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VHELLI GTYTQSQGI YRLKFDSRSGQLDATPLQVVKSA YLFVGNYSPGGSLAVLPVSPEGKLSPPVQLSSHPASV

 GPDG』GLLDTDVHSGSGADPERQEGPHVH

VFISAFAPGGALHAYKMNPQTGELKLVERTS AGVE
$Y N L L I G T Y T K S E G \square Y \square Y H F N S H T G E F K F \quad K S L A K G V E$ YRGYI GTYSK GDSKGVYTFTLDTETKQLSNQQLAAELLK



VYNLLVGTYTDSDGDYVYRFDTSTGSVAPVSS AKTV

 YLIVANYADPGGALSVMPVGKNGQLSDAKVNPERQAS
 LQT TYLGTYTESKGUYS AALDTEKGTLT DDTLCAEEK
 LFVGTQTGSKGDYAYRFDTAMGEDRQVGLAV EAE YVFLGSYNTAEAUQ Y QLDTLNG KLTKVTAAKNII Y IG TYTKAESQGIYRLVIDKTTGEIKENKLAGKMD SDGDGIVTVAVAPDGTLTERARTTAPH
YMLVGTYTSGEGLYVYKLDTVTGTSSYVSETHVD









 $P M$
$P N$

HK S L CP N QL
S K Y K S V VK V T



VYF GT Y T K S K G $\square Y K$ A DF DAE T G QL S S N L E L V A E EP
$H \bigvee F A G S Y G S G G E E R L T R L I L D D K S S$ GMLKRVAGISGDD

## QUERY

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UniRef90-J1KXH8 UniRef90-UPIO0016A665E UniRef90-S9P8A7 UniRef90-X4ZCN6 UniRef90 A6C8R6 UniRef90 B5WUU0 UniRef90-UPI00047AAEF8 UniRef90-W8A6C2 UniRef90-B2JE60
UniRef90 Q1ICP7 UniRef90_W0EVW4 UniRef90-C1DKR7 UniRef90-U2T2B7
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NPHS LVLSPDGRHLYASD LGADKVF DYRYDGA DPPSVADP SPSYLSVSADNKFIYAVNENGVSSFSYDSQTGKLLNKNDS
EPSY A DDPKGRYDYAVNEGAVSAFA NAQSREDTFTNRQ NPSYITLNRAENVLYAASDGEVSAFTVDPETKELSLSRRT HPFFLAVSPDNKFLYS DHAPGVSAFALEGRTGKLKLLNRS
NPSYLCTSENQNYVYAVNGSLSSFSFNSQKGELTF LNKVS DPTYVAITNENKLYAVTKGGIAAFTDNPDSGSLEPLNRQ NPSYVIASRDGRHVYAVNRGGISAFSFDARNGQLTFLNRS
PSWLVLSADQRLLFAVNQGHVSSFSLSKAGEIKPLNOVP NPSYQVVAPDQKNIYSVNEGKISAFGFNKKTGALHNTVSS NPS WLAFSPDRKYLFAVNEGRVTSYRVDTAKGSLEK INKS
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FPTFLALTPDRKTLVATNEGGVESFRVEPGGAKLKKVNQS NPSYLTISPNGKYVYACNAGSVSSFEFNPDNKTLTFLNSQ NPTYKKISDDEKFVYSVAKGGVAAFSVEEDGSLTFWNQVQ PMFLALRPDGETLYAVDGGRVSAYRIDAESGGLERLNSS NPSYLTLDPSEKYVYAVTEDEGNAFSFDKKDGKLTFINKQ
 GVHQVVFSSDNQYLLSNDGGKUYGYQYNPNQTLTKKDSVL GPTYLAKSVAGNVYTVTSIDGKGGVTAYDPSFNQLNSVTA NPSYLSASADSKII YSVNESGVSAFKYNKESGAVTLINKQ NPSFLIPSADGKRIYTVGEDAGKSSTANAQKKLTLLNSQP PGSWITLNHDNTKLYTNAWATGASYSLSDNHETGHDVTDA NPSWLVLDNKRGRLYATNEGRVSAWR LEASGHQPIGRSDS NPSFLALSRNGERLYTVHGSDVSAFKVDKASGKLTFLNRQ NPSFLAISKQGDFLYCVHGDTDSAFSI GADGALRYLNSQT NPSWLTVSKDQRYLFVVNEGKVSSFSIGPKTFNIAPINQT
 NPSFLALSPNGQRLYVVNDGQVTALSVVGTKLKTUNSQSS
NPSYLALSPDEKLLFSVSENGVLSFSLDKKVGKLINAQNT SPTYLAVSAADK LYTVDHGGLAVYDFSKDGETEFIASYM NPTYIAFSEKGNLYSVGKGGIASFTAD FGPDNHVVE NPTFLNVDPDNRRLYAIGEGEVVSFEDDPAAGKLTERNRS NPSYLNISPNGKYLYAATEGSVSSYVFDSTSGKLTFTNKQ NPSYLTVNKEGTHVYSVSETGDAVFDKKDGTLKLLNSQLT NSSYLTVSHDGRMLYSUADEGVVAFRILENGALSRVNSAN NPSYLLPHPTLPVLYTVHGDGVSALHRDPRSGALAPWRQQ GPRHFAFHPNKRWMYSIQESTVAFFHYAPDSGQLDRQQD SPTYYA KAAKKRLYVINQGGLIIGYDVSEEKPRACQQVLE NPSFLAVHPNQRFLYAINNGSAEAYAIDPDGKLTLLNRQP NPSFLARSKDGKTLYAVSEKNLSAYHFDGKQLTFLNEVNV



## QUERY <br> UniRef90_S3DPE4 UniRet9-_RTYMB7 UniRef90-W9BYU6 UniRef90_UPIO003FCC297 UniRef90-R8DP13 UniRef90_U5L478 UniRef90_LODQC5 UniRef90-W4QQP2 UniRef90-UPI000287EF54 UniRef90-C7PIQ9 UniRef90-M5QH70 UniRef90-B0KFB8 UniRef90_UPI0002EF0BBB UniRef90_A0A010SJC6 UniRef90_S6JB16 UniRef90-J8BPW0 UniRef90-V9W6H7 UniRef90-UPIO0047AEAOC UniRef90_UPI00039B8895 <br> UniRef90_UPIO00287DAF0 <br> UniRef90-J2Y8M6 <br> UniRef90-V6UST7 <br> UniRef90 J1KXH8 <br> UniRef90_UPIO0016A665E <br> UniRef90-S9P8A7 <br> UniRef90-X4ZCN6

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## G

$G A L T E R Q H L P L T D S K D A A A R A A G G L H$
 T G SVVAPVSSTKTVNPSYLLPSRDGRTVY
GAVVDLK Q HQDP TGSVAPVSSTKTVNPS YLLDPSRDGRTVY GSLGEMSSQVRHAGKGFRQDRQEAPHPHSVTPASSGRRVL GSLGESETFIQUTGSSVNPQRQKEPHAHCSVISPDQKFVF

 GQVGASVLTVHHDGSGPVKGRQDNAHVHSTVFSPDGKFDF



G GVAPAVLSVHHEGK GPVRGRQDNAHVHSTVFSPDGRYLF G S L GEPVVSFHQHK GS SVNPRRQKEPHAHS IV I SPDNRLAF GS L LPA SD I I K F E G S G TD K E R Q E K S H L H CV RIT P D G K Y M F GEVVALLDEKKHEGQGAHPERQDKPHVHSAFFSPD GKYMM
 GKLSAPVVKEQYTGSGPNAKRQEKAHAHFATASPD GKYVY



 P S V S T I Q H T GK
 $G E E L$ K A A D S I I F H Q E A T G P H K N N Q D H A H VV H Y T D L N N EVVE Q GQF LKKHE GSGP H D R Q E K P H V H F TAGYT P D G K Y





 GDAVVQVLPALGP G S K V N P E R Q M S S H V V H L A V P T P D D K Y V V
 GA RSD LVRHKGSGPDPDRQSSPHAHQVLPDPA AR YV H
$\square S V F T \square T E N G V L Q E \square S Q N \square T$ F DKHSHDHSVQFSPDKKRVL
 GLAGELLDDEKKHSDLVPVREAQQQARAHSAFYSPD GKYVG GSLNP PSQVLQYEGSKVVQDRQA!AHTHSCVFSPKYDQVI


 GS L S A M S QQ F K GS DGGPNS ERQQAPHVHCARFDPDGN GVI GTLTETDEVHDD DPVGPAPEQADGAHPHFTNLTPDNR LV GKLGDVSGIFKDTGAGPRPE QEAPHAHMMLFDPAGKHVI. GSIAAARDTLVQHS GKG DDASRQDKPHVMSAFFAPDFKT I F DETGS FVTHE GN GPH ER QEK S HVVHFAGFTP D G S YVV




QUERY
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$P \vee C V K$ L H P D F R
$K$ GEIIKPLNQVATRGDEPTHAS $\square S R D Q R Y \square F V A N Y A V A P D P$
$\square P K D F K G G T G A A A \square K \square S P D G N F D Y V S D R V D A N A$ HHQGSGPVKGRQDGAHAHSAVFSPDGRTLFVQDLGADKDF EQYAAGSGD
 EDFSGTSHCADLKFTPDGRFLYGTNRGHDS QTVHHEGSGPVKGRQDSSHVHFSPDGHYLFAQDLGADKDY S GFN
EGFVEESF GAVGAADIU H I G DGKF LYASNRGDAN PGF KGQVGAAAIHLSPDGRFLYASNRGDAN
 $K Q N V A L A A E G F Q G Q S K A A A L H V S P D G R F L Y A T N R G \quad T$ PLNQVVTHGDEPTHAS LSRDQRYLFVANYAVKPDP

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DGYDGKENTTAE
PSY目HELD
AD Y S
ADF T DFN
DDCSVESTGGADHLSSDGSYVYTSNRGYDS
$\stackrel{A}{P}$
A D G F T K P F T A A D D

> DEVGAQGGAD DHVSPDGRF LYTSNRDKN A PDYTGQKSGAEVLLSHPSGRFLYASNRKLKSDH EDFTDTN

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ESFT


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$G L H \boxtimes Y$ A CD LGGADKVF $\square Y$ R Y D G A S P K E P A A VD L P P G S G P R H
 GRYAYVTSELTAAVEVFGHQDGKLTPVQTVPMAAPGF
 GK Y L I C A N M P G N N V V V F K

 GQWLIV GNQLS DTAYV FRRDP QS GLLLPKRIDDGSPV

GRFILVANQNSNAIVVMERDPDTGKI TQSLPFPSPS
G Q H V Y A C D L GA D KV F I Y R Y D G A S V V K P A S V A LP P G S G P R H

GKYMLVACRDSNVI QI Y E RDADT GLLTMDDKVDKPVC
GKLLIVAANRDTNNLVTF TVDQES GRLKH S T GVVSK PVVCVKP



GNFLLVGHQYTNNVVVFKRNKETGALTDRDELCAPVC

 GK F L A A S N V L T G NVIV V F K R R D L K T G L L K K K T I
 G K L L L V A N R D S D R I Q V F F K V


EDF LICA HQNSDNLTLFSRDADTGKLTK DVFAPECDCVAL GKFLIVVNVNSSNVIVFRRDADTGLLDKT
GAYLLVANQNSNEI TTLFKRD\|VSGKLT
$G R Y L L V A C R D S N S I Q V F E R D S Q T G L L K D T \square K T N K P V C$ DRYA ALMDSSSKGFVEI WELDASSNATIVAHLDDAD GGCCAN GKY LLAAACRDSNTI Q Y Y ERNAT T GLL K D T I TVVAK PVC GRFMLIANQLSNALVLLRRDPDSGKLGETLQ
GRFMYALNEDSDTIVAFAVNAATGQLKPSVDSGSPVC
 GRCMYVANEDSETIVVVSVVDPTTGSLTPTDETGSPVC GTEMLFANQK SNQ:VTVR RDVQTGGIVQKDVDDAPS D $\quad$ VVVSANQNT DNLTLLYKRDATTGELTTKDIGAPECVC
GRFLFSSNQNSGTVTSFAVDQASGALTPTWATPTPVC
 NK Y I Y T I D L G L D K V S L Y K L K D G Y F K E V A D D L N I T P G S G S R H
 NRYLIVANQNTDNLSVYERSSKTGKLTKNFVVPEGV Q N YLIV A H QDSPNATVFKRDSASGKLTDDFYVPEAVVC GKFMVVANRDGNNLVLFNVDP EDGKLAF TVVSQSK PVVCVKP
 GK F L L V A S R D N D VI Q



GRFLLCACRDDNT DQVFR DNSANGLLTDTDSVDKAVC ESLVIVVNQNSDNATLYKRDADSGKLTKDFMVPEGVCVVP GNHLYALSQKGDT1LRLRDDPQTGKLVVVAKVPTPVC

ESFIIASNQHSGNLVLFARDKTTGKLTK



| QUERY | ATWY D |
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| UniRef90-R7YMB7 | A I WY |
| UniRef90-A1CU41 | A V WY D |
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| UniRef90-UPI0002F65448 | A |
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 $\square F V G T R T D S K G \square Y A Y R W D P E Q G E D T S L G L A V G E S Q$ EAP
$\square F V G S Y A G A T G \square N \square F R F D V E K G T \quad A D P V K S \square S G \square P$
 GGS S I F SLD ESGKL DPHPQVIPQGT


VWFGTSTGSRGDYHATFDMETG K $\square$ GSRAT LAAETR Y $\square G S Y T K G K G I Y R F E L N E N Q S R \square D L L E \square G F \quad E \underset{G}{L} \quad E$ $M \nabla R A Y \square G T Y T K S Q G \square Y K \square E L S E E \quad G R V L E D A S V A K V E$
 HFAY LGTYNPGEGVYRMQVDAKTGALS AKTLVSSLP

VHYLFSGFFSGS TTAGDEFDDKAHSLSLVKNDSASDD LFVGTYTDGGGUYIYSFNQEDGSFELLGNAPAR $M L V G S Y A D V A Q E G V K A F R F E E D S V R A T Y L C G L S G L S$ YMAYI GSYSYTGGI TVCDVDVEKGVLTAKRTED EVN


 G P
QR $\square F \prod A S A G K P S S \prod E T C T F D S E T G Q F \quad G E V T T A V A D V$ $R A Y I G S F T A A G G L T A R L D P E D G S L T L L D A T$ DALP
RAF $\square G S F T A A G G \square G V L T A A V D E D T G A D T V L G G A D G V P$
VHELLVGTQTTSKGDYGYRFNAESGEDTQDGDAVGEAE

HQLIVGTFGTP F LYTLEFEDAARTLTLAANTSVNVSS RAFDGSFTSAGGDTVAAVDEETGADTVLGATDV VP $\square H L G C Y T A G E G V V A R R E P E S G A L T P L G$ V YMAYVGSYSYNGGITVVYDDVAKGRF!PRCEVEVD $\square E E \square L F G T Y T K K N S Q G I Y K M K L N T E T K T L N H R A L V A K \square S$

VFFGTGGGSEG $\square$ YHATFNPDNGKFTPSK $\quad$ A AAK $\square \mathrm{G}$
 Q $\square$ AF GANYHKGE $\square$ T $\square Y H F N \quad Q \square G K \square S \square T D C F Q \square S H P N$
$\square \mathrm{LV}$ VGYHDGK $\square \mathrm{T}$ VLS $\square \mathrm{NEDGT} \mathrm{L} G K \square T \mathrm{DEVYHKG} \mathrm{\square G}$
 Y VA Y VS T Y T DNHGUKLYDVDMANGRLKEKAEVE IT

FFIG TDADGVYASTLDTDTGAMSP PVLAAAME YALLVGSYSDGKGLYAMTLD KAGK LSSTATTEAL
$\square E T \square L L G T Y T K Q T S E G \square Y Q V E \square D T T Q K Q \square Q N \square Q L V A K \nabla E$ YTASQQDHAWQL QEDGT LTTLQVTDVAGQV
VYVG TQNRQDHALRFAPSTGKLAVIGK VAEGP FIGTYTKSRGI YKIIFNSSSGCIEEINL AYEDE $G V G L G V Y G F D E E T$ LETRKLAETND I D D
MKTFYVSSYGKSDGTY\| DDLNEENQKLSLV QHVVTHD QYAWVGTYNPGEGLYRFTVDPHTGALSNKTLVSTLP $K D F V G G D Q G Q G 1 S V F T F D T V K G T L T P Q A Q G R S D A L G$

MQTFYVSSYNDNKGUY IVNFNENTEEFSLV QH【ITKD

> RAY

LHRDFVGSYTDDQG\YTILFDEANQHLQVVHQGGHAP YLFVANYSGGAGVTALPIGGDGKLGESVQHYPFTSGS VLI GTWTPSQGMYRLALNED GSLLPLNRDKMD


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 HPHQVAFDPAFGHVFGADLGTVWAWKLDAEAGKLTPNQVA HAHWAGFSPDQRFAFVPDLGKVMDYKVDTDTATLKFGQAP DPSYLTVSRDGKFVYSVSETAVPAYSFDKQTGTLSGLNHT




SPGFLAMHPNGKVLYATSNDNVSAFR\TGPVGLEYDNSAP ASTYLV RNNEVLYGDNKEGVASLKIDDNGELHLLNKSS HAHMI ASDPSGKFVFSTDLGRIYQWRFDRSSGSLTPNTPP NPTYLALSSDNKNLYSVSKGAVTSFRVLEDGRLEELTSVQ
 NPAQLVTDAKGQTLYVASHGGUVAYRINDDGSLTPLNQVS

GSKWTALDARKQNLYVGTTGYFQSYKVTKDLGDTYKSNVS

 NS S YL V A SRDQKTLYS DADEGIVVSFRI DENGALSKLNTRN
 $A P S F L V A S A S G R F L Y A V N E G S V T A F A V N G Q T G D L T N T V S S$
$G P H C M V A G P G G Q H F F A V D L G T D T V Y A Y T L A Q G R L Q R T S T P$

HPHSVFVSPDDRFLIVNDLGNTSVFRIDPVTAKLLLTNLR PHFNPFDRTGQFVVVPDKGKVFSFPFRAGKLVSKEIETR


SPTF LVLGPRERFVYAVNQGTVSSFSFDKKSMKMQEDSKS
 NPSFLCLDQTQSLLFCVHQSTVSSFQIEPASGTLTKVSSV
$S W \square S \square S H D K K V I Y G N A F E D \quad T G S S V Y V S Y P L T D D L Q \square S$
DPSYLALGRGGTVLYTVSETEPGAAAALDDTGDVLGATRP APSFLARHPDLDVLYAVNDGGVSAFRIAADGDLTTLGSRP NSSYLDASNDGKTLYSIADEGVVSFRIHENGAITRLNSAN

SPGF LT THPNGS $\square L Y S V G R W D E G S Y H \square G K K G E L T E F T R \prod C$
 DPSFLALSPDGSTLFAVWEGRVLSFAVCDDGSLREVNSQP QAHFVGLSPD KYLVTCDLGAVTTFKLVDNNSHLEKITHQ
 NSSYVIVSHNNKILYSTADEGVVAFTILENGDITRLNSAS NSSYVTISHSGKFLYSITDFGVEAFKILEDGNLELINKAS PHHAVTDPANRFAFVTNDGEITQLTFDADTGQMAPNSLP $A P G F L W I D P T L P V L Y A V G G G G G S A F R D G G E G G L T R S A S V G$
$N P A V M I P H S D G K T L Y A I D E G T V L R Y T V N A D G T L T Y B D T Q A$ NPAVMIPHSDGKTLYAIDDETVLIMYTVNADGTLTYHDTQAA NPTYLTVSH QQMLYAVDQGGVSVTQLGDRSQVLQHLVQP KPHYAALDPSGRFVLVPDKGCDRIHRLGLQADAAAFVALR QP MVVSPKKDFLYVGVRPRVLAYRIAADGTLSEAGEAP

RSTWVAAHPVLPVLYAVDDGSVTAYAVNRATGVLERDNEV NPTYLS IDDKERHII Y SACKAGVASFKYLHGENHLNLI NYM NPTFLSSLTPD GSRIYANSEGTVVAYSTVRGS GTLAMLNKS HP H Q A L F DP T GKFVVVMPDLGSI RVLDKVEPKFSVAPPNKVK




$D P S F L A L$ AGPVLHAVSEGAVAAFDVSGPAPLPLGAPVP NPAVL DPSPDKK YLYAI ENGTVVQYEVVND GSLVEDS S RA GPTY F FQKD GDFIFTVNED GHGGIATYENGRRVSQQLLHE


 DASWLAWSPDHQYLYVTNQGTVTAVDLTSHTPKVIDSSSS Q P

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LS S D
V CKNANF 1 TASSKSPFAVFGTPYGGGCPT





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VGGGPTHLSV HAGHVLDANYGSGSVTAVPLRADGTP GVQDPSYLAVHPDGGTLYAVNERERG
$K G G G P T H D A V D H S G R S V F A A N \quad Y G G G S V A S F L V N S N G Q D$ EGENGCYLTASSDGKYMLDAVYDSGKLR GCEGNNPVHLTVDKSNTFLAVANYATGS VVILPFDKTGHL
PG NTVTSQGSCKQLS $\square \mathrm{F}$ VRPSPVSPYAVYGQPF GAC
 PGSGPRHLILHPQGKRAYFVNELTNELCDAANGALKLQQT
PDGGSAHDAVHPSGK FLLTAQYGGGSVADFPLD EN GVADPSYLAVHPDGRTLYAVDEQ
SGAGPVYLSLTPDGKFLLVANYNSGSDAV $\quad \square P V Q A D$
 AGAGCRQLVFHPNEK乌AYLLCELNSTVEVLI YNGYGYFEL
 1 GMRGCHLSIDHDNKFLFVSGYHDGKI TVMT DNPD


 HGEGPRHMTFSADGKFAYASTEMSAQVHVYAVQNDK
GTPPAYVTVDEHRHLVFDANYHEGTVVHAY

 LEKQPCHDSIMNHKQLLISSNYHENKMLVYNTL $L G S \square T A H N T I T R D G T K L L V A N Y M G E G G P D R A V A V Y G F D G E$
$P G T G P R H G V L Y P A D K S K F Y Y V V G E L S N T V T V M S V E Y M V D T$ NGRSYTHLCVSDNSRY LFAANYH VGSTASYLLENN SGGGPVYLSLTPKGHHLLVANYVSGS IAVLPVNADGSLD TSDEPVS


$V G A G P T H L A D A D G \quad H L L T A N Y T S G S V T A D P D A B P D$ NGKSTCYI SFSPNRDAAIVINYWDADIDVV DVDENGKD GSSPAYVGDNKDKHLLYTANYHTG VLAVDSYDEK PGSGPRHAVFSPDARHVCVINEMGNTVSVFAC DADAA EDAGTCHVVVHPNGRFLYGSNYESGSVCCTLTSQAAARST
PGAGPRHMVFSPQGEYAYVITTEMAGDIVEAFAVNDHRLLTP L
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LY Y
 GALSAPVSHFQYHGHGPNPERQAGPHAHRVTPSPDDRFLL



 K QLHTLSSLR KQLHTLSSL PADYRGT EGVHTVAVDPDTGTMRRLDDRGTNFAAGLTLSKDGKFLY VEVKEHSELLPKAGSGVVDAVAAGPDPTFVTFDPSGEHLY GEI DRLIDQELAHDFPTGTHERQDHPHAHYDNQTPDGKYVA GTLQEQQTDSSDPEN K PGQTIGFDGHGADKERQAQPHLHFAYFTPDNKYLL GADGERTDVVKHSTPAPGP GQQGPHAHQFDTAPDGGHVL GAASSVQQDVGPAGAAKPAAAVEGPHAHMDASDPSGKFVF
 $G S V G P V I D G V Y D K G D G S V A E R T F R P H V S C A R M T D D Q K Y I L$
$G T A S D D K N D A G K D G P T K A V N A P P G S H A H M D Q A D P A G K F V L$ GAEAARAS HTGQGPNEDRQEGPHPHCITPGRGGLIAC GSVGAATDVKTDVGDVGTDSGHDAPHVHCAIMDPNNRFLC
 VEVL NTVNSHGGHPTHASMISDGGKFLF
 GSLSRK $\square$ SRQKHAGSSAHPQRQTRPHPHGVAISRNSKFVL YPAGR DVLRHTGSGPHPQRQQAPHAHQILPDPSGRWAV HAEDAMNSTSSHFAY
$H A H Q V L P D P S G R W I V$


 QPVISKYDL PGNPGPHKDEQASSHPHMIPRDPSGRFLV GTVMSVDSDGLLVES $\quad$ QEYNYSSSSGVSFGTALSDPDGRYGMY GADGPVAAVLAHEGSGPVADRQQGPHAHQVLPDPSGNWVL

 GKDKEPTVTEHEGGSKVVDRRQDSPGPGFWTGMHPKETHLY TAGAVTAVRLADRK■LGSRSTGGAGPCHLSVHPTGRWLL $G R D S E A S D A R Q H Q G P A G A D S D H N G P H A H M D A S D P S G R F V$
$G V L F R P C H V V Q H S G S G P S D R Q D G P H A H Q V L S D P T G K R V L$ $G V L R E P C H V V Q H S G S G P S ~ D R Q D G P H A H Q V L S D P T G K R V L$
$G T L A F L N R V S S Q G E ~ G P A H L S L D R A G R F V L$ LQTVSTLPD

S Y A D F N A C A A VGDPSFDLIETVPTDNEYHSEDTAASALNLSADYKYLI GSIGHIADGI YHHGLGSVAERNFRPHVSCTKVTPDGNFVL
 GEAMATVTVARHAGRSVNEKRQTAPHAHSVVRFTPDGRTLM $\square R Q S F K Q F Y R P Q G E W R Q V T D R Q V G P H A H C A H F W$ N GTL NLAHTFTNQGSGPRPE QSEAHPHYVDRTPDE HLV
 $\square \mathrm{H} N \mathrm{NK} \mathrm{L}$ TVGNPLS GSVVSTVKD $\quad$ GS GPN RRQAGAHAHSAVVDPSGRYVL
 GLKLTE GEATDTHQDRGEPGAAKPVAAVEGPHAHMIAADPRGKYVF PT KTFKFQDKKPGPVAERQTQAAAHQVKLDPAGKLLL GKDTHSDSKEQHEGKGVN NRQEAPHSHSAWFSPDSNVII FTEVQYlSTLPE HFDENSQGSADHDSSDGRFVY GTARAATSVLRHEGGGPVTARQAGPHASWIVKKKDGRFAY GEVYRPEEQWRQVENREDHNRQVGPHAHCAHFWHD WVF
 GARLQVVSGGYHHGRSINPTRQRAPHVHTASFDPNTHVLA
 GGI GESTDLVKHAGA QP
VSISP DDEHGVAQAP $\square Q Q \square D \quad D \square P A P H S A N I D P T N Q D L L$

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UniRef90_V6A0X7

$\qquad$
A

AND|LGADK\|YRMDYSDNLDNSSVVEF SVVKPGSGPRHSSF AVDLGTDSVYSYRLDETAGTLTRVSYATLPAGAGPRHLVF AVDLGADLLVTYHYGDQG LEVAHRTALEPGDGPRHIAY

## ,

## V

 VAN RLLHNS I GQF A V T TA | $V$ | $T$ | $D$ | $L$ | $G$ | $A$ | $D$ | $R$ | $V$ | $T$ | $Y$ | $K$ | $F$ | $D$ | $D$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $N$ |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $V$ | $A$ | $N$ | $R$ | $L$ | $H$ | $N$ | $S$ | $A$ | $A$ | $F$ | $A$ | $V$ | $G$ | $A$ | TCDLGTDEITTTYKLNK



WT R G D Y P R R G L L V



























 TTNNVGDNS A A I F K K I D R D K G T L S K I L C L L P I S G S Y P K D A A L

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
















## UniRef90 UPIO004777287

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UniRef90-D5EQV8
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UniRef90_W8U256
UniRef90_VVAOX7

210
HPS GEWVYTlTTELS GEVI A YN
230
240
HPSGRFAYLANELNNTVAVCGYDPGSGALT
HPNGHVAYVVFEMGSAVQALHWDKEKGTLLHALQDPLHLTP SPAGDVLLVANQNSDDVVSFRVTRAGALRRTGATAAA PSP





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\begin{aligned}
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## E

## S

## S


HPN GK IVLLLDNE EA STLT SYRFDS QN GTLLK QLHHAAVSTLP
S P D GH HL SK DGRF A Y L I N E LLGGE CTVLLKYEN GRMTEVVQR I
H P N GRYA Y L I NE L L S G N V V V V D Y A D G K L A T K Q

H

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## D

F
D

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S H P D G R R C W L V G E L L S S DGRFF Y L L Y E L K NVI DVYT YETGERQPI EK I QTITSTTG
 SANDAY LLIAN QESDEVRSFRRETD GS LSDSGHRLT TGT
 SPDGGHVLAVVLGGSDTVYTYRLDTTKGTLTEVSQ


SPSQNY LIVAHQESNTI S LLFKRDQDSGKLNLLSNTUEVPE HPGGRWL FSAN Y GS GSVVAVHP IGAS GALGERTGLV

 TPE GDRMLVLNE DSDA VVTFAVDAHTGRLTPTGQRVATGS



 T P K G D A L W WL I N E EA S T L T HY T L D A R G R





 HPSAK HAYLLSELNSTITVLGFDVESGKF

P
UniRef90_V6A0X7

LT N N
 $L A$ S
E E N
$L Y S$
 V T Q P


$\square K$ P S $P$ | $S$ | $L$ | $P$ |
| :--- | :--- | :--- | :--- |
| $S$ | $L$ | $P$ |



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UniRef90_W3ASF9
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 PGEPQPTGAGGAGSSFPSQPVITADGAFVFLANRGHNS P A CVAF

TYHEDSTGCDMVLDHKARFAYVINRFYN
HVSGSAD $\square$ H $\square$ TPDGRF $\square$ YASNR $\square K$
PNS $\square H \square W P$ V G
PVCLQ W
KEYEGQKWAAA $\square R \square S E D G F \square Y A S N R A H N S$ ESYGDKN

EEGAPDNTAADHVSRDGYVYASNRGD SGAD $\downarrow$ HIGKEGKFLYASNRGHNS
ERQTAPHP
HSTTGGPENRFAYVPDG
EVV APHP
KAKETFNSASEIRVHPSGRFIYTANRGNDS ENFDGDTKLAAVRLSHDQQFLYVSNRGHDS
PEYYSTLLEDFPVENKGSATKTSNDNRFTYVSNRGQDT ADTLDARGSADI HLSPDGRHLYASNR A $\square$ GDPQPTGSGAGTNYPAQLLVTANGSYAYLANRGHNS KDTGSGPDTERQEAPHAHMVLFDPTGQRILGTDLG SGF TNSSSYWADEVLLSTPGKYLLSATRSRKTGV
PGF YLEADTLHAGGSADUQSPDGRFLYASNR QK
PGF

 PVCLQVYPD
LeADNGRDVTFNHGSGPRHMVFSSDGKHAYVT AEM
PLFT
PVCMVF N
EDFDGENTTA EVVVHPSGKFLFGSNRGHNSN
DGSARGDAFPSEVVVAPDGRFLWTATRGEDV QGAGPVYLSLTPDGRHLLVAN VAETPVLPGAPEGDAYPSGVVSPDGRFVWTATRGKDV AHTRAGAGPRHLTFHPGGRYAYLADEADDS APGPGQDGP H AHQI TSPDGGHVLAVDLG EDYDGKAAPSDAFDRKMSFAYVASRLDDF FQMVPADPQEFVGDSRAAALVMAPNGEHLFSSNRGHDS RHRGTGPDPDRQTGPHAHQVVFDPSGRWVLAVDLG

DGANDTEYWSDEVALSYSAKYLWATSRARNTNS GSHAVADRQASGH AHSVNISPDGKMLFVADLGADTVH VGETPVLPDGVTGASYASEVVVARDGRFLWAANRGHDS GQVQPSEVAVGPEGRFLYVANRG
PKADSQLTAASSMRFSTDEKHMFCGNAGDNT ETYTEHNGAAA $\square R \square S A D G R F L Y V S N R G F N T$ PCFVEFPDRGGAQP
ASRVTGKRQDAPHPHWTG FSPDGRFAFVPDDGDDK A DS EKVKAGESFNSAAEVLVHPNGQFVYSSNRGHDT AHTRAGAGPRSLTFHPGGRYAYLANEVDDT
 VEPNDPAADADAAGAGPRHLDFHPNGRFAYVIDNGHDS PTCVLFD
THSDPPPGPGQRGPHAHQVVTGPDGNHVLAVDLG
PNCIVIFHAGGNR
S SNCTHLKELTAATCTKFTSDNFDEANAGENS KYQAQ DVAASALNDSVDGKYILASNAGENS
AVAADDPADAER ASAELLFHPGRHVYASNRG PFQYESTVDDRENVSYVSEUKLSPDAKFLYVSNRGDNS PDWEQHNGAAA $\square$ R $\square$ TSDNRFVYVSNRGHDS PVCLVFSPD
A SLSAFSHKDDSKMHFAS ITPDNKFICAVNLGMD SSETFQGTRSGAETAVSGDGRFVYAQN有AEDS KNYT GEKSGAAIRVHKNNRFLYTSDRGNNS AEARDSNH CADUQUSPDGRFVYGGNRGHDS
PVCLQWWD
RHF HGFSSASATRTSATGNHTFTSNRGHDS
HGYKGTSFAAGLALSADGKQLYVANRGHNS

P VC
TPHHFHGFSSASA $\square R \square S S S G K H \square F V S N R G H D S$
SNVVKGRQDSGH AHSTTFSPDGQYLYAADLGND $\square A E T P V V P D G T T G P S Y P S E V V V A P D G R F L W A A V R G D D T$

$R \square S \square P T A L L D G T E N E A A A H S A F S P D G T F \square Y A S \square R G S D$ P
S TRADAKGGGGLAFSPDGKYLYASNR QK
GQVLSSRKPGAGGENFPSEIAISRDTGFVYAANRGDNN
ADFTDT RWAADUH TPNGRHLY YSDR

AHSTTFSRDGQYLYAADLGGDK $\mathrm{L}^{\mathrm{H}} \mathrm{H}$

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UniRef90- A9GCQ0 UniRef90-10II54 UniRef90-W6K8N2 UniRef90-10QS62 UniRef90-A0A059KGZ5 UniRef90-E6WC64 UniRef90-H7CV37 UniRef90_UPIO00419D25B UniRef90-K6U9E5 UniRef90_LOKUB1 UniRef90-E5ROD7 UniRef90 R5REY8 UniRef90_G8LJF4
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 $\square A V Y E \square L A D G S \quad V L L E \square V P T N G L N P R D F \square L S P D$ $C \square A V Y R T A P E T G G T G S V A R V P T E G R T P R N F A D S P D G$ $\square A \ F S \square D Q A S G K \square K N V D F Q P V A G K T P R N F A \square S P F$
$T$ D QVHVYAVERDAS LSRVDADDLAP GAGPRHDSFAPDG



RSE $\| V T F N V Q D K T A E \square K \square V H E D K T P \quad E F K S A S G \square I I S P D$
AVFQTDEQTG RLSFVEREPTQGDHPRFVGQDP
 $V A V C A Y E P S S G R L T G G R P S T G A K A D Y P A Q L V V T P D G$ T DTVYTYRLDESRGTLTEVSRAGTRPGAGPRHLTFHPG $M V T L A V S P D G$ R R TMMDKTSCGGKRPRHLAVD HT

 AFSYHAGNKEPFSAEPKLDLHFK PGGEGPRHMTFSAD


VVIYKVDAANAR DDMQGYAATPPGGG PRHMKFHPN N $V$ SVYQANPKNG KLNVVQVQPVRGAFPRNDNLTPNA
 A DALTTLSYDPSRGALSAVATVSTGPEGVSGRGLQVSP
TDTVYTYR LDEDAGTLSEVARARTRP GAGPRHLAFHP G

 $\square$ AVFAVNDDGT $\square E \quad \square \square$ QNCA $\square$ AGSFPRDFA $\square$ NAD $\square T V F S V S E D G G L L N D E G F Q P T E T Q \quad P R G F N \square D H S$


1 VLYRVNQETGKVS LLYMVHT
GKNPRDFNII D

IGHFTVTADGTDAHQDDVW TRGDYPRTLTLD KQ



## $R \square V W F H \square$ TEEG RLLDRNDVSSGGQGPRHFS LSP D

TNE VVGYK $\$ NPENG K $\square T L I G R T L S G G \square E P R A F A F D \quad K S$ ATFSVEEKGA KLLSAATAPTGGDWPRHFADDPE


UniRef90 UPI0004777287 UniRef90－V6KR90 UniRef90－EESK67 UniRef90－UPI00036F2E92 UniRef90－M5RSY0 UniRef90－R6WXY5 UniRef90－U5P4T4 UniRef90－JgGKV4 UniRef90－UPI0003702E55 UniRef90－UPI00047D3039 UniRef90－FOKRQ7 UniRef90－MODU74 UniRef90－M5TY04 UniRef90 Q7A4P4 UniRef90－GOAID8 UniRef90－E5V4X1 UniRef90 R5S5C5 UniRef90－S2YQ91 UniRef90－U2MOXO UniRef90－H5W8C3 UniRef90 F9FUC4 UniRef90－L1N4J2 UniRef90－S88FBX5 UniRef90 M5S304 UniRef90 W3ASF9 UniRef90－UPI0002E8F1CB UniRef90 LOA2U3 UniRef90 UPI0003B3C754 UniRef90－W8F8X1 UniRef90－R5XIH0
UniRef90 A0A014BI64 UniRef90－UPI0003B77417 UniRef90－W9V946 UniRef90 FOSPA2 UniRef90 UPIO0036EF01F UniRef90－L7ZR11 UniRef90－Q82MX3 UniRef90－UPI000375FD82 UniRef90 C9Z1T6 UniRef90＿UPIOO0370BFEE UniRef90－UPIO00426E491 UniRef90 L1M790 UniRef90－K0EMNO UniRef90－A0A010RCB5 UniRef90＿UPIO0036BF9DA UniRef90 UPI000362EAAF UniRef90－A4XAS7 UniRef90 R5SVQ3 UniRef90 G8PCT3 UniRef90－D5EQV8 UniRef90－UPIO003670E68 UniRef90 UPI00036D8A03 UniRef90－UPI000373BF46 UniRef90－A0A014N4E7 UniRef90－A4FAW3 UniRef90 S4Y1P3 UniRef90－A0A023VHT2 UniRef90－H1QB63 UniRef90－UPI0003B7318C UniRet90＿G5GIW5 UniRef90－R7R2E2 UniRef90－A9GCQ0 UniRef90 101154 UniRef90－W6K8N2 UniRef90－100S62 UniRef90－EONED8 UniRef90 A0A059KGZ5 UniRef90－E6WC64 UniRef90－H7CV37 UniRef90 UPIO00419D25B UniRef90 ${ }^{-K 6 U 9 E 5}$ UniRef90－LOKUB1 UniRef90－E5ROD7 UniRef90 R5REY8 UniRef90－G8LJF4 UniRef90－E3KBP6 UniRef90－UPI000288FD98 UniRef90 C3DM93 UniRef90－UPIO004635A8B UniRef90－N9AC27 UniRef90 F2R9T1 UniRef90 E3BH12 UniRef90－K0NZ87 UniRef90 ${ }^{-}$Wolww4 UniRef90 F7UUJ2 UniRef90－UPIOOO3749C37 UniRef90－X7G2H0 UniRef90－A4FKG7 UniRef90－W8U256
 GALLFAANQRSNAVSVFRVDQGSGQLV DAYLVVAHQEENSVVVFKRDLDTGRLTKTDDAPEGVC GRWLLLANQKSDNUAVFEDHPETG

GKFLLCACRDSH VQVYE $\square \mathrm{DKQSGLLKDT} \mathrm{\square RVSKPVC}$ QEY LIAVHQDSDNATVFKRDKASGRपTHDFHVPEAVC GKY YLAANQTTGD A AVFRDDADGVPQFTRCAVPESAC

DRAY乌TNEDDSTVTVLRRKDGTDTERATVSTDPPEFA GRWLIVAGQQSNTATVFADDQETGELQETVAVPSSHC

NKFAVATNETSGTTTVYAVDQKTGELQCGVEVPEAVCVKF GKYVLVACRDTNEI QVFARDASTGLLTDSIQATKPVC GTLLFAANQKSGTVSVFRVDTASGEL GRYLYAMNQRSDNVTRFSVDQLSGKL GTLLYVINELDGTVACHGYDPATGRVLEE EDFFAITDSGSNFIEVWK TNEKSASAVAHLDLENG PAN GKYLLVACRNDNSIRIYRRNLETGELTDTIGVDQPSC GRYLLAACRDSHCIQUFRRDEQTGLLMDTVEMNKPVC GRFLYVCNQRADNVTTFRDDRDSGLLEFTGNYASVGNPSC EKH｜LAVANHESGSITFFFSTDYDNGLLVRDVAVDEPNC GQFLYSCNQRADHVAVFRVDRKTGGLAFTGHYTPVGNPSM GNYLYSCNQRSDNVTSFR $\square$ NRGTG

GKYVIAANRGSDNLLVFKПQEDGLLAQPTV
GSMLISANRNDDELVAFSTDQNSGELKPEVNVARPMC NRFLYAANERSGDVTWFAVDQESGLPVGSVRVPAPSC GKFVFSTDLGLDRIYQWRFDAASGRLT
GRFLYVANERSGNVTWFAVDPTTGRRGGSTEAPAASC G YAFLANRGDNTLARYAVDGARLLRLLGTVPDE GRYAYLANELDNTVVVCAYDPGSGRLT DRWLLIANQDTDTVAVFARDSKTGKLADEFP RSRPQC GRFLFVANEDSDNVKTFSVKGELALLEHQUETGSPVC GRTVFLANELDSTVTVCDWRAERGELRPGQSVPA DQFVAITDSSAGFVEIWEMDGASADVVAHDDLNDGGCCAN GKFAYVSTEMSAQVHVYRTEQDKLTEIQVINLTDSQDPNN GRRLYAANERSGNI AWFTVDPETGTPVHGGSLDAPAASCV GANVYVADERADLI SVFRVDPTTGAPVDEVGVPSPTC QSFVICANQETDNVTGYTRNADDGKLTANIEVPEAVC
GKWAYVLNELSLSVTVFDYDDRNGSMTAKQTTPS
NWLLAAGADSNTIAAHRDDQETGKLTSVINVPSPDC GAYAYLANRGDNSLARYAVDGARLRLDGTVPV
GRTLYAVNQRSDNITRFRVDPASGVLSFSGDYTAVGAPSQ GAVLFAAGQDSGTLRALRRGDGGLEPVGEVETPAPVC GKFVYGSNRGHDSUADFAVDPDQGTL
GRHAYपANEVDDTVAVCAYDPETGRपT
NRHTACLNHESGTTTFFTVDYEKSLVNSVKVNQPNSC NKHLVCLNHESDTMTFFTVDLNKNVIIIKEMKVKQPNC
 GKAVIVANQDSGHLRVLSRDVETLTMTDEIELPAPN
ERFLVCGNQTTNNDSपFERNSENGKLQKDFAAPEVVC
GQYLVAAGQKSHHTEVYKПSDDRGLLTPLARYAVGQGPMW GKFAYVICENSSEI IILKLGEEGFKLVQYLHVPNGFGGQN GRWMLVANQRSGNVKVFAVDTASGKLSDTVDVPSPVSDAF GNFLLCANENSDNISFSINQETGSFIMSEHIPTP G HLIFSANQNADR\｜SIFVRDAGNGMLTNTGRSUE $\square G T P M C$

DKYLIVGAQDDDELELLTFDEKSEQLVSTDADPAPVCDA GRWLYIMNQRSDN：TRFRVDGKLSAEPDYTPVGSPS NSFMVVANQDSNQUSVHKRDPQTLTFVKSADTKSPA
$E E F I V V A N Q N S T L S Y K R K G K T H D K M T P N P T C$
DKY LIVGAQDDNEDELLTFNEEKEELISTDT DPAPDC DA GQHAYVTAEMSSEI VTFKVQDGY苗KVA
GRHLYAANERSGDVTWFTLDPETGARAGAMEAPAASC GKAAIISNQDTGNVIVFDRDDETGKMTDEIEVPAPN EKYVVAANQNSNNATLYQRDGTGALLVKDUAVPEG
GRF【ATVNQFSNDVVIFARDAES【HEMCH $\square$ S $\square$ HAPSC
GKFLLVANVFSNNVTVLQRDDDTGELYGSVQ■GTP QTSVYVANQRSGTITRLARDPGTGLLT
GNFLVSSGQKSDHIAVYRDDQSNGQLTTGGRYPVGKGPMW

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UniRef90_R5NKV7
UniRef90 U5P4T4
UniRef90-J9GKV4
UniRef90-UPI0003702E55
UniRef90 UPI00047D3039
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UniRef90_GOAID8
UniRef90-E5V4X1
UniRef90 R5S5C5
UniRef90-S2YQ91
UniRef90_U2M0X0
UniRef90 H5W8C3
UniRef90 F9FUC4
UniRef90-L1N4J2
UniRef90-S8FBX5
UniRef90 M5S304
UniRef90-W3ASF9
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UniRef90 LOA2U3
UniRef90-UPI0003B3C754
UniRef90-W8F8X1
UniRef90-R5XIH0
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UniRef90_W9V946
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UniRef90-UPI000426E491
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UniRef90-A0A023VHT2
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UniRef90 A0A059KGZ5
UniRef90-E6WC64
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UniRef90-G8LJF4
UniRef90-E3KBPE
UniRef90 UPI000288FD98
UniRef90 C3DM93
UniRef90-UPI0004635A8E
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UniRef90 F2R9T
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UniRef90-K0NZ87
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UniRef90-UPI0003749C37
UniRef90_X7G2H0
UniRef90 A4FKG7
UniRef90-W8U256
UniRef90 V6A0XT

IT F V D


F VD

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1

A V W LVL V
V VVV

UniRef90 E3CGV3 UniRef90-F9TRX7 UniRef90-U5VRU5 UniRef90_UPI000363A822 UniRef90_F4CNT8 UniRef90-R9F4I5 UniRef90_UPI0003B47AA6 UniRef90-D4GFB8 UniRef90 E8XMF6 UniRef90_UPI00046AC89A UniRef90-D4KN36 UniRef90-N1ZXZ0 UniRef90-W7QSY8 UniRef90_UPI0003B33728 UniRef90-UPI000405CFF9 UniRef90-V8ABG0 UniRef90-S4MGI6 UniRef90_UPI000369F209 UniRef90_G6XI85 UniRef90-K3WIQ9 UniRef90-EOWS37 UniRef90_UPI00036E61F6 UniRef90_U2J6P7 UniRef90-S3CP77
UniRef90-W7YJY3
UniRef90-UPI000381D398 UniRef90_UPI00034BB7A7 UniRef90_UPI0003627C48 UniRef90-D8HU40 UniRef90 R4XZS1 UniRef90_UPIOO03742A3C UniRef90-R5A7E9 UniRef90 K2RNE5 UniRef90-UPIO00368B114 UniRef90-K3WX42 UniRef90-F6A9P1 UniRef90-N1PPX1 UniRef90_A0AO10SP59 UniRef90-F3KPX2 UniRef90-UPIO003718374
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UniRef90_UPIO004691AF9 UniRef90 UPI0002896E72 UniRef90-N1JJY5 UniRef90-W7QHI4 UniRef90-W2F239 UniRef90-L2G724 UniRef90_-13DBP3 UniRef90-F4RN01 UniRef90-KOSQ80 UniRef90-M4FQE5 UniRef90_UPIO0047E5149 UniRef90_M2PBPO


LWDGSYTPDSGDARVWFDTDTAADS KAEDAAPAS YVA Y V S S Y TN GTGG RVYDVD $\square$ KNGRMTEKSK YAYVGTYNPGEGVYRFDVNA QGELSGKTLVSQLP $K V L F S G Y T K G K G V Y$ SA EFNS YVAYVGTYTNSVGIH HYDVDVANGSMKERKVVPI N KVLI GGYTKSKGLYELPF ENNDQPHLDEAKNI 1 E DG



 LFVGTYSQGKGVYAFQFDLLT GAL A PLGLQH EVGI




 $V Y \square G S Y T T G A T G H G L D V A G R S G A A \quad L S V V R T \square P G I T$ LAVGTYTE GRGDHLLAAD GATASFHERQVLTGPV




$K \square Y$ VA LR S E P Y T A A A F T $\square$ D A T T G Q LS P LGG A A L P D
S Q Q THVWSMN EVGEDT LLQTVKTPGQV







VHY ILSGTFNT,VFLYLLAFNPDTPSDS DSQV DRAEG



LYVSSYS GNTTTLDLSAACSAGGLLRTVSSTNGCAG $V Y V S E A D D G T I A R Y A L N E Q T G A L Q L L G R T Q A G G K V$




 VH F F FVTTS Y S D G H T L R V V Y R F N T D G S S L V L L H I S E G S QV I VH H H L L T G S Y T N N T S S


UniRef90-A0A010SP59 UniRef90-F3KPX2


SMAN $\square$ A T DRSGRWLFAASYGGAS VSP DDAA


QVMPMALS P D K H H L Y A A VR S KPA GYA ID RK TGGLSPAGTAP







 G Y L M Y D P K T T I LY S VD ER K V M A F S V NLE S G HLLSL L N E Q
 EPTYFALSNDQKYLYVTNNGRLTAFRVNNDGGVLLGSTAT
 WIA K H P R LD V LY TP S R G G V H A WT Y D A K G K V T K I A S G Q S P S WL T LD R T K P V L F CV A K G S L S S F A T S A H G D L R R L D K V S

 NAS F S SVVFSPRRHRRLHY V VA DG R V G V H R H G D Q G W E T L A V V P A
 NGYFIIAK HP EF N I V Y L A A S S R I H TYR I I Q D G H L Q H L S S L D


S P S WMEVS S DGK LIHDSNTGSDSCYRDIKNTHSGS NQAF NPAFSRYHPRLNVVYTCTNGQULAYRVSQVGADHLIGKVD LH QYVT SNAARDRIYATTMSEPPSWALSDGYQFTHLDTVN

UniRef90 E3CGV3 UniRef90-F9TRX7 UniRef90-U5VRU5 UniRef90_UPIO00363A822 UniRef90_F4CNT8 UniRef90-R9F4I5 UniRef90_UPI0003B47AA6 UniRef90_D4GFB8 UniRef90-E8XMF6 UniRef90_UPI00046AC89A UniRef90-D4KN36 UniRef90-N1ZXZ0 UniRef90-W7QSY8 UniRef90_UPIO003B33728 UniRef90_UPI000405CFF9 UniRef90-V8ABG0 UniRef90-S4MGI6 UniRef90_UPI000369F209 UniRef90_G6XI85 UniRef90-K3WIQ9
UniRef90_EOWS37
UniRef90_UPIO0036E61F6 UniRef90_U2J6P7 UniRef90-S3CP77 UniRef90-W7YJY3 UniRef90_UPI000381D398 UniRef90_UPI00034BB7A7 UniRef90_UPIO003627C48 UniRef90-D8HU40
UniRef90-R4XZS1
UniRef90_UPIOO03742A3C UniRef90-R5A7E9 UniRef90-K2RNE5
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UniRef90 K8WJQ3
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UniRef90-N6TZ32
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UniRef90-V9DLN4
UniRef90-X4UY90
UniRef90-B6KOT3
UniRef90-M4KMG2
UniRef90-K1LT35
UniRef90-J2M132
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UniRef90-W4FDA3
UniRef90-UPIOOO349E330
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UniRef90_X8JHH5
UniRef90-M1 W2Z0
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UniRef90-KOSQ80
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Uniret90_OMIOB47
UniRef90_M2PBPO

DGAAPCHLGWDDKRDLVFSANYHTGQALVY

 A GHGPRHLAFHPDGERLYVLCELGSTVVAARRDGEGYRRT TGGSPCHLLYHPAGRHLIVANYGDGSVSVHA


 |  |  |
| :--- | :--- |
| $\square$ | $G G R G C Y$ | PGSSPAY GINPAKKLLYTANYHTAVLSVFS YNDEGK LGDYPCYVSWNGDRNQLAVATYVSPNYSVIDYTDNQDSGK




 LPASPTHUSTDLA GKFLFSASY GS G GAVPAHLSIHPSGKYVLVANYVGGCVSVIPDRH KGAHPCHVAISPTQPVAVVSNYTGGSLLLV SLKED



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

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

AKNVKALSGYVCNNQSHVFSAGGPSGEVFRAAEADGAID
GKPAAAVQUVPNGKNAHAA DPDAANRNVY DTS GGTDQVL

LAESMAYVSTAASGRYLF SASYGGNLLAVNSDDSNGVA
 SGDSPCHLALEPTGKGLAVANYADGANVVTVGGFGRPDF


 ATTAPSYMSGYVVANAKAIYSACGPQVDVFEDDDKGKDKT TCQGKTYMSCFVNENRDFAYAVDYYNGEVVTIA LLKQK】E GDPCHVAVNAAQNLVVASNYGSGSFSVYRLEQGSLTHF

VS GGEAPCHLSVHPSGR WLLSANYGTGSVAVHPIEDSGALL


TRSRSGYVTASGGATGEVFSDDPETGN VIPPPASSGTTAT LA GSA SHTA TSADGRFLLAASYAFNQ
EGHGPTSLCVLDNGT VITANYDSGTVSKCHPD
 TTGNPVHAALSPDGRHLLIVANHEGGNVAALAFADDDALLIP

MASTEVYVSNAAD
VRATSSYQVS S DQPRDYSAGGPTGEVHDDDAKTGGFGKD

 1 GASLVSLAADRTGQLLFGVSYGSHELLAFSVKQLDLGG
 TLGGPVSGVMYGKGQKRGLAVAHYSPGALTXTDVSDPSHLD AAASYPY STDPQGRFLLGASYDGDVVHVY WF K T IS GPV SAVQFGEKGAGLADAQYGGSSVSWFDDSNPAAD

 LSTQPGPVSTVIYNQGKALAAAHYSGSAVTSFBDSIGDR


ALPVGST
T S S D P VA F D DS P D R K NMIVA S Y T G A T Y E L N E D Q S FK Y N K S
 VT T S S CYFS DNGKY TFTA

UniRef90_E3CGV3
UniRef90_F9TRX7
UniRef90_U5VRU5
UniRef90_UPI000363A822
UniRef90_F4CNT8
UniRef90_R9F4I5
UniRef90_UPI0003B47AA6
UniRef90_D4GFB8
UniRef90_E8XMF6
 $G E V I Q T F K Q Y Y R P E T V E N R E R Q V G P H A H C A H F W H D$
$G V P G E R S D L L Q L Q G Q G P V A D R Q E G P H A H M V F P D P N G P D V L$
$G V$ GAVGERSDLLDLAGSGPDPERQQGPHAHMVV PDRDCVL
 $G V P T A P V Q R L T H T G A G P R T D R Q E G P H A H S V Y V A P G G T H L L$
$G S I G E I T E E G Y Q K G L G S A A G R N H R P H V Q C V R M T K D N K F L C$




 GS GSLGPATDVVHNTGPRQPERAADGSHPHMIVSDPSGKFVI
AR SAVHVLQHTGAGPHTPRQHGPHAHQVQPDPSGRWAV SAVHVLQHTGAGPHTPRQHGPHAHQVQPDPSGRWAV
GATDVVHNHQP
GSLAELSDLHQFEGSLADVPDRQEAPHLHSSSWAPNGNYLF
VSVSPIDNNGMVK DWTQQLNNLKK TP
HSVNQVPTNQLLE


 STPGAAIARLVGEGSGPVEGRQTGPHAHSTAMGPEGRYLL GTDTSVTSEFTHEGRGPHDDRQSVPHAHCAVPSPDNRFVI GAATDL VTHHGAERDAHAHQVVNDPTGRWVL
PQVIARR
$G A G P R V D R Q E S P H D H Y A A A T D D G A R V Y$
$S P P P G P G Q N G P H A H Q I V T A P D G G H V L$
GSELGGRTDLVTHS
 $A L G G S \quad Q \square F T \square D T P G A V P D R Q D A P H E H E A I L D P T G Q Y V I$

 LSVQA $\square D K D G Q V S D K P Q V$ YKTGPFAHSDRTDLSDRFVY GDLVQELDYVSGQGENQSEKRGDVAHAHSVDDSPDGKSLY | $G M I S Q Y R L D Q N N G A D S D I E Q V N A G D Q V N P M A D T P D G K V L F$ |
| :--- |
| $Q W R F D A A T G Q L T P N D P P A M A A R P G S G P R H L V F H P N G R H A Y$ | GSDTLTDTVKKEGEGSKVHPARQERPGPRHYVDFHPNGRHAY LSVLTINDEGVPNQVVQVIEGLQNP $\qquad$

$A P Q Q T L E G L T N$
$G K G K H P N R Q Q S ~$
$\qquad$ H A $\square R N A P D$
C H S A NVD T

[^1]UniRef90 E8XMF6
UniRef90_UPI00046AC89A UniRef90_D4KN36 UniRef90_W7QSY8 UniRef90_UPI0003B33728 UniRef90 UPI000405CFF UniRef90_V8ABG0 UniRef90_S4MGI6 UniRef90_UPI000369F209 UniRef90_G6XI85 UniRef90_K3WIQ9
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UniRef90-L1L4M6
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UniRef90-B3YF92 UniRef90_UPI00046233F2 UniRef90-W4FDA3 UniRef90-UPIOOO349E330 UniRef90 X1P7W1 UniRef90_X8JHH5 UniRef90_M1W2Z0 UniRef90-J3C822 UniRef90-N4V052 UniRef90_M2QBJ0 UniRef90_UPIO004691AF9 UniRef90_UPIO002896E72 UniRef90-N1JJY5 UniRef90-W7QHI4 UniRef90-W2F239 UniRef90-L2G724 UniRef90_-13DBP3 UniRef90-F4RN01 UniRef90-KOSQ80 UniRef90_M4FQE5 UniRef90-UPIO0047E5149 UniRef90_M2PBP0



## N

## H

## H

UniRef90_M2PBP0


## UniRef90 E3CGV3 <br> UniRef90-F9TRX7 <br> UniRef90_U5VRU5

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AA CYR 290
AVFKVLEDG 300 D/V VP TH GE $\frac{310}{T}$
PRD DCLS
320
P DTVGSVGF S WEPE G G A GERATPVVEVMPTGG


S D S $\square$ AT F S $\square$ QPNGS $\square$
AFEHLAPAGGSFPRHFSL NGD

LIGHESSRGAFPRSLLLYKG MGYVAAF FLGNYPVQEKQPRNI AFFP N Q S H

| V | T |
| :--- | :--- | :--- |
| I | A | Y YLSHYSVSPLGTKIT TLED DVK TEGETPRDFNFNNST | S | S |
| :--- | :--- |
| T |  |
| S |  |

## A


PNTVAAFRVDGQS
ADVLATLVVGPDGRVRHERDLADGGCGGWPRHHEVVDG
$S T S L S V Y R / N Q D N G D L V R V G Q Y P T G K G A N W$
GAIISSYKIDSEGSLKK DQHYLTAGTWPRHFADHP S
K GWVSAWSLDENGRLEQPQHRFQTRTSGGWANA IAVAPNA
 VVAVCAYDPGGEPQSTGAPPGGGTGANYPAQDLVT SD

 P $\quad$ E D N TF A V TAEITALRWDASGRLAPVQTLADSSAEFAGTRSLALSP D


$\square A V M R \square N P D D G C \square K P \quad V G W V F C G G K T P R F T T \square S A D G$
 KGF I A WYS I DEKAKLTRIGAVKLAKSPGLASRSFAFD S T GDII A I Y S PV SGESAK GHVAEVRSGLKHDRGMEFGGPD






 EDSMATYSTNPSTS EI TLLEEATSAFSYFPRTFAII NKA
 $N G W V A A F Q Q D T S T G L L Q A L T Y Y K A P V T G G S A A G L R V A F W E$
 UniRef90_F4CNT8 UniRef90-R9F415 UniRef90_UPI0003B47AA6 UniRef90_D4GFB8 UniRef90-E8XMF6 UniRef90_UPI00046AC89A UniRef90-D4KN36 UniRef90-N1ZXZ0 UniRef90-W7QSY8
UniRef90_UPI0003B33728 UniRef90-UPI000405CFF9 UniRef90-V8ABG0 UniRef90-S4MGI6 UniRef90_UPI000369F209 UniRef90_G6XI85 UniRef90-K3WIQ9
UniRef90_EOWS37 UniRef90_UPI00036E61F6 UniRef90_U2J6P7 UniRef90-S3CP77 UniRef90-W7YJY3 UniRef90-UPI000381D398 UniRef90-UPI00034BB7A7 UniRef90_UPI0003627C48 UniRef90-D8HU40 UniRef90-R4XZS1
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UniRef90_C6DDD4
UniRef90_UPI0001924BF1
UniRef90-J4UJS3
UniRef90-E7G7N4
UniRef90_UPI0002EFC82E
UniRef90-D6EX32
UniRef90_N6TZ32
UniRef90-L1L4M6
UniRef90-C6CNX8
UniRef90_W4JNZ6
UniRef90-F4RT10
UniRef90_UPI000472F6B7
UniRef90_JOKAA5
UniRef90-V9DLN4
UniRef90 $\times 4 \mathrm{UY90}$
UniRef90-B6K0T3
UniRef90-M4KMG2
UniRef90-K1LT35
UniRef90_J2M132
UniRef90_14N6C0
UniRef90_U5HBL8
UniRef90-B3YF92
UniRef90_UPIO0046233F2
UniRef90-W4FDA3
UniRef90-UPIO00349E330
UniRef90-X1P7W1
UniRef90_X8JHH5
UniRef90_M1 W2Z0
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UniRef90_UPI0002896E72
UniRef90-N1JJY5
UniRef90-W7QHI4
UniRef90-W2F239
UniRef90_L2G724
UniRef90_I3DBP3
UniRef90-F4RN01
UniRef90-KOSQ80
UniRef90-M4FQE5
UniRef90_UPIOOO47E5149
UniRef90_M2PBP0
UniRef90_M2PBP0
 GHAAVVSNQDTGNVIVFSRDIESGSMTDEDDIPAPN
 GDHYVANLSQSVTTFRIDPDG
$Y$ VVVANQNSETLTVLPDDAESGPACSTDDLPTPVCVLP NKHLVSLNHESNTMTFFNVNMAQGTIVPEVGVDQPNC GSMIYVMNQRSDNDTSFRVEKASGA
GQYVITAGQKSDAI EVAK IDPPNGQLTTLKTYAVGKGPMW
 ETYVVVANQNTDNATLYSRNEEDGSLTKNIPVPEG QDYLLVANRKSDNLAVYSRDKDTGKLTD
NKHLI SLLNHESDSLTFFTVDMDKGTMVPELPVSRPNC NHHLVSLNHESNSMTFFTVDMKKGTLVPEIKVDQPNC GSFLFCANQRSDAVTSFRIDKASGQL

FLYVANERSGDVTWFATDPRTGRRAGS $\square R$ VTAASC
GRWI YVSNQRSGTVNWLPRDPKTG
 GDF LIAA GQQSDHIVVYRI DKSCGKLI QLAARHAAGKGAMW GNFLFCANQRSDVVTTFRVDRDTGK
SRVVITTNQDSNQITVFKRNKHTGALEAEVDVSKPVC
DEFAALTDVPKRYVEVWRWDPKKDEVVAHLGIDDGGCCAN GNFMVVANRDVNNLSVYQRNKRTGRLTGVAQVERPDC
 $G K F L F V A N Q D S D L I A S W R L D P H T L$
$E N W F Y V S N Q R S G T V T W L P R D A A T G$
GAFLLVASQDDHFI RAWRIDPATGLAHAQGQLASPAC
$S L L F A A N Q R S S T V T A F R V G S D G S L T P A G E P L P A P V A V C$

## GDLIAVALQYDSKLVVKKRDVQTGDEVAS $\square \mathrm{S} \square \mathrm{DA}$

FLLVSNQNSDNTEVFRRNDGTLTHTGH GKWLLVTGEKSQTI GSYRDDKGSLERVSEAKSGDG KEYLALTDSQDGRVS IISFDGKKIKEVANVTLGKTVKAST GKYLYVVGEMSGTVTAFS $\square$ NDSTGAL SQIAVANG
EDF\|IVAHQDSDNTSLFRRNRKTGMLT
GRFLI SSGQKSDHVSVSEDDPDTGKLRLLARYGVGKGPMW GNYLLAVGQLSTSLSAYRIDPKTGALSALGQYPVGKG
GRFLVAAGQKSHHIAVYAIDAKSGKLAPVARYEVGQGPMW DSFVLVGNAGSNSVTVHVI DQQTGLLSSRDELIEPVC
$G R Y L A A V G E L S D S M T V Y A I D Q S S G A L$
$G Q I V A V A L Q E S D K V V I F R V D P T T G E F D G S V H V P N P V C$

GKVILCADQFKD VVEVIAVNASTGML
GSYI ALT DSEEGFVQMLSYEKDGFEVLDEDKDGEKG
DRWLVVASQLGGTLESFELKNESKGVLYETHVGEPVC
GD WLLVVANQNTSNLVSYRVDKT TGLLSPEFATGNPVCDA
GAYAFLANRGHDSVTRYAVEAEGARLRLLGTVPVGG
G LLFAAHQRSSTVGVFHVDPETGEL
GKFVVVADLGADLLRLYAIDGDR DRELPAVPVQPGSGPRH GRYLI AS GEKSEQLSVYR!NQTSGELTLTGRFPTGKG $G K W L I A G G V H G G G V K I Y E R D G Q T L K E A A K N N V V Q$
$G R F V V V G A V D S N L V I I H R R D P M T G A L D A R T K V K K P S ~$ GKTLIVANELTDTVVAYGLRAE
GRF LYVGNRGESQLLVYRVDAGSGELTPVQRDPSGGEAPW


LNF YSANEDSDS TRDFSVDQDSGMLKDEVFTASPTC NRFVYVLDEDHDKVISYALDAKSGQL
RDWVLLTDDQDGWVWVLEWDGVQMRELCGVQLDEGTGASH
GQYLVSADRPDNKVKVYNVNADTGVLVSDFTLPQPAF
GKYLIAGGVHGGGVKVFERGGKGLKEVAVIELAAPTG
DNVVYVGNQHANKIVSFRLNGALVSTGTNFAVPKPV
GRTLLACGEHSTHVSLFS DAQTGALT LCSRSEGGSGAN
GRFLYAPNRGHNSIACFSVDAYTGLLTSIGRVP
 GTLLAVAQQSDGRVVI I DRDVETGRL
GRWLIASGEKSAVTGSYA DDQESGALKK RVGEAPAGGD GSLVAVGLDSDSRVVVISRDAASGKM $G D H C Y V A A Q S A D A I Q A Y E L D A T W R \ I G T Y P V G S P A F V G P$
$D S Y I V A V A Q R D D S L V S F Y K R D R K S G E L T K A V R T D R P V F F$
 GTMVAVALQGDGRVVVFARDASNGSQGPLLSIDGMGEADS GKWALVLAKESSTVALKKVVQTGALTFNKPVYSDPTPMA





UniRef90 E3CGV3
UniRef90-F9TRX7
UniRef90-U5VRU5
UniRef90-UPI000363A822
UniRef90 F4CNT8
UniRef90-R9F415
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UniRef90 D8HU40
UniRef90 R4XZS1
UniRef90_UPIO003742A3C
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UniRef90 X8JHH5
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UniRef90 M4FQE5
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UniRef90-M7N628
UniRef90-G7U562 UniRef90 UPI00046F7802 UniRef90-UPIO003653148 UniRef90-D8NOF4 UniRef90_A0A031FT97 UniRef90 XoPGV8 UniRef90-G4TA95 UniRef90-B5JFE8 UniRef90-R8DAF1 UniRef90-UPI000369C9C3 UniRef90-UPIo00455F445 UniRef90-A6WFV3 UniRef90 UPI00036775AB UniRef90-N1LJR6 UniRef90-M1PBCO UniRef90_UPI0004763C49 UniRef90 Q8TPK7 UniRef90-UPIO003804681 UniRet90_G8NP96 UniRef90 S3Y1L5 UniRet90_N1VSP5 UniRef90-E6SBG5 UniRef90'UPI0003764BEB UniRef90 E2L998 UniRef90_UPI00047C578F UniRet90_X2GM67 UniRef90 S2FO58 UniRef90-18TC20 UniRef90-UPIO0034B1A21 UniRef90_M1Q7R9 UniRef90 W5TES5 UniRef90_UPIO0047C164F UniRef90_UPI00047E153D UniRef90_UPI000262FE22 UniRef90-W5TF04 UniRef90_C2Q881

LLVGTYTPGRG $\square$ HRDWFDPSTGE DT DGGVAARAS SFWT FRLNDNDGTLTLLSAVPKGFAH VYV SNGDSGTVTAYALNKTQQQLKPVGEYPSGL
$H L L L L G T H \quad D T H D H A V V F D S E A R T D T R G A S T V$ ASE $G Y V A S Y \quad S G L V T T L N L S V A E Y R D T P V K L T T D G C A G$ LLASHY

RLFASS

$N L V V S H F N G N V Y S L A L S G S Q L T L K \quad Q T L K A G G T$ VRHIVTGTFNT EALYVLGYDILDSSLRDEQR $R L F V A H T R P N C L S F R M D T R T G Q L T P N A P A K L D D D V$
VVVGGYTNTEGVHVLRQCGVTGGRLTLAPLARYPAAD VF HIYVGSYTNE GUYTLAFDPDVPSLTLVSTLTVAGF



MTR R $\square W \square G G Y T S D R G \square A S V E V A P D \quad G T \square G T P K \square A A P M R$
 SNSDSQSIEVWNL CDNGKMHLDQTVDTYSEV SNGTGTVANTAVVNVDV MTRFWLGGYGPAEGDGVLAGDEGREATTLAYRGPVTQTP ILAGGYTT F VASYLLNSDTNALSLANQS PTGA TGGGGYVLRIDRENGHAELINEAS SLLP A GD S S S V FRLDGDA


LLVGAYSSV $\square$ TSVRFDPSSSDDTVLGTS PSGL

FFVGCDGTD $V$ DRGVYS FY $\square D S A T G E \square I K K S F V K S D A$ LYASGYDDS AVVVFERNQQTGELTFVEVQKVDGLG

Y $\square G T Y E G V G S G G U Y G F E M D V R S G E M S G G E L V C E A P$

RFWVGGYSPDGGGTS $\square G \square R A M G Y T G V L T D L G D A H A A E$ DAAIGGMTAWQVTTGPDGP TLIGSRTTEQGVGVSSWSRSGSQKPWTYLANLPDL GTYAVDEVLSCWAVDVDGAAL AKRSSITLPA
 LIGTYTRRDSKGVYQLEDDTDNQKLQHLQFVGEAD $\square L V G G Y G N A \square T S L K F T P S T S S L T Y M T Q T N V A Q M T$ $T G T \stackrel{N}{N} T V \operatorname{Til} T V D N$






MSRLLVG ASDGTLTLLNLTADADTKDDARDAAVG GSGLINSYTINATTGALNAGGFVAA GGG


YTANES $\square S Q V R \square D T G \quad V V K T V A L N I$ HAYVPNEASHKVVKTLPAEGSLGQ

LS S R T T E IAGGA

UniRef90 D3AP58 UniRef90-W1HFL7 UniRef90-J7L8Y7 UniRef90_J3D1H9 UniRet90-W4FFD5 UniRef90-J9VWFO UniRef90-F9FNP0 UniRef90_N4VS30 UniRef90-G2YL55 UniRef90-A0АО24H6L6 UniRef90_B5WFX3 UniRef90-D8HKY8 UniRef90-A0Ао22MJ29 UniRef90 G4MKH3 UniRef90-UPIO004560099 UniRef90-UPIO002197BA8 UniRef90-M5TT96 UniRef90-A7F6H0 UniRef90-AOK8V6 UniRef90_C1EDW0 UniRef90-K5W431 UniRef90_J9VM85 UniRef90 -G9MYF7 UniRef90-W3VDH4
UniRef90 C9SSC9 UniRef90-A0A010RKX8 UniRefolollajuo UniRef90-E6ZK36 UniRet90-W7J4N6 UniRef90-E3QZ20 UniRef90-UPIoo047C1591 UniRef90 K3WX43 UniRef90-UPIO003B51A2A UniRef90-G8QRV8 UniRef90-COWZH9 UniRef90-G2LPF4 UniRef90-UPIO0037BE334 UniRef90_UPIo00469E9FE UniRef90_UPIO0046246A0 UniRef90-G51FJ7 UniReffo-U2YKS1 UniRef90-S7W5P3 UniRef90_E2SK10 UniRef90-UPIIOOO462897B UniRef90-×8JFI2 UniRef90-W4MBM9 UniRef90_M9VH07 UniRef90-M2PA61
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GPSFLAYRPEPPTVYAVNEGADTAFRPHGDASLTELGSVP NPAFTRCHPS $\square N V V Y S C H E G Q V L A L Q L D S R S G E L T E L C P P$ K S MPMVVSQDKKTLYVSVRSQVSAWHIQPDGTLSHFADTP
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 P II IUITYTPDG GGRAEGIGALSAHPDGTLEWRGTAS

S P S W LT RHPS $\square P V L Y$ A A NTGGVT A $\square$ A $\square$ S P S GE $\square S V L G T A E$

SPSFVAQHPS $\square P V L Y A V G D G T F R A F R \square A D D G A L A P L G R V A$ RPSYLCF SDTNLLYVVNEQNLAMHQGEGKTYLLEIGGSIP KPDFMTFANNG ILYTLDHAAI TSFKEEGGYFTRLSSVSA QP $\quad$ KIIIKNQKLLYAGKNNEI TTYNDDAKGCLYEKSKIS VCAAPPVRYAYATNAGSNNLFTVDTSTGVLGSMAAP


 DAKYLSYYKNR LLAFPTQLTDAGLCVLVNGNELHAGLEN

NPSW $\square$ ATHPNNS $\square L I S T N T G G \square S T F L V T D K G V V V R S S Q A S$
$N P$ LSMSKSGRWMY LGYRNGGGVWQYSCMDLQLGLAARV SAEALALSPDGKFLYVPGYSDVAVFERNQQTGHLSFVEVQ RATWLIAHPSAKGIYFATGGAVRILRLDSDNAQVVASVRS


SPSWLATHPRLPVLYAAHRGEVAAYRILGHNKLEPLGKKP HTNVVGSCPLGDHLVVVLCERDGTLVVVHPGREVVGTVQD NPSWLT A GDPGIVYALHGDGVSALRCDPEGMLSLTSTLD KVQYAWRHPLLPVLYASDRNHLSAFRIGADGTLEAL PVS LVADPAGTTVYVANDNTVSTLADHPDTGAVSVSAPA DPTYVA ESNAKRIYA YTDGNVTGGFKEWDGSSEDFA IMD

 RPRGMAVSPDGRTIYVAEVPEDKIVAIDVATNR IKAEYR NPSWUIGHPTNSDLYAANPGALQSFVVGDDGALTTVDTDS
SPSFLAAGAPGTGLVHAAHGRVSTRVFDGRAWELRGESPS SPEGVHASADGRYIAVAVEESNSVTIIDAKTRRQLADIPV NP $\square G V A V S P N N T T V Y V G N H G N N T V S V I N A A T N T V I N T I P$ LKGSPTPSYAYVTGLNSNTVSVFNTAGNNTLAKTVP



P LIATHPSGSVLFAASSPRVGVVHDERDGSLVTGASTE GPESMAISSDQKYLTVANRNTLSHFSINPNGNLTIIGTVP

$N P V A M V T S P N G K Y \square Y V V N D N N D V Q F A D G T D A K \square Y P Q Q T N T$ NPLGVAISPNGTLAYVSNQGSNTVSVINTTLNTVTATDP



AANADRDYVSAAGSDHLVGYAADSAPRATAGAKET LTLS QDHSILFAVNAGSGSISVFGVRRSNLVLVSKA $R P R G 1$ HASPDGKTLYVALSGTDAGPDVDESTQRKLVKUIP $N P G E V V T S A D G R T A Y A A N Q G S N T V S V I D V A Q G K V T A T V P$

UniRef90 D3AP58 UniRef90-W1HFL7 UniRef90-J7L8Y7 UniRef90-J3D1H9 UniRet90-W4FFD5 UniRef90-J9VWFO UniRef90-F9FNP0 UniRef90_N4VS30 UniRef90-G2YL55 UniRef90-A0АО24H6L6 UniRef90-B5WFX3 UniRef90-D8HKY8 UniRef90-A0Ао22MJ29 UniRef90 G4MKH3 UniRef90-UPIOOO4560099 UniRef90-UPIO002197BA8 UniRef90_M5TT96 UniRef90-A7F6H0 UniRef90-AOK8V6 UniRef90-C1EDW0 UniRef90-K5W431 UniRef90_J9VM85 UniRef90-G9MYF7 UniRef90-W3VDH4
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SGGGPTHFDILPDGSGMFTAHYVSGT VTFHPLDEQGLF TVLGPVSAVMYGEWDYG LAVAHYGGSAFTTWDIQDPANL TSGGDLHSTLYGGSNGGY|ALLAQYDASTDSTYPLPLTGAG TLGGSCHQEFYNDGKALAVAEYDGSG KADSAF

RRTGD
 SNGEVHSGLYGGGDGKGFIAVVQYENSGI WTYKLPITSSS GLRHINTVDITATSSYVHVQPPPYPSYCLAPGPYSAGGPT LLGSASHTCTDGSGRLFFAASYAFN SGDSTSHVEVHPSGDFVYVGNRGHGSDAVFA DSHTTGE TPVGAAATVLYANNTGLAVAFYSSSS A VAGSYDVTSD DDASHAY LSLDRSGWLLGASYGGNSDSDYDAARVRDGD AGGRSTCCYLNFNASREWMMAVNYWDARVSMFKLGKDGRP TGGAPAQFQULSDRSAVVLATYLGGSMARYPLSANGTFAS DGSGVCHLAFNKLGSGMLGASYAEGTVDIWNTESSNPELII
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## 1

GATGSYVHVQP
LGAQPTHL QPPPYSSLSAPAFGGQAGVARWLGSAGGPT NGSAGV VSVEFNADKTRLVGASFGQGTVDVWDVAAEASSD
NGDAACHVAVEPGRFLVVCCWGDGQVLFYGLDGVVGRT AGAAACHVNGSAKGLSTFSFNPKDGSLTYLNVVDVGVNP SGGDPCFLTLDPSKK FLLTTNYSSGTVADFPLSKAG
 FPGKANFLSFDQNQKFLFCSSYHTNSLIVA TGSTPSGVADPAGRFAYVAN RGDNTVGAYSTGAGTGF TGDGVCHLAVSPNGQTLVAASCYGDGRVGRFGLAADGGD
SGGDSPAFTTPGSTGQVALMNYNSGNGFVVPTEKGNALEF SGGDSPAFTTPLSTGQVALMNYNSGNGFVVPTEKGNALEF

 TGADPAY $\square$ AGLAKTRQVAVMDY

GQSPCHGAVDPTGRLMADADYASGQVEFVDLSAYYQGGLV SYEGRTY ${ }^{2} K T L I A P D R L H G Y A D D Y Y N G E V V T M P D R Y S K$ VDGLANATSVTVSPDGKFLYATGYGDSAVAVFERDEQTGQ


AGALLCHLVVAEAAGALV ASCYGDGKMLAYPMDADGTL EGQWPCHGAVDPTGRLMAVADYASGQVEFVDLSDPTRPTV CGGSPVHAVVTTDRRLI DANYASGTLAALPDDDDGSL

 SGGAMNYLSDTRGSVLLGAAYSGGYGVVCA TYGVGG
 VGTNPDGVAVSPNNTTVYVGNHGNNTVSVINAATNTVVGT VGSNPERLALNPEGSQLWAANENAARATGFDLETGKILG GGASPCHLTLAGE FLLAANYGGGVGVLDLDG AGKNPEHAVFSPDGRWLLVSAEEAEQVDVIDVAQMRQVGS VGIDAPQGITVSPNGALLYVVANELSNTISVINTATNTVIAT
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QGKNPEHCVYSPDGKWLLASNEESGDVDVI
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PGSAP $\square / \square A V N Q S G T F \square Y V V D Q Y Y P G G P V Y S S S N P G P G D$ $\nabla G L A P Q G I A F T P N G A F A Y V A D E N S N A \prod S V \square D T L T N \prod V V A T$ A GQHP A HVVT DLS GQRAFVSDSSANLVRVFDL
AGKGPEGIERSPDGRWDAVCAESSNEALLFDAASFKDGK
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VEISTNPESUSMDIKETPSSSSAPFAYDTNGGS
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## UniRef90 D3AP58

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140
GPFTHM ${ }^{150}$ PAGRYLIA HDGLPGETITVVEGLEG CHSANDSPDNRTLW GEVRSDAHRG KGPVADRQEG GPHA ASADRHERQSDPHSHA GKV

E S
TSQAPLSEHTFTPSHSPGHHRQDHAHVHQ\ILHKDE TSLN VQQFSDSEPGPDPSRQEASHPHAAVVDPSKRFVL QPLQKLTFTMPQ PGPVPSRQNKPHPHSVFTDPSGQNLL SSLTPHQQTFEMASTGPDLIRQEASHPHQVVVDPSGQYLC

TGSGPN RRQGSAHAH
GAPSARTALVQHHGTGPVSDRQEAAHVHMAVPSADGSVVS GERTARVTH SSSPPGPGQQGPHAHQFITSPDGGHVL QPLQKLGP WTMPGPGPVPSRQNKPHPHSAFPDPTGRFLE VTVSRQDQAGRMQPPHQRLD DLMAAHSVTWLPGEQELLL

## LSLLQRKSTV

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TTIQSKD
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KYMKNTT $\square G$
KLLKQLNST
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GESSTRLRHDGA
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NAPVSHPHMALE H GSEVF
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SDPVPAAESTDPFAVPGHPERAASHSHQATVDRS
RSVLDLGQGCVF PGPVADRQEGPHAHQVTWL DRAHLAA GEVDSVVDLNSLGQS HGASESHPHQI LLTDDGFAY LSVHRLDTDGRVDEDPQDAEADFGTYPHQVMVFPSGRTVL NTLSIFRMGAKTGAPALRGVVQAGSNPYTVAVGGAGTFAY GSITRADRDMDKGTLGFRPEQQDGPHPHY\|NLTPDNR VV GQVLQFTGSGPMQ GALTFVDAVYDSDGGVDGपD

FVNGSNTDTFPTKDSGP YAGVSEPHMALQV
EFQTGVAPQGIVTVSP GAVRGLRQTLRGEGSGPDTDRQDASHPHSTRLLGDGEEVF I PVGNTVSVITNTATNAVINTTNVGTEPRGG| GFSPDSRRAY VSVD DTARGEVITUVDVGNKYSPCG\|AVTPDGKKLY V ${ }^{A} \mathrm{~S}_{\mathrm{T}}^{\mathrm{V}} N S$ VTDTVKVEGA
AS $\square$ ALIKKSTK
KGKNPEHAVFSPDGRWLL HPRG| GFSPDSKKLAY
AQLDRLDANG AP QQVTDAVYAPNDHSSVITADG CVH FSVNPLTGNLTMENTIPKIHASGSA

AAMSPATVT
$G D \| G N T K$
VVVYPDNSNQALTGCTPNTGVQVSSHAHGVHWSEEKKEVL IIPVGARPRSIVFTPNGQMAQVPVGMNPTGVSALANGNYVY QARTQLGTVKTGSFPHGLRLSPDGKMLY
KVfevkVkarn NNVSVI DTVNNTVIATVVDV GSDPEGVVFSPDGKTVI GSLTPVPGTPVVTSQAPLAINVSRDGRHLVVQGPDGS GFRLDLGAQLRPDKNSTAFLTANVTGGASUAFSPDGRFLL LKㄴ
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RKX8

C1591
B

190
H S GPRHMV ${ }^{2}{ }^{2}$
GAGPRHMVF
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$V V P D G G M D V V R Q F H D E E T G V V T P C G V I V S A G R G D G P R Y E I V F$
$V$
$V$ S SIMRTNAKGGLTKIGQETNATTANQPTYFAFL





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S $P$
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 HPGGRYDYSLQEHSSMVDVFVIKXSDGTRLEWRQGVKIIP V
 H
H


 S

 TRGNTLFALHELSSTLTQQLIPPAPNGTTPLIANFS ILP HPGKPFLFVDFEQLPEVHSFQVDMASGEDGKLVGKAP NSAEDAVYVMTEYSGEVLHYVRDAATGGLEDRSRANAVDP RPN NVFFVLGELGLGVIVYEWRDREFHQL DDHGRFLYMLSEDSCEI GFEMNMEQGGVI TRK LSLLQ MLDDGRVMTTDLGHDLVRVWDYAPSQGLRLDHEVTLP
S

\section*{| $H$ |
| :--- |
| $T$ |
| $S$ |
| $S$ |
| $H$ |
| $D$ |
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SPDGKFLYAAGFGDSALAVFERDEQTGKLTF
HPDGVLYTVAELSNQLFAHAWPAGEHLTTANATSPPLDP
 VASD LYYVNE DNNTLSHYTDPGGDGGTTASVRTTQ DPTSKYAYVANSGSNTVSQYAI GANGALTEDT
HPSGYG YYVVTEHGAEV DT DRADAAGVV YRE TEDGHKQVVGGALSGTVSTWSRPTGAREWRFVQETASSRW
 $H P S M P W L Y A A D E R T S R R M M F R H E N D R L E G$
$H P A G T F A Y V A N F A D D T V S V Y T I D G R T G A L T P A G S P V A T ~$ $H P A G T F A Y V A N F A D D T V S V Y T D D G R T G A L T P A G S P V A T$
$S D D Q Q T V Y V L T E F T G E V L R Y H R D P S S G A L A L V D S T P A H D P ~$
AMNNTLYTLHQNYNALSQSTLPAGSGGTSQVVANFTVVP SPDGRHLYVALW SNEIVVFS RDSSTGLLTYVSKLVYLES TLDGTRAYVTNQNSNTVSV 1 NTATNSVIDTINVGT SPDGSKAYVSAEDAGTVSV I DARAHRVIQTI
 MPDGKHAYINAENDGTVVL VDTK $L$ HKVVKT $\square S G G K$ APDGRTVYVSNSGGSTVT PIDTATN
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YSTFLDEEMGAFAAAGEVVLSADSKHVYTSNRLMTSPT
FGNTPHNATSALAGAI A SDNGKD IVYVNRLTGTAP STYGAAFPPANATSAAAGEIIISTDGKHAYVSNRNSGNAT AAFPPANASTA AAAGEIAISSDSKNVYVSNRVTGNET P AHLAAHGRHEYRGDTLRFSSDLRFLYASTRGKSAAT FTPAWALPDPAGNQPAEIVLSPDGRFAYATLRGDNT EAFPPANATSA AAGEIVISGDGKDVYVSNR DTGNA GFVGPATAGGAQPEDSAAEI ALAPDGRHAYVGVRGSN ADFT GSSDSADIHVTKDGQFVYTSNRGHNS
$A P \square Q P G E$


KQFLKKH YWSADDHVTSCGRFLYATDR L SPLPVPTATTGNSPSAIALDPDGRFVYVTNSGDNT A $S P D A Q V G V D F P A E L T R S K D Q F L Y T A D R G S N T$ $P G L P Q G A A M A A G E I L L A B P S D H F P E P F L Y V S N R G V Q D P R$ LILEETVLPDG\|VLYAAD\|I VHPKGTYLYVS IDRNAD ARGEVGGDPVANHAVWGADIHFGADERYLWI SERSTSTDG

## K



DGYTERNT
QGANSSTFGAAELI LDAKRGLLYASNRNLPDPR
SSRWSKVP
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 VGKRPWN

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GPCGVSFNQDGTRDYVTNCESNTVS NANGI AVHPSGRQVYVSNGVDANVM GRF $\square$ GSVPVQPVYPSANFNNNITSDYVFLSVPVQFTDLSE VGKRPWN MAITPDGKKLYVAN VMKE $\square G S G \square H P E Y Q A S S H P Q H A C F D G N H I L A A D L G T D R \square H$ G $\square S R F G A D P K T E H L \square W V S D W Q L D A S E A R L F C A E R$
 ETC $\square$ SADNMDAAEVL $\square P P P N T T Y P \square P$ Y $\square Y V$ SNRNDPSPE NPNGPTKTDTLPFN

P 1 QMYATADGRQVYVANQGSSSEP
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$L R S N G V V V H P D G Q R V$
$L$
$P$
A R A NCWN

$P$ GMVK PMAVLLSPDAKKLYVSTRGKMVFT $D T E P T L L V S G Q A Y G L A L S P D G R T L W V S S T G D T V T P$
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SDSLLTYS $L$ N HNNGNFSLIS $\square$ D AAGGSFPRQFS $\square$ NKA SSRLLGYRRNEDGTFEPTVAHATPTETQPRGFADDPBS GDVI AI FSVADPAKLAPA AEVRSGLNHLRGMVLGGEH
 KGWVAVFQLDKDGELGDALCLWQSPTSGGWANADEPAPGT DSISHFKITQQAAAGTLEFVDQISSGGISPRMFSFSKD DSVAHFKVKQTAAAGELEFVDSVSSGGTKPRMMSVS KD T D S I A S V V S IT A A G G G RVCVLEVVAGGAALRPBVADVPSGGDWPRHHLVRDG $S D V I A V L A V G E R G \quad \square P S P L A E V P S G A A W P R H H L L L$ D

LS ITS LF Y TN P DNN K I L Y K S Y Q TE DQPRSFCTDYKD VSAYSIVDAGSGVLTPLAMKSQTEGDQPRSFCIVDYK D

 VI DI A S WRI SI EVAVVQPSRESGTFTLTGIFPATSGGARPGDSAALAAD

 AV AV FERNQETGELDTFVEVQKDDTDGAAATSVVTLSP D
 $\overline{\mathrm{V} V} \mathrm{~S}$ A $\square$ FKLEASVGGKEPKWVKEVHT
 GVAVLNL $V$ VSGRPVLRGSGSCAGAWPRHHV QV VGS GIL GGRFGRLNLIDEFDTTGANPRDITVTTQN
 SGT SLFAI DARTGALTPDGTVQT


NDA TATIFETTP $\quad A L K P V A H V R T G L K H V R G M E F V G A N$ NDALSVFSRDSASGELTLDGNVFNGSSGDGPHADS S S S


## IDTASATR】KD

VID TATNTVTDTLADEK
WP $\square G-V S V S P D$
VI D TATNAVSA
T $\quad$ AVGKRPWNMALTPDG SNSVSVIDDTDQN KLI K KNPDVGTYSEVGTYTVKLTVSNSN
 NATISTDEVDGDGDPVRLLAVSPV LLEQPRGFTLASSD


GDTI A DFTPNNMST $\square$ S



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GTK K YANERSNNVS DDSETKNVTAA $\square K \nabla G$

GAF TATSNS पNNSTCVYRYDS पHGFVGEQVVAFPGRAM GR LVVASETSGMATVYTVNDGTL GKFLYNTNIADSTVGIFIINQTNGSLTNGTVGTSTSPAV RHAYVTNLYGNDVAVLDLNE LRVVGRIDPVGD
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| UniRef90-N1VSP5 | IV |
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| UniRef90-UPI00047C578F |  |
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| UniRef90-18TC20 |  |
| UniRef90-UPI00034B1A21 |  |
| UniRef90-M1Q7R9 |  |
| UniRef90-W5TES5 |  |
| UniRef90-UPI00047C164F |  |
| UniRef90-UPI00047E153D | $\square \mathrm{V}$ |
| UniRef90-UPI000262FE22 |  |
| UniRef90-W5TF04 | A V |
| niRef90- C2Q881 |  |

$T K P A A A T A Y V I N N T G N T V T P \square D V T T N T A G T$
 $N Q N G G I A V L D D$ A $\quad$ A L ELLVGS LEV GAK
 YTAY $\square$ SNEKGNS $\square$ TV 1 DT D


A GDNS $\square$ SSF $\square \quad$ T DSGAP VLVDVK PSGGAQ
SLLVVTKTIKVGK

TATANTVIDSVVKVGS
$P T N Q T C T V T N G S A G G V T A$
$T A S Q G D S V L R V H D D G A A L T P V P G S P F A T G L$ VN T G NVV G K L V L P THDLLYYAALESDGTVQAYRRTSETARLTMVGPA
$S P D G R Y V Y$ VA D R S T G T L T P P L G A P VG T G G T




$\square D ~ T ~ A ~ T ~ L T V K ~ A ~ T ~ V P ~ A ~ G ~ \square E ~ P ~ E ~ G ~$

 VANLYDGTFS Q FLIDNQSTGLLATANGTPTAPAGA


 | $K$ | $L$ | $S$ | $K$ | $G$ | $T$ | $Y$ | $P$ | $T$ | $G S$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $L$ | $E$ | $V$ | $I$ | $A$ | $T$ | $F$ | $P$ | $G G G$ |

VYYGTGFQGKS LQALEVDTQ
E VVSE LIFDE



T A R G V $\mathrm{T} \square \mathrm{D} \square \mathrm{I} G$
$\square Y$ S A NE GD GS $\square$ S A $\square E L R T G A V S T$

1 A T FPAGN
HF LFVVN A GSNS TTSFK $\square$ TDSGT L ILADVVKQSD GFF


$$
\begin{aligned}
& \text { S L E T L N T पS G L S }
\end{aligned}
$$

$\square D$ VETGAT TAVVETAF
T A TMQVVKTVEVGQ

T WKVVKTI ATGK
DTGY $\square \mathrm{F} \|$ SSEDDDVVAVTFEKVKDIPTAE $\vee A V V D T Q Q G K \quad Q \vee A L I K V G D$ T A S $L Q R \vee \mathrm{~K} \mathrm{R} V \mathrm{P} V \mathrm{G} \mathrm{K}$

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UniRet90-K7RUC4 UniRef90-Q8PTX1 UniRef90-Q13PU1 UniRef90-L7LG60


PN TVDVFGNLVYVANVGNVSGFTDNNGRDTPT
RPRGDTLNADATLLYVCASDDDTVQVLDVASGK TLYNDP EPEGMAVSPDGKWAINTSETTNMLHWLDTSTQQLVDNTL YPCGVAVSPDGTEAYVTNCGSNNVSVIVDTGANTVTATVP NVSNVAVQPVYMYVPDYNNGQVLGYTVDTVTGAQSTIPGS GVLSLVVSPDGEKVYVALDGGVSGYRISASGRLTPINADK
 NAEGUALSPDGKQLAVCVEGQNQVMLIDAAQLTVQQVIDAT
 KPRELVFSPDSKKLY VACGEGSRIDI DDTATDKLI GKLN

PQGVAFTPDGTRAYVTNFGSNTVSVIDTATNTVTGTP T PPQYLAFAPDGKKDYVSVWDTMADVAVLDTTTNSIVADIK QPNWPQASPNGRFFYSAMNPRLISYAUGSDGTLTPGAAMP HPAHVFTNDGKYALVTNNGSNSVSVDD DTTFKVKGTIP PHTWLAFDQDGKRLFVSGGESGMVHVFGWENGKLEVR GKRLQQVVPAARRLYLTDADHHRLVELDTVQDRVVRNVE GASGVAISPDGSQVFVTSRDDITVFNRDASGNLTFRQAI K
 AYDPTRDNTVVVLDAYYGTY DYTIP AAAPASRVLGYVANNGGGVSVLDTATDQVTSTVNG DPEGTAVTPDGKQLYVVNENPGTVSVIDTATHQLVVATVT



 RPRGIGFSTDRKLLYVVASNENKIVVVDPKTKEIIKKID GASNAVVTPDGKHLYAANDNSVAVFSRNITTGALSFDTSY KPAGIAVAPDGSRVYVTPKSGEVAVIDTVSNKL AQVP APRNLVITPDGRFLYLASEGTMAAYGI NSDGTLTFLNSYS NPRG| AV SPNGQRAYVANADSNTVSVINTSNNTVVIATVS GPRLLSFSPDGTRAYVTLFDTGSVGVIDTATNVLTMTMIP $H P T S M S G D P S Q K F L Y V T G P G G V N I F P V N S D Y T L G T P A V Q P$
$R P R G D T A S P D G K W L Y V C A S D D N L V R V F S T D T E E Q P T L P ~$
 SPYAI AT TPDGKKAYVTNNSGGTVYVIDDGTS TVMNTVN QAVGITLSRDERTLYVADWGGEQVIAMDTAHPEKQKAFKA PEALVAFSPDGKTVYASAGGKDRVYGFENGTLIMLTDQNK GPFNVKVQPRGQYVYMSNFTSNTVSVINTRTLMVEETFVV KPAGVAVSADGRLAYVTSPDSKAVTVIDAATRQI A GRIE TPHNVQISPDGQLLLAVDHGGHGQTEAGDKGLLLLESEQP SCLAQRLLTTYVVCVSNEKSGDVTIIDGPNGDVMTTVP


RPRGDT $\square$ S P D GKELYYVCSSDDDTVRVFDPESYEEDHTDP PKSLTTH RNFLYVANAGNGSSFQVDENGRLTEI ID ST NPDALLAAPNDSAVYALNHDDNTLTEYDPGSDGKLFAQKT SPDGVAVTPDGRRVY ISELGSEATMSVIDTATFEVVGTVD

N】AQTEDSSDGKTपYAASTGELADFSRDTETGALTLSNTD
 EPEGMAVSPDNKFTVATSEQTSMAHF:DNETFKVT ANVL

DPEDFDLSQDGRTLYVSNEEDGLLSAYDTASGKRVFADR
 R P R H I QFS P DHS LL Y V ACGD GESVDVVIDVAKL EDVERIG

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UniRef90_Q021R8
$V|G E G A H G| L R P S P D G S S V Y|V| A N|V G S T T| L V V I D D T A T L E T V A D$ V GQGPVGIATNHDGSDAYVADWYEHK

##  RGSVP CHLAVVCPDGGHLITANYGSGDLIV$\quad H R D N A S$

 $\square G K N P E F V R V L G G R A Y V Y E P S S K G G P P P K G G E V V R E D D D D$
 T GKYPE GVVAVSPD GKK IVYVTNYADNTVSIIDTATKA IITT

PGSTHSLST\NAQPAQVLFTRDGSK\|LVSELTSNH
 VGNWP E GDIAV TP D GKK A Y V A N S G
 $V G G A P T A A R L T P D G K Y L Y V V L G G V P G R V T S Y Y R T G S$ GFKFPRELII SPDDKHLYVTEA GNKSVT LVNKNADWSA






S


 $P A V T \quad D R A G V P D F V A A V Q P G T G K V V L C N E A N H E D C$ $\square$ GENAEGI ALSPDGKQVAVCVEGQNQVLLIDAAQFRVQRT



 $V$ S GS P R GLLAV S P D G S RVVVVT


## EGNN $\quad N G G K T Y L R V Y A R D$

VGGGPH GARPTPDGSALVVANAGGPPVOVADSPDAENGKL





 L D GP G ITTA GVVTP D GS RLLFV A
 SGP DP ELLFVLHPS GNP L Y I AN E D D N IVVTVVDV VGESPRSITVTPDGRQLYVANHLSDTITVIAAPEHTTRAT
 GKTPS GMLV SADNKKLEIANRDSNDITVVDTNTLKTLAQ
 VGKA PVGI AVA SRLNRAYVVNVESQDIVSI DTQNNTRVNR V G G GPLGI AV T P D GRTDYVA D WY A A A V R V I D A A S R S V T A S

 V VK Y P A GVVAVTPD GTKVYVANHCKYVGTVIVINT A L S A D GK T L Y V V S S P E G GS A V L S I F V R N E E G K

V

SGTNPNGMA
 VGAAPGAVAIHED GVHAYVVNYGKP T

ETEGT
TA S D T QLLLK IS P D GE T L L M S GANGRSYSDTVAVFNRDPAT


LF D F P H G L A AVRES A GE LVWLVS T Y S S QLFVF DVE T MALLE T SGPDPELLFVLSPD GKTLYVANEDDN

A SVV QDGKTLLVTNNNSGKTYLRVYARDAESGK






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UniRef90-UPIO00361ECBD UniRef90-LOJ3X7 UniRef90-UPI0003B4EB84 UniRef90 ${ }^{-}$F9ZVB6 UniRef90_UPI00047B7506 UniRef90_A9KRK1 UniRef90 UPI00030A9F37 UniRef90_UPI00036CD7F8 UniRef90-F4CRB4 UniRef90-W5TJZ8
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 LP D $\square$ T RHPDAAPGLPSABG AITPDGRTLYVTNERDNVVT - A Y GVAFDRSGSRI FVANRG ASR $S \square N V L T G G P V N N \square P S T S N P V Y S M A D G K T L Y V L N R S D P N N P$

FEDPGMSKEA TQP DGVS ITRDGKRAFVA LGP GQF $\square G S I P \square Q P V Y P L A N F S S N D T S D Y V F L S V P V Q F T D L S K$ $T Q T G K K L A D T A V G K A A Q V A F A P N G K N A Y V S L R D E N$ SNFPSNTTTLGEDRAAGPTLHVSKDGKF

FA $\square K G V A K D K \square Q P V G V K L S A D G R Y A F V A$ $\qquad$
ASAHGRSQPSGLIPTGGGD
L L VA N R M PVAGSPFSNAGRLEGLAITPDGKKVYVAHY $S \nabla T P T P G S P Y P T G G V P H G V V M T P D G K R M Y V P N A$ $\square G Q P G L V K P M A V L L S A D A S K L Y V S T R G G K$ SLDTDT VGQRPWNP AAELCASRDGSTLYAGVRGSDT
 P VPGSPFEAGRGPVG

FEPKGFRAEDDT PVMVAVSPNGQFAYVPSEFDDTBN
 $F E \square P G L S K E A \square Q P \square G I A F T N D G K R A F V A$ SSVLNFQTATCW

VALSENGRFSYTSNAGGHT $L V S P D K R F L F V A T L A G V P G$
$S V A V L P D G R T G Y V T N L N D G T L T$ LP HVPSITPDGRF LYVPNMG
GPREVAIAPDGLHVYVTDNIDNTVS
E $\square 1$ NTA $\square Y$ P DAPEGSTPDA $\square A T S P D G H T L F V A N A D N N A V M$ A GLRTAGVALSADGSRLYASNGGGNS
PS $\square T A V T K A E R S D Q T D A C W V V V T P D N R Y A Y T A N$ F V APRGIAITPNGLKVYVANYGSST
TQERSWW VALTPDGRELYVTVHG

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QYPW
```

EV $A_{L}$ QQGGDHLYVSNSGSNN

GSDTLPDKSPSGUVLSSDGKSAYISNLGNNS

YPEG $\ A A H P D G R R V Y V A N W F S N S$
 EMQQDGVN GLDGLS GAFA V $\frac{1}{1}$ ASPDGNYVYVT

YAASLA QNDSLLFVTNQDD
TGFSGS L $\quad$ RYMTIDPSGRFAYVANNG
ATNTVIA
PTPGSPYPAGLMSHGAKI TADNLYLYV
PEAV PVGNSP IGVVASPDASRLYVTNSADNTVS


$\square N T T T N T V T A T \square P G D G P Y G V S \square T P D G K K V Y V T N \square G S D$

SVNVQDDTENMKVGS A GM





FPAGNQPFADTLDKTGKY LYAANRQD
D P E L
F V $\square N$

 EGFRKED

L G R

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$\mathrm{V} \| \mathrm{D}$ П A
$P$ DVATNTPGAT
PGTI TTDATAA
QNTLQVFD

ANRVAVID AETKKVEKYLLV GQRVWHLAFTP D NATKWVWDFGDGSGSTKQNPTHTYSTTGDYTVSLKVNNSN AVAVLDVATRKATGKVKV

 ANHVAVVD AKTFEVEKYLLV
$\square G T V S V L T D D A L T T W S G N V S V E E F D C S G A N P R D \square T$ S D TLSVIIDALNNTNTVTSSVDVEVYP QGNVTGFSIDQSTGVLTAIA GSPFAMGYAYQDGASMFNAS GTSI A AYNAHADGRLTP DAGSPYPGPAGTLPGQVLLHPN EGALLFVFADPPEPLVNDPSVSSDTPNQGTIGTEVTIS
 $V I D T A S L R ~ E L K Q D P V E L P W G V I I A R$
DGTVTEIDTVSGTTVGAPIAV GGYPLGLSVSP D SNDMNAFSLTGDGALGREDGSPVRTGGTAPESVAIRPNQ $V 1 S T I S T V V N R D A V G D A P F G V A V S P D$ KV DVKS R A VK GGRPWGIALSKD ANRVAVID TATKKILEKYLLVVEV GDKPEGISTHPB D GNTTYKVENNGHLSVSNIIYSTKDGSGAPIDSGVSSNN GNTVSTFRLHPDGTLTAAPG GPASAGDKAPVLLAASHPT
$\mathrm{V} \square \mathrm{N} \square \mathrm{A}$
TAAISTYADQADGTLRPDHGTDFDPKVGVYSESSVMSPSG Q】S

TETNTVVDT $\square$ SVGTDP L GVAVTPDS
$\mathrm{VV} D \square S G S K N D E N A K Y A E K V S V V N \square P V$ VSVIDP RSGRSLADIAV
SNSTSSYA $T$ FNNGTTSLDEGEAALPGDGSEPVDLALSSSD $K G N V R V L$ DARSYAQTGVIDV GPEPNGIVATP D
 GGRVAVIDTTHDRLLT TIPAGTKPWGVAV $V S V \vee A L A T N T V T S G F G G V G S T P L G$
 VSVIDTSTNTVIG TMPVGNGTGWA DT TD $A N R V A V V D$ A QK $\square E V K D Y L L V G Q R V W N L E F S P D F$

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

 D DS V TVVIDTNNRT

$T V G V T A F S \square D A Q G A D S Q V G Q D S G T S E Y \quad Y \square N G \square A \square S P \quad D$ $A N R V A V I D G A T D E V L D Y L L V V G Q V W Q M A F T P \quad G$ EGSISVF STGREGKLIRKQVFSNT
QNF LISYTVQGSSSSIRPLPANSTTPTGQLPSADTVDPR
TTNMAHF $\square$ DTGTRQUVANVLVDARP RFAEFKQD QNS $\square$ S QAN $\square$ T S TALSSNGSTLYAT LSDGT $\square$ NR

GTDAGYS $\square$ GTNSALTTMS GSPFSSGTQVLS LGVDSSG
 ANHVAVI NTD TYEVEKYILVARLP GQRVWHLAFTP D VLS RDAATGSLNYVTTINKTTNSAEIPKDIVISP D SDDVSVVDTASRKAVATLKA GRVPHSVADDD ANHVAVVDVA

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UniRef90-14BJ78
UniRef90-UPI000361ECBD UniRef90-LOJ3X7 UniRef90-UPI0003B4EB84 UniRef90 F9ZVB6 UniRef90-UPIO0047B7506 UniRef90_A9KRK1 UniRef90 UPI00030A9F37 UniRef90_UPI00036CD7F8 UniRef90-F4CRB4 UniRef90 W5TJZ8 UniRef90-UPIO00463AA60 UniRef90_Q24NS3 UniRef90-B4D9Q3 UniRef90 UPI00039B1233 UniRef90-K9EVA1 UniRef90-C7ZIH8 UniRef90 Q0W2S0 UniRef90-Q0WOY5 UniRef90-C6WCT1 UniRef90-D5MI92 UniRef90 UPIO003650DDB UniRef90-Q6HMK6 UniRef90-D0KHX1 UniRef90- V9Z6H5 UniRef90-D1YX27 UniRef90_Q609F6 UniRef90_A1VVZ2 UniRef90 UPI0003B45EEB UniRef90-IYYKQ8 UniRef90-B9XR87 UniRef90_I3CBK2 UniRef90 G4SYJ4 UniRef90-N1W207 UniRef90-R8CQA5 UniRef90 W5TEH7 UniRef90 ${ }^{-}$D9WWF4 UniRef90_UPI0003B6D7FC UniRef90-A3PJ35 UniRef90 W4LHR0 UniRef90-E6TYX8 UniRef90_Q467B2 UniRef90 UPI00036548A0 UniRef90-K6DPC1 UniRef90-I8J3X8 UniRef90-UPI00036091CC UniRef90 W1JKQ2 UniRef90-A0A031MHU8 UniRef90-B9XNC8 UniRef90 C6J105 UniRef90_Q8PV15 UniRef90_Q6D920 UniRef90-G9AH26 UniRef90 A9KRK2 UniRef90_UPI00036A5EEF UniRef90-G1UDU8 UniRef90-H0TY48 UniRef90- W0H7K8 UniRef90-D3SY43 UniRef90-UPI00037A88AD UniRef90 UPI0003B4C174 UniRef90-E2CL70 UniRef90_LOIES2 UniRef90_E8TE89 UniRef90 C6D924 UniRef90-F8GTL5 UniRef90-H0Q3I7 UniRef90 I3BU34 UniRef90_UPI00036BE06D UniRef90_OPIO003
UniRef90_Q021R8

GKHDYVSNWGSDSVSD DDTTTGKR $\quad$ TT DVKTGKGS
GVAAYAVNRDSNSVTBPIDVATNTAGAPISVGE
GDLLYAALPDADAVGAFRWTPGTGML
QQILLACG RSGELIV IDTKTLEVRKRD
QQWIYVSGNIDNTLTGKRIDSTTGELRA
EKYLLTANGVSNDVSV TDVANLKVVKS $\quad$ VPVGSFPWG GTYAFITNLNSNTVSV I NTGNNTLTATVPVGTEPFGAA NRFVLVANQGTNTLTV VDAASLKVVADIKTGDGAHGVT GDLVAVGNQDSSTIVI IKRDPKTGKEVASLLVGEAGGLSS

QKR LIFTSNGVSNDVSV $\quad$ DDVTMTVIKS $\square P \mathrm{~V}$ V
GDRVWVAQQDDGVVVGMVRTPDGWR ADVRDDRPGA
$G T \square A F V A T G Q D G A V L T Y N V D A T S G A D T$
$G R Y L Y L T A R L T S R V T T Y R I G D G S L S R T S R P E V D T G V$
$G K T L Y S S N G P S N D V A V V D L A T N T V T K \quad K V K A G T G P W G$ $L L V A G Q L A D E I V S L P L D A R T G$
GTQVYVANYGSNVLSV $\square \mathrm{DTV}$ TVTTTAPDQV GSGPEN G GNRDYVTNRGTNNVTVDTL
EKTLYVTNGQSDDMAV I DTDSFKVTK AVPAGRVPYT
 LYVLNGNEGFISVFDRDGKLI RVI RDTELCN
$\square N \square I Y T G F A S S S Q V G V F S Y D E T G G T$

GTLLVVAN
DK LYVANGRSNTVSV $\quad$ VDTAS $\square R Q L Q Q \square P V G E$
$G M Y \square Y N L L R G S G A V V A Y K \prod K D G S \square Q Q V G E$
GKYLYVVTPADYSLTV I DAAAGNVTAKDS
GRWAYVTNPKENTVSAI DTVTDFEEQEHTDPVGTGPAG
GKRAFVTNSESDSVSVLDLDKGAPVTD $\square P V G D$
GSRAYVTNDNDNTVSVDD
NRFVYVSSNSQGTVSIFSRDSDTGALT
GTRAYVTNSDDNTVSVMDTTMNVIGS
$G R \quad L Y T T N G L S N D V S I \quad \square D L A S H K V T K S V A V G S$

GT LVANGKGG
GANVYTGGNDNAVATFRT
GRFVYVANWFDDNVSV IDDASLEVIDT\ETGGGS

QRHVYES DVLS T NVTSM $\square$ R D $\square$ QS D GR $\square$ T K S P $\square$ P E
EKYLYTTNGNSNDTSV $\quad$ DDVATDEVIRSVQVGEQPWGVV GMTAYVSNGDDNTVTVM NTETNRFVGTITV

GKDGYVTNSNGGTVSVV VDVVSNTFDGNDPVGNTPFG NHQAYI ANWGSNNVSV GKRVIVACWESNTLSV GDFMFVTNNVDNTVS GKT $\square Y \mathrm{Y} V \mathrm{ANGPSNDISV}$

D A TDLKVVIGGETGE
A 1 D $V$ RKKKVVI A TFLLVPNPNG
$\square D V E T A R E \| K R \square K T G K G P W G \square E$

GKT KYA DNADGNTDTVGA DGA $\square T$ TTNTTPDTDDGG EEFLITTNGNSNDVSI $\square D V K S Q K V \square R S V Q V G E$
GKY $\square Y \mathrm{~V}$ S NYGS GTVS GFA $\square \mathrm{D}$ A T T G A
GSE $\square \mathrm{WV}$ SAE $\square \mathrm{GGTVS} \mathrm{\square} \square \square \mathrm{DPAKREVTGK} \mathrm{\square KFA} \mathrm{\square PGLRSE}$

T Y L LAGANQGNPDLSMYSYDPGK $\square D \square A K S \square A T D T D P A G V S$ GALLFVSSEDGGTVSVINMNGETGPEL
GERAFVANNKTNDVSVVDID TAFAEVERYD
QKTLITTNGNSNDI TF 1 D TATDEPVQSLTVGQ
NRFVYVSSNTQGTVS $\square$ FSRDVDTGSLT
ES QLYVVNGLSDDDSV DDTASRKVLRSVPVG

| $\begin{aligned} & \text { UniRef90_UPIO003B5ECC5 } \\ & \text { UniRef9O_ITKJ7 } \end{aligned}$ |  |
| :---: | :---: |
|  |  |
| UniRef90-Q0RER7 |  |
| UniRef90-UPI000377F850 |  |
| UniRef90-K2F5Z5 |  |
| UniRef90-UPI0003B6E43F |  |
| UniRef90-UPI0003650723 V V |  |
|  |  |
| UniRef90-Q465V8 | $\left\lvert\, \begin{aligned} & \mathrm{V} \\ & \mathrm{~V} \end{aligned}\right.$ |
| UniRef90_UPI0003B3C43E V |  |
| UniRef90- Q2ULM8 | IVWY |
| UniRef90-W1SMB7 |  |
| UniRef90-W9GRH9 |  |  |
| UniRef90-S6B192 |  |
| UniRef90-K7RUC4 |  |
| UniRef90 Q13PU1 |  |
|  |  |  |
| UniRef90-L7LG60 |  |
| UniRef90-UPI003779E0A V V |  |
| UniRef90-E8UZY6 | V V |
| UniRef90-E8N8G5 |  |
| UniRef90-Q8PPN4 |  |
| UniRef90-14BJ78 | V V |
| UniRef90-UPIO00361ECBD |  |
|  |  |  |
| UniRef90_UPI0003B4EB84 | V |
| UniRef90-F9ZVB6 |  |
| UniRef90-UPI00047B7506 |  |
| UniRef90-A9KRK1 |  |
| UniRef90_UPI00030A9F37 |  |
| UniRef90-UPI00036CD7F8 |  |
| UniRef90-F4CRB4 |  |
| UniRef90-W5TJZ8 |  |
| UniRef90-UPI000463AA60 V |  |
| UniRef90_Q24NS3UniRef90_B4D9Q3 |  |
|  |  |  |
| UniRef90_UPI00039B1233 |  |
| UniRef90-K9EVA1 |  |
| UniRef90_C7ZIH8 |  |
| UniRef90_QOW2S0 |  |
| UniRef90-Q0W0Y5 | $\square$ |
| UniRef90-C6WCT1 |  |
| UniRef90-D5M192 |  |
| UniRef90_UPI0003650DDB |  |
| UniRef90_Q6HMK6 |  |
| UniRef90-D0KHX1 |  |
| UniRef90-V9Z6H5 |  |
| UniRef90-D1YX27 |  |
| UniRef90-Q609F6 |  |
| UniRef90_A1VVZ2 |  |
| UniRef90_UPI0003B45EEB |  |
| UniRef90-I1YKQ8 |  |
| UniRef90-B9XR87 |  |
| UniRef90_I3CBK2 |  |
| UniRef90 G4SYJ4 |  |
| UniRef90-N1W207 |  |
| UniRef90-R8CQA5 |  |
| UniRef90-W5TEH7 |  |
| UniRef90_D9WWF4 |  |
| UniRef90_UPI0003B6D7FC |  |
| UniRef90-A3PJ35 | A V |
| UniRef90-W4LHR0 |  |
| UniRef90-E6TYX8 |  |
| UniRef90-Q467B2 |  |
| UniRef90-UPI00036548A0 |  |
| UniRef90-K6DPC1 |  |
| UniRef90-I8J3X8 |  |
| UniRef90-UPIO0036091CC |  |
| UniRef90-W1JKQ2 |  |
| UniRef90-A0A031MHU8 |  |
|  |  |  |
| UniRef90_C6J105 |  |
| UniRef90-Q8PV15 |  |
| UniRef90-Q6D920 |  |
| UniRef90_G9AH26 |  |
| UniRef90-A9KRK2 |  |
| UniRef90-UPI00036A5EEF |  |
|  |  |  |
| UniRef90-H0TY48 | A 1 |
| UniRef90-W0H7K8 |  |
| UniRef90-D3SY43 |  |
| UniRef90_UPI00037A88AD |  |
| UniRef90-UPIO003B4C174 V |  |
|  |  |  |
|  |  |
| UniRef90-E8TE89 |  |
| UniRef90-C6D924 |  |
| UniRef90-F8GTL5 |  |
| UniRef90-H0Q317 |  |
| UniRef90-I3BU34 |  |
| UniRef90_UPI00036BE06DUniRef90_Q021R8 |  |
|  |  |  |


TNSGSGNVSV DDTATNTVATVKTGT
 S P D GKR $\square \mathrm{Y} \square$ A N E D E G Y VT $\square$ ME R A E VMM $\square \mathrm{V}$ $\square$ TETRE T L LEVVD H $\square P T G P$




TSPNGDTLYVANYQSGTILSIDDTNETPVGN
T S P N G D T L Y VAN Y Q S G T L S $\square$ ID T N ELLKIG D
$Y$ VA N NTVPGTVSVV, DPGSNTVLKTDLV$G G G$


TASNTVIKTLTLQK $P \vee T S S P T P T V A G T V P V G Q$
$T \| T V G K$
 VYAVN NANNSVTPDNPRT $\square M V G D$

 $Y V T S A G T Y T L S V D V A L G G M T M S$ T A TVPVGN
HFVFAVNAGSHSDSSFMV TAGGELILVEVVPS GG


VR S $\square A \square D G$
D G A KA Y VA NLNS DNLT A T DTVSTTDP VGT
 VD P $\square$ A GK L

VKTVPVGQ $\square Y$ VT H Q Q G A Q E L G A Y R V G S D G K L T S L A A Q
 $\square Y$ A WQPQEKGAELKLVKR VPAGK

T A S P VA T VQVGS
SESDTVQAFNLNDGS LAF


VA T VK $\square \mathrm{G}$ G
$V \mathrm{~V} V \mathrm{Y} \mathrm{D}$ K A GKVRADLNGFVT
 QEAVI PTCR



ATVPVPG




TASGYTYTYTLNDGSGT LE $\square H H$
TNASAYLFAINTSTGALTAQGNALTLDVG

$T \vee T T \quad T V S V G G$
$T S D L G K V Q S \| D L G E$

UniRef90 Q1LLM9 UniRef90-Q8TQF3 UniRef90-W9UUX4 UniRef90_U9VZU7 UniRef90_Q46D35 UniRef90-Q1GZE6 UniRef90-॥1 YIQ3 UniRef90-C1ARD8 UniRef90 -14KTX5 UniRef90_R5MQQ5 UniRef90-Q1IQG7 UniRef90-W5WPQ5 UniRef90-UPIO0047B88DB UniRef90-I4BFE4 UniRef90-Q11F33 UniRef90_UPIO00361AOD6 UniRef90-UPIo004765DF7 UniRef90-G4HVOO UniRef90-G2FKV8 UniRef90-UPIO0047BE850 UniRef90-J1ZRX3 UniRef90_UPI00037D940F UniRef90_UPIO00374A59B UniRef90-UPIOOO47CA1EF UniRef90-L7LPR2 UniRef90_UPIO0036129D7 UniRef90-M3C1Y9 UniRef90-I3ZJ38 UniRef90-B4CX20 UniRef90-B4VEF8 UniRef90_UPIO003738E37 UniRef90_UPIOOO364326B UniRef90-UPIooo36B1CF3 UniRef90_D5MMT9 UniRef90-V4JBQ5 UniRef90-T1C2E5 UniRef90_C7PZT9 UniRef90-J3DGS66 UniRef90-T1A6D9
UniRef90-UPI000472EDB9 UniRef90-A0A022GNY7 UniRef90_UPIOOO362B811 UniRef90-L8TW55 UniRef90-X0Q599 UniRef90_R9A3F2 UniRef90-R4K8F9 UniRef90-J8SYI6 UniRef90-Q466P8 UniRef90_UPIOOO3B6BOD1 UniRef90-19CJF7 UniRef90 UPIO00369770F UniRef90-UPIO003816A95 UniRef90-RoPE47 UniRef90-U2NTE9 UniRef90-UPIO0045E936A UniRef90-K8R7Z8 UniRef90_W4HVC7 UniRef90-V5SCG7 UniRet90-E1SKC5 Uniinefol J4P418 UniRef90-D6Y2A9 UniRet90_E4NOF3 UniRef90_M7Pow9 UniRef90-DOIEN2 UniRef90-QOSBNO UniRef90_G7LP54
UniRef90_UPIO0037940D1 UniRef90-NoB3V0 UniRef90 A3VLY8 UniRef90-HOBS12 UniRef90-UP100037AC1AB UniRef90-V4YGH1 UniRef90_l2FFY7 UniRef90-C1F560 UniRef90-D5UE78 UniRef90-B8ILHO UniRef90
UniRef90
IN UniRef90-UPI000373D7FD UniRet90-UPIIO0036BC428 UniRef90-UPIO0039D166C UniRef90-UPIOOO36999EC UniRef90-D2B090 UniRef90_UPIOOO29A1F48 UniRef90_J7KLDO UniRef90-UPI0004789332 UniRef90-K5ZKY9 UniRef90-UPIOOO3B76B57 UniRee90_UPI00035F67BD UniRef90_A5FWY2
UniRef9O_Q2N9R9
 FPFGVAVSPDGKKVYVANSGGYSTVSVIDTTANTAAAT RPR
 TPSAVAVNPAGTRAYVTNSGSGTVSVINTATNTVVGSPIK

EPEGMAVSPDNK■TVATSEQTSMAHVIDNETFDVLQ NLL
SPEVFYFSPDDSLTYVSN EENSTLQ\| DDVAQRVI DDEVA RPRGVVFSPDGSKLFVCASDSNSVQVIDPASGKVLH DLP RPRALALSPDRRRLYVACGDGNSVDVIDPD RRTV VARLR
 NPQFPKRTPDGTKVLVPNFGSNTVSVICTAANQV CDATIP
$P$ V GPWGVEVAPDGLRAYVACFGTDSVAVIDTATHTVTDTLTG

HPTRLAASPDGTRVYVNNREGDFVSVIDTE SNTVLASVP PPYNLYFTPDGKYAVVMASNDRQLVFRDAHTMKTVKAVPV PVASLA DDPKGRFLYATTGAAVSMFTMDQSTGMLIPASLP QVTGLAVSPDGKRLYVALGASNAVSVVDLD SGQGGELIP SPRFMARTDDGHWIYVTNQGSNSVSVIDTQTDTVAK TVA APVAMQVAPDGRFAYVADRDAGVVTVFDVAGG VARGTVA APVGVAlSPTLSRAFISNVESQNISVINTDTNTVSETUA

DPAAVAVAPDGDP TFVANTASNSVSVLNSANK■ TATVP GAEGLAVSPDGSRVYAADTGG SSVTVIDAATDTVVTTVP
 ATVGSGDATVTLIDKDTQKVLE TFP ATNGLAVTPANTFDYVVAGTGMFGSSVNSGTGVPTLISSS
 QPNSDTVYED LLEYVSNVGSVTGFRDGNRGQLSTRKLST

$A P A G \square A \square S P D R A$
 NPSTVAVTPNGAKAYVTNNTSNDVSVINTATDTVVSTFA ATTELYIEPA FAYVTN NSGDA

RPRGTALSPDFKS TYVATSDDDT TK TLDAETLKVTGKLIP LDPQVAVSPDGKFVVVNGFGK TVTPVTPANMLLAYPUNN GPSGVAVSWDGTRAYVISATSNTMSVIDTATH DETVTATM GAFGTAISRDGQRLYVNNEAASTLSVYDLTHDRPDAVVTT YPQAVAVSPDGSQAYVVNNGSGTVSVLDTATGTVA AT: A
 DSTEVVYSSDGSYAYAAGDGADSVFSVDDTGRLTLAQTLT
KPAG DA LSPDKTKAY TTSPDSKELVEVDAVSRAVTR RVT

 PGHNVYVTPDGKFAVAGSVVGESLSVIDLATDQPADWDLP APSCVAVTPSDSFLYAGSPGAIVVYTHNSDGSLTIGNSVA


## QHFAYAASGDK $\square \mathrm{DRYRVAGDGADTFAGTTD}$



$T P V R \square A V T P N N Q L V Y G T$
GGVDAAAALINGTLSNEDA
$G P \square G \square V V P P S G A P V Y V A D W Y Q H R V Y A D D P D R R V V T \quad G F V Q$ APHGVAVSPDGAEAYVTDTSGGTVSVIDTATGAVS ATVP NPHGIVWHANGD IVATAEGRQSVFWISNDGGQADTFEYA

UniRef90_Q1LLM9 UniRef90-Q8TQF3 UniRef90-W9UUX4 UniRef90_U9VZU7 UniRet90_Q46D35 UniRef90-O1GZE6 UniRef90-॥1 YIQ3 UniRef90-C1ARD8 UniRef90 -14KTX5 UniRef90-R5MQQ5 UniRef90-Q1IQG7 UniRef90 W5WPQ5 UniRef90-UP100047B88DB UniRef90-UBEFE
UniRef90-O11F33 UniRef90-UPIO00361AOD6 UniRef90-UPIO004765DF7 UniRef90-G4HVOO
UniRef90-G2FKV8 UniRef90-UPIO0047BE850 UniRef90_J1ZRX3 UniRef90-UPIO0037D940F UniRef90_UPIO00374A59B UniRef90-UPIO0047CA1EF UniRef90-L7LPR2 UniRef90-UPI00036129D7 UniRef90-M3C1Y9
UniRef90-13ZJ38 UniRef90-B4CX20 UniRef90-B4VEF8 UniRef90-UPIOOO3738E37 UniRef90-UPIO00364326B UniRef90-UPIo0036B1CF3 UniRef90 D5MMT9 UniRefofo- 4 UJBQ5 UniRef90-T1C2E5
UniRef90_C7PZT9 UniRef90-J3DGS6
UniRef90-T1A6D9 UniRef90_UPIO00472EDB9 UniRef90-A0A022GNY7 UniRef90_UPIOOO362B811 UniRef90_L8TW55 UniRef90-X0Q599 UniRef90-R9A3F2
UniRef90_RKK8F9
UniRef90-J8SYI6 UniRef90-Q466P8 UniRef90_UPIOOO3B6B0D1 UniRef90-19C.JF7

TGNNSLGVA SPDGKKVYVANM
SGDDPEQFALHPNDRLLFIANEDDDVVSVVDTETHQVLAQ GTSGVTVSPDGTQVFVTSADDASLTVFNDDAFGNLF SGNYTVNLTVSNGINTSFKLVNITVGKRVSSTWPFVYUTN VGKAPAGLTVSPDGSKLYVANRDSHPFGLTLGPDGRQILA $V G \square T P N A V A V S P D G T R V Y V T N R S S N T V S V I T A$

VSLNGVGDGNSA
VHEKPCAVSTSSSWYGLCFSNDNTRLYASAGN GVGLENA VGSAPGEAAVTPDGKTVVVSNRTANSVSLIDAAKSSVRTT
VDTRPREAQFTVDGRHVWVSAE $\quad$ GGTVSVIDAKTYK
TVTVTdghags TGAEPEGVVVSEDGK\|VYVTSEVSDMVHVIDAETHTLTDN SGEDPEQFALSPDGAKLFIANENDALTTVVDVETRKVLAQ GVDDPEMFALTPDGGALWLSNEETATASALDLASGRIIAS VGSDVQDVALSPDGTRLY
 LNKPDGLAVSPDGSRLYVASRGGSRVDVISTASETVIDAS VGYGPTGVGASPDGDRVYVANGRSNTVSCINTGPRLVTAT LANSPEQFVISPDGKKAFVPHLLTN
VGNEPEFSTDTPDGSEVYVSNNKENTVSVYDTATNTVIVKT SCHGVNHADFSMDGRYFIVSCEF
ADGYLFDAKVTPDGRFLYVLNNESDGKSTRAAWEYSTN




VGSQPDATAVTPGGVAAYVAN
VGQTPVGLTVSPDGSHVYVPDYGSGQVSVIDTATETVSAT VGKEPHHLMATPDNKSLTVASATG
VGSGPDALALCPGGSTLWVANGGSNDDEPDATATRKAGAD VGDEPEGVAVSPDGKTVIVTSETSNMVH
1 GKEPHHLIATPDDKSLIIANAV GNDLVFLDPV
V VGSSPTGVAFTPDGSKAYVANNEGDTVSVIDVATRTVSST ATDSPNGVAADPFGRFLYVNETVTVGLAADTDSQFTDN ANAQPSCVLFSPNGYQLVVSEDTTNRGSVFGDSGMVKND


 AGAAPLGAAITPNGKLIYVCNSGENSVSVIRT
 MVNDPTSVAVSPDGTRVYVSSLTNNTVSVINTATNTVGT GFAQPRGMK SPDGKTVYVTNFKGDKUTLVDAVTGDIRGE VGKTPADVFLTPDQKTLLV VGTAPTDVAVTPDGTRAYVTNNGSNTVSVINTATNTVADT
 TGTAPNAVAVNPAGTRAYVTNSGSGTVSVIDTATNKVVGT
$\square G G G P \square G T A A P K \square P E T Y V A D W Y S H K T V V N A K T \square A V V C A$ TGERPRGLTFNSDHSLVFICASDSNAVQVMDPDTGEIVRIV AGPGAFGTVLSKDGATMYVNNQAASTVTRFDLASGEPRAV VGSNPLNLAFDPSGTHAYVANSGGTTVSVLDTATNT


VGKTPHGLALTPDGEYVLA
TP EPFGTADDPHGPTFFVANFNDG ASGGLSSFHVEPD MGRDPRHMMI SKDGAYAYVCVWGDGYVSKDDVSGDARGDV VGDFAGGDALTPNGTRAYVAAAHSP VDSRPRFAAFKSDGSELWVSSEDGGT VSIDPPVKAVT SAQTPAGVVISPDGTHAYTANYNSNNVSVIDLATNTVTGT LP HAPSGLAVTPDGHKLYVCGNLSNQLHELDDATGKTLRS KNSSNAGLAVDPSGTYLFVTETGTVVNGTNGGRVLKIAAN MDETPTGLLVDGDK VGQSPSGLAVSRDGRTLLSADRDDDQVSAIDTASFTVRAT


UniRef90_Q1LLM9 UniRef90-Q8TQF3 UniRef90-W9UUX4 UniRef90_U9VZU7 UniRef90_Q46D35 UniRef90_Q1GZE6
UniRef90_I1YIQ3 UniRef90-C1ARD8 UniRef90-14KTX5 UniRef90-R5MQQ5 UniRef90-Q1IQG7 UniRef90_UPI00047B88DB UniRef90_I4BFE4 UniRef90-Q11F33 UniRef90-UPIO00361A0D6 UniRef90_UPI0004765DF7 UniRef90-G4HV00 UniRef90-G2FKV8 UniRef90_UPIOO047BE850 UniRef90-J1ZRX3 UniRef90_UPI00037D940F UniRef90_UPI000374A59B UniRef90_UPI00047CA1EF UniRef90-L7LPR2 UniRef90-UPI00036129D7 UniRef90-M3C1Y9 UniRef90-I3ZJ38 UniRef90-B4CX20 UniRef90_B4VEF8
UniRef90_UPIO003738E37 UniRef90_UPIO00364326B UniRef90_UPI00036B1CF3 UniRef90-D5MMT9 UniRef90_V4JBQ5 UniRef90-C7PZT9 UniRef90-J3DGS6 UniRef90-T1A6D9 UniRef90 UPI000472EDB9 UniRef90-A0A022GNY7 UniRef90-UPI000362B811 UniRef90-L8TW55 UniRef90-X0Q599 UniRef90-R9A3F2 UniRef90-R4K8F9 UniRef90_J8SYI6 UniRef90-Q466P8 UniRef90_UPI0003B6B0D1 UniRef90-19CJF7 UniRef90-UPIO00369770F UniRef90-UPI0003816A95 UniRef90-ROPE47 UniRef90-U2NTE9 UniRef90 UPI00045E936A UniRef90-K8R7Z8 UniRef90-W4HVC7 UniRef90-V5SCG7 UniRef90-E1SKC5 UniRef90-J4P418 UniRef90-E4NOF3 UniRef90-M7POW9 UniRef90-DOIEN2 UniRef90_Q0SBNO UniRef90_G7LP54
UniRef90_UPIO0037940D1 UniRef90-NOB3V0
UniRef90_A3VLY8 UniRef90-H0BS12 UniRef90_UPI00037AC1AB UniRef90_V4YGH1 UniRef90- I2FFY7 UniRef90-C1F560 UniRef90-D5UE78 UniRef90 B8ILH0 UniRef90-E4N3H0 UniRef90-I4EGM4 UniRef90-UPI000373D7FD UniRef90_UPI00036BC428 UniRef90_UPI00039D166C UniRef90_UPIO0036999EC UniRef90-UPI000465CCD6 UniRef90-D2B090 UniRef90_UPI00029A1F48 UniRef90_J7KLD0 UniRef90-UPI0004789332 UniRef90-K5ZKY9 UniRef90_UPIO003B76B57 UniRef90_UPI00035F67BD UniRef90-A5FWY2 UniRef90_Q2N9R9

AGSS $\square$ S $\square \square D T \square S N A V V S T V K T G R S P K G V A V S P D G K K I V$ $\square \mathrm{EV}$
 $S Q \vee 1 R$ $N G A F S V I D T A T G V V I T S V K V G R G P E G I A V D P N G K T A Y$
 SQDISFIDTALMQESMFRLKTGSGPVGIATNSNGHRVF TRDGVPPPYK DKKADGII NHIDVGGTPTWLVTSPNGKFDY $\square K$ K Si S DQGNLTMLSDSVMMGKPWPEPAGMAMHPDQHELY
LSVNSAKAFVVCPPTNQVAA $\square D V G G S P D$
VVKKFGFTIPGVNPELIQ A M P
 $G P Q P$
$G T R P$
$G F E P$
$G D E P$
$G T G P$
$G T G P$
$V A G T$
$G T G P$ $P V G I E M S K D G K H A F$

ITGFN
NPDDVAFAPGGAFAY FPAVSVIDLEKDEEVVDERETVIVANPFDVAFQPDGSKAY IGGVSNPRFGNATPDGQYVTAGMGGSYPTGMVLSPDGRARY
 VRVDPRTDTIIDTEKLTGAEVEVGRQPSDLAFSTDGKTLY VEVHDPTPNGKYAVVMASMDRETCAGVNHADFSADGRYFI $\square T V G T K P A G M A V T P N G A E L W V V N D N S A N V S V I N T S N N T V T$ GAVVARDPTDDSP LIVANA

GAGPQHL
 L

1
GWAPDSVAI APDGLTAY

GT ${ }^{L}$
TQVDGTTPI GSVDANGTVYVLGNSGKPFGSCFLSSGLLLV GK 1 T I T T A A N GAVSY

VEVHD
NTTTDAVSSTDT TNDGTGP ENNSELTK $\square Q \mathrm{~V}$
V A V
1 K V
ASSYS $\square$ SSSGSFST LS GP $\square$ A VT G 11 AV
VQKF GFD\PGVRRELIQ
1 TGFSTDAVVDTQKHVITATDPVGQDPYGAADTPDNRYVY GDSFVEAYDVSNGPAKLVKRIPTAAGAHAFRAQGDKRHLF IPV
TATVPV GVAPTGVVGVSPGGTRVL

V R V
$\qquad$
SFVSAV
D T GNGDASG
1 s V
TT GFA Q

## I Q V

KEVQRTK\DPGPPSGLTVLFRVATGAEPEGVLLSQDGSTAY K EVQR KLP GP PS GLT VHQPHASAP SHGI AIAPDGKTLW GGVETLSFNSSTGALAQVSPKQNLDGDNAVAVSPNGSYLIF LD L ${ }^{\mathrm{L}} \mathrm{D}_{\mathrm{A}} \mathrm{A} \mathrm{V}$ 1 TVF F P A

A
VS MDD T
$T R A A T A S \prod P V G T S P S$ G GGFGTDQVSMDDTGTNQVIGRIPVAKPHNFAUSPDGRTAY

## GTMRHVSTVDTK

## ESVREVKQ





VPV V $P$ VD $\square^{A}$
 PTI QTDDPVDPNLYYSDGLLTGYDSHVSSDVL S D DGRTLL


## 1 K V <br> L D V

GTPFA LGHAAVAGNPLS QVGF LVK
$\mathrm{GT} \mathrm{P}^{\mathrm{P}} \mathrm{FA}$
$\mathrm{V} \mid \mathrm{E}$ VGE

HPHSVAVSPNGTRAY
 GSGACHPMFGPDKKTIYY
GARPF GVTLSADGS RAY GVRPVGVAVVADGSRAY

## UniRef90_Q1LLM9

 UniRef90-Q8TQF3 UniRef90-W9UUX4 UniRef90-Q46D35 UniRef90-Q1GZE6 UniRef90-I1YIQ3 UniRef90-C1ARD8 UniRef90-l4KTX5UniRef90_R5MQQ5 UniRef90 Q1lQG7 UniRef90-W5WPQ5 UniRef90-UPIOO047B88DB UniRef90-I4BFE4
UniRef90-Q11F33 UniRef90-UPIO00361AOD6 UniRef90 UPIO0004765DF7 UniRef90-G4HVOO

## UniRef90 G2FKV8

 UniRef90-UPIO0047BE850 UniRef90-J1ZRX3UniRef90-UPI00037D940F UniRef90_UPIO00374A59B UniRef90-UP100047CA1EF UniRef90-L7LPR2

UniRef90-13ZJ38
UniRef90-B4CX20
UniRe90_B4VEF8
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UniRef90-D5MMT9
UniRef90-V4JBQ5
UniRef90-T1C2E5
UniRef90_C7PZT9
UniRef90_-J3DGS6
UniRef90 T1A6D9
UniRef90-UPI000472EDB9 UniRef90-A0A022GMNY UniRef90-UPIOOO362B811 UniRef90-L8TW55 UniRef90-X0Q599 UniRef90-R9A3F2
UniRefon - 4 KK8F
UniRef90-J8SY16
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UniRet90_UPIOOO3B6B0D1 UniRef90-19CJF7 UniRef90-UPIO00369770F UniRef90_UPIOOO3816A95 UniRef90-ROPE47 UniRef90-U2NTE9 UniRef90-UPI00045E936A UniRef90 K8R7Z
UniRef90
W4HVC7 UniRef90-V5SCG7 UniRef90-E1SKC5 UniRef90-J4P418
UniRet90-D6Y2A9
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UniRef90 DOIEN2
UniRef90_QOSBNO
UniRef90_G7LP54
UniRef90_UPIO0037940D1
UniRef90_Nob3V0
UniRef90-A3VLY8
UniRef90-HOBS12
UniRef90- UPIO0037AC1AB
UniRef90-V4YGH1
UniRef90-12FFY7
UniRef90-C1F560
UniRet90-D5UE78
UniRef90-E4N3HO
UniRef90-14EGM4
UniRef90-UP1000373D7FD UniRef90-UPIOOO36BC428 UniRef90-UP100039D166C
UniRet90-UP100036999EC UniRef90-UPIOOO36999EC
UniRef90-UPI000465CCD6 UniRef90-D2B090 UniRef90-UPIO0029A1F48 UniRef90-J7KLD0 UniRef90-UPLIOOO4789332 UniRef90-K5ZKY9 UniRef90-UPI0003B76B57 UniRef90-UP100035F67BD UniRef90-A5FWY2
UniRef90-Q2N9R9

170
180
V G MTGAD Y $V|A| V D W R T R T V V \mid K Q \| Q T \quad G K G A H N F R A$ VADNPDNSLTAVD\DDTATNKVTATAAVPVGKAPGGREV NTSETTNMLHEWUDTETLELVDNTVI GRGDQRPRHVEF VANSRDNNVSVTDTTTN TVIATVNVGRDPSEVAV VTNTQADTVSVIDLEQNKETTRDS VADWYENVVKVIDT VTNRANNTVSVI DTATNSVVTTVA VTNNTTHSVSVIDTTTDK TVSKKLVEHKTPTGLNG
 AVSVGSGAVVSLDPARYSVRATA VGN

HPAHVIA

VALSHANRVAVVDNDTETYEDKQYVLV GGQRPWHMAV VADNGSNAVSVIDTNS
 VANHGEANLWVSVINTT
VSNGGSNTVSVINPVTN
SNO




 VADMMADGLWVLDGDTFAKPSLLPTRNADGKGAHGLYV VVNRASNSVSMYSTHNTGALTLNRTQNAPDGSPVPFRITF VSCEFSGELLTMKVDTERMEVIGQQKLPFEGAMPQDVKG ASAPDPSAVVVIDPAQN VAQRDSNEIAVIDPDKTLTIV VTCSRSAEVWLLALPAHTVVATVSNVAMLPVGEAPTQ 1 VANRASNSVSVVSTPGSATLTNL VTDAGSGTVSVIS TATETLSSTFSVGVAPHGПA ANGARLGRRVDVYRY DGRDLELAKRVRLAKKTGAPSHIAF VSSEGGGTVSVL DTNTREIDHKMSFAPQGUHPAGVKL

AVLKSLLVETNPYGVAV
AVLKSLLVETNPYGVAV LTSTEVTPVGQRPRHAEF VT LLGQLGVAPLPFNTSGALLSANTVNIFPKA四GGVT
 IANQVSQS $\square R H Y A I N S N G T L T F V N S Y S V A V T A Q B P G L A$ AEASGA MSSYAVDPDGELRVI SGSVSDRQMLTCWVSP VANGGSNTISVTNTVTN LASHAVTKTVNVGVKPYGVAD VTSEEDNAVSWIDDAKARKE पASHAVVSTMETEKRPRHVEF VMA SLDRELVERDPHTMRTDKTTPVTC YGVNHADF VTNTASNNVSVID VANQQSSNVYVINTQTN
 SASETTNMVHWIDAKTNGKLTVAVNHTLVDPRPRAVAF VANNLDNTVSVIDAADN SMAATMGVGGPWDLAV SGNLGDNSLSVIDTAAGKVVSTVTGLDAPRQA RPWHVF VSNRTANSTSRIDMQ TLTVTDTFAVPGAGPDCMDM VTNETDGTVSVINTATN TVIMTIPVGTTPSDVAF VANLIGGSVSVIDAATDS DTGTIVDSRARMPAALAVV VSDWYQHIVSVIDSHSGKEDHTGSTBHEDRVGESPAGVVV VTNSGSGTVSVINTATSTVLATVG VGTQWNGVARFSRDLSTGALTYVDRVPGEDIYSNSRNGVI SADRDSDAVSTMSVVDGATLKVVET:IKTVPGRRPRG| TA ITANEDDAVTTVVDVETRRV VAQINVGIE VTNFMGDKITVNTATNKDDGEDTGFNKL VTNNNEATVSVVDTAT VTSEVSNAVHVIDVTSRKQVSY VNSNLSNAVYAYELPDGHVAMPVREVAGKPVPAVPNWLTF VGETGINAVRVYSVGTGGVINE:SGSPYSTGGGPDALVV VADRDDDAVSVVDAGTRQRLAVV $L V Q P Q G D T V$ VDTAGNTVVATLPLPG SPRRVAV V S SGAPALAVVNEGKK K VTNQTGDSLSVVDLAAEK
 VVH GTPRLVGYAVDRDGKLS GPVARAQI GPSGHRVVI $\checkmark \mathrm{A} N T Q A$ VTNWDLDSVWVINTATN VALGPANRI AVVDA
 VANVGGDRVSGYRDASEGSVSVA VANYGGDRVSLYRDPDTG VA TNSGVVDGFALSANGALTSLQRLVTEVSGLDGRAAVF VCNQFENTVSETDPVNHKVLRTVKVL GREPKSAVF SANVGSNDVTVI DVPNAK AI ATVAVGERPYAVAL VTDSDTNTLWVIS TATDTVTSSIALPAHAYG $V A N F Y N D S L S V V P L V P G G A A T E V Q A Q D G V A G G E Y P F W V V A$

UniRef90_Q1LLM9 UniRef90-Q8TQF3 UniRef90-W9UUX4 UniRef90_Q46D35 UniRef90_Q1GZE6 UniRef90-I1YIQ3 UniRef90-C1ARD8 UniRef90-14KTX5 UniRef90-R5MQQ5 UniRef90-Q1IQG7 UniRef90-W5WPQ5 UniRef90_UPI00047B88DB UniRef90_-14BFE4
UniRef90_Q11F33 UniRef90_UPI000361A0D6 UniRef90-UPI0004765DF7 UniRef90-G4HV00

## UniRef90 G2FKV8

 UniRef90_UPIOO047BE850 UniRef90-J1ZRX3 UniRef90-UPI00037D940F UniRef90_UPI000374A59B UniRef90-UPIO0047CA1EF UniRef90-L7LPR2UniRef90_UPI00036129D7 UniRef90-M3C1Y9
UniRef90-13ZJ38
UniRef90-B4CX20
UniRef90-B4VEF8
UniRef90_UPI0003738E37
UniRef90_UPIO00364326B
UniRef90_UPI00036B1CF3
UniRef90-D5MMT9
UniRef90_V4JBQ5
UniRef90-T1C2E5
UniRef90_C7PZT9
UniRef90-J3DGS6
UniRef90-T1A6D9
UniRef90_UPI000472EDB9 UniRef90-A0A022GNY7 UniRef90_UPIO00362B811 UniRef90_L8TW55 UniRef90-X0Q599 UniRef90_R9A3F2
UniRef90-R4K8F9
UniRef90-J8SYI6 UniRef90_Q466P8 UniRef90_UPI0003B6B0D1 UniRef90-19CJF7 UniRef90-UPIO00369770F UniRef90-UPI0003816A95 UniRef90-ROPE47
UniRef90-U2NTE9 UniRef90_UPI00045E936A UniRef90-K8R7Z8 UniRef90-W4HVC7 UniRef90-V5SCG7 UniRef90-E1SKC5 UniRef90-J4P418
UniRef90-D6Y2A9
UniRef90_E4NOF3
UniRef90-M7POW9
UniRef90 ${ }^{\text {DOIEN2 }}$
UniRef90-QOSBNO
UniRef90-G7LP54
UniRef90_UPIO0037940D1 UniRef90-N0B3V0 UniRef90-A3VLY8
UniRef90_HOBS12
UniRef90_UPIOO037AC1AB
UniRef90-V4YGH1
UniRef90-l2FFY7
UniRef90_C1F560
UniRef90-D5UE78
UniRef90_B8ILHO
UniRef90-E4N3HO
UniRef90 14 EGM 4
UniRef90_UPI000373D7FD UniRef90_UPIO0036BC428 UniRef90_UPI00039D166C UniRef90_UP100036999EC UniRef90_D2B090 UniRef90_UPIO0029A1F48 UniRef90-J7KLD0 UniRef90-UPIO004789332 UniRef90-K5ZKY9 UniRef90_UPIO003B76B57 UniRef90_UPIO0035F67BD UniRef90-A5FWY2
UniRef90-A2NAR9


ANGR AFVSNQYAATVSVF DTGSFARLATIEVGD DPTGARAYVALVNGGSVAVVSTATGTVTSLVPVGVAP


UniRef90 Q1LLM9 UniRef90_Q8TQF3 UniRef90-W9UUX4 UniRef90_U9VZU7 UniRef90 Q46D35 UniRef90_Q1GZE6 UniRef90-I1YIQ3 UniRef90 C1ARD8 UniRef90-14KTX5 UniRef90_R5MQQ5 UniRef90_Q1IQG7 UniRef90 W5WPQ5 UniRef90_UPI00047B88DB UniRef90_I4BFE4
UniRef90 Q11F33
UniRef90-UPI000361A0D6
UniRef90_UPI0004765DF7
UniRef90_G4HV00
UniRef90 G2FKV8
UniRef90_UPI00047BE850 UniRef90_J1ZRX3 UniRef90-UPI00037D940F UniRef90 UPI000374A59B UniRef90_UPI00047CA1EF UniRef90_L7LPR2
UniRef90 UPI00036129D7 UniRef90- M3C1Y9 UniRef90-I3ZJ38 UniRef90_B4CX20 UniRef90-B4VEF8 UniRef90_UPI0003738E37
UniRef90 UPI000364326B UniRef90-UPI00036B1CF3 UniRef90-D5MMT9 UniRef90_V4JBQ5 UniRef90-T1C2E5 UniRef90 C7PZT9 UniRef90_J3DGS6
UniRef90_T1A6D9 UniRef90 UPI000472EDB9 UniRef90 A0A022GNY7 UniRef90-UPI000362B811 UniRef90_L8TW55
UniRef90 X0Q599 UniRef90_R9A3F2 UniRef90_R4K8F9 UniRef90 J8SYI6 UniRef90-Q466P8 UniRef90_UPI0003B6B0D1 UniRef90_19CJF7 UniRef90 UPI000369770F UniRef90-UPI0003816A95 UniRef90_R0PE47 UniRef90_U2NTE9 UniRef90 UPI00045E936A UniRef90_K8R7Z8 UniRef90-W4HVC7 UniRef90 V5SCG7 UniRef90_E1SKC5
UniRef90-J4P418
UniRef90 E4N0F3
UniRef90_M7P0W9
UniRef90_DOIEN2
UniRef90_Q0SBN0
UniRef90_UPI00037940D1
UniRef90_N0B3V0
UniRef90 A3VLY8
UniRef90_H0BS12
UniRef90_UPI00037AC1AB
UniRef90 V4YGH1
UniRef90 I2FFY7
UniRef90_C1F560
UniRef90_D5UE78
UniRef90 B8ILH0
UniRef90_E4N3H0
UniRef90_I4EGM4
UniRef90 UPI000373D7FD
UniRef90 UPI00036BC428 UniRef90_UPI00039D166C UniRef90_UPI00036999EC UniRef90 UPI000465CCD UniRef90-D2B090
UniRef90_UPI00029A1F48 UniRef90 J7KLD0
UniRef90 UPI0004789332 UniRef90_K5ZKY9 UniRef90_UPI0003B76B57 UniRef90 UPI00035F67BD UniRef90_A5FWY2
UniRef90_Q2N9R9

$\square G P$ $R Q A I V D D F G G A N E L F G A S G V A V S P D G S Q V F V T \quad S G P$ MPVES GPS GVVAlSP D GTKVYVTNYNSNTTS

A P F G L A LT R D GQRLYSVNVQDNT R $\square$ P GF N A P H G $\square$ V I DN D R A T R M Y V R P D All A F T S D E S HLL LVVN S G


SPRGVAFSPDGSKAYVANSGTNSVS R A WGI A LS P DETTDFVTNGLSDDVS
$D R \square Q$

(


$G G F N L P R G \square G \square S P D D T R L Y V A N Y G$
Y A R A SMS G E P V K L I K K D S L S K EVVRE GK T I F Y S A N S D E F A T NTRHLIVGSYLRHELLRFDIVITPNGRHVYIMN WWY NGGNDTSPT GEHPVLA IVVSPDSQKAYLSPANSNSTV K WR LP N G G S P D M G G
$\vee$ S A D GKVLWLS GRYNS D
A

GEAFDVPK L LDP T GK GCHGLY $\square$ S R D S K E M YVSNRGE
$T \mathrm{~V} D \mathrm{VRDDP} \mathrm{T}$ GGS T DSDGDGIPDSSD
 VQNTLKVGEH PYCAVLNPNNKTLYVSNTQDDTVT DTTTRQSLRRDPVGDDPHHVVFGPGGAFAYVLNRGSDSLS HDKNGVKSMLNP QQLIVTPDNHYLFVABAS A
$G L A L S P D G S T L Y V A N S G S$
A V S V I K P LD T A LT A G T A Q

## 

T Q TVMWRMDAGSAPAG $\quad \square W V T P D Q K Y L L V G M T G A D$
STFTE DSGSPFKAGSQPRSLQFDGTGDYLYAAN GAD S NTRAAYSYTFAATGAPAPTFHV



DGRTFY IA DMVADGMWCHGLYVSRDSREMYVTNRGE G Q $\square T V$ V DERSLA D A S WT A TVVS T

##  <br> LE VQ G VT A D K I Q P VGVVI DK D R K R G Y V A <br> L G P

$S P \square H V A V S R D G A H A Y V S$


P A RP $\square V T G L S P S S G P A A G G N T V T \square T G S H L Y S T$ $\square W M K A K P S D \square F G A S P N A D A F H P S G E R L Y V A N$ $N \vee L$ K
A
GF T K VK D $\square$ Q L A N G S N A L R G $\square C \square T$ P D G K Y V V V S N L G R F A V P YPEGI EASADGRSVQVVNWESNSVQ H GVVAVS P D G T L V V Y V A D Y G S H T V S


UniRef90 Q1LLM9 UniRef90_Q8TQF3 UniRef90-W9UUX4 UniRef90_U9VZU7 UniRef90_Q46D35 UniRef90_Q1GZE6 UniRef90-I1YIQ3 UniRef90-C1ARD8 UniRef90-14KTX5 UniRef90_R5MQQ5 UniRef90_Q1IQG7 UniRef90_UPI00047B88DB UniRef90_-14BFE4 UniRef90-Q11F33 UniRef90-UPI000361A0D6 UniRef90_UPI0004765DF7 UniRef90-G4HV00 UniRef90-G2FKV8 UniRef90_UPI00047BE850 UniRef90-J1ZRX3 UniRef90-UPI00037D940F UniRef90-UPI000374A59B UniRef90_UPI00047CA1EF UniRef90-L7LPR2 UniRef90_UPIO0036129D7 UniRef90-M3C1Y9 UniRef90-13ZJ38 UniRef90_B4CX20 UniRef90-B4VEF8
UniRef90 UPI0003738E37 UniRef90_UPIO003738E37
UniRef90_UPIO00364326B UniRef90 UPI00036B1CF3 UniRef90- D5MMT9 UniRef90_V4JBQ5 UniRef90-T1C2E5 UniRef90 C7PZT9 UniRef90-J3DGS6 UniRef90-T1A6D9 UniRef90 UPI000472EDB9 UniRef90 A0A022GNY7 UniRef90_UPI000362B811 UniRef90-L8TW55 UniRef90 X0Q599 UniRef90-R9A3F2 UniRef90-R4K8F9 UniRef90 J8SYI6 UniRef90- Q466P8 UniRef90_UPI0003B6B0D1 UniRef90_19CJF7 UniRef90 UPIO00369770F UniRef90-UPI0003816A95 UniRef90_ROPE47 UniRef90-U2NTE9 UniRef90-UPI00045E936A UniRef90-K8R7Z8 UniRef90-W4HVC7 UniRef90 V5SCG7 UniRef90-E1SKC5 UniRef90-J4P418 UniRef90-D6Y2A9 UniRef90 E4NOF3 UniRef90-M7POW9 UniRef90-DOIEN2 UniRef90 Q0SBN0 UniRef90 G7LP54 UniRef90_UPI00037940D1 UniRef90_NOB3V0 UniRef90_A3VLY8 UniRef90-HOBS12 UniRef90-UPI00037AC1AB UniRef90 V4YGH1 UniRef90-12FFY7 UniRef90-C1F560 UniRef90-D5UE78 UniRef90 B8ILH0 UniRef90_E4N3H0 UniRef90_-14EGM4 UniRef90-UPI000373D7FD UniRef90_UPIO0036BC428 UniRef90_UPI00039D166C UniRef90_UPIO0036999EC UniRef90_UPI000465CCD6 UniRef90-D2B090

LIDD D
A NHVAMDD Q Q T Y E VLE Y F LVVGRRVWGVGDTP DAA TVFDRDASGNGSFRQA $\square$ KDGQNGVEHASGVVVSP VIDTATNKVKA

T $\square$ NVGEHPWGVAVS P
VSVVD T QKHQVLAT $\square$ NVGE WPYCAVLS P D

A VT LT H
T QKHQVLATINVGEWPYCAVLSP D
RLYi A DYSRVS LLDTSTNQLVGTG IPGFNYPRDワAYSPHN $V V N L G T C R V E E$ T L V AVV R T VKTK Q N S K I S RERSLVTMMPVGAQPNAIA I $K V D L A A R K V V A S A S V P D A P V Q V Y V S A$
VIDTASGAV
VQTDT T GFSVPWGVAVS P D $\begin{array}{ll}1 & 1 \\ S & D A S M K V L Q S V Q V G R \\ V & A\end{array}$

$K \vee D \vee A A R R V L G$
Vs V I s
TTGLNVVTTVPVGDNPLGLDVTGD
TGNI GMFRDEDNGTLTNLGQAGDLPKSVGF

VPGFHAPSWPVITPD
GDTVSVI DTATNSTIGRL
 GNSVSGYNILGDGRLV PTGQAPMPT
 $V Y A L D A S G Q L L A R \square R V \quad G S G P H G \square A V Y P Q P$

| GS $\square$ S VF D F T Q N | K LT K K WELPD G G S | P D M G G V |
| :---: | :---: | :---: |
| $A N V \mathrm{~V}$ Q VLD | T | S S VA VT |
|  | LITTQKS I A SVDV GM | E GVSFD |
| V I QMANHQV | $\checkmark$ A TIPVGK | S D A |
| SNAMNVFKK | E Q T Q ${ }_{\text {L }}$ | ACCMAF |

YVQVIDWRTQKTVK VR T W WRTGEGAHNFRAH GD $R \square Q T A T G S A L R P D W P G T G P T A A T G P R$
 $N G T I S G F S V L A S G T L T A D T G S P F P A V G N G P F E L T \square D Q S K$
ANSVSVID TATNTVTATVPAGANPVGVADTAD $S P S V T V L G L D D N S G S \quad \square S I A G S V P Q A D A P N G C M V H P N$ Q G S I S V F F
MGTVSV I NTTTKDVTNDTVVGGKNCGVAV NKN A DRIALVDVASHT V A GSVTAFDLA TLKPDADIDVBGDHEGIA ADAD GSVSVFDFAQD RLTKKWRLPNGGS PDMGGVSAD


$\square G T V Q V I D T S T N T V S T T \square A T S H Y Q P G \square N Y S D G G V A D S A D$


QNA TAVVHFEPEDKGESH $\square T$ G $L T P A G \quad W F P G A V V F D A G$ AGTLYHYT $\square G D S G T \square S N P A T F T Q V D G T T P \square G \square A V N A S G$ $T S Q \square S A F S \square D D T \quad E K Q E F V G A V P E R G A A \quad G \square W S \square D C N$


TVT GAVTATVPAGPGPEAVAFDAAG
 E V D F A T G E V

UniRef90 Q1LLM9 UniRef90_Q8TQF3 UniRef90-W9UUX4 UniRef90-U9VZU7 UniRef90 Q46D35 UniRef90-Q1GZE6 UniRef90-I1YIQ3 UniRef90 ${ }^{-}$C1ARD8 UniRef90-14KTX5 UniRef90-R5MQQ5 UniRef90-Q1IQG7 UniRef90 W5WPQ5 UniRef90_UPI00047B88DB UniRef90-I4BFE4
UniRef90- Q11F33
UniRef90 UPI000361A0D6 UniRef90_UPI0004765DF7 UniRef90_G4HV00 UniRef90 G2FKV8 UniRef90_UPI00047BE850 UniRef90-J1ZRX3 UniRef90-UPI00037D940F UniRef90 UPI000374A59B UniRef90-UPI00047CA1EF UniRef90_L7LPR2 UniRef90 UPI00036129D7 UniRef90-M3C1Y9 UniRef90-I3ZJ38 UniRef90_B4CX20 UniRef90_B4VEF8
UniRef90 UPI0003738E37 UniRef90-UPI0003738E37
UniRef90- UPIO00364326B UniRef90 UPI00036B1CF3 UniRef90- D5MMT9 UniRef90_V4JBQ5 UniRef90 T1C2E5 UniRef90 C7PZT9 UniRef90-J3DGS6 UniRef90-T1A6D9 UniRef90 UPI000472EDB9 UniRef90-A0A022GNY7 UniRef90_UPI000362B811 UniRef90_L8TW55 UniRef90 X0Q599 UniRef90-R9A3F2 UniRef90-R4K8Fs UniRef90 J8SYI6 UniRef90 Q466P8 UniRef90_UPI0003B6B0D1 UniRef90_I9CJF7 UniRef90 UPIO00369770F UniRef90-UPI0003816A95 UniRef90-ROPE47 UniRef90_U2NTE9
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UniRef90_Q2N9R9

DKYVISTNGVSGDVSD DDVEKREVIKTDKVG GNQVYVASAVDAAITVFDRNADGTLSFAQVVLD GTKVYVTTYYDVSVVDTATNTVTAKVDV
DRWLYVTNQDESTVS KVDTQSQQVVTDGAVDD
T PRVYLTNQNSNNVII
GRVLSVANADNNCVTLFD $\square$
GKRLLAADQGTHDVSV $\square \mathrm{DPQTMAVTAT} \square P \mathrm{~V}$ VAGPHG GDFVYVANRAAGSLAD VDAGTNTLVKT $\square$ STGGNAYGVA

D A MLLTTNGVS GDVTM DDVASRKAVKT■KVG
GRRLLVANGLSDDVAVVDL
GT QVWVANEGDSS $\square \mathrm{S} \square \mathrm{I}$ NTNTNT $\square \mathrm{A}$
DLEVYYVNNGNETVSVL
GRLLYVADSAQDCLLIIDDSG
ARAYLTANGNS SVEVISLSTNT

GRFMYVPNLASTF $\quad$ SVVFA $\quad$ NNGT $L R A L P N A Q T G S P L G P M$ GSRAFVANPPDGTVSV IDDTAEQVVATLPTDKNAWTLL GRY
$G K V L W \square S G R Y N G \quad E V Y A \square D T T S G R Q L A K \square K V G G G$
GR AYVTDLLDGTLTVLD
NQ VLVTSWGENKLTVV $\quad$ DAASNK $\square K S H \square K T G D$
GHYI YVTNTRGGDVSV I STQTSAVVGT MPVGARPHN QNALFVAGETDKGILI FDFTPSTGKLKFRQHITE
GSYLYVVEPNQNVVLVDDTATQT $\square R$


KFLLAVNSGGSPDLQLFSFDATTAGKIDPGATATNDSGAT
GNTVYVSNGGDGTVSTIDPDTNLVTDTVVVGAGPAG


GTKVYVT NS GTGTVSD 1 DTETKTV
GTRAYTANGLSNDVSV VDLVAGQTIAT,VPAGVAPWG GR LYVANWGDNTLSVL DARTLKVVTTDPTGNG
GRVLWLS GRYHS EVYA $V$ DTATGEQLARIPVGSG

QR LYTTNGVSND\|S I DDLSS QTVT


GGAVYVANSKDGTLSVLDPATDTVSRT
TR LYVTNQYDDS ISVIDL
E
S QLYAAA YDGTDGMYTVAGGTDTLSGSLA G GTGG
NKQVWVSAEVGGTVSVVIDPGTHQIDKKITFEDPGVTAE GHDVYVACWGDN VLLRLDPRTDKVTGKADVGDG
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GRTAYVLNEDLG LLAKVDLASNRVEATLAAPA


GEVAWVTNLYDGTVSVL DLDANTVAATIPVGD GRLVYVANWESNTMSV—DDAASLRVTGQVTTSDG GQ LLVANRADDYLTVLDTATDTLGRARDVRAP
GRTAWVTDELSNDVAV VDLGSHQVTAHIPIGN
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GK HVYVGDFGASTLTVFTR
EKR $\square Y$ VVNLGDDSVSVIS

RNA TYSAN
$T \nabla Y V L \quad G N A G R \square T \square Y T T D A N G G$
DDH $\square \mathrm{F} \square \mathrm{SHSGTHEVSVID}$
AR AYVTDTDADTVTV $\quad$ DDTATGAVDSAFTVGSPAGDAF GTRLYVTNGGTNSVAVDALNTAKPEVDGLLPTG

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UniRef90-J4P418
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UniRef90_J7KLDO
UniRef90- UPI0004789332
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UniRef90 UPI00035F67BD
UniRef90_A5FWY2
UniRef90_Q2N9R9

UniRef90 K9QVF0
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UniRef90-K9QNY4
UniRef90 E1IFL2
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UniRef90_W4AWB7
P VASIPMTG

T $\square G N R \square H H Y R \square D A A T G R \square T S L G A P V A T G Y V$ Y $\square$ A S GSRG $\square$ K $\square$ WDATMGKERQT $\square K G P W V R S V A F S P$


> DTATGAHR QT LEGHGH

FDPQQAEAVATDPASNSVAS
TTSGLINGYKVDYQQGY LTQLANSPLPSGG $\square Y A Y K P L G P G Q G F E L T L A R R D P A G K$


पD TESDE $\square$ K D $\square \mathrm{E}$ VQGEPDGV GS $\square \mathrm{T}$ P $\square \mathrm{D} P \square \mathrm{~T}$ A $\square \mathrm{MVD}$

SPDGKYVATASNDN TSRLWDVSTGKQDD
$A V R N V P V G K$ SPDGQSFY $\square$ S DSTKGT $\square E L T R S A S M A V G P$

$H Y \square Y V V N A G T D D D S F R V G E S P R D E L V Q R \square A S G G V R$ TLDNK YYV DDLKASPPKLLAAT IEGGK $\square Y$ VNNFSDNTVSVTNTVVAT $\prod_{\mathrm{V}}^{\mathrm{V}} \mathrm{V}_{\mathrm{V}}^{\mathrm{G}} \mathrm{G}$


N G G Y $\square$ Y K $\square$ D P K T R Q S T K $\square$ R $\square$ T $\square$ N A VS K

VGNLYVAT AGDHNVRDFSGVDGSSMGEFVSSRGGDDRG DGKT I A TASYDKTARDWDTENGKELDATLN

LLS P T DVYAGD

UniRef90 K9QVFO UniRef90-Q0BVQ2 UniRef90-K9QNY4 UniRef90_E1IFL2 UniRef90_C6J106 UniRef90-G9N0F3
UniRef90-W5X8A4 UniRef90-H1QL94 UniRef90 K1ZIK8 UniRef90-W6JU86 UniRef90-V5SGG5 UniRef90 ${ }^{-}$UPI0001F2A43F UniRef90-K9QFB8 UniRef90-H5WHP2 UniRef90_Q2GV04 UniRef90-U9WCW0 UniRef90_UPI00047C20FD UniRef90-A4SYB0 UniRef90_UPI00046FEF81 UniRef90-UPI0004638FF2 UniRef90-I4EAI1 UniRef90-Q7NV21 UniRef90 LONJJ1 UniRef90_UPI00022C7EC1 UniRef90-D0D4Y3 UniRef90_A0A031GH36 UniRef90-A0RVW0 UniRef90_UPI000378C9A9 UniRef90_Q87WE0 UniRef90-C8S0P2 UniRef90-R1BN58 UniRef90-E1T3G7 UniRef90 UPI0003B613BC UniRef90-UPI00037A3D30 UniRef90_H8GM22 UniRef90-A0A024FHN7 UniRef90_TOLQF7 UniRef90-V5UKZ1 UniRef90-W7YQG0 UniRef90 ${ }^{-}$A0A011PQ82 UniRef90_Z9JU31 UniRef90_B8GM03 UniRef90-UPIO00348F180 UniRef90_UPI00036D00BE UniRef90-B2JWH3 UniRef90-B7L2T6 UniRef90_U7J662 UniRef90_HOTDA7
UniRef90-D3P073 UniRef90-R7RQL1 UniRef90 UPI00037CD88B UniRef90- Q01 XU8 UniRef90_UPIO0036237C2 UniRef90-UPI0003620908 UniRef90 - $55 \times 5 \mathrm{H} 3$ UniRef90_UPIOOO303231A UniRef90-J3D2S0
UniRef90-B9XN09 UniRef90 Q8TMX4 UniRef90_UPI00037B1B26 UniRef90 14D1J4 UniRef90-G2J2Q3 UniRef90_C2QLC5 UniRef90_UPI0003B35EB5 UniRef90-N0B4L4 UniRef90 Q0G3J6 UniRef90_UPI000465D473 UniRef90-UPI000477EE71 UniRef90 W0RK01 UniRef90-UPIO0034818C2 UniRef90_D7FP51 UniRef90-B8EN42 UniRef90_UPI0002E80F18 UniRef90_UPI0003FA402D UniRef90_AORWR4 UniRef90 A6TNK1 UniRef90_UPIO0037EAED1 UniRef90-AORVT6 UniRef90-A0RVT6 UniRef90_S8FEV6 UniRef90-I2NAP2 UniRef90-W4NMM7 UniRef90_UPI00034C3830 UniRef90-W4LJ76 UniRef90-Q10XW6 UniRef90_UPI00047CA94C UniRef90_UPIO0036B7796 UniRef90-UPIO00479A1DB UniRef90_V6JWE3 UniRef90-J4J717 UniRef90-A0A010QQK8 UniRef90_W4AWB7
 DVAGIAISRDGSRAYVTAPED HSLT LLDAVQRRVIKRIT $G \nabla Q R \square A Y H M P T H R L$ F A DH D G A L S S V Y Q V NGRY L A S VSDG $\square$ T $\square W D V T$ T GKEQ

QTLKGSTTVKSVA
 EPEGMAVSPDNRITVATSETTSMAHI I DTKTFEVLE NIM DPGFVAFSPDGRLLASSSY DNTVRLWDPATGTLDQTEEGB
 WVSAVAFSPDGNTLASASDDTATIRLWDTATGAHRQTLEG $P$ PSVLAVSPDGQFLEQAEGNMLRIFSLNDPTAPEFVSEVE
 TPSH $\square A \square D S Q S T V A Y V T L Q D S N E V I A G D L N T Q Q P$ ALWTLP

 EPHHLMDTPDKRSLIIANSVSNSLMFLDPNTGKLQRQVAD NPGTNAAK $\square$ NVTTGYDATVG $\square G S S F S F Y A G G S Y T K P V T L S$

VPKFlSVSPDGSRALVSNWCD STVSVLDLGAGVELRQDP NPHGLVVTPDGEYLIAGSLAETAATAHETPTSRLYLDHPA
 GPGMQUFSPDGKYGYVCSSFNPETEVVSVADHKIVGAVKQ PESLLAFSPDGKHLFASAAGNHKISRTYHFACGKLVGVIRLK



VYVPNFGSDTVSVIDPRTYKV VRTVP TSMHNAWSADSRHFFTVDRVDNRMVIVDTQDWSTVKVDSP

DPYN $\square Y$ WSPDGRSA $\square V V A E A H K R \square D F R D P H T K \square Q Y S \square A T P$ PVRNVVFSPDGKYVATANTTTGEGTSVLNHTGRVNNVVVS EPFALAVTPDGRRVYVADEGGGTVTVVDAASD TRVTTIP
 GAFGTTLSRDGSRLFVNNQATSTVTAFDPATLQPLAVMTG
 DPELLTLHPDGG


TLATVMNSGEASVSVIDMASHK\|VRTDP QVSGAVGTRA

KPAGTAMSKDGATAFVTSTEGKFVTLIDAASRR $\square S G R \prod D$ EPFGVAVNPDTNFDYVTNVGDGTVSVINGDTN』VVDTIN
NPSGVAFTPDGTVMLVVGNSRDLVYRYEDTGGGVLDGVSS MPHGMVLTKDQERVLVANKGTKSITEDQTRTNEQSEVYYE ASSNALLTFERNATGELTAKGVIP


HDRVYAAEQFSNTVSVIDPADNKLLGLIRL P I S DRVYTADQSSNTVSVINPATN TLVGRIT P LS S LRFGPDDGDLYVLSRVNDRVLRYDGRTGAFVDTVVP HQFWVAFSPDGKTIATASSDNTARLWDTENGFELATLNHQ TLLVANQKDADLSLIDTASAKVVGT $\square P$

QPSGLS $\square$ NRAGTLALVANKAGRSVSVLKADGRVQACGEVD DNGNLYIVDVPYGRILKI NPKKNIT GVAE

UniRef90 K9QVF0 UniRef90-QOBVQ2 UniRef90-K9QNY4 UniRef90-E1IFL2 UniRef90_C6J106 UniRef90-G9NOF3
UniRef90
W5X8A4 UniRef90-H1QL94 UniRef90 K1ZIK8 UniRef90-W6JU86 UniRef90-V5SGG5 UniRef90- UPI0001F2A43F UniRef90-K9QFB8 UniRef90-H5WHP2 UniRef90_Q2GV04 UniRef90- U9WCW0 UniRef90-UPIO0047C20FD UniRef90-A4SYB0 UniRef90-UPIO0046FEF81 UniRef90-UPI0004638FF2 UniRef90-I4EA11 UniRef90 Q7NV21 UniRef90 LoNJJ1 UniRef90-UPI00022C7EC1 UniRef90-DoD4Y3 UniRef90-A0A031GH36 UniRef90-A0RVWO UniRef90-UPIO00378C9A9 UniRef90_O87WEO UniRet90_C8SOP2 UniRet90-R1BN58 UniRef90-E1T3G7 UniRef90-UPI0003B613BC UniRef90-UPI00037A3D30 UniRef90_H8GM22 UniRef90-A0A024FHN7 UniRef90_TOLQF7 UniRef90-V5UKZ1 UniRef90_W7YQGo UniRef90 A0A011PQ82 UniRef90-Z9JU31
UniRef90
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 LGAGSWGCVAVHPSGSPVVVGGMVVAGNGAV EGAHNVQVSPDGKGATVVPSMSDMEGMSEAEDQEGGHGED FLADSRYLALGLSNGGLTDWDTDTGKKGSTTVELMAFSSN
LGDQRVGSTFSPQ
YSGDSGVHGLAY YSPDR
GFDGPSGFAITPDGKTAYVNNYGGPAGVTVDLASKAVAGS GGRYPRGIVAGPDNKTAYVAGMGSNKVVTVDLASKAVADF HTCSVVPVAFSPDGRLLLASCSSDKHTDLVNSVAFSPDGRL
 HGDSVRAVAFSPDSNTLASASDDKHGHWVSAVAFSPDGNT VPVRPQAVHFNGAGDLLAVVGDSSENGM ITGSATDASDDAAGKFLYVTYTYQNTILADGTPANPGPGG VGKEPHHLMMTPDQKTLLIANA

A GN
VGSTPADVFLTRDDKTMLVALTGDSYVEAY

ITGKNPEFVRVFGGNAYVTYEPGDSGGPPKAGQAEKDDDDD VDSRPRHAEFVKDGAELWVSAEDGGTVTVFDTATQTEKAR $V G$ G GPQHVVPSWD LDRTLWVANNAERTDKGS LTP DDP LGKP QDTNPRGFAASEDGRFVFMAGTNSDTVHRYDLGNPYDFGF
$A G T N P S Y M A V T P D N A Y I Y V T N T T S G T V S V N T T T Q A L E N T$
 LDGGPMGVAVDAARGRVFVSDWFNARVWVIGAADLAV GNVEPCTKLLDPGEGPI HACVHPSGTVAIVVGGTMNLVAD TGKEPHHLMVTPDNSSL IVANS VSNNLMLVDPKT VGRNPVKISATSPNHFVYL ISQDSATQANDFGFSQNASN VGEAPGVARVAPDGSAIVVSNERSGSVSVVDPKLERVRAF SGEDPETFALNPDGTMLYVSNEDDSR VTADDLKKRKA

## VGDNPYGVTYNPDNHEVYVMNEYTANTVTYSTDTGSGPQG

 DDPYQLGFSPDRKWFVVDVYRYDGENVSVVKRMPDAKT LNGQGVYT IITVTKDT\|D\|VAGKMYSGR\|IGTDFLLDSGS
$P \square G R A D P T E D M V L N V S V A P D R K S V V A L H S G F N P H G \square$ AGHGPQHVVPSWDLRTLWVN DNAG SAPHYPVPSPNGEELWLVHEGD DEHGPG
$G \backslash Y E \square V N P T T N R V Y V A A A G Q R G A N$ QCGG $\square$ NHADFS $\square \mathrm{DGRYVLFTCEFDGSDTKIDMDSRAVVGT}$ VGDGPINDAVHPGGRFAAVLNTGYSTHEVIVVQDRPDGKI PDGKY IATASDDNGKQIFVLNQTDPVRNVVFSPDGKY $\square$ AT LSGNPSGDAVTPAGDSVWVAVPQG
$V G L A P T A V A I D P T S T T A Y V T N S A A G T V S V I S D P T D T V V A T$
 VGQDPFFITISPDGSRAYV $\quad$ NFGGNTISVINDSTNTVISE TLLEYPSAVSMTPNGKRALFTMRTENK $V G V E P E G M G M S P D G K V L V N T S E T T N M A H F D D T T K H E V G G T$ $V G G G P \square G \square A V H P S G S P I Y V A D W F S H S L L V V$
T पREPSHWALSRDRSKLYTADASGNA $\square$ GASGPAEVRLSRDGRLLAVTE
MPDAPASVAFTPDGKRALVARFP
MPDTPLGVAADPAGRFLYVSGFYQPRTYKTDपETRVIIAT VGAQPLGVAVNLTDNGYVVNNGDNTVSVISGFSDNIIAT


GDPSPGNFSPLYKGQLLVHGMGYSPDHHTDA $\quad \mathrm{V}$ V $\square \mathrm{GSN}$ L TRHGGLGNPVD MAFAPDGSIVVSSL MT DRVWAVAFSPDGNGKE DATLNHQSSVNAVAFSPDGKTDAT VGGVT GH LADSPDGKTAYVPIYGDAG VGRPGTN RGVEPQHVVPSYDLQTLYVTNDGPLGGGGLLPDDPRTGEP VGRSPQHVVPAWDLQTLWVTNNAEGRSDGSLTP $\quad$ DKTGKA

UniRef90 K9QVFo UniRef90－Q0BVQ2 UniRef90－K9QNY4 UniRef90＿E1IFL2 UniRef90＿C6J106 UniRef90－G9N0F3
UniRef90 ${ }^{-}$W5X8A4 UniRef90－H1QL94 UniRef90 K1ZIK8 UniRef90－W6JU86 UniRef90－V5SGG5 UniRef90 UPI0001F2A43F UniRef90－K9QFB8 UniRef90－H5WHP2 UniRef90＿Q2GV04 UniRef90－U9WCW0 UniRef90＿UPI00047C20FD UniRef90＿A4SYB0 UniRef90 UPI00046FEF81 UniRef90－UPI0004638FF2 UniRef90－I4EAI1 UniRef90＿Q7NV21 UniRef90 LONJJ1 UniRef90＿UPI00022C7EC1 UniRef90＿D0D4Y3 UniRef90－A0A031GH36 UniRef90－A0RVW0 UniRef90＿UPI000378C9A9 UniRef90＿Q87WE0 UniRef90＿C8SOP2 UniRef90－R1BN58
UniRef90－E1T3G7 UniRef90 UPI0003B613BC UniRef90－UPI00037A3D30 UniRef90－H8GM22 UniRef90－A0A024FHN7 UniRef90＿TOLQF7 UniRef90－V5UKZ1 UniRef90－W7YQG0 UniRef90 ${ }^{-}$A0A011PQ82 UniRef90＿Z9JU31 UniRef90＿B8GM03 UniRef90－UPIO00348F180 UniRef90－UPI00036D00BE UniRef90－B2JWH3 UniRef90－B7L2T6 UniRef90＿HOTDA7 UniRef90＿D3P073 UniRef90－R7RQL1 UniRef90 UPI00037CD88B UniRef90－Q01XU8 UniRef90＿UPI00036237C2 UniRef90－UPI0003620908 UniRef90 H5X5H3 UniRef90＿UPIOOO303231A UniRef90－J3D2S0
UniRef90－B9XN09 UniRef90－Q8TMX4 UniRef90＿UPI00037B1B26 UniRef90＿14D1J4 UniRef90＿G2J2Q3 UniRef90＿C2QLC5 UniRef90＿UPI0003B35EB5 UniRef90－N0B4L4 UniRef90－Q0G3J6 UniRef90＿UPIO00465D473 UniRef90 UPI000477EE71 UniRef90 W0RK01 UniRef90－UPIO0034818C2 UniRef90＿D7FP51 UniRef90－B8EN42 UniRef90＿UPI0002E80F18 UniRef90＿UPI0003FA402D UniRef90＿AORWR4 UniRef90 A6TNK1 UniRef90＿UPI00037EAED1 UniRef90－A0RVT6 UniRef90－A0RVT6 UniRef90＿S8FEV6 UniRef90－I2NAP2 UniRef90－W4NMM7 UniRef90＿UPI00034C3830 UniRef90－W4LJ76 UniRef90＿Q10XW6 UniRef90＿UPI00047CA94C UniRef90＿UPIO0036B7796 UniRef90－UPIO00479A1DB UniRef90＿V6JWE3 UniRef90＿J4J717 UniRef90－A0A010QQK8 UniRef90＿W4AWB7
$\square Q R \square S G T A N G L D G A K G$
140
GAVKAVIETGKS
$G Q V A Y I R A A R P D L N V T P N D T$ MHSFVLDADGDHQAPGSPAD GDHEMSGYAYFYDTVSDVKKVAGAALPYSCRFSQNGQYLY GRDASVSDSII DWDVTDGKKRQTSTTVKSVAFSPDGCYLA TINAQTDEVMLMTPAGAGPSVTVGYRPYAAVLSPDGNDLAA
 GNATTVRVVD』ATNA』VGSA A
VHKFGFE！PGVNAELIQ
KPGNGPRHMVASPDGKFLY
 $Y T V F R \square T P R G Q L I P P G S T V A L P T G S D$
$G A V Q R T L R D V D$ GAVQRTLRDDVD
 PY H LTRFSPDMKWFV GQLSQPQTFPMELTERSDLPFDPGABSVRFHPTADUVA



N P
D
G A
S
GV
VH T T S VGQRPRG】T
ANSPPAEAIVDLKTMKVTHLVKSGHE $\square$ RFA $\square$ K GVVEDLIQ

PVGGEFSP
GKEVPVDD
PYNMYYTPDGKTAF
GPTGEAAE $\square$ GS GGEPVPGYNLTEDAAPTGDTFSYDGTQMF $\square \mathrm{SV}$ $G \vee \vee R K \square D T$ $K T \square K V \square A D \square P \square G A G$ QRELATGSA
$E P N H G G A H$
GTVVS GQVQRWVENDED TEKLAEPNHGGSAHMATLALVSPDGRWLV MATFDVRAGAKFVVF
PY Y 1 GFSPDRKWLV GSLSPLPGVT\NP $\square N \square A S T G F N S G V T$


 A GA S GVTVSPDGSLVVF
 $\square \mathrm{D}$ TGP $\quad$ T NH H N SFMDTATNTVRHTTYV VSVIDLATNKVQTTHIGH

 | 1 | L |
| :--- | :--- |

PTSLGVEP EGMDVSPDGRWGV
STMAPVATLPIGGKPAGVAVSADGARAY
 VVVFDLTQDGYPERLSMPLTGEEVEEAHHGNFTQDGSDFM VKVWEAETNDLIKEVAVPSDRSDGSKPHHFMAVPGRNFAF
 DK L C SKKPKKIPDSKVVASE DCTGTGPQDVRVSPDGKTFF VSHTKLDEAFY ASADNTSRLWDTTTGKQDFDMKHDGPVNDVVFSPDGKYVA $\square Q E \square D P A A N V I R R T V P L A A R A Y S A A I S P D G R F G Y$
 GTNPVDVAI
 DPQTREVTQKFE

EAGT G
G
A
G
G GNNPQGAIA

$A \square G H K V I A D$
I DTYLVQPDGA
GNTY S GAAPFGFDYTNTGR LV GNK【SVLD DDGGKASYNKVD IVAGPWPYNVAVTPNGKLALL
 GASPSGVAVS $\stackrel{A}{\square} \mathrm{P}$ V GTGPFGVGVNSNGGLVV

PANETHSSTLSVAAHEEN MK LMQV $\square$ H $\square G K M$ $\square$ ILFDLKS GRPEPTA
 RAASSG


GETELWLQAVDENEP $\square Q$ LLEHND
SVSFIDTQTNAVKHVTYVGRS LAVISTGSNDDTATNAIKGTIYLGRSPHEGFFTPDGKEVW
 GSEMSVIDDASRK DTGKVDFGHGVRPHCADYDKNSGMLF GEPLPVRDDPHTWEQVGA AVPDCPGDDHMDFTADGRFAL GKAIEVDDNMYFTPDGKEAIVVAEAHAHNSDDAPQCKG｜N

## UniRef90 K9QvFo UniRef90-Q0BVQ2 UniRef90-K9QNY4 UniRef90-C6J106 UniRef90-G9N0F3 UniRef90-W5X8A4 UniRef90-H1QL94 UniRef90_K1ZIK8 UniRef90-W6JU86 UniRef90-V5SGG5 UniRef90-UPI0001F2A43F UniRef90-K9QFB8 UniRef90-H5WHP2 UniRef90_Q2GV04 UniRef90_U9WCW0 UniRef90_UPI00047C20FD UniRef90-A4SYB0 UniRef90_UPI00046FEF81 UniRef90-UPI0004638FF2 UniRef90-I4EAI1 <br> UniRef90_Q7NV21 <br> UniRef90-LONJJ1

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UniRef90-R1BN58
UniRef90- 1 T3G7
UniRef90-E1T3G7
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UniRef90-H8GM22
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UniRef90-TOLQF7
UniRef90-V5UKZ1
UniRef90_W7YQG0
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UniRef90_UPIO0036D00BE
UniRef90_B2JWH3
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UniRef90-H5X5H3
UniRef90-UPIOOO303231A
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UniRef90-Q8TMX4
UniRef90_UPIO0037B1B26
UniRef90-I4D1J4
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UniRef90_NOB4L4
UniRef90-Q0G3J6
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UniRef90-AORVT6
UniRef90-A0RVT6
UniRef90-S8FEV6
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UniRef90_W4NMM7
UniRef90-UPIO0034C3830
UniRef90-W4LJ76
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UniRef90_V6JWE3
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UniRef90_A0AO10QQK8
UniRef90_W4AWB7

170
180

TRVQTLQN ${ }^{190}$
190
STVGASDV|T|V

 VSNWGDNGSTI W WDATTGK


 ASSSDDNTVRLWD PATGTLQ QTLEGHTDPVEVAF GADQFAGVLRSWR LDPQGRLQPASEFAGTGRPSFPLGLQQ TAANRLNHVDLYRWQPENADQPLKLVKRDDAPRTPSHLS I SAS DDKTI RLWDTATG



LLCASDDDT I ELDDTATN
 $V$ V AEARHRLDFRDPKTMAVQYS DDTPQCGRRVWHMAF
 VNNEAASTLSVIDLDHQRPVAVVPGFSQPRQG



 $V$ GMTGE D DVAVV WRAQKVIKRDQTYLSVNVGMGASANAR


 VVNYDSNDVSVID
 V S S OGGS
$V$
AN R G

ATHKIDVGFHPNKSVL





VMAFASSSTKVFDMVTNEFTNEIPT GLGARHLEF
VMATARSGSVVSAIDDRRDNSAVKEIPT DSEGEGLAGARHLEF
VADMMADGVHVVDGES $\quad D K Q I D S E G E G V G A R Q L V B$
S S GAGDEVIHCFNF NNGDLSNHHHI RDRNSSDRPAGI A D $T A B L Q R D G V V A E V D L R T G A V T R Q L P V A$ VSNSGSNSVSVINPITN TVI ATDPVGTEPAFVAL SGNLKGNSMTIVSLPDFKVTGEDGGL HGPRQLIAR
 VALGPANRVAVI DTATLKVLKYILV V GQRVWQMYF
 $V N A D R L N Y V D I Y R P D D \quad L T L V K R \quad F S P G G M P S H L D F$ VSEAGPGTASSYA AAGGVLHVRTASAATLQRAPCWLVV

 VVNNNDNTVSVIDGSGNTVVTTI
ASGGNDNWI LKYADRQ QKLVLQDSDILWPNK I SPA G I B D





 VT TELDKSVSII DPKTLK IVGSV PTGQEQSHMLVL ASCEFAGRMAVLDVVGTDLVTMID LPGGRGSMPQDVKL

VVDMGADSVSVVDLLA TPPR


## UniRef90 K9QVFo

 UniRef90-QOBVQ2 UniRef90-K9QNY4 UniRef90-E1FL2 UniRef90_C6J106 UniRef90-G9NOF3UniRef90
W5X8A4 UniRef90-H1QL94 UniRef90-K1ZIK8 UniRef90-W6JU86 UniRef90-V5SGG5 UniRef90 UPI0001F2A43F UniRef90-K9QFB8 UniRet90-H5WHP2 UniRef90_Q2GV04 UniRef90-u9WCW0 UniRef90_UPIO0047C20FD UniRef90-A4SYB0 UniRef90 UPIO0046FEF81 UniRef90-UPIO004638FF2 UniRef90-I4EA11
UniRef90- Q7NV21
UniRef90 ${ }^{\text {LoNJJ1 }}$
UniRef90-UPIO0022C7EC1
UniRef90-DoD4Y3 UniRef90-A0A031GH36 UniRef90-A0RVWO UniRee90_UPI000378C9A9 UniRef90-Q87WEO UniRet90-C8SOP2 UniRef90-R1BN58 UniRef90-E1T3G7 UniRef90-UPI0003B613BC UniRef90-UPI00037A3D30 UniRef90-H8GM22 UniRef90-A0A024FHN7 UniRef90-TOLQF7 UniRef90-V5UKZ1 UniRet90_W7YQGo UniRef90-A0A011PQ82 UniRef90_Z9JU31 UniRef90_B8GMO3 UniRef90-UPIOOO348F180 UniRef90-UPIO0036D00BE UniRef90-B2JWH3 UniRef90-B7L2T6 UniRef90_U7J J662 UniRef90-HOTDA7
UniRef90
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UniRef90-B9XN09 UniRef90_Q8TMX4 UniRef90-UPIOOO37B1B26 UniRef90-I4D1J4
UniRef90_G2J2Q3
UniRef90-C2QLC5
UniRef90-UPI0003B35EB5 UniRef90_NOB4L4 UniRef90-Q0G3J6 UniRef90_UPIO00465D473 UniRef90-UPI000477EE71 UniRef90 ${ }^{-}$W0RK01 UniRef90-UPIO0034818C2 UniRef90-D7FP51 UniRef90-B8EN42 UniRef90 UPIO002E80F18 UniRef90-UPIO003FA402D UniRef90-A0RWR4 UniRef90-A6TNK1 UniRef90-UPIO0037EAED1 UniRef90-AORVT6 UniRef90-AORVT6 UniRef90_S8FEV6 UniRef90-I2NAP2 UniRef90-W4NMM7 UniRef90 UPIo0034C3830 UniRef90-W4LJ76
UniRef90
Q10XW6 UniRef90-UPIO0047CA94C UniRef90-UPI00036B7796 UniRef90-UP1000479A1DB UniRef90-V6JWE3
UniRef90-J4JJ17
UniRef90-AOAO10QQK8
UniRef90_W4AWB7


UniRef90 K9QvFo UniRef90-Q0BVQ2 UniRef90-K9QNY4 UniRef90_E1IFL2 UniRef90_C6J106 UniRef90-G9N0F3
UniRef90-W5X8A4 UniRef90 H1QL94 UniRef90 K1ZIK8 UniRef90-W6JU86 UniRef90_V5SGG5 UniRef90 UPI0001F2A43F UniRef90-K9QFB8 UniRef90-H5WHP2 UniRef90-Q2GV04 UniRef90-U9WCW0 UniRef90_UPI00047C20FD UniRef90_A4SYB0 UniRef90 UPI00046FEF81 UniRef90-UPI0004638FF2 UniRef90-I4EAI1 UniRef90-Q7NV21 UniRef90 LONJJ1 UniRef90_UPI00022C7EC1 UniRef90-D0D4Y3 UniRef90_A0A031GH36 UniRef90-A0RVW0 UniRef90_UPI000378C9A9 UniRef90_Q87WE0 UniRef90_C8S0P2 UniRef90-R1BN58 UniRef90-E1T3G7 UniRef90_UPI0003B613BC UniRef90_UPI00037A3D30 UniRef90-H8GM22 UniRef90-A0A024FHN7 UniRef90_TOLQF7 UniRef90-V5UKZ1 UniRef90-W7YQG0 UniRef90_A0A011PQ82 UniRef90_Z9JU31
UniRef90_B8GM03 UniRef90-B8GMM03
UniRef90_UPI000348F180 UniRef90_UPI00036D00BE UniRef90-B2JWH3 UniRef90-B7L2T6 UniRef90_U7J662 UniRef90-HOTDA7
UniRef90 ${ }^{-}$D3P073 UniRef90-R7RQL1 UniRef90-UPI00037CD88B UniRef90-Q01XU8 UniRef90_UPIO0036237C2 UniRef90- UPI0003620908 UniRef90- $55 \times 5 \mathrm{H} 3$ UniRef90_UPIOOO303231A UniRef90-J3D2S0 UniRef90-B9XN09 UniRef90_Q8TMX4 UniRef90_UPI00037B1B26 UniRef90_14D1J4 UniRef90_G2J2Q3
UniRef90-C2QLC5 UniRef90_UPI0003B35EB5 UniRef90_N0B4L4
UniRef90 Q0G3J6
UniRef90_UPI000465D473
UniRef90 UPI000477EE71
UniRef90 W0RK01
UniRef90-UPIO0034818C2
UniRef90-D7FP51
UniRef90-B8EN42
UniRef90-UPI0002E80F18
UniRef90_UPI0003FA402D
UniRef90-A0RWR4
UniRef90 A6TNK1
UniRef90_UPIO0037EAED1
UniRef90-A0RVT6
UniRef90-A0RVT6
UniRef90_S8FEV6
UniRef90_I2NAP2
UniRef90_W4NMM7
UniRef90-UPI00034C3830
UniRef90-W4LJ76
UniRef90-Q10XW6
UniRef90_UPI00047CA94C
UniRef90_UPIO0036B7796
UniRef90_UPIO00479A1DB
UniRef90_V6JWE3
UniRef90-J4J717
UniRef90-A0A010QQK8
UniRef90_A0A010QQ
UniRef90_W4AWBC

UniRef90_W4AWB7

 $A V F$ ESIALSPNGNSLYAANRNTNPDN FNFNQSMTFDG LLHPDGYY VVATMSG DLATEKMDKVPVGNGPAQ VYIPSDNKYAI DANQGTEQNP AMTGKEQQALGGSNCWVMSVAFSAGGRYLAASGLSNGGD VDPTNKLGATPVAIALAPDGKRAYVANAGDN $\square K T N Q V S K \square I P L G T Q P A \quad G \square A L T P D G R F A Y A T N Y N T L Y G G$

GH $\square$ D WVETVAFSPDGR LLASSSYDNT NF $\square$ KTVPTSGQAPCW TATSAHRQTLEGHGHWVRAVAFSPDGNTLASASRDKTEGH DAAQHQLVAVTSGGFQSETLADSDDGTLLADMSNESDLFDP

$G K D D P K D H G D P G G E Y P D D V A W V G R G K K A Y V A G B R$ FALVSGDRVSVSNFDSADATVVSRDGKRDYFACHSAN LAD WRVLKVITGFSGPRQGDKLSPDGADLYVTN

A YRPPRDSPDGKKTGVGAHGDYPSRDGKKLYVANRGTHPKG
TTATLTTAESLDQSSSPTGVAFSHGGYTIFAVGNASDSVH
T GFNK LRA $\square$ S $\square$ SAD GNT $\square Y$ AA NS GSNS
RPYG $\square$ AFAAGRG
F VT N Q Y A D S VT $K E L Q R C K T S P H D G L N L P T S F S D T A K G D F G Y T T T R G G D G R P$ GLSWMTPGEKYGYVGMRGGD


DKERKRGYVA $\square G P$
A LL WVT D F G S

$G \square M P G P D D M E L S A D K R Y L W V G F R$ GHDNFP SRDDQT $\mathbb{V} G A D V G \square Q G P S A L A V S G D D R F V Y V S A A G S N S$
$N V H G L D M G D D G R T \square F D S S Q K A E T L T$ AAGPVDNGPPGSEVCSAQDVRISPNGKRYYVADMEADGVH EIIVGEWPW





FLLFAVMYKKCE
DGRTWYVADMQTVEVVNPAALVLSDNGQTLYVSNWGSDSVS VG GEGRMGHVAFTEDGRYGYVSNAGDGNDH

 LIKTWPDPGGGSPDMGG$\quad$ V DMKHDGSVNTVVFSPDGKYDATASADNTS
 SAFGGVISPDGSRAYVV GFD GKKVTK $\square K E \square E V G G G M P E G V V L S P D G R Y \square Y V G N F \square G D N V T$





## A

EAYTCLLSHDKTK $\square Y Y$ S CD DC $\square S K N D R Y \square Y V A N A N D N S$ $\square L L D \ A F A A D G S A M F A A G A R \quad N D M V Y A Y A L G S G Y D T P S$


TPFGFSFSGHGT GASPSAVLDMSAYSRSSTGMAFSDDGLGMFVLDGGNSTVH GASPSAVLDMSAYSRSSTGMAFSDDGLGMFVLDGGNSTVH
 PFALIRTLDTGPITNHVNIVR NAKGMYAYVTVGGLNV
 VIDTATNKVKSWVEDPAYGTATTPDGRWLLVADRGAK

GTHGLYVTRDSAALIVTNRGE



290
NT NT L LP P P VT $\frac{300}{1} \mathrm{~L}$ T T

 K $\square$ WD A T K I D A $\square$ T G K E R Q T F K GS S PV

CVAVLDI SRRGA TRETGF DPTE
P Q FVDNFVYLTMGGLDETWVYKRTHGAGGHAPHGAWAS GD


VR L WDDPATGTLQQTLKGHT
G WVETVAFS P D
 GDWVSAVAFSPDGNTLT TIRLWDTAT GGDWVRAVAFSPBD
 $D R E$ VVVGDEA GEMRVSGRVPLRG QPNRIVV NRD
 TTNMAHF DD TATNEITHNVLVDSRP THEAEFKP D VF D G S S Y E $H V Q D V P V \quad G Q R C W H F S F T P D G$ $K G S V S D D F A T E K V V S N W P I P \quad G G G S P D M G N V S A D$ $A Y E L F$ GDA Y D LTT GF $\square T$ QSVGGN $\square D V S G Q E T A P T G M A F S D D$
 VF D A TA A
 T H
 $S N N$ I S GNQMDPTDGTLRQVQRTP
 S N DI S S I D L A S Q T K K Q I K I I N V G K K N I I D R I L Y H T P R P VGG TNNLSVINPSDNSLIENIGV

GS GPQ GVLVFPYN






 A S SVS S Y R VG P H GALT LLQA S APTHQTAAC WVIDATPG
 S SVVE WN Y A YN RMMGGVY M A L L A A K D T P S

## V IDDTATNAATA

IAKVFR TD DFSEV
 $H V K V Y Q R G T N P N$ VATDR ATIPVGNLPHGLWPS GD
 WUniRef90_B8GM03 UniRef90_UPI000348F180 UniRef90 UPI00036D00BE UniRef90_B2JWH3 UniRef90-B7L2T6 UniRef90-H0TDA7 UniRef90_D3P073 UniRef90_R7RQL1 UniRef90 UPI00037CD88E UniRef90_Q01XU8 UniRef90_UPI00036237C2 UniRef90 H5X5H3 UniRef90_UPIO00303231A UniRef90_J3D2S0
UniRef90 B9XN09 UniRef90 Q8TMX4 UniRef90_UPI00037B1B26 UniRef90 14D1J4
UniRef90 G2J2Q3
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UniRef90 UPI000477EE71
UniRef90 W0RK01 UniRef90_UPI00034818C2 UniRef90_D7FP51 UniRef90-B8EN42 UniRef90_UPI0002E80F18 UniRef90_UPI0003FA402D UniRef90_A0RWR4
UniRef90 A6TNK UniRef90_UPI00037EAED1 UniRef90_A0RVT6 UniRef90-A0RVT UniRef90_S8FEV6
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UniRef90 K9QVFO UniRef90- QoBVQ2 UniRef90-K9QNY4 UniRef90_E1IFL2 UniRef90 C6J106 UniRef90-G9NOF3 UniRef90-W5X8A4 UniRef90 H1 QL94 UniRef90 ${ }^{-}$K1ZIK8 UniRef90-W6JU86 UniRef90-V5SGG5 niRet90 UPI0001F2A43 UniRef90-K9QFB8 UniRef90-H5WHP2 UniRef90-Q2GV04 UniRef90'ugw UniRef90_UPIO0047C20FD UniRef90-A4SYB0 niRef90 UPI00046FEF8 UniRef90-UPI0004638FF2 UniRef90-I4EA11 UniRef90 ${ }^{-}$O7NV21 UniRef90 ${ }^{\text {LoNJJ1 }}$ UniRet90-UPIOO022C7EC1 UniRef90-DOD4Y3 UniRef90 A0A031GH36 UniRef90 AoRVWO UniRef90-UPIOOO378C9A9 UniRef90_O87WEO UniRef90 C8SOP2 UniRef90-R1BN58 UniRef90-E1T3G7 UniRef90 UPI0003B613BC UniRef90 UPI00037A3D30 UniRef90-H8GM22 UniRef90-A0A024FHN7 UniRef90 TOLQF7 UniRef90-V5UKZ1 UniRef90-W7YQG0 UniRef90 A0A011 PQ82
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GKTLYVVNWMDDTLSLDDAENGHKALVK
NRYIYITGQNGNSLSVFQRDSSTLTHVQTLQ SEWVFASNLY GSIYSLLINPNTGTLLATTNDDN SK YVTNMFDNTVTV IDDNETNKVITTMKVG GRYLASA SDDLTL WDATTGKEQQTLK KRLRLVATGEKSDAVDV TDTVTNKVVDTD GMRAYVPNYSSNTVSVFSI

GR LLASSSDDNTVR【 WDPATGTLQQTLK EFVQVITRRTSPNVVILKVNDGTGNEVDTSPGPGPS GNTLASA SDDTTIRLWDTATGA
NQLLYVGNDDAGSVEVWRIDSGSLERTDRYRAPRGV GDYLYTSNSLSNNISGNQMDDGRLRQTQRTPFGANALPSC GKTMWVTFRFSKKVGV $\square D \square P S M K L V A V I P D G K$

RSRAYAAEDNSDQVAV DDTETNRLIESTPVSEP QSFAYVANDGAGTVQ KIDDVTNRIVKTISI APDAGSH GT LYAANSGADTLA RVDTKTGRITATVPVGEPYGAA NSEVWVSAE DGGTVSV IDNESREITQKISFEDPGLRSE SKLLLTCG RSNALYVL
GKY LWLSGRFDD VVYRTDTNSGD VAKVKVGQ GLRVFVTGRDSDS $\square H R Y D L$

GLHVYSGNLGDNSLSVDD
GRRIVVANWFSNSLSVDDAQS TLDGEVATGDG SALLAV DVLGGTLTAFKRDPTSGMLEKSAVVSAPKATGD GRHVAVSNRVASTIST $\square \mathrm{DEESGTNVGDTTMPGP}$

GHLLMVVDSRSDLAMVR
GNYAFVANSNADKVEV $\square D M K T F E \| V S K R \nabla P D G$ GD $\square Y \vee \square N Y \square S G T L D V L S$
GKFLADGF $\square$ QSPY $T$ K $\square$ YRREGD $\square F T T D E Y \square P \square P H P N A G$ QRLLMVSGAENNAVAVFERDSASGRL
G FVYVSSRQDP VIWVIDQQSLEVTATDALPAGEGHQM GSKLYVANRGSHQUSVTVIDFASEKIVAQWPIPGGGSP TQLLVVNNDEESGVVV
GAR $\square Y \nabla G \square E N A D A \nabla A V \square D T A A N A V I A T \square P \square G Q G$
D $\square$ AASVSNQKNGS $\square$ TVLK $\square \mathrm{DGKTVSKTQDVE} \mathrm{\nabla G}$

GKRAYSANVESDDVSV DDLASRRVIATVKVGKPYCVAL GRGLVSCANDNTVAV I DTKTRQVIERVSTPEGSTPN GR\|LWLSGRYDREVYA乌DTTTGRLIAR\|PVGS
hKalatadarsntatr VdVnt mevtdo GR LVLNQGSGDVTVL NAADGKLLNTVKTGEGA
GTYLFVANSARNSVSV TDTETGQPTET
GKYVATA SADKTAHLWDVSTGKQISYLRHDSGV S VAYAHGEDNELTV DDTATASVRRTVPMPADNSAST

GRFVYVANWFDNTLAKMDTETDETATVEVGSG GRHALVTNARAGTLSVFDAVARPAANVQLADP K LDV

EKTLY $\square$ ANADNNC $\square$ SVFDV

GRLMFVAGNAEDTVYTFAL
GRLMFVAGNAEDTVYTFAL
GSRVYVTNTGGHStsV TDTATGTVVATVGVGD
GKRIYVGLENADAMA
GTRVYVGLENGDAVDV
N LYISNQRSNRVTV
AI DTLTNTVIATVPIGQ
1 DTIAQQRI ERIPVGG
KT\ATATSDKTARL WDGENGKVLATLN
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 GAHAYAANFNSNNVSV GDTATNTDTTKVPVGNG

## UniRef90 K9QVFo

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UniRef90-K9QNY4
UniRef90 E1IFL2
UniRef90 C6J106 UniRef90-G9N0F3
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UniRef90 H1QL94
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T V W

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UniRef90 J4J717
UniRef90_A0A010QQK8
UniRef90_W4AWB7

# SFTE T GR $\square$ T $\backslash \mathrm{V} \mid \mathrm{P} \quad \stackrel{40}{N}$ <br> E $\square$ VD H $\square$ D F G H G V 

DTRALLKVVSTWAVSAE

$R \square D \square P N G S \square T P V G R S L D L D D L$


T QS NTVK GTVYVGR

$$
\mathrm{T} \mathrm{E} \square \mathrm{AR} \mathrm{~V} \mathrm{~S} \square \mathrm{PG}
$$

RMFVSSFSGAKVI
T LRRVDTYAAGR
DPENPK $\square$ A A SLLPLKNSVVG

Y VT H Q D GPVT $\square \mathrm{Y} \mathrm{S} \square \mathrm{L}$
STQT $\square E \operatorname{LVDVERQRKDD}$
D Y TKiGGEDDVGE
$\square \mathrm{Y} \mathrm{V} \mathrm{CH}$ Y T T N Q
Y $\square \mathrm{Y}$ E $\square \mathrm{D}$ VA T G T V T
D A $\square E A G A$
VAVID $\square$ ATGE
$T V K E \underset{V}{V} \underset{V}{V} G A$
$\mathrm{T} V \mathrm{~V} \mathrm{~T}$ G A

H LIVGGF DDVVHRFDFD GRDALTNRTTDTYPD
FNATNGNGTLAASSFATQLG
 DGGLLDKDTPAKAVATGA AAGTLSVTTLDASASE N S Q T DH LLVY D $\square$ QS GVLK A S LLGF VT TALTLGD

FD DETRTRK $\square$ FYRSR EHFE $Y$ VAVIDAAT YREKTRMKTVPA Y LAVVVNAGFGTVESNYEQSIAVDD TRKSVGKVDSCT

TTVEAED
DTENGKATLNHQSSVNA

# NSRGRワYVVD TASNKVIDS DDLGKG IEDG <br> ADGKRIYVSM PEAGQVALIDAERFQVLG VASGSDDKTIKIW DAASGTCT QTLEGHGG A QDQK VYRYSFDVT T A M $\square$ GEVEMSQEDATR LDPKTGK $P$ PRTMEG DD DGGLLKNTPANRVTTGA <br>  

DAKTWKV DDR DPFPDGG DAA $\square G G M T A W Q V T T G P D G P$ VVVMDAADGK】K

T WTETVR $\square$ PTGK

T Y VA D G S LYYVDV PY GR LK VDAEK QVTEDG GSGRUARVDAVTHTVVSSVRADTAEG
$\mathrm{S} \square \mathrm{A} \square \mathrm{H}$ H T VP VQD

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UniRef90-K0JV37
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UniRef90- B9M542
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UniRef90-A0RV48
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UniRef90-Q5ATB2
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UniRef90-UPI00037BCD3D UniRef90 B2IWB9 UniRef90 ${ }^{-}$T0CTI1 UniRef90_UPI00042A0BFC UniRef90 A0A017SWV9 UniRef90 UPI00036927C2 UniRef90_UPI00045E5BBF UniRef90-UPI00046F8858 UniRef90 UPIOO04118899 UniRef90-UPI00036187B5 UniRef90-17A3S4 UniRef90-W4M6T9 UniRef90 V2JPW9 UniRef90-C1F8J2 UniRef90-A3WBI8 UniRef90-B1Y7F7 UniRef90_E5YT94 UniRef90_C7Q7K3 UniRef90-Q111Z3 UniRef90_AORUX4 UniRef90-A0RUX4 UniRef90_-Q12D42 UniRef90 R1E7C3 UniRef90-UPI00034D33BD UniRef90-X0XCA6 UniRef90-A0A024HFL4 UniRef90 Q00808 UniRef90-W0DDU5 UniRef90-A0RXB7 UniRef90-A1V5R6 UniRef90_Q8YX32 UniRef90-I3ZL54 UniRef90-F9ZKR3 UniRef90_UPIOOO42476DE UniRef90-J7QAC2 UniRef90_UPI000349B725 UniRef90_M5RRH8 UniRef90-W4UGA1 UniRef90_Q31DS8 UniRef90_W5Y7K2 UniRef90-S5NKC9
UniRef90 K2CYX0 UniRef90-A0A024EIA0 UniRef90-UPI0003707652 UniRef90-B8NTC1 UniRef90_UPI000380B0C3 UniRef90_R1E0X3 UniRef90-S0EZ50 UniRef90_R8BQN7
 LSEFPVGEKLYVVDISNDA DPKAKFGF P RPHQPVYDPARK LLYYVTVELGGNSVTVIDPKAKKGVGSVPT

PSSVVEDRGGKFLFVANRDSNDIAVLDASTG TEVKRLA DGRHAVLSPDGSRMYVDGQGGDFQYSLGSPSTADYDISYD NADGVALTPD G GSRMVYAHDVVGAGTVTVVDTTNAVVTDDA促 $P \square N L V, V S P S K K Y L A V T N N G Q S T S I T L I D A A S E K V L D T A A$ LSVSASGTHLLVANYENDSISLINLANRVVQLDLRP $R \| Y V P N L R S N D V Y V I D P A T F K V V E K F R$ TTTS $N D Q G V A F S A R G D L M F I V G T E S D G A F D L S G R T H T G S L Y D A G$ EPH HLY LSPDEKSLLVANALGNSLTLVDPRTGDGQRTIND

VAFSPDGKQL ASSSSDTTTKLWNSTTGELQQTFKG



KPAAVAVDPRGGRVYAVSVEPGA $\square W L V S A E G E \square L A E F T D P$ $R$ LGEAP VLNSADASVSLDDEATQKVVDTFP EPQHVVPSWD $\square$ RTLWVNNNRGNSLSPIDPRTGRPAGPAVP PPVNVAIDPTGTVALVADSVDVVI YVIDBATPPKDAATIA NPKVMALSPDERLLWVANWSAHSVTAVDRRRRKAVDHFR PKSWLQFSPDEKLLYAGHDNQGKVYVVDTKGKLSLTDSLL GGRGVGLTDDGKLLVVAVKETKDLADVDTATNQVVVRVVP AI EPSAVYRYSTAEGDWDQF
VPKYAALSPDEKTMLVSNWCDFDLSVIDVESGEET GRIP
$K P D A L I K S P D E K Y V Y \nabla A N S G S G D V Y K D S T A S G E D E A K D A$ VVAGFALSRDGKTLFAANFENDSLSIADTASRQVLREIKF $\square A L S P D R R T L A V V S \square G S N S V S F \square D T G T H R V R H T A Y$ S

GMS WLEVNPTANDLYVTNFNSNNVTYFNATNGNYMNGTDP GPHGLTVSPDGKYWFVSGYPYGSLWKYET GTNEFVDKVE VVAGIAVSKDGRTLVTANFENDSISIVDATTRKVTKEIKF
 PPAY $\square A L S P D G K H L F A V N D G R \square E I F A V N \quad Q G G L V H E G S V P$

PRNTVFSPNGVHFYVTDSSKGVLERWSAQ ALRREDSLA $\square P \square N L R V S P S G K Y A A V T N N G T Q T V Q L I D P K N E K L L D T K V A$

APNW SPDNKF $\square Y$ FNKEGK $\quad$ YR $\Pi$ A $\square D G K \square$
APHEVTVVASQQRAYVADYGTRSSVIDVQQRQKVGEDDDS GPGMQIFSPDGKYGYVCSSFQPRTSVVSVAEHKVDATIEQ TQTGQTDNPDPRFALEASQTLYNGIAFSSDGRHLYVSTDS NPHELATSPNGRHVALACYGGTTVDIFNTDTMERTHSVED GP【SVAVNPVTNKIYVANDRSHSVTVIDGASNET T TLA



QYAHLADTPDDTRLYLASWEKGVVFVIDDASESVSKDEDP NPVRVALQPDGRYLWVGNNAEESGVSV1DTOTRKLVAHLP


 VVAGLAVSPDGSTLVAANFENDSUSLVNTANRQVTEE IKF
NPHNMWTDKDQTVIYATQWFDSK $\square$ TVFDRQTGALIR NVS

## A VSVLDLAAKTVVAR <br> TV ATLP

IAFSPDGRWL ASGSDDNTDK\WSAATGDDQRTLTG ASMHIAFAADGKTLWATNAQRSLFEAIKKADRWMWSRVIA


 EPNGLVVREDGC VVIADYKQGULLFSTNTDSPLLTRRNDE $V A V T P D A R R L Y V A V T G Q Y Q V T A V D T A T G A S R A \square V$

AFMGLAFSPDGDWLYAAGGDRGNDLRYNLRTQQLASSWNL

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UniRef90-UPI00036FB490 UniRef90-UPI00047A34B8 UniRef90-A0RW12
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UniRef90_JOUTJ3
UniRef90 B9M542
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UniRef90-B5GRG0
UniRef90_A0RV48
UniRef90-14Z6D5
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UniRef90-J31Q19
UniRef90_A8FX18
UniRef90_Q5ATB2
UniRef90-Q1IQ65
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UniRef90 UPI00035E0E1F
UniRef90-UPI0004641F9C
UniRef90_UPI0004768B8C
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UniRef90-I2IN55
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UniRef90-UPI0004118899 UniRef90_UPI00036187B5 UniRef90-17A3S4 UniRef90-W4M6T9 UniRef90_V2JPW9 UniRef90_C1F8J2 UniRef90-A3WBI8 UniRef90-B1Y7F7 UniRef90-C7Q7K3 UniRef90_Q111Z3 UniRef90_AORUX4 UniRef90_A0RUX4
UniRef90 ${ }^{\text {Q12D }} 42$ UniRef90-R1E7C3 UniRef90-UPI00034D33BD UniRef90-Х0ХСА6 UniRef90_A0A024HFL4 UniRef90_Q00808 UniRef90-WODDU5 UniRef90-AORXB7 UniRef90-A1V5R6 UniRef90_Q8YX32 UniRef90-I3ZL54
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GKVDPTLSGVPGGTYPFADKFKGDNKAYVTVQRDRED VGYSPQHVVPAWDLKTLWVANNAEGR PD FGTFPYDIEDTPDGTRAYVADNTGAAVRVLDLATR TGGNAMDLALSSDGRLAFIPDSSSDSIHRY
$\square G G D P Y Q L R F S P D$ VGRAPAGVAAHPGGAAVFVAERDDDSVAVVDTAAQRVLAR

VVVS GDGQQLFDASYKSNA $\square S V F D V S G D K$
HD DW $\square$ RAV AFSPDGKHLVSGSDDDHSRSVHAVAFSPDDKQ TANGPGMVLFRPDGKLAFVPSSFTPELDVIDTSTYSPNDA $D A S D P K G L A F D P T G K D L F V A V P W A D A V V R V P L V N P D N K K$ VGRSPQHVVPSWDLQTLWVTNNAEGR

GWSPDGQADDP TAPAPHEEVVSRDGRDAVVSEYGHREPGHTGGVYDAHAG
$V G K E P H H L M A T P D N Q S L I V A N S$
$V$ VAADPYNLYFTPDGANAMVDAEANHHDDFRDPHTFALRHS GGKQPSGLSFSPDGKMALVANRGDSSISV, VGHHPRGMVVDEQGRVYVNAMYSHQIHVLEFVPKKSGYDE GESVSHGLGVTPDNSLLFTGDLDGGNIYVVDTATDQIKNT

 LGRWARGIAFHPDGHAYATAM

GT

TPGSTVASGEYPFDVAVLSNASGIATVAFVTSQRD LGRAPHEAFFTPDGGEDWVTVRGEDYVAVLDARTYREKRR V DNRLLGVDRLGDPGDGNLSALYKGQLLVVGMGYSPDHRT


 VGDNPAA IAAGRRGQQLYDVNE GADSVTAYDIRQHAFC
 $V G V D P V A V A A R S N D E V W V V N H V S D S V S I V D V S D A Q R A R V V$ LGS PAVEGAYSPDGKYLYFTNYMYGEGFKKEGTDKCSPAD $V G K S W Y G L A F S H N E K H L Y A S \quad G G Y D N I I L D F H \square A D N Q$



## VGESPAHVMTLTDSDRLHVTN NGD

ID GKPAG TAMSRDGKSAFVTSPEGKYVSVIDTAARKVLRR IGGKPAGIAVSRDGARAFITSPEGKFLTVIDAASRTIEKR HSNSVISVAFSPDGRWL LD GHPCGLAHDADRDRLYVCVDDDTGQLLREDPVGVAPYD EGQWPCHGAVDPTGRMMAVADYASGQVEFVDLSCDPTRPTV VGKSPQHVVPSWDLRTLWVTNNAEGT

## T D

## 

RFKGPND IISSTND $\quad$ YYTDQGQTGM
T D Q T VGAYPRDVAVAPDGRQAYAAVTGGDTG
PGGS

D G P T D GH DALSPNGRYLYVVD QANFRLVVMDVATGK
EFSSALRVVLSADEDFAFVSQE

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UniRef90-K0JV37
UniRef90-J0UTJ3
UniRef90 B9M542
UniRef90_UPI00041F337B UniRef90-UPI00036971BC UniRef90-G0A7W5 UniRef90-B5GRG0
UniRef90_A0RV48
UniRef90-14Z6D5
UniRef90 C5CPS5
UniRef90-J3IQ19
UniRef90_A8FX18
UniRef90-Q5ATB2
UniRef90-Q1IQ65
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UniRef90_K2CYX0 UniRef90-A0A024EIA0 UniRef90-UPIO003707652 UniRef90-B8NTC1 UniRef90_UPIO00380B0C3 UniRef90_R1E0X3 UniRef90_S0EZ50

F S SV|F K K V
140
150 N|I VR NPK GQFAY THIVDLSWHPS GDF MA
 GHSFNCQT DMVI SPNGS IIDTATNTVVGCYA DTPNGKFLY SEDTVIDAVRAVVADRIHLANDAHGFHDAFSRD GRLGV $F D I$ S TASPGGGFDTTG
$\square P \vee$ S F $\quad \square$
TFI DTATNTVKHTTYV

Q QLVAAEP DVLGK
$\square A V D I N T E K \square G \square L K R \square K T A G Q P W P V K I S S P T G$
GSLTP D D K TAK P G K E V A V E
T QTAS $\square P$ A E G D P VA VA DT P D GK E V Y
$E L D G P Y G \square D G T P T G E Y G L P D S A P T G V A F S A D G T M M L$ $Y K V 1 R P V G G G F E L Q L A K R V P$ VR V

V VP N R VE G GES GLG
GAVA LALSADNTLLA LA S S S LD S T ITK WD SA T GE LQ R T L E G HVVRSV T FSP D G KL L A
 GSLTP $\quad$ TD P K T G R P GK E VLVD

DPYNMYFTPDGKEATI

$R R$ V VEVS P D LK E K $\qquad$
GK IQ R WMP D $\square E D$
LDVGTAC

I E E L RVMPVCEY
IS VGER
FGLDAEGY


GFEERI EPLDCCSDI F GEPAMGA $D E V L A V D Q N G D\|V T R\| P$ V


GS ILSATYMGAFSAAPQSGE

 NEVLAA VA $\square T$
ASS
 GY D K S Y L S R L D L E T LDK $\square$ DAAA Y A V G S V P K K V V L S V

P D T $\square R \square \mathrm{~A}$
P WP
 NS QPRGI AVMPDNTTAY GDRDR HVITSS DGKYLY
 GGQPN K L L L L A P N GKR L L A GPGMAVVRPDGRYAF $P Y Q L G F S Y D R K W F V$ A GVNHVD F S VDGSYAII

PR R V A WSPDGRHAL GRDALI H GID M S P D G N Y V L T Gla V S K N

VH G $\square$ G F S P D G R T L A

$\square \mathrm{D}$ T G P ПT N HVN
$F \vee R N R N G Q F A Y$
RKQNAIGKPVPAGMA $\square P A P T G L A V V H S A Q$ S QMPDVFEYAT GKGSHMLVVAPDARTA W $\square \quad K A G K R P R R F A M T P D G A Q \square W$
 ASSDKTARLWDTENGKELATLNHQSSVNAVAFSPDGKTIA LS GHSYTGSVHVGKD T DVP T $L S G H S Y T G S V H V G K D T D V P T$ $E \vee A F S T D G R R V F$

$G N D S \square L D A Q T G E E L R T V D L P F G E G P E P M Y V Y H L L S T N E \| I$ TAVGELSWNRVFEGR GEDRRQD LRDLA DSPD GKRAY $G N I S V I D A R S H T L R S V L T V G R G L G P \quad D R F S D D G R Y G \square$
 NTVLPVLNTGHKGDFSMH
GNATSI S MK VGKV
$T \square S \square S E \square D A$ $P$ G Gll F S ATGETMY $G S P A G L W T P G D K Y V$

 VVDSATMEVVKTINVGQRPRAIT\|SH 1 S L P D A
$1 \mathrm{P} V$
I K I WS A A $T G D \square Q R T \square T G H E G G P L G V A A S P D$ VVLLPDQQALIVSNWGGRHPRDDEKSAPS
 LETGKV GS LT P I D P R TTQPLPSVAVDRPYYAMSMD

A L S P D R K S A I
R WD GNE PVLVKRVAT S RTPSHMWV D S R S T TVVY
$\square$ WE $\square$ D TK T H D $\square \mathrm{K}$ K GA DLLE S GSPYMVVSSSGERLY


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

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UniRef90_UPI00046EEBB3
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UniRef90_TOCTI1
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UniRef90 Q12D42 UniRef90-R1E7C3 UniRef90-UPI00034D33BD UniRef90-X0XCA6 UniRef90-A0A024HFL4 UniRef90_Q00808 UniRef90_W0DDU5 UniRef90-AORXB7 UniRef90-A1V5R6 UniRef90_Q8YX32 UniRef90-I3ZL54 UniRef90-F9ZKR3 UniRef90-H01207 UniRef90_UPI00042476DE UniRef90-J7QAC2 UniRef90_UPI000349B725 UniRef90-M5RRH8 UniRef90-W4UGA1 UniRef90-Q31DS8 UniRef90-S5NKC9 UniRef90-K2CYX0 UniRef90-A0A024EIA0 UniRef90_UPIOOO3707652 UniRef90-B8NTC1 UniRef90_UPIO00380B0C3 UniRef90-R1E0X3 UniRet90_SOEZ50

VTI TGGLNE TKIVIFDTSDYKQ ${ }^{180}$
$Y T G B A T \| \mid P G G L P H G L W P$
 LLTDFLANTVHVINTDTNTAVGEPIPVAAGNGAWKAAI LADLLADTLTLF GADVGKPVEVPLDELERYATRPFGVAV
 ITVRGEDYI SVI DANTFEEKTQIKVPA VANNDAASLTVLDDSADTPGTVAPTVASPAVGNAPVGVAM

 AGSNGNGLVRVIDTATD ASGQDSDQLIAIDD ALNVQSNDVSVVDMRD VSMPTAGEVAVI I TGFDEHMLTVDSEQFKLLDSVAA
 VTVGGKNEVLVYQNPLTGELQQ VTVGGKNEVLVYQRGSGAEPKLVSTDQV GEMGDLPHGI WG
VVAEAHARL
DFRDPHTMADRSSVDVPQC KG DNHADF T SLLGD ILEAALTGTNAA $\square$ SKFYHFDKENGPNDIKF


 VARFPGHKV SVLDIAGD KVTYAK DDLPAGQWPYNVAV VSCSGEDRVATYDPETGEED VAA GRNSGPSLVVINVELQEVVTVIQ

 $V V A S G A$
$V S I P E R G E V A V I$
$V$ V S $\quad$ P ERGEVAVI
 VGNMGTWDI AVI D ПREEKEVE VANGNSDTITVIDPL TYNVVQSTSLIDATFGINEMIF $V C S S F T P E L A A D P R T Y Q T V A L V R Q L S P F C P G N A L A A$ $V T \square R G E D Y I D V L D G N T Y A E K T R V K V P A \quad G P G M Q I F$ VANANRNTVSVVELGSGRTDETISTADAPPPGCNPGSLAL
 HVSMMTDELVVI DTENLEVAKRLNLSKMNDRPTWADP VANGNDDSISVI DTDSNRVVRTDSRPGDRYKGANPNSLAL
 TPGVGRADVWVFDAAALGTLAGTPLTIVTLFSDTPRALAV VSNWCSYTLSVISVEEKK


## NKI YVI DLKAN

 VANLGSDTVTVLD
VTVGGTNEVKVFRTDD
$\square S Q R R I Q E Q I V V G A G A$
V G F SQVATIPVGKLPHGLWP


 TAS SDKTARLWDTENGK ELATLNHQDTVRAVAF 1 S DSGPDTINEYELDGPYSFDGPPTGAFDLPDGEPTGVAF

 VDDRANNRVVFFD QTTYEVTRTVETGAGNFHMWV
 S GSDD HTIK KWDAVSGTCTQTLE GHGDSVWSVAF VGSYSDNRFFVISTSDFSVVAHVDVAGNPHY
$V V$ GRSGVHQYT $D D S P G A I S G T P V L N P \square A E A D \square P R G V D F$ I GMTGADYVAVVDWRNQKVVKTIPT V VANGNSDTISVIDTNSNRVI GTISRPNDKYVGSSPNSLAL $V Q N D G V S S V V Q F S V G G D G V L T S Q Q A F A S$
$V$
$T$
 $V A G F Y Q P R L Y K D D P A S G A \square L A T V A$ VAD $\square Y G R R L I E V L A G$ GAQRSVGVGAMASGVAV
 VTDRGGDRINVVRWSEAG PE E I GSLKTCGMWP $V$ SNTSSNNI SEIDD LDDKMAVVRELDDGGDQPTHLIDF TVAEARQRL DFRDPHTMEMQGSVSVPQC RGVNHADF $V L T S G Y N N V Y V F V F D V S G G A P V R K Q V L Q V S D T Y$ V V V $V$ VAF
 VADSVSNDLMFLDPKTGKVQ SRLEGDEDPYQLGF VAMTRSNAVWRLPLHADGSTTKVGLFFQSFGCAGPDGLABV V A T A K GVS V

 $V$ VNVGMFA YSPI PEAANGHRGLPFPPFAFGSKAARDGVK

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UniRef90 ${ }^{-} 2 \mathrm{LJ} 8 \mathrm{~J} 8$
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210
SGDGSRVVYVGDENADAATV
220
DTATNK $\begin{array}{r}230 \\ V I A A\end{array}$
240
STDGKNYYVVDAKGEQ GKSTEAGELMLVKFSMDG

TPNSKIALTSDNGNSGASDGSVDTASVIDLEAKP
SPDGKRAYVDPEQSAVVVVDMVNLVTETVWQT
TPDGKY品VCNANDNSVSMDD TKSKKVIETGD SPDGEQFVVTREYGNKMLILDKN SGDGTALYVVNYYSNTMS KVDTETMEEVQEVATGA

## 

N
SADGKRAFVGLGKANHVAF AVDVATRKTTDLVLAGK
NPVTNKDYVTSDKDYYVTVDDTTVATGNVTNAVAVNPVTN

$$
\begin{aligned}
& \text { APDGKTVIVADRDDNALSSLIDAATFSRVATVPVGK } \\
& \text { SPDGRWLIVAGSSDFTVKIWSATGDLQRTLTGHS }
\end{aligned}
$$

SKDQEMTYAANPLDCRRSVVR SMQVKTGETVNE
S ID GRYAIFTCEFGGYLAKVDTVNRTLIGYLKLSRGGM APDGQHFYVTGGGDDNLHRFAFSQGAWGEVGA
$S$ G D D R R L F V G LTT G S D GVVEVVFD I S G R E P R S I K K I T T G




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UniRef90 JOUTJ3
UniRef90- B9M542
UniRef90-UPI00041F337B UniRef90-UPI00036971BC UniRef90 G0A7W5 UniRef90-B5GRG0
UniRef90-A0RV48
UniRef90-14Z6D5 UniRef90-C5CPS5
UniRef90-J3IQ19 UniRef90_A8FX18 UniRef90_Q5ATB2 UniRef90-Q1IQ65 UniRef90_UPI00016C4C2A UniRef90_UPI00035E0E1F UniRef90 UPI0004641F9C UniRef90-UPI0004768B8C UniRef90-UPI0002F2D35E UniRef90_I2IN55
UniRef90 ${ }^{-}$Q2J8J8
UniRef90_UPIOOO2DF6603 UniRef90_A6G5G0 UniRef90 C0GFL6 UniRef90_UPIO0046EEBB3 UniRef90-A6GLU8 UniRef90_UPI0003B39E87 UniRef90-C7NEZ7 UniRef90-B1J883 UniRef90_UPI0003A0EF79 UniRef90 U5QQ43 UniRef90-Q7NMA4 UniRef90-14W7E1 UniRef90_E8QZN8 UniRef90_A0RV47 UniRef90-K6IB31
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UniRef90-17A3S4 UniRef90-W4M6T9 UniRef90_V2JPW9 UniRef90-C1F8J2 UniRef90-A3WBI8 UniRef90 B1Y7F7 UniRef90-E5YT94 UniRef90_C7Q7K3 UniRef90-Q111Z3 UniRef90-AORUX4 UniRef90-A0RUX4 UniRef90_Q12D42
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UniRef90_UPIOO042476DE UniRef90-J7QAC2 UniRef90-UPI000349B725 UniRef90 M5RRH8 UniRef90-W4UGA1 UniRef90_Q31DS8 UniRef90_W5Y7K2 UniRef90-S5NKC9
UniRef90 K2CYX0 UniRef90 A0A024EIAO UniRef90_UPI0003707652 UniRef90-B8NTC1 UniRef90-UPIOOO380B0C3 UniRef90_R1E0X3 UniRef90_S0EZ50

QGVAYVPNAVEKGDGRAN
STEHQLAS QTAVGVNPG
260

DV GNNPGSVATTPNGKYAlVSN YL DLAASANYVISRDPVGPRGVILTPDGSKLLVANRDDDS VD D A AVPAAPTGYAPDDVAISPDGSTMYIAEDGGRVQQ $\mathrm{G} \square \mathrm{A} \square \mathrm{H} A \mathrm{~V}$ P A APTSLVAGYA


#### Abstract

QASPF CPNI AAS PDGKQVW


 E IATNKNPND GWYPS LLLTRDGRFLYAANGNDNTVA AFFVADMMADGKTGVGTHGLYPSRDGSKLYI SNRGSNKVH PGSRPTAVTVSADNARAYVAN GN APTHNGSFFVGETETTPNGLABTQDGDGLFIVGFAEDAVY AFRAWG

DKRHVLVINRVANSIS
A Y P E Gl A A H GDRVYVVNWMDDN
GHHEDAFSKDSRFAFVTNRDDGTVS
LF Q LLTNDQLGGGLKGAGSLAVSPDGQSVFAAGEADSG DTAKLWDPATGEHSKWVESVAFSPDGKLLASSSYGET IKL QALVYVPGAASSDAGTASLKPFSTATDALH HPTEMVLAPKGDALYVACANSTK

TGERPYAVAFAKGRG
VHDPETLDVIATLDSPGFPDRVSADGQHAFVVNNARSESGGG D WRARKIVKT 1 HTDKGAHNFRSLVDGQHILVSNR GLYP D RVVVGDGPEGLGVSPKGDLAVS
$\vee \frac{A}{1}$ LRGSNHEK


APYNDETSHDGKLLVASYKGEGATG GWYPNSVSVSQDGQRLYVVNAKSNSGP SIAFSPRKRKVYVTNAKDDTVT PNKMQISPDQSRLYVANGNSDSIS VGDQ EAAVIVKHDGHWVDVL

 HPNELVLNKKGTILFVANANDNT QVVFTPDGKDLPTGQWPYNVVVSPNGKIALTSDAGSSDGS $\begin{array}{ll}G M T D F S P D G K Y G Y V C S S F D I A A T P D G R Q V W L T & G H P M K D \\ D W F P H P S P D N K Y ~ V F L S Y A P D V T\end{array}$ D WF PHPSPDNKY IVFLSYAPDVTTBDGRQVLVS A $\quad \mathrm{D}$ M

KTGPSSHP
$\square S M A L S P D G Q R \square Y V A N R$
$P L R \square A I R P Q G D V A V T S D$
RAWGLGLNKAQD RLYVAN
K $\square \mathrm{YV} \mathrm{V}$ TNTTTTVAVGYGPRAVAVNPVTNKIYVANIVNDTMS GGTTLSPDNYPQNSAHHGLALNGDGSKL CDVGTDDDY SDKTARLDDTENGNVLADAVAFSPDGKTIATASSDKTARL PASIGTFSVSAQDNNL RDVKLSADGGSVFIIGRQSDSVH
 $K E L Q R C K T S P H D G L N L P T S F S L T A K G D F G Y T T T R G G D G R P$ EAA $\square$ GTNA $\square$

PHDVILDPSGLYSYAT LLREDNPD
A APRQAGD LP L AAES LG $\quad$ GRDSQSVFVVNPVDNST
 $D \square L V A P R T Q G \square A V S P D G K M L L V G N$

GPDDMELSADRKTLWVTFR
WYPNSVSVSQDGRKLFVVNAKSNSGP NGTY LTYTSTGPNPSR
 AA GARAYTANVEGNDVSVVDLASQKGKRPYAVARGFTSDQ

HPFGVVTDDASSARAYSAN
YGSATNALALSDDEQTLYAANGGNN
YE $\square G K K V H G \square D \square S N D G S Q L F V S \quad S \square K$ PQDI LTAPDGHKFYVADMHADG
$\square S \square N H K A G N G \square G S T P \square A T G V D V T A D G K R A V V A N R Y N D S \square T$
NGAHAFRAAGDGRHLYVSNRVANS
SAYSMALNNQDSTRLYVAD $\square$ S SHMAFSNDWKMHVGKTPAGLWMTPADKYLLVGMTGED KAR』VTAPEGGKNLTNCT FGGPDGKTLFIT TGGAEPWA VAVTPDGRKVYVTNMNADSVG TWGSADGVGDAAEFHGPRSIALSRDGGALFVADQGHGKIR


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UniRef90-A0RV48
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UniRef90-J3IQ19
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UniRef90-Q2J8J8
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UniRef90-UPI00037BCD3D UniRef90 B2IWB9 UniRef90 ${ }^{-}$TOCTI 1 UniRef90-UPIO0042A0BFO UniRef90 A0A017SWV9 UniRef90-UPI00036927C2 UniRef90_UPIO0045E5BBF UniRef90_UPIO0046F8858 UniRef90 UPI0004118899 UniRef90-UPI00036187B5 UniRef90-17A3S4 UniRef90 W4M6T9 UniRef90 V2JPW9 UniRef90-C1F8J2 UniRef90-A3WBI8 UniRef90 B1Y7F7 UniRef90-E5YT94 UniRef90_C7Q7K3 UniRef90-Q111Z3 UniRef90-AORUX4 UniRef90-A0RUX4 UniRef90_Q12D42 UniRef90 R1E7C3 UniRef90-UPI00034D33BD UniRef90-X0XCA6 UniRef90-A0A024HFL4 UniRef90 Q00808 UniRef90-W0DDU5 UniRef90-A0RXB7 UniRef90-A1V5R6 UniRef90_Q8YX32 UniRef90-13ZL54 UniRef90_F9ZKR3 UniRef90 UPIOOO42476DE UniRef90_UPIO004
UniRef90_J7QAC2 UniRef90-UPI000349B725 UniRef90 M5RRH8 UniRef90-W4UGA1 UniRef90_Q31DS8 UniRef90_W5Y7K2 UniRef90-S5NKC9 UniRef90_K2CYX0 UniRef90_A0A024EIA0 UniRef90-UPI0003707652 UniRef90_B8NTC1 UniRef90_UPI000380B0C3 UniRef90_R1E0X3 UniRef90_S0EZ50

GSS L T LIFK $\square$ GADGT LS K
VA D Y P F E G $\square$ Y P R S VAF D S N P VEVAVT

FTLKD I GKAQAPFDLIKT\DTGP\TNHVNLTNKN GDSTSVINTADNSVT TPYLL PLGYSPMGLAITPDG LIDDLAKRQVSE TLTTSLFPDAPVGTTPNGLALS ED N GGS $\square$ SVL DFATRQVVANWP $\quad$ PP GGGSPDMGNVSAD ARTVSVID TATSADTATIPAGATPRGLALTP G



GNMLTVLDTTDGQVLYSLP AGEETHAVDVSP D

 N ${ }_{P}^{L}$ ANGRTTDAGAATNTTFKNEY $V K V F T T D D T P R P V A T D P V G A L P$ HGLWPSA $\square G K V Q V F D A R P P F A L L K T L D T G P L T N H V N F A R A \quad T T K$
 VWD NPAG LEAGKE LAK $\square$ PNSRKVSHGVS $\square$ SP D
 MFS LDVFAI NARANPPAQlAAGFYTGVGT\|LYNMAVNPVN SGRVISWDLEANHADKSVK TGATARSLAIS GD EVTLPDFK

VSVIN TAKNKVIETLSALYPTRDTGSTTDGVALS KD VDTTSVIDDEAN PPRIIDRVVVGDGPEGLAMSPKG


 DSGLSVIDLETAKVTRQISVDVASNAQQRFQVTILWSDD SDDLT I IDDVGAKA! K SVAVGRVPHS
 WDT ENGKVLATLNHQSRVGQ NAVAFSSADG RYDLASPFNTTDPSLNGSFFDGDSESG PTGLEFTP D
 $\begin{array}{ll}G D A K G K G G V S V I D F A T R K V T A T W V V P G G G S P A D M G N V S A D ~ \\ P A P V G V F E V D A & A E G T L T H R Q W V D S G G W N T R D S V L S P D D\end{array}$

G G WVQSVAFSPDGSSDKT■KПWDTASGGGWVQSVAFSPDG GTTVRVYTVSPNGSLKNFETIKVIDTGVGRHMGHVVFMED $P G Y V Q R Y E M S E P Y N L S S A V I V D A L D V G G G T P R D D E L S A D G$

NPS
$D Q T D T S A V G T G G Q L T N S T Q V I D T P V A G Q T P Y N Y T S D T S G$ $T G T V T V V N T D T D E L V A M L P C$
$T$
$T$
 SDDVSV DDLAS RKGVATLKC

GSRPYTVVADA
 VVロVFVGDTFRETGFIPTGIGTHGLYP SRD
 ASEDAV DTATNK DVAVVD W

RHQTVI NVAWSEKSPRHVVSVSAAD
VY DAAS RRHLK DVRVGRD

GSNLDAT
GKYAYVT TGAN $\square$ NVIS $\square$ ANKT VVD T $\square P \mathrm{VGGGG} \mathrm{\square A} \mathrm{\square T}$
T R LIF $\square$ S GNETD

TTLYAVNN
EKTLY 1 A NADNNCLAVFDVETK
GKMLWLS GRFD D VVYA DD T TS GAVKS $\square P \mathrm{~V} G$
GQDLY IANAGSWNVMV
DVMLAAS

GA AYVADGKDGTVTVVDAANQSVRRV $\square K \square K Q G \square G P M$ GQYLLVTAAKQDSLYVLKL
NRLA SVDI FDWDPATGELLQALKKGHSK G G

 GSKVYVANANSDTVSVVI DTKT

 GSRLWLSGRRSNVVYVFDTEPKAGRLLARDPVGEPHGL $G K Y!L V G N Y L S Q D F S I L K V D G T N V T D T G K P R F Q V P G H P A S$

GQF VWVAASKTGE\|I IFDVENE
QQ LIVACGRSNNTLVL DYATGNVIK D DPEGNMPWG GTVVVAN YDGSIVVY D DHSTER

QA VYVSDGSEGTVRVY DARSHQLRHTVQAEQGDGPM

$G T R \square Y V G L E H A N A D A V V$ DTLANRVTATDPGGQSPQA GSFAYVTGGGPNQVKVYRTDD FEQVAT $\square P V G K$

TRMLVAGGANNIV
DKFAF $\square$ SGGEPGS $V \mathrm{DV} \quad \square \mathrm{N} \square \mathrm{ET} \square \mathrm{KR} \mathrm{VEEVIETSKQAGG}$
GNRLYVTDGGENAVAVVELRN
GK I YVSNTDA L NDTRFESN
$\square S K$ V QK ■K V
EKTLYTANADNNCLAVFDV.
D LAVAAKKDGSLSILKIDGKKVTKTQDワEVG
GQFAYVTVGTQNIVKVFRTD TFEQVATVSV
G A L P H
KRFAFVS
GSTAYVA
$G K T V Y$ VADAGGDNVAVL
GTRVYVAETASNTVA EVDYATGEVLRRDPGGEGGDG
$N K$ VYVANDDSNNVSTFDFAGRTTNPDT
GQYCFVSLSKLGEVSV IDVATATEVARVPVGA
KTIATASDDKTARLWDTENGNVLATLN
GEGLFIVGTAEDAVQEYRLDG

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

QR VASGSSDNT $\square K \square$ WDTAS GTCTQT LDNVGSTATC
GSKFYVTNRVAD SVFVIDGKKFE DKRI QTAEGG


GTY YY LTDGTNNR LQQYTVSTGVLQPVTGG\|VNNFVAGVT GYYAYVSSKFSNRMLIVDPDP
 GASVYVANWFSNEI WALDAETLKVTAKMAVGDG GR I FVANQHGDSVSVF DAESLAPLETDKVGE GRWLASSGSDDNTVRIWSAATGELQRT
 GTKMYVANRGSHKI GVVVIDFATDRVVANWPIPGGGSP NKTAYVSSEREREIVVBDLSTNAPQVVTRMPV GRWDYVSSRWARKLSV VDTQAGKVVRQVAVGK SPH GKHLYVVTFTSAFI WVL DAVSSLEVQKI DTGK

GTEVWVGNTMTGTVSV $\quad \square$ GTESDRVTAT $\square R$
GA LIVADNGNHKI R RVEVVAGEVTTLA


UniRef90 A7IBX5
UniRef90-UPI00046EF451 UniRef90_UPI0004759252 UniRef90_UPI00036FB490 UniRef90 UPI00047A34B8 UniRef90-A0RW12
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UniRef90-JOUTJ3
UniRef90-B9M542
UniRef90-UPI00041F337B
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UniRef90 G0A7W5
UniRef90-B5GRG0
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UniRef90 ${ }^{-14 Z 6 D 5}$
UniRef90 C5CPS5
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UniRef90 Q5ATB2
UniRef90-Q1IQ65
UniRef90-UPI00016C4C2A V
UniRef90 UPIO0035E0E1F
UniRef90- UPI0004641F9C
UniRef90-UPI0004768B8C
UniRef90-UPI0002F2D35E
UniRef90 I2IN55
UniRef90-Q2J8J8
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UniRef90-W4UGA1
UniRef90-Q31DS8
UniRef90 W5Y7K2
UniRef90-S5NKC9
UniRef90-K2CYX0
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UniRef90-UPI0003707652
UniRef90-B8NTC1
UniRef90-UPI000380B0C3
UniRef90 R1E0X3
UniRef90-S0EZ50
UniRef90_R8BQN7
$\mathrm{P} \square$
$\mathrm{G} \square \mathrm{W}$

T V W

P V W

UniRef90 K9QEP3 UniRef90-A0A024K082 UniRef90-L7UJH5 UniRef90-AORXA2 UniRef90 B8GB84 UniRef90-M9VYN8 UniRef90-G2MIN3 UniRef90-R1E9C4 UniRef90_A9WHM8 UniRef90-R1EEI3 UniRef90 B2JOF4 UniRef90 A0RXP7 UniRef90-UPI0003B41DDC UniRef90-UP100036F1E6B UniRef90 A0RW32 UniRef90 UPI00036E3D4E UniRef90-B8HXM9 UniRef90-B7KJH4 UniRef90 UPIO0036346EA UniRef90-K2BC38 UniRef90-W5WN31 UniRef90 M4FQ81 UniRef90-UPIO0047525E0 UniRef90_R4WNM8 UniRef90-R6GAU5 UniRef90-BOUHLO UniRef90-UPI000463B310 UniRef90-ROFAC4 UniRef90 A9FEG4 UniRef90 UPI00016C572D UniRef90-UPIO003B5E239
UniRef90-F5UF33
UniRef90-K0K625
UniRef90 UPI000349EBDO
UniRef90-QOBFK1
UniRef90-D5MIV3
UniRef90 G7CH14 UniRef90-E8YSG4 UniRef90-W0EZW5 UniRef90 S4Xмто UniRef90-W0JB15 UniRef90-H5U3U8 UniRef90-UPIO003463AA1 UniRef90 UPI000464DBDF UniRef90-A0A059MWNO UniRef90-A0ACS7
UniRef90 M7AILO
UniRef90- ${ }^{-}$XOPZM8
UniRef90-K2L7V4 UniRef90-UPIO00363183B UniRef90 UPI0003F08397 UniRef90-B5ERH2 UniRef90_G8WMB5 UniRef90 B5HRC3 UniRef90- G7XTKO UniRef90-G8WNU9 UniRef90-14EGV8 UniRef90 D6TJX4 UniRef90-F4L7S7 UniRef90-W8AGX2 UniRef90-F8B4L4 UniRef90 R4PYL8 UniRef90-U7NKM3 UniRef90-UPIO002ED9429 UniRef90 M1E4S7 UniRef90-A0A017S901 UniRef90-D3FCM6 UniRef90_S2EQJ5 UniRef90 UPI00047B61D6 UniRef90-UPIO003688EB9 UniRef90-Q1QGK8 UniRef90 UPI0002883C07 UniRef90 AORVZ4
UniRef90-R8NC75
UniRef90 UPI00047A5F7D UniRef90 UPI0004069FC7 UniRef90-K6XIL7 UniRef90-UgVLM4 UniRef90-Q125C7 UniRef90-K9QMH3 UniRef90-QoW6P3 UniRef90_UPIO0030E1755 UniRef90 A4YR98 UniRef90-XORFYO UniRef90-F4CNS8 UniRef90 W8X866 UniRet90_R1E140 UniRef90-B5JQU1 UniRef90-A0RVW5 UniRef90_UPI0003802E4E UniRef90-B5ELI1
UniRef90_L5K8j2

PT $\square \mathrm{AAS} \square \mathrm{R} \square \mathrm{V} N$
Y L A P G G $\square R L F A D D A D N G R V R Q Y E L G S S P Q T A$ G S $\square S$ E T A A $\square E$ T G S
$\square Q T \square P \vee G G$

G S $\square$ GSVS FS P D
DQEE YTNSEQKE IGFVNTNPSSPNMDGTTSVASYG DGKVIASASFDNTNESGKLLFTGSHDADV

LATVDTNA

S GRDSVLIVDLDPENPK IAANLPLKNSVVG DEDGTVQLWQDADGTGTT
VWVF S A A S P S P A P L N I DT LIFS D T V I R F Y D L T S G K E VRNLS S S $\square G G T$
S DK T $\square K V W N L Q T$ QK P $\square A T L T E H S H \square G \square A G$ GAWT T GAAVSVYVVNGWAGAVTALEVDRIDTGV

YATSSADMVVADDADSSRHELLGRDSGDGND $Y$ VT S E K A GVGVI D LE Q M TLSS RTFPVGAA
$D G P H R V A D D A A G G A \square Y \square A \square S Y P D T A G S$ D P G S LT LIGFDGGQPSVRHVPGVPVNFTG LD A DPASPTYNQVIVEVPAN

S S DDGVLT LF DTAEPGAVRPAGPPVQAHTG
P A T D T $\square$ T LR S P LSVPS T Y
$P D H T \square Y \boxtimes \quad$ A GGGGSDVAAFTVQDGNLK L L R R YP LPR LF $D E K G N L T I P L D V P A D A A T$ GSWDKTVKDW NTASGALQDTYKTVRAV

VGTATRSQGRYAYTTNSTSGALKVFDVSNTTSST
 SFSDGK $\quad L L D F D V D N G L L T L S K V I K L P E S S$
$T A T G T G N D G V V P F D T A T R T A G P D V G D G A L T A F$ TYNSNGNIYVAN DYNNGAGS ITVIATMPTSY $V L A D D R D D G R R L T E R L D R H T V V D V G T$
$Y \square Y$ T R P GTDG $\square S K L T Y D A Q T G E M V N T N E F \square F G G E S$

TENATANGTLSVPNDD
TGSTGPTGSTGPTGST
Q $\square \mathrm{LV}$ S G S D D NT $\square$ T $\square \mathrm{WD} \square \mathrm{S}$ T G QE $\square \mathrm{RT}$ T T GHS D DEQTSAEQEQKNQDWDVLN

VCLWDAGTGELRHQCNANFPESN
F V D F Y T K G

GAVTTDAGSGEEGAAD GVGDAAEFD
YTDFLGSRLELLD DETGDREDVYSTK EG
$G T V F T L P L P A Q Q G S S F V N G T G T V G T D A$


UniRef90_K9QEP3 UniRef90-A0A024K082 UniRef90-L7UJH5 UniRef90-AORXA2
UniRet90 B8GB84 UniRef90-M9VYN8 UniRet90-G2MIN3 UniRef90-R1E9C4 UniRef90_A9WHM8 UniRef9-R1EEI3 UniRef90-A0RXP7 UniRef90-UPI0003B41DDC UniRef90-UPIO0036F1E6B UniRef90 A0RW32 UniRef90-UPI00036E3D4E UniRef90-B8HXM9 UniRef90-B7KJH4 UniRef90-K2BC38 UniRef90-W5WN31 UniRef90 M4FQ81 UniRef90_UPIO0047525E0 UniRef90-R4WNM8 UniRef90-R6GAU5 UniRef90-BOUHLO UniRef90-UPI000463B310 UniRef90-ROFAC4 UniRef90-A9FEG4 UniRef90'UPI00016C572D UniRef90-UPIo003B5 233 UniRef90-F5UF33 UniRef90-K0K625 UniRef90-UPIOOO349EBDO UniRef90-Q0BFK1 UniRef90_D5MIV3 UniRef90_G7CH14 UniRef90-E8YSG4 UniRef90_WOEZW5 UniRef90_S4XMT0 UniRef90_WOJB15 UniRef90-H5U3U88 UniRee90-UPI0003463AA1 UniRef90 UPI000464DBDF UniRef90-A0A059MWNO UniRef90-AOACS7 UniRef90_M7AILO UniRef90 XOPZM8 UniRef90-K2L7V4 UniRef90-UPI000363183B UniRef90 UPI0003F08397 UniRet90-B5ERH2 UniRef90-G8WMB5 UniRet90_B5HRC3 UniRet90-G7XTKO UniRef90-G8WNUS
UniRet90 14EGV8 UniRef90-D6TJX4 UniRef90-F4L7S7 UniRef90-W8AGX2 UniRef90-R4PYL8 UniRef90-U7NKM3 UniRef90_UPIO002ED9429 UniRef90 M1E4S7 UniRef90-A0A017S901 UniRef90-D3FCM6 UniRef90_S2EQJ5 UniRef90_UPI00047B61D6 UniRef90_UPIO003688EB9 UniRef90_Q1QGK8 UniRef90-UPIO002883C07 UniRef90-AORVZ4 UniRef90-R8NC75 UniRef90-UPIO0047A5F7D UniRef90-UPI0004069FC7 UniRef90-K6XIL7 Uniinefol_UgVLM4 UniRef90_Q125C7 UniRef90-K9QMH3 UniRef90-OOW6P3 UniRef90_UPIOOO30E1755 UniRef90_A4YR98 UniRef90-XORFYO UniRefol F 4 CNS 8 UniRef90-W8X866 UniRef90-R1E140 UniRef90-AORVW5 UniRef90-UPI0003802E4E UniRef90-B5EL11
UniRef90-L5K8j2


GANWLEQSPDGSHVIVSARESHKQFRपDADSTSETFGEVT Y पA $\square H P D R T L L A \square G S W G T V W \square Y P V S G E R Q A T F N C W P$
VSFVNATNFLAGTNPNSVTTADTDGDGKKDLVIANS QMSGIDFSSGGRRMYGVGDGSNNAYHYNGDSGVTHVGTFN DPRGAVSPDGRTLYVSRPSLGDVSAFDTATGAQQWFQRV
 NH VAFSPDGKVIASASYDK TVKLWNESGKLLSPLSH

AYLFTTTSSNLYALSPNMLAVVENAGHVNFDGEDQ MTTGLAVSGDGRTAYVVNGWDGTITVVDTVAARVARRIKT

VAFSPDGRQV ASASGDGTVRVWHAATGRCFQKLEG

PPVNGA $\square N P S G T \square A L V A D S V D V V A \square K Q V P D T K \square K L \square K T \square E$ VPTPATFSPDGTTLAMAGYGTVRLWGVSGGGERAVFTGHG NAEGPAAGPDGA I YAVNDGTLGRLTLQADGSAKAEVFVT PRALAATPDGSRVYAA AFHSGNRTTVIETNVVN DG LAFSPDGKVL ASGHGCNTVLLWDLAGGKVQSQLQA GDWGQVTS:ATAPDGTPVPRVPLV QLAQAVLSPDGKTLASTSLGDNNTLKVNLQTQKVVATLTG VAYSPDGEFLAFVNDMGVTVQR RDGALLYRLTE THATVKFSPDARYAYVIGRTGEVS KDDL $\square T L K \square V K Q V N$ HPAHVIETPDDK VYVTNAGDGTVSVFRSR SLEPVGRIE GPRGLSLNADGSRLLVANKNTGDLAVIDTASGEVVQ RVK
SGPHAVHGG SAVAGYVQKLADDD $\square R \square L G Q V R$ PPTCVALHPSRPLALVASSMRPVIVEGKPDTRVTLVRTAT SASGVVATPDGKTLYVAEYSSNNVNVIDSPTKGTVVASIA GHDGQVHGVAFSPDSQL GVWTVAFAPDGRTLASASWGTAKLVVIDDPATRAVVKMRPA
ASSFGMVPH
AT $\square$ NGELSAPSTYVS $\square$ HS PQVSGT

$$
\begin{aligned}
& \text { PHALGFNTTTHRLYAVDQDADRVLVLDKDGT QSSTP } \\
& \text { FLEAEHEGPVSAVDITVDG } \square Q \square A G T
\end{aligned}
$$ YPDSTAVGHRGRHLYVTGMLSNSLARINLQTGKTDYLN GLHPLTVITQNPASVSQVMLKLSKVVPPKNTEAFRLQTDP



## 

 $V V N G A S N N V V V I D L N T D L K T G T L G L$ NAYFVAVQGRYAYVTSAVGNTLSIYDVSNPASPTSMGSAS SHASVKFSRDARYAFVFGRDGGLSRVDLLTGEVTHRVIGQS

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

$$
\text { DAHFVFAGG } \square G N D D V Y S M N K N G E L T P \square S N H E
$$ APGGПDFSADGNRMYVVGRSGIHQYTLDSPYGAISPVVNP GPTGPPVGMDLGTMYVVQGSTNVSVIDGNTN TVLATVP GPTGPPVGMDLGTIYVVNQGTNVSVIDGNTN TVLATVME SVNSVVISPDGQTVVSGSSDK TIKIWQLSTGQELRTLE PPSSLDITPDGKSLVFDMDGDDYVVALDGGKAKALTQDFA

$\square A F S P N G K \square L A T G D V N G E \square H \square R E D A N G Q \square D S C K G$ SVLNQTSGATVAK K $\quad$ D
 PPS AVDRDGNLYVVNLGKPGTIGRLAATASEKFTELDP


SPYGVALSSDASALFVADSSNHTRRVEVATGAVTTLAGS APNW AFSPDGKTL A YPFGDTHSPDEKTAYVAN VGGVFEYKPFTDLDKKDLKE


UniRef90 K9QEP3 UniRef90-A0A024K082 UniRef90-L7UJH5 UniRef90 AORXA2
UniRef90 B8GB84 UniRef90-M9VYN8 UniRef90-G2MIN3 UniRef90-R1E9C4 UniRef90_A9WHM8 UniRef90-R1EEI3 UniRef90 B2JOF4

UniRet90 AORXP7 UniRef90-UP10003B41DDC UniRef90-UPI00036F1E6B UniRef90-A0RW32 UniRef90-UPIO0036E3D4E UniRef90-B8HXM9 UniRef90-B7KJH4 UniRef90 UPIO0036346EA UniRef90-K2BC38 UniRef90-W5WN31 UniRef90 M4FQ81 UniRef90_UPIo0047525E0 UniRef90-R4WNM8 UniRef90-R6GAU5 UniRef90-BOUHLO UniRef90_UPIO00463B310 UniRef90-ROFAC4 UniRef90-A9FEG4 UniRef90-UPI00016C572D UniRet90-UPIoo03B5E239 UniRef90-F5UF33 UniRef90-K0K625 UniRef90-UPIIOOO349EBDO UniRef90-Q0BFK1 UniRef90_D5MIV3 UniRet90_G7CH14 UniRef90-E8YSG4 UniRef90-WOEZW5 UniRef90_S4XMT0 | UniRef90-WOJBI5 |
| :--- |
| UniRef90 H5U3 | UniRef90-H5U3U8

UniRef9O-UP10003463AA1 UniRef90 UPI000464DBDF UniRef90-A0A059MWNO UniRef90-A0ACS7 UniRef90_M7AILO UniRet90-X0PZM8 UniRef90-K2L7V4 UniRef90-UPI000363183B UniRef90-UPI0003F08397 UniRet90-B5ERH2 UniRef90-G8WMB5 UniRef90-B5HRC3 UniRef90-G7XTKO UniRef90-G8WNUS
UniRet90 14EGV8 UniRef90-D6TJX4 UniRef90-F4L7S7 UniRef90 ${ }^{-}$W8AGX2
UniRef90
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VGSVPKFIVATSNDEGLVLVISNWCSWD $\square$ SVVDTAKNKETKR VGRHPVGVAVDPSTRTVYVTNYDDASVSVIDIASSKVVAK
 HTEPVTVVAVSPDGGWIVLRSLEGHTEPVTAVAVSPDGGW TTSVGERAYQAAVSADGKLFVTSARGPKDGSL GEDDRTPEGGRGDRDGPGPCDVTDHPDGEYAYVPDVFGDT RGEHPMSLAFSPDGS LAVSEFHHSRGQVQLWDVMNQRQ■
$D D N N V S V L L N D G S G G F G A P T N Y T V G M S P S F V A V A D F D G N S$
$V G G G G P R G V$
$H$
 NAQLDSAV VRPDGQRLYVTGTDSGQGYVLSVDTHTNTLA HSNDPSSVSFSSDGRQVA SASDYGTVQVWDVATAQHLRT
VGKQPSGLDTSHDGTMALVALR
AENAVGVLSTIN SA ПWACAFSADGTEQAVLAGPVNRMDGCAFAPDGSRLATV LPKGSTGNGDRFRDGVMYVADYTG LGLGPTTNAAGVPQPSAPLIVKFNGTHWVDELNRSWDDKV EQNQVSNLVFSPDGKTLATGDTDDTLIRLFDVATGKERQQ TAASTQEVWAAPDGRHAWVSGGPNYPMR

 VGKWPYAMVLGASGKRLYVADNDRNTVVVVDVERHEVVRT AGKLSVGGVVSQDGKYVALSNYVPGEVRILDADTDELVKT lGKNPEFVRV, HNGYAYVTYEPGEEGGPPATRPQAGK VEANPGDDALSEDGGRVVVSHFDLKRALDNPDDLAAARSS VGRQPASVAFAPDGSLALVANRSDGTLSILELAGTDTAPA MPGGLGDLTMSPDGNTLYATTGDG
VGWDKTVRLWQLDGTEIAVLKGHSGIIDWVTFSPDGQTIAT $V G D S P F F V R V N P N T N L V Y V A N \quad R G S R F V S V I$
LGGGVPALAFTPDGAALVTGGHDGT $\square R V W T L P T G G Y N A T$

VGRSPVAFESHPH $\square R A S T \square S S S$ PA $\square$ PGGKPAYSFHVSAD
VGKRPNA TA TDPG DDR TYVVNAGSGNVSVI
VTGNDGVLDUSTRKYTTIMRSHTDTVLSVTVDPDRRHTAT VGPYPFAVTFADGGKKLVVSLWGGNAVAVVDPETMRLLGT VGERAYQSAVSADGK FVTSARGPKD GSRLMRLNAG MQDRAAALNFSQDGRLLACYSSTSTNCSVKVWDVSTNGHS GRLVSSTLSPDGRKLAALTYRQGTGYLTUM
mLKSGRGVVADPATASTFTSYGGYDLDHDRVVWTKSYDFG DGATPHHIYLSPDKSQI AVADTSTDLSAGHGGHGTGTAAY GGREPQHVVPAYDMQMLYANNDVRDPYNMYFTPDGKYALV VAG AYSVYVQGRYAYV
GNSTGGAVSQDGALVAVANYEPGGVKDFDSETDEEVAD TSAWPIHGLAMDNQDRLYAMSESHNVMVI YENPLFSLSAD VGNAPYTVLDDSN HSSSVRSVAFSPDGQTVASGSEQGHSGWVRSVAFSPDSQT VGFTQAGSILNPTNGYQYIFGNGGIIKAFDTSTNLSVGGTL DGRVVRRIVDTAPLLRPHGLARAGDNVYFTAELNRV
TVAQGTSNS TGKQPSGMADNRAGNLALVVNRADNSVSVLSUSGKTVAVV GKGPRGMVADSINGNDFLFVANKHGNADETFKILNNGALL VGTNPFGVGVNTSTNRDYVANQTSDSVSVIDGNMNTVIAT GDGLINSLATSPDGQDLVVVRSDYFDWKSYTVVRGNDYNT WNDHP AVSPDGEKIAF

HAGWVHSDTFSADGKMLCSASSDH T MPARPDGAAVSRDGGRVYVSN
atDHLTAVALSPDGKTlAINPTAGHNAPVCA $\square$ AFSPDGRT DGS\|GNAIRIDAAGT MFIADYKKHTDFAIAPGT
EDARKVVD! IVCDGHANDMVVAPNGDAYVGNFGFDGMGGA
GESGPDGLATSPDGSADFVADYSNNKTRRVEV AT SGVSAEMDTGFGDRNNNDHVLNWGADMIAISHHTEEHDGK S S SPP TAHNFPATKYGSTTEGVPALGDPNAPEAFSVWSTRLGSQP USGLGLHVALSPDGRRLLVSNFYNDSVSMIDDLDQRRVLRD
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UniRef90-K0K625 UniRef90-UPIIOOO349EBDO UniRef90-Q0BFK1 UniRef90-D5MIV3 UniRet90_G7CH14 UniRef90-E8YSG4
UniRef90 WOEZW5 UniRef90-S4XMT0 UniRef90_WOJB15 UniRef90-H5U3U8 UniRee90-UPI0003463AA1 UniRef90 UPIO00464DBDF UniRef90_A0A059MWNO UniRef90-AOACS7 UniRef90_M7AILO UniRef90-XOPZM8 UniRef90-K2L7V4 UniRef90_UPI000363183B UniRef90-UPI0003F08397 UniRet90-B5ERH2 UniRef90-G8WMB5 UniRef90-B5HRC3 UniRef90-G7XTKO UniRef90-G8WNUS
UniRet90 14EGV8 UniRef90-D6TJX4 UniRef90-F4L7S7 UniRef90-W8AGX2 UniRef90-F8B4L4 UniRef90-R4PYL8 UniRef90-U7NKM3 UniRef90-UPI0002ED9429 UniRet90_M1E4S7 UniRef90-A0A017S901 UniRef90-D3FCM6 UniRef90-S2EQJ5 UniRef90 UPI00047B61D6 UniRef90_UPIo003688EB9 UniRef90-Q1QGK8 UniRef90-UPIO002883C07 UniRef90-AORVZ4 UniRef90-R8NC75 UniRef90_UPIO0047A5F7D UniRef90-UPI0004069FC7 UniRef90-K6XIL7 Uniinefol_UgVLM4 UniRef90-Q125C7 UniRef90_K9QMH3
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UniRef90 B5JQU1 UniRef90-B5JQU1
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# 150 

A A A S N K A Y $L L V G D E P R D \square V F A G P T T A H R G Q H R T H A S Q A G V P G A G D Q Q L$ HDFFPT GVGGAPE GDIDARPDVGELIDPYDIRTFPN GT LLL $\| V S G S W D R T V K W E A A T G N L L R S L E G H V T A V A L S P D G R F I V$

 DS L L LADP D
A A T I A A
$K$ LDFVVTNSIDNGGFGTPTNFAV $\stackrel{\mathrm{E}}{\mathrm{G}} \mathrm{G}_{\mathrm{G}}$ S S Y A G SLDDVSDQ
 I GNDGSTTGWDKDGK DT T $\square$ NSNQ

 A A V FRLGGCRGK V VP P P P QVGA S P T GLAA S Q D G S R L K R $\square$ P T GKEPHHLYM T P DEK S V $\frac{A}{1}$

GKNVELTQKVPVDELVSHVE




I K F WS RDGTLLRTLT GHEAP
 NMCR C R G R

VY N A K F S S P D G T
A S G VV V
 V P VGEVSAD GRYAYTG $\square T$ EPVAVSAPPA QVSLLTPDDATVV QTGQPPDQHANEAG EASKPH $G N G K H T D D L D Q L K Q Q K L V Q Q V P D A S A W W G L C F G K T T P Y L Y$ LVVVDPDAVSPMGSAAPTRIPVCKAANGILALSRPDAARAY
 A S D D K T I R F WH WK H P L L TA L N GHSAAVVGGVK FS P D G Q F A A


G Q M Q P VP P D A L I G | $P$ | $P$ | $V$ | $S$ | $A$ | $P$ | $P$ | $A$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $G$ | $T$ |  |  |  |  |  |  |  |
|  | $P$ | $R$ | $H$ | $A$ | $R$ | $Q L$ |  |  |




## $\square \mathrm{SNDHT} \mathrm{\square}$ $V R$ V $G P P$

 T L A V V A E A T L P K DKK GE Q VRLWDTASGAARATVTAGHH GRGVMQVALSADGRT V GEVHGVSASGAY DAT』KLWERQYTAESHSMAFSPD GR WL A $V A T G A V V Q Q V G T G A A G D R K \square G D G K V A A D G P D Y S P D G R T L W$ $\square D S M A D T P D G Q D G A V L Q A D Q V G G G A A G H N T V V G L S G K Y A Y$ QVII LDTKTGEDHHSIA LDKL VA EADRSDDFCDP HS WQD RGD




## f

 GTVA LAPAD ERVVSLVA DT F DVVSTAT QT DF LDD ILS VA P R T Q $\mathrm{V} P \mathrm{~V}$
$V M E L S P D A T K \square D R R \square P V Q \square P G E K \square$

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

VR S A A V S P P Q T L A A L
 ASAGEDRT DRMWDTRTSRELFQVSGHATRLGFTPD GRTMD
 G IVVLDAASRQVVANDPLQARN AHWMAI TPD GSKAY VKQFPD DATPHARDVLVDDAHHRAY


 $V$ D L R P GP S E GRRHGQA GGESP

## UniRef90 K9QEP3 UniRef90-A0A024K082 UniRef90-L7UJH5 UniRef90- B8GB84 UniRef90-M9VYN8 UniReffo-G2MIN3 UniRef90_A9WHM8 UniRef90-R1EE13 UniRef90-B2JOF4 UniRef90 AORXP7 UniRef90-UPIOOO3B41DDC UniRef90-UP100036F1E6B UniRef90-A0RW32

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 NGSDGNDDPADDLLKGKRRLTVVDASSLDLGAGDRPFVV $V G N G G S V K L W M Y D E D G K L T V G Q N S N Q G S V R M A F$ VVNDAGNFPRVMRDFSGGDAEHDADVDPFRGRREPDAVGF
 VNIDKGNKVLVFNDDTNGVATPSIIKKFDVSPNTHNMLF



 TAN GNDCSALLWRLSDGTVGETEVGGHSDWVRGCAF
SPNWNDNGRLWHVSHDGEVHLLEAGMTPNG
 TGDLDDETVVAVRLWDPATGKELRQMQMNGAVGMAESLAF
 SAS SDNUTKLWNLQTQK KKAV ATTTLTGHSGEVNSVVI
WSMPVGQGAGSVAVV
 SADQGTADANAVSLTDTARMTVRATV ETGAGPHGVVV VADDDDDANKPPAEIALVDMKTWRVVRSVTSGHETEGIVEF VACYGDDALALVDLTDPDKLVPVGPPLSSDAHYGPYAAVM VT GGSSVVRIIDIDPASKSTYQQVIGTMGAPVATGAAV
 TASTTDGEVHLWDVRDPTVPRLLWANDVTETAFTASELLAF
A
 ACGFDSGCVRAFNVSTTSLLDAHRQHRGKVTG

SGGSG DTVVKIWELETKLLWGSAHDALHHTLEGHRVFSGSF FPQ S S S DLA RFTVGBPDGKVTGAPVVVKLTMPH GPS GMA L V N HLLSANEL E VIDEVS S
 $V$ S C E F S GRMAVVD VGNFGSDNVSVIDTDSN
 $\qquad$ GK E ,





 S S D DN T $\square$ T VWQLSS T GQE RTLT GA GS I N S


 STDKNA

 VA DVDNHKI RRVEVA D A TL LPLP GI YT A E R G G K WN D WR T T T D G K GE E A Q L T D S P G L
 YVSSMMRDREIVVIDDTGNDDPK VVARDATPGN

## UniRef90 K9QEP3 UniRef90-A0A024K082 UniRef90-L7UJH5 UniRef90 B8GB84 UniRef90-M9VYN8 UniReffo-G2MIN3 UniRef90-A9WHM8 UniRef90-R1EE13 UniRef90-B2JOF4 UniRef90 AORXP7 UniRef90-UPIO003B41DDC UniRef90-UPI00036F1E6B UniRef90-A0RW32 UniRef90-UPI00036E3D4E UniRef90-B8HXM9 UniRef90 B7KJH4 UniRef90 UP10003 UniRef90-K2BC38 UniRef90-W5WN31 UniRef90_UPIO0047525E0 UniRef90-R4WNM8 UniRef90 R6GAU5 UniRef90-R6GAU55 UniRef90 BOUHLO <br> UniRef90_UPI000463B310 <br> UniRef90-ROFAC4

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UniRef90 H5U3 <br>
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UniRef90_G8WNUS <br>
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Une L5K8J2




## PGAGATHPQFTPK


$\square G W \square D L K T G K S T T V K V P E A Q G A T \quad D \square T R D P A T$ AGGAAVFS PDGTRLLAVGRQNLSTGVRHSRRMAFTPDGG







ND QVAVLDVVSSTR ILRT T F CLLAEPDVSFLLPAH
$D$ D TVVKLW D AT T G K E WQ T L Q G H S $\quad$ G WVF SVAF S P D S $R D D G R L Y R D D V T G E P \square R S F N \square G P A A T G G G$

ASTLLVFDVA TRTQRHAHR $\quad$ TAG L P LGMLPGARA
HDHAVAVLLKTDGKKVRKLGETEVVAGAEGDAFSP D
 SFELP FSLLMPSFSGNADTVTAETPAAGSYS GI AMSD N

 $V A D S P D G$
 L K I WETD T GKCLRTLTGHT QRL R S SVAFSPD G


 A N H P Y Y K H VF $L$ RTMPVSGGAPR IVA
ESNDVQYALGTPFDLATANHSGSAFTVGGTPRG\|ADSPDG NGTVSVMDI P T DARLLK AETEQVMANNFTIRPVS $M N A I A V L S L A \quad G A M P H S \square G L L P T A W S$


UniRef90- A0A024K082 UniRef90-L7UJH5 UniRef90_AORXA2 UniRef90 B8GB84 UniRet90-M9VYN8 UniRef90-G2MIN3 UniRef90 R1E9C4 UniRef90_A9WHM8 UniRef90-R1EEI3 UniRef90-B2JOF4 UniRef90- UPIO003B41DDC UniRef90-UPI00036F1E6B UniRef90 A0RW32 UniRef90'UPI00036E3D4E UniRef90-B8HXM9 UniRef90-B7KJH4 UniRef90 UPIO0036346EA UniRef90 ${ }^{-}$K2BC38 UniRef90-W5WN31 UniRef90 M4FQ81 UniRef90 UPIO0047525E0 UniRef90_R4WNM8 UniRef90-R6GAU5 UniRef90 BoUHLO UniRef90 UPIO00463B310 UniRef90-ROFAC4 UniRef90 A9FEG4 UniRef90 UPI00016C572D UniRef90_UPIO003B5E239 UniRef90-F5UF33 UniRef90 K0K625 UniRef90-UPI000349EBDO UniRef90-Q0BFK1 UniRef90_D5MIV3 UniRef90 G7CH14 UniRef90-E8YSG4 UniRef90-WOEZW5 UniRef90_S4XMT0 UniRef90-WOJB15 UniRef90-H5U3U8 UniRef90 UPI0003463AA1 UniRef90 UPIO00464DBDF UniRef90-A0A059MWNO UniRef90-A0ACS7 UniRef90 M7AILO UniRef90- ${ }^{-}$XOPZM8 UniRef90-K2L7V4 UniRef90 UPIO00363183B UniRef90 UPI0003F08397 UniRet90-B5ERH2 UniRef90-G8WMB5 UniRef90 B5HRC3 UniRef90 G7XTKO UniRef90-G8WNU9 UniRef90-14EGV8 UniRef90 D6TJX4 UniRef90-F4L7S7 UniRef90 W8AGX2 UniRef90-R4PYL8 UniRef90-U7NKM3 UniRef90-UPIO002ED9429 UniRef90 M1E4S7 UniRee90 A0A017S901 UniRef90-D3FCM6 UniRef90_S2EQJ5 UniRef90 UPIO0047B61D6 UniRef90_UPIOOO3688EB9 UniRef90-Q1QGK8

REIVWVIAC YSGNIIMVF HFAYVSSDDNHGSVTVIER GT VYVSNTEANNHVRFE $G M K M Y V S G D T N K R V N R Y A G$
$G W W V S G G S S D T V K V W E ~$ GR LYVASQETNNVVVL

STLL
GE WL
GSALFVTDFSGHKTRRVEVVGRAVTTDA
GDGLVVANSDDNNVSLL LNDGSGFGASTSFAVGTSPRS GTVMLVTGRDSNDVHEYFLDE
GDYSEVSGGRDDTVRVWDVATGSG REVARTPVGD
GLWMFNTGREGQNLYSYTLD
MRI $\mid$ ATMGDDS
RKLVITANEVEGNTSTFEF
$K$ VIASASADGTVRLYDYDGDS $\square M V K A$
KRFLFVGVPGGNTVNTFRTNPD GRLTA APGGPAS

GRYWASA KRHVLVSNRVANTVSVGUDYVSMDVVAELPGPSGPDCMD DENTEISHSGTHEISVIR
GRYLLVGNFLDQDFSIYRVDGSNVTDTGK RFKVPGHPAS GSVLATAGGDA TVRURVSD GRSVCADRFGAPVTGVA GKQVFVTLQDRGAVETFRSD
GQ YALTRFDNSISDTDVGK AETAHVPMPEP GKTLAGGNDMNGLNVWDVTGR RLLSQVKVD


EEFATAA WNDVIRVFR
GEAAYVSपMDGGKVVVY DTATFQVLKEFPADHPSG
GKRDVAAAREQTQVFDGHSYDLADVPVGQ NKTLYIANADNNCLAVEDV G LFIVCEGDQTVTVLRLDPETLETRSEAEVG GDHVIVAGTGHRRLAFLRREGARLIPTGRDEVPEPVAC

 DGNV LATGGDDHTVRVWDRGPD
GRHVYATNHDSFDVTVV DTGGWTAR GEWLAVGMESSNVEILHV GRTLYVAESTDRSSQVTIIDTATGSVTATMPVAEGATG GVTLYVNNVDDGTVSVVEVGDQTVVKTVRLE
TRHLLVVTSSS RLLKLDSRTGRLLSEIS
GR LYVASQETNNVVVLDAD GKVLADTY GAGGVS RTLAAVGNEDGDQVRLF DTATGRSQRTTKLGA GRWLATG SDRIVRI WDPATGTLQHTIDTQKP GTSLLVADSGDDSVSV MDTRTRRVTQTFNVPDPG TR VYVADQKSDAVDV I DTATNQVIATLRUGKDVYVAN GRYVYVG DSGDV IDTATRTVVKHLP

GRVFWVSGRHHG DSRAYVGNFGSDNVSV IDTDSNTVVDTIPVGNGPVG
GRYAYVINYTSNTLTTYDVGGA
GEQAWVSARDSDRVVVY DTRTLEEVARपDSESPSG
QT VASGS $\square$ DNTVK WDATTGKERQT $\square Q$
Dr\|VLSVEAG aVVEVDVETGEVLrRVEVGQ
GQFLYTANDGEQELATYRLAANKLVPVG पP पK DPGHPAS EALAVGTRDDASI QLCRLNKE
GTELYL $\mathrm{L} E \mathrm{ETGNVITRYKL}$
TNLIYVANDSSNNVSVMDGNTNTVLATVPVGTNPFAVG GYYAYVSSKFSNAMSVVDPDPNGDGNPADAAV
QT LVSGGDDGT $\square$ M $\downarrow$ WRV
D VIASASDDGT RRFWQLPDGQL
A WVVAVCHNGSGTLVVFRVSGLQLVRHAEHP $\square G$
K $\mathcal{L V A S G S G D H T V R L W S V D G Q S L K T D}$
GKLMYVTHEHS EVKVVSLPDGTLLKT
RTLAVVG RDTTITLWAV
GKTVYVTQRQGGFIESFRTDVE

T A WVTV
Y Y G GGQGT $\square$ NVPSWSPDGRKVAFVSHTVLDA
TNLTVA
GDALWVINNKS


UniRef90 K9QEP3
UniRef90-A0A024K082
UniRef90_L7UJH5
UniRef90 A0RXAZ
UniRef90 B8GB84 UniRef90-M9VYN8
UniRef90-G2MIN3
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UniRef90- A9WHM8
UniRef90-R1EE13
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UniRef90 AORXP
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A
UniRef90-K2BC38
UniRef90-W5WN31
UniRef90 ${ }^{-}$M4FQ81
UniRef90 UPI00047525EO
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UniRef90-R6GAU5
UniRef90 BOUHLO
UniRef90-UPIOOO463B310
UniRef90_ROFAC4
UniRef90 A9FEG4
UniRef90 UPI00016C572D
UniRef90-UPI0003B5E239
UniRef90-F5UF33
UniRef90 K0K625
UniRef90-UPIO00349EBDO
UniRef90_Q0BFK1
UniRef90 D5MIV3
UniRef90 G7CH14
UniRef90-E8YSG4
UniRef90-WOEZW5
UniRef90 S4XMT0
UniRef90 W0JBI5
UniRef90-H5U3U8
UniRef90-UPI0003463AA1
UniRef90 UPI000464DBDF GV
UniRef90-A0A059MWN0
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UniRef90 UPI0003F08397
UniRef90-B5ERH2
UniRef90-G8WMB5
UniRef90- G7XTK0
UniRef90-G8WNUS
UniRef90_14EGV8
UniRef90 D6TJX4
UniRef90-F4L7S7
UniRef90-W8AGX2
V V W

UniRego r8B4L
UniRef90 R4PYL8
UniRef90-U7NKM3
UniRef90-UPI0002ED9429
UniRef90 M1E4S7
UniRef90 ${ }^{-}$A0A017S901
UniRef90-D3FCM6
UniRef90 S2EQJ5
UniRef90 UPI00047B61D6
UniRef90-UPI0003688EB9
UniRef90-Q1QGK8
UniRef90_UPI0002883C07
UniRef90 A0RVZ4
UniRef90-R8NC75
UniRef90 UPI00047A5F7D
UniRef90 UPI0004069FC
UniRef90-K6XIL7
UniRef90-U9VLM4
UniRef90-Q125C7
UniRef90 K9QMH3
UniRef90_Q0W6P3
UniRef90_UPIOO030E1755
UniRef90 A4YR98
UniRef90 XORFY0
UniRef90_F4CNS8
UniRef90 W8X866
UniRef90 R1E140
UniRef90-B5JQU1
UniRef90-A0RVW5
UniRef90 UPI0003802E4E
UniRef90 B5ELI1
UniRef90 L5K8J2

UniRef90 W4E8X3 UniRet90＿Q4WH28 UniRef90－B5JGK3 UniRef90 UPI00037B69E2 UniRef90 WOEV19 UniRef90－UPIO0026CC9F9 UniRef90－B4VLP3 UniRef90 B7K903 UniRef90 V6HT26 UniRef90－H1XNY7 UniRef90＿S6AJ24 UniRef90 G2LLHC UniRef90－KOTN14 UniRef90－AORVT2 UniRef90 UPI000376FF61 UniRef90－Q7NJ67 UniRef90＿UPIO0039AE46C UniRef90 R1B7A1 UniRef90 UPIO0035DODF8 UniRef90－L8M7S2 UniRef90－B5HKT5 UniRef90－G8PQKo UniRef90－ $11 \times 4$ T0 UniRef90－UPI0003116C84 UniRef90－A0Z7U8 UniRef90 UPIO00289F32D UniRef90－UPIO00365A010 UniRef90－UPIO003783A24 UniRef90－X6CK10 UniRef90 Q2GT52 UniRef90－A5F753
UniRef90－UPIO00455FCC7 UniRef90 K9QTC6 UniRef90－${ }^{-} 9$ WCR7 UniRef90－UPIO004695AE1 UniRef90－UPI00029AD5CD UniRef90 UPI00034A6E6A UniRef90－UPIo00359789F UniRef90－UPIo00305949D UniRef90 K9VR67 UniRef90－AoRYY7 UniRef90－UPIO00475C686 UniRet90＿W5X679 UniRef90 BoDYW7 UniRef90－W0IPM8 UniReffo－S4YGL4 UiRe90－011 W8 UniRef90－I010G7 UniRef90＿12GU71 UniRef90 UPI00047B9C3A UniRef90－G8NS55 UniRef90－E2B110 UniRef90－B0DYX6 UniRef90－D3CRG6 UniRef90－UPIO0037265CC UniRef90＿M5FFU1 UniRef90 E7RUG5 UniRef90－U2ZAL7 UniRef90－UPI00037BCD49 UniRe990 D8K618 UniRef90 L7FBU3 UniRef90－S4NDD8 UniRef90＿UPI0003A68D40 UniRef90 R5BKC3 UniRef90－UPIO00440996A UniRef90－S4YJ03 UniRef90－Q0AFC9
UniRef90 UPI00016C49CC
UniRef90-A9EZ15
UniRef90-F4CQ24
UniRef90 E8WLB4
UniRef90-FOQW53
UniRef90-UPIO00467A948
UniRef90 D5X8R6
UniRef90 B2IVX2
UniRef90-UPIO0040D759C
UniRef90-Q1QTT2
UniRef90 R6VIM4
UniRef90-R1DW22
UniRef90-BODSJ1
UniRef90-A0A056XGE7
UniRef90 U1IFE4
UniRef90-R1C0Y7
UniRef90-V4NES6
UniRef90 D6TCT3
UniRef90 B4VH43
UniRef90-R1CDN3
UniRef90-S4XSK6
UniRef90 Q0SC61
UniRef90- Q1D1L8
UniRef90_M4WZW8

VAFSPDGQTVASASDDK TIRLWDAASGAEKQVLKG PDS LVMSDSRDELYVVNQTHSSLSVVDGKTSQVVE APTALALSPDGTRLYVANSGSGTVSVINTVGYKTSSKDITV

SVSAVTFSPDGKRIVSGSDDR TLKLWDTSGNLLHTFRG GLWGVAFSPDGQTLATASMDRVVKLWKRDGTLIKTFNDNP

DLNSYYLVVMNKDSALTMDPVTSVSTDARVA
PPEADEFGPGGПNMYVAAAGSDASFNVSTASTGDSDNVLS RPS\｜ILWKADGTQL ATDPEKAQKVLFSRDGQVLITG

GHTGWVRSVDFSADGRTL $R\|T G L V F S R D R Y A Y V F G R D G G L T R V D\| L A G R \square T H R V M Q A$

【LS TAFSPDGKHLVSGSSDTDK LWDVNQQSLVHTFNDHE DARDVAGSDGSTVYAAVNGQNKVVALDAATGTVRQSNAP TPRDIVIGPDNS LYVASGGTDSVLRFGLDGTFTFVQAGS EMSSLVLSADQRTLIGGGKTLIRRWNVSDGRELPVIEDKE


DVNT】SYSPDGNST VSGGDDDTVRFWDVG NGHT DGNFI DAGNLGEVSSVAVSPNGDFLAVGSCE GINTVAVSPNGKMI KAFGVVLDDAHNRLYVGNTVDLSVTVVDTAQSKAVGTIQL

SVAFSPQGNIL A
DCQWGGAVKVGDFTYATQPDQSRVVIVDAGNTWNPLQVIG NPQTIVVSKNGQRVYVLTTQEVASFEFD STIWVAFDSNGTKL ATGTGFWRVMLWDLKTGQVIR S LDD NPRGLAFSPDGLKMFVVGNDTVHQYALGSQFGFSHNFSVA
$Q T S V V A F S P D G R T V A T G S G D G T A C L W Q P D T G R A R A T L N T$
$Q I S S H S T S P T G T R V A V E A R G E L F S V V$


VVFAMPHAFRGVFAFCPSNGNTHVVYVT QPRTVALDKDG NAWVANEEDASISVIAAATGQVLQTIIP PPYWQDLCDAGK LASEGWAFCNSFNSELYTGGVAQGNPP YVVNAEGNS LISVIDLSGQQVKETISA YVVNGESSTISVIKLSTNTVTNSSGS

DEGSVYRVAFSPNGKH I IS GS GGHTDKVWDA MVTAVAFSPDGQFLAAAGRDQADLWDRENGGEPVATLAGP SHRRTRHDG LVYAVACNRNYVISGSADKTLRLWHP YKLADTVRQSVITEAT VT QGTWMSVDVSPDGT LGDLYVMP $N V S D P A Y P S Q V G E P L A G S S G E M Y A L G F S P D G R T L A T G S$ VLEDMTFSKDKQTWYLTCMGSSNIIVGNAATDKPIKSDKA
 ASSD $\quad$ PDGSRILIEMRGD FSLPAENGPVYNLTRS MVMWDTESGLSACLE GHKWKVNSVA APRELVADATTDTDY TGGGESSVVWVVDGKDLTERTTIT GAVWITFLDNNQLVMGMESGTVKПWDWQR GTVRNELNHP QVRPLALSPSRNLLFAANDNRLEVFYVGSGGLTHISSVT RPTGIVYNPANNLVYYVTDTLAGQVAAFDRKGKEVFRFGRP PEGFAIFDPKNGYIYVIPYSNNTSISVINGTKVIASTSLP
 SPYGーALY GENFYVSDMGTGQIVIFSKTGKQLGTLKIK

VAFSPDGRHVVGSDDK TVRVWDAQTGQTHVTSVA DPHGVAVNPGGNIYVTNQGSNTVSVIDPATNTVTGSPIT

```
PQSNDFSPDGQTVY
```

TGHQGEVTSVSFSGDGQLIATASQ

## $\square A R A P Q G D A \square Y \square A$ <br> DEDHGVVRR】P啫

PSFTTFDPDGTRLFAVNDNRDEVFSDSSAG LSLTAADP RDEGLGDLSHSLVYSRQRHAFVFGRDGGLSKVDLLSVQ

## UniRef90 W4E8X3

 UniRet90 Q4WH28 UniRef90-B5JGK3 UniRef90 UPI00037B69E2 UniRef90 W0EV19 UniRef90-UPIO0026CC9F9 UniRef90-B4VLP3 UniRef90 B7K903 UniRef90 V6HT26 UniRef90-H1XNY7 UniRef90-S6AJ24 UniRef90_G2LLHC UniRef90-KOTN14UniRef90-A0RVT2 UniRef90 UPI000376FF61 UniRef90- Q7NJ67 UniRef90-UPIOOO39AE46C UniRef90 R1B7A1 UniRef90 UPI00035DODF8 UniRef90-L8M7S2 UniRef90-B5HKT5 UniRef90-G8PQKO UniRef90-11×4T0 UniRef90-UPI0003116C84 UniRef90-A0Z7U8 UniRef90 UPI000289F32D UniRef90 UPIO00365A010 UniRef90-UPIO003783A24 UniRef90_X6CK10 UniRef90-Q2GT52 UniRef90-A5F753
UniRef90_UPI000455FCC7
UniRef90 K9QTC6 UniRef90- ${ }^{-} 9$ WCR7 UniRef90-UPIO004695AE1 UniRef90-UP100029AD5CD UniRef90 UPI00034A6E6A UniRef90-UPIO00359789F UniRef90-UPIo00305949D UniRef90 K9VR67 UniRef90-A0RYY7 UniRef90-UPIO00475C686 UniRef90-W5X679 UniRef90 BoDYW7 UniRef90_WoIPM8 UniReffo-S4YGL4 UniRef90- Q11 W87 UniRef90-1010G7 UniRef90-I2GU71

120 HENWVNAVAFSPDGQTVASASNDGHEKSVNAVAFSPDGQT

EGGTPLYVLNGNNTLEKINLNTKQRVWSASTGVAPYGUT
YEADVNAVAFSPDGKR【VSGSHEDAVNAVAFNPDGKRTVS GGFWRVAFSPDGQ

LVAGASVDKT
Y N A N S
LK R P PMDWVASADDRLLYVSMPSAGEVAVVDTAEFKVLGN TGNND $\square$ WQLDF GSGRLRPLTTHPDTDWDPVVAPDGNRSGT NETRPTGVRDSPDGYRLFIVGEMPQSGPDSVFEYDSNGEL LDDGTVRLWSSQDGKPIAVFKGSDKLIMSIDISPDGQQIA SGSDDQTVRLWDADSGLCFRVMHGHSNWISSVVFSPDGRL GNS $\square G G A \square S A D G S L V V A Q N Y T P G G \square K V F D A A T L E L L A D$

NYVLSVGFSPDGKYLVLHTFNGHKYSVLSVGFSPDGKY RGLALVGGTLYVSNEGGRPARAGETTMNSYGTQVPADPDT TRGYNTDGDYVEESRVAATYTTPNEPTWLVA VEKL TGLDFPAGLVFDDADNLYVTSFNTDEVFVF DDTGTPVGD VGMEPVAVAFKDNDEVWVVNHLSDSVSVVTLTGLPRVVET TATPTFANDVFLTPRAAWFTDSFQPT SVALLPGGRDGAL

## GWGAHQQTDEGHSSSVRAVAFSPDGRT

QADDPTALH GSSVWSVQYSPNGRLVASAGYDGFLKL HPRSNVKVWDLKTGKLIHLLGHQKPVNVVVISPDGQILAS AGTTPT SGRTLGEDLYGENTVAFSPDGKTLAS MEKKTGKDGKAAYTHDLRELVVDSAANRLYVTGHSSQPDV
SGSADRADRLWDVNNGQCLTALLGHRELVSTTAFSPEGKT TDERPQHLWYVSHLDQVWVLCGGDSGRTIVVIRDASQHDQ PVAQRLSLTGRFNHNLNIVSYFGVDATETKLIISGQ HSASVWSVALSPDGQLVA
EDVLITGIDFGNNGNRMYLSGENNSADQQYD पSEAG
RSGPLRSVALSPDGRTLALTGHTGPVRSVAFSPDGRTLAT SGARERHPNWSPDGHTIAYITSATGNYEVYTQPQL
RGHDVTSVAFSPDGRYIA
VTSAPEDLALSEDGQTAFDTERPKGGNRDSDLPPGRDLSD
SNAGDNIWAFDTAGHHIYVLNKESFPVRVEKLRDMKFGPG YASRPYGUCFDPQKDFCYVT WWKRAEEVVKAGKHELQGT FEAGVSQ RDTDYLHI DNWKRAEEVVKAGKHETLNGM SGGHPHHTY DSPDGSHLGI GVP GMDLSAGHTGGTMGMK MIMWPHHIYHHQSGGDHHLAI GVPGMDLSAGHTGGMPGMK PGVHGHEI AVSADGKTAFLPIY G GSVGVGKPGDDGHE HGEVVCAVTVSNPTKYVYTVRGHOGKGCVKVWDDGQSVGS GGEWVTAVAFDPDGRFLAVA GRDQAILWDRENRGGP VTGKLLKTIQAHEGVVCAVTGHPDGNTGITG

 GDSKVR WS自PAGDLVGSSGAFRRDGKVLATAGRDTGR ALSNSAFIVSVRYPGDALHDGLDRLLVTSTVRHSDL HTEVVNVVAFSPDGR DPKRPKPLGKPDTGHTSWVSSAVFSPDG RTLASASDDGT
PESHERSVSWSPDGSTTAWLSDKSGEYQVYTAPYDNFDAA FSLDGKRIVSGSEDKTVRIWDVESHADSVQSVAFSRDGTR TGKYGTGLALDAAAGRLYVTNA

HSLFPTPVYVTLQTDGVVENLQTGTTWSVPGAHYHAVSSD DGNSGNI WAADACLKCKYLMVASDDSAVTFWNPNGKYLAT VGLIP PVAVAARNDGEVWVVNHLSDSVSVVDVSFPGRPRVV LGGELQHVVPSWDMKTLYATDDTSDKIQTVTMFDPVREF GTASGALLLYDPANGLIYVTSNKYG YVSMPNGYRSPSQ | $D T G G$ |
| :--- |
| $G Q K G M V P G G L L V D G G G A F L L E A F E V G G T P F L V V G G Y D D D G$ | TKGDUQ

NAVGRYAVF

FSPDGRH ITSGSDDKTVRVWDAQTGQFWVKSVAFSPDGRH $\square$ GNGPTG

## VAVNPVTQFSNT

P TNGGDVVVLSPDGSALF DADHGNHKDQVATGAVSTFAGS FGTPTSPDADSHRDRVYTADOWSNTVTVTDPSDRPRDSA
 VDVSTPGVAUSPDGGALYVSNHKDRRVEVATGAVTGLAGS

## UniRef90 W4E8X3

 UniRef90-Q4WH28 UniRef90-B5JGK3 UniRef90-UPI00037B69E2 UniRet90_WOEV19 UniRef90-UPIOOO26CC9F9 UniRef90-B4VLP3 UniRef90 B7K903 UniRef90-V6HT26 UniRef90-H1XNY7 UniRef90_S6AJ24 UniRef90_G2LLHO UniRef90-KOTN14 UniRef90-AORVT2 UniRef90-UPI000376FF61 UniRef90- Q7NJ67 UniRef90_UPI00039AE46C UniRef90-R1B7A1 VASASNDMT $\quad$ RLWDAASGAEKQVLKGVNAVAFSPDGQTVA VKVVSVDPTTYNVTDTVGVGSQPTAEPYGLTGS GTVNSRYVSNWGGTLPNAGATAET

$$
\begin{aligned}
& \text { AGVPYGKMFU } \\
& \text { PDGKV } \\
& \hline
\end{aligned}
$$

GSDDRMDKFWDTSGNLLDTFRGHEDAVNAVAFNPDGKRIV ITKDWKRDKTGWQEELVQTLEGHTG WIAGLAFSLDGKILA $L T \perp Y N A K T G A Y L N G T L A N S T F P T Q A G P D F V A V N P K A N V L Y$ PGKFCTGLTFDGKFLW PAGAEPVRVALQPDGRYLW LEDWTANPDGTRGRALLTAF



 GETVSSMVLGKDGKHLY
 GAATTGTVSVDDTANPSAAVRS DDVGLHPTAVYAKKGAVF GATGKRLHQFPYENAFGTL LQVGDEPRDIVFAGKDARRAFDTAAFRGQVFTPDGRRLA PAADEVVHDPLTGMATAFRGQNHPEFSVDTLL ASADRHNFEMPHADGEVFNANGITRTPDGSALL VQQAVAVSPQGNLAV VASGSADET $\square R \square W D A A T G A H Q Q T S S A V Y A D A F S P D G R T V A$ WDSLTHKFVAEFEKYATSIIFCDSWAPDGKRLA GSNK IKLWNLHKGDRI CTLWH SSAVHAIADSPDGT\|LAA GSDDNIIRDWDDGGKLDHTLKGHSAWISDLVFSADGKTLMM SSVLVVIDTNTLK VINTDDGLGNAKAPGLALDAANKRVY VATSSDDTNVK DWDVSSGATLQGHRHVYSVAFSPDGRTVA HRSVHTRPVGNHFDLVENLFIAP NQLAAFDLTGTLLGIVPGVQSDGGVAAGNDLDHDFDYGY
 IUVQPVHAGNFSTAGQYDSPR

GVIVSGD GRIML GSYDTTUR IDWNVRTAAVRSVLSAPTAVWSLSFAPDGRTLV G G T A T QLT TNSGLSMNGLTYSPDSKKLL G D L L R L GAALRLSDTVEDEAFPEALSLPDGESVAVVSNTPEASFVVQ GHLYITSARGQFSR
 GRVLIVNPVTGQTTQNQQTPVMN HNAVFSPDGSEIW GMVVVMDAVTGVLKKNLEVPVMN_HNAVFSPDGTEIW MLVLDLPSRR 1 IIDHVEFGHGVRPHMPLLDEASGMLY A SVVKPVSQLDC GS NDATLRIWDALTGLSVMGPLKGHD VATFAVGDEW

GSDRADKDWDLNQGQLLRQFGQHSNWVGFSPDGQLLA RRDGAVDLSDAAAPRLAD TAETGAAFPESLASVSPDGETRIMA GNRYRLNVADWDGQNVQTALNAGEP IISPAWSPDGKRLA GGGDNIWTIDRAGGETTQUTRETFRLLSQPDWTPDGQFEV $\square R L W N V T D P A R P V A L G K P F T P V V R D P F S Q V L F S P D A R T L A$
$G D A G E T U T V D E P S T K V S E K P S P S G A A P V E V R F L D P D A E L V Y O$ VRLLWSAAADKP PVKDTGRDAAVWSVAFSPDGRTLA $\square R L W D V T E P G R P K Q L G K P L T G H D G T A Y L V A F S P D G R T L A A$
RCL
TNFKSGYPGGLMWSPDSKTLY LIASGAWDNTDWNTESGQCDSGPFEGHVYSVAFSPDGKRV GELVTVDTAKTNKVLTRKKDDESKEHFFLLDPATHRAF GSRNSQVK $\quad$ WDWANN $\square A V V K D Q H R G T V H S V A Y N P D G T Q L A$ RTLLVGDEPRD\|VFGGPGRSRAFDTAAHRGQNAPFDPQLTM GEAG DSVGYFGKAKGVAVNSEG


 SD $\square$ PRARQ $\square R W D E A S G V S V L R E G V G H S N G N T F D R W G R$ V V DGFVRQKNYSVGSGSNASIVNPVDGELF


$G \square A G S V D G V G \quad D A A Q F N A P Y G V T \square S P D G S A \square F$ ISNVAVMDVASRKVRVLTDEKDGNWFWFASGFTPDGKY $N P$ VYTGQLLVHGMGFSPDHHTLL SSKDRTDKLWNRDGTLLNTLTGHSSQVFGVDFSPDGQTLA GEAGDTDGVG


## UniRef90_W4E8X3 UniRef90-Q4WH28 UniRef90 B5JGK3 UniRef90_UPI00037B69E2 UniRef90-W0EV19

 UniRef90-UPIO0026CC9F9 UniReffo-B4VLP3UniRef90-B7K903 UniRef90-V6HT26
UniRef90_H1XNY7 UniRef90-S6AJ24 UniRef90-G2LLH0 UniRef90-KOTN14 UniRef90-AORVT2 UniRef90-UPI000376FF61 UniRef90- Q7NJ67 UniRef90-UPIO0039AE46C UniRef90-R1B7A1
UniRef90-1010G7
UniRef90-I2GU71
UniRef90-UP100047B9C3A
UniRet90-G8NS55
UniRef90-E2B110
UniRef90-BODYX6
UniRef90-D3CRG6
UniRef90-UPI00037265CC
UniRef90-M5FFU1
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UniRef90-U2ZAL7
UniRef90-UPIO0037BCD49
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UniRef90 L7FBU3
UniRef90-S4NDD8
UniRef90-UP10003A68D40
UniRef90-_R5BKC3
UniRef90-UPIOO0440996A
UniRef90-s4YJo3
UniRef90-QOAFC9
UniRef90-UP100016C49CC
UniRef90-A9EZ15
UniRef90
F4CQ24
UniRef90-E8WLB4
UniRef90-FOQW53
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UniRef90-B2IVX2
UniRef90-UP100040D759C
UniRef90-O1QTT2
UniRef90-R6VIM4
UniRef90-R1DW22
UniRef90-BODSJ1
UniRef90-A0A056XGE7
UniRef90-U1IFE4
UniRef90-R1COY7
UniRef90-V4NES6
UniRef90-D6TCT3
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UniRef90
S4XKK


## UniRef90_W4E8X3 UniRef90-Q4WH28 UniRef90 B5JGK3 UniRef90_UPIO0037B69E2 UniRef90-W0EV19 UniRef90-UPIOOO26CC9F9 UniRef90-B4VLP3 UniRef90-B7K903 UniRef90_V6HT26

 UniRef90-H1XNY7 UniRef90-G2LLHO UniRef90-KOTN14 UniRef90-AORVT2 UniRef90-UPI000376FF61 UniRef90- Q7NJ67 UniRef90-UPIO0039AE46C UniRef90-R1B7A1
SPDGQTV AVASASDDMTVWLWDAASGAEKQVLE RASLLH GPGGKLVYASQNGDTVTVNTMSVAATTVLSTUD SPDGQFVYVANGNSDDTTVINTNTLSVAATILV
 WDTASGGKLLHTFRG NPDALLYVSNANSGTVTYYMNATTGAYMNGTLANSSFP

WND Y L V Y V L N A G G G H L A GFH L D SR T C E ME Y DQ D SVVVLQQ

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



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UniRef90_M4WZW8

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UniRef90_UPI000475C686 UniRef90-W5X679 UniRef90 BODYW7 UniRef90-WOIPM8 UniRef90-S4YGL4 UniRef90 Q11W87 UniRef90-IOIOG7 UniRef90-I2GU71 UniRef90-UPI00047B9C3A UniRef90_G8NS55 UniRef90-E2B110 UniRef90-B0DYX6 UniRef90_D3CRG6
UniRef90_UPIO0037265CC UniRef90-M5FFU1 UniRef90-E7RUG5 UniRef90 U2ZAL7 UniRef90_UPI00037BCD49 UniRef90_D8K618 UniRef90_L7FBU3 UniRef90-S4NDD8 UniRef90_UPI0003A68D40 UniRef90 R5BKC3 UniRef90_UPIO00440996A UniRef90_S4YJ03 UniRef90-UPI00016C49CC UniRef90-A9EZ15 UniRef90_F4CQ24 UniRef90 E8WLB4 UniRef90-F0QW53 UniRef90-UPIO00467A948 UniRef90-D5X8R6 UniRef90 B2IVX2 UniRef90_UPIO0040D759C UniRef90_Q1QTT2 UniRef90-R6VIM4 UniRef90-R1DW22 UniRef90-B0DSJ1 UniRef90_A0A056XGE7 UniRef90 U1IFE4 UniRef90-R1C0Y7 UniRef90-V4NES6 UniRef90-D6TCT3 UniRef90_B4VH43 UniRef90-R1CDN3 UniRef90-S4XSK6 UniRef90_Q0SC61 UniRef90_Q1D1L8

GVNVSTNA
260
 TATDTVLPGADAVGPAPSSVAVSADGS\|AYVANGNDNTAT K IDGHTSGFI GDSPNALDVSPDGKTLYVAN GM GHNKTGNGSEVLPQAAGVAUSPDGTRALVANYYNDSVMS

T S G T S VWG
 SPLSLALSP
GLGGLSHGRARWSPDGKQIWVSTIG EGLDQPGDLPNVFASPSQ VSFSPDSEHLVVNIRPLDTEV AGAPDQ $D F Q T T P N E L K P H D M E F S N D G L R M F V I G D S D N V V Q$ LWDMNGTRTLPGHPSGTLSDAFSPDGQQLFTILRGHRASV HSDRDWNVETGQHTS WVRSVAFHPDGRVLASASQDKTARL
 P

TD Y F PAE
PDEA WKKCYEVETDGPGLF $\square$ RTHP
VAFSPDGKTVAQAGMGSVRपWDTATGRDD
TENHQGESEPETALIVQKRESRWVDERETDWTA DVPTTAAAYKGRLYLPNARFSTAPTPQTAYA
APFHVEVGSDSGRPSRPMGVAFAADGQSVFAA GFR
 VDNIPSSHHWTRDIAFSPDGKTLY LISVGSGSNPE NWVF AVAFSPDGRTV AS GS GDSTLK
SGRSNNTEPFWHPDGKSLFTSDRGGKPQ
PFRMNKGAKRHVLG
VAWSPDGRRL
LAVS P D GQTL
ASGUD SSSA
GNPNRVFALAISSDGETLASGNGD
 KGQKTAII VAD DLSKPNGIVGTPDGKFLYVADMDANKTY
 D G $\square$ P GATTGGVFSPDGLQMF $\square$ S P HSSDTVD $\square A R G S T R A T L T G H T N T V K A M A S P D G R T V V S G S E D H T A R L$ NEGHYSDTGVTWDLSGKYLYTSARSFNPTY MDP LKGHYAWVYSVAFSPDGKYIV
PWGNVVEVGADPFVGRFTPDGRHYLTANWGRNFQT CCAPVPNAESEKSLATPVDMAVTSDGAKLYVAAFGSSK RFPRWEPAANVVHALANTSAASGSPKRLFASSW SGE DLSTMTENSQMRTDINACAVEFSPYGNDAFVALQG VQYNVGH DAAAEGD GTDGKMYVDNEKGQS $\square S V I D V A T L$
VAAEV QRANDSRSIVIDVATNANL
 DWVTAVAFSPDGRYLATASR $P$ LSASADGQFLITAGKGN G $\square R \square W G N \square V D V G A D \quad P F V G R F T P D G R H Y L T S N W G R D F A A$ TEPVY SPDGKFLYTSDRGGAPQ RETGEVEPYVT GPGGADRPTPSPDGRWL
 GAHHMVLSPDERYVFVQNSFLDNAMS NALAFSPDGRVL ATASDDGTA
 $L T V M W R Q L P K S K W G Q P G G I I A F S P N G K Y$
$R W Y D A S N P$
$V$

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\begin{aligned}
& P G \square D Q P H N L D L S D D G K T L W I \\
& \text { DAWSVSFGNNGK WVASAGSD }
\end{aligned}
$$



NCFCVWQGHDRWLRSTTFSPDGKLL ASGSY VDDIPANHHWTRDIAFSPDGKTLY DSV GS GSNV A $\square Y Y$ Y $\square D D D D E P A L Y K P N G \backslash A L S A D K R T L Y A S D T S H Y P D Q$ QPGYQDGVGDETARNAPYQMCASRQGDYFLADTWNHDNKG AKGSADGPGPSATFSRPQGLADSPDGAALFVADHGNHKDR
$T \quad G / V A V P D T G V V Y V T N S \square D D T V S$
STGQDTKVAD EPFKPNGIAFSHDYKKVYVCDTGHYPNA ERGDADGVGGAAEFDGPGG』ADSPDGSALFVADFRNHK $\square R$ NRETFETKRLKATPWEQMAQQFSPDGKYLIVSNNADGRGT GMTDFSPDDKYGYVCSSFTDAATPDGKQVWYT

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


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UniRef90-A0RVT2 UniRef90-UPI000376FF61 UniRef90 Q7NJ67 UniRef90_UPI00039AE46C UniRef90_R1B7A1 UniRef90-UPI00035D0DF8 UniRef90-L8M7S2 UniRef90-B5HKT5 UniRef90_G8PQK0
UniRef90-11X4T0
UniRef90-UPIO003116C84 UniRef90-A0Z7U8 UniRef90_UPI000289F32D UniRef90-UPI000365A010 UniRef90-UPI0003783A24 UniRef90_X6CK10 UniRef90-Q2GT52 UniRef90-A5F753 UniRef90_UPIO00455FCC7 UniRef90-K9QTC6 UniRef90-K9WCR7 UniRef90-UPI0004695AE1 UniRef90_UPI00029AD5CD UniRef90 UPI00034A6E6A UniRef90-UPI000359789F UniRef90_UPI000305949D UniRef90-K9VR67 UniRef90-A0RYY7 UniRef90_UPI000475C686 UniRef90-W5X679 UniRef90 BODYW7 UniRef90-W0IPM8 UniRef90-S4YGL4 UniRef90_G0UWJ3 UniRef90-1010G7 UniRef90-I2GU71 UniRef90_UPI00047B9C3A UniRef90_G8NS55 UniRef90-E2B110 UniRef90-B0DYX6 UniRef90_D3CRG6
UniRef90_UPIO0037265CC UniRef90-M5FFU1 UniRef90-E7RUG5 UniRef90 U2ZAL7 UniRef90_UPI00037BCD49 UniRef90_D8K618 UniRef90 L7FBU3 UniRef90_S4NDD8 UniRef90_UPI0003A68D40 UniRef90 R5BKC3 UniRef90-UPI000440996A UniRef90_S4YJ03 UniRef90-Q0AFC9
UniRef90 UPI00016C49CC
UniRef90-A9EZ15
UniRef90-F4CQ24
UniRef90 E8WLB4
UniRef90_F0QW53
UniRef90_UPIO00467A948
UniRef90-D5X8R6
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UniRef90_UPI00040D759C
UniRef90-Q1QTT2
UniRef90-R6VIM4
UniRef90-R1DW22
UniRef90-B0DSJ1
UniRef90_A0A056XGE7
UniRef90 U1IFE4
UniRef90-R1C0Y7
UniRef90-V4NES6
UniRef90-D6TCT3
UniRef90_B4VH43
UniRef90-R1CDN3
UniRef90-S4XSK6
UniRef90_Q0SC61
UniRef90_Q1D1L8
UniRef90_M4WZW8


TGTLSRLERGADGREVRRATLEGVDGAAACPRGVAVTAD ADYVRCLAFSPDGKILKTIKIWHLSGDGGYVRTLAISPKG DGRAAVLAFDPDGKNGRIVATGLRNCSG VAMAVABT GHSGAVYAVAATGSGDSTI RDWDAATGAGAVYAVAFSPDG

 GTYQVWNLTTNQLTKTFNGHQ$\quad$ DWVRALAMTPDG



 AYNLTVPYGVATATPADSFDLNPDPTGDNRPFDVEFS AD GQY

WDTATGKQRAVLTGH GDQVQAVAFSADG
SGSDDKT\RDWDAVTG
HSLGDPFQ PSTDSVIRDADPATPQRHDLLGGAETGLSSEGIAITSE Y TMLIGVVDTAQEGDTFTPSLSNQDQVTGGGPSGLALDQPR $V N K \bigsqcup T M D D V A S N R L G L L \quad D S T G L A P Q G L V I N A D$
GNKVVIFERMNNAWMK MGEVITGLDAHATAFT KD GTIILNFKPGTNGKVAYYVDMGGNTVTGADAHA】AF N
 WDFNAGQSV MDPLKGHGDVVDSVAFSP D
$T D T \square S V V R \square A D A S A D A A R H D V V A G A E T G L S A E G \square A V S P D$ $I Y R M P S N G G A A S R V T F G$ SSYNVSPR ISPDG
$D G T D R L W K V T D \quad P A R P T L L G K P L T G H T G P V N V L V F S P D$ $D G S U T V D L A K G E A \square A Q \quad \square I D T L K N Q G F N P N C I V L L P E$ RVWDAV TGRARS LTKHV GWLSALDFSP D LWNMA
QDPLAVLRFNRDGSVDEDNARALTWTTGRNPYGLAFAPDG DGT $\square$ R $\square$ WD $\quad$ T $\square$ TGHT $\square$ AGPFEGHSDH $\square$ TSVAFSPDG $T G Q V A A V D \quad L L T Q K \square L A V I P V G R G H A G \square D A V T A S$ GFVKVWDVETGAEV FSFHGPTAYHVVRFARD

 GSALSVLAF DGSTITQVHRFESPSALSGAFDAEVDALG
 ASDMAVLAFDPDGKNGRTVATGLRNCSG MTVQPAT
 $L V D V S V T T V A G S G E K G S A D G V G G C A Q L E A P R A L A L S P Q G$ VIT
KNIVWQYDLNGDKLSNPRTLIDMTLDGSGFPDGMRVDDDG $R V E V A V T T V A G S G A E G S A D G V G G A A A Q F N N P Y D D A \square S T D G$




UniRef90 W4E8X3 UniRef90_Q4WH28 UniRef90-B5JGK3 UniRef90_UPI00037B69E2 UniRef90 W0EV19 UniRef90_UPIO0026CC9F9 UniRef90-B4VLP3 UniRef90-B7K903 UniRef90 V6HT26 UniRef90-H1 XNY7 UniRef90_S6AJ24 UniRef90 G2LLH0 UniRef90-KOTN14 UniRef90_A0RVT2 UniRef90 UPI000376FF61 UniRef90- Q7NJ67 UniRef90_UPI00039AE46C UniRef90_R1B7A1 UniRef90 UPI00035D0DF8 UniRef90-L8M7S2 UniRef90-B5HKT5 UniRef90- G8PQK0
UniRef90 I1X4T0
UniRef90-UPI0003116C84 UniRef90_A0Z7U8 UniRef90 UPIO00289F32D UniRef90 UPI000365A010 UniRef90-UPI0003783A24 UniRef90 X6CK10 UniRef90 Q2GT52 UniRef90-A5F753 UniRef90_UPIO00455FCC7 UniRef90 K9QTC6 UniRef90-K9WCR7 UniRef90-UPI0004695AE1 UniRef90 UPI00029AD5CL UniRef90 UPI00034A6E6A UniRef90-UPI000359789F UniRef90-UPI000305949D UniRef90 K9VR67 UniRef90-A0RYY7 UniRef90_UPIO00475C686 UniRef90-W5X679 UniRef90 B0DYW7 UniRef90-W0IPM8 UniRef90-S4YGL4 UniRef90_G0UWJ3 UniRef90- Q11W87 UniRef90-IOIOG7 UniRef90_I2GU71 UniRef90 UPI00047B9C3A UniRef90- G8NS55 UniRef90-E2B110 UniRef90_B0DYX6 UniRef90 D3CRG6 UniRef90_UPIO0037265CC UniRef90_M5FFU1 UniRef90 E7RUG5 UniRef90 U2ZAL7 UniRef90_UPI00037BCD49 UniRef90_D8K618 UniRef90 L7FBU3 UniRef90-S4NDD8 UniRef90_UPI0003A68D40 UniRef90 R5BKC3 UniRef90-UPIO00440996A UniRef90_S4YJ03 UniRef90-Q0AFC9
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GQTVASA SDDKTIRLWDAASGAEKQVLK
DK LYVANYFTNDVSVMD

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GTYMYVT
QT IIAGSDDGTLTFWSKEGKLLRTVK
HTLASGSDDGTVKL WDVQTGRLADSLS GHGSGVWS
GESVWISCRDDNRVQVY DTHTLQAQASLPVDAPSG

GKYLASGSSD
GTEVWVSNWNNGE पVVF DAETLEEKTR】K
$G R T D A S A G L D D T V R M \quad W D A K T T R E D V Q V$ $G \quad V V Y V S A L D A L N H V R F E G P G E T T T T V S S I S V L D G G G A A$
$G A L V L V A G G P R G S S V L W L L D A M T L A M M A R V R$ E $\square L I$ SGSDDQT ITVWQLLGAG GALWCVVNESDG
RTVVATGSYDDT $\square R$ W WDAATGAHQQTLK
GKFLVMDNRSDSGFNLAKQDLETGAMLTKTLLDEPNGGM
$K R F I S A T G A D R H T V Q V$ RDASTGKPVLHL
K VLASGSSDQTI KI WQIDK
KMLASGSGSQDNTIKLWNLRSGKL
NVFVSDKNGEKD
 SHHLVLTSADDDDIIIMNLVTGKVEKMPGSQYTDPSG
GNFAFVANWGAQEVVVLDTSPDYFGETSRVGL
KT IASGSKDNTI KLWLR
GLLMFITGRNPDELYSYTLD
RTVVASGSDDGTVRLWDAATGRLRATL
GHYAAVLS VVFSPDDKT $\square$ RL
GRLIATVNDRNASVTLLSFDPATGAGSRLADYP
GR LYVLTRFDNSISS VDTATRAELAHLP LIHNP
GRYLVVCDVALNKVLVF DADTGAFVFALSVPSPV
GSRLGVHNFLTRTVKVF
GATAFVTNQGAATVSVVDVVKRTLKDDAVGKKPNG
GAYGYVTNQGANTVSV I NVSTHAKVKDIPVGK
GKWLLVADPAAGKVAV VDLATMTVKNTVEVP
GE WLAVVGENSN
GRY IVSGSDDKT $\square R \square \quad$ WDAETG
GRLVATVNQRDASVTLLSFDPVTGDLARDADYP
QQMAYVT QRNGRFLI ALLKDLQSGDETLLTDTGEPSFAPN
GHTLASGG DDDTVRपWDVAD
GRT $\square$ ATAGGYDGTVR $\square \quad$ WDADTGSA $V$
k LWL
RR VTSGSYDNT $\square R \square \quad$ WDVESGNVVS
$Q Y$ VFTGATADPMVDV, DDA $\square$ TFKVVKR $\square D V G Q G S$ GTTLAAGG RDGTVKVWEI

$N G Y / V Y / V N$
DRLVLVAAQNSGQVHLFEDDTG
QQ $\square$ AS S S F DRTVK $\square W D V S$ GNCLK
GALWCVVNERD
$N$ NWSSVGGEGKDGVSVF TPGGERLARILLPE VCAN
GTVLYVADKENNRIV
STLAVCC

N $\square \mathrm{WVGAGGPGYDGVQVFAPDGQR} \mathrm{\square GQ} \mathrm{\square}$
STLLV

QT IASASTDGTVKLWRGDGET
GA LFVTD
AHRDYVAAESGTVSVFDQEGGHDTEVGSGHLAD GAH
G VVYASNSEANNLTRFEGAGEYGG

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UniRef90-H1XNY7
UniRef90 S6AJ24
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UniRef90 Q2GT52
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UniRef90-W5X679
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UniRef90-WOIPM8
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UniRef90-V4NES
UniRef90 D6TCT3
$\mathrm{G} \| \mathrm{W}$
UniRef90 B4VH43
UniRef90-R1CDN3
UniRef90_S4XSK6
UniRef90 Q0SC61
 S $V G K D R N D R T W D T D S G R E S G A P L K P A E \square R E D Q$

TKGGGRYTLRVADADGEGGQVALVSPEP】

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## WVSRVALNPDGRMVVTVEEGNASFWDLERRTRTGPSLSHP WRVDAPAGQFDDAVEQGTWMNVDDSPDGETDVFDTMP <br> 

UniRef90 N1MAF2 UniRef90-E7C5X4 UniRef90_LOD9C9 UniRef90-B6BUS4 UniRef90_Z5XST6 UniRef90_UPI000477361B SEHVIWGLAFSPDGRKLVTCCDDGAARWWDVTTGNRDGGG

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UniRef90 N1MAF2 UniRef90-E7C5X4 UniRef90 LOD9C9 UniRef90-B6BUS4 UniRef90-Z5XST6 UniRef90_UPIO00477361B

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UniRef90_N1MAF2

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