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LS A NS LEGVID NEFSMPAP ${ }^{10}$

 K QSDVRAKAFAMPLT ETVRRTAFAMPLT
 KLADVRQKAFAMPLND

D DVLRNAFAMPIN KVEDILKHAYAMPLTN KLDDVRRNAFAMPLT K $\square D D V$ DKNAFAMPLT KESEVVKKAFAMPL KQQEVRQRAFAMPLT K I D EVLETAYAMPLTN DAATIRETAFAMPLT K $\square$ E DVRRTAYSMPLTN EVKERAFAMPLT DVVKRAFAMPLTN
DEVRSRAFAMPV
D $\mathrm{DK}_{\mathrm{K}} \mathrm{I}$ IREQAFAMPLT KIADVRARAFAMPLNN

KQVAKSAFSMPL DVRNRAFAMPLTQ EKKQPPFGMPVQQ

$\qquad$ $\begin{array}{ll}P \\ P \\ P \\ S & P \\ S & P \\ S & P\end{array}$ SYPA

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FTNREFFI!
40

NTSDVKQRAVSDPLT
C N

| S |
| ---: |
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 $P S Y P P G P Y R F F D R E Y I I I$
$P A F P P G P Y R F V D R E F L V$
 $P A F P P G P Y R F V N R E Y M I$ SPGYPRGPYRFYNREFIV PAYPPGPYRFFDREFM SPAYPRGPYRFVDREFLI SPAFPRPPYRFYNREYIV PSYPPGPYRFYDREYFV KIEQI RKDAFAMPVHN TI KANAYAMPFT SPAYPRGPYRF DNREFLI K I E DVRQQAFAMPLT S P AAPAFPRGPYRFHNREYLNI SPAYPKPPFRFVDREFI II DAGAYPLGPYRFYNREYLNI SAYPPGPYR CPSYPAAPSQMSNREYMI
$\qquad$ SSPAYPKFPFRFVDRETII
 $K \prod D Q \square R G Q S F A M P A \quad H$ HRPAYPKPPYKF LK S E $\square$ S T K $\square$ TMP L

RDEILTAASMPA
PVNAPSYPKGPYRFINREYMI MPADSAPAYAPTRYRFTDREYLNI KAEDVRQH $\quad \square T \mathrm{~T} P \mathrm{~L} T$ SPAFAPMVPRFTDREYLNL $K A E Q V R \quad A \quad L T T$ $\qquad$ TPSAP K EQLKNNAFSMP

MPLAS
EDVL RAASMPL KEKDVVKQ K I E DVKKNVFSMPL DVHDVLKNLNT PLTA SPSPKGPFRFYNREYL

 PAFASPPYKFTDREYLNI
 MPA $\square$ SPSYPRGPYRF $\square$ NREYMI I
KASD【LDNATFMPF APPCSNGPYEFFDREYFI I


KAPSMPIM A $P$
KAPSMPIM FAPSYPRK

\section*{TRDEILKK PSMPA \\ | RDEVLK |
| :--- |
| E DVR |}

$\qquad$
SPBAPNRF 1 KREYLI $\square \stackrel{\mathrm{M}}{\mathrm{Q}}$

KAPAMPワM
K A P A M P I M P $\square$ T APS N
 NDEEVL RAVSTPD GDGAAYPGGPYRFFRREYLN


## VKNIVATPIN


K E E LLKK K $\square$ T T P $\square$ ND P PAFPETK VSY $\square$ NREFVCF AGTTPLTAPPYARVRRRFTDREYLNV K I S EVRQQIT T
NTEEI LRRGTT
PTEDDI RRGGFSTP TVEDI LKPGFSTP
$K$ RAD $I V R G G V S T P L$

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UniRef90 Q82NF4 UniRef90-A6V7E7 UniRef90_J9HF75 UniRef90-B5I6K1 UniRef90-F8JJYO UniRef90-T1A6A0 UniRef90_UPI0002196DD4 UniRef90_W7J3D9 UniRef90_A9WLH6 UniRef90-UPIO0038146A5 UniRef90-K1ZW51 UniRef90_UPI000362DDB2 UniRef90-S9QTC3


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L

A YETDPDLLQATLPPDMELLEPVVKFEFIRMPDSTGFGDY TYRTDPEALRRRVVEP LQRDEPLVKYEFIRMPDSTGFGDY

 RYRTDP E A L R R V V P E P L E E V V E P V V V N Y E F I R MP D S T GF G D Y

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UniRef90_W6RMF6




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 K K LA S P KLA AVETVVLVGTLHYGSVLCASATMGYKHRTVVD K K LA S P T L HVVDT D H L L G T L D Y G KVVRVA T G T M G Y K H R E L D D K K L A Q P T L A V E T D T L V G T L N Y G S I R I A T G T M GYK H R T L D L
 K K L G D P E L L R I H K D T L S G T L D Y S D F RVVAT GTMMGYKHRAMMDL K K L A S P K V V N E G E VI V G T L H Y G S V L C C A T G T M G Y K H K P I D
 K K F A Q P S L T V V R D A L V GVL D Y G S C R V A R GVM GYKHRP LD Q K K LAA QP K L E V V H E T L L G TLL E Y G P F R I A TAATMMGYK Y E A L D N KKAGKPRLEVHQDTLVGSLDFGPVRIATGTMGYKYEALDR K K LA S P KI E H D G DVI L C TLLK Y G P AL CVVEASVGYKHR IL E T
 K K LAASPEDRVAK DTIGGVLRYGPVPVAVATMGYKHRADPH

 QKLARPKLCHESEVLVGALHFGSVLCAVASMGYKHKELDDLD K K L A K P R L V V VES D TLL L GTLLDYGSVVRVATGTMGYKHKVLDT


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 K K M G K P S L Y V D S D T L V G LMD Y G S L R V A T A TMGYKHFP L DH QKF GFPSSTVVDKDTLYGETKYGQQEVATGSMVYKHHRLDLD
 $K$ KI GEP T L K V HRD T L V GEELRYS DMPV ARGTMGFKYAPMDR


 K K Y A H P K L EVVVDTLTGTLTYAGQTVAMGSMGYKHHSMNG K K H A Q P KLLELVT DTLTGTLYYANERVALGTMVYKQ QTLDE K K Y G E P R L Y V D N D T L V G T L D Y H S LiR V A Q A TMTYY Y H P I E T K K S G S P T L Y V V S D T L V G T L D Y G S L R V A DATM GYK QRAMDL
 KV IG S P S L Y V D S G A L V G T L D H G S L R V A T A T M G Y K H H E L D R

 K K Y G DP E L K T I HE T L T G T L K Y D N E R V A L G T M TY K T K P LD H
 KVF GKPRLYV DSDTLVGTMDYGTLRVAQATMGYKHRAMDL
 KVLATPELHTEHAALVGTLDYGSQRVATATMGYKHQPLEA $K K T G A P R L Q V D S D T L V G T V D Y G S D R V A T A T M G Y K H R V V D P$
 KVMGKPALYADGAALVGTVDVGSLRVANATMGYKHHPLDA K K H A EAKLVLATDTLTGTLRYAGERVALGTMAYKHEPMAD K K M A S PVLTVVDNDTLLGTLDYGSVRVATGTMAYKYDELDK QKFCD ITTFAPT QDTLKGGTLDCNGCRVATGTMSYKYERMAF QKFCDITTFAPT QDTLLKGTLDCNGCRMVATGTMSYKYERMAF K K WGVPRLKVTKDTLTGTLHYDEERVAMGTMTYKHKSLEK

 K VLGS P S L Y T D HAALVGTLLDYGT@RVATATMGYKHHAMDP
 CKYGFPSLEFIDK DTLSAKLAFGEQECVAATSLYKHS PMTL
 KKAGNPDLFVDNDTLVGTLDYNSLRVAQATMAYKYYKMTD $K$ VMGRPELRVDSGALI GTLDSGGERVATATMGYKHHSRDP
 K TA G S P G L Y A E H G A L V G G V L D D V G T L R R V A T A T M M G Y K H Y E E L
 $K K S G Q P N L Y I D N D V L V G T L D Y G S L R V A Q T T M G Y K H F P M D E$ $K V A G S P A B F T D T G A L V G T L D R G G Q R V A T A T M P Y K W Q P D D L D$ $K V M A S P R L H T E A G A L V G T L D F G S E R V A T A T M P Y K W Q P L D S$ K K Y G S PRRYLDNDVLVGTLDYHSLRVAQATMGYKYVPMAV K TM G K P T L R V E K D T L L G T L D Y G P V R I A T G TM GF K H K A L D V
 K GPGKPAL RVEEGALVGTLDVGSLRVAAATMAYKHRPMDL KVMGSPALTVDNGALLGTLDYGSVRVATATMGYKFRPLDF

 K K L G E P K L E L R G DLVV G TVVARNGIDVVLTGTLPYKQRTDS L


## QUERY

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UniRef90 K6TXN7 UniRef90_UPIO0035CF5E5 UniRef90-G8XDU5 UniRef90_G8PK45 UniRef90-A4FKR9 UniRef90_W9GWX3 UniRef90_C8PY98
UniRef90-D2VGY2 UniRef90-D2VGY2 UniRef90_UPIO0037D54B2 UniRef90-A9VBK8 UniRef90-A9VBK8 UniRef90_UPIO0037883E8 UniRef90_D7C0F6 UniRef90_UPI0003B747F1 UniRef90_F2UKZ4 UniRef90_F2UKZ4 UniRef90-D7BW82 UniRef90-B9DIK9 UniRef90_UPI000255D7BF UniRef90_A7JGH7 UniRef90_Q82NF4 UniRef90-A6V7E7 UniRef90_J9HF75 UniRef90-B5I6K1 UniRef90-F8JJYO UniRef90_U6B9L3 UniRef90-T1A6A0 UniRef90-UPI0002196DD4 UniRef90-W7J3D9 UniRef90_A9WLH6 UniRef90-UPIOO038146A5 UniRef90-K1ZW51 UniRef90_UPI000362DDB2 UniRef90-S9QTC3

180
GTPLVNQ ${ }^{19}$
190
200
 DSLLKALGGAPNFMLKI I PHVDGTPRICELVRYYLEDVTLK AEQQKRLSGPNFLLKI I PHVDGSPRICELVRYYLKDIVMK



 $\begin{array}{llllllllll}\text { Q A } & L & L & P & G & L & E & P & N & Y \\ K & K & L & F & E & T & P & N & Y & L \\ L & K\end{array}$ GEVVLK S LA VP N Y L L K


API AEALQQPNFLLKII PHVDGSPRICELVRYHTTDVAIK
DPVLSSMHEPNFLLKKI I PHVDGSPRI CELVRYHMSDIVLKK
DAVLAALKTPSFLI KI I PHVDATPRICELVRYYDEDIVLK
DQI AASLSAPGFLLKI I PHVDGSPRICELVRYFCEDVTVK
 D ALLALLASTPNYLLKVI
GPQV
DATVRALAAPNFLLKII
EVVKEALGEQNFLVKS
QAAKATIEAPGYLLKIIPHVDGSPRIDEELVEYRCQDVIIK
EVERKKLDTPNYLLKVIPDVDDGSARI CELVVRYFDRDVTVK
DVVMPSLTAPNFLLKVVPHVDGTARVCELVRYHMTDITFK
K F AY Y GI A QPNFLLKI I PHVDGTPRI CELVRYHMVDVTLH

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UniRef90 X1ES36 UniRef90-E3CZL8 UniRef90-X1B0B1 UniRef90 UPI0003B3DCD0 UniRef90- G7V9S4 UniRef90-G9PCG8 UniRef90-C3MN21 UniRef90 UPI00036637F1 UniRef90-I2F7U3 UniRef90-D2Z7Y1 UniRef90 W5W3T9 UniRef90- UPIOO046538CE UniRef90-H2JMZ7 UniRef90_UPI0003B34DE4 UniRef90 UPI00034D19E1 UniRef90-K6Y379 UniRef90-UPIOO04714D3F UniRef90_UPI0003606766 UniRef90 D2BFL9 UniRef90-Q1AX78 UniRef90_UPI0003F87EEA UniRef90 B5GUR2 UniRef90- S5S967 UniRef90_UPI00047CF21D UniRef90_S0E683 UniRef90 A0A016PH41 UniRef90-A3CULO UniRef90-X1RBH9 UniRef90_J2J8A3 UniRef90- $\mathrm{S7}$ X9N7 UniRef90-B8ESY4 UniRet90_D7COE5 UniRef90 A0A024QVX8 UniRef90_UPIO004719A5A UniRef90_FOQSQ6 UniRef90 UPI000368D22B UniRef90_W7SNZ1 UniRef90-D6MBS5 UniRef90-K6ТМ03 UniRef90 G9BAP6 UniRef90-UPIO0034529B1 UniRef90_K2S913 UniRef90-H0UN89 UniRef90-I8SKH3 UniRef90-STSFL7 UniRef90 Q2G540 UniRef90 Q73W87 UniRef90-N1SBT5 UniRef90_W6WXUO UniRef90 C70J11 UniRef90-J1ASZ3 UniRef90-UPIOOO289AB47 UniRef90-F6B1Y7 UniRef90_Q8NJQ3 UniRef90-M2T9N3 UniRef90-W9FU2 UniRef90_UPIooo36AEF7B UniRef90-UPIo003AB0834 UniRet90_V4LE94 UniRef90 A0A010TA22 UniRef90_D9UVS7 UniRef90 W7 WU448 UniRef90 H2C2K2 UniRef90-S3C911
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# D S P HVPS F P F SYRNAE L L L L 



PTTFYNAETLTV
 GPLYPPSPHYYQGPRMMIAA KA
K GF S $\square P \square S P E G K A L P$ GYTVPDTPDGKSTPRPPWHYSGAEMUA V
 F GYTMPVDEPLYPKPPVYYRDMETITV K G Y CYP LT GTSSLVGPPPWHYA TEYLNL NGFCYPLTPTGRSVGQETYWDYYSAEMLLV
$\qquad$
 $K G K \square N V N Q V F A M P$ GNAPLYLKPPAYYRDCP LDMG MSGKKGKFVFNADFDYKMPVHFGGAPFYPVRYGDNTVISV F K D D F V Y K M P V H F S G G P P F Y P V $\operatorname{R}$ R Y G D M T C I S GKFRF RGFLYPRTGTGRA\|PPPPWHYSG

GRFKFQ $R$
$R$

$R$ | G $Y$ F |
| :--- |
| $D$ |
| $D$ | GFFPPATGNSSGIPSSPWRYS KGFYYPRTASGKAAPPVPWHYS NGFLYPRTGRATLIPNPPWQYS RGFFTPATGRSSLVPSPPWYYS

 RGWFHPATGRASLDPAPPWHYSG DLLTV

F S Q P Y GP G QL Y GA P P Y S YR NA Q S I T A KGFTTPR

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MPGPSWGGLYPAPPHFYRNTKNLI
K GF LPPPLTGSSSLVPEMPWYYSGTLLTVV GYTVPLSPQGRSTPAPPWHYS CDCI A I K GYTVPLSPRGNDAPAPPWHYAGTVVGV KDRFAPVGPVHAPAYLIAPDDFGDVDMLSI VYAMPVHFSGHAFYPVRTVYGDMTGI SL DKGFGDPLNABPLYPQSS\|IYSRVRVVMA QGYTYPLSPRGNLAPAPPWHYAG DIVGV KGFLHPRTPTGRATAAPPWHYAG DLI TV KFEEDKTYSMPPFFGGTVFDANFTATANTGALNF
 GYSMPFSPRGKAVASPPWHYVGNFLA VPAFAPPYLNKTHEFSD ITVVS EKGFGTPLNAPDYPSST\|SYSKVRVVLV D MVY SMPVHFS GRAFEPVAAEYGDMTCVRL $K G Y T L P R T G T S S L A P K P P W H Y V G N A L A A V$ K G LIF YPRTPTGKAVPPVPWHYSGEELTL KTKEARGP $\square P \square C S S P Y P V G \square D E F T N V H D L S V$ K QYAVPRSPRGLSAPPPPWHYSG
 QGFLFPRTGNSSLIPNVPWHYSG QGFMGP

MPS GTLRTKENHGA RODGPAPSWHY VPIIFAPPY RWRFTDVNCT I P NYSSPP Y PTGP Y E F E E D I NTTTVI

K F D E K K A Y R A P V I P L Y S P P Y P SGVDEF

T G V M A P Y S L P P Y S Y A GN R M L V V
MS MPAFAPLYGVGA ESVDLRWLTV GYSLDPLSANGTAVPAPPWHYAGBDVGV TDSNLNNSFTMPITRRGRSVFPPPWYYGVTYIAA MPF GQ $\square \mathrm{KTE} \mathrm{V}$ NHG
 NKCYKMPAHFGGFDHDPTQVYYRDVVTVSY

 NGESMP



FFEADPDGAAEVVPEDLELPVPTADITFFKFPFST DGPY AYETDENAALDLLPEGFELTLPATVRIVDAKMPFTTFGAY YWETKPE IIKKRLLPPPDKPTDP\AYAFVAYYPKTNFGVTY LFRADPDKVAPFLPEPLEPGPDLGYVAFSQWWSHPERTQY
 LI
 EMTVDPEVAAAHLPKPLVADPSGAADGIDALKDRMSSYGPF DYETDENALLSSYIPEDFEELKEPVVVVVQYTNCRDVDWMGEY EYRTDPAKVAALLPEPLSPADHEPGAVAVINADWQSCSQY


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RESNVM|V|GASLKEHSGAYSPYDF|L|NSEVGVCHGRE|V|HGQP TEANIMVGARLGGAEGAYSPWLFLSSSSGVSQGREVVGQP



 REAAVFVLAA YNGQPGTYCDSMPDS DD DA MGDGRE LYGFP
 REAGLFVLAD YNGQLGNYCLSMPITS DDGMAMGREVCGLP K E VMM Y Y V GA K Y K G K P V C R CVV Y $\square$ WVV D K D YA MLDR G L
 NEFAVDIK VLLD GQEKYYTAYNY V DPVAPI A A GREIIWGFP
 NEGALLLSAEFDGVEGGYCLSMPVTDDQALVAGREIIFGYP REA AVWVGCSYRGRPGQ IVCLF IVWVDNDFSLARG WFMGFP

 REAF LVVEALLFQGKPVNYCPY I FVVDNDAADARGGWAQGFP NEVVL APLVI YQNQP HLFVVSYI Y V DNDAALTAAGREDWGFP

 $K E C F V V V R C Q Y A G Q T Y S R C V F I W V D K D F A I A R G L H Q Q G Y P$
 KEAFAVVRCMYRGQTYSRCVVY WVDK DFABARGLH Q GYP
 K E A F A V V R C S Y R G R T Y S R CVV Y W WVDK D F A V AR G L H Q G Y P
 K E A FVVVRRCFRGVTYSRCVYIWVDKDFAI GRGLHQ GYP KECFVVVRCAYRGRTFSRCVYI WVDKDFAIARGMHQ GYP REFFIVVVNALFEGEEVTTCPFIWWVDQDFALARGWWQQGP
 NEFWLYVRVEFNGERFMYCVAMYADSEKATAA GRELWGFP
 NEYGNAVQVKYNGKTFDYYLVLVLDNDGAI FAGRE』FGYP

 EA A Y GY L E C S F E GKAY MMETF LVWV S S E S A MAA GREFWG D S
 $R E V V Q S I A C K H G D Q S V G Y V P H I V V T N E P A M I A G R E W L G W P$ $R L I Q V T T P V R Y E G L V G E Y V F V I W E N K A C P I I G G R E E D G M P$
 KECFVVVRCQFA GRTYSRCVF, WVDKDVSLARGGHQQGGP




4529B1

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 KKMADIYFKREKRIVEGWIERQGTRYYEVKAKLNGRLNAP KRLGAAEFSESGTVLRGAALAHGERLMEGTLTLRDRDISP KRMGQIFMSEPHPLLKGYVTAHGERLIEGTMLVRGK MEA KKLGQVYDTKEGTVFKGIASANGERLMEGTVTLESRIVNP KKFANMKLLEDKGESVEASLERPTGRKLISAQMRIERQAKD KEFAEDSFSDHENVRVCEVVKEG KVFADISSERENHWFVAASYEQFTFLDDLQRGDEVSEEDLL KKLGSI HQTRPHPYGPAPRIDEGARFATLAAGDRRLAEAV KVFADISAEHHGSHWYTSASYENNNFLKVDFLRKSEEKDVV KKLGSI HQTRPHPYGPAPRDEAGARFATLAAADRRDAQAV K IFADIAMERHGDHWFTAASYESVNFGKLDFQKKGEEEAIV KKLGSI QMSRPGGTFGATLAAFDRRLAEAKFTITGKAEAP KKMGSIFQTRSGSRFGASLSAHGQRLAEACVTLRK KKLGSMWQTRPHPFSQGAI GPGGVFGASLAAGDRRLAEVV KKLGSTHMTRPHPYGLARLGEGGVFGATLAAADRRLAQAV KKLGSIWMTRPGGRHGATCSARGRAMAETTLTDEGEAAEG KKMGEVMMAESGGGDTATVSRLGRTLDSATFTPQDUVYD KKMAQMSLLRQEGGQWTFRAARARARNAMAVVTLREPSESG KKLGQVWMTRSGSKFGATCHARGREVARARVTVEARSDSG KIFGKTNFHPSAGVMTGNVERPAGRSLLEFEFAPKAPLED K YAD 1 DDHVVRPHFATTVSYEGNTFLEATGSDTGRDLDA KKIDAKI HFHRKDKYVEAWSERDGVKNIEVNDTGKFNDSET KKMGKVELDFVKEEVVASLERPGSKIAGARMRLERFAEA KKLGNIAVTRVFNAGKATLENGGQFGASDAAYDHRLASAV AKLGNIFQTRRGSRFGASISAHGERMATARMQLEEKIDDA KKLGAVHQTRAGGQFGATASSAGQRDAEAKITLEQPVPDP KMLADITFSTQTTTLDGLITARLERPAGLDLAVAQQRLDS KLFADIACERREDRWFTAASYESRTFLLTLEMTGRTRALSE KKLGAVHQTRPGGRFGASMSAAGHTLAEATVTLEQPADDP KKFGSI HQTRPHPFGHARDAPGARFGATLAAGDRRLAEAV KDFADIEDLHAYDGRYFTASDFGETFDRLEMSWEKGKLEK K FADIDLHLLKPNYATTVSYEGNTFLNMDFEAEGEISGN KKIAEINVRREGHKVTGVCIRKGDPDKDKVNLTGFVESD KKIGSVAPLRSGGVFAGTLAVKDRRLAEGVVQL ENEASA KVFGKTVIEASTGSILGHAERPDGRAMVAFEFLPEQRDAA KKLGDIRLT TDYGLVIGTLDRGGERVEVATSGLGLEQLDA $K L F A Q \perp A S E R H G D H W F T S A A Y E S C Q F C S L D F W G G E R D E D L D$
$K Q M G S T W I T R A Y D L P S K A V G P G K F G A T L S A K D R R L I E A Q ~$ KKLANTEVDHDGSRVSASVDRMGYRLITVS KKLGSI HMSRPVNVGKARLEPGGTFGVTLAAFDRRLAEGR KKLAQITVERDGDRVTAGVDRLGYRLI RLSGQVSGRA KVMGNVEWSSPNGIITGHVER PVGCKLVQFGFKQKKVQD KRLGAVHQTRPGARFAATASTAGQRDARAEVKLTGKVDDP KKLAEVVVDRDGEQVAGTVTRHGVTFAE AIIRGRIAGA KIYADIDLVLRPHYSTTVSYEGNTFDTMDFEAAGAVTDLD KKIGSIHLTRSTTVGKARLQPGGDFGATDAAYDHREAES KKI GSVWITRSGATFAGTVAVKDRRDAEGHV KLSADAD KVLGTVEFDRQNRPPTAFIHGRVLRPSNTVVADIHKPLCLL KRLGHVSLDTDTGS HIVRGHVERPVGQKIVNFDFAPS KVLGKVVWDPSSGFDSGHVER PEGSKLAELGFK DRKVQK KVFADIDLHRHQDSCWTNASYEGHTFLELQMQGLQALPSD KKLADVKVERSGDEVVATVNRMGVTYVEV RGGTVEE K ISADFSLTEEGGRLQTKVVKDGLTLI EASM RLGT KKTGПAQVYMDGHEAYGFCERNGVRLIEDEAEF GD KKQARVTLDEDGSSATGRVTANGUEVVTVTAQAARRHSED KKIAKIAMTRLHPRLGGYVVRGGANLFRLQVELEDRA KVFGNVVWDPSSGFVTGYVERPFGTKIVQLGLKPQKKVHG KKFGTVEFNPCEPCGTRVMRYVEHPPHQKILQMNYSPVRK KVFGNVVWDPSSTKGVPSGFYTGVGAKVVQLGFKQKKVHG KVFADIDLHLFQGNCSSNVSHEGNTFLRLEMTGAQ PLDG KIFADIDLHSRGDHVFTCASFWSRTFLELDFFGKRDATPE KVLGSFNFPTQPDGMSGFFHGRVCRFPIVEVLFKPTVLDD KKAGNVHQTRPGARFGASVSSDERTLAEARVTLEAPMEDP KVLGKSVIEFTGTRLVTGSTERPAGRKMVEFEFVPEQMDT

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$\rightarrow 0$
DAMESEYDMKPMGLRVIP PSDGKGFDYRLI REEVPLRPK QELPFPLARPLFHDRHFPSDGAPPSVLELVELGAENVRFG ATLPYPLRAPLFHTRHFPSTGAPPSVLELVELPAQNVRGK
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 GAVENHREVNFFGWRYIPDLGKGGAALSQATLYPQEMDVV NETNKDYKTNYFGWRYLPNLGKGGATLSHATLYPQEMMAK DTLREPSQTNGFHHRWLPS GKGLALDELVESGAASFEGG DETNKNPKVNGFGWRYLPNLGKGGATLSHATLYPQESTVK GFVNA SOPMAHHRWYPAD EGTDSIEEVVTMGGFDVDFG GFVNALDSRMTVLLRRYFPARLTAGPAVNELVMMGGFDVDFG VRLREPSETPMAHNRWLPSPGKGLALDELIATSGASFEGG PRHNAP PGVNVRHFPRLAAGPQVHELVRAVSRDRATS

GFVNA
GFGNA ${ }_{S}$ MREDS HPRVQVKRIPRADGKGYVDQAIRNDLRDAKIA SLHTDP

HPMAHRRLP
$\stackrel{\rightharpoonup}{s}$

## L

 SA GATPPKVLNLRVYPSTDAEPALVEFVAVDMQ FEFS DKSQF LTMMNTLGWRYVPKVGAPGAELSQFVLYPQGMEVE VTLREPAESNGFHSRFMPSTDAGMSLDQLV TMGGTDVEVGRSV

## A AL

a MSRPVINLRHFP SEVAAANSRNYFGWRYLPNLGRGGASLSHATLYPQEARMA FKALMPVTFPLLSVRVLPPPDGTPGIAQLIHWYFTPRESP AAL FARPTVNLRHFPSLYGKPAVHELVMAEFDDRRLA DELTEPSPHNGFHHRFQPSVEAPDSYGELVESRSAAFEGG EETLKSMSQNTLGWRYLPKVGAPGAELSQFVLYPQGLQVE RPVAVFGSAPVITMRHFPSLEAGPAVYELTRAKPEDTADS
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240
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 DFWTGSAELSIPHVEGEDMDALAPREVGRGFRFGMSYSVS
 QAWSGRGSI SFGESELDPWHTLP KRITTDALYVRSDMDVP EVWRGEGTLRLFPSDLEEHTALGKLEVLEGYHYHSGYTFP
 DIWKGSGTLKFYESEVEEHFLLAR KEVLDAYMFSSGYTFP



 QA WTGEGAVTWTWT IINTLADLPVLKVADAMMMVARLNVG QAWRGEAELELFDAPTEELARLEIREPIAAYYRQVGVVWD
 QAWSGDVDLKLFESPTEELADLTVEEIIGGYYRQVGVIWD QAWSGEAEALELAFDAPTEELAGLATVDEVIGGYYRQVGVSWN QLVRGSATLAMGGSSGDPLYELDVQRVDGAEFVVAEFYLD PAWRGEAELDLFDAPTEELARLEVREPIAAYWRQVGVVWD
 ERWSGEGSLKFNGFASTPWADLDVVSYIGSWMGKSKVVLG EKWSGEGSLKFNGFASVPWANIDVVSYVGSFMGKSKAIL

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QIWS GEARVK LGGTPFDPLD DIVVTGVVA GFY $\quad$ GE G DMELG S A Q R G M GLVVSWT WRII DALA DMPVLGWRGALMTWGSAVL E
 RCF R GD F DL D Y F D S P V E E L L D I A P Q E K I A GY WHE V G V S WR
 DVVWA GE G Q L SLNAVE GEVILRDSDLDPIADLPVLRLVEDTYGE KTSDQ


| $E V$ | $W E G V G S$ |  |
| :--- | :--- | :--- |
| $S$ | $A$ | $W$ |


EVVW GEPS V GLFNSAF D P I H K L E V L R Y V G A TMM R
Q V W W N G I G G I K WH S H I I IA A L A A L S A H R L D G E V I L R D S D F D P V A D L P VVR K L I S A E HVVKA D L V L E I S M R L G E L



E I WD GE G AV SFPPS AVVDPMHRDIVVRYESA HFLLREA HLD EVWTG $\ P S V G F T G S D F D P V H K L P V I R Y G S A T L F R$ S A WT G S G MV Q W DE H I I K AL A EL P I I EMAP VL MIK G
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| UniRef90_UPI000289AB47 | $G G R T L A$ |
| UniRef90-F6B1Y7 | N NHLLRD |
| UniRef90-Q8NJQ3 |  |
| UniRef90-M2T9N3 |  |
| UniRef90-K9FCU2 |  |
| UniRef90-W9Y3B5 |  |
| UniRef90_UPI00036AEF7B | H G R V L A |
| UniRef90-UPI0003AB0834 | Y $\square$ H Q R Y D |
| UniRef90-V4LE94 | S GEVLHD Y L A |
| UniRef90_A0A010TA22 | $R$ L D V L P D Y L |
| UniRef90_D9UVS7 | F G T Y L |
| UniRef90-W7SU48 |  |
| UniRef90-H2C2K2 | $\square \mathrm{L} R \mathrm{l} \mathrm{V} \mathrm{H}$ |
| UniRef90_S3C911 |  |
| UniRef90-A2QFR2 | L G |
| UniRef90 F0X6N8 |  |
| UniRef90-14C1A4 |  |
| UniRef90_E3CWS4 | P |
| UniRef90-E4ZI78 | PA DV |
| UniRef90 ${ }^{-}$M3DYR1 UniRef90 ${ }^{-}$W9KT40 | VT QV |



## UniRef90 Q643B8

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UniRef90 J9MRW2 UniRef90-C3ML22 UniRef90 W7KV87 UniRef90-S3BPS9 UniRef90_R9GD95 UniRef90-C4KDS0 UniRef90-D2ARH4 UniRef90-H6Q906 UniRef90-B8MWJ2 UniRet90_UP10004706F54 UniRe990 A0A031LU84 UniRef90-V9DJ62 UniRef90-R7CL68 UniRef90-W3XE21 UniRef90-B8F8T0 UniRef90-UPI00036FCD2B UniRef90-13X364 UniRef90_UPIO003B73576 UniRef90-M1IUT UniRef90-B7RXX4 UniRef90-Q1WVG5 UniRef90-W6BLV9 UniRef90-S6C952 UniRef90-C7N231
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UniRef90 Y2ZXX4 UniRef90-F4G398 UniRef90_A4YFF7 UniRef90-F4FBS2
UniRef90-F8JMW0 UniRef90-D3CYY UniRef90-X1FJF4 UniRef90-UPIO0036599BC UniRef90-TOLOG1 UniRe990-J3JC63 UniRef90-Z5XFK7
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K Y H T T Y HARGDPSRMEKVL EYWADPKATAALLPPGLTPDPKTNGHAALLFLDWQFTAQY KAYFDPVKVLDLVPPPLEVVDGEGFVYIAKIFTVSGNRWY TYETDRGLLEQYIPEGFELISPEVQVIFSKFTDWMQGGQY
 AYASEPDAFIESVLPAGLKLVANNIMGAAVFDGEGGSAGPF EFDAAPTAAAAFLPEGLELHSGRCAAYFVEWQYASDTGQY YFTADPETVARMLPAPLEAAKS GLLCAAFADATFCATYGPF FFTDKGDVSDLLPEGLKAYSPAQGGDWISHYSFSTVGEY SYLTDPAA MFSVGHEANCLLPKELAPAANPADAIVVASYRSSTVGPY DFETTPEFDQSVLPPNFEAGDTPTGHISVGTFESKLCGEF
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 SFYTKAETAANYIPEELEDEEEPLVTYFIANWGYSSMGAY DFETPPEFVKSVLPPGLEPADRPVGTVSLSTWESKLCGEF

 YVKFQKDTLYQFLPNFLDSKGERYTAEFGSMYQDPDLTQY AYVTSAEKLTELVPKPLKVVAPVIMGYVTHMGDPTFAAPY TVSIDPYRMQPWLPRGVRLAEPARADLFCAYFPENSFGSY A YATDEKVLAKLIPKPLKLVAPVVCGYVVQRGKPSFGGPY
 VYRTDAGVVDSLLPPPLRRDEAEVLIWVARFLSASFLPSY YETDEAVARALLPQPLVIERPEVWLQUAHVAMHVADDRT PYKTDAE DLRKLMPEQFEDDEPTVSVNYACNKDDDWDAGY LGRLKPGVTKSITPPPLEPMGDFILIISWLRMGAVLGLPPR LGETDPDAVAAVLPPPLTPTSPLVRVSVSEVALP GGYPL HAVANPDRLKNVT ELKTDGEM WI YFADVYETP QLVQY VYETDPEGAKALLPRPLVAARPETFLQFAHVAMHETTVED HVKFS GAEQUPEFMKTDGEVYIAEFVSTAESNWLVQY EYRADPDAVARHLPPGLEPGPDAGAAAAVWAQWQWCSDQF DYRVDPDAAARFLPPGLTDPDPGAAAAVFATWQWPSRSQF VYLTDPARLAEVLPPPLTPPAQRVHVRVTDDDLHFGEYHY YWETKPEGIKRLLPPPLKPTDPTAYAFVAYYPKTNFGVTY
 AYAAPAEVLAKLLPPPLKLVAPMVCGYVVQMGKPSFGGPY MF SVPADAAQRLVDYEFRPGRAVVNLMLARYIDGD LGKY AYRVAVSQDRHLVPNVLEDDEPLMSTTVLDYGMSP VGAY TYETDAEDVRAMLPRPLVPARPEVFLQFAHVAMHETTVEV VYESDPEALSAVLPARFELAAPYVIVNMNMLRDVAWLHGY VYDVDVAAMRRWLPPGURPATPRAEVFTAWFPECTYGSVY GYRTHRAKLEALLPPGFRLNEPMVYASLAFFRNLFWLRGY VAHTGLEELQ YRPGHGICTLVFVDYDDGD LIGPY VVEDDSDKMQPWLPAGVTDTGPTADLFCAWFPDCNYGSVY MYSVPTRAAQSLIDYQFRPGRG\|CVLVFVDYVDGD GGPY
 AYLTDPAAVAKVLPAPLEPFAPVVTVSACHDKEPTFADNY HVKFDKDTANQLLPDFLSTDGEIYIAEFITSMYEDPELVQY AYTTTPEA TARVLPPGLSPFPPVVALSLNHVNNPSFTDDY Y LRCDPARLQALLPAGLKVADGLCMAYVAAMLRNPAGAVY QYRVAGSDIRHLPDIMEIEKESLMAMFIRYGKSSGGL MYSVPTKAAQRLVDHGLE:GRGLCGLVFVDYGDGDGGOY SYLTDPANIAALLPPGISPKSPKVTTTIYNFPVLNE PEY


## UniRef90 Q643B8 UniRef90-UP10003B5843B UniRef90 UPIOOO2622CCE6 UniRef9O UPIOOO2E53FA UniRef90 C7YIZ1

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UniRef90
UML2 UniRef90-W7KV87 UniRef90-S3BPS9 UniRef90-R9GD95 UniRef90-C4KDSO UniRet90-D2ARH4 UniRef90-H6Q906 UniRef90-B8MWJ2 UniRet90_UPI0004706F54 UniRef90-A0A031LU84 UniRef90-V9DJ62 UniRef90-R7CL68 UniRef90-W3XE21 UniRef90-X8BH91
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 $K E T L V V V R C T Y R G E D F S R C V V I W V D K D C A L V R G L H Q Q G Y P$


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

 T GAA Y V A ARHGD ILGGKYTMCMFMNNDNAMMFGRDDIF GEP
 K E V G V A V H E Y L T V I Q VE DE G DM GYY I P Y I Y V T N D S A L A A GRE L A GAP
 HE A G LS GI Q V R P P D G E T G Y Y Y I P P Y I I Y V

 GA GSVAVAARHADAD GWYPLVMPMTHERALI GGREVVFGEP





 Y E A I L E C T M V S


 LE GA I GLRVYYE GK S Y L Y FP F M WVD K D WA LVR G WLD GYP NLVAVNAAAVFE GEEGNFTLI MWEDLAD P ILLTGREMQGIP



 EQGGVCVVRCSRS GEQ GAYPLVSY IAGGNHGFTGRELGGLP


 GAGSVAVA A A H GAVDGWYP LVMPMTHERALTGGREVVGEP


 MEGAI GLKVEYK GKNYVYFPYMWVDK DWALVRGGWLDGYP

S



 KEFVVHQVEVTYKNEKFMYSLILLILDNEAAIMAAGREQYGFP GA LTTLG LMCDYEGTP GGYVV HMAME GESVV T S GRERPGEP HEAGLVVHVRTVQGTGIHCPWMILDDDVALVMGRELLGYP





 GCVVVNVDAEYN GIE GEYTLLGIAI DQEAAMY IGQE RWGQP $G V V V N V A A D V D G V E G E Y T L G I G I D Q E A A D A G S K E R W G Q P$ YEA L GVYCTYK GQVGLYP【SLLLGGEMATQLGRDNSADP $M E G A 1 G L K V N F E G K N Y L Y F P F M W V D K D W A L V D R G W W L D G Y P$


 GCVDV NVDAIVY G DE GEYTLLGIGIIDQEAAI FGSHERWGQP


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UniRef90－M1IUT9
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UniRef90＿H6LJF8

130
140
 VLIH GV GVI R H Q Q S ATEFSLRIGGNEVMWGSAAYKHDPVPL K K Q A RVGTLTEE G GAVTGGRIVTANDDVVVLVRARATTPA GP K K LA DI E L R R N DNSASAVVDRHGKRLL DL SWTA GE Q FA GQ K K G K CRLWRS GD WRYA YAERNGVRLIDVQA K F GEDLP K K L G S $\quad$ WM T R P H P Y G R A A L A A A D R R L A Q A V V T L R DV V E A P

 K K M A Q I I E M T R F H D L F F E A K R $\quad$ R G G V A Y R S G Y N L F K R 1 G S V F Q T R R G S R F A G S L S A H GVVR LRA E A R I K L E A P E P DV



 K RLA $\mathrm{L} V \mathrm{~V}$ F NANEKQGGGHVDRGTARLIEIDATF K QIGSTWDTRAGGRFGATLSAKDRRLLEAQVTDREVT $K K M A N D H L K R D G N D V K G W S E R L G T R Y V R A N L S G K F N D M E A$ KKIAKI TMTQDGQEFTTTAVRADVPMIQLNSR】TE PAKP

 KKMGEDSWDDNNGSRI LS QASRRGTVVLI EMEAKLGEELIDKDA $K K L A H \| R L D R E G G L I Q Q G T L E R P G K R L L T L T A Q P D E R M S S D$


 K K L A D I ELLNRELGNTAFA TVQQRHGQE LLNV KWSFLDE QFAQM


 K K I GAVHQTRHDSRFAACMSAHGRLLVQARVARREKA

 $K K T G V T K L F R S G H R R S G F G E R N G V R L V E M R A T F \quad D E$




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



 K K QA QRVLLDRAGERTSAEILDTTAE IPVVR DEAEDTGKAA $K K V A E T S F E R Q G D H V R A T C S R H G D T Y$ SVALEGBGGGE $K K M G E F V L R R D G D V V T A E V S R R G C Q V A S V R M E L G E T P L T H$
 $K$ QF GAI H QTRPGGRFDGALSVHGRLTAEASVTVERRSERP

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 KKMADI Y FKREKR IVVEGWIERRQGTRYYEVKAKLNGR


 K K L G E I E WRLTTDSEI HAAATAR GAQQLTMMRGRLGA

 K LFAD DR LDPDS GSLGGASWFDFKFFE』EMHGワEKVAVDS
 $K V L A D F D V D H T G S V R R G S V S R D G R L I A Q L S V$
$K$ Y Y A E T Q Y Y R L MM D F $\quad$ I R S A K V V R H R G Y T F K F F A E T KYYRIF DEVVKASVTHQ GYTFLEFS GKVKGPVE I K K LGEFY I R K ENDKVTCNVSRRGAELLNDEMSYNHHALYQ K K I A K IV M T R L H P L L P M Y G G Y V VR G G GV L L R L QVE L Q E R A
 KAFGKMHIKTSTRM RLYQGTADGPVSESUPKDDTL K $\square$ M A D F E A D H V S D V R R G R V $V$ Q D G R L I A E L T

 K K I G T V K L L P D Y N S R R E N L I L G GY Y L L R D S K L I D L L K V T L R R

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UniRef90
UML2 UniRef90-W7KV87 UniRet90-S3BPS9 UniRef90-R9GD95 UniRet90-C4KDSO UniRef90-D2ARH4 UniRef90-B8MWJ2 UniRet90 UP10004706F54 UniRef90-A0A031LU84 UniRef90-V9DJ62 UniRef90-R7CL68 UniRef90_W3XE21 UniRef90-X8BH91
UniRef90
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UniRef90 A0A010SOW1 UniRef90 ${ }^{-}$M4SKM4 UniRef90-U5E7A6 UniRef90-G9YQM7 UniRef90-HOQVY6 UniRef90_B7RZJO UniRef90-UPI00046F7105 UniRef90-UPIO0036B83E7 UniRef90-F6ER37 UniRef90-Q0S7W4 UniRef90-UPIO003B6F51A UniRef90-UPIOOO3818442 UniRef90-X81T42 UniRef90-Q974D7 UniRef90-U2VOD9 UniRef90-A5VE83 UniRef90 M2SW25 UniRef90-E9T1A3
UniRef90 K9T2P7 UniRef90-12JPR4 UniRef90-W7L419 UniRef90_H6LJF8
 190 GGGPR PRLVASEVSDVEFS PEAEAFFARPKFYLKLLGSPLGEPVRHRLFSLEPSSIALA LALNKAAEMSSFALKNYDSAEGTGYUSRLVRUPFRTSEPG PRVRDA ${ }^{2}$ NFEDKAYPHSQGKGLQWEPLDSTLEVREHD GFVN SHPMAHHRVVPGGGAPDALNELISAAAAVTGG A MPSETPAWRLKVIPRADGPPALKQLIDCTTQDLEVH SKREESDPFEGFGSWLLRRYLKPDELDEFVEFVP EVTVGG TKI GFSRPTVNLRYFPR LAATPAVNELVMSVTDELRYV EMDAGFSSVNAI GWRYMPKVGAPGAELSQFVLYPQGMKVE QDCQAPSTKRMLNLRYDPSPGEPPSLRELIPVTMA MKFP PEGPKTDEWYDFEVKAFPNVKGTGADPKLIALKVIDKSAT PSILQTFGSDQFALNKESEMNSFFFTHDLVQNHFENVELDD ETLPSPGFAKAVNTRYFPELHDSPAVHELVQLKSRDVRVS PKILIGПGMVSFNYKHF पAPEMRGFI REEVEFRP EEVPSLW PMYLLK M I DFVLPKPTYLYRHLPPDKGKGGVTQLVKWYADDFHVR AAALYQLPAAGFHFDRMPDENGSHFLNGALDMNQCEYNYQ PPLLG SRQMYSARTNFYSVRQLPPUSGKGEVTQLVKWCTDRTLR DQPPRLRENTAYEIKAYPHSMGRGLQWAPKVNQLKVVEHD
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SVYSGDATLEFGESEYEELHELGPVTAGRGYHYWYAMTIL EI WKGDAKIEGGGYVNDELDKLKIEDVIAGGYYTTYFKVR
 ETRVAQLELKLGGTERDPIHAMGIGAVLEARDHRQDUVGG SWENASVNVGLGASEDDPWAALPVVLKPLGGGWTNFDCRMG A LIFKVDGEVILIRESRFDPVVDLPVRRLVG
RLERITGDVVLRESMYDPVADLPVHTLVGDTLGE KTSDQ GVTGLDARVELTASGADPLHLLPVREHAWAARGRTELRVG

 PVWSGPGRLALSGRPGTDLALLAPVEVGAGHVFAYGETLH VSIADDSTFELSNGPLDEFNULGDI DILSARYEKSSFDFD RLERITGGVVLRESAFDPVADLPVLR
PLRQGEASLEFTESGSDPLHILAVKGSVRTTYGHARLDDD Y I Y R GKATLEDGGGDNDELEFFKPEKDLEGYRYSALLKVK QAF DGEI RFHESAYDPLVDVPDRRIVSMEYVEATNTSG EITWKGSAEVDIGGYVNDELNSLSLRETLGGYYFKVTKTIL EI WK GTAEVELGGYVNDEVNVLSVDQVYGGYYYT
GLRSGPADLWLTDSAFADLGSLAPREVGTGTVFSYGETLV D WTGTAQLRFLDTPDDDFATLAPVEVGAGHVFSYAETLV TVERVEGKLVLRDEPTAPVVDLPVLETVS ITYTT


UniRef90 Q643B8 UniRef90－UPI0003B5843E UniRef90＿UPI0002627CE UniRef90 UPI0002E53FAA
UniRef90 C7YIZ1
UniRef90－A0LTV9
UniRef90＿UPIO0035F837A
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UniRef90＿UPI00046F537F
UniRef90 Q97YT6
UniRef90 E1REN2
UniRef90＿C9SYL7
UniRef90－XOKRH4
UniRef90 B3WC05
UniRef90 G6E847
UniRef90＿D7AJZ7
UniRef90 ${ }^{-}$X1PSM4
UniRef90 X0UXK7
UniRef90＿O29091
UniRef90＿A9KS83
UniRef90 N9RKB
UniRef90 Q89YC6
UniRef90－J9MRW2
UniRef90＿C3ML22
UniRef90 W7KV87
UniRef90＿S3BPS9
UniRef90＿R9GD95
UniRef90＿C4KDS0
UniRef90 D2ARH4
UniRef90＿H6Q906
UniRef90－B8MWJ2
UniRef90 UPI0004706F54
UniRef90 A0A031LU84
UniRef90＿－V9DJ62
UniRef90 R7CL68
UniRef90 W3XE21
UniRef90－X8BH91
UniRef90－B8F8T0
UniRef90＿UPI00036FCD2B
UniRef90－I3X364
UniRef90＿UPI0003B73576
UniRef90 M1IUT9
UniRef90 B7RXX4
UniRef90＿Q1WVG5
UniRef90＿W6BLV9
UniRef90 S6C952
UniRef90 C7N231
UniRef90－E3J8U7
UniRef90 ${ }^{-}$X0N6Q0
UniRef90 UPI00037DF129
UniRef90＿W0A9X7
UniRef90＿G5F245
UniRef90 UPI0003716B5F
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UniRef90＿UPI0003634999
UniRef90＿S5VDU9
UniRef90 Q0RYG7
UniRef90＿N0BB65
UniRef90－U2ZXX4
UniRef90 F4G398
UniRef90 A4YFF7
UniRef90＿F4FBS2
UniRef90＿F8JMW0
UniRef90＿D3CYY9
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UniRef90 T0L0G
UniRef90 J3JC63
UniRef90＿Z5XFK7
UniRef90＿A0A010S0W
UniRef90＿M4SKM4
UniRef90 U5E7A6
UniRef90＿G9YQM7
UniRef90－H0QVY6
UniRef90 B7RZJ0
UniRef90＿UPIO0046F7105
UniRef90＿UPI00036B83E7
UniRef90 F6ER37
UniRef90 ${ }^{-}$Q0S7W4
UniRef90＿UPI0003B6F51A
UniRef90＿UPI0003818442
UniRef90 X8IT42
UniRef90－Q974D7
UniRef90＿U2V0DS
UniRef90 A5VE83
UniRef90 M2SW25
UniRef90－E9T1A3
UniRef90－K9T2P7
UniRef90 I2JPR4
UniRef90＿W7L419
UniRef90＿H6LJF8

GGRLLSDY
GAEVIHRY FGTYL
LESVDADKMA
GGEVLA
YA QUVYD Y L
$G \| R V L$
D
G
$\mathrm{L} K \mathrm{~K} \mathrm{~K} \mathrm{~L} \mathrm{~L}$
GTK\｜L

TGT
LE QVDADK】A
$D L I P \square R D$

F VD $\|$ L E Y
$\qquad$ IP P 】

D Y NVVA D Y
$R G R / V A$
LIEDVDADETA
GTKILA
NGTVIDDLLA
Y G
$D\|E\| L A D$

D A DVLAP Y L

GTSLVRKLL
S G SV
TTRLLA
V V $\mathrm{L} D \mathrm{DR}$
YMPPD
LIEKVAEKTA
VAKVVA
RGEVVA
Y G T YL
SGQILRDWDA
$G M R R L A D$
GGRLL
$\square \mathrm{SR}$
Y GTYL

LEKV
GGRCLA
S G R

D A H V L

D
DPP回
$\mathrm{D} A \mathrm{~T} V \mathrm{~V}$
SPPV
DAQPV

S L E Y L E D
GMRKLAD GATRL

F G
A GTVLTMP ${ }^{30} R \square R K$ K DVVT A

```

``` GARF:TA P P Y A P A YPLE WECPLRT LEV
```



``` P P Y S P A Y P V E WE C P L R T L E V
```



``` P P YSPAYPVE WGCTLRT
YPFMPGAMNNE
```



``` \(\vee R T V R A\)
YPDEPWR LA GEAFVSV
\(T\) THE ILGKQVAMPVQ
STHQVLGTTVTMPV
```

```
M T A P S S T H D V L G G T T V V T M M P V V l
PADPLEGTAVSPPVRI RSARCFVA
\(P P Y\) TYPMAPWSLLQGYAVQTL
\(P\) PYSPAFPLDEWETR MNVLIVV
```




```
P Y P QAPWTLLQGYAll V
HGFTPPYTGRSS LVPPPPWHYAGTVLSM
YPDEPWRLLA GEAF V S
S
MS Q H T \(\square\) A G TVLTMPVRVRTATQHMA
PYPKTPWT L \(\square G \square A \square Q T \square\)
R M P VRI R T A HAFMA
FGPAPGPRQKPGGGMWAAENAEWMAV DHRYRMPV VFGPAVGPGMWSRENAEWMA I
A H Q \(\square\) A G T TVTMPVH \(\square\) R D A R CF VA
FGPAPGPRQHPEGRMWTPENAQWMKV
NS D WMRV
A VF GPAPGPRQKADGTLWRPENAQWMTV
K F E E DK TYSMP PFFGGTVFDANFTATANTLALNF
MTHPSRHDVLGSTVTMPV
```



```
- \(V\) RIRTATAFMA
```



```
AYPGEPWRLAGEAYVSV
AYPGEPWE ARARCVAA
AV F GPAPGPR QK A D GTPWTL ENARWMTV MPSPSTAGTTLTMPVEI RDARCDVA SAAYPDEPWRLAGEAFVSV
```



```
WRMP \(\square \quad\) GFGPFPGPRQDFFGRRTMSV SNVHAVGA
GMPPMVWA PQPPQLIHNARMI IV AYPQAPWILNGYALLT
```



``` PPYAPAYPVE WECPGRT LEV PYPLAPWTLKGFA I ETL \(\begin{array}{ll}M P A F A P D F P P G & V E T V S V R W D S \\ G P R T G P Y G P D G R K F A K S T S I & T\end{array}\) YRMPGPRTGPRYGPDGRKFAKSTS I TV FEKNK \(\quad\) Y EMPVPSPDPKNPRPDGTVADVEAATV P Y P C A P WTLKK GRA VQ
VS S P S Q H T \(\square\) Q G T VLTMP
MTTASVHDVLGTPVTMPV
RVRTAHQHTA
PGEEI A Q W W M M K I
```



```
PVRVRTARQHMA
FEKGRTYRMPTHFGPAPGPRQPHRNPTRMTVSA RQPIAFGPMPGPRQTFTGAPQDGRATTTAAA QRYDMPV VFGPSLLPDVTVMEDLRNDSV RQPTVFGPMPGPRQDF WRSRAAATASI
ATPTTHKVLDQTVTMPV
RHATCFVA
PVQ \({ }^{R}\) R A R C F V A
A GTVLTMPVRIRKADMHSA
```

UniRef90_Q743P5 UniRef90-UP1000465717F UniRef90-M5A0Q1 UniRet90-B8FE75 UniRef90-W9HAD8 UniRef90_O2FSZ5 UniRef90-Q142X UniRef90-K0F367 UniRef90-A0Z4L6 UniRef90-R4YX17 UniRef90 UPIO004625032 UniRef90-A1BEI8 UniRef90-H2C1T3 UniRef90 UPI000248A072 UniRef90-U5FOP5 UniRef90-I1D1F3 UniRef90-M2XJX8 UniRef90_K6W1R1 UniRef90_DOL2K6 UniRef90-LTKSZZ5 UniRef90-LOJPN2 UniRef90-UP10002 E9AFD7 UniRef90 UPIO00476C457 UniRef90-B9K071 UniRef90-IORD74
UniRef90-V8CS28 UniRef90-UPI0002E0B86B UniRef90-13TRR5 UniRef90-KOUSL2 UniRef90-F5z286
UniRef90-H8G573 UniRet90_A8ZVR8 UniRef90-K9TZ10 UniRet90-G9PTX4 UniRef90-C3NLM8 UniRef90_UPIO003467CC7 UniRef90-Q5YS54 UniRef90-B9K0R6 UniRef90-C6B8V1 UniRef90-A0A023XVP4 UniRef90 HoR439 UniRef90-UPIo003B79DBA UniRef90-19С3Y4 UniRef90-F2KCK6 UniRef90-C6PXZ7 UniRef90-W5T855 UniRef90-H6N130 UniRef90_A0A059MUR5 UniRef90-F4BVX5 UniRef90-M3USD7 UniRef90-I0UX71 UniRef90-H5TJL2 UniRef90-UPIOOO464D31C UniRef90-L7KF83 UniRef90-AOR4Q7 UniRet90-C7MT42 UniRef90-G7GXW4 UniRef90-UPIO003776125 UniRef90_A0A010S6B4 UniRef90-J9MRW3 UniRef90-D2S514 UniRef90-UPIO0034523FF UniRet90_A5V7T8 UniRef90- W3XDY6 UniRef90-W0HTM7 UniRef90-AOAO24QKX2 UniRef90-UP10003B5EA88 UniRef90-J7FVZ6 UniRef90-E1QY44 UniRef90-K9TCW0 UniRef90-13×368 UniRef90 UPIOOO4678D2B UniRef90_UPIOOO3B3F780
UniRef90_UPIOOO47E916B UniRef90_UPIO004623170 UniRef90-UP100037931D6 UniRef90-IORR77 UniRef90-ROJVD1 1 UniRef90 W9APJ7 7 UniRef90-WMYUZ6 UniRef90-M4ZWUO UniRef90-B8NL45 UniRef90-E8YUK5 UniRef90-G7GNH7 UniRef90-F1YJ83



MFSVDAQAA ${ }^{50}$ RLII I YSHRP ${ }^{60}$
70
 MF SVPADAAQAMI DSGLQPGRAVVNLMLARYIDGD LGKY
 VTRVDQSKLTELLSDPFELLVNDRVAFRYMLSPKGHTEDVAYA
 VTRVDQAKVRELLKDPFELVNDRVAFRFMLSPGHTLAVHA SYLVPADAAQRLIDYSLPAGRAMCSLVFVEYVDGDDLGPY TFLTDPGVIAAVLPPPLEPPAEMVKVSUSRVDLGGGRAPF MTRVAPGKVATLLADPFEDASDRVAFRFMRSPGHSLAVHA FWETNPETAQRILPPPLSPKHPTVMAYVVNDREPSFAPWY HVKFNKDGAEQVLPTFLSTDGEVYIAEFISMYKDPDLTQY AYVTSPEVLARLVPAPLKPVAPVIAGYITHMGNPTFAKPY


## G

 GFSADAAAVQRAI PLRIRPGRAMCMIVFI DYVDGD GYEADPEVLAAALPPGLEPHPNLVQMNMYRVPQTAHLDPY VHLVDTNRVRALLPPEFERESKTLGSVYLSNYQPGSVLEY TYRTSADKLEALLPPGMSLRGEPVSCAWFKNLYWLAGRGY MFSVDAAAAQKLIDSGLEVCRAVVNLMLARYFDGD LGQY GFTASASAAQAAI DQQVRPGRAMCMLVFVDYVDGD LLGPY ACPTDPAAAARFLPQGFGRATGRLGGVYLSYYGAGTSGAEY

 DVPLNKKETKKLLPWCMWLGPPTATLFVVDYTKTSFTVPY MFSVDADAAQAMUDSGFQVCRAMAVLMLMRYID TDCLGEY
 S Y L R T $L$ L $\operatorname{P}$ E TYRTDPAKLAALLPPGMSLRGEPVSCAWFKNLYWLAGRGY
 S Y R T D P A K L E K L L P A GF S L REP IVVSV S CA WF KN L Y WL R G Y



## い

 SYRTN R D A QLAE R L L L



$S \mathrm{~F}$
$\mathrm{~T} F$
V T T L VA GK A LLKDPFERVNDRVAFRFMLSPGHTGALHS


 RFRTTERFVRSVLDPPCLAPDEPIVGTIGMSFMEWNRAGRD MFVVDADAAQQMIDSGLQVCRALVVLMLMRYEDTDLGQY
 A YATD EAVLLKALI PAPLKLMAPMVVCGYVVHMGKPTFSAPY
 MFSVADPI CQUMVFDYSMST,LGAY MFSVDADAAQRMIDSGLQVCRAVVVLMLMHYLD TDLGQY


UniRef90_Q743P5 UniRef90_UPIOOO465717F UniRef90-M5A0Q1 UniRef90-B8FE75 UniRef90-W9HAD8 UniRef90_O2FSZ5 UniRef90_Q142X1 UniRef90-K0F367 UniRef90-AOZ4L6
UniRef90 $\mathrm{R} 4 \mathrm{Y} \times 17$ UniRef90-UPIOOO4625032 UniRef90-A1BEI8 UniRef90-H2C1T3 UniRef90-UPI000248A072 UniRef90-U5FOP5 UniRef90-I1D1F3 UniRef90-M2XJX8 UniRef90-K6W1R1 UniRef90-DOL2K6 UniRef90-LTKSZZ5 UniRef90-LOJPN2 UniRef90-UPI0002E9AFD7 UniRef90_UPIO00476C457 UniRef90-B9K071 UniRef90-I0RD74 UniRef90_-V8CS28 UniRef90-UPI0002E0B86B UniRef90--13TRR5 UniRef90-KOUSL2 UniRef90-F5z286 UniRef90-H8G573 UniRet90_A8ZVR8 UniRef90-K9TZ10 UniRef90-G9PTX4 UniRef90-C3NLM8 UniRef90-UPIO003467CC7 UniRef90-Q5YS54 UniRef90-B9KOR6 UniRef90-C6B8V1 UniRef90-A0A023XVP4 UniRef90 HOR439 UniRef90-UP10003B79DBA UniRef90-19C3Y4 UniRef90-F2KCK6 UniRef90-C6PXZ7
UniRef90 W5T855 UniRef90-H6N130 UniRef90_A0A059MUR5 UniRef90-F4BVX5 UniRef90-M3USD7 UniRef90-I0UX71 UniRef90-H5TJL2 UniRef90-UPIO00464D31C UniRef90-L7KF83 UniRef90-AOR4Q7 UniRet90-C7MT42 UniRef90-G7GXW4 UniRef90-UPIOOO3776125 UniRef90-A0A010S6B4 UniRef90-J9MRW3 UniRef90-D2S514 UniRef90_UPIo0034523FF UniRef90 A5V7T8 UniRef90-W3XDY6 UniRef90_W0HTM7
UniRef90_Q8YYV7 UniRef90-A0A024QKX2 UniRef90-UP10003B5EA88 UniRef90-J7FVZ6 UniRef90-E1QY44 UniReffo-K9TCW0 UniRef90-13×368 UniRef90 UPIOOO4678D2B UniRef90_UPIOOO3B3F780
UniRef90 UPIOOO47E916B UniRef90_UPIOO04623170 UniRef90-UP100037931D6 UniRef90_10RR77 UniRef90-ROJVD1 1 UniRef90-B1SYR7 UniRef90-WMYUZ6 UniRef90_M4ZWU0 UniRef90_B8NL45 UniRef90-G7GNH7 UniRef90-F1YJ83 UniRef90-U5WNP2

HEF GTC|V|MVRALGEAAAFDHH|L|V|DQSFT|L|EAGRSDWGFP LEFGTAVMVRALGSAGAFIHHLPVDQAFTLEAGRTI WGFP REVVQSVEVRFEGQPFSYVPHVFVPNERAMLAGREREGLPB K E A ALLVVNVKTP LGKGGVHCCWMVVDD E TALIAYGRESSLGYP G Q L M V S V P V R Y E DLLLT H T H DF M Y C S D P M GI A A G R E V F G Y T
 SLI AV SVVQV QYEP I D GVYY LVVLWEN KAEPILLGGRE EA GMP GQLMVTVPVRYEDLFTQTHIVMYCSDPMGIAAAGRELFGYT NEFGVSFMVRHHNKA GVFIHQLPVDGDFTLAAGRGIIWGFP

 ME G GI GI LCCS Y G D I T G DY F L N L Q L S GP GAL T G GRE FS G L P MEGAI GL KVVF F E GRS Y I Y Y P F M WV D K D WALV VR G WVD GYP $\square E \square G L G V M C D Y E G T P G G Y V F H M A M E G E T V V T G G R E R F G E P$
 N E F G VVVF M V R D H G G A G A L I H Q L NE F G V $V$ C F L V

 S E L I V A P A V K Y Q G K I G A A WVVTHV








 YEYGTNVMVNPPGSAGAFVHHLDVDQSFTLEAGCKI WGYP $M E A A V A L K V K Y N G N D Y T Y F P F M W V N K D D P L D R G W W L L G Y P$ S E L I V A A P A V S Y Q G K I G G W I S H I Y V D N P D S V A G G R E M W HE F GVV S F M V R H G G S A G V F I H R L P V D G E F T L A A G R G W W GUCVV
 NEFGVCFLVNPPGDARALVHHLPVDGEFTLAAGRGUWGFP

 HE F G L NEFGVCFLVRDHGGAGALIHQLPVDGEFTLAAGRGIWGFP

 NEF GVCLLVEARGDAHALIDRLDVDGEFTREAGRGLI WGF




 S LT Y L TVVEVDGH D IP GRFFAYYWNS SPRVIA YAREGA G IP C LVVVPAVGY Q GKVGGWVSHIVVDNPDSVAGGRE\|WGLP






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


 SEFVVTIQVTYERRTFDYTVILILDDNESEI FAGREQWGFP HEYGTNVMVNPPGSRGAFIHHLPVDQSFTLEAGRS\|WGYP T MVVHVS WP A $\quad$ VF A G T R GK F L A A V W E N L A D P I I T G R D E I G H P
 $N V V R V Q V N V R H H D V V G P Y S L V I W E S D P R P V I A G R E L Q G Y A$ NHFGLYI HVQYKSTEGSYLPVLFEDLDDPILSGREELGFP
 NEF GV CFL MQPPGDAHALI HQLPVDGEFTMAAGRGIVWGFP H E Y G T A V M V R A L G R A A A F: H H L P V D Q S F T

UniRef90_Q743P5
UniRef90_UPIOOO465717F UniRef90-M5A0Q1 UniRef90-B8FE75
UniRef90 W9HAD8 UniRef90-O28016 UniRef90_O2FSZ5 UniRef90-O142X1 UniRef90_K0F367 UniRef90-AOZ4L6 UniRef90-UPIO004625032 UniRef90-A1BEI8
UniRef90-H2C1T3 UniRef90_UPIO00248A072 UniRef90-U5FOP5 UniRef90-I1D1F3 UniRef90-M2XJX8 UniRef90-K6W1R1 UniRef90_DOL2K6 UniRef90-LLKKSZ5 UniRef90-LOJPN2 UniRef90-UPI0002E9AFD7 UniRef90_UPIO00476C457 UniRef90-B9K071 UniRef90-IORD74
UniRef90-V8CS28 UniRef90-UPI0002E0B86B UniRef90-13TRR5 UniRef90-KOUSL2 UniRef90-F5Z286
UniRef90-H8G573 UniRet90_A8ZVR8 UniRef90-K9TZ10 UniRef90-G9PTX4
UniRef90-G8RU63
UniRef90_UPIO003467CC7 UniRef90-Q5YS54 UniRef90-B9KOR6 UniRef90-C6B8V1 UniRef90-A0A023XVP4 UniRef90 HoR439 UniRef90-UP10003B79DBA UniRef90-19C3Y4 UniRef90-F2KCK6 UniRef90_C6PXZ7
UniRef90 W5T855 UniRef90-H6N130 UniRef90_A0A059MUR5 UniRef90-F4BVX5 UniRef90-M3USD7 UniRef90-I0UX71 UniRef90-H5TJL2
UniRef90-UPIO00464D31C UniRef90-L7KF83 UniRef90-AOR4Q7 UniRet90-C7MT42
UniRef90-G7GXW4 UniRef90-UPI0003776125 UniRef90_A0A010S6B4 UniRef90-J9MRW3 UniRef90-D2S514 UniRef90-UPIo0034523FF UniRef90 A5V7T8 UniRef90- W3XDY6 UniRef90- WOHTM7
UniRef90 Q8YYV7 UniRef90-A0A024QKX2 UniRef90-UP10003B5EA88 UniRef90-J7FVZ6 UniRef90-E1QY44 UniRef90-K9TCWO UniRef90-13×368 UniRef90 UPIOOO4678D2B UniRef90_UPIOOO3B3F780
UniRef90 UPIOOO47E916B UniRef90_UPIOO04623170 UniRef90-UPIOOO37931D6 UniRef90-IORR77 UniRef90-ROJVD1 1 UniRet90-B1SYR7 UniRef90_W9YUZ6 UniRef90-M4ZWUO UniRef90_B8NL45 UniRef90-G7GNH7 UniRef90-F1YJ83 UniRef90-U5WNP2

K $\quad$ M A D F TIV
130
140
150
160
KI MADFTV $\begin{array}{ll}K \\ K & \text { TA A DD } \\ K & \text { K A D }\end{array}$

R DGGRFGFDVISADGAHIAGID F
A P G



 $K Q \square A D F D V H H G G P L R H G T L H Q D G D L I V D L T V R$
 $K K$ LA D I T L E TVVP E Q S S G S A V R G LVVRMGVGII E LD G T L G D E KK DA H YAFEHPDGS $\quad$ T G WVVRRRG $\| P$ LA DAF TPPDPSAPVVR KKDCE IVVVERTDHFAHAYIESSKGKRIFKVEIDDGMEDFHR K K I A K V S MT K LIH P L L G G YVVVR G G G H L F RLLQV E L K E K

 K E L A D F D LDD R T D GF SASAATPDEWI ATATFTPRGPS GPR $K V L A D F T A D H A S D V K H A S V G Q D G R L I V D L R V$ $K T L A E F E V D H D S P T K H G R L T A D G Q L V V D L T V R P G \square G V P D$ K TLA E F DVVDHDSATKHGKVRVDGRTAVGLRVR K T $T$ A A E F D V D D H G S S V R H G R L E A D G A L I A D L R $K D L A D F E V D H D S A V K H G R V S Q D G R L I A D L T V S R G$ TRPGSCTWEEDGDELVSTLSVDGEPV DEAEASVGDDQDDT

 KLFCD DT WDKEKATASCEASWFGFKFFDDA LGEMEEDDAP $K \| M A D F T V$ RERRRFGFDVSAEGLHDAGIDFGGBG $K$ T LA D F DVVDHRSATKR GVVVE GGQMMA ALTVRPGDKVPD S KELADFTWERQGNRTLCNLNYKQQTFA $K K L G Q V W M T R S Y D H P A A A P L R A G T R L G A S L A V K D R R L A E$ K REGEFTVNGDFDEAVA IVVRRHGDDIVNADUVKGGAPAEP $K V M A D F T V R D G K R L G F D V A A G G E H$ I ATMEFGRGL
 K K A A D $\square T$ F E E N G K N T A GVVTR R GVVEVLD DE S T S K A Q Q T P P K E DA E FTWTRQGDRILCCCLKYHQQNF

 $K$ K LA Y $\square$ S M S E F H K L LD G Y V K M G G Y A LR N G K E I I R I K I T L R K ELLA D F A WER QQNRL L C S L S Y GQQS WA
 K MFA D I E I E H D Q GTA A C S A S WM G F K F F D I A LT D L VEA GNE $K$ LF CDI A WER DKGTAS CTSWF GFKFF D I ALT GMM E E DA P $K K L A H D R L D R E G G L I Q Q T L E R P G K R L L T L T A Q P D E R M S S D$ K TLAD FTVVHDAATKRGTVHSDGQLVVDLSVRR
K MFA D I E WEVA GGAS CYAAWFEHRFFDI ELI E LTTEEVNP E
 KI F A DI E DLHAYDGRYFTAS DFGETFDRLEM
K EIIA D D E V T

 K V L A D F DVV D H T S P TK T G S V K ELA A F H L D R T GDVTVVSAATP SEWI A SAT FVVPK GPS GPA

 K VMADFTVR EARQFGFDVS $\square$ G GKFADGMEFRPGDPVPP KESAVVELDDR SDGFTASASAHGEWDATASFTPRGPVVGPA




 $\begin{array}{llll}K & K & D & H \\ K & \text { A F A E T D D G W }\end{array}$
$K K Q V R S V T L V D T P T G F A F V D A H G Q Q L L D R G A S A A G R T G A$ $K \square Y C E L P L T F N G E T H C T A S W L G F K F M D M H V K A T E Q V S V Q P$ KEMATVEVRRAHGA SFVAKTGEGTMATARFTARGRLDPG



 K KLA DIVLLRRNDNSATATVVRHGKTLLDVSWTAGE K DLA ALLDFRH GRTFTAAAGTDTEWI ATAAFTRRAGAPVA
 $K V L A D F T F \quad R G G R R F S F D V S \quad 1 D G R H$ ADGMDFRPGLPVPA

 K V G E I D HERRS D G R A A F E C S E Y GTR L V R GEVV D GLDS P LD E
 KI LAA F DVVDHDSPTKHGRVSADGQLIVDLSVR $K V L A D F D V D H D S A V K H G R V S Q D G R L I D A D L T V G R G L P V P D$


UniRef90 Q743P5 UniRef90_UPIOOO465717F UniRef90-M5A001 UniRef90-B8FE75 UniRet90-O28016 UniRef90_O2FSZ5 UniRef90_Q142X1 UniRef90_K0F367 UniRef90-AOZ4L6 UniRef90-UPIOO04625032 UniRef90-A1BEI8
UniRef90-H2C1T3 UniRef90-UPI000248A072 UniRef90-U5FOP5 UniRef90-I1D1F3 UniRef90-M2XJX8 UniRef90-K6W1R1 UniRef90-DOL2K6 UniRef90-LLKKSZ5 UniRef90-L7LHR2
UniRef90 LOJPN 2 UniRef90-UPI0002E9AFD7 UniRef90-UPIO00476C457 UniRef90-B9K071 UniRef90-I0RD74 UniRef90-V8CS28 UniRef90-UPI0002E0B86B UniRef90_13TRR5 UniRef90-KOUSL2 UniRef90-F5Z286 UniRef90-H8G573 UniRef90-A8ZVR8 UniRef90-K9TZ10 UniRef90-G9PTX4 UniRet90_G8RU63 UniRef90-C3NLM8 UniRef90-UPIO003467CC7 UniRef90-Q5YS54 UniRef90-B9K0R6 UniRef90 C6B88V1 UniRef90-A0A023XVP4 UniRef90 HoR439 UniRef90-UP10003B79DBA Unirefolo-l9C3Y4 UniRef90-F2KCK6 UniRef90_C6PXZ7 UniRef90-H6N130 UniRef90-A0A059MUR5 UniRef90-F4BVX5 UniRef90-M3USD7 UniRef90-I0UX71 UniRef90-H5TJL2 UniRef90-UPIO00464D31C UniRef90-L7KF83 UniRef90-A0R4Q7 UniRet90-C7MT42 UniRef90-G7GXW4 UniRef90-UPIO003776125 UniRef90 A0A010S6B4 UniRef90-J9MRW3 UniRef90-D2S514 UniRef90 UPI00034523FF UniRet90-A5V7T8 UniRef90-W3XDY6 UniRef90_W0HTM7 UniRef90- Q8YYV7 UniRef90-A0A024QKX2 UniRef90-UPIO003B5EA88 UniRef90-J7FVZ6 UniRef90-E1QY44 UniRef90-K9TCW0 UniRef90-13×368 UniRef90 UPI0004678D2B UniRef90-UPI0003B3F780 UniRef90_UPIOOO47E916B UniRef90_UPIOO04623170 UniRef90_UPI00037931D6 UniRef90-IORR77 UniRefigo-ROJVD1 1 UniRef90-B1SYR7 UniRef90-W9YUZ6 UniRef90-M4ZWUO UniRef90-B8NL45 UniRef90-E8YUK5 UniRef90-G7GNH7 UniRef90-F1YJ83 UniRef90-U5WNP2


पT DEEPQPGGELHVRRLPDPDGVGVAYADVVYRHTPDEYT PSDPGSGGGAAMYYKYVPRTNGGGADVAYITTNFDGYEFK $\frac{\square}{G A V P S M F T A R P Q V L K T Y T H A E G S T R ~ E V E W E M K T A G V R ~}$ GA TTVLRAYSH(LDG $\qquad$ EVP WEMKTAGVR

AAVLGF $\square A G P T Y G L V G A P S \square G T P G A D R L V D P G T T G R M A G$ TALARMVEEVAFVLKADPKADGPGDVLQLAGQPLDNYDVH PVPGLFTSRPRTLQAFSHLDG VAVTHVPWEMKVSGVR ${ }_{P}^{A R A R F S} P V F D H K T F Q N G G G P L Q F F S L V Q P \square W L F R E I T$
SRENPDTTRGGCLLHKYT MDGDDFINMEMTYYDSQTRYY ALTSKPQSHPTYSYR DRG TRRETVGEMTDVRYR EKVQSP【PFP\|VQFRRFPAVQDGTDVYELGQVISSDFRVS
TPLRRGAGA SFDAYSH DDG VTRCTRWEMAPTGM PALPGADNGPSMYYKYVPRTSPGGRIAYVTTAAAPPETGG PSLPGSGGGAAMYYKYVPRTGAGADVAYVTTPALRPGEGR SRQMYSARTNFYSVRQLPPDSGKGEVTQLVKW CTDRTLR DSMPASSASDNVVLHAYSHLDG ITRATDWRLTETTGT
 EKIFPREGKPQLYYKYMPRTGREGADAEYVTTGMDDFEYR

DERAGASEVVTMGWKHTPSAEGPP DADYPDANVTRWTYR NTEPKTDKSVFYEVKAVMRPSGGFSKPTLIEFECTQETSQ

DRIVPAWFDTQYTAKLIPSAEGPHY円SRLVQDPRDEAAG PSAPQKQPTGTLHYKYMPR TGEWGVADLTPASSPNRVVK RPPLAYRLAQSDDGRLKTTR VRSRATLRPAR ERDTGESEAK FNYKYIQAIVDASYPVAEAPEGYPYTLAEP EFSFGSFSTLGSNLLLFPG
AEDEKEF YFDLRGYFGVNASDVTRQLVVFENSTATKR LS GRRQVHSTYSHLDGVTRETAGEMVLSGVRYRP
DPDESGIERFEWWTKCVRKVGGEDFPPHVVKDHGSYGPGY S G

DTVLQAYSQLDG
VTRRTPWRLTSTSGT
PPTGFRDAQTDHGLKYSP


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UniRef90-H2C1T3 UniRef90-UPI000248A072 UniRef90 U5F0P5 UniRef90-I1D1F3 UniRef90-M2XJX8 UniRef90-K6W1R1 UniRef90-D0L2K6 UniRef90-L7KSZ5 UniRef90 LOJPN2 UniRef90_UPI0002E9AFD7 UniRef90-UPI000476C457 UniRef90-B9K071 UniRef90_IORD74
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$D P \square P G H V D \square R \square Y P S E F D P L T D L E P$ KVLGAHFMKT R WRAKGSFNWHKHIVNAVADMPCFEIV


PMVGGTAE $\square$ RFFDAPRDE $\square$ A A $\square R P T G P A V A A \square G N V A \square T V T$ DCRGAHDTFADNRDTDDTGRALHVKEVLSATFTHMDFMLG GTVGGT T L R L $\quad$ GTHPYAELAALPKRPMMSSTVGHVEMTFG ATWTV NPDGPLGYLAGRRPL

S WEPCSAALKTNSS $\square$ DDPWGALE $\square K N V L A A G W M V S D$
PGGATVRLGEHPYAELASLPKRAMVSGSAGNVDMTFA EVWRGEGEVILNGSDNEELEVLKDNKDEGGYYFNWSFKQL
RARPGGAELVLGDHPWAELAS LGPRRAVSAS
RVWTAKGSVAWHAHVVNGMADLDULEV
PRWRANGSFNWHRHIVNADADLPCVDIVR
R LIFTGPTS TVYSPSIIDPVHNLTVGQALLGTYEEYDARD RTRVGGAKLTLGSGPI DELRALKLSRLMASSVDH $\square$ SMTFE $\begin{array}{ll}R \\ R & W T G K G V V N W H R H D V N G I A D L L D U L E Y U D A E M V E F S\end{array}$ R WTGKGTVAWHKATFEQL
KWKGTGGSVKWNRHVVNGLADLE $\| L E Y \square G A E M \square E F S$
$M G L G G T R T E L G D H P V A E Q M R D P K R A D F S S R D G L L R M T F E$ RTRLGGARLHLGDHEI DELRSLGLSRLMTTSVRSLAMTFD SRVGG ATLRLGTHPIAELRALPRRALLTSSIPRLQMTFG RSWEAASSI SMEPSLDDPWSELVVIKPLGAAYSVNSNWVR RTRDGGAALRLGDHPMDELRRLKLSRHAIMSSSVSDLSMR PASATWTVNPDGPLGYLGGRRPLVSVHLR DARLL RARVGGAGLILGGHPDAD DERGLRLSHALMTMSVD RWKGESGVVKWNRHDVNGVADLEILDYLSVEMVEFS RARVGGATLTLGGHPLAELRGLKPARHAAMTMSVAHLAMT FGGVRLRLGDHPYAELASLPKRALVSSSAANVQMTFG ARFASATWTVNPH GPLGYLAGRRPLASAHLCDARLL RTR $\square G G A K L I L G S H P \prod A D$
$A R P G G A V L R L G E H P V A A E D R \square P G R A L V S S G \square A R M R M S F G$ RASAADVSVKMDGHVAKF LAEMP MYEVVSAKVVEGT



HFMTSEVYG
$P \square R T G D A T V E W \square E S S S D P L Y L L T Q C A A P \square A V W G V A Q \square D \square D$ EHWRGEGTVQFHKARWEDLHELEIKEWRGASIVKT
AEWTVP RRQPCAGTVEFHAPTGEDLAKLPIKRYVGASH
$\square R T \square T D A K \square K \square T G S P W D P V S T \square P D E G F \square D G G H \square G G E T S Y \square$ GGVQLRLGEHPYAELSALPKRALVSSSAANVDMTFA RL AVS GKLTTLKDSPWDPVASLPMEEQLSAHLDW
$R T R L G G A R L T L G D H P \square A D L G R L G L S R R A L M T T S V A D L S M T$
$R V R P G G A R V W \square G D H P D A E D A A D P K R A D V S N S S E N V D M T F G$ HFWFGKGCIAYPQNALLSPSWNLPVVAPIVSFYWNTNAELV RYRPGGVTVRLGDHPYAELADLPKRALFSGSAANVDMTFG RRHVGDAHVRFNAHVVNALAELPVVEMRGGS VVA EAWLADPTLH H HVVSRLAELPVVEVVGAKVTES EAWTGQGTI SFSAHII EALRALPVLEYRTATVVHSRVTDP E LRATDARLEDDGHIVSRLAEVPVYQVIEAKVVEGE KWKAAGGSVNWHRHVVNGVADIDVVEYLGAKVVEGSA RTRDGGASLTVGDHELAELRGLKLSKLMTS SVGHDEMTFG


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D A H P L
D A QVV

G G F A VE D

GFEV
DAVPV


F G
D ATVV
D ATVVA
NPTVV
D ATVL
QGRRLRDY

D A R P
DAERV
G A T
WR G V V D Y L
D A EV
G【WYVHSY

D A Q
GTK L L

E P E V V

D A VIV
D A EVI
DAEPI
GMHVLARF
F
F G R
H
F G
EAEVI
D A E VLR
$M G R \square R D Y L$

GGFAVED
Y G T Y V A E
F G
$\square K ~ D V V$
DSK』V
F A D A V

D G
LEEVL
D A E
$R$ N A V I R

D A E
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 QGFTAPFTTTGRSVPPPPWHYAGW LLNV
$S G P S Q H T V L G S V L T M P V Q$
QMPVR DR H A S C FVA $P \vee R V R K A D V H N A$
A GTVVTMPVQIRKADQHMA STPVS QHAGTVLTMPVRVRTAHQHTA A GTVLTMPVRVRTAHQHTA $P \vee E V R T A S A F M A$
A YPPPAPWDLQG $\quad$ QA F VT Y HVIDAGTVLTMPVRVRKATQHMA WRMP $\quad$ GFGPFPGPRQDFYGRRTIS F $P \vee Q \square R T A E Q H M A$ F T P P F TS S GRSVQAPPWHYAGW LVNV A GTVLTMPVR $\square R K A N T H V A$ NRRYRMPV VFGPTCGPGPYDYADRTTAA
$R P$ VP D Y P P E P WR L A A Q A Y L S V E $\square$ R E A R C F V A
 YPDEPWH L A GQMYLS L
FGPMP GPRQTH FGTARNNQRSTFTI $P \vee R \vee R D A Q V C S A$

A GTVLTMPVRIRKANQHMA


A YPPEPWNLAGQAY LS I
F GPMPGPRQTHLGVPRNGNDSTFTTI
A A ASTHDVLGTT $\square$ T
 $P \vee R \| R K A D V H T A$
MPVSFGPFPGPRQTFDGVARVSV


YPPEP WH LAA A A C LS
F GPMPGPRQTHLGLPRGGTNSTFITV FTAPFTASGRAVPPPPWHYAGW LLNV MTQHT $\square A G T V L T M P V R V R T A Q Q H M A$

MP TAFGPMPGPRQDHY GRSTAS I
GKVYNMPLVAGAEDAPDRPRYA YA GEACVVSV


SSPGPDVPAAYPPEPWHLGGSMLMTL
$P \vee R 1 \begin{aligned} & \text { R A T A C A A }\end{aligned}$
SHPPPPWHLLRGTMHAA

FGPMP GPRQTH LGGVPRDGNNSTFTT T
FGPMPGPRQDHFGRPRNGSSSTFVTIV
$M R D F T T D S V$
$P Q V R E A E T H M M A$
Y P A E P WRLLA GEA Y L S V
F GPMP GPRQTHLG $\square P R D G T N S T F T T \square$ LQD GFGRPR VPRQGAP WRMP $\square$ SFGPFPGPRQAFTGETTAS I WRMP $\square$ SFGPYPGPRQDAQGRETSS I PDYPPEPWNLAGDAHLSV TELKTPFFQ VPTHHRAFSLGPTRYTDAGCVMA F GPMP GPRQTHFGVARQATESTFTT ■

GPAPGPRQDSKGEPWDQVNDKTCTMI $P L S P E A L R Y P P P P W R L S$ GTM WS GLL P Y P P E P WY L G G A S A F VV
D H Y G L P R S GENS T F T T
Y P P E P W
F GPMPGPRQDHYGGPRSGENSTFTT$\underset{Y}{ }$
F GPMPGPRQDFLGRPRNGANATFTTV
FGPFPGPRQTFEGLPRTATQSTFVTV
YRMP TAFGPAAPAGMRHDPAASCAYA MPVGYGPFPGPRQDAFGRTTMSV


FGPAPSPRQS PQGTWSDARTTTVGV
$R Q P \square V F G P M P G P R Q D$
WWGRNR QTAS I
A MPVQ $\square R R A A V A S A$ F G L V R D G S R S TF T $\quad$ I Y P P E P WH L R G H L H V S A

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| :--- |
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| UniRef90_V5XIY8 |
| UniRef90_T1X9Z6 |
| UniRef90_A1UM53 |
| UniRef90_A5V6X6 |
| UniRef90_D2BEJ2 |
| UniRe9_-_ |


$W R D P V R A L P R V V T P V T P G G R A L V V T A W D D Y T P P G R M R Y$ GF TADAA A MQRPTPLRDRPGRGMCMLVFVDYVDGD LGPY RFKTSRTVLQNMFPTDFRRVDTVCTASWSKFGRVPWLGGY
 $M F S V A A A P T Q R L D N S G L T V C E A D V M Q M L V R Y V D G B D L G Q Y$ KFKTS R T ILE T L FP P M F SVLD T V A Y A T F L N KLD WL G G S G Y

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


## 

$M W R V P A D E L P A \quad L P A G A E P H Q A A D F T A W D D Y L P S$ G $\quad$ G $Q L S Y$ SFKTS RTVLQQNLFPPGFTSPDSVAYASSLDNMEWLGGTGY




 WRVD GS DL R RYV PA DVDLVA RLLIFTAFVVR EPGSVLSS VY L V R A E A ARAVLA Y EVVLPGRAVCTLAFAQYRDGD LGA Y $L W P V P P E R R L P R W L P A G L R R I G R R C A V V A F W V D Y R P G G T L A Y$ WRVPT $\quad$ R DVHP A ALSVVAGTTVVFTA WDAYRE PGQLS Y





$K F K T S R T V L Q N L F P P G F K S P G T V A Y A S F L N K M E W L G G S G Y$ $V Y P D R A D R V R P L V T G G L D V A R T L A V L A F V R Y R B V N D L G V Y$ RFKTSRTLLENLTPTEFRRADTICVASWLDRLDWLA GEGY
 $R F K T S R T L L Q N F L P S$ G DTIDAEASYIRTTLDNMDWLGLGGY WAVPRGRLDRDVTPVTIGGRAVVVTAWIDYR PDGEMSY TFEVDWDAANALI EA PLDNSKALMNVVVYEYRRLTNGTPY
 TF KAP A E QL VA L L P R P P C GLLGEA SVVS FTS L G NL P WLA GR G Y

 $P$ VTELDPAGTLDVVPAPLTVGGSIVVVAAFVHYTEGGVLQY RFKTSRTALQNLTPPGFKSPGTVAYASFSQTMQWLGGSGY $F L \operatorname{LVP} P \mathrm{~V}$ V R D T V R P P V T V G G R V A V
 K F K T S R T M L

 2475BC1C UniRef90_UPIO00475BC1C UniRef90_S8B449 UniRef90_E7A209 UniRef90_S3DCL4 UniRef90_A2QMA8 UniRef90-D1AF87 UniRef90_M2MPE6 UniRef90_UPI000262905E UniRef90_R8BF49


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UniRef90_V5XIY8
UniRef90_T1X9Z6
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UniRef90-D1AF87 UniRef90-M2MPE6 UniRef90_UPIO00262905E
UniRef90_R8BF49

Y E Y G T N $|V| M|V| N P$ G D A G A F $I J H H|L| P|V| D S F T|L E A G T K| I W G Y P$ RET TVVLEVRPDGSRAMYCPAI WVDQD DSLVRGLLQ GWP LE Y GTNVMVNRPGSAGALVHHLPVDGEFTLQAGRQUWGYP NVLGVSFPAIF NGEEGGLLTVLWENLCDPILTGREQLGFS NEFGVCLLLEDPDTPGALVHRLPVDGDFTLAAGRGIWGFP HE F GTCCVTV N P P G S R A R GI H H L P V D Q S F T L Q A GR T I WG F P


## N


 RET VVVLEI RQRGDARCYCPLI YVDQD DSLLLRG WL QGWP

 HELLSTVVAVRHGAGDAGSDTEMPQVSTEQSVTGGRETVGEPB NEFGVCFLVDDPGNARALI HRLPVDGEFTLAAGRGI WGFP CTMALFFHVRYVRKKGAFIPVLFESLSDAVVAGRELFGDP


 N EF G V C F M V $V$ R D H G D A C A L I


 NHMGLYI HV E Y E K K D G S Y L P VL F E S L T D P I V S G R E EL G M
 HEFGTCVMVRALGEAAAFIHHLPVDQSFTLEAGRSIWGFP


 K HI GLYI HVK D D GI K G TYLP V L F K S L A DP IVV GRE ELGMP RE T I I I V E I E LDD G SLLA N F CP FI WVD Q D DS LI R GL LL Q G WP



 NHLGLYVHVKRDGSAGTHLAVLFESLADPIVSGREELGMP D E L L V A A V G R R GVVVP FA T I P H WWV D S P A SVVA G G R A L WG


 K H I G L Y V HVVKK D G T R G S Y L P I L F E S L T D P IV V GREEEL GMP




 D EVVGLA V P V R R R G RL G A HVV HL PVVTAT FTMAA GRAALWGLP Q T L GLFV HV S Y K K K D GA Y V PVLF E S LT DAVVS GRE QL GLLP $R H I G L Y I H V Q K D G R D G T F L P I L W E N L T D P I V S G R E E L G M P$
 HELLATVAVRRGARPTGTITEIDVDSAASLAGGRQLWGIP
 NH L GL Y I HV E Y E K QS GA Y MP LL F EN L T D P IV S GREELGGMP




 S L K V NFP A A Y N G E R G S F C S V L W W N L A D P L L S G R E E L G F A

 NHLGLYIHVKKDGSTGTHLSVLFESLTDPIVSGREELGMP
 R H I G L A Y I L HV Q Y K K E R G T Y M M P V L

 HEFAVA F LVVRPGRNVGVGIHWLPVDQGFTLVAGRSDWGFP N H L G L Y I HV K E N G TVVGTY L P IL Y E S LT D P I V S GREELGMP
$R E L M V \operatorname{T} V V V R$

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no UniRef90_W9XAMO UniRe990-H5X9M6 UniRef90-R7Z232 UniRef90_UPI0003725C80 UniRef90 N4VB88 UniRef90-A0A010ZTB9 UniRef90-B5H846 UniRef90_M7A6S4 UniRef90-N1QGH4 UniRef90-10HCV4 UniRef90-UPIO003618618 UniRef90 ROJVRO UniRef90-FOXEC9
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KVFADVDFKNEAGGCEMTASWMGSAFCKMSLGDLQDAPEH KEAATLEFDHSVGFTGAASTDTDWDATAAFTPRGPAAPR K ${ }^{1 / F A D I S}$
KIFGFIETMKEEDGDAGS DASHKFTF DEMVVDVNAQPEDP KLFCDIDFETHATTARVRASWRGTQFADVELKKLKRDTEH KGLAEFEQSWGEDG AGRRRITATATRDGATLAG KELATDDLRLSGPYKRCVLKKDGRLVLDMLVRPGMPVPDP KRPATFAFTRPAPGLLDTAMRTDASPAHSHPAPRVSALHR KDLADLRFT KVFSTIDVKRQESYHVTTSWRGAVWGRMTGTGLSEVEKTA KLYTSVDVYRRSTSYRIRTGWEGSFFLLEGLTEIEPATEM KLFSTVEVARGEKSYHARTGWRGVNWGTFSLGLSEAALSV KVSCDVHISHCTGSCHATASWRGATFDDTTLDDLAEEEPR KRLGDIKUQRAASTRGIVBLDGQLVADLRV KEKAALDFRFTATATADRATPATPFPGAGTGGAGQRAARP KKIAKVYLERTDKDVYAYSERLGVKNDEVKLTGKFNDPET KLYTSVD YRRSHSYRTRTGWEGAFWGNFLLEGLEEVDSA KWLATAELSVEPSLTTCRDDAASGRVLDA
KFGCDVALHHRMKTCRATASWRGATFIDDSDDDLVEDDPA KLYCS:DVWRRTNSYRGQTGWQGVNFGSFTLEGLHETDSG KELADIDVRLATPYKRCVLRKDGRLVIDLLIARPGDPLGS KELANLSFTGGGGFTGSAST QRDWLIATAAFTSRGGPP KFVTNIDFALQGKSFAGTVHDPERED KLYSSVDVYRRATSYRINTGWQGARFTMENLKEVEAAGDG KEVVEVDTATGRGQRCEVRADGERVGA HTTSGLPAPG KLFATLRVEASGDWRLAMGWEGSQFGELAISGLKLDVAPP KTVERIDVENTPTSSTWALFVDGQHAFTVRTPRGGTD KQLARFDWTDRQVRDTTDLGAQ DTLAAGPEPRAAAP KHLAEFERSVDGRTVRTAMRDDGAPVASLTARPGRRILPG KLYST DVRREKSYHMKTGWQGASWGSFSLTDLVEQDPAA KEMAELQLDADTEPLVASVAPSSGTSSSGTSSSVASSSVA KLFADLAVHKADD VTCTASWLGGWRLDASWMGEKFCALAEL KLYCSDDVWRRAASYRTQAGWEGASFGS VLKD LVEADP KLFCDUDFELHATAARVKASWRGATFADIRLN KLRADDP KERAEFGVESVEP K YYA DFERHNSYRSQTSWQGAVWFELEDMEDDHQSAAK KVYAAI DASVENETRTHTDSWDGYEFLRLQLDLTDTAGES KVYCDLDDQRQQSSYTLKASWQAQTFGTFVIEDLHTTDTK KLYTA EAHERSNSYHLTTSWEGAVWGHFHLEDLEDQDFS KLMAELPLDLDGAVRRCAVRVDGQLVA KLYSSID YRRATSYRDRTGWQGA LUGNFHDQEDEEMDT


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VPAPSKPQAPP TYSHLDG VTRETVGVMRPSGVR APVPSGSRSPRVTAYSHLDG VTRRVPWEVSPARVR PNTERGUIGGULTYRY 1 PS SVGEPGADAEYACVVPHEEEAR MFTGGF LAA PT TGAVGWPDLDGVVPAATS GQMADMSGVRYR
 $G P P P P D F A G G V L H H R Y F P A V S R E G V A D V L T P A G G A T D R Y D$
$P G A P V P G G G T M A P V D A Y S H L D G G V$
$V$
 DSVEGGWETNVLAYRYDPSVDKPDAAYACVVTHADEGRVK WP LA A GLA QTLDGRDRTSRVRGSAALR
$N G V P \square P T G K A Q V$ LKAYSHQDG $V$ TREDPWEMK MSGLD S PAKEHDEEPLLTYKY LDPATGNKGKAAEEYPVV VY DVSME
 DRLMPRQQAQ RSYSHRDG DRLRASVDSEDFGWKS DPGRDAPDADYPTLIHGSTSFE
 VRMPAAFDVVQMLLKRSP
 DSTADTV $V$ HAYSQLDG VLRRTPWRLTSTTGT

GTDGGEDDDGVFAYKYMPRVGRSERGNADVEHATFVPHAE AEI GGEADDGUIVYRYDPEVHARGKAASFVPHAEEPTTVE SRIQPDTVRGGYML


APPPAPKDTGLLLHKY $\square P A T D R G Q A D V E Y T T Y$ VPDDEEAK TGARFS IVQPG EGQPKVT PVRAWARFRSAA
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STDVGSTDPG\|LVHRYMPSVGGTPEASQ\|VPTKDT RVL GS IS SEADDGULAYRYMPKVGKS DAADEHVVWDTTPKPNR TSMTGSDDEGULVHRYDPSVGGKTEADYAVEAVPQARVTR SEAGAVFGETNVLYHYVPADGEPGKADAEYACLITSHADEG
 PK IDKELGTVNYNFKYFPAPNGFDYNPWLVKQEATAVGPK SEISGGEADDGULAYRYMPTVGYSDAFCETTPRPTKFYKVR
SETGAVFESNVLGYRYVPALGEPGRADPCVVSHADEGRVR STlGGGEDDEGปFAYKY IDKVGDRGKADEHATFVPHSEESK
 VAGPAR AGAEKRLDDWQDLVLYSKFEDQLF RA T SVVTRSD EGR GS SSGDNDAGULTYRYMPAVGGTAEAAYPVYVPFKDEVPK GAGGASVDAYTY $\quad$ R G GVLDRTPWTMHPAGVR EPETAPRAEDVLCYKYVPRTGRPGVAD ES PAVPMTAYSLIGGEPHRTTFTQGGRESQVVF

QS DS GESDEGDIA HRYVPAVGGQDGNAAGVDYAVFDRTVH SASGAGGPDGSALVRLKGRLPGRFPLGFTVAQALGDAVRR PGLGEHPSDGTLUYKYIPQTGGKAAVAHACLTPPAGNPVE



 SPALHPQQRGILHQRYMPAVGEPGKADADYATFCPPPPAP EEV ASSDARILVYKYSPAVGKRGADCEVVVHHGADAEDK MNPPQNDGKGDLIGRYMPQVGGQPEAEYPVLVRGRTAKNA


| UniRef90_L0J6K4 |  |
| :---: | :---: |
| UniRef90-J1EKI7 | GWHEATATLQLTPHPCEDIGLLGGLVAGDASAGWIGDTVA |
| UniRef90-A0A024M5E2 | P GGVRI RLGDHPYAELAALPKRALLSSSVRNVQMTFA |
| UniRef90-UPI00036015B1 | E LWRGE GTVEFHKHVVNAFHELE\KEYRGA |
| UniRef90-UPI00037C8E72 | $R$ TRLGGASMQLGSHPIAD ELLRRLRTSRHALMTSSVG |
| UniRef90-X7Y550 | GR\\|GG A AVRLGDHPYAELASLPKRAMVSVAVDNVEMTFG |
| UniRef90-X5KTW2 | PGGVRLWL GDHPYAELAALPKRALVSSSVDNVQMTFG |
| UniRef90_14BPS4 | RYRPGGVDIRLGDHPYAELAALPKRALVSSSAANVDMTFG |
| UniRef90_A1TFN9 | PGGVSLRLGEHPYAELSALPKRALVSSSAANVDMTFA |
| UniRef90_C0ZPZ5 | SRPGG AEVQLGSHPMA |
| UniRef90_UPIOO03777436 |  |
| UniRef90-UPI00047D05EA | MRPGGATVRLGDHPVAD |
| UniRef90-H1UUW5 | DVPASEVSVKMEGHDWEKL |
| UniRef90-V5XIY8 | PGGATVRLGSHPYRELAALPKRAMFSGSARNVEMTFA |
| UniRef90-T1X9Z6 | GWTRGSATLQFHEHPVEELSLLGPVEATEASAGWIGDTVR |
| UniRef90-A1UM53 | VRLLGGARLRLGDHPYAELAALPKRAFASQASANVEMTFG |
| UniRef90-A5V6X6 |  |
| UniRef90-D2BEJ2 | MRPGGALI RLGNHPVAELSELGLPKRALMTSTVSHLTMT |
| UniRef90-X8FKS8 | LLENDDGNLELGESPLDPAADIVIRQ!RSIT WCRRRTDQ |
| UniRef90-UPI0003650558 | ARWTVD PHGPLGYLAGHRPVFSAHA TDARLL |
| UniRef90-M7AKC4 | RTR\GGATLTLGDHEDAD |
| UniRef90-ROIMW0 |  |
| $\begin{aligned} & \text { UniRef90_UPIO00367D2B4 } \\ & \text { UniRef90_W4HR34 } \end{aligned}$ | R A R $\square \mathrm{GGA}$ R L R L G D HPYA ALLGLPKRALAS Q A A NVEMT F G |
| UniRef90-B8LWL8 | NQFKGPLDDWEQLPHVISRLAEIPVYDIVDAKVV |
| UniRef90-UPIO004754459 | RPGGALI RLGNHPI A ELSELPKRALFSTTVARAEMT |
| UniRef90-UPI00036CFFB7 | RVR $\square$ GGADLILGG HPIAEELKLPRRALMTTS VGDFGMS |
| UniRef90-A0A024K4Q0 | GVRTGGVSVRLGDHPYAELASLPKRALVSSSADHVQMTFG |
| UniRef90-Q0RL31 | Q GWS GVGRVEFATPTDDELAAVPQVQPRPAFVGVGSAK |
| UniRef90-B0UPU7 |  |
| UniRef90_UPIO0046681C3 |  |
| UniRef90_R4SPL3 <br> UniRef90-B2WPW6 |  |
| UniRef90-M0QFV4 | $R T R \square G G A S \square R L G T H E \\| D E L R S L R L G R L M T S S V E H \square T M T F E$ |
| UniRef90-X8C7X9 |  |
| UniRef90_V7JW43 |  |
| UniRef90-S3CCl9 | ESKVVPr RVEHVVHVVSR\AET |
| UniRef90_R1EU16 | NVWKAKGSIKFDHHVVSRLAEI PI WEVVGAKVVESE |
| UniRef90-UPI0002484C02 | D A QLDLG D HPla ELKELRLNRMI G |
| UniRef90-X1PST1 | EAELVLQSSEHDPWGDVDVVRVLGASYSVG |
| UniRef90-D9V0R9 | ADWSVV NPAGPLGFLAGKRPVVASMALGATRLR |
| UniRef90-B6H0J1 | G LTWQQLPTLH H I S RLAEVPVLEIVGAKL |
| UniRef90_C4XJV0 | QWHEATALLVRTFEHPVEELSLLGELRAQTASVGW■G\\|TVA |
| UniRef90_UPIO004633A84 |  |
| UniRef90-B2WB36 <br> UniRef90-UPI00046763E5 | TVERGSAS VSFDHHVVGRLAEDPVYEVVEAKV $S T W T V N P D G P L G Y L A G R R P L A S A H$ |
| UniRef90-X1BQV3 |  |
| UniRef90-R9LWQ4 |  |
| UniRef90-N4VKG4 | DVWERLPTLHH HVARFLDEMPVYDYVSAKVVEGT |
| UniRef90-UPIO003B718C0 |  |
| UniRef90-D6Y5C0 | $\square R P G G A L I R L G N H P \square A E L S E L G L P K H A F L T V T F G G L S L S$ |
| UniRef90-UPI00029B14D4 | P W LT R T RL R T A P A A PLGYLA GLRPLAA |
| UniRef90-UPI00036A983A |  |
| UniRef90-K9FY34 | NAS QGT\QLEWNHH\ITSRLAETPVYG\VEAKVIEGE |
| UniRef90-M2TXI8 | LIFKATKAKFSDDPHVISRLAELPVYEVVDAKVVEG |
| UniRef90-N1PEV4 | TLVAEEAEFSIDGHVISRLA G |
| UniRef90-UPI00035FF8CA | GS GVALSSLGDHPLAELASLGLPKRPASTMWIENMRGS |
| UniRef90-H1VCY5 |  |
| UniRef90-UPI000463CBE2 | RLRPGGAHLMLGSHPWDELRHLPHSAMFSSSIGHMRMTFE |
| UniRef90-UPI00036A375F | ARWELL APDGPLGYLAGRRPLASAHLR DARLV |
| UniRef90-X1HBP8 | SMEMGEAEFTLNSTDHDPWGEIEVVKVLGALYLKTDNTML |
| UniRef90-ROICX4 | K A D D P L N WE QLP HVIS R LS ELPVYEIM GA KLVEG |
| UniRef90-F4CQL9 |  |
| UniRef90-N4V9U7 | DAR\S CAALD WDHHVASALAEVPVYEVVSAKLVKGRA |
| UniRef90-N4TS14 | VVPADKASFEFDPHVVSRLA |
| UniRef90-W2EP53 | GVRPGGALIR $\square$ G NHPVAELSELPKRALMTATAGHLAMAFE |
| UniRef90-W9XAM0 | EIWKALPTLH H IVVRLSELPVYEVVKGTVSEGT |
| UniRef90-H5X9M6 |  |
| UniRef90-Q9RY02 | SAEPGTFVLTVSPTSLHPMA |
| UniRef90-R7Z232 | LD WEA LP TL H HVIE R LIA E LP VY EVVA A K V VE G |
| UniRef90-UPI0003725C80 | $\square \mathrm{MPGGSRIEDGTHPGAD}$ |
| UniRef90_N4VB88 |  |
| UniRef90-A0A010ZTB9 | G G E G VELTT L G D G P |
| UniRef90-B5H846 |  |
| UniRef90-M7A6S4 |  |
| UniRef90-N1QGH4 | KVWT AKFELQS G D HVISRLA ELPVYE\MGAKVVEG |
| UniRef90-10HCV4 | TPVRGRGGLRWRADPAGPLGYLAGRRPV LSLAIT DFWLV |
| UniRef90-UPIO003618618 | RLRVGKGRVNFRPHIVQALSALPILEQREAVEIRGDSDLS |
| UniRef90-R0JVR0 | TAKASKATISFDPHVVERLAEIPVYDVVEAKIVTGT |
| UniRef90-F0XEC9 | SRETSKASVSFEHHVVSRLAEI PI Y EVI GAKVVEG |
| UniRef90-K0MNB2 | R $\$ A APRWEDMPTQHAALADLPLLECVRA  \hline UniRef90-T0LMZ1 & DVPAVSVKMDAHDHITTKFLSEMPIVDFVSAKVVEGT  \hline UniRef90-UPI000475BC1C & GRMAVRTA S WHPEPDGPL G WLH GRRPF V S L A LHDFEMR  \hline UniRef90-S8B449 & RTKNAK  \hline UniRef90-E7A209 & $P \mathrm{~T}$ GAVKLQI TRGGNVVDGLAALKVV |
| UniRef90-S3DCL4 | PESLDTGRIPTLHHIVSKLAEIPI Y SVIEASVVNGS |
| UniRef90-A2QMA8 | R ITEIDALS WEALPHVISRLAEIPVDEIVSAKVVEGE |
| UniRef90-D1AF87 | GV R PGGAVVRVGDPAGHPVAD |
| UniRef90-M2MPE6 |  |


| UniRef90 L0J6K4 | D A R | 250 |
| :---: | :---: | :---: |
| UniRef90-J1EKI7 | G A |  |
| UniRef90-A0A024M5E2 | D A K |  |
| UniRef90_UPI00036015B1 |  |  |
| UniRef90-UPI00037C8E72 | H $\square \mathrm{E}$ |  |
| UniRef90-X7Y550 | D A H 1 |  |
| UniRef90-X5KTW2 | D A K |  |
| UniRef90-14BPS4 | D A K |  |
| UniRef90_A1TFN9 | D S R T V |  |
| UniRef90-C0ZPZ5 |  |  |
| UniRef90_UPI0003777436 |  |  |
| UniRef90_UPI00036DACC7 | D A Q |  |
| UniRef90_UPI00047D05EA |  |  |
| UniRef90_H1UUW5 |  |  |
| UniRef90-V5XIY8 | D A E |  |
| UniRef90-T1X9Z6 | G A |  |
| UniRef90-A1UM53 | D A Q |  |
| UniRef90_A5V6X6 | D Q R V L R |  |
| UniRef90_D2BEJ2 | F G E |  |
| UniRef90-X8FKS8 | V G R 1 |  |
| UniRef90_UPI0003650558 | F G |  |
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| UniRef90-ROIMW0 |  |  |
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| UniRef90-W4HR34 | D A H A I |  |
| UniRef90-B8LWL8 |  |  |
| UniRef90 UPI0004754459 |  |  |
| UniRef90_UPI00036CFFB7 | F G R |  |
| UniRef90-A0A024K4Q0 | D A Q |  |
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| UniRef90_B2WPW6 |  |  |
| UniRef90-M0QFV4 | D P S V V S |  |
| UniRef90-X8C7X9 |  |  |
| UniRef90 V7JW43 |  |  |
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| UniRef90_B2WB36 | V G S 1 |  |
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| ) A |  |  |
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| UniRef90_X1HBP8 | PGEK V A E |  |
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EGHD
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$M V V S$
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PTNSRASPALMA
TPMPSTDKSALSASINYRDSACINA PYTMPVSS

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ATIAGA
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SYPPEPWDLHGHAHVGV
PVHVNAASMLMN
MPVFFGPTPGPRSWPADVEIGA
PYTMPVNA
$\square \mathrm{N} \square \mathrm{DFFTS} \square \mathrm{PRGGPTY}$
APNFYYRTSSVQ
PPWQVGGQAALE
PTLYGNVTCAI G
FRSPLGFGASPGPRRPLGMSNQTLFV
K $\square W R M P V S F G P A S G P R Q R W S N K G S S F V T I V$
AEATAV
DPPWHपQG DAFTL

PAPWTLSGAAFMS
RTPNFYYSMSRAQI

AMPILYHDNSNFLA

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UniRef90_A0JUC6

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 D E L L V A V L T H E R H V P R V T I P Q I WV T S P A S R A G G R V L W G I P


 NEVGTAIACRFK GIVGFNVIDLPVTTAAACAAGRDIWS YP R H G G L Y V H V E Y A K E D G S Y L P I L F E S L T D P IV V G R E E L G M P


## $\begin{array}{r}\mathrm{H} \\ \mathrm{I} \\ \mathrm{R} \\ \hline\end{array}$ <br>  <br> N D $\square$

$\qquad$

RHLGLYIHVQYTKKNGDFMPLLF

NEVGVAIAATPRGTPGFHVVDLPVTTADACSAGREDVGFP GEIMMSTVLVRD GWRLRVSI THIVWVDSPASMAGGRELWA $\square P$


 SHFGLYLHVNYTKRDGSYMPLLEEDLTDPI ITGRDEVGMP






D

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 $K L L$
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KLFCDIDVVEKGANTS TRCSWRGAEFVD DT पKGDGEATNG KLFCEIEVEEKNSADNGLAEANGVNGANGTNGAPKPTGPP

UniRef90 UPI0004299491 UniRef90 F6EF51 UniRef90-UPI00047127DF UniRef90_D5Y9B7 UniRef90 L2GEM6 UniRef90_L9X910 UniRef90_K9F4M6 UniRef90-10HLH9 UniRef90_R9P5H3 UniRef90-E3SAK2 UniRef90 F8A6K0 UniRef90 W4I757 UniRef90-I819R2 UniRef90-F4H2Z1 UniRef90-M0CV24 UniRef90-UPI0003101E36 UniRef90-Q0CBC2 UniRef90_UPI000382F5B1 UniRef90 LOK165 UniRef90 W7M8E8 UniRef90_UPIO0047D3B32 UniRef90_Q1D2M7 UniRef90 Q4WAA3 UniRef90-F8D7W6 UniRef90-M2SUE7 UniRef90 B0XPL1 UniRef90-U7PN61 UniRef90_UPI0002D30433 UniRef90-C7YY59 UniRef90 W3XMC6 UniRef90-M0A9C0 UniRef90-H8N0M4 UniRef90-M7T835 UniRef90-A1SHG2 UniRef90_M2NI37 UniRef90_14WM96 UniRef90 E2S9C2 UniRef90_UPI00045E7924 UniRef90_-Q5AY88 UniRef90-R4LRV8 UniRef90 H6N2N9 UniRef90-U5W7B7 UniRef90-G2R5H9 UniRef90 M2MRT6 UniRef90-L9VW67 UniRef90_Q0CJ11 UniRef90 ${ }^{-14 Z R D 1}$ UniRef90-UPI00039C98C3 UniRef90-Q0V4W2 UniRef90_M0CI81 UniRef90 Q2J9AO UniRef90-H2CFV9 UniRef90-I7CU78 UniRef90-Q5UYV5 UniRef90-Q09C19 UniRef90-Q2SNB0 UniRef90_W7IRF2 UniRef90 G0IXT8 UniRef90 C7NMZ3 UniRef90-UPIO003607A75 UniRef90_M3ANW4 UniRef90 F7PFE0 UniRef90-UPI0003C80024 UniRef90-UPI0003B5399F UniRef90- 19C6M9 UniRef90-G8R1K8 UniRef90_L9Y505 UniRef90-G9MU55 UniRef90 Q7NDT5 UniRef90-A3YDQ3 UniRef90_F9XE20 UniRef90 A9GLH1 UniRef90-J4KLK5 UniRef90_M0D262 UniRef90-D2RPM6 UniRef90 N8P315 UniRef90-C8PWF0 UniRef90-U5QN00 UniRef90-M0CAW2 UniRef90 A0A022LGN7 UniRef90_UPI00047A451B UniRef90-UPI0004176DCA UniRef90 J9RLH7 UniRef90-G2RCH2 UniRef90-I2JNFO UniRef90-UPI000347B771 UniRef90 ${ }^{-}$L9WGR0 UniRef90_V7FBX0 UniRef90-T1C1A4 UniRef90 N1S0D5 UniRef90_A0A016PTK0 UniRef90_AOJUC6

AAGAPSMDA ${ }^{170} \quad$ YSC|Lid G VTRRTP WTLTPSR|V|R ${ }^{1800}$ LRAFNQSSLGVFGVREFPNVDYTGYIERVISDPVTEDRVA LGRQEPVISYGAHLKCLTHQQNEMMYDPVAADSRREFLAL
EPARPGQDV LCFKY $\quad$ PPR TGRPGVAD VEYAPECFKDE $\square R L E V S R P R P D V S L R G V E L S S F T A H N G E L V R A R M Q L R G G$ AALSGEADAGTLTYKYVPKANKNDAAEEYVVFDPLSKAVA STPALGNPSQRGIVGWPDVRQPRQLPEDT
APPPAPQDSGLLLLKY IPATGPAGADVAYTTYLADDEDAK

GGLS GEADAGMLAYKYDPRANKNVPAEEHAVWDPRVYTTK VRAADGRPDARLTARVGPRLSPVPVVLPLPTAQRRPVVAH

GALS GEADAG LLAYKYDPKTGRENAVPTPKPHRVYTTKKA GS GDAEAPLLHCRYLPSADDPGRVDEVTVTYPKREVLD VRLEVSRPRATVS LRGTERSSFTRRDGELIRARMQ


GVIGGEPSDG\|LVHRYDPKVGRDPHAAESKMVPSRLIRVR $D E P A V R D A D P R \quad P R I G G R H R D L T D R S Y S T K D G T L R$ VQPEPPRDDGLLFHKY DPTTASAGADVEYTAFLDGDEESK ASAPGGFSGGULVHKYLPRLNKNKAAEEYAAFDPFSEAVR FAPKPAPDDGDFFYRYVPAVGQPGADAEYPDFHKDSDTKR LTNPPPAEEGLLVYRYVPAAGNPGVADAAYPVFLQNGEVD SE $\square G G E A D Y G \| L T Y K Y \bigsqcup P A V G E P G K A D V E Y A C V V P H A E$

LRMAA
GT $\square$ G GS D D D G $\square$ LVYRY $\square$ PS VGNRGRADEHAVF VPHPSKVK LPFKGGTWQP
VETKEPSDNGQLA WRYVPAVGEPGKADAQYPVYARDATVR
VGMGVPAP LLDLVLYSHHNG
TAGPGDSGVNGLLHRY $\square P K V G R D P N A D E L V S K V N R V R T A T$ S $\square A Q A G \square T T P$

WPTPMTLAQAF GDTVKHSPVRGHARDRLGG A AVLPPKEEGTLVYRYVPAVGKPGEADALVREGAKPRVEK GTPPAPPETGRFHYRYVPTVGEPGKTD
PRTRVATRDRDWTMWSYTTLDG
GS IT GEPSDGVLVHRYMPQVGGQPEAEYPVIVPFAETRVR SFYLNSYHLRTSMLKU
GSAPVSNEEGMFFHKY LDPATGS $\square$ GADAEYTAF $\square P N N E G A G$
SRGRRLPGRWPVRFRVVQDLDGQPRV
A LIPPF PLSQNLDGKRFHTRYSGRG
DWTLT S YT T
$\square$ R A S A A

S $\square K$ K V VGATNYCRFRNM
PTLPARLS GYNFTLK D DRLLREPTK LRGRV
VKMRAS
GS $\square S G E A D D G \square L V H R Y \square P A A E P K P R A E R L W V A E S A R F E \square D$


PPARHPDHQGMMSYKY $\square$ PATGDWGETDR $\square$ TSYYTCDASAE

T PPSPPPESGHFWHRY $\square$ PS $V$ GEPGADADY VIFNPHSSKNA SSALVPARRRLVHHRCAPTARGSARHARLLEARVDPARMP


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

RMGVPVPGRHSLGMNCDQVLDGKP
$P$ VSTRLLPFPNKAFRTTFSGTGTGRFATMTD $\square N \square N E$ PGLSAKESLT TWLTERY

PAPK $\square D R E Q G L L M Y R Y \nabla P A \square G K P G K A D \quad V E Y A V F D \quad P Y$ KTVAKPQRAPSLA $\square R \mathrm{~N}$
APLLD
DRDVS LWS YTMMNDKLLRS
$\square S A D N P Q V V K A F G L R V I G S P G G P \square A V C E F V R S A L E F Y A G$
HTNEEQG LLVYRYVPAVGQPGVADAAYPVFTED
$G A P P L P E E Q G Q \| Y R Y V P S V G N P G V P D A A Y P V F I E D R K V E$

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TRPGG AKVV $\frac{210}{V L} G D H P V A E$
220
230
240
RAWHADGFVELHSGELDELADDPVNADTGAYVY
HKRVGSGSLKLDGGFKDALDE IPV
RMFKAKAK IHFEHHVATRDAELD VVSVEDVR\|VEG EVSVGPPRLEVTPELTSEL G L RQRPLVRLYGARVRARDS S I QUDADDWQQLPHIDSRLAEVPVFEIVMAKVVEGE $D W F D A E A T \square H L L P H P A E D I G L L G E L S A E Q A S A G W L G \square T V T$


KASFQ DDALD WEHH\|ISRLAEVPVYEVVGAKLVEGE $N T V T G T P R V R W D L P E G G P L A B L R G L R P V G A S V A V T D A T V V$
$S \square E \square D P \square D W E Q \square P H V \square S R D A E V P V F E \square V G A K D V E G T$


ERWS GPGSLKFNGFASTPWANLDVDSYVS GVRMGGTYLRLGDHPVA
$K T T E A S F R \square D A D G H V I S R L A E \square P V D Q \| V G A K \square V E G E$ RARRVRGELA $\square$ GPPVGASL
AVWKALPTLH HIVERLQETPVYGVVEA
KVWTSKASFQDDPHVISRLAELPVYEI ASARVVEGE VVEATQTTQQASHHIVAALAEIPVYGUVKAT GLSRGGGALALGDHPMAELRELGV
KVT\GS GNLPTLHHDAAGFSEIPVYDワVES
EARLFPATLPTLHHITSALAELPLYE I SAKVVEGN

K A T A A E VHFSAKSH $\square$ ART $\square$ E EMPQYGVVAAEH $\square$ VAS

RAWEA $\square$ PT $\square H \quad H \square \square E R \square A E \square P V D E \square L S A K \square V E G E$

RRRSAEARLEFSPH $\square$ ASALAEMP $\square Y G V V E A K H G V D D L S$


AA QASSAD $\square$ KFDHH $\square$ VDR $\square K E \square P V Y Q V V E A K \square V E G T$

G $\square$ NKAKGS $\lfloor$ F $\square$ GD HPVAP $\square$ K D $\square E \square$
GAWPARASVSFGEHPI
GVWDQLPT L H HVVGRLAELPVYE
GWFGGKGSLSFGEHP
WMKATWAELPTLHHVVNGFAGLEVLEWREGF L MT

S L AFDKGNWKTDPHVATGDSEMP DYGDEEARFVKG RVDEGRVVFAVRLSSFQPVADVE P
RVQTARTANVI FDHUVGRLAEIPDFEDAEATVAEG GARPLAGSYALGGHPLAELRGLGLGRPLGAVAFDGTVVIG

ARFEGSAT LTTEAAPDSPYHLLK $\square$ RRPLVG $\quad$ RRFE RFS $L E$

DAS $\square$ GPGKEADSGHANGT L

E $\square$ WS GDGS $\square$ MF TGSAFSAVHQ $\square$ P $\square$ A GA $V E A T A F$


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UniRef90-R9P5H3
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UniRef90-I7CU78
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UniRef90-Q2SNB0
UniRef90 ${ }^{-}$W7IRF2
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UniRef90- G8R1K8
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TSHRPFLPPGPWDMKQVRLLFA
F MEVVE QRPYPGPSSPWDMK Q T N MLFA
P A P WTLLT GDAYI A $P$ VPKEPWVMA QTHLLFA F GPMPSPRQRHDGTMQPSSGTTAHS I FGPAPSPRQAPDGSRFDWSQARTTTV F GPMPSPRQDHLR $\square P$ AQES GFTTYSV GP T T L S D GSVV QMP L L T YRARSFAA D F F R P L P V D S P VGPTTPNFYYALSSAR L GPTY T P N F Y Y A MS S A RL FGPMPSPRQDYHGQRYNGNDSSFWSV

A A GNIDFFRR!PKRLAASRVGPTWAAPNRLQQ
A A G N $\square$ D F F R R $\square$ P K RLLA A S RVGP T W APNFYYR SHRPPLPN LDWGMK Q T D L L L L A A
GPFPGPRQTTS GLDWNEARSTTYSL

| $P$ |
| :--- |
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| V |


GI I L
S V P D G $\square \mathrm{D}$ W $M R Q T D V L F A$

HRPFPP PKGPWQMT QTHVLFA
R HLLFA
$\begin{array}{llll}P & N F Y & Y \\ N\end{array}$
P Y P L P N T R W $\square \mathrm{MT}$ T T L C S PRTPWRMTWRD LCFM A MPVSSEDSPVALMA
GPTLTPNFYHR】STARLTM
TSHRP WP LPPWRQSWLD LAF I
A P NFYYRTRSVQL


MT TTSHRPPLPKGPWDMAQTAVARA
P WI MK Q T S L L F A
A A G N $\square$ D F F R R $\square$ P K Q Q VP S R $V G P T W$
A PNFYYRASSVQL
$A P N F$
$P P S S L$
G P T F
GHRPPLPPNNW $\square M R Q R$
A D
MPSFTPTAPLMRQRWSN
PNFYYR $\frac{L}{L}$
RTPNFYYAMSSARL
RTPNFYYAMASARLL
PVNSDDSPVLMA


M S Q $\quad \square$ D DVLS S V
PAPWQLQGNGY IQL


E G
P A
G
A P NFYYSAR I QV
A P NFYYRTSSS A
P NFYYAMSSARL
PAPWQLLKGSAFVLV
P NFYYRMSSARV

F GPTPSPRQKPDGGRFDYNDAETLIV
EHRMPVTSPLPP $\square R D L N R N A L S R K I P M S F G P S P G P R Q D L N G Y K T S Y I$

MPVSFGPNPGPRQNLNGATYKT I
PVWA PNF P A VP HLVVNSRAL
WRMPV SFGPSYHDSSDSLQTFTTAAlV

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UniRef90-D0SZU4 UniRef90_S9RUJ4 UniRef90-F2F7X4 UniRef90-N8YNY3 UniRef90-M2MPS7
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70
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 H WAVEPQSLLRGLIPAELETCSGKAWISULPFPPDPFISRF



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90
100
110
120
 PELNVRTYVTYRG\PG\YFFSLDAASRLAVLSARTFFHLP
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 LEL LVVRTYVTYKGVPGVYFFS LDANHRLDAVQTARRFFHDP
 REL L F DPGRFRTRRGWS DSKI YVSSWESVVSGQVNWGIP AELNVRTYVTFRGKPGVYFFSLDANSKDAVI LANNTYDLP
 NTLGVYIVCNRPAVTASYMAVLFENFTDP TTTGREELGFP KYLGLWI HVQYTRKDGSKVHGSF LS LADPITTGRDELGMP







 RELLL DPGKF GKHRKQS $\quad$ GTK I F VD SDLSTMNGRANWG MP
PELNLRTYVTYKGKPGDYFFSLDADHRDAVLGARTFFHLP NEVGI AAATARHGEHGMYVLDLPVTTPKANAAGREDWGLP TEAAVGVAVRRHGRDGSYVLSLPVSSDIARVRGHDGYGFP DEVSVAIVVRRPGARGAHVLALPVNTEIARVRGVHGYQDP










 P E V N I G T Y A T Y G G G V P G V


 HELDNVRTYV HHE GRPGVVWFFS L DAA KLVVAVLIAARAGWHLP SEMNVVRTY V KHK GK P G V F F I S S D D V N D WA S L N A A K R WY R L P






$R$
D
D
K DEVSVGIVVKRHGKLGAYVLSLPVSSEDAQVRGHDGYGFP

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 S LA Y L G V PAPD GVTP G GWWTHYVAASSD QVRDYARARLGAP $D E V S V A V V I R Q P G A T G A H V L A L P V N T E E A R T R G V Y G Y Q Q D$


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A $\square P \square K \square A A S N Y C V F R N M$
PFTAQKGTLDHWLTERYR
SPALL
$R R G L P L P G T H S V A M N C V Q V L E G E P V \quad L V R A G A R V S G G R$ ESA LQQNPVLHYKAIPSSMKKGQDAEYATTYPSIPTAR

ETSTETSCDNQFAYRYVPAVGTKDFADAEYP LLLRERTLR PQVPFGLSGYTYTER DGTL LDREATAIRGRVGG VSAPD SLE

TGLSVPTLMLKTYSHHDG $\quad V T R E \square P W E M K \quad V S G L$
SSALVPARLRGLVHHRDGRDYFC
VYMANTGTLEHWL
QTLTNGGPQPAFWYRCVPSVGRKGVADALVTQTPEPAPEP
SPALKPYTHPTLHQRYワPAVGEPG
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GAPPLPEEQGLLVYRYVPAVGQPGVADAAYPDF DENRQVE QFY $\square$ NS H H $\square$ PASMLK $\square$

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\squareA\K G S F E
E DPAK\VSFRPMLHYKY\PRTGSPGEADVQYPTFTPAPAEG
VF RPDEGT LD Q WLLER Y
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FALNKESEMNSFFFTHDLVQDKQGANHELVATQMKSLAD

G ERVGSDTSYT
STVFFPMQLCQTWLKYFPM $\quad$ T GWGKFAE LDPKYFPD DR L RYHADPGS $\square$ A HF $\square$ T ERYRAPDGS $\square$ RYADVSHWP $\square$ Y DAE V
EAPTRPGSVEEWFTERY
A LTPAPQSLEA WLT DRLASVDSRGRVYR
GL P LKLAAANYCAFR
QKA WLPLDMPGTNYCQFRGMLMKSYVYFQGKLGFF LIFK

TAEEDSLD
VEQPRGLRVPLFNL
PFSAQKGT LE Y W $\square$ T ERYR $\square Y$ T A HNR R $\square Y$ YED $\square$ HHS P

[^0]GEKDS T LT S Y T

VRVETTSYS Y $\square$ NGVPH GTPLA MDMSAA
GE HVSTDTSYT
VS TLT S YTRPN

VE T P GS L LEAF LTERYC LY APDGRGGARREVH HE LWP LRRA KGFSFPI HTSLVPGFMKTLGQ RWQGQEFLYS

Q $\square$ A A D A GS RAAF $\square$ T ERYRYYTQVPSTLRYARVDHEPWQLY
KALAQLWQGRQFVL SPSASGRMRMARVLDWQFDATEFP
$\underset{G}{E} \underset{P}{K} \frac{\square}{P} A D V S T E P E L V T N S F T N \square D G E \square A F G Y A V S R Q M R H A S N S$

DSV LQNPTLHYRVIPS
DSV LQTPVMHYKVIPSSMNKGQDADYAT■YP
GTTTHNGHHRYLTALDG
E S T G D D VVS G R VLLS R H LRP K $\square$ G K G G $\|$ A D A S C R VT QR WR $\square K$
$\square R$ PA G GATVTDAQGAED
RWKAGKAEIVFTDLENGEL
PWP $\square$ Q HAEAT $\square K V N T V A E S M G \square P \square E E P A P L L H Y C E K L D V$
GTS A VK GTSK DMPAVTTGLSELP $\square Y G \square V E A$
W $\square Y$ S EAATLE LGEHPLAE


T T P N A A A K K T WHE HVAASTLADMPVYG!IAS

TCRSQSSRLEFTEH\AAGFAETPVCGVVEA
■WGPRAARLHLGSHPVDELRDLDV
K T LVGS G D LD DT P H $\square$ AT GF S D $\square$ P VY GVV

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

PGSAVLT LGSHPLQPLKELD $\square$
KAEVE DERCDLFQSAGDTLEDLPV
$S \square L P G N V T L N R S E G P L S K L N E L G V S T \square L R$

QWTLQEAEAEFHQNTAAAASDL

E V

V VE P G D V H $\square$ T $\square$ G S G P $\square$ A D

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

EANVDLGENTLFE
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N A G S $V N \square K \square G D G S$

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lupas_21
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lupas_21
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jpssm



K K LA S F DWS Ti P GEVQVT A A ${ }^{140}$ P GQVIA H ${ }^{150}$ LL F S E S P WN ${ }^{160}$
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 K QLAAKFRFYKSRDCL
YMNAKMSVSNSEGKVI
 KWVTGLDVAVDRTVTTARAGBGK PDLLRAPLPELRN $K W V T G L D V A V D R T R T T A R V$
$Y F Y A D M K A E K N G D A M E Y R S K$ YFYADMKAEKNGDAMEYRSKRRDAGKAEFDATYRPLSAPF KWLT GlDDREDGHSVV VVFSDI SVDRSEKSYLIRAGWRGVGWGSFDLSDLRLAVDD K WLT P I DMK IG SHELQAHIF K HLAAFQWTQNNGSTSVKVFPHDTTGDLAESSPSPKPLFQ KWLTA $\square \mathrm{D}$ LI $\square \mathrm{DDH}$
YYRAQMAFHRQGDR DDFTSRRDSGLPQSPTFEGSYQPL KDLCQYEMPAPGPERYAVTVKGFDVFAPTTEDAWHPDLEV K WVT DLDDVEDDTT RTSARVDDGETDIADSAATPRQATAGT YYRADMGVTVQNETVF YRSERRQAGPVFAARYRPVSA KWDT GDD RREDAQAVTYDIVDARSGKVDVVFRARKLDG FEPADMVVREAENGLTVGLVSRAGRGPALSLGFRRRMPWY Y LYADIVVKHNGPTVE
Y YRARMRVDRDGDGICFASDRTHRDAPSAGFDATYEPVGE KTLATFEGAPETGK KWLTP $\square T Y T Q D A D A \square S F E \square I D S N T$ GKT DLVITGEKLDD A LRAAAEADLTDRQLRFAAPD $\square G V T V E G R L G P G \square R C P E A$

 K WLAE I DVKI DKKKVEATL
YFRARI TTTHDDGSLTFESLRHGADPRSAC RFRWRGVGP K WLA GI SVTI GAEVRAATQAPDGT
K WLTAPI DMKIGNHDLQAHDF
K Fi A DIE F
KHLAKFDWTDSNGS $\square$ TAKVYPHDTLPSSESASPDHTPFFQ KWVTDLDVDDDDARTSARI
YYHAEVERYHDGATVESTRNRRGMTPARFSASVRPNTEDV YFAAD I HLHAREGWLFGSVRRSDVRRACALM
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YKQANI RFEEQNHEMTSTVVQASAGDAKVEDRY
KRDTS I SRQQDSSRSTGFLNMFG
YYRARMRVYKRGDVTAFCSSRTHRGAPRAHFSGRYWPLGG KHLAAFDWDVDGSTHV KVFPHDTAGDLKEASASTTPLFQ K HLAAFDWQDHQDGSTT
Y Y YAS $\square$ D L RGENGR $\square R F$ TNRRRHPGARPVRFDATYGPVGD K WRTEINVE
YYRARMRCEGVGEGWDDY $\square R R$ RHGDAPAGVFRGYRGAGEPY K WLTEDERKEDAQSVV
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190
EFQAAPGTLEDWLTNRLASADQQGRVYR
GGFAEEGSREEFL
A
VPSQSHMATATM $\quad \square$ NR $\square \mathrm{DGEWHQT} \mathrm{\quad LVQTNMLSFAB}$
TAQEDS $\square$ D
ASAGYSADES $\square$ LIHRQVPEA G $\square$ GCKGQLVPANL DVKVD
ATFKSVPYVPSFPL

VRTEGSGGRPDHNF
GEHVATLTSYT
PYTAEPGSLEHWLTERY
LS HEPGLVTNSF
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AFTPEPGSREAFLLENYRFY
MPTLSTALAQQW
DWVLYG RRGESTVRTLVRTSGRPRLH
$\square$ A A A E P G T L E H F L VER Y

ATFKP $\square$ RYAPSFPFR
$S A \square E$
FSTPDPGSLPAFLTERYRFY
$P \vee L T K V P L L P V N L L D F L P$

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R A T P G S L T A

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UniRef90-C9SA64
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UniRef90 K9BlI8
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UniRef90_UPI0002556B2L
UniRef90_B0R697
$R L \operatorname{RFRDVELSRHGGPLSQLLD} \quad G L G A S T V L$


EARVGETSL

GQYSKKAS LGWFD

E A E $\square$ E T C TVT E G WG $\square$ A $\square$ P E G VA P $\square$ L
lupas 21
lupas_14
lupas_28
jnet
conf
sol25
sol5
solo
jhmm


UniRef90_C1D1B7
UniRef90 UPI0003A96878
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UniRef90 N8ZRT1
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UniRef90-UPI0002556B2
UniRef90_B0R697

RMDVVKD


[^0]:    AATPGTFEHAERYLLYADGGDGRLFTGQ VHHHPYPLHHA V
    HPAPGSL
    PAPDHPGSLANWLTARFSQY
    $\square \mathrm{L} \quad \mathrm{LARPGTLAHFLTERYCLYTAGPDV}$

[^1]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

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

