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TLACKDI IYAFSKDHKPVKQVKPGTTI SI DTYDCFQN MKNLNRDQVIYTMSREHRPVLTVKSGETVTVHTYDCFKD MLTI NKDRIFYSFTKENS SHRVASGTTLALETCDCFQD HTI HSRHVHYGWDNGLEPVLEVEPGEAVEFEVVDASGG HVHRGHSHLKWSKEIAPVLTVDSGDVVTFDTIDGSNG | YFV S K K K V F |
| :--- | :--- | :--- | MYTIHSSKIHNKWDNSLSPVLTIKSGDVI TVVESREASDG MKI EAKDSVYEMSAENEAVASCKPGDSVVFETKDCFSN VHVGRHQKHLKWSKDEPPVLT TS S GDTVTFDT DDGSNG YEIT DKNVHARWSSTDEPVLKVPSGSVIKVATQEASAS LTAAEENI HNKWDNRLEPLVTVDPGSVVRFECRDADDR HITQSSI HFKWSRNLAPALTVSSGDEVTFDLRDGGNN MTTLHTDTVIFAMSKENKPVARAKSGDRVTFETLDCFSN MMVIPRDKHVYSFGPNMKEVARAKPGEDVIFQTLDALGG MKI EKENSIFSFSKANTPVAKVKPKEKICIETKDALSD GYRTIHREHHHFGWDNGLPPVARVFPGEVVEFEVVDASGG DENDHSAWDNSLDPALTVEPGDVVRFECRDAVDG


 $\square R L N K Q Q V I Y N F S K E H P P A L I V E N G A T I Q V E T A D C F T D$ HTIHQHCHHTVWNHAIIEPVLSVAPGESVSFEVMDASGG M IELDDKKVLYAFSSELAPALTVESGETVRDRTKDCFGN MLLIPKEKHVYSFGPNMKPVARAKPGD VVVFETDDALGG MEV PKEKMLLAMSKSNNPVKKVDSGSTVVFDTFDCFSN
 $\| L K A T K E T V H G G F S H L L P P A L Q V D S G D V V E V E T Y S G F Y D$ MKT\SGDKVIYKFTPNMEHIESILPNEVI KVETNDCFFQ ASDETVHSAWDNSLEPVQTVESGDVVRITCRDSTGG
 HKFTTDRVHYTWHKEHEPILTIDSGDTVVFEIREVSDN HDHHFGWDNILPPKLEVEPGETIEFEVLDSSGG $\square H A V K Q N Q C H L V W D N N I Q P V L R I K S G E D V T D D C L D A S N G$ HT IHS $\square$ NHHFGWDNSNEP LYI K S GETIEI ETIDSSGE HTDHSHQNHVTWDNADPPVHEVDPGEKLRFEVQDASNG MKI RADKVIYGFNPDLEAVAVARSGDVIVFETLDCFAN MKVI TKDFITNVLSKDNAACASIRSGETVVFETYDCFTN LLTIPASQTVFAMSPDNAPVLRAASGSRVRFETCDCFTD MKFFSKEKTI NYFSPYDEPNFTVNDEETI MVETHDCYGG METLSRESIIYAFDKNHEPDKMI SSGTTI RIETFDCFQN
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 A I Q L A E Q GV MVT SP G L G V L G E KI T E A H TKI DPI K N G FAE F



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 GEEVVVN L S V MDVA $L$ KVDLI KGENLPFPRFETNGYKAT TGDGEDLMQAAR SLVVT EVVI LK N STLPTP LLVNSEKDMTLSSFPTLDEASV MHI KLSFKLHKGKMI QEPRFETPGYYVT TGHASDLMDASK GFATVThTALPELSLKNPVIENATHFGTDASAATMDEAAE GRVKVKVDVL DGVLEWPLLETADAYYLLVSMEKDDDADR GEVTVKVTVLKNPHNLLPILVEGNHVMTIASAKTLDEAAK LTASLRLTVVKNQPWTSPQFQTPGEYATMGDDCDLLEATR

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| QUERY |  |  |
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 MLYY SKEYVQDSGDKSVAPAAVCD
VKTTHSVNSHFGWDNSTEPTARVAP IHFVKRSQCHILAWDNSISPVIHIS MFVSKDMHLYQFSQQAAATVKKVE HTI HARHHTGWDRSDPVLVRPGRVKVETLDAFSN
 MKISSEDFVYSMSAHNQAAASCQPGETVIFETQDCFSN HHI HRGQSHLTWNKDEPPKLSVCSGDVVTFDCVDGGNG MQTLTKEKIVFEFNKNNKFNYSVQNNEIFYVETEDCYNG DHVNRCQNHLK WSKSDAPVLKVDSGAVVTFDTGDASNG DDAVHSVWDNGLEPVSTVEPGDVVQFECRDSTNG LLKATKNTVHGGFSNLLEPVLIVD 1 IKATANTVHGGFSHELEPVLMIE HSIHQSQKHLLKWSKKOPPVLKVDP HT IHAHQHHFGWDNSFTPAVTAAPGETILFQCLDSSGG VLRSTPGNVQWGWDGRLKPVLRTASGDRVTIETLSGEPD MFHDGRDSGHARWSRKIPPALVISSGEVVTFDTIDSSNG पLKATKETVHGGFSHLLPPAITIDSGDTVEVETYTGYYV HQFPEDHVHYTWDKDPQPVLTIDSGDQVDFSTREVADD YT THGAHHHFGWDRSTPPVEKVAPGSTI RFECMDSGSG LLKATKETVHGGFSHLLKPALIVNSNDTIDVETYTGYYD VFVQKTDSVYAMSRENPAVVTVKSGTVVQLETCDCFGD KTLHQRQCHLKWDNSTPPVATVASGSVVNFDCLDASNG HELSKDNYFYAMSKDNEPKLKVDIGDTVKISSHDCFTG MHTIERDQFVFSFSGHHAPVLTVQSGDRVVLRTNDCFSG $\square K T L H S Q H C H C G W D H S L A P A L E V A P G E T V S F A C B D A A D G$ IEKKHVIHTFSPDHVPAASAGPGETL
$\square T A S P E T C A W Y F D A A D P P V L E V E S G A V V T I E T V S G G P A$ AVYTLDPRHZVYSLSPSHPPALSVPDGALVHDETCDCFEN HTTHGANHHFGWDNSLSPAVMVAPGDRLHLNCLDSSAG ILNATDSTVIWYWS ENEPVLKIKSGDYVKVHTLTSNPE VKTHHHAQHHFGWDNSLSPVLHVASGSQLEFHCLDAANG MQEURQPGAHYVFSRYLEPI AKVKPGEAVVIHTKDAFEN位 LLKANCKTVHGGFSCELEPALTDES
MQRLQKEKFDTRFSAEHNPAYSVGLDEPFRVETYDCYGG HTTHIHMKWDKSLTPALTINSGTEDSFDLLDGGSN HKLSKDNLFYAMSKGNEAKLKVNLGDTVDDETYDCFTG LKKTPETVHWYFHPNIKPALHVKSGDLI QAEATTHHAG HTNHSNIHFKWSKNIPPVLAVKSGAELDFDLKDGFNN

HRID AEDVHSDWDNGREPALTVQPGNVVRVSCRDATNG HVHSHHKHLKWSNKQPPVLTVSSGDVVTFDLIDSSNG MQQLKKEHFTTHFSAENKPAYKVRDNETFAVETFDCYGG KKITRNQVIYAMSKSNKPDMNVNPGETLLIETEDCFSH $\square M K I D E N N R V F A F D S K N E C V A E V M D$ HTHHRAQHHFGWDKDFEPALVAKPGETVEFCMDASGG HTLRPDQUHHKWDNSLPPAIEVEPGDVVHCETAEVTNN LLRATPETI HWYFHPEVKPALTVKSGDMVMAEAVTHHAG MQVLGKDKVDFSFNQDNKVAYFVDDGEVFTVETDDCYSG ITEATQGTYHYVYGPFAKPVLTVEPGAVVSAETHDAFEG UHSVRREQCHLUWDNS AAPVVRVQSGQTVDFDCLDASNG MY IISKEAHTYSFRSDLMPVESVDSGSEVIFETYDCYRE AGPDTVHWGWDAELKPALTVDSGDRITVETVSGGPA

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## UniRef90 F8Q2X9

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UniRef90-H2C4K8 UniRet90-S6C649 UniRef90_L9WAE3 UniRef90_MOMJ51
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 K ELDDTQGVVELFPGWGPLGDKVTESHTEVVSUQKGKGHF EFQPSGTGWTANIPGFGLLSDKFPAPALELWSYDAGPABY DFRNKGWGWTGVLPGFGFLADEQYTPALKIWKADDKYAYA
促 DVSPRPVGFNALLPGWGALPQQFTEPRLRFIPMLDLDKGVA NI ELGGSGDMMTAKGLGVLGDTDQNESTKLLSVEDGFVKF

 SIDLDNYGIAMTGPGVGVLGEKLDKMTHNILNIKENSALF DFTTKGWGWTGVGPGFGFLPVDDTGPALKI WKV KEETAEA A EIDHEGQGYTLVLPGLGLLADEFLEPALHVWNLEDGIAHF DVEHRGWGYTLVLPGFGLLPEEFPEPSLHVWDLEDGMARF DLETTDWGWTGIVPGFGLLSDEFPDGALKUWQLDPDKALF GFKPSGFGWTANDPGFGLLADQFEDPALHDWKYDPDTSLF K K A EQGVLTTGANLGVIGDELNENTVKIVPDNEHVLF SiELKGNALAMTGPGVGVLGNKLDTMTHNILKIENEKALF EFAPSGVGWTANTPGFGLLADEFHDPYLKVWSYSGDFAEF SFKPSGFGWTANIPGFGLLADQFTDPALVLWHYDKSPAAF K ELDEEEGVMAVAPGLGVLGQQVETFSYKRMKVDEHGVHF AFHPSGWGWTANDPGFGLLADEFPEAADNTWTYDGAPAAF KIELNNQGVMVTTSEESYLEEFDTESKTK LIPIKNNKVIF
 EFEHEGWGQTLVLPGLGGLLAAEFPEPASHVWELEDGVGRF SFKPSGWGWTANLPGFGLLADQFKDPALHIWKYDPGTALY
 DLQTEDWGWTAVMPNFGLLADDFPEASLKIWCLDDDRAYF
 AL ETADWGWTATIPGFGLLADEFPDPSHEDWQUNKERGYF SLKPGSWGWMA RPGWGALPKEFTQPALRFDDLDNQVAEF EFEPSGFGWTGUIPGFGLLADQFTSPALTVWKYDMEPAMF K KLNGNQGVMVTGPELGVMGHRLTHRESKIIPI ENGVAKF
 RISLDNQGVITTLPGIGTLDHRSEVRSKLVQ\|REGRRVQF SFTPSGFGWTANVPGFGLLADQFPDPVLQLWQYDRTPAAF
N DVETRGEQTTCMPEFGGLVGTASTARVKKLHVDRSGVRW
 HYAPSGFGWTANDPGFGLLADQFKDPALHLWRYEPDTALF GFDPSGFGWTANIPGFGLLADQFKDPFLKVWKYDTKKMVY
 DI EPARDWAVSVHPGFGRGLTATAVTRMLHUYKLENGRLTF D| RVASWGTMAAIPDNGVLGDCVSRGTVKRIPVRDGVAWF
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 STLAKVPLKPFAGTVGVALAEPGRHSVPPRRVGGNLDDRD SEGUEVPGYPFFGSMGVAPPKEAWNSAPPWVHGGNMDNKE KGKRFPLNKMWGVIGTAPAEEEVNTGTPGTHGGNMDCDQ
 FNGLSIPVNKMAGVIGVAPPDEPVNNGTPDTHGGNMDSLK LTGVRVPARPHLGTAGVAPVDERVSTMPPGGHGGNDDNWR PWGTELPDDPFFGI MGTAPPWGRVGTPVPRAFGGNMDNKE V K SkKLPAWRMDGVIGVAPSDEKPSTGIPGRHGGNDDTKY KPGVRVSLRPFDGMGUAPADGEFSTDPPTVVGGNDDCRD NSQLQFPAAPMIGVDGVAPEKGAVLCETPGDHGGNMDTRW
 $N D K L V F D V P M M I G V: G V A P E N T S V N C G T P G C H G G N M D N K R$
$G P G G K V P L K P A G T I G L A P A D P G P H S V P R R V G G N L D I D R D$


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UniRef90 K2J4M7 UniRef90-K9RDT2 UniRef90-TOECTO UniRef90- H 2 C 4 K 8
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 MNGRTKLTLRQDLQLTTPLAETPTHIITMGFAPTLDTALE AKVTVKIDVTAEK MNGTRELKLHKDLQISTPTAETPTDIITMGFAPTLDQALE AKVDLKVDLDSNFKINNPIVETYDAYYTDASAQTLDDAYK MDVT KVVLHKNVGLTQPVFVTREYDAFPGDDPNLWEAGK GWATVTLTAMPELKLVDPLIENATHFGVIASAETLDAAAD MSVTCRFEVRSDRSIGGPQFETTGPFTTTGMADDLMDASR LKATLRLSIHKNQPWIAPQFQTKGEYATMGIGDPDLLEAAK ANVTVEVELIN NEDEWPLDETESGFAVVVSMGTVEEAAKK MNATVTLDLVKNAQLETPHFTTPGYECTTGISNDLDTGAR GEVTVTVQUYKEKKWPGPMADQKEKMMTVASEKLLDDAT GEVTVRVSVLKDCRMPAPFLVTVDKVMTUQSADTTDEAGK MRVTLRFGVQKQANFQAPRFSTPGYDVTTGIGPDRFEASR
 ATVSVTLTVLK KKDTMPWLENEQEDEVISSADTVEEATE CEVE AVDLVKDANFAFPRFETKGYWVTTGDGTDLMQAAR GKVTLQIEVLSGAKDP LPMIDNNENLIVVHSEKTLDESVK GEVTVKVDLVKNKDLSDPLLETEAAFYTVASGTDVDAAVK VQATLRFTVKKKQPWQSPHFSCPPQYNTMGVDSSLLEATK GKVCLKVKIVKEFPDKNPVLETQDSDYTVASGKTFEETDK MTVTCRFDVRSEPTIEQPRFETTGPFTTTGVGEDLMEAAR MDVTLKFELVKGANLAFPRFRTEGYEVTTGVGPDLMEGAR
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 GSVVVTLDVIKDTPGNHPLLENEKGFTFLVSANTLDEAVK ADVTVKLEKAETLKTYHPVITDQDGDYMMVSDKDLNLAVD GEVEVRLTVLKGAELGAPVVETEDSWYAVSSDHDVLAAIR MAVTATFELIKGQPLKMPVLETEDTWYADASDEEFEKALK GRVTVQVDVVKNHPIPWPLVETGDRWIATASRENVDEACQ ATVTLQVDLIKDWSFAWPRLETKDFMMTGSARPLEDAAR GRVTVRLEVVEGGTCPAPMAETPTHLVTMGMHEDLDRCAE MKVTLRLDLVKGANLKMPRFTTPGYEVTTGVGPDLMEGAR MDVDIRVDLIKQTPLANPRFTTPGYEVTTGIGPDLMKSAG LKGKLQFIVHKDKKLDWPMAETDTHIDTMGFDRDLTEATH
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 SVVELSSLDVYKQYHWQDPVIETEEYFYFIGSASTLDEAVK MDVELTLDLVKGMALQSPRFTVAGYEVTTGDGPDLMTSAR
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GRVRVKVEVGKESGFNGPVVEDREMFYVISSALTLDEACQ GRVRVKVEVLKESGFNGPVVEDREHFYVISSALTLDEACQ LRGSFRFVLHKGRSLKAPRAETAETWI TMGFDPDLDDAAK
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UniRef90＿V4M6I9 UniRef90＿A8IKB3 UniRef90＿S7Q001
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UniRef90＿UPIO0039C522C
UniRef90＿UPI000315373D
I
 $\square A L D E A V T L I C E K R G M T$ WERAYMFASIACDLHDSQVVNPL


 N A I R Y M I

 A A V R H MV T F L G A E Y DLLT R E E A Y I L C S V A G D L K M H E V V D P N



 RAVHEMLDLI CDRTAEDPDKVVMLLSLVGDVQVCQMVDPE
 D A V R D M I D H L V T E R GL S R E Q A Y V L C S A A V D L K L N Q V V N P N
 D AVRRMVD WLCKTQGMSAVDAYMLCSVVCGDLIRISEVVDPN
 D AV R S M I D HL GREY QL D P Y D A Y L L C S V A A DLLRI S E I V D P N Q AVVSNTI D WL C R E H HMPAEQA Y ML C S V C G DL RI S E I V D P N A AVRNMIAFLKAEHGLSAVEAYMLCSVAGDLRMHEVVDPN RAVKEWANILTERTPLTGNEATMLLSASGDLSICQVVNPL

 $K A V R A M L E Y L Q A E K G M S R V D A Y M L C S V V A A D M K L A E V V D P N$
 A AVR QQI D HLVTERGLDRAEAYMLCSAAVDLKVSEAVNPN
 Q A L K AVVRAMLEYL QAEKGMSKIDAYMLCSVAVSLRFGEVVDPN



 L A L L K N M I Y
 K A Q S V H K M T DL L QP H T N L P L S E L T M L M S L A G Q T QL N QVV D P K


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

V

## 品

 NAVHKMAELLOPKTDL SMEETMML MSLTGOTOI NOL VOPK

 K A T R S M I E WL VA T K G L T R S E A Y I L A S VA G DL KI A E VV D P N $K G M R A A A N R F R A A F G L G F N D A Y R L L S A T C S L E I S Q U V N P L$
 HAVRIMNERVQENLGLSLNGAGMLLSAVGDLRFC

## マー

 SAMVR QMI D F L C C A E H K L L H R T E A Y M L C S V A G D L R L H E V V D P N $\square A$ Y R E L V Y WM A E D Y G F D A DE A Y MLL L T QVG K L $R$ R V G N MV D P K
 HALRQMLDWVTATSNLSRHQAFMLMSLAADVRVTQLVNEH


290
YVVGMMMPKSVL
$K \mathrm{~T} V \mathrm{~K} \mathrm{~V}$ R 1 P K


KTARARCPR

K GV H GMDPKSI LP K
YVI GMMIPKSIDFTK

$K G V H G M L P K S I L A E$


KTIR
WDVTAY LTPKD DFPE
KTI RFMVPBKYVLDS
WTVAA A YLPPERI FP E
WTV S A YLPESVFP

WVVSFYFPRIVFDGKG
$K T A R M E D G M D Y V E K G G$
KT 1 RFKFKKDIL SQLND
MTVRVEFPRQILEKYG

YVI GMMDPK SVETQ
$K \mathrm{~T} V \mathrm{R} \mathrm{LA} \mathrm{MSKALLKQTGL}$
WVV S FYFPK IVL
$M T V R M E D A H K Y L K Q \square G \square$
KTARMRVDKEALKEY
YAVVASLD LNVVF










$V T \vee R F F V P R Y V L E T Y G$
KTARFFVPRYILEHYNI

| $T$ | $V$ | $R$ | $V$ | $R$ | $P$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $A$ | $V$ | $V$ | $R$ | $F$ | $G$ |

WVVSFYFPRIVFE
$K T V R \square E M P K W P L E K L G$
Y TMGAS ILKKYLKA
K GVGMMMETALL $\qquad$
KTARME $\square D R D L L H Q L R V$

WVVSFYFPRVVFD
VGVVA M
WVVSFY FPNSVEF
HTMRME $T$ SKKVL
YS LVAKIEKTY
RTVRMEMKKTVLKK $\square$

Y A V A CSLP LD I F
KTARYFV PQY


K GVAMLMPK S AL



KTARVQIPK SLL
RTVMMCUPKKIMKS $\quad$
WVVSFYFPRIVF
K GVV H GLLP K Si F S H WCVSFYMALSVFR
QGIHVK IDRNLEPAKGV
HTFRVRAPKALLKLGGI
F VVTLAMPKALLE
Y TMGAS 1 RKT F L
YVVGMMMPQSIF
YTLGASDAK SLL
KTAKYRIPKTLEP
K G 1 HVML PK S V
K GV H CVVI A K K NL P A R

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UniRef90 $14 B W H 1$ UniRef90-H1PY08 UniRef90-B8IKM2 UniRef90-U4KHNO UniRef90-F819A6 UniRef90-B6HBX1 UniRef90-UPIO003643971 UniRef90-B9K713 UniRef90-K8GHZO UniRef90-A1 U7F9 UniRef90 ${ }^{-}$W3AG42 UniRet90_W3RJ21 UniRef90-A5V6R9
UniRef90
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UniRef90 $\mathrm{N} 1 \mathrm{JWU5}$ UniRef90-N1JWU5
UniRef90-Q16A66 UniRef90-UPIO00464A105 UniRef90-Q0FP12 UniRef90-G7VE40 UniRef90-UP10003B2ECBA UniRef90-F6IKQ6 UniRef90-M9RCM9 UniRef90_UPIO002F726EE UniRef90_B3T564 UniRef90-UPIO0036EE730 UniRef90-UPIO0036B8BA8 UniRef90-UPIO0036FBE2D UniRef90-FoQYD2 UniRef90_UPIO004729080 UniRef90-W7D076 UniRef90-C7N1R6 UniRef90 -V6M9F5
UniRef90 W6WHH9 UniRef90-JON4J7 UniRef90-A4YZ41 UniRef90-Q9YEQ1 UniRef90-UPI0002E4B157 UniRef90_E6QK03 UniRef90-UP100037C8DOC UniRef90-A9DW17 UniRef90-K9VF93 UniRef90-B0T410 UniRef90-TOJUGO UniRef90-R5GXAO UniRef90 B9Y820 UniRef90_UPIO003764668 UniRef90-S3D1Y1 UniRef90-UPI00036F490A UniRef90-UPIO0037B74E8 UniRef90-K2G332 UniRef90_UPIOOO2558816 UniRef90_D5VGF6 UniRef90-A9W7J2 UniRef90_WOJ1R9 UniRef90_19WL17 UniRef90-B9NVT4 UniRef90-M8B366 UniRef90-UP10003B47DBB UniRef90-UP100036ABAFF UniRef90-B8HOF1 Uniinefoc-SOARO1 UniRef90_Q31MZ1 UniRef90_UP1000441272C UniRef90-Q01Z67 UniRef90-E6PK54 UniRef90-U5DNC1
UniRef90-E7QZ344 HTIHRTRNHYGWDRSIIEPVVAR\|APGETVIAFECDDASDG DKT1HGHHSHLGWDNAI APAAHVAPGTRLTFACNDSSGG YTVHGAQHHFGWDNSLPPAERVEPGSTVGFHCQDSSAG HHTSPETSRLKWSNATPPVLTVLPGETVTFDLLDSSGA MDYIEKNHADHTFSPEHPPVSRARSGESVTFETYDCYKG $\square 1$ PVPAERLDYAM WDRSNAPLVTVPDGSVLTFETRDCFED WDNSFAPVARVAPGSMVEDECKDSGNG
 LLPANSETVQWGWNNAEPPRARIKSGDTVVMETMMASLN MKRASSKHVYSFSEHMTPAEEVQPGEQVVFETDDALGG ILRATCDTVHGGFSSALPPALEVESGDRIQVETFSGFNV MKRFSTEHRDTAFSKNHEPAYFAELGEAVAVETMDCYDG LHASPETCHWGFDAADKPALVIASGDQVTI DT円SGTPE ATPETVIGMFDASFPPVLSDDPGDTVVIDTVSGWRQ \PARPETVHWYFDAAKAPALTVKSGDLIRAEAVTHHAG LLRATPETCHWYFDPSLAPVLTVNSGDLVQVEAVTHHAG PYTNDKVHNRWHPDIPMVAKVKPGDDFKVECYDWTGG MTEAAQGKFHYTDGPYSEPVLSIAPGDRVRVETRDAFEG LKAGPETCHWGFDATLPPVLTIKSGEEVVINTVDAGDG M IK DSADNYDYNMSAENKAAAEVSSGAKVLFETSDCFKN ATPNTVAWYYSGMAKPALTVKSGDTVMMQTDSTCGE ILKANHHTVHGGFSPQLKPVLTIHSGDSIDVETYTGFYV MHПTKDHYVFSMDKNHEPI AKVASGQRLQVDVWDCFKG I HSGQVHHAWDRTVEPVATLAPGDEAVLEFQDASGG VISSAPENMVWGYDSALKPVVKIASGDTVTLTSFPAGGK HT IHDHQGHLGGWDRI DPVLVARSGETVAFSCRDAGNG LHESPETCHWGFEAALKPALTVKSGDEVTVDTMSGGPD LHVNRKQYHLKWDNQQPPQLTVKSGDVVTFDCVDGSNY

VkAGPTTCHWG

YTDHGAQHHFGWDNSIVPALTVAPGSTVLFNCMDSSAG LKKPTPTVAWHYDAANKPVLTIRSGDTVVMHThGVAPH LKATPETVHWYFSPETKPALTVRSGDLI SAQAVTHHAG HQDDSSHTYYEMSATIAPALKIDAGDTVHIGTVDCFED LKASPQTVHWYYDWRLKPVLRVQSGDTIEVESVSGHGL
 LPARPDTVAWYYSGQSRPVLTVHSGDTVRMQTLSTCGT MIT DDEENLHYRWSPNDRPIVSVRDGDEVTVIPDDSTM $V K A S P E N L Y W Y F D A E T K P V L T V P S G A E V M L H T D P C F E E$ MHPVTEQHVDYAMDKNTNPSMRVDNGAVITINTPDCFNN MLELNDDAVFYAFSADLEPVMTIKSGDTVRIRTQDCFAN MHTIAKANHIIFSFAPDLKPVMTVESGAEIVFETYDCYRE ASSKTCAWYFDAALEPVLTVDSGDTVVGDSVSGPAE DPATHESMVWGYDSTTPPVLEVASGDTVTLHSFPAGGK MTHTSNEHYVYAMSKDNTPVAHI EPNQRFTVDTFDCFRN HRLSALPTHSLWDRNLEPRLEI NSGDEVEIACLDASGG MQFFSKKNTDTHFSADMKSVYT EPGETVVVETHDCYGG LNAAPETCHWYFEAKRPAALTIKSGQEVIINTVSGAPN LLKANCKTVHGGFSPNDEPALRVDSGDRIDIETYSGYYV LKATPATVHWYFDPSUKPSLR KSGDLVSAEADTHHAG YAFSRYLEPDARVKQGETVVIHTLDDAFD
MNKIAKDHVIYAMSSENKPVLNVHSGDRITFETMDCYSD PTPQTVAWHYDASSKPVLTVRSGDTVVVHTLTNSPA HHTTHSHTHLTRWDKTAPVLTVSSGDEITLDLPDGGGN ПKTIHADTHNKWDKSLKPILKIKSGD\|IEVETKEASDE NEKLHNRWHPDIPMAEMVKPGDDFIIECDDWTGG PYDNDGVHNRWHPD|PMAVKVKPGDDFILECHDWTGG ■KATPQTVHWYFDPSTPPSLRVKSGDDVQAEAGDHGG DNDMVHNRWHPDTPMVATVKPGDDFIVETYDWTGG HT DAPEPFVHRWNNALPPRLTVAPGDTVTFQCADSSGW LKATPETIHWYFSPDIKPALTIKSGDLVHAEAVTHHAG TLNAGPDTCHWYFDATLSPVAAI ASGAEIT円NTVSGGPQ VLNAGPETCHWGFDASYEPKLRAADGDSVTVKTISGAPD LKATPTTVHGFFDASLPPVLSDDGDIVRLETASGNPR MRTDDESVFYSFHSGLTPVATVESGAEI RMVTQDCFSN MKVIDNENLHFRWSPANTPVEHVSPGETLTIKIPDSSTK MIQIDDSNVHFKWSNKLKPIAYVNSGDELLIKVPDSSTK LLPATDETVQWGWNNAEPPRARIKSGDTILEEMMASQN IHSVARAQAHLSWDPRTPPVLTISSGDTVSFDCQDASNG LK KTPATVAWYWSAA KPVLRMKSGDTVEDQTRLDATAG



UniRef90 UPI0003826B5F UniRef90-Q1R131 UniRef90-A3PRU9 UniRef90 ${ }^{-}$N4VLA4 UniRef90-CODAC8 UniRef90-TT2L9B5 UniRef90_C1D2F8 UniRef90 M1FG77 UniRef90-K5VVZ6 UniRef90-B5WML3 UniRe90-H1PY08 UniRef90-в8اКММ2 UniRef90-U4KHNO UniRef90-F819A6 UniRef90-B6HBX1 UniRef90-UPI0003643971 UniRef90_B9K713 UniRef90-K8GHZO UniRef90-A1U7F9 UniRef90 W3RJ21 UniRef90-A5V6R9 UniRef90_OOK401 UniRef90-A7HRS2 UniRet90-Q1YUC1 UniRef90-F7SAG6 UniRef90-UPIO0046AF315 UniRef90_E3DP37 UniRef90-I3ZE16 UniRef90-K9XHN4 UniRef90-F217U9 UniRef90-UPIO004639771 UniRef90-UPIOOO3730F62 UniRef90-UPIO00466050E UniRet90_G7D7Q6 UniRef90-M2YJF9
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STDRRQNWGWNTLPLLGTLPEDFPEARRIHVPLDAARGVM SLETAGWGFTAIVFPNGLLAAEFPDTHLLKHYTWSASTEF DISLDPVGILDMGPASGALKHKDSTVVIRRVPVQDNRIHY DMKPRGPQGLVATGDTALLNTPLPERVKKVDVDAETGVKW HUEUGSQAVMVTGPGLGGVEGDVLEHPTVRVYPDNDGHITM SFRPSGFGWTANIPGFGLLTDQFQNPALMLWHYDRNNMTF EVSTAEWGWTGNLPGFGLLADEFPTPSLKI WDLPQDFAWF R $\mathrm{D}^{2}$ LKEQGAIVTIPKEGILGDKVRQAKTVICNVDQDKVKF DIKLRPWGVMRSSNRGGVFHEKYDKREAIVYSIRNNKILF
 D REPRDWAVSC|LVPYFGGLTDPLPELVWIYRRQPDGTWAY RIVPRSYGANWNLPGDGQFPDKFTQAQVKHFYLDDGRGMF
 Di GWGFNGFFSKKNGGGFLTEHFPEAQKS WDFNGTKSRH S ETGEFGGMMAAPGLGPLGEHVTDSTTKILPDRNGQIDEF DVSLRDWGYNLIKPLMGTLPEDFPEPRLINIPLDKTRATL
 DGGWGFNGFFSKQNGGGFLTEHFPEAQKSTWDFNGTKSRH TMKPRPRGTCCMDPHFGALTGTADTATTRKVHVDEKEVRW DVTLADWGYNMIIRPVGTLPLDFPEQNLTIIPLDGSRATM KI NFNDYGVMLAEPEMVFVDDVVKEAKAKIIKIKENKADF
 A| SPRLPVGFNADPNKGALPKYFSEQKDQFIPLDLERQIA

 DLKHADWGWTALVPGFGLLSDEFPNAHLK WQLPDTSASF SLELDSQGVVETCPFWGPVSNVSRECVTEVVKIDGNFMSF
 D TPDEFGFTVNVPGFGFLRDVFRDPYKIRWROSGFYAES
 STMPRGPQTTCLDPEFGGLVGTRPEKVKKIRVDTDGVYW
 HMTPRCRYGSNLLAANWGYLYKEMGEERVTIYELDEDRQPA KVDLANFACNGFSLGKGFLPMEYPYSRSKIIPLDRQKMDF DIEVGDWGWSAILGFIGGLKGRFRDYLLIHWRISNGYAEF EATPRQDWGFCAIPLLGTLIEEFTNYERMHVS:IDRRAKL AI DVDSKACMCTGEAEGTCGDLFADGLVNVVPVVDGKLIW SIDLEETGIMYIRRGAGALHKYVQEPEVKTFRVVDGLIVQ DVELRDWGYNVIRPLAGTLPYDFET SCKVSQDWGFSILPLLGTLPDEFTDYETPHPKVDHERQVM D KAEPFGFTVALPGFGFLRDLFDKPYKIRWRIEGGYAFS EIELLADKGSMVSSELFGSLSHKLSGSVVHPDTINGNSAED ATQHHGWGWTSLIPGLGFLKERFQTPGLFHWTLDGDRTTS RMVPSNVGFNALARGWGALPEYFPE N ETAGWGFTGIMPNFGLLAADFPDTKHYHWSNSDSFDTF KI SARDYAVSCNQPNFGGLVSTPTTPKVWIYKKEGNMFRC KI DLAPYAYNAFRYGAGFLTDDFPYARMKIIPLDRQMARF SLQPAAYGWTA LPGFGLLSDEFHEQRLK WDLEDGYAVF D TGWGFNGFFSKQNGGGFLTEHFPEAQKSI WDFKGTSSRH D GWGFNGFFSKQNGGGFLTDHFPEAQKSII WDFNGTRSRH DGWGFNGFFSKKNGGGFLTDEFPNAQKSIWDFNGTKSRH RMVPRNNYGSNLAANWGYLYKEFGEPGTITHCPECDRQPA D IGWGFNGFFSKNNGGGFLDEHFPQAQKSIWDFEGTKSRH DYRHHGWAWTSLIPGLGLLADDFPDPHLIIWKLDGNRTRS QMTPRCNYGSNLAANWGHLYEEFGKPGTITNCPECDRHPA DVQLQDWGYNVIRPLAGTLPLDFEATRLTHIPLDAGEATM SVMPRTNWGMTLRPLMGTLVDDFHTTREETI AT DMKRATM SVEVRPDAGQGFRPKRGVLPDEFDYQKDRVLWI DMKRVEY E:DIANSGVVCVVPGAGVLGDRDEAAHVKVLPLDDRVHF
 Di KVDKWGWSALLSDFGILKKRFNERRLIIWDIKENYATF RIVPRTYGCNWNLPGLLGQFPKLIFPKPQAKYFYLDMARGEF QLKTADWGWTAVIPGFGLLANEFDEATDR WWRIDHEEGVA GI KYSPYAYNSFSPRSGVLPEDFAKGSMKIDPLDTKRAKF SIRPRPRGTCCLDPRFGALTGTEYTATTRKIDLDEEGVYW A 1 WPRSMGFNVIRPGWGALPDRFSAPARRFIVLDANVAEF

UniRef90 UPI0003826B5F UniRef90－Q1R131 | UniRef90－A3PRU9 |
| :--- |
| UniRef90 W9GRN | UniRef90－N4VLA4 UniRef90－CODAC8 UniRef90－T2L9B5 UniRef90＿C1D2F8 UniRef90 M1FG77 UniRef90－K5VVZ6 UniRef90＿B5WML3 UniRef90 14BWH1 UniRef90－H1PY08 UniRef90－B81KM2 UniRef90－F819A6 UniRef90－B6HBX1 UniRef90＿UPIO003643971 UniRef90＿B9K713 UniRef90－K8GHZO UniRef90－A1U7F9 UniRef90－W3RJ21 UniRef90－A5V6R9 UniRef90－COKK401 UniRef90－A7HRS2 UniRef90＿O1YUC1 UniRef90－F7SAG6 UniRef90＿UPIOO046AF315 UniRef90＿E3DP37 UniRef90－I3ZE16 UniRef90－K9XHN4 UniRef90 F217U9 UniRef90＿UPIOOO4639771 UniRef90－UPIOOO3730F62

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UniRef90 ETQZ34
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150 GTHARVPLKPFAGTLGVAPAAPGTHSIPPRRVGGNLDVRD GKEGRVPLKPFAGTLGNALAEPGLHSVPPRRVGGNLDIRD PWGQELATSPFFGNFGVAPPWGRLSSKEPRAFGGNMDNKE KPGVNIPDRPF R NLE PARPMVGVIGVAPERGAVSTMTPMNHGGNMDCTR TDKITLPYQPFIGTIGVSPEDESISSLVPDYYGGNMDLPD GA VKIPVQPMIGVIGTAPAGDPVPNGTPGPHGGNMDTRL GKFAKVPLKPFAGTIGLADAEPGLHSVPPRRVGGNDDDRD DKG【KIPLRPFAGEMGVAAEKGPHSTIPPYSTGGNIDTKH L NLSLPVRKMUGVIGVATPENTPTGTPGRHGGNMDTTV PWGTELPLDPFFGIIATAPPWGRVGSPVPRAFGGNMDNKE STMAKVPLKPFAGTVGVAPAASGDHSVPPRRGGGNMDVRD FKNMRIPLRPFLGCMGLAPNDEELSTVPPTNAGGNMDCRE
 PPGUNPLQPFFGULGVATDETYRSSGPAGAYGGNDDNRQ DPNVEFAGMDHPGLIGCLPSKEMLRTVPPREHGGNCDDKD AESLKLPVSSMDGVAGVAPAEGEISTALPGEHGGNLDTKD PWGLKLPLAPFFGVMGTAPPWGRISSDVPRAMGGNLDNKE PWGLDLPTAPFFGVMGVAPPFGRISSKEPRVHGGNDDNE RAGVRVPVRPHGTAGVAPDRGRVTTVEPGLHGGN：DNWR NPGVEFAGCLHPGLAGCAPNRERLDTWNPGEHGGNCDNWR PWGLKLPLAPFFGVMAVAPPWGRISTIEPRAHGGNLDNKE
 APGGDPMPFFGSMGVAPAGGKDDSAPPFAHAGNMDNKE

 PWGLDLPLKPFFGVMGVSPPWGRDSSLVPRAMGGNLDNKE
 PWGLLKLPLSPFFGVMAVAPPWGR STIEPRAHGGNLDNKE GEOGRVPLKPFTGTIGVAQAEPGLHSIPPRRTGGNLDVRD
－ー
S QK G L S P SNGVTFPKRPMFGVIGVAPASGEDSTFAADRHGGNMDDNQ GDGVRDPARPHGGTAGVAPAVDGRMTDPPGRHGGNDDNWR
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 A P G ND H I A L P L N K M IGGVIGGVAPRDEAVPNGVPGDHGGNMDNRV





 UniRef90-A3PRU9
UniRef90 W9GRN9 UniRef90_N4VLA4 UniRef90-C0DAC8 UniRef90-T2L9B5 UniRef90_C1D2F8 UniRef90-M1FG77
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UniRef90 R5GXA0 UniRef90-B9Y820 UniRef90_UPI0003764668 UniRef90-S3D1Y1 UniRef90_UPIO0036F490A UniRef90-UPI00037B74E8 UniRef90-K2G332 UniRef90_UPIOOO2558816 UniRef90_D5VGF6 UniRef90_A9W7J2
UniRef90 W0J1R9 UniRef90_19WL17 UniRef90-B9NVT4 UniRef90-M8B366 UniRef90-UPI0003B47DBB UniRef90_UPI00036ABAFF UniRet90-B8HOF1 UniRef90_LOA9Z0 UniRef90_Q31MZ1 UniRef90_UPIOOO441272C UniRef90_-Q01Z67 UniRef90-E6PK54 UniRef90_U5DNC1
UniRef90_E7QZ34
 MDVSLRLDLIKQTPLAMPRFSTPGYEVFTGVGPDLMEGAR MDVVLTLLDLVKGANLKTPRFTTPGYEVTYGGGPDGMSGAR LT GTFEL VVVRKDMKLTDPRAESDTAWI TMGFDEDLDDAVK GRVTVRVHVLKGLALEYPMDRNSQKWDTVAYGETLDEAGR TVTTVVQVDLI KDWTFKWPRLENEQFYMTI GSARPMEDATR GRVTV RVRVVPQCRWPDPMLHTDTHVYTVASAVTLDEAAV MDVTVKKLDLIKDTPDAMPRFTTAGYEAFTGIGPDLMQAAR MKTTVRLTVLKDKSHKTPHFSTPGYYCTTGVRPDIREAAR VA LTAKFELVKKANDAFPRFTTPGYEVATGIGPDLMEGAR GSV V VFK SI SAMSPSWPCVETKDWLYIIVSDEDINKAFY
 MNVVVELDVVDNLKMQTPYFTTKGYQVTTGVEPDLMAGAR GKVTVRFGLI KNRPIMWPR VVSPEDIMT IGSARPLEDAAR
 AKVVVEVDITRE EI KWPMVETKDSYYIVVSLPDI EEALLK MNGTI QLIVVHKNQLPTPCAETPTDLITMGFGSTLDEAFE
 LQGSFVFRLRKDLRFTYPRAETPTHYMTMGMDPDLDQCVV LTGRFTLILHKGGRDRFPRAETPTHFDSMGMNEDLDQAMK LNVLFQVVLRKDFHFPSPLLETPDCWVVHGFHEDLDEAGK LDVLF QI VLRKDFEFPSPLLETPNYWIVHGFDEDLNVAMR
 LKGRFRLTVRRDLDITYPQAETPTHM MTMGMAADLEDAAR GEVELTVEVDKNKKI ENPQLEDKDYFYTDASAKKI YQACK
 ATVRLRVDVRKGAAPRTPVIETDPALATTGIGBDLMEAAK




 LIGTFEFILHKKTATPYPRAETPTAYIAMGFDDDLSNATR
 A RVVTV R L E K A S G I S T N H P V L I D T E G L N M MV S H E C L D E A V D
 LNVTMQUVVRKDFSFPTPLLETADSWIVGHGFDPQLESACLR LS GSFRFIVHKDRHLDWPRAETPTHYISSMGFSPDLKTATE




## $\square$





 GKATLKFTVLKGKHDSWPRDENDEYIMCVGSAKPMEDSAR AEVTVKVEVLKQ ACAGPWVTDQDQLYALASAKTMEEADK LTGTFQFILHKGEKSTYPRAETPTHYUAMGFDDDLSNATR
 G W I H
 GNVLMQIVLRKDIQTPGPLLETPKWWIVHGFNEDLNLAMR GWV HLKVSLDKDGMAKYPIVKPDDHLI FEGVSVDVTVA YR MDVTLTFNVHKQRPLAAPYADSPGPLLFVESDENPREACK

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UniRef90_UPI0003826B5F UniRef90-Q1R131 UniRefofo-A3PRU9 UniRef90-N4VLA4 UniRef90-CODAC8 UniRef90-T2L9B5 UniRef90-C1D2F8 UniRef90-M1FG77
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UniRef90 B8IKM2 UniRef90- U4KHNO UniRef90-F819A6 UniRef90-B6HBX1 UniRef90-UPI0003643971 UniRef90_B9K713 UniRef90-K8GHZO UniRef90-A1U7F9
UniRet90 W3AG42 UniRef90 W3RJ21 UniRef90-A5V6R9 UniRef90_OOK401 UniRef90-A7HRS2 UniRef90_O1YUC1 UniRef90-F7SAG6 UniRef90_UPI00046AF315 UniRef90_E3DP37 UniRef90-I3ZE16 UniRef90-KgXHN4 UniRef90-F217U9 UniRef90-UP IOOO4639771 UniRef90-UPIOOO3730F62 UniRef90_G7D7Q6 UniRef90-M2YJF9 UniRef90-N1JWU5 UniRef90_Q16A66 UniRef90-UPIO00464A105 UniRef90-QOFP12
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UniRet90
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W0J1R9 UniRef90_19WL17 UniRef90-B9NVT4 UniRef90-M8B366 UniRef90-UP10003B47DBB UniRef90 UPIOOO36ABAFF
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UniRef90_E7QZ34

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A A V/S GM|I|D|LL|SAETGMDP|V|DAYM|L|AS|V|CGD|L|R|ISE|IV|DPN QALSGAI EWLIKTRDMPAEQAYMLCSVCGDLRINEIVDPN
 KALRSLIAHLVATRHLTREEAYMLCSVAADLKI AEDVDPN KAVLQMFSFLTEHTGADTVDAGMYLDMLGDLAVCQIVNPM MAYRELVRWLAAEFDFDEIEAYMLLTQAGRVRLGNMVDPK DAVSGADDWI TREHHMPPEQAYMLCSVCGDLRISSEIVDPN D AVVRHMI TVLMVEHDLSREEAYMLCSVAGDLRMHEVVDPN AAVSGMIDDLTRQHHISADDAYLLCSVCADLRDSEIVDPN






 TVLYQTAKQLADWLGLPFDDGYRLLSAVCDLKFSQUVNDL KALRDMIVLLGEKGNLARDDAYTLCSLAADLRITQTVNGS QALREMLSLI CSRTNLSREEAYQFCSLAVDFRVTQVVNGH NAARDMIHLLTEQQGLSRDDAYSLMSVSADFGVTQVVDGT NASLDMLKFLHDERDLSKDDAYSLMSVSADFTVTQVVDGR QACLNAI NYMT KFGYTKAQAYALLGCAVQGHI SGVVDP N

 SALQHMUDLLERFVGLSAEEAYVLCSLAVNFRITQVVNPQ QANDRMAEFLMAQTGLSYNKVGMFMTFSAHLESCQIVNPN DAVRALIDEI SARTGGVPEDAYGLASVAADLRIDSEIVDPN



 $K A V L N M V S V L$
 GA SLLD ML H LL T E H Q GLDS RHD GY S L M S V A A D FGVV T QVVVD G T $\square A$ Y R E LVV R WL A N E T G Q S E A D A Y M L L T M C G K V R L M A L R N M I D YL VRF R GL H K DVAY S L C S L ALDLLRVT QUVN VT
 H A L R D M I D F L V A E K HL S R D D A Y M L S S V A V D ME I T QL V D G N D A L E D M L T I L N K L Y G L T P E E G Y V L S S V I G N L R I S E I V D P N







D D A SLLN ML T L L L D D HVGLLSK N D A Y S L C S
 RCCQKMNCQLQRQLGCTPETAGMLMSLEGNSEIGQVVNDL K A L R N M I D F L VA T K GMT R D D A Y M L I S V A G DVVEVTELLVDRN


 Q A C L C N A I
$R A$
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$K$ R

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| UniRef90_UPI0003826B5F | $W\|V V\| S F H F P R / V{ }^{290} V L$ |
| :---: | :---: |
| UniRef90-Q1R131 | WVVSFYVPRIVVFE |
| UniRef90-A3PRU9 | WVVSFY FPRAVFE |
| UniRef90 ${ }^{-}$W9GRN9 | K GI H C V ID K S KLP |
| UniRef90_N4VLA4 | F AV S A Sil P Y S I F |
| UniRef90-C0DAC8 | K TVVRLEL PR L V T E A E G |
| UniRef90-T2L9B5 | Y TLGGA S L L K il |
| UniRef90_C1D2F8 | KTCRFEL SLDILSSALG |
| UniRef90-M1FG77 | WV VA F Y V P RLLV |
| UniRef90_K5VVZ6 | Y V I G M M M P K Si F G H K S V |
| UniRef90-B5WML3 | WVV S LYFPRIVFE |
| UniRef90_14BWH1 | K TVR A K L P K S L |
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| UniRef90_W3AG42 | $\square \mathrm{V} R \mathrm{~V}$ A V P K S L F |
| UniRef90_W3RJ21 | $\overline{\mathrm{K}} \mathrm{GVVHCMI}$ A K S |
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| UniRef90_Q0K401 | Q G I H C T M P R S I |
| UniRef90_A7HRS2 | Q GV H VRMPRSIF |
| UniRef90-Q1YUC1 | A CATLWLPT DI F D |
| UniRef90_F7SAG6 | Y TVGTAlSSKKYL |
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| UniRef90-K9XHN4 | K GVHGMLS K A I LP |
| UniRef90-F217U9 | $\square$ I M R VRVD K A S Y E K L |
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| UniRef90_UPI0003730F62 | K GI H M M L P K S V |
| UniRef90_UPI000466050E | WVVS F Y FPRIVVFE |
| UniRef90_G7D7Q6 | $K$ GI H C M I E K A |
| UniRef90-M2YJF9 | F AVVATIP L , NV V F |
| UniRef90-N1JWU5 | VTVVRVRVPKEIL |
| UniRef90-Q16A66 | WVVS FY FP K S AL |
| UniRef90-UPI000464A105 | K GV H L M DE K S L |
| UniRef90-Q0FP12 | WVVS F Y FPRAV/FE |
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| UniRef90_UPI0002F726EE | K TARFFVPHYLLE HYS 1 |
| UniRef90-B3T564 | K GVVH GMMS K E V L K N L |
| UniRef90_UPI00036EE730 | PGAKMRVP K |
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| UniRef90_UPI00036FBE2D | V G V H V M L P K R I F K |
| UniRef90_F0QYD2 | Y V V T L T T I PRRS I I E R $\square$ |
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| UniRef90-W7D076 | K V A R M EL P L H Y WS E |
| UniRef90-C7N1R6 | K TAR F VVPRRVVEA Y G |
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| UniRef90_W6WHH9 | K G V H M M M K T L V D R |
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| UniRef90-T0JUG0 | F AVSA SIIP Y S I F E |
| UniRef90-R5GXA0 | Y S L V A K V K K K Y L |
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| UniRef90_UPI00036F490A | W $\mathrm{V}^{\text {T G G F P P L D I }}$ |
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| UniRef90-K2G332 | A C A T L WL P T DI F E |
| UniRef90_UPI0002558816 | A C A T L WLP T DI F D |
| UniRef90_D5VGF6 | Q G C HVRI PRDI F P K L |
| UniRef90-A9W7J2 | A CATLLW WI P T Gl F D |
| UniRef90-W0J1R9 | T T LT A Y L P E A I F D |
| UniRef90-19WL17 | LGVVHARIERRLFPQK G |
| UniRef90_B9NVT4 | K G V H M M L E K A V LD H R |
| UniRef90-M8B366 | K GIHCMAAKS L F |
| UniRef90-UPI0003B47DBB | K GV H A M L P K S I F R K |
| UniRef90_UPI00036ABAFF | V T V R Y R M P K A V VA E Y |
| UniRef90_B8H0F1 | K GVVHALLSKGLL |
| UniRef90_S0AR01 | Y V V S M EL D K |
| UniRef90_L0A9Z0 | F V V S L V I P K Y L Le |
| UniRef90-Q31MZ1 | K G V Y CML P K |
| UniRef90-UPI000441272C | Y V V G M T MP Q A L L |
| UniRef90-Q01Z67 | K GV H A M I P K S IFK |
| UniRef90_E6PK54 | Y TVVGA A R K K Y L K |
| UniRef90-U5DNC1 | K GV H GLL S K S LL P |
| UniRef90-E7QZ34 | $W \mathrm{~V} V \mathrm{SA} \mathrm{Y} \mathrm{L} \mid$ P Q S\|IFP |

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UniRef90-D7A853
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UniRef90-Dokz44
UniRef90-BOUQ89 UniRet90-B5JCK1
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UniRef90 B9E7M2 UniRef90-X1 JWI8 UniRef90-B4WKX1 UniRef90-UPIO002D4BDCF UniRef90-V5X518 UniRef90-K9TYF2 UniRef90-UP1000468E39A UniRef90-R9BV26 UniRef90-R5C7H8 UniRef90-A0A023X670 UniRef90_S3MX17 UniRef90_UPI00047B2F63
 LIPASPHTVAWYYWSQARPVLTVHSGDVVTMQTLSTCGE MDT DHADKVVYKFSANNEPTGT:DSGEVVIFRTQDCFSN


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| L | T |

$\qquad$ VVEVRCETVHGGFSDQLPPALTVDSGDRIVVETYTGLCQ IPGTHEHMAWYFDARAEPVLRIASGDTVSLSAFPAGDG ASPATVHWYFDAA LIPPVLTINSGDTVEVTCVSGREG HHDTEETYHYTDGPYSQPVLHVKPGDRVVVETRDAFEG LLPATPATVQWGWDNGQKPALLRUSGQDVIVAEAVTHQAG GHHR $\square \mathrm{DRSFTYNSWNRDFPSRICIESGDTVTDQMNDASDA}$

HNRWHPDIPAVVHVKPGDVFRIEMKDWTDG DHAVKREQANDTDNSIPPAITVDSGDTVSFDCDDASNG NDMVHNRWHPDIPMVAMVKPGDDFIVETYDWTGG
QPNKGHNRWHPGDPPQQVVKSGDVVVMDTDDAFDC HT THRHKQHFGWSRDTMPVHFVRSGDSMCFECADASGG VPSTLNTDTWGYNKDAKPVLSVASGSTVTFDTVSHEGD YTFGRYHEPIAQVKLNEMVVLYTEDCFEG
 DYHYTDGPYSEPVMEIDPGDRVVVDTRDAFDG NENVHNRWHPDLPMVATVKPGDDFILECYDWTGG $\square H A D K R E H A L D A W D N S I D P A D R V Q S G D T I A F D C D D A S N G$ HNRWHPDIPAVASVNPGSVFRTECKDWTDG AMGTSSKPVTYINPGETLRIETEDCFSH AHYEVKPSFYNYVFSPY LEPAIKVNPGDTVSLYTDDAFES A LTEAKQGKFHYTIGPYSDPVLHI QPGDRVVVDTRDAFEG MHRVPASQVVYSMSARHQPVLRVADPARLTFETDDCFAG HNRWHPD ${ }^{\text {PPAVLRCAPGDTVAMRA RDGYDG }}$ MRQLSREHH TYTLEPHSVPAITTDSGEELMVETWDAFEG LPLTPQNVLWHYTSTKKPVLTVKSGETVRIDGWDWTRG FDDKNLHFSWNATNKPVIYNDGDVLNDNIPDSSTN पPADEKNVHWYFDAALAPALIVESGDFVRAEAVTHHAG HSLGTDSIHTVWDNSLPPALTIRPGDTVSFETLDASDG IDASPDTCHWGFDASLPADAEIDSGAEVMDNTVSGAPQ HNRWHPDIPAAFSVNPGTSFRMECLDWTDG ■KATANTTHGGFSPELEPALVIASGDRTQVETYTGYYN NVHNRWHPDIPMACWVKPGDDFILETYDWTGG HTGREHS HNRWHKDNASVLTVSSGETVTFDADDSSNG HNRWHPDIPAAFSVEPGQSFRMDCKDWTDG पNATPENVVWGDDPTKEPVETVPSGSTVEDET TSHEGD ENLHFKWSPHNSPVAHINPGEKISIK DPDSSTM VPSTGNTTTWGYNKDAKPVLTIPSGSTITFDTVSHEGE DKTNLYYVMSKKEEPVLNINPGDTVETHTADCFSD VVRSLPENMVWYFGADVPPVYTAKDGDTIEI QTVNPSGV HNRWHPDIPPVASVKPGSVFRIECKDWTDG HVLGASHTHTTWNRDHSPALTVQPGDQVTFDTMDASGG DDGVVYEFSPDLEAVTTVEPGAELTMETRDS号DG
 LRATPDTVHWRFWSELPPVLRVAPGDRVTVQTFSGSGM

TNENTHNRWHPDTP TNTWVEQGDDFK NENIHNRWHPDIPMACWVNPGDDFILETFDWTGG MRDTRERHVYSLGVSEPVATVTAPCSLTVETCDCFNG

PSNELVHNRWHPDTPMACWVNPGDDFVLETYDWTGG HNRWHPDIPAVVSVKPGDVFRECKDWTDG YRPQPEDYAYTFGGR PPVARVRPGDALAVYTEDCFGG KSPKEHTHNRWHPDVPMVATVKPGDDFIIECMDWTGG NEQVHNRWHPDIPMACWVKPGDDFILETYDWTGG ■TATPDTVANGWHPDIPAVVSVNPGDVFRIECKDWTDG DKVYFTYCYAHPPALRIKPGDSVTTTTRDASND TPDTVRFGFDAAFDPVLTVTPGDTVVIDCVSCSGD VPSTLDTTTWGYNKDAPAVVSVKPGEVFRFDCSHEGA NDMVHNRWHPDTP IVAWVKPGDDFKПETYDWTGG HNRWHPDIPAVAAVNPGAMFRIECKDWTDG WDKANSNHLHGSFNHTYKPVLTVQSGDQVEYTTVDWGYN
MHE QKHPGHNRWHPDTPAAFSVEGEVFKECLDWTD G MHE QKHPGHNRWHPDDPAAFSVEPGEVFKME CLDDWTDG
VKSSPDNVIWGFKPDSAPILTVQSGDRVTLETVSHEGR ATPETVRWGFDPSFAPVATVESGDLVVLQCVSGSGL PTPEQFAFTFGGA EPVMRIKPGTALRLWTEDAYGG TPANVIWGFKPDSKPIARVKSGDRVVMETDSHEG TNENIHNRWHPD IP $\|$ NVWVEPGDDFKIETYDWTGG MHHLKQQNLHGSFSSSYKPILTVESGDSTTLKTLDDEWG MKKVDロKHKFFYYDEAEEPVMHVKSGDQUQFESEDCFQN HNRWHPDGPAVAAVDPGSDFRVECDDWTDG
LNPSKESLHGFFSREMEAALTIDQGDTVIFKTLDASWG

UniRef90_UPI00037C0153 UniRef90_C1F6F4 UniRef90-B6WRY6 UniRef90_A0A031LT29 UniRef90_UPI000375AA05 UniRef90_W0JOW6
UniRef90 W7KGY4 UniRef90_D7A853 UniRef90_A0YLS0 UniRef90_A0A023X3D6 UniRef90_V4RJI3 UniRef90_UPI00036C2A47 UniRef90_B2TGC4 UniRef90_DOKZ44 UniRef90_B0UQ89 UniRef90_B5JCK1 UniRef90_C8WRQ6 UniRef90_UPI000455F22D UniRef90_B0UPW0 UniRef90-D7WBF4 UniRef90_M2WZU6 UniRef90_D5QJD3 UniRef90_U4T1J5 UniRef90_UPI000375B75D UniRef90-UPI0002ED0E8E UniRef90_UPI0002F9584F UniRef90_L0A573 UniRef90_UPI0003694522 UniRef90_UPI00046EAF71 UniRef90_S8DW49 UniRef90_K9XHV8 UniRef90-X1T1Y4 UniRef90_B8FSX8 UniRef90-H5WRF8 UniRef90_UPIO0036C15D2 UniRef90_X5KYF9 UniRef90_UPI00036F7706 UniRef90_WOIW21
UniRef90 Q6L2P5 UniRef90_Q6L2P5
UniRef90_Q13KP2 UniRef90_UPI000381BC96 UniRef90_UPI0004680730 UniRef90_UPI00047ADE5D UniRef90_K1W9L0 UniRef90_Q0K546
UniRef90_Q0C9Y9 UniRef90_UPI0003F81631 UniRef90_UPI0002D3374D UniRef90_D8J7B4 UniRef90_UPI00034AF2D3 UniRef90_TOLW60 UniRef90_UPI00034BC27F UniRef90_-I4ZWQ4
UniRef90_UPI00047843A1 UniRef90_UPI00036538FE UniRef90_K9YBF8 UniRef90_C1D2T4 UniRef90_L9X959 UniRef90_D7DI54 UniRef90_A0A059ITR6 UniRef90_UPI00047E7933
UniRef90_I5C7V8
UniRef90_F7ZAG9
UniRef90_UPI0002E08771 UniRef90_E5YB34 UniRef90_A0A024IG36 UniRef90_L8MBC1 UniRef90_UPI0003729C79 UniRef90_UPI0003A255C2 UniRef90_V5UF59
UniRef90 K1VNR6 UniRef90_K1VNR6
UniRef90_U5T2T5 UniRef90_UPI000466D029 UniRef90-B0T8S1 UniRef90-I4EFE2 UniRef90_F5RBP6 UniRef90-M8D4D5 UniRef90-V4HDA9 UniRef90_W4QZY8
UniRef90_B9E7M2 UniRef90_X1JWI8 UniRef90_B4WKX1 UniRef90_UPI0002D4BDCF UniRef90_V5X5I8
UniRef90-K9TYF2 UniRef90_UPIO00468E39A UniRef90_R9BV26 UniRef90_R5C7H8 UniRef90_A0A023X670 UniRef90_S3MXI7




 QEGVPASAIPAYNGPGGHILTGPVAIEGAEPGDVLEVDVL QMHS E S QLVV T S C D Y S K M N P A T G P $M M R P E L Q A D H E A P S P G P H D M T G P$ | $M M R V L$ | $K$ |
| :--- | :--- |
| $Q$ | $T$ |
| $M$ | $P$ |




Q A P
QVHPGDT TRTDYPGRGPHTLTGB




 QGRDAEKFFTDFDKDGPHDVTGPIEIVGAKPGDVLKVEVL K I R GDQKASE IV HLP EVNYQTGPFYVEGAEPGDILVL HLL
 $N D A D S A Y P E R P H S G M R G H P L T G P V F V R G A E A G D A L I V E V V$
 F I


 QIT R DS TAADVVLDTARIHPLTGPVYVEDAEPGDLLVVDVL

RVLTESERPPDRP

$G \vee A R R A V A F P Q R E G P R G H P L T G P$

| $V$ | $P$ | $G$ | $E$ | $G$ | $F$ | $H$ | $V$ | $P$ | $E$ | $L$ | $L$ | $P$ | $G$ | $H$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $Q$ | $I$ | $L$ | $T$ | $G$ |  |  |  |  |  |  |  |  |  |  |




F V P P E L A E I R K I V S S G S HLL L T
QMKKDYSDLARIDDSRVDAAVGP

QI I S P D MD F S A V D WSNSNPATG
SRTNPDEFYTKNNLPRGHMLTGP

TI R T E A DVIIESI P S S QVNAAT G
QI GNNDSAVRDVDLT QVHYLS G
HV D P A H R E I L L A G L P Q A H L L T G
HFSPADRA A A R GPGGHVLTG
Q 1 K N D D D A V
F I K N N D S A V R D I D L T T V H Y L S G


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0
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UniRef90_UPIOOO37C0153 UniRef90 C1FG64
UniRef90 B6WRY UniRef90-A0A031LT29 UniRef90_UPIO00375AA05 UniRef90-WoJow6 UniRet90 W WKGY4 UniRef90_D7A853 UniRef90_AOYLSO UniRef90-A0A023×3D6 UniRef90-V4RJ3 UniRef90_UPI00036C2A47 UniRef90-B2TGC4 UniRef90-DOKZ44 UniRef90-BOUQ89 UniRef90-B5JCK1
UniRef90 C8WRQ6 UniRef90_UP1000455F22D UniRef90_BOUPW0 UniRef90-D7WBF4 UniRef90-M2WZU6 UniRef90-D5QJD3 UniRef90-U4T1J5 UniRef90-UPIOOO375B75D UniRet90 UPIOOOOEDOEBE UniRef90_UPIo002F9584F UniRef90-LOA573 UniRef90_UPIOOO3694522 UniRef90-UPIO0046EAF71 UniRef90-S8DW49 UniRef90-K9XHV8
UniRef90-X1T1Y4
UniRef90-B8FSX8 UniRef90-H5WRF8 UniRef90-UPIO0036C15D2 UniRef90-X5KYF9 UniRef90 UPIOOO36F7706 UniRef90_WolW21
UniRef90 Q6L2P5 UniRef90-Q13KP2 UniRef90_UPIO00381BC96 UniRef90-UPIO004680730 UniRef90-UPIo0047ADE5D UniRef90-K1W9LO UniRef90-Q0C9Y9 UniRef90-UPIo003F81631 UniRef90-UPIO002D3374D UniRef90-D8J7B4 UniRef90-UPIO0034AF2D3 UniRef90-ToLW60 UniRef90-UPIOOO34BC27F UniRef90-14ZWQ4 UniRef90_UPIOO047843A1 UniRef90 UPIO0036538FE UniRef90-K9YBF8 UniRef90-C1D2T4 UniRef90-L9X959 UniRef90-D7DI54 UniRef90-A0A0591TR6 UniRef90_UPI00047E7933 UniRef90_15C7V8 UniRef90-F7ZAG9 UniRef90-UPIOOO2E08771 UniRef90-E5YB34 UniRef90-A0A024IG36 UniRef90-L8MBC1 UniRef90-UPIO003729C79 UniRef90-UPIOO03A255C2 UniRet90 V5UF59 UniRet90-K1VNR6 UniRef90-U5T2T5 UniRef90-UP10000466D029 UniRef90-BOT8S1 UniRef90-I4EFE2 UniRef90_F5RBP6 UniRef90-M8D4D5 UniRef90-V4HDA9 UniRef90-W4QZY8
UniRef90-B9E7M2 UniRef90-X1JWI8 UniRef90-B4WKX1 UniRef90-UPDOO2D4BDCF UniRef90-V5X518 UniRef90-UPIOO0468E39A UniRet90-R9BV26 UniRef90-R5C7H8 UniRef90-A0A023X670 UniRef90-S3MX17


E TRSVDWGWTAVLPGLGLLTEDFPEAHILHLWDLTGDTANF KVHLDDFACNGFGVGEGFLPNDFPYGRTKIDPLDRQHMVF DVQCDTDGTTTTLPKDGPL WDKCETRTKR1 PDVENKAVF SFRDKGWGWTGVLPGFGLLADELYTPSLKIWSVKDGDASA KVTPRDPWGTNARPGGGGLPDLVPRPFEKVYK DLKRADY EFKDMGWGWTAVIPGFGFLPMDLSGPGLKIWKSDGEHSRA AI SPRAMGFNA RSGWGALPQEFSEPNLRFIPLDDERAEF RUEPRDFAVSALVPGFGGLTSTVMTRTLWVWNLSDDGKTL ETVVDYDWGTATMPLEGTLPDEFDEPETVHPSVDHARAVM KMAPRPHGFCCMIPNFGGLTGTDYTALLRKIVKIDEKNCRYW QMAPRFRYGTNGAAHWGLLYKEMGEERVTVYKIDPDYNTA TYEHEGWAWTSVVPGLGLLDEDFEEAYLHTWELEGEQTES DMEWGFNGDFARENGGGFLVDYFPEALKSI WEFQGDYAVH ELQPGAWGWTADIPGFGLLADEFQEAALLKI WDLERDAGSA DI GWGFNGFFSKKNGGGFLTDHFPGAQKSIWDIEGTRSRH SIEVGGQATDMTHPEVGALPGTVEERTRLLPVRNGQVYF NVEASSFAYTVNDPGFGFLRDSFREPF VRWHDEDNVATS KVEPRPYGVISNRHGKGALPGEFPKNVSVFTPDEKNEADS KVRPDREYAVSTHPYFGVLTGETYTAKTYIWKLDDERNVG DITGRDWAVSAQTPFFGTLQDPLPEKVWIYRKQADGRFAY HFGTMSWGWTADIPGFGLLNEQFEDPYLKVWDLNNQNAEF $D \square R S A P W G W T S C R P G D G L L D A E D T E Q V W H Y W D L R G G T A P F$
$E M R T R P T G T C C M D P E F G A L T G T H T A R V R R M R L D D E Y I Y W$ DTGWGFNGFFSKTNGGGFLTDHFPEARKS ${ }^{\text {WWDFDGTOSRH }}$ SIAPSVPWGWSATDPGFGLDDAFPDPADKI WQLHDGYAWF DVEWGFTGDFARENGGGFLTEHFPAAQKA: WDVQYTRSRH K1 EWDKQGVTVATKDLGVLGYKVKSSQVE DPIENDADMF SIETRDWAVSCVMEYFGGLTKMLQKPEVYIWKSKDKGQTW SMAPRPRGTCAMIPQFGALADSLPEDVRKU DLDENGVYW EDRVSSPGDMVAAPGAGVLGDLVQQPETKMVEVKDGQVQL SVETGDFGATLNTPGFGFL RDEFTEPHVVRWE:CDGFARS DVTPRPYGATSGRPGGGTLPDLVPRPFTKVTMLDLKRGIV DIKTGGWGWSA DNNFGLLKNKYNE RLFIWDIENGYARF QMIPRFNYGSNLAAHWGHLFTDFEKERVTIYELDCCRELA EARTADWGWTGCRPNDAVLAEEGLQPYTHLWDLERTHTDF DVQLRDWGYNVIRPLSGTLPEDFDQTHLTTVLPLDADRATM SI YPRLNVGFNARTGWGALPQRFSQPKLRFINLDLTRAEF D GWGFNGFFSKQNGGGFLTDHFPQAQKSIWDFHGLYSRH DL QWADWGWTADIPGFGLLAEEFPTPQLAD WDQAGGYTCF D EWGFNGDFAKENGGSFLTEHFPEANKSIWDFEYTTSRH AI EPSRVGFNAVRRTWGVLPERFSQSRVDFVEDDLERAEF SIETGTWGWSAMMKDFGSLSNMFGE KLII WELRDNKAKF DMEWGFNGIFARENGGGFLTDHYPDAAKSIWDFHYTTSRH KVEPRPYGVISNRHGKGTLPE FPKSQKHFTPDEKNKTES TI ELGSRGLATVNAGAGVMRDY苗ERCVKMFDVDEHHTTN DLSPASFGVNSVWPGGGGIPDAVTTRETFVYRYDTRRMTA D EWGFTGLFAQENGGGFLTQHFPKAAKAIWDFQYTQSRH EVRTSAWGWTGCRPDDAALAEEGLQPYTHFWDLEGTHAQF DVGWGFNGDFAKENGGGFLVDQYPEARKSIWDFHYTTSRH KIELGDWGYNLVRPTAGTLPGEFPASAEALSLIADDRARLD RIDLAPFACNSFSSRSGFIPEDFPTTRSKIIPLDAQRMIF SFKPSGFGWTANDPGFGLLADQFKDPADTLWNYDAEPAAF D IGWGFNGFFSKNNGGGFLTDHFPSAQKSI WDFDGTKSRH Di GWGFNGFFSKKNGGGFLTEHFPEAQKSI WDFKGTSSRH AI RPEKTGALMTAPGAGALPDRV KGDTRI CPDADGHFTF DI GWGFNGFFSKKNGGGFLTEHFPQAQKS WDFHGTTSRH DIGPGDRAVSTTFPHFGALTGFATEERVWVYDLDLDAGVV DIGWGFNGFFAKENGGGFLTEHYPEARKSI WDFHGLKSRH DIEWGFTGDFARENGGGFLTDHFPNAAKA, WD QGGYSRH AATPRQDWGFCDLPLKGTLPGEFTDYQQDLDDIDRNRATL SMDDRDWGWGASLPNFGLLAPEYKTAMVTVWHLDNSRKVA D EWGFNGIFAKTNGGGFLTDYFPDAYKSIWNFQGDYATH SVEPRPYGVTSNRHGKGALVGEYPGNVSDFTPDEKNNAES DI GWGFNGFFSKKNGGGFLTDHFPDAQKSIWDIKGTESRH DIEWGFAGDFARENGGGFLTEHYPEAAKSIWDFHYTTSRH GFEHEGWGVSAVPPGGGLLPEEFPDPHVRAWDLDCEVARF DLDPGWYGWNCAGGKDNWHNNK LGLTQSKEDRLDWTTVRN DIEWGFNGDFAKENGGSFLVEHYPKAAKS WDFEGDYATH KI EVESRGVVEVYPGWGPLGNKVEKAETKIVSTSEGRAKF D AYRPYGVISNRHGKGSLPGEFPDIYTKVIPIDMAKGUF
 DINYRPYGADSNRHGKGALPGEYPENYSKV DADDARRANN DI GWGFNGFFSKKNGGGFLTEHFPEAQKSIWDFDGTKSRH D VPGWYGRNWAGGMANWQNNA DGIANTDRIQLDWETSDH DI ELGTDYGTMAAEEFGVLGKYFEKEETVKVPI DDGDAEF DVEWGFTGMEARENGGGFLTDYFPEAHKAIWDERGMYATH
UniRef90_UPI00037C0153 UniRef90_C1F6F4 UniRef90_B6WRY6 UniRef90_A0A031LT29 UniRef90_UPI000375AA05 UniRef90-W0JOW6 UniRef90-W7KGY4 UniRef90_D7A853 UniRef90_A0YLS0 UniRef90-A0A023X3D6 UniRef90_V4RJI3 UniRef90_UPI00036C2A47 UniRef90_B2TGC4 UniRef90_DOKZ44 UniRef90_B0UQ89
UniRef90_B5JCK1 UniRef90_C8WRQ6 UniRef90_UPI000455F22D UniRef90_B0UPW0 UniRef90-D7WBF4 UniRef90_M2WZU6 UniRef90_D5QJD3 UniRef90_U4T1J5 UniRef90_UPI000375B75D UniRef90_UPIO002ED0E8E UniRef90_UPI0002F9584F UniRef90_L0A573 UniRef90-UPI0003694522 UniRef90_S8DW49 UniRef90_K9XHV8 UniRef90-X1T1Y4 UniRef90_B8FSX8 UniRef90_UPI00036C15D2 UniRef90_X5KYF9 UniRef90_UPI00036F7706
UniRef90-W0IW21 UniRef90_WOIW21
UniRef90 Q6L2P5 UniRef90_Q6L2P5
UniRef90_Q13KP2 UniRef90_UPI000381BC96 UniRef90_UPI0004680730 UniRef90_UPI00047ADE5D UniRef90_K1W9L0 UniRef90_Q0K546
UniRef90_Q0C9Y9 UniRef90_UPI0003F81631 UniRef90_UPI0002D3374D UniRef90_D8J7B4 UniRef90_UPI00034AF2D3 UniRef90_TOLW60 UniRef90-UPI00034BC27F UniRef90_-I4ZWQ4 UniRef90_UPI00047843A1 UniRef90_UPI00036538FE UniRef90_K9YBF8 UniRef90_C1D2T4 UniRef90_L9X959 UniRef90_D7DI54 UniRef90_A0A059ITR6 UniRef90_UPI00047E7933 UniRef90_I5C7V8
UniRef90_F7ZAG9
UniRef90_UPI0002E08771 UniRef90_E5YB34 UniRef90_A0A024IG36 UniRef90_L8MBC1 UniRef90_UPI0003729C79 UniRef90_UPI0003A255C2 UniRef90_V5UF59 UniRef90_K1VNR6 UniRef90_U5T2T5 UniRef90_UPI000466D029 UniRef90-B0T8S1 UniRef90-I4EFE2 UniRef90_F5RBP6 UniRef90-M8D4D5 UniRef90-V4HDA9 UniRef90_W4QZY8
UniRef90_B9E7M2 UniRef90-X1JWI8 UniRef90_B4WKX1 UniRef90_UPI0002D4BDCF UniRef90_V5X5I8
UniRef90-K9TYF2 UniRef90-UPIO00468E39A UniRef90_R9BV26 UniRef90_R5C7H8 UniRef90_A0A023X670 UniRef90_S3MXI7
UniRef90_UPI00047B2F63

150
G
GHFGNVVDCKD

 KF GVVR DP I F P F P GVV G V A QER GKFS T IPPPRKNGGNMD DK H PWGMMMPARPFFGVMATAPKPEDLTSDIPGYFGGNMDNRE





 A P Gll $M P G L T L D L N P F C G 1 I G L Q R E E G E F A T P P P G P F G G N M D V K H$

V
V
S
P

## P


 $\square 1$ G K V
 GEK $\backslash R V P D A P F C G V M G G A D A A B G P H T S P P R Q V G G N M D V R Q Q$


 $T N G V T M P A N P F C G T L A T A P D T E A A I Q A D T P G Q Q G G N M D C P D$
 A P GVVRLPAAAP FM GVMGVAAPSRE GRRTDCPTEA G GNDDDK H D A K V $\underset{\mathrm{E}}{\mathrm{R}} \mathrm{P}$ PMRPSMGGLVATTPTYTQQTASDSGPYGGDIDDMKE

 | L |
| :--- |
| L |
| R |
| P |
| V |






 S A GLVMP L N P M $\quad$ G GVIG NA P A D A SVVP N STP GP H G G NMD SK K
 GPGVRVVPTPFPGVVGVAAEPGDHATSPPRHVGGNMDIRQQ GD L EVVDVAPVIGTI GVATDSESYTTVVPHDHGGNLDTTD







 $\perp P W G Q S F A A L D P F F G G U M A V A P P W G R M A S P V P W A F G G N D D D N A A$


 V P G V








 UniRef90-C1F6F4 UniRef90_B6WRY6 UniRef90_A0A031LT29 UniRef90_UPI000375AA05 UniRef90-W0JOW6 UniRef90_W7KGY4 UniRef90_D7A853 UniRef90_A0YLS0 UniRef90_A0A023X3D6 UniRef90_V4RJI3 UniRef90_UPI00036C2A47 UniRef90_B2TGC4 UniRef90_D0KZ44 UniRef90_B0UQ89 UniRef90_B5JCK1 UniRef90_C8WRQ6 UniRef90_UPI000455F22D UniRef90_B0UPW0 UniRef90_D7WBF4 UniRef90-M2WZU6 UniRef90_D5QJD3 UniRef90_U4T1J5 UniRef90_UPI000375B75D UniRef90_UPI0002ED0E8E UniRef90_UPI0002F9584F UniRef90_LOA573 UniRef90_UPI0003694522 UniRef90_UPI00046EAF71 UniRef90_S8DW49 UniRef90_K9XHV8 UniRef90-X1T1Y4 UniRef90_B8FSX8 UniRef90_H5WRF8 UniRef90_UPI00036C15D2 UniRef90-X5KYF9 UniRef90_UPI00036F7706 UniRef90_WOIW21
UniRef90 Q6L2P5 UniRef90-Q13KP2 UniRef90_UPI000381BC96 UniRef90_UPI0004680730 UniRef90_UPI00047ADE5D UniRef90_K1W9L0 UniRef90_Q0C9Y9 UniRef90_UPI0003F81631 UniRef90_UPI0002D3374D UniRef90_D8J7B4 UniRef90_UPI00034AF2D3 UniRef90_TOLW60 UniRef90-UPI00034BC27F UniRef90_I4ZWQ4 UniRef90_UPI00047843A1 UniRef90_UPI00036538FE UniRef90-K9YBF8 UniRef90_C1D2T4 UniRef90_L9X959 UniRef90_D7DI54 UniRef90_A0A059ITR6 UniRef90_UPI00047E7933 UniRef90_I5C7V8 UniRef90_F7ZAG9 UniRef90_UPI0002E08771 UniRef90_E5YB34 UniRef90_A0A024IG36 UniRef90_L8MBC1 UniRef90_UPI0003729C79 UniRef90_UPI0003A255C2 UniRef90_V5UF59 UniRef90_K1VNR6 UniRef90_U5T2T5 UniRef90_UPI000466D029 UniRef90-B0T8S1 UniRef90_S7WUI3 UniRef90_F5RBP6 UniRef90-M8D4D5 UniRef90_W4QZY8 UniRef90_B9E7M2 UniRef90-X1JWI8 UniRef90_B4WKX1 UniRef90_UPI0002D4BDCF UniRef90_V5X5I8 UniRef90_UPIO00468E39A UniRef90_R9BV26 UniRef90_R5C7H8 UniRef90_A0A023X670 UniRef90_S3MXI7

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L
3
 $L \vee A G T K L Y I P V F A K G A L F E A G D G H A G Q G N G E V D I T A M E T A$


 LTVGSRVI LPVFKR GALLSDGDTHLAQ GD GEVVCGSA I EA P $V G I G A V I V L P V N T K G A L L Y L G B C H A T Q G D G E L C G V A L E H P$



## N <br> -

## - $\Gamma$

## L <br> L

- VK A G N T LTKGTRLLLPVWVEGALFSVGDTHAA



 IC P G H T I Y L P $\underset{I}{ }$ V H N P GA L F Y I G D C H A A


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




## L L L

\section*{} | $L$ | $A$ | $G$ | $S$ | $T$ | $L$ | $Y$ | $L$ | $P$ | $V$ | $N$ | $V$ | $P$ | $G A$ | $L$ | $S$ | $F$ | $S$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $D$ | $P$ | $H$ | $T$ |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $S$ | $K$ | $G$ | $S$ | $R$ | $Y$ | $F$ | $P$ | $V$ | $F$ | $V$ | $K$ | $G$ | $A$ | $K$ | $L$ | $S$ | $M$ |
| $G$ | $D$ | $L$ | $H$ | $F$ | $S$ |  |  |  |  |  |  |  |  |  |  |  |  |



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LSRGSKVFPVYVDGAGLSVGDLHFS


VVAGVTMQFPVFEPGALFMLGDGHSA
LTAGATLFLPVWVPGANFSVGDGHGR
LGAGSTVYYPVQVPGALFYTGDSHFA
LSRGSRIYFPVFVKGAKLSMGDIHFS
LVKGSSLFLPVVVEGGLFSVGDGHAA
AEGAE Y P Y F SGAKLALGDVQA

VVKGSSCLF PPVSVEDAGLSSGGDGHAL

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UniRef90 C1F6F4 UniRef90-C1F6F4
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UniRefo - 14 FFE? UniRef90-14EEE2 UniRef90_F5RBP6 UniRef90-M8D4D5 UniRef90-V4HDA9 UniRef90-W4QZY8
UniRef90-B9E7M2 UniRef90-X1JWI8 UniRef90 B4WKX1 UniRef90-UP10002D4BDCF UniRef90-V5X518
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 $M N G T, L L N L H Q N L S L T T P I A A E T T D D M T M G W G S T L D E A F A$


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FELNVGVVLRKDFHFP
MTVTLRVSVIKNAPLE
GWI EISVDVIK GGMAKYGVVHNPGYLVFEGVSVDAHVAYR MKVKVRLDVRKDKPYNTPHFVSMGYYTTTGVDPDVREAAR

 MNVELHVELLKHTFLSAPRDTTPGYEVTTGDGPDLLQAVR ARATFKFTLLKGKKI EQPLAENAEFWITPGLDADLDEAMK

 ADVTLRFSVRQQAE:QQPQLRTPGWFATTGHAPDLMEAAR

 GY LDL HVDLIK G GVAKYPRYSEYEVFEGVSVDEDAHVAYR A EVELTIDICTEYNWK IPVIETGDSFYFVGSADTMDHAVE AKATLKFDVIKNKVTNWPRIESPEKDMSVGSAKPMEDAAR

 A DTHVRVTVEKGLNTDRGPRALTPGYFVVLSHGEELGBAMK

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


 GWDDLQVDVIKGGGMEKYPVEPHYGRYAVMGGAPDLMEASR GWUDD RVDVIK G GMAKYPNYSDYLVFEGISVDDEABDAYR MRGEI ELYLHRNLSLTTAPLAETPEEWVVMGFGETLDKALE
 ARATFK I TVLKGKSLKQPLGEDDEFWITPGLDDEDDDEAMR AAVTVKLEKAENLATVVHPVVIDEEGDYMFVSDESLDNGVD LTLTAKFIVHKGKTLKQCRAETPTHF!AI GLDKDLNKAMK
 TEE DVGTLEVGSDPELERPLVETAEAWKT DASAETMGQEACK GYLDDIK V S L I K K D G P I
 $M N V A V K L D V V K D A N L A M P R F T T P G Y E V T M G B G G D D M E G A R$ GWLHLKVVVIK S GMAKYGVKNPDDFEI FEGGVSVDVMIAKR GWVHMKV TLI K GGMAKYPIVPTYDYLIFEGUSVDVNVAYR




 FKVKFTVNLDKGKK DNWPRMMMNDNEDMSMGSTMPPLDQAAE $L T G T F T F V L H K A G A R R W P S A E T P T H Y L T L G G N E D L D L A M K$
$G W L D L E V N L I K D G M N K Y P R Y S E Y L A F Q G A V D E D S D A Y R ~$
 GWLHLRVNII KDGMKKYPI FKPDDYLI FEGGI SVDVVVAYR
 $M D V D L T F D V H K D L S L K M P R A K T P T G W V T F G F H E D L N E A T V$ GWI ELKVHVIK GGMEKYPHYNEYLVFEGIVSVNEDANTAYR

 GWLH
 GYLDLHVEI I PDGMITYPI FQPGNHLVFQGDSVDAHLAYK UniRef90_UPI00047B2F63


| UniRef90 UPI00037C0153 | WI VIT A H\|L|PKAlI LRAR |
| :---: | :---: |
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| UniRef90-B6WRY6 | EVVRLGVPKADMKR |
| UniRef90-A0A031LT29 | WIVTAYFPKDIVD |
| UniRef90-UPI000375AA05 | K GA HVM ${ }^{\text {a }}$ ( K A |
| UniRef90-W0JOW6 | LGVM ARIPKRIF |
| UniRef90-W7KGY4 | WIVTA Y FPLDV |
| UniRef90-D7A853 | Y TMGAS 1 LKS Y LR |
| UniRef90_AOYLS0 | K GVGHMI SKSTLP Q |
| UniRef90-A0A023X3D6 | Y S L Vas i E K K Y L R |
| UniRef90-V4RJI3 | K GVHMMLAKSL |
| UniRef90_UPI00036C2A47 | K GV H GMLRKEL |
| UniRef90-B2TGC4 | Y TVGAMVAKHYLK |
| UniRef90-DOKZ44 | QGVHCKMQRG】FP |
| UniRef90-B0UQ89 | K GTY CMLP K D |
| UniRef90-B5JCK1 | T T I S GYL P E A |
| UniRef90-C8WRQ6 | ACCTDAIPP A I FDR |
| UniRef90_UPI000455F22D | YLIGMMMPESV |
| UniRef90-B0UPW0 | A CATLWLPTG |
| UniRef90-D7WBF4 | NTARFRLPVY1 L H Q Y GV |
| UniRef90-M2WZU6 | VLVSA 1 L P L D I |
| UniRef90-D5QJD3 | FlVS F YFPRIV |
| UniRef90-U4T1J5 | K GVHAK ${ }^{\text {L }}$ K SDFKEF |
| UniRef90_UPI000375B75D | Y TVVAKFPKKYLPA |
| UniRef90-UPI0002ED0E8E | Y SLVAKLSKEF |
| UniRef90-UPI0002F9584F | Y LVSA Y L P QK |
| UniRef90_L0A573 | WTVSAFVPLRI FEE |
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| UniRef90_UPI00046EAF71 | S CATLWIP T E |
| UniRef90-S8DW49 | Y V I G FMLP K S I F T K |
| UniRef90-K9XHV8 | A CCTIAI P T A I FER |
| UniRef90-X1T1Y4 | KTARIRI PKS CL |
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| UniRef90-UPI0004680730 | KGVHMMIDKA |
| UniRef90-UPI00047ADE5D | A C C T $~$ GIPKDI FDK |
| UniRef90-K1W9L0 | K GVHGAI A K S I LP E |
| UniRef90-Q0K546 | ACATLWLPTQI FD |
| UniRef90-Q0C9Y9 | Y V VA M S I P L GI F E |
| UniRef90-UPI0003F81631 | A CATVAIPKDI |
| UniRef90-UPI0002D3374D | A CCTVAIPTQIF DK |
| UniRef90_D8J7B4 | K GIIHGKIPK S TFE E |
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| UniRef90-L9X959 |  |
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| UniRef90_UPI00047E7933 | M GVHVMIP K K L F T R R |
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| UniRef90-E5YB34 | K T A R FAMPVSVLAKFGV |
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| UniRef90-L8MBC1 | A CCTLALPTAIFDK |
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| UniRef90-UPI0003A255C2 | VCATLWIPTEIF ${ }^{\text {V }}$ |
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UniRef90-W0RH87 UniRef90-J8DXK0 UniRef90-G8TTB9 UniRef90_F3STQ1
UniRef90_C5ET20

D|IGWGFNGFFSRQNGGGFLTDHFPMAQKAlWDFKGTSSRH
 D L E P R LDP Y G S N L S A A P W G Y L F E M H E K E R V T I Y K L D D K G Q WL
 ALEPARDWGSAAI PFFGGLTSTDRVAT TWUYELDRVRNTS



 DFEHHGHGVSYFPPGD GLLPDEFPEPFCYNWELDDGVAFF SVTPRPYGTVSARPGSGGLPDLVPRPFTKVVHLDLKRGDF

 DI EWGFNGIFAKENGGSFLVDHYSQAAKSIWDFHYT TSRH EIV V GH WGWASAGGFRSYWNEKMNE EVLLDFE LDDPEKMMG
 DAGWGFNGIFARENGGGFLVDHFPEARKSIWDFHG\|YSRH AFEHEGWGVTVVERGGGLLPEEFPDPHVRGWEFDDGAVPH
 E $\operatorname{G}$ V A D E GTVVA T D D H C G P L F E G T D Y R T K K I K K I K D GV A D F



 DI A L H Y D WG F T S A P QK G A L P D D F D EVVHS M T I P L D RERMM L
 DHEWGFNGFFSKTNGGGFDTDHFPSAQKSIWHYEGTRSRH D $\square$ E WGF T G $\square F A R E N G G G F L T D H F P D A A K A I W D L Q G D Y S R H$
 DVEWGF T GI FAKENG GGFLTDHYPKAAKA DWDFEG $\square Y$ SR H EIVVPGSWGWTSAGGFPSYWN EKLGMS DTEEVAALDFEF GNF DI EWGFTGIF DRNNGGGFWTNDHFPNAAKADWDLEYTKSRH
 AI E P D P WQYTVVQVPGF GF L RDQFPQP Y IVHWHLYDTYAES
 DLTPRDWAASTTVPFF GGGTTSTDRTRDTWVYQVDRTRNVA TMTPRFRFGSNLAAHWGQLYSDLGERRVTIYGLDCDRKPA SVDTGNF GATLDNP GF GF L R E E FTE P HIVVRWEIA DGAAH S DI APRD WAVSTTMPHFGALTATHSTAMLVVWVYEVDRVRG D I Q VA D E GT I A T D D H C G P L F E G T D Y R T K K I K I E G G M A D F SIVPRET R GFSTVVPFF GSSLTATPATAMLRTWVYELDRAES
 DLTPARNWGSAT $\square P F F G G L T S T D R T D T T W D Y H L D T E R A R F$ DLVP GSYGGSNCAA GKAS WI N D QLGE QDTFEWT IDQQQK E I A
 D GWGFNGIFARENGGGFGTEHYPDARKSIWDFNGDYSRH SI EPR DWGVSATEPYFGALTSTSHTATDWVYGDDGHAGVS
 DVVGPRPY GVISN RHYKGALPGEYPENESKFTPVEEDNGKL

 NIE CDP WDA WGYVP GF GF L RDLFPEPY IVHWNLYGDYAES D HE WGFNGFFAKKNGGGFLTDHFPLAQKSVWNFDGTRSRH

 DVGWGYT GI FAKKNGGSF LTVDQFPDAYKAVWDFN GQKATA
 ELTPGDYGWTGIFP GFGLLADEFTEARDVLWDLTGRRAVF

 D I EPRRRVF GS SVAA WWGYLSEPHPRECVVTDYEEVTATARW
 SLQTRPYGVISNRHGKGALPNEFPENTS ITTP IEEDNGNW



 DLGPGYTGI FARENGGGFLTDHFPEAQKAI WDFHGVYATH

 SVVEPRPYATVSTRPGRGGIPDEVPEMYSHTVKLDLARGVY A L S P A R D WG S C A $\square P G F G G L T S T G R T A T D R T W I Y S V D R A R G$




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 I P KVVRFPGTIHPGLIGTLPSREGARTVPPREHGGNCDIKN
 D F S S V D




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UniRef90_C5ET20
 GVIDLKVGLVKGGMEKYPHFRDYLIFEGISVDEDAHIAYR VNALLRVAVRKNFSFPMPGLETEQEWMVHAFNPDGEEAAR MNSVITIELDKGVPTPWPRLESDTHDMTAGSARPLEDAFR ATVTVQIDLIK GWADPGVRLLETEDFIMSVGSARPMEDAAR LTGHFRFNLHKGGGLRFPRAETPTHYDSMGDHEDLDDAMK TVTTIRVDLIKNWAISTPRLENETLLMADGASRPMEDAAR GYLDLRVSLIKGGVAKYGVVNPKRHLDFEGDSVDPHVAYR FKMTLRITVVKDLKVQEPFASTPTHWIAMGFHTDMLESTK
$M D V T A R F R G V E R G G P F T P S G R D E P A H A T V G V S D D L M D A C R ~$ NTCTLQFILHKGKKLNAPRAETPTHYGTFGLDPDLGKAMR GRVVVRVRLLKNFELNWP TTETETDFFVNTCGATCDEAME
 GWLDLHVDIG GGMAKYNIVNNPEYLVFEGISMDAHVAYR MEVSLTENVIDSMPVNLPRAKTKNGWITMGFHEDLDEAMW
 MTVTARF SLADREVTAPQFETAGPYATTGIAPDDMDATK LTGRLRFELHPAGTLPLPRAFGADSLISMGFGPDLDAALK AEITVKVQLVKNFELHWPVLETHDKWYVNANAPKYDEALM MNVVLIVDLLKTPGPAWPRLENDDYLAVIGSSRPLEDAWR LUGE QLTVRKDMKLAWPRAETATHYIAMATDPDLTATK MELRI QVILHKQKNLAWPVAETDSHWI MMGLDKDLNAAMT LNGLLRLTVRDLPFTVPVLETATELLVHGFGDTLDEAMK NTVTYQFILHKGKTLKAPRAENATHYDTYGLDPDLDKAMR LIGTFELHLREDMSLTWPMAETPTHVMTMAEDPDEDDCVV MEVGLTFHVRDD AAMKLPRAKTPSGWLTMGFHEDLDEAMW GWLHIKVDLIKDGMAKYPVFKPKDYLIFQGISVDANVAYR GFIDLHVDIIKGGMEKYPHYSEYLIFEGTSVDEDAHVSYR MNVTVLVELIKGGAPAWPRLEHDDALLTVGSARPMEDAWR GYLDLHVEIIKGGMEKYGMVNPMDYLVFEGDSMDVHDAYR MEVSLTFRVRDDMADTMPRAKTGTGWLTMGFHEDLDEAMW GFIDDHVDIDKGGVEKYAMVNPSEYLIFEGMSMDVH1AYR GAAHLGFDLIKGGMAKYPKYDQWMHFTGDSVEEDSTVAYR SVVHVEFRVHKDGYFTAPEMAAPRRFYATTESEDDTLAAR GWIELRVNVIKGGMDKYPVMPNYDYVVFEGISVDANTAYR MDVLFQVILRRDFTFASPLLETPDHFIVHGFGDNLEDAWR ARVVLRFDLRKGAAAAQPDVASRPHFAVTGDPENLNMATR MRTVVVVDLDKGAGTPWPRPETDDF LMSTGSARPHEDAYR AQUTVRVNVLKNFEDNWPVLETFGPWYVNASAQEYNEALV MEVSLTFHVRDDMPDKMPRAKTSDGWLTMGFAEDLDEAMW MNTVVAVELIKGAVTPWPRGEDDDHLMSTGSARPLEDAYR MDVDLTLTVREDLPDQMPFAHTPSGWVTFGFDEDLNKATI MKATLRFTVREDMPYTSPHYDTGGVYAVLGIDSDLLEASR GWDHI RVSIIKDGVAKYPNYQNHEIFEGISVDEDAHVSYR TVTTLAVEVIKGTDTAWPRLETDTAIMSVGCARPLEDAYR TDIDVTVEVLKEPELERPLIETPDAWKPLANAETLEEACE GYRDTKVGLIKEGVKKYPTYRDYLIFEGISVDEDVHVAYR MDVTLIVELVKGRAPQWPRLESDTHFITVGSSRPLEDAWR GYLDLGVDLIKGGMQTYPRYSEFLTFVGUSVDEDSHVAYR GWLHKVELIKEGMSKYPSPDTPDYLDFEGDSVDEEVAYR GTITLNFSVIKSGGPVEPHFGPGRYIYFEGFSVDVAVAYR MNGLLRLTVRRDLPFTVPVLETATELLVHGFGDSLDTAMR
 $M R A R L R L T V E K R L L L T S P H V L A P G R Y V A L G V G P D P R E A A R$
$L G G T F Q T V H K G E A A Q W R A E T P N A Y I A M G F H E D G T A T E ~$ LITGTFQFIVHKGEAAQWPRAETPNAYIAMGFHEDLTKATE MTGTFRVTLHKKADITYPLLETPEDWVLTGFSHPLDDAMR
 LRGTVRLTVLKKGDFTQPFAETEDYWIPGGDDPDLDEAMK GY IDDLRVE: KGGMETYGVTTNPEFLTFVGFSVDTTLAYQ LEGEFHFELLKGTDQRWPYARRGHLLISMGLEESLTGALV MDVDITLTVRDDYTLSMPRAQTPAGWITFGFNEDLNLAAA
 GWI EFGVDLIKGGMERYPRYSEFLSFDGISSDDEDATLAYR GlITLKTSIVKDGALKQPDF DPDYHGTGKQYNMDATVAYK MAVTLIVDLVKGHAPAWPRLEESDDALAVGGSARPLEDAWR LGRGRFQLVVRKDMHLTWPRGETPTHWUAMGTDSNLTVATK GEVTVTVQIIKEKK
GWI DLGVDLTKGMAKYP IFKPGEYLMFEGDSVDATVAYR


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| UniRef90-COCY33 UniRef90 C6XAL | KTMRFTMPWYALKAYG |
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| UniRet90_A3YWW6 | A C C T |
| UniRef90 G4HGU1 | KGVHAFLPFDAL |
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| UniRef90-B9L432 | VMVS ${ }^{\text {V }}$ |
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| UniRef90-F4CK15 | YSAVTKV |
| UniRet90_M9MLU1 | VGAHM |
| UniRef90-A0QPQ9 UniRef90 H6RNB7 | I LVSAAL P T D D IF |
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| UniRef90-W2EFV1 | YTMVAKLPKAYL |
| UniRef90-UPIOOO40 | YSVVVKAAKS |
| W4PYR |  |
| UniRef90-A0AO10QRY3 | FAVSAS! |
| UniRef90-DDL155 | VCATLFLPTE: For |
| UniRef90-D9T7V7 | YTVLAAI DKALLPQR |
| UniRef90 D3SS61 | VTVVNSIPKEY |
| UniRet90-W4AV69 | KGluALI H |
| UniRef90-Q1 H0E2 | ACATLWL |
| UniRef90-E3J8N3 | Y SALAKI |
| UniRef90-D6A | SCATLYLP |
| UniRet90-D1CAV5 |  |
| UniRef90-B2142 | S CATLWIPTEI |
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| UniRet90-W9GIS5 | YTMVAKL |
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| UniRef90 F8D8L6 | VTVRNA |
| UniRet90-G8P1E2 | SGVHVMC |
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| UniRef90-H5UPM8 | YTMVAKMPS |
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| UniRef90 NoAQ | KGVHAVLPHGALKR |
| UniRef90-4CSZ9 |  |
| UniRei90-V5XID7 | K GAGLY |
| UniRef90-V5XID7 | SCAT L M |
| UniRef90- L8N5U2 | ACCTIMAIPTAl\|FDK |
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| UniRef90-01ASQ3 | ${ }_{\text {A C A A P }}$ |
| UniRet90-V2WTD5 | A CV ${ }^{\text {T }}$ |
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| UniRef90_UPI0003B6304E |  |
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| UniRef90- G8TTB9 | S 1 G\|PLETFDK |
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UniRef90-D6U3W3 UniRef90-W7D275 UniRef90-F0X8X0 UniRef90-F1W2R4 UniRef90_LLWTL4

VhrlinpdsthgafskdLepalellds gdtvirathdsawg MLI DKSNHIFAFGPNLRPVAEAENGEDVVFETLDALSN HRUTPENVIWGFKPESRPVARVRSGDRIVMQTVSHEGN KDGHVYEFAPNMEPПYTAKDGESITFETIDSLNK MQQ TSLGFLNYEFSRFQEPRISGESGETVRVESEDALSG $\begin{array}{r}\text { TPETAQWGFNRASAPVLNVESGATVTVDTLSHEGG } \\ H N R W H P D P A V A T V K P G D S F R V E S K W F D G \\ \hline\end{array}$ HNRWHPDIPPAATVRPGAEDRLESREWMDG MHNRWHPD:PMVAMVDPGDEFRVECVDWTGG DRVHNRWHPD KP LEISP

HNRWHPDVPPVGVKPGEEIITESLDFLDA
HNRWHPDVPPVATVRPGQSFRVHCREWFDG
HNRWHPEIPPVATVKPGDSFRVHCREWFDG LRPTYHQYAYTFGGRRPLVTVRPGTIVELSTEDCFGG EGDHNRWHPEDPPVATVKPGQSFNIQCVDWTGA HNRWHPDIPAVVSVNPGDVFRIECKDWTDG VPSTLQT TSWGYNRDAKPV LSVPSGSRVTFDTVSHEGD DGHIYEFSPDLDPVYTAADGESLTFETDDSLNK MKRDP DGPLYYEFSRHHEPRLRDEPGETVMVASEDALSG YRPDPSELAYTFGGR EPVRSVKPGTVVELYTEDCFGG LPVNAHHVHWGFSRSLKPLLEIDSGDIVTVETLDAPEL TISHETAIYEFTPELEPIATVESGAQLTVETRDSLDG DPATPENMVWYFEAGQTPVLEVESGDTVTLSSWPAGGM VHNRWHPDVPSFATVKPGETVK ECDDWTGN QYVYAFDKANEPDARAKDGDEFSFRTLDCYSG LEPNRETVHGVFSRDVSPVLTDSGDTVVFQTLDAGWS MLGLTTDKKIDUMDAKNAPSARCKSGDTVLFETLDCYDC冋PGNSNHLHSSFNRHYQPILTVNSGDSIQLKTIDWGYS YTPSTEQYAYTFGGA APVMRVKPGTALRLWSDDAFGG HNRWHPDDPAVASVKPGQDFRVECREWTDG HNRWHPDVPAAVTVRPGEDFRVECREWFDG QSQGLHNRWHPDIPPFATVKP
DKDGVIYEFAPEMDAVRTVES
M最 RDKVYDRLDKNMPPSAICES
IELTQENLIGSFTNEVTP PLASVKS
VVESTYETTKWGFDSNLPDVVQIES
GHRWHPDIPTIGTIKPGDVVSYNTWSHFGN
PGRGHNRWHEAIEPVLEVEPGEVKIECVDWTGG DHKПNKKNDHGSFNNKYRPIITVDSGDSIQLKTDDWGYS HNRWHPDTPPVETIRPGETFRVDCRDWFDG
DNVIWGYNRTAKPVLTVPSGSVVTFDTVSHEGD YF $\square$ GPENLHGHLSNKMPPALRIRSGDTVTFSTLEGLER PQRENLHGVLDPALPPALRVRSGDTVHVTTLEADWR ATPQTIVWGYNGMAKPAVTVKSGDSVAVCREWTDG MNRVTKDQLCTSFSALNPPALRVQPGETFVMETNDRFEV VHNRWHPDIPACGSI RNGETVKIECLDWTGG HNRWHPEIPPVATVKPGDSFRVDCREWFDG NLHNRWHPD: PFAESIDEGETVKIECDDWTGG पPASDKTVHWYFSNEIKPVLN RSGDTVTIETLDDSDR HRLPASDLHTVWDATLPPALRVGSGDVVEFVTLDASGG YRPARDELAYTFSGRMPVAHVRAGDVLQVYTEDCFGG TPTPEQYAWTFGGVAPVREVEPGTVMRLWCDDAFGG ЏNPNKESLHNAFNCELETVLSI QSGDHIIFKTLDSGWG HRFTPALYHNVIGGSLPPALHVADGDTVITETLDAAGY DDPQKQTLHGSFSKHLKTILTVNSGDSVRYSTLDALWG VKLTPDNVIGNYPADKKPILTVKSGATVRUDTGGGGN MDED KEYDYEFAKDMKPVAKAKDNEVVKFDVEDCFAG HTFEPTHYHHTLGTHPPVLRDAPGDTVQTTCVDAAG HRFTPTSYHNVIGTMPAALRIADGDTVVTRTIDAAGY VPSTTETVRWGYNKSAKPVLTVPSGSAVTFDTVSHEGD पRPAADDYAYTFGGR QPGVTVQPGTVVELSTEDCFGG VSAERVHWYFSRSRPPQLEAASGDTV DPADPGOHGNRWPDDPPCAS:KNGEVVKIECLDWTGG A $\square Y T \| Q P K Q L H G S F S R E A S P L A R T I K P G V P L R L E Y T E D C F G G$ ATQPHLHNRWHPDDPFCGTIKNNEVVKDECVDWTGG TPTPDQLCWTFGGAD PVAEIEPGTILEVFTEDCFAG IVATPKNVHWGFDASLSPVQIVKDGDI IMMEADTHHAG I HNRWHPDIPAFASVKPGEVFTVQCVDWTGA H $\square P S D D E A Y T F G S R L P V A Y L R P G D V V S T Y T H D C F A G$ YRPEPTELAYTFGG VAPVLSLRPGQLLRVRTEDCFGG AVHHFQPKHYHNTDGA HEPVLKIADGDSVVTSTVDARGW LIKAEPKNLHGFFSRDLSAVLTVDTGDTVRYETLDAGWG MHPMTKQHVDYAMDKNATPSMTVDNGAVVTMETYDCFEN
 VPATQQQLHNRWHPDLPSAGTVSPGQTFKLHCLDWTGG


SVT R Q GE AR R LKMDRRMHPAT


Q I G N N D S A V R D A K L N V A H M L S

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


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QIGPGSPKAPLFPRHALC A A R LMA A GV D R K D I P G GH IL T YEGPDSSPEA ME L K TMAGP V M A


 | A | $K$ | $N$ | $D$ | $D$ | $S$ | $A$ | $L$ | $E$ | $A$ | $P$ | $L$ | $L$ | $T$ | $V$ | $H$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Q | K | $L$ | $L$ | $S$ |  |  |  |  |  |  |  |  |  |  |  |

 $M \mathrm{D}$ G D P G A Q S V F H WT R V H I C T G P I Y V T D A E P G D V L E V R I L
 $R \| R A V T D A S A V L D P R F L N P Q T G P F A V R G A E P G D T L V L H L V$











 A GP E Q A N GR R V E F C T R K H P Q I G P L Y I A D A K A G Q S L A I H I N QIG N N D S A V R DVID LT K I H Y L T G P F E I A T A E P G D V L I V E I Q




 $D Y R G E S V A$


 $\begin{array}{llllllllllllllllll}Q & H & D & D & V & A & D & V & R & V & D & L & R & A & H & P \\ Q & H & N & N & D & T & A & V & & \end{array}$

UniRef90 UPI000404E7BA UniRef90_S5ZIQ0 UniRef90-K9XD72 UniRef90_Q18160 UniRef90_A6CBV7 UniRef90_A0A010YHD6 UniRef90_UPI0003696D6D UniRef90_UPI0003F59417 UniRef90_UPI00035C5DBC UniRef90 F0NK10 UniRef90-UPI0003780D60 UniRef90_D9T205 UniRef90-C8XC71 UniRef90_UPI000373446A UniRef90_S7RMP9 UniRef90_K9TYN4
UniRef90 M1NSX7 UniRef90- X0QNF4 UniRef90_V4HDB2 UniRef90_LODDK2 UniRef90_UPI00036D76FF UniRef90_D7A2Z3 UniRef90-MOAZK2 UniRef90_A0A022GWE2 UniRef90_D5RSZ7 UniRef90_A5DPG0 UniRef90_E5YB32 UniRef90-I4ZRL5 UniRef90_W5X264 UniRef90_R5B699 UniRef90_UPIO004413E0A UniRef90_E7RF20 UniRef90_W9GH20 UniRef90_D1CAT6 UniRef90_H5X4N3 UniRef90_D8QBN6 UniRef90_UPI00031CA313 UniRef90_G2MKL2 UniRef90_U2CL10 UniRef90_W4B2B2 UniRef90_Q67Q45 UniRef90_B4ULR1
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EVVP 90100
 A I D Y R P Y G V I S N R H S R G A L P G E Y P L $D V Q W G F T G I$ FDKANGGGFLDEDYPSAAKAIWDFEGDYATH DVRLN E E Q GVIT A P E F GLLQ DHIE H PATRVVTEITKGESLL A I E S R D GQ CA TYT GNP K QL C Q WL G T DVL HVCPI R D G Y V Y W DLG G $\square$ RAPYGFSNRHGYGALP GEFPE GTLRRREDAH GSNIH F $D V G W G Y T G L F A R S N G G G F L T D W F P D A Y K A V W D F S G Q K A T H$ DI GWGYTGVFDRHNGGGFLTDRFPDAYKAlWDFRGQTARH

 DMGWGYTGI FPT GNGGGFLTEQFPDAYKAVWDFTGHKATH
 DI T P A R D WGS S T F P H F GA L T A T P T T A R V WV Y D L D V D I E WG F T G I F A K D N G G GF LIT D HYPN HAKA I WD LE G I Y S R H DVGWGYTGI FAPAHGGGFLHEHFPDAHKAVWDFRDGRATH KI EPRPYGVISNRHGKGTLVGEFPKASKDHPERFGNVSVF

 DI EPRPVF GS SVA A WWGFHYSEFPRETVTITYEIPBAKAVH D D LT E D R G V I S S I E G F G L L H E G I E A P R S R I T P V E G D A T L S SHDPTDWGF DS L LP L L GA LPAEFTDYETVVPRLDRAA GEW
 DI QPGFS GVFAKENGGGFLADYFPEADKAIWDLKGLFATH E I Q $\square$ GS WG WT S A G GWPHDCHKRLGGETFMLWSLDRDRMVG K I T TR DWGAM GTSSGF GFKNVQGSDHSMHVVDIKDGVVRA
 KLVPGWY GRNWAGGDPA WQNDKLDDT K SARIQLD WARMT G ALEPARDWGSAA IPFFGTQQHPLPD T TWWYELDRDRGTS

 D L G WG Y T GVV A R T N G G G F L T D H F P D A H K A V W W F H G Q T A T H EVVRVA E D R G VVVT T P G F G L L Q D D D V E A P F T Q I T T P V D G E Q I R Y
 DI GWGYTG IIFCRHNGGGFLTDHFPHAHKADWEFDWARSRH RVRPTDWAVCFNNPGAGALPDAFPQGQAKYFDLDNNTSEF D AP WGFTGlF DRHNGGGFLEDHYPKAAKADWDFDYCTSRH
 E L VP GWY GRNWA GGDPN WQN EK LGGDTNTEK LQVDDWGKAE D DVGWGYTGIFAPSHGGGFLHEHFPDAHKA IWDFRDGRATH AVEPRPYGVDSNRHGKGALPGEYPDASAEHPERYGNDS LF
 EIVVTENWGWSSVVGGNRDHLDNLGE EDFRVWDLDA HRGICC
 K I D DDP WA C N S F G A G R G F L P D D F P Y S R T K I I P L D R E K M l F

 DVQWGYSGlFAKENGGGFLDEHYPKAAKAVFDFEGCSSRH DI QPGKHFGSNAATWWGFQYDDLPPHAKA I Y NFRWTP QTD DV R TAA WGWNACRPGGGLLDDRVPGPYTHFWDLRGGAFT D SIIEPARQWGSATPPHFGALDTSTHTATDRVWVYSDDRQAG DLTPARDWGASTVPFFGGLTGTDRTALTWIYELDRARNTV
 DVQWGF T G $\square F A A N N G G G F L S E F Y P Q A A K A I W D F E G C S S R H$ E I R P S S W G WS F A G G S K Q V L G $\quad$ DG E Q D P Y H L L N W
 DI KVA D Q GAVCSIIPDCGPFADK SES RTHILDKI KDGKVI W KLRPNRRRGWSGVVLAANVVDPEDVPRLADWDVDLEKQTA $R M V P T R D S G F T R S V L A M G N V V D D L P R P E K T L W T I D R E N S T V$ K L E P R P Y GVISNRH GK G A L P G E Y P R T E P K FA P I I E K D G D Q W D $\operatorname{E}$ P D P Y G Y T V I A P G F G F L R R D L F P D D P Y
 DV QWGFTGIF DAKNGGGFLDEFYPNAAKAI WDFEGCSSRA SLTP A P VGUSSTEPHFGALTSTGYTRTLRVWLYD\|DLARS SITPAR DWASAATPHFGALTSTSHTATILRVWIYDVNRANS E L RVVGTWGWS Q G GEFSSSALGMMQEKE GY P L I WELDATNM MS

 DMPWGYTGGFELENGGGLFAREFNRAAKAI WDFHGVYARA

 SMVPSRDWGWT F NVLAAPNVVDP IAAAAALPPFDIVRWSVDA $R \quad \mathrm{R} T \mathrm{G}, \mathrm{T}$ WGWS A GPGLLPSQMDERPPAVITVPTGDQATAHN
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GD D F T|V|T|L|QPFMG|IMGMPPSPGEHTT\|ISPRVTGGN\|DCKE GD LRIPAKPMIGVIGVA SREEIPCGEPGKHGGNMDTKL
 FK DLLEVPINPII GTIGVATSEETITTTLPHNHGGNLDTTD
 1 I
 V






 $\square P G V R I A G L K H P G L M G T L P S H E A A R T V P P R E H G G N T D D K D$ RHGHEVALRPPMGGVMGMTDEPGEYSTAPPRATGGNLDCKE


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 DPGVVRVPMCAFPGSI GVLPGKE GLRTVAPRENGGNMDDKA $P D G M T V P L S P F P G V V A V A P E G E R V R T H D P G N H G G N L D C R A$ $\square P G V K F T G I T H P G L V G T A P S P E G A R T V P P R E N G G N H D D K N$
 $1 P$ GVVRFA G LI HP GILGGCAPSAEVLA E WNRRENGGNCDIKN

 $F \operatorname{L} G V R V P B L A P F P G V D G V A P G P G P H R T A P P R Q V G G N D D V R Q$


\section*{Q} | $Q$ |
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| $L$ |
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 NKNMIWPVVDTMMIGVIGVATDENNDSTGFVGNHGGNMDNPM


 $\square P H V R F A G G L D P G G L G C A P S A E V L A A E W N R R E H G G N C D D K N$
 DK GHK R L HP FM MVMGMP PDEPGI H T I PPRYCGGNDDCKE


 DH GVRFAGVSHPGLGARPSAELLATNNPREHGGNCD】KN
 D F A V A L





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niRef90_L8WTL4

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 MTGTFRVILHRKADLTYPLIETTDDWVLTGFSHPLDLAMR IDDVTVEVLSDPEDELERPLIETPEAWKPVASADALEAACE GTGSFRLTVRRDFALRGPFAEDAENLDAGGLDEDLDDAAA GVVTLSASIVKGGKLKSPMYVPGEYLTFEGFSVDLTTAYR GVTRVGFDLIKGGMEKYPIVFVPYDQWLTFGVNHYLDVAYR MEVQLTFRLRDDFPIATPHARAPDAWITLGLHEDLQEATY GEVTVRVTAVKGMKLEQPLLIEGGDAMTVASGETMQEATE MDVDTVLILHK GMKMKQPIFLPDYHGDGKQYNMDATIAYK MTTTLTVDLVKGSAPGWPRDEDDTHWMTVGSSRPMEDSWR GFIDFGVDLIKDGMNKYPRYSTFDSFDGFSVDEDATVAYR GIITLKTSIIKGGALKQPIFMPDTHGDGKQYNMDATVAYK GFLDLHVDLIKDGMNAYGUEHNPEFGTFTGVSVDEQLAYK GTVTVRVSVLKENPIPTPFLDTRDAVITUQSAATVEEAGK GYITMCVDLIKDGMNKYPRFSSYVVFEGYSVDEDAHVAYR GTITIRFDLDKNGALKSPVFRPGDYLTFEGFSMDATVAFR SRVRVRFGLRKGEAERRGDAVPRRFYATTGDSEDLTLAAR MDVDIT TVADDMQLNMPRANTPAGWITFGFNEDLNEAAA GHLDLHVGLIPGGMDTYNDTENADWUSFSGDSVTEDDAYQ
N
A GRILRSAADYLIKKPDVHTAEGWMTFGFHEDLTVAAY GF DVFHVDLIKGGMATYPRYSEFGTFDGGSVDHDATLAYE LTGTFEFILHKGTRLVWPRGETPTQYIAMGFHEDLKRATE VDATLRVT EDRFKVNRPVVETADEVMTTGEGETMEVATN NI TVKLSVIKNGMVQMPQFGPGRYLTFEGFSVDHHVAYR GF:DLRVD:DGGMETYGVSPNYSHWLAFGTSVTDDLSYQ GS GIFQLVLHKKGNLSHPFLETPDEWVLEGMSSSGEAAMR GVVTARVHLHRGRARRTPELRREGAYVTTGNEPTLLDAAR MHVTLIVELVKAAVAPWPRIESDELITVGSSRPLEDAWR MEVHLQINLLKSQSIKRPRVVTKDGYITLAFHEDLNEAMW
 MDVDLTFTIKADQHLSMPRANTPAGWITFGFHEDLDEACF NTAVLQFHLHKNTGLKVPRAETPTHY SFGLDPDLDNAMT MKARLRLTVEKKADRPKGWVMSSPHYVTLGIHADPREAAR GEVIVRVKVLKNFELNWALLETEDAYYVNTCGPTCDDA R MDVQFSVDLIKGQAI RWPRGEDAEHIFTVGNARPLDQCVQ FEITVRLSVDKRRRISWPRAETADDIVTVGNARPLDQALG LRATLKLTLLKSGKAQLPLGETNDYWITVGLDEDLDAMK MRTTVIVDVVKGGAPAWPRLENDRFLISTGSARPLEDAFR MTGTFQVILHKKADLTYPLIETETDWVLTGFSHPLDLAMK GVIT KFNVIKNGMHMPQFSPGRYLTFEGFSVDHHVAYR MRTVVIVDVISGVPTGTPRLLETDAQLVSLGAARPLEDAFR MRTVVIPEVIKGHATPWPRFESDTALMSTGSTRPLEDAFR
 MNTVVYVDLLKQTATPWPRLESDQFLMTTGSARPGEDAFR THTTVQVDLLKGWTFRWPRLETADFYMTDGSARPMEDAAR GII TFSCSI IKGGPMF LPPSVDPDYLVFEGDSVDVHVAFK MRVILTVEVIKGVSTAWPRMETDTA MSVGCARPLEDAYR
 LDVRFTVQVLKGKTRGWPRGESDTHWFCDGNARPLDQADQ MEVELEFHLHTRMQLSLPRAFTPAGWLTFGFHEDLNEAWA SQITMRLQVVKEKKLA
GIITINFKVIKNGMADLPQFGPGRYDYFEGFSMDVTVAYR GATHVAFDL:KGGMAKYPSVVKPHYSKYDTFEGDATVAYR GVVTLKFTIKDGPMYDPSVDPKYNDGKQYSMDATVAK

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K S VRE Y L E $\square$ AN S K Y G M T K Q DALL VG S A A $\square D F E V S Q V V D \square V$ QTVLRRCIVYL RRFGYS DY QDYLLLS CAPQGHVAGIV DPN MANED LI KLLA LLEHDYS LT DAY L FSS LVVGGLEIS QVVDPL





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|  |QATLNAITYLM KLGYTREQAYLLLSAAVESHVGAVVDPN



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| UniRef90_Q67Q45 | A C CT L WL P T E I F E |
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| UniRef90_G0RTX7 | VCTT L GI P M D I F D |
| UniRef90_Q1ASP9 | L L V S A L L P L D I F |
| UniRef90_UPI00030C8CC2 | K GV H ALLP H GV DR K |
| UniRef90_Q8FNE6 | A CAT L Y L P T D $\downarrow$ F D |
| UniRef90_A0A031MI98 | K Gl N S M I R K A DF SEF |
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| UniRef90_A8LYY6 | Y TV L A TVVD T A ALLP R |
| UniRef90_UPI00035EE949 | Y S AVT K V S K A F L |
| UniRef90_W7ZP28 | K GVHA S L M K E K L R R V |
| UniRef90-N6UU38 | Y T M A CRVVSKS WLLKR R |
| UniRef90_E4UXJ0 | A C T T M GVPM $\square$ ¢ D |
| UniRef90_UPI00037A0146 | K GV H A L P P S S T H |
| UniRef90-I7Z9N4 | K GI H A MIP P K S L F |
| UniRef90_R8BHV1 | Y A V A C S I P L S T F |

Y T MVCKMPKKLLERLG
F T V A A C R V A K K W L
K GI HA L I R K S D F A E F

| $Y$ | $L$ | $L$ | $S$ | $A$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $Y$ | $P$ | $L$ | $D$ | $D$ | $A$ |

Y TMAA A KL P K G L L


| $A$ | $C$ | $T$ | $T$ | $L$ | $G$ | $V$ | $P$ | $M$ | $D$ | $I$ | $F$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $Y$ | $D$ |  |  |  |  |  |  |  |  |  |  |
| $Y$ | $V$ | $M$ | $S$ | $A$ | $G$ | $I$ | $D$ | $K$ | $K$ | $Y$ | $L$ |


| $Y$ | $T$ | $M$ | $V$ | $A$ | $A$ | $V$ | $D$ | $K$ | $R$ | $Y$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $P$ | $K$ |  |  |  |  |  |  |  |  |  |
| $V$ | $G$ | $V$ | $H$ | $A$ | $V$ | $L$ | $D$ | $E$ | $D$ | $K$ | $L$ |
|  | $C$ |  |  |  |  |  |  |  |  |  |  |


$\begin{array}{lllllllllll}Y & T & A & V & A & K & V & R & T & L & V \\ Y & T & L & G & A & S & T & K & 1 & \end{array}$
Y T L GAS I T K A I
K GV H S II P K S MF R
A CVTMALPLG $\quad$ MF D
Y T I A A K I N K T Y
Y T M V A K L A K Q H L
Y TMAAKLPKSVL
$\begin{array}{lllllllllll}Y & S & V & V & C & K & V & P & K & A & V \\ R & L & \\ V & H & A & L & L & A & H & D & A & I \\ & D & A\end{array}$
A C T T L GLP H DIF D


UniRef90 UPI0003763E35 UniRef90-A0A010YIW1 UniRef90-N1PKW1 UniRef90- $\mathrm{X1KR71}$
UniRef90
W4LJU8 UniRef90_UPIOOO1BC2E91 UniRef90_UPIoo037B4A35 UniRef90 ${ }^{-1313 \text { KP1 }}$ UniRef90_UPIO003160E5B UniRef90-UPIO0047D1252 UniRef90-K5W215 UniRef90-Q0G5P7
UniRef90_UPIOOO381B74F
UniRet90-Q9SZE9
UniRef90-Q01VE0
UniRef90-UPIo0037C7467 UniRef90-M3AZH6

## UniRef90-H6C1T5

UniRef90-UPIO00372414E UniRef90-UP10003B5E39C UniRef90-F6IKQ4 UniRef90-G9N1K9 UniRef90-UPI00031F29EC UniRef90-A3GHA5 UniRef90-UPI00037B5BC7 UniRef90-Q89LS7 UniRef90-D5PFC8 UniRef90-UPIO002E59AD4 UniRef90_U1PPDO UniRet90-S4MLC8 UniRef90-E4L822
UniRef90 B8NZC2 UniRef90-UPI0003B619BA UniRef90-A4G9L4 UniRef90 A4YYS5 UniRef90-R5FQS8
UniRef9O_10HQW0 UniRef90-B9LQ06 UniRef90-A0A017SLB0 UniRef90-W9GZW7 UniRef90_UPIO003762016 UniRef90_l3ZFM7 UniRef90-A6WFM7 UniRef90-F8JZM5 UniRef90-D7BBR3
UniRef90-M4ZWV4 UniRef90-B8MQJ1 UniRef90-A1T1T9 UniRef90-K9DP46 UniRef90-F4L8V8
UniRef90- AOA009P2W7 UniRef90-U4KZ34 UniRef90-X8JPT2 UniRef90-M9R1B1 UniRef90-D5BMC8
UniRef90 $\mathrm{s} 3 \times \mathrm{XV7}$ UniRef90-Q0K404 UniRef90-R5F4Z9 UniRef90-W1TUUO UniRef90-KOP3N9 UniRef90_UPIO0028973F6 UniRef90_MOMM18 UniRef90_UPI00034A37C7 UniRef90-A2SLW4 UniRef90-MOBBZ2 UniRef90-Q5UWY2 UniRef90-D2B144 UniRef90-V6KD93 UniRef90-GOLJJO UniRef90-K91740 UniRef90-F8GQC7 UniRef90-UP10003B5857C UniRet90-A8L5W9 UniRef90_D6TR17 UniRef90_Q1YIL4 UniRef90-UPIOO037F8749 UniRef90'UPI000379FFAE UniRef90_A6T1X1 UniRef90-A0A010Z4J1 UniRef90-L8DCC7 UniRef90-16ATP8 UniRef90-B2GIX0
UniRef90-E6PK45

R P TVVYRFSAANKPVLTVAPGDTVHTTTVDAAGT

L HNR WHP DVP F C G T I K N GE TVVKIV C L D WT G G
A $\square$ H T F Q P
L H N R WHP D

L Y Y N N $\quad$ G S | $H$ | $P$ | $V$ | E |
| :---: | :---: | :---: | :---: |
| L K P A | H |  |  |

LPASPETVHWGYSKDLKPALHVRSGGDFID IVETLTHHAN
 PHCGHNRYHPDIEPLLEVNEGEEVVLETRDAVDG


\section*{$M$| $L$ | $R$ | $P$ | $T$ | $P$ | $D$ | $Q$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $F$ |  |  |  |  |  |
| $P$ | $V$ | $E$ | $A$ | $S$ | $R$ | $V$ |
|  | $A$ | $A$ | $T$ | $P$ | $Q$ | $T$ |}

HWYFSRSL
 $\square$ HK $\square$ D P E TVNWGFDNSTE PVVRVIESGD■VSIETVTHQAG PSPA QLSWTFGG VKAI SRLLRPGTTL RLWTEDAFS G MQE $\square$ R K E G IHNRWHPD IPP EAPPSSSLSYVFGGABEPGATVKPGEVFKVQCVDWTGA
 M N K V L K $\qquad$ D N N I HN RWSH N NK P A L Y Y CD D LTSSRDGHVYEFAPTMEPVYEAADGE STGM LK IDD R E K L H N R WHP DIP SVVATVANSEEVVLI E CMDDWT G G LPATA DTVVHWY F S K S L A P RLLE I S P G D YV T I E AMDT H H A N H N R WH P DIPAVAEVRPGDEFRVECKD WT D G

 FKPDHYHHTLGSHPPVLTI QPGDTVIDTTCVDARGF
 L P S H P D E V LDWGWN A Q TR P A L SVA S G D TVVTID TVVSHE G D $\square P S T L K T$ K

L HNRWHPDDPRASAGITPGETVVIDCLDWEGE
L H N R W W H P D I P S A A TVVP P G Q T F F K L L H C L D D WT G G
F HRDN
L H N R WHP DIPACGT
$\qquad$ H N R WH P D I P A AVTTVIS S P G




 HEEGAI YEFTP TLDPI ATVEPGAELTI ETRDSDD F DED GHIJYEFSPEMDPVYTAA D

H N R WH P D I P A V A MVVR P G D
P G L H N R WHPDIP SIGSIE P GETVVKIECLDWTGG QP DP IV VN RWH P D T P P P A A T I K P G E K V

I HRDESETVVGILDPKAAPVASIESGDLVMYWANGASYG

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

TGHNR WHE DII P P IL L TVVDP G D TVVLDDVRDA WD S Q LH N R WHPDIPMVAWVKPGDEFRVECVDWTGG
TGHNRWHPEI PPVATLKRGESYRIDCREWFD G

 $\square P$ A S P ATVS WH LDD PAAA PV L Q L A P G E R A V I E T L S G G P R H N R WH P DIP A EVVSVRPGQTFRVHCREWFD G



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UniRef90_QKK404 UniRef90-R5F4Z9 UniRef90-W1TUU0 UniRef90-KOP3N9 UniRef90_UPI00028973F6 UniRef90 ${ }^{-}$MoMM18 UniRef90-UPIO0034A37C7 UniRef90-A2SLW4 UniRef90-MOBBZ2 UniRef90-Q5UWY2 UniRef90_O2B144 UniRef90-V6KD93 UniRef90-GOLJJO UniRef90-K91740
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UniRef90 E6PK45
$M \bar{Y} R$
Al RNDDSATRHAPLAGVHVLS

DVKGDPGAESVFHWTGVHTCTGPVA, RGAEPGDVLLVEQ QVHDDDSAVRDMVLDHNHMLS
DATGTPRSL
DATGTPRSLRRAGGNPQTGPFFIVN
GGNPQT
RVRTRDDLVSKVRFPFLLNPLGPFHVEGAGPGDVAVTLH DEHDQPVTPR R GNPMTGPFFIEGAEPGDTLVIKLE DAPDWDGIAPETRTPGVHDMTGPDEVAGAKPGDTLRVDLL Q Q MVLKDAVATVDFYKDGPHVVTGPVEVAGAEPGDVLKVELL Y LDDEAKMITDFSKDGPHDVTGPDEVQGAMPGDVLKVEVL
 QI KNNDSAI KNVDLTRTHYLSGPFETESAEPGDVLVVERQ VLKSLDKKLTDVTFPFVNPVTGPVKVKGARKGDMLKIVVMH MI DGDAGAESVFHWTGVHDCTGPVAVRGAMPGDVLEVRIL

A VNDDSAI ANAPLESVHVLS

Q| GDNDSAVRGVDDDHAHMLS AV GTDD A E ESVFHWD TIQTGDDLLDSIP DEVNAATG QLHNDDSAVRDVDLTLAHMLS RRTADEDVPRMFGERRGHCLAGPDAVRGAEPGMALAVT QVNNDDSAIRDMELSPNHHLSGPFEVKGAEPGDMLVVDIL QUNDNSDDVKNDDLTKVHNLSGPVAVEGAEPGDCLVVDUL MSYEDREPVRKRFPQGPYSNVGPVELRGSMPGDVVECRMV EVLEDAVGMAASDTPGAHVVTGPVHVAGAQPGDTLQVEVL LGASTEESPRDTVHDNGHALC DATG
DMNGKRV
DMNGVKRV QGGNPET俍 MLKDPGAESVFHWDGVHDCTGPVYVQDAEPGDVLEIRIL QFDKDTDDVGRATTDGVHPHTGPVYVRDAEPGDLLEVRIG QIFDDDSAVRDVDLTKVHYLS
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UniRent UniRef90-UPIoo037B4A35 UniRef90- Q13KP1 UniRef90_UPIOO03160E5B UniRef90-UPIO0047D1252 UniRef90-K5W215 UniRef90-Q0G5P7 UniRef90_UPIoo0381B74F UniRef90-Q9SZE9 UniRef90-Q01VE0 UniRef90_UPIO0037C7467 UniRef90-M3AZH6 UniRef90-H6C1T5 UniRef90-UPI000372414E UniRef90_UPIO003B5E39C UniRef90-F6IKQ4 UniRef90-G9N1K9 UniRef90-UPIO0031F29EC UniRef90-A3GHA5 UniRef90-UPI00037B5BC7 UniRef90-Q89LS7 UniRef90-D5PFC8 UniRef90-UPIO002E59AD4 UniRef90_U1PPD0 UniRef90-S4MLC8 UniRef90-E4L822
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GMELDT回GFALLWPGПGMFPDWVRQMRTHVVEVKDGVVHW SVEPREWGSTTVPFFGSRTATPVTPLLRTWIYDDDRVAS
DVWGFTGVFAKENGGGFLDEHYPEPAKADWDFEHCTSRH KILLDREYAFSLLPHFGSLTGESRGRDLARYDWELDLAAQ D EPDEYGYTLIVPGFGFLRDKFTKPYMAWROTRLEATS DLTPARGWGASAIPFFGLLHDHLPEG VWIYEDDFQTCTG DLGWGYTGIFAKSNGGGFLTDHFPDPGKA WDFQGKYATH DIHPRRCFGSNAAAWWGFLTEPKPREVVTVYELDADRAVY DVGWGYTGIFSRNNGGGFLTEQFPDAYKA: WDFSGQVATH DMPWGYTGIFELINNGGGLFAREFDKACKAIWDFNG\|YATH T TEPRPYGVПSNRHGKGALPGEYPNASAENPEAYNNVSDF KLRLNRDWASSLNSDLAKMKDVGKEARWHDDLASGTAAH NLEWGFTGSFDRENGGGFLTDHFPCATKADWYFEGGYAYS RLKLNRDWVVWRALDTDLAVKMKDGGKTVRWHLDLQRGVA DI RPRDWAI STTFPHFGALTTTHTTAMLRVWRYDVDVARS DVQWGFTGVFAKENGGGFLDEDYPKPAKAI WDFEGIHCRH DVQWGFTGVFHKDNGGGFLDELYPEAAKAI WDFEGCSSRH SMTPNRDWGWTCNVLAPNVVDTLPTDEVVRWQVDAAQGDA EFSHKGWGWTATLEGMGLLAEDFPDSHLHRWELGEHTADF D KPRPCFGSNAATYWGFHYDLLTEPKKRDYEVEATGART ELQTGTWGWTVVIPGMGLLQDEIPGPHVMTFDLPNDFAVF DVVPQATGFTCILPGLGFLRDVMTDPFLAHWKLSDGWATS DV QWGYCGIFHKTNGGGFLDKFYPEAAKADFDLEGGHATH DIVPRRVFGSSVAAWWGYHYNEFREAVTIYEDFDDTDAPH RI RLANYATNNTAKDKGLFPGEFPEQVTSYYDTDRMRMRF DVGWGYTGTFAQKNGGSFLVDQFPDAYKAVWDFQGGTSRH GLTPARDWGVSTVAGFGGLTSTDRTARTWIYQVDFEAAAG D SVADRGFVCTVPECGPFAEKA EDRTNGLRVEGGKDYW DMPWGYTGIFELENGGGLFAREFKKAAKADWDFKGVYATH TIEPRNSWGSATVPFFGALTTTHLTAGLQTWYYEIDRAER DVMPRPSFGSNVASWWGFHYHDLPREVVTTYETSCAKAVY DMERDRLGFTALUPGDGMFPDWVRRKETRVVAVENGQVLW NTKVDNVGFVCTFKGCGALRDK TELRTKTFEVKDDKVKF EI GWGYTGVFARNNGGGFLTERFPDAYKVIWDFRGDVATH DVRVTEDRGVLTAPGFGLLQDETEHPATRITEVDAEGADD DVQWGFGGVLDRYNGGGFLDEDYPKPAKAVWDFEGCSSRH D GWGYTGIFARDNGGGFLTDHYPEAGKAVWDFHGRFATH RLRLNRDWATSTRANPPGUARRDTDSGVVRWHDDGEKGLA SI EPRDWAASSTVPLFGALTSTATTEAVWLWELDRARRVC HLRPNRRRGWSLAQAGGYFVWDWEVDAKAGTARLNHPASP SMTPRMPYGSNCAANWGLFHNKFQKERDT YYELVDQRQPF DLAMRPYGFVSSRHGYGALAGEFPEPVREVDQTPYGKIAA SAVPRPYGVVSNRHGKGALPGEFPENVSVFTPDRRDKDGK
ESAWGFTGIFARENGGGFLCEHFPDARKACWDFHYTTSRH NVEPRPYGVISNRHGKGTLVGEYPEGASHLHPERYGNVVF DVQWGFCAI FDKKNGGGFLDEEYPQAAKAI WDFSGTSSRH DHAWGYCG|FDVNNGGGLLCDDFPVAAKA EVAVEGDGTTAVWPGVGIFPDWCRQKEFGIVLVKNGIVHW DVGWGYTGDFAKNNGGSFLVDQFPDAYKAVWDFNGQTATH DVRPRPCFGSNAATWWGFLTEPREREVVTVFEDDCERARW DVTVADQGAVCSIPECGPFCEK SEDRTHIMRIENGLVHW SMDLDPGGYSGLDSTAGDWGDQAGYPMTRVMKIEDNIIHW
DMGWGYTGMFAKNGGSFLVDQFPDAYKAI WDFEGGYATH AI RVTEDRGVVTAPAFGLQQDD DIGWGYSGIFAKVNGGGFLTDYYPGAYKAVWDFKGQTSRH
DVATRSFGSNAAWWGFHGDTMTEPKKRIYEVDWARAVY DVATRPSFGSNAAAWWGFHGDTOTEPKKRIYEVDWARAVY AVRVTEGQGVVTTPDFGLLQDEDEHPATRITEVDGDTIEF DLGWGYTGVFAKVNGGGFLTDYFPDAYKAI WDFHGTYATH DVQWGFTGIFAKENGGGFLDEHYPNAAKAIWDFDGIYCRH SLRPDAWGFTAAATSDTPLTRRDGDSEWLSWDLDADRGTG DLEWGFTGMFDLENGGGFLTDHFPEARKTIWELDGTHSRH DMPWGFTGI FELENGGGLFAREFRRACKAI WDLNGVYARH KLRP胃GWGWNAPKGVGALPNDFAKPYDRYFKFDESRQYF QLHRRPYGVVSNRHGRGALPGEFPESEGNVSHFSWIDDAGA EVRPGNWGWTSAGGRQSAI NRYLGKRELLHWALDADAMTG RMAPNRDRGWTFSVLAPNVVDQMPERERVEWIIDRDAGTV HLKLLNRDYAVSRATDNDVAVKLKDNGKTIRWHLDAAKGVA DI APDEYGYTVIDAPGFGFLRDVFPDPY\|VNWRLTRDGAVS D 1 QTRPSFGSNAASWWGFHYHDLPKPREVVT YE EHAAH PTRCDRWGYTVQVPGFGF RETYQAPHDTKWDUADNWATS DSAWGFNGLFAKTNGGGFLTDHFPDARKSCWHFSGVYARH DVGWGYTGIFAQKNGGSFLVDQFPDAYKAVWDFRGGTSRH DVDPRRVFGSNAAAWWGFLTEPKPREVITIYEDDCSAGRW GVGWGYTGIFAKSNGGSFLVDQFPDAYKAVWDFSGHTATH QI RPNRPTGWARSVVDPTYVVKQLPETPLLAEWAIINHDDGTA EI ADADWGWSADEPGFGDFPDLAPAYESLVVPIDRARARL DLGWGYTGDFATRNGGGF LTDQFPDAYKVI WDFSGQRATH DCGPRPSYGSNAAANWGFHYNDLLDGTKRIYEVDWAEAVY DLAPRPYGVISNRHGKGALVGVLPENVSVFTPVSDGRGIL

UniRef90 UPI0003763E35 UniRef90-A0A010YIW1 UniRef90-N1PKW1 UniRef90 - X1KR71 UniRef90_UPIOOO1BC2E91 UniRef90-UPIO0037B4A35 UniRef90 Q13KP1 UniRef90_UPIO003160E5B UniRef90-UPIO0047D1252 UniRef90-K5W215 UniRef90-Q0G5P7 UniRef90-UPIOOO381B74F UniRef90_Q9SZE9 UniRef90-Q01VE0 UniRef90-UPIOOO37C7467 UniRef90-M3AZH6

## UniRef90-H6C1T5

 UniRef90-UPIO00372414E UniRef90-UPIo003B5E39C UniRef90-F61KQ4 UniRef90-G9N1K9 UniRet90_UPIO0031F29EC UniRef90-A3GHA5 UniRef90-UP100037B5BC7 UniRef90_O89LS7 UniRef90-D5PFC8 UniRef90-UPIO002E59AD4 UniRef90 U1PPDO UniRef90_S4MLC8 UniRef90_E4L822UniRef90 B8NZC2 UniRef90-UPI0003B619BA UniRef90-A4G9L4 UniRef90-A4YYS5
UniRef90- R5FQS UniRef90-10HQWO UniRef90-B9LQ066
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UniRef90_D7BBR3 UniRef90-M4ZWV4 UniRef90-B8MQJ1 UniRef90-A1T1T9
UniRef90-K9DP46 UniRef90-F4L8V8 UniRef90-A0A009P2W7 UniRef90-U4KZ34 UniR Ref90-X8JPT2 UniRef90-M9R1B1 UniRef90-D5BMC8 UniRef90-S3XXV7
UniRet90 O0K404 UniRef90-R5F4Z9 UniRef90-W1TUUO UniRef90-KOP3N9 UniRef90-UPIO0028973F6 UniRef90-M0MM18 Unifereso-vplooosa4A37C7 UniRef90-A2SLW4 UniRef90-MOBBZ2 UniRef90 Q5UWY2 UniRef90-D2B144 UniRef90-V6KD93 UniRef90-G0LJJo UniRef90-K91740 UniRet90-H2JLF6 UniRef90_F8GQC7 UniRef90-UPIO003B5857C UniRef90-A8L5W9 UniRef90_D6TR17 UniRef90-Q1YIL4 UniRef90 UPIILOO37F8749 UniRef90-A6T1X1 UniRef90-A0A010Z4J1 UniRef90_L8DCC7 UniRef90_16ATP8 UniRef90_B2GIX0 UniRef90-E6PK45 UniRef90_UPIO0029A5A85 UniRef90-UPIO0029ACB03
UniRefgo-UniRet90-A3PPC2 UniRefofo-D2SFT6 UniRet90-X6GDM4 UniRef90-AOAO11SIN7



UniRef90-10L2F8 GlVAGVAP 140 GTHGGNLDVVQE


 NKNVQUPVRPHFGVDTVAPQQDGLDSUPPSTFGGNLDNWR VPG RSIPGRPFFGL MGVNPPWGRITSVTPGRYGGNMDNKE VPGVRFAGISHPGLDGTAPSPELATWNKREHGGNCDDKN DA HRRDPAKPMLGGCDAAAPSTAAPGTGDSGFYGGNMDFNE PPGVRFPGLTHPGVIGTAPSNEAARTGPGRENGGNCDDKN

 $K G A A D V P I R P F L G V L A C S P D T D Q P Q V M P P G H F G G N V D C R D$
$P T N V E I P R P H F G V A V A P A Y G G V D S V P P A S F G G N G D N W R$ KPGIHIPRQPFYGTMGVAPAEGEQFALYPRNDDGNFDCRY VPGVRIPGAPFMGTSAVAPSRHGLRTLPPRENGGNFDVKQ IPNVKFTGLIHPGIMGTAPSAEVLAEWTAREHGGNCDIKN ADVGIVPLDPFFGVIGVAPABGEVDSVPPSYFGGNGDNWR SPNVLVPLEPFPGLLAVGRTDGKCSTEQPGPYGGNMDLPA LDNVNDPGKYHFGUAGVAPSSEAARTAPPRENGGNQDIKN DKNMVWPAAPMDGVGTAPDGEDMPTAFVGNHGGNMDNAM MPGVRFAGVTHPGLIGTAPSPELLATWNQREHGGNCDDKN NKNVR1PVRPHFGVLAVAPAHEPVDSVPPSYFGGNMDNWR NEHVKLPVRPMDGVAGVAPVHGAVLTVDNGPHGGNLDVQE ND LTUDUNPMUGVDGTAHESDEISSGKSFDCGGNMDSND FEGVDVPGEPVIGTIGVATAEGSVSTLTPDDHGGNLDTTD
$\pi z$

## [ $\square$ <br> I

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 SDKVKLPVRPMDGCDATAPVNGGLMTVDCDQVGGNEDVQE VPGVSFTGLDHPGLMGTAPSHEGARTAPPRENGGNQDIKN
 VPEVRYRGATHPGLMGVAPSNEAARTAPPRENGGNQDIKN GD VSVP QPVIGTIGVAPATDSYSTLVPHDHGGNLDTTD VPGVEYTGITHPGLMGVAPSQEGARTVVPRENGGNHDTKN FGDHEI AVDPCDGTMGVAPASDSYTTLVPHDHGGNLDTTD
$\rightarrow-\quad$ TDGHTVSLAPFLGVIGTPPDEPGEHSTTPPRVGGNIDCRE
IPGVRFAGVSHPGLIGTAPKKEGARTIPGREHGGNCDI KNLPGVRFTGVTHPGLFGTAPSQEGARTVPARENGGNHDVKN
RYGLSFPVAPFMGLTGLTPAGEALNTTPPGAFGGNLDVRDTDGHTHALAPFMGGMGMPPDEPGANTDPPRFCGGNDDCKD
$P T R L R L P L A P M L G C C G V A P A L G A D S T A T S G P H G G N M D Y R G$
$Y P H Y T V P L H P M L G C T A T A T S P G A P G T G D S G S Y G G N M D F N E ~$



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IPGVEFAGILHPGLIGCLPSREMLRTVPPREHGGNCDIKN
TPNVKTPVRPHFGVMAVAPRTGLVDSWPPAYFGGNDDNWR
TGRLTIPGEPMLGCFGVAPRQQAIVTATSGEHGGNMDYRG
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UniRef90 K91740 UniRef90-K91740 UniRef90-F8GQC7 UniRef90_UPI0003B5857C UniRef90-A8L5W9 UniRef90-D6TR17 UniRef90-Q1YIL4 UniRef90_UPIO0037F8749 UniRef90_UPI000379FFAE UniRef90-A6T1X1 UniRef90-A0A010Z4J1 UniRef90_L8DCC7 UniRef90_16ATP8 UniRef90_B2GIX0
UniRef90 E6PK45 UniRef90_UPI00029A5A85 UniRef90-UPI00029ACB03 UniRef90-A3PPC2 UniRef90-D2SFT6 UniRef90-X6GDM4 UniRef90-A0A011SIN7

AT|LTVVRVTLEEAPA|L|AHPR|IETPTHTCTLGCARPLEDAMR MDTALVVDVIKGHPCRWPRIESDDFLDT TGSTKPLEDAFR
 ARVTVVTEVRKGLAGEVPVYSTYDESKKIESSEDLTLAAR MNSTIIVDLIKGGAPAWPRLEDDAHWMVVGSSRPMEDSWR GYVDVAVVLIK DGVAKYPRYDDFVSFIGISVDEAGDQAYR GTGDFQLVLHKKEDLTYP LVETAEEWVLHGFSSTGDDAYR GF DDLRVDVIKGGMETYGVPRYNEWVAFSGTSVTLDLSYQ GIITFNCSII K GGPDFLPSPDDPMYLVFEGDSVDYHVAYK ARTTFRLTVLKEGDERLPVAETPDYWIPDGLNEDLDEAMK

 MSTVVVVDLIKGAACPWPRLENDTHVMSTGTARPLEDAFR


 $M T G L D Q V V H H K A K D V D Y P L I E T E T E W V V M G F S H P D D S A M R$
$M R S R M R L S V I K G G K L G A G P H Y E T P E R V K Q M V S G N D R D T V V K K$ ATVAVRFKRHAGLALRGPVFTMPLHPDGDCEGENDNLAAR GVLTINCKVIPGGMLKSPMFDPGDYDTFEGFSVDEETAYR MNTVVLVVLIKGRAPVSPRMESDSFLMTTGNTRPEEDAFR MTGTFEVLLHKKADLAYPLIETATDWVLTGFSHPLDDAMK
 GNGLVQFFVHTDLDFESPVLETSTHWITHGGGEDLEVAAQ MNVTLVVDLIKGAAPAWPRIENDEYLI TLGSARPLEDAWR

 ANLTVKV SLDKAPALNHPRICEPTHDCTLGCARPLEDAMR GVITI K V Sill K NFELLNYPVTETKDAWFVNTFGDCANQAII


 GHVD VGVDLIKGGMRAYPRYNEFVSFVGISVDESGDQAYR
 METVVVVELLKGVSTPWPRLESDTHLI STGGARPLEDAFR MEVRFSVDLI KGQK $\quad$ E WPRGENEEYIFTVGNARPLDQCVQ LDDVTLRLSVVDDVKAEAPLLRTDTQWITHGFGDGVDNAMA GVITVKCTVMKNGQKQQPQFGPGRMLYFEGFSVDATVAYR LRATVRLTVLKSGALTNPVVETATHWIPTGMDADLDEAMR LRPTFRITTLLKKGDLTRPMGETPEHWVTIGGDNPDLDEAMK ARATLKFTLLKAGKDK PP LDAENDQFWITPGLDEDLDIAMK GVIT K F DLI K G GMEKLPQFGPGRMLTFEGFSVDVNVAYK GVVTLRFNLIKDGMKKLPKYSTQVTFQGDSVDMDATVAYK GVI TLKFTVLKSGMMKSPVFHPGPVEPTFGPGRDATVAYR A H L TVEVDVCK QPEMSWPRIEETPTHI CTVGCARPAEDAMR GF DV HVDVDPGGMDKYNVKENAEWI SFSGTSVTLDDAYQ LTGD GQLVLHKSTMDDYPLVETADEWILHGFSSTLDDAMR GEVVVRVRLLKNFKLDWAVTETKDAYFVNTCGPTCDDA K K ARVTLVVETRRPKRMTWPRFETPTHDGTDACAKPLEDAMR GYLELKVDIIKGGMEKYGVPQYSEWLAFSGTSVTLDLSYQ TEI DVTLDVVSDPSLDRPLVETDSAWKTDASAETMEIAAT
 LTGTF FQLILHKKASLPYPLLETQDEWLLHGFSSSVDKA LR

 MTTRLTVGLQPSPPLPTPHAVTPAGRITFGFDADLNEASA



 FEVAFTVEI DKGRTI GWPRGENAES I FTLGNARPLDQADQ
 LTGEF QLVLLHKKKD DDHPFLESSETEWVDQGGSASLLDMAMA
 GFMD L HVVDLDK G GMETY GVP QY S E W DA F S G D S V D S DL S Y Q GF LDL R V S L R N G V Q K Y P H Y T S H L I F E G I S V D E D A H V A Y R

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



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AF Q E MI Y WLIED DYGワP A A E
 IA HSE LVVGWVA A EA GLLSTQDAYQLVSQATVTPVANVVDTV


 D A F K T R R F L M T T K GLSSEDEA I SL SVAVDFGVTGVVD GN
 Q A A L N A I T Y L M K L GYTRREQA Y L L L S A AV E S HI G A IV D P N EAVRS S I G F L T D RLGGID P Q TALAAYLSAATDYEVS QVVDKT
 SATYGMAQ WLE QDYK LT PSEIAAQVLGSAAEYKISEVADRN

 D A T R A MVVEHI S STYGMMDPLDAY L L S S V A V D L K I S EAVDPN

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

 VS Q V Q MVN WL S E L H G L D R LDD A Y QL L S QIISRTPPLANVVVDTD S
Q

## D

 RGYNE LQRLI SKAYSWDYTDTCLYMSVQAILDSANQAC NACNHAID YLM KF GYTD DQAYMILGTAVEGRLSGVVDPN
 DAFRKMRQFLMNAKGLTEDEAINLLMS LGVDF GIITQVVDGN R A CLLA A DA Y L E QFGYTGRQAYLILCAAPIE GRVVGIVDPN

 HATSEML R WLEEQR GLDDTTQAS LL MGQGVRYDLGNVEDPA MA A EQML K MMVD R G GFTMDEA Y SLLASVAI DLDGI T QVVD G I Q S C L R I I E Y L R R R Y GY D D Y Q I Y L L L S A A P E G H I A G I V D P N
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## R

L
R
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UniRef90_I0L2F8

| UniRef90 UPI0003763E35 | $Y \text { T Y } \square \mathrm{CK}\|\mathrm{~V}\| \mathrm{DK} \text { K }{ }^{290} \mathrm{~V} \mathrm{~L} \mathrm{~A} Q \mathrm{~F}$ |
| :---: | :---: |
| UniRef90-A0A010YIW1 | YTMTAKMPKSALP |
| UniRef90-N1PKW1 | A CTTLGGLPVD\FD |
| UniRef90_X1KR71 | Y T V V K FP K K Y LP |
| UniRef90_W4LJU8 | Y IV S A I L S L |
| UniRef90_UPI0001BC2E91 | Y S V M T K A K S L P ER |
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| UniRef90_UPI0003160E5B | S C STVYL P T S I F |
| UniRef90_UPI00047D1252 | K G V ${ }^{\text {H GLL }} \mathrm{D}$ T S V |
| UniRef90-K5W215 | A CVTM GL P L G I F E |
| UniRef90-Q0G5P7 | K GV HALIA K S DF |
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| UniRef90-Q9SZE9 | A VATLA A P T A I F D Q |
| UniRef90_Q01VE0 | $\mathrm{V} \mathrm{G} \\| \mathrm{V} \mathrm{L} \mathrm{K}$ I S K D R L K G $\square \mathrm{G}$ |
| UniRef90_UPI00037C7467 | Y T ML A K L P K T L L |
| UniRef90-M3AZH6 | A CTTLLGLP $\square$ D I F D |
| UniRef90_H6C1T5 | ACTT\GLPMDIF |
| UniRef90_UPI000372414E | Y SVA C K I P K A Y LP |
| UniRef90_UPI0003B5E39C | WVVSA Y L P L S I M K |
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| UniRef90_UPI00031F29EC | Y VVSAVLPEAI |
| UniRef90-A3GHA5 | A CTTLGGIP $\square$ D I F E |
| UniRef90_UPI00037B5BC7 | Y T M V A K F C K S L |
| UniRef90 Q89LS7 | WGVHA I L S K R L F E |
| UniRef90_D5PFC8 | LG TY CVV |
| UniRef90_UPI0002E59AD4 | SCATVYIP TE TF D |
| UniRef90-U1PPD0 | K GMHCMLNKNV |
| UniRef90-S4MLC8 | Y T V ${ }^{\text {P T K V P K A L L P }}$ |
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| UniRef90-B8NZC2 | A CVTL A LP L G DFEH |
| UniRef90_UPI0003B619BA | Y TVVAKLPKAl L K |
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| UniRef90_A4YYS5 | Y T Y $\square$ CKV CK T L L |
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| UniRef90-IOHQW0 | A C S T $\quad$ Y $\square$ P R A $\square \mathrm{FD}$ |
| UniRef90-B9LQ06 | VT A R N A V P S E Y L |
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| UniRef90-W9GZW7 | F GVVA I I K K A I F |
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| UniRef90-I3ZFM7 | A GVILKM M K S KL D T L |
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| UniRef90_F8JZM5 | Y TVVAK I R K A WL P |
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| UniRef90-F4L8V8 | A C CT L A I P T E $\square \mathrm{FD}$ |
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| UniRef90-X8JPT2 | A S VT I G I P T E I F D R |
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| UniRef90-D5BMC8 | Y S Y I CKV S K EV L K Q L |
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| UniRef90_Q0K404 | WGVMA I I R K S MFS R |
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| UniRef90_K91740 | A CVITLA I P T G I F D H |
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| UniRef90-F8GQC7 | K T V H G M L P K A V F D A V |
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| UniRef90_UPI00037F8749 | A GIVLLKINKDRLKPL |
| UniRef90_UPI000379FFAE | F IV SAVLNMDVFDK |
| UniRef90-A6T1X1 | WGVV H A I I K K T I L |
| UniRef90-A0A010Z4J1 | F V V T A V L P L D I F |
| UniRef90_L8DCC7 | S CATVYIP TA I F D |
| UniRef90-I6ATP8 | A C A T L Y L P T El F K |
| UniRef90-B2GIX0 | SCATVVYP T EI F D |
| UniRef90-E6PK45 | V G V H Al I R K A L F |
| UniRef90_UPI00029A5A85 | SCATVYLP TAMFE |
| UniRef90_UPI00029ACB03 | Y T MVCKLPK S VLP A R |
| UniRef90-A3PPC2 | K GVECVLDR R SL |
| UniRef90-D2SFT6 | S CSTVYI P T A I F D |
| UniRef90-X6GDM4 | W G V H A V V K K Dilf |
| UniRef90-A0A011SIN7 | CGV H A R I R E A DF |
| UniRef90-10L2F8 | V G A H A V L R D A L R |

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UniRef90 A2SLW3 UniRef90-WOBFZ3 UniRet90-R9LVR6 UniRef90-D2R5NO UniRef90-C6AYBO
UniRef90_UP1000472F501 UniRef90-A1B7J3 UniRef90-D5UJM6 UniRef90-UPI0003B4FB43 UniRet90-L9XNN9 UniRef90-D8RV56 UniRef90-10G827
UniRef90-A4SZ74 UniRef90-J8VQ88
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UniRef90--F2JOT3
UniRef90-W7YSZ4
UniRef90-A9BMP7
UniRef90_UPI000471C84A UniRef90-D8HX05 UniRef90-O82LR6 UniRef90-K1WMY2
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 LPARPDTIHWGFSRNLRPALEVRSGDFVTVETLTHHAN LPATDETVHWYFSKTLKPKIEINSGDLVTDEALTHHAR L FPSSHTLHNYFDRELNPDLEVQSGDSIVYQTLDSAWG VPASDKTVHWYFSKSLKPLVELESGDFATDETLTHHAN LPATRESTVDVFDRATPPVLTVDPGDSVVVGSLDA AG KLHNRWHPDVPFAGTIKNGETVKTECVDWTGG VLPVRPDTIHWYFSKYLKPALEVCSGDYVTVETLTHHAN LHNRWHPDVPSYAKI ANNEVVKIECLDWTGG TPDTVSWGSDPATPPVLVVDSGRTVTFDTVSQEGR HRFQPTHYHTTLGP HAPVMRVAPGDTVITTCVDARGF KKFTDQQDHNRWHPDVPAQVRVRPGDSFRVDCREWFDG LKVSRETAHWGYSRAIPPVMSVRSGALVTIETLDDYER PETAPVLTVDSGCTVTFDTVSAYFG HNRWHPDTPPVAEVKTGDLFRVETIDWTGG LLRASPETTHWYFSRALKPVTEI ESGDYVTVETLTHYER LPAEVQHVLWGPCAADAPVLTVAPGATVTIDTISHEGD LPVSRDTVHWGYSRTIPRVLRVRSGARVTVETVDAGAE LPANSDTVHWYFSKLLKPQLEVDSGDYITIEAVTHHAG NDKNCFNRYHPNI PAVARANPGDMITLHTRDALDT HNRYHPDIPAVETVCPGDSFRIVDSREWFDG KTTSKDNDKYEYSRFFEPVATVKPGEDIIVETEDAFNG MQRIVREQAKFAFDWRDEPLLKVSPGETFEMETWDASVG IVKLGMEHRKFAFDKDLPPAATIIRSGTVILETEDANCS GMHCVDDPNCFNRYHPEVPEKAKANVGDMIVYHTRDALDT LHNRWHPEIPSVAQVKAGEFFRVEMDDCMAG
VHPGTVTQVFSRDTPAVLAVDPGDTVVVGSDDASGH
HNRFHPEVPAAATVRPGQEFRVESREWTDG NVHFSWTPENRPTGKVEPDTELRLKITPDASTN LVASPETVHWGFSKNLPPVSTIHSGDYLTI EMITHHAG QLHNRWHPDIPPVADVTEGELFRVEMVDWTGG NPFNRWHPD: ESVVTVEPGETIRLECLDWTGG LPVTPDTHHWHFSSSLKPVGTVESGDYVTVETLTHHAN A Y
 पPATPSSVHNRWHPDIDP

EGVHNRWHPDTP AYKTIKQHKSYKIECFDWTGG MKIVSDQYYINVHSEHNKPAEEMRSGDFVTIETLDDYER LPSTPETVRFGMDPAAPSALEASEGGDVVHYNTWTHWGN GLVDPGDTLTVRSLNASGN DDFTPTDYSNSWNADRKPVLVVWPGDTIHTTTIDSGGV LPATPETHHWYFSSALKPAVTJVSGDYVTIEALTHYER LPATPGNTLWGRDPADAPCAVVQPGSVITVDTVSHSGG ANQHTVHWYFSRSQAPVLYLEPGELVTVETLDDYER

M $\square K$ VDPTKHTHWYSPWNVPVAKVDSGETVSFTCQDWNDV HHFEPNTYYTADGTHEPVLHIDSGDTVITTTVDAGGV TYQPHENELRYTFGTHPAVAEIVPGGLLVTSTEDCFGG LRATCDTVHWGYSHDLPPVLTVRSGDTVTVETLDDWER HRFITPTIFHNVIGGSLPPAWHIADGDTVVTETLDA LPSRADEIRWGWLPASRAALTVASGETVTUDTVSHDDD IPSTVDNISWGFNRDSRPIMTVPSGSTITGDTISHEGD


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UniRef9_-W4KAB7 UniRef90-C7MWP7 UniRet90_- 22 JOT 2 UniRef90-H5XF87
UniRef90 A2SLW3 UniRef90-WOBFZ3 UniRef90-R9LVR6 UniRef90-D2R5NO UniRef90-C6AYBO UniRef90-A1B7J3 UniRef90-D5UJM6 UniRef90-UPI0003B4FB43 UniRef90-L9XNN9 UniRef90-D8RV56 UniRef90-10G827 UniRef90_A4SZ74 UniRef90_J8VQ88 UniRef90-F1Z3K1 UniRef90--F2JOT3 UniRef90-WTYSZ4 UniRef90-A9BMP7 UniRef90-UPIO00471C84A UniRef90-D8HX05 UniRef90-O82LR6 UniRef90_K1WMY2
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DEHG\|TQAL
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保 YLDRRLQGATMFPDRRGHCLTGPVAVRGAEPGMVLGVHFA QI GNNDSAVKNVDLTKIHYLSGPFEI ETAEPGDVLLVEI M DIUGDPAAEAVYRWTGVHVCTGPDA:SGAEPGDVVQVR1L QVKNNDSAGKNVDLTQVHYLSGPFE:ETAEPGDVLLVEIQQ DKNGLQRA
DRHDRRVT PPGNPMTGPFF
FF

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PS GRR|V|P|L|RPHDG|ICGVAPKMRGVST\|PPGVFGGN|V|DNRH $\square$ I GVSFASKCHPGLMGTAPSPEAAVTVPPRENGGNMD】KN RS G H C V P L S P F M G V M A V A P D S D D V K T H A P G P Y G A N M D C R D



 RPGVRDPADSHPGILADVAPSHEAARTDPPRENGGNMDIKN $R H G V V \vee P I R P H F G F I G V A P R E D M V D S I P P G Y F G G N D D N W R$
 T K G G l


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 NFKQKVRLAP FMGIMMGMPPAEQGQHS TFPRSSGGNIDCKE







 AS GRA E VRPFMGLCGVTPSPEARSTIPPGPFGGNMDVRD



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










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

 NKNI E $\square P$ L RA HFGGVVALAP H WG IVVDSVPPAYF G GNDDNWR





 K N I E L P L N K M $\square G G V I$ G VA P N S E P I N C GTP G S H G G N M D C K V

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

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UniRef90 M5B675 UniRef90-V9GBX8 UniRef90_UPIO0037BAA70 UniRef90_I3ZJ29

FMPGTAMYYPVVQVPEAMVFMGDTHLAEGDGEVVISTA\|IEGH $L T A G S R I F F P V F V D G A N F S F G D L H F S Q G D G E I T L C G I E M G$
 LTA G S T L F L P V TVVP GA L L SVVGDGHAVVQ D GEVVGGTAA E C G I GK GA T L Y Y P V A V P GA L F S V G DP H A S Q G D S ELL C G T A I E C S I LRE GTTVYLPVF QE GALLVFVGDGHALEGDGELNGDALE
 $A G K G A R I Y L P V A V P G A L L S V G D P H L A Q G D G E I N G T A L E C S$ LS R G S R V F YP V FVVPGAKL S L G D L H F S Q G D GEII T F C GI E M G
 $V R P G A T V V L P V N V E G G L L S V G B D H A C Q G D G E I T G G C A L E C D$ VAPGHTVVLPVFVPGGYLYLGDAHAAMGHGELSAS GLEMP TIVVGT TI L L P C F I D G C GL FAG DV V FAMGGGEVVAGTAA E T G CRKGASVVLPVSVHGGLLSIGDPHAAQGDGELSGTAIECS








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 $L$ S R GC K V Y F P V F V E GA N L S M G D MH F S

 V A P GN T I LL P V WWHP G G L L L V L G
 MQVGTR|MFPCFIDGCGVFVGDVHYAQGDGEVSGTA|EMG


VGDGTSMYYPVSVPGALFSAGDAHAA
L QEGGS K I Y Y FPVVFVDGAKLSGIGGDMHAS


LVAGTSLY

LGAGARIFLPVSVPGGLLSVGDPHASQGDSELCGTAMECS
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290

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K G I H AVI P K K LiF N
 WGVHAVL WGVHAVLGRDAVRE WGVHA $\operatorname{HVVRKAl|l}$ WGV H A V V R K A A F
 A CVVTLALCDVGI F D

 KNVAVHIPKEIFKTFG MSCLCRI NRRFLKKY

 K GAHCVL D L G SLict TGVHARIRLAD LEPG TGVHARIRKADF TCVTVSVPNEAFD AVATLAVVPADEDQ WGVHAII SKRLFHQ LGTYCI I PKNI

 WGVHA!I RKD』F KGVHAFL WGVHAVIKKALFP WGVHAVVNKSLFPAR WGV HAVLP
ACCSLYVPTAMFD ACTTLGLPMDDFD WGVHAVI RKALF

 Y TMMLCKMPK R WL PG SCSTVYIPTEUVF WGVHALVPKNMF KGVHCSI RKSDF AVATLA P DADFDQ WGVHAVI RKGMF


SCTTDGLPMDDFE WG 1 H ARVAKAI FEPPG WGI HATI KKNLE FVVTAVLNDDVFDKY ACSTVYI PTAIFD FTGRCELPKDFLK Y VA GAEI PTKYL

 YTVSALLPQGLFAR
WGVHAV
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A C S T I AVPK GVVE
ACTTMSVPMDI FD
WGVHA I RKELF
K GVVHATIRKGDFP ACATLAIPVNDFDQ


WGVHATIRKSMF
 WGV H A VL P D GAALT R V VGVAARLDKALLP WGVVAVI RKELL KGVHGKI RK S DFREVG VGVHATI RKS LFASRND AVATLAI PTSIFDQ KT T R YK I KRK
MTMRFGFEKR\APEL YTMVCKVKKSILRDIGL YTMHAALTKAVL
WGVHAIIRKRMF
Y T I A C R V A K K WL
K GVVCMIRKADF
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A G V VLIE I K S L L S K L

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LPVSRDTVHWGYSRTIPACYRMEQNKPYKVECHEWTGG
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OHRWHPDDPPANTVRPGATYRDECKDWTDD
LPVSSSTVHWYFSKRVEPRLTLKSGDRATI ETLTHHAN
AYLAASPENVLWGPTGSDQPVRTVRPGTEVLIDTVSHFAG
VLKANSETVRWGNTGKGDPAGTVHSGDTVTVEAITHHSG


HVFTPTDYSNTFSADRAPVLVIWPGDSVQTRTLDSGGV
TPDTVLWGYVPHTPPTLQI RSGETVTVDTVSHEGD

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

    HDFKPTTWSNEFSASRAPVLTLWSGDTLKTTTLDSGGV
        DQTGKELGHNRWHPDDPPLHELLDPGDEVILETYDDYQL
        LVIKSENLHGSFSNEYKPVLKVNSGDSIRMKTPDDEWG
    LPATPETVHWHLSRHAKPALRVQSGDYVTIETLTHHAG
    LPATPETVHWHLSRHLKPAIRVQSGDYVTIETLTHHAG
    TPGTVYWGPCAADTAVARI AAGETITVDTVSHEGD
    LPTTPETASWGWGAEDRPVLTVDPGDTVVVDTVSHFGG
    
KENVLWGPCAGDRPVLSUDPGADVTVDTVSHSGH

■QSNPDQVLWGYVPHATPVMRMRSEETDTDDTVSHFGG ANSENVRWGNIGKGDPVLTVNSGDIVTVEAITHHSG LPCRPEDVYWGPCAADTPVMSVESGATVTIDTLSHEGE YVPSVDAEPSLRMRSGRTVTVDAVSHFGA AYロPTSPDTAYWGPCAADTAVLSVDPGQEVVVDTWSHEGD PDQVLWGYVPHAAPVLRMRSGQTVTIDAVSHFGA HHFEPTVYHTA $\square G A$ HEPVLHDESGDTVFTTTVDNAGF

HNRWHPD ${ }^{\text {PPAAATVKPGSEFRDECKEWTDG }}$ QC NRLHPDIPMAAMADPGQTVVMHTRNASDF PDQVLWGYVPHATPVMQMRSGQTVTIDTVSHEGD PDQVLWGYVPHATPVLRMRSGQTVTIDALSHFGG
 AYDPSTPDMVLWGYLIPDSEPVLRMKSGETVTVDTVSHEGD AYLIPSTPDTVRWGWGAESAPVLRVAPGSAVTIDTVSHEGD HDFEPTTFSNTFSADLPPVLTLWPGDSVNTRTLDSGGV LPATPDTCQWTFDGRLAPVLTVRSGDLVTMDCISHRAG LPVDPENVWGPTRGRPVADDGATVDTVETG

ARPDTVTWGPNRDSTPAAVIDSGSVITIDTVSHFTG
NPFNRWHPDIPAVIEAEPGESMRLETLDWTGG
ASPETVHWYYSKNLAPVITVNSQDYVTLETITHHAG पPVSPKTVHWYFSKKVAPALTLRSGDRATVETLTHHAN DEYSTDTASFELSPEREPVLYVNPGQETSMEIMNAFSQ

NRWHPD DPAFCTVKPGEVFKDGCHEWTGG NRDYDYDESRMPAMYADSGDTIIFNAEDFVGN NPFNRWHPDVPAAVEAEPGETVRLEALDWTGG $\square$ HNRWHPDI PPVADVTEGELFRVEMVDWS GG TKKENTKYQMDNAVEPRLE: D S GDTVVFEECPE P P C G G LIP ATPDTVHWYFSRTDDPVLTLKSGERAVIETVTHHAN PETFSNTFTAERAPVMVVRPGDVIATWTIDSGGV

PEHVLWGPARHDAF TGSVAPGGD\|VIDTVSHFGG SHSDPSVLHVASGDTVSFDCLDASNG LLHRWNRDLRPVTTVRPGEVVQLLCRDALDA EKVLWGYVPTVESVLQMKSGETVTI DALSHEGD VPASVQNTFWGPSRSDRPVLTDESGESIVIDTVSHEGD
$\square P S E P D A V \square W G Y T A H T P P S \square T M A S G Q T V T D D S V S H F G G$ HRPAERQLAYTFGGRDPVAHLRSGDVLEVYTEDCFGG VPANNKTIHWYFSKTMEPLLKLESGDYATIETITHHSN LRATPDTVRWGYVPDAAPVLRIRSGETVTVDALSHEGD DNERVHNRWHPDDPMACWVQPGDDFILETYDWTGG HFDSNTHSSGAFAAGAEPVLRIAPGETIGFETDDTVYA AEQECLHNRWHPDNPSYTSIPCNTAVKIECVDWTGG

DQVMWGYVPTVDPVLTVDSGETVTHDAVSHEGD
D P A D V L W G Y V P T V A P V K S M R S G E T I T I D A V S H F G G LPSRPDEVRWGYVPSVEPVLRMRSGQTVTVDAVSHFAG


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| :---: | :---: |
| UniRef90_A9L0F66 |  |
|  | VQWGFTGVFAKNNGGGFLEEHYPNASKAIWDFDY |
| UniRet90-E8RUS ${ }^{\text {U }}$ | ELKTRPSHGSNVAAYWGF |
| UniRef90 UPIO00440CADF | MP WGYTGTFELNNGGGLFAKEFQ |
| UniRef90-T1W7W4 | KVDLANFACNAFSLGKGFLPMEYPYSRYR |
| UniRef90 W6MMN | DVQWGYCGVFAKENGGGFLDKFYPKAAKAVFDFEG\\|HCRH |
| UniRef90 D7AAM5 | ALKPRPSFGSNA |
| UniRef90-A0AO10PN80 | KLERRPYGIISNRHGKGALNGEYPRGEANVSIEAA |
| UniRef90-14YYF6 | RMTPTRDTGWTYSLLAPNVVDRDPERHQVEWVTDR |
| UniRet90-D2SFT5 | GIGWGYTGIFAKENGGGFLTDEW |
| UniRet90-K8RMZ9 | DVRPRPCFGSNVASWGFQYHD |
| UniRef90-E3JD988 | ELTPRPYGVVSNRHGRGADPGELPDPVFTFCR |
| UniRef90 M2YT99 | DVQWGFTGVFAKENGGGFLDEYYPKPALRKHF |
| UniRef90-W4BRQ3 | DMKLRPNYGVNAAANWGYLYGDMVEEPKKREVVDYATAVY |
| UniRef90-UP100036F4C32 | RLHLNRDYADSLDMIVGAKATELGKPVRWTLDRERGVGYP |
| UniRef90-A0A031H | SLKLNRDYADSLDGLVGRLKTPRVAAEAT |
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| UniRe | QTDLRPYGVVSSRHGKGA |
| UniRef90-UP1000314C81A | DIEELEFGYS |
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| UniRet90-A0A059M | PSGUGYSNILPGGGPLA SWFPRG |
| e90_W4RP9 |  |
| RRH | RAPYGV |
| UniRef90 V4NZK2 | DIKSRPSFGSNVAAYWGFLT |
| UniRef90-25FD27 |  |
| UPI000374FB |  |
| UniRe90-14EU82 | R |
| UniRef90 F5JJ11 |  |
| 78C77 | ETTPRPYGVISSRHGRGSLNGEFPSAFATVRDTDDG |
| UniRef90-D1RD51 | DIIKLINDFGYNFLSPTQGILLSEFTQPRIMYFKYEKNTTEF |
| UniRet90-7GDLO |  |
| UniRet90-C6D199 |  |
| - |  |
| UniRe990 UPI000376E | SRHGKGALPGQEYGNVSTFTPVEHGQGVIM |
| W6 |  |
| UniRef90_uploonz | STEPRPYGVISNRHGRGSLPDEFPAGGAGIVSVFAQVDFW |
| UniRef90 Kouz41 | QAVPRPYGVVSSRHGKGALARTAPDPTKTFTAVEDGHGVM |
| UniRef90-UP10003B7 |  |
| UniRef90-0M393 | K WA |
| UniRef90- B8KJR6 | AVDPGPWGKTWVGSG GFLADKYPTGFAATWKLSPDY |
| UniRef90 G7Ccc6 |  |
|  | HGK |
|  | AVRVAEDRGVLTAPGFGLRQDEDDHPATR |
| UniRef90-A4A744 | EVAPGPWGKTWVGAG GFLADHYPTGFSATWKLGAD |
| X5DTH2 |  |
| D3D272 |  |
| -2TZQ6 |  |
| $813 B 7$ |  |
| UniRef90 UPI000374 |  |
| UniRef90-A0f | ETLPRHYGVVSNRHGRGALHGEFPVDGTTVSVFADDTAQG |
| UniRet90-H5WX | DLRLIRPYGVVSNRGKGAL |
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| niRet90_10G830 |  |
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| UniRef90_14X5 | DAERMTS |
| UniRet90_M7XP52 | DITWGYTGVFEEADGGLFATQFKSRAAKAIWDFEGC |
| UniRet90_UP10004724481 |  |
| V4XU |  |
| C5XKW |  |
| UniRet90_X1GAK3 |  |
|  |  |
|  | H |
|  | KLALLNRDYITSRAMPLGLAARSAGLGQRVRWRLDRTAGTA |
| UniRef90-UPI0002F55985 | EQSWGYT WASSRHDPGVLLSEWNRREQALDDLNPHRVTG |
| UniRef90_K1ZG70 | DLGWGFTGIFDHKNGGGFLTDHFPKAG |
| UniRef90 UPI00041DF8FA | RLDRRPYGVTSTRHARGVLAEGFDGNY |
|  |  |
| 767 |  |
|  | PVSTFTAVEDGQGVM |
| UniRet90_D2Q7z8 | KLERRPYGVISTRHGRGVMTDTYGTLCKVIMDFHD |
| Ref90-B8KN75 | G |
| UniRet90-V4XLC6 | DVDLAPYGINLISPAGGELPEQFPHEAVEVVPFDAGVAAF |
| UniRef90-Z9JTT0 |  |
| UniRet90_E8SDC9 |  |
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| ef90_S2WKW | DIGWGFNGFFSKNNGGGFLTDHFPSAQKSIWD |
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| UniRee90 J6F0x9 | G |
| Ref90 Q0UZW5 | DVQWGFTGIFARENGGGFLDETYPEAAKAIWDFEGCSSRH |
| UniRef90-UPI00026 |  |
|  |  |
| UniRef90 C1A | EAIPRPYGVVSSRHGKGALADEVMPPVSTFTAIEDGKGVM |
| Ref90 U5W194 |  |
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UniRef90-M2W1Y5 UniRef90-C1A289 UniRef90-U5W194 UniRef90_U5W194

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VA Y R E M $\square$ Y WLA D E Y GFS E P D A Y M L L S S DA E GRAT Q MM N P K DAFRKLRRFLMTT QKLSEDEA ISLMSVAADFAVTQVVDAN A ATGSMVQWLE QD Y GLLSVSEA SLI LGTTAA QYRVVTLAGRN

 A A V R G MI A Y L G A T H GLL S RTDA Y ML C S VA G D L RMMEV
 RAVVNALDFLETDLGMDRATAYAYLSAAANFSVSQVVDKT R S V D Y S V S LL S S L F HLLP A K VI Y L Y L S A A A D F DVVS QA V D L V
 H A L R Q CI R L L S D Q T T L S EA DA Y RLLASLLAVDFNVTQVVVGT QAVVNALDFLE QDRGMDRATAYAYLSAAADFTISQVVDRT
 $R A V V N A L D F L Q A D L G M R R P V A Y A Y L S A A A D F E V S Q V V D R T$
 Q T CLR VI E Y L R R F
TAVVVNAL E F L E Q E L G M D R A $\square$ A Y A Y L S A A A D F T I S QVVDRT RAVVNALDFLEHDKGMDRATAYAYLSAAADFTVSQVVDRT RAVVNALDFLEHDRGMDRATAYAYLSAAADFTVSQVVDRT R A V V N A L D F L E H D LGM N R A VA Y A Y L S A A A D F S V S QVV D G T

| UniRef90_A9L0F6 | $\mathrm{V} \mathrm{G}\|\mathrm{~V}\| \mathrm{A}\|\mathrm{~L}\| \mathrm{K}\|\mathrm{~L}\| \mathrm{D} \text { K }{ }^{290} \mathrm{~S} \mid \mathrm{L} \mathrm{~L}$ |
| :---: | :---: |
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| UniRef90-E8RUS7 | WGAHAII R K A L F T H |
| UniRef90_UPI000379218C | K AVHGVLPKAIIF D A |
| UniRef90_UPI000440CADF | $A C V T L A L P L G I F D$ |
| UniRef90-T1W7W4 |  |
| UniRef90-W6MMN7 | S CTT $\square$ G L P M D $\square$ F D |
| UniRef90-D7AAM5 | WGVIHARID K A I F |
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| UniRef90_W4RP98 |  |
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| UniRef90_C6D199 | WGVHAVI T K G Q F |
| UniRef90_H5TFZ8 | K G V H A R I R K S D F A R |
| UniRef90_UPI000376E7C2 | V G V H G L I R K A D F D R |
| UniRef90_W6WG66 | K G I H C M L P K R $\square \mathrm{F}$ |
| UniRef90_UPI000374BD9D | K GV H A R I R K A D F |
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| UniRef90-B8KJR6 |  |
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| UniRef90_A1UFL6 | V GVHGQI Y K E HF |
| UniRef90_M0DDR9 | $V$ T A R N A V P SEY L |
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| UniRef90-B8PJ64 |  |
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| UniRef90-V4XLC6 | K GV H GL I P K A I F |
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| UniRef90-E8SDC9 | YTLLAA A GRR L VP H |
| UniRef90_A6SV92 | WGV HA I I K K A V F P K |
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| UniRef90-Q0UZW5 |  |
| UniRef90_UPI00026C6F7F | V G V H G I A K S H F |
| UniRef90-M2W1Y5 | $\checkmark \mathrm{G} V \mathrm{HGQI} \mathrm{F}$ K N H F E |
| UniRef90-C1A289 | V GV H GQI F K S H F E |
| UniRef90_U5W194 | V GV H GVI P K T HF |
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UniRef90-D3CWP3
$10 \quad 40$
 AT NRTTRPVATVVSGSLVITLLDTVJSHFGG
 DDGAASAARI ESGDQVLYDTWTNWQN PVIPDHYYRTFSHTNPVFQKIKSGDVVNTRTLDSGGQ LR S DVDDVLWGYVPSVDAVTRMRSGQTVTDDAVSHEGA AE QECLHN RWHPDVIPAFCSSVKPGEVVFNVECHDWVGG


LEATPATVAYYWS EAKPALRDASGD IDDDTDTGLAR GYLPATPETVLWGPCASDSPVLSVDPGQEVWVDTVSHLDD L HNRWHPDSP
QPKPLHNRWHPD $\square P$ P $\square$ A QVKVNSVFRVDMDDFTGG


DPKTPPDATVKEGEVFMVETAHHDYK LPSRPDEVLWGYDPTDAPVARVRSGQTITVDTVSHEGE LRATPETVLWGPCATDTPVLEI ASGETVTIDTVSHLDD


TLHGSWDRDRPPVLTVDPGTTVRFGTLDSGWW
$H V F T P A R Y Y N V L T A A P A D L T V A P G D T D E T T T V D A H G$ VFLSKEKAHSGFSADDDPSLTIAPGEQIVFETSDESY

ARPESVA WGYDPKRGAQLVVSDGATVAIDTVTSGGP LHNRWHPD P P H A EVVQNE FTVEMMDCAGG
KLHNRWHPDIPPAADTI KNGETVKI ECVDWTGG $\square N A S P D T C H W G F D A S L P P A L T L A S G D E V V I N T V S G G P Q$

HF LSKAGGVAGFPADKEPVLRVSPGDRITFETDDEAYR LFLGKEHGRPGHDASVPPVLRVRPGEALAFQTDDAVYR

QKKPFHNRWHPEIPPVAQVKVNSVFRVEMDDWTGG VRVPRVLHEFAFGARVAPVLEVDSGATLVFETLDCFSN GFDAAVAPALRIEPGTVIGFETDDAVYA HNRWHPDIPAEVGVKPGEDFRVECMEWTDG VY H LGPEQVHGFVSRDVKPALTIDPGDTVVFQTLDSGWG



LH NRWHPD $\quad$ PP PVADTEGELFRVEMVDWTGG
PKTFQAYYFAGNKPEIHIFPGDUVHTWSVDSAGV $\square R S R P D E V R W G Y V P S T D A V L R M R S G E T V T \square D T V$ V S E G D

HNRWHPD $\square$ PAAFS VDPGESFRMECLDWTDG

QKLHNRWHPDTPPVAEAKTGDLFRVETDDWTGG


TTTSLHNRWHPD $\square P P$ VGTVKEGD $\square$ FR VETVE WTGG $\square H N R W H P Q \square P P V E E \square K A G E \square F R \nabla E M V D C$ F $\quad$ S G H

MIKVQMNEHAYFDEAERAPVLTVSPNQ\|VK DP IVNAFGR VPSTLNTDTWGYNRDAKPVLTVPS GSVVTFDTVSHEGN VHRLK PDSLHGFFSKELDEPALYQSGDTVLYQTLDASWG
MK TFE T D D Y L Y K $\square E A T$ T P $L G S V K P G E D F C D H T R N A F G G$ YT $\square H G R S H H F G W D H S \square P P A Q T V A P G S T \square R F E C \square D S G G G$
$\square R \square N K Q Q V \square Y N F S K E H P P A L I V E N G A T \square Q V E T A D C F T D$
$\square P S T P E T \square S W G P N A R T R P V L S V D S G T T V T D D T V D A F D A$ $T L E L G E T V V I E T V G G H D Q$
$\square P K S K S A T K F \square P D A P P A L T V C S G A \square V S F E T T D \square S Y E$ TPQNLHWGSRDRPPVISIASGDRVTDETLPAEPD HNRWHPD $\square P A V L R C A P G D T V A L R A R D G Y D G$

HNRWHPD DPAVVSVNPGD\FR\ECKDWTDG HNRWHPDIPAVVSVNPGD\|FRIECKDWTDG
UniRef90-UPI00034C9404
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QMHKSMDAVTAV
LNPVTGPVHVQGAEPGDVLAVTIH
ELHEHGDLGR LDR $A P L N V T G P V F V E G A R P G D A L A V T I H$ QI KNNDSAMKTVNLTRCHHLSGPFAVQPAQPGDLLVIELC

 QI HNTDSDVATVDLSRAHMLSGPFAI KGAEPGDLLVVDIL
 $D A Q G V T R A L$
$Q G R D P D A F L A N G V P$


 DKNGKRLAL GGNANIGPIYVEGADPGDTLVVHLI QARDYARTARNFDVDGPHVVTGPVQI DGAEPGDVLKVEVL QVANNDDD $\square K H V N L N R V H V L S G P V H V N N V Q P G D L L V V D I L$

> TGPVFVEGAEKGDVLAVD L L


Q TRDDDSAVKTVDLTKVHNDSGPVAVEPAHPGDLLMVETC Q VESDDVLDNFDYSRVNPATGPIFINGCRPGNTLKVTIH X IVRDDSALDVIDLSTVHYLSGPIRVVPAKPGDLLAVEIC

EFQSPADFMYKKSQQKHHPDFGP TF TEGCKAGSTVRVA TH EILEDAKTDTDFHKDGPHVVTGPVAI EGAQPGDDLKVEVL IAKRSAPGAPRTKFTEGHALVGPVALEGAKAGDTLEIQUN
 QFKPDSTDVSSLDFSRVNPVTGPVFVDGAEPGDALKITID
$Q \square D S A N Y A F S G \square N W D Q \square N P A T G P \square F V K G A E P G D V L K V K \square K$

RA $\square$ A AS GVVPHRFGTDGSDVVTGP DHVRGADPGDMLRDDDL $D \square T G E L K P G T P \square D \square P R G S R P G G P F L I E G \square E P G D W V A \square E \frac{1}{F E}$
$R$ LISRGEQ VEVEE VNIVTGPLYVKDAQPGDCLEVEVL EMPGVPADVTAVATQGSSPATGPVHIRDAEPGDVLEVRIL Q $\square$ S R NS TAADVLDAAR $\square$ HPLTGPVFIEGAEPGDLLVVDVL

Q TGNNDDD\RDVELQVVHVLSGP\HVNGAEPGD\LVVDLL QUGNNDDDURDVELQVVHVLSGPIHVNGAEPGDULVVDLL

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A TPNRTYGWSNAMVPGLPWPPKGERRRSYWEVDVAAGVA DITLGDHGWSGYFEGSGALAEVMGEPYMRKDPI DDGQVHL EVALAD WA WTMSRPYGGAL EWRQPPHLRHTRLDAGVARP DLGPQEWGFTA\|LPGFGFLSDRFPNATKADWDFEGQFASS DVQPHQEH ADKY易PGRITYCPECDRRMA ASEPWPWGWNALRAGKGGALAALDDDETVVIPRDDDARVA D A APHGGWSVYLPGAGALEGVMGEEMT DLEWGYTGTFDRENGGGFLTDHFPKASK AIDFID HGWSVYLPGVGALAGRMGSETRSICPIAGETVWF A RVHPGHWGWSAGAMLPAQLDSCLPPARKKIPRGDQATGTS RLRLNRDWADSDDTVVGPEAGKLGKPVRWRLDRDAGYATP


NLEWGYTGПFERENGGGFLTDHFPSARKA $\square W Y F E G \square Y A Y S$ KIEPNRKTARSRDQQFGVLAAKYDPRFNGEYQDDNATGVA


NLEWGYTGIFDRDNGGGWYFDGVYAASRHTPKПWNDRVLH NLEWGYTGTSERENGGGFLTDHFPGARKADWYFEGDYAHS SLHPRRYGVISTRHGSGLLAGEFPETTTSFFAVERRRGRR NLEWGFTGTFDRENGGGFLTDHFPSATKAIWHFDGIYCRH KIKVESRGVVEVYPGWGPLGNKVEKAETKIVSTSEGWAKF NLEWGYTATFDRENGGGFLTDHFPCATKA $W$ WYFEGDYAYH

KTQPHKNSYNANSपSTGVLKGHEYE RRFDTLSTLQPQ KVEPRPYGVISNRHGKGALVGEFPKKAKEHPERYGNVSDF E $1 \square P G S W G W T S A G G F P S Y W N E K \square G M R D V Q E \square M L D F G R S Q F$ NV ■ARNARVCLSTSTGTRKGEFEGREPVFQSDGNAEYTE EFEPSGFGWTANDPGFGLLADQFTEPALNLWKYDATPADY
K $\square E \square D S M A T M \square T G P D M G V L G S E \square T Q T T \square K K C P \square K N D F V Q \square$

TLHPRRYGVISTRHGAGLLAGEFPETVTSFCAVERRRGRL DMEVGPYGFYRNGG PFWGSVRLIAPVRDGLVHF DHPWGFTGVFDKNNGGGFDDETYPTPAKAIWDFEYCTSRH GMEDRCWSVWIARVCGCLASKLTGRSSSVRELELRGGSH SVETGDFGATLNIPGFGFLRDEFTEPHVVRWEDADGFATS

RDGKVIr
d Tewgrtg Tfdrnngagaltdhepeankacwd teytetrh DiEWGFTGUFDRNNGGGFLTDHFPEAAKACWDLEYTETRH

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UniRef90 - 4 EOWW 1 UniRef90- XoQNN4 UniRef90_101687 UniRef90-UPIO003470DEB niRe90_R1DF19 UniRef90_D8S2D1 UniRef90-A7F433
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UniRef90 R1BAB9 UniRef90-R1BAB9 UniRef90-R1BAB9 UniRef90-D3CWP3 UniRef90 UPIOOO371774E UniRef90-H1UUZO UniRef90-L11713 UniRef90_UPIOO0466320D UniRef90_8F203 UniRef90-X1CGJ9 UniRef90-BOC2N8 UniRef90 BOC2N8
UniRef90 V 4 Y 654 UniRef90-S6SGA1 UniRef90-T1B034
UniRef90-R1CCS4

DGRRRFPLLAPFLGVMGVIARDTEVVDSVIPPTDAGGNIIDIIRR TDRHAFPVRPM GCIGVAPASGTNSTIMPTAEGGNMDVTE QLG GVRTAPFLGVVGLPPEPTGEHSTDPPREGGNVDCRE VHGGSLPDDPFAGIIAVEPPGDEQTSLIGGDHGGNLALPE GSGVRFPLKTFFGMMGVALTAPEANSMPPTLGGGNDDDSH 1PGVRFAGLPHPGLIGTMPYKEGARTIPGREHGGNVDIKN DEKRSDPTAPM/GVIAVAPAFGSTLSVDLGEYGGNLDVQE SERLQLPRPSUGCIGVAPAGASSTFRPWPWGGNDDVE APG|VIPRKPFFGSMGVAPAPERVSSNPPGRHAGNMDNKE PAGVRFPLAPFLGTTGVAVAGGRPHSVPPGQHGGNLDVSV AAVLHHRPMPKEALLGADSRKEAARTIPGRENGGNCDIKN SNGVTFPTRPMFGVI GVAPASGETGTFFADRHGGNMDDYL FGSMSFPLNPFLGIIGVATDTDRVSSVPPGPHGGNDDDRR KLSMEFPAQPMLGCIGVAAAGDAPTSGPSGSYGGNLDYNK PFGDRFPLRPFMGMMGVAFSRDDANS IPPTLGGGNIDDRL GARVRFPLNPFMGDMAVVDLGGVPSTSVGLHGGALDCRD FTSVRFPLAPFLGTMGVARDTSAVDSVPPTDAGGNIDIKD GDGVFVMMRPVVGCDATTPQEPVDTLMPGPAGGNMDDPN DPEVSWPLDPFAGLMAVATVGDALNSIPPTVGGGNDDVRL
 QAGHTVALAPFFGVMGVPPAEPGQHTDPPYWHGGNIDCRE $P G G T T P D A P M L G C F G V A P G G E A L S T A T S G P H G G N M D Y R G$ TDTVKVPARPMVGCFGTAPATGRNSSMSPYPEGGNDDLTY PWGGELDLRPFFGVMATAPPFGRQSSIPPREFGGNLDCKE NWRVAQPPNPRNVHAGSAPEREGARTIPGREHGGNCDIKN LQGVRVPVRPH四GAGVAPDपGRVSTVPPGLHGGNIDNWR TPPRNVDRRPFFGQLGVAPRPDRVVSRRPGAHGGNLDNRLD
SDEVSVPVRPMIGCIGVAAAATMSTVMPSYTGGNMDLTD SDAVTVAPLPMVGCVGTAPAAGTASTVMPAHAGGNMDVVTD PTSRPGPGRAMVGSLGVAPAGDGFPSLSHPRCGGNMDCQA LEGVKFAGISHPGLMGCAPATGVGSTVMPSYYGGNMDLTD RAGYQLRLNPFMGIMGMPDDKPGVQTFPPTPCGGNLDCKD DRDFRVPVRPMLGGLALASGFGAPPTGDTGRAGGNMDFPE
FGSLRFPLAPFLGVMAVSTTEVIPSTSVGLHGGALDSRD GRKVRFPLSPFMGIMSVADSPGPVRSTSVGIHGGALDCGE VAGVEFAGRPHCGVFGTCPSYEGARTKPAREHGGN:DAGN PPGVRFPGLTHPGIVGTAPSVELLNIWNEREETGHESLKK TKDFKLQMRPMLGCISVAPPGFEAFTGPHGVYGGNDDYNG
 KDMKWPDKPMDGSI GVAPRFGRD ETLVPGEYGGNMDCVE EGVT PPVRPHFGVVALAPETGLVDSVPPSHFGGNDDNWR TRPLALLPEPKGALLGNSPDWEAARTIPGRENGGNCDTKN PPGVRFPGLTHPGIVGTAPSAELLSTWNPREDTGHESLKL
 REGVVWDLRPFIGTIGVAPDFEVESSLVQGVWGGNWDCRD
 VDLPGAPMUGTVGVAPAFEARATIVPDTHGGNDDTPL DDGYNLKTRPSLGVIGAA TCERTRSGRCGKTGGNLDIND TPSVRFPDYPFMGIMGVAANTEPVHSVPPAMYGGNDDINE GTKYSVGLKPFMGLMGMPPGEEGQHTFMPRPYGGNLDCKE RFGVRVPLRPHFGMLAVAPREGLIDSDPPSYFGGNLDNWR FNGGW KRPSIGVLATI DDQRRSAGRCSENGGNMDFPQ GRNGRVPLKPFAGTMGVAPAEPGMHSVPPRRVGGNLDVRD TSTLKVKVNKMIGVIGTAPKDEAISCGTPDAHGGNMDCKD MHVGCMGLAPKHDSVDSTPPMPPGGNLDNKR MHVGCMGLAPKHDSVDSIPPMPPGGNLDNKR MHVGCMGLAPKHDSVDSIPPMPPGGNLDNKR FGRTRFPLNPCLGTMAVAADDDTVTSRSTGAFGGALDCRE PPDFVVP RPMUGVVEVAPHAGA MN MDLGGNMDFNS DPHVKFAGLDHPGLLGCAPSAEVLDTWNTREHGGNCDDKN PWGRELTLSPCFGNFSVAPPSD WDRRPFSGHLDDED VPGVRLPGAPFMGVMGVAPSREARRTDSPTEAGGNDDGH KVPLRPHRGTLAVMPNNGGANTIPPARFGGNIDDWR NEYTSWDLEPMIGTIGVATEYETHGTLNQTPCCGNWDCKD 1PGVKFAGNTHPGLI GCAPSQELLNTWNQRE M $\square G T \| G V A T A E E T U S T L T P H D H G G N D D T D$ GARTVPPREHGGNCDDKD



UniRef90-K8E559
UniRef90_R1BAB9
UniRef90_R1BAB9
UniRef90-R1BAB9 UniRef90_UPIO00371774E UniRef90_H1UUZ0 UniRef90_L1I7I3 UniRef90_UPI000466320D UniRef90_L8F2Q3
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UniRef90 E3IW61 UniRef90-UPIOO04652007 UniRef90-A6WGH5 UniRef90-X1DAC9 UniRef90-14F3L3 UniRef90-E8N7N6 UniRef90-J1T788 UniRefolo-Q2JGJ5 UniRef90- XOQNN4 UniRef90-101687 UniRef90-UPIOOO3470DEB UniRef90-R1DF19 UniRef90_D8S2D1 UniRef90-A7F433 UniRef90-B6AUM7 UniRef90_F3SBW7 UniRef90-C1MJI3
UniRef90-S5SGG9 UniRef90-E8N7C9 UniRef90-M2XZL8 UniRef90-UPIO0037A11EF UniRef90-UP100037C12BF UniRef90-UPI0002D857A0 UniRef90-UP100036049DC UniRef90-UPIO00471C7EO UniRef90_18OZ61 UniRef90_F8AXZ7 UniRef90_W3WTT3 UniRef90-U7NPJ9 UniRef90-UPIOOO378E962 UniRef90-10H9Q2 UniRef90-C4W7K2 UniRef90- X1UWE7 UniRef90-UPIO00463B37D UniRef90-W2TN71 UniRef90-D8TRD5 UniRef90-M8CNE2 UniRef90-UPIO003658A7B UniRef90-X1KSL3 UniRef90-10Z1U6 UniRef90-XoZLV2 UniRef90-A5APC8 UniRef90-G9ZE79 UniRef90-UP100036CDDA4 UniRef90-W1E1Y5 UniRef90_I8SKLO UniRef90 A0A013S389 UniRef90-E5ZOH8 UniRef90-UPIO0035D9735 UniRef90-K2D5C0 UniRef90-HOHJD9 UniRef90-W2TPD3 UniRef90-K8E559 UniRef90 R1BAB9 UniRef90-R1BAB9
UniRef90 R1BAB9 UniRef90-R1BAB9
UniRef90-D3CWP3 UniRef90-UPIoo0371774E UniRef90-H1UUZO UniRef90-L11713 UniRef90 UPIo00466320D UniRef90-L8F2Q3 UniRef90-B7G413 UniRef90-X1CGJ9 UniRef90 BOC2N8 UniRef90 BOC2N8
UniRef90 V 4 Y 654 UniRef90-S6SGA1 UniRef90-T1B034
UniRe90 R1CCS4
L
 GTALVSVDLVRGGPLRAPRVETADDWLFVGLGDPVQESVR
 MDVEFSVEVRKAAQVTAPRVETADHII AI GSQPSLDRALQ
 AKVTLSVDKDRPKRMTWPRFENETHIGATGCSRTLEDGMR GLAVVSVDLVKNMPLRAPRDETDDEWLFVGLGDPVQESGT L LRALLRFDLVRQGDAHGPWAETDELLVADGLDADLGEAVR GVITIKFTVMKEGMKQLPQFGPGRHIYFEGFSMDATVAYR $\stackrel{L}{L}$

\section*{ <br> | L |
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$\stackrel{\rightharpoonup}{F}$

## \section*{$\square$} <br> G

 GIIT INFKVMKNGMADLPHYGPGRYLTFEGFSVDHH LQGRFQWRCSK
L N VLIF Q I ILRKDFSFPSPLLETPKNWIVHGFGDTLNAAMK LRGTFRLSVIKNGDADAPRAMTRSHYLTMSFHESLDVAQN
 GYAILRCQI I RNGMDRYPMGPTKDHVNPIFEVGPLE

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

 LRATFRLTVVKKGAFRYPFAETPEAWVP $\square G L S D D L D \square A M R$

A QVt LK LEVIKNRAAEWPRDENQTHDMVAGSARPDMDAVR GRVVVRVRLLKNFELNWPITETETDFFVNTCGATCDEAIE FTGVFQVILHKAADIDYPLIETPDEWVLQGFSHPLDSAMR GFLELKCEI IRGGMEKYPMGPTKLHVHPIFEDGPLE
GPASLHVNPI FE IGGPVEPRFSEWLVFEGISVDEDASVAYK
 GFLELRCEILLRGGMDQYPRFSEWLVFEGLSVDEDATVAFK AEVVMK
GFLELKCETIRGGMKEYPRFSEWLVFEGTSVDEDASVAYK GVVEVEVHVIKGRPYPQPLADMADACHTIASAPTLDQAAE


## LT G S F E L R V H K R A A L D H P F L E T G C E WV I Q G FS S S L LE G A M R

LT GEFEF LLHKKHTLDHPMLETEELWSMYGFHASLDQAMR
 $G \vee A R \vee R$
LA G T F E F HVVRNLHLSAPRF


 G WV H M R V E L I K G G M A K Y P $\quad$ I V P T Y N Y L

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UniRef90 S5SG9 UniRef90-E8N7C9 UniRef90-M2XZL8 UniRef90-UPIO0037A11EF UniRef90-UPI00037C12BF UniRef90 UPIO002D857AO UniRef90-UPI00036049DC UniRef90_UPIO00471C7E0 UniRef90_18QZ61 UniRef90- F8AXZ7 UniRef90_W3WTT3 UniRef90-UTNPJ9 UniRe990-UPIO00378E962 UniRef90-10H9Q2 UniRef90_C4W7K2 UniRef90-X1UWE7
UniRet90-UP1000463B37D UniRef90-W2TN71 UniRef90-D8TRD5 UniRef90 ${ }^{-}$M8CNE2 UniRef90-UPI0003658A7B UniRef90 X1KSL3 UniRef90-10Z1U6 UniRef90-X0ZLV2 UniRef90-A5APC8 UniRef90-G9ZE79 UniRef90-UP100036CDDA4 UniRef90-W1E1Y5 UniRef90-18SKLO UniRef90 A0A013S389 UniRef90-E5ZOH8 UniRef90_UPIOOO35D9735 UniRef90 ${ }^{-}$K2D5C0 UniRef90-HOHJD9 UniRef90-W2TPD3 UniRef90-K8E559 UniRet90_R1BAB9 UniRef90-R1BAB9
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UniRef90 V 4 Y 654 UniRef90-S6SGA1 UniRef90-T1B034
UniRef90_R1CCS4
 LGYEDAFAFLVEDHGFTAEDAYAVLSAVGDSKLGG DALDRGLI SWFAGASGVTRAEALHALCSMAASFRITQYANRT MATTDMVRWVVADYHLEPWAAHQLVGAAGKY VESVVTVA RAVVNALDFLEHDHGLDRAVAYAYLSAAADFAVSQVVDRT
QAALNCFDYLNRLGYSREQAYLLCSAAVEAGVGAVVDPN
 RGYEDMFHFLVDDHGWVAGDAYAVMSALAHSRLGG AALENAVALVRRAFELTTREAYAFVCACLSYRFGGPAGPV
DATRCALALLERE GMHPAHAYAYLSAAGDFAVSQVVDQV ETSLLRCI EYL R RYGYDDYQSYLLLSCAVQGHLAGVVDPN RAVLNCIYYFT KFGYTPEQVYLLLSCCCEGRISGIVVDPN HACEEAAKLLVDHWGFTDEDAF FESVAGDGGIAQNCHPM MCVRNAVELVVSDFDADPQQAYLYLSAAADFNISQAVDQV RAVVNALDFLVDDRGMDRATAYAYLSAAADFTVSQVVDRT RAMRA VLFLSSRLSLDRASALAYLSAAADFGUSQLVNGV LCAVANAVELELHALEEMEPRQAYLYGSAATDFTVSQAVDLV KACLAMTDFLKARLGLSEEKIGVLLSSVGGF RAVVNADDFLQTDLGMDRAVAYAYLSAAADFEVSQVVDRT ACVRSSLALLGGRWGMGEHLAYAYLSAATDFDUSQVVDVV RAARSAVVFLQSRVGLDRTEALAYLSAAADFGACQLGTGT VALDAMLDVMAALHGISRSDALGLASVVVDLRVTQVVNQV KSTREAIRFLNQEYG\|DEADAYAYLSAATDFEVSQVVDKT HATTEMVRWLQDEYGLSPMHAQTVLGQAVEYEVGNVFDPA
$H G Y Q R F R F L K V G F S R G D A F T V M A T V N G P A G A A T P E ~$
 RAVLNAIEYLS KFGYTREQA

NAS DDMDDLL GEKGLSRNDAYSLMSVASDFTVTQVVDGT LLALRDMLRWMRRVTGLRVVDLYRMSSLVGDMSVTQVVNGK MAYEQLFDALTTDHGYSAEDAYVLMSAEAHTELGG VGDPD
AAMGEDRRRLDDCGYFPAEAHHLLGAVAEVTVNQCVHGG RGYEDMYDFLVEDHGWSGADAYVVMSALAHSELGGPPDPL
$\square A T \nabla E M V K \square M T E Q Y G \square S S K E A \square S \square A S \square I V H \square R T Q M V N G V$ QASTGLI QWLRQDY
RATRSAVLFLQSRVGLERAEALAYपSAAADTGVCRDGPGA QTTRSAVLFLSSRLGMDRADALAYLSAAAVFGIGRSGSDL HAANSAMNYL GKLGYSHEQLQMLLAAAPEAKILATPNPH DAVRESTRFLHEKLGMDRATALAYLSAATDYEVSQVVDGT RAVLNAIEYLS RFGYSKEQVYLLLSCCCEGRISGIVDPN TSTAQLATWLKRDYGLSDSEVALLLGAVMKDEVTELVDPE

ПA HVE TT K WLVVDYGFDKWEALQVLS QVGTMRVGNVVDPN AGYREMHRLI SNAYGWDYTDAGM
DAFRKTRRFLMTAFSLSEDEADSLISVAVDFSVTQVVNGN
RAVLNATEYLS KFGYSKEQVYLLLSCCCEGRTSG\|VDPN RAARAAVTFLQTKVGLDRAAALAYLSSAADFGVGRLVGGS KAVVNLMKWLVEDYGMAPRDAYFQIGVNPDFRINQMVDVH RAVLNCDDYLS KFGYTKEQVYLLLSCCCEGRLSGUVDPN

DAFHKARRY MDAHGLDEDEAVSLISVAVDFAVTQVVDGN TAVRNAMDYLKRFSGWSEPHLYEFLAGF NLVPGNLTGKV DAFRK $\square$ RRF $\square$ MQVHK LSEDEA $\square$ ALLSVAADFG $\square$ TVVDAN NAYTQTRKFMMATYNTSQAESDTTMTQGVDFGTTQLVDGN NAYTQTRKFMMATYNISQAESDTIMTQGVDFGITQLVDGN NAYTQTRKFMMATYNUSAESDTIMTQGVDFGUTQLVDN RAARAAVRFLQTRGGLLQADAVAYLAAAADFGLGRLTDGH VA WVNMVGLIADRYDTTAEHANLLVGTDADAR-DAGDVDN KALEQAYDHLTGKEGLTAEEAFAYCVAKADVRFGG
 RA自NLMSWMVEEYGVRAKDAYAMMSCSPEFKVKQMVKPN


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UniRef90-B0C2N8
UniRef90-V4Y654
UniRef90 S6SGA1
UniRef90-T1B034
UniRef90_R1CCS4

T G\|H GLI R K A D F
WGVHALLPHD
K GV H GLL RKD IFPA GSMA LKIPKKYLPR


$V \vee A A L P D A P V T Q L$
K G TYCMLPKD
CGVHGTDRKADDREL
A CTTMMGLPMMDIDR
 AVAKMRVPK GSMALCD PKKRIDPAL
 S GVHGQURTAADFAR GGUATRKD
VGVHGVIPKCHFR
SGVHARIREADF


KGIHAKIRKADFKEF
YTIVCKLEKRWLPE
DTMVAAIPKWUL
SGCHVVLQKRCLIP

Q G V H VRMPRNDFP
K GVHLAFPRR
P L H P F D A VG
WS VHTA TPRYALPHM
HPMTARLPTSLL
$R G \square H A V L P H G A \square K P \square G$
QTAFCRIHRVDFTE
QTVYCRI RRADF
ANVSVGI P
KGI HGLI RKSDFKEV
AVATLAIPTADFDQI
F NVVTKVPKSTL
TGVHAVIPKDHF
Y T IVAKFPKKY LP
$W G \nabla H A V I R K S M F T Q R$
A VA T LA DP T A DF D Q
ESGYCRIRRADFSE YTVGAEFPKKYLNK ACAT $\square A \square P \square A \square F D Q$
$A \boxtimes A T \square A \prod P T A \prod F D Q$
 YTVLATVDT T A LDPR WVVSFYFPNSV
$C T A A T V I P T R$

WGVHGS $\square$ RKSVFAER
WGVHGVIPKVIFEEAGV
 GTGFCRLRRSDFNE

ACTT $\square \mathrm{G} \square \mathrm{PMD} \square \mathrm{FD}$
$W G V H A D D D K W F D Q$
$Y$ VVGGA E I P K K YLLK


UniRef90 FOYDJ8 UniRef90＿FOYDJ8 UniRef90－B7FYS6 UniRef90 B7FYS6 UniRef90 L9XFJ0 UniRef90－L9XFJO UniRef90－I3SC68 UniRef90－13SC68 UniRef90－UPI000466AC68 UniRef90－MOTCR5 UniRef90－M0TCR5 UniRef90－X1RZX9 UniRef90－Q8H1G4 UniRef90－Q8H1G4 UniRef90＿10YMM8 UniRef90－A5APC9 UniRef90－A5APC9 UniRef90＿R1D2S7 UniRef90 UPIO0038236CF UniRef90－Q9SZF0 UniRef90－M1CC20 UniRef90 M1CC20 UniRef90 UPI00037CA17E
UniRef90－M2UZC1
UniRef90－B9DFI3
UniRef90 B9DFI3 UniRef90－B9SGY7 UniRef90－B9SGY7 UniRef90＿W5G883 UniRef90 ${ }^{-}$W5G883 UniRef90＿A7A7U2 UniRef90－C5T7M6 UniRef90 B8AA41 UniRef90－B8LQX8 UniRef90＿B8LQX8 UniRef90＿F8D710 UniRef90 F8D710 UniRef90－X7XS13 UniRef90＿UPI0003B3CACF UniRef90 M2XGZ7
UniRef90－UPI0003B61A33
UniRef90＿L9XG60
UniRef90＿L9XG60
UniRef90 S8DMW3 UniRef90－B8KXJ2
UniRef90＿D6M310 UniRef90 Q8RCU9 UniRef90 ${ }^{-}$W6QLH0 UniRef90－B1HXL7 UniRef90－UPI00047120F8 UniRef90 R7X393 UniRef90－MONMB0 UniRef90－Q3K469 UniRef90＿F1ZWZ9 UniRef90 N9RHH9 UniRef90－UPI00040853E9 UniRef90－D4BHN1 UniRef90 K0AYI4 UniRef90－X1JVM8
UniRef90－C0QBL1
UniRef90＿R1CXU5
UniRef90 D3LOZ1
UniRef90＿UPI00035E301A
UniRef90－UPI000368FACE UniRef90 UPI00041754D7
UniRef90－V6MBF1
UniRef90－D5WTI6
UniRef90 D5RP35
UniRef90 F2F5B1 UniRef90－A0A011STYO UniRef90＿UPI00041CAFF4 UniRef90＿M1E5U2
UniRef90 UPI0004264CED UniRef90－C5EEN8 UniRef90－B8DMH2 UniRef90 TOLVW7 UniRef90－F5SII1 UniRef90－UPI0003660175 UniRef90－UPI000373962C UniRef90 L9WN08 UniRef90＿UPI000288A395 UniRef90＿A3PP17 UniRef90 UPIO0037455E6 UniRef90 UPI00047A09DC UniRef90＿GOLKE2 UniRef90＿UPI0003014A83 UniRef90－W4L7V2 UniRef90－D6XUC3 UniRef90＿M3FA92 UniRef90＿UPI00041B34B7 UniRef90－E4RNB7
UniRef90＿UPI0002E7C073

LHNRWHPD TP PVAEATTGELERVEMDDFSGG LHNRWHPDIPPVAEATTGELFRVEMIDFSGG
LHNRWHPDDPAVADVTEGEVFRVEMVDWTGG LHNRWHPDIPAVADVTEGEVFRVEMVDWT G G $M K R \square T R N H S I F A M D K Q N Q P V L Y V D S G E R F I V E T E D C F S H$


HNRWHPKIPXVAEVKAGEFFRVEMVDATGG HNRWHPKIPXVAEVKAGEFFRVEMVDATGG TEKNCYNRYHPA』PPAMEVPSGSVVDFRTRDLWDH

LHNRWHPETPSVAEVKTGELFRVEMVDWTGG
L H N R WHPE I P PVVTEVKTGEMFRI EMVDWTAG LIPSRPGTV LWGWGARDRPVLLADSGETLTVDTVSHFGR

QDQPLHNRWHPEDPPVAEVKAGEFFRVEMTDAMGG QDQPL HNRWHPEIPPVAEVKAGEFFRVEMIDAMGG L HNRWHPDIPPVAEVTAGELFRVEMVDFSGG
 LHNRWHPE IPPVADVTQGELGRVEMVDCTGG VHNRWHPD $\square$ PMAVWVEPGAEFK【ETYDWTGG LHNRWHPETPHVAQVVEGEVFRVETVDFSGG LHNRWHPE IPHVAQVVEGEVFRVETVDFSGG HNRWHPD $\square$ P P VVTVKRGDTFRAHCREWFDG QPKP $\square H N R W H P D \prod P P \prod A Q V K V N S V F R V D M \prod D F T G G$ HT T HARQHHFGWDNSFAPVLTAAPGET LLFQCLDSSGG HNRWHPD P A TVV SVEPGETERLEMLDWTGG VKKPPHEQLHNRWHPE IPPVAQVKTGEVFRVEMVDWTGG

VPATAKTVHWGPCRSTPPVAE $\square$ PS GGAVT LDTVSHSDA

$$
\mathrm{V} \square \mathrm{~K} \square \mathrm{~K} \text { S } \square \mathrm{Q} \mathrm{~V} \mathrm{~T} \text { S M A T S S G H D E }
$$

HVSHRDGHVYDFSPAMEPVYEATDGES $\square$ T $\square$ ET $\square$ DS $\square$ NG

HFQKEQSFA $\square \mathrm{D} \square \mathrm{DEQED} \square \mathrm{SFRTLDNGGY}$

QH $\square$ NQTTHHFELKPDNTFK $\quad$ K QNKTYT $\quad$ HT $\square \mathrm{DNDGH}$ AEPGDA $\square$ AVHTATASGN

DPEAPMLGPVANGGT】IANTPGCWGP

WGPM $\square$ T PE $\square$ RAEPGDA $\square R \square E S \square T$ AS GN NLHFKWNSTNRPVLHVSEREEFEVI DPDSSTM LPATRETTVDVFDRATPPVLTVDPGDSVVVGSLDAAG WGPM $\square$ T PR $\square R$ AEPGDAVVIR $\square R D A S G H$

UniRef90 FOYDJ8 UniRef90 FOYDJ8 UniRef90-B7FYS6 UniRef90 B7FYS6 UniRef90 L9XFJ0 UniRef90-L9XFJO UniRef90-I3SC68 UniRef90-13SC68 UniRef90-UPI000466AC68 UniRef90-MOTCR5 UniRef90-M0TCR5 UniRef90 ${ }^{-}$X1RZX9 UniRef90-Q8H1G4 UniRef90-Q8H1G4 UniRef90-10YMM8 UniRef90-A5APC9 UniRef90-A5APC9 UniRef90_R1D2S7 UniRef90 UPIO0038236CF UniRef90-Q9SZF0 UniRef90-M1CC20 UniRef90 M1CC20 UniRef90 UPI00037CA17E UniRef90-M2UZC1 UniRef90-B9DFI3 UniRef90 B9DFI3 UniRef90 B9SGY7 UniRef90_B9SGY7 UniRef90 W5G883 UniRef90 ${ }^{-}$W5G883 UniRef90-A7A7U2 UniRef90-C5T7M6 UniRef90 B8AA41 UniRef90-B8LQX8 UniRef90_B8LQX8 UniRef90-F8D710 UniRef90 F8D710 UniRef90-X7XS13 UniRef90-UPI0003B3CACF UniRef90-M2XGZ7 UniRef90-UPI0003B61A33 UniRef90_L9XG60 UniRef90 L9XG60 UniRef90 S8DMW3 UniRef90-B8KXJ2 UniRef90_D6M310 UniRef90 Q8RCU9 UniRef90 ${ }^{-}$W6QLH0 UniRef90-B1HXL7 UniRef90-UPI00047120F8 UniRef90 R7X393 UniRef90-MONMB0 UniRef90-Q3K469 UniRef90-F1ZWZ9 UniRef90 N9RHH9 UniRef90-UPI00040853E9 UniRef90-D4BHN1 UniRef90 KOAY14 UniRef90-X1JVM8 UniRef90-C0QBL1 UniRef90 R1CXU5 UniRef90 D3LOZ UniRef90_UPI00035E301A UniRef90-UPI000368FACE UniRef90 UPI00041754D7
UniRef90 V6MBF1
UniRef90-D5WTI6 UniRef90-D5RP35
UniRef90 F2F5B1 UniRef90-A0A011STY0 UniRef90_UPIO0041CAFF4 UniRef90 M1E5U2

A $\square$ T K NYTAEDAVDLSAVHHLSGP\R\|VDSQPGDLLAVEDC A $I T K N Y T A E D A V D L S A V H H L S G P L R\|V D S Q P G D L L A V E\| C$

RVGDDNSATKSLDLTDTHYLSGPLRVVDSKPGDLLMVEDC RVGDDNSAIKSLDLTITHYLSGPLRVVDSKPGDLLMVEIC QIVESDDVLDNFDYSRVNPATGPIFVNGCQPGNTLKVACH


GlK DDDSSLDVKNWAQVHYLS GP\RVVPAKPGDLLAVE\|C GIK DDDSSLDVKNWAQVHYLSGPIRVVPAKPGDLLAVEIC PWDGEDGAFAPDDLAAVHIITGPVGIAGAMPGDKLAI E MTGPVSVRGAEPGDVLRVD

 H HIDPADRVPADHRVDGPHVITGPIAVAGARPGDVLAVHLL

VIKDNDSATKNLVLTTTHHLSGPDRVVDAKAGDLLAVEDC VI K DNDSAI KNLVLTTTHHLSGPI RVVDAKAGDLLAVEI C GI TQQNTAIKHADPSVVHYLSGPIKVVDAKPGDLLVVEIC
 QVKDDDSA IKSLDFAAPHYLSGPLRVVDAEPGDLLAVEIC

A $\square$ K N D D D DVRDVD $\operatorname{DSTVHF\square SGPVGVKGAEPGDLLVVDLL}$



A $\square$ HNDDSA $\square$ LNAP $\square Q N V H C \square S G P F A V D G A E P G D L L I V D \square L$ Q TK NDDNAVKS TNDNKNHHLSGPFSVKPAKPGDLLVVELC QL GPRSTDVQALDFGQDNPVSGPDFVDGAKAGDVLKVTIE Q G N D D D DVVRDV

 RELAASHAGRDPARDGPHVVTGPVHVTSARPGDVLRVETL P $\square$ T DRF $\square$ GDPF $V S$ VKCPGCGK $\square H V K G \square G P \quad$ Q A $\square R C S T C$ A $\square$ Q T D D DR $\square \mathrm{DA} \square \mathrm{P} \quad \mathrm{EEVNAATGP} \mathrm{\square AVEGARPGDVLADE} \mathrm{\square E}$

DELDKEFEELNPLSGPFLLKNA $\square$ RGD L $\square \mathrm{E} \square \mathrm{T} \square \mathrm{K}$
 DEPVEGRFNGDPF $\square A G \| C P N C G K T R V E G I G Q G A V E D V T P F$
$M \square T P \quad R \square R G G H E D T Q P \nabla A \square E G A E V G D A L V I R \square R$

DRT $\square$ EGRF $\square$ GDPFVARVCPGCGSSH $\square E G \square G P \quad D A V R C D K C$ Q $V K R N S S D \square R K \square D S S \square F D G A V G P \square Y V D G T E P G D C \square T V N \square K$

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

DSSPEGFCDGDPYVAARCPVCDTVWVEGDGPEAVKAVTPF

DRT $\square$ EGRF $\square$ GDPF VAAKCPNCGTMH $\square E G \square G P \quad E A \square R C T T C$

UniRef90 FOYDJ8 UniRef90 FOYDJ8 UniRef90-B7FYS6 UniRef90 B7FYSE UniRef90 L9XFJO UniRef90-L9XFJO UniRef90-13SC68 UniRef90 I3SC68 UniRef90- UPIO00466AC68 UniRef90-MOTCR5 UniRef90 MOTCR5 UniRef90 X1RZX9 UniRef90-O8H1G4 UniRef90-Q8H1G4 UniRef $90{ }^{-10} 10$ YMM 8 UniRef90-A5APC9 UniRef90-A5APC9 UniRef90-R1D2S7 UniRef90 UPI00038236CF UniRef90-Q9SZF0 UniRef90-M1CC20 UniRef90- M1CC20 UniRef90 UPI00037CA17E UniRef90-M2UZC1 UniRef90-B9DF13 UniRef90 B9DFI3 UniRef90- ${ }^{-19 S G Y 7}$ UniRef90-B9SGY7 UniRet90_W5G883 UniRef90 ${ }^{-}$W5G883 UniRef90-A7A7U2 UniRef90-C5T7M6 UniRef90 B8AA41 UniRef90- B8LQX8 UniRef90-B8LQX8 UniRef90-F8D710 UniRe990 F8D710 UniRef90-X7XS13 UniRef90-UPI0003B3CACF UniRef90 M2XGZ7 UniRee90 UPI0003B61A33 UniRef90-L9XG60 UniRef90-L9XG60 UniRef90 S8DMW3 UniRef90-B8KXJ2 UniRef90-D6M310 UniRef90 Q8RCU9 UniRef90 ${ }^{-}$W6OLHO UniRef90- B 1 HXL 7 UniRef90 UPI00047120F8 UniRef90 R7X393 UniRef90-MONMBO UniRef90-Q3K469 UniRef90-F1ZWZ9 UniRef90 N NRHH9 UniRef90-UPIO0040853E9 UniRef90-D4BHN1 UniRef90 K0AY14 UniRef90-X1JVM8 UniRef90-COQBL1 UniRef90-R1CXU5 UniRef90 D3LOZ UniRef90-UPIOO035E301A UniRef90-UPIO00368FACE UniRef90 UPI00041754D7
UniRef90-V6MBF1
UniRef90-D5WTI6
UniRef90 D5RP35
UniRef90 F2F5B UniRef90-A0A011STY0 UniRef90_UPIO0041CAFF4 UniRef90 M1E5U2
UniRef90 UPI0004264CED UniRef90-C5EEN8 UniRef90-B8DMH2 UniRef90 ToLVW7 UniRef90- F5SII1 UniRef90-UPIOOO3660175 UniRef90-UPI000373962C UniRef90 L9WN08 UniRef90_UPIOOO288A395 UniRef90_A3PPI7 UniRef90 UPIO0037455E6 UniRef90-UPIo0047A09DC UniRef90-GOLKE2 UniRef90 UPI0003014A83 UniRef90 W4L7V2 UniRef90-D6XUC3 UniRef90_M3FA92 UniRef90 UPI00041B34B7 UniRef90-E4RNB7
UniRef90_UPIOOO2E7C073

NLEWGFTATFDRENGGGF LTDHFPYATKA TWYFEGTYAYS NLE WGFTATFDRENGGGFLTDHFPYATKA LWYFEGLYAYS NLEWGYTATFDRENGGGFLTDHFPCATKATWYFEGПYAYH NLEWGYTATFDRENGGGFLTDHFPCATKAI WYFEGIIYAYH KI EVESRGVVEVFPGWGPL GNKVEKAETKIVS DSEGGVNF NLGPGDEWGFTASNGGGFLTDHFPCATKAI WYFEGTYAYS NLGPGDEWGFTASNGGGFLTDHFPCATKAUWYFEGUYAYS

WQGYWYPG\|VTTHPTKTEDYS IDR NLEWGYTATFDRENGGGFLTDHFPCATKA\|WYFEGDNAYH NL E WGYTATFDRENGGGFLTDHFPCATKAIWYFEGUNAYH DI T PLA Q GF TMSHTPLGFMNGVKPDMAWVTWDYDATTMSW SLHPRARYGMSTRHGSGLLAGEFPETATTFCAVERRRGRLL NLGPGDEWGFTASNGGGFLTDHFPCATKA TWYFEGПYA NL EWGF A A F DRENGGGFLTDHFPRATKAI WYFEGI YAYH NLEWGFTAIFDRENGGGFLTDHFPRATKAIWYFEGLYAYH DLAPRTSYGVLTER

HGRGRGTPPVTVCP $\square R D G F A R V$
NLEWGFTGSFDRENGGGFLTDHFPCATKATWYFEGTYAYS NLEWGFTGSFDRENGGGFLTDHFPCATKAI WYFEGIYYYS NLEWGYTATFDRENGGGFLTDHFPCATKAI WYFEGI YAHH NLEWGYTATFDRENGGGFLTDHFPCATKAI WYFEGI YAHH NLEWGYTGTFDREHGGGFLTDHFPSARKAI WYFEGIIYAHS NLEWGYTGTFDREHGGGFLTDHFPSARKA LWYFEGLYAHS
D $\square$ GWGFNGFFSKQNGGGF $\square$ DEHFP $\square$ AQKS $\square$ WDFHGTSSRH
DLE WGFTASFDRENGGSFLTDHFPNATKA ITWYEGDFAYH DLE WGFTASFDRENGGSFLTDHFPNATKAUWYFEGUFAYH

D $\square$ GWGYTG $\square$ FAKRNGGGF $\square$ TDQFPDAYKA $\square$ WDFAGQTATH
 SFTPAGFGWTANDPGFGLLTDQFPDPADHVWKFDMEPALF DMEWGFNGDFSQQNGGGFLTDHFPDAAKTVWDVEGTVVRH DMEWGFNGIFSQQNGGGFLTDHFPDAAKTVWDVEGTVVRH NLEWGFTA $\square$ F DRDNGGGFLTDHFPNATKA LWYFEG $\square$ YAHH
S LRRRGYG VVSTRHGRGALPGEFRGPEFTFCRTEGDTGLI
WGFS LIDPGLGPLDQPQTRVAKS VWDFHGKMARH DTDTAPFNYTMAFDHKGH GVTVGREGAR R $\square A D D A K N Y M R$

D V R VT E DRGVLTAPGFGLLRDD DDHPATR】TEVDAGGR】E
$N \square H \square T R D \square G L S S \quad C G \square L P K Y L K K E E V V F W K V E D K V C T P$

T T WY WA WT $\square$ S RPYGGA $\square E$ WRVP PH $\square$ RHTR $\square$ DAGVARP Q V V T R N $\square G S$ S S GP $\square P$ CH $\square T P R \square K K P V L I F W K L E D H F C Q \square$ K FTNAYTMAFNESKTMGLTNEKMRKPENSUQNPVVTFAPH
$D \square T \square G D P Y V A P R C P T C G T \square W D A C G N A V T P F A \square V H G Y T V A F$

GAPDAPFAFTNS $\square$ GADGRHYMQTPD
QS $\square$ Q N P VVA L APSD K $\square E$ TEDWGWT A $\square$ MDNF G $L\llcorner K$ NMFSE T LVVWK $\square D E G V I T S$
$S \square T P G D W G W T A A G T K D N A L N R R \square G V A A W L T W D \square G L E T A T S$

E $\backslash V \mathrm{H}$ GYTVVFDETRAVGVAAET $\square$ ARDASHYAA $\square$ PDQSAQH

GADVTPFVFTNAYTMGFDEQHDFGEAAERDARDGRRYMTF

UniRef90 FoydJ8 UniRef90-FOYDJ88
UniRef90-B7FYS6 UniRef90-B7FYS6 UniRef90_L9XFJO UniRef90-LIXFJO
UniRef90-I3SC68 UniRef90- I3SC68 UniRee90 UPI000466AC68 UniRef90-MOTCR5 UniRef90-MOTCR5 UniRef90 ${ }^{-}$X1RZX9 UniRef90-Q8H1G4
UniRet90-O8H1G4 UniRef90_10YMM8 UniRef90-A5APC9
UniRef90 A5APC9 UniRef90-R1D2S7 UniRef90 UPI00038236CF UniRef90_Q9SZF0 UniRef90-M1CC20 UniRef90_M1CC20 UniRef90-UPI00037CA17E UniRef90-M2UZC1 UniRef90-B9DF13
UniRef90_B9DFI3 UniRef90-B9SGY7
UniRef90-B9SGY7 UniRef90-W5G883 UniRet90-W5G883 UniRef90-A7A7U2 UniRef90-C5T7M6
UniRef90-B8AA41 UniRef90_B8LQX8 UniRef90-B8LQX8 UniRef90-F8D710
UniRef90-X8D710
UniRef90-UP10003B3CACF
UniRef90_M2XGZ7 UniRef90-UPI0003B61A33
UniRef90-LLXG660
UniRef90-S8DMW3
UniRef90-B8KXJ2
UniRet90-D6M310
UniRef90-Q8RCU9
UniRef90-W6QLHO
UniRef90 B1 HXL
UniRef90-UPIOOO47120F8
UniRef90-R7X393 UniRef90-MONMBO
UniRef90-O3K469
UniRef90- ${ }^{-} 9$ RHH9 UniRef90-UPIO0040853E9 UniRef90-D4BHN1
UniRef90 KOAY14
UniRet90-X1JVM8
UniRef90-COQBL1 1
UniRef90 D3LOZ1
UniRef90-UPIO0035E301A
UniRef90-UPIOOO368FACE
UniRef90-UPIo0041754D7
UniRef90-V6MBF1
UniRef90-D5WTI6
UniRef90-F2F5B1
UniRef90-A0A011STYO
UniRef90-UPI00041CAFF4 UniRef90-M1E5U2 UniRef90-UPIO004264CED UniRef90-C5EEN8 UniRef90-B8DMH2 UniRef90-ToLVW7 UniRef90-F5SII1 UniRef90-UPIOO03660175 UniRef90-UPI000373962C UniRef90 L9WN08 UniRef90_UPIO00288A395 UniRef90-A3PPI7 UniRef90 UPI00037455E6 UniRef90-UPIO0047A09DC UniRet90_GOLKE2 UniRet90_UPI0003014A83 UniRet90 W4LTV2 UniRef90-D6XUC3 UniRef90-M3FA92 UniRef90_UPI00041B34B7 UniRef90-E4RNB7
Unire90_UPIO002E7C073

PPGVRFPGITHPGITGTAPSMEAARTIPPRENAGNCDLKN PPGVRFPGITHPGII GTAPSMELLN WNERERDV FKDMKWP IKPMDGVI GCAHDERDI PTGHVYNHGGNMDSA币 1 PGVRFPGLAHPGVVGTAPSMELCDWNERE IPGVRFPGLAHPGIVGTAPSMELLCIWNEREMGNDD PPGVRFPGLTHPGII GTAPSKELLRIWNERE
 ITPGVRFPGLTHPGIIGTAPSMELLNIWNERE IPGVRFPGLTHPGIGGAPSMELLNWWNREMEGNTDTQR FGRVRFPLNPCLGIMAVASDVAEVTSLAGGVYGGADDCGD




TVPPREHGGNHDIKD $\square \mathrm{PG} \mathrm{VK} \mathrm{Y}$ TG $\square \mathrm{VH} \mathrm{PG} \square \mathrm{MGTAPSAQLLAKWNRRE}$
AAVLHHRPMPKEALLGA TSPKEAARPTPGRENGGNCDपKN GKNGRVPLKPFAGTI GNALAEKGHHSVVPPRRVGG GRPDRYEGKIHPGLI GTAPSRELLEEWNSRE IPGVRFPGLTHPGIIGTAPSKELLTUWN
 GVISRMRPFLGQLGTAPSDKMPDSHNAGDFDGHMDINR

tVIPGRENGGNCDTKN TVPGRENGGNCDIKN EAARTVPGRENGGNCDIKN EAARTVPGRENGGNCDIKN EAARTIPPRENAGNCDIKN WNRREHGGNHDIKD

GG

■K N GVMAAR GVAAMQPFL GGPLRMVGLGAPPGQQS KPEITSLKKNLMLGCLACADPDGADTSDDVDEYGGNFDCKL RVIP FF

D GVVA $R V R$
$R$
$R$
$V_{R}$
$R$
$R$ EGTTV

MRFGQLGTTPSKAMPSHNAGDFDGHMDINR


PGVVTRRRPFVGQLGTTPARPLPDSHNAGDFDGHMD:NK LKNVKIRAEPFLGVIGTAPAEGEYGMDPPQYFGG
PGVMARVRPFLGQLGTTPSHPDPDSHNAGDFDGHMDTNR DGHTVAVAPFLGVIGVPPAEPGPHPTT

RLRPFI GNVGTTPPVELPDSHNAGDFDGHDIPE


UniRef90 FoYDJ8 UniRef90 FoYDJ8 UniRef90-B7FYS6 UniRef90_B7FYS6 UniRef90 L9XFJO UniRef90-L9XFJO UniRef90-13SC68 UniRef90 - 3 SC68 UniRef90- UPIO00466AC68 UniRef90-MOTCR5 UniRef90-MOTCR5 UniRef90 X1RZX9 UniRef90-Q8H1G4 UniRet90-O8H1G4 UniRef90- A5APC9 UniRef90-A5APC9 UniRef90-R1D2S7 UniRef90 UPI00038236CF UniRef90-Q9SZF0 UniRef90-M1CC20 UniRef90 M1CC20



GKGATMYYPVQVPGALLSGGDAHTSQGDSEDDGTADETS
 LGPGTHLYLPVQVPGALFAVGDPHYSQRDGMIGATALEGP

YSPQLPEGANLSTGDMHFSQGDGE\SFCGIEMS
ПGAGTTDHDPVQTAGALLHLGGPRLAHGHG
AALEGP LTKGSRIFYPVFVDGANLSVGDLHFSQGDGEDTFCGUEMG

## 


 LS $\downarrow$ GSTVYFPVYVDGAKFALGDFHASQGDGEปTFCGIEMA
 $\square T R G S R \square Y L P V F V E G A N F S V G D D H S Q G D G E V S F$


VREDADLTPVKVAGGGVYGGDMAMQGDGEDAGHTTDVS $V R P G A V V I V P V K V K G A G I Y V G D M H A M Q G N G E \backslash A G H T T D V A$
VRAGATLICPVKVDGAGVYVGDLHANQGDGELSLHTTDVS VRERAALI CPVKVPGGGVYIGDMHAMQGDGEIAGHTTDVA VRPGATLVAPVKVRGAGVYMGDMHAAQGDGEI AGHTMDVA VREGAVLICPVKVPGAGIYLGDMHAFQGDGEI AGHTADVA VRAGALLVAPVKVPGAGLYMGDMHAGQGDGEIAGHTMDVA VRPGATLICPVQVEGAGLYVGDLHANQGDGELSGHTTDVS VRENAVLICPVKVPGGGVYLGDMHAMQGDGEIAGHTTDVS LTKGSRLLDPVNVDGALYSAGDGHYAQGDGECCITADEMG AREGATVIAPVKVEGGGVYAGDMHAMQGDGEGAGHTTDVS VRAGAILICPVKVAGGGIYLGDMHAMQGDGEIAGHTTDVS VREGSILIAPVKVKGGGVYVGDAHAMQGDGE:AGHTAD: S


UniRef90-X7XS13
UniRef90_UPI0003B3CACF UniRef90 M2XGZ7 UniRef90-UPI0003B61A33 UniRef90_L9XG60 UniRef90_L9XG60 UniRef90 S8DMW3 UniRef90_B8KXJ2 UniRef90_D6M310 UniRef90_Q8RCU9 UniRef90_W6QLH0 UniRef90_B1HXL7 UniRef90_UPI00047120F8 UniRef90 R7X393 UniRef90_MONMB0 UniRef90-Q3K469 UniRef90-N9RHH9 UniRef90_UPIO0040853E9 UniRef90_D4BHN1 UniRef90 K0AYI4 UniRef90_X1JVM8 UniRef90_C0QBL1 UniRef90_R1CXU5 UniRef90 D3L0Z1 UniRef90_UPI00035E301A UniRef90_UPIO00368FACE UniRef90 UPI00041754D7 UniRef90_V6MBF1 UniRef90_D5WTI6 UniRef90_D5RP35
UniRef90 F2F5B1 UniRef90_A0A011STY0 UniRef90_UPI00041CAFF4 UniRef90 M1E5U2
UniRef90-UPIO004264CED UniRef90_C5EEN8 UniRef90_B8DMH2 UniRef90 T0LVW7 UniRef90_F5SII1 UniRef90_UPIO003660175 UniRef90 UPIO00373962C UniRef90 L9WN08 UniRef90_UPIO00288A395 UniRef90_A3PPI7 UniRef90 UPI00037455E6 UniRef90_UPI00047A09DC UniRef90_G0LKE2 UniRef90_UPI0003014A83 UniRef90_W4L7V2 UniRef90_D6XUC3 UniRef90_M3FA92 UniRef90 UPI00041B34B7 UniRef90_E4RNB7
UniRef90_UPI0002E7C073

G WLLELKCTVIIKGGMPDEPRYSEYLVFEGDCVVDEDATLAYK GWLELKCTVIKGGMPLEPRYSEYLVFEGICVDEDATLAYK
 GF L D I K C SVI K G GMEMLDPVVGPSEWLVFEGVSVVDATIAYK GWI DLKVDVIKDGMEKMPGYMDPDYVVFEGYSVDEDI GMR GWIDLKVDVIKDGMEKMPGYMDPDYVVFEGYSVDEDIGMR

GRVVVR VR LLKNFE $\square N W P \square T E T E T D F F D N T C G A T C D E A \square E$

ASVKMK TTLVKPGDAGYKRMSPGEFTSFMGSSGTDPSQYV
 GF LDELKCEII RNGMQEYPRFSEWLVFEGDSVDEDATVAYK
$\square R V T L R V E R \ R F G N P R R P F A T T A D A L D P G G \square A A D P A L A D R$ GFIDLRVD IIKGGMDTYGVPQYSEWLAFSGTSVTLDLSYQ
$\square R A T \square R V Q V V P T A E A K \square P F A \square S H G T L I P M G F S S T \square D D A L S$ GF L E LKCE $\|$ RGP VEPRFSDWLVFEG $\square$ SVDEDASVAYK

AYVDVKFDLVEDGMEKLGVDHPEDYVTFCGYSVDSHTAYR A YVDVKFDLVEDGMEKLGVDHPEDYVTFCGYSVDSHTAYR

MTGTFEVILHKKGDLTYPLIETATDWVLMGFSHPDDLAMK

 GEVELQVEVIKGLA IDGPILFQNAPITFIGSAPTLNEATK

 G IVALQVKVLKGVTIKGPIILPNPDVAKPFSDEEMDAAYN

GTVEMDVEVIKGLDDDGPILLPNEEDLPFDSKPYSDDEDE
 GTAVLEVHVIKGLKIDGPILFPDAPVTFIGTGADLNKATD
 G R T E L ATAVVRFTLHQGEAI RWPRFSHPGYFDGTQEGEDLTLAAR
 GITHLQVHVLKGLNDKGPILLPNYPVSFIGSGPNLNDATD AVVILKVKVLKNLNI DGPI I I PDEE LI SFVVGTGVNLNEADD


UniRef90 F0YDJ8 UniRef90 FOYDJ\& UniRef90-B7FYS6 UniRef90_B7FYS6 UniRef90 L9XFJO UniRef90-L9XFJO UniRef90-13SC68 UniRef90 - 3 SC68 UniRef90 UPIO00466AC68 UniRef90-MOTCR5 UniRef90-MOTCR5 UniRef90 X1RZX9 UniRef90-O8H1G4 UniRef90-Q8H1G4 UniRef90-10YMM8 UniRef90- A5APC9 UniRef90-A5APC9 UniRef90-R1D2S7 UniRef90 UPI00038236CF UniRef90-Q9SZF0 UniRef90-M1CC20 UniRet90_M1CC20


A GYREMHRLISNAYGWDYT DAGMYMTMRGF LSANQACDEA

WAKDRALTFLTEVGGYTYGEAMVLASVTVDLRVAQLVDPA RAARAAVTFLQTK $\quad$ GLDDRAEAMAYLAAAADFGAGRLAAGY RAVLNAIDYLFKF

QCAAQGEE LVAGHGLTRDQARTYLGATAVFGTGRT RACLHADEYLT KFGYAPEQAYLLLGAAPEGRDSGVVDPN
 $R A V L N A \square E Y L S \quad R F G Y S K E Q V Y L L L S C C C E G R \square S G \square V D P N$

RASLQAlDYLKQFGYTGQQALHLLGTVPVEGRQSGVVDPN RASLQAID YLKQFGYTGQQALHILGTVPVEGRQSGVVDPN DAFRKMRRF $\square$ MS $\square K G L T E D E A \square A \square M S A A V D F G V T Q V V D G N$

NA $\square$ A A M $\square$ D Y $\square V N T Y G Y D E A Q A Y M \square A S V A V D M R \square G Q L V D P N$
LIANQWGADSLEKSYPDSFDGTGANLNEAVNLPLPEVLNGV QAATHAMDYL QRFGYSHEQAYTLLATAVETKVLAVPNPT NGLDA KLE VGLERAAR


$N G \square Q R A A H L L \quad G V T V P E V L N R A T!T G A T Q T G R H P G V$ DATENGLRRASEFLGIPYGEVLNRATITGEIGUGRLPGV

DATENAFDRAGTLLEMSEGEVRSRCTFTGGVQDGRLPGV
 NGLSRAATLLGMTVPEVRNRA TITGAVEI GRAPGV NGLTRAAEVL GMSFDEVRNRATVAGAIVI GRNPGV
 DARKWGLEQLEDTAPVSFVGTGANLNEATGMTVPEVMNGV NALVN
NGLERA AMVLGTSVPEVMNRATVTGADEDGR NPV NGLKRAADF FGVTIPEIMNRSTITGAIEIGR HPGV NGLERASEVL D GLLKK K A KLL
NGMARAATL

GLTVPEVKNRATINGAI EI GRA PGT

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| UniRef90_C5T7M6 |  |
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| UniRef90-Q3K469 | VR V T F LCP L S L D R M G |
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| jhmm |  |
| jpssm | - |


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    lupas_14
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