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UniRef90-B9JS399 UniRef90 O98H62 UniRef90-UP1000466ED6C UniRef90-D4ZLL8 UniRef90-E017W4 UniRef90-A3X8F3

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20
30
40 KI G TVNGRLE GDRNKVRFVQTNLAQLILRAAMARS GADLA $K I A E T N G H L Q Q E R N V V R F Q Q T N L G R L I A A A H K D R A K A D F S$ KVGSVEGKLEGDRSKVRFVQTNMGRLLLAAQKERAGADFA KI A ELS GRLVGDRDKVRFGQTNLGRLI ASAHKERVNADFA KVGSVDGKLEGDRSKVRFEQTNMARLLLAARMERTQAD LGG
 I G S VK GE L E G D R S KV RFRRQTNLARMMLMA Q DERTGADFA V G R T A VEL NGERGNI RTGETNLGNLI ADAMRAKFNADAA

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

 $V$ G K T T V V L V GKTKVVELD GKREHNRAMETNLGNLI T DAMRQVAKADVA






 I GE T K V V L D G E R A N V R S K S T N L A N L I A D A M A WRA N A D V A EVGYTEVVLNGVRADVRTKETNLGNLIADGMLDATNAVIA I GTATVVKLDGERQNVRSKETNLGNLIADGMLAKANADIAA $K V G Y T D V P L D G Q R E H V R T K E T N L G N F I A D G M L E S A B A B Q A$ KI G S VDARLEGDRNKVRYQQTNLARVI DQAQMNVVGADFG LGHTEVHLQGDRNKVRFGQTNLGQLI TQAQMNHVDADFA $V G R V V G V F S G E K E T V R V Q Q S S L Q Q L I L R A Q M A A T Q A D F A$






## K

$V G H T D T A I T R N Q S T A G E S A L G N L I A D A Q R A E M G T D F A$ VAETAAADDGDRSVCRAME CPMGSLI ADAMLDRDRVQQA $V G S S N E A F N G D S D V V R Y R R S D L A Q L I$ LAA QTASTQADLA
 K

> K

E
VIGETKADI H S Y F A LVV K D D P S I Q I V T N A Q K WYI E K QL K


 KVGTS DVFLD GQREHVRAKETNLGNFI A D GMLLESAGADLA



## E

 $V G K A A D A L \quad D R T Q S P A G E S T L G N L I A D A Q R S V M N G Q I A$ VGKTKEKLDGFRSNVRSKETTLANLLCDAMRETAGADLAA V G Q A TVVELVGTSDACREDECNLGNLI A DAMMWATRTRRIA VA QS GGEI NGDRNVCRLQECSNGNLVADA QLARVAGQI S VGRT LT DLERSPD KESNVGDLI A DAMRESTGVAVA
 $K V G S S D V V L N G \square R T Q V R S K E T N L A N L L T D A L R E A G D A D L T$ I ATTDALLDGERANVRNKQTNLGRMLAMAQSGKVSADFG


 E V

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



 I GT T DGKL E GERAVVRTQQTNLGRLI A EA QRTKVVGADFA V GYTKVTLDGEHAHVRTRETNLGNLIADSMLDKVEGYVA | $V$ | $A$ | $A$ | $T$ | $S$ | $E$ | $A$ | $V$ | $V$ | $G$ | $A$ | $R$ | $D$ | $V$ | $C$ | $R$ | $A$ | $Q$ | $E$ | $C$ | $P$ | $M$ | $G$ | $N$ | $L$ | $V$ | $A$ | $D$ | $A$ | $M$ | $L$ | $D$ | $R$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $G$ | $K$ | $I$ | $S$ | $I$ | $A$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $G$ | $S$ | $S$ | $E$ | $A$ | $L$ | $I$ | $D$ | $G$ | $A$ | $E$ | $N$ | $C$ | $R$ | $H$ | $M$ | $E$ | $C$ | $Q$ | $M$ | $G$ | $N$ | $L$ | $V$ | $A$ | $D$ | $A$ | $M$ | $L$ | $D$ | $R$ | $V$ | $V$ |



## QUERY

 UniRef90_I2BBLO UniRef90-R11PC3 UniRef90-R9PLYO UniRef90_G9Y5C9UniRef90 A6W3H3 UniRef90-R9NL77 UniRef90-M5E2F6 UniRef90_B7IFI

UniRef90-A5IL64 | UniRef90-A5IL64 |
| :--- |
| UniRef90 |
| $12 F 527$ | UniRef90-J5HKM9 UniRef90-U1KL39 UniRef90-A7HKR1 UniRef90-U7QA52 UniRet90-U7UGC3 UniRef90 V7HYK8 UniRef90 UPIIOOO401DC2D UniRef90-UPI000248DF3E UniRef90_E3H666 UniRef90 A3NOD1 UniRef90-UPIO002F59FDB UniRef90-Q31BZ5 UniRef90 ${ }^{-} 00 \mathrm{AO} 31$ WHK9 UniRef90-O34313 UniRefe90-F7YVI UniRef90-G4H8J6 UniRef90-ЕЗЕ315 UniRef90-W1Z3L2 UniRef90-UPI00034C347F UniRef90-H3R970 UniRef90-R9CA84 UniRef90_A0A024BAY8 UniRef90 W4C340 UniRef90-UPI0004728B9C UniRet90-A9EOS9 UniRef90-X7EDP6 UniRef90-O2CCT1

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UniRef90
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 K KAALEHSVEFDPGTGSFDQVGGITFDADTSRVSNDMI AG
 VIEALEHASDYPATKGAFPQLAGMKVQFDPSKAPGERNNG VMDY LWQYL EVVTRFPPDSGAYMQYHKLSFEHKNNTLVKVLING IKDVLEHGVKDYPEKSAFDQVGGISYYFNPKQITNIQKEG VKDWLERSYNFDVIDGVTYQVDVKVINADSSRLINLSYEG I KEALENVSKIPAQDGRFPHIAGMRFYYDSTKPAGERNGY LKDGLENGAKLADLPGKFPQVAGMKFKWDPSAPAGDRVYD KEALEQGSGVEDGGGAFPHVAGDEYTFTDQNEPGKRVDD LWNYLETVTSFPVDAGAYDQYHKLAFTRKNGKLVSVLI DG AFAYISKVASYPVDSGAYAHFNQVAPVCEGDELVSVRIDG |lKRYLAVVANDEPGSGGYAQFANVSLTANGSGVSKVT:MG KQALEQGSGIEAQGGAFPQVAGLTYTFT LNKKPGHRVDQ I LAALEGVASYPEPSGGFPQVSGIKFK DDTSAAEGSRVHD LSDYLGVVATMQRGSGAYAQITKMTVDCQAKSVADSEI NG VVEALENVSQHEEGAGRFPQVAGMSFAFDPSRISDVMVAG VIDALENVSQDEEGAGRFPQVAGMSFTFPGSRVSDVMVGG LQKAVENGIRSYPESGAMAQVAGMTVNPAYRRVLEUKIGN KAALNQQ WNGSYARMLQQSGFHYTWDPDAAAGDRPDG LAQYLTAVAKIPAGSGGYAQFSGVGFVRAGDVLTEDTVKG VAAALENVSQIEEGAGRFPQVAGMSYTFDGSRVSNIMMGD LIAALESVSEDDAGSGRFPQVAGLSFKPTGSRVSDVKVGD LATYLGLVATKTVGTGGYPQFGGINMEVNCSSVTDTSIAG VKEWLEMSAGQFNQDPAKYDKDGKQVNADANRIKNLQYNG VWDVLENVSEDEQQSGRFPQVSGMSFTYNPKRVVSVKDGS IV AALEHGVDKAPEPGKFPQVSGMTFDYD VKAALENGSQDDDGGRFPQVAGLKYSFDKSKPPGGRTEF
 KKALEQGSGIEEGGGAFPHVAGILYYFTLSKPAGSRLID IVEALENVSQUEEVAGRFPQVAGMTYAVDPSRISDVMVAG I RDULNQQWQKGTGARMPQVAGMKYSFDKSKPAGSRVSG LDALERSASMDPEPGGFLQVSGVRYEDAGRDLRSASDAG IVEALENVSAVADGAGRFPQVSGMSYAFDLSQEPGSRISG I RDILNQQWQKDKT RMLQISGMTYKWDDSKAVGEKVNG I YTAVERGVRLYPDNGGFLQVSGIKYTFDASKPAGKRING LWTSLESGVSKAHDKGRFPQVAGLRYVYDPTKPEGSRIVF
 REVLNQQGWQPNTTRFLQUSG DYTWDDSQPAGKKVMG LISTLNQQSKVEPKAGRFPQVSGLTMTYDPKAPAGKRVMG IYKALERGLRGYPFNGGFDQVSGMNYVIDASKMAGERKDG AADYLGAVGSLQUGSGGYAQITKMTVDCVAKKATVHETNG TKSALENVSQVRELGGRFPQVSVDVKEPVGSRVKSVKING I IDALENVSQVEEVKGRFPQVAGLKFTWDPSVAPNEGRIY VIDALENVSQVEEGKGRFPQVAGLKFTFDMSVAPVVDGDW
 LLTAIENVSEVEDVAGRFPQVSGMRFTFDAGRPAGDRYGW VIDALENVSQVEEVKGRFPQVAGLKFTWDSSTAAGEGRTT VVEALEHVSSVDKKAGRFRQVSGMEYSYNPSRVSNVTDNG 1 KAALELSVKDAPGFGGFLQVSGMKYTYDSSKPVGERVDS LLTALENGFSRLPQSGRFPQUSGLKVTVAPAAAPGSRVQG ILETLEHVAKAPEANGAFLQISGMKYTYDSSKNKGERVEF VKEWLEMAAGKFNTDDPFDVIDGVTYKDDVNRDKSLKYDG V 1 A ALENVSQVDDGAGRFPQVAGLKYSFDRSKPVGSRVVD LVAGLESGSQIEDGAGRFPQVAGLKYSFDKSVAPNENGAW I ASGLEHVSGIEEGAGRFPQVAGRRYSFDPSQPANIDENG ITEYLNAVATVDTGSGAYPQLVKMDVDCEAKTVANNDUNG IMAALENVSGVEQREGRFPQVAGMRFYYDSTKVSHDREAG
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UniRef90_B9NNU9



160 QLVNSHQTYRDAMPGFNASGGDGYPVIEQRPGYVNTGLID EPLDANKTYRFTVPSYNAAGGDGYPKLTGHPGNVNTGFVD KPLDEANMYRFTIPNFNATGGDGYPKITDHRGFVDTGFVD EPLQADKVYRLALLNFNATGGDDYPIVSELPSYVNTGFVD KALDTSKTYRIAMNNYSASGGDGYPKVVNHPNYVNSGYVD EMLDPNKMYTVATNDFMKAGGDGYSMFADAPIVSEAGGLE KPLEMDKVYKVVTNNYMAGGGDGYSMLKEAKATYDTGFVL EPLDPEKKYKVVTNNYMAGGGDGYVMFKEWDG YDTGYLM EPIDDNKLYKLATNNYLASGGDGYE: LAGGLSGYDTGFVL TPLDMNKSYKUSIPDYLTAGGDGYPIMKTHPTYVNTGFUD KRVEPDKTYRMSINSYNAAGGDGYPVLTDKPGFTATDSTD KPVRDDQKFTVAVNSYRASGGGGYTMFKDAPVLFQTTEED QPLDVNATYRVVTNDFMMGGGDGYKIFEAGENQVDTGFLL MPI EEAKEYTAALNNFLGAGGDGYTMFTGSPVLIEYPALD EPVDLNKVYKLATNDFMAVGGDGYEALANGNLVAEFAAFD EELDPDSVYLVATNDFIAAGGDDYKMFKGKAEAGNFEGLD KAFDPNKTYKVSTPDYLTAGGDGYPVMKKHPSYVNTGFID KADDTAATYRFTIPSFNAAGGDGYPNITAHPAFVNTGYVD
 KPLDLNKKYVVATNDYDASGGDEFPCFSKEPGLKEFGNLE QPI DPEKTYVVATNNYLALLGGDGYVVFKQLTGYYDGGALL DMIMKDETYRMATNSFVANGGDGYKSFAEGKYNEDLGYPD ENLNEERTYRVATNNFVGAGGDGYSVFTKASRGEDLGYVD KPLDENKTYRMSLNSYNASGGDGYPAINKLKGFVSTDETD QPLQLDKTYRMSINSYNAAGGDGYPRLNTDTRFVDTGDSD QPLDDTKTYRMATNSFNAAGGDGYPRIDSDPGYVNSGNVD KALDMNAKYLVATNDFMAAGGDEYPHFKNAKTENEFQALD AAAVQDKTYRVATSNFVGEGGDGYSVFNEASHKEDDGFVD KALDPEATYTLATNDFTAVGGDEYTMFAKYPTTGMYGALD KDYSATDSYTFTVPSFNAAGGDGYPKLD DPVQTGYVD AP DDEKTYGAVSNNYVRNGGDGYAMFKDAANAYDYGPDL EALDPEKMYGVVSNNYVRNGGDGYAMFVDAEDAYDFGPDL EPIDPEATYMAVSNNYVRNGGDGYSMFTDAANAYDFGPDL EKLNPNKTYVVATNDFMAAGGDGYSSLAGGKELGHYPALD TPLDLNQAYTVTLNNFLAEGGDGFTAFTGGTNR ETGPVD QPLQADKVYRLATNSFNASGGDGYPRDDQQPGYSSKGVTD APLDPAATYMAVTNNYVRNGGDGYAMFKDAENAYDYGPDD VPIDEEATYTVVTNNYMRGGGDGYGTFAEGDNPYDFGPP KPFDANASYSFADPSFSAAGGDGYPVIVNNTVTNAGLVD QSLNKGQTYTMATNEYMASGGDGYSVLKKAKVIINASTRM


 QPD EDQKVYRVATNAFVGTGGDGYSVFTEASHGEDLGYDD AD $R P I D P G R L Y Y V V V S D F L A A G G D G Y A V F T A M V A P V M T G R D D$ | $R$ | $P$ | $D$ |
| :--- | :--- | :--- |
| $E$ | $L$ | $A T Y$ | EALVDS QTYTVVANAFLASGGDGFVSFRNGKNA ET GPND K P L D REKYYKVATNDYLYNGGD GYDELKEGK LLSK GE LL




 EP LDPA KTYK LAATNDFMARGGDGYRVFTEAKSLVDVS QL M
 KAI DPAATYGLVSNNYVRNGGDGYKMF DDAQNAYDFGP D



 EP I D D P E R TY K K V T M M P S Y L V D G G D G F S M I K E E L L K K H N T G D L D VQVNENKTYVVATNVFTAKGGBGYTMFAKA GRVSEP GYV D

 KP I DPD QEFIV VTNNYRASGGGNFPGTKNAKYVVDSQEEN

 E WV A L D A T Y G VVA T N N F M R G G G D G Y A L F S S N A Q N A Y D F G P GlL $K G Y A V D A S Y S F T V P S F N A A G G D G Y P V L T$
$P$ VMTGYVD HRMMPDAMYVVATNTFMAGGGDFYAAMSDAGRRYKLE LL D



UniRef90_F8D3Y1 UniRef90-R6DBB3
UniRef90 C7D938 UniRef90-UPIOOO31066E3 UniRef90 ${ }^{-}$E7QUB3 UniRef90_UPIO0036B2606 UniRef90-W5KTP6 UniRef90-R6DTU5 UniRef90-A8TK86 UniRef90-B5Y8Q0 UniRef90-A0A026XOLO UniRef90_UPIo00372D12B UniRef90- $\mathrm{S2XJ52}$ UniRef90-UPIO004716707 UniRef90-TOJY50 UniRef90-K8X1W6 UniRef90-G3SLC6 UniRef90-UPI0003C38524 UniRef90-СЗҮHC9 UniRef90-UPIO00258E33C UniRef90-UPIO00370D87B UniRef90-H8MKG2 UniRef90-UP1000379COFD UniRef90_UPIOOO4748123 UniRef90-E91PY5
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UniRef90-_J3JFS2
Uniiefefo-S2LSJ9
UniRef90-W4ZAQ1
UniRef90_UPIo003D07B11 UniRef90-F1 NZT4 UniRef90-UPIO003B5CB48 UniRet90-J8QEM2 UniRef90-F21WU3 UniRef90_UPI0002B4A331 UniRef90_Q0TP10 UniRef90 UPIOOO3B3AE19 UniRef90-D6Y4C6 UniRef90-UPI0004164771 UniRef90_V4IY85 UniRef90-H6RBA6 UniRef90_UPI000442141D UniRef90-A0A023G4Z2 UniRef90-UPIO003B3D64B UniRef90-C5CSZ2 UniRe90-AOA026WZQ2 UniRet90_UP10003B47135 UniRef90-Q892U3 UniRef90-W4YFE3 Unire990_O7SBG6
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UniRef90 BOX8R2 UniRef90_K6YMG7 UniRef90-A4AFT8 UniRef90-C3AJI7 UniRef90-M5EHM1 UniRef90-E9C220 UniRef90-UPIO00381FB36 UniRef90-A1AIB6 UniRef90-UPIOOO36D142F UniRef90_H7CXX8 UniRef90-UPIO002FD6FA8 UniRef90-A1SJ41 UniRet90-F2T3S9 UniRef90-E2BRD8 UniRef90-O5B294 UniRef90-E6TXI1 UniRef90-H3A661 UniRef90-S7ZRL7
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20
VAKSGGVI EGDRAVCRVQECSMGNLVADAMLCAGVGVDAA VGVAQGDI TGRETPAGESALGNLIADAQRVATDAQIS I AYTETPLDARFATNYHRESNYGDLVTDAMRAKTGADVA VGTTDGSVTGRTDAYNNEAALGNLIADAMRSADFADFA VGRTLVYLNGSFEECRFRECNLGNLICDAMVSWNHVGSC I GTTTTELDSRRATVRNGEATVGNLFADAMRTAVAADVA IGEFSEDFPVDPLTARMSDNAYFDLQLKAMEWAAGTDIA VGOTRGELDGDKANVRSEQTNLGHLLARAQSKYVNADFG LGTTTAPMNSYFALI LGHTVYEDKHEK GT SA ELGKTIVYDDGSTQSCRFRECNMGNLICDAMMTWNHVSMC VGGTKVFLEGSRKVCRHQECNLGNLITDAMVYWTDAADA EAGRTHVFLEGRRQVCRRQECNLGNVITDAMVKWADVSMA VGKTRVLLEGDSKVCRREECNLGNLITDAMLDWTDAADA RVGRSPVSLDARSAQNRLGETNLGSFLADAFREAMGADVA I CTIAAELDTRRASVRMQEAAFGNLIADAMREATGADIA KIVEAETPLDDATGSNYHRETGYGNLITDAMRDRAEADVA $V$ GDAAAPI SRTANEAGEMPDGNLI ADGMRAATGTQFA VGYSETELNATFAANYHGETGYGNLVTDAMRERVDADVA VAKSDVTLTTKDPSDRNGETNGGDCADAYRSVMGADUG EVGKTRVLLDGDSKNCRRKECNLGNLICDALIDWTDAA:A 1 GRTETRLDGDLDACGTQECNLGNVMADAMMDWYGANLA EI GKTNVYLNGTSQACRFHECNMGNMICDAMLYWNHVSMC EI GTTSVYLNGTSEACRFQECNMGNLLCDAMLYWNHVSLC KVGEDTGDLNRAQQENRGGESTMGNFIADVHLWAAHADIA VGVAADDMIGDYSND GDTPLGNLI ADSMIWEMESDFA
 KVADLSVDLPHDRD TGVSPMGATVAETMRRIVDAD:A LGEVTADFNRARSENRGGESTMGNFVADVQLWAAQAQLA VGNDTATMA RDPSGAGESPLGNLIADAQLEAARAEIAA TGESTTELNATSAANYHRETALGNAI TDAFRAETGSQVA VGAAAAPLPGTKAAPGGESPLGNLIADAMLDATQAVAA GHFAVDLDGRFSSDRTSETNLGNFICDVMLSSTHSDLA
 KIGKTKVLL SRSNCRY VGHTKKDDPHERFE KLGVVEVDLDARFASTRTGP I GFSAAPLDARFTVRDRESNIGNFV EUGYTKNGLTR NGNNG KVGDITADFNRARSENRGG
E
K










KVADLSEDLPHNRD
AGESALGDVIADAQLLDATQAVVT
$\qquad$
KVGYIANPLDARFTVRRKE
KVGSTRVELN NQCYRE

LCRTEVALDGRFATVRKSE

VGKTLVEGNASQSACRFHE
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UniRef90-A8TK86 UniRef90_B5Y8Q0 UniRef90_A0A026X0LO UniRef90-UPI000372D12B UniRef90_S2XJ52 UniRef90_UPI0004716707 UniRef90_T0JY50 UniRef90-K8X1W6 UniRef90_G3SLC6 UniRef90_UPI0003C38524 UniRef90_C3YHC9 UniRef90_UPI000258E33C UniRef90_UPI000370D87B UniRef90-H8MKG2 UniRef90_UPI000379C0FD UniRef90_UPI0004748123 UniRef90_E9IPY5
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UniRef90_B0X8R2 UniRef90_K6YMG7 UniRef90-A4AFT8 UniRef90_C3AJI7 UniRef90_M5EHM1 UniRef90_E9C220 UniRef90_UPI000381FB36 UniRef90_A1AIB6 UniRef90_UPIO0036D142F UniRef90-H7CXX8 UniRef90_UPI0002FD6FA8 UniRef90_A1SJ41 UniRef90_F2T3S9 UniRef90_E2BRD8
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UniRef90 U5WC22 UniRef90_R9SPB5
UniRef90_S6ASZ3


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


 I Q N S G SIR T S IT R A DVTRGDI LTVLPFGNVVVKLSLTGGEQ $I M N S G G V R A S I T E G N I T Y R D V L T V Q P F G N M V A Y A T M T$ GT D $M Q N G G G G D N P I D A G P I T V G V L T T L P F G N T L A T M T M S G A E$
 FENGGGLRASIPAAGATLGTLYQVVPFDNTLVTVELTGKQ


 FHNGGSI R T S I T R A N I T M G DV L S V I P F H N A I M K V SMM G D L


 FMNAGGVRDEIVKKGPITWGDLFA\|QPFGNDIVTMNITGAQ
 $\bigvee$ Q N S G SI R T S I T R A TVVTRGDII GVVLPF GNVI QLI SMT GE Q








 $1 L$ L S G T L R S DHRRGPFTMRDLVTILDMMDS LIVLSATGD Q







 FMNPGGVRADLDAGPVTYEEAFTAQPFSNNLVTVDDLTGEQ



 VAN G G GI R A GLAP GNDTMGDVLTAFPFPNTLIVVTLTGAD
 F MN P G G L
 $L V N S G S I R G N Y S A G P M T Y L T V N E \backsim L A F R N E V M S V E M N G A D$ VT MKDVLESLPFYNAIVKVKMTGNV

 LIN G G GNR S YAQ GQRLTRRRDLA E ELDP FR S K V A V L T I T G Q Q





 $\square$ N N G G G V R A P L K K G V I T V G D M Y T I L

 MMASGTI RGDYPPGPLRVKDVLNCFPFEDPVVVLRVKGRA

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



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UniRef90_M3ZZF8
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L K A A I |
L L EVVLEASTFCTPEDGGFPQVSGIVFTVD DNRVTDQTVGG

I KT LLL E QQWUQGQS YKP S GDWYS WSTSSRPE GSRRVI EMRDT G
L E ETLLA S QVTPLESEA GQMQVS GVRFE WVGHQIRDVVVNG





I L S V L E WS VH N G NL L G A Y L Q Y S G L Q V T Y D M S R P P N S R V V S

IVK M A L E Q S V S LA P E N G GF L H I S G M K F T Y D S R LAA A G R V T S


I K Q A L E Q Q WD M P V S H GF Y YE WD D S R A V G D K V I A G S M K L N G


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

MLSVLEWSVQNLEMFGAFAQFSGLQVQYDLSKPKNSRPMY
IVRALENEGSGVEQGAGRFPQVAGLQRQWRPEAPPGQRGGY

LVETLASQ VTLESGTGQQQTSGVRFEWVPHQDRDVRVGG



I L S M L E W S V Y NL L N N F G A F L Q Y G GlL QV E Y D E T R P Q N S R V V S










L REVVLA S QVTH QVS GVVR F E WVP H E GVEP KVVRDVYMEPAN W





$V$ K KVL E E QWQPA GAS R P F L K L G GV N V Y TY D P TAAAA G S RIV G

L Y E A L E N GVVSQYPKK GRFP QV S GMRRYGFYPS AP S G QR V V G













L K Q T L E D S A T C R S G S G G F F Q I G G L R D T





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










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140
E P V V D L E A T Y E|L|GTN D F LLAA G G G D G Y E ML LANA DVLVDDEGT LL 160 KDFDPAATYT I ATNDFMAS GGDTYYRFVNATANYDDGDPM
 A LI N P A A V Y R V
 E P L D P K K V V Y K VVVMP S Y L V D G G D G Y S M I K E E K K E S K H D S G D K A L D L N K T Y T L A S H D Y ML N G G D GFVVMFKGNKVLQDEVVMID
 V QV QCAA CYKILMNDF LGRGGDGFHMLEKVEKS SLGIT T EA FDAA K E Y K F S L S T Y L A A GG D GYP A I E S T S DE DA
 $S K L I L T K D Y K V A T N D F L A Q G G D G F T M F S Q G K H L I D T Q L P D$
 E P L E E D RLLYNV I VP S Y L A N G G D GYT F V EN G P KP QRMQLK D E PVVRGR RYKLLI NAFMVGGGDGYSMLPENEDREPDGYLD S K L E R NKTYNAL L L D FMQSGGD GYTMM K D L K A A P L L G V T T





 $V Q V Q C N A T Y K V L V N D F I A K G G D G F H M L E G L K A T S D G V T T$ AQFRCEGHYEVI MNSYMAGGGGGYDVVRENRMEHVSGNND


 TKLEND KYYTVVTNDFMAVGGDSYD FS
 QPFSRTDTYAVVTNNFCAAGGDTYYAFS
 V P L E M E K T Y K V L L P S F L A A G G D G Y H ML LK G GP S N H S S G D L D

 EYP KHDEWYRVVVPSFMDTGGGDGYYIFKNSSRNHQVGMRD


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 A P L E E E K KYVLAT R GYMARGKD GY D S L A E E ELI SE E N GI LI ,





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

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E

## E

 E Y P V F N V W Y RLV VP SY LA N G G D K Y I L F K N S S R N H Q V G S L D EPI NMNASYLVAVP DYIGTGGSGYHF E GEVLYNEVTPM


 D P VR D A A VY A V V LP S Y L V T G G D G F N V I K N G L L E H S $\square$ G H L D

|  |  |
| :---: | :---: |
| UniRef90_F8D3Y1 | S A L \| A I A A|| E D A G T I A P E T E G R|I |
| UniRef90_R6DBB3 | D EVVMM Y I T T N G TVA A D K Y EP A GRI |
| UniRef90_C7D938 |  |
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| UniRef90-W5KTP6 | I AVVA G Y I T E R K RVHPAV E G R I R F |
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| UniRef90-A0A026X0L0 | A EVL EKYFEKHSPI Y P G V EEWRIS Y |
| UniRef90_UPI000372D12B | ALVLRDFDEKQES L L VA DF NPDGDID Y |
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| UniRef90_UPI000258E33C | A E TLA E Y L K H S PVHP GVV E WRI S Y |
| UniRef90_UPI000370D87B | E EVFEA WLA R R S PVTP A T $\quad$ D GRI |
| UniRef90_H8MKG2 | WEALGTAFRTGKP APRAKPQGRITV |
| UniRef90_UPI000379C0FD |  |
| UniRef90_UPI0004748123 | $V \mathrm{~T}$ VVV V (LRERDTVAP EPEGR |
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| UniRef90_K6DFS9 | LD A F V D Y V K S K G P I S A K $\square$ E E R I |
| UniRef90-J3JFS2 | ATTVI D Y L Q A R GTVAP EREGR |
| UniRef90_S2LJS9 | NQVLIDDY T K Q G V G K E Y T M P E G I S I |
| UniRef90_E2BRD9 | ADVLEWYFKKHS PV H T GVV EWRI S Y |
| UniRef90-W4ZAQ1 |  |
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| UniRef90_F1NZT4 | I EVVSRYLD R M K RVYPAV EGGRIK K |
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| UniRef90-J8QEM2 | LEAFIS FVKTFS EPDAYYPDGRI |
| UniRef90_F2IWU3 | EDVVA EADAAAGAYQPDGRIT |
| UniRef90_UPI0002B4A331 | T T V V E N H F S $\square$ RVLK G G K K S $\square \mathrm{S}$ G |
| UniRef90_Q0TP10 | RDEMANYWRENG I D P |
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| UniRef90-V4IY85 | STAFINYVEERGTI S P K V E G R M R R V |
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| UniRef90_UPI00046855FF | LQS MV D WFD A NK T A S P DLA Q R A VGVTV |
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| UniRef90-G2XDK7 | S A M L R Q Y F M G L R T V |
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| UniRef90_D4M0Q5 | ELL $\mathrm{L}^{\text {L F F E Q G S }}$ |
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| UniRef90_UPI0003791BD2 | WE QL R D Y MVE G G VVD P V I E E G DT |
| UniRef90-I0GY91 | LT ML V N Y F A E N T Pl T A D T T PR |
| UniRef90-D4BZN1 |  |
| UniRef90-C4JNH6 | S T I L R Q Y F L L K V L |
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| UniRef90-A0A022T236 |  |
| UniRef90-W9VK91 | R D L V ID A I Q VA K S I A P K I E G R |
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| UniRef90_K6YMG7 | VDVFID S I R E R D T L G P A L N A R |
| UniRef90_A4AFT8 | LLQAMVDYFEETPVATPPFEQRA |
| UniRef90_C3AJI7 | QEAFANF I R S $\square$ S HID |
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| UniRef90-E9C220 |  |
| UniRef90_UPI000381FB36 | QEAFANFIRSNPSLE |
| UniRef90-A1AIB6 | SNVVID Y F K K G H K I TPA QVN |
| UniRef90_UPI00036D142F | TDAFEAY LQANPT GVAP GPQNRI |
| UniRef90-H7CXX8 | REG $\square$ S D Y WK N H G |
| UniRef90_UPI0002FD6FA8 | R D A MIIK E L K K S K S V |
| UniRef90-A1SJ41 | LQA MV D Y M ARHGADNPAV |
| UniRef90-F2T3S9 | NGVLI S T I L R Q Y F L S L K V |
| UniRef90-E2BRD8 |  |
| UniRef90_Q5B294 | SGTLLI STLMMRQYFLSLLKV |
| UniRef90-E6TXI1 | T TAMID Y A E Y L G LQQ Q K L Y H $\square$ E GR $\square \mathrm{N} \square \mathrm{K}$ |
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| UniRef90_S7ZRL7 | NGVLI S T I L R Q Y FLS LKV |
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| UniRef90-R9SPB5 | I DLFNRY】A A H P DV DVRANQS SVGI |
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K GS S E TVID GSREVVRAKECTMMNLVSDALLDRVKD QIA K GVA SKEFTHDRASKGSV SLLGRWSCEVMQKKTGADVA V GRSPAA LP NA GCRQGECALGGS LVAEAMLAATPAE I A I GYTSAP L D A R FTTTVRTKESNLLGNFTCCDLMMRHYNA DCA I G Y T L A P L D A R F T T V V R L K E S N M G N F V C D L M R L H Y L A A D C C

 I G R DE GDMTK DP F EA R V K E HP F IDELI N R VQMMEAS GA D I S L G R I E V D L D VR F T S V R L K E T N I G N Fil C DV V L T A V D A E C V
 V G S I A A D D T T A F K D D R A S E S T M G N L V A D S L L D R G G A E I G


 I G Y TA AVP LDAR F S T DR AK E S NV A N F V G D L M R F Y Y S A D CA I G K DN G DLVVK D P M F V R T R D T A L DE FI N RV QMECS G S D I S
 $\begin{array}{llllllllllllllll}\text { K } & G & S & V & K & D & & \text { I } & G A A & R & D & D & R & S & S \\ I & G & Y & T & A & A & P & L & D & A & R & F & R & T & V & R \\ L & R\end{array}$
 LGNFGVELE GRFS I IRSQE
 I G Y T V A P L D A R F T T $V$ V R R K E S S NLLG N F V G T VAR DL TVRRPE GALSNLLSD LLI WGSARFGEHPDFA $V G Y S D T G L T R D G R F N$ GDAPLGNFWTDAMRDFADADVA
 I GFTVRPLDARFSTVRQRESNLGNFVCDLMRHYYAADCA I GTATAPFEGGPRARYTDSPLADVINTVQSEAAAADVS RI GSTRAAFPGGHA ARYGDSALADLI NKVQQEEAAAADFS I G WTATPDDSRFTTVRLKKESNLANFVCDIMMHHYNAECG VGHTRVLLE GRKE I CRARECNMGNLIT DAMVYWTAAA IA
 $K V G S T T A Y L N G A R D$ DRSSESTLGGNLVADSLLELGGAEDG K I GKASAELTRS

I GETS GEINK S GK
I GMMNQDADATKAAVRQRE
IGES LVDLP QQQPCDSQE
E $\square \mathrm{G}$ Y T E Y G L $S$
T D K $\square S V R$ VNE

## GNFKRAAQGE

$\square$ NMETRTANAAGE
$R \boxtimes A S$
NMEDDGR $R E V T V R R$
$\square$ GHSANVVLVGE
$V G S S L V V L \quad Y$ SKAECRGS

I G RVV G D MTIDE S PA CR L A D H

1 GQAARELPKGE

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




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| UniRef90-D9SQ37 | KQYME WSAQFYNTYYNYDMFSGVNYDVDVTKPLGERIDDG |
| UniRef90-G8UZE2 | YDLLEQQWM GSYMNMLQTSGFAYTYDSHQPLGHRHQN |
| UniRef90 R9C9L | GFLHVAGGKUVYDAKKQAGER |
| Ref90 G7WNDO | RIL SEGLIYAWRV1 |
| UniRef90-UP1000346A0C6 | V RALLEQQWVQQVSDGFAYRWDARRAQGQRVI |
| UniRef90-V4ECW0 ${ }^{\text {a }}$ |  |
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| UniRet90_C5FWI |  |
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| UniRef90-UP100040E8A56 LLA ALERSVSVYPDEGGFLHMS G |  |
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| A0A031F |  |
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| UniRef90 E5WD |  |
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| ef90-Z2EPJ1 |  |
| UP10002E |  |
| Ret90_T1DJS |  |
| UniRet90-G0VRQ6 |  |
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| 90-A4YQ3 |  |
| UniRef90-UP100030 | VVAALENGAQDEEGAGRFAQVAGLKYSFDRSKPAGSRDGF |
| 硅 |  |
| niRet90_D5RNA | LRAALEAGSRYAENGGGFPQVAGLRYGFDPAAPAGQRLRG |
| UniRef90 M2ZV92 |  |
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| UniRef90-E9ES65 I WDALEN |  |
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| LKA LVEQQWQPGAQ |  |
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| UniRef90_E4NYT4 FKEALEQQWQTDADGNHNVSYTYDPNAAQGNHUTSVTVNG |  |
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| UniRef90_D5GF03 ILKAIENGSKLPAFEGRFTHVSNIFYTYDGSRIISCKVGQ |  |
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| UniRef90 UPIO0036836EF | G |
| niRef90 ${ }^{\text {U2RKL2 }}$ F KQALEQQ |  |
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| UniReef90 UPIooo3689BB2 |  |
| UniRef90-R6VTV6 |  |
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| UniRef90-W7ZFB0 |  |
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130
140
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160
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 VMVNPDALYKVAVNDYLLGGGDGYGALGGGRVLTNGGNLV EPVDLEKEYVMVTRGYMARGRDGYDSLAKEVVSEENGILIG KPIVDSETYRVATNSFAAPGGDGFTAFIDGQNKVK KPVNDSQSYKVATYSYAASGGDGYHVFEKGTGLESQGDSV KPVLPEQRYRVTVNSFMAGGGDNFTVLNQASQRVDTGLND EPLDPDARYRVAIAAWMGNGGNGYOMFADASQRNVRIGLND

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QPIDLEREYKVATRDYMARGKDGFSMLKEHGGAAESTVSD KPIAYDESYHVVLNNYRATGGGNYDMFKEKPVVKEDQKDA RPYNPEDVYVLVTRGYMGRGKDGYTSLGSAHELVDEEVLI

 QPVDPNAPYRVAVNNFLAGGGDGFTEFTRGTDVTVGGVD
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UniRef90
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K GFFKNKTYTGASNNY I DNGGDG】NMFMDNK LIQDET LID EPDAMDETYDVTVNSYMA
 K P I D Y D H K Y A L AT R GYMTRGKD GFAS L QDVRPDQKLRIADNNYRAGGGGGYAMFKEGT\|VWQSTSE\|

 Q
Q KP LK K D A WYP VVVNSF LA T G G D GFSAFTE GRNDKTVA GSA






 E P L D R N K Y Y R V A I A A W $\quad$ G G N G GNGYTMM GEHRTNPRI GPDD


 E Y L K LE Q T Y KL CVK S YL YMGCD GYTMFK DARVLMDA
 Q P I S A T D E LEVVVTN QYRAVGGGNYTMFGSEK VVREDQUDM


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| UniRef90－R0J561 | STILRQYFMSLKVL |
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| UniRef90－D9SQ37 | RELIGDYVKN VKGGT\TPELENNWK |
| UniRef90－G8UZE2 |  |
| UniRef90－R9C9U1 | WENFRDHLVSLGGDG\PT EVEGRIV |
| UniRef90－G7WND0 | LEALVGYLREHSPASPP QKGRI |
| UniRef90－UPI000346A0C6 | GDALTDYLRDRAGVPAGRAAPAGR |
| UniRef90－V4ECW0 | A EVLKAY I Q K S P P DVSVYEPKGEVSWQ |
| UniRef90－P52307 | A EIVMKYMNSTSPITTAL D GRVTF |
| UniRef90－L7UHE5 | S D ALEA Y LK A H S S A N PLPAPANRIT |
| UniRef90＿C5FWP9 |  |
| UniRef90－S6D4P5 |  |
| UniRef90－UPI00037C01 | RDALAQYFEQHSVVDVKL EGR |
| UniRef90－UPI00040E8A56 |  |
| UniRef90＿A0A031FXIO | LAA A TVDYFASRDVVDPAPLGRAVEVT |
| UniRef90－K2AUC3 | ANDVMGYVEKHRKVKPAV E GRI |
| UniRef90－E5WDP4 | T ELIA D F F L E K K K V $\square \mathrm{P}$ T L N |
| UniRef90－R1E8G6 | SMMMRQYFMSLKVL |
| UniRef90－Y1B7V4 | S NAVID Y L VKG K K IP |
| UniRef90－B0X2W1 |  |
| UniRef90－Z2EPJ1 | TQVLID QFKAKKNVTVPALLGRQVDVSVK |
| UniRef90＿UPI0002E17DF2 | LQALV V Y L Q A |
| UniRef90－T1DJS3 | I DVFERYVTRMSPDHPG |
| UniRef90－G0VRQ6 | V D ALVE YL SHKGTDAADYGNPQGRIIV |
| UniRef90＿C5QPR2 | DEVVGSYI QKHDLSKYNTTHPVRVINGK |
| UniRef90－A4YQ39 | E ALF A Y L K S S P L A P P PRDRIS |
| UniRef90＿UPI0003C12 |  |
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| UniRef90＿M2ZV92 |  |
| UniRef90 N1PRP0 | ENL L R Q F M S L K V L |
| UniRef90－W9ANB0 | VEI I R S Y F ERHKTVKATAT |
| UniRef90＿E9ES65 |  |
| UniRef90＿A9B2U3 | A DV V LE Y $\square$ SQT T P I IP S $\square$ Q D R L L D VT |
| UniRef90－UPI00037D0952 | TELLANYFLEKKTVKA |
| UniRef90＿C1LJ94 | I ILI QNYFRTVQVLK |
| UniRef90－A4FIW3 | LDALI GYLL |
| UniRef90＿UPI000367B4DD | RDA WI K Y L Q G H N P V S P |
| UniRef90＿E4NYT4 | R D A W I D Y $~$ S K N S PLK P R Y D R R A V A VT |
| UniRef90＿I6H913 <br> UniRef90－R5FT98 |  |
| UniRef90－S6D115 | GTAVVNYIEERGTI SPPEEDR】RRV |
| UniRef90－UPI0002EB0BFE | AELI ADYMMKQGTI TATVNH NWK |
| UniRef90－D5GF03 | N GVL $\mathrm{S}^{\text {S M L L R Q Y F L S L K V }}$ |
| UniRef90－U2EI88 | SELI ANYI LERKVIEAVVN |
| UniRef90－UPI00036836EF | $\square D A F A N Y L A A H D P Y T P G \quad P T N R \square S \square$ |
| UniRef90－R4G2P7 | G $\square$ A $\square \mathrm{Q}$ N HFEA $\mathrm{I}^{\text {K }}$ |
| UniRef90＿U2RKI2 | R DA WIS YLLQQNS PVSPS |
| UniRef90－M7T5R1 | SMMLR Q F F M L K V |
| UniRef90－UPIO0035FF6F4 | LDVFNAY $\square$ A A H STPSAPLAPPAGRTTV |
| UniRef90－S3ZCB1 | LK A L N D F A A NS SADKPIAPPKARITV |
| UniRef90＿W8BA01 |  |
| UniRef90＿U2CHQ9 | R DVLVENLKALK |
| UniRef90－UPI0003689BB2 | S DI L I N ELRLLTNS\SPK】ESRMLD\} |
| UniRef90－F9WXT1 | SMILRQYFMGLK T L |
| UniRef90－R6VTV6 | RYIIMDYFRTHGTVDAAI E E G I K V Q |
| UniRef90－W7ZFB0 | T A A MEQYA LR LT DAGEKLYYREGRISIK |
| UniRef90－M2ULE2 | EVLTRY【QAQSPVD\EL |
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| UniRef90＿UPI00047866A9 |  |
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| UniRef90＿Q2GZ19 | S A ML R Q Y F S L T VL |
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| UniRef90－S9SC42 | ANVVGDYLARTPHVAPRI EGR |
| UniRef90＿UPI00036A6462 | R DAWIS Yi QKNSPLSPSFAKR |
| UniRef90－A8G9H4 | A EAVVDYI K S Q A |
| UniRef90－S2DMS9 |  |
| UniRef90＿UPI000463088E |  |
| UniRef90＿UPI0003C3A8E2 | ID AI ME Y TQKFSPI SPK】EDS |
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| UniRef90－F5L6G9 |  |
| UniRef90－UPI0003B64CAD |  |
| UniRef90－UPI000347A128 | LDALQEYLKA GTVTPDDAA R $\mathrm{L}^{\text {L }}$ T |
| UniRef90－UPI00032AFAF5 | STVVMNHFES |
| UniRef90－W8H3T1 | LDAFT A Y LG T T S PVTPPNT D R |
| UniRef90－K1MMG0 | DEVVMEYLKKMTAEQLEKYAPNTRI |
| UniRef90＿W0ALD2 | SGAlL ISYFKEHDUVTPDETKRVTDI |
| UniRef90－Q17NS8 | IVVLEQYVAKMSPIMQGT DGRI |
| UniRef90－UPI00047D4B7E | SELIANYI LIARGTI E A TVNE N WK |
| UniRef90＿C6IXF8 | AELVAEYI QRHGTI YAS |
| UniRef90＿UPI000401A828 | VELI HAYFDKHKTVK |
| UniRef90－U2BIT5 | GDALREYFQNHKDEPVSVELEGRワTV |
| UniRef90＿M7N203 |  |
| UniRef90＿B4MIR5 |  |
| UniRef90－Q816Q2 |  |
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 GGTRDKMPKs SVRANETALGNLIADAYLAYPETA：A 1 GSTRVKMPKS CRVGECNMGNMITDAMIAEWTYASUA I GETKNGLSA ANNRTGDSGLGNLYADSVRAKTNADFG I GEVSEKIDRHRDE KI GVATGDFLGTDQTMGPTALIMDLINKVQKYYAKTDLS GFTSVPLDARFTTIRAKESNYANFI TDLMRFYYGADCT VGETKVDLL KNPCNSKECNLGNFFSDAMDHWTSAADG KI GTASQATDISREVNEFKESAVGNLVTTAQLAGYDVDFA LGKSEVEL DQTGCQKGECLLGDFMSDAMLDYQDVDFA GGAAIDLTRTQSAQPYGDSLLGNWAAQVTKDAVGADFG LGRALVTLDG HTCRLRECNLGNADDGFVYQTRVFIS LGKTETGFDDRESVLRFKESGFADTINDLLKDKFRVDVV $V G Y A G V Y$ LS RTNVDA QSLIGNTIVDAMRTEVGADFA KIGTADKAEDISRTVNEMGESPVGNLVTDAQVYMANVDFA I CTLTDSLSA AKARWQDTPFMDLIHQTQLHFSGADTS VGRAEQPLPHDRVPDPTKGSADAPLVAESLRNGFNVDIA EIGEVDGTMWIDPMAVRAKGHPY円EFI NQVQMDATGTDIS E GKLTEDLVSPRKSVRNSETVLGNDITDGMLAKAKVVMA VGETKVDLA MSTCSDSE GQSARFMDRFRP
GFISADMAGRGSEAP VGSTKVLLEANGKLCRYK

K
K GGEAVLPDPHARGTTDTGE ｜GNSTVFVPRTDSAGRTCE $\downarrow G Y A A A T L T A Y R P$ KFATTLYTLDGSRAPVRESPLSNLIADVLRDGAPADVA VANTPYARGRNERGETNGDFADAYKYTYMADGA VDLEEDAHLCRVQE VGYTSADINGRGSEAY

K
EVGSITGDINGTGGEDRGAY VGFSNVEL DQTTCRTRE


GGYEEVDLEGRFQQDRVEE ETL VGKITADI LRDGADDRKRESALSNLVADQYVDVVNADGS GGTDEP ERAGAVVHGGECRVGNFVADAFRWVHDADVG GTATAP TTASDSVRNRESAMSNMVAQMFKDTLGKDIG VGRLANPLT RQAQAGYGDSSLGNLVADAQAAYAPVDFA I GYATGDFTPEPPAAQVQDTALVDLINRVQLKNAEADDS E：GTSSVIL DQSTCQQRECLLGDFIADAMLTYDDVDLAA K GYTNETVTGRLHNNDTLENQAGELVADSQLAAAQPDFA保 GHSAANLVSYR VGYDSADINGRGA GTPEEPLGDLIADAQLLAATAQLA VGVSATDLPGYPSTAADGDLGLGNLIADGMKAAMDADFA VGSSTVFLNGSREQCRARECNLGNLVTDAFAAAYDGALA VGTAEMSMDKGAP VGTADVSMDRKRP KVGVVNGRLEGDRSKVRFVG KI GTAASSEDTTRDITNEFKETGMGHLILSALTERDDADFA VGHILADLSVEPDGSGQSSLGSVVADAQLAATRAOVA EVGRAGCYMSAGRPDRYESSPLSNLLSDMLRFNEQPQFA RPTDOYAMDS TGYTAAPDDARFTTVRTRESNIGNFVCDLMRYYYSAECC VGETTHYMSARRP ESDLSNLSDLLVWGDHPDFG ■GRTEGD【S DPDPTARQADHAFTEMI NRDQMEVTGAELS VGQTSVAWRAD SARVAD I GYSDTYLTKTRDA VGSSMVFLDGVACRGKSLIGNFFADALLDIGDAVFS KIGTSTGEFGSGQLITEPTATMELINKVQKESAGTQLS VGYTYTDLYTHRMVARQEETPLGNLI ADSILSSTKGFVA RVGSAAVDLDYKSSCNYAECNLGSFIADSMAHWTYAAIA VGSSKVLLEANEKLCRHQE VGTAEISMDRSRP ESLLSNLIADVLRESAPADMG VGSVTGDLLRARNVVRNDESVLGTFVANAQLAGAQAVVA VGYTNTP YRYL TVENPMDNMI TDAARWKTGADIA VATSTQELPA TESRWRDTPLIDFI QRVQTDTVRAAVA VGEVQGNMKTDPMQARUVEHPYIGFINRVQMAASGVPVS K $\downarrow$ GETAQSLTGRDKNNQYDE SEVDLSGARDSVRHE
Uninefor
Un

## UniRef90 R4KFQ5 UniRef90-D6Y0C1

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 MQAFLDYDADHGGG SVGGVEMDIANDKATDVKDQG
 L RNVLNQQDEKYFLVVSGLKYTVEKNDTSFVVKEMKKADG I K DF I EDALSSS IIDAQRFFGGFPYSPGLGFRDDPTAVRGNRVSG LKAALERSAGYFAQHFNYDMYAGDSYT DD QRQPVGQRYAG LKAAFEHSVKSAPENGGFDHDSGAKLEYDSSKEAGSRKAY LRNALE HSAKVRTWNGGF LQQMSGGLRVEYNYNNPVAGERPRYS
 LQQMFEYSVWYPDLNGKF LQVSGARVAYNFSLPNGCRPVY RTGLEQQWMLQVSRGFSYQWDEKRPVGQRVVPGSVKLDG



 FKDVLEQQWKPGQDRPRLALGLSNNVSYTYNPITSDTIDGG LL GAL EHGASYENGAGRFLQVAGLTYSVEPAKPVGQRVSW $11 S V L Q Q Q V S G A V N K G L T Y T L D G T K T G A D R V V A S S V K L N G$


 LWESIVEGULT GVNVGNGREVTSGLQVSSGDKDEYNPTDGD L WESIEEGULTGVNGNGREVTSFLQVSSGUKDEYNPTVGD FKQAL ENVSAYPKFDGRFPSVAGVRFRFDPTKEPYNRIND FKQ LLEEQWQPAGVSRPFVTYTYDPTRAQGSRDTGDFVGGG FKQVLREEQWQHDEKGSNNVWYTYDENLDPGQRIVTVWWVNG VMQL L R DQWQGHEAENRELTYHWDAARPDQDRVFDVRUGG
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 LKELLFNNDAVRHGE L K QL F E N VAD
I
Y DALC LKAVLEQQWQGERQVSAS LSYRWSRSAPADGSKVADMRADNG
 $V$ KA A N DQF Q G N QID GGLQUAGFTYTDLTAETGEFYDQG VKAA TLQLFREDASVG GEGVSHGVELVITKDRKLVSARING IVEALNQQYDESEKY FLQVSGLKYTYTKNDAGEKREDG I RAMLEQTAEYKPQHFNYDMWEGIDYTDD ISRPAGQRRHG $L V T A L Q Q Q V S G S N E G G L T Y T L D L T K A G A A R V V T D S V K D N G$ LRAYLEHSAKYYRTLTPFDMI A GADYVLDLRQPVGQRIRG V LALADF IDAQTGGQP $L K Q A L E H S V A S W D A P G Q F D Q M S G M D V T Y D L A K D C S N C K E L$ K K WME YSVRYYDQTTGDNQLYGATYD DDGNRIKNLKVNG I I S SLENVSGLEAQQGRFPQVSGMRYTFDSVEIKQPDGSY L L GVME Y AVEKSWDEDRFNQVSGLLRVEYNVTKPI GERPRY LLQMFEYSVVNFTWNGKF LQVSGARVVYNFSDPNGCRPVY
 I D DVLE QQFRGADSDGFTYQYNRSLPEGERVLDCSVTIVGG

 I YDVLNQQYKNYGAGHHYDFTSNDDKTQPYKVTKDYTNDG VKEALERSVGGSVIDGGF DHVGGMKFTYDSTKKSGERVLE VQELI QYFIKTKKPQPL SGGTFTDDKNEQAKDDKUNG


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UniRef90 A0LZ27

UniRef90_H3KDS3


## D C <br> VGRDASALSRQQDTA

VGRAASYLNAER
I GHTNVDLDTRFKQDRTQE 1 GSDSADMT RSGSAAGE
KIGTATGDFVKGDPEAQRPD
 TTTMTMAYNGAEDRGR $\square G Y \square S G D \square G N T G T$ TVELDTSGSITYGRE $\square G T S T E E L R A D$ EAPYKD GTNAAGETAGS GVSNVVL I GDTPITLTR AYGES I GYDSADI GNTGT I GECAVRLETRFSVIRTS

$\qquad$
KLATAVMPEHT KVGRLNV/R1/PG $V G E T N I V L P G S T G E V L K Q G$ $V G G E T V V L D D Q S T C Q E Q E$ VGHIAHDMTRHRP
LAENARDLVKDRKT LL SNRG1
EVGKTVVY DDGTTQSCRYRE
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WQ
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RVMDTAVMNLL NDVLVWNEHPDFA
K LGVVEVDDDARFASDRTQETNLGNLVTDIMMLVLEADVA GKTNVLLEGGG ICRNRECNLGNLISDAMVHWTDAPIG
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UniRet90 UniRef90-V6SNB1 UniRef90-G7M579 UniRef90-G8QUW1 UniRef90-C2WAJ1 UniRef90-U9WSV8 UniRef90-E0D877 UniRef90_K1XNIO UniRef90-B7QDH9 UniRefot-HyJWY4 UniRet90-U5LIK7 UniRef90-F4AYE7
UniRef90-R7AYE5 UniRef90-K6COR1 UniRef90 U2MBR8 UniRe990-GMYUH4 UniRef90-B3MG79 UniRef90- - 9 TTU3 UniRef90-V4QR20 UniRef90-A0LZ27
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 LMNGGGVRAPLDAGEVTFGDLFSMQPGNVLNKVTLTGAD LINSGSIRCTIPAGEMSYLTLETLLPFENMIVTVQMTGDE ITNNGG| RSDLDTTPMTWGAAQAVQPFGNFLQUVEVSGRD CTSGANSTKGFNTDVTVRDVVTYVYPNTLVVYEVTGET LQNSGGDRSDALDGEVTASDLIGGIPFDEPVATATLTGEQ LLNSGTLRSDHPPGPFKDRDLSQLLPMDDPLIVVEESGED VTNGGGI RTTHKDSPITVGDITKVPFGNQLTQlQVKGTD
 LLNHGGTRSIISQGNITARTAYEVMPFDNEVVVVQLKGPQ LVNMGGLRNILPEGD TVGDVFEELPFENSLCVLTMKGQD LMNGGGLRAQLDAGEVTFGDLFSIQPFGNVLNKVTLSGAD LINDGGI RTTI GKGDIMLKNVFEVMPFENELIIVKMNGAD
 LMNHGGVRAIISEGKVSARNAFEVMPFENNIVVAELSGGSD VYNDGGMRSAFAKGDITYGDVLDVAPFENKICFVTLKGSK
 ASALFKADSKLNAGDISYSNTEDIYKYPNTLVSVNITGEN GTALFNNEAKGFDEQUTMSILTNYDYPNTLAVLRVTGSD LVHHGGDRASLPKGDVTKKDLYTAFPFEHHLVKIEVTGGD LMNPGGVRNDLPYGTISYGQAAAMPFEGNTLKTADYTGAQ I TNAGGI REEIRTGEVTLKDIITVLPFGNRMAQTDLKGSD $L M N P G G \mid R A P L T Y G V V T Y A E G F T V Q P F A N T V N L Q T F T G A Q$
$F Q N G G G U T N T Y G P L T A G D V L G L P G N E A V V F E A T G E E ~$ GTSPFARSAVIPQGEVTDREMSGLYPFDNTLGAKLLTGAQ LFNSGADRSSI PTDNVTWGHLIATLPFDKQI ARLSMNGST 1 NAGGLRADLTPGTITAQTYAVMPFSNELGYVTMTGAD LTNAGGLRADI PAGNGTGGVLSEPFGNSLVEVTMSGDD
 QNAGGVRIALTDGDFTTADAYTALPFSNTIVTIKMSGAD LQNSGGI REGDPSGEVTVGDLVSVLPFQERVVVAELSGDE LVNSGGLRANMKAGPMTYGDLYAVLPFDNTVAVVTLSADE ATALYNNEAHGFENPITMRNIITNYVYPNTLVKSRITGAD VTNAGGDRDTLYPTDTTRGMVTSTHSFGNTVVVVEVTGAE I LNAGGARTDVQAGPLTVADVYNLLPFGNTVYVLDLSGEE LVNAGG円RATIDEGEITRGEVLTSFPFGNAVVEVTYTGAE
 ILNNGGI RSSLPKGDVTTRSAFELMPFENMVVVVEISGDR MLNWGGI RSDLPKGTITMESAFNLMPFENEVIVLTMPGTK MINAGGLREDLEDGTUTYAQTYEVEPFSNELGYVTLKGSD CTSTFDHATTWKTGPTt TGETYEVYPVPSTLKVLEDTGED ATALFNDEAHGFENPITMRNI DTNYVYPNSLSVLKITGAE
 LNHGGIRSILPKGNVTTRTAFEIIMPFENSLIVVELKGTE IAAPLSSSAN PKGNTVKDMGTYVYENYLYGIKMNGAQ AAALFSDSSDUPAGDINYGTVFGDYKYDNTLYRVPVTGAE CTSLFHNESSGFPKHITMRDIVSNYIYPDTLKVIRITGKD MTNNGGIRSDLNDRTITWGAAQAVQPFGNDLQVIQMTGQH LTNFGGDRAALPAGNVRLYDVYSDFPFENYVILDLKGVS I NGGT|RAPLQQGDITLGAILTTAPFGQTIIDVTLNGSA ILQGGGIRSSILHANVTKGDLLSVLPFDGNMVALTMNGTV GRNGAEEYTEIKKGNLTDRSAGDLYLYDNTLKAVKVKGSV LLNYGGIRSALNQGSITTGTAYELMPFENEVVVVELSGKQ VMNMGGDRNAMPEGELTFGT DYEXAPFENALCVLTMDGAT VYNMGGПRAALVQGPVTYGDVVDMAPFENKICFVTLSGTK AAALFKGTSDLPKGDLNYGNIFDTYKFDNTLYRVSVTGAE LLNSGTFRSDHPAGEFKKRDLDTLLPLDDPLMVLEVTGDE LIQGGGTRAS IEDRNTNGATLMTVLPFENDVMMTRISGKK




## UniRef90 C7R1E6 UniRef90-F7ZZ45 UniRef90-RZUV88 UniRef90-BOY950 UniRef90 UPIO00248D903 UniRef90-UGZUU8 UniRef90-O6HVA6 UniRef90-10HY21 UniRef90-B3MG77 UniRef90 R2NWAO UniRef90-L7M9A5 UniRef90 C7VQN8 UniRef90-Q16AA5 UniRef90-UPI000255C47C UniRef90-UPI000413EADA UniRet90-E1RKG9 UniRef90-UPIO00288DA2B UniRef90 UPIOOO463F431 UniRef90_WOJR72 UniRef90-E9FVW5 UniRef90-D3P0A7 UniRef90_U2S231 UniRef90-QZKOL5 UniRef90 O7PZ UniRef90-UPIO0047CBAC0 UniRef90-UP1000370DDC8 UniRef90-R6JCP8 UniRef90_UPIO004734500 UniRef90_W4TCA6

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V 1 LIQALENVSKWPSFE LHTLLEQQFTYPANAPAAGQPFNRILQVSEGFSYSWRING LKAALERTAEHKPEYYNYDMYEGIDYTIDLKKKDGQRFEG LYAELEQQWYDAALQTVGDTVEWNDLAPFGERDEEDKESG VKAAFEHSLGGPVETGGYLQVSDSTRVHYDKVLNKETKKF LQVLENRIDTLPDNTFGAQQGQQVGGLQYEWVGDVYVEG LRDYLEYSAEYYVQTAPGDD\DPDGLTPAGSRITDLTHDD $L G K A L R R S V Q N Y H Q R G E F L Q Y S G L K V Y Y V K N C K N C S V P R Y$
$F K A A L E Q Q W K T N L N D S D V V Y T Y D P T R P G D R I T S V T V N G$ FKAALEQQWKTNLNDSDNVRYTYDPTRPLGDRTTSVTVNG LSRLMEHSAALTNGVLQVSKGVIMRYDPVGQRVVQFTLNG LVQVLKEQVILQPSANLTYTLDLTKSGADRVVTDSGRVNG VQQVLEEGTHYSDSTGAFPYSSHLRYDVDKSAEQGSRNKW LLDVFRQAHDPTDGFAEHDWWHGHVWNRAENALESATITAG LRRLLT AAYGASTSMFQVSGLKVTLARCAGPQRFRPDG I YDALNQQYDESERYFDQMAGLHYLYTTPYKVVKAFKDDG LRAALEVSAKYFDVKHGQVVVNEQFMFPKESRVTEKKYQG RDVVESQVTPLGMDNQYQQVSGVTFEWVPHTVQDLTVNG
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| UniRef90－K1XNIO | R DAI I E Y FKA K GEI N S A L |
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UniRef90 O2GAW7 UniRef90-F8P124 UniRef90 M1PP85 VGG\|VGDMSKDAHAAR TSGHAYVDEMNRVQMHESGCAMS 1 GTSTAAMTTARAP WQDEPIIDLINQVQVETVRAALA GGFATGDFVPENPVAQDQDTALLDLINRVQLKYADADIS VGTATETLTTV EARYKDAPIIDLISKVQEDVVREALA KTGQVSGVFPGSPAENRGTESTVGSLVADAMLDGKPIDDGG $\sqcup G T S T T A M S A$ ATARYQATEA DDFDNYVQAWAE ELPVLA VGTATETLTTVDARYKDAPDDDLITKVQEDVAYADLA I GKSTDNLDHVRDPSKTHGSMVAPLVAEGFYQNYNPDLV CRDDRPMDRSEETVAAGECRVGNAIADAYRWATDADVG LAYAPETMDKSKGE

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$\checkmark$ A VGFLDSELPTSHLDMALNGSNLANFINQVQLETSKADIUS

SLSETLYGTRDYSRRAESVFGNLLTDSMRWKTGVQ| G TANSPVEDNGDRMNVRVRETNLGNAVADALLDYGQTNLA IGRSVVATGGKGP GTGLGNFSDALLNESKDDFT

 EI GSLARTLRTR DCFFGPAPFNSLIHDIQLDYTKADIS LGTALTALDGRRVTCRTQESNMGNLVADALREGLSADVG GGTTLTSLSRGOKCRRECNLGSWACDGFLEWNGAHLC VAQSPVEDTR AETAQHGSVITPLVAEAFMKAVKTDAA R VGTVAETR KTEPAYFGPSAFDDFIHRMQLELTHADLS VATSTEELSAAAESRYKDTPILDYINKVQTDTVTAALA VGTVEEPVVCDLQACKRGESRIGNLIVDAYRWRTGAADG K】GELGANLENDSKYEMKTPVFEGVLKGLCEEAKTDFS

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$V H \square P E T V T$

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 I QN G G GARAN I T Q G K FTVVA GA TK VL P F N N TMVVNITMM GA E $V$ T N G G G L R E T I K D K P IT K G D I I A V L P F GN S V A QVAA T G Q N







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 LNSGGGFRRQPPTGDVTAFDLVGVTPYGADLVVLTIDDGKD FFNSGTLRAD\HKGDI TYKELDKI FPMADQIVKINIVGSD
 $F Q N A G G V R V D L A K G N V T V A D D Y Q V L P F K N T L V Q L N M T G Q E$ $\square Q N A G G V R T D I$ EA G DI T I G D GY T L L P P A N T L V D L T MT GA E
 L NNA GAFRGI YPKGNVSNTMLKEIDDEFGNYAYLLTMKGKY F L N A G L V LD HLLE K G TVVTK F D L H R I L P H P






 $L E N G G G V R A T M R R G D D T V G D S D N V L P F G N T L A F K E V V T P A D$
 ASASFNTS QNI SKD DITTLQEMSGLYIYENYLYGIEIINGAE

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

 $L \square N S G G L R Y \square L$


UniRef90 UPI00047E9C38 UniRef90-M7POA5 UniRef90_UPIo UniRef90-LOK814 UniRef90-M3BPW3 UniRef90-G1KR52
UniRef90-S2WDRO UniRef90-UPI00036FDD23 UniRef90_UPI0003B38CE4 UniRef90-Q01DG4 UniRef90-F3NR81 UniRef90-I3CKJ UniRef90-MOIE25 UniRef90-UPIO0040E67D0 UniRef90-E3FRK1 UniRef90-D4YQQ6 UniRef90-G8X612 UniRef90-M5JBF5 UniRef90-W9EIG3 UniRef90-I2F108 UniRef90-Q64VC3 UniRef90-D4M9J2 UniRef90_UPIO00304E45F UniRef90-G2Z1X5 UniRef90-UPIOOO374E2A8 UniRef90-W4DNX8 UniRef90-A3WJW6 UniRef90-B1WVH9 UniRef90-UPIO0036C364E UniRef90_U7JR77 UniRef90-M7MDG7
UniRef90 UniRefe90-V5HS36 UniRef90 UPIO004783EDF UniRef90 UPIOOOA5 UniRef90-E8SFG9 UniRef90 Q7U3PO UniRef90-UPIO0047D5EC5 Uniinefoo-L8GHJ5 UniRef90-B0WU98 UniRef90 UPIOOO47BB410 UniRef90-R6G6G8 UniRef90-F5YIA6 UniRef90-E8M3Z9 UniRef90-M7CVL7
UniRef90
UPIO0046 UniRef90-UPIOO046E5CF9 UniRef90-H8MXG5
UniRet90 L8GWM5 UniRer90_-_8GWM5
UniRef90_UPIOOO29A699D UniRef90-W4TZZO UniRef90-H1HM22 UniRef90-V9EV32 UniRef90-H9JTK9 UniRef90-UPIO003FBA464 UniRef90-UP10002233DCF UniRef90-A4BHO2 UniRef90-F5RZC9 UniRef90-N6XX82 UniRef90-R7CWE3 UniRef90-U5VW88 UniRet90-MOMVI6 UniRef90-AOBWD9 UniRef90-K2C214 UniRef90-A0A031LJ40 UniRef90-W5YRJ4 UniRef90-UPIOOO373DE22 UniRef90-H5XL31
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UniRef90 F21JU2 UniRef90-M5BPD9 UniRef90-UPIOO0463D08D UniRef90_- -9CZKK4 UniRef90-UPIO004702A2A UniRef90-IOHLJ3 UniRef90-E3GKB6 UniRef90-B5UVJ88 UniRef90-B4SAX5 UniRef90-W2CJI8 UniReffo-L8GFL4 UniRef90-R2TA77 UniRef90-EOVD87
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AlLLKMVO 90
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LKEALELSAHPKQSKRAHPVAGDQLVLNKNNTVKTFTVGG LKEALELSAHPKPQHYNYDMYAGLEYTHDLDRPAGDRHEG LKEYMEWSARYYNTYQPYDMFAGVEYKUDISKPAGERYNG VRAYLEYSAEYFNPDYNYDYVSGVRYDPAGSRTKNETFDG LKEAFEHSVYRHGGTGELDQVSGDRVVYDLSRKPSNRPVY LWKALENGVGNYPGDGRFPQDSGFKFSFDASKPIGSRIVE 1 REYLEFSASYFKQTGPFASYD DDTARPPGSRDSNDSYAG K KAVLEDALSSDPSTGAYPYVAGLRMDVDMSKAKGSRVSW LRAYLEYSAQYYVPDYNYDYVSGLTYDVDDAPAGSRHNG VKQALTNHFDNGGSSGSFPYAYG RYTUDMNQAKGQRVTY L LE FGAAFGEPEWWHAHMSGARIVWDDARDEVVEAFVGG LWEMAEYUVAREGKYQPLTGVQVELARCDGPGRKKKALLVNG FKKALEQQWKTDLNSQNSRPLSNVRYTYDPSAKYGERITND 1
 LRQALEQCASFFQINCGQLQYEFDIRKPTGHRVTYDTYHE LEKILNHSVSQSGTGFFSQVSGVRFIISNGKATSIEVQE I KDFLEESYYMWTNQMKFDSAAGUTYTVDVTRPKGEKVDG LRKAMEDSASFRTPTGGFDQVSGLRVVYDLKNPPTTFNEW LRDYLEFSARYFVRTPAGTEVDPARLTPAGSRDTDLRFAG LLEMTQYLIAEKKPHPL SGMTFTIDKNNQAKNYEDQG VRAYLEYSAEYFVQDYNYDYVSGFSYDIDDSRIKNLTYNG LKAHMEASAAHFRQWY LYDMFAGMNYQDDISQPVGRRYRG LKQVLEEALNFDDNUGAYPYGANUQYSUNLQQGFGDRIUSD LDVLEEATQPSGSTGSYPYASGLRWDMNLSKPFGQRGTW LRDYLEYSARYPASEGGHTQYSTDLSKPVGQRVLGLSWQG VNDLVDYLVTAK SRARHP DSKLNLTVDTNYQLVDARINN TQRFFDLIA RADGGWPVSKEVQFVLKGKRADRLTVSG LKCALERSAEYFAQHFNYDYFSFDIRRSVGDRVVSGKYKG VRAYLEKSAEYFKQVPAAGSYASTDVTNAPTRITDLAYGG
 IKQALERSAEYFDYHYNYDYYAGLEYTFDLTGRVGDRMDG
 LRQLLERVAALPGQAGQFMQVSGMRFTYDVEETAQVVEVN LKLALERCASYFDNDNGYDYFANWNYTFDGNRVVSUKYKN VKQVLNEAVDKKGSDGAYPYAAGURYDVNFNRPSGERVHW IKKMFTKSQPLLDPSGGFDQVAGAKVYYDTSLEPRKRITY $M Q E M F D F V T E R S A E R G S Q A Q I S G A R F T M D C A Q V Q D I E I N G$ LLEALENSVSLIN TGRFVQISGLKFSWNSNQDVGWRVVN LKDYLEYSAKYPASEGGDTQYS DDISRPVGARILGDSWQG I RSMLMQQAPDGQWHWRFDTAAGI DYEVNVARPHGSRITNG LKDALTYWLRRYPMSSSQPHFSGIRITYEAKNPNILSIRG L LEALEFSVGVAQTTPGDFSSSRMVISATVRCDECDVPQY KKELERAAEYFEDHYNYDFFAGLWYEFDISRPVGDRVDG LKEALENGVYKYPADGRFPQVAGLEFGFDPDAEPGHRLQG RTLMEHAASLSNGVLQVSKGLEMKYDPDGQRVVEFTLNG VKDYLEYSYTLWNFAFNFYAGALRWQVDLRQPRGGRISW VKDYLEYSYTLWNFAFNFDSAAGIVCYTVDVTRPQGEKIDG LLATLRHAALARAADGPRWHFSHVSWDDAKNELQKARVDG LLKLLENGVKWPNFDGRFLGVSGISFQPQGSRIVNVKING 1 KKLI DYSIGSKKKTPFFVQTYGLTYEEEGGKAKNUKIKG I KDTL EDAVTEQKNTGSYPYTAGGTWQVDMTQPDGKRITN VREWNEAVAFDGSTGAYPYAAGLRWNVDMNRAEGDQTQW LREWLERAAGQFNQUDPNKQEEQPLVNPDSHRUVNLQFNG I LELEHSAAQYK LGGFMQVSGLKYTVKDPNKDQQNGKW LEEVLVETLDPKGFRGKDMGRFVYRQDRFDHALRKDYDQG LRDYLEYSARYFKQDYNYDALAGIDYDUNVSKPTGERIVGG LREYLEWSARYFKQDYSYDAVTGVKYDTNAGKPVGERDDG MKAYMEWAAACWNQWPGYLHDHFIGLNYEVNR ENVTFQG TKQWLFASNYHDRFGGWLVRFSGMTVKFNSSRVESUTGKG I WNALEAGSTWPAQEGRFPLVSGDRIEWDSRLTPGNRVKG VKDYLEMSYAGWTNRMNFDSAAGIRYTVDVTKPEGEKIQG LKDYL EMSYAGWTNRMNFDSAAGIRYTVDVTKPEGEK QG MVAALEDAVSNHQSSGSHPYAAGLRWNDDMSKPKGSRFSW LYEALENGVSDTGQGGCFPQDSGMSFTYPRNPARDVKTGE KKDFLEMSYYMWNYSFNFDSASGMIYTVDVTKPQGEKVDG LRKYMEHAASFYGTSPDYNYYTIDMTKPVGQRITKLQYOD VKELLKADCRADDYGPAYYQIDLGRTNREVKAUKVRNEKG GLGML NESSEASDSAVAYDQVSGLNFTYNPAEQVGLRVVW LHEGLQYSTERHVGRGQFLHMSGMKVKYDLNKNPGSRPRY LKEGFTQSENEDWPRGELKGLGFRNYGDEMTKQRELYDNG KAVLEEGLDDNGPRQALAPSTGFEFRYDPARTSGDRLDG


UniRef90＿UPIO0047E9C38

## UniRef90－M7P0A5

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UniRef90＿K2C214 UniRef90＿A0A031LJ40 UniRef90－W5YRJ4 UniRef90＿UPIO00373DE22 UniRef90－H5XL31 UniRef90－A6QBW9 UniRef90＿UPIO0036A0B9A UniRef90＿UPI000471E851 UniRef90＿Q5UW63 UniRef90－D4YJT8 UniRef90－G9YWQ7 UniRef90－F2IJU2 UniRef90－M5BPD9 UniRef90＿UPI000463D08D UniRef90＿J9CZK4 UniRef90－UPIO004702A2A UniRef90＿IOHLJ3 UniRef90－E3GKB6 UniRef90－R5UVJ8 UniRef90－B4SAX5 UniRef90＿10GUQ8
UniRef90＿W2CJI8 UniRef90－L8GFL4 UniRef90－R2TA77 UniRef90－EOVD87 UniRef90－F2F6N5
UniRef90 Q2GAW7 UniRef90－F8P124 UniRef90－M1PP85



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 HLLKPDETLEIVLNQYRAVGGGGYHMFGPSKITREDRVPM A P K PA ARFVLVVNQNYRAGGGGAFPHVARAEQLWSNSDEM



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| UniRef90＿UPI00047E9C38 | R N A M I D F F S K VD TI A P K VD |
| UniRef90 M7P0A5 | TELIA GYFKEHPVVSA |
| UniRef90－UPI0003626C41 | R N TII D WVVR A K G TVVD P A A F A S VG |
| UniRef90＿LOK814 |  |
| UniRef90＿M3BPW3 | RTRI A EWATAKGVLDPKDFASE |
| UniRef90＿G1KR52 |  |
| UniRef90－S2WDR0 | REWI Q K Y L E A N P KVA P |
| UniRef90＿UPI00036FDD23 | LDVFVVDALK A A G KV T QVPA A D GRI |
| UniRef90＿UPI0003B38CE4 | RQLILD WVSETGTIDPAVFSASSVPT WR |
| UniRef90＿Q01DG4 | A Q TMi D Y AREMKTVAPPVAE |
| UniRef90＿F3NR81 | R T R I A E WVT AKGVL D P K D F A |
| UniRef90＿I3CKJ2 | A ESFVNYMKEVGTISSP |
| UniRef90－M0IE25 | H DVIAARYAREVGF D A E $\square$ E G R I |
| UniRef90＿UPI00040E67D0 |  |
| UniRef90－E3FRK1 | RDALIAFWQKAQ R P P A A P P GRMRF |
| UniRef90＿D4YQQ6 | RDQLAK Y L A Q K S SVGVTVGAPQGD |
| UniRef90－G8X612 | R D M L I D Y F S Vid IVKV P |
| UniRef90－M5JBF5 | T D HL I H Y L S EQGT |
| UniRef90＿W9EIG3 | P N L M I D Y L K H Q P |
| UniRef90－I2F1Q8 | QKIVKEYMQNNSPVSARLL D GRI |
| UniRef90－Q64VC3 | $R \mathrm{~F}$ Y L M Q Y I E K K G L D P |
| UniRef90＿D4M9J2 | Y EVLVGYI K T F P D G A L K L A P D Q R $\square$ T VR |
| UniRef90＿UPI000304E45F | R NTI I S WV Q ENGEDDPARFA |
| UniRef90＿G2Z1X5 |  |
| UniRef90－UPI000374E2A8 | $R T \mathrm{R}$ A E WA TA K GVLDPAGFA |
| UniRef90＿W4DNX8 |  |
| UniRef90＿A3WJW6 | A QAFADYVRQFDQLKR |
| UniRef90＿B1WVH9 | QQALLANYI ESNGVI S A A D Y P E E GR】S |
| UniRef90－UPI00036C364E | A K S FVD YVV ${ }^{\text {V }}$ |
| UniRef90－U7JR77 | RQELI DHASRDGK\DPT T F |
| UniRef90＿M7MDG7 | RNALL D Y F Y K T D T I NPVID D R |
| UniRef90＿V5HS36 | F DVLVE Y I Q K I S P K T Pi EEGG T |
| UniRef90＿UPI0004783EDF | R DL L I R HVVQRLTEQG LTVVSA $\square$ S N R I I W |
| UniRef90－R5BAR4 | AELI I A Y V D K HRNITV |
| UniRef90＿UPI00045EB72B | R QLL I D WV T A E QVVDPSTF |
| UniRef90＿E8SFG9 | EQVEANYLK T A DLSSQYATTAPHR\INGK |
| UniRef90＿Q7U3P0 | QEIL A T Y I S E ELA GAVD $\mathrm{C}_{\text {P D A DVI }}$ |
| UniRef90＿UPI00047D5EC5 | P DLL D F Fir RHTPVKEIVNS |
| UniRef90＿L8GHJ5 | S A MV R C Y L T K L A L |
| UniRef90＿B0WU98 | A D S FTNYVAKVRVID |
| UniRef90－UPI00047BB410 | QQALS GYLREGGTV S S ERYPSEGR！V |
| UniRef90－R6G6G8 | P EII I N Y F K N P K V |
| UniRef90－F5YIA6 | CEVLDD Y I S S G $\square \mathrm{T}$ I P T K I A G R I |
| UniRef90－E8M3Z9 |  |
| UniRef90－M7CVL7 |  |
| UniRef90＿UPI00046E5CF9 | REA I E Y $\square$ E D Q T RA G E $\square \mathrm{E}$ QLD GR】 |
| UniRef90＿H8MXG5 | $R D S L I G Y M Q$ |
| UniRef90＿L8GWM5 | NQVIL Q H L |
| UniRef90＿UPI00029A699D | $\square \mathrm{D}$ A L Q Y V A D D G P L S P P T |
| UniRef90－W4TZZ0 | RQLLID TAMAMK T I D P K D F |
| UniRef90－H1HM22 | RTI I M A Y I E R LH T I P A T T |
| UniRef90＿V9EV32 | R DL V E K F V R Q RVVEVNYP P P K G R I VIE |
| UniRef90＿H9JTK9 |  |
| UniRef90＿UPI0003FBA464 | P DLL ID F $\square$ K R H S PVGE $\square$ V N |
| UniRef90－UPI0002233DCF |  |
| UniRef90－A4BH02 | TQAFVDFARNQGTLKP |
| UniRef90 F5RZC9 | SNAVI DYFKAGNTIT |
| UniRef90＿N6XX82 | A DAFLR Y A LD NPVLARPATA |
| UniRef90＿R7CWE3 | $R \mathrm{Y}$ YLMKY IEERQGTVNPK |
| UniRef90－U5VW88 | RQLLID WAQAEGEINPADF |
| UniRef90－M0MVI6 | YEAVVEYARET G L D P ERDGR】 |
| UniRef90＿A0BWD9 |  |
| UniRef90－K2C2I4 | R E L VIE Y ITK K R G K |
| UniRef90－A0A031LJ40 | AEAFLNYLQEMKTI |
| UniRef90＿W5YRJ4 | A QSFV D YV SEQGTI SKP |
| UniRef90＿UPI000373DE22 | RQVLID Y I A Q NKKINPT A A N N W |
| UniRef90＿H5XL31 | Q QAV QRYLT E G GAVT S A D Y P E E GR\｜T |
| UniRef90－A6QBW9 | Y S IMA E EV SEHKELT P G N N D GRI |
| UniRef90－UPI00036A0B9A | R DVLE WKL L Q L Y PV |
| UniRef90－UPI000471E851 | $R Q A L D D W A E E K Q \square V D P A D F F D E \quad N W Q$ |
| UniRef90－Q5UW63 | F K AVAD Y AREEG |
| UniRef90＿D4YJT8 | REAI V D WT VK N K T I D P K D F F Vic |
| UniRef90＿G9YWQ7 | R D MLVA Y L AEHDPLEPAVV DHNWK |
| UniRef90－F2IJU2 | HD AV TS Y L NEKH TVVPVVI D GR |
| UniRef90－M5BPD9 | S S IVRRYI |
| UniRef90＿UPI000463D08D | P D I L D Y I R Q N S PV |
| UniRef90－J9CZK4 | R Y Y L M Y I E A HPVLEP |
| UniRef90＿UPI0004702A2A | $R D V L A W K L Q N V Y P$ |
| UniRef90－IOHLJ3 | T Q TFA D Y VK A Q G TVARPARA |
| UniRef90－E3GKB6 | E EVFRD HLT R LTA A G G G SFAS Q GR】 |
| UniRef90－R5UVJ8 | R F Y LM N Y $\ddagger$ EKK G $\square$ M D P K A L N |
| UniRef90－B4SAX5 |  |
| UniRef90－I0GUQ8 | $R N \square M \square R Y V Q E K G T \square T P S$ |
| UniRef90－W2CJI8 | ADEIMK Y L E Q HP Sid Y K |
| UniRef90＿L8GFL4 |  |
| UniRef90＿R2TA77 |  |
| UniRef90 E0VD87 |  |
| UniRef90＿F2F6N5 | R DVFK N Y C M K K |
| UniRef90＿Q2GAW7 | $\square \mathrm{D}$ ALE S W $\square$ K A VP VR NVVP |
| UniRef90－F8P124 | GELLLSE Y |
| UniRef90－M1PP85 | Y S I M S M $\ddagger$ T Q N K T L N P P A A D G R |
| UniRef90＿M2TNZ7 |  |

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UniRef90-R2QTB4
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UniRef90-U2T1S0
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UniRef90-M5DXV4
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UniRef90- J9FXF2
UniRef90 - V6IZE0
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UniRet90-F2FAT3
UniRef90-R6DYM8
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UniRef90-K9P8U1

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20 20
EMPDSFRKGTT GESAAGNLLTTDAFRAAYHSDVIA IGTDEEEDDTRMSLIRTQESPVANWVSDCDREYTGADAT
 $V G E T D R P L S R Q S \quad$ F LDESAWNTLFNDALREYFETDLA



TGY LK KT TYT K DSYFGNSAFNDLI LDNLELKITKADIA EI A QSEVDLEGRQSPVRTQETNLGNLMADALLDTGEPQI G I GEAGEDLLHNRQEYYGVSLPLGSDIAPVVAKSFYSDLC KLGTAKENGADTREVNESKESPLGNLI TD GQVAMADADFA

Y TATPLDGRSAHNHS $M L A D A V R A Y Y D T D \square A$

PTATLKETPVIQLINAVQKHYAKADVS VGETDTPLYRQS FLESAWNTLFNDALRAHFDADLA IG DTERDITSYLS RVMDSPVTQV DNDAQLWWAEQEFA GSTTQFLNGLRAEVRTEETNLGNLTADANLAYARTVIS

 VAYSTNAMSAAYP ESALSDWFVDAEITGKRVDVG MV

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

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



I GTFTNTITTR DSYFGS
I GETTAPI NSFFSVVR
I GEDDASI NT D DPSVQIVSNAQKWYTEKY A
 RGQESSFGNVVVADARSEDGANVGG ATSEVP $\operatorname{DDGVRDPVRTAETNGGDLVADAVLAAGRAQLA}$ EA A R E L N H P L P VD WY AESPLGNF LAA GLLQWVPSDCA $\square C R T T V E L D L R S N L I R T Q E M A S S N W F A D I L R B T Y D A D G V$ GNTEVYLNGVRGSIVRTEETNLGNLTADANLWYADVDIS Q $\operatorname{lGTFKNTIYSRESFFGSSAFNDFILNLMLQDTHADIA}$
 QVVAYLKRDLPVDWF GPSAFTGMMADAQLAEWCGAEVS K $\square G S F E T P U Y T R$ ESFFGNCAFTDFILNLQLQDTGAD S ПGNFSNTDSTR DCYFGSSALGNLMTDAIVNVHQTDFA R $\square E G A P F \square N L L Q Q M Q L W F T D A D V S$ TGHTDGLLYRRGNDAFFGNSAFNDFI LNDQQLQLTGADI S EVGRTASPLHSYFALV ADDPSVQIVNDAQMWY VNADLP EIAQSEVALDGGRDPVRTQETNLGNLMADSLLDAAEPQLGG



PTSQQQETPMDNLINEVQMYYTKANVS P T I QLEDSALI DLI N NVQLYYYTKA DI S पATSEVDLNGRRPGVRTVETNQGNLIADALLWQATPNVA QQK HNGADVA VGFTELPL DQTTCQFGECTLGDLIGDALAAMSPSNTG
 K】GKAERTUSAR SAFFGPSSFVDFVHSLQUALSGADIS

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VGKTAAPLHSYFALV VGTTAVPIHSYYSLV

TINSNDD | ESFW |
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51
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S
A E LK E D $\square$ P QWF SPSPL TVRTLETN GNFVSDSLKYWVENNI S LPERDDHHFHTESELGNLVADEMRKVAEAELA


VCQSTVT LDDRSSH $\square R V G E S A A P N W F A D V I R H A Y D S D G V$

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## 

 ATAVMSEKAKGFGKEVTMRDVLLNYPYANQLCRVKLTGKE


 LIMN A G G V G A T D F E GF A G G S D F T D A A A A F R S N A N MK Q GKll K K S D A S LI Y K F D N T L Y L L E V T G K Q SA A A F R S D M N LIK K G D F K K K D D V A F I Y K Y S N T L M G V N M T G E N










 LIAAKGPKPGDAEGKVMLGESWDAYGYGNPVLTVSGTGAQ


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



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 I K NVLMM G GVVN K K N T G SYPY A G GLLQWDDVDLDSKNK GE R V S Y L K K A L E R C A E Y F A L R D G E $\quad$ DT D $V K Q V L M Q F A L V D G S T G A F P Y G A G \square R Y E A N E T P L N K Q T Q Q W$ I H K YL E M S Y DL WN Y SF NF D SAA GIVNYTVDDVTKPK GQKVNG
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 IV K L Q E A A V S G S S N G A Y P Y A A G L R WE I E G S K I K E G T G D W
 I R E A L E Y A V S E Y D Q Q N R F L Q M S G I R V T Y D L T K P A Y S R V S T L K E Y L E F S AR Y Y VQ T P A Y DAVGGGLI Y E DIDIA KA P G S R F D G I R A A L E E AVVAD GS GGAYPVVA NGL WELDLSRPRGQRFSW
 $I K D F L E M S Y A D W T N Q M Q F D S A A G L I D Y T V D V T K P Q G E K I N G$

 I K QVLLE E N WQN G Q K T N H L G WS E E L T Y T F D D S R V T GUWMGG L W D A L E E N W L Q E A L V Q QL G A YPA S G S F P H V S G V R L V Y D RTM T S F T D EA G I QN TLE QTANKME IVGGGLLQSSGI HYHIDLSKPDGERVMD



 I R K HL E M S Y DLWANYGD QQRLGGFKNFSFNFDSAA GUDYN G
 $L$ R Q M L H Y M L REEA A T G H T EFYY D R R K G DF DY F TYC G REVG

 I R S LI K N SHKRRRNKRA DLFVSGMMTYK DFTKD G DEMKMANG

 $V$ R E WL E R S A GMFFN Q QP S R Y A A D GAALA D P E A R R I V N L T Y Q G

 V YEAFETNLLE QVFSPDPFQQMAYKPYNPKGRRDEHFLVQN
 I K A WL E T A A T R F N R I N N P T L L S T D Q A L V S S Y P G Y N F D M F Y K G LLKYME WSASYYPNVRSYNYDMFEGDDYDINRDKNDKIKG
 L WRIVF G IV N D QPVTS F VQVSSSURFSADVSRPVGERDGE $L$ R E WL E MSAGQFNQQPNRYDS D GNLVNPDAHRVQDGTYQG


 LAKDLEA
$V$ K D WL E R S A GMF NMDGVTY Q DD LTVIN P DANRIVNLQFDG





 L K D Y L E Y A AR F Y D Q D Y A Y D A L T G VD Y D $\square$ N I S K P L G E R I D G L K RVL D Y GEDAS GT GA Y L HRYNVKWVE DNWFI N N
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$K P L K Q D A \square Y R \| V S A G E Q Q G Q \quad Y Q S V K K H L G \square H A$
AVYVD DKTYTI ASNNF LLVGGGDDFPVFFKEGKNFIDT GVID KA I DPAA YFIVATNNYRASGGGNFPGLDGSKTIYASPDAN LRKMDNET LKKLIVNNYRASSNPNSGDFKDGS LPKDIPTPD











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| UniRef90_I4ZS35 | A EAFLQYAKSTQGLK |
| UniRef90_D9R215 | P Q L A L D Y F R K H P V V K $\square \mathrm{E}$ |
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| UniRef90-P44569 | A ESFILKFMKKHP |
| UniRef90_E1GWT2 | R Y Y L M K Ele K A G T $\quad$ A PEANNNWK |
| UniRef90-J7L757 | QGALELFVTETGRIGAEDYPESGR\\|VV |
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| UniRef90_UPI000444A09C | T D |
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| UniRef90-B1MW79 | QDMLVSYFKAHNQL |
| UniRef90_UPI00035EC18F | YQPLVD Y $\square \mathrm{K}$ SQ |
| UniRef90_R7BJM0 | VELLLMEYFR\NPVVEV |
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| UniRef90_D3RVM4 | A Q GFI D Y L Q Q |
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| UniRef90-I1D643 | QLAVQGFLSEGGTVTAADY PEGRIT |
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| UniRef90_R5FHW8 | R Y Y LT EAI R K M G T I D P K |
| UniRef90-Q1YN55 | WDLVES Y L K G H P EI S P S |
| UniRef90-UPI00035CBB3E | R DVLVRYI HEQGEVKPA A D A N WR |
| UniRef90_UPI00034C1BFC | QGALEHFVTETGQITA A D Y P E S GR\\|V |
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| UniRef90-D7BM15 | NAAFNKYVEKFQKDNP |
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| UniRef90_U4KIG7 | TET F I D Y VR |
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| UniRef90_U2KG39 | RQVLIN Y IT ALLK TINP T A D N W W |
| UniRef90-U2E0Q7 | R F Y L M Y I E K A EVVSP K |
| UniRef90-R4XMR7 | ADVLQAYID K Q |
| UniRef90-UPI0003FBC744 | V Q A M K D Y K K F P N F K P |
| UniRef90-A6TNZ0 | R D AVLDEYI NKNKY I |
| UniRef90_A9F1R7 | R D PV I A WI EKK K |
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$\qquad$
 EVGDLDDDLRTR DSYAGMCPYMNLI HTLSLSAKSAQVS KVGESTADINSFFALV QDDPSDQVVNNAQUWYVENTVR LVKEFESAGNADCSMGRLVADLLCEAYQVDLF
 RQKQTNLGMFVADA $\square G W S F T S D i A$ VGKTSAPLYSYFALV ADDPSVQVVSQAQTWYLK DV: GGKASFASDDFTSGEELGFFMADAHYSTLGVDI T

GESTMGDLVADWALLWATPADLA TGTTDANMTSYFADV GDPAADEVVAGAQAADYVANYVG VGKTSAPLYSYFSLV ADDPSVQVVTAAQKWYAEKYVA GKTSAPLYSYFSLV ADDPSVQLVAQATLDNHKDIA RПGRFENTDYTR DCYFGSAAFTDFIHDLQLKDTDADVS K $\downarrow$ GTDTSPADTGGSENRGAESTLGNLIAEGFYQYAKTQFA NKEWYH पGDTTVRLSSYAD DNDVSKETSMGNVIN GLTDVELNGTRGDVRTQETNLGNLSADANETYEFTDFA TGKTDSLLYRRGNFNGT VGKTSARLYSYFALV ADDPSVQUVSNAQTWYDRAAAP INSAPGPLTHDL


EPSPLAYYGLDATKERTGADTA KVADLAAPDTSYWALV QDDPSVQLVSNAQVAYVKSALA LGMSLTALDGRRVTCRIQESNMGNLVADALRCGLGANVG VGQTDELLYRRGNFNGTWD AMLDLICDALLSEREADIAA KVTTLKP PLKTDLNGFQETEFSRMLCSALREWCQTDCA IGHATQALRHVRIPDQEGPSELAPLVARSFMHVMPVQFA KLTEAVAVI DRSLPIHYEEESPFANLLAQAVLQHTGAEDA QVIATVPATFPVNWQGKSELVEIGLEALKEYAHTDAA RLGTQTASFTRRRNAA GESTMGNLVADAQYPNTPADLA

SVRGGD
TQQLVAQAY【EYGGADTT TYHADRPLDGTDTANRSKQTNLGKLIARSMAYAYNVAGA AYLEHPLQVDWFKASELPSIMADALRLWCDADIG VGKTSAPDYSYFALV ADDPSVQVVSNAQTWYIDEAAAP $V G Q L T A P M D S R$ SVFFRPAPFTDLIHRLQLEFPEAEVS I GTTKVHMSSYFAD LGRTEGLLFRRGNFNGTWDDADLI DDALLEEREAELA KVGETTAPINSYFAQV LDDDSI LGTTGSLLYRRGNFNGTWD DLVNNAQHWYGRKELAA LGNGGDPVYLDRTYTRHDNHALGQLAADALRHAAPAHLG ETGKVIDAHPVDWIPDKFKETAVSRWAAEALKESCKPDLA EVGKTPVEULPGDPAAVVQDNPITDVVNVQMKESGADVS DYTAKENLPRVLPVSWQEESEASQ LCDALTTEWCKEEIG
$\qquad$ TAKEVLDGTDASGRSK

## VGETSAPLHSYFALV

ETSAPLHSYFALV ADDPSVQIVSNAQLWYVEAAAP
 ELATTESLLYRRGNFNGT FDDLICQALLDVREADIS VAYTLTPWDVRSEKVRTDESAFGNFVADVLMHAREVDCA
 VGYLGQDVQLDKAFTRHDNNALGQLVADSFRTARPAMLG R पKPTALGSFVSNALAWDFVKNG

## UniRef90_MODN20 UniRef90-D1VWA7

 UniRefefo-F2PEN8 UniRef90-17KHU2 UniRef90-I4WZR2UniRef90
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UniRef90- AOMOV8 UniRef90-F7UOK4 UniRef90-W8A5P6 UniRef90-UP100040D3C0D UniRef90-UP1000369C70D UniRef90-V21H68 UniRef90-R5DUT4 UniRef90-L1IF74 UniRef90-DOGN74 UniRef90-N9V268 UniRef90-M5FBJ8 UniRef90-UPIO00470D286 UniRef90-L8EQ40 UniRef90_LOEENO UniRef90-UPIOOO3316B6A3 UniRef90-UPIOOO3C11168 UniRef90_Q98RF4 UniRef90-L1N8W1 UniRef90-UPIO004627F3D UniRef90 UPIOOO287A8F4 UniRef90-UPIO0034C2A5F UniRef90-K9AZZ5 UniRef90-U7QPJ4 UniRef90-F70KM2 UniRet90-LONDYO UniRef90-R7LSK8 UniRef90 UPIOOO3F06508 UniRef90_UPIOOO35C2522 UniRef90-D4KTS4 UniRef90-UPIO0041A9D62 UniRet90-R5H3R6 UniRef90-UPIOOO476F040 UniRef90-H3GUF2 UniRef90-G5HOR5 UniRef90-V9WLD2 UniRef90_UPIOO047A8696 UniRef90-C9P6Q3 UniRef90-D3EDH5
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UniRef90 $\mathrm{D} 8 \mathrm{NUJ7}$ UniRef90-U6SNN5 UniRef90-A3UBQ0
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UniRef90- G8UPM4 UniRef90-L7UE65
UniRef90_UPI000470766B HHNAGGVRCSFNPGVITPADIAKLCPADGMMIYSVKGKR LHNAGGVRCSFEAGTITEADVARLLPFADPLILYEVYGQE IVSMNNNTLYLPQ DVKVRDILRNYPYDNTLFLMKVTGQQ LLNGGDYYTNI ETGQAAKNVADLYVFDNTVFALKLTGAD LKNGGGDRDDi AGGASEDIANALSFNNGLSATVVAAE FNAPGGFNSS|SAGPITVADMFNLYKYENQLYVMRLTGKE AMAPFKNNTNVAVGDLS K SATDLYNFDNTIKAVKMTGAQ AAAPFDYYTDVPAGDLASRNVADLYLYPNTVQAVLITGAQ GRNGVEDYP ELTMADTVTVDYLWSMLPVDSEAKQGTVTGKQ


 GTSGPDYYTDVPKGD ALKNVSDLYDYPNDLKVVKKTGAQ LONAASNRTYEAGHVTDDDLRREMPFQARAVACRLKGRD LQSGGGVRIALDGTVTAAQVIQULPFGNMLFREDVTGAE GRNGAEYYTDIKAGTIAVKNVSDLYDYPNTIKAVLIDGSQ

 AF GGGNDRGFFEQGPLDSHQVFEVVPLKNNMVKLKLTEKE LI NSGTLRADFPPGPFLMKDLVTLLPMLDELCVIQLTGAQ ILNSGGI RMNLSPGDFSYDNAYTLLPFTNTIYLLNMSGAE FVGGGSURENLVKGPITRGNMFAVSPYGNRIAAVELKGDK
 LQNGGVRMSRLPKGPITNHNVYSLDPFGNEMVVIELTPEE LVNAGQLGGGPAGGVTTGRLHADCPSPDNPCRMTLTGRH GFAGGTDYTDVSSGNLADNNAADLYKYNNVYAVKVSGTD GRNGVDEFTEIKKGDLTIRSAGDLYLYDNTLKALLAKGSV LVNGGGLRVDLKTGK KKGDLVAGAPFGNNSVTLKVNGTV LVNGGGLIVDLKTGKIKKGDLVAVAPFGNNSVTLKVNGTVV
 $F F N A G I F L T D M E K G A V T A F D I H K M L P H P I N A C L F E L T G A Q$
$G V P G P D D Y T D A P G P L T R A A A D L Y F Y N T L A A V K T D G A G$ VSNSSALEKDIPKGSITVDVMNAIPYGVTAVQTDVKGHE
 FKAGGRYYTDVPAGDVADKNVADLYLYPNTVQAVLISGEQ IINADSYDNYMESGNMTYGDLANVMLYTETVDIVEMHGRY
 SVGGPDYYTVPKGP ATKNVADTYDYPNTIRIVKVTGEQ IVGAANDRGYVEKGKICTRTVEEVSPFKNKVLKVNYSEKE DVNAGYUKGDQLNAP AAALFNEDSNLRARD:KKSDVSLYYKYTNTLYKLRMTGKQ MINAGLLLGSLED DVTVYDLLKICPHPGNPCVVELTGDE $\square H N A G G V R T S L S A G A V S V A D I A K L P F A V P \square G V Y R L K G K S$ VNSGQLLGPLPEGEVSTGMLHGLCPSPINPCVVKLRGEH ILNAGLFMQPLVEGTVTKDDLHKLLPHPMRMLRCTLDGEN


## UniRef90_M0DN20 UniRef90-D1VWA7 UniRef90_F2PEN8 UniRef90-17KHU2 UniRef90-I4WZR2 UniRef90-F7UL36 UniRef90_F7UL36 UniRef90_E1KNU6 UniRef90_D8FJU4 UniRef90_W1SMQ2 UniRef90_E3EYY8 UniRef90_G8TL29 UniRef90_UPI0001A638A0 UniRef90_A0A024K922

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UniRef90_B0P6H9 UniRef90_D8NUJ7 UniRef90_U6SNN5 UniRef90_A3UBQ0
UniRef90_B3MG78 UniRef90_R4YV38 UniRef90_A3VCW5 UniRef90_UPIO0046A8E04 UniRef90_LONJ68 UniRef90_R9P557 UniRef90-E3CK82 UniRef90_G8UPM4 UniRef90_L7UE65 UniRef90_UPI000470766B
UniRef90_D0CNR6
 I K N Y L E M S Y D L WWVNTMNF DS A A GII D Y E V DV T K P N G N K V N G
 LA DALE GAINNATDNGSFPYVA GMRYTYDAAAPLGRRQGW


 L K K A L E Q N F T Y K E E H Y N F D F F Y G I D F DVVF Y E R I S N DT F K G

 L WD WL E T E LENT F AK DPAKRLGGWVIDR P GKRVNYVKVGG L DEVLE NSLSEY P
 L R QFMEWSAAFFK T WEPYDAFA GVKYD LDDSKQPGNRMDG
 I DE WL EVS A GQFNQQPARYNDNGDVVQPNAHRINKVMFEG V REALE ASSLRHHLHMSRGWHCTYDPAAPE G GRVVGIITRDG $V$ K S ML L A VFKA G GSTGPYPYTGGDRFDVNASAAFGQR GTW
 L I E T I
 V D A L K K GA A K S F N D P G H DMMP S G LIK Y T V S R S G E L K A A S F lla L L EA L E N GVCMYPK E GRFPCVVS GVVRFEFDPDMPA GR R 1 KQ VI E D S ALLS GGS S GAFPY GA GI R F EATKA GQLGGTR N K W




 VVKE WL E MSANFDVID GVAYRID GNVIDNAGSSRIVDLMFGG






 L REA FENSVSRYD GEGRF LQQVS GQS WD
 L K NVMER SAEYY A YH Y NY DYY M GVVDFN P DGS RI E GLL S K D G V R E WLE R S A G $\square F N R \square D P R Y D N D G K L V A P D A H R I V D L A B Y G$

 | V | Q | $W$ | $L$ | $R$ | $A$ | $A$ | $G$ | $Q$ | $F$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $Q$ | $Q$ |  |  |  |  |  |  |  |  |
| $K$ | $D$ | $A$ | $L$ | $T$ | $Y$ | $W L$ | $R$ | $R$ | $Y$ | $P$ | A M

L R T Y M E WS A E YYN RMF NYDMFA GVNYEDNVSEEPGSRDDG
L K V VME DVA D N IF NP D P Y Y Q Q G G D MV R V M G Y H IDD IT K P Q G


 I WNALE SASKWPA QE GRFPIVVGLADVKWDHTRPPGRRILS

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

 L K D WL E R S A GMF NRIE P GA Q S D GAVVAP DANRIT ELLTB D G L K A H L E E S Y D R E GP S F N F D T A A G I S Y L V DVTRPPS GD R L KA WL E KS A ERFN Q IGGEQELIDNTRMP GYNFDQDQGMT YK G

 L VA MFE H S V P I LAAP S GA F L Q V S K D V K L HV D C S R P V K QR VR TMEALNKELAKNKPYD IVQTSSTEWKKKKRKPKEVYY IN G LK K IME Q QAMYNY DMFAGVNYE DD DS K P E G S R V V NVT Y Q G I K T WL RSALK GFGFRGKVLGRMIF G G IEVELDKNEQVTEULILG N DV L D Y G K Q S A G T GA Y L QRY NIVTQDA E T G G N W WL V K G $L$
$W$


 I WE AL E N GLSSMYPKQGRFPQVA GLLMVKWDSRKEPGKRLLVS L R E WL E MS A G QF N Q DDP N KP QA QNL V NP DA HRVVQDVT Y Q G $V$ K R L L A A DCRAD DYGPAFYKDA LGGDN KEVKKVVEVKMPDG $L V A M M E A S V G \square A S P S S G A F L Q V S D M H V D C A Q G R G Q R V R P D P$

UniRef90_MODN20 UniRef90-D1VWA7 UniRef90-F2PEN8 UniRef90-NOU157 UniRef90-17KHU2 UniRef90-F7UL36 UniRef90_E1KNU6 UniRef90_D8FJU4 UniRef90_W1SMQ2 UniRef90 E3EYY8 UniRef90-G8TL29 UniRef90_UPI0001A638A0 UniRef90-A0A024K922 UniRef90-D4JZG4 UniRef90-R6SXM0 UniRef90-X7E366 UniRet90-S4W5J5 UniRef90-A1W3W1
UniRef90-A0MOV8 UniRef90-AOMOV8
UniRet90 F7UOK4 UniRef90-W8A5P6 UniRef90-UP100040D3C0D UniRef90-UP1000369C70D UniRef90-V21H68 UniRef90-R5DUT4 UniRef90-L1IF74 UniRef90-DoGN74 UniRef90_N9V268 UniRef90-M5FBJ8 UniRef90-UPIOOO470D286 UniRef90-L8EQ40 UniRef90_LOEENO UniRef90-UPIOOO3316B6A3 UniRef90-UPIOOO3C11168 UniRef90-Q98RF4 UniRef90-L1N8W1 UniRef90-UPIO004627F3D UniRef90-UPIOOO287A8F4 UniRef90-UPIOOO34C2A5F UniRef90-K9AZZ5 UniRef90-U7QPJ4 UniRef90-F7QKM2 UniRet90-LONDYO UniRef90-R7LSK8 UniRef90-UPIIOOO3F06508 UniRef90-UPIOOO35C2522 UniRef90-D4KTS4 UniRef90-R5H3R6 UniRef90-UPIOOO476F040 UniRef90-H3GUF2 UniRef90-G5HQR5 UniRef90-V9WLD2 UniRef90_UPI00047A8696 UniRef90-C9P6Q3 UniRef90-D3EDH5 UniRef90-F4BMK8 UniRef90-J9VN80 UniRef90-J1ZP08 UniRef90-A9E762 UniRef90-A9BXS7 UniRef90-UPI000409612F UniRef90-UP1000255C737 UniReffo-D5T3G8 UniRef90-Q0FS42 UniRef90-UPI0003771B3A UniRef90-AOAO23NYP2 UniRef90-Q0G1J1 UniRef90_H4F3M2 UniRef90_JЗАK36 Uniinefoc - X7F577 UniRef90-S9Q7N1
UniRef90-BOVHJO UniRef90-B0P6H9
UniRef90 $\mathrm{D} 8 \mathrm{NUJ7}$ UniRef90_U6SNN5 UniRef90-A3UBQ0
UniRef90-B3MG78 UniRef90_R4YV38 UniRet90-A3VCW5 UniRef90_EORCY2
UniRef90-UPIOOO46A8E04 UniRef90-LONJ68 UniRef90-R9P557 UniRef90-E3CK82 UniRef90-G8UPM4 UniRef90-L7UE65 UniRef90-UPI000470766B UniRef90_DOCNR6

130
140
150
160
EPLLDPEATYLVISTNDVVAGSEEF

$K P\|D P A Q K F V \operatorname{VA} T N N Y R A G G G G N F P G I N S E K\| V F K G P D T N$


 GPIDPAKTYRLFVLSFNATGGDGYKTLAAVPRRLDDGVLD RHIDFEKTYKFVTTQGVAS


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

VP DDMKKMYNVGTNSYVAKGKDGYTTFGKVNEQVDTHLGV KAI DRNATYYLVTDDYILVGGDEYNMLNYAKDTVKUIDEGG
 K P L K K D Y K Y RVA Y N N Y IA N A R P L DVSRSYRIMAAPSYTLLNNQDGYPAFTGFAQPFR HNRD E P L R D D R L Y T V G T ID M F TF G $\square$ GY E S L K L G T D DR Y L P E F $\square$ Q A I N L S Q E F V V A T N N Y R A S G G G N F P G I D G T K T I Y A A P D A N


 K K V E K T E IVV K L V T L D M F T F G WF FP E L K N L P K T Y L L P Q F L
 DNQNENRE $\operatorname{DRRLVTLGFLAGGGDSYPFPLFGENRVNLVETE}$ K P DDA AKSYTVAGWASVNEGTQG $K P I D P A Q K F V V A T N N Y R A G G G G K F P E D A G D K D V F D A P D T M$ KNPRENKYYKT\INDYCAQGNDGFKMLNQPDRVTKKYDFD

KADDPNQTF VVVSNNYRATGGNGGVDAAEKRLLNLEN $K P V L D D D K F T I C L N N Y R Y S G A G G Y D V Y T E C P G V K E I N V E M$ K PVEPGQEFLVVTNNYRAGGGGHFPGADGSTVVFQGPDTN K NPRKDKMYSVVA $K P \square D P N Q Q F V I A T N N Y R A S G G G S F P G L D G K N \square V L Q A P D E T$


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

 UniRef90-D1VWA7 UniRef90-F2PEN8 UniRef90-17KHU2 UniRef90-14WZR2 UniRef90-F7UL36 UniRef90_E1KNU6 UniRef90-D8FJU4 UniRef90-W1SMQ2 UniRef90-E3EYY8 UniRef90-N0BOM UniRef90_UPI0001A638A0 UniRef90-A0A024K922 UniRef90-D4JZG4 UniRef90-R6SXM0 UniRef90_X7E366 UniRef90_S4W5J5 UniRef90-A1W3W1 UniRef90_AOMOV8 UniRef90- W8A5P6 UniRef90-UPIO0040D3C0D UniRef90-UPI000369C70D UniRef90 V2IH68 UniRef90-R5DUT4 UniRef90-L1IF74 UniRef90_D0GN74 UniRef90 N9V268 UniRef90-M5FBJ8 UniRef90-UPIO00470D286 UniRef90_L8EQ40 UniRef90-LOEENO UniRef90_N8ZLZ6 UniRef90_UPI000316B6A3 UniRef90 UPI0003C11168 UniRef90-Q98RF4 UniRef90-L1N8W 1 UniRef90 UPI0004627F3 UniRef90 UPI000287A8F4 UniRef90-UPI00034C2A5F UniRef90_K9AZZ5
UniRef90 U7QPJ4 UniRef90-F7QKM2
UniRef90-LONDY0 UniRef90-UPI0003F06508 UniRef90-UPIO0035C2522 UniRef90_D4KTS4 UniRef90 UPI00041A9D62 UniRef90-R5H3R6 UniRef90_UPI000476F040 UniRef90_H3GUF2 UniRef90 G5HQR5 UniRef90-V9WLD2 UniRef90-UPI00047A8696 UniRef90 C9P6Q3 UniRef90-D3EDH5 UniRef90_F4BMK8 UniRef90_J9VN80 UniRef90-J1ZP08 UniRef90_A9E76 UniRef90-A9BXS7 UniRef90 UPI000409612F UniRef90-UPI000255C737 UniRef90-D5T3G8 UniRef90 Q0FS42 UniRef90 UPI0003771B3A UniRef90-A0A023NYP2 UniRef90_Q0G1J1 UniRet90 H4F3M2 UniRef90-J3AK36 UniRef90-X7F577 UniRef90-S9Q7N UniRef90 BOVJHO UniRef90-B0P6H9 UniRef90-D8NUJ7 UniRef90-U6SNN5 UniRef90-A3UBQ0 UniRef90-B3MG78 UniRef90_R4YV38 UniRef90 A3VCW5 UniRef90-EORCY2 UniRef90_UPI00046A8E0 UniRef90_LONJ68 UniRef90 R9P557 UniRef90-E3CK82 UniRef90-G8UPM4 UniRef90 L7UE65 UniRef90-UPI000470766B UniRef90_D0CNR6

FESFVAFVRTKKQLAPA
P L N R V S V K

PRADANWR
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RKSI I S Y L S S I K
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RYYLI DFFERHNPYTPRVIS
REILAKWLQREQTISAKT
WEVCEEYLAAHSTVEPT
$R D I V R Y I V E Q G T I D D P Q A D G N W$ RQAIIDYIVSEKT 1 NPSADNNW WDVVEAHIRKQGTVT I
VTLTEA WMRQHAEPKPPLFEEE R VVFE
TEVMIDRQVKKM
 RDVL $\square$ RYIIKKLGTVTRAAN
RDIL
RKAVID Y L K
RKAIMEYAKRCN IV 】AE DEGR
RQTVADYLIFSTEENPETFDPSADNNW RDVIVRYI VEQGT $\square$ NPSADA
RDMI ELLELKRPG
WDVVEDHIRKQGTVTVS
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H QVLIN Y TT A VK T T N P T A D Q
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UniRef90 W87113 UniRef90-A0A011LXJ3 UniRef90-UPI000380855F UniRef90_UPI000466A42F UniRef90_UPI00031CEE9C UniRef90- C9NUT7 UniRef90-C6D8P5 UniRef90_UPIO0047109B3 UniRef90_UPI00031E8C18 UniRef90-W7BE69 UniRef90_UPIO00470171F UniRef90-C3NX96 UniRef90_V9ZV64 UniRef90_-S6EIN8 UniRef90-C6RHSO UniRef90-X0P901 UniRef90-W5VVN5
UniRef90-W5VWU4 UniRef90_UPIO003667D9D UniRef90_W5VVC9 UniRef90-B8J5R8 UniRef90-D88DTQ2 UniRef90-K8GE94 UniRef90_UPI000225B32C UniRef90_G4E347 UniRef90_UPI00035E7C38 UniRef90-F4FUE5 UniRef90-B6BBI3
 EVAH VRLPGSGGSDQHG SKLAGHIADAMLWYLNTDLA $V G K T D A P L H S Y F A L V A D D P S V Q I V S D A Q L W Y I E A A A P$ LGTSEVPLAGNNPDDRDRESNLGNLVADAFR YSVADVG
 $E V G E L K V E M R T R \quad D A Y K G M C D Y V N L V H T L C L G C P P A Q \underset{F}{V}$
LGQTSVY LDGRRSEVRTEETNDGNLSAEANLWYANVSVS EIGK $\square T E E L A N P R A T V R S N E T A L G N I I T D G M L A K A Q V V M A$ VGRTVANLNTFFG RVMDNKVTKWVNDAQLDWYANFI S
 $\square G N \square C E D L S E P L V H A P F K E T N F S K L L S R T L R E W C S A D C A A$ $\square G R \square A R Q L V H$ V GATDVFLEGRRAEVRTQATNLGNLTADAQFDATVA

VA LP H Q LE HNWYKPSEVSELFHEAACEWTEADTF $P$ VREQETELGGNLDAD DFGEDDT DDVV TVRLHDDLEARIDRESRLGNVLAAGLLRRTGAQI G

 ITGTLCEDMDLT QEVVRTRDSKIGYLFADAAQQFYSADI A I GKTSGLLYRRGNFNGTWD DLDCQGDMEERDAELA VGHAPDDWNATRDSRYRGECADANYMNDALVAEGAPDLA ELAVSEDLLYRRGNFNGT FDRLDCDALMEQVDAEIA LAESVAFLPEALKADPMQHSELSRMLTQALREWCNADCA
 QVGTTSAPDNRELLPAVYSVESPFGNLVAGAVRRYTGSDLS
 $\square A C A K H A L R H V R V P D D T G A S E D A P L V A E S F A Y T M N V E F A$


EVGQTDAPLHSYFALV ADDPSVQ\|VSNAQTWY $\square$ EAAAP

$R V A T V T G D L T R T S G T D$ EESTLGNVTADAFLWAANADLA LARTDSLLYRRGNFNGTWD DLICQGIIEERDTQIS GTLSVDFGDDWERETPFASFLAASLRLWANAEVG $\square A H A N K S L R H V R D P D E V G A S E L A P L V A E S F V H G H N A E F A$ $R L S R V I A R L D A P L P A L D E R E S P L G N L L A A G L R R H A D A E \square G$

GKSTVFLNGSREDVRTRETNFGNLTADANLWQARVLIS ELSDVVVHLPEK $\square$ A HAD R T L R H L R D DP DA E G G S E $\square$ A P L V A K A F V Y A L I GTLPEPLQNARRPGDNGSDNHGSLVAEGQYVWANVDFA VGETNSVLNRDLS MESTMDNFLLKSDSNVTGNKDC
K L A R $\square \mathrm{KTPMTTNL}$ TGNSRLVNEALHAIMEKAGTQAG
 LARTDGTLYRRGNFNGTGD
ELATTDALLYRRGNFNGT A VTEGVLYRRGNFNGT Y Y GVLDD H S FTR DCYF GNAPF $V G V T N V P L D S \| R T N V R A R S T L A G S L I A D D A L R D A S K G L V G$


\author{

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## UniRef90_A0A023VH16 UniRef90-I1DU82

 UniRef90_UPI0004681CB6 UniRef90_A0A016QLP0 UniRef90 UPI0003B31C65 UniRef90_L1QF10 UniRef90_R5BNM1 UniRef90_A4EE80 UniRef90_N6X1N8 UniRef90_A3IGL5 UniRef90_UPI00020D9A68 UniRef90_A6TKQ1 UniRef90_E0XQZ4 UniRef90_K6D6F0 UniRef90_G4Z9V0 UniRef90_A6TU63 UniRef90-A0YT32 UniRef90_Q7UWM1UniRef90_A0A031GJH UniRef90_W7CLQ9 UniRef90-14HUH9 UniRef90_UPI00036E01F5 UniRef90_B1HYS5 UniRef90_C2FRU1 UniRef90_UPI0002E18061
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UniRef90-14AH70 UniRef90-14AH70 UniRef90_A6FW70 UniRef90_Q2CHK8 UniRef90_E1SFI5 UniRef90_UPI00047D05FE UniRef90_R5GG75 UniRef90_UPIO004765FAA UniRef90_M4Z9F8 UniRef90_W2F158 UniRef90_UPI000367C57B UniRef90_UPI00042622B1 UniRef90-A0A059IMA1 UniRef90-X4UDT4 UniRef90_K3WGC5 UniRef90_I3CK34 UniRef90_HOPOV2 UniRef90-N4WC49 UniRef90_UPI000347433E UniRef90_T0BR41
UniRef90_S3AYL6 UniRef90_UPI00036992F6 UniRef90_L7P926 UniRef90_C9QFK1
UniRef90-W8Z113 UniRef90_A0A011LXJ3 UniRef90_UPI000380855F UniRef90_UPI000466A42F UniRef90_UPIO0031CEE9C UniRef90-C6D8P5 UniRef90_UPI00047109B3 UniRef90_UPI00031E8C18 UniRef90_W7BE69 UniRef90_UPIO00470171F UniRef90_C3NX96 UniRef90_V9ZV64 UniRef90-S6EIN8
UniRef90 C6RHS0 UniRef90_- X0P901 UniRef90_W5VVN5 UniRef90_W5VWU4 UniRef90-UPIO003667D9D UniRef90-W5VVC9 UniRef90_B8J5R8 UniRef90_K8GE94 UniRef90_UPI000225B32C UniRef90_G4E347 UniRef90_UPIO0035E7C38 UniRef90_F4FUE5 UniRef90_B6BBI3

## 

GTNDPTAYT
50
60







 A A A LLFA S E S N I K E G P V A Y G D I F G I Y K Y P N T L Y GVVEV T G A E
 GSAGVSDYT DVKA GNVALNNAADVYLYPNALYGVKMNGAD

 GTNNP LDYTNI PVGPLADKNMADIVHYDNTVATIKVTGAQ

 $V M N G G G \perp R G D V P A G N L S L G E V L S W S P F G N T M M T I Q T N G A S$
 F SPGFRWGTTVLPGPIT FEH IMDQTGGTYPVTRNEMSGAM

 | $L$ | $P$ | $S$ |
| :--- | :--- | :--- |
| $L$ | $G$ | $L$ |
| $L$ | $L$ | $E$ |
| $N$ | $G$ | $G$ |



 1 H N A G G V R T S L N P G DI S VA D I A K L L P P A V P I G V Y E L K G K D

 FK A G G R Y F Ti D V LS P GFR WGTSSLP DTPDITVEDLDHNGCAMTYPAYRNSMS GEM LT A P LDD F N V LLL K K G T I S L R R D L F K LLY R Y E N S L Y M M R L S G E E


 FRNGPGDFTYVPAGAIT LSNVADLY IVPNTLQVVKMNGAQ MSPGFRWGPSLDPGDITREDLYNNTAMTYPAYRSEMTGAQ
 L SPGFRWGTSILS GQUTMENVLDTCDTYPETYRREMTGSE




 IS P GFR WGT TLLP GDI TI D DLYTQMTYPN VYRLEFTGA Q H N A G G V R N S L N A G D V S V A D V A K LL L P F A V P I G V Y K I K G E F | $L V N S ~ G Q L L$ |  |
| ---: | :--- |
| $L$ | $G$ |
| $N$ | $D$ |

 LANS GLLLAPLSEGAVTRKDLLLCVPHPDKPCAVTDTGEQ I H N A G GVVRNSLNVGNVSVADI AKLLPFAVPDGVYQLKGK D






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







## UniRef90_A0A023VH16 UniRef90-I1DU82

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UniRef90_S3AYL6 UniRef90_UPI00036992F6 UniRef90_L7P926 UniRef90_C9QFK1
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UniRef90_UPI000470171F UniRef90-C3NX96 UniRef90_V9ZV64 UniRef90_S6EIN8 UniRef90-C6RHS0 UniRef90_X0P901 UniRef90_W5VVN5 UniRef90_W5VWU4 UniRef90_UPIO003667D9D UniRef90 W5VVC9 UniRef90_B8J5R8
UniRef90_D8DTQ2 UniRef90_K8GE94 UniRef90_UPI000225B32C UniRef90_G4E347 UniRef90_UPI00035E7C38 UniRef90_F4FUE5 UniRef90_B6BBI3
UniRef90_I8UF42
 L R ALL S QSVVA GAHTGKYPYVAGMRYTAKQNGPDQQQGRW

 L K E

 LVDLME YAVE E GATP GQFPQ】A GMRFSFDPSNT L
LRA S L E H T A QYFAVENGVLVVNPAWLTPKVEHVTK LKK K G
 L K D L E DVCDNLLFNPNPFFQVGGMSYRCAPKAAMGSSRID $L Q T V L L D T K D E D D P H F R G T V L G Q V V Y D G D D F A E N T D F I N D$




 LLA A L E Q S L LP E Y ID K P L Y G F G F R G K V L G T L LCVV

 L K L F L C GANNVITH QNGFYVHPS GFKYTYKCTTWHNHLTNR



 L K E WL E MSAGQF NTDDPTSKEPQQLVNPNYSRVRNLLKYQG | $L$ | $K$ | $A$ | $V$ | $L$ | $E$ | $D$ | $V$ | $C$ | $D$ | $N$ | $L$ | $F$ | $N$ | $P$ | $D$ | $P$ | $Y$ | $Y$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $I$ | $Q$ | $H$ | $G$ | $G$ | $D$ | $M$ |  |  |  |  |  |  |  |  |  |  |  |  |
| I | $A$ | $W$ | $L$ | $E$ | $K$ | $E$ | $L$ | $N$ | $N$ | $V$ | $F$ | $A$ | $K$ | $E$ | $A$ | $S$ | $K$ | $R$ |

 I VA WL E WA TRVFN TIDPSTTAGS QPLVTKMSGRIADVVRFEG I A A T L E GA DN NGT G DGSYPYTYN LSY DYDSMAPIGQRDH W
 L R D WL E R A A S CF H Q DR A F D TVVSGVTY R IDDPGAPPARFGPD G





 L K S IMME AVAP Y Y Q Q G G D MVVRM G GM S Y A I DV N Q TA G K R I S N LA E ALE GADDNATNNGSFPYTA GVVRFCYQADQPKGRRUTW MK K Y I K K GANF DN LN GYY VQP G Gl K Y T FK C T
IIKLILE DVCDNLFNPDPYRQQGGDMVRVGGNYVCDP TDDG $L Q K \vee L A Q G E K N S G T G G Y L Q L G G M A P N$
$L M E V I R R G A D P Q L T Q Q A F W G G Q D D R Y E D E T G H V R H A Y W Q G$ L RLI ME H SVVREGATPGQFPQVGGLDSFSFDPSRTAVRRNGQ

 L K E I L E DVCD NLI HK DPFYQ HGGDM
 I RLVALE QSLLEEYTRMEDRGFGWDERRPAGSRITSILRAGG L K EWL E CS ANY DVID GVNYQF DCKLIDNEAHRVINLLSFNG

 I A A ALE GAI NNATNNGSYPYTFNLNFEYAPEAPIGSRII GW



 V R A L L T E TI TATA HAGKFPYGGHLRYTFKETQWQTAEGQW
 FRQMMRYMLRD DA F LGEEFY QL S Q G DY S R S R Q E I V S L T Y Q G LWRLI K EMEKNRNFLDKFPQKGMGFRGKVFGELVYSGLRY L K DV L E DVA D NLF N P DP YYS H G G D M
 L K T $V$ K L
$V$ R AVL E DVVCDND


 | $L$ | E | E | L |
| :--- | :--- | :--- | :--- |
| L | L | R | A |
| K | K | E | L |
| L | E | E |  | I K E I L E D VC D N $\square$ F N P D P F F Q Q G G D M VRD G G LTTY T C S P K N LWRLI KEMEKNKNFDTKFPQKGMGFRGKYFGQLHYGFFHE



UniRef90 A0A023VH16
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UniRef90- L7P8Y1
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UniRef90 O2CHK8 UniRef90_O2CHK8
UniRef90 E1SFI5 UniRef90-UPI00047D05FE UniRef90-R5GG75 UniRef90_UPI0004765FAA UniRef90_M4Z9F8 UniRet90_U2FT58 UniRef90-W4HQK8 UniRee90-UPIO00367C57B UniRef90-UPIOO042622B1 UniRef90-A0A059IMA1 UniRef90-X4UDT4 UniRef90-K3WGC5 UniRef90- I3CK34 UniRef90_HoPOV2 UniRef90-N4WC49 UniRef90_UPI000347433E UniRef90-TOBR41 UniRef90-S3AYL6 UniRef90-UPIOOO36992F6 UniRef90_L7P926 UniRef90-C9QFK1 UniRef90-W8Z113 UniRef90-A0A011LXJ3 UniRef90-UPIIO00380855F UniRef90-UPIO00466A42F UniRef90-UPIOOO31CEE9C UniRef90 C9NUT7 UniRef90-C6D8P5 UniRef90_UPIOO047109B3 UniRef90_UP100031E8C18 UniRef90-W7BE69 UniRef90_UPIoo0470171F UniRef90-C3NX96 UniRef90-V9ZV64 UniRef90-S6EIN8 UniRef90-C6RHSO UniRef90-X0P901 UniRef90-W5VVN5 UniRef90-W5VWU4 UniRef90-UPIO003667D9D UniRef90-W5VVC9 UniRet90-B8J5R8 UniRef90-D8DTQ2 UniRef90-K8GE94
 QPLDDKARYTLVTTSYLADGNDGWQLLQQLQAEKTDRVDM


TS SDDMNRSYKVLIS DFMDS SKTE NSVANNE EVMENNDND RPFNFGETYNVAMTSYRANAEAGDDTDTDSERTVEYYPEDI QAVGDDD $\square$ F LVATNSFRAKGGGGFPT $\square A P A D \square A L M T T Q S V$

TDVQEDDYFDVAMNNYRAVGGGNYQDYAQSETILTGDQSV EPVTAEMEFVVVTNNYRATGGG

DHLKKGAEIILSSTDEN VVLTRTGALIEADKHYTVGGWASVNPDTEGPA!Y
SKIEFEKNYTLAGPDMFTFGHFFKEVQPQKQKRYFDPEFD E KKDSDEFVMALTNYLYS TEFVVIDNATVKVSEVEAD ESVMDDDTFNLAGNNYRYNGLLDSGIISNDAYFUSDPK S S KNVQDDQQYTLCIQEYHFKNNITAEQLTQLGNEKVLTTSA KPVDASQEFLIATNNYRASGGGNFPGLDGSKTVVASPDNE
 QPVEADRLYVI CVQDYHYQNSHKSLNLTPEENAKVVTYSS

 EPIEADRSYVVAGWASVNEGVEG E DALFDRPFRIAMTTYLAGGGER R WN GLP DAGGV GENS PLVY TQVDTQRMEAKEHYILADPDMEASVQEQPRADKGRM NELGLEQTYRVAKVDMETGGPMLPYGAEQQKRYYMPEWL KEVTADQEFIVVTNNYRANGK FPGVRDASLNQLLGLEN
KPLEMDRVYSDCACERDGDPDDMLCRFTGVMDTENTEYTL ESLELERLYT VGTDDMFTFGYLYPELSTLSDKQYFMPEL KPLDLTREFAVVTNNYRADGGGGFAALKDAEDLLRAPDTN QAVERERYYRGTSSAYTMKGKEGYEAIUQNMKGETVTDRSM QKVNRKQYTLVTNDYNLSGRENMEFMNMKTNKEITNVDM1 TLDTEAWFVLATNTYRASGSGPYPMLVDHDILDAPALDVV

## K

$\stackrel{A}{\top}$ $T V L P G T A Q V V V A V N S H R A$
$Q R \| S D M R L I V T G A A!D P A$ NMGTSSNGNRMRTLEVIDDSGN
 K PMP LDEQEFLIVTNNYRASGGGHFPGDTS DVIVYEDPEET MKLLKDGSPIEAGKSYTVAG WASVNEGTK QAVDADADYRGVSSAYTASGKEGYTALARTQHNQEDG

TADDMEKRYPVAGWATVGSQAEG KP Si EPSKTYRVALMEYLLSGQDYDT NTPGDKVINYGRDI HPIDDHQTYTLATAD MFTFGHDFPADARATTKFY PEFM VVGDPNRLYRLVTLNFLANGGDGYPDPRFAKNRVDLNGSE


QPVESNKDYTGTSSAYTMKGKEGYEA LNMQGELITTVSM SDLDDDTEY SVGTLDMFTFGVGYLSLKEGRDIRYFLPEL KPVDDKQEFLIATNNYRAYGGKFPGTGDSHIVFAAPDEN KSVKAGREYRUATNFFARNATPGFTADFDARNQDRSDYSG EPIDMQREYRIGTVD LFAFSPDFPELSQGKEYRFFLPEL
 QPINPNQEFVVVTNNYRGSG NFPGVRDAKEIIFYQDEN QPGDPNRTFRMVTNNFLAGGGDSYPF
VIM
EPISAFRKYRIVTHD EPGSAFRKYRUVTHD TFVFAPFFPITKQSEKEVYTPELL QAVDSEALYWGTSSAYTMKGKEGYDALLDMEGEMVTQDSM QDLVNGRRYRVVTNAYSANGNDGWQALARAQR
EELNAEKSYSVSYDTEQAVPKYD GENREKDEVTA


ALLEADRVYKVAGWAPVA
EEAKSAGNKQT
K P LDEASKTYRVATWASVS
EAARDAGGEPV NAFH LHQVYRVVMHSYRAHGGGSFSELPARMIYQSPHTQ QLLYDVAQFDLATDNFTANGGDNFATLANDRKFTLTGVTY K PLLDNEKVYSVVTADAFTFGRLLPEVAKSEKKTYILPEFD
$E \square G K R \square S N L R M V S S D K P L E A S K K Y T V G G W G S \square N P N V D P P \square$ ELVSPAKTYQ I AMPHY LFI FFPTLE $\quad$ G H NE L LYDENL

|  | 170 |
| :---: | :---: |
| UniRef90_A0A023VH16 |  |
| UniRef90-I1DU82 | V L R Q Q P A L Y P V K VE A |
| UniRef90_UPI0004681CB6 | RDVIVRYIVEK G T I S |
| UniRef90_A0A016QLP0 | REALEET Y L R E H GP Y T P P P A N |
| UniRef90_UPI0003B31C65 |  |
| UniRef90_L1QF10 | R NS\ME LTWK NEG\NFEVEN |
| UniRef90-R5BNM1 | RE IL Y D Y L R K N RVI D P AV |
| UniRef90_A4EE80 | $R G H L D D Y L T E S G T I A T P V \sqrt{H} A$ |
| UniRef90 ${ }^{-}$N6X1N8 |  |
| UniRef90-A3IGL5 |  |
| UniRef90_UPI00020D9A68 | QELLVAYFDTHNQL |
| UniRef90_A6TKQ1 | R NI I I D Y I R E M GEADP Q E E N |
| UniRef90-E0XQZ4 | DLLESS Y I T G K GVVT P S |
| UniRef90_K6D6F0 | R DLL K WKL Q |
| UniRef90-G4Z9V0 | R S AL E A Y I S R LS |
| UniRef90-A6TU63 |  |
| UniRef90_A0YT32 | QDVLEEYFSSHQNINSNV E GRLVQK |
| UniRef90_Q7UWM1 | Q D ALAEY L L A N |
| UniRef90-A0A031GJH0 | $R E L L D A Y V T Q Q K N L T R A$ |
| UniRef90_W7CLQ9 | R DVMTWKL K E K |
| UniRef90-14HUH9 | QGVLE E Y S T H QLLD GQV E GRWT F |
| UniRef90_UPI00036E01F5 | RDVLQEELA DPEAVAASAAPR |
| UniRef90-B1HYS5 | RQAVVD Y I M A K TIN P A A D N W |
| UniRef90-C2FRU1 | \QAAL T Y L N E |
| UniRef90-UPI0002E18061 | R D IL K S Q Q |
| UniRef90-M4BQW0 | A E ALE A Y V T K F S N GNVC $\square$ R S $\square \mathrm{E}$ Q R |
| UniRef90_K2LET4 | Y D LMENYI T R H K VI Did |
| UniRef90_A0A059IIG6 | REVLVRHI R A NPEIAA R P D G R |
| UniRef90-W8L737 | WDVVTDHL R D HETVS $\square$ S L N E P K L R |
| UniRef90_W4RT11 | P EFLRNLLE |
| UniRef90_S3FJ22 | R DVL R E T I M A R |
| UniRef90_UPI00037E165C | $R D L L R M E L Q$ |
| UniRef90-U5PBH7 |  |
| UniRef90_L7P8Y1 |  |
| UniRef90_UPI00045E740D | H Q A VK N Y LA E H S P VT P |
| UniRef90 C2WDW7 | R DVLAKML |
| UniRef90-A0A037UUT0 | R D AVFRYFR A S P TVVHVHDTT P |
| UniRef90_B8K9X8 | A DCFI A L L T EHPE |
| UniRef90-14AH70 | RKAVV V Y L E Q |
| UniRef90_L5MWM0 | REVI AS TI T D |
| UniRef90-A6FW70 | $R \mathrm{D}$ ALV V HVRR GPPワDA |
| UniRef90_Q2CHK8 | $R D V I V R Y \\| V E Q G T I S P T A D A$ |
| UniRef90-E1SFI5 | RAVVAAYI SAETKAHGEV QPKADNNWR |
| UniRef90_UPI00047D05FE | WEVVEAWL A R N P L VE |
| UniRef90_R5GG75 | R HYFMLI L Q K Y D P Y T P T |
| UniRef90_UPI0004765FAA |  |
| UniRef90 M 4 Z9F8 | WEVVSS Y L Q R Q K V |
| UniRef90 U2FT58 | R MVLLA F |
| UniRef90-W4HQK8 | WEVVENH!RRQGTVS |
| UniRef90_UPI000367C57B | RAVLA AYI SAETKKH GAVT P SADNNWR |
| UniRef90_UPI00042622B1 | $R N H V Q G Y L E S L G E \quad Q A Q A S D G \square 1 / 2 F K$ |
| UniRef90-A0A059IMA1 | WDVVEA WF K E NPEVV $\square$, |
| UniRef90-X4UDT4 | A D AF $\square$ R WARY L P A LT A M P R VE Y Q |
| UniRef90_K3WGC5 |  |
| UniRef90-I3CK34 | WDIVAE Y L R A E K VVK $\square$ K V N M P K |
| UniRef90-H0P0V2 | R S I L V V Y L Q N N |
| UniRef90-N4WC49 | R D L L |
| UniRef90-UPI000347433E | QDAL A E Y L LT N Y R T N P Y S VE Q D G R I |
| UniRef90_T0BR41 | REVLLARI HEEGRMERAATPR |
| UniRef90_S3AYL6 | R SRAI A Y L K E VK N GVYEPKVQ N N WK |
| UniRef90_UPI00036992F6 | R DVIVRY V D Q G T I N P |
| UniRef90_L7P926 |  |
| UniRef90-C9QFK1 | A DCF $\quad$ L L S K M P GVLNRDQR |
| UniRef90-W8Z113 | R HVLAEEL R S |
| UniRef90-A0A011LXJ3 | R QILANY I S TESKMHEQV SPKA D N W R |
| UniRef90_UPI000380855F | A D AL WKYMEAKSPVRPP |
| UniRef90_UPI000466A42F | Y D LMES Y LT R LG TVNVP D E |
| UniRef90-UPI00031CEE9C | R EVLA |
| UniRef90-C9NUT7 | A D CFI E L LT D |
| UniRef90-C6D8P5 | R DLL A A EL R EGHGMT A |
| UniRef90_UPI00047109B3 |  |
| UniRef90_UPI00031E8C18 | A NRV D L L GE TG DL T T G DVNRNGR |
| UniRef90-W7BE69 | R D I F A WKL K Q |
| UniRef90_UPI000470171F | R E AIL K V L Q R G |
| UniRef90-C3NX96 | A D A I ELLS D |
| UniRef90_V9ZV64 |  |
| UniRef90_S6EIN8 | IE A M K R Y L R D K G P TE |
| UniRef90_C6RHS0 | $L \mathrm{D}$ L L E Y L N S K A I R Q DV |
| UniRef90-X0P901 | R DVFGD Y L A K H Y P I N |
| UniRef90- W5VVN5 |  |
| UniRef90_W5VWU4 |  |
| UniRef90_UPI0003667D9D | WEVVEP WLQ S K K V I A P K L N E P A L K NV |
| UniRef90 W5VVC9 |  |
| UniRef90_B8J5R8 | WDVVGRWLRAQKTITPRTPN |
| UniRef90-D8DTQ2 |  |
| UniRef90_K8GE94 |  |
| UniRef90-UPI000225B32C | R D F L A D T L R E |
| UniRef90_G4E347 |  |
| UniRef90_UPI00035E7C38 | Y R L L E N Y \S N K K \LT |
| UniRef90-F4FUE5 | R DVFGDYLAKHYPLN |
| UniRef90-B6BBI3 | $R$ Q AVR D Y I A G Q LP P D P LA E A P |

## UniRef90_D1P6D4 <br> UniRef90_GOEJJ7

UniRef90-UPIooo34CA8EF UniRef90-UPIOO021971AE UniRef90_B7PW54
UniRef90-LOE2P8 UniRef90-141F90 UniRef90_J9FX17 UniRef90 W5VW71 UniRef90-L8LNL9 UniRef90_17LLG7 UniRef90 UPI00041BF296 UniRef90- B1B8Y4 UniRef90-A9G582 UniRef90-H1X847 UniRef90 D1KBDO UniRef90-A3N341 UniRef90-H8L8D8 UniRef90 Q3SEW2 UniRef90-W5ZNS4 UniRet90-A5CXN3 UniRef90 UPI0002EOD53E UniRef90 R 5 HH 70 UniRef90-F2QAFO UniRef90_DOJ5R9 UniRef90 L7P9B6 UniRef90-Q085V1 UniRef90-M4Q2J6 UniRef90 R9C5D7 UniRef90 ${ }^{-}$W5VXF7 UniRef90-W5VWT1 UniRef90 ${ }^{-}$AOAO29DOW8 UniRef90-B7IJF5 UniRef90-L8DW03 UniRef90 W5VWW7 UniRef90 ${ }^{-}$W3AOHg UniRef90-UPIOOO402157C UniRet90_O49W63
UniRef90 F2PF75 UniRef90-T0JU50 UniRef90-J7F6X5 UniRef90_D4YIH2 UniRef90 G4L607 UniRef90-Q0FNR4 UniRef90-UPI000262CA3F UniRef90 W4UKT2 UniRef90'UPI00034F486C UniRef90-ToRIF5 UniRef90 M4PZZ5 UniRef90 UPI0003715F4C UniRef90-L9XY12
UniRef90 V5ABX8 UniRef90 W5VWQ5 UniRef90-F2PFX1 UniRef90-W9VAG2 UniRef90- S5FWE7 UniRef90 UPI0003713ABA UniRef90-A5IRR1 UniRef90-K7S593 UniRef90 UPI0002197115 UniRef90-U2XEZ2 UniRef90 - Q89VN6 UniRef90 A0A059IJO5 UniRef90 W5VWQ9 UniRef90- R4ZPS6 UniRef90-W5VW32 UniRef90_W7DHY7 UniRef90 A9D334 UniRef90-UPI00046F5423 UniRet90_J7F547
UniRef90 UPI000477D332 UniRef90-B7P7V4
UniRef90-L7P964
UniRef90_Q8CPQ8

1
 VGRTESLLYRRGNFNGT FDDLICEALLSKRDAETA GQTDVFLNGQRGSVRTEETNDGNLTADSQRFYSQDQLS $V G E T R T G L N R N T V L$ EATMDNLLLQALLDLTGADMA VGNTDSLLNRSLA

MESTMDNFLLHSISHVTGNA\|C RAQQTSLGALCSRI RDAFGADGC
$R V \mathrm{~V} A E L P T A Y T N G L Q G E H R L I D L G L E A L K A R T H T D \square A$ $K L C T$ TEQTLYRRGNFMGTWDQVLVN SLAREEHSADFA


VGKADVALYSDAADPGATEGTSHNFTADAFREQAGADVG
 KLCTTE QTLYRRGNFMGTWDQVLVN SLREEYNADFS SDMGTKP HPGT
TGQSE VPYTLDDLKKQYSRP
GSTDFRMSTLFADV GDPGAl LGETSSLLYRRGNFNGTWD
$\square G Q T E S L L Y R R G N F N G S W D$
 S FLA A KMMETANADAA QIVNQAQQA YREASY DLICNALISERDAQUA DLICDA LLSEREAE AA LAKMLCEKLVSWCHSDCA



P SVQDQETPDSDFFHEVMLYYSKADVV
ELSEKVVADPGKDAHNWFDDSEIAAHVLNEAVCEWTGAETF KLAVTEGLLYRRGNFNGT FDQLLCDAMMEVKDAEDA

TRGYST $\quad$ HKAKVQDSAD MLLAESLFEFTNADCT LGKTKNTLYKRDTFF STFDQLI NDAIMDEMKCDI S 1 GKTESLLYRRGNFNGTWD
 GVSEVFLNGNKLSVENQEYSLIDEEALQAVKKRGKTQVA KLAKADRLLYRRGNFMGTWDTVGVIGCNANLWEYDADVVA

 LGTTDSLLYRRGN FNGTWD

VGRTEASLDRQS
FLESDWNALFADALRTYFGTELA KLATSEGLLYRRGNFNGSWD WQLVDGMAVKDAE:A KLALTEGLLYRRGNFNGTMDSDDQVILDALLAVKDAEDA KLAQVPVEIKKRRPGDRGTDSDVAPVVAEGQYYWANVDFS LAVAEGLYRGNFNGT LSQTSTGCFYTDALDQTISNSDIV ELGRADEALYRRGNFNGT HPFSQLLHDA QLAF DNDIT ADUPHTMTTSLTDDNELVDLGLKAISEKKGTTAA
 LAVADQLLYRRGNFNGT FDQLICDAQRAVGDAQTA QLVMDAMLFYAGADVA

 TGQTAEDQTपYRRGNFNG VG■TRGADHRATA园NA



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lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm


|  | 20 |
| :---: | :---: |
| UniRef90_D1P6D4 | V V E WLIE C S A G M F N Q WD G F R T Y D C Q V VNK D A N R $\square$ K Q VT Y Q G |
| UniRef90_G0EJJ7 | 1 K DAME Y S Y GRWF NTYNYESVA GLNYTVDVTKPNGEKID G |
| UniRef90_D6V8B3 |  |
| UniRef90_UPI00034CA8EF | LKTVLE DVA D NLFNPDPYYQQGGDMVRAMGQRISDMRLRG |
| UniRef90_UPI00021971AE | $V W R L V M E M E K N R L Y L R N H P Q K G M G F R G K \square F G E L R N D Y I N G$ |
| UniRef90_B7PW54 | L Y ELFERSVQRYAP DQEFLLQVSGFRVVYNVKNPPMHR |
| UniRef90_L0E2P8 | I K TI LE DVAD NLF HEDPFFQQGGDMVRVI GER\LEMEFD G |
| UniRef90_14IF90 | LK Gl L E Y G N P P A S Q GRFPQVGGMAFSFDLLDDPA G S R $\square$ K S |
| UniRef90_J9FXI7 | $L L D A L E W S A G T G E E C G G F \square Q V A G \square T Y K \square D G E W P T S V Q M D E$ |
| UniRef90_W5VW71 | L K EVLE DVADNLF NTDPYYQHGGDM |
| UniRef90_L8LNL9 |  |
| UniRef90_17LLG7 | L R A MME ENLERTFARDPYDQMGGYMKRCMGVNIQEFFAGG |
| UniRef90_UPI00041BF296 |  |
| UniRef90-B1B8Y4 |  |
| UniRef90_A9G582 |  |
| UniRef90_H1X847 |  |
| UniRef90_D1KBD0 |  |
| UniRef90_A3N341 | LKAYMNWSADYFD |
| UniRef90_H8L8D8 |  |
| UniRef90_G3CJN9 | $L$ RKAL R R SVE K Y HERGHFDQ H S GLLKVYYVANCQNCSVPR Y |
| UniRef90_Q3SEW2 | LK D DL E N NAA GSFNSD $\quad$ F K WT G G W |
| UniRef90_W5ZNS4 | MS R L I REMEKS RQF LR K F P $\quad$ R G M GFR G K $\square$ F GELLCY DFWQ G |
| UniRef90-A5CXN3 |  |
| UniRef90_UPI0002E0D53E | I H DIL E Y CYS HIE F S D GCTF WQ GVHYTDD M N A E P Y HRVT L |
| UniRef90_R5HH70 |  |
| UniRef90_F2QAF0 | I K IV LE DVGDNLL N P D P Y YR H G G D M |
| UniRef90-D0J5R9 |  |
| UniRef90_L7P9B6 | L HTVL E DVAD NLI N P D P Y Y Q H G G DM |
| UniRef90_Q085V1 | I DEALE S S $\quad$ N S AT N N G S F P Y P Y G LR Y F Y D G K R $\square \mathrm{K}$ G Q R D Q W |
| UniRef90_M4Q2J6 | L KVVLEDVADNDFNPDPYYQQG |
| UniRef90_R9C5D7 |  |
| UniRef90-W5VXF7 | I K DIL E D I C D NVVFNP D P Y Y Q H G G D M |
| UniRef90_W5VWT1 | LKVILLEDVA D NLLFNPDPYY Q H G G DM |
| UniRef90_C5UUU0 |  |
| UniRef90_A0A029D0W8 | 1 R DVLE Q Q WS GANANSPYQYAA NTSVSPRASNDM VA G |
| UniRef90_B7IJF5 | L K D Y ME WA A G Y F S SRANDFF G GVK Y E D L T K P Y G S R R T N |
| UniRef90_L8DW03 |  |
| UniRef90_W5VWW7 | I K V I L E DVCDNLF NPDPYKQHGG D M |
| UniRef90_W3AQH9 | LKHWMLR DETFTGDHTEFYQVSRGFYDQKTHSFLKFEYEG |
| UniRef90_UPI000402157C |  |
| UniRef90_Q49W63 |  |
| UniRef90_F2PF75 |  |
| UniRef90_T0JU50 |  |
| UniRef90_J7F6X5 | MKEILLEDVCDNLFNKDPFF |
| UniRef90-D4YIH2 | VSE YLNQUYP Q I A S R P DLQA M P $\square$ K GS GFR GR】F GQLM L |
| UniRef90_G4L607 | L VRMVLEMEKN RHFL R NFP |
| UniRef90_Q0FNR4 |  |
| UniRef90_UPI000262CA3F |  |
| UniRef90-W4UKT2 | L ED Y L E Y S A K Y |
| UniRef90_UPI00034F486C | 1 LEAL E R GVS E A W G Y K P F |
| UniRef90-T0RIF5 | FKKFLGTQ F SQSCANQSRSFESNGFYPQLSGVKAAFVCN |
| UniRef90-M4PZZ5 | LH T I M E DVA D NLF NP DPYY Q H |
| UniRef90_UPI0003715F4C | LEAICCQEIR G M GFR G K EF GQVLCS GFAYKNGK\\|VYNKQVI |
| UniRef90_L9XY12 | LL NHMEA F LT DNFTPYVVYEQED GRVRNYS S N |
| UniRef90_V5ABX8 | I K TVLE DVCDNWF NA D P Y Y Q Q G G D MVR\VS GKR |
| UniRef90_W5VWQ5 | I K ALL E D I CDNLF NPDPYY Q H GRGM |
| UniRef90_F2PFX1 | I K DL L Q E AVP E GA HA GKFPYGGGH\R Y S Y TE T TP HEKHPVW |
| UniRef90_W9VAG2 |  |
| UniRef90_S5FWE7 | I K DILLE DVVCDNL F N P D P Y |
| UniRef90_UPI0003713ABA |  |
| UniRef90_A5IRR1 |  |
| UniRef90_K7S593 | I K L I L E DVCDNLIFNKDPYYQH G |
| UniRef90_UPI0002197115 | L WEVVMEMEKNKDFLVRFEQKGMGFRGKYF GRLIV DFY H D |
| UniRef90-U2XEZ2 | L WRLLVYEMELVRPFMGFRGQQFGY DQYA WQA DQHELLVVHG |
| UniRef90_Q89VN6 | I K DVLE D $\square \mathrm{C}$ D NLLFNA D P Y Y Q Q G G D MVR A |
| UniRef90_A0A059IJ05 | I LAA ALA NGFSRAGTGGWFPR】AGMHVVGDPTAPPMARVAG |
| UniRef90-W5VWQ9 | LKLIL E DVA D NLLFNPDPFYQHGGD M |
| UniRef90_R4ZPS6 |  |
| UniRef90_W5VW32 | I KVI LESVADNLF NPDPYYQHGGD M |
| UniRef90_W7DHY7 | L EVLI Q E I I R K Q E LK D $\quad$ P L R GFGFR GEDF GAVLMKRWD G |
| UniRef90-A9D334 |  |
| UniRef90_UPI00046F5423 |  |
| UniRef90_J7F547 | L HVVLE DVAD NLT N P D P Y Y |
| UniRef90_UPI000477D332 | L WQL L E Q NLEKTY S P D P L CQVYFKVENPA GTRVQRVFVGB |
| UniRef90_B7P7V4 | LK QMFEHSVERFNR R G E F LQV S GMRVVY NLS LP S L Y R PVY |
| UniRef90_L7P964 | $V K N T L E D V A D N L F N A D P Y Y Q H G G D M$ |
| UniRef90_Q8CPQ8 |  |

[^1]

## UniRef90_D1P6D4 <br> UniRef90_G0EJJ7

UniRef90_UPI00034CA8EF
UniRef90_UPI00021971AE
UniRef90 B7PW54
UniRef90 LOE2P8
UniRef90_14IF90 UniRef90-J9FXI7 UniRef90 W5VW71 UniRef90-L8LNL9 UniRef90_17LLG7 UniRef90-UPI00041BF296 UniRef90-B1B8Y4 UniRef90_A9G582 UniRef90-H1X847 UniRef90 D1KBD0 UniRef90-A3N341 UniRef90-H8L8D8 UniRef90-G3CJN9 UniRef90 Q3SEW2 UniRef90-W5ZNS4 UniRef90-A5CXN3 UniRef90-UPI0002E0D53E UniRef90-R5HH70 UniRef90-F2QAF0 UniRef90-D0J5R9 UniRef90 L7P9B6 UniRef90_Q085V1 UniRef90-M4Q2J6 UniRef90 R9C5D7 UniRef90- W5VXF7 UniRef90-W5VWT1 UniRef90_C5UUU0 UniRef90 A0A029D0W8 UniRef90-B7IJF5 UniRef90-L8DW03 UniRef90_W5VWW7 UniRef90 W3AQH9 UniRef90-UPIO00402157C UniRef90-Q49W63 UniRef90 F2PF75 UniRef90-TOJU50 UniRef90-J7F6X5 UniRef90_D4YIH2 UniRef90_G4L607 UniRef90_Q0FNR4 UniRef90-UPI000262CA3F UniRef90 W4UKT2 UniRef90-UPI00034F486C UniRef90-T0RIF5 UniRef90_M4PZZ5 UniRef90 UPI0003715F4C UniRef90-L9XY12 UniRef90_V5ABX8 UniRef90 W5VWQ5 UniRef90 F2PFX1 UniRef90-W9VAG2 UniRef90-S5FWE7 UniRef90 UPI0003713ABA UniRef90-A5IRR1 UniRef90-K7S593 UniRef90 UPI0002197115 UniRef90-U2XEZ2 UniRef90_Q89VN6 UniRef90-A0A0591J05 UniRef90 W5VWQ9 UniRef90-R4ZPS6 UniRef90-W5VW32 UniRef90 W7DHY7 UniRef90 A9D334 UniRef90_UPI00046F5423 UniRef90-J7F547 UniRef90 UPI000477D332 UniRef90-B7P7V4 UniRef90_L7P964 UniRef90_Q8CPQ8
 RSFELDKEYKVA $\square N S Y R G S G G G G H L T Q G A G \square D L E T L Q N M D$ VADDPAKSYKVAGW
KLI EADKTYKVA
QELEKNKEYTLADDHY $\square$ F VP

KPLDPDKEYVVA GWASVQEQPAAGDGRKD LVI KDNRSFRMVTLSFLLDGGDGYTIPQRNRVNFAPDGTE K GVWVGAPYRVGYNYTLRDMGDGFNMFSGAVNVLDYVMED

GSR $\square$ Q N LTF S $\square$ S TQD F $\square A N G G D S Y P T$
$K R L D P D A V Y Q A A F V T S Q G V P A N Y$ GENREVLDTSA ELI DEKKKYTLGTLD MYTFGR\FPQFRYSKKEYMVPDLL TELDANKTYNVSYITEQAVPKYL $\quad$ LI DGSNRVYLETTA
 TPIDDNKSYKVSGWAQVGSIGNG

KPTDLDKNYTFTTVDHLM FVPFFPTDEAGKNEFLFPEF\| YSLNDDRTYSVVTTLFLSDGGDGYSMFKDATREQVYEEVD
$K P \square Q P E Q K Y T L T T V D H$ FQFVPFFPTDELVGEVEFLFPDL KRISNMKDDEGDADDYRVSGWAQVDSVGNGR EN KLDHMYRVSMTDYCYRNYKQY LENAVIHETGEITM K Q If $\square$ NKKYKCVIDSF $\square$ AD GGQGFKALQQAEK
KP ID TAQEFVIATNNYRATSGASFPKDDGSSADWASPDAN QT LESNK LY $\square \mathrm{G}$ VS SAYTAAGKEGYDALLHAHWQQMSNQTL KE $\square$ QADQEY $\square$ VTVPD MLT F GNFFPS $\square$ YRATKKYF $\square$ PEFM

TP TQDSDVLYVAVNNYRGGFKDGETVPEFVGKSEETPGLI SPLVDTKVYRVTVNSFDADGGDNFTVLKEGQNRVGGGQD


EEVPDDRVFTVGLQDYLKNLPDSFDLINKNHSTRAVATSC




DNENLDK I IT DDHLLY L PFFTELINKKHY DWGQPF QD DDPEKSYSFTTVDHFM F $\square$ PFFPT DE $\square A G K V E F L F P E \|$
 DAIDPAKTYKVTGWATVNNTPDG
 NKKDRLQLVVVDQYCF ASYFET $\square H S K K A E L L F P H L L$ K A $\square$ E A S K N Y K V V A S WAP V A A G VT G E P $\square$

$\square L L Q D N D Q V T L S D N D Y \square S S \quad V F P N L F P T T P T F S F P L T T$ DQUDLTKSYRVTMTDYCYRNYKNY LKNA DIHESYDETM ELVEPDKKYT円ALIDH YSFDPFFPADS DGKND DFYDETL QPVDRQQTYQUALLDHDLFIPFFPTLNSGQTE\|LFEAML KP LDPDR $\square Y R \square A T N D Y T L S R G D G S G A L G G G R V V V D N G R R M$ EKD IDAKEEVILVIVDQYYFASYFECLKTKKVDLLFPELL

EPVVLRRKYRIVTHDTFVYAPFFP IGKQAKQKVYTPELL


## 

NGLNEEDSYR DTMTDYCYR NYKMYLQEA VVDTYSE


| UniRef90_D1P6D4 | $\text { R S } \quad \text { LA A Y } \square \text { A K VS K EK GE VV }{ }^{180} \text { K A D N N W }$ |
| :---: | :---: |
| UniRef90_G0EJJ7 |  |
| UniRef90-D6V8B3 | WETVAS Y LRDRKS KPKSANSQVK\\|V |
| UniRef90_UPI00034CA8EF | WEHVEAWLKAQG |
| UniRef90-UPI00021971AE | RSVFGDYLSKKYP |
| UniRef90-B7PW54 |  |
| UniRef90-LOE2P8 | WDVVT D Y LR DRKTVR $\mathrm{V}^{\text {V }} \mathrm{D}$ D $\square \mathrm{N}$ |
| UniRef90_14IF90 | QDAFAEYLRAN |
| UniRef90-J9FXI7 | Y M V L A N Y IQ |
| UniRef90_W5VW71 |  |
| UniRef90-L8LNL9 |  |
| UniRef90-17LLG7 | DEALLERY\ A L G P V S A |
| UniRef90-UPI00041BF296 | RDII K N Y L E A |
| UniRef90-B1B8Y4 |  |
| UniRef90-A9G582 |  |
| UniRef90_H1X847 | REDFAAYLAE |
| UniRef90-D1KBD0 | WDVA A D Y L R K K H L |
| UniRef90_A3N341 |  |
| UniRef90-H8L8D8 | RS VVGD Y LK A HYP TK |
| UniRef90-G3CJN9 | LK V VANYLEQMSPVYTG $\square$ D T R I I |
| UniRef90-Q3SEW2 |  |
| UniRef90 ${ }^{-}$W5ZNS4 | R T V VANY L H A H P P ${ }_{\text {L }}$ |
| UniRef90-A5CXN3 | WDVAADYLRKQKHLN |
| UniRef90-UPI0002E0D53E | VELIS R NLLK D N |
| UniRef90_R5HH70 |  |
| UniRef90-F2QAF0 |  |
| UniRef90_D0J5R9 | R DVVIE Y VRKNP Q |
|  | PEAF $\square$ DFVSQHGH |
| UniRef90-M4Q2J6 |  |
| UniRef90-R9C5D7 | $R N \square L A D T L R D K$ |
| UniRef90-W5VXF7 |  |
| UniRef90-W5VWT1 |  |
| UniRef90-C5UUU0 | RDLIGKYDQE VKGGTDT PECDNNW |
| UniRef90-A0A029D0W8 |  |
| UniRef90-B7IJF5 |  |
| UniRef90_L8DW03 | R D L K WKLK K M |
| UniRef90-W5VWW7 |  |
| UniRef90-W3AQH9 | AQVLEEMLQKGQHQDAEV EDR】K】 |
| UniRef90_UPIO00402157C | VIDVE |
| UniRef90-Q49W63 UniRef90-F2PF75 |  |
| $\begin{aligned} & \text { UniRef90_F2PF75 } \\ & \text { UniRef90_TOJU50 } \end{aligned}$ |  |
| UniRef90-J7F6X5 |  |
| UniRef90-D4YIH2 | RELIA DK\QQTS SRDEPL |
| UniRef90_G4L607 | RTVLGNYLA QKYPLSSK |
| UniRef90-Q0FNR4 | G D |
| UniRef90_UPI000262CA3F | WD $\square$ IR D Y $\square$ K A N K A D |
| UniRef90-W4UKT2 |  |
| UniRef90-UPI00034F486C |  |
| UniRef90-T0RIF5 | K D L F D Q F V |
| UniRef90-M4PZZ5 |  |
| UniRef90-UPI0003715F4C | REVLE D Y L R K K S |
| UniRef90_L9XY12 |  |
| UniRef90-V5ABX8 | WDVMET Y L R S EKVIK |
| UniRef90_W5VWQ5 |  |
| UniRef90-F2PFX1 |  |
| UniRef90-W9VAG2 |  |
| UniRef90_S5FWE7 |  |
| UniRef90-UPIO003713ABA | A D Y L DE Y LT N N P ¢ $\square$ D |
| UniRef90-A5IRR1 | STLIAAEKLRD |
| UniRef90-K7S593 |  |
| UniRef90-UPIOOO2197115 | R DVFFGD Y L A K K F P L K |
| UniRef90-U2XEZ2 | R TVVGNYLTS Q WPVN |
| UniRef90_Q89VN6 |  |
| UniRef90-A0A0591J05 | A N D V I A Y $\square$ R A $\square \mathrm{K}$ T VKK $\quad \square \mathrm{HPDGR} \mathrm{\square S}$ |
| UniRef90-W5VWQ9 UniRef90_R4ZPS6 |  |
| UniRef90-R4ZPS6 UniRef90- W5VW32 | $R \mathrm{DVVAD} \mathrm{V}$ L |
| UniRef90-W5VW32 UniRef90-W7DHY7 |  |
| UniRef90-W7DHY7 | R D $\square$ F TWQLK K R |
| UniRef90-A9D334 | ANAFTRFMKREQTLE |
| UniRef90_UPI00046F5423 | PGAFIQF $\square$ SKNNRLD K L L P P V VNYQ |
| UniRef90-J7F547 |  |
| UniRef90_UPIO00477D332 | VA A MRA Y L D R HRPL A VA Q P E |
| UniRef90-B7P7V4 |  |
| UniRef90_L7P964 |  |
| UniRef90 Q8CPQ8 |  |

    UniRef90-Q8CPQ8
    ```
lupas }2
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm
```


[^0]:    lupas_21
    lupas_14
    lupas_28
    jnet
    cont
    sol25
    sol5
    sol0
    jhmm
    jpssm

[^1]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf
    sol 25
    sol5
    jhmm
    jpssm

