

TGTNTVVDT\TVGNAPLEVTV SPNGARAYVT
AGTAF T S A QPALAA A $\square \underset{V}{W} \underset{Y}{V} \underset{T}{S}$
T ATNTVIDT $\square$ P VGTNP】GV AVSPNNTTVYV

GQFAYVA
PALAGKVFVS $T N L V \square A T \square P \nabla G R D P \quad V G \nabla A \square T P D G N F V Y I T$

QLT Q TVEVGGEPEGVLV S P DGNTAYVT
$D Q \nabla Y \nabla A$
SNTVVATMPVGNGPGGVAlT KGFDSRAYVT
 DGTHFYYT AVTPNSKFVYVT
TATNNVTARVPLG DGWP $\square G V A V D P A G T R V Y V A$
$D Q \nabla Y \nabla A$

ATSRSVAT $\square$ P $\square$ G GK P A G $V$ A $V$ S $V$ T S P D A K E
TGTYTYVPTSAARLAAGQTPGAD
S D T F TVTVG
T GKVLKNDAVGKEPEGVKV A P DGKTVWVT
DSPTAVVFSPDGLLAY $\quad$ S
TATNNVTARVPLG GGWPVGVVVNPAGTKLYVA
TATNTVEAVVDVGGYPRGV AVDPTGSRVYVT $P G S L P D K P V \quad F S A D P D N L F V V$

T T VLAMSSSAFAGQAPGAASAPD $\square \quad$ P $\square$ SHHDRVY

$\square T A B L A T G A D C S G \square A A V A A P A A T A A P A R N T A A P V$ TVVDTATNTFKTTITGSPGSNP LIIT $\square T P D G T R A Y V A$

AEMQAWLDRNAGQQPAGLVET
$\square T$ S D G K K L Y V D

ATNQS $\square$ STVKVGTAP VGVA $\square$ DPRQNRVY $\square$ S
QTAGATAAPSAVQT DPGSETTPEHDNPEVAQDPARVYVP AASDRVTRAIDVGKGPQGLAMTT DGKWLLVA QADGTAVTPYDWTLTPAGKQDQLPMGSVLSADHRYIIVS

TPDGSEVWVT
QMATWLRSAPAATAD DEASR VVYHAPGTDPAADPSNLFLV TVINPATNAVIGQUPLGHPRPGVLGALFSPDGRYLDVI. ATNTVVDRFKVGRGPQHVV PSWDLRTLWAT AEQIMASRTLDADYAPVDAPVWDSDPMNITLV

## OUERY

UniRef90_UPI0003720CED UniRef90_D5W8B5 UniRef90_K9DEQ3
UniRef90_B0T7F2 UniRef90_K6Z5K0 UniRef90_F2IXX2 UniRef90 G9AH26
UniRef90 ${ }^{-}$D5V716 UniRef90_UPI00045E8FAA UniRef90_UPI0002F532B5 UniRef90_Q0FQZ7 UniRef90_A7GPF0 UniRef90_UPI0003A5125C UniRef90 W9UUX4 UniRef90-K2JXN2 UniRef90_R8DAF1
UniRef90 V5MAL8 UniRef90_K0G6A5 UniRef90-Q1GYW6 UniRef90_A6E1Z0 UniRef90_UPI0002D3238D UniRef90-Q8TPR8 UniRef90_Q46G45 UniRef90-Q46EA5 UniRef90-C2OSS1 UniRef90-I3BU34 UniRef90_G3IY03 UniRef90-K2CWFO UniRef90-F8B4L4 UniRef90-X5E4G1 UniRef90-U6ZRW2 UniRef90_K6TWG6 UniRef90 R8RD94 UniRef90-Q469E7 UniRef90-Q8Q0C3 UniRef90 A1W604 UniRef90 B812K9 UniRef90-Q12EB1 UniRef90-G1UDU8 UniRef90 UPI00041D8AD3 UniRef90-H2JCD7 UniRef90-LOJ4Y6 UniRef90_Q47HC2 UniRef90- H5WHB9 UniRef90-Q12WY8 UniRef90-18J3X8 UniRef90 M1 Q6T3 UniRef90-C6J106 UniRef90-M1QFQ7 UniRef90- A0A024YNA9 UniRef90-FOBAW6 UniRef90-H2AEHO UniRef90 UPIO0042476DE UniRef90-UPI00035D9372 UniRef90-D6Y2A5 UniRef90-UPI0003B376EB UniRef90 UPIOOO39B1233 UniRef90-UPIo0037AB570 UniRef90-UPIO003608378 UniRef90_UPIO004766C25 UniRef90-JoUTJ3 UniRef90_000808 UniRef90-DgWWFL UniRef90_UPI00036F03B1 UniRef90-A0A024EKL6 UniRef90 K7W4U6 UniRef90 D5SLS4 UniRef90-H5XW92 UniRet90_14EGM4 UniRef90 UPI0004793BE4 UniRef90-A6X3Y4 UniRef90-A0LIO7 UniRef90_UPIO0037392EC UniRef90 C2QLC5 UniRef90_UPIO004706E6A UniRef90_J2KB30 UniRet90 UPIOOO4178933 UniRef90-Q111Z3 UniRef90-B8EN42 UniRef90 ${ }^{-}$B2UKB5 UniRef90-14BJ78
UniRef90-Q1LII5 UniRef90 UPI00037C61A5 UniRef90-UPI00047158CB UniRef90-D0CP62
UniRef90-Kок274
 DPDFPNLTTTAFVVDGDKGEVLGMVDAGYQANLAFSDKEA
 D GGWDMPGTSI FDGDSGKMVGMVETRRDADMAIDPAGQ DLHTASMDDGRMVTDTASRPLKGMVRAAQFASSLYSPSRR EVSFQSFGGKMDILDVAEPKIKGTADKNLVGNFANSKTRP NE KGNTDTVLDSTTNEV DATFPGGQRPGDTDSPDGK SETTNMA HFIDTSTYKIVHNVLVDQRPRYAFTADGK NE NDA VTVVDTQNKSVLAQI EVGVEPGMAVSPDGK NED


N 1
NEKDDSTSVIDVTTDEVTRTDPTGERPGTTFSHDFS


NER DNTTSVIDTKSWEVVNTFNVGMRPGILLNSDYS NE KDDTLSVI D DDTLEVIRTLKTGERPGITFNADFT NAGDDPADDTVSVI NTGTNTVVDTITVDNAPEVTVSPNGT GNHGNNTVSVI NAATNTVINTIPVGDAPGITVSPNGA N SGSDTVSVIDDSSNTVVATIPVEVAPHIAVTPDGT

NERGN
T TT VVDSETWEVITEFAAGNRPGTTASPDGK NER DNTVSVI DGDSLEVLRTFPVGRRPGLTFSQDGR N


S E S
VAVIDTATNNVTARVPLGGGWGVAVNPAGT SES ANSVHVVD円PTNELKASIVVGERPRLVLAPDGK

 N YGSDFISVIDDQKNQKFSEVITGSKPHVAVSPDGS APNMVDGRAYLFD DNGRNLGLLSTGTWSGLVMSQQRD
 AT T DDAC VVYVIDTATNTVKVNIRSSYPSGITFNPAGT

N E G
A DTVSVLDAAS LKTLTNVRVGKMPHVQVSPDGK ANEDESSVSAVNVATMQTTASIPVGKGPHVQVTPDRN

## VT V VD A A A R QVT G R $\square E \mathrm{~V}$ G G G P G $\square$ A VA P D G R

DGSTTVAVPVTVPVRPAALSVTTPVTVDGTPAFAVSPDGS SE VIASLVHVIDTASGKVLMNVKVGKRPRMADTPDGA $N G \quad N S G T V T V I D T T T F Q N V A T \square P V G S G V N L A T T P S G D$ SAA $\square$ D $\quad V C T V Y V I D T A A N T V S A K V N I G Y P S G I T V N P A G T$


 $N$ SGENSVSVLSTETNSEVERIDAGASPYIAASPNGN

AAEQFSNTVSVTDPVDNKLLGVIRLGLVHGMGYSPDHR VANRLDNTVSA IDVATYATIATIPVGAAPGLDASPGGT


NL
$\stackrel{V}{\mathrm{~N}}$
RSNDVSVIDPATSKVVDRFPVGKSPHVVPSWDDR NGDDRVAFVDTSAHGVSATVPVPKPHTIAIRPDGR QGTQSLQVVDTKTQKVVQTVPEALYFGLALSPDGK

VAFSPDGK
VRGENY $\quad \square$ AVLDASTYAEKTR $\square$ TVPAGPGMDFSPDGK VEAGTHH VSVDGDK LEPDHRFTTRFAGGPKFSSDGR S NASNGVTIIRTRDNTVMGTVY GGRGPGFFTPDGQ NNAEGSTNGSLTPINPRTGKPGPAVTVDDPYNMYFTPDGR VETGDHH VSVLDGDTFEVLDRFETPFAGGPKFSPDGR


UniRef90_UPI0003720CED UniRef90-D5W8B5 UniRef90-B0T7F2 UniRef90-K6Z5K0 UniRef90-F2IXX2 UniRef90 G9AH26 UniRef90 D5V716 UniRef90_UPI00045E8FAA UniRef90_UPIO002F532B5 UniRef90_Q0FQZ7 UniRef90-A7GPF0 UniRef90-UPI0003A5125C UniRef90-W9UUX4 UniRef90-K2JXN2 UniRef90_R8DAF1
UniRef90 V5MAL8 UniRef90-K0G6A5
UniRef90 Q1GYW6 UniRef90 A6E1Z0 UniRef90 B1LYY7 UniRef90_UPI0002D3238D UniRef90_Q8TPR8 UniRef90_Q46G45 UniRef90_Q46EA5 UniRef90_C2QSS1
UniRef90 ${ }^{\text {Q8TLB7 }}$ UniRef90-13BU34 UniRef90-G3IY03 UniRef90-K2CWF0 UniRef90-F8B4L4 UniRef90 ${ }^{-}$X5E4G1 UniRef90_U6ZRW2 UniRef90-K6TWG6 UniRef90_R8RD94 UniRef90_Q469E7 UniRef90_Q8Q0C3 UniRef90-A1W604 UniRef90-B8I2K9 UniRef90_Q12EB1 UniRef90-G1UDU8 UniRef90 UPI00041D8AD3 UniRef90_H2JCD7 UniRef90-LOJ4Y6 UniRef90_Q47HC2 UniRef90 H5WHB9 UniRef90-Q12WY8 UniRef90_I8J3X8 UniRef90 M1 Q6T3 UniRef90-C6J106 UniRef90-M1QFQ7 UniRef90-A0A024YNA9 UniRef90-FOBAW6 UniRef90-H2AEH0 UniRef90 UPIO0042476DE UniRef90-UPI00035D9372 UniRef90-D6Y2A5 UniRef90-UPI0003B376EB UniRef90 UPIO0039B1233 UniRef90-UPI00037AB570 UniRef90-UPI0003608378 UniRef90_UPIO004766C25 UniRef90-JOUTJ3 UniRef90_Q00808 UniRef90_D9WWF UniRef90_UPI00036F03B1 UniRef90-A0A024EKL6 UniRef90 K7W4U6 UniRef90-D5SLS4 UniRef90-H5XW92 UniRef90_-14EGM4
UniRef90 UPIO004793BE4 UniRef90-A6X3Y4 UniRef90-A0LIQ7 UniRef90-UPI00037392EC UniRef90 C2QLC5
UniRef90_UPIO004706E6A UniRef90_J2KB30 UniRef90 UPI0004178933 UniRef90-Q111Z3 UniRef90-B8EN42 UniRef90_B2UKB5 UniRef90_14BJ78 UniRef90-Q1LII5 UniRef90_UPI00037C61A5 UniRef90_UPI00047158CB UniRef90-D0CP62 UniRef90_KOK274

ESNNISVIDDTTNKVTATVD
TASTTGYAY $\square$ T NSGSTTVSVI DITTNKVTAT
$K \square Y \vee V D$
D L WVTS
K V Y V S
LVWVTNTPQGSHDSMEAKGFAVVDTKKREVIGSVAVNDG RAYVGN

GKPGAVWAIDTATNAVVAKVP
WlAVSN EGDNTVSI ISAADNKVKQTi S
ELYATEDYFSRGVRGTRSDVVSVYDARTDSPKHEIPDPA VVAYTN QSKDKNMDMNMNGFAVFYDTDTGKLIKKVE FAYVTN AGSNTVSVIDTSSNTVVATVP
$R \vee Y V T$
K Q R

FVFVVE
NKSNTVSAIDTKTNKITKTIKVREG

## A VRVID T A S R S VT A S $\square$

$R A Y \square T N F$
NGTVSVINTVTNTVIATVP


QADGTVSVIDPA TNTET
KQRDNTDISVINTATNTLMAPIVVEQ
$R \vee \mathrm{Y} V{ }_{\mathrm{P}}$ LVGATVVPSMSDMEGEMSGYAYFYDTVSDELVKKVE

 TLWVNN NRGH TLTPDNPATGEAGKPVEVH | QFA C |
| :--- |
| $\mathrm{F} \square \mathrm{C}$ |



T L A V V $\mathrm{S} \square$ GSNSVSFIDTATS SVKHVTYI
$R \vee Y \vee A N$
QNAGTVSVI DTATNTVIAT@P
$R \vee Y \vee P N$
RLYLIDADHHRLVE

EKSHTVTVIDPKTYR LTTPVP
RGENYVAVLDGKTFEEKTRI DTPAG
TLWVNN
GSNAVTLIDTATNA $\square K G T I$
YGY CSSFNPETNDALGDSLTPLDPATGKAGTPVPVD
RAYVAN ERVASGSDDKTVKMIWDAASGTCTQTMEGH
T $\square$ V Vs
R Y Y V S HTAPS
F V Y V A S
QL
A $V$ Y VT $N$
QAYVVN $\quad$ R S S D S V S V
RVYVSSDGAS

 | $L$ |  |  |
| :--- | :--- | :--- |
| $L$ | $A V G S A A S D H A H G S$ |  |
|  | $V$ | $A C$ |

## QL F V A D WF H

EGSGSLI A/VDTKKRAVIAETK GIVVI NTFTNTVI
T LWVTN N
AEGTTNGSLTPIDARTAKP
QAYVAS
T L Y A S A G
QEPGHFALVVIDMATRAVVTQ $\square P$ LDKP
GNNKIRVYRFNDGQLTEQSPIQMS DKTARLWDTENGKELATLKHQ

YGYVCSSFNPETV
Y VY MA S
QVWVTV
RDGWVSKYDLWNLKLVAEV
SAIVVAEARRRLDFRDPEDYMV
Y VFIMS
RD GWVQKYD DWA LK QVGR】
LA Y V A N G


## QUERY

UniRef90_UPI0003720CED
UniRef90-D5W8B5 UniRef90-D5W8B5 UniRef90_BOT7F2 UniRef90-K6Z5K0
UniRef90 F2IXX2 UniRef90-F2IXX2
UniRef90_G9AH26 UniRef90-D5V716 UniRef90_UPI00045E8FAA UniRef90_UPI0002F532B5 UniRef90-UPI000468B5FB UniRef90_Q0FQZ7

## UniRef90-A7GPF0

UniRef90_UPIOOO3A5125C
UniRef90-W9UUX4
UniRef90-K2JXN2
UniRef90-V5MAL8 UniRef90-K0G6A5
UniRef90_Q1GYW6
UniRef90_A6E1Z0
UniRef90-B1LYY7
UniRef90_UPIO002D3238D
UniRef90-Q8TPR8
UniRef90_Q46G45 UniRef90_Q46EA5 UniRef90-C2QSS1 UniRef90-I3BU34 UniRef90_G3IY03 UniRef90-K2CWF0 UniRef90-F8B4L4 UniRef90_X5E4G1 UniRef90-U6ZRW2 UniRef90-K6TWG6 UniRef90_R8RD94
UniRef90_Q469E7 UniRef90_Q8Q0C3 UniRef90-A1W604 UniRef90_B812K9
UniRef90 Q12EB1 UniRef90-G1UDU8 UniRef90-UPI00041D8AD3 UniRef90-H2JCD7 UniRef90-L0J4Y6 UniRef90-Q47HC2 UniRef90-H5WHB9 UniRef90-Q12WY8 UniRef90-I8J3X8 UniRef90-M1Q6T3 UniRef90-C6J106 UniRef90-M1QFQ7 UniRef90-W6M9Y4 UniRef90_A0A024YNA9 UniRef90-FOBAW6 UniRef90-H2AEHO UniRef90_UPI00042476DE UniRef90_UPI00035D9372 UniRef90-D6Y2A5 UniRef90_UPI0003B376EB UniRef90_UPI00039B1233 UniRef90_UPI00037AB570 UniRef90_UPI0003608378 UniRef90_UPIO004766C25 UniRef90-JOUTJ3 UniRef90_Q00808 UniRef90_D9WWF4 UniRef90-D9QF80 UniRef90-UPI00036F03B1 UniRef90_A0A024EKL6 UniRef90-K7W4U6 UniRef90-D5SLS4 UniRef90-H5XW92 UniRef90-I4EGM4 UniRef90_UPI0004793BE4 UniRef90_A6X3Y4 UniRef90-A0LIQ7 UniRef90_UPI00037392EC UniRef90_C2QLC5 UniRef90_UPI0004706E6A UniRef90-J2KB30 UniRef90-UPI0004178933 UniRef90_Q111Z3
UniRef90-B8EN42
UniRef90_B2UKB5 UniRef90-14BJ78 UniRef90-Q1LIII UniRef90_UPI00037C61A5 UniRef90_UPIO0047158CB UniRef90_D0CP62
UniRef90_KOK274
 KYMGEISVPGCSHVYPSGESRFAMLCPDGSLASVSFDDTG
 $K F V A N V E V P G C A S M M P N P G V G F S A L C A D G S L A T V V L T G S K$ KVLNEI DLPGCSHDYPTGERGFSSFCADGSMDSVTLDDKG EVVDTHGTPGCVLPFPTGERSDTSDCSNGSLLTTVLDNNG KVLAE I PVV GVEPEG MGVSPDGKIVVNT EVLDYLLVGQRVWQMAFTPGEEFLITTNGNSNDVS\|DDVK $K M V A K I P G I F K D L I Q P V G \square K \quad M A T S D G K Y A F V A L G P A N$
 K I V K K L P

S GADPE




$A \vee I N T I N V \quad G G T E P V G \square D$
$T V \vee A T V L V G S A P H G \square A V T P D G Q F$ KVTAKI ELGE APGIAVTPDGQFAYVANFGSGNVSIIDDP TILAEVPVG GVEPEG $\quad$ MGIVSPDGKYVVAA $K V L A Q D V \operatorname{GIEPEG} \quad V A V S P D G R T A V T T S E T T N$

 KVTATVKV GKHPWG

| $R$ | $I$ | $A$ | 1 | $T$ | $P$ | $D$ | $G$ | $G$ | $F$ | $A$ | $Y$ | $V$ | $T$ | $R$ | $A$ | $C$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

 TLMAPI IVPSTYGIAFTPDGKKIYAANCNN AVKDYI LVGNRP AVKDY LVGR Q1 IKTISVVGESPSG WN GVVSPDNRWLYYVANRISN
 KLVNSIPVGKNPHIVPMPDGKNVWVTSEGDNKIVKLNLDS
 $T V T T T V P V G \quad D P G P V D V A I T P N D K F A Y V P L V V N G$ KVTANVPVGDSPYEVVVTPDGKKVYVPNYNSSAVS



 QTTATI PVVGKAPHNVQATPDRNFVFVVENKSNTVSALDSK SVLATIPVGNGPAGVAVSPDGTRAYVTNSSSGTVS $K L E K S V R L G B D S P E G$ G

 KVTGSASVGDSP QTVGTIP A GKGPHGFR CGlla V TPDGKKVYI TNYNSS TVTTTVPVGDDAGKGPHGFR CDVAVSADSKFAYVANMSED SLERVI PVVNEAGVYDAAPRKSFVAADKDDPE LWELSY DRVKTVPVVTCYGV NHADFSADGRYFIVSCEFSG


KETTRIEVPAGPGMSPDGKYGYICSSFNPETDVVSVAD TVIATVPVGDGSF RPGRPI PVADPYNLYFTPDGAHALVVAENRRELRYHDPRT RVQRTIA A HQA K $V$ ARLASPFCPNDAATPD KEI RQVKVANGPG $A V \vee K A V P S$ D CAGV PEHCLYTPDGRWLLTSNEGS AVVKAVPSNCAGV NMDMFSSDGSRAYICSSFTP TCTQT PVGNLPGWPSGDGTRVYVGLENADAMAADDTL
 QETARVETPNGPGMTDFSPDGRYAYCSSFSPETVVVETAT TVTATI S AGPGAYDVAVTPDGTRILYVTDSTAN $S P V K T L P T I G Q D G$ TASRVSAVYTAPPRDSFIDVKEAW KVLNTLKVVWSVGFSPDGQQLASGSGDKT $\square K \square W V L N T L K G$ TVTATVPVVAQPTSAAVAPGGGHVYVTSTNSSSVAVIDTT
 SVIEH TT T KVVAAFSVGDEPH
QI I HK $\square$ AV V GKHPFG
TI I GE P T TVGODPF
T G G $P$ DTVGQDPF
ALQQSVETPDCKGV
RLVFSPDGKYALI PNRESG $D \square M$ L QWGVPI PTGVSPHIAHFMGNHADFSDDGRYAIFTCEFGG QIVSSVSVGGKFPYMGMASGVVVVQGPGEVMLFDPAT KELATLNHQSSVNAVPDGKTDATASSDKTARLWDTLATDN KT A H E 1 GGKPAGIAMSKDGATAFVTSTEGKFVTLIDAA EQVATVPVGKLPHGLWPS GDGTRDYVGDENDDALAVIDTLD
 $S L Q R \| Y P V T G A G G V Y D A A P R G S F I V A D R D \square P E V W E D P Y \Pi G$ KVIARVPVV SAFSPNLVVTPDGKEVWLTHKDVG KVLGYLKLSSGGMILVSPDGRTFYVADMMADGVFMVDGDN $S V A K V V$
$A V V$
$A$
$V$

## QUERY

UniRef90_UPI0003720CED UniRef90-D5W8B5 UniRef90_K9DEQ3 UniRef90_B0T7F2 UniRef90_K6Z5K0
UniRef90-F2IXX2 UniRef90-G9AH26 UniRef90_D5V716 UniRef90_UPI00045E8FAA UniRef90_UPI0002F532B5 UniRef90-UPI000468B5FB UniRef90_Q0FQZ7 UniRef90-A7GPF0 UniRef90_UPIO003A5125C UniRef90-W9UUX4 UniRef90-K2JXN2 UniRef90-V5MAL8 UniRef90-K0G6A5 UniRef90_Q1GYW6 UniRef90-A6E1Z0 UniRef90 B1LYY7 UniRef90_UPI0002D3238D UniRef90-Q8TPR8 UniRef90-Q46G45 UniRef90_Q46EA5 UniRef90-C2QSS1 UniRef90-Q8TLB7 UniRef90-I3BU34 UniRef90-G3IYO3
UniRef90 K2CWF0 UniRef90-F8B4L4 UniRef90-X5E4G1 UniRef90_U6ZRW2 UniRef90-K6TWG6 UniRef90-R8RD94 UniRef90_Q469E7 UniRef90-Q8Q0C3 UniRef90-A1W604 UniRef90_B812K9
UniRef90 Q12EB1 UniRef90 G1UDU8 UniRef90-UPI00041D8AD3 UniRef90-H2JCD7 UniRef90-L0J4Y6 UniRef90_Q47HC2 UniRef90-H5WHB9 UniRef90-Q12WY8 UniRef90-I8J3X8 UniRef90-M1Q6T3 UniRef90-C6J106 UniRef90-M1QFQ7 UniRef90-W6M9Y4 UniRef90_A0A024YNA9 UniRef90-FOBAW6
UniRef90 H2AEHO UniRef90-UPI00042476DE UniRef90_UPI00035D9372 UniRef90-D6Y2A5 UniRef90_UPI0003B376EB UniRef90_UPIO0039B1233 UniRef90_UPI00037AB570 UniRef90_UPI0003608378 UniRef90-UPIO004766C25 UniRef90-JOUTJ3 UniRef90_Q00808 UniRef90_D9WWF4 UniRef90_D9QF80 UniRef90-UPI00036F03B1 UniRef90-A0A024EKL6 UniRef90_K7W4U6 UniRef90-D5SLS4 UniRef90-H5XW92 UniRef90-14EGM4 UniRef90_UPIO004793BE4 UniRef90-A6X3Y4 UniRef90-A0LIQ7 UniRef90_UPI00037392EC UniRef90_C2QLC5 UniRef90_UPIO004706E6A UniRef90-J2KB30

TPE $\square$ THTEVFHPEDEF $\square$ NHPAYSQKAGR ${ }^{230}$ VWPTYTGK $\square^{240}$ KADIQRTPFFDPETDPVFEHAAADREADKVFFVSYSGNVY KEKGRSDAFDDVAKDPAFVNAASRSGNTYWFATFNGNVR
 KKASQHAPFFDTDKTPDFERPSYV DGDGYFPSFAGEMH
 SQKVIRS
HVAVIDTKTYKVIKY LVVGKRVW HMAFANNGTK $\quad$ Y MVHWI DTRTRKVMDNTLVDRYARFSADGKLLDVSAGGTVS HIAVVDAKTYEVLDYLLVGRRVW HMAFNIDESRLL LATVVDTQT DEVLAQDDVGVEPEGMA VSPDGKWA SETTNMAHWDDTGTEAI FANTLVDSRPRHAEFVKEGSELW TVSV

## QVTV

 SETTNMLHWI DTETLELVDNTVI DQRPRHVEFTHDSQRLW SETTNMAHWIDTESHEVYANTLVDSRPRHAEFVKDGTELWW $N V S V I N V A V I D T T S V G L S P D Q V T I I P D G T R A Y V T N Q N T V S$

 MVHWDDTRTLAAVDATPVPRFAAFTADGSRDWASSGGTVS $K V A V I A T N T N T V V D T D T V G N L P L G V A D G N I N F P$
$N P S N N T T L I D D T D T N E V E A T V L V G E V P F G V A V T D D G K K V Y$ IVSVDDTATNKVTAT』DVGNFPF GVAFSPDGKKAY TVVSV $N$ VA

 DHKVIK SVPVGRVPY
 NVSVIDTDSNTVVDT\|PVGDVPF MKVVSE $\square$ PTFG

F P
HVASRTAPLFDPLQDLLLTTGGATPDGKYIYLT IRWFHG NKEVKK 1 KVGNI PVTTG
QVSVIDTS SNTVIATVPVGSGKTLAATVNGENELAA
VIDTATDNVTATVPVGDSPRRVTVTSDGNKVY
$T S T V I A S V P V D Y S P S G V V V S P$ TVSVIDTASQKEVAQVPTGKGPAFTPDGRLAFASDSGENA ND DSVIDLSSNKVIKT TKVGKKPAQVAVTPDNKQVF

 TNII-TKT\KVGEGP AVVLLAA PQGKELARIKVQGKNPEHAVFSPDGRWLY DI TFVDVANAKALKSVAVGRVPYMT
 TVSVINTA TDNVITTVSGGSLPDRVAVTSDGNKVY
 E LLLKVDTEMEVVGQQKLPFEGAMPQDVK VSPDGKTY TRTRRASGPAGVRT,


## $\mathrm{N} V \mathrm{~V}$

$F R L Q$

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

 HESTVSSVEFSPR GQQLLASGSAWDVTYKQLVLATSRKKGGQ
 KPGAPADAVVNGEGKSLINS IDPDDHTPRALNFSPDGSRAY D LS I IETHELKGEKRPWEIKRIQVGVPGGTVFNREGTYAY
 DVENSVSVGRVHRRVVI A TGPVGNHPNRATSNGDGSRIVY NFGDNT ISVINISTNTVISEVTVGNNPQF DADTPNGDRAY
 TVSVIDIATFAKKDDワSVPNA1ADNPKNGNIYVSDSDDVS HQSSVNAVAFSPDGKTIATARLWDTENGKLATLNHQSSVN SRRVSGR DDMPDTPL GVVAADPAGRFLYVSGFYQPR TKKVSTVRI GQAPQALTYVPNAVPKGDGTTNLQP[LGMAG
 KVSVIDARTFKVDTGKVTNHVNADT $F R Q T G F 1 H T \quad G V G T H G L Y P T R D G K Q M Y V A N R G S H L$ $N P P V R K I T T P D Y D D D F F F D Q S Y R D G K G G Q V I D L V I G Q K V A$
$A V S I V$
QUERY
UniRef90_UPI0003720CED UniRef90_D5W8B5 UniRef90_K9DEQ3
UniRef90_B0T7F2 UniRef90_K6Z5KO
UniRef90_F2IXX2
UniRef90-G9AH26 UniRef90_D5V716 UniRef90_UPI00045E8FAA UniRef90_UPI0002F532B5 UniRef90-UPI000468B5FB UniRef90_Q0FQZ7
UniRef90_A7GPF0
UniRef90_UPI0003A5125C
UniRef90_W9UUX4
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UniRef90_Q1GYW6
UniRef90_A6E1Z0
UniRef90-B1LYY7

UniRef90-UPI0002D3238D
UniRef90_Q8TPR8
UniRef90-Q46G45 UniRef90_Q46EA5 UniRef90_C2QSS1 UniRef90_I3BU34 UniRef90_G3IY03 UniRef90-K2CWF0 UniRef90-F8B4L4 UniRef90_X5E4G1 UniRef90-U6ZRW2 UniRef90-K6TWG6 UniRef90_R8RD94
UniRef90_Q469E7 UniRef90_Q8Q0C3 UniRef90_A1W604 UniRef90-B8I2K9
UniRef90 Q12EB1 UniRef90_G1UDU8 UniRef90-UPI00041D8AD3 UniRef90_H2JCD7 UniRef90_L0J4Y6 UniRef90_Q47HC2 UniRef90-H5WHB9 UniRef90_Q12WY8 UniRef90_18J3X8 UniRef90_M1Q6T3 UniRef90_C6J106 UniRef90-M1QFQ7 UniRef90-A0A024YNA9 UniRef90_F0BAW6 UniRef90-H2AEH0 UniRef90_UPI00042476DE UniRef90_UPI00035D9372 UniRef90_D6Y2A5 UniRef90_UPI0003B376EB UniRef90_UPI00039B1233 UniRef90_UPI00037AB570 UniRef90_UPI0003608378 UniRef90_UPI0004766C25 UniRef90_J0UTJ3
UniRef90_Q00808
UniRef90_D9WWF4
UniRef90_D9QF80 UniRef90_UPI00036F03B1 UniRef90_A0A024EKL6 UniRef90_K7W4U6 UniRef90_D5SLS4 UniRef90_H5XW92 UniRef90_14EGM4 UniRef90_UPI0004793BE4 UniRef90_A6X3Y4 UniRef90_A0LIQ7 UniRef90_UPI00037392EC UniRef90_C2QLC5
UniRef90_UPI0004706E6A UniRef90_J2KB30

 TTNGVSGDVSVI DVDSLKVIDSIKVGRYPWGV
$V$ N TSETTTNMLUWIDDTSTQQLVVDTVVDQRPRFVEFDPD $V$ S S E D G G T V T V F DVAAS QAEKA K I E T G V H E D R L Q P V G F T P D


 $V \square D \square A T N T V I T N V P V G V A P T G \square A T G T \square$



VT NLRDKTVSVIDTATNTVIAT\|PVGDDPCG\|V ADSPD V TNSGGGSTN FTATVSVIVTATNAVAATDYNSLEVAFSPD





## I DDDAT DKVEKVPVGK

 $V A \operatorname{N}$



 $\begin{array}{lllll}\text { A } & V & T & P & D \\ A & A & T & A & D\end{array}$ $\begin{array}{rrr}M & S & P \\ D V & D \\ V & P & D \\ M & P & D\end{array}$
 VTNSNGGTV SVVDLVSNTFIGNIPVGNTPFGDDLLTI

 VTNAES DNVSII NTATNKVTAMVNTGKYYMNYP IGVV








 $V$ VDLAA GGPMHTVAVGNAPRVIDVQRTAASEGAH I SVI DS NS DKVKN TIS L A P Y K HAK T GS QP D A A A VSP D


 $V 1 D D D A G R K V A D D A L T G M P H L G S G I T W K R N G R E V M A M P T N$


QUERY
UniRef90_UPI0003720CED
UniRef90-D5W8B5
UniRef90-K9DEQ3
UniRef90-B0T7F2
UniRef90-K6Z5K0
UniRef90_F2IXX2

LD R TY L L VD QR DE WRHKTASRFVVVLDAKTGERDAKFEMG HEELYFLMHEGGEWTHKDAGNQVWVFDANTGERNRVIELDD TQRLVVAMHQGDADTHKDPASEVWVFDANKTHKRNARWKKLA
 GLRYII MNEAGFDGSQTHGGNQIWWVFDVKSRTRIARKFDAP $G V R G V T S D G K K V F V A L G P A N R V A V V N G D T L E V D K Y L L V G$

GRYAFVPL
GTR $\quad \square$

## GPANHVAVIDAKTEQPVKYLLVG

## 

GTRAYV T

QKTAFVALD

WASAE $\square G G T V T V I D V A S R Q V L K T L P D K$
GPANHVAVVNAETWEVEDYLLVG NQASNTVSVI DDATNTVIDANVPVG SLLSVI DVKTKQII KTVRFE


NFFTNNVSVIDTTSNTVTATVSVG NEAAGTVVVFDTSKHEVDATIPVG

$G K K V Y V G$
GTKAYVMNSN
GTRVYVTNEYD
GTRAYVT
GNKVYVANNN
NRGDSTVSIIDTATNTVTATVDLE $\square Y$ HDSTATI LI I DTTTNDVTTTVHVG $V$ SVI DTTKNKVTARVKVG

DSRLLVT N Q N S N T | $V$ |
| :---: |
| V |
| V |
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| S |
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- NQDDGSVSVVDTETLKEDALITVG
 GKTVYLTSQFTNDVT

AlDVASDKIMKNITAG
DKYAFVA NQGTEKQPSNTVSKDDMSTKKVVATIETG
GKFAYI
GSKVYLG NFYNNSVTVINTKTNTVMATVVVG
GTKVYVA $\quad$ NYGSNTTSVI DTATNNVIASVPVVG
SRTLLVA NQGTRKMPGKTVSMI DLETFKVVKTVVTG

GKRIIVACWE
GKNLYVANSN
GTRAYVT
GSRAYVASEMAGK

GTKLYVTSHKND
$\square 1$ S VID TVTNSVISTVNVG
GSKVY G
NFYNKSVTVINTKTNTVTATVPVG
SDNKYA! $\operatorname{CN}$ ANGTEQNPSNSISKIDLATNQVIATUETG
QDYAYVLGAARPADGSDKPAPGGQVVNLD DRRKVADLPDP SKEMYV SNRGEGTISVYNFPQKKLTKTLPDG
GDKLYVA
GTRIFVT
GARAY
SKGTFAYVT $\square G$
GTRAYVG
GRTFYVAEGHRGG
GS R L Y A
GTRVYVGLENDDKMT
 SNRGRMVTT\|PVG PKKMYVLAEKADGSGPLQGLSSFMTNPAATGALTAKWPGG

GQFAYVTVGTE

SKGLDSVIDPGFFMRSHVNSRYAWLIDKQTDEDAHTLRPG GQKLLASGSADKT $\quad \mathrm{KKI} \mathrm{WDVTTGKVLNTLKG}$ G S R V Y VT
$N \square G G D S T S V \square D T A T N T A V A T V P V G$
$G N \square G L V A V$
QGPGD $\square$ S $\square$ F D P VK T S V DA S VP T G
$G A Y V Y V A \quad N Q G T E A E P N D T V S V I E D E S G N V I E T \square T T G$ GEFALVTLLRTKNWVITNGDGDLWKDGRVDQLLLDEFDHH HDRVYVASWMD NELTVIDVTTNQVITKIPTG

$G Q T \square Y \vee A$
GKT ATASSD
GGLI VVADRDDD
G
GKRLLYVS GT
GPGRGVSGT S SGTVSVIDTASGMLVAPDAVG GPGFFLRSHEATPYAWTDARDTLQVI DKQTGAVVGNTPG NTRVYVGLEDQD $M G N \quad V$ SADGKS $\square W$ W S GRFDDVVYRFDTQTGAVI K I PVG GPGFFMRSHENSPYVWADNKDAMHVIDKQSLEVVKTLAPG

## ouerry

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UniRef90_B0T7F2
UniRef90_K6Z5K0
UniRef90_F2IXX2
UniRef90 G9AH26
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UniRef90_UPI00045E8FAA UniRef90_UPI0002F532B5 UniRef90 UPI000468B5FB UniRef90_Q0FQZ7
UniRef90-A7GPFO
UniRef90-UPI0003A5125C
UniRef90-W9UUX4
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UniRef90-R8DAF1
UniRef90 V5MAL8 UniRef90-K0G6A5
UniRef90-Q1GYWE
UniRef90-AGE1ZO
UniRef90 B1LYY
UniRef90-UPIOOO2D3238D
UniRef90-Q8TPR8
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UniRef90-Q46EA5
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UniRef90-13BU34
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RRVWQAELSADEK QLWVTNGVSNDVSVIDTESLKVIKS【 VQPVGVRLSADGK RRVWHMAFDRDHK VAPTGTA
IPPVGVVIDKD RKKGYVALGPANRVAVVNAETLEVEKFL


P $\square P \square S \Pi A D P D G Q F V Y V T N G S A N V S V I D A S S N T V T A T \prod$ QRSNGVKVLPNGK KVYUSNGGDANLSVI DTATNKVITTV1 RRVWQLALNAAGTRLFTTNGVSGDVTVIDAATFRPLKTV
NSPYGIVVNPAGTKKAYAAGTVDGFVSVIDTATNKVTATT D $\square P R G V A V S P D G K K V Y V A D D S L T G A V N I I D T A T N K V T A T V$
 TSSRKIVINPDGN RVYLVNFGSNSVSVIDTATDNVIANV
TKPEGTSTHPDDR HVYVANWFDGNVSVIDARTLKVIDTT
 KNPNWIEFSSDGK FAVVSNTSSNDASUIIDVANWKVVATI
KGAHGVVVSPDNK YVYVTNMYDGTVSVIDNSTDKVIKTT DGPFDVAI
EWPMGI AVTPDGK KVYVANAESDNVSVIDT
WSPVGVTI APDGTKVYVANLGSSNVSIIDTATNTVTDSV AGAHGVVVDRDGR YAYVTNIYANSVSVLDVKDRKVTKTV SKAHGVAISKDGK YVFVTNAGSGNVTVVDAKSNVVIATV
 KKPSQVAlITPDNK DAPYGI AVSPGG
QYPNGIAVHPDGQ
QVFVT■SDENRVDVIDTSTMSVKEST LAFVTNSGSDSVSVINTATNSVAMTI

E $\square$ PWDVA畐TPDG TKVYVTNSRGNNVSVIDTFTNNVTATV
EWP $\square$ G $ا$ AVTPDGK KVYVTNAESDNVSVID
KGAHGVVVSPDNSKIYVTNMFDNTVTVIDNETNKVITTD
H पGSGTSWSYपGRPVMATPNपKEGTVSVIDMKDWK\IKD GSPDMGGVSADGK VLWLSGRYDSEVYALDTVTGKQLAR\| ELPWGVVIAR
LYPADIVIRP
KRPYAVAL AKGRGFTSDQYGGTVSTFDVDSDRPMQRT NLPHGVWPSGDG TRTYVGDENADALAAIDTATNKVIAN LGPVGMAVTPGG TRVFVADQSSDTVSVIDTATNTVIATL
RGAHGLYPSRDGKRFYVSNREGSVSVLDMATGRSSAKW QRPWNPALTPAGD KLYVANGRSNTVSVIDTASLRQLQQU QRPQAV YVPDAVPEGSGTDGLE ELPHGIWPSGDGK KTYVGDENGDAVDVIDTVKQQRTQRTV QIVEMGKHQDERRYLVLVASVEDG
 SLPHGLWPSGDGS RUYVGLENGDGVAVIDTLANRVIATV
KTAAHVEFTRDGRHLLLS $\square$ WATDGALIVYDSNTDKEDKR $\square$ HEGWSVGFSPDGKKM ASGSADKTIKIWDVTTGKVLNTL STPDGVAVSPDGGAVYVADSNSGTASVIDTATDTVIATV
KQPHW $\square$ ATSADGRT AWVTDELSNDVAVVD $\square G S H Q V T A H \square$
SGAHGVSASADGA FVFVTNTADDSVSTDVASQEVLKTV ADPTDVADTAKGR YAYVSGGGVNAVAAUDVERMKEV
K
DSAFGUVISPDGS RAYVVGFDDSTVS\|NTSTNA\|IGS EGPDMGNVSADGKT LWLSGRFDDVVYQUNTEDGS MKK
WYPTSПQपGADGKQПMV
SSVNAVAFSPDGKT I ATASSDKTARLWDTENGKELATL AHPFGVTDDAKGA RVYTANVESNDUSVIDDNTRALIGTV
SVPTHVAVSPDGTRAYVVNTYDGTVTEDDTVSGTTVGAP RTAAHVEFTRDGRYALVSLMEADGAIVVYDARTLKELKRL QMPQALVYVANAVP
AEPHGLTVWP
KTVAHVEFTRDGAHALVSTWEDDGAVIVYDAQTLEETKRL RTPRGITIAAGGR DAYVVNSGSNSVSTFDTRTNEVLGEV

QUERY
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UniRef90_B0T7F2
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UniRef90_UPI00045E8FAA
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UniRef90-UPI00037C61A5
UniRef90_UPI00047158CB
UniRef90-D0CP62
UniRef90 K0K274

p VGrypwavavs
LVGRRVWHMAFTPDQ K V GRFPWGAA

LVGQRVWNLAFSPDQ
K V GRYPWGVVAA
K ${ }^{2}$ GRFPWGAA
$P \quad V G V A P T G \square A T$
S VGNGPFGDAD
$P$ VGKRPWNMAVTPD
$P V G K R P W N M A V T P$
QVGGQPWGVVV
K VGRFPWGAAARPM
$P V G N S P F G V A V T P D$
$P$ VGRAPGGIVTPD KVGSCPFGVAFSPD $P \vee A L S P D Q V T D I P D$
$P \vee G E Q P M G \| A V T P D$
Q T
$\mathrm{P} V \mathrm{VKTPNGDSV}$
P V G D GP F GVVA
P VGKNPKRLWVAN
KVEGEPNG■
$N V G \square A P C G V A V T P D$
P VGKAPNGISV
$A V G K G P R G I T V C D$
$V V G A V P D Q L Y A T P D$


S V VK TP VQYDTPD P VGDGPVGVALSQDG EVGKRPWNMAITTPD

N VGEYPWGVIVNPDG

K V G T T P NG $\square \mathrm{S}$ V
K TAGPAFFM
P VGGGPHGLAV
S VGDYPEGTETSADG
P I GQAPQAI A
$T A G N V P S D V A \square A$
$R \square P G G G \quad S P D M G$
$P$ VGESPWGVVIA
P VGYMPQALV
$P \quad V G V G P H G L C V$
EGGGWVHSVAFSPD $P \vee G N S P \square G V A V S P D$ $P \quad I G Q G P Q G V T$

P
KGHESTVWSVFSPD
$P \mathrm{~V} G \mathrm{~S}_{\mathrm{E}} \mathrm{P}$ YAVAFTP
P $\square$ GNAPRK $\square$ A $V$
P VGDRPNG\|VYA

PVNDNSHALSLTPD
$P \quad V G A E P H G L T V$


P
P VGTDPH

QASPEQVVAKASATDKHRLYTA
GTADTPHGWTVTPSGKQVTLPMGGALSPDHRYLIVS MK T WRV $\square R$ SVTS GHETEGDEFSRDGNMMLVT
$V F G P D G K$
$F S P N P R V$
$D G K W L Y T A$

TATNQVAATVPDGNGTD VWGMAVSADGARAYAV

$$
\text { GSGGPTGA } \square A D P P P T S G P G T L L G T A A P G P R P D F V L
$$ AVAPGDTVTT INAGTGURSLADSPDGKRVYVL


TATGAVSATVPVG
$G \square P Y A \square A D T P D G G R L Y V T$

PTFTRASADPAGLVFVL
PVESVVFSPDGKQL
T LT A HA GPVHDVVF

TATGA $\square$ QQT $\square E S H \quad E G \nabla R S V A F S P D G R M L$
TASNALITTVPVGTSPLGVTV SPDGSRDYVA

K A F V V



VIS $\square G A \square S L L A F V G A S \square A E S T V A P V V Q G \quad T V L V T$ $V L A P G G R R L Y A K$


VTSVNFSPDGKTL
THSVLSVAFSPDGTRV VIAPGGKMAVAV VI APDGNTIYVA


PTVSMAGSTSTDASLVLKSPGSD
WVP VD R L R R LIF VT

UniRef90_Q1GZE6
UniRef90_D5MMT9
UniRef90_UPI00047558B9 UniRef90_UPI0004759C11 UniRef90 UPI000467006C UniRef90-H1QL94 UniRef90-NOAXR9 UniRef90 Q13QX2 UniRef90 F8JJU7 UniRef90-Q8TMX4 UniRef90_F9ZY94 UniRef90 C2W5X7 UniRef90-L0F6B5 UniRef90_UPIO00382A6EE UniRef90_J7VSR6 UniRef90-ROPE47 UniRef90-UPI0003D40429 UniRef90-H5WHP2 UniRef90 UPI000364E439 UniRef90-G41506 UniRef90-K8RBV6 UniRef90-A9VVC6 UniRef90_C6WSV3
UniRef90_UPIO00289E4F0 UniRef90-Q7ND80 UniRef90 UPI00035F67BD UniRef90- J8AFY9 UniRef90-W7QB49 UniRef90-UPI0003655678 UniRef90 - I2NAP2 UniRef90-D2BA64 UniRef90_UPI00037C6E7B UniRef90_I3D579 UniRef90 Q5ATB2 UniRef90-G7WNM7 UniRef90_UPI00035C36FA UniRef90 UPIO004696CB4 UniRef90-A5GFH5 UniRef90-B8MPL3 UniRef90 E8X7J4 UniRef90_UPI0003453A47 UniRef90-14BFE4 UniRef90_UPI00046F2B0F UniRef90-IOWG18 UniRef90_UPI0003B5ECC5 UniRef90 K6V054 UniRef90 U5N4Y1 UniRef90-E1SKC5 UniRef90-UPIOOO4759252 UniRef90 UPIOOO4205254 UniRef90-J2WNA5 UniRef90-F4XK01 UniRef90-B4VLP3 UniRef90_D2AVI6 UniRef90-EOUEV7 UniRef90_UPI00046F2C6B UniRef90-C7ZCX2 UniRef90-A0A024HFL4 UniRef90_12EYW4 UniRef90 UPI00030CB70E UniRef90-B5GRG0 UniRef90-F4KW87 UniRef90_UPI0003B2F0BC UniRef90-W7W466 UniRef90-LOF6J7 UniRef90_UPI0002E54C7D UniRef90 UPI0001745E87 UniRef90-LODLV0 UniRef90_UPI0002F77E97 UniRef90 A1DJ78 UniRef90_F4BZK8 UniRef90-G8NS55 UniRef90-X0EVA4 UniRef90 UPIO00374D2D4 UniRef90-B8LXS9 UniRef90-B0JPS2 UniRef90-R4YNO4 UniRef90_UPIO00440996A UniRef90-B4D9Q3 UniRef90_V5XJR4 UniRef90_W4JVS8 UniRef90-B4W111 UniRef90_UPI00047A5601 UniRef90_H5WSG9 UniRef90 UPIO00362B5E7 UniRef90-S0EXQ9 UniRef90_Q096R0 UniRef90-B9XDL6 UniRef90_COGFL6

NEG S DTVSVIDLASMKVTGA $\square$ AVGAGPH $\square$ AVVPDRQ N D Q S D Q S
N D G
NE G
 NGSNSVTFI DTATNKVKGVTYVGRSPHEAFTRDGR


TASADKTAD
VWNTTTGEKDFVLNTGRVNNAVFSPDGK AFSSLDGNVRLIDTATWQPITKLPAGAVWNIVFTPDSR $N \square D V N T V T V T A K S R K V V S E I P V G K E P Q L T U S P D E K$

TVV VID GATQTVVATVNTDGPYGLAVSPDGA
$N$ S SDATTSMTDPVTATEDRRTPTGKEPHLYLTPDEK T IT QEQLAHRI ASV ARPAVVGTI PVGDEPGIAVSPDSQ N GNTNGNGAVSVIDTATKKVTATVNVKLNPDLAVSPDGR ND DS N N

VSATDGNTNTVLTT TPVGTNPGVGVNSSTN RQ DAGVSVIDLDATMVVKEFDIAESPGLGITDDGK



PAVAADKP
 SRDATVSLIDAARGEVVRRTPTLREPHLVYSPDRS
 VAVSPDGR
AAAGRHAARTWDVSTGETLHTFTAHAGPGVVFSPDGT NKA SRSITVFDLEKGEEIKELPDADEPHEATALTNP NYA DNSLTVVDKQSMLVTGUIATGRGPGMAFDQLRR ASGS $\begin{gathered}\text { D T T }\end{gathered}$

N
A GSNS $\square$ S VIDPTANAVVAM $\square$ PGFSGPGVAVSPDGS
TFTVAPHPGLTLSHDGK
SFAVAATTPVGAAPQVAVSPDGA
NR NDDTVSVIDGATHTVTATVRVGDASGVAVDPGDN AS GSADNTVRLWDVATRKPLGE PLRGHVAFSPDGK VASYSERSDVVVYDLAAGKVRKVMKGYVTPNALFSPDGK
D AKGSTVTVISQTTRKVVEVLKVGYDSHVVPSYDLS D G WY A A AVRVIDTASRSVTASIAVGASPGLAVTPDGK GGSDH

N VSGSDDNTLKLWDTTSGKLLHTFR GYDADVAFSPDGN
N ab SDONTLKVWELLT ANKI FMFDPLS GESK GTISC GYIGDMTLSK D GT
 S S S D D K T
H G D
V GGQ S NKI FKFDLDETGKVIGVVDGGYDGDMILISRDGT SGSSS DGTVVTIDETSTNKVVTSIPDVGHTPSPILDSPDGN
 ENSRGGDI SVI D R K THEVVRTIPDGQDDHIVASSDGK $N$
D H R

QESWDPC MQVLEGHTGWVTA VAFSPGGQ
NS GSNPDWSTVAKIDGEDLSLDETVEVGDNAHMVQSP
VA F S A D G Q
GWVDSVAFSPDGQ
 $\square S$ GSNDDTVR TWDAEN VQTVSTHFEGHVAFSPDGR CAGYNNP GLAALDDVASKKVAQFI PDPHWNGLAFDQDGK $N V N S S D V S V V S R A E D T \quad M L R T V T L D S D P S I V V H P D G D$ AS GFDNTIWVWDTGTHDVVGEGHTDRVRSVAFSPDRK

QP KAGAVAVVDTENFKVIDQLEAGKQPRVVLQPDGR

GP H GSHGTGTALKMDALTHQLVGSVRVDRNPGLLLSPDGR



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UniRef90_IOWG18
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UniRef90- XOEVA4
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UniRef90_B5W1Y6

Y A V VT C S
T LYVADWGGE EVWAVV

| $L$ | $L$ | $A V V S V$ |
| :--- | :--- | :--- |
| $T$ | $V$ | $V A S A$ | $\mathrm{T} V \mathrm{Y}$ Y A S A G

D YVVTLES K L

S A WVA N S

| Y |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| F | L | A | A | A |
| V | S |  |  |  |


RVYVADGL

S LVANSAG
Tily Y A
YVYVTDLTYSTSTT

$K L V V A T$
$Y$
$T$
T LAAAS
$R$ VYVT N
100
QGENTV|S|VL|SLSDHR1| AT|
120 RSAEVWILALPAHTVVATVSNATG NAVEIVDLASKKILQSIDVPGA RGENYDSVI DAKTFKEKRRDE TSNTVHMVDTRTNKVLDNTD GNNKIRVYGFENGKLAEQSPDPDT GSSTVSVYDTRLERRIGTV ADNTSRLWDTTTGKQUFVLNQTDP MDKSVRLFETEQF QLDD DNK LDVGS LEKKKVIDR $\square$
SNTVSVIDTTTNQVVNTVP

LV Y V PHS
 GS GDVWVID PATFQVVA RAYITN

RGSGSVSVIDTATNTVSATVP
NSNNVSVIDTATNTVV
$E \| V G D S A G$

## L L

RAVSAS Y
RLAAAG
NRIVVTNYGADDAKGKS

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

RDATIQLLNQETFSPI S SIP
RAYVTNAD
TGSNSVSVIDTATNGVVTTVAVPGR
VA VT A N S G T S P L S A A YVT N
$\square S \square L K K \square T S K K P D D R Q V P P G P S T$ A QSNDVSILDTATNTVTGTVP
$T V Y$ VT TELVSGGNVTSGNNMVWVINGAHQAVVTNVP V LIF L S D S S L

ASGSLD
$R L L V N S S Q A N R L T$
LLLSAD
TL
$R$ A V S A S W
T L WVN N

Qi D PVTTHTVKDLP PVP
RDDDSVSVDIATRERRAVIK

T LYYAVDQ $\quad$ GF ${ }^{\text {R }}$

LMVIDTKSRKIRYNIP TI LVVSVAFSRDSSGSELGTIKIWDTKTGGIKKT
RI YVS


MPEAGQVALIDAERFQVLGNLD ILVVS GDEDQTIKIWDTNTGKLTKTLEAHQ RAYVAD
$R$ L $Y$ ALD $Q \square G F R$
$R \square Y A L D Q \square G F R$

$S \mathrm{~F} Y$ VS D S S L G T VTR
KVFVANS
TLYLNCSGHDTMDAASGSGDVYQ NSSTGG EAKDSM
 RVFATTAQDSLDEATVGAD
$T \| V S A$
RLWVTC


PD S DHIAVINPSTMELIDNI EDE ASGSDDMTVVKLCDVKT GSEELQTMVGHSG
TL
TLVSGS W
$H 1$
$R L F$
$L$
$R$ A Y L A R


F L WVVGN N
LFVVCCMA $\square G \square A R G R Q S \quad T N T A H Q D P T G R T V A P V G$ $T L Y I S E V F Q R G G S E Q E M E A R L A S L D T Q T L S R Q A M V$ $V A Y V S D W G G R R P L P G D T T A L S V V V D Q R T V S V V N L I S N S V V$ $L L F T G B D L D G G N$ L $L$ LI

DSVDDPAT WAETARTP
 PGGGAVQVI DTATNVVIATISVTSG $V G V I D D D T L A L A T T W D V G K$ NGSDNISVI NGSTNTVVATIP RENASVSVIDTATGTVLQQIPVGKN NTNLVSVVIDNNTLTVI NT:TVGGG
 ASGSYDNTI DLWDSATGELLQTFEGHPH H G

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| :---: | :---: |
|  |  |
| UniRef90-UP | DRKTAYVTRPEGHG |
| UniRef90-UPIO004759C11 | SGMLVSADDKKLFI ANR DSNDVT |
| UniRef90-UPIO00467006C | TAPGPGMVLFTPDGGRAFVVS SFTAEVA |
| UniF | VGRAAHEGSFTADGKEFWVANRGRDT V |
| UniRef90-NOA | KTNFYPAGVSVSKDGKALF |
| UniRef90-F8JJU7 | QVGHGPTGVGAAPDGDAVYVAN GRS |
| UniRef90-Q8TMX4 | NVVFSPDRK YIA TASD |
| UniRef90-F9ZY94 | GLAFHPEGRYLATAS |
| UniRef90-C2W5X7 | FGU VTNPDGTKLYVS |
| UniRef90-Lor |  |
| P1000382A | VGGGPVAVVASPNGSKIYVAN |
|  | VYVAGFGG V SV |
| UniRef90-UPIOOO3D | TPDEKSLIVANALGDS LTFVDPRTA |
| UniRef90-H5W | RDUV DPYHLRFSPDMKWFVTAANRDNHVDLYENADQ |
| iRef90-UP10003 | SYEDDS |
| UniRef90-G41506 | VS LD GSRVYAVDTSYWGSGIDDNGLIKV |
| UniRet90 A9VV | GVGVNPSTNLI YV |
| UniRef90-C6W | YAFISSEPGEKAKVEEDDDDAKI AV |
| UniRef90-UP10002891 | EFDPTDEFAYVMA A |
| UniRef90 Q7N |  |
|  |  |
| UniRef90-W7C | KFERIARFPSRYALTPDGRYVYF GSRDGWVTKYDIYNL |
| UniRef90_UPIO003655678 | PaHVVPSWDLRT |
| UniRet90-D2BA | GDVPSGVAITPNGAFVYVTNIASNDVSV |
| UniRef90-UPIO0037C | DSQWLTVASLRR NQ |
| UniRef90--13D579 |  |
| , 71 | - GRRA |
| UniRef90-UPI00035C36FA | PV EGVVFSPDGTR |
| UniRef90-UP10004696CB4 |  |
| A5GF |  |
| iRef90-E8X7 | GVRPHQPTLNPHDGMLYVT TELDQTITVIDPKAM |
|  | VGKEPHHLMETPDGKSLTVAS SVGNELIFLDPKTG |
| 4B | SPDGTLAYV |
| UniRef90-UPIO0046 | SPDNQVVYVA GGQTNQ |
| UniRef90-10WG | PDGSGV |
| UniRef90-UPIoo | LSGVRGT। |
|  | VGNGPNSVAVDSDTHTVYVTNRND NTVSMIDGSTY |
| 5N | $V K$ S ${ }^{\text {VAFSPDGKVL ASGSD }}$ |
| Ref90-UP1000475 | D |
| IR |  |
| UniRe | GVTIDA ${ }^{\text {a }}$ |
| $\begin{aligned} & \text { Unir } \\ & \text { UniR } \end{aligned}$ | SVSFSRDGQTL ASGSFD |
|  | AVAFNPNGKR UVSGSD |
| 2A | $Y N \begin{array}{llll} \mathrm{Y} \\ \mathrm{Y} & \mathrm{~F} & \mathrm{~T} & \mathrm{P} \\ \mathrm{C} & \mathrm{D} \\ \hline \end{array}$ |
|  |  |
|  |  |
| 024 |  |
|  |  |
| Ploo030CB70E | S GNNNI |
| UniRef90-F4KW87 | DGR ${ }_{\text {d }}$ |
| UniRef90-UPIO003B2FOBC | DITRDGRYL |
| UniRef90_W7W466 | G A A |
| niRef90- UPIO002E | VG ${ }^{\text {a }}$ M ${ }^{\text {a }}$ |
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|  |  |
| UniRef90-UPIO002F77E97 | SPVATGEPDESFAVASAASTGTSSASTAGPVVYAPDRGTG |
| UniRef90-A1DJ78 UniRef90 F4BZK8 | AVSPY |
| Unil | AVSADGK |
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| UniRef90_-B0JP | SPDGKTL VSGSGDKTI |
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|  | PFEGHSDHTTSVAFSPDGRR |
| UniRef90-V5XJR4 | GGERL |
|  | PDGK |
|  |  |
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|  |  |
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| UniRef90-0096R0 | AVCPAPHAVRLAPDGRRLYIACYSDE VAIVDLAPN |
|  | SDIELSSDGSTLYVANANSDTVTVIDTI H |
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UniRef90-A9VVC6 UniRef90 ${ }^{-}$C6WSV3
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EVN THA 170
EVNTI NI A GS P
 K TLA Q 1 $\mathrm{K} 1 \mathrm{~V} \mathrm{~K} \mathrm{RI} \mathrm{P} V \mathrm{~V}$ SPFSPFLQFTPDGKEVWMGHKDV GVTGTVRVGDGPSKVLMSPDGRYAYVNFTSKAEVDVIDVVR QISKTVAVGKNP ELATATVPVQRRPFAAMPTRDGRHVLAANFGSDTVSVISSVR KQLLVLNHDGPVNVFSSDGKY IATAASDDNTSRLWDTATGN

 VLKAKI ITGGSTSD $\quad$ IAI TSDETR YVVAPFEYFDVSVIDTK TVSEYIPAAGAAPLG IAITPNGKLDYICNSGEN QVQRTVRGIVDPYHLRFSPDMKWLVTAANRLNHVDFYRW KLVKRIDTPSHLS IDSKSTVVYASLQDSDELLAVDLGTQA KVD H YLAATGKQPYALSVSPEGQVWVPI SVGAT $\square A S H G F S P S Y H N G T$ A LAF SPD GTKLYVTTTESS KVTRRAK GKNPEFVRVFGGYAYVTYEPGESGGPKDDDDA $T V L^{T} T \mid P \vee G T N P$ EKVREI TVINVFPVPGAS $\qquad$ IEFSADGKNLVITNEADN TCLTTTDTGHTGR\RA


EVTAEV R RAGI NMRNDAVSADGRYVLAGNYDPH LPGKKI PVVDPYNMYFSPDGKYAISVAEARRKLVWYDPHT TVTATVPVGGLPNSATAAPTGDRVYISSGAAVSV

 ELQQTLD SHSQSVRSVAFSPDGKLL A S EEIRTLKHYGWVSAVAVSPDGRRAVSGSYD ETLHTPTAQDGGVVFSPDGRRDAVAGRRVVLIWDVSTGE KVEKQDATQQKVSKHPFKP\|VYVTNINSGSVTVVAIESNK FETGRVNVPSSILDDPTGKRAYVFNTLANTISVIDDSKRA A LQQTLGGHSNW KIVGTIPTGQ ALSHMMVMDHEGRILGYTANDQPG QLQRRIKDILDPYQTGFSPDQKWFISNSLRLDR\|DLYRYD TVVDAVSVGSDPLGIAVGPDGS QVVDT FSSGGQEPQHVVPSYDMQTLYATN DML ARLDS IDVMADGEKTPYGY $\square$ GDMVLSKDGKTLYAVDQMNF TVTASVPITGNA SWGAAASADGAHVYVPTGDAD EVVKTI EGPHNVQVSPDGRSVWAVSGHDGAAVMLDAATLD GQi A IVVPGKDLRGVAVDPSTHTAYVTRAYDNSVS $K P L G E P L R G H$ E $P$ A EVSSVAFSPDGKVL AS GS WDK
 $K P T T R I Q E P T C K G \quad P N H A D F S A N G R F F V V T C E F S G$ HEDGRVPV GMRPYAVALAQGRGFVTDQYGG EVI RT LVGHDDFLNS $\square$ SFSRDGQTLASVSDD

KVRAVVDLADGHGGTRHRGTRAS GVPHRVKHGSTRHGSVQ K V L H T L K GHSNSVYAVCVTPDGKR
 T L L Q T G H GDGVRSVSFSNDDKLVVSGSDDK T T R WD WA KLVAHLPSGDGHHEIAFDRASRFAFVSNRDSGTLSI $V L K T K V A L G G A B D P S E V V F S K D G T Y A F I A L G E T S$ $N L D N T F D H P D R V L S \square A F S P D G K N L V S A G D D K L V V E S G K \square R$ $T V T A T D D A G G D G G A T S A$ FVTSGYNTPEMKGQLDVPGLGDPNSPEGFSVWKYTLGEQP

 K I LAG SVIPTGH PESHMLTVSKDGKRGYTANVESG




 SELQTLQ GHSSLVHSVAFSPNGQTLASGSHD QE I RTMLKGHDNSVIVSVNSPDGKTLVSGSGDN
 $N V V S$ GPLEGHERDVNSVCFSPDGDR VVSGSLDR A WEQADPVGEHPHSCVFGADSRY $T V S A T I A V G A A P \quad R K A V V S P A G D S L W V A N S G Y S$ AVGD Y GFEGHVRAA YYVTVSPDGLRIVPGSEDD
 $K L A K Q V A T G A Q P L S V G Y S A L S Q A V Y V A D G K E G H V S I I D A Q$ RLIASAETPPQTIDLPLGPVNMAASCD GRFLFVT QRVSQLAFNGRTNGLYYGLAWAPTLQQDGRVAVLSVDAYG



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UniRef90- F9ZY94 UniRef90-F9ZY94
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## A

 KVTRDDVKTGVIDTGFDTNHLGFATARGTLAYVAVGGNVV
 $S Y Q P I K Q \square G E L P L A W G I V T Y P H S D G S$ ARQVI ATVES TVDGKY DAT VPVGPLPHSDT T DPDGRAY
 K I SVVDTESNKVKKVITLAASPDKEDRKKSQGDPNTLEQF



## VRWKV

 HSAGRIEIYTAGQQQKVGQIGVPNPHAIGYAGDLLMRAF $N E D P N S V S V I$ K GGTNTVVATIPVGDFPFGVGVNSDTNLIVY
 TVK LLWDAATGE SGSSNNVSVIDADTNTVIATDPVGSSPNGVGVNRVTNQDY TLVLLDAARDLDDIATIPVEGLNGETSRVSAVYTAPPRNSF WQAHDETATPDCGG IDDADFSPDGRTAVFTEFAGRVA $N V S V I N T A T D T A T N T V T A T V P V A R P N G V A V T P D G T R L Y$
 KIAIIDAKEFE $\quad$ LLDSTPVKGDPHNLD I SPDGKFLV S SLDDSTDKVWNPATGELDQQSLEGRSGWVKSVAFSPDGK
NTLKVWDLEKGEEI LTLKGHSASVRAVAAVTPDGRKA V Q IVVTIVTEPDPV TVK K WNTATGAPQQTLKGHL KRGQFNRSGDALY SVSVLDMHERKLLT ILP I IQRDA DSADDKKDFTTDQMKPR
 PI GGGSLLPIDPRTGKPGE PIPVRDPYNMYYTPDGKFAL RLI DADTQTKEV LYSVPTGRYPFSPDESKAY SVIDTATNT DAAT $\square \mathrm{DVGSFPIDAATNSTHDYVTNAGDYT}$ QHGVTTT
$T V R \square W D V A V D G V T H T V T A T V P V G K N P Q G V A V D P S T H A V Y$

 SVTV ELLKIST TEHRIVVDRKLDPTASARP TVSVFDLATFKPVKR\|NVGDYPEGDAA KTlKLWDPKTGKVI RTLIGHTEAVESVSFSDGKRVIL KRAV GTDKK WDLETGRELATLTGHSREVWAVADAPDGK | $H G S T R H G F$ | $Q H G S T G H D L T R N T T A P P G S T W N T T V P P G S T Y$ |
| :--- | :--- |
| $V I D S G S M D K V W D L E T G K E L H S L T G H S G W V R A V C V T P D G K R V V$ |  |



 DPRSDRTAVLDTATRTRVATVPGSRPTA VTVSADNARAY $K V S K K D K T G F L V G D \quad L V D G V P A V G G A S P N S L V A T D R Y V F$ K QPTRD $\quad$ KYGSIINTNAL

 TVSVLDRKLLTS SKVAPRTQRISLSVDDKLAFTSDQVQPL RPREGEKTAPSSETPVLIDERGVGK
GFKYTPTQAARQAASAAALDPAALDDPNNYDSF HTGWVTAVAFSPDGQIIASAAARQTLHGHMDWVSPDGQVT $A$ VYV $\quad$ VDAVRNAL TTTDNPGHA TVTV SGSYNTIKVWDAVKGACVQTLEGG DPGKSGVTVDDAHTFKPVKTVQTGKGHGEVNSVAFSADSQ

KTVKLWDVKTGSELQTLQGHSDLVHSVAFSPDGQTL VETGEEIKTLK GHDSYVNSVNFSPDGKTLVSVSRDN NLVMFDAENLDMLKDYPVMNSEGKTSRVSAVYNAPPRNTY

 TFWVRDTATHATVGKPLEGHTVVFSPDGKWIVSGSHDKTI
 RHVVTEKVALK K G G L GP RVSPNGRF
HPELRKISVVDLAQRKVRSVLPYPGMPFGDASDADATHILF $V V H D T G R V L E D P N A R P N F E A G D A D S S D G S K L Y V A H N E S S L$ SRSVQVTLTMDPDRTVFLGGPPAFTADGHTLYMPYQRGDA $A V V V V D M V N L V T E T V W Q T G \quad D P$ A


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UniRef90_B5W1Y6

 $K V Y T T D G E A K L L N T \square A T G A L P H G V W P$ SDD
 VSVVDTKLNREIKS $\square$ S LSPYENAPA GSQPNALS LD

VT D N G G S AVTVLGPDGHVIR\| DMKHDGPVNNVV FSPD GKYVATAGYDNTACDWDTAT
 $V T Q H S S P S V S L I D T D T K Q V V A T Y P L G S Y P Y N \quad$ LIL
 VANQQSSNVYVINTQTNAVDK 1 FPVGLLPSG







VT NAGSNNVSVIDGATNTVIATVTVGTNPRGEEVPDNPT VAA LRD $\square P E V W E \square R W P E E R A D G D E T I V G D F A D H R M E A P D Y$ VVDVVSHK LLRMDDMPHRNTHMGPQD ILLAPD ASSQSAGVATVIDTATNAVTATVPVGNTPFGA AVSPD VTNSNANNVSVI NTTTNTVVGDPIDVG DDPQQVAI TPN VANMGEDTVSVIDPETGQTI RKVQTGAAGAHNLFLSPD
 $K L A S G S E K N T V K L W N P A T G E L L Q T L E G H S Q S V R S V A F S P D$
$V S A S G D Q T L K V$
$V$
 $V 1 Q R \square S S Y L T V L N P A S L V V T K R K Y \square G \quad T G A N A V K V D S N$ LLASSGSEDGTIVKWDTATGAALQQNFEGRDERVWSVAFSSPD 1 TQQGSDQVSGIDDATQTVKWTMPVGKDPAG DLEHDPMGVANTAPSKGSVALVGGGG VVAGTWTYVYTPA
 I SVI DTAANTVVATI PVPAAGBALKFPAFAYRPVADTAT $V T A D D T S T M V V A T I P V G E A G B G G L P S P D$ VTNRDDGTVSVIE
AS GS WDKTVRLWDVATRKPLGEPDRGHEADVYSDTFSPD AANSGSNTIAVVDTQKHVITATDPVGQDPYGA ADTPD
 VACWESNT RD, DAAELKKI GEVKTGKHPHGLYP
A

AVSASRDYTLKLWDLETGTELATLTGHSNVYAVAFSPD TIVSGSTDTTLKLWDTSGNLLDTFRGHPGGVTAVAFSPD VADMAKHGVWLVDAGKDRVTGFDRTGRGAHGLH
 TAWDGWE
VTDGETGNDSVIDARSHTLRSVLTVG VENKIVNTINVIDPDSLNIVEYLD RGGGPMRFSDD SVKFSGSEDKTVKLWDVTTGDEMRTGKVSDGWRSDAFSPD


AANSGSND DAVVDTAARRVTGTVPVGRDPYGA ALDPD
 VVDLDGRTRKTDALPPLPPETPEPKIWPNTVDHGLVLTPD $\begin{array}{ll}L V V V D T A T N T V K N S I P L P D Y G \\ S G T V G K V D L A T G K Q V A E V A T G L H P A D & Y G T A A T P D \\ L V S H A G\end{array}$



290


| $R$ |  |  |
| :--- | :--- | :--- | :--- |
| $R$ | $Y$ | $V$ |
| $K$ | $V$ |  |

GRQLAV
GTTAY
TQQVVVA GTRMYVGLENGD


NVY A N S L ${ }^{300}$ S V I D|L E T
310
T R TI PV|G
NRGSDSLSVI QMANHQVVATI PVG TANVVSNDVVSADVGS GRETGRVATG NWGS DTVVSI DSHTNTVTSTI A SP A V QV I D T A S D K V I A A V P $\square \mathrm{B}$
$G L D E T W V Y K R T H G Q L I T K I K N G$ $N G G N N D V A V I D L P K G E V K G L I P T A$

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GQSVYVVNTN
GK QL F V GLT GSD
GKHVFVG
GRRVLVAG
GSTLYAASLFT NTVAVIDTSTNHVVTTTHVG
GKQYVVTLEN
TNLIYVA


GK VLASGSMDET $\quad V \quad$ V $L W D V A T R K P L G E P L R G$ NRYVY S GNLGDNSLSVIDTAAGKVVSTVTLD

GQTL KLWDLETGTELATLTGH GKRIVSGSGDGT SKVLYV
GKRAI
QTRMVVA

## QTRLYVA

GRYGDALNT LDD $\quad$ RVLIVDAGSDKLVHDLAVP
 GRFLAV

GRFVY

GKTLLVTII $\quad$ NR
SGRLYVA
GTRTYVA
GQIIASAAKDGT
GQYLF LGHYTATD


GQTL
GQTME
$G K T L V$
$G$
GKTLV
LDDFFFDPDYK LLI
S G NLADNTVSVIDVAT LKVVAT DAGF
TQASDGAKLISLRTADGEII GQCSLA
YVAIYSTPE DDLIGTIDNG FOPDKLSAGAAGGQVVDLDLGKVVHSLPGP GTRVVSGSNNQTIRIRNVKSGR\|VAGPFKGHTRVWDVEIG GHTVFVANADNNAVMVVDDSDENAKYAEKVSVVNGFIPVG GATVFVA $N R G D G T V S L D D A A T R T V V R T A K V G$ NTRVWDAMTHAVGDPSGSGDQTVRVRDMATHAAVGDPLEG $\square D T L Y G F S P D G K!L A S G S G D N T I K L W N D E T G E A I D S L D T G$
$S S K T F V A C S G G H Q V M A D A G A N S K F N P G Q P D R L E A L M D V G$



GTHGLVVC
EGDHEGPGT $\qquad$ पHLVDLK
NANSDTVTVI DTAGMTVVETILVG $N$ Q G S K S V S V L D A N D A VVVGSVVVGG 1 WLWDAAT GAVRQTLQGH
 VKVWDAATGAV
TI TVVDDARTGATRKLIDQAK ASGSDDETVKLWDVKTGSELQTLQGG SGSGDKTI KLWNVETGTEI RTLKGH SNSGAGSVVVVSFALRRPVDTFWPGG S GSGDNTLKVWDLETGKEL HTF TG SGGSANLEDWD $\square$ T TNE $\backslash$ YKTLPGH ES GVNAVGVVDAEKLEVLGH!PTG
TQASDGAYVAIYSTPEGDLI GTVNVG

GQFVWVAASKTGE\|IIFDVENEYS\|VDTVTF
GKRAVSAS

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E H P Y ClV $\$ A S R KEPSDADI T PSGH QRPYVI V L A A G K
QAPQALVYVSNAVP
GHAPHGAWASGDGSRDYVGDEKSDAVDVIDTVTNKVVDTD WYPSG【Y LDNDGKGLGAGSNREGGTLSFUDVPDEKQLKE

RAPDGNAVAPDGTRDYVADSARDLLLIIDDPAHRVVAEV SGVNNVVFSPDGKYRLWTAK WISDTEDLI DEANNRLTRNLI AAATQVAFSPDGRYLAAASEDGTARLFDLVSGAEKSRI
 ANPQRIVHHPH
QAPSSLG
SATLATVITPDEK LAYYTNFDSNELLVIDLTANDLLTKD QNPLGLTVTPNGE KVYILNSSGSYVSVFNTATNTVTAAI NGAHAFRAAGDG DHLYVSNRVANTISKMDMRAGRVVDSF NEPQSVAWAAD SDHGYVVNEGDNTVSVVEGSTGKVTATV YNAGPIVISPDGNTVYVGANGGGAVYAI
TGPYGVSFDPSGKRLLIAASR DKTLQVFDGSTYEHRKDV
TTPFEVGVNSSTNLIYVSNLNSNNVSVITNGSANTVIATV
 SWVWSVAFSPDGRTLASGSFDQTIKLWDAATGQCLRTL
 GMPHGITWELDGRRVMAIPHIDKGQVSVFDMTDWSLI THI KGAHGLYLSRDAK QLYVTNRHEGSVSVLDAYTGAPVTVW DTPDGVAVTPDGGE VYVTDSQSGTASVID
ANPRGVALTPDGA FAYVGNRALNNVSVI NTTTNTVVGDP






 GGPQDVKLSPDGK QFFVADMVANGUYVFDADADENTGFV


HEVYSTTFSPDGK VLASGSMDDTVRLWDVATRKPLGE

SVATSVSFSPDGQTLASASSSSENTDKLWDPKTGEVIRTL $S G V W A V A \square A P D G K R A B S A S F D K T L K L W D D E T G K E L A T F$


GEPFQVTFSR
DDAHAITFTKDLK KAFVVNQRGNTVSVIDASTHQKTNDD RRLWSVAFSPDGQTL ASSSEDGNIALWDVTTGTRLHSL WFPSKVAVTPDGKKLLVTS

$K Q P Q A V V F R D G K T$ A YVLNED
 AAPQALIVSPDGA KAYVSCDASAQVAVIDLKAWKV
S ASNALALSADGRA LLFVAGGNNALAVVDLA
DPTGVAANPAG-TRVYVTNSGSGNVSVIDTATNKVVATV

 NSVAFSADGQYLASGSDRH GTVKVWDAATGTCVQTL $P G L G P V R F T A D G R$ YAFALNTMENVATVLDAGSDEVAHE
 QGVNSVAFSPDGRRVVSGSGAFDHTLRIWNVEDL WYPSALAVSPDNGTLLVG
HWVSSVAFSPDGKW IVSGSGDNTICVWDTATHAAVGD

 $\square F P D S V T L L R \quad G K P$

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| UniRef90－UPI000467006C |  |
| UniRefefo－H1QL94 | AS GQEPQA $\backslash$ VY |
| UniRef90－NoAXR9 |  |
| UniRe990－Q130X2 |  |
| UniRe990＿8JJU7 | VQPQDVAVT |
| UniRef90－O8TM 4 UniRef90 FgZY94 | VHAGSVLSVAFSPD |
| UniRef90－C2W5X7 | GSNPR |
| UniRef90－LOF6B5 | PD回HPRDLVLVPD |
| UniRef90－UPIO00382A6EE | ELVNSTTDITMTPD |
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| UniRef90＿UP10004696CB4 | K VGMP |
| UniRe990－A5GFH5 | DTSG |
| UniRe B8MPL |  |
| UniRef90－UPIO003453A47 | NVPGGPDCMEVSAD |
| UniRef90－148FE4 | S P GGHGAHG可YTRD |
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| UniRet90 U5N4 |  |
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| UniRet90＿F4XK01 |  |
| UniRet90＿B5W1Y0 | TGEARMLS |
| UniRet90＿B4VLP3 | GHEDAVDAVAF |
| UniRef90－D2AVI6 | D GVGAGPHGLAVPD |
| UniRef90－EOUEV7 UniRef90 UPIOOO46F2C6B | TGHSSSVTAVVTPD |
| UniRef90－UPIO0046F2C6B |  |
| UniRef90－C7ZCX2 |  |
| UniRef90－AEEYW4 |  |
| UniRet90－12EYW4 | QVGSYPNGIV |
| UniRef |  |
| UniRef90－F4kW |  |
| UniRef90－UPI0003B2FOBC |  |
| UniRef90 W7W |  |
| UniRef90－L0F6J7 | ET GVTPKSLV |
| UniRef90－UPI0002E54C7D | D VGDYPQ |
| UniRef90－UP |  |
| UniRef90－LODL |  |
| UniRef90－UPI0002F77E97 | TtGTAPNAVAVNP |
| UniRef90－A1DJ78 | P पQGHTDSVITAVA |
| UniRet90－F4BZK8 |  |
| UniRet90－G8NS55 | EVPLAPQEV |
| UniRef90 XOEVA4 | EGNGRVRSV |
| UniRef90－B8LXS9 | QGSGSVYSVAFSPD |
| UniRef90－B0JPS | ， |
| UniRef90＿R4YN04 | KTEG |
| UniRet90 UPIO00440996A |  |
| UniRet90＿B4D9Q3 |  |
| UniRef90－V5XJR4 |  |
| UniRef90 W4JVS8 | P LIE GHTDSVT SIVA |
| UniRet90－B4W111 | D DGGGA |
|  |  |
| UniRef90＿UPlooo362B5E |  |
| UniRef90－S0EXQ9 | SLRGKN |
| UniRef90－Q096R0 |  |
| UniRef90＿B9XDL6 |  |
| UniRef90＿COGFL6 | P LIGQSPH |
| UniRef90－85W1Y6 |  |



UniRef90-UPI00037FC9DD UniRef90-S6JJ84 UniRef90-W0RRV7
UniRef90 $\mathrm{R} 7 \mathrm{QML9}$ UniRef90-C3DWV7
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UniRef90-H8MLF1
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UniRef90_Q01XU8
UniRef90_S2XN77
UniRef90 C7NEZ7
UniRef90-Q8GAL9 UniRef90-UPI00034DAB50 UniRef90_UPI0002FD0935 UniRef90-H0A2F1 UniRef90_UPI00034CFB37 UniRef90_UPI00035D26F4 UniRef90_G7XTK0 UniRef90-J7JH99 UniRef90_A3IRL3 UniRef90-S6AJ24
UniRef90-UPI000262CE8F UniRef90_R7Q5P5 UniRef90-E0XYJ8 UniRef90-B6QWN2 UniRef90_LOFM56 UniRef90_UPI0004407AB6 UniRef90-W8HP89 UniRef90-D4ZXP5 UniRef90-W4JUB2 UniRef90 ${ }^{-}$IOHWLO UniRef90_UPIO003632D26 UniRef90_D7C6S9 UniRef90_B0DF85 UniRef90_UPIO00363183B UniRef90-H1Y7A3 UniRef90_UPI0002DE2B30 UniRef90_UPIO0034856B2 UniRef90-G4TXS2 UniRef90_L7E4Y5 UniRef90_D7A8S5 UniRef90-D5UE78 UniRef90_UPI0004751609 UniRef90_UPI0003616CE9 UniRef90- Q6L284 UniRef90_UPI000365C269 UniRef90-I2EVA2 UniRef90-K9QM50 UniRef90_U7DVG3 UniRef90-B9M542 UniRef90_B7KD29 UniRef90_UPIO0041659AC UniRef90-F4KRI8
UniRef90- X7IEW9 UniRef90 UPIO00380B0C3 UniRef90_EOUJ20 UniRef90-B0D207 UniRef90-UPI00037B69E2 UniRef90-J4GIB1 UniRef90-D9WA41 UniRef90-W0EV19 UniRef90-M9W737
UniRef90_UPIO0037C1D07 UniRef90_R9GMH2 UniRef90_K9ULH5 UniRef90-K9T7Q3 UniRef90_UPI00044074D9 UniRef90-B0JNY6 UniRef90-T1CT19 UniRef90-K8A456 UniRef90-A1U5C8 UniRef90_R7SQ43 UniRef90-U5WXZ3
UniRef90 C7M157 UniRef90-D2R674 UniRef90-A1W765 UniRef90_M2RDA6 UniRef90_-19WSV5 UniRef90-A0A022LTJ8 UniRef90-C313A1 UniRef90-K9XDS5 UniRef90-A0A021VZU4 UniRef90-F9ZN25 UniRef90-UPI00028A0A9C UniRef90_G9N0D5 UniRef90_UPI000366F168 UniRef90_I4WXW1

GSGAGDGTVVRVWD\|ATGYSSRPFEGHSNSS\|SFSTDGR

NVVGYEDGTVDVGPMPGMVPTPEGD VVVGYEDGT LRLWSTSERKVLRIFRGHKSRMVAMSGDGR

四HGSNASK


NCAG
DT TS K TDDT N NKEDSKワKVGLAPGVCVDPNKE NYQMYGKGGYIYELDVATGTVTDAI EAGAVPYAALSPDEK AATLSPPSTIDVRATAAVVFSGDGS A VADLNADSTTVKFWEVSTGKLLNTLQGHSNSSVAWSIDGQ DSGGNEM RELDPATGAVLRRERISNPYHLAFTPDGK N SGEANTLVLDGATRQEVRRDPVREVHHLADTPRGD ASASADKTIKLWNLITNKAIATLSTGEVRSISFSPDGK VEATDTEPGGVLVDDTRTHARLGRISTAPGPHFADTPDGR N ARSNTVSVIDESTNAVVTTLAVGAGPVSLA DLPGA ASGSGSDDNTVKLWD $\quad$ ETGELI RTLKGDRVRSVSFSPDSK

VS GSEDKSVRVWDVERGAQVREALVGHTGGVAMSGDG NKDAS LTVIDP TVSVGGVTSTGRPMDWVATADDR N I A GANDRTIRIWDVENRKQVGEYSVGDHQGVAVSPDGR NVE $D$ DGSVSVIDTETRTVSATVAVGNRPGMGVDPSTH V SASGDK $W$ K KLWDLEQGRELLATLS GGHSHAVAMAPDGK VSSLNDYTI RVWDVSTGDAVGDPFKGRADQI AIISPDGK
 KESTNS LYAAAAL PARKRLSGHADVVRS VAFSPDGR VS GS GDKTVRVWDAQTGQVMDP LKGGRVTSVAFSPNGR ALGFNTTTHRLYAVDQDADRVLSSIPVGKRPNIADDPG\D

ASTNGDSTDK TWNVATGQETRTLNVHFVDSVAFSPDGK VSGSDDKTVKIWSVSNGQCLKTFPGHQNMGVVLSPDNK
 WVANEGDGTLIA IDAASGQVKSVKPGAGLYEVVFSPVMN $V$ VGAADTTLKAWDAASGQVLTEGVTGUPSPHVQTSPDGG ASGSGDGTVRLWDAASRQSK 1 ARTGPRDGVAFSPDGT LGGYYSNTVSVINGSTNRLTAIANVGKNPYSAFDPYNN
 VAIS PDGQ NNASKAEESGVTVIDPQS $\square$ KA $\square$ KH $\square$ ATGSGHH IAFSTDSR

AS GSDDKT $\square K \square W D V I T G T E M \square T L Y G \quad H P N V S Y S P D G K$
 SAEGFKDVGVVYKLDPKTLKTLGLSHTDKNFGMALSPDGK

ASGSGDKTDK LWDVQTGQLIRTLSGDVVWSVSFSPDGK VSGSNDKTVRVWDAQTGQSVMDPLKGHDAYVTFSPDGR $V C V S L D Q T V R L W D W G T G Q C L K T W Q T D W V F P V A F S P D G K$
$C W V S G T D D K T V R V W D M E T G Q Q L G K G H T G P V G S V A D S H D G R$ $N S G N G \quad D G V S V I D T G T H T V T A T V A T G N H P N V A V T P D G T$ SAEGFKDVGAVYK KDPKT LKT TG LSYTDKNFAVQDTPDGA LWGGAKLLVYNTVTGKDGSEl AVGPAPGIVVTPDGA NLATGGEDRSVRLWEVSTGSCIDIWQGGSWIQIAFSPDGK MVSGSCDDTVKVWCLSTGTLLDTKHSDGVNTVADSPDGK AF GTCRGT$I S$ W WDI ESKELVSKGHTGSVRGVAFSPDGM ASATGTDEVVAIDSVSYQIIARIPVGNHPGLTYVPGEH TAQSFKDVGVIVKLDPKTLDTRGETHTDKNFGMTTDTEGK VSGGRDGGLVEVVDLLTRTVTDRIQSGNS\|GGADSQDGR $V$ S GSDDKTLRLWDAATGQPI GSGSTASVSSVAFSPDGR



UniRef90 W4K2R1 UniRef90-UPI00037FC9DD UniRef90-S6JJ84 UniRef90-R7QML9 UniRef90_C3DWV
UniRef90_14L365 UniRef90-H8MLF
UniRef90-Q47628
UniRef90_UPIO0037A59C0 UniRef90_Q1D6V9
UniRef90_Q01XU8 UniRef90_S2XN77
UniRef90_C7NEZ7 UniRef90- Q8GAL9 UniRef90-UPI00034DAB50 UniRef90_UPI0002FD0935 UniRef90-H0A2F1
UniRef90 UPI00034CFB37 UniRef90_UPIO0035D26F4 UniRef90_G7XTK0
UniRef90-J7JH99
UniRef90_A3IRL3
UniRef90- S6AJ24
UniRef90_UPI000262CE8F UniRef90_R7Q5P5 UniRef90-E0XYJ8 UniRef90-B6QWN2 UniRef90_LOFM56 UniRef90_UPI0004407AB6 UniRef90-W8HP89 UniRef90-D4ZXP5
UniRef90_W4JUB2
UniRef90 ${ }^{-}$IOHWLO
UniRef90-UPI0003632D26 UniRef90_D7C6S9
UniRef90_B0DF85 UniRef90_UPI000363183B UniRef90-H1Y7A3 UniRef90 UPI0002DE2B30 UniRef90 UPIO0034856B2 UniRef90_G4TXS2 UniRef90_L7E4Y5
UniRef90_D7A8S5
UniRef90-D5UE78
UniRef90_UPI0004751609
UniRef90 UPI0003616CE9 UniRef90- Q6L284 UniRef90_UPI000365C269 UniRef90-I2EVA2
UniRef90_K9QM50 UniRef90-U7DVG3
UniRef90-B9M542
UniRef90 UPIO0041659AC
UniRef90-F4KRI8
UniRef90-X7IEWs
UniRef90 UPIO00380B0C3 UniRef90-EOUJ20 UniRef90-B0D207 UniRef90 UPI00037B69E2 UniRef90-J4GIB1
UniRef90-D9WA41
UniRef90-M9W737
UniRef90_UPI00037C1D07
UniRef90_R9GMH2
UniRef90_K9ULH5 UniRef90-K9T7Q3 UniRef90_UPI00044074D9 UniRef90_B0JNY6 UniRef90-T1CT19 UniRef90-K8A456 UniRef90-R7SQ43 UniRef90-U5WXZ3 UniRef90-C7M157 UniRe UniRet90_AM2R165
UniRef90_M2RDA6 UniRef90-19WSV5
UniRef90 S0G0R2
UniRef90-A0A022LTJ8
UniRef90-C313A1
UniRef90 K9XDS5
UniRef90-A0A021VZU4
UniRef90-F9ZN25
UniRef90-UPI00028A0A9C
UniRef90 G9N0D5
UniRef90_UPIO00366F168
UniRef90_14WXW1
$H$ VIJS GS
$R$ VVLLLG G W
90

100<br>110<br>120

$R Q Q G V Q V V D R A T G A V V Q T L \quad D Q$ | L | I | Y | V | T |
| :--- | :--- | :--- | :--- | :--- |
| V | N |  |  |  |

 ANSNNVSVINGNTNTSLATVP
$V$ L Y V S $\quad$ SS N A R Y QAPNF LDND V LV L NTSSSWA T I K A I A T N D G

 $K \vee G \vee \vee S$


\section*{| $\square 1$ | $Y$ |
| :--- | :--- |
| $T M L V$ | S S G S S D | TMLVSNWC <br> $R A Y A V G G$ <br> $P \square G$}

VL
AVGG $R L V V T S L R R D Q V D S G S A D F T V S L W D A N D G E H V K R L S$
$M L L I G D S$
GANEMLF L N PSTGEVVKR
$T L A S A S$
Y GY A T N
WV Q Y VA N S V
D D K T I KL WN LTTNKAIA $\quad 1 \quad L R G$ SNNVSVIDDTTTNTVTAT』P TVAD
TLASSSSFHPDGASGGRDGT\|KLVDVEKGE\|IHTFNHDNG
$S R V V S G S D D T S V R V W D V E K G A Q V G E V L V G H T$
 QVFVV S IPERGGSGSDDKTVVLWNPATGSLQQQTIDABSE Y FASAS
$D G K V L Q Q W D A K T G E A V G$

 $W I V S$ GSTYWVRIVSGSDDNTIRVWDTVTHAAVGG RLVAA D WY A NR
QIVTAS
T L A T
HI
$\begin{array}{lll}\mathrm{R} & \mathrm{l} \\ \mathrm{l} & \mathrm{V} \text { V } \\ \mathrm{N}\end{array}$
LLVWDTARLD
GGAD GAVVRLWEATTGESTRTLT
VS GSGDK TVVRVWDA QTGQSVVMDPLKGH
$A G S G N V S V 1 D G G S D R V \vee A T V P T D$

$T$ LA S T N G
VL
V S G S VD K T L KLWDV S T G K CLLK T L
1 S G S RDN T R R WDPES GQ DT I KLLWNVE T GQE $\square$ RTLT G GHN G

TVV WVV G

HADSAS

T LAA GAMSDPR
$N S G N V S V 1 / N T E N N N V\|S S V N\| S G Y$

T 1 A S S G
N G Q GKQ S V A L I DL E N E A DL D D EP DA K S F A F V V N

RD R G K K WNMTTGEEIA TLKGHFR
$T L A S S S$
T L A A S A G Y
$T V Y$ VT N S L

| 1 | $L$ |
| :--- | :--- | :--- |
| $H$ | $L$ |
| $T$ |  |

$R \nabla Y \square A D$

| $T$ | $L$ | $F$ | $V$ | $N$ | $S$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $T$ | $G$ | $L$ | $V$ | $A$ | $D$ |

$Y$ V $Y$ V $A N$
TL
T

| H |  |
| :--- | :--- |
| T | L |
| L |  |

$E L F V S D$
$\mathrm{T} V \mathrm{~W} \vee \mathrm{~T} \mathrm{~N}$ S
Y V A V S N Y E P G G
$R \vee A A A D E D W$
$R \| V S A$


 $D G G L S A L D N T A D G K V K N R V L V P E$

T A YVT A MY A

$L V V A Q N Y T P G G \quad V K V F D A A T D E L L A D L P$

$P D G \stackrel{L}{A} \mathrm{M}$
$Y$ VMAGSYV SHNAVILDAGTFEPVKDLKGENP
GFVCNTSQ
F A Y L L N $\square$ STESMD
A $\square$ A S S S W

A S G S G D K T I K LWDVQ T G Q Q

$R \square V S G S R D N T V R V W D M E V G Q L G S P L K G H T G$ A GDDS L SVIS T S TN T V T A T I S I A V V D Y Q QR KI TASWSFTGK

ANDNSVVVISSTATNKVIGTISATLY AN GSEDKTI R L WQLLA DARTSATSRNSLT




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


L I Y VG N G
Y A Y V
Y A Y

UniRef90 W4K2R1
UniRef90-UPI00037FC9DD UniRef90-S6JJ84
UniRef90 WORRV UniRef90-R7QML9 UniRef90_C3DWV7
UniRef90
ILL365
UniRef90-H8MLF1
UniRef90 ${ }^{-} 47628$
UniRef90_UPI00037A59C0 UniRef90-Q1D6V9
UniRet90_001XU8
UniRef90_S2XN77
UniRef90 C7NEZ7
UniRef90 ${ }^{-}$O8GAL9 UniRef90-UPI00034DAB50 UniRef90_UPIO002FD0935 UniRef90-HOA2F1 UniReef90 UPI00034CFB37 UniRef90_UPIOOO35D26F4 UniRef90-G7XTK0
UniRef90_J7JH99
UniRef90-A3IRL3
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UniRef90-R705P5
UniRef90-E0XYJ8
UniRef90-B6QWN2
UniRef90-LOFM56
UniRef90_UPIO004407AB6 UniRef90-W8HP89
UniRef90 D4ZXP5
UniRef90_W4JUB2
UniRef90- ${ }^{-10 H W L O}$
UniRef90-UPIOO03632D26 UniRet90_D7C6S9 UniRef90_B0DF85 UniRef90-UPIOOO363183B UniRef90-H1Y7A3 UniRef90_UPIO002DE2B30 UniRef90_UPIO0034856B2 UniRef90-G4TXS2 UniRef90-L7E4Y5
UniRef90-D5UE78
UniRef90-UPIO004751609 UniRef90-UPIO003616CE9 UniRef90-Q6L284 UniRef90-UPIO00365C269 UniRef90_12EVA2 UniRef90-K9QM50 UniRef90_U7DVG3
UniRef90 B9M542
UniRef90-B7KD29
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UniRef90-F4KRI8
UniRef90-X7IEW9
UniRe990_UPIO00380B0C3 UniRef90-EOUJ20
UniRef90_BOD207
UniRef90-F4XTCO
UniRef90 UPI00037B69E2
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UniRef90 C7M157 UniRef90-D2R674 UniRef90-A1W765 UniRef90-M2RDA6 UniRef90-SOGOR2 UniRef90-A0A022LTJ8 UniRef90-C313A1 UniRet90_K9XDS5 UniRef90-A0AO21VZU4 UniRef90-F9ZN25 UniRef90-UPIO0028A0A9C UniRef90_G9NOD5 UniRef90_UPIo00366F168


HSGYV YSПS $V$ SNDGKTL ASGSGDKTПKDWDVSTG W YGLKFSGDSKTLY ASGGNDNDI LAYHIANN W PRGAASPAGLALSADEQHLY RNPEGFPYGARQVLLHNGLLYY GAVADPAVIWVVDAETG RHN DSVWSVSFSPDGKDL ASGSGDKTVKMWDVQTG HTAHV CSVAFSTDGKT VASSSRDETVRLWDDKTG KSDSVGTNPGAEVVGGDGR, पYVAN TGSNTVSVINTTTG PVSFV AVSYDDRH IVSGSYDKTICVWDME $V G D N P E G T A V A P D G T R A Y V T L Y N S A S V A V V D \| S A N$ GFMSTYSGHEVLRSGNNTRIFWSAAQSGGERQSVVNGNDL
 PTKLTGSTTNGLALSADEKLLYDANA DNNCLAVFNVSTG LTGHQG WVCSVAFSPDGKYL ASGSSDYTIKLWDVGTG
 I GNSQYDSASGHVFVNLQTLGQLAEIDPRSH NEQGFPTGAREVLWHDAGLLYVGAVADPAVIWVVDAKTL GAVL PLTGHTDWVTSVAFSPDGRR IVSGSADDTLRLWDAGTG LVTDTGRKPRHLVLSPDASRLYLTVGSGSDRLVELDAATG KTFFGLNTGHLQI DKQNEYVYFWMIYRNNPI SVNNDK $\square G$
 RRWPVPGQAFGLAADPDGRALYVGDWSGNRVLRLSAETG DGQMVESDSGMLTGTPFADYLVVAMEENAGVWIIDCSDLD PAAFVVSFSSUAIDPNGQYAYVVNANA

La LSPDGRQVAV LGARTVWRLSLDDG
${ }^{A}{ }^{\text {B }}$


## UniRef90 W4K2R1

UniRef90_UPIO0037FC9DD UniRef90-S6JJ84 UniRef90-W0RRV7 UniRef90 R7QML9 UniRef90_C3DWV7
UniRef90
ILL365 UniRef90-I4L365 UniRef90 Q 47628 UniRef90_UPIOOO37A59C0 UniRef90_-1D1D6V9 UniRef90-Q01XU8 UniRef90-S2XN77
UniRef90-C7NEZ7 UniRef90_Q8GAL9 UniRef90-UPIO0034DAB50 UniRef90_UPI0002FD0935 UniRef90-H0A2F1 UniRef90-UPI00034CFB37 UniRef90_UPIOOO35D26F4 UniRef90-G7XTK0
UniRef90_J7JH99
UniRef90-A31RL3
UniRef90_S6AJ24
UniRef90 UPIOOO
UniRef90-R7Q5P5 UniRef90-E0XYJ8 UniReffo-B6QWN2 UniRef90_LOFM56 UniRet90_UPIO004407AB6 UniRef90_W8HP89
UniRef90 D4ZXP5 UniRef90-W4JUB2 UniRef90-IOHWLO UniRef90_UPIo003632D26 UniRet90_D7C6S9 UniRef90 BoDF85 UniRef90-UPIOO0363183B UniRef90-H1Y7A3 UniRef90-UPI0002DE2B30 UniRef90_UPIO0034856B2 UniRef90-G4TXS2 UniRef90 L7E4Y5 UniRet90_D7A8S5 UniRet90_D5UE78 UniRef90-UPI0004751609 UniRef90-UPIO003616CE9 UniRef90 Q6L284 UniRef90_UPIO00365C269 UniRef90-12EVA2 UniRet90-K9QM50 UniRef90-U7DVG3
UniRef90
B9M542
UniRef90-B7KD29 UniRef90_UPI00041659AC UniRef90-F4KR18 UniRef90-X7IEW9


 A QVGEALVGHTAWV GSVAMSGDGRRVVVSGSGDR $T V I A T V S V G F G S S G V V \quad V G N R V G V N T S T N L I V Y V A N F G P G$
 $K$ LV RTS D K A G N A A D S R F G H L G H MVVYS Q D S D T L F V S Y S N M L
 EAVQR IPLKSA WLGLA WHPN GKRLYVSGGNRAPI Y DFDYE
 K A EVVFATPGDRDRHVITSPDGKYLYVVASGAY TVTGVVI LEHSSGKLAVSPDGSTVYA SLIRTFEGHTHWALSPDGTKLVAGSMDQGVWLWVNNEQAF
 $T L L A R L K M P D M P$ E PIT TIN GHKEWSFSPD GKTLASSASDDK T ITKLWWNLDTNNQ E I I R T L P T K G QVG L L LA G ELLRP DT TP G GP L GA QLP GALTV
 ELLNTLN

HHTGLVRRINFSPEGKILASGGDDG
$R L L A K L P T$ $G T Y G K G V L S$
A QV GVV L VGHTGWVVWS HVVDII KHPRVPDVFDT S L L Q TL K H S Q S V H A ViM F S P D G K L I A S G S G D NTLKTHNTG


 TTVGDL LLRGHTNRVTSVAFSPEGSWIVVSGSGD
 R EPRDTLAHTGRVEALAFGPDGR Q S VM D $\quad$ P L L K GHD S WV S S Q KVLD SQQLP VGSKDFVETNTHRHRAFFISYEDP
 ECLMTLQGHSDWVMSLAFSRDGQLLASGSWDHTVKLWNVS
 K PVAKLAKGEKAHV R EVVAVDEANDRAYVTVLGMR

 NSVSYI ETD T IVY DYSFNPYSMUYNHNHYDYMS GYDDS

$D V R R$ V I K T R Q G L G
PMGFSADGRFG V $L$ NT L E N

 LY D F NVVGNK T LF K K T K L K K A P A Y T C N D G K K


 KRIDANPSWFS QDISVVGTAPTALALSPDGTRLYVANSGSG


 $T V T A S I A G F T A P$


 QAI GKPFVVGHTN GVQCDVADSPDKCVVSGSNDFTVRVWGME



## G V V H E

GAPDT GHTP DRVHSSFVGCDAFSPTSRYDAS
EVLRTAETGREP
WI I GRDK $\square \mathrm{DG}$
A SVSHSSFVG
 QVLA H TT WVGS VAFSP DGTR DASGFRNKADRضWDART GQA AV EAEVA V GRDPAGLADGVDGRLYVAERENRSVGVVDTAR PVTKIKNVGRHLHLSPEGRYLTIASYEDGNFPVVDLKEKK



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


## UniRef90 W4K2R1

 UniRef90-UPI00037FC9DD UniRef90-S6JJ84 UniRef90-WORRV7 UniRef90-R7QML9 UniRef90-C3DWV7 UniRef90-14L365 UniRef90-H8MLF1 UniRef90-Q47628 UniRef90_UPIOOO37A59C0 UniRef90-Q1D6V9 UniRef90-Q01XU8 UniRef90-s2XN77UniRet90-C7NEZ7
UniRef90-Q8GAL9 UniRef90-UPIO0034DAB50 UniRef90-UPI0002FD0935 UniRef90-H0А2F1 UniReef90 UPI00034CFB37 UniRef90_UPIOOO35D26F4 UniRef90-G7XTK0
UniRef90-J7JH99
UniRef90-A3IRL3
UniRef90_S6AJ24
UniRef90 UPIOOO
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UniRef90-EOXYJ8
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 SVRVWDVETGAQVGEALVGHTSWV WSVAMSGDGR NVSVIDGFATNTVIATVSVGVFPDGASVNTSTNLIY STSMRVHNAMTYADFGSGPSPGGVLTA KAHSPVNSRLY KTAEGMKPLHKDGTTLALKGEVKDAYKGTAYGDTMDEKTQ F TSVINTKIDDRGKTGDDPGRLKFSGDGKYCFVSDDGTDS SQTLEPKQTIDVGDMPGYWSGLVHHRSKEVTFSQDGR SVSVIDLH KKTLITEDPVGYGP RAVIADPYKNLVY K QETSRISKDDASTGEVLGQVHTGNEPRSMDISGDGTALY QRWQGHTNLVNFSSNGQVLASGGDDYTAKLWDVQSGQVIQ SSVVDPGTHA VERRDTVGRGAHQIFPSPDNSV A TTATSLETREREPVWTVDVGPEPAGVIW WTHEGKLL FAADTLAPLGEVEVGRL PLTITSSPDGRLGYVSGNVSST FAADTLAPLGEVEVGRLWPLTVUSSPDGRLGYVSGNV TNTV KATVGVGTDPFDVITPFVPPAPTCNDNMQNGQET T DKLWDVEKGQLIHTLNPYNEAVVSNSFSPNGKLL ALTVIDPVTSVGGITSTLARVALKRPPMDWVASADDRLLY SVRVWDVETGAQVVEALVGHTDWVVS TGRVF IAQA DARNDANGKSGTKKHGLKELENRAFLNQVT T LSVIDIPMRLAKT DKVGPHPLSVS TVRUWDSQTGKPDDAPLRSHVAFSPDGKHFTSGSHDRTLR VIDTETRTVTDTVPVGSGPQGVAVDPTSHTAY ELATLSGHSSEV RAVAIAPDGKR
TI RIVWDAKTHAAMGEPLRGHTNLVSS
VVDTARAAVVATVAVGHAPYGAALAAGGRLLYVSNQHDDS TLLRWDTQPGRLSDQPLRGEHLALSPDGRRLVSTAHSETL
$A G R P R T T L T G E A G N$ TVRVWDAQTGQSVMDPLKGHSVAFSPDGRHIVSGSGDKTV ALTMLDSDKKDHREDLGLSHPWGVAVDAQR TGQEIRT पNGHSSSTSSVAFSPDGKTIA
HNSMI RAVMFSPDGQLLASGSLWEVATGQCLKTGYGNGTW HEDWVRAVAFSPDGSQLVSSRLWDEASGQSLGNPLYGWVL TGTEIIRTLTGH
DKPSAVWI VDGAKKE VDSIDDLAGGDAG\SLDARNNRDF PATLTAATDPVESPV QVAVSDDARTAYVSDAGTST KQAITTLKVWDLEADQKIQKQAGHTDWVQALIRHPNKM AATGRKKKVF FNNRKGEMSAVFSPRGTTLAATDFKRVR


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Q
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ELDVSAEPYQVVFTKAYAYVR
TVSVVDTNGNNYGTPKIGSGTGQSPFGVAVSANGKRVY
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RVWSASTGVAPYGTTVVNSRTYVSNWGGTLPNVPYGKMF RIEQRWKPLGD KPALLLNIAEDSETGRLFVTDNSKAKT
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SLSTGKLLRTLTEEHSCFVYSVAGGPDGWLWSVQF SPDGR
 SEKVVAGPFWHLT KFVKSVAFSSDGRRVVSASDDFSVV THVVRTVNDDENHRTIASTPWAHDPDVWNESTHEGPVW R EKRWKPLGDLKKPALLLNMAEDPATGRLFVTXNSKAKT WEPEQGVQTILPDYGKGEQRLPVYKMPHLEGWATADGYAF GADDGTVRVWDTVEGGAVEKPFEVH TGAVSCVLFSPDGL ThRLWDAATGQPLGAPLTGHTESVTS GVAFSPDGHR TVTKVDTETLETLQTVEVGKNPIVEASGGITYEPTQRRVW PRVRRULAGYGRGQQPG TSVVYMPHDRGWALAGGHAY $\overline{M A R I A G D P V G D G}$ PFALAYDP
VAVK\P GGCTPHFGSGA $\square \mathrm{VK} \mathrm{V}$ GKSLGDG
1 ASVREVGRTD DDQT AHPYSLNFDSAGKQVF VASGTTLTVIDLSTFQKDGDDLTGAYYNSFLS SSPNQPLA
 AGHTLSLDLGRAAPPRS GLLGEHGRPHGLRFLPGDREAL SHADVST


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$D V D C G G$
 V SMP SA GEVAVV
$V$ V I F

 SVAF Q DGTPQKPKFIDLEAPLPPRHPGQALATPYAI QVSDD
A SGSNDTFKLWDLA TGSLQQTYVTHSKMILI AFSPD VVDGEE GSVRV F FARNHQLRHTVQAEQGLGPMRFSSD I WD DE SGEEGKDTSVA DSPDGRHVASGSTEKGIQLDDTEN VVNLADDTVSVI E

AVSASRDNTLK LWDLEQGREDAT LSGHSSVRAVA DAPD VVSGSYDCTI RVWDVTTHAAVGDPLKGHSLSIVAFFPD VSVLDAEGLSVLRTLHGFGYPEGVAA W

RVWDAQTGQSVMDPDKG


$S M P D A V A D D G A$
STASGSWDTTVK WNVATGQEDRTLNHSDLVNSVATSSD
 VS GSLDNTI KLWNVETGKEDRTLKGHDNSVIVNFSPN V SA L QANEVVVVDLATKKVTNRFPSGG EGSIVLVYDAS
 LLDATTGRTT AILNMPKSGTTARWPKHTVESVAFSPD




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

DPVTGAASGGSVSVFDTKGALDKEVPAGLHPNDLVASSPD T LVLD $\square H S G K V I K Q L D L G D S L D A V A F P K$

 VWDMESGD WR GSTGKHTDTVIDS


 R】VSGSLDKTIRTWDFETQQTLRTQSHHGDVWSLSDSPD VANYSGSTDTTLRLWDAATGAPIGATGHTDSVDSVAFSSD PFKEHGGTDHVDP EGLAKDRSRFVR $\square E \square G G R M G L R \square T A D$ $\square P A \square G R H E V L V V D T A T W A E V G R \square P V A G Q P V F V M A D R P D$
 TNIGSCENTVVTVWDMETFDVVKQIPVLGPTESPAAHPD VAN

 $V A L N G H A A$
$F$
$F$

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

UniRef90 W4K2R1

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GKRTV
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300
$300 \quad 310$
320
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GTRLFVASGSTD
GDGRRVVSGSDD
SNRDD

NSTSNNVSVDNGNGAVEALVG
TNL! YVA
ERSGNTVKLYDSETFELI NTLEGG
TGVI YVT
GKRIVLAVSVRTG
SDRAFVVVFDHDDRSGTKDG Y GKYAFVVFDHDDRSGTKDG RNVYVIDLRDGKQLGYVHTG DGLMYV
GQTLYV
SETLYVSAFKRTMTSSNWGSDSVSVIDNTLRVTGRMGVG
THTVWMANYVGSIQVYNDDGDGLSVVDLKTLERKGYVKTG
GTRMYYPM

 SVRSVSFSPDGKTDASASADKTUKLWNRATNQEISTLRGD
$G R \square A D \quad S N G A V M F W D \square \quad A T G T V Q Q T L G V M$
 GRYLWVGNNAR RGEEGGVTVIDTQSRKTVATLATG ANEAYVA L
GRRVVSGSRDGS
VVRVDVETGAQVGEALVG
DSTLFVSA ASGAGSDKLFTVDAQTGQVLGRADVD

GKNAUAFSSDGKYLVSGSDDTQVCIWDAETSKVLVKTLDG
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GRTL
GRHIV
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CTI RVWDSTMHSSVGNLLEG
AVSVLDADTGAERRRIATG

TNRIVVA
E Q T L Y V S L W
GKTL
WVMTVAF $A$ ASGSEDKTIKI WDIKTCKYOQTLPGS
GKTL
AFSPDGSR! $\square$
GDQVFVA
GTSLL SADQGTANQGS
GKKAVVGSSD

NTILATGSNDDT
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GKYLFVSHGND
GTTI


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## 

GRYLFVANAND
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RNEITY TQRDSGKLLSLNATDYSVKKSWDLP
GARLFAT EPDANRVWVVNARKNTVAGTITGG
G
ASGSRDTSIKLWDVQTGQQIRTLSGG
TGQRVMGPFKGHDDTVTSVAFTVRVWDAQTGQSVMDPLKG
GNTIASGSHD
T GKVY V $A$

GQFVYVANGN


GKLLASASCD
GKTLVSGSCDGT
GSRVVGSRD
LINSVEFNPDEGKTLVSGSDDGTVVRLWDAH GGKMVSDTSTG THRAW
RQEDY TTRRDGGKLLSLDAATYKVKQQWDLP
NRQI WVSFAHPKND


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GSRIVSGSNDMT
GRRVVVTNQHAG
SKYVVVDVVGTGPDADK GKLALFTLE
GEFIY Y A QPEQ
ANTVFVFSPRGD! IASCDNDR
LI KLWDVRTGKCL L S S D
EGRIDFVSDRETGFGGWKVDRGTVSRIDLTNNSKTDEVDAG

$P H \square R G W A V A A G R V Y \square P A \square G R H E V L V V E \square G S W K E V A R \ P V K$ H H R/L F A V C E N R T

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QRAAA $\square$ NFSQDGRLLAYSSTSTNCSVK VWDVSTNTLRHML
$\square T \| L S L N F S R D S Q \square L A S G S N S N S N T V Q \prod W D S N T G$
GGHHEI AFSADSR HAF 1 SSRDAGRVTVVDVASDKK LKD $\square$
RRAWGLGLSPDGK VLAV LDNGLSDDFTFIDLDTKRPLLT
HRVLSVAMSGDGRR VVSGSLDKSVRVWDVETRAQVGE

$\begin{array}{lll}H W D S A & A F S D D G K & L D M S G S G D K T V K L W D P A T G S L Q Q T L\end{array}$
HS GWSVTFSPDDKK VASGSQDKSIRVWDVDTGKLLREL
GAMDSCEVAPDGVTVVAGDNGG
HAVHSVAFSSDGKW $\backslash V S G S G D R T \square R \nabla W D A T T H A A V G S$
R N SRG


> NAPVGVAMDPAGTFVYVANSGSDTVSVIDTATNQVSGDP HYVRNVRFSPDGKTLASGSNGDTIKLWDVKTGKEDYTL STTNALTLSPDEKT LYYANADNNCLAVFNVA
> WYPTSVRFSPNGKETEYIAGLFKGTLSVIPVPTREEL
> PNPNSLLLSADGQTLFVTV
> AEPWAVAVTPDGR KVYVTNMNADSVGVYDAASRRHLKDV HNVWSVSFSPDGK I LASGSRDTSIKLWD

DS P NALDVS PDGKT, LYVANGMDNALAVINGGSGHVKGY■ VNPNSLLLDAEGQTLFVTVTPGRGDVTVNPDTATVVTTL NFYVDAEVSADGHNWAYATDYVEKTV HGVSTVA $\square$ SPD GK TLLASSGSCDRTIKIWQV TGEPQQT
 DYPRSVNFSRDGKTL VSGSDDKTIILWDVKTGKK DHTL
PNPNSLLLSQDGQTLWVTV
KSVLHMEFTPRGEE VWVSSRDSDRVTVYNTRTDEELATL SYVYAVSFSPDGRH VVSGSSDATLRIWSAEERESVES HTVFSVAFSPDGRR IVSGGLDMTLRLW

PAPE
KAVLHMEFTPRGES VWISCRDDNRVQVYDTHTDQSQARL

GHSHFPEYTAMGDYFYVSAGYKGDKLVIYKSDTMEKEKEI PGPRGLTVDAKDDT $\square Y V T N F K R G T$
ASPGSIAI
CRAWAI AFSPDGKTL ASGHDDQTVK LWN LE GDCDAS L



UniRef90 W4K2R1
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$K K Q G L G P M G A S A D$

A LVGHTDWV

D VGGRPDGLA
$N$ MPVYPNQMVLSDDM
ATGAGAHGlAFSAD
STAGSTPNALA

R T P
$R$ VGRSPHG L L
K Q
E GS GEVH GVS $\square$ S P D

ETGSSPDSGALSP
KRAGLI PHSIEV
A LVGHTD WV
ESYSSVNAVAFSPD
GEGRSPII
LEDGDDWSIAFSPD
P LE GHASSV
GHQDKDTTVAFSPD

PGGTNPYAVAVDSDTG
STVGSTTNGLALSD
NGHSSVNSVAFSPD
HEQNHGVLSVTSPD
KGHDSPVTSVFSPD
$V T G G M P Q T V A V$
$P V G D L P N G \square S F T$
GHTGYVRS $\square$ AFSPN
S
E $\square$ G GRP
$P T G W Y P T A V K V$
RGSTETVT IAFSPD
$\square \mathrm{T}$ VGS M P T G $\square \mathrm{A} \boxed{\mathrm{V}} \mathrm{G}$ T V G $\stackrel{\rightharpoonup}{N}$ G
$R \square G R \square P A S A A A S P D G$
D P LG R VT S VA F S P N
$\square A$ VG P A P S S VA VS A D G

P T
$T G L G S P Q R V A S T P D$
PHQSWVWSVVFSPN
PFEGHTDHV
K GHGG

PA

DV DAPSGDF
E GVGG SVAFSPD
P V VA EGPRTVA A
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PSPGFP $\square R V V F T A D$
P
P

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UniRef90-G8WNU9
UniRef90 S5NKC9 ATGSQDKTAK $\square W D \square E S G K Q T \square N \square K G H T A G V A F S D D G K$ VS GS WDGTlRLDWDASTGKLIQSYETGGVYSVQFSPNGK VS GSDDWTI RI WDASSGE AlA GPFEGHVSFSPDGK $V$ S GSDDKTIRLWDVTTGEVIAPLSGDRVRSVAFSPDGT VGSWNHVNNPVVVWDMVNGKEDRRQDAERFGDAVFSGDGR SLGEGA ATSVVVIDVGSRTVTATDPVGAVPGDEVDPSTH ATGSEDNTAKVWDLSAGKALLSLQGHSADVAFSPDGR
VT GSGDKTПRПWDAETGDATGKALQGHTYY VEAGDSRPGGVVVIDTRTRRTVGRIDTAPGPHFADTPDGL VIS GSTDGTIVRIWDPNERTELGRLETGGVWSVGWSPDGT

## LDARNNR LVGSVRVNPNPGVIIDSADGS

A A A GDASVSLWDVDSGKTRATLTTGLVWSVAFSPDGH
 T GEVYSVAFSPDGT VS GS S DK TVRDWDASMGKIVSDTSARHTESVAFSPDG
AS GSWDSTIRIWNADTGKEIRRGHTRIVTSLSFSPDGK DVGSSQDANNPLVDNVHSDSVTC LS FSPDG

A $\square$ A SETGVSI WDAETGQRVRT $\square R$ VK GHPPTT L
ASASWDCTVRLWDGYSGQLLKTFHGHTKPAVAFSPDGR

## VA F D S D G Q

ASGSEDKS $\quad$ K TWQLDTGKCTRTLKGHTLWTLAFSGDGT HGTEVDVINLDTEAVEARIPNLKGHGIALAPELN ASGSSDDTAKLWDVAKGTEIRSFSASSVYSVAFSPDGR

$F G R D G G L T R V D L L R A R I T H R V Q A G N S \square G G A \square S Q Q G R$


A LEPNDTTVRDWEVESGRVLRTLGGGKATSVAFSPGGR REYGIA $Y$ VWDTRNERTVTQLDVSGVLSLAFSCDGS NNDAS $\square$ SVIDPAGYSQLYAMILLKRPGEVFSFDGK



VYSAKRN VALS GDGN

ATTASAA
QVID T A T G GLVT D $\square$ P T G T Y P H A N Y S P D G S
DDSK YDVVKVFPTGRKPKSVTFVNDK
TGSWDSTAKLWDAGSGQAEKTFPTSCVHSVAFSPDGK VSGSFDNTIRVWDADTGQQLGRGHTNSVRSIVISHDGR ATSAGTDTVVAIDADTYTVAATAETGSHPHVIEAPNGK LGGGR GVAVVDTRRAMVRRNVAVGEDPTIVVAPGGH G ICASMATNSIYIIDDTTEKIKWERKYDEGCDMAISPDGK S DGSIKLWNLTTGKEIASLTTGNKSEDMFSPDGT GGFYFNNSGQRFTWNLATGKPVATHPVGSNLFFEVSADGR N S LDGGUSADDTATGKVKNRDPYGARQLLLLN N N VV GSYDKTIRVWDASSGQSVMVLYRGSDPTI AFSPDGK $V$ V GSADKTIKI WNLHNRKAIRTLKGGEVSSVAVSPDGN ASGSYDRMVRVWDVSTGECLNTLAGSWVRSVAFSPDGK

ASASFDQT LKLWDAQTGKVRTTLRTSYAYSVAFSPDGR ( N NYNNSISLIDFNSFKEESNIYVGAHPNDIVAYN D S IVS GSYDRTIRLWDVDTGAQDGMPLEGHADSVAFSPDGQ ASASDDHTLREWDATSGKLKGPLKGHKLASVAFSADGQ $T Q H L \square G G G Q G P V T V W H T A T G R L L D T Y P G Q F K A W I S F S A D S R$

## VLLWDTETWEDERKFDTGWSGG\|VFSPDGQ

VS GS LDNSVRVWETKSGHQLKELQGGHADHVMFSPDGN ASGSYAKTVTI WDCESREVVSEGHTGSVWNVAFSPDGT ATGGEDGTПKLWDVSSGQCLQTLQGHKGGTVVFAP RQ NGDK GRVIVFDTETLLKTDSILLGNGYADSFTSDGN DFG ADTVSFVDPDEG VVDSVRAGHAPYGLVVGDDG
 ATGTLAIVDTSQRALLAQVSGGDLSHVVFSRDGR
 NAGYGTFESSLAVLDTQTGK LADFPEADTSGLAFSRDGK ARDGRVTNGTVSVIDLASGTEKSTVRVGLEPSALTLAGT

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UniRef90-B0DRLO
LV
R L A T
Y A A G S W
Hi VS G S Y
T L
RLVFSNT
$T L Y \vee A N V$

RLLATGSWDYTRLATGSRDKTAKIWDLITGQALLSLEGHSD QI VSGSRDRTIRLWDAVTGQPVGALRGHGG RIVSGSGSVDRTMPG VDRTIRVWDMTTGEVVG KPFGG


T $\square Y$ QTHFDT $\square K \square$ SEMDMNAN $\square A \square D D A R T M T R K A M V E$
$R V A S G S W \quad D D T\|R\| W D A E \quad \square R C \| A D P N C$

L L A T
QV
$R L A S A S$

GGEDRTAR LWDAATGRALATLTGHTG VVSGSSDGTVKKVWDLATGKELDSLKGHTN SRIVASGSFDKTVRLWDASTGQVAS MPFEG
 Q $\ V S A S W D S S R T F S G H V D T T L R V W D A R T G E \| V T T L E G H S K$
$T \square$ VACGDRNGEASGSHDTNVRDWEVESGRADRVLESHSH $R$ VACGLRNGEVY ICCDDNVRVWDVRTGQPVGEPLEGHT $R \quad \mathrm{LY} \mathrm{V}$ Y $\backslash \mathrm{A} V \mathrm{~T} \mathrm{~N}$
T $\square$ A S A S S MPKA GEVAEID TDSLAVVRNIP
NGQSVQSLQLINPKTERILDNVIVSKL $R \| V S G S A D R T M R W D A E T G G Q U G H A F M G H A$ $T$ TYVAAA QRFDDGKG G $\quad$ IFADDPET $\square A E K A A Y Q V P F K$ Q 1 VFGC $E D R S G A L Q \ W D A K T G Q Q \backslash R N L^{Q} Q G$
$L L Y N S S S L P R S L N A L K G A R Q L T V V D G A T L K V I R K Y T F E Y G$ $A V A V A L L D G S G \quad F D \square D D E T G T T V A E V V P L P G R$ KVLTGSW DKTAVLWDAGSGQAEKTFTDHTS

VYVADS R VVSGSRDKT RR WDADTGQQLG $L P D R$
VYVVADS
T I Y L L P TFEKEYWS
TLASAS
TVFVVAA
TLYVGAVAD P
HI L C
FLAVGSCEHPRSN
$\square$ L


A QI WV VD A T T LIK L K T R $\square \mathrm{K}$
GTTNH【I RLLWNALT SHCMLSPLG
$T \square A S G G$
$P Y L V A G S Y S E$
$\square A Y V S C G$
$R \mathrm{~V}$ LS T S A
HI
SLF F Q RWWLERTGSDDTDDTIRLWDTSTGQFRLGWSGGEG


| $T$ | $L$ | $A V S T$ |
| :---: | :---: | :---: |
| $R$ | $\square$ |  |

QIVSGSY
HVASAS
KLYSLNAY
ELLLSCST
KFAT
RA WVITAAEG
TlA S SGGDG
LVAAQNYTPGG
VSGSRDKTIKLWNVKTGKEIRTDKGH

Y A Y
R
ASGSGDQTVKLWDTNTGQCYRTLSGHS

RLY ASMGSLAD ASGSKDKTIRVWNAYSGTLV YGFDGSG
 ASGGGDRII K WDWQTGKCLKEL HGHT QEGTV TVVFALDTGKE I VKLWEVSSGREVRTL
DGSLLA $\square N S L N G T V K Q L 1 Q Q G Q K$
RDTGNVEFREPETGKIVSTLIGEAE 1 R LF DAQT LAP PLAELPA DGV
 LL A S A S G

$T \mathrm{~L} L \vee \stackrel{A}{L} T S G$

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UniRef90_S5NKC9


A GAMPVRMAFQPDSRYLWVG
W GWVRGMVKFSGDEKFLYASAGNDNQULKYSIVMDK WVTAVVGSVRTVAFSPDARR VRGVSGSEDGTIRLWDVESG HSLQLGDLPDNMQLSASGKYLA TNNGQSTQLQLLDAKTE A HTAAVTS

## 

$\square$ RPAV FTPDNRTMY AQFSYLNGFAEVDLT T G AT RWDYASLDERSHLLFDAHLGDSAVVVFDTAQR EYAEKFGFVESLVL KHKNELWVSQMPTASIHIFDLTSF KVTSVABSPDGKKVLT GSWDNTAKLWDAGSG GHMSWVTS VVISCDGR WIVSGSADKTVRVWDANTG VGGMPHGLRAAPDGSVIVVANHMTGA LDVIDARTD A VGPGH
HEESV
DDDTAVA

NTGAKWMTAVALSPDARAVATAGADGTLRVWDFE
DDEGSVDS GVAFSPDGKHIDSGCGDGEMMVVNDHNQ PVNFV VISPDGEIL ASGSNKI KI WNLHKG

S W $\square R$ A V
A
A DHNAHMQANSVAYSPDGKTV
TGRFPHNDTVMPKGQGV PLEGHVGSVNSVAFAPAGHR I ASGSDDRTMRLWDGETG


 $V D \quad$ GTISFSADGQQLAVACNDDMSPPQFWDIASG EAFFPSSYVYSVNFSTDGKTL
 HTAAV RCVAVSSDGKQM VVSGSEDKTIRVWDADNG YVGNYPNNGII YKD CULVVNGDSDAISIFDIEEK WSVALLPDPPNSPLNKGGHRALVASGSDDNTVKVWDUTG EHGRQPFGLAA SPDKRTAFVANVGPGVTRTNKDTHTK $N L G P V T D G E Y G L A L A P D G E H V Y V G V N V P G G N G T L V D T R T G$ YSQQV NTVVI SPDGKTL VSASDDSTIKIWNLATG AEYGAAKPSRVVGLVDLPGRRFAFSLFDADAI WIADLSDT $M Q A G N S D G G A D S A D G S L V V A Q N Y T P G G A K A F N A T L$ PLVGHTDFVFSVSFSPDSAR IASGSKDNTIRDWNAADG VRQRLMK $\square P L Q Q L A T G R K T L L I G G K E G D K G$
 $P G S S V G S Y P N A L A F A G P H T L L V S D G R D N A L A Q Y R W D G$

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UniRef90_S5NKC9
 KQTFNLQ GHAAGVWSVAFSHDGKRLLATGSEDETAKIWNF EVVGHVDGVRTVAFAQDGKHDASGSGDMTVRVWVSQVLEG KLIQSLE GHSKGVRS RPAMQPFEGHGDHVWSVGPDGSTVVSGSGDETITVGHDGT RPAMQPFEGHGDHVWSVGPDGSTVVSGSGDETVTVLHDGT ENVRTFPGHGAKTTALSFSPTGAKLASGSDLGEVND WDC TVTDT TAGRSPHDVAVDPSTRTAFVPNADDGSVS KPVREVQLPK GSRPRGDKA SPDARQYVVTLENSN QALLSLQGHSSWGFSPDGQRLATGSSDKMAKLWVLLSLEG QPVEEPPLRGRSGFPDGKRDFSASWDGDWDFSVTFSPLG
 TELGRLEHTNTVLSVGWSPDGTRLVSGSDD TVVG APIPVGGNPAWLTVAPNGNAYVPNNTSG KPVGVVAAGSGGAVAPRHQPYALTLSPTTGEVWVSSMASR NAVSGPFEGHTSGVFSVCFSPDGSHVASGSDDETVRDWDV TVSATFKV GLEPFG HLLRTGQTGPVMAVAFSPDGRTLATTGNDKTLRLTNUATD ELMGHSDGVLCVAFSPDGAQIISGSNDHTDRLWDAHAFEG KMT QA $\square G E$ PQRGHS
$\square P Y S K P ~$

GKGHT APAAEFD GVSSATADANTVAFSPDGSYMVSGSTDM RETTKMGVADMSLDSPDGRRUVAALADCTVAVWIVFYDRG QMLAVAKAYYGLTF SADEKTLYASGGNNKLLVFQLQNNK REIRTFK GHKAGVTSVAFSPDGQTLATAGLDK R DDRRT GQSGNSDGGATSQDGRLVAAANYEPG TCRKTIAFRGDGQILASGGEDNA】KLWETGTGQCVKTWQG EVLITIAVGGKP
EETMTLTGHTSGVYSVAFSPQSNLLLASGSLDTTIKLWN R LL HNDNVGLWGAAYDANTKRDFVGHGGKDEDAVINPAT ERIACL TGHTGYDYPCGKFLASGGEEDGTVLVWNI ESWQ RQPRVTRLPAGREPYDVTPDGRWYLAGLFGEDGLALVDLW EELARLE KQUAGTGHANGVLADAFHPGGNRLASAGHDGAV
$\square C I D N D K A Y V T N W G G R$
$N N H O S F V M Q A W N G E$
KILRTFK KGWWQKGHEGPVRTVIFSPDGHFFVSGSDD RALSTLGGHVKAVTSVVFSPDGRMLASGSNDTTVRLD W W QMVLGTFTGHTNSVLSVSFSPDGAIIASGSWDNTIRACGA TQAAFDQTG VQUGQLLEEHQGAVYSVA FSLNGCR VISSSYDQ KI DDEKVLSKSWYGDAFSKDEKHDYASGGNDNWI LDDFNDQ KVEGVRQLASKKEGYPVHPRTGRFDSVHQRQYVTAVAAPG KTTRKVEMPFSAGGRLAADDYPQNSAHDGMALYVADGGYLG $K V V A T 1 P V S S V H G V L Y V P E D G R V Y A S A T G A D E V V A$ EYKRTINSTGTW QAEKNYTGHTFFVYSVAFSPDGKKVLTGSFDNTAKLWDA




RLAAGGSAGPRFLGKRRALAFSPDGKLLATFGPRDG RTEQRWK TEEQRWKGHPLGDKPALLLNMAED DRICTLPVHG AADSPDGKIIIASASSDKKDRLW QSDRILSVKTDWAFAPVGKSD NPHETFVVGCWDDN DAVGEPLRGHTGWV WSVAFSPDGRH VVSGSNDS
 KEIKRIKVENTPAKDSVSQNKKYMYVCMSY品GR DKNG A 1 G G AFGGHTGWEPEGHHIVSGSSDQTTEAQTGPPGRG KVQRDRE EALRGMNAFGLVDAVAWFPDGQHFVTTGRFN CLRGTLGHAGKVRLFNVLRLVIDPMLTGHDNWVTVAFSPDG RLRKTLGHAGKVRTVAFRPHGAMLASGGDDATIRGWADA EVLRTVSVTGP SFSSNGQYLASSLRDGDVLLCDAKKGDT QEปRTLKGHNSVNFSPDGKTLVSGSEDKTUKLWNVETGQE AAFAMLD YQLKKLKHTHMVGSVAFSPQGDYVVSGSWDQSV, WVW QAI GNVGHADETLSVADSSDDRHIVSGSSDR TVRDWDAR KVI GQVKV GSFP QDIVYNEKYNLDFVSNMNSD RCUKTLDKGMCVGILKGHTHGVFTVCEGNTLASCSDD REDKTL KVTDTADVGRRPFDVDVSRDGREVYATDHDSFDVTVLDTD K Q DRT THPKLTQDPGDALVTPDGRHYIAGLFGEDGLALVDL WAE ELVADIPAAYENGQL SRVVGLVDGPGRRFAYSLFDAN LGPLEGHGDFVSSVVFSPNGALDALTIRFWN VPFPAA\|AVLGGA
A C $\square \mathrm{K} T \square$ PGHNNMV
GRAPVRYEGLIPTDWYPVAVQRSAATGRVVVTNDKGI.

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 ESGKQTMNLE G G KAGVWSVAFSADGKRLATGSKDKSAQ
 AI RILDASSGEVVAGPFEGHTSLVMSVS FSPDGKRI TLQGSRLAVLDDDEHPAPDTNVKPQNTPSESPQGYSGRVL


LIRDSEAVVYRHEPNILDREVYPLPDRRWLAADYWGRFL

 GGVVCK GHDF GRRLSVFAAGTYEPLGGVGVGRFPWTVTSSPDGSRAY
 $Q V H V Q T R T M M H E R A V P L R G P P M F F T A D G R T \square Y M P Y Q L V D A$ ESGKTTSGPFKGHKDAVL SAAFDPDGR $\qquad$ A LI R

LDASTGAETGRVADGHAPAG
$T$ DSVT
SVAFSP DGR
ESRTDTTGHTDSVT HTGIVNTVMFSPDGRRVVTIRIWDVTTGEEVMKALSGHVQ TIIIWDAENGDMLAQSEQMHTVAFSPDGTLIASASVDNDV
 S DWDAETQVRTLKTRHGYTLVAVPTSDGRALLATTNDHDG HTRTVNAVLFSPGGSYY LTTSSLWSARDGS LARTLTGGHRDC LLERWNAGTLTDEASLALGPGAFGSADDRQ
 $G V K V F D A A T L E L V A D D P T A Y G N A G A R S K V V G L A D A P G N R F$
$Y A S W D Q A V T F S P D G N T L A C S N L T T N G T N T Q T V S H K G W V C$
VATGTEALTLSGHASGV NADAFSPDGRLLA
GADEQRFTTGDAKSDHFFVNVALSADGKKVVGADANGKDY QAPPQARRILSGYGRGNAPLPVYKMPHLRGWAMAQGMAWL RDWETTTARFEGHSDWDLA LDAWHPDGGRLASAGHDTTVR TVTDTTMEF $K L S \square E H A F P F S P A A P S P L P N E L V I N N E N R T D F D N G N N Q L V$


 A Y Y L DLQ TKKVISKTPFQGEAYSSNDKKQLY ISCWGCDK KIRMWDTEPDWQADRPLVNSVAFSPDGRRVVS GSDDETVA TASASRDHTV NNK $K$ GKSDTIK KGKGK $\square$ SPAGIVVNKNNNKWNTVSGEDVS KLYVVDTKTI N DLGKWTAGLAIDPEHQRAYTSNFDGRDD WEIKTGRRLLKDKGHTEWVRSVAFSPNGNAD
DVAAFD VAGT $\square$ D D YVAlVDRPGLTTRGYVHYDTGS LPY D $\square$ SVIDP SSYKEEKTKAVPRGMAFSQDGKFIYCAQFE GSGQAEKTFFAGHTSHVSSVAFSPDGKKVLTGSWDKTAV VDTRQQ RREVTGRVP
 NVATGKK $\square$ ASLTGGHQDNVDSVAFSLDGTTLASASSDGS
$T V A L W D A A T \quad G R H L R E L P G N S G D G A G L A F D P S G A V L A$
 A LTGISVMGP LRGHDREVTSVAFSPDGRY IVAS T L G
 TARMWDAETGDATGDAVGEPLRGHRNWVRSVAFSPDGRHV TATGKELATLNDQTDTVF FVAYSPDGKTVASASGDKTVR GVSVVDLSTL EYSGFDTTGPMPNYVSFSPDNS



 HKSWVTSLAFSPDAQHDATGYLWHTATGKVLMTGHEGQVD
 DVKMGHHLMKDQGHTDHVYSVTGSPDGRQDMSCSDDNS R S GKVIASLEWHSNT $V$ FSVAFSSDGRRVLSGSGDCTIV

$G \nabla Q \square G$
ASYDKTAKEDWDLKVGGAS
S GDTRRDEVAPYGTEG GLGSWLKPHYAAVRPSDGKLLF NTIKIWDLATGEQDRTLVGHTFWVRSVADSPD

S $\square R \square W D V N T G Q C L K T \square Y G Y S S K \square W S \square A C S S D G Q M$
TRGAFSTVSEGPGTNPATGHNTYDDTGSVTTFTPPSH

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260
260
270
280
WDATTGQQA QPVAFSPDGKRDADTHESS NSIAFSPD TLNLLQGHTAYVWSVAFSPDGKRLATGSQDKTAKDWDLEAG CMSVSPNGRHTVVVWDVESGQLVSGPFEHDSVYSVCFAPD VSGSSGSDDKTIRLWDASSGKIIQSGEGHDFVWSVVQFSPD CVAFTPDGTQUVSGSEEKTVSLWNAQTGAPVLDP





 VSGSGDGTIRI WDPNDGTELGRLEGHTGE GVRSVGWSPD $V T N F S A N T V T V I D T T T N T V V G V P \square P \quad V G S G P V G V A$ $L A V I D P E T G T V L R E V Q L A D A G C$
 TLATGSEDSTARLWQPDTGQARALLNSRTGPVRSVAGSPG
 SVAFSPDGTRVVSGSNDTTDRLWEARTGAPDIDPLVGHTN VIWNAAGGKSVSGPFKAIEDSNLQE

 V NDFSPDGAK LLSASDDFTAEEKE $\square K G H T N R V T G C A W A P D$ $V C D L G T R K V L K N D S$
VNNQASNTVSVVDL NAWRVSKVITGFSGPRQGVKLSPD A SGGWDKTILKWNVNTAKNIRTFTGHSDLIIVVAFSPD
 $V V Q L D A K D M K V L N R W P V A P G E E P S A$ S GAGDRVVKLWDVATGKELHTLAGHTADYAVAFSPD QFDTSSGKVENTAEVGL PA IGRHAVLVADPANGWREAAR
WDPDTGKQLARDQGHTRDVKALAWRQDGER
$K D G S L S V I D U N G S L L N E \quad L Q L G L H P N A \square S P D$ $K \square N D D T R Q T V W T K P T G V A P Y G L A D V G H M N W G G P M P A D \square V$ ALAFSPDGASESETDKLWEVNTGKTLFTLNGKNTDAFSPD LWEVESGRVLRTFGGHGKVVTS 1 WDARNRDAHSNPP CAHVVCEGDGNLLVVDGLSHE IISRKTFEPGFREVRFAPG LLVFDTEKRSVTNEISVGD LWDVETGKKQVVTVAFSPDCRHVVYGSHDPTVRWWDPETS QKTLEGHSHWVLAVVFSPDGKTIVSASRDHTVRLWNAHSD

 VSDSTSKKAFLIDAVTGRRTGEFATG DFPHQNDFSPD

VSDEHGGTDTVIDVRSNVRVATMPDGGEVGNTQ YDPV DDSAGNSQCKLIKKSLADYKTVYEGGVKGAKRHVVTDYE LWNTDTGQQ Q $\square$ GKP $\square E S H K H W V T S V A I S S Q D$ SADQGSPDASLIDTRTMSVRATVETGGAGPHGVVIDSS ILDAATGKVAHQLS GFAAPDAVTFTEAYAYVRQAGAAKVS VVDGANQHVHF FDATVMPSRQDGSGPLRDQP TTS SLD
 VGS DASRYTLKKSWAGPA V SLDASRYTLKKSWLPA NPNSLLLSAD
 TLASGSRD RTIKLWDVRTGRCWQT LDGHAGI WSVAFSPD VSGSNDSTIR IWDAETGDAVGEPLRGHRN WVWLVAFSPD LHDAQT GKLRGILTG RAYVSNSGNGTLDEGDTEKRILTRNLLHKEWVRSVAYSPD $V$ SNLCDGS IS IVNLNELKEEEKIDIGGMPRG

 GQUD VSGSADKT DCLWDTSTGGMLDGEPMEGRNTGEVVRSVGFSPD





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UniRef90_G8WNU9
UniRef90_S5NKC9

GKWII 290 ASGSSDKIIRIIYDVSS GQLVVAGPFQG 300 KQTLNLQGHTSAVWSTGSDDNTAKI WDLDSGKQI LDNQGG

 KT RLWDASSGKII Q SLELG


SNA $\square Y$ VLNSS DYKE $\square K Q \square G D \square$ AKVWDLLNT GQALLSLEGS GSKLLLTCGR GQRLATGSSDHT
 PG
GTRLVSGSNDGT TRTWDPNERTELGRLEGH VAPNGKAYVCNRFSNNVTVIDTTTNTVVGVIPVG $E R \square G V V V C \quad$ EGDHVGPGT LHAVDVTEGTVVGTVEVGG GTRVVVNVQ SGSWQロ SGDLVVWSVENGQVVAGPFEG GRTLATGGDDGRTR L W W GKRVISGSRD $\qquad$ GTR $\square A S G S G D$
 STMKDWN PAE PATGKLRAT GDI II RDVQSGHIKSGPLEG

 GAD Y V T GTSLASGSKD

NFRSDK
 G RYY S A GLDF GEDWRPEHGVRTIKLWDLATGKATLTLEHT
GKKDI A

H R L

GQPVIF SQDGK VAAYRYGSVLLWDI ESKQARPADPTEAPA GQPVFAMAR LASAGDDTT KHFDYVANGN KHETA GVPYGSTYVNPKTGATLMQVTDINSGNVVKEIPVG GRIL ASGGANNAITLWEVDTAKEIETLKHG GRTLASGSNDTTVRLWEVESGRALLVFEDH GSRVASGLHDGTARIWDGHTGELLLGPGRGH DRWYFTVNGKNG QILVFDAAGNELLHSTVVA GKF LFVANAND NSVSSVNDKKQRVIETLPSG


 $G K R U Y V L L P H A L N F M$ KGERSLLIVDAQSLQLLRTUKFP
TRHワFANAQTR RKLIYV
$K Q L V E \square D P A T D R V I S R \prod N L P$ GKKVVT
GRRII
GRRAWVT ASG
$S D M R N$
$G S W D$
$A S G S R D$
$V S Y Y D$
$V V D Q A G$
 LDRAALGGSVAPPVVDVQAGQKVPSMASAGERVSTTDPVG GKHAF GKTLASASWD GR GQTLFVTVKQPFNKDHSTKGPDSVV NNR $Y$ YSFSPDGRF II $\quad$ SGSGDRTIVVAWDADTGQS $\square M N P \square K G$ GQTLF GK M
GRHVVSGSND
GKTLASASND
GTTAFVADAEAG
RDNDFVG
WVRLVAFSPDGQTVISDFLNGVLKIIDMK NRRIKT IP $\quad$ IGG SARLVACSRTGQTVISSGSDRTIVRLDDVETGAQ:GSPLGG TGQSVVNPLKGHDNCVTSAAFTVRVWDEKTGQSTIDPLKG GAMLAATDELGT LCW
GTRLVSGSQDHT HSRSLAFSPDDRQLASASEDRTVRZWDAQSQELVAGPLSG GKKLABTGSGILISVRDNTIKLWNVETGQEIRTLPLN



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UniRef90_UPIO0022C7EC1 UniRef90-F4KU47 UniRef90_G4TTA0 UniRef90- W4KOHO
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UniRef90 R4YWA8 UniRef90_UPIO003703FDB UniRef90-Q1CWR4 UniRef90_UPI0004407EED UniRef90-UPI0003793DDA UniRef90_UPI0003A1475B UniRef90_UPI000474C7E8 UniRef90-M2PJK1 UniRef90_UPIO004409047 UniRef90-R7S0B7
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UniRef90-I4WIF7
UniRef90-Q73NC8
UniRef90-F4L2X1
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UniRef90_S5NKC9

$P \quad L T W G T$
DAVWSVAFSPDGQRL ATGSSDHMAKVWDLSTGQALLSL HDGWSVAFSPDGSQLI SGSSDKTIRLWDTATGQPLGEP MA VF S I A $\square$ SPDGKRM VS GSKDGFINVWVREEGESTGTL
DRVWSVGWSPDGTRD VSGSADGTIRAWDAQTNEEV AQPNFVA GGPNGN AYVANGTSNDVSVIDTTTDLVIAT






 HMDWRCAFSADGKK, VVSCSWDYNMKLWDVRAGNEIATL KNPNDLLQTRDGK F LYVACGNDNTVMLIDLTKNQVVETL NKIRAI SISADGG DKVNSIAFVPNTATVR HRGWAI A
QWLWSVAFSPDGK
 NYINSVAFSPDG RLLASGSADNTVKLWNVSDLT
VHPNSVTLSADGQTAFVTID
AKNQH HVVSSKGE LYVTS $\square N K N T V K L W K V G T G N K A A R L$ HGVLHMEFTPKGEA LWLSCRDDNRVEVYDTATLERLATL
 S S P N A

FAYIRSLGTADVTLDPDAAL
GRPEHVSFSTE
STS S SVA LDS SDEKT LVY ANADNNCLAVFDV
HD DT TI AFSPDSRR IVSGSDDNTVRLWDVNTGTQDRRLL
HSSWAIVFSSDSKT I ASASSDHTIRLWNATTGAHQKTL


GAAGNHGLY DDGASRDFDACEDNSKLLVLDDTSRKVRATF F NPNTVQLSPD KSLLYVSCRGPNNLDIDDTKTFTRIES $\begin{array}{lll}H G V S A V A F S P D G K K L L & T G S G D N T A K L W D V Q R D A V E D K I ~\end{array}$ KGPNGISYSP IAEAPDGKSVLI ANPADKALYFYAEGMMVPAGTF Q GVH S
$Q Y V Y S V A F S P D G K \quad M \square A S G S G D S T \square K \square W N V L T G K E \square T S \square$ TGAAGGADSTS WQRCLAVSPGGNQVAVANVATNDVVRRW

HGVMSVAFSPDG RYVVSGHDKTVRVWDFHTGQSVMT AGVNSI AVSPDNQ LIVSGSADKTI KI W
HHVQSVIYS LDARTLASGSEDETI K I WD DATGGCLKTL
 A ELHGLDVSDREET LDVAVKKAGQLAAVDLSSGAD R NEPNGMTLT
$H A V T S V A F S P D G R R L V S G S Y D Q T V R L W D V E T G D Q \square G \quad L$ $\square S T F G V G D S A D G \quad R M L A G G S L H G D V S V W D L D S L K L I A$



 HTVDSVAFSPDGNQ IVSGSSDHSVRVWNA


NAPAY T TVLD KFAYVSSVEENKVN\|IDDEEMR\|VNFD DF $\square F A V T F S P D G R S L$ ASGSADQTIRLWDVKTGKVLH TAPRVALSPDEKALYITSARG
GP HVAVSPDGQT, ATCSDDRTIKLWNVISGAELATF NTVTTVAFSADGK AYVTGGFTGITVDLGSGDTRR RAVLHMEFTPRGEA VWISSRDDNRVSVIDTRSFDTLATL GQPVFVMARPDGRQVWVNFSVPDYHVQVIDTTTQSIVRTL


| UniRef90 F8PD52 |  |
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| UniRef90－F4L7Y2 | SLQGHTNSVAF |
| UniRef90－UPIo0044082D7 | KHSDAVFSVA |
| UniRef90－X6MB18 |  |
| UniRef90－UP10004 |  |
| UniRef90－M2QH | EPLGTVWSVA |
| UniRef90－UP100030C4D3B | SHRNWVAAMAFSPD |
| $\begin{aligned} & \text { UniRef90-UP10002DB25FO } \\ & \text { UniRefoo- XOHOB } \end{aligned}$ |  |
| UniRef90－UPI00022C7EC1 |  |
| UniRef90－F4KU47 | QGHSEAVSVAFSHD |
| UniRet90－G4TTA0 | FQGGWDNSVAFSPD |
| UniRef90－W4KOH0 |  |
| UniF |  |
| UniRef90－R4YWA8 |  |
| UniRef90－UPIO003703FDB | P VGTNPWGTA｜VGPNG |
| UniRef90－Q1CWR4 |  |
| UniRef90－UPIO004407EED |  |
| UniRef90－UPP0003793DDA | P |
| UniRef90－UPI0003A1475B | RYGANVWSVSFTPD |
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| UniRef90－M2PJK1 UniRef90 UP10004409047 |  |
|  |  |
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| UniRef90 L8HOG0 | GHMGAVSAAA |
| UniRef90－F8EGR33 | NAVGSTPNLA |
| UniRet90 U1AVH1 | AVGSEPYGAA |
| UniRee90－G6FWG7 | $K R D S G Y$ S |
| UniRef90－B8R8P4 | P GQSWPQSVMARPD |
| UniRef90－B9XD71 | KTAPRARTMALDP |
| UniRef90－H5S |  |
| UniRef90 M51 |  |
| UniRef90－UP10003B6FC34 | AADAPTNNTLASAHEG |
| UniRef90－UPI0003FB6BB2 | P ADNPSG】F |
| UniRet90＿A9GAC3 |  |
| UniRet90＿UPIooo35C336E |  |
| UniRef90－UP10003B61CC0 | SVIDG |
| UniRef90＿A7BZD6 |  |
| UniRef90 A9FTS8 UniRef90－M5C5U2 | GHTAPVVSVSFSPD |
| UniRef90 Q74DR2 |  |
| UniRef90－UPIOOO3638 |  |
| UniRef90 G4TUL7 |  |
| UniRef90 ${ }^{-} 77 \mathrm{~V} 1$ | wV V |
| UniRet90－UPI00046AF582 |  |
| UniRef90－UPIO004715F10 | $\square G A N P N S L V$ |
| UniRef90－B0D4S4 | QGAGPVQSVAFSHD |
| UniRef90－02S | ELPASAFGKANYPN |
| UniRef90＿D2A |  |
| UniRef90－14WIF7 | DVA D D P DVLAFDASLG |
| UniRef90＿O73NC8 | N |
| UniRef90－F4L2X1 | EMVGAGFQLEEEDMG |
| UniRef90－J4GN04 | PLEGR】TSVVISHD |
| UniRet90－AOPO17SUZ4 | P GY G |
| UniRef90－F8EIA2 | PGYGR |
| UniRef90－K9UX17 | GHQtrVesVVfspd |
| UniRef90－UPIO0016C42C4 | DAA |
| UniRef90 R5X9 |  |
| UniRef90－BOD1W2 | P पM G HVS SVAFSPD |
| UniRef90 UPI0002DB89 |  |
| UniRef90＿UP10003 |  |
| UniRef90－UP1000444A1AE | PQRGHTTSVVLSSD |
| UniRet90＿UPIO002D681BF | Q QLA P APYHLTVADGG |
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| UniRef90－G4TU65 | P Le GHTA WV |
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| UniRe990－W3XAK0 | RQAASTE |
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| UniRef90－UPIO003B78214 | PTP |
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|  | A GERPLGIA |
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| niRef90－G8WNU9 |  |
| UnRef90＿S5NKC9 | P T G WY P S DVA |

ASGSRDCTVRVWD $\square$ LTRQALGDV VGRHDELAFSPDGR

N G
 AESADH $\square Y$ RVRFGPTGAAVEKADPDGELHGLQUSADGK AGE DDTVRLWDADTGDLDHTINTADVYSVAFTPDGN ASATRTHEVVALDANTGKVTARIPGGRYPGLAYAPEGH ASASAKNTVGFYDVQKGKVTDEVKTGKFPNMALNENKN ASGSCDNTLRLWDGQTGQPLGVMKUGSQPSVAFSPDG AELE LLGATQQIVERAAATGKPTGTTDTEDRHHMVFSPDGK

AS GGNDNT $\square A L W N V E F G E K \square R T \square E G S F V N T L H F S P D G N$ ASGSEDMTMRLWNTATGELLQKFESHKVSSVAFSPDGQ SGSHDGTVRRWDVKTGUQIETGHTSFVSSVAFSPGG

 VIS GSHDKTVRVWDGETGCQ】GETMTGHTRGVAMNGDGK
$S \nabla A F S P D G S K V L L W D A A T G T E D R T F T A G Y V N S V V F S S D G S$ $A L G T L N E V S F V D V R T R R H V G A P L T G L D G A V S F S P D G R$

RATGSVQ\|VDTTTRESLARDTGGDLSHVKYSRDAR ASGSADNTIKLWNLETGQEMGTLKGGGVSSVAFSPDGR ASGSEDFTLRLWSVKTRKCLQCFYGNRLSSYTFSPDSQ
$N \square G W$

AESAH QVLVFD LDS GKY $\operatorname{LR}$ R $\square$ GNDVKPHAILDRPG
A L L G LYDRTLE DDTGSGHMSA FPDRKTDVLVISADGR $T I V S A S Y D N S L R L W D A T T G Q Q K A K F E$ GHSGGISFSLDGT $V$ VGSRDKTVR1WDVSSGKQDK S LEGHSNHSAGFSDDG VISGSWDGAI RLWDASSGKLI QLL EGHLDNASVQFSPDGN AGGRDGGLTKVDULEQAUVGRUQAGNA\|GGADSDDGR VSGSDDRSVK WDMQTGACLATLTVDNVRSVAVSRDGR NRGERS

VSVIRRGDWNEAARVTVGVEPGMAVSPKGD
 ANDKEGSVSFIDEKSKKTVTTWDGKEPGVTLLPSGE
ASRAELGRDRLWDVETGSLRQTFDGGPMADPSFSPDGK TAYMERTSGLVTADDRRQLALIATVSTRRVESMSDTADGG

ASATGTDE\|VA TDATT T $K \| V A R \square P G G V Y P G I A Y A P E V S$ RSDRVLVVDLAD GALTATIPTDGVHGVALVRELG

VS GS LS D WVR VWNVDTRAPFTKFDGDK DSSVAVSPDG $A G S S G H V W D L E T K Q \square G K \square K H G F T R G A A L S P D G K$ $\square S$ GSDDQT $\square R \square W D V Q R G L L L K C L Q T G W V R S V D F S A D G R$

VNTHTDGS
$V A N G P \square G D I G U S P D G S$
VASGSSDGTVCVWNASTGK MASNGRGQS AFSPSDK SIVSGSRDSSVRLWDLQQ GPDGEGHTGFVYSVAFSPDGK $V \mathrm{AVS} S \mathrm{~S} G K$
$\mathrm{G} V \mathrm{VYS} \mathrm{P}$ GQ S GGADSDTRVWNLSTGECTQULQGHESASLADSPDGN ASGSDDSTIQLWNIQNGQLLGRAQAGD\NSIAFSPNGT $\begin{aligned} & D I A V S P D G R \\ & A \\ & A S P S G A\end{aligned}$
FGRDGGLTKVDLLERRTAGRVQAGNS $\square$ GGA $\square$ SAD GT ATGLKSGKIK UWDLSTS $\square$ CVQTLEG HDRS

UniRef90 U7JQQ7 UniRef90-UPI00046A156F UniRef90-D8QC68 UniRef90-UPI0003634AC2 UniRef90_K9V548 UniRef90-D2QU53 UniRef90-D5WZ26 UniRef90 C1A8E1 UniRef90_UPI0003B3726C UniRef90_UPI0002EC6B39 UniRef90-K6CJN7 UniRef90_K9QWT8 UniRef90-G4THB9
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UniRef90 UniRef90-M5C0D7 UniRef90-F3WYU9 UniRef90_Q5P0U6

QVFVFN
HAYVTGMLDANLDAR
NGSGNAVVINAVTDKVVGSVEMGGA Y LYMTTG $\square$ D Q $\qquad$ DTLV $G \backslash T$ TLATGAWDASKT DTGHTDAVLSVTFNADGS LLATRSWDKT KLYVSDETGKSET

SRVVSGSYDSTVRLWNADTGQQLGEPLQGHD
LLATYNWAC
$\mathrm{K} I \mathrm{Y}$ T
D NF GLLSPS I S I DDRTNDTTVT
HT FS FYDLETKTALKHVVLP
$T^{T} \mathrm{~L}^{\mathrm{A} F}$
GSDRNTDKLWDVEASEEI DTLE

KAYVTNTGSDNVS
WVATAEGVAAV
T IVSSSEDCTE
FAF V
RVVSGS WDNTVRVWWD G
FGRDGGLTKVDMLQ
$G K G L Q K F E S H S Y$
$M K M G T Q \square G D P F E$
VIDTATDTVS
$V$ WDGETGCQUVETMTGSG
QVLT GSNDATAKDWDTVKGNVTARGKVGTV



PDGKEVQVWS円ATGEDTRC $R \mathrm{R} V \mathrm{APS}$
Q ENGI EVYDTTTGESVLSLTDERA
Q

$R G Y T S N G$
RADSLSVFDLATLKPTGTIAV
VNDVNGPTAAHDDPDGRIFELDTTS VVRVPLHNG
$T$ ASGSFDRTVWLWDVSTGECLQTFADRAQ
$F M Y \vee \mathrm{~V}$
$E \vee A V S A S T G$
K LYENKAY $\square$ A C G RDGYLSQI ETVSDSLI K QVK NVVHLLDVAT GRETG
TLVSSS ESNSLLVMDMASKKDAFDIK $\quad$ E
TAVSASS
EDGTIKLWNLPS GEYQSTL

T LASTG
$R A \square S G A R D C T L K V W D L Q Q G K E L N N T L A G H C G$
E L L VY



T L
AS GSDDQTVRLWDADS G
A N


UniRef90 U7JQQ7
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UniRef90-W7SIK0
UniRef90_C2W5F9
UniRef90-C2W5F9
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 RPAGTLPVGDYPLPGATTRWDYLSLDPTRSRLFVAHLGDS EGAGKI GEGCVAYSPTADRLAAGSNDCTVRVKNQHTGDG TVIATVPVGGNPN EVVKRIQPPTQPNFKPQTP GVITFSQTWKCVQ\|ITNY K KNKYSVAPAGGVYDAGSNRLFSVCRKPQALVV KVRGAVPTGGAAGAHPTA TEVARIVTCTMPHGSRVSDDGNHQYSTCMQLVEVDTRAFE EHIKTLRGHYSYLISS R RAFSPDGSULASGSEDD
 K

SGHHNWV
HP LGEPLRGHRSADRAVAFSPDGDTVVSGSSGDTSGAWDY TSAHFIPILNKALWSAPAPEEKTASAYGGNTEALVLSPDG T VVRLRFDDIJAGAMAGPDGLMYVGFVSGLIGA EETRTLDTVFSDSFSPNGKMLASGSNDKTIKKW ELLQTVEDYSQWAFSPDGQLVAFYFSDGMLQLWNTAKFEG TVSTVGLPLQGHTDAVNSVAFF PDRGRIISGSNDK TVSTTVTVGTTPIGVAVTPDGAKAYVAN AVVGTVPVPFDVDVSRDGRHVYATNHDSFDVTVVATDDWS K CCQMFYGHYAEIVALCFSSNREILASGSSD CQTGETMTGHTAGTTSVGKRVVSGSSDRTVRVWVGETMTG ELVADUPALGAVGLEDAPGNVFFSGUYAGELWLVDGKDRT
 ALIRPFSDGGKVNSVAFSPDGRKVLTGSDDWDVATGTDSG EQUGELTGRGEPASVAFSPDGGRALATGTDGKVQALTWDT RRI KELEVPNCRYLAFWEGKAYVSSYAGPVQLDPNAEKGF
 SVLRNUSSPRHMNDPEGKYLYASLNGEGKIAKDSHPQGN GWTR ESLQTLE GHSNWVSSVAFSPDG KKLGDIRDDGTVEAMADDPTSNRDYANDPARNLVVVINRA
 ELIRSLNLVSFVGFFPDGSKIVSGSYDNTDRDWVSSGEQI QQKAKLDGH SDYVRSVNFSPDGTTLASGSDD KLIUSLKSVWSVQFSPNGNRIVSGSDDKSTRLW KUTGMGSNPYDALVTSDGRTYIAGLFGEDHLTALDLWQDN DPIGE P LUGHESWVNSVGY YPDGRWIVSGSYDE KHLRDLQPSGRSGRDSFLPTGNKDTCGAGKTVLV GD DV ANEERGALLGDPVVSPTSFRPRGMVSPDGQHAFAPVRWSR EVA SLAAVIQV GATPTG KETGSVSVGKGPLTMVQNDKQLHVLNFYDTQLS TTIDQNA VEVQTIRTSWYGLTYPDGKTLYVSGGNDNQVNMYQVANNG TLGGTVDGGNDPGV DTDELQLFGCGEPHFISSTIMPPA GTVTQLLPDDISGVLAFSHDGSRVACGLNNGEVYICGPQQ QQ| GQPLEGGTDWVYSVAFSPDMACEDNGMLRVVSRS
 R

SSALTGLTEPFAVTMSRADSNYAYVSUATAG
ECLKTDETVYSVAVNPDG
RTVVSGADAKIGLWDAN STLKKIETSKNVGIKSWKRFLIFALMDKDEDWVLDSEKNF EVVRRVDMGAPMTLSPDARYAYLQVSFFHGFVEYDLVQDR KVIGRIKAPEYPTILLSKDEKKIYLCES GYGGYDIDEG
 SVDKTLKVWDLLSGEP RSTGTGGTGWVNAVALTPDGG KEIRTLQSSGVANVAFSPDGK TLASGSWDKTI KDWNLT QKVRFFADKGKETGSVSTGKGPDTMVEHHNQLSVENFYDT QPLGEPLPGHQGVYAVGFSPDGS RELATVDRVRSVAISPDGKTVASAGSDLSLRLW $R L M F I L P N S G C V N S A A F S A D G C Y$ ITALGTAESSVQDWNDS KVKARMEHDNEVLTVRFSPDGNLVATGCKYEARVWHTGSG ELMMDPLVGHSKGVRCVAFSPDGA HCLRVLQ GHGSGIWSVAFRGDGKTLASGS DDHSVRLWDF QVLGSRGTGGHLSVHPSGKWLLSADYGSGSVAVHPIGDGG QEI RTLNHTFRVNSVTFSPDGRTLASGSTDYTV
ATI R LLMETPKMITTSPDGKSVADSHWGDNTVALIDVSSEN AVVSTHP LALSVSDLDAASDGKYVYASRNG
GMKGQ PLIRGTSPVQSVAFSHDGSQDASGSRDNTVRL AlVGHRSFVQSVGFSPDGKSIVSGSGDNTLRIWIGGKPFIG NVIRTRTTHESRVWGHSSVNAVAVSSDGKYVVSGS IDDD GVPKVIFLDNGNALASSSTDWDVSSKRCTKTLQGHNNSVY ELTASTPGPFEGHTGPVNS $\square$ AFSPDNTRI ISSSSDSTIRT AVTGSTPTADFPHENRYSRDGRTDYNGSUGNVILT IIDAA ALL
 QTKQRVGTQEGPTYSPDGKQLWLGQTDGYTKFTVNADGTL



UniRef90 U7JQQ7 UniRef90-UPI00046A156F UniRef90-D8QC68 UniRee90-UPI0003634AC2 UniRef90_K9V548 UniRef90-D2QU53 UniRef90-D5WZ26
UniRef90 ${ }^{-}$C1A8E1 UniRef90-UPIO003B3726C UniRef90-UP10002EC6B39 UniRet90-K6CJN7 UniRef90-K9QWT8 UniRef90-G4THB9 UniRef90-D4ARL2 UniRef90-UPI00030FD644 UniRef90-A0Аоз8 НЗХ2 UniRef90_UPIOOO345C348 UniRef90-M7U6H5 UniRef90-G4U365 UniRef90_UPIo0037D3397 UniRef90 UPIOOOO3C75085 UniRef90_UPIO00346ED70 UniRef90-R7QPT1 UniRef90-V6EZM8 UniRef90_UPIO003C7F97B UniRef90-J2WA64 UniRef90_UPIO00370D186 UniRef90_UPIO00467C462 UniRef90-K5CID3 UniRef90-UPIO0047704C4 UniRef90-UPIo004757C1F UniRef90_I4G253 UniRef90-Q3MEK2 UniRef90-Q1DBR3 UniReffo-DgY220 UniRef90-A7EU93
UniRef90 C1F6S2 UniRef90-UPIO0030DF1E4 UniRef90-A0CQ08 UniRef90-X6M7P3 UniRef90-AOCLS6 UniRef90-X6LLH7 UniRef90-S9QB06
UniRef90 UPIOOO440795A UniRef90_K5XAW5 UniRef90-L7U1NG UniRef90-M2QWJ9 UniRef90-W7SIK0
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UniRef90_A6C5Y UniRef90-M2QHJ7 UniRef90-Q7NJ67
UniRef90-UPI0002890BD9 UniRef90-K9PCE7 UniRet90_17GSW77 UniRef90-AOPKV7
UniRef90 M2QY08 UniRef90-K9TY81 UniRef90-UPI00031E329A UniRef90-W4LAG2 UniRef90-UPI00034A7EB2 UniRef90-X8JAU5 UniRef90-UPIOOO36F1E6B UniRef90-U2S8E0 UniRef90_10HLW9 UniRef90-G9NSB9 UniRef90-V6JGNO UniRef90-F4Q3X77 UniRef90-M5COD7 UniRef90_F3WYU9
UniRef900 Q5POUG

210
220
230
240 KVITGTDDT पANQGEKKPLPGKPAFSADGKTLYVPVNGQNS AVVVVDTK TKGVLATDSNDRHVHGTLAVPELDRVY HTDAl NCVVFSPDGTVIUTVRVWDLATGKTAFATYRREVS ASSVASVA

FSPDGKIILASGGVY
KGVKLWSVANGQEII D $R L V A V S T Q T L K V V R V I D D S P Y P G A P P G S Y P D A L A V Q G K L F$ VSRRFSLAKGKEGPLPLTAGTMAGMNHGAMDHSAHAAGGA SLRLWDVAEGQYIGGLWEHEAGVETLAFSPDGTM $S V Y K \square D G K N R T S K P L K V G A N P N D$ WI GDKHRIYY $T \prod R Q W D V K T Q P \square G D P Q Q E R V W D A Y T G Q L D R P D Q G H V Y$ KLAASGGCGLDATGAPVVSKLNYSTDKNGLFWPSDKRLV SEAHDMLLVF VPVTGATVKPPI WAGGLATFWFTQDGKKLY HSOWVSSTAF NVETGKEVRTLEGHQDAVFSDSFSPNGKAL
SPNSQVLATIRLWNTATGELLCGHWHWVS TLRIWNVETGMQNGEPLVGHTVANSPDGRGLASGSDDKVII LDTNDVSVIDTATDTVSTTIAVGTNPATVAVTPNGAKAY A RRVEVAPTEGGLDSWLKPHYTVVRRSDGALLLPFEG HTDWVRSRLWDGATGKCWRKTQERSYCMTLAF SNNDGQIL KPSVR KFAHIGKQP YDALITEDGRYYWNPDKGVRR TVSVLTTATGVVTATTGVGSMPFD ALTNI NLATGEQDSDRVSSY NHGACAWDVEGRHVY HTDAVTSVAFSPDGGKVLTGSLWDAATGTRTFFGHTNGVR RTRERIGAPLEVDYDSMPPTAVFSPSGNMLATTAHDGDVT VAEDDTTTLEVTRKVPVGYQPEMVVHDGKLYVANSGG Y EIWVAD FSEGKEPRITRHREVGRQPYDALITPDGRHY TGEVTHTDTQHSDK INSVAFLPNAG YGKS DNG KLWDUKTDTFAPEHQKRVWSIAFSPNSQULVSGSGDNSVW NGEVLRAHPYPSDGRE RGAAFLDPGKRFALLTAANGRTH VYTYR LDEAAGTLE
TKVASGSHDKTI
RLWDTTTGESLQTGHSNWVS IIALDAAHHRLFVACRDGHLV HETGYVLRVFDVASGKMKYSSTVSRNA LYAFLTASPDGR H HSNI ITSVGFSPDGSKIVSGRIWDVSSGELQLEGHSEGTT NSSRLLDDVKGQ
PEP
GHVYKMPLEGWA R WNAETGTPRCGPLRGHGDY\|SSVG YSPDGRMH

 SLTVVDDTRIATVVHTVPVDVAPVRRRQGHHLRLAHQQPVR
 VGIWNSAALLQVAKGASEDHGAFSPNGRFLAFGPHHTSVE EASSVVRLLGGHTSS VVTVAFSPDCLHLASSGSSDNVR T L R L WDA H T GQA $\square$ GESFR GHSNWVNS A A
 AKLVARWKLEDCKDP TGLAFDEAHHRLFSVCQNGKMA
 DFAESKMKLVKTFTGSLTPKSVAASQTGGLVABNMMY TGRCLKT
 EVMKMDKNAGGMPFDALMSENKYDGSVGMLDVNTMNYSRR
 LQTITTAHK Q F S P D GE RLVT T R DWR L A D GK C L C V G H S Q WI W
 A $\square$ S ASTLKVWDLETGEHLFTLFGHTGTVRAVAVTPD GKR TSKVIHTLKGHSD LVMSVAFNSDSQTLA


 RKDL H MK F VG H T E H
 T L RL WDAKTGHPLLRAFEGHT_GDVNTVMFSPDGMRV $H$ TS WVRTVAFSPDGTLLASS GLWDP DSGRCLKTGHT GWVN
 PKEWKHTKRLVVDYVLPLNYPVVDRDTGSMAFSEDGKYLL AR GA D DA VLDTAT GRVDVVDI ATKPGDTTECVRVSAD GN

 $M T G V R V Q K L$ T GHTM
A $\square \mathrm{A} \| \mathrm{N}$ PQETLLLAS G GDDFSVVRLWD DTS GECIDRIFQGMHNW WDPRQGT LS DDVLKTHAVSSVAYSPNCQHVASCSYD GTVR S K TVVR R S L D D G A G DR P F V LRARKVVLS GY GRRGQEPD
 A NPTTVRIDPAD GSKHALVA AAVVFSA DGSTVVYSAVVNGNK HE GVA HA HM MS CDKS GNYA YSADVVGL D G M V V W

UniRef90 U7JQQ7 UniRef90_UPI00046A156F UniRef90-D8QC68 UniRef90_UPI0003634AC2 UniRef90_K9V548 UniRef90-D2QU53 UniRef90-D5WZ26 UniRef90-C1A8E1 UniRef90_UPI0003B3726C UniRef90_UPIO002EC6B39 UniRef90-K6CJN7 UniRef90-K9QWT8 UniRef90_G4THB9
UniRef90-D4ARL2 UniRef90-D4ARL2
UniRef90_UPI00030FD644 UniRef90-A0A038H3X2 UniRef90_UPIOOO345C348 UniRef90-M7U6H5 UniRef90-G4U365 UniRef90_UPI00037D3397 UniRef90_UPIO003C75085 UniRef90_UPI000346ED70 UniRef90-R7QPT1 UniRef90-V6EZM8
UniRef90_UPI0003C7F97B UniRef90-J2WA64 UniRef90_UPI000370D186 UniRef90_UPI000467C462 UniRef90-K5CID3 UniRef90_UPIO0047704C4 UniRef90_UPIO004757C1F UniRef90-I4G253 UniRef90-Q3MEK2 UniRef90_Q1DBR3 UniRef90-D9Y220 UniRef90-A7EU93 UniRef90_C1F6S2 UniRef90_UPIO0030DF1E4 UniRef90-A0CQ08 UniRef90-X6M7P3 UniRef90_AOCLS6 UniRef90-X6LHI7 UniRef90_S9QB06 UniRef90_UPIOOO440795A UniRef90_K5XAW5
UniRef90 L7U1N6 UniRef90-M2QWJ9 UniRef90-W7SIK0
UniRef90_C2W5F9 UniRef90_D1W8E0 UniRef90-Q0CD38 UniRef90-M5CHA2 UniRef90-R7S347 UniRef90_UPI00046A1066 UniRef90_UPI00036C7B36 UniRef90-J5E2E1 UniRef90_UPI00036927C2 UniRef90_K9UGI2 UniRef90_Q1Q4H1 UniRef90-A4FKJ4 UniRef90-UPI00040BFE2E UniRef90_K9WGI7 UniRef90_UPI0003479B70 UniRef90_UPIO0034BB766 UniRef90-Q8YSG6 UniRef90-A9VKM6 UniRef90-Q1D4W8 UniRef90_G4TWI8 UniRef90_LODR60 UniRef90-F9XI44
UniRef90 A6C5Y9 UniRef90-M2QHJ7 UniRef90_Q7NJ67 UniRef90_UPIO002890BD9 UniRef90-K9PCE7 UniRef90_17GSW7 UniRef90-AOPKV7 UniRef90-M2QY08 UniRef90-K9TY81 UniRef90_UPI00031E329A UniRef90-W4LAG2 UniRef90_UPI00034A7EB2 UniRef90-X8JAU5 UniRef90-UPIO0036F1E6B UniRef90-U2S8E0 UniRef90-10HLW9 UniRef90-G9NSB9 UniRef90-V6JGNO
UniRef90-F4Q3X7 UniRef90-M5C0D7 UniRef90_F3WYU9
UniRef90_Q5P0U6

VAAllDLGTKKVOTHTWQ|V 260 ASATGTDE\|VAIDAATLR\VAR $\square P G G \| Y P D G V A P R A V Q L V$
 $V A N V V G N V T V I D G A T N F S T T V P V G P$ SFEFFANQ S LSFSANGKILAGASFHGFSAWDI I S TSNGEGNVTVIHQDSPDTYSVVQTGTTRPGLKTMVHRGT VANAGNNDVAVYDLASNKRDALIPTAWY PTAVTVQ APAVKPAGPVIDPAQDMSTPASCSPTWAQP VAASGSRDDKI LWDLETRDA LHTDSEHEDDVWAVAFSPD ${ }^{V}{ }^{-}$A

TLATGSSVERII KLWDVETGECLHTLQGHDMLWATAFSPD AVA $V$ S P DVS R VVVWDVESVLPPLRGHQNS VVAVNFSPD T DTVNADAYGWLVTWDTTSLLEELPDDKSHRLVLNMA S S P N N GVHLLSNTVTRLHPRDATVPPRAVPGPRPEGN SALSSD A SGSNDKTIKLWNVETGKEIRTGEGHYSVWSVSFSPN SVAFSPNSGSIDKTDCLWNTDTGELLWHSDWLNSVAFSPN QI WDANTGMQI GDPLEGYAGAVLSVG FSPD $V \vee N N G S N N V S V V D T A T D T V S T S I G V G T A P R G V$ V $\quad$ V VAPN A SGNHEETVADVDDVNTGRVRIERMTADTHQHGAAVAD SVAMNGDGKRVVSGSDDKTVRVWDGETGCQVGETMTGHTA ILD HYGRGQEALPVYKFLPA GRHETWREVGRDPVA $Y V A N S S T T S S I S V I D T V A L S A V A T V P F G A A G L R Q I A L S P D$ $V V H G V G L T K V D T I T K R E K R D F E M G S S Y V D T \quad P V L R S V D$ SVAFSPDGSKILQTAKDWDAATGAEDRTFSGVGSVAFSPD SLAFSPDGRTLAIGDSGNTLRLWNVHTRRQLGEPFIGHTD RVPEYDRTVSVVDLNTFNELGKIDVGD NLDRMTIDKR I A G LIF GEDGMALLDLRNPDAGVQRIMDGYRGDEPLPVFKM VILVSGSNDNT KLWNSTT GEKIQTLKKDSGYYSVTI NPD SVTFEEHQAWVLSVTFSPDGRLI ATGSEDRTDK LWS I EDD
 $V R D L D A D P A E Q D R V M N L W G H A E G A W G D T R L H S Q A T A L P P G$ $L A N E V D D T V A V C A S G R L R D G A P Q S T G T G A G T S Y P A Q U L V T$
$S V A F S P D G T K V I R L W D T T T G E S L D T L E G H N W V S S V A F S P D$ VFNTTGQQDQSLPIGKGVDDAS RLALSEEKETVVRTGRVIRQMQGGADWHGNGTVCRRFPD
 $S V N F S P D G T T L I R L W D V K T G Q Q K A K D G H S E A V I S V N F S P D$

## P

11 SG G
LWDVS
$\begin{array}{llll}\mathrm{V} & \mathrm{D} D \mathrm{~L} \text { NK } \\ \text { SASH }\end{array}$

QVVNEKV
RIWNGG S WI A I WDVPKRLLTKAPLGGEGYQVL V SAD VWDMRTGQP VGEPFEG HTSWVPSVSYSPD ASGSSDDTDRLLDAETGQPVGDPDQGHEDGWVWSVAYSPD VADESG VVVITRVAATGVTKTGEGFVGPHSLADDPA VT DSVNGKAVASVA

 NLRRGEGEADFKDTWGVYKDSAFDPAVGERRLHDVD DDLDT
 KAFWSPDGRQVAQ KRRIREDVKTRTVGGMPRGVWGDSIIKQ KTAVSASSDS TALKVWDLH S GESRSTSLRGHTGWNSVABCTPD



UniRef90 UTJQQ7 UniRef90-UPI00046A156F UniRef90-D8QC68 UniRef90-UPI0003634AC2 UniRef90_K9V548 UniRef90-D2QU53 UniRef90-D5WZ26 UniRef90 C1A8E1 UniRef90_UPI0003B3726C UniRef90_UPI0002EC6B39 UniRef90-K6CJN7 UniRef90-K9QWT8 UniRef90_G4THB9
UniRef90-D4ARL2 UniRef90-D4ARL2
UniRef90-UPI00030FD64 UniRef90-A0A038H3X2 UniRef90_UPIO00345C348 UniRef90-M7U6H5 UniRef90-G4U365 UniRef90_UPI00037D3397 UniRef90_UPI0003C75085 UniRef90_UPI000346ED70 UniRef90-R7QPT1 UniRef90-V6EZM8
UniRef90_UPI0003C7F97B UniRef90-J2WA64 UniRef90_UPI000370D186 UniRef90_UPI000467C462 UniRef90-K5CID3
UniRef90-UPI00047704C4
UniRef90_UPI0004757C1F
UniRef90-I4G253
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UniRef90-Q1DBR3
UniRef90_D9Y220
UniRef90-A7EU93
UniRef90-C1F6S2
UniRef90_UPIO0030DF1E4
UniRef90-AOCQ08
UniRef90-X6M7P3
UniRef90-A0CLS6
UniRef90-X6LHI7
UniRef90-S90B06
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UniRef90-A9VKM6
UniRef90-Q1D4W8
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UniRef90_AOPKV7
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UniRef90_V6JGNO
UniRef90-F4Q3X7
UniRef90-M5C0D7
UniRef90_F3WYU9
UniRef90_Q5P0U6
 LGKLYVSDETGNTET VIDARTSQRITTIALG GQUVAAA ETGNTETYYDTSHPDWLWDASSGQK GHALQG
 RKEI Y T IDEFGTFGSSRDCGSKDQLWDVATGKEDRTITIGG THRIY LADYQADGKTPAPGTFGVFVYGPQTRQ

THELV
ASGGGDTVSLWDVATAEFLQTFDLP
GSTL ASTSSDNTDK LWDVGSGNCDATLEGG


 GQ $I V A S G H T D N T \square K$
 GAKAYVA NSGDNSVSVIDTTTDAVSSTLTTG $D G T L Y V V G T G P \square D P S A D A G P S L T I R T P A G R E R L D V P D D$ GRLLASVGHDR $\quad$ VVRLWDTHTWECHKTFAGG GITNVAMSGDGKRVVSGSWDKTVRVWDGERGVKIGETMTG GQPVFAMLQPGGRRLWVNFAGKVQVIDVPSGSVLKTDEPG
 GSKVLTGSSDKTAKLWN $S V T S I I F D N D G G T L V T G G T D G T V R D W N F T T H R Q V G D P L A G$ GD IVVSSR GDYRNDP PNLYVIDSRTDEVKRDIPVG GOTEGWAMAGDYAFMPAVGHHSVLVVNRRDWSEVAR】PVH
GQ Q R WVF S S D GQRLASSSDDQTVKVWQVKDGRLINSFEGH TREVWVACYSGNIMIIFQD
SPAAYAQTWQVSPDGAWLAQPELSLLDARSLAPVRTLLAP GNGRFAYLANRGDNSLTRYAVEA VDGARLRLLDTVPVGG GTKVVAS ASDDQTDRDWDTTTGESLQTLEGS TGRIYVQC GEPGATWVYREESPDHYTMLGEV
GARLIL AKTGRLFVRDVATGKAVGNEDAE GNTLVSGSFDKSDRDGSADKSIHLWDVKKGEQKAKFDAE GTTLDASNSVRDWDVKTGQQKAKLDGH GNKVVSGSSD KI



PGRHGVRCGHHHP

GDEKFVYALSH A L A S I IVDD C WGC

GSNTLRKFDTQTYKEVGADEVG GKHAYAS CWGCDQVKVWDVAAKAWS DSIPVG GNAALASUS ASGSSDKQUWDMTTRSLNTSIKPE
 GAR VSGSVDNT $\square R \square W N A Q T R Q T V V G P \square Q G H K$


GTRVVSGSSDMT $\quad$ TRVWDARTGAP I 1 DPLVG GRVL ASASQDKTARLWDIE TGRCLWTLQ G
 NGYLY $\square S V N K D G Y V Q K A K M S D F I E S F S Q F S A K K K Q A I K V G$ LNPVRGGRARSRGRNGQGVAGSVVQQFPRDGRUIDTIEIG
 S D S K YVVS GSRDE GGQDGTV ${ }^{\top} \mathrm{R}_{\mathrm{L}} \mathrm{l}_{\mathrm{K}}^{\mathrm{K}} \underset{\mathrm{W}}{ }$ FLIFSVVFSPDGRTIASSSADQTIRLWDADSGRPRLKLSHR (

 DKPI YSDAMSGDGD RVQVIDTLTQQVVQTFSPG T DN SYGTQVPANPKTGATTTGTVSVI DGEDPAAVGSMDVG NTNMYT ILEEASLITHYTVNKE TGDLTEQDSISTLPTT GKRAVALVDYSPDDQY $\square$ ASGSYDSTGRLWDATTGNDIHGP DGR V V

UniRef90 UTJQQ7
UniRef90-UPIO0046A156F UniRef90-D8QC68 UniRef90-UPI0003634AC2 UniRef90_K9V548 UniRef90-D2QU53 UniRef90-D5WZ26 UniRef90 C1A8E1 UniRef90_UPI0003B3726C UniRef90-UPIOOO2EC6B39 UniRef90-K6CJN7 UniRef90_K9QWT8 UniRef90-G4THB9 UniRef90-D4ARL2
UniRef90
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UniRef90-UPIOOO345C348 UniRef90-M7U6H5 UniRef90-G4U365 UniRef90-UPIO0037D3397 UniRef90_UPI0003C75085 UniRef90_UPI000346ED70 UniRet90-R7QPT1 UniRef90-V6EZM8 UniRef90_UPIo003C7F97B UniRef90-J2WA64 UniRef90-UPIOOO370D186 UniRef90_UPIOOO467C462 UniRef90 K5CID3 UniRef90'UPI00047704C4 UniRet90-UPIOO04757C1F UniRef90-l4G253 UniRef90-Q3MEK2 UniRef90-Q1DBR3 UniReffo-DgY220
UniRef90 C1F6S2 UniRef90_UPIO0030DF1E4 UniRet90-AOCQO8 UniRef90-Х6M7P3 UniRef90-AOCLS6 UniRef90-X6LHIT
UniRet90 $\mathrm{S9QBO6}$ UniRef90-UPI000440795A UniRef90-K5XAW5 UniRef90-L7U1NG UniRef90_W7SIK0 UniRef90_C2W5F9 UniRef90-D1W8E0 UniRef90-Q0CD38 UniRef90-M5CHA2
UniRef90
R7S347 UniRef90-UPIOOO46A1066 UniRef90-UPI00036C7B36 UniRef90-J5E2E1 UniRef90_UPIOO036927C2 UniRef90_K9UGI2 UniRef90-Q1Q4H1 UniRef90-A4FKJ4 UniRef90-UPI00040BFE2E UniRef90 K9WG17 UniRef90_UPIO003479B70 UniRef90-UPIO0034BB766 UniRef90-Q8YSG6 UniRef90-A9VKM6 UniRef90-Q1D4W8 UniRef90-G4TWI8 UniRef90-LDR6 UniRef90-A6C5Y9 UniRef90-M2QHJ7 UniRef90-Q7NJ67 UniRef90-UPI0002890BD9 UniRef90-K9PCE7 UniRef90 AOPKV7 UniRef90-M2QY08 UniRef90-K9TY81 UniRef90-UPI00031E329A UniRef90-W4LAG2 UniRef90-UPIO0034A7EB2 UniRef90 X8JAU5 UniRef90_UPIOOO36F1E6B UniReffo-U2S8EO UniRef90-10HLW9 UniRef90-G9NSB9 UniRef90-VGJGNO
UniRef90 F4Q3X7 UniRef90-M5C0D7 UniRef90_F3WYU9 UniRef90_Q5POU6


KWVWSVAFSPDGK LLASGGDDAT $\quad$ R $\square$ WDVETGQ
$P G E Q A D A F S P D G K$ LLAADEEGAVHLWRVADGTLLHRL GDPRQIAFSPDGA LLFAANQRSGDVSVFHVD NWVSSVAFSPDGTK VASGSYDQTIRLWDTUTGESLQTL
TEFAEAAVSPDGRW LAVQNDRDGALELWDSRSARLARTL QYVTSVRFSPDGT ULASGSADKTVRLWDVKTGQQKTKL EYYLSVNFSPDGTTV ASGSADNSIRLWDVKTGQQKAK PGVLHMEFTPRGHEVWLSVGRDAKI MVYDTQTFEKLREI HEURSVGYSPDGRH IVSGSDDKTIVI WDAETGAPI SGRSHYAFSPEGATILTASKGDRVKVILWDAASG

SNPFSF पKSEKEG YVASYDSNEVYVDDQQNMKTKQT SHPNEMCLD DERNRLFVANANDNSVSVVNLRQRRVEETL TWPHLTAFSPDGQLLLSASH DGTYQLWEARTGTMIG


PSARTLALDAESHRVYLVA
DP RDAVSDGGTAYVASCDAGAVLDVIDTRVNKVVG
SVPKVVKVTPDNKYILVSNWCSYTLSVISVEKEKVIKTD HEIWSIAANP THQIVASGGEDRTVRLWNLDTGNCLR
KRIMHIRFSEDSR RLYYSSYFDNTVRVLDTNEWKVLDED DHPQRMRL
NEPNGM
NWVKTVAFSP NSQATSTGHKDRTLRVWDANSGTCLRET
 DALLWCCAVAPDGVTVVVAGEASGRV
GYIYSIVISPDGRNLGYVASYDSDEVCVMDMKNMKПKQT\|
SNPF AFLKSGAEGYVASYDSDEVCVMDMKNMKLKQTM.
HEEWAVDFSPDG LRIVSGSDDKTVRLWDVHTGQLLRE HGUSALAFSPDDERLLVAGGFNDEVWLWNTVAWRERLTL

HSVFSVAFSPDGTR \|VSGSADKTVRLWDAATGRPV HTSWSVAFHPDGHTL ASGSDDGTVKLWDVQTGR ADS

 HPVNSVALSPDGQT
HSVWSVAFSPDGK

TVIRAI FSPDGB H
GA IF SVAVS LD D S F VA HAP Y WA S A DLAA GR YC F LAA N A D S D DV S KAVLHLAEFTRDSKDG

VKKADFSKDGQ
पHPTAVYAKHGA
NFTSGIVFGKGEK
MRGHSLGFSADGSALIYCAN
AAAPGLNLPAGGTTLYAAGS
QTF FAlVNITS GDGKENYIG


A T V $G$ Y E P T G $\begin{gathered}370 \\ P\end{gathered} \frac{1}{}$ T T K D G P LPG

S
PTSNRLAHGVTSPD D GHTTSVAVSPD

K A
KTMDワCQADAFSMD
E LP A N P
$K G G G L A P H$
P $\bar{\square} G E R P \square G \square A D$
$P A$
$\square P V G V G P R N A V V S D D G$
DASKPGALDASPD
S G

K P GPAVLHMEFTP

RGPGGPTWVDFTPD
$E G V G \quad S V A F S P D$


K $\square$ GRYPG $\square \mathrm{A} \square \mathrm{SAD}$ TVPTPSGПF पLPD

KAHTRGPAVAFHPN $N T V G A \quad V A D T P D$

K VGKGP F QLI
EGEGPVKSCAVTED
K G Q AKVNAVAFSPD

SGHGSGWSVVFAAD

K A
$E E \square G G$
PFVGHTNYV
TGSSDVNTVA $\square$ S S D
SGKADVDAI A WS P D
$P$ AGVTLSLSFSPD
GH

LS GFQ
$E T S S R T P S V M F S P$
$S T V G Y E P D A V T L T D D G$ WTHGDTPRALTVDPTG

AT GEAPDTAVLA
MMPGGADQSI

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ASGSDDNS\|ILLWDVKTGQQKAKLLD GHSASVITFSPDGS
VA F S P D G K
VAMSADGR

ATG
D NR LVILDEDTAAVLGQAPTGDYPDGGDHDPK ASGHVVTLVNTTSRQPYAR $\square G G G D L S H A V Y S R D G R$

F GRDGGLTKVD ILCGR IVKRワQGGNS $\square G G A \prod S Q D G S$ $N N H G S H N I T A I D G K S G A V V G T V E I G G N G E G A V T G K D G$ A PGEMA VVKLVDLSS QRVIDDQFHLDLDTSPPTBSPD GR
 DGD TGTTRFVD\|ATGKVNAEVATGKKPDGGF $N \quad H L S D S V S V V D P E R A R V V R T L L V G D E P D Q V F A P Q R S$ $\square S G S N D N T V V K V W N L D T G E E Q F T L S G G W V Q A V A V T A A C T$ AS GHVTLVNTSSRQPYARIGGGDLSHVVYSRDAR E GS G A GEEVLVVDA DTGSVEARWPGFEAVHGLAGVP GA S Y A G D A RP GKVVVELDTA S LDS IT REVIVGYQPE EMVIDTDGK

 RPSFADVVS IVAI TGKI NWRTPVGFRAHMAVSPNGQ $N V F D D S M S I I$ GD F R L HD TVVIIGSSPN D GN
 AS GSDDKTIVK WNLANQQEIRTFKGGWVWSVAFSPDGK VF S R Q D D A A Y V WD MK N GTVT QLLP $\square$ S GVP CIAF S S D G S

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


A S G S G D C T $\square \mathrm{K} \square \mathrm{WN} \square \mathrm{L}$ T G S C Q Q T LE G G WVWS V VF S P D S K
VS GS LD N TVQ TWNLETRKLERTDRGDMVRAVATSPSGR

 A A A G G D GQ i T L WNAT TYEKIT S FK CHPYA DI A FS P D GA $\square P \mathrm{~V} N \mathrm{~N}$ GSVVYI DNPSTGKVVETWNDGKSVGVAYSPNQQQ AS AS DD GTVI L WNVYTGEII YRFR GHSQHI A FSSNGK NRA S GTVSVIDTTSLTVTSVIAHDPRSGIGNQPLG DVVA ERRPGSVVLVDTTRHECVGRIDVGRAPHSIVGREGA
 TGGGWDYLSDQPGSE NGEGRKGLVVAYRDENDSLERLAVIEDGRAAHISVHPSGE D GVVQUWDAATGQGKPDLRGGRRVNVARDAS GT


NTITVVDRYTFEKRGE\|TTNLFTPRYMAVSGN
VS A S Y D K T I R L WD $\square K S G R E \square Q \square L E G H Y \prod S F V Q F S P D G R$ ATASDDKTVKLW SKEGSLI TTLE TAAVGDLAYSPDGS VS G S D D N TVLK V WD L K T G T A L S T L T A H WV Q A V A I T A A D G K
 WDTET G TALLQTQMA GHTGAVAFSPS GD ASSSADGK $\square K \square W D \square N T G E C L K T \square E G G E V Y S V A F S P N G Q$

A V I N C S N K $\square \mathrm{E}$ VMDARS T K R $\square \mathrm{GQ}$ Q $\square \mathrm{E} \square \mathrm{P}$ N CR Y $\square \mathrm{KFH}$ K Q Y A
$G Y V H S V A F S P D G T$
SASDDGTVR LVWKQGNP $\square$ GQPFRGGFVHSVAFSPDGQ GS NRDMSVST IAR RLDEKTLQQIAATLPTGYNAGIDVVDDENG DEQQQ G GVV AVALAAD GSFRVLGTRDTGGAGHLSVMPGGK F GRDGGLSKVDLLSRRVVARVQAGNS $\quad$ GGGAIISQDGR DPKDFS LVKNVK YYDKYTRQYGG
 TAE GVAVVDTQRRTRRDGAVRYGGGMGIALAAPGR
 NGRGHSFS
$V \quad D D P A S S$ K V I A T V A L S G K P E F A V S D E A G
K T G G V R L WD L S G WKE LR K L D GHKKA GL S F S A D A K GNIMIWETDTYQNICTINGHADGIAFSPDSQ

NENGPAHADRVSAWQLDSHQLIGQDSLGDEPHASLSHDGR A S G S S D K TVVRLWDVRTRKLKRTLESEMVTA\|VFSSDGK



 ASASS DRTVQVWDPRTGKVLGPLTGHSNQVTFSPNGT VS T T D D G TVK I WD A $\square$ S GVLL CT LVE G R NRVLVFTP D GR


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TVYSV CFSPDGTNLASGS DKSTRTWDAKTG NEATVGRDDRRVAMSDDAKQLLVTDYDSDNVLLLNAKSL KRVAVTS LRHETGNK LHWLAFSPDGRSLASGSLDPEG VAVWDVATG DGVESVAMSGDGKRAVSGSLDES VRVWDVDTG VSPDGTHMAASVTDGGAALAAVDLKNW $\mathrm{A} \square \mathrm{GGS}$ GGDVGNVA IT SDGRIVVAQNYTPGG IVKAFDAETL LRKDLAYYPHHFCVDEQEKKIFIPSLINGTLYAV D IISG


ETK FV
DFSADGKTLISVSDEKKSDI KI WDVNSF
LEFGV
PDGKGGAYVNVEDRNVVVAl D
$P D G S R V A A F H S G N R T V I M D$
 WVLAVAVTADGTRVGSDDKTVKVWNLETGEEQFTGSGHSG KRVMQSGNA GGSUSQDGR\|VVAQNYTPGG TKAFDAET AKPDGVSQDEHEAHHASRAASVMPKDAGVSWLTVVEAETG
 KVVTGDSPHENVYSKDGSKDYHASDGGKRRFQVVDTASM
 AVSDV $\mathrm{K} \mathrm{T}_{\mathrm{Y}}$

YPCDVRWS
DVVAVTFSPNGTVLS LMRGIGHGPAGVAVDTVLNRAFVAN SGDDTVSVIDTRVS RAGTSGRAIALSADSAFLIAGYYNPNHAVILDADTL HTASV DSVAFSHDGERL ASGSRDRTIKLWS PMRGHSNWVKCVRFSPDGSAL VSGSDDGTVRMWDVRTG
 DRLISA EQQAGNS DGGATSADGTLVAAQNYTPGGVVKVFDAENG

NavRVSAGGGDTMVSA
SASTINVWDLEAA PERDI ENNGKLYVSHKTTNNDVSVIDIAS EFKVGTFPRGDGLTKDGKYLVTANKDDAADVMVNVKTK STLATASYDKTVKLRSKEGSL1TTMEGHTAAVLAGADG SVIAVGTDPGVAITADGKTA VSGSHDNTVKVWDLQTG QESPVGS $\quad$ A ATPDGKTLFSGSFTA
 SSRFDYASLDPGRGLLFTAHLGASQVIEVDTHAD RCLVGFQPDEREVGVGKIVVANSGGYMTVSVIDDATF EGHHSGV PAYVQVGSDKRVYAVKQIDDQGGVASYSLKDD HRGKVLS WVRVAFSPNGQ YロAIGGDDSTIGLWDLQG
 GDESWTEHPREVKVDAASGKAFVATGGRYFVSADDLKTH

QRAKVVG
PTRYSPA
ANPCDVA
TVFAS
AGVG
RRPF ADRROVDSPDGREVY
 T DVRSVNFSPNGTTL TCQSPSGLAI DNTHHRLF HTQSV $\qquad$ RAA AVTPDGKRLTSG VK HSQMVMS GPRVVASPDGKHTASASF
 RVHTLALS WDYLVVFSPGGLRL RGCF TKTHPGAGPRHLATDVDGRY HPQAAABAGEAYAT
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200 KVIT QVPSRPFGAVFDAKNQQYYVTSFERDKLLV D
 RMRF RLKA Y G GVGWLDP DS SALLLAARFDSSTPDVLGEWSAAD






 $K V V K T \square A D T G C E G \quad P T G \quad L A L V G G G T R L I S A C A N D V$ RTESLVPDGGAAGGLPGPDTNFEGVPRPEVGLILKFDGAH $W V Q A V A V T A D G T R V I S G S N D N T V K V W N L E T T L S G H S G L V L$ ELLSEVPAEYAPGRF SKVVGLADVPGNKFAYALFDGG AVVRRIEVPGAVH
QVI GNLGUAACGDSDYMTSVEWSYMSTESNSYAAYADYDVLW MEI RTLGSGHSSLVYSAGQDGQTVVSGSSDR YATIKVWD
 S $\square K M K I K Q P Y P\|I A L A F S P D G E\| L A S G C$ KRY LDT A A A GNFNVLK
 KEI RTFK
RPVGE PFEGH TGYVLSVSYSDDGSRLA SASQDN QVVGSVRDGGEPFAVVVADDRAYVSV KLLKTFK QHNSASVTFSADGRFMASGDQDGLINDW KA I KKFPNPYDALMSPDGHYY $\square A G L F G E P G L A L L D \square W N A G$ R $V V A T Y T L S S G V T A L A V S P D G K R V Y A G R S E G D R V D L$ SCQQTLE GHSDSVWSVVFSPDSKW KVVLD GVNNWPNNDEK CREKGLIVVSNFQSN AIVGHSRTVTCVAIISPDRHFCSASDDRTIRRWI GKPMSG RVNSVAALPNQRII SASDDNTIWSLKTAEELLTIVSDNRC KCLDTFQGHTDW SVK ELVSFASASNAPMGGATLGVAVSPDGSRIASAGDDG S VVKMV $K L W K N Y P V E V D V T T L S F S Q D A D F L Y T N R G Q L D T G L S D P F$ KVTTVLSDLGSAIGHA PRGVAVDEVTHHAFTTNSGDG EPLHRIP AHAVDADGQS IASRICTVRDVFLLVLKDAG QLLKTLQGH QQTKQL LECYREIVSVGSDGRRVVCG KVF GQLPVGQNPDAIMYDEFTKHLIVCNGRSNSVSD KLEAHTAFDSQPG GGPRHMRFSGDGRFDYLLNELSL TVLRELDVESQG TVRTWAEAFSADGEEI ATANDDDS A LRADI PALTANGQRSRVVGLADLPGQRFDYSLFDADADC RPSREIRGEGULDVTLSPDGRLVSLSSCQDVAVWDTKTGR EVVQEVIVKDNPDELFFNNQGQLVVLSSGRTIVDANWNVT A I EKTIEVG $\square N P S T E P S S K G K P P A P G E Q K A P G E Q K H E E E E$ F V T SVMFSPDGTTLVSCSEDKTMRDWVASGGEED
 SELLERYQVGDDPH YPDPGTDLIAVNNAGESFATFVDAAR E PVGQ ENPDCGH STGGRDGSVCVSSSDGRYDAGSVNFWD ECLIRTLESQVWADAFTSSPDGRTLI SDTGNCLYVVRGVYS KVVRTI D LP GVHGVLVVPADHRVYATASDANQVAADDE KEEKRIPVAWNLHRIVKAKRGNLWVSSRGDYKGYRLFFDD
 $N L!G Q P F Q G H Q G E V W S V A F S P D G Q Y I A S G G A D N \quad T \square K L W D$ VCIK T I GHEHETFAVAFSPDSQULASASGD KVEK I KVGG Q I I TAPVGGHVLAVD $\square$ GNDT
 QAPRT RRFKAGDRPYDG LVSPDGRWYVAGLFGEP EVARAFRRPGEAGPPTEPSMTYWTLDGKYVLLQGEARPYE $K R L N A F P V E D Q A S V M A F S P D C K T L A Y G G S G K A V$
$R P L A T L S G H T D F A N D V A F S P D G R T L A S A G D D L T V R D W D V A$ RTRRR
 RLVANVADGDGPDAVVYDAGTATVFSSNGESGNIT ADVG EELIFT ALGHTGARVAVAADPNGTGVVSGANDK KMA WPALGHSGGMMAVAVSPDGLVSSAGQDGSLD VNLERQASAHVHSVVSSPDGRFVFACDLGADRDFVYQYDP ERPDQPDEPASVELPPGSGPRHLVFDPSGKHASLALELSA K LRQTLTSNGPVFALAFSPDDRRLASGGELDNTV HCQTTLKGHSTW W VRSVAFSPNGMRLASASNDKTV SLGRDMDGVFHKGLGSVAERNFRPHVNC
TLTE LLSTLSTLDGYDGKENTTAE DTVSNDGRY TLKDTLKLSDKRLITPDGKTALVALRDEQGLMVLDDDSDK
 $V T S T 1$ HPDLTTGMGNTCTLLDLDTYEIKETY $K P L S S G P V A L T G D T S P S G L R A V S G S S D G S V H V W Y V L S V D Y$

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220
230
240 HSDYVRSVNFSPDGTTLASGRLWDVKTGKAKFDGHSNWV|K SV
 SVVSPRTVSGPAGSKHALVVGAAAFSADGKTVYSAVNGQNR
 M I S VDDMP H DD DENKS DYKK DDTDFKA WHLEDDEKREEDY AVSKVELKEDGSLERVRFSNTSFDDTPRTIRHDSQQGRVY HSADEYTPD ESSVVT QPSAKKTMAFDKKT GQVFLSAAATVTND $T V A V$ Y
 AVVGVTDPAGKVVATLA LGADPDAVIVDEARHRAF





 $\square S N A V R P \mid V F S K D E S K \| Y A Q$ $\qquad$
 GHSKAVDSVVFSPDGASLAS GSWD
$T \square R V W D P Q T G Q T V L G P L T G H S V S F S P G G A F I A S G S W D H T \square$
 VK H I L S D Y GK D DE K L P P V Y K M P HLLE G
 $\square A S G S D D H T \ K \quad D W N L E T G S C Q Q T L E E G H S D S V W$ NVSVIDDKVIVNDKT LEEYPT KVKVSNDRTLLYVCES HRDIVNT\|AYSPGATR\|VSGAANDRTVRLWDVSTGGIVS

 $N N S V G F Y S L P N L Q Y M G M V Q M P S G V T P \quad Q R G V F T P N G Q Y Y L$ $F P P Q T P L P D D F V G E Q W D Y S R R L W W P P E Y R A T Y V A V H G R T V$ TVSVVNTRTFAADR
TVWFVD YP IVDE DDVGRVLHDGVFSPD DRYFY LAS QAELY


S VRT
$V D P E N D R V V G T V$ VAY DARYGRAAFMS D
VRLWRRA
TGSHGLRLDGH
$E G R D R$
IA DCTD TARPRMTR $\square D G \square G R Q P Y D A \quad L V T P N G R H Y$ SLQA I A Y R AFAAS FSPD GGMDALLTFA GP $\quad$ TR





 TT GK VLHRSPTGGGPDGLAYDPVHNRVVWM $K E Q Q R V T D T I V A A T H Y W I D D D L L Y V Y G A E Y S Y I N K Q E W T F$ $\begin{array}{lll}T & L & Q \\ A & D & S \\ S & L & H Q G A T G \\ T & T \\ R\end{array}$ A SASYDTTVR TWWDLT GQLIAA

 DRGTLLEQLS YA ALRRPGAGPRALTFHPGGRYAYLACELDNT GVAVLDLWHPERGVRKVLQRHVPDDPRRPVVKMPHLLRGW



 T DK V WN LDD I K QKE Q F T L V G Y M $\quad$ G GV K A I A T T Q K WV RRWEGAGSPLVVPFNVFARHAVAFSQDGQAAWGGTD GRVH ASFDKT DK LWDWQQGKC TVSLKGHTQGGMVWSLAFGPND


 VYGSNRGHVFAVDADKLVEHVSAEGEHPRHFALTPNGKLL $V T T Q R E R \quad \square S T G V A P Y S V D V S S T G K W A L V G N A G L A G$ $T A T \square R N T L T G H T Y$ Y A A N SVV F S Q VA D SPTDDLSAPVEVLLLRRGKF $P$ QYA LAA T M M L G G D I SPS D QY IA SGSSDNTLRIIWDANTGT DMHGPMKAHSEA V W


UniRef90 AOEB01 UniRef90 UPIOOO2E840C4 UniRef90_UPIO00440906F UniRef90_UPIO0036DA882 UniRef90_R7QP26 UniRef90-D7C9S5
UniRef90 QORY60 UniRef90 O47AY1 UniRef90-R5XDV4 UniRef90_U7U8K5 UniRef90-G2DFC9 UniRef90-G8NYB9 UniRef90-D6YZU2 UniRef90_UPIO002E7345F UniRef90-A0A031JQT1 UniRef90-A9G378 UniRef90-A0A024YUQ3 UniRef90-K7WTS1 UniRef90-W0SKK1 UniRef90-K2MYF2 UniRef90-R6G6H9 UniRef90-UPIO00475ACA3 UniRef90_UPI00035FABDA UniRef90-M5C913 UniRef90-O112W9 UniRef90-N9DSK2 UniRef90-F6B134 UniRef90-IOILAO UniRef90-UPIO004746DAC UniRef90-M5CGN9 UniRef90_UPIOOO360A534 UniRef90-A7BTI4
UniRef90-G3IYU5
UniRef90-I4BNH2
UniRefofo-A7IOV8
UniRef90-JOCVF8
UniRef90-O10ZJ8
UniRet90-KgRLAO
UniRef90-D5SUY3
UniRef90-Q973M4
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UniRef90-B5GK15
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UniRef90-M4FSQ9 UniRef90-A4COB8
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UniRef90-MOLKH6
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UniRef90-U2CMF6
UniRef90-C2ERU2
UniRef90-F8P8B2
UniRef90-K9TW63 UniRef90_UPIO0036A760F UniRef90-ЕЗН3R8 UniRef90-UPI000423B44E UniRef90_M4WZW8 UniRef90-A3MW79 UniRef90_UP100031F2B45 UniRef90-A0A024Y101 UniRef90_UPIO00377C867 UniRef90-UPIO0044169CB UniRef90-A0CJ89 UniRef90-A0A023NN70 UniRef90-K9W7D5 UniRef90-UPIO002F75E3E UniRef90-U9VJZ6 UniRef90-UPIOOO2EFOBBB UniRef90-O5BBQ9 UniRef90-H7EY42

|  VAIDAATGTVKQSWNV GNAPRGMVIVGNKLYVSNEG位 STLDGKLVVGKEENLEVVNTFQELLLPV VGOQKNNYT <br>  |  |
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ПSGSDDGSARDWDDKTGQEDRTDIGHKAVRSVATSSN AMNGAGDTLCVAGTMDDYVALVNRETFEYQ ILTDLG VVDVHTGDTLVGPGQAHTGSVQSVDMWADGMRFVSGSDDS ASGSQDQKVKLI EKGQLDHSTLENHDWVNDARVSGUSHSPD VVNSCSNTLMKIDL HTKKRTELICCGYMP LLTMSLPSGKLQNRFSVGTDPDVLSSLDSKRGVHLVVASES RVYDAHTGHTALGP LHGHTKAVNW

## $\square$

DVAVIDVTAERVGTDDПATGVG
SGSNDSSIKIWDVSTGKKRLTLKGHNGVLALVAFDAT APA GGQHKVLVI D
 SVVFSPDSKWI FKASGSDDRTIKIWNLETGSQTLEGHSD SVAFSPDGACIANTIRLWDSATGAHLETGKGKSSMCFSPD TWDSGSFDKTLKVWSLATKKEDATLVGHTGWKALAVTPD RUDVGGQDELVKDWDASTGDERATDKGYPGVRAVAFSPD EAPANKNEVVVISTSNFQ】AQTUSPSUNPQGLASUGЏTPG ALGHTSGRVSLLE
 KIWHSNGT LLQTLKGHNND VETVSVNFSPD
 NUENKSEIVVILKSQRVLHRWPLSPGVAPTGASELAIDKT SVAFAKDGASTATG CADGRVRLWRTDGALTATLSAH IAGLFGEDLALVDTWADQPVARRI LGGYGRGQQPLPVFKM VWDLAEEM CVRTFQQAAAGEFGSGSVAFGPD HRVATS YVYAINDTATSLSNTSIIEAEGYFYGIEVQGDALFTLNAN VTNEADNTDTVHDFMSGELDKTDSVEPYGLRPRGIKVSPN $\square$ LDTSGAVVQKLEGHSGPVSGVQYSADGHMWDKTI R $\downarrow$ WDA
 V RLA S SGVARILMWDTETRSLLREFEGHSQPDQCVVFSPD SVAFSPDERVTIKLWDITDISNSKCIRTLKGHSNWVWT TTNESGGSETVVDAGSGAVRGTVPCGGEAGNV AYAPI SYGIVDTRTHQVITKNDITDGTDKQIEMPYGIM VHPG VCDLGMDLVVVYDVSAKLTAVSRYKSEDGFGSRHTAFHPN KLASGSLDKTVRI WDVIAGKVIAGPGEHNGVTSVLF SPD AVTTSPDDDKTLRLWDLKGHQUGQPLIGHEYYYSVGFSPD
 $V V V C G Y D P A T G V$ AMAGDYAFLPADGRHELVVLRVSDWSEVSRDPLA VVVRGAGVYVRSPPPEYREUTRVATAMDVKGUVQGAFSPD VKSFHGDTVVFSPDGKLAAHATDRDVITAAGRELVWSDPG RLWDAG SHRPEATLAGHTGSARG VVGTGPDGADDEDPSLTVRTPDGKERTVPGPHEDVTVSAD SLAFSPDGKCDASGARDNTVLLWDVETGQUVCAPSEGHTD TAAEGHHPAVEPDSTVLTVGRP

D VVDWRTGK
 T ANGSSRPEENTTRFWDTTWEPVRADTGHRQGVTSVVFSPD TDYGTLDLNLLSPSSSPSTALPTSGLRHQQHQGYGDSAD RTNKRRHKLELVDDRCP RAANRDTNNLVTFTVDQESGRLKYTGHSTGVSKPVCVKP LPGNVGTLAGDVDSITLDDSRRPYRAVQHVSEGIIISPD LWDVTGHTGWVGSVSFSPDGTMLATGSRDDTVRLWDVATA CVPRNNTKKKYDAFTKGFDGSTQGLGWTLEMYVVMOLDD ILDLASGEAR QTFSRHTNDVTCVAYSQDGTRIVSGSRD

UniRef90 Aoebo1 UniRef90_UPI0002E840C4 UniRef90-UPI000440906F UniRef90-UPI00036DA882 UniRef90 R7QP26 UniRef90-D7C9S5 UniRef90_Q0RY60 UniRef90 Q47AY1 UniRef90-R5XDV4 UniRef90_U7U8K5 UniRef90_G2DFC9 UniRef90_G8NYB9 UniRef90-D6YZU2 UniRef90-UPI0002E7345F UniRef90 A0A031JQT1 UniRef90-A9G378 UniRef90_A0A024YUQ3 UniRef90-K7WTS1 UniRef90 W0SKK1 UniRef90-K2MYF2 UniRef90-R6G6H9 UniRef90-UPI000475ACA3 UniRef90 UPI00035FABDA UniRef90-M5C913 UniRef90-Q112W9 UniRef90-N9DSK2 UniRef90-F6BI34 UniRef90-IOILA0 UniRef90-UPI0004746DAC UniRef90 M5CGN9 UniRef90_UPI000360A534 UniRef90-A7BTI4
UniRef90-G3IYU5
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GTTLA ASGSYDNS\|IRLWDVKTGQQNAN/LDGS GETAWVLWSFDHDFQFQSPGNEQEVVDERKFKQDNDIESG R GTVLIAS WT T GET $\square R \square T V G G A R V L A L S A D G R T L V T A L P H S$ GRPAYGTQVLADQKTAATTSGTVSVIDLANQAAVSSIEVG THHTYYP@PDGTGG
QGKAYLPA $\square G R H$ EVVVVDVATWKEVGRTPVR DNRVY SDLGYNQIKILDYNLGKYIGKUKUN

 $R R Q V L V G E E E T G G \quad V A V I D A A N R D R D R I I F G$ GKTLFTGSRDLTVKTWN VSNGELVR\LVNS | D G R R V V |  |
| :--- | :--- |
| E | Y |

 $G K R L Y V A B A B Y A G K V H E V I I A D G N \square S R S L D V G$
SQT $\quad$ ASGSCDDT $\square$ QVWD LSAGRVIRTLRGH EKPYWVTSDRSGENCYWSDTDQMSVDNYESGEEVDRVDVG


 GT V SVVFSRGTF GWKKS GEQYVAYRAHT $G \quad V$ T L A S GS K D GTRRYSCSDDGTVRTWNQDRGTSDALSTASGBV GKRLYAA TSGPRGSRVVVVNTETARVEATVWIGG GQILL ASGSDDSTI RLWDVQTGKLLDTLEH G $G Q P V F V M A R P D A R Q V W V N F A F Q V Q I I D V K D L S I D S K T L S P G$ GDAVYALTT SVRSVVVFSPDSKWDAS GS GDRTI K I WNL E T G S CQQ T L E GS
 $R \square H L V S G S H D \quad K T V R I V N V Q A R Q L V R T L R G H$

 ESYAYVVIHG SVVSSGGMIVLINLQTLSVAYEVP口T

GHGMFCTAHPDSDDTDRDNDGF $\quad$ TYQ QDPDELVVSTVIDTT GQTLV SSSYDQTAKVWQVGTNQPAHTLSGH P N G L Y V A S G F VD

 | $T$ | $D R V Y V A F G P G D D W A S W D G T A D V W R D G A A R H$ | $V$ |
| :--- | :--- | :--- |
| $P$ | $L$ | $R$ |

 F S DVSVVLNVYS $\square E T$ K A K T Q S K EVVAV GA S K
GERYVATLEH AS GREDRKLEGHSDCVKSPDGSIIVWDVKSGKEIQQKLQED GSTLATASSDNTVKLWSKEGSLI TTLEGHTYA I
 A D DRYVLVDSYDE A HVVTIVDAETGSVAGRVVGVG

LD GRY A A S G S D S SVRRLW D S E T G D A L WKVVM G $V V F S S N G Q \| I A S S S E D K T V R \square W D S H T G E C L K V L E G H$ T R QMLVDVQTR
TKD】YI T
GK YAY L LS S K LE VLKK Y N A A D G TFS HVQ T $K$
Y N A A D G T F S HVVQ T
GSKL

## $V$ S S S EDSTVRLWNRADFE

 TDSTLHSG E TI
E Q E Y V S A Q G S Y D R Q
$G N G R F A Y L A N R G$
 M H S LT R YAVEDDGATLRLLDTVPVG

 $G R T L A S S G N D R T V R L W D V S G R R A L A B A L S G H T$ GRTAYVTGGFTRDGYWNGITVVDLDDEEDGEKDEVRLEAG SVNCVAFSPD GAY LMS GDEDGVI RDWDSAT GQTDRGPWE G


ENW I I S GSEDSTLI LWNLETREKFFTHTGHN
GRRLL ATS SGEKT IRFWETATGKETGK\|DEA GKRLATGDNNGLIQLWNLESRTIRMWDLQNGYCVKSLSGT





GRWVAVQSMDGSNLTADNPGRRLILFSNQNGKLVASLPAG TEDNTLTGHNSGDGTTDATGSWLVVWDVATTTLRNTLTGH
 D D S I LSVGGFSPD GHKVVCGSRKMHVVDRHTNAVIMPDTGG GTRLWD ATQNADPPS E E S A DCRSTVEFSHRSHVLLARDNDS

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niref90 G8NYB9
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UniRet90 $\mathrm{H} F E \mathrm{Y} 42$ UniRef90-H7EY42
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UniRef90-D4LSL8
 NRPHDGAFTDDGKKVIFTL A GSEDLLVFDL NSVTS VAAFSSDGTRVVSVSS DCCTVVVWDVERGK DSSG HWVESVAMSGDGKR AVSGSWDESVRVWDVDTGGAC LHPTAVYA KNGVVFVTNTADNNVSVIDTAKDKVVQT $\square$
GQPVFVMARPDGR Q IVWVAFPNGKVDVIDTLAGKVVH
 KGTLHMEFSPRGEE VWISVRDKDEVQIVDTRTLQQTHRLL

ARPAGMVMMP
A WVE A VNVTP DGKSLIT ATALGE
Q P T QMAVT R NGAT LYY VAA LGS DK $\square$ G VF D TAK LEAA N Q $\square$
HS GWAVAVTADGTRVISGSN DNTVKVWNLETGEEQFTL

$N W V N S \square A \square S P D G Q \quad \square L A S G S A D T T V K \square W D L N T G Q Q \square R T$
D HPQRI
$G L V L S V C L S P N G$
QAVWSLKFTPDGQTLVYVASGSDGTVCVWDGQNGKR $\square$ KPYWA TRSSPGKSC! DSESAND AVTVIDFDTGDKVLSV K EPDGLIF
DKVNSVAYTPNG VILVSGSNDNTIKLWNPTTGKEDRTL TGIYSVRYSHSGRHVVVSGSSDGTVHVWDVRTGELVR APVRDIA AGTD G $D A Y A L T S D D Q S G E V H V V D T A A G T V L G A \square$
 GAPTQLAVSPDEA RAYVVDY DRVAVVCTETLEVI ESGL
 SYVNSVIVSPSG RYIASGSCDNTI RIWDAQTDNEVGA
 ERIDDISSFSPDSQRIASASNSDMTARVWDVAKAKQUKTL TA P

EWADGPEFTRDGD HVYVSCWDAGTLLVFDSSTGAFTAA Q R V Y A S S F S P D G K T L A ATAASR DT T I KL W D L E T G NLL LQ TLL




$K$ S P YGTS F NA A G D K LIFVA A GK S K T LEVVY A TE D Y S K I K D I










 S A V WII A $\square$ P S GE WL Y Y S



 GPATHLRRFTGDGSELVW


 GTVFSVVFSPDGKTULASGSADKTVWMMA

NA A S G LA LA P DGK H LFCTTAGENTVSMY DAETGGLEKTL

 K GA H H M A F T R S G K D V V VA ViP N L N S G T I


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UniRef90-G3IYU5
UniRef90-I4BNH2
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UniRef90_J0CVF8
UniRef90-Q10ZJ」
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UniRef90-A4C0B8
UniRef90-A0P4Q3
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UniRef90-A8ZL84
UniRef90-K9W2N1
UniRef90-M0LKH6
UniRef90 K9SNT3
UniRef90_G4TH12
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UniRef90 V6KUI1
UniRef90 U2CMF6
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UniRef90 A0A023NN70
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DGHSETVYSVFSPD
PYTGHANSVAFSPD PDADDGPLGLAYGPDG

STVGYEPDAVTLTDDG

HVGKEPTTVV
P VGDAMDVLYNAD
S

R V P G G G P T G L V
$S G S G W V Q A V A D T A D$
QPGKAVLHMEFTP
A A L A P A P Y H LTT T

P VGNHPQRV

K K D S G Y $\square$ S VA $\square$ S P D
A VGGAPTQLVLPD
PA
PADARPSCVAT
EGHSDSVWSVVSPD
ПTVGKEPNAMT
PLTGHTNSVAFSPD
S
$\underset{S}{\mathrm{D}} \mathrm{G}$ M $\quad \mathrm{ETPT}$ TTFLGD
P T
GPDFNAPNVI
TGSGRVCSLSFSPD QPGKAVMHMEFTP D T

Q $\square \mathrm{DGKRWHFTFTPD}$ E GHSSGVSGVFSPD E G

TGHSFWATTA
$D G L G E M P S G L F Q P$
PLQGHGNLV
DEVGGQPDVLA
STEGDFP

H GHTNFVAFSPD
QSASKGANDIT
GTPFAAPAAVCV
EGTGAVNQVIFKPD DRV

PFRGHTSWVQTVA

T G H K R G D A $\square$ A VT P D
PHNSPVFDVDFSSD
QT $\square$
$E H A B G M S \square A F S P D V$
QT L
$P \square S G D Y P D L V I F P D$

D
S S VGFSPNGLFVA

TVGSANVSNIDVTCSARPLFAYAA P VARRALMSALAS $\square E A V L T G H T D V V V A W A P D G R$

E L A A VLQ GHTDEVDEVFSPDGQTL
A VS P D G S QVF VT D S Q IAFVT

VA T T T $\square$ T P $\square$ A TASSSGGGGCHVSVSADGTCVLVS
A VS P D GQRLATT

T AT LE $\square$ TAEVTVGQPDELVIQQ DGL $\square \mathrm{Y} V \mathrm{~V}$
QEGQVTSVAFSPDGTLLAVA

VGHQDKLTSVK FSPDGQHLATA GKSRTALSTVRTPTAA YGVALSADGRRL

GPDSEYAFAV
FSPDNRFV
PDGS L
QEPVS $\square R$ A Y S A $\square W R K Y A$
QRSVT LLLRDGK $\quad$ VY VP

E S IT S A A F S S P D G Q

DK G Y VY V
PDGRTLYVA
P P G L G G S S VNTVAFSPDGKWL
$\stackrel{\mathrm{A}}{\mathrm{S}}$ VF SPDSK T


TAGFAAAPGRSV
MPGTAG■IAVRPDGKVFATA

UniRef90 S2Y101 UniRef90-B4VW73 UniRef90-A0A014P2L8 UniRef90-B2JWM1 UniRef90 D7VJHO UniRef90-UPIoo03490B52 UniRef90-UPIOOO39B8895 UniRef90 F4L7J8 UniRef90-G4TWE3 UniRef90-C7DH34 UniRef90 UPIO0037E62CD UniRef90 UPI0002484313 UniRef90-C4K9Y9 UniRef 90 - BODYXO UniRef90 AoZFT6 UniRef90-UPIO004407BF4 UniRef90-O8Z019 UniRef90-G2Z0G1 UniRef90 UPIO00369F209 UniRef90-K5W7Y6 UniRef90_K9RMN9 UniRef90-K9X9R5 UniRef90-UPI0004681D39 UniRef90_U6GX04
UniRef90 A4JGK7 UniRef90-AAJGK7 UniRef90-UPI00016C4C2B UniRef90-G8SDB7 UniRef90 ${ }^{-}$F8FQD6 UniRef90-A0AO24HHAO UniRef90-M9U6K9 UniRef90-B5GS71 UniRef90-D2NTS3 UniRef90-J1QTP6 UniRef90_UPIo003B4471F UniRef90_R6E3U7 UniRef90 15ClU1 UniRef90-D8HZ37 UniRef90-R5V863 UniRef90-F4F9J8 UniRef90-A8LM01 UniRef90_XIBAL1 UniRef90 F6G630 UniRef90-UPIOO03621494 UniRef90-UPIo00362E9F0 UniRef90 K1W5K9 UniRef90-UPI00031A08ED UniRef90-K9R7R5 UniRef90-K9PYJ2 UniRet90 Q3MCX2 UniRef90--9VVZU7
UniRef90- TOMKX8 UniRef90-U5DM95 UniRef90-l3ZBH4 UniRef90-KgY9G1 UniRef90-UPI000376FF61 UniRef90 UPI000307DA5 UniRef90-R6U0H3 UniRef90-K9Z9Q8 UniRet90 R5ENP4 UniRef90 F5UAS8 UniRef90-H8MG82 UniRef90-B4CWL6 UniRef90 UPIO003111403 UniRef90- M5C9K0 UniRef90-UPIO0030FOCA9 UniRet90_D2B8D9 UniRef90 K9WBA1 UniRef90-W5WET1 UniRef90-Q8YLO9
UniRef90_U1QG38 UniRef90 W7T561
UniRef90 O5QZV2 UniRef90-UPIO0047EAC18 UniRef90 UPI000455EAF2 UniRef90-G8N1D7 UniRef90-UPIO00382195F UniRef90-M5C8J6 UniRef90-G3XR70 UniRef90-B7K903 UniRef90-K9VT27 UniRef90 KgWsi3 UniRef90-R7QLN1 UniRef90-R7HLB1 UniRef90-UPIO0016C3CC0 UniRef90 K9WGl1 UniRef90-UP10003AD301C UniRef90-G6FMYO UniRef90-K5W814 UniRef90_10H5W3 UniRef90_WVVFL1
 TYTQPGKSKGПY $\begin{aligned} \\ \text { Y DSRQANLLSTTSCNNPSFLARSKDGK }\end{aligned}$ WD $\square T T G E C I R T L Q \quad G R$ $D L G L D K V V \quad \square Y R L D Q E G G K L V K T E P A S G P R H L A F H P N G K$ $S G N A \square A \quad T L W D \square K T G K C E Q L F H T A S \square W A A D F S P D G K$
 SEDHH I I L WD\|HTGQRLQTLSTERVGSVTFIDDN $D G Q L Y C W D S D T G E L L D R W S S S Q G G \| W A L T$

 IDS S Y Y G ML RI WD AK S GQS RSHV T CLDE GLAYSPD G A GA ANTVVKLW SRNGTVLTTMEGHNEAQVDFSPDGR


NQSNKVEVADARTAVSRGHVSVPNGRYMAFSPDGQ ADAGGGRISTIHLTTGILTDVKTGMGGGLAVSNDGN GHGSEGIV VYDTKTGSVVSSAKTVNPSYLLPSRDGR


$M \mathrm{~V}$ T A N Y P D N L H V VD L Q S D K L F K T VP GAF GPGVILLSPDKK
 ASSHPVRRTLRSGHATGVVFAQDGR

 S Y A G NAEKGLVAEDDTVT LIK LTTRKVTVGYQPEEMDVHEGK

LVPTEDGT
AGGSEEAGTLVWD\DTGALVNRTPASRVWS LA
ATGAVLIVDRSTHTVLDQVEGGDLSHVVFSDDGR VSFSPDGQ NSNDNTVSA YTLDPTTGTLIGT\PVGHGPSLIADKAGK S $\square$ ATASRDGTARLWDADTTMVTHVLHTGMVEA IAFSPDST

A S A S VDN T $\square R$ L WN L Q GEELVGH $\quad$ VS EVYGVRFSPDGQ QQDAA $\quad$ TTVFDRDNLSFRQA $\quad$ KDGQNGGVVV NFA ANTLSK $\quad$ LDVMAETVLDEFPVGQSPEGLYYMNGK GAI AS LAFAPDGR NYGGGSVANAVQFPPAEHGPVKDRQQGSHAHSALISPDGD H

DRPS I I L K A D GTQLAT $\square P \quad E K A Q K V L F S R D G Q$ VHIWWDTATGRLVAGPNPSARHGVVLNNGH MTLSADGR
A S G S D DKTVK L WDVQT GDCVQT LEGHSNWSVAWS GD GL
 A S GSLD G TVVLWDS NGKLI RVI HAHKNYSISFSPDGK $N L G W L$ 1 H L Y D LD T G E KV R TLLE GH Q Q S S V A F H P S G R

LDPKPLQVVKT DNPSLTLSGDQR TFWLLVDSGEDYVWDAGSGGTVTQLS A T S SND GTVVRLWDTAT GQCRRVLRGHGRTSVRRSADGS SE DGTARLWNL SGKPLTQFKGGQDWSVSFSPVRG A A G VA GGSVLLWDVS DPHSPVALATGGGHAVAFSPDGK
$D V A G E A L R \quad V L N V D P F E T V A E V D V G E S P F M T A S F D G E$ VS GS QD GTVRIWDVATGALVGAPLTGHTSGVAFSHDGS
 SE TS $\quad$ DDVFDVK TKRLIQRAPYNGLPFGLLSADNT ASASRDKT TRVYDARTGQ TVLGPDEGHVSRFSPD G K T I SVWCLKTHHKLKS FFVD DVRDLTFS QDSK
 ASGSWDKSIKLWRPD GSLLVRTINTGNI YRVNFSPDGK ATGEEI RTLKGSYVYSVVISADGK
 $D R G R$
$G R V V V W N A E N G S Q V G E T H N G R V Q S V A M S A D G S$ GVVWDVDFSPKGQ GGSHRVGDATTYLWRVADRHRVGTQSTSIMKSLAFSPDSK VS G S N D H S L L K I I W D S G T G A CL S

UniRef90 S2YI01
UniRef90_B4VW73 UniRef90_A0A014P2L8 UniRef90_B2JWM1 UniRef90_D7VJH0 UniRef90_UPI0003490B52 UniRef90_UPI00039B8895 UniRef90 F4L7J8
UniRef90_G4TWE3
UniRef90_C7DH34 UniRef90_UPI00037E62CD
UniRef90 UPI0002484313
UniRef90_C4K9Y9
UniRef90_B0DYX0 UniRef90_AOZFT6 UniRef90_UPI0004407BF4 UniRef90_Q8Z019 UniRef90_G2Z0G1
UniRef90-UPI000369F209 UniRef90_K5W7Y6 UniRef90_K9RMN9 UniRef90-K9X9R5 UniRef90-UPI0004681D39 UniRef90_U6GX04
UniRef90_A4JGK7
UniRef90 F5ITY2
UniRef90_UPI00016C4C2B
UniRef90_G8SDB7
UniRef90 A0A024HHA0
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UniRef90_B5GS71
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UniRef90 I5CIU1
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UniRef90_R5V863
UniRef90_F4F9J8
UniRef90-A8LM01
UniRef90-X1BAL1
UniRef90_F6G630
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UniRef90_UPI000362E9F0
UniRef90 K1W5K9
UniRef90-UPI00031A08ED
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UniRef90_K9PYJ2
UniRef90 Q3MCX2
UniRef90_U9VZU7
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UniRef90_U5DM95
UniRef90_I3ZBH4
UniRef90 K9Y9G1
UniRef90_UPI000376FF61
UniRef90-UPI000307DA51
UniRef90_R6U0H3
UniRef90_K9Z9Q8
UniRef90 F5UAS8
UniRef90_H8MG82
UniRef90_B4CWL6
UniRef90_UPI0003111403
UniRef90-M5C9K0
UniRef90_UPI00030F0CA9
UniRef90_D2B8D9
UniRef90_K9WBA1 UniRef90-W5WET1
UniRef90_Q8YL09
UniRef90_W7T561
UniRef90-Q5QZV2
UniRef90_UPI00047EAC18
UniRef90 UPI000455EAF2 UniRef90_G8N1D7 UniRef90_UPI000382195F UniRef90_M5C8J6 UniRef90_G3XR70 UniRef90_B7K903
UniRef90-K9VT27 UniRef90-K9WSI3 UniRef90_R7QLN1 UniRef90_R7HLB1 UniRef90_UPI00016C3CC0 UniRef90 K9WGI1 UniRef90_UPI0003AD301C UniRef90_G6FMY0 UniRef90_K5W814 UniRef90_IOH5W3

I V
$T L A B S A S$
RDRTVRIDWDAATGNQRQTLEGHSG TV A GYNTVYTGANNSALDTADSTQYDF\|YDVSGANR TLYAV SEKNDGTENLSAYHFDGKQLTHLNEVNVR
 K I LT
$D\|Y L\| N \quad S R \| V S G S D$

$Y C Q L T Q T \square Y S A G D G G$



$\begin{array}{ll} \\ L I & T\end{array}$ KAYVSI
VA Y V L GE L R A EVV
$T V A A W D A A R G K L T G E V V P T V D$ $H \mathrm{LV}$ S C S T
L I ASAS T

MFNLLASASQ
D N S V
LAM DQTVVKLWNTD GTLLKATLDKNEN
TAYVSSYVGRDNSESVLGAVYKVDTLSLQVVDT

| $T$ | $V$ | $S$ | $L$ |
| :--- | :--- | :--- | :--- |
| $T$ | $Y$ | $A$ | $V$ |

 $F V A V$ G $A$ S $G R I$ DLLNAATGRLERVVRESGD $K L Y V S N E G G R T A V T G D T T$
$L$ N S Y D T Q T T T GT VSV V I N VA D
$\square A Y \square L N N H Y A D \square Y G V Q L D D C K A V F \quad H A T \square A Q Q P G E N A$





Y V Y A VGE T
EK GFTANALALDTLTAGLTLL
N
A WTARD GTLLRLAS GHTDGMDQLVDPESGDVSAMS S A



$V \mathrm{~V}$
Y TV V G S F

$T$ LASASF
D NTVRLWNLK
TLMSAS
O K T R L WNGK
QVYVAS TR

 $T L A A G G N R T A G K P A A I A L W D P V S S V A V G R L$ FVLVNDLGLDR HI FGLDHATSKL TPHKPD H

 TLFSTAG S QLQAWNTETS Q
Y V Y A VREV $V$ A D S T A S A A AS GS T T L S LDRK T GVM QLIGG TL A S GSDDK TVKLWDVQTGDCVQTLEGHSN $K L W W S$ SRGDYEK $\square P S R L V V L E K D K R T N R M E V$
TIATAS G D RTVKLWRLD GQLIRRTLKGHRD WL VS GA S D DTVRVWVEVATGEGVA $\begin{array}{llll}\text { W } & R & D & G A \\ \text { S } & \text { K W D A S }\end{array}$
$R L Y V V N E N G P G Q N D P V G R V S S Y S \| D P K S H R L K R I V R Q P S T$
 $M L A T S G G N D G V R I W E P R T G R R L R E L T G Q A D$ $G T S A A Q G V G Q R \square A T A G E D G T V R V W D L S$ GREL
$L L A S A S S A D K T V R L W R V D G S H D Q L A A T L T G H A K$ VF S S T G QLLA S GSAD RTLK LWS P H T GQCLDH T L

 TLAS GSSDHSVRLWDGHKNWVWSVDGQTLARLWNVKLGTC $K L A T A S S D D H \square I D Q F D P \square S L E Q L T D F R T D H T$
 TI A T G S W
 $T L \square S S G L D Q Q Q K G K V K W W D W A S G T E V K T$ ILAASSSEDTTKLWWKQNQTA GTYTWDKTLDNAHEAGV L I A S A S G D G T I DLLWGHK G IV T WVVFSP DSNVIVVT TVVKLPA G TF
 $R V E S V S W D T S A!V W N T M T R T Q V G Q A L I D H T$
 $R L F I A G G A G R Y L V A L V G R A M R A Y D L E T G A E R A R L E L D G I$ $M \mathrm{~A}$ S A S S DGS
TI A G A T N R
TLASCSNDY
WMAS
$P \vee N Y$ $\begin{array}{llllll}P & V & N & Y \\ P & V & T & A & V \\ A & N & P & K & L\end{array}$ ANPKLVQA
$\begin{array}{lll}G A & P & C\end{array}$
 $K P \square Y A$
 WA

## D D

 KH $\quad \mathrm{L}$ L GKKWSIVFHPQRNILVSGNEDKS A|V|S P D GT H|L A A
 A LD G N G N Q T L Y G T G G A D D K V V Y V V G GR A S W A $V$ A F H P Q R P I L A S S S S D Q T I I R L WWDV T T G $S S V N S V A F S H D G K \square L A B S G S D D K T I K L W S V S T G$ SWIST LAYSPDGTRIVSGSYNE TLQIWDASSG
 A NAPVPS YP GEDAVVSPD G GFVYA SNR GEDTVAT FAVARD S G
 $S N S F T \quad S V S F S P D G Q I I A A T N Y N R \quad T V T L W N \quad R D G$

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

 K A MFA
$\qquad$


MTVSH
 PRFRPGG
LYRMA GAGPVY TVD DVD

U

UniRef90-D8HZ37
UniRef90-R5V863
UniRef90_R5V863
UniRef90_F4F9J8
UniRef90-A8LM01
UniRef90_X1BAL1
UniRef90_F6G630
UniRef90_UPI0003621494
UniRef90_UPI000362E9F0
UniRef90 K1W5K9
UniRef90_UPI00031A08ED
UniRef90_K9R7R5
UniRef90_K9PYJ2
UniRef90_Q3MCX2
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UniRef90_T0MKX8
UniRef90_U5DM95
UniRef90_I3ZBH4
UniRef90_K9Y9G
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UniRef90_W9VFL1

UniRef90_S2Y101
UniRef90-B4VW73 UniRef90-A0A014P2L8 UniRef90-B2JWM1 UniRef90-D7VJH0 UniRef90_UPIO003490B52 UniRef90_UPIO0039B8895 UniRef90 F4L7J8 UniRef90-G4TWE3 UniRef90_C7DH34 UniRef90_UPI00037E62CD UniRef90-UPIO002484313 UniRef90_C4K9Y9 UniRef90-B0DYX0 UniRef90-A0ZFT6 UniRef90_UPI0004407BF4 UniRef90_Q8Z019 UniRef90_G2Z0G1 UniRef90-UPI000369F209 UniRef90-K5W7Y6 UniRef90-K9RMN9 UniRef90-K9X9R5 UniRef90-UPI0004681D39 UniRef90_U6GX04
UniRef90 A4JGK7 UniRef90-A4JGK7 UniRef90_F5ITY2 UniRef90_UPIO0016C4C2B UniRef90-G8SDB7 UniRef90-A0A024HHA0 UniRef90-M9U6K9 UniRef90-B5GS71 UniRef90-D2NTS3 UniRef90-J1QTP6 UniRef90_UPI0003B4471F UniRef90-R6E3U7 UniRef90_15CIU1 UniRef90-D8HZ37 UniRef90-R5V863 UniRef90-Q82MX3 UniRef90_F4F9J8
UniRef90_A8LM01
UniRef90- X1BAL1
UniRef90_F6G630
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UniRef90_UPIO00376FF61
UniRef90_UPI000307DA51
UniRef90-R6U0H3
UniRef90-K9Z9Q8
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UniRef90-F5UAS8
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UniRef90 Q8YL09
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UniRef90-B7K903
UniRef90-K9WSI3
UniRef90-R7QLN1
UniRef90-R7HLB1
UniRef90_UPIO0016C3CC0
UniRef90_K9WGI1
UniRef90_UPIO003AD301C
UniRef90-G6FMY0
UniRef90 K5W814
UniRef90_OH5W3
UniRef90_W9VFL1

QVVKQKVVGNAADDLTAAVGQEGPTYSPDGTQLWLGQADGY

 S IIAATLVQHSGKGIDASRQDKPHVHSPDFKTIFVTDK\|SI KCIK LIPGHNGAAFSPDGRLLTS SGYDCTDRLWVHDGMSV KLIQHISSEG KI EKTFNEISS DAFTPEGTQ\|LTGNWNGTAKVWIEHEDKF


## E ${ }^{\text {D }}$ Q T F G

 GYDGRISAlDCGVRMVI TASEDO TE DCTLDTGHSSWVYSVAFSSDGQILDASGSFYWNALTGQS $T Q V G E P \square G G H K \quad$ G
 TVI FNSNFVGAHGlFATNDQNYIFATNDAAGQLYGLNASN RAISRVGNVATGGVWP RHFTLDPSGRWIYVSNQRSG $K N T K T F P$ G GHEHTVSAVRFMGDSGDQQVVSASRD RPLGTDNLIHTVADSPDG RTLVSGDHKGVVKLWDDQ $T 1$ KATLEGHTAPPPYQDGGVNSVSFSPNSQLIATAGD DG GVVRTIDVAPNDFRVRADRYGNVWVSSRGDYASVPYELYA
 GAVGTVLTVHHEGTGPVAHVHSTVFSPDGRYLFVTVDGSR TETKK I V G $\square$ NLHRMELDSDDNI KELR AQKRDGAKDREYRSHWPLLPDG
 GELLELATGSSVHADRQGEPHPHCIVIREGFVYVP DLGK AA DGGMD AKPI RTFPAPRQLTIMQTGDDGTLYVAGPDIY T S R RVEVAPYGTE GGLGS WLKPHYAAVRPSDGA
 SLGEAVDSHQDQGGEPGAAKPAAAVGGSFADS
 $R L T R M L D V W P Y Y G M A S D T T G R L Y A M S E A N D M E V$
$S V V D V I Q G G A P G D V A A D P K A G R I Y V A N P P A G V V$
SVVVDIQVGGAPGDVAADPKAGRIVVANPPAGTVV
$K L K E R Q E Q P H L H C V Y F T P D G K L L L A N D L G L D R I H A F P V K Q ~$ KPELTAP EPVGQ PLT GHDGGSESSMTAWTGPEGHGYLAVAA
EHVASFDTAKTIGLVDVPGRRFFTMWDSGETWLVDMNQ AVI RT LAGSNDQ $\quad$ RSVAFSPDGQLLASGSKDNC $G V L T S D G T \quad$ VAA GTNPYTIADNKAGTFAYVVNAANG QTTLT GHAGDVWGVDWAPDSSRLATASHDRTVIVWDATTG EILARATPPEAPDGGLVAVYGLGLDEANGR VWATNTRQD
 REVQAFDTVLSLAFHPDGKR $L$ LVSGGADQTVRLWHLQ KQLRQL GGWFSSHSGUVDSLAFSGDGE VIVSGSWDE EELAVLQTARVWDVSFSPDGQILASAAEDKTVRLWNLKGE KLKRT $M$ MSLSGGDWSLAISSDGQT LTVDQVDQDGVNGANELAGA DGAVVSPNNQQVFVTTDNAL SVIDNILDGGTPNTVGUSWDGTAYLSAGG DAARAI AHPSPVTTVQFCPQGEKDLTGSTD GLVRDWDKR RVLDRLS WEGEVKALDAMSPDGEYFAVAGGEFMATMDADV SKIRTLKNPIASN NSHTEGENRLVGLAFPDSKLLVAGDWYG KPAAT A LKPHDF $\square Y$ RTGLGGPDSTRQNHAHCALFNAAGTELYVSE


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


QR A TAGVDGTTRLWDLSGQLLAELKGHQGWVYVSFSPDG

 $V L L G H R T T V D A V A F R A D G G \quad L L A T G G L D G$ RTAKVTHVSESPGSDSWSNDDTQLAFTDSVKAEATPAAKS VCVRTLQ GHAS GVL SVVSCNPDDCILATGSSDG
 $K V V K R V S Y Q G P R G S A P T H P D G S D V F F A G R R \square D A G N D N M V H$ KELKTLKGHGCVSFSPDGKTVVTGSGDRTAKLDNLE GK EL A L V
 S L R G H L T S V W W GVVK F S P D G R F IVVSA GA E N L V R R L WQ RE N P F Y QL L D T L K GHK NWGVSFSPNS QVIA SVGEDNTVRLWNSNGQ
 L QV G E A M A G H T S G V H C V A T S S D G K H A $\square$ S G S Y D G S T R I W D L
 EPGAVFAGPFEKGI WS YDLS PDGRTVAVLYVMEAVVLFDP RLLK TIT GH GA WDIS A S P D G QL L A S A S D D S TVVK L WN K D G T
 KHLRDL WPSGLSFGPDCSPSFSSTGDMLACGAD
D P V R T

| D P | R T |  |
| :--- | :--- | :--- |
| Q K | I | $H$ |


UniRef90 S2YIO1 UniRef90_B4VW73 UniRef90_A0A014P2L8 UniRef90_B2JWM1 UniRef90_D7VJH0 UniRef90_UPI0003490B52 UniRef90_UPI00039B8895 UniRef90 F4L7J8 UniRef90_G4TWE3 UniRef90_C7DH34 UniRef90_UPI00037E62CD UniRef90-UPI0002484313 UniRef90_C4K9Y9 UniRef90_B0DYX0 UniRef90_AOZFT6 UniRef90-UPI0004407BF4 UniRef90_Q8Z019 UniRef90_G2Z0G1 UniRef90 UPI000369F209 UniRef90_K5W7Y6 UniRef90-K9RMN9 UniRef90-K9X9R5 UniRef90_UPI0004681D39 UniRef90_U6GX04
UniRef90 A4JGKK
UniRef90-F5ITY2 UniRef90_UPIO0016C4C2B UniRef90_G8SDB7 UniRef90_F8FQD6 UniRef90_A0A024HHA0 UniRef90_M9U6K9
UniRef90 B5GS71 UniRef90_D2NTS3 UniRef90-J1QTP6 UniRef90_UPI0003B4471F UniRef90_R6E3U7 UniRef90_15CIU1 UniRef90_D8HZ37 UniRef90_R5V863 UniRef90_Q82MX3 UniRef90_F4F9J8
UniRef90_A8LM01 UniRef90- X1BAL1 UniRef90_F6G630 UniRef90_UPI0003621494 UniRef90_UPI000362E9F0 UniRef90-K1W5K9 UniRef90_UPI00031A08ED UniRef90_K9R7R5 UniRef90_K9PYJ2 UniRef90_Q3MCX2 UniRef90_U9VZU7 UniRef90-T0MKX8 UniRef90_U5DM95 UniRef90_I3ZBH4
UniRef90 K9Y9G1 UniRef90_UPI000376FF61 UniRef90_UPI000307DA51 UniRef90_R6U0H3 UniRef90_K9Z9Q8 UniRef90_R5ENP4 UniRef90_F5UAS8 UniRef90-H8MG82
UniRef90 B4CWL6 UniRef90_UPIO003111403 UniRef90_M5C9K0 UniRef90_UPI00030F0CA9 UniRef90_D2B8D9 UniRef90_K9WBA1 UniRef90_W5WET1
UniRef90 Q8YL09 UniRef90_U1QG38 UniRef90_W7T561 UniRef90_Q5QZV2 UniRef90_UPI00047EAC18 UniRef90_UPI000455EAF2 UniRef90_G8N1D7 UniRef90_UPI000382195F UniRef90_M5C8J6 UniRef90_G3XR70 UniRef90_B7K903
UniRef90-K9VT27 UniRef90_K9WSI3 UniRef90_R7QLN1 UniRef90_R7HLB1 UniRef90_UPI00016C3CC0 UniRef90_K9WGI1 UniRef90_UPI0003AD301C UniRef90_G6FMY0 UniRef90_K5W814 UniRef90_IOH5W3
 GSADKT IKLWNLAT GQLIRTMTGHSSSVNYLEDSPD GKML

 AFSPD GTKIF DDT $\square$ N $I I$ HSHQCYQTLT GHVWWVA WS PDNR $N \mathrm{~L} A \mathrm{~A} F \mathrm{~F} \mathrm{~V}$
$S F K L S Q S A \square S S \square A F L P D G D S \square L A G Y D D G R L L$

 TVVRUWDL Q


K T $\square$ K $\square$ WS V S T G K K 1 Y T L T G H S S
 T V N W
$R T \square$

 $D E V V G S V D V P V S D F D F L G D S D I V Y Q G D \quad G H V G$

 SRYP QNTRLWWDFKT GKHTTDQLAAASNPD GTLLAATEE H GE AVV
 DRIVTYRLAGDAVEGDLVPHAEAAVHAGHLVVHATLDP A Y



HE WDVHK $\square$ A ERAS P VGGFS E $L$ L P

R A Y
$V L D S R T H D L V S V I V A G A G A S A L A D D E E A N R V Y Y$
 ASGT DR DWDT DAHRVVDEPRTSHSAGVWSWRTSEGRTG



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

 LVTVHENGSI $V$ QI WNFPTGQLLDRTGHQGRVG $T V F N R D L A P N L L S D T R Q T P A T T E T D A D T L V V F R V T F S S E S I Q Q$
 ATTGALTPIQHKANPGLEARHIXVDPSGKWFLVAFS GDVT WEVYTFKPLFS LE GHS DLVHSSLDFSPDGK NILWWWD NEGKLI NTTSEHRNAVDSLVFSPD GRML LM WLW K KVGVP EA ILVVIPEAA DNSTLEAIAFHPNNKFVA FSADVVARYDVATRQCRRIQLPSDFGPRHIVLNDGEDKAY TVKVWDVQT GDEGHRSVVRSVAWS GDGLTLASGS GDETVK K WSVRT
S V SVVSRD G Q T $\square$ A S G S K D G T VR L R A Q D GR L LD WVGHN G P I S SVWSRP YS $\quad$ SND GHERGAAFSP DLKHFA LTA VD G GVL
 $K \square F V Y H Q M P L T P A K P A F V Q L P P G S G P \quad R H L L F S A D G M H A W$ K $\begin{array}{ll}N D A K R E R A F V Q G P K N Q A \\ V & T \\ V & A \\ V & S \\ V\end{array}$
 KAKLTVETSFLLEAVAFS PDGRTVGAAT GDDRLDWDVAA QLDQVA VETGYCLQT WEADSNRVW AVAVVRDNQYLATGGDDSVV HEQRAVTTTVDVGEGPTGATSGMVRP

 $L \vee R \backslash W D V A S G$



 $K T V V$ G HQ S G D WS VA I SACSSMMIATVSHEN
$A L K V S V T G V A F S P D G E T D A S G S Y D K T V K L W R R T G N S H T V L$ LVT GEEIRRTLKGHSDWV NK VA $\square$ S A D G K T
EKSSSEITKTGGHTGSVRIVMVSADGSRAGKAM TS YTSWVQ
 SLRTTFAARVYDVDFTPDGKRLVSVSADGTARLWSLDGRVW
 S GQLIRRRFSAHTQ V VVS GLAFTPD GQTLVTASHD GTIK NTVLVWDFAHGGVL QAFSGHSNWVMSVAYNQDGT


UniRef90_S2Y101
UniRef90 B4VW73 UniRef90_A0A014P2L8 UniRef90_B2JWM1 UniRef90_D7VJH0 UniRef90_UPI0003490B52 UniRef90_UPI00039B8895 UniRef90 F4L7J8 UniRef90_G4TWE3 UniRef90_C7DH34 UniRef90_UPIO0037E62CD UniRef90 UPI0002484313 UniRef90_C4K9Y9 UniRef90_B0DYX0 UniRef90 A0ZFT6 UniRef90_UPI0004407BF4 UniRef90_Q8Z019 UniRef90_G2Z0G1 UniRef90 UPI000369F209 UniRef90_K5W7Y6 UniRef90_K9RMN9 UniRef90_K9X9R5 UniRef90_UPI0004681D39 UniRef90_U6GX04
UniRef90-A4JGK7 UniRef90-F5ITY2 UniRef90_UPI00016C4C2B UniRef90_G8SDB7 UniRef90-A0A024HHA0 UniRef90_M9U6K9 UniRef90_B5GS71 UniRef90_D2NTS3 UniRef90_J1QTP6 UniRef90_UPI0003B4471F UniRef90_R6E3U7 UniRef90_I5CIU1 UniRef90_D8HZ37 UniRef90_R5V863 UniRef90_Q82MX3 UniRef90_F4F9J8
UniRef90-A8LM01 UniRef90 ${ }^{-}$X1BAL1 UniRef90 F6G630 UniRef90_UPI0003621494 UniRef90_UPI000362E9F0 UniRef90 K1W5K9 UniRef90_UPI00031A08ED UniRef90_K9R7R5
UniRef90 K9PYJ2 UniRef90- Q3MCX2 UniRef90-U9VZU7 UniRef90_-T0MKX8 UniRef90_U5DM95 UniRef90_I3ZBH4
UniRef90 K9Y9G1 UniRef90_UPI000376FF61 UniRef90_UPI000307DA51 UniRef90_R6U0H3 UniRef90_K9Z9Q8 UniRef90-F5UAS8 UniRef90_H8MG82 UniRef90-B4CWL6 UniRef90_UPI0003111403 UniRef90_M5C9K0 UniRef90_UPI00030F0CA9 UniRef90_D2B8D9 UniRef90_K9WBA1 UniRef90_W5WET1 UniRef90_Q8YL09 UniRef90 W7T561 UniRef90_Q5QZV2 UniRef90_UPI00047EAC18 UniRef90_UPI000455EAF2 UniRef90_G8N1D7 UniRef90_UPI000382195F UniRef90_M5C8J6 UniRef90_G3XR70 UniRef90_B7K903
UniRef90-K9VT27 UniRef90-K9WSI3 UniRef90_R7QLN1 UniRef90_R7HLB1 UniRef90_UPI00016C3CC0 UniRef90_K9WGI1 UniRef90_UPI0003AD301C UniRef90_G6FMY0 UniRef90_K5W814 UniRef90_IOH5W3 UniRef90_W9VFL1

280

ITS S VR D REVVVLNDANPAAPQFVTR DPDQGNAYGMSFSPD

$E \square D \square D S N T V I \quad T$ A H S DA $\square$ Y H $\square$ A VS P Y DK A VA P D D K Y VS P V CFLLQD GWVQSSDQF LFWVP PDNRHGLRYP
YYPPGS T T F GND I I Y LP S GFES Y G







ASSSKDHT LRC $\square D P T$ T GETKMEFRGHENDVEVVVFAPATA MWDFNSGEVQQ QTFNGH INSVIAAIAVNP D
 1 D VR T G K V V
L ANFDG
$V \mathrm{E} V \mathrm{~F}$ GY H D GK LT P VQ T L P MSAPGFKG K VGGGA I HVSPD QSNTVSYA VVNTKTRNDVSRNFDTDGTRDKVPYGLAINPE VT DVATGR ETARVEVDPEEKANRRFGD】MRFAWAGD $V A N T R G \square D A R$
$\bigvee A N E L D S T V T V A D P A E G K L T E R E A V F T D P E G Y K G \square H D H P N$ DFTGLYTTARFKDAKQDPATADFNVNLATGKTETTDFGPV


 A GNHESTVTLWDP KRGDK LDRS LRSERCTYP LCCFSP Q

 LSRLDAPTPPRLLHRVKHLWGRAEGALAVAMRMDGMLVIDA I A D GRADE LGTVVRLAEVATGDTVVSWNAHADTDFDLAVSKD |LTTEMSAQITVEDTQKQRVELADQQPLADKAAAALHASKD
 LWDMLEKG
R V

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

 VS G S D D GTVQQWDVATGQHVMQLLE G D D S I P S V GF S P D



V WD A A R GE
$T V G P A V R L G G R N R Y E T T A F H P T$


L WD AK T G D
 R $\square$ A S G SRDGTV RLWDVVTQPATLKPQPD YASIIPANLSSEK


UniRef90_s2Y101 UniRef90 B4VW73 UniRef90_A0A014P2L8 UniRef90_B2JWM1 UniRef90_D7VJH0 UniRef90-UPI0003490B52 UniRef90_UPI00039B8895 UniRef90 F4L7J8 UniRef90-G4TWE3 UniRef90_C7DH34 UniRef90_UPI00037E62CD UniRef90 UPIO002484313 UniRef90-C4K9Y9 UniRef90_BODYX0 UniRef90 A0ZFT6 UniRef90-UPI0004407BF4 UniRef90_Q8Z019 UniRef90_G2Z0G1 UniRef90 UPI000369F209 UniRef90-K5W7Y6 UniRef90-K9RMN9 UniRef90-K9X9R5 UniRef90 UPI0004681D39 UniRef90_U6GX04 UniRef90-A4JGK7 UniRef90 F5ITY2 UniRef90-UPI00016C4C2B UniRef90-G8SDB7 UniRef90-F8FQD6 UniRef90 A0A024HHAO UniRef90-M9U6K9 UniRef90-B5GS71 UniRef90_D2NTS3 UniRef90-J1QTP6 UniRef90_UPI0003B4471F UniRef90_R6E3U7 UniRef90 15CIU1 UniRef90_D8HZ37 UniRef90_R5V863 UniRef90 ${ }^{-}$Q8M ${ }^{\circ} 3$ UniRef90-F4F9J8 UniRef90-A8LM01 UniRef90-X1BAL1 UniRef90 F6G630 UniRef90-UPI0003621494 UniRef90-UPI000362E9F0 UniRef90 K1W5K9 UniRef90-UPI00031A08ED UniRef90-K9R7R5 UniRef90_K9PYJ2 UniRef90_Q3MCX2 UniRef90-U9VZU7 UniRef90-T0MKX8 UniRef90_U5DM95 UniRef90_I3ZBH4
UniRef90 K9Y9G1 UniRef90-UPI000376FF61 UniRef90 UPI000307DA51 UniRef90-R6U0H3 UniRef90-K9Z9Q8 UniRef90 R5ENP4 UniRef90 F5UAS8 UniRef90-H8MG82 UniRef90-B4CWL6 UniRef90-UPI0003111403 UniRef90- M5C9K0 UniRef90_UPI00030F0CA9 UniRef90_D2B8D9 UniRef90_K9WBA1 UniRef90-W5WET1 UniRef90-Q8YL09 UniRef90_U1QG38 UniRef90-W7T561
UniRef90 ${ }^{\text {Q5QZV2 }}$ UniRef90-UPIO0047EAC18 UniRef90 UPI000455EAF2 UniRef90-G8N1D7 UniRef90_UPI000382195F UniRef90-M5C8J6 UniRef90_G3XR70 UniRef90_B7K903 UniRef90_K9VT27 UniRef90 K9WSI3 UniRef90_R7QLN1 UniRef90_R7HLB1 UniRef90_UPI00016C3CC0 UniRef90 K9WGI1 UniRef90_UPI0003AD301C UniRef90-G6FMY0 UniRef90_K5W814 UniRef90_10H5W3
 GKTLVV SGSADKTIKLDNLLATGREIRTM TG
QSK $\square Y$ VAVSNAD HVAVIDTTRHTVEKT $\square \mathrm{D} \mathrm{V}^{\mathrm{G}} \mathrm{G}$ PDGKFVYASNRGDAN VITAFKVLKDRTLIVVDTYNVG GK II A ASSSSDTTDKLWTVVDGECIATLPGG
GKYVLT GSEDGTAKDFN I IS FNASDKEQYE LR DERVFSAA
 GSRLVYGSCD

YGPVRELAG $\square P N T D K S K R P G Q Y V A \square W D T Q T G Q L L R T L S G D$ GKTL SQFLVSASSNGS $\square V L W$ S G GK D Gl K I WDLSS T GNLLSSQLYGS

GRFVYASNRGDANDVVIYAVNQA DGRLKTVGRQSSDG TKEIVGTDAKDYPGTLYCFSPD GRYLYV SNRGHDS V AVEEDNQRAVQHQSTLG TEVYFSAMRSPTDSNLIYGVNRLTKYDIKEQKLLAAANLDD




EKTLY $\square$ A $\quad N R G D D T L V A V D T G T M T C G R R V K T R$
 GKFLYASN GDRA EHGRIQLASAGDDGT AVRGVRIWDPTAGTEQAVLTGHAG
 $G L M L D Y S G S Y D N T: R L W N V S T G E E D R T L T G G$


 GQFLTASASADCTDKTWQATGRELUVWGCDRAQE RQLLRG SRTLASASADNTVRLWNLQREEFAILQGHTDRVL AVRALVFSHDGKMLVSSSWDQT DK WQMPTGKLDHTLDG NGIVGLDLAAGQDITDPDPTTEPTIDETYSGVVETIITP

GTR $\quad$ ASSSGDW DGSVK $\square W \quad D V R D G C L L A T L S G C$
GQY $L$ ASGSSDKTPLFQNKPHRYCW SRHRESVTT GQQLFSGGEDDLILVWQLSSDF YTGLYLAA GIYSQKGVSVGVWNFDTQEKLFELPGH GRFLY ASNRLQNDGIAIFKVNADGTLAKMGYRNTG KTVKLWDVQTGDCVQTLEGS

GKR\ASAGSDGRVK DWNREAKLLLNLKVDNSKV
QGHVREPPPEANAHAWRFSGNDALAAYPVTWRRLARLLTG GKLLATA GGDKLVKLWDLETHKELAKLEGH GKFLYV SNRGSANQLLVIDPASGELKARSVEG ATREFSCSDDRTVR $\square W N V G G P A V S$ STAPALSVATFAVR GRRVVVASTLR GQRLATAGQDGTVRLWNLSGEAL VEDKDHKR
NGHAQSGWA $\square G Y D K T H Y D G K V R L W D M D P L R P A A L A T L D G H$ GRR M $\square$ SSSSDRTIK $\square W N V S T G E C L A T L Q A D$

GRVLAVPEDEHVVQLWDVTDPRFPVABGRVTGDD
NKHVVFSGNRSEDWAYQVNESDLYNVSLDSKEVTQVTDKP GKTLAASASQDKSVKLWDI HEHKCVKTLEGH S DGKTLLTAGADDWT VWVWNATTGEPI HGPLEG TGWLYVLSAEDSK LFVIIRASDMKMVKEIHPG GKTIATGSEDYTAKLWNDEGKELKTLKGHSGY ITKTIATG GHKVV CGSRKMHVVDRYTGNAVIEPITG SPDLMMNDSEDKPD DEEQPPQRDFGYDRESNRKTREDPVG
 GTTLFSGSDD $G D V R G V A \square S A D G E W A V S G G D D E V R V W D L Q A G A Q S G K T L T G$
ARVFAA DNDSGHP TLFDLDTGAALRDFQLG GQMLVA GGASGAVK $\square W K \square D G T E \square T A L T$ GHEGNV
GR\|LASGGKQGV VQLWDLTTGKLLNTLEGH STGYVIFSHNALGVSNDRSSTSIVVVKTDSWDRACTVPSE GKLL

UniRef90 S2Y101 UniRef90-B4VW73 UniRef90-A0A014P2L8 UniRef90-B2JWM1 UniRef90_D7VJHO UniRef90_UPIOOO3490B52 UniRef90-UPIO0039B8895 UniRef90 F4L7J8 UniRef90-G4TWE3 UniRef90-C7DH34 UniRee90-UPI00037E62CD UniRef90 UPI0002484313 UniRef90-C4K9Y9 UniRef 90 - BODYXO UniRef90 A0ZFT6 UniRef90-UPIO004407BF4 UniRef90-O8Z019 UniRef90-G2Z0G1 UniRef90 UPI000369F209 UniRef90-K5W7Y6 UniReftoo-K9RMN9 UniRef90-K9X9R5 UniRef90-UPI0004681D39 UniRef90-U6GX04 UniRef90-A4JGK7 UniRef90 F5ITY2 UniRef90-UPI00016C4C2B UniRef90-G8SDB7 UniRef90-A0A024HHAO UniRef90-M9U6K9 UniRef90-B5GS71 UniRef90-D2NTS3 UniRef90-J1QTP6 UniRef90_UPIo003B4471F UniRef90_R6E3U7 UniRef90 ${ }^{15 C I U 1}$ UniRef90-D8HZ37 UniRef90-R5V863 UniRef90-Q82MX3 UniRef90-F4F9J8 UniRef90-A8LM01 UniRef90-X1BAL1 1 UniRef90-6G630 UniRef90-UPIO00362E9F0 UniRef90 K1W5K9 UniRee90 UPI00031A08ED UniRef90-K9R7R5 UniRef90 K9PYJ2 niRet90 Q3MCX2 UniRef90- U9VZU7 UniRef90-TOMK X8 UniRef90-U5DM95 UniRef90 - $13 Z B H 4$ UniRef90-K9Y9G UniRef90-UPI000376FF61 UniRef90- UPIO00307DA51 UniRef90-R6UOH3 UniRef90-K9Z908 UniRef90 R5ENP4 UniRef90 F5UAS8 UniRef90-H8MG82 UniRef90-B4CWL6 UniRef90-UPI0003111403 UniRef90- M5C9K0 UniRef90-UPIO0030FOCA9 UniRef90_D2B8D9 UniRef90 K9WBA1 UniRef90-W5WET1 UniRef90-Q8YLO9 UniRef90 W7T561 UniRef90-O5QZV2 UniRee90-UPI00047EAC18 UniRef90 UPI000455EAF2 UniRef90-G8N1D7 UniRef90-UPIOOO382195F UniRef90-M5C8J6 UniRef90 G3XR70 UniRef90-B7K903 UniRef90_K9VT27 UniRef90_K9Wsi3 UniRef90-R7QLN1 UniRef90-UPI00016C3CC0 UniRef90- K9WG11 UniRef90-UPI0003AD301C UniRef90-G6FMYO UniRef90-K5W814 UniRef90-10H5W3

LIHPTAVYA 330 HSVNALEIDSPDGQ VLVASGSADKTUKLWHLDAGQLIVTL

RDTVNVTVSRDGRT LYAVNNGDNSTAVISLDGYRVEGLI KGPRNFNFSPDGQSTLVG NQYTDNITLFDIATGSLQK HHTWS LAFSPDGQTLI

AGDTYATIKLWDLHTKKCINTL

## GRVNAVAFSPDGKQ $\square$ ATGGDDGTVKVWGVENLR】

NSSSETYVLSKNDTVLYASNYGTNSTDATNTATNA TQ
HNGWSVRFSPDGK LLASGSEDETVK\|WKVNTGECLKTF QRVWSVAWSPDG MVIASGGGDRRLKLWDANSGTCQHTL RGILHMEFLSKGHE UWLSARDDNKVVIYDTASKQPIG HYVLSVVFSPDDKT
DQVLSVAFSPDAGWD AAGDRRGNTKПW
HRVVSVTYSPDGNR TASGSWDGTIRIWDAHNGTYTKTM
YNLSFSPDGKT ЏASASDDGTUKLWNVPNGTLLKTF
NWVRA VVFHPSGKYLL S GSDDHTDRVWEDATGRCVKTV DWVSSLAFSPDGK MLASGGFDKTVRLWESKPPTLNARL SSVNSVSFSPNGQ F $\ddagger$ SAGDDGTIKLWS LD GKEFATF

KTPREFLDDPSGKW LIVGNQDSDTFYVFDVESGQL D $\square$ PA HIVFTR
$R G G D A L A L S P N G Q Q L L \quad A S A R G G Y Y \nabla A L W D T G R G K R L A K L$
RFPRNFAVTPDGRFLL AANQNSDS ITVLE $\square$ R
 TRPGGMVL
GTVSSVAFSPDGRTVATAGTTGSRTRLWDTETGTLRQTL TQALLALE HDEDSDLVYVTDFGTGKVAVFDGRADEVIGEV SFAAGLVLSRDGK QLYVANRLHNSVAAHFSVQTLAHQDDI
E Y WAVTFSPNGK EYTWAVTFSPNGK LLAAGHWNGNIHLWDVDRLKRLK
SDPNRTYRTPDGRDLLLLTNSGEQS $\square S V F D A T Q E E \square E R \Pi$ RDPTGVAVHHASGTVYVANSGDHHMSIVDAATRTERKTV
 WDPA LV H WT D D GRPRRLASSGGADGTVRVWDPATGAAEQVV
 NDPLLA I TLN DAGS IA YIVNGVDHDVVAY KVD S HTAWSVAVSPDGTRGL
GAKSAI GVVSYDPETRVFVAAQGSDALLILDAESGDLVKSV HRVQ S LA WS P D G S T L V V G S H D R TVVRLWNVAE G KVVGD A L

H T S R V V T L S L G IA E Q T LVS G S LDNKLK WNLQQTGKLLETL NKPAQLTLS GLE $\square T$ GLGTDNTLRLHVQAVDIASVGEIR\|I
TGTRALAFTPDGRTL ATAGDDRVIRDWDARTGR SRTL
VAFSPDGVD $\quad$ V $\operatorname{VGSEDET\ R\square Y~}$
HRVWSVKLSPDGQT $I$ S SSGSDGTIKRW TQSGQLLQRL HRVNAVAFSPDGSWLGVSASDDCTI RVWNVLTGRLTVAR $\square H P R N F N \square T P N G K F L L \quad V A C R D S G C I Q I F N V R T G$ $D G V R S V A W S G D G L T L A S G S F D N T V K L W D V Q T G D C \square A T$

NAVSFSPDGNT $\prod A S G S D D N T \prod K \prod W G D G Q L Q R T L$ KPREGMTFSPD TTTLLAGTFEDGVVRVWRVADGQLDHTV DHPREFTLDPSGRFLL VANQKSNEIVVIDTHTGLLGKTV YSHSGLRV VSGSHDGSVGVWDVRTGKLVR
GAEHVALLSPDRRVAF
GRLWTVAFSPDGS LLATGGSDPAVRLVDARTGELLVK
 HWVWSLYLTPDEKTLLSSSW DETIKCWNUSTGECWQTL

GGNA $\square A F S P D G \quad R M \square A T V D A D H S \square R W D V T N R A P R P A$ GRESSPQFSPNGEHLAYATGSGDCLVKLWDVGEGKCTTTL


## tratcltfspdg LTcaVgGsnkQfaVfond WGVAFSPDGKQ $\square A S V G D D R T I L W D V Q$

D WVS T TAFSPDGK LLFASGGYDKR\LVW
HR HYVAFSPDGATILTASEGYHGVVALWDAASGSP


| UniRef90_S2YI01 | A TVV\|GYEPDAVV|T|LTDD |
| :---: | :---: |
| UniRef90-B4VW73 | K GLS SVNS I A I S P D |
| UniRef90-A0A014P2L8 |  |
| UniRef90-B2JWM1 | P T A Y A P K D $\square$ T L S A D |
| UniRef90- D7VJH0 |  |
| UniRef90-UPI0003490B52 | K A |
| UniRef90-UPI00039B8895 |  |
| UniRef90_F4L7J8 |  |
| UniRef90_G4TWE3 |  |
| UniRef90 C7DH34 |  |
| UniRef90_UPI00037E62CD | K GTTS WVRTVA |
| UniRef90_UPI0002484313 | D G H GR $\square$ WSVAFSP D |
| UniRef90_C4K9Y9 |  |
| UniRef90_B0DYX0 |  |
| UniRef90-A0ZFT6 |  |
| UniRef90_UPI0004407BF4 |  |
| UniRef90_Q8Z019 | Q G R G G VR S V S F S P D |
| UniRef90-G2Z0G1 |  |
| UniRef90-UPI000369F209 |  |
| UniRef90-K5W7Y6 |  |
| UniRef90-K9RMN9 | K |
| UniRef90-K9X9R5 | N H G A A V N NVT F S P D |
| UniRef90_UPI0004681D39 |  |
| UniRef90_U6GX04 |  |
| UniRef90-A4JGK7 |  |
| UniRef90_F5ITY2 |  |
| UniRef90_UPI00016C4C2B | E |
| UniRef90_G8SDB7 |  |
| UniRef90 F8FQD6 |  |
| UniRef90-A0A024HHA0 | $E \square P \mathrm{G}$ G |
| UniRef90-M9U6K9 |  |
| UniRef90 B5GS71 | S |
| UniRef90_D2NTS3 | EMNGAAANDVT |
| UniRef90-J1QTP6 | WT R G D Y P R L T LD K Q G |
| UniRef90_UPI0003B4471F |  |
| UniRef90 R6E3U7 |  |
| UniRef90_I5CIU1 | T L P A N P |
| UniRef90_D8HZ37 |  |
| UniRef90_R5V863 | K T 1 |
| UniRef90_Q82MX3 | $P C$ G G A WP R A L T L ${ }^{\text {L }}$ |
| UniRef90_F4F9J8 | DCRPHLR WVLTL A |
| UniRef90 A8LM01 |  |
| UniRef90-X1BAL1 | T G A S E $\square$ M S V A F S P D |
| UniRef90 F6G630 |  |
| UniRef90-UPI0003621494 |  |
| UniRef90-UPI000362E9F0 | P L G A G P L S V VF D P |
| UniRef90-K1W5K9 | Q A H A K SVQVVFSPD |
| UniRef90_UPI00031A08ED | E G |
| UniRef90-K9R7R5 | K G H S N A WTVA L S P D |
| UniRef90-K9PYJ2 |  |
| UniRef90-Q3MCX2 | S G H S D W $\square$ L $\square$ A |
| UniRef90-U9VZU7 | DVNGANRTQ1 |
| UniRef90_T0MKX8 |  |
| UniRef90-U5DM95 | Q LK G H $\square$ A T VA F S P D |
| UniRef90-I3ZBH4 |  |
| UniRef90 ${ }^{-19 Y 9 G 1 ~}$ |  |
| UniRef90-UPI000376FF61 | PSEGEVWAVDFSPN |
| UniRef90-UPI000307DA51 | QF D A A L T LAFSPD |
| UniRef90_R6U0H3 |  |
| UniRef90_K9Z9Q8 |  |
| UniRef90-R5ENP4 |  |
| UniRef90 F5UAS8 | K |
| UniRef90-H8MG82 | K G P E A P VT M V F T P D |
| UniRef90-B4CWL6 | D GVA WA P S VAVT A D |
| UniRef90_UPI0003111403 |  |
| UniRef90-M5C9K0 |  |
| UniRef90_UPI00030F0CA9 | T A L G F T P |
| UniRef90 D2B8D9 |  |
| UniRef90-K9WBA1 | GHKEA ${ }^{\text {GWS V S F S P D }}$ |
| UniRef90_W5WET1 | A T $\square$ G Q L E S V A F S P D |
| UniRef90_Q8YL09 | R P A R P Y E G M I |
| UniRef90_U1QG38 |  |
| UniRef90_W7T561 | G R VG H S S NVVT $\square$ A |
| UniRef90_Q5QZV2 |  |
| UniRef90-UPI00047EAC18 | P G H T D G VW L L S P D |
| UniRef90_UPI000455EAF2 |  |
| UniRef90_G8N1D7 | $P \mathrm{LI}$ A A P R S L A I |
| UniRef90_UPI000382195F | K G Y G T T A S F P D |
| UniRef90_M5C8J6 |  |
| UniRef90_G3XR70 | L L I G N $\square$ S H T A WS P D |
| UniRef90 B7K903 |  |
| UniRef90-K9VT27 | K G H SRVNA】A F S P D |
| UniRef90-K9WSI3 |  |
| UniRef90-R7QLN1 |  |
| UniRef90_R7HLB1 |  |
| UniRef90_UPI00016C3CC0 |  |
| UniRef90_K9WGI1 |  |
| UniRef90_UPI0003AD301C |  |
| UniRef90_G6FMY0 |  |
| UniRef90_K5W814 |  |
| UniRef90-10H5W3 | LT G H D G P |
| UniRef90 W9VFL1 | $\overline{\mathrm{K}} \mathrm{G}$ |



ARARA $\square$ GAP $\square$ T GHSA
$\begin{array}{rl}\text { A } V R A V A F G P D S K & L V G \\ M\end{array}$
H D QVFVT
PATAAALSADGRRVWTA
$\square R G A P A G G A T E H V A Q S G G V Q E D A D S P D G R K V F T V$
$E N A G E T A V A A V N S R D P P V K A D Q G K I L D A S S S G N R Q L$
$M$

DRPIVRAVFSPDGK】IATA VTVREDQQS RAHSAFSPDGRYVFVQ A A S P DGLEV

A GKG $\square$ NAARQEKAHVMVAYSPDKKFVLSN

A $\square \mathrm{AF} \mathrm{V}$ PGGSRFFAA
APAGGRVYAATGAGMDAPNARR YYVA
SPDGARV

D G R R F
SPDGKMMAFA PDGRHL

P I E P M T GLLS WS P D S R R I IT A S GAPRMVLQGESEPAQMLFSPDGARLF
 GSGA $\backslash Y A V L P G L C A F G P D G A S L G G V D G G R I Y V A$ PEGMLYAAALSPDGQTLAVG

AFSPDSSR $\square$
NGKR V A
$\square$ S A Y D P S T QR LIFV V

GVGSPDGSRVYYW
G $V \mathrm{Y}$ G $\mathrm{VA} \square \mathrm{S}$ P D S Q M
S P VS K S L WVT
$T \vee F V$
$\mathrm{V} P \mathrm{SPDGRYVYVA}$
RADGAGEP VLRGHTDQ VYSAAFSSDGERI

PNGAMVPSVAPTGDRTAFQ
TVAEDSEGSGEHESPAAADDLSPVFVAFAPDGESVYVA
TPPVTASTISQSGNQVYVV
TEANRAPAANGPTCH $\square$ QKSADNRY $\square$ T $\square$ TSY HNGLVS

SVVQNVSHAS $\square$ AK PARTDGMFDTV ALSPDGSR $\quad$ VYAA
$T G L Q G A T G A T G L T G A T G V T G V T G S T G A T G V M H$

UniRef90 R4KL40 UniRef90-T1BG15 UniRef90-K5VAHO UniRef90 Q7N6R1 UniRef90-UPIoo03B6865F UniRef90-KgUH13 UniRef90_UPI0003B61E43 UniRef90-K9WPSO UniRef90-X0кHJ3 UniRef90 FOKBEO UniRef90 AORVT6 UniRef90-X8J9H5 UniRef90_UPI000376A76E UniRef90 M3EAFO UniRef90 UPIO003784CDE UniRef90_UPIo0031CA480 UniRef90-D9W4E8
UniRef90 K9TI33 UniRef90-M5C8M7 UniRef90-WORE37 UniRef90-K9TDI0 UniRef90_S9P7U0 UniRef90-A9AJH1
UniRee90-UPIO003B49DAB UniRef90 UPIo00455F5D0 UniRef90-B1WX81 UniRef90-KgY1R2 UniRef90- UPI00044113A9 UniRef90-S9QG15 UniRef90-A1VIG5 UniRef90 UPI0003464334 UniRef90-A1BIW6 UniRefofo-K5WBI3 UniRef90 UPIO00464DA16 UniRef90-K5XF66 UniRef90-U7QRRO UniRef90 UPI00036CB007 UniRef90-UPIO0029ADE30 UniRef90-UPI0003B7A049 UniRef90-I4ANB1
UniRef90 UPI000455D227 UniRef90-A311T0 UniRef90-V4PDG4
UniRef90- B2JOIO
UniRef90_AOYRJ3
UniRef90-M5CBL5
UniRef90_R75360
UniRef90 F9PHJO
UniRef90 E8N118
UniRef90-F3ZQD3
UniRet90_F4KUW5
UniRef90 XoSm76
UniRef90-LOD515
UniRef90-LIKVV5
UniRef90 D4XIC3
UniRef90 L9W157
UniRef90-X8J598
UniRef90_UPI00047B7776
UniRef90-R7Q4W5
UniRef90-UPIO004410D9D UniRef90-MIYYPO
UniRef90-U7DKF7
UniRef90-B4S559
UniRef90-F4CE67
UniRef90-UPIO0038065E5
UniRef90_R70IN2
UniRef90-Q01W15
UniRef90-F4XSE2
UniRef90_J2PE36
UniRef90-R7KOZ5
UniRef90_UPIooo3B4883B
UniRef90-UPIo00361ECBD
UniRef90 S4XYT6
UniRef90-B1ZNQ2
UniRef90-B9NUF9
UniRef90-K9Y006
UniRef90_UPIO002F38A59 UniRef90_UPIO0036BD429 UniRef90-UPI00034743EB UniRef90-U4KF84 UniRef90-D6TTJ3 UniRef90_UPIo00373EB26 UniRet90_X6NV75 UniRef90 U7QL54 UniRef90_UPIo003823B02 UniRef90-F4CNT8 UniRef90-UPI000455FC76 UniRef90_UPIO0036A5F00 UniRef90_J7L613

GTYTDAGSDGDYVYDTRTGEVVSSAKTVNPSYLLPSRDGR LSLI QTVDVGEVQPMVVSPDRK DGK $\square$ A L ID G DSKK I I K T I E T GYAVH ISMSAS GR

GS $\square \mathrm{G} \square \mathrm{W} \square \mathrm{Y}$ D TVTHQEVATGHTGYVFSVAFSPDGA ASGSKDGSIKLWNLKTGQLLRPLSGDYVLSVAFSPDGQ VGSGENG DEARLWKTGTGTECLT GKGGUGAVTAFSPDGK GGSSNTTVHDSAYDGTAGPGQGH VGYVSSVAFSPDGA GGAENEGI DIRMWNTLTGKKIAMDNRAHKTSILISPDGQ TGGDDNTIRLWDVADPRAPAAFGRVHTGLVHSLAFGPDGR NGGGSGTVSVVRSTTNTVTTTIGVGFGPVSVATDPGF AGNAEPG VWDAGRGDVVRVMPTGGTRALAATRDGR HVAFSPDDQ VAYSPDGS
RGEVFAAAARPDAQAGAAFRVTNS AADEEELAWSPDSR
S QTMAVND\KSNTLTGHSQ DVRSVAVSPDG VTASRDGSARVWRWRAQPRALTDPRRAGTVRALAFSPRGE GTYTDTGSDGIYVYDTSTGSVVSSAKTVNPSYLLPSRDGR S $\square$ GEAKREHGLHVFA $\square E R G R K V Q S \square A S E R P A F L A L H P N Q Q$
$G V V K S L A V T P D G Q$
$N \quad A D S T V K \square W S W K G Q L H T L E T K L V R N V V F S P D S K$ $D L G L$ DKILAYTVNENKQETQLDAGIGPHLAFHPSGA
 NTVSVVEMTTYSRLTTISLGAA QASP
$D L G L D K V \quad F V Y K Y N P N S L T L K G S V D V G S G P H L T F S K D G K$ $N L V S G S S D G T V I V W D T R R G R V L L H L E G A Q V N G I A Y T A D G B$ D S DT GHLLRLVDPYNADMVRTTSSVPTASPQGLALSSDGL GGRVVVVVDPATLRVAGRAPWTSVSGUVLDSWDLR VISAA ASTSGDQTIKLWNRD GSLQKTLIGHDNWKVAFSPDGH AFANDSGADQVFDTAAG SDRFGNKD VFVMSADGGEPKRTVHSANDTPVAFSPDGK VSSALNDDQUR】WDLQTGNQVRELSFPGGCHVALSVDGS

ASASDDKTVKLWN RNGQLLQTLTGHSSGVAFSPDGQ
 FDSAEPRVWDAATGEEVLSLHGRERRWVSVSPDGS SSGVDVWKLAADGERLASSGEHFAPCDFVLSPCDGS GTGKNSEDKNTYLFDVASGEMVKRLSGGDPDVFSPDGR DSEGR RVVADDGESGTVVAERVLPAAPHLALDAEAR
 ARPGTPEGARLQLLDPRDGHVVDTPPAGFEPGVAWSANGR
$\square H A Q K Y T N N \square Q V R S A Q T G Q L \square Y Q L Y T$ GNEGR $\square$ GYSPDSR N IK K M TVSFVDLLKKMAI AEEWKMEKPTGALILPDGD CVFQNSLSARLWDFDGETGRS DAE SAPLEEDVSWSEDGT

## ПDARPLQVVKs

TGAVQYVVVSPNGK ENPSLTLLSNDR
 LDD T GELTV VAH L DVADPSFLA WHPS GA
$S Q G S L W S V G A A G G A P Q L V D Q D V A T P R G P A A A D S P D G K$ ASGSGDKTVK LWKAD GTLI TTLKSATVYGVAISPDGQ FDS STGQI LQVVPSENPSWLTLSKDQR QRFNNE LWETDPATRKVKTKIA $\square G R E P$ VAMAPDSC
ERGEDKIWUID GKEVKTIFTFPN VHGGUK FWS S G DRSTHTVVP YAVDRRTLTPLGAPVVGTGGTGADAPDGE VT GSQDRTARVWRADGAGEP $\triangle V$ DRGHDDRVYAAAFSPDGE SERVKGVVVAYADAEDGS LKMLNQVSTHGAGPVAYGSPDGGK ASASLDNTVKLWNRE GKLLHTLNTSDVRSVAFSPDNK DE SGATHVLDVASGKTRQDAEATYFPGPSWSPDGR NEDN GSGRLVQVDWETGEELAS\ATEPN NLTVGTDGT NEDN DTVTAISANSFSKVWEAPVGDRPRLDIAPNG
 VKFSPDSC

SGTVHT LDDGA AVTRDWRSTA DD DVQFSPDGR DESADPGGGTVSAFDPGTGALTASRPSGAGTHLTDDPSGR GAVGEPKETQVR SATTGEVLMRLP GAGVCFSPDSR S PMLY A GSNTVY

UniRef90 R4KL40 UniRef90 T1BG15 UniRef90-K5VAHO UniRef90 Q7N6R UniRef90-UPI0003B6865F UniRef90-K9UH13 UniRe90 K9WPSO UniRef90- хокнЈ3 UniRef90-FOKBEO UniRet90 A0RVT6 UniRef90-X8J9H: UniRef90_UPI000376A76E UniRef90 M3EAFO UniRef90 UPI0003784CDE UniRef90_UPIooo31CA480 UniRef90-D9W4E8
UniRe990 K9tli3 UniRef90-M5C8M7
UniRef90-W0RE37
UniRef90 ${ }^{-}$K9TDIO
UniRef90 S9P7U0
UniRef90- A 9 AJH 1
UniRef90-UPIO003B49DAB
UniRef90 UPI000455F5DO
UniRef90-B1WX81
UniRef90-MOY1R2
UniRef90 UPIO0044113A9
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UniRet90 B2JOIO
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UniRef90_M5CBL5
UniRef90-R7S360
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UniRef90-L9W157
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UniRef90 R70IN2
UniRef90-Q01WI5
UniRef90-F4XSE2
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UniRef90_UPIo00373EB26
UniRef90 - X6NV75
UniRef90 U7QL54
UniRef90_UPI0003823B02 UniRef90-F4CNT8 UniRef90 UPI000455FC76 UniRef90_UP100036A5F00 UniRef90_J7L613

FVYaVNELPGDNGPASQRGGVSAFDAKTGALTFLDRVSSE HLYV
$Y L L \vee I G$
RDAR $\square \mathrm{DMDDLWMKEPVAE} \mathrm{\square KVG} \mathrm{\square E}$
T L A S G S W
TIASS
KLVAAGLIDRNTGWK

## DDTVRLWDVATGTLRDTLTGHT

ADKTVKLWDVRTGKQVRSLSGHS V FMWDMETGSKVAS
CRYNDDTSNTFSNTLSFIDFKSRKV Y RLFVLDGGKSVVHRFGMD RPFDISRAEYADTLDISS RVVSASFGS $\square R \| W N G P F K N H T G Y D N T V S F S P D G T R V V S G G$ TLASCS T L GVFVANAGGS


TAVVTVSADYSAT
ASGHDDKTIKKWNLNTHKLI STLTGHSQ I WDGNGNLRKK LND QL VYASDRDGRWR MA $\square$ AS GSFDGTIKI WNLETGTLIRTLT
WLATAHADGTAGVWRLGGDLEPVL
 QVAVATDY DTVGUWDMQKG YE $\square C K P L A$
 YAYVINEDNS SVTVLRYDQEAGREVLETVSTDP
 RAYVT S LG R S E VELVANEASGKVFVALGTG V FVYLVQEL

D G T L T
K L

$R M Y \vee A$
H V K
R L W
VAI DRAHGALVPVGPSGRR TLVSASGDKTVRLWRLHNSLLTRWNVSDDEVVWGVTWSQD $Y L$ VD LDTVVWDLK
 H L AVGTRVGLYL FVYFNSSDVAFPFGGFEQLYKVADDAPTGNNRPEMVINET LL A VGS T

KPFGCVILLDAHSGQE

 TIASAS DDKTVKLLWN RNGQLLQTLTGHS
 $R 1$

SQDASGSGDHTCRI WNAETGKEVGE $R \square$ WVADAGFGRITDDISGTTAHIWDAATGEELLS $\quad$ TRGHNQ
 YLAATLT LFKTDEDYAKDAYNLAFDAWGLRVKADFTLEKK RLYVGEMGI
$G T \| L A D D A G T L R P D D Q V V L G G$
FLASSSGDATAGVRGEGRPKMRVLRGHTQEV




```
F|VSAGG DGALILLWDARTGG DRWKTLSG
```

YLVAVNENGPGQKDPVGRVS SYADDSKTHEL SLIN

L LAAA $\square E S P$ D K Q Q P GR

## $Y \mathrm{~L} Y \mathrm{~V} C \mathrm{ERDP} \mathrm{GR} \mathrm{\square} \mathrm{~A}$

VTVY NTND Y S E TK TVS
$A \vee A \vee A E D G S L T L L N T E P T G$
T F A F
FRHDGPQFAVFLQSGTEKA
VA Y K R R
T I A SAS GDKTVK L WGYN GK L L R T FQ GHNDRV
YL F V VN E N GP GQKD PVGRVSSYADDSRTHELNN $L L I A N N L P E M P S T A Y P D A V Q Q D D V D D P S K K V G G R D M L P N G$

$\begin{array}{llllll}T & \mathrm{~L} & \mathrm{~T} & \mathrm{~T} & \mathrm{~N} & \square \\ R & \mathrm{~V} & \mathrm{~T} & \mathrm{~A} & \mathrm{~S} & \mathrm{~W}\end{array}$ S GTVVVF D RTVRVWNADTGEP FVYSMARVPGADGKPTGAVAAFALEPETGRDQLDN $F L L V A N Y V S A D G H L G E A S D T Q Q D E G P A A V K P A A A V E G S F A$ TI ASAS R S GTVKLWN AD GELLHTLIGGHTB $T L V S G G S \quad D N N G V I R L W S \square K N G D L I G N I R K A Q K$ $R V A M A V V E A A S E R D T A G H N H D M V V D T E T G K A T T Q P D A P$
$\rightarrow \mathrm{V}$ A TYFNALS $\square$ WGP D $\quad$ LE 1 THDFQLPDR H WVTN QSDDSITVL T A Q GSKVRD DALPRA



TYATTH
RTGAHY LIFR LY DTSDGRVLHTFPPVPV F VLTANYHSGSVC $K L$ F L A $R L Y Y S G G$

RDR S V F PVTE E GLG E P TA D VTHEGD
$R \vee L L H A$

## UniRef90 R4KL40 UniRef90-T1BG15 UniRef90-KKGAHO UniRef90 O7N6R1 UniRef90-UPIO003B6865F UniRef90-K9UH13

 UniRef90 K9WPSO UniRef90- X0KHJ3 UniRe990-FOKBEO UniRet90-AORVT6UniRef90 - 8 8.J9H5 UniRef90 UPIOOO376A76E UniRef90 M3EAFO UniRef90 UPI0003784CDE UniRef90_UPIo0031CA480 UniRef90-D9W4E8
UniRef90-K9T133 UniRef90-M5C8M7
UniRefigo-WREB37
UniRef90-K9TDIO
UniRef90_S9P7U0
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UniRef90-UPI0003B49DAB
UniRef90_UPIO00455F5D0 UniRef90-B1WX81
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UniRef90_UPI00044113A9
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UniRef90-F3ZQD3
UniRet90 ${ }^{-}$XOSM76
UniRef90-LOD515
UniRef90-LiKVV5
UniRef90-D4XIC3
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UniRet90 UPI00047B7776
UniRef90 R7Q4W5
UniRef90_UPIO004410D9D
Uniinefol M1YYPO
UniRet90_UZDKF7
UniRef9-B4S559
UniRef90-UPIO0038065E5
UniRef90_R7OIN2
UniRef90-Q01WI5
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UniRef90-B1ZNQ2
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UniRef90-K9Y006
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UniRef90 UPIOOO34743EB UniRef90-U4KF84 UniRef90-D6TTJ3 UniRef90-UPIO00373EB26 UniRef90-X6NV75 UniRef90 U7QL54 UniRet90_UPIo003823B02 UniRef90-F4CNT8 UniRef90-UPI000455FC76 UniRef90_UPIoo036A5F00 UniRef90_J7L613
 ARSVETGSPHISTDKQGRFLFSASYS YNNLLSVSLIDDQ ARSVETSKFKGF EDKYTIAGSYWP PQFTIMDGETL NS AALSPDGNYLASGGFNGD WYLWDTHTH SHVWSVAFSPDGTTLASASGSDDRTVRLWDVATG

FGVEGDLTAAGFTSDGRPFAVQKLG SQUNLDDLEDG KSSFIGMHCNDRRD DGNKAYVI CGDSNSIIKYDIKNE
 HTSNVLS SGPPPGTVR VAVDHLAGRAYVTNHVGQRMSTIRTSANP A VK S V
HQDVVGS
D N GL AFSPKGN
 PLQGHTDAVRSVVFSSDGR PLAGDVSAVRSVVFSSDGR LVASGSHDRTIRVWDVCSG
 LKGHGAELRTVAFSPDGQRVVTASEDKTARVWRVDGKGE PLSLSANDPCYMSALSPDGKYLVTANYS GHAGSV EDIDLSHSGSLLASASLDKTVRVWEVKHKTF SKAVLVNNYSSVAFNLEKDLLVVAGODQTVMLLSLSTG GKILASAGENNVAFSPDGHTLVASASYDQTVRLWNLEER HENPVMS VAFSPDG ACVASGSGDSTI RLWATSNG $P D C V V G$ K EDVAFSAK DDRWYLTCMGTSSVIVVGDGKTD FKGGTGAAADKISPDGAFLYVSDRVDANSVSVYKDQKN TWVECVDYSRDQRRL ASGSTDSTVRIWDAATG
FSVGNDVDELTESPDSTRLYVGRGTTSCVGUYDDHTY DVSAAEPDPNGVELSDDGLLLFVSGPQGVQSYSLVDTAVH DYVRS SVSPNGMWM VSSAEDMVCLWSLDEATH SRTDATASRDGVALSPDGQTLASASWDRTIKLWNADGTLR GPVARLPGAWAAGFSPDGKTLVLAGDGLLTFWSVGDWKRL HSFHVAYAEYG VASSLDQQGVYLTMATSHGKQRLPDTKTGG TQKGNFNAAGNKLVYEDRKG YENEWRKHHISVYDMAAK P LMGAGSQTEKLAFSPDSS AVAVLLGDMTLWLVHLGDR KASSGGDHPCYIGMSPNEKFTAAANYTGGS LSILSNETL SGHARNPGAFRPVISPDGRYLAYATRYDNQ ANGSVVDGVWGVAFSPDGQTVWGSASDDKTVKLWNRNG HPVKS PLRGHTDEVRS VAFSPDGKQ FVSGSWDNTVCLWNIEDH GSGSPDGKRL RDVDVFPGGQTMATT

GAAPCYVLETPSSHKVVGNEGMAHLYRVSDGRFL DRTTGGKEPFSLAFSPNGQYLATANYMSGSISVFTQDDNN LGGPRDLALDGAAGRLYVAHADKYGAUSAIDVADM EEDGLTNDDDIALSADGGTLLVARSLPGNPLEVWD QQACQGRNPVHLALAPSGRFLLVSNHLSGT

## 


HNGAV NA $\square$ A $T$ SPDGRS $\quad$ ATGGADTR $\square K V W D \square Q S G$ QVQSLGNEPTHSSLSGDASHLFVSNYS GVRFSPDGKKLVSGSFDE KVMLWDVATG
 GTSPRVAMSDDGKRAVNGSEDGSVRVWDVDTG PFPGSFRFFDGVSFSADGENLLVTVIETEAWLLLPDGAPR QVQSLGNEPTHSSLSGDGSHDFVSNYS
A ESKDFVSPPASI ILDAQTLKVKSIINLHFQPVSVVKTKNN
TDRI YGVAFSPDGRRVATASQDETARVWSAD QRSLC HLALDATHRMLVAVSYGGGYVASFPVLADG
 TAVESV HRSIIATRGDDGP ISPDGQTLASCSNDYTINLWNLKTN DSWNNPSLTDDDGTRMSVSAGDDEGNVQVWNLETG SQPYGVAFAPDGSAAFVT SHYSTGDGFRGAAWSPDGHSDAVVSAGPSGYDQVVNAQTA TE LHPGAGPRHLAFHPNGAFAFVINEVDSTDTSFYDAETG FVGHMQWVNAFSPDGNTVI SCSNDTTIRLWDTKSK VSTDPAADALSPNNQYLAASASYDGKIKIWNQKTG PRRQTAAHAHMVAFDPVTGLLLVPDLGMDAVVGYVLGDDG LDSPLHSTRSTFRVSPDGKKGII YNEFGDLGLQUWDLETG


## UniRef90 R4KL40

 UniRef90-T1BG15 UniRef90-K5VAHO UniRef90-C5AAS8 UniRet90_Q7N6R1 UniRef90-UPIO003B6865F UniRef90-K9UH13 UniRef90 UPI0003B61E43 UniRef90-K9WPSO UniRef90-×0 $\mathrm{KHJ3}$ UniRef90-FOKBEOUniRef90 A0RVT6 UniRef90 ${ }^{-} \mathbf{x 8} \mathrm{J9H}$ ! UniRef90_UPIO00376A76E UniRef90 M3EAFO UniRef90 UPIO003784CDE UniRef90_UPIO0031CA480 UniRef90-D9W4E8
UniRef90-K9T133 UniRef90-M5C8M7
UniRef90-W0RE37
UniRef90-K9TDI0
UniRef90_S9P7U0
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UniRef90-UPI0003B49DAB
UniRef90-UPIO00455F5D0 UniRef90-B1WX81
UniRef90-K9Y1R2
UniRef90-D3E5Z5
UniRef90-UPIO0044113A9 UniRef90-S9QG15 UniRef90-A1VIG5


KVGQSVLNVHHEGRGPVAHVHSTVFSPDGHYLFVTPDGS KIVQSVLNVAEGGGPVAMVHSTVFSPDGHYLFVTPDGSR EPLQIVSTRGTVGTHPEPRVAAIIASHEHPEFIVNVKETG QLKGHS SVVSLTYAPV R RLJSSAEDRHILASGSFDG TLRDTLTGYTGSVWSDAFSPDGTTLASGSSDNTVGLWDVA KLDTT
 A EEIIPCGYMPHSIDFNKNNMFVTSDMGSSSITIFKEGS DUSPSTRVPEVGDASDVRGMAl GPGGSSVATDNGTG
 AYPSQV GEPLAGASGEMFALGFSPDGRTLATGSGDSK $P$ VVMEIQGPGGITAIDPVKHVAYVTQPDDGTVSVV EEICTL YGHSSPVKSVAFSLEGLLASGSWDKTVKDWNDT ELSGHTEAVRCVALTPDGTVAVSGSADHRVILW QAIDATGGDTASHSWEWGTTCAAFSPDSQWLVTTSKDFTA SL THPFHGHTS RVNSVSFSPDSTRIVSGSDDT $R E R L V A A G A F E R P P F T G A G D V R W S P D G R W L A F A Q P A G A$
$E L L Y T U A G A S F G D S S A T S P D S Q L S E E G N D Q L W N D D S G D$ p GRSSTA GSFALFPVRDDGGVAP GGVAVLSVHHEGKGPVRGRQ SSIDTTSAHPQMVLFDPAGRMLAADL GSDRLSVFSLEGAQ VVKHSLKQPSGVRADCFTPDRLASGCQDHNIYI WDVRSGS RKL QQVNEVEFSPDGKILASGSDDGTVWS SSGELLHTLQDKSS SPVQYISTEG GHPRHFTLMPGGKYLIVANRDGN DCLGULPVPSVGFDPDGPSHFASGSLDGKVRVWNVAAG SVTATLAVDPSAVSDATDADGETIYVAHTGLEPGTENALG ELVEQVSTPRDFAIDPTGNFLLVGHQYTNDIIIF Q CLHVCKGHDTAVRMVAFSPDSTVVA SC ARTATDQDAGEVLLSLMSHQGDR\|VTGPTSDHPGQVKDWN APRAATPLPCDAGHADFTPDETSLVATCTDAGTVRVDLAG RILERWDLTYSVTFTPDSSTVLAAYAGSGQLSVWDVKTAG TTLTRWDHQDLVYAVAFSPDSQMMVSASSDKTVKDWKLIS TVIHDQKKPKNRRVILDSQQVRHWGHGGGKISWWALESDD LCMAQMELRFPDASIFSPDNRWLATSDK TTATUNLWNPE KTSKIEDSVMDVAFSPDGT KLLQTUQHEGSS■NEASPHVHSTVFNPSHFAHVSLTGMD QLLQTLTSSSVWGVAFSPDGQTIASASDDKTVKLWNRNGQ GSDRTVKLWKLDGTLVNTDQGHRNVVLAVAFSRQGSMIIS NAADKDSESHKWGVNCVAFSPKGRLVASGANDHTVKLWND QVLGAGNSVETVSWSPDGTRपSTGAKDGGNRVW SRLGETGPRLWAVAFSPDSRWLAWSGENGYLYUYDLERDF NLVDLVEDIPFFGNGPGKERQEQSHGHCHYLFANDLGSDK
 RRDSQHSQHSQDSQGSPDPQD
पAVLPVARDGADEPVAQSDAMPGEPGPHRK ELVADIDTGAGSHMAAFSPDDEYMHIGEGAGVRVEADLES YFAHSMRTTGLLSAKFSPDGHHFVFGSSHGSLLHIWDSHTG AEVRRHMAPHGPNVLGWLEDGKRMFSADGDFNIVAWRWDN TPGRLLSGHNGSTLSVVFLPAGDKDVVGSSDR NEVRSVPGHFGVAFFPDGTRLISSGLGESVILW
VAEDPGGGLAVLPVGADGK APLHTMSGHDCVDYSPNGDRVASGSTDSTVRIWVDPAP QVGARTDLVQHTGTGPNAERQEGPHAHMVSFTKYVLVTDD LQIGDALTAHTEAVSSVGGDGKRAVSGSEDESVRVWDVDT KLAAPWPPAARPRTMVWAPDGRRSILSMEPAPGSWAHLYA TLLNTLDRVYNLATSPDGKTDASASWDG VVAEDPGGTLAVLPVGSDGKNVVQDSSHPASRVNPERQ $K$ KLTSVDTPQKGAANPWS VIVTPDDKQIIVAAAGSQE
 GTGEPIVLRGHADRVYAAAFSPDAARIVTAS RVRQEKPHPHSVTLSPDNRFAFVADLGVDRVFTYRLSPED KLEANKPAWDAASSAGAGPR HFVFHPNGKSLYYLINEEAS TLTGQ\|SVKADSIKSITFSPDTQTIASGGTDGTIKLWNLQ KFTRSF APVALSPVADSVSVSAEGNVLFLSL DGGKLVLGGDRQY EVEFEFA ADDRSSDPVINADGTLLYTNMTTDE KLLKLNPS TGAVQDEVVVGHSARGITATNDSD TLDYTLKWDGSYN GDGLAWSSDGQYLATNIFDAQG SLQKVEHVPTLPAGYEGENTAEDAVSGDGRFLYGSNRGHD ALKAHIYSTADVTFSPDGKTIVSGVSDN QLL
EAVAQ RFGVWDVTRGRSVASLDLPGAAVVSDALDH TLTAR DDPAGHGAFHPDGERLYVLCELGSTVVAADGEGY EL DGHDDNVTCCCFSPDSKRVADG SKDGTVIVWDDDTGE


UniRef90 R4KL40 UniRef90-T1BG15 UniRefefo-K5VAHO UniRef90-O7N6R1 UniRef90-UPIO003B6865F UniRef90-K9UH13 UniRef90-UPI0003B61E43 UniRef90-K9WPSO UniRef90-×о ${ }^{-1 / 3} 3$ UniRef90-FOKBEO UniRef90-AORVT6 UniRef90-х8Ј9Н5 UniRef90_UPI000376A76E UniRef90-M3EAF0 UniRef90 UPIO003784CDE UniRef90-UPIO0031CA480 UniRef90-DgW4E8
UniRef90-K9t133 UniRef90-M5C8M7
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UniRef90-D3E5Z5
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RTTKTWETGTAKSVQTLKGHQSYVLGLDFSPDGN NDLVFLNPKTGDILRRLTR\|SDPYQI GFSPDKHWFV NSGKHTACLWDVATGKLIREFVGHSHD VGLSVAFSHDGR GLISPTESRYTLVRPGSGPRHLVFARSGRFAYVTNELNGS RILLVNYKDIDNLTTTSIGASLFLHDGG WDSSHRYFM TVR WDLDTGETDHTQAVYSVSFSPDGKIDASGSDDGSVK DNLWNLENLLTGCKDASSCSPAFSSGTLAKKTFSGKG RRDDTNTWLWLIASPMNETCRRVYDAAVGESLVFSP SSY而KRTKVGEYPTKAVF TKDGE HVNWRALDVPHVLDGPVLSASTGTGSPAGLAFSTANVRMF VTSPLEGHTFLVD SGKLIRT VPDAHLNADTKIVFTPDGS NFVS VRLWS VPTSDMVGRNGVFRPDGKVLATAGRDGRIR TGQE पSTLIGH DPVADEVTAT QLLQVSAVTFSPQSQLLASASFDRTDR DVAAGEFVRSLEAHNHTVDAVADSDDG KTWDTQGNTIKVLEDHRGDNQVVFSPDGRLFVTASSDKVL T IRVWRATDGAILMDPLQGHTEAINN WVTFSPDGTLI KGFTNVYVVESQGGTPRPVSFVANANTGEVAWGADGSYLL F DGTFSGHLGTV VFSVVFSPDGQTLASASQDGSIK TARVWRV DGKGEPVVLHG HTKYLRSAAFSPRGERV DNAHVHSTVFSPDGRYLFVQDLGLDK RAGAGPRQIALHPDGQRDFVAHGASVS

 TVERMMAGELDMV DPTVMGDSIFDLETMEHTAHTSDSPSG DPTVIGDSIFDLLETMEHDATYATTDPDGAPSSPVEITFFVP AAGITLDNGLTPEKDFRPERLAVNPGDDRLYMLGNVGLAA

SRDTT DR WWDVETGRERKFTGHDS YDECLAWSHDGK AVTGEELLTVDHPKKLSEPVAFSPDGSEVVVGCPAKTA D TRTFPSVSLDVTAQDGTPTGVAVSANGTLLFISVSGSVY RRVSGTLRLPD

 TLRVVEAETGKPVCDPLTWGILFTPDCRRLVVATHQGQVS SGELFKKFTNKPKKGGYSMPIAFSPDTDLIASTDR FKMSSASPSTQTQTTTLKNHPVRSASNEKTLCFGYNGETY
 KIYNYKVSPESDTLLSLVAEYDQSPGDGHLTFSNDGNTVF LLQTLTGHSSSV ASDDGTIKLWKPNQPP MPALKPGSQLYAVRFSPDGR
 DAATGQPRLTVDNGARELSEVVWSPDGTRLATSSYLSPR LAKRILDSVGLGEEPYLATRULFSPTSQQMAVLTSAGVN
 GV
APDGRSYAGLSGLGAKDTSLAYSADSRRMLITRGFESNVC PKGSRDPQ

GRESRPRKTRTLTGVASGGLLA ESFEVVDEDDVLDPTVQAAGIESGAP CHQYAHDGRSD AMTAGHTKAHTAEVDFINDRVISGSEDGRSLTIAHGHRIG TKEKTDEFTMHPSA AGAWLNEASNEIWVGGHGDI H TAVAWSSDDICATVVGDGDVVMYDVKTGKKMWGDAETHVS SDRDWEARTGALVVGPLLGHDTVIS DSGVAVSPDGRQF HPSSRVNPERQMSAHV HSTVSSPDGKFVFSNDLGFVY GKCVHLCKGHDTA GKCLVHLCKGHDTA SEQQTMAARQQKGFRDF G GLQQGDALLGHTDGTGEVESVGMSDGKRAVSGSWDESVR WEGTLLTTLIRGHQDLVYGVAVSPDEKTVASASWDGTVR LIRDDRTALHERDAKAKQGEMVTPSVKSWNNTPNDAGFLY FiRVQSIEVIGPEFNEVFSIKTTSPPHSSAFWYOKGNFY ADRTARVWRADGAGEP VVLRGHADRV YAAAFSPDGRRV GSDAPHEPAFATFAPGAGPRHTKFSGDGTFFYVLDEDDCT T T GKLTRSFK AHGRSVEKVLFSSDGQTYLINAGWEGTVD LWDLVNKRPDATLVHYNNISKITISPDGQILA
VPPDTCTMPDPPPRKVIRAGALWDGRSDGYVDDTVEDGVI RTWDRRATVWDGTTEEVVVEFPNDDVPDVFEERESWPIMR TAYロTR

F ISPQSHAE GDPAKSNFVWK DASKALVFKQAGGGNPGSLAFQPKTHNLA S VVVYE IDPDSGKLIEHVSVQGKHPRHFSILPGGRHL SEKQIQTLIGHSNS ISSVQFSPDGQMIMSADDTIVL LA WDNRDRLWNLETGELIRTLKGHDEDVKTLAISSDGKWL RRTAVVRTIPDDVTTLUQTAADRVSPSGRWVLASNRGHLL NVPVQHPHVREVAFSPDGKRVASLGDDFREWDV DTGELT


## UniRef90 R4KL40

 UniRef90 T1BG15 UniRef90－K5VAHO UniRef90＿C5AAS8 UniRef90＿O7N6R UniRef90－UPIO003B6865F UniRef90－K9UH13 UniRef90 UPI0003B61E43 UniRet90－K9WPSO UniRef90－хоКНЈ3 UniRef90－FOKBEO UniRef90 A0RVT6 UniRef90－ $88 \mathrm{J9H}$ ： UniRef90＿UPI000376A76E UniRef90 M3EAFO UniRef90 UPI0003784CDE UniRef90＿UPIO0031CA480 UniRef90－D9W4E8UniRef90－K9тl33 UniRef90－M5C8M7
UniRef90－W0RE37
UniRef90－K9TDI0
UniRef90－s9P7U0
UniRef90－ A 9 AJH 1
UniRef90－UPI0003B49DAB
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UniRef90 UPIO00455D227 UniRef90－A311T0 UniRef90－V4PDG4 UniRef90－B2JOIO UniRef90－AOYRJ3 UniRef90－M5CBL5 UniRef90－F9PHJO UniRef90－E8N118
UniRef90－F3ZQD3
UniRef90 ${ }^{-}$F4KUW5
UniRef90 XOSM76
UniRef90－LOD515
UniRef90－LIKVV5
UniRef90－D4XIC3 UniRef90－L9W157
UniRef90－×8J598
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UniRef90－U7DKF7
UniRef90＿B4S559
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UniRef90 F4XSE2
UniRef90＿J2PE36
UniRef90－R7KOZ5
UniRef90－UPI0003B4883B UniRef90－UPIO00361ECBD UniRef90＿S4XYT6 UniRef90－B1ZNQ2 UniRef90－R9NUF9 UniRef90－K9Y006 UniRef90－UPI0002F38A59 UniRef90－UPIOOO36BD429 UniRef90－U4KF84 UniRef90－D6TTJ3 UniRef90－UPI000373EB26 UniRet90＿X6NV75 UniRet90＿U7QL54 UniRef90－UPI0003823B02 UniRef90－F4CNT8 UniRef90＿UPI000455FC76 UniRef90＿UP100036A5F00 UniRef90＿J7L613

$R V W E A G T G E C D G Q P \square K G H S A F V L S D A F S Q D G R S L V S F A S G$ GAEPPVAYVTNAASADLWIAEWRPEEERFDGRQAFDFAPGD
 AVTYDSRTGHLRHVFKLAKPARHA
GYEMSRHDVATANLDQTADTSSEQSTLRD DHFAPD VADARAGGVWLVDARRFAPLGFVPTA PGARGLA CDAYSQDGTR｜VSTVRLWDATQKAVSTDQLENADKSSDAP TAELGTGKVRLVPAFSVWDTGTGKILYRHRGFLLGTLPTA VRSLPSGELQAEPVKIPTMDQPAETMGMSVDGTQFATG TMKDGSEPKKVAIQIAQDNRYNKVAKN\｜RGGITDMAVSSN FWDVTTGQKVFQHMLSFQPRAR VVDFKEDTFTLKQRLSLLDEGFTGD VRAVGAAEVRVTPD OTATSASDDKTVKLWNRNGQLLQTGTGHSSSVNGVAFRPD
 ASGSSDHT R

s LVD T
TTGHEDQQFRGHDDTVMHGTFAPQGTVVATA VRPDKALVAADSVIAELLPEGRVTERALGESGTSALTFSPD VFVFALNDLGADDAPHCVASAREGSGPRHA AFDPE TLGPSDGALVIVDHEEFAVDKAYAGDETNCGTMP HPT CIAFSPNGDLIVTGSSLDRSLEVNLWDAQTGTKLVQFSPD RVHFTAARDGTFAMWDSKTGDEGGEAWAKDGYEACWSND保 CSASYDSTVRRWDAESGALVGGPMTGGHVRVNS VAYSPD RFDPKGNPDLPLTPATPASVQLPPG RLRGPRHLLFSAD
 TMVDICEVRASGAMI RSVERHSAMVGEVPSGNLPSHLEDH VWDVDTG EIDA｜LDGT TQRP EYSGAWSPSGLQ LWKPDGILLTRLRGHSDLVWAVADSPD RFDPKANPD पP LTPATPASVQLPPG SGPRHLLFSAD G RDF 1 PTQGKGP RSVVATGDKDFTANYYTSELVSMDLN TADPYLNSIIIVKMFDWEIVKS PDDAHAVSAFTLAGDGALRPVPGSPFEAGRGPVGVAVSPD ATASQDETARVL WNADGTGDPFVLRGHDQVYSVAFSPD VTSCRYDAPRVVEPFERVSTGPADFSGQNTTSE I RVHPN EAATVSSDPSGYKGTSFAAG LVIDKS QYNTVTNEDNAVKVWNLEGKLLKSKDVGNDYVYGVAFSSD SGDTQGVVKLWDLNSGQLIRQFIAHTQVSGLAFTPD TAVEDANTPSVEATTVIPGLLDVHNHWHFRGRQ
YAEFHPTDPSVLAVKTSDSDLVLYD LATGEVQRMEAPEP VVEVNLNGMSVGQVIQLAKDTSTIDGG\｜PNYLNADT DSPD FNTYTMNAPVLTQVWNLETNKPVA SHSGAYLATWSPD DAANRDTNNLALFRDDAATGKLTYTGHSVSVSKPVCVWAG WNAKSGEKLKVLKG

HTNTVKCACFSPD A SGSVDKTIKLWNLSTGKKHLTLKTSDWVRSIVFNSD RPDGGLLVGEGRIARLPSGRSTGRDLVQGDEIGALAFTAD RVDGDSDEPVLAHTEPGRGSWPRELALSPDGRIVLLGNQD LPHVPTDTAGDPEPFIHGRGRVTSIHWFSNGQQFIT
VSMYTGNR【NVIDTTSNT【VQT\｜TSUNSPNNDSGTFYATS

## UniRef90 R4KL40

 UniRef90 T1BG15 UniRef90-K5VAHO UniRef90_C5AAS8 UniRef90 Q7N6R UniRef90-UPIO003B6865F UniRef90-K9UH13 UniRef90 K9WPSO UniRef90-хоКНЈ3 UniRef90 FOKBEO UniRef90 A0RVT6 UniRef90- $\mathbf{X 8 J 9 H 5}$ UniRef90_UPI000376A76E UniRef90 M3EAFO UniRef90 UPI0003784CDE UniRef90_UPIooo31CA480 UniRef90-D9W4E8UniRef90 K9Tl33 UniRef90-M5C8M7
UniRef90-W0RE37
UniRef90 ${ }^{-}$K9TDIO
UniRef90 S9P7U0
UniRef90-A9AJH1
UniRet90-UPIO003B49DAB
UniRef90 UPI000455F5D0
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SFDRTVRD WKWNAGTCSDSDAGFM GQKVFDADAKRAYVTTTAPGNAFDTTDPDYPRHLGAAETA GSRLYLGGHSFGVTT\P VLEVDTAAGTVARVLRVP

DSLIAFCGRD
SK $\square$ K $\square$ LDARSGELLCTDEGH
GTALYTVGRDPDADHQFNLAAPYDTENRAPAVA $\square N \nabla P \square D$ ADRLFVV HNKSRAGGGTLSAVEFRSRRVASRWRLP SKRLTIFSHNKSRALLVRENDSVEVYKTDTWEC AYQPLS GQMLATGSHTVKLWTLQANQPPMLIHTLNSH GRGFLASGGLEDGT VHVWDVINWQQiTTY TG GKEDAFIVRGEVFVTAMVENGYKQUTNT P GK AFVC GRGTSADEYGLEM VDVVKGKQLWSTTLI GQNVYA GSRLAFSADGKПYVMPMSGGKPCALAD GQTIASASDDKTVKLWNRNGQLL QTLTGH
GQIIATASGDQYVRLWKSDGUL:MPLERHSGKFVAGBGE GARIVSGSDNKTVRПWDAQTRQTVVGPLQGHK
SERLLGGLGDDRAAWDAARGERLLTLEGS GGTLFVGGNQVLRAVVTGDGSDLWKSDYDPQ
GKFLYASNRLAGD
GVA IFRVDPKTGER】GYQFTG
GGH
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 DDYVYVLSH GSNMLYKL KESGEVDASVSIA GTRVFVSFRRGMGLWDGKTGNKLW ERIGYMHIG GTRLVSGANDRTGGKSDASAGQDGCVWDASTGEAFGTPLEG GKHAWLTMEM SAQVAVFDYRNGTLEQTLAAG GKRLVSCGEE
NEDGTVA
TVIRUWDVASGKNTASYATG

## GKHLYVA NRGANCTSVFETDPWRPVIDVPTG

 GKRAVSGSRDRS $\quad$ VVWDVDTGLQIGDALTG YVYVTSAPDGPADWMRSLAEGWARPFEEGSAEGYYDLS GKNL
GFVFFVRTHPNTNYПWADSGGY $\square Y \square I N K Y T F D V R R \square E \square S$ GRHLYVANFDSNDMN
GHHLVTASHDRTARVWNAD DTGEPLVLRGHT GRFVYAA NRGHDSDAVETGS品TVEIVPGG GKNIYAANRGHNSTAHFADEPNGALDHMD V DVMVTRG GQTLVTASHDGK $\backslash$ KLWDAKTGNF
EQHLYEDHFSNDGSRLAASGTTAVWDTATGELLTDEPVE GGKAWDPSNKADRGEFNEGSEDVSQIDDNTNQELASIDNR GQQL AYNGSTQLGKNSYESNVTIVAANSGKVVHVYKEG R
SRFTASCSHD NTMRПWDAESGEELK TLKG
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GRVTSLAFSPDG LYLVSGGEDESLRVWDVSTGQQLARA PGAHHLAFSEDGR LALVQNGNDGSUSVVDLEVMEMUDS P G

HAVRSVCFTPDGTEDASAANDES VRपWDVKSGKLLHT
DGATGLALSPDGTRपFYLGQANDQVHPYDDAGAAVTGNA GGGSPVPGGVSSDGTALWLADPAGLVYAVSTRTGRVVRKA LPTHYVAFSPDDATILTASEGDRGGVALWDAASGSLRAQW GEVLGUAFSPDGQTLEASASQDGTVKLWDNQ GVLLSTLL SEINSVAFSPNGA LVVAAGENRITSIWDTRTGQRLKSV YGTSRMSYSQDGTLRAVVTSDDDDTITVWELERDEKLYTV EQERNVDFSPDGKALIYSAERNGS RNHTAIAFSPTGDK VVVGFIGGTLQVFEASTGR GMPRNFNFTKDGEYLLAAHQASNDVVVFNPEDGKDSKT GWQPSWSPDGKTLTFVTWRASGDVWTIPAAGGAATKIS NGARAVSFSPDSSQVIAAASDDGTVKLW
NGARALAFSPDSEHLL SGSHDKAIKVWDL
DAVRSVAFSRDGKH VVSGSYDGTMRI WDAQTGQTV
DMITSVAWSPNGQRAL TGSQDGTARIWDAATGEVIHT KHPRN ANITPNGK YLVVACRDEDSUYE $\square$ YYKTGRLLPT

KGTWGGGWSPDGTVIGWGTDWKGGNT
EPVSALAFSPD SRVLAVAGEAGTI QLWDTASSRRLGSL NRAAGLAMDRRGR HLYVSNRGDDSIAVFDPDNGRLVQHV NDAHGFWFTPDGEE WVLNRETNDGVVVDPETDEVIEEI HPVESVSYSHDGT VVASGPRDNTVIVWDAYTGKVLG ANPFEMAFAED KLLVAGYDSNDI HI LNPENLKSLKSD CMAWAGNDTK $\square$ ALGGSNNDGRVVLLSARTGEAI R HQVWCVAFSPDGA FIASGSLDNTVRLWDSATGAHLATG

DWPRHFA
ANGFMYVANQNSGDTAV

QPVTSVGMSGDGKR AVSGSLDKSVRVWDVDTG
QP RYSPDGQRDAYVRTGARHAVYVSSTAGG HRVSGMADSPDGE MIASASADNTIKLWH RNGSLLKTL

GKEFHTEFSSDGSXXF口TSRGENGG\|IILDTATQKELSRF

## DRVYGAAFSPDGRR VASASDDRTVRVWNADTGEPTVLR

 KTPRNFSTTPDGRWLLC AHMDSNTLAVFDAATGRLTRTG DYTRTLTLSPDGKTLYAMNQRSDNTTRFNTASGALTDDY
VY SSLAFHPDGEVIVSLTPAPDNDFTVLDGETFEDRHEF AQPKAIQFS DLGDYAYIVIEGQNSVEIRDAYNLSRVNEL A Q $\square$ A QLF WS PNGKYML
HYVNAVQYFPDGRS UVCSSDKTWRWWDKTGNETQQL

GGA LT QLSPDETVLT TGSTRFMGSVGQWDVRSGRKLALT H $\square$ PANL

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PA
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Y P VGK G P M WVTV

PDPTPARVLMFSPD $\square \mathrm{P} \square \mathrm{GNEPTGII}$
$T G V D S V S A D V N P$
GD GA GAVTALA
T GCGP
PFAGHTWSVVYAPD
TTSGGF
S GHSRVES VVFSPD
K TVGRQSS $\square$ GRTP
$\underset{K}{Q} G R G W V L S L A F S P D$ K

K R G A A VT S L A F S P D DTFKNAGFTV

DVDDNSPTVAFTPD
$R V A G R \quad P S G L V H P Q$
E G
NGNGPVRKVAFSPD
SPAADHRSMLIGDDHG GHENEVMSVAFSPN $R E R L G G S G V V$

PTTDYYTYPVFTPD
TGSSSVWGVAFSPD

PTPGDPVS $\square$ AFSPD
PS GGRTPFFTLSPD
DAYGP
PLVGH
K VGEGPFK 1 V
ERPGPVES LCFSPD
E G
SVEGDHP
EGHDDGASVCFSPD

S VE G D H P
K A
GHDDEVNSVAFSPD $P T V A V P R V V C V$
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E GHTDWVAFSPD
P G
ADSGKAPVGLV

D A P DKPSYVDVSHD
KGHSRAWSLAFSPD
T T P G G A $\square$ T SLAAFSRDG
ERRGAARKDEFSAD
PTPGTPRWCMDDP
$\square A A S G G Q L R R \square S T S A G H N G H T G \square A F T P D G R Q L$ QWSRAGGKGGK LAEVAMAHPCGAMADTAGS LWVA TVYTASPESQQDHVW
A Y S PDGK F L
PSPDCKGWY! S

AFSPDGRTL
S $\bar{V}$ T S T A P T A G T $\square$ QLT S G S CP N G VTV SSDGKYAFV

A AVPRSA $\square E \square E T V V A S S P L P A D A F S P T G N S G L T A$ DPPLEDHSAGVAEVAFSPDGHTL


TEAGT $\square$ A $V$ P T $\square$ A A E $\square P$ K AS F $\square D G R N E N R L L A \frac{\square}{T}$

PVSADDFSPDGKTVASA

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

T V Y T A
P $\square$ T P P PRST $\square$ AAAFSPDGKT $\square$
EPVADAARS NNEDWVV
P VGEPLTGHTATAFSPDGRTL

D G S S VY VA AS GALS LVEQTKAGDQVNPMADSPDGKALFAA AVSPDGQR! A W P TPVAATAAA LRPDDALTEHTGAVFAVAFAPDGHTL
$K R \square Y V I$
ATRKEQRVTS LDGAEVGAAFSPDGKVI A FQ

| $K$ | $A$ | V |
| :--- | :--- | :--- | :--- |
| R | T |  |

DNTRAYVT

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DRG GG $\quad$ S WD $\square$ PAGKEVARFGTGRGAHVAVTPDGK
 DRDGQTLVGGIYLWEVATGKRKKTDAGHGKAEI AISNDQQ $R \vee V R T L L V G D E P D V V F A G P G K$ LAFSPDGK
Q P T L
DRVLIVDVQSQKVVQAVSTDPVPK VSFSPDGK $S \square G A K \square G G N R V W D A T T G E P R \square T V D N G A R S E V V W S P D G T$ RGPAAVWSPD DGS SNSN\|VQ\|IQTGQQTVLKTПSVGTGPE\|VVDPNNT


VA ${ }^{\text {D }} \mathrm{HPDGK}$
 D K K

EPGV VEVIDVARDQVRATIDGSRAGQMRDSPDGK GDAVWSPDGQ
ATGGADFTVRLWDVARPRRLRTTHTDAVNAVAFSPDGR DCEEKA VKRIDVKTAKIVATDPTGANAASSGEGN
 ATGSDDKT $\square$ G $\square$ GRVGNVSVSPDGK ASMGPRGSSILTVLDADSRSPLQYTDAGHRREIAFSPDGQ SGG GSNVINVVNRYTFKLIAKIDSGLNPRYGVVKDGK

A A G GDDETVRLWDVT DRDRPRTVHTGLIHSVAFSPDGR GETLANTAVILDADPNQVIVEVPANSASGVVATPDGK VAFSPDGT $S \square A R Q S Y D H S V Y V W D P H N G Y L L G T H Q G C D Y S A M F S P D G T$ ASGSHDGTIRLWDPAHPRRLGQSHTGSVASIAFNPDGH VSGSFNGHLTMWNATTGEQIWLLAKQGHTNSVAFSPDGT $D L G A D V L$ RVGPFDADDPEPVGRLDPGTGPHMAVHPAG


LGTVPAGTTPYVAVNSAGT
NQGDSTV QEFAVDSGSGKLTSTYPTGSHPTLAMDAAGK
SQEPGAPAGEVACFHMDK $\square T E V H R A S T Q A P G A V H D S A Q G S$ NR】FAVGPNGVD IIDAATGTVLGGVDLSADGGASVSVKNG GGPKENEAFDPDTT
$K \square A V L T \square D T F S V S S K L A A T H H G H Y V Y S \square D C R$ LGTDSV WVSALDGDD DRPLHQVPLGSGPHLVFRADGT AAGGDDNTIVRWDMADRELTGHKSTMVHSVAFSPDGR

AGRNLLLR VWDLDTFKCVRTDKAHETPVLAFDPSGT $A Y R G G Q F$ $H L W S L D P D G S G V R Q L T E G P W D D G P A W S P D G T$
 ASTHGDHTVK I IDCQTGSCLK VLSGHRR N GIAETGK TGDVNSVSFSPDG N HLSDSVSVVGGQTGRVVRTLLVGDEPDIVFAPGRN ASGSSDNTVRLWNMADRRHPAADGAPDTGHVAFSPDGS


GGSGSAYSLVQFSRDTTTGSYVG\|VATAAVSEDADSDDGT $\square R V K P Y Q V V S Y S \quad D E P G T G R P L A Q A P D A E S A Y L S T D R S G R$ ASAGEDSTDRLW GADGHPLKTLSGHQGGGVAFSPDGK DGSHFASAGEI RVWNAKTGE GSIDTDSVTSIDDSPTGS ATGASDGTIRLWDTASPRRLGAVVTDAVWSVAFSPDGR
NETDGQTQGGLI IYDVSEEKPRADQQVGASPYVAVDEARQ DEKYQTLT VDLASGKVTKVLGGGSVPGVSWSADGK

NQAAFTTDDFVAVINLSTYEVESTDADNADGERDLEENGK LSMDNRVAVVDT $\square A Q Q Q D D K V D N P L F A H E \| F L P S G A$ D SPLGVIGM\|D\|ADPRAPKPLGNIDVDGEPTTAVIRKGM


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110
120

| $\mathrm{T} V \mathrm{~V} T \mathrm{~A} G$ |
| :--- |
| $\mathrm{Y} L \mathrm{~A} S Y \mathrm{Y}$ |

DDLIVRTYDAVTGA
T G A
S GK
S G K $\qquad$ S


 YLVTGESGHMP

DKTVK L WEVATGRLVS T L GTGEKTSPTLQVITLASNVHHTGTLQEH
F $L$ A
LVY/A
RLATSSYDSPR T L GSGDNTAKLWSTETKTELYTFTGHTN GRNSSAVWVYDEATLT LQRTDAVP
$R$ VAAV
 HHWTMNNGNSSGCSSEANPNVSSDSVVHDDPDPVIIAYIH WLAVGGNFARDPQAM GALRIYDFASGR
$S \prod A A$
TDGKPNNGIYVYEL NKKNGEDRLLDH GDGDNTVKLWGIPEGSEIRSLNGEDW DLEEAAVVTLIDARSGSVVARQLATGGQE Y $V$ A Y A GS Y THESSNG


TLALGAGSE $\quad \square A L V E T A S \square A P K A R \square T A Q G A$ FIAAAPVNSIVGQKPPDSHGNIVDIWAYTVQMWNATNGT QLATAGTDATDMTGSGSAREAAVLTGHTGSVGTLAFGPGG VVAGEGSVWVASDNGADDGLVARIDPATNAVIASVPVDPG RVFAGRAGHERDD FLYVGVRPEFRVLAYRDTPDADNGALTAGEAALPGS QI AYTVTYYSPENRGNADLY IMDADGTNKKQLTR HLVSSS
$\square D C T V R V W G T T T H Q M \quad \square M A P \square N$ A LFSGSPDGGVHRWQDADDWI REVDPKTVWSDADGADAKT

$T \square A T G D A D D T V R \square W G \square T D D M L A A S S A D S T A S \square W N V S D P A Y$
TLYVAEYSSNNVNVIDDDPAS PTKGTVVAS DAMPGG RILSA
 MVFTA $\triangle V E G A V K R R S A A G T I S T I A T$
TL ASGSHDGTI QLWNLT D_PAHPGPLGPP K A G VY $\square$ A
 $V L Y$ VS GELDDARVHVLDKASAWSLGAFDASRF
YLAASGGEHDNIHIWDGNTMEHLHTFK G TIVSAS DDKTIRIWDIASGREIQNM
TLAYGTET DSAVAHPTPP LRVNFWGVSRHRVTGTADLDVM $T \ Y A G A S M M A V S A G A Q A E S L L Y V S N A D S G T V T G Q M K L L P T$

VDDPRGGHY DA GVA DDGQ

FLYVTFTYQKYSDSNPGPGGVDUF $T V V V A N Y V G G S A A S F H M D A D G A D H P A S F Y Q F N A A D H G P D$ MVAVAVGAEDKTQPG TVVVMDTDGAEI
GFKKEGSDWLTVVNPN VVKRVLDVGLV TF DDCQF ICSGSEDKTVRVWD IETNKQSQSFNIHSG HVVSA AEDETVKIWDAVSGMQISTLEGHT VLAGCNRNT NLYDTKTGAKL CVLIDDA RVYVVGELEP ASGLTACSWDVDSGRLEPLGETRV VP TLASGSSDDT IRLWNVA APRHSRPLGAP $Y$ Livig

 LLLV TALSVSPVDYTLVSGSDDGTAIVWDTRRGRVLLRDEGHGG TPWVVRFHPGDLASGSLDHEVRLWDANTAECI GSRDFYRP
 RAFDT TAHRGQNVPYDPQFTVWVFDANQLNPLNIITLFSD

GAEDKQIRVWD ${ }^{\text {GTRTMKH }}$
RVAVGCSDGSVSi RNAYDGT
LFRG

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Q 1 Y GVN
GKENATVDLYSLSKGKLINQWETGEG
S LYT $\square N G V T P D G S T G K N A V T F F S R D T T S G A \quad \square A F V G S L V G$


GSSTGSVQVWDVVDRTAPKSLGGG
LVYTANYHKGLVDVYA $\square A D D G T L$ TETDEVHDDDPVGPA
GNDRNLIELVDVATGK ARTVDPAP QDHTVRVWDLATLQQLYDLRSPEE
$\square Y$ VTNGTYGEGNS V V V 1 TPFRMVLDNQS $\square Y$ Y $\square$ S DRNNTIYVI DINTYHQVST I NTPPF AFVGVNTSESFT DPSGALRSIDLAEGRIVDSCDLGGQ

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UniRef90-A6T6J6
UniRef90-W2CTW9
UniRef90-UPIO00455E269
UniRef90-K9S851
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UniRef90-J2K191
UniRef90-M5C1Y1
UniRef90-H3GHE4
UniRef90-F8JJP9
UniRef90-V3z165
UniRef90-A31P12
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UniRef90_UPIO003B5C530


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 T T S L L S G $R Q Q H Y P \square V P Q D \square A$ $R G L I A$ RGUA A ALSSSDGNTVVTALGGEDATVKLWNLSTG
 $K R G H T Y W G V T S V A F S P D C K L L A S G S C G Q L N N D K L W E V A S S$ $K$ QF DRVDDPTTMLI DTHMRFGFILDHKDEAA LQKIDDLETMM $W V T S V$ SFSSDGKF LATGSYDNTAKLWS I ETKA H N QP F N L A $\square G P T G G V V Y V T Q Y T G N N T V S V I D P A T C D$ HS QTVTS V V
 AS I CVGKGAHKVAF Q TVSPFLALVTNQSDNSVVVIDDDSN

 $F A S M$ NAIAAFSPDGGAIA AG GGEAVEVWDVAE G $A \mathrm{~V} \quad \mathrm{NAMSFSPDGKWL} \mathrm{\quad ATGGQDGRTKLWDPATG}$ $R F K D D A R S G C D R \quad G D G K L V V A G D D T G G I Q V F D D N S R$ R E EVIIID N P S F
 G $\bar{D}$ $D R A$ A R L WD D $L$ T $T$
$\square A Q$ V A F SNDGRRLAAV
$\qquad$ D NGLVVWD PVFTYT GHSDAVVAWSPDGKH A IV SAS WDNTVVQVWEAANG

 P TH $\square S$ T D H H GRFVVFSAS
TAASESAVAWK P D
 WEFSQG
ANRLL L

TRNFQYSPDGTH

 $P S Q \square G V G E M Y A L G F S P D G R T L A B T G S G D S K V R L W S L P T S$

 S L P GAN SLA F S P D G K H L Y VG QVF F G D G L S E DD LE GR


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T SVQVLGNNP HSNSV
 GRYTVGSLPDMVTFTPDGTKILVANEDPEGSVSVVDLASG HTLVHDSVVCCVRFSPDG SVYCVKFSPYHYRSS
 SNSKADNYIRSACFSPDGK YI ATGSEDRII RI WDLSKR PETEKEAFPSEVVLRPDGRLAWVAVRGADSI AVLELDEAG LT GHTGP VWSVAFSPDGTMLAAGSADSTASVWVSNPAYP ARSV ETSKYKGYEDKLADAGAYWPPQFVIMNGDTL PFKDHTASVLSVSYSDDGSRLVSASLD A I RVWDPQTG RGHSGUVT,LVQFHPDAARLSLVSASDDATVRVWDGYTQ PSQDGPWEDFDPTWSPDGRRVLFVRGDPGPAGTVLEART SKAVGNGYG SVDVNPGTLAATSSLDSHVKVDLETG PTHLSTDHTGRFLFSGS YNAGSDQTVVMLNS GETGV $P V S N$ I 1 HDHHGALIATGSDDDKSVKIWDASSG IAS $\square$ AF HAQGELLAVASGHKLYDWQYNRRGDASSPTSVLR

 HEQD $\quad$ YSLDFSKNGR Y $\quad$ AS GSGDRTVR I WDMETG PLAGSSGEMYALGFSPDGRTL ATGSGDNKVRLWALPTG $P L Q G H T N Y V P S V V F S G D G R \quad L V A S G S Y D R T I R V W D V R S G$ IVAA EVLKNGKEVAFADQ AQNAVRFFNLLDG
 SDT $\square P \square K S P S G I V L S S D G K S A Y \square S N L N N S \square T V L S R D A E T G$ QTYKTGMHAHSVRTDPSNRFVYAGNLGVDRVLQFRDQPKD HRAGVFDVKFALAGRAGTKRPADVSGSADGTVKVWQPDHN PAADSTGPVNTVAFSPDSRTLASGSGTNAGLILLLWDVMGAG
 WDSVSTRGDDGP IVFSPDGHWLAVIVNLPVGPDGTPT GRAR $T \quad P R A \square A F H P T R P V L F C G F A S G A V C S F S L E A A G$ $N T G \square S P T S F E E E N G Q L Y V L C G N Y D D A S K L V R V Q L S N N$ N P A SF GPGLRGLDISEDGKRLYVARPND $P D S V A G S D M D A V A L E N E R D E D L G D G G L P Q M P A G F V A L V D C$

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 KLVGTLPDSG DAVRGLAVHSGATKVAFICGPETD
 KVVT QLEAVDGSG NLI ETLPVEKEV NLGLGLPPPTTNAAGVAQPSAPLVKFNGQH
 IVVVAANKVGSKVTAVSFSEDCSYFVTAGNSHDKKWYLDDS
 TFI GHSQSVTSVSLSADGKY LAAGSED $T V V A T L P T G N S P V G V T V S H D G S R L T V A N \square S S A F \square S V I V D L$ ERLLTLEHSDMDTSVAWSPNGQRALTGSQD GTAR REMYT L DGHSRAVKSVSFHPDGQI LA S GS WD ALLHTFDT SILRTDTVGTAPLNVAYSSFMNLFYVYNTGAGTISVIDPN VRLERTLTGHTADVYAARFLPDGRIVSAGYDNQI LLWDGD KQSANGENPVYVSIHQSQKFVISANYGEGNVTVLPINTDG RK L H R EEAAALPGNAAVTALAFSPDGNWLATGSENEQVF A ILRTLDSHK QPVVHVTKFSALLNHTQVLSCSD ELVASINGMRGCHDCVTSDNRFLVVSGDGKITVLHDNADG ECLRI AGH SNFVKSVAFSPDGRILATGSDD ANPAQLFRGNRWGAEH ISPDGHTLYSF GQTSVQSWDVEG T LA Y THVGVGTSAQLGWSPDGKRLFCNSDH
HRPRELPGPVNSVAFSPDGRTLASASADGTDRLWTLGAAQ

 TVVEGLEGCHSANDSPDNRTLWVPALKQDRICLFTLSDDG K QVSDI E
 QRTATF KA AETVE DGSSGDS DEEENGTLFILSGSGEIVKVKLSDK KLTSDI PWQMQPRFSPDGKKIAFTSDQGGGDNI WLMNDDG

 KEI RRF QHTGWVYNVGFPAREDRVLSG GWDSTVRLWDVE
 $K P D R Q M R V P G G S G D L D S P D G K Y V V L L G D G S H V G V L Y G P N G$ Q R R T LA HTNSVLSVAFSPDSRHIASGSGDQ TVRDWD AVEEDGASLRPLGESSTGGKWPRHFAVMGDHUVVANQKSG TYIESLFGHQDKIT GDDAGRRERAVTSGGRDGSIRVWK TEMA ILEHSGGVTTVQFSPDGQSUVSGSWDR DMVRSWP GAQGHAVADAPDGSR KLIKQSPLPESMAYLSMDKTGHYLLSASYGGDLFSDNRDQ K TDR $\square P \mathrm{~L}$ GA GSAPHGVGPDQAAWITDGGQNAVVRVDPVK QLAHTLAAGEGYHFYGHGSGRYLYVTANRGEDSAGLVRVYY

IGTVAATGATTPRAIVVHKNLIDFLADAGGT WI LIAFSANGTSGALTPIGKTNISV
EEIRTFEGHKSGVNAVAFSPDGQIIASGSQD
ATAKMTLHGEWKSAPGAGPRHLVLHPNGKWVYNDDEMAC $T V Q D Q D D A L R D A G V R D F G P G S Y I A I A P D G Q T A Y V T L Q E N N$ AKLS I LNDDASNSKQDNY IRSACFSPDGRF LATGIVRDW $R Q L Q L F N T D G V C A D E F S P F N G G R Y L C S G S F D K S V R V W D I K$ ACLSTLTMRDCVLS $\square A V S P D G L W M T S S S K D D N A V L V L D V A A$ K 1 DAAKLVATMPCGGRWP RDLADHPTGRWLYAANERSG SQVGEPDAGAVGFSPNGRTLATASGDSKVRLWVLATAAR EPLK IVATRGTVGTHPEPRVASUVGSHFKPEFVVNVKETG K QVACLDGMMSLVTSVAFSEDGYTMSLSAPGRDKVVNGWNDR A AVAADPVTVAHTDTAA GQLMVPAVAPDGRDAY DRTTP KLAKSDPVDAWTVAFSPDSRFLASGSHTGKVNLFGVDSGR
 TNRSLRAVHFHPHAAPAPDSSMTDATSRGYLQYVFFANMR GEFREVARAFDDKGHSAGVHAFDFSNDSHRMVTVSKDGTW QA $\square G E P D R G H S T G V N T V A F S P D G K H D A S G$ VADV
 RVLATAPVPMGEPFRPKGGVRSLEFSADGRTLAVVTGNRW SLIAA KERKRVRVSKNPDTIIEGTKELKGYVISFTQKDVTVIDDR N LGFIETIG YSKQVFESVAINNDNSRIYAAGNDGI TLLNDQPTGGAHQDDPSGNYLLSANYGSGSVAVHPDAADG SL GTLLPDDEGFVTLPENTGPR HLAFSPNGTFLYVVGEMSG SEVFEVATAGDVI ASASADGTVRLWKPDGTLLKI ALLHVI KGHKGAIYSDSVDTGSSKLASGSEDGTVRVWDUQ SVLGRID HDVRRDQADGDFSVLFLPGSHTDAASSLDTTV
 TAVSHVDLPAGYG DFDNKKGVAYLVGELSSNVATGDYDA RLTSE ASDAPSWSGDSKTILYLHNGNLRTVPVTGGKPT VLVRHRRHQGAVTGLAASPDGSFSSCSRGTLAQYHCSTTC E\| L S EV
 A A MTRVD $\operatorname{DTGLAE\square APEDPEPEFLD\square NDAGE~VVTLQENN}$

UniRef90 UPIO002D36F3B UniRef90-UPIO0016C458D UniRef90-T2IST4 UniRef90-UPIO0036270F3 UniRef90-L8NPT2 UniRef90-S4Y3C2 UniRef90-H5SRN1 UniRef90_UPIO00462CF01 UniRef90_-Q8N475 UniRef90-D8G755 UniRef90-UPIO004697507 UniRef90-UPI00020039F3 UniRef90-K9R1C6
UniRef90-D6TQR9 UniRef90-V6HFZ7 UniRef90-UPIO003687F6F UniRef90-l2EYT1 UniRef90-K9TJ43 UniRef90-H8GLX8 UniRef90_S7RX02
UniRef90 C4Z165 UniRef90-UPI00047708DF UniRef90-UPIOO0479D2C2 UniRef90-D6U8C7 UniRef90-L1L8A0 UniRef90_A0A031K180 UniRef90-A0A024M7X2 UniRef90-A6T6J6 UniRef90-W2CTW9 UniRef90-UPIOOO455E269 UniRef90-K9S851
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UniRef90-UPIO0044148E1
UniRef90_UPIOOO381D398 UniRef90-C1BV17 UniRef90-X6PEY4 UniRef90-UPIOOO37CD3D5 UniRef90-D8MSG5 UniRef90-D8MYP2 UniRef90-T2LFO3 UniRef90-14B3R9 UniRef90_D5A678 UniRef90-13ZBH5 UniRef90_13TJG3 UniRef90-- $5 \mathrm{H} 1 \times 5$
UniRef90- $\times 6 \mathrm{PAC4}$ UniRef90-K5VRV9 UniRef90-G7E9C8 UniRet90_V6KYG1 UniRef90-J2K191 UniRef90-B8R969 UniRef90 M5C1Y1 UniRef90-H3GHE4
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VLTTLISGHTKAVTSLAWAADGSMIIASAGARGDNT PPSLRKVCVWDFVTELGSSKPLNVRYGEPRNLFSPDGNLL K SVSFSADGTAVIAGSPRGAVRSWSTTTGRLNPLSMGGFVN DDKVNDVFVLDAMADPLAGPAGAFQGVGTVLYNPVSGRVY VATGEEVRTI SSSHDPV NSVAFSPDGHLLASSSDDTTI KTSKVNATVPLLGRSGLEFTDVACGRGKKAFCITSSGLLC TGAVSPQVMVDGVTDSVIGTFGNSDVTGTPYVSPDGHYL TAPAAPVALANLTDPGASETVTESADGSTLFVPNNNANVY $\square W D A A T G E V D H T Y T G N W V R D V V W T Q G G P R V V T G S A D G A A H$ KT DKLWDVNTGKELHTLKGHTLQVSAVGFSPQGQLL TSKLSSMQPFSGGGGAMF RVVARYRHDEQLKRLAVAPGYIAAVPD SLINQNGSSDNKERQEKPHDHSGILSPNHDYDFTSGNKLL QI TASDTAFWHRETGEELRRFNAHQGMDRALALSPDDRI WNVADKRPQLLTGHDSAVVKVAFSADRNHLISMAKTGQMI TVKVWDVPSQSAVTT FVVHTDYVRSG SVGF $\frac{1}{R T D E V K F K G G U G S V A E R N F R P H D S W S T V T P D E E L L C}$ NAGFLAALPSPPTSSTDVGQGALVSPDGRRIAYTYYRG
RARPLRTESWDASDGSDVIVYPDVLVDDTVAWSPDHQAVY NALAGR】KVGENLKWGDVDTGA GKVWLRTTDDQVF SAG AVVDAVEVGAAPTQLVLSRDATRAYLVDYDRVIV FLSAQEPAEVTTVEGAGPRHMVFHPNQQYGYCVNEDNDVW EKCMNGDLYEDLDKAKAYVYDDLMYRHWDTWKDGSYNHLY TVQYSPDGSFUASASHDFTVRLWGSQSGELVHNSLRGHKG TLSTSSTPVROSSRPGYRLGALALHPNNRTLADAQNQGLYY TRPVPLGEPFRPGEGDIVRSLVFSPDGATLAVLAGSRAM TVSVTVTEVHAAEPGQV RSLVARTHQVVADDAGSRAM $S T Y Q Q V I G T 1 \quad G A P V A T G A A V S A D G K L L Y V S E Q$ TGEELSQFEIHA WGIWSVAFSPDGTRA
AVCLLWDGTSGKLLSGPLRVHTAMV WGWVSTSPDGTRL
 RLQSDGTS ${ }^{\text {A }}$ TVT
VEESQLVFNRPSSSTDSVKL TNEEHFVT $D V Q S G D E L K I L E G H S S V D N N V R F S P N G A T L V S S S C D K T V A$
$F V T S D G Q V R E P S D D R P A G A G S I V S T G P L A F S D D G A V L$ SNGLVEAKPVQVVHTGKRAHATQVDPTNHYLYVTLLGADY TLAVTRFPLPKDRPNANLNTAVFDKR GHLWFTGQSGTYG
 AVTDHSALGGDLASTSCAGLIHISSGNAPY
DTSGKTVATGYGAGTSPSAUAADPASRFVY
KT】K $\square W D \square N T G E E$ Q
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ATAlVD\SGDEPVVTETVP
NLA QKRVAKDFSGHKSEI YSLAFSPDGRRLVSGSGDRSAK TSKTLHVFNGHTDGVWCVDSPLQSNDNNKASSAGIIDGNG RGGVRHAFTGH $\square R S$ VSTVAHNRDGTR VISGSWDG RTLVSTARVWDMDKGDSVFTLND RDGSAGDASVDAGVT DVT WFDDDP WGLPYPAGADEDPGASCVAFG DERVRDWSVQDPQRPALLGKPFTAGEDVRTMAFSSDGRTL TDRVYDAHTGHTVLGPLVNRVMYSPDGTRLYSCSDDGTVR DNKLSKTVLVHEAIEGLIVVPSVFK
SPAASCTLVVDGRDVPVDGDLAPVPPSPEELLLTVDGHFR KETSMDT GGKFTMSUAYSPNGKYUASGALDGUVN SGELIKT K 1 YDTRTYTRTDTLQHIAGFSPVSRQGDR $\ V T G A H W D A P G$ SGSGLNSEADRDNQVPLEPYPAAFVRDNERNSPQPDNMVV KLWNTDVEYKKQQDPYLLRTVSCSSSDGSRVALSPDGRVV TVRWDAEAGQPVGDPLQGHRSFVSS
WYDERGKLWDDPDKDVFVIDATANPPAWNMAFSPDGMRIV EGSDRAPPPEGAEHELAHEHNEGHRDSVYSVAFTSNGAGL NGGDPDRPVPHGSPVPLFADPLAFSPDGRLLATADDDRTV KKSVSKHFPGHPSS AVGALLREDQDGGHGEGLSQTEGNNTH AVASRDSNTGKLTPGQLALNPDGDSGFTNLALSQDGSLLY SLGEATQF QREGTGPNAARQEGPHSHNQVFDPAGEYAF TVTAFSGVSFDPNTQLVV SANEKTGGLTLVNHANGDPE HQSG\|RGVSFDPNTQLVVCWASDDNTARLWNPTHGGTDW GLWVSDPKAPHADGEPLRAFADNDVTDAFSAAGGDGAAGG DERHQLWLIEDAEGEPLLTTDTTVVHAWGCWSPDGTQDAY TVKQUHTUPDDWTAHNGSAADRLSSDGRFVYVSNRGHNS DVTPKLTYTQQVPTTKVLIHAGRLWDGRNAEPKSNVDILV RVLRVTANMVCRDAHPTPNALVVSGDSLLLAFVGPSKYVV FSAALNATTIS KTF QQDDSVEAGKHPVQGNSVTFTNDKEGFGVIDNGKVR
$H V V I G A G A D A S H A G S V L D G D D A E G A L D F G Q L R$

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UniRef90-K9TJ43
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UniRef90-Josox8
UniRef90-U1L794
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UniRef90-UPIOOO36EA071
UniRef90-H5U3U8
UniRef90_14EHI8
UniRef90 ${ }^{-} \mathrm{M} 5 \mathrm{C} 8 \mathrm{KK} 5$
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VK LDWS RDGK LLQTLKGHSDTVFAVAW
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280
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$V$
$K$
$K$
 V ATGGSDNTAKL
$V V T T A T G T V A S T W T$
 A SAGFDRTIRLWRMKALTESEGEIQNCPCDTLLDHTR



 L G S
 SQDNTEELEVWRVSTGKKLLGHYPVVGGNWEDGGYGDMDWRPD $R L W N T T D V R R P R P L S A L P G T S A V D S$
$A V I D D P K A M T V A A R K G K A A G S G A L R W T P K G V W T V A F A P D$ WCTLTS Q LHGSVD VVA QPAAVA LDRDNGTRLYDADYD ELKDPKGNIECVQTLDMMPPDFSGVRWAAD LGDVKGDKVKTI EDIMPGEPFDSPVKP FGGTEO AWTPD
 AMDINATTPSTTAIVNSP
GTRLGAGEVWLYHKAGGKGVQLTKRANDQKDLGEPAFSPD Q $\square W D V T D P A R P T A H G P P V$ ELDTRYAGPDALAFSPD SADLGVDAVFVSRFHSRTGQLGPAQRVRFKGPRHEVFHPD D AQVVSVIDVDPQS PTYKQVLGTYAVSAQPVALTPDD VSGSEDGTMRMWDVGDST LTPSDLVATHDKTVYSASFSPD
 ALEMATGKKKHLVVGE SNISALTTS VWD

M WDMDS GTC C FT LQ DDDVT DAEN GPVDAGVTSVVLSPD YTDCSGSFDKT RMWD ETTKQLIIFEGHQDW VNSVKYG T LRLWDNAVLVLDVARGGVRHAFTGHDRS VVTVAHNRD

## SVALSPDAAGSLDTLVRIWDAQTKVKGHKDSVYSVAFAPD

$A V R T G S R A V Q L V N D P K R P V P Y G P P V A L R T R Y A D A D V F S P D$ VAANQSNKIAAMDLKEGKMAKLIEVGIPHPGRGANFTHPK TWNVDRGTSDALSTASGVS $\square A \| L S V R Y S H S G R H \square V S G S F D$
LLRPGRGTGEVIPFRAAMSVARPAYRVKSYDLAGGAVRPV VFDMTTG KLIHTLEG
 QVK $\square$ WSA AT GEELLT DDPPKKLS $\square$ P PVAFSSD DTNSEQEITESSPSPHLTTD A $\square S D G C N V A M F D A N T G K L E E E D R A V$ HSQGDTDDRFDDN VSGSKDNTVRVWDAQTRETVLGPLRGP ENWVRSVAFSPD VANTEASRISVLSPGSVAPVPNAENAKSLAFPQEMAVTGN
 ASASSDKT $\square R$ RWHSHDGTPAASPLLG HTDEVSCVVFTPD
 $D V D L G S D S V H V L T P D G R L E E A G R L E V R P G A G P R H L V F H P S$
 DVNFSPD GRMLDASASSDRSVRVWATDGTLLKSFNPA
V $I L A T S S D D A V H L W Q V S A D R T S Q R P F G R S L A G D G P V C F S P D$ SANYRDRSHMD HVMTVATGETKCVYEGUGWRSPAAFAPD ITVFA A DDEGKLTTVQRDST
$V G D \quad R I Q S I E P H Q D G R D T T G W Q V I D A S G Q T V T P G$ TVV $\quad$ STASLEELLRVDVSADELASSRLDSAVADCFGPP VSDYASNGRVFDYSTTGALQKEFPVGLIPNG
YVP DT $\square D A P S Q G E P G G V V N L D S F D V N N A \quad Q N \square V I L P D$ $D V P R E P D A V K W L D A D H F V T A N E G D W N G G S R G F$ TVVARD

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## GSQAFV

GSKVLAGFDDGV
VRVWDEVSGKVVLSLAGH
DSWLAATAY GMLSTGSDDNTIKLWDUHTGQLIGTLGG GKRLFVASAVSGTSTSTTNSSAFYIFDSSSLSLLRTTMVG GRWLAVGAADHPMTCSLYNAQQGFKRQTDFTK KKFAYLIEEMGGNVYQYQNGKLTELQRTMANQKKADD
GQLLAAGASSTDMTLKAGAGWQVNSGEELRTFMGG AAAAGSNPAAGNVQSAOGLAAGRNADVSGKKRSPRHW EQ VLMFPSGTVALSTAGPILRVWDLVAGGRCTRALSN GKFAYVVMKNYロNVYSYDKNSDKDRFDVVNTVRRDHKSN GLAL GKR ATSSDD Ts $I V G G$

GRTLAVASRNHTATLWN


## GQ

GGHLYACDRTASTITVFSVSEDGSVLA VEGYQPTE GSVIVYTCKKGRDYAFQTNSNLYAYTLADKQTRLLTPDMP GHQGA!DADQCSPDGARFASCGIRVWSDRDGVQVRTGSPR

GRYVYFSQDATPGKTFHYSKDSVAGПYRETGE\|ET\|IEGM GRTVATAQDDRSVQLIWDTA DPARPRPLGEPLTG GRFVYVACEQ GTRLYTANSDDTVSVIPTGVVTGTAHGSADGDTLAYSVSG GTRALTGGQDDIV RRLDVETGKEIRAFRGH GKRIVTGCADGKDRMWSSQTDTLVLDPFGSQSHTNED
GVFPFAIDAQGRTEDYVAGGFAFHAVDGRTGQALARPLVS GDRRVVVNDGGSDDGRПGGPSEIVGI

| $\begin{gathered} s \\ j K \\ C_{G} \\ \hline G \end{gathered}$ |  |
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GHYYAAGS $\quad$ TVDRRWDAHTGKLLDKLKHK SNE GNDGGANTDLSGNDKSVWD GTRIVSGSWDGTLRLWDVAKRGFWGHS
GKWLVSGSLDKTLKMWDLSAFESSS $\square K R E D S G G \square A T \square Q T K$
GRTDATAYDDRT $\square Q \square W D \quad V$ VEPSR $\square R P L G P P D T G$ YGPVWSTGHDGDE T IS LIGTDPVKNKANAFKVVQTLKG GTRSVNYSPDDQY $\square$ ASGSDDRTLRLWDASTG ND $\quad$ G GP
$R G \prod H L P A \square S P D G R R \square A F A A L N S L W V Q E T S T P R R \square T R A D P T$ SQLLVTGSDDG QIKI YDVEHANLAGTVSGG GTQLVAAVRN FVKSWDLTTLQQVWSTKGPKL


SRF L ACSGDKA $\square$ RVFHNAPGYRAA $\square$ RDMQ
GKYIVSGSSD
 EDVLSVAQTPDAYGPWVISGRRVQFWDPRTNQ DQLMLQG
 DDFI YVLSH GTNTLYKIGPK GHIVKQDKVG NRYVYI TGQNGNTFQRDGSSPTLTHVQTLQNGVNG IRGL GAAAYLITELD GSALYVAA FGSQSLLMFGRDADSGALTYRNSVELSVNT
 $S Q T F L S V V D$ GSLAAVGDSDALHLWDLAAP DAPRPQGTAVRGHD

पWD $\quad$ HNHQQMKSK $\square$ FGDR
PGHLLVSTSSHT
VVVLDAASGRVVRELSGV
TSYAF VT NHFENF GSPYPAGST $\square G \square I E P D A K \square I A A T R P \square P$ $G G V \vee F D S G N G F D R A V A A \square G H Y P E H R S E N K$

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 RNSVHIGYVPDLLPVVIVAGGRGGR\|LIIDADSGSPEAEL

GFVNALQFSPDGKTLLAGПGQE
HGVTDVRYSYDGRT IVSCSYDKT $\square R W W D A E T G K E \square Q K M$ DSVMALSFGADGTTL RVWS DPTGRVWISEWNAGKVGVFDPATHQ
HYTASVAFSRVSGNALVTAPRGNRVLLLDAAQGKLVASL TTPGQMLINSSG FGYLVCNGDNTVRAYSVANLSLIKSY TGPNCLSIIEPALGTYMYSANNLDNT
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RYLLGPVWARDGRSLLYTDDRDGHAVRRHDGATGAETV SWVLSTAFSPDNTH FITSGSSDKTVKTWNAGTRQCVHT EUNTDAVSPDNRTYVATANKEGTIUMLFDGATGRKLATL EPAFCAVYSPDGEYVAFGV RGGKDVELYDAKSGAFLAKF

HGVLSVAFSPDGMR $\quad$ VVSGGDDTMVK $\square$ WDAE
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GHVNVLAYSPDGKTLAASGGDDNSVRLWDLE
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A N H L A
 DEVCSASFSRDGSR VVASGTQDGYI HVWDAKSGK SLIESVACSPDGRTL ASGSQDSTVRI W
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HS VAS $\square$ A $\square$ SRDARFLLTATDRV $\square$ R VWD
ospooiticsponn yivm
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PGV
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$A Q V G E G M V M A V S P D$
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K GHSNGVTGULTPD
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$P \square S G P Y P B A D$
P $\square \mathrm{SGDYP}$
GHS
GHS WSVAA LDA

EA
T G H T R A $\square$ T $\square$ AF S P D
A $\square H \mathrm{GVY} \mathrm{T}$ T $\square$ A WT PD
$G H L G P V N T L A F S P D$ $S C G G T W P R H M T \square D P S G$

D G T GVIRGVAFSPD
$D G \square A \quad G P A S A \square E R D D G$
GQPGTVQSLAFSPD K G

Q G
K T

P VGTAPTS $\square$ A A
$S$ QVGA $\quad \square \mathrm{A} \square \mathrm{SPD}$

KEHNTPVWSVTFSPSG

LP VAE
$\square A P G G R \square H P A D S P D$
Q G
D G

P

PFAGHTRSVVYAPD K VGKGPFKLD

GSGGS WP
A DV PFATGVTLSDQ
KRVGEAPSG

P V VG V VA S $\square$ A WT P D


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sol5 sol5 sol0 jhmm
jpssme

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B B
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