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 DALEI PVMQSRTGGQLIKRKGYTLSYNADYKTPQWVAW A $\square \mathrm{DNCLVGCPTGGSDQTVI} \mathrm{\quad RDVYTLNNNSHTKFANWVAY}$
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 AS S Y KVT R HHFAL

D HVVKLGVPS QS S QLLCRD GYAA GYNY DTKVS DWV S Y $K L G V P$ GTS GTVLCRTGYLLAHDPARKTPDVVAE
 P HY TPSRGG QII RHTGFTLSYDADYK DPQWVAW DNCLHGCPTGAS GQQ VVNRA $\quad$ GYSLSNNADTKFADWVAY
 DNLAMGNPSNADSNYLMIKKGYTLSYNRSKGTANWVSW $\square L D \square E L P A S R E G D I I V R H S G Y T L S Y S E D H E Q P W W V A Y$

QHLTMGTPSE QS DQILCRDGYAVGYNYQTKNADWVAY DLE EDPARETSSVPE QILRRRTGYTVVSYNSNRRVPNWVAW
 GLAEQI LVRTGYTV S YNKDTKLPN WV S W $A \mathrm{Y} G \vee \mathrm{P}$ $N L E D$ $G N S G E L L C R K G F T V$

E DMEPGGPELLERNS QVI RHTGYTV SYNAETNDPNWVVA W NCVYDCPTGGLGQQEI ERS DYTLSNNATTKFADWVAY
VQ DLELP LYQGG
K YGFPEAGTTET
$\square D N C L V G C P T G G S S K T L T H G T L$
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 QHLDKGTP NDSDQILCRDGYAAGYNYQNKVSNWVSY
 E Y V K Y GVP S T T G DI L C R K G Y L L A H DP DR KTP T WVVE S S DNLVLGGNPS GAPTNYLI QRNQYAL SYHRDNG $\operatorname{CNANWV}$ S W LE DP R Y T S S R G GQQLI A H L G Y T V S Y D A D Y K T P Q WV A W HLKYGNPS QANNNYLLEEKPSYALSYNCSEGDPNWVSW D N M M L G NP S GATTNYL MVRTYYTLSYHRDRGTPNWVSW
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Y GFP
TKRNYSML

TE QVI RHK GYTVSYNSDYRVANWVAY $D L K K V G L P K N G \nabla A G E L V E H A A M I L N Y S E A H E Q A A W V A H$ DLEE I P GP L K K R Q E Q Hi R H T G Y T V S Y N E Q WK DP N W V A Y FHLP
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NYST
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 K Y G F P
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D EDACRKWARK
NLEDCRAWAR

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 $D V L K Y G N P$ GPDSDLICRKAYTLGYDRKLRHPAWTVE LG K D S LQ K N S Y A LCF H D F NVMMYS GV S K TP L WWV A E $H \square T \square G N P S N A P N N Y L I I K K Q Y A L S Y N R D K G l P N W V S W$ $\square N H S S F N Y$ LDP TSTTGQI I KHQYYSLSYSEPHEQAEWVAY $D N L A L G N P S G A P N N Y L I S R P Q Y V L S Y N R S R G \square A N W V S W$
 S GRSSA Y YIITHRNFSVEY DVVYHHP DWVCY

 DNLAMGNPSGAPNNYLMDK SAYTLSYNRRRGDANWV S W


 E HLTLLGNPSGAPTNYLLLKKPQYALSYHRDRGTPNWVVW YGFPDSGAEVRYYSNH MLSYDQAKRVPRWVME YGFP GPTADLRTHPSLTLSYDRRTRNPHWVAE HLLLGGNPSSAS DNYLMVKKQYALSYNRSHGTANWVAW MELLPK F S GGNHN Y FVTHYN F S F F Y D V V L L R H P R WV A F

 A VSRLEFPRLKGGRS $\quad$ VIVVRTNYAVEWDCDKKSQRWSCY L E N Y L QP S S T T GVVVVK HNYFT L S Y N E KYE QA E WV A Y
 LPSS TTGQIVKHKYYTLSYNEKFEQAEWVAY


K Y G F P GPIHDLQTREEFISCYNRQTQNPYWVLE Y GFP MKYGFPSLSNLK
MK G PSLS K S R T GLLV S G
$T$ R E S YVV
QLEFPKVKGGTSVVLVHHANYALEWDGEKKANRWTCY
 FDFDPTSTTS DVVYKRNTYYASYSEAHE QSEWVAY $E \square M K Y G F P S$ L $\quad$ V S R S Y S D F VL S Y D R R N RVP N WV F E D NMALGGNPDGASNAYLDTRSTYSLSYNNSTGIANWCSW
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LPS G EGEIVVRHTYY TALSF NSRLHRHPA WTA E


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LK Y G N P SEN Q G P DA DLTVVK K A YVAAAYDRR LR HPA WTAE LE $\square P \mathrm{~V}$ V LT R R QE QL I H H T GY T V S Y N K D L K L P N WV S Y HNYCMME Y NLP K R HA R WV A F $S Q \square M K Y G F P \quad G L D N V R \quad S Y D D F V L S Y D R R N R V P N W V F E$
 A EDHEI RNFTNYSVCYRETYEQAEWSA Y
Q $D N$ I R S F D D Y VL S Y D R R T R VA H WVF E


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 H T T A E S L S GAK GDRF LIEDQAVPERFRAK DK DYFRSG $K L T A E H T E G A N E R K G M R$ FQEDKEVPKPRAVDADYVRNG QLNSSWLGRQRTEDWNADLS LDPSGWDLIS $\quad$ PS SYKGSG HLEVQDLGSTSRGDFAVDTSLPS GWYRIVAT HLTDPNGGDRSKSVFKEDESI PRQFRAFLKDYFRSG PLSKGYMASNRTDAWDYDPDI DPQYQANLS KGYPAAG KLTPQSNRIDKREDNFHEETRI PEMHRALLSDYRGSG QL NS SWLGSARQDDFRADTTLPTGCYRVQS SSYTSSG ELNKSWLGEARSNKFRPDDTLPEGWYRVT PNDYTRSG ELKKEDYTNHKRPFFDEDPKIK TKSANYRNYKKSG RLSPSWKGDKRNDNFRPDPELPSGWY AARTSDYTNTG LI TQDT IQSRKHSNFMPDPS IPPGLFSADNSAYRGSGWSR HLTKENEVDRSKCEFKPDQSI HPFFRSDNTDYKGSG SADEYTCQRHTRRSWSWDPFVPSQYEVTQSAFRG H DT PQNNADRKHSTFAEDTSIPAQFRAKLADYFRSG HFTAQNNASRRNSVFHEDDTVPPMFRAKLADYARSG
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 HLTDDNRGSDRQDDFRADNTLPTGWYQVQAT SYSGSG HLSKDK $\square$ ANRKHCKFKPDPSI PVLFTATNRDY LGSGWSR HITPASNADRKHSVFVEDTSIPEPFRAKDKDYFRSG ELNQSWLGNARQDNFTPDPTLPKQWR DK K S DYKGSG HLTAESVAKNDKCDFKQDESIHPFFRSQNTDYRRSGSGSG
 SFDD DTSETKRTDAWKWDPMI PQRYQSTEESMFRNSG
 ELKKNSHSNLERPYFGDDPEVKTG
 EII DATNNTSWQGDPFQEDPNI PQAYRTTLSADYRGSG HLYPASQK $\square$ KREDSFHEEDKVSSQHRALLSDYRGSG HI TPESMADRKNSFFREDEVI PEKFRGKLSDYFRSG HI T PESEGDRKNSQFVEDESI PEMFRAKLKDYFRSG QLNGETDSDRKFCDFKEDDTVHSYHRAANADYKGSG HLTSAHVRGRQQCDFKEDETI HPYFRATNWDFKRSG HLTPKSKADRKNSKFMEDENIPESFRARLKDYFRSG YLDSDDVKTTNYDRFEQDPVVKK TESADWRNYKKSG HI TAESIAKNEKCDFKVDESI HPYFQSQNSDYRRSG HLSSAWKGSRYTGNF\|PDQTLPTSFF QAKHSDYTSTG QLFKSNMMKN TDRYKSDNNQYPVDP LLPKTGWFSYWRTG QL NTSWLGSARQDDFRADTTLPSGCYRVTS ELKKQHLS KNEFERPYFEIDKKVGSVSADWRNYKKSG ELKKEHLSANDKRPFFEEDRKVKS SSADWRNYKNSG HLTASEAGDRGKSTFVEDPSIPVMFRAKLSDYFRSG TLEGKERVAERTDRFREDKKVSSG SAKPSDY $\square K S G$ QL NKSWLGTARSNDFRADTTLPKGWYQVKS S S O Y NGSG HLTPRRAKGARANNFHADPNLPPNERAELSDYVRSG TLTQEKKNARRTNNFTEDKNISTG SAKLSDYKASG HI TPQSDGDRKHSVFVEDGAVPDKYRAKLKDYFRSG HLTKQS $\mathrm{T}_{\mathrm{G}} \mathrm{G}$ RKKSIFKEDESI PVKFRNKLRDYFRSG
 EVDAAWLGSKRQDNFRPDGALPAGFYQVT PNDYRGSG $L L T A A H T K G K H K R N F Q P D P E V Y K G V Q V T T F D Y V R S G$
$H$
$H$ HLTKETVKDRSKCEFFEDNSI HPYFRSKNSDYKNSG YVTKESVNSPRTDYFKDDFEI DPPFRASSFDYNHSG QLYSSNCQQNVKR WRPDPKLPAGYAFSYDHYVRSG HI TAASGESREGDRFVEDHDVPEKFRARLNDYRGSG IL RASDDITS HLTPEEAGDRTKSAF DEDES IPDSFRARLQDYFRSG ELKKSDLS KNEFERPYFEIDNKVKTISADWRNYKNSG ELTRKETKGKRSNRFDTDPQVR G G L DATNTDYAHSG KAYDVTAADNRTDAWGDDPQVPAEYRTTKTDYSG
H T TKEH MMKNDKCDFTPDESI HPFFRSQNSDYKGSG HLDAAMMSTPRRGEFHTDPRI APGEQSELEDYVRSG ELSAEDFSN R R DFERPFFI EDPKVKTHSADWRNYKNSG SLS YQQLEKKRSNDFRPDPAI STGGSASLSDYKASG HMTPDSVRDRAKSDFKPDESVHPFFRSLNSDYKGSG QLNQSWLGSARQDDFRADTTLPSGCYRVTS

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 Y DRGHMAPNATRYGRDA QLETEYMSNIVVPQPERNRRVWQ Y DRGHMTPSADRTSSQNNSATEFLMTNDLPQAPDNNQGPWA F DRGHNCPSADRTNTADNSATFLMTNMIPQAPRNNQQTWA $Y$ D RGHQVVPAADAK WSQAMDSTFVVLSNMCPQVVGEFNRDYWA

 Y D R GHMAA Y SHGHLAP
Y D R GHLVA
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Y DRGHLCPAADRKYSMANYQTFYMTNMQPQYHKFNEGLWV Y D R GHL C P A GDRRFAQAYNETFYTSNDTPQKNDFNA GVWN
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 Y DRGHMAPNGDMSTKSSQADSFSLANMVPQAPKNNQQVWR Y DRGHQAPAADAKFSQAMNDTFYLCNDCPQVGGFNRDYWA Y DRGHQVPAADCKFSQAMDDTFFGTNMCPQVQGFNRDYWS F DRGHLAAAANHKWSQAMEETFYLSNDAPQNPHLNQNAWN Y DHGHLCPSADRLYSEANYQTFFLTNMSPQLNAFNAGVWE Y D R GHLLAAAAHRHSQTAMGDTFYLSNDSPQVGEFNRDAWN Y DRGHQAAAANAKFSQAMDDTFYLTNMSPQVGGFNRDYWA
 F DRGHMAAAGNHKRHQKHCDT F DRGHLCPSDDRDSTADNRTTH YDHGHMICPSADRLNSEANYQTFYITNMQPQMRGFNRYVWQ F D R GHMTPSADRTNT $\square$ ANNSTE LMTNMDPQAPDNNQGVWA Y DRGHLCPAGDRRFTQAFDETFLTSNVTPQNHDFNSGIWN Y DRGHLLCPAGDRRFTEAFEETFLLTSNITPQNHEFNSGUWN
 Y DRGH MAPSADRKD DATNSATELMTNIVPQTPDNNRDVWE FDRGHMAPAGDMT TPQGMDESFSSLANMVPQNSENNRNLWE Y D R GHQVPAADRWSQAAMDETFFLSNMCPQVGEFNRDYWA YDRGHQAPAADAKYSQAMDETFLLDNDSPQVGDFNRDYWS
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 Y D R GH L A P A G T DD F SKHS Q Q S F L M S N DA P QL P GF N R G GWK Y D H G H L C P S A D RLLA S Q A N K Q T F F ll S N M Q P QV H N F N D G FDRGHQVPAADARWSQAMDETFFLSNMCPQVQGFNRDYWA Y DRGHLVPAGDRKATKAAYDT
Y D R GHMVPAADAKFSQAMNE Y DRGHLCPAGDRMSFEAYNE YDKGHMAPAADMKWSQAMKESFYYSNISPQNHNFNAGMWN

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FDRGHMAPSADRTNT $\square A N N S T F L M T N D I P Q A P D N N Q G \square W A$

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 ELEKQVR W WAKRH


 | F |
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| $\mathrm{A} K$ |
| V |
| K |
| Y | GEIFVVTGGVLEEGLDDEIG G

G
G HFEDFCRRLTMR
HFEDFCRLTK $\qquad$ YPSVRVVGP Y PKKYEMGSPPSV

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HL E D F CRRLT
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 SLEDYERQLMS
RFEMYCRDLAKR



 HFEDFCRRLTQR KVFSVTGPGY YQSIRVITGPLYKNDGKLPNSDKKH

 ELEDYCRNLLN GN HLERYVRKLAKRS S N V Y Y $V$ V $\mathrm{C} T$
 N RGTI WV A GPVKKGLP TIGRYNNV NLENFSRAQL ANGA RLLEMYCREETM HLEDFCRRLTHR YPSVRIVTGPLYLPKRDADGKWPPNV NL EDYSRDLVEQGKTDYIIAGTWG


 RLEKKVRQWVKRDK
TLE QK TRY WAAK



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 ELEAQVRKYAKSLDF LIVVTGPVLEKQPEEYFTGQSKV HFEDFCRRLTQR YPSVRVVTGPLYLPRRYEMI GNPPNV
 ELEEYGRDLVYQYDHS LHVFAGGYGS ELEQMCRSWARKW GEIHIVCGPDN PQEKGRSRIGNRSIV NLEQY $\mathrm{K}^{2}$ TQVTAGKEAYVIMGSYG NAGTIDNGRII KLEKHVRKLTKK YSNVYVCTGPLY LP KKEADGKNYNTV GLEQYVRDWANV YQSLYIVTGPIWDGEESYDGGNGV $T M E R W V R N Q D T F G S P Q T L E V V R G G T I D K P E Q U S K K D K D E F$
$H$
$H$ HLLEDFVRRLTAR

 RLEQKVRYWAQK NLEEKI RDWA!ADSA KLEEDVKAWMDAADR RLEKHVRKLTKV EI E S GVRRLT L R E RLESGVRRLWAK DLEETAVVRWAKK HLERYVRKWTK LTK

## D H

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180
190
200
( AV P S H L Y K VI LARRSDVVLK DGAFVI PN NPVGFDHQQLQEFQ



 A V P HF Y
 LVPAVTWKVILVLDDK N A GVVAAVIMPNKQG!KSDPWQQYL AV P S GYWKVTYINDSPEKSSYAAFIMEQNTPLSGNFCQYQ
 VVPARTWKVIIVLERPGNTRTIAVDMPNENGDSQDWQQFK LIPAVTWKVIVVRVAANTRVIGIDWMPNDQGIRSNAWEQYR AVPTHFAKVVLASRPGSAYNGAFVLPNASDPDETPMEKYEL AKPKYYYKALAMK Q GGSYYT DGFKMKN EAPADRDYMQYT $T V P A R T W K V I V V L D R P G T R V I A D D D P N T Q G V R N N D W R N Y R$


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 AV P THFYKVIV GES A D HK LIH MESYMPNQVISNDTPISVFQ IV P K Y F Y I A L L SVK N GVYRALG DWS P HATGSKTEY $V V P K Y Y W M A M V V K K G D A Y H G L A F W L E H K E W D M K T P M M T V A$ IVPRYFFMACLVMKNSMGYRALGFWAEQQSNEDDEPVSDYV AVPNYFYKIVAKGKGDNLNVIAFLGFHK ESKKELLS SFVV AV PN Y F YK L L LD N N S R GEYKV IA F L VP H E AS Q K S L D S F V $T V P$ A R C WK V I V V S R $\square$ S A NT R V I A I D T P N Q Q G $\square$ S T D WG T F R AVPKYFYKIVIAKSGKEHKA IAFLV PNEDSDKSDYDFV

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 $G V P T H F A K V V L A S R P T S P A T G A F A L P N A D I P D E A P L E G G V$ TVPGFFYKVVYAP GARQM $\operatorname{CBAFVLP\quad NTQEKRQLRDYA~}$

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 AV P E R F F K V V L $\quad$ S P F V

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SDПFKYGTPDSG
 SNLIADHH YTH TTGAVVOHALSYDGRRTPSWVAE $\square A Y G N P S L G Q A N L Y L C R D G Y V V G Y N Y Q T K E A E W V A F$ SMNKGSYPLCFNGFAVLYSGVSRTP TWVSE HDEDGVPAAASDDHLMIIKPQYALSYNRSRNVANWVSW FDYLP TSTTNSVYNH
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AKE $\square$ MKFGFPSC
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 Y D R GHMVPAA DC $\square$ S QA A MDE TF LL T N I AP QV G GFN R H Y WA Y D R GHMAPAADMKWNEAMEES FLLSNDCP QTPELNR GRWK Y D R G H Q VP A A D AK WS QEAMD T F AL S NMCP QVGEFN R D Y WA YDRGHLAPAADFKYSQAMEESFYLSNVCPQLHDFNAGYWM Y D R GHMVPA A DAMS QTAMNETFGLSNDAPQVGEFNRHYWA Y D R GHQAPAGDAVTQEAMDETELLSNMAPQVGGFNREYWA F DRGHMAPSGDMATPSSQHESFSLANDVPQAPESNRCLWE FDHGHDCPNADRKYSKANEQTFYYLTMQPQYRRFNEGLWVV Y D R GHLLA PAA M G S K K S Q H E C F T GHMAPAADNKFSQAMDETEYLTNIVPQDIDNNGHFWN YERGH LCPAGDRRFSEAYNETFYTSN I SPQQGDFNGG GWN $\begin{array}{llll}Y & D R G H \\ Y & \text { R R G H Y A A SMD F S K S A D Q S F L L L }\end{array}$ F DRGHMVRSEERRTPDDNKATFLLLTNDLPQRHDLDAGPWL Y DKGH LCCPAA DRKGSDEYNETFFTSNDISPQNHKFNS G $\square W N$ F DRGHMTPSGDMPDRQAQEESFALSNIVPQRAELNRGRWA
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 RLEDYERTLANQGN ELHIISGVYGQK GTLAQGKV DLEQLVRTWAK

 EMEKVRNWATKNNY
YFEDWCRKLTNK K K
QLETYSRNLIK QGKY RMERYVRDQlRQND HFEDFCRRLTKV NLEDYSRQLTTVGNYPSVRIVTGPLYLPKRYEVIGNPPNV HFEQFARTLTNKYDNVRIMTGSNPNRYKVEYEVIGSPPNVIM
, $\stackrel{D}{\mathrm{D}} \mathrm{E}$
RLE QKTRRYWAKK
$H F E R T$

HFEDFARRLTKK $R G S I F V V T G V I F S G D A V Q Q I$ \begin{tabular}{l|lllllllll}
$N$ \& $L$ \& $E$ \& $E$ \& $Y$ \& $E$ \& $R$ \& $L$ \& $L$ \& $S N G N Y$ <br>
$G$ \& $I$ \& $E$ \& $S$ \& $S$ \& $V$ \& $R$ \& $K$ \& $M A$ \& $R$

 

$G K$ \& $L$ \& $Y$ \& $L$ \& $I$ \& $A$ \& $P$ <br>
$Y$ \& $E$ \& $G S$ \& $D$ \& $G$ <br>
$Y$ \& $Y$ \& $V$ \& $V$ \& $T$ \& $G$ \& $G V L$ <br>
$V$ \& $D$ \& $D$
\end{tabular}



 \begin{tabular}{l|lllllllll}
$Y$ \& $L$ \& $E$ \& $E$ \& $A$ \& $C$ \& $R$ \& $D$ \& $W A$ \& $S$ <br>
E \& L \& E \& S Y Y V \& $R$ \& $S$ \& $L$ \& $T$ \& $K$ \& $T$

 $\qquad$ N $N \square K T 11 G G$ 

K G G \& $V$ <br>
D P \& V <br>
Q \& <br>
\hline
\end{tabular} $N L E K Y V R Y R A R R A K \quad N L W T V T G P L Y$ LIPRNKNGKKY DHDV




 $K$ L E G K VR SWA G S S D HFED F CRRLTRRQ

| S F |
| :--- |
| D |

 Y L E D WCRRLLTS S S HFE E F CRRDLLTKK $\begin{array}{llllll}H & E & E & C & C & D L T\end{array}$ $G \vee E M A V R G L A R R E$


## Y

$\square$ HFE D F CRRRWTS Y YLE QYCRRLA MKY
$Y$ $\left.\begin{array}{l|llllll|llll}Y & L & E & D & W & C & R & R & L & T & G\end{array}\right)$


 LME $\square$ Y CRNLTAK
$R L E Q Q \square R S W A K R E G P L V I I T A G V L S E D L P T Q G K E D$


 QLEAKVR N N K C S




 | $D$ | $T$ | $Y$ | $V$ | $V$ |
| :--- | :--- | :--- | :--- | :--- |
| $R$ | $N$ | $V$ | $Y$ | $V$ |
|  | $C$ |  |  |  |

Y

## R

R L E D R E R A L A T R L GV
 $S L E S K V R \quad N N L C N D T L Y V V T G C Y F G N G Y T S T Y D G N N R V$
TMEKK L R R GEFNKNSK

RL E E Y TRNQTR V
RLE QKTRSWCKK
$R M E N Q L R K W A D K L S T$
$W$
WLE SYCRNLLTS


DLEQKI RRYAKME
R I $\quad$ I H CR G L L K
KLESTVVRFWAKSK
RLE MQTRKWAK R
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 FVPTELFKVVYLPSRDMAFAIVTQNVATN IVP TYFFMAI LTVKNGVYNAVGFWVKHENNKDNR LAKYA AVPTHFYKVVI GTSKY SRTDGAFVLPNAVIDDNTALSTFK TVPASTWKVVVVLDSNSTRVISVVVPNSQG\|KSQNWKTFR


 LVPTQ LFKALYDPASGEAGAYDSR NDESRDWRA

 AVPTHFYKLI VGENQEK』SCAAFVLPNEVIDNNTPLTQFQ
 PVVPKYYYMALLFKKKGDSFKADAFWAEHTDDKPSKT DKDYA IV P T A VF K A I Y I P K H G I IG A YY S $\quad$ PNND S Q QVK

 SVVPTHFFKVLLVVENDDGNYE SFVVIQNKQIDDNDPLKAKK
V P K Y F F S A A L M K Q D K WE Y K A I G F WF E H K I N S D R S L K P Y V AVPTHFYKVIVAESPLRGPVAAFVLPNDKISNETKLTDFE



 | $A$ | $V$ | $P$ | $H$ | $F$ | $F$ | $K$ | $V$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $D$ | $Q$ | $G R T$ | $P$ | $A$ | $V$ | $G$ | $G$ |
| $A$ | $F$ | $V$ | $L$ | $P$ | $N$ | $A$ | $M$ | $P$ |
| $P$ | $N$ | $E$ | $T$ | $K$ | $L$ | $T$ | $D$ | $F$ | TVVPAALWKVIVVR $\quad$ DDAQ TRVIDAVWMPNTNAVGDGKWS S YR

 A P K Q F F K VV L
 SVVPTHEAKVVLTSKPSSPSTGAFVLPNAAID DEAKLES F V V VVPARFFKVV AVPYTGTPRGDAFIVDN EA EQPS L K E L A A AV P T H F Y K I I I F A E D GK V G G N A A F V L P P N D R I AVPTHFFKLLLADNG K LYYA GAYVLPNEPIPQSAKLSEFE



 AVPTHLGKVI AVVPSS GSPVGVFVVPNAPDDSKHTLKEYQ




 AVPTHFFKVVVVENQKQELS LESYMPNQPDDDKTPDSVGQ IVVPNATYKAVYMPK T G LI P K DFYKIVLALLNNNSNYE IVAFIIDPNEKAQDTDDRNYV
 AV P THFFKVVVAETENAEFDLEAYVMPNAIDDATPLKSFLL AVPTHFFKVIIAKDSMKPVVGAFVLPNKPIADNFPLKNFA RVPS GYWKVVALAD GRATAFVFDQAAARRSDYCDAR LVP SHYFKAVYDANTGES GAYW AV P THYFKVI LRTRS GNSKA IGGFWLEHRNDYPEEFST DYC IV P GYFFSAALMKRNKWEYKAIGFWFKHENNQNPSURPYV AVPNYKYK L LMTKD A K K M I GF LMP HK E S D L P L Y K F V SVV THFGKVVMGSKDEGHRDAAFVLPNQA DPEQVPLPT FLL IV P Q Y F Y MALLAS K T T K T Y HALG』W S P HESGSKTEY SVVPTHFFK IIVGDNRKKKSNAVFQMPNEKDSKGTPDDEYK
 SVVPTHFAKVI LAA KAPGAFAAAFVLPNAPDPETQRLESSFI
 AVPTHLYKVVLAEKNDKDAMGCFVVPNKPDPREQSLKEHQ
 A V AVPTHFYKVILDPKKREYALGAFLMPNERDSDTTPLQVYN PVPTSTWKAVYLPSRQAVTVYVCK





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 NLESKVRSWASRADTCYVVTGCITKGS TKTARDNVGKRV NLENYLREQVAA GYEVYIIMGSYGTGGTGSNTDNNGHI
 DLEDLTLKYISYPDTGYNVTGTYGV QGYTTDKGGNRV ELEGLLRRYIVDHPETQLYVVTGPLLDDNGPVIGESGVNKI RLEEVVDDRFV PRFGRLQVITGPVFDDDFQGMLDRVGLV KLETKVR NNDCSDTLYVVTGAYFGGATTTTDGAGNUV GiESAVRNLAA ERGDLYVVTGPTFEGGGNVQALKGRV
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 RLEEVVIDHFVPRFGVVQVITGPVFERFLDNVANRVGGV FLEEDVRAAVLCGGHQDVIVVAGPIYGGSALWIGGKGATK NLENALRDSVKA GREAYVIAGGVFTNGVGLG
GVEMAVRDLA A DQVGELLIVTGPGYDAEID
NLESKVRSWANRADTCYVVTGCITKGS TRTARDNEGKHV
 DlEKSVRRLAEK RGDI YTITGPLFSG GTVRQLNGRV
KLEGDLRDWA LE K G D L V I G P V D

RFEGFVRHAA K V E S DVRKK A K R A

| $Y$ | $L$ | $E$ | $A$ | $F$ | $C$ | $R$ | $N$ | $L$ | $T$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $N$ | $I$ | $E$ |  |  |  |  |  |  |  |
| I | $E$ | $A$ | $V$ | $R$ | $D$ | $V$ | $V$ | $S$ | $S$ | $\qquad$ | $F$ | $L$ | $P$ | $N$ |
| :---: | :---: | :---: | :---: |
| $Y$ | $G$ |  |  |
| $G$ | $R$ |  |  | RFE GFVRHIAN

$K V E A A T R K Y A A R A$

DI ERSVRKLARK
EDKVRRYSGSAKSGELYVITGPLFTGGGTLQQLNGRV RL E D H V $R V E E A V R A M A V R D$ GEAYVVTGPMFHGGELQTQGGESRV
 H TE D F V R RLT S R
 GL E E QVVQT WTA S GTY D KVVYV AK G GTVLNELLVVNFNGTHH GL
 TLETKERKWAK, NIGGDVIVAGPLYTSADKQRDGETGV

 GI E S AVRRDIAESE TVYVVTGPAFLGS ELESLLKGRV



 RLEAVEVDYFTKLHR RVWVITGPVFSNPLNRLKSSWK
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 WSA

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A


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 AVPTHFFKALVVSESPERNQTYSFVLPNQRDDAAVPLSSSAA AV P D Y L WK A Y Y P K R G
 AVPKFYYKALARKVNGVFQTIGFKLEQKKYSNANGYMDCA FVVPTGFFKII Y AP K QE K K ALAAFWVPNKKVAPRKDGLY L
 TVVPTHYYKAVLIRYSKNGY DACAILLEHKGYGDNNNGKPYA $N V P S N V W K V A L V A R V T A A T R \square I A D V D T P N \square N T D N S D W T K Y \square$
 AI P Q Y CWKVLLRTKK GS QLAA A G Y WA ENSSTTT GNDK QY $\square$ SI PREYFKVVL NLLKTGDA IGF LMP NAT DTQP I SEYA AVVPT H F F K V I A K E T S A G R M Q T E A Y V $\operatorname{P}$ P N Q Q


## \section*{}

## R

 GVPRRYFKALLVW HGGRYHADAFLDPNRERDEGGFGDYA AVP THFFFKVVMMVES SGKP YME GYVLPNAADPKDLPDLRSF VVPAELWKVVVVLPEGDNTEVVAVIMPNDNGLSNDYTEYR


\section*{\section*{| E |
| :--- |
| T |
| L |} <br> A

F
T}

 $L V P T R R D F K I V V D T R T G R G A A Y V A D N E P D D D Y S$
LVPSAFYKVIVDLKARKS DAFLLAA NEKSDADLSSFA


















 E I P D A F Y K $\quad$ Y A A E T S S G I K M L A F
 PI P TH T WKVLLKK KK GQWVS\|GVKMPNVRPASGSKWDD Y T


 AVPKYYFKALCDRSTGAAYT DAFKFDQGNRYYSANYMDFA


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LKFGNPTPRPQLRELCYEAA RELCFDNSLEWCSTMMHSNWVAF GLEFPKVKGGTSTIVVHETNFCTEFDTSKKSQRWSCY CYDAFAVMHSGRSKTPVYVAE NCPDGCPS【KEGNVVIFERLYALSQNKKTQFADWVAY NGDKLLNYTHFSLVMSKKRRLAYYTVV SFAHCPQFFPPMAYTQRELCFSSALHSGQTKTPVFVAQ PKAPSSAELLCYDAFAVMHSGRSKTPLYVAE ARTRALCYDAFAVLHSGRSKTPLYVAE RNYSIEWDAKLKANRWTCY NFSLLWSAAKKHAVWVAF PSAQTFTRVLRNDGYLVGWSDFRVGALWASY FADCPQFFPQGGAAQRELCLSGFAYLHNGQTKTVVFVVE RDLCYDAFAILHNGNTRTPMFVAQ NLLFGNPSGAGTNFLINTGYYVESYNSTKLEPNWVSW
 $\begin{array}{rl}E \square A K Y G L P G V A & Q L K S R E S Y V L C Y D P R T R G A L W V V E ~\end{array}$ NFPWGDPRYRASTCTLYQNHYITGYSNTFHVPLFVGY FEQCPQFFANGKPPVRALCYDAFAVLHSGQSKTPVFVAQ TR FRNDGFMVGYSDLRGNPLWVSY SSTTRTTEICHTEYVLLASGVTKDPAYSAE AFDDCKDPFPTTSQAGRDLCFDSFA YYSPQDKKPMYTIE YP配ASG


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 D EQATRKYVMRSQ GAVQVYTGPMF PKRPRTDGDNQV K MEEK $\square R S$ L LTYYANDTMY V CKGGGTDDKSEQ LLGYTKNRF




 S $K$ L E K A TRRRYA L R A G $\begin{array}{llll}\mathrm{N} & \mathrm{L} & \mathrm{E} \text { K K } \mathrm{S} \text { R } \mathrm{S} \text { L T R R }\end{array}$ K L E D QV R R WGRS D K Y D E E V Y V V
 $R$ R $\operatorname{R}$ QDTRKY $T$ QRA Q GDVYVFTGPVYEGS
 QTIGGSN $R$ EKDTRHYASRAR GDVFI I TGPVYE VVQPDTVGDNHV



 RI E K DTRSSYA QRA Q GDVVIIDT GPVVFE A GAASVGGHNQV
 H I E E QV R QLA K Q H GEVYYVVTGPAFDS GTAPT IGTD KVV

K
 A $D \vee F, Y T G P \vee V D K S R G$


 ELLEDY I LDD N R RWK SRVTVFTGPVL RD GL E E QV Q Q WG A S C L Y D K K L Y IVTM G G TII D N L L I N F K G T P K G L




$\qquad$ DD P N | $P A$ | $F$ | $V$ | $S$ |
| :--- | :--- | :--- | :--- |
| $P L$ | $Y$ | $L$ | $P$ |
| $T$ | 1 | $D$ | $P$ |

 HLENAVRAYAKQ YGPVYVITGPLFDAHDTYQVIGKNDV

 WI EHGTRVLA QRD GEAYVVTGPAFI GPS L KQ I GA $R V E R R V R D M A D$ DEGELYVVTGPAFHLDRPIQTMGHD RVV K V $V$ E Q D TR H Y V K R A K

 \begin{tabular}{l}
$P$ <br>
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$P$ <br>
$G$ <br>
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$A$ \& <br>
\hline$L$ \& $F$ <br>
$L$ \& $Y$ <br>
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$F$
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$A C P K Y Y F M A I L A G K G D T H A D G F W V E H K E D W K K P T A D C A ~$
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 P1 PKYFFVAVLKKENQYTYSAFGYWFPHENEKGDKLGNHV RIPAEFWKVAVMVRDDGK乌SATAYLQTQKNMIDNEYKTYQ MIPKGYFKVITTIKNNK AVPETLFKVVYDATTHR AWVHWQANSPDTRAQA P SVPESLWKVVLVLDKPGQNSLAFALYLPNNVNWKDNFEFLG YVPSSTWKAVYSPSKNKASAYVCKNAQQH KVPTYUFKLVYDATTQRAWA AVPAYTWKAVY ATEPGAVGAAAFLCTN WQQNDEDYTGTV SVPTHLFKILLAEEDEEPPLLGSFIIPNKPVSDCPLRTFQ


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20 RUYTHFS1T 30 30 RALRSDAYLVGWSDLRANPLWTW CPQFFPGGKPRERELCFSGFAVLHNGSTKTPVFVAE
 LK YGLP S EYEMP

S SHRRDFDGY $\square C V Y D R R N R D P Y W V M E$ SEGLRFFKNFVLSFDSRTRNPRWVLE NRDVIGRYNDFEMSYDNRNRQPNWVLE IMEGNTYVEHENYAMEWNDHMKHSRWVAY SAATRTALWSAE
SSLSKTALWSAE $G \square P R T P G \square D R V L T N S S Y L V G Y A D A L G N P V W A A Y$ S■SARTTEVCHSEYALDASGVTKGPLYSAE

KKSYAHAFDGRTRNPRWVME
HLKFGNPSNAPENLLIERPQYALSYNGDTNTANWASW

TRDLCFDDFAVLYSPTSRTPVYGVE
SEDMKYEMPHTTG
NFPWG円PRKSMD
NFPWGDRKSMDTCTLYOKHFITGYSNTYRVPIDFTGY $\square M K Y G F P G M$ DE CPQFFPKASQTLRELCFSTFAILHNGQTKTPVFVAE D $\square$ MKYGFPGM SSDEMVYKNFVLSYDRRNRAPAKWVCE AVASGAAELCSEGYGILYSTEAKSPGFAAE KYGFP GPDHDLATREQFISCYNRQTRNPYWVVE
 AGGHDQKLDYEGFTVWLDCARKGPVKFMY NFDVRYDGFWLSYSCERRTADRWAY TVEHMRHGWP LDTSSVIHQKSSYVHAFDGRTRNPRWVME


FAQCPQFFPPAGAHLRELCFSAFAVLYNTQTKTPLVVVE CPQFFPGGAPKLREI CFSSFAVLHNGQTKTPVFVAE LRFGTPAAGASDDVLRY | RHFSVVLNGERRLAFFTAVV |
| :--- |
| $H V Y A L S N G N T K F A D W V A Y$ | FDQCKDLIFPSTTQVGRDLCFDDFAIYYSPSDKKPDYTVE PLLDGSGYELVYHHFTSVIVADRKFPLFTAV GRDDRTLKYTAFELTYDCKERTALRWFY KMRAATQEI CYTDFALLHSGVTHGLLWSAE RPTGADSGLSLVKEYMRLSMDEAKNVPTFVSY NNGNGSILNYTHESVVMSKSRRLAFYTVV KRSSANVVLRYHHFSLVIRADRRMPGFTIV

A $\square$ NG $\square E F P K \square K G G S S Y V V T H M N F S S E W D D N T Q S Q R W T C Y$ RAGGNVLKLDYEGFMVWLDCARRGPMKFQY LPVAGTDDKVRYRNFSVVQSSSRRLPMLTAV


GGTGGELKYQNFSVVMSASRRDPRLTAV
FGFPLTGTETR CYTNHALSYDQAKRVPRWVLE TVGFPQLTACCKPLRYKDFISYOTKNRLPNWVYE MQLGNPSNATSHYLIQRTVEADDFSDSLGGPNWASW PRSDRQLIVLCSAEFVSGYSAEDREPAWSAV DQLPMGNPK四GENTHQVYQEYTVLVSGKTGTPEWWSAE NYCVEWDRTLKSNRWTCY HLPYGRPTVLQENCLLHHHHYISGFSRDLMPLWSSY HLLLGNPSGAPDNYLMVKNQYALSYNNSKGTANWVAW VGSNKNVLHYHNFSVVMHATRRLADYSAA
 HLPYGRPKVLQENNIYCHHQYVSGYSYDIWMPLWTAY

■PTGQQPPYVLPYHHFSVVLNRQRRLAFFTAV MP DPRPTGPTETAVLPYTNFSVVFRPDRRLAAATAV Q $\square$ MKFGFPGLDDHVRSYEDFVLSYDRRNK\|AHWVFE

SFNGCKDLFPKGNPRERELCSDNFAVLYADRTKTPLLVIE FPAAGTETRRYTNH ALSYDQAKRVPRWVLE SSYVLDYMHFSSVVNGERKIPFFTAV

## QTDVRVCDEGYAWGFSKKTNVNVYSAE

$N \square P Y$ GRPKVLQKNCLLYHREYVSGFGKATRMPMWSSY RLDYEHFTVVMARGRRLALFTAA QTLSUCYQDYNLYASKVTGTNLWSAQ
 GGDGTE $\square R Y$ THFSVRMSRSRGLPLYSAC


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 HLTDQQVAGGRVGSFHEETADPAADRSKSSDYTNTG YLTRDTFPDRNKSKFKEEKAVPEQFRSKLSDYAGSG QLNQSWRFEPGDPALHRDKTLPSGFPKVLSATYKTPNNMQ RLNKHADHQKRTNRFYEEARLRPGERSSLADYRATGGDQH SITGVKNVNRSDDAWAVDPLLPVEMQVDNSWHTNDG HLKADGTNINRKECWYPDMSVPSNFRANLTDYKNSG HLTDVERPLSRKDCFRRDDRLNDATQ ASNCSNYYRSG HLYRDPQTLEKPNEYDPDASIPTMFSANMRDFRNS RLNRQAQGMPRTDKFYAEARVPRAERAELVDYRGSG LLTKENLISRAKFDFTEDLSEPKAFRSTSDDYARSG HVKRDEKTLNKPNAYDTDNTHPTDFSANMRDFKNS TVAPDYPRKGKFKKFRADPDI ENPVVYKDYTHS HLSPEYDHQGRSNDFRPDERVARRARASLEDFRGSG HLTADSHVNRRYSEFRPEEDIHPFFRSNNGDYYRSG HITPESLSQRNSDRFLEDEAIPEKFRGRLKDYFRSG RVHADDDVDYDRPDMYYDDLRLDDEHR\|GRRTFGKDGGDQ NAQHDTGNKARASSFR】DPDVPKECQQASAKAYGNS TLTKDKKNAVKTAQYTFDKSMKDECQQKSLKGYNS QLNRETLSGASDRDFQEDDSVHEYHRATNADY VITRETVGSRKRSDFAEDEAVSWKHRSRDADYRGSG
 YFDKVTSLDNVKTDAWGWDSTYDFATMGGVEEANHKNDG
RLNRSAREQHRTDRFYPESRLPRAERAELEDYMGSG RLNRQAQGLQRTDRFYAEGRIPRAERAELQDYQGSG NIDGARWLNRGNDAWFYDPRIPEDLQDGDEDYGNEPRNNY EVDVSNFGNTPGRKWAVEPLLGENKTLEAADYKSASSSLE RLNGEQPHPRRTNQFYEEARLPAHERALLADYRGSG NIDGDRHPGKRKDTWRRDARIADEFQPDGDFYEKAKGTVQ AMGEDVGNEKRPSSFYYDPNMPEGCLQQKSVKAYSNG NTDGGDIKGRKGLEFVLDPRIPAEFQVGNELVAYYRNR HLTAQAKNNTRTNRFFVEKRLPPGESAQLADYKRSG MLSAADIQSREKSHFRRDPELGASGVVDSD YTGSG N DGKQLKDGRSDNWRYDPR1 DRKYQVGNEDYQQNPFDRG NI DGESLKKLSRNKFQLDPQIEAQHQMGDEV YKAND

 NTDAQSRRLKRRGGWRLDGRLAPEHQVGNQDYSANPLDRG

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NTDGQSRRVPRKDLWRYDGRLDKGDQWGEDDYYGKG HISKSKDADRKHCKFKPDPNIPPTFSAFNEDYVGSGWSR
 DLTGSDDGSSGRSSFFTDTTLPAGFYEVKTVGGDYTGSG RLTGAAENLKGRGHFHDDMRLPRSVRSTRSAYKRSGWS E TKGGHSWKAEKKFEDNGHAPKDNSYAYSNKFRSANPDW YMTKQRRRMKRVNSFHEEDSVPDAARARDADFVGAKN VMTKQNDKKNVQRWYAAEVNLTTDDYHTKSNGQDLIYGSG TVDKKSTGTPLSDCLRADVRIPPTYSQACSQY KKGLD QLNSSWLGDDRQNNFRPDNTLPAGWRVTPSMYSGSG NVSFAHRMSRPSDVWRRDPRILAKYQIEGW YYAANN TLDKDQGHDPRVDNFRDDRSLPEGCKGQFSAKAYSTPK G TVNKPENTSTVSDCLRADVRIPVAQSQNCSDYP AGLT SLNADTGSAARPSDFKLDTTLPSGCGGQTSTKSYASVRSG
 TI DGAHLVDERKDEWRFDPRLPEAQQAGHPVYRDNPDDKG HLTKERLQCNNKCEFKPDESIHPFFRSQNTDYKGSG
$K \square S A K Q \square K N K R T D F F Y A D P R T P T N G R A K A S D Y K N V Q P S V V$ HI S K S K DA D R K H CK F K P D P N IP PA F S A F N Q D Y VG S G WS R
 LLTK QVVQKAKMRRY
$T$
$N$
$N$ HLTRAKVIGAES $\square$ N R $\quad$ IDDSNFFSE TGFPTKHASYTNS G HLT K ENLNG DAKDAFVEDLGEPLEFRSTNLDYAKS G $P R H D C Y N G S S G R S S Y S R D P D \| P S N L Q Y S S T D T G G$ $\qquad$ $\square^{G}$


## UniRef90 12 CO 052

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FHFTNCSP
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 F D R GHMT P A GDASTESTEKETESMANVVPQDHKLNT GEWA F D R GHLLAPAADVK S Q NADDETF ILSSNI SPQVKGFNR GY WA Y DRGHLVAAADQKGSQEMDATFALSNI SPQIPGFNRDFWA YEGGHLTAFADRDNRKD V VAVNLLSNIVPMQKELNNKQWA

 YNRGHLAPNGGSFDLEAQGNSFQLSN APQKYPFNA GPWL WVGGHMAP QNYKCD AAMFTEAYKFPNDVPDSRALKNNVWL Y SRGHMAPAGDMSTREAMAQSFSLANMVPQDQTHNAGPWS Y DRGHMAASGNNLFNAECMDTFLFCNIAPQVRGFNRHIWN WVGGHLAP Q NYKCDADKF LDEAYKFTNNVP DNRGLKNHIWY Y S R GHLLTPFSDPEDEKTVFE $\square$ NYMSNI TPQDQKFNGGVWY F D R GHLAPSADMDSPKADSESFLLTNIVPQDPHLNRNLWA Y DRGHLAAAANHKEQQHCNETFRLCNISPQVGGFNRDAWN YDRGH QVPAADAKFSQAMNETFFFLTNMSPQVGEFNRDYWA LNVGHMTPNNRQFGRLAQMET FLMSNNSPQYASVNS GVWL YDR GQLVSAALLMS DSKAQSQTFFMTNVAP QYGQFNQGLDS RGHLAAAANHKWSQAMRDTFYLSNVAP Y D R GHLVAAADQKGSQDMDATFALSNVSP
 Y EMGGL AP ENYPFDCEAFCECFTMTNDVPELPGFNC GPWF F DK GHICCASEDRVYCEANEQTFYYTNIISPQ』ASMNQKYWM MGGVS DWPSLNYLSNITPPQKSALNQGAWA Y DRGHMAPNGDMPNKESQSDSFSLSNMVPQAPKNNQEVWR
 F DRGHLVVRRLDPVWKQANDDTFHWTNCVPQYFGFNA GP W A D R GHQ AP L A S F A GS RYWSELLNYLSNDTPQDKDLNQGPWK Y D R GHNVPA GDMTRERGMAQSFSLANMMPQARQNNQGDWA FSRGHQVRLLDPCWSTASEDTFHYTNAAPQVQGYND\|DWG Y D R GH LVA SNHMDTNPAARESHYMNNVVPQVSTFNQGIWA $\square D R G H \| A R R A D L L W E Q A N K D S F Y Y T N I$ APQMDDFNQGVWG Y DRGHMSPAGGRASKKGMAESFSLANIVPQDPSNNRRIWS F DRGHMKPAEGSPTQEAMDESHLMSNVAPQHPDLNRQAWR
 F D R GHMVRRDDPA WKQAADDTFHFANCCPQISAFNQHLWA Y DCGHLI A S NERQSVASNKQTFYFTNMQPQYSTFNQGIWY Y DRGHQVPANHLDASPADRQSNFMTNDLPQVSQMNRGAWL HMVRRRDPGWGDHAEEAERDTFHYTNCAPQHRDLNQRDWL GHLTPSGDTPDRASRDQTFALSNIVPQNARMNSGPWD

 FDR GHLAAAANHRWS QAMDDTFYLSNVAP QVPHLNQNAWN LD R GHMVRREDPVWGDANDDTFHFTNACPQMPGVNGKTWV LM GHMAP GNNFSSKAMA ETFYLSN V P ADPANYPFDSEACAETQVMTNVVPUVGFSCGPWF FDRGHMCPSFDRTDNTTDNDVFYMSNIIP QTADNNQGVWQ FSRGHMTRREDPNWKQADADTFHATNACPQRQEFNGGIWWL MGHMAPSGDATTRS GREETFALSN VVPQA VLNS GHWN
 FD HGHLCCPSNDRLYSLAANKQTFYGTNMQPQYKVFNK GLWD $\square$ I Y GF L YP PNFKANSDDQYDALI TSNIVPMYEAFK DI WS Y DRGHI APSGDRRTAEDNAATELMTNMMPQTPDNNRNI WG F D R G H L T R REDDLEYGQSAADTCHWTNCAPQHSRFNQN I WQ Y HRGHLLAANNHFDDDRAMDASNLMSNDVPQLASHNSRTWY
 LD R GHLVVR RLDDPA WGAANDDTFHFFTNCTPQHADFNQNTWA FDRGHMAPAGQMPTPTAMVQSFSLANMMPQAPQHNQGTWR $H$ L VR R LD PVWGPNASMANDDTFHYTNAAPQMNVFNQGLWQ Y DRGHLAAAGNHKDQKHMEQTFFLTNMAPQDKGFNRDSWN WN S $\square$ A QSESFFMSNDCP QLHS LINS GAWE DRGHLAPAGNADSARGMAQTFALSNIFPQDSDNNRGPWR GHMAPAGNNFSSKAMAETFYLSNDVPQDFDNNSGDWN LD R GHLVRRLDP VWWE QAENDTFHYTNAAPQHALLNQRDWL YDRGHMAPSGDMGNYES QVKTFIPQNLVPQTRQLNSGKWN HMAPSADMPDSRTQSESFSLANMVPQNSENNRYLWA
$\square$ T H G GF LYP PAYNRTSDSQYDAL
FDRGHLVRREDPNWGAANRDTFHFTNCAPQLSAFNQRTWL YDRGHMMPAGDASTTPAQKETFSVANVVPQAPKLNRGTWA LDRGHMAA GNNNYNAESNKKTFILSNDAPQVGGFNRGQWN C NK GHMLGS A ERTVTK A NK QVFYYSNIAPPQSSENTGAWN FSRGHLTRREDPNWRQADADTFHDTNAAPQRQGFNGGDWL UniRef90_R6G262

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| UniRef90_D0J590 UniRef90 B4SK62 | AVPDYLLFKLVYDASTGKSTAKATVVYWQANSADTRMGP P P |
| UniRef90-UPI0002F1CA6A | T |
| ef90-G4 | AVPTHFFKVAADQDKPNW |
| UniRef90-10Y | AVPTHFFKVVLAERATATPDGAFVLPNALLQADV |
| UniRef90 T1IHG9 | AVPTHFFKIVGETKDKSLHVGCFVPNRRDFMKRELNDFR |
| UniRef90 R7E9H9 |  |
| UniRef90-C8\% | LVPSHLYKAI YIPSLQQAG |
|  | GR |
|  | GVA |
| UniRef90-F4 | WCLHTFSKATTVKNQ TFAQAFVLPNQVIQDSPPLTD ${ }^{\text {P }}$ |
| UniRef90-A4RRT2 | KIPANFWKVMLVLDSPGOYT GFYMD |
| UniRef90 H H 8315 | WIPDYVYKLVYDPTTGRSWAFWLPNDQQV |
| UniRef90-R9IGR2 | PVPQYYF |
|  |  |
| UniRef90 B3S | VIPTHFYKI AKCRCKGHLDVIAFVLPHIDSFTPQCQVYV |
| UniRet90-B5D |  |
| UniRef90-U6ILY8 | AVPTHFFKAIAVQERRGGPWFAWI |
| UniRef | AVPTHFFKIIIRENRDMPI |
| $\begin{aligned} & \text { nife } \\ & \text { niDo } \end{aligned}$ |  |
|  |  |
| UniRef90-T1GZV55 | SVPTHFFK1ALLERSDGKYDVESYVPNENDDNN |
|  |  |
| UniRef90-UPIO0045EC367 | ATPDAFWKVI I RGAGQDERAIA WVVPNSPAAT |
| UniRet90-A0A0247844 | RTASFWWKAl WTKDSNGSDMI DA WMFP NEKLVNDANKYL |
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| UniRef90-UPIOO046F5FE0 |  |
| UniRef90-V1WNH3 | EIPSGYWKVLFTGTAPSKSEYAAFIMDQNTPRSANFCDYQ |
|  | VYKAVYMPK |
| UniRef90 ${ }^{\text {alluj }}$ | AVPSYVYKLVYD |
| UniRef90-UPI0001D2F165 | WKVVAVVDRRGQLYASGYLVSQQDNST |
| UniRef90-Q2B | SYK |
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|  | KIPEEYWKVAVMVKDNGETSATAYIRNLEAEPFGAFRTFQ |
| UniRef90-UPI0002DA | RIPREFWKV LAYTTDGQLTAKAFLLTQNLDQLEEFKTYQ |
| UniRef90-X5LIV6 | NVPRQFWKIVVRVSPDGNLRATAFLADQNAALDAKVVMFQ |
|  |  |
|  | K V |
|  |  |
| UniRef90-UP10003670CB2 | QVPLRFWKVAAFMQDGNLASTAYULDQSPDPPLGPFRTFQ |
|  |  |
|  |  |
| UniRef90_UPI000454ACB3 <br> UniRef90 B1YXU9 |  |

SVPSHFFKVIIIESHDGNDELESYMMPNVTPEEGNLDDYL SIPGFTWKI AVVRDTTATRVIADETPNDSGDRTTPWSNYV SUPGFTWK AVVRITTATRVIALEEPNDSGDRTTPWSNYV RIPSSTWKAVYVPGRHAVSVIVCR A P PDALEKIVVRESNLENPDVLAFTYPQYYSKNYDHSRYL AI PTQUFKLLYNPVNQTGGVYVVDNVDTETDGWK IVPKYFYAAVVWKRNVYSGLAFWFEHTNVYHGDDALKGYV HPTHYFMVVTSCRSSSETPAQCFVIPHRPDNSESCADHT
PFPLQYWKVVAA DDSAGDDFATAY $\square$ ASQEEVIAQAYKTFQ ATPEAFWKVLDTEDEHGQPQVIAWWIPHQVDLGTDLDPY童 RTPEYFWKTITTVPSTGAEKADSWIDPNQTGLGSLDDYD RVPKYLFKLVYME
QVPLRFWKVAAFLQD GEGASTAYVLDQSPDGSRDFRTFQ
RVPNAFFKVVLSLKPGKEKATGFYYTNRR NKQNMADAA WKPSR $\square F K L V Y N P S E D K \square W V Y \square M K N E S T N N V S T$
QV
KIPEAFWKVVALLQDDDTVTVTAYLLGQAAFLNDDFKTFR WVPYATWKAI YVPKLEQTGVYFCRNTQKPD MVPTQLYKVVYDPKR
PI PTHYFVVLTSCKCPGKQAGAYLVANEATGDYS V V AI PLAY YKVVAFVKCDGWLDVLSYYI PHQPTNVESCPEHV
 SRPSMFYYLLLRTKNGNTKKAAFVLRHNMDKGHKPQAKDM TPTAFWK AFVHDETGELTTDGYRRSQMDYLPRPFRDSQ UniRef90 R6G262

|  |  |
| :---: | :---: |
| UniRef90-UPI00046AC176 |  |
| UniRef90-DoJ590 | \\| S YEEFTRRTGMPLLSAV |
| UniRef90-B4SK62 |  |
| UniRef90-UP10002F1CA6A | VSVAELTHVTGDDPFPALPARLKQACMALP |
| UniRef90-G4M111 UniRef90 10 YZ 19 | VPVESVESASGWKFFP |
| UniRef90-T1IHG9 | ASLDDVEKMTGF |
| UniRef90-R7E9H9 | 1 S D Ple |
| UniRef90-A0AO22FRB3 | $\checkmark$ SIAELANLAGVDPFPRLDRAYRETPMTLLAPTP |
| UniRef90-C8PWT2 | I SLDELAVRIGVDAMPGLSGKVQKTAMT |
| UniRef90_WolZX6 UniRef90 LOTOA6 |  |
| UniRef90-F4PCC1 | VPVEYIERMSGLLLYPNL Q |
| UniRef90-AARRT2 |  |
| UniRef90-UPIO0034BB266 UniRef90-H8L315 |  |
| UniRef90-R91GR2 | $V$ STDELESQTGII DFFCNLPDYDEDDVES GCQ |
| UniRet90_W8BMI4 | ADIREI EHIAG |
| UniRef90 - B3S3W3 | ASVREIEKLTGLNFFPNMPUQLQDMIES |
| UniRef90-B5DQL5 | ADVRDVEHFAGLKF |
| UniRe990-U6ILY8 | VSMKALEQAAGLII FPNLTKN |
| UniRef90-Q9VGU3 | ADVRDIEHFAGLKFCDG QQRDQL |
| UniRef90-UP10000E0E612 | VS DKLET T GLDFFSLLDDQKEEKLEKAVN |
| UniRef90-E3HYC2 |  |
| UniRef90-T1GZV5 | EPETЏEKAAGFLFFDNVPKAEVIK凹NGRK |
| UniRer90-AFIF32 | A |
| UniRef90-UPIOOO45EC367 | VSIDELERLTGETIPPVADYAKHDKPASSWVLPR GC |
| UniRet90-A0A024T844 | VSVAEIEAK |
| UniRe990_U31365 | VPI ESIERASGL |
| UniRef90-O01FU1 | VPSTTDLE |
| UniRef90-UPIO0035A1F64 |  |
| UniRef90-UPI00046F5FE0 | VSI DKLEQETGI DFFCNLPDVIEDEVE |
| UniRef90-V1WNH3 | VTVDALEHKTKLTLWSALPEAVASEVKTTKGSLAQKLGCR |
| UniRef90 A0A009X6M2 | VSVCYIEEKLG\| N |
| UniRef90-ACIUG | MGYGEFVNRTGURMLPSEP |
| UniRef90_UPI0001D2F165 |  |
| UniRef90 O2BNY4 | $V \mathrm{TLHDLQSKDEFTL}$ PKDELNQRTYSR LGC |
| UiReto-Mr ${ }^{\text {a }}$ | KK ETELDFSAVPPFDOGG |
| UniRef90 TOQBE7 | VSVNFIESKLNDDLGPPVPDALKKNVEPVTWP仿 |
| UniRef90-H6RBC5 | VTVPEIEKRTGLRFPEAVHNADTATTESTGRTAP |
| UniRet90 U3UAT | TSVDALEGLLGQDLYaQLPESLQAKLES |
| UniRef90-E01 |  |
| UniRef90-UPI0002DAD967 | VTLNELTERTGVQFPSALAEQP |
| UniRet90-xLLV6 |  |
| UniRef90-H8GRI6 | VTVDEIEQLTG |
| UniRef90-S954M9 | $V Q V A R I E A E T G L G F ~ G A L P D ~$ |
| UniRet90-Q5FN80 | VPFDALVRVVGI DPFPGVNAKEKSK |
| UniRef90-UP10003670CB2 UniRef90-A0A024TL1 |  |
| UniRef90-UPIOOO362D648 | IVAVGEVEQRTGLQF |
| UniRef90-UPI000454ACB3 | VPIESIERASGLDFVPND |
| UniRef90-B1YXU9 | USVAHVMDLTDIDF |
| UniRee90-UPIO0027F2A12 |  |
| UniRef90-UPIoo03595877 UniRef90 B9XCV9 | TPGVQQEHASGLIFFPRADPASVATVLRAKVDG |
| UniRef90_W9HEF3 | VSIAGLARETGLDL |
| UniRef90-UP100047C0AD7 | VGLDALARVVGVTPFPGLP HSELRR |
| UniRef90 R9PMS4 | TS1A A EEEDTGLSFLNSISEDKRKKLKAQ |
| UniRef90 R6WC30 |  |
| UniRef90-UPIO003C11817 | ARVRDIELLTGLSFYNN |
|  |  |
| UniRef90-007KR9 | TSVVEDERLTGLK F WC G |
| UniRef90-V6US83 | RSVRQIETALGPDEPPEVPEHLKDRRPPHTWPLPAR |
| UniRef9-UP10003872742 |  |
| UniRef90-UP1000262ACEA UniRef90-E3IWPO | VSIADLEELIGAN NVSSAVKNMLPSTTWKLPS |
| UniRef90-E31WPO UniRef90 A1VWD5 |  |
| UniRef90-A0A014MU3 | VPVSD\ARपTADDGP पPAA |
| UniRef90-W4W0Z5 |  |
| UniRef90-D0SFV8 | ПS YKDFVDETGVKF |
| UniRet90_G1TBr |  |
| UniRef90_L7C8K2 | T SVAKVR QLT GL |
| UniRet90-W7DW02 | QTVEFFTQKTG\| DPFPKLDASIKAAQLPLP |
| UniRef90-V5UJU5 UniRef90 UPIOOO46BE794 | VSVAELEKIAGI DFFPGMAADVKATAMTLPR PKAAGGK |
| UniRef90-UP10003B5С038 | RSILSIAALTGLDF |
| UniRet90-F8TUD4 | $\square S L$ NEKRRAFVDPFPSLGTALRAQ |
| UniRet90_W6U747 | VPLKDVERAA |
| UniRef90_R7JF 33 | MSVAE ERLTGFTFFANVPNAPKDTYNPSDWGL |
| UniRef90_UPIOOO464C8BF UniRef90-H8Mll 4 | VPI RAIAQESGLEELYAOTPKSVQDKDE |
|  | VSIMKKIMEETKIIFPENIT |

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$D \square L S D N$ GGLPDTELRYEHFSVVMSRSRRMCILSAC

ERDVLLDYSDFETSYDN LNK $\square$ PNWVAE IP YTHFSLASDKSRRFA LWV A W NENVFDYMHYSLVLHRERKLAAWVAW GRTDARLDYEHFTVVMSKSRRLALLFTGV QYHFATLYDRNRRIPLFSAY LLKYEHFSVVINKTKRIA AYTAT KFGPPVTVGGDAVLNYMHFSLELSSERKLAYWTAV QRARALCFTGFAVLHSGMTKTPVYSAE $\square A V P \square P R D T A E T V V L P Y T H F S V L L R P D R R L A A A T A V$ RNYTVVFSAEHHCPVWVAA
PATADSDTVIPYTHYGDGSYACAERSAKRWGY HTAVELPRAATAAKVLDYTHFTVLLNTERRDAELTAV QDGRVYDFTHFSVVMNARRKFAVYSAA



$\square R Y G L P Q S P S T \quad L V Y S N H V V Q Y D C S R K \prod P \square W V A Q$ $D V P L P V P A R G V A T V I L P Y T H F T V V F R P D R R L A A S T A V$ KYGSPK RDT LDYRFAMGYDKAKKAALWAAY $P \square N G D L P Y V L R F H N F S V V M N G E R R D A Y F T A V$ KYGFPSLANIK SRDSYIMSYDPRTRTASWVIE H $\square$ PY G RPKVLQKNNTYCHYQYVSGYSHD $\square$ WMP L WTAY L L HKKAF D $\square$ CYSCKWKTP LVVY $N \square P F G R P R V M Q K N C L L Y H R E Y V S G F G K A \square R M P L W S S Y$ PDGAP GANGLSLVKEYARLADDQGANVPTFVSY HMPFGRPRMLQPDQSYCHQGFVSAYSRTALMPDWSSF Q HAP $\square$ GAPVMTFDTDYL $E \square A P D V Y P \square D A G N R \quad L$ LD Y T H NLPFGRPRVTQTNCLLYHSEYSLVMNKETKFAVYSIA NLPF GRPRVTQTNCLYHSYISGYGKAFKMPMWTSY T TLPYTHFSLVMSSTRRFAYWVAW

NFDLTKFANPERYFS
TDQGRGFSMFYDCYEKSPVVIVEA PPGGDPTVLAYTHFSIVVNRRRQLAYYTVV ENMPYGRPRVMQKNCLLYHREYVSGFGKAQRMPGWSSY

$\square P \square P E A P A D A R P V R D D Y \square H F T V L M D T D R R \square A A L T A V$ $N M P \stackrel{G}{F} \operatorname{R} P R V 1 Q K N C L L Y H K E Y V S G F G K A L K M P L W T S Y$

LPSFHGGNSKVVTHNYTVEFDKDKQATRWVAF TEHYVADYVHYSLVMNPERRSAVYVAL ETLPYGRPRVLQSVCLLYQHQFVSGYSRDQHMPLWTSY LRHGSPATGAADDVLRYQHFSVVLNPKRKMAFYTAV $N \square Y H L P Y G R P \square V L Q K E N V Y C H H Q Y V S G Y S Y D \square W M P \square W T A Y$


 LPYGRPRDNSTDCLLYQHQFVSGYSEDULMPLWTSY PSTARDCQRDQQYYYATLYHRDARVPI YSAY $N L P Y G R P R V L Q N Y C L L Y H Y R Y V S G Y S R D Y R M S L W S A Y$
 N LPFGRPKVMQKNCLLYHREYVSGFGKAFKMPI WS SY VDDSRGPLATFGEGVSELRYHHYSVLMNARRRGAYVAAV
$\square P \square P \square P S P A V E T V R \square D Y P R F S V L L D P A R R F A A V T G V$ GVPR

RDILLNYPD IQVSYDNRNKVPNWVLE DRYRFASLYRRQHRAPLFSAY D T L P Y GRPRKNSTTCLLYQHQF DSAYSYD DQMPLWTSY $\square P Y G R P R N L Q K N C L L Y$ YEGF
QHQF

Q $\square$ MRFGFPGTDS $\square R F L$ NLPF GRPRVTQKNCLLYHREYGSGYGAGRRCARVTAV SEl MRFGFPGF QKNLRTFEDFVVSYDRKTRTVHWVSY ENMPFGRPRVMQKNCILYHREYV SGFGKADRMPMWSSY $N$ LPF GRPRVMQENCLLYHREYVSGFGKADRMPMWSSY GLPS DERLRFFDGFVASDNYERRDPNWVLE

## UniRef90_UPI00037B02B8 UniRef90_C3YLH6 UniRef90 K7FIN2 UniRef90-K7FIN2 UniRef90 C7PQU4 UniRef90-W9VLF66 UniRef90-V4PYW8 UniRef90 W4V115 UniRef90-T1IHF9 UniRef90-UPIO00346618F UniRef90-W7XVR2 UniRef90-UPI000287E57A UniRet90-UPIOO0329EF3C UniRef90-UPIO002DF94CE <br> UniRef90-UYYLJ9 <br> UniRef90-Q21Z56 UniRef90-UPIooo3C765C4 UniRef90-R6VNY4 UniRef90-A0A024GZN4 UniRef90-A0A024TI65 UniRef90-N1UXN2 UniRef90-S9P3Y3 UniRef90-UPI0002FOA988 UniRef90-UPIOO02FD3A0E UniRef90-M1EKP3 UniRef90 K6WZU <br> UniRef90-K6WZU6 <br> UniRef90_UP1000381CCED

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HLTFDNLKQSEFSCYQQDERVHENYQSTAEDYNSANVAFD
 N| DGGHIKKVNRVDFKKDPHLPMEAQIGNELYMNYKHND NLRPGEGSRPKNTNWMDEPRLVSDYQKHPDQNVKNYRNSG NIDGATYDDVNRDQWFKDPRVSAGF VLDQTFYSDWSHD NIDGATAASARAPKFRLDPRLKEGEQSGDEDYTEN VNY TID DERKVEDRTDDWRYDPRVAEDWQAGPEDYRNS PRHACYEGTNRTNAYKADPDIPSGTQY NTDGAGLTKLSRSDF TKDPR】PADVQTGDEDYRGN SLGANIHVASRPKGFYFDPNYDRHCQQLSTKAYGSKTG
 NVDGSTWVSTNRATWSVDERUSPDAQCHEQDLYDHQRPRT

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TLQADTGSAARSAFTFDTLLPAGCLQQSTASYEVHPG

HTTKEK $\square A G \square A D R S F K T D N V P K F R A T N E D F D N G$
CI EGREEDVPRDDVWEFDPRLPEEHQAGNDVYRNNS
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RLQYGKLKTQPSSKFHADDGDEDAGMFQPKA YGYVGAP N|DQNLIKNRRKRGWDIDTRDGADFQLDN M DYYRNNP NIDGEKLDRDRSGDWSEDRRIGAHEQTNNDHYRG RDNK KLNHASLNGPSDRKFREDESVHVFHRATSQDFRGSG TVNKPESTSSLPDCDRADVR|PVVASQNCSDYP KVDGNKNLSRKSLRFRPDYNLPTKCRSYSKDYSRTG TVPKPGDTSTVPDCLRADVRVAPSESQKCS FYSADEN MLSAEDVKSRLESTFVRDPELGRTGVTDSD YTNTG TLHKDPLPSEVPDCLRPDVRVPSSQSPRCDQY NAAGN
 VLTPAKLSGTREDNFRADDRLPGNARADDNDYRGSGDDRG Ni DGASSVEVKRDSWSFDGRLPAEAQUGESLYADNVLDRG TV PKSSLSPTVLDCWRADVRVAPSESQKCSFYLNKN
 IIGNDTGNVKRSDDFKLDPNVPGECQQKSTKSYRKYRNVA N| DRSDDFQRQADKWYFDSRIAESEQDGEAGYRRNADDRG
$T$

NDDARLVDERSDDWHDDPRDPAEQQCGPED YARND TVPKPGDTSTVSDCLRADVRVAPSESQNCS FYSADKD QMNSHNVFGNIPRNYLFDPKFSS NVDQNKHKQTRSNRWRIDGRTGSKFQLDNTYYRNNDWDRG TVDRNDSFSAVSNCLYQDLRI SDSPVHKCSFYKNNTRLSY NIDGARWTNRGNDVWFYDPRIPEELQNGDELYGDEPSKNY TVNKSENTSTVSDCLRADVRIPAARSQNCS Y NYPEGLDT N| DGSQSQGRGRDNWYFDSRIAESEQDGESGYKRNADDRG NVKPGDTSTVPDCLRADVRVAPSESQKCS NDQDKMKEVPRVDFHFAPNI DIEYQVGNELYRNN TVNRNDRFSTESDCGYQDGR|SLSPVHKCSFYKNN ILEKSTTSRPDSTNWYLEPMLADLPQTDSQAVNDDYRNSG TVGKDDKWGAASSCLHKDVRIS QTDSQAVNDDYRNSG
QNH OTCLFYNNHPR TI DGARLRDPRTGEWRLDPRVPAEEQAGPAV TINDSFSTDDFSNCFYQDLRISGSPVHKCSFYKSNAKLS
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Y NR GHMLGNYERRTSGMNKQVSYYTN\|\|AAQHSTFNDGAWN GHMAPA GDNKFSQAMDDIFFLLSNIVPQDDENNKEFWY

 F SRGHMTRREDPVWGDDNADSMHVTNTVPQMQAFNSPDWLG TKGFLVNGKNHQHAERSFRQSSKLSNVVPLAQALAQETWS VDRGHLARRADDLLWRKANTDSEFFFTNDIPQQMDDFNQQGWG

 F DRGHLTTRRSDPTWGDANADTFHFTNCSPQHFRFNQSAWQ $F D R G H M V R R K D P S W G D S N L D S M Y F T N D A P Q Y Y K V N Q G L W A$
$F Q R G H Q F A A A D A T N E D S M A Q S F S D A N M V P Q S P V N N S K T W A$ LDRGH L VRR LDDPVWGAADGDTFHYTNAAPQADVFNQGVWQ CNNGHMLGGSAE RTYSRANE QVFYFSNDIAPQYSGFNTGGWN LD RGH LAARRAD LVWGEANKDSFYFTNNTPQMDDFNQGVWG

 YDRGHLTRRKDVCWEKANYDSFCYANVVLQH HNFNTGGWN




 Y NKGHQVVPNADRKVSNANK Q DSYYSNMTPQQATANSGAWG



 FDRGHMKPAEDSPTQEAMDESHQMSND APQHGNHNQQVWR

 HLVRRQDPNWGKEAETANSDTFHFTNCSPQMAAFNQKTWW HLTTRRYDVVWGAQAKQASHDTFCWANDALQHHDFNTGVWN I THGF LYPP GNNRTAES QYD S LIT S NFVVPMYEEFK KI WD LDRGHLARRADVTWQQANSDSFTYTNIAPQMDDFNQGVWG Y DRGHLDSHNQLLDYSDAASASFYFTNNDPQASTFNRSGWK $H$ LVRRLDPVWGDDLARANDDTFHFTNCAPQHEKFNQGLWQ



 $I$
I H H G HMAR RTTAA WGDNA DDA QNETFYYTNACDQHANLNQDEWL G F $F D R G H L V R R L D P V W K Q A N D D T F Q W T N C S P Q Y W G F N Q G A W Q$ FTRSFLVPPNLNSSAVEQYDVLLTTSNDVPMYRAFK DIWD
 I THGFLYPPANNRTSDSQYDALIDTNLVPMYKAFK KMWD
 YSRGHLTPSGHQQTKENKEATFTLTNIVPQMEKFNSGPWN FSRGHLNPSGHH SAESQ $\square$ STFTYTNMAPQQGNFNSGTWN


 YERGHLSPD QHQAEPA DKAATYSDTNVVPQFREFNDGQWA HSQEAMDDSF LMTNMSPQVGGFNRGYWS

 GF LFPP QL NNVSNKTYSEALLDTNNVPMYQNF QVVWR FDRGHGVPANHDDNSEGIQQSNYMVN WPQHRDLNRGAMK LS Y G F LSP P QL N K D S S Q I H E A L L T T N I V P M Y P S F QV Q YDRGHLCPCGDFYYSMGQDETFYLSNVVPQDPNNNRFYWL FDRGHLAAAGHRKCQSDVDQTF LL SN MAPQHKGFNRDAWN $\square D R G H M V R R E D P N W S K A N Y D T F H Y T N S A L Q H S G L N Q G L W Q$ ITHGF LYYPPADKGTSESQYDALITSNLVPMYEEFK KMWD YDRGHMAAAGHRRTQNA DDQTFLLSNMAPQVKGFNRDKWN


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 DLENWLLAYVK DGRKMIVTTGPIHRDSDDEYCGVHRKI
 RLDEDALYDDVE YTEDLTECF R RDDYEQVKVLVGLKFEDSSNDYQПKSHGVIV YFHS VLLIRYATERNGVNVISGPVFDYNYDGHFDANTSV RLESFCKNQLIN RFKSVTIISGPIYHHPNKYEVIGDRNV KMERCDKCVMDKYCKNSSGVTEAFVTTGAQPSSNNVNNKV
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$A V P L S F W K V L A Y R V E D A L T C K A F L V T Q E P F G L D D Q Y L I H G$ Q L P R Q F F K V V V A MVVR Q D G S L


$Q V P L R F W K V A A F L Q D G A L A A A A Y V L D Q S P D P P L G P F R T Y Q$ $P V P T H Y Y K V L L R T K Q G T T G Q S V T F W Y E Q T T D K T Q T P D G C A$ AVPTHFYKLVICDKHEGGVDMGCYLMENDSEDCEPDSTFR LI P S A F F K V V CVVNK D N NELLDVRAF L MF QDEEAALRDF QTY Q
 P I P T H Y F VVVLTTSCNCT GS LDDVLDSFIDP H QPDNTTESCA E H S



 T P S S FFKM WTDGNDYRLDWVMPNIALGKLSGAQY GQYE $K$ I P S A F WKVVVAF LGDDGKPSASAYM


 KTADKWWKII QTGDS Y V G A WVFPNSNSVRKS SANRYL R L P P L A Y WK V V G Y C K P A G A L R V S G Y L L E Q T QL I E D D A G T Y R
 N I P S MLLWSAFCCYSSSNMDMWDASAHWGENVPDESAHKY LQQ AVPTHFYKVIYGEESSAHSPGAFVLPNAEIPNEKSLADFE




 $R$ V P L R F WK I AA WH GR D DLLAAA GFVVLDQSA LVVTAREFRTA Q

 TVVPE Y L WTA YCCPTNQNYFPKLIDL KLQNTKHGHDLEK $N V P T F Y W S A F C C V R G D G S R R A E G R L G \quad S N T A P Y E V L A$

 PI P T H Y FVVVLTSSCK C P GRLLDVLPP FI I P HRPTN ME S WQA H
 AVPTHFFKVVLGEKRGGNGTAGFDLPNRADPENKNLRDFQ $R V P L R F W K I A A W R S D A G L A A A G F V L D Q S R V P P D R A F R T F Q Q$
 LIP THFFVVLTSCKNCENLDTLAFI LDP RTDNSESCA HHR

 AVPTHF


 A V P T H L F K VV LGE R G D G S H EVVA A F I PN E P VVS ER P LVA Y Q



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$D L R V P \Pi^{10} T$ TGVETVLLP ${ }^{20} Y T N F S V L M R P D K R \square A A T T A{ }^{40}$
 ENMPFGRPRVMQDHCLDYHREYVSGFGKAFRMPMWSSY

HLLYS RPAVTYRTYMLHHHGYESGYSETY L MPLLWTSY LHYEHFSLVMNRETKMAFYTAH ELAKYGLPG置AESSDLKSRESYVLCYDPRTRGALWVVE TTEPSDLIFKFAAYTTSFDDTWADPEWVSY $R$ VGMPNQAARQRYNNRYHFATLYDRQKRIPVYSAY MKYGFPSL DNVRSYDDFVLSYDRRNRVPHWVFE DALPYGRPRNLQKNCLLYQQQFVSAYSHD LMP WTSY $N G P Y G R P R V L S S Y C L L Y Q N K Y V N G Y S Q N U L M P L W S S Y$
$Q R Y R N Q Y H F A S L Y D R Q H V P L F S A Y ~$

NAQHVPYGRPRVGSKYCLLHQHMYDSGYSD DLMPDWTAY HLLYGRPAVLYRTRYLKYHHYSLAMNKARRLQMWSAA HMMFGRPQMLQPDCILHQEGF DSGYSHEVLMPLWSSF

HLP F GRPAVMFSTSLLHHVEFTSGYSRELAMPLWTSY $N \| L P Y G R P R V L Q K N C L L Y Q H Q F V N A Y S R D / T M P L W S S Y$ LPYGRPRLKSSVCLLYQHQFVSGYSHDVLMPLWTSY QI QKKKSYI IFYNPKTRNAMCTYE TFDG FG $\square$ PTHAGA $\square H L \quad$ FSHF $\quad$ SVSDSRMR $\square P \square Y V A W$

HVPMPT LS DGASGQVFDYTHYSLVMDRDRRTAMLTAN SESLKWGNPTEAENNYLIEKPQYSLSYNASKNTDNWVSW GVI QPDPTKGELKYEHFSLILHKSKRMAMFTAT NLPYGRPAVMFRTCDLHHTDY NRYHFATLYSRDRRTPLFSAY DNDPYGRPHVLQHSCLLHQTKYПSAYSQD乌LMPLWNSY Vprp SVGSSTTRVCHTEYVLLASGVTKDPVYSAE NMPFGRPRVNTEQRYMNKYHFASLYDRHRRIPLUYSAY LIPYGRPRVLQETVCLLYY H Q FVSGGYSQDMSMPMWTSY PKGFTGAQYI CQTHFATLYDTYNK\PVYSAY NLPFGRPRVMQKNCLLYHREY DTGFAKAMKI PMWSSY DSLYMGTPPRGSALRKICQRYYATGYDPRKRIP DYSGY

NQRRFVT $\square Y$ V VRNRDPVFSAF
$H L L Y G R P A V L T S Y D I L Y H T D F E S G Y S E I F L M P L W T S Y$ LIPYGRPQRKGSVCLLYHHQFVSGYSLDILMPLWASY NKYEYATLYDTANRIPVYSAY NLPFGRPRVKSGDSLIPYEKYSVVLHRKRKLAMMWSS $E \| L P Y G R P Q K G D N G C L V Y Q H R F V S G Y S E R F R M P N W T S Y$ NFNNCLQFFPKG 1 T GSDYLYHNAYATLYD $\quad$ KYRTPLYSAY


HLPFGRPAVMFSTQLLHHVEF DSGYSKELAMPLWTAY ETLPYGRPRVKNTDCLLSQHQFMSGYSQDILMPLWTSY $S \square K H L P Y G R P R V K S S V C L L Y Q H Q F V S A Y S H D \| L M P L W T S Y$ SQHLLLGNPTEARQNYLLEKPQFSVSYSKNDNIPNWSAW

DKPRYVTLYDPHDRTPVYSAY EF L Y M G TPPKAPSVKY DCQFYYVTLYSTEDH I PI YSAY VP L P R P A DRRVT HE LT YPRFTVLLDPARRLAAVTGV RTFVTLYDTHNKIPVFSAA NTKQFETKYTHHSIVMHKERKFAI ISAS NLPYGRPAVMFHTKILHHTDYISGYSEALAMPLWTSY $H M L L G R P Q M L Q P D C L L H Q E G F V S A Y S H K V L M P L W S S F$ GTPPAGLTDDSLCQHYFATLYDAKKRIPVYSAY ELLYYRYS LVMMNKKYRLPLMYSAY $\square$ YPNYATLYDTRNK $\quad$ YPVYSAY SA Q $\square$ MTHGYP GFTNVR TYEDFVISYDYKTRTAHWVCE $K$ VGFP $\square P S G N \quad F H S \square Y Q T C F D K K N L T P L Y V G Y$ $\square P$ A G $\square P$ QRFVNRYHFATGYDT\HRIAVYSAY TVMLRY LI H Y SVLFRPDRRFAAATAV RTEVTLYDTKNKDPVFSAA
 $N \square P F$ GKPRVLQENCLLYHREY DSGFGKADTMP


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UniRef90- $\mathrm{R11HX} 4$
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TFKKSDGEKRVDYPWMYEPQLHQNFEDTQAVLQDYADVVL
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EVQKATFKIEKRPOWMTDDNDHKQG VPNDAT FKR LYRPKAGVCKRPDWFDEPQLAENKKSDKDMQNYKTNSNi HITKEHDKDRSKCDFTPDESI HPFFRSQNTDYRGSG
TIDKSFSAENDPNCLYQDPRISLSPLHKCSFYRNNAKHS RYTG FKKGRPQDRWMDEPQLMRARRVNQAYTEDYQKDYR TVSKSPVNPTAPDCLRPDVRIRAAQSQKCSNYQPDGNN ODYKRSG
T TNQDKPTANLSNCLFADVRTSUNSQKCS YYKKDHN NVDYNRKQNGRTDRWVADPRI PNKFQQ TUDKPTNLDPLPNCLRADVRLPEHQSPRCDQFE A A DH
TLSRQDDMTAVPKCVQADPRVSPDHSQSCS GYSQNSH TVDKNDSFSAESNCFYQDHRIPPSPПRKCSFYKNNPKLSY TVNRNDSFSTESNCLYQDLRISFSPUHNCSFYKNNAKLSY TLNRDTNPSNEKNNENNQAKTELKENTDSKRESDQRDLNQ SUPHLHDGMKVTADRKFSRFTKGSFYDNFTDFNPNNQDYG DNMRVAKKTTDKNQAGNDDYKNTQG
NTDAAHKQTGGGDTWMMDERLGED QLGRETYDHNQ KLNQSWFGSASRSGFGEDPALDNWDRVKHVDYNANYPIID NIDGQRYNSSEGDVWFKDPRVSNSFF LDQTFYSQWSTY TVSKQVDTDALSNCIRPDSRVPTAYSQSCSQ NYRTEKQ TFKKSDGEKKVDFPWMFEPQLASEKSSSNMEPFPQSTSMH TYNPPQGKRPKGNWKYEPQLANSKADGNQAVQEDYDNSS

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 TTSKQGCRATECKCLVK QL RGDKRDDPAGSNSDFSLRL TVDKNDRVGDFSNCVFQDLR\|PLSPLHKCSFYKNNAK KFQGLIDCTQRNKRWFTEPQLDDPNSNKKKMESDGNKDHH NVDGRTQKKGEMEKWVLDPRVDERFQD PDRFYTKDNGA TFNTSPDPPTVPDCLRADVRVAPSESQKCSDY DAEKN
 HYSRDDGVDRKHSKFRADESVPADFRATNDDYRGSARVR
TVSRNDTFSTESNCLYQDFRVSLS KLHSPDGKRPRPD WMIEPQLANSNVKESQAVNDDYTNSG TVGRNDNFSTESNCFYQDGRISVSPVHKCSFYKNN VK TVDRN ARDFSNCVYQDLRI PLSPVHKCSFYKNNAKMSY CHESTASPNKDTCYHRDIRLDUATQTSN CSNYVNSS TLTPIPDVSPSVNCTRADPRVSSVHSQSCTTY NQNNH TVDRNDSFSTESNCLYQDFRUSLSPVHKCSFYRNNTKVSY

TFKKTEGDRRVDYPWMYEPQVGKSFRKKKNNWNFDKYRCY TFKRSDGEKCVDVPWMYEPQLHMNFEDTQAILDDYTNADQ NTDGATLLDRKKWFIDPRIENRVQIGNMLYFDNALDRG
 NVDGNTWQPIRKGNFMKDTGLSENSQFGNEGYHDGKNKND TVSKQVDVSVLPECVRPDARVPPASSRSCTSYR ADKQ TVEKPTDDTPLPDCLRADVRLTPSQSPRCDDYETAGS
 IFKKSDGKRRMDTPWMYEPQLVSKDQDGQAVLEDYTDAVG
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HL KHTRGSFRTNGDYGKDNDDKLYKFGPKQTFFRRPLNF QFQPSN GGGRENRWFVEPQLMKDGYWLGQDHPGDYTNSG DMDGAHMVSERSDRWLLDPRLAAELQAGPAV YAHND KYRGGAGGKRPKDKWMTEPQLENPNDDNNMRQSDNYNKQR NDDGSNGKRRKGAGFFEDSRIPSESQAGN MRGYKNNP VAGKDMANYERYNRFFRDPNLPNKCQQTSSTYKTGKGKDK TLDGSKVNSKKRPRFYPDKSIPKKYRTTSSD YTHNEFH
 VFEGA DSCDRRDKWY DEPQLDDKGLGDHQAVSKDYENSG
NLDKFQVKDGKKWY

|  |  |
| :---: | :---: |
| UniReff9-UPIO0003FA8F14 |  |
| UniRef90-R1FU97 | RGHMAPAAHKQSQEALDETFLLSNI |
| UniRef90-UPI0004409FE1 | RGHLFPSSYGHAVVEKNSTFTLTNIVPQRKKFNQGS WS |
| UniRef90-UPIO00333E151 | VTHGFLYPPENNRTSDSQYDALITSNLVPMYEEFKKMWH |
| UniRef90-I3JTLO | FSRGHLF |
| UniRet90-W5N61 | YERGHLNPNQHQSEPNDKAATYTLTNVVPQVREFNDGPWF |
| UniRef90_V9K9M5 | WSYGFLYPPTLGSTLDAKYDALLTSNIVPMFPAFKR VWN |
| Uni | WRKGPMHRPAKR WSQANKDSFFY NANLQVAKHNQN |
| UniRef90- W7YD29 |  |
| UniRet90-W7 |  |
| UniRef90-G3 | RGQLNPDEHQGEPNDKASTYTLTVVPQVREFNDGPWK |
| UniRefoo-S4P3K: | FDRGHMAAAGHRLAQKHVEQTFFLTNMAPQVGEFNRHAWN |
| UniRef90-UP1000443CBE1 | YGFLYPPGNKALSLI YSEALITSNVPMYQSF QVIWH |
| UniRef90-F6P77 | LDRGHLFPNGHAANKDIUASTFTLTNVVPQYKSFNGGSWN |
| UniRet90_G1 | LYPPNFNSSNFEQYDALLTSNIVPMYKEFKR DWD |
| Ref90 | NPSLHQKTLDNRKATFTLTNVPQKEGSNSGPWS |
| Un | RGHMAPAGDMPTPTAMAQSFSLANMVPQDUQHNGGAWA |
| UniRef90_V9K | SYGFLYPLINLLQDQHDKYEGLLTSNVVPMHKAF QKVWN |
| UniRef90-UP100034F | MSYGFLFPPYLSSSPEAKYDAFLVTNMVPMYPAFKRGVWS |
| UniRef90-UPIO003B65154 | LNIT LQQQYDALI MSNVAPMYPAFKR I WD |
| UniRef90-G4YM57 |  |
| UniRef90 H2L5C0 | PVLSTSPASRYDASLTTNTVPMYPAFKR QVI WT |
| UniRef90-B7N: | SPPQLSKDSSQDYSEALLTSNIVPMYQSF QVIWR |
| UniRef90-G5C7\% | VTHGFLYPPANSKTADGQYDALITSNLVPMYEEFK KMWD |
| UniRef90_UP10003835B4A | MTRGHLATAA |
| 2v4 |  |
| UniRet90-UP100032 | RGHLYPSYGSTESEQSSTFTLTNVPQTDNFNQGSWN |
| UniRef90 X6BTY7 | KGHLVRREDVLWRAANKATYFYSNASPQHKNFNQDEWK |
| UniRet90-K9T | RGHLAPVADRRTRKDVLATFLT TNILPQQQTNNRG\\|WR |
|  | RGHLTRRSDPTWERPNADTFHFSNCSPQHFRFNESYWQ |
| UniRef90-E7F2C4 | YSFLYPPQLSSTQEARYDAVLITNTVPMYTAFKR VWS |
| UniRef90-M4AGP1 |  |
| UniRe990-W5 |  |
| UniRet90_U3FAB3 |  |
| UniRet90_UPI000473. | A |
|  | IDRGHLARRASAVWAQANKDTFHYTNAAPQAARFNQGMWL |
| UniRef90-W5 | RGHLNPSLHASDPTEKCSTFTLNTVGKEENDGPWA |
|  | GF GFSPPPANNQSNKSYSEALTSTNVPMYEEFOKMWD |
| UniRef90-UPIO001A2D494 | YDRGHLAPVYHANSQSCADATFTLTNAAPQEPNFNRGTWK |
| UniRef90-I3MUU9 | DTYGFLYPPANSRTSNSRYDALVTSNVVPMYEEFK |
| 4T5 | A |
| UniRef90_O08C | FDRGHLAPVYHANSQECADATFTLTNAAPQNPSFNRVEWR |
| UniRef90-SgWR | SRGHLAPAQSYKHSQEMDNTFNMANVVPQDMTLNALDWL |
| UniRef90 F1LSF4 | VSNGLCLFSHLISSPEAKYDAFLVTNMVPMYPAFKRGVWA |
| UniRef90-HOVSW3 | QVIWR |
| UniRet90-W5K91 |  |
| UniRef90_J2RRIO | KGHIVRREDVCWQRANGDTYHVTNCSPQRGNFNQGITWG |
|  | GFLYPPANSRTSDSQYDALITSNFVPMYEEFK |
| UniRef90-J8M5W7 | WDRGHMVRRKDVGWKKGNDDSFCWGNVLQHCEVNQG |
| UniRef90 R1DM51 | APPA |
| UniRe990-HA | GHAPAPSLHKA SKD |
| UniRef90-UPIO0044446EF | S |
|  | KDSSQIYSEALLTTNIVPM |
|  | DVF DVVTQSNSN |
| iRef90_UPIO00443C | GFLFPPELATSPESRYDSSLITNTVPMYPAFKR T W W |
| UniRef90-U3D179 | GF LSPPQLNKNSSGIYSEALLTTNTVPMYQSF QVIWR |
| UniRef90-B3EX52 | GF LSPPQLNKVSNKIYSEALLTTNIVPMYQSF QVI WQ |
| Uni |  |
|  |  |
| UniRef90_H2M341 | V |
| Un | TLNPDEHQNEPDDKASTYTLTNVVPMVPDFNDRTWT |
| UniRef90-X0YM | HITRRRLDVVWGSSAKKANDDTFHYTNCVPQHEGFNRRSWR |
| UniRef90-13100037516FA |  |
|  | DQGHLTSFQEILWGQAAKDTFYFTNCVPQHSLLNKGAWK |
| UniRet90 W5UK91 | LSYAFLYPPQLASSNDARYEALLITNTVPIYPAFKR V |
| UniRef90-UPI0002A4CD | FPR NVSADOQYALIMSNVVPMYPRFKE WD |
|  | A |
| UP1000065F6DF | APLNPDLHQSDPGDKSSTYTLTNVVPLKEDFLVASWR |
| UniRe990-14Y | RGHI VRREDSCWGQANADTYHWTNCTPQHELFNQGDWG |
|  |  |
| UniRef90-B7JZ64 |  |
| UniRef90_H2W826 | WN |
| - | P |
|  | SPEVDFTFRREQHATE |
| UniRef90-UPI | NPNGHHP V/PSRNATFTLTNVVPQNPK |
| UP1000 |  |
|  |  |
| f90_GOL4R0 |  |
| UniRef90 B5EW91 |  |
|  |  |
| 1386 | dillt |
|  | GHLAPVYHARSQDCADSTFTLTNAAPQVPKFNKGPWR |
| Ref90_A5EMQ3 | LDFGHLTRRQDAAWNAANSDTFHLTNCSPQHSVFNQSS |
| UiRef90-B0RON8 |  |

UniRef90_UPIO004790CB8 UniRef90-UPIOOO3EA8F14 UniRef90-R1FU97 UniRef90-UPIO004409FE1 UniRef90-UPIO00333E151 UniRef90- 13 JTLO UniRet90-W5NGL3 UniRef90_V9K9M5 UniRef90-R11HX4
UniRef90_UPIO00292A42C UniRef90-W7YD29 UniRef90-G3N186 UniRef90-W5NKM1

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UniRef90-F7BSJ2
UniRet90_B7NZB8
UniRef90-G5C778
UniRef90-UPI0003835B4A
UniRef90-D2V494
UniRef90-UPIO0032969EE
UniRef90-X6BTY7
UniRef90-K9TRS7
UniRef90-D5WIL9
UniRef90-E7F2C4
UniRef90 M4AGP1
UniRef90-W5KXV6
UniRef90-U3FAB3
UniRef90-UPIOO047345C3
UniRef90-HOOID8
UniRef90-W5N2N4
UniRef90-UPIOOO32AFB44 UniRef90-G1PVJO UniRef90-UPI0001A2D494 UniRef90-13MUU9
UniRef90 Q4T552
UniRef90-Q4T552
UniRef90-Q08CG1 UniRef90-S9WR97 UniRef90-UPIO00444194B UniRef90-F1LSF4 UniRef90-HOVSW3 UniRef90_W5K9W4
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UniRef90 HOXAK5 UniRef90-UPI00044446EF UniRef90_UPIO003F14329 UniRef90-G5C779 UniRef90-B3S3V8 UniRef9O-UPIIOOO443C25E UniRef90-U3DI79 UniRef90-B3EX52 UniRef90-K9Y093 UniRef90-A1VJX1 UniRef90-H2M341 UniRef90-UPIo00443DAE7 UniRet90 XoYWJ5 UniRef9O-UPIIOOO37516FA UniRef90-I3JTL2 UniRef90-UPI00047A65AE UniRef90 W5UK91 UniRef90-UPIOOO2A4CDCB UniRef90-W5N6M3 UniRef90-UP1000065F6DF UniRef90_- 14118
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UniRef90_UPIOOO38F1386 UniRef90-F10GG37 UniRef90-A5EMQ3
UniRef90_BORON8

130
140
150
160
GLLETYLLEENATDY RRRLTVFTGPIIFSDDDPVYRG IVI

 YFHRV 1 LLRHATERNGVNVVSGPVFDYNYDGHFDANTSV KMEECIKCVLNKYCDNNNGNI EGFVVDGAQPSNNSLNNRL QHEDRIRRRLNNYCRGQAYVI TGVTTSGNMIRRDNDDRV WLELENWLLEEEDLDDKLSVFTGPI NTDNDQPYRGT NLEKYSRSLTR SYQNVYVCTGPLFDPYVKYQVIGKNHV QHEHTDRRRDNNYCRGTAYVVTGGVTTSGNTURRHNINRL NYETQTMRDKSQGCK TLEKHVRKDTKV YENVYCCTGPLYLPRKESDGKSYVKY YFHGTLLPKYAEERNGVNVVSGPVFDFDYDGHYDRNQEI RMENDVREDMDSDCAKNRPAYVLTGAVPNQEHYDNQKV YFHNTLLPKYVMERNGLNVISGPLFDYNADGHFDTNLQVIV KIEQDTRRYTRRAK GDVFVITGPVFTPESPRIG NNGV YFHN VLLVKYADRRNGINVISGPVFDYDFDGHFDTPDKV GFEAYIQKSL QHDDTRAC, IA AP DAADDPTADFGSGPI YLHNTLLVKKYASERNGVNVISGPVFDYDYDTQYVEGSS RLEGFMRHLAE GKYDA|YVYTGPLFDPKKNKRTGEYEVI YFHN VLLPRYAGERNGVNVVSGPVFDRKQNSKRDSNQEV YFHDTLLQRY AEERNSINVVSGPVFDSDYDGRYDRNQEIV ALENNCQTIFENNNITRNVHVYTGPLYNYKETKKSSEKPRF RMERFTRSLA YDFDSVHV DAGPAMIPEMFERKEVNGRV KMEDCTKCVLNEYCNNNGNIEGFVVIGAKPSSRNDLNK A IEDWV LERATDLSY RLCVFTGPVFTDSPPELRSVSRAA ALEKHVQDVVKRPPNGDTYIVAGGFDVNQQYNGISQNDS YFQKSLVKRYASEKNG VNVVTGPIFDYDYNGLRDVSGSV K LEGSVSQRLQAYCLGEAHVVT GI DPYEKDRWLKDKGRV YFHSTLLPKY ATERNGGNVISGPIFDYNYDGHFDNNTKU HTEEQVRQLAKQH GELYVVTGPAFD GLETYLDDNAADYRRRLTVFTGPVFSDSDPDYRDKV ALEMDVNKRLTSYCEKEAY VTGAI PYRKDRWDKKDRV YFHNVLLVKYAAERNGDNIISGPVFDYNYDGHFDTNTNV YFHGTLLPRYAEERNGVNVVSGPVFDSDYDGHYDRNQEV ALEGQI ANDLFKTCTKRVYVVTGVVPGNGQP VNNRV XYFQGVLLIEYATKKNGVNVISGPIFDYNYDGHFDTNSSV KYLDLI RRRLNNYCQGEAYVVTGGTTSGNTIQRNNVNRV LLEKRINDNDTCAEYNVYVVTGVVPD GDOKDNNRV RLENLVRKVGKQHKDNKLYVISGPVVQHDVVGRGPHGPTVV Y YLHDRVLVKKYASERNGVNVISGPIFDYNYDKQYVEGSS NTERNVANILTQECKNNDRYIVTGVV QLENFIGSQADSERY GCVGAGPVLSDNDEGFSGTE RV DTEEWI LEHDDNPSRKISIFTGPIFTENDRKYCGENGGI RLERWSRGLLK EYSDVYVVSGPLFDP YFHDTLLRRYAK ERNGVNVVSGPVFDFDYD DK ITRSQED KFEQNLSARFKNVCKDKLYVVTGII PYQSGEHKIKDRV
 YFHDTVVPRYKAEERNGVNVVSGPVFDSDFDGRYDRNQEVV YLQGTLLRRYSEENNG IVNGSGPIFDYNYDGLRDTTAQ1 YFHDLLRKYAEERNG RVNVVSGPVFDFDYDGHYDPNQED NLENHFEKVTRTNDRRELYUYSGSVGTKSDKPSDNDPYDI GYESAARQLATAE GRGDIYVVSGAFDGGKUKKDGNGNV KQQHIVRKRLNNYCRGTAYVVT GITKSGTMIRRENMNRI RIIEDWILDNADDHDLK IVFTGPVFNDYDPYYRG GLEDHVLEFADTTDERLAVFTAPVLTDEDPAYRG NMEDCI KC LNEYYDNNNGNIEGFVVIGAKPSSRNVLNKKI
 FF
 SYENNVATLLQNQCYESYIVTGVVPGNQQIGGQDPTPGV DLEMHCR
WI EHNVRKMA TTSYQLYVITGSYFQE PVKRTGYDGV RVENHVRDLAKVLQ KDITVVTGILGKKDEKEIYLGDDVI IHESQLTELFLE KCPKAYVLVGAI PSADSWIVKNNVKRV GLLEDYLQEHAETFDRK DAVFAGPVLAPTDPPYRG QMEKCVKRFDDGNCDNDKNRIAFLIIGAKPRHSVSNKNKL ELDEALYDQTEMDRSRVSII GGCIFHEDDREYRGYK RTEQYVECRRDKANDTVVGGVYTGNTPEDGDFMDTYKGM


NLEMYVTAQAKK DTPRLSDFNGPVFRATDQLYRG

UniRef90 UPIO004790CB8 UniRef90_UPIooo3EA8F14 UniRef90-R1FU97 UniRef90-UPIO004409FE1 UniRef90-UP1000333E151 UniRef90-I3JTLO
UniRef90-W5N6L3
UniRef90_V9K9M5
UniRef90 R11HX4
UniRef90-UPI000292A42C UniRef90_W7YD29 UniRef90_G3N186 UniRef90-W5NKM1 UniRef90-S4P3K3 UniRef90_UPIO00443CBE1 UniRef90_F6P7H4 UniRef90-G1K9M6 UniRef90-UP10003EC39B2 UniRef90-K2DNM9 UniRef90-V9KBF8 UniRef90-I2QAQ8 UniRef90-UPI00034FA03F UniRef90_UPI0003B65154 UniRef90-G4YM57 UniRef90-H2L5C0 UniRef90-F7BSJ2 UniRef90_B7NZB8 UniRef90-G5C778 UniRef90_UPI0003835B4A UniRef90-D2V494 UniRef90_UPIo0032969EE Uniinefol ${ }^{-X 6 B T Y 7}$ UniRef90-K9TRS7 UniRef90_DEWIL9 UniRef90-ETF2C4
UniRef90 M4AGP1 UniRef90-W5KXV6 UniRef90-U3FAB3 UniRef90-UPIOOO47345C3 UniRef90_HOQID8 UniRef90-W5N2N4 UniRef90-UPIO0032AFB44 UniRef90-G1PVJo

|  | VP VR ${ }^{\text {a }}$ |
| :---: | :---: |
| UniRef90_UPI0004790CB8 | VPVRDIATLTGLDL <br> ARVRDIEI TGLDFY |
| UniRef90-R1FU97 | V V L A D V ERASGGLT |
| UniRef90_UPIO004409FE1 | KTLAELHRNLGLKAFP |
| UniRef90-UPIO00333E151 | A RVVRDVELLTGLLDFYQEKAQPVSEDL Q L K T Y L |
| UniRef90-13JTL0 | TLGGKLHRELK I EVFPKTKCPKNT TVTHLYSNLP S |
| UniRef90-W5N6L3 |  |
| UniRef90-V9K9M5 | A R V R D I E T L T GLD F Y |
| UniRef90-R11HX4 | VSLTTQ TELTDLYFQQALTY D |
| UniRef90_UPI000292A42C | VPI E SI E R AS GLLFVPNI |
| UniRef90-W7YD29 |  |
| UniRef90_G3NI86 | MTVQQLEE |
| UniRef90_W5NKM1 | T TVGGELE |
| UniRef90-S4P3K3 |  |
| UniRef90_UPIO00443CBE1 |  |
| UniRef90-F6P7H4 |  |
| UniRef90_G1K9M6 <br> UniRef90-UPI0003EC39B2 |  |
| UniRef90-K2DNM9 | $\square \mathrm{T}$ Y E E L VKR T G VEF $\square$ PR L |
| UniRef90-V9KBF8 | ASVRDVELIT GLD P Y Q RKQPVTE LL QLK TCLPE |
| UniRef90-I2QAQ8 | RPLAEI A EL A GVT |
| UniRef90_UPI00034FA03F | A RVRDI EQLTGLDFF |
| UniRef90_UPI0003B65154 | S RVR DVE WIT GLDFY S A S S P VPE LLLMMK T R P T |
| UniRef90-G4YM57 | APLDVI EKQAGLIFFDKLD |
| UniRef90-H2L5C0 | A RVRDVE L L T GL DL |
| UniRef90-F7BSJ2 | A RVTTVVELI T GL S F Y Q R K E SVS DIL |
| UniRef90-B7NZB8 | A RIM DVE HIT GL S F Y Q ERKEPVSDILK L K T H LP |
| UniRef90_G5C778 |  |
| UniRef90_UPIO003835B4A | VQ K Q ENES GLK K |
| UniRef90-D2V494 | $\square S L Q E L E S V T G L K F L D K D A K S$ |
| UniRef90-UPI00032969EE | NLK ALQRTLGVEA F P |
| UniRef90-X6BTY7 | VTMAAI ETWTGLD |
| UniRef90_K9TRS7 | I N I E ELE KL |
| UniRef90-D5WIL9 |  |
| UniRef90_E7F2C4 | ARLRDVELLLT GLD F Y |
| UniRef90-M4AGP1 | VPLKNLEK |
| UniRef90-W5KXV6 |  |
| UniRef90-U3FAB3 | A R V R DVEELLT GLDDF Y S VLK Q P L S E T L |
| UniRef90-UPI00047345C3 |  |
| UniRef90_H0QID8 | V P V R D $\downarrow$ A A L T GLLDL |
| UniRef90-W5N2N4 <br> UniRef90 UPI00032AFB44 | $\checkmark \mathrm{P}$ |
| UniRef90_G1PVJ0 | ARIT DVEHIT GLLSFYQERKEPIS DILK |
| UniRef90_UPIO001A2D494 |  |
| UniRef90_I3MUU9 |  |
| UniRef90-Q4T552 | VSND\VEVS |
| UniRef90_Q08CG1 |  |
| UniRef90_S9WR97 | VPL S R L E S L T GLLQF F P QLP P N Q K K |
| UniRef90_UPIOO0444194B | TTLEEDLQH |
| UniRef90-F1LSF4 | A RVRDIE HLT GLD F Y R K T S R S Y Ell |
| UniRef90-HOVSW3 |  |
| UniRef90_W5K9W4 | MSVTTELDRK |
| UniRef90-J2RRIO | K S L A Q I EKLIGLLLS F A Q L |
| UniRef90_H0XH88 | ARVRDVELLTGLDFYQ |
| UniRef90-J8M5W7 | VPL L TVS QLT GLLEF |
| UniRef90_R1DM51 UniRef90 HOXAK5 |  |
| UniRef90-UPIO0044446EF | MPLEELEAI |
| UniRef90-UPI0003F14329 |  |
| UniRef90-G5C779 | A RVTDVEHIT GLS FYQERKQPVSDILK |
| UniRef90-B3S3V8 | S SIA DI EKLT GI D F F P ELS A ELQVT F E T Q P T |
| UniRef90_UPI000443C25E | A RVRDVE\\|LT GLD M Y |
| UniRef90_U3DI79 | A R I T DVE Hi T GL S F Y Q Q R E P V S D L K Lik |
| UniRef90-B3EX52 | A RVT DI EHITGLS FYHER EEPTSEILTLKTYLP |
| UniRef90-K9Y093 | TNIASLEKELNLDFLSNLPVNVRTAIKNQTFP |
| UniRef90_A1VJX1 |  |
| UniRef90_H2M341 | M TVVELE |
| UniRef90_UPI000443DAE7 |  |
| UniRef90 XOYWJ5 | TPDSK I D K T G D F |
| UniRef90-UPI00037516FA | VPI A DI A A LA Gl D L G P L A A D V |
| UniRef90-13JTL2 | NLKALQRTLGVEAFP |
| UniRef90_UPI00047A65AE | VNVKMIKK\S GMGF FPYENDDARE】IYKR】EV |
| UniRef90-W5UK91 |  |
| UniRef90-UPIO002A4CDCB | A R V R DVELI T GLLDFYQGSKRPVAELLK |
| UniRef90-W5N6M3 |  |
| UniRef90-UPI000065F6DF | H SVA EL |
| UniRef90-14Y118 | A T L A D C Coma G $\square$ S LAP S $\square$ |
| UniRef90-W5LG44 | V S V K Q L E S I |
| UniRef90-B7JZ64 | S S T TLI E QLT GLE F |
| UniRef90-H2W826 |  |
| UniRef90-H9JZ14 |  |
| UniRef90_Q5WPS9 | AQADNLEYFSGLT $\square$ CCKLEEFVKRN K I I LPKEV |
| UniRef90_UPI0003AF5198 | LSLDKLE |
| UniRef90-UPI00047C1309 | LPI A DI GAMTGL |
| UniRef90_UPI000394044B | QTLEDL K E NLKLEAFPG |
| UniRef90-G0L4R0 | VAPSEI EAKCNFTF |
| UniRef90-B5EW91 | VTPAEI E EK $\square$ G |
| UniRef90_Q0F0S2 | VDCNDL |
| UniRef90-UPIO0038F1386 | A R VR DVELLT GLDD F Y Q E K A Q PVSE\\|LQLK T Y LP |
| UniRef90_F1QGQ7 |  |
| UniRef90_A5EMQ3 | LR ${ }^{\text {a }}$ A D A A R T QLD F |
| UniRef90_B0R0N8 | R S \|L |D K L | E Q |

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UniRef90-UPI0003EA8F14
UniRef90-R1FU97
UniRef90 UPI0004409FE1
UniRef90 UPI000333E151
UniRef90-I3JTL0
UniRef90-W5N6L3
UniRef90_V9K9M5
UniRef90-R1IHX4
UniRef90_UPI000292A420
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UniRef90-G4YM57
UniRef90- H2L5C
UniRef90 F7BSJ2
UniRef90-B7NZB8
UniRef90_G5C778
UniRef90 UPI0003835B4A
UniRef90- D2V494
UniRef90-UPI00032969EE
UniRef90_X6BTY7
UniRef90 K9TRS7
UniRef90-D5WIL
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UniRef90 F1LSF4
UniRef90 HOVSW3
UniRef90- W5K9W4
UniRef90-J2RRIO
UniRef90 H0XH88
UniRef90 J8M5W7
UniRef90-R1DM5
UniRef90 ${ }^{-}$HOXAK5
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UniRef90-G5C77s
UniRef90 B3S3V8
UniRef90 UPI000443C25E
UniRef90-U3DI79
UniRef90-B3EX5?
UniRef90 K9Y093
UniRef90 ${ }^{-}$A1VJX
UniRef90-H2M341
UniRef90 UPI000443DAE
UniRef90 XOYWJ5
UniRef90-UPI00037516FA
UniRef90-I3JTL2
UniRef90 UPI00047A65AE
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UniRef90-H9JZ14
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UniRef90_UPI000394044B
UniRef90 G0L4R0
UniRef90 B5EW91
UniRef90_Q0F0S2
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UniRef90 F1QGQ7
UniRef90-A5EMQ3
UniRef90 BORON8

HLLYGRPAVLYRTKILHHHDFES GYSETTGMPLWTSY
 LP GKP RVK SVSCLLYHHQYV S GY S K DL S MP L WS A Y YEYATLYDTANKI PVYSAY P S GF QE $\square$ T E E P D Y $\square$ C Q Q Y F A T L Y D K E K R I NRHHFATFYDKRRRI PVWSAY R P K N A A R $\square$ CQFYNHRFATMYDKT QRI PVYSAY K P GED P HE L R Y HHFS ILMNADRRLAFVTAC Y H Y A T L Y D R D R R $\| P$ V Y S A Y LP F GRPAVMFD T Q L LH HVEF DS GYS K ERAMPLWT S Y QRYNNKPRFATLYYAARRVPVYSAY HALF GRPRMLQPDC LLYQEGFISAYSHKALMPLWSSF

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


C Q

| L I | $E$ | $Y$ | $V$ | $D$ |
| :--- | :--- | :--- | :--- | :--- |

L I E Y V D F
VP F GRPRVK Q $\quad \mathrm{DC}$
K $\square \mathrm{G}$ LP R L TA SAT P NLPF GKPRVVQENCLL Y Y

QRFVNRFHYRSCYDVPNQTAHFVIHH
LK Y F H Y S LVVMHK D F K MC I WA A S
$R$ C C Q H Y Y A TL Y D K D N R I P V Y S A Y
DEYVLK YYHYATLYYR NQR@P Y S A Y

D D $\square$ A A PVREADGGEHELKYEHFSVFMHKTRRLALLTAS
P S GFAKADTANRYQNRYHFATLYNKANRIPLWSAY $\square M K Y G F P S T N D \square T$ L NETFDFVTSFDRRNSAILWLCE
 P T Y S L L H H V D D F I S G Y S K E L A M P L WT A Y

QRYVD QPRF ITAFY D P K K HIDPMYS A Y


$S Q V L \frac{E}{D} K \quad Y Y L N C Y D Y N Y K G T K A V A Y$
NRYHFATTY DTAHRTAVYSAY DHCPQFFLRETPPHVRDCQRYFATLYDQDNHIPVYYSAY FYPTYETCFNYDTRNPI YS QY

$H\|E\| C Y D E E K Q \| S R Y V R Y$
HLLE I C Y D E E K Q I S R Y V R Y
H HPFGTPQPGNSFCLLFHADYLSGYSRDRLMPLWVSY
 T D NL Y V HKD Y V V SQDRSTNAPKWMCE T S R T PLD Y $\square$ N Y SL VM GRSHRMA IY S AV NQYHFATLYDRNRR DPL F SVY DFAPYFNPLNCS VVLDKFEYTNCYDYKLKGTKAVAY
 LP A GFASTYICQKYGFASDYDRGRRVPDYSAY

NKYRFATMYDRDRRI PL FSAY
 LN N RYHYATLYSTHHRI PVYSAY QQYDNKFHFASLYDRGRRVPLYSAY Y A T L Y D S S R H L PLLY S A Y $R R L D H P H F T V L L D P A R R L A A A T G V$
P Q GF DQNAHK $\square$ CQKFYDSFAS LYSTTHRIP LYSA Y

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UniRef90_Q4SZU5 UniRef90_UPI0003BD2546 UniRef90_UPI0003C26B11 UniRef90_Q4S8J8 UniRef90 - G3P599 UniRef90_UPI000255F498 UniRef90-UPI0003B47EF8 UniRef90 K7FF46 UniRef90_UPI00042A9DE8 UniRef90_UPI000478B26C UniRef90-I3JMH8 UniRef90_UPI000442061B UniRef90_UPI000443A0B2 UniRef90_UPI0003D0A7A5 UniRef90_Q4SCS2 UniRef90_W5K9W5 UniRef90_M4AGP0 UniRef90-UPI0001DE6D54 UniRef90_UPI0003C4A54F UniRef90_UPI00035996BD UniRef90-X5Q2V1 UniRef90-UPI00039587F0 UniRef90_I3JJN4 UniRef90_W5N6M8 UniRef90_I3JJN8 UniRef90_H2S8H4 UniRef90-H3C189 UniRef90_UPI000441AE68 UniRef90_W5NHX0 UniRef90_F4HOH0 UniRef90_UPI000454612E UniRef90_T1IX19 UniRef90_T1IX19 UniRef90-T1IX19
UniRef90-G1K9C7 UniRef90_-G1K9C7
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UniRef90_B4ML29 UniRef90_M4ASL5 UniRef90_I3JTL1 UniRef90_B3MJA2 UniRef90_B4JR03 UniRef90_UPIO003EC6812 UniRef90_T2BEJ8 UniRef90_E7F6K2 UniRef90_G3X3M1 UniRef90_K9VJ27
UniRef90-F6YH01 UniRef90_V8NCE3 UniRef90_UPI0003942AB3 UniRef90_B4LBI3 UniRef90_W5KGP7 UniRef90_UPIO001DE6D13 UniRef90_I3KVB6
UniRef90 UniRef90-I3KB55 UniRef90_UPIO003C26F4F UniRef90_H2SXU4
$T$ VSRQVELS P
$\square$ L R K H E S L H R R N T F DVVE P QLIP S M Q SE S Q A VNA D Y G N R S
 TLPK QEDWTPVPECVRADPRVSADHSQSCSAY S QHPQ EYRGGS E G KRSFWK IEPQUNDNDNMIPA DINDYA K Q T E $K$ LGTRK G QVQQCE GK WKV E P QL S KA E DA SLLEN I QR D Y EK T G $V Y S A P Q G K R P K A S W K F E P Q L T Y S G A D G N Q A V Q P D Y \square N S T$ TI DRPMNPPAMSDCLRADVRLRPSQSPRCDQYAAAGN
 $N V D G A A L L D L A R D E W R L D E R V P A D W Q A G P A V V$ VAAND TVNKYDNRTNVPSCLHVD IRIPSRSSHTCSFYKSRHQ TFNDSLSTD DFSNCLYQDLRIPFFSPTHKCSFYKNNSKLSY


 TFKK T DRSSHVDYP WMYE PQLHKSFEDS QAVLDDYSNVVE KFEGK DDCTRDDTWYFEPQLNNADLLSNQAVSKDY I KSR
 TLDP KRCTKP DS E A WK V EPQQLI K EKLLKQTQAINEDYEKTG
 1 YQPGP

TFKKS D GEMRVDVPWMFEPRQi D D Q
$1 F K N S E G D K C V D A S W M Y E P Q L S A$
I Y N P G G A K R P T K WMVE P

 QVT QVYKNVRDENDNVEEDSI PEEFRTGQDDYEVNNFQHL



 QFEPSSGGGRENRWFVEP QLVND GWQAEMKDGYWDYTNS G



 TLDGSRCQTKKRSKWFVEPQLSKDELDSSQAVNEDYEDTS
 $T L L K Q E D A T P V P E C V R A D P R V S A D H S Q K C S A Y S H N N$ $V L N G K G D K Y R V R K T F R E G K G V Y \square G V N M Q Q F V L S S K T S Q L F$
 PLHDA YAKKNRKNSYKDDPDLPYEQV TLTADNSNGSPVVDLRRPDVRLEPEEQFSCGDFEFEEREFQ QFQPSNGGGRENRWFVEPQLVDRSWQGEMKDGYWLGQDNP

RL E A D NL K GK K R P R F E D D T N I P K K Y R T T WS D Y K N S G
AT I DD PSKQFY
RF QPSNGGGREKRWFVEP QLVNS SWAAEMKDGYWDYKHS G $V Y N P \quad G K A K R P R K W M I E P Q L I N S M F Q S D M E T E G D K N L T D$ TQKPAYY QTRVERPFFIDDQFAVAQLVGTKLKDYMTPSQE

$N L D R S Q P L Q F T A S R L K P D S R L S V D Y Q P R P N W Y F R A \quad D R P$

ELT P A NVGY QR R G D F Y E DVVN LY G Q T H Q L E Q Y I D T S K D M Y ELTPANVGYQRRGDFYEDVNILYGQTHQLEQYIDTSSDMY $T L Q P S R V R T L D P D G C \square R A D F R V P S S S G Q L C L L Y R D E A A L S$ E YRGGPAGKRPK $\quad$ GK WM $\square E P Q L E N \square N Y N H Q A G D \square D Y Y K Q T E$ HFRGDYKK
HLKGNYKK
 $N L D R S Q R M Q V T G S G L R Y D N R L L D D L Q \quad P D R A W Y L R P D R R$ IL S P GDGPRPKNTNWMDEPRLVSDYVKNSQADNEDYKHS G


$K V D S S W R N R V E E R P F \square T D P G \square P G S P Q V W P R \square D G \square M Y T G T G$
 QY K T GRGTRSEEWMIEPQLRTLLKKSQAVDQDYKEGVQ KYEPGP GNRSK L WY AEPQLDNPAYSKDDDNQDYNNGQG
 LEDK Q A A G N S R T S V W N V FKK S DGKRRMDTP WMYE P QLLLSNDESSNMKAED Y T DAVGG M $D$ G G R LLQP PRTGGWRLDPQAPEHEQAGPELYHRN TFDYTNQE GRKTGNWFIVEQVSKSPQVRCCAVDDDYS HTG $M L T V K S C C Q P Q R R K K W F V V E P Q L L G E H K Q S A Q A I S R D Y E N T N$


UniRef90_UPI0004442E77 UniRef90_Q7WX15 UniRef90_Q0V9E2
UniRef90-D2R620 UniRef90 Q4SZU5 UniRef90_UPI0003BD2546 UniRef90_UPI0003C26B11 UniRef90-Q4S8J8
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UniRef90_UPI00042A9DE8
UniRef90_UPI000478B26C UniRef90_I3JMH8 UniRef90_UPI000442061B UniRef90_UPI000443A0B2 UniRef90_UPI0003D0A7A5 UniRef90_Q4SCS2 UniRef90_W5K9W5 UniRef90_M4AGP0 UniRef90_UPI0001DE6D54 UniRef90_UPI0003C4A54F UniRef90_UPI00035996BD UniRef90-X5Q2V1
UniRef90-UPI00039587F0 UniRef90_I3JJN4 UniRef90_W5N6M8 UniRef90-I3JJN8 UniRef90_H2S8H4 UniRef90_H3C189 UniRef90_UPI000441AE68 UniRef90_W5NHX0 UniRef90_F4HOHO UniRef90-UPIO00454612E UniRef90_T1IX19
UniRef90_T1IX19
UniRef90-T1IX19
UniRef90-G1K9C7
UniRef90- X6IK67
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## UniRef90_G1KE08

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UniRef90_H2TQX1
UniRef90_Q0ZST9
UniRef90-F1RCK3
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UniRef90_R7TW03 UniRef90_I3KIN5
UniRef90-T1JED0
UniRef90-H7SKC2
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UniRef90_B3MJA2
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UniRef90_T2BEJ8
UniRef90_E7F6K2
UniRef90_G3X3M1
UniRef90_K9VJ27
UniRef90_F6YH01
UniRef90_V8NCE3 UniRef90_UPI0003942AB3 UniRef90_B4LBI3

 D L E

## LIE

 DETTAE $R V$ I $F A G P$| $G$ | $N$ | $N$ | $R$ | $L$ | $N$ | $N$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $R$ | $R$ | $V$ |  |  |  |  |
| $R$ | $F$ | $N$ | $G$ | $V$ | $D$ | $S$ |
| $K$ | 1 |  |  |  |  |  | A EAYAK DSGGIVNVA GPVEDNNYDGLRDSADQI

 $\begin{array}{llll}Y & F & H & S \\ G & L & E & D \\ G & L & E & D\end{array}$
YLE Q S VN Q SNQTLDAFCLGEAYIVTT
 $Y L H D T L L Q R Y S K E R N G V N V V S G P V G D F D Y D G R Y D R S Q E V$ GFENHIQRDLQS GD TRACII A GPI LNPNDPSEDF GT GPV YF QRVLVKKYATE R N GVNVLTGPI FDYNYDGVRDIG GTI

 EHDERI RVRLNNFCLGKAYI I T GVVTTGNT\|RRNNQNRV
 K Q E H V V R K RLDN NY C R G K A Y V V T

 AVETYVLRNAYTT RGRVTVFAGPVFGEDDPPYRFDS DYENQTMAQNTQGCRT TYVI TGADPGNTYDSNNRV



 $Y$ IH DVLLVKYSQQKSG LNVVSGPVFD GLEDHVLVYAETW RQRLSVLTGPVLRDDDPGVYR
Y FH QT L L

ELRSYI AFLTQR
ELRSYI AFLTQR




 $\square H E S D L T T$ LTFEKCSKA YVLVGTVVPSADNW $\square V K N N V K R V$

 $D$ LE DLI T R HLE E GN RVSYFAGPIVDVEDKFFYNRFKGM

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



 KI E K R E R QVALK L L G L EVVLNLVNYDNNPQR IDNQI YLE YD TRDLAEKHGTDTVYSGGWGVLELEDDNGNQDKKVV
 $T L E V D L R N H D H A A G Y N T I Y T G T Y G W T D L H L Y T D E N N N P V I$





 PLENWVRTQ HNPLANKVTIFSGTDFNPTSHP』DG

 NWEDK LKMLLQQRERDGTAYIVTGTVLRIPQRPQPQNSNRV
 QYENDMIG S AKGCKTMYVVTGIVPSKEW FYEEHINTAGCKQTYVIVGAV
 YQSKTM PQHTKDCTT R DE D D S V R K F V KYEKNLTGYADGCKTMYVVTTGIVPSNDTW $P Y L D V V R R R L N N F C H G K S F V V T G V T V S G A A D Q R N N R D R L$ $G$ LED HVLAAYA QAHEHR LVVLTGCVL A ADDPDVRGV EWEAAVRILKKDQDPVGTAYLVTGTVPSAHNRDPRRDYNRV K L E E S L R D K L K Q N C L N E G G T A Y L V T G D D Q E WDR QR T Y N R V

UniRef90_UPI0004442E77 UniRef90-Q7WX15 UniRef90-Q0V9E2 UniRef90 Q4SZU5 UniRef90_UPIOOO3BD2546 UniRef90-UPIOOO3C26B11 UniRef90- Q4S8J8
UniRef90- G3P599 UniRef90-UPIOOO255F498 UniRef90 UPIO003B47EF8 UniRef90 K7FF46 UniRef90-UPIO0042A9DE8 UniRef90_UPI000478B26C UniRef90 - $13 \mathrm{JMH8}$ UniRef90-UPI000442061B UniRef90_UPIo00443A0B2 UniRef90 UPI0003DOA7A5 UniRef90 Q4SCS2 UniRef90-W5K9W5 UniRef90-M4AGPO UniRef90 UPI0001DE6D54 UniRef90 UPIO003C4A54F UniRef90-UPIO0035996BD UniRef90-X5Q2V1 UniRef90_UPI00039587FO UniRef90-13JJN4 UniRef90-W5N6M8 UniRef90-13JJN8 UniRef90-H2S8H4 UniRef90-H3C189 UniRef90_UPI000441AE68 UniRef90 W5NHX0 UniRef90-F4HOHO UniRef90-UPIOO0454612E UniRef90-T11X19 UniRef90-T11X19 UniRef90-T11X19 UniRet90-G1K9C7 UniRef90 - 611 K 67 UniRef90-UPIO0022B54D4 UniRef90- $\mathrm{B6DTG}$
UniRefon
U4JUA4 UniRef90-B4JUA4
 HIPDFIWKAl HVP NGIGAAVYLVRNDATPAYS V V N| P SRVWSAYCCVNNNGKP
QIPRQFWK VVIAKTEDGPKAFGFVLKQKDTAVPEDWEPYQ KVPTHFYTVVTVEDCGGALGVFSFLTPHRADNSEACKRHT NIPSVLWSAFCCYSHSQNKWLASAHWGNNTDLGGPTYLQT VVPSHVWTAVCCDHSDNNKKFSFAFLGENKPNSN AVPEYLWSAYCCPSYNKSLEGEFPTYAADGRNDRSSTEEI PVPTHFFAVLTVSECTGELQTVSFGWPHRPDNSESCKSHR RIPRRFFKIVAWNQQPALGALASTGYGEEVPGPGPFRTFQ RVPLQFWKVVAW NAGGALAATAFGLDQQAPPGGPFRTFQ KVPTHYFMVLTSCKCEGTLDTLSFEVPHRPDNSESCPSHT
 PVPTHYYSIITADKCDGPLSVLSYI FPHRPDNDESC AVPTHFF LIMTSCNCEGPLQAMAF MPHKPDYSEFCRFHD KIPTHYYVVLTSCKCEGALDALSFIDPHREDNSESCASHT GI PKELWSAYCCTNAPHDVRDFFPSYASMGKNSQDSEMTE CVPSFFWTAYTCDDNNQQDAAAC AVPNYLWSAYCCVDYDHNTP VVPGHI WTAVCCEHANNNQKFAFAFLGKNRPDS $\quad$ LEP NVPSHIWSAACCLEGTIWSAACC HVPDKFWK $\square$ ALLWSDQAGLRA NVPSHDWSAACCQTNTAMKTWAVIAGNNMN PVPTHFYTVITVDECEGALKVFSFLLPNKPDNSEACNSHT AVPKY LWS AYCCPRFDRNSPYDVRYMFPTYAAYGQNDQVD QUPTHYF\|VLTVTSCDSEDQTVSFLLPHRADNLESCKSHQ TVPEYLWSAYCCTKFDQNAPYTERYKFPTLNNRANNHVVE AVPTYLWSAYCCTD
NKPSHLWSAACCVIDNNHTRSWAlLARNEEN P 1 PTHYYLLATSCDCHGQLDVTSFVLPHRPDNSESCPSHV GVPRHFWKVAVWATPDRAGVGHGDDGPRVRPPLGPFRTFQ MIPTHYFRANTPGNCDDSLDTLPFDLPHRPDNVESCEAHT
A AIP T H F F KVLL A A P HFFKVL
PL

## P

 PLPTHYFVVLKGEVNEPQEVVDAFLIPGDATDEFDPDRYR A VPDYYWKVICDPTTEQSAGFYGSNNEGGTVKTFS NIPDYVWNAYCCVDNNDQPDQSGAGTARNTDEN R 1 PRKFWKVVVCRESRKRNAAFGYVFDQSEPVERFGDSYP NKPSYMWSAACCVVDNNHMRSWAIIARNDEN NKPSHDWSAACCVVDNNHRRSWAVIAENDKNAVS TVSKFFWRATCCLNSNDVYIGKAYFGPNNNDKVEEK AVPTHFFKILVIDQKDEPYAEAYVMPNSPLNNNVELRTLL LIPTHFFDVLTSCKNCENDDTLAFILPHRTDNSESCVHHR PVPALFWKAVFHVKTSAAIVFVGANNPHAENGAPSVCKDV A: PEFMWTAYCCTDYDHNAPYSERYKFPAGNDRVNNHVVE PVPSHVFAVFLKCPSTDCSDMDYDVQAFVVPNKPNPGNCL NI PDYLWNAYCC
AVPTHFYKVIVCSNWDKKFRFECYKFENKYEGDDDVTKF AIPSSYTKILKGDNFKE CYQVPNHEVEDESIRSYQ PAPADTWKVIYEKDTNRAAAlVG\|NNPHDTTAPEPLCTD NDPDYMWNAYCCVDANGRPVLSGAATARNTEQNR NRPSHDWSAACCLDDNNHLRSWAVLARNDQN
PIPQYFYKVVYEPSSKNGI AFVGIINNPHYTAEKVKELIFC PIPTHYYSIITADKCDGPLSVSSFVLPHRPDNEESCKMHT PVPYAYWKAVKGEVREPEFEVDAFFIPADATGAFNVEQYR AMPEYCWKVLLRTKNGNTKKAI GFWAENSSASADGFAEYT PVPRLTYRLVIDQVSRQGVVLVVANNPH
PVPRLTYRLVIDQVSRQGVVLVVANNPH SVPTHFFLIMTSCNCEGPLQAIAFDMPHKPDYSEFCAQHD NIPSVLWSAFCCYSHSKESWLASAHWGENKDDG
PVPSHYFKVLIMDSQQSYPYMEGYIIENSRIVGGKDSDHR PMPSHYFKVLIDDPQCSPYMEGYUGDNKNMPSSTEELDDYL
 TVPSH I WTAVCFKHQSDPRKSYSFAY $\square$ GDN
AVPTHFFKVLILEAPGGQDEDRSYVMPNPVDENDPGERFD RI P GWTWKTILVSNQSSLGVSYTYITPNDPEPYTDWSTWK NI PKYMWNA YCC
NVPSHDWAAGCCVSNQNNQKKSWAVIAENKQNTVVRLTLG NVPSHIWSAACCQTNTDRRTWAVIAENNRN
 NI PSHVWNAYCCVDNNDKP
IIPKHLWLAAYCCPQFDRNSPYEVRFMFPSYGGYADNEQAG GI PRRRWK IAA WAAPSWRTRTARA $\square A A G E \square P P L G P F R T F Q$ TVPTHIWTAVCYDHPDEEESFSFGYIGVNEPHG AVASHI WTAVCCDNANNNLKFSFADLAENKEESK

UniRef90 UPI0004442E77 UniRef90_Q7WX15 UniRef90_Q0V9E2 UniRef90_D2R620
UniRef90 Q4SZU5 UniRef90_UPI0003BD2546 UniRef90_UPI0003C26B11 UniRef90_Q4S8J8 UniRef90-G3P599 UniRef90_UPI000255F498 UniRef90_UPI0003B47EF8 UniRef90 K7FF46 UniRef90_UPI00042A9DE8 UniRef90_UPI000478B26C UniRef90 I3JMH8 UniRef90-UPI000442061B UniRef90_UPI000443A0B2 UniRef90_UPI0003D0A7A5 UniRef90_Q4SCS2 UniRef90_W5K9W5 UniRef90_M4AGP0 UniRef90_UPI0001DE6D54 UniRef90 UPI0003C4A54F UniRef90_UPI00035996BD UniRef90-X5Q2V1 UniRef90 UPI00039587F0 UniRef90_I3JJN4 UniRef90_W5N6M8 UniRef90-I3JJN8 UniRef90- H 2 S 8 H 4 UniRef90_H3C189 UniRef90_UPI000441AE68 UniRef90_W5NHX0 UniRef90 ${ }^{-}$F4HOHO UniRef90_UPI000454612E UniRef90_T1IX19 UniRef90_T1IX19 UniRef90-T1IX19
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UniRef90_B6DTG1
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UniRef90 UPI0003B6AAC0
UniRef90_J1EEF0
UniRef90_G1KE08 UniRef90-UPI0003C28E98
UniRef90_J2UNE4
UniRef90_F1QVX8
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UniRef90 UPI0003C4A293
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UniRef90 R7TW03
UniRef90_I3KIN5
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UniRef90-UPI0001DE6D13
UniRef90_I3KVB6
UniRef90-F6FW60
UniRef90 I3KB55
UniRef90_UPI0003C26F4F
UniRef90_H2SXU4

A R|V|RD|V|ELLT G ${ }^{210}$ LD L
$\square S V A E L R H F A G I D P F P T L P K A M N A T A M D L P L P T P H$
VS IQ E I E D L
A R V R DVE I L T G L D L Y
$K$ T L G E L L T E L Gll E A F P G
L S V P A E L
V P V
SRVR DVE W TT G LDDFYSNRP $\square P E$ LLLRMKTRPTAA $\square$ R R
$V P V A D I \quad G E L T G L D \quad M G Q L A A A D R Y R V P A E A$
V P V A D V A G L A GLL
ARVR DVELLTGGSFYQDRKQPVSDGL

LS QK DVV D RF GVVEFAP G
$A R V R D V E I L T G L D L Y$
A RVRDDELLTGSFYHG
A RI R D V ELL L T GLS F H Q D R K Q P VS D $\quad L Q L K \square$
MRVQDLEK

## MTVT QLQK L A GL

S T VA E $\square E E L T$ G L N F G Q Q VR D D $\square R$ A G S E S A P A Q T

N S I DE V P L K T L E S F L LK N E T D
A RV R DVE WLT GLD F YSNRPVPELLRVKTRPTA
V S L Q NLE

ARVRDTELLTGLSFYHN

K T $\square E T \square Q E M T G \square L F$
VT L G ELEE ELT GLL
TS I K E I E A R T G L LF
T V Q E L E T L L K
VSVA E L E T AL GLLT FPANLHAADTHQPAAAPEDAPQ
1 P V E E L
S DVVREIENATGLRFFEGLDRNLVNT
A R I T D V E H IT GLL S FY QERRKEP I S D L LK LK THLP

CTEAGFAENS GIITICCAL KNVVKQSKVVLPRD■

C R I R D L E L L T G L E F L
VSRHDLEKETGFLIFPGLPDSL
$\stackrel{1}{\square}$
$S \square T W L D F$

D DVCEFRWLT GYTFCCS IPDFRRA ARVRDIEQLTSLDFF
 A S V R DV E RLT GTSFFTDLPPA EQARLKA
TSVAEIE QKTGYKFFPMLDEA $\square A A D V K A Q H N P T$

A R VR D $\square E L L T G L S F Y H G$
A K IDE E I R Y T G L R F S K D LK P A VK
CDIAAEI ERHTGLRFFDGV
LD V A E L E R R T S L L N F
$\square S$
VP IE S I E R A S GLLLF VP NI
$\lfloor S$ L N Q L E N L T V F N F L S N L P E D VR N R $\square K$ Q Q S D
$K L Q E Q L A K L Y G \square D L F S N$
${ }_{\mathrm{V}}^{\mathrm{C}} \mathrm{P}$
FSVVEVPLKT
$V P \vee A D V A A L T G T D L G P L P A A D V L P A A G P R P E G V P$


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VSNDPYGRPRVSQTNCLLHQLQYVSGFSHDDLMPLWNAY HAPF GRPRVLQPHCLLRQEGFVSAYSRSLLMPLWTSF PKGFDTTNTVNICQKYEHFATFYDTSSRIPVWSAY $\square M K Y G F P S M N E \square S \quad \square N E T F D F V T S F D R R N S A I Q W M C E$ HFATDYDTYKRIAVYSAY LCYDESAQI TRYARY NHYYFATLGYDRGRRI P LY SAY YVTLYH L G FRI PVYSAY
NTSFPDPTNT NQYRFATMYDRNGLIPMYSAY
 SDY SGYS YELHMP L WT TY Y ATLYDS SRRLDPLY AY $\square$ MKYGFPSMND $\square$ T $\square$ NEEFDFVTAFDRRNSA $\ Q W M C E$

Y DVCHDELSEVTRYVHH APGDFVLKYHHFSTLHHAVRRVPVLSA I $K$ VGFPDP T G D FHT $\square \mathrm{Y}$ RTCFDKVKLTPLYVGY $\square$ LHKKAFDDCYSCKWKTP LVVY YEVCFDTKELTPLFTKA HHPYGTPQSGANFCLLYHLDY INGYSKDRLMP WVSY DQI I DKQ IFKICYSYKYKGALAVWY QYYNKKPRYVTLYNTVDHIPI YSAY

 NQYYFATLYDRSRRI PVYSAY NQYYFATLYDRMMRIPVYSAY NDPFGRPAVIFRTFVLHHVDYISGYSEADAMPLWTSF EACVLHNTDYSTAYSHKYNMPVWTSY RMADGSHE SYHHFSVVMHKARRGALLFAAA LCYDQQEQUSRYARY
 K LPS TENLILRESYLSSVSFRDKI PNWVAE
$D L V K F G \square P S \quad \square E N \square Y V H K D Y V V S Q D L S T N S P K W M C E$ VPAPSPAPETVVIAYHHFSLADHMKRRDADFTAS LMDKYYY INCYDYNYKGTKA DAY

A GDDPHEDKYHHFSVVMNARRKVAFFTAC PAGFENNYEY $\square$ QNRYATLFDQQNLIPVYSAY $D L V K Y G L P S \quad S E N L Y$ VHKDY $\square V$ SQNFALDSSPNWVCE

$$
Y \nabla L P S Y \quad D N L L I R D T Y \square S S V S F R Y K \square P N W V A E
$$

$\square A$ YFNYS LVMGRSHRMADYSAV HPFYATLYSVHHG $\square$ PLYSA Y

YRVCYNRAAVRPDFVEH H LIP F GRPAVMFDTQLLRHVEFISGYSKELAVPLWTAY KQYEVCFNEDEEVTRYVYH NLPHGRPAVGFSVNNVFYPLYQSCYNQNRMEVLYVWY S VMDK IYY IN CYDYHLKGSKALAY

 YHYAT LY DRDHRI PRWSAY MYDYRTRVASWILE EQYKVCFDEAEEVTRYVHE
$\square \mathrm{CY}$ D D D S Q $\square$ T RYARY IC Y D DD SQUTRYARY GNS L K Y L RYPTLI I EYDHMNRDARFACQ
 NRYHFATLYOTTNRIPVYSAY FHSVFTICYDSANEHTIYSAF


VLYPGSDQYQRPGDFYGGKDVNTLYTQVQQNYFNTTGNVY NVNGKQRDSTRKDRWLRDNRI DYAA QLDDAWYAKSG
HVK Q $\square R S$ GFRTSKGDYGKVRINEDYKTHDSRFFFRKPLHY $K Y Q G D P D Q N V K$ NSQAVNEDYKHSG
KVDGNKNDSRKSLRFRPDYNLPTKCRSYSKDYSRTG
TV $\square A G \square K G F Q A S$ FPRPDQWEQGQLYGSVDMSNQYSKNY SLRPPKPRSETDVCVRADVRVPLASSQQCLQYKD DRS ELDGKFVNKNNRPDFYSEKNI PIEYRTKSQDY DNSG


GKKNTNNRPKKFNDNGEQLY
MMGKKNNTNNRPKKFNVEPQLVNKKDSANMRSVNDYNGSG LYQPGP GTRPKTWLVEPQLISKYYNVSSEQUGKSQADLD TVSRQVGMSKRPKTWLVEPQINPAYSKDMATEMY $V L R D G Q N V S L V D N C V T T D E R I P A N N R F P C T M Y Q T E N$ TLIGNNMNIKKRPRFYPDRDI PARYRTTSSDYTKN EFH NVSADPMGKDDSEKWFGDGRILDTEQ LPDKFYNKDRKA
 ELTTPANVAYQKRGDFYEDVNVLYGQSHQLSQYFDST


HLKGNYKK

## LT T DADGDALHLR

NVDASPAAKNETERWLVDPRIAPAFQ LDPGRFFSNEKGA KLEANQKHDKKRPKFKDDTNI PKKYRTYWEDYDKSG K YRPRSTEKPPEWWMVEPQLDDEDEESQAVLDDYKGLKD

## SRGRSEFYADSSVPAAFRVKP

 I YQDNNCTNRMDSWKLEPQLADSSWPKTQAVREDYVNS G KI TPAS $\quad$ HYRKSDDFFGGRNI DPDYRTGKDVS $\quad$ Y VTAKNY HLRGNYKK LSSDDDGDETLHLRFNDVYVLSCAS

## LANYFNQKKNFF

NTHKQFY
K $\square$ NF DTYADRRSSVFRADPDVPLLWNAENRDYYCSG
 NLDRSQRVSIT GS GLRYDVRQPTSVQPPDLNWY LGQNRS KFDPQCFDSGRSNSWHLEPQLNKNTYKGNQAISDDHSDTG RTYAKPFNARRPCTFSADGVLGRADEGSNQAVDQANRDAG TLPKQEDWTPVPECVRADPRVSADHSQSCSAY SQHPQ RLEPGYFAGKNVDKLYTQETI DKELDMDSARYFDSAKNVF HQTGVGRPSWSAGGFFPGVNI NNVYTQASQADKYVTNNQF
TLGRQVDASPLPNCVRPDARVPPSYSQSCT EVKAENKQLKKRPRFEEDFALAKKYRTRWEDYKNSS
HVTK GVYGKVRDDNDYKKTHUSRFKKVFGSTQTFFRKPGFF NFDGSQMDENDQERWFTDPRIPALHQ LDPDRFFEKDRQA TLDSNYYATGVDRNFAPKETI DKALGTDSAKYFDSPKNVF ILSPGDGPRPKNTNWMDEPRLVSEYQKHPDQNVKNYKHSG
 YLTKGKNCDKAPKTDKGDTSSKKDFQVDFPQYSRKSTNEQ
 VR WHMKEDSQAVLDDYSDVVL ELTPANVAYQRRGDFYSGKDVNLLYGQANSQYFDSSRDLY $E L P A N V A Y Q R R G D F Y S G K D V N L L Y G Q A N S Q Y F D S S R D G Y$
$P C H D I Y W E G G Y T R P W R P D P K F Q E S E Q D W N N W P W T D N G G S P$ HDTKDNAHDGRKKQDKTNKVFMSDDQKEKDSFFRTTEADY



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 $\square R \square Q H L A E F Y L S C D N N D M C V C S N L V A Q R V G L H P Y D G N L W D$ FDRGHLNPNGHHP VPSRNATFTVTNVVPQNPTMNQNAWR FAK GHMSPDADFVIMDNQDATYYY DNAVPQWQAFNNGNWK FDRGHLNPNGHHP VPSRNATFTLTNVVPQNPKLNQNAWR IT H GFLY P P NLKNP QE S Q GDALI TS NLVPMYEAFKS LWA
 FHRGHLNPVCHHEDKDA QDATAFTLTNAVPMDSSLDQGQWR EDRVALSPCGAFSQSEASR,VFFLSNDKPFMRGFNLSVWD F D R GHL N P NGHH A VP S R NATFTVLTNVVPQNPKLNQNAWA LTRGHLAARQDFVHGSAQRATHFYVNVVPQWRSITIGNWL
 YERGTLNPDEHQDELDDKASTYTVTNVVPMVPVFTNVVWS QDRGHLAPSSHQPDQDSKAATFTLTNIVPQFSALNQGQWR LAR GHLSPEVDFVFGNEQHATEFY INTAPQYQSINQGNWL

 LAMSSNSSPAHFTGQSEASRVFFMSNIWSFVRGFNLS DWH A HLT P QVP HLL QNAWN

## LARGHLSAKTDFVFGAAQQASFFFVNAAPQWQTFNGGNWE

 FD R GH L S R REDA EWGP TMDMTCSYANAVP QVPAFNR GQ WG YTRGHLAPS GHQQTE EDKKATETVTNNVPQMEKFNNGPWK


 Y E R GT L N P D E H Q N E P D DK A A T Y T L T N V V P V L P E V N D L D W D





 FDKGHIVRREDVAWQNANGDTFHVTNCSPQTARFNRDNWG LT R G QL A A R LD FVVHS S A QR A T HF YI N AVP Q WR S I N I G N WL
 LT R GQLA GRNDF $\quad$ LHS S A QRATHFVVNAVPQWRSANDGNWL
 Y N DVF VLS C G G
$F D K G H A V R R H D V A W Q F A N G D T Y H F T N C L P L A A G F N Q D N W G$ Y T RGHVVVPN QSMNTPQA QLDSTF LMMSNDTPQKKDDNAK DWN LDLGGCL NPS GHMES RESKMAT FSSLTNVVP QDSVLLHK GQWN $F N R G H L A A A Q L H K T S Q A E N A T F L N A N L L P Q D K T L N A G D W L L$ LS RGH LLAPDGD FVDAAS QDMTYYY DNCAPQWQSFN NGNWK FQKGHMVRRRLDPCWGEDADDSFHWTNACPQVGFFNQGLWR
 TR $\square$ CKAFKRK $\square A R G H \square A P D G D F \square D A G S Q D A T Y Y Y L N M A P Q W Q S F N G G N W N$ FAKGHMSPDADFVLMANQDATYYYINALPQWQAFNNGNWK YSR GH LAS A GQHKDTEENSQTEFLSNNVVQNNLANNGSDWY DDR GHLVVPSA DMQNEMAMMTTFTL T NVAPQSSNENQRA WN WLPARLASAND』AWGPEFQYTRGLPNTMPQAREFYRLRWT YDRGHLN PN S FQCGEGRTATNTLITNAAPMDACFNRNQWG

 LARGHMGAKADFVVAPEQRATF LFFDNAAPQWQTFNA GNWA


 LAR GHMGAKADFVVYAPEQRATF LIFINAAPQWQTANA GNWA YTRGGHLAPS GHQQTE E DKEATVFTLTN IVVPQMEKFNNGPW
 YQRGHLARRENH $\quad$ R S SNDRENVDKFTNDAPQTKSLNCGPWR
 YERGHLNPD QHQSTP HDRAATYTLTNVVPQIREFNDGPWR LTRGQLAARRDFVHGSAQRATHFYVNAVPQWRSASIGNWLL
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| :--- |
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 RLEQMLDEQGVAGESGR\CVFSGPI FIPGDP RVENHVRNGAKLLDQDSVLVVTGGLGSRAEQEDYGGDRVI KI EKFVRDQARKYKD DRVITGVCGSLGHTW
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 KLEQHVSQMTEK F KVVENVVMEQARS F GSVVYVYTGPMYLPSC


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 RVVDGVRAWVTKNKKHDCWTGVWGVTTBPNKYDHNGNGLD

K $\emptyset E K C V K R F M D E N C D N N V V S G A K P S D S E S S D S S L L N N N K D$ $K L Q H L F Q A E L A K S C L S L G G V A Y L V T G S G P S R E M I S R G H R V$
 A I ERWVRSSVRGNQFVNVRTGANGILTLPQRQVFDSGN RN EYEERI RVRLNNFCRGTAFIVT GVTTTGHAIHRNNQRRV AVESSLRQYV ADQSLNVSVFAGSWGDSTLPNWDGAQKQL AVESSLRQYV ADQSSLVSVFAGSWGUSTLPNWDGAQKQL NKNVYGCYYGDESWWKTSSKSKDC
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AVPSFY $\square$ K FKAKDFKECYKV PNDNVLDENDNTYQ PVPE $\quad$ F WKAVFNPKTFEAIVFVGSNNPHTKTFNPGCQD LI PTEYWKVI AAVEDGKLNTYAF LDKQYTEA $\square P D K W E P L M$ PVPKLYFRVVIEETSKKG\｜VF $\square G V N N P H$
$N$ NPS L L WS AFCFYSRSQNKWLAGAHWGENRDDNHKY SVPSYVWMAACCDNRNTDHKF
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Пs LGeDe
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$\vee \mathrm{P}$ VESIERASGLDFVPNT

पs पGKLEER
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$N T L Y G L P Q N S N G N C L L I H E D Y \square N E Y D Q Y \square R T P L Y V T Y$ QR YADRPRYVTLFDPD TRDPVYSAY


Y Y A T L Y S VP Q R M P L Y S A Y


LP Y GRPRVLQTNCLLYQHQFVS GYSHDFLMPLWTS Y $P Q G \square D M A N T A E \square C Q K Y H N F A T \square Y D R A N R \square P C W S A Y$ Y F A T L Y N Q NR K I P V Y S A Y H Y A T L Y D R $\dagger$ S R I P R WS A Y
 $N M P Y$ GRPQATNDGE LLTTQEDY IN AYDFKRK ISRRYVSF TSCFDDVARNVLYSRY


N Y Q R A Y P R P S K F
GFTVNKKYYGP VFE $\square$ CYNNDNEHTYYTHN
RNYEACYD\RRHNPMWVAY Y SVLFNKRRKDP $\square W S!A$ TMYS $\square G Y T \square N N H R Y R A C Y D R T N V R A H F T V H$

Y RACYDRTLIKALFTTH
VCY N A Y T G L P L WT LE A A SPLLCLPRQGFTLLY DPVARRLSVVWCGY $\square$ A H A P LG $\square$ P $\square$ P N D S N VLL $\square$ NE DY LTT GF D T E S G $\square P L$ WT S Y

I C H DEDNEVTRYVHH
YRSCYDVANVAVHFTLH YHFATLYSPEYRIPVYAAY YRTCFDSNTLRVHYSTS
$\square C F N P T E E A T R Y V Y H$ HS $\square$ SESYRPSFKTAG TAP VLE YKDFLICYDNDTKTPVWVLE

FATMYDKDQR VP $\square Y S A Y$ DHCLLYHREYVSGFGKAMRMPMWSSY YTICYCTSRETVLVSAY NFY $\square H L D G H S L S Y N C E R R T A D R W N Y$

VCHDEVNE VT R Y V H H

Y H F A T L Y D T T N R $\square \mathrm{P} V \mathrm{~V}$ S A Y A Y

Y R A C Y D R N G VRARFTTH YS $\square$ C Y S T QRETVLYS AT ASTLRTYYSKYT $\quad$ TGY Q S Q Y P R P Y WK Y G AESHVK $\square$ C QRAFATLYSTRDR DPVYSAF ESYEVCFDNDVRMPRY\|RN G NDTTSPSTSY LYR VGYELCHDPKHLRTHYAHH

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TYNAQFQQHVERPYFVEDDAYRRKRVGGHAANDYTTAESF ETDGTSLKKFVTVCFYTKNHQTALFKYDYNNEDKISDSSF S DGTYNSTNGYNKTCYLQDMRVMYYKEPCRYYSTQKDVT TVYGKPFFPARPCDFSRDNALSAADARTNQRYMPNNRDVV TLYPKT ${ }^{\text {S }}$ STRPNRFTTDQLITPAQYGQNQQYIRNNRDLV TLHGASSNTRKVNEFYTKKNQLARFEFGQGQTYYDEKKNF T पDKTVSDRAVENCDRPEARLPPDNTYPC TDYNMNKGDGT TEKKTDRSTHVDYPWMYEPQLHKSFEDTQAVLDDYSNVVQ RVYGKPFY $\mathbb{V}$ TRPCQFSSDGVISGADEGNNQNYDPNNRDVI

T पDRDTTTTGRADVWHVETQ $\mathbb{V}$ QPGSRTDQA $\square$ SDDYTDTG YY $\frac{1}{D D V G K S Y Y Y}$
NASSLPSTMPDCLRADVRTPATQSQNCSDYQ VVDGGGDVSRNRSNFYADDTVPAAFRVGP RVYAKPFFPRRPCRFSTDGVI GQADESNNQQFDPNNRDVV ETVPDTGE LKRYKGFHREDKLPEHCRKKSSTFKRPAGTTQ THCVRPDVRVSPAFSQ\|CDAYKN DKQ TVHRNDSFSAESNCLYQDLRI SLDPSVKCS FYKNNAELDS HVSPATSYTTAQQRVRLAALLGSQEQADRFDTTSSYMSR
K LGDAACQAKKMSQWFVEPQ
C TLDKSECEARRTYKWLVEPQLTDPEGRQNQAINEDYENTA TFNTTNTKQNWKRQYPWDTDLQEQWGIVDFTDDPTPTAQH TMTDEARQGYKPKYCRPDDRVPQEATTPCSDYTTTNLQSV YLTSGMVKGARHNHFYTDRTLPRELQVKSMQLQRN RHA TVQNKTRTKSQPNKCपRPD TRLPQESSSKCDEYGSASEAH LVGKFYPG TПNGATYTTTKTNEYYTQANKVAVERYYYWNTNHADNTM PCHEDYWEGGYTRPRPDPWRPDPSFSESEQQYFNSGANDY LHQSNVWQHKSYNEFFFKSRENRFKKYPCQANDLDYKDSG
SVYAKSFYPRRPCTFTRDGVLTEADANNRQTYDPNDRTVV $T$ VYQKSFNPQRPCTFTRDGADSQADAENTQRYDRNDRDVT HVERNPQRDDHSCLYCEATRTGCAQQEDSSALGSD GLIV YLTRETVDRARRQNFFTDRSLDKTARRVPAE TVSGNMTNNTNDGKWDEDPRLETNHTGSCQRLSSUVQTKD NSTKY $Q$ Q STNYY VLTPSSNGYQRPGDFYAGKNVDQLYTQVQQNQTDSNSNTY LVYPNNMGSGRPVQTFTTDNI DSGAQASSFEAKNSERDLV NYTNSTTRGRCPNCWLTEPQLDDDEMAKPTTVRGAGENQG DVYYKTFFPRRPVEFLTDEMLTPAEFGENQTYLPSPGALI
T LEPYYQQGMARVEFDTDGFFGGKDVNY $\square Y T Q K K Q K E T \square S$ HVQPATSYTTAQQADRFAQLLGSQAQADRFDTSSSY DMTVEGLKTKVKNTPHNDERVPEELQASQHDYVEVAHRDK KCKPGH GSETERWMDEPQ PSKYUSETNDYF TVDTSPDPPTVPDCDRADVRVPPYESQKCS FYDADKN GFNDPTGNYQRPNRARADDEIYKTFQTLLGDYVKSNRDYA TLATDKKAATRPSSFDTD QMMSKECNQFKTKSYASTHRG

$$
\text { T E K Y K F T पD Q } \square \text { K E S QA VLA D Y }
$$

K $\square$ NPSSHGVTRPSDFYAGKNVDNGYTKQQNFFNDTVDVY RVAELFQRLNATENGSSKGQY KV EDGKSSDHSWMVEPQLVKQEFEKKMMTQDSVKHKH YYNHSY YYNRTTQVNTVGR LLGDPKDGSKYDYE TNSTSAREDYF PKALQDSQAVLEDYKNLAD SVYHKTFFPQRPCDFSRDGVLSEADTQNTQRYIPNDRDVV PIYNQHMNGARVKSFEADDVFQRFNTLLQQTYYKNRDFA SLYPGYNMNY AFKAEVQLRSMTSEEQARKFDQPGKQY RAARPAQGSAEPR WLVEPQUAFPNSNGKQADNTDYQNAN IVTAKNDKLSTTDVWRTYPGUDKGHNEKAFTCKNKLSSCC QLTPAHFQKNVKRपKFSTAGHFTGFDMAR YYSHKSKSGGF MSNPVAQAEAQRYDFDHSY CNNQAGDQDYRNNPD

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 SYAFLYSP GLSKGMADYDATVETNLVPMY EPAKEVWN YERGQLNPDQHQSAVEDRAATYSLTNVVPMDREFNDGPWR $\square$ NRGHLAASADFFAGDQLCATFKYVNAVPQFKSVNDGNWE YDRGHLNPNSFQCDAEGKATFTLTNAAPMDACFNRDHWK FARGHLAPDGDFDDAGSQDATYYYINAAPQWQSFNNGNWK LARGHLGAKADFDYAPEQRATFLF NAAPQWQTFNAGNWA MSRGHLAAAQLHKASQAEMDATFNANIVPQDMTLNAVDWL DNRGHLAASADFDFGDQMCATFKYVNVVPQRASDNDRNWE MSYGF LFPPYLSSSPEAKYDAFLVTNMVPMYPAFKRGIWT YGFGYP PQLNKGSNQLYSEALLNTNIVPMYQSF QVLWR GHDAPDADGIFRSWQWATYFYVNVAPQWQQTNGGNWL LARGHMGAKADFMYGTQQRATFDFINAAPQWQVFNAGNWA YDRGHLNPNA FQCNDGRTATFTLTNAAPMDPCFNR DHCY YSRGHMNPNGHHSPGAFRKATFTLTNAVPQNQYANEEWAK YEPGQLNPFS FQCKKSRKTTFTLTNAVAMDPHFHQLRWS FARGHLAAKSDFVFGAHQRASFWFMNVAPQWQRFNGFSWQ MDHGHICPNADRLYNANQYQTYYMTNMQPQYKDFNRGTWY
$V$ V
$V$ $\square$ ARGHLIARTDYMYNAQQMQTYHY $\square N S A P Q W Q T F N G Y N W F$ YDKGHMAPVASVATCTTSFEASLASNFVLQHKSLNRGDWK VSHSFLYPSE LSTGVAVHDASVETNVVPMY DSTQEVWN LARGHLGAKADFDYAPEQRATFLFINAAPQWQTFNAGNWA LSRGHIVAKGDFVYGNQQRSTFWYLNTAPQWQTFNSGNWN LVKGHLAPRADFFYGVEERSTFFFSNADPMWHTDNGGHWL
 WPWGHMMRSAERGCGNSNTQTFYPTNDAPERYLNETEHWS WHKGHLTPANARWSHKATLSSNDY DNAAPQDGRTNSGLWT INRGHLAPSADFDFGDQMCATFKYVNVVPQFKADNDGNWE
LARGHMAAKADFDYGLEQRATFLFI NAAPQWQVFNAGNWA N RGHLTPSGDYDYGDQMCATFKYINVVP A $\begin{aligned} & \text { KWHTNFDYDPCYFYHGFPQ } \\ & H \text { DGH }\end{aligned}$ HDRGHLAPHASAASPQAADEAALLSNVLLQHRQ\NRGVWR $V$ VY DHL FPK LARGHLTARSDNFYAAQQNATFYMQN APQWQTFNGWNWN MARGHLAPDADGDYRSWQWATFFYVNVAPQWQVVNAGNWLL LARGHMAAKVDFIFGSPQRATFYFVNAAPQWQAFNAGNWE
 $\square N R G H M V A S A D F L F \square D Q M G S T F R Y L N \square V P Q \square K S \square N D G N W K$ MADHAQRISPEASCNTHVFTNASPKAASLNQGPWLD
 $L S R G H L S P D A D G G L F R P W Q W A T Y F Y V N V A P Q W Q A T N G G N W L D$
$P L R L D A L C F H K H L I K D S Y V Y T T L A P A V V D E D R A C R A G V W D ~$ LSKGH LAAKSDFMLGAQEYATFLYVNAAPQWQTFNGANWN YKRGY LSPVVHQPDEDSRVAASTLTNAVPGYTGL EYSWR VQRGHMANSQDFLTYDQMDATFLYMNVVPMFRGCNLRNWK FDRGHLVASSMMTDSPEQRGSHYMTNIAPQ LSRGHLTARSDFFYAAQQNSTFQFLNALPQWQTFNGFNWD LDRGHLSPSSHQDSRESKTATFTLTNIVPQDSSLNTGQWN I NRGHMVASADFLFTDQMGSTFRYLNVVPQFKSSNDGNWE LSRGHLAPNGDFIDADSQRASFYFMNAAPQFQTFNGGNWR
FARGHLAPDADF DAASQDASYYFMNTAPQFQIFNNGNWK LARGHMAAKVDF I FGAPQKATFFFVNAAPQWQMFNGRNWE LARGHMAAKADFVFGTQQRATFLFINAAPQWQVFNAGNWA YNHGHLNPSSHHAG DASKATMTLTNIVPQRKKLNEKKWS LQRGHLVPDADQLFTTWQWSTYFYLNVVGMWEQDNNGNWK LSKGHLTANADFSLIAQRYVTFFYMNSAPQWQTFNNGNWK CNRGHLNPNGHQPDYSAKSSTFTLTNDVPQFDKLNGGAWN 1 NRGHLTPSGDYLYGDQMCATFKYVNVAPMFKSINDRNWE LQRGHMANSQDFLTYMQMDATFLYMNVVPMARGCNDRNWK LNRGHLAAKADFVYGAQQTASFWHLNTAAQWASFNSGNWM YNRGHMVASADFLFTDQMGSTFRYLNVVPQFKSDNDGNWE
 MARGHI AARSDFIYGTQQNGTFWFDNASPQWQTFNAGNWE LARGHLTAAKADLIYASQQRSSFNYMNVAPQWQSFNGGQWA FDRGHLTPSSYGSDQDEKMSTFTLTNIVVQQSDFNTGSWN GFELSSPPQLNKGSSKLNSEADLTTNLVPPMYQSFNQVIWH GHVTP IGDGIFHTWQHASFYYENAVPQWKDVNEGNWK MARGHI AARADFVYAPQQNATFWFLNAAPQWQNFNAGNWE $\square$ NRGHLVASADFLFVDQMSSTYRYLNIVPQFKSDNDQNWE FARGHLVANADEYYGAQQDGTFFFANVVPMWQLI NNGNWK YERGHLNPDEHQADPDDKASTYTLTNVVPQ $\square$ REFN $\square$ GA
YDRGHLNPNA FQCGDGRKATFTLTNAAPMDPCFNRGAWY


## UniRef90 H9JIU6

UniRef90 J9JLZ7
UniRef90_O9J5H1 UniRef90-B5DYF
UniRet90_UPIO003C385EA UniRef90-OOGIJ2 UniRef90 F6XHG6 UniRef90-UPIOOO2990281 UniRef90-Q9VAU3 UniRef90-U4UJU3 3 UniRef90_ASPM73
UniRef90 E9G3K8 UniRef90-Q9VVU9 UniRef90-M7BZH7 UniRef90-BoZTD UniRef90-B4N8P9 UniRef90-UPI0003703612 UniRef90 G3HA94 UniRef9O-UPIIO003EDF202 UniRef90-BOWUW1 UniRef90-T1P9F7 UniRef90-UPIO0042C2BAO UniRef90-UPIOOO3C111A2 UniRef90-UPIO003C4C284 UniRef90-Q7QH21 UniRef90-K1U323
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UniRef90-R5RPJ7 UniRef90-T1KLX8
UniRef90-B4N8P8 UniRef90-A0A034WIIO UniRef90-B3LV90 UniRef90-T1 J583
UniRef90 A4HVO5 UniRef90-Q08JX1 UniRef90-E9FS92 UniRefolouluibe UniRef90-Q16XJ2 UniRef90-1PND8
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UniRef90 $11 P 9 F 9$ UniRef90-T1P9F9
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UniRef90-B4PGW7 UniRef90 C6ZQX7 UniRef90-UP10003EBC037 UniRef90-UP10003ACC94F UniRef90-T1IKU1 UniRef90-BOWUW3 UniRef90-X1YRMO UniRef90-B4J6V0 UniRef90-K7J7A5 UniRef90-B5xGH7 UniRef90-UPIO00462D089 UniRef90_W4ХТ

180
190
200 PVAAWLWKAAVDRSTGAGTAFVCSNDPFKRAASPPCGDMD PVAAWLWKAAVDRSTGAGMAFVCSNDPFKRAASPPCGDMD PVPEWMYKVV RTSTNRPLAVFLTYNNTYAPRRPSAPRFC PVPTWMYKIVRDATNRPLHAFITYNNVFVRARPRQPANCQ YIPKYYFKVLTRKSADESIVFVNVNNPFANGKAEEVCPNI PAPADTWKVVHDESTNCAVAVVGVNNPHANAAPATLCEDL
PVPTHFFLVISRCVQSGQNEIICHKPDQAPSDWIDKKEHV
$P$ VPQWMYK VRNANNQP VVAFLTNTYARQRPAAPNFCQPV
 TVPSHIWTAVCYK
PAPKYYWKVVHDPVTNTATAVIGNNPH
PVPKLYFRVVDDPSSHRGIVFVGVNNPH
PVPTHYFVVLTSCNCVGSLDVLSFIIPHRPDNSESCADHA HVPAAPWKVFLAEENGGRSHAAFMMPNGPIIEELPLTAYQ


EAPKWYWKTMKSPNTNSGTALTTNNDPFRT PVPKLYFRVVDEPATKKGIVFVGVNNPHDTDEQDKKDY\T SVPTHVWTAVCCDHWDNNRKFSFAFIGENKEASS SUPEYVWSALCCVNNNGNPMRSTARLQMNKGDKNENTVKS PAPALFYKVLLDEANDAGLALVGVNNPHATPEE
PTPTHFFVVVTRCVNYDTEK TAFTVNFAEPPCNSMKEHV
PVPTHFFMTLSRCKQCTDNSFVVPNYAEEPCHETDQKEHV PVPKLYFRVVIEPSTHRG\|VFVGVNNPH
YVPKFYWKVIYDPLSKRGTAFVGLNDPF
PVPE LIFKIVRCQALNEA VELAN NDPLLEDDGMDAEEH EAPKYYFKVLLHKPSDEGIVFVTVNNPFAADGEEEDCENV PVPKLYFRVVIEPSTHRGIVFVGVNNPH
LMPTARYKLVMRTKSGSUGKAIGFWFPQSFTGEKPDADYD DVPACFWKMLCYKDESSTEVVVGFDAENSKLNNKHDHAKR
 PMPE WMYKVVRTASNQPHTVVFVTYNNDFATSRPNACRSIDP
SMLTHYFKVILCETCNGCYRLECYKFPNEPGCCTNHENFQ
PVPGYFYKVVQDSSRRFGTAF $\square S \square N N P Y Y T Q A E A R N L Q F C$ MNSTAGWNLTTCPVEHRDLQAFWKYQNSCDSDRDF IAYNV PVPQVYWKVAYNPLTQRG1 ALIGVNNPYNS RAPKWYWKIIVSPITSAGIAFVTNNDPFRTN PVPK【YFRIVIDRATRKGIVLIGVNNPHAT YVPEWLFKLV DADGSNKRFVFLTLNNVHVREKPSPNA SVPTVVWTAVCCS
PVPAWTYKVVKDANGNGLYVFLTYNCSFDRERPE
AIPDAFFKLLVIELPSGRVDWRAVIYEHPHHQTYDHSPQL PVPKLYFRVVIEPRERKGIVLIGVNNPH QTPKWYWKI I KSPRTNAA A LLVNNND GVPTHFFHVI LSVKKGK PVPKDFWKIVY NANTKAAVVFVGVNNPYDANPGSDYN NQPSH $\square W S A A C C V H E K R G R T S W A \quad A \square A K N K E N K V K Q$

PMPMWMYKVV
RTPDFWWKVVLTKDDSGADK\!SWFFPNQEN
PVPETFWKVVYNPDSQRGVALI GVNNPYKT
NRPSHDWSAACCLGEDTQPKDAWG PVPEWTYKVV RDATGNGLYVFLTYNNTFRSERPQCLDU PAPKYYWKLIHEPTSNTATAVIGINSPYVNP
PAPKYYWKLI HEPISNTATAVIGINNPYNAVMPED PVPKLYFRVVIDRKSRNGIVLI GVNNPH
PVPKIYFRVVI EPSTKRGIVFIGVNNPH
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PVAKLFWKIVY KAVTQAAVVFLGVNNPYDNKPGSDYY NRPSHLWSAACCLIDNNHDRSWAILARN
ПMPGWLYKVV RTSSNAPHSVFDTLNN TFARTRPPAPAFC
PMPMWLYKVVKYNNRCHVFVTLNDHSKNPADRATN $\square C Q$
YVPKLLFKVVYNRKNKAGIVFITITNNPHEN
PVPRFYWKLI HDPVGNRATAFVGLNEPYASEDTEDM Y L PVPEWTYKAVRDATGNGLYVFLTYN
TVPEFVWLAACCAVPGGGWAMGFVKHTQDGGIIDEDVM RAPMVYYKILHNEAQNSGIVLTGVNNDH
AVPQLFYRVLDDVGHPTRGIALVGVNNPHATDAQDHESYD NI PSVLWSAFCCFSKSQNSWLYS CCPFH LIPTHFF IVGTAPSQCENLDASAFILPHRTDNSESCVHHR
 FLPKVYYKLLHNEAQNSGUVLIGVWINWDRENLARGYSYA

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

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UniRef90 U4UJU3 UniRef90 A5PM73 UniRef90_E9G3K8 UniRef90_Q9VVU9 UniRef90- M7BZH7 UniRef90 ${ }^{-}$B0ZTD3 UniRef90_B4N8P9 UniRef90_UPI0003703612 UniRef90 G3HA94 UniRef90_UPI0003EDF202 UniRef90_B0WUW UniRef90_T1P9F7 UniRef90-UPI00042C2BA0 UniRef90_UPI0003C111A2 UniRef90_UPI0003C4C284 UniRef90 Q7QH21
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UniRef90-V5G4S3
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## UniRef90_UPI0003ACC94F

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UniRef90 ${ }^{-}$X1YRM0
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UniRef90_W4XTH3

C P
V CVD

CS KANLYQRK GYTFCCS LQD
$C S$
A R L R D VE $\square L$ T GLLS F LDP K WNVD QE T RVEAT
$C P V A L V T A Q A G F S F C C N$
ENICEQVGFD

AHTRDVELVTGLDFYQDR DQPLPE!LQLKTFLP
$\mathrm{V} P \mathrm{I}$ E R L Q RIT GLLQ F FP GMDA R P V
$\vee \mathrm{V}, ~ \vee \mathrm{Q} K$
ARVR DIE HLT GLD F Y R K T S R S Y S E $\square L$

C T
L T V E E Q L

| $\mid L$ | $T$ | $V$ | $N$ | $L$ | $L$ |
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| $I$ | $P$ | $V$ | $E$ | $K$ | $L$ |

$A R \square R D V E \square L T G L S F L P K W N \square D Q E T R \square E A T$
$\square \mathrm{CDDDAD} \mathrm{K} L$ T WL T F


HCDKD
CDQADLKHSKGYTFCCALPEDVEAKLMTRKN
Y P VA D IE R M IGF D F F P L A P E GVK N S C N TS D WP
$V$ S LTPVVSQARVLRMFKGRNPWISTDMELNKG CPV T LVVDARA GYTYCCN
CTVVDY। S WKA GY SYACEVSD FRSKVTNLPS

T
ATLKDVERVT DF QFFPDLPMEDKLNLLAR
$C E \square V A L E K E A G F T F C C D P T D F L N R N L P Q L A N$

VS LE T LE A R T GFS F LE S E P
$L$ L L E E I E R
VK R E E LE REA GFR $\square F$
V CT D $\quad \mathrm{C}$ S K $\square \mathrm{S}$ W $\square \mathrm{S}$
CS LD ELQ
$\frac{\mathrm{V}}{\mathrm{C}} \mathrm{S} \mathrm{L} \mathrm{VLDEK}$
$\square$
$\mathrm{CT} \mathrm{V} \mathrm{S} Q \mathrm{Q}$ Q
$\square \mathrm{C} \square$ T W $\square$ E WE A GYS YCCE Y D DFKKSVVD A
T S 1

CP DVSQQEGFSW $\quad \mathrm{DG}$ WEPRN $\square E K$
VK D LEKLLPFNDFQNNCGESEQDTEKMKK LL
VS DK
Y T Y C C S LS DF LK A
$\square p / V E D$
CTVQELQNVVGY $\square P Q A A \square A T N V$
$A R \square T D V E Q \square T G L S F Y Q E R K E P V S D \square L K \quad \square K T H \square P$
VLKGRVEQETGUKFFSLISRAM


ASVMDVERMSGLTFFSSMSDDVNTR

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UniRef90-B4KZ79
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UniRef90 B4IYD1
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R D R D Y F F T T Y S VCFDHQK $\square R S$ VF T $\square$ S HFATLYSPRDRDPVFSAF
 DCDNNTATWG
AHGLPSTAE VRCYGGY $\square$ AS $\square N Y$ YRRRIPNWVME AADSHVK】CQRFFATLYNTRDRIPVFSAF EHFATLYSTRDRIPVYSAF
 RPTNAARQRLSNKYHFATMYDKTRRIPVYSAY
 F E T L S F D R N N Y T T T M Y Y Y V K K Y

T F DNP L $\square$ Y NDPD $\square$ ATRQM $\square$ YYPQFT $\square$ FFDREGKTNNWT $\square E$



ETYK $\square C Y N P S E M S \square L Y V K Y$ $\square Y K A Y R Y V N N A R \square N A Q W K S D$ FATLYSRRDRIPVYSAF

FATLYSPGHR $\square$ P VF S AF
NKHDYTVCLDSRVMAQHFSAY QQYNKKPRFATLYSSTKDKRPKYVAG

 PEGFTEHVKICQRYFATLYSTEDKTPLYSAF AAAA HVK C CQRSFATLYSTWDR $\square P \mathrm{P}$ Y Y SAF


FATLYSTREKTPVYSAF KERFATGYSIQDKIPVYSAF YRNCFDHKS LAFQHS $\square Y$ QPAY LT LYKAMKMPVFSAY CFDDYVLEYSTTNN $\begin{gathered}\text { VPVVATY } \\ \text { YRSCYDARTMKAYFS }\end{gathered}$ FPGTN LVVYDFT ILDRDVPKRTSSWVI E

AADSHVK $\square$ CQRSFAT $\square Y S T R D R \square P V Y S A F$


PHYAT $\square$ Y DREKH $\square$ PFYSAY

[^0]
EAYPFVQGRPFGMQFDPDENTFANFQHQQSYMSPDEQERR RAVRPAFRRAEPRWPALSPQIDDPTSSSKQALNTDYLDSD SPSDVV K DPNDTPSETTEKNWKYEPQLVNDSAQPVE DDYKMMYYNMY IT GKDDLCPLPSD VT DMLWRYGDCGKCQSLS GDYSGCG
 RSARPAPGSAEQR WLVEPQI DDPHSSLEEVMNEAYLDSV RAPRPLPASAEQR WLVEPQIDDPNSNLEEVMNEAYLDSD KFTVNDKQETSKFGRLQETDLPCSQLKQNQLSNMNYKQSN RAARLAPGGAQPR WLVEPQINEEDADT SVNNLGSYLDSD $\square Y K P A P$ GNRYHSWFVEPQVSFSDTAHPAGLNDYDQMSG QLLPANEHFQRQVKFGYDMQLWQHPDDDASRDSFLKSGLY K $I$ YPATMNCKKKVKFTADPKYFDN $\square N \square K N S \square K \square Y L N D K Q R$ N I NES L A LVVEPKDVRWYDND LVRYNFDEDYDCTARGFECC
$H \square D C E N V E H F Q H R H F \quad E A M V L G Y K D P K Q S Y S T \square N$
S D $\square$ WKASGTRCRDSDPSFDDLKESHCGDCQGSGCGTT QNTTNGDY
LT NQ WM NQ DRVY DPNEVPKVWS G DFQTDLKQ DYNTNVSY KYTKATQRGEES WLIEPQLHEADTVGSVNNLGANQALY TVAKQREVWTKASDLGLDTWCPVS

D Y T N S G

VT NQWMDDLKDYDPNEVPRVWSGFQNDLEQ\|YNTTSDSY QISGQFDNAYERRTTQA RAARPAAAGAQPR WLVEPQDDDPTSPSKQALSTDYLDSD ■WKASGTRCRLSNPSFDDLQESHCDCQGLDSDYSGCGT T RAARPAPLNAEQRGLLEDPDSSLEEVIEEADAVTSYLDSD NMHQLYSQKNQRLKAA QLLNTEPEALAYALDA KS DY PSTNEKPPKHRNSVWGFDGYKIQKNRTTNSFPQKYNSKKQ KYTK PGQNEEENWLVEPQIDDPENDLHEMVHSDYVGSG
 RAPRPWARGTEER WLVEPQUDDPNSKNKQALNTDYLDSD $R A L G P G A S G A E Q G W L V E P Q D D D P S S S S K Q A L N T D Y L D S D$ KYTK PAQSREESWLVEPQUDDAESDLDDEMKHSDYADSG RAARPAPGGAEQRWLVEDPNSSLEEVMDEADADSSYLGSE KYTKAAQRGEES WMVEPQIDDAGNDLEEMVHEAYVDSG KYTKA AQSEEESWLVEPQUDDPENDLQEMVHSDYVDSG RY A SGESREQGWM EPQI DDGEMMIEEDAVSSYLDSE MAYRYVNTAPRPHPPWESDQLDGGFDCLATMMNADYQDSCK R $\ P$ LDEKPGNGHRHARPDPFLHSGEQDVGTAKNRDFKNSE ■L NANVKYDNSPFKQADSEGVGKFNREEAAHVAG TVVYPTNLRSDRPPTFDKDGDI, TPADEATFQTYVPTSRS LS RITKSTVDHYEHRHFEVLKPFYKKENASLPFALANLGGMV RGQHPGAGGAEQRWLVEDPSSSGEEVTEEADADSSYEDSD K I SKDNVEADLHRHFKFNCNLPVGFRFGNLGNNNRFDDK S KVVACDEGRQRTREFKMGPLLSNTTVEVADUYNREYQRRY

AE S A L S LAAERRS S QA $\square$ NEDYED T S QLPCFGEAYWKTGEWYAESALLSLAERRSSQAIINEDYEDTS

[^1]

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Y P P GFDDGG ${ }^{90}$ D S NFPQSPDQ
100
110
120 $V / R P \mid V D A T F S P Y D D N$
$A A P Q W Q P F N A G N W N$ LNRGHLTPRGDGIFQTWKHATFFYTNAIPQWNVINEGNWN FDRGHLTAAGDFMTNTLIASTFKMDNVIPQFHAINDGNWR YQRGQLYPFSDNNDP QMATFTLTNSAPMTQSFQERWYM LVRGHLVARADQFYYAEQYSTYSYLNVLPMWQSVNNGNWK INRGHLVASADFLFCDQMASTFRYLNVVPQFKSINDGNWE YTRGHLVPNSFMASPSGKSATFTVSNAPPQNFNQKQWS YNKGHLNPNANNQTQAVQEGTFSLLNSAPQAADFNQCTWQ MSRGHLAAAQLHKASQAEMDATFNANDVPQDMTDNAVDWL YQRGQLYPF T L S SDLQMATFTLTNSVPMTQSFQERWYM YQRGQLYPFS FGDDFHTAMFTLTNAAPMTPTFQERWYM YTRGYLVPSAF HDDSDARRDTNYYVNTAPQEPYDSQGPWH YQRGQLYPFS LSSDFPTTSFT LTNAAPMTPSFQERWYM LHRGHLSPNAH LSSRENKTATVTLTCMADKDSRVNNGQWS ARGHLAAKADLYASQQRTSFNLNAPQWQSFNGGHWA FTKRQLVNSQDVPPGVVSQUATYSNQNIVPQWTSCNNTKNWD LARGHI AARADFDYGTQQNATFWFLNAAPQWQNFNAGNWE

 MARGHI AARADFVYGTEQNATFWFLNAAPQWQNFNGVNWE LEGGFLAPYYNFLSPFQRDTTFDMANAPDQWATVTAGNWQ $V D S G Y Q L N G G S L N E A D F Q L A T Y T L T N A V P M T P S L S K S W H R$ GVWN
FDCGHLNPNGHH AVPSRNATFILTNVVPQNPKLNKNAWR YNRGHINPNSNNKDADVQDGTFSMINAAPQDDDFNQCVWQ LSRGHITAKADNFYPAQQQASFFLLNVAPQWQTCNANNWQ $T S E S Q Y D A L I T S N L V P M Y E E F K K M W H Y$
$S P R Q R D T T F D M A N A P L Q W A T V T A G N W Q$ $L A G G F L A P Y Y N F D S P F Q R D T T F D M A N A P L Q W A T V T A G N W Q$
$F D R G H M T P A S A F G S T A L K K S T F R Y L N A D P Q Y Q G V N R G K W K$
$V$ YQRGQLYPFSLSKDLQQVATFALTNAAPMAPSFRERWYLL FNRGHINPNSNNKDADVQDGTFSMINVAPQDDDFNQCVWQ YEDGQLYPF GLSSDLKMSTFPLTNSVPMTQSFRERWHM LSRGHLAAKADMLYATQQRTTYTFFNAAPQWQSFNGGQWA YNRGHLAPFADFPDENDRKATCEYDNAAPQWEDFNKNSWS
 YQRGQLYPF P $\square G N D F Q M A T Y T L T N T V P M T P S F R K R W Y M$ YDRGHLNPNSYQCG RGRDATFTLTNSAPMDACFNRVHWK YQRGQLYPFS FSSDSQMDTFTLTNAVPMTLAFRERWYM YERGQLNPSSQNED DFQQATYTLTNAVPMTPSASKNWHR YERGQLNPSSLNED DFQLATFTLTNAAPMTPSFQKRWYV
 YDRGHLNPF LFQCD QGRTATFTLTNAAPMDPCFIRVRWY
 FDRGHMTPASAF DSKS LKETTFRYLNADPQYGGVNRGKWK F D RGHLNPNS $\quad$ NSYVSAKYATFALVNVAPQYERFNRVYWS FDFAALANNSLA GTNAKERNSELNRLPMVAELNRGMWN F DRGHLTPVADYSFPK LLRQTNKYLNVVPQYYSI NRSNWK
$H A V L F P A P P T D E S D S S P K Y ~$ YDRGQLNPN DYYCDNDRTATFTLTNAVPMDPCFHQLLWS $Y Q R G Q L Y P V S D S S D$
$V E D P M A A S T Q$
$V$ FVEGLLVSPNDLFYKVQQSSTYFYENTVPMWRSVQEGNWR $L V E G M L V P R S D M F Y R A Q Q D S T Y F Y D N T V P M W K S V R D N N W K$
$Y D R G H L N P N A N Q C N D G R T A T F T L T N A A P M D P C F N R I D W Y ~$ $Y D R G H L N P N A G Q C N D G R T A T F T L T N A A P M D P C F N R I H W$
$G Y Y R Q R L H P N Y L Q G S S G L L A T F A L T A Q A P M Y H S F N R N V W$

[^2]
56677777777652



[^3]
 UniRef90 E9CJJ5 UniRef90＿F4AV02 UniRef90－B4QYS6 UniRef90＿T1IR69 UniRef90 ${ }^{-}$K7FR09 UniRef90－UPI0003F06C22 UniRef90＿T1ITM2 UniRef90－UPI0002247B57 UniRef90－K7J7A3 UniRef90＿UPI00042BA669 UniRef90－W5MAE8

FADRRYEKGHLLAPDEDRTRTFKDALSSTYMTSNLLDPFQHYV ${ }^{190}$ PVPLYFYKVVHDSSRRDGTAFISINNPYYTQAEARNLQFC DVPL WMWKI LKSPSKNAGDAFVTLNNPYETKKPDE PVPLWTFKVVLDRNGERTVFVQYNNDH
TVPEFVWLAACCAVPGGGWAMGFVKHTQDNDVIEDVM $P V P K L L F K L A Y S P T L H Q A L V F V T V N N P Y L T D S D L R S N D L R$ $P V P L W I Y K T V R D \square N G N G \square Y V E L S Y N N K F E R D R$
 AV PQFVWMAYKC
AI PDFYWKAVCYPDEAKGDAPFAFAFYGANRNCTKDKTVE
TTPEFVWLAACCAAPGGGWAMGFVKHTGDSDVIEDVM
TIPEFVWLAACCAVPGGGWAMGFVKYTRDGDVIEDVM
VVPLLYYRLLIDNASNGQKRG【AIVGVNN
PVPKCFWKTVCTRTQSGQVTAATFYHD NQLISGDESSKK
TVPEFVWLAACCAVPGGGWAMGFVKHTREGDVIEDVM
NI PSHIWSAACCVSKNKPDEAWGAIAENQIHNNQ
AVPLLYYRLLIDQKYPSRGLALVGVNNPSATLSQLLESYM PVPKFIYRMVINDERCEGIVFLSINNPH
PVPKFLWKVVQDEYSGSSLAII QVNVP
FLPKVYYKILHNEAQNSGIVLI GVNNVH
PVPKYFWKIVWDEKVGRATAFIGIINNPY
RCPSHFFKILVCKNPDWTFRFECYKVK $\square E Q L N A A D L K D Y L$ A $\mathrm{I}_{\mathrm{P}} \mathrm{GY} \mathrm{F} W \mathrm{KK} \mathrm{A} \mathrm{L}$ CYP
WLPMLYYK】LHDEASNAGDALVGVNNVH
PVARWFWK LMHSPSTSSGILFFVYNNPYVAKPQVDKEF SVPEFLWLAACCD APEAWSVGFVKRRSDENSIED PVPTHYYSILTADKCDGPLSVSAFVLPHRADNDESCKMHT NI PDYLWNAYCCVDNNDRPIQSSAARAKNTENN
AI PGYFWKALCYPGDENAG LRPYGVGFYGPNDDCSKMTS PVPEVYWK DAYEPDKQKGVVLIVTWI NWDRNNQDKGFAYA PIPTHYFKAYTPDSCPGWLDVLPFIIPHRPTNMESCPEHD PVARWFWKLMLSPSSSGULFFVYNNPYVAKPQVDKEFSTN PVPEWMYKIV
TVPAFVWLAACCAAPGGGWAMGFVQHARDGDVIEDVM
AI PGYFWKALCYP
TIPEF PWLAACCD DPGGGWAMGFTKHTQASD』IED DM
PVPA LYYRIIVMGDSAG
PVPMLYWKLVINNKVDKTKSRAFVGVNNP
SVPESLWLAACCDGPEGWSLGLVKKMNDENSLVDLM



SI PEFLWLAACCDAPE WVGVGFLKRPSGENSDEDL SVPETLWLAACCDAPDGWSDGIVKSTNDDNSDAD KVPTHYFVVLTSCKCEGALDALSF IVPHRPDNSESCRFHT SVVPSHVWTAVCCDHADKNRTFSFAFLGKN WVGQEESQLEP SI P DFLWLAAACA GPGGWAMGF IKHMRDGDI I EDMM PVPE WMYKIVSHLSGDKWVMLTYNDRISPTDNADNADCEV

 SVPSHIWTAVCCDQADDTQKFSVAFL AENKEESRLQU $T V P V F V W L A A C C A G P S G$ WAMGFVKQTQDSDUIEDVM NRAYYFKADSCKNPDGSFRFECYKFNLLGEGCGARCDYH F VPKLLFKYVYDKK
$P \vee P K F L F K Y V V D Q V R N R G V V F V T \square N N P H$
SVPTH
SRPAFVWTATCCAGRSYS $\square$ AFFGEGDP

[^4]

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 T

VK D L E K L
$\square \mathrm{CRQE}$

LS V

K S LEETVSYTNPEF
$V$ K DLEKLLP F N L L P QNNCGETEQDTEKMKK L
1

VT REELENDTK $\square$ H L

FTDDEAKF LT GVD
$\square \backslash S V$ F
$A R \vee R$ D I
$\square \mathrm{L}$ D D E F E
CTVDSFRKV VSYFPEL
ARVRDVE LLTGLD FYQE KAQPVSE $\square L Q L K T Y \square P$
VRELEK L LP F N P Q $\square$ F R D
VRD D E K L

VGELEKLSGVHLFCGKDKQSQEKTEA\|LQALSQ V K DLERLLPLNLFQSNCGESEQDTEKMKK』L VK K L K K
 V K DLEK L
$\square A$ I GEL EKQTEVNDF
V K E L E K L
$\checkmark \mathrm{S} V \mathrm{E} E \mathrm{E}$ L
ARVRDVELLTGLSSFYDRKQPVSD IL QLKTYDP
$\square S$ VA EL
$M$ VK DLEKLS GTQLFQN
$V Q D E K$
1 P

VT RE QLINADAG【ELIP
LP VEEL
VK DLEKLSNPQLFQNNCGETEQDTEKMKK LL VS REELERDVGF TLFEK DTQNM


[^5]```
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UniRef90_B4QYS6
UniRef90_T1IR69
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UniRef90 W5MAE8
```

lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
j̣hmm
jpssm


[^0]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^1]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm

[^2]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm
    lupas 21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5

[^3]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    jhmm
    jpssm

[^4]:    lupas＿21
    lupas＿14
    lupas＿28
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    conf
    sol25
    sol0
    jhmm
    jpssm

[^5]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

