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1 10

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YEWGNVK $\square$ G G G GY VCGIVVYNPGEKGLVYARTDMGGAY V GR N


WK D $\square$ S P T G S T D S P G L A VD A Q H P D T L M VA T P DD H $\square Y R S T$ NESEQDLI Y ARTD DG GAYRWN
 $L A D D P A D H G T L Y L G T R K N G L W R S T$ YA WRNVQ $\square$ A G G GFVTGFVFNPSRKGLLYARTMMGGAYRWD
 TWKNI SPSQGDYFSGLSVDPRKPSTVMVTTLGRWI YRTT T WQP V P GAPT GY IP K K G V VD Y DN G Y L Y I A T S D T G V WR Y T TWRQVGASS GA GIS FVTYGPA GSNTVYVGVASTSLYRST GLAVDA QHPDTLVVATPDANLLRST
 LAVDPNKNSVLY LGGAPS G GLLWR S T Y T F K NVQ $\square$ A G G GFVP GIVFS QAQK DLI YARTDIGGAYRWN




## GWWMTGVA $\square D P F N K D E \square M Y G T G A$

LY R T F TGDPTPVVYASVSGEDAPLHRSD $L Q V D P N D N S V L F F G A R S G G L W W$ S T
 TWTN $\square$ S P VAEA DTS GLTVDRQHPGTVVMTAYSSWLYR S T $G \vee S V D A R R P G T V V V S T N N R W L Y R T T$
$F$ V P GI I F H P T A K G VA Y A R T D $\square G G L Y R L N$
 S GLTIDDRQDPDTLMVVT QUSWVFRST
 Y Q WRSVADGGGGFVTGVLFHPAERDLAYARTDVGGAYRWD Y R WRTAVIGGTGFVTGVLFHPSVRGLAYARTDIGGAYRWD SWKS LSTPH GDNHDIWWINPNDTTIMW DQSNDGGANDTL KWRNIGPFRGGRSVTASGVVGHPLVYYMGTTGGGLWKT T



HAFWIHPDNGQFMMDGND GGLLNDSK

WY PVA G GEAGY IAADPK DPKIVTVGGEYDGFMSKK D $E W R L V G P Y R G G G R V V A V A B G D P R D V G T F Y F G S T G G G V W K T T$ WK L P P G P W G K V G GVA V A P S D S K R IV A E A E K G GLLYR S D


NWKNMGLKETKT $\square$ HR $\square 1 \quad$ HRDNPNVVYAGAQGRGVYRTK
RWEN $\square G Y F K T G S V G A V A V A P S N P N \square I Y C G S Y G D G V Y K S T$ S WK S M GLEK TRHIHRIMI DPTDPNTVYVGAEERGVYKTT A GGESAHI AVDPKDND V VYGGSYGGY LTRYN
 K WRCI GPARGGRVVAVA GDPNEPMVFYF GACA G GVVWKT $\square$ TWKEIS P H D T L G I M G I T V S PVNSNRVWA VVDKGGVYRSE



HD DW DD P N N NQRMV IA D D G GA QVSH HDLWI DPDNNKRMAMA DDGGAQISN K Y R NIG PFRGGRSVTATGVIGDPDTYYMGTTGGGLWKTS E WRLVVGPFRGGRAGTVQGVIGKPNLYYMGTAGGGVVRTM TWTDIT PVTGEDLT GLALDSSNPGTLVVASPDAQLFRST
 HCMWINPQNNKHFVVGCD GG』YETF

## D F A VS P A D P QR VY A A LP G G G L Y R S N

$$
\text { A } \square \text { A Q D P F D N S T } \square \text { Y F G S Q } \quad \text { F } \square \mathrm{H} \mathrm{~K} \mathrm{~S} \square
$$

S WQRMG LE Q T R H $\square H R \square I \quad D P$ T DPETVY VGA $\square G R G V F K T T$
$V Y R S E$
H D L W DAP NDPTRMD DG D D G GAQVTY EWRSTGPYRGGRSAAVTGVPGKPNLYYFGAAGGGVWRT T


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$N G G A T W T A I W D W D G Y P S R K L L R Y T Q D I S G A P W G D L E T D P A ~$
$N$ QAGKQWKPLLDWVDWDRWGWSGVVGLASDTADPDKVYAAV PADGRWKNV S SPSKGSYGFSGLAVDPQKPSTVMVTT DAGVSWSEVTAFPNPGNYAQDPSDTSGYGNDNQGDVWVTF PSTQSWTPL $L D W V G Q S N W G Y N G V A S L A A D P A D A N R V Y A A V$ DAGATWTRIWDWASYPNRTFRYKMDISSSPWES LEEDDPFD DSGGSWTKAWDYTAYPNRANRYTMDVSSVPWDTWIDPFDS
DSGATWSQVANFPNVGNYQQDPTDTSGYASDNQGUVWVT QSTKSWTPLLDWVGWDKWGYNGVISLATAPVQTNRVYAAV YGTTNWTKVNEEPVNDEVRAMGDEETADFD DAGRTWEPV PGQPTGLIPHQAALSTTGALHVSYGDL NSGVSWSKVTSFTSTGNYDVVGLTWMEFDKSSGATGKATP





 DGGSTWTRRLWDWAAYPTMNRYYTYDDS LAAPWWMMEA LA I D



D A GLLT WS NCSDGY
$F$ K T G S V G A V S V A E S D P NVVV VGM
 NDGETFTDLLDLDTSQFYHVSTDNDFPYNVY $D G G A T W M A L P \quad G G P D A R L L A A K A V L G R D G M L T M T V N D G$

 ARTNQTSAI SVYPE GAIGAPASVKKYRFQWTYP LLFSPHD

 D G GK SF T QLMPAY GADNGVHPDHHAWWIHPKNGQ DGGFKWKKVNDKA G $\square G N R P F Y Y$ SE $\square Y V$ VP QNENR LYT T $\square F$ D G G K T WE R V L Y V N

## N Q T G VA D M V VD P S N P N K I VA M

D A GK T WTHLGLTK
NGGETWEQI LFVN
NKTGVADMVMDPTNPNKLIVAM HKTKS QRAINVWPDNPMGHGAEGMKYRFQWNFPQL FSQH
 D A GETWKNI NSNRELRRQRAWYYTRI YADPKDEDVVVVVN DGGFKWKK VNOKTAMDVVTTNPDVMYV
 VTSSIDVVHSNPDIMMYA
D G G S N WS TYM
DGGNNWTTYH
DAGQRWENDSDGG F F Q T GSVVGAV AVSPSDPNVVVGGM

$D G G E T W K Q \square N D \quad D R N \square R Q R A W Y Y T R V Y A D T Q D E D V V Y V L N$ DAAKTWDFKK $\mathrm{N} L \mathrm{P}$ VT Q F Y K V A V D

DAGETWTLVFWRSGNGGRNWTALNTPHGDDHDLWINPADT

DK GS T WN I IS P DLT T N DPN N T T L LA
D G GET WEK I LF VN
 D GGETWSTYHNQPTSQFYFTYGFGQUWVDPTDDKK\|VIVG DGGQTWANISDGS
NA GTTWTPI F D


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 ATQTDYKDQSVYRSTNGGLTWSAVGQPTGYDPHHGVFDSD GMYWDPNHGYIMRSTDKGNTWQ】TQLPFYVGGNMPGRSMG

## 

 GMYWDPNNGAILRSADRGATWQAAADPFKGGGNMPGRGMG GAADKTTSLYRSTDGGVSWQAVPYTDTPGPNGVKAGSV GTYTNDWNGAILRSTDQGKTFQRTDLPFK LGSNEDGRSMG PGPYEMYDGAVHKDDLATGRWTDDTPLRPNTGGEAGFGYA GWWMTDEDMYGTGATMYGTTNDTKVDSEPVNIDERAMGDE GHVLYGTGNGILRSKDADASDRGGTSHWSMGARGLEETALC VNSWWPDM IL FRSTDSGETWSR DDDPQPPEESPKLGWMN LGPNGVTAGSVWKHTPAGGTWKNVSPSQGGYG SNRDMYGTGATLYGTNNLTDWDSGGKVNUSVMARGDEETA GTYWDPTNGAVLRSSDRGASWKAATLPFKLGGNMPGRGMG LDRWWPED E GMYWDPNNGAILRSANKGDSWQVTPGPFKLGGNMPGRGMG SNRMMYGTGATLYGTEDLLKWDTGGQFTVKPMVRGLEETA
$N$ RMMYGTGATVYGTEDLGKWDTGTPFTIVPMVQGLEETAV NRMMYGTGATVYGTEDLGKWDTGTPFTDRPMVQGLEETAV
DESTGTSDNAVYRSTDAGATWTRLAGQPTGYLAGVLDTVN GMYWDPNNGAILRSTDKGDTWQVTAGPFKGGGGNMPGRGMG
$P G P N G Q S D G S V H K L R T V N G K W T E V T P V K P G G T A T D G S A D T$ $P G P N G Q S D G S V H K L R T V N G K W T E V T P V K P G G T A T D G S A D T$
$P N D E N A P D L Y S I M G D I Y G F R H Q D A N V C P E E H F G D F K S T D I C$ PGPY EMYDGAVHTHDPGAGTWTADDTPLRPNEGEEAGFGYG $R \square F A G V A S N G V F M S N D A G S T W T A V P G Q N T F P H R G V I S P G E$
$G E A C P R H G D G V Y K S T D G G R T W V N V G L R D T$


 GMYWDPNPGAIIRSSDRGNTWQSVDLPFKVGGNMPGRGMG R IFVGNTTSSVYVSNDAGSTWSAVAGQPGRYFPHKGRGQP $G T Y S Q P W N G A I L S S E D R G K T W T R T D L T V K M G A N E D G R G A G$
$P F D S D S F L Y G T G A T V Y G G S N L T A W D S G G T V K V G V R A Q G D E ~$ $P F D S N H W L Y G T G A T I Y G G H K W D T T R N V T L K S L A D G Q E E T S$
$G M Y W D P N P G S I L R S T D S G T T W Q E T V L P F K V G G N M P G R G V G$ $G M Y W D P N P G S V L R S T D S G T T W Q E T V L P F K V G G N M P G R G V G$
$G T W S G S D D G Y V Q L S T D N G K T W K N V T P K$ GTYMHERAGAVLRSFDRGKRFERADLPFKDGGNQDGRANG GTYAQSWNGAVLRSEDRGATWKRTDDTVKVGANEDGRGTG

 GAQQDNSAKRIASRSDDATIGDRDWYTVAGGESGY IGPNGDTRGEVWRDDTANGGWSDVTPLKGADAPEGGYMGV
 $G Q Q D N T T M A T P S$
$F D D D P T N P D E A D Y V T G Y G E T W G R N D G D G D E D Q F A V G G G E S$
$D$ PSVLYATSNHVHRSTDAGHSWEDLSPDLTRHEPKT DGETG GRGNVSHGDGVYRSTDAGRTWQ

 T Y

WEYGRKPWSGDYVTHDGGDTWERRTDADGLPKGMLGRVG
 A LHQGNPERGIYKSVDGGKTWKNTLFVNELTGANYPEDMY
 GENNSQRSDGVYRSDDDGRTWRNMGLKDSEHDACILVDPR V S Y H
 T Y TNEGAGI NVSEDGGKSFKQLIMPAYNADNGVHP GTASGGLWKSESGG\TWKPVQVTAS IGAVA QQQSNP QDNSTMRDA HRNEGSSDTESDWEVSAGSESGW GAQQDNSSVRワPHRTNGNAVTEK GEHMTSYGDGVYKSTDAGKTWKKLGLSKT

 VR Y H
VR KSSDGGKTFETFNAPH
SPFYNDYGGTQDNFSDGGPSRVLTNHG $\square R N S E W F \square N G G D G$
FYFGSTGGGVWKT LDGGRTWSNISDGYFGGS

 YYAGYTGGGVWKTENAGHTWR
WEHRRWPWSRLYMTHDGGKSWKQLTDADGLPKGNDGRDG $V \mathrm{~V}$ V VRSEDGGKSFKSIER AA AQDNSTVRIPHRTEEGRS $\square$ SEDDWESTAGGESAH


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LVSPPSGAPLLSAMGD $\quad$ GGFRHEDLDNRAPEMDTNPY L

 WKLAVDPQSPGTVLVTTLDRWWYRSTDGGGTWTSVRDASA ERLAI DPADHRTLYLGTRKNGLWRSTDYGTTWNQVPGFPD G LAVDPRRPGTVMVATMSRWVFRTVDAGATWHSI LDEFHG
 ESVEIDPFNSDRFMYGTGGATDDTNWDTGGTVS LRTMV SGLAVDPRKPSTVMVTT LDRWWYRTTDGGTTWKALAAPYV $\square$ MELI SPPAGAPLLSAMGDDSGFRHDDDTAPPAKTMSVPA ERLAVDPNKNSVLYLGAPSGNGWRSTDSGVTWSKVTAFPN TALAI DPFDSGHVLYGTGNGDGWRSKDANASDSGGTSHWT ERLAVDPNKDSVLYFGAPSGQGWKSTDYGATWAKVTNFPN VLDLISSPPSGAPLVSGLGDIGGGFRHTDLAAVPPMMFTSPS
 EALSVDPNDNRVLYFGAPNGNGWRSTAYGATWAKVTSFPN F GVAVDARRPGTLVVSTNNRWVFRSTNGGRTWTSLKDGGD DCAAMDYNDVVRATDEGSGTVYYSKDGAVTWQEVKTGPE G LAVDPTDPGTLMVATMGRWIFRTTDGGQNWSPFLDWGD QSLYI AYADGAGPYDGTSGALMKYSDSSGTTWTDITPVS
 GGVAVVARRAGTVVVSTNNRWAYRTTDGGRTWTSGLKDGAE
 ERLAVDPNNGNIIVFGARSGNGWKSTDGGVTWSKVTSFTN A ALYLSYADGT GPYDGTSGSVWRYDDTA G T WKDITPVSG $E R L L V D P R N S D T L W L G T R H D G L L K S T D R G G S W T K A T F P R T$
$E T A V L D P P G P V Q L V S G L G D V G G F V H T D V T K V P A Q M Y T Q P Y ~$ VQALL SPPVGPQLLS GVLDEEGFVHTDL KMATKAPSAEF ERLAVDPNKNSVVYFGARSGHGWKSTDYGVTWSNVTS WTW
 ERLLVDPRDSDTLWLGTRHDGLLKSTDRGATWTTASTFPA


 SVSARDPKMDSTVDRRRPVDTVWLSRDGGRQWEELLDFDG $F D V V P D P V D S R Y G Y T M S Q Q G N V Q R F D H T G D N Y I V R P T P P D$
 GPI TKDPTEKGVFWAGSDDGLLHVSRDGGKTWQNVSDPVG

 HAWWIHPKNGKFMIDGNDGGMNDTKGDRGQTWRF IGNGPN

LADSRSKPNDVYALVEDNALYKSTDGGKKWSVVAT KN
 A AMWEHQRKPNMVVSGGVGSGLYKSTDAGETWTKIIHK GPDTQDPLKAGELWDGSDDGLVHDSKDGGNNWSNITPPK
 HDMWI APENPDRIIMGDDGGAQVTY DGGETWSTYHNQPT
 MAI SPMNPDVLYATVETGGFYRSADQGASWTKVGDEIG SVIWVGTGEGNPRNSLNGGFGDYKSLDGGKSWNSM

LAVDPNNPDVVF GGNYGGLLQRLDHSSQARRNVNVYPD A HLAPDPLNSEVVYGGDYKGYMTMQNDETGQERSTNVYPD SRIVIHPKNPDIVYVAAEDRGTYKSVDGGESWKQVLFVNT NPDVVYVAAMGNLWIPNEERGLYRSKDGGKSWEKVLYVSD LDLASAPGGSELFAGVHDDSGFTFKSKADDNTSPKTAWNT GAAI RVAQNDPNVVYGTGSDGVYKSVDAGKSWRHB HDLWI APEDPQRMII GDDGGAQVSY DGGTTWSTYYNQPT FESQIDPNNPNDVYAQSQYGGLVRFDK KSGETVGDKPK GAVSVAPSDHNVIYVGSSGYGI WKTENAGKSWTQ A TAI TVKPGNHNIVYANCKGCFSVYDKRSGQERNYFDGPND SVIWVGTGEGNPRNSLNGGYGIYKSLDGGRTWNSM KASIYNAGEVNNYRNSDYRPYLFHTTDYGNTWRNVVSESQ GAIAVAESDPNVVYVGTGEHGVYKSTDAGRTWTRV LIAATNKPNRVYALVESNALYRSDDGGFSWKKINDGDD HALWFDPKNPKHYINGNDGGINITYDDGKTWFKANSIDVV NPDVDPENNDVVYGGSYDGFLTRVNHDKNTVRSDSVWPD


## QUERY <br> UniRef90_F2JH03 <br> UniRef90_E4SDC8 <br> UniRef90_UPI0001E2D93B UniRef90_W4C6Q8 UniRef90_E0IAP3 <br> UniRef90_A3DFA0 UniRef90_UPI0004703921 UniRef90_R4LTC6 UniRef90_UPI00039AFFD4 UniRef90-I7DZU2 <br> UniRef90_UPI000377D029 <br> UniRef90_D2PPG2 <br> UniRef90_E9SA69 <br> UniRef90_F2RHT9 <br> UniRef90_C5BQL1 <br> UniRef90_UPI000303D88B

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AFTNG $\square$ GYTSVVIFDPERNGTDYASATAPQGMYVTHDGGVS KTAPDDPYNGI AVDPQNEDNIVVIWWPD\|FMYRSTDGGET
 SSTDNFGYGGLAVDAQNPGTLMVSWWPDATLIRSTDGGAT P GT D $\square$ M G $\square$ A W $I$ T F D K S T G Q T Y Y V VA D K A N S I YR S T D G G A T EAPNSVGGGSVAVAADAKSVI WTPENASPAV TTDNGNS GTS STDLDYAEKNPDLVVRVGNADGSAPRSTDNGRT


 GASSGVGGLSVVTFGPA GSKTVVVGAADRNSLYRSTDGGGS
 EHFGDFKSTDI DCAALDYNUVVRATDEGSGIYYSTAAADT
 GTHTGHWMTALADDPFDSGHV MYGTGNGワWRSKD GT SH WT TYG $\square$ D YAEL NFVVRVGMADYSADANARSVGLSHDGGAN $P G N D N Q G \square V W V T F D E R S G D \square Y V G V A D K Q N T V Y R S T D G G A T$ VGA R GLE ETALLADAPPGGATVVVTAMGDQGGFRHDSPA GRLD A GNDNQGVVWVTFDKRTGTVYVGVADKQNTVYRTTNGGTT TTS SDDYA ETKPAVMMVRAGNFT DADRPSDSHVAFSTADGAN T GP N F T S T T S VVDFA E TK P GTVVVRA GHDD G GVVA F S A D N G A T A GNYAQGVVWVTYDKRSSTAGTATADKENTVYRTTDGGAT
 GVD K K G G G S V K L S A D G S T I L Y A A GV A G A GVV IT D D F G D S
 K GA GS GA G $A$



PS ETG $H G S V T G V D F A E A K P A T M V R V G V D G T V$

 TPSASGGGVT, VA AA GRTVYAGWGDGDSLVVSDDAGRS $\square K F R F Q R V A P V H V S P H N P N M V Y \quad H T S Q Y V H K T T D D G K T$ $N N T G C S D L S M D V T N P R \| V A S G G K G S G L Y K S V D A G E T$ TWSTTVDLDYAGNDPTNUVR\|GGDSSSGKQVALSTDSGNT P HKKEAQVNAD IELDSVHAEGKAYVAVTGQPYI YKTENYGKR RTYRFQWTYPIVFSPHDPKTLFA GTSQYVHKTTDYGHS KANFGHWIAGLADDPFQPDHAAMVTGATVYETQDGPMR

 QLPEFA LMMSVVHPSEHAPGKAYMSGDRKPYLYKTTDYGKT NA GA D D S DDPTNPR I I Y A S G GP GS GL FRSTD GGDT RSFNPNGDVKEDWHTVGGGEAGFCVSDPNLVYAGEYGG LR QRA WY YT R ITYAD T D D E EVVVYVVNVQ Y
 GRSAAVTGVSNKANLFYMGATGGGVWKTTDAGNT
】GDRPF
YYAE $\square Y$ YVDPQNENRLW $N \square F S L V T K S E D G G K T$
 GLPE EK GKMA IAV S GA DSNRVYASNQDKGGLVVSNDAGAS IGNRPFYYSEIVVDPQNENRVYSVFTY IVVSEDGGKN GLDP E WA Q I N S I E P S R Y DAAT CY I AA A T R Y K Y L Y K T T D Y G K S
 GQ FYRLTTDNHFPYRIYAAQQDNSTIHRSTEYSEN GLENTRHDHRIIVDPTNPDVVYVGAHPERGVFKTTDGGKT
 G LQ Q T R H $\square H R R V V I D P T N P D V V Y A A A H P E R G V F K T V D C G G K T$ NPYRF QWNFP I FY S DH D S N L Y Y T G SNQLHRSTN G G Q S LP A GS N WN YP V F F S P H N P K KL Y A C S N H

 $G L D K T G Q \| G A V E D H T N H N V V F V A A D G N R G V F R T K D G G K S$ AQ FYRVTTDNAFPYRI YAAQQDNSTVHRSDGFGED ARKDEDAYRFLVVSRHVPGRLYESA


 GLDATRQQSAVRVHPQNPDVVYVAATTDRGVYRSTDGGRT

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## QUERY

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 WTRIF EGYPNRKDRYTQD $\square$ SAAPWLTFGTNPAPPETTPKLL WAAVPGQPTGFV WKVCTNLGMGAVVASD RVNGKKFYAFYNGKFY ISTDGGL WRPAANAWASDRTSGGYAAVGADGSALLWSPQGGTPEAPV WTA APGQPTGY $\square P H$ H ETAV ADLASPPSGAPLVSALGD $\square G G F Y H A N \square D A V P P N F H D$ WARLAGQPAGY $H W T V P A K G L E E T A V L G L V A P P G G K L D S A L G D V G G F R H D D L D$
$W Q A V P G P T G Q L P Q$ WQAVPGQPTGQLPQ WSVRA QGLE ETAVLDLISPPWGPPLISALGD $\mathcal{Q}$ GVYRHD WEEVETLPEGVKKAGGGSVKDSADGKTILYAAGVAGAG WTGFKAEPVAGAQDGHVALAADGSTVVWTQAGQAPYRSTD $P E L M Y Q S P E F G T S T S D D F A E L D P G D M V R V G H P V G D V P A N F$
$W T A G A R G L E E A L M D A I A P P G G A D V V T A M G D Q G G F R H D D$ WTAGARGDEETADMDADAPPGGADVVTAMGDQGGFRHDD
WYKASSEPTGTKGGGTVAVSADGNAVVWVGVYSSKSGGNS WSRMAGQPTGYL QNPVMGNSTDDDFAQSNPTAMVRVGRGGAQDGAYSTDGGR WT QAWDGYPNRSNRYTLDVSSVPWLSWGASPAPPETAPK L WERVAGQPTGY
WF QGTEPGGINEGGTVAAAADGSRFVWAPKGVAVHRSTGF WRAGQEPAGVTGGGTVAASADGGRFVWSPDGTGVHTGTGG WTKAWDYTSYPANRYTMDVSSSPWLTWGANPSPPEQSPKLL WSRLAGQPT GY $\quad$ WA WTKCEGVPSAAM IETDKVDPDKFYAAFDGAVYISTDKGK

 WTKLTGGPQG KGR $\square G V A V S P A R P D R V W A \square V E A$
WQAVPGQPTGQMPQ HGVLAGDGS ETSVIQLISPPVGEAHLISASRD DGVMYHERLTASPSRGM WFAGADPSGVSGGGTVAAASDGSRFVWSPAGTGVQYTTGF
WAPFATQPAPAKDAPGPDATNADGSVLLWTFVMWDGTKYP WAPFATQPAPAKDAPGP WKQLWT WGTDGNQNFSYVQTSPKAPWIKTNFLDVDTKD WDPAPAQPTG W WA GQQPAGVTGGGTVALSADGGTVVWSPAGTGVHRSTT WA DDYGSPDGVSGGKVAISAAGDTVLWSSSGNGVQVSQTN
 WVAVA GQPRGLRPS HMAGGSDGQ WEAVPGQPVGVTSAK VPDRAAYDKQTRD WE IISPD TTAF DPENQMASGSP DTRDVTGEEYYST $\square Y S \square$ WT KMEKGLPKELGKMGIAVSRANPNRV
WS QDYGAADNVSGGKVALSANGDTVLWATSGNGVQVSTNS WT RDDKGLP
WET TSPDLTRH DPATVGPTGGPDSKDMTGAETYATVFTF WRPWTRGLTSPTGGAHLVSGFGDIGGFRHDDFAVSPPRDH
 WQE S P DLTRNGGPDTNEQAGAEYYNTVFYDAESAVNKGE
WTAFASSPPREASKETGADSADGRRMVWAMRKAAPYVSSD WTPDTNGDLADEYCRVVRDDPEQPGLLFAGTER
 FSSSSAPHGDHHDLWDAPENPDRMIIADDGGAQDSYDGGA WSVISADLTTNDPEKQKQDESGGLTMDATGAENHCTVLVI WS MSQQGFVSRYDW\TGNNYTVKPTHPDAD $\square K$ KRFNWNAA WQNISDG FFGGSVGAVA
FETVLPYSGVHPDHHAFWI HPNDPNYLIDGNLNISHDGGK WKKVVLIFSNENAGVVDLIIDDPNNPRILVATTVWNI RRTP WQMVSG DNRLVQRAWYYDEVFADPND FKEL WK K WRKVA GGPTADLGRIGLADSPANPDVIYACVEAAD WERLNGLPGGVLGKIGVSVSEAQRGRVYALFEAEGDNTG WESTAGGESAHITQRAlNVWPDNPMGHGAEDMKYRFQWNF WNK
WQE

SFGDGFDVVPDPDNSRTN | WQE | SFGDGFDVVPDPDNSRFGYSMSQQGYVSRYDWQTGN |
| :--- | :--- | :--- | :--- |
| WTP | NTKRKHVDDHAMAFHPTDPDFVLMGSDGGTYMSHDR | WEK LFANNKTGAADGVMDPSNPNKLIAA DGG WWEHQRE

 WEVI SADPETDKSSGGPITQDNTGAEYYANDFAAAESP WFEI GEGLPEEKGKMAIAVSPANSDKV
WTKLPGLPKGVLG\|IGVTVSPLNSDRIWTIIEA
WGLHPANGSTQAGGSVALSADGTSVLWSTSGVGVQRSTNQ WEKV LIFISEQTGAADLEFMPSNPDIIDYATVWRAERKP
 WTKKLYSND LLAGAVDLIIDPSNPRNLYATTWRVQRTPYS WEVISPDDTGNE PDKQVISGSPDTRDVTGEEFYSTDYE WNK LIFTNELSGAADLVMDPKNPNKLVAAMWEHKRDP WTQWTNGYPKVSTMDDAIHPREHDLVI GYGRAAYVLDDDR WT QVLKGPNGTTGPSDLSMDPSNPRILYA AMWDHQRL
YKFLLGGDGMQVYRDNNTVYAGFQFGNYFRDNKATNERKA WKVI SPDLTRNLKSSGGPITQDNTSVEYYCTIFAAQES WTNi S GLPGGDWGISGVAVSPVNSNRVWAIIEN
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LYVTYADYPGPWGVTFGEVWR ${ }^{260}$ QNRTSGAWD 270
DRLMYGTGATLYGTNNLTNWDYDVNGFYHSDVTKVPSILA
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L AEVA LYVTY VP ${ }^{T}$
KGTNWSRTGGDGTDV KGTNWSRVGGLGTDAVVVADRSSARTFYSLSGGTLHASTD SYMGDSTSAGDAWWAGANAGSPTTGGTVALSANGGSUVWS WT RVPAGRLGNPMMTNSTDIDFAQSNPELMVRVGRGGAQD
 SWKGFAAEPVAGADSGHVALAADGSADVWTQAGQDPYRST
$G W M T A A D E D V D R D S D R M M Y G G A T V Y G T E D Q T S W D S G G T$ LYDATSDTGGPYDGAKGDVWRYATATGAWTQ GTSWTASTGIDPAGASDRVNPARFYGFGAGRFYASTDGGAS AWTASAGMPAGATVESDRVDPGTFYGFAAGTFYASADGGA GWMTEALETDPFNSSRMMYGTGATVYGTENLANWDSGGQF LYUATSDTGGPYDGGKGDVWRYATATGTWTQUSPVPSSSS $L T A S P S R G M A S N P V F G T S T G L S L A A A K P S Y V V R A G W G N D G$
SWNSLATLDP TSPPAGMHQNPILGNTTSLDHAHDPATVVRAGTGDGPWAA GWMVESDSDDPFDSNHWLYGTGMTVYGGRDLIKWDTVHNV पY पTYTNALGPNGVTGGSVWKHTPTAGAWKNI SPSQGN ATNPVFGSATGDAQAAGRPAYVVRTGWGDNGNGAHSGDGG GTSWSASAGLDAGAlVESDRVDPKTFYGFKSGRFYVSSDG AQRSTDNGATWSEVATCPARFYAYDTDTGTLGASTDGGRT LYWMYSDGAGPYDGSAGAVYRYD TNGTWKDITPVSGGDL LGWMIESFEIDDPTDSDHWLWGTGLTUFGGHDLTWDTGAKV L PFSAVSSLPAGAA IASDKVVNSIFYAGSGNQFYLSTDGGK L H
WYLSYGDQPGPD पMAGGALWKYSPAQGRWSETSPTVQPAD LYVTYGNAAGPNGQSDGSVHKDRTTTGSWTDVSPVLPGGT RESPDQAGLIWVGANDGPVHVTKDGGETWEDVTPNMPKGG FSAVSSLPASTTADASDKRNDSDFYAASGSSFYVSTDGGT

AECEHEKGVYWTGSDDGLTHVSRDAGKTWSNVTPPKEMLG LRPF LTNTNTDDYAGRAPLVMVRSGNTHARTVPDTSGGGS EPSTVEKDMLWVGSDDGRVHYTQNGGETWNDVTANDKGLP | $L W V G G$ |
| :--- |
| $Q G Q T W R P V Q G V T A G D D G K L H D T A R E G K N W K D V T P H K K E A Q$ |

EDGAVFRSDDYGDTWERLSEDRNDRQ P LVSKHDPKTLYHAANVLFRSTTGGQTWEKVSGDLTRNS TWSTYHNQPTSYRVTTDNHFPYRTQDNSTVRINHRSDGYS EPSPGEKDMDWIGTDDGRVHDTQNGGSSWTDVTANDKGLP MN円DPFDNSTLYFGSQGFVHKSTDKGGTWEVISPD SWRFDENDPQFYHVNHDMSIPYQDGGGSWVGPSAVWQAGG YS SSGGGEGSA VLSAP LWK STODEGETWTNDSTNKGLPD ADTVY
WWIHPENGQFMMDGNDAPALRSTDGGKTWETLSGTHGD
GNITRDGGSWRFGNIPAAQF WWDHPENGQFMMDGNDGGMN】TRDGGKSWRFVGN】PAAQF

## GKGGTFRS的GGETWERRNP

LYRTDDYGDRWMKVSQNRDDMH
PTIFSKHDPNKDYTFSNHVHVTTNEGQSWETISGDBTRND IAAMWEHKRDPWFFNSGGLHITHDGGETWKKI TEDDGFPK NYSVRPTHPDPGYFGSQFV̈KSTDKGGTWKVISPD GTT MWRFMANDP LTQFYSKPFYMDYAGAQDNSTQGGPSRTMRE PWFFKSGGEGSG $P L D Q K G V I W T G S D D G L V H V S K D D G K T W E N V T P P S L P E W$
$F T E G E I U W T G S D D G M Y V S Q D G G K N W K N V T P P M S P K L I$ YALIESDSDQDKGGLFVSDNAGUSWTMVSGDNR LVQ GPLSRVSSLAAGSVIDADKRNDEVFYAGSDAFYVSTDGGA WTIISGGEEHG PDIFSRHDPNKLYTFSNHVHMSTNEGQSWELLSPDLTRND VAFSESP $V$ NMNGTDDGLI HDSEDGGQTWKK SNDPGSPN RESSKQAGLIWSGGDGSAI WKSTDYGETWKEVSTNEG

 WWIHPENGQFMMDGNDGGLNLTMDGGKSWRFVGNLPVAQF LEVPRELGEAPFRFNSNKFHRSFDKGDTFKTLSGDLTRGR PLKEGLLWVGSDDGLVHVTRNGGETWDNVTPKNMPEW RHESLDTPPSSMYKPLKKTSLGDAFAYQNSKFVARVHTYT

QUERY
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PAPYNNQTF ${ }^{290}$ A GGFCGLSVDDATNPNRLVVITTLDRDPGPA ${ }^{320}$
NVKAGDKYSSLNSSVDVDYAELNPNLVVRVGERKEYGNYL
FSADYDTQPNMGSTTDI DYAELNPNMVRVGNVDKTWNPNT DGSPKHENW YGYSGLSDDAQNPDTLLVTSLQSWWPD NISVMAKGVEEDAVLDLVSPPSGAHLI SGLGDVSGFRHNN

 $D L H F \quad G F G G L T V D A Q N P D T V M V A S \square N A W W P D E$ NWYNGQEPAGVTGGGTIAVGADAGSFVVWSPAG


FGFGGLAVDPQHPATVMVTTDDRWWPS GAYSTDAGKSWQPFAGEPAGSTQPGKIVVSTDARTWVPGD $G G A T F T A R A T N D P A G R L V A V P G V A G D L W D A A G G G$ PGGSTVHYSTTFGSSWLGVPAEAKVEADRVNPDWFYAYSG GAYSTDGGGNWNGFKAEPVAGAQDGHVADAADGSTWTQAG FTQTAAAGLPSSGAASLKAVPGREGDVWFAGGNESPGPYG YYGFSGLSVDRQKPGTLMATAYSSWWPD NKGASWSKVRGLGAGAVVVADR RITPMVKGIEETAVNDLASPPSGPDLMYTSPVRVGNSDAA S P I P S S S S DDYFGYS GLTIDDRQHPGTIMVATQVSWWPDA FAATAATGLPATGNVKFKAVPGREGDVWLAGGDTAAGGTS $T F T A R A T G L P A K G N V R F K A V P G R K G D I$
$T D K P M V Q G L E E T A V L D D A S P P S G A P L L S A L G V G G A P D A A$
$M$ $D D Y F$
$N G A Y S N D G G R T W A P S G L T V D R Q K P G T$
$M$ NGAYSNDGGRTWAPFGAAVAKDAPGPIATNADGSWSFGTA TQTGELNNMSAE DRDCRAIKAEKDGDYMS DYMLGQVNDNG YSTDAGDSWQPFPTQPPTVSGGGTDAVSANGDAVVWTPED


YSHIYADPKDPDTVYVLNV
RT WAPFAAQPSLAHDAPGPDATSADGSTLLWSFVHWDGTK GATFTASAATGLPSGDSVRFKADPGTKGDIWLAGGASDGA FSGRASGLPS GDSQFQLAAAPGRSGDLWLS AKT N $\square$ QS $\square A D G \square E Y F G A G G L G G V D M Q K P G T L V V A S L N S W W P D A$ TD DASAATGFPTFGYGGGAVDARRPGTAIVSTNNRW SAMV FTASAATGFPTTGNTRFAAVPGHAGHVWLA TFAKQATLGTSSSVSTVIVHPAVTGDVWVSTDK $N Y G Y G G L A V D L Q V P G T V M V A A L N C W W P D E L$


DFAL MS LIETSRFDKGKAYLAATRYKLNDRK WS GLHVPACAPRADGSLCPEATGDAAITVSADGTAFLVET $K G S W I P Q \quad 1$ KASTRNKGEALLIANDYRRFNYT


RPWY YMHDYADPKDPDTVWVLN
GGP DTGDNTGVEVYGAIFADSESP VVNKVLWSGSDD ■GEDDWESTAGGESAHI AVDPENDD VVYGGSYGGHKTGTV KGSWПPQ IKASNKNKGEALLIANDYRRFNYT NDPEKLKQAESGGLTMDATGAENHCTVLVIRNMLWAATDD $\square R T S Q W Q E V F F G D G F D M G F R P D N S R Y I Y A M S Q G G N V G T V D$
$G L W$
$G L G S V A V S P V N S D I V W A L I E N E$ YH $\square$ NVDNEFPYNVYGGM

F D Q T A MYFSTVVADPRQVERVYVLNVF
RPFY YTHVFADTTQADTVYVTNF
STK $\square$ GSSGGPTQDNTGVEYYATAAEESSIKEGLIWVGSDD G $N$ N

 $T$
$N$
$N$ RAWYY $\square E V F P D \quad$ PNDENTVYVLSASA RAWY YSRTYADTENEDRVYVLNV AFAKGGALQGANSVRSLAAHPTKAGDVWAST
PGPDTQDNTGVEYYCT FASPLKEGLLWVGSDD
QSYINS VYGKHDENVVYAAFNHHKYGDFK
FAKGT LG GMMITVSPLSSDRLYA VVENDQG LDPKGGRVDCLEPSPHRANKAYAAVLLYQLGDWR G D
$G K \square G V A D S P A S P D R V Y A \| V E \quad A D K$ K
DA $\square Y S G E N R P S \frac{G}{G}$

TM
R A WY
GPHY
INS I EPSAFDEGTCYVAGTRYKWGDF

## QUERY

UniRef90 F2JH03
UniRef90-E4SDC8
UniRef90-UPI0001E2D93B
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UniRef90-E6UB52 UniRef90_UPIO00425A016 UniRef90_UPIo0044143FB UniRef90-H5SFE9
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UniRef90-B5HWX2
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UniRef90_F4GZJ9 UniRet90-A9CSH7 UniRef90-B6QPP0 UniRef90-D2QP12 UniRef90-LZFIJO UniRef90_A3HXR1 UniRef90-F8EMD9 UniRef90-M2RTN7 UniRef90-F5Z9H6 UniRef90-TOIPG5 UniRef90-UPIO0047D006B UniRef90-U9YE65 UniRef90-J3ADL5
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| :--- |
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 QI YRSTNGGETWSPI WEWDGYPGRKL KYKQD $T G V Y Y S T T R G S S W T A S T G D P A G A K V E S D R S D P K T F Y G Y A A$
 QELYVSTDRGATWKASTGLPKGTAVVADRA A AGSFYAL VVPHYSRDRGASWSPVTGLPQQVAVVADRVDASLFYAFDP GDVFIS RDKGRSWEKLTTLLVSSFYMQACPDVEGDLWDND QGLLHSTDGGRTFTPLTTVKSASALGFGKAAPGTSALYLI G QAPYRSTDKGASWSKVGGMGTAD
TQIFRSTDSGATWTKAWDFTS GTLYASTDSGAATWTKARDFTS PHUGFSTDNGATFAARATNDPAGRLTAVPGDAGD DWWAD FFRST G IWHSTDGGASFTKLSGVTSAVNDGFGKAAPGRAYQAVG Y GLWHSTDGGATFTRVAGVEQADTVGFGKAAPGASSARIG PHVAFSTDNGANWFAGTDPSGVSGGGTVAAAADGSRFVWS

FFRSTDSGATWTRVWDWTSYPNRSF NPGYRSADNGATWSEVASYPKGAAPDADPDDPTRFYAFDT YGVY $\square$ SQDKGAT WKRINDDAHKWGNPVISGDPKHFGRVY $\square$ GVAHRTTDLGRSWTPSSGLPDGLAVRSDRVDAAVFHAVDP
 G
YAAHRSADNGATWSETSSFPKGATPVADPADPTLFYSYDT $Y G L W H S T D G G A A F T K L A T V D Q A D T V G G A S Y Q T L Y T S A K D G$
$N G L Y R S T D G G A T F T K L T S W A S H T L A F G K A A K G A D Y P A V Y Q$ QLFRSTDSGNTWSRIIWEWAGYPNQNWYYSMHT
RSDIDTAPQTTWTDPMWATSISVDYAGNKVANVVRVGNTV DTLYRTTDGGTTWKSLKDTAE
TGLLWRSTDAGATFTKLAGFEDGGAVGFGKAAPGASYPA DD
 ELFRSVDGGKHWAPLL ADAVFD DTVFRSTNGGRTWTSLKD SAVFD


PY LLLKT T DYGKT WTA DT NGDPADEYTRVVRDPHRKGLLYA DAPQ ${ }^{\text {P R D R GATWQRVSGLPSRVRVTADKQDPRRFYAVDF }}$ PYAYRTKDYGKSWTRIVDATDVSYALS IIEDPENPNLLFLD


AAWKS $\square \mathrm{DGGKTFFQVA} \mathrm{\quad VPHGDNHD} \mathrm{\square W} \mathrm{\square DPNNPQRM} \mathrm{\square N}$ GMVHLS QDASYTWKNVTPGPDWGTVSCVEASPHDEATAYV RAINVVWPDNMGYGAEGMKYRFQWNFPI MFSKHDPNKGYT PYAYRTKNYGKTWER VVDATAQSYTLSUVEDIINPNLLFL GRVHVTRNGGQEWTEVTKNDKGLPAGSWIVQVKASNRRFN RGVYKSDDGGENWKKVLFSDENSGVVDLI I DPNNPRILYA TETGKTQF $\square$ KPTSPNNTEDRFNWNAAFAQDPHNASAI YF
 GGAA
$G P A Y V D F A K T W S T$
$V$


GGLYRSDDAGKTWRRLSEDTRAWYYMNVTADPQNADVVYV GLIYVTKDGGYTFTK I MDK PNGDWGS G PYLYKTTDYGKSWTKITNGNEEHFTRVLREDPKQKGLLYA

RYHKSTDGGATFK AYNAPHGDHHDLWDAPEDNQRMVI


| QUERYUniRef90_F2JH03UniRef90_E4SDC8UniRef90_UPI0001E2D93BUniRef90_W4C6Q8UniRef90_E01AP3UniRef90_A3DFA0UniRef90_F8FGA4UniRef90_UPIO004703921UniRef90_R4LTC6UniRef90_UPI00039AFFD4UniRef90_IDZU2UniRef90_UPI000377D029UniRef90_D2PPG2UniRef90_E9SA69UniRef90_F2RHT9UniRef90_C5BQL1UniRef90_UPI000303D88B |
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GNTVVWATPDEAVSWANGGYNWTASIGIPVGARDAS D
APKGVSYSTDNGNTWYQCANVPSGAIVYS
$\square$ SKA PWLTF GKK DNAASGGMVTGGN PAPK LG WMMNATADD DPNAMGLSSDGGTTWYKANAEPAGTTGG DSAAPWLDFG ATNGRGVVYGEPASDEPVPTPQPQVDKGLVGDLNGDNRIN GQYG $\square Y$ RSDNAGASWTR $I N$ D DDAHQFGSANRTITGD $\square$ SAAPWDDF G $\quad$ S SS VYVSKDGGATFSTVAAPTPAQNDKAVPGRAGD $\square S S V P W L N F G$ L
 ASAAPYVGTG
GS GLFLLDTETGE
GTTGVFRSTDQGATWLRVN DDAHQWGGDGGVGVVTGD

GVRGFFRSDDGGASWVRVN LRAGRAHQYARVTTITGD
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GAKGLLHSTDGGRTFTALGT
PEGGVHHTTGFGTSWTASTGDPAG ATVESD
IS A APWLTFG TNPQPPEVTPKDGWMNESVEIDD
GVNGVFRSDDTGASWVRDN DDRHRYGNMGEAVTGD
$G V R G V F R S T D A G A S W V R I N \quad D D A H Q W G W T G G A I T G D$
AGAGVQYTTGFGTSWQASSG】PADAV
ØTENPWDTFG
TTGTLIFASTDSGRTFTARATGLSTGDSEFQ WM TA A
STNG
EEGAHYRSDDGGASFALVNDDVPATGQAQWKAV
GDAVLWRTASNGVMDS RYTNQFTAVPTVPS GDGGANVTFNGGQTWSTTGPGDDRPDWYPVGGGESGYVIH

DTGTLYASTDSGLSFTARASGLPAGDSQFQ LVAA GVRGIFRSTDKGASWTRVN DDAHQWGWTGAAI TGD VGAGVYRSDDGAKTWVRVN DDRHQWGWDGATIAAD GNAPWDDT GFLSTDSKRLGWMIEALEDD GTPQLAVSSDGGATWKVSPAAGAAQYGGSVAYSADAIASD VSETPFLNWGGQE GVRGFFRSTDAGATWVRTN DDEHQYAWTGAAITGD GGVGYFRSDDAGTNWVQINDAAHGFGSASANV GA I AGD ■S NAPWLQDN TSTAQFPVSVGWMVEALA!D
HSAAP WTAQATPH WMGADADD
 NDGGAAVSFNGGETFSPQN
GGVGYFRSDDAGTNWAQ $\square$ NDASHGFGSVSSNV $V \quad \square A G D$
GTRGVWVSFDDGVNWQKMQLNDPDTP $\quad \square H D L V I Q$ AAGHIVRSDDGGASFRQ $\square$ A GRGLPAD LT P LRSANAPI LAQ


GDGGACVTFNGGMTWSTLYNQPTAE $\quad \square Y H V T V D$ VVDALWKTTDFGDTWVRITDGLPTDEYLRV VRAD FSNHVHLSTDEGQSWTLLSDDLTTNDPEKLKSSGGPITQD GDDGLYISLNAGSKWQKWTEGFPTVSTK YEPYAYRTTNYGKTWERD VDASDVKSYTDSIVED TTSAMWKSTDEGETWTNISE NKGLPNGIWGIVGVTVG GSQF LHYSKDYGQTWEVISPDLTTNDTAKQHTTILAIGPS
 MS QQGSVSRYDHIT GNNYTPTPPDADTKARFNWNSALAGQD

GDGGVYESFDRGQSWQFKANDPVTQ
GDGGAC【TFNGGRTWSSIYNQNTAQFYR
ATSYLYKTTDFGESWTKI TNGINVEHFTRV



 DDGGAAITYNEGKTWSTQD
ADGGVQVSFDAGDNWTTYHNQPTSQ
GDGALYGSGNGGASWTDLQGEDGFGAVDGAR $\quad \square A G S$ MSTPYLKSADGGKTWKRLNPPHGD NHDMWDN GDPYLYKTTDYGQSWTEITSGDDPEHFTRV VRED




## MNAP VKS $\square$ DGGRTFQT LPATHGD NHQLW $\square \mathrm{N}$

 MSQQGYVGRYDYVTGNDYRPTPPDDTTRLRFNWNAAIAQD SLNALFVSTDYGQNWQA DGADLPAEP $G T T G M Y I S F N D G K N W N P F Q L N L P Q V P$ ADGGAQTSFDAGENWSTY$G D G G D Y M S H D R M A N W R F M A N$
$F D G D F L I S K D G G K S F M K M A K$
$F D G D F L I S K D G G K S F M K \quad G A K \square P S F D N W W V S \square Y S F P V L A P$

QUERY
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ANGNRLVWSTSDKGVHYSTGGNSW
PHNPNRMMYGTGATIYGTNNLLNW
STD
$P R D Y G R V Y V G T N G$
PFDSDRMMYGTGATLYGSDNVTKWD $V W L A G A G G L Y R S T N$
PFDSNHLLYGTGATIYGTSDLTKWDS
ADRGGLLHSTDGG
PFDSGHVIYGTGSGLWASDDVTAADR

P D T Y G R VY V G T N G
AGGGQGLLHSTDGGRT
$P R \nabla Y G R V Y V G T N G$
PFDSNRMMYGTGATVYGTENLTAWDS
RKNPEKFYGFEAGTFYVSTDGGAT
PFNSDRMLYGTGAT $\square Y$ GTTDLTKWDS

$P R V F G R V Y V S T N G$
$R V D P K T F Y G F K S G K F Y V S S D G G A T$ PFDSNRMMYGTGATVYGTENLTQWD $P G R T G D \square W \square S L G N G L Y R S T D A G A T$
$P G V A G E V W L A A G G G L L R S T D$
KKNNS FYGASGSKLVLSTNVG
$P Q D P N G V Y A G S Y G G L H R T R N I T A W P Q$
$P G R S G D L W L S W N G L Y R S L D$
$P R V Y G R V Y V S T N G$
PRLYGRVYI ATNG
PHDSDHWLYGTGLTLFGGHDLTKWD
KRNNTVFYGASGSRFYRSTDAGAT
PYDSRHVVYGTGATLYGTRDLKHW PDVFGRVYVGTNG
PRIVGRVYVGTGRGDFYGD
PFDSNHWLYGTGATUYGGHDLLKWDSN
PFDSNHADFVTGYGПWASRNL
PYDSRHIVYGTGATLYGTRDLKHW
HEDDLVMSTMGRGFWLLDNL
$P R \nabla Y G R \nabla Y \square G T G R G \square F Y G D$
KREKDLVVATHGRSFWLLDDLTPL
PDRAGALWLADGGALWRSSDFG
PREHDLVIGTFGRAAWVLDDDMS $\quad$ I
PARFGRVY L G H GRGD
T QVP YR V Y A A
PKKKGVLYAGTERSVWFSDDGKTW
P L K E GLLWVGSDDGL
PREHDLVIGTFGRAAWVLDD I
PENKNLLFLGTDDGLYI SLDAGNWQK
PVNSDIVWANEKGGVYKSTDAGKTWK
PLDAKVVWVGTDDGLQLTRDGGKTWTN
$P E D N Q R M I G D D G G A Q V S F D A G N W$
$P D N P K Y V L G G S Y \square G$
PFDNSSVYFGS
NSEPFYF $\quad$ Y G
DRHPYRVYAT
PTNKNILYAGTEEGПY ITSFD
PDNGNFMIDGNDGGMNI TKDGGKTWR
PEENNLMFLGTDDGLFVS $\square N A G D$
PVDENILWAGTDDGI
PTDGTFMDDGNDGGLNTTHDRGKTWR
KENNLIAATQGRSFWI IDDLT
KNDNLIAA THGRSFWLIDDLLTPQQ

GNEAGLVYVGTGRGVF
PDDPQLFIQANDGGANVTHNGGKTWS
PKRKGLLYAGTETGMYISFD
ERENDLVLGTFGRGFYVMDDYS
PEDPNRMIMGDDGGAQVTYD
TMGRGFWIMDNLSPLHQ
PEDGSF $\square$ MDGNDGG $\square N I S K D R G K$
PRDARFLVNANDGGVSVS LDGGR
PYDNSTVYFGSQF VHKSTD
PKNANII YVGTDNGLYISMDKGKT
KDNNLIVATQGRGLWIIDDLS


UniRef90 K9TH95
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WNNVAVGGGGYVTGLV|L|HPQVPNLGYDRTDMGGFYRWD RSI GPAMSGRITAVDAVWENPNIDYAASAS GGVWKSE QYRLIGPFRGGRSAAVTGVPNKPNLFYFGATGGGVWKTE

GLAD ISP Q Q P D I L Y A A DE T G GVVYR S S



T WQRMGLEKSEH $\quad$ G R I LIDDPRNSDIVVVAAEGRGLYRSN P T A GGESAH $\triangle A V D P L N N D I V Y G G S Y D G F L T R V N$

H QRKP WKV IS G GA G S GL YK T T
WK D WY A VA GGESAF LAFDPDNPKLIYGGTYQGN\|DKWD YEWRNDGPDRGGRS LIGAGSPGRKNEYYFGATGGGLWKTT WR GIG P Y R G GRSVAAVA GVVDNP QVYYMGAT GGGGVWKTT
 GDNHDLWLNPND NSKMINSNDGGANVSN H D $\square \mathrm{W} \square$ N P K N S D $\square \mathrm{MV}$ N A N D G G G S $\quad \mathrm{V} T \mathrm{~F}$

$\square H D \square V F D \square N N S D \square M H V G T D \quad G G V Y R S W$ H A L WIDP Q NPN HLIDD GND G GI D DT Y
 K WREI GPYRGGRSVAVA GSVARPKEYWMGTTGGGVYKT T TFQPVSTPHGDH HDLWDDPEDGNRMDIGDEGGAQDSF
$\begin{array}{lllll}V & M & R & S & R \\ I & F & R & T & T\end{array}$ WS DVT P EK GRFGY GVSVQMGRPDTVIVSTPHEQIMRTTT KYRLI GPTRGGRVTAVTGID DAPLI YYMGSTGGGVWKT $\square$ RWESAPGGEG
 GHGDTHDLWWNPNNNQNMDLGDDGGGE!SF
$R Q \prod G P A M S G R V T D L E P H P T D A R V L Y V G T A G G G V W K S S$ TFKNLGGMHPDIHDVVFDDNNSDRMYVGTDGGGVYRSW

T WK NMGDK S SERTSD IVHPTDSKTVWVSAQGRGLYKTT KWRNDGPFRGGRSVTSTGVIGRPHTYYMGSTGGGVFKTT NWTNMGLPKSDRITSVVVDPRNSDVVWVGSEERGIVYTT TWANVSD GF G GSVVGSVAVSPSDPNVIVYVGSSNFGVYKST
 EFRN $\square$ GPFRGGRSNAA T GVPGNPLRYYFGGVGGGVWQTD TWRN $\square$ GPDRGGRS $\square$ SATGSAARPHEYYFTA VGGG■WKT T

FRNVGPVQSGR $\square$ T D LDVNPKDPTNFYAAYASGGLWRT T G G GEPGY I A P D P LDDLDVFYAGTNNGGGYV
SFRS $\square$ GPAFS GR $\square$ A D FA V NPDNPSEFYVATAAGG VWKT T
$G \square A \square S$ A A N S S K $\square Y$ A $\square S$ S K N G L Y A S E WRSDGPFRGGRVVAMVTAHPSNAHTFYFGAVAGGVVWKTT WRLIGPFRGGRTRAVSGVPSEPNVFYVGAVDGGVWKTN

VF LATAS GA IQAQA $R Q \square G P A M S G R \square T D L T G H P S D G K V I Y A G T A G G G L W K S V$ H D L W I S P S D P Q R F II A D D G G G QV T Y
 $Y R Q V G P W R G G R V T A V A G V P S Q P D T F Y M G T T G G G V W W S T$
 NWEEMHPPH GDNHDMWDNPTDSQLFDQANDGGANVTH TWQHMGLPDSHH $\square G R$ R LI NPNQPDEVI


## $\square 1$ D VA M VP T N F NVQ Y A A A S N S A $\square \mathrm{Y}$ K S $\square$

$Y \bigvee W D S V A \square G G G G F D T A V I P S R A A P G V A Y A R T D V G G A Y R W D$ GAPGGDDYRDLWDDPTETRXMVLGSDQGTNVSLD GDP T GDDFH QMW $\square$ D P TEPSRQ L LGVDQGA V I T L A 1 A QD P H DENT L Y Y G S Q
 $Y R W A N V S G G G G G F V T G V Y L H P R Q K D L V Y I R T D V G G F Y R W N$ KNI GPSMSGRVVDLAVNKDNPTEYYVAYASGGLWYTN QYRAVGPTRGGRVTAVAGTAMEPGTFYLGATGGGUWKTT



GYSAGGDNHDDWLDPGNPDRIMVA HDGCAS ITLD
 HGLWIDPDNSNYLVNVNDGGIVISY


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 NNGTTFTP LDNAQ
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UniRef90－T1C313
UniRef90－А2ТРН UniRef90－UPI0003B32725 UniRef90＿UPIO003733AE7 UniRef90 C1ADR0
 GEGNPRNSAGIYKSDDGGKTWKLMGLEKT SAGLSKSRNG DNTMQ】SVDGGKTFTRMNEKHKHGDN
GAT $\square$ FGSHK LTNWDKNEKFTLSS LTSYGMEETAVLGLT
NHKYGDFKPYLLVSRDRGRSWNSITTGDP G I GYNGGASAILKSSDYGRSFTKUSKQFKVHGNGMGRGNG GAQQDNSTDRIMSRTYGGADTEKDWEPTAGAESGY

TYYMGSTGGGVFKTTDNGTTWNNDSD
SFLAGGAKSGIYKSTDNGISWKQVKTGDPSGDKGK円G
PKKLYTFSNHVHVTENEGQSWKLLSDDLTRNDPTKLVSSG ESDSDKELGGLFVSSNGGENWSK SSDHSLVQRAWYHGDH
FYFGATGGGVWKTEDGGQTYENISDGFFGGS $\square G V S K S D P$
GETQ $\square T \mathrm{Q}$ GD GVVKKSTD GGET WRDL GPLKET
GEHMTSHGDGVYKSTDGGKNWDYLGLENSRHDAD DQ GGTQDNSSQI
GEAAPRNSVGVGRTVDGGKTWKFLGLEKTE
GQQDNSA IAIVSRTNDGGDDWK DWYSVAGCESAY
FYFGAT GGGVWKTTNGGRSWENDSDGFFGGSDGVSKSDP GHPYR $\square Y$ S GQQDNST $\square A \square D S R V V D N G \square G E M H W D V M R A G E S$ FYMGSTGGGVWK T E DNGIH WKNDSDGF FKTGTV GQQESGSVGITSRGNDGQUTFRE WHPVGVEEYGY GTAGGGVWKTTNGGDSWKNVEATMSIGAVTDDPGHP $G L Q D N G A W G G P S A T Y D N G S Y$ S GEGNPRNSYGVYRSLDAGKTWELMGLEET GEFNVSHGDGMWKTTDGGKTWVNDGLNDSRQDAKVRVHPT GAQQDNSTVR\RSRSAGAGITERDWDPTAGAESGY TDWVGTDDGLI HVTRDDGKTWNNVTPPDMTSWSKVTQDEA
$N P D H A T F T T G Y G G H E T F N L T D A D R G K P V I W H A M A T G D E E S$ GSASPRGNRGIYGSTDAGKTWKDMGLDDTEAQDGKDQUHEG
 QDNNSFGCPAKNKWTNLTNADCFVTMG GGQQDNTSVVIASRNNGYGDTQTDWFEGPGCESAF GAA G G GVWKSFDGGATFKP GE $\square W T R N S T G L Y K T T D G G N N W D E V$ PGFEKSERU FYFGATGGGLGWKSTDAGSWWGPSSSPGGVEARDWNRGDG WSRQTGPGAGIHTSDDGGETWQELKTGLPAGNMGKIG
GEHMTSMGDGVYKSMDAGKTWTHDGDEKTYHDSDVIDHPT WFNSGGNNSALFKTTDGGKTWNKIHNGFPKGQLGRI
D LWQSSEARGVYKSSDGGASWQKVLFANEDAGATFDPGNP GEPWVRNSTGLYKTNDGGKNWKLMGFKDSERDSEVIVHPK


GETQLRGNNGVWKSTDAGKTWAKTG
G S GGVWKTVNAGTTMEPV
SQVDPKSSQRLWATRDGGRTWMNLSGDLTRHAPLDDTH HI YATGGLWKTVDDGTTWTSLLFDGQSAFGDGSFAHDG GENNNQRSDGVYKSVDGGKSWKHMGDKNSEH GGMDAVDPR GSAS GGI WK T TN N GVT WTPMFDKQSVGDIALEPGNP YYMGTAGGGVWKTSDAGNTWESISDNFFGGSIGVSESDP $T \square Y S R V G D T E D G G K S F T Q L L P Y Q G V H P D H$
GEACVTHGQGVFRTSDGGRHWESLGLSDSRH $\square$ AR $\square R \square H P T$ GEGLHRPDDGIYKSTDAGKTWTRLGLRNV QQF
 GETWVRNSDGLYKSVDGGSSWNKVGFENS
GAQQDNSTVGIRSRTS GSGDTERDWWPDAGGESGY
GENVGGRHDGVYVSHDGGANWKNMGLKQT
QDNYNWCGPSASRHNRGITFNHDWFQIGGDGFDA $D P$ GH $\square$ GSSKDRSNVGワWKSVDGAKTW GLYLGEWKGAILRSSDQGKTWQKTPDDDQVGGNADGRGSG $G Q Q D N S T \square C V P S R G \quad W G N Q N V L G G L Y G D A V G G G E S$ GMYWDPNPGSILRSLDQGKTWLESPLPFKVGGNMPGRGDG SRSPYSVQNVNAWLI EAGGCETGPAVPKPGDPDTVYANCK HFSGNGNHSADYKSTDAGNTWTKKISV GEGSGFPTGEGV
GLQDNNSYCGPSNSLDAGDT WYAVVYDDDGQWADPDPHDP GLQDNNSYCGPSNSDDAGDTWYAVVYDDDGQWADPDPHDP GSVDGGVFKTTDGGVVWQPLFQHEPVGALAIAPHHP DS QFRRPAEAKKKKDSKMNNFDKTNGFHEKHRAPNVKQMV G $\square$ KYNEGRTAI LRSRDAGKTFD $\$ VSAQFKTHGNGFGRQNG GAQQDSGTAVVPSRTNHHE DDARDWYTVSQGEAGY

PNASGVFRSDDGGKTWQFMSNQNQ
，
R P T Y F QDSGAVALPSRGGGD G $\square$ TMAQFHE $\square$ TPGGES
GTDDGNLQQTEDGGETWTNLASKLPGLPKASWDPQ\

 GSDGLRSNKGVYKS DDAGNSWSPVGLERVGQDGALILHPE E WQQFGGSDGG■YKSTDGGTTWKQLTAGLPPIIEAN QDGYSYK GPSNSRQGYIPLGLWKGVGGCES G GMDS G S D NGVWMGPHDYEASPGWQQEGKYPYDNLIFGGDG SMQDHGSFKGTVDLSRGRDSIQAVVNERAPGGEGTSH

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UniRef90 1 T1C313
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140


160
 H T I A F K K K D P D YL L V G T D G G L V Y E T F D D L T K N WR F I E N L SPPQGPHLLSVVGDVGGWRHDNLDVAPSKAFLTPS WRLVQDHERADLMFVGTEFG VFMTDNAGKSWEKFS E K L QV D P VN G K L L Y G T R A D GMF K S M D E GL S WQ H L D G L P A VVAD PLNPDVVYGGNYGGYLSRLDHKTGENRAITVWPD S SVA GTA Q NADLYVIGTAGGGVWKSVNGGATWKPIIFTKEP GAI A V S E S DT N I VVVGGSMGD GVVYK M M A GK T WM HL
 H DLL W I N PKNSKNMVI AND G GAAVS Y N Y GK S WS P P





 GAIAVSESDPNIVIVGGMGDGVYKSEDAGATWKHI
 FRVLPMP T K DVLYSEMMQGADNVWRYDMKRNYTKVKPLPA FFVVKPDPSDHNDI YGNYQMNGLTRVDKRGRGDRPEAS LHE
 NPELVYAAVQGHVWGPNAERGIFRSKDGGKNWQKVLFRDD VV AD P L NP D IVYGGNYGGYLSRLDHK $\square$ GENRAI NMWPD
 $N P D L V Y A A V G V G N I F S P N P E R G V Y R S Q D G G K N W E K V L D V N D$
 G T A FDPNNP EVMLGGCYQGLIEALDTRTNERKDVMAYSS PKDPDNTIWVGTGETWYK ND GGKTWEKV



 $R I L$ YAS T WNVHRTPYGGPGSDLWKSSDSGETWKKLTEDPN



A R VRDD PANCDTAFVAGFGHYDFKTTDGGKSWRKVLFRDA GAVALDANNSNTVWVGTGEHGGYKSMDGGKTWTNM
 KTIWVGSGEANNQRTSYSGTGGFKSTNGGKTWTNM $N S D V V Y$ VA A T GP LIWSA G G DR G L Y K T T D G GENWEK I L D $\square$ S $\square$ DVI YAGTGESNVRNSVSFGNGIYKSTDGGKTWAYL

 S Q M A V D PTN PD RVF VA A A GHPYYRS LDGGKTWQKVLVYVE $N 11 W V G T G E T W T R N S V S D G D G L Y K S T D G G A N W K K$ DI I Y A G T G S S K $\square R S N V S I G R G V W K S V D G G K R W Q F \square$


 DRLIVDPKDGNVLWYGSNQEGLWKSTNAGASFSKVNG GYVAPDPRNPDI YYAGSYGGLLDRYDHRTGQSRTITVRPD ERLAVDPNKNSIVYFGARSGNGFKSTDFGATWKAVSSFSS GRFAVFDKNTGTERSYYVGATNMYGQN PRD
 EI L Y VGTGEADMRSDLSTGGGLFRSNNGGATWQAD

 E R L A V D P A D GKR L Y L G S R R D GL F DS S DA GAS WQRAA GLD T
 GMIA PD P D DP D IV Y G GNVDKLDTHSGQTR DVDPTULA YPA QASAFDAGEVWVVANNYRNNDFYHSKDFGKSFTRDADDSK
 GRIVINPNNPNEVTDGVTGHLYYKTTMGGKTWKNTLFDNE D H NTVV F VA G $\square G Q P F Q A N S E R G \square F R T R N G G R S W E K V L F L S D$
 GFAQPDPFDNDIVWSGCYDGGLQRYNAKTGHARDVRVWPE
 S


## UniRef90 K9тн95

UniRef90-12EU18
UniRef90-FOR9N3 UniRef90-A0АогзС1B6 UniRef90_G1X5T9 UniRef90-B8KK89 UniRef90_UPIO0037EF540 UniRef90_UPIooo3F6BF33 UniRef90-E6PF57 UniRef90_UPIO00476C6B6 UniRef90-E4TMS4 UniRef90 A4ANS0 UniRef90-UPIO00363C5C0 UniRef90-СовНт6 UniRef90-UPI00047C76E3 UniRef90-A3HSZ3 UniRef90-UPIO00377002F UniRef90-UPIO0036E4A1C UniRef90-UPIO00360986B UniRet90_A4ANC1
UniRef90-A9DN06
UniRef90-UP100047D8CAC UniRef90-COBID2
UniRef90-F8ELD1 1
UniRef90 1 T1C313
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UniRef90
X5DXX7 UniRee90-UPI0003666B32 UniRef90-UPIO00409686C UniRef90-W9BXA3 UniRef90-A4A7G7 UniRef90_UPIO003639440 UniRet90_C1A6U2 UniRef90-W5X5X2 UniRef90-UPI000366AA62 UniRef90 UPIO003B77DF2 UniRef9O-UPIO00047E854C UniRef90-A3HTL1 UniRef90_UPI0002D9930E UniRef90_C1F513 UniRef90-A8UML9 UniRet90_UPIOOO2F9C157 UniRef90_M7X936 UniRef90-UPIOOO3737012 UniRef90-UPIo0047BF57E UniRef90-C1AED2 UniRef90-UP10003B50B5B UniRef90-F4QTQ7 UniRef90-UPIOO03B48581 UniRef90-S3DH18 UniRef90_B8KHV6
UniRef90 10 WJSS UniRef90-E6Q0V7 UniRef90-TOZUO2 UniRef90-FORHW3 UniRef90-UPIOOO4792454 UniRef90-T1WC00 UniRef90-Q01WK1
UniRef90-Q022C2 UniRef90-A0A023NRU8 UniRef90-UPIO003FE488C UniRef90-UPIOOO37BB4C0 UniRef90-K9WBF5
UniRef90 UPIOOO47C8587 UniRet90_UPIOOO36E2835
UniRef90-WORNB4 UniRef90 O01 $\times$ N3 UniRef90-UPIo00381A905 UniRef90-13YVD4 UniRef90-UP100047AFCC6 UniRef90 UPIOOO376A156 UniRef90 UPIOO04175EBD UniRef90_E6Q316

PSESKDGI ${ }^{170}$
180
KESKIGILIAAFDPNQANQIYASVY GDRLYESTDGGTT K SGVADMIMDAKNPNKLFVSGGEGSGLYVTYDAGKS NSSAGAVDLTLDPNNPRVLYASGGDGSALWKSTDSGET TQYYKVAVNSTQGGPSRTDNLHGDQNSDWK VLNWDGHQP AGMPTDSDRDIQDQRRENDLVAA SGGRGFFVLDDFSAL AGMPTVSVRDVQUQRRENDLVAAMSFGRGFFVLDDFSALL
 TGGETRAGGVADDPNDQNVLWVGTGEGTGLYKSTNGGKT GGTGPHYYQEIEASPVNPDLVYQMDVFFGHVTKDGGKT NMPEWSMDNSIEPSAYDEGTCYVAATRQPYLFKTADFGKT NRMATAQFYRVNTDNLFPYNLYGGQQDNSSVKDSSSGGHN
GLPASREVPRIVIDPTNPDVVYAAVTSERGVYKSTDGGKS GLPESRHVPRIVIHPTNPDVVYAAVTSERGVYKSDDGGKS TGUKEG\|INSIEESPHDPATAYDVMDFGNYIFKTTDYGST

FSGAADLSMDPSNPRILYASGGEGSGLFRSVDGGEN KGDSPNRWNWVIISPHSHTRLYFAAQH VYRSNNRGDS K TGVADMAMQPGNPNKI $\square$ ACGGPGSGLY $\square T V N S G K E$ LALGNNWNAPIISSPHDRNTIY GHGNVVFKSTDSGNS GLKNSRHDPRMAVHPMNSDVVYAGVMGNRGVYKSTDGGKT GLDNSRHDANIQIHPTQPDII YVAVQGDRGIMKSTDGGKT GKYRFVRTVPVLFSPVDKKTLFFAGGNVLFKTLNGGSS GLNQVGQLGAMAVNPDDPSNVFVCALGDRGVFMTRDGGRT KGSADLRFNWMATSTHQPDRFY MGSQFLHVSEDMGDT

PVYRFNWSPMHISPHDPKTVY TGGNYLFRTRNGGQN QMTGVGDMVMDPSNPNKILVNGGPSSGLYDTMDGGKN NPMGAQWNFPVFFSPHNPKRLYAC GNQLFVTENEGRS GDPQGAYVNSUKEDTQAKGLLYA STELRVYVSFNDGAQ HFGNTTGVAAGDLAPLTIVRVGASGGNRGNIGYSTDGGKS KLPYNGCIDLVMDAKNSRIIYADGGEDGGVYKTTDGGDT | GLDYNKHVSRVVASKYEKGTVYLTLNGTDYMYKSTDYGQT |
| :--- |
| $P A M R W N W D A P L I D S P H A N T R L Y F$ | पNDANNWNAPIVSSPHDPKVIY HTGNVVFRTRDAGDS GFDKSERTSSI EITSPNSSDMYVWGDSEERGVYKSSDGGKT GPGTGVSDLVMDLTNPNLLYASGGEKSALYKSTDGGKN

 GGTGPHYYQEIFADPHQFDRVYIASNYSK TVVRTGASSLSMDMTNPRDLYASGGENSGLYKSTDGGDT MPAAPRGIIGVTVSPVNTDRVWAIIADDGGVFRSDDAGES NTGLADMAMDAKNPEVIYASGGKGSALYKTTDGGKT ■TYKWNWNAPLMDSPHNKTRLYMAA GPHRGGRTVGAAGVPQQPGTFYAGGNPNGGVWKTTDGGRT GPHRGGRAVGAAGVPGPGNFYAGGGPGSGLFHSTDGGET GLEDSQHIGEI IVHPENSDVIYVASGGDRGFFKSADGGQT DMPDFGRVSQLDASSHDAGTVYMSVDRAPYIFKTTDYGRT GLPESHH1SQVIINPKNENVVYVAAMGHRGIYKTTDGGKT H GLKDTRHVSRIVINPKNPKVIYAGADGHRGVYMSSDGGKN GLEDSEHISRIRIHPKNPDLIYVAANETRGVFRSKDGGEN GQFYHVNVDNELPYNDYGGMQDNGSWTGPAYVWRRDGIDRN

NPETGATDLVLDPFNPRRLWASGGPGSGLWRSEDGGNS
NTGGNDVRIDPKNPQIVYAFSGPEGG1YKSTDGGST GFEKSERTANI VVNPKNSNEVYVAVSEERGVYKTTDGGAN AGMPNVGCSDI MMDSNPDVLYASGGLNSALYKTTDGGKT
 EAYRFTGVTDVVIDPRNPDIMYAGGGPGSGLHKSTDGGNT TL PATAFALEMASDDPKTLYAAMWHGGGLYKSVDGGDT NPMGAQWTFPILFDPHDAGTLYV TSQHVWKSRNEGQS YTSDPVGITAWITFDSTSPRIFVGVVDAGQSVFKSEDGGST LKYRFQRVAPVAVSPHDPNVVY

## FKNMSS WESPTGFAPWNPHTTWF

GGNVVFQTTDRGBT GYSYGYYIGAGIVVHPKNKDTVVAMGTRGVFRTTDGGHH GLEKTEHITGRIVVHPTNKDEVYVAGVPDRGLVKSNDGGKT ATPNDVGUNLVVPDPASVVAGRAFGSVGPNLYRSDDGGAS AKYRFPWTP PLVFSTTEPDTLYF GSQVLLKTTDGGLN LDASHTDYHAFWINPKEPR VF TGHDGGVDVSTDGGLS LP TFSKRDTKVLYF ANQRLYFSDGGDH

 AGYRWHWNFPLAFSPHTKHRVYV GSQFVHKSDDDGQS



## UniRef90_K9TH95 UniRef90-I2EU18 UniRef90-F0R9N3 UniRef90-A0A023C1B6 UniRef90_G1X5T9 UniRef90-B8KK89 UniRef90_UPI00037EF540 UniRef90_UPI0003F6BF33 UniRef90_E6PF57 UniRef90_UPI000476C6B6 UniRef90_E4TMS4 UniRef90 A4ANS0 UniRef90_UPI000363C5C0 UniRef90-C0BHT6 UniRef90_UPI00047C76E3 UniRef90-A3HSZ3 UniRef90_UPIO00377002F UniRef90_UPI00036E4A1C UniRef90_UPI000360986B UniRef90-A4ANC1 <br> UniRef90-A9DN06 <br> UniRef90_UPI00047D8CAC

UniRef90_COBID2
UniRef90_F8ELD1
UniRef90-T1C313
UniRef90-A2TPH3
UniRef90_UPIO003B32725 UniRef90_UPI0003733AE7 UniRef90-C1ADR0 UniRef90 UPI00040F2AA6 UniRef90_Q026P4

## UniRef90-W5X3Z0

UniRef90-UPI0003B47E08 UniRef90_UPI00037D055C UniRef90-Q01RZ4 UniRef90-F4LOL4 UniRef90_L8JS11
UniRef90_G8R011 UniRef90-A0A023BVJ1 UniRef90_W5XCC6 UniRef90_U1J9U2 UniRef90_A0A024FFR4 UniRef90_UPIO0040A23CF UniRef90_B8KIQ6 UniRef90-A1ZF54

## UniRef90_X5DXX7

 UniRef90_UPIO003666B32 UniRef90_UPIO00409686C UniRef90-W9BXA3 UniRef90_A4A7G7WN PLIPNSPSHAF
220
230
240
WNPLPNSPSHAF KRDGDASDST WKKL S GLLP E G DYGRI GLA S C R S Y P N RVY ALI E A
 WHIHASAGS WNGGRAQLSSNGDFVVWAVNNGLYVSANEYP RELTGDALEQEATLFETRDADWYFPRKVLGARKRGSQGDD FTAVSGGPSALM WEAISPDLTRNDAPSGGVITKDNTSVEYYGTDFTATES WARV GLT LTTRH $\square$ SRIAIDPKNPQHV WKNI LS FDYLGTGREKHSDNHALWDDPDN GKHLIAGSDGG WEK T N G $\square$ KKEHFTRVVREDPKRKGLLYAG WSASAGGESAF LIAFDPDNPRYVMGGSYLGTDEDLDTNWNA WKKV LFSNSDSGAFELVMDPSNPRNLYASTWRLNRTPYS WSKIVNGDNGDNTFTRVVREDKKV
WT DLPGMPEGP $\square G K \square G V T V S P A N P N R V W A \square V E A$
 WKKLA GLDKGDLGRMGVAFSTNKAEIVYALVEA WEVVS PDLTRNDKSKQGPGAGPYTNEAAGGENYNTDMY

 WQVISPD S LTRETYDDUPKSVGVYTREEMKKMPRRGV WKKVLY L NSHTGCSD DAFQPGNPKVLIAGMWPLQRFPWL WKVI SNDPKKQEKNSGGLSADNSGAETHTTMDTAAESPD N WEI I SNDPEKQKDSGGLITMDNTGAEDHCTI LTIAESPVQ WT KQNGDPKGDDGRMGLAFATNDPSRVYADI EA WTEDTRNPGLPKGL WGNIGVTVSGGD WETI SPDLTTNDASSGGADTKDNTSVEYYCTIFTATES WQPLQNNMPVTS DRDVVVHGDDLADATHGRGFWVMDQMTA
WNPTKSAPTGAREGHI AVSADGKTWVWSLRNGAFTSDRGD WKQLKGGLPTGVVGRV GVAVSPVNPER W $\ \mathrm{D}$ I S GNPGGPVNVIREDPKNKDVLYVGTDGVYVTVNSGK
 WNKI HGFPSGK DGRDAFAMAYVGPSTGCGDLMMDPKDPST WKKIHGFPSGKDGR WKKISSDPAKQDKESGGISTDKSGAETHTTUFTDAESPQD WT PI STKRKHVDDHAFAFHPTDPDFVLDGSDGGDYMSHDR WDKMEGGLPDAFGKSGDSVSRANPERVFSVIEA
FKSLGSMHAD $\square H D \square T V D L F D S N R \square Y V A T D G G L Y R S W D S G N$ WEKI NSDSRAWYYSRIIADSQDENKVYVMNVSYATSTDGD



 WTKTLGD EAFTGVTDDADDPRNPERVY WTKVVNGGSGFPTSNGVGRIGLSLFPGNPNGVYASVDNE
 $F R K V K G M P G G D D G R D G L D V S P V N P D V V Y A V V E A$
WQRI LIYDDDRHGVADMDINPQNPNIVYATMWRFERK WDKILYVSDKAGAGDLI DDPNNSR@LYAA
WQEVSFGDGFDVVPHPANSRYGYTMSQAGNVSRFDKETGH WT NLP GLPQGPLGRDGISASGAQEDLLYMSVEAA

WKKVLF $\square$ NETLGAADLEFQADDPRVLYAAMWHG $\square^{R R G R}$

 WEAI SPDLTQNASRDTITIARNDGISQWPSUVALAESPKQ WTKLAGGPTGLFGRANIGVS
 WS WV S GE P


 W K L VKF DS DKA GF VDVA DHPKNPNVLFATSWERRRTP F T PVA G GPD GLMP QRAALDGAGKLVITTYANAGPHP WQEIS G D LT GDT RK DK T P DA GP V M T A NAREA GYGVIYT IA
 WNKWEHGKAVSTYDMT DQEREA DLVI GTFGRSMWVLDDDR
 WS KI E GSPQQAQR
WSKIS T P T S GFP T GNGVG $\quad R \square G L A D F D D N T V Y A V M D N D$ WDKVTKG GNGVG
 WSAVRGAPGGDDYQKSWDNPPNIIFLVADQGGVLSANRGE
 WT A I S E DLT Q G GK P GNVA
 WTK SS TPES GFPT GEGVG

UniRef90_K9тн95
UniRef90-12EU18 UniRef90-FOR9N3 UniRef90-A0A023C1B6 UniRef90_G1X5T9 UniRef90_B8KK89 UniRef90_UPI00037EF540 UniRef90-UPI0003F6BF33 UniRef90 E6PF57 UniRef90_UPI000476C6B6 UniRef90_E4TMS4 UniRef90_UPIOOO363C5C0 UniRef90-C0BHT6 UniRef90-UPI00047C76E3 UniRef90 A3HSZ3 UniRef90_UPI000377002F UniRef90_UPIO0036E4A1C UniRef90_UPIO00360986B UniRef90-A4ANC1
UniRef90_A9DN06
UniRef90-UPI00047D8CAC UniRef90_C0BID2
UniRef90-F8ELD1
UniRef90-T1C313
UniRef90- A2TPH3 UniRef90_UPI0003B32725 UniRef90-UPI0003733AE7 UniRef90-C1ADR0 UniRef90-UPI00040F2AA6 UniRef90_Q026P4 UniRef90-W5X3Z0 UniRef90_UPI0003B47E08 UniRef90_UPI00037D055C UniRef90-Q01RZ4 UniRef90-F4LOL4 UniRef90-L8JS11 UniRef90_G8R011 UniRef90-A0A023BVJ1 UniRef90_W5XCC6 UniRef90 U1J9U2 UniRef90_A0A024FFR4 UniRef90_UPI00040A23CF UniRef90_B8KIQ6 UniRef90-A1ZF54 UniRef90-X5DXX7 UniRef90-UPIO003666B32 UniRef90-UPIO00409686C UniRef90_W9BXA3 UniRef90-A4A7G7
UniRef90-UPI0003639440
UniRef90-C1A6U2
UniRef90-W5X5X2
UniRef90-UPI000366AA62
UniRef90-UPI0003B77DF2
UniRef90_UPIO0047E854C
UniRef90-A3HTL1
UniRef90-UPI0002D9930E
UniRef90-C1F513
UniRef90-A8UML9
UniRef90-UPI0002F9C157
UniRef90-M7X936
UniRef90_UPI0003737012
UniRef90_UPI00047BF57E
UniRef90-C1AED2
UniRef90_UPI0003B50B5B
UniRef90-F4QTQ7
UniRef90-UPI0003B48581
UniRef90-S3DH18
UniRef90-B8KHV6
UniRef90_10WJS9
UniRef90-E6Q0V7
UniRef90-TOZU02
UniRef90-FORHW3
UniRef90-UPIOO04792454
UniRef90-T1WC00
UniRef90-Q01WK1
UniRef90-Q022C2
UniRef90-A0A023NRU8
UniRef90_UPIO003FE488C
UniRef90_UPIO0037BB4C0
UniRef90-K9WBF5
UniRef90-UPI00047C8587
UniRef90-UPIO0036E2835
UniRef90-W0RNB4
UniRef90-Q01XN3
UniRef90_UPIO00381A905
UniRef90_I3YVD4
UniRef90_UPI00047AFCC6
UniRef90_UPI000376A156
UniRef90_UPIO004175EBD
UniRef90_E6Q316

Ref90_E6Q316

TKNGLYRSDDGGMKWEKVNDDPKDVT KEKGGLYRSDDGGKKWTQVNQERKLRQ P LVVAHDPAR DYFASHRVWRSDNRGDQWKA IS GDLTSWD FEKVPNDPSGSYTTANDRNHNGLFYAA ENSNFYVSTNA LYVA
$L V V V Y A Q G A G P W G M E Q G A V W K Y D \square A A R K W S D \Pi S P P \square$
PYEDDLLWAGSDDGLLHVSKDGGKNWQNVTPKGMPEW
VVGAS GDPFADSVVRGVYVTFDGGKTWTK
LYASWQHQRYPWYMESGGLYKSNDSGETWKKMKEGDP
$L Y E T F D Q G L G W R H F S N L P G S Q F Y G A Q D L G T L I G P S R T T N V$
$P \square 1$ WS QHEANTYYHGAQMLLRTRDNGVNWEEDS PD DSNNG LN SGGEGSALLWKSTDEGKTWDEISSNEGFAK

NEGGVFRSDDAGKTWKKVNDERKLRQ EKGGVFRSTDGGDHWTQVNDQRLTDG
$E G L I Y V G T$
DDGLI QVTEDGGKTWRKISKDAGVPE KKGVFLRSDDGGFKWQVVNNQPSVNN

 LYAAWEHSRSPWQMKSGGFYKSTDAGSTWNKLDKGLDDVI I Y TVY VNDNT DWVGTD GLMMHDT RDGGKTWTN TTPPAVTAW L $V$ S GG


RSGGLYRSLDGGRTWKKLTHGLPKG
D DGNVQITRDGGANWTNVVANI P
DDGNVQITHDDGKSWENVVENIP
SKRLYAIIEAAEEGGVFRSDDAGATWQRVNDERKLRQ
 $L R Q \| A A Q G S Q L V S S N A Y L F K P G D T Y A V R T G S M N G M P M P P E$
$T W A V A L P A G L R V I D A D G K L F T S S D G G A T F V E K S F T D A G G L D$ VWVIQESHD EKKGGIFMSEDAGKNWKRVNREHSFRQ EWQVLANGDPNCFVWDGI HPRDNT EGLIVVGT LIESSLEKGVIYTGSDGLVYLTRDDGRTWSNVTPKD LYASMWEFRRTAWGNKSALYKSTDGGKTWNKI HNGFPSG LYR QKVIWVGT DDGNVQVTQDGGATWTNTVANDQG L
 $T L D \| V K N D P L S Y H G S L D N E E P Y N D Y G G L Q D N G S W Y G P S K S$ LWIDPDDNERM\|IADDGGAQ ISTDAGDSWT
L V
 NIEAE GKKGGVYRSDDAGETWSQVSSDRVTVA
ANRVYATVE
HRTVAAVMDG
LRAVEKKEPKA

Q W
A WNFRESGPGSG
QEDKGGFYRSTDRGESWEKRSKYSSSG
PWTVSGD TEGGLYKSVDSGSTWNKLS
WEMKRNGYRMDSGGGDSKLFKSTDGGDTWKDISSRTGDPG NKTVRPTHPNTVYYGSQFVHKSTDSGETWEVISPDDTTND $P G K V Q L Y R S E D G G Q T W T A P T T D A R P K N$
P WT $\square \mathrm{T}$ S G
WS FESG
 VESPDEKGVFWAGSDDGLIHDSRDNGKTWDNVTPK

A $\square E L D R R T G A V Y R S S D R G A N W V K G A D A V A G G T$
RGVFYAGT DDGTVSVTRDDGKTWQNITYSLPGFP
ATSGGVYKSEDRGLT WALVVGDGKLTT L EKGVIWAGSDDGLVHDTRDGGANWANI TPPKLPKF LYVSYANGVGPYDGTNGTVHKYD DSKGDWT DISPTP RESADAPGVIWTGSNDGPIHVTRDNGQSWKNVTPRG LAKYLEDANAMLFDTGAEVFRSDNGGKTWTKTHDDYDDGV LD DEGSQGEDWVGTDDGLVQLTRDGGKYWKNVTPPGAN
 YSLIFSGGPGSG LI KSTDAGETWTEV
PSPGRADREGREPMDRGQVWI
$P S P D R A G M D W V G S D T G L I H D T R D G G K T W Q N V T P P G L S A W$
$L R S T A G G V N T D W F T V S G V Y A E S Q D G N M T R H D L R N G T Q K S V$
$V$
LRSTAGGVNTDWFTVSGVYAESQDGNMTRHDLRNGTQKS $P \square R \| F A A N N G E A P D A K \square T A V P A P D A$
TTKMWMNDPSVDNAKPFNVYGGDQDNGSWVGPSRRAGGDS LYVTHNS GVSQY

 SWSNWYNQPTAYHVTADNAFPYRDCGGQQDSGSACVDSRG




UniRef90-I2EU18 UniRef90-FOR9N3 UniRef90-A0A023C1B6 UniRef90_G1X5T9 UniRef90_B8KK89
UniRef90_UPI00037EF540 UniRef90 UPI0003F6BF33 UniRef90 E6PF57 UniRef90_UPI000476C6B6 UniRef90_E4TMS4 UniRef90_UPIO00363C5C0 UniRef90-C0BHT6 UniRef90-UPI00047C76E3 UniRef90-A3HSZ3 UniRef90_UPIO00377002F UniRef90_UPI00036E4A1C UniRef90_UPI000360986B UniRef90-A4ANC1
UniRef90-A9DN06 UniRef90_UPI00047D8CAC UniRef90_COBID2
UniRef90-F8ELD1
UniRef90-T1C313
UniRef90-A2TPH3
UniRef90-UPI0003B32725 UniRef90_UPI0003733AE7 UniRef90_C1ADR0
UniRef90 UPI00040F2AA6
UniRef90_Q026P4
UniRef90-W5X3Z0
UniRef90-UPI0003B47E08
UniRef90_UPI00037D055C
UniRef90_Q01RZ4
UniRef90_F4L0L4
UniRef90_L8JS11
UniRef90-G8R011
UniRef90-A0A023BVJ1
UniRef90_W5XCC6
UniRef90-U1J9U2
UniRef90_A0A024FFR4
UniRef90-UPIO0040A23CF
UniRef90_B8KIQ6
UniRef90-A1ZF54
UniRef90-X5DXX7
UniRef90-UPIO003666B32 UniRef90-UPI000409686C UniRef90-W9BXA3 UniRef90_A4A7G7 UniRef90-UPI0003639440 UniRef90-C1A6U2
UniRef90-W5X5X2
UniRef90-UPI000366AA62 UniRef90_UPI0003B77DF2 UniRef90_UPIO0047E854C UniRef90-A3HTL1
UniRef90_UPI0002D9930E UniRef90-C1F513
UniRef90-A8UML9
UniRef90_UPI0002F9C157
UniRef90_M7X936
UniRef90_UPI0003737012
UniRef90_UPI00047BF57E
UniRef90-C1AED2
UniRef90_UPI0003B50B5B
UniRef90-F4QTQ7
UniRef90-UPI0003B48581
UniRef90-S3DH18 UniRef90-B8KHV6 UniRef90-IOWJS9
UniRef90-TOZU02
UniRef90-FORHW3
UniRef90-UPI0004792454
UniRef90-T1WC00 UniRef90-Q01WK1
UniRef90-Q022C2


NRAYAG TTVDPGDQDRM\|VST $\square$ DYYPGAMG MMFNSI DPDPFKKGGAYVVGTRYKSDDYR S $\square Y \square G P S S G A S D I A M D P A D P N Q V Y$ AGPWTFHSGGPQ $E G V R N Q D W Y V P G G A D G Y A F D P V D P N \square V Y M E I Q N G L L F R L D$


| $\begin{aligned} & \text { R A F Y } \\ & \text { R A WY } \\ & \text { F C F } \quad \text { N D } \\ & \text { R P F } \end{aligned}$ | Y S R |  |
| :---: | :---: | :---: |
|  | YTEI | $\checkmark$ D P R DEHTVYV $\square$ |
|  |  | CASRHDKNTVFAADDNHKTGDFK |
|  | YCRI | WVNPVNENUVYM Li |
|  | EGIVNS I | EVSPHEAATAYVAVMRYKTMD |
| G |  | TVSPLN Q Q V - WA |
|  | NVV | EPSPHDSATAYIAVMGFKMNDFT |
|  | GKA GI | SVSRANSNLVY INSLEAKGEA |
| S K | V S | DAGRFDNNTCYAAVNRIRCDDAR |
|  | GRS A | AFAPSQPETVYAV 【QAKG |
|  | D\PA NTWVYHI | EASVHGEGTAYAVFEGHARGDMK |
|  | K N W Cos L | EASHFDAGTAYAAFDGHRMDDYS |
| R P F Y |  | Y VDPKNENRLYS |
| R A WY |  | YADSKNPDVVYASNV |
| MMW |  | ETDPFQKGTAYFVGTKYK LDD Y A |
| EPQMENPPSGVVAYYWL |  | K S APAQ |
| PRRGGDRMDARAGQDQL |  | Y ATPGRTGDLWTAAFD |
|  |  | FADPSDEHTVYV |

DAYV $V$ QR LASQHDAGTVYVAYENHQNGDFK
LPESMDQSIEVSPHDPGTAYISATRYKFNDFV K $\square G R \square A$ I AI APSNPQ\LYAVLETEKDKD
R P F Y
FSRIVVDPRNPD LVVKGLFGS
LP KNTWVYHI EASSHHKGTAYAVFDGHASGDMN $G \quad \square G V V G K \square G V S V S A A K R E R \square Y A \quad N \square E A A D$ WF WTLGGDGHQP R S WY
$Y M E \square A F D P Q N E N V V Y V$
DGG $\square$ E A R DWHSVG
T Y H NQPTAQFYRlATDDHFPYR\YGAQQD

RAWY
FARLVVDPKDENKVFKMG口N
Y 1 E CADRFDANVVYATFDNLKRDDFK
$Q Q V G G L A D D P H D P N R V F V A M L G H P Y G P N K$
RAFY
Y S R L LADPVEKDRVY I LNNVD
$K M G K \square G L A D S P Q Q P D \| V Y A A D E \quad$ D DRRK
NDFLDNNRFPARYSAKTVKADVKSGKIKPSALADYLEDPG


$R \square G G G D \square P M P$
Al DPEHPNVFYMTS 1
 TVIDEAE E K K D E R R
RPFY FSRIVVDPKNPDVVVKAGLSGS
GLPETM\|S I DASHHDAGTAYFAATRYKFGDFQ
GPHY YQELWASPHYFDHIY LAGV
TGHAFVSEVVPSRF
DAATVYVTVDNHRQNDYQ
RPFY

TK $\square$ T TVEDS
MSSVNYGYGGLSVDLLKPGTDMVAADNSWWDDFK LPKGGRVDSVEPSRHDPAVAYAAVLRYQLGDSK
F F S Y G YYFAQIA ADPNNKNKVYVGGVP
PNGRFETVAPSPLQRGTAYAVEDSHLMGDNA $P G R \square G \square A \square A S N G R \square F Y A V V S A K N$
PAGY
NNSPAVGQFYADNVDDEKPYNVYGGLQDNGVWVGA WT KGRMSLDINLANPDVMYMMIEAAANSTGN SK VGMMEASHFDAGEAWAADDRHRLEDYK


NNDWTNVYGGDGFYY T NFF $\square$ KTNNFQEKYRAANGKNTNPKHVLVALEQSY $R P F Y$ YTN PRYRKT $\square$ SGEP DT DDEMYATDYT DKESS $\square$ ARGVIWTGANA MDFHDWHPVGDEEYGMAAPDPKNPDLVYGGKVTVYNRLTA PKWGT GLANUEPSVYA R V GLDW HPFTDYRYASGCETGPVALHPDEPDVIW WGCYGGA

YKK WVSR VASAFDLGTVYMTQNGKRDDDFA


## UniRef90 K9тн95

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UniRef90_UPIO002F9C157 UniRef90- M7X936 UniRef90-UPI0003737012 UniRef90_UPIO0047BF57E UniRef90 C1AED2 UniRef90-UP10003B50B5B UniRef90-F4QTQ7 UniRef90_UPI0003B48581 UniRet90-S3DH18 UniRef90-B8KHV6 Unireftol-10WJS9 UniRef90-T0ZU02 UniRef90-FORHW3 UniRef90-UPIOOO4792454 UniRef90-T1WC00 UniRef90_Q01WK1 UniRef90-Q022C2 UniRef90-A0A023NRU8 UniRef90 UPIOOO3FE488C UniRef90-UPIo0037BB4C0 UniRef90-K9WBF5 UniRef90-UPIO0047C8587 UniRef90-UPIOOO36E2835 UniRef90-WORNB4 UniRef90-Q01XN3 UniRef90-UPI000381A905 UniRef90-IBYVD4 UniRef90-UPI00047AFCC6 UniRef90-UPI000376A156 UniRef90 UPIOOO4175EBD UniRef90_E6Q316

TQLLYHSRDGGVT WTEKK



DKFFETLDGGKSWNS VVD QG/R $\quad$ VD P N
 D GI Y K S T D G G K S WT KL VG N GLDP A G Y E GL A $\quad$ A P P S D P A RV Y A GGVYRS D N A GK T WK QVVNNN RV H WY Y M E V F A D P Q N E N VV Y V R R TEEVMMDQPQPAPGDAPERYNWDSPVLISPHDHKTLYF
 $G G V Y R S D D G G S T W S H I N D R Q R A W Y Y S K I V A D T Q D E D V V Y V$


RDWE GMDERVPS GRLTARRFDNLNDDLI VQ TFAAVSSDGGKNFDNVGEKNKHDDNHADWDNPKNPDYLLN GTLYKSYDEGESFQVVSKNSRGFYYTDLRIDPKDENRVYA
 $G N V Q V T K D G G A T W T N V V S K D S T Y D A D E A W I V A N N Y R N N D$ E FLLRSLDD GRHFESV P P TP HVDH H DLLWI DPHNP QRMDN VTVWK S E D S G H T WH AFR GAPG GDD Y Q N I WI NP H N S K V I A V
 $M G L Y H S D D F G T S W K L V N S E T R P F Y Y T T L G V D P K N A D V V G V$


 WF RSTD GGKTFKD EPTPHGDNHDVWDNPKNSNLIVA D DVV V S K D G G GK W I A L E E MSKH
 IWR ST D S G S T WSP WA WA NYPA LNRYYR Y V $P Y A Y R T S D Y G K R W T L M T D G P A D Y P V R V V R E D P V R P G L L Y A$

 $N N A R E S V R W H Q T G Q Y P W E S D M G G D G M Q V Q Q D S R N A N I V Y T$ NGLWKSTD GGATWTQMNNDNRPFYYSQVRSDPKNPDRVYF

 $P Y V Y R T R D Y G K T W T L V A K G L G P A F V N S V R E D P V R R G L E L Y A$ | $G R G G \\| G G G T G G G G G G A R G G E$ | $P$ |
| :--- | :--- |
| $P$ | $L$ |

 TKIYE TLD G GDNWTEKKASIKHRVPWW
A EVYYR S ND A GK S WS K Q N E Y S Y G Y Y F A Q $\square$ S V D P N NVDA D TGYYRSDNSGKDWQRMN PPHGDSHDMWI NPDNPQLE LA GPVYVTR DNGATWTNVTPKDLPPGGRDQTVEPS
QKAAVGPGRGGAPAANEPPARTVRTQPLIWSPKDPN LYY



TSTWRSYDGGSTWSAMKGAPGGDDYHTVVWLDPDDPSHM

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UniRef90-X5DXX7 UniRef90 UPI0003666B32 UniRef90-UPI000409686C UniRef90-W9BXA3 UniRef90_A4A7G7 UniRef90- UPI0003639440 UniRef90-C1A6U2 UniRef90-W5X5X2 UniRef90_UPI000366AA62 UniRef90_UPI0003B77DF2 UniRef90_UPIO0047E854C UniRef90-A3HTL1 UniRef90-UPI0002D9930E UniRef90-C1F513
UniRef90-A8UML9 UniRef90-UPI0002F9C157 UniRef90 M7X936 UniRef90_UPI0003737012 UniRef90_UPI00047BF57E UniRef90 C1AED2 UniRef90-UPI0003B50B5B UniRef90-F4QTQ7 UniRef90-UPI0003B48581 UniRef90 S3DH18 UniRef90-B8KHV6 UniRef90-10WJS9 UniRef90-TOZU02 UniRef90-FORHW3 UniRef90-UPIOOO4792454 UniRef90 T1WC00 UniRef90-Q01WK1 UniRef90-Q022C2 UniRef90-A0A023NRU8 UniRef90_UPI0003FE488C UniRef90-UPIO0037BB4C0 UniRef90-K9WBF5

GDGGVSDSRDRGKTWT
GDGGAQITYDGGDTWSTYNNQPTNDWEETAGGESAHTAVD ANPY LVKSTDNGRTWKSTKGNDPEKTL ATAGHYRSDDGGYTWTLISDDSNGFGTPGNN $\square$ Y $\quad$ WR AAD

GVSWDA GS<br>F $\square$ H WTAS $\square E F D$<br>GTEGMY $\square$ SYNDGLNWKPF Q $\square N \square P M V P$ KGGULWRSDDAGAHWRMMT DNTLVDQRPFYFTHIAVD LNAPVMKS DDGGKSFYNDPVPHGD GSQRLWKSNDRGNSWTSVSGDLTTNVNRYKDKMLTSUSES

Y T PA $\square Y$ K T T N Y GK S WT N $\square$ S A G $\square \mathrm{P}$
MGAYTRVVRED H H DL W $\square \mathrm{A}$

NDGGGVVS $\quad$ NGGKTWTEEDYPTSQ
NDGGACISFNSGKSWSAQDN
 NDGGVVISYNRGKNWRFV
GTTGLFISTNDGQNWQPFQLN
LNV YHKSTNGGKTFSTYNAPHGD
GTGGVVSFNDGTQWHPLQNNLDEVP
H H D L W DA
LNAPALKSIDKGKTFQNMSTPHGD NHHLWI H
GSEA YVSFDDGDNWQS LRDNMPATS
LSMKLMESTDGGRTSFYTDPG
GADGLY $\quad$ TVDGGLNWSKFTNNFPATA

GTEGlFASLDRGRTWLSLKNDMPTTA VRD AVVH GDGGMA 1 TRDMGKTWQFV
NDGGANVSTDGGKSWT
GTEGMY ISYDGGTQWKSFQLN LPVVPVTD $\square$ T $\square$
GSRG $\square F R S D D G A A S W A R \square N$ D DDHQWGLVLQ $\$ AGD NDGGANVSFNGGKSWSTQMNQPTQPFYSVGGGESGHIAVD

GTEGLYWTNDGGEKWMKLNVGLPTD
AERGFYLSYDGGLQWSRLQLNLPVVP
GGLIFGSISRDGGKTFKNLGPMHAD
GDGGLYRSWDAGTTMEMVENMPVSQ
 LDNGFGRSTDGGKTWSSLRPSHGD AS QRVWRSDDRGDSWEPISGDLTKNGNVEAGWDVYAMTN NDGGANDSFNSGKSWSTIAASRTNDGGUDWKDWYSVAMAF GSQFVHVSDDMGLTWRKISGDLTTNDPNKTHCTIFTIAES GTYKGYMYRFNHANWPLNPAGSGVEVMKYRFNWNFPTFFS GDGGVYQSFDDG
GTEGIFFTVDGGANWVQLKSGMPT $\square A$ NDGGAClS FNGGASWS T
PGSGLYKSTDGGNTWTH LTKGLPTVEQ
VF D $\square \mathrm{A} \square \mathrm{Q}$
$G \square G R \square G F C \square A$
MDASMKQSLDGGKTWGPVNRQHRHGDN
HALAFK
HQALWVS
$\square D P S I L N A F L R Q A T N G E V K A E D V I K D \square K E K K S T F Q Q L K P A$ GDGGVYESWDRGQTWRFFPN

S THGDYHS $\quad \mathrm{W}$ WD
 FEAYAFHTSNGGESFTRIAA GDGGAAVSLDGGKSWSTI GDQGALVTVNGGQTWSSW
GGLTGSISRDGGKTFKTLGNMHSD
GNEGWFKSADGGKSFTVQNTPHGD
ADGGVYRTWDGGTTMEIVES\|PVSQ
$G T G G M Y V S F D A G E N W Q D L Q L N L P P T P$
$G D G G L Y E S F D R G K T W R H F T N L D T Q Y Y K$
$\square N Q P T A Q F Y H L A V D$

VTDIAVH
 NDGGANVSRDGGRTWTVQSNQPTAE IVQVAVD ASSYPWL GTEGVWASFDGGSAWHKDQANDPVVQVSDLAVTDHDLVI S IS A APWL SFDDGDSWQS FDTTSTADFVSQVGWMVEALADD


 GFGNYFRDDRENDSQKY QQPKHNDGESPYRFNWQTP LL S SSTELQLSEDGGKTSRNAAQ NVHVDDHGI WID A A GVPWL SFDSGDHWQSLQLNDPAVSVGHGIVWTGSVEFD GTEGAAVSFDSGDHWQS $\square Q \square N \square P A V S V R D L A V H G D D L V I$ AGQFFFKSTNRGDTWT
GTKG $\square Y \mathrm{~V}$ S F D DGAHWQP $\square Q Q N \square P M T A V R D \quad \square D$
A S QY $\square Y R S E D M G E S W D R \square S P D \square T$ T DNPDKQNCTDYT $\square$ AES DDSMFATWTSAI EFD


H H SLWVN NDGGANVTHNGGKTWST
 GDNGLYMSHNDGENWMRLKNNLPPAPVYW
GTDGAYVSFNRGESWEVFSKDLPNVA
V H D L V I Q
GAQYLLRTQDGGLSWDRISPDLTTNTPEHDFN
GTDSVYVSKNGGKDWDVL G GNLPST
YVHDL $\frac{1}{1} 1 \mathrm{H}$
GDQGATVSVDGGKTWSSW

UniRef90 K9TH95 UniRef90-I2EU18 UniRef90-FOR9N3 UniRef90-A0A023C1B6 UniRef90 G1X5T9 UniRef90-B8KK89 UniRef90_UPI00037EF540 UniRef90-UPI0003F6BF33 UniRef90- E6PF57 UniRef90_UPIO00476C6B6 UniRef90_E4TMS4 UniRef90 A4ANS UniRef90_UPI000363C5C0 UniRef90-C0BHT6 UniRef90-UPI00047C76E3 UniRef90-A3HSZ3 UniRef90_UPI000377002F UniRef90-UPI00036E4A1C UniRef90 UPI000360986B
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UniRef90-W5X3Z0
UniRef90 UPI0003B47E08 UniRef90 UPI00037D055C UniRef90_Q01RZ4 UniRef90 F4LOL4 UniRef90 L8JS11 UniRef90-G8R011 UniRef90_A0A023BVJ1 UniRef90 W5XCC6 UniRef90 U1J9U2 UniRef90_A0A024FFR4 UniRef90_UPIO0040A23CF UniRef90 B8KIQ6 UniRef90-A1ZF54 UniRef90-X5DXX7 UniRef90 UPI0003666B32 UniRef90-UPIO00409686C UniRef90-W9BXA3 UniRef90_A4A7G7 UniRef90 UPIO003639440 UniRef90-C1A6U2 UniRef90-W5X5X2 UniRef90_UPI000366AA62 UniRef90 UPI0003B77DF2 UniRef90_UPI00047E854C UniRef90-A3HTL1 UniRef90 UPIO002D9930E UniRef90-C1F513 UniRef90-A8UML9 UniRef90-UPI0002F9C157 UniRef90 M7X936 UniRef90-UPI0003737012 UniRef90-UPI00047BF57E UniRef90 C1AED2
UniRef90 UPI0003B50B5B
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UniRef90-FORHW3
UniRef90-UPIOO04792454
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PIVPSRVWLSDWYGVWQTDNF
PTNNDlVYGGSYGGF
HVQPNLLFAATEFG自YYTVNGGN
$P R T Y G R \| Y \square G T N G$
PFDTRSVMVVSGNGDFKTDD
KDNDLIVATQGRSFWVLDDLSLVQQ
PKNANRV GFGVSEMLSVSTDGGK
PNDNTNLDNSNDGGANISFNGGK
P L K E GLLYTGSDDGDHISDDGGNWRK
TKRKDLLFAGTELGMY IS WNGGKWQS PEDNQRMIIDAD GGAQISYN

## ERENDLVGASFGRGFFVLDDYSPL

QDND LVAATAGRSFWDLDDVAA $\square Q N$
PENPKRMI 1 GDDGGAQVTYD
KRKDLVVATQGRA LDWI LDD LTP L HQ
PKNNQUMINSNDGGANVSTNGGKTQQN
KDDDLVAGTHGRGFWI LDD DSPLRQ
PHDPDRIDQGNDGGVYLSTNGGK
KQTNDLVAGTHGRGVII DDDIS
PRENDLI $\square$ GTHGRG』W MDD I S P L Q

K DNDLLVATQGRAFWA $\square$ D D $\square$ S VIQQ
PKRYGRVYVGTGRGVFYGD
LT R LD R
K QMDD LV $\square G T F G R S \square Y V L D D Y G P \square R Q$ $R N N D L V A S T A G R A F W I L D D L G A L Q Q$ $\square$ DDSDRMYVGTDGGVYRSWNGGTT DKTPYNVYGGQDNGSW
KKTNDLVLGTHGRGVII IDD DSP $\square R R$ Q PDDPSHMLESNDGGANVSTDGGKT

 HHDSDKLYA
ERESDLVAASFGRGFY ILDDYSPL
PSNPNRMYATVDGGMYRSDDAG
RSDPDY LLLGTDGGVYESFD $\square$ A D PDKPGYVINGNDGGLNDTYDDGKT TFDPG TTGEEDYRSDDGGKTWS

P $\square$ NPKR $\square$ WQGQDGG $\square C V S Y D R G K W D$ PNNNNRMII A DDGGAQISNDGGN $P V E P N L V F L G T E L G L Y V S F D K A K T$ HQVP P RVY
$\square$ NDSDR $\square Y$ A G T D G GVYRSWN G GT T PNNSMUMVQSNDGGANVSLDGGKTWS NDEPYNVYGGQDNGS W KRDKDLI VATQGRSFWVLDDL

PRDNALLVATHGRALWVLDHLEP $\square$ Q NQFPYRLY
PFNCDEM $\square Y G T G Y G \square W M S E N L S K$
THGRS FWVMDNIDVLRQ PFDSNHWLYGTGAT $\square Y G G H D L Q Q W D$ RDD LVVATMGRAFWVLDDISALRQ YQKPYNVYGGQDNGVWM $P Q F D D L V I A T H G R S \| W V M D D L R P \square Q Q$ PVNPDRMI I GVDQGASISVDGGKT $P H N Q D I L Y L G G N K L H R S F N$ PNDPQRWFLANDGGIA ATFDAG SADPRAVWVTSGNGVFRSADIEA ATFGRGFWLLDGMEPपRQ
VHGSDLVIATHGRGFWDMDNVTALQQ
$P$ VADQT $T W V G T D D G L Q V T S D G G K N W Q N$ $P N V S G K V W M T N G F G I W Q T D N I$
PNLPGHLDNGNDGGVNTSDDGKNWFKN

P LDVVNVLWA GTGDGLFTTDGGAKW
ERFDDLVVGTYGRGYYILDNISPL
PEAKDLVLGTHGRSMYI AD
RKDAKTLWAGTDDGVHITRDGGGTWSE PRDNIIVIATHGCGMWAMD
PKMS GHLINGNDGG $\square$ N $\square$ S D D GANW

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UniRef90 UPIOOO46572AA UniRef90-K9RF42 UniRef90-T1BAM5 UniRef90-UPI0004703F3F UniRef90-A1ZWV9 UniRef90 - XOZEHO UniRef90-G8NUS8
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TFRAAG LASSDR DAR DVIDPKDSNTVYVAAGERGVYRTR WQFVGGCESGFAQ DVPFNSNLVWSGCYDGGLDVT D WTNVTPLT WGNTSGVDIDPANVNRVVISTTGDFIYFST A L A I D P N D T A V L Y F G S R H H G L QR S G A L A ES P LDE P G TL WA G S D D G L V H D S Q $F K N D G P V M S G R V V D V D V V P C N T T E F Y V G Y A S G G L W H T V$

$R Y R Y \square G P$ VGN R V $\square$ A A VGVP G D P N $\square$ Y Y A G A A S G G $\square F K S A$ VAMSATNPNLFVVTVS QGQPLRTK


H D WHPVGADEYAY HS LIT FDP TDANHLLEGND GGLDYETY K F R F IGPEGN RT $\square$ AA AAVPGDNMISYVGAAS GGGWKTE

Y QWDAVSMGGGGF
NAVIPSKTE QGLVYARTAVGGAYRWD
KWQF LGPKNS GRMTDTAVSPN NRDADYTASAS GGVWWKST $T L Q N V G P V M S G R V V D V A V N P E N P D E F Y V A Y A S G G L W Y S N$

 $R N V G P T N S G R \square V D \square E V S$ QD F K T Y Y $\square A A A S G G V W K T E$

QN $\square G P S M S G R V V D L A V N P A D P T E F Y V A Y A S G G L W H T T$ 1 N A I T V D DH N P K H L V V V A E Q N G G I Y R T T


NWSNVQ
SGNIKDFKLKPGDPNTVYAVTNSR FYKST VWUHLGLEETHHI SQVRVHPTNPDIVFVGAFGHGVYRTQ
 $F T Q I G P V M S G R V V D V A D N P D K P T E F Y V G Y A S G G L W Y T N$
 YNWKS $\square G A P G G G Q V S$
$D F A N P Q T P E \| M L L A A D Q G A V V T V$

KHASLGGGGYVTGIITHQKSRDIYCRRTDVGGAYRWD Q WT H IGGAA A TR R I G A I WIA PRNPDEVVVVA SNARGIYRS S


YE Y G N L K $\square$ G G G GF VT G $\square$ T F H P T D S K T $L$ Y $\square R \mathrm{~T} D \square \mathrm{G}$ G $\square \mathrm{Y}$ R Y D N WVER GP GF G GRT R S VVVVHPN DVVNTVWA G SVVGG GDWK S N NWTQ $\square \quad L S G R V D D V V F S P S G D T V F A V G S G \square G \quad R R S \square$


SWSN $\square$ T P D G G GCASVKVCKKQNQAY TVVMA DADKFVYRST I WVDP $L$ NS N I I I VGG|ID L WRS S WQFAGP $\square$ NGGRVT DVEMDSGTPGTILVGAAAGGVFRSN $G P G T G A W V V P Y A Q A Q D V S N T F Y V G L S G G T V K K S S$ WK QVGGGDG IVCLIDDANPSVYYVTSQNGYLLRFT WT DITP GGSKS WWAVAVNPA DANQVVAMDHGGRCFVSN G Q GWF DN T L T DD P T D A SVI WVG AVE V V M R S E NWELVGPNGNGRVVS I AF HPTDPNTVIVGAPSGGFWK T T


T WAS VKF G G G GYVT GLVFHPTSANLLYARTD $\square$ GGAYRWN K WA QRGPHNGGRTRAL AIDQANEQVILAGGASGGMWRSD
 TWFPLGPY

 TWSFSGGLSSMQNI SCITDNPSNPQEVLVGVQGNGIIGTT





GQSFYTLALAASPTDPNFLLAGGVSQ WAST $V L A B G T R K G G F L R S R$

UniRef90_Q1IM78 UniRef90-Q024J1
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UniRet90-E3T6HO UniRef90-K9DLR7 UniRef90-W5X6H4 UniRef90-Q021G9 UniRef90-W5X6M8 UniRef90-A4ANW7 UniRef90-W715Q0 UniRef90-A312M4 UniRef90 I31A16 UniRef90-UPIO0047DB76C UniRef90 UPIOOO3B4EO8C
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UniRef90 - 5 IY78
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UniRef90 D 30765 UniRef90-UPI000478A03F UniRef90-F4B132
UniRefot H1XXK1 UniRef90-J3C9W7 UniRef90 T1AQH5 UniRef90-Q024EC UniRef90-13IAJ1 UniRef90-B5HAN90 UniRef90-FORB95 UniRef90-H1XWN8 UniRef90_13ZEZO UniRef90-10AJJ28 UniRef90_UPIo00467B253 niRet90_B9M5W0 UniRef90_W3ZY20 UniRef90-K9UX96 UniRef90-UP1000378EDFF UniRef90_UPIO0037D838A UniRef90 L8JVEO UniRef90-_10K4H7 UniRef90-W0J1K3 UniRef90 U1KTAO UniRef90-G8R3M44 UniRef90-UPI00046572AA UniRet90-K9RF42 UniRef90-T1BAM5 UniRef90_UPI0004703F3F UniRef90 A1ZWV9 UniRef90-XOZEHO UniRef90-G8NUS8 UniRef90-UP100030C49CE UniRef90_B5WV38 UniRef90-F4F645 UniRef90-D8PITO UniRef90-FgYSR1
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UniRef90-D7BC31
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DGGATWTYQNDSFN【VGRP ${ }^{50} Y$ FSLLVSDP ${ }^{70} N D G D R \| Y$
DGGKTWQRVL AGSTPWTGAVDLAMDPRDPDVLYAA DRTGDARDVRPWPETQYGWNPQQVKYRWHWNFPMVLSRHR DGGSTWT IKNGSNSTFDNNGПGYTAGQVNWAECAVFDPFD DHGRTWRRVESFPPQGQPTNPGVSFVLFDGRSGAAGQGSR
DAGRNWR DAGRNWR DRVLIAPELPPWSFIVTVEPCPRPGKAYGAV

 DGGVTWQKVSGLPNGPGGPWNWSQSLAADPVDGNRFYY NRGDTWEEISPGKTNQNVPYCTMTSISESPLRAGVIWV DGGRSWQRNPALIAVTTTPNDVGLNIVLPDPASVRQGRAQR



NASAA KPTWTDASVGDEETATSALMAPPPGASYTLLRSA NRQKTYRQFV FPNAQMYHVWTDNQVPYNVYGNR D GETFTLLENSALPEESGRLVLGVSLADPNRVYVLSAN DGGKSWEKVLYKSDKA VGGVIDLVMNPSNPDELFAVM DAGVAWERIETGYP NAPVLGVSSI AVAPEDSNTVYIGT DGGRTWAAVAMPGTPAGAQANRIADVDAPGNGSVAYAYS DAGNTWRLLPTGDGKTS MVQRIEVADSPTSPNLIYAV NGGDTWSSWYOGTAOFYHVTA NGGVSFTKLNNWNAPNTPSYTHA DNHNLRFIN DGGRTWNNLGNAVNWLYHQGWYNNTLLVHPFNPQUVFVGG AATSKWVQLLDWISEEERNFSGVEAMALLDPQNANTI YMLC NGGKTWQHVLFVNDS PSGGVDLAADPAHLDTLYAAL DGGKSWRKVLAGANGYHPSTGCGMLSSSPQDPATVFASL

FDKSTWVY ADKVTADDPAQTYPGA AAVENDPNKLFFTC


NGGQTFATF
GSDDPSGTRTHFDLSLTNPADMYAA DGGNNFSAINSWSNPQQASYTHA DDHFLRYYN DSGDNWTLVANGLTNGN VQTIIFDPSDTTNSSLFA DNGTLATVDGQAHTYFEDTGGDGGWVVTDPQDPNHLFTTW NGGKSWQKQTMFMGAYDPNHTGAASIMIDPGNPKQVWWTN DGGVTFNK SVWWMAPASAHADHHVI VAHPNYNNT TN DMGENWEAVFDEMPS NGMQSWT $\quad$ NAGKAGNSTDESIAADAPSNSNYUYA DQGATWSRHDHWQERQTNYFLSVGELAFDPFAPKPGRDWF DSGQNWQQMSFYYRDADAPHVDHHGLYFHPEYDGV YYE
 DNGVTWTEYSNG

QATTSWVP TTDGFGAAESKYHGTESMAVDPTNDQLVYMAT NGGASWSKVTGASQN HSVTAMAQDPQSPATWYYTA NNGISWDPVFD DGGTKWARVSR $\square$ DKRDDLVL DGGIVNFSKISTWWQAPHSAHADHDILIDPRNPKHLMVGA DGGTSWREVEANMPHTDTCRGW DENVT\DPANRDH $\square$ MHVH

DGGKTWRELPGLRSAKGQGGMCLHTILLDQSQPDRMFI DGGKTWQQKLFVGTR DSGAHWKLI SPEGSMEDHEVESUAIDPKDPKIIYAGT AGGD
NGGNSWEO
GGWVKAEHEPYTQFYSAAITPQDPSRI
DGAATWSKVWDVPSGLSGEGIRSVAYGLNPVTK C GQVVYA
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NGGENWYVSSFWAPDENYQFVHADTHET

## UniRef90_Q11M78 UniRef90-Q024J1 UniRef90-ToZDPO UniRef90-F4L702 UniRef90 J2SBM3

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## $90 \quad 100$ <br> KPGFGLITVSDDGGRSF <br> SGDGSEGAGGGVHGDY

WDRQRSAWSGLWKSSDGGDRWTQLTQGFPTGDEVGRDG PNTVWVGSQYIHQTTNGGQSWQVISPDTTADPKKMDNSG SNKVRVVGGG GIFTCPDIIAANPVWKLDV VILAGVADQGLYRSDDGGATWRRLDGGPDGLSPVKGVIDG GENNSSRSSGILKSTDKGKTWKNVG WVTGAQQDSGAVAVRSRGKFAEDSTRDWEPDGAGGESGYT
$\square G P S E V G A L W R Y D V G T D W R A G A E G A F G V A V A R S A P$ GETF $\square R S H Q G \Pi Y S \square D A G K T W S L M G \square E K T G R \square$ YAKGKVYRSNDGGSSFQVVN NSDRNEGW GTDDGKVQVTQNHGGQWTDVT PALVAAGAPAERWV DFVGVSRFGSVYRSDDAGATFVPVGSPSGLMPQRAAFDGA GGAQDNGSQGVPSRTVNRAGWRTSDWDNTGGGDGFQSR GETFVIRTNVLFKTRDGGNSWKVVSPTDA GATVFGSHKLTNWDRNTKFTLSSLSYGMEETA QDNGNWSGPAYTWKRGG\|RT GTYFNGGKSAlLKSNDYGNTFQVISNQFKAHGNGMGRQTG TWINPENPNHIINGNDGGVNDSYDNGAHWПKCNNEALGQL
 E GEPQ RNSAGDYKTTDGGATWQHDGDKEARHDAKDRGHPD QDNSTDRDD HRSTDY TVSEDNWEETAGGESAH
GENNSYAGSGVYKSTDAGKNWEFMGLPFS QH1V
GENNASRSSGLLKTTDNGKNWD FAGDADSHH1 WYDPWKSEDDQGCADNGGFTHYSDTDYPTVWYDNQESTGI
GLQDNGCWGIPTQTTKGGVAF GDVGTSVQTELLKSPVRG SWGMFNSTFSSDMAWSNPAYM QDGYSYRGPSNSRQ GSTPLGLWHANGAYM TSAEDFSFQGLYESTNSGDSFSVTLNSEDLM FSSQAWC WEFERKAWGGLWKSTDGGDTWKEITYNEGLPEGGRGRAGD GEVYNYQLAGGLKTTDYGQTWTK GQTVRMPKPYLWRRETFGGAF ASVRPPPDIGTAQAWYD SCDVNNGFEGFYRSADFGETWQKSSFRGNLLSTSYTTAGG KSVGTVRVTTDGGDSWTTLPGSHGAGWTGWCD GQQESGSACVSSRGNDGS円TYR GTLYCGSDGGFYSSNDGGVNF SSWR GVASEY
 GDYYDFGKTAMLKSTDKGNTFTSDDVTFKAHGNGRGRSTG WSURNYPWSAIYVSHDAGLHWHKLGGQGWPAAPGGRIGLA ADGPATLYKFDGTNWTPDRSYTQTEWTNYGIGGVAVSGTG WAGNGAVLRSDDRGATWSRTDLPVKLGANEDGRGAG GDKRSNY I CISDDKGENDIQKALPCSVHGNEVGRATG SANTDYTFQGIYKSTNSGTTFTKTSNTTDL LDESNQAWFD
GEGFYNSDAGLFKSTDGGESWTQLAST

VY S S SQVNDYKSTNYGVNWT STTPTTSEQNLAGQAWYD GKLMCGSDGGVYLSENDGGSFTDLTKGLQDG GTWG GGVFKTSNSGNDWQSANLG पGNTFV QFMGMMRF RASDG WKTVSPPEDQAKPWMMF GMGVARTDDVTTATPTYMNNLEELDSNMVRVPPKSKAHGG RTVFFGNDGGIYKTLDARAVSPSVGWQELNNQLSITQFYG GEANAGGGSGVFRSGDGGTTWESRGLE EVGSI ASQSGlYRTTNGGGNWTNDTNNDPADVN
DYHQATKTLFIGSNTLWRKNENNFSSAWERVKDFDSKEMI AEGFGVWRAAI P TRGYNVNDGGI ADTSNPFASAEEPAEUAWRSGNSGYN SNSRDGGDGYGVYKSTDGGLTWSSSNSGMG
 KHKKYKYSGEVMVSDDRGNTWKDTGLGKKMGANQLYASQF
 SAGVYKSDNGLT WVLLTNTASGANNGDNAG GEGAGNSASGVYKSTDNGLTWVLLTNTASGANEGDNPFRID
 QRLFFANDGGMYETPDASTSVAKGGTGWKELNNNLSDTQF TPGWSPKVNNLEETATL
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ADSAAGAFRTDDGGKTWKP RGMKPDPDAEVGHCVV WQINNSQWSSVYKSEDGGRSWKKIT TNNGFASQE WHLP WKTTDDGAHWSN KEGV SGGTQDNGSLRSWNGQRFNE YDDSDVG
GSYGWGLLKTTDSGMNWFQPNПW
GYYHHYVV GVRG\|GVYSKAPR SNGQTTWQLTGRSPEYPARMTVAKNG FMKNGGSSAVYETTDGGQSWTRVQGATHKSFKRGYAFKD VEGW

## DGG $\square \mathrm{FKSTNTGNSFTD}$

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UniRef90_W4LXI8

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 S RVVFA SPHDPATAFVAAKNGPY LYRTADFGKTWAAVVHGN GKLY K T P HPDKS GSEPDDRGQVWQYE DASGAWRNVTPV EVVYVGS GEADMRSD DQQGDGMYKSTDGGATWAHI



 YAVNV D Y QENYNVYGGMQDNGVWF GNNEYAHWHQEGKYP Y
 NSNEIVVGVAGHLYTKNKERGDFKTTNGGKSWQQVLFVND FWMFADPADADY I YMET QGGSITRVNRHTHEARDI QPKAN

 P GII FN QTEPNLI YARTDDGGAYRWDETTKA W DP LLLD WVG




## L


 WF LA V APNNPDAVYLGAINAHRGERQDDGAWWTNISARPT
 $S Y \vee A P D P L N P N I V Y G G T R T G Q V Q N V S P N A G R G R G G A G S G P$



 ERLIVDPRDSDTVWLGS RHDGLWRSSDRGATWARADFPAE


LYCFVNPKNPNKVYVGT- $V$ V $\quad$ VFRSTTG DNFTNDTNGY




 Q DVVFAPS DVKTIVYVATYSYRLVVTTDAGQTWDKVLGG NDVIAPPGGRPVAAMWDLGAFYFTDPDAYTAQKSHPGFMS
 MDCAIDDTKDPNTMYAS DYYGDFFKSTNGGFSFNSPFNLPP
 YRI SVSS LLKLHTIAG GLQDNGGFGFSD NEWRNYHGGDG
 GSVLVDPHDPNLVYVAA LGHPYFKTTD GGKTWHKVLYY ERLLMVDPNKPSTLFYGS RTA GLWKSTMDSGHTWAQVMS LS D WNVKV HPTNGDVYVANARRYSNWRSTDGGTNWNLVLDGDG
 Y S IA AVS R R S GKL I G GA QDN GTVVVYK GDS E K WRDIIH G G D G $F A V A P P A G A Q Y K L I D A A G D \square G A W V I T D D A T R P T R B C T P M P$
 GKI G L A VF DKNRVYAVV D D N R ASRTRKAS QSV


 A S GK L K F $\square$ G A I Q S GAN Y LGG S Q L WY S E D K G V V W WK Q I E T H P E



ES $\square$ GMSATNPNRTAAGLQD $\square G T V L N T \quad A V N T W K V I G G G D G$ WQLVPS P S E P DVVWA GVEPGA LVRSEDRGVTYRMV G GLDE $H G L S \square S T G P E S K L Y$ A TTPDGIIWTSTXEGQHWSLHGFPRF

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UniRef90-W4C3T6
UniRef90 R5D0R7
 RGGRTVGAAGIAAQPN VFY $\square G V N N G G I W K T D D F G R T$ EPLSPARLASM
 GLPAGGSVSCDEPSNFEAGTCYVVGNTQSYIFKTSDYGKT LLQPSVGTNSVAFAAGNTNKLVRSSDAGAQVFYSTNKGVT $H E Q G S G G F M G V D V A R G E P G V V V V R W R P G D T L W R T T D D G E S$
$V T P$
R TGUDDLAYA PGNFNDMYAAA WD ETMRADWTQPLVFSKADPHALYY GSQFVFKTTDGAKS GADFGHWDSGLAIDPFDAGHIAY TTGATVYATQRGPVD $Q N T G C S D L A M D P N N P R I V Y Y S G G P G S G V Y K S T D G G A T$ A HLFAFGK APQGSDTPALY YYGNDDGGIVQSMDMGRT
 GLEDTRQDGKILVDPQNENVLYVAANEERGVFKSVDGGAT
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 QELIGGDGMQI QI DSRNPNVVF TGYQFGNYYR
L L I G G S LLDMDPEDPELLYASTWTGCSIHKS DDGGKT ETGVIDMAVAENNFDVLYASAWQKDGIYKSTDAGST Y H L R WN WNTP\ALSPNEKGTI YMGAQF LFRSRDHGQS
 NPYRFQWNFPIIFSKHNSNKLYTFSNH NTGIIDIVIDDPSNPDVMLASSWEGSAI WRSVDGGDT WDNWGWGVLSMATDPVDTNRVYAAVGNNGAI DRSSDKGKT Q NGGI DDASASNNFNVLYAAAGTGSGIYKSTDAGEN TTGKMAYSS QGNRFNWSTPF I SPHNSRTLY L GGNRLFKTINRGDA ATS A G A QVAPSNPSUVAGGSEGAGVYRSDDAGAT

 WFVNDAAYTHADIHTDRDFNGKLFAGTDGGLYVTEDGGET | $\\| I G R P F Y Y S H D Y A S P H D A N E L W$ |
| :--- |
| $G F$ |

 GDS $\square$ SA A D Q I EAVAAAPEDFNTLYAGSGTGSAGYKSTDAGSS
 DQ HQAVFAPSDPNIVYECND D Y F R G $\square$ RTMP ILFSP $\square$ NKRKLYY MEN NPNANQYDFDCAWDPNDPSKVYGF IQSGG TTANGNGICFVLFDPSGSMYIGVSR TQAANWYFSRLTVMPGQPGTVF QVWRPFYFANLIVDPKDENKVF RIPANEGFTDI EINPFNSEHILVV GSANIYKSTNGGAT A GGRTLYASWADGGPTLRRTRDGVD KWTDSEGKLFI AGCSGEANSP DGVTRGHTLYCSTDGLKS
 TFNNGQRVQQIANPLRWNTQFIAVNSSGIYKSTDGGYT GPDGGDARSFAFDPHANHIYLGTVS M GLGNRDVEACAVSGTNPNTYYGF DQGGGSLYYKTTNRGTT LDGSDITTVEVARADAKRVY $\quad$ GTENGGFFRSSDGGAT PYPHVSGATGMDYAYKNPDYVAFVGFNQWQGYWSSDNGKT G Y N SDSTGA $\square D L V L H P S D P N \Pi L Y A Y T G \| T S G I Y K S T D G G T T$
 A WADDWCPANPKFIAADFRSHLDHVPQPNSSGYSTDGGRT
 YTTTSSSMKD DAYKPGDSNIIYASGTT MEG VVDPIDPNIFYGFTQYGGSLNKTNDGGQT AAKD $\quad$ PGFTFVAFDQNAGKAI $Y$ YVGVHGKGVWQSKNAGQT KNVNTGA DDLAFQPGNARVIYASNGPGSGLYKSTDAGKT TGTKGSGTATQTLYAADAPDYVSAAGLSSNLYKSTNGSTS AGYTDD EDAADGVFYATISSSGGTHKGIYRSTDGTNW
 GFS GWSSGNAADMAWADPSY IAVTGVDNANGSAVFWSGDGGS DWAQPIGADAMTSDGEAQPGGGSITFGGDGIYRSTDRGES DFGFPi AVHAVYVVPDKSDSEHYPPEGKLRVYRSKTGGNE EKVQNIHLSNI DFEKMNETE
TARRT RVLMQDPEHQNDVFA GTTEGDYRTTDAGKT ADRRNW FTPVQFDPTDPKTLYY GGNVLNRSTDGGVS EGARVI QYHPTDENLVLATTSNDDTIWRSTNNGLS
 TGMKGSFFQNFAFHPTNRNDI YIP TSRSIYYSEDG GLGUTQYYT $\square$ SGTPRDPNLL MMAQDNDSUYQGNPQFKG M GASLERVWQCA DDPNNENIIVGNGYQFGGFLKTVNGGAS

## EYCFDDYTND

UniRef90_Q1IM78 UniRef90_Q024J1
UniRef90_TOZDP0 UniRef90-F4L702 UniRef90_J2SBM3 UniRef90-U2Z9N8 UniRef90_UPI0004724981 UniRef90_A0A023BZP3 UniRef90-W0RKD2 UniRef90-A0A0311543 UniRef90-W0RCS5 UniRef90 Q026X0 UniRef90-F4XKM4
UniRef90-E3T6H0 UniRef90-K9DLR7 UniRef90-W5X6H4 UniRef90-Q021G9 UniRef90-W5X6M8 UniRef90-A4ANW7 UniRef90-W715Q0 UniRef90-A312M4 UniRef90-I3IAI6 UniRef90_UPI00047DB76C UniRef90_UPI0003B4E08C UniRef90_UPI000468402C UniRef90-A0A023NRB3 UniRef90_G5JAH4 UniRef90_UPI00029A5810 UniRef90-U5C9C2 UniRef90- X5IY78
UniRef90_UPI000255AA7D UniRef90-R5IG98 UniRef90-W5X9U1 UniRef90-W5X3Z2 UniRef90_UPI00037FA238 UniRef90_K1L202 UniRef90-A4CJI4 UniRef90_UPI00035D8DDC UniRef90-IOAFY9 UniRef90-C0BL80 UniRef90-W0RNK4 UniRef90-I2EQ74 UniRef90-D3Q765
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UniRef90_UPI0003A58ACB
UniRef90_W4LXI8



WKNII GYGDGFWSFADPTDND ${ }^{220}$ LI Y SEYQGGRMDRVRRTTGE ${ }^{230}$
 WTKIIGDLPQNQSSTVFQIRED
WTALSADGGT ILNCPNDANFSQQQKVYYSTDNGTNWTEST WTSL REQAVRDVSETPFLYWGRDEPDFGWWDAA LADDPDA HQLVAGGEDDRKTDSPRLFAPRRTWRVLPG
WNKI S I E GSGFPTGEGVG RIGGLAVVDENTVYAVHDNQ WTRISPD $\square T R P E G P P P P N L D E T A A K H V D R N G K R G V V$ WAPWVRGDEQTAVITLIAPTGGAPVVAAGGDDAGFVHDDL WRPV
 WSHLTGNLPTVAVHDGTIHPRENDLVLATYGRALWTGDDT WVDVIARGGRRDAAGVPWLEGHAI HWAGSVDPLDPRA WTKSLY L NADTGA DDMVMDPTDHNTLI A $\quad$ SM SWQTRRP


WHVHASAGSWT GGRAQLSANGDFVVWAVNNADYVSVDEHP WEIISPPDLTTNNPLHQKADYGGLTLDVSGAERYNSULTVS FTAISGGPAGLMPQRADFDKRGDLLITYANGAGP
WERISTPDESGFNDP
 WKKAVDGFPQFVGRDGFDFSLSNPKIVYHDYQKAKESQEG WQ V T K LDP FKVGGNMPGR $\quad$ W
 WKPDSNDPGKQNAGKLGVTSDRSGAEMHCTIVT ISESPTK WKLL GLEGTKVIPTILVDPKDPDTV
WTYTNLP A LA AVGIDR

AYH $\square$ A A DRKNPNK SM

 WK SL NKGMDAWLLA GTQDNGT RYEGQQVWYHVADGDGGD WKF I AKGQNATSCYRDGLSEDGSKVITGAQDNNMFDDGME
$F K K A S H G M S Q F Y D L G S W E H I S T V V G G G T Q D Q G T N M T T G G[L$

 FEKNNGLPESRDFHTPLVMDPHNTNKLIT TMARASDTNR F HVVKGSPGGDDYHFVWDNPDHPEDRDVAQGAVVTLDGGK FGAVSGSAHGDFHDVWI DPAHTETVFTTDDGGLWRSHDGN KPTWNEKVNGDEEVATLALMTPPPGASYSLLNSSGDVGTL WEDVPGLPDG PAARVPIRAAYDEAGHA FVPLTAPDP VKK ENSSYYGFVPQRDTSDSRY FTDVTNGMS GQFYR $\square$ SVAEDDSAKMDGGDQDNGGNVFNNN WNYVSEEDTN HNR MEMA IAPTD

 WMAANTGDSSALVHAVAMDAANPQVVYAGTNSGUFDSSGG WS WKAFESVPTENDWKSDKSAQEKVMATGGQUAMSPTNPKNLL SQY IA NNPAAANFIAPFIISPNNPNRLLAGGASDWGSNNA WEELGNGLPSDKGR $\square$ S AI SPSDPNRIYAG $\mathcal{L} V N S G G Y$
 WTRFAGAAPGDLEYGVIAVSANSPDKIVWSPTRGAD

 QSLNLRSPSGERGNWVTPLT $\square N K D G E L Y A G Y S E L Y K L D N N$

 VNINPGFDPGSYARIVLAVAPSNNNVVYFFAAAGTTANGH WVRVK GLPEGVLGRIGLAVSRSNPDVVYADIEH
WDNIKKGLIDDSDVFSIIIDDPAKSHVVYASACSG TQS YYTDDM ND KPNF IAPF ILDPNNAAVNPKWTS SKVAT WS QF P S MP T G WKRV GLT DS HA IGGRLADDP FLQUDNQKLDA Y LDHRMGWHQMYSANNLKQMIASGVTSPAR WTRTT G GKLDAYLHRMGWM WTPDSPDLTGGPG QDAYPYGTITTVSAAPSDPRT WEKI RVGLL $\quad$ EGYHFHPDNPNIIVGI
 VKPPENGNGLWVTPMALDTNNSNRDYTGYARHDNAASSGD FELVRPL WEHPTRSRWVP
FTD DVSGNTDVEFKSP DQQDPMGPNTFYAGGRKNLYHSSN WE A ANQGIRAPFLPEGQQYPE FGQCVHKVAPDP

UniRef90_Q1IM78 UniRef90-Q024J1
UniRef90- TOZDPO UniRef90 ${ }^{-}$F4L702 UniRef90-J2SBM3 UniRef90-U2Z9N8 UniRet90_UPIO004724981 UniRef90-A0A023BZP3 UniRef90 WorkD2 UniRef90-A0A0311543 UniRef90-W0RCS5 UniRef90 Q026X0 UniRef90-F4XKM4
UniRef90-ЕЗТ 6 HO
UniRef90-K9DLR7 UniRef90-W5X6H4 UniRef90-Q021G9 UniRef90-W5X6M8 UniRef90-A4ANW7 UniRef90-W715Q0 UniRef90-A312M4 UniRef90-131A16 UniRef90-UPI00047DB76C UniRef90-UPIOOO3B4E08C UniRef90-UPIo00468402C UniRef90- A0Aо23NRB3 UniRef90-G5JAH4 UniRef90_UPIOOO29A5810 UniRef90-U5C9C2 UniRef90 ${ }^{-\times 51 Y 78}$
UniRef90-UPIO00255AA7D UniRef90-R5IG98 UniRef90-W5X9U1 UniRef90-W5X3Z2 UniRef90-UPIO0037FA238 UniRef90-K1L202 UniRef90 A4CJI4 UniRef90-UPIO0035D8DDC UniRef90-IOAFY9 UniRef90-C0BL80 UniRef90-WORNK4 UniRef90-12EQ74
UniRef90-D30765 UniRef90-UPI000478A03F UniRef90-F4B132 UniRef90-H1XXK1 UniRef90-J3C9W7 UniRef90-T1AQH5 UniRef90-Q024E0 UniRef90-I31AJ1 UniRef90-B5HAN9 UniRet90-R6SYQ0 UniRef90-FORB95 UniRef90-H1XWN8 UniRef90_13ZEZO UniRef90-10AJ28 UniRef90_UPIo00467B253 UniRef90_B9M5W0 UniRef90_W3ZY20 UniRef90-K9UX96 UniRef90-UPI000378EDFF UniRef90-UPI00037D838A UniRef90-L8JVE0 UniRef90-10 K4H7 UniRef90-W0J1K3 UniRef90-U1KTAO UniRef90_G8R3M4 UniRef90-M7NBE2 UniRef90 UPI00046572AA UniRef90-K9RF42 UniRef90-T1вАм5 UniRef90_UPI0004703F3F UniRef90 A1ZWV9 UniRef90-XOZEHO UniRef90-G8NUS8 UniRef90-B5WV38 UniRef90-F4F635 UniRef90-D8PITO UniRef90- FgYSR1 UniRef90-UPIO003B51DFC UniRef90-UPI000373C198 UniRet90-10AFU9 UniRef90-W4C3T6 UniRef90-R5DOR7 UniRef90-UPI00040C3D72 UniRef90 UPIO000472EE83 UniRef90-V6JN21 UniRef90-D7BC31 UniRef90-UPI0003776A62 UniRef90-UP10003A58ACB UniRef90_W4LXI8
 EGLQRPDLSVGDGMYKSTDAGKTWTHLL
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YRRKDNDTKRSDTGGTKEDFKTMSSEAFLK LENKK L K
 DRSPQPSFIDPYLSNTNMLDYAGRAPDRPRDASLARSEDG WA GT GEPNSRNTIEPGAGIYKSTMGGNTWTDMGLEK P F

EDKPTQKGQLWKSDNAGDTWDLVSUDRQLQG
PLQELSD
VWVT S GN GVF RTPD DDATPAT WTFTVKGLE E TVD LGGVS P WEVV P P S SGPGS G LYK S T DA GK T WS K $\quad$ T
GTSSIA ESPDLKE GGTDDGLVQDSQDGGATWHKVDKFPGVPE D G VS WS P LRRQNMPAT S IRRDLVVK D D D

FEDDS PALYYKSEDF GES WT LQT R NHD $\square$ NE FQKVPNDPSGSYYTANDRKHNGDFYAA ENSNFYVSTDA P S ALLDEDVV DWVGT D D GQQ QLDT T D A G K S WQ NLT S N I $P I L L S S H N Q D \square L Y M G S E F L H R S M N Q G E T W E R I S G D L T N G A$
 $A G L I W V G T \quad D G G N L Q L T R D G G K S W T K V G G G \square K G Q$



 $P G L I Y V G T$ $D D G G V Q V T Q D D G A T W T E \| G K N V P$ $L L A A T G S G R K P G D E R G V Y R T T D G G K S W T K T L F V D N Q D G$ VY A YNS G GA WWA WSETPHFYTSTDGGHSFTESATFAA NSW AESHLLENGLIDWVGSND GLVHLT RD G GQTWADVTKNDPGKP $N W N N W H G G D G G F S Q F G G V L Y L S T D A G Q S \quad 1$ GF LGGS TWSSYTQKNSQFYRVNVDNDFPYNVYGSGQDILSASRWGG FR TEAEKDSNARKSEALLTKEDFKAMDTKAFMKDSD GKML CADD A DEPYVCYHSYYGPYVERSDGGGAWNDWKAATPAKAL
 TWRPDHGGDGMY F VTHTQDEK STMGGNTWVAKTA GLVGTT $R G V V Y T \square A P S P V D S N D G L I H V T R N G G R T W R N V T P P$


 TWSSWYNQPTGQFYNRFPYWDYSGQQDSGTVADASASDYG LPVVSQF Y HVSVVDNAEP Y H DY GGGQQ N S S WVA D S S Y P G GVT
 Y I T F A S S G E VF Y G G M G A Y A C S L L S G G K V Y R Y R I E N G V TV
 L Y V
 $\square E V D P S N T N N D Y V S R E N N L Y K S T M K G V N W T K D H T S T T N D T$ SA WN LCSNG IPADTEVWSVLTAANSAGTGTGFYRSSNGGV

 $L$ AN MMVSENKGAS WANL
$A P D A A F V A D A T V V T A G N S V S F T$ D QSTGGSPVEWSWSFPGGT MS QWT RYGTGLPNSPVYDMRVDYTGSK LKAATHGRGVWEV

 RWTR $\square$ S DTEGGGNLDKVE IAAPNNTNNIITSNDNVLYRSTNK
 $P Q R V Y$ A MVD
 $F Y V V F T K D A G P G A G G P G R L Y K F D \quad G S T W T L L K S E$ SFYKYTYTAGEGNGDG K D G G $\square$ WR SEEDK GE SWK RTC DN K
 S LAAVTSRNNLVWAPQDSVPSYTTNNGASWTQQNLPATFTAT EDRIIFAAAS GNLLFVPGGEVYLSENGGDSWRQVLAPPN
 1 WV G T D D $G R V W L T R D L G G G S T K V L D G Q P W V T$ VYA T D WF G VYKTENNINGTVGGLT GSTAASTWWEADITDGHE E V V V P L Q M WT A S R N V S Y G V Y S A VYYR S D D G G K T W R T L Q E P DN G I G WVNVSSSNGS F D R S L S QUE

PDR』YAS QS T GWF GQK

| $L$ | $P$ | $S$ | $N$ | $S$ | T | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $T$ | $S$ | $M$ | $Y$ | $T$ | $S$ |

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UniRef90-ToZDPO UniRef90-F4L702 UniRef90 J2SBM3 UniRef90-U2Z9N8 UniRet90_UPIO004724981 UniRef90 A0A023BZP3 UniRef90 WoRKD2 UniRef90-A0A0311543 UniRef90-WORCS5 UniRef90 Q026X0 UniRef90-F4XKM4
UniRef90-EЗТ 6 HO
UniRef90-K9DLR7 UniRef90-W5X6H4 UniRef90-Q021G9 UniRef90-W5X6M8 UniRet90_A4ANW7 UniRef90_W715Q0 UniRef90-A312M4 UniRef90 I31A16 UniRef90_UPIO0047DB76C UniRef90-UPIOOO3B4E08C
UniRef90- UPIOOO468402C UniRef90-UP10004688402C
UniRef90 G5JAH4 UniRef90-UPIOOO29A5810 UniRef90_U5C9C2 UniRef90 - X5IY78
UniRef90-UPI000255AA7D UniRef90-R5IG98 UniRef90 W5X9U1 UniRef90 ${ }^{-}$W5X3Z2 UniRef90-UPI00037FA238 UniRef90_K1L202 UniRef90 A4CJI4 UniRef90-UPIO0035D8DDC UniRef90-IOAFY9 UniRef90-C0BL80 UniRef90-WORNK4 UniRef90-12EQ74 UniRef90 UPI000478A03F UniRef90-F4B132
UniRefot H1XXK1 UniRef90-T1AQH5 UniRef90-Q024E0 UniRef90_13IAJ1
UniRet90_B5HAN9 UniRet90_R6SYQ0
UniRef90-FORB95
UniRef90_H1XWN8
UniRef90-13ZEZO
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UniRef90-B9M5W0 UniRef90-W3ZY20
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UniRefotolioo UniRef90-UPI000373C198 UniRef90_10AFU9 UniRet90-W4C3T6 UniRef90-R5D0R7 UniRef90-UPI00040C3D72 UniRef90 UPIO000472EE83 UniRef90-V6JN21 UniRef90-D7BC31 UniRef90_UPI0003776A62 UniRef90-UP10003A58ACB UniRef90_W4LXI8

PEWTNSDAEKYET 290
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GLLRDAQQIPAUVVDPRNPNRLEVAVLGHPYGTSS
YYTYG

NAFLKTNGFQEKYRADNVKQLVRSGTVP SR GRHWTP $\square R \square P P Q G E P P A R D D L N G E A A D T V S A D G A T M D V A A$ RSAY

YTRCLVSPDNEHELYFMSA
पPGAPLVSATGDYDGFVHDDPARPGRTHQPEDGTTTGDDG GHGLPGAFGHVGLS $\square$ SNANPNRVYAVVDTNRK TG MTYVTDVFPS PHDVNTVFVTLNDFHRGNFK
RAPY YTRMAVSTADPNEVYFANVKFST
GTSYNKTTSS $\square G Y$ REMGVNPFRПGDVWVASTS
QEMPKEGWVAQI QASRYDKGTAWVVVNDYRKGDYA
FSRAFGGI TVDPNDADRIIVSSCNTYMSAWG
KEG
NVAFGTISTISESKFQFGLLYAGSDD
QRLCNTYGWV YYGGQUTVDPTNEDULYVQGVS


RPFY FFHLFAAPHNADEDWA
AQ FATKYNASVRQGKITPAQDANYNGELKDANS\|LLSSSVIG PTDVNNYLLNHQGVLWVTFDPTSGAAGSASTI YVGVADKE NTFLKTNGFQEKYRAENVKALVRDDVVEPIDDAKYLEDAG
 DQHLARAYDKPSVVFALSQRWYRD DPASFRPGAKVPSG
 PFDDNGRRLQGNWITP A TGPDAGTVYA DAHQLGDFY TSGYETT\|IGNGE\|SSVIPNPNDPNIVYNDSGGAPMGSGA QGWYSHW NQYLKSNGFQEKYRAQNVKQLVEAGTVKPADLATYDEDAG NDEDALFYPPLDVNGKLVVRGATPSAVTAATADRDYGTDG AGEWYSPTRFPQVSTALAVPKNNPEIIYGAKKATPILKQS PRWQLADWKVSMDASHFDANTAYAAVNTFRLDDLR
 ALSFRDWHPVGYGGVSVDPSNVNRVVVSTIIARFNNDWG ALSWENMYGGDGFWTWYDEDPSDPAFIVFGTGLGGRVSRW DSGATWNTFPTLHPQGLTNQQDFSSLAVMKANHVIWAPSN ADDGSRDTFA YGGVAVDARRPGTVVVTTNNRW AQV DKD TTPKDH DPCGYSGI AQLGPPKNADDEDUDGNWTT P GQGWYDN
$A L V V S P L D P D V F A V G G T D G Y H F A G F$

## R S

 RSSVYKTTNNGGNWTAMTYYD S WDOSNTGDAPCGVYGIEVANDNTNDIYUSTNGYSSSGVS EWIQSNTGLAPCGVYGLAADPTADSTLYAATC PAL
GGFSA PITDMEDRPYDWWFNRVVVHPTDADKLYYDGFNTNEYDPE PSASVEQNPVVTYANALTATNNAGSDTHTKTAY TVVEDPG PLDAVPVGQVTSLITAKRDVCAGTSMGVTYQVTKGATGPNT TTTPQD YDTNGGSGSQAWYDLVIAADPTNANTIYTGGTN GVNFSEDSFNHGP DQAMA SSDDSDVWIVTRNNVYKSTN YSAVTVQKNNPKSVIAI AD RGWY DPAGGTNFGGGG|VVVPRNPDVVYAA GST DGGLLQENYNQYVKVKPDNENVVFIGSTNLYRSMDG TF TVNFRPFYYSQLRIDPSDDKVVYVFS RTRKLLQ
 WNGFFRAY $R L A V D R N N P N K V Y A F D S G G N W S W Q P$
$E V I I D P S N P D R V Y A A M W D R T Y G G P G$


UniRef90 Q1IM78 UniRef90－Q024J1
UniRef90－TOZDPO UniRef90 ${ }^{-}$F4L702 UniRef90 J2SBM3 UniRef90－U2Z9N8 UniRef90－UPIOOO4724981 UniRef90－A0A023BZP3 UniRef90 WorkD2 UniRef90－AоА0311543 UniRef90－W0RCS5 UniRef90 Q026X0 UniRef90－F4XKM4
UniRef90－EЗТ 6 HO UniRef90－K9DLR7 UniRef90－W5X6H4 UniRef90－Q021G9 UniRef90－W5X6M8 UniRef90－A4ANW7 UniRef90－W715Q0 UniRef90－A312M4 UniRef90 ${ }^{-131 A 116}$ UniRef90－UP100047DB76C UniRef90OUPIOOO3B4EO8C UniRef90＿UPIOOO468402C UniRef90－A0A023NRB3 UniRef90－G5JAH4 UniRef90－UPIO0029A5810 UniRef90－U5C9C2 UniRef90 ${ }^{-\times 51 Y 78}$ UniRef90－UPIO00255AA7D UniRef90－R5IG98 UniRef90－W5X9U1 UniRef90－W5X3Z2 UniRef90－UPIO0037FA238 UniRef90－K1L202 UniRef90－A4CJI4 UniRef90－UPI00035D8DDC UniRef90－IOAFY9 UniRef90－COBL80 UniRef90－WORNK4 UniRef90－12EQ74 UniRef90－D3Q765 UniRef90－UPI000478A03F UniRef90－F4B132 UniRef90－H1XXK1 UniRef90－J3C9W7 UniRef90－T1AQH5 UniRef90－Q024E0 UniRef90－I31AJ1 UniRef90－B5HAN9 UniRef90－RGSYQ0 UniRef90－FORB95 UniRef90－ $\mathrm{H} 1 \mathrm{XWN8}$ UniRef90＿13ZEZO UniRef90－10AJ28 UniRef90＿UPIo00467B253 UniRef90＿B9M5W0 UniRet90－W3ZY20 UniRef90－K9UX96 UniRef90－UPI000378EDFF UniRef90－UPI00037D838A UniRef90－L8JVEO UniRef90－10 K4H7 UniRef90－W0J1K3 UniRef90－U1KTAO UniRef90－G8R3M4 UniRef90－M7NBE2 UniRef90－UPI00046572AA UniRef90－K9RF42 UniRef90－T1BAM5 UniRee90－UPI0004703F3F UniRef90 A1ZWV9 UniRef90－XOZEHO UniRef90－G8NUS8 UniRef90－UPIO0030C49CE UniRef90－B5WV38 UniRef90－F4F6515 UniRef90－D8PIT0 UniRef90＿F9YSR1 UniRef90－UPIO003B51DFC UniRef90－UP1000373C198 UniRet90－10AFU9 UniRef90－W4C3T6 UniRef90－R5DOR7 UniRef90－UP100040C3D72 UniRef90－UPIO00472EE83 UniRef90－V6JN21 UniRef90－D7BC31 UniRef90－UPI0003776A62 UniRef90－UPIO003A58ACB UniRef90 W4LXI8

GNVQVTQNGGKS WTNVAKNPPNTWVSTHEAGHFDPGTAYA ${ }^{360}$ RGVFRSTDGGQSWQKVLYKDDRTGA DDLAFDPRNPQNVYA MPMLVSNDGGKTWTGLNAPNMHVDYHDLLIDPAFPRRMAA
 STLA WSDDHGRSWRPLGRPAPAADRDAP $\square \mathrm{TV}$ VADGETFVV
AEVYRSNDGGKSWAKTHKYSYGYYFAQTQVSPVNKDHTY ${ }^{\text {I }}$ PYVYRTRDGGKTWQRTTNGLPAGWVHTVKEDRVRRGLLFC RVPQRTRDGGRSWQAVRGLPPRTRAVADKVDAATFYAVDA AFSHSLDGGKTLTPLPALPGGDNHDMWIDPGNGDRLAD

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

$$
\text { SK D GGK T } \square \text { K GGYK A GGDN H D } \square W V D P T N A D R \square M V
$$

$\mathrm{G} ⿴ 囗 十 一$
 GKIHVVKDGGASWQLISGNNPQSWVSRVTASTHKKERVYA


 AEVYKSTNAGKTWVKTNTYSYGYYFAQVNVDPNNPDVYYL
F

T
K
P
D
$P$








 D TVFRSTDGGRSWTS LKETA
DIIYTSTDSGESWKIIMNRLEYSRF DWNDPYMKPRYN
 GASMTIT Q DT NWYTGTA YPYVHADQHALVTDPD GSANFA


A GVFVS D DEGSTWANDTGNLINVVPVVDLVYH
K S WS N I N P WL S S Y I L A A D R Q D P K G E T F Y Y L


Y A 1 QL S D A S GS FASPTLLASTTATTADVT $\square P$ GTPAEVVYG
D GLFRS T D G GANFA Q GNPVPDRWNLTLKSTPGHA GHL WF

I WK S $\square D G G T$
FFTENTP


TALYESREDGGKTVVPDK GAPGGDDYHTMWDDPS DPARMLG
 FATTGNTAGGYHKTNFFYPEHHPDNHSLVFFPSDAKKM1S
$G L Y R T Q D G G K T F S W M T G P D D V V N D \square Y V D P K N P S H V L L$ D N L WL S T D G G L N WN S S T G P L P P P A P R A I A I H P I D H N WI Y I
 S SLWRSDDGGETWQRMTNGLDPTDGRWGLAVAPNNPQRLYA

F A L L K S E D G G ST WA N T S A VT LQ D K Y LK $\square$ K Y H P VH H H V V V G GVVFVSTN G GLDNWA QKN T GVLEA H DVVFSLGGQA S D GTVV A G A HVLTTRDAGQRWTDLS GNLPDAPVNDVVTGPGGLLVVA

 STI Y Q STN G G SNWT N I S S G L P GLLSIVK S A V F D K S D K GI Y A A
 E K $V$ V $Y$ K S T D G G D N WT N $Y R V Y R S D D A G G T W R A M E R G L L P E G P V H A T V L R D A M T M F F G$

## UniRef90＿Q11M78 UniRef90－Q024J1 UniRef90－ToZDPO UniRef90－F4L702 UniRet90 J2SBM3 UniRef90－U2Z9N8

 UniRef90－UPIOOO4724981 UniRef90 A0A023BZP3 UniRef90 WoRKD2 UniRef90－A0A0311543 UniRef90＿Worcs5 UniRef90 Q026X0 UniRef90－F4XKM4UniRet90－E3T6HO UniRef90－K9DLR7 UniRef90 W5X6H4 UniRef90－Q021G9 UniRef90－W5X6M8 UniRet90 A4ANW7 UniRef90＿W715Q0 UniRef90－A312M4 UniRef90 I31A16 UniRef90 UPI00047DB76C UniRef90－UPIO003B4E08C UniRef90－UPIO00468402C UniRef90 A0A023NRB3 UniRef90 G5JAH4 UniRef90＿UPIO0029A5810 UniRef90 U5C9C2 UniRef90－X5IY78
UniRef90－UPI000255AA7D UniRef90－R51G98 UniRef90－W5X9U1 UniRef90 ${ }^{-}$W5 $\times 3 Z 2$ UniRef90－UPIO0037FA238 UniRef90＿K1L202 UniRef90 A4CJI4 UniRef90－UPI00035D8DDC UniRef90－IOAFY9 UniRef90－COBL80 UniRef90－W0RNK4 UniRef90－12EQ74 UniRef90－D3Q765 UniRef90 UPI000478A03F UniRef90－F4B132
UniRef90－H1XXK1 UniRef90－T1AQH5 UniRef90－Q024E0 UniRef90－131AJ1
UniRet90＿B5HAN9 UniRet90－R6SYQ0 UniRef90－FORB95 UniRef90－ $13 Z E Z 0$ UniRef90－10AJ28 UniRef90－UPIO00467B253 UniRef90 B9M5W0 UniRef90－W3ZY20 UniRef90－K9UX96 UniRee90－UPI000378EDFF UniRef90 UPI00037D838A UniRef90－L8JVE0
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UniRef90－G8R3M44
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UniRef90－K9RF42
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UniRef90－UPI0004703F3F
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TFDGVYKTTDFGKTWTQLNSPE FKLYAHVVRED VNSGLFKSTDGGTTWNPI GAGLPTYQQGNDGR】 G $\|$ A $\square A$ TDGGPYDSYDGGQHWQALNA
GVKGLFRSTDKGANWTRTN
ATPRP凹FSRDRGATWRAV
SGVPILKSKDAGKTFTNTNGKNVHAD Hes ${ }^{[W T W}$ GTRALFVSFDDGEQWLPLQLNLPTTSMRDपE पYEDDL AAGRLLVSHDGGASFAPVATQGLPRDLSAAAPRNSALVAV SSSGLWKSTDAGKTWTEIKGNGYPEGVKGR』 GIA】S ANDSGF $\square$ SVNRGKTWNRVQLP

GSATLYRSADDGASWTPVAG
MNTGMYRSTDGGKTFLPIKGAPG
GTEGLSFSVDAGLHWVKVKGGMPDTP
LA GRDLRAVA GDDYHTLD $\square R D$ LidQ

ADGGAS $\square \mathrm{S} \square \mathrm{NH} \mathrm{GKTFQR} \overline{\mathrm{VL}} \mathrm{P}$
 NDGGISISQDGGKTWKRSRNTVNVVQFYNVAYDMD
GDGGLNITYDNGKSWQLCNSIPV GTEGLWISTDGGASWAQFKGG TTQFYRPAVAVRD\｜A TDGGCQI SLTGGKTWSGFNNQPTTQFYRDF
 Th D
AGVPDDQSKDGGKTFSTDKNNVHSD NMQLSNARALWDN GVWGMYASYDNGENWTRUNS OD DNQLSNNPRQLSAD GTFGLYRSDDGGNSWRRMAADDARIANGQ GNYTSGVYVD GKAGVYRSDDGGVSWTRFN GTDGLYDSKDDGATWFRLRNNDPPAP AEGSLYFSEDGGENFLKVAT GGNVVFKSTDEGLNWEVISPNLTNNLKERFGQEIYSLDES GDGGVFRSTDAGETFSGCNGGYQSTQFYN SGVPLLASANGGKSFKSTGGDNVHSD HHHVWTN GRGTVYRSADGGATWTAVRAGLPDVA VNALEID TGKKVYYSNDGGKNWENITYNLPNLPANT $\triangle Y$ YSE TYGAVWHSGDAGTTWTDLSAGLPNVSAN VNNAVLH GTETVWFSGNDGDQWQPLKLNMPPISDRDLIDKDDDVAV GTDGVFVSYNGGQSWSYFDRGLPAVAVRSMK\｜IGSQU
GAQVLFRSTDEGAHWQVTSPDLTGAVAGTAGCVIYSTADA GAQFLFRSRDHGQSWERISPDLTTNDPEKQNTTVYSISES YDSGGFTSTDGGSTFTASSQFASLNARPEFFGY ASMAVN VSETPYLRWG EQRPKFGWWIQAVAVD GGNCV
NNNVIYKSEDNGVNFTSYDS $\square P G N$
NDGGVFYSPDMGVSWESKDNNYNVTQYYD
GTWHPWRTTDGGQTWQNMKEGIIDDSD VFSIIVD GTDKVYKSTNAGSSWFSDDGPLPDAPVNDLFDYTAADEN N GTDGVFVSRDAAATWNTLNTGLTNGD IYAVAVA
NNSTFYYSNDGGANWRKLPGWLIRPTIVPNPTQQGDVWVS GTEGVFVSLDKGVSWGLPQTGPANVSVDELF
GDGGLYFSENAGQGFTKWDN【P $\square$ TQFYTC E $\square \mathrm{D}$
SPASLTDSFDGSGPWSYQLTGDGPRTTT
ADGGLWRSTDGGVTWTAIAG
GTDGVYHTDDGGDSWQPFDHGLPNVAVYRVLRRDEHV
GTDGVFYKDDTNPSWVSFNFNLPNVIVNE
NDGGIYYSSNDGANWIDTSSGLATAQVYKTG TSLGVYY■SENSTEWTVFDNGLPN DKVNPSAPKYYQSYSGTGASVVVID VDQGAVVSDDGGKTWSSW
VHGGGIVETRNASSATPTWSGTDN
GDGGVSITTDNLATGGDHPVAWTYपNNGYYTTQПYGMD $\square \mathrm{D}$
ATGGVLSSEDSATSFVASNAGFSTQQ VTSFAMD GNEGIFTSNDYGRNWTLEPSAPANVS $\square \mathrm{DE} \square \mathrm{A} W \mathrm{~W} D \mathrm{DA} \square \mathrm{LY}$ A ADGAVYHSDDSGATWTKLTA
YVGAFYRSDNGGDTWTQMP $\square$ STNQASQSTFSWWFGK $\square W V D$
ATNGLSVSFDSGKSW■LKHMTQSVSADK $\square A Y D$
 GNGGVGHGAGGHLRLGAL

AVFSLYED QTGNPVRSTNRGATWQNMNAPFQA $\mathbb{G} G N M V F A Y N H P L A A D$ RSGRVFRGSDAGVKDKDTNNHEWTNINSSMGNQLHSIKVN TPSKVFKSVDGGINWINITGALPNIPCHK IYRTGS VNGMIFYRSNSVTNWTSFSNNIPNVDIRELEIYYGA ADRVPFRTTDAGRTWEPLSKGLPEEDHYGTVLR GALLCTD AAAGSFRTDDGGQTWRPINRGLKSEYRPDVGHCVHRUAGH GDVGVFHRDNAAASWTSFFTALPRTQIKDL

|  |  |
| :---: | :---: |
| UniRef90_Q1IM78 | L V N P K L L WVG T E N G L Y $\square$ S $\square$ D G G A |
| UniRef90_Q024J1 | PS DGNRMFAGEAGGLYRSDDAGA |
| UniRef90_T0ZDP0 |  |
| UniRef90_F4L702 |  |
| UniRef90-J2SBM3 |  |
| UniRef90_U2Z9N8 |  |
| UniRef90_UPI0004724981 |  |
| UniRef90-A0A023BZP3 | P K N P M H V V G N G G L N I S D GE N W |
| UniRef90_W0RKD2 |  |
| UniRef90-A0A0311543 | P GA A GELVLQVGTALLHSRDAGR |
| UniRef90_W0RCS5 | RSNPDVVYALTENGLYY S A D G G K T WQ |
| UniRef90-Q026X0 |  |
| UniRef90_F4XKM4 |  |
| UniRef90-E3T6H0 |  |
| UniRef90-K9DLR7 | PVNPKAFYAYDDKALMASVDGGA |
| UniRef90-W5X6H4 |  |
| UniRef90_Q021G9 | ARESDLIAASFGRGFFVFDDFSALDR |
| UniRef90_W5X6M8 |  |
| UniRef90_A4ANW7 |  |
| UniRef90-W7I5Q0 |  |
| UniRef90-A3I2M4 | EPESALIVGTFGRAI WVLD D L |
| UniRef90_I3IAI6 | P F D T K NVYVT S G N GIF KAQDV D A |
| UniRef90_UPI00047DB76C |  |
| UniRef90_UPI0003B4E08C |  |
| UniRef90_UPI000468402C | E Q E P Y $\$ M G G Q D C GVWVG A N  \hline UniRef90_A0A023NRB3 & PRDGDLVL A T H GRG】W\VDD  \hline UniRef90_G5JAH4 &  \hline UniRef90_UPI00029A5810 & KEGNLIVAT Q GRS $\quad$ VW L L D L S |
| UniRef90-U5C9C2 | PKDAKHILLGTDGGLYSTFGGGAWD |
| UniRef90-X5IY78 |  |
| UniRef90_UPI000255AA7D | R N K P G H L I N G N D G G $\square$ N $\square$ T Y N D G K WS K N |
| UniRef90-R5IG98 | R NRPGRVYLGGT G G |
| UniRef90-W5X9U1 | PRELDLI I GTHGRGLWW T L DVS G L E Q |
| UniRef90-W5X3Z2 | PKNPDIVYATCD YRSVDGGNT |
| UniRef90_UPI00037FA238 | Q NVP G R L Y V S G G G |
| UniRef90-K1L202 | E EFRDLVIGTY G R GFY |
| UniRef90-A4CJI4 | HENPNI AWAVT |
| UniRef90_UPI00035D8DDC |  |
| UniRet90_I0AFY9 |  |
| UniRef90_C0BL80 | P R D P Q H M $\square$ N G N D G G $\square \mathrm{N} \square \mathrm{\square}$ T Y D G G A W M K N |
| UniRef90_W0RNK4 | P T A P D T LFA T DVGVVRTDDGGA T |
| UniRef90_I2EQ74 | E D T D L Y V G M DV GVY Y L VE G T K |
| UniRef90_D3Q765 |  |
| UniRef90_UPI000478A03F | GTHGRGFW L L D N $\square$ T A L R Q |
| UniRef90_F4B132 | E F N GVLTA G T Y G R G $\quad$ TWQ TD |
| UniRef90-H1XXK1 | VA A T H GRGVWT LD N |
| UniRef90 J3C9W7 |  |
| UniRef90-T1AQH5 | P SDP N T $\quad$ WT G S D S GVVVT H D G G A S WS N |
| UniRef90_Q024E0 | $P$ L L G R LI WVGT D D G L Ql T R D G G K T W T N |
| UniRef90_I3IAJ1 | PNAEGHIWLVDGHSIFRSVD |
| UniRef90-B5HAN9 |  |
| UniRef90-R6SYQ0 | PFDSDTALFNTGTGLFMDTGLAS G D |
| UniRef90_F0RB95 | NLD S S L Y A T T S NRV |
| UniRef90-H1XWN8 |  |
| UniRef90_I3ZEZ0 | P V N P S NVY L S A C S G $\quad$ V R S T D |
| UniRef90-IOAJ28 |  |
| UniRef90_UPI000467B253 | Y S D Q VLLA G T G R GVVWK |
| UniRef90_B9M5W0 | G T S P A T $\downarrow$ Y A G T WG G |
| UniRef90- W3ZY20 |  |
| UniRef90_K9UX96 | ARNPEEV T G K L Y R SVD G G K T |
| UniRef90_UPI000378EDFF |  |
| UniRef90_UPI00037D838A | Y Q Q P D R L Y G G T N G T N R T |
| UniRef90_L8JVE0 |  |
| UniRef90-10K4H7 |  |
| UniRef90-W0J1K3 |  |
| UniRef90_U1KTA0 | $N \mathrm{Y}$ L Y F T Y G R G V Y R |
| UniRef90_G8R3M4 | Y $\square$ N N K L R A A T Y GRGVWE S |
| UniRef90_M7NBE2 |  |
| UniRef90_UPI00046572AA | E E D A K L A A T Y GR G IF V S D |
| UniRef90_K9RF42 | P A NPKRVWWTNGWGVACT DN $\square$ T A K E P N |
| UniRef90-T1BAM5 |  |
| UniRef90_UPI0004703F3F |  |
| UniRef90_A1ZWV9 |  |
| UniRef90-X0ZEH0 |  |
| UniRef90_G8NUS8 |  |
| UniRef90_UPI00030C49CE | A T H GRG $\quad \mathrm{F}$ T A N T N SV |
| UniRef90_B5WV38 |  |
| UniRef90_F4F615 | P A N A H L $\quad$ L |
| UniRef90_D8PIT0 |  |
| UniRef90_F9YSR1 | E T N N V L Y L T N Q G V |
| UniRef90_UPI0003B51DFC |  |
| UniRef90-UPI000373C198 | $R \mathrm{GARR} \mathrm{L}$ VAA T F GRGLY E |
| UniRef90-I0AFU9 | Y Q N PRNVYVNT K F GL |
| UniRef90-W4C3T6 | $R \square N G Y K F Y M Y A A G Y L Y R S T D A G A$ |
| UniRef90_R5D0R7 | EFGDQTML G N T |
| UniRef90_UPI00040C3D72 | S D D E L F L A D L G V Y Y R T N |
| UniRef90_UPI000472EE83 | S GESRI R A G T G R GL WE S |
| UniRef90_V6JN21 | D A D P A GVYFGNRNGVFASDDGDSWQQ |
| UniRef90_D7BC31 | PKRPDVLFMQKHWDVMRSDDAG |

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UniRef90－E8X382
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UniRef90－W7Y012
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UniRef90－AОK2Е


 G S GVYK S Q
$R$ VLVGTRKGAF\｜LTA
TSDVE円GSNGTDHVGDGDFTGGSYRST TWRR $\square$ A $\square D Q G \square H V R C L A V H P N K P N L I Y A G S D K G G \square Y S T$

A GS GR $\square$ NF $\square T$ F DP $\square$ SPSTMYVGAPDGG $\square W K S T$ PSTARRTRVLLQDPSNLDIVFAGTTEG LFRST


S WEDS G LDRGDRYQR LI HPFNDAVLWVTRNNKG DYKSE A G GMCLHSILIDPANPQRIFIA 1 SAAGAFRTD
 NWE $\square$ DGPHFAGWVYH LTGSPADPDR $\square Y$ AAPSMDWVQRSD

PGDPTTVYAVSDTS FFRST
WRVDGPHFAGW $\square$ YH $\square$ NGSPVAPDR $\square Y$ AS QS S GW WQRS D VGGSDLGIIYKS G

WE WLGPGNGGRTRGLVVDPDDPDRMWAASAGGGVWHTA HAFVFDPVNPAVCWDANDGGDQ DST WQRMNLPEGRVVWSLAFHPHHAQUMYLGTEGSEVYTSQ
$R L L V G T R K G A F \| L T T$ SPSTPHVAVLIGTRKGLFRSD

 TWSK】QDQGG VIRINPNNSNILHVAKDRAGVRLST S WQA $\square$ GPGNGGR $\square R S \square T$ FDPDNSAH $\square Y$ VGS $V$ S G G $\square W S S Q$ VLAI GTRKGWLATSR RLLVGTRKGAVVTSD
GGRVASFTGATDGSRTVLLASVEGGLIRRSV GSPSGDDFHTLWIDPVNPDRMI I GVDQGMAS SM
 WEVSGPYFTGWVYHLAASPAEPDRIWASQSGGWVQRSD ADRTLLMVGTRKGLWLGTS SGNFLSVA VYKDNPYKVIVGNDKGSLFRFD SVRVNVSGRISAUAVDPRNPAHVLCGAANGGVWESF

WTVSGPFFA GWTYHMKGSPVDPDVVLVGTKKGAFDESD GGVRAMAVHPTNPD\VYAGSGSEVFKTT $R V L V G T R K G A F \| L T S$
$\square \mathrm{S} M \square \mathrm{~A} \square \mathrm{H}$ PED $\square \mathrm{NT}$ MYSQGGQGD $\square \mathrm{Y}$ K S T $\square$ L IS PHDHNRVY VGSQ F VHRTT RVWHLEPALSDPDTVYAGVEDAALFRST NPGGAGLI HSLVLDPEDPEGVWVGISAAGVFHSA $V P G G G G L G L H T V L V D P R D S R A L T V A V S T G G A Y R T G$

GTlWAGVEPGA ITFRSR VPGGGGLAVHTVVT DPRDAAAVTVAVSAAGVFRSH R S N
 K WRESSPGFQGQAAS LGVS LQHPEVAYVAYSGSGVAKTT

HP पRPGWVWCFSHGRGपFVS
RWELS GPFLPARVYAVADDTRGSPRLLAGADSAHVFHSD $V D I E V 1 P S Q P N T V W I T T Q D D G I Y K S T$ IVA』GTRKGWLARSS

UniRef90 UPIo002F33ADE UniRef90－UPIO003B75D90 UniRef90－15САЗ9 UniRef90 UPI00016C3B8F niRef90 UPIO004718DCA UniRef90－D2QKK1
UniRef90－D1C969
UniRef90－D2Q4F7
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UniRef $90-$ O $72 W^{2} 1$
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UniRef90－АокаЕб

DGGKS WTP LIEMPEFCAGVNRPRMLALAVDPADSNDVVA DCGVHWSRIDCA KGLLNGLAVWKLVVSESNPLVMYAGT NNGTTFSFVF

K GLEDSRFISRVRVHPTNPDVYAMG DGGRTWELLNSTVNQTPGSFDSVNSIAAAPTN
DG KRDRWQVtGPLFGGWEVYALLFDPNDPTRKKVWA IRDVAADPTTKDVVYDAT NGGANWNTPVGFPASGDTQRV ELAVAPGNANVLYAMM DAGENWALLDNP LNNYTVWALVIDDEDPNLIYAGT

NGGTSWTTNTDY LS\｜TGCSGLVIHPTNPNLMYLAT DAGKQWQRTTT STGLTWTS RNRHLATLQYISUAQHSTWDNVMLGGT

DGGDHWF LVYDMSSLVPER DETAVAANDPDVLYAM DGGQTWKPINRGLHSKYIPGHCVHHIAMHPSRSDTLFMQK DGG［LS WQVPYKPGSSSGLPKQVCTTVLLDPKDRRTLYAG\｜ DGGATWYTFEYCYLNDNQPNVCMPATClHPDHHA\｜VFRPG
dGGRTWTH■WYDGTPRPWEFTRVWHLEPSATDPDTVYA

DGGRTWEPANDFTYTPPVGDH TWYDGTPRPWEFKRПWHAD DGGLKWSQQSFVSKRQSIKGLNIMD\｜VIDPQNPSVVF\｜

DGGARWAPVDDFLGN

## पACACVAMDPADHSRYV

 DGGENWDY LST IVNPDAVQMAFATR』LGFAMEMT EPQ
DEKRS QWQ DNGPYFAGWEVFHLKGSPVDHNRTYA DGGASWSATLAADNAAQYTDVEVAPDGTLYAVLSSQ AHRTHWA $\square D G P H M P G Y E I Q S A L D D P R Q P T R G W A A A$ DGGRTWEHPHRPQWQPGGGGLALHTILSHPTDTQRJAV DCGDSWVND SPDLPNLSTNSUAQAVSNPDVIYVGT NGGNSFTKISDFSRWESGD DAYGGSSDGYCRNMGEDLSNP

## NS GNNWQPLDDFMAN

LSVS S LIFDANDHNVMYAGT DGRAGWE VTGPH $\quad$ PMAEIFAVAVDTRRAPRILV EARKSWD VSGPHFAGWE IYHVKGSPDDENRIVA
DGGRDWATVKPGFENERHLTMAPG DGGKTWTPWLNQPTAQDYRLTTDYHDYASQQDSGSLNIVS DGGKSWQP NHGLHSEG】PGHCVHRLALHRERPNVLFMQK DGGKTWETPGGGVGRSPEGF DGGRTWQPVNDFSYDGDVGTHQWYDGTQRPWEFTRDWHFD
DEARTWEFTGPHCNMEEVYSCLVDTRSDPPR LNMGSFERD QVRANCIYSLYVKSDD
DRGGSWAPRTDY $\quad$ QATTTVGA VAFDSTNPS VVYCGT

PARRSWR $\square R G P F C E \quad T W P \square N H V V A D P A T G A \square Y G A G G$ D GGKTWHQPGLKPGEPEMP AFPGKAPNRFEYDT D G GVS WTVVF DSN $\square$ A $\square S$ GY $\square E N P A E \square F \square N P T N P D \square V F \square K A$

D G KRQQWD $\square$ S GPHFAGWEVYHMKGSPSDPDR】YAAP
 DGGHSWTVISPDLSTNDKSKQQVGGLTPDPTYCCVLFAEG DGGVT WREDRGLRTHGSGPSWQPGATVQDPRTTSR\｜ DGGKTWSARNRGTRADFLPGQCVHCVVKAPGMRHRLYQQN DGGQSWAPCNRGVQAAFLPGQCVHKVARDAENADRLYLQN

DGGASWDHPHRTEWNEGFGGQAFHTDDPHPTDPDSVTA DGGASWEPSNKGVKAVFLPGQCVHK\｜APDPVDHDRLYLQN
dGGKTWKQVDDVETAPGSNAWVGRGDSNDPGRFDRYDFCS WNETQVFALTPHPHDAKVIFAGA DKGKNWTACASSYNF GANDTALR■DPKDPNTVWV
DAG $\square H W E P V Y Q N V R D A W \square A G R F G T G W A G \square P Y G \square G \square S P T N P$
DKGKTWENDTRFLLFDSPDYRGNVPASFRDRNRDFFSTDP DLGGTWTPAVAFPRDTGASLLERVWQLHPAAGEPDVVYA DSGDSFTKV ROWSGSTWPAAYPKYLAVSPVNPSNMAMGS DASRTWRPRNGLLAGSRAADASFGLLAASPAYPK\｜IYARH

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UniRef90-АокаЕб

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> TWEFTGPHQPMTG

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GEGTFNMDQGTFKSNNKGQTWS SVLSTQNNTDFY GASSTHFGPSVVVSEDLGASWQEPEEAPIAFPEDTGGALE SQSSSWFGQQI QRSDDGGKTWQPVDNTFAYDGHPWEFKRV AQTGGVAHKQLLRSTDGGVTWEKTFRMAMPWDKVTFGTNV RSRRGIVMNSAWSATAGGEAGYVIPDPL HWDESGTPLTVMRSDDAGDSWYE\|SGDLPTDFGFPDDVHA TVYAGAQDAALFRSSDGGWTWRELRGLRTHESGPSWQPGL GASSSWLIGPQVRRSDDLGATWQETAGGADRFPEGTDATVE T IDFVGTENAFLWSDNNGQSFKGFALTITGGE
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N A TWT SRGPYNVGGRT NEWFGPAVWKSTDLGETWTHSSEGLAYAEGQEPDKAV S DATGNPLT THQWYDGSQHPWE
GVHRT TVNGGTTWKSTDGGVVW】AQTTGWYNSTDPNRSVVG
S GGWFGQVVQRSDDGGRTWNPVGNKFAYEGGTWEFARV N Q WT G $\square$ G P A G A D V
T P L H G T Q Y S G VY K S T D G G Y T W
NKNTAGLPGTHDV FSLMSFAQTEYEGSDSFGRI VIWAGTNDGLLHDTRDGGDNWTNVTKNपPDLPPWGTDSN HC

HVATSAAGAFRTGDAGATWEPTNKGLVPDADAEVGHCV GMYRSDDGGTSWTSIEQGLPGFPAAVHPSDP
HW GVYRSDDGGGNWTSVGDRLPSDFGFPHPRRG S $\square M V G T T G A G L F Q S A D S G E S W R R \| G S P F A G$

H W A $\square \mathrm{STGGVYQTRDGGETWEARNNG} \mathrm{\prod PEGQQYPEFGQV}$ GVYRSDDAGASWTDDGSGLPSDFGFTVAAHP

> WNDEGPLDAGYETI

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GSTSGLFVSKDGGNTFNRUKEDTTTVNS $\square R$ RVDDS
EFAYASDSGRVVRTTDGGKTWNPAYSNAAPDGNWTTNG $\square$ D
ENPDTLY LGQ KHDYAATASGLSISKDEGKTWQNKTVADGLLSNDIRAVFV GAEPAALFRSEDRGETFTLVRPLWEHPTRSRWQPGG EETDDWTVNRHYRSTDGGVTWSLSQNIDSSNSFIDPLNDRS GVKS WHWGPTVQVSEDAGRTWSESAERALAFPSDTDTARV RESPGEAPRALYRSDDAGENWRCVWRHDWLRGQWGWTFAP

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 RALAVDPLTADTLYAATSAGDFKSVDAGGSW SAAN
FDLEFAPNDTTTTYAASSAGKDTWT LDQGASF YTGYAG FDLTYDPATPNKIYAПSEDNHTVVSEDNGESWDTLYTLPS ESSKYDAGTCY\|TIDNNRDPFIYKTIDFGRKWKSLSSNTP HNGADGDAETGTIYSAAGDAWFWKSTDGGETWTHSSEGLA DTLFLVPLNGDTAFMPDAKAAVWRTRDGGTSWTALLRAGLP
 RADAVDPQCPNVVYAGSNNGDYRSEDSGQNWAKD D HKVARHASRPERLYLQNHGG VYRSDDEGLSWK STAD HRTGVAYLFP自TAVPAGHRCRVFRTCDAGASWEPDEGLPA DHAWMDPRMPQHAYATANHPIWYRSHDAGHSWEVLPHVPH WSLA AANGHLYAGVEPAGLFRSADRGETWTHLGGLRD STVAVHPNDPNDYTGGHRGKMRRSKDGGKSWEN STIFE WSVAVDPVHPDTIFAGTRPGADFRSRDGGQQWEPLNADAC K IITVATHNFASRPNTRVDGFFDSENGGTSFRRVMSG YG $\square H F D P F D P R H M F \square S Y T D \square G L W A S D N G G A S W Y S A T R N G V$ पGLAADPASPGRTYGGTFDNGLWDSDRGRTWTEVAAPAF LCLDADPASPGRLYGGTFDNGLWUSDDSGETWER F HTVVTDRRDPAAVTVAVSAAGVFRSRDAGASWSAVFLPDP SHFVWSPTNGNTVWGFGGDVIGKSTDAGANWQWANNGNN WQLTPDPNDDDVVWAGVEPHALFRSTDRGESFELVRGLWN AGMEVNPRDPDHVFATTDTSALVTRDGGNTWRQVHAPPA ECTAVSPARPERVFVGTFEGGLFRSQTGGESFERL

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 $R$
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$P S G D S Y T H A D I H Y L G F H G T K L F ~ C G S D G G I V V S N S G D N ~$ RFPEGTDVWQLAPAPADQPGVVYAGVEPSALFRSTDGGET DAEVGHCVHRLAGHPSRPDTLYMQKHWD NVMRTDDAGGR ENKP $G$ GWEDYHVKVKVDPNDSKYIYDATAQGGVLQSRDYGQT GGWE UYHVGGSRFDPGDDLRAVAGALRDGEAWYTRDGGLT $N L L N G Q T V W S I A D D P A N P A V L Y A G T G A P S A L Y K S S D A G V T$ GRVP FYAPFALDPTTPTTCYF GGGQLWRSANSADS RFSP $\square A Y S R G V Q M A P H D S N T \square Y A C V G E A G G V V R S T D L G A T$
PGAGGLCDHTDLLDPHNPDRTFV A DSAAGAFRSDDGGQT LDLDQGGYNMLVKVHPTESQTVFV AGGTNLFRSTTGFTT HPDRGLAVHSVQVDPQNPQRCYA ALSAGGVYRSDDTGVT I GATYRAVQDLQVDPNDFSVQYAGVN GLGI IKSNDAGET VYGWGQSFHSIVADPDRENMVWATSKTGHILRNTKTGFDS
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 AFRDKA GN $\square$ KF $\square$ GAQQQGG $\square \mathrm{W} \square \mathrm{S}$

HPS

TGEGQGVFKSTDNGRT HPTRGLILHSLVLHPNDPNQIWV GISAAGVFHTADGGET HGTGGMCLHTVILDPGNPNRIFI AISAAGAFRTDDGGET APYTATHPNLLNSDTSATGGFYNCAATASGMWRSNDGGQT DGGLHSADTSADNPVNGYGVVYVGTEPSAMFYSENGGET PGAGGMCLHTIVQDPRDAGRLFVADSAAGAFRTDDAGES TGLTTASDMRAFADDPLTPTTLYA GSTTGGVFKSVDGGGN

 KTVL SYTHCVREDPVRQGLLYL GTENADYDSFDDGKN YAEGEEPDKAAWSDAKVDGVLYA GVEPAGLFKSTDDGQT DFGFP $\square Q V H A V Y V V P I T S D M A H F P P D G R D R V Y R S R V G G H E$ QQNAFFNVQAMATDTLEPAGVY FGTGSGELYVSADEGES QAHYGPVLRDAMCADDADPVGIDFGNRNGEVFASADEGDS
$Y$ RGGDAPVKSVWSLAAGPDGSLYAGVEPAGLVRSTDGGES YEGGDAPVKSVWSLAAGPDGSLYAGVEPAGLFRSTDGGES SPMDGLKLWSIAINPSDSATVFA GTSPPFLFRSKNGGQT G $\square P T D F G F A M V V H P Q E P D T I Y T F P D G A G E V W R S R D A G D H$
 HRQGLYAQSLKAI HPTQEKVLYA GDDPPGLF $\square$ SQDDGHH HPSRPSWLHSLVI DAADERRIWV,GUSAGGVFHSADGGAT

 $P N P W V N T T Y W I D F D P K V R G R L W A A M S G T G G V T R S D D G G R T$ PPASGGAGEAPSVQPDRPGALWA GTIPAALFRSTDRGES TGMTYNRVMSVAVSPRNGYRVVWAGTEPSGLFRSEDGGRT PD I YPLAYWAFAVDPQFPQTMYYGMNTSGMLERSMHGDSF LASNN LTAVYVSNSD $\quad$ TYAASASGLS DSKDGGKT HPEFGQCVHKIAQDAGDLDRDYLQNHW GVYRSDDAGAR $G \square M T G G L M N W$ STQDGNVMYMSAQDYNGGL TTDAGNT HPHRGGAVHTVVPEPGVPERMLVAMSAGGVYRSADAGET GGMMVTSAWRYYFEPGVYPERRYVALMTDFGGGWRSADAGET

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UniRet90-O82MZO
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UniRef90 ${ }^{-10 G H P 7}$
UniRef90-UP1000360E60A UniRef90 R5NZ34 UniRef90-A0A022M8M1 UniRef90-UP1000479331A UniRef90_UPIO0041862BD UniRef90-C1F8D7 UniRef90-A9DKL6 UniRef90-R8QSF3 UniRef90-H5WYY4 UniRef90-A5G4C6 UniRef90-UPIO00402FB27 UniRef90_UPIO0016BFB26 UniRef90-M7N162 UniRef90-UPI0003B7BBEB UniRef90-V5SD89 UniRef90-UPI00035CDBOD UniRef90_A7IJ71 UniRef90-V6L762 UniRef90-D7A1A3 UniRef90-UPI00036AC808 UniRef90_E9UTR3 UniRef90-X0MNW3 UniRef90-UPI0003C75038 UniRef90-D5BX52 UniRef90-UPIo003729C1A UniRef90-W7YLV1 UniRef90-W4MCZ4 UniRet90-J9QT70 UniRef90 K2EMZ8 UniRef90-Q01YW4 UniRef90 Q21K09 UniRef90-UPIOOO3621735 UniRef90-UPIO00462861E UniRef90-UPI00036B15D8 UniRet90_l2MU61 UniRef90-C6CUMO
UniRef90 E6SFU6 UniRef90 WOJ1A5 UniRef90-L9WQ47
UniRef90-АокаЕб

WTKAELLDRPSSCMWAFGANPADPD WTRQPAKETWGLRYSRV WEKTNDQRAWYYTRDYADTQDENTVYVMNVSYHKLRRPGS WKKLPGLPTAKTGRIGGDYSRKTKGLVYAIDDTENDGKGR PEDTWTDLTANLPLSSIGGSVGNLNLQGEYNMVIEVSPAD wo
WKP TNRGLRSDY WTRVIVPGSASTGADDVS\|NQKNPDUMLA TI SKENGYNTSQFYSCALHPTAGENYMDGGODNG TTSKENGYNTSQFYSCALHPTAGENYMLGGTQDNGSHK WKSIGVRENFDLGG FSVLPS TTTWASTGKIVCDPNNPNLVYASGVQVSEDGGV FVKQSTASTPNILHSSANPTAASVGGQAFHDLLALAVSPGN WNQVEQTPEA पAADNAAVAPPE 1 RAAVS $\square N R N Q F A V K P S A$ WEPLTTGMP WSQLSSSUDLNYUDTIIVRNENGGGAVYAGGGRAFSNGAY AHRLVKKPSEPDFNRNVADDLGSLTYAGPFRVVDGSTGVQ WEPIVHDLPGVLSTEVQTDP
WA HV
LTDMOKAARESYEQTMAVALHPQN KTLVGNNVGTFLNPCDFDSPNNVFWTYAGQASITGGLRTY FELVRPL WEHPSRSQWQPGGGGEGLHTDLTDARDPAA WT E S G Llp SDFGFPDAVHAD
FAFVRGL WDHPQRPEWGEGFGGQAVHTVVTDPRD YQFVEGL WNHPHRERWEAGFGGQAVHTVLPHPADPRR WAPSNTGLKAEFLPDPYPEFGQCVHKIAPD AVDPDR FTDLTAGAQSQFYKDAVSKQSAANMVGGLQDNGGHAYSGG FSLVEGL WNHPHRKEWQPGGGGQALHTVLPHPTDPAR WREISGNLPTDFGF P $\square A V H A H E P E T Q Y V V P I$ WRVL
WTPPGSSPEEपKSPQGW
WTPATRGP WGGRVELAYAARTAEVVYASVQA
WERTAP WAADTSGPGPADTADAVHPGDSNTVYAGTENGRVYRYRRT WERIDHG\SPQSTTFGVADHRQNPGQD GPHFAGWEDYHMKGSPVD WQADNRGDASPGED PDATAEVGHCVHSLALHPSR NRSTPYENHHPDQHELVFYPSAPNRSUSAHDGGLSRTDND WSAQTDGLPQV PFWAAVMRDA W DTSSDGISEGTRFEVAVSPSDPNVVTS WETVNSDEINLTUYVNGLISNRTGYLTSEGSVFRSTNDGR DGPFFAGWETYHVAGSPAD WS LAQGLSHDNNVRDETAYAYSNANIVFASV WNPSNTGVSAKFLPDPYPEFGQCVHKIAQHP
WKP $\square$ NRGLKSEY WRQAMSAVLPPDTGAGGAGASPRLATIGDEVTSAWGDPQR WRIISPDLTGASVGPPTRATGKPTLADAAREGYGTDYSLS WRPI VRDLPAVLSVEVQTLP
WTP NRG RSQFLPDEDAEVGHCVHH AAMHPEH
WYD GDGLPSDFGF PDAVHAHEPDTVYVVPGKGARHPSR FVELLKQFSGYSVTFVAIVP
WTAVAPGSPGAFDR\|AVCDAPSNPTVAYAWGANGAAA WTEVNGVGKGVWFQSVEFDPSNRDMIY DPGSRS IFYFDDG RRGGVWEFGDRPHFNAQAVYAVAVDTR WQQLSSTDPVNRTQFGQRYPEGGQRNEWQQCYDUAUDPVS WETRNRGTRADFLPEDQRYPEFGQCV WKP $\Pi$ NRGLHSKYIPDPNAETGHCVH $\mathrm{H} \square \mathrm{AMHPDR}$ FTCIYNYGCGTYNPMHVDMQDFRSFGNEYWATTDGGVFKS WKEC KSMKLLLSSYTWAFPPRPFTHHDRWDTVDPNKQDT WRP $\Pi$ NKGLRSDGIPDTDAEVGHCVHNLAMHPQRPDV WS SANSGLT WQRMVAEDGTVLGQETLVSSNFEVTVENPQFWSIVLHPKQ DMSIVAEDGTVLGQETLVSSNFEVKGMFPDNPNVSLTFEG WQPLNNLPHAPVHWLTVQEHFNDLQGVATYGRGFWIQDDDLT WSHVPGLRDHRDPSAEWTPGGGGLLLHBDVPHPVDAKK WSR AEHLPARSSVETLVV
WRQLA AHLPDVLCVRAAVIS WEKLS AEDAQECADGSPRVTAMVVDPVD WEALLDKG[PDDFY
FELVRPL WEHPTRSRWQPGGGGEAVHTVVTDPRDPDA WT PLPGLNEHPSR DRWEPARGGFAVHS $\square Y D P R T$ WEPRNRGTRADFNPEDQRYPEHGQCV WK LSNQGDPK LG

WETTGSAMT PGTDGQQLNNPDПHG
FTKVEVAPSARPGRLAVSDAPGG ENY ws L FPAAKDYGLLIDNMQ WRVMNNGMPQTAATHILRDPEGADYVTGFGRG WTLMRGLWDRPERKDWGGGGYDQPGL HS WIDCPALLDLPSKSTWSFPPRPHTHHVRWTEPDPHDENR WKPVIPNKTTLPNGIITDLILQPGNGFTDRKLYALVNYRT WEKTAADGLASDNDNDIYVFSNTDYAATSSGLS DSKDEGK WT DIGAGLLPSDFGFAVAAHPHR WT YVDPNSNGWVYGGYALNNQDMYGGYGHGSYSTYVTRNG WEPSNPGDRAYF MPDNEYPEFGQCVHKVARG WRYRPDGNPWHNNTYADAFDPDRPDRVW GASSVT WT QLT GL TALSS A DEWYFPPRPHTHHVR WLEVDPFDPER

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UniRef90-АокаЕб

NRQLAVGIDGGTPGTTAALLDSDAGETWTRAALDHPSNS TFKGANAPHGDHHDLWDDPVDPKRMDIDAD GGA QVT F D G G $\mathrm{P} \mathrm{V}^{\mathrm{T}} \mathrm{T}$
SNLMFVGGTNDYRSTTG FTTPAGQESW TAGYSPLNN LEEGTDGILYAGFNPNRLFRSTNTAGTSWTETTPAGASGG P NVLF
 PNVIFLTMGDTTPGSTGCDMRSDDTGQSWQRDPGPVEPNT TWANPANTFGVWAKDGDRFYKSDGTVGGFTEESKSQVGDQ THAAPHTTALKNSKGKAFQHPPDHKAAKPDPNSPAARKAK LCTDDADPAGVYFGNNGEVYASADDGDSWRQL
ADVTRTDVTAPMPSSSUSDLAVDNTGTVWATLGSTNDHVW


SRLVYAGTSRNG LLYSQDGGATWRHYS


PNRTYASQTSGWFGQ VVQRSDDGGATWNPVGGDAGTHQ PDVIF MQKHWDVMRSDNAGEWWYEI SNDLPSDF LQETVAWTSDNRGYVTTQFYTVGDDQSQVNDIIIGGMQDN LLVHPARAGRCYQQSHHGLYMSDDGGEHWHEISAGQPSDF MCADDADPTGDYDGTNGEVYCSPDEGDHWQLVADKLPD NWVDOFNSNTVYAGGAKG WK SKGENWAN NWVDQFNSN VYAGGAKGLWKSTDKGANWNKVNSFNDFPA PDRLYASASLGWFGQ GVVRSEDGGRTWEPVGGEPGTHQ

ANPDRFFLQNHFGVYRSDDGAATWQSIADGLPSDF



PNRDFMQKHWDVMRSDNAGDSWSEVSGNLPTDF

## TSDMARFPPDGHDRVYRSRTGGHEWEPLTTGLP <br> PERLF LQNHGGVYRSDDHGGTWTYIIADLPSDF QTQ\|IFAGSEDGVFVSQDHGITWTKSLS KKGDF AKSTVENGKRKYNDKKMSFDVYNENRTADRNDPSDPDNKT GAVPRLLAAGDSAHWGPSVFHSDDLGRGWTE PARPA GAVLVSNLRGGMYQQNCGMYRSTNGGTSWTQQVDASASQS PD RLVGQNHCGMYRSDDGGRSWESVEAGLPSSF NDLFASQPEFKMNGVHGTDFW GFGSGWNRDLLVGGTFHN DHVSDEA GAVIQSKDNGQNWEDKKFGAPDDA <br>  PATVYAGTAT GGLFKSVNGGGSWSAV PRTLFAGAGPVS TGEGDVYPDKDTLKTAGGLYRSTDSGETFARVESFPQDPQ

 IVDTNYRDQYGLIYGMTFFTNDGGANWDPL$\square W \square G \square$ S A A G
Vfytedgat weprnrgtrady
VYASPDAGGTW

VTVAVSAAG VFRT咱 VGASWSP SNEGVSA PHRLYCAVSA GGVFRSEDAGTSWПPTNRGVRAEN LVQAPGVADRDYQQNHCGMYRSDDGGRSWQSIEAGLPSSF PKVLYASLNQRSPQHVGGLYDSEDGALTWTKMKDPATDSS PVVSSASPTTVLVSTPREIFASTDTGENWQ LYALVNVENKAYYYGQPHILQSKDSGLTWTDKTTDTSNRN -

$\square F V G I E L G$ TWITRTDSNGBPDIFLSTDNGESFKRLAGSDDSVL NFTRTISNGDPSDNTQNVYVTKDDGDPSTYVATSNGISV VTPUAADGDRVPAGHRCRVFRTPDAGANWEPLTAGLDP HDTPMWGYGTGGFGQDDKGVYRSEDGGASWQSVAEGDPTDF LYVGDEAGAFVLSTDGGETWQERPAGSRRDNHT

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UniRef90 L7W41
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UniRef90_Q82MZ0
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UniRef90_W7Y0I2
UniRef90_E8V6J5
UniRef90 C7LPQ6 UniRef90-I2EQL1
UniRef90_S3ZIX4
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UniRef90_D7BRL2
UniRef90 A3J3G8
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UniRef90_G8SFY7
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UniRef90_A0KE42
UniRef90 B5H8D7
UniRef90 ${ }^{-}$W4LAQ6
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UniRef90_H6RC90
UniRef90 E4TU59
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CMWAFGSHPSDPDFQ口AA
TSWSTYMNQPTAQFYRVTTDDHFPYR $\square Y$
S K F
GAQQDNST

VS VY T D Q H P DQHVV LIFYPSNPNKAVSGNDGGVFVTED ERTELALAPSTS GTNQVIYA GFP $I$ EVVHAHEPETIYVVPDTHYPPEGK DVE G QPNTATYVGRMGVDFSDSDPNRAYLISS STAGGNF


 $L L A A K K H T A A P S K R T K I V V P P V K E L T A T A A P K P H F F D G S V$
$R L G P N D A Q W T P R S N G L A Q A N P V N T \| V I D S N N N N R L F C G A D$ F YSDDGSTFTQFNLGALDVSPSDPNLLYVMMENGSTGYI A ANESVVSNGGAYETMVALYYK LIDEGVVWATS GLDPEGDLR

 ENCYVNVLRDAMAVDSLLDGVYFGTTG $R A E F L P D Q Y P E F G V H K I$ ARDPVDPDRLYL QNH
 S S S VS S P GG $\quad \mathrm{NGNWWVTPLTSNSIIGE} \mathrm{\square FSGF}$ $D F L P G E E P E Y G Q C V H K V A R N P Q R P E Q L F A$


GTS G
RVWHLEPS L
$K A E Y$ LATQGWYDNAVWAGDP

PGEFSDTVWTSRSNGLAPANPVNTIVIDPTNANRLFCGAD
WY D GT P H P WE F K R A WH LEPS LS DPD T IFAGVED A
GFP I AVHAHEPDTVFVVPDEHFPPEGA GSHLTPSAGEQANWLRVLGGDGGYTHVANRGAYYYVSFQN $G Y$ ALVATDPHDPDVIVCVPEDRATVDGR
$F \square G G Q G W Y D N T \quad V A V N P Y N P Y E V F V G G \nabla S$
D NDEY $\square R$ STNYTGVYDIVTDPNNPNWVYVTT$\quad H G K G Q D$ WY D GS QRP WEFTRVWHFEPSPTDPDRVVAGVEDA VQGWYD N ALWVD PLNENHIIVGGDD
GFP $\quad 1 V$ THPHRPDVVYSADMRRFPPDGQ
 SR

GFV $\square \mathrm{DHAHEPET} \mathrm{\square YVVP} \mathrm{\square EHYP} \mathrm{\square DGK}$
G F
LLGY
$T G Q A W Y D W Y$ MA V D S L E P E T G Y Y VVP I Ald P TNSNIVYVASF
I F P L R A T S P G NMVIS T
 GQWSHLDVVSTGTNSRL
GFPA


GVDVYSEGFPF GVDIDVAHEPETIYVVPIEHFPLDGA GVDVYSE GF P F GVF LD L G G GEPAS GYVNP GTEQ IY S TN DG
H Q
GFP




NPEDQRYPEFGQCVHSLA LAP G G GERLY
Q Q N H

MPEGQNYPEFGQCVHCLVMAPGGGARLY
Q Q N H
DK G $\square$ T NP D $\quad$ H GMAVS LGEHKTLLVSTPN

Q N H
VF LPDPNPKFGQCVHK\AQDAGDPDRLYL L P Q R Y P DVGHNVH RMVL H P K QP D RLYRQCYN $\left.\begin{aligned} & G F P A \\ & V \\ & V\end{aligned} \operatorname{LH} \right\rvert\, D$

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

P F A WRMARDSKGALYLI VARRSDDG SYGNTGD MPPERRGDPNAQDVHRLAQAPTAPERLYAB QH

HMLT $\square H P H$ VS GRVYY EAAG
 SNNEGESWESYLQDKYIHAVYVKGAY IYAATES

S GDHFGTVLRDALCTDDADPAGVYF GNRN
 GF


UniRef90 UPIooo2F33ADB UniRef90_UPIO003B75D90 UniRef90_I5CA39 UniRef90_UPI00016C3B8F UniRef90 UPI0004718DCA UniRef90_D2QKK1
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UniRef90-A1ZWP5
UniRef90_UPI0003797ED6 UniRef90_G8R3Z9
UniRef90-L7W412
UniRef90_E8X382
UniRef90_Q82MZ0
UniRef90 D9X7U5
UniRef90-UPI0003A61468
UniRef90_W7YOI2
UniRef90_E8V6J5
UniRef90 C7LPQ6
UniRef90 I2EQL1
UniRef90-S3ZIX4
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UniRef90 A3J3G8
UniRee90-UPIO003815DE5
UniRef90_G8SFY7
UniRef90-UPIO003729113
UniRef90 ${ }^{-}$W5XDQ5
UniRef90-UPIO003C746AC
UniRef90-A0KE42
UniRef90-B5H8D7
UniRef90 W4LAQ6
UniRef90-UPIOOO47A3781
UniRef90-A9WIR2
UniRef90_M7NBR9 UniRef90-R4VCS8 UniRef90-H6RC90
UniRef90 E4TU59 UniRef90_UPI000248E77D UniRef90-H8G792 UniRef90-A6FH30 UniRef90 A4FA91 UniRef90_D8JXV6 UniRef90-O72WN1 UniRef90 T1A4N2 UniRef90 UPI0002379F78 UniRef90-UPIOOO47CC747 UniRef90_UPIO00382AE07
UniRef90_A1SM89
UniRef90-10GHP7
UniRef90_UPIO00360E60A UniRef90 R RNZ34 UniRef90-A0A022M8M1 UniRef90-UPIOOO479331A UniRef90_UPIo0041862BD UniRef90_C1F8D7 UniRef90-A9DKL6 UniRef90-R8QSF3 UniRef90_H5WYY4 UniRef90 A5G4C6 UniRef90-UPIO00402FB27 UniRef90-UPI00016BFB26 UniRef90 M7N162 UniRef90-UPIo003B7BBEB UniRef90-V5SD89 UniRef90-UP100035CDBOD UniRet90_A7IJ71 UniRef90_V6L762 UniRef90-D7A1A3 UniRef90 UPIo0036AC808 UniRef90_E9UTR3 UniRef90-x0MNW3 UniRef90_UPI0003C75038 UniRef90 D5BX52 UniRef90-UPIO003729C1A UniRef90-W7YLV1 UniRef90-W4MCZ4 UniRef90_J9QT70 UniRef90-K2EMZ8 UniRet90_-001YW4 UniRef90 Q21K09 UniRef90-UPIOO03621735 UniRef90-UPIO00462861E UniRef90-UPI00036B15D8 UniRet90_l2MU61 UniRef90-C6CUMO UniRef90-E6SFU6 UniRef90-W0J1A5 UniRef90_L9WQ47
UniRef90_АоКаЕб

GYLYRSVDGGRTWAKEWR
MRISHRNDGFGDTEDDWEVSAGSESGWLAVDPTNND\|VYG
DTMTLDDDEPVDWTSLNNGYПTTQPYHVSFDPANSDDLVA KWFKKSSNAGVTWTPVFSWGDHYYSMNLVVHPTDANTLYA LRVYRSRTGGHEWEPLTKGGPQQNCYAMAVDQLDPCGVYF DPQ TGNSTSEDNVAAFGSASDTHDAVSPNTVHRVFFG GYロYRSDDGGDSWSKL
DKAYRSTDGGANWTVIGEQNFYLNPHAVTVDATNKDRDMV GGVSKTTDDGVTWTDMTNNDAVSQQTNUALSSLSPNFFFA FA TTTSDDQGVSWKPA GPPDSAEWRYLASAKNNVVAA
VGVFRTENAGQNWYPWDQGLPNVPVFHLAVHPRLLRAAT TY\AKSSDAGNTWTQTSNGNPFGDYQGLGIDPNDPNTIYA $\square R$ SYELKNREDEASRUSKWSAHADQHNGT DEEVGDIVVG

KSVFYSNDGGTTWTESTYGRPNDPVRYALFNPDNYKQVLI WGVYRSDDAGAHWTDIGEGLPSDFGFAAVAHPHRGDTAYD GQVHVSSDSGDTWTTAADTLP
GGVYRSDDGGAHWAETSEGLPADFGFAVAVHPRRGGVAYV GGVYRSDNGGDSWKSISAGGLPTDFGFAMAVHPTRGEVIYD CRVFRTEDAGASWSELSAGLPKADHYGVVLDDADPAGVYF DNLYKLT GGAWVQQNTDAGGGGNDDLITIDPSNNNIVYV GGVYRSDDGGDRWVSUVDGLPADFGFPMVADP
YGLLRSENGGASFKAVNLIVPSESLPSIVVNPKDGKTVYV ALEKSTDGGKTWAELAGLRTHATLHTVLVDPTAPDRMWV AVYVSEDDGLTWRDRFDGLYYTRTVVQLPEPEGDLLMAD SGVFRTEDAGLNWTLWDQGLPNAPVFDLALLHAKR

A LFRSADGGQNWQELPGLRKHGS LHTHLLDPSDAKRMY $\square$ LRVYRGHRDGEHWQALSTGLPQSHCYALTVDTLDPCGVYF SQI YRLTLDNDESFARI DP IGPY LIF I NPYVFDPHNPNRMYA LRVYRSRDAGAHWEALTNGLPQENVFVTVFDGLDPLGLYL


CGMYRSDDGGRQWTS $\square E A G \square P T F G F P S A A H P R D P Y M P D$

CGMYRSDDGGRKWES $\quad$ EEGLPSSFGFPAAAHPRDPDGLY $L$ E $\square$ F A S QDEGET F QSLAVTKSFAMPYCRWVFAANGDAA $\downarrow$ G

WGVYRSDDSGGTWTDTGAGTPSDFGFATVAHPKHADTAYV GTYRSDDRGNHWIEEISQGLPSDFGYVIVVNPQDPDMVYD VAVWRTRDGGRSWQDLRAGLLPQRNAYALATDRLAPAGVYT GGVWKSADSGVSWVRIFEAPNVWQLNANLILVNVPYHKNL CSAYRSKNGGAGGYK DVTVGGYCSGNFKIHADMQDIAM GALYRSTDGAEHWTRIPLPVGVNGPNGLAIIDRDPARLYA NGVFRSVDGGERWTEITAVQPSKFGFAVAVHPRDPDTAWD GGYAESADAGATWQTVNEGLEPYNYVGVAVDPADENTMVA $G L Y \Pi S D D N Y K N W Q I K T T T D G L G N N I I N Q V V L S D D K V Y V A$ GELYASADDGDSWQQVAAHLP
GDVVTSFDKGLTWSTVVSLPSGEGVRDTAYDQKRNRLFTA $\square Q L Q R T D D A G R T W R Q Q A N G L P N H S Y T C V A L D D G D P V G I V V$
DGYAVSDDGGKTWSRPQDGLAHTYCWGLAVDPADPDAVIV

GNYGGLLQMKNHATGARRNMGHGAEDMKYRFQWNFP $\square F F S$
GDNGTWFSTNTTDAWDEDFGGDGSPAAASGFSFVAPFVLD GGYNWFRSVDGGNSWS $V P L T N T Y T R Y Q A L L F Q$ GTTGVYVSADSGDTWMP VVENDP

HGLEWD $A G V S L A E S K D G G L T W T T S Q T P H A D Q$

 GNGSFF $\square$ STDGGTTTSNLTFTPALPS GDWFTP IKQD


H GRSVW
GADSIFKSTDSGTNWTE $\square$ SE WRGTGSQPYVHADHHN【VF NDGGVFYSSDGGDHWAHKSKGYVTSQFYGV

STDMGVWSTND $\square T A V N P G W A \square T N S G \square A H V R C E S M R F R$ ADRVPYRTADAGKSWEPLSAGLPQGDHYGTVLR DAMCTD

FPAAVFRTEDAGATWEERCAGLPGEPHYGVVLR DALRTD GRCRVYRSSDAGETWEALTEGLPQDGFWS AVMRDALCVD GNGEVYASADDGDSWRLVAEHLDDV ANGVLYKSVNGGVNFSPINFTTNN $\quad$ DES $\square A D H$ FPIVVYRTDDAGATWSALTNGLPS DPHYGAVLRDGMCAD
ASSEDYKTVDRGDSWK $\square E K T G T T R K \quad V E V L R \square N$ $A D S A A F R T D D G G \square T W K T A N K G L V S N F M P N V G H C V H R L A L H$ GNRTVFFGNDGG
GDGTPYRSTDRGHAWHETDLHTPPNSTFWAFGAHAA

AAAGAFRTDDGGETWKP $\square$ NQGF $\square P D P T A E V G H C V H H \square A M H$ GTTG\YASADDGEHWTPLASHLPPV
A GDVVYRNRNGSQSPTALNWERLSTTAADSGS $\square \mathrm{SA} \square \mathrm{A} \square \mathrm{S}$ GTGHLFASADGGDHWTSLAGYLP

NSNGПWFTNDGGKNWTKQNKGAAFNTFNS $\quad$ TDD SAAGVFASDDGGETWTPANKGLVSDGDPDVGHCVHNLARH NDGGI YETPDGSTGWKELNNNLSITQFYSVAVSHHGKLIGG GS GEVYASPDEGDTWHLVAQHLPDV GTTGVYASSDSGDTWAA VRDLPPV DRAGVYRSEDGGRTWRDVSLGGLGSPG

ANGAVWGSADEGETWRQVVCDLPDV
STLGI YKSSDGGKTLTKUFNUSG
GSSGWYVFDVLVS GDGGLFRSADRGNSWASCNNGIVVITS ATAGVFRTADGGASWSGVSAVFLPDPDPEFGQCVHKVAQD TSNKLYRYQHSAGDWSDRSEQLPDDGFNPQGGYNYVIKVDK GTSGLFASADEGESWDCVAQHLPS
GTTGVYASADAGNTWNPIVRDLP
GNDNLFKSVDAGASYDAVYTAPANSTVL,GTE 1 S SAA IPYESYDYRKTKNTPFQKVQHGLPSADGTVISMLATN TGGQVYVSPDSGAHWTPIVRDLP

GTGGVFKSVNSGVSWSAVNTGLTD MVVQTVDD CRMGVFETRDKGETFHDL FTAGVYYSDDAGATWSKINHGLGNPTG | $A$ | $R$ | $D$ | $R$ | $R$ | $C$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $Y$ | $D$ | $V$ | $A$ | $F$ | GTGNLYKSTNGGNTFSVVNMNWTEG\LDE IT Y I K Y N

A QAAVWRTRDGGASWTA $\square R N G \square P Q E H A Y \quad F G V L R Q A L A T D$

GKTAVWRTRDAGQSWQARREGDPQDGAY FNVLRQAMATD NTGTIQRSTDGGRSWETQQLPVEPNSP】WNFATH

FPTNVYRTSDAGGSWEALSRGLPEEDHYGTVLR DAMCTD GKLRVYRSSNGGADWEPLTHGLPQEHAYVTVLREAMDCD GT GALYASADEGDTWACI AQHLP KNPGLYLSQNGGESWRKINRGIGQPDK MTD $\quad$ KCD CSGQVLISEDAGDSWRKVK AGDEVWDANDGGDKYSP
$V$ GGTVMRSMDGGRTF DPDTNNDGSGSETDETD VDGGVYLSTNRGATWRRVLSGDQH GKLVVARTRDGGDTFEVLREGLPQAHAYDD VYRHGLAVD



STAEK $\square Y R F E S G V$ DTDTSHDPADQMGNRWDWSVAVD GTGDVFASADEGESFTRIATQLPDV
LT GALYASDDQGRHWQKLFSDPANPF LT QVTPP

UniRef90 UPI0002F33ADB
UniRef90-UPI0003B75D90
UniRef90-5CA39
UniRef90_UPI00016C3B8F
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UniRef90-D1C969
UniRef90_D2Q4F7
UniRef90 A1ZWP5
UniRef90_UPI0003797ED6
UniRef90_G8R3Z9
UniRef90 L7W412
UniRef90_E8X382
UniRef90_Q82MZ0
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UniRef90-W7Y012
UniRef90-E8V6J5
UniRef90 C7LPQ6
UniRef90-12EQL1
UniRef90-S3ZIX4
UniRef90_UPI0003486158
UniRef90-A0A014NX57
UniRef90-UPIO0038117C8
UniRef90-D7BRL2 UniRef90-A3J3G8
UniRef90_UPI0003815DE5
UniRef90_G8SFY7
UniRef90-UPIO003729113
UniRef90- W5XDQ5
UniRef90_UPIO003C746AC
UniRef90-AOKE42
UniRef90-B5H8D7
UniRef90-W4LAQ6
UniRef90_UPI00047A3781
UniRef90 A9WIR2
UniRef90-M7NBR9
UniRef90-R4VCS8
UniRef90-H6RC90
UniRef90 E4TU59
UniRef90_UPI000248E77D
UniRef90_H8G792
UniRef90-A6FH30
UniRef90 A4FA91
UniRef90-D8JXV6
UniRef90-Q72WN1
UniRef90_T1A4N2
UniRef90-UPI0002379F78
UniRef90_UPI00047CC747
UniRef90_UPI000382AE07
UniRef90 A1SM89
UniRef90-I0GHP7
UniRef90-UPIO00360E60A
UniRef90 R5NZ34
UniRef90 ${ }^{-}$A0A022M8M1
UniRef90_UPIO00479331A
UniRef90-UPIO0041862BD
UniRef90 C1F8D7
UniRef90-A9DKL6
UniRef90 R8QSF3
UniRef90_H5WYY4
UniRef90_A5G4C6
UniRef90_UPI000402FB27
UniRef90_UPI00016BFB26
UniRef90-M7N162
UniRef90-UPI0003B7BBEB
UniRef90_V5SD89
UniRef90 UPI00035CDB0D
UniRef90_A7IJ71
UniRef90-V6L762
UniRef90-D7A1A3
UniRef90_UPI00036AC808
UniRef90 E9UTR3
UniRef90- X0MNW3
UniRef90-UPI0003C75038
UniRef90 D5BX52
UniRef90-UPIO003729C1A
UniRef90-W7YLV1
UniRef90-W4MCZ4
UniRef90_J9QT70
UniRef90-K2EMZ8
UniRef90_Q01YW4
UniRef90_Q2IK09
UniRef90-UPIOO03621735
UniRef90-UPIO00462861E
UniRef90_UPI00036B15D8
UniRef90-I2MU61
UniRef90_C6CUM0
UniRef90-E6SFU6
UniRef90-W0J1A5
UniRef90-L9WQ47
UniRef90_A0K2E6

HHDPKVLYTTSDR FHRSTN
PNNDNDMYMPAGNTMWRNRNL
PGSTLSAAFCSD $\square$ G $\square$ SWSSNWNDVSQ
PFTPGKVFLGNDGGFYWST
KGNDNHLLVTYSNSVWETTDGGTT
PTKPNFVFALNDGGVFRSKN
$P \mathrm{~V} D \square \mathrm{DKI} \mathrm{Y} / \mathrm{G}$ G GKDLYVSND
$P$ SGE IWVGGPEGIFVSSDAGNT
$\square$ DS DK $\square$ LFSNDGGVF LT T DGGNT

SADNTVILATHGRGTYTTT
GADPA GLYFGNRNGVYASADDGDTWQE
DADPAGVYFGNRNGVYASAD
DGDPAGVYFGSRSGVFASAD
S T D S NII Y LT T D G
DADPVGVYFGNRNGVYATADRGSWQQ
QENPEVVYAG
PSNPNTLFMQKHWDVMRSDDGGD
RPALVYAGTKYGLFRSRDGGNWTKE
PSRPGTLFMQKHWDVMRSDNAGD
T T P A D $\square L Y Y G T S R G D F$
$\square$ SNEDRPYVLAGG
PERPDTDFMQKHWHVMRSDD
GTQDNGTLVYTG

PVTRELYCLITGGGLWKSADGGATWQD
HDNDVIVGTHGRGIWILDDVTSLIQD

SYNPNLVFAVGDF!VYGTNRVT
RHNANHFDLSHKSGVFRGSDGGMLMKD
PADPDRLYLQNHWGVYRSDD
PDNPEYVFIGATNGHRSSD

RTNTDTMY
PAEPHTFYTLNNNGVFQS $\square$ DS GQWEQ
$P \square T P A T V Y A G T T G G V F M S S D G G D$
$P D N P R R L L A S E A G A L Y A S D D \square G K T$
$L A D P N V L W L T S S G G F Y K G F$ $L A D P N V L W L T S S G G F Y K G F$
$P L N P L E I V L L E E N E \| V T S V D G N T W Q$

R LE P A GVYF GTS GGLYGSAD

TMEPAGVYFGTNGGLYASTD
P S N P

GADPAGLYFGNRNGVFASDDGDSWTQ GLSPNGVYFGTSSGLFGSHD

PYDEN $\square 1$ WCAGWGSGW
$P \square N S N T V Y T G G R N G \square Y R S K D A G N$
DKDPRTLYAGFESSAWKS DD
AGGDRLAMGSTTGGLWLSEDGGD
$P S A P G V F Y A V N N Q G V Y L S D D G G K W E Q$
$P ~ E L D P D I V Y A V D K A G V R S T N A G A W E R$

PGNPN $\|$ V KAGAAN $\square Y Q S D$
A GRPDTDYVATGGGAWKSDDAG
TDEDGVVYALSNRGLFVTDDFGD

CVTFDPFRPERVYCGTFGRGLWRSD QWVQRGPFNGGRTRALA

F G G GPKMTAVSPADPEAVFVGNYFGGDHKSS TWQQMTPFKGQTVWKVAVDPQNRQRIFAGTSRAVLWRSL $Y H D Q N M Q P \quad$ TClAVDPFQKNRVYCGTFGRGLWLS D

T WRQVGPGMSGYCEEFWCHPTQENVIMMSPDMYNTYGTW SNRLWVATRKGLLWHRD HEYRNF PVAGGVATNLVVDPTDEKNIYVATYTGKIVASQ GKYASSIVINPANNQ\|LYVAMYEKGVFKTT
FGGGAVHTVVPEPGHPENLLVAMSAGGVYRSS S WS LRGPFCDTWPTNHMVGDRASGRIVAGGGNE WVWQSD $T V A S V F R G D G N I V Y S Y S G S T I Y K S T$
$G I A F C N E N V G V V A T G A N K G A T W Y T H$

GDPVT LALLHDPRDGTLYAADKHGHLHKS S WAAASTGMGQRVRSLAL GSNGQTVFAGTEAG VFKST WRTVDPGGSGGTLDFVMHPAD GTLMASSDMGRLLRCT A GHEAVMS $\square$ S $\square$ S P H DP DVI Y A GTEPS RVYRS T

HS $\quad$ VVDQSGEK $V H \square A M S T G G V Y R S \square$
S GAVY QLVIDSTTPSTMYVAANSKGVYRST
$\square D R D G L I Y A L A V N P A D A D H L F A G T Q H G Q Y V Q$ F GWKPVEAPYDGEVSS $\square W S L H H A H D T L Y A G A K P A T L F V S R$

T WEPRGNGKSEHVYT LAAQQRDGRVLY $\square G T E P S A \square Y R S D$ GGDDPVTA LI $\square$ SPHDPDTVYAGTEPSR $\square Y R S R$


RFRGLAAVSRD TAWVAGSLGTVLRTT
QVHPHGAHSVRTVAVHPQDPNIAYILGSHRGKLRRTL F G GAAVHS $\square$ VP N $\square$ QDPN I IHAAMSTGGVYRSS VLA $\square$ GTKKGLWLATS
$R \square S Q L K F H A S D T N K Y Y A V T G E G G L F F S N$




TWRVDGPHF $\square G H \square S H L V L D P R D G S T L L A A A K T G H \square F R S T$ TWRSMGTAGNG LALAANPAQSGTLLAAFDVTNLYRTS $\square R A L A V D P D G R V F A G T S G G G U F R S T$

## GVLYAGTKPASLLQSR

WRTTQRLGDHDLECVAVVSPNDPNS


VSHTSGGVFKSV WSVRGPFCDGWSVNHVDGDPDSGTLWAGGTGAGIWRST DEPGVLWA WT DP GGGLFRSD $N W T Q L G L A, G K \square V L S L A F D$ SKGDLYAGTKEDGLYKTT TWDVSGPHCDGWINHVVGDPASGMLWAAGGHGAGVWRSA

$A G Q S Y G G L L W V S A$
$V G T A E D G L L R S A$ GGALTGLLKT T

D G GETWEPCTEP $\square M G R G \square N Q A \square V T A D A V S P A Q Q A N G Y G V$
$N S G A S W R K$

DGGESFSKLDHTGKNSDAQDPGDATSGQAPRDMD DA DSQS DGGQTWAPVEDPEFCAGVSRPRLLAFAYDPTDANKIWF

DGGKNWHT $\square$ KD $V$ DGDGKD $\square$ AR $V$ RKFMFSHQNPDFG $\square$ A $\square$ T
DAG GWRPNAAPAFLGDPVSQVLHDARDGALYA DGGKSWKTL SFPDIEISDLQUDNSGQKLIAISR

DAGASWAASNPGTRAYFMPDNEYPEYGQCVHKVARGAGG DFGASWTHSSRGLAHAEGEAPVKSVWSLAPGADGVLYA NGGAS WLSASYYPS LNLPS GYY SQ S SVSPTDENRIYAAV $D G G Q T W N F V Q L D F P G G I S K R L Y D V D A Y G D S T \square A \square V G Y$

D G GKNW $\square \mathrm{N} \square$ ARDYAPAWEADKAYWESRNNPYNDNMVEGHQ
 DGGTSWAAANTGLGNLYMSALALGS DG DWHKGFEPV APPGHPTLDVLVPHPRHKGTWYAGF QDRVT W NDEATSLSKGRIFSAIFDQRNGCRLFAAE DGGDSWTELPQWFFPPRPSTHHVRWLEVDPFDPDRLYV
DGGAS WEPRNKG $\square$ SAYFMPGQCVHK $\square$ AA DAA $V$ GNR $\square Y$ A Q N D G G $\square$ NF S A R N N G LS T P LGS GGQARY $\square$ AMSPVNSSKLI IT F DRGRTWRAVER DGEFRGDTLLEAGG
NGGRDWTRI ATAPGGLGPGRAALQPRPGLVLWFAP DGGQSWDRVEGLNNHPSRESWNPGAILSDPQEPDKLWL
D LGENWEEVSAMLSVPDQDKWTVKNVAFHPAQPGTDYVC
DGGETWTH LPEWFFPPRPDTHHVRWDEVDQFDPDRLYV
NGGKTFKQVAKWEPTFHGEDQGTYSTTADGLARTMGLSNA DCSRTFEEMY

VGDVEVLQLE $\square D H$ YNPEIVWL
$D G G R T W R D V P P G A E K \square Q F R D V E A F D A R R A V V L A D G E$ DGGKTWENDASIIFDADNNGWEGLAAALLIDPQKPDNMYFCA

PDRQQWSFTGPHFLMNEDPS IGIDT RDGRTRDMV TPLQWEPLDEPGAGGRMDAlHVSPHDARRVLL
 SLAMDNYNSNAF!HFF

D H GK S WT RANSGLTSP
 SDGDRWEARTV $\quad$ LS GVGAMCLAMDPHDPRRLYV DNGNSWTWKHDGECFD $\square$ KYKHG

DANTIYIMV

DFGRTWTEAARPPAFAKAESGAGRSVDHTFWLTPGHASQP
 $D R G A N W T P V N Q G \square T G S N \square N N \square I V I S N D A \square D S E G R \square F A G G$

DGGKSWTRVDGLSHHPSAGSWNPGAAGVLHTILTDRRPS

NGGRHWTVISPDLTRDVKAKQGDQSTTMAPTNPHVIWV
 NGGTTWSTSGWPNPTGRKMNFFDSQVVKNPNGSQTVV EERRNWS MAGPFLNGWEAYSVLGDSRNGKHA LIFA
DEGKTWES $\square$ NDGMMVDYTNFPSFREVEDNPVNPN LLYACG DGGAS WT LAK LS DGKMD AWIAADPEMARTF
DGGDTWRPERRGWFGGGYDAPG $\square$ HSVMVDPRDSRHV
$D G G Q T W E Q Y K R G$
$D G G V T W Q L S L M A N G Q L D D F L A$
NGGSAWQNVRMANGQLDDFLA GRVEVACSKTTAGKMYDL
NGGSAWTNVR NG NFGTNGRVEVACSKTTAGKMYVLE
DQGATWKLTDAEFPNGKNTYANRD GVYYGDDKASKAN
DGGKTWTQLATMVDEADETLLSGRNDSGVASRGNTLLVSA

UniRef90 N8ZPM3
UniRef90－T1BP24
UniRef90＿UPIoo03B608A7 UniRef90－A1ZPX1
UniRef90 G6Y626 UniRef90－X1KGK7 UniRef90＿UPIO004790AC4 UniRef90＿N8Y760 UniRef90 C3DI64 UniRef90－UPIO004630828 UniRet90＿GOL1M6 UniRef90－UPI00025594F9 UniRet90－G6EGE8 UniRef90－A2SLN6 UniRef90 UPIO0041C741F UniRef90 ${ }^{-141 C 4}$
UniRef90－M0LXV3
UniRef90－W9GGC7
UniRef90－UPI00045E8405 UniRef90－Q1Q468
UniRef90－H1XXJ7 UniRef90－UPI000367ADF7 UniRef90 A7HG60 UniRef90－W7XWJG
UniRef90－L9XJW9
UniRef90－B5JFL6
UniRef90＿UPIO0036EA60E
UniRef90－sog4Y9 UniRef90－D6U1G1 UniRef90－W0JTL8 UniRef90－X1U164
UniRef90－UPI000474D6FD
UniRef90 UPI0003A2870B
UniRef90－Q1Q6Y8
UniRef90－14AQQ1
UniRef90－1016W5
UniRef90＿UPIO00369A314 UniRef90－A3W746 UniRef90－A6CGD7 UniRef90 Q46P13 UniRef90－UPI00047A044F UniRef90－LOIE36 UniRef90－UPIO002885994 UniRef90 K1Y621 UniRef90－F1TF27 UniRef90＿UPI0003687D1F UniRef90－UPI00037EC33A UniRef90－A5KTK3 UniRef90－M7NNRO UniRef90－F0M9E0 UniRef90 101 A93 UniRef90－F219K4 UniRef90－KoC5G2 UniRef90－13CAE6 UniRef90＿UPI00034B9C98 UniRef90－A0A024RL29 UniRef90－A0A031GPV5 UniRef90－A0A011 NG J3 UniRef90－R7LQ34 UniRef90－D1C5M7
UniRef90－UPIO00468D66A UniRef90 UPI000362899B UniRef90－K9FGMO
UniRef90－UPI00035DCBDD UniRef90 XOT2E5 UniRef90 Q01UT9 UniRef90＿UPIOOO35E84F6 UniRef90 UPIO00346132E UniRef90 S2YRZ3 UniRef90－A0B2M2 UniRef90－MOMZN2 UniRef90－C9DзАЗ UniRef90－S9RSW8 UniRet90＿S5V037 UniRef90 E7QX30 UniRef90＿17BX59 UniRef90－T1AWD2 Re UniRef90－UPIO00478FFC8 UniRef90－UPIO0036861A0 UniRef90－UPI00016C0B4E UniRef90－X7F6Q1 UniRef90－L2EGB9 UniRef90－IOAHF8 UniRet90－V7EQZ3 UniRef90－V6SOVO UniRef90－UPIO003724389 UniRef90－D8J7S6 UniRef90－F4XXN8
UniRef90－E8WVC1

VFVGTEPTALYRSDDGGDTWTELENATWSFPPRPHTSHI GELRGYRGNGUFKSTDGGNSWNPLAATTNLTPQDNAFEYV SWKLRGPFCEHWPMNHVVGDA
$N \square D D V H T A G V N W R S T D G G \square S F T \prod T S Q T P S G A \square N G N \square G Y C$ GLEEGGLFHSQDGGETWQRLDDRLLWDFN VVYVGTEPSALFRSENGGETWTELKNMKSLFPPRPFTHHV WKLSGPFCQTWP亡

## S G $\square \mathrm{L}$ Y K T N D M GK S WE E $\square \mathrm{YK}$

FKGRY
ALNLGHFGCKLHRSDDGGSHWQELAAPKPDGDDDPVPWDL NEVVSTDRGLNWVQLPG WWGMLTKAKLLNNNLYISAGY HVGTNKAE YKS SDGGKSWЏLSNQG』KPGTAFY TQV
$\stackrel{H}{4}$
GA LIFAQNHKGVYRSDDGGTTWESTADGLPTDFGFT $\square L A H P$ G GVEPAGLVRSDDGGQSFTALDGLQKHPSRGDWGPGG

GHFGIASSKDNGQTWHNYRDL DVNQERF
LSNQQWNGVKYTHRSDDLGRSWSEVAAPEGAGDAPTVHQLW R LWCGTFESGGUHRSSDGGDSFESLETEFVPGAENLESAVV

 G $\square E A G A F V Y S T D G G E T W H E R P \quad E D S R R D N$
H H
GVYRTDDGGENWDS $\square$ ADG $\square$ PADFGF $V \mathrm{M} \square \mathrm{T}$
RGLFGNY VYHTSDGGANWTKTTNMDESNADGWVDNDY WFVGTAGGGI WKTTDGGTTWEDKS GGMSHDGDSSCESSP A LFLGAADGVYRWQEASRRWQRSGEGLPDRGV DGAQDWAMSGVARSDDGGRSF

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

GIEAGAFLLSTDGGESWQERPPG ARRDN
NNFYWVNSQWVTGSKDGGKNFKVMHANQVSKGKWQSTGFD GTAVGEILRSDNNGTNWTT』ER

LGSKI
G EDSRVYRTDDGGTTWTET FRNPDPRAFY TKNMDSEVGGFYKSTDGGYTWTLSNAGLPADA QNHGGVYRTDDAGDQWISIADGLPA GLGGFVFRTGG $G V R S E H W G P T V A H S D D L G A T W S E P E Q G A D A F P E D A G A A V E$ GGDMLGI GRSTDGGDAWMPTS GNYYSNSSAGLRKSNDGGTTFTATSLTNCLVIE
 ND L S GVN GN G $\square Y K T T D G G T S W T L V N$ K

DWT LRRQDW
GKTW
VFADNIPVGQF

GTFDQGLFRTRDGGEHWE

GVWYGTSPQGLFRSEDGGANWQY $\square$ K WMGTAQDGTPDGPK STTG $\square S S G G A V Y K S L D N G D S W T K L T A P S P R D S T F A L A A G G$ DYNYGR GLFRSLDHGDTWTSLTFQNPV LDRVEVPE WVAGTKGTVLRTTDGGTNWRDVSPP GADA LEFRD $\square$

TTDGVVSDGAVPGDAWRTTRRDAEHDL
H $\square$ WCG $\square$ SAAGVFASEDGGET WERRNRMSNAEGRAHHDHCV
W $\square$ A GTQGTVLRTTDGGTSWRNVSPP GAGGDQFRDV
T G D A T DP D D WT A ETRDEGPDL GTDDGWVWVSRHGGKHWTKVT TGTEPSAVYRSTDGGESWERPSSSEWSFPPRPDTHHV SATNSYI GSSNDFGGTWTVKFVPRFLADPDVVTFTT GTSHAAYGAS SRVSYDFGETWTQ DEDGYSEESGFSLNRDW WIGGGTKGTFVRTADGGRTWQTGTVPDAPTCDFRDVH RKENS $\square E P E G \square W \square S E D G G K N W F \square S T R \square G S G Y Q E D A E Y W S$
 D $\square \mathrm{F}$ IGSENEGVFRSTNNGNSFEHIGLPDSRVKN【VFSGDS NDPGAREY LKKEPSPPA PFKGK I DRVAAAAPVK TKMSTDGFATNTAVTDPTS $\square G R Q P P A A N D F$ NLVFAATEAGLLKSTNAGNSWSLVS GLD Y $\square E R P T E$ GTEPSAVYRSRDAGDSWEHMSEPEWYFPPRPDTHHV


UniRef90 N8ZPM3
UniRef90- T1BP24
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UniRef90-B5JFL6 UniRef90-UPIO0036EA60E UniRef90-SoG4Y9 UniRef90-D6U1G1 UniRef90-WOJTL8 UniRef90-X1U164
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UniRef90 MOMZ2 UniRef90-MOMZN2 2
UniRef90 E6SGV7 UniRef90-C9D3A3 UniRef90_S9RSW8 UniRef90-S5V037 UniRef90-E7QX30 UniRef90-17BX59 UniRef90-T1AWD2 UniRef90-MOMKN6 UniRef90-F9ZHXO UniRef90-UPIO00478FFC8 UniRef90-UPIO0036861A0 UniRef90-UPIO0016C0B4E UniRet90-X7F6Q1 UniRef90-L2EGB9 UniRef90-10AHF8 UniRef90-V7EQZ3 UniRef90-V6SOVO UniRef90-UPIOOO3724389 UniRef90-D8J7S6 UniRef90-F4XXN8
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130
140
150
160
 NT WIDPSNAQHLIVGAAGGGLWQSSDGGGSWSAVSEFP
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HADDLLEFDGNELYVCSDGGDFVAEAPTNVSSSYYTDLTT HAVAVLPNHGQKVVVVVCVNAVYRSFDDGQTWTGD I AK RWITVDPNNPNTIHVSDEAGAV DQSNDKGHTW NHFVAHPETGTLYAGGGDAWFVWKSTDLGQTWTHSSNGLA ADDAVDPSNDKNWYVGPGDFWNY SRNGGRSWQK SVI KLIAGGPEQPGVLWAGTDPGGLFRSEDRGASWRLVESLWG EGLYVFKDDGNLLVTSTFGGGLYASYNNGKDWKELTHSDLD FSINIDPTNSSIYAATSTGGIYKSTNGGNSWNRIGSNKT ECVAASADAPERVFVGTFSDGLHRSTDGGDTFERLETGAD TRWNDPVADDGERIPPGAQLQVQRSDDGGRSWRMQAKGLP LTVATDPNNANVVYTGTSANGVKFRSADGGRTWNAMPTDQR
 A A GGPREAGAWAGNAA DADRASTVR QCIWQDKRGENVIYGGSGEHHLWKTTNDGSEGKQAAKYLN TAVTISPHDPDVVYAGTEPSRVYRSSDGGESWEHLEGLTD HS ICVDPRNSKVITDGDSCGGVWRSEDDGETWQQUGHGQA YGLVIDGVDGQTVEAGTAGGGVFKSSDGGANW A VAGAN WTVVPGTTEPDVVYAGVDPASLWMSTDQGETWEPNPAGWG ESVALDPYHPGTIYVAFGSGNLWKSVNHGDSWKPIFE ESVQLDPYHPGTVYVAFGSGNLWKSVNHGDSWKPDFEDPD
SP TSFHPTNQN TA $\square T \square G W G N Q V K K T T D G G V T W S N T G Y T G S$ TTMYATTGETPFSGNGDNGGGVFKSTDGGDSWSRLDSTDP RALAAPPTNSA LFAGTDAGLYAALRDYETTWQLV
TSLRHGAFG【DGAFYGVDHDQKK】WKFSGGAWEDLTRAAG E TWSLEPDQPDRLWCGTDPGGLFRSDDRGSSWQLVDSLPA HRVLIRPSNPAQLFMCGGEGLHYS ADAGETWTHLMTRAD PHDMAGVRSEHFGPTVYHSWDLGETWSEPETAAD HSDETHPDREGLVYAAAGDGFARSTDGGETWDH

DCVTFFDHRHGDAMSDPVDGKFRDTRDGGRSWTVLPGMPP RRLMLDPADPKQIYAASQNGGLYKSVDQGDSWEKQTI ACVAWSATETNTVYSTTSDSGFLVSTDGGKTWTGRSSTVH TVWT VP LT SDEHRIPVNGRLSLYRSTDAGVSWEQHHGLPD RIWQUYPDRPGVVWAGAEPISVWKSTDGGEHFELNRGLWD GDFTSHPDRPNEVWAGTLSGPHRST DGGQTWEPRRAGMP
 STAAGGPDOPGVDWG GGDSDDASPGAPQ YHINGGPDQPGVLWAGTLPGGLFRSNDRGESWQLVESLWN LEFDPTSY
 YLTRFDPTNTSKVFASFDTGGLWMTSNDGADWT LTD
HSTIDDPRDAHMYMAMSGGGVHESFDAGRSFEVVEGFDV DRLVVDERNPNLLVLYGHDGVFAFSCDGGQNWHT PK GKIUVDPAHPQSVY ADGDGMFASADGGTTWSRDSSLTA ASMAVSPAGHVVIGCFGYPGLT GSTDHGETWNNPPPAWV E AFDARRAVVLADGGEASRVYRTDDGGATWTESFRNTD ADEPGVLWAGTDPGGLFRSDDHGDSWVLNRALWN ECVAVHPASPDRVFVSTFDAGLHRSEDGGESFERV
HNMVRAPGDNDLTYQQNHHGV WKSRDGGRSWED $\square$ NG $\square$ PS
E AFDARRAVVLADGGEDSRVYRTDDGGATWTESFRNPD HDLECVAATGERVFCGTFDAGLFRSEDGGESFQSVGEETD ECIAAVHNGSPRYYVGTVADGLFRSTDGGETFDRLTRTPA YHVTVSPFHAGTAFAGNNHPYVFRTDNYGRSWHRIT
RWIEPDPHSPDHLYVGITEAGALVETHDAGATWE DR LRASPNFTNDKEIYLGSRFHGVLHTKDFGKTWRLQRGVPL

AGDAQTAYLMSAGPDQARIIYKTTDAGQTWTLLLYKTEQ SQYAPDDVDTRNVDVGGEEDWSWMF
DSTWS पARADGALWAGARPAQLFVSRDRGDSWQRVEALTD HRVVQCASNPDVLWTQ HHCADFRSTDGAMRWQRIEAQPS VTLWSVAKVGAKLYAGAKPAALYESADWGESWALVEGLSN VTLWSVAKVGAKLYAGAKPAALYESADWGESWALVEGLSN RAYFVAPSNHDTLLLASYGRRYYRTDGGATWTVVFSNTA RWMEIDPHDPRRIYVGTELGALLISDDGGETWRERPPGSR FDLVGPTNNQRFYVSVGGNGIFRSDDGGANWDNVSDQDD
VSFAQDADPNTLAGLGAGTAGTSYSPNWPQLAPGEG

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UniRef90_G6Y626 UniRef90-X1KGK7
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UniRef90 T1AWD2 UniRef90_M0MKN6 UniRef90_F9ZHX0 UniRef90_UPI000478FFC8 UniRef90_UPI00036861A0 UniRef90_UPI00016C0B4E UniRef90-X7F6Q1 UniRef90_L2EGB9 UniRef90_IOAHF8 UniRef90_V7EQZ3 UniRef90_V6S0V0 UniRef90_UPIO003724389 UniRef90_D8J7S6 UniRef90_F4XXN8
 GS LAVDAIAQLPAGTGDPFNEFQPGSGMLMSTDGGNT KFRGPLLDTHTLLLTHPMAPGREYAAAGDGREYGESKDACLT NFV ARYTDV AVSPKSNTSSGSPVGTVSGFYRSTD GSNW YEA GEEP DK A VWSLARRNGSLYA GVQPAGLFRSDDDGAT FRGFAVHPQNSDDVFAFSKTKGKIYKTEDGGEN GLGDGDSQTDPVVIVTGGSQDNGSSVLDGTDGIVRGADCGEC





 $\mathrm{F} V \mathrm{~V}$ S D A
 YPEHGQCVHCVVKAPGLRHRLYQQNH CGMYRSDDGGVS TFGTMFGI SNITVRPDN

S YVY $\underset{F}{ } \mathrm{~K}_{\mathrm{K}} \mathrm{S}$ S F A GTTW
 G G Y D E P G L H S
 HDPET QDPHLLAI CRDQPDHFWIVQHHNNGVFKSSDGAKN
 PGAGGLCLHTDIDADTRPSRMWDGISAVGCMRTDDGGRS A GLLEHRYCWGLVAVDPA DP


 GWPQNGVNGLLFDPDDPDRLYVHD AFERIVSTDDA VTPASFG SVVAVNPVD GS IVYVFDEGGHAIVRSDDGGRR APSD GE DGHCVVHNMARAA G DEVVI Y Q Q N H H GVVFRSTD GA R T
 AFPKDADTAVERIDPAHPDEVWAGVEPTSLWKSTD GGQT VGLD H R Y C W S VV V A D P S D P EVWA GVE E S V L V S A A S GA S GWK G GK G GNSVVVSDPERGNVVWTVLTSGQKVLVSTNKGQS LLKGADH V VGVAQDKKGENFYMAV RDNLYHSTDKGNT
 ALLE GEA GFA A LVSS GPK DVVWLAT G GAARARRVLHSAARRGRT $P$ A Q $\square Q S V N N V F D D R N T Q A D F L S T G R R T G G V W K S S D C Q G Q T$
 HP H R GEWGHSIVVVHS GDTIHVAMST GGVYRSLDGGAS APRFGTARSRLLAFTGDHRDFSGNTTNQGRVYLSRNGGES PFTDMKVNTA TNSQIVYASTEEDPRFYRSTNF GTS IE S N
 A A GPD AP GLVLWA AAA GPDAPGVLWA GT DPGGLFRSHDRRGRT
 VP QRA Q G $ل H S D C V D P R D S N T V L V G V S C G G V W Q T$ LD G G A S DAA PD D DNRYGYAMSQGGN




VT QVVKLS PS Y S T D QTVYY VVR G NLL K SVVDK G E H AEPTFHDPHCl RLCPANPDRLYQQNH
 $V L P T V P A V V A V G A A P G R N V F V T K W S G D G K Q M F Y S T Y$ V $\operatorname{C}$ G G S

 $G G Y D A P G I H S V M V D P R D S R H V T V G D S C G G V W Q T A D G G A T$


 PKAFYDCMAF FDRRHGLAMSDPVDGRFRILLSTRD GGRS



 $K G \square F F D G \| D F$ WDS QHG VFSDP DDGRWAI LT T
 HP S A GLTVHTLVTAPEAPGRDWLGISAAGVFASED G GAT
 HPSGGLVLHTIVADPDDPAKMWV G DSAAGVFATEDGGAT




UniRef90 N8ZZPM3 UniRef90-T1BP24
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230
240 WT PIS S TAPASANAFWAVINSDATNSNG WESKAEGDKHHY DY GMAVDPGNPDVIIVSASVHAMEAHH $V N \square T P V G F P T \square H D R T V M A \square S P T D E N T V Y \quad$ TVLSNTPT WSHIEGLQNHPSRK DWNPGGAGLILHSIVTHPRD


 WDSCS GLEH Y


WA LISA QGMRAAFMPPDQAHEQN
WETWKGGKSSPKGDRP TYVSSEQAGПYGTODKGESQDP WFADGPEGEYVHFITDHPVNHNUIYIGTSKGLFKSSDSGE WTHLE GVVDLPSAEEWYFPPRPHTHHVRWLEVDPFDPDR FNRIATQLPDVLVVRAAQLP WQS I EKGLPS SFGFPAAA HPRDAETDFLVPLNGDTAGRF K LPPPSSTSTANTTPTVTTGSATDVTTNSATLNGTVNAGG YTPLLGWPNVDFKGLAISPANTILGVCFKGDATDSTDGGY WSPAPDALNNVISITQ
WTPCGHGMYAEYMPPERR DDLNVQDVHRLAQCASSPDV FVDWGKATMA WMRTNH $\square R \square D P \square N P L N M Y F G V T E V A G$ WTERPPGSR $\quad$ RDNHSMATHPDR FTEDEEAGPSVFGFAVAVHP KNPDT WA AVNSGLGSYYVQSLALGSDGQTVFVGTHSGVFRSSNGG QRSLHPDTTGRAWRRIPDLPVEPITCLAHDSIKKWV W VFANKNTRAGFLPDPYPE FGQCDHRLVQHPTQ TAHTAHRADAHLYRKRGETEWERLDGCGLPTGEGVV RA WKHLGLDDSWH GEDAVHPYDPDGVLVCVLGHFWSKNENR FTEVVSHLPDVLCVRAAVVVGTPAGT w FK L I ATVSHNNRKATAAAAMYENUIIEAVGATNDDSTNAQ WT ITYSNP DNDTPTWTARWEGMPDSAEVQQDIAEPGN WS RVLTNARVGKGEPPWLHVADQGFFATGQVVFXPVVPGR WEDVTVGLPSTFGFPPAVHPHDADTVWVLPLNGDTEGRY WT CKA D G L R A EYMP P DLA HDPN WQEDRNGLPAEVIGN FRL NQALWDHPHRQDWFPGAGGAAVHS VVPDGEV QA HRQGTADSYVYRDQSEDAWERDEGTGQPTGDGVV RA WKESKGLPKTKUSGLSSDRKSPKNNRTAQGDVYKSTNDGQ WSKLTLVTTERKTRIY
WDAVNSGLTS KNVYSLAVSGTNDIAGTNGGVYDSNNKGV WTAT
WQoLLFAPFVWQAESSPVNPDLIVISVAGOAVSMADD




 WS QUQQF LTTSTTAA VAA A GK D DY T T DD S G DT WQ Y Q S S L E Q E V


 LAR Y D LIK T GF T K N L R P T H P D A N M K L R F N WN A A L A Q D P F S $F$ S L I I I N DP K VA D G II R F T D D GK LIY IGN Q Y G LIF LI NT Q T N E WED RKP G


 WR R I G G GMPAEVGDIGGPM

 $F Q S$ G G H I S DGESN V L CLLA M D E
WQLVEA LLWNVPQRA QWF GGGYDTPG DHSDCVDPRD WKVLPDAGMPAAQE GEAGFAASGQCLVAS GPSDVWLATG

 WQDCRDGLPQE GCFFTVLRQAMAGDRRDPAGVYFGTNSGS WKPVQS LTDHE SAEGWNPGAAGVVLHTVVSDPVNPQK WRPAAGMPAALDGEAGFAASGQCLVTSGPKDVVWLATGGG WERRE GLT D LPS EPN WSFPPRPHTHHVRWIVPDPYDPN H WT R LE GL T DLP SA SEWSFPPRPDTHHVV WL EVVDP DPDR WRPDLHA N L T T A A V F D L Q V VK P L H S L VLAT H GRGM WM LD N WV HP Q E GL GHRYCWSVAVDPA D P DTVLLS SA S GP

 WA QVDSVEVDHD VW $\square$ GRGNSNVPGKYVLTQPVTNDV
WERRNRRSNAVPPPDHPAGGDGHEDGHCVHNIVRASGETD FERFSAGLPTA WQLTTNLTADTLMSVYNVLVASDDTLFASTEFKLRKSTDGG WDRRNRR SNEDGADHVHTGECGHDVGFCVHNMVRAPG $\square S E R N N G G T Q F \square N N A P A G \square S G A T E \square N G G D G C W N F T D T G G Q Q$ WSVLIP GSR



UniRef90_N8ZPM3
UniRef90 ${ }^{-T 1 B P 24}$ UniRef90-UPI0003B608A7 UniRef90_A1ZPX1
UniRef90_G6Y626 UniRef90-X1KGK7 UniRef90_UPIO004790AC4 UniRef90_N8Y760 UniRef90 C3DI64 UniRef90_UPI0004630828 UniRef90-G0L1M6 UniRef90-UPI00025594F9 UniRef90-G6EGE8 UniRef90-A2SLN6 UniRef90-UPI00041C741F UniRef90-X1AIC4 UniRef90-MOLXV3 UniRef90-W9GGC7 UniRef90 UPIO0045E8405 UniRef90-Q1Q468 UniRef90-H1XXJ7 UniRef90-UPI000367ADF7 UniRef90 A7HG60 UniRef90-W7XWJ6 UniRef90_L9XJW9 UniRef90 B5JFL6 UniRef90_UPI00036EA60E UniRef90-S0G4Y9 UniRef90_D6U1G1 UniRef90-X1UI64 UniRef90_UPIO00474D6FD UniRef90_UPI0003A2870B UniRef90-Q1Q6Y8 UniRef90_-14AQQ1 UniRef90_IOI6W5 UniRef90_UPIO00369A314 UniRef90-A3W746 UniRef90-A6CGD7 UniRef90 Q46P13 UniRef90-UPI00047A044F UniRef90-LOIE36 UniRef90_UPIO002885994 UniRef90_K1Y621 UniRef90-F1TF27 UniRef90-UPIO003687D1F UniRef90-A5KTK3 UniRef90-M7NNR0 UniRef90-FOM9E0 UniRef90_IOIA93 UniRef90-F2I9K4 UniRef90-K0C5G2 UniRef90-I3CAE6 UniRef90 UPI00034B9C98 UniRef90-A0A024RL29 UniRef90_A0A031GPV5 UniRef90_A0A011N6J3 UniRef90-R7LQ34 UniRef90-D1C5M7 UniRef90_UPI000468D66A UniRef90-UPI000362899B UniRef90-K9FGM0 UniRef90-UPIO0035DCBDD UniRef90-XOT2E5 UniRef90_Q01UT9 UniRef90_UPI00035E84F6 UniRef90-UPIO00346132E UniRef90_S2YRZ3 UniRef90-A0B2M2 UniRef90-MOMZN2 UniRef90_C9D3A3 UniRef90_S9RSW8 UniRef90_S5V037 UniRef90_E7QX30 UniRef90_I7BX59 UniRef90-T1AWD2 UniRef90_M0MKN6 UniRef90 F9ZHX0 UniRef90_UPI000478FFC8 UniRef90-UPI00036861A0 UniRef90-UPI00016C0B4E UniRef90-X7F6Q1 UniRef90-L2EGB9 UniRef90-10AHF8 UniRef90_V7EQZ3
UniRef90_V6SOVO UniRef90-UPI0003724389 UniRef90-D8J7S6 UniRef90_F4XXN8

VA LIATTLQG
250
260
270
280 GTGAPSRAVLWRTLDGGKTWTRANVED
 QGFPYSLWKYTYLAGDG E E Q IWVGIIS SAG VF Y S GLGGGQWTNLS GNVPRLG
 $L T P F E Q D P \square A A N T V Y T G Y V Y K S V D G G F S W T S V S Q N F G A N L$


## G

 SKEHKPSNKVVFHTADGGETWEPRNRGTRADF L F PNSQPHGSKEHKPSNKLWKSTDKGKTWK WMNKGFHPDT VEQTAFEAAGTSVITKGGVYKSTDGGKTWQNCTGNDAVDM
 I PGATVYDLAITANSKGYQLLAGTDANTYMTALPLQNKIID D WV
$\square Y$ AG $\square E A G A F V Y$ TEDGGETWHERPEGSRRDNHS
M PEAKAAVWRTRDGGASWQAMRSGLPQK
LSTTSWFEYGETSGSYGSKSSTQSASGSKGTTVS $\mathbb{C}$ GIS GL NWTYPDNLL

QHHNGT SGGGSGTDGPDKDKEGGFHKSTDGARTFTE ITAURPSKF EGGVYSAAGDGF A WL AP A TNWTAVNTGLSNLNVYA LALGSDGQTVWAGTADSGVFRS WAVTRSGRLAKNDDATGRWEQV
$P D V L Y$ QQNHCGI YKSLNAGEDWIDI QHNLPSEF





QNHHGVYRTDDNAETWNS DADG LPAD
 $\square K G N$
$Y L I T$ $N V Y F L \operatorname{SPSKDRRRKGAD\square T~DYRSVDA}$ $R Q V S V A D S T G Y$ G SRHVAVGUS
$I V R S A G T P D A L W C Q H H N G V W Q T N D G G A S W R V T A D G M E A D Y$
$I$ NSTMY DEKEYAEFSNDPNVTGGDVVGNVIYVQTWDGIY TLENDT KYNGASDHDGGGEAPTGYVLLSNPRKVAFSDTNPKNVILP VVARWNDK I YRT D G GDTWA ITTSGLPN
 LRALPREQGPIVKSMGWRIMRSDDGGRTWNPACKGLLGWFD $L A$ GAARARVLHSRDRGRTWTATDTPDPAGD VVQCAANPDVLWMQHHCAI FRSTDSGEHWRRIEAEPSSFG LYVG $\ E A$ LYASGHPGPQ $\square N \square D N P L G L A R S E D G G R S W E P V S$ VFASFNEGDQW
LWVG $\square$ SAAG VFATEDGGKTWERRNRDSNDET LY V $\operatorname{GIEA}$ AHARVLHSADRGDNWTAAETPVPAGD GALVQQYDAGETWEDKVPTARVDN $L Y V G \| E A G A F A Y T P D G G G T W H E R P P G A R R D N H S$
RSAHNADTAESYVYRKRGNGSESDA DSWERLDD R R GLD T PATDNLVIVGTNNGlYYRTDGGTTWTKETHASVGAN PDVLY
 YFVSGETGLWKGNDTVDYSHQDTKAVPMERDDFENQVS L DDDSGTRLAMQQNHHGVIFRSRDGGRSWDDVT
 KGGDLMYQQNHHGVFRSPDGGRSWHEI TAGLDPSF YMDSSYVYNVYSRHNDNGGWVYDDANDSANDVLYANGSSG $M E I S P A A A D K D Y D F N L F Q D L N S G T T D G A T K G L V K Y N T N G D$ $V L V S C A S G A R S A H S V G S A E S Y V Y R R R G R R W D R L A G R G L P M$
$P N V V Y G G D R Q D U P F P N A D G A N D F S G R L F R G D T D E N P T D P$

UniRef90 N8ZPM3
UniRef90-T1BP24 UniRef90_UPI0003B608A7 UniRef90_A1ZPX1 UniRef90 G6Y626 UniRef90-X1KGK7 UniRef90_UPIO004790AC4 UniRef90-N8Y760 UniRef90 C3DI64 UniRef90_UPI0004630828 UniRef90_G0L1M6 UniRef90 UPI00025594F9 UniRef90_G6EGE8 UniRef90-A2SLN6 UniRef90 UPI00041C741F UniRef90 $\mathrm{X1AIC} 4$
UniRef90-MOLXV3
UniRef90-W9GGC7
UniRef90_UPIO0045E8405 UniRef90-Q1Q468 UniRef90-H1XXJ7 UniRef90_UPI000367ADF7 UniRef90 A7HG60 UniRef90-W7XWJ6
UniRef90_L9XJW9
UniRef90 B5JFL6
UniRef90_UPI00036EA60E
UniRef90-S0G4Y9
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UniRef90_UPI000474D6FD UniRef90-UPI0003A2870B UniRef90-Q1Q6Y8 UniRef90-14AQQ1 UniRef90-UPI000369A314 UniRef90-A3W746 UniRef90-A6CGD7 UniRef90 Q46P13 UniRef90 UPI00047A044F UniRef90-LOIE36 UniRef90-UPI0002885994 UniRef90 K1Y621 UniRef90-F1TF27 UniRef90_UPI0003687D1F UniRef90 UPI00037EC33A UniRef90-A5KTK3 UniRef90_M7NNR0 UniRef90-FOM9E0 UniRef90-I01A93 UniRef90-F219K4 UniRef90-K0C5G2 UniRef90-I3CAE6 UniRef90 UPI00034B9C98 UniRef90_A0A024RL29 UniRef90_A0A031GPV5 UniRef90_A0A011N6J3 UniRef90-R7LQ34 UniRef90-D1C5M7 UniRef90-UPI000468D66A UniRef90 UPI000362899B UniRef90-K9FGM0 UniRef90-UPIO0035DCBDD UniRef90_XOT2E5 UniRef90-Q01UT9 UniRef90_UPI00035E84F6 UniRef90-UPIO00346132E UniRef90_S2YRZ3 UniRef90-A0B2M2 UniRef90-MOMZN2 UniRef90 C9D3A3 UniRef90_S9RSW8 UniRef90_S5V037 UniRef90 E7QX30 UniRef90_I7BX59 UniRef90-T1AWD2 UniRef90 F9ZHXO UniRef90_UPI000478FFC8 UniRef90-UPI00036861A0 UniRef90_UPI00016C0B4E UniRef90-X7F6Q1 UniRef90_L2EGB9 UniRef90-10AHF8 UniRef90-V7EQZ3 UniRef90-V6SOV0 UniRef90_UPI0003724389 UniRef90_D8J7S6 UniRef90-F4XXN8

PEFCAGVNR PR L LA FAY DP T DA D Q DW F 310
G L E E MVIPDVVFDPNNPNDAVADSYN
GNQGDYNS QESFN MLI D DKPDNSNIMF D. G G LP E G Q N Y P E F GQCVHCLVMAP GRPD RLTY QQNH
 $H \begin{array}{ll}\mathrm{L} \\ \mathrm{L} \\ \mathrm{K} \\ \square\end{array} \mathrm{A} P \mathrm{~S}$ N G N F Q Y A A S G

पPEGENYPEFGQCVHNVVMAAGANGRDY
Q Q N H

 P P
G F
 S E WG A A E GE GRF G VF K I A TS P T E L N V V Y K I

## $\square A T H P D R E G R \square Y$ A A

A G
G T G S
PAGKTYYYRDAAQNSAGTTYGSKMSFTTSSGTPSTSTSSG ADFANENLALAGGYKGI
E K
GALSYYQYGENAY VPFNNQFEPTG GF AVVAAHPADPRTAWFVDERRVPVDGR $W V R D \square E F D P R D N T R A S I V$ VAA P WN K EVVQI
DHSY RHGLAVDSTGLQLV A GSTT S N G GTNWTAVNT G L S NL N MY A L A L G S D G Q TVWA GTN $G F{ }_{P}^{P}$

1 A LD P HHP E TLLVVVVED RHNS GT H
QTGAND V V IAPSDPD $\quad$ IY A S MWENYPGGSN
$A \square P G \nabla D F H A L A \square A P S N P N V F Y \quad G F P A S G A$
 RSDFTVIVDPARP QHVYA GAT A NDVSAAPGQLP L FAA WDFGDHRRDDLERFSTGYGPKERV E GLD G Q N CYF TVLDRQAMATMTSSPVVGVYF GTNT GF A VADVP HLPDTAWFADECR】P VDGR K G GHYRWF LQA GQC V HK $\square$ A A D P A N P HRFYA

Q N H
S GVDFWE F N P Y T G $\square$ Y D $\square$ K T D P N N K N WLY VT A K G K TALMDDAGNGNNYYLGVT N WK A A N S G L T F $\square$ SVNS L A I S G GN $\square$ FA GTED A YRS GVA WLPHSRTAALAVGPTGADL

S L N GS F $\square$ D T T Q S M WQA VD GY VS GSNH V VF GCDNG $\square$ T P G
F GFVMLLA HPRREGTAWVVPLER DP PNGE $S G V H D S G V V A H P D R L G T A F A T V A V D Q G D Q R L R T D P A R A D A$ TFYD DDVTEGGQGNYNDTVDLVDPSKLDLQSHCTWY
 LD DLG SVVDF DDENVGIISGGASENNVVVYKTTDGDSNYSN

 $P S K$ QKQHE S GGMTMMATGAENHCT DLTDAPSQWIGT D D $\square T$ K $\square T N E N Y D T R W P Q M L T V S K S N P N H M V Y E F R G S V T N Y F T$
 D D WQ GTVGSFS DFWTGGLEFDP RYAK S F F F L L L F K G F Y D D E T
 V S WVEP $\quad$ LPGVPAGVLAM

G K
 SVG H S G M G C G I A L L N R K N M GL GN Q SMF GYY S E S V
 PAKGVFALAFRDRTHGLAV GGDYRPDQSSP F A V A V H P P H E P D T A WF VD A CR $\quad$ DP V HS $\quad L$ QGVVDFHAMMAVSPARP GLIVYGYY RAWSAAG

$$
\square \mathrm{Q} \text { G V VD F H A M A VS P A R P GL } \mathrm{Q} \text { Y GYF Y G }
$$

CGHHDHPAAPRDGETGGHCDHNMMRAPGDGDLLYQQNH PAKGVFALAFRDRTHGLAV$G G D Y R P D Q S S P$ H S

LATHPDAPGQV
LA A HPDRE GRLLYAA
WS A A G

GEGVVRAVLAPGAAGEFYAV N N $A V V Q Q V E F S P D F G T D R N D F V N V R G K G L F R A T L N \quad G A$


SKNLGNSFDSLFSGFNL PDENNVIA $\square$ T DNNF $\square S$ D P F L GFP
 $L L Q A I P Y P V T G H L L D D C T V S Q T D S T V L Y L G$ GYAS GEGVLRATLATHG

EEFYAATN GNPENDNSFS GGGTANNSSPHADSRE $\quad$ ST FDANGD I DE VDD

UniRef90 N8ZPM3
UniRef90-T1BP24 UniRef90_UPIO003B608A7 UniRef90_A1ZPX1 UniRef90_G6Y626 UniRef90-X1KGK7 UniRef90_UPI0004790AC4 UniRef90_N8Y760 UniRef90 C3DI64 UniRef90_UPI0004630828 UniRef90-G0L1M6 UniRef90-UPI00025594F9 UniRef90_G6EGE8 UniRef90-A2SLN6 UniRef90-UPI00041C741F UniRef90-X1AIC4 UniRef90-MOLXV3 UniRef90-W9GGC7 UniRef90-UPI00045E8405 UniRef90-Q1Q468 UniRef90-H1XXJ7 UniRef90_UPI000367ADF7 UniRef90 A7HG60 UniRef90-W7XWJ6 UniRef90-L9XJW9 UniRef90 B5JFL6 UniRef90_UPIO0036EA60E UniRef90-S0G4Y9 UniRef90-D6U1G1 UniRef90_W0JTL8 UniRef90-X1UI64 UniRef90_UPI000474D6FD UniRef90_UPI0003A2870B UniRef90-Q1Q6Y8 UniRef90_-14AQQ1 UniRef90-1016W5 UniRef90_UPIO00369A314 UniRef90-A3W746 UniRef90-A6CGD7 UniRef90 Q46P13 UniRef90-UPI00047A044F UniRef90-LOIE36 UniRef90-UPI0002885994 UniRef90_K1Y621 UniRef90-F1TF27 UniRef90_UPI0003687D1F UniRef90_UPI00037EC33A UniRef90-A5KTK3 UniRef90-M7NNR0 UniRef90-FOM9E0 UniRef90-I01A93 UniRef90-F219K4 UniRef90-K0C5G2 UniRef90-I3CAE6 UniRef90_UPI00034B9C98 UniRef90-A0A024RL29 UniRef90-A0A031GPV5 UniRef90_A0A011N6J3 UniRef90-R7LQ34 UniRef90-D1C5M7 UniRef90_UPI000468D66A UniRef90-UPI000362899B UniRef90-K9FGM0 UniRef90-UPI00035DCBDD UniRef90-XOT2E5 UniRef90_Q01UT9 UniRef90_UPIO0035E84F6 UniRef90_UPI000346132E UniRef90_S2YRZ3 UniRef90_AOB2M2
UniRef90-MOMZN2 UniRef90-E6SGV7 UniRef90_C9D3A3 UniRef90-S9RSW8 UniRef90-S5V037 UniRef9- EVQX30 UniRef90-17BX59
UniRef90_T1AWD2 UniRef90-MOMKN6 UniRef90 ${ }^{-}$F9ZHX0 UniRef90_UPI000478FFC8 UniRef90_UPI00036861A0 UniRef90_UPI00016C0B4E UniRef90-X7F6Q1 UniRef90_L2EGB9 UniRef90_IOAHF8 UniRef90_V7EQZ3 UniRef90_V6SOVO UniRef90-UPIOOO3724389 UniRef90-D8J7S6 UniRef90-F4XXN8
 GSVVYSTNAGATWSAAASGMPGGGRSALAFDPSVAGSVYA QGLVRSADTGDTWRRD $T N L Y R S T N G F T T P A A S W Y P G H H P D V H K V V F Y P S N P N K M L A$
$C G M Y R S D D G G K N W Q S D I E K G G P S T F G F P A A T H P R D A D T L F D$ GGVYRTTDGGDHWTRVLSKDYGVYGSVVMTVSPSNTNVIMA

CGMYRTDDGGVKWES DEQGDPSSFGFPAAAHPSDRDYMPD GFYKSTDGAKHWK QKTKGFDYDVMRAMAHHYDDGKTLTD GGVWKSDDGGKTWMAVAREGGYWKQTAYWQSRNNPTHVTS YGTLVSHDRGDSWTKIRPLGDHGDNHGVALS ADGKVYIT


DGYAESDDGGERWRQPERGLEHTYCWSVVPDPGDPDRVLV

## GEDYASADEGENWTRLAEHLDP

LQAFYAFDDG SGTIATDTSGNNKNGTDTG AAWTT LYRSTD GGLD WQEVPNPMYDEGKSVYVVRFVDENLAFA LY $\square$ S HDGGKT WEKI ES LLVVEDAPTFIYGDQNE DYVTDS LVVARTRDGGESFEVLRDGLPQEHAYDLVYDDGGRLVMGS GGLAHSNDRGETWSEMPDSNKVEGVNNIAFDHTGRLYASA ASSAESKSGAEPWERLEGRGLPTGEGVVRAELATGTVYAV GNLWQSPDQGDTWHTLSNTLPPTY
D GVFRTSNGGTSWAAAHTGMGNLTVYSDALGSDGQTVFAA A GLFHTRDQGATWQWLTQGNVPRDFRYFFIHPGNPDHLILD

S GVYRSTDGGRTWVASHDGLPGGS LVGDAVSYTDPDKAYV
EGTHHSTDGGKTWVQTQMKGLEAAPFGLHVDPRNADHVFA SNI YKSTDAGASWTPSLNLPSGYYDSQITVSPTDENRIYA
 DGLYRSKDRGETWERL GGKNDTVTALAWDERHPHDLYA LI AA QQLD

WTPAQPGFFVTNASDTRTDCCSGD GSVFASRDEGESWTEDARHLP
FVIARTTDGGATSEVLSNGLPGVYRHALDDDETDCLAVGS
RGVYRTDNAGETWES $\square E E G \square P A N F G F N M \square Q H P S K P G T \square W D$
KGLYKSTNRGDTWTKL $\square \quad \square T D D Y M R K V G V A S Q N S K \| L Y A$
$G G \square F \square S T N N G E S W S P V N S G \square T T K Q \square N S V A V S G T \quad T \square F A G T$ TTDGGRTWRTVDTGS

SDGARS $\square V K V S \square D N V G S \square G Y T D V S S T T A N V D L T \square$
$\square A V H R T D D A G S T W T R D S K G \square P T G E Y N S V L V D T A E P A G V Y F$ GGVYRTTDRGRSWQKVEGGGSHLD IGRDGATDYAVNDSWS STNSGATWTLLTHWWEHTDMHQDQQA PNRNNLYSM

\section*{| G |
| :--- |
| $N$ |
| $N$ |
| $N$ |
| $C$ |
| $L$ |
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| $S$ |
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| $K$ |
| $G$ |}

 VSKDAADGSGLRYSTFLGGSCPDLAAADADDGSGSAYVVG $\begin{array}{ll}L G V Y C S T D G G N N W V D Q S A G L A S R D V Q A & A \\ N\end{array}$ QAAARTADGGRTWQPAAQPPPAYRSGAAWLPHSRTAALAV

GQLYRSEDGGQTWTRAPAPDLAGPRGQL VAHPTDPATLAA
$H$ GVWRS GNGGRSWDD $\square$ TA G $\square P S T F G F P \square R V H P R D P N T \square W D$ RAAAVTADGGRTWRPAASPPPAYRSGAAWLPHSRGAALAVV DGYAESENGGETWEYPQEGLDRRYCWSVALAPDDPNTVLL DGYAESDDGGETWRRPQDGLEHTYCWSVVPAPDDPDRVLV

## RGLFFTTDAGDSWTRLGVEWP

GAVTAS QN $\square T \square P L L Q N E N D Q F T E F Q \square S P T Y A V D S T \| V G A$ LLVYRRHRDETEWLPDGDVVPEELQHAMDVDSLEPYGVYF SNVADSRDGGQTWQTVAQTDPAGLKEAVALDPGD RLLT T


K G I LR S T DGGNNFEQDNKYTYSVFAKDNGLVVTDGASFGG A AVWRSEDAGESWQAMRDGLDASNCFAMATDRATPSGVYF TTLFVGTNGGAPWSSVGDASWVGAVSDVRFGNTTNDGFVT GEVHKSTNGGLTF FTNNPGYTSCVNYVHADVRCLSS RGLFRSRDAGDSWDRLPVEWTP
GGIYRRTDNT GDWFSLNSNDQVTEDHDDAYDTVSNDIISG

UniRef90 N8ZPM3
UniRef90 T1BP24 UniRef90_UPI0003B608A7 UniRef90_A1ZPX1 UniRef90 G6Y626 UniRef90-X1KGK7 UniRef90_UPIO004790AC4 UniRef90_N8Y760 UniRef90 C3DI64 UniRef90_UPI0004630828 UniRef90-G0L1M6 UniRef90 UPI00025594F9 UniRef90-G6EGE8 UniRef90-A2SLN6 UniRef90-UPI00041C741F UniRef90 $\mathrm{X1AIC} 4$ UniRef90-MOLXV3 UniRef90-W9GGC7 UniRef90-UPI00045E8405 UniRef90-Q1Q468 UniRef90_H1XXJ7 UniRef90_UPI000367ADF7 UniRef90 A7HG60 UniRef90-W7XWJ6
UniRef90-L9XJW9
UniRef90 B5JFL6
UniRef90_UPI00036EA60E
UniRef90_S0G4Y9 UniRef90-D6U1G1 UniRef90-W0JTL8 UniRef90-X1UI64
UniRef90_UPI000474D6FD UniRef90_UPI0003A2870B UniRef90-Q1Q6Y8 UniRef90_I4AQQ1 UniRef90-1016W5 UniRef90 UPI000369A314 UniRef90-A3W746 UniRef90-A6CGD7 UniRef90 Q46P13 UniRef90 UPI00047A044F UniRef90-LOIE36 UniRef90-UPI0002885994 UniRef90 K1Y621 UniRef90-F1TF27 UniRef90_UPI0003687D1F UniRef90 UPI00037EC33A UniRef90-A5KTK3 UniRef90-M7NNR0 UniRef90-F0M9E0 UniRef90 IOIA93 UniRef90-F219K4 UniRef90-K0C5G2 UniRef90-I3CAE6 UniRef90 UPI00034B9C98 UniRef90-A0A024RL29 UniRef90-A0A031GPV5 UniRef90 A0A011N6J3 UniRef90-R7LQ34 UniRef90-D1C5M7 UniRef90-UPI000468D66A UniRef90 UPIO00362899B UniRef90-K9FGM0
UniRef90-UPI00035DCBDD UniRef90-X0T2E5 UniRef90 Q01UT9 UniRef90_UPI00035E84F6 UniRef90-UPIO00346132E UniRef90 S2YRZ3 UniRef90-A0B2M2 UniRef90-MOMZN2 UniRef90-C9D3A3 UniRef90_S9RSW8 UniRef90_S5V037 UniRef90 E7QX30 UniRef90_I7BX59 UniRef90-T1AWD2 UniRef90_M0MKN6 UniRef90 F9ZHX0 UniRef90_UPI000478FFC8 UniRef90_UPI00036861A0 UniRef90-UPI00016C0B4E UniRef90-X7F6Q1 UniRef90_L2EGB9 UniRef90-10AHF8 UniRef90-V7EQZ3 UniRef90-V6SOV0 UniRef90-UPI0003724389 UniRef90_D8J7S6 UniRef90-F4XXN8 UniRef90_E8WVC1
 SSGEVYHSINDGQTWTLLAGT
T DGGVY $\square$ TNNNDANWDSFNQGYFTTQFY SVADD AKAAVWKTKDAGATWLDERKGLPQEDCYA GVLRQAMATD GSTAFYRSDDGGNTWQRFWKPLWGPPGDTAGTPDSAV VAA

AKAAVWRTRDAGRTWQDLRNGLPQENAY FGVLRQAMATD DKGGIFKSVDRGETWQKLQGNLSPEMPSADTIRFNTDAVD ANGTVYDSKDGGDSWQQIDDDETQPGSNHWVGRGGS SPCGVFISTDRGSTFRRHDFPDDYPSDDNLTQYVRHDALK
 D S S S Y VYRKADGGP WERLEDRGLPTGEGVVRAVFDTL

GKNGGADSFNGTSNYVS $\quad$ PP LINHDE $\square$ SVSAWFYRNSVD AGSKGY SEDGGQTWTLVGNSETST NGEKLLVSKDAGKSWQVI GAQTDFPDEVNVSGTVY
 $\begin{array}{lll}G A G G L F Y S D D Y G E S W T Q L F E A E & Y D N F D \square S \\ N N R G P F R A D F G D S W E R L\end{array}$

T NGG VFRSSNGATSWVRVGPMGATYA $\square$ AA $\square G$
GD MYQS LDDGGRTWRFAAARYLPDRHAYQGKGLTLLTAD GTGQLFASNDRGENWQLIADFLPP

NAAEVYKTVNGGLHWSKTHQ ED $\square$ K $\square$ FSV VIGWYFTD $\square$
T TAGLYESRDRGETWSADASTQNAP $\quad \square A G L A L L$
VVKGKGDTAANGGTSVLRNNANGDEDDQFGEDNTSSUA ID GGVDLWKTT
GTKGLWRSQDAGHTWERAPFDDMDRHPSVNALLISA
GDAVLGYSEDGGRTWSKFAT LDPQPPGTALSDPWFGA $\square A V A$
T T GNFW $\square$ T E DGGDS WQT $\square$ S T N $\square P$ P $\square H C D R F$
GK $\square$ AVHRSQDGGDTWERFSAGL PDFEQNVVLRDAATVD
NSNGVLFSNDGGKTWKKQNKGMAYP
Y G G G $\square$ FASENNGKS WT A $V$ N S G $\square$ T N NHVYF $\square$ A CSSRS $\square$
PPEG RSW WYGTATSFKDWLSGSSFFTPGY L L D
GTRGVYASADEGGTFQEVVSHLPDVLCVRAAVVAGA
SPRGVYKSADGGSGWQS GRMSEATPFGPGDTVDQWWVEDD NDGGVW DSNDGGNNWDPRSNGLGNKCGDGSQVDKDFIS IGG
GYSNLYKT DDGGENWNLIDDNNYYSSGGKПKFYNNNV
ARLVVDRTRDGGESFTSLSHGLPEVPSYDL
GEFVVTRTRDGGRSFERLSNGLPPAPAYDLVVYRHGLAGD $T Y G G A W Y S G D E G E H W Q T L S A H L P P V Y A V C F$
$Y K P Y L F R T K D F G A T W E S L G$
$V$ GGDNVFRSSDGGDNFVQASGDSNMMQGGKF QFN GDGQIYHSADRGDSWRRLD
STSGIFQSLDGGKSFKAYDKDP DGVRNAYKSKVAVH NTSHI YVAVGSGSNQNGHHAVHDYKDDKTTGTHHGDLVMD SDQGUSISLDSGETWTDYPHGLKKDRQADEFETHHAISDN
RNGFVIRSADHGKTWQKVLDANGRAEDVKRILTSHCFVFD VTGSADFPVTQGSVQPKWGGGSASGFLAKLTPQGNALVYS ANNGVFRSADG
AA $\square A V T R T S D G G K S F S \square F R S G \square P Q E H C Y D L M Y R \quad H G L A V A$ GPTGTDDT T DGGRTWRTVDTGSYDTCTADLGCW TTGGLWTSADGGEHWQQVSAHLPPVYCVRFG
SSASGPRSTGGGVSWERLD GENGLLLSTDGGRTWERLRDGVMTAAAFVPGTDRGTI
AAAAVWRSRDGGQTWQDLRNGDPQKGCF FTVLRQAMTGD GPGGTDLTTDGGRTWRTVDTGSYDT
SSATGPRTAHNVDSADSIEPWERLDGLPTGEGVTRAVFES SSAASYVYRREGEAWERLEG RGLPTGEGVVRAVFAT

ARKNTYKSTNGGLTWAVAGFPD
$G T G E V F C S T D R G V K W Q R L D$
$G P S G T S L S A D Q G Q T W Q K L D$
$A V R G V Y K T T D G G V T W A V A N N G \square D A T P A N \quad \square N A V A F S$
GTGSVFASLDAGKNWSE $\square$ ARHLPT

पD N Y LS D $\square$ K E D

TGEW $\square \mathrm{S}$ A $\square \mathrm{Q}$ Q
NDSVVWSTADGGDVAVSTDPNNDQQSVRYSSFFVTPVVVN T $\square M G L Y Q S T D A G S H W F N I S S N D P N A P A N$

UniRef90 N8ZPM3
UniRef90 T1BP24
UniRef90-UPI0003B608A7
UniRef90 A1ZPX1
UniRef90 G6Y626
UniRef90-X1KGK7
UniRef90_UPI0004790AC4
UniRef90 N8Y760
UniRef90 ${ }^{\text {C }}$ DDI64
UniRef90_UPI0004630828
UniRef90 G0L1M6
UniRef90 ${ }^{-}$UPI00025594F9
UniRef90-G6EGE8
UniRef90-A2SLN6
UniRef90 UPI00041C741F
UniRef90- X1AIC4
UniRef90-M0LXV3
UniRef90_W9GGC7
UniRef90-UPI00045E8405
UniRef90_Q1Q468
UniRef90-H1XXJ7
UniRef90-UPI000367ADF7
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P
S LIE P A GVYF G T S G G L F A S A N
PDDPMTVFVNNNGGVFKSTDGGETWTN NNDTDGFYLGMNYGVFY IDNLTEWQ

RMDKAGVYFGTSGGVFASSD
PNDANNIY LINNEGQIWRSKDGGKT
PDETDVVYACTGDT
PHDPNR $\square$ WA G GNDGLF LSKDMGQT
GRPGVVYAVTNRGDFVTDDFGDWDR

TAEPDTILGG
$P$ VA SK Q LA ACYSG QADKTYVATDKGLY LSEDQGATWR

PFDNNVLVFATNPG $\square$ F $\square$ S $L$ DRGK WSKN

SDGQTVFAGTGGGVYKSSDGSA QVHPNRVYLGSDTGLMQSDDRGA

NSN NTVMDGSDPGLYRSNDNGKWEK PNNANVVYTGTRNGLFRSLDGGETWTN

DGRWLYAATTHGVWRAD
ADDARNIVWTHNRSPFYTTDMGRTWR

D G A P A G $\square \mathrm{Y} \square \mathrm{L}$ T R G G $V$ Y A S A D

FAGTDEG $\square \mathrm{F} \square \mathrm{S}$ S NGGKT WS

P A N T N R M WVA GS Q G $\square$ F R S T D

PNDDDRVYTAGTHSALRSTDGGATWDD TQDNGRVWFTTGGG

ATGHSLAMGSTTGALWVSDNAG ETGTRLAMGSTTGGLWISGDGGDWQQ
P VEPKLMFLGTENGLFVS DDGAK YYNPDLILLSDYAGV ISTDGGKT

PRNENE $\square W V I A S G Q V Y R T D N G Q T W E Q$ RNDENKMIYGT
F VDDK TVFLGGFNGLYRS
$R Q D P N H V G \square C T \square D G \square L E S V D$
T F
GDGRTLVMGSTTGGLWLSAN

T R DPAGLYFGTNSGVFAS $\square$ D
GTADGELYAVNNRGLFRTEDAGTTWRE TGRPETVYAVTNRGLFVTRDFGD

T DHET LYAGADGGLYKS $\square \mathrm{D}$

A SNK LIFFGTRRGDYE $\square \mathrm{D} \square \mathrm{I}$ T SMNED
PGNANEVIVGTELGVWRTANFTAASPN

EVDPNRTADGGFTSVYESFD


F G GQA $\square$ HTVLPHPRDDQRVLVAMSTGGVYVTD
PA $\square A G N L N D \square A V S E D G Q H \prod W A V G D G G L I D Y S T$ GRITAI AVDQSDANTVLVGGAYGGVWKST HVHGLTVNRDNPNIIVVASHNGLLQRSE GHIIRPIVFHFDDDDYGVAVAQGGFIIDRTE DRSAGARVLAGTFDAGLFRST NPGAAGLVHTVVSDPDNPKKLWDG $\square$ SAA GVVASE NWVERGPNNGGRVRA\|MFDPNDAKKVFAGGVSGGLLVNN S WRNVSPPGAAE LQFRD $\square E A F D A R R A V V L A \square G E G V Y R T D$

VHFVDTSHGWAVGEDGVILVTA PD QVYA GVA D A G L F DS R VHS LLLDVVNTGRLVAVGDRGHVLYSD

Y S HS SVVLPDGS VLMGGASDGGVWRST

GGDNHDMW\DPLIPDRMVVGNDQY VSIS T NWGSIGAEGGRQVSEVAQSPGDRTVWAIGTNGGGRILTA NPGWGGRYSHASVALPDGS $\begin{aligned} & \text { V } L M G G S T S G V W R S T \\ & L L V I G T R K G L F T A K S\end{aligned}$

WLPRGPGNGGRVRAFAVDPGRPRADYAGAASGGVFRSL A VRFVDNQTGWCVGENG\|ILHTE A G GTDEPGVLWVGTLPGGLFRSG

## QRLVVVGDRGHWLFSD

T WRMTSGWRESDFTK $\square A \operatorname{VDPDDGGNVYAAS~VWGVSVSR}$

YEFKSVT $T$ TGGGY TIG VGGPTKKDLLYADTD DGSTYRWE
TWKNIRTPEGHFVRYIVTDQRDQNKMYFISGENRLFVRE $K R L V A V G D R G H G Y S D$
TFVGDTADGATAWAVTRSGDVWRSG WQPRP $\triangle L H A G \square P V C Y A A C D P R D G T \square W A S L D H G H L S R S R$

NWVQAKVPTRQLLTSVFFD NDKKGWAVGHDAQULAST SSLGIDFSDVNTGWLLTNSGDLYLTT T D GNT IYYVALVRNGUYKST


$$
\begin{array}{r}
L L I \quad G G R K G U F T A R S \\
R S T
\end{array}
$$

 D V HF Q NPHTGFAVGDHGVIWSTR NTLSTHPSRPGVIFAGWKDGS $\square R$ RS S

LY R S E

WRPRP $\square$ AHAG $\square$ P VCYAARDPRDGT $\square$ WAS $\square$ DHGH $\square$ SRSR DP QVGWAVGDGGLIVSTN

$D T \| W L G T \quad S R G V S V S F$ S $\square$ TYHFFNPDYLVALS $\square D D G L W L S L$ $R L V A A G D R G H \underset{L}{L} \underset{\sim}{\text { Y }} \mathrm{Y}$ S E
$N$ 足YYRSET

UniRef90 UPI00036719C2 UniRef90 UPI00047E9A3B UniRef90－GOIZK3 UniRef90－UPI0003749790 UniRef90 Q1IP81 UniRef90＿UPI0003493BD3 UniRef90＿UPI0003B6D87A UniRef90－B9LSU7 UniRef90 U7FK79 UniRef90－A3J2L2 UniRef90－T1BIN0 UniRef90 L7EPLO UniRef90＿UPIO0047ABE34 UniRef90－M0NY40 UniRef90－UPI00047A0A9F UniRef90－L9PM21 UniRef90＿UPIO0036685B7 UniRef90－A4XWH5 UniRef90 Z2DTB7 UniRef90－S7VRZ1 UniRef90＿U1Z8Y3 UniRef90－K4MJV1 UniRef90 UPI000400BA54 UniRef90－Q12A90 UniRef90－X1QTQ1 UniRef90 UPI00036D84BD UniRef90 ${ }^{-}$W6Q8T5 UniRef90－UPI00034C0C51 UniRef90 UPIO003744574 UniRef90 S4YAR2 UniRef90－B1ZY37
UniRef90＿UPI00037BB039
UniRef90 J3EFG3
UniRef90－A0A022G033
UniRef90＿A4BHJ4 UniRef90 S2K662 UniRef90 B5JCP7 UniRef90＿UPI00047DA1E4 UniRef90－TOZX33 UniRef90 A0A028V2H3
UniRef90 A9DSU3 UniRef90－B0YAD3 UniRef90＿UPIO0016C0497 UniRef90 UPIOOO2557375 UniRef90－I0AIP4 UniRef90－C5C4K3 UniRef90 UPI000375856F UniRef90 K1LTP3 UniRef90＿U3HFX0 UniRef90－M4X0X1 UniRef90 W7YZH6 UniRef90－G2PLU5 UniRef90＿V5C3T0 UniRef90－UPI0003B5486E UniRef90 B9FR06 UniRef90＿UPI000379B3E6 UniRef90－L1LWL7 UniRef90 J7L6W0 UniRef90－T0LE10 UniRef90－D7DKX1 UniRef90 A9GUL5 UniRef90 UPI0003637AC1 UniRef90＿UPI00037B4B7F UniRef90－A3ZLL9 UniRef90－17CBY5 UniRef90－T2KIS1 UniRef90＿A3TSH9 UniRef90 F2NOP9 UniRef90 R9ZFX5 UniRef90－D5WJL7 UniRef90＿UPIOOO34A792A UniRef90 H2SAT5 UniRef90 D2R7B8 UniRef90＿UPI00037BB90D UniRef90－UPI00035E6C3C UniRef90 K6P3E4 UniRef90－M7MIT1
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DAGASWNPSNTG GRADFLPGQCVHKVSRDPTDPNRLYA
S $\square$ Q WV ${ }^{-1}$ DAGVSWQQGQ $\square G P P A P \square T P \square A R A D G F W \square K A A Q A E M P A A E P$ NADPTPANDQWSPDMDDQATLSVGS $\square A \| Q P G N S N T \square I V G S$ T GEWFW MMGERADYMGFTA DP $D G G E N W K L T E N Q T K N D L M G V H F A T S$
$D G G G S F E R V T E S L G P G G S G S E A V T A V A T S P H D P E V V W D$
 D $\square T$ TNWTRVGDPEN LSVSA DTYDPNNTNTFYLGT

DGGGTWT ESFRNTDARAFYDC LTFFDSRHGLA
DGAKS WQFQASGTKE【LNSVHFVN
DAGES WAEVDGLHTHPTRSYWCLHS VVVDPADSDRRWV DQGQSWLQAKVPTRQMLTSLFFVDA

DNGATWTE $\square$ NSSSGWSARHVHSSVVL RDGS VLM
 GAGQT DADDT QVGPTGGFSPTALAVSPHDEGTVAVG DKGATWTRMNASAGWSARYEPSAVAL PDGGIVLMG EDRRA WEVTGPHRAADYASMSAVYAVGVDPRSGRVL A

D D G $\square$ S WHS $\square$ WD HGMPSMA $\square$ GA $\square$ AA GSAGGTRYVWVGTGEV NGGETWEQQVKSTYNNLFDLHFDSA

HWRQVDSPFNGQTVWKVAVDPQDAQRDFVGT DGGATWRPLWDRPERSEWDTPGIHSICVDPRDSRHVTV
DQGKTWTQARDPTRQLLT
DGGASWKPANKGLAEKYSRT
AVFFDDDKRGWAVG IIVDERKPKRLLL

## A V H S LLLDVVNTGQ

QE LNKWDPVTD LVGPEDENDLGTESVATDDFDWRKDT LRS EGGENYLENGVAVRNDVNSPESAAWIS $\square$ SPHDDN【MYMC【 DNGSTWT QGKVPTRQLLTAVYFVDD
DGGVT WEVV
GRTDLGYASAMRLV
D
DGGATWEDLATLKYPEGARHIVQYLPTPDFDPQTPAGQPE Y ST IF AAAESP $\square K K G V L W A$

DGGSTWTRQFEDLKRE
DGGKHWSKQSKQRTGRPRPT
DEGNSWVPANKD DE
APLLD DWF QDDN SLDLIDANRGFDSL DLTFYKVFANGT

F M G K

EDRRSWEVLGPHRENDDAGMSPVYTVGDDPHTHRLLVGTE DGGNSWSTIYTSPTN

NAVLPF QFLDANNGWA 1 MDS $\square$ S

DKG $\square$ NWQA CDPTFNFGKE $\square K A \square Y \square D H S D S N T V W V$
DGGSHWEQ $\square \mathrm{PSGVDVS} \mathrm{\square QA} \mathrm{\square SFA} \mathrm{\quad DDQRGW} \mathrm{\square VGGQ} \mathrm{\square}$
DGGVS WTVADAGLPGAP $\square$ LS $\square$ TMAAHAPDT

D Y G K S FEDVT N LINNTF $\square$ R S DFG $\square$ A $\square$ GPENSGKVI LT A CSHVSSTSYNPWEVISVPT DAKLLD $\square$ AFTPQ
 NGGTSWQQ HEVTEKD $\square R A V T F \square N R \square$

NGGATWN HASTPAFFGR\EE\｜VPSS\｜DSQTLYAVYTNT
DKGESWT NFYGRSDFGTDNVSA $\square$ GYDNYTRTFWCATT DFGARWTKVHEGVHSFSWGAGTNLFFSCSRVD A DYGKNFKDITHLINNSFDRTEF GMAVGPENSGKVILTA DGGSS WMQAKVPTRQLLTA $\square D F V D D$

D Y GKNFKD TTN L IN NTF DRTEF GMADGPENSGKVILTA DGGKHWQTTVPVNGWSERNALSDRLVVSDPKNNQDVLGLK

UniRef90 UPI00036719C2 UniRef90-UPI00047E9A3B UniRef90-GOIZK3 UniRef90-UPI0003749790 UniRet90 Q1IP81 UniRef90_UPI0003493BD3 UniRef90_UPIooo3B6D87A UniRef90-b9LSU7 UniRef90-U7FK79 UniRef90-A3J2L2 UniRef90-T1BIN0 UniRef90 L7EPLO UniRef90-UPI00047ABE34 UniRef90-MONY40 UniRef90 UPIo0047AOA9F UniRef90-L9PM21 UniRef90-UPIOOO36685B7 UniRef90-A4XWH5 UniRef90 Z2DTB7 UniRef90-S7VRZ1 UniRef90-U1Z8Y3 UniRef90-K4MJV1 UniRef90 UPIO00400BA54 UniRef90-Q12A90 UniRef90-X1QTQ1 UniRef90 UPI00036D84BD UniRef90 W608T5 UniRef90-UPIOOO34C0C51 UniRef90 UPIO003744574 UniRef90 S4YAR2 UniRef90-B1ZY37 UniRef90_UPI00037BB039 UniRef90 J3EFG3 UniRef90 ${ }^{-}$A0A022G033 UniRef90-A4BHJ4 UniRef90 S2K662 UniRef90 B5JCP7 UniRef90-UPIO0047DA1E4 UniRef90-T0ZX33 UniRef90 A0A028V2H3 UniRef90 A9DSU3 UniRef90-B0YAD3 UniRef90-UPI00016C0497 UniRef90 UPIO002557375 UniRef90-10AIP4
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UniRef90-T2KIS1
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UniRef90-UPIOOO36685B7
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UniRee90-A0A022G033
UniRef90-A4BHJ4
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UniRef90-BOYAD3
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UniRef90 UPIO002557375 UniRef90-IOAIP4
UniRef90-C5C4K3
UniRef90_UPIO00375856F
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UniRef90-C6WXQ9
UniRet90_K6BN44
UniRef90 A9AVH4
UniRef90_UPIO0036F5B26 UniRef90_U5VF24 UniRef90_K2C5B2 UniRet90_G7VU59
UniRef90_10AJ10
UniRef90_M4AW43
UniRef90-G1T661 UniRef90-I4CUN8 UniRef90-A0A024HL75 UniRef90 UPI000331487F UniRef90_UPI000367C8D0

HGLAVNRDNPKVIYTATHNGLIQRSETGDWYW 160 HRAWVAPLVADAERI PPRGQQi WRTDDAGDTWARVDGLPD
 SAVAFNPGKTNNVVAGVASAGVAWSSDAQASTVDKTGEPV HAリAMAPSNPNVFWPASGAQGLHTSTDGGKTWDK MQR

SVAFADADRAVAVGEKGTI TTSDDSGKTWTNDE MD
 AGIAGNYACYPTTAFGIUNSDNVAPSSDGCETWTNAAALNG NTRNDVSYGDGVYESTDGGLHWRHL
QCLVSSPRDVWLATGGGARARVLHSADRGLTWTASDAP PSVSIDTRGGRTRTMAGVRSEHWHSDDGQAWTEPENGAI ERPGSEDADYVRVLAGTSDAGLERSTDGGERFERVAAGGP HGWAVGDLGAILATADGGLT WQAQAKNAN RDAGSDNWVEVAAPAFPTKPTDSADPV
GRLADDPRPPHPGYDQHHSGVERSADGARSWERDDGLPT HSUCVDPRDSRHLTVAVSCGGVWQSHDDGRSWTCTTKGAD

DR DGSTVLMGGASDGGYKNDVWRSTDNGATWTE $\square \mathrm{NSSSG}$ RFYDVVFVGEGKAVAVGDSGAIY亩TGDGGRSWQKKESGTQ

IPDGAWYAALRMGHFGVKLRKSTDQGANWQEITAPAF QQVVMDPVDEDRLWLATSSGL YRSDDLGRTDTRLT
LDPD GSMMLTGGYSSGRKNDVWRSTDNGATWTQVTASAE

## EAAAVDPDDGTVCWF VGPTG $\square$ YRHRAGAWSAW P $\square$ PTPAA

S $\square R G V Y F \square N S R Q G W T V S H Q G N A Y Y T R D G G K H W T Y Q R T N V R$ LAFAYDPTDRNQLWF GLEEGGLFHSRDGGDTWTRVDD RLL GNDQVQCAGHPNAMWVQHHGGIFRSGDGGMHWQRLHARPS



## $\square D$ A Q H G WA VGHDAVILATSDGGETWVKQF

GVMTDDASGKYV V LLDI WFKDDAKTGFAVGAYGALLETTDGGANWEDVSDRMN
 SWELDNRPDWNHESRGG R DLISSGDATSETRWGGTPASVD NSMEAHPFEEGGLYFAATAYKNFKTTDYGKTWTK VVNGD
HLNS $\square A A D K D S G L L V V G E S G S T F R S R D W G Q T W E K \square E G P Y E$ D SIWAAGNGFN STVYVGTLDGVFENDGNSD\|VY PTPDFDPESPSAQPEYADATVYK $\square W N$

GQ $\square W A G G D P G V L F E S R D G G A S W T L N R A L W D$
VY IK A T GEQSAEMVTDEGAI YVTSNRGYNWKAAVQETV AHGWMLSETGSSLEE ERYSLYVTEDGGQSFENPSGLDN RAWQVAFVDDKHGWAVGHDAQLLASSDGGATWSKQY

$N S \square R V S P S D K N E V T V A A A D G \quad F Y R S T D G K S F Q K D L$ Q AFDENTA IVMSSGGD $\square$ SRLYKTTDGCQTWKLLVTNPD NHGFAVADPSPIYPTG LFETRDGGRSWRP

RADIFDPNDNETVFAGGVSGGLWKNTNASSVWTSVN
VSVANETGMGGDWLYAGTQAGLTRVPDCFCRWQDVVAGDA

YTMAQQERDGRTLF LGTEPSALYRSDDLGATWVEDPEMMT RDDQAFSATEAVVASAGQPARIYHTTDAGKSWKMV YDD MQITYNPENSNVLMALSNKDELWLSEDFGTNWKKLHDMVC S $\square H F A D H D H G W A V G D R G V I L A T T N G G R T W Q R Q N S P V A$ NTDSFALLNDRLGWAVGHDATILHS QDGGLNWHVQLYLPE EPIAGlDFASASVGWATARDGIWSTTDSGASWTKVQTPFS
 $\square W N H P S R G G D L F A G D A T S E N Q$

YGVAFAP NASHGWAVGDDGUILTTQNGGETWQTQSSGL

D GHDVLYVGDGSGGNETGVYTYNGTNWEKL
D $\square$ SFTDSRHGWVVRQNLDATVILRTADGGQSW VD GQNDNQIQYGINN FSVMEDPRSPRVMYFSS DQGETFSOASALPVV SPQNSEYLLALLSTDNGLWVSKNFGGKWEEIHKAVC $\square D V W F E D T Q H G U A V G A Y G A L L E T U D G G Q S W E D U S E R L D$

UniRef90_UPIooo36719C2 UniRef90_UPIO0047E9A3B UniRef90-G01ZK3 UniRef90-UPI0003749790 UniRef90 ${ }^{-}$Q1IP81 UniRef90_UPIo003493BD3 UniRef90_UPIooo3B6D87A UniRef90-B9LSU7 UniRef90_U7FK79 UniRef90-A3J2L2 UniRef90-T1BINO UniRef90 L7EPLO UniRef90_UPIO0047ABE34 UniRef90-MONY40 UniRef90_UPIO0047AOA9F UniRef90-L9PM21 UniRef90-UPIOOO36685B7 UniRef90-A4XWH5 UniRef90-Z2DTB7 UniRef90-S7VRZ1
UniRef90-U1Z8Y3
UniRef90 K4MJV1 UniRef90 UPI000400BA54 UniRef90-Q12A90 UniRef90-X1QTQ1 UniRef90-UPI00036D84BD UniRef90 ${ }^{-}$W608T5 UniRef90_UPIOOO34COC51 UniRef90-UPI0003744574 UniRet90_S4YAR2 UniRef90-B1ZY37
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UniRef90 $\mathrm{C} 6 \mathrm{WXQ9}$ UniRef90-K6BN44 UniRef90 A9AVH4 UniRef90_UPIOOO36F5B26 UniRef90-U5VF24 UniRet90_K2C5B2 UniRet90_G7VU59 UniRef90-10AJ10 UniRet90_M4AW43 UniRef90-G1T661
UniRef90 14 UNU UniRef90-A0A024HL75 UniRef90_UPIO00331487F UniRef90-UPI000367C8D0 UniRef90_A4ESP5

MGKERADYMGF TADPTNSNRFYASGHPPTGFDKSENQGQD ${ }^{180}$
 SPPPVQKQTPSGRDPKRANLYSVYVGEDGVILVTADGAKS TSVSGSSVMDVVYNPKEDK FFIVIRYHGVYVSGDQGHT

 QEACFFTVLRQAMDTRDPAGLYGGTNSGSVFASDDEGET KAAQNAGAIGVIMMNNVAGTPVAMGGDDPSIMDSQENGDL G LK GTMQISSILIDSHHPDTVLVGAMGNRGVYRTRNGGKS A GDPARGVFALAFRDRTHGLAVADQTSPRAGAVTTDGGRT RFPEEAGI WQI QPDTGDRPGVVWAGCEPDSVWKSTDGGEH GGSGPAAVTAVATSPHDPAVVWV GTEPSRAYRSTDGGET Q I F QSVDFID EWTVKQIWSLAAGGPDQPGVLWA GTLPGGLFRSNDRGET SFGFP IAVDTVWVAPLEGPDNRYMRAGRLALYRSPDAGGS NEDAYHLNALTAV, KDTGLF VVGELGGMFRSRDWGQT YMPPEQSEEAAIQDPHRARPEFLWVQHHNGTFRSRDGGDH DVTYSKTQEDVIYALTLT NHVVTSTDGGDT $P Q A V H S L L L D V V N T G K R L V A V G D R G H I L Y S D D Q G Q S$
$H V H S S V L R D G S I V L M G G H D G N V N N V R S T D N G A T$
 PPKPEQGDWTLAAGGANQPGTLWAGCDPAGLFKSEDGGAS ASTAKYRWQWIADSPHDHNKVYV GSQYVHQTTNGGES WSPREGHSSVVLPGGSVVVIGGFDGGSANDIWRSADNGTT HPHRADWFPGAA TNRNSPGASDVKFMHTAGGRYVVVAAAHSALSRSRDGGAS GVNFPGDFSLAMDPRDPRVLYVASLANGALCSRDGGET Y E YWOYNS LVDVHFVDENRGWVVGDRRIVLATQDGGRN SFG NSDVHAVAALPNHGNKVWVVVNAV YRSLDEGLT D A LDWPPLFD AVAAHPRRPNTAWFVVAVKDECRVPVDGRLV
NNTEGII TGSQGALLVSNDAGAT



D LIEREAPLLDTWFKDANQG

## FAVGAYGALLETLDGGKS

 QTPY I SSDRVQPKTFYAFSGGVW YVSTDGGFS LPMPSVFNVAFAPGNSEILFATSTAGRKVLNTLDGGAS AA SGYHLNSIIAVKDSGLFV VGELGVMFRSADWGQT $\square T V E D V A R G P D G A D V L W V G D T H G D A T L E D D D A G V T$ YGVF E P GII AQHFT

G S L F G
SYPPLHPVNHIIVGT LTHGAWSLT
$\qquad$
DAFGNANQPGRLY
SATRGLRTVSSGISGAS
SATLNRTVSSGISGAS YYTGTFNTVNRSPDG
GFGLS $\square$ SGSS LTFTSVRHGFDGDTEEGYPKLFMTEDGGDT DLSREAPGLDVWFNPQHGLAIGAY GAMLETTDGGQN ADSSRNRVGFF I SPDTGWVGSGTPGLPEGILLHTSNDGES HESRGPGIVS IIVDPRDPNHMHIAVSTAGVIETTDGGKN NGKFYDHELKPNNPKTVYLLGSNRGELYISYDGGQN
 SLLIDATHAGKRLVVVGDRGHILFSDDQGST $A L P A G E P V E$
 AASSLLLSVAHAGKRLVAVGDRGHILLSDDDGKT

 KTGQAFFDALAFWNNEEGMAMSDPVNGYFLLLKTEDGGKS LVKWGRK NTMFFTANHNGSCVDRGMLE LKRTTDYGKS | $C R L A A V Q F D S P Q V G F A V G G W T H P Y T H H T S G V V L S T D G G F S$ |
| :--- |
| $L E K P L L G D H F$ | LPGSPVSVVALGQNKAE MATNVGADYRTNDGGQN ANGHKHNPNDI E I GPNGK DWLHLYGDGGGVIGSSTDG YG $\square$ FEPG $\square \mathrm{HS} \| \mathrm{IVNPHNQNHLYVAVSTAGV} \mathrm{\square ESTNSGQT}$



EDFNG $\square Y$ VNN L LVQPEDNN I IVVSAST $\square G S \square F K S T D A G A T$ A LPSGEHVSAI QYVNPSTGWIMASTDQQKLLYHTTDGGAT $T V T V Q N L C Y D I A F T P N T \quad D W D A T F A G G L R R S T D N G Q T$ STEQFYSULDLEMHVDNPGDTFF NEDGYHLNADTHDQGSGLFV, VGELGGGMFRSADMGET VCDAKWGPRNI I FFTTFSNGSCKADLGALELDRTDDLGKS


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UniRef90-A3J2L2
UniRef90-T1BINO
UniRef90 L7EPLO
UniRef90_UPIO0047ABE34 UniRef90-MONY40 UniRee90 UPI00047A0A9F UniRef90-L9PM21 UniRef90-UPIOOO36685B7 UniRef90-A4XWH5
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UniRef90-A0A022G033
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UniRef90_A0A028V2H3 UniRef90-A9DSU3 UniRef90-BOYAD3 UniRef90-UPI00016C0497 UniRef90-UPI0002557375 UniRef90-IOAIP4
UniRef90-C5C4K3
UniRef90-UPIO00375856F UniRet90-K1LTP3 UniRef90-U3HFXO UniRef90-M4X0X1
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WQQ $T$ SMP
WTEVIRHDPDVLCVRAAVLP
WVAVNDPTEASVNKISFVGDLLGYAVTADSEILKTNNAGL WQLQTSGTKEILNSVHFVDPAHGWAVGQAGLI LATADGGK FTRLATQPNNALFSAANCPAATSSGTCYVKPGTETSATDE WTLVAN TQEAPVISLALQKEGNNLIMYGYRFDKSAPG WERQTSGWWYTLNALHFINPQKGWDVGDLGTVLHTTDGGE WRVVDRGLD HGYVWGLAVDPGDPETALVSAASGAGAAHS WQEI ARHLPTVL
$\square E A L S G A V T A T L N P V V A G A F T G N P G Q Q H \square N D \square K V R N N G G V$ WQRVLY VGPDVGISDMAMNPRNPNVVYA WTAAATSPPAYRSGVAWLPYSRTAAAVGPTGTDLTTDAGR FELDRGL WDHPHRPEWGAGYGGPAAHS VERV G GLS GVPSASEWSYPPRPDTHHVRWDEPCPADPER WQS QPNQVSQFLRSVRFLKDGLRGWVAGTNGMLAATTDGG $W Q L V E G G W N V P E R A Q W M G G G Y D V P G D H S I C V D P R D$ $W V E C R Q G \square P \quad D V P H Y V S V L R D A$ WEAVEDKPYEGSLFGALGTDEAGTLLVYGLR WQGVVAEPSSF GFAVAVHPRQPDT WTVLYSDPLDNYARNEGAADSFNDRAEGTDYNKIIDFDDA WT Q A KVPSRQMLT SLIFFVDAQHGWAVGHDAQILATSDGL WTEVN WKKVSSGTALRTNEDTFSNENTGFIAADGGKILKSTDKGN WE I I S FADAEVPNTSAAVGTFVAVEVPDGPAAGTELLVAGAARWR
 WEDLSSLKYPAGARY IVKY DPTPDFDPAAPAAQPEYRDAT
 WEHLTTLGSNKRHTEHYGQQTGDEPLHTFLLYALHFTDTEN WT GIVARETFGLYYVRAMNAPD

G T VTRTRDGGVSFDVFSDGLPDVPAYDLVYRHGLAVDHSGDR WNP DDS WAKVESPYEGSLEGVIGTAHARTLLAYGLR WSKRGEGLPSQNVTSMTFDPN WTALTLPLAPSGNKT

QSGRLWVSTFE
WEDVSDRLDNE
GPFQPGSAVFHVVPDPRT DAYHLNGHAAVKDSG WADASAGL PATRVTALTQAALEPDM YDAVDAGLPAHTGAVPVVSADRAGGTVADLITVGAAAPGS WETVESPYDGSLLF GAVATKEPATLLVYGLR WT LTNDEGQMSYFGDPVTQDPSHPDTLFTMIGVNFKMSTD TRDVEGHVEHSVDRGETFTEVRMPMVSMGDLAASPSASGT WA GRNRGMLNDYMPDPNADWGHDPHF\AACP
WSPFQLNLPIVPITDLTIKDNNLIAATQGRSFWIDDDLTV WTQAKVPTRQMLTAVYFVDDKKGWAVGHDAQVLASEDGL WQQ NGGELEFGLSEGSLLADGTIVVVGHGGSVLESRDD WVAMNTGNASTSDLISTQ NTVYAVGGSRSYFYSNDD WEDLFVGDATTENRWYGTPASDDYGVFEPGMHSVIVDPRD WRRGNQGLVPKYLPEDGAVPDE DALCVHALQRAPLRPER WEENEQFFDRDKYTSCDSFTMGTDSFFSENKQEGWVPDGC WQDVGDRLDNPDGLHLLNGIARVKDAGLVVV
WTTQNPNFDASLGDQFVDANNGWATSNFGGVARTTNSGT WHSRNHGMLNDYMPNPESEWCHDPHFVTSCP WRWICEGAVGYDDTAGAA A A SGRVLAALADGTAVGAEGGC F R RETVDVQGNGVRAGRLAVTHATGGEDY WKRQS $\square Q G F S E Q G E G L F A A S N S L M L Y G K S E R A F V T G G P T$ w WTQ ARVPTRQLLTAVFFLDDKRGWAVGHDAQDLASSDGL
$W T H V G G A E G E T V I Q T A A S V T V N S P S E I A N R N V A E T A D G D$ WA QVTFAPVTALAVDPAASDGLHVIAAGPSGNLRVSRDGGT WTQAKVPTRQLLTADDFVDDKHGWAVGHDALVLSTSDGGQ WTQ AKVPTRQLLTSVFFVNERKGWAVGHDAQLLVSDDAL WT EPRSYESENDKFYHDNHR WKKDEKKKDPPALEGEAGFAASGTGLVT DAPDVALFGTGG FKTVANKTFSFGLGGKFGFASVVTGKGTFRMIHVSVDQGD WRVMPGLVGLRMTSTQEGLAFGESSSGFPSGVFRTSDGGK WQSEFHQEFLLADDVDYDNDLKAEDEEAYLDEIAFILPHF WKAQVEEAVGVVRNDERSADGKYVAVSAKGNFYSDWEPGLD
$W E P K N P C T S V E N P A A W A A S F I S S H D G W F G C G S D E G M G G E$ VNFTQAYVVNGADRTQIAVSATロPDK WQSRSRGMLNDYMPDPESEWGHDPHFVTSCK
WQQQTSPTSNDLRSVFAVNQQVAWIVGRAGTSAKAARGLL WVQQTVPTSNDLRSVAVNQQVAWIVGRAGTVLITNDAGQ WVQSEVPVSSNLTAVHFLDNRRGWAVGHHATUIHTSDGGF WMVITAGLTDANHLGAMAVQSDKNDTMYDAGQESSNG WKKVAQSSGMSSNKSGSGLPDLG WQRVVLPPDNKNSTAPTDTLDFCLAPVGGSFCSVGNLNHR FSK SLERHDFDGHRKSDFTNTTSLRGVYLTNKLDDDGRD FKT TGVKDYSFGLGGRFDFASVMAEKDTTRRDHVSTDQGD WERVESPYQGSFFGVVGGSEPGVVVAFGLR
WTQ AKVPTQQMLTAVFFIDEKKGWAVGHDSQILATEDGL FKTTGVKUYSFGLGGRFLFASVMAKDTTRRDHVSTDHGTT


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UniRef90-J7L6W0 UniRef90-TOLE10
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PQVFY GFPVSGTQAPLHTSKDGGKTWNQLGSQGLGGT
TWEDFDDTTGYAVGDEGA\IKTEDGAQNWQF $\square N S G \square D T D L$ SWKNQASVAGWAVGDGGVILATADGGQTWQAQAKNANQDF LYIWLIGFDAGGNTADFNLYQTKNGGTSWTQIDETGAYAT YRSSDGGKTWAKL
TWV QQAPRYFHEMDKGIFFLDETEGWVVGWPG\|VFHTE RGEAYLYRRSVGGDSRRDDRGDDRENGRGDDRGDGGNGRS

SE $\square \mathrm{F}$ VAVGDTEYSAANQGLYKSTNGGASWT LLTDPSSTNG ATYRFRRTPWHYSDGGIYKS $I$ DAGLT WT RLLS G TWKTVDTGS
$\square L S S P V D D T V H \square A M S T G G V Y R S T D G G T S W E A R N \quad K G \square S A$ WFVGVEA GALVVTPDGGETWLD L SWRLLNSGTSGELRSVKFLLDGLHGWAVGADGT\|VAS SRSVLVGIS CGGAWLTTDGGESWSLRAQGMKANY
 AWFVPATKDECR DPRDARFVVTRTRDGGRSFETLERGLPD TASIVQTFSPPNSYEFD LI ESYD ESDSNNDVTSNGGLNW LDIWFKDLQTGYDGAYGALLETSDGGQNWEDVSDRLDNED VLMGGASDGG YKNDVWRSTDNGATWTEINSSSGWSA ARHLTGLAVSSDAYGUAFSSESIGYAVGENGLFVKTVDGG AESPVEQGLIWTGSNDGLVHVTRDGGSNWTNVTRNFPDDP PYGLAANGAGVLVSADGGATWASASGGLTAMSVRSLAVSA VGGLSGGSKNDVWRSTDRGTTWTLMTASAEWSP VYK $\square$ WTLAFGNAEQPGGGLFVSDDGGDTWELNRPLWNHDS RRARNAKLAGVPDAAGDRIYVAYGTSVDRTFRDSPVGATQ GATWPRRENGLPERGKYTQVLKVDRTRAGRADAGCESGNT GWIVGDLGAILHT QSSLYLSISDGTPGTTSKVLVSHDAAVSWEVL LIAM GSTTGGL[WISESGGERWKLFS
 EGTVYSDQQGDNWQS GGLM
K $\square \mathrm{WV}$ SSTDSSTFGDGGGKIFVSNDEGATFTTAYTVSGGQR PGNVYALANSGFWGPS IFRSRDYGAKWSEVATPGFPPP LFIV GEMGSMFRSADWGENWEKI
LYAALANDG $\quad$ LWRSQDAGESWEFVMDRPY DDG PALFIRGSTGHPKKSGYRVYQSDDNASTWDGVDDD DGIAMATAEFVNERLDTMSIFFTTAANQTSVI DGAAAKDG GHLFRSSDFGDTWQQI E $\square$ NTPNNG
 LALAYAAGDDRGVLVTSDAWATYDVVGTVHDMTFDPFAPD A QP D HLWQQNHCGVFYSEDGAQTWNKVS DPERGVH $L H Q L S R D V S K P F Y L F Q P Q D S Y T L D G V R R E S K T A G T N R P G G$
$L D V W F K D A N G F A V G S Y G A L L A T E D G G K N W E D V S D R L D N E D$

GWMIVTKQGPTHHLTQNLV TSDGGRTWTPVSTDMDQGM $G A T W S E V L V L S P D N Y S G L K S L L D S N G K$
$D H D Y V A V S S A G$ VFMOF HGGVYRSDDGGETWTDПGAGTADPS RAVARRDQNMGWRADGG LLWLVRGGG LI LISKGSGD SREDSTKFNGYFTEDAGHTWSLVPFADSWQQ

GEQGSDYRSSDDGQTWEKLESPYEGSF T W $\square$ P K S AWARSQPDHLWQQNHFGIFYSDDGAKNWKKVS RTDLDDV AWARAAEDEGSVRQGDPSHVVAVVAGTRHGLWTSRDGGAS VYAMVNDNSFGYSYGMPRVLVAJVAAGLHWEDKTVATGTFC HARLITQSAHSTSLETGDLVKLLRGGKPFHFSGPMEWTAA LDVTFLDAQGFAVGAYGALLETTDGGQHWQDVAERLDNPD LVMASDGSASPYEACGRDTNNAEVKGGNCGFUDKVKYVQD TWSSF
SWVQYEDREGTAVGAYGALTET\DGGQSWDDTSDRDENED LDI WFADEQGLAVGAYGALLETRDGGQHWEDVSERLDNED VLVRPSNPKQMFMCGGEGLHYSADAGETWVHLMTRQDLIG PAV
TWMVFMHVDEPGDTGFGTIYVSDDRGTVYSKSLERHLYAT SWHPVSKNVMPGWVAGD MRSDGSGVLVDHHGTVKLLA NGLVQDGRSLFLMGETGLLAKSNDFGKSWQKFN NAWIPHNRNSSRRVEN MGFTENGQMWMMLARGGQVQF TKVLLLRTADAARTWERUAAVQRDGE VYVLAETASGVIIKKTTTAFVPAFLVQ TKALPNDADPN EQPEHLWQQNHCGMFYSDNGAKSWKKVSIPELGVN ПDTAHAGARLVAVGDHGHULYSDDQGKSWVQWAVGHDAQI TWADASECAAWISGDDGSFYRTHDAGQTWQAQQSKTSKDL I DAAHAGKRLVVVGDRGHILFSDDQGKAWTRVPTRQLLTA I YKSTDGGESWSTYYTG
QGFVVINLD SSVKLYKTSNQGKTWTPVASKMQGCP VFSVIANDSTVLVGTANGINKTTNANDTYPSWVKFNHQNQ RSVISFNRGGTWRQKPQNVNCADNVKRCNDHIHGEHSRKN TWMVFMHVDEPGDTGFGTLFTSDDRGIVYSKSLDRHLYTT ПDVWF QDASGVAVGAYGAMLETHDGGKSWEDUSERVSNED WSMAYS ILAANDDMVFMHVDEPGDTGYGTDFTSDDRGIVY


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UniRef90_U7FK79
UniRef90-A3J2L2
UniRef90-T1BINO
UniRef90-UPIOOO47ABE34
UniRef90-MONY40
UniRef90 UPIo0047A0A9F
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UniRef90 Z2DTB7
UniRef90-S7VRZ1
UniRef90-U1Z8Y3
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UniRef90'UPI000400BA54
UniRef90-Q12A90
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UniRef90-C5C4K3 UniRef90-UPI000375856F UniRef90 ${ }^{-}$K1LTP3 UniRef90-U3HFXO UniRef90 M4X0X1 UniRet90 W7YZH6 UniRef90-G2PLU5 UniRet90_V5C3T0 UniRef90 UPI0003B5486E UniRef90 b9FR06 UniRef90_UPIO00379B3E6 UniRef90-LILWL7
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UniRef90-17CBY5
UniRef90 ${ }^{-T 2 K I S 1}$
UniRef90-A3TSH9 UniRef90-F2NOP9 UniRef90_R9ZFX5 UniRef90-D5WJL7 UniRef90-UPIO0034A792A UniRef90 H2SAT5 UniRef90 D2R7B8 UniRef90-UPIO0037BB90D UniRef90-UPI00035E6C3C UniRef90 K6P3E4 UniRef90-M7MIT1 UniRef90-C6WXQ9 UniRet90_K6BN44 UniRef90 A9AVH4 UniRef90_UPIO0036F5B26 UniRef90-U5VF24 UniRef90_K2C5B2 UniRet90-G7VU59 UniRef90-I0AJ10 UniRef90 ${ }^{-}$M4AW43 UniRef90_G1T661 UniRef90-I4CUN8 UniRef90-A0A024HL75 UniRef90 UPIO00331487F UniRef90_UPI000367C8D0 UniRef90_A4ESP5

P F
300
310
ELIADDPRNPDHVFATT
320
KDVIF NPSYPLIGVIS
G D G QSFIDNRRGWAVGTGGRIVATTDGGNTWQSGLRAWVAGTN VGGDADPSVQSWYNAY LGAVPNGTGTLYMGSVNNPVCTAK WTETNGVVVKLA IAPSNPQDFYTVNDN
NGGLTWKRQNSNSYNELYAAY FIDQHTGWDVGQF AASDSGPRFERLDDRGIPTGEGTYRAVLASGDGTMWAVHN
TTFTNRHTVTSGKRTQ TAVSATNANKDYVLSEDSTNGEA $H G L P A G P L G R \square G L A V A P S A P N V V Y A V \quad \square G S H Q$

YFMPDPNPEFGQCVHKDARDSKDSKRDYA QNH RPEGSRRDNHALATHPSAPDRVYAA A G ADGGNSWQAASQKVFSSVQFMTNRQLGWVIGAD QHH
PLEFGLADGTLLRDGSVAVV
G H G




 RYRHSSVALPDGSI VLMNGYSGC GF A VVTHPSRPETAVISQEVHDPPGDR
 QWAAPTIWAMPQGFDALGQHQSEYNLVLAARPGAPAGPGT AQSWRQVFSTRTTDTDLRQSPHDPQHWLATTQS

WATFDDRRWLVAGDDGПTATDHT $\square N R P \square I T Q S G R A \square V A A E$ LEFGLASATLLDDGSLVLV

GNG
$T E D E A S N T T A D V I Y V L S Q D T P V S P S N D E V Q M \square K T T N G F S T$ GQRKAPKEFGKFPPEADHALWHLEPGRGDEPKTLFLGADP $A E R E V L T L V S V G G G \square W \square Y A G T D A G L T R D P D C F C R W Q D V T A$
VVLVDNFTLRPAGFPEVAVSVEKTGKMYVTTGDSASEAKL PLEFGLAD GELLADGSIVVV

G H G $R \frac{1}{L} T N Y G L S W T S G E D P T$ I $A V D F T N P G D A W A T \quad K W G G G$ VLWVVASTA GLYRVSGRLLEEPVASVHLAADPDSTRPGSGG FGFP VAVDAQDGRTAWVADMARMAIDGG


S S GFNSMY $\square$ NF $\quad$ DD
H N NGVVAEFQGS G
 MPNPEAEWGHDPHF VTSCPGQPDHL WQQNH EFGFP I AVDPTDPDSAFAGDFDRVTPDGR TEDFEEASVQSRGFGULDVGYRSKDEAWAA GGS
$F G V I G T A Q A N T L L A Y G L$
GFAIVAHPHRAESAFNFPV
VS QE V H DP PEN $\stackrel{R}{R}$
SDGGNSWFTQSSGVF NNLNAVFFANANVGYVAGS NFGFPDAADANDGRTAWVVPAR WT GA GAPDPAGFVARTVDVAPSDPRRVYVSGLASEGGSVK PS S DAKQGGQGYYDMMIGVSDTNPEHIIFG
NS IPDA TSPSAGAFSSFSTAPSQDDVVIVGGDYKDPDSST GRQFDAHGVS $\square S G$
Q LHLN
D R1 T1 V
AGA GVVVINNEAGAPDGMGGTDTNNATIVAGLFVGE
GFH $\square$ NA $\square$ AH $\square E G \quad S G L F V V$ GEM
QFHLN A I AAVKDNGLLVV GEA
YPD AMMIDPRNENVLYLGGPGNAPRDWG
PSTG $\square Y S M A F K D S \square H G D A L D G G D Y T Q P N A T T$ TGGETDQSVISFDQGGEWVPLRKPADSKCDATAKDPERCS $A Q E \square R D S R S P S \square G K R S L H Q L K L M E D \quad G K G W L V G S A$

$\begin{array}{ll}\square S A G D F T R G Q A F Y D L M L E V D P S N D E \| V Y A G G D D \\ F G F & A\end{array}$
TRY LASSDGGKNWNKQFEDLAREAPLLDVWFKDLQNGLAVGAY VALASSRDLLHGGDDGII ISTNDHGNHWQDQLNGWAVGHA $D D Q F Y D K D L L E A Y E N E R R F I L V H F N R Q Y A D G V T L F M T G E N$
VFFLDDKRGWAVGHDAQILASNDGGATWVSFLDAQHGGAY

QAKAEAPQSFKG KSSSYWDPVLCY DDSGTK DNPDS GNFDTALAYN NTSNNT NWASTWKAEDPDEF R VVPMLA LSEPTADGLVIAHGSVGDSL TGGETDFTNVTSLRGVIDLLTYLKGRIWVSKGKKKCASAG $V L E S G L A D G N L L R D G R \| V V V$ G
QLHMLNGUTAV


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UniRef90 J7L6W0 UniRef90-TOLE10 UniRef90-D7DKX1 UniRef90 A9GUL5 UniRef90 UPI0003637AC1 UniRef90-UPIo0037B4B7F UniRef90-A3ZLL9
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A GMYESSNGGNDWTLIIPNTQEAPTVISALLIKDGDTTVMYG
 GTLAATTDGGLNWRILTSGTSGELRNVKFSQNGSHGWAVG PFINLTHVYDSTCNDPLYPNVHPDQHGFDYDGSTPKMVFF NAVFQSQDSGKTWREL
GEILHTFDGGKTW K FQRSGTQANLNKVYFADANHGLIVG EGLYRTRDAGESFERVPADLDASPARALAD
$N \prod Y \square T$ TNGFSTVTTLAEPAA $\square H G T T A \square T V D P T N D A \square V Y \square$ GMLWRSDDAGGNWTLVSKDSRPFYFSHIAVDPKNPNHLFA

H GVYRSDDDADTWVSTADGLPADFGFVMMTHPTRSDTAWD DGFAESDDRGDSWSVVDRGLDHGYVWGLAVDPGDPETALV GAVLSSTDAGRNWRTQEIQTHQDLFGLHILADGQRGWLT NGIWRSVDNGANWTEVHSAPLSNFGFVTAVHPHDGETAWF
GTVLRSTDHGQSFSLINRPDRLSLAGVTALD NGNLILV GGLWLSENGGEDWRQLSANLPPIYC

ATMVRTANSGTSFTKRSLGAGNRNDKSTAFDPGSNLASTD


NDVWRSTDNGKT WT QVTAHSGDEWGHSSVADPDGSDVLMG LGVYRTDDGGDSWRPVTEGLPQEPYFGUVLDGADVPGFYF A GVLRSTDGGDSWAGSNQGMLNDYLPDPRAEWGHDPHFVA DVI AISVDSGATFAPPDNWNALFNRRDDYHPDHHAAVMET D GALQSQDGGLTWTRFEGVPSAEADYNVAFDAANARRFAD GEVLRTDDGGLHWQSQDSGTMECFGSTHFINDK VGWSVA GHLFTSENGGEGWQKQWR

A PTVLT LP T DASDSRDGTYGFTGYNDFDETDPTNDAKVF HRLYRSDDRGASWEKWAPGGGGPCLHT LLDPERPARMYV $G H L F R S T D F G G S W Q Q \square G N G P D E F G L S G A V L D A D G S Q V V V G$
$D D A M D A L A A G K T P P P A K P L P E D Q P I T H L L A L S P K A P E R L Y A$

GGVWVTDDEGKTWNKDFEMPPHNDKRMMVIVRDNFSKYDC GTVLKSTDDGRNFSLVNRADRVSLSSAATTD NGKLILV GGFLK S T DYGLT WVAQPSFA G VNMWGVHTNPNDGNEVFA FGLWRSDDGGATFTAATTPSGSGADRALTSAVVHGRTVLV KYKVGSNE FNWNLRRDPDAKGFEGMDMWSGPLRGPKVVP GSMFRSPDWGQTWERLEGPYEGSLFGATGTNEPGVVVAYG

LR\IDQTKDGG\SWQE

 GVLLKTTNGGKTWRDKAADNDAANLYSVKFDGDNKGYVAG
ANLYRSTDFGSTWQPDARGPLQFGLASATLLDDGSLVLVG LRAYRTDDSGESWRAI DAGLPEEPYFGIVLRDAAGFYFGT GTVLKTTNGGNNWTALTPPVFNFWSVHFLNP NTGTVVG


GTAASSFDG $\square F S$ PAQTPPHGYRSSVAYDPTQK $\square W \square T V$ S LT LTS SHDGGANWETSPTGDRTP LDHAVTFVNSTNGWAVG GGMFRSTDNGQTWAKVQGPYEGSLFGVIGTARPQTLLAYG SD $\square R S A \square D S G D T V Q H \square N D V L V R D N N G V S E V Y \square A A G S T A Y F$

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


 GEVWHTQDGGRSWQKVSQGPSGVRLDFVTAELGWSLLFVQ




YS GLLF TADAGMQWNNVSLGLSSKRNSVIRTFLNDKEGWTV
 NENECS LDIDHASYSPMAPLSEPNAVGIVIAHGSVGDAISVV GAVLTSDDQGRSFKLFNRPDRRSLSG VVTSDSQGNLIVV GVIFRSKDWGTTWEKVQGPYEGSLFGAVGTNQAGTVLVYG GS $\square W A T T N G G K S W Y A A L R V G N G F S K D T Y W A$

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SAPGlIYRSNDGGKTWNKLLWTETSGVIVK LLASS
APSGVLDS SNNGSSWS $\square R \square S G T P S D$
ADGTIVASTDGGNSWQAASQKVFSSVQFMNNRQLG
GDGGMYRSLDGTTTGDCSKLNVFDSMNADLGSFAQFПWQH
DEGVILTTLNGGVTWELQKSGTSNDLYSFSपSPDG\|LAV
GGTDTHRSSNSGGSWQTTSKWSYGTGVSVAHADQHAMAFR LS MNLLASDNGGRTWRHปA

KS $\square \mathrm{HVDNHA} \square \mathrm{W} \square \mathrm{D}$
GRLAVHRTDDAGQSWMRपDTGपPDAEYNVVLRD AAAVD GSNGVFATSDAGKNWRAQNN NTKПFLFRVQFL VPAAVTRTTDGGKHFTAWRGGDPQQHCYDLVYRHGLAVS GQGGVHDAASTGA
 LRGHLFRSTDFGDSWQQ\|VINTPNNGPLEFGLADGTLD
GDGYLSNSGNAGTSWTQKLAGTRNNFTSADFKNVNT
GQMVVTRTDDGGASFKVLTEGLPQRQAYHD VYRHALDLT
GTNALYVSFNDGKNWIPLQNNLPHAP
VHWLTIQ
GSNEVHRSTDKGATWKQTNASSG
GTGDVYAATDDGDRWHQVAAHLPDV $A C A G I F H S E D G A A N W S R V S R A E A D G A H F G F P V A A D A V D$
$G R T R M W T D G G V A F T Y V T A A G A V V D A D A N W R V Y D L T Q H$ GTYGVLVTEDGGATWHERNAGLPD GHCVFRVGDD EWGTIVHT配GGTW

DNGALLTSSNEGQQW■DQSपsVSVDLAPPVFFGTTGLI
GGLNVYRSTNSGAAWTATSRWN SGNLVHSDQHAMVFK GAAGTFRTDDSGETWKPVNRGFDPETRPEVGQCVHHVALD HGGTVLKSEDGGRSFSLFNRPD GATGLWTSTDAGVNWTRAAAGK $\quad \square D A \square A D D$
 GQGGVHVASPTGA
GCGSTWRTKNGGSTWLQ $\square P \square S S S H Y Q V Y T$
AGSGVLLSTDGGATWSSASGGLTVTSVLSLAASRDGRW TTGNVYLSEDRGETWHCLGHNFPPVYSIVRFG
GDYTVLLMVDGGKTWETDELKNARGGTपEFGLSGGTLL
TSGGVF LSNDNGDTWEKK ${ }^{\text {S }}$ NPSVN $\square$ ATSALDY
GGLSVARTTDGGQSWQTFRNGLPQDNAYDIVLRHS $\square D$ TSGDVYGSGDAGATWSHVAAQLPPV
GSGVLLKTTNGGKTWVRDKA
NGGTVLRSSDDGQTFSVFNRPDRLALAGASGL RNGDVYALTDDEERWHRVVAHDPDV
GAGAlLHTTNGGTDWTDQSTGSSDLRGVYLLNANKGVAV TSGNAYLSEDRGETWQCLGNNFPPIYSVRFG APGRLFVSTDGGAAFAPVFTTEG FVRAFADS
 SLGTILTTHDGGASW
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DSSGLYKSVDAGSNWSAVSLPLSENGSRFEPNDIE LGAD
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T S EPAGVYFGTRGGVYASAD
NDGLHGWAAGDGGLLVTRDGGK
DCGQILLMGSTTGGAWLSED

PTNSNETIVLEENEMVVSSDNGATWEN ADGS $\square A V V G H G G T V L R S T D$

GY $\square$ A GERGGLFVT T N
NDGQTLAMASTTGGLWLSANAG
EHFNDLVIGTYGRGFWILDD\T

RADSQRMADGGGLFVARTEDAGRT
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PDDGRLYAAVYKEALFESRDFGRTWQ

SGDEGALLLSTNNG
$P N N P D V A V V G N D G G T Y$
PSDSQVAYRQDHNGUY LSED
PADPEHLVAVRDGTLSVSRD
PHKAD L LWATSGGGFYK


DDGTLLVVGHGGSVLKSTD

SNGVLVS GGE GDYLSEDLGTWD
$\boxtimes A G D C L C F G S T T G N V Y L S E D$

SDGNLILVGQGGAHYAT
GS G G T $\square$ LRTTDGGN
P DGATVAVGSDDGVFR

DDGS LVLVGNGGSVVRSTD
$R D G R \prod A / V$ V $\operatorname{RGGAVLTSDD}$
ADGR\|VVVGHGGSVLESTDGGR
 R GWAA GAMGTILATRDGGRTWR KGKLLAVSDVGI
$P \quad S T L L A Y G L R G N L F R S T D F G D T W Q$
VLVGNGGAlMVSTDDGKT
SQPRTLLYGLRGNLLFRSTDGGTWQ

T G N Y $\square \mathrm{F} \square \mathrm{G}$ S D D G $L$
SHP $\square$ NVIK F S T DE G
GS $\cap A V V G N G G S V L L S K D$


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UniRef90-N6X1H2
UniRef90 X1HPQ3
UniRef90 B6IWX8 UniRef90_UPI00040F22BD UniRef90-IOAKN2 UniRef90-I6ZZY0 UniRef90-UPI00046F6A97 UniRef90_UPI0003A6B15F UniRef90-W7TR43 UniRef90 I7JYE0 UniRef90_U2TNF5 UniRef90_W7S879 UniRef90 F4F9V3
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T WT QAKVPTRQLLTSVFFD
DDKRGWAVGAGGALWNYD $D S S G N L Y V G T \square G S G V V K D A$ $\square 1$ YHPTNSEHLLA $\square$ SKNNVLWLS S QW $\square$ SMGPNASGGY $\quad \square A F T P A A P S R \square Y V L P D G R A V F R S D$

|  | DAQHGW\\|VGSSAT\|LHTK GHLLF S A ERGWILHST |
| :---: | :---: |
| NPGAGGQVQDVVADP | SHTGTLI AVGDFGT ILRST N【NERLI LAS DMEGIIYESL |
| $S G L L T D \square A$ | SAGARQVAVGERGHVLLSD $R L V A V G D R G H I L F S D$ |

L Y R R S E
VI IN P T D P D N 1 VA G Y R QVGVG Y S T
TWENLDVPR EEVYSVVASP DGERDYAGTHPAHDYVST
$\square T$ A S DRAGDRLVAVGERGH $\square$ I YS D

GTFVVA $\square$ E S S P NDK
YAAGDFGTLLKTG $V$ YKT T
 TWRLHTTGSDARLRGLSAV SPLVAWASGSAGT■LRTT S WT QAKVPTRQLLTAVFFV DDKHGWAVGHDAQDLASD $R L A G Q Q G G U W K T$ RWRQAKVPTSVTLTKVCFV SPGRGWAVGHGGVVLASR


LWGYRGNHFVLYETA
$P S \square C \square D P T N S N N I V A G S V L D Y \| H T S N$
DDLT GWAVGS GGKVYATQ

GFVTALAS $\square$ PARPGETVAGLAGGGGYFWD Y I Q S L LF HPKQEDWVLA Y SLDDQKLYSSM VTLTAVHFANAQKGWAVGHSGVVLAT

QRTVAVGQRGH【LYSD
TMLASTRAGER\VAVGDHGVVLLSD ADGKHGLIVGDDGVILTTT

YNPGDCN I LT L S VMDDLWLSE WEDAGGGSFRFSTLDFLDPTTGRAAGNGFLIGTS $P A G G G S F R F S T L D F G N P T T G R A A G N G F L I G T S$
$V G T D A K L L D L A F G N P Q H G F L V G S D A T L L E T K$
 $D \square A F V P D D P K H G F L L G T R Q T Q L E T K$ GLIA S G GLYRTE


DQGKTWSQARDPTRQLLTAVFFVD

A A HRRWRE $\square$ N P DPQSANGDGFGWGAVAVDPQHPQVLLAST DGGDTWTKQFEDLKRE S P L LDVWF QDAN N TGTSWTKVNTGLKA TVITTVVHDA

PNDA $\square$ FFTTH
NFGETWKE $\square$ HNFVC $\operatorname{LVK}$ KG
DHGVT WAP PTAFASGVGGTH $\square$ AADPRDANVVYVAA
$D G G A T W N Q Q P \square P \square E V E \quad L K K \ R F \square D P K$ DNGRHWQSVR SPADRTLTADAFADEQLGIAIGH
DEGKHWTR RTYSRFAKTWDAVGAEGTALKSVDDGUNWQK NNGESWKPKGELHQNR VYAVAIPKQSGN
DQGRTWAQAPVPSQQLLTAVYFVDA
DQGKTWTQAKVPTRQLLTAVYFVDD
DYGKNFKDDTNDINNTFDRTEF GMADGPENSGKVILTA DYGKTFKDVTHLINHTFiQTEF G IDAISPDHSGKVILS

D G G S S WT D Y L I G $\square$ D $V$ AP Y S WES DP G $\square$ TVDRFGNFYTVT LC
DGGDTWDELDQWHTPRHRNEAHVRS $\square G V H P E T P D R \| I V$
D WWA LATLWPSS

DQGTTWTQGNVPVSTTLTSDHFPT
P Q

DGGASWS G $\quad$ PPAGTFSNLTVLQV $\quad$ VDGNTLVAGG DDGNTWNLTNDEGQMSYFGGWQYVAGTQDPSNPQULYMMQ
$D Q G L S W D Q A P V P T R Q L L T A V Y F A D$
RFERVS FN N ${ }^{\mathrm{E}} \mathrm{G}$

DGGRTWEQKADFRD $\square$ QAFDAQHAVA $\square$ S $\square G E G D S S R V Y$
DGGSTWTKQFED LAAREAPLDDVFKAS DAGMTWTQQF $\frac{Q T G A S F N N A T S F P N \square V H Y F D A N N G L A \square G}{}$ DGGETWVRQFDGREAAQRELEAAKAAAPDKPLLDVWFADE DGFATAPTTLPLPPDNDSRSATFGFTGQQAFYN $\square$ F $\square E S D P$
 DGGLTWSTKKQTSEFGDWGDPVIVANKKGEFYYFHLSDPE DGDT WA T Q T CS GCGDAS $\square$ DSASATHVW $\square$ S DETNDRM $\square$ S T

S A A N R WD PLVTSYS LTP SNYVASYGNFAD GVWEARDCPSTL DGGSSWQ FPGKGLPGAPVTALAASAAVPDTLYA
DFGRRWQLMHERTTPNRFY WAVAGGLDKEADLVHMEV NGGATWTATT LTNDGNNALISDLTAVDANTAWVLTAGT
$D A G R T W V R Q L D G R Q I G D L P Q E A S A A D A G D P L L D V L F L D E N$

NQGQS WT QAKVPVSSDLNAVQFPT
P Q
DGGRNHRQARQM PDDVALTSVS $\quad$ V $\quad$ DAR NGGKK WEKQESDTENDGFALSPEGMVAVGKGGDAMRYSVD DGGETWTNVYSTGASNYLD ITFDPLN N

WSTVISLLAVLPGRVASAHAGLPETSN\|VIRRGHP DF GATWRKI HDSVCLVRWG DGGCNWQSI YQGTWQFSQMDFVSNTTGWAL

T G G G H WQP $\square$ A D
K $\square$ P S $\square$ S T G T $\square$ A $\square$ D H A N R $\square \mathrm{WY}$ A T G E
DGGQS WAPRSIPSAEDEDFNYRFNADSFKGKEGWIV
DGGTTWAEAASPLAAESTADPGPEAFRV PDRKHLVY LSA
GVVDGLDSVDFRSIVVDAGNTGRVRTDD

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UniRef90 UPI0003B7911D UniRef90-B1J560 UniRef90-V9KTW0 UniRef90 G1XVX4 UniRef90-W7TC14 UniRef90_UPI00046E83D1 UniRef90 UPI0003B569E6 UniRef90 V4RZ10 UniRef90-Q4KBJ9 UniRef90_Q21N56 UniRef90 K4KQB1 UniRef90-W8RC52 UniRef90_14MW99 UniRef90-UPI00029A01D5 UniRef90 K9NJW5 UniRef90-S9YKZ7 UniRef90-13KT66 UniRef90 C7R6H2 UniRef90-TOLHM5 UniRef90-LOFWLO UniRef90 L9Z142 UniRef90 U2SLH1 UniRef90_UPI00047CB7AD UniRef90-W7Q0N4 UniRef90 C6VS62 UniRef90-N6Z1K2 UniRef90-N6X1H2 UniRef90-X1HPQ3 UniRef90 B6IWX8 UniRef90-UPIO0040F22BD UniRef90-IOAKN2 UniRef90-I6ZZY0 UniRef90-UPI00046F6A97 UniRef90_UPI0003A6B15F UniRef90_W7TR43 UniRef90 I7JYE0 UniRef90_U2TNF5 UniRef90-W7S879 UniRef90 F4F9V3 UniRef90-J2MJT5 UniRef90-L7W9E1 UniRef90_N6Y0X2 UniRef90 UPI0004761996 UniRef90-UPI00047E3809 UniRef90_V6SNQ9 UniRef90-A0A031MAV8 UniRef90 C8WUS3 UniRef90-UPI000248ED7E UniRef90-L5K5V2 UniRef90 K1XQU2 UniRef90 J3IVJ9 UniRef90-K9VWW6 UniRef90 HOTLC9 UniRef90 UPI00036CCF9D UniRef90_UPI000383BD13 UniRef90_C6X3D5 UniRef90 UPI000374DC35 UniRef90-UPI0004267B05 UniRef90_UPI00034636B1 UniRef90_S6AQS7
UniRef90 L8MSC1
UniRef90-UPIO00476649E UniRef90_UPI0004782FFB UniRef90-I0AJQ9
UniRef90_V9QVB2
UniRef90-U2TVZ5
UniRef90-H2RV63
UniRef90 W8YEM4 UniRef90-UPI0003FFA5FA UniRef90-C9SSI6 UniRef90-K2FYY9
UniRef90-UPI000374B7BF UniRef90-J2S2J1
UniRef90-UPI0002C32429 UniRef90 F8FE31 UniRef90-R7XIL7 UniRef90-MOLZV2 UniRef90_UPIO00479DDAO UniRef90 BOKVC9 UniRef90-B7S1T6 UniRef90-UPI00046F89DB UniRef90 FOFVT2 UniRef90-UPIO00421A7DB UniRef90_UPIO00365C128

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

ANGSC $\square$ ARGLLDRTD D LGK T FK V I GSK $\quad$ YS F G LG
S QLGGGQGHDYRSTDGAKTFRPVLNDKAD
GE I F R S T D G G L T WP KVVVVSDSLSAYT PMDMKF VGWAVGDNGTVLKTTDGGQTWMKKNTGTRTAL

GATLLRTTDGGQQWTAVP
$L D D \square G R D$ $R L V A V G D R G H I L Y S D D Q G Q T W V Q A K V P T R Q L L T$ $D T W L I A A E Q N V W L S T D Q G L H W H T A P \square A N N L S V T S \square P \square S R G$ QKMYVGTLFGLEVSNDSGNTHTLIDATKK

K S $\square$
H GWAVGHDTQQLATVDAGATWTRQQ FQDPARQA
HGWAVGHDAQILASTDGGATWSKQ FEDLAREA $R L V A V G D R G H I L Y S D D Q G A T W T Q A K V P T R A L L T S V F F V$


 WA T GSN G L WM L T LD G GAS WK
$K G V \square A G M D D$
K TWPYTNHIQVFRSSDAGRSW NEDAEASGAMTYRPDF WASGTHGTVLRTEDGGYMWQ S CSMPPGAEKLDFR G I

PMPPTRTLIGHL
E GWAVGHGAT LLHSSDGGETWEK QFDGRQAADLVIATME
 GA $\square$ Y A GTWGG VYR S D DGGSNWTNLKANLQAG

NGWAVGHDS LI LIHTADAGETWEMQYRDPALEESRADQDGG E GWII GKPPILLHT QDS GKSWER DPLSPKLPGEPST

RTDNGGKTWQQTQTNQEPKGFYDCMAFF

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


L V S VS HQEAHVWDTK DAGRHWRET T LDP LP TGAVQFAAGQW
 V G G E

## EDYGKNFKD $\square$

TKLYMVYLSTPFVSTNSGRTWTSDNNGVAGWFEANGDHGV AVAGDGLWHSTDKGAVWSLAMDRDWDGDGEREIVGL
 $E G F A L G A F G L L L H T A D G G A H W T R A S S R L P$

N P D G

QGWAVGHDGVVLHSQDAGATWEKQLDGRQLGRLML
Q GWAA GHWGVILLHTTDGGETWQVQR S DAA QDR A E ELPA ELP PLAERTEATDTYHWDIVR QATWQTAFTDTYF


QDFFVGTTFGAVISRDQGQTWRWVCPDAMGYGGWRPEAYL NHNRSCNDRGRRKTADYGRSFQTIAA ARSAASGPNALIRTADGGSTWEKLK
E G W V V E P S L L L H S T D E G K S WL R V P V S EK LP G N P
 WVV G T R G TVL R T VD G GA T WT SVVGPTLLAPEDAALQFR DV

S N T GATASVGTGVYVLKDPRHGTFQPGGRVGGAELESTV|
GKPA $\square L L H T S D A G D S W E R \square P L S S Q L P G D M$
GHSLPAS
$L A!S A D G G R S W K S G T L P E E A S G G E A V F T S K$
E D A Y A A T T S G LTYRSTD G GRTWENDDVPREEVYSVVTSPD G T A GQPARIYRTSDGGESWEKLLESEKAFFDGINFADE

D S GK T WT N $\square$ S P A S T VQFTSNPVYGQ

UniRef90 Q87YL7
UniRef90_I2JMB0
UniRef90-IOHZU2
UniRef90- 4 ZDD UniRef90 UPI000290E2A9 UniRef90-UPI0003067946 UniRef90-J3D1E1 UniRef90-K1ZA94 UniRef90_UPI0003B7911D UniRef90-B1J560
UniRef90 V9KTW0 UniRef90 G1XVX4 UniRef90-W7TC14 UniRef90_UPI00046E83D1 UniRef90_UPI0003B569E6 UniRef90_V4RZ10 UniRef90_Q4KBJ9 UniRef90_Q21N56 UniRef90_K4KQB1 UniRef90-W8RC52 UniRef90_14MW99 UniRef90-UPI00029A01D5 UniRef90_K9NJW5 UniRef90-S9YKZ7 UniRef90_I3KT66 UniRef90 C7R6H2 UniRef90-TOLHM5 UniRef90-LOFWLO UniRef90_L9Z142 UniRef90_U2SLH1 UniRef90_UPI00047CB7AD UniRef90-W7Q0N4 UniRef90-C6VS62 UniRef90-N6Z1K2 UniRef90-N6X1H2 UniRef90-X1HPQ3
UniRef90 ${ }^{\text {B6IWX8 }}$ UniRef90-UPIO0040F22BD UniRef90-IOAKN2 UniRef90-I6ZZY0 UniRef90-UPI00046F6A97 UniRef90_UPI0003A6B15F UniRef90-W7TR43
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UniRef90 L8MSC1 UniRef90_UPI000476649E UniRef90_UPI0004782FFB UniRef90-I0AJQ9 UniRef90_V9QVB2 UniRef90-U2TVZ5 UniRef90 W8YEM4 UniRef90_UPI0003FFA5FA UniRef90-C9SSI6 UniRef90-K2FYY9 UniRef90_UPI000374B7BF UniRef90-J2S2J1 UniRef90_UPI0002C32429 UniRef90 F8FE31 UniRef90-R7XIL7 UniRef90_MOLZV2 UniRef90_UPI000479DDA0 UniRef90 BOKVC9 UniRef90-B7S1T6 UniRef90_UPI00046F89DB UniRef90_F0FVT2 UniRef90-UPI000421A7DB

130<br>140 150<br>WQD|VIS D R|LID $R E \ A V G Q M G V A \square I R F G S S E$ WKLADTGSD

## Y LTR D N GK T WT N $\square$ S P A S A

GALADD PFD S NHALFVV $\operatorname{L}$ G Y G $\square$ WWWF Q D R G L E E T Q L Q Y L G P

 SVYF LDAEHA WAVGSAGSIYRSA DGGETWERQLGEQQ GRF LF A S VMTDK V S L R A $\square$ H VSMD LGETWN MA
 ADSTHGY GSYYFGGNNNFIIATSDSGKTWSPLPMLSNF LAVTFADK DHGWASGDGGLI I NTKNGGTTWVQQTIDTN SLLGVIHLGDQHFVAYGAFGLYLESHDGGLHWSRRQLLDE
 GAld IDHPTNKNDVLAAVGWKDDYDDTDGGVNWTEKTTANT
$P$ L LSVHF LDD A EHGFAVGAYGAVLSTEDGGQHWQDVSQRLD $P L L D V W F K E T Q H G F A V G A Y G A L L E T T D G G K T W N E V G D R L N$
 $\square Q Q L V N P G D C N K L L T M S D M M D L W L S E D E G A T W R K M H D V R W$
 $R D I E A F D A S T A V A V S A G Q P A V I Y K T T D G G K S W K K H Y Q G P E$ $H V L I F G P D E \quad Y V A S T G D G L Y R T Q D A G Q S W T R L D T R L D$ $F V W Y$ T P EVVGLIA GANS QDMLDRTA DGGRTWDSVSPAD
 HMRAVHAVSPT\|CWIGGTQGTVLRTTDGGHTWTTFKVAGA
 EQIAAEMETRDEEAPEAEKADLAEWTLDDGMDFALEDAEAD
Q A D S LK
$A A L A F D D A N T G F V F E \quad Q G G Q V F Q T D D G G T R F A A B D A V P G$


Y I WAL I L N D GVLLFAA T E Q G I FKY D HMRAVHTVTPTLCWDGSAEGKILKTTDGGKTWATYQLPQAA
 $S \square A Q D P L N S N D L Y$ C GTF D R G L L WK S T D K G D T WT R F T Y N S P

D Q V V D P L N GRFEVLAT D D G GRSWQ ${ }^{\text {LTGMPD }}$ RTLAADEYQANTWYAGSAE VLFRSTNAGAGWEPVGRFDA $H L N A \square A A V K D A G L F D V G E S G S M F R S A D W G Q S W E K I E G P Y E$
 Y S $\square \mathrm{HVA}$ GRD LYI A GE Q GALYHSADGAKS F T A $\square R$ H M RAV H A V S P T T C WI G GS G GTVLK TVNGGK K W HAMAFRPNATNSA $\square$ F GNDGG VYYAA SLDAATTTS G $\square N A R N$

MA GRDGWMFESGGYD GVAAKY LYRTENSGDSWQLVATSTG QWACI NPKNNH LYTTWTEFDKYNSSNDSGKTWSTPKNNSV F GMAI GPENS GKVIGGSHGGRDFRSSDFAKNEVQATNLPF
 D R L I AVGERGTMLTSRDRGHSWQASEVVGGG
PSKDNTLWA GAVD GSI YYS RNDGENWTNDKTKVD CNMAVDPANDQVVFVGSPANGLLKTSNSGGKWVVDSGVPA



 GERGGIVASRDQGQHWQQVDS D HYA A REGAEQWLDDEGKR $\square E$

P LFAVHF F DEK Q GVAVVGLWS LVLRTEDGGE HWQPVELAPP $H R T A D E P A T L R G W A V G S$ A GVVIAHTTDGGKTW $\nabla A C G Q N G L V L V G \nabla T S G G V Y R S T D F G S T P T Q T \square S$

WRETGD $\quad I L A A T G S A L L H S P D E G C T W R$
 ERIRFLDASRGGGYSRAFSYYTSDGGVSWSRIPTPPN
 QAFSAAKAVILS DGEGTDSRD YVTEDGGTSWDLVETNEE
HALRFA
GDTVWAATSRGVWSHSATELSSPDWKLEFAPN VY TK A T GDKS A EMVVT DEGA I YVT SN RGYNWKAAVVQETV $H H G Y L V T Q P D \quad A A M G S S Q K R I Y E T A D G G F T W A L V M D N A S$

$E R \square$ $K R G Y$ VF G D P VDGF $W$

FYATGHRGHILISEDGMNWQQAD



UniRef90-I2JMB0 UniRef90-IOHZU2 UniRef90-X4ZDH7 UniRef90_UPI000290E2A9 UniRef90-UPI0003067946 UniRef90-J3D1E1 UniRef90-K1ZA94 UniRef90_UPI0003B7911D UniRef90-B1J560
UniRef90 V9KTW0 UniRef90-G1XVX4 UniRef90-W7TC14 UniRef90_UPI00046E83D1 UniRef90_UPI0003B569E6 UniRef90_V4RZ10 UniRef90-Q4KBJ9 UniRef90-K4KQB1 UniRef90-W8RC52 UniRef90-14MW99 UniRef90_UPI00029A01D5 UniRef90_K9NJW5 UniRef90_S9YKZ7 UniRef90-C7R6H2 UniRef90-TOLHM5 UniRef90-LOFWLO UniRef90-L9Z142 UniRef90_U2SLH1 UniRef90_UPI00047CB7AD UniRef90-W7Q0N4 UniRef90-C6VS62 UniRef90-N6Z1K2
UniRef90 N6X1H2 UniRef90-X1HPQ3 UniRef90_B6IWX8 UniRef90_UPIO0040F22BD UniRef90-IOAKN2 UniRef90_UPIO0046F6A97 UniRef90_UPIO003A6B15F UniRef90-W7TR43
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UniRef90-U2TVZ5
UniRef90-H2RV63
UniRef90_UPIO003FFA5FA
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UniRef90_F8FE31
UniRef90-R7XIL7
UniRef90-M0LZV2
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UniRef90-B7S1T6
UniRef90 UPI00046
UniRef90_UPI00046F89DB
UniRef90-FOFVT2
UniRef90_UPIOO0421A7DB
UniRef90_UPI000365C128
 $M R L L N V D V A S R G L A V G G A F G T L L R S K D G G E S$ VQSNPVYGRDIGFTDSDNGWIVTVGMMETVVLRSTDGGTS $R L T N G E S I D A A G Q A P Q R S G T V R D R R N N E S R A L Y S Q D Q A D S$
$G S L F G$
 AN
QLPHVSAEQFYSILAANDDMVFMHVTGFGT\YVSDDRG\|L SLILAGTLA GTRLVAVGERGHILLSDDNGHS GAKRLVADGSALFVGTDGQLVVASQERDGSAVISTDGGRS SDGSGNYDTDLVAGANVGDTVYTAARWTGFIFKSTDHGTT NTIEGIDFVS PEI GWAAGGGGTILHTSNGGQT HFDRHIARVIKAADS $L$ LIFGESGTLLRSSDLGQS DLKREAPLLDVWF KDTQTGYAVGAYGALLETSDGGQH RKLNDNY ATIVWHPTAQK FVLAGSGATLFVSDQNGDD YGDRN VFAI KFNPKNGSEAFLASDA GIIFRSTNTGDS
 NEDQFHLNGlA AVKDAGLFI VGEQGSMFRSSDDGQT RESP LLDVWFKDVDSG FAVGAYGSLMETTDGGKH $V G Q E Q F Y$ SI GPKNSDYFTTDNNGSCNDKGML ESYEQPALFDVQFDTED LIVAVGSYGLYLESADAGES $N \square N D T Q W V P A V G A N G E V Y V A W G Q F A G N G Q V L F R S T N G G V S$ AFLDGDAF
$N R Y F R E A F A F A A A D D R R G Y A Y G D P V D G K W M V L L T D N G G D S ~$ SFRVYDLEQSGGRTWICGSSGNIVRSDDFGVT ADGFWDALLLNRFD VVDGYLLGDPVNGRFSLWWKTSDKGSS DSLDFRDПHAFDKDVADAMSAGESEKDKAKI YKTDDGGQS

A DAP ARARRSRDSGHH DAARAGDRLVAGQRGHILLSDDNGRT TRAVGGGAVPTDAVFRSPTVGFV ATSDGNIVQTTDGGNS KFSTSGEIPTIADDFTNRGTAWAKWGGGGGFLKSTDFGET A GLIN G IDDV HDLAAN DSLDFRDIHAFNKKEADAMSAGLSQEGKARIYRTEDGGLT NEDGFHYNADT E S I A DTGLFMVGELGTMYRSADYGDT FKKDDIHMTSIVVDTGKSGVKGASYFTGSIISVVRDQ
AQPNEAGFAAVATSGANDAWDGSGGGTQRGVWVSLLAGVL APAPAPVRPGIVSRPGSVAVATVRAGGGSRVHDSTDDGET $G S\lfloor F G$
$D F G G T T \prod F G D \prod V I G D A Q P S T L L A Y G L R G N$
$V$

 K ISGADSLDFRDI HAFNREVAVAMSHDKAK GYRTEDGGLT $N G L N \square T Q F Y S L G V A P T S S G E F F A A G A Q D N G T Q Y S Q G G D G A$
$D L P H N G V R T A M S F A P N G K T G R M A V V D D D E K V V E T N D G G A H$ HEGDD DLITTEGAVPSSDGKNLIMVSWAFDHHIWKSTNNGKH HP


 PLPKGEAVRALVSCLDESERLFAAM PSGLWTSADAGVN
 SEGDYSYVGLKEVV
 $V G L F L N A A L V V A V D P Q N G S H V L A B G T D G G G L L G S R N G G L T$ AEGADKGPFLDVRFADAQHG V V
 E TRAGERLVAVGERGFILISEDHGVS EGGKRADLNLFGLFADARGQLFAPGERGMVLRSDDKGRS HS GVKDDLRRITFVDEDHGWIF

GYSGVSLEFDKFDSNRVYAGSSSTNGFFVS
PFFRPTWVTGLAGHPTDDRVFYAVTGRPGGVYRSGDGGET $V N H E Q F Y S I L A A T R D M \square F M H V D D S G V G T I Y V S D D R G A V$ TRGAEFS SRNTGWA VVDPSKGYRLEQTLDGGKS G V VRNM

ERSPDGKYVAVSAKGNFYSTWEPGQK PTAFYNCVDF ENQERGLAVSDPVDGKFRLIETKDGGRS PAYLPGGAND $\square$ AVDPKDPGKVLLAVVGWRGGLYAKRN G D



 $\begin{array}{ll}\text { A } \\ L V E T P W G W L A G E F D S R & L\end{array}$ $P L S Q G G S U S S U Y F S S P L R G W L M A A W D S S K A L Y L T E D G G A T$

GNKR $\square$ NEK Y

UniRef90_Q87YL7 UniRef90_12JMBO
UniRef90-IOHZU2 UniRef90-X4ZDH7 UniRef90_UPIO00290E2A9 UniRef90_UPI0003067946 UniRef90-J3D1E1 UniRef90-K1ZA94 UniRef90_UPI0003B7911D UniRef90-B1J560 UniRef90-V9KTW0
UniRef90G1XVX4 UniRef90-W7TC14 UniRef90_UPI00046E83D1 UniRef90-UPI0003B569E6 UniRef90_V4RZ10 UniRef90-Q4KBJ9 UniRef90-K4KQB1 UniRef90-W8RC52 UniRef90-14MW99 UniRef90_UPI00029A01D5 UniRef90_K9NJW5 UniRef90_S9YKZ7
UniRef90_13KT66 UniRef90-C7R6H2 UniRef90-TOLHM5 UniRef90-LOFWLO UniRef90-L9Z142 UniRef90-U2SLH1 UniRef90_UPI00047CB7AD UniRef90-W7Q0N4 UniRef90-C6VS62 UniRef90-N6Z1K2 UniRef90-N6X1H2
UniRef90 X 1 HPQ 3 UniRef90-B6IWX8 UniRef90_UPIO0040F22BD UniRef90-IOAKN2 UniRef90-I6ZZY0 UniRef90_UPI00046F6A97 UniRef90_UPIO003A6B15F UniRef90-W7TR43
UniRef90-17JYE0
UniRef90_U2TNF5
UniRef90-W7S879
UniRef90-F4F9V3
UniRef90-J2MJT5
UniRef90_L7W9E1
UniRef90-N6Y0X2
UniRef90-UPI0004761996
UniRef90_UPI00047E3809
UniRef90_V6SNQ9
UniRef90-A0A031MAV8
UniRef90 ${ }^{-}$C8WUS3
UniRef90_UPIO00248ED7E
UniRef90-L5K5V2
UniRef90-K1XQU2
UniRef90-J3IVJ9
UniRef9-K9VWW6
UniRef90-H0TLC9
UniRef90-UPI00036CCF9D
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UniRef90-S6AQS7
UniRef90-L8MSC1
UniRef90_UPI000476649E
UniRef90_UPI0004782FFB
UniRef90-IOAJQ9
UniRef90_V9QVB2
UniRef90-U2TVZ5
UniRef90-H2RV63
UniRef90-W8YEM4
UniRef90-UPI0003FFA5FA
UniRef90_C9SSI6
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UniRef90-F8FE31
UniRef90-R7XIL7
UniRef90-M0LZV2
UniRef90_UPI000479DDA0
UniRef90_BOKVC9
UniRef90-B7S1T6
UniRef90_UPI00046F89DB
UniRef90_FOFVT2
UniRef90_UPIO00421A7DB
UniRef90_UPI000365C128

210
$\stackrel{220}{Q}_{220}^{230}$
VIRDEPTNY D R T WESIA PDWAK LIYDSGAGDAA WQRLAGGLDEERDQGAGDAA SANFAV WK ISPLSQGSK ISSAYFSSPFKGW
$W T Q A M K V P R Q M L T A D D F V D D K H G W A V G H D A L V L A T A D G L$ WSAFASEPPSGQGAGTDAIAADASQVVWTPEHGGVWRTAD WE QVA ERGDLEFGLSGGTLLDDGSVVIVGNGGSVISSSDN WAEMNTD KTNTYITTTA DAADNLYVGTNEVMGSNEEGV WET IP $\square R T R Q R L I G V H F A L E P K W G W A M Q R D G T V L Y T T D G D$
YSKS $D E R H \square Y T T T G G E T D F T N V T D R G V Y \square T S V L A E D G S V U$ WRQVPAPANATLTGVRFDDAKQGWAVGHDAT ILHTTDGGE
 WTETSDDLYSGYTSYLFAMEFS
WEFQTSATVNTLDAIS MLDNKVGWSVGAGGAVVATVDGK WQALLPSPYEGSFFGALVTPAGALLAFGMRGNLYRSADQGQ

 WS Q AKVPTRQLLTAVYFADDKHGWAVGHDALILATNDGL WQRVQGPYEGSLFGAVATAQARTLLMFGLR
WEKLEGPYEGSLFGVTGTAQPRTLLAYGLR



 LEAVSYPGKPEEVILAWTVINGHVLAGTNDGRLI NRDADG WT DLRGTP $W$ WTRAKGVEADREEGAFAASNSS LMDDETFATANADDRC WT RSQAKGVEA DREEGAFAASNSSLMLDETFADAFVTGGV WEQRSSGVDGPVDFHQMTVSEADPDVLYAGRLQVSRDGGH WQRVQSEPEAEEPLLGLWVDASGKGFAVGAYGRFLATADG
 WRQMPVPVDSALTGVFFVDARNGWAVGHDSVILHTGDGGE WLSVSK WIAQPSFNG $\square$ NMWGVHTQPDNG
WNEMNT G L G Y N LVI QSVTVHNNK $\square Y$ YA S Y GGGVFKYENNA WQMVYQTRQPG』FLDGIAFWNKKDGDCQGDPVDGTHDGGR WETLTDLP Y DGSFF GASGTGE LS GAY LAVSSRGNFFDTWDP GQDFWVPHNRGTSRRD FELLTDFEHIQGGKNQWFFPPRPFTHHVKWFDTNDKSPGT
 WS LV A DLE WE QVE WNGVVFSGTGKAARGALEFGLSGATLLADGSUVIVGNGGS WTKRLDGNQANELVLAADLKARDGAVETAAAGASDLEGGRF WHKI DLAQPVTVSAGARLADGSLVLVDETGRVLRSDDGG WS LVYQTTQNGVFLDGIDFWDKNKGICLGDPINGRLD $F T M F S Q D A D K Y Y I S N Y V Y N N T V V Y R P F P T G A T R V L D N D A S$
$W L Q A P A P T R Q L L T A V D F V D E R N G W A V G H D S L I L H S S D G G E$ WQPTSNLPSGITQPPSVELA LAGPGETLQLAVEVVGSASQ WSK $\square A A Q K A G W R F K \square P V V N R T N G F P V I D V D$
$W S$
$M A Q L P S V G Q E Q F Y S I L A A N D D M V F M H V D E P G D T G F G T$ W
 WS $\square$ GEETRIVTALGEE WSRSSELNALALASHPQ NPEQLAAVTKDAVVVSRDGGT FTDAMENDKSSRGLMGNØIIEGYEVAGDKG\FLANKKVDD WMAGYSPVLDFGGATQAGSSGSFAFQDADNGLLDAVDGAA WADVSGGADSAWTGATTLADGRMV
WTHQAPD LIFFGAVFAVTFLGDGERADCAAQSGDFRFEASQ WLRRLDDGRGVADIELAAAHDDAARQAAERQKADGPDKPWLL
WEP
WQQVDSPVSVTLTRVRFATAFD
WKYMKTGYA GSFWS G $\square A A P S G G L L V A G D R G S M Y R S V D D G G$ WQVIKKVVRNFQRISAMQF DNTKEGWLGADQGQTDHTTDG FSGPFNNVNVWE LLQKQDSTLFTFSTSSGYPVSKSTDLGG WRQASVPVSVSLTAVRFVDAQKGWAVGHAGVVLATLDGGE WSATP LLRAGLELNAVRVSPVDPRRLYASGVS
FSKSLERHLYTTTGSETDFTALTSLRGVYMTSVLTEDGVV WTTKLSAPSEE ASGGVVRVSGQA $W V P F T Q D G Q L W M L A R G G Q V Q F S E T A D A E A Q N P E L A T S W G L$ WGIVDPSDMAPALAGEFGFSASGTCDTTAAGRWYLAAGGV WTLQYSDALDDGAEALDDEALLSDEELYNDDTYSDDLYSDD

 WHEVSLEVSSRDG QGQPQITGAPVFWDSEARGGW WRQAKVPVSVA L TVRRFDDRNGWVVGHS GVVLATRDGGE WTERREGVHHDVHHVLVLGGEEYVAS
WMVHPSPL
WEKIGLDGRG\|LDDKYYA
WSKQYDGLDRYYYSDLAEKNPDNEDFPY LVEEMQFAVDQGA FKTVMQNDQYSPKSLHPAlP VVGVTGGMVFRDGEH WRQARRVPVSATDSAVSFVDAKRGWAVGQWGATLATDDGD WRQVQVPVSSSLTAVQFVDDHNGWAVGHSGVVLHSSDGGQ

UniRef90 Q87YL7 UniRef90-I2JMB0 UniRef90-IOHZU2 UniRef90 X4ZDH7 UniRef90_UPI000290E2A9 UniRef90-UPI0003067946 UniRef90-J3D1E1 UniRef90 ${ }^{-}$K1ZA94 UniRef90_UPI0003B7911D UniRef90-B1J560 UniRef90_V9KTWO UniRef90-G1XVX4 UniRef90-W7TC14 UniRef90_UPIO0046E83D1 UniRef90-UPI0003B569E6 UniRef90_V4RZ10 UniRef90-Q4KBJ9 UniRef90_Q21N56 UniRef90-K4KQB1 UniRef90-W8RC52 UniRef90-14MW99 UniRef90_UPI00029A01D5 UniRef90_K9NJW5 UniRef90-S9YKZ7 UniRef90-I3KT66 UniRef90_C7R6H2 UniRef90-TOLHM5 UniRef90-LOFWLO UniRef90_L9Z142 UniRef90-U2SLH1 UniRef90-UPIO0047CB7AD UniRef90_W7Q0N4 UniRef90-C6VS62 UniRef90-N6Z1K2 UniRef90-N6X1H2 UniRef90-X1HPQ3
UniRef90 ${ }^{\text {B6IWX8 }}$ UniRef90_UPIO0040F22BD UniRef90-IOAKN2 UniRef90-I6ZZY0 UniRef90_UPI00046F6A97 UniRef90_UPIO003A6B15F UniRef90-W7TR43 UniRef90-17JYE0 UniRef90_U2TNF5 UniRef90_W7S879 UniRef90-F4F9V3 UniRef90-J2MJT5 UniRef90_L7W9E1
UniRef90
N6Y0X2 UniRef90-UPI0004761996 UniRef90-UPI00047E3809 UniRef90-V6SNQ9 UniRef90-A0A031MAV8 UniRef90 C8WUS3 UniRef90_UPIO00248ED7E UniRef90-L5K5V2 UniRef90-K1XQU2 UniRef90-J3IVJ9 UniRef90-K9VWW6 UniRef90-HOTLC9 UniRef90-UPI00036CCF9D UniRef90_UPI000383BD13 UniRef90_C6X3D5 UniRef90_UPI000374DC35 UniRef90-UPI0004267B05 UniRef90-UPI00034636B1 UniRef90-S6AQS7
UniRef90_L8MSC1 UniRef90_UPI000476649E UniRef90_UPI0004782FFB UniRef90-IOAJQ9 UniRef90-V9QVB2 UniRef90-U2TVZ5 UniRef90-H2RV63 UniRef90_W8YEM4 UniRef90_UPIO003FFA5FA UniRef90-C9SSI6 UniRef90-K2FYY9 UniRef90_UPI000374B7BF UniRef90-J2S2J1 UniRef90_UPIO002C32429 UniRef90-F8FE31 UniRef90-R7XIL7 UniRef90_MOLZV2 UniRef90-UPI000479DDA0 UniRef90_B0KVC9 UniRef90_B7S1T6 UniRef90_UPI00046F89DB UniRef90_F0FVT2 UniRef90_UPI000421A7DB UniRef90_UPI000365C128

VKVLEDNRUIVGGEYGQLNVSDDGGDSWSVLYRHPEVDG VKVTGFHGESRGYGEYGQVVWSQDGGARWEPLYNNDTHDR LMATWDTEESRESKALYMTDDGGATWKTIUMQNQY $L D V W F E D T R G \mid A D G A Y G A L I E T V D G G Q S W D D I S E R L D N E D$
$V G K R W Q R V Q G V A D R V D A Q R W D A A D R G S G R L Y E S S D G A A S ~ F$ L KS DDGGNSWTTVNAGLTNKQ TWTAGDRPERPPFMEGDPPGNFSDNDVTFGKFSEGVGQFG DDAAHAGKRLVVVGDRGHQLFSDDQGNTWTQWAVGHDAQU QSVITFDRGGEWKPLRKPEYSDCDSTAKNQD S WTL QNFAPDWEQPLMDVLFDDADHG NTWVSHDNGRHWTSEPKALPTDDLYADLGSFPDRPHEAYG EWAVO VDGKTGYGG
Q SRVPNSNG SWAGULADGVPNSNGMPEPIWDVHFADENDGVAAAEFGVIL GEQGSMFRSADDGQTWERL NSVRHTQQS $\frac{\square}{D S G F V V H S D N W D P S G R G A E G W L K K S D S F G K S W}$
 GNLYRSTDFGDSWQQI ELKAARGN
 STERMIHVSVDGGETW $\square D S \square D D D G$ FETSSALVAETRDGGETWQK $\square$ ATPYDGSF LYMTVMDRSVSSGDQD VFFLTSTDQGNTWSPRKR VNDDPG L WVD A G LVS G

MDMSF LDPE GWAVGMKGS LWATQDGGATWRRLETPGQSPQ S GARLLSMQDDGSYSALRDP LRGGS LAASSRDPEHLYAATQAGLLMSPNGGQRWRQVHPQRSPAS ACFAASGTSILVNGKGNAFIGTGGSKMARVFRTEDYGQSW GSNWAARELEANEEALHLNAVLGLGGERFLI A GEAGTLL | $\square A V V$ |
| :--- |
| $P D V E A G W$ |促 SWLV VGAYG $L F L K S T D G G A T W V A K P D G A P D G E D L T G V E C A G E D V C V L S T$

$N H I I A G C Y S C N T S W R S K D G G Q S W D Q D P D S S T N Y Q ~$ VWSLSSNSNALFAGTYGSLYKSADDGATWEKVNNLPADFV SWACYAASGTSMVVQGHGSVWDGTGGSSQARVLHSADYGA $A N V V L A$
$Q N M G F V K G D \quad W G L R$ QNMGFVKGD $\square \mathrm{NLTDEA}$ LA RMNSDFEKGLLRSPLRVFRSADAGRSWHEATAAVENALL AAATSRDQGRTWQAASVGGYRS
ILVDPADADRGFYAVRAFVSERGAQGVAVAAVYLSANAGR VVRSTDDGET
SLDDGVTWDNDDT DQHVDCAFFNDRVGYSGSFSDSFNNQG QAALETLGFRLEDAEAGAGFGPSRPLLALWFKDERLGFAV LRFSPVNVPQPSPFAG

F LLT TEDGGKSWQEL
$P \vee E$
SAANGAF DAPMVLDSNMDMLYSDYSVGTYYQURRYSNIKA SWAVYRDPEDDAPDDEGFGFLEKPLMDVWRDTRTGFAVGA $\begin{array}{ll}L K V M N S S Y G S S W D V A A G D L A A B L E D K S G Q Q T W M V S P D G G Q T \\ M & L\end{array}$
 GWAAVTAGGAPGTFLSVVSVDPSCASPASPPACVVIAGGTG GVHWTAREMPGDGAHFNGLDGGSDGRQMLVGEQGLVLRSS
$F T A D Q V G D R \square T A Q T R T V V K D Y T S N S Q Q D C L E V N A P F S H D G L$ GTLWITTGAGGALRSWTSETG
NW

WK PVLAPEAADPAKT LAPATSADR $\square Y \square L G R D R D F T S G D G G$ DA WMSDAQRITVVGAYGLALHSDDGGQHWQSWRGRLDNPK LI $\square$ A GEQGLLLRDDDSGERFQALTSP
GWAVGHAGVVLHSRDGGFTWTRQLDGVAAAQ
 GVTWK LQ KTGTTNQPDTALHFVNSTEGW T WTTVGNTPDLYAAGNGGVYKSTDGGSTFINFNLTFSSNK HWTLQLDGVRVAQLE MVLDAAKADQATASDPDAAGVRDQ ETVVTFDQGAKWQVLRSPQSSQCDSETSTNRPKRCRLHI VWAMLMGGAGMSQQSYS LYASSDSGSTWRTDGQNTAGGG LDMAYRTPDELWपGGSGNLLRSSDGGKTWEKDRDVEGDPA PYATSGAPLLDVWCDSTRHARAVGGYGYMVETRDGGDSWQ $M T T N P S G L K G V Y V A K S G S P F G P W T Q Q A D Y Q K L G K G S G S A D$
$T V Q C M G D G R V L A L G A Y G L A F S T Q D A G Q S W Q P S L A L L N G S E$
$Q N M$ MPYEFRHGETVSLGA YFTSDGGETWQLKAFGPETBDV SWSMQLDGTRAARTELAAAKREEGDASRRTADARQLVEDG FSMTYTKKGELVAVGGDYLEPDSEKGNDGLIFLTPSMNWSE 1 YVTTYYVINNSYG IV VSEDGGTTWYNINDGSSTNK LFRVFSPSHGHAFGAYGMMMKTEDAGENWDHVLETTENDS GLVTLNTSKTP $T W V T Q R \square D T A V A Q P L F S V L F T S A Q D G \square A V G L W S L M L Q T H D$

 UniRef90-W7Q0N4 UniRef90_C6VS62 UniRef90-N6Z1K2 UniRef90-N6X1H2 UniRef90_X1HPQ3 UniRef90_B6IWX8
UniRef90_UPIO0040F22BD UniRef90-IOAKN2 UniRef90-16ZZY0 UniRef90-UPI00046F6A97 UniRef90_UPI0003A6B15F UniRef90-W7TR43
UniRef90 I7JYE0 UniRef90-U2TNF5 UniRef90-W7S879 UniRef90-F4F9V3 UniRef90-J2MJT5 UniRef90_L7W9E1 UniRef90_N6Y0X2 UniRef90 UPI0004761996 UniRef90-UPI00047E3809 UniRef90-V6SNQ9 UniRef90-A0A031MAV8 UniRef90 C8WUS3 UniRef90_UPI000248ED7E UniRef90-L5K5V2 UniRef90 K1XQU2 UniRef90-J3IVJ9 UniRef90-K9VWW6 UniRef90-H0TLC9 UniRef90 UPI00036CCF9D UniRef90-UPI000383BD13 UniRef90-C6X3D5 UniRef90 UPI000374DC35 UniRef90_UPI0004267B05 UniRef90_UPI00034636B1 UniRef90-S6AQS7 UniRef90 L8MSC1 UniRef90_UPI000476649E UniRef90_UPI0004782FFB UniRef90-I0AJQ9 UniRef90-V9QVB2 UniRef90-U2TVZ5 UniRef90-H2RV63 UniRef90-UPIO003FFA5FA UniRef90-C9SSI6 UniRef90-K2FYY9 UniRef90 UPI000374B7BF UniRef90-J2S2J1 UniRef90_UPI0002C32429 UniRef90 F8FE31 UniRef90-R7XIL7 UniRef90-MOLZV2 UniRef90-UPIO00479DDA0 UniRef90_B0KVC9 UniRef90-B7S1T6 UniRef90_UPI00046F89DB UniRef90 F0FVT2 UniRef90-UPIO00421A7DB UniRef90_UPIOOO365C128

290 E L N GARGPVEFGLASATLLTDGTLVLV

GNG $D \backslash A A T F F D L K L S G N T G Y A V$
$G V A L H F A E D F A Q S Q T L L$
$S P N S P H P A L P V V G \square A G G V V F R D G E T G L H A R Y A D V L A$ LHARYADVLAGDEG GFHLLNATAHIEGAGLFLV GEM $R D T G Q Q V G S P A R A R P Q L R P D P W R A G V V Y L A S P T L G V M R W Q$


GAEASCGSFTS $\square S$ A $\quad$ TTLLTPEVAWVL GS QGSGGFSLVARDRCCWDAV GGDYAKPDDAS VVVATGGELYAFMDG QVSATPPAGPTAGDFGDRFW SKKNGIAVGGDYKKTTDST RSDDGGETWQASPYAG SFFNALALSDGSALVFGMR
 LF LDET DDGGRTWTRRRIEEDDYHLNADIAPTPDRLDAGEF KAGSKVGVTKDGGTGWAWPTPS SDPLYAAGDASATAGQQ YVI $\square D S M T Q F A A Q G N G \square Y$ $Y$ SVVVDLS GKVYVASWTS
T WDASTTP $\square P$ A GPTSG $\square F$ GF $\square D S K H G \| A V G G D Y K Q T Q L N E$ P EFKFADSK $\square$ RSGGYG L DDV WKDEQEVWAV GGG


PGSFAHVGLANVDNRVLAVQYDGPATLLWSGAGEPDPKKS VF RYTDTVLSE
GAFGQ $\square \mathrm{F}$ RTDDGGW $\square \mathrm{S} \square \mathrm{A}$ GA $\square \mathrm{LENPDS} \mathrm{\square H} \mathrm{\square NA} \mathrm{\square VR} \mathrm{\square PDGTR}$ KRPVAEPGEACFAASGTS ILVAGKEKVF $\square G T \quad G G G K M$ GTVARLNLTNALLTSPPTAFAVSPYTTTSTTLLVGNRGGK YGLFLRTEDGGQTWEDVSFDVDNPDDTVVKDTGLFLVGEM WYTQAAAGLPAS】ATAASVSLSSPNTFFLVADDAR LAA HFFNWMK IDPAT GF $\square Y$ I I YYEQNPNNAPLI NV SEDNS $\square Q T M \square T F D Q G G R W K H L R K P E N S E C D A T A K N K N E C S$ NVYYTADGGATNWHNSDVVVNDNA VQMLDS LINGTAVSDS D GGQQWQQLPSFYNGSLF GVVRLSASRWVTYGMR PEKTTTFT K KDTLLQLNAPDSSDVKEPYFKDHHLLAATLG WVRNSLRDGAGLSGIAVSPLTPNNMLCCSL
$H \square Q \square S E N P Y S S$ GR $\operatorname{L}$ SSKETAPGLVVATGNDGPEDSYT $P W Y F G D \square T Y$ VP GTVSTYVSTGANPGTL

AEPRPQW

## $R S F V E G R R W E T S A \square T A \square A V V R S K P E D I V A V V$ $E L H Z Y$$\quad G E G$ <br> > YEGSFF GDSVQ PGLVLA YG <br> <br> YEGSFFGISVQ PGLVLAYGL

 <br> <br> YEGSFFGISVQ PGLVLAYGL}LALAAAQAAPAEHAEGVEDGPDKPNLHFFDAQRG\|VVGAY TSVALGDQGGATLYSRQGV
EGGLVLHTVNSGDYWE $\square Q D K T H Q P A A A V H F A D S G W \square V G R D$ $1 \mathrm{I} \mathrm{S}_{\mathrm{Y}} \mathrm{YQN}$
NAERLVADGPDKPFLALEFVDARRGLIV$G A Y$ RPY HASYSTTMKMNVPMDPLSQPNAVGLVLAHGSVGDSESVLS HAPGEGEAVTGMGPASPGGHPGELKLIGATAILSGYSPAA $N L Y K \| V F F S P E Q G F$
DASNAS $\square$ TGAEAGGVFSVRFRDTKNGVAVGGDFTVPQGAE QANRDMDNADGWHFYS IAPLNGEPDTLFISGE

 RAABRSTG
ADKPF LDDRFSDAQHGTAV
DHGYFREAFAFEGTLYVAAARDPPPTW ENTTGPSGYRSGVQYFPRFSWLIAVGPSGSDF DD R D S K Ti Y V

GSTV
FYHVFDFAFFDSGEAGDDVEAKTATLVETVPWEGSFGGLR FDQYDSVKLGKPEF FSSDSGWIPAAGKKKDVEGTF GGRTWTRTTLPKPPGGGKADRNDYHVFADAAHALY|VSEQ DGADKPFLALSFGAYGLAMRTDDGGEHWSSLMDRIPNAQG $G A N F T D W L A G N$

UniRef90 Q87YL7 UniRef90-12JMB0 UniRef90-IOHZU2 UniRef90-X4ZDH7 UniRef90_UPI000290E2AS UniRef90_UPI0003067946 UniRef90-J3D1E1 UniRef90-K1ZA94 UniRef90_UPI0003B7911D UniRef90-B1J560 UniRef90-V9KTWO UniRef90-G1XVX4 UniRef90-W7TC14 UniRef90_UPIO0046E83D1 UniRef90-UPI0003B569E6 UniRef90_V4RZ10 UniRef90_Q4KBJ9 UniRef90_Q21N56 UniRef90-K4KQB1 UniRef90-W8RC52 UniRef90-14MW99 UniRef90-UPI00029A01D5 UniRef90-K9NJW5 UniRef90-S9YKZ7 UniRef90-13KT66 UniRef90_C7R6H2 UniRef90-TOLHM5 UniRef90-LOFWL0 UniRef90-L9Z142 UniRef90-U2SLH1 UniRef90_UPI00047CB7AD UniRef90-W7Q0N4 UniRef90-C6VS62 UniRef90-N6Z1K2 UniRef90-N6X1H2 UniRef90-X1HPQ3
UniRef90 B6IWX8 UniRef90_UPIO0040F22BD UniRef90-IOAKN2 UniRef90-I6ZZY0 UniRef90_UPI00046F6A97 UniRef90_UPIO003A6B15F UniRef90-W7TR43 UniRef90-17JYE0 UniRef90_U2TNF5 UniRef90_W7S879 UniRef90-F4F9V3 UniRef90-J2MJT5 UniRef90_L7W9E1 UniRef90-N6Y0X2 UniRef90-UPIOOO4761996 UniRef90_UPI00047E3809 UniRef90_-V6SNQ9 UniRef90-A0A031MAV8 UniRef90 C8WUS3 UniRef90_UPIO00248ED7E UniRef90-L5K5V2 UniRef90-K1XQU2 UniRef90-J3IVJ9 UniRef90-K9VWW6 UniRef90-H0TLC9 UniRef90-UPI00036CCF9D UniRef90_UPIO00383BD13 UniRef90_C6X3D5 UniRef90_UPI000374DC35 UniRef90_UPI0004267B05 UniRef90-UPIO0034636B1 UniRef90-S6AQS7 UniRef90 L8MSC1 UniRef90_UPI000476649E UniRef90_UPI0004782FFB UniRef90-IOAJQ9 UniRef90-V9QVB2 UniRef90_U2TVZ5 UniRef90-H2RV63 UniRef90-W8YEM4 UniRef90-UPI0003FFA5FA UniRef90-C9SSII UniRef90-K2FYY9 UniRef90_UPI000374B7BF UniRef90-J2S2J1 UniRef90_UPI0002C32429 UniRef90-F8FE31 UniRef90-R7XIL7 UniRef90-MOLZV2 UniRef90_UPI000479DDA0 UniRef90-BOKVC9 UniRef90-B7S1T6 UniRef90_UPI00046F89DB UniRef90_FOFVT2 UniRef90_UPIO00421A7DB UniRef90_UPI000365C128

 QLIQTS DDWGTTWESADAGRPAYFY
$A T I L H T T D G G E T W D V I S S T S E L R A A H \quad F H D D R D G W A V G$
$G N G Y R S T D F G S T W E Q V A R G A D E F G \square S G A T L L D D G S L V I V G$ GVIFRSEDNGDTWEKVAEEASDGHFHT LITDPKREIVVAL DTYSSATPASTNWAQI WTENDVVDGWDVGKPNARFAHYTP
 GSVLRSSDDGQSFSVFNR
GNLYRSTDFGSTWEQVELKAERGDLSGGTLLDDGSVVIVG PDVY GTVYVSDDRGTVFSKSLERTTGSDTDFTVVHSLRGVYMTD $V Y$ L $T$ QS YDGGQTFTP
KNSAFSFDHGKTWQTPQGTPPAGYRSGVAYFPEKSWLVAV
A GRCQTSDGGKTWR
GTAAFTVDGGKKWQA AKASPHGYRSSVAYDPAMKTWDTV VGLIKADEATREWEQLSGDWGERYFTHLAVDPRDPQRLVA QNVLVTNDGGDTWTLSGMTKPA GLKESVAVYHDNYALVAS GNVVRSEDGGDSWTEIDDTGVQSSLFGGRVLADGRLVLVGM EGVFRSRDGGKTWELSSAEVPAESDHDLAAGGDTVRHRDG

$G V Y S S E D N G A T W T \quad S Q G L G G L G V S S L I V T R N S D D V F V G$ P NVLTTA DGGKTWTDQSRLTSKVWNGHTPIRQNQRALVAV
GSMFVSKDGGKTFT
D TFIES DDYGQTWT TFTDGMKYRYGYGLALNSNNSSNIVI A NVLRTTDGGLTWNHVALPLADALWVYDLERAAGRTWICG
GQGCRLFESDVKWQAMQAGWDGGTCRDLAFNATVALAATQ
GMDWFSSDEGAS WRA NEVGYDGHLYGLIQAEPATLVAFG
ARVFRSDDYGRSWEVSATPDPAGPTSGDFAVGGDFKKTTD LLRLTNANATPTWTDDTGPSFVGSVSDVEYGANNNEVFVT PTMYR S A D F G D T WE T L T T

K L A V S K N GA K S F K N I S E K P F H P K GA N F F G D Y N N ID V Q N G




 MGSSYSTDGGDT WDEIIDSG

GQDATSEDSGQHWQPGEPGKDGPPVDNVAADVHVPKRVWV GLVLVSDDQGEHFRRVDTPYKGSFFTAEL PADGNLLVA GNAYRSNDQGASWSQVKTGLNSAITASASDGQGHLYLFG GLAFATEDGGTSWKSISARLDNPSLHLYD\|LELEGALF IAB

GRSF $\square$ T QDGGVT WK QLLPETMDEG $\square R R \square K$ FHDHQRAWG $\square D$
G LAALLT T DGGATWQS LMGR $\square$ ANPNG $L H \square Y$ A $\square S R Q G T H W F \square$ THLHRSDDGGRTLTQVS
PDVYVSDDGGYSWLLALKGPHHYA LLDSGGLLVAVEHTNV GGUGRSPDGGRTWSSGGMLPGFGGAADSFASPADGWDTVD
RNAAWSEDGGQTWTAAETFPRGYRSATAWVGGLCNVAVAV GTLYRSRDRGETWTKLDSPY HGTFFGTVSSDVRTLLAHG EEVFETKNGGTSWTVPGPYWNFP FPCWSDDPSK
GHLERSDDQGASWQSVA VASSKS LTAAT Q GILLRTTNGGKSWRDKAADNIAANLYSVKFIDDNQGFVLG A HLLHTADGGASWEVLGGSGVWEDLR LEFVSPLDGWALVR GMAFRTEDGGRSWSFMGSDAAADARHLYALVPTRDALLLL AALFESRDGGDTDDAVSYPGEPASFVLAW
DGLYVSEDGGKTWERFSDMSFH
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UniRef90-L7W9EUniRef90 N6Y0X2 UniRef90 UP10004761996 UniRef90-UPI00047E3809 UniRef90-V6SNQ9 UniRef90 ${ }^{-}$A0A031MAV8 UniRef90 C8WUS3 UniRef90-UPIO00248ED7E UniRef90-L5K5V2 UniRef90 K1XQU2 UniRef90- J3IVJ9 UniRef90-K9VWW6 UniRef90 HotLC9 UniRef90 UPIO0036CCF9D UniRef90-UPI000383BD13 UniRef90_C6X3D5 UniRef90 UPIO00374DC35 UniRef90-UPI0004267B05 UniRef90-UPIO0034636B1 UniRef90_S6AQS7 UniRef90 L8MSC1 UniRef90-UPI000476649E UniRef90_UPIo004782FFB UniRef90 I0AJQ9
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GQRVAMKSSNGGASWT
SHTALLYTLDDGATWMTATLADESGDALL ALLPS GKVYGYFTTNGGDDWKWAEFNLGLRTGDNEDVPPTFLL LRGHLFRSTDFGDSWETIEDGDGDGQADES GLAAGSLL GVDGIFRSDDEGAHWLRIN DDAHRFGKPYGVTGD
YGSGПFK L I N GETNWQP $\square$ NTGLT NTH VS SLMVD ESGQVLRTTDGGFTWEPKLTGLPKDLHGVVADSEQEVYA
EQGSMFRSSDSGQSWSKLNGPYEGSLFGLIGT
TVNVIKFS IDE GQCWYTY
LQ GHAFRSTDGGQNWQT $\square$ D T GTKAGLMGGVATPDGHV
GDEC $\square W R S H D N G T S W Q Q Q T S P V P G S S \quad R S I A V D$
$\square A G S V L H T N D G G E T W K P Q N S G N V$
NGGSVIRSTDHGQTFSVFN
ASPGVRYS LDTGKTWE I AN T DTSSHLYNG EVN
K G N G
LRGH LFRSTDFGDSWQP $\square E L L D G G E P \square E S G L A D G N L L$
GENGVHHTDNSGN
NGGSVIRSSDNGETFKVVN
P INVI KFSTDEGQCWQTY
GTVETVITYDQGAKWQRLRRPENSHCNTD
$G T G G V L V Y K \quad T \square T S T D \square K K R R D L K G R T A V V$
GPNGADYSVDGGENWTKFS

GPNGTDTSADDGKNWRAVHPSAA LHEAPDADRNWNA $\square$
SDGVLLI SEDGGREWSSL
GPSGSSVSLDRGKSWLLLGT
QS GVVLVSADQGRSFARFDGPD
G GTVLVSTNNAESFRTY
APSAI WRSRDQAESWQLIAGPEG $\square P P R P V G T W R Y E A \square A A C$ LQGNI YRSTDAGATWTAV
PDGTLGRTVDGGKTWTRGNATSEDVLDVSFPDVNDGYALD
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ATS
SSRN $\square$ FRSDDAGATW WE $\square R E T P F S S N D R C V D M S F Q D A E$
$S G G V L R L D T L A G Q Q W A S V S V N C G L P L R D R T R F M V D A V A A A$
FAGNVFRSADGGQTWVKVAR $\square$ SEKS $\|$ VG
A $\square \mathrm{H}$
STQNVLITRDGG $\square$ T WK GMTKPTG $\quad$ KKESVALYHKTDAVW NVVSVWYSKDGGATWSNKEGNDPDLPVKAIMMRNLKVD GLRGMFRSTDFGESWEQVELLTPNNGELEATLSGGQLAAD
$\square 1$ RPDWTQVENG
M I P DVY Y $\square$ S H DGGYS WT KMLE GPHYYT ILDSGG\|IVADEHS SSGTVLRTEDAGATWAPVANPSGGETFEEVSFYNAS GAGSRL 1 RLDAQGNLVAIDQRQG
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PVRHDWVS FDEGHSWDKYG
 G LDRGAWRSSDGGASWQALPAPLPASFT QTGQALAASTDQGASFKPLD DGQPVPVYGALASMDGGL GEQGLLRSTDGGVSFQALETPAG

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NSNDGWIINGNVLYRTTN GDGRIVVVGHGGSVLTSSD $P R D P G R V Y I A T G G G I F Y G D$

ST GNLYAGTDGGFFD AQPQNEGTIVRSTDGGTWEQE A QPQTLLYGLRGNLVRSTDFGDWQ

VLVGALGTVLSSSDGGA
PSDPNKLYLAT GASLYTSTDGGKT

PETGT $\square$ LAVGQNSVVQRSQDGGLW
P DGR VVVGHGGTVLSSED

F VDEDTLI I VGEGGV

ASKPDVIYVST
VA GGVFNTNDGG
PFNP

RGWAAGVKGF L WATEDGTTWRR
$S G G Q R L V L V G G E R G V F R S T D A V D W$
QED $L G V L L V A R N G S L I R S R D A G K T$

SGFATEVI DGTELGVWFSNNF

SHP $\square$ NVIKFSTDEG
$P R \quad H L V V A G E R G V Y$
AKD QLWAGTGSGIFYSTNGKSW FANPNNITY

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

V VA G LIK G N A F VS H D A G A

VMVGNAGAVLTSHD $V Y \mathrm{~V} G N D G G \boxtimes Y R$

SAS GQT $\square$ LYGLK GNVYRSADAGHWER
NGNT】FAGSGGGMY VSKNLGTWEK

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T WRQAK VP VSVS LTAVQFV DPSHGWAVGHLGVVLHTE

TWRQAGVPVSVALTDVHFDTSTDG WAVGHGGVVLQTT Y $\square$ HS LLFHPK QEDW L LA Y S QDQK $\square$ FS S $V$
SWRQASVPVGVS $\square$ TAVQF $\square \quad$ DAHQGWAAGHQGVVLHSA

WRSD $\square$ HA $\square$ SKKVVWAGGTNGTVLK T T IAVGHDGWILRSD

R S S
 HALW $\square$ DPSNP $\quad$ H $L I D G N D \quad G G \square D \square T Y$
 Y N P G D S N T L LT L S $\square$ T LD D W L S D

 $\square A V D G A G T V Y A L A D D G S R S K L L A$ S T
 WQQAAVPVSADLSAVNF PSAREGWAVGNDGVVLHSD

TYFHPTHRDLMYVKTEENK TWLSR
GRVTGLAAD DHGFVYAGAANGGVWRSR $\square F Q G Q R F P N I T V A M D G S V L A S W G S K G V R V R R S V$ $P Q G A \square R \square D S P V I H E E N G E D L W V G T Y N G \quad L Y Y N$ VRRSF

S H

GFVPDVAMHPTNAEVILAMARDKKLWLSE

GGSAGPMAKSE LDKK S D

FFAGTHDVGПWVSH $A V R \square A D F S T G W V G G E \quad G W I A R T E$

D A GAS WRAVWQLT APPADEMPAATPV
LALF G DNGQHWRQAPSPVSVSLTAVQFVDAAATDNALLDVWFSDA


DGGETWQ $\square R$ RDGRQAAR VVFEAQARAQAPF $\square G \square H F \square D G Q$ EF GRRWLLLHEGVTPNRFY WSMMGNGRDPDLVHLEA
DGGATWSKQLDGTQAAALVLKAAAEVTPQERERALADARH KTASNWTPVATGVQPDGKRLPCWNPVLFQ\|PDGDLLFYK\|

$\square K E N N F V A D Y L L K V F G D V P \square H P S \square F A \square K Q S S D$ NFGSTWRK $\square$ HNSVCLVRWGP

R N S $\square \mathrm{Y} \square \mathrm{T}$ T
D NGASWSRSDTYFMY DEGESHSLQLAAKDNDVYSCGYTFG DGGQTWEPMKEVIDMGEWGLNGVGDAAVVDEQTNTDWVMG
DGGEHWA $\square$ QFTNPDPKGF FDA $\square$ AFWDATHGVVV

LK D G T L LA Q M

DGGKWYKTKEENNDYMGFNATKDGFYTSGHPGQD DAARNWKAAVEETVDATLNRTVSSGVQGASYYTGSFSTVS DLGKQWTLLQERVTKDHM FWAVAGVDSDANLVHVEA DAGVTWRKQLDGRQ $\begin{aligned} & \text { GGELLVKHYGALAS AQPDNEEWS RWA }\end{aligned}$

HNSVIEDR

DFGMTWKALQSNVQQASWAASEMNA PDDLFMLQEED TGGGHWQP $D G G K S W S S P V V V Q E S G F Q G \quad G G I T V D E K T G D V L M F V E$
 DGGHTWGDLQTVLTYPGHGAKGASVIDSCVVQDRRNGRLV

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DGGDT WSRLDDQLPPNFSKHQNCPS IYYDPEGKPR\WVFS DFGQTWDMIQEHVKSFSWG

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UniRef90-UPI000370B6AD UniRef90-J2YDTO UniRef90-М2АЗА8 UniRef90 F5LFN9 UniRef90-U9W688 UniRef90-X0UTS7 UniRef90-J7IRU2 UniRef90-Q3J993 UniRef90-U5VCK7 UniRef90-UPIO003785DDD UniRef90 10 L589 UniRef90-M3ZMP1 UniR Ref90-K5YL46 UniRef90 ${ }^{-}$F3YOM7 UniRef90-K8GLE1 UniRef90_UPIo0035C09F9 UniRef90_Q027F5 UniRef90-Q026F2
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UniRef90_V6MAQ1

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P $\square$ PAFAATAMRADR

HGWVVGSKStपFETQDGGNTWQ ERTपEपGEEKपSFTSVV
HGWLVGSNALLMET पDGGRTWEPRS $\square L E T N D G G A N W N E R S L D E G E E E N F P S$ GAS
 LAYSNDRGDTWTRVPWPPKCGEPSVQFDAK RTVDGYAQY $\square$ TCKMQNCSEATRSKPFPGY $\square D H N S I V Q G D$ LVADGPDYNLLFKTDDGGATWQ PWQQHVANPK

GSTGDDPTTQTWRTSDGGKRWASAP DESGDQEAVFSFADG FHLTDAKKNVTYVT ${ }^{\text {V }}$ GGASYTARNTPFYPSAFLFHPSDP AGNAEDGAAK\YKTINGGDSWEVVQKGVFFDSMDFWNEKE G

F GEEVQVSDDGGDSWRRVSGDEGGGGAASSGEDR
WASGDKGTFVLTTDGGQTWKAGTVPGAEADDFRDVDAF SNPRKMQEMFVCRSTDGGKTWTEPRNGFFASGRGLVTSDG H EPVTGLSRGVALASDDAGRSWHRVDSSDATKLHRMAMRNS HGWLVGSRSSLFETNDGGQTWEQ TAGDT NVLDLGGEQRYGG


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

ERGDILFSVDDGKSWESR
QEAVRVYS SVT WNTEWY I RKTSNGGNSWSTIDHYMP TSGDISC
LWQHGLDPKVMT WWNDDGKTWQMKNPEWHLFFEGPMADGT CEEGLLLVTNNDGGTWAQRKQPR RVVSGGLR GDQLDGRAEURTTDDGGDHWERRDPPAGLPNEGAFAASN
SRSGSYH $\square E R S T D G G R T W A D V A S G N Y R A M S A S F A E$ T RRSEDRGLSWKAAEPDAGCSGATPTVRPV SNDPNPLGI QKSTDDGKTLQELAVEGETDFHDMGVGYE RNPETGEYIGLSSRGNFYMSW A APGQAYWQPHNRSSA
 PYYKKNYQTTLFKTEDGGLSFKK DTVGKGTLSKMTKDTQG
 GQLN GNTSATSFVGSGVYVLSHPRTGRFTTRDRVGGTELESTVI DSHPPAPDS RYSKDHGQTWAKQETVMHPNASMHMNDHG TRQTIMETKDGGNTWVQRSTPSAEDEDFNYRFNS GTSYDNRKSSIFKN VLIDHFPGGUGQPNAEAGLGVDEKGRY LHDGQGATYTWN TAPSFKDPLDASAPATNRVTH HDSTDAGQSWSVTK

GPDDGMVGKV SGDWHYPSQAYTSSSDGGKSWSTVREGFFGSGNGIITSKG GKNPGRVWMLVDMSTNGSQGTYSIKETGTGYVKVDGKDYD WLHGKPGKRAWWYSDDEGETWEWYLCFNGPGMGITTKTGT
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## UniRef90 B1ZMZ3 <br> UniRef90-UPIOOO39B351F UniRef90-E9UUK4 UniRef90-F6BI59 UniRef90_UPI00036A8510 UniRef90-Q3JDZ6 UniRef90-K9UWE4 UniRef90 C8WSD6 UniRef90_UPI00046FBC5B UniRef90_A0A024HFA4 UniRef90_B9XKA6 UniRef90 C3VA12

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UniRef90-W0JJ27
UniRef90-K9RSQ6
UniRef90-G3FFN0
UniRef90-Q0IDJ6
UniRef90-S4XX06
UniRef90 N6YFD4
UniRef90-N6YEN6
UniRef90-UPI00037C86AE
UniRef90-B4EK85
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UniRef90-18HWT0
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UniRef90-U9W688
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UniRef90_IOL589
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UniRef90-FYYMM7
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UniRef90-Q026F2
UniRef90-F4KT93
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UniRef90_UPI000375EFD6
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LVSVGPRGVIQRSEDGGKSWRQVPS
$\square Q L N G \square A R A G E R L V A A G E R G T I L L S D D E G A H W R R A S V T P E$ GGTSGEVAISKDKGRSWKA DST S D NH $\square$ WA A GHDAT $1 \frac{1}{1}$ SADGGQTWNLQFEAPD

S
SNGQEGWIVGEPS LLLHTEDGGGSWSR\PLSTK HGLGLDPSD QRLYVATHEG YTPDSKGNPQLVGDSKD AVKSWDHAE GVFVASSTGAYRSRDGGTTWEDL EVP LIG YRFASVSFSGSEGWI TGQPSVLLHTTDGGQSWERLALSAK


> LVVAGE VGH L L S TDQGQSWQP A QR

 YVFVQLTSGGRPHYYVSYRRSPFAQM
LHLYGMRGAGGALYDAGEQGLLLRSTDQGASFSALAS
$\square \mathrm{P}$ G
LLPSGVLLCPTSSEDHNWRVHFEMTSDWGKTWQKTAP $\square N D$
HGWA $\square$ GS SECNMAAGTA $\square C G R T T H T S D G G K T W K S Q W S \square A D$ $N T L M A D N S R V S N V N L A$

F GDLWlSSTN G G S WTMMLK QVE G L L G DP DD DKPFI LRTDDGGKS WDRI AKENG HVYGVARADDGALVLVGERGLLMRSTDKGESWKALAABYT WELYPHPWDNQRAYILGGSFEHWMTTDQGETWRKFSSAGS S SDTAY LLS GGEGNKSRDYKTVDGGKSWTLQFTNTT

 SLYFLDAQHGWTAADDGRKTVTAFTADGGQSWTKGTLDKP
 NKLVITSEKTAFVYGGTKEVPATYSEDKGATWK TSQIS
$C C W D P P A F A G S G V D V L S Q P$ $R D \prod A F D Q Q G R V W \square A T R G A G V S U Y D R Q S K Q F S R L E H$ RALAVDQYQPRT WYAGRGPVLFRSSNGGSGWEPAGRFDD FVLGGKFVFSS IMTGMGTERVIHVSVDGGDHW NDAQL
 LVFAGAFKDKDQVPHSTENDDVYRKDHGATWQVGTGAKG LDIVAVNKDSSHGWVVGANASLFETTDNGETWQERTGAKDD ETVVIVPMQKNSCPNGTVFKFNMRSNDDGKTWYQVYQFPQ $T C L T L F G A A D V W F G T G G P G A R V F H S K D R G R T W T V A P T P D R$ $\square G S T V F F \square E Y Q T F T S G S T P \square R \square W A S T D G G A T W A P R A T F Q D$ $S P$ EVAFASTADRTWRTTDGGATWPVINGSER NQVIF $\square$ MNPQKNSIM ETGKFY LSEDNAKTWKEVS RRI QSMGWRKDGGVWQLTRGGGUYLSDTKALPEEDDEFTE
 FALLVGCVSSDAAPGTGFCRQQVAVDDASQRFAALQTPYQ $N L Y V I$ KEVYEKDNTPPQYT L K STDVGETWQEIGGF
IAFVPDDPSHGFLLGTRQT LETKNGGNTWFPRSGPSA

$$
\text { Y } \square A S D S F A G A E G W V A G Q P K I L L H T L N E G S D W T S D R L N N Q
$$ A TSTSSTEKSQQSSSDVQHVLHVSTDRGHSWQPTQLPVI

 $\square$ S FKGKEGWIVGKPA LLLYTADSGETWER DP LSAQ SS IIED NHNNLWIGTEGGGLNYFDTSQKKFTYFTHVNS EDGSVTDADGNTAPFRISERGD
 RIMFVAAMRTGEEWGGTMDNVLVYSDDQGRTWH ALYDKDNNQYTLRENGEVFDKENRKTDYGNDKQGYHEKGD LVFAAQFKDKNQ\PHST
 RTLGLYHDSPTHGYLVGARGAFAETNDGGKTWEARSFSNLL RDKYMFATKVVVHLFGSQQPSSVQLWWVSGGRKPMRAAQFVET VSDAClLLDEN $\begin{array}{ll}D R G V A V G A G L W M H G V L D R \\ V & V L I V M S S D G S\end{array}$ $K N K A V Q L E D G T \| I A P T S D E R H F E M S K D N G Q T W E V V G P D N D$
$P E E A F S G N$

## UniRef90 B1ZMZ3

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UniRef90-H1RY82 UniRet90-C6CX68 UniRef90_UPIO0036745F5 UniRef90-U7G657 UniRef90-UPIO003723A0E UniRef90-UPIO003830E9E UniRef90-W0JJ27 UniRef90-K9RSQ6 UniRef90_G3FFNO UniRef90-Q0IDJ6 UniRef90-S4XX06 UniRef90-N6YFD4 UniRet90_N6YEN6 UniRef90-UPIO0037C86AE UniRef90_B4EK85 UniRef90-U3J114 UniRef90-UPIO0036F4CC4 UniRef90_UPIOOO3758864 UniRef90-UPIOOO361249B UniRef90-T1CUE2 UniRef90_UPIO0037489EA UniRef90-UPIO001FE2864 UniRef90_12EYA8 UniRef90 18 HWWTO UniReft90-WYGR4 UniRef90_L7U702 UniRef90-UPIO00370B6AD UniRef90-J2YDTO UniRef90-M2A3A8 UniRef90-F5LFN9 UniRef90-U9W688
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UniRef90 Tosol2 UniRet90-F3YOM7 UniRef90-K8GLE1 UniRef90-UPIO0035C09F9 UniRef90_Q027F5 UniRef90-Q026F2 UniRef90-F4KT93 UniRef90-R5J9C2 UniRef90-UP10003B73ACA UniRef90-W7KR12 UniRef90-K8EQ73 UniRef90-UPIOOO2C46225 UniRef90-J2P8K8 UniRef90_UPI0002F12AF9 UniRef90 UPI000248E8D3 UniRef90-l106W7 UniRef90-K8YTB8 UniRef90-Q2JJR3 UniRef90_UPIOOOOE4A294 UniRef90-G8SOU7 UniRef90-UPIO00375EFD6 UniRet90_U5G4H7 UniRef90-G0L848 UniRef90-E6KU822 UniRef90 C4JIO6 UniRef90-Z4WQ86 UniRef90-F7JGG0 UniRef90-R5VC43 UniRet90-B7P760 UniRef90-O3AN55 UniRef90-B7G3A6 UniRef90-M5S5V2 UniRef90-13L8K1 UniRef90-R7JMK1
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UniRef90_GOIVG7
UniRef90 V6MAQ1
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 GTLFGAV
 GSYFG PVSSDVDTAFDPGALYVAYQC VGHDSVLLVSRNGGHS PGRDMDNGQIVKLKNGDSRSVRWQESYRLPVFKSTDKGRT KQRPFLDDTF FNKQHGVAVGAYGM FBGRTQDGGKK पp GSPQA \VALGSHQAE DFMGFTVAQGKTFYASGHPASGTDGPGNKG DKSTAKT DRFWHAGESEKWFYASGHPASGTDGPGNKGLIKSTDAGRT L GNGNAELTTDDGAlYQTQDQGKT
 SVNROALTAASHPDPSRLLVRATY GLLSTRDGGEE TPYPGTWFGALALD AKADTLLAYGLGNVVRSADGGAS LLGGAPKMRVDAATGKVYAVAGAAWEYPSAVSVSADGGRT PASTLTQVRFITP KLPKYSLPKDMHVISTDENVFAAVNDTYNLYISDTRGLY LATSNKGTLDAVYDGRRNSSVDLQEDDDVGMQRSTDGGKT GVENGA IQPSVLFHPNGQLQALCRSQKSGFILWSKDGGKT
RRAGANN
$\qquad$
RRAGAN
QFAFGD
EASFAASGNCVVTRGDA
ENTAFARE
GT WLEGI
Y EAMANTQNRIFT
 GLALGFRSSPGSFHGRDPQRVIWNGEQCVGLLYT俍
 TYAAGLSFADPLHGWMLT LPGNPLMVTALA KGSVEMA KPRFNWNSPIYISPNDPKTVYATGGNYLFKTTNGGHS TPDPDLGSSDLVFDPPNIQPTYLNGSDFNAMYKTTDGGAT AVHGPQADRAVLQDVARVGMRLVAVGERGVVLLSDDNGAT PFDRYSLAHNRVYSVFQDQTGIMWFGTANGI SKLDPTTLN PAVDHQQFYSULAANQDMIFMHVDDPGDSGIVVSDDRGTV LGEPLLGUWS TASADGNRVYAFGSGF HTTEAQVVQNMRDDRNRSNYELSDAYNG
QPYR
QPYR
P
ENTDDQMDGDEGWI AGFDGVILHTSDGGKT
NDGASAGIFSLAFFDSNTGIUVGGDYAKDKIAVTRDGGAT LVTTKQGTLIAVYDVRYENDRDLPANDDVAINRSKDGGQT LVTTNKGTLLGVYDVRYNSSVDLOEHVDVGLSRSTDGGKA GP TNKGTLGPHDALLGLRUVSAGPDASALQRTVDGGAS

YALPK $\qquad$ GK SGEVLMAVQE WH
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UniRef90_U5VCK7 UniRef90_UPI0003785DDD UniRef90-IOL589 UniRef90-M3ZMP1 UniRef90-K5YL46 UniRef90-TOSQ12 UniRef90_F3YOM7
UniRef90_K8GLE1 UniRef90_UPI00035C09F9 UniRef90_Q027F5 UniRef90-Q026F2 UniRef90-F4KT93 UniRef90-R5J9C2 UniRef90-UPIO003B73ACA UniRef90-W7KR12 UniRef90-K8EQ73 UniRef90_UPI0002C46225 UniRef90-J2P8K8 UniRef90_UPI0002F12AF9 UniRef90 UPI000248E8D3 UniRef90-I1Q6W7 UniRef90_K8YTB8 UniRef90-Q2JJR3 UniRef90_UPI0000E4A294 UniRef90-G8S0U7 UniRef90_UPI000375EFD6 UniRef90_U5G4H7 UniRef90-G0L848 UniRef90-E6KUU82 UniRef90-B5WGA1 UniRef90 C4JI06 UniRef90-Z4WQ86 UniRef90-F7JGG0 UniRef90-R5VC43 UniRef90-B7P760 UniRef90-Q3AN55 UniRef90-B7G3A6 UniRef90-M5S5V2 UniRef90-13L8K1 UniRef90-R7JMK1 UniRef90_UPI00046B6FE1 UniRef90_GOIVG7
UniRef90_V6MAQ1
 WQVRPTAGMPAALDGEFAFAASGTCLVSSGGKAFFASGG WE I ADTQGDEAPGEFGYSASGTCLVTAGAHDA WDGGG WTRL KMKSSSSINSADQTTNELDPQSGTLIGMSFRDNKH TLVFGLYGMFRLSPEGELIDNWAGRS VGGNNAAFTGPP WKAQVQDAVGVVRNDTGSPDGKYVA WQPVNTGGNTSLTAAGI DRDGQLWLASQAGDLLLSRDDGA FEALQGPYEGSYFAAAVLPDGRLLVGGQRGKLFASADQGA WVP $\square E A T K T D A A D A K G T$
WQAFS PA TT TPKGKSPVPPKKKAKRPRNPFKPAGPVDNDF WK QLDGRSVLALLQDQYGRRANAGDQVADDAMSTSATPDV WRQVAFD WK QVSVIDANEGTRGSLGDPDKGVYEPYFQM GDNGD WQSEQHVSLLDPYDREYLEEVRAEDEAFYQQELNSILPHD WKTAVAPSEVLLTAVCFADARHGWAVGHDAVVLGTDDGGE WSALVVEGAVGVVRNIARSDNGEYVAVSSRGNFYSTWTPGH WK SL S WTELTGFRDLPSRGHWESP $\square$ DPH YAR $\square R A L S A K P G F$ WQALVQEAVGVVRNDSRSPEGQYVAVSSRGSFYSTWSPGQ WS DLPRGLGMRTDGTDTKMHGRGNVIVAGNSETQGSDPTT WEAEVSDAAGADRDLRRGPEGGYVSVSSLGNFYAGWAPGH WRWICEPVVGFGGNEDPMVAFLADGTIIAGVFEGLSASKN WTEVNDASNGEPDMNAARLPSGDWLVVGAFGRVLRSTAGGG
 WREVHIDHDHSDPLLSIWGTADSPLFAAGSFGQLLRSDDA FTLALENVKSSQGLEGNVMDDDYEVAGDKGMFLANKKDDN WEPMNGKPQQNGVGDPSILVDRNTGTIWVAG WAHGHPGR WSKVDTGVQASLAGGAELADGTLVLVSQGGDVLFSRDQGR WSALQKTTLPNPNSGTDAV TLKDGRQVLVYNPTS WS LVASAPQVTA IDDVGGVIYA PSASGVDSSADSGATWT
 $F Q$ WRKLAVPVSETPFKKGQTAGIFGLHFWSDVQGIAVGGDY
 WTPLPATAFPPALPGEAGFAASGTS $\square$ ATRGTQHAWFGMGR WTPLARWEDMTGTNCNGAIIR YSAKNSGAESRIL WTP PLLERTDNPGALNLYAVVRPVGDELFIV WQPVRGADRGAAVMFVAASEHSVPWAL
WK PLTS
V S L D K P VP GA $\square$ P $\square$ S GHA WTALVQAAVGVVRNMTRSNDGRYVAVSSRGNFYSTWEPGE
 $L V F G L Y G M L R L S P E G G L I D A D N W S G R S V L G L N N A A F T G P P$ WRQAMSVPVSVSLTAVQFIDERHGWVVGHA
FNKD KKPNPLTSNDAWALYEDPQQRIWYGSWGGGDDNRD WSLLTDLDSAWLDRDGGALLVATDTGLYEVSLLPGAVPLQ FSKSLERHLYTTTGSDTDFTA WSKQELP $\square$ NGEH L NSMDGA
WTGVYDYGATSEGVDVIVLS GNNATSTHNHMVEKS $\square \mathrm{DNG}$ G WVEHSTSRTALVEPN CMASIISYKNKKGK WSR $\square P \square S E K L P G$ APNTDEALGPQSAEMTTNDGA WKEFT S IIRLPKEMNWSGVTDRKDIALKDGS WS K QES GVTLS LET LYFLDPQNGWAA GWA GLVLHTVDGGK WSAPAAGPAGFRSAIVYVPDLKFWDATGTSGSDISPDGDA WEPDMDMGPGANDGI GDPSILVDEQTGTDWVAALWSHGNR WTKVMGGYAA NAVTGTVLSGGELLLGQSTLYEPEHPKL WEKM RLD $L A F G E H G G L P A A Q N G \quad V G D P S I L V D T Q T N T$
 FERISGQGTSVFFTNDSLIMGTYDGTSK
WKRDRGTDEVAGNTLYKVAFAKDDVGFI
YS SVLE HVRSSRQAEESVLIDDLEVVRGVKGVF $\square A N Q K \square D G$ WTALDSGLLR WHAVDRRTVGEVAEDPAAVLATECAAPAGALPDACLRERV WETLIVKVKGVDINDPFFIVENELYTTYDTNATATVNFNT WERUPLSAQLPGNMVY IKATGEQSAEMVTDEGA DYVTSNR WTE
 FAESLLRHLFPNGNQVTDFYKVESMRGVY LASSQVSSDST WQRTTLAGDDASDAANVGTVTFAAAADGSRYYAI EESPTQ WED WRAAVQESVSATLNRTVSSGDSGASYYTGTFNTVNRSPNG YASVQDDKLSFKDWNSIATPSSRPNKNRITCLFEDGHGNV W SGPFNLNQDVKEEWMSFCGTSPGTGVQLRSGR WKQLDGRMAAKLLTEHFRVKAAAGDARARAYLNGVPEQAL HKTLTKSQHG WSEPQT WPELTGNACNAALARYAPIGSGKDQHLLDHT
WSEDTPQVKEDWMRFCGVGPGFGVQLDRYDEKHPGRLI

 WER IPLSPKLPGEPTAT WSTPVDTPWGLSGDRHIGVADPDGRWVFAFRDQAPGSP FS $L$ S $L E N V L Y Y S P G G A G S D T L V R Y F A N E P F A D F H R V E G$ WSEPVNVTAATKRPEWWLFAPAP


|  |  |
| :---: | :---: |
| UniRef90_B1 | A |
|  | GATSRVFSSGDGGRTWS |
| Ref90-E9 | HDGGRSWS |
| UniRei90-UPIO0036A8510 | GFПTLEKDGQPS पYTTADSGK |
| UniRef90-Q3JDZZ6 | VRVQDSLFVGDRGAGGQYI YHSEDDGLTWQE |
| UniRet90-K9UWE4 | A ${ }^{\text {A }}$ |
| UniRef90-C8 | T SFDLRTGQASTLA TVPYWYSVSLARGPSGTWY |
|  |  |
| UniRef90-B9XK | NWRASDAPADRWYSVACSADGTRQAGGTGПFTSTNSGSTW |
|  |  |
| $\begin{aligned} & \text { UniRef90_T1CA } \\ & \text { UniRef90_LBML } \end{aligned}$ | NGQUYNTMDGGKHWSNVSNDTGAPP |
| UniRef90-H1R | GRFLVSRDQGEHWQ SAATPQMQ |
| UniRef90 ${ }^{\text {che }}$ | K ${ }^{\text {D }}$ |
| UniRet90-UP10003 | WQYSDPLGGGESSDVELEPLDDLSMDDTYGDPYGDDDY |
| iRef90-UPIO0037 | ERTSSRRLQNMGFGKDGRRWLIAR GGQDQFSAPEAEEDW |
| Plo |  |
|  | PERLIAGVEA GGIHLSNDGGQIWHDRRDALVDDV |
| UniRef90-K9 | PAWEPHNRTSSRRVQN |
| UniRef90_G3FFN0 |  |
| IiRef90 Qoid | RF |
| UniRef90- N6YFD | DS WAEEVIDGLTIDWHLNTIVSSADAGKWLIVGEAGTLLRS |
| UniRet |  |
| Plor | WTNTTLKDGRGN |
| B4 | VGDGRGNL |
| UniRee90-UPI00036F4CC4 | NWWASKPGLTPEETSQFVLVKSDDDGKTWSE亡NUTRQUKK |
| UniRef90_UP100037 |  |
| RRef90 UP1000 |  |
| UniRef90-T1CUE2 | LSTSSQARALVSTGNMLVLGLSNGA |
| UniRef90 UPIOC | VFVPSDANADCRAAVWKTKDGGRHWVKLANAPRLSG |
| iRef90-I2EYA8 | VALTNDGGQTWKFL |
| UniRee90 18 HWTO |  |
| iRef90-W9YG |  |
| UniRef90 L7U702 |  |
| UniRef90-J2YDT0 | VMKLDRASGLFEALS |
| iRef90 ${ }^{\text {F }}$ L |  |
| UniRef90-U9W68 | , |
| Ref90-XOU |  |
| iRef90 J7/RU2 |  |
| UniRef90-Q3 UniRef90 U5 | SADGGEHWTGQLDGKRAAT |
| UniRef90-UPI0003785DDD | KHDDKDSQPDADSSNATKAITQDQQGNTW |
| O-10L5 | ELVDPSDADRGFYAVRAFVSERGAPGQASFGVYLSTAGGR |
| M3 | ETVITYDGQGAKWPLERRPQNDCDAETSTNRPSRCKLTD |
|  |  |
| UniRef90 F3YOM7 | QYLFFSNPADAKKRDNLTVKVSDDEGNTWDK |
| UniRef90 ${ }^{\text {K8C }}$ |  |
|  |  |
| UniRef90-Q027 | T |
|  | Q |
| UniRet90-4KT93 UniRef90-H8M | G Gli |
| niRef90-R5 | WWS SHSTDDGKTWSA $\square$ NTTEQV |
| UP10003B73ACA | VPVPDDL |
| W7 | VMYFAQNPNNDQEMTNGDUYYTTDGANNWD |

UniRef90 B1ZMZ3 UniRef90－UPIO0039B351F UniRef90－E9UUK4 UniRef90－F6B159 UniRef90 UPI00036A8510 UniRef90－Q3JDZ6 UniRef90－K9UWE4 UniRef90 ${ }^{-}$C8WSD6 UniRef90＿UPIOOO46FBC5B UniRef90－A0A024HFA4 UniRef90＿B9XKA6 UniRef90 C3VA12 UniRef90－T1CA52 UniRef90－L8MLUO UniRet90－H1RY82 UniRef90－C6CX68 UniRef90＿UPIOOO36745F5 UniRef90－U7G657 UniRef90 UPIO003723A0E UniRef90－UPIo003830E9E UniRef90－W0JJ27 UniRef90－K9RSQ6 UniRef90 G3FFN0 UniRef90－Q01DJ6 UniRef90－S4XX06 UniRef90－N6YFD4 UniRef90－N6YEN6 UniRef90－UPIO0037C86AE UniRef90＿B4EK85 UniRef90－U3J114 UniRef90－UPIO0036F4CC4 UniRef90－UPIOO03758864 UniRef90－UPIo00361249B UniRef90－T1CUE2 UniRef90－UPIO0037489EA UniRef90 UPIO001FE2864 UniRef90 I2EYA8 UniRef90－18HWT0 UniRet90－WYGR4 UniRef90 L7U702 UniRef90＿UPI000370B6AD UniRef90－J2YDTO
UniRet90 M2A3A8 UniRef90－M2A3A8 UniRef90－U9W688 UniRef90－XoUTS7 UniRef90－J7IRU2 UniRef90－Q3J993 UniRef90－U5VCK7 UniRef90－UPI0003785DDD UniRef90 10 L589 UniRef90－M3ZMP1 UniR Refo－K5YL46 UniRef90－TOSQ12 UniRef90－F3YOM7 UniRef90－UPIo0035C09F9 UniRef90 Q027F5 UniRef90－Q026F2 UniRef90－F4KT93 UniRef90－R5J9C2 UniRef90－UPIo003B73ACA UniRef90－W7KR12 UniRef90 K8 EQ73 UniRef90＿UPIOOO2C46225 UniRef90－J2P8K8 UniRef90－UPI0002F12AF9 UniRef90 UPI000248E8D3 UniRef90－•1106W7 UniRef90－K8YTB8 UniRef90 Q2JJR3 UniRef90＿UPI0000E4A294 UniRef90－G8SOU7 UniRee90－UPI000375EFD6 UniRef90＿U5G4H7 UniRef90－G0L848 UniRef90－E6KU82 UniRef90－B5WGA1 UniRef90 C4JIO6 UniRef90－Z4WQ86 UniRef90＿F7JGG0 UniRef90 R5VC43 UniRet90－B7P760 UniRef90－Q3AN55 UniRef90－B7G3A6 UniRef90 M5S5V2 UniRef90＿13L8K1
UniRef90
U7JMK1 UniRef90 UPI00046B6FE1 UniRef90－GoIVG7 UniRefino－Goival

$$
\text { DSPYDGSFYGT } \quad \begin{gathered}
390 \\
\hline L P G G P E T L A Y G L
\end{gathered}
$$

320
伿 PSAGIFSLAYRDPGHGLAVGGDFAVPDAAPD A A GVFGDRFRNPRQG PKSYKKYYVMSANVPVLVGVKNYTFTVEYRGDSNNKTVKH KSCDR TTTGKPQFYGTSKTSGWMNПGCVKGTQTSYSG DRYNLVANPEGTGLWA T EKWLDPQKPEKGYSWALL
PTGLYESAQGLGAWHRVAA

DMAYRNSDDVEFFTDRP PTGLYESAQGLGAWHRVAADPADGSARSPMLFGLDGDLFQ

QSNN $\square$ AWDFPAGAWYSVASSADGSTLLA $\square R \square L T T Y T A G S V$ HTQFHGDKVDTAYVTARTVVKHRHKAAPPAHPKAGVPSHA RMHLYGGVFYVSGEQGLFVTLETPYTGTYFGDRSFDGGLR DKHLNGIAGDRQGRMMLV EDFVAWMPDDAAARPGMPITSMLKNGQYIVTFEVCGTNNC FPLDASTLLAVGGRGNDFVMRDDQQWEYVSTLNSIYGEND GDDLYSDDPYEEASSAPVDTSGAPDVHCESKDKAVAVGGY DDLYPE PSTSWGLLDVAYRTPAEIWVS GGS $H Q \| L P \square S E D V W L A T T G Y L D H E L E N \square G L G H A V G A$ SEGRDWESWTKPTNPQVAVSVGLDDLAYRTSEETWLAGGS GKDTGSPDGDGSRLAMMCH VVDNSVVIYGMQ ENWGKAIIP TNGYGYMDMAWSDDGADWA DSWTKSGADLPEDF LAQTVDPSNRDRLYASGRFGGPDYA LDGARWEVVPFYNG SLYGALHLGGSTWVSYGMR
$P V A A G T G S L V P T P G L G A A A D P A D T S H R G R F A V M V P R D S N T$ ADNGVTWDKPPSPYAG S LFGALMLANGDWVAYGMR
 TEWYLLLQGPGKG $\square T$ LIEDGTLVFPAQFKDAEQ $\square P H$

EYSYPAVIQTSDGRVH TTYTWKRNR IR HVVF
QPWKT I FTDPSHDVWSLS $\square$ NQSNPAN $Y$ YVV EWPGYGA DWSPAA1RR PDRKHGFVLFVNPDTHG


TGGISMAAVKGFLVAAAKSDGTDELALYVTKDASQWHRAE GGGVFSLLF WSEQQGUAVGGHHQRHSDPT

TPYNGSFFGVTGKPGVALV<br>F G L R

NDSSVTDDGAPVFF KDEPDKGWDPVRTVSGNTES TWGDPVRPE $\square G T S W G F \square D \square G Y R N E N E L W V S \quad G G S$

PYFEEGQDFLLVGQG PQGDYMGGTV DRYNLLANPEGTGLWAl I SEFFDRP
 PGSFAHVGLSNVDNRVLAVQYDGPATLLWSGAGEPDPGQG

VAVSSRGNFYSTWQPGLSAWPHNRNSSRRVQNMGFTSDGR VAVSSRGNFYSTWQPGLSAWPHNRNSSRRVQNMGFTSDGR
$E K L L G E G F D R S S G N Y P A S L G S S N N N D P T V K M P F F Y S K T T P$ RDGGATWESKTTPYSGWLTS $\quad$ TGFDGANRGWDTTD

 $P G S G G V A C G P A G G C V V G V A A Q S D P K R L S A A \ V G L F P V G A A$

H $\square R$ WADSPYVS GAVHTQDTAPGLDMAGNLGSQLVEYK $A V A F S R D G G R G W T V S R D P S P M D R P G R H V V V A V G Q D A V Y A A$ LMLYNHTTQKLITYDFKNNRDQTNVGVNISGNYIAVLRSD PDGRYVAVSSRGNFYNRAVARRDQNMGWRADGGLWLLVRG TDDFTSGQWSSPDRPGRALSFGYDNAAYQNDHDLWVVGGG HNQYSRLKGDRFPTGPDSDSTAT GLLLVHATVASSLELRP DPGY MPGLQAWYNQFLQVDPTDANHVYL
G पY DSKGTGTSEEFEETP VQSRGFGWLYRSKEEAWAAGGS TQPQSDGNTLVGGENGLGSVSVDSREITRTAFKKESDDPY REDDSRTLDTEAAATHEATLIERADGSLLMLMRNQHPSGK SDVVRLAGVKKFLVAAAKSPRTREMTRYVTTNTGYKGGLRM
KDGQETSSQNPVGПSELT TELSSGNLLQFMRNTR GNGK PGSYGYSCLTQUPGRLGVIYEGAGELYFQQLD
GTPVHCDPGQSQKFGLLYGGTRSPGLLLASGVDGTS
GKGH


A QRLS QLLS $\square Q \square R R T P \square S K E S A P G L I I A T G S V G K N \square A K$
 MAVQLENGDIMLNMRDNRNHGPNG VAGHGTQRYロAGEQ

UniRef90 B1ZMZ3
UniRef90-UPIOO039B351F
UniRef90-E9UUK4 UniRef90-F6B159 UniRef90 UPI00036A8510 UniRef90-Q3JDZ6 UniRef90-K9UWE4 UniRef90 ${ }^{-}$C8WSD6 UniRef90-UPI00046FBC5B UniRef90-A0A024HFA4 UniRef90_B9XKA6 UniRef90 C3VA12 UniRef90-T1CA52 UniRef90-L8MLUO UniRet90-H1RY82 UniRef90-C6CX68
UniRef90 UPIO0036745F5 UniRef90-U7G657 UniRef90 UPI0003723A0E UniRef90-UPIo003830E9E UniRef90-WOJJ27 UniRef90-K9RSQ6 UniRef90 G3FFN0 UniRef90-Q01DJ6 UniRef90-s $4 \times \times 06$ UniRef90_N6YFD4 UniRef90-N6YEN6 UniRef90-UPIO0037C86AE UniRef90_B4EK85 UniRef90-U3J114 UniRef90_UPIO0036F4CC4 UniRef90-UPIOO03758864 UniRef90-UPIO00361249B UniRef90-T1CUE2 UniRef90-UPIO0037489EA UniRef90-UPIO001FE2864 UniRef90 I2EYA8 UniRef90-l8HWT0 UniReft90-WYGR4 UniRef90 L7U702 UniRef90_UPIO00370B6AD UniRef90-J2YDTO
UniRef90 M2A3A8 UniRef90- F5LFN9 UniRef90-U9W688 UniRef90-X0UTS7 UniRef90-J7IRU2 UniRef90-Q3J993 UniRef90-U5VCK7 UniRef90-UPIO003785DDD UniRef90 10L589 UniRef90-M3ZMP1 UniR Refo - K5YL46 UniRef90-ToSQ12 UniRef90-F3YOM7 UniRef90_UPI00035C09F9 UniRef90_Q027F5 UniRef90-Q026F2 UniRef90-F4KT93 UniRef90-R5J9C2 UniRef90-UPI0003B73ACA UniRef90-W7KR12 UniRef90-K8EQ73 UniRef90_UPI0002C46225 UniRef90-J2P8K8 UniRef90-UPI0002F12AF9 UniRef90 UPI000248E8D3 UniRef90-•1106W7 UniRef90-K8YTB8
UniRef90 Q2JJR3 UniRef90_UPI0000E4A294 UniRef90-G8SOU7 UniRef90-UPIOO0375EFD6 UniRef90-U5G4H7 UniRef90-G0L848 UniRef90-E6KU82 UniRef90-B5WGA1 UniRef90 C4JIO6 UniRef90-Z4WQ86 UniRet90_F7JGG0 UniRef90 R5VC43 UniRef90_B7P760 UniRef90-Q3AN55 UniRef90-B7G3A6 UniRef90 M5S5V2 UniRef90_13L8K1
UniRef90
R7JMK1 UniRef90 UPI00046B6FE1 UniRef90-GolvG7 UniRef90_VGMAQ1
 a GAAYLSTRGHTWTVARTVPGEYRSGATWI GRGPAALAV A $\square$ TYKSNDGGNKWE YFTEDGGKTWTHVAYTLKPQTGTNQTMGPTFLNRWSL AELRESLDGGATWQRVDDGSFPAHTVRVAHDPGDPQVAYA
GSLLH SDDGGKTWEKDTMME GTVEESADGGASWRVLARDPRQTP $\square A V A A G P G K R \square A V A A V$

DRVYVSTNYGTTW
AStDFPRGAGGYVATSGNGDTLIV
PRHARAA GDKVNPAHATARTVVKHGHKA $\square$ PPAHPD $\square \mathbf{D}$ GNLFVSRDNALHWQKTETGLKSS
GLVLRSADGGATWDAV KVPYEGSLYGVLPLRDGAWLVYG NIFVKNSEDGKTWEPGTQVPVQSGGPYVTALKDGSLILTS DTVYALGNNGMVVS LSRPLPVSQHDPYANPAN GYYLETSDGGDTWSKQAARMKNSDGWH LYAAPKSDDRYVV GNLLVSFDGGQTWEKDRDDEEVPSNLYDIIFTQDDRGFI L GVARSTDGGKTFTK RGGQPVMAFLSWKAKNALYGVD GGLYRTTDAGDTWTRDDTGNDFSYURCVFVHDGTVFFCGD GNLLCSTDGGKTWKK
MHTAISRNGGSTWTWLPSGLNAGSGSSNLSSVGDTIVAGT GTLLVSRDNGDSWERDPEANQTPTNFNRFVFDHSGNRLHA GALQRSDDRGATWERFD 1 PGSDDKRLPYAIDPADPDTLYD
GHVFHSEDDGATWQEARLPAPDSVYSHALTADGTLLLVG
$\square D V Y$ VTSDAGRSWTGPAT TSATGA DRPA DDFGPDGDRTTT GNVVRSTDHGASWTHVDSHVPVSYFGATQL ADGELVLVG ISMFVTSDAGNT WRQLFEEEHSVLYLDQGGVLVAMKHTSL SSLIYSKNHGKTWHMGTGAKSHTDGSLMLNMRDDRGRTAS

ENLYSTQNNGGSWTLFASPAG AQFVALSVGPL PVLYVG SLLYATDNGGGKWKLRNDKDPGDRPYPVKLEFVNPRVGYV VRSVITYDKGGNWHADTPPAEDVD

FGQHRVNEDAYT LLESTNYSMQVDVLGSRPSNPMGYRETS GNDALTLDGGKTWSPRTRPAGYRSGUALVHGAPGPTLITV GNVFRSTDDGASWNR $\square D G \square P \square S \square T A S S V T A D G R \square L L V$ RDAYVTKDGGQTWSFKQTGMQNALTFADSLH GWGF GTLLMSSDGGETW
SAKYKSDDQGKTW
AELRESLDLGATWNRVDNGSFPAHTVRVVHDPGDPQVAYA GAYMSTVDGGRTWQSAMGRLPNRGLHLYALARQGSDLYUA GGLIFRFD STTQQFTSYAVKQGDSNLIITAPRVTSIYQD CHRTRLFESDVQWQTVQAGWVGGTCRDLTFAGGLALAATQ PDVYVSDDGGYSWLDALKGPHHYAILDSGGLLVAVEHTNS
GHVFVSHDDGAHWEQVELGGRLPLGGHVRTADDGVLIVGS GHVFVSHDDGAHWEQVELGHRDPGYGHVRTADDGVLIVGS
LWMFTSPENSEEWTDPPEFATSWGLLDLAYRTPDEVWVAG LFMSASNDMGKTWSNAAPVNDFGVWPDALVLQNGUIALSY DGFLMSTDAGETWKPQPTET QFF DNKLLSANGSAWAL
STLIYSKDRGQTWQA GTGAKSNTTEAQLVELSDGSपMGG A GDMYSKDRGETWKR NNTEAQVAEVEPGVLMDNMRDNRG TEVRRTDDAGATPYRVVA SGADRKGS $\square G V H \quad G L L A \square A$

EEMY $\square$ TSDCGRTWRQVFEEEHH $\square$ Y $\square \mathrm{DHGSVIVA} \mathrm{\square KDTS} \mathrm{\square}$ RADHRSPDGGRTWQRVWTTGPTGEPRSLGVPVGGRVEDG NGYYYSKDNGKNWITKESLPDYLADSHPIALY
GGLFLSKGSGlTFEEASVQSRGFGILDVGYRSKDEAWAAG GSI WTSTDTGVTWTEQQQPDGDFRLWYSIASSSDGTKLAV ATLTHSPDGGKTWEQ
PDVYVTSDGGYNWR ADQGPHHDA $\square$ TNSGGLLVA $\square$ S T LE G EEVFETTDGGANWTVPGPYWNFG
GVLLRTTNGGKTWTRDKAADNDAANDYSVKFDDDKKGFVL DSIYASTDGLYQYDLKTHKSTRYGVNSGLPDEVIYGILPD VATTVSTDGGETWSDVSAWPTEDCPERVVFANASQMRPYR FDGHKLENDAYTVLESTNYSUQVGVKTGGGFNPMSALYTS
VVVSRSTDGGATWSDPПDTTAPEVYCQपSVLYYDKNG TG PSLEVSNDGGLTWHEARYGNHDYSFADFGGVIVAAEFYVF GTLLVSRDGGDSWENDPVGDRQPSNFTRMVFDGEHAFVLG
TNVYVSSSAGARWREADPGPHYYTWGDHGGGIVADAQGM RRI CTTSDFGKTWEPTCMASDHKHHYTKDGQPKSVLVFMN GLLLRLDPAGNHFAQVKTPYE GTFFGVDVRPGRVLAYGL

UniRef90 B1ZMZ3
UniRef90_UPIO0039B351F
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UniRef90_UPI00037489EA UniRef90-UPI0001FE2864 UniRef90 - 2 EY A8 UniRef90-_18HWT0 UniRef90-W9YGR4
UniRef90_UPI000370B6AD
UniRef90-J2YDT0
UniRef90-M2A3A8 UniRef90 F5LFN9 UniRef90-U9W688 UniRef90-XOUTS7 UniRef90-J7IRU2 UniRef90-Q3J993 UniRef90_U5VCK7 UniRef90_UPI0003785DDD UniRef90 IOL589 UniRef90-M3ZMP1 UniRef90-K5YL46 UniRef90_TOSQ12 UniRef90 F3Y0M7 UniRef90-K8GLE1 UniRef90_UPI00035C09F9 UniRef90_Q027F5
UniRef90-Q026F2
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UniRef90 R5J9C2
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UniRef90-UPI0002C46225

UniRef90-J2P8K8
UniRef90_UPIO002F12AF9
UniRef90 UPI000248E8D3
UniRef90-I1Q6W7
UniRef90-K8YTB8
UniRef90 Q2JJR3
UniRef90_UPI0000E4A294
UniRef90-G8S0U7 UniRef90_UPI000375EFD6 UniRef90-U5G4H7 UniRef90_G0L848 UniRef90-E6KU82 UniRef90-B5WGA1 UniRef90 ${ }^{\text {C }} 4 \mathrm{JIO6}$ UniRef90-Z4WQ86 UniRef90_F7JGG0 UniRef90 R5VC43 UniRef90-B7P760 UniRef90-Q3AN55 UniRef90_B7G3A6 UniRef90-M5S5V2 UniRef90-I3L8K1 UniRef90_R7JMK1 UniRef90_UPI00046B6FE1 UniRef90_GOIVG7
UniRef90_V6MAQ1

QARAHFVSRDDGATFSAWD IIE LTTAVAELIFTSPDGTL GPTGSDVSWDGGRNWRKFDTGSFD GPNGSDISHDNGRSWRPFGATQTRFHTVD

DDG TYTTQDQGHTWKALPANDT
LSGGLYRSEDRGVSWHLTALLQEP
VH G L A F V
GDRGGYL
DASGLWVSRDGGQHWTELGA
SMGY $\square$ YTSTNSGVT WS QNNVPGQTYG
$P \square 1 W R T T D G G K T W V S \square V R G \square P R D Q R T G N W V N V L A D$
MRGNVLRSADFGAS WEA
NSNEVSTSLDKGASWELNPVAPWSGTFPQYLW
GEKGVFRSTDKGAS WT QLDSP Y DGT $\square$ FGVTA $\square$
GDRGYLL
TSGKLNHSADGGATWKK LATVPGGQPQALTAV
HEAALFESTNFGRDFDRVPYP GEPHE\|VETWDVYD
YNGSAAVSYDKGLSWSAVPT
PSDALLVSRDGGQSFATVFESQGD LLGFALS
QGGLVLASTDQGRNFS
GDAFSAVSFDHGRSFSA
$Q G G A V V V S K D G G L T F D V R K \square G G V Q S \square A A V L D M G H G A L$
P $\square$ RHLWLSFDEGRSWSKYS
GARSVA TK K L G K T W
VDGGLYSSKDSGVTFTALPDQDCDVRLD TE $V E G G L L K T V N G G T H F A K L Q D P R L V S V Q D A D F H D P R T G W I 1$

QAGHVLVSSDDGASFQLQPNTTLAPVAAAQVASGGAD
K DKVLHATSDGGTTWNPVSSDPVLTDTLK

LS A GLYYRSQDRGVSWHDTA|LQEP
GEQGLLRSRDSGSHFEPLQGPYDGSYF
VH G L VFV
NDQQL WLATDGKGAYRYDQLTNYTKQENGMGLSHNAAA FLL SGGVLRLDTAAQPQWQSVSVNCGLPRDRTRFVPVDGVAVS
P INQUKFSTDEGQCWHTYN
GGAYAWLDAAGDLTTTGY
$\square K K E \square R Y S \square D N G V S W S N \square A A S N S V N E \square H H \square$
GSGNLLLSRDGGKTWEKDRFVEDVPSNFYR
GRPGNWLSNNNGVSWGPR LQFYND $\square Y P P D C G N Y M S \square A E \square A$
GPF GLVKQTGTGLAWKR $\square A N P L$
GSRSVATTKDLGQTWT
GSRAVAlTKDLGKTWT
NAGRLHVSSDHGRTWSDVPLP
P L K V LK F S VDE G LT WS T HNFTSTSVF VDGL
GELSGYGSVDGGRTFVGLRDGTHYTRRTPLG
GS GVLLKTTNGGKTWVRDKA
NGGSUWTSTDAGATWT
ER $\square \mathrm{D} D E G R R W Y S \square A S S$
T T D T $\square$ K F S Y DE GQC WN S F K

GNDGVLL
DLGHIWLSTNKG WS R LTV $\square$ NSGE $\square$ KNYSRADG
GRGVLRLSEDGGRTWIASRTFNPAHYVYQ
QDGQAIVSADDGKHFTP $\square$ A
NSEGDYFTRNA
GK D R VIMSNPGG
GTDRDFYSLDMGEKWSTLQLLEG
ERGNLLRWVDN
$\square K K G L W M T L N G G K \square F \square S S E E P D L T K D V F D F G Y G \square T D V A W$
ETNELKYSTNEGETWKTF
$P N S Y V K F S F D D G Q T W P E K Y W \square L L D E W G G A G Y S C \square T S \quad \square D$
S GNAYVSKDEGTQWRKLATGT
T D S $V$ V M Y T T S D G G K Q WT K V H E F H

UniRef90 B1ZMZ3
UniRef90 UPI00039B351F
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UniRef90_V6MAQ1

PQEPPLLVAGTDTGVKVTSDWKAW

PK QPGLLFAGTGTTVYVSFD

S D Y QVLVY G $\square$ Q GNVWLS A N
DTGH L LAATQNGVYESRDGGKT

PDGATVLVSGPQDGDWR

PRANGSVVVGCDQGAY
A $\square$ NPERLLLGTGGGSW TDFT

VLA G T R G

PQKPPLLVAGTDTGVKDS
$P$ S GRLLVGGRGSLFASDD
RRDNNDMWLATSDGI NTLSADSE
PTAADRLVLACGRGVYRSADAVNW

RNPKEVWVGGSNTMYVSFDGGK

E Q T $\square$ GVVYEGSGANL UniR UniRef90_R6CDI2
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UniRef90-M4AAB2
UniRef90 H0Q1K6
UniRef90_R5DJI6
UniRef90-H1Y196
UniRef90-J3ETV8
TVIFHPKEEDK LLAYCKDGR $\square$ FAST
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$R \square V A V G Q R G H \square L F S D$


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UniRef90-B8CPG3 UniRef90-14DXM6
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UniRef90-R9XT75
UniRef90_M7T7F2 UniRef90-R6CDI2
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UniRef90-UPIO0037B9F6E
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UniRef90_Q4YI59
UniRef90-M5G6S6
UniRef90 ${ }^{-}$M4AAB2 UniRef90 H0Q1K6 UniRef90-R5DJI6 UniRef90-H1Y196 UniRef90-J3ETV8
 DNGVT WEPQQLVRTGSGLHGFGDPSLLVDSDTGRIVMFHA
 DKGETWTTFFTDAYTSNRREFGWMSFHADDPD R】IFYGM

## Q

DGGRTWQRVLQENTGKKNVMSATLRYLAGPMQEKRDFY LK EFGRRWQLVHDSVVPNRF YWSRLGLDKDQGMDHLETSVS

D $\square G R K W T L L Q E R V T K D R \square$ FWSVSGVDLDPDLVHMEMQDS

D A GLDH WQQA QVPVSSDL
VAVHFPTSRQGWAVG

UniRef90_C1E5W5 UniRef90-UPI000370E8DE UniRef90-D8PDZ8
UniRef90-N2BBM3
UniRef90-B8CPG3 UniRef90-14DXM6
UniRef90-S6JAI5
UniRef90_R9XT75
UniRef90_M7T7F2 UniRef90-R6CDI2
UniRef90-FOY810
UniRef90-UPI000473E850
UniRef90 UPI00036E26FA
UniRef90_Q31P11
UniRef90 UPIO0037B9F6E
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KNTDSDLKAY LKVSDDNGKTFGPPDEDT TPPGYHVMNNDG DGRSQYITCKLQNCSDGNR

GKPFPGF $\square$ D

TRQTVLETKDGGKTWDVRDLSGLLDDDVNYRFNS
RSTDGGKTWS FNFPNYFPDSVDAFSNE
$S$ GGH LYVTCLIQNCSDKMLT AQF LGR DDH

H DGVVLHSSDAGASWER
lupas_21
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GKPAl L L H T TDGGDTWERVGLSPRIL10 GAPV
AGTHAVQHADVSFSDDDGDTWQHTAQLKHGAVTGLFAAAG MFPEGKG $\square$ F GMPK $\square$ NEKGDKTYQ $\square \mathrm{L}$ YKQGEFGHYT $\square R E N G$ $G V S \square S E D G G N T W \square S K T A W T F N D S K M P D R R$ DCESVFCEEVVMYTTDGGCWWAKSSHLFTTGQGDLDANRI


| UniRef90_C1E5W5 |  |
| :---: | :---: |
| UniRef90-UPI000370E8DE | QGI Qi HTQQFVLLVDGADTAASAFSDDHGETWT LGELIG |
| UniRef90-D8PDZ8 | LGMFFHDPQLGWAVGSGGTILKTTDGGRKWKKVSSGTT |
| UniRef90-N2BBM3 | A GDDGSAAFR $\square$ P G |
| UniRef90-B8CPG3 | VGHDAT L LHTEDGGKTWQ LQMQS |
| UniRef90-14DXM6 | E VYDANNQKTDYRVVVNPTKADYRDKG |
| UniRef90-S6JAI5 |  |
| UniRef90_R9XT75 | YNSIDGSIYAMHGTWATGNGFWYQDRF N |
| UniRef90-M7T7F2 |  |
| UniRef90-R6CDI2 | AGDDGSNAFRIPG |
| UniRef90-F0Y810 | S A A YVYKSS DGGATWPQVAKLD |
| UniRef90_UPI000473E850 |  |
| UniRef90_UPI00036E26FA | GHALAVVGPRGI L L L S P A G N WSQ |
| UniRef90_Q31P11 | NS $\square$ S FKGDEGWVVGQPSLMLHT TDGGKNWLRIP |
| UniRef90_UPI00037B9F6E | ( GNWTKRS LDGGKT W QVP SRTA |
| UniRef90_A6CBR3 | RWLIAPVASTPDVRKNNHFVCTCFISDDQGKTWKQSKGSVD |
| UniRef90_Q4S2T7 <br> UniRef90 C6Y405 |  |
| UniRef90-F9YZU8 |  |
| UniRef90_A4S6D5 | VS FCGDEGW\IGKPAVLLHTTDGGANWERVGLS PR |
| UniRef90_UPIO00377EB35 |  |
| UniRef90_NOCTR6 UniRef90 C4F819 |  |
| UniRef90_Q4Y159 |  |
| UniRef90-M5G6S6 | LFYFDDSTSVLWHDTANG\\|VFVSEDEGKS WTQSTDDPE |
| UniRef90-M4AAB2 | SLLVQDDY $\square$ FVKV T T GNRTKHYV |
| UniRef90-H0Q1K6 | RLVAVGLR GM\\|V |
| UniRef90_R5DJI6 <br> UniRef90 H 1 Y 196 | A |
| UniRef90_J3ETV8 | QLDA R Q I GALLLGGYYRQKLINARPDNEALMTRVADAQR |

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| FSEGK $\square$ GSRGFGLLDLTAKPNGKQ FW V |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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77777666777774489993144885589984367777777
B B B B B B B B B B B B B B B B B % B B B B B B B B B B B B
                        B B B B B
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GA $L F Q T T D G G T H W D D R T L P N K \square T D L I R V R F T D A Q Q G W \| V G$ A GVMYSKDRGKTWHLHNLARTNTTEAQVAVLMLNMRDNRG GHLFKSQMQLAQWQEVMLPVDST DNAGVAI DESTLR VVGN LQVATSKDGGATWEKEIKRYPQ VKDVYVQMSAIHTMHD GNLFASRDDGQHWQAVA THDNSSVVSUVEQGPELIVV DWAYYTEDMGKSWHA YEPASFGSSTAQPTQ TKI TFDDGRTFESVKTGDDQDHDHSDFSSPAPGLVMGN AGIMYSKDRGETWHDHNHARTNTTESQVVVLMLNMRDNRG A YVFRTTDGGASWSQTADDSATDDRDGVSVSITGSTIVAG GLTVTTDDGGVTWKKGPKDAGDFYPYAALFASRNEGWVSG GNAFISRDGAASWSSLAMGSDASVVAALDR GAGRLVFVI GTLLVSEDGGEHWQR
QRACLSYDEGKTWD $\quad$ ENEVILTGSPNGDMGYPSTVQLMDG
$N S \prod F D T S D A G N T W R E D F Q E E Y S \square F F L N Q G G S L V A D R H T P Q$ STLIYSDDHGKSWKALGAKSNTTEAQLVETNPGTLMLNMR VA HAASVDGGETWEQLTE DFSQPNTESVVFANASMMLDFR GSVFYSTDAGKSWKRDRGTDNVAANLYNVKFQSEDQGF!L AVSVFSDDHGETWRAGEAVGTGMDLSDGRVMLNSRDSQRS

 A SVIVSDD GVTWKRSTSLQCQTSESTVVAFEVDGVLVAETA | $D V D F V S T N N G K D V E V L V K H G N K F V I S N G Y I V V A K L N D V I K$ |
| :--- | :--- |
| $S R L Y T S E D F F D T D G Q V N F G R G K Q G R G V V A L G V V S K F I V V$ |

 TQLIYSDDKGETWK LGGLVNEHGGNESSVVELKNGDLMLN

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ND Glı LLR 370
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EHGQlLRTTDAGFNWVEEASP
GSRAVAVTKDLGKTWTEHMPSSRSALQEPVCMASLIKVD $A G V V I D V T A Q G N A T L V E Q R Q G E N G V A L A K D T A G G L W V$ GIEYVVLSNAGGPERTN
$S Q G G Q L V K L D R$
GSSIYVTLPNGRRVLLVSKPNGNNDNWARGNL ALWMD
GNTGLYVSDDAGRTWUEGPKGPHKYEFGDQGS L L LA DK
GSRAVYTTTDLGRTWK
GAAYVWHTTDGATWTR
LIA GQMLHTSDGGKTWSKQDNATQATLNRLFMHD
QT GQVLLSNDDGASVTALEVPRG
$S L L T V Y Y Q S P G N G Q P T N \square L T H W$
$P \square R H \square W \square S F D E G R N W D K Y S T S S P L Y V D G V L G E P G E D \| L D$
DNRGGFRSVDMGQSW
GCGVLRQSFDGGKTWPHNRVLNPRHHVYQ
GNDGILLRFTGAK
GYRKVAVSTDGGQTYGPVT $\square D R Q \square P D P T N N A S \square I R A$
TGGGVYVSADGGNTFAAPFSPVPGLDTP
RHGWYAVSHDGGATWEEERSLRDS G $\square D V Y$ TGCQDSAL
QTVNMMVSTDGGKTFNKANLP
GEMVLYVSVDA QNWAHARFPHGSGRLDENAYTDHS LAVD
PLKKLKFSIDEGRTWNDHNFTSTSVFVDGLLSE
$Q A G G V S V S G D R G K V F S P V K A S V P M P$
MSRSYVISKDGGETVSQIS
GTF R YYKTTNSGK WWERLPR DNNYSY $\square G Y G F N D \square Q \square S$
QAGHVLLS IDDGASFT
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UniRef90 C1E5W5
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[^5]AKDPSHVY
DSDSDE

VLTHSRDFVSNSNGTFFVRSLQNTNRN PGDETLVMTVFGH $\square S$ YRSD

GST $\square$ WAGGGHGF
lupas_21
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[^0]:    TGSVGDAMDRNGN<br>GSVGALAVAPSDPN $\omega$

[^1]:    lupas_21
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[^2]:    lupas_21
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[^3]:    lupas 21
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[^4]:    lupas_21
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