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## F A

 TY Y $Y \vee L$ $Y A Y$ S $L$ $Y Y \backslash F \vee G T Y T$S
$S Y Q T$ K V F V S Y S S GVYTYEFNEEETLSLLDQTS GLLKNPT
 K Y I GY I G
RLL L V G
Y A Y I G S A

```
    M T K
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        \(1 \quad \mathrm{~L} Y\) V
    AKY 1 GYA
    
 HFAYIGNPNGEGVYRVQVDPSGALSHATLVSNVPNPA
 $G D$
$T Q G$
$N Y$

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

Y T A N Y
K M A $\qquad$
$\qquad$ $Y \square G T Y D$
YL GTYYSK GVY T F T L D T N T K IT T DL K L A T ELLK DA T
 A K L L A F V G S Y S A P GVVY A C L F D E T G K L E L T D S S V S G L Q N P T T D GNSK GI Y T F RFNQET GLAT SLSSS IGEVLNPS STRTEVYVSAATAGMIDTYAMDATGALTRVSSVEAGPTVM QQVYVGTCQSKGMYVYEFDASGEFKFKNSSENVISPS


 TS GESKGITYSYRFDEENGTATLLSEAEVENPS

 STPA GRGLDVAHRADSGALEPGGTVDGVPDAS

 Y VG T Y T D G GI YKY Q $\square$ N A D GK LK KI GLVA K TN NP S




FA Y I S S P G D G
$K Y \vee A Y \vee G$ GTYTHG
 M N Q T L L L G T Y E S Q GI Y S ID L N E Q GK LT GLQQHAVTVS GP T VWI GT S N S K GI Y H CT L N T T G K L S D P T L A T E M G GP G $A Y T S A G G G D G I G V A A Y S A D G R I A A R G T V G D V P D P S$ $R A Y D G S A G G A G V V T A A V G P D G G L T V L G A T A E V P D P S$ RRRAY IGSYTAE GVLCAAVDEDGALTMLGACDEVPDPS
 RPTVVVSNAADGDLSTFSLAADGTVAPLARYPAADVAM QDI YF GTYDSKGI YKASFDETGQLSDLELVAQEPNPT
 A D S GRIT GK G TIITGVTNPS
 QAVY GTLGGDGLVVAEADGPALAVTGALTEDREPS MTEQFLIGT
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## QUERY

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 CLEV D P QK K Y LF A SVRRSASKFMSFS DDP Q T GKLLKLI S S $\square P$ F L A V S PN GK F LYA I NEAGGHVSAYAFDAA GGNLRFIN QQP $P M V V$ S H DKK H L Y I GVVGP HLLSVVVTYDDEPQ GTLLRFKA QT C
 F L T L H P N GR Y L Y A V S E K S G S IT G Y K i A G D S G QL E K L N T E S







 F L ALHPS GHFL Y V T P N S D N S ML Y S I EK A D G GV A A Y Q I H Q N S G E L T F V N H QL Y L T LS P D NRFVVYAVSEENDSI NAFAFDKKK GTLLTLL NKQR
 QLTLGADGKTLYVASEKHGG\|TAYRVNPADGALTQLNQVS



 Y LTPSADGKFVYAVSEHNDTVTAFALDKEKGKLLTKLNEQP

 S V F F S P D E K F L L V Q D L AMYI DAANGRLSLLNSEP Y L I PS E D G R F V Y A V S S M N D T L L A A F S F D K E T G K L P M AVAP D QK HLY AT T DR S QPYVVLT LA DDPATGNLAQKAAAP Y L SVVSSDNKFI Y AVNENGDQVSAFGYNAKSGKVTGWNTKA
 Y L V A S R D GR HVVYAVNEVRGGV SAFDFDAKTGALKFVNRVS QL NLDAA GKTLY VASE QHGVLAA YA DN RTDGS L T LL N Q HA
 Y L T PSED GKFI Y A V S EMNDSVNALLAFDKQTGNLRLL NSER YLAVAPDGNTVYAVSELNDEVCAFAFEKEKGSFRPLNVQP Y L Cl D Q T R H R L F Al S E E E G GI S S Y D I D P G S G A LT Y I N Q Q A
 FLAVNSAGSVLYAVSEDQGEVYAYAIDDPATKALQSLGSRS WLA WS PDHQYLYVTNETQGTVTAVDLTSHTPKVVINSQSS $Y$ VAKS DA GN LYTVTSVDGV GGVGAYDHSYNFLNAVTEA FI T L L S A D N R F L Y A L S E G D G SVV A F A VD Q K T G S L R KL N SVV FLSVTPDGTRIYANSWREGTVSAYGFDRSSGTLTYLNKQP


 Y L VVSRDRNYVYAVNE QRGGVSAFRFDRATGQLSFLNRVS
 Y L QVL L D
FLAMHPNGKVLYATGSPNDNVSAFRIVGPVGKLEYDNSAP $P M A D T P D G K V L$ F A A L R V VK Y QVVGFS I D P K T G H L S Q I S K GP

 Y I D GNADYSLLFSGEDCNGGDASYTKNDKGAFVKVDEWLQ FLAMHPNGSVLYAVGDVGGTVAAFKDDGSGKKLTLLNSVA Y LAVHPD GRTLLYAANE E E GAV TAVRLGDGEAPPRVLGTPP Y L A L GPGGDLL Y AVSET DGAVAAFDPAGDTARLLAPPAPD F LALLSPKD GLLVYAVSESDGAVAAFRVTGDTPERLGAPDPV $Y L A F A G D G N L Y T V G A G D E G G I A S S F P D Y H$
F Q T LD GE GK Y L Y SVVH G D DT K V S S Y R D LIK D H T LEEHINTMID $P \quad 1 A V Q A D R A R L Y V A T R G E Q P I V A F R V V P A T G A L V R I G T T A$ Y L A F S K A G F F Y Y SVGGAE Q G GI A S F S P D H $\quad$ QLI N HVV
 QLTVSHE GKTLY LA S EVVEQGVVQALHDGDNGELSAL NQVA YLAVHPDGRTLVVAERDAGAVTAVRLSDRK VLIGRST
 Y Q T L D N E G N F L Y S V $\operatorname{H}$ G D K T K V S S Y K I $\quad$ LE D G T L S P L Y A A GA D R R RVV A V DV AQGRVV AVVDV S M G
 $Y L A L S \quad D T N V I Y A V N Q D G D K G G V S A Y D D S G G Q F K L A D H L F$ S SVVVSADKKMLYVSDRREPYHVAAFHDLEDGKLEKAGNTS
 WLTLDLKNNRL YAANENGGRASAFAM DPATGRLSPMLGQQS
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L P D S M A Y L A T D R G GRWL F A A S Y G G N R A S V S P I G T D G QPA P


A G GNAAY I A T DK S G GY L F S A YY G E GK V A V H R L GK Q G E I L E

$\stackrel{L}{\mathrm{~L}} \mathrm{G}$ PKTTCHVQRDSDNRFLVVSSYHGGMVGLVSLKENGHDGE

 MGGGPTHIAVDHSGRCVFAANYGGGSVVSFPVSFFQYAAD


 DP GK S N Y L SF D R R K E F L F S S S Y H S N C I SVS PNQYCVVPQNP Q GA GPVY L S LTPD GRHLLVANYVS GSVAAFP\|EAD GS LGA
 A GGPTCHVVVVDHTGRCAFAANYGGGSAASFSVFFQYTGHG PGSGPRHLTFSPNGKYAY LITELSGKVIAFSYDNGKLEQD A GS P P C HVVSVK S D G SVVVVTAN YHD GS L K EVA DVVE H D GN G
 AD GGPCHI SVDKAGKRALSANYHSGMI HAFALLNQHKGSGP S GF FPCHVVVI NDRETHAVVVNYAS GTLAVVQVITLS GAGP
 A TGAADPCYYVATN LP D S M A Y I S V D P S G R LL L A A S Y G G N CVVA V S P G K DVT E G A LGADPCHLINDDKGSIVVFKKQTNGSITVQQIIQHEGKGP



 N G S A A C Y V S IE T G GHTALLAANY GT GNV CAY P I HQ HR G S GP
 RGAGPTHVAVHPEGDFLFTANYTDGSVAVHRRNPDGGIGE
 LG S
 D GNDPCYLAI SPDGKYLLTANYPGGSFAVFPTVHHEGGGP GGDGP THLALMAS GSVTAVP LRAD GT LARAASGVLRRHTGS


## 二

EGAPP CYVAYDADRQLVYLANYHKGFVAVLKTVDRSVHSG $\square D G G A A H V A V D S Q G K M L L T A Q Y G S G S V A A F S M K H E G G S R \square$
 GGKGP T H L S SVVAGHVLTANYGSGSVVAVPLRRHTGSGP



 A
 LP ES MA Y L S TD K R GHFL LSASYGGDSINRIGKNGLVE TP P
 K GP A P A Y V GLLDE QR HLLYYSA N Y H TA N NV E V F KVVAA D G S L T R


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## 130

140
150
VDVVEGLDGCHSANTSPDNRTLWVPALKQDRDCLFTVVDD



 NTDRQEAPHAHQVRLDATQKYAFVVSDLGTDKDMVYQFDGQ

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


 LLDDVQTHQHVHSAFFSPREKFLLVQDLLGLDLIDRTYSDDHA E A S QV IP T GKNA HADRADRTNRFVYATNLGSDQDA QFAFD
 AEKHERRPHAHRVTVVSPDNRFL LVNDLGGLDVI HIVYKLDPA
 NTARQEKPHMHFAGFS PNDQYAVSVDLGTDDRVDTYKL DEERQDAPHVHSATLSPDGRWLYASDLGTDKVHAYRVDDQ

 ASSVQQQGPHAHMDASDPSGKFVFSTDLDRDYQWRFDAASG NPDRQEKPHAHYAGFTPDGKFIAADVDLGTDEDITYEDLND G PKPQQA GPRGHRVTVSPDNKY L FVNDLGLDE IVVYH L D A S

 DPVR Q KV P H L H CVVQFT P DKK Y L FACDDGTD K I HKF NV NK Q NAERQEKAHAHFAGFTPDERYIVAVDLGTDEVVLYTLDGE NTERQE GPHAHSFLGDRSFTRGFAFFDTDRLDAYSFDPFA D E $\square E V V P T \square P S D Y T G E N G C S E D T V S A D$
VA DIVHR HEGAHSVV VDRANRYAVACDDGLDK LIVYK LDVA




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DTDRRQI V P H V I H C A L
NHDRQEAAHAHSSVFS

REDRQEAPHPHSVI PDASGRHVLVCDLGLDQIVI YRPE E G
STSDLVK H P H A H Q I V DD P S K R WVV A V D L G A D S V Y V H G F D H S

NATRQERSHAHSVTETDAGGTAIVADLGIDRLVSYRIERD $\square H P K Q Q K P H A H F A K F H P T K N E V I$ AVDLGTNQLWFSAFDEK
 VKGRQDNSHVHSTVFSPDGKYLVAQDLGVDKVFAYRYTPD

 I QT DK T GPHAHSVRTDPSNRFAYAGNQGSDHVLQFRLDDK
 QSVHPNQTSPHAHYFD LTPDKQYLDACDLDTVEVYTYRDN VPKRQEAPHAHWAGFSPDQRFAFV PDLGLDKVMIYKVDTD
 D PKRQQQ P H A H QVLPDPAGRWLVSV DLGTDSVRVCTELAG

 T DVVQHS GHSPHVVHFTD LTP D Q Y L V T C D L GT DEVVTTM DV N SFA A S D H N GP HA HMDA A DRS GKFVVFSTADR DY QYRF DR R S G
 VVSETHLPGKKE GTVSFAAHQCI WDQTKT Y LDFVVTQ GRRIQ G V RHPGATPHAHQVVPDPSGRWLLSVDLGADAVEVHGLDRR P QPE QDSPHVHFADLTPD QRLVVCDLGMDLVVVYDVSAD GPRPEQA D GPHPHFFDETPAGNLVC CDDGNDTVDFYRD

 H P QRQK S A HVHS A V L S P N GK T L F V S D L G A D R I F A Y R Y N P E T DVVTHQGETGPEPEQEAPHVHYADLTPDQRLIVCDLGMD

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 GTLVPNEPAFAK DHP GAGPRHLLTFSPNGKHAYLVNEMSCT K GL N E GK P A Y T S S I A G S GPR HFTFHPNGKWAYVI E E L S A T GVLK A NT P P R L S A A A G L E P R H L A V S Q D N R F L Y F D N E K G S S
 GMLV E DAAPA YS LPA A K S GPR HFVVFSNNGREVVYLI DEEL D G K GTLTETVAREVILPPGSGPRHFALNPKMNYAYCLNELDST EEGALKPVRDNDIHAGAGPRHLAFHPDGHDAYVINEVDST
 A PLRSAESGPATARAGAGPRHDAFHPTEPYCYVVDELEST A G K LIAAHGDTHTAKGAGPRHLAFHPGGQFAFVINELNST GR LT P DNPPAVKVAA GNGPRHPVFSPDGKY LYYVLCELSGN


 K NGS LTEVVKTHSFAP GSGPRMIVFHPAEKYAYVMTEISNE E E L P R P P L A E T V N DQ P G S G P R H L I F S K D R K Y A Y L RLTPNDPPWUAASSAGAGPRHFVFHPDGDTVLLVNEEAST

 K ELLE LTKQHVFNAPA GSGPRHIVFAPNSQYAYVMTELSSE GELE MVD QQTK S I S T P R D F N

 GR RLIPHGETRVAPGAGPRHLAYHPTLPYAYVINELNAT
 S I P H P S A E A I DVVDPNS GPRRHLTFFSPN GKYA Y LI S E L L S G N $T M L E A N D P P Q V A T G P G F G P R H I V P S P D N R Y L Y V L T E L T G H$ K N EMLTLLKETVVVKPGSGPRHLTFSKDGKFVYLI QELDAT THADAVPPRSLAVAAGSGPRRCVFGHDGRFVYVLNEELSAD

 GN I S R LP GEA DD IAPD S GPRHLDTFSPNGKFAY LI NE LS GK PFLKK GTPAAFRVAAGSGPRHLTFAPGGEYAYLI NELSGM

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 PSQSPTEARYAPVAPGSGPRHLDFDESGRRAYLTTELNAS T D GA LTVVHRETALAR GS GPRHLVAHPDGSHAYVVNESLAPT


 A OKDE QV VAKKIKPGTGPRHITFHPDGKRAYVFGELSGK



 A GLLRALEHGETRVPTGFGPRHLQFADDGRALVVVSEFEAT DLGK LTKTTQTYQTAPGAGPRHIIFHSHYKTAYLINEELAT
 $T \mathrm{G} A \mathrm{~L} \mathrm{LEV}$ V RARTRAGAGPRHLTFHPGGRYAYLANEVDNT
 Y G QVLVVYTDCFRSREYDEPRHMADHPNNRYAYLINEKGNK

 $G H V L Q K A T T F H T R P G F G P K K I T F T R N G V Y A Y V L G E L A N Q$ SPSFIN IDEAEAATGPRHFVLAPKDDGQGKQNMYI LTEMAG K G ELSLLRYTVVQTEAGAGPRHLSFHPTRPFVYSVNENNST



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V

[^0][^1]
 - DVELKDAGNIECVQTLMMPNFSDTRWADTHITPD $V$ DV Y QL DA A S G DV Q KV Q T L D A M P A G F S D T R WA A D I H I T P P


 V N VF D Y D A K






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

 $V$ QVI A $\square N A A R T G P R D V Q T D M M H S S G G S D T R W A A D I D H I T P N$
 $V$ IA LDS FNSSETGAAF E E L Q Y I S T L P DD F T E N S Q G S A I H L S S D

 LTSYRFDRQKGTLKQLHAVSALPADYQGTSFASGLALLSKN




$V$
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1 I DVLK Y N Q S T G I F E E L Q NI S ALP E G $\square$ A | D |
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#### Abstract

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FVLTPDNRYLVASNQKSGTLTLFSRDQQTGK TLVQPGMD
F TI PNGRF LVACRDSNVITYERD $\mathbb{T} T$ GLLTDTRKDTK FRLDPTESIVVASNQESGDLTVYSRNKDTGKLSLHKANIS FSIDPSGNFLLVCNQDSNTMAVFR $\square$ NRATGDLVKLFAYPV $\stackrel{V}{V}$
FALTPDGRFVLVANRDTNNVTYARDVETGKLQATGAELE FSLDPTEKFLIAANERSNTVTLFARDQMKGKLNLMQKGUN FITTPNGKYULAACRDSHVIQVFQRDPVTGLLSDTHQDV FDIDMSGQWMLVANQRSNRINLFRRDVATGLLKDTGKKLE

 FNITPNGKYLLAACRDSNVIQVYERDTENGLLKDTOQDIL FATI TPNGKFYLVACRDSRANQVYERDEESGLLTNTNKDID

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| :---: |
| I |

$\stackrel{F}{\square}$LIVAPDGKHLAVVNHESNSITTFADDYEKKLLTMKGKPMK
 FNLDPSGRWLLAAGQNSHTLASFAVDPQTGELTYNQNVVH MALSPSGRLLFAANQRSGTVSVHAVDPESGELRRAGRVFA LALSG QGLLYAANEHSGNVAGFAVDPASGLPRASGSLEA
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 KYVAYVSCYTQGG｜AVYDVDEKGTFTEKDKIEGSNSS
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保保 LFVGTYSSKG｜Y Y Liv Y S A A D S WTLGAALPA IVENVS ■fVGTYNGKGVYPLSYSASATWTIGQPAAQVENVS MDLYAYVGNARGEGMSVFRVDTTAGLEPVQLVKDLVNPS RYVAYVGCYTGKGUGRYRFDASGQDRAQPLVIETDNPS

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YLTKSQAGN ${ }^{50}$ LIYTVITTVDQQGGAGSYDSEYHFLINAVITEE YLALSKANKIYAVENRNGQGGVVTLDNAKRPVVELDAKLT FLAVHPDGRTLYAVDEEDGAVTAVRLADGE VVGGSRGT YLTVSHNGKFLYSI A TDFGVEAYTI MPDGDLELINFAP FLARHPDLRVLYAVNETDGGVSAFRVAADGDLTTLGSRPT FLARHPDLPVLYAVNETDGGVSAFRVAADGDLLTLGSRPT YLVLGPGGAVLYAVSETEGAAAALDVTQDVPRPIGALRPV W VKSKDGRFAYTTNEENGEVTALSV QNGKVEVLNTVS FIVQHPKNSVLYVVGSEKKQLAAYKITEKGQQTPLDQELL WLATAPDGSMLYAAVRSDPPSVVGSGSAAGSRLHQAGTAP CVEFSPDGRYLDSDLGTDKIYOIETDFGIK GI T TSPDGKAVYVCASDDHAVQVI DPA YLSLHPDGRTLYAVAEHDGAVTAVRLADRK SLVVNAERRQLHASVKGDPPAIVTCRIGDDGRLVLGSRST YVVESNDHK I YAIDRNQGGLAVFDGSTMPAKLMQEDRGQ YLTVSRDKKMLYSI A YITLSHSGNFLYSIC GVAVSPDGATVYVTNYF GLVLSHDGKLLYVCASDSDTVQVMDDASG YLTVSHDGRMLYSIA DEGVVAFRI DENGALSRVNSAN YVIKSRDQKTLYSIA GUALSKDGKALYVCASDD
FGAYSPVSQHYYLLNEKDEGRIGUYDKAWNKTYEVSSQ
TSSNT Y LA DSDDNRFDYAVSELDPMVKSFATNTDSSLSFLNEQLI FGAYSAKHKRHYLLNEDDGKVGAWTVADGAWTLT SEQSS F GALNPAGDRLYAVHGDLADVSAFAVDRASGRLTFDNRQS WVTLSADGRQLFAVNENGGRASSFARARGSSSSRRLSAS YLYVSEKAKCLYAVMEPGGGVAAYRLEPDGKLEPFNSVYW FLTVNRDGTHHLYVLSEEKGEIIVFQVDWEKREAMESSRCD YTTLANNDVIYTVDKVDDQGGVAVVNADTGKIKQTLLQP

 TIAADPSGKYLYVTNRSDNTI SAYAVDATTGALSPVAGSP SLALDRERGDLYAANESEAMVSSLQLDGVSGRLTAVNSST FMVLGKDRRTLFVTNETESTLSSYKLDPSSGELSLLSKTT FLRYHPQKNTLYLCTEDENTIGAYSVNPETGALAEUDHWS FLALHPSLPVVYAVAEEGKTVQAYRRTGDAELEAFGDPWS GITVTKDGKYILLCASNDHAVQ MIDRATGK VVADLDP HVTAHPSGKKLYTSVYVGTEGVTQSTIDPAGTLSLNLTTG YLSLLTPDGKHLLVANYVSGS IVAVLPMQEDGSLAEAVDRHQ DLAVSPDGKTLYVANSASNTISLVDVAS CTTAAVNYP FLRGTKAGKFLYAINETTGYVVALEVGM DGKLKLCNRME
 GILSKDYTKLYYCASDDDTVQVLDLA TRKIVDTLP GVTVSHDGKQLFVCASDDDRIDVVVDTATGKDTKSLR




GПEFSRDGKFVMVAVGDDDTDQVDD TKTQEDVDDP SVAFSPDGKYIASGS DDKTURVW NAETREPVVGPLTG FV DANKAQDLVYAVEENGGKGKITSFNLINGKLQKLN SVA GVSFSPDGKMLASAS DDHTVKLWNTSTGTEDKTLTGHT AVAMDPAGQKLYVVVRDDNAVAMIDLDSKKEQF TQTEDG

 NVQVSPDSRTVWAVSGHD SMAVMHDAGTLALHGVVP YLLYTEQGHYL VSECSQQEGSALI FVPTNSEDHQVRLL SVAFSPDGLTLASCSGDYTTKLWDI ITGNCLKTLKG AVAlTSPDGQRVVSGSE DNTLKVWNLATGAEERTLTGHS TFALNPAGDRLYVSNEDDSLVTVIDDDATASKKAIKKDQ SVAFSPDGRTLASGS DDETVRLWNVCERRCVRIL QE SIAFSPNGSLLCSGSSDRTVKIWDVGTGN GVAVNPAGTKVYVSKDKSGSVSVIDDVD TATNQVTATVG SVAFSPDGKYIVSGSFDK TIRIWDSQTKKLVLHPFEG SVHFSPDGRFI ASSSED RTVRIWHA

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P UniRef90_UPI000469CFB3 UniRef90_UPI000255E53E UniRef90 UPI000219733F UniRef90_D8NTK4 UniRef90_R5G6U1 UniRef90_UPI000248E5AA UniRef90_UPI0004691AF9 UniRef90_A9VB49
UniRef90_UPI000474D5B6 UniRef90_J2CRD1 UniRef90_UPI000370009F UniRef90_W1GMK4 UniRef90_G8S0J4 UniRef90-UPI000381B0A5 UniRef90-K3X3U8 UniRef90- X6DZR8 UniRef90_R8KJ60 UniRef90_E4PQ68
UniRef90_B8ILG2 UniRef90_K9PTF5 UniRef90_K9PFR8 UniRef90_R5C064 UniRef90_B1LYY7 UniRef90_UPI0003B775A9 UniRef90_UPI00030FEDD0 UniRef90_Q16BS6 UniRef90_C7PZT9 UniRef90_UPI00031005A6 UniRef90_UPI0003B3FCA7 UniRef90_UPI000377FE42 UniRef90_B5HCU7 UniRef90_U1IHB9 UniRef90_S7Q5N0 UniRef90_G0J2L7 UniRef90_UPI000302EA45 UniRef90_UPI0003804681 UniRef90_UPI0003B364D2 UniRef90_UPI0003B795BC UniRef90_Q46G45
UniRef90_UPI00037940D1 UniRef90_N1MPT4 UniRef90_E6SBG5 UniRef90-A6D903
UniRef90-K9QMH3 UniRef90_K9TJ23 UniRef90_UPI0003806884 UniRef90_M2R882 UniRef90_UPI00034A6E6A UniRef90_D8G6G1 UniRef90_Q46CJ8 UniRef90_B0DDW2 UniRef90_D0LR22 UniRef90-M1PBC0
 E GS A P A YMGI DED RQLLLFA GYYHRGTVV SYTI NWQNE GS G GGSAPCHVVVHPD GHWL LSANY GS GS V A V H P L D D A S G A P G E I N G M R C Y V S TA Y T D Q Y L F V A G Y H D G K L T V T D E I Y H K G L G S


 HGGHPTHAS I S LD GKFLVFVSNYSAFDKMVQNIVFSE GS GH ND G GAA H LAV H PS GRF LATA QY G GNSVVSI Y H I EYT GA SMA NGMRGC Y L S T D Y T D R F L F VA GY H D G K I TVV T D EVVY HK G



 K GMR GCQ I STS P ENDY I FVS GYHD GKVVTVLDRLNPD GSVGGH






Q
T
V
 LGDDPAHASVVRDGRYLFVANYPGGTLAVLPIDREGRLQP Y G G WP C H V I I A D E E K D S
 GASPAY LGLD TKR QLL F S GNYHKGT LDDIFKMDQNG LILL LGSAPCNIATNNGKEVSTAEYGGGSMTRYALKSD GSLGS





 GGADPCHLLAVTA D GRHLVVANYTSGSVAVHPLDADGVPGP










 MRHEGHGP
S G P DP E LFT Q D A A G K T M Y VA N E N D N T V T V IDD LEK R A R L G HENWVTSSVAFSPDDGKY DAS GS W DNTDRLWNAQT GEPVGE SAKSPCYI TLDPSESFAVTANYSS GDFPVTQVIDHTGSSV
$\mathrm{V} G$ -

## D

 HR GR V Y S V A F S L N G T H l A S
HRNWVNSVAFSPDGLTASSCSE $D K T V K L W D A V T G E C R$
 H T Y Y V T T S V A F F S P D G K Y ll V S G S Y D C D K T D R R I W D P Q T K K L V L


## UniRef90_S4D4T9 UniRef90-KoDC97 UniRef90_UPI000362F15F UniRef90-R6EL04 UniRe990_R9KHA1 UniRef90_UPIOOO4OF6F03 UniRef90-I6SVI6 UniRef90-UPIOOO425C0B5 UniRef90-A0A014B164 UniRef90-UPIO00474FCAE UniRef90_UPIO003B7318C UniRef9O-UPIO0047E5149 UniRef90-F5IU44 UniRef90-A7IB93 UniRef90_UPIOOO3665211 UniRef90-C8XHF3 UniRef90_UPIO002197056 UniRef90-R6S1Q9 UniRef90-R5E7Y6 UniRef90-U6EACO UniRef90-A0A024HI11 UniRef90-R7A1B5 UniRef90_J4K931

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UniReffo- - 6 DZR8
UniRef90-R8KJ60 UniRet90 E4PQ68 UniRef90_B8ILG2
UniRef90 K9PTF5 UniRef90-K9PFR8 UniRef90-R5C064 UniRef90-B1LYY7 UniRef90-UPIO003B775A9 UniRef90_UPIO0030FEDD0 UniRef90_Q16BS6 UniRef90-C7PZT9 UniRef90-UPI00031005A6 UniRet90-UPIOOO36D6B1E UniRef90 UPIOOO3B33CCA7 UniRef90-UP10003777FE42 UniRet90-B5HCU7 UniRef90-U1IHB9
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UniRef90 K9QMH3 UniRef90-K9TJ23 UniRef90-UPIOOO3806884 UniRef90-M2R882 UniRef90-UP100034A6E6A UniRef90-D8G6G1 UniRef90-Q46CJ8
UniRef90 BODDW UniRef90-D0LR22 UniRef90-M1PBC0
UniRef90_14BFE4
<

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140
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160
ASSVYHDEPT ${ }^{130}$ GHKNQDHAHVHYTDTTPDGRLLVVCDLLGTD PRPEQSSSHDHFANDTPDKRLVAVD DGAGGSDEIITFDVT
 IUDGIFHTGMNCVKLTPQQRFLCAVDGGLDQVKUYQIDYE DPQRQERAHTHMVASGGDGGPLLVVDLGTDSVYRYELDAV DAARQEGPHAHQVLPDPSGNWVLSVDLGTDSVRICALDPD VKGRQESGHAHSTTFSPDGKYLYASDLGNDKVYVFRYNPN
 RT GKVIPGRHAHTVLPSPDNKYVYATALGDDLTAWWSFD
 PAPGPGRDGPHAHQFAPDGGHVLAVDLGTDTVYSYRLNER VVSRDDDPHMHSCAVGPEGRTAYFVSLGADLIAQCAL DG SQRIHDDGMTGPLPEQQSGPHPHYADCDAGLDRVYADDVG ITADRNFRPHISWSVFTPDEELLCACDLGIDQIKLYEFNHN TTTHLVGSPSGVAVSPDGTIWYVANQGSGSVSVIDT Q INVGVEPEGMAVSPDGKWAVNTSETTNMLHWIDT VTDGVYHKGLGSVARTPDGRFLLVADLGTDQVKIYRFDGE IVDEVYHKGLGSIATTPDGHFVMAADLGIDQVKIYHFDNK VTEDPVGVEPEGMGVSPDGKALVNTSETTSMAHFTDNQSH GPNKARQEGPHAHWVQFHGDYDYSVDLGTDQVLGYSFDAT NADRQEGPHAHQVVVHPNGKDVFVCDLGTDMVKAYQL EE
NKDRQEAPHAHWVQFSPDQEHIVSVDGGTDQLVAYGYDAA HRDEQKQAKPHFNRFDPAGRFVIVPDKGDDRTFAFRFAA VIQEAPGSNPDGПADTPNGTTAYVVNQVAGTVGVDDTATN GVQVQLGPHVHAVVPAPDGRYVLAADLGADKVYVYRYDPE EARGEHPHVTCVKVTPDQQSVCAVDSGLDQVKIYRIDRE

SHFQDSGAS
LIQ L TLFRGDKKAQLAPHTPDQKLVVVDLGTDEVLFFDLS PTAEVTWPNAHCVALAAGDGGQVYVVSGGAYVVAQYADSPG
 SSPIYTSDEPWAVADAPGGKFGYITNTTANTVAAYTVDTT PDWHEGESHPSDLCFSPNGDEGFVVDAGQDKVYHFNVSSK VDWHIQDSHPHSVYFTSDGSQLFATDLGLDKVLHFGIHTD LHNRQLEPHAHA VLDPYGHLAFVPDLDVDKUFTYDNATG RTSAAAAVDPHTATPDEQRPSRAHASLMLPDGRVMTTDGG AFQVDVGKEPEGVAQSP AAEROPAAHMI AADPSGKFVYSTDLDRDYQYRLDSASG DAERQASPHAHMVVPAPAGPDVLISDLGSDTVWRSRLDPV PSDSHFYKGGSGAAPSQDAAHLHSTTWVPGGTNVKFDPSS DDTVGVEPEGMAVSADGRYVACTSETTSMVHLMDAGTD
 FVEVQKNFSVDYVTVSP FVEVQKDDTNTSVTVSPDGKFLYATGYGDSAVAVFDTGQLD VLDGVFHRGLGSVAFRPHVNCVRPTKDNQYLCAVDNGDDQ LAQ DVGDEPEGVAVSPDGRTAVTTSETTNMVHWIDTRTG PLERQEQPHVHYLGITPDEKYVVAMDLGTDKIVTYEFGDN LSTTAAGPGAEGLGVEPDGMRVYAADTGGVNTVTVTDNAAB $H T A M P V G V E P E G M G I S P$
$V$
 VVERQSAPHAHQVLPDPTGRWVASVDGGTDSVRICADDTA DIQVGVEPEGMTISPDGKILINTSETTNMAHFIDDT PLTGHENWVTSVAFSPDGKYIASGSWDNTDRVWNAQTGE QTDTGHRDAVWGVSFSPDCKMLASAS
 NRYNFFEHRVFDHTMWEVLWDVAAQAENDHTLLVEHTAAV TATIDVGNFPFGVAFSPDGKKAYVTNSGGDSTNFTATVSV
 AFQVDVGGEPEGVAQSPDGLWVAVTSEEDGVVNWI DTAAR HPTRQQAPHGHQLQFDPNSQQFVTVDLGDD

 MR LVGHT DEDNSVAFSPDGEHVASAS D
KTLQGDTDRVYAVAFSDDSKTLATGS RDSSVRL Q Y Y GHTSYVWSVTFSPNGRTLASGSEMANTVDRTVKL HPFE GHTYYVTSVAFSPDGKYIVVGSSDKT I RLWDSQTGK LVLRRGHEHVVTSSADFSPR GRRVVVSTS E D Q TVVRVWDVVARS


## UniRef90 S4D4T9

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UniRef90-R7A1B5 UniRef90 J4K931 UniRef90-DoDC30 UniRef90-G1Y3R2 UniRef90-K0FZD2 UniRef90-V4PPT4 UniRef90-UPIO00479FF4C UniRef90-V4PE43 UniRet90-D8MYR8 UniRef90_18UBS3 UniRef90-A0A021 W969 UniRef90-R5TGP3 UniRef90-R6W5Z6 UniRef90-E6TT34 UniRef90-V2V079 UniRef90 ${ }^{-} 8810 Z 7$ UniRef90_UPIO00469CFB3 UniRef90-UPIooo255E53E UniRef90-UPIO00219733F UniRef90-D8NTK4 UniRef90-R5G6U1 UniRef90-UPIO00248E5AA UniRef90-UPIO004691AF9 UniRef90-A9VB49
UniRef90_UPIo00474D5B6 UniRef90_J2CRD1 UniRef90-UPIO00370009F UniRef90-W1GMK4 UniRef90-G8SOJ4
 DNGQLTEASRFKTEEGFGPRHI RFSPNGQYAYVLGELSSL HGT LTEVSRAAARPGAGPRHLTFHPGGRYAYLANEVDDT KG KLKIADILREHLESSPRMI RFSRDGRFAFVLCEERNV TGRLHPRVPRVRTAAGVGPRHLARHPDGRRCWLVGELDGS RVYTYTIVSEFVAEPGTGPRHLVFHPNETDAYLEGELDST KTQPLEADNGRDVTFNHGPRHMVFSSDGKHAYVTAEMRSE DKWQ QANETAIKAGSGPRHLKFTPDGKNVYLLNELSDT TG KLRMDDUIHSEQYSGPRH:KDSKDGRFIYVIHEEKSY NSNGLDDRIDYATQGTHPRNLRESSGKHYVAEMAGT NSTNGILDRDDYQ\|TGTHPRNLQUTPNGKFLLAACRDSSC TGALTEVAQTHTRPGAGPRHLTFHPGGRYAYLANESDNT ATLTPLDPPTAAAPTGSGPRHLVLTRDGAHVYVMTEFSGD DEGEDTPVSEVQLSPGFGPRHIAFVESAGKAYLIGELSSK TGKLKDYDIIRSQLESAPRQMIFSADGRYAYVLCELKNY
 KGT L S LVDADRCDLESGPRH DERLSLVIDMIPCDINSAPRF FISTEDYETKHNVLVDQRPRY EVLANVLVGSRPRV
TVVAT VPVGVGPFNVQWTKDGSLVWVSAEVGGT TGAVGQAFEAYHAPGGAGPRHLIFHKDGVHAYLVTELSNT NVLIPNPRKDCKDPEGSGPRHLVFNVKGDLAYVINEL T QKTVGDQVVAFQAPAGSGPRHLAFHPNGQVAFLVTELNNL GRLTPAAPSFVESREGAGPRHVAFRPDGRFAYVVNELDST TVTQTVTF GVGSAPNQ RNKMELED LRCEEDSGPKMLRFDRQHKFAYVLCEMDNV QKVFEWKAPEDSGPRQ LRFSPDGKYLYMVSELSCQ QYLYQRNRVTDPVPTGAGPRHIEDNEEKNMMYVIHEFQSS EQGKDTSETRFQTEAGFGPRHIRFSPDGKTAYLLGELSSK VQKDSMVVDTINFEPNFGPRHFIFSNDNKMMYVIGELSGK GGLSPLAPPTATAPKGSGPRHLVLDAQETHAYVMTEFSGE
 NGAFTQLAGPNTSTGNAPTSUGFDPSGKFAYVVNTLSNN QKLKPNMQKKLKMTKGAGPRHLAFHPNNSSWIYVVSELNN CLKTAQTAAPGPAGSTHGPRYVHFHPEDNGMYVVNEDSST HDLVRVWRYSPGEGLQPDHQVI LPKGSGPRHMARHHSGTV TMVDATETDQ
TGVPПSPPASVA RPRHVEF KLTPNDPPFIAASSPGAG VDDAAEP SGRDGAPEPAVEAKPGTGPRHETRSAQ KLI DANGPAAGTNTNVGDMPANAVSPDGSLVYVADQA KKLLGTTTLPIIKRPPGSGPRHMALHPSGNVAYVVDETSNT ELLDNLLVDTATMETGRPRAVAFSPDGKQLWVVSEIRGT ETFEIEKNIVVGQRPRHVEFSKDSKIAWASAEDGGT SFVEVKKNGIAGITGLGQVSSDTVSPDNNFLYTTGLNDSA TFVEVQKDDTNGVDGLAGALFVTVSPDGKFLYAAGADESA VKLYRIEPRTKRCTRESGPRNIRFSKDGRFAYULFELSNE QVIREDSVGQWPD GITAVTPNGRRVYVANSRSNN GY STE SEYAVYDFEPGDGPRHJSFHENGKVAYVVHELSND TVVTTVPVGQTPV GLTVS ATHEITDNVLVDTRPRF TSVHLIKATA पQTNKLKHTDKTQGKNPRAATFT AD ALNPHREMP RPGKNPEACFSDQQWLLASNEESNN TTRQUVANVLDSRPRFAQFKRDGSELWISSEIGGT PVGVPDTGHEAQVNSVAFSPDGKY KPVNPEP VYRLKVAPGAGPRHMVFNSKGDKLYLIHEDSAE
 NSVAFSPDGKTIAASVGDSNFI RMWDVATLTEUDTLDRGS WNANTGSHLRTLTGHTDRVYSVAFSPDGNTLASGSWD $\square D T A T N A V A A T I Y T G N N S L E V A F S P D G T K A Y V M N S N T Y H$ ATNQIVENVVVDSRPRVAEFRSDNKQVWVSAEVGGT TKVADTEV GKAPAQVAFSPDGRFVYAS NKTDAVLSQSLVMPGGSGPRHVDFSQDGKFGYVLCEGDES ECLETLRGHTSWVQSVAFSPHGE LIASGS WNLATGEEERTLTGHGDSVNAVAISPDGQRVVSGSWD QULKS I SFE\|PGVSNDKDQPVGVADDKDR WNTRTEEKVAKLTGHNGRVWSVAFSPNGEQLASGSED WDVGEGKCLAVLLGHTDTVRAVAFSPDGQTLASGSDDKTV
 LVSHPFEGHTQAVTLLHSHLMENTLFQGHMTTLSNYGDQR EPLVLR



UniRef90_S4D4T9
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UniRef90-A7IB93 UniRef90_UPIO003665211 UniRef90 C8XHF3 UniRef90_UPI0002197056 UniRef90-R6S1Q9 UniRef90-R5E7Y6 UniRef90-U6EAC0 UniRef90_A0A024HI11 UniRef90_R7A1B5 UniRef90-J4K931 UniRef90-D0DC30 UniRef90-G1Y3R2 UniRef90-KOFZD2 UniRef90_V4PPT4
UniRef90_UPI000479FF4C UniRef90-V4PE43 UniRef90-D8MYR8 UniRef90_I8UBS3 UniRef90_AOA021 W969 UniRef90-R5TGP3 UniRef90-R6W5Z6 UniRef90-E6TT34 UniRef90-V2V079 UniRef90-F8IOZ7 UniRef90_UPI000469CFB3 UniRef90_UPI000255E53E UniRef90-UPI000219733F UniRef90-D8NTK4 UniRef90-R5G6U1 UniRef90_UPI000248E5AA UniRef90-UPI0004691AF9 UniRef90-A9VB49
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UniRef90-A6D903
UniRef90 K9QMH3
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 $V T V C R W D A A A$

 $V$ V VDPQTRQUI RK DDFK $V A V C G Y D P R S G R L T V G A A Q S T G T G P \quad G T S Y P A Q F L V T A N$ V L HYSRSDFAPDRGLRHSRGGADP $\square$ AD DLI WGAD LIHLSLD



 V DVFTYEAKP GCDEK】QTVPTTGSNKLSELTAATTTLNAD


 $V \mathrm{SV}$ I D $\square$ S S NTVTATVPA GPGPVDVIAITPN $V 1 V L K A A K D G R F E A T Q T \square T T L P E G F K G E S F C A H I A L L N A A$ | G T | $V$ | $S$ | $V$ | $L$ | $K$ | $F$ | $H$ | $E$ | $D$ | $W$ | $F$ | $K$ | $E$ | $V$ | $H$ | $S$ | $Y$ | $T$ | $S$ | $L$ | $P$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $E$ | $Y$ | $L$ | $G$ | $T$ | $P$ | $S$ | $S$ | $S$ | $A$ | $I$ | $R$ | 1 | $H$ | $P$ | $N$ |  |  |  |  |  |  |  |
| $L I$ | $S$ | $L$ | $K$ | $K$ | $N$ | $A$ | $D$ | $G$ | $S$ | $F$ | $T$ | $E$ | $I$ | $Q$ | $Q$ | $A$ | $P$ | $L$ | $L$ | $P$ | $A$ | $D$ | $V \operatorname{T} T \mathrm{Y}$ GY D A G T G T L L T P L $V \operatorname{VRDD}$



 $L M I L D Y Q \quad D G K$ LAVVKQTLATIPPEWTEHNGAAAIVRVQD
 VLVMEYDAETAGLTLVDEVDAAKDE

P EVI L Y K H H R G K L T E V V R L L S L S G D $\quad$ PQ SRG G Q L C L S P D






 V SVID TATNSVINTDNDVGTEPVGIIDITPD $V$ HI I DVD NLEQDHEMSFVPGVNQDRVQPVGIVELTS D $V$ S V I D V A A R K V V R K I S F K
 $V$ S V F
 V SVI NTQTNE

 V S V I D V S V I D N A T REVKHK円T F E $\qquad$ 1 P GLRSE $V E V V$ S $V \quad G D W K V L H R \square K V$ LTVISD ASSQQQEVVKKLHKVKIR GLRSNGVVKV S Q D
 VTLCRWDPAAGLLEPVGETAVVPDGTAGPVHPSAPVVSHP

 $\begin{aligned} & D T V V K L\end{aligned}$

 $\square 1$ NA E DALVVKVDVQTREVVGRVMVGDGPIQTYVSPD
 CD QT V K F WN N T G K C Q Q T I PA H Q S WV W S V A F S P N $N R G Y V A L G P A N R V A V I N A Q T F E V E R Y L L V G Q R V W N A F S P D$ WT I RLWNMNT G GARTMNKV K L W

D $\| R D A G S S Q C L T T$ T Q E H S N QVVRSVAFSSPD





## UniRef90_S4D4T9 UniRef90-KoDC97 UniRef90-UPIO00362F15F UniRef90-R6EL04 Unire990_R9KHA1 UniRef90_UP100000F6F03 UniRef90-I6SVI6 UniRef90-UPI000425C0B5 UniRef90-A0A014BI64 UniRef90-UPIOO0474FCAE UniRef90-UPIO003B7318C UniRef90 UPIOO047E5149

 UniRef90-F5IU44UniRef90-A7IB93 UniRef90_UPIOOO3665211 UniRef90 ${ }^{-}$C8XHF3 UniRef90-UP10002197056 UniRef90-R6S1Q9 UniRef90-R5E7Y6 UniRef90-U6EACO UniRef90-AOA024H111 UniRef90-R7A1B5 UniRef90_J4K931 UniRef90-DODC30 UniRef90-G1Y3R2 UniRef90-K0FZD2 UniRef90-V4PPT4 UniRef90-UPIO00479FF4C UniRef90-V4PE43 UniRef90-D8MYR8 UniRef90_18UBS3 UniRef90-AOAO21 W969 UniRef90-R5TGP3 UniRef90-R6W5Z6 UniReffo-E6TT34 UniRef90-V2VO79 UniRef90-F810Z7 UniRef90-UPIO00469CFB3 UniRef90_UPIo00255E53E UniRef90-UPIO00219733F UniRef90-D8NTK4 UniRef90-R5G6U1 UniRef90-UPIO00248E5AA UniRef90_UPIO004691AF9 UniRef90-A9VB49
UniRef90_UPIo00474D5B6 UniRef90_J2CRD1 UniRef90_UPIO00370009F UniRef90-W1GMK4 UniRef90-G8SOJ4

 GKYUFCSNAGANSVIVYSINQETGELAVVCDSISGDYPKS GRFLYVANRGVGT:AVFALDGEDPVLVDEVVDSGGKWPRH GRFVYASNRGHNS:AVFAVSEKDQLLECDQVISTEGFPRD GKYVDAANRSDNKLLVFKIQEDGLLAQPTVYKANGDEPRA GHYVYTANRGHDSITVFRRNDEGKLVRVEVEPMRGAWPRN NRFLYTTERSSSTDTAFAVDGGSGQLSYLDSFPTETQPRG


GRYYVSEWGSESRVT DFKVNK LMGQLTKTGTQSVGQQPMD GKFLYASNRGD

FPRH
GHFLYTSHRDQDAl IS FRVDKQSGR\SYLSTTPTGRHPRH GQYVVVSNRGHNSI ATFKADASTGMLKQPEFFHTRGRPRH GRFAYVGVRGSNRICVLKVSHSGAELQPEDVPCGGEWPRH GKTAVVALGRANHVALVDVAT GKVRAYVPVGKRVWH GRFVYVANRNSHNVSAYAI NPRTGALTAVPFSVGANTPNS GKQLYVANRDHNSIAHFTVLADGSLSHQEDDWTRGDYPRT GSRAYVTESNGDAIA I DD GKFVYTSNRGHNSIA\|FKVSQTTG\|LERDGTEPTRGQPRS
 GTR $\square Y V V N K V S D N V S V I N D A T N$ GKYAFVALGPSNHVAVVDAQTY GTRAFVALGPANRVAVIDARTY GQYLYAAGYYDSAVAVFKRDKTTGKDEVEKYLPVGQRVWQ GKFLYAAGFGDSALAVFERDEQTGKKLSFVVVVDGLGGAFS GKY $G K Y I F C S T A G E N A V S M F K D D E E S G M L E K R F V P D S G D Y P K D$
$G R H A F V A L G P S D R V A V V D$
$G$ GTRAYVSNQYSNGLSIINN TQLDQVEETIBVERQPFG QKFLVYV SNRGHDSVAVEKVGDNGSTVSLVDVVASGGFPRD
 GSRVYVSNGGDHNI SVIDAANSTVIT RRYGYVALLGPANRVAVVD GKWAYVANEAANMLEVVSTADW KVQANIVVGQRSNG (GERATFVDVPCGGHWPRD GKTAFVALGPANRVAVVD GATHKVLKYLLVGQRVWH GKY ASGSDDKT: RVW NAQTREPVGEPMTGHGDLVNS GKFLYASNREANEIIAFK
 GSRVYVSNGGDGNVSVIDDDTAKTQKVIATIVGGKRPWN GQLASGSGSSDSTIRLWEVATGNEIRTLTGHTAT VYS GKKVYVADQFPGTGAVNII DTATNKVT ATVPVGRAPGG GKTAFVA A GPANRVAVVDDTA
GRTAIVALGRADHVALVDVAT NRFVYLTGRGESIVSWFELSDPAVPAYQGFVSSGGQGPRD GE VAS GGQDETI QLWDI HTGKCL
GQRV V VGSHDNTLKVWNLATGEEERTLIGH GSWVSA QKRLYTTNGTSND:SVIDLESQKVTK S $\quad$ GAY VGVGLYPWG GQTL A S GSFD Q TVVKLWDDRDARNCRAATTLRGHTA WIRRS
 $\square H R Q K \| S$ GSWDKTI RMW DSQTKK LVLHPFEGHTYYVTS GRRI AS GSWDRTVRVWNADGSGTALILSGHEDWVSE
GK K V Y V A L S F C N T V

## UniRef90 S4D4T9 UniRef90-K0DC97 UniRef90_UPI000362F15F UniRef90-R6EL04 UniRef90_UPI00040F6F03 UniRef90-I6SVI6 UniRef90_UPIO00425C0B5 UniRef90-A0A014BI64 UniRef90_UPIO00474FCAE UniRef90_UPI0003B7318C UniRef90_UPI00047E5149

 UniRef90-F5IU44UniRef90-A7IB93 UniRef90-UPIOO03665211 UniRef90-C8XHF3 UniRef90_UPI0002197056 UniRef90-R6S1Q9 UniRef90-R5E7Y6 UniRef90-U6EAC0 UniRef90_A0A024HI11
UniRef90_R7A1B5 UniRef90-J4K931 UniRef90-DODC30
UniRef90 G1Y3R2 UniRef90-G1Y3R2
UniRef90-K0FZD2 UniRef90-V4PPT4 UniRef90_UPI000479FF4C UniRef90-V4PE43 UniRef90-D8MYR8 UniRef90_I8UBS3 UniRef90_AOA021 W969 UniRef90-R5TGP3 UniRef90-R6W5Z6 UniRef90-E6TT34 UniRef90-V2V079
UniRef90-F810Z7 UniRef90_UPIO00469CFB3 UniRef90_UPIO00255E53E UniRef90_UPI000219733F UniRef90-D8NTK4
UniRef90 R5G6U1
UniRef90_R5G6U1
UniRef90_UPIO00248E5AA UniRef90_UPI0004691AF9 UniRef90_A9VB49
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UniRef90-K3X3U8
UniRef90-X6DZR8
UniRef90_R8KJ60
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UniRef90-B8ILG2
UniRef90 K9PTF5
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UniRef90_K9PFR8
UniRef90-R5C064
UniRef90-B1LYY7
UniRef90_UPIO003B775A9
UniRef90_UPI00030FEDD0
UniRef90_Q16BS6
UniRef90 C7P7T9
UniRef90_UPIOOO31005A6
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UniRef90_G0J2L7
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UniRef90_UPIO0037940D1
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UniRef90-A6D903
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UniRef90-M1PBC0
UniRef90 14 BFE 4

 DADSPDGRLLFAANQRSGTVSVLHVDGEGELRLAGEPFA




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



LAF NPSGRWLAVACKKANKVEFYSCDRESGLLRQKDLSDT FAFSPNEEFLVVANQNSNNLVSYKRNKNTEELTFVDKIKA
 $F Q F D A T G H W L V V A N Q D T D T I T V F R F N R E E G V L E F T G H T Y D$
$H L V R E G W L Y V A N E G S D D V V S F K D D P E T G L P D G P A G P V$





 VTVSPNGKYLYATGYYDSAVAVFERNQETGELTFV
LAIFPDGRHIAVANHASNSITMFTVDYEKDVLVMHGKPDK




|  | $\text { APECVCVYY F } 330$ |
| :---: | :---: |
| UniRef90 KODC97 | APEGVRVTF |
| UniRef90-UPI000362F15F | SPVAVCAV |
| UniRef90-R6EL04 | VNMPNClVFHK |
| UniRef90-R9KHA1 | 1 D Q P N CIRIH K |
| UniRef90-UPI00040F6F03 | VP S P T CV |
| UniRef90-16SVI6 | APECVCVYF |
| UniRef90-UPI000425C0B5 | PAASCV |
| UniRef90-A0A014BI64 | STPT |
| UniRef90-UPI000474FCAE | MPNP\CVF |
| UniRef90-UPI0003B7318C | $\square \mathrm{DQPNCVIFH}$ |
| UniRef90-UPI00047E5149 | A A P R ClEF S |
| UniRef90_F5IU44 |  |
| UniRef90-A7IB93 | G GAPWGVVVSPQ |
| UniRef90_UPI0003665211 | S P VA V |
| UniRef90-C8XHF3 | GR G A N WVR F L S |
| UniRef90-UPI0002197056 | VP E G T CV |
| UniRef90-R6S1Q9 | V NEPNCCElVK |
| UniRef90-R5E7Y6 | 1 S K P N M |
| UniRef90-U6EAC0 | GYNP IVVAVTPNR |
| UniRef90-A0A024HI | GRYPWGVVV |
| UniRef90-R7A1B5 | VNEPNCCVI TK |
| UniRef90-J4K931 | VNQPNCCV |
| UniRef90-D0DC30 | GQQP WGVAI |
| UniRef90-G1Y3R2 | G R L P WGVVVA |
| UniRef90_K0FZD2 | GS SPVGLA |
| UniRef90_V4PPT4 | VSTPVFI G |
| UniRef90-UPIO00479FF4C | 1 LS P SC |
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| UniRef90_I8UBS3 | G N N P T G 1 A |
| UniRef90_A0A021W969 | AVSPS DVKFVSVE |
| UniRef90-R5TGP3 | 1 EQP N CI F |
| UniRef90-R6W5Z6 | 1 P S P S CVI |
| UniRef90_E6TT34 | 1 K NPTCIY |
| UniRef90_V2V079 | 1 GQPTDI K |
| UniRef90-F810Z7 | I P E GVRVEFNS |
| UniRef90_UPI000469CFB3 | 1 K K P VFV |
| UniRef90-UPI000255E53E | GA GANWV |
| UniRef90-UPI000219733F | -P E CVCVHF |
| UniRef90-D8NTK4 |  |
| UniRef90-R5G6U1 | 】D Q P A CLLWT |
| UniRef90_UPI000248E5AA | P NPTCVL |
| UniRef90-UPI0004691AF9 | TDRPVFI L WESFD |
| UniRef90-A9VB49 | VP SPNFVCVHA |
| UniRef90_UPI000474D5B6 | TGSPSMLV |
| UniRef90-J2CRD1 | GA GPWGIVVAP |
| UniRef90-UPI000370009F | GAN |
| UniRef90_W1GMK4 | VG S P S Q M V $\$ S A Q  \hline UniRef90_G8S0J4 & EPSPTCLL  \hline UniRef90-UPIO00381B0A5 &  \hline UniRef90-K3X3U8 & S S T PVSLY  \hline UniRef90-X6DZR8 & GRGPWGVVIGP  \hline UniRef90-R8KJ60 & DVAPTGI  \hline UniRef90-E4PQ68 & GRYPWGVVIDP  \hline UniRef90-B8ILG2 & G L L P WGVVVSPQ  \hline UniRef90-K9PTF5 &  \hline UniRef90_K9PFR8 &  \hline UniRef90-R5C064 & VE T P N C I S  \hline UniRef90_B1LYY7 & GRFPWGAA  \hline UniRef90-UPI0003B775A9 &   \hline UniRef90-UPI00030FEDD0 & A P E GVCVQFLK  \hline UniRef90_Q16BS6 & GQQPWGVV  \hline UniRef90-C7PZT9 & G T NPVYLAVS  \hline UniRef90_UPI00031005A6 & GALP WGVVVSP  \hline UniRef90-UPI00036D6B1E & GKLP WGVVI H  \hline UniRef90_UPI0003B3FCA7 & GHYPWGVAV  \hline UniRef90-UPI000377FE42 & GQRPWNMALTPN  \hline UniRef90-B5HCU7 & PAASCVVF  \hline UniRef90-U11HB9 & GELPP WGI  \hline UniRef90-S7Q5N0 & LDETGWL  \hline UniRef90_G0J2L7 & IH K P VY I N F L P  \hline UniRef90_UPI000302EA45 &  \hline UniRef90-UPI0003804681 & GQLP WGVV  \hline UniRef90-UPI0003B364D2 & V N V - AFSP  \hline UniRef90-UP10003B795BC & $G D G \\| V N V F V A$ |
| UniRef90_Q46G45 | GKYPIEI A |
| UniRef90-UPI00037940D1 | GRSPWGAVAVP |
| UniRef90-N1MPT4 |  |
| UniRef90-E6SBG5 | GDKPNGTS FS |
| UniRef90-A6D903 | $\square \mathrm{T}$ A P VCLVI |
| UniRef90-K9QMH3 |  |
| UniRef90_K9TJ23 | GS GIVNAVA】S P |
| UniRef90-UPI0003806884 UniRef90-M2R882 |  |
| UniRef90-M2R882 UniRef90 ${ }^{\text {UPIO0034A6E6A }}$ | T D QVN S $\square$ A F S S |
| UniRef90_UPI00034A6E6A |  |
| UniRef90_D8G6G1 |  |
| UniRef90_Q46CJ8 | G K K P V |
| UniRef90-B0DDW2 | TD RVASVA F S P |
| UniRef90-D0LR22 | VNGAH F S P N |
| UniRef90-M1PBC0 |  |
| UniRef90-I4BFE4 | T T G E V $\mathrm{A} / \mathrm{V} \mid \mathrm{T}$ LT A S |

UniRef90 Q00808 UniRef90-UPIOOO37535B4 UniRef90-H5UR54 UniRef90-A8P965 UniRef90-UPIOOO379B501 UniRef90-B8LXS9 UniRef90-UPI0002E1DB7B UniRef90-F2USK2 UniRef90-F9T9F5 UniRef90-FOM8R7 UniRef90-U2YKS1 UniRef90-A0A011MZP2 UniRef90_F9TEC1 UniRef90 ${ }^{-}$Bobzw8 UniRef90_UPIO003608378 UniRef90-G6FXB9 UniRef90-19АЗК3 UniRef90-G4TYN9 UniRef90-UPIOOO26CDDC4 UniRef90-UP1000361ECBD UniRef90-D7DN71 UniRef90-A7BQ86 UniRef90_Q8TPK7 UniRef90-Q8Z0R1 UniRef90-R8W4Z2 UniRef90-D6Y2A9 UniRef90-BOC3Y2 UniRef90-B21ZJ6 UniRef90-V2JPW9 UniRef90-B8MUZ3
UniRef90-KgVGI2
UniRef90-K9PNS4 UniRef90_UPIOOO1F2A43F UniRef90-UPIO003683204 UniRet90_UP10003488726 UniRef90-UPIOOO345CF8C UniRef90-K9ZCB4 UniRef90-D5GNU7 UniRef90_UPIO0047B2877 UniRef90-UPIO002E5E41F UniRef90-K0SQ80 UniRef90-UPIO0034538C5 UniRef90 L8TWC8 Unineffol-l4BFM5 UniRef90-D6U340 UniRef90-M4FNY9 UniRef90-UPIOOO3478C29 UniRef90 A1SN87 UniRef90 14 K TX5 UniRef90-UPIO003782EC0 UniRef90 UPI00047ECAE6 UniRef90- B2J557
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UniRef90-O2GVO4
UniRef90-EOULM4
UniRef90-UPIOOO35CF58A
UniRef90-BoDYU2
UniRef90-N9Z747
UniRef90 L7E4Y5
UniRef90-UPI00040D9A78
UniRef90_Q2C367
UniRef90 H8E9F5 UniRef90-H1QL94 UniRef90-UPI00034C5989 UniRef90-K9TY81 UniRef90-UPIO0037FD895 UniRef90-B7KCU4 UniRef90-UPI0003016FA0 UniRef90-UPI0002FDD70F UniRef90-W4GNJ5
UniRef90_UPIO004793BE4 UniRef90-K9TP09 UniRef90_UPIO00440881B UniRef90_UPIO004284E98 UniRef90-G4TQM7


$T N G E \square R \square Y Q V S D G K Q \square \quad L Q T L E G H S G W V D$ VS GSKDKTVRIWWNTDTGEELARYSGHTGKVR



M R K

 $\qquad$ G G Q F | F V | $A$ |  |
| :--- | :--- | :--- |
| $A$ | $T$ |  |
| $H$ | $L$ | $H$ | SERDRVYTADQTSNT $\square$ S V $\square$ NPATNTLLVLSPLY $R$ GE L N V H GHNHWVR S P NGRLLDASAGADNLVQLWDDDRTHPVKLSTLTRHTSWTL S G S D D M TVVRLWDV E T G Q QV G Q SLIG H T G WVR

 LAYIT N Q E S SV S VIDTSTN
 Y A Y I A NLLN S NTVSVI N TGNSS LT T
RTLI S CSDDQTARLWDVIT

 ENRAI EVNTLEGHSDWVS SHRDR $\square Y$ AA E QFSNTVVSVTDPASNEVLGMDRLGEPTPAVMH VA S G S GRTVVKLWD S A T GTLLR QT L Q G H S G S V H SASFDNTIKLWNVETQKPSA

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

I LAASGSSDCTVK LWDVVG GANVELASTSESSPAPT G G QMA H K QV M $V \mathrm{~V} Y \mathrm{~T}$ C TE D N GQULA YRVS QVGAL

TA Y VT NMHSDTVS VIS VAS G
TVAATDPVG RAYVT $\square$ A HENRVSVMD T T T T N T

VA A T $\mathrm{D}^{\mathrm{P}} \mathrm{V}$ G
 V T

SPDSVMLVS GSGNHTVKFWDTD
 T I WV A N E A G D S L T A I D A A T H
 D A S T GKEI KTLS GHTNGVT S S S E D T TVVKLW DTSTGQCIQTLQGHS SRVW
 VS GSEDK TVRVWDL

SGSDDYYI RIWDINTGOKHCLDTFGHEDAVN
$S P N N R \prod F A$
SASDDTTIRLW DTATGAHRQTDE
$R$ V Y VP S GSTDKTI K L WK L E A GK T
 $\qquad$
H C


TLV S S S R D NTM KI WN L ETGTLLQKT LTTGHTD WVN $V$ S GSDDNSVRLWDL $\quad$ Q GQP $\square G K S F V A Y T N S V W$
 SPQGK L LAS GSRDRTI RI WNVES GQCLQI LTGHTSDVQ

R F A YVA D WY GRAVSVVDLD ERAVVRRLAAGNVPA D G Q G K G I Y T V S I D A A S G K L T L I H V V N D N T G N P S


 LIF A S G SF D N TVVR W WD A E T G K E $V$ A S G S S D Y T I R VS GSTDGTI RVWDPNE Y LFVVSENDNAVTVLD

GKSLGRLET G H

$T$ LVSASKDHTワKLWC■
ESGKCLRTFEGHS DSVW


UniRef90_Q00808 UniRef90_UPIOOOO37535B4 UniR Ref0_H5UR54 UniRef90-A8P965 UniRe90-B2A074
UniRef90-UP1000379B501 UniRef90-B8LXS9 UniRef90-UPI0002E1DB7B UniRef90-F2USK2 UniRef90-F9T9F5 UniRef90 FOM8R7 UniRet90_U2YKS1 UniRef90-A0A011MZP2 UniRet90-F9TEC1 UniRef90-B0BZW8 UniRef90_UPIOOO3608378 UniRef90-G6FXB9 UniRef90-19АЗК3 UniRef90-G4TYN9 UniRef90-UPIO0026CDDC4 UniRef90-UP1000361ECBD UniRef90-D7DN71 UniRef90-A7BQ866 UniRef90-O8TPK7 UniRef90-R8W4Z2 UniRef90-D6Y2A9 UniRef90-BoC3Y2 UniRef90-B21ZJ6
UniRef90 - V2JPW9
UniRef90
UniRef90-B8MUZ3
UniRef90-KgVGI2
UniRef90-K9PNS4 UniRef90_UPIOOO1F2A43F UniRef90-UPIO003683204 UniRef90-UPIO003488726 UniRef90-UPIOOO345CF8C UniRef90-K9ZCB4
UniRef90-D5GNU7 UniRef90 UPIOOO47B2877 UniRef90-UPIO002E5E41F UniRef90-KosQ80 UniRef90-UPIOOO34538C5 UniRef90_L8TWC8
UniRef90 $14 B F M 5$ UniRef90-D6U340 UniRef90-M4FNY9 UniRef90-S4XYT6 UniRef90-UPIO003478C29 UniRef90_A1SN87 UniRef90-14KTX5 UniRef90-UPIO003782EC0 UniRef90-UPI00047ECAE6 UniRef90_B2J557
UniRef90-C2QEB4
UniRef90-M2Z5C4
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UniRef90-O2GVV04
UniRef90-EOULM4
UniRef90_BOJGM3 UniRef90-UPIOM035CF58A UniRef90-BoDYU2
UniRef90-N9Z747
UniRef90-L7E4Y5
UniRef90-UPIO0040D9A78 UniRef90-Q2C367 UniRef90-H8E9F5 UniRef90-H1QL94 UniRef90-UPI00034C5989 UniRef90-K9TY81 UniRef9O-UPIIOOO37FD895 UniRef90-B7KCU4 UniRef90-UPIOOO3016FAO UniRef90-UP10002FDD70F UniRef90 W4GNJ5 UniRef90-UPIO004793BE4 UniRef90-K9TP09 UniRef90-UPIOOO440881B UniRef90-UPIOOO4284E98 UniRef90-G4TQM7

SVIAFSPDGQRVASGS DDKTIIKIIWDTASG
 GAAPEPAGFRIYVSNERSGDVSVID


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






 CVA R K G S L L A S A DE LE GRAGVALWWDRPCTPPFSMCCP

 GLGF S P D GRTVADVV $\ddagger$ G S N S V $\qquad$ S $T I$


 S V A FS P D N WQT■F GNHI I
 YLT IDDRAQKHLIAVNYWDSSLAVVPISPETGEFL SVAFSPDGEY V V S G S LDG G TVRLWNRKGELI GSPFVG AVAFTPD GSTAYVTNWNSNTVSVIDSVASGT

 GLADT P D GTRIVYTNEDNNTILVIDIATNT



 $S V A \square S G D G Q F V V S G S R D K \quad T V R V W D L H T L S L V H T F T G$
 AVAFSPDGNTLASAS DDKTIRLWDTATGAHRQTELG SVAFSPDGQTLASGSQEQ GVAFSPDGQMLASASDDK $H V$ VP S WDLLK T L WVNNNRGHTL
 YV DS G L K N GHA YA V S E DEVVQIA HY RLDEESERDCLLCS KMK SVIS S PD GK T LVSGS W D GTI K L WNV K T G K E I R T L K G
 YLASNQS G L Y T F NE DDRHSGA ELHFS DNQ DC CS LA I






 A V A T P D GK Q A V S A S D D K T L K L W D L A T G S E L A T L I G H S S

 SVAF S Q D GRLVVASGSWDK TVRIVWSAESGRAVFDTFG
 DMKLS A DRS QVVFV IA S NS ERVVDVIDDI
 $G V A L S P D G R T V Y V V S P E T K V L N V L A A D G A D$ H L QL S P D R S R L Y V A C S D D H RI DV I DVA S T L L
S R K T HAVRLWN LA GPGGPVGGLAD TLS
 $G M G Y S P D H R T L \mid A V V S \square G S N S V T T \quad F I D T A T N S V E H \square$


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H G GWVQSIV VFSPDGQRVAS $\qquad$ GSDDHTIK
ПWDAVS GTCT TGPDPETLALSPSGDVVYVSNENDSMVTV $V$ V
 VGORVASVAFSPDGSC:ASG (
 HD DEVWSVAFSPDGNTLAS HTDVVTSVAFGPDGQHVVSGSRDN GGTMPVNLAFTPNGARAYVTA AGEATCHVAADPQGRFDTAACWNDGSVSVIDTATNTITAN LPGSVSYIALARGGTALLAASYG GDYGFVAPISDGAI GE $V G S N P V G M G V S P D G S Q L Y V A T Q R G G G V T V I D C L R N T R I A$
$Q G E L P C H D L H E N P N F I T M A Q Y W T G E V S L F Q F N E H Q G T G P$ HTDSVNSVAFSADGRRALS GSSDRTVRGWDVDTGQS L $V G R S P H E G F F T P N G Q E L W V A V R G E D Y \square S V$
HNGWVLDAAFSPDGRTLATSGYDNTARLWDI TDRRHPTEL HTGPVRSVAFSPDGNHVISGSEDQTVRLWDIETGKQDGK


 HQGRDRSVAFHPDGK LASGSADNTIKLWD ISDTNHSKY EKQTPCHLRFS VGAGPTGVAV $\qquad$ P
 AQGNLI G HSDRIRSIAYSPNGQQLVS ASADKTIK】WDVSSGKLL
 HSNSVDAVAFSPDSKVVAS HSYSVDSI AFSPDGQTLAS
 HWMGATAI AFSPDGRLLASAS HTGLVWSVAFSPNGSLLASGSEDH NGNWSRTLAFSPDSKTLVSGNE HTRRVQSVVFHPDGKILASTSHDQ SDNTIKLWNVETQKPS
A

 WVISVAFSRDGRTLAS GSDDNTIRLWDVDTGECDK』
 HQGEVRSVAFSPDGESIVSGSFDN
 TGGWVWSVAFRPDGARLASGGETGSVRLVRLWEVSTGQCLD
 VGTTPNEVAITRDGKYAYVTNAGSDNVSVITDNTNTNTV $G L N G P Y S L A V H P D G S L L Y V G G N$
UniRef90_-4KTX5
UniRef90_UPIO003782EC0 UniRef90 UPI00047ECAE6 UniRef90 B2J557 UniRef90_C2QEB4 UniRef90-M2Z5C4 UniRef90_EOUHX8 UniRef90-D4ZVZ4 UniRef90-Q2GV04 UniRef90-EOULM4 UniRef90_BOJGM3 UniRef90_UPI00035CF58A UniRef90-B0DYU2 UniRef90-N9Z747 UniRef90 L7E4Y5 UniRef90_UPI00040D9A78 UniRef90-Q2C367 UniRef90_H8E9F5 UniRef90-H1QL94 UniRef90-UPI00034C5989 UniRef90 K9TY81 UniRef90_UPI00037FD895 UniRef90-B7KCU4 UniRef90_UPI0003016FA0 UniRef90-UPI0002FDD70F UniRef90-W4GNJ5 UniRef90-UPIO004793BE4 UniRef90-K9TP09 UniRef90_UPIO00440881B UniRef90-UPI0004284E98 UniRef90-G4TQM7


UniRef90 Q00808 UniRef90＿UPIOOOO37535B4 UniRef90＿H5UR54 UniRef90＿A8P965 UniRef90 B2A07 UniRef90＿UPIO00379B501 UniRef90－B8LXS9 UniRef90－UPIO002E1DB7B UniRef90－F2USK2 UniRef90－F9T9F5 UniRef90－FOM8R7 UniRef90＿U2YKS1 UniRef90－A0A011MZP2 UniRef90＿F9TEC1 UniRef90 ${ }^{-}$BobzZW8 UniRef90＿UPIO003608378 UniRef90－G6FXB9 UniRef90－19АзКЗ UniRef90－G4TYN9 UniRef90－UPIO0026CDDC4 UniRef90－UP1000361ECBD UniRef90－D7DN71 UniRef90－A7BQ86 UniRef90－Q8TPK7 UniRef90－Q8Z0R1 UniRef90＿R8W4Z2 UniRef90－D6Y2A9 UniRef90－BoC3Y2 UniRef90－B21ZJ6 UniRef90－V2JPW9 UniRef90－B8MUZ3 UniRef90－KgVGI2 UniRef90－K9PNS UniRef90－UPI0001F2A43F UniRef90－UPIO003683204 UniRef90－UPIO003488726 UniRef90－UPIOOO345CF8C UniRef90－K9ZCB4 UniRef90－D5GNU7 UniRef90 UPIOOO47B2877 UniRef90－UPIO0022E5E41F UniRef90－KosQ80
I

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140
 DARVPVGDEPEGLAVSDDGRDVVDVSESTSMAHFDDTQSW EVSRTEYANCHCVATDASGEHAYVVAEDGDDVVAQFGVDES EPDQGHTKKVTSVAFSPDGSRDASGSRDNTVRIWSAHSGE ADKSADG【AIVDLATGRRVRQLHVGSDPEEFAVSRDGRQV RQLSGHENWVWSVAFSPDGKILASGSW

 $N L D R Q A S P H A H Q V V F Q R T E K A L V N V D L G S D A D R F Y H D E Q N$ $\square P G V A \quad G G P \square G V A \square T P D G A K A Y V T G Q D S S N L A V I D$ RFPAAPSADPHAAHASLMLADGR』MTTDDGHDVIVRDWNYV P T GRVEFSKLHSVLPS SDGRFAYFVS LGDDLVGQFELGDD $D \square N \square G Q N T L D V S V N P V D G T V Y A A N C E D N A V Y V I D P S E K$ NTNRQE GPHAHYSAFTNGGYHLHSTDLGADKIWSYELDNS $R$ VME GHTDSVQSVAFSADGRRALSGS Y


P F E GHASF VLSVVDFSP DGYRIASSSSGD NTVVLW
NAARQEAPHAHWVGFSPDGQWLYQTDLGTDEDLAFPIDAA DPVRTGFASPRGLAVTPDGAHLYVSHGRPDPTDVITHFAD

 ATQDACGEKAGCHQS LGRRGF LVPCLEQDQVRIFDRKFS $\square A T \| P V G T A P T D V A V T P D G T R A Y V T N N G S N T V S V D N T A T N$ QPWTGHTNYVRSVAFSPDGQRIVSGSY KTLTGHTSAVSSVAYNPNGQQLASASD KTRIPVPAGPGMQIFSPDGKYGYVCSSFQPRTSVVSVAKH $R$ Q TLQ G H S GVVHAVAAFS P CFKTFKGYSVFSVAFN QTLEGHTRSVVSVAFSTNGRLLASGS RTLEGHGNWVSAVAFSPDGRLLASASKD RVLHGHTNRIWSVAFNPDFQNILVSGSKDQTVRTWNVRL ATFTGHENWVSSVAYSPDCQYI ASGS DTFQGHTDLVNSVAFSRDGS NLATASDDQTVILWDVSTS LQGHDDGDRS $\frac{1}{N P D N S D R T E V S C S D D Q T V K L W D V A T G E C I T}$ NPDRQTSPHAHQVTFLSTRDQLAVVDLGADVIHFYPYDRN SPFVGHQSGVNSVAFSPDGESIVSGSFDGTVRLWSR TATVPVGLSPVGVAFTPDGATAYVTNADSNTVSVIAV

 ISTMSVGYKPSGVAITPDGNLAYVTNKFSDNVSVIDTAGN

## ，

 PVGA GP H GLRPSI DQTVKF
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## H

 NEINHYPCKI F TVVAF| QT | L G H G D WV N A V A F |
| :--- | :--- |
| $K$ | $F$ |


| T |
| :---: |
|  | ARMRGHDEVVTSVAVSPDGRY』ASGSNDC $R T L T$ GHNGPVNSVNFSPNGKTVVSGSW

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

## N

## $\overline{\mathrm{V}} \mathrm{N}^{\mathrm{T}}$

FVGH T N Y V N S V GF S P

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




 QPFYDDGVNISSVAFSPDGSQLVSAG | Y | T | V | $R$ |
| :--- | :--- | :--- | :--- |
| $D$ | $L$ | $W$ |  | FEGHKEQ V NSVCFS




 ATLGNHTDNVWSVAFSPDAHTLAVASDDRRTVRLWHVADP


## UniRef90 Q00808 UniRef90-UPIOOOS37535B4 UniRef90-H5UR54 UniRef90- $\mathrm{B} 2 \mathrm{A074}$ UniRef90-UPIOOO379B501 UniRef90-B8LXS9 UniRef90-UPIO002E1DB7B UniRef90-F2USK2

 UniRef90-F9T9F5 UniRef90- FOM8R7 UniRet90_U2YKS1 UniRef90-A0A011MZP2 UniRet90-F9TEC UniRef90 ${ }^{-}$BobzZW8 UniRef90_UPIO003608378 UniRef90-G6FXB9 UniRef90-19АзКЗ UniRef90-G4TYN9 UniRef90-UPIO0026CDDC4 UniRef90-UPI000361ECBD UniRef90-D7DN71 UniRef90 A7BQ86UniRef90 O8TPK7 UniRef90 Q8Z0R1 UniRef90-R8W4Z2 UniRef90-D6Y2A9 UniRef90-BoC3Y2 UniRef90-B21ZJ6 UniRef90-V2JPW9 UniRef90-B8MUZ3 UniRef90-KgVGI2 UniRef90-K9PNS4 UniRef90-UPIO001F2A43F UniRef90-UPIO003683204 UniRef90_UPIO003488726 UniRef90-UPIOOO345CF8C UniRef90-K9ZCB4 UniRef90-D5GNU7 UniRef90 UPIIOOO47B2877 UniRef90-UPIO002E5E41F UniRef90-KosQ80
UniRet90_UPIOOO34538C5
UniRef90 L8TWC8
UniRef90_14BFM5
UniRef90-D6U340
UniRef90_M4FNY9
UniRef90-S4XYT6
UniRef90-UPIO003478C29
UniRef90-A1SN87
UniRef90 14 K TX5
UniRef90-UPIO003782EC0
UniRef90-UPI00047ECAE6
UniRef90-B2J557
UniRef90-C2QEB4
UniRef90-M2Z5C4
UniRef90-EOUHX8
UniRef90-D4ZVZ4
UniRef90-O2GVO4
UniRef90-EOULM4
UniRef90 ${ }^{-}$BoJGM3
UniRef90-UPIO0035CF58A
UniRef90-BODYU2
UniRef90-N9Z747
UniRef90-L7E4Y5
UniRef90-UPI00040D9A78
UniRef90_Q2C367
UniRef90- H8E9F5
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UniRef90-B7KCU4
UniRef90-UPIOOO3016FAO
UniRef90-UPIO002FDD70F
UniRef90-W4GNJ5
UniRef90-UPIO004793BE4
UniRef90-K9TP09
UniRef90-UPIOOO440881B
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UniRef90-G4TQM7
UniRef90-UPIo0044078FE
UniRef90-B8MFB6
UniRef90-R4YWA8
UniRef90-C4KAM1
UniRef90-UPIIOOO363032C
UniRef90-F21XW8
UniRef90-A1WSQ6
UniRef90-UPIO0035F6AC4
UniRef90-K9EH66

CTQT五E
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C GHGGWVHSVIAFSPDGQR VASGSTD
 ALL Lit IVANEDTATVSTWEDESGRELAQASVSAEPEGVTDHPQRD WDVATGSELRQLSGHGDLVISVAFTPDGKDLASGSSD WDVKTGSELQTLQGHSDLVHSVAFSPDGQTLASGSRD ECLKVFQGHSDWDVNTGECDKTFQGHDNEVYSVTFRSQGD WDVTTGQQLTKCDGHTDVVTSVAFGPDGRRIVSGSHD
QFLL
Q PGGAANTVTATVPGAAPGMVAISPDGARAYVPGQLANS LTVTPVGPGTAAAPAGSGPRHLVLNSAEDAVYVMTEYSGE GKI LNSAFCDVPSGCGPRHMVISPDEQFAYVCCELDE WDVDTGQS $\quad$ RVMEGHTDSVQSVAFSADGRRALSGSSD
Q TKRTPVTSPFCPN NCLKTLTGHENWV TAPRRPRPLAATTAHTDYVWAVAFSPDGRRLATGAYDGT DVETGKQVGQPLVGHADPVTSIAFSPDGRRDASGSADRTV GTLGAVQRAYRARPGSGPRHLLLHPRDGKRAYLIGGEDN TПKKRI TVKKRIPGGKPDTGHSDKVNSTAFSPVGKHPFGLADSKTG KVVATVKTGS GPCGITVNQEGTNLYVANCENNT WDKDTGDCGQKLKGHSHWVWTVAFSPDGRULASGSADSEIG TVIATI WDAQGNPTGQPWTGHTNYVWSVAFSPDGQRIVSGSDD
 WNVETQKPIATLTGHSNQVLSVAFSPHGKTLASASFD WDVNTGTCLKTLTGHRGWVVSVAFHPDGKLLASSSVD WSPATGAAVRTLEGHGDWVSAVAFSPDGRLLASASGDK SCLRTDRGYTNWIGW II AFSPDGKFLTSANED IWEIKSGQCLNTFSHENWVSSVAYSPDGQYI ASSSSD QCLNLLHGHDTRVMESWGVAFSPDKQMVASASDD
 SLTFETPVQSVLMPAGSGPRHLVFDKIEETAYVVCELSE KGELTGSPFVGHQSGVTSVAFSPDGESIVSGSGD ASGTVTSTDP DEADPWGVAVSPDGSTAYVTNFDAGT SYVVTDT IHVGSPTSGFQPLGLALSPDGALLYTADDSHDN WEVSTGQCLTTFQGHTGRVWSVAFSPDGTRLASSSDD



GYKPSGVAIT PDGMYAYVT
GRLSSIKILYPTGUALNPSNSRLY凹ADYSRVSILD
WDVNTGKCIQTLKEHEDLVWTIAYSPDGRLLASASSDQ
WDASTGKEIKTLSGHTGWVSAVSFSPDGKHLATGSGD KTLKGHGSRVWSVAFSPDGKMLASGSDDQTVRDWDVNTGG SPSFNTVIGTIAVGNVPDDVALATPDGTSVYVTNADDDT WDVASHNPIATLTGHTGQVYGLAFSPDGRTLATAGDD WDINFQQTSLKFRGHQGEI DSVNFSPNGELLASSSND WDTATSAHRQTLEGHGHWVRAVAFSPDGNTLASASRD QCLKTLRGHSHCVYSITAISRDNQ\|LISGGGDQLINN MPALLAT KVIGQQKLPFEGA MMPQDVKISPDGKTFY DADMMAH DALTGQSVDHPLTGHDCA DMSVAFSPDGRYDASGSWDMTV DGSMER VRTNQADPGDGPRHGVFHPVHDWFYLFAEDECA WNVETGQEIRTLKGHDSYLSSVNSPDGKTLVSGSQD $N T \square T F S \square N Q T L N M P A G S G P R H L V F S L D E S I G Y V V C E S D G E$ HGDGARGSHDVALPRETGPRHSRWHPSEHLFVVTHKELDS KПTKRDTGLG ATFSSDQAMSPDGKRIWVSHKRDGK WNLDTGTLQNTLTGHTDLVRSVALSPDGKTLVSGSWD WNLQGKAI GKPFVGHTNYVLSVAFSPDGKFIASGSDD RVLGTVPVGKSPHSIVRVPNRPLLLNANYDDDTLS KQLNTLKGHQKADYSLSFNKDGKILASGSDDHRI DLWNV HDDKTIVTGSEDNTIKIWDCLQTLHEHNQRVWLVDLHPDN KVVDTIAVGEYPEGปALHPDGIHI YVANWFDNTVS ALADHPDAPVVALPBGSGPRHLTLHPTLPLAYVVHELSNN WDLATGSELATLIGHSNSVWAVALTPDGKQAVSASDDK DVESGRDVHEPLKGHTDTVRSVTFSPDGKHVASGSDDYT■ EILTL LI DVEAAVQПGQPDEGHESLISSVAFSPDGLHVASASSD WDVRTGQAISDFEGHKGPVHSVAFSPDGRC VASGSDD WDPATGTLRQTLEGHSDLVQTVAFSPNSKLVASGSYDK
WNPDDGTELGRLEGHTNTVLSVGWSPDGTRLVSGSDDG WNPDDGTELGRLEGHTNTVLSVGWSPDGTRLVSGSDDG
$A 1 L$
AL CLKTVQGHSSRLWSVAFSPDTHMLASGGDDQTVRLWDVNT KLVKNVQV GNRPRRFALTPDGKRLWGVNERDGR RHPDRLAS LVGHADTVLSVAFSPDGQTLATAGDDHTA WSTHSGDCDDTLEGHSDWVLSLAFKPDGQMLASGSDD UniRef90_HOTPW5

## UniRef90 Q00808 UniRef90-UPIOOOS7535B4 UniRef90-H5UR54 UniRef90 B2A074 UniRef90-UPIOOO379B501 UniRef90-B8LXS9 UniRef90-UPI0002E1DB7B UniRef90-F2USK2 UniRef90-F9T9F5 UniRef90 FOM8R7 UniRef90_U2YKS1 UniRef90-A0A011MZP2

 UniRet90-F9TEC1 UniRef90 - Bobzw8 UniRef90_UPIOOO3608378 UniRef90-G6FXB9UniRef90-19АЗК3
UniRef90-G4TYN9 UniRef90-UPIOOO26CDDC4 UniRef90-UPI000361ECBD UniRef90-D7DN71 UniRef90 A7BQ86
UniRef90 O8TPK7 UniRef90-Q8Z0R1 UniRet90-R8W4Z2 UniRef90-D6Y2A9 UniRef90-BoC3Y2 UniRef90-B21ZJ6
UniRef90-V2JPW9
UniRef90-B8MUZ3
UniRef90-KgVGI2 UniRef90-K9PNS4 UniRef90-UPI0001F2A43F UniRef90-UPI0003683204 UniRef90-UPIO003488726 UniRef90-UPIOOO345CF8C UniRef90-K9ZCB4 UniRef90-D5GNU7 UniRet90_UPIIOO04782877 UniRef90-UPIO002E5E41F UniRef90-KosQ80

220
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240 GHGG SVAFSP VRDESVRDDDPEAGLGHSVMGADPAEEHLRWGADRFHRT EVWVTCEEHGGKLILDDESALIDPMQEHAETVTSVAFSPD EVWVTCEEHGDVFILDLESARLDGHVPLGGRPRTVTFSLA KTVRLWDVATGSELRQLSGHGDLVLSVAFTPD LLASGSFD KTVRVWDSSTGEDLCVYRGHTSTVRSAVFSTLGTFIVS

VVVLTKTDTGWQVSQQSDLIPNGEKGEAASA KKLOD VSViD VEVFVLRPEAGTFELVFRGPATAGGSLADDSAAEICLGRR VLHYVRDAATGGLELRSRANAVDPVANHAVWGADIMEGAD

SLLVLTREDLGWRFHSQIQAFDCDKETEGSVSAIRLSPN SEVWFTHKDVGKVSDLDTGQLLRVMEGHTDYVWSVAFSAD NTVRリWDL
ARПWD 1 ADPS T TKCCANLLGHENWVRSVAFSPD
RPA ATASFPADEKWVFDLAFSPD RLWG VGSGEATVQPVEGHADAVMSVAFSPD VYGSVLDRSTGDFVHRETVSTLPPDWQGESIVAHVADNA LWLVSVNVKEDTVSIINTKTNAQYKVKVGYHPYCAAISDD RLW WITVSNTA NVKTRTPLGGPLIGHSSWVSSVAFSPD SIIDTGSNTA KI W LYHFNYADTRYQLLDVASGKCLQTLTDPQGMIWSVAFSLD TRVLVTNETDGTVSVINTTNTVDATVPVGTTPSDVAFSPN

KTLRLWDAQGNPIGQPWTGHTNYVWSVAFSPD VQVFDARPPFAPI RTADGGPLKSTGHSSEVNSVAYSPN RTVKLWDPATGTLRQTLE GHSGQVYAVAFSPD NTIKLWHLLESQKPTTTLTGHSNSVLSVAFSPV RTVRIWSTHTGKCLQTLPGHGNWVQSVSFSPD NTVRLWDPATGTLQQTLE RTVRLWNVATVRLCDPATGGAV

QVWSVAFNPD QTVRLWDVRTIKRWEVKSGQCRTTFSEHENHVSSVAYSPN QTVRLWDVKTGRCLRVIQGRTSGDWSVAFSPVRTVPLAEF LLASGSDDQTVRLWNVSTAQCLKTLSGYTSQVWSVAYSPD VSVVFSLKDRDRSTWKLVDESTDLLPNQEKGEAASAIKMLSPD VAVIAV GTVRLWNRKGEPIGSPFVGHQSEVNSVAFSPD LTVIR TADNAVDDFUNGPSEPTALSLSPD DTVYRVKYDSVRLWEVSTEQCLATLQGHTGRVWSVAFSAD RVWNADDTGEPLVLRGHTDRVYGA ■SVIN TAKNTVTATVFVGDAPSGTA【NAEDAVVKVDLAKGRAIIAKTTVGSGPIQTYVSPD
T $\square K \square W N T T G E C F R$ LUKGHTVGGDPGFNYPRDVAYSPH STVKLWDVSTGKETKTLRGHTHTVHAVSFSPD CLKTLQGYCNGIWSVTFSSNCLKTLRGHSNRVTSVSLSQD VSVID

TATSVVITVSVGDGPAGVGAGNTPQ STVRLWDVASRTPVATLTGHTGAVIGAAFSPD

TVK


RT w VYFYEFHGPDPMSVRRQKIDELIPRSFWDTYQGAEIKVSAD ILASSSTRTMKLWNVETGTEIRTLTGHDSYVNSVNFSPD | $\square L A S S S T D Q T I K L W N I K T G E C V Q T L N G H T S S V Y S V A F S P D$ |
| :---: |
| $T L V V I T K K N G C W E Q A S Q Q A L L V D E N K Q A A S A I Y Y S P D$ | NELYALAPDASGQWRVVAGVALSPVALAGDAAAELIAFSRD DTVLDLKRNEVVTVLNTGPDTNHPQFVDNRK

NT IKIWNPDTGTLQNTLTGHTYMDLTSGVLSVA DSPD
$N S W R L W N L Q G Q P \square G K P F \square G H T N S V W S V G F S P D$
 QTLVS لEDQT DKLWDMRSRRCLKTGKGYSNWULSLAFSPD
 LLVIDRETLKVDYKRRI

GAVPVRLVFSPD

## IVw

TLKLWDLATGSELATLIGHSNSVLAVADTPD TIKLWDVSTGKVIKTLTY RTVQLWNVETG
RTVII WDFERGET
T TRVWDPNDG
VTVLDAKTNVVKETVTF
KGGVNSVSFSPC

GOCLKTGNKTVK AYTADVGSNTVSVVDLATATLVAQUPTGERPYT IAFA



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 UniRef90_F2USK2 UniRef90-F9T9F5 UniRef90-X0Q599UniRef90 FOM8R7 UniRef90_U2YKS1 UniRef90-A0A011MZP2 UniRef90-F9TEC1 UniRef90 B0BZW8 UniRef90_UPIO003608378 UniRef90_G6FXB9
UniRef90-I9A3K3
UniRef90-G4TYN9
UniRef90_UPI00026CDDC4
UniRef90-UPI000361ECBD
UniRef90_D7DN71
UniRef90_A7BQ86
UniRef90_-Q8TPK7
UniRef90-Q8Z0R1
UniRef90-R8W4Z2
UniRef90-D6Y2A9
UniRef90-B0C3Y2
UniRef90-B2IZJ6
UniRef90_V2JPW9
UniRef90-B8MUZ3
UniRef90-K9VGI2
UniRef90-K9PNS4
UniRef90_UPIO001F2A43F
UniRef90_UPI0003683204
UniRef90-UPI0003488726
UniRef90-UPIO00345CF8C
UniRef90-K9ZCB4
UniRef90-D5GNU7
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UniRef90_UPIO002E5E41F
UniRef90-K0SQ80
UniRef90_UPIO0034538C5
UniRef90-L8TWC8
UniRef90-I4BFM5
UniRef90-D6U340
UniRef90-M4FNY9
UniRef90-S4XYT6
UniRef90_S4XYT6
UniRef90_UPIO003478C29
UniRef90_A1SN87
UniRef90-I4KTX5
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UniRef90-M2Z5C4
UniRef90-E0UHX8
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GHF VVAS $\quad R G \square D Q L A V F R \square T Y P S G L L A A P Q F V S T Q G S P R H$ GKYALIPNRESGDLSIDETEKGEKRPWEDKRIQVGVWPGG GK QAVSASMDNTLKLWDLATESELATLIGHSR GVYA











| VAFSPDGKKVLATGSDDQSVKLWDVN <br> VAFSPD DRTLATGSTDDTAVLWDMM <br> VADSDDGQF <br>  |
| :---: |
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VAFSPDGQT TASTSDDKTVKLWQRDG TLLATLSGHTAQ GGVSSDGKVLWLSGRYDSEV YADDTTTGKATLLARDPV


FVISQNGEWLLVANQHSNDI GSYHRNVETGDTKATGYSCK HVVVRDTLLAGQCSDEVVALTDDERTGVPGRARRRVD A WASGDGSRLYVGLEKSDAVDV IDTVTNKVVDT IDAS
VAFSPDGK S $\backslash$ VSGSRDNTLRLWDL QGQपTS $\square G H E N T$ LAVGPEGRQAYVTNLLDGTVYVLN:ATRKELKTLKGHQSV LSWSEDRK LLASGSYDNTLKLWDUATRKELKTLKGHQSV

FTLVG DDLVVVANQNSHS VSFQLSPADG LVPTGHALH TVFNREGTYAYVANNKTNDI SI INMS TLKVEETIDV VAITPDGKQTVSA SDDKTLKLWDLITGSELATLTGHS VVFSSDGTRIVSGSNDRTIRIW DAETGCVVSEIILEMH VVFSSDGTRVVSGSNDRTVRVWNDAETGCVVSEILEEMH <br> \section*{} <br> \section*{}
$\qquad$
 VAISPNCQ LASGSDDQTVRLWD LGLTRDNRLLYVVNGMSDDVSVVVETASNK AVFSPDGRTLATAG NDHTARLWELDPEHHLATLTGHT
VAFSPDGRGASSSNDQTVKGWSLESGNCUHTYKGHQSS

| UniRef90 Q00808 | $\text { GSTATC\|L\|S F }{ }_{D}^{330}$ |
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| UniRef90-UPI00037535B4 | GR LP WGI A V |
| UniRef90-H5UR54 | GETARWVS F |
| UniRef90-A8P965 | TETVSSVAFSP |
| UniRef90-B2A074 | GERPWGVALSP |
| UniRef90_UPI000379B501 | A S SPDG |
| UniRef90-B8LXS9 | GSVY S VA F S P |
| UniRef90_UPI0002E1DB7B | $\square Q S$ VAFS P |
| UniRef90-F2USK2 |  |
| UniRef90-F9T9F5 | VGAPVCVI |
| UniRef90-X0Q599 | APSPTALV |
| UniRef90-U2YKS1 | G |
| UniRef90-A0A011MZP2 |  |
| UniRef90-F9TEC1 | V G T P V A I |
| UniRef90-B0BZW8 | $\checkmark \mathrm{N}$ S V AFSA |
| UniRef90-UPIO003608378 | GYMPQALVYVSN |
| UniRef90-G6FXB9 | GYSNWV ${ }^{\text {AF S }}$ |
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| UniRef90-G4TYN9 | GDEVWSVAFSP |
| UniRef90_UPIO0026C | VA GA A S V |
| UniRef90_UPIO00361ECBD | GTAPESVA】R P N |
| UniRef90_D7DN71 |  |
| UniRef90_A7BQ86 |  |
| UniRef90-Q8TPK7 | G F S P V |
| UniRef90-Q8Z0R1 | TAA $\square$ R S VAF S P |
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| UniRef90-B0C3Y2 |  |
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| UniRef90_V2JPW9 | GQAPQAVVYV |
| UniRef90-B8MUZ3 |  |
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| UniRef90_UPI0001F2A43F |  |
| UniRef90_UP10003683204 | GY TVYGVA F S P |
| UniRef90_UPI0003488726 | V WSV |
| UniRef90-UPI000345CF8C |  |
| UniRef90-K9ZCB4 | V WSVAFSP |
| UniRef90-D5GNU7 | 1 S MPN |
| UniRef90_UPI00047B2877 | IQS $\quad$ TAF S P |
| UniRef90-UPI0002E5E41F | TTVPVVCV |
| UniRef90-K0SQ80 | VP SPNFV |
| UniRef90_UPI00034538C5 | GHCVNSVAFS A |
| UniRef90_L8TWC8 | TKATMRA |
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| UniRef90-D6U340 | V WAVAFSPN |
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| UniRef90-A1SN87 | GEAPNGI |
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| UniRef90-B2J557 | QR\WSVA FS P |
| UniRef90-C2QEB4 | R NVPNSLA |
| UniRef90-M2Z5C4 | VTS $\square$ Q DVVFS P |
| UniRef90-EOUHX8 | V Y S V $\mathrm{A} \square \mathrm{S}$ |
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| UniRef90-Q2GV04 | G D WVS A VA F S P |
| UniRef90-EOULM4 |  |
| UniRef90-B0JGM3 | V Y GVA |
| UniRef90-UPI00035CF58A | G G GPH GLAVY P Q |
| UniRef90-B0DYU2 | DFHVTSVAFSP |
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| UniRef90-UPI00040D9A78 |  |
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| UniRef90-H8E9F5 | APSPTCLL |
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| UniRef90-K9TY81 | $\square F S \quad$ VA F S S |
| UniRef90-UPI00037FD895 |  |
| UniRef90-B7KCU4 | $\square \mathrm{NS} \mathrm{V}$ |
| UniRef90-UPI0003016FA0 | V HS VAFSPQ |
| UniRef90-UPI0002FDD70F |  |
| UniRef90-W4GNJ5 | IP S P S CVAVV |
| UniRef90-UPI0004793BE4 | G $\square$ HPD GI A F |
| UniRef90-K9TP09 | NSVN A V A $\square$ T P |
| UniRef90-UPI000440881B | TP I I R S VAFs P |
| UniRef90-UPI0004284E98 | V T T L AF S S |
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| UniRef90-UPI00035F6AC4 | D NVVQAAFSPQR |
| UniRef90-K9EH66 | VRA ${ }^{\text {P A F S P }}$ |
| UniRef90 H0TPW5 | GQAPQAI A Y VPN |




TRTWNAK ${ }^{70}$
RLWNAKTGELLMMNSLE G
 $T V R L W N L A T G E C L H V Q L Q G$

 CLAVVSPDGSCIASSGSADE TIHLWDARTGRQVADPCS G


 AV AF H RDGRTL STGHGDGTVRLWELAASGGQLRRLGHN NLALSPDNRELWVACEQAGTIAVVDTATRTKALE

GVAVSPNGDRVYVTTPES | $A$ | $V$ | $A$ | $I$ | $P$ | $D$ | $G$ | $R$ | $A$ | $V$ | $S$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $V$ | $S$ | $F$ | $S$ | $P$ | $D$ | $G$ |  |  |  |



S
 C L AVSP D G S Y A S G S A D K $\quad$ T
 HLAANPVRNEI YVVNTQSGTVSVIDAENN $R$ VA AT DP


 GLGGFS P D H K T L I A I S S N G S N S VT F $\quad$ D D $\quad$ T A T N K V


 SLAFSPDGK LLASGS DDKTIRLWDISTEKEMSTFRG



UniRef90_UPI000255DE31
 GVAF S P D $\quad$ R A L I A T A S A D R T VV


 AVAYSPHGN IVAS GSDDQTIRLWDVNTGYCLRTLGG SLVWSPD GKRLAS GSE DHSVKI WDVNRGECLLKTL AV AFS PD GSRIA SGGADK





 GLAFSPDGRWL VSGAADGSVRLWRLTAEGAKAGP』FGGG S V A L N T E G T L L A S G G Q N G IVV K I WS I L T E N C Q C F R H F N Q K


 AVAFSPNGTRVVSGSGDD TVVRWDARSGDLIMQPLEG


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V UniRef90_B4VLP3 UniRef90_W6SPC1
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 HT GWAHAI A F HP Q GHLLVTGGSFDC T T L R L WNVS T GECL

 H TKAVKSVTFSPDGKSLVSASGNKDDRMWDVATGEMMVGP H GEPVTCLADVSPDGSCI AS GSADETVHLLWDARTGKQMTNP HE EMVYGGA AN GDSTRRVS SS GDKTVRVWNMDSSSDP Y K GQ GF GLAA SA D GRTL FVAD WS GNRDDRLSAA D GTVEAS



 HTGRVNTVAFTPDGRQLATGGADFTVRLWDVARPRRLRAT


 GGVMAVA, A P D GK R AVVSAS W

## H T D

 D C I N S S V V F S LHS DWVV R S I T Y S P P D GK T L A S A S H
H S D WV R S T Y S P N GK QL A S G S
HD DWV HGVAFSPDGKTLAS
HG S S V WSV A F S
HT GSVWSVAFSPD GRLL A S G S LA
HGVTSVGlS QD GRRIVSGSEDK
T G $\square E P$ P GLV VTS QD GRWLYVANYR S GT I RVVDM

HAGWVRSIVFSADGQTLFS
HAGWVNAVAFSPDGGKFVSGSSA

 VGGGPLDGAVA PD GATVYVA DWYAAVVVVIDARERRVAAS
 HTHMVRSVAFSPDGKQIVS GSDDKSVWVWDASTGDKL IG R S P H E G F F T A D G R E V WVV V V R G E D Y $V$ V
 T A R L W N $\rightarrow \frac{1}{D}$ HTGRVRAVVFSNNGKLIAS GSVDKTVRVWDVPQAL

HKEKV Y S VVAFSPD GK TLLASGSR HSNWVTSVAFS PDGTKVAS M G

$K M V R A V A F S P D G T R L A T A S S$ G S D D K T $\quad \begin{array}{llll}\mathrm{K} & \mathrm{L} \\ \mathrm{L}\end{array} \mathrm{W}$ | L |
| :--- |
| S |
| V |
| $H$ |
| $S$ |

 HD GAVLDVA F S P D G TLI A TA GAD R TVRLWDVAARRQRGP



 HENWVRAVDFSPDGTQLVSGS


GAlASVAFSPDGQTLASGSWMDKTIKLWNVNTAKNI

Y S N W L S SVA FS PN GQMLAASSSED Q
L S TAPR HAA
HS S DVRSAAFS

| Q Y G A | H | A | A |  |
| :--- | :--- | :--- | :--- | :--- |
| H H A P | I | R | S | V |

S A D S RLL A T GSEDK TI KI WSVVE
HKHSPVTCMAVT
$N N G G V Q C V A F S L D G S R$
$\square H$ D D V $V$ D A V $V$

$H E V \stackrel{R}{V} \vee W S$ WAWSVA


TGGGPLGAVAPS GAPVYVADWFSHSLLVLDPGTRKVVGS
 $D V H P S$ A


## UniRef90 M2PJK1

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UniRef90-UPIO0037C6450 UniRef90-L8MZP2 UniRef90-BoDSA7 UniRef90-UPIO0035D409D UniRef90-W0V8N6 UniRef90_UPI00036735E0 UniRef90-K9QVB9 UniRef90-F8PD52 UniRef90-B4WTY0 UniRef90-UPI000307D136 UniRef90-A7EXQ2 UniRef90-UPIO0035C36FA UniRet90-K9X8J6 UniRef90-K9R8F6 UniRef90-B4VLP3 UniRef90-Q8TPR8
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 LE GHSDAVWSVALSPNGTQIVSGSADNTLRLWNATTGD
 RTWQGHSERIHSVAFSPQGHAIASSSD DGGVDGLDGARSIVISPDGKNLYVAAYDDSK■SVFTRNSS LRGHTGSVRGI AFSPDGRLLASSGS TATTEVGDEPHGVLVDREGKHLYVLNTSIDNVSVIDLASL DPVGAAPFAVAFAPDGATAYVTSGGSGSGTVSVID
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 PLKGHVGY VMSVATSHDGQRIVSGSWDNTVRVWNANTGK
 PLEG HSDTVWSVATSPDGTQLVSGSADA TLQLW QVFRGHTSFVFSVALLERGDRPI LASSDDQTDNLLDIQTG $P F R G H N G W V N S V A F S P D G L R V V E G A Y D R T V R L W N A T G G Y$
$A G T G E Q P G V D R ~$ KGHTQP VRATFFSPDGQTASAS AVGASPSGAVTPDGLA FPTYQDKSHM ISFHPDGSKVYUPNDGSHNVTVVDTASE KVLKGHTHLVRSVAFSPDGK KIVGGSDDKSVWVWDASTG KVRKGHTGGPGMVMF HPNGKLAFVVSSENPVVDV1PDMKTS GQPLGHPGGVCSVAFSPDGRTLATGA TVDTARLWNDT CRKILQGHQVNSVCFSADNKFIVSGGGDCTVKVWNVETNK
GQ
GHSAVSSVAFSPDGKQVVSGSGDNTMRVWDVMTVG F ATWRGHTSGLWCIAFS ST QTLEGHSNWVTSVAFSPDGTKVASGSDDKTDRLWDTV HTLTAHTDWVWGVAFSPDGRRLAAAG RTLQEHEEGVWSAAVSSDGHLLASASG K\|LQGHRAAVWS\|AFSPDGQTLASGSYDQ HTFRGYEADVNAVAFSPDGKRIVSGSYDQ TIKK ITPLGNSPRGVAVSPDGKRVVVGHDEVGNPSNNTTLKL ALTGHEG AVNAVAFSPDGARVVSAGVD GTVRMW

 K T LGHEHETFAVAFSPDSQUDASASGDRTDKDWDVEDG
RELRGHSYVEDVTYSPNGKKIASASS RELRGHQSYVEDVTYSPNGKKIASASSGTRDWND LLEAHTDWVSSIIFSPDCTQLFSGSHDGTVRDWNDQDVDTP QGKGHES SVYAVSFSPDGATVWALDWSADGKILASGSHD FSAGPAGNAPMGIAGGKVGT VTKDYVANNTANSLTVI RTFTGHSDLIISVAFSPDGTSLASGSKDKTIKLWDLATGK VTTLQAPDGHFGVSFSPDGRALASVSQDCTVKIWNASNGT RTLPGHTNLISSVTFAPQNLNDCTASKSIISDREIGKQQE TTLANSP VSGALKETGSGPHDEQRSAHPQMVVFDCAGRVVSADLGSD GLPVGPEQDVTSVTFSPDGR VLATGSADRKVRLWDVR CDAWKDEVPVMNVVFSPKGRWLATSCTGGCKAFGAPVRLW EGHLERIGG VAFSH MKTLTLQKSPRFMARTLDGHWTYVTNQGSNSVSVIDTQTD
 QTBEGHSDSVFSVAFSPDGQRVASGSEDKTVKDWDPASG DPHRGHRKGVSSVSFSPDGTRIDSGSDDHTLRLWHAETGD DTFAGHAGAAYSAAFSPDGHTLATGSDDRTVRLWD
 HTYQGHTYSVNAVAFSPKGNIVASCGQDLS FTLNGHRNWVKAI A DTPDGQSVDSSSGDEK KKVWDW KTLQGHTNWVYSVVFSSDGQTLASSSDRAVRLWDTKTGEC FETGESPSGVVAVSADGKVIVTADRDSNQVSFIDTETG
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ADRTVRLL
$H T I R R W$

## UniRef90 M2PJK1

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UniRef90_J4GV20 UniRef90-M5QTJ9 UniRef90-G6FZT5 UniRef90-M2QHJ4 UniRef90-UPI00047A7DE2 UniRef90-G4U2W7 UniRef90-UPIO003786D92 UniRef90-UPIO0037BE153 UniRef90_UPIOOO370F9B4 UniRef90_UPIO0037C6450 UniRef90_L8MZP2 UniRef90-BoDSA7 UniRef90-UPIO0035D409D UniRef90-W0V8N6 UniRef90-UPI00036735E0 UniRef90-K9QVB9 UniRef90-F8PD52
UniRef90 ${ }^{-14 W T Y 0}$ UniRef90_UPI000307D136 UniRef90-A7EXQ2 UniRef90-UPI00035C36FA UniRet90-K9X8J6 UniRef90-K9R8F6 UniRef90-B4VLP3 UniRef90-Q8TPR8 UniRef90-UPI000255DE31 UniRef90-W6SPC1 UniRef90-K9WA86 UniRef90 R7QGMO UniRef90_UPIO0036A760F UniRef90-UPIO0034C60B3 UniRef90-X8J7K6
UniRef90-D6TQG2 UniRef90_UPIO00316416B UniRef90-G4TJB8 UniRet90-A5G864 UniRef90_G6FWG7 UniRef90-K9TGT5 UniRef90-QOBVQ2
UniRef90 UPIOOO34BC177 UniRef90-UPIO0047CA1EF UniRef90_UPI000380F34F UniRef90-UPI000477CC74 UniRef90_U3OHE1 UniRef90-B7KMFO UniRef90_UPIO003738E37 UniRef90_W4JSH6 UniRef90-M2PJF7 UniRef90_F8MW33 UniRef90-D8HPG7 UniRef90-M2QWJ2 UniRef90-17DX78 UniRef90-UPIO00427EE1A UniRef90-K9T8X7 UniRef90-B2IVX2 UniRef90-K9WW30 UniRee90-UPIo0031F473F UniRef90-Q1YFV4 UniRef90-D7BXH8 UniRef90-UPI00035C73FF UniRef90-M2QW77 UniRef90-D7CFP3 UniRef90-K9ZQ05 UniRef90-G2GNB3 UniRef90- F5YNI8 UniRet90-UPI0004407AB6 UniRef90-M7 M949

DVTTGEEVMKALSGHTDIVQSVAFSPDGTRVVSGSNDTT\ WDLDTGETIKVLQGHAHWVRSIAFSPDGQAIVASSSWD VR L WNVT DPA HPVA YKP P V P L RTRFA GALGFSSPD GRDVMAT
 PVMEPLEGHSDTVWSVAISPNGTQIVSGSADATLQLWNAT PVMEPLEGHSDTVWSVALSPNGTQIVSGSADATLQLWNAT TRLATIPVGTA RLMRPLKRHSTQV
 AMGDPIEGHTNLV

SSVAFSPDGRRIVSASAD WDTSTGECDRTMQGHTDWV TFLGVYEEGDQGVEELTEPHALAFSPDGRHLYVADWSNEI WDVAARRPWAALTGHTNAVWGTVFSPDGRTVASSSND TGSGSAREAAVLTGHTGSVGTLAFGPGGRTLVSGSEDQSA QEVKRLSASR SPWDLALSPDGQTIVVTNVLSRY VASGTVDSADPVGPLPNAVAFAPDGSKAYVTNGQDSN QTGECYQTLFGHTNWDRSIAFSPDGKTLASGSVD RTRNTTKVGE HPFGLAVDSKGERIYVANVESDD WDLETGTELATLTGHSGWVKAVALAPDGKRAVSASRDE KCLKTLQGYSSGI WDAATGAHQQTLKGHSDWVSAVAFSPDGKTLASASHD WDVNSGQLLKTLTGHSSWVRSVTYSPDGKQLASASDDK WDAASGALQQTLRRHDDVVCAVAFSPDGRTLASASND QLGSPLVGHTGIVDSVA SYDGRRIVSGSDDNTI $K V 1 K R I S L$ APSPDQEDRKKSQGIPNTLEQFVIAPD G WDINTGEYRQTQESHKNWVWSVTFSPDGSATASGSED NATTGDRMMEPDKGHKYNVFSVAFSPDGARIVSGSADATV KCLKTLRGHTDWVFCVACSSDGRTIDASGIDR TLGEPFREHEESVFCVMAVAFSPEGLRIVSGSSD DAKEAHPRDRAAFPGCPGAADAVVLPDSSKAFVACSSGHQ WKTSDGSLAHTLIGHQDEVRGVAFSPDGE\|IDASASAD ASRERRGVKVGTRPFGVTHDADGKRAYTANVGTND EVL NHIPVGRGPEGVAVHPYGHHLYVANQEDGT LWNLKEKEPQTLTGHSKIVMKVAFSP
DKLKVLKGHTHLV
KVIKHISVTSPFSPF QIIKRIGVVSPFSPF DPAHPQALGQPLTGHपDVVNSVAFTP CQTDQGHTSWVLSVAYIPHSNCSDVSGGDDGTLASLWNSVN ETAKSTAQKHYKWV KKNVSVAFSPDGKHRASASGD NKFLTLKSHSEELG GIHSIAFSPDGKTLASGSTD TGESLQT LEGHSNPVTSVAFSPDGTKVASGSDD
WDVSTGETLHTFTAHAGPVRGVVFSPDGTRLAAAG WDLHTGKCLKTLQGHTNWVISVAFSPDGQTLVTGSWD WDUSSGQCKKTLLGHRAWVWSVAFSPDGKLLASTSPD WDTTSGNLLDTFRGHEDAVNAVAFNPDGKRIVSGSDD DT DTNEVEATVLVGEVPFGVAVTDDGKKVYVTNDRDKT DTGSGQAVGEPLSGHGEAVLDVAFSPDGALIASGGEDKMV WDVPTGRELRQLTGHTNSVNSVSFSPDGQTLASGSSD WDLNTGQCLKMWQAHLGQVWSVAFSPQGRTLASSGAD WDVETGAQVGEALVGHTGWVWSVAMSGDGRRVVSGSRDKS KCLNTLNGHQDWVRC WDANTGQELKQLSSHTNRVMGINYSPDGKKISSASWD SSLDPTFPP QNFYSARYSPDGLLVVSGSYDGNV WHKETGECLRELHGHERRVRSVTFSPDGLVLASCSDDS QTVRLWEMQSSQLAPLPQDCRQLKTLQGYSNSVLAVVWSP NTKTGQPDGEPLEGHDDTVWAVEFSPNGSQVVSGSSDGTD ATLTLKEHTDKVNSTAFVPNTAKNKSDDTVRLVSGSSDNT LLKTLVDPNLTSDPSKHSDCPVESSHSDRUYSVSFSPDGQ SQLLASSSDDTTMKLWDANTGECWGHDSWVHSVSFSPNGQ QFVISPDGKKAFVPHLLTNDDTPGHFQETVEPAVSVIDGE
 DS WSVETGECLHTLKGHQDWVWQVAFSPDGQLLASGSGDKTI TVAKT IAAVGVTPLR DVATGDIVGKPFEGHRYSVSSVAFSPDGLQIVSGSYD NVTTGRQVMEPLAGHNNTVWSVAFSPDGARIVSGSSD SCLQTLEGHSDSIGHNFSVAFSPDGQRVASGSDD SSPRAPRPLDKKLTGHTDTDFSVAYSPDGKHVATGSADRMV PLDAF VAGTLGGHTNAVYHVALSPDGKAVATAGYDG GVAGTLLGGHTNAVYHVALSPDGKAVATAGYDG WD AANGECTKTLLVDYSSYVWAVAFSPDGTTLATGSEDG APEK
 AAI ARVAVGE WNVTTGKLRTTLTGHYDGAIGSVAFSPDGRTLASGSNDEHV DPRHAAQLGAPLTGHDGPVNALAYSPDGRTLASGSDD

AVMEPFRGHTNSVLSVSFSPDG EVIDASGSQD KVIGQQRLP WDLETGTEILTLTGHQNWVNAVALTPDGK KAVSGSDDNT DPREPSQVGEPLSGGSGEMYALGFSPDGRTLA WDAESGQELRTFTGHSFWVNAVSFSPDSRYLASCSRD DVATGRPLGEPFRGHTDYVSSVAVSPDGKLVVSSSHD

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| :---: | :---: |
| $\begin{aligned} & \text { UniRef90_M2PJK1 } \\ & \text { UniRef90_KgXDS5 } \end{aligned}$ |  |
| UniRef90-G2PAV4 |  |
| UniRef90-A8YMC6 | T $\square$ K $\square$ WEVATGRELRTLTGHSLGVYSVTYSPD |
| UniRef90-F8NFL7 | RVW |
| UniRef90-M2OHJ7 | TGDQLMEPLKGHGEEVFS |
| UniRef90-DOLUT2 | RIWNA DGTGEARVLRGHAAALYGVD |
| UniRet90 A9VXV4 | dmalkallatv |
| UniRef90M20WD6 | AGTGQ GAAGAPLTGHTLWVTSVAF |
| UniRef90-W4JUK6 | KTlRVWDVATHATIGDFLEGHTDWVIVAFSPD |
| UniRef90-K9U115 | RTURCWDVNTGRIVQTLQGHTDCIIRTVAFCPD |
| UniRef90-UPIO0037D9BC4 |  |
| UniRef90-L118A0 |  |
| iRef9 |  |
| UniRef90 UPIOOO38 | V IDVASGTWTSTIPVGSSPTGV |
| UniRefo- UPIOOO475CB33 | LGRDHLK R RIATVKVK MLL |
|  | WDLETGREDATLTGHSREVWAVA |
| UniRef90-UP1000308D0EC | K LWDANTG QCLKTLRGHSNRVTSVALNANS |
|  | VRL |
| UniRef90-M4GB40 | WDAATGALRQILR |
| UniRet90-A5URP9 | tVrLWDAASGQLVRTLEGHTGR |
| UniRef90-J4Gy | Q Q |
| UniRef90-M5QTJ9 | LLTNIDTPIHFEET |
| UniRef90-G6FZ15 | R |
| UniRef90-UPIo0047A7DE2 | T ${ }^{\text {OKFWDUNTGECLKTLQGHTMSVYS }}$ |
| UniRet90-G4U2W7 | KTПRFWDTGTG RSLGETCQGHQDWVTAVGFSPD |
| UniRee90_UPIO003786D | AAAPGTWAAKQNPALMTDHMLT |
| UniReego-UP100037BE153 | VSVID K |
| UniRef90-UP100037C6450 | SVPVRLV |
| UniRet90-L8MZP2 | NNFGTV |
|  |  |
| UniRef90 UPIO0035D4 | DVATLTKGVID GFITNHLAFAK |
|  | DTATLEVSGVIDTGLITNHLAFATVAGO |
| Unil |  |
| UniRef90 K9QVB9 | LQDYEEQULLENSTSUWSUACSNDIFTGHNQA |
| UniRef90- B 4 W 7 | TVRLWNTHSGQLVHALQGHTNSVWSVDFSPD |
| UniRef90-UP1000307D136 | KTIK WQLLSTGQELRTLTGHSDDVCSV |
| UniRe990_A7EXQ2 | KT1RLWDAVTG |
| UniRet90_UPI00035 | HavVI WDVSTGETL |
|  | HT KLLWSVSDGACLKTLPGHNNMV |
| UniRef90 K9R8F6 |  |
| UniRef90-887 |  |
| UniRef90-UPIO00255DE31 | RLW DARSRRQQGPELAGHEAAV |
|  | NTVRLWDVATGRELRQLTGHTDYVNSVSFSPD |
|  | NTMKLWDVSTGQ |
|  | VRVWDVETGAQVGEAL |
| UniRef90-UP100036A760F | WNVSKGKCSTT LTEHQGWVRSV |
| UniRef90- X8J7K6 | CVW NVLTGEMVLGPLSGHSRPVVAVDYSPN |
| UniRef90-D6TQG2 | RWELATGKCVR\\|FKGH\|NWI WSVAFSPD |
| UniRef90-UP1000316416B | AGQRLASSSADHS\RLWEPDTLKRLQGHSCWVWGLAWSPD |
| UniRef90-G4TJ | RLW |
|  | KGWDLKTGKEDRTLK |
| UniRef90_K9TGT5 | DKTVKIWRID GTLLKVLEGHSERVNSVAFSPD |
| UniRet90-Q0BVQ22 | RTLLARD ${ }^{\text {a }}$ ( GHRPYVVTVH |
| UniRef90 UP $1000348 \mathrm{BC177}$ | - |
| P1 |  |
| UniRet90_UPIO |  |
| UniRef90-UP1000477CC74 | DVRT PSAPKPLAVPLAQHATS |
| UniRet90-U3Q- | AVAYGYAVEVWDLT QENPPQVVVGRYGGGGWI GTV |
| UniRef90 B7KMFO | K ${ }^{\text {a }}$ |
| UniRet90 UPI00037 | QA STVTV |
| UniRef90 ${ }^{-}$M2PJF7 | IWDAQTG ${ }_{\text {l }}$ |
| UniRef90-F8MW33 | S D S |
| UniRef90-D8HPM |  |
| UniRee90 M20WJ2 | RLW |
| UniRef90-17DX78 | R |
| UniRet90_UP100042 | WDVVSGECLQSLHGHSDRV |
| UniRef90-B2IVX2 | YTi RLWDVATGNCFCVWQGHDRWLRSI |
| UniRef90-k9WW | KTIKVWNLQTGTEEFTLTGHHNSU |
| UniRef90 UPIO0031F473F | ECFKTLQGHTNWVRSVTSKKCLYILQGHTNWAYSVAFSPD |
| UniRet90-D7BXH8 | - |
| UniRef90-UP100035C73FF | AVPRRATRLGSPLSHTEAVVSLTSED |
| UniRee990-M2QW77 |  |
| UniRef90-D7CFP3 | MEADGVWVLNGAFTRPRLLPTGQGA |
| Uni | LKMWDLETGLESGDSKVRLWSVPTSDMDGRSGA VATPR |
| UniRef90-F5YN18 | A |
| Re990_UPIO | SQTG |
| Ref90_M7U949 |  |

## UniRef90 M2PJK1 UniRef90-K9XDS5 UniRef90-G2PAV4 UniRef90-F8NFL7 UniRef90-M2QHJ7 UniRef90-DOLUT2 UniRef90-A9VXV4 UniRef90_M2QWD6 UniRef90-U5WXZ3 UniRef90-W4UUK6 UniRef90 K9U115 UniRef90-B5JFE8

 UniRef90-UPIO0037D9BC4 UniRef90 LiL8A0 UniRef90-B1ZY85 UniRef90_UPI000381576F UniRef90-K9UOK8 UniRef90-UPI000475CB33 UniRef90-B5W1Y0 UniRef90-UP1000308D0EC UniRef90_Q2HFK4 UniRef90-Q3MCV7 UniRef90 ${ }^{-}$M4GB40UniRef90-A5URP9 UniRef90-A5URP9 UniRef90-J4GV20 | UniRef90-M5QTJ9 |
| :--- |
| UniRef90 | UniRef90-G6FZT5

UniRef90 UniRef90-UPIO0047A7DE2 UniRef90-G4U2W7 UniRef90_UPI0003786D92 UniRef90-UPI00037BE153 UniRef90 UPIO00370F9B4 UniRef90-UP100037C6450 UniRef90-L8MZP2 UniRef90-BoDSA7 UniRef90-UPIO0035D409D UniRef90-W0V8N6 UniRef90-UPI00036735E0 UniRef90-K9QVB9 UniRef90-F8PD52 UniRef90-B4WTY0 UniRef90-UPI000307D136 UniRef90-A7EXQ2
UniRef90-UPI00035C36FA UniRef90_K9X8J6 UniRef90-K9R8F6 UniRef90-B4VLP3 UniRef90-UPIO00255DE31 UniRef90-W6SPC1
UniRef90-K9WA86
UniRef90 R7QGM0 UniRef90-UPIOOO36A760F UniRef9O-UP100034C60B3 UniRef90-X8J7K6
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UniRef90- UPI000477CC74 UniRef90-U3QHE1 UniRef90-B7KMFO UniRef90_UPIO003738E37 UniRef90-W4JSH6 UniRef90-M2PJF7 UniRef90 ${ }^{-}$F8MW33
UniRef9 ${ }^{-184 P G 7}$ UniRef90-D8HPG7
UniRef90 M2QWJ UniRef90_17DX78 UniRef90-UP1000427EE1A UniRef90-K9T8X7 UniRef90-B2IVX2 UniRef90-K9WW30 UniRef90-UPIO0031F473F UniRef90-Q1YFV4 UniRef90-D7BXH8 UniRef90-UPIO0035C73FF UniRef90-M2QW77 UniRef90-D7CFP3 UniRef90-K9ZQ05
UniRef90-G2GNB3 UniRef90-F5YN18 UniRef90-UP10004407AB6 UniRef90_M74949


## GRLL ATASYDRTVRLWNLTDRHRPREDPPLTGHTGPVNS

 GEYIINHGWT IT NGLGLLWADGTVDQVLLDQNDTCFPDPTD GSKAYVANNEGDSVSVIDVJSGTATST GMGUPVGFAPDS GSEMLASSSDRTVKLWQTSTGECLRTDCGHTENGWDRTV GKRAVSASR DYTLKLWDDLETGTELATLTGHS GGKTL SEDQSVKLWDLSSGECLKTLRGH GK ASASDDRTVRLWDAATGAHQQTLKGHDY
 GRLLASGGR DWTVRLWDVQTGQLVRTLEGHT GHNLVSS
 GE VIASGSFDTTVRRLW NATNGLPVMKPQEGHSDVVRS
 GQTDASGGS DKTVKDWRRNRQGRFETYKTMTGHSQAVRA EGRGFVTDQYDGKVSVFDLDATMGRDPVKRLTVGDYPEG GKTIVASDGYKHTVKLWNL AGKKLRTLTGHSNAVG

 GKLLASGSHDETVRDWDITS GQMVAGPDQAHTARDNC

 GS KIVSCAEDKGlQL W DATTGQPLGDFLIGHVGSVSA GFRVLAVNNMGNSVSVINTSSN GQTVVSGGSADNIIKIWRV GRLIASGGS GK MUNEMSDSVTVFD TVSLKPITSFGVGSYPEG GKMLASGSDDNTIKLWDVSTGICLQTLLGH GDWVLS GSKAYVVMSGSEDLVVFDLATRGGNATQLLRRDKGDNPRG GEFLYTTSRWGGAVSMWRIAGGTGAVRRLQVVDEGGSPHE NRWLADGSGSGAAVMLWDLTMGTRKEPVALKGHSAAVNS
 GS WVVSGSADKTIRLW DAATGRPWGQPFEGHSDYVWS GQRVASGSEDKTVK WDPASGSCLQTLKGHSMAVDVNS GTR ASGSGDSTIKLW DARTGAP IDPLVGHTDSVLS GRTMASA SADHTVRLWDTHDLSHDTLGQALPGFTDAVNT GQTL/LSASENQTMKLWDDHSGKCLRTLEGYSGMNWVLS GKLLASGSYDNTIKLWDVKSQKCLQTLRGHRQT RVTA GK SVISGSGDNTVKAWNLQTGTEEFTLTGHTHNSVNA RGKVFVTDQYGSTVTVFDAVTGTRLDE GVGETGEYPEG ARTLASGGAEGKI WLWDVATGEPRTTLTGHTDAVG GTRTLASGGNDNTVRFWRVAHPSKAAPIGQSTSPNAKTGN SRSMYI TNRGEGTISVLSFA DGKLVSRGRQGSTIW GK KAVSGRGDNTLKMLSFATSTGKLVIERWRLIPGGGSPDM GRVLATAAR DGSVRLWDVAPARPRLLNKPFMPGDGGQRS


UniRef90 M2PJK1 UniRef90-K9XDS5 UniRef90-G2PAV4 UniRef90_A8YMC6 UniRef90-M2QHJ7 UniRef90-D0LUT2 UniRef90-A9VXV4 UniRef90-M2QWD6 UniRef90-U5WXZ3
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UniRef90-Q3MCV7
UniRef90-M4GB40
UniRef90 A5URP9
UniRef90-A5URP9
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UniRef90-M2QHJ4
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UniRef90-G4U2W7
UniRef90_UPIO003786D92
UniRef90_UPI00037BE153
UniRef90-UPI000370F9B4
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UniRef90_BODSA7
UniRef90_UPIO0035D409D
UniRef90_W0V8N6
UniRef90-UPI00036735E0
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UniRef90-B2IVX2
UniRef90_K9WW30
UniRef90_UPIO0031F473F
UniRef90-Q1YFV4
UniRef90-D7BXH8
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UniRef90-D7CFP3
UniRef90_K9ZQ05
UniRef90-G2GNB3
UniRef90-F5YNI8
UniRef90_F5YNI8
UniRef90_M7U949

$V A F S P D G R T L A S A S A D G T \square R L W T L G A A Q R A R P L R T V P G R$ I A I T P D G R L AVVVT S S S S D RVVAVVDL QKLTALLK





$V A M S H D G R R I V S G S D D N M V R L W D$
VF HP NGKKA YA IMMSGS E DVVV F D L A R G GNAT QVLRR RQ
 $V A F S S P D G T R B V S$ G S Y D N T I R V W W V T P G D

 VAFSPDGKTLASASWD GTVKLWRQDGN

 VAFSPDGN QIVSGSNDNSVRVWDF


 $V T$ F S P D GK $\quad \square 1$ A S S S G D Q A $\|$ K WDV

VA F S P D GRTLAA G GNGNNTVMLLPCD
LAF S P D GTK VASSGSFD D TVVRLWDAVT GES LQTLE GHL

 I Q T S A DGKTLYVVNWMDDTLS I LY L




$V A F S P D G Q R$ L A S G S Y D N K V K I WD P A S G S C L Q T L K G H S R S AA QYAPD GHTLAGAS GDGTVRFWEADPD VA F S P D GT R V V S S S T D K TVVRDW D DA A T GRPDVKP FEGH

 | $V$ | $A$ | $F$ | $P$ | $D$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $A$ | $F$ | $S$ | $P$ | $D$ |
| $G$ | $Q$ |  |  |  |  |
|  | $A$ | $F$ | $S$ | $P$ | $N$ |
| $V$ | $G$ |  |  |  |  |



$G G V S A D G K V L W D S G R Y N S E V \quad Y A \square A T R D G R \square L \quad L A R \square P V$ VAIT S DGKK AVSGAYDKT K $\quad$ GW

I AYSPDGRYIVSGSSVDATIKI W DAGTG


UniRef90_M2PJK1 UniRef90_K9XDS5 UniRef90_G2PAV4 UniRef90_A8YMC6 UniRef90 F8NFL7 UniRef90_M2QHJ7 UniRef90_D0LUT2 UniRef90_A9VXV4 UniRef90 M2QWD6
UniRef90_U5WXZ3
UniRef90 W4JUK6
UniRef90 K9U115
UniRef90_B5JFE
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UniRef90_L1L8A0
UniRef90-B1ZY85
UniRef90_UPI000381576F
UniRef90-K9U0K8
UniRef90 UPI000475CB33
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UniRef90_UPI000308D0EC
UniRef90_Q2HFK4
UniRef90-Q3MCV7
UniRef90_M4GB40
UniRef90_A5URP9
UniRef90 J4GV20
UniRef90-M5QTJ9
UniRef90 G6FZT5
UniRef90-M2QHJ4
UniRef90 UPI00047A7DE2
UniRef90_G4U2W7
UniRef90_UPI0003786D92
UniRef90 UPI00037BE153
UniRef90-UPI000370F9B4
UniRef90_UPI00037C6450
UniRef90 L8MZP2
UniRef90 B0DSA7
UniRef90_UPI00035D409D
UniRef90-W0V8N6
UniRef90 UPI00036735E0
UniRef90_K9QVB9
UniRef90_F8PD52
UniRef90 UPI000307D136 UniRef90_A7EXQ2
UniRef90_UPI00035C36FA
UniRef90_K9X8J6
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$\square \mathrm{T}_{\mathrm{T}} \mathrm{D}$ A VS AFSP
TDA $\|$ VSLS S
S G WVS F T S
S DAVCSVVFS P QGPV
AEGPRS $\square$ A $\square$ AA
TESVTSVAFSP
T N WV H SVTTFS P
GNT
ETGDTW
$\square \mathrm{GH} \square \mathrm{NT}$ T A F S P
GTHPTGVAVS P
GGG

G ㄱ S

GDNPRGVVIS P
$\square$ WSVNFSP
LRS LAA FSPNE
TD S V R A I A F S P
GSAPDALALSEDE
GDGPR AFGAF
$G V H P D G \square A$
V $\quad$ M S V A F S P
G Q A P Q A LVYV H
$G Q A P Q A L V Y L S H$
V WFVAFSPD D


S D S V E S VR F S P

SGEPV
LAAPMSMA
V F S VA F S P D R
V C S $\quad \mathrm{V} V \mathrm{~F}$ S P
GTG P Y WVVK F D P Q
M $\square$ S A N F V A F S S
VR S VA F S P
GDLVWSVGFS P
GA GI QE LA DS P V S S $V$ T F A P Q N

| L |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| V | K | A | WS | V | A | Y |
| A | H | P |  |  |  |  |
| A | D | T | P |  |  |  | GHANWVAFSPND G D G P

V S S
$G G G P H G \square A V F P Q$
$\square R G P D A L A F S P$






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210
220
$\square 230$
230
240

 $K T \square R \square W R S D G S G E P V V L R G G H D A W V N K A R F S P D$ $H$ LLWEIAYSWTQFQATKPTRULQGGBLEDIEGVAFSPN
 NTAKLWS IGETKEALHTF IGH

N S LRLWD TE S G QLI H T LQQ G H A NHVTS IA F S P D
 K T A RVWN A E S T GEPLS LR GHDDSVSSAAFSP D

 $R V L D A$




$T L I V L H K T N Q G W Q V Q Q Q V D L L P G A E K G E A A S A D K D S D D$ HT T K L WNLETGAEIHT LQ GHDHFFRSVSFSRD LF LYEA GTPQFTLRSVQK LDPEGRVWSPAAASAAVRLSPD RLWNVRD RAHAAPIGTPLTGHTGPDWSVAFSPD $R L W N V A D P R H G$

KTIRLWDMQTRQCLKTWQE

## VR $\square W D$

NTI RLWDL R GNAI AQPFTGHEDFVRAVTFSPD
$T \square K L W K P D G T L L T T L N G Y S G R F W G$
T GEQVSMPFKGHSAEVYSV
HTAKVWDANTGSMLLD LKGHHASVTSPFF
SGQS GDPFRGHFGWVNTVAFSPDGSRVVSWVNTVTPSPD


Y M WQDGNQTHELT GHTAPVCS $\square A \quad L S A D S Q R F V S G D$
NT I K WN L E T G E C L H T L S Q H Q S WV R S I A F N P S
$R T V R$ VWKVDDGTL
VHGFRI GVVDGALTPVPNSPVDGGDFPEGA DSILLWDWKTGGQKA KLDGHTNSVSS VKLWK Q N Q T D GTY T LD K T L N A HEA GV W G RKLNKQNQTA A AFSPD RLWYSANDVGSDPRRATSGAPLTGHTGP\｜WSVAFNPD $K R A Y S A N V E S D D V S V I D L A S R R V I A T V K V G K R P Y C V A L A Q Q$ $L L S R S G D C T \square R V W D S L T G R P L G D P L R G H S C A V R A V I F S P D$ DSHTLATAGRDKVVGLWDPAASNNRTTHSDAVNAMAFSPD
$R \square W T \square A G$ RTVKIWD F N T G NC L K A F Q A H $\square$ N P V S DVT F S N D $R \bigvee W R T A G R G K P L V L A G R P S P A G D P$

TVKLWNGEGKLLRTMS
Q L WN A R LW

KT\RLWNTATGEL
K T I RLWDAETG
$T V Q L W D A A T G E$
$Y S L G D$
$P Q G A P$
$K E L K$
VRVWDVETGAQVVEAL
1 LCATGNRI I RLLWNALTSHCTSSPL

 | $G$ | $C$ | $L$ | $R$ | $N$ | $F$ | $D$ | $Q$ | $V$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $T$ | $V$ | $L$ | $L$ | $W$ | $D$ | $A$ | $S$ | $M$ | $G$ |

Y T $\square K \square W H A T G A A M$
R／VWDAAMH⿳⺈⿴囗十一 C

| $R V$ | WD A A M H CA |
| :--- | :--- |
| 1 V | S C S T DRTLDRWDAHS GEP | $\mathrm{K} L \mathrm{~W}$

TLQANQP GEPAL D EPPWT
 IT I R L WD A R T G NTV R L WD RATG VTVLSTK D YSEDGTLKFEVKGARASDDT GVAVMVA
 $R \| W$ GTARLDWDVATGAALGS RLTGHDGWVRLVAFSPD K T $\square$ R M WD S STG
 NT $\square R \square W D \square T$

TVRDWDTATGARQQILKG
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F S VWS YTPN GTSWKVKNKTK TMDEDFPAVGGSSPDSVAA T

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$S Q L V A S C G N D K T I K I W E V V S G Q Q V Q Q L E G H K Y S$ VED GD YSEVRDHVDDTVRLWDVATGSGINT DIEHTGSVRS GKY L ATGSWDKTAKLWSTATKAGIHTFDGHT NSUWS




ERFVYVSCRHQNVVSCFEVS GE EVKWDSMNDAGGDFPRD GQTLASGGS DHII KLWDPKTGEVIRTLIGH NDDVMS ERFLYLSTRFADLI TVYQLDGFQAV KIUQTESGGSHPRD GEQLAAASADSTASLWNVSDPAYPSQVGEPDAGSSGEMYA


 GQTIASAN EDKTVILWN KEQVLTLNPLMYGCNWVRD GA QIVSGSQDSTVQLW WARARTGNVVMEPLRGHTESVLDS



 GREGNDPDARAGQVRVSTI GDDGR LTEKPRRVTMASPTG
 GNMLAAASADSTASLWNVSDPAYPSQVGEPDAGASGEMYA GSK VVQLWGWDNTVRLWDVATGRPRREPLR R GHKSCVSS
 GATLASGANDNTVRLWDVSAPADASPDGEAMSPNAKAGG GQHIVVTASWDRTARVWRADGTGQPRVLRGHV GKVIS $G K$
$G R T A S S A S G D K T V K L W N D E S G K L L S$
$L$

 GRH I ASGSSDNTVRLWD
GT LLASAGS DRTVRLWW NPATGRPHREPLGGHVGAVNG SN MLAASASGDGTVKLWDTNTGKE LIKTLQA H GHKNUVFG



G
G
G
G G LRIA SGSFDKTI RLWDVA TGTAMDDPGDGHTGWVDS GEF LASSGSGDCTIVKLWQVNTGKEDRTFTGH GVLVASGGSGDGSVCLW NARSGKPLAGALKAHLNVVHS $G Q T L A S A S Q D G T V K L W \quad D N Q G V L L S T L N \quad G H N G P V R K$ GK QUASGSEDDTIKLWDAATGDLQKTV DAVHSSAVVT




 GRTASGSGGWNNTI KLWR



 S E L V


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 VVFSPDGQF TA SVSRDKTVRVWHIISGKEVHKFQGHTNY $V A F S P$ DGDTLASGSGGSTVRLW DAATGNDTNT LDE


TAFSPDGNKDF SGSDDNT DR LW DTQSGQLLYT LA AAFSPDGKR IVTASDDKTARVWNADGTGEPLVIRGHADR

YSATF LLDRRH DAFGFSRAVRDWDV
1 AFTPNNRFQASVSGET AVVQLWEANSGRKDWQLTGHTDC VTFNPDGKLLVSCSEDGLVRLWNDHTKTCEKTLTGHTNI




FTTTSCGEWLIVANQHSNNWVSRRNKVTGSDEASGYQCH VSFSPDGQT LAS GSDDNTIKLWNLETRREIRTLKGHDHV FILTGDGRFLLAANRYEGGLASFRINPGTGMDTGLCSRIA
 VAFSP DGRTLASGSKDQQIR RWDVESGLCTKTQPGHRDV


VTFSPNGKLVASGSYDA TVWDWNAATGVPVMEPDEGH VYFSADGKRILTASWDKTAKLWDATTGTMLLDLKGHTNR $V A F S P D G S Q 1 V S S S N D T T I R L W D$ $\square A V T P N N V D \square Y V A N S G S N T V S V \square Q L G P Q S S G T K V T \square T G T S$
VS $\square$ S P D GQTVVSASGDS T LKKVWD LE T GMEVMS FTG VAFSPDGSH $\square$ I ASASDDTTVHLWKPDNAT VAYSPNGD ILVSGSGDRTVKLWDCHTHTCDKTLHKQTNE $V A F S P$ D GRTLASGSYDNRIKLWR VAFSPNGQY L VSGSQDQSVRVWEDQTGDCLTVLTARLYE
$\square G F S A D G R H L Y V S D Y T E S G V N A F A V A P D$ GTDDDIDTAAS CFSSDGKTLASGSNDKTIRLWDITTGQQUAKLNGHTNL VKFSPDGRFIVSAGAE NLVRLWQRENPFYK TVVGHQ



AAFSPDGQR VVTASTDGTARVWRADGAGQPVELRGHTAQ



VAFSPDGTLLATAGAD GTVRLW NPATGRPHREPLTGH VSFSPDSK MLLASASGDGTVKLWDTNTGREFKTLQGHT




 $V G P G P K L L F W V P A A Y R D$

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ASFSPDGRRVISASLDKSVRVWNADGSGEALVLRGH VAYSPDGSR IVSGSGDRTIRIW DAKTGKAIGKPLTGH



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VD D V V V S P
IYS VCFSFD

GRVPHTVVVD V R S A AFS P

VRQ $\quad \square A F S P$
VS SA
$V$ NAPN
GTSPTCVTV
GWYPTAVKV
TGSDNAVAFSP
WS A PTWV

VD A PVCVV

AKAGNF LAFAPH
VTA
$V \quad V$ V VFS P
$V \quad L A V A \square S P$
S D A V H S $\square$ A F S P $\square$ S S A

LS G A T A VK F N A

V
C CDAFSPDN
G
GPRP
SGlWSVVAFS A
T A A
GDGPR AFGAF ESNVNA TVAFSP
1 Ws
VQ S A VF
D S V V L T F S
S S PVCVAFS P
V S S V AFS P
T DAVNAVAFSP QSVNSVSFSP

VR HVTSVAFS P
V WCTVFSPN
TDTVASVVFS
VRA VIAFS P
$\overline{\mathrm{V}} \mathrm{Q} \quad \mathrm{V} A \mathrm{~F}$ S
ASAVNAVSFSP

VS S L A $\square$ S P

S D NVRSVAFSSN
G D G/VRSMAFS P
GRQVWSVAFSP
GWFPSKLKVT P


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UniRefgo- 8.757 UniRef90 X8J757 UniRef90-M5C6Z6 UniRef90-K9HEG9 UniRef90-K9TQR1 | UniRef90_R7QP26 |
| :--- |
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## UniRet90_R7RZU7

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HAALSPDGATLIAVANYSSGSVALIWRILDRRTGTPT SVEFSPDGSTLASASRDNTLKLWYFSNDESGLFAEKATHG SVAFSPDSKWVASGSGDD AIAFSPDGTMLASAS GDRTVRLWDTATGNARKTLEGHT AVAFSPDSKTLASAS DDRTVRLWDVATGEERQKLKG
 RVAYSPDGMMI ASASGKN DKLWEPDGTL DKNLTG SVSFSADGKLVLSGSEDK TVERMWDSGNGSLIPNSIKH SVAFSPDGKTLATAS DDKTIKLWNLNTFEEDCTLFGHS SVAWRPDGKMLASGSRDRTVKLWLRDRHGSGMETRLTDTG SVAWSPDGNLLAVGSHPRNNVKVWHLATAKPLHTLLGHQ SVAFSPNSSLIASGSSDK SVIFSPNGQTLASASDDD TVQYSRDGTK FVSCSADKT $\square R \square W K L W K$ YVAVSPDGTTAVFSREDD TAYLWDMKNGGQLLTGHS NVQAAPDGATVWAVSGGNQAVAVLD HLVYSPDRSEI 1 VGDSAGNEF LLFREPDTGAVRRTLRVS TVAFDPSGNRIVSGSY DGVIKTWNVHSGECEKSLLGHTS SVAFSPDGRTLASASTMDHTVRLWDTATGECRQTLEGHHS WLTDDPARGVLYCLNEGNGSLSSFTDNADGSLEHVQNTTT CAAFSPDGQHIACGESDESPIVVY DAFTSKSEPFPFDA AVAFSPDGQRI ASCSR DHKVKIWDTDSGT足ERTLEGHS AVAFSPDGKTHATASSDK
 GПAPGPDGR YVTHPDHRLTSVID FRRIDD GTAPGPDGRAVVTHPDHRLISVDDABAAGRVVARLP俍 AIALSSDGKYV VSGSGDNTVKIWELRTRKEDCTLTGHS IMTITPDGSEAWAACRAQGFNWGFDVDTRTKEVTWFGSHP AVAFSPDGQHMASASEDR TVRVWDVRGQ V GIAVAPDSRTVYVADWYAAAVRVID SVAFSPDSKWVASGSRDK TIKi WDAATGSCTQTLAG SLALSPDGKLLATGDM DGQVHLWQMADGKNLLTFKG WLEWHEELQQTLYVANETQNGGSVSVFDTVEGQAVGKPFVG WLEWHEELQTLYVANETQNGSVSVFEWTGNSFRLIDTYY
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 SIVAFSPDGQWLASGSADQ TVKIWDVHTGCCMLTHKGHT
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SVSFSPDGRRVASASWDK
 AVAFSPDGKRTLYVTDPDBGRVTVVDAVT AVGFSPDGRTLATGNGDSKVRLWSI VVAFSPDGKHVVSGSADTTIVVWKID SKEPTSVRFAG DVAFSPDGRVLATAAGDSS VRLWDI A SRQPLGNPLTG SVAFSPDGKT ATANRKKYNIKLWDI ASN RKICNLTH GSVLSADHRYLIVSNDGQGTQSLQVVDTKTQKVVQTVSYE AVALSGDGGR AVSGGEDGKVVVWDVERGEQEATLSGHTK QLVLSADGRRAAVSNNGQSGHSLQWIVDLEQKDSVLHTLL GVQFSLDGSKIISYSYGDKT RIW VDGSGKQLHVGHE DVSFTPDGRQVASGSVNENVVRLWDVATKATSFKLVGQT SVAFSPDGSRIV VGSDDRTIRVW DAKT SVAFSPDGTRLASASFD FIVKTWDA GI ARTPDGHKLYDTNSGASNVSVFD SVAFSPDGRYI ASGSHDC TVRVWDAS R V V R VWVD AARFSPGSQl VSGSGDKTVRIWTLASDKRPIRGPLRG SVAFSPQGHLLVSGSYDQ SVAFSPNGELI ASGSNDKS I R RDTASGK


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UniReffo-DgWQU5
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NRGRQAAPHAHWVGFAGNGTLHADD TLRGGHSRWATCVSFSPVGDTIASGS $\square G A D A \square F A H R G E$ AGHRNW VKSVAFSPDSKWVASGSD RILRGHTDRVRSVAVSPDGGYMVSGSDDGTV
 QTLKGHTDRVKVIAFSPDGDMLASASYDC TIRL
 LGYTQATWAALFARLPDNHFESSKTVHQENQYQISGGED $H T L K G H K S E V W G$
$F$
$F$
$F$ FAVAVKPYG VADSPTGTTLYVGHQGTNTVSVVDINRE CTLTGHQLQVSAVAFSSQGKLLASASFDRTDRLWDLSPLH KTLTGHSDSVMSVSFSPDGTLLASGS


 RTLSGYTNTIWSLAFSANEKTLASHDKNDRLWNLVGTDLA KILEGHHSWVWSVVFSPDGTTI ATGS RTFLGHTSVVSAVAFSPDGQUVASGSADKTVKLWNKNGTL DAKVYVGWGPSGAAYDPYNNYVYVANYDTDNVSVLDTQTQ QTLEGHSDWVSAVKFSPDGTFIASCSHDGTVKDWERTSGC VKKI AVGHLAGCHOIIF TATVPVGGLPNSATAAP YTLTNHDNYVNSVVFTPDGKKLISCDC LKGHEDNHVTSVAFSPDGKHITSCD LKGHED HVTSVAFSPDGRHIISGSD NRDRQAGPHAHWVGFTAAGGRLYUAEREQRRVVVIDARALL RTLTGHSDSVYAVALSRDGKYVVSGSRDKKLKI
NTIPVGDQPVGIATTPDGNRAYVVNARSDSVSVIDVSTN ALPAQHSETVTSDDFSPDGRFVASCS RAVIKVGTRPFGVTDDAEGKRAYTANVGSDDVSVIDAAG KPLRQHTSSVWTVAFSPDGNTLATGAGEDETVRLWDAS
 GPFVGHSDAVEAVSFSPDGHHVVSPDGTDRIWSVDESMSV PITVGTGAYGVAVNPGDNVYVTNFGSNTVSVID GVLAGHTDYALGVAVTSDGDRSVVLWNGAGPALTARPFTE NGFПDK LHGHTSPVSWVKYSPDGTRLYSCSWDGTVRTWNVQDRGTS HTDUPAGDGPHNMDDAPDGSRLYVANVVSEDLSVDDLESS ALTGHTSYVDSVAMSGDGKRAVSGSQDMSVRVWDVDTGLD GPLEAHTDFVNSVIFSPDSTRLYSCSDDG

LRGHTSLVLCVAFSPNGNRIVSGSADMSVRLWDAQTGQ QTLEGHGSSVLSVAFSPDGQRVASGSGDKTIKI WDTASGT QKYPNDGKEPYDALMAPDGHYYIAGGFGEPGLALLDLWQP QAQLTVGTAPAGLALSDNGHWLASADRDADQVSVFDAETV
$K T L K G H T N Y V Q G V S S P D G Q L I A S A G W D Q R V N I W D V E S G$ AKLDGHLNGILSVCFSP

## D

 DPKRQNQPHPHFVDFTPD GAETAVGKSPAGUVLEK GAPFMPDDGERTLAFSPDGRTLAVLTANRAVYGWDVTDP PMSG HTNTVTSIAFS
CTLYGNNSKVNSLTFSSEGQNQVLLTSGGGOMCDNDL SDANKTNFYPAGLTVSPDGKYMYVADNMSGQVSKDDLSTK ATLSGHDGWVLAVALSGDGRRAVSMSFDGTMKVWEVQRGQ LSLCFSPDGTULASGSDDRSICLWDVQTKQQKAKLDGHTS HSLGGHSRWVNSVVFSPDGKLLASGSMDE QTFEGHSGSVNSVAFSNDGKRLASGS RNLGPEMTPRSAPSNTPPIVLSELPSVYPFILISHLPEH RNLDGHFSFVFSVAFSPDG MALASADTKIKIWDAYSG GAGGSRSVSVDDTRTDKTTATWQVGPAPHALAAAPDG DFFTGHNNRIYSVSFSPDGRFIISGSGDR RRLEGHSMAPTMASFSPDGRRVASSAWDQSVRV KTLIGHNNWVFSVVFSPDNNLLASGSG S GHSRGINCVTFSPNGKIIASGS
STGHQSGVRNVDFNADGKTLASSSEDTTDKDWNTDKTUML $V Q T D G D$ VYDVEMNPAGTEVYASLSVAGGVQADS

UniRef90_UPI00031D308C UniRef90 UPIOOO335AOBC UniRef90_A7IQW2 UniRef90-B8MUB1 UniRef90-XoKUP7 UniRef90-A8ZLJ9 UniRef90-K0JNX4 UniRef90-K9RC85
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UniRef90_M5R4Y5
UniRef90 X8J205 UniRef90-K9W0M9 UniRef90 $\times 6 \mathrm{MKC4}$ UniRef90-M5C914 UniRef90-D5UDE9 UniRef90-UPIO0037C6E7B UniRef90-B4WRJ5 UniRef90_Q7ND05 UniRef90-K9VIJ8 UniRef90-M2Y J 69 UniRef90 ${ }^{-}$Q ${ }^{-1 L T}$ UniRef90-L8WHN4 UniRef90-V51447 UniRef90-Q10XW6 UniRef90'UPI00037AD464 UniRef90-l2NAP2 UniRef90-A8PG40 UniRef90-K9ZML4 UniRef90-B0DSJ1
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ARGVGTT 170
180
190
200
LWHVNGTP LWHVNGTPIRTRKGHDSFVESVSFSPDGQLLVSASRDK WDAATGSYTQTLEGHGGSVNSVAFSPDSKWVASGSSD

$F Q K M T Q D G K S Q U G S R V W S V A F Y Q D N H Q T L L A S G G D D R S V$ WDTATENTRQTLEGHTDRVKAMAFSPDGTVLASASDD WDAATVKEDQKLKGHKDGVRADSFSPDGKTLASASED KLLRIWSLURSKQCVTHTDAIRAIAFSPLLEQVIASGSSTND DPHEPHSAALAVTGDEAGVWGLADSSDGTTLASVSDKAVR EDTNKPILLKTITGHSDRVWAVAFSPDGKDIASASFD SLQDGTATHSPPKVHNSLITSVGFSPGGDKLITYSWDRCM TEVFKNCPCYSLLGHAWAVLTVAFSPDGNILATGSDD LWNREGKLLATLEGHNGWVNSVSFSPDGQVLASASDDQ WNPHSGEPLRTLSKHSGEVKAlADSPDGQFLISGSAD QPENSYETTRDNLGEFRRPYHAFSDADNTHVYTANTHGH SSGRTTETGHSGSVHFSVYVAYSPSGKLVASCSILDGVV WDLSSGRQDQVLRGHSQRVNGARFSPDGTKIVSCSWEKII PVGEPFEGHTDWVMSVLYSDDGSRLASSSRDNTTRVWDPQ PVTLTRTATIPVGASPVQVAVGADGRLAYVSLAGSST | $R V L W R Q P T G D T P A G V V M T R A G Q V L V A N M G E D T V S V I$ |
| :--- |
| $E G S V A E Q K C S Q T I D Q N S P V L D L S F F P N S E F L A S A G G$ | WNAATGRLSTVLQAHTGWVSAVAFSADGRILASASAD LRTLEGHSAVVISGVVFRDQTVKLWNVDGTERTTLRGHTAA ThKLQALEPLQATSGSGPRHAAFYTPYGTYMYLVAELAGT PCLLNTNGLEDYSA VLATLNHQSRVRAV AFSPD TGELTFPEKSGPRHGVFNREHSKFWVVSERSNEVYCFSVK SVIDTATNTVTATVPVARPNGLAVTPDGTRDYASSQSAGV EVLNRFEGHTNSDNCVVFSPDETTDAEGHTDAVTSTAF DAQTGQEVMDPLKGHEFWVKSVAFSPDGRHIVSGSCDK RVLGA WELGTGKQVCTLAEAGAGPRALARHPRLPVAYLVTELANT WELGTGKQVCTLAGHSDSVMAVVIVRRDGKYVVSGSRDKKLL PDGQVLASGSNAVKLWDMETNACDEDEGFVFCLAWSPNGR HEDGRV

DPGRVQPLGEPLTAHTAPVMSVAFSPDGETLATAGEDDAP TQTLLEGHSGSVNSVAFSPDSKWVASGSGDDTIKIWDAATG KCLKVLHGHTSAVVGTSSVSVRFNPDGSDLASGSQDCDM ESPGDVSSEWPDSALTSSVTSLAYSPDGRRIISGSEDGTD LQTLQGHSNSVYSV PATNTVTGSTTDGNGPSGVAVSPVTGLVFVTNFDSN VWQAQYSPDGSLLATADTDHTVRLWDAGRRRLVATLRGHT WYVRTGNQKAQUVGHNYDVMSICFSPDGNTLASGSADKFD DALSTASGVSTAlLSVRYSHSGRHVVSGSLDGTVHVWDVR

QNGDAGTGHTHWVLSVGMSGDGKRAVSGSYDKSVRVWDVD TVKKTITVGS A IGEPDRDYSDSV WSVAFSPDGKHI AAGSSD CTQTLE EQGVKRILPDYGKHDEKLPVYKMPHLEGWAVTGDYVLAPA D HVDVG RGFGLRFAPDGRL $E C L Q T V D D K N S F W S T A F S P D G E M L A T G S T D E T V R M W D V H T$
$W D V K T G Q Q K V T H D G H I G K I L D V G F S P D G T A L A S G S S D K C I T$ INEKGEFENQPYKTFKGHSDAVVSVAFSPDHRLLASASYD SPV VRGHDEGVTEPGSGPKKASFRPDGQGLVSASDDWTV WEVNSGEHQGQLLGHERDTNAIAFSRDGQILASASSDN $K G A E T G R L A V G K A P F A L A L S P D G R R L Y V A N V Q S G D$
$A G P V V E L V R F L G P D A L A F A P D G R T L T A Y D D R T D$

 QVVSSVSVTGTVCSVGKFPYTVALSKDGTKLYYSNWGEST VETTLSVRNTWVKAVADSGDGRRAVSGGSKGTVV
LDLKQKQV RKKIALDAQPYTCLLSKDQKEVYUSLWGERA TVYSVCFSTDGATLASGSADNSILLWDDKTGQEKAKDQGH WDVFSGKQ QSFEGHDGDVTSVQFSPDGYKGMSCSYD WKVVKGKEEQTHEGHRDWVASVAFSNDGKLIASGGSYD TMRKDGLYSSTPQPAWNYRPYRHTNSDGWD QCLQNLKGHRYGV NSVAYSPDGTRLASASED RTLYVTCADGLAVVDTGHGAVRHRLTGQARARGVAVHPDG DALTGQSDMNPLKGHKYGVMSVAFSPDGRYIVSGSHDK QRLGEPIKDHKGWVLD GVMFSPDGSRIVSGSAD WDLAGQRPPVVLRGHEDAVFSVQFSAEGERVTAAGDSSAR WDVSTGKTVTTFRGHEAVVRSVVFYADGKTLASGSED
WDVAEGKHIKTLKGHSNFVGVAFHPSGKLASSSLDKN WDVAEGKHIKTLKGHSNFVGSVAFHPSGKLLASSSLDKND ATNTAARGIRTYGHPRSVAFGPDGTRAYVASGGNDQ WNVATGKE $\square$ KT LUKGHTAG $\square$ NRVAFSPDGKT $\square$ ATVIS S D

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UniRefofo－R5ROC4 UniRef90－D4ZZ44 UniRet90＿UPIOOO35C7FOE UniRef90－UPIIO0036C6FC4 UniRef90－UPIOOO4407663 UniRef90－Q9XBD8 UniRef90－K9RFK2 UniRef90－UPI0004178933 UniRef90－K9V0R2 UniRef90－DoLTK4 UniRef90－F4L－1H0 Unirefto AOCVT5 UniRet90－X6NV31 UniRef90＿W9Y410 UniRef90－＿9MUP5 UniRef90－M2VAC2 UniRef90－G8XDS3 UniRef90－BOD1W2 UniRef90－G4TVZ5 UniRef90－DoLZ61 UniRef90－L8M6F4 UniRef90－Z5XQK1 UniRef90－F4XQB6 UniRef90＿D5SLX0 UniRef90＿UPI0003479AED

VT TQ ARPDGSFAARGVVSTLPAGFNGASAAAHIADNRA 240 TVKLWSIDGTLDKTFHGHTDKVWDAFHPD STDKIWDAATGSYTQTLEGHGGSVNSVAFSPD CTVRLWDTATGNARKTLEGHTDELRAIAFSPD MTVKLWDTTTGEERQKLKGHDSAVWAVTFSPD KTDRLWDVQTGQCKHLLS LWDLS STLKLWK DDGT YTWDVENGYSNPHLLGNHDSLVVGTVAVGSSPYGTAFSPD TATNTVVGTVAVGSSPYGGAVNAT TVKDWRRDGTLLKTFSPHEGWVMGVGFSPTDHLLAS QLWDATTLTPYSKPFGHSSPANT TAFSPD KTVKLWK DDGTLITTLTGHSDP SFVNFVQFSPD TGQTMVGPLKGHSHNVSSHTVLGPLHGHTNWVNWVKYSPD VVEVDLGAGRRVLRSVAVPSPPVQLYLTPDGSRLLSAD GQT IR
$\square A A A E \square N V W D L N S Q R L L R K /$ KVQTGAGAHNRLFLSAD保 TWGDAWSPDGSFIASAGAENRVRLWQSQNPDRTMITAHKA VTAYSVSY伊NNFTELLSNSSTIPLLFTPHRNAPAEIHVSPD VSVINPSNNSVISSIITGSSPFNGVYDQANG FKMWNA $\square H S T S S H T Q R W K T P T \quad N G T Y S V A D P D$ VSHERAYDSTVQLWDTVSGS LRHSLEGHDGAVEDVTFSSD KTARLWDTENGK ELLATLNHQFWVNAVAFSPD GESFHLMETLP ILETDPDPDMLPLLEREACAAAAVRLSDD ATVID DGRRLIS SGAYDG LLLWEVST
VRGWDKTKLWHLLATGLLHTFLGHTDSITSLAFSPD
 VTVLR AHPDGRFTALATLSTLPKGFAGASAAAHIAVNAA KIW ELGTGKEIRTLTGHSHWVSALALRND VSVIDTDPSSPTFNTVTRTLGVGDRPTG YFATGSSDHRVRDWKADTQRCLQLLEGHEGWVFQVAWSPN RVWETNACPKPM GFVTDQYGGTVSVFDLATFKPVKRINVGDYPEGIAA－TAD LLWNVAHPATGHTEAVWEVAFSPDGHNFTNPETAVAYSPD LCTLLEGHRLFGNVGSVLARFETLAGHRNWVKSVAFSPD NVWDAS DDSTLCVWDSTTLRPLGELHGNTGWICDVDYSPD DCVYETMQFQCLQDVSVLPPGTDPRFPQPPSAGEIAFIDPD KLWNL DGQVLQTLQGHSSSVRGVAFSPD
TVSVTDPNTNTVTGSDPVGTGAYWVSHLCYCSTYV ETVFSVAFGTVRLWDVAGHRLLDTLPGHTGQVFAVAFAPD
 TGELVRGPLRGHLWDVKTGKDKAKLDGHSSGVCSVCFSHD VTALD GPGSGEVAKQUPVGQGPHGVRT SAD K WW TGLQDGDALTGHTSLV SRVGMSGD
 GT $\square R$ $D V Q S G E R V L G P D P G H S D A V V L V D$
 DGRHEVLVIDKKSWQLVKADPVPGQPGGVVFVMARPD NRDYVANFGSNNVSVIDNTNTVLATVPVGTNPRGVEVNDS FVGNVGSDDLSVI DAANGEIITETVAVGSRPYGVAFAE GQCLKTFDQTDK WNVQTGRCEKTLSGHRNWHWS VVYSPD KTVR【WSLNALRपPILQ GHTDRVLSVTWSRD RIWNNFNPVTLDDPRLWS
TICVYKYNDLKEELIQTDDTYPDEYDEPS $D A G Q M L F S E K$ $T I K L W D L E T Q Q L R Q T L T G H \quad$ EDWVRSVAF
 QLW W NTVRDWDVETGKV RLW $\quad$ NVATRAPIGDPLTGHTSVTNGVAFSPD KNLLASSSHDNTDKLWNDSTGKEDRS DDTKYSUYAI AFSPD VSVID ATFAKKLDI GKCIVKILQHTDKLWNIST VWDVERGQQEAKLTGDCLNLL $\square$ SVGGDHPNA｜VA DNPK VA TYDI AATVYSLCFSPCLWDVKTVKQNKSLNGHDNYVLSVCFSSD KT TRLWDISSGKQLLLLEGHSNWVRKAYFSSD NTVKVWNMKTGAEELTLEGHT

QTVKTWDADSGQCLQTLKEHSSPVRFVAFSPK RHVYVVDTGQDTLSVIDTRHRVTARVRVGRTPWQVAVAPD TVRVWDFHTGQ KTGRLWDAHTREPLGGPLRGHKDSVWAVFSPD $\square W R \square T D D G A G G R I E R V L R H P T L V S S A D$ RTIRLWDVSNGQNWKTLRGHQAEVWS VALHPD
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G DR GSL LASGSADGTVRLWDLQSNRCTRVIEGHTSP V V W
 G GRLI ASCSDDGTVKLWYTDSMDVYHTLHGHSDWV1 T



 GKYVVSGSR DNTVKI WELET DNKRFFNFDWNWHSDSVSA








 GTRAYVAVSETNTVEVDDVGALT
GQ WVA GASGDSSI LI WQVSS GQLVRTDFGHS DAVHA GK R AVVSGSR DK SVRVVDVD TVGLQGDALTGHTD WVES







E E R ITVVTNRGHDSSLALF LVDQETGLLTTYKDFVDTSPNARD QKFLLVVGSADRTIKIWDLDQGSAIDTVVGHTMKDMA GKRLAVTLQHDNALALVDAGETLEVARVKVGYPEG

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 GQTLA S G S N DHTVKLLWNIS T GKCY TMLEGHT NEVWS

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 GSRI VVSGSSDKTIHLWDワNANS QSIEH
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 V
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 SA DGSALVS S G S D D G TVRMWDV

IIAFSPD GQTLVSGGS LD S T LK L WN I GTGQLLQTLKGHSDT $V A M S G D G K R \quad A V S G S W D E S V R V W D V D T$
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VVFS P D GQR V AS GS D D H T I K I WDAVS GTCTQTLEGH $M E F T P R G E Q V W V A L R D D N Q V V V Y D \quad T A T Q Q E A A R G P V$



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 HS DAVTSVVSFSRDGQSLASASLDKTVQIWRKNPDTGEFDP H T D DV N S V D F S P D G K R I A S G S D D K T I R I WD T EK GR T I C G P





 G
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 H S A S V Q S V A F S P D G H L L A S G S R

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


H



$\qquad$ V R S S V A F S P D G K L L A S G S E E K N S N N I K L W D D D K G K E
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UniRef90_K9R860 UniRef90_UPI0002EFD0CE UniRef90_Q467B2 UniRef90_F2UD09 UniRef90_UPI0004775F17 UniRef90_UPI000466379B
UniRef90 L7LNN7 UniRef90 B4VYL3 UniRef90-W9HAP6 UniRef90-K9VT27 UniRef90_C7RUQ4 UniRef90_G4TU22 UniRef90_UPI0003831039 UniRef90_L8M2Y3

|  |  |
| :---: | :---: |
| UniRef90_K9WNF6 | T A GTWQ |
|  | GA |
| UniRef90-UPIO00349317A | SHDK\VRLWNTSTGECLREWQGDTTIVYS |
| UniRef90-M3DGC3 | ARTGRPRV ELPK |
| UniRef90-L8 | RVWDGLTGQDMHGP |
| UniRef90-UP | VNRVRFSPDNENVKLWAIDDGTLLTTFNGHRDRVKD |
| UniRef90-B4VUG8 | QlIASASEDYT KL |
| UniRef90-M5C |  |
| UniRef90-UPIO003B3EA05 | EAYEHII DLWDVSSGTLKATLEGPEGVVDS |
| UniRef90 UPIO004409C32 | TGVR\|SEFLQESEDRVCS |
| UniRef90 K9VRH8 |  |
| UniRef90-W6SP | RLWNLQGQQIGELQ ${ }_{\text {L }}$ |
| UniRef90 M2RC | DRTVSLWNAQTGTPVLAPLQGHSDLVTSLVSPD |
|  | VWDVDAESMK |
|  | VINNAESGCVSGP KAPKDS |
| UniRet90_lil95 |  |
| UniRef90 ${ }^{\text {K }}$ ¢9 | TLKVWSLQTGKEDRTLSGHSHWVKAVVLTPD |
| UniRef90-UP100044122A2 | पDH【LKGHSSFIWDAQTGEPVGAPLTGHTDWLNSVAFSPD |
| UniRef90-C2W5 | MLT ${ }^{\text {T T D }}$ |
| UniRef90-X8JUS6 | VAGPLHGHTDA |
| UniRef90-G4 | RLW |
| UniRe99_-u9VSD5 | SARLWDVPSGQVLVGDPLLGHSGP |
| UniRef90-D8C | QVGDDLRGHAD |
| UniRef90-16SCV0036C011F |  |
| UniRef90-AOZAZ6 | DGo |
| UniRef90-P4963 | W |
|  |  |
|  | QVMRR VNLMDSSUVAGPFEUERSELSTLSFSRN |
| $\begin{aligned} & \text { UniRef90-KPG49 } \\ & \text { Uniefego-UPIOOM408 } \end{aligned}$ |  |
| UniRef90-K9QSN3 |  |
|  |  |
| $\begin{aligned} & \text { UniRef90MMEMH5 } \\ & \text { UniRef9o K9Q4D } \end{aligned}$ | CDWDLKTLGCIKVFAFEDGNHAPAWSLD |
| UniRef90-K9UNM6 | WD |
|  |  |
| D6 | GTGY W |
|  | WEVDGGTTGADRHDGMVFAAASPD |
| UniRef90-G4THE | R\VSVFLDGVRLWDVESVLPPLRGHQNSV |
| UniRet90-Q8YS | KTIKL WNLSTGKT\RTLRGHSDK |
|  | RIN R |
|  | SWDGTLRVWDSTTLQPPLRGHTHC |
| UniRef90-K9WT13 | Va GHSQGVTAGKTLKTLTHSSGVNVVSPD |
| UniRef90-R7QG51 | WDVETGA |
| UniRef90-G0A |  |
| UniRef90-A20 | LATGTLQQTVDGHMSSG-FRGSGASDAVAFTPD |
| UniRet90-UP100045 | HTLRUWDATSGKLRK GPLKGHKपAVSSVA |
|  | EGHLAQVWSVS |
| UniRet90-V6DIF1 |  |
| UniRef90-L2FK30 |  |
| UniRef90-UPIO003618F68 | N |
| UniRef90-J3NZL3 | [LWDTATGALRQTLR |
| niRef90-UP1000 | NTVR\\| WN |
|  | R $\square \mathrm{W}$ |
| UniRef90 R7RXE7 PIOOO | TLWDVSTGEEVQKLDGHTDSV |
| - | GHDKM |
| UniRet90-V80M52 | LS RLAADSLQEVWRTGMQ |
| UniRef90_BODZA3 |  |
| UPI | WHVSTETEICTLSGHNN |
| UniRef90 A0Y | VKLWDRNSNPLDHULQGHPLAVNDVDFSP |
| UniRef90-K9 | LWDUAKGKLINTLKGHEAEVNSVATSPD |
| UniRef90-UPIOOO455 | LWNAKTG DDSLDAFSHHTGNVTSIDISPD |
| UniRef90_ADDXJO | VSFCSCGTLLASGSRDHSIRLWNFEKNTIYSVSFSYD |
| UniRef90 UPIO0044C | KAPEDSTQQYFAPLAFSPD |
| UniRei90-B1VMB7 | A |
| UniReigo-F4 | KLWKMDGTRYQTLGND DHESHQSTVTSITFSPD |
| UniRef90_CON5T1 |  |
| UniRet90-K9\% | ( ${ }^{\text {a }}$, |
| UniRef90-Q467B2 | PVGDNPVRV |
| ef90-F2UD | S |
| UniRef90-UPIo | GHTNWVYSV |
| UP1000466379B | RLW NVA】RRPLDEQLTGHNEKTGVSALALSPD |
| iRef90 B4VY |  |
| W9Hap6 |  |
| ef90 K9V |  |
|  | A RL |
| UniRet90-G4TU22 |  |
|  |  |

## UniRef90_K9WNF6 <br> UniRef90_F4XL72 UniRef90_C9ZFP5 UniRef90 UPIO00349317A UniRef90-M3DGC3 UniRef90-L8WV50

 UniRef90_UPI00034D9C8A UniRef90_B4VUG8 UniRef90-M5C429 UniRef90_UPI0003B3EA05 UniRef90_UPI0004409C32 UniRef90-K9VRH8 UniRef90-AOYPZ3UniRef90-W6SPH9
UniRef90-M2RC35 UniRef90-UPI0003A1AF91 UniRef90_UPI0004409222 UniRef90-141957
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UniRef90-K9QPZ0
UniRef90_UPI00044122A2
UniRef90-C2W5X7
UniRef90_X8JUS6
UniRef90-G4TG91
UniRef90_U9VSD5
UniRef90-KOJVZO
UniRef90-D8Q5V7
UniRef90-I6SCV0
UniRef90-UPI00036C011F
UniRef90-AOZAZ6
UniRef90_P49695
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UniRef90-X8JE32
UniRef90-K9PG49
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UniRef90_Q8YSG6 UniRef90-F4EAQ0 UniRef90-R7SQ43 UniRef90-K9WT13
UniRef90-M2UEN5 UniRef90-R7QG51 UniRef90-G0A0R3 UniRef90-A2QX40 UniRef90_UPI000455FB7F UniRef90-B2JBW8 UniRef90-V6DIF1
UniRef90-L1L7A5
UniRef90_L2FK30 UniRef90_UPI0003618F68 UniRef90-J3NZL3 UniRef90_UPI0004415108 UniRef90_UPI0004407B04 UniRef90-R7RXE7 UniRef90-UPI0003786641
UniRef90-B0DYX0 UniRef90_V8QM52 UniRef90-B0DZA3 UniRef90_UPIO003139B4E UniRef90_AOYTN5 UniRef90_W6Z8K8
UniRef90-K9QHD2 UniRef90_UPI000455F5A9 UniRef90_A0DXJ0 UniRef90_UPIO004408667 UniRef90-I4G253
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UniRef90- F4XXP7
UniRef90 C0N5T1
UniRef90-K9R860
UniRef90-UPI0002EFD0CE
UniRef90-Q467B2
UniRef90-F2UD09
UniRef90_UPI0004775F17 UniRef90_UPIO00466379B
UniRef90 L7LNN7 UniRef90-B4VYL3 UniRef90-W9HAP6 UniRef90-K9VT27 UniRef90-C7RUQ4 UniRef90_G4TU22 UniRef90-UPIOOO3831039
UniRef90_L8M2Y3


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



 VNFSPDSQTLASASAD N



VSFSPDGQTLASASKDS TVKLWGLDGK
$\square F$ S ND SKFlA S G S YDHTVKI WNVAT GKEERTFKGHTGL $\square A F S P D G E D F A S G S D D N T V K L W T A D G$


|  | 330 |
| :---: | :---: |
| UniRef90_K9WNF6 | G T W G V \|A F S P |
| UniRef90_F4XL72 | $\square$ H A L A F G P N N |
| UniRef90_C9ZFP5 | GGV P |
| UniRef90_UPI000349317A | $\square \quad$ WS VA F S P |
| UniRef90_M3DGC3 | TEGPVELAF S P |
| UniRef90_L8WV50 |  |
| UniRef90_UPI00034D9C8A | T D Q V N G V S F S P N N |
| UniRef90_B4VUG8 | N S SVFCVVS S P |
| UniRef90_M5C429 | S D F VFSVGF S P N D |
| UniRef90_UPI0003B3EA05 |  |
| UniRef90_UPI0004409C32 | EK G T WCLVYS P |
| UniRef90_K9VRH8 |  |
| UniRef90_A0YPZ3 |  |
| UniRef90_W6SPH9 |  |
| UniRef90-M2RC35 | S D Q VR S VA $\square$ S P |
| UniRef90_UPI0003A1AF91 |  |
| UniRef90_UPI0004409222 | S G G $\square$ T C VA F S P |
| UniRef90 - 41957 |  |
| UniRef90_E0UMG8 | $\square \mathrm{C}$ S VA F S P |
| UniRef90_K9QPZ0 | V T AVAVVT |
| UniRef90_UPI00044122A2 | T L S VC CVA F S P |
| UniRef90_C2W5X7 | G S N PRGI I L L P K E |
| UniRef90-X8JUS6 |  |
| UniRef90_G4TG91 | S F S P D G VR $\square$ G A N D |
| UniRef90_U9VSD5 | VWVA F S P N |
| UniRef90_K0JVZ0 |  |
| UniRef90_D8Q5V7 | D D H $\square \mathrm{NCV}$ VA F S P |
| UniRef90-I6SCV0 | RQA IVFTA D N |
| UniRef90_UPI00036C011F |  |
| UniRef90_A0ZAZ6 | VH N VA F S P |
| UniRef90-P49695 |  |
| UniRef90-B2ALD4 | G T S VT Y $\square$ S F N |
| UniRef90-X8JE32 |  |
| UniRef90_K9PG49 | $\mathrm{V} \quad \mathrm{V}$ S V A F S P N N |
| UniRef90_UPI0004408215 | K E G VR SVA F S P |
| UniRef90_K9QSN3 |  |
| UniRef90-UPI0003786CC0 |  |
| UniRef90_M5BYH5 | $V \mathrm{~L}$ S V A F S |
| UniRef90_K9Q4D1 | 1 R S la F H P N |
| UniRef90_K9UNM6 |  |
| UniRef90_UPI00044082D7 | S G G $\square$ T C V A F S P |
| UniRef90_D6YA55 | AFHPS GVASASND |
| UniRef90-W4K1B9 | V |
| UniRef90_D0LSA5 | $V \quad Y \mathrm{G} V \mathrm{~A} F$ |

GAGPSA $\square A$

| $V$ | $L$ | $S$ |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $S$ | $G$ | $A$ | $L$ | $V$ | $F$ |
| $V$ | $A$ | $F$ | $S$ | $P$ |  |  |

$G H$ S VS S V A F S P N
$\square$ A F S P D N
GRVWSVAFSPN
S S ENVCV

UniRef90_UPI0003618F68
UniRef90-J3NZL3
UniRef90 UPIO004415108
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UniRef90_A0YTN5
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UniRef90_K9QHD2
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UniRef90 G4TU22
UniRef90_UPI0003831039
A F S P D GRY I V S
A A GPR IVA
VN S $\forall \mathrm{V}$ A F S S
V K $\quad$ NTVVE F S P N
DKPSATAFSP


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UniRef90- Х6MY20 UniRef90_UPI00034A7EB2 UniRef90-W9D977
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UniRef90-F5UB72
UniRef90-E8W5X4 UniRef90- Х6MEH7 UniRef90-B2WNC1
UniRef90_U1HX63
UniRef90_G6FWG9 UniRef90_G7XS21
UniRef90_UPI000363D6B2
UniRef90-A0DHV3
UniRef90-K9RIA3
UniRef90-UPIOO04656703
UniRef90-K1WV61
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UniRef90_UPI00044095CB UniRef90-B4W1D3
UniRef90_S9X8L2
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UniRef90_C9S7C5
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UniRef90_D9X8V0 UniRef90-Q8Z020 UniRef90-UPI00034BFD3C UniRef90_G8YCI1 UniRef90-B0CCY2 UniRef90-F4Y257
UniRef90 M5CDN0 UniRef90- WODDU5 UniRef90-UPIOOO4449841 UniRef90-K5W8F9 UniRef90-UPI000150AA46 UniRef90_UPI00038257F5 UniRef90_UPIO0037C660B UniRef90-K9VUB5
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UniRef90_Q2J5B0
UniRef90-H5SVU1
UniRef90_UPI000474C7E8 UniRef90-K9UXP0 UniRef90-G9MYF7 UniRef90-X6P7D1 UniRef90_N4VS30 UniRef90_UPI00031E4937 UniRef90_K5W9W9 UniRef90_M2QYM3
UniRef90_I1K010 UniRef90 UPIO001584BA1 UniRef90-K7W194 UniRef90-R7S075
UniRef90 U2YMX7 UniRef90-M5C517 UniRef90-D1AA67 UniRef90_UPI0003620908 UniRef90_A8ZPE2 UniRef90_Q3MCX2 UniRef90_D8Q5X4
UniRef90-M5BXD1 UniRef90 B7K911
UniRef90-D8I8N2
 I S G S N D K TI RLW D A S S G K QL Q S L E G H S N NV E $V$ S G GY D R I I R L WN L D G E R R P YR R T G H T D F L



TASDDGTVR $\quad$ TWDAREAGNPVVLTRRHGDGVVY T L E GHS S RVR

TLE G H S S Y VT
 S A S T DK TI K I WDLAT GTELLHTLK GHS QWU N $R$ LYAAS Y A GTVTTTLS L S Q S S K GTVVAQSTDCGTNPS TLVS GSEDKT』KLWNLAR GQEIRTVEEHSNSVN S GSSDNSMRIWDVVQTGQQKAKLDGHSSTI Y

 WVAT A H T DGI RI WRVN DGKL L F S CQAHPET DW

 $R T L A S A S Q D G T A R L W D I A E R T S Q P G T G R D A$

RDTVLAT GSAD GTVVRWDPVSGRCRSVLSVMPDGVW


VS GS H D H T VV S V I D L AK T G
I SLI A S IP S GVLLQQRTLIGHSEAVNN QYYYTAN E E G S $\quad$ G $R \mathrm{~V} Y \mathrm{~V}$ P N S E S N TVSVDD PAT SPD QRVLAT G GWDRTARLWTAATPRQPRRLATMPARAAVC $R V A V S G C C D D G R V V V W N$ A E NGSQVG
VS S S F D NTVRLWDPVA
KTNLLVSGSSDRTAKLWQLDGAN
TLIAASGSADRTIRLWK ASDGTPAAPPDLQGSNPII T S G S D DKMVRIWDI QS GQTDSGPFEGHVDSV


 GEGGLRVWD DT R RERPVRLPEAGHE GPV N TFASAGWDGNITIWQRETLAHSSLST@QKNQNDIT $\square A V G D A D G K V R L W R F D G T S$ QFDRAFEREHTGWVW SASHDATVKVWDLD ETGRCLRTLKGHTDWLR
 $R V V A S G S G B R T V R V W D V$ R S GS P A A GP F Y G H $\square D W V K$ $K Y L F V A N P D Q R T V S V I D$ A V N LR K VK D DE T GA R PK
 $V I L V T G S Y D K D I R F W E A W S G \square C S R T \square S R T N E T G Q V N$

S G S A D D TVRRLWDVADPSAARPDGLTGHTGPIWW G GWGDNTVVHLWD AVTD E L K G TLLGHEDDI N

 ILAS ASEDNTDKLWS REGRL LRTMLTGHGDRVH

 $\square \mathrm{Y}$ L A T Y T S A S AT I DDL DE

V S G GQDNTDRIWDVSSGKQLH $\square$ W GMS A K T S TLLA SHY S G QL Y TLSSLS P TN QL S I S G S IS S GNRPA TVLVS GSTMDHS IVRVWDVVNETGSFKTVSPAHNSVVV
$K$ QLLFSGSDDGGTVRVWD DSKTKKKNCIATVDHS SAVT $S A D S K L L A$

FA
V V Y S GS K D K T I R I WNAD T GK EVVGE P L R G H T D Y V
$\qquad$
A L F R GEVQAYRRTGLLD
$T$ I L A T A G E D E T
$V$ Y V S C A G E G DVVVV DDL
SPNQPIIAVGSNDRGLRIWNDTQTE

S G S D D G T I R V W W D V R E A K K E E S Gll P
$V$ G G S A D A T V R V WDV R S G KVVCG GP I E G H T D Q V A
SPDDRFIVVGHDSGKVNLWKLDGT$\quad$ F F L K T I G S H Q DR V T



## UniRef90 BoDFW7

 UniRef90-X6MY20 UniRef90-UPIO0034A7EB2 UniRef90-W9D977UniRef90_UPI000366FCD7 UniRef90-U5QK96 UniRef90_UPIo00380B9FB UniRef90-R4XD36 UniRef90-F5UB72 UniRef90 ${ }^{-}$E8W5X4 4
UniRef90 UniRef90-×6MEH7 UniRef90-B2WNC1
UniRef90-U1HX63 UniRef90-G6FWG9 UniRef90-G7XS21
UniRef90_UPI000363D6B2 UniRef90-A0DHV3 UniRef90-K9RIA3 UniRef90-UPIOOO4656703 UniRef90-K1WV61 UniRef90-BOC3R6 UniRef90-G2GCV6
UniRef90_UPIo0047A264F UniRef90-K1W5K9 UniRef90-A8L0X3 UniRef90-UPIO0034DAB50 UniRef90_K7FY52 UniRef90_B5GK15 UniRef90-A3KB59 UniRef90-EOUIW2 UniRef90-K9QDZ2 UniRef90 - B4WOP8
UniRet90-W7KZR8 UniRee90-UPI0003B48D52 UniRef90-UPIOOO36B7796 UniRef90-UP1000476A676 UniRef90-R7QLN1 UniRef90-LODR60 UniRef90 -G4TWY7 UniRef90-UPI0002FB2C35 UniRef90-M5C970
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UniRef90-X6MLW2
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UniRef90-UPIO0041B9B61
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UniRef90-Q8z020
UniRef90-UPI00034BFD3C
UniRef90- G8YCl1
UniRef90-воссу2
UniRef90-F4Y257
UniRef90-M5CDNO
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UniRee90-UPI000150AA46
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UniRef90-K9VUB5
UniRef90-K5CCX6
UniRef90-BOEOS5
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UniRef90-UPSIOO0474C7E8
UniRef90-K9UXPO
UniRef90_G9MYF7
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UniRef90-A8ZPE2
UniRef90 Q3MCX2
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UniRef90-M5BXD1
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34BFD3C
 T I YSLCFSPNGTTLAS HDDPVLSIAAFSPDGKRIVTGSRDDN VPASGVWLQGDAGARGMAMCSYNKSNAYESWYPDLASKKP DRDWS AFSPKGQTLVS SSHOGSNDCTRRDWDVTTGT VK DDVWGLAWSPDSAHEASSSHDQT HHPWHLKLSRDGKLLAVYNYHYDK TALVWDLATGTPVTTM HSDAVGSVAFSPDGRTLASAS

 L VYTTAFSPDGRLLATGDR

SGTVRLWDTRSGELL TVRLWNAKTGRPQG
GSIWTLVWSPDGHTLASGSH

## VGNHPAHVFTEDGKYAVVTNNEDNTASV

 GAVTSTTFSPDGRF IATGSADATATLWDTDTEMDSFNVV PVRDPYNMYFTPNGAFALVVAEADRSVDLYDPHTWEQVGA GVGADHEVVFSPDGRVLAAGGS GGVRLWDVGNPEMSRAL HTSDVKSVAMSGNGS VLVVGGENGTVRVWDAKTGDQVGE HDAAVECVTFSPDGSRI VSGSRDGTMRLWNADTGQRVLV

YINDVADSPDGESVASVSGDGTVKLWQTSTGEEQNSF


HHKAQVRAVAFAPDGRTLASVSF HKDRITTLSFHPDNQTIAS GSADKTIKIWRVNDGORP SVGFSANFYCGSRGRGFAAATNDEGMVKLWDASVGFEEETV HTQPVWDVTFSPLGHYFATATA STDCITDLETGDCQRRLLGHHSCITNSVTCHDQGNLLASGG HTGGVNCVTLSPDGTLIASASS DRTDRLWHSHDGTPAA KGDFSMHGTFSPDGKYYFVGSYSDNRFFISTSHVDVAGN HTRYVTSVAFSADGQHVVSGSYDESTMVVIWDAFTGME HTDKITYITFSSNSKLLATASY RGDMVGSSGAFRRDGKVLATSGRDGRTRLWKVTDPARPGE RGIKSVAFSPEGRELATGGKDTTLQLWDTETWTHQRTL DRVNAI ATSPDGKMIVS
H N G
EIQCIDISSSGRYALT
HHRFLWSTAVHPNGRVLATGDYGQTVRLWDAHDPDRPLPA HNHWVLDVSFSANGQLI AS
 DGSEVCHLAFNKDGSUMLGASYAEGTDDVWNTESSNPKDP SGGDLHSLYGGSNGKGYMALAAQDASTISTYPFTMPQPGP俭 VEAVCVLGSGSPFASSLDSYQQNLKKRDGSQWFYFITVGE HSDWVNSVAFSADSKLLASASR DRTIKIWNAATGTLDQ HENEVLSISFSADGQFIAS GSADKTVKLWNVKMRKCT $H T W M V L C V A F S P D G N R I V S G S S D E T L R L W D A R T G Q A D G E P$
$D P Y G P D A P A E P T V D D D D A A A A R A L R E A A G P E F D H L V P G S$ HSDLVVCVRFSADGSSVVSCSY DGTVRLWDVNTGEQT HQGWVRSVAFSPDGAVLAS
$V Q G E P M H N A W S A D S R H F F T V D R V D N G T V K L W Q A K T G H L I$
$V$ SGKWCWDTALSHDGRTLA VMSGGDNEVQLKNDGTGQQL LSGGVWSLVALSSDGQTLAVTVHENGSMQVWNFPTGQLLRTM HTSWVRSIS SSPDGTRI VSCSGDGTVCVWDAQDSELYLG TGDWDIAGTTNDSGQYLLLAGFDDTLNLWKNDGDKWNLI

UniRef90_BODFW7

## UniRef90 ${ }^{-1} 6$ MY20

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UniRef90-U1HX63 UniRef90-G6FWG9 UniRef90-G7XS21
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UniRef90- $\mathrm{G} 8 \mathrm{YCl1}$
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UniRef90 M5BXD
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UniRef90 B8HQY1

130
140
150
160
EGHTGHMGA\|ISS\|AFSTDGTR\|V|SGSGDTS|V|R|VDASTGA Q R R MDHSNINSIQFSHDGTMIVSSS
 H ALA GHSRRVWSVAFSPAGDDLLASAGDDGVVILWAGGER $R T L R G H S D W V Q G V A F S P D S R T L A T G S \quad L D C T V R$


 QVLNEHTEGIV GI QFSPFNGNRYLCSGSANNTIHLDDVET STLEGHCNVVTAVAFSSPDGQLVACASFRTTVRLWEA GTGM
 $R S L K G D C D V V D A l A D P D G N T V A S T S Y F D N A D K V W N V N T G$ VP D R Q D A P HS H GVVVV D P T GR F V L V P D L G A D LI RII F LI I NP S



 SGHSD FVVG IR EVS L GRMLVEVVVSDFRNETVYDT DSDLN QLVVYCLKND $L A T L Q D V D W V R A L A F T P D S Q Y L L S G C E D G$
 S GLLGE LIHNNIFCGVACGQGKMLGNTNCVSYSGLLCQFNE ASLGPHQGPVFRVRFSPDGALLATADEGIDDHGTVRVWRV



 $\square$ IVP DCP GI D HMDF T A D GRFALAS CEFAGRMAVLDV

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

$\begin{array}{llll}L \\ V & \text { P S R Q E A P E M P H C V V Q F S }\end{array}$
Q T LQ GHE YP VY S V S WS P D
KSDFQV
YK T I S F S P D G T ILLAS C HLD M S
TVLRGHNGLIHSVAFRPDGRHLVTGGDDQTARLWDLTDGR $R T L T G H N D E V T S V N F S P D G G Q L A S G S \quad T D N T V K$ D L HLLK N L R GI R LA A CP K Q T QRQQLF A A A S NE GNVQQLWS C H RIF AGHINDVDCVRFHPNSNYVLTGSS DTMCRM

 SPLH GHTDEVTCVTFTPDGTRLVSASHDCTVRVWRVSDGS P HYF DCYKNTLDWVTVVEFNEPK KETSSKPMVYVYYISNPAKP

 PFTPEVRDPDSQVQFSPDGRVLAVLATGRDH L WNVTDP $T$ GHEDVV DS SVVSFSSPDGTTYASAS RLDWKDHTVYLDWD K T L R S HS R RVN S V A ITS P D G Q T L I T G S D D H
 A T L ETLTAHNQPVLDI SFSPDGQYLVSAS
YVLQGHRD I STAVAFSPDGTVLASAGFDNT川RLWQW




 $H T Q G H A B D R T 11 L$
 QTLEGHSDWVNSVAFSADSKLDLASASDDHTDKDWDSATD
 D APAAPHPGPD QDAEAPRPSRSHEARYTDMGLDDVRFWRD K QLF NEESAITSVCISPEGHWVAFGSQGGK\|RVLDVHTGN


 NLDGHNG SITTSAMFSHDGRHIVVGSNDMTVRMWDAQTGE


## UniRef90 B0DFW7

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UniRef90-R7S075
UniRef90 U2YMX7
UniRef90-M5C517
UniRef90-D1AA67
UniRef90_UPIO003620908
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 LWDTSSGKKDQSUEGNEDDISAQFSPDGTRDVSCSAD QCNQUIMKGHSSWVWWVA ISPKGNILATGSADGTVG
KPLSPRPLSTSLDTATAGSWSIAFDPTGSQVASA
RATLLGLPEGWAALAPDGRYKLHGEPGGQFWHVVGM
LWKRSGEPVAVLRGHTDAVPAVRFSPDGRF IASASFDKTV AAGVKR ILPTYGKDDDKLPVYKMPHLEGWAMAGDLLFAPA GKLQAAGTLKFKPAQGPRHCAFNPIHPELVYTDCELSNE WNLKTGQEIRTLTGHSDLVYSVADSPDGETIASGSWD
WSLTPGGPNTELTGHQASVSAVAWSPDGCCLASVSEDRTA WEAATGTCRSTLEGHSDWVGAVAFSPDGQLVASASRD FKSLHDFNGHTFWDWCVEFSPLQSNNNNNNNNNKSNS DGV CRSTLEGHSDVVTAVAFSPDGQWEAGTGTCRSTDEGHCNV WDTESGVKLQTLQGYSNAVSALAFSPDGKILALGGSWD WSVSTGQCFKYLLTHVGGVHSLSFTSDSQFLAVSN KLI RVLRGHEQAAHSLAFSPNSNTLASGGWDN TGGLEPQAPLVAAPGSGPRHGVFWTPAGTMFYLTSELNNH WDVKTGNQKAKLDGHNSTVYSINFSPDGATLASGSYD LWDKNGKLIKILEGHKDWIESVAFNRDGNYIATASRDG KVLKSIKVVKGKRRRLVLVAGGAEL WVTNEDDAS $K L I P V A E Q P S L Q T E K G V G P R H G V F W T S D Q Y L F F V G E L D Q Q$ RLLATFTGHSLPDTCDAVSPDGQYLASSDAQT DRLWQVST QRLLVR GHTDYVWNDAWSPDGQMDASASSD
RLLRTVKVSEMPHGDEDDH
$W Q L Q D G K K S L T \prod Q A H S G V V R A \prod A V S P D G Q L F A S G S D D$
WDVAEGTLLRTLPGHTEPVMSVAFSPDRRTLASASQDNTV KLLRNLPGHRYWVMAVALNADSTDAASGS
K RMLEKWIDDKVSVANCICVSEEFIFCGCANGTVRDFYSH SDLRPLHEMHGHTGGRVYTLAFHPGGDLLVSGDTDGGV KVAHRIKVGT RPFGLRFAPDGRL
AKTRRPQGNSLILPNMFQVNSVAFSPDGKIVVSGSSD
WNLATGEQDRTLTGHSELVFSVA DSPDGKTLASSSFD
WDLNS GQS WKLLQGHTGWVCSVAWSPDSCTLASGSHD
GEQLWCVTHEKPIDAVGFSPDSTFMATHYSDGTTSVSRVV VGTDLVTMIDLPGGRGSMPQDVKDAPDGSTFYVAD
RHPREPRVLTSVSSRDERVTSVAFSSDGRTDASAGFSGTV E ITKKTGHTGSVRIVMVSADGSRAVSVSGVNSULA CDVATGAEGAVFARESD IIRTMMFTPDGRTVILGGDDPRVEV PLGKPLQGHEDSV LLEAVAFSPDASRIVSGSND $K T Q Q D K K F A F R S V S F S P K S$
$R D G M L P P P P L P P L D A V M A R S D T F C P D N \prod R U V V T G G Q N W T$
$V$ RDGMLPPPPRLPPLDAVMALRSITFCPDNIHFLSSDVYEAD WQVGERRELGTLRGHTQRVRTLAFSPNGYTRASGSMD
 WDVESREI MAEWEENSGDIQKI QFFPDCSSMVICSDEII R
 WDVQTRQQKFQLIGHTWSICSVCFSPDGATLASGSRDTSI IWQTDGRLIKNITGHGLAIIASVKFSPDSHTLASASWD A A

 IWDNQGNQLAVLTGHQNWLTSVAFSPDGQRLAATASVDGTA VVTSPFQGHTDVVTSVAVSGDGTVVASGSYDKTVRVWRDD KELQKL DLSENVCTHELTPAGDDPMRS ISLASDGSCLVAGNNKGKC FELQYSIEGHTGCVGBSVAFSPDSKYLATGSHD ARPVPYGPALVLHSRFMGPDALAFSPDGRTLATA YD

TVSGKPKGTLTGHTDSVTSVAFSPDGVVLVSGGEDR WSLATGSLIDTLTGHTKPVLCVVITPDGKNIISSSDD MHTGSP I SKRPLNRSWASGQSAAFSPDGAWLAVADTYNDR WNVTTGKVEDTLKGHTHWVNSVAFSQDGNRVVSGSSD
 QAEREI QVLHGHEGPVMALAFSPDGKL LASGGGARD WNLETGKEIVTLSGGHSDSVNAVAVTPDGKQIISASND
 RIFDITTRREHLLEHSLYYNLVQRSQDGTKIASSTYNAN GTLTECSPATPGAGDGPRHGAFWTQGNSTLLATVNELSNS
 PLLAAFEGHTGNVGMNGMFSPDGRRVVSGSDDKTI
 KDKCTLKGHSDWVRSUAFFVKSVCFSPGSTDSKLLASWSRD
 SPRGLRLVEQVALPLGSGPRHTLWHPSGHLYVLTELSREV WEAKTGQLDTTLDGHEDLVVEVAFSPDGSLLATSSHD GYPELTRLSMPLTGEEVEEHHGNFTQDGSLVMVLNRGPGG ECLQTIPDDDWAWTLAYHP FEPLVVTGCNG
 MVLGPLEGHSSFIRSVD SSRDGTRIVSGAADA
WNPD RSK L L K L G F S H DK T I LAAVD I S P DNRLIDASAS LDD


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UniRef90 UniRef90-Х6МЕН7 UniRef90-B2WNC1
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| :--- |
| UniRef90 | UniRefon - B7k911 UniRef90-D818N2

UniRef90_B8HQY1

DGTCTVSGSADYSVRIVIWDASTGAEDNVHTHYVYSVAFSTD NTIQLWDVSSGAQTRSLKGHSDYINCIRFSPD DGMVRVWNTTNPAWDTATGQCLHLLLHAHAHWVWTVAFNPE

RПWQLNAQPAA $\square$ SA 1 GKHEV HTGEVSADDFSPD LVNKRDWTLLKADPVLGQPVFVMARPD ET K LVWNTAVA TDK पWSV S RSLL DASMEGEQHKEYQDTD KTVRLWEAATGMCHSTPLN TGGNGYTDCSGSFWDDETTKEDIIFKGHEKWVSAVAFSPD VTAVAFSPDGQLTASTSWDKTVRLMLEGHSDVTAVAFSPD KTVKL WDAKFNAALQTLEGHSEEVNAI AFSPD
SKFSVKI WS LNESRCYRVLHSNKEWSSSLAFSPD VTGYKVTYPSNFTEFYTANSYGGAVPPNGSKVAEIADSPQ KT DK LWNDDTGEEDHT

KS TRLWDVKTGNQKAKLDGHNSTGQSVCFSPD
NTRLWNKNGKF VTVIDTANHTVKASDKFAVDGLRA VHTYETTYSDSGLTWTFVSAVAGA保 ALTSVWSMAFSADGEVLGAGDRQFLKCWRVPT

R $\square W$
RTDTLWNASNRSTLNTLTGHSHRVQSLAWSPD EDQTVKFWEVSTGKLLNTLQGHSNSVLSVAWSDD
NMHYLSDDPKPHSLGVDVAKELEPRKPDSVYPDTIALAFD RLWDPRTGRPGPPLDKGPGGVYQVVFADD
FVGNVGSNDVTVLDPASGETLATVPVGERPYGVAFAQ
KTIKLWNLATGEQTRTLTGHSEGVWSVAISPD
DAVVDLATDRVEKVPVSTGETGPAQVYDAGEKDQFAAYSANQ
DGLLIPGADHEGKWIGSEKRNDPDDHHGDGSGRRVHFSPN
R LW HVTNGRRLTTAATLNNHVGAVYSVAFSSD R■wHLVPP RLU
 SEQVVSRCDT GHAECVRSFFT

KT K DWQLYDRQTLATDNGHTWEVYAVAFSPD RПWELQATKRUSPSSKEGG\|CKQTFSGHKDFUSVAVSPD IWDLLMSTTKKKELKALRSVEDIINDVK
I TSYAVSYFGNRFDRVFQCPTHGATVPEGAAAAETA $\square$ SPD KLWSR WNVKTGQLKLLA EGQLLQTLKGHEDSVWSVSWSPD EGRMLVTAKAGQGABANIDDSPAMAHPAHICFSPD
 NTIKLWQVTDGKLINNLNGHIDGVTSLSFSPD GSDR DWQVETGEQUQLLEHQNDDWLSHDDADWAVS FSHN R $\quad \mathrm{w}$ UWDGGR DVATKE HGRS SVYSLAFSRD RUWDNQGNQ $\square$ AVLK DVATKEVLQVLP GHQS
DGTPAAGPFAGHTEVIWS
FEGTTVRVYTNDGKLVKA ${ }^{2} K S A V K G V G H A$
DRQRVVSGSSDESVR WDTSAAREODKHTDSTTSTYVSN DRQRVVSGSSDESVR WDTSAAREQQKHTDSTTSVAFAAD YRTFKVWK WNDERSELPRFQAVTKFQAHNKYLTRCLLSPD SRRTK WNVEGFKLAYNITT

A HRGYIDGLAF
 GHA GHEKSVLALABSPD VWDLKTFRELEPL

KTVRIWNVTTGKVEAKLKGHTHWVNSVAFSQD A DVD $\square S A P A T P R G R S$ KLW RPDGTLTDTLQGHGKAVLGLGFSPN NTINVWDAQSG NTMRTWNDETEELKKTYSQHKQKVNSVATTPD QTFWDKKVSLWNLEKSGKTQFLKTLATHDSVISQVKISPD VFKLKYTEVDVEFVAAGSYSTFLDEEMGAFAAAEVVLSAD DTAWSVLYQPGGCISLLKRQTISTFPPGKSRVKDNFVYAT
 RLW NVLTGEEVMDPLSGHTSIVQSVAFSPD NEEDVDMKFDGDDEKFMSCSYVLSGHTEIILCLDTCVSSS HTIKUWDSATGTLQQTME
 FVLGA DREGRWRMLSATGLLGALDGHKNVVRSVAFSPD RIW W ETVK DWQVESGRLTTTLTGD GTVKDARGREVAFFDAESKELVHRVTTASNGVGHSYNSPD QTIKIWQMPTGKLLHTLLGHTSRVVT LS LGUAEQTLVS TGEQMGGPLTGHTDRVRSVSVGGPLKGHTAWIRSVRFSPD T TRVWDGQTGDLTNKTRVLGPGKGHTAWDRSVRFSPD ANGLWVLDGAATKVLRFIPTGRGAHGLYLSRD

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UniRef90-B4W1D3
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UniRef90-X6MLW2
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 A R QV WVNFAMPDNNHLQLIDVKDLAVTNMLTP GKAVLS GGLLYASTRYSDTVLWARLDSDGKMGKVTHHDTGLDAPWH GQ HIVAGSGDNTIVKLWNLKDKQEDRTLTGHSHLD GQLV ASASMDKTVRLWKAGTTNDETVQL

 NQFLASNSQTLS FNLWNCNKEQUVQTFEKNTDVVKT GNT LASGSWDKT R L WWNVNTGQE RTLAGH DDKVWS NNRLVVSNRDDNTIAVFNCADETGVTFGGLYPAYGSSPRQ GKTL VVAGDDNTIKVWRVSE
GKTLASGSDDDSI RLWDVQDEQEKAKLDGHSCA VQS NRELDAVAYYDGTVRFWDKDSNFLLQELVGH GDQVHS


GSTVVSGSHDRTVRLWNVAEG KVFDADQAHAKSVQA
 PNCWLS CGYKDHSI Y I WDVKDTNKVGKVWSDLIFHSSFVWN GRHLAACHAT GAVRLWQLSPDGYEAAAERFQPTPHQGSA


 GKHLAGLREAVNSLTLWDVDTGENIKTLKGSEGKGRSLTF SAALIVTNRGEGSLS VWDFAQQRIVRTW WRADPGGGSPDM



 GETLVVSGSMDKTMKVWRCDK GETLVSSGMDKTMKVWRCDK

 GRLLVVTAGQDHRARLWDVTDPHRPALLSTLSRHTDALYT GE LIASGSADNTVKLWNLPNATLLKTLLGHP

## 


 GKY A AS





 SKHVYTSNRPTETIAHFRIDAELELELVAETSTQGKHPRM G RFDRSFGAQENTARLWDVVSGKQLQLVEGHSE

 GTRGVVSGSNDRTIRLW DARTGAPIIDPLVGHTDLVLS GKTLIVTGSKDNSVRLWESESANCDGVGDGH MGAVGA SKLL ASASDDRTIKI WDSATGTLQQTLEGHS GGVNS GELMMVSGGEDRETRLLWSVSEQQCLRTLRGFT V GEA I YAGVRGSNTLGVLRVRDAGDRLEQLADVDGVDWPRH


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GKYVVSG
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GTYAV


VGEVVSVVWD
G G S V N S V C F S
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SESPN

G R R V V A VIA F D A
A D G P
V $\square$ SVA V S P
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LE GEVT A V I F A D K
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 QLVRFDGPVTTLTDATGSVALLASGSND QATGQVKWTMPVGKLPAGIFMTPDNKYLLVGDMGKDY WNATTGKQIGQSLVFQHENSSVAFDPSGELVATADRD QPVGEPFEGHTDQVWSVSYKTIRVWDPQTGQTVLGPDTGH HTLNGHRTIENIV FSPDSQUIIAVGN LLATLRGHSAPVRADDWSKDGRTLASASWDKTVALDDVPG WNLDTGEELQTFTGHRDWVYSVAFSPDGQQUASGSED KEERTGKGHTDWVTSVFLSKDNKLIDSGSWDNTVNVLSFT K 1 FHGHED VVAVTFSNQGNLLASSSDDCTVRIWDIDQGE TI RSPY IALSDTVHPDSRQDSSHGHRSRVRCVVFTPDGSH WQLPSRKVLHVLAGHSGRVRSLAFSSDGQTLASGSAD RDPAAPVPLGELTGHRGTVHSVAFSPDGKTLASGGDDLSV WDIERGECLNRFI GHKDDVNSVAFSPDGQTLVSGSSDE DPVHPVSRYRDATSRPAPI RGIADSADGRLLATGGEDHAV QSGPPLYGHTQPVWSVTDLHDGQRVVSGSDDKT LLKTLNGHQDWVNSLSFSPDGKTLASASAD $D M V N R K V M G Y D D L S K K G M P Q D I R S S P D G K T F Y V A D$ WNLNTSQKIRTLEGHKADVNAI A I SPNGQLLVSVSDD RSLGVVKVGSMP

HF ALVS GDRVSVSNFDSAD TDPADPTQRSRADTATGGVYAVAFAPDGRTLALAGEDGTV TQL WNIKTGQQKVKDDGHQEYVYSVCFSPDGSKLASGSGD PRLWDARTGKPVGHPIDFSGDRPEDQGPMAFSLDRRM GSLIK LIEDNSQDEKSDFTKSVSFSPDGKDIATAS LQKKYRHPDS TFGCEWSYHDKDFVATGCNDGV TLIGPIEAHANWVCSVEMWADGMRFVSGSDGRSA NARPQAVLTGNDNDATFSPDGKLVATSAWGGDV QLWDS IRTMRGHRSDRTLVTGGDDSNLRI WKLSNFNTSFQAFENP $\begin{array}{ll}L & \text { SLEEHKHPVYSISYSPDSQCIVTADGHRDAVNQVSFTP } \\ N F E D L T D R N V Q E D H P I M S F T I S K N G R I L A L L N V A T Q G V H L\end{array}$ TGQPGARVGKKQDQPTASSTWVAFSPDGRTLATGNSRGVV EKGVKRILDGYGRGSEKDPVYKMPHDEGWTVAGDHAFVPI STLRASGSQDSTVK $\quad$ WWDASSGEYLQTLEGHSGSVNSVAFS KSLKVLSGHT GQLTNRASDAPRGGYGFGPRHLDFHSAQPWVYVSLERQNK EQGTRR LGNYGRGQEKLPVFKMPHLRGWSMAQGNY LPA
 $A 1 D D P T Q T V K W K M K V G K V P A G L W M T P G E K Y L L V G M T G A D Y$
$L W R S D G T E L R T F R G H Q G R V L S V S F S P N G Q U I A T A G D D$ WDMTAADPSAHPDRDMGHQDUIQDVDDSPDNRWVATAGWD LWDLSGKQKAEFKGHQGWVTSVSFSPNEPYIVATAGEDGTV TKVLKEDDLNGHDTPGATSPQEAYHSGGAKANL CRTQFDHPEH LPDSSVA $\square$ SPDDT $\square Y A A G L G N G A M T \square L L R S$
 WDLETGELQNTLTDHTRLVRGLADAPDGKTLASASWD
GQUDLSGPRHLAADHESEQLHDSCERSGMDATAVRQQNDA

KQLGTDTDHQGTV ESVA ISPDGKLLASGSGD

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| UniRef90-X8J0Q8 | PEINLWDAQTG TKVLGPLTVVKSNISLVQFSPA |
| UniRef90-D5QEV9 | D GVFIID GDTFRETGFlPTGI GTHGLYPSRDGTMMYVANR |
| UniRef90-UPI00047158CB | DGVFMVDGDNFRQTGFIHTGVGTHGLYPTRDGKQMYVANR |
| UniRef90-K9TRK6 | T TLRLWNVGTGKLLYTLADHSSGVTSVSDS QNNMMASSSD |
| UniRef90-UPI00016C46CD | RVW |
| UniRef90-J3DGS6 |  |
| UniRef90-LODPJ6 | Y TVQLWDASNGKPKGPPLQHNGQVMAVAFSPN |
| UniRef90-M5C0D7 | S STASSWDHT\RVYDARTGHTVLRPLHGHNNWVNWVMHST |
| UniRef90_K9Y006 | YKEDKLWNKDGKL LTHTLNGHSSTVNQII F S P D |
| UniRef90-Q7NM62 |  |
| UniRef90-K9TQC5 | WSVSDPRA ${ }^{\text {da }}$ SLTGHTAGVNA |
| UniRef90-W9NIV0 |  |
| UniRef90_L8N3K2 |  |
| UniRef90-M2QH34 | IVSASEDKTVSLWSALTGAS F WPLQGHVRPVTCIAV |
| UniRef90-UPI00030C0 | K T I KLWHL T NGRTLCSVVGHSAEVLSV |
| UniRef90-UPI00037E47D8 | RLWDLSD PAAAAPLGLPLTGHLDPVWSVKFS |
| UniRef90-AOYUH5 | M DLETG\VQNTLEGHTDEVRSVA |
| UniRef90-M1WAT5 | WNVERAECLQTWNGHSSAVQRV |
| UniRef90-W7SB90 | E LW DVGGGAPSQVSALTD HTNTVTSVAF |
| UniRef90-J4IBB0 | WDARTGQQLGSALEGHTHWVRCV |
| UniRef90-UPI000340 | LWKDS DS SPLS T FEGHSAEVRDAS FSPD |
| UniRef90-Q8YV57 | K TIKLWRIA D GKLVKTLKGHNDSVWDVNFSSD |
| UniRef90_UPI00030F2DA5 | MADGVYLIDPASFKQVGFIK T GVGTHGLYP R D |
| UniRef90_UPI000 |  |
| UniRef90-14EAI1 | ATVVSRSKRKTITRI AMGAGPLGAGA |
| UniRef90-I8QUM5 | RLW NI RDAARPTPGAVLRGHTRAVRAVTFT |
| UniRef90-F2UTC0 | LLMSASRDQT ${ }^{\text {L }}$ CMWD\ARGAT LVRELKGHQGCVAT |
| UniRef90-A0C5Y0 | NTINLWDFQTGQQK DQLNGHTDYVYSVCFSPD |
| UniRef90-H0QN29 | AI GGHTGNVRRWDVRTGKP |
| UniRef90-E0UNY6 | VKLWNQDG口L L L L Q HRNTVFSVS |
| UniRef90-H2Z7K9 | $V W \mathrm{~V}$ S KPSTDPRHVLRGHT |
| UniRef90-M5C8D0 | WD GLT GKQAAVCGDDDWSHSGEVLSVC |
| UniRef90-D3D5B7 | GARGEEMTPLATLTDVIGNGETTESAQAQPDFSNMM |
| UniRef90_Q7NID9 |  |
| UniRef90-A0YRH5 | DNQMLVSASRDSTVRLDWNLNGIPQVF QPDKKVYSPIES P D |
| UniRef90-Q9H7D7 | WDLQDRVLVRKYQGVTQGFYTIHSCFGGHNEDFDASGSED |
| UniRef90-G0Q104 | TLWDSTDPH H L KRRDKSLTVP GGSLWSVEFSPD |
| UniRef90-UPI0003B62608 | GRHKVLVMDTNTWQQTGSIDTVGQPVFVMAR P P |
| UniRef90-T5ANI1 | GADNILNGNRGTLS 1 LKGHSDEVDAL |
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| UniRef90-EOUL31 | ILASASDDKT 1 R L WHFDTWENFQTLMGHTGKVQS 1 |
| UniRef90-UPI000472EBA4 | LDVFKLQNDSLDPQP\FSKDTLPGNIRPRQLAGTVHVHPN |
| UniRef90-A0A011Q6C3 |  |
| UniRef90-GOTVV1 | LRVWDLSHTSTSHTASVSSRVLGGHAGGVRAVAWCGLAP |
| UniRef90-E1T3G7 | VAVVDWHTQKVVKTl HTGNGAHNFRSLAD |
| UniRef90-K9S8L0 | $V R L W G L D G K E L K \square F R E H T N P \quad V R H V S F S P N$ |
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| UniRef90-B1KED1 |  |
| UniRef90-B4VPV8 | L S GNPLTGFQGHQDW■TNVSFSPT |
| UniRef90-NOE263 | N |
| UniRef90-K5W1J6 | SDDHWSH TLLQGHTSKVWALDP SPD |
| UniRef90_E9T5C2 | VRVWDIA DPARPVQVGRDLT GF D DVA H V V |
| UniRef90-UPI00034A11D0 | VAVVDWRTQKIVKRIPT GRGAHNFRSLAD |
| UniRef90-K9TI | KI WSLTTGEDQNTLIGHTDLVVSVAISPD |
| UniRef90-A0A022KXN9 | DPADPRDIARGAEYRWAVRSMEPASRHEGTNELS SHLELTAD |
| UniRef90-J7SCT8 |  |
| UniRef90-A0A017SDL4 | CVRLWNYVEGRCIKTYOGH |
| UniRef90-K9TF49 | VKLWELPS GKAVATLTGHQDIVRSSVSFSPD |
| UniRef90-18TJJ6 | LT GYKVHYPKNFEKFFETT TYGGPELPSGATAAEIA |
| UniRef90_LOD9C9 | V RW DVETGRQIGTPLMHKSPVHMIAFLRD |

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GQEPHGLAV
DAGSHGVGF $T R P \square S R V T F V A$

VNR VFFTA
HNAPVWVK F S P

DNPSG $\square$ FFS
GSVNSVAFS
IIEA LAA F S P N
Q A P S G $\square$ F F T S
GRSPHG TYF


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