASRE |
| UniRef90-E7RZQ6 | R A 1 A E AVRP LT PRVPP |
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| UniRef90-T0HSR6 | A A MAQKVA GLLSPRKLPELK |
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| UniRef90_R7WW80 | RVLA D AVA D A ERARRTPSH |
| UniRef90-A1ZT30 | A EIT T K I A A EYS PRVIP EQE |
| UniRef90_N4WEM7 | A AIND ATQTLDAP DTSKQVK |
| UniRef90-C6W4B8 | RVIA E DA GKHSPRPLP |
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| UniRef90_UPI00036DD39F | EQ A A AVA GVPPR QVP E |
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| UniRef90_G7FY00 | R A F A K GLA GVK P R Q LP ELEV |
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| UniRef90_W0RKP6 | R A I A EALRRDLKPRARPE |
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| UniRef90-Q5FP86 | Q A LD G ML R R L R P A P VKR S T I |
| UniRef90_D6TL89 | A A MRKVLAEYAP |
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| UniRef90_A2AXF3 |  |




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|  | ef90 ${ }^{\text {W2CB }}$ |

LAYELINVASARILARAECDPRYVVIGAII GPTS ${ }^{110}$ RTAPGARNV $S^{120}$ LAYKLNFESAKLAREPEKPRFVAGAIGPTNRTAPGFRAVS RIRDLSGRGTRARRPQHKRYVLGSMGPGTKLPTHGH1 RAYELNYESAR AKEENKPRFVVGSIGPTNKTAPGFRAVS LVHELNFEAAKLAQETGQDDFVAGVLGPTNRTCPSQRNI N LSYEVNVAAAKLARTPDKPRFVAGAVGPTNRTAPGFRNVT

 LVYELNFESARVAREPDKPRFVAGSDGPTNRTAPGFRAVT KVQR NQRAVRGARDAAGESDVAGDVGPLGKRLQPEGPLS
 LGYENYAGAALARAACDPRYVAGALGPTTRTAPGARNVS RAYELAFAGAHLARADGTDRFVLGSIGPGTKLPSSGGHTS EVVYELNKEGARVARACCDPRFVAGVLGPTSRTAPGFRNTS SVKA NEHAVEUARKADAETSGVYVLGTDGGDGFQHEETD RTFELSEKGVAMAREDGRMRWVLGSMGPGTKLPTMLGHAP Q IJSKAVEIAKAAKEDFPDSYIALDIGPSGKVLRPVGDVE LAYELNLEGAKLAKEDGKPRFVAGALGPTNRTAPGYRAVT RAYYLNKTAAELAKKPQKPRFVAGSMGPGTKLPT LGHID AVSTLVTAAVKLAQKAFQACCVALDLGPTGKLLQPYGDLP VADEMNRDSARRHATPDKPRFVAGAIGPTPKTAPGARNVD LAYEDNDQSAKLAREPDKPRFVAGAMGPTNRTAPGYRAI T KVYDLNKRSALLASEPDKPRFVAGSMGPTNKTAPGYRAVT LAYYMNLIESAKLARAACDPRFVAGALGPTPKTAPGARNVT
 LVYELNYQSAKIAKEPHKPRFVAGAMGPTNRTGPGYRAVT AY LAYELNVASVKCAREAIDPKFVAGAIGPLNKTLPGYRAVT LAKE NVEGAR ARAKGMATFVAGSLGPTNRTAPGARNVT LVYELNYQSAKDACETDKPRFVAGSIGPTNRTAPGYRAVT

\section*{}| $L$ | $S$ | M A R E G |  |
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| L | G | K | T |

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$\begin{array}{llllllll}R & I & Y & E & L & K & R & R \\ S & A & G A & A & A \\ A & D & I\end{array}$
$\begin{array}{llllllll}\text { S } & V & A & D & A & R & A & G \\ N & S & A & A & V & G \\ N & D & A & A\end{array}$
$\begin{array}{llll}A & V & H & D \\ E & D & V & V A G A R \\ K & \text { K A M E }\end{array}$


 $R$ I F E L S E A G A R L A R E Q D R P R F V L G S M G P G T K L P T $L$ L G H P $L V V Y$ D L
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 RAYEI S K K A A V L A K T P E K P R F V A G S M G P G T K L P T $L$ G H
 F S Y E I N Q S A A R L Y S STE H P R Y V A GVL G P T N R T GP G F R N V T
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| UniRef90＿I4EXA8 | A Al｜A R A V V E GRAPRTPDEVR |
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| UniRef90－G0J5A8 | A ALAESASKYPPR |
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| UniRef90＿UPI00035FBAA0 | KAI AELTKGYKPRK |
| UniRef90－K6H329 | ELI R DVVS DL |
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| UniRef90－U5LAE8 | RAFSDELKGSPPLEKKEVR |
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| UniRef90－W7Z924 | A A I N Q AVALLKKPVKRP |
| UniRef90－W2CBZ3 | A HFPELARGKR |
| UniRef90－S3BQ88 | R QLVARV／RGMER |
| UniRef90－F2JGX5 | EKTVDKTKD\PYELLEREKV |
| UniRef90－W3RJQ6 | A AlA A AVAPHKPRV |
| UniRef90－I3TIS7 | RAI DEMLRRRRPAPVKRE |
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| UniRef90－G4Q6D8 | K ALVESCAE |
| UniRef90－UPI0003654899 | A A ITTDAVHDQNPRATARTGV |
| UniRef90－UPI0004042003 | RAMATLAAKYQPRK |
| UniRef90＿UPI000237B8C2 | K AFGQYLK |
| UniRef90－A1W263 | GAlA RAVAPVGTR |
| UniRef90＿Q0FP39 | RAIA K AVEEGFAPREDP QPK |
| UniRef90－UPIO002896342 | RAFKEGI S E LEPLDTVK |
| UniRef90＿UPI0003B4CF4A | GS IA K F VA GKP PRVPGKPAM |
| UniRef90－UPI0002559DC8 | KAI AE I AEKAERRQVAEQ |
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| UniRef90－E8R0S5 | A AI A R AVRESPPRTLPK |
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| UniRef90＿C7MUL0 | RAVVEAVSSLRPKERRPEH |
| UniRef90－K7YLZ0 | AAI ANSLS G |
| UniRef90－G8X6P8 | K LMAEIAKNYKPR |
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| UniRef90－UPI000369E477 | R A MKS SLRA |
| UniRef90－M1UL94 | R A VRD A V VGVP |
| UniRef90＿C7Q855 | RQLVESLGGREVP |
| UniRef90－UPI0003669783 | TAI REQVRGVPARKVPEDPD |
| UniRef90－K7RX62 | AVLA DALA GRPVAGREVHHV |
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| UniRef90－B7IHI6 | RLLM1 K F L K N R K P K K K |
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| UniRef90＿UPI00035FE0FD | RQVVERVQGRDVVRREPR |
| UniRef90－C3YH00 | KAI AEAVRPFRPRKV |
| UniRef90－UPI0003735261 | RQVVERTRDLEPTPRQPR |
| UniRef90－I1FAB7 | KAI AEAVKGLKPRE |
| UniRef90－F5SG92 | RKVAEALQ GLPPVPRVNPEL |
| UniRef90－UPI00036B5A5E | A ALSELAER |
| UniRef90－K5ZDU9 | A ALVKGAKSHVP |
| UniRef90＿R6YMT9 | A R Y NEMAKGK RPHQEKPKTM |



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 VIIRA GIDR C A K E AVA Q S G K E A WV A L D I G S T G H L L P P M G M L P


 K Q WDI NV A A A KLAKECCKPRFAA GAllGPTNRTLDAFRACT





 K V Y D L A K K S A E I A R E S G K K V Y Y V F G S i G P T N K S L P Y K R A V S RI GEI NNSLVTLAKESNGKALVAGDITMTGRQLKPMGDLD $K V T R I N R A A V A I A R E A A K D A F V V G S I G S D \quad L A G R V R Q K A$
 RI YELAFA GGKLAREVDKPRWVLGSLGPGTKLPT LLDHTD
 K V E E I IS K K A L K I A K R A R G E K E V K D D DG P I G E L L E P M G T L S





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 R A E E I N K R L V G L
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 Q Q I I PA AVGCA K Q A A T GK D T LVAA LDDI G P DGE LMMEPT GT L S KMEEINERAVVDTARAAATSRRVLAGDLGPTGEMFPPS GS L N

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 QSYY L S K T A A E L A K Q C E K P R F V A G S I GP G T K L P T


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UniRef90_Q31JA5 UniRef90_Q31JA5
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$\stackrel{1}{4}$



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D A L GV N C GMG P E QMLDP LA E E L V K LLA SVVPVVVVN NA GL P R R L S V G L N C A L G A A E L R P F L K K N L S D l A D C Y I S V Y P N A G M

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 SAI GLNCSSLGPKELLPII GELSKWTNLPLVVKPNAGLPDP





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MSDTG
VTNE YNCSAEDF
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## T

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 $R \square F E L S E A G A R I A R E D G R T R W V L G S M G P G T K L P T \quad L G H T T$ YAYEMSRAAAAVARNPQKPRFV AGSMGPTNRTASMSREVVT

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 $H L I D M N T E L V R L A K Q A G G K A L V A G D I T M T G R Q L T P M G D M D$ QACWD CA DA WTA QQPEKPRFVAGSI GP LDNKMLPGARSVT
 $K L V E M N T A L V Q L S R E V E G K A L V A G D I T M T G R Q L Q P V G D L S$
 HF E II NR Q A V A L A R R A S H G C WV A A S L G P L G E WLE P L G A L S KA F E N K L S V E L A R E D G R D R WV DG D I GP GTK L P S L G H I D $\begin{array}{lllllll}\square & \text { Y E M N L E A A R }\end{array}$ F NKRMAEVAREAAHDAGRPVFVAGNVGPSGQFAKPLGPVE

 LVERLNDEAARVARRACDKKYVAGAVGPTNRTMPELLRNDT LAEELALLRSAQUARQAA GDALVAGSVGPTGEMLAPM GEMS

 VTKAVEHAKKARELTGRADALI ALDLGBTGKLLEPLDGDL S QVKNLDRSAVTLAKNVVDAFWVAASVVGPYGAFYTGKY S




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 RVVHELNRLAAAEIARKVADRAVVAGSVGPTGELLVPLGAMT









 DVAAI NHAGVQLARRAAAAVDRR $\quad$ RFVGGSVASASQRSWVS QALDLDKK GVVELAK QARDDFNVAGCVGPYGAYYTGTY DL S Q QI E L I K R S V T L A R E A R 1 R R P LVVA G S I G P Y G A Y Y S G D Y S V S
 Q SKALIEEQSVQLAKEASDDYRVAGSVGPYGAYYRGDYACS E A A DL MRR SVQQLACEARDAFWVAAASVGPYGAMYRGYPGVS

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 Y DELLAA YVEQAEALI DGGVDLFLI ETIFDTLNAKCAI DA FEVVREGFRQNAAGLI AGGVDALLIETSQDLLQTKASVLG

 FDKAYDILKEQLKAIIEDAGADVVNFETFTDLNELRAAINA F QEEVKKAYGDQARSLDQGGVDVL LVETVVFDSANAKAALLA FD QVVHA YRHQVKALNEGGVDLYLI ETITDDTLNCKAABMA F NDLRLAYGQQ\|DGLIEGGADLILIETIFDTLNAKAAIFA FDTLA ANYGEAARALVEGGADVLMVETVFDTLNAKAALEA
 PAETTEI F R RQALALAEGGVDLLIAETFTDLAQULAALSA $F E Q D A A S Y A G Q V R A L L D G G V D L L L P E T S F D T L N M K A C L Y A$ PLDERMMLLEQASALLEEGVDGIVMLETAYDENELYDAVNA





 PEAAREDFAAQARALVKAGGADLLWVETMSSYEEVEAALAG FEEAYAAFKEAADYGEEAGADLVHIETMSDTYEVKAAVLA
A V
FPELVKAYSQQIVALI EGGVDGLLVETIFDTANAKAALEA FEEAVKSFEPQVRGLI RGGADLILI ETMLDDKEAAAAVEA

FEQVYEAYAEQVRADHDGGVDMFLI ETDTDTLNCKAAIKA


FQEDRETYYEQI LGGVDGGVDGILI
$N E A Y Q T F H Q R R M R L M D E A G V D V F A F$





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## 1D09FA

 DVI GIDNCSLGPDKMLELLPRFDSCASVPVLVKPNAGLPRS


 $L V A G V N C S L G A D Q U R P H V E E L A R \square A G T Y T A S H P N A G$ $P L I G L N C A T G P Q E M A E H V R W L A Q N W P G L L S V Q P N A G L P E L$ EVVGANCSGGPDSLLEPIKKMHGVVS IPLSVKANAGMPEL
 FTVGLNCALGAAAMRPHMAEIAGVATSLTCAYPNAG
 I A CGTNCGVGASEVVATV $\mathrm{V} N \mathrm{~N}$ MNAAHAAGESEPNCGDPEY

 DVVGUNCHLGPDHMLESLNTVSLPTNGYLSAFPNSGLPLY DVVGTNCSTGPDQMCGVVRQMKQVAKDPVLAKPNAGLPKD






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 FAVGLNCALGAELMRPHIAELARDADTLVSAYPNAGLPNA DALGI NCSLGPRQIKPFVERMAQVSSTPI IVTPNAGLQTAD



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 AAVGVNCT A P EFVVPS LVERARARTSKPIVVVYNS GEHYD | $V$ | $A$ | $A$ | $I$ | $G$ | $L$ | $C$ | $T$ | $A$ | $P$ | $Q$ | $Y$ | $V$ | $E$ | $S$ | $L$ | $I$ | $T$ | $E$ | $I$ | $K$ | $N$ | $N$ | $S$ | $N$ | $K$ | $P$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $V$ | $A$ | $V$ | $G$ | $Y$ | $P$ | $N$ | $S$ | $G$ | $E$ | $E$ | $Y$ | $D$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $V$ | $C$ | $T$ | $P$ | $P$ | $R$ | $F$ | $I$ | $H$ | $G L$ | $V$ | $S$ | $L$ | $I$ | $R$ | $K$ | $V$ | $T$ | $S$ | $K$ | $P$ | $V$ | $V$ | $I$ | $Y$ | $P$ | $N$ | $S$ |
| $G$ | $E$ | $T$ | $Y$ | $D$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


 $L A I G A N C G V G A D L L R T V L G L A A A G P E Q P L I A K G N A A D P R F$ DVF G L N C STGPVVEMTPSVRWLDEQNE HNILVVPNA GMPEN

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S D GK TT Y S OP VD ${ }^{250}$ VK Y 260
260
 FGG EGGKTVFDVSAEEFAQTMLR AA GGARVGGCCGTTPAYI
 TKDGSHYPLSPVELADAQESFRDYGLALVGGCCGTTPEHL M G G $Y D E T P E M F A E D V G E Y M R R G V N V V$
$Y D E T P D E T G A K L G E A A S G V N A V G$ $P N A F G G Y D E T P D E T G A K L G E F A A S G V N A V$
$V D G R T H Y P L T P E E L A V W L E R F A E D G V N L I$ $V A G E A V Y$
$P N A G G G Y$
M G Q
PNAFGAYDEEPHE
PNAFGGYDEQPEETAAVLREFAEAGLNLV
 $V N G R H V Y R T T P D Y F A E R A A E M V A A G A A L$
$V D G M G G F D S T P S E F S G V I D R E A E N G V N I$
NEGKYVYKSNPEYFEDMAKPFDEQGVRLI SEGRTVYEMDAETFGREMCLLVEAGATFL M G Q YDEQPAETAHE L HEWAK D G I N N L
$V E D K L V$
$G P D G A V Y$ VDGQTI YDMEPSEFATDMELLLNSSGASLI
 VDGKTHYPLGAA PNAFGEYDETPDQMASVVGEFATSGVNiL
 VDGKSVHNGTPELMARYACLDALDAGARL KDGEVYYDVRPEEFAEVMARIVKKGACLLA M G G YDETPEDTGSHVEAFARDGLNVV G D ENGVT LT
MGEYDEQPHETGHM P C

DEGHTYYDMSADDF
 SLTNAWTPKSAPDFALEMMKEQAS LLNVHVL VTNT NQNGDYMETAEQMDQDLLPVIQNQKVNML
 PNAF GGYDESAAEMAAQIQEYVDLGVNIVGG RGTE DHYSGTPPLMADYARDAMDSGAKII $A V S K T W H A C G G E Y G S E Q A G D W Q Q D G A R$
$V D G B$
$V$ $V D G R N D Y D C S P E Y M A S F A R K F V R A G V Q F V$
$R G D R L V Y P S S P E Y F A S V L V Q C A D H G A R V L$ TADGAYFPDTPVELAEALERFDEYGVGLG $\begin{array}{ll}P N S M G E Y D E T A E S M A P Q M Q E Y V D E G V & N \\ P N T M G Q Y D E T A E S M S P Q Q A Q F I D E G V & 1 \\ P\end{array}$ PNAFGEYDETPEHTASVLADFAREGVNVVGGCCGT
 $V E G K D H Y N G T P E D M A D Y V R M A I D A G A R I I$
$R D G A T F Y P G T P R E L A D W H K R F V E D G V N M I ~$ PNQFGGYDDTPEDMVRLMRVYLDDKVNMI VGEDVVYSMSASEFANQMKPYFEDNMGYI
RGSEIVYSGTPPLMAEYARLARDAGAKII ENMKAVYKQTPTEMVSTMDALLEEEGVN
 ENGRTVFPMGPDEFAEKTARFVDLGAKAL LDGKTHYPLTPAEMA DWHGRFREDGVNLI 는 D GQLAYPETP ENGTTCYNMEAEEF
VGGQAVYKMTPEEY
I TGNEYNVLPEEF $V$ TNTYSINASGY ADNLLQQKSLGVE EGRYSHTPEMLDQRELLWPLIEWHVL VEGAIVYNGSPEAMAAYAQLVRDAGAR PQTKTWTSVPHTDTFEQVPRWLAEGAN A HSKCWSATGESTLAPRRISEWYADGARLI VDGKIVYSGTPQLMADYARLVFDAGAREI AVGKVWQGEGQHDFAAQAMRWHNRGARLI ANSKTWHHSSSESYCCSAKGWFEKGAK ADRKCWQAGSADAGADHLTAWRAAGARL GATKTWSTQNTKDYGKMAHDWYEKGASV HEGHDHYDGTPEDMADYAVLARDAGARI


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| UniRef90-E4N2M6 | RHLVERVQGRPLTPRDPR |
| UniRef90-13YIJ2 | F ELSKIACNYAPRPVPAPR |
| UniRef90-UPI0003AD601A | AKI A E AVRGAAPREVA |
| UniRef90_UPI000369CC4A | A ALDAML |
| UniRef90-J7IUL5 | S ALRKELNET |
| UniRef90-E3M453 | NA MYKAVQGI |
| UniRef90-B4W9T0 | K HVAEEVAPLKPRA!PERPV |
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| UniRef90-UPI0004795ADD | A A I A A AVAGLPPRRI |
| UniRef90-UPI0004770984 | K A MRQAMDNHKPQAKPS $\mathrm{L}^{\text {D }}$ V |
| UniRef90-UPI00036C5CF0 | RALRAKAEGRSWAMPQKTD |
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| UniRef90-D5SPE9 | HAVANVVK GVAPRKVPHEN |
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| UniRef90-E8RS01 | K HVA DEVR G I A P R VPP ER |
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| UniRef90-C3XLV5 | R Q L VQK TQS $\downarrow$ P K A P K |
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| UniRef90-C0D4W7 | QKTVGRCKDVPPQARKRTVI |
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| UniRef90-B4RHL8 | K HVADEVRGVKPRPVPER |
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UniRef90－G2NFY2
UniReffol－litilz4
UniRef90－G5GES1
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UniRef90＿E3CII1
UniRet90－R5VZH9
UniRef90－B8ZRP2
UniRef90－K9CZ12
UniRef90－UPIOOO376A520
niRefgol
UniRef90＿V7CYT7

 MPNKNPDDA乌ISQRMMILDGALATELESGCPDWSARVLL

KDRLKESTREQYLIIDGATGTELQKKNIEGCNEILNI PLLDALAARRVLVYDGAMGTQUQDKPLDGCNELLVL MESFRTYLNRDEKPLIIFDGGTGTSFQNLNLEGCNENLVL FLKALEERVLLGDGAMGTRVQALGCENCTETLNR KFEDALKDHVLVLDGAMGTMVQNLDVTDLTDLLTF RDFRQTLKGGVLI FDGGMGSLLQRRGAGQSPEEFGM MTTAKPLQKVLESRIAI DDGAMGTTIRTYGMKEADDLFSL MTHFLDYLNSEKRPI IVFDGATGTSLQDQSLEGCNENLVL MTTATPLADF贝AEKVLLADGATGTNLFAMGLEEAPELWNE KRRSLLEDLAGGCAVDDGGFATGLETHGDPAWSACCLI
 RSSLQDLLAQKTLLADGATGT MPQQALLDTLSERVVIADGAMGTMLQRHGLEGCNEILNV MPQNTTLSTHLAGKDLVLDGALATELEAHGCDLWSAKVLL
MNPLTPFLE NQ
Hstif NQFVF
$\qquad$ RKLAEDII I LDGA L－TELLSTRWLMADGATGTNL
MTN ALSKLLSGAPMI LDGGLATELEAGGHDLWSARLLA NPIER K RWLLADGATGT MNS $\square Q S T L E Q Y G V M I L D G A M A T E L E R S G D L N D S L W S A$ PLGDALMAGPVVLDGGLSNQLADOGCDLWSARLIA KKIILTDGGMGQELVRRSQPLWSARVLI
MSK $\square E E L D A E R A L L A D$
MSHNPVSRALQQSAPL QSNTI LERLNSGEVVI GDGGFVIF


MRPNNP口FSVLREQPRVDGGMA
MRPNNPLFSVLREQPLLLDGAMATEL
M S N
SFQELLDSRVLLADGATG
MPN
 HYPVI
QGCVV

MSRKNPVDQRपQEDPL
$M K P V R T L A E A L G D A T L V L D$ RQMLHDLIAGGCAV MAKKQRLRDLLHRRPLLDDGALAT
SMKELLKEGYAIIDGGLATEL
EARGILERLDSGEVVVGD
MTS
GTLAEALAAGTLAL
GDGFL

MTN $\qquad$ RWLLAD
KEK【IEY品KNi
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MATKGLVERLKNEDILIAEGYM WEL
D DLSELMARGPVVLDGAMGTELDARGNPLWSALAVLT
MTN ALTKLLDSRWLLADGATGTNLENMGLEEPPEFWNV
MSQRMA DREHLKKEPLVCDGGLATELEARGHDLWSARLLL
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NADERSAS NDGLA
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## UniRef90 D5BMT9

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## UniRef90 J3JBI4

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UniRef90－C6LEJ3
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UniRef90－A4J5C2
UniRef90－R7BJI6
UniRef90＿UPI00047DC402 UniRef90＿UPI00047264BE UniRef90－Q1GGL5 UniRef90－UPI000475F344 UniRef90－A9RG17 UniRef90－H5V105 UniRef90－U6BGU3 UniRef90－W9RIE0 UniRef90－UPI000467A22D UniRef90＿I1KWU9 UniRef90－UPIO00468E8D8 UniRef90－V6IVH5 UniRef90－UPI0004672FC5 UniRef90＿K2N6B5 UniRef90－Q4VNK0 UniRef90－UPI00033191F4 UniRef90＿W5MFE4 UniRef90－UPIO0035EFE20 UniRef90＿UPI0002F333CF UniRef90－A7MLT2 UniRef90－NOCCS6 UniRef90－MOTBDO UniRef90－IOJZN3 UniRef90＿G2NFY2 UniRef90＿－11H7Z4
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UniRef90＿G5GES1
UniRef90－R5DRA5 UniRef90＿UPIO003C74560 UniRef90＿K1QFK7 UniRef90－JOWSP1 UniRef90＿UPI0003B384A5 UniRef90＿13KT92 UniRef90＿UPIO00466FAD4 UniRef90－L1N8R3
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UniRef90－R5VZH9
UniRef90－B8ZRP2
UniRef90－K9CZI2
UniRef90＿UPIO00376A520

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 S QPEMVRDVHRAYVAA GAELI QTNTFSGHRVGLARYGITA






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

E HP E A V R QL H H E F L R A GA N V M Q T F T F


 DAPEQI EAAHAAYVRAGAQVLITASYQATYEGFARRGVRD SHPDLLEKVHRDYI DAGAKII RTNTAESNAYHLSFFKLEK D A P QQ I E A A H A A Y V R A G A QV LIT A S Y Q A T F D G F ERR G I GR T K P H L I K E V H M Q Y L E A G A DVVI S S S Y Q A T DP GF LA R GL Q E NNP GIVEDIHKKYIGAGSDDIYSCTFFGNASRLKLGNAR
 EEPEAVVAAHRAYYEAGADVVTTAGYQATFEGFARRGDGD DNPEVV RALHMEF IHAGTDVI EAFTYYGHREKLRT $\square$ GRED EAPEAVTAVVT DYLFAGARVI CTNSYQATAPALMRTGLEA



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 D A P Q E I V A V H V A Y FR A G A TVIVT TVVSY QA S FE G FA A R G DR D


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## UniRef90-J3JBI4

UniRef90_D1B2D3 UniRet90-Q1YME9
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UniRef90-A0A059B3U7
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UniRef90-E8TI70
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UniRef90_UPIO00262711D UniRef90-F2ERY3 UniRef90-E2ZJF6
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UniRef90 $11 \mathrm{H} 7 Z 4$ UniRef90-I1H7Z4
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UniRef90-R5VZH9
UniRef90-B8ZRP2
UniRef90-K9CZI2
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 HLKELNQTAVRLA REAVGEAFVLGTVGSTSDLGAGDREQP KDMELIKQTVWLAQKARDDFWVAASVGPYGAYYVGDYGVE ESKQLILDAAQLADQRAKYPVVAGSIGPYGAYYTGAYKLS KAYEDIAKRAAVIANEARDEYFIVAGSLGPGVKLPS SAGQIGG
 KAYEINKNAAFI AKKVDKPRFVAGSIGPTTKLPT LGHIDD EAFELNRTAGILAREDGRERFVLGSIGPGTKLPS LGHDA
 EVNETMTRAARQAVGGDAVFVAGSVGPTGKMDKPDGDIS SARQCREWADRVANQSGRQRFVAGAI GPDTVSLPGFRVVTV
 DVTDFNRRMASLTREVAGDRFVAGSVGPTGLFVRPLGPLS $E G E L L L K K S V K L A D E A R D K F W V A A S I G S Y G A Y L A D G S E Y S$
$R I D E L A E A G A R V A R R P D K P R W V L G S M G P G T K M P S ~ L G H Y S ~$
 TEAGRLIFAARAAAEETADEVWVAASVGPYGAVYRGRYGLT EAETLISRSVEDACEARQUYHVAASVGGSYGAYLADGSEYT RITELAAAGARI ARERARMRWVLGSMGPGTKLPS LGHTT ESLELVALDVVRLADEARREALVAGSVGPYGAYYRGDYTLS A SKALI AKAVQVAQQARTDYYVAGSVGPYGAYYTGAYQLD EAKALIASSVQI AKKVRDDFWVAASVGPYGAYLRGDYALD RTHALNR】AAELARAVADAAVVGGSVGPTGELLQPLGALS
 RVRELNRDGVEL

 QATDLIQNSVRI EGQHLI QKSVQL RAGER R R SVQUA $\quad$ EARDTFWVAASVGPYGAYYRGDYKLN RAGELLRRSRLARRAAGGRWVAASVGPYGAMYRGRYGLS

 SGQKVNEAACD DARQVADEGDAFVAGGVSQ TPSYDSCKS KKIVLAGLDLANKVAQGKS DF DAAS IGPDPEMFDKMETDQ EVMENLDAAVKAAREAVS LSK RSDPI F DAGD $\square$ GP DPGMME VALDRRSVELALRAREQYCRQWDGASLGPYGASYHGNYEDS

 QATALI KQSVELAQRARTDFLIAGSVGPYGAYYRGDYTLS EAQALI RQTVTLAQNARRDALIAGSVGPYGAYYRGHYGVS ESEALLKKSVEVALEARDDYYVAASVGSYGAYGADGSEYS ETARLLARSVELAREAVEGVWVAASVGPYGAMYRGRYGLS EGESLLEKSVKLAVEARDGFWNSADINPGNKSGCYGPDVN RAHELSRVSAELAREVADTAVVAGSVGPTGEDMEPVGGLS REEELIGKAVTIAQKIRPFPLIAGSUGPYGAYYTGNYS L S $R V F E L N K K A A E I A C K A G R R V I V A G S V G P T G E L L V P L G A M T$ KSESLLRKSVEI ACEARSTYYVAASVGSYGAFLADGSEYS QWEAVNAAACDLAREVADRGDALVAGGDCRTSMYKH HKD RDEKI NEAACDLAREVANEGDALVAGGVSQ TPSYLSCKS ERAAALMASGVALARDAVARWVAASAGPYGAMYRGRYGLTT ERAAELMAEAARRARTDRRDWVAASAGPYGAMYRGRYGLT QSRALIARSVELARQARDDYYVAGSVGPYGAYYRGDYALS KAHEI FKKTVLLA QKQRSYPLTAGSVGPYAAYYTGSYRLS
 K LIKEIVSRSVQLAKKALGSREGWDAGTVGPDWTKPTESPI EGAAELMAARRAAGRSGREVWVAASVGPYGAMYRGRYGLT EAEGLLRTSVHLAGLARDEFWVAASIGSYGAFLADGSEYM
 ESIMKACKIAREAAKGHEHIFIAAGDIGPITTMEYNHNDM RAARLLALSVDLAREAARQAWVAASAGPYGAMYRGRYGDG D LIE KL NRVALQMAKEVARENGKLLAGGDCNGDYDPQDEST DSRAVIATSARLAAHPQEPVLVAGSLGPYGAYYTGAYTTD RVMELNLIAAEARDVGRTIVVAGSVGPTGEDFEPMGTDT RARELLMSGVHLAKETQRRPLVAGSVGPYGAFLHDGSQMS RSVT LARQAAAEAPGEGRHRFVAASVGPYGAAYRGRYGLT LVERI LRS GWEDAARAAEPAYVFADIGPVTGLP

## QASELMRRSVRLACDRRPHPLVAASI GPYGAFYRGDYTTS

 RSVDLARQARDDVSGDGRPRFVAASVGPYGAAYRGAYGLT QSQALIARSVEALVQARADHWVAGSVGBYGAYYRGDYVLP ESESLLRRKSVEI ACTARVNYYDRCNTSTPDESDDGRDFKK A QAKKI DASTEI EKESRPYPLISGDVGPYAAYDGDYGA!T YVISNVRAAVKLAKQDRKKAYVAGDIGP $\square P A D A G$QAIRLMRRSVALASAARDEDCVAASVGPYGAAYRGRYGLS EAAALIVRSVEI AREARDIYCVAASVGPYGAYYRGDYGMD EARQMITTTVMHANQRRDYPGIS GDVGPYAAYQGDYGVIDD

## UniRef90 D5BMT9

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UniRef90- J3JBI4 UniRef90-J3JBI4
UniRef90 D1B2D3 UniRef90_Q1YME9 UniRef90_B8C9X1
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UniRef90_V7EL05 UniRef90-A0A059B3U7 UniRef90_UPI000237921C UniRef90_A6FS57 UniRef90_UPI000248D1E1 UniRef90_UPI00047691DE
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UniRef90_R7BJI6
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UniRef90 B8ZRP2
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UniRef90_UPI000376A520


PDSACEAFTKQASALLISEGGVDMLIWVVIMSSTEEVDAAVVAA





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 Y A HL R D T F A QQAA GLVAGGADAI LVETSQDLLQTKAAVKA F D QVVK T A Y A E Q I A A L A E G G V D L L MI E TVVF D TLL A K A A I A A VR E L E R F H R P R V E A L A A A D P DV L A L E TVVP DTVDEAAEA L L R A




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## UniRef90 D5BMT9

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## UniRef90-J3JB14

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UniRef90 AONU21
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UniRef90-L5KLN3
UniRef90-R7BJI6
UniRef90-UPI00047DC402 UniRef90-UPIO0047264BE UniRef90_Q1GGL5 UniRef90_UPIOOO475F344 UniRef90-A9RG17 UniRef90-H5V105 UniRef90-U6BGU3 UniRef90_W9RIEO UniRef90-UPI000467A22D UniRef90_11KWU9 UniRef90-UPIOOO468E8D8 UniRef90-V6IVH5 UniRee90-UPI0004672FC5 UniRef90-K2N6B5 UniRef90-Q4VNK0 UniRef90-UPI00033191F4 UniRef90 W5MFE4 UniRef90_UPIO0035EFE20 UniRef90_UPIO002F333CF UniRef90-A7MLT2 UniRef90-NOCCS6 UniRef90-MOTBDO UniRef90 ${ }^{-}$IOJZN3 UniRef90-G2NFY2 UniRef90-l11H7Z4
UniRef90_C7D6E3
UniRef90_G5GES1
UniRef90-R5DRA5 UniRef90-UPIO003C74560 UniRet90_K1QFK7
UniRef90_JoWSP1
UniRef90 UPIO003B384A5 UniRef90-I3KT92 UniRef90-UPIO00466FAD4 UniRef90-L1N8R3
UniRef90 E1ICX9 UniRef90-H8G861 UniRef90-Q5H117 UniRef90_UPIO0032A7269 UniRef90-UP10002B4BD3D UniRef90-E3CII1 UniRef90- $\mathrm{B5VZH9} 9$ UniRef90-K9CZ12 UniRef90-UPIOOO376A520
UniRef90 V7CYT7




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19
QFAEQAVALG|V ARRLTSLPIIANLAPDVVGVTRDGYSVVDAFATMRLAGA LLRDFPDAYAWLSESHKNEKEISDGTALAECARVFDNSKA LNNNFSNYSAWI TFSIKDANHLCDGTSLAEADAYFESNPQ


 AEREFCDVPVG|SSMTKE GGVSLTGTTDEECAKVLNSCKN MREVFDEDPIMMSAAVGRGGTMLSAQTREAFWNAVENAKP VNEAGDKDPVMVSVTMETTGQMLTGSDISSDTTVLEPFND AARAVCDLPVLVSMTFE GAASLTGSSPLTFLDTMQNLGV LEEENIKXPSWVCFSSVDGENAPSGESFQECLDVINKSNK
$\stackrel{A}{\mathrm{~L}}$

 EAALACDMPYVVTG AKELGGDLPLLCSMTVEAD AKLAGLTPWCGTMSFDTAGRTMMGVTSAALAELVEPNPP LVEEHDTTPAWFSFNSKDGIVNVVSGEPMVECAAIADSCKQ FKLAGM PWCGTMSFDTAGRTMMGLTSADMVNVVEANPP LQEFPQVCAW MSFSAKDGERTSSGERMDECAEWLDEQRQ LYEEFPEMLDAWSFSVDGKDKLCDGTPGKQGVSYFVDDDQ VEGTG VPVWLSYTVAGDRTRAGQPLADAFALAAGVPQV ASESGKPVWVSWTLADHGKPRLRSGEALATAASALDGLAV
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## LKASGK

KVKDSSAFAATMCITGPEGD LIHGVTPGECAVRLVKAGA L

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LDEGVAKDPGWFSFNSKDG
LKESGK PVAATMCIGPEGDVVHGVAPKDCAVQLVKAGA LNTSGK PVAATLC GPEGD LNGVSCGECAVRLVKAGA LRGLGGDVPAWLSYTVDGSRTRAGQPLEEAFGAVADADEVV LESYPQARAWFTFTDRDSDHTSDGTPLSDVAAALADYTQ LAEEFPQVEAYLSFTAQTASAVSDGTLIEEVGRLAQSSPQ
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 $D V V G L N C R L G L S G I L R T Y E K F T L N S D F \emptyset Y A A Y P N A G M L H Y$


 VAD GL $\operatorname{N}$ C A L G A K D L R V H I



 TAYGANCGVGASDILSSLLDMKDAAPDAIVIMGNCGIPEF $D V V G \backslash N C S A G P V E M L S T V R A M Q E R L E T P L H V Q P N A G L P E L$
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 $V$ V A L G G V N C T A L L T



 I AVGVVNCS A P D DV LTTA EVAASATVEK PIVVVYPNS GEGWD $L G Y G A N C G V G A S D L L R T V L G F A Q G T D R P I I A K G N A G \square P K Y$

 $\square A V G \vee N C C S$ A E D A GPAVALAR QVT GK PVVVVPNS GERWD


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 $V$ AV GI NCC D P VIEA GAAVELAAGAVTGKPAVVYPNS GERWD D AVGIN C A P P HLLMENLI C K F K QL T K K A II V V Y P N S G E V WD







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 $V$ DGQTVYP LA A P ELLATWLERFREDGU S F
 ANTKTWHGASSSNAFSSAKEWFENGASVI GGCCRTTPSDI VD GATVFRLP P DPFAATVSTMVDVGVSCLGGCCGTTPE HI $L$ S P T G F F D L N P E D MA R F L G D FAR G G GI N I A G GCCCGNT P E H I

 GANGAHYPLSPAELAVAHQQFREFGLGLVGGCCGTTPEHLL PNAFGGYDQTPAETGALIGEFAASGVNIVGGCCGTTPPHI
 K GKETVYTGTPELMADYVDLAANAGARIIGGCCGTAPK HI

 M G G
T EKEALY HDG A E HK E WVP STADED F VS Y V GK WR DA GALL F G
AQRRAWTGRARLS AEQARSWRAA GAH
A PATK R WQ D AFARAWRGSSCQDYGQQAQDWYARGARL VE GWIAA GARLI G GCCRVGPRRII
 A R AR GWT G
ASSKTWHSPSGCTDHDKFSEWQAAGAR
D G S G
CNK QEPRVATRWDIQKYAREAYNLGV R Y VHERMVYIQNPNYFAEKMKD IVGLGVKIL TRNRMHFGNAP DYFA GKMREIA HLGGVSMVGGCCGTKPDTI A ERRCWTGKSNAEF GRLAS EWAEA GAQTI G GCCRTMPE HI V D G H WH H QP H GCAS D Y L P A WLA A GAR V ASTKTWHTAAACGHFAADAARVVWHEA GAK L P E $\square K$ Q WVE S T D T DFVVS YVHEWRNAGAQL A QTK C WTA QTCDS LD GYLD D WLCA GA RL

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A A A G GWYGP
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K Q
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A Qi A K WV R G
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KA $\square$ REMSEGYKPRKLP
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GEI ARNDQKDK
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A A L A A AVR P
AAI ARHCQPQ
$K L L N S V F A G C V P G \quad R S A H K M$
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EKMSELI QS YL NAP $\square$ PKQQ $\square$
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$A V L H R$
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EAI SKALREHT
ALLA QR
A Ql R S VCQ

QlISNALREKS
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RQDAQWARSEK
A A MAPE $\quad$ ARRRPR LEKPRR $L$
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RADHKRL
RAI A E ELA P $\square$ P P ASEK
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GRI A R T L G
GSVAAALAP
A ALRA
RRLAGELRT
$R G I S \square A L Q K E H A \square P R E$
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A A MA QRAAT $\square$ KP $\square K E K P P K$
S GLA A A LA S S GP
RAVSKALKGR
VAMRAALETRATTARP
NKLRLSLK
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A GLADIAD
RALCLALAD
A E L A R R L

RKIIYSVL|SSKESA


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PSFKDYLAD R VRELLT TSV $V$ L VRELLTTSVLVGDGAMGTMLHAAGNSLDQALLNL

 GEVLI SD G GLATELLEARGHDLWSARLLLS S G DPLV DD G GL G T AL E S R G DDL S H E L WS A $M K T L S Q V L Q \quad D E G W I L G D G A V G T A$ MPFKQ GIL E R L N DEVI I GDGGMTHALEKRCY GVWTPECVV

 NKSPLILDG ALLG A K K G IlVVLIDGAMS D
T S K R T L E E R L Q A
MSTNK LLKERLDK
LNERLL L L

EME

| $L$ | $E$ |
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| $L$ | $E$ |
| $L$ | $S$ |

LGYDLWS

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E

## E <br> ,


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E


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## -

D F P D A L R A L H R D F Q R A
DAPEYVTMAHNAFIGSGAD
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 E EPELI ARVHRDYFEAGADVADAA GYQASVAGFVSLGYSR
 E H P E LVVRQLHEEFVRAGS DVVLAFTYYGHREKLRDIDGED ESPDHVRQAHESFARAGADMLTSNSYAVVPFHVGRDRFDA EAPEEI EAAHLAFFRAGADIAATTATYQASFEGFAA HGDER NGSDAI TKDHEAYVLAGADIDTTSTYQAS LASLQGGVGI SK
 D A P E L I R A V E D S Y L A A GAARCCLIDTAASY QA T P Q A L Q E Q R G DS
 DAPGEVVAAHRAFYEAGAVVATTASYQASFPGFAERGLDH EMPETVVTADHAAYAAAGADLLLANTFGANARKLAETGYSV

 RQP MNLHKYLEAGARLI ETHTFSANGHKLAALGUDA

 NELDKI Y QAHWDYFTA GAELVITTDTYQANVQAFTQAGYE Q TKPK AVFAT HLD F L RAGADII ET NTYQATIDGFVKYLTEE D NPDVVLKQTYRDFMLDAGSDVVLAFTYNAHREKMRII GKE D
 H D K K TI LN I H K E Y IK A GA GA I K T N T F GAN K I S L E C D D D E HP EVL ENLHRRDFQHAGSDVVEAFTYNGHREKGRVI GKEH

## S

E

T Q
E HK DVI Q K L Q K A Y I E A G S R I Y Y A P T F G G N R L N L R Q H GLE N

S S S HLVVRRVHLDVLDAGANVILTASYQATVQGFEAKGFS E

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VTEAAVVANAREAVRQSRKEVVVAASVGPTRQSAEEEDGK120 RVAELNRKAAADARTEADRAVVAGSMGPIGEMMAMGSLT $R V H E L S R V A A E I A D T A G R A V I V A G S V G P T G E L M E P V G T L S$
$E G E M L L K R S V K L A V E A R D S F W V A A S I G S Y G A Y L A D G S E Y R ~$ KARTLIKDTVRLAQEDRAYPVVAGSVGPYGAYYIGNYGVT RFQQINEAACDLAREVANEGDALVAGGDSQSPAYDSRKN RASELLVQSVELAREAARRAYVAASIGPYGAMYRGRYGLT EADGF GRSVELADAERDAFGVAAGVGPYGAAYTGAYDLD ESADLIRKSVVIARENRPKPVVAASVGPYGAYYTGDYSLT DTERINQLAVQLCDEARTAANVSRPILIAEDCYRVDLVPD RVRELNRLAAE ADKADRKVLVAGSMGPTGETMAPMGPLT ARSVREAAVRARAAGVSRPLWTAASAGPYGAMYRGRYGLG KWEDVNAAACELAQEVAAKGDALVAGG\|CQTSTYKH HKD EVRDINTEAVQLAKEARDNTWIAGSMSSMAPFNCPQEVAN EALDRVARSVELARAERDAHGVAAGVGPYGAFYTGSYDLD LVAQLRAGWALAARAAEPAYVFADI GPVIGLP DEASALLAARGAAERSAREVWVAASVGSYGALYRGRYGLT LWKTLNQVASDLAREVADEGGALVAGSLSPDTAYKEGTEG
 QFEAINAAATRIACEVRDHTRPVDVAGSMSTTTFGTAQPP RAEELLRRSVELAREVDRQLLVAASVGPYGAVYRGRYGLS ETVDLAKKAREKVWQGRPYPLISGDVGPYAAYLGDYGSID LLEPLNRHALRLAKEVADAQRPEPALVAGNISYDPDDAGS LLEPLNRNALRLAKEVAKEHPGEEALVGGNISFDPNDLES QFETMLRTSVALAKEQDSARWVAASVGPYGSGYDGAYDDD
 QAEDMIAKAVEIAKQARDHNFVAASVGSYGAYDRGDYKLT EARALI QLLSVTLAQQARDAVWVAASVGPYGAYYRGGYDLD EADRLLKESVHIAVKARDDFWVAASVGPYGAFYRGDYQVS QSCALIARSVELARQAREDFLVAGSVGPYGAFYRGDYQLS RGHALAQLAAEI ARACAHPVTVAGSLSPVLGSYRPDDFQM QWEEVNAAACDLAREVAGKGDALVAGGVCQSSMYKYHKD LLRRSVELARAAAPSDGRRRYIAADMGPYGAVYRGRYGKG RRAESI ARSVELARDAFGSGLVAAGVGPYGAAYTGDYDLD EHKKLITDAVQVAKQTGKHNWVAASVGPYGAYMRGDYSGLT QLETLNRRALKI AREVADETGTLMAGNDCNTLYVKDDAD QGLALADRAGRLARSVADAHGVKAAGSLPPVFGSYRPDLF RGVEVARRARAEVSGDGRQRWVAASVGPYGAFYRGRYGLS
 EVLETLEAGFTVAKEAAEPYRQKHPVFLAGDUGPGGRQEQ EAAAVRAVAQSVESAKREVVFVAGSVGPYGAYYRGEYTLS DVARI NAAGARLAREAAARADVAGSVAPAV SVHQRRRVA DSIKLDKTAVELANKTHKDPWVVGSIGPYGAHLHDGSEYP RSVALARQAGDEVSGDGRRRFVAASVGPYGAAYRGDYGLT ESESLLQKSVKLAVAERDRFWVAASIGSYGAYLADGSEYS QGVRLLRRSVELAFDDGRERWVAASVGPYGAAYRGRYGLS EGLRLARSVEA AGAGDALVAGSVGPYGAAYTGDYHLS KWDENRRAAQI ARHARDIJAWLGVVGPLAQPVQVMSV ETAELLRRSVELAREAAARAHAGGVTGPLYSEYRGRYGLS EADGLIQKSVQIASEARDEFWVAASVGPYGAFYRGDYSLS EAEKFIRDAVKVAQKTGKHNYVAGTVGSYSAYYRGDYELS ESGEDRKAVDYAKDRNRKPLIAGSCGPYGACLHDCDNIS LLEPLNRSALRMAKEVAKEHPVAGNISNTNDFDDPEDPAS EVSALNRDLVQLSRAVGTNALLAGDMTTTGQPVTPGDDNA LLEKLNREALRIIAKKVADTTPEGVAGNI SNSNIWKQGDQE QLAAMNKKALALAREVARATGTLFAGNICNSTYNRDDKES ESYNLVKKSVVLAKQGDAKPLIAGSVGPYGAYLHDGSEYN SGAEINTAACKLAREVALEQDALVAGGDSQ TPSYLSGCT MVYDLNRDGARLAQKDGRRRFVAGALGPTNRTAPGFRAVT EALALIARSVELARAERDAFGVAAGVGPYGAAYTGDYDLD NALKLIANSVYLAQEARDWPLIAGSVGPYGACLCDGSEYT GRHNINEAACLLAREVANEGDALIAGGMSQTPTYAEGGS KGPELADQAALAREAVQNALIAGSLPPVLGSYRPDLFKP EAEKFIRDAVKVAKETGKYNYVAGTI GSYGAYYRGDYNLS KNKQNSAACDIAREDEGDALVCGGUSPTPGYDKGOGKEA KWEAVNEAACDLAQEVAQQGDALVAGSICQTSLY TQHRD EGRQLA QLARHAADTGPHPVRVAGSLPPLFGSYRPDLFQ VRAFNAQMAAVARKEAGDKHFVAGSVGPTGHMVRPLGNVG KIQEDNSTLVSYSREDENKAFVAGDITTSGQFVTADGEYT LCRTYLEAGAKDALKFQDQAEVYGSIVGMETTDPQDYLCVV ESRALLKRTVELAKQAQQEKWVAASVGPYGAYYRGNYGLS KMAEYNRQLAQLTVETCRQFDVAGVVAPLEDQAEPFGETP SEKSLKKAVLSAKKAVTSTQLI AGSI APDEDCYSPEMYPG EEFWQAWGAPEDAAHWRHRPLVAASIGPYGAMYRGGYGDS

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UniRef90-H1LVO3
UniRef90-B9E9X6 UniRef90-W4M719 UniRef90_W5WDS
UniRef90 J3AJ84 UniRef90_C8X542 UniRef90_A0A024PPL3 UniRef90-R4M117 UniRef90_UPI0003B4CBD1 UniRet90_W4MH50 UniRef90-10HNA3 UniRef90-C2EMY5 UniRef90-L9U8Q2 UniRef90 ${ }^{-}$W7ZID2 UniRef90_UPIO00463C567 UniRef90_UPI0003B45D8A UniRef90 C4L805 UniRef90-UPIooo38EF524 UniRef90-D4JC63 UniRef90_UPIOOO3721412 UniRef90-J7LH97 UniRefigo-O5FKC1 UniRef90-V3ZGT9 UniRef90-D3P3X9 UniRef90_UPIO003641E7D UniRef90-UPI000366A95F UniRef90-R5QNV7 UniRef90-H3APQ5 UniRef90-F4CJ93 UniRet90-BOWAH1 UniRef90-H5XN82 UniRef90_D1PMD8 UniRef90_M4E8R5
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UniRef9-UPIoooz8924E



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TAALEAFHRPRAEEALAAAGPDVLALETVPAPEABYAAAA ETRVKTLHRDQLQVFARKNVDFFIAEYFEHVDEARAWAVRA GEKVA QNYQELAEI TAEAGVDLIITEMMRDAVNAKLVIKA EDGLYRWHRERWQVLADSGADLMACETVPSLPEVRALRRLC

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LKES
VRGLG $\qquad$ PAWLSYSVV LEETPDVRAW FSFSCADGERDSDGTPLREVAAEDYGRGL LKDTPEASAWVAFSCKNGKETC GGDSVYEAAKALDSNPQ AKKTGL ANATG EAAARAD奇A A A A
 LKE FVPAWLSYTVAGGRTRAGGTDEEAFGLAAEADEI AIGBPVAVTMCIGPEGDMRGVTPGECAVKLVKAGA ALSTGLPVWI GYSAMMSDDGKSVQTWHWKELVEAV／SPLGG LDETPGVRAW VSLTCRDDSRISDGTPLLREVAAEAFAGGS UKAACPHAFVQISFTALPGGYTRDGFFAEDLVRAVAESGV TADTGV PVWLSYTGEGGRTRAGQDLGAAFALAAGHDHV MAKTGM APVACTTRMGDMGDESGVKPGDAAVRMAKAGA TKKKCSDAFITASFAVMPDGYSSEGYQYKALEAEVTNSGV AKRTGLPVWLGYSTAGKEDGQVRLLYYDVSLADALQELSA LQEEFPAA EAYMS

MKKQGL
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DEALA AS LLPGLQSCR LAEHPGAQAWIITFSAK LK

AKASGDAA


TKRYGRGLPAV1 MSPD
LGDDARP W SF
LEGTGTSAWL

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VK
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 IAVGVNCCESPADVDRAVPLAAEVSGKPVVVYPNSGERWD
 LVVGMNCFRGPHTMQPYIVDIRKNVDGYVEEHPTFFNLPD DMI GLNCATGPAEMSEHLRHLSRHARIPVSVMPN WA GVGVNCCPVPQAVAALRILGEETGLPLSAYPNSGETWD DII GLNCMNDPQRMYPHIQEMRAAFDGYLAAQPVAFRCTD VAAVGLNCTAPEHVPALVAAAQARTRLPDVVYPNSGEQWD VFAVGANCFKPF LAATAAI DKMKEFTKKAIII YPNDGGVYD


 SAI LIFNCSQPNAVHDAVAEIQRQGKADPVGVYANAFPAQS D $V V G V N C R F G P E T S D Q T L R L M K Q G L S P H L M A Q P L G F H T P D$
 LVAVGVNCVPPRHVPS LVRAVASAAGDPAVAYPNSGEGWD
 DVVGLNCGRGPATDTPGI KDAK LDKCKGPLACDPVTYRTTE
 $!V A G G V N C S S P T V C E K V L S Q L V N L T G L D L V A Y P N S G E G W D$

 V VAVGFNCDPDRLATAAVATLAAHTSKPMVVYPNSGEDYD AAMGVNCTLGPQGCLAVLRELRVHTAVPLTVQPNAGLPRR | $L A$ |  |
| :--- | :--- |
| $V$ | $V G V N C N C A P A D V T P A D A C A R A V T D K P V V V Y P N S G E S W D$ | $D A I G I N C S D G P A E L D P F A Q R L C R P A G T P V V F V K P N A G$

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

 LALGUNCSSPLLYNQALTELKN AGKALI TYPNSGEVYD VFADGINCDSPDLVAPALKEIGKYTFKPLVLYPNDGASYD $L A D G V N C\|A P Q C V T A L L Q D\| N K N N D I I P L I V Y P N S G E K Y T$ LVGMNCFRGPDTMQPFLERIRHHVDGYVAGLPVPYRTKD
 DACGFNCFSGPYHLGLQYSKTLDDKDKT I SMMPNSGYPSM DVVGLNCFRGPQTMLPDLKKIREAVKCHVAGLPDPYRTTD



 DGVGINCNFDPDTVLAGVREMKRITGPLGYRTPDANKHGF VFAIGINCVSPKLVDQALKEFAKYTSKPLVVYPNLGATYD
 DVVGVNCRFGPSTSLETLADMAKGLKAHLMVQALAFHTPD AAVLFNCSQPEVIGAA DVARSVIDQQAFPPQPKQATAND

 LIADGINCTGPPRFI HGLI SFFKKATSKPVLVYPNSGETY I AA YGVNCVQPDLV DPALEY LKEDATKPLVAYPNSGATYD AAFGLSCCDRPEKLYHHIEEIAPYAK DPLIVRPRAGEDFD $A V L L L N C N T D Q L T C K A D P I L K R Y W N R S W G V Y P N D G S K N P E$
$V L A L G V N C T A P Q H V A A L L D S A R P F T T K P L L A Y P N A G E R Y D$


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| UniRef90_UPI0003B6C62E | ADGHTHYDGTPELMADYACLARDLLGVRV |
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|  | WYERSCORFDESSDRWVEG |
|  | FHTPDCNRQGFWDMQRYAREAYIAGTRYI GGCCGFEPYH: |
| 90-09H2M3 |  |
| UniRei90-UPiooosid | AAGORWTGS SEGGGEAAAGWADGAVFVGGCCRTGPEHA |
| UniRei90-R7 |  |
| Unireit90-k2 | DDQGWLFENHPDSVESYMQA |
| UniRef90-A8LSK2 | V |
| Refi9-L9.59P7 | KGGFEPRVATRWEDAKYAREAYNL |
| Unire | AGSRRWTGTSEPEFGAAAVEWWAAGAVLVGGCCRTGPEHI |
| UniRetato-e | VDGRTFYESAPEYFAETAALVODGVSL G GCCGTTPAH: |
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|  | GGCSCHLYHNRYELAEWAKEANDLGVNY GGCCGASPAML |

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GLDP DR D DLDPA SYLRRWA ES WVEAGASVGVGCCGNAS H Y L


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 A A TMEWREDSFDTSPSTLAPWVSAGVRII GGCCRTTPA DI

 GSTQ T WKPKDKDTLVEHSKDWHDQGVKILGGCCRTRPNDI P TSKTWGEGSSENQFTSTQRWYEAGAQI I GGCCRTTPEDI


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 S A A LLE P RVCSRWD $\quad$ QQRYAREA YEMGVRYI

A A R GRWT GTEPEEFGRAAVGWYEAGAVLVGGCCRTGPEHV CST GWCGEKDV F DS Q CRTWWDSKGVKII GGCCRDT P E DI VD DM E P R T LT R WD CHRYAREA YDLGGVRYI GACCGFEPY HV ENHKANSTMFSEQAYLHHAQNWYEAGARRIGGCCGDGPS H I

 CGK GEPRVVATRWDDQKYAREAYNLGGRYIGGCCGFEPY HI GLDEELRE D L D P P G Y L A WA K D WRA R GA S LV G GCC G DG P E H I
 VD GR L QYK E NPSYF S QA LA QGLN Y GL S AESNQWGKSSGILAFDDFVPSIGDAGAFFFGGCCRTDPSY ATTKVWTHSHDEVVFSNEALKWHGGSGCKWIGGCCCTS

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EKI RESLS


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 I LV KD G GF GTQMTVHGDPLWSARFNA

MGRFKELLS
LHSK N IVV LD G GFAT Q L S CHGDVVLWS A R F LA
QE NYL I L H G A L G
MATKPKLDRLKA GETVIDCAEGYLDFEFERMGYGP FAPEVVVV
$M T \square S T N L L D R L D S G A V I V A E G F L F E L E R R G Y G S Y V P E V A L$ $M T N$ ALSNLLKTRWLMADGATGTNLGNMGSGDAPEMWNV $A$ S N L
$K K V T I L D G G M G R E L K R \square G Q P L W S A Q A L I$

 $M R P R R T L A E A L G A G P L V L D G G L S N Q L A A Q G C P L W T A R L L D$ Q I R E YLGK E H TLL LFD GAF GTYYTK YFRP EFPE YVVNV


 $A$
$A$





ARSRRVETTAEA
D V V L
D R PF F $F$

VK D L L E K



ERD DVVLDGGFATQLSCHGDVLWSARFLA


 $K P F K G L T S R K V I V I D G G F S T Q L A E H N D P L W T S R F N E$
 E K L K T Y L E A HKLI TD GAF G


FENY NNKIM

 $L L G L L S T G A V L M Q G P V G T M L A S E A Q D V P A A Y W N M$

## 

$G P V V L D G G L S T E L E A A G H D L W S A R L L R$
EKSLVILDGGMGRELARRGQPEWSALALS $R \ T L L D G G V G Q E I A K R G D P L W A T R V L L$ $M T L L D G G M G R Q L A R M G Q P E W S A L A L D$

F REY $\square$ KNN RVLVY GAFSTYYA E DGK C LVVPEMAN I

$K L L 1 L$
$A M$
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$Q$
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NSPEIVRRVHDEFIVAGADVVTNSYALVPFHVGEAFER NSPEVRRVHDEF:VAGADVVTTNSYALVPFHLGEQAFER DNDEAVYDAHYSYLAAGAQMI LTDTYQANLQAEEKAGHSK
 DARRLVSRVHA DARDVVRAIHRDYARAGATVHTANTFRTKRRQAGAAWAE EAPEYVTQVHRAFDAAGARVITTNSYAVVPFHDGEERFAR QNPGAITAAHREYFRAGAQVADTASYQASLPGLAADGLGR EHPGLVSEVHRDFTQAGATVATTNTYADHRDRLVDTDVAD $K N P E L V E Q V H L D Y D N A G A D M I I T S T Y O T S Y A S L H K Y Y D M D$
$D H P G M V G V H D E A A A G A T I A T A N T Y A T H H D R L E G T A L E G$ EAPETVSQVHQAYVRSGARVITTNSYALVVPFHIGAERFAA ENPEVIKQ1HGDNIEAGADIITTSNYQATPELLKREPSAP TDKEAT DDAHLDFLRAGADLVITNSYQASDGGFMEHLTKD DAPELVGALHRRYLDVGAEVIQTHTYGASRGRLARHGLAR
 ESPSEVQNVHQQY:ENGAQLIQTSTYQSSDHPSLQTEFNII TNPGAVLETHLDFLRAGADCI LTNTYQASIEGYMDFLNET DNKDRVIRVHKEYI DAGAKLI RTNTFASNTDNLDTEDDD ESPEDVRQVHVEF DAGADAI TTNSYALVPFHUGEERFAS TMGRRVTDIHKEYI NAGAKLI RTNTFAANTVNLEC NFD TNPNAVFRTH $T S P H L V R E V H L D Y L E A G A D V I V T A S Y Q A T V Q G F E A K G F S E$
$E N P D A L K Q T Y R D F M A G S D V V L A F T Y N A H R E K M R I I G K E E ~$ QHPNDVASVLRDFVAAGADVVMTITYQASFTSVTSNTGIT TDPSKV DD HSDYMKAGANLI RTNTFACNTDSYTDQSGSD ENPEVVGVHREFIEAGADVITTNSYALVPGHMGEERFRS AEPQEVTRDHQQYADAGAQULLTNTFQATAPALKRDHDES
ESPKHVEQAHRGFПEAGAE\| TTVNSYACVPFHDGEALYQQ DTPS VVRQVHEEF $A A G A D V I T T N S Y A L V P Y H Џ G E E R F A K$
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## E

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 TAA A G L V R TA A V T L L A R R A A D S T GVVAA S V A P V E D C Y R P D L V V P G
 EVIAA GWSLAAQRAA QENGARVFAD I GGDCAD TA EA DYLT





 ERIVEASCRLA QACAEPYGAYVFADI GPAPESRELSRA D Y E QV L L K S I D LA D Q A R G D R WI VG S I GPY GA S L G D Y G D DK

 EVVKANI KAAVVANARQAVKECGREVYYAAADIGPDPN DNDFD







EA ATLMT RSVQLAREGAPDGWVAASVGPYGAYLADGSEYT
$E G R A L A S T A G Q L A R A G P Q K V R V A G S L P P L F G S Y R P D L Y Q$ $R \square G E L R A D A \square R A A R D A H G F G L V A G A M G P L R A T Y R P D L D P D$ R GRE L A DLLS GRLLARRAAASA RVA GS L P P L F G S YR P D L L HFEELAA AQATAARDAHGSGRVAAALGPLIASYRPD DCPP E LLK S I DKA GWEDA K E CG DK A Y VAA D I G P I E T






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| UniRef90_R5KGU3 | S |
| UniRef90_UPI00046AD697 | A |
| UniRef90_E5A393 | I |
| UniRef90_UPI0003616F74 | A |
| UniRef90_D3TPQ2 | A |
| UniRef90_U4UBH3 | G |
| UniRef90_G5JU52 | K |
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| UniRef90_C3Y467 | L |
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| UniRef90_V4J7B0 | Q |
| UniRef90_A4EKV4 | H |
| UniRef90_R7R3X6 | R |
| UniRef90_F3BQ16 | E |


| S |
| :--- |
| A |
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| A |
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| F |
| Q |
| H |
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| E |

 ANTGAPDYAE\AQ M M G PSCDLILCETVASVTHAEADLRG
 AKDI T D WHRVRIDDACLDAGIDDALIIETIPCQMEAEALVDM GAYARSTPVETMKAWHVPRVDLLAADETIDCRAEAEMLVNL




HE AVEMF HEQAEGLKAGGADVLWVETDSAPE EFAAAS

2F9EF 962EA 25966

## 


 $\frac{L}{L} A V V Q D Y L K V L V E Q L S P F V D L W L G E T L S L I A E G E A V R T A$ AAVLRREHGWLADQLARAGVDLALVETMNTVREAVVATRA


 HDEAVAKFAEVARA DGPHVDLI CCETVVSVAQTRAVLEG

 VETMREWHDPR\|RALVEAGVDLLALETDPCKDEAEMLVEL PAAVRAADREQAAALVEGGVDVLVCETFAHADELAEAVEAA ENYCRQADLFLDDGVRHFLL E SSNLVEFHKERLEMCKDNRVDLIGLETMPNDNEIKGLIDEL QEDHVRELDALPDIETLADQVDFWLAETQSSLKEVEMVHNL GNRLQKWHRPRISAIVEAGVDALADETDPCRIEAEALLELL

A R $\qquad$



## D


 $P$ T QMVQ D Y L K V L V E G L A P Y V DVVWL GE T L S L I A E G D A VRA A
 Y R L A R D A Y REQAH ALL A A GVVACMLE FE EAV SAF GEMMVQA GCRA GAGGVILL
D P A RVQD
K EALVEEL VA DLRAFHRPRLQVLAEAGADVLAC

$$
\mathrm{M} \mid \mathrm{I} D
$$

 EPERAPEVARVLVEGLLA PHVDLWLAETSQSSIVREVAAAAAA HQEAAPVYAEIV Q LL DP QADLYLIDTVSSI EHARGALLG
 HK QCQQMY EE QV A WAK EA GV D FVI A E T I N WSDEMK DA L K A



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UniRef90-W7J3C7 UniRef90_W8SKB1 UniRef90_J9Z278 UniRef90_B5GUS6
UniRef90-X8GU29 UniRef90-F9S958 UniRef90-H2IM48 UniRef90-C3YKZ2 UniRef90_UPIO00302B6AC UniRef90_UPI00047C8217 UniRef90-A0A024K1T2 UniRef90_UPIO00371316B UniRef90-G5ZXE7 UniRef90-F3PBX2 UniRef90-C3YXS9 UniRef90-F6T886 UniRef90-Q28RZ7 UniRef90-C3XWR9 UniRef90_UPI000359D7B4 UniRef90_UPIO003B45A04 UniRef90_SOFT88 UniRef90-G6DMX5
UniRef90-H4F043 UniRef90-H4F043
UniRef90 W5YGF3 UniRef90-UPIO0021948DC UniRef90-A0A026WE74 UniRef90_UPIO003B67039 UniRef90_Q8KNI2 UniRef90_S4XMJ0
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UniRef90-W5JIQ4 UniRef90_R6K415 UniRef90-A9DBB3 UniRef90-R7N822 UniRef90-W5JPY0 UniRef90_B9H8B8
UniRef90_UPIO0041F3000 UniRef90-R9X8V1 UniRef90_UPIO003B2ED11 UniRef90-Q6W1U6
UniRef90 A0Z513 UniRef90-AOAPQ0 UniRef90-R7D315
UniRef90-R6YRE4 UniRef90-R6YRE4
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UniRef90_B8K630 UniRef90-B6BQ90 UniRef90-N6V7E6 UniRef90-S3BYK7 UniRef90-B7GG6P4 UniRef90 J9YYS4 UniRef90_G8ZW18
68F9EF

UniRef90_UPI0003C38C44

LIKENHDCTTLi ${ }^{170}$ VHFSVNQFGY 180
(

 MRDA DVPVVVTLAPMAGNTMMDGVGIVETCRELEARGA EAFALADMPWCGTMSFDTAGRTMMGLTSADMVKKVGKHQP LKGSTKPCYYAFTLSDEVTETLRSGELVTDAITALLEQQN LLPSDGKPFWVSFTLQDEETPRLRSGEPVADAI EAVAGMGV

 VRNSDLP AADCG | $V$ | $W$ | $A$ | $G$ |
| :--- | :--- | :--- | :--- | :--- |
| $V$ | P | V | $\mathrm{W} L$ | LK DQCPGAYA】SSYAVMGDRTRAGQPLADAFALAAEHEQV KKQTKPCYYAFSDTKGDSASIRSGESVKEAVKLVCQSNA

 LGAQSKPDWVSFTLLDETDGPAQSTESVGDAVRVAAQLGA ATEVGLDTVVSFTLDDNNPEALRSGESLSDAIETVIPFGV VRTVGGMPAWLSYTMDGTTTRAGQSLGEAFAVAAGVDEI VKEADMPGFVGLTICDDHSNRLRSGEALSDALDQLLPLGP VKGLSPQAECWVSFQVRPDGVRLDGTPLVEAAAWAAGEEA INKYGKGLPAVVCMTFHKDDRSVDGLSLLDSMRADEEAGA MKKA KMPIACSMRDGPMGDS NGVSVEECAVRMAKTGA CLGHGVPVWLAFSVDDRDGTRLRSGEGLGDVIAMAGE
VRKYAK GI PVVVSFNDKRGDDLDDGVLI QDAL RRDAEAGA


 LLEKNVPQMPVYVSFTLRDEMTLSDGTELKRAVAAISKFEQ L REFPHARAW LSFSCRDGQFMADGSKFQEVAVRCYRAED VAADRKPFWDSFTLADDEEPKLRSGERVDDAANWAASSGA VREHGL PAWVSFVCTGDARLLSGEDLAAAADAVRAAGA AVATGVEAWV S SFTAGPGADLLSPEDVGAAAREAAARGA

 TKKYTSKE FFISINPQTGSALSDGTSLTEVAQLFAE DNF AQAAGKPDWIAF





## UniRef90 R5KGU3 UniRef90_UPI00046AD697 UniRef90-E5A393 UniRef90_UPI0003616F74

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UniRef90 W7J3C7 UniRef90_W8SKB1
UniRef90_J9Z278
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UniRef90_X8GU29
UniRef90_F9S958
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UniRef90_F3PBX2
UniRef90_C3YXS9
UniRef90-F6T886
UniRef90_Q28RZ7
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UniRef90_S0FT88
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UniRef90_UPIO0021948DC UniRef90_A0A026WE74 UniRef90_UPI0003B67039 UniRef90_Q8KNI2 UniRef90_S4XMJ0
UniRef90_Q88J73 UniRef90_B0PF81 UniRef90_C8X6V8 UniRef90_UPI000468F9EF UniRef90_B9W8L8 UniRef90_M9RHX9 UniRef90_R1F7B8 UniRef90_UPI00037962EA UniRef90_UPI0004725966 UniRef90_D6WLX1
UniRef90_UPI0003644C59 UniRef90_C5E0N3
UniRef90_R9M951 UniRef90_K0KNI8
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UniRef90-B9H8B8
UniRef90_UPI00041F3000 UniRef90_R9X8V1
UniRef90_UPI0003B2ED11 UniRef90_Q6W1U6
UniRef90_A0Z513
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UniRef90_G8ZW18
UniRef90 UPI0003C



 DV A V G V N C T A P R L I E S L V D G I G R S T P I P I V V Y P N S G E S Y N ILAAL GI N C S S P L I Y K S L L Q K I A A DT E KP L V TY Y P N S G E I Y D


 F GFGAN CGVGAS DLLARTVLGGFAAADP TPDIDAKGNAAGPKY DAVGMNCGIGPAHMEKLQAGVGDSGTKYR\|ALPNA GYPRR $\square A G I F F N C S I P E V I E Q A L R D T N N V A F A N S F T P \square S S A H K A N$


 IA TGGVNCC AP PRDAAPAVARAASVTGRPVVVYPNS GEDWD DAVGLNCMSSVWHMDHLI RQDPDP GKPLLLMPNA GYPVV TGI MFNCSV PEVMDQAIIDTKQVMDYANNFAPDSSEHEA
 QA $V$ L F N C S Q P EVVMA A A LTTEA R L V I Q S L G QVVYANAFPPVVN K A V SV V C C S M P E T V M T K K I P II G C Y A N G F Q S V A L L E V G GTT
 $D G L M V N C S D P E A V S K A L P D P F G G Y A N G F T S D D A L K P G G T V$ VVAV GVNCVAPDVVGRALPVLREVTAKPDVAYSNS GDNYD
 A A ALL A N C S VP E VMPAAL D





 A AVLVNCTDPA GTERA LRRRLRAAGAYPNVEDRSGVPPATP
 SALLVNCSSQPESMGAALRSARQVLKQA LGVYANAF QAND D A V GL N C S C G P S H M R S L L R A LGGQRV K P V A AMPNA GYP S S

 V DALLFN CCSQ P EVVI EAA L R QSQGGFSHDRGGAYANAFPP QP








 LNKG I NCSSLSHTPA ILADDHA YLDPTLPMT DYPNS GE I Y D





 $D V V G M N C A T G P D L M D S K V R Y F A$ EHSTRTVVSCLPNAGLPRN
 LSVGL N C A L G AK D L R P HVVETLS QDA DAYVSAHPNA G

## 

 EAVLLN CSRP DLVGLN CYRGPEMTMK LLKKVRDKVSCHVAGLPVPYRTTE NALLFNCSK PEVMRAAVDTAAEVFKQGGHNYANAFEGEQ $\square A V G V N C C E A G E V E A A M E A A A H A C P G Q P L V A Y P N S$ GEGWD



## UniRef90 R5KGU3 UniRef90_UPI00046AD697 UniRef90_E5A393 UniRef90_UPI0003616F74 UniRef90_D3TPQ2

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UniRef90_R7R3X6 UniRef90_F3BQ16 UniRef90_S6JDL2 UniRef90_W7J3C7 UniRef90_W8SKB1 UniRef90_J9Z278 UniRef90_B5GUS6 UniRef90-X8GU29 UniRef90_F9S958 UniRef90_H2IM48
UniRef90
C3YKZ2 UniRef90_UPI000302B6AC UniRef90_UPI00047C8217 UniRef90_A0A024K1T2 UniRef90_UPI000371316B UniRef90_G5ZXE7 UniRef90_F3PBX2 UniRef90_C3YXS9 UniRef90_F6T886 UniRef90_Q28RZ7 UniRef90_C3XWR9 UniRef90_UPI000359D7B4 UniRef90_UPI0003B45A04 UniRef90_S0FT88 UniRef90_G6DMX5
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UniRef90_Q88J73 UniRef90-B0PF81 UniRef90_C8X6V8 UniRef90_UPI000468F9EF UniRef90_B9W8L8 UniRef90_M9RHX9 UniRef90_R1F7B8 UniRef90_UPI00037962EA UniRef90_UPI0004725966 UniRef90_D6WLX1 UniRef90_UPI0003644C59 UniRef90_C5E0N3 UniRef90_R9M951 UniRef90_K0KNI8 UniRef90-N8U339 UniRef90_R6K4I5 UniRef90_A9DBB3 UniRef90_R7N822 UniRef90-B9H8B8 UniRef90_UPI00041F3000 UniRef90_R9X8V1 UniRef90_UPI0003B2ED11 UniRef90_Q6W1U6
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UniRef90_R6YRE4 UniRef90_UPI0002F2ED03 UniRef90_UPI00037B7A83 UniRef90_Q9RA53 UniRef90_-I4EZ51 UniRef90_G719U6 UniRef90_X7EH42 UniRef90_UPI0004111AA8 UniRef90_UPI0002E8AAFE UniRef90_R6P5W6
UniRef90_B8K630 UniRef90_B6BQ90 UniRef90-N6V7E6 UniRef90-S3BYK7 UniRef90_B7G6P4 UniRef90_J9YYS4 UniRef90_G8ZW18
UniRef90_UPI0003C
$\square$ N R DT 250 YFTEKME 260 A $\square$ D
270
280 LNNRLTFTDNAEYFTEKMEEIAALDVG|IFGGCCGTTPEY\|

V
V
G

VDKGWL
 GK H Q N WT K A S S G S L L E N T

GTWT GA A REDAAAAARGWAKDWQQRGASMITTDSARQDIGPAAYAGFAETWAAHGAR
ME WT F DEVI SPK DYF NYCNRWLK K G $\quad$ V N I

$R G Y R T V F E G N A D Y F A R Q L A R D A G Q G V A M V$
$N D M L D E M R E D G Q G Y Y L Y A K R W H A D G A N V I$
$K$
A GCDC IPP GTS ARTDLGPEAYADFA
LRPTMQF
$V E D K D P R T A T R F E V$ HEFTRAAYNNLGTRY IV $N$ D N D P

|  |
| :---: |
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$$
\begin{array}{ll}
T & L \\
L & D \\
A & R \\
A & A \\
A & D \\
A & D
\end{array}
$$

THKK V S K MLQ E S A WA N S IA K W W N L N V A

$$
\begin{aligned}
& D A D K M R R D F T P D D Y A D H A M R W V D H G A T \\
& K E D E D R A D L G B D L D Y L D W A E C W R E Q G A T
\end{aligned}
$$

$$
A N T L T W R D G A E A G V G S W M A E W T R R G G A Q U
$$

VELGGWDDREKCEPVVTYVQK WLDLGGVTWV

$$
\begin{aligned}
& D T D Q S M R E \\
& D D H G T \\
& \text { D }
\end{aligned}
$$

$$
\begin{aligned}
& \text { EGGRV } Y \text { L } \\
& A T A R R W
\end{aligned}
$$

ATARRW
PNAFGEYDET

290
300
RR\||AAG|ISADHPVRKTETE


RLI KEAVQDY
KABKREVEKWR
KNLNQGLQR

KAI SNNLKP
RTLAETMGRTPPASKYSPDM
KALSElAKN
REVAEAVGRTPEAGRFSETM
RAMREALETRP
$R Q L S Q G L D T T P C P P R$
EALVQ
A ELKRSLK
A GVADLLRAERP
A ELAR RFKH
K Y L K ENL
A ELAAS
RLLADRLRENPVRR
K ALAD
AKLSQHFKG
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A QLHLHLRPQT
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A AVRRACSG

A HLA QRLRD
REIA A A VRT
RTLAESLGRTPPASKYSPDM
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AVTAKLLAG
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HMLADTLRK
R HLA A D TLA D
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RAI RSQVEQCR
HRLKQTLAG
AALRSRLAPRP
A ALRALADEAARRPAGPPR
ARLDE HLDACK
R
RRDARSAPGWP
AEIARRLK
QQVA QLI K
AEI A S RLR

AVLTE RTR

QE $\square$ CKVVD R
K Q
AELSA
KRI K K T I
RRISQ
RRLAAEDLK
DRIASKADFTQNRQ
QR I K QAVET $\square$ AEKS
R
RQDADADRAQTTASSTDTR
FKI A E
HNLA Y S L K G
EALAQ
LAI RKYVDGL
CAIA E ELD
AKMAA ACAGLRPLPAPSR
K A L A E
HSLAARLK G
RKVAEAVK G L A P K P R P E
RAI ADAVR
RAI A EAVAD $\square P P R Q R P$
ELLAKQLK
A A V A R HL R
ARIRAAL
AELARCLR
KALNDAVDSQKPHELK
QVLA E
REMSVA $\quad$ GGKKP $\square$ SMKYMPDM
HQLK LSLMPPAE
TALDASVAQSK
REMAVAL GRKPTSYK
AEVSAAVKKYNKVQE


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UniRef90-B8IIJ1
UniRef90-G4RFX2
UniRef90 LilQ40
UniRef90-UPIO0035F6148
UniRef90-A1KC77
UniRef90 K9XX73
UniRef90-A0A023XUN9
UniRef90-K1TBV1
UniRei90 - Pliooo375FAED
UniRef90 XoYJU3
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UniRef90-UPI000477CE67
UniRef90 W4XUY5
UniRef90-G1 XM96
UniRef90 Q11KQ1
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UniRef90
U5XZP5
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UniRef90-F4RLQ3

 KITLLDGGMGQELLRRSSRLATRLWSA DTLLDGGVATELQRAGDPWWATRALL KKVTILDGGMGRELKRПGQPLWSAQALI $K K L T V L D G G M G R E L K R M S Q P L W S A Q A L I$
$N G P F V G D G S V L L T L E K G Y G A W T P E A V I$ MKKQDEI DHALLRERTMVLDGGMGTMI QRHKLKGNNDILSL

RQP $\downarrow$ QEYLKRKVLVLDGGQGTELENRGUNVANPVWSS
LVERLNQGPVLCAEGYLFAMERRGYGAYVPEVVL AERTLVKCGGFSSQLARNGDPLWGSRFDC KQLTILDGGMGRELRRLGQPLWSAQALI ПT LDGGMSRELMRLNQPLWSARMLA NPVVLDGGLAATELQRAGLPYQPPLLAD保 LDNEEVVLI DGSMSLGLEEQGLDDLDPLLWLM EKNVYLFDGGFGTYYSQKYEESSNEVINL

MTKQEF QTLTEKILLLDGATGSNLMTLGMPVCTELWUM

SKGLLERLDAGEMIVLDGGMGRELHRIGQPEWSALALIM MVFALEKRGWGPWTPEATV ALFDAPLLLDGGLGTHLEAQGHDLWSARVLR
ELLSKLKDQUVIADGAMGTLLYAHGVDRCFESYNL
DLLDVLSQRVMVGDGAMGTQLQARGLEGCNEILNE
DLPTLLAQGPVTLDGSMSTPLEAWGEDTNSDLWLA AKKGILERLNSGEVVIGDGGFVFALEKRGYGPWTPEAAV MAQFRGALPQLQGELFLTDGGETLEGDADPDAAFVLL MADYRKSLPQLGGELFLTDGGUETTLEGLELPDFAAFDLL MSTKGLLERLHDGEFVICAEGYGFYFEREGYGPGVPMDVK

MDERAQLGELLQRQSFVVDGGLATQLERLGADLNNSLWSA KK R L D G GMGQEL LT RGMKPNGTLWSA AKKGULERDDSGEVVVGDGSFLITLEKRGYGLWTPEAIV MADSRSFEEAK R 1

MSKYRHDLPQLKGGMYLTDGGLATRAEARGHALSARLLL
KELMDRLAAGPLVAQGPTGSLLEAGTADVPAAFWNI MKKTQEIEA LARERUMVLDGGMGTMLQRHRLKGNNDULSU MKSYR RLQSGQCVVIDGATGTELERRGAKVWCATATE
 MYKYRDSUPINSTGLFLTDGGLETTLVFHHHLDLPEFALL


MAKYRHGDPQLKGGTF S DGGMETTMDFHDGDDLPHFASL NPNPTLAAALDRGPIVADGGLSTVLDQLGTPLWTGEVLV MTKYRRNLPQLEDEVFLMDGGIDETTLDFHGMELCFAAFDL KQVRI LDGGMGQELHAKGGTLWSASANL
 MAKY $\square N A L P Q L S G D \square F L T D G G \square E T T L I F H D G L D L P A A F D L$ MATYRHSLPQLEGGFFVTDGGMETTLQLPHFASFVMLASE MARYRHGLPQHGGGTFLTDGGMETTLIFHHGPHFAAFVLL MSQYRNRLPQLREDLFDTDGGLETTLVFHEGDDLPAAFHL MAKYRRSLPQMKGATFLSDGGMETTLIFHEGVELPAFASLA


FPPRLDGKFYLTEGGTETE LLYKWGFLLPEFALL MS LYRHRDPQLAGAAFVSDGGMETTLIYHHGRELPHFAAF MGKYHQNLPQLSNHLFLTDGGDETTLIFHNLPYFAAFDLL MAKYRDNLPQRHGGIFLTDGGMETTLIFHKGLELPAAFVL


#### Abstract

PGESPDLWAF $R Q R \| L A E \square G E K G P L I Y D G S K G T R D A E V G R E D V S E W L N D$ $P L \mathcal{F} D G P M G T R L L A R G L D L R V E E W S L$ LP QLA GRPMVTDGGLETDLIYHHDVDLPDFAAL MPKSKGLMERI RDETVI CAEGYIFAFERLGYGPFTPEVVV MTDHRDRLPQMSTPS ILILDGALGTLLEASASPLWSS IVDLL 


MSKRAD $\square$ F NGMEKSVIILDGG LGTTLES $\square$ NTP $\square$ WSAEA $\square S$ LLDGGTGEELIRRKMHDDRQIWSA
VLLDGGNGTTEAELDTGWSATLLV

UniRef90-A0A050GV77
UniRef90-J2AUV5
UniRef90-R4YZ19
UniRef90 W9HAA5
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UniRef90-X1HF97
UniRef90-J3BR37
UniRef90_UPIO00462A92B
UniRef90_D5BYS5
UniRet90-W8IFS
UniRef90 B8IIJ1
UniRef90-G4RFX2
UniRef90-L1IQ40
UniRef90_UPIO0035F6148
UniRef90 A1KC77
UniRef90 K9XX73
UniRef90-A0A023XUN9
UniRef90_K1TBV1
UniRef90_UPI000375FAED UniRef90_X0YJU3
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UniRef90 K5XZ5 UniRef90-A0A024GMC5 UniRef90-F4RLQ3 UniRef90-B3T2H



ER KTVVETVY ${ }^{50}$ KFMSSGSDMLLMTVTYQASFKATAENTED ${ }^{80}$ DEPSLVRDLHRDFILAGARVITLNNYTATPERLTRENVPE HEPELVRDLHLDFINAGAQVITANTYTATPQRLAKNNADA ESPQYVKMAHENFI DAGAEIVTVNSYACVPFHLGEELYAK ESPEFVYQAHDNFIVAGAEIIIANSYACVPFHLGQELYDQ TQPDVI YQUHKDYLLAGADII ETNTFSSTADAQADYGLEH K DRVIVKGMFDAFLDAGAEILDMTTTYQTSFKSVSENNLEE EHPEVVTQLHREFIRAGSDVVQAFTYYGHREK RLIGKEE TQPTAVVKTHLDFLRNGADIILTNTYQSSVEGFMKHKTRE EKPSAVQQVHEEFIKAGAQVITTNSYAVVPFHDGEQRFHA EDPAAVTQVHAAFYEAGADVATTASYQASFKGFEQAGFRA EKPSAVQQVHENFDQSGAEIDTTNSYAVVPFHDGDQRFDA DHPGLVSQVHRDFTTAGATI ATANTYATHRDRLADTPLKE EDQEKVDAVHQAYFEAGANVADTNSYQATDAGFEKDGIAT KNPQKV DDI HVEYI NAGVDAI KTNTFGAFFENFG A
 E

LASEDGRERTKNYYRRYLDILDTATWRANPDWGQKLNYTT SRPDQVRRAHRAMLDAGAQVVLASGYQVSSAATADRLLVE EKKNLVVDLHLSY IHSGADVI DTNTFSARRDRGIQNKVNE T LSA D G L R Q Y Y E A Y Q H G L G F V L D S P T WR A N P D W G V R L G Y D A LS D D A GF D T L H H Y FA R Y V K L L E A P T WRA N P D W G A K L G Y D A
 D D P A LI I K R T H A A F Y M A G S D L A A T S A S Y Q A T V A G G R M K P F A A

 LDSEA GRSHLR QYYEAYGFVLDSPTWRANPD WGAKLGY D D

A HPERAAE $\square$ HRAHRAAGAR ILLTQSFGANRRRLKPFGAED LAPQLVQQCHRDYDAAGSQVIQTNTFNGNRFRLEAHGLAD
 VD GEHGRELLLLRYYEAYVEILETPTWRASGDWGDRLLGSA DHPELVRQMYKDFVRAGSDVVQAFTYYGHRNKFKLVGRED HNPSRLADVHAQYI KAGAGCI ETATYQLCRETLLRSGDED D D R D A L K S Y Y R D Y L R IVVGF L L E S P T WR CS R D WGAK L TAREVL RDVYATYVDAWAHIIGTPTFRASYVEGAGRGGVE
$K D P E A \square V A B H L Y Q Q A G A Q \square I E T S T Y Q C S L D T F Q R A G Y \square D$ Q Y H T L L V DVVHS FMKA GSKYI T CNNY GVT PGVGGSESEVV


## UniRef90 G8ZUH3

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UniRef90 $881 / J 1$ UniRef90-G4RFX2 UniRef90-L11Q40 UniRef90_UPIo0035F6148 UniRef90-A1KC77 UniRef90-K9XX73 UniRef90-A0AO23XUN9 UniRef90-K1TBV1 UniRef90-UPIO00375FAED UniRef90-X0YJU3 UniRef90-E8R4×3 UniRef90-UPIO00477CE67 UniRef90 W4XUY5 UniRef90-G1XM96
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RFLDLLTMAIAEA RMSDAPRIAGAMGPLASYRPDVBPS
 RAGELAALAGKLARQAVKKSHDAGSLPPGFGSYRPDLFDP HGAQWAALAGRLAREVADAAKVAGSLPPVSGSYRPDLID RLEEDNHTLVSYSKEADGKALVAGDLTTTGKYDTVDGPYT LAVDLAKEALIDSNQKHESGLIAGSVGPYGAYYTGDYQLS HGQALADLAGRLGRQADGGRPVRLAGSLPPVFGSYRPDLF SSQKVNEAACDLAREDAQEGDALVAGGVCQSPSYDSCKS EGANLAAKAAKIARKASHAVQVAGALPPAFGSYRPDLFR RSVAVAREAVRVAVDKHTAHGVAASIGPYGAGYDGAYDLR QVHQUNTKAVQLAKAAQDKFVLGTLGGMRGSVQKLVTS RGHALASLAGRLAREVPHPVQVAGALPPDGGSYRADQFN R AARALIRESAAVAIKARDHNFVAGSVGPYGAYYRGDYALS
 LVEEINKSALRMAREVADETGTLMAGNLCNTGYNADDAER SGQKVNEAACDUARQVADEGDALVAGGVSQ TPSYDSCKS DEARAEFWADEDRRRGREWPLVAAS GGPYGATLHDGSEYR AEEAVNEWAGEVAKNKKNFPDVMMAGGLPPQNLTYEEDTR EAEELDEKGVKLCLQSRDKFWVLGSIGPYGAFLSYVDTMS LVEEI NKSALRMAREVADETGTLMAGNLCNTDYNADDAER ELADINRRAIAMSSTHSPIVLSGCTGPRGDGYSPDMMMS EVAVALRRSVTLAREAAQARFVAASVGPYGAAYRGDYGDS DAVELLSELRADYERPGAPIVISGAI GPRGDGYKA GNMD DYRSVNRAGADCALTCSRITGVPGSVGPCGDAWEDADKEE LLAYRMNKCSAGVARQTGLKRFVAGSLGPTNKTLSVSPSVE TNRMAIDLLHGLRAELQTPMVVSGCVGPRGDGYDPGKVMT EGLAAI NRRSVAYWERPGLPIVLNGVLGPRGDGYKAGSMT DQLASVNASARREFEMPGAPMV GCI GPYGDGYQVSEKLT KALEMMKDSVRTARNACQQFWVAGSI GPYGACKADMSEMT
 YRGCYGLS
EALQAANEGDRRAYERPEQP DVISGADGPRGDGYKAGVMS ANRLVREARDGWAADCAGRAWVAASIGPFGAAYQGEYGLT RELDLNTKATDLAFETAGSPMVTGCVGPRGDGYDPGAVMS HFKY NEQACLLATKAKDKKNVLIAGSLPSQSDTYVEDQR KYTAL AGMLAQKARMRKPNAKI CGSLPPLLESYRADRVME RSKALNTAARQSFETRHTPVVMSGCVGPRGDGYNPDTFMG EALHAANAGDRGRYEQPERPDVISGAGGPRGDGYKAGNMD KAlGGLLEARAAYETLETPVVINGNAGPRGDGYYKAGNMD RAAELNQDAVYLLTELLRAEYERPGAI GPRGDGYRAGGRMS DALAEVNRARRQHAEPDLPLVLNGVIGPRGDGYTAEATMS
RLTAVNIAAVELRWETPTTPIVLNGAIGPRGDGYKAGRMD ASVGCYGASLADGSE YTGDYDTG QHRVIRFLADMRAEYEGRVTDVYGCTGPRGDAYGSGGAIT DSVALLDALRATHQRAGTPMVISGAIGPRGDGYVADAGMS HAIALLEEIRDEYENDNTPMVISGCIGPRGDGYNPAELMN ALTAリNMRA】RFLWETSGLPCVINGAIGPRGDGYKAGNMD
 RVHEVNDMAGQVAREAGNDVPVAGSMGPSGKWLV TGEVT RLPRLNTMAGDLARRAGEGLPVVABMGPVGK
RI NRESVAMLARLRDDLDPLLVSGCVGPRGDGYVAGEEAS ELEKQNRLALKMAREVADETGTLMCGDLSNTWYEPGNEEA QMRKDCHAAMQLAVDNNNNASVALSLGPFGMCLLPSQEYS RDETFNREADKLMEELRREARISGNIGPRGDGYAPEAQLS AVRRLNSEAVAFLHEDHEPVFIAGVIGPYGDAYRPEDCLS
T A K Q $\square$ M H R A $\square S L A Q K A Q P P \square R \square C L S L G P F G A S L S P T Q E F E$



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| :---: | :---: |
| UniRef90 H5TEY9 | PEALASYRRLVQLQYNAC DVFLCETMAS円A |
| UniRef90-D9VC32 | DDELRAEHGWLALQLSRAGADLFLIETMNT |
| UniRef90-UPI000197AC2F | FETSLATYRELVALQasgcdifi cetms |
| UniRef90-U22 | EVASELFEA QDQYVDIWLAETVS |
| UniRef90 | QVEYVDLWIAETIGSLKELKCLQRV\| |
| UniRef90-H2ZQK5 | KVDYFY FA HiEELEICVEV |
| UniRef90-UPIO002C34F9A | FDEVEAYKEQAKGLLDGGVDL |
| UniRef90-J7S5F7 | YDYLSYFKPQLDNFFHNDNLDLIGFETIPNDHELRADLSW |
| UniRef90-F4J0X9 | GTKLKDFHRRRLQVLAESGADLIAFETI PNKIEAQAFADL |
|  | K EAG |
|  | agy gratralata |
| ef90 B4JBY1 | EQLQQWHTTRTDTCLLAGVDGLAVETLPCQLEALAVTEL |
| UniRef90-13D7T9 | GKDRFAEDAQPITDGLSPYVDLWLCETQSATIEPV |
| UniRef90-E8LVS8 | QRAKEIFTTLFEA QDSEVDI WIAETISSLEEF |
| UniRef90-10YMA9 | EEQLLMDFHRQRLQAVVGAPV |
| UniRef90-C8KZRO |  |
| $\begin{aligned} & \text { UniRef90_W7VFJ2 } \\ & \text { UniRe90_UPIOOO469436D } \end{aligned}$ | ADEGAPVYAEIAQ RII GPSCDLLICETVVSVTHAESVLRG |
| UniRef90-SoPF | KAGADLLACETMPDYTELCALLEL |
| UniRef90-C8N8 | D Y WLA ETQSSUAEVRA |
| UniRef90-UP10003B | - |
| UniRef90-UP10003B | RAVLSVLVTALAPHVDHWQAETLSATAEAELVADL |
|  |  |
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| UniRef90_UPIO0037EF9B8 | RPEDADRILDPLVAGLSPHVDLWLAETQSCIAEAEAARRA |
| UniRef90-H3BF72 | EVEVKNDFRKQLDVFVKKNVDFLI A EYFE HVEEAEWAVHV |
| UniRet90-F9T984 | QUFNLLYQA QDKYV |
| UniRet90-C3PEGO |  |
| UniRet90- V4PAO5 | YVDHWQAETGSATEEAELLVRDV |
| Uni | YAVIRDAYTEAALGMLDGGADA LVETCQDLDQLKA |
| UniRef90-FO, | HEEYVDFHAPR\\|EELVAGGVDCLAVETQPKLSEVRAILD |
|  | Etivk |
|  | PFQAQQY St GiF |
| UniRef90 UPIOOOSFOA56B |  |
| UniRef90-UPIoooz | ETEVKKVFQQQLEVFMKKNVDFLIAEYFEHVEEAVWAVEA |
|  | YGARMSQEEFIDFHLPR |
| 9DZ |  |
| UniRef90-UPI0003ADC31C | - |
| UniRet90 T1EZE |  |
| UniRef90-UPIOOO46FE609 | GDD NKNY |
| UniRef90 U9VWA1 | AAEAEQYHQDQUDSFRDTTADLVISAMTTTYPEEALGAVRA |
|  |  |
|  | GTDADMVTAFTLTSIDEAIGIIARA |
| UniRef90-G1WKA4 | GEEGTKADKEAESAVLESGVAGVLLETFCSLHDLEPAVTG |
| UniRee90-UP000331922D |  |
|  | GTAQRDRFREMAETLADAGVDLLLLEMMSDPDFINPATEA |
| UniRet90_A8TSY9 | AAEAQAYHGRQ AVFATAGADMVADTMNTPEA |
| UniRef90-UP10003B6F04C | VSEAEEYHREQUDILSRTEADLVSAFTMNYNEEA |
| UniRef90-J4XTC3 | FEDAYELFREMVTAGEEAGADLVITEETLTDLYEVKAAVLA |
| UniRet90 E9H6P7 | EEELIIQWHRPRLVALLEAGIVDYLAIETFPALLEAKAILQL |
| A1S2M1 |  |
|  | PQEAAA HGD |
| A0A050G |  |
| iRef90_J2AUV5 | DYAFQ ETFAGTEADMVAAFTLTDDEAIUARA |
| UniRef90-R4Y | VAALLAFHRERLDVLAAAQVDVWWFETVPDPDEVAALVAG |
| UniRef90- 66 B | NSNEDEKDFLDQATIINPYIDFFYLDVLSSGKEL DITAS |
| UniRef90-UPI00047DEAC2 | PEEAAAYHGRQПRTFGEAGVDMVTADTMTNANEADGVTRA |
| UniRef90_K3Wm | YNDGVHMYTVIGSALL PYVDVYLAETLSSSVAEAKMALEA |
| 俍et90 N6WWJ4 |  |
| eef90-х1H |  |
| UniRef90-J3BR37 |  |
| UniRef90-UPI000462A92B | AAEAEAYHSGQLAAFSEAGADMVTAFTLNSINEAVGVVRA |
| UniRef90-D5 |  |
| UniRef90-B8IIJ1 |  |
| UniRef90-G4RFX2 | VAEARDYHAFQVGIFAGTQVDMVSADTMNTVNEAVGI ALA |
| UniRef90-L1IQ40 |  |
| iRef90-UP100035F6 |  |
|  | DYHGEQTATLASTRCDLVTAFTLNYVDEAIGIVRA |
| UniRef90_K9XX | EAEAENYHSAQI KTFVESQVDLVTAMTMTYVEEAI GIITKA |
| UniRef90-A0AO23XUN9 | ATEAMDYHSSQUTSFAEAGADMVTAFTMNSVNEAIGVVRA |
| iRef90-K1TBV1 |  |
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| UniRef90 XoYJU3 | KEGFAEQARALDEGGVDFFHVETMADLDEAAAAVEG |
| UniRef |  |
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| UniRef90_W4XU | ITETKAIIKEQLEWAVDEGADYIVAET GHLGEAI LATEA |
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| niRe990 E7LX61 |  |
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| UniRef90 | YNQLEPLKNFHLDRLLWRKVDMVIFETIPNLLEALAVRSA |


| UniRef90_G8ZUH3UniRef90_H5TEY9UniRef90_D9VC32UniRef90_UPI000197AC2FUniRef90_U2ZYB7UniRef90_T2AN48UniRef90_H2ZQK5UniRef90_UPI0002C34F9AUniRef90_J7S5F7UniRef90_F4J0X9UniRef90_J9Z002UniRef90_A7HBZ7UniRef90_B4JBY1UniRef90_I3D7T9UniRef90_E8LVS8UniRef90_I0YMA9UniRef90_C8KZR0UniRef90_W7VFJ2UniRef90_UPI000469436DUniRef90_S0PF37UniRef90_C8N8Q6UniRef90_UPI0003B7364AUniRef90_UPI0003B79C8C |  |
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#### Abstract

   LLKRSTTAKFWVSFQCKDEDHLAHGESFA GAALADWQSRL         $L$ S QTE KASYYAFTGADTTSEPAQSGQSAREATTTRVCCEAGG  




ARSTGLP L WVGGS ARPGQAGRGGFEEGSESMLDDISLDGV AKSRGM PVVADSTVETNGRLPT GQPLQDAIAAVDAATG A $\quad$ S GAA L P C C V AK
L K QEAPD DP A WПSFSCKDEQHLCHGETLDSVVWVNKTPGL


 A G A V G V


UniRef90 K9XX73
UniRef90_A0A023XUN9
UniRef90_K1TBV1
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UniRef90_X0YJU3
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UniRef90_UPIO00477CE67
UniRef90_W4XUY5
UniRef90_G1XM96
UniRef90_Q11KQ1
UniRef90_A0A022GQR3
UniRef90_D3FFF0
UniRef90_E7LX61
UniRef90_K5XZP5
UniRef90-A0A024GMC5
UniRef90_F4RLQ3
UniRef90_B3T2H6

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UniRef90-H2ZQK5 UniRef90_H2ZQK5
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UniRef90 A7HBZ7 UniRef90-B4JBY1 UniRef90-B3D7T9 UniRef90_E8LVS8 UniRef90_-IOYMA9
UniRef90_C8KZR0 UniRef90-W7VFJ2 UniRef90-UPI000469436D UniRef90-SOPF37 UniRef90-C8N8Q6 UniRef90_UPI0003B7364A UniRef90_UPI0003B79C8C UniRef90-J9G455 UniRef90-W0FE37 UniRef90-UPI00037EF9B8 UniRef90-H3BF72 UniRef90_F9T984 UniRef90-C3PEG0 UniRef90-W4VMF8 UniRef90_V4PAQ5 UniRef90_UPIOO04645819 UniRef90-FOJZH2 UniRef90_T1SEU6 UniRef90-S6AEN2 UniRef90_UPI0003B31FDB UniRef90_UPIO003F0A56B UniRef90_UPIO002C69170 UniRef90_L8GXS8 UniRef90_W9DZ27 UniRef90-UPI0003ADC31C UniRef90-T1EZE1 UniRef90_UPI00046FE609 UniRef90_UPI0003F0E04F UniRef90-U9VWA1 UniRef90_K6WNR4 UniRef90_UPI00039DD191 UniRef90_G1WKA4 UniRef90_UPIO00331922D UniRef90_UPIO0046EB6F2 UniRef90-A8TSY9 UniRef90-LONK35 UniRef90_UPIO003B6F04C UniRef90-J4XTC3 UniRef90-E9H6P7 UniRef90-A1S2M1 UniRef90-FOSRN3 UniRef90_A0A050GV77 UniRef90-J2AUV5 UniRef90 R4YZI9 UniRef90-W9HAA5 UniRef90-B6BST6
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UniRef90-F4RLQ3
UniRef90_B3T2H6

UniRef90_B3T2H6


TLLGDNCVSFSDSPD\|LES\|HKELPDMPLIAYPNSGEVYD VV AVGIN CTPPRF DE GLVLEI EKVTSKPILVYPNSGESYD DVVGLNCYRGPDMTMKLLPSIREQVSCHVEEFPTHMYDED SAVGVNCGAPGAALGALAAWAKATLPVPFVAKPSPGLPGA

 SAMIVFNCSDPEQVMDKMGTE IGEDGVNANAFAPDEDAQHQAN $\begin{array}{ll}V V A V G V N C L P P Q L V D P L I K Q G L P T & K L L L A Y P N S G E E W D \\ Q A I L F N C C Q P E V I T E A L N D T R H Q A T H D Q U G A Y A N A F A P Q P\end{array}$ | QAI LFNCCQPEVITEALNDTRHQATHDQUGAYANAFAPQP |
| :--- |
| $E V V$ |




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

## TAVLFNCSQ PEVMAEAVT $\square$ DKAGSD $\square$ H $V G \square Y$ ANAFPPQR

## FAAGANCFKLAWTVDVVKNLRASKLPGVYPNSGAEYD

 S $\ V G V N C H F D P$PAYYMINCAHPDHFEAVLTPSNRRVQRDRGLRANASRKSH PAYYMINCAHPSHFDTVVRGSDPWTARIRGLRANASRMSH KLKSAGAAVGPLAADPVPYRTTKEEPTFFMLKDPMTNKFY SIVGVNCHFDPTUSLQTVKLMKERLKAHLMSQPDAYHTPD VAAVGVNCTSPQFIGGLLESVRGSVRKPLVVYPNSGEGWD


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

QAAG $\square$ MHTK THVVTPALAC LGRRFSKDKMAYPDSGFFKM AAYYMINCAHPTHFAEQLVAGQPWVSRIRGVRANASRCSH PVYYMVNCAHPTHFEDALNRGERWIERIGGVRANASDKSH A Y Y Y MINCAHPVHFNGALKSGEPWVRRIRALRANASEKSH
$K A \square G \square N C T P E R L I G P L L R S L D G V D H V P V I L Y P N R E E S F E$ A A YFMINCAHPSHLETVPQDAPWLARVKGFRA NASS LS H EAYFGINCAHPTHFHEALQAEEEWLSRIGFIRANASTMSH
 PAYYMINCAHPTHFEGALDHGSAWVKRISGIRANASTMSH
$V A L G V N C C A P Q D V A P A L D R G A M S T D L P L V A K P N L G G T W D$
 LG LIGACVSPDEELKE NDPFGFKANLWEDEEPGPQRNPN AYYMINCAHPAHFDGTLAVPDARVGRVRGDRANASRRSH
SGILFNCSQPEDDSKALRQTHDQGRNDRLLGAYANRILTQDP
 DA $\square G F N C G S$
PAYYMDNCAHPTHFAEALDHRASWTKRDRGLRANASRMSH RACFLI NCAHPTHFESAIATGETWVQRIHGIRANASVKSH AAYYMINCAHPTHFEQVLQEGGHWRERIRGLRANASKRSH PQYYMINCAHPDHFDASLDAGSAWVHRIGGIVRANASTKSH A YYMUGCTHPDHFEPALLTRDASWLARGRGVRA NASTKSH LVAVVGVNCLHPRYVEKILERMKVGSKLALVVYANKGEEWD AAWFGTNCAHPLEEFTPALADVGPWLERLRYVRPNAVRMED ATYYMINCAHPTHFDHVLDGAGDWRHRIRGLRANASCRSH PGYYMI NCAHPTHFVNVFTNSEAWLERIRGLRANASDKSH RACFLINCAHPTHFESALQAGEPWVERIHGVRANASAKSH

A A $\square G V N C V S C D D P Q R \square P \square M T A \square R A A A G T R V P D I A S P S \square P$ PDYFMVNCAHPGHIAPGLAGEGAWRSR\|VGLRANASERSH DVVGFNCTVGPVSIMPLLE
$R G I G I N C T K$ L ENVREVVRVYSRKEDVFLVLYPDGGLTYD AYYMVNCAHPDHFANALDE GEWRARILGVRANASRKSH L YYMINCAH PSHFEVAVSTGEPWTARVGGVRANASTKSH THYGISCVHPTTALQDLHVASARGAARLREVKANAPGQLV LLM GVNCVSFNQSALILKMLDHEHLDPGMPLLVYPNSGEIYN DGFGINCTSVVDEMGLACMKDEREERPFLVLYPNGGDEYD


## UniRef90 G8ZUH3

## UniRef90-H5TEY9

 UniRef90-D9VC32 UniRef90-UPI000197AC2F UniRef90 U2ZYB7 UniRef90-T2AN48UniRef90 H2ZQK5 UniRef90_UPI0002C34F9A UniRef90-J7S5F7 UniRef90-F4JOX9 UniRef90-J9Z002
UniRef90
A7HBZ7 UniRef90-B4JBY1 Uniref90-13DTT9 UniRef90-E8LVS8 UniRef90_10YMA9
UniRef90_C8KZR UniRef90_W7VFJ2 UniRef90-UPIO00469436D UniRef90-SOPF37 UniRef90-C8N8Q6 UniRef90-UP10003B7364A UniRef90-UP10003B79C8C UniRef90-J9G455 UniRef90_WOFE37 UniRef90-UPI00037EF9B8 UniRef90-H3BF72 UniRef90-F9T984 UniRef90-C3PEGO UniRef90-W4VMF8 UniRef90-V4PAQ5 UniRef90_UPIOOO4645819 UniRef90-FoJZH2 UniRet90-T1SEU6 UniRef90-S6AEN2 UniRef90-UP10003B31FDB UniRef90_UPI0003F0A56B UniRef90-UPIOOO2C69170 UniRef90_L8GXS8 UniRef90-W9DZ27 UniRef90-UPIO003ADC31C UniRef90-T1EZE1 UniRef90-UPIO0046FE609 UniRef90-UPI0003FOE04F UniRef90-U9VWA1 UniRef90-K6WNR4 UniRef90-UPI00039DD191 UniRef90-G1WKA4 UniRef90-UPIo00331922D UniRef90-UPIO0046EB6F2 UniRet90-A8TSY9 UniRef90-LONK35 UniRef90-UP10003B6F04C UniRef90-J4XTC3 UniRef90-E9H6P7 UniRef90-A1S2M1 UniRef90-FOSRN3 UniRef90-A0A050GV77 UniRef90-J2AUV5 UniRef90-R4YZ19 UniRef90_W9HAA5 UniRef90-B6BST6 UniRef90-UPIO0047DEAC2 UniRef90-K3WM45 UniRef90_N6WWJ4 UniRef90-X1HF97 UniRef90-J3BR37 UniRef90_UPI000462A92B UniRef90-D5BYS5 UniRef90-W8IFSO
UniRef90- $881 / 1 / 1$ UniRef90-B8IIJ1
UniRef90 K9XX73
UniRef90-A0A023XUN9
UniRef90-K1TBV1
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UniRef90-XOYJU3
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UniRef90_K5XZP5
UniRef90-A0A024GMC5
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UniRef9O_Взтан6


TVKK DWNRDMVMTWEEVVDRYDKAGAR VGGC CRTSPKDT ADRKEWVENTDEDFVSYVEKWMDAGVSLLGGCCRTTPTTI PNCGCLDTCNRFEMAEFTKQCMDDNVNFIGDCCGADPHHV AERGEWTG TGLNATSFVPQWLQLGARIGGGCCRVYPDDI GLDEVRKDLDPQSYLA WAQKWTAQGATIVGGCCGI GREFI ESMQTMRELSPQDYLNYCQQWYRLGATTI GGCCGLGPEHI AAARDWKGSSVQNFGCSARQWADSGASVIGGCCRTTPEH| KDDEVRPDLDPQAY DTWAQKWVDCGATVGGGCGDGLEH: GALKDRRDFTPENYADHMMGWVDAGATVVGGCCEVSPAH GLDEDRTDLTPTAY DDWAKHWCAAGADVGGGCCGVGPE ADAE $\square R A D G T P Q G Y A A F A R A W A A E G A T I L G G C C G \square G P E H I$
P $\square$ SKRWTDHGP $\square$ NWSELVPTWYEAGACLIGGCCRTSPDD HAEEARDDFGPQEYLRAARHWQAAGAS IIGGCCGVGPET甘 FHTPDCSQQGF DDLPEF
DTDQAMRDLTPQDYLEYSKAWFESGATITGGCCGTGPEHT CTAHDWQPADAMSLPEAALQLRAAGVSVLGGCCRVGPAEI
SDAE $\square R S D \square E E G Y T R F A R A W Q R A G A T \square G G C C G \square G P E H \square$
PSVKKWVYPPEAADFGQAGAAARQCRKD
AELNDAVALDSGDPAELGAQYARLQTNVMGGCCGTDQRHT AELNECSELDVGNPAQLGREYADLQLNVMGGCCGTDHRHV THDADTFYCSREDTKRFGSTCKEMGI QFVGVCCGNRPFYT CSKQEPRVTTRWDIQKYAREAYNDGIRYIGGCCGFEPYHD AAAQQWTPADASDDITRDRAALRQ

TRWDLQKYAREAYNLGVRYI GGCCGFEPYHU
NDGSWDPSKSTAQWHVNVPKWVTAGAKWI GGCCTTTHH
DNYGVKSSSTWGKNGEFVKKFKDDGAT LGGGCCEDRPSH SHDTDDFYCSREDDKRFGSTCKEMGIQFVGVCCGNRPFYT AEDDESETGDEGNPRDGGERFYRGHLTVLGGCCGTNHRHT QELDESETLDAGDPADLGRRYRQLDQLRVLGGCCGTDHRHV
QDGCPHWDEDVEGVARASVQWVADGARLVGTCCGFTP $\square A T$
 AELDRATELDAGDVELGALYRDRARVLGGCCGTDHRHI AELDEATEXDDGDPVDLARRYSDLRMRVLGGCCGTDHRHV

DEPSRQDEKCNNNDSKLAKEWLSTHPNVLGGCCFYHPPDT AELNDATTLDDGDPHQLGQQYASLGLNVLGGCCGTDHRHL A ELDNCSELYAGDPGDLAERYRQLGLRVEGGCCGTDVRHV GRRRAWVGPRRFSSGQLAREWVAAGARVVGGCCRVRPIDVIV HVVGAVSDGSSSAGHRPLEAWLDLGARLIGGCCGTGTFQL AELDGSTDLDDGDPVELALQYRDMRARLGGGCCGTDHRHI

D
AELDESETLDAGDPVDLGQRYRQLMVR VGGCCGTDHRHV AELDESETLDSGDPADLGRRYLSLGMRILGGCCGTDHRHV AELDESTELDGNPQELGEQYCALRLTVLGGCCGTDHRHV A ELLDESTELDIGNPQELGEQYCALRLTVLGGCCGTDHRHV ADLDGASDLDSGDPQDLGHRYATLNLNVLGGCCGTDHRH AEEKRWMPGTDDEYCRMAEMWRSMGANMI GGCCRTSVDT CKKGHLEDGDPLELGRQMGEVARRHMDVLGGCCGTDERHL AELDEAEELDDGNPIELAVQYRQLNLNVLGGCCGTDDRHV AELDESEVLDSGDPADLGRRYVALRMQLGGGCCGTDHRHA EGAAVVYDWTPEAAGLWAQEARRLGARULGGCCGTE

PPPPDRPAPTP DEVAEQVLDWWRAGADGTGLCCGGNATHL EEGDAATELDEGDPVALARAPLLPRLALIGGCCGTDARHV
VNTKTWSDENGMAEVEKWCRLLQWGSIIDGGCCKTTPEHT AELDNSDVLDPGDPVELAQDYMRLNLSVFGGCCGTDHRHI AELDEADTLDAGDPVDLGERYLGLQMSVLGGCCGTDHRHI ALDHAESDPPEVFGESMHQLGIDFGVSILGGCCGTDAKHL PKEKTWHRPTNDDWETTVKKFVDNGARIIGGCCRTSPKDI RVRGVWKTGDREKRGEWATRLAGWGGVVVGGCCRCSAEQ ANRDTPDASDWDTYRDFAR WIIEMGATIIGGCCGDDPEYI AERRCWQWARQLMNDAQQASLHWPGV VVGGCCKTGPTH|

| UniRef90_G8ZUH3 | $\mathrm{A} \mathrm{D}\|\mathrm{~V}\| \mathrm{S} \square \mathrm{~A}\|\mathrm{~V}\| \mathrm{K} \mathrm{~K} \mathrm{Y}$ |
| :---: | :---: |
| UniRef90-H5TEY9 | QVLHDSL |
| UniRef90-D9VC32 | A A A Q V A |
| UniRef90-UPI000197AC2F | QVLA Q TL S |
| UniRef90-U2ZYB7 | K L L A |
| UniRef90-T2AN48 | K ALSD |
| UniRef90-H2ZQK5 | RAI A Q EV |
| UniRef90-UPI0002C34F9A |  |
| UniRef90-J7S5F7 |  |
| UniRef90-F4J0X9 |  |
| UniRef90_J9Z002 | REMAVAM G R K P $\square$ A Y K Y Y P D M |
| UniRef90_A7HBZ7 | RALAA GWRAPR |
| UniRef90-B4JBY1 | LEI RKY ${ }^{\text {L }}$ |
| UniRef90-I3D7T9 | KVLSENLK |
| UniRef90-E8LVS8 | Q ALS D |
| UniRef90-IOYMA9 | R SVA ECLAD |
| UniRef90-C8KZR0 | QALSANLK |
| UniRef90-W7VFJ2 | A ALTARL |
| UniRef90-UPI000469436D | A EI A R RLK |
| UniRef90-S0PF37 | NWLS Q |
| UniRef90-C8N8Q6 | A ALA A |
| UniRef90-UPI0003B7364A | K KIK K G ${ }^{\text {l }}$ N N F K |
| UniRef90-UPI0003B79C8C | A V L R S ELG |
| UniRef90_J9G455 |  |
| UniRef90-W0FE37 | Y ETINK A V Q QLK N R |
| UniRef90-UPI00037EF9B8 | A LLA A GLR G |
| UniRef90_H3BF72 |  |
| UniRef90-F9T984 | K T L S E WQS T LK |
| UniRef90-C3PEG0 | RQLRRA】S |
| UniRef90_W4VMF8 |  |
| UniRef90-V4PAQ5 | G A L H R A F K |
| UniRef90-UPIO004645819 |  |
| UniRef90-FOJZH2 |  |
| UniRef90-T1SEU6 |  |
| UniRef90-S6AEN2 | E Q ${ }^{\text {a }}$ K A CKPL |
| UniRef90_UPI0003B31FDB | E QLA LA C |
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| UniRef90_UPIO002C69170 | R A 1 A E ELAPLPPASEK |
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| UniRef90_UPI00046FE609 | N N 1 A Q |
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| UniRef90_U9VWA1 | EAlCKACS |
| UniRef90-K6WNR4 | A DMHS GLA S A R |
| UniRef90_UP100039DD191 | A A C C A C |
| UniRef90-G1WKA4 | CALS GALDH |
| UniRef90_UPIO00331922D |  |
| UniRef90-UPI00046EB6F2 |  |
| UniRef90-A8TSY9 | E Q ${ }_{\text {l }}$ A G Q C R K |
| UniRef90_LONK35 | SAICEAC |
| UniRef90_UPI0003B6F04C | R E I A R A $\square \mathrm{H}$ |
| UniRef90_J4XTC3 |  |
| UniRef90-E9H6P7 | T $\square_{\text {L }}$ |
| UniRef90-A1S2M1 | E QIA K A C $\square$ K P R |
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| UniRef90_A0A050GV77 | A EI GR A LT T A P PR |
| UniRef90_J2AUV5 | A AI CEAC |
| UniRef90-R4YZI9 | S RI A A Q La N L G P |
| UniRef90-W9HAA5 | ERI CLLT CA |
| UniRef90-B6BST6 | EAIA K |
| UniRef90-UPI00047DEAC2 | EQISAACR |
| UniRef90-K3WM45 | Q SIIHKRL |
| UniRef90-N6WWJ4 | E A I CKVV |
| UniRef90-X1HF97 |  |
| UniRef90_J3BR37 | A A 1 C E A C |
| UniRef90_UPI000462A92B | A AVCEAC |
| UniRef90-D5BYS5 | EAI CDACHAY |
| UniRef90-W8IFS9 | A A I CEAC |
| UniRef90_B8IIJ1 | E AI CEAC |
| UniRef90-G4RFX2 | A AI GEAVAP |
| UniRef90-L1IQ40 | RMLRQKL |
| UniRef90-UPI00035F6148 | GEI AKNI |
| UniRef90-A1KC77 | EAI CAAYDG |
| UniRef90_K9XX73 | E EICKA |
| UniRef90_A0A023XUN9 | A A ICAACVPLQAA |
| UniRef90-K1TBV1 | RRTADKVKGRKYEPKK $\square \mathrm{ERTV}$ |
| UniRef90_UPI000375FAED |  |
| UniRef90-X0YJU3 |  |
| UniRef90-E8R4X3 | A A $\square$ H T L C A D L P P R D P H S P |
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| UniRef90_W4XUY5 |  |
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| UniRef90-Q11KQ1 | EQIC |
| UniRef90_A0A022GQR3 | VAI C D A V |
| UniRef90-D3FFF0 | A ALARRLEAKA |
| UniRef90-E7LX61 | A EIASAVDKYS |
| UniRef90_K5XZP5 | A EL |
| UniRef90-A0A024GMC5 | A A 1 R |
| UniRef90-F4RLQ3 | R A L K |
| UniRef90_B3T2H6 | S K\|I |A |



MPSTAA LLE
E S R V L I LD G G L G T S LE D K Y T P L W S T HLLV

$N P$ LTP $\quad \square R$

|  | $T$ | $L$ | $D$ | $G$ |
| :--- | :--- | :--- | :--- | :--- |
| 1 | $E$ | $L$ | $D$ | $G$ |
| $P$ | $I$ | $L$ | $D$ | $G$ | $A M G$

$A G L$
$A$
$\square L M E G A L G E R L K R E Y S V E F D D K V N T$
 $K M L R P G L K I L D G G L S T Q L E N H H P K L W T A G L L A$ MSLK T DF DNTKLVLMEGALGERLYNDNDDGPVAMASL

$K R I L I L D G G L G T S L E Q N Y N P L W S S D L L V$ I I L M E G AVGERLLKREY Q I P N DEVV AL GDDLSAE QWLL
VLD G G LG T T LED IF H P L WS A K S I D



GMETDLIFNKGPGFAAFTLL

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


ENLMVLDGDSEAQLYQRLKPS\|IALYAV
$V Y \vee L D G G G G T A L Q D R Y T P L W S S H L L I$ $D \square Q L R$ F HKDMLVMSAP $\square$ DYA $\square$ TRQGVDLDNEFVSL

E E F S $\square$
VRLMDGSMSVQLKQFGYDENKPHWSF D $E$ DRFHRDMLV LDAPDDYRLA ERGVDVDAEFMS L D I QMRF GKDMLVLSTSFNHSFAQLGFDLATEEAYV

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UniRef90_X8A571 UniRef90_UPI00028A2E86 UniRef90 G0N7R1 UniRef90_Q5B7V2 UniRef90_E3QXE4 UniRef90 F7KCW3 UniRef90-F6XC87 UniRef90_G4ZCR5 UniRef90_H3GW73 UniRef90_A6VP77 UniRef90_K7KFA8 UniRef90_A0A023ZSC8 UniRef90 L2GCN6 UniRef90- X0RMG0 UniRef90_D7A3B8 UniRef90_S8C1F2 UniRef90 A1C5J4 UniRef90_W6M2Y0 UniRef90_X1GPN0 UniRef90 K0B246 UniRef90- F7SIQ1 UniRef90_UPI0001D2D36A UniRef90_M9RMU9 UniRef90 R1E164 UniRef90_UPI00046AAA92 UniRef90_F7VQY2 UniRef90 K0SU76 UniRef90 V2WS63 UniRef90_W7LRY3 UniRef90_S8B712
UniRef90 F7ZEJ6 UniRef90_E9EM19 UniRef90_G7WAX8 UniRef90 J1H980 UniRef90-F8NV22 UniRef90_B6K6T6 UniRef90_A0A016PN35
UniRef90 W3XL20 UniRef90_R5Z4K0 UniRef90_E8WRQ6 UniRef90_T0PB81 UniRef90 D0LTG7 UniRef90_W9CTV5 UniRef90_UPI0003FCA417 UniRef90 W4Z0M2 UniRef90_B6WQU0 UniRef90_Q28UF5 UniRef90-W0ED40
UniRef90 I0Q004
UniRef90-R5JU20
UniRef90_18X338
UniRef90_C7MMT6
UniRef90_R6V772 UniRef90_UPI00026267A2 UniRef90 F0JZD3 UniRef90 UPI00042C3DB5 UniRef90_E2C780 UniRef90_S3BP66 UniRef90 K6PRE5 UniRef90 C7N6G5 UniRef90-W2U1H4 UniRef90_B5JNF3 UniRef90 X1VNS6 UniRef90_A8XME5 UniRef90-J6IVA1

FTYNGHREKMRVI GKED DQSLMEKVYRSFLD\|GVNNITTNTYHFGS\|LDKNLSGQE S S P S TLLQSAHRAFYDAGADIL LTA TYQSSI EGFARTA AS H D GQDTLLACQKDFGNVPVDI I LTATYQLSIDDGANTRTAK EGRDALAA AYRSYLQAAEDLLMTNTRRANKDRRSEYRDKN EKPEEIMKAHLRFIKAGSDVVSTCSYQASVQGYMEHATKE
 ARHHMVVKAHDDFIKAGATMIVTNNYYVTPGVGFTPDEIR EKPSAVQQVHEDYIASSGDVI TTNSYAVVPFHDGERRFHA


D GQDTVLACQKDFGHVPVD I I LTATYQLSDHGFANTRTPE ESPEIVRDVHRAY DKSGAAVI TTNSYALVPFHIGEERFAA FTREALLDAI YR GYMQVVAGESVVGPTWRAHPE GLVRRQGFSAA



HS REAMES $\square$ FKEYVT $\square$ AEK $\square$ AT T P T R R A N L E HVMQSEF DE
 NDKRAARAL REYYTAFANI FDSDLTYRASRDWGALLGYSH D A R A K LRAAHDAYYAAGASVILSSSYQTSPGTDTAALAAS E GKEALRNDWNEYKD DAKRMATTPTRRANRDRDLGNNFSE SEEDKKLDDCHEAFQKAGANDI STATYQTSDNGFAADGKEG D S P DVIVVQAHLAA L RA GT RMLLSTATY QSSYMEFERA G
 ( S DP T T L L Q CQ S DFAAVPVD LLLTATYQVS $\square A G F A G T K T P K$ ESKKAL E E IGFNQYDSUSMKMLVTPTRRANKERVFQSKYNK Q N GE LL RK KQEEWLAA G $\square G G L C A P T F S H T F C P D H R E A L R E$

 QGEETLLDACQADFVTAGADVLLTATYQTSIEGFQRTRTAD

Y E P A A L E S $\square \mathrm{CRQ}$ Y $\square D \square G C G L L S T P T W R A S R E R \square E A A G Y A G$
K TEEGRER\ARYYDE\|AAALIETVTWMANPDRAVG】GYSP THPHT LIFATQKSFVDAGADILLTATYQTSYEGFKE DGDKE T GREAL RE YYRP F L R L A D $\square E V L D T P T W R A N T D W G E R L G Y E Q$

A A R H A L CE L WQ GY WQTAVR LATTPTRRANRERTRQAGEDE L L E S A T WVANRDRSAPLDGYGP $\square L R G \square Y K$ Q Y $\square$ D $\square$ VR K M I F T P T R R S NP E Q $\quad$ A Q A G L I G A Y RYQLPFLATTPTRRANKERI YMAGYNE A HRDTLA GLYK QY DD I A A S MLLMTPTRRANNDAVSAYRNRS SYREVLA GI YK QYI DIA T RMLMTPTRRANRISGSVYRNRD LEPEAVSAALRLQVAAGAPCLVAPTAGVTHARLAHQRAAD
 NELD KVYQAHWDYFTAGAELVITDTYQANVQVFTQVGYEQ

 TEPA A V I FEGDTVHDALSMEQLAGAACLVTNTEG』CKARLAHKRMEL

K S R G T I IE DA K Q E NEDNMYRLITE
VKKRELKRED S DMHLMEQVYRSFLDLGSKII TTNTYHFGSTLDRKLDKNE
 DEPETVVE AY QMEKMDGTPCFCTATECITNARLAHEKFEG
lupas 2
lupas_14
lupas 28
jnet
conf
sol25
sol0
j̣hmm
jpssm



EDLDRFNAEAVATARAAKERAVSQQTGPRGDGYA GMAT EVNGMMRSADDIATQKDSNGKIALSLGAYGADMTPHEHKS EALDAVNAHAVAEGDESVEVVVNGCVGPRFDHYDEGRRMT
पRDCMTLLAGПKAGWERTPTYTGGLMGCKGDAYTGEGA DD DQLAEINRAAVAEMVKAKMATAEVPIGPRADADAPSEQMS DCARLLMDIRSEYGEYSKRDFIGGLMGCKGDAYNAEEALS S DID DNVDLRSDKEANVDMY GGLMGCKGDAYTGEEALN VIPDNVRFLLQLRASALSPVYI GGLAGCRGDAYDGRYHFS ILRDNVAFLSELRDTASTPVYIGGLAGCRGDAYDGRYHLS RDINDAQAAKSLATAFTTQ HVLAEIGATGLPDDPNSKSS STITDNVDLRTMKETANVNMYIGGLMGCKGDAYTSERALN

SYTELMEKSVKLARELFDRCEDVAGCCGSSVVSECVDKY DTGAFLTRAVDVAERGLRFPGIALSLGPYGACMVPSTEYS HAQEIADSADEAAQECTPQHIVFGEIGPCGDPLDPESGAS

KCHELNYAAAQLVSDKPEEKFAAGSMGPTGKFLKPHGEYT ENFEKTCNLLVNLAKEYEGDRTFGSVGTLATFYHDDSEYS


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| UniRef90-UPIOOO28A2E8 | ARMFTE |
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| 900 | EQQLSDF |
| UniRet90-H3CW73 |  |
| Uni Reito ${ }^{\text {OAG }}$ |  |
| UniRefoco Ao |  |
| UniRe990-L2 |  |
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| UniReto -W6M2YO | a |
| Unireto | $\square$ |
| UniRei90-F7SIQ1 <br> UniRef90 UPI | R |
| UniRete-M9RMUS | S |
| Unireto-kilita | SAEAYQFH |
| Rei90-E7VOY2 | A |
|  |  |
| UniRefoto-W7LRY | Lad eawh |
| UniRef90-S88712 | DAERY |
| UniRef90-E9EM19 | QEALREWHRERMQLELASRLGY SMETIPRADEAAMRAA |
| Rei90-J11980 |  |
|  |  |
| UniRef90-B6K6T6 UniRef90 A0A016R | S |
| UniRef90 W3XL | GNYDDOHDSEES |
| Uniret90-E8WRa6 | VTEAREYHA WQAGKLIAETEDD |
| Rei90-00 | eymgrolia |
| Unirito W9CTV5 | SEOLSSWHEERVSVFCWEKIDYVAFETIPLLEEEDEGVRKS |
| Reiso-W4zoM |  |
| B6 | EEDARRFHAWQADLIADAGADFLYAGTMPTLPEALGMARA |
| Uniret90 O28U |  |
| Uniret90-1000 | LEEATDFHSWQAGLFKSAK |
| UniRe90-R5Ju20 | EAMOFHPTVRAMA |
| UniRef90_C7MMT6 | LTANRDEYLRAARALGDADADAFFVNGLTGAADARCALMG |
| Uniretion $\mathrm{RG} 6772{ }^{2}$ | Q |
| Unireetoo-Fouzo | ELE YLAFHLIP RLIRQILAEKPDLIA |
| Unifer90- Un $^{\text {UniReiso }}$ |  |
|  |  |
| Unireeigo-K6p |  |
| UniRefo-W2U1H4 |  |
| UniReefo- XJVNS6 |  |
|  |  |
| Unireioi_RIBR1 | ASRAQYQTAVKEGTEYPFDALFFSGFTSAYDAQCALMG |

lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm


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| O-UP100028A2E86 | KQSGL PAV NUAPMGENIMRDGVSIVDTCKELEQRGA |
| UniReego-Gol | LKK VK |
|  | , |
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| UniRef90- F6XC87 | LREYPTLKAWVSFSNKNGTHTCYGEPFEEVFKALGNYHQ\\| |
| UniRef90-G4ZCR5 | VQPL QKPVMVSFALNSTGQLRSGEDVVESVHS |
| UniRef90-H3GW73 | $V Q P$ QKPVMVSFALNSTGQLRSGESIVESVQS |
| UniRef90-A6V | PKDERPWV |
| UniRef90 K7KFA8 | LEEEDTK\PAWFSFGTGPMGD MHGVSPGECADRTVKAGA |
| UniRee90-AOAO23ZSC8 |  |
| L2G | GS |
| X0R |  |
| UniRet90_D7A3B8 |  |
| UniRef90-A1 | VTAALAEMPDQSVP |
| W6 |  |
| UniRet90-X1GPN0 | SRKSTDLPIFVTMTFNLHPRTLMGNSTAQCTEELEKEDV |
| UniRef90-KOB246 |  |
|  |  |
| UP10001D |  |
| M9 |  |
| UniRef90_R1E | DGTPVADAV |
| UniRet90 UPIoo | MSDTKNDPY ISSFTVRKDCLIDGSTVSHAVESTV |
| UniRef90-K0S | LAFFKNPRPLLVSFTLKQNGKIRSDESVVDAIPAIIKYCT |
| UniRet90 V2WS63 |  |
| UniRef90_W7LRY3 |  |
| UniRef90_S887 |  |
| UniRef90-F7ZEJ6 |  |
|  |  |
| UniRef90 G7WAX8 | MTMENTSLPYIISFMLKENGQLIDGTT HEAAAADDSRKP |
| 1 H 98 |  |
| 8N | MGMLG EWKPWW StVF GGHPPRGEVVRQPLTPSGIG |
| B6K676 | IDMKGYGKRCWITFTCPSVEADDRDG LESVMKGPLTYL |
| UniRef90-AOA016P |  |
| 527 |  |
| ef90 E8WRQ6 | KPYLVSFVVRQEGTLLDGTPLKDA |
| TOPB81 | LPQDGKPFWVSFTLEDEAPGCERSGERVADAVTALAAVGV |
|  |  |
| ef90-W9 | MGDVTGSKPFWITCVFPGEGNSLDGSSVQQUVQAMLGNKP |
| iRef90-UPI0003FC | - |
| UniRef90_W4Z | 1 KEYGKGVPAVITDATHFTPTTADGIEFNEALRRLVAEGA |
|  | AKAQGV PAVIAFKVEDDGRLPTGMTLEDAJAAQTEAYP |
| UniRef90-W0 |  |
| UniRef90-100 | DTDロPYIISFTl QRDGKL |
| iRef90_R5 | MAATGL PYI I SFMVRRDGRLMDGTFIHDAI DTVDKETT |
| UniRet90_18X338 | ATGL PY |
| UniRef90_C7M UniRef90 U6V | VRQVFA APPLASVDVNEEGLANDGTGLEDIVAVMA |
| UniRef90_UP100026267A2 | ARRSFQRDCV LDHLLAPDIRLGERLDGLLEMVQFG |
| UniRef90-FOJ |  |
| UniRef90_UPIOOO42C: |  |
| 20 | MKRHHPIRGWITFLC R RADGKLLDGNTLETVAMRCYDHQU |
| ef90_S3BP66 | 1 DPALARLPYWISCVFPGTNDTLDGTAVADAVSAMGGQRP |
| 900K6 |  |
| UniRef90-C7N | A |
| UniRef90-W2U1H4 | A |
| UniRef90-X1VNS6 |  |
| UniRef90-A8XME5 | FKI FSFTFKENAHLRHGEHIETILVKLKKSKQ |
| UniRef90-J6IVA1 | PVFASVTLGADGTFDGAPLENA |
| UniRet90_R7B5R1 | ARAVYDGPVFLS YALTDAGELPTHTHTLAEAIVALADEYGA |

lupas_21
lupas_14
lupas_28
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sol5
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jpssm


UniRef90_X8A571 UniRef90_UPI00028A2E86 UniRef90_G0N7R1 UniRef90_Q5B7V2
UniRef90 E3QXE4 UniRef90- F7KCW3 UniRef90_F6XC87
UniRef90_G4ZCR5 UniRef90_H3GW73 UniRef90_A6VP77
UniRef90_K7KFA8 UniRef90-A0A023ZSC8 UniRef90_L2GCN6 UniRef90-X0RMG0 UniRef90_D7A3B8
UniRef90 S8C1F2 UniRef90-A1C5J4 UniRef90_W6M2Y0 UniRef90_X1GPN0 UniRef90_K0B246 UniRef90-F7SIQ1 UniRef90_UPI0001D2D36A UniRef90_M9RMU9 UniRef90 R1E164 UniRef90_UPI00046AAA92 UniRef90-F7VQY2 UniRef90_V2WS63 UniRef90_W7LRY3 UniRef90_S8B712 UniRef90_F7ZEJ6
UniRef90_E9EM19 UniRef90_G7WAX8 UniRef90 J1H980 UniRef90_F8NV22 UniRef90_B6K6T6 UniRef90_A0A016PN35 UniRef90 W3XL20 UniRef90_R5Z4K0 UniRef90-E8WRQ6 UniRef90_T0PB81 UniRef90_D0LTG7 UniRef90_UPI0003FCA417 UniRef90_W4Z0M2 UniRef90_B6WQU0 UniRef90_Q28UF5 UniRef90-I0Q004 UniRef90_R5JU20
UniRef90_18X338
UniRef90_C7MMT6
UniRef90_R6V772 UniRef90-UPI00026267A2 UniRef90_F0JZD3 UniRef90_UPI00042C3DB5 UniRef90_E2C780 UniRef90_S3BP66 UniRef90_K6PRE5 UniRef90_C7N6G5 UniRef90-W2U1H4 UniRef90_B5JNF3
UniRef90- X1VNS6 UniRef90_A8XME5 UniRef90_J6IVA1 UniRef90_R7B5R1


D V GVNCHFDPK T CVETVS MMKAAVEKHYMVQPDAY HTPD WGI GI NCTKVWK LVQELIT DGIVAEAPALILYPDGTNGEV EAILFNCCQP
$G N Y L I G C T H A D H V T$ RAQGSVHWPANGRVTGLKANAPPSEL
 WG $\square G \square N C T K D H E K \square A S A M A A G R V S T V P T L V L Y P D G T N G E V$

SVVGVNCRFGPWTS LRTRRRLMKEGLRATGLKAHLMVQSEY









[^2]

| UniRef90_X8A571 |  |
| :---: | :---: |
| UniRef90_UPI00028A2E86 |  |
| UniRef90_G0N7R1 |  |
| UniRef90_Q5B7V2 |  |
| UniRef90_E3QXE4 |  |
| UniRef90_F7KCW3 |  |
| UniRef90_F6XC87 |  |
| UniRef90_G4ZCR5 |  |
| UniRef90_H3GW73 |  |
| UniRef90_A6VP77 |  |
| UniRef90_K7KFA8 |  |
| UniRef90_A0A023ZSC8 |  |
| UniRef90_L2GCN6 |  |
| UniRef90_X0RMG0 |  |
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| UniRef90_S8C1F2 |  |
| UniRef90_A1C5J4 |  |
| UniRef90-W6M2Y0 |  |
| UniRef90_X1GPN0 |  |
| UniRef90 K0B246 |  |
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| UniRef90_K0SU76 |  |
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| UniRef90_F7ZEJ6 |  |
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| UniRef90_G7WAX8 |  |
| UniRef90_J1H980 |  |
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| UniRef90_B6K6T6 |  |
| UniRef90_A0A016PN35 |  |
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| UniRef90_T0PB81 |  |
| UniRef90_D0LTG7 |  |
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| UniRef90_C7MMT6 |  |
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| UniRef90_UPI00026267A2 |  |
| UniRef90_F0JZD3 |  |
| UniRef90_UPI00042C3DB5 |  |
| UniRef90_E2C780 |  |
| UniRef90_S3BP66 |  |
| UniRef90_K6PRE5 |  |
| UniRef90_C7N6G5 |  |
| UniRef90_W2U1H4 |  |
| UniRef90_B5JNF3 |  |
| UniRef90_X1VNS6 |  |
| UniRef90_A8XME5 |  |
| UniRef90-J6IVA1 UniRef90_R7B5R1 |  |
|  |  |



VPGADQSMMDME Y SKFAMRWDDDGAS VGGCCGDPPDY L VAGALQPVMDMEIYSKFAMRWIDDGASIVGGCCGIPPEYL

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



SEGEVSYSQGDEDYVRYDPQMDDNGANLIGGCCGTNPDYD E ELDNSDDLLKTSDSISSACNMMELNPKGFGGCCGTDNTHI

C8

## C

| A |
| :--- |
| L |
|  |

## 

## 

$\begin{array}{r}\mathrm{Y} \\ 1 \\ \hline\end{array}$ PVSRTWRGSPEEFADQARALLRAGVPVLGQGGDQTPEHW
AHPYSPNGPTPREWAQAVAPYVRDGKLLLGGCCETTVEHLL
YNTTT QKWEMPDGAENQRRTSWEGAILVGGCCRAGSEDI Y NTTTKTWEKPHKD $\square$ ANADSWASQLANVI GGCCKASAVDI AVKKVWFKQSALSFEQYAYNYMKSGASAVGGCCTTVAKHV
 $\begin{array}{ll}G L D E I R A D L G P D D Y L G W A E R W R A V G A S L I & G G C C G D G P E H \\ D N S E E L D D G D P Q E L G Q Q D A S M K Q Q L P R V V G G C C G T D M R H\end{array}$
 PWTGERAFCSRGDVVKFTQRCAQLKDPYVGLCCGNAPHYT DNATS LLTSAPDDLAHGMLGLRELTAKIFGGCCGTDGRHL DNATEED GGNPEELGHVLADLARRFPRMLGGCCGTNMRHM

## K

| UniRef90 X8A571 UniRef90-UPI00028A2E86 | 290300 |
| :---: | :---: |
|  | A E L A |
|  | REVAEALIGKTVP A S K Y R E K M |
| UniRef90-G0N7R1 | Q D R S CVD |
| UniRef90-Q5B7V2 | A ALRRRID |
| UniRef90-E3QXE4 | A RLRAAVEGLS |
| UniRef90 F6XC87 A |  |
|  |  |
| UniRef90-G4ZCR5 | QR\A EVLS |
| UniRef90-H3GW73 | QRIT E IL S |
| UniRef90_A6VP77 |  |
|  |  |
| UniRef90-A0A023ZSC8 | R A TA E E LA P |
| UniRef90-L2GCN6 | A RLRATVEGGS |
| UniRef90-X0RMG0 |  |
| UniRef90-D7A3B8 | R A L A R R |
| UniRef90_S8C1F2 | YRLVQ |
| UniRef90-A1C5J4 | R K L A E Q LK S Q |
| UniRef90-W6M2Y0 |  |
| UniRef90-X1GPN0 | K R M A ELIK K |
| UniRef90-K0B246 E E I A K R L K |  |
| UniRef90-F7SIQ1 | Q ALA Q WRRSRP |
| UniRef90-UPI0001D2D36A E A L A R K L |  |
| UniRef90-M9RMU9 | EKTGRAL |
| UniRef90-R1E164 R A L S R A L R |  |
| UniRef90-UPI00046AAA92 E E I A S S SUniRef90-F7VOY2 |  |
|  |  |
| UniRef90-K0SU76 | NVLRNGLS K |
| UniRef90-V2WS63 D RLE K AL | D RLEKAL |
| UniRef90_W7LRY3 K K L R G C L |  |
| UniRef90-S8B712 K R L R E |  |
| UniRef90_F7ZEJ6 | S K A A |
| UniRef90-E9EM19 A R L R E I |  |
| UniRef90_G7WAX8 | NETAQRLG |
| UniRef90-J1H980 | RALLHQCAQ |
| UniRef90-F8NV22 R A V VD A L R |  |
| UniRef90-B6K6T6 | QLL RDLI T S E T A K S S Q |
| UniRef90-A0A016PN35 K K L R D RL |  |
| UniRef90-W3XL20 G D L K R E F A S Q |  |
| UniRef90-R5Z4K0 E E V V R A |  |
| UniRef90-E8WRQ6 | M A L A A R L A |
| UniRef90-T0PB81 Q L A S R L R |  |
| UniRef90-D0LTG7 E Q A A |  |
|  |  |
| UniRef90-UPI0003FCA417 A A L A A R L |  |
| UniRef90-W4ZOM2 R A M A E T L G R VT E A S K F S P D M |  |
| UniRef90_B6WQU0 E A I A R R F SLLRRSAT |  |
| UniRef90_Q28UF5 E AI A Q A A S |  |
| UniRef90-W0ED40 Q GLVKLL |  |
| UniRef90-10Q004 E K I A K L |  |
| UniRef90_R5JU20 R N F A E M L |  |
| UniRef90_18X338 N S F A E 1 L |  |
| UniRef90-C7MMT6 |  |
| UniRef90-R6V772 | E E\A |
| UniRef90-UPI00026267A2 R WL R |  |
| UniRef90-FOJZD3 |  |
| UniRef90-UPI00042C3DB5 R A I A E E L A P |  |
| UniRef90-E2C780 A L A R K Q V D D Y R $\square$ F S Q R P |  |
| UniRef90-S3BP66 S AL Q A A L |  |
| UniRef90-K6PRE5 E A L A GRlQ AVV P E P E G P |  |
| UniRef90-C7N6G5 G A L A A V C Y G L D A R R |  |
| UniRef90-W2U1H4 SEIIRS HVD HL |  |
| UniRef90-B5JNF3 QEMLE A F NKRS |  |
| UniRef90-X1VNS6 |  |
| UniRef90_A8XME5 |  |
| UniRef90-J6IVA1UniRef90-R7B5R1 |  |
|  |  |
| lupas_21 |  |
| lupas_14 |  |
| lupas_28 |  |
| jnet |  |
| conf 99999851577777777889 |  |
| sol25 B B B B B B |  |
| $\begin{array}{ll}\text { sol5 } \\ \text { sol0 } & \text { B } \\ \end{array}$ |  |
|  |  |
| jhmm |  |
| jpssm |  |


[^0]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm

[^1]:    lupas_21
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    lupas_28
    jnet
    cont
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^2]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol5
    jhmm
    jpssm

