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PDGRR $\square$ ATAGDGN $V R \square W D A S T G S E \square P R G$ WSVGFS PDGKRAVSASRDTLK LWD LERGTEDATG YSVAFSP DGTTLAGADRRDGVRLWDAATGSLTKTAL $T V Y S V N F S P$ DGTTLASGGEDNI RFWDVATGQQKADG VQFS LDS RTILSCSDDTIRRWDVISRRD IQEG YSVAFSH DSQMVVSGSDANEFVVSCREAIDMSAP

 A VAFSPND QLLASGHRDRLR WDRHRGECI RQL


PDGK\|LATGSDDQVSLWSVPEGKRLKSL PDGSRI FSCSDDKI RI WDAMTGELLAQG
PNGKRIISGSDDNLKVWELAATGKVLHTG
AAQFSPDD SMIVFCSNGTIRIWDIASKEQTQLG

 | $S V N S V S F S P$ | $D G N T$ | $A T S S D G T A R M W N D N G Q Q F K K F G$ |
| :---: | :---: | :---: | :---: | :---: |
| $S V R S P$ | $D G N R I D S G S H D R M Q L W D A S S G K V M Q L G$ |  |



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SVAFSP NSQLLASGSSNTDQFWDPATGALQQTG SVYSVAFS ADGQRLASGADDTVK $\square W D P A S G Q C L Q T L$ PVWSVAFS RDGTRIVSSSDSTI RMWDSSTGKAVLEG SVSSVAFSP DGRGSAAE ERGAVVHWDTHRGGPARELA

YSSVVFSH DSTRVVASSEDKVRUWDAKTGKCER\G
$P D G Q T L A T A S D G T T R \square W D L L G K R A T F K G$
NSATFSP DGSLIASASADATILWRPDGSLLHTLG SALSVAFSP DGTRIVSGSRDNLRIWDSKTGQPILRG

SVAFSP DGKHTVSGSNDQDRDWSATDGEYVLGG SVTFSP DGQRIASGSRDNIKLWRKDGTLLKTLG A VAVSP DGRF IVSGSRDRVKVWEAATGRLLRSG
SANFS $\square D G K L I V T A S G D K A R V W N \square S G K L L V E L G$

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 GGFVSVAFSPNGQFLATGNTNGND
HQNQVNAVAFSPDGQILASGSSDNT
$H E C V V W V V F S P G Q T L A S G G H G$
HECVVWTVAFSPDGQTLASGGHDG
HSNSVWSVAFSPDGTKVASGSYD

|  |
| :---: |
|  |  |
|  |  |

HGNRVWAVAFSPDGQTTASGSGD YTTGLWNASTGDRYN HTSYVYSVVYSPDGKQLASASWDNT VKI WNAASGEEQT HDNEVWKVAFSPDGHTLVSASGD KTVRLWRLHNSLLTR KLKNQVSVFSKDCIVSYIYNEREGKILFHDFNGRLINE HSDSVMSVAFSPDGKYLVSGSFDRTKTVRLWDSQTKKLH HSSVVSSVAWSPDGRILASGSYD QTIKLWDTDTGELKT PGVRARTPRFRAEGEWVVWVTDAEGDDALEFAPATGTVRL HS RWVKSVVFSHDSKKVASGSGD HSGWVNEAQFSPDGSKIVSCATD


 GNTVR1 WDTGTGKETR
HTNWVRAMAWHPDNRRASAGD HEELVMSVSWSPDGQTLASGSYDYDSTUKVWSREGKLLQT
HSDWVRGVATAPDGKRAVSASDDNT LKLWDLERGTELT HQNRIRAIAVSPSGN\|ASGSDD NTAWYYSIAFSPDSTTLAV GHST HSNWVKSVQFSTDGLTLASGSSD KSIHLWDVKTGELHTK HSNVITNAQFSSNGATIVTCSFD QTIRLWDVASGEIQK HTYLLSALPSTSAASHIAKVYWPVFGNIAKFCVQGTGRQR HSNGVYSVAFSYDDQMVASGSRDNT HYGWVSAVAVSPDGRRAVSGSYDNT HTDSVTSVAFSPDGKQTVSGSNDRS HKGPVSGIVQLSPDGSKILSYSGDAT
HEHQVLSVSFSPDNQTLASASAD
$H S G V V N V R F S D G S K V G C A W D$
$\qquad$
RFPGGS DNKIVFTFAGD
QGQRVWSVAFSPDGQUVSGSDD
HSDWVHSIAF

| HSNSVYAVCVTPDGKRVISGSMD |
| :--- |
| HPVWTNKAGSSDGSKVVSCSSD K K K |
| HKEAVLCAAFSPDGHLVTGAQD |

HQSSVNSVSFSPDGKTV ATASUDGT
PSGAVYSVQFSSDGNRIVSGSSD K
YQGTVLSVSFSPDGKTLATASSDKTA


HTDSVSCLAFSSDGTRTVSGSWD HTLRLWDAANGSDGK HSSSVWSVNFSPDGATLASGSYDNS IRLWDAKTGEOKK

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$H T G W I N S V A S P G G L R I V S G S D D T D R V W D A S A T A L G E P$ HSDIVYSVVFSHDSTRVASASEDKKTVRIWDAKTGKERI HKGLVTSARFSLDGRM|ASSSSDGTKVRLWDVVSGNEKK HFGRVWSVSFSPDGQTLATASDDGTA HNDSVTSARFSPDGQRIVSASQDDKTTKLWSREGKLLAT HKNLVYSVAFSPDEDRI ASGSDD KM K K K W $H S G W V H S V A F S P D G K H L V S G S H D$
$H R A G I V S V S F S Q D G Q M L A S G S E D$
$H$ HLGQUKEAYFSPDGLKKI ASCSED K HTRDVNAVAVSPDGGWIVSGSSDDT

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HEELVMSVSWS P D GQTLAS GSYDYDSTVKVWSREGKLLQT



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$L$ K G H S S S S E V $V$ N S $\operatorname{L}$




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## QUERY <br> UniRef90_Q97A95 <br> UniRef90-AOYMI4 UniRef90-UPI00034C322A UniRef90-C7RS72 UniRef90-A31K50 UniRef90-K9PFT4 UniRef90-UPI00034B5A75 UniRef90 B2IZJ6 UniRef90_UPIOOO379B501 UniRef90-B5HBFO <br> UniRef90- ${ }^{-1}$ 6M7P3 <br> UniRef90 B7K750 UniRef90 BOC3Y2 <br> UniRef90-X6MOD8 <br> UniRef90-F4XLW5 UniRef90-UP100037B55FB

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B8HM86
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TSEAGEYDLNDMYKRSSPTNVDPGDYRMTHP DESSTLTYS EPEKGEYDLERLKYDSEPLPVDQADYRSITPLKDGVLLFS LLATASGD LYTDNT RLASGSGSDLYTDNT
TLVSGSHDKTD
VRLWDVATG QTLRLWDAESGOELRQLSGHESWES KVWNLATEEVIDTLTGHDDFVNSVS

LLASTSPD
HLASASADKT
GThRLWSASTGECKRT,VQENTGWLQ TLASGSWDKTV RLWDVATGSQLRLLSGHEDSVFSVA PAAGGLDPDEGLENRVTPFPVAASKYSALHAVAGGLVWLR KTVSGSFDKT 1 Q 1 WDVSSGKL RSWNGHSKSVT TLASGSRD
 NTVKLWDVDTGKE DTVTFEGHQHLVL DRIW GKTLATASEDKTVKLWDLQGNP AGDLWI VDDLSPTSVPRKLDVQAGRRTYQAVGGHQDWVR WDASGSRDKT PAGAVTVEVEGLESRVTPFPVPASKYSALYPVAGGVVWLR
TLASGSGDQTV RLWDSGSGQCLK $V L L G H D H R V P A V T$ TI ASASWDATASWDKTVK冋WNHQGKH LHTLTGHSDWVN ILASGSTDKTV RLWDVRT HECLA LLQGHDHWVP FI ASGSHDMTI OKVWNAENGREMRTLEGHSGVVKSIA ILAASASD OTMKLWDVETSQCKTLQAHKNWVFSLA TIATGSYDFHGHTSDVFSVIFSSDRHIVSAAQDFSVRIWS KVASGSYDKT

NGRHIVSGSWDKTARVWDAQTGQSVINSFKGHDLWVT YLASGSWD TVASGSSDYS NT KLWNVETGECRHRTGQGHTDLIW FSLDGKQLASGSLKTVKIWDAVSGEC DHTLNGHTDWAN FSPDGQMLATGSEDHTVKLWTLQANQHTLNSHDGEVLGDA ENNPGDYDLNNLDKKSTAFPVDSRNYEALVAVDNGVLLFH SII LWNGDMNDLLVRGCNW
IKIWDVNTGECQKTLKSQPPYQGMNTTQTTGDTD
GTPTTRIDLEGLADRIVPFPVEAGRYSTLRAAKDGVLWLR WVTAAGRDFLWLPPECRNGNVAVSGSRVAIGCRSG KI LSCSGDKT ILASASWD GT ПKFWNLKPEEKPVHPINTIQGHTKGVK MVASASADKT

GTIKFWNLKPEEKPVHPINTUQGHTKGVK TVSASLIDKT RLASAGHD $\qquad$ TLASGSWD
 FLAVS GGSAN TLASGSGD
TVASGSDD
SIISCSFD HVASASDDKTD

## QT\|ILWDVNTGKE LKKKEGHSNVVR

$M V V S G S D D$
HLWNTRTEEKVAKLTGHNGRVWSVA
KAVSSSGDKT
KIVSGSDDKS
KLVSCSSDKT
TLASASCD MR1 WQVQLDEGHS FLSDRDRTMNGETEKVKVARFSLDGFRIISGSSDKTIRIW LTSPPTPLLQGEGSKKFNPPYRSHKGQTIVFEKGGYLYTF RATSGSRIVSGSSDRTVRQWDANTGEPLGHPFKGHAGTVR
 KVVSGSADKTARVRDWDFESGEMKGRTAEGHTSWVS

TTATASSDKTA RLWNL QGQLLQEFKGHQGLVL TLASASSDKTVKL RIVSGSSD
TLASGSGDKS GRHDVSGSYDK
LLAS GSTDRTV
GQRFASGADR
GTRV GASSDK PPPTTRIDLDGLADRTVPLPVEAARYSALRAAKDGLLPVR RDASGS DDKT WDRTVRDWNTSMGECNDVLPSDSGTDVLSFTPDDGGIITS TLLSCSEDKTGRGNRWD WKGRE LQKFEGHAWGVT TLATASDWD TISSASTD HIISGSSD FFASGSHDT TTLRMWDPDVDHSTGQPLLSHEDRVTTVA FFASGSHDNT IKLWWVK DWQEVLTIGGHSWYID ETTG WLLKDPDGNLMLWVPKWARAGLYWD IKLWNSDTLAGHSEMVVDVSFSPDNKTRLWASDGGTQAVR KIVSRSMD TT TRIWDV USGKQLRMLDGFAGDITGIQ FVVSGSDD $\quad$ VTVKVWERETGRLLDRSEGGHTGWVR



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SVSFSPDGKTLATASEDKTVRLWDLQGNQLADFQGHVTSV
 WP $\square$ S GA L GE TFANPD DRPTLEHFT ITKAKKSELVDHLDWF
WSPDG RTLASGAHDQTVRLWNPRNGECLK ILSGVSVV NVVFSRDGQTLASASWDKTVKLWNHQGKDLHTLTGHVNSV SVAFSPDSSTLATGSGDETIKLWDVKTGTL


 SVGLSSHGRHTVPEFGDKTVQV SVVYSPDGRYLAS GS WDNTI KI WEVATGRLRTLTGHVYSV SVAFSTDGQDLASGSQDETVRLWDANTGKSLKMR VVAFSPDGKQLASGSKDETVKIWDAVSGELHTLKGHVGVV
 K LS S Y G $\square H R Q K \square S G S W D K T U R M W D S Q T K K G H P F E G H V T S V G$

HPVQGVLGASRAHPEDPTELERYDLAQRRLEHLASDADHF
EARFSADGSKLVSCSKDTTDRTWDVMSGKQLQDLEGVNGA SVAFSPNGKIVASASDDETVKLWSLQGELIHTLKGHVTSV
 ALA WRQDGERLASAGDDTTVRIWDAGTGRDEGHTLGITAV WSPDGQ TLASGSLDKTMKLWSREGQLLRTLNGHVMSV
 FSPDGQ


SVQSPHSSTVSCSDDRTDRDWDDASGQFEKFTDYDTA FSPNGEQ LASGSEDWTIRLWNMNTGGARTITSIVRTV SVAFSHDGQMVVSGS GGTVKLWDAKTGELRTLKGHIYSV AVALTPDGRKAVSSSGDKTLKVWDLEKGEERTLKGHVSAVV|


 DARTRELRQVPVTDNNDMD





SVSFSPDGKTDATSSDDKTARLWNDQRQLLQEFKGHVSSV AVCYSPNGKHLATGSADKTVKLWDUSSQCSATLTEHVSSV



 SVAFSPDGLRIVSGSEDKTVRVWDVATGAAEPLEGHVNSVG $S V A F S$
$N G V S$
 TSSDGPDGQTLATGSDDGTVRLWDLQGNERSLFKGHVWSV SVSFSPDSKTLISAGRDKTIRLWDVLDRNPKANNDWITSI FSPNGTQ S $\square$ AF NPDGEFLASSSNQ VIKIWRVKDGEVCNLTGHVYSV
SVSFSPNGEMDATASADNTDQLLNRKDRSRKAFSAHLTAD FSPDGNK IVSCSEDKTIRRIWDVLLGEQLQIMEGVTEV




K ISTDGSKIMFSKQDGKLYTFRMEKPEEEKSLN NDA $\square$ TIV
SFSPDGKLLATASGDNTVKLWDASTGKEIKTGTGH
AFSPDGKLLASGSDDKTVRLWDVATGSELRQLS
AFSPDGRRLLSGSHDGTLRLWDAESGQQLRCCWANGER
S $\square$ STDGQTLVSGSGDKTLKVWNLATGEEIRTLTGH
AFCCDNQTLASGSEDETDRLWNTATGECLKTDK
VYSPNGQHLASPSYDKTIKI WNVSSGKLLKTLTGH
AFSPDGKILASGSEDNTVRLWDVATGSELRQVFGHGNSV
$A V S G D G T R L V V V$ DEGDLRAVPAETGDLDSTVYLDMRRIL
SFSPDGK $\square A S G S F D K T V K L W D \square T$ T GKE $\square$ T T FEGH
AFSPDGQRIVSGSYDNTLRLWDA
SFSRDGKTLATASWD TLRVWDL
ASS $\square \mathrm{NSTLIASGSDD}$
A LS GDGTVLVVV DEGELRAVPSELGDSDTTVWपDLRR TL
A WS PDGQTLASGSGDQTVR\WDS $\square$ S GE
VFSPDGQTLASASADNTVILWNLD
SYSPDGQRFASGSHDNS DSVWSAAGGVEDQKLS
A WSPDGRTLASASYQQAVKLWDTKTGQCLNTLS
AFSPNGETIVSGGADNTLRLW
SFSPDGS LAASGSHDKSIKLWDVIS GHCTT T LYGH
AFSPDGTKVASGSHDKT IRLWDAMTGESLQTLEGHSNSVL
TYSPDGRY $\square$ AS GSDDKT $\square \mathrm{K} \square \mathrm{WE} V E T G K E \square R T \square T G H S R$
AYSPDGKQLASGSKDETVK\WDAVSGECLHTLNGH
AFSPDGQTLATASEDQSVILWNIPQVLDQDQL
S V S L NKKYL LIRKPDSYIKKNTGDKKTEEDK IK
AFSPDGKY IVSGSWDKT IRLWDPQTGK
EVSGDGKRVLLWA DGRLRVVPSDRRDGDTSVTVDLARV
QFSFDCSKILSCS $\square D K T \prod R \square W D V S S G K Q \square Q \square L E G H$ AFSPDGKNLASSSNDGTVKFWNLEG
AFSPDGQTIATASGDNTVNLWKLDG
S $\square$ S LDGQTVVSASGDNTI RVWSLKTGNEHGTLTGH
A WSPRGERLASAGHDGTVRI WDAATGEEDDRIEGHTRRVM
SWSPDGKTLASGSEDNTIKLWWSRERKLLRTLNGH
AFSPDGKLLASGS GDRTVKK WDLTAKRCLKTGMHGHSSRL
A $\square$ APDGKRAVSASEDKTLKLWDLETGTELATLTGH
AFSPDGTT $\square$ ASGSESGTVR $\square$ WDAATGN $L I N T \square Q G G G N S V$
QFSPDGRN!VSCSWDQT\RLWD
VFSPDGAYI ASGSDDKTIRI WNSTTGEDKKPDTGH VFSYDGQMVISCSDDNTIKLWDVKTGSELQTLK
AVTPDGRKAISACDDRTLKVWDLERGEELRTLKGH
AFSPDG $\mathrm{A}^{2} \mathrm{I} V \mathrm{SGSYNKSVWVWDASTGDELKVLKGH}$
EFSPDGSK IVSCSWDKTVRVWD ILSG
A C S P D GQT $\square$ AS GSFDQS $\square$ R L WDRKE GS LLR S $\square K G H H Q P \square$ QFSPDGSKIVSCSLDKTVRLWDVQTG
SLSPGGERILFSAR GELFSVPAEDG
A FSPNGQIVASGSDDQTVKLWNVCDGKCLQMLHGHTKSV.
AFSFDGTQIASGSDDRTIRVWDAATGKP

S F S P D G K T $\square$ A T A S $\square D G T A R \square W N \square N G K$

SFSPDGKT\ATASEDGTAQ【WNL
AFSPDGQULASGSYDQTAILRDI
AFSPDGTHI ASGSRDWTLRLW D TAAEVNTGEPEG
YFSPDGTTIASGSLDKSIRFWDVKTGQQUQQSDNHYKD\|L
AFSPDGRHIVSGSYDKTVRVWDAQTG
EFSEDGSYLITNLGD
AFSPDGQRLASGAVDDTVK $\square$ WDP PASGQCDQTLEGH
AFSRDGTRIVSGSDDKTI RMWDSTTGK
EVSGDGKRVLLRT DGKLKVVPSDRRADEDSDTVDLSRV
AFSPNGLRIVSGSQDSTlRIWDA
QFSPDGRNVVSASEDAT $\square R \square W D V T \square R Q Q L Q K T D G H M D P V L$
SFSPDGQTLATASDDRTARLWDLHGNE
SFSPDGKTLAAASRDKTVKLWSRDGPGDEDQVW
AFNPNGTLIVSGSDDKTLRLWNTSTG
AFSPDGEYLASGSSDKT KLW
SFSPDST■MASASEDKTVK LWNDDS
QFSPDGTKIISCSNDKSI RMWDVLSG
ALSADGRLVVSGSDDHTLRSWDLESGQSCLLFWND
RFSTDGNYI ASVSNDKTVKDWDUTSGACRQILEGH
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UniRef90_D8G596 UniRef90-B0DFW7 UniRef90_UPI0002F51E73 UniRef90_A1BER4 UniRef90_K9QJS9 UniRef90_DOLUU7 UniRef90_UPI0002D36F3B UniRef90 UPI000349317A UniRef90_UPI00034CA823 UniRef90_K9WXH1 UniRef90_K9WFP1 UniRef90-A0A024H4B9 UniRef90_M2PJU0 UniRef90_B0D541 UniRef90 R7S2Y6 UniRef90-E0UIP1 UniRef90_UPI0004408667 UniRef90_X6MTA9 UniRef90_A0C2Z9 UniRef90-B2J650 UniRef90_U9VVD6 UniRef90_L8G6V4 UniRef90_UPI0003154A05 UniRef90_A8N0C0 UniRef90_B0C7J1 UniRef90_K9QWT8 UniRef90_K9PTY8 UniRef90-G4U339 UniRef90_X6PDL1 UniRef90_D8G755 UniRef90-A0YLR0 UniRef90 Q8Z020 UniRef90_UPI0002E87163 UniRef90_UPI00036763F0 UniRef90_R7QML9 UniRef90_U5QSM4 UniRef90_-T5ANI1 UniRef90_K9V4W4 UniRef90 UPI00034C99D8 UniRef90-K9UF82 UniRef90_X6MRW3 UniRef90_J3NZX3 UniRef90 Q2U9S0 UniRef90_V6KCI6 UniRef90_A0DB07 UniRef90_Q3MC23 UniRef90 K9EYG4 UniRef90_I4I957
UniRef90_B0CCY2 UniRef90 UPI0004407663 UniRef90-X6LXA5 UniRef90_K9UVD8 UniRef90_K9W375 UniRef90 M5C312 UniRef90_UPI0002D3EC77 UniRef90_K9TQR1 UniRef90 A8ZLJ9 UniRef90_M5C429 UniRef90_X6N652 UniRef90_UPI00034B6536
UniRef90 D2SAI7
UniRef90_W1Z0T6
UniRef90_X8IY82
UniRef90_UPI00037C457A
UniRef90 ${ }^{-}$X6PEA0 UniRef90_UPI000346C8FA UniRef90_G4TUZ0
UniRef90 J4H548 UniRef90-X0L5S2
UniRef90_X6NTT4
UniRef90 A0YRK7
UniRef90_UPI00047797A9
UniRef90_R7S323
UniRef90_A8ZQQ8
UniRef90 UPI0003F545B7 UniRef90-UPI000361880C UniRef90_L2FYC2 UniRef90-A1S8B3 UniRef90 K9WXX9 UniRef90_UPI00034D2881 UniRef90_K9TI38 UniRef90 L7FBU3 UniRef90-UPI000348989B UniRef90_J3NZL3 UniRef90_X6P6I7 UniRef90 ${ }^{-}$X6M0S0 UniRef90_UPI0004417027 UniRef90_UPI00037DB3D7 UniRef90_Q08TC1 UniRef90_K9WCJ9 UniRef90_UPI0003B4CD66

YSVNFSPD GE LI ATGS DSKDK DWRSNGELVR\|LG SHDNKYI LS GSSDKLKLWDAESGSCI S T G WSLSFS $\quad \square D G Q R L A S G S D D N T V N L W S S T G T L L K T G$ $F S A C F S P$ DGQRIVSASFDR IVNADGAGVPVVLRG



SVAFSP DGAVVISGSDGTVRVWNTRTGELMMDG
 $S \boxtimes N A V A V T P \quad D G T K V I S G S R D K L K D W D L A T G K L T L T G$ D D S K VAAA Y S R S R V LVVVDR IG T K R Q P L G
F S P
$S \boxtimes N^{F} S^{P} T$

$S V M S V S F S P \quad D G E L L A S A S K D Q V K L W N R K G Q L V K T L G$ SVAFS P D GTLLLAS GS DNTI R L W WNP QT GEALGEP


GSR V VSCSKDK $\square R \square W D V S S G Q Q \square Q L G$ DGSLVEW RGQAWFLTHRSGPARALS
 A $\square$ A F S H N G K Y L A T A A D Y T $\square \mathrm{K} \square \mathrm{Y}$ A LD T S K C $\square \mathrm{Q} \square \mathrm{G}$

AFSP DGRT LVAGS GDA $\square$ RFWDVQS GYCTTRT L S ND GKYVVS GS D D D VK $\square$ WE LS T GKE $\square R T$ G

QFSS DGTK LISYSWDK R DWDA LSGKQLK $\square G$ DGKTVASASRDKVKFWDTATGRCRATG RMLTHSDDNTVRLWDPATGTLQQTG

TVWSLSFSS DSKQLASASDDNTILWSHTGNLIKTFGG WSVD F GPD D H L L V S S S N D HVVRVWDAAT GDCLKVGG


 $W S V S F S P$ D GQLLAT GGDNN ARLDWDLVGQMLATLGG

STAFSP DGQNDA $\square$ GA D GT $\square R \square W D \square K S G \square C L K A G$ SVTSVDYS PS D QY V V G S D D N L R I WD AN T GTDMH GP
 FGVVAFSP DGAVLAAGADGTVRLDWDAATGRARGAG


 SVNAVAFSP DSSRRVSGSNAXI RI WDANTGKLQLKTG WSVAVS LDDGRRIVVSGSKDKVRI WDRET GS QLL K G
 $S$ VSFS P D GKRLLASASYDKVRLWDVQTGQQILKG

FS P D GK L $\quad$ A F S A N T D VF V VP VE G G VPR R LT
$1 V A F S P \quad D G R V V A S G S T D E V R D W D V N T G A L R Q T G$



FSP DGKLLATGTDGTAKLWDTEGKLVATLG
$G S L R S A A A L P T H R R L T G$
$A L S P \square G K R G I S G S K D H \square R V W D V E V G E P L Q G G$ KHSEDNSPPS GQYV ATAGNDKI WNLATDSLAALTLYG D GRRLVS S S D DHVRVVWE LER GESRVLG


UniRef90 D8G596 UniRef90-B0DFW7 UniRef90_UPI0002F51E73 UniRef90_A1BER4
UniRef90_K9QJS9
UniRef90-DOLUU7
UniRef90_UPI0002D36F3B
UniRef90_UPI000349317A
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UniRef90_M2PJU0
UniRef90_B0D541
UniRef90_R7S2Y6
UniRef90 E0UIP1
UniRef90_UPI0004408667
UniRef90_X6MTA9
UniRef90_A0C2Z9
UniRef90_B2J650
UniRef90_U9VVD6
UniRef90_L8G6V4
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UniRef90_B0C7J1
UniRef90_K9QWT8
UniRef90_K9PTY8
UniRef90_G4U339
UniRef90-I6WRE7
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UniRef90_U5QSM4
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UniRef90 UPI00034C99D8
UniRef90 K9UF82
UniRef90_X6MRW3
UniRef90_J3NZX3
UniRef90_Q2U9S0
UniRef90_V6KCI6
UniRef90_A0DB07
UniRef90-K9EYG4
UniRef90_I4I957
UniRef90_B0CCY2
UniRef90 UPI0004407663
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UniRef90_K9UVD8
UniRef90_K9W375
UniRef90_M5C312
UniRef90_UPI0002D3EC77
UniRef90_K9TQR1
UniRef90_A8ZLJ9
UniRef90-M5C429
UniRef90-X6N652
UniRef90-UPI00034B6536
UniRef90_D2SAI7
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UniRef90_X8IY82
UniRef90_UPI00037C457A
UniRef90_X6PEA0
UniRef90_UPI000346C8FA
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UniRef90_J4H548
UniRef90_X0L5S2
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UniRef90_A8ZQQ8
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UniRef90_A1S8B3
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UniRef90_UPI00034D2881
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UniRef90-J3NZL3
UniRef90_X6P6I7
UniRef90 X6M0S0
UniRef90-UPI0004417027 UniRef90_UPI00037DB3D7 UniRef90_Q08TC1
UniRef90-K9WCJ9

 HS GAVVSCALSHDNKYI LS GSYDNT L K L WDAES G SI S T




$H G N G V L C V A F S P D G A Q V V S G S K D$ H M Y WV S SVAFSTDGTHVVSGSCD

H N D SVS AVVAVTS DGTKVISRSWD HS D DVWSVAFSPDGK CVASGSWDGTA NS WDVRSAEFSSDGSKVVLYS WDET HASGVYSVCFSPDCAQIASGSGDNS

 K SVRVWDASTGAELK

$K T \square K \square W D \square A T G K L E T$ |  | $K$ | $V$ | $W$ | $D$ | $V$ | $E$ | $S$ | $G$ | $E$ | $V$ | $E$ |
| ---: | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | H Q G WVNSVSFSPNGQDLASASDD QTVKLWRRNGTLLKT



 $P G V R I R E A I P L G N G K G V W A T D A E G E D C L E \| A S L D G B P D R D$ HS QSVTS VSLLSADGKYLATGSEDNTAKLWS DETKA AELHT

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H T S MVQ A $\square$ A $\square$ S S D G Q $\square$ I A S VS S D N S $\quad \square K \square W Q L S T G K L L R$
H T GTVAS LAF S P DGEYLASASADHSVRWWHRSTDYTTSCL H T DPV R Q A F A P D G K L L A S A C D E T

 H T D P V N S MVF S P D GRLLAASGSD DNT VVRLWDPVT GT LQQ
$H V D R V N S V C F S P N G N L L A S G S D D N S \square C L R \quad D V K T G K D K C$ HS D A V V S V A F S P D T K L L A S G S Y D K S V K L W S L E A P R L P H Q H AV WFV KVSP DGNNLV S GDYSGLI KL WDLSPSYRERS H S D A V N N TVV D V
 QP H DV K S MA F S P D GQ Ti A S S GS A




 HTDAVTAVAFSPD GAVLASAGADGT,VRLWDPATGRPRP




| $H$ | $S$ | $D$ | $W$ |
| :--- | :--- | :--- | :--- |
| $E$ | $D$ | $S$ | $V$ |
| E H S | $V$ | $R$ | $S$ |
| $V$ | $E$ |  |  | H Q N Q $H N Q S V M K V V$

$H T S L V L D V A$ S H N S
S S N

WHPG $\square \mathrm{D} \square \mathrm{V}$ R F T P D GKNVLF $\square$ S R R S Y A Q


 HK D R VNSVAFSPDGKF LATASGGDDG VVSDWDSSGKLLQE HTDEVRAVAFSPDGHTLASAGAGGS VVRLWDAKTFERETVTH

HTNEVSWAYSSDGSR VSGSDD HS D V SVVA Y S S D G S R V V G S D D V TV R L WD A E S G D P I G HTVNQTISFSPNGQFLAS GSNDRS H S G G V W K L V V HS G GVVNVVRSPDGETMATASADTT

UniRef90_D8G596 UniRef90-BODFW7 UniRef90_UPIO002F51E73 UniRef90-A1BER4 UniRef90-K9QJS9 UniRef90-DoLUU7 UniRef90-UPI0002D36F3B UniRef90_UPIO00349317A UniRef90 UPIOOO34CA823 UniRef90-K9WXH1 UniRef90-K9WFP1 UniRef90-A0A024H4B9 UniRef90-M2PJU0 UniRef90-B0D541 UniRef90-R7S2Y6 UniRef90 ${ }^{-}$EOUIP1 UniRef90-UPIOOO4408667 UniRef90-X6MTA9 UniRef90-A0C2Z9 UniRef90_B2J650 UniRef90-U9VVD6 UniRef90-L8G6V4 UniRef90 UPIIOOO3154A05 UniRef90-A8NOCO UniRef90-BOC7JI UniRef90-K9QWT8 UniRef90_K9PTY8 UniReffo-G4U339 UniRef90 - 6 6PDL 1 UniRef90-D6WRE7 UniRef90-AOYLRO UniRef90-Q8Z020 UniRef90-UPIOOO2E87163 UniRef90_UPIO0036763F0 UniRef90_R7QML9 UniRef90-U5QSM4 UniRef90-T5AN11 UniRef90-K9V4W4 UniRef90-UPI00034C99D8 UniRef90-K9UF82 UniRef90-×6MRW3 UniRet90-J3NZX3 UniRef90_V6KCI6 UniRef90-AODBO7 UniRef90-Q3MC23 UniRef90-K9EYG4 UniRef90-141957 UniRef90-BoCCY2 UniRef90- UPIOO04407663 UniRef90-X6LXA5 UniRef90-K9UVD8 UniRef90-K9W375
UniRef90 M5C312 UniRef90-UPIO002D3EC77 UniRef90-KgTQR1 UniRef90-A8ZLJ9 UniRef90-M5C429 UniRef90-X6N652 UniRef90-UPI00034B6536 UniRef90_D2SA17 UniRef90-W1ZOT6 UniRef90-X8IY82 UniRef90-UPIO0037C457A UniRef90_X6PEAO UniRef90-UP1000346C8FA UniRet90_G4TUZ0 UniRef90-- 4 H548 UniRef90-XOL5S2
UniRef90 X6NTT4 UniRef90-A0YRK7 UniRef90-UPIIOOO47797A9 UniRef90-R7S323 UniRef90-A8ZQQ8 UniRef90-UPI0003F545B7 UniRef90-UPIOOO361880C UniRef90-L2FYC2 UniRef90-A1S8B3 UniRef90-K9WXX9 UniRef90_UPIoo034D2881 UniRef90-K9T138 UniRef90-L7FBU3 UniRef90-UPIIOOO348989B UniRef90- 3 NNZL UniRef90-X6P617 UniRef90-X6M0S0 UniRef90_UP10004417027 UniRef90-UP100037DB3D7 UniRef90-Q08TC1
UniRef90_K9WCJ9
UniRef90_UPIO003B4CD66

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LLGHSNTVITARFSADGSK\VSGSFDDTПRTWDVVSGRQL GHGQLGRVLALTANPEGSEVAVASHDGAVLVANVAGNTVR F DGHSQSVVSVSLSADGKYLATGSDDNTAKLWSVETKEAL WNAHNGWVNSDSFSPDGKMIASGGEDNLVKLWQATNGHLI

FSGHSSMVQAVCFSADGELLASGSWDETTKWWVSSGKEV LGKHRRPCFSDAFSPDGTVVGYDGLLRLWSTSERKL TGASDCDGSAFSADGMLDGGSHYVYLPHTHSGLCL TLASSCDDGSLAFTADARML
 WHTA
WE T
WD
WD
$W D$
$W D$
$W D$

$W$ | HT |
| :--- |
| S |
| S |
| RT |
| LT |
| AT |
| VT | GKM EGHTGWVKTMVFSPDGRLLVSGSDDNTVRLWDPVTGTLQ

LVQLEKKVKSTNFSPKTKGVTLVSSDQUVHTWNLTTGKQT LRGHEDRVLSVAWSPDGQVLASSSRDRTVKLWRRQLNKGR QGHDSWVWSLAFSRDSTFLYSGGQDRTVRIWEYQYGCCD LLGHKGSVSSVKISPNGQFIVSGSPDGKVNVWRRDGKLL LEGEHSNLVSTVKFSPDGKLVVSGSEDGYVRVWDAESGCTVV LEESHQGWVWSLAFSPDGKFLASGSDDATVKLWDVSTGKCL| FEGHTDWVWSVSYSDDGSRLASASDDKTVRVWDPQTGQTV WTAEQNAVWSVSFSPNGKLLATAGSDSTVRLWNLH GRRL
 LLEGDGIV LSVGFSPDGHKVVCGSGEKMHVVDQHTGNAVF LEGHRESVVDISFSPNGRYVATASTDGAARVWDIVEGNAVA LAGHTDAVNAVAFNPDGTLLVSAGTDRTVRLWDTATGRGR VTNETFRLNSPAWSPDGDYLVARKHFGEVWLYHKAGGKGV

 LEGHTDCVSAVAFSPDGQRIVSSGSCDKTVRVWDGVTGQPL L EGHSDPVLSVVFSFDNSKVVSGSADNTVR|WDVLSGKQD
 LRGHYSRVLSVAFSPDGKNLASGSSDRTVRLWDAETGEPV
 QTGHTQEJVKAVSYGPDGKYMATAGADKTLRMWLASNGKEL TLKEDHVVREVIFSMDGHMVASDSGDRTLRLWDAATGTALL FTGHSHSVNADADTPDGQQVISGSCDETMKVWSLATGSEL LNGHTSEVNSLSFRPSANTLASGSDDQTVKIUNLQQKRAL


FQCHDGQATNVKFSPDASKTASAFYFNTTQLLNTC GNVL EPLVGRAVNSVAFCSHDEYVISGSWDGTVRIWGVGTGPLV LYGHSSWVRTVAFSPNGKLLASGGDDKELRLWDLNTFTIK FAGHAGAVVGGIAGTPDGRHLLTSNGDDLLRLWNVATGALE



UniRef90_D8G596 UniRef90-B0DFW7 UniRef90_UPI0002F51E73 UniRef90_A1BER4 UniRef90_K9QJS9 UniRef90-DOLUU7 UniRef90_UPI0002D36F3B UniRef90-UPIO00349317A UniRef90-UPI00034CA823 UniRef90-K9WXH1 UniRef90-K9WFP1 UniRef90_A0A024H4B9 UniRef90-M2PJU0 UniRef90-B0D541 UniRef90_R7S2Y6 UniRef90 EOUIP1 UniRef90_UPIO004408667 UniRef90-X6MTA9
UniRef90-A0C2Z9
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UniRef90-L8G6V4
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UniRef90_A8NOCO
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UniRef90-B0C7J1
UniRef90-K9PTY8
UniRef90_G4U339
UniRef90-X6PDL1
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UniRef90-Q8Z020
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UniRef90_J3NZX3
UniRef90 Q2U9S0
UniRef90_V6KCI6
UniRef90-AODB07
UniRef90-Q3MC23
UniRef90-K9EYG4
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UniRef90-Q08TC1

UniRef90_UPI0003B4CD66

T|I $R \mid I W R$ VD T ${ }^{210}$



| T | L | K | L | W | D |
| :---: | :--- | :--- | :--- | :--- | :--- |
| T | A |  |  |  |  |
| I | K | L | W | S | R |

S K WS R




T I K L WS T
FDPVYDGHSFDLSFP
TVRLWDAA T GDYVWS
SVRVWDVST
TLRLWDAHTGQA IGEP



S R GEVKT GKKLSS
TVRLWDS NGNPGEQKSKLSGNSGWVFQVCFSPDGT

$T V K V W D V A L G T L Q Q Q T L K G H S S V V S S V A F L D N S K$
TI ILWNLDMNDL
$T$ R WGPQTGGASWDNTDRDWNLQGHSVVVTSVAFSPNGT RVRI WKA

 T R LWDSDSGEPLGGHRGPVKAVAFSPDGSK ASASKD WD TIRLWD IQSKE QQUVFEGHSNGVNGVLFSPDGS DDPAYDEDNFDDGFTNTVRPYVIPGSAEDPVPFGPSADGW TAKVWELHTFTCQTDLVMSVMSVSLSAD
$T V K L W D T H T \quad G Q C L N T L S G H T D W V R S V A F S P T T D$
$T M K V W D G T L I K T \square S G R G E Q Q R D V T F S P D Q K S Q K S N V N S V S$ $T V R I W R V A D G B G E L G V L P K D W V A C V G F S P D G K$ TVKLWHATT GREVGVRTLVGHSFFVNAVAFSPDGE $S V R V W D V E T G A Q V G E \quad A L V G H T \quad A W V G D A$ SI RLWDI T L RLWDMMT GACSRTDAGSTRRTPERDAVSENGRLISSAS TVKIWEMMGOL TIKI WD THTGE TVKLWDVNSGQ T I R I WNV LSS
FSPNHPPLISPSLQKTAEQNQI $T$ VRLDDPVTGTLQ $F D P V Y D V H T G D G Q R P G K G H T D P V N S M V F S P D G R$
 S $\mathrm{T}_{\mathrm{I}}^{\mathrm{R}} \mathrm{K} \mathrm{L} \mathrm{W}$ WRV K T E

 T I RVWDV
 $T V N L W Q L$ $T V R I W N V Q D R G T S D A D P T \quad T S G V S T A D Y S V R$

 A 1 RFWDVSSCEASLQGDVEPRANKVTPESSSSRNSKHDRW T IR R WD RA QLWD L
 $T V R \square W N$ PATGRPRGGPLHDGAVTAVAFSPDGA FQTSYDLTSGEHTYDK LERDMQETWADHGVYPTAWTPDWA
T I RLWRAPTQGNSSPS NTDCGHPPELSGNAEEDYRTLHWQ

 $M M M L D D D D D N$
$\square R G H R G S V T A V D F S P D G L$ QSVVWSVAVVSGSGDNT $\square R$ VWDAQTGPQLFSALDEHRDSLL

 GHK Q IV Q FE GHSSNUYCVRF DPDGS SIKLWNVGSNGQEYRMLEGHTDTVWSVAFSFDST MVK WD GEV
TLKLWSLDSG ACLRT TNDVHGASPKS $\square$ CFSPHEE
FEQAGYLH HFDLAANAPKDIDLLELRQRFAKGGRYDRSAD T IKVWE TALGRELKTIEAHTDAVNKVVFSPSGQ $K V Q L W D G S L F$
GNSQYKDFQ $\square R A A R \square N N G K L V F Q M G A D \square R V M D \square A S G K D E V$ $T \square K V W$ S LATGSELRTFTGHRYGVTAVADTPDGQ
 TARVWDISALQSDTLQANQDLIL GVAFSYDGN TVLLWD LDSRRPRAKKEHTQSVTSVAFSPDGHTLATA $T I R L W N D R G Q Q L T S F R T H N A P V V A \backsim H A F N P K G G T I A$ $T V R L W D T A T G A P G$ R Q TI RI WDTESSD T I RLWD W
 LI SGHSKYVTSVAFSPD $T L R Q W D V R T G Q G R V L G E K L G Q L W$ G $G$ G


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 HIVSGSQDKS VRVWDASTGAELKVLEGHTHIAA
 Yi LS GS YD $N$ T L K LWDAESGSC ISTDTGHSGAVV LLASASDDQTVKDWRR
 YI A A A SDDST ILANGS




 KVISGSWDKT LKDWDLATGKLE
 LI ASGSRD
$\qquad$

KKDAEDGA EGKKLE
$\square L A S G S H D A T \quad \square R \square W S P Q T G E A D D G T L L A S G D H T \square R \square W$ GQSLLASCGVDGTAN VWNDKTGDCLDTFHEDNWIWSVV RLWDVDQVLEGHSNDCTIRLWD DTTFQCLKTLQGHANSVD FlVS GSTDKT VKVYD DNGKLIQTFTGHNNIVT
 A】SDVVLDDDGTEDRMVPLDPVPAGRYDGLCATAEGVLWRR GKYLATGSWDKTAKL WSTATKAE CHTF HGHTNWVW $R V A S G S Q D \quad Q T M R J W D V K T G D C D K I C H E H Q G W V R$ FNPDGKTFASAGWDGNDIWQRETLAHSSLSTDQKNQNDITT
 MSGDGRRVVSGSGDRSVRVWDVETGAQVGEALVGHTSWVW $R$ LLQFVSGSEDQTMRDWELPTGGRCLRTFSGRDNWQM

 K L S YSKDKT GLSDGLWVTWGL HRVLWLPLA
LLA SGSDDDTV V RLWDPATGALQQTLEGHTDPVEFVT




 FSRDGTN V SGDGTGTII IWDAKSGQIVRKLSDDHTAMVV
 PAHLDPVLAS GYFDQVRWNVQDCVYSGFRGHTDAI RAVA $M A A S G S A D T T, ~ T V W E V N G K L I K T D K G H S D S G W N V R$
 WVAGASGDSSDL WVDED GWVVDSHDRRLVWVP
K V VSCSNDRT
$T L A T V S D D S N \quad \square R L W T R Q G Q P L R V L R G H R L S V F$
 SGSDHK
M N D G W
MNEDGW
FSPDGRTLAAADADHTVR
SWDVAGR

RQQAVLRGHTGAVF
RTVSGSQDKT ПRПWHTTTGQPLGVPTLGHTYPVQAVA VSVAVSPDVSGSRGNTIRVWDRETGVQLLPALKGHTNGI W MVASASDDHD KปASGAND GTLRIWDLASGKQLQVIEMGCALSIV MLASASSD TMDKDWNPFSGEEDRTLQGHNSRVWSIA
T $\square$ ATGSED GTVK VWD $\square R$ SGQC $\quad$ GWTGTGHSNMVN ISPSGNRAVFDFRGEVLTVPAEKGDARNITQTDNHEKYPA M $\square G S A S D D$ GSAKIWERESGGLIMSINDHGDAVNADA

## LP LTLTSDFTARRARWVNNPMDYVSDVRLAPSGDKAVITAA

 QVISGSSD NTVKVWSLATG SELRTFTGNSDSVT KIVSGSADRT $\quad$ I KI WDFKTGKDRTUPAHKDDVNALA LLATA $G Q H G N V R I W D S S G S L L K K F Q G D K D W V S S V A$ DGYDASKTFATATDRFVDV WDAATGALRTTLAGHHNVVL TASRDGTAKVWSLDGKEVVTLRGHQDWVM $T L A S A S R D G T A R L W D T A T G A L R Q T L R E H K N Y V H G V A$ KIVSFSKDTT $\quad 1$ RIWDVLSGRQDQI $L$ K GHSSDVT TLVSASND D D TI AVWNVGSG ERI HRLKGHSDVVL ARMKASFGLASWRSDNKGWILGPDDERLLWVPQHSRWNLW GRFLATGSDDKQVKV WDWNYGVEI ATLLGHSSYVQ QLAAGNGD GQVRLWEDATGQGRLL GQHDGRVNRLA MI ATASGDKTVLWKRDKNGEFQTTPYRVLTGHQDWVWDVAUniRef90 D8G596 UniRef90-B0DFW7 UniRef90-UPIOOO2F51E73 UniRet90_A1BER4 UniRef90_K9QJS9 UniRef90-DoLUU7 UniRef90-UPI0002D36F3B UniRef90-UPIO00349317A UniRef90-UPI00034CA823 UniRef90-K9WXH1 UniRef90-K9WFP1 UniRef90-A0A024H4B9 UniRet90_M2PJU0 UniRef90-BOD541 UniRet90-R7S2Y6 UniRef90 EOUIP1 UniRef90-UPIOOO4408667 UniRef90-X6MTA9 UniRef90-A0C2Z9 UniRef90_B2J650 UniRef90-U9VVD6 UniRef90-L8G6V4 UniRef90_UPIOO03154A05 UniRef90_A8NOCO
UniRef90 BoC7J1 UniRef90-K9QWT8 UniRef90-K9PTY8 UniRef90-G4U339 UniRef90-X6PDL1 UniRef90-16WRE7 UniRef90-D8G755 UniRef90-AOYLRO UniRef90-Q8Z020 UniRef90_UPIOOO2E87163 UniRef90_UPIO0036763F0 UniRef90-R7QML9 UniRef90_U5QSM4 UniRef90-T5ANI1 UniRef90-K9V4W4 UniRef90-UPI00034C99D8 UniRef90-K9UF82 UniRef90- X6MRW3 UniRef90_J3NZX3
UniRef90 O2U9S0 UniRef90-V6KCl6 UniRef90-AODBO7 UniRef90-Q3MC23 UniRef90-K9EYG4 UniRef90-141957 UniRef90-BoCCY2

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| :---: |

NPQTGEDGTLLASGSYDGTDRDWNSQTGEAEPLQGHVASV WSPD HRFLAYSTADGNIKFWDTKTWKLQTLTGHVTRI A MAANPQGLLLATGADDFSLKLWDVATGECRTFKGRVKSV DVAFSPDGKIVASSRKT:KLCRIDGSLIKSWNAHVNTV




 SVSFSSPDGR QLVSGGEDHLVFLWDRESGARRLLVGHVGAV

 A ARFSPDSSRIVSGSFDNTDR\WDVSS GRQLQVLEGVNGV
$F S P D G R L \quad L A S C S S D K T D R L W D P A T G T L Q Q T L E G V V S V$ WP $\square$ S GALGE TMFVNPADRPTLEYFNITKAKKAELVGHMDWF $F S P D G G B T A D S G S C D T T I R D W D V K Q G Q Q K G K L D G V T S V$ FSPTGE ILAAAANWDSTVKLWSREGKLIKTLNGHVLSV SVAFSHNGRYVATGSFDCSVVKLWTPETGTLTAHSDCVVMSI







G $\square$ S F S P D GQTLASASADRTVRLWSTDGES FRTHQDWVRDV

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

FSPNGS R $\quad$ VVSSS LGGKT $\square R \square W N A N T G Q Q E A \square R G H Q K S V$ SVAVSSDGRRI AS GSRDKTI RLWNAET GALE GHTESVWSV

 FTTDG

K TLVS GSED GTIKI W
 WSPD GKS $\square A$ YFSDASGEYTLHIMKDGS GTARVLKGNGTGF FSPDGG KYVITTGGD DEKI I I WE DES GKVRTLFGH DT DV

R S H D GQSVF G $\square$ S D A S GEQE LWRFDGSDGGV QLTQDAS S L $A \square A \square T P D G Q Q M I S G S E D E T I K V W S L A T G E L R T F T G H V Y A V$
 FSPDG RLATGGDDGIVRIWDSSGNPLKELEGKVNSV GLAFSRDSHTLATAGRDKVVGLWDPASNNRTTLTGHVNAM YVNFSSDGKNLDTASRDKTAKLWNLEGEELATMRGHVGSA F SPDG
A A QF S LDCSK IV S S S NDKTIVRIWDMSS GEQVKLLEGVNTV
RAQFSPDDNYVVSCSYDNTVRIWNVNTRKEKKLEGHITDV QPAS
SVAFDSSGKTVASAGYDGLLRRWEV
$F S P D$ GQ Q R L A S GS D D RTARRVWE PS T G L S R VL H G H T S A V $F S S D S Q L$


UniRef90 D8G596 UniRef90-B0DFW7 UniRef90-UPIO002F51E73 UniRet90_A1BER4 UniRef90_K9QJS9 UniRef90-DoLUU7 UniRef90-UPI0002D36F3B UniRef90 UPIO00349317A UniRef90 UPI00034CA823 UniRef90-K9WXH1 UniRef90 K9WFP1 UniRef90-A0A024H4B9 UniRef90-M2PJU0 Unirefolo- 0 OD541 UniRef90_R7S2Y6 UniRef90 ${ }^{-}$EOUIP1 UniRef90_UPIO004408667 UniRef90-X6MTA9 UniRef90-A0C2Z9 UniRef90-B2J650 UniRef90-U9VVD6 UniRef90-L8G6V4 UniRef90_UPI0003154A05 UniRef90-A8NOC0 UniRef90-B0C7J1 UniRef90-K9QWT8 UniRef90-K9PTY8 UniRef90-G4U339 UniRef90_66PDL1 UniRef90-16WRE7 UniRef90-D8G755 UniRef90-AOYLRO UniRef90_O8Z020 UniRef90-UPI0002E87163 UniRef90_UPIO0036763F0 UniRef90-R7QML9 UniRet90 U5QSM4 UniRef90-T5AN11 UniRef90-K9V4W4 UniRef90 UPI00034C99D8 UniRef90-K9UF82 UniRef90-X6MRW3 UniRef90-J3NZX3 UniRef90 Q2U9S0 UniRef90-V6KCl6 UniRef90-AODB07 UniRef90_Q3MC23 UniRef90-K9EYG4 UniRef90_141957 UniRef90-B0CCY2 niRef90 UPI0004407663 UniRef90- X6LXA5 UniRef90-K9UVD8 UniRef90-K9W375 UniRef90 M5C312 UniRef90-UPIO002D3EC77 UniRef90-K9TQR1 UniRef90-A8ZLJ9 UniRef90-M5C429 UniRef90-X6N652 UniRef90-UPI00034B6536
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330
340
AFSTDGQDI|A AS DKQS L R|LWQVGEK D D
AFSTDGTRIVSGSRDRSVRVWDTSTGAELKVLEGHTHS $\square$
A WS P D GELL AS AS QDK T I K L WNRD GK
A L S H DN K Y I LS G S D D N T L K L WD A E S G S C I $S$ TLLTGDLIR
TFNPNGELLAAASWDSTVKLWSRD GKLINTLNGHRAPVL
E F S P D G QLV A S A S M D K T I R W WRAD GT G S
SFSPNGETI A TMSED KI KLLWN
AF R P DNS QL A S GSKDET I K L L WDVET GECLATL
AFSPDGKTLVSGGEDNS $T K \square W$
AFNPQGHLLASAS LDRTVKLWQLDG

AVSPD GSCI AS GSADETI HLWWDARTGKQRS
TFSTD GTHIVVS GSYDK SVVRVWDASTGAELKVLNGHMQS $\square$
AFSPDGKHVVSGSEDGTMRIWDTQTG
AVAPDGVTIVAGDSSGQVH
A F S P D G SRIV S GSNDK TV R L WD A S $\square G K$

CFSP LGTLLAS GSMDNSI RLWD WS S
AFSPDGQWI ASGS LD GTVRLW
AFSPD GRMLASGSEDRTVYLVNLQDPK
AFSHDSKLLASSVSHDKTVKVWDTAA GTLQQTLEGH
VF S P D G T LLLA S GS Y D S T $\quad$ R L WK P Q T G E
DFSPS GRRLAS GSYDLLTIKIWDVETGNCQQTLTGH
A WS PMTAIVASGNEDRTVRLWTLDG
A F S P D GQ L A S G GEDNLV KL WQ TVV S K L I KA $\square$ A GHKERV
AFSPN GS QIV S GSWDHTI RFWDAGT GENAVAFFSPD GSR1V



SFHPDNQTIASGSADKTIKIWRVNDGQLLRTLTGH
MFSRD GKNLITASRRKTAKLWNFDGVETRLIASLHG
AFSPD GK T L V S GS D D D T VK $V$ WR S
A MS GD GRRVVVGSDDGSVRVWDVETGAQVRSVSGDGRRVV
A F S P D GE Y L A S G G N D Q S I H L WKVAT GESLAAVWS G HRATVV
SFSPD GK QLAS G S Q D GT L R L WN A A R A N A QE TETPDDR

AFSPD GKTLASGSSDETARIWDI QTGE
A F S H D G R M L I S G S K D R T
EFFPKEPKlLS CSYDGT\|RlWWDIT
AFSTNGRLLASGSRDK I R L WWD P AT GT LQQTLKGH
$A \bigvee S G D G T R L V V V D E G D L R A V P S E S G D A D T T V W \square D G R R \square L$
C F S
SFSPDGQTLASASDDNTIILWNL
AFSFDDRLLASTSSDATVKIWSVQTGQCLKTLT
HFS QDGKTLVS GSSNKTI II WDLAR
A F S P P G Q T V AS C S K D E T ARR W S V E T G QC L A K L S G H

$V$ F S A D G Q LLA S G S T D H T I R L WHVVS G
$\mathrm{N} \square \mathrm{S}$ S D G K $\quad$ A T A S F D Q T I K 1 W
$R F S V D G S A L V S G S H D G T V R M W D V R T G Q Q T K Q L S S D G R R V V$
$S F S P D G Q Q L A T V G D D G T A C L W D L Q G K$
S $\square$ S A D GKMLTS GS QD N T I KVVW
$D F S P D G Q L L A T A S V D H T V R L W K V D T G Q C L R \square L E G H$

TFSPNGRYA $\quad$ S AS D DRTVR $\square W N L Q Q K G P \square H T L E$
AFSPD GTLLASASVDEMALLWDPATG
$E L S R D G K K I V Y T T W Q G T V R V V S A R S G R G E A T F S P D G K T I V$
AFAPDGRTLATAGLDGTVRLWDAARGTPLATL
$R L S P D G Y K I L S C S N D K T V R\|W D\| V S G K Q L H V L E G H L$
AFSPDGSK I I S GSDDK T $\square R \square W N \square E T G$
A I S HD GRYIVSGSDDKTIRVWDGETG
VF S H D S T M V ALDA S D D E TVVQI WNVVE T G N CE QVLD
R F S P D G S RIIVSCSYSNTI RVVW
S F S P N VQMLVSAS DNTVVKLWK LDLLKDLAK SA

AFSPDGKWLASSDHQGVIRR $I W$
HWSPDSKK CF VDNGRNL YL LDDVAT GN QQK
TYNDDGSLIDFSASVDKTVIIVWDG
 AIT P D G Q QV I S G S Y D K T I KV WS LA T G S ELLLTFTGHRS AFHPDGESFATASDDKTVKLWNLNTG
AFSHDG R LA TGGDDG IVRIVDSSG
AFSPDGRALATASDDESVRLWDPATRK
VF S GDGQTIATAGWDTTVRTWN
AFSPDGKTLASASCDETARDWDTATGALRQTLREHKNDVL

$K Y S P D G Q T\|V T S S C D K T\| R L W D V K S G R E L Q V M K G H Y S T V V$
AFTPDGKRLAVSGYDGTARDFTLSTAVDR
DFSSDGKKLA SGSADKTALLWTLER

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UniRef90-UPI00037DB3D7
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UniRef90-K9WCJ9
UniRef90_UPI0003B4CD66

$S V I S V A \square S P S$ GWY $\square A S G S D N T \square R \square W D A Q T G E A V L!G$
F S NDNSKILS CSWDK TI RLWD T $\square$ S GK QI QIIF S S D S L Qil CA GVDN DV LARWDAES GAP L LT G

$P D G K M \square A S G S L D K A D V E V D S G R \square C R \square G$



S S DGMR V S GA DDR RRLWDAPTGNLLGAG SVYRSVLSPG GALLATGDEGTVRLWDAASWELLHTG



S VWT $\square A F S P \quad D E R Q L A S A S D G T \square K \square W D T E S R A L L W V G$ AAFSP DGQRVAAASDGPAWVWRVDGTPVALTG AT $\square$ SPE GTR $\| L T S A P D G T V Y L F S I N G T S Q R M D G$

 A F S P D GRTLLAS GS F D RVVWLWDVVSTGECLQA D

SPPSSELLASGSFDQVRLWSPRADASLKVL F S S S GERRLF S CSDDRI RVWDWRSGTQLTD G


PNGLIVASSDAKDワRFWNFSEELLHTSK


AFS RDGQTワATAGFDKVRDWNRQGKLLVLRG


PDGRYAVSTSSDNLK LVELLSSGRAVHTG
A LAFSP DGQY IAAGGQDQLKLWS $\quad$ NERSSA VLLG




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

 SANGKY $\square$ A T A GQDRVKLWK P N G T L L K T L K

PD GKRAVSASND Q $\square R$ VWD $L S N V N D L T L R$
LVSFSTPCGNHVIWGSEGDワWVDSVSGKT\HHG AFSHDD RFLATASNGPIRIWDAERASIVTAG AFS CDGSRVACGLRGEVY CDDNTVRVWDVG AFSP DGTTLAATGGTDRLWDTATWEPKATDTG



UniRef90 A0A024YI01 UniRef90-X8J4Y5 UniRef90_UPIO004411E86 UniRef90-X6NVH3 UniRef90-UPI0004413069 UniRef90-X6P5Y6 UniRef90-LODH44 UniRef90-W5WET1 UniRef90_L1J3A9
UniRef90-X6LLU2 UniRef90-UPIO0036EC7BD UniRef90- X6LVY4 UniRef90_UPIO004415108 UniRef90_UPI000366FCD7 UniRef90-W3WT51 UniRef90-K9TM62 UniRef90-E9FAY0 UniRef90_UPI00035DD8D2 UniRef90 A7F664 UniRef90-L8WHW1 UniRef90-D6TBP7 UniRef90-H8MNA4 UniRef90_S9R721 UniRef90-B1WTV9
UniRefgo J2K191 UniRef90-J2K191 UniRef90 K9UEI6 UniRef90- X6NWX5 UniRef90-U9W6D7 UniRef90_UPIOOO40837A4 UniRef90-K1KU23 UniRef90_UPIO0044122A2 UniRef90-B1WPG6 UniRef90-A7EPC1
UniRef90 $\times 6 \mathrm{MVZ5}$ UniRef90-B1WPV7 UniRef90-G1XZ10 UniRef90-A9WGM8 UniRef90-X6NG88 UniRef90_S4Y9Y4
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UniRef90_K5W117 UniRef90-K5W117
UniRef90 G1XSA9 UniRef90-H1QV35 UniRef90_UPI0004784A53 UniRef90-M5C9K0 UniRef90- X6MLE4 UniRef90_UPIOOO3716254 UniRef90-B4VUA6 UniRef90-F9PHJ0 UniRef90-K9QHY1 UniRef90-X6NE97 UniRef90_UPI000455FB95 UniRef90-UPI0003683B76 UniRef90-B3ENN4 HTDSVLSVAFSPDGRSVVSGSADGNAVQAQUWDTVSGAVVP EGHNVNAAYF LPDNTKI I SCSDDET I RLWDTISGKIQI
 HGSPVTSLAYSPDGSIILTGTKDGTAQLXWDAASAKPRP


#### Abstract

HEEYVTCVIWSWDGRSLASASED KTDRVWNAETWELQQ HSSWVHLAEYSPDKRTVVSCSYDKKTVRLWDVKSGKEKK    $\begin{array}{lll}H & D M V T S V T F S P D C F H L A S G S Y D S T \\ H T S A I V G C L A F S P D G D L L A S G G H D A S S\end{array}$    HKHPVNTATFSPDDSLLLTASDDGTARLWNVLELWQPPRV1     HTDWIDCI ALDSPNEDHI A S SSKDCTV $\begin{array}{ll}H P S A V W T V V F S P N N Q F I I A T A S N D N \\ S N E G A N L P H F S P D G K H I & A F T A Q Y D G\end{array}$  K T D D E G H S V T S S $F D \frac{K}{K}$ 

RLWDAATGELQT


HTDAVWGVNFNETGQWLASSGEDGTVRLWLWDLQGNMVAK AGQGQNSPVFSPDGSLVAYTGTYDGNDVYVVPAGGGQPQR HEGDVSS LAFSPDGAGLASGAQDD PVVRLWDTGTGEDAQ

HAEPVTAVVVTPDGR LALSASHDNT $\square K V W E \square S R G R E V R$
EHQNTRTVAFSPDGN IIASGSWDRS $\square R \square W S P D G R H L Q T$ HRGSVWPVVWRPDQNQVATSSNDGTT RLWDVRSGQLQH HTRAVTSVACSPDGKYIVSGSRD QTVRLWNAETGQPVD
 HKSTVYSASFSPDGSQVVSASKDSS VRVWDASSGNQLT HTDWVTGGAWSPDNTRILTTSTDGTA HTNRVHAARFSPDGHTVVSCSDDGT HTNKLTALDAYSPDGTLLATAAWD

 HEDRVLGVRFSPDGKKLVSGSFD
HNAVIVREVALSSDGLI AASASEDGT $\square R L W K T N T G G E V K K$ DHVSVTGLILTADGKQADSASEDKTDKDWHDD STPETP T
HGGENWVIAVSPDGRHT CSDSGNCSDSCRDAETGALKV HESIVVHLEFSPDSNILLTASHDGTARLWDVD GALTT HTDSVLSVSYPDDGSRLASASRDNT IRAWD LQTGQMVT




VSCLIFSPETSRVRRMFKKEACKWDRQDSGGALLQ HTAAVLAVDYSPDGQKIVTAGVDGT LKLWKRDGTLIQT
 HEGEVDAVSFSPDSQTLVSGSWDRTLRRLWLWDFMGNPLAT HDAPVASVSWARDGVRLVSAATD HVARLWDTGTYA GTA HTGPI WSVAFSPDGEQLAAASADSTASLWNVSDPAYPSQP HTDEVNSVVFSGDGRLVASGSDDRTEVVVWDVRSGSDDP



PSVRVREPVLLGDTGRAVVVTDAPHDALEVHDPDAAPQRF HK SVVVSVDYSPDDQRIASGSWDNT HSDRVNIARFSSNGLKIVSGSDD HKDCVRGVRFSPAGELLVAVSDK

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LM GHRES IE S IVWA Q D GRDIDASGSHDK TVRLWEDETGECR L E GH S N MV WCVVNFSPN G GDIVVS CS T D K TII R L WNV GT GK E I


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## L <br> -

 F T G D M L L WV V T S V DVSHPGAVWALA WSTDDGRRLVASSGSDGHLQQLWRQPT G H DR



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


 L T WHP GRRDV A V G WT P D G K NV L F R T P R T Q L Y T I P V T G GA A T LR GHS D W DR S L A F S P D G R L L A S A S VD Q T I R DWEVV S G Q T T
 MS GHA GEVVYSVAFSPD GTRVVS GSWDRAVRIWDART GD LL FASHTAPMTQLSFSPDGETLASADFHGEVKLWKVKN RFF T L R G H G R V T A L S F R D D G E V L A A C G N D GVVI R L WE P R T G R L V



 LA G H S H A $V$ V



 FTGHTNSVLSVSFSPD GAII AS GSWDNTDRACGAHTGHTVV




 L




A A GE LGR VLH LA A S P A G DKVVA A VSH D GRVSVVVVPA GTV V MNGHSRPVNCVRFSADGSLVVSGSNDGTVRTWDVSTGQQT L E GHS S YVTVDVGFFENDNKVVS CSTD GTIRIWDTALERKI

 FN G H T D WV N A A E F L LDD GN TII S C S D D ITTI R LIWDDMIS G K ELL LY GHK GRVVTVCCSPDGREFASCGE GGVHIWS LHDRK QP
 LTWHPSSDRVVGWDPQGKSVVMMSPRGHLYQVNTAAGFPE


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UniRef90_K6YVD9
6

V R L W D V S GR R A L A A L S G H T
180
190
200
S V W W V V F A P $\quad 190$
GRTVVASSSTD G

 V RLWNV ET R KLERTLR GHSNWVSVAVSQSARYI AS GSFDK
 VR L WD GK S R T A L S T V R T P T A A Y G V A L LS A D GR R L A A G VA G G









 I QLW WDVSEPSRRLRPT GHT GYVNSSLVFSPD GRTMLAS GS S D A V RI WD PVT GQCILHLE GHASVSSVSWS QD GRQLASASAD K L K L Y D A S T G E C L T Y L G H R DEELRRSV DF S R D GRMMLDS G GK DR





 VWI A A L S D S SVVVKIVPRDNSNDDRNPLD
 LKI WELSSSGRELKKTLT GHTAGVNAAATPD GRLVVI SASEDK I R L WN A K K G E L H S L E G H S D GVVRCVA F S P D GA KI I S G S M D H I RLWNME GELLLKVINNAHSGGNQLAFSPNGEVI ASVGNDN $V$ HL WNTETGADERELDNTDHVWAVAFSPDGBALATANDD D









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 I RIWWD T DA WRET E RLLEYS QYTTHLAFSSDSRVLASASSDG $V \operatorname{ESWNSQQGELV} T R R F E G E P T G D R A V A F S P D Q Q T V A A A G K D D N$



 H T K A VN S VVTF T P D G T RLL V S GS D D E VRLWWASNGKERFALSEHHGAAVGVVFSADGKQLVVDVGRDT


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$T|V| R|L| W D$
TIIVWDTYTGA $\square$ A $\square$ GP $\square E G$
 TICLLWDSTT $T \square R \square W D A Q T G E A V A A P$ TMRLWDV AS GRELQKFK
TMRLWDV
SVLLWDVSDPHSPVALATG

 GI RI WDA

ASASDDNTVKDWDTGRRLREFSGTSDRLDSALFSPAGP ASASDDNTVKLWDTTSGTCVQTFQGHLDSVNSVAMSSDRVV
 $T \quad 1 \quad H L W D G E T G$
$G G G A V V V K \square W D V A$
T I R L W DAMT
$T V R W N V Q D A D V S N A$
$T \mathrm{I} R \mathrm{~L} W \mathrm{~V} V \mathrm{Q}$
GGRSRVVLS GHSAAVYS LTFTSDSR
TARVWKA
DGKGTPVVLKGHEGDVHSAAFSPD
QARLW Q WH LTSDTTKPLRAFSGSTNPLNSATFSPDGS TVRLWSVTDPRHAAPQCEQWPEESQWLGTKSNQGKDTDDAA TVR WDPATGHSAS LI
 TLRLWDVATGD CLHILD G D ENWVWRMA

 FI WSYDPATGDLVYEQGGYLHLLNPATGQTQQLEDHDKGD TI RLWDSTT GAHLATLTGHENPVLSIS FSPDQD TIKLWN LQGDLLKTFEGHVFYI
 TVRLWDVKT TVQLW
 GPVALYAY DVVKAKVTSVVRNERGFDIQSAAAGPGGUV
 SLIVWSLSSSGDALFELLGHTASVTAAAVTP
 KVKLWSRIVEGLREWEYSESITGMAFSPD
TVRLWYRRTGRHLTPHRGRVRTVAFSPDGETDATGCDDQA


TARDWDATTGHHQL TLTGHTDTATGGAWSPDNT $T$ T $\quad$ WNV $V$ A TAALWD TDSGHDTHAFVHGPGKLHALRFSPDGE
$\mathrm{T} V \mathrm{~K} \mathrm{~L}$ WDVKKTGDV
$\square R T \square S$ GHSWSVAALAFSAGGE TI RMWD VVK K ПD
 TUQUWDVKT TI WEGKLLMNVVAHEGRIWKLAFSPKGN Y SGMLS SDKPLRMWDYQNRINLLETHEGLYSPRSKTGGWP
 $T \vee R I W N V A T L Q L E R E L Q G H S A L V R S V A D S P S$
TAQLWDATT S I E L A DI NTSSNLPQAV LSPDGR TAR $\downarrow$ WDGHTGELLLGP LRGHGNPVASLDYSPDDK DKAVLLWDTVVGKQKGTLPEDTRE IVNVAFSADGT
T TR T W
TVELWNVADPAHPVSYG KPVELRTRFVGPDALA $\square S P D G R$ SI RI WDARTGEAVGAP

DVKLWEKGTGSVTWERRNTQPTSQLKPMALSPDT
T I QL WNA TDNATSE LDAAASFEED $\square R L W N T T L K A A D T D D R W N T V V T V$ TIRMFDSRSGDLVLGP
SLKLWS LDGRSHSRLNS
L RVWTLETREELLA
TFQLWNVADPSHVTAYG
TVRVWRVSDGSAVTGPFQG
EI QMTDV ANGKKGRTLFGHEHPIVRTVAASGDGT
ACKVWKSGAWTCQFNHPERIPILIGGEHPIRTVAASPDGK
AAKI WS SANTDS GTGSCUQTLEGHTSSVQSVAFSNDGE
$T \square R L W D V T D P S R R P L G A P L H G G T V Y L L A F S P D G R$
FDPSYDSHEFALSFSAATRPWLIPLAATEPAPFGPSADGW
TARIWDAETGK QLVVCGGYDDSYKGFLNCVA

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UniRef90_K6YVD9

$\square R R W D V V S G Q Q Q \square Q \square L E G H T E N \prod N$


T L A S G
SLA S A S NDRT
RLATSGWD
KVAS GSRD
Y SHS GLDRVVS GSDDK A I HR LDW $H L L S G S \quad D D G G L R L W E V E$

GS $\quad$ D D G T L R R L W W

 TLASGSDDNTVGRDWNTDPRHARPLGAPLTGHTEAGV $R L A T W S N D \quad K I V R V W N P \square T G Q C T S I L K G H R N S V R L V A$

 GGW V V CS EDCT T T T WDAETGLPLGDPITGHNDGVLTVA
FHWARERWNEVNQRGLHNAS LSPTGQRALFEYRGE\|ITVV H L V S G S E D

ETVRIWNVAT GRLDH I LIMGHSSFVY GQTDASASADKTVKLDNLQGDLDETFDDDVNSIV $Y \vee V G G T V A S G S E$
$R \vee V$ TASK D S T
 $S L D G S V R L W W$
$Y \square S S A S D G T \square I$

 VRLWCRLTLEH HT DRVYSVGFNSEGTLLAASAGN DGTAVVW


| $R$ | $l$ | $L$ | $T$ | $S$ | $T$ | $D$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $T$ | $V$ | S | C | S | S | D | $R L A T G$

GTARDWDATTGHHQHTTTGHTDTATGGA

GQDGYARLWSVTTGEPLGAFAHGEVVYSVA

## ATGEEVETLVGHTDSVCAVA

$Q \square A D C G R D A K V K V D D A A T G Q M \square K V L E G H E D G V R$ $T$ L A S A SVVDGT VKVWK T D G S A DA TVLPVQ G GVVWGVAA LVVSASFDKT $\square \quad G I W N V Q S C K R M H E L T G H S N Q V W R T R$


 LIF S A REDNVG Y I A T A S Y D
TIA S A A Y D A
STLRDIWDASTANDMMGPMHGHSGYVNHVR $R \bigvee R L D W D A V T G E L L K \quad A T L T G H E W T V V N$
$T L A T A Y E D \quad H T \square Q L W D V S A P S H V R R D G T P L T G H K G Y V N$ $S$ A S GSHDETV R WDLFEARDPGVSLLPMVGHSNWVR
 KLISCDSDKT KI WSVK Q GEIVSITGHTDAVNTIA QL LAA A T D P P N S S DVVTTLIDTKTGSIVRRLSHANNVAKVA


 ASVSRDRTLA L WDLHAPGGQLQTLRGHEGSVVSVDD $T$ LAS GSAD GT DRLWNVT DPARTAPDGAPDRWHS GPVVN LVAS GSLDYTVRVWRLDDGTLAAG P PAGHTEGI W $L L A S A$ GEETRIMLWDAQAGKLLDRLSGHTDFVN 1 YAA GLGG NETTTVLLLRSTVDDAWSHTLQGHTSRVVSLLD RIVVT G S Y DK T TLLASSA H D D D H A V R L W DV A A D P R A P E A L GKLLT G P TA A V R


## KLVSCSMD

L LA T A A A D
I SP D G Q L LAS G S
 RIIDT Y I V S C L S W D K T QV LS GS S D QV L S G S S D
$\square L A S G G C D S$
$\mathrm{K} L$ V S C
$\mathrm{Y} A \mathrm{Q}$

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UniRef90 ${ }^{-18 J 4 Y 5}$ UniRef90-UPI0004411E86 UniRef90- X6NVH3 UniRef90_UPI0004413069 UniRef90-X6P5Y6 UniRef90-LODH44 UniRef90 W5WET1 UniRef90-L1J3A9 UniRef90_X6LLU2 UniRef90-UPI00036EC7BD UniRef90- X6LVY4 UniRef90_UPIO004415108 UniRef90_UPI000366FCD7 UniRef90-W3WT51 UniRef90-K9TM62 UniRef90-E9FAY0 UniRef90-UPI00035DD8D2 UniRef90_A7F664 UniRef90-L8WHW1 UniRef90-D6TBP7 UniRef90-H8MNA4 UniRef90_S9R721
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UniRef90_12MXI3 UniRef90-I2MXI3 UniRef90-F8PGI3 UniRef90-Q0REB4 UniRef90-X6LVW8 UniRef90-A6G7E1 UniRef90-X6LYS0 UniRef90_UPI00047708DF UniRef90- $\times 6 \mathrm{P} 8 \mathrm{~K} 0$ UniRef90- Q8KB12 UniRef90_UPIO002FB2C35 UniRef90-X6LYS7 UniRef90-UPI00031491EA UniRef90 ${ }^{-}$X6LWI6 UniRef90_UPIO00441339F UniRef90- X6CB47 UniRef90 M5C5U2 UniRef90_UPIO003A0EF30 UniRef90-X6LMQ0 UniRef90_UPI00035C73FF UniRef90-UPIO004412AFA UniRef90-X6NVJ0 UniRef90-D7E5E0 UniRef90-A2QW12 UniRef90-K9TNH7 UniRef90-K9UEP3 UniRef90-K1WEW3 UniRef90-S4A6L4 UniRef90-S2YFX3 UniRef90 M5C180 UniRef90-G3JOL5 UniRef90-K5W117 UniRef90_G1XSA9 UniRef90-H1QV35 UniRef90_UPIO004784A53 UniRef90-M5C9K0 UniRef90 ${ }^{-}$X6MLE4 UniRef90_UPIOOO3716254 UniRef90-B4VUA6 UniRef90-F9PHJ0 UniRef90-K9QHY1 UniRef90-X6NE97 UniRef90_UPI000455FB95 UniRef90_UPI0003683B76 UniRef90-B3ENN4
UniRef90_K6YVD9

FSPDG $\quad$ KKDASCSGDQTDRVWDDKAGTTTGHKDGVWS
 VAYFPS GKRRVVSCSDDRSSI RI WDAVVGKVVVPLS GHTGMV AAQFSPDCRTIASGSWDETIILWDVQSGKI

 VTSEGNTMVSGSGDGTIRIW

GПQFSPDGSK LISYSDDNTLRLWNLLS GKQDQVLEGVADA
 $S V A M S S D S Y R V A S A S D D N T V K L W D T M S G T L Q T F Q G H V R S V$ VAFSKS GKTLVSGSFDDTIKLW
RAVF GPDGQF ASASNDSTVRVWDDESRNDRQPKGYASAV FSPDGG SLISAAADGTVVIWD
SVAFSPDGTKVASGSGDNTI RLWDAMTGELQTLEGHVSSV CVDYSPSGRYI ASASWDQTLRIWNADTGQIQGHNDAVSCV DLDWSPDATQLVSGGTDTHVTVWEVASGMPRGVLRGVYGV
SAGFSPDGLWVVTTSLDRTARVWRTDTAPPQVLKGHVEDA SAGFSPDGLWVTTSLDRTARVWRTDTAPRQLKGHVEA FSPN GQ WSQDGS WSQDGS
 VSPDSRL IAS GSRDCSVRLWNLDGGVREPLTQHVRSV
WS PDGQQ $\square$ A WFSDASGEYQLMTGD LKPARTDTLPKNTFFF SVSVSQSGRYDASGSDDKTI RI WDAQTGEPAPLTGHLNSV $F S P D G Q \quad T \| A S A S A D K T I K L W N L Q G D L L E D F Q G H Q D S V$ SS SA
NVQFSPDNQK\|LSSSFDETFYLWD $\operatorname{CSGKKLKELIGHVYRA}$ SVSFSPDGQFIVSGGNDGTDRLWTKDGTLLQTLGGHESGV LSPTGKRVLF
 GVAVTDDGRLAI STSEDTTLRVWDLCEERCDALVEAHTGC
 FSPQGD DAVT GEDGNLLATAGDDLVIRLWDPVTGRLHTLAAHVWSV
 IIS SDG ACIVSASDDSTVRLWRLNSYRVKQVYSHVWCV

WSPDNTR $\square$ LT T S R DGTARTWDAT TGHLHTLTGHSNWV CVD $\square \mathrm{FE}$ E GNI I A S G S T D C K $\square \mathrm{R} \square \mathrm{W}$
FSPADPGLLATATMDDDAAHLWD $\quad$ GGRGLRLRSFRHVDAV
A A
G G K R V A S G S R D K T VK L W

SLVFSPDGHTLASGSADDTVRLWNTADPRHAPLTGHVNAL CV AYSPD G D RIVS G GDDGTVRLWDASTGAAAPLE EHVPSV SVAF S S K D GQTIV S S S LDDK T I $\quad$ R L W

| $D$ | $S$ | $P$ |
| :--- | :--- | :--- |
| $F$ | $D$ | $G$ |

$K I F A T$ GSHD K T I K L WY L A T A E L L H F N G HVT S V




 $S V V Y A P D G T R V D S G S G D G T M R V W N V R G G L V A S A L S R L D S L L$
 F S P D G S FSNDDEL SVAFSPDGHTLVA

GAKFS QDGKKI LSCSWDCTIR LWWDI SEDKCYEWK GH $\square$ N D A $F$ SPD GRLL LAT GS DDRTAR I WQV T
 A LA WSPDSSSRVAT GSHDDTVRVVDAAT GQTQLVLGAVETV
 $F$ SSDGSK FLSSAS DD GQVVRVWEATPRKLLUQLQQHVYCA A $\square$ QF DPE GKVILAT


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UniRef90_K6YVD9

AFSHDGRWDASGAAENNTIVWDTLTGS
A F S S P D G R S I A S G S A E D G M V R I WD L L T G
EFSSSDSSKMVSFSSNEE II RLLWDT■SGKQ $\square Q \square F E G H N K F \square$
AVSPD GRQLCSASDDYTIRRWDAESGA
AFSPDGETVLTGSHNQTGRWWRVAEWPDD
AFSPD GTTLASASYDLTTVRLWNTADRTLKAKLT
TLLWDGRT』ASGSNDH』VRLWDADTG
 A $\square$ S P S GRY Y AS GSYDETIRIWDAQTGE
 AMSTDGRRLDSGSEDKTVKLWDAESGACLQTLL

AFSPD GQY L A S GGVTVVQVWERES GSSEKT $\square T$
AFSPD

A WS P Y GRLLLASCGWDHAI RLWDPTTG
RFS PDGQRRITVSRDGTLRRVWKAGGPGQSARFSPDGSRVV
$H L T R D G T R A L T V C G N G L V R I W P L$





D WS P D GK H $\quad$ A F T D T D Y N $\square W \square V N D A T G T S K$
AFSPDERSLISTSDDRAI RRWDAESGAP
A F S P D GQT $\square$ A S $\square$ S A D N T I K L W S LDD
RFSPDGQCIVSCSSDKT IRRLWDVASGKNLK
RFRPNGQQLISSDVTGTVMQWDLTLEANPETL


A VT P DGRTFLAGDGAGGLWIDPAVEPLDGGDVQPDFRD
A F SPD GTR I A S GSADKTVRLWDAATG
AFSPD GQMI ASASWDGTI QLWTNEGVK
HFSPDSS LLASA GDDGTVRLWDVADPEHAQ
$A L T S D G A R I V S G S D D G T I R V W D$
D F S P D G RLLLAT T S P D R TVVRVVDVSNPA
AFSPDGTRVAS GS LDKTIRVFDVDTG
A WS PDNTR $\square$ LT T SRDHTVR $\square$ WDATTG
AFSPGGDQLATASWDHSAR $\square$ WDVQRGRVSTPLEGHR

AFSPDGKVIASGSDDFK TK L WW

QYS A D G Q TVVV C S F D K T I R L WDVK T G L E L Q K L E G H

KYFPGGRTIVSCSGDNTIQLWNIES G
AYS LD GKRIVVSGANDRTLRIVWDASTGE
AFSPDGRSLLTASRDGTARIWSVAGG

A Y S P DGRTLASGSDDDTVRLWNT

AFSPDGKTWVSGSSDNTWKLWNLESKE
TFSPD GK LLLTLLNARDGTVQLWNTNTETVEQTL
AFSPDGEEIASAGAENVAILW
AFSAD GR S I A S GSA DGTA KVVWCVDTGACLMTFRGHR
V PDRRDVLA $\square S E D G W V R$
EF S P D D Q L A A G G GNGTIT L WQDD K
VF S P D GTRIA A VA D H S GHAFL W
TYSPGGRTLASGGNDNTVRLWNVSDPSDA
CFSPDGAHVVTESENNGIQMWRVTDGTCDQPGSVDMRP
AFSRNGKFLAS GSADSQV LLWNAATGEQDQS
RYS P D GQRMASCGKEHSVRIWDLS
A $\square$ S N D DK LI A A GSFGGVI KVWDLES GEC LKKTCE $\square$ NR
AFSPD GHTLASGGSADDTVRLWDVTDPAAAKP
$A V S$ GD GERVVIDRS GS GLSSTQPATSKPGBDDPFD DDLSRVV
QF S H DELKKVVSCSYDNT $\square R \square W D V L T G K S$
A $\square$ S A K G R LL I S G S A D G T VR LWHP GRGK LIQT LS

SFS P D S K L L LT P G I D H T I Q L R D L S G K

A F S P D GQKLLI S G S S DT TVV K L WQTKT G Q E

LWS PKGDQ $\square A Y$ Y $I$ S D H G

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AFS $\quad$ NNSKLLAASASDHTIUR|LWQVDGGEDAWET
$M V L S V M F S P G \quad G M Q V V S G S D D K V R \square W D A M T G K Q V M L G$ NQLVFTAEGDIWHSALDKQQTQRLT


SVDGKRLLAANSDEVRTWDLETGSETRS ${ }^{\mathrm{G}}$ SKAVPP $\square$ APPKAQFAADASN R GDKMVTASYDQMY WDVENGPCLLNT RFS GDTLISASADKIRIWNAKTGEP KT YTAEFSPDECT IISCSEDKT IRLWD $\square$ ETNKMRFKG
$\square V R Y S P V G N R L L S C S S D G T L R Q W D A Q T G D C D E V N$ VAFSP DGKT LAASSRDTGRLWDVESGACRSVG

SPTDEER LRFWSQLHP $\square$ MRD $\square R \square S S A M P P Y$
DATR $\square V V G \square D G E \square Q \square W D R Q G K V L R S \square T$
ASFSP DGRF ITGFDGTARDWDKSGNLITEDK STKSSRFSP DGNTLVS DANDY I LLWDVSSKEE GKEG

S WS A QLQT LG
WSVAFSP DGKCVASGSDGTVR】WDVESGEMVYVL

Y G LS F S PDD RS $\square$ ASASEDN $\square \mathrm{K} \square \mathrm{WQVDGK} \mathrm{LVRT} \mathrm{T}_{\mathrm{L}}^{\mathrm{L}} \mathrm{K}_{\mathrm{K}}^{\mathrm{G}}$

T T P $\square$ SQST T
GFSPL GDKLVTASRDRVYI WDVESNPCLLGT



 T T WS SPDGKSLVFDMDGDIYVVALDGGKAKALT $A \square P A H P A Q A F G P A \quad G K L L V S G G Y D Q V R L H D R T D P R A P R T G$ NSDSFNPA GTLLASGSEDRDRDWDPLTGEQKAVG SQNGSRALLTRDNEVYKTDRWDWAYKPDS $Q \square S P$ DGTE DAFCYKGDIYKVPAKGGTA DQLT
$S \square K M T R W A Q K S P \quad D A K S D L F Q A D G K \square Y V K D \square K S G K T S R \square T$ SPNGGLI ASGGNDNLLLWNPQTQTLVHED


AFSSPDGQTLASCSNDTDNDWNLKTNKFTRQG SSAVSP DGKQ $\square$ AF $\square S R G D V F V T A T D Y T T T R Q Q T$ PDSRTLVTASDDQTARMWDLDGPAISGP ATTFSP DGKHVLSGNDGSLCLWETATGKVAFDD WS P DGKRIAFHARYHIWAVSKEGGKPQQLT
VRFS ADGKYLATGCNRAADVFSVETGQLVTLL NSVSFSP DSKCIVTACDDRVRIYDVGQHLLVRTG

HAVTSSPD G K T L V F H A DGG L WK K N L P N G K P Q R L
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UniRef90

- 6 MPZ 4 UniRef90-W3WYB1 UniRef90_UPIO0047C6848 UniRef90_UPIO0036A0EB7 UniRef90-UPI0001F2B2E4 UniRef90_B2JAS8 UniRef90-X6LYY1 UniRef90_X6MEQ0 UniRef90_UPIO0036735E0 UniRef90-A7BQC4 UniRef90-UPI0001F2A99E UniRef90-K9ZML4 UniRef90_UPI0004407F43 UniRef90-R7RWW4 UniRef90 W5WFM6 UniRef90-A3Q8T8 UniRef90_Q3M6B4 UniRef90-K9U9M1 UniRef90-X6NL79 UniRef90-B3QYS2
UniRef90 D5G228 UniRef90 ${ }^{-}$X6NEN7 UniRef90_X8JDJO UniRef90_E0U919 UniRef90_UPI0003B673B9 UniRef90_L8WXE6 UniRef90-L8M2Y3 UniRef90-UPI000455D24B UniRef90-M5C6Z5 UniRef90-D4ZZ44 UniRef90-K6XIL7 UniRef90-D8HPG7 UniRef90-K4BKA6 UniRef90-D8TPB3 UniRef90-X8J2S1 UniRef90-K5VAH0 UniRef90-UPI00036FEC8B UniRef90_X6M3J2 UniRef90-K9W5S9 UniRef90-X6LHC7 UniRef90 ${ }^{-}$K7AAH5 UniRef90-UPI000455FB15 UniRef90-T5C7C6 UniRef90-D6A6P1 UniRef90-HOUTP0 UniRef90_X6N468 UniRef90_UPI0002F38A59 UniRef90-D2JM07 UniRef90_N1QHE4 UniRef90-J5VWL5 UniRef90-UPI0003B6F648 UniRef90-UPIO004764D17 UniRef90_UPIO0036BB136 UniRef90-S9X8L2 UniRef90_UPI000455E3F2 UniRef90_UPI00036CF579 UniRef90-H2BWD9 UniRef90-B9XAV5 UniRef90-M2P818 UniRef90_UPIO0036787C1

K GYGVWSVAFSPNSALVVSAGRDS
TVRR ${ }^{70} W Q V$ I GEDR ${ }^{80}$
HNNRVWSVAFSPDGTR VVGSSD YT $\|$ R LWDASTGAP $\square T$ HPALEREPLLARDGQTLYF $\square A N Y D G D E \square Y Q L P L S G G T A S R$

KEER TY $\square A E F S P N G Q \square V A \quad S G T S S Q A \square R \square W N T K T G E V K T$ HEGPVERASFSPDGSRVATAGRDGTARRIWDAASGGQLY




$$
\text { SVSFSSDGK } \square \text { G GGENG ! K WWHDDGRTFQQ }
$$ HTGVSACVSWSPDGATLASASWDGT $\square \mathrm{L}$ RLFDTGSGEDAV

 QPGGTWSTAFLPGTDDVLTVG HTDSVWA AVSQDGRTLVSGSAD GSDVRLWDAKSGREKM $H T D S V W A D A V S Q D G R T L V S G S A D G K T I K V W D L Q T R E L Q R$
$N G L E S Y S A V F S P D G T R V A S C S M D G F K M W N A L H S T S S H T Q R$ $N G L E D Y S A V F S P D G T R V A S C S M D G F K M W N A L H S T S S H T Q R$
$A A H G D R V T A L S V D H A R K T F A S G S A D K T V K I W S I D G N A T A T$ $H L Q P \square W C A H F F P D G N T\|V S G S M D S T \quad Z L W D V S G K\| Q Q$

NPSMFVSAAYSPDGND $\square$ AA $\square$ S RSEYVCLWSSRTGEA $\square R$ HTGAVLGAAVSPDGRVAATASADGS I RLWDVRDAESSR HKSYIECLAAYSHDGQKLVSCGEE PVIKLWDAASGK IAN HEDT $\square R S V R F S P D G R N \square I S S S A D$ KTDRDWD\|ISGDQKQQ DKDEFNYVAFTPDGKQ\|ASGSSFGAVRVWSTDDRVACYT
QD $\square$ S KPTA $\square$ SSSETTDAVGTESGA VTVWNLKTNQSQS HSRSVHSVAFSPDGRTLASGSDDNT IKLWDTTTGTERQ AGENVKSAFFSPNSKFIVTSSNRT HTDDIRDVQFSPDGHSLVSASND


KK WD T T TGGERQ

 HS GMVNTVVFSPDSE $\quad$ LASGSGDGT $\square Q \square W D A K S G K Q L Q$ FRAF $\square$ TSVVFSPDGHR $\square$ ASGSYA KTVT $\square$ WDCESREVVP FSGDLSYSAFSPNGKVAAAVSLDRTARLWVTDDHRPRELAA EGTW MNVSVSPDGKQIVFDLLGD



##   $V K \vee W D V N$ T G K V $V$ L

PH $\square$ Y 1 SAALLECPHSSFV SKYREHDRVNAKESGDTMV TS GGVVSLI LSADGKELDNDGDRS I LEVVWTLSASTP ILAT DASRELFPSWSRDGSRIAYWTDSDLGTIRTIASGGGGDRA HD H YVSSAVFSPDGTRVASCSRDCTVKMWNALHSTSFHSS
HEDDVKCVAFS QDEKHLASGSRDNT $\quad$ KK $\quad$ WDDLETGQVVV CHNLVHSVKYSPDGGAF $\quad$ GAS GDHDGLKLWAAHTGNSVA


 F GDAVCGVAVSPDGRTLATGSWDHTMTLRITDAAPGPPVV
HAGQVLGVAFSPNGAYワASASLDSTVRDWDASTGEEKE

 S F S P D GQTLTSASDD KTVK LVRTDGS LIT T NDHDELYPRYSNDGKSTVYTTWDDQETVRTVKSGGGKGQK HEKAVRQVAWSPNGKLLATGSNDD KIVRIFDVEKRKLLP



H T SNVLS LT $\square$ TPD GK LIAS G G LDG A A I T AVAFSPDNQLLASGSSGK HQSVVCCVRFSADGRFVATGCNRAAQ $K G S Q A R G V T H E A D N K S V V Y A S T K D G S W$ AKPA CRAVVFSAD GKLLAT GS QDG




 K G DFEYE PAFSSNGKEVVVYVTWDDKN KGSIMMKISGGNPTD




#### Abstract

LT Q N D S NVVRVIFSSDNQTVISAS Q QS LNDWRRQGNEKF $L L G H E G K A K C V E W S P S G R M L A S G G E D K A V R L W D A V S G E C V$     


 1CFE62PMKGEGDGLSVQFS DDGAALLTGWQDGAVRDWDVQSRCL QS GQLV IDQQDGWVTAAAFSPDGNLLATAGYNRTLWDVSDPTRSKV

 LG D A K D K $\square S S$ S A $\square$ S P D G S T L 1
-1
-
$A$ LK G S S LV
LT GHPGYVI
FNGHSDFVVSVNFSSDGRRK

 FEGHS G S V F S I A V N P D GKTFASGS GDK TI KI WDV Q T S E L L
 T DR QA D PLVVQLAFTAD GRMVTVGGGSARLWDVTDPSPRES
 IT NNDHWI WKVT F S P D GRYL A A N S T N G

 $V$ GS WLSEAKSMAYSPNGARIAFGCENGTVVVREIYGSTLP
 Y S N P T K G VR S VA $\square$ S P D G S R I A A A GE DK A $\square Y M M F N T Y N$ G T A L

MRGHTKEVTAVAFSRQGHLASGATDK IIWLWNMSNGMNA TYVHP R R I N S V S F S P S G E HVVA T A C R D R FI R I F NV S G L E L S WNTPSKPVYSVTFSPDGSRIAAAASADHAI YI FSAHDATPI



 $R W K R V V Y$ V M WA I S
LT T H S G

## 

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| UniRef90-18U90 | VLPLADANS DESSNTLFFTRFGLHLLTGDNAKVYRGGAMGE |
| UniRef90 ${ }^{-1} 6$ | ( SSDDGT |
| UniRef90-UPI00041CFE62 |  |
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| UniRef90-C6WJ96 | K QVAELDAGH GQQVRTVVAFSPTGLLAASGSDDAT |
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| UniRef90-A8HMF2 | A ALQ GHEEDVNAVAWSADGQSIA S G A D Q T |
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| UniRef90-X6NM52 | KELQGHLNCVTNAEFSPDGQMIVSS S Y DQ T |
| UniRef90_UPI00029ADDA4 | KLENGHTSLI NTAVFSPD GNFILTA S S D D G T |
| UniRef90 ${ }^{-19 T Z 22 ~}$ | GRLLGHGGPVWTVAISSQDGQTLFSA GEDGT |
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| UniRef90-E3J106 | A SLRGHDGYVASVAFSPD G NLLA TAGYDDTARVWNVVDPT |
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| UniRef90-X6MPZ4 | EFDGHLK A VWCVNFSPDGNHIVSS |
| UniRef90_W3WYB1 | HTLQAHSRWVNAVAFSPNGKLFA |
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| UniRef90-X6LYY1 | K L LDVP F L WM T DVK F F P D N Q L I SF S REEK |
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| UniRef90-K9U9M1 |  |
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| UniRef90-E0U919 | K T LF GHK K E $\square$ Y ALLIT P D GQ |
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| UniRef90-L8WXE6 | QPLVAHAGADNSVAFSLDGRYLAA SGGDYND |
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| UniRef90_G9MW59 | RKEPNKGYPVRCDAMSSDGKYLA S S T D T N |
| UniRef90_UPI000455D24B | REDS G H T S SVT SI QYS P D G SVI A S A S EDYT |
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| UniRef90_D4ZZ44 | GQLLGHERDINAIAFSRDGQ L A S A S S D |
| UniRef90-C4ZMZ4 | LL R EAA G G T HRGEVLA WNGRRNVEVSADGALIA SAGGEDGT |
| UniRef90-K6XIL7 | Al KKRVNGNTADPAFSPDGKYLYFTQDVSGGSTFSYNRDA |
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| UniRef90-K4BKA6 | $F$ T CQGHRNWVLSVA WSPDGKHLV S G S K A GE |
| UniRef90-D8TPB3 | LR Y T GH T DVVSSLCWAPNGNLI AS A S S DLS |
| UniRef90-X8J2S1 | L GPHGHFDSVLTVAFTPDNTR1V S G S R D R T |
| UniRef90-K5VAH0 |  |
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| UniRef90- K6M3J2 $^{\text {a }}$ | QTLKGHADSVNDAQFSPNGNMVV S CSADTT |
| UniRef90-K9W5S9 | TTFDGHESAVWSVT F S P D GQ TLASA S Y DK T |
| UniRef90-X6LHC7 |  |
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| UniRef90_UPI000455FB15 | KPFRGHTYWVGC】EWSPDGKR】V |
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| UniRef90-D6A6P1 | GTLLGHTSSVWAVAVTR N A S GEVLITGSHDET |
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| UniRef90_UPI000455E3F2 |  |
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| UniRef90-B9XAV5 |  |
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$S \square S \square W N V R S Y Q K \square H Q \square G D N D N \square V T S A K \quad F S S D S R F Q V S C$ DES IITF WNLRNGE ITYKI TGHS GWITS I A LIN EKN T
 N FVWNSRSGK VS GPLEG $T L R V W K D Q T G D L V F$

CTLS GHQAAVKTVA $\square S P$ D
$\square I$ RMWYVGYGT\AP T DLVGDHKDAVYSAEFSPDGKH\|VSG TVKLWSLEDQSLGADKTVKLWSVENQSLLHSFNAHQSEDM


 $E K T V$ V





 | $T$ | $V$ | $K$ | $L$ | $W$ | $R$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $T$ | $T$ | $R$ | $L$ |  |  |
| L | $W$ | $D$ | $T$ | $L$ |  |



MGTRPRVQQ WN AQTGKP HFPLIMDKQQDAFEQEAKKPRSE $L \quad K L W D P Q T K T L R G \square L A G H T S N V T L A S G S V D R T V K L W D T \square$
T I RFW

$N V H L W$
K $\square G S A T A Q T \square P F$ QARNTYKRK $\square Y D F D S Q K P Q P V M G \square K G P A$ QTL LWDAAR GEK $\square R$ DLDGHTNFANGCSFSPD GL
TTRLWELQ
$L V C I W D L K T H D L A L E P L S G$ HAGFVYAVKFTPDET

$T V R \square W D L A S G A \square P \square P V P S$
T I R I WD AS T GQALLE PLEG
$\mathrm{V} S \square S \mathrm{D} D \mathrm{G} S R \mathrm{Y} L \mathrm{~L} \mathrm{~V} T \mathrm{NG} \square \mathrm{F}$


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UniRef90_UPI00036787C1
 TLASVGEDETV RLWDVSDPARARALGAPLTGHSAPVR NGRCDVSGSDDKT IRRLWNAYTGQPVMDAGTGHSDCWLL
$R \square Q Q$
QRERWLEVLT
K T
 ASGSCCSDDMT NPKGS LI ATVSLDWDGVSERGVLWDVKTGNERDLRKLEGHADWD
 YFATGSGDM
LLAS G GADRTLRLWNVANGS LRTLF NNHQGRVL FLYDNKRVVCGSRSGRIYVWKDGKQTHELTGHDKAVYSI A TVVSCSDDY R R RIWDVKSGK GLKTDEGHSGWVW 1 AT TGANRAI KFWNIK DGKDKKVFT TGNSDADSR

 $\mathrm{F} V \mathrm{~V}$ CSSSD WIVTGSEDNTA RVWNVDGSGNEKI

$T L A S G S R D R T \quad V R L W D V T P A H P R E L S R T D D A T G V R S$ LSGDGRWLVSGSDKGTIPLREDSSWRCVRTFYGHTSSVV.

## E L A T A G Y D <br> GTARLWDVT DPAHPRAVAT $\square$ PADAHWVL

T IVSAACDKT $\quad \square G L W D V K S G \quad E R \square K T M K G H F D A V F$ FIVSCSWDKT
 SLWAVN


LHISVSNA W
LIVTTSSNNSDFFNRNAQVWDTSGKE $\square A E \square K G H E G D V T$
KIVSAFAD GKVIIFDDKSGEAHELVGHSGEVMVAH TLATASVDDTARDWNIIDPAHPEALGQPLTGHTADVWTVA QVITTS WDTTA RLDNVRGQQLAVFSGHKDAVHHAA ILASGSGDKTV RLWCTKSGGQLKQLQQLEGHLLDWVR
 YIVSGSRDCTV RVWSVHAMAEAYGPLKGHSAEVYFVR TVGTGGWD HQSRLWDVS DPAAPRGLATLTGQNS VVW


SLDKT $\square R \square W D V I S E K E$
 RIVSASND GTIRIWEAKSGKEVRKLEGHSGLVLSVA



CHDRK $\square$ RMWDSQTLS LVFRPFGS RWHKGA $\square R S V T$ SSFDGKYMITGSRDSNVKD WS DENQSLLHSFNAHQSEVL
 CEDGK $\square R M W S S Q \| L T L V L D P F$ GSQSHTGQII T $\square$ A SGSSDNT $\quad$ K I WRRE
TLATGSSDRR TARDWDFADGTPRLRHTLRGHADQVHRVA Y F DWTPDSKYIVFWTAGKFHKLTVKDQSUATIP
 CTDKVWETTQGK LDRELKGHGHWVNSLALS GAFDHTNKHF RIASASAASDNTVLWDVRVAESGSVESAS MDMVT
 YGYDGE $\square Y T Q Q D G S T P Q K V R D E \square I R D D Q P Q T A T N G A T S A T$ R VVSASDDKTII TLASASDD T IVSSSND



DREVSKPGKMRAGSA LLAVCWFPDGHRFASAGEDFVIRDW NVDILD INETH $\square$ GNGHYVVSYSTDETTELDWDPSTGISTFT GRLLAS GGHDRLVRL WNAATGDCLAELRGHTAGVR
 LLVS GLQQDST
 HLSTFESHKCDTN HLVS GSLDKTDRMWRLNPAPQHPKSGECVRTFEGHKDFVL $\square A A T G S A D R T A$

| EKQAKADTTKTKKAQPAKSTNGVI E |
| :--- |
| RLWDVTDPAAPREAALLTGHTDNVI |

!SPDGQQ $\square$ AF A A $\square G D \square W \square L A K G A K A P E R \square T Q G P A M D M E P T$ $L L A T T S N D \quad G T R L T D V P T G T A T \quad L T L P G S A Q S C A$ ATKRISPSSDKEGGПCKQTFSGHKDFILS


Q VR
$E T \square S D R P \square S T L V N T G H A V D K A E L G C H G Y F V L$
R\|VSGSRDNTLRVFGVISDNAHAPTGRPRVAFSPNVHHFP

UniRef90 XoB715 UniRef90-M3EAF0 UniRef90-M2QH34 UniRef90_18U9Q4 UniRef90_UPI00041CFE62 UniRef90-X6LTY0 UniRef90- Q6W219 UniRef90_C6WJ96 UniRef90_K9W7G8 UniRef90-J3NUV9 UniRef90 K9THF1 UniRef90-L8X1V0 UniRef90-X6P0B0 UniRef90-UPI0002F2060D UniRef90 A8HMF2 UniRef90-K9WCR7 UniRef90-X6NM52 UniRef90 UPI00029ADDA4 UniRef90-K9TZ22 UniRef90_L8WHN4 UniRef90-UPIO00381C0A8 UniRef90_X6PDR2 UniRef90-R1FC08 UniRef90-D6TWR0 UniRef90-X8IW22 UniRef90-E3J106 UniRef90-Q3B6A0 UniRef90- $\mathrm{X6M2H0}$ UniRef90-X6MPZ4 UniRef90-W3WYB1 UniRef90_UPIO0047C6848 UniRef90-UPI00036A0EB7 UniRef90_UPI0001F2B2E4 UniRef90-B2JAS8 UniRef90_X6LYY1 UniRef90_X6MEQ0
UniRef90_UPIO0036735E0 UniRef90-A7BQC4 UniRef90-UPI0001F2A99E UniRef90 K9ZML4 UniRef90_UPI0004407F43 UniRef90-R7RWW4 UniRef90-W5WFM6 UniRef90-A3Q8T8 UniRef90-Q3M6B4 UniRef90 K9U9M1 UniRef90-X6NL79 UniRef90-B3QYS2 UniRef90-D5G228 UniRef90-X6NEN7 UniRef90-X8JDJ0 UniRef90_E0U919 UniRef90_UPI0003B673B9 UniRef90-L8WXE6 UniRef90-L8M2Y3 UniRef90 UPI000455D24B UniRef90-M5C6Z5 UniRef90-D4ZZ44 UniRef90-C4ZMZ4 UniRef90 K6XIL7 UniRef90-D8HPG7 UniRef90-K4BKA6 UniRef90-D8TPB3 UniRef90-X8J2S1 UniRef90-K5VAH0 UniRef90-UPI00036FEC8B UniRef90_X6M3J2 UniRef90-K9W5S9 UniRef90-X6LHC7 UniRef90 K7AAH5 UniRef90_UPIO00455FB15 UniRef90-T5C7C6 UniRef90-D6A6P1 UniRef90-HOUTP0 UniRef90-X6N468 UniRef90_UPI0002F38A59 UniRef90-D2JM07 UniRef90-N1QHE4 UniRef90-J5VWL5 UniRef90-R4SZ95 UniRef90 UPI0003B6F648 UniRef90-UPIO004764D17 UniRef90_UPI00036BB136 UniRef90-S9X8L2 UniRef90-UPI000455E3F2 UniRef90_UPI00036CF579 UniRef90-H2BWD9 UniRef90-B9XAV5 UniRef90-M2P818 UniRef90_UPI00036787C1


320
AVAFGPDGKTLATGGDDNT\RDWDVADPRARVLRGHVHSL SVA $\square$ SPDGTQUVSGSSDGTMRWWDVGTGRPKP KGHURSV LSHDGSWVYAI NDASGENEDWRFAADSARSEQLTKDGSTF AVKFSLDGQLIVSASFDKTIGLWNVKTGRLKELAGPVTSV SFD NCAFSPDDKLLATASLGNLVRLWDVESDSEAVI AGHVEHV WSLIS GSQRRSMSSQDAS GLVKLWDLLKSKD TK TLTDGVWND

SVAFSPDGQALASASADQTПKПW
VSPDGHDGALLAS GSYDMTIRLWNTHTGQLRGHGGGVRCV DVNFSRDGKYIVSGSSDRTARLWNVNSGEETKHSDNVVGV LVLSQDGKTIASISKEDGIIKI SSIDKKQLNTLHSDFTDA




$V A L G P D A R T L A A A G D D G G D R L L D V S A G A P A V V P A H V E A V$ SVSLLSDDGHWLAS GSKDNTVRLWEVNSGRCVHITSDVTSV.

A $V$ A F S P D GRT $\square$ A T G GRDGTVH $\square W D \square A$ A GVLAGHSDW $\square$ E S $\square$
CATFSPDGQFПASGSDDAT\RПWDVKTGNQLKVMEGVKGV

 SITFSPNGQLLATAASDNTARIWQLNGQVLRLLKGHVYST
GANFSPDGKR $\square$ VTVSNDGTAR $\square$ WDTNGKMLLT $\square K G H V S K A$
FSPSG HY TA SGSRDET DR TWKVSG $\square P V K V L K G H V T D V$ FSPDG RTLATASSDKTARLWNITDPAHQPLTGHTAEV FSPNG DRVVTAAADNDKTARLWNANTKKLDTVLSGVWRV AVTFSPDGEI LAS GSDDKTVRLWDAKFRK

FSPDG KH $\quad$ ASGSFDGTMKLWDAKTGKMARHPKPVYSV GVGF SPDGHTFATTGD LTVRLWDLADRAHPRLSGGVYSV.


DAKFSLDGQTIVSYSSDGS IS LDWDVQLGEDQK LKGHVTGD
 FSPDGS R V A ASNDQTVRDWEAKSGKLEGHSGSVRSV FSLDNG A T ITFSPDGQYFVSGSEDTTLKIWNFQTLEVQTLNGHUSSD

FSPDGRD $\quad \square A S G S D D G A \Pi C \prod F D S H S G E \square K A H Q G L V M S V$ SVKFSPDGKYFVSGGRSKK K K W W V E NQSGLDHHDDSVTSVI T V A S P NGK F SVVFS P DGRLVASGTDDGTDYVLDSHT GHLQA HTNWVLSV
$F D P S G A R L A T A G L D N Q L R L W D V A S G E A V T L K D Q L R G V$ VQVHAELKYADA VRFDVDVAPDSFPIKMTRWA AA QYAPD GHTDAGASGDGTVRFWEADPDRAAERICAAVSP ASPRGNAPERLVSGSDDFTMFDWEPAVSKKTRMTGHVNHV HMAFSPSGHTVASAGADWTVRLWDPSDGNHRAMLQGVHAL

 FSSPND Q


DATTGSNGHLLATASDDRTDRLFNPDTKELLPLTDHVYTL DP D F V D F R D K V E F S P D D D T I HL WN MA T G K S L V A T D R V R T I AVAF FRPQGNVLATA SED WDVRLWDLRTNQPSAVLTGLWTV
 FSPDG KMDASSSNDK INLWNVES GE IKQLRGHVTRA
VI AVSPDS QTLASWLS DNTDRLWSTKTGELKPLGKPASRL SVVALTP D GN WVMMSGSK D R GVVQFWDPNTGEA QLMLQQGVISV. WDN SVAFSGDGKTFSTGSYDRSVRLWDVSDRESANLIDDVVAD

WS PDGKK LAAYVSDRAGNMDVWMRDLQTGQDRMLVDMSDDL $F S P D G G L V L A T A S T D D T A R L W D V A T G T V A T L T G H T S T V$ VAVSPD GK WI DS GSKDRTDQFWSLDS PTSQTLQGHVISV


GMSE $\square$ R S N S A S T N H L L Q F WD A N T G QVLE LT N S F S G M SAVGTSNSDSSSPLLSSLEFHRHHPDSGD RPHCDHVS

UniRef90 X0B715 UniRef90 M3EAFO UniRef90－M2QH34 UniRef90＿－18U9Q4 UniRef90 X6MMUO UniRef90－UPIO0041CFE62 UniRef90－X6LTY0 UniRef90－Q6W219 UniRef90 C6WJ96 UniRef90－K9W7G8 UniRef90－J3NUV9 UniRef90 K9THF1 UniRef90－L8X1V0 UniRef90－х6POB0 UniRef90－UPIO002F2060D UniRef90－A8HMF2 UniRef90－K9WCR7 UniRef90－×6NM52 UniRef90 UPIO0029ADDA4 UniRef90－K9TZ22 UniRef90－L8WHN4 UniRef90 UPIOOO381C0A8 UniRef90 ${ }^{-1}$ 6PDR2 UniRef90－R1FC08 UniRef90－D6TWRO UniRef90 X8IW22 UniRef90－E3J106 UniRef90－Q3B6A0 UniRet90－ 6 6M2HO UniRef90 X6MPZ4 UniRef90－W3WYB UniRef90＿UPIOO047C6848 UniRef90 UPIOOO36A0EB7 UniRef90－UPI0001F2B2E4 UniRef90－B2JAS8 UniRef90 X6LYY1 UniRef90 X6MEQ0 UniRef90－UPIOO036735E0 UniRef90－A7BQC4 UniRef90 UPI0001F2A99E UniRef90－K9ZML4 UniRef90－UPloo04407F43 UniRef90＿R7RWW4 UniRef90 W5WFM6 UniRef90－A3Q8T8 UniRef90＿Q3M6B4 UniRef90 K9U9M1 UniRef90＿X6NL79 UniRef90－B3QYS2 UniRef90－D5G228 UniRef90 X6NEN7 UniRef90－X8JDJ0 UniRef90－EOU919 UniRef90－UPI0003B673B9 UniRef90－L8WXE6 UniRef90－L8M2Y3 UniRef90－G9MW59 UniRef90 UPI000455D24B UniRef90－M5C6z5 UniRef90－D4ZZ44 UniRef90－C4ZMZ4 UniRef90 K6XIL7 UniRef90－D8HPG7 UniRef90－K4BKA6 UniRef90 D8TPB3 UniRef90 ${ }^{-}$X8J2S1 UniRef90－K5VAHO UniRef90－UPI00036FEC8B UniRef90 Х6М3Ј2 UniRef90－K9W5S9 UniRef90－X6LHC7 UniRef90 K7AAH5 UniRef90 UPI000455FB15 UniRef90－T5C7C6 UniRet90－D6A6P1 UniRef90 HOUTPO UniRef90－X6N468 UniRef90－UPIO002F38A59 UniRef90－D2JM07 UniRef90＿N1QHE4 UniRef90－J5VWL5 UniRef90－R4SZ95 UniRef90 UPI0003B6F648 UniRef90－UPIOOO4764D17 UniRef90－UPIo0036BB136 UniRef90 S9X8L2 UniRef90 UPIOOO455E3F2 UniRef90＿UPI00036CF579 UniRef90－H2BWD9 UniRef90－B9XAV5 UniRef90－M2P818
UniRef90＿UPIooo36787C1

AF GPDGRTLASGSSDNTVRLWDVAAP
AFSPDGTQIVSGSQDTTLQLWNATTGE
RWSPDGRYLAHDDKNGDLWL LDDQNGSNRK
CFSPDKKCVVSCSYDKTI RI WDVKSGKELKK【EGH
A $\square$ TSDNK LVVSGSEDQT UKLWEUETGEEUCTLTGH
AFSPDGTRLLTASHDETARDWDTDRPPTFAAFSPDGTRVI RFAPDGRALLTGSEDGTVRAWDLAGPGPDAPTPDGDRR KFSPDGKTLASASEDKTIKLWNVEDGRLLKTLEGH

AFSSQGDKLVSGSDDRTTRTWDVESRTSTAVLEGH
QFSPDGQMVVSSSTDKTIALWDVKSGERLQVLKEY回DP！L
SFSFSSN\｜I ASADGDNKIRIWN
KWSPDNKSLASCGKSGKCRI W
AFSPDSSTLVSGSFDNTIKIW
DTSEDGK VSSSRDQTIRLWS
VPSPRGQTLVSSSKDRTIKI W
VFSPDGNHVVSGSNDGNVWVWRVEDGAPA
AFSPDGRTLASVGDDSDVKLWDAGAPGQLRVLT
SLSRDGRWLVSGSQDQTIRRWEVGSGRCIRTFYGHTSDV
AFTPDGRALLTGSADRTARपT $\square \mathbf{L}$
 TUSSDGKTLVSCS YNDEVR｜KPDEYGD EFSPDGRMLASSSYNDEVRLWDT
DYHPDGKTLDSASDDGTIRLWNPDTGEQKEVWKANNSPV DFHPDGLRVATASKDGRVGUW
SFSPDGQLVITASDDGTSRपWDANAK Q $\square$ AT T $\square$ GEK
KYSFDGHS LVSCSNDKT RRWDVS S G $\square E M Q T \square T G H$
YFSPDGRTLATASNDKTVRLW
AFSPDGQRIVTASKDKTARLWNANG

AFSPDSTCTASGCADYNTHTWDLKTGK
AFSPDSNRLLVTDDERAVRLTNL
$Q V S P D G D K V V Y E A D G K L W V K R L P E G K V S R \square T D D D$
AVNPVAQMIASSSRDKTUKLW
D $\square$ SPDSKTlVSCSRDTKПRWW
AYSPNGK II ATAGDDKLI KLWNAEKP
AFSPDGSRIVSASDDGTI RIWEAKSGKEVRK■EGH
ALFPNEQ\｜IVSCSDDNT！RLWN
AFSSDTRYII SGSSDQTIKKWDDPTGKLIGTVSPDRKHD
ALSRDGHTLVSGDKDNK！LIW
VFSSNGNHTVSGSDDRSVRVWRVGGAPA
DFSPDGKYIVSGSRDKNIKLWSL
VFSHDSSKVVSRSSDKSIRVWNAGTG
CLSPDGSKVLSGSDVGAVRLWDTSRGEQD
VFSPDGTHILSGSGDRTVRVWRVKDGAPA
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QKSPDGKSILFQAL GKLYVKNIKSGKTER
$R \square T P$
YFSPDGQWTASASFDKSVKLWNGTTGK
AFSPNSKVLASGSADKTVRLW
GFSPCGAWFFSGSSDGTVCLWDSSRKTVDE
$R L S P D G S G I L V G D D D R L V Q L W D V D A Q A T T S L P W \square P R R T$
SFAPDNRTLAYASERN
KYSPDGRTI ISCSDDFTワRLWDV
SFSPDGKTLASASWDNTVKLWNFD
QY $\square P N G Q\|I V S C S W D G T\| R F W D V K S S Q E \square Q N \square E G H$
T F TPDSSRLVSGGMDKT $\quad$ R $\Pi$ WNTFTG
SFSPNGNDLAASYQNHAI II WDLTVKK
AFEPNGHSLAAAGADAVIRRWDIQGRGGVRAFTGHEARV
SFNPQGNRLLTGSSDKTAR WDAHTGECLQQLDAGHMDELI
TFSPDGLFI ASCSLDN $\square A R I W D \square K T G K S K$
VFSPCG RVLISENNES $\square \mathrm{DWWSADTGVHQDTHKHNG} \mathrm{\square P} \mathrm{\square}$ APSPQGTLFATGSGDMKAR■W
$\square L S S D N K K L F Y F S$
AFAPDGHTLAGSVADGSVRLWETERAAERपCATV
SWSPDGSKVAFYQSD
AFAPYGLLLATTSTDMTARLWD $\square$ T
A $\square$ SPNGHTFATGSGDLRARIWS
CFSPDGSQLLT GCWNKAASLWD WS $\quad$ SRKK $\square R$ T $\square K H D$
S $\square$ SPDNKWVA WSELHKVFVAP
AFSGEGKRपATF REGSAQ $\square W D \|$ VRKP $\square$ SPW WQHDERD SGD $\quad$ IFSFHDGW $\square$

UniRef90 X0B715
UniRef90- M3EAF0
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UniRef90- X6NL7
UniRef90-B3QYS2
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UniRef90 L8WXE6
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UniRef90 X6M3J2
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UniRef90-X6N468
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UniRef90 R4SZ95
UniRef90 UPI0003B6F648
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UniRef90-UPI00036BB138

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UniRef90-UPI00036CF579
UniRef90-H2BWD9
UniRef90 B9XAV5
UniRef90-M2P818
UniRef90_UPI00036787C1



FS P DCTMVASCSDDHVRVWNVQTGG】IHTL SPDGRLLASGGDGEVWLWNRQGQP $\square H R L S$

AFSPDNT LLAA GDFSGKVS LFDLTADAPRKST SSNGKE $\square$ AF $\ V R G E V F V T A V E N G Y T K Q \square T$

VRFS P NEERLITASEDGTARDWSSDGEEARLVL


WS P DGKR $\square$ AAGSNNQ $\square R \mathrm{VFDVA} K R Q L A \square P$ LPLKPEREVKFT
SADGRLLVSGSFDKVRVWDIWTGPLHTFE
AFSHDDSR\|ITCSADQTVKПWDASSGEGVLVA FSP NGQYLATGAEDKVIVWD $\square$ ASRT TKHTG

PDFSP DGRHLVYQSNFHLWLARADGTGARRLT
$\square Y$ QF N

F VRDARRFDLABGRADRNAP
$P Q G N L L V S G S F D E V R \| W D V K T G V C R R S A$
 UniRef90 X6MK63
UniRef90_UPI000455F9A6
UniRef90-E1IIN4
UniRef90-Q10XR1
UniRef90- X6MFG3
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UniRef90-W6LYU1
UniRef90-X6MSN6
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UniRef90 L1JP98
UniRef90_Q54CB5
UniRef90_G9P3M8
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UniRef90-U2L084
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UniRef90-W3XPP3
UniRef90-UPIO00440839C
UniRef90-X6N5V3
UniRef90-X6NUB5
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UniRef90_A0A023GLX8
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UniRef90-F1SKR5
UniRef90-101949
UniRef90-14ANB1
UniRef90_UPIO004412BC7
UniRef90- X6LWR1
UniRef90_X6L7X6
UniRef90_W9HQT1
UniRef90_A0A059DZT8
UniRef90_LODDT4
UniRef90_S9WHZ9
UniRef90-B2B1L2
UniRef90-S3CR86
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UniRef90_UPI00047AEC1B
UniRef90-U9VYH8
UniRef90-DONXI5
UniRef90_A7RLM8
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UniRef90_UPI000477D021
UniRef90_UPIO0036964D9
UniRef90-J9MV70
UniRef90-A9VBM2
UniRef90_C1EAM0
UniRef90- X6MUHO
UniRef90_X6MUHO
UniRef90_K9TJ43
 HTGSITALTVSPDSKWVTSRSDDATIILWHTKRQEAVHK HASAVYCCSFSPKGERFCTASRDRSTVRGWNTVTGSSSV HAEA $\square L H V S F S P D G K K \square A S G G G D A T, V R F W D T N T C P Q H T$

 HQKAVSSVKFSPDGKLLGSSSAD KT K L WSADDGKLKT

HAGSTWPFAFRPDGAQLAVTDDQFTT RLWDPATGACRV EGHRVYADAFNPYGDKI ATGSFDKTC KLWSAATGKCHT SPDNESNPRWSPDGKYISFTAARGGSQVWLDDRRGGEGVQ HEAHDYKAVWSKDGKQLAFASDRYGNFIFIMSASGGPASR HTGKDTS LAAWSADSTLLASGASDDNE I RIWDVSTGRVRR QGDYVHSAILSSSDNRTIVSGS D QHTVNFWDIVSQQUYTV HKKSVNSVADSPNGKLI ASGGADRTA R WI WNLKTAKMLN TQESYSSPVWSPDGTRIAFASNRGGSDLYVMSSEGGPARR
 HTSLI TGLHFSPDSRQIMSSSNDNTAQIWI PFNTKKNPLI DHSGlTAVGFTADGRAVDGCSSDSGM KLWDDETGELLH

 $P \square W L R Y P A V S P D G Q H D A F V Y$ G GGQLWRVPAGGGEALP CSAETTTAYYSPDGNRVVFCA RNKTUR』WD RRSHE QQK NNFTEAHPAWSPDGKQLVFTTWKNGGHLYKVS $\square D G G R P V Q$


HSAP $\square$ CAAFSPTGAR $\square$ ATGSGDCTAR $\square W D \square D E T \quad P G P A$
LK K
HEENVYMCDWSHDGKRLVSCSQDW Y $\square$ K $\square W D V I T G E V \mathbb{V} \mathbb{V}$
EAAEDTA LAFSPDGQY LAAGSRDGLTRLYQTGSGRLLQS HS GFVRSLADTPDGQKLDSGS WYHPIKDWDLQTGLLNT HKMGVSSVKFSPDGAWLASCSAD QTI KVWHAKTGKEQT GRARVTCAAFSPNGTYI GSASAFGTDRLWNIAARAHVATF
 HRGEVNSSTFSPDGQRLLTASEDG CVVYGWETQSGRLLK EDGWVLSSLAFSPDGSGLLATGSQSGKDYLWWTDARFGELVKV GSRVYSVAYSPDGSRVAVGCEDGSVSDRNAYDGTLLAGP

D GHDVVAYEYSPFGDRVVTASYD KTVRVWNSRSGEELR H Q G A V R A VA F H P D G A S V ATA G D D G $Q$ Q



SNSSGTALAA TAPNHED $\quad$ A ASDTNDYK IKTWNLQTHEEQT
 $\square Q A Y V S A D T F S P R \quad R S V T R R G F K E E E P S W W L A K P T \square A E E T$ $H S D P I S A V C F S R D G S L I A S G S Y D G L C D R L W D T A T G Q C L K$ AFNK S G DK K $\square$ T GS Y D R T C

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                                    KVFDTDTGEEHT
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## UniRef90_R7Q1wo UniRef90-R7SPY1 UniRef90 Q4DNC1 UniRef90-UPI00034C5DBD UniRef90_T0QR41 UniRef90-UPIO00455F7C2 UniRef90-F2PRQ7 UniRef90-M5CD77 UniRef90_D8RBM7 UniRef90_UPI0002E9DD3E UniRef90-J9GRY4

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UniRef90_DONXI5
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UniRef90-ROIWP1
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 LTNAKGDLNSYSWSPDGKKLA
LTFHSNDEIPFDFTADGSKV DFGAQRMDIVSHQYPTGSQP LS GHT GWDRSTAFAPNGT LLASGSTDQTVRIWDAATGQLL

 ITTFNSASEVSTAFSPDGEYVLFKSSMPELYRVPVGGGRVEETV







LEAHGNGVGADAFAPNGRADATGGRDRDIRRWDWRQGRKV


 L S G G H T L G P V V L E G H T Y W WV T S L L

 A I VF S P T N R RLEASSRVP S WL LVVWPV VEDE WC $L S$ GHSAAVVRSARYNADAS QVVTA SND GTVVRVWDAET GQQV

 FRGHKSVVLGVAWSPDGQRLVTGGAKPCPYVCVWDVHKGQ LT T Gl A Y E THPR Y S P D GK K I L F T S DR DN L WY I DMEKK D T V


 $T W K H R N D V A T I A L S P D C G K T L A S G G R R D E T A K L V D L Q T M G E D Q Q$
 WAPSTDATVQQAWRPDGKA』AFTSGKGDAVVQVDADGKRT
 LTTHPAFDSEPDWSPDSQRIAFMSDRQRLFIMSANGGTAK



## UniRef90 R7Q1W0

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UniRef90-Q10XR1 UniRef90-X6MFG3 UniRef90-X6N9P8 UniRef90-W6LYU1 UniRef90-X6MSN6 UniRef90-FOYIA5 UniRef90-IOWH44 UniRef90-X6MLY1 UniRef90-G1SIT2
UniRef90-B5GS71 UniRef90 L1JP98 UniRef90_Q54CB5 UniRef90-G9P3M8 UniRef90-S9UQE9 UniRef90-UPI00046BFD1E UniRef90_E3J9E7 UniRef90_UPI0002DB25F0 UniRef90-UPI000367A850 UniRef90_UPI00034D1824
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UniRef90-R7T4A7 UniRef90-U7FPP2 UniRef90-W3XPP3 UniRef90-UPIO00440839C UniRef90-X6N5V3 UniRef90-X6NUB5 UniRef90_UPI0003F0DD41 UniRef90-A0A023GLX8 UniRef90-D3PMD4 UniRef90-K9VIF3
UniRef90-D5GI24
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UniRef90-X6NDI2
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UniRef90_F1SKR5
UniRef90_IO1949
UniRef90-14ANB1
UniRef90-M5C1Y3
UniRef90-UPIO004412BC7
UniRef90-X6LWR1
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UniRef90_A0A059DZT8
UniRef90_LODDT4 UniRef90-S9WHZ9 UniRef90-B2B1L2 UniRef90-S3CR86 UniRef90_UPI000455F967 UniRef90-UPI00047AEC1B UniRef90-U9VYH8 UniRef90-DONXIS UniRef90-A7RLM8 UniRef90_ROIWP1 UniRef90_UPIO00378CC34 UniRef90_UPI0003990CF8 UniRef90-D7C2U8 UniRef90-K9WMN7 UniRef90_UPI0003791D5D UniRef90_UPI000477D021 UniRef90_UPIO0036964D9 UniRef90-J9MV70 UniRef90-A9VBM2 UniRef90-C1EAM0 UniRef90-X6MUH0

DTMTGHTR $\frac{130}{1}$
140
150
S GSDDK ${ }^{160}$ ATLVGHTQAVHTVVWSPDGTKLASGSDDKTYLASGDVDHN YTLKGHDDKVYCVQYNSTGDYVVSA $R T L T G N S G P V S S V A V S S Q G N F L A V$ EPMKGHKQWVNSLSWEPIHR

GSCE DPLAGHTATVTALRFTPDCSRLASA

NSTCERFASA RTLERCHCPPSTGDSFDMLSHLAFSSDNGGASDMGASDRT RSYQ HTDD $\quad$ YCVTFSPDGALVAFSSDNGGAS $\square M G A R P E T$ K LKGHTNFVFCVNFNPQSSVIA
 RLTYYSASETPSAFTPDGKHI LIFSASDQDPSAPCSDDNT YTVECWND WVTAVKLSKDGHWIV SGSQEGD RLTDNRDAAYQPSWSPDGKQIAFTSS GRDMKVEKRQ $R R L V G S E D R L L T F$
 FTLRGHSAEIISLSFNTAGSRVI LVMKDPKDTSKTKPPEPYII NKFRFKQDITGYQSDTSRTH ELYQVPGGRVDQ $\square$ WT $\square P D$ GSKMDYHDKKGGENEWRKHHRD A TLS GHTGFI GGVVFSPDSTTLASA
 SGSSDRT QRFEGHEDTITEVQFAPDACTIV QVLGTPAEAVCFGRDGSFFLYQDRKGGEDEWRKHHS $\square T R D$ $H V L Q G H S D S V T D A E F S P D G N Q V V$
$H V F Q E H N R H T C S L S ~ D S V D G S R L A$ SGSSTDQT
 K KQFDGHSNVI CSAKFSPCSRFVV TGS $\begin{aligned} & \text { D K } \\ & \text { T }\end{aligned}$ $\begin{array}{llll}S C S & Y & D & K \\ S & K & D & T\end{array}$ QVLGTPAEAI CFDKSGNLFFYQDQKGFEDQWRKHHRD
 KTFEGHEKTVTGVNFSSDGRLVVSFSEDNTDRAVTSNDKT HTYRGHATEIVCLSFNPHGIIVA
${ }_{\mathrm{H}}^{\mathrm{H}} \mathrm{A}$ EVWVDSNGGAANF VAKSKGRTHFTKVDDRLY LSHAGKGLV RVFQGH WRLGGHTGPVKCCRFSPDGRLCAST MLTRKAQGPEYDGHRLP LHTSLDGFSPDGETLAVSQRDCT TTMKGHTNWVLCCAFSPDGKLAA KTM $\square F E S P V T T C S F N R S G V L F \square G \square Q D G T \square E V Y S K D W K T$ HTLEGHERRVTCLTAFTDGKL GGLQDGTLA

ASGSYEPI
 NPLDGPA GAVTSVAFSPNGHTLAVGNS DGAVWLWSVTNPT RTLFGHSGYVSSMTLSPDGQTLATSAD NTLAGHNASLTFVHFSPDGEYIVTA AALPRQEENVFTLAFSPDGALLA $T G P V M L R G R D Q G A V$ V TAMDGKYSYSDGDI WF E WSPDSKWLLSAY GNGGWNNRDI
 DTLVGHMAGVSTVAWSPDSKVLA SGSDDKA DALKGHTKWVMSLAWEP $\square$ NQLLGHSGSVFSTQFSPDGKMIVSS
QSLRGHSELVNTAYFSSNGKMIV VTYKGHNTNITSCCFSPDGQNI ASSSAKGDLIAACSCNDQT FTLAGHTKAVSSVKFSPNGEWLA S S
$L E F R A H S H V T G L A F S P D G R T L Y S S S S D E S L A W W A ~$ HSLPC SNQVYFVGDTPDGRK LIDSVEESNUQQDDLNNQ RLLRGHHNAVYTVAFSPRGNGVA ALLTGHENDITSVAFSPDGRSLV QKLEG TNSINDVNFSPDGQCI I AASAD KTLKGHSNYVFCCNFNPQSNLIV QVLKGHQRSVETVSFSPDSKQLA A PPLLE LNGQVWGVQFYPPQGERVLATLTS


SGSYDEA
SGGS LDD T

KRFGGH $\square G G V S S V K F S P D G Q M V V S A$

RMVESGELDPATYATFSANGDRILVAYA DNT
RMVESGELPATYATFSANGDRILVA SADKS
 QTLEGHGGSVLSVAFSPDGQRVA SGSSDRT
 QVTKDKNGDVPGAHWTPDGEY VVVAKGRRITKLWMYHK CLFDGHDRAVYSVAFSPDGRTVA LTLADHSHPVWESAFHHDGDFLVSA
 HT L R S VGEQGRPQ $\square$ ASVAFSRDSK LYMGTDGGN HTFRGHSAEVVCVSFNLQSTLVA TLATVTEGRVAGPSFSPDGARFAYVHEEDVFPFAARWPSA NVLQGHEASVNTDTDSPDGQTDA SGSQDRT HNLEKHSQEICTVAFSRDGTKFA QL TFHSQKANPLAFTPDGNNIVYAANLQNDYQNVRFPKY AL TDFRDDAHQPAWSPDGKRITYFSYRDG TFH ATLEGHGGGVHSVVFSLDGQRLASA SHDTT



## UniRef90_R7Q1W0 UniRef90-R7SPY1 UniRef90-Q4DNC1 UniRef90_UPIO0034C5DBD UniRef90_T0QR41

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UniRef90_D5GI24
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UniRef90-X6NDI2
UniRef90-R9WQ85
UniRef90_F1SKR5
UniRef90_I01949
UniRef90_14ANB1
UniRef90_UPI0004412BC7
UniRef90- X6LWR1
UniRef90_X6L7X6
UniRef90_W9HQT1
UniRef90_A0A059DZT8
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UniRef90_S9WHZ9 UniRef90_B2B1L2
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UniRef90 U9VYH8 UniRef90_U9VYH8
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UniRef90 R701wo UniRef90-R7SPY1
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UniRef90_UPI000455F9A6
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UniRef90-Q10XR1
UniRef90-X6MFG3
UniRef90-X6N9P8
UniRef90-R5JPJ7
UniRef90-W6LYU1
UniRef90-X6MSN6
UniRef90-FOYIA5
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UniRef90-L1JP98
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UniRef90_UPI000367A850
UniRef90_UPI00034D1824
UniRef90-D81122
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UniRef90-A0A023GLX8
UniRef90-D3PMD4
UniRef90-KKVIF3
UniRef90-D5GI24
UniRef90-UPI0004413CFF
UniRef90-X6NDI2
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UniRef90-S3CR86
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UniRef90-X6MUHO
UniRef90_K9TJ43


$\square 1$ K 1 WD DQ
 $T V R I W D T E T G S L V A G P Y K$

## TVVLWN

LMRIWDSQTGN
$\square L D A G K R S V L Y T \square D A D M A H S V C W S P D G T$ LMRIWNSSTGN LAARSRINPLSGHTGGVRSVAFSPCGT I RMWDLLLQQRPLATMTRFDNLI YTLDDENPPVSF FESEWRKHHTSSITRDTGKHTNLTNREGEDRNAVFAPDVQ LDLGFVGSFQGHDSTVTADS DSEDRHWDVSG GK WE $\square Y V M D A D G N N Q R N L T N D A G S R N D K$ V TVIIWTRTTGALDH MVCGEHRGRVRSDAFNADGS TCMLWDAENGK CLLATLTGHDDEDLDSCFDFT
 GDVSDPSSSKALTDLKGFPVRFLTVSKNGLMSFSFDGELYY
 T: R R WNO
T K K WRW
GGS FNVYSFPLDNPAATAVTHFRTHPVRFDSVGDNGTDC TIDRAWDE DSVEDVDTHPGHKKTINSVQASQTDF AAY K
LLY Y WDVNT K G G HKVHEDRENSRVVTSVDDSSDGN TLLI WNV KSGTVEQQLDGHNSAVNDVKFSPDGQ GGS FNVYAFPDAQPESVKVTDFKTHPVRFLSMSNNGTLC PENQWRKH $\square W A Y D T T A K T H R Q L T T W R G E D R D A V F S A D G K S$ TVRTWDVMTGQA $\quad$ LQVLLEGHTHSLTSVHFSPDSN TVKVWDVRT GRCIHTLAGHNGEUSSTQFNYQSD HGLLPTSEEGWRENNTASRPSEI RDSPDATHALAKD NN
 $T T$ I RLWDLA KGAVH
$S$ L R $\square W D A V T S A V T L V L T G H T S S V V C V R W G G S G L I V Y S G B S E D$


V I R W
WGTEEDVY $\quad$ MFFD $\quad$ DDAYDRRE $\quad$ ADQ $\square A K D N K P V A Q T K K N K$ SKATLIAEESTMSGPKGDEPERMVSCSDDFTMFLWQPEVE

YDEAVF LWDVRAGRDMRSLPAHSDPVSG\DFSVD
TVKVWDP
NGGKLLHTLKEHAHWVNTLADNTDFV

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




EKWMWDLLR R WQ
EK WQLDPRPWQ WGSEYDAY DFTMSKEEYTDWKEDDGDKDKEEGKDDKKGKK Ti RRWDAESGAP $\square G K P M T G$ GKSGGVNSVAYSPDGT T R 1 WDVV S G E KKEVHILKGHSRNINEVKYFYDGQ

$T \vee R$ WNLQTGECDEVL KYPSPTGKAFAFS
SGKI WDAETG CDEVL
SGKIWDAETG
IVVRLWDDSRR SLKVWS TTGSDQFSLTGHQSCVTCVKWGGEDRDYSSSQD TMNWGACDWT VRASGSSTQTLEGHGSLVKSVAFSPDGQ
 $M S A E E D R G I Q \square W D G E T G L Q V G E A V R H Q K S V S A V S D S G D G T$
$G A W N Y N A Q U G Y D F D K G E \square T S D T S R Y G S A F T P T L S K D G N W$ A VRFW
$T V S \square W D \quad \square R S G L C V Q T F Y G H Q N A C N S V A F A D A$
TVQLWNSKTF
GVQFWDP H T GVA Q
A RLGVYKGHKGWAHSVGlSKDSS
LV $\square N D P K S G Q T K Q T L G T N L D V L Q G H K N S V I S V A P S P T G G$ TVAVWDVGTGRM VPRVQERPAAPDSDAAPASASPRPVVKGUVSPSLSPDGER K IS SWRDETKELSFFY LNSPYS HSGFVSSVAFSRERR TAKDWNDESGELDKDDCLLASPDYDLAYSRDNR GENKWRKHHWTYQPKSQSYKRIIDWKGEDRNPVVSKDGQT G SYNLWELSL KTKELKQLTDNAGNEYYPAWSPDGK TVKDWDATTGECT
DPTVRDWFEGD DKPP
DARVWDART
ATLEGHHGCVNSVVFSPDSQ
DRGRCRALEGHGAEVSSTVFNYAGD
T R RLWDVKSGQELLQLKGPLALILL A

[^1]


















UniRef90 R7Q1wo UniRef90-R7SPY1 UniRef90-Q4DNC1 UniRef90-UP100034C5DBD UniRet90_TOQR41 UniRef90-UPIO00455F7C2 UniRef90-F2PRQ7 UniRef90-M5CD77
UniRef90 ${ }^{-}$D8RBM UniRef90-UPIOOO2E9DD3E UniRef90-JgGRY4 UniRef90- D6TCN1 UniRef90-UPIOO035FE8E6 UniRef90-K0F824 UniRef90 UPI000333D00F UniRef90_UPIO0036213CE UniRef90_UPIOO045E7D04 UniRef90-A7NPP3 UniRef90-K9R9U4 UniRef90-×6MBD6 UniRef90-K9RGQ9 UniRet90-R6VTR7 UniRef90 X6MK63
UniRef90-UPI000455F9A6
UniRef90-E1IIN4
UniRef90-Q10XR1
UniRef90-×6MFG3
UniRef90-X6N9P8
UniRef90-R5JPJ7
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UniRef90-D81122
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UniRet90-B2B1L2
UniRef90-S3CR86
UniRef90_UPI000455F967
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UniRef90-A7RLM8
UniRet90-RoIWP1
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GKRVASGSDDETVRVWDAETGRQTGDTMTGHTNCVR ${ }^{260}$ GKQILSGSSYGALRIC DSFSREGIVTMQGHGGMVN RUVTASM NHELRVWDWK NGNRNCDLSWKGHQVPI H AAAQTGYDVSGSDDFTLFLPREPAESKKTVVAHKDQVKSLA CVISGSKDKSA CVISGSKDKSA WLASGSNDMTV SFRVWEVKIGT MVGKELKKGSSYVM FSPNGKF VVATDDNTVRLWNYQTGKKTYTGHVNNKYCI F DNTGVDKLWDGTGKVIRTVP SVYFLSERNGGSFNVYTFPMNHPEEVKAVTSFQTHVRFLS SQDCIVKFWDTLVKRCQ HIVFVSDRVGNM LMATGCDD GKFI AMASADGTAR VFNADTRKCITKLEGHEGEIS TLKSGEAPQKVEDSLATQAITNPDNFIDSI

GLDATVRTWDVERGVQTGVLDVHGGVSEMS FNCNGLILASGHTSG|VKL WDTNSAKCLQTLGNFGKPII
YAYNGE $\square Y T Q P A G G K P \Pi D \square T R D D A G Q E T \Pi F H F T S G A S D P A$ TVVTASDDTTAT TWNWSLL KPWD KILTGHTNHVL $A L Q S G S F S E D G A R Y V A l A G D S G D M Q N L Q A E P Q R L Q V Y A$


KGKKKDKAKKDDTSKLLRFDFANCRDRRLTVNSSHLGDAV KKP $\square C R M T G H Q Q A \square N A V H F S W D G R T G K F 甘 T T L R G H V Q R V Y$
GTLVVSCSTDGDTR $\square W D T \square S G Q C \square R T M V H E D N P P V T S$ $\stackrel{-}{\mathrm{L}} \mathrm{R}$ Till cs RDR
FSPNGQY UVSCPFHETDDL WDVRFGTK DSEDCRHRRPVN NRTRIDQGHSGDSKLN RSCSMTPCEQCRDRCC SNLTVSGSFD ESVRTWDVKTGKC GGTGPAHSDPVS R ASVGWDKT M LRLWSVQGPLLQTTSGFVRPLYAVA K WDLT AKKYPDVRLTLKSSAEGVYALT DTPDAQRIVS FSPNGKYLLAGTQDSCVRWDYHRGKCTYMGHKNDKYSIFS Y GSASAD GTVWVWDTAVRERVATLKAKDRGWLRS
 CFSAFGLLASGSWDKTIHD WKPSTRSLLVQLKGHVTWVK
EDKDEAKKDEKVETDTFDWTGFEDRKERDTSHASRMSDAA FTPDGTRLVSASSDQTVRVWRVSDGSAVTSPFQGHTRGVS Q VSGANDCTV RLWDASTGEALGAPLEGHTDTVLCVA TiVSCSSD RNSKVLLTASG NQFVR $\square W K T Q T W D H \square I F R G H T G A V N$
CEDGTARLWETRTGRPTGEPL AHRARVTCLA RTVIVWDADTGAQRCVLKGHAHWVNFDADSTDHAKSRYEA RVASGSHD NTIK WDTASGSSTQTREGHGGSVL VLVMGECKWDQTESHCVSIIFSADGGEVACGVRGDTLIVCC VAIASDDP
GDTDASCDADGFVKVWDVRMVAER SSDDGGQHPDN KLVSGSEDETHFGEDSLGVAVADSSDRLLIAMDSKIHSVT VFATGSGDMRARDWRFDRYPGP
1 ASGHHN GEDHDWKTQSARKDTTDTGHSGVVETLV LIVTGSMDKT CMLWNAMTGTHIATDTGHSEEIL AFAALGD $\quad$ DWLAPVNPPRGKGSAPKAVVSDGHLLNEPA
LASASGD L YAAC LYFLSERD GQFNNTTKRLNTKTGKQLSPLVGHDDAVL
 RLASAS DD
TSAGVDDKATATTDDAAAQDTSSGATQTASTVTTPASTTA RVVSAS $\square D R T$ CRLWDVGGGRTEFVW RGHSDEVL


## UniRef90 R7Q1W0

 UniRef90_R7SPY1UniRef90_Q4DNC1 UniRef90-UPIO0034C5DBD UniRef90-T0QR4 UniRef90-UPI000455F7C2 UniRef90-F2PRQ7 UniRef90-M5CD77 UniRef90-D8RBM7 UniRef90_UPI0002E9DD3E UniRef90-J9GRY4 UniRef90-D6TCN1 UniRef90_UPI00035FE8E6 UniRef90-K0F824 UniRef90-UPI000333D00F UniRef90-UPIO0036213CE UniRef90_UPI00045E7D04 UniRef90-A7NPP3 UniRef90 K9R9U4 UniRef90-X6MBD6 UniRef90-K9RGQ9 UniRef90-R6VTR7 UniRef90- X6MK63 UniRef90_UPIO00455F9A6 UniRef90-E1IIN4 UniRef90-Q10XR1 UniRef90-X6MFG3 UniRef90-X6N9P8 UniRef90- W6LYU1 UniRef90-X6MSN6 UniRef90-FOYIA5 UniRef90-IOWH44 UniRef90-X6MLY1 UniRef90-G1SIT2 UniRef90_B5GS71 UniRef90 L1JP98 UniRef90_Q54CB5 UniRef90-G9P3M8 UniRef90-S9UQE9 UniRef90-UPI00046BFD1E UniRef90-E3J9E7 UniRef90_UPI0002DB25F0 UniRef90-UPIO00367A850 UniRef90-UPI00034D1824 UniRef90-D81122 UniRef90_U2L084 UniRef90-R7T4A7 UniRef90_U7FPP2 UniRef90_W3XPP3 UniRef90-UPIO00440839C UniRef90-X6N5V3 UniRef90-X6NUB5 UniRef90_UPI0003F0DD41 UniRef90-A0A023GLX8 UniRef90-D3PMD4 UniRef90_K9VIF3 UniRef90-D5GI24 UniRef90_UPI0004413CFF UniRef90-X6NDI2 UniRef90-R9WQ85 UniRef90-F1SKR5 UniRef90-101949 UniRef90-I4ANB1 UniRef90-M5C1Y3 UniRef90-UPIO004412BC7 UniRef90-X6LWR1 UniRef90-X6L7X6 UniRef90-W9HQT1 UniRef90_A0A059DZT8 UniRef90_LODDT4 UniRef90_S9WHZ9 UniRef90-B2B1L2 UniRef90-S3CR86 UniRef90_UPI000455F967 UniRef90_UPI00047AEC1B UniRef90-U9VYH8 UniRef90-DONXI5 UniRef90-A7RLM8 UniRef90-ROIWP1 UniRef90_UPI000378CC34 UniRef90_UPI0003990CF8 UniRef90-D7C2U8 UniRef90-K9WMN7 UniRef90_UPIO003791D5D UniRef90_UPI000477D021 UniRef90-UPIO0036964D9 UniRef90-J9MV70 UniRef90-A9VBM2 UniRef90-C1EAM0 UniRef90-X6MUH0


VS P DGKQ DAFTVRGEDFVTSVEYGTTKRVTETAATESDV KARFSPDDHFVVSCSRDKTVRIWSTKTGEIKKLEGHVRDV TAAFSSDGSRIVSGSEDGELYLWDADSGRL
VAF RPGHPGQLAA A GFEAKGYLWDLDNRNPRDYSGHTDWL

VSPDGKQDGF I IRGEVFVTSADYATTKQDTRTPANESGL SRTSQNDLVYGYDGE $\square W R \square D H D A K E P K R \square E E E V S E \square$
YNATGS RLVTASADGTSRVFNTMTGACQS $\square$ LGE $\square$ SKV WSGDSKKDHWSLGASH FRFDLEAAK
DVNFSSNGQFIVSSSSDNTDGLWDVKLGKDKELLGHVYSA
 NATGHELVERLVSASDDHTMYLWEPAVGKICRMTGHVNHV SLSFSPNDKYLADGTFDGTVELDD\ASGKLRRVVSSITSLL
 SAQFNWDCSLI VTGSMDKTVMLWNAVTGRVATMTGHVLDV SVAFSPDGHTLAGGSADGTVWLCDVTNARPAPLGQPVVSVG
 FSADGGTLATTGGDGAEGTARSWDVATGEETASVGEVRS $\square$
LSPGGDTDYYQAAFEGDYDLWKHDDKENKTEVVLKGVGGG Q $\square$ A WSADSRLLCSGSADSTLKVWDMKAKKFSVHIDEVYAV
VCFAPN GRYVLAFSMDSCLRLWDYVSGSVKKTYQGHTNK LSTTPEL LISGSDDHTLFLWSLKGGKLKPLTKQVSHV
 A IS SKDE 1 AY GTDKGQVKV DS FGGE ILEGHTGPVRSC AVHFNRDGSLIVSSSYDGLCRIWDTASGQLKTLIDDVSFV WAPDGRLAVGSGTDRQAGTVALF
A GRRKDNDDYESFIVEWDLNTGEKSTTESYVCCL TFIIANGSCFVMAGSENSDVVIWDIQTKEVHLLVGHPDGV IRFSPDGDHFASSS RLDRVHI WNI HRGKIETSTSAVTDII GVDMTTDGNTLVSCNEDKII RVWEI
ANFSVTGGKWIVSGSEDNYI YI WNLQTKEIVQKLEGHSDV S $\square$ AF SPDGLQLASAGYSHTVKVWDCNTGRCTDTLKGVLDV
LTPKGDKLYYLTSFEKGADLWVEDLRKKETKLVLKGVRGG SVAVSGDGRLVASGSYDDTVRVWRLDDGTPAAHTGSIQSVV FSPDGAAVASGDFDDI RLWKGATGHDTTLKGHVASLL SVD $V$ S PNGNM』AS GSWDEA I CI W

NTIRLWNVKSGKVQTLEGHVKCV SAVIS QDSKTVATSSDDATVRLWNTHTGRCEKITGKVNTA
FRPDGT MLATGSSDGT $\square R \square W C A V S G \square P \square P \square K G A V R \square L$ VVARFGNSERLVSGSDDNTMFLWNPKEGRMTGHQGAIFHII SVA FSPDGQRVASGSDDRTVKIWDTASGSCTQTDEGVWSV


SVAFDRSGK $\square L A A A S D D G S \square K L F S M K T E S L A T L K G H V Q A V$ FSPRGE AIAVGCESGTISIQDRSCKVLQSFSEHKGAV
 DVCFDYAGQRIATCSVDGSARVYDAETQKIAKLEGHSSEI WSPDGSALVVYVSDRGGAADLWTYDDATRRLTDLQDAASGP S IA I S PDHQTLVS GSADKTIRIWSLNRLAQPRILSGVTSV SVTLSPDGTVAASSSSDGTIKLWSLASRKDGELQREUYKV VSDNGLISYGYAGG DGVT EVLYTLKEGESKTVTSGATSS
$\square A S D P S G S Q A N A T K Q A G N T$
DACFDASGARVASASADATARVYQVSSGELAHVLEGDSKV


UniRef90 R7Q1W0 UniRef90＿R7SPY1
UniRef90＿Q4DNC1 UniRef90－UPI00034C5DBD UniRef90 T0QR4 UniRef90＿UPI000455F7C2 UniRef90－F2PRQ7 UniRef90－M5CD77 UniRef90－D8RBM7 UniRef90＿UPI0002E9DD3E UniRef90＿J9GRY4 UniRef90＿UPIO0035FE8E6 UniRef90－K0F824 UniRef90－UPI000333D00F UniRef90－UPI00036213CE UniRef90＿UPI00045E7D04 UniRef90－A7NPP3 UniRef90－K9R9U4 UniRef90－X6MBD6 UniRef90－K9RGQ9 UniRef90－R6VTR7 UniRef90 X6MK63 UniRef90＿UPI000455F9A6 UniRef90－E1IIN4 UniRef90 Q10XR1 UniRef90－X6MFG3 UniRef90－X6N9P8 UniRef90＿R5JPJ7 UniRef90－X6MSN6 UniRef90－FOYIA5 UniRef90＿IOWH44 UniRef90－X6MLY1 UniRef90－G1SIT2 UniRef90＿B5GS71 UniRef90 L1JP98 UniRef90＿Q54CB5 UniRef90－G9P3M8 UniRef90＿S9UQE9 UniRef90－UPI00046BFD1E UniRef90－E3J9E7 UniRef90＿UPI0002DB25F0 UniRef90 UPI000367A850 UniRef90－UPI00034D1824 UniRef90－D81122 UniRef90－U2L084 UniRef90－R7T4A7 UniRef90＿U7FPP2 UniRef90－W3XPP3 UniRef90－UPIO00440839C UniRef90－X6N5V3 UniRef90－X6NUB5 UniRef90－UPI0003F0DD41 UniRef90 A0A023GLX8
UniRef90－D3PMD4
UniRef90－K9VIF3
UniRef90＿D5GI24
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UniRef90－X6NDI2
UniRef90－R9WQ85
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UniRef90－UPIO004412BC7
UniRef90－X6LWR1
UniRef90＿X6L7X6
UniRef90＿W9HQT1
UniRef90＿A0A059DZT8
UniRef90＿LODDT4
UniRef90＿S9WHZ9
UniRef90－B2B1L2
UniRef90＿S3CR86
UniRef90＿UPI000455F967
UniRef90－UPI00047AEC1B
UniRef90－U9VYH8
UniRef90－DONXI5
UniRef90－ROIWP1
UniRef90＿UPI000378CC34 UniRef90－UPI0003990CF8 UniRef90－D7C2U8 UniRef90－K9WMN7 UniRef90＿UPI0003791D5D UniRef90＿UPI000477D021 UniRef90－UPI00036964D9 UniRef90－J9MV70 UniRef90－A9VBM2 UniRef90－C1EAM0 UniRef90－X6MUH0

SMSADSQKVRSVSFDGTVLQWKARPGVSD
VFSPDGVTLSSGSDDGSVCV
VFVVDGVTKLDTSSDLDDTLKLWTDNEK
AVSADGRTLISGSADSTIKIWRLPTGELLQTLT
CWSSDSRLIVSASKDSTVKVWELADPKNAK

AFSPNGSHILSGSHDSTI RAWNID
VLSPKENKI ASGAKDKTVKワW
AI NPNGQTLA SAGRDG IKLWNDPSGELLNTLYGH
AVSSDGKQVAF IVRGGVFVTSTDTPAMEAAVSPDNRTLI
SIS EDGRWIVSGSEDHTVQYWDAVTG
$V W S P D G K H I A F V S N R T D I Y V M D A D G G$
$A V D P R T G L L A T A G D D L V I ~ R ~ W ~ W D M A T G R H L H T M E G H K R R V ~$
AFNYRGD 1 G G KDNTCRIW
SAAPKGNWVAFMSE
EFAPDGKSI LYSSRDGRWQDFKAEKVRSEEP
VFSPDSEVLGAVGYNGIIQL
TFSKDSNLLAVGRDSE I I QLL WD $\square$ KAGK $\square V A F F Q G D R$
QFSSDGNAILSCSHDGTVRIWW
TWGADNRTLVYASRDGKWDLYRATVVRDEE
KYFSDGQT $\quad V \operatorname{SCSDDQT} \square R L W D V K L G D E T Q T \square N P D G N R \| V$
AFSADGQTMASASNDDTVRVWMPDLPGGDPLV

SFAPDNRTLAYASERNQLY LAK $\square$ ARKED
AANQDGSEIAVIARGEVFVVDAASG
AFNPQGVR पLTASSDKTARपWDMETGDC LQULEGHTDED
KFSPDDRNIVSCSHDNT\R\WD DRSERELKCLKGH
AFSPDE $\square$ WL AS A GYSHRVKVWDCNTGKCLETVK
DDSPDGMAIATSSSDGSVDLRETRTGRTRLTIIPAEVRD
SFSPNGRLI ASASFDKAI RI WNGDTGKY IATL
KF DDSTRLVSVSNDRSLIVWN
ALSKDGNKVASGSFGRTVKFWNTATGECVQTLPVG
ELMEN KLLTASMDKTLKLYNDGR
CFDYTGQRI ATSSADGSARVYNAETKKC $\square$ AK LDEGHGGE $\square$
AFSPDGRTLAAGSQD TVGLWNVTVNPASPTPL
DFSPDGTY LTGAYDGHAKLWSTN GAELTTV
AVSRDGGMLAASDYDGAAYLW
A L Q P D
DWS P D G QRVAS G GKDKVLK $\square W$
GF S
SFSPDGRWAASASWDSSVRVWEGRTGKFVAT $\square$
DVS Q NGNK IILGYNDCKI QI W
KFFPDGQTMVSCSDDRTIRLWNVKFGTEDQTVSPDGNTIV
CFSQDGKVLVTCSDDNTIKIWK DRGDSVDTVC $\square$ GHRDiV
KFSPNGKYILAATLDNTLKLWDYSKGKCLKT
A $\square$ TPDGKQ $\|$ S GHRDGT $\square R \square W$
DSHPTENDVASCGLDGTVMVW
ALSPSGQYIATGCEDWSVRIWDARTG
VLCPTQN $\square$ I ASGANDKT $\square K \square W K S N T$
AFTPDGKLLVSGTAD
$S L L M D G K K L Y L L A \quad N G S V K V I D L A S N K P \quad K S V S \square N A K$
VYAPDGTRVISGSHDRTIRAWNVREG
CFSPDR $\square H L V S G S W D E T V R \square W N V E T R K L E R T L E G H S K$
D $\square$ S R N G NTワAS G
A I SPDNQVLVSASVDRTLR\WD $\square$ DAGKCKKVLRGHDCD L
VFSQDGRRLAAGGFDVTVRCWNAPNP
QFSPDGTMUASCSADKSVKLWNANDGSF口TT
AFSPDG
VISPDGRRDAFRKG
CFSPDGMRLLSGSDDCTARVWD $\square A S G K S A$
－SPDGKKLAFSALNR LYVMDYPS GTPKR
KFDPNGRFLASSSSDCTFRDWST
AFSPDGK LLVSGS $\square D K T \square K \prod W$
SFNSKGNRILTASSDKTARLWDAATG
AFSPDGASVAFGLGAGTLHTVDVATGA
A $\square$ SADGNTHASGSTDGT$K K F W N L H S G E L L R T \square E$

SVASDGS VWYTADGAUK

AFNPQGTRVMTASSDKTCKDWDSATGDCAQT LEGHTDED
K F S PDGQFVVSCSWDST RI WDVLS GKQLQKLDV

UniRef90 U3QHE1 UniRef90-H3BGC3 UniRef90-UPI0002246E56 UniRef90-UPI000273F90E UniRef90 X6P219 UniRef90-L8LGT4 UniRef90_M2MJM5 UniRef90 Q17963 UniRef90- U9W348 UniRef90_G4TRV3 UniRef90 UPI000444118B UniRef90 W1NZR8 UniRef90-F4L3B0 UniRef90-UPI0003B39787 UniRef90 R7RY00 UniRef90-R7YY47 UniRef90-UPI00031A80B1 UniRef90-X6LZS4 UniRef90 T2JX84 UniRef90-R5BQX7 UniRef90-A2A0M1 UniRef90 UPI00038BB7B2 UniRef90 F4P5P9 UniRef90-UPIO004411A04 UniRef90-C5WM28 UniRef90-UPI00044492C7 UniRef90-11PI60 UniRef90-S8FSR3 UniRef90-UPI0002E5C6D4 UniRef90 UPI000455FB9A UniRef90_UPI0003BBB62A UniRef90-L8HEZ3 UniRef90 UPI0002F9A530
UniRef90- M4CYA4 UniRef90-X6NFN5 UniRef90-G8JPW2 UniRef90 G9NLS5 UniRef90-B6BLP1 UniRef90_UPI0004561841 UniRef90 K5XKX8 UniRef90-D8UHT0 UniRef90-D1W057 UniRef90-A5UUK1 UniRef90 W3VEB2 UniRef90_Q2JY38 UniRef90_A5DVR1 UniRef90 R7SSX1 UniRef90 Q9KNC1 UniRef90-M7ZVC4 UniRef90-R6X7W6 UniRef90 A1ZR41 UniRef90-K4C7J9 UniRef90-C1MR80 UniRef90_W4GB55 UniRef90 C3NYG6 UniRef90-A3M063 UniRef90_G0W8U7 UniRef90 B0W5J8 UniRef90-D6U4P4 UniRef90-M4B8C0 UniRef90-UPI0002D59483 UniRef90 UPI0003766322 UniRef90-G0U117
UniRef90-D5A536 UniRef90 A9SQZ7 UniRef90-UPI000350966D UniRef90-A6GKA2 UniRef90_UPI00036BE7F8 UniRef90 A6BZ78 UniRef90-W2EWL9 UniRef90-L1ILJ0 UniRef90-12N9U3 UniRef90 G2YLK0 UniRef90_UPIO002FE321E UniRef90-UPI000479842F UniRef90 V5FFH2 UniRef90-UPIOOO3492050 UniRef90-H8MG82 UniRef90-A8PXB2 UniRef90- X0VX09 UniRef90-X6MPS9 UniRef90-W2ZB39 UniRef90 D5ST63 UniRef90-14FAR9 UniRef90-A6EGB1 UniRef90_F9ZZU8 UniRef90 M2ZNV6 UniRef90-K9ZIT7 UniRef90_K9PKK4 UniRef90 A0A059DWH9 UniRef90_UPI000258DC8B UniRef90-H2MKX5
$P \nabla Y C L S F S P \quad D R N L L L S C S E D R L W S D H T W T C V V C Y K G$


ASFSPASSSR LATGSGDRAR $\square$ WDCDTGTP $\square$ HTG $S A N G Q W \square A \square G T D G M V Y R R N \square N \square G W S K F K A$ S WS ADGTS $\square \mathrm{MVAAKNQ} \mathrm{\square FDWNMESKDADCRG}$ D VS P D G Q T $\square$ A F D $\square \mathrm{M}$ G D $\square \mathrm{Y} \mathrm{S} \square \mathrm{P} \square \mathrm{A}$ G G K A K Q $\square \mathrm{T}$

FSH DGQK LVFGAKDSAK $\square$ WD $\square$ KNKSSAA $\square \mathrm{D}$ AAGDKR DC $\square$ NSNGSTK T A
 D GKTL $\square$ S S S D D S V V WNWQSEDY $\square \mathrm{FLG}$ NS目AVS DGCQLCTASDDT $\square R R W D A Q S G A P \square M T G$ FSP DGTRLVTCSDATVRVWDVHTDPTTSLP

FS P NGSMLASAAADKLILWDAYTGE』IQTG VA WS S DSNLLVSASDDKLKIWDVSSGKCLKTG AAFSPASARYLATGHEGRLLLWD $\square$ KRGK LE WMF S PDGLTVASSADDRVA DWDMTSGSK DQVG TLVYTPKAVFKVRPVTRSSSAIAG TVYSVAFSH DSKWILS GSRGTINLWDSTTGECLRTG

FSP DGKC $\square$ ATGAEDQ $\square R \square W D \square A K K K \square K N \square G$
FSPNN ELLATASRDVR\YDAKTGKVILDG TS S SP DGQT AFSYKGDVFTVPASGGQARQLT
 Y VLYNPAFARDDDVDLIHSLD
$P G V W Y \square A F S P \quad D S R Y \square A S V V D G K V I I W D I S S S H Q V T V L$
AVSP DGKE $\square$ A VVIRGDVFVTSADYKTTKR $\quad$ T VLGANGGRTLLQG
 YSTSFSP DNKYL DSGSEDK LDWSLDTNTTVVSYKA
$T V N A \square A W S P G Q F F D A S A A S D G R V H V W D A M T G R L I T \square G$
YACSWNPMTNVLVSGSSDSTARLWTLPNKKILDHG $A V P G Y F A E Y L D P D G R A A S T A G G A T F V V P T A T T A E K T L P$
$P \vee Y S V A V S P L D \quad N L V A S G S K D K \square W D P T V E A K S S V I K A$
FALAFGPDD TLYSAAANGEVRRWT LDGGPGEPLA
VAF DSKSELLATASEGGMVKFVS
AVAFS RDGRLVSSVSRGAVVVWDVASGRPVFQR
SKDGSMLASLSNGTARVWEISS GEEMRYS

G
PNGKE $\square$ AF $\square$ CRGEVF VT S VDGS $\square$ TKR $\square$ T
YPAA LS ADGQT $\square$ ASSSDGS $\square \mathrm{K} \square \mathrm{L}$ K $\square \mathrm{G}$ S S E $L I Q \square K$

G
$M R Y P A \square S P \quad D G K N V A S A S N D K L R L W G Y A T G E G K R G G$
S $V$ KFSP DGKW $\square$ ASCSDGT $\square K \square$ WDARTGS $\square S Q T \square$

RA $\square$ AGGTKGKVSVFDMHSGRLLPAS
VQFS RDGSQMLSCSDDE T $\square$ R LDWE TKKLHMT

UniRef90 U3QHE1
UniRef90-H3BGC3 UniRef90-UPIO002246E56 UniRef90-UPIO00273F90E UniRef90_X6P219
UniRef90_L8LGT4
UniRef90-M2MJM5
UniRef90 ${ }^{-17963}$
UniRef90-U9W348
UniRef90-G4TRV3
UniRef90-UPIo00444118B
UniRef90- W1 NZR8
UniRef90-F4L3BO
UniRet90_UPIOOO3B39787 UniRef90_R7RY00
UniRef90 R7YY47 UniRef90_UPIO0031A80B1 UniRef90-X6LZS4
UniRef90-T2JX84 UniRef90-R5BQX7 UniRef90-A2AOM1 UniRef90-UPI00038BB7B2 UniRef90-F4P5P9 UniRef90_UPIO004411A04 UniRef90-C5WM28 UniRef90-UPI00044492C7 UniRef90-|1PI60 UniRef90-S8FSR3 UniRef90-UPIO002E5C6D4 UniRef90-UPI000455FB9A UniRef90-UPIooo3BBB62A UniRef90_L8HEZ3 UniRef90-UPI0002F9A530 UniRef90-M4CYA4 UniRef90 $\times 6$ NFN5 UniRef90-G9NLS5 UniRef90-B6BLP1 UniRef90-UPIOOO4561841 UniRef90-K5XKX8 UniRef90-D8UHT0 UniRef90-D1W057 UniRef90-A5UUK1 UniRef90_W3VEB2 UniRet90_Q2JY38 Uninefoto-A5DVR1 UniRef90-R7SSX1 UniRef90-O9KNC1
UniRef90-M7ZVC4 UniRef90-R6X7W6 UniRef90-A1ZR41 UniRef90-K4C7J9 UniRef90 C1MR80 UniRef90_W4GB55 UniRef90_C3NYG6 UniRef90-A3M063
UniRef90 UniRef90-B0W5J8 UniRef90-D6U4P4 UniRef90-M4B8C0 UniRef90-UPI0002D59483 UniRef90_UPIOOO3766322 UniRef90_GOU117 UniRefofo-D5A536 UniRef90_UPIooo350966D UniRef90-A6GKA2 UniRef90_UPIO0036BE7F8 UniRef90 A6BZ78 UniRef90-W2EWL9 UniRef90-L1ILJO
UniRef90-l2N9U3
UniRef90_G2YLK0 UniRef90-UPIO002FE321E UniRef90 UPIOOO479842F UniRef90 V5FFH2 UniRef90_UPIO003492050 UniRef90-H8MG82 UniRef90-A8PXB2 UniRet90 - xovx09 UniRef90- 6 6MPS9 UniRef90-D5ST63 UniRef90_14FAR9 UniRef90-A6EGB1 UniRef90-F9ZZU8 UniRef90-M2ZNV6 UniRef90-K9ZIT7 UniRef90-K9PKK4
UniRef90- 00 A059DWH9 UniRef90-UP1000225DC8B
UniRef90-H2MKX5 Unero_Hzvikx


HTGWVLAVAWSPDDGVLATGSMDSTVRLWDPVKGTPLGAP HTKSISSAKFSPCGKYLGTSSADKTVK WNMDHMDCERT

H पS WVHCVMFSPDGSSF $\square T S$ SDDQT $\square R \square W \square L V D N A R H \square Q$ NGMAYTHPKWSPDGKK $\square$ AFTSDRSGENAWY $\square \mathrm{DFEKQDTVQ}$


HAEGTNDTAWSADGEYDASASDDKSDTWSMDTEESNR

 HEGEI LCVIVFSPDGKQLASGSGDG HCGCVKDARFSPDGRMLMSCSND HSGSGHSVVFSHNSKIITASGSVD HKQE $\square Y S \square D Y S K D G R \| I$ ASGSGD
 KTVRDWDVPDKNGKTH HGGLVRS TSFTPDGRLLCSGSDDCVALVWS DEHVPGKDTT SNAAYSYPIWSPDGKKI AFASSREGSDI YVMDKFGGEPKR HPAYDGEPAWSPDGRQIAFTSMRDGQDUYTLDLDSGDLRR

 EGYPLRGCSWSESGAY/AALDNDGT REWDGRTLQPLP HGDEVWFLQFSNNGKYLASSSNDKSAD WKVDEDGELDHR NPEQERNVSFSKDGRELYYSSERNGHWIYKTSDTDKKEKR
 HMMSVSNLALHPKKSTVATASDDAT WKMWDLPSGDIMS
DPEAERDVSFSSDGYRTTYASEREGSWNDYYVNDGGKEEP HSGPVYSVSFSPDNRYLLSGSEDKTVRLWSLDSYTALV S HNHPVWDVKFSPLGHYFATASHDQTARLWSCD HDYPLR TSSAVICFDVSRDSTMAAVASSR CVQQWQDNGPELTM


HGGAVRTVAFSHDGQCLLSGSDD
HEAAVTS DMDPDGRALISASEDGT ARDGVWT SFNKDSSRLLTASDDG HDGYI RFAA HVRIWDVKSKELIS Ho KQLCVWDVDNGKLIQ ERERLTDAALSPDGTKVAAVGVAGGGVELWDLRTGGRRV
 HRKGVAQVRYSPNGRWIASCSADGT
NPEQERFVKFMPDGKAVAYASERNGKWSYFPDNTGEVDP WYRDAAVSPDGSQIVF RYAGQ WWFAATVFKEDT GHCWSLYPAATGSGGHSLASGSTEKKLHLSHSGTGELRT

S CS Y D N T DWF WD A S S GQ ${ }^{\text {D }}$ K HKSAVT GVSFHPSVQQVASSSLDGLVMVWNFKPQLBRAR
 NEAQDMMPVWSPDGKTLAFASNRYGNFVFSDPVAGGNPVR NTRIAYVTSAARGNMLQVADADGYNPRT EGHGDSTDAWSPDSKVIASGSDD K I I I R L WD W A T GKPNP $N G R T L P$ LLASGSHGQTKLWDLSKGELIV

PSADVTAVKDTAAGDRVAYWSFR GEEAHAKVQKSSKQES $S A D R N T D V L F N D D N$ I FVSAPDHCNRIQVRTGDT LLQ

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LGGHGKSSRVAAFS LDRHWLJATGSDDGA\| R|L|WDLVTTSRS VKGHTGPVNACAFSPDCSUFASASHDCTVRVWKTATTECDL $\square K A H E D E V V C C A F$
IS GHSNVVWSVAK
LKGHTKWDTS $\square$ CWDPGRPRDASASKDFT $\square R \square W D A R T P R L I$ LTGHKLGVND FTPDAYEHLRIRLSPDGQKLVVISSSDP HLWEIVSGERL

S GK T



LVGHTDVVTRVKFSPDGKK\ASASWDKTVKDWGR DGKTR LGGHTNFVFCLNYNPRSNLLVSGGYDETVRIWDVARGKSL L P A H S D P V S A V S C S VD G D PVV ES Q S V E G Q CRRIWD TA S G Q C L
 4 Ret90 X6P219 UniRef90_L8LGT4 UniRef90_Q17963 UniRef90 G4TRV3 UniRef90-UPIO00444118B UniRef90 F4L3B0 UniRef90-UPI0003B39787 UniRego R7RYO niRef90 R7YY47 UniRef90-UPI00031A80B1 UniRef90-X6LZS4 UniRef90-R5BQX7 UniRef90-A2A0M1 UniRef90 ${ }^{-}$F4P5P9 UniRef90-UPIO004411A04 Rin90 C5WM28 UniRef90-|1PI60 UniRef90-S8FSR3 UniR -UniRef90-UPI0003BBB62 UniRef90-L8HEZ3 UniRef90-M4CYA4 UniRef90 X6NFN5
UniRef90 G8JPW2 UniRet90_G9NLS UniRef90-UPI0004561841 niRet90 K5XKX8 UniRef90_D8UHT0 UniRef90-D1W057 UniRef90-A5UUK1 UniRef90_W3VEB2 UniRef90_Q2JY38
UniRef90-A5DVR1 UniRef90 R7SSX1 UniRef90-Q9KNC1 UniRef90-M7ZVC4 UniRef90-R6X7W6 UniRef90-A1ZR41 UniRef90_K4C7J9 UniRef90-C1MR80 UniRef90 C3NYG6 UniRef90-A3M063 UniRef90-G0W8U7 UniRef90-B0W5J8 UniRef90_D6U4P4

## UniRef90-M4B8C0

 UniRef90-UPI0002D59483 UniRef90_UPI0003766322 UniRef90-G0U117UniRef90_D5A536
UniRef90-A9SQZ7
UniRef90_UPI000350966D
UniRef90-A6GKA2
UniRef90_UPIO0036BE7F8
UniRef90_A6BZ78
UniRef90-W2EWL9
UniRef90-L1ILJ0
UniRef90_I2N9U3
UniRef90-G2YLK0
UniRef90_UPIO002FE321E
UniRef90-UPI000479842F
UniRef90 ${ }^{-}$V5FFH2
UniRef90-UPIO003492050
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UniRef90-A8PXB2
UniRef90_X0VX09
UniRef90-X6MPS9
UniRef90-W2ZB39
UniRef90-D5ST63
UniRef90_I4FAR9
UniRef90-A6EGB1
UniRef90-F9ZZU8
UniRef90 M2ZNV6
UniRef90-K9ZIT7
UniRef90 K9PKK4
UniRef90-K9PKK4
UniRef90 A0A059DWH9
UniRef90_UPI000258DC8B
UniRef90_H2MKX5


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TASQNFSQRVLKRHHKPV DAVATTPDSKY LITGSADKT KLFSVVNMEDLS DNQKGELYYDKKGYEDPFRKHHRSPDT NL TNHPAPDHSPAWSPDGRFDAF $\mathrm{S}^{2} \mathrm{SRDGGG}$ HLFSGHKQEDYSUDYSKDGRDIA $\quad$ SGSGDKT LQLQGHTDLINSVADSPDGRWI A ALQRGGPDHPCSAAFSRSSTRVAV RRGGDDKAGYRGS RLTYHGAKDDPYAFSADGQQLYFSSRRLGDDKAQGSFMAQ
$H V Y E K P G L G L T S C G W F P D G K Q U L ~$ SLLKGVNDGDQGFEWSPDSKYLLSNYQTNG GWNNSD RLTYHSSNDVPSSFTPDGKAVLFRSSRLDNAQNAMFMSE RIMAGHLSDVDCVRWHANCNYIA
VTFAEHGQAVWNACFHDSGDFVA
TGSSDKT
TLDAHADYSYFDK
RIVAGHINDVDCVEFHPNSNYVDSEIVTRDRAMSNGDIQ RLFLGHTAPV\STAVSPDGRWL
ATFKGHNTFVTSVTFMMDSRRITSADR
DSC
LSYR YAAPI SVVAWSPNGTRFAYSGKNAKAE
QQUKDHDDPVLDAAPGTGKFVASWKDDSTFATCSSDMS
SRDGQNLATGUKDGR
QELKSHTSWVQVLSWSPDGSYLV SGSKDGTLVVWTHDGQ
QQFNDGMGLTNSVRFHPNGCLL
TVERAHTATVRSVHFSSDGQSLVTA
TVLEGHGKAVLAASFDDAGARLV
GTGGSDNW

FAALPATNVHRLGFDAADGTLATGSAYHGVGFWRGREDGV
SCCTGHKGRVTCVAWSENGRFLA
GSPTGHDGRVRCLAYSRDGRMLV
PTPLGHHNYVYSVAFSPKGNVI A SGGNG
KRLVGHTSSVWAVALSPDGKKAD SGGMDGT TIMT PKDVIHMQDGDQYFQWSPDSKWLLVDWKVSLNNVE RLTYHPSKDVPYAYSPDSSTVYFESRR\|GNNKGNGLFGGG RR】AAHAGMVRPDADSPDSQILA

WDDPEAHLHQLAAWWRRQRESSGGAPWVES
HSFTGHTGEVHSAAFSPDGTMIV SGSSDNK
KShKGHSDIIKSVQFSPDGNTIV SGSHDKT
VTIKAHAGAVRSVSFSASGRELLTA
SDDMS
GTVQAFAGQV
WDVSASEDRKFFAGGGDDGS
KSWQAHEQA ITS DA $\square$ NPHRHLIASASRT
LISAAG MEKAKFNQDGSQ1 VFEDRKGFEDAWRKHHRD

RSLPAHSDPVSSVAVVRDGTLVAA
DILHKHNGSVRCVAFTPDGNMI A SCSSDGL
STFEGHDASTICTAFSASGTWMSLDVSPDGETIVGGDDRK



UniRef90 U3QHE1
UniRef90-H3BGC3 UniRef90-UPIOO02246E56 UniRef90-UPIO00273F90E
UniRef90_X6P219
UniRef90-L8LGT4
UniRet90-M2MJM5
UniRef90 Q17963
UniRef90_U9W348
UniRef90-G4TRV3
UniRef90-UPIO00444118B
UniRef90-W1NZR8
UniRef90-F4L3B0
UniRef90-UPIOо03B39787
UniRet90-R7RYOO
UniRef90-R7YY47
UniRef90-UPIo0031A80B1
UniRef90-X6LZS4
UniRef90_12JX84
UniRef90-R5BQX7
UniRet90-A2AOM1
UniRef90 UPI00038BB7B2
UniRef90 F4P5P9
UniRef90-UPIOOO4411A04
UniRef90_C5WM28
UniRef90_UPIO0044492C7 UniRef90-|1PI60
UniRef90_S8FSR3
UniRef90-UPI0002E5C6D4
UniRef90-UPI000455FB9A
UniRef90-UPI0003BBB62A
UniRef90-L8HEZ3
UniRef90 UPIO002F9A530
UniRef90-M4CYA4
UniRef90 $\times 6$ NFN5
UniRef90-G9NLS5
UniRef90-B6BLP1
UniRef90-UPIOOO4561841
UniRef90_K5XKX8
UniRef90-D8UHT0
UniRef90-D1W057
UniRef90-A5UUK1
UniRet90_W3VEB2
UniRet90_Q2JY38
UniRef90-A5DVR1
Uniego-Rysk
UniRef90-M7ZVC4
UniRef90-R6X7W6
UniRet90_A1ZR41
UniRef90-K4C7J9
UniRef90-C1MR80
UniRef90-C3NYG6
UniRef90-A3м063
UniRef90-GOW8U7
UniRet90_BoW5J8
UniRef90_D6U4P4
UniRef90-M4B8C0
UniRef90_UPIO002D59483
UniRef90_UPIOOO3766322
UniRef90_GOU117
UniRef90-AgSQZ7
UniRee90_UPI000350966D UniRef90-A6GKA2
UniRef90_UPIO0036BE7F8
UniRef90 A6BZ78 UniRef90-W2EWL9
UniRef90-L1ILJO
UniRef90_12N9U3
UniRef90-G2YLK0 UniRef90-UPIO002FE321E UniRef90-UPI000479842F UniRef90 V5FFH2 UniRef90-UPIOOO3492050 UniRef90-H8MG82 UniRef90-A8PXB2 UniRef90-X0VX09 UniRef90- 6 6MPS9 UniRef90-D5ST63 UniRef90_l4FAR9 UniRef90-A6EGB1 UniRef90_F9ZZU8 UniRef90 M2ZNV6 UniRef90-K9ZIT7
UniRef90 K9PKK4 UniRef90 A0A059DWH9 UniRef90_UP1000258DC8B UniRef90_H2MKX5

C|VR【WD
sTKLWD
TLKLWDVRSAN EKKSDNVKQFFDNSEDPPEDMEVIVKC SI RLWDIQTFNILNGHTDYVWCVEFSPILQSSSNANNGVGV EDNUWNLQT GAHLSTFFEHSTSVLTMADSPDSR ARRRKARERYEAALLPAGGLERLVTASDDCTMYLWEPSKS
$L V R U W D A N G Q$

QGDETTTFQGHWSSDRALAFSPDGK A LH WDWENGNFAGKCWATVQGKALSLSHSSPKQMVLCGT TAKVWDIITGNMDKD FACHQDTVLSCDVSSDAA TVRVWDAKT EQTGLVKRNDQTGEEAWKALKPVQRABSDPSIAAVNFNRDGS KVVSSDVEKADEKPDLPVKLVKKPKGAKWAKPAVLTDRLS
 VI RVWDIE TV RL WNPTQLKYVFSMAFSPDGLELAMSGETVKLWNSDDE $T 1 R$ WDVHS GQETQRLRGREDHVNDLKFSLDDNQ TVKi WNK

EGELVEQFDNYDDEVLF UAFSPR
G
Y LK KWNVVT GASSYTNGTNLKKDHVSPD

LCRVWDSTTGH CVKTLIDDESPPVSFAKFSP TLRI WDIDSGSSVVAQKSHMICIALASDGGCAVAGSLRCE LLRVWS TSDLASPVAE LAGHGEGVSDLAFSPDGR
 TMRLWNLQGQQLRSFHTH TLRL WNCQS S RCVKTYTGHSNRTYCLTACFSVTKGHY IIS LVY WN LQ T

IVRLWDAETGYF DERYEGHDDSVYSVAFSPDAK SVVVWD DPDRRACYSGGAPVWALAFSADS RYFVTGSNYT TI RMWDHAGWVNSLSLSTEYVLRTGAFDHTRQVTCSDEEM | $T$ | $R M W D$ |
| :--- | :--- |
| $V$ | $K$ |
| $V$ | $W Y$ |

Ti R CWD
Ti KLWDSATGEY

$G V Q F W D P K T A Q T Q F$

VIFVWD $\quad$ F VTGECKRALVGHKAPVSC LAVAPDGH


LVRVWDAQT GKQLERDKSHKDS DYSVSFAPDGK WI LVANGNPAVYLWDPRS GALLKT LEAD YP TVRVWDSTTGFLVERDDSGNESGNGHEDSVYSVAFSNNGN $T$ MKISSAART GAVVRSLDGHKGRVHKACFSPCGR $E Q P W R T R D \square W Q W S P D T G K H T Q Q T T F R G E D R N P V W S A D G S S$
$T$
T DGYRSHGSWGAESDDYIMFFDGKEMTKFYQDKEDA YEDDRRKHHWSYVPATNTFTQLTSFKGEDLNPVISEDGKM $T V M M W D L S S G R C I T P L T G H S S C V W S G A F S G E G S L L A S G S A$
$T V$
V TWDARN

GLRDIDDMVVQY
$\vee V N D W D A G T G$
SVVRVWD
SLR R WS $\square$ T REDEKFTVS HSGE $\square$ TSF $\square$ TIADS $\square$
TI QVW W
TVKI W
KAMIWPA EPFAKAADKKETEFG

 N RIWD LAAGLQAGSFSPVQTMTGHHSP $\square$ LD $\square$ A $\square$ SSDGK TI RVWDLREGQ\|LY
TVKLWDKTS
TVRGWE
REC $\square H$ SF CEHGGFVNHVDFHPS GT
TLK【Y D DEKREP
KESYDSIHEEDIWALSFSPDGK
 TVLVWGNF
LATTGEDRTVRDHHPVTGQPLTGPDPADAAGPDA DA $L \square R V W D T A T G Q$
$F$
$G$ GLKSYAT SGSFETDVYSMFLN VESWDKF IWLYKGGKHLQLTYFKGEDRDAHWSADDSYY LSERSGSFN TIE IWW HLDTGLRRNDFAGHAGTVRSLADGDD GSHGDGNNVHVWDVATGKQLRVMEGHEMEVRGUSWSPDGK

## VLILWDV




QVEI WDV

DTKERLLMNPGHTSGVVSVAWSND
KVK WS EMLGEL
 SLRLLWDYVDGT
1 WHTSSSTVSNKNVEDTQP LHMLMGHSHIVSSLATSADAK IKVWRTSYQME $\square$ PFNDLPPTHILLGHAHIVRSLAISADAK GDNVWDARQ $\square$ THETHAMVAGPAWSSDGKS A SVITYSD $\square \mathrm{F}$

UniRef90 U3QHE1
UniRef90－ $\mathrm{H} 3 \mathrm{BGC3}$ UniRef90－UPIO002246E56 UniRef90－UPI000273F90E UniRef90 X6P219 UniRef90－L8LGT4 UniRet90－M2MJM5 UniRef90 Q17963 UniRef90－U9W348 UniRef90－G4TRV3 UniRef90－UPIO00444118B UniRef90 W1 NZR8 UniRef90－F4L3B0 UniRef90－UPIO003B39787 UniRef90＿R7RY00 UniRef90－R7YY47 UniRef90＿UPIO0031A80B1 UniRef90－X6LZS4
UniRef90＿12JX84 UniRet90－R5BQX7 UniRef90－A2A0M1 UniRef90－UPI00038BB7B2 UniRef90 F4P5P9 UniRef90－UPIOOO4411 A04 UniRef90＿C5WM28 UniRef90＿UPIO0044492C7 UniRef90－I1PI60 UniRef90－S8FSR3 UniRee90－UPI0002E5C6D4 UniRef90 UPI000455FB9A UniRef90－UPI0003BBB62A UniRef90－L8HEZ3
UniRef90＿UPI0002F9A530 UniRef90－M4CYA4 UniRef90－X6NFN5 UniRef90－G8JPW2 UniRef90＿G9NLS5 UniRef90－B6BLP1 UniRef90－UPIOOO4561841 UniRef90＿K5XKX8 UniRef90－D8UHTO UniRef90－D1W057 UniRef90－A5UUK1 UniRet90 W3VEB2 UniRet90＿Q2JY38 UniRef90－A5DVR1 UniRet90－R7SSX1 UniRef90－Q9KNC1 UniRef90－M7ZVC4 UniRef90－R6X7W6 UniRef90 A1ZR41 UniRef90－K4C7J9 UniRef90－C1MR80 UniRet90＿W4GB5 UniRef90－A3M063 UniRef90－G0W8U7 UniRef90－B0W5J8 UniRef90－D6U4P4 UniRef90－M4B8C0 UniRef90－UPI0002D59483 UniRef90－UPI0003766322 UniRef90－GOU117 UniRef90＿D5A536 UniRef90－A9SQZ7 UniRef90＿UPI000350966D UniRef90－A6GKA2 UniRef90＿UPI00036BE7F8 UniRef90 A6BZ78 UniRef90－W2EWL9 UniRef90－L1ILJO UniRef90＿12N9U3 UniRef90－G2YLK0 UniRef90－UPI0002FE321E UniRef90－UPIO00479842F UniRef90 V5FFH2 UniRef90－UPIOOO3492050 UniRef90－H8MG82 UniRef90－A8PXB2 UniRef90－X0VX09 UniRef90－×6MPS9 UniRef90－W2ZB39 UniRef90 D5ST63 UniRef90＿l4FAR9 UniReffo－AGEGB1 UniRef90－F9ZZU8 UniRef90－M2ZNV6 UniRef90－K9ZIT7
UniRef90 K9PKK4 UniRef90－A0A059DWH9 UniRef90－UP1000258DC8B UniRef90＿UPIOOO258DC8B
UniRefon－H2MK Uniref90＿H2MKX5

RILIAVAYGYAVEIVWDLIT QENPP ${ }^{260} \quad$ QVVVVGRYGGSGGWITGT ${ }^{280}$ CFSVSGMLATGSWDRTVRV WNPKKGVLIFLLEGHSGWVK
CSWSADGAR IVVAKNKTFLWNTDSCLKVADCRGHLSWVH $\Pi$ GGSGYTDCSGSWDKTIRWDVETGKEIVLEGSEGYVRSVK VMVTGGLDGIDRANNLTPQRP TKPGQRMVGHQKQVNHVTFSWSAKDGTFLFTGRGHVGPVY ELATGAED $G$ GFVRVWDLNGQEKFSLKGHDSWIA DSGAVYAWTESGQSLWTVHNAHQPTLRTVFSSDGQLVATT LIVSSSYD GLCRIWESSTGHCTKTHELKGHKGCVR FTPDSKFVIASYGGKIWKLPDDGGAAVNVVELEMGPAVKF FSHNGKLLASGSEDRTIRVWNVENGETVLGPLKGHTGSIG FSRNGLFI ASGGFDRTVRWDTSTNQQVMVFTADDGFFSIA FNSNGNQLATGGGDGSIKLWTSRGDUWKKIKYKEADFRLA


HWG $\square W K T S L V R K E D K M F T Y A V Q T K E E L V S T P G E T C F Q$
NGKY ILASTYDST $\square R \square W S Y S$ NGKCLKTYTGHSNSTYCCF
NGKFTLAATLDSTपRपWNFS AGKFLKTYTGHVNTKYCपP TlAVWDVRTGVLAKAGFDWFDDDDIE LI ASASDDWTVRDWDLGDGGGEPRLMKTLSGHTNYAFCDAA L VSG GFDETVRDWDVARGR TLKTLPAHSDPVT

SपASGSपDKT पK पWD पCNPRARSRCRSTFNGHKDFVL KLWS KK】ADERY苗KAKGKVDSPERLVSGKMVTTARVTGHQQLVN
$\square K$ GGAFDHTYSRPATAEEAQKRA $\square K N Y E K \nabla A K$
H $\square$ LTSFDKT $\square K \square W N \square S T G K E \square R T F K G H \square G G V I$
FSPDGKF岛AGAEDKQTRT WDTGKKRПRNVFDGHQQETY FLVSGSHDRT RAVWDLINGNELATLSAHTGAYGVL YSYDGEDYTQMGSAAPQKVNVSDTADRNDUDLKRQDNSWA
SLVSGSWDLTGTAKAVQENRAEGGHATCATTFVGHKDYVL LSPDGRHLLAASASGI WDWNVGTGSRERTDPQPSGDATLA Q ASGSLDRTVKLWNLEGKSDKNSNCEA TYMGHDDVLS MYASASVDKTVRVWR WO MYYLSEQNLAGSFNVWQQRFDGSEPVQITDHQKPVRFLS EIAKALEDGDKSEKKIEKEEKKEKRTARLTRFSGRLGDFY MVYNVFEMTLSNQQKKPLTQFKDHPVRDLSRANNGTLCYR DCTVKLWDVTTSTRAPLKEENKSGGNNRLRLLK


## Y LISGSKDMS पKVWQVSGGKAQVLVGHSDAVTCVA

DDMEVDSCKNSEVDPA DDAASSVALVYS LQEHKKEVYTFR GSTLATGSADNTVVLWTAAGKKDRVIPHPAEVRSDA


CDAAAGTDNTKVWDVRMNRL LQHYQVHSAVVNSLS DHRVA DSADDVTGERVASAAVDGTVRVTSTAADGHREGVW HVTAGQDRTARW VEATGKVVKIFRGHGGPVH

FSHDGRMLVTGGRDGTVRRWSTGTGRPVGKPLTGHTGPVT NGRYILAHTLDSCDRLWDYVAGTCKKTYQGHVNNKYSLGG TADA VWRKEGYNPSKKPEQQTFFDTFPGKSDSKKKKDDKKEEAT GQTLASGSTERTDKDWQTGALRRTLTHTDPLDNDT RDASGSR RLASGSR TSASGSEEFFNTTLERVLI LWDVTSGGSLRRFEGHTAPVT KIVSGSYD SYDKSVNLWDTRAGRLVH HYKAHEASATCVA GQFLATGGGDKTVNL WDAADGSLLEMTGHTGGVY
 SLAMV NGNGGRYRILAMDMASRTVNVLSEGNLDSPS
$F L V S G S R D K T \quad \square K V W N L E T G K D H T L K S H R D G V Y A V A$
 RVVNSEDHLYGDDDGSEEVVVPPDVQEPRFAPNGRHLYYT

UniRef90 U3QHE1
UniRef90- ${ }^{-}$H3BGC3 UniRef90-UPIOO02246E56 UniRef90-UPI000273F90E UniRef90 X6P219 UniRef90-L8LGT4 UniRet90-M2MJM5 UniRef90 Q17963 UniRef90-U9W348 UniRef90-G4TRV3 UniRef90-UPIO00444118B UniRef90 ${ }^{-}$W1 NZR8 UniRef90-F4L3B0 UniRef90-UPIO003B39787 UniRef90-R7RY00 UniRef90-R7YY47 UniRef90-UPIOO031A80B1 UniRef90-X6LZS4

UniRef90 T2JX84 UniRef90-R5BQX7 UniRef90-A2A0M1 UniRee90-UPI00038BB7B2 UniRef90- F4P5P9 UniRef90-UPIOOO4411 A04 UniRef90-C5WM28 UniRef90_UPIO0044492C7 UniRef90-|1PI60 UniRef90-S8FSR3 UniRef90-UPI0002E5C6D4 UniRef90-UPI000455FB9A UniRef90-UPI0003BBB62A UniRef90-L8HEZ3 UniRef90-UPI0002F9A530 UniRef90-M4CYA4 UniRef90-X6NFN5 UniRef90-G8JPW2 UniRef90 G9NLS5 UniRef90-B6BLP1 UniRef90-UPIOOO4561841 UniRef90 K5XKX8 UniRef90 D8UHTO UniRef90-D1W057 UniRef90-A5UUK1 UniRet90 W3VEB2 UniRet90_Q2JY38 UniRef90-A5DVR1 UniRe90-2 UniRef90-M7ZVC4 UniRef90-R6X7W6 UniRef90 A1ZR41 UniRef90-K4C7J9 UniRef90-C1MR80 UniRef90-W4GB55 UniRef90-C3NYG6 | UniRef90-A3M063 |
| :--- |
| UniRef90 -GOW8 | UniRef90-B0W5J8 UniRef90-D6U4P4 UniRef90-M4B8C0 UniRef90-UPI0002D59483 UniRef90_UPI0003766322 UniRef90-G0U117 UniRef90-D5A536 UniRef90 A9SQZ7 UniRef90_UPI000350966D UniRef90-A6GKA2 UniRee90-UPI00036BE7F8 UniRef90 A6BZ78 UniRef90 W2EWL9 UniRef90-LIILJo UniRef90_12N9U3 UniRef90 G2YLK0 UniRef90-UPI0002FE321E UniRef90-UPIO00479842F UniRef90 V5FFH2 UniRef90-UPIOOO3492050 UniRef90-H8MG82 UniRef90-A8PXB2 UniRef90-X0VX09 UniRef90-×6MPS9 UniRef90-W2ZB39 UniRef90 D5ST63 UniRef90-14FAR9 UniRef90-A6EGB1 UniRef90-F9ZZU8 UniRef90-M2ZNV6 UniRef90-K9ZIT7

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 SVAFSKDGILLATAADDDMVHVWDCGNGKC 1 KILEGKLDL
GVMFSPDGSSFLTSSDDQT円RDW ETKKVIVLKQEVD V YSPYTAGGNTVYSGSDDKMVRLWDTRSKKQTSIFKGHTSY VADHPNGY GLASGHDDGKVKFWNLRTAERAEFSSHVSAV
 ADRFGSDVRNFTT DTNDGTHRLWDVTSKSCTTFIRYQAEV SNDKTARVWDNSSNSDPPTLHMWDLETGKEDYHTTDDKGM
 WSMDGRLIYFSADRKPDSEYYVDLDTDETKRLTDRKRGA
 LSKFSFDGCRIVAYSTYGMFRIDDVATGTEDKLLEGU VDV
PDVSPDGKWVAYYRDRTELVIKNLKNGKEKSLFKGINGF
GSFSVTSGKW VVAGSEHY $\square Y \square W N \square Q T R E V Q K \square A G H V G V$
 VAFSPNDKYVAASLSQNVDI WDVKTRAV DPLVGHRSRV FSPHGN MLASGSFDETVRVWEVRSGRCLRVLEPVTSV AVTFNHDGTLIASCAMDGLIAI WDAESGQLKTLADDDNHI A S SSMEKDLT $\square R L W$
SVAFSPDGNWLISGSKDRSVQFWDPRSAATHLMLQGVISV ASSADHGSGTILTGHDDTHLRLWQ IRSDSPRTLVGHVRTV HVYFSPNGQWIASASFDKSVKLWDGVTGKDTAFRGHVYQI
R NGVLEELDATASDDFTMY DWNPGTKPGTRMTGHVNHV SAD $\square$ TTDSKYA $\square$ SASNNNSLILWDMETAKVKTPSYDVLS
S पDFSTDGRLIVSGSGDKTARTWDMVDGTSKVLTAGVTSV SCAVSSDGSTIMSGGYDNLVKMWDATSGADATI QGHVSSV LSPNGKEDGFVLHGD $V Y V T N \square E Y K T T K Q \amalg T D T P R S \|$

SVSCSPDGQWVASGSKDRGVQFWDPQTAQAQVLQGHKNSV LSPDGRLLAS STDHRAQQI K DWDDRSGKELRTLGGVSAL VCCTPNNEYILSGSKDRGVI FWDQASGNALLMLQGVISSV EVAFTPDGTMLWSAADNGTVW ASLQGDLAYGF DGEI WR LIKAGAKQAEKVPVSTRRS SCFGGSDQAFDASGSEDSKVYDWHRATEDVETLSGHVNCV


KVVFDRAGETVAVASDDGTVKCFGADHGEVAEDAGHVQAV SVCFQPYTVNICTGSGDKTUS $\square W D \square R S G L V Q T F Y G H \bar{Q} N S$

WSCTGPGTATLASASFDGTVKLWDAESGSCRRTFDHVYGV WSPAGD RLAVGAVDDRIRIYQASTGKLIALQEEVTAL TDAVSPDGKIVASGSEDTTUILWDTETGKKRKVLGGVTSV


FHPSGN YLVTASNDSTLKILDLLEGRLLTLHGHATCV A LAFTPDGQRLVTASFDGTARVVRADGRGPARVLRGVLRL GVVVSRDGSLI ATSGRDGSVRVWNPE FIPHSPFLVMIRFSNG VFIDDAKSLKRSVPTRTTGDL D $\downarrow$ E $\square$ SPDGRVIASASSDRTVRLWDARGNPDGTLGDHVRAL
QAVVSPDGRTLATTGHDGTVLLRNPATGRLTGHTGPVGHA SFGFSGNQGFI SSGSEDGDI LFWDVSTKELDQKVHGHEGV SVAFDAEGKHLVSAGDDADI RLWDVGTGKSKGHEGSTRSA VKALKFDLDENVERRKSRLTI H WDVGSSTLADAV
GD DWIKPSQEAKSHKVA $H$ HRKQE LQAGERNVLKYQATEF PNPSGQ
FSPDGTL LAVANDGWLTHLYDLDTGKVRTLKGHVLSV SLDFSQNGRILASGSGDKTVRLWNAENGTELHVLPGVTTV AVA $\square$ SPDGKTALSGSSDMSLILWGLAGQRFEGHTSAVNSV
FHPTGN Y LLSTSHDNSVKLWDVREGQVLTLQGHVNCA SVAFTADDQKIVTGGWDKKLHVWDAATGELDGHTADIWSV

LSPN EQTIASGSSDKTTKLWHLETGELLTFTGHVTAL

S C R F S WD S E CL A T GDDNGE I R

UniRef90 U3QHE1
UniRef90- $\mathrm{H} 3 \mathrm{BGC3}$ UniRef90-UPIO002246E56 UniRef90-UPI000273F90E UniRef90 X6P219 UniRef90-L8LGT4 UniRef90-M2MJM5 UniRef90 Q17963 UniRef90-U9W348 UniRef90-G4TRV3 UniRef90_UPIO00444118B UniRef90 W1NZR8 UniRef90-F4L3B0 UniRef90-UPIO003B39787 UniRef90 R7RY00 UniRef90- R7YY47 UniRef90-UPIO0031A80B1 UniRef90-X6LZS4
UniRef90 T2JX84
UniRef90-R5BQX7
UniRef90-A2A0M1 UniRef90 UPI00038BB7B2 UniRef90 ${ }^{-}$F4P5P9 UniRef90-UPIOOO4411 A04 UniRef90_C5WM28 UniRef90 UPIO0044492C7 UniRef90-l1PI60 UniRef90-S8FSR3 UniRef90'UPI0002E5C6D4 UniRef90 UPI000455FB9A UniRet90-UPIoo03BBB62A UniRef90-L8HEZ3 UniRef90 UPI0002F9A530 UniRef90- M4CYA4 UniRef90-X6NFN5 UniRef90-G8JPW2 UniRef90 G9NLS5 UniRef90-B6BLP1 UniRef90-UPIOOO4561841 UniRef90 ${ }^{-K 5 X K X 8}$ UniRef90 D8UHTO UniRef90-D1W057 UniRef90-A5UUK1 UniRef90 W3VEB2 UniRef90-Q2JY38 UniRef90-A5DVR1 UniRef90 R7SSX1 UniRef90 O9KNC1 UniRef90-M7ZVC4 UniRef90-R6X7W6 UniRef90 A1ZR41 UniRef90-K4C7J9 UniRef90-C1MR80 UniRef90 W4GB55 UniRef90 C3NYG6 UniRef90-Aзм063 UniRef90_GoW8U7 UniRet90 BowbJ8 UniRef90-D6U4P4 UniRef90-M4B8C0 UniRef90_UPI0002D59483 UniRef90 UPIOOO3766322 UniRef90-GOU117 UniRef90-D5A536 UniRef90 A9SQz7 UniRef90- UPIO00350966D UniRef90-A6GKA2 UniRef90-UPIO0036BE7F8 UniRef90 A6BZ78 UniRef90-W2EWLO UniRef90_LiLLJo
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VF QENEDMVLADDNKRRLQL!NGKTG
ASSNDGNIIYSGSRDNTIRLWDI
LFTLDGEKLDTGSLDGTIKVWHLGTRQLLYTFTGHNSRD
DWSPDGERVGSGGQDKAVRIW
VLASDQNIIASGAPDNKIHIWRSD
VFSQDG HMATVSGNGTAYLWPPNQTKPSKPFMGGGKR
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 A WSPDGASI AYVTWENKIYKVNVATGA
RLSPDGKWI AYTGYD
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AFAPNGKDLISGSLDKTIKVWELSMPPENDPGTGWM
AFSRDGKY ASAGNNGVLKLWNTEGK
QFSSDGQTVVSCSVD ALRLCD $\begin{aligned} & \text { SQSGDE } \square Q T \square K ~\end{aligned}$
RFNPDGDSLISADGEGKI RFWKTET
EWSPDSHYILCGWNNSDVALIDDETGD
ACHP【LNMDASSS $\square \mathrm{DKD} \mathrm{\square TVK}$
SCHPTENMTASGANDKTVKVW
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ALSADGQWLASSADDQTLRLWSAVSGESQ
SWSPDSRMLLSCSKDSTLKVWDUGTKK
AFSPDGRY $\square$ VSASFDNS $\square K \square W E G S S G K F \square T$
K $\square \mathrm{T}$ PDAKYF $\square \mathrm{SGNSDET} \square \mathrm{R} \square \mathrm{WD} \square \mathrm{NT} \square \mathrm{K} \square \mathrm{V} \square \mathrm{K}$
A $\square$ SPNGQYVAAGS $\square \mathrm{DTVVR} \mathrm{\square WDVATGVLVER} \mathrm{\square RGHR}$
AFSQDSTHLATAGRD
EFSPDGLA!VYASE
NLSPAGGLLATGSGDFNARTWSYDR
LFGPDGQTLLSGGADGADR|WGPEHPASEA
AVSSNSQ\|FATGSGDCKAR\|W
AM PDGRH
SWNPNPHMLASASDDHTDRПWGVKKASTKR
VPSADDKDLYVFTGSS TTKUTIASGATST』SFSGD
A $\square$ SPNGKEVAFVVR GE $\square$ FAAS $\square E G G T T K R S F S P D G R S \square L$
AFDPHGKFVVSCGSDATFR $\square W N$
AFSTAGDTIASCDADGF $\square \mathrm{K}$ L WDVRMVAERAT $\square \mathrm{DGGQQPD}$

K VSADGTTAVSGSDDKTLIVWEMKRG
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$N \square S A K S N R \| I A G T Q E G R \prod F V W S$
SFSPDGRLLATVTRSHTLSVWDGAAPRRLSRVS
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QWS PDSKSLIYATERN
A WA P
T F T A S GEMLVSGSDDKTDKDW
AFTASGEMLVSGSLDKTIKI W
Q ISPNGKSI AF $\square R \mathrm{RL}$ LGALEVKDLESGYEE PDYQDLGR
AVSVDKSVVSGSKDANLIVWDIDTGSDLHTLKGHLGG $\quad$ GM
$H F S P D N S L L V S A G G$

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UniRef90 A1ZR4
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ARFSP DARL $\square$ ASCGDDRVR $\square W D T S S K H C \square N T D$
VDSKA $\square A A Y S P \quad D G R W L A T S A D G L I R L R D L S D A E P L A V G$
$S V P S \quad W S S \quad D N S Q 1 A Y D A P T Q L A V V D V A T G Q E R V V G$


$$
\text { T D D S } \square \text { Q G F F E }
$$

STPG $\square$ NGAPVWSPDGRR $\square$ AMVGNTE $\square Y \square M E D A T K A \square T R D T$
RFSP DGC LFAGTSCDA $\square R \square W D V A E A K R L Q V L$

$P V Y G L S F S H \quad D N K Y L V S C S G D K L W S T Q T F S N W V V Y K G$ QFSP DSKLLATASWSKLWSVPDCEPVSTMKG

TVNSVRFS ADGRK】VSASDDN $\square$ R $\square$ WAVASGKQLQTG
DCQY $\square \mathrm{CSGSRDNVR} \mathrm{\nabla WDVKTAKQ} \mathrm{\square KNG}$
PVAYAT WSPDDTKLITCSQDFKAKMWNVQTGT LLTDE GKKVVSSSDNTLRLWETETGRCLDVF DWNS DGTLLATGSDGFARDWTEDGNLASTGG NGSMFASASRGSVMDWEVSDAPPFQHL

AFSP NGQLLAAGSDGMDGFWDLTSNQPLPKA $A$ VSPK GKEVAF $N S V Q F S P$ DGQLLASAS QDRDWVPCDHGESSVLKA $\square N M V F A A R F D P D E H T V S C S R G T I R L W D V N G T E \square I T F K$

VY D S S GK S LLARTYTGEESQL $S \nabla Y \square A V F S P D G S R L L Y S E R D G L L L W D S N T S P S G E Y \square$ AFSS DGSRFAVGSDGTVS $\square$ LDAHTGVPVLGP

PVYAVVFSH DSLHVASGADSTVRDWRTESGQCDQTLin

S SMDSTLLIFSFKPHVRAYR LSG

$$
\mathrm{E} \square \mathrm{~A} Q \mathrm{Q} \mathrm{P} \text { A Q } \square \mathrm{T} L \mathrm{~L} \mathrm{RND} \mathrm{Q}
$$

RWSP NGKQUVFTARDHLYLIDSASAKPLTRG SPNWSP DRRTIVFTSNPNMVLMSTNGEKRRTLL

FSP NGRF $\square$ A $V$ THGKHVQVWSAPG

UniRef90 UPIO003298FAD UniRef90-V70909 UniRef90-G7ZV59 UniRef90-M2QWw0 UniRef90 FOZAL4 UniRef90-W6LFJ3 UniRef90-Q6AWF2
UniRef90- J7RJU3
UniRef90 D7E3K2
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UniRef90- X6PC73 UniRef90' UPIO0046EB63A UniRef90- D1REJ3 UniRef90-K9TG21 UniRef90-A4X2H0 niRef90 W2UKJ4 UniRef90 ${ }^{-}$F4PE64 UniRef90-UPIO00380A243 UniRef90 Q0RGZ5 UniRef90 - 11 DZ01 UniRef90 ${ }^{\text {Q }} 111 \mathrm{Z} 5$ UniRef90-UPIOOO441894F UniRef90 UPI000343FDE5 UniRef90-19KO78 UniRef90-Hзввмо UniRef90 R4L9N3 UniRef90 GOR128 UniRef90-B4NMX8 UniRef90-F4P198 UniRef90 B9SSE1 UniRef90-Q9W3J1 UniRef90-A0CBZ6 UniRef90 T1JDA8 UniRef90 B2IYQ8 UniRef90-M4EFF2 UniRef90-BoW5S6 UniRef90- UPIO0044094F3 UniRef90- 18 UBT1 UniRef90-S2JVB2 UniRef90-A7RZ49 UniRef90 S2K6H UniRef90- X6LRF6 UniRef90-M8BPH0 UniRef90 X6P2U6 UniRef90 GOSVV3 UniRef90-UPIO004417C22 UniRef90-X6MBV6 UniRef90 X6NE48 UniRef90-D8UD37 UniRef90-E4US22 UniRef90- Q3MDH3
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UniRef90 Q4QJ76
UniRef90 ${ }^{-}$M5C5K8 UniRef90-UPIOOO462E5A5 UniRef90-19KF37 UniRef90 H2S9V8 UniRef90-U4LVS4 UniRef90-A0A024SIA6 UniRef90-A8NX65 UniRef90 ${ }^{\text {Q4C325 }}$ UniRef90-UPI0003B4704A UniRef90-T2M8S6 UniRef90 UPIo0034A74BF UniRef90-U9VNI3 UniRef9-K K 10 UniRef90-D2QID6 UniRet90 M1 YZE6 UniRef90-U3K7U1 UniRef90-A7RS02 UniRef90 A0A034V8V1 UniRef90-UPIO003C46E5E

HQGSTYSACFSODGTKIAS ${ }^{50}$ CGA CKTLKVIVKSTSGKLIM ${ }^{80}$ FGGRNQHPRWSPDGKSLAFTSNRETTQLYVISAAGGEARK HGGRNOAPRWSPDGKSLAFSSNRETTQGYVWSAAGGEARK HLGDVMCLAFSPTDYRLASGSHDTNA II WNYLSGDQHA HVAGITCVV SKGNRLISGSSDST, LRVWDVVTGKLHV HKSK $\square R S \square S \square G K D S Q R C V V G C D D T R A L I Y D M H A G K L V R S$ FDHLIYT LAMSPDGQTLASSNNKG VVK LWNDQTGKIRQ HPASVYSVTFRPNSSNLII SGREDDSIHVWDTSTNQLQT

YGGSATSVDFNPSGTCTASSGSDSS $\quad$ RTWDLRTNKTQH HSDRVASARFSPDGTKIVTGSED KTIRVWDITSGKELQ HRGPVTG\|VFATDSRRLVSAGSDGSLRLWQVDPASSVAAR PDQWFTDPQWSEDGK\|IYVLMETSRNHLSAVDVHTGKVQR HSWSFYP TGGLHAPVSFAPDGRRLVFRSETEEANLLVLDLNSGRFTN HREPVYAVALHPDQTIAASGGGDDRSYLWRMDT GEKVYN

NHRADTEPAWSPDGKELLFTSERGGNQपYSVNLLTGTTRR QGHRVETDSFSPDSKQQASGGWDK VMDWEVQSGQVLR

HEGEVYCCKFHPNGSTLASSGFDRLILLWSVFGDCDNYVT S GHTGWVTTLYAVHGLI ASAGYDGTVRLWDPAVDDA VAV HAGWVRDVCPSLDGNYLLSTGGDHTGRLWELTVANPETKT
 HQAKVLCTDWSPDKRH\|ISSSQDGR LIIWDATTNKEHA HKKCVRTVDFSPTAKQLASGGDDS CVVVWNLQPNQAFR HKNEVWFVQFSDSGKYLATASSDCTA\IWLDDNEVELMHT HGGEIFSTEFHPEGQHLVSTGFDRQUYLWVYGEQCDNVGM SKEPLMSPDWSPDGK HNSPVWDVDFGPYGFYFATASHDRTARIWSCDHIN PRRI HNERVCSIVFHPDETTPSMASSGADGTVLLWNFKSENPIA HSSDVYRVKFSPDGSK凹VSCSFD KT TRVWDVSSGNQLL HVDRVFAARFSPNENTVVSCSGDGT $\square R \square W D V N G E \square M K$ HSHFVYCAKFSPNHDRPTVCSSSQDKT\RFWDFETSKEQV

HHEA TT SASWAPDGESFVTGS $\square D S K S Q \square C H W S V P Q K K \square 1 Y$ EPDEINSLAVSKDGSYVAIRYART ILVRNWNNKQTKSER ESHRSRI WDLSSTRQGDFVASASGDATVK\|WNLKSKKVST

 YNSGLFKQ
HFFP $\square$ WS $\square$ AFSPDG $\square T$ T $A S$ GSGDGTVG $\square W S \square D H R H S D A L$ NPDQERNISFAPDGRTLVYSSERDGLWQLYTSATELKEER HEAVVTAMVFDAAGRWLYSADAKGA VWRWSVDTGEGRA

HTAAVRSVNFSHDGHFLVTASND KS KKMWSVHRQRLLS RGLDVWDVNFSPDGMY VADRSSTDETUYLWDIESGE UKQ

RA $\square$ G $\square R F C A D G T R \| V F A N R T G N K \square Y M C D F D G E N V Q$ AGRGSDHVQFSPDGRH LLA $\square C N D \square H Y G \square Q R W D Y A S R T D E$ H पGWVRSVA

A $\square$ SPDGRFA $\square$ TRHGFS $\square R \square Q D T A T G E V Q$
TNDGLHCLDFSQDAELVA GGFAESYVRVWSLKGTKSRR DSGGIESVAFSYNSTLIASVSQCGVISVWRAQLSGR\|IDRT

$$
\text { SEQK } \square \mathrm{P} V \mathrm{VN} \square G \square \mathrm{RFKHR}
$$

HKDAVTSVVFSPSGHLIASSSRDKTVRपWVPSVK GESTV HGRNVNATAFSPNGQMLATAGGDG LIRVWDLQGDEERS HRDTVCSLDFNPNMKQLASVSMDSCLMVWNFKPQM RAYR KDFSVGNFVVSPDGKKI AYDAARNPDLI YVLTLGDT ISRK DPGLNSAPSWSPDGSR $I$ ALSLSKDENSE UYTLSRWNELTR

HTREFAPFVLH RTYTGHYDDTTC DDWFF $\square V G S K$
HTD VSSCHFCFEDTK LLSCSYD KTVK■WDVEKS $\underset{E R P R G Q}{V}$


GPVSCVRFSTDGRLLATYCGNNDRПYETRTRKKD






LT FEGEMNLAGSYTPDGNSVVMVNRTRGQYHDAKMDRQTR


LKGHSGAVMELHYNTDGSMDFSASTDKTVAVWDSETGERD LDAQSGPITDLCTLQDSVLLAATAEDGVI RLWDAERGAQW L $\square$ GHE HVVGCCAF APTA EFMAT GS RDKTI K L WDAR GNCD




LQSHQNPVSFVSWSPDDSKLLTCGNAEVLK LWDVETGVLR MNGHTGAVMEVHFSPDGGNLYTCSTDKMVAVWDVPTCTRI



■EGHTDFVRSASFSPDGTK $\square$ S CSNDKT $\square R \square W N T S S G D Q \square$
FKKDFNN $\square$ CDVNFSPDGKY VSG $\square Q D N T \square R \square W D V H S G \square E \square$ LDGHASPI LCASFSPTGRYLATGSGDNTCRLWNLDSETPA

MVS WS WDRTIRLWDVLSRDEL
A WRGQYRDRDCA TTPDGKR $\square \square A \square S \square Q K R \Pi Y V Y N F D T R E$
VLFGFDN TPMAISNNNQLIATAMDQNVVKVWNVKTGEER
LTGHSGDVYSVKYHPDENHLVTGGYDKTVRLFDVNTGS IV


FTGHMSAINCVDY QYGCIVSGSSDGNVKVWSHKGTEIT




LS Q H TH WVRCAK FS P D GRLIVACSEDKTVRDWDTTNKVCV FKGHSNSVDRVKFSPDDKFIVSCSRDNTVRIWNDETGMES PSGKMLITTNRDGNLYSMQADGSNPM LTNSRSTS LTPAVSPDGTYIAWTSGKPNLYIKNIATGAKV LTNFRGVATDPVFSPDGKQFAFLWNGKDVYVQMUGGEQPL LITHHGRILAGEFSPDGGRFLIVGDDNHVRTYHTLSGEPA LQ GHENVVMSVFFSPDGRNVLSGSDDRTTRMWNSRTGKVI $E A H G S E V N A V R F S P N S G M L A T G G T D R L I Q L W N V V G G E K M$
$T G S T Y G P P F R C A F S P D S R S V L T G N R D G Y L Q L W D A Q S G E C R$

LIGHSGPDYGVSFSPDRKYLLS S SEDKSTR LWSMDTYTA/L LDSHKGRVMCMTFSHDALLLASASDDCSVKLWKTQGGDLI

## $\square T$ GHT TP $\begin{aligned} & \text { R S } \\ & \text { LAA }\end{aligned}$ FKAHTSTVRSVDFSKDGQSMVTASDDKTVKLWTVHRQRFL

$\square P S S D R Y$ VTS $\quad$ LAFSPNNRYLVTGTYNGDVRDWDLNNCEQE
 LTRHFNDDTSPTWSPDGKRIAFTSDRPQDYMMDAEDGDQQ DMTARDYSLDPMENFSPVVTCSVDRLLILWKLTTQCRA


|  |  |
| :---: | :---: |
| UniRef90＿UPI000329 |  |
| UniRef90＿V7Q909 | K E ESVD DEKK T El E D H E P L EVDSLS Y K L D G G F K R G Y Y T Q |
| UniRef90－G7ZV59 | $R \mathrm{~V}$ LE GH T A WVT AVAVT P N G A C AVS A S D R T |
| UniRef90－M2QWW0 | $R$ SFPSAA GAI T QLAFSPNDKYVL A Q S LF S |
| UniRef90－F0ZAL4 | HTFSHNTS GI S CLF Y K N L L I N G M M Gl |
| UniRef90－W6LFJ3 | Y T LP G H LT EVVCLLS F NPQS T MLVV T GSMDS T |
| UniRef90＿Q6AWF2 | KRSLKRHA QA QRSPSTT LPP ITTCFDLSRDSQQMADAS GRH |
| UniRef90＿J7RJU3 |  |
| UniRef90＿D7E3K2 |  |
| UniRef90＿G9NL98 | Q TLN G H D G DVCTIA F S P D GVRLA S S S S C T |
| UniRef90－14WZ95 | （ PDGHWLVYTVTTTNADTDQPQSDL |
| UniRef90＿UPI0004408F19 |  |
| UniRef90－H2V319 | YTLHGHKGPVFTVAFSRGGDLFASGGADAQVLMWRTNFDT |
| UniRef90＿X6PC73 | CVIKK G S S RV |
| UniRef90＿UPI00046EB63A | EAACDPA WPVSTMLFSPK G R WLA T T C T G A CKDF NAP |
| UniRef90＿D1REJ3 |  |
| UniRef90＿K9TG21 | RTLS GHS G TVVRP 1 S LSPD GT L L A |
| UniRef90＿A4X2H0 |  |
| UniRef90＿W2UKJ4 |  |
| UniRef90＿F4PE64 | QELDGP PE |
| UniRef90＿UPI000380A243 | K Q $\square$ T E H G S $\square$ S $\square \mathrm{K}$ P K V S P D G M K $\dagger$ A Y LS Y K D |
| UniRef90＿Q0RGZ5 |  |
| UniRef90＿I1DZ01 |  |
| UniRef90＿Q1IIZ5 | QLTHD A GQDYSPTWSP DGRSI AFLR Y T D T |
| UniRef90＿UPI000441894F | DL R A G T PVIFH Q E LE GHS G NIS CLC Y S A S GLLLES G S WD R T |
| UniRef90＿UPI000343FDE5 | K T $\square$ S G K K G $\square$ S DVA WS S D S NLLVVSA S D D K T |
| UniRef90＿I9KQ78 |  |
| UniRef90＿H3BBM0 | K R L K G H S FVNS CYPARRGP Q L V C T G G D D T |
| UniRef90＿R4L9N3 |  |
| UniRef90＿G0RI28 | K TLVVGHDNWVS GVMFHP G G K Y L L SVA D D K S L R CWDL S Q D G |
| UniRef90－B4NMX8 | HR $\sqrt{\text { S H H R GPV T GI LVA GACDVLI }}$ |
| UniRef90＿F4PI98 | M T FREHSHVVECVAFSPEGRTRATSFGQS G Y L A T G S R D K T |
| UniRef90 B9SSE1 |  |
| UniRef90＿Q9W3J1 | A A K G T H T S Y M C C $\square$ Y P N S D Q Q L L T G G G S T |
| UniRef90＿A0CBZ6 | GKLD GH T S EVD S I C F S S D G T T L A S S S S D N T |
| UniRef90－T1JDA8 | VS F K P HVA PVR SVR F S N C G K L I A T T S S D S |
| UniRef90＿B2IYQ8 |  |
| UniRef90＿M4EFF2 | H T F G N D S TVS S CAWF P D T R L V C G S D P E R G |
| UniRef90＿B0W5S6 |  |
| UniRef90＿UPI00044094F3 | YPFEGHT LYVWSVCFSP D G S RVV S G C G D T |
| UniRef90＿I8UBT1 | RI T SHRAID TEPSWS P D GQEIVVFSSERGGNP Q |
| UniRef90＿S2JVB2 | RVF T G H T G SIK TVAVSPNGRLMASA GEDRS |
| UniRef90＿A7RZ49 | LHQEGHSREVYDIAFQCDGSMVA TCGLDAR |
| UniRef90＿S2K6H1 |  |
| UniRef90＿X6LRF6 | LLLK GHQKAVHDAQFFSDSTKDV／SCSKDNT |
| UniRef90－M8BPH0 | G GF SDS S VKVWD M A K $\square$ GQPAK T |
| UniRef90－X6P2U6 | K Q L L G S K A V L S T K Y S S D G K M V S S |
| UniRef90－G0SVV3 | STLLS GHTGWLLCVVEWDGLER N A S S PRLASSSSKCAT |
| UniRef90＿UPI0004417C22 |  |
| UniRef90－X6MBV6 | HI F N G H K G AVWCVIDFS P L L N Y N S K S N S T GVIGGS GSYDNT |
| UniRef90－X6NE48 | HL LE GHFKAVSNAQFSPDGSKVI S S S S G G T |
| UniRef90＿D8UD37 | $R$ SFRGHKDAVTSVCFNHNMKQLV S G S L D N C VMVWN F K P Q |
| UniRef90＿E4US22 | EE Y S V L L K L D T C L S $\square$ S A D S R Y ML V N M S E N E |
| UniRef90＿Q3MDH3 |  |
| UniRef90－11BUQ4 |  |
| UniRef90＿UPI0003C4A322 |  |
| UniRef90－G31461 | HDLQA HSKEI Y T l K WS P T G P ATSNPNSNMLASASTES T |
| UniRef90－K5UKE1 |  |
| UniRef90＿V4BQ67 |  |
| UniRef90＿UPI0003501717 | YRFQGHDEAVMDVT F S S S GKYMASA S R DK T |
| UniRef90－X6MZU2 |  |
| UniRef90＿UPI000418093A | VTF LG H T G T A ES LVFFSPNGK L L V A S Q D T LK LWQ |
| UniRef90＿R6K882 | TVMD S Y A D G D Q WF Q W S P D S WWI LS D F $\square$ G $\square \mathrm{G}$ G |
| UniRef90＿A6GAS4 | LER Y GGDGGAT RTF T GHA GPVYAASFDASEARVT T S LD R S |
| UniRef90＿J4W7R6 | FCP $\square$ M DVRFSPDGRHLA SRSCGGAK W WVQQ D W |
| UniRef90＿UPI0003C2B753 | DSFTD Y E GFANFVDFNPS GTCVVSA GANHT |
| UniRef90＿X6LV30 | $N \mathrm{~L}$ L N G H S S DVLD I T Y F P D D Q T I A |
| UniRef90＿UPI00036C9391 | NLTQSESLEFGGSWHPDGNSLVTYSDRDGNNE |
| UniRef90＿Q8KEQ0 | SVNK H GVClS PAWRP GTNTLVT T L S Y E G |
| UniRef90＿UPI000375E2F6 |  |
| UniRef90＿UPI0001745121 |  |
| UniRef90－Q4QJ76 | M MKGGHNGFVLS CD Y S P K G NRVASS S D D T |
| UniRef90－M5C5K8 | NSVKHHPHPVNCAAYSPDGKLI A C G L A S D E C P |
| UniRef90＿UPI000462E5A5 | Q T L G A N G SIT SVEFDP S GCHLLA A |
| UniRef90＿I9KF37 | VALG D H P D SVEAVVLSVDGRLAL A G CLLD GT |
| UniRef90＿H2S9V8 | G GHDCR |
| UniRef90＿U4LVS4 |  |
| UniRef90＿A0A024SIA6 | QEYADYPGVVTALAFSHDAS LMALLA S D H T |
| UniRef90－A8NX65 |  |
| UniRef90＿Q4C325 | D T L R T Q S S A L LT LA V S P N G K T L $⿴ 囗 ⿰ 丿 ㇄$ |
| UniRef90＿UPI0003B4704A |  |
| UniRef90＿T2M8S6 | FSLT GHMNWVRCARFSPDGRLIVSA GDDK T |
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| :---: | :---: |
|  | V VOVETGEDK |
| ,iRef90 G7 | LKIWKLASGCLEGTLEGHVSAVAVAATPDGARAVSAS |
| UniRef90-M20 | VNVWNAETGDLHAALNEHGII WQFADDREGARV |
| UniRef90-FOZA | LNVVDMPTRIHLTKFNGHSDRVQWWDSPDGPR |
| UniRef90-W6LFJ3 | AKVWDVERGELFSFVGHTAEIVSVW |
| UniRet90 Q6AWF2 | VHLMRUNTPEYQCTLEGHTAGVSCKFAPNGE |
| UniRef90-D7E3K2 | TKLWDLTTENLKNTLSAHKDWVSAIFTPDGKIL |
| UniRef90-G9NL98 | IK WDPVNGLCLLQTL HRYNVVS |
| UniRef90-14W | WRVGFDGRARTQLTHTPDTDESQA |
| UniRet90-UPIO004408F19 | IWDIATKKVKHLFQGHQRQVSVVFSGDGK |
| UniRef90-H2V319 |  |
| UniRe990-X6PC7: | RLWDTNSGKE |
| UniRef90 UPIO0046EB63A | $\checkmark$ VLWDLSDRGPKLLLPHSASMLALAFSPD |
| UniRef90-D1REJ3 UniRef90 K9TG21 |  |
| UniRef90-A4X2H0 | ELYEQLPDGAGRVVTEAGPAVRYPVPSADG |
| UniRef90-W2UKJ4 | GSARQLTHGNYNHSNDSWSDGKLI YFSGNR |
| UniRef90_F4PE64 | MWRIPSGKCMSVMYGHSGSVTCQFTPDGKS |
| UniRef90-Q0RGZ5 | DGRLLAVSGWND |
| UniRet90-I1DZ01 |  |
| UniRef90-Q11II5 | MVPALIGGAEHVFTPEWERNALLS WS P |
| Uni | QLKGHIT |
| UniRef90-UP1000343FDE5 | K |
| UniRe90-19KO7 | VKDWDTRKKALVR |
| UniRef90-R4L9N3 | VRLWDAATGQAETVLDGGVGALAQVPTGYGTVVAATSAEG |
| UniRef90-GORI28 |  |
| UniRef90_B4NMX8 | WN |
| UniRet90_F4PI98 | R CliqTY $i$ GHDNWVSVRFHPCG |
| UniRef90 BgSSE1 1 | DGRFLIASS |
| UniRer9o-ay3 | WDV |
| UniRef90-T1JDA8 | IKVWNVHDQKFVCALNQHTHWVSARFSPDDKMM |
| UniRef90-B21YQ8 | S GQ |
| UniRef90-M4EFF2 UniRet90 - Bow 66 | VMWDTDGNETKAW |
| UniRei90 - UPIooou4094F3 | LRIWDVESGKTIPFKAHKGQVVSVAVSPDGRSVVSGSDDN |
| UniRef90-I8UBT1 | VNIATGDTRRLTFEGEMNLAGTFSPDGQSVVMVN |
| UniRef90 S2JVB22 | IMLWD:ASGKR KKLTGHTGFYS SFSADSGVLVSGG |
| UniRet90-A7RZ49 | WDLRTGQCVMPLDGHLLQKVGIDFSPNGYH A G GEDQ |
| UniRef90_- 2 K66 1 | TTMVKPDGKHLVSASRSL |
| UniRef90 X6LR |  |
| UniRef90-M81 | NSTKNANLVCYKGHNYPVWDVQFSPVGHYFASASHDR |
| UniRef90-X6P2U6 UniRet90 G0SVV3 | VRI WNAKARKALKSGKGGHTASVNVVRWGGEGVI |
| UniRef90-UPI0004417C22 | IRIWDIAKKRIRNIFDGHQEIYSLEFSRNGRLIVSGS |
| UniRef90-×6MBV6 | 1 CLWDIETAKECSVFKGHEHVVSVKYSPYETNILC |
| UniRet90 - X6NE48 | D |
|  |  |
| UniRet90_E4US22 | GNFLRSAFGNFVVSGSEDA |
| UniRet90 Q3MDH3 | MKLWDV SERLELGTGHESECRCAISPDGKTLASGDGHG |
| UniRef90-118UQ4 |  |
| UniRef90-UP10003C4 | VKEWDLCKGACYRTINVFSYCNDVVC CDN |
| UniRef90-K5UKE1 | VRIWDVDSGLTTRVLKGHTSYVCVNYNLTST |
|  | W |
| UniRef90 UPIIOOO3501717 | VRUWPTVIGSTGMF |
| UniRee90-X6NZU2 | ORVGNQSDPLOTLTGHTGGDGTVAYSPSEDLVVSGSTDG |
| UniRei90-R6K882 | ADGGEMVNLTESGYSDSNAKWVLGGKAMIWNSDRA |
| UniRef90-A6GAS4 | RVWRADTGALEGELRGHEQGVFFFGAFVGEDSTAD |
| UniF | KMHDFP |
| UniRee90-UP10003C2B753 | KLWDIRMNKLLQHYKHRAEVNCVSFHPSGNYIITAASD |
| UniRef90-X6LV30 UniRef90 UPIooo3 | R RLWN ESGKELQKLKGHARUNCIDDVSQNGN |
| UniRei90-O8KEQ0 | RADGTVERRLTKGGGIDDVSPTFSPDGSKMAFVSTRQ |
| UniRef90-UPI000375E2F6 | VPALGGAERKVTDVTCMEIVLSSPQWTRDGKSMLLSDRCV |
| UniRef90_UPIO001745121 | $\begin{aligned} & \text { R V } \\ & \hline \end{aligned}$ |
| UniRet90_Q4C | IKLWSTSSCNKVATLKGHEDKYCVKYNATGELLVSASCDT |
|  | YSASTREPIISFDAHHSSVESVTFSPDGKSVVTGHASG |
| UniRee90 UPIO000462E5A5 | AQLWKTGDCQCKEILTGHTDKVTAAKFRSTQHQAVTGSRD |
| UniRe90-12 |  |
| 隹90-H2S9V8 | $\begin{gathered} \text { Sp } \\ \hline \end{gathered}$ |
|  |  |
| ef90 A0AO24 |  |
| eefog |  |
|  | WVWPNPDSKVTS FEHYSHVLDLVVTPDSQLVVTGSLDG |
| 4A |  |
| UniRef90-T2M8S6 | பKLWD |
| Ref90-UP100034 | TLWSLVSIUSQLICQMSGHSESVSLAFSPDGQULASTAKDK |
| UniRef90_U9VN13 | VSGSDD |
| UniRef90-K10HIO |  |
| UniRe990-220ido |  |
| UniRef90 | ALFTQGPSNKEEPSWSPDGRFLAYRVAHG |
|  | WDPCHGESSVLKGHTASVRSVSFSHDGCSVVSASNDK |
| UniRef90-A7RS02 | LVKWKKGPKHFFEKENFTEITSCALHKATQVLIVGFSNG |
| Uni | ECV KTMHGHDHNVSSVAFVPAGDYVISASRDK |
|  | $\begin{aligned} & V_{V}^{\top} \\ & V_{i}^{\prime} \end{aligned}$ |
|  |  |



## D N A $\square \mathrm{Y} \nabla \mathrm{R}$ T $\square$ A T G K E $\square \mathrm{H}$ T $\square \mathrm{K}$ G H K S K $\square$ R T M S $\square$ G K D S Q

 TIR VWDTLKTYSLSPSNPPTSPDTPDHEFHGHEQGVSDVSFSSDSR VSGSCDRMAFDWDMRS GHVVQSFEGHQSDVNSVKFHPCGD S I C C WDVK WGQSMLE TVRLWD TIKFWNLRTGKL
 ETKDWDVRKRDV GRYHLA RLDRQSRY LQQVLTATNLDESPSVAPNGSM TVCVWDVNTENTS
$K V I V W D$
$F L R I W D L A T G E S I R$
$\square R K R Q A \square Y T \square P A H T N L I S S V K Y Y E N Y L$ TRIWDLATGESIR TAHEAPII VMDIDPT

$T V K \square W D G K T G K \square \quad \square R T \square S E H A H W V N T \square A \square N T D F I$ TAR WDMEVDSNGTPSTGGSLTKLLADDNEDSDAGVTSVA GSGDRS DRLWDLRSKKEDQIFR
TIVIWDMKLQ TNTQTFCGHENAVTQVQFSPDGQ
 CIKKWD LVTRKNTRITRKKYYEKPVNSLAFSPDSK SNRLWDV RMVRPIRKLKGHQNTSKNFDR $K$ K RFWDS RGARCTEVIPVEGQVTS LH $\quad$ SSQDQM CVHDWNTQSGS LSYRGTGG $\square F E V C W N A$
$D V R I W N P Q \quad$ R
LI R I WKPLQAN KELASLTGHSDRVVSVATD

VVKLWSTH KAKKF K K S KVGHTNWVRCARMSNDGS
 T I KL W
GYRSHG SWGSEDDTYワMFFDVDAYNRFDMSKED $\square$ LTAADDGQVRRWS $\square$ DD $L$ GAGSAGTVIASHPRADTA GGGGGD LI WDMESGSRKHR $\square$ SGHDGGVRALAFSNDGK TLK K $\square \mathrm{MDLLE} \mathrm{GRLI} \mathrm{Y}$

G S SRDLFDMN GGPQ $\square \mathrm{F}$ QDMN PNGPYGUVVF TARLWDASSGQP TVRVWN A E A SQAKLMTLRGHSLAVFSCAAFS A CVWSVHDGVLTDGP LKAHKGSITSVRFSPTGD $R T$ VKEWDLSKGACSRTDDV
T GGYYDSLHFA QVWDLLERGRLLQTTPCWEVSAHSTRIDRD S I R V VWD M TARMWDVNTGN SVVRFSGHSAPVTADAASPDGK EAAKIVKTLTGHKSSISASAFHPGQG S $\ Q \square W Q V A R H N E A A G A V I N P D A T D I H S G H I V A V A F S Q D G S$ EILLFDIASSSLIDAHSGTVWSLHLRKDGKALVSGSADKD R R
 TI KLWSVAE PAEEFERGTEIATLTGHKLAPNAVVFSLDGQ


LIKVWSVCYQRLLF
T LF QHTGWVRCAKFSSDGR VFTI HELLPDFNLL $\square$ QTLS S SQQTISAVAVNP



ADGTNKRALTNNELTYEESPAWSPDGS S G QVRRLTYSGUYNTQPSWSPNGD SFATGQKRCRTPLSKNEDDRSLNLSPDG LLGAVMLHEAPVNHASFSADGR AVFWDVR

UniRef90 UPIo003298FAD
UniRef90_V7Q909
UniRef90_G7ZV59 UniRef90_M2QWW0
UniRef90_F0ZAL4 UniRef90_W6LFJ3 UniRef90_Q6AWF2
UniRef90 J7RJU3 UniRef90_D7E3K2 UniRef90-G9NL98 UniRef90-UPI0004408F19 UniRef90_H2V3I9
UniRef90_X6PC73 UniRef90-UPI00046EB63A UniRef90_D1REJ3 UniRef90_K9TG21
UniRef90-A4X2H0 UniRef90 W2UKJ4 UniRef90-F4PE64 UniRef90_UPI000380A243 UniRef90_Q0RGZ5 UniRef90_I1DZ01 UniRef90-Q1IIZ5 UniRef90_UPI000441894F UniRef90 UPI000343FDE5 UniRef90- I9KQ78 UniRef90_H3BBM0 UniRef90 R4L9N3 UniRef90 G0RI28 UniRef90_B4NMX8 UniRef90_F4PI98
UniRef90 B9SSE1 UniRef90_Q9W3J1 UniRef90_A0CBZ6 UniRef90_T1JDA8 UniRef90_B2IYQ8 UniRef90_M4EFF2
UniRef90_B0W5S6 UniRef90 UPI00044094F3 UniRef90-I8UBT1 UniRef90_S2JVB2 UniRef90_A7RZ49 UniRef90 S2K6H1 UniRef90_X6LRF6 UniRef90-M8BPH0 UniRef90_X6P2U6 UniRef90 G0SVV3 UniRef90_UPI0004417C22 UniRef90_X6MBV6 UniRef90_X6NE48 UniRef90_D8UD37 UniRef90_E4US22 UniRef90_Q3MDH3 UniRef90 I1BUQ4 UniRef90_UPI0003C4A322 UniRef90_G3I461 UniRef90_K5UKE1 UniRef90 ${ }^{-}$V4BQ67 UniRef90_UPI0003501717 UniRef90 X6MZU2 UniRef90 UPI000418093A UniRef90_R6K882 UniRef90_A6GAS4 UniRef90-UPI0003C2B753 UniRef90-X6LV30 UniRef90_UPI00036C9391 UniRef90 Q8KEQ0 UniRef90_UPI000375E2F6 UniRef90_UPI0001745121 UniRef90 Q4QJ76 UniRef90-M5C5K8 UniRef90_UPI000462E5A5 UniRef90_I9KF37
UniRef90 H2S9V8 UniRef90-U4LVS4 UniRef90_A0A024SIA6 UniRef90_A8NX65 UniRef90 - Q4C325 UniRef90_UPI0003B4704A UniRef90_T2M8S6 UniRef90 UPI00034A74BF UniRef90_U9VNI3 UniRef90_K1QHIO UniRef90_D2QID6 UniRef90_M1YZE6 UniRef90_U3K7U1
UniRef90 A7RS02 UniRef90-A0A034V8V1 UniRef90_UPI0003C46E5E UniRef90_C4JFX6
 F $\square$ GNEKEFQNATVDKAWLYNI ETGK LTCLTEVGGVLPKPA
 HGNVLVSGSWDTTLKVWDLITG

CLHTLL GHSFN | $M$ | M | $T$ | $G$ |
| :--- | :--- | :--- | :--- |
| $S$ | $I$ | $D$ | $R$ |
| $S$ | $R$ | $V$ |  | $K \stackrel{R}{\mathrm{~L}} \mathrm{~S}$ GS G D R T



EEFALSPD L $\square$ A A G S VD S V V $G K Q L A V I A F D P E R P A G T P K \square K N P P P D V T$ $R \square W E T Q S G N L V E R L K G H R D A V S C V A$ $\vee$ GHRACT $\square W$
$\square K ~ G ~ H ~ S ~ N ~ G ~ V ~ R ~$ WLALGSGGSNDVRWRDTNNPDPPSTPK\|LSGGGP自TVVR $T \square A S G S$ $\square E K T \square K \square W S \square D T G D L R T L T G H P D P T \square T$ F A
$H \square A Y \square S N D D K \square Q A Y Q N R T \square H \square M G A D G S N T A T \square D R S \square S N \prod Q$ A IK S DS S LAA ISAGQDGSVRLLH HGNGR LLAALDSHQESVE

$K \square A F V R G S \quad E G W V Q D \square Y$ VMD A A G GE P T R L T N D GRMMAS $\square S$
L I VS S S Y D G L C R $\square$ WD TAS GQCLK T L $\quad$ D D D NP PVS RA WDD GSVLW A GGRGEPAPAVPPSRPAAS QVLRGHVGSVT D NTVRVWDIRPFAPKERCVKI FQGNMHNF $R$ L W D D S GEQVK VLRPHHVRVWSLQRETARPLLGHAAWDT

RCVVGCEDTRAL $\quad$ Y D MHSMPPNPGPVTATYAMDGGNK $\square$ T F
 AI ATGSDDSS CRLYDMRADREVAVFAKES IIFGVN TLASGSWDRS $\quad$ RRLWDVK T GQQKAKLDGHSSVVRSV SVASSSSGDVHNAAVK TIDFH
$G K R\|V T G G\| S T P T M K V W D L R S F L M L K G D S G H T Q P V E$
 SDFGA IL L WN $\square K H G R V V V G P F E R \quad H T G R \square W S V A$ $\square 1$ YSTMH GRSQVLALLVSMDGRFKARLPASDGQVISPA
$\square$ SASYDCKVKV
ST L VA T G S A D A S $\square K$
WS QP GWAP LKT LS GHEQK VS
$Y \square A T G S S D K T \quad$ VR L WDVQTGEC $\square R M F \square \quad$ GHRSMVL
$L \quad R T G P F D Q F A K F P A S D E E A Q R L A L K R Y K T F T S R$ $\frac{L}{M} S P D G R L V A A G S L D T \square V R W D V N T G Q V E R L R G H K D S D Y S V A$

 $M L A T C S D D K T \quad I K V W S V A T Q K F A F T L S G H Q N W V R$ $K V R V$ WMR QPCLGTSSGNKSR
F I VS GSDECDVT L S SFASHQLIVGGSEDGIVYIWDQETGEVLQKLRGHSGVVY $H L L S C S R D N T L K V I D L K M N N V R Q V F Q A D G F K C G S D$
$A G L I V S C A L D G L \quad \square R \square W D T N S G Q C L K T L A \quad E G H D A \square C Q$
 $\square 1$ A S C S D DK S

$A L L E E A E K A D S T E D K P D T F D L E N D R D V R L T V N S S R L G B A V$ FAVDGARVITGSVDGQVRVTDWQAGAEASEVVVDHGDDVR VLAS SGGDQTVCLWDAESADLIDK FAVEGAVLDVN
$K \prod A F T R L I W E Q D D T T L V I M N A D G S K V Q R L T Q K T G Y D S G A A$ KI LYS SMQK S G E I N I FSINVDGS GLLQLTS GS GNNEHPS

 $R \mathrm{~L}$ VT A S N D R S VF GF L G L VF P
VV CCGT I I V S GHHDK T I R F WDS R DRCT QVIPVVEGTVT S L S

 $Y$ LATA GEDSLIS I WDDA GGKRGKAMRGHGKTS IMS FMASVVSYGHTVVQDWRTECMRRFQGRTVSDVSPRQEPCPMT

 Y L V S GSADST L K I LDDLMEGRFYTLHGHQGAVNSVVK



LIA S C GEDKSVLI
WD T R D K $\square \mathrm{CV}$ V S F S D Y E G F A T T GE WLA F GCTS LG QLLVWEWQSESYILKQQGHYYDMN
 Y L C T ASWD

UniRef90 UPI0003298FAD UniRef90_V7Q909 UniRef90_-G7ZV59 UniRef90-M2QWW0 UniRef90 FOZAL4 UniRef90-W6LFJ3 UniRef90-Q6AWF2 UniRef90-J7RJU3 UniRef90_D7E3K2 UniRef90-G9NL98 UniRef90_14WZ95 UniRet90 UniRef90-H2V319 UniRef90-X6PC73 UniRef90 UPI00046EB63A UniRef90-D1REJ3 UniRef90-K9TG21 UniRef90-A4X2H0 UniRef90 W2UKJ4 UniRef90 F4PE64 UniRef90-UPI000380A243 UniRef90_Q0RGZ5 UniRef90-I1DZ01 UniRef90-Q1IIZ5 UniRef90_UPI000441894F UniRef90 UPI000343FDE5 UniRef90-19KO78 UniRef90-H3вBM0 UniRef90 R4L9N3 UniRef90 G0RI28 UniRef90-B4NMX8 UniRef90-F4PI98 UniRef90 B9SSE1 UniRef90 Q9W3J UniRef90_A0CBZ6 UniRef90-T1JDA8 UniRef90_B2IYQ8 UniRef90_M4EFF2 UniRef90-B0W5S6 UniRef90 UPI00044094F3 UniRef90-।8UBT1 UniRef90-S2JVB2 UniRef90-A7RZ49 UniRef90 S2K6H1 UniRef90-X6LRF6 UniRef90-M8BPH0 UniRef90_X6P2U6 UniRef90 G0SVV3 UniRef90_UPIO004417C22 UniRef90-X6MBV6 UniRef90 X6NE48 UniRef90-D8UD37 UniRef90-E4US22 UniRef90-Q3MDH3 UniRef90 I1BUQ4 UniRef90-UPI0003C4A322 UniRef90-G31461 UniRef90 K5UKE1 UniRef90 V4BQ67 UniRef90-UPI0003501717 UniRef90 X6MZU2 UniRef90 UPIO00418093A UniRef90_R6K882 UniRef90_A6GAS4 UniRef90 J4W7R6 UniRef90-UPI0003C2B753 UniRef90-X6LV30 UniRef90_UPIO0036C9391 UniRef90 Q8KEQ0 UniRef90-UPI000375E2F6 UniRef90-UPI0001745121 UniRef90 Q4QJ76 UniRef90 ${ }^{-}$M5C5K8 UniRef90-UPI000462E5A5 UniRef90-19KF37
UniRef90 H2S9V8 UniRef90-U4LVS4 UniRef90-A0A024SIA6 UniRef90-A8NX65 UniRef90 Q4C325 UniRef90-UPI0003B4704A UniRef90_T2M8S6 UniRef90 UPI00034A74BF UniRef90-U9VNI3 UniRef90-K1QHIO UniRef90-D2QID6 UniRef90 M1YZE6 UniRef90_U3K7U1
UniRef90 A7RS02 UniRef90 A0A034V8V1 UniRef90_UPI0003C46E5E UniRef90_C4JFX6
 WTKDGNGFYVIGSDKGSTGIYYISIEGLAVRDEKEHLNGF AVEDTPDGTRAVSASYDGTVRVWDLTGGALQLASFATEY VSPDGE NPSAARKVTAWDTADGHVFTLVGHVTKV WS DQCEGNR LVSAGWDKKVKVWDDETGKLYTLEGHTESI



NRFQFKDDDSGW $\square$ GARHKHLYTVDLASGAAAELTPGMHDP FSADG KNLFSGSSDKAVKVWDLGTGPVRRL

$\square D$ S E G P
WNQNGKGПYFTYDNKGNSKПGYVGL NGNПKKПADNLGGT TVDFSDFLPYVSTGS ${ }^{\text {V }}$ DGKI HTWDITTGRIRHTVQHDDAV WSPDGKMMAYVVEQRGEGEVYVMDADGANPRRLTGNNESP

WAADGKS $\square V Y S S N R A G K F S \square W R \square P A T G G T A E R \square T E D A F G P$
 ACAFSPDGAVVLSAGEDGSVRCWDARSAACCDLAVTVADV ATVHRAGRELLVSADKNGMLRLWDPDGRESQGHHDAVNAII
YSFRNEELYYSRNPRRKRS $\square K K H S Q A Q R S P S T T L P P \square T C F$
CVNFNPQSNMIVSGSFDETVRTWDVKTGKCLKVLDPVTAV SVDFSVSGRLLFAGYNDYTVNLWDLKSERVCLLYGHVSCV SFSPDVLITLSVYGMLRQDHKQPNQVIIDKIRLILS
TVA VSSDGKLI ASGSDDYTIKLWDLHTLKLTTHSGFVSAV SCFGGLDSSFIA SGSEDSQVYIWNVKNKKLEVLSGHVNCV
 FSPDGAARVVSGSADRTVRVWDSESGQA
WS P F
CVD DS P DGEY IA S T S F D R TFK K W
K FHNFNGKWY IAS GADDCQVR】WD LQTRS $\square$ A VLQSHVSGL
S LAMSPDGRYMASGDEDGT $\square$ MMWD $\square$ STGRVSPLAGHVWS $L$
SPEQ LISGSDDHTLF LWPPATPKVARDTGHVNHV FTPDGKG KVVSGSDDKTLKYWDDRNKALKDVKEGVLSV KDSSCGKDLCSGARDNTIRFWDIRDNKQMHAIKGIEG


LVIFSPNGQMTASASDDCTDK LWDVQEKELKGHTKAVTSV DVAWNPKQGMLASCSDDQTAKI W
WA $\square F S P D K S Y A L V G S S N G S L Y L W N M E S G K \square E T V L S G V N A V$
HVQFSPNSKY TLSTAHDSADRDWDYNTSRDKTYTGHANAA VSKYGD IAALTGSRDGIVKIWQDNGNQSKVCVKCVSDA

$M S P K G D W Y Y L A A F E G D Y D L W E H K L K E N T T K \ L L K G V G G G$ FVGRGPAGVVSVGMDARAFVPPRALEGHRQVLLTGAMDG WSPDDSLLAASSGHD II 1 WDAGTKSVETKSQG $\square$ AS L

FSPDGSQTAFYGMANESFDLFTMDADGSNLYNLTNDAYSP WS PDGSMIVFSSTRDGRRRLYVMNADGSNQRPLL
WSAD GSRII FSSGGTFSDRLWHVSLDGGD【EPESVYSNDG FSPQGNNFLTISDRADDTHHHLWS
TVVFSHND RYVLS GSMDYELILWDS $\square$ SGTRDRSMDGVHHA
 SDAFSPDGKWLASASDDGTVKLWDLMQGKITEFTSHVNIV LSFSRE SNVLVSGGADMTVRCWDV
CLAF SNDS LYYLAVSLQQE TVVTCWDVERGEHEQEDGDVTSV G
 $\begin{array}{ll}F S K N G E L & F A S G G V D E Q V L \\ F S P D G Q & I L A S G G A D K T I K W N V T S Q S E T A F A A H I N A L L\end{array}$


FVDFNPSGTCDASAGSNNTVKLWDDRTNKDKVHRAGVNCL VLAYSPDGNYIATGGDDGKVKLWNTMTGTFHEHSASVTAV NEGTGVDGPFLASGSRDKTIKI WDVSVGVCLTLNGHVRGL


UniRef90 UPI0003298FAL UniRef90-V7Q909 UniRef90_-G7ZV59 UniRef90-M2QWW0 UniRef90 FOZAL4 UniRef90-W6LFJ3 UniRef90_Q6AWF2 UniRef90 J7RJU3 UniRef90_D7E3K2 UniRef90_G9NL98 UniRef90 14WZ95 UniRef90 UPI0004408F19 UniRef90-H2V319 UniRef90-X6PC73 UniRef90 UPI00046EB63A UniRef90- D1REJ3 UniRef90-KMTG21 UniRef90-A4X2H0 UniRef90 W2UKJ4 UniRef90-F4PE64 UniRef90-UPI000380A243 UniRef90_Q0RGZ5 UniRef90 I1DZ01 UniRef90-Q1IIZ5 UniRef90-UPI000441894F UniRef90 UPI000343FDE5 UniRef90-19KQ78 UniRef90-H3ВВМ0 UniRef90 R4L9N3 UniRef90 G0RI28 UniRef90-B4NMX8 UniRef90_F4PI98 UniRef90 B9SSE1 UniRef90_Q9W3J1 UniRef90-A0CBZ6 UniRef90 T1JDA8 UniRef90 B2IYQ8 UniRef90-M4EFF2 UniRef90-B0W5S6 UniRef90-UPI00044094F3 UniRef90 ${ }^{-18 U B T 1}$ UniRef90-S2JVB2 UniRef90-A7RZ49 UniRef90 S2K6H1 UniRef90-X6LRF6 UniRef90-M8BPH0 UniRef90_X6P2U6 UniRef90 G0SVV3 UniRef90-UPI0004417C22 UniRef90-X6MBV6 UniRef90 X6NE48 UniRef90-D8UD37 UniRef90_E4US22 UniRef90_Q3MDH3 UniRef90 I1BUQ4 UniRef90-UPI0003C4A322 UniRef90-G31461 UniRef90 K5UKE1 UniRef90 ${ }^{-}$V4BQ67 UniRef90-UPIO003501717 UniRef90 X6MZU2 UniRef90 UPIO00418093A UniRef90_R6K882 UniRef90_A6GAS4 UniRef90 J4W7R6 UniRef90-UPI0003C2B753 UniRef90-X6LV30 UniRef90_UPIO0036C9391 UniRef90 Q8KEQ0 UniRef90-UPI000375E2F6 UniRef90-UPI0001745121 UniRef90 Q4QJ76 UniRef90 ${ }^{-}$M5C5K8 UniRef90-UPI000462E5A5 UniRef90-19KF37 UniRef90 H2S9V8 UniRef90-U4LVS4 UniRef90-A0A024SIA6 UniRef90-A8NX65 UniRef90 Q4C325 UniRef90_UPI0003B4704A UniRef90_T2M8S6 UniRef90 UPI00034A74BF UniRef90-U9VNI3 UniRef90-K1QHIO UniRef90_D2QID6 UniRef90 M1 YZE6 UniRef90-U3K7U1 UniRef90-A7RS02 UniRef90 A0A034V8V1 UniRef90_UPIOO03C46E5E UniRef90_C4JFX6

QFSLDGSQL ${ }^{330}$ S CSSDQT TR ${ }^{340}$ WETKK
S LHPDEKSFA
ALSSVGGVLIV/AGDGGS
VFSPDCTCVATAGYDCTVRDWN
CIQFKGSKLVTAAKEIIVYDFDS
QFNPQGNKIITASSDKTCRDWD LDDSGQTMQTL EDSADSVHI I SGSRDMS LKVVWQATGGK
VFTRDGNKVVSSSLDRSVKLWNL


D LS P DEN ILLSAS LDNTFR LTW
$R F S P D P R Y L L S W A A G E P A R L W R L E A G A D P L V L R G S V G P L L$

TVGPSGSY S\|SDKGVI
QWHKSMPYFTSCSADMTIRTWDGRSGECDK $\square$ WRGHQAP $\square$ TWSPDSRHVMFCSTRNELWTVNVKTGEERR VFSPDGRLLATSGEDGTARLWDTTARGE

S $V$ S R N GDH $\square$ A Y T QGS S $\square Y G \square H R \square D \square K A P K S A A T$

APAPDGGWDAVAGDDGVIRDCDPSTGRRTMTLTGH $\square G G V L$ VFHPDEP LLLSASSDRRLY
AE DPFGERLVSAADDRTVRLWEVTD DAPLRVLSGHTAPV
D $\square S$ R DS QQMA $\square$ AS G RSVH $\square \mathrm{MR} \square$ NTPEFQCT LDGH
DFNRDGSLIVSSSYDGLCRDWDSGTGHCVKTLIDD
QVSPDGTALSTGSWDYTIRVWA
$V Y S P D G T T L A S G S A D E S I R L W D V K S G Q E K \square T$
AFSRCGQWFASGGNDLQVLVW
AFSPDMQTLVSGGDDNTI RL DD $\square$ QTKKDA $\square$ A $\square$ TPDSKKLV
SWNPNPRMLASASDDQTI RIWGPGKP
DFHPTEPVIVSGSSDKTLYLGEDDG

DFSADGKF L IS GSRDKVVNVWDWQAKELRAT
AFSCEGALLASGSADCTVKLWDVASSDDTKAGSTNRLRLL
AFSPDGRF I ASAGFDNAVK $\square W D G R T G K F \square A S \square$
A VS A DGEWVVS GSKDRGVQFWDARTA
KFSSDGLI IASGSEDNTIRDWNAKTGK
AFHPDGTCIASGSTDASLKLWDLRS
SFSPDSQTLVSGSKDRTDRLWESS
A WCFSGQYVVSVDQGRKVVLW
CFSVTGKWIVSGSEDNKVYLWDLQSRE\|VQVLEGH VFLQNKSRFVTVSYSGLIKI WNISNKTGDIAVK
A IHPSGSY LTASKDGKMKILDL
EYLPVGS IICSGS IDNT I RFWDTRTSKQLHEVK
S L DP D GKNDF MCTGGR
SGRRLATGSWSGQTRVWALDQAPLVTS LEGHGQRV VFSPNGKMLISGGFDGWIKVWSLEDG\|PD

S WS PNGEWTAYTGGNRDTY L I HVDTGERRRDT TTEGRD ELSPDGQRVAF
$\square$ F S E D D A Y $\square$ F S CARD WS $V M \nabla W R T T D G E H \square E T \square I G H \square S T V$
VFSPDKSYAMVGSTNGSLFDWNMGTGKLETTL $V L T P D G R F A L T G G A D G T I R V W D L A A G R C L R S L$
QFNPNEYLLASGSSDRTVKLWDLEK
TFSHDSK LLASTSG A WMR LWDFATGE
D I S DD SKLIVTCSADKNVKIWGLDFGDCHKS $\square$
ALSPNGQVLASAGHDGVRLWNAQTG
TFSGDGELLVSGGRDRHIQVWDVGT
AFSPDGQ\|LASGSRDKTIKLWNVASKEETAT
A $\square$ SP V GNLLASGSTDGVIKLW

SFHPSGNYLITASTDGTLK $\square \mathrm{L}$ D L
TFSPNGQVVLSASLDGTVRAFDLNR
SFHPGGKYLISASDDKTI RVWDLRNKRCMKTGY
A $\square$ S SNKKWILSSSKDATLRLWNIEKAD

UniRef90 UPI0003298FAD
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UniRef90-G7ZV59
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UniRef90-Q6AWF2
UniRef90 J7RJU3
UniRef90_D7E3K2
UniRef90-G9NL98
UniRef90 ${ }^{-14 W Z 95}$
UniRef90 UPI0004408F19
UniRef90-H2V319
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UniRef90-I1DZ01
UniRef90-Q1IIZ5
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UniRef90-I9KQ78
UniRef90-H3ВBM0
UniRef90 R4L9N3
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UniRef90-B4NMX8
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UniRef90-S2JVB2
UniRef90 A7RZ49
UniRef90 S2K6H1
UniRef90-X6LRF6
UniRef90-M8BPH0
UniRef90_X6P2U6
UniRef90- G0SVV3
UniRef90-UPI0004417C22
UniRef90 X6MBV6
UniRef90 X6NE48
UniRef90-D8UD37
UniRef90_E4US22
UniRef90 Q3MDH3
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UniRef90-V4BQ67
UniRef90-UPI0003501717
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UniRef90-A0A024SIA6
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UniRef90 Q4C325
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UniRef90 M1 YZE6
UniRef90-U3K7U1
UniRef90-A7RS02
UniRef90 A0A034V8V
UniRef90_UPIO003C46E5E
UniRef90-C4JFXe

AFSP DGMHLAFSQ
QF NSSEEQVVAGSQSGSLRVWDLEAAKILRSG WS $\square D Y S S L D G E F L C S G S K D K U R V W D F A G N G Q L K L G$

F VS G GDDYKVNVWNYKSRKLG

SHDSTLLASCDGGD $\square \mathrm{K} \square \mathrm{WH}$ TESGQC $\square \mathrm{Q}$ T $\frac{\square}{G}$

FS PDDTFIVT TSADSTTALWEDKSGRपYRVQ
TRI A YTSNGRLRVADADGNPQTIVS
DGRWI A TASDGTAKUWDAATGQHVDVG

KGGSTTRIG
GS LLA TGSDGFAR $\square W S T D G R Q V T T L G$ $R V A D$ S WNCDYTFS

TDGRQVTTLG GTYLA T T S F D H S W W WD DERGTELLF Q SNNGALFASAS $\square D K V Y S T E T \square T Q \square S H L I G$ P $\square E G K Y \square A \square Y$ PEF D $\square Y \square A D \square N G N \square T K Q L T$


DGDVE $\square$ P P NKATVLR G
NA $\square$ A $\square S P \quad D G K T V V S G S G D R V R \square W D \square T S N Q P Q K \square G$

ASRCQ $\square$ R $\square W D V P R G S C R Q L L$
PTTY $\square$ PDDAHTDG $\square W V A$ WS NHSN $L V \square T G S E D N T \square K \square E G$

SARF DPND DF I IS AS RDRDRVWEVAS GFCVKTG YCDQFSPFDGRYLCSGSGDKVRLWDVETSKALHVG

DGSLLATIDDKTVRLWNLEGKQULHSK
$A L Q F S P S$ GRHFA $V G V G R R L Q F W H T P T T P G T D A G$
QWS RDSDGLFSASADHLASWDLTSGTRワRVG

G

SPDGN $\square 1 \square Y$ S D GA $\square R \square S D V K S G Q E \square R R G$


R VADS R Y G T $\square \mathrm{N} \square \mathrm{WD} \square \mathrm{A}$ T G N C $\square \mathrm{Q}$ T F
MSPSWSP DGSHLAYVSHAAVFVQSLYTN $\quad$ RRKVVA
SPAWSP DGTKVAYVSFEKVYVHLPTGRRVVVS
SPDGRLVAAAVRTPVRLWDVSNSAPRELT
VAFS DDSRFLASSADGTVRVWDPTTGDADHAF
AFS ADGRTFA $\square$ TEGTISILDSTTHAQHRHC
LPAWS GDGSSTAYVARGELHVADATSGKDRAAG
STPHIYLSSLSLCPHTR AYVQLDQLLVADADGNPRTLLK
 SA D R T K K WDL A S GKLLT LTTG

TDGRTLVLTPRPRVYLFNDDTGRQEVLG
SPRVSP DNSRVAFSSLGQIRVFSLLLNRMVSFP

NGALLASASSDTVR】WSTESKPQLTLI R
 SPDGSRLVTAADGKIKIWDVTSGFCLATE PDSQLVVSGALDGIRVWSLDPPHLLYTL

|  |  |
| :---: | :---: |
| UniRef90_UPI00029A9F88 |  |
| UniRef90 A8NA98 | HTMS |
| UniRef90-I1BJ17 UniRef90-TOK0E6 |  |
| UniRef90-TOK0E6 | VWQVQFSHDGKRLAACGS GEAVVIWDLPSFSVQV |
| UniRef90_UPI0002C2 UniRef90 UPI00029A | TKPGVLHVSFSSDGKLLATA NKGKVVRVWDWKAKKAKW |
| UniRef90-W5MGG1 | HKANVCSLDFHPFGDYVASGSMDT NIKLWDIRKGCVFR |
| UniRef90-X6M1C7 | TI RFWDFDT SEARV |
| UniRef90-Q96WV5 |  |
| $\begin{aligned} & \text { UniRef90_UPIO003D09D80 } \\ & \text { UniRef90_13J7Q3 } \end{aligned}$ | R |
| UniRef90_UPI000363BE98 | $S R \\| A F V V Q K G K E S R L Q V A D V D G R R A Q T$ |
| UniRef90-E9FDD0 | ES T RYS S I F SHDSRMLA WVEWT DTECI R I WDMVAFELQI |
| UniRef90-K5WHN7 | EDSAEHAFAISKDGRLLASTWDSDVIMI WRLS DGFNVQRL |
| UniRef90-L8H043 | HDDSIWALAWTSANKIVTGSVD EHVK\WNPSLEKPER |
| UniRef90-U7PXB3 | HMSHIHSVRFSPNGRYLASGADDK\\|ICI Y RLEASAPSHKR |
| UniRef90-K9FN89 | HQGPVYRVVFGPQDDVLATGGADG\\|VRLWLRD K GVQ】EA |
| UniRef90_B9FDB0 |  |
| UniRef90_B3RLM5 | HKKAVTCCSFSSDTHILASGSEDHLVMLWNIKL GRRVAR |
| UniRef90-UPI00037F | S NDPL M S PA WS P D GRRL A YVSFENRRAI Y VQ |
| UniRef90-G0SC84 | HMAGI S CVA WAPDSRTLA T GS D D K Sil RL WDR |
| UniRef90-V4UHH1 | EKTGVGLIS WFLD G G GI FAGMTD K S I CLWD |
| UniRef90-R4G | D T R PVSYCCFSPDSTMLATS S WS GLCKI WSVP D CNEKKV |
| UniRef90-UPI0004622CA6 |  |
| UniRef90-S7MCZ7 | DNS CIKLWSLRSKKLKA |
| UniRef90_UPI0003F0E31A | FALKWNKKGNYILSAGVDKTT I I WDAHSGPIKT |
| UniRef90-E0U990 | HTDAVASLVISSDQK\LVS GS WD Q S LKV WEMES G E |
| UniRef90-TOQUF2 | EGHYVYAIIAAQPDGALMATGDLNGLGGRI WD I R S K I LiP |
| UniRef90-I2JM | CAEFNDDSTMVA GGFQDSFVKI WSIDGKPMRS |
| UniRef90-A0A022S2J2 | HS DGVS DLA WS S S T Y C C A S D R T L RI WDara a |
| UniRef90-L1ICQ0 | H T APVNRVRFSSDGLRILSASEDSSMCLWVFDLASGEVKQ |
| UniRef90_A3J6R0 | Y A EAVVSPDGKKIAFTS\RSGDEIYTMDID GTNLKQ |
| UniRef90_UPI00044150A4 | CI DWS PDGALLATGAMD MTLRVWNKEGTEYMN |
| UniRef90-G8SKY9 | GHVRARGLDVSADGRYAVSAG GTDHTVRLWDLRDGRCQR |

UniRef90-I3LRF4
UniRef90-D6U0T3
UniRef90 UPI0003C885D3 UniRef90-UPI00044182E8 UniRef90_-Q8YJY6 UniRef90_UPI0003C17A44 UniRef90_G9NCP9 UniRef90-N1REZ2 UniRef90-K6GJ62
UniRef90 UPI0003C1A1E6 UniRef90-FOWCC4 UniRef90-S2K212 UniRef90-UPI000370B7E5 UniRef90_D1ZEB4 UniRef90-U5HHDO UniRef90_X6PG23 UniRef90-A3FPY1 UniRef90_A2QUD5 UniRef90_J3P899 UniRef90_D2UXK7 UniRef90-UPIOOO4412182 UniRef90_A0A024G4R8 UniRef90_G0RN47 UniRef90-E3KSX6 UniRef90_UPIOOO4571377 UniRef90_A3VLU4 UniRef90_X6MAM0 UniRef90_C1DXY4 UniRef90-W7HV62 UniRef90-F1L282 UniRef90-G9NUM6 UniRef90-R9PBV1 UniRef90-B2JGA0 UniRef90-D1AC54 UniRef90-M5CFC3 UniRef90_A0A024S736 UniRef90_B6Q3N0 UniRef90 A4H8W6 UniRef90_A5V771 UniRef90-X8J1W8 UniRef90-A1ZU14 UniRef90-M0X8A9 UniRef90-B4MKC0 UniRef90-R7SZR9 UniRef90_L1J966 UniRef90-13ZH91 UniRef90_U2P9C4 UniRef90-M5E8Z4 UniRef90_COSCJ9 UniRef90-C6XVE6 UniRef90-A4C0E2 UniRef90_I2JZ86 UniRef90-B7JXK2 UniRef90_M2R114
UniRef90_UPI00029A9F88 UniRefefo A8NA98
UniRef90 11 BJ17 UniRef90-11BJ17
UniRef90-TOKOE6 UniRef90-UP10002C2E8BA UniRef90-UPIO0029AF525 UniRef90-W5MGG1 UniRef90-х6M1C7 UniRef90-Q96WV5 UniRef90-UPI0003D09D80 UniRef90-13J7Q3 UniRet90-UPIIO00363BE98 UniRet90_E9FDDO UniRef90-K5WHN7 UniRet90-L8H043 UniRet90-U7PXB3 UniRef90-K9FN89 UniRef90-B9FDBO
UniRef90 B3RLM5 UniRef90_UPIOOO37F4218 UniRef90-GoSC84 UniRef90-V4UHH1 UniRef90-R4G4V5 UniRef90-UPIO004622CA6 UniRef90_S7MCZ7
UniRef90-12JW19
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UniRef90_UPIO0044150A4
UniRef90-G8SKY9
UniRef90-I3LRF4
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UniRef90-G9NCP9
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UniRet90-A5V771
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UniRef90 - X8J1W8
UniRef90 A1ZU14
UniRef90-M0X8A9
UniRef90-B4MKC0
UniRef90-R7SZR9
UniRef90-L. 1.1966
UniRef90 W9H2A6
UniRef90_I3ZA91
UniRef90-M5E8Z4
UniRef90-CosCJ9
UniRef90-C6XVE6
UniRef90-A4COE2
UniRef90-12JZ86
UniRef90-B7JXK2
UniRef90-M2R114

90
100
110
120
LITNKGGYSGAKFSPNGKE\|IAFYGSNKGFWDDFTMDGTN|L
LVGHTEGLSDVAWSSDSVHLASASDDTTRRDWVETGDTR VGGTEGUSDVAWSSDSVHLASASDDTTVRIVNVETGITR LRPHAHGVGNFSWSPDDSMLVTCSQDKYARLWDTSTGEDR LRGHESEVFICAWNPVSDLLASGSGDSTARIWNSNGGSTQ TLNCKARVASVCFSPDGKWLAAASDQVQVWDV YKGHTQAVRCLAFSPDGKWLSSASDDSTVKLWDVTAGKM1 LTGHSHYVMCAAFHPSEDLIVSASLDQTVRVWDISGLRMK FVGHQDVI TGVQFSPSGNLVASSSKDRTVRLWTPSMKGES VLR A EPLISPAWSPDGSRJLYVSFENKIYVQDLATGQR IK PNQSRPVSLVFSHDSSULASASLDSTVRLWDASTGQCLI DFGENQWVVSVAASADGKLVAASAMDSNIVRIVDAESGNLV FEGHEDELSSLAFSPKASVLVASASDSGDIVLLWTGDSPGQP

FEAHENTVTACTFSPDGKCLATASKDCTTK पYDTVPGSGQ VASFPGUNGSPAFSPDGQRLASKDGNANIYTLDLISRELT AVTLVRAAARSAGSANAGKGRGRGRGRAKEKNGTGSGEGK WKGQKTRTSDMADTDDGKRTDSDCREAA LLLDREANFER $\square R G H N C N V S U V F H P N A C A L A S S A V D G T V K L W S D N S D E P V$ YRGHQNPVWDVKWSPMGПYFATASRDRTARLWSTDRTSAL
EPHQVDVSRIRLACD
FQGHTNEVNAIKWDPTGSLLASCSDDMTLKDWSMKQDSCD VQAHSQGILAVVFTGNGYHFATGSFDQMIKFWSLKSQKET LQGHAKQUVSMSWHPNGHVLATGSDDHTURVWDLRKRQND VLKHDKYNDPVNFPDGAGYASGSFDETVRTWDVKTGKCT LKGHTGRVLDVSFSPDGSVLATGSDDETVRLWNVQTGEEI LTYGLGYDGGCFFSHDSKKIVFRSSRMEIYTWCNDGSDL TFTSDYDDTAALSADGRTAAAGGLSGVVRVWDIPDRAER ATGSWDTFLMLWSFKPQARA FTGHNDVVLAASWS $\square D G K R \prod A S V G F D G A V R V W N A S T G T$ VLRHNKDVTSLDWNSDGTLLATGSYDGFARUWTE DGNDA MRSD FSPSNDRDA GOSRRRIREKGGSTT PYSHFDDVGSSPDGKTVLDTDPSSKLVAWDTATNE Q LEGHETKVRMLDFSPDGTQLASGSRNGIVKLIWSLETGACL LDGHDGGVGNIVFSPDDSLICCSRDGHARLWTTHDGTLI STRLPEPVHGVAFSPWHAGQLACVGQG\|LTLQLLWGQAGD

LQSHRDPTICVAFHPVFSSLASGSEDQTПKПWDWEGGEDE ELRGHDHVIEVAVSPKGAFAATGSRDKTIKLWDTQSGQCL LKNAQDNFMTISFNSDNQLVVATQSDNTLRLSDFMFGTQL FEEHEGPVRGIDFHESQPIFVSGGDDYRVKVWNYKERKCL LAGHRQGVKAAYFSADQESIYTVSSDGALFRWEYVTKKDP FEDHTLPVWECQFHHSGDFLVSCSMDQTAKLFDIRSEKCV MRGHDNAVEVVAFAPPGAFLATGARDKMVKIWDTSTGQVL QGHYFDMNVVDYSPDGRYLATGADDAKLKLWDTSTGFCF LTGHRSPUTALAFHPTFSSLASASEDCTVKVWDYETGEFE LTDSESLLLAPRFSKSGDRVLYTSGQPQIYVLEVGSAQRR
 TLTFKDNNRWVAFSPDSKWUAVSIHNSRVEIRDTVSGKCLD FLGHINHVDTLAFSPDGLRLASGSADCAIIKLDLTAKSSS SGHLGWVRCVAVEPDNKWFATGAGDRMLKUWDLASGELK LTQGSSIDTEPSYSPDGQSIYFTSDRGQIYKMPASGGAQR LTGHKGAVDSVAFAPSGKLLASAGLDGTVRLWDPLDPERT
 TFAHPKVVICCCFSPDSKYLVSGCQDRVCRLWDTKRGREW VKG LQGHIDDYVSSVAFSDDGGRVVSGS RGGIVRVWNAHNGVLI LTY HSSGDQATCWTAQNEVLFTSRVRAYRQI DHKVSAEGG

FRGHKDATNSVVFNPNMKQपTSGSQDSCTMTWNFKPQLRA LTNNPADDTSPSYSPDGQRIVFESDRGQLYVMDANGGNAQ TNSRGPDVSPTWNPKGSQLAWDSGRTGLQVYDMDTDGAG
 LAGHREGVLNAWFTEDQESIYTVSRDGALFRWQYGGKEMR LAGKRPESQFQPAWSADGQW/ TFVSWFGQVWKVDKNGDSMT LISQLEMAPGNLSWSPDGTQIAFT
FSAHDQPISGLAADSSGEVVAAGSDDFATHVWSVRTGQLL
FSAHDQPISGLAITPDSRSVVTASHDGTVKIVDITTGEMM



UniRef90_UPI00029A9F88 UniRef90_A8NA98 UniRef90-TOK0E6 UniRef90 UPI0002C2E8BA UniRef90_UPI00029AF525 UniRef90_W5MGG1 UniRef90 ${ }^{-}$X6M1C7 UniRef90-Q96WV5
UniRef90_UPI0003D09D80 UniRef90_I3J7Q3
UniRef90 UPI000363BE98 UniRef90_E9FDD0
UniRef90-K5WHN7
UniRef90_L8H043
UniRef90_U7PXB3
UniRef90_K9FN89
UniRef90_B9FDB0
UniRef90_UPI00037F4218
UniRef90_G0SC84
UniRef90_V4UHH1
UniRef90_R4G4V5
UniRef90_UPI0004622CA6
UniRef90-S7MCZ7
UniRef90_UPI0003F0E31A
UniRef90_E0U990
UniRef90-T0QUF2
UniRef90-I2JWI9
UniRef90-A0A022S2J2
UniRef90-L1ICQ0
UniRef90_A3J6R0
UniRef90_UPI00044150A4
UniRef90- G8SKY9
UniRef90_I3LRF4
UniRef90_D6U0T3
UniRef90_UPI0003C885D3
UniRef90_UPI00044182E8
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UniRef90_UPI0003C17A44
UniRef90_G9NCP9
UniRef90_N1REZ2
UniRef90_UPI0003C1A1E6 UniRef90_FOWCC4
UniRef90_S2K212
UniRef90_UPI000370B7E5
UniRef90 D1ZEB4
UniRef90_U5HHD0
UniRef90_X6PG23
UniRef90 F4YOI1
UniRef90-A3FPY1
UniRef90-A2QUD5
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UniRef90_UPI0004412182
UniRef90-A0A024G4R8
UniRef90-G0RN47
UniRef90_E3KSX6
UniRef90_UPI0004571377 UniRef90_A3VLU4 UniRef90- X6MAM0 UniRef90_C1DXY4 UniRef90_W7HV62
UniRef90_F1L282 UniRef90_G9NUM6 UniRef90-R9PBV1 UniRef90_B2JGA0 UniRef90_D1AC54 UniRef90_M5CFC3 UniRef90_A0A024S736 UniRef90_B6Q3N0 UniRef90-A4H8W6 UniRef90_U4TPH2 UniRef90-X8J1W8 UniRef90-A1ZU14 UniRef90_B4MKC0 UniRef90_R7SZR9 UniRef90_L1J966 UniRef90_W9H2A6 UniRef90_I3ZH91
UniRef90_U2P9C4 UniRef90-M5E8Z4 UniRef90_C0SCJ9 UniRef90_C6XVE6 UniRef90_A4C0E2 UniRef90_I2JZ86 UniRef90_B7JXK2
UniRef90_M2R114

LIR $\quad \mathrm{WN} V \mathrm{~V}$ T G Q
Sil K I WDV
$C L K T L S$
K K GKCMKTVPAHSDPVSAVHFNRESGT K I H V Y N P T T RELLE Y E MEARP T CVVS DSEDS RHLLLVNK K D
TTII WDAHTGE
$T \mathrm{~V} \mathrm{~K} \mathrm{~L} \mathrm{~W}$
L R $\quad$ R $V$ G W
TVRLWD
T I R V WD
T RVWD L L R R T AVQTRRRD
T I K L WD T V
$T \vee R L W D T S T K$
GGPQIY DQALDGSK T LAPVKSSGSLDVRTVRTVYQGAYNVSPAFSPDGR V V L V T VFEVRD GVAD
WKP DFD TE KP $\square$ QVLNAHSDPMDEESSSEEVLDDLAFSSS GQ T $\square$ K L WD WNTMLCE $\ V N \square L E G Y H T E M V T T I A F S A D G K$

LI R $\$ WD T Q T GQLVVED NPAVTNVCFSPNGRFVLAFNLDNS QV YI WHRYTGELLVL ALAGHSGSVNCVSWNPANL FGRVWDLRT GRCDMFMEGHLKSVFGIDFSPDGY A $\square R$ RLWD CVHDD RTAR LDWS F D RTYPVR IVYA GHLADVDCVRFHPNSN C $V$ H W S T Q T G SLLS Y R G T G GI F EVVC WN S
K $\square \mathrm{MLWELT} T \quad G R Q L G \square L K G N \square S S V A S \square A \square S P D S R$

 ALRMWD LGGS GVP EK Q GHKLACGGLS YDR FGENLVSC


## VGFS DTPAVSEEPGA


 $\mathrm{C} \| \mathrm{HVC}$ R R L GCDRPVKTFQGHTNEVNADKWDPS $D R T A R L W S T D R V S T L R V Y A G H L N D V D T V R F H P N S L$ $W$ LTVWN LQTAEL
TVVRLWDVLNGNCVR DFTGGHKGP HHSLTFS P
GIKNA IRRTWDLGTGDELKTHNLRTDAWESTCTAFAPD
 S P S IVV WD MQ T F R P I Q T $\square$ R E H E HVVI E C DT F S K T A V A B H R G T E


 SVRIWD FTGLDREKTVKGHSSYSSYSTSDGAS
GQLVWE WQSESSYVWDVKKS GFCLVT FTEHTS GVTACEFSKK TVVVIWSNETGKLLY
LVLLWDRNQFNGSDVPVSANKCTFDQSGKVLAVASSDSSV
FNYVWSMQNGRLTDVLNGHTAPVTS LAFSPS DTAEPVLAS D I RVWWDLRKKAVVYS LLGGTDTITSLRVSPDS Q TI KI WEVATTSFCVKTLDRGHTEWVRGVWPWTHGKLLVSASN
 GTQQ SCEMWDV SCIVVWRVD D WSVV SKDTEPYQSSMGATESLRRLSWSPDGK D Q Q WD AS S GNCAFTVDGTHVG TTLSHDSRRVVTAL T $\square K V W D L A D N T T W S S I D A C R R$ TVMVGHNFVRCLQMDEE


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


 GSCKLDSVSPGD\A GSNRAPRVGWTLSSAAPGPFTRLMMVAB
 A D GQTRFNI AHLNNLAT GEFRVLTHGYNDESPTVAPNGQMI
 $\square K K W S G E F L H N M L S Q Q Q K T \square L N A M A V N E D G V L A T A G D N G S M$ Y DKTAR LWAT DSNQALRVFVGHLSDVDCVQFHPNSN

$T F N D F G T A K Q Q L T H F K G N P V R F L T R S D D G V L S F G Y D G E L Y$ LVYMWGQENSRVLQTLEGHGDDAPLSKSTPE
$\mathrm{K} I \mathrm{~K} \mathrm{~V}$ WD I

 E D WE Y D RNS EVVK VD $\square$ NS R I ITVLLTS QN GPDPKVSPN GKL K I VF WDVE T G

| T | I | Y |
| :--- | :--- | :--- |
| S | L | W |

$S L R L W D$

UniRef90 UPI00029A9F88 UniRef90_A8NA98 UniRef90-I1BJ17 UniRef90-TOKOE6 UniRef90 UPI0002C2E8B UniRef90-UPI00029AF525 UniRef90-W5MGG1 UniRef90_X6M1C7 UniRef90 Q96WV5 UniRef90_UPI0003D09D80 UniRef90-I3J7Q3
UniRef90-UPI000363BE98 UniRef90-E9FDD0
UniRef90-K5WHN7
UniRef90 L8H043
UniRef90_U7PXB3
UniRef90-K9FN89
UniRef90-B9FDB0
UniRef90_UPI00037F4218
UniRef90_G0SC84
UniRef90_V4UHH1
UniRef90 C 4 G 4 V 5
UniRef90_UPI0004622CA6
UniRef90-S7MCZ7
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DADCADRDWDYQTSRCL
$M \square V S C S H D W D T A S G Q C L$
GEVQLDDDATRTK LVDDDNPPVFSVTGGK



YLCTASWDRT
CI ASSGAD
NDRFWF $\square T$ VHPK $\square N D F A A A H D S G D M V F K$ STLKKIWDIKTGDFRHHGPIEGHQGSVS QLAYVRREAGRFKVMLQDLATGDARMUSNSAFDES M P S

 YTKKPTPNGEPSNGLSNGNGNNSAA

$\square$ WDYVQGTVKKTYQGHTNQGFS $\square$ GGCFG $\square$ LT DVDNRNSPR HMLASASD HLATASGD LLVSGGADWTV NSCKVWD L R QQSCVYT】PAHSNLLS $L L V S G G A D W T V$
$Y L A T G S T D K T$

## RCWDVKSSGG

VRLWSAQQGNSVRLFT GHRGPVL
$\square L A A G C A D \square W Q \square E A S \square W E S G K Q P Q P \square R \square L S A H R G Q V H A L L$
$H P N S T Y V F T G S S D R T V R M W D \square A R G E S V R V F \square G H T M P \square N$ $S V S G E K Y V S G S E D K C V Y L W D L Q G K N Q K L E G H T D T V V C V T$ $G Q D G S \square K L W D G K Q G L F L R E V A K K E R H S Y L S C S$
GNAAGVPVWNSTTSSVAVLRGHAQAVS HVVWAP GRTIVS AGRDKTIVVWDAESGACVRTLTGQGSVVVYS GRTVSCSEDKTGRDKTURIKDWDTTNKQCVNNFSDFVGFAN FLAWAVTTPGNPQVQVINISV GHTMYNYHEHSDLINADAA GMLLA SCS DDMTLKIWSMKQDT CVHDLQAHSKEIYTIK YLATGSSDWTA RLWDVQ KGTSVRVF $\square G H Q G V V S$


#### Abstract

     $K Q Q L A S C$ GSDKRDK IVWDLASARSVLETHEVVHTDQVW K L A M T L S R D GNA E VVV LDDMRTNNLDKRMTDHWADDTEPS Y LLDSTSD DYT SRLLWDVTVTNPEPRVTLIDGHEHVVLCC


FDANSR LI IGQNTNGMDSVYNPVYNFFELKEMKGHQGSIR HTMPAHVDMF GANDVLCKF


## $R$ LFAPD GVKDQEESSKSNFTLGD LKGSKE GVQVVK

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



$A \boxtimes T$ TCNSYKKPSHTASVLERGDWGSKFDFVGHKGPVVTVR LS GA I QI WDV D S G K R L Q E LE D P V D L V A $R L I S G S Y D C$ L $R S R D G F \square K \square W D L T S G M C L H T I M N G R F A D L D$
Q I DSGSMDAT $\quad$ VKLLWDLAA GKS $\square T \mathrm{~T}$ T T H H K K S VRA
GGPRRLLVIQGANFGLLVDLTGEGGMRRLAEDPGSGQVGA
 LAREAT ILLATEYGDK SI CLDWDT E T GMKMSSA DT DYF NLLA EM CSNRFVYILDMETGREV
 $L Y T K D R G G N T M L A D G R V H L N L P S G N G Y V R A P A W G$

 WF WD WK S GHNF QQE QTIVQP GS LIESEACDYA L


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

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ACFSVTGGKY $\|$ VAGSEDHKTY $\square$ WDLQTRE $\square V Q V L E G H S D \square$
SAFGGANESFVVSGSEDGNVLIWHKNSGAVERLEGHTNAV A $\square$ K WDPS GMLL/ASCSDDMTLIKWSMKQHDLQAHSKE $\square Y T \square$

RPAHALN $\square$ NTLLYVNKEKS VSYD LLRAQSTTVASHLGSA SCLDFSKDASLVVSGAYDKN AVWDIRTGKKDTLQGHVMDV FHPSNN FAPNGKMVLYASDEGGRSVLYAASPGRVKLGVLEGQVQDA
 PDSKYFATGSADKTVKVWDAAKGQVHTFTDHVWAVV
 A $\square R F T P D G R W V V S G G E D N V V K L W D L T A G K L L H H E G Q I Q C I$ ACCFSRSGKYLSSGGDDN
NEEEQNGRSF $\square A S A S E D G D \square V M W D V N S K Q V V Q R \square K G A H K F$ HVKYQPGGDF $\square$ LT ASYDNTAKVWSNKTQP $\square$ KTLS GHVMCL S $\square$ AF S P NGKY $\square$ AS A GEDQR $\square K L W D \square A S G E L R G H T D N \square T S L$ FSPDQQ $\quad \square$ FSSGSDG $\square I K \square W H R S S R E V T T L A N A V F S L$

A $\square$ A CSPDGRWLATAGEDS $\square \square N V F D \square A S G K \square K S M R G H \square Y S L$ CHPT ENMIVSAGLHNDRTLRVW
VSFSNGMGFNDATGSDDGTVKFWSADDGTDKGS LDAVNDV
VDLEEGEKKVLVTCSFDCTARDWDAQTGEDNVIAGHLSAA
 WSPDSQK I ATASNDKTVRIWDSASGTVQRVTGEVVTV WSPTGPANDMLASASFDSTVRLWDVERGTDTKHQEPVYSV TLAFSPDGRYLASAGEDLAINLWDLGSGKIKKMTGHIYSL
SLRFSRDGEILASGSMDNTVR\WDVETDDFTPATGHTN
$L H F L A T P T R L M S Q Y G D G G F R I W D S A T G E Y L R L A D G I T$
$C S F G G A N E S F V L S G S E D G N V V I W H K N T G A V E R L H G H H N$
CSFGGANESFVLSGSEDGNVVI WHKNTGAVERLHGHHNAV WSLDSQQVYFSAYRSNNADI YSIDDIETGELDQITGAERSP WSPQSCGRQHVAAGYSDGTLRVFSIPRSAVEPHAAALTALL HGKAPKK LR YLLS GSRDRTVRLWEALS GVLT QHENWVRMV G I A WNAEGTKLASGSDDKSVKWF
WAPDGKS IVFTSDRGGGPQVYMMDADGGTPRRLTEGRYSA APPATSSAEFMATGSRDKS LRLWDARGTCDKTLAGHVRGL

EVISSSNGK TASLGDDKT\RLWEDENNELSPDEGQFKS L


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FDPDG KYLVSGGDDG|L
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AT $\square$ NGN $\square$ N $\square$ WVADGDQVAT $\square D \square R D \square A G G R K S T \prod S K H F T S \square$ RASWDSEGKKVAAASGDGTVVI WSAQTGKLYKLPGHVNCA
 $N G R V 1$ MF TRESQGAEGAPGLYSVD $\operatorname{SGGRNLRRVPDAASDP~}$

FSPDAPPHTVDACGSQDCKMTVW ATNRPKPFTQSVVDL FSNNSTRDA SAST NTMKIWDVTSRKLRTEEGHITSL SDGATLFSGSADFSIKCWDERVGVCVMTLHNAHEN
$\square A \square H P T Q Y T F A S G S A G G N N \square K T W R C P E G T L V N N M A V N T \square$
QGADSPDGR LLAGGDARPVVRDRDTGRGTVTGLSNGVEDV FTPDGT RLVSGSDDYTVRSY
WVAFSKDSRFLATASNDWTVKLWTTTTAKQDLPVKHYGII FSLSANGKQFIYLVDEE VIRIWDTEKGHSQRLKSDVLSL
YSPDGTHMAFVADG
VLWTVATDRHGDF $\square$ DSADEP
$\square S P D G \quad \square R V A S S D F N T V Q V W K T H D G T L V A D T P S S R S M$ 1 Q A T N D YRFDQVTHQ TYRNGVADY YDNSGS R LVTCEADKTПKMW
$\qquad$


$\square S P N G K E V A F I L H G D V Y \nabla T S V E Y$ ATTRQDTDTPEQERSV STVWNKVQGLL AS CADDGTVRVWD
LAVDPSGEVVCAGSLDSFDVHIWSVQTGQLDQLSGHVSSL
WDSSGKGLYCTYDEKGNSKVAH

V V
SWNPDPCMDASCGDDGKVKVWS
K WS PTGPMLASASFDSTVRLWDVERGVCDHT LTKHQEPV

WLP P
AVSSNKKWlLS S SKDSTMR TWNDEKADH DPAVIENRKR AFSRAGDLFVSGGADSQVLLW
A WGP
T $\square$ S RNSK LLAS $\square$ DHQTVNDWA DETGYC LRTLS F DYR
TFSPDGNLLAAADREGKI RVW
AFDPKGALLASASDDKSIIVYNV
A WTPDGQTVFASSDDGSIVVAKFEEGE
A $\square$ QPDG 1 AS GGKDGKINLWNA SGELIRT $\square N$
DFHPHEFLLATGSSDKTVKFWDLETGVRSMTFNPDGRSLL
WVDVNGGTmVscGQdGAVKVw
DVT PDSKY VVTASYDRTFK LWAPE
AFSPDSS LVASASMDNSVR $\square W D \square$
A $\square S$ S D G Q W $\square$ A A G G $V \mathrm{D}$ GT $\square \mathrm{K} \nabla \mathrm{W}$
AFSRDGSVLLSGGSDNS $\square R \mathrm{~V}$ VD $\square \mathrm{KRGT} \mathrm{CD}$ R
S Y S P DNGQLVSCSSDMTVKYW
CFSPDARFVATAAGDASLFDTSVSTG QRVWRDARR
A $\square$ TPDGRLAVSGSHDGTARVWDPDTGDCVRVLDPEEVEVV
SFHPSGNYLITASSDGTLKILDD
SWSKDGAYLASGSTDKTVHVFSATTG
AFSPDGKYLASGSFDKCVHIWNTQSGS
AFSAESSMLVSGGADWTLRCWDVKSAG
A $\square$ S P D G LLIA S G Y Y E $\square E \square$ WD MA $\square$ D S G K P D $\square$ T $V E$
A WNPDSYMLASAGDDGRIK
TMSPNGKYIAFSSQERR
AFSPDGQTIVSGDKDGLVAV
RFHPSGKYVISAAEDKSVRVFD $\square E T G R C V R T L$
RFS LDGKT $\square$ YYVHQRNGFNVAALD
VFHPGGKYLLSVSDDKTLRCWDLT

S DSPDGKQLAAVKKDGTVHLLELKRKDDKQFKDDKGK
IFHSNKDWLLSNSEDRTI RIWDLTKRACDHTYRRDSDR
AFAADGSHLVTGSWDRTVRVWS I

CYSADGRCVLA G GRSKY $\square$
EFSP GKILLSASSDRT
RFHPNGRHLLSSSDDKT RAWE DRTGRCVKVVD
AFRKDGDFLGTASDDGTVRVWDCEVGKCEQVLQGKDETV SWGP

CWSPDGYS LIACSTDGTVADFTFDEKEDEAKVYGDLRR AFSHDSTRLASTSEDRTI KIIWDI
AVTFDNERIVSGSVDRTUKMWDLRSGRCLQTDD
S VNADG VLFSGGDDGS LKFFDYATGVPFQVAE
SFS PDGR $\square L A D A D N N D S V R \square F D V S T P A A P R Q \square T$
ALSDDGKLTATGNKRGVIEVQNV
QLSPDGKLFAVDYENKAVEIWDVKT
S WA GDSRS $\square V Y$ QSADK $\square K R \square W \square D D A H \square E D \square P \square D L$
TYSPDGTRIIFS
KVAPNGKYVAVE $\quad$ R $\mathrm{VE} \square \mathrm{F} \square \mathrm{KP} \square \mathrm{AK}$
T F SRDGTLLAAAGLDNNLTLWDFHKVTDD
EFSPDGNYIASAALDSTMWLWKAEDGSALTT
AFSPTGDYLATASND
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T $\square \quad$ GRPYASGSDNGT $\square V$

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SPDGTR $\square$ AFTGRPG $\square K \square M N M A D R R \square S A V R$ G

AFS $\quad$ DD GRY $\square$ AS T S Q D R T A VMGVECSALMKNS

PSQF TFFSMKDQK LVAVTTESYDRVWTDDGSPDKSDGM


GSAFAA $\square H R G R P P E M P V N Y G S P P N L V$ DGQLLASSSDDNDKWDTATGALKHTL

TRTHIWLI
$T N \square R Q L T$

LISDDEDGRATLVNFKARNVLHHF SPSGTILATTSGGSVQLWDVDPSAPKPFG

DDRG\LWNLETGQVIHAF
$R{ }^{70} \mathrm{P}$ E $\square$ SRDKVR ${ }^{80}$ QSGVSDDPGWRSNGEVATTDSFEGDQDDYPYEDSRDKVRY HGGPVRADAVSPDGRLADSGSFDQSADLWRIEDGTALA V HTSEVFTCAWNPAGSLLASGAGDSTARIWTMDMQNGPSSV AFS TK $\quad$ LYVTHNRGAKQLQYADADGHRVKT TFSGSSIVTYSPDGRELTYASFGGTVEI WRWESSQNNIGK
 R A Y V V V N DK K K F A R V A DY D GF N E R L
 TAFGEPVFAFSSDGRLLAYVSSQS $V$ V

$E \square H R \quad G K Q L T G C S T F S T A F P G T M Y Q H \square K M H R R$ EDHFVSS DAFSGDGQLLASESHDDT DKLWDAATSALKT QNSKLRCAAFHPTSNLLVVGFSSGLFGIYELPSFT MLYQ NGGDNAEAYFSFDNSMAVFQSNYSEWNIEDNNMMNERPKM
 NKEKCSAVKFSPDGRLFALASGRFLQDWKTPDVNDRHRV DPVPTSAVAFGPDGTTLVTGADDFSVQLWD DADPAEPVEP WHAP WK NYRV
S SKQFKT SSKQFKT

SGHQDSVVAFSFDGKYAATGGYDG

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 RTLKGHSCNVGCUVFHPKATVTEDDFEERVSNTCCASDGS VVSR ERGINGAPSWSPDGQRLVITLSEKDGNPE
GPLI ARFQDHNASI DS ISFSPDSALLASS STDGT KNDSNGQDAVPA GWANGASKTSAKEQQPYN I DA $\square G S Q D R T$ $R V T F T G S Y N I S P A V S P D G R W L A Y V S R V G G A$


LKQQSHYDALSTLQYSSDGQR1
EEPSREQGYVWPIYN

HVLKGHTRCVQA LQF
DNVK L $\square$ TGSMDHT AFFSHDQEKIYVSDGA $\square T \square T G H \square G Q V R G L A V S N R H T Y M \square S A G G S S D V V T G D D K D$ QSFNGHSNHVYCVKFSPYH YHNNRQNVICSSSGDTT RTLMGHKANI CSLDFHPYGEFVA A VYRGHNHPIWTVAESPTGGLFLA

lupas 21
lupas_14
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jnet
col25
sol5
sol0
jom



[^2]
#### Abstract

170 180 190 200 A RVWATDGR LIRYTLGAHKGPDFALLKWNQKGDKI DSAGVDK IFTDRPDGSGATRLTSGARENESPSWSPGGDMIVFTSGR $V$ VVWDVKTAERKQHFKFHSATVLDVVDWRSNFSFATCSSDS $V K L W G G G K G E T D A E V E G H T E R V S L A F H P S G R F L$ $L Y M V N V N G G G L T R L T D N Y G D D T E A R W M P D G E H V V F T S S R S ~$ MQRWDVKTGKMIAGENF LAFHPVAVAVSNDGKKIITGAEYG  I RMWSVSSGNCVRIFTGHTDY I TVVWTTASARPLFVAKHFFSQVDLSWSPDGYSLFACSLDG  1 RVWCLRTCAPVAVLHGHGSITSLQFSPMAKYMVSTGADG I KLWDAATGALKHTLEDHSSPNSVAFSGDGQLLASSSYDD   VFVWEFTKRPSDDDDNESEDDDKQEEVDDSKY VVVWDRAESRDTRLSGHSGTVYSVSITPDGTRAVSGSDDG  AKLWD RKGCVFRYKGHTQAVRCLRFSPDGKWLASAADDH 




[^3]

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AAAFSSESARVAVGYADRTDCTWDMATRQQSLVLGWVYDV FCNNGD RFLSGSRDGTARDWDLSSEEERFMKPKVTMU
S $\square S F N S S G S L L A S G S W D K T V R \prod W D \prod F S R E P \square P \square P S D V L S L$



TMVPHPKENAFVSASADN DKKFSDPKGEDSQQKD IINAV KYGSNE $\square R D M \square L S G S Q D K S \square R L W D \square R S G K Q \square Q F \square G H V E H P$ GCQDS
CATWSPDSRHFVSSCVDGTDR DWD AKRMLSTSVDTATSS YAPDGKS ILFTSGRGGSPQIYRLS LATGEVARVTEGNYNA WHPTEAIVYTCTTTGGLIYAWDARSGSQLKIWQGILDM

[^4]

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AFSPNGEYLASGSLDKCVHVWSV
DFSPNGYHIATGSEDNSCR\|WDLRKRSC $\square Y$ T $\square$ PAHM
A WS P
GFSPDGKYIISAGEDRTERFWEAGS
SFAANGQY I LYATGRGVLAAVSTDG AWS P

FSPDST L $\square$ AF $V$ S SEDR $\square$ A $V$ WRTATGA $\square$ H T QF T $\square$ DA $\square$ R $\square$
VFSPDGRLLLSASKEQTMKVWDAHTGAMVHALGGHESRV AWNQNDSVVVTAVNDHVLKVWDSYTG
AFHPDGKEVCVASLDGQLTFWNVQEGK QTSLIDGRK MFSPDGKKLI FSSNRN
APSFDGRWLLSAGSDQTARワWDASSGEPKATLVGHEHT $\square$ S LAA A K L RVASGAHDKSVKI WDKDSGKCMHTL A YSPDGSRVVTASEDGKIKVWD $\square T$ S G

AVNEDG VMVTGGDKGSLWFWD
SFSSDENVICSGSWDNTGRFWD $\square R S N K V L H V L K G D D K K$
ATTP
RASPDMKNIVMLHRDDR
AFVMNGGHILTASDDQTVRMFS $\square$ SS


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UniRef90_A8PRQ8
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UniRef90_K3ZQG5
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UniRef90 R7SIA2
UniRef90_UPIO0033469C9
UniRef90_G3XQH5
UniRef90-Q9C1X1
UniRef90 G8R358
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UniRef90-D3HSJ
UniRef90-A0A024FZG0
```

lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm


[^0]:    

[^1]:    $\qquad$

[^2]:    lupas_21
    lupas_14
    lupas_28
    jnet onf sol5
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    jpssm

[^3]:    lupas 21
    lupas_14
    lupas_28
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    conf
    sol25
    sol5
    solo
    jpssm

[^4]:    lupas_21
    lupas_14
    lupas_28
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    conf
    sol25
    sol5
    sol0
    jhmm
    jpssm

