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##  <br>  



50 $Y Q G G M E A L A R G V K A K G G L V V G V T A P A F$
$G P G \square M E A G N K G A H R G K G T S V G L N D E L P$ GPGIIMEAGNKGAHRGKGTSVGLNIELPFPERRGPNPFVDL


 $\stackrel{L}{L}$ E - $\quad 7$


G $P$


GPGMEANKGA F GPGVMEAANR GA TEA G GMSVG L G I $\begin{array}{lllllllll}G P & G & V & M & A & A & N & K & G \\ G & S & S & Q & G & G & V & S & V \\ G & G & G & A & A & N & K & G A & K \\ S & E & G & G & S & V & G & L\end{array}$

$G N M G M G R V A D G A M E N N G S V T G I I P$
$G P G A M E A V N R G A R E A G G L S V G L G$
GSIGLMGLVSHAVHDGGRHVLGVI
GPGVMEAVNRGASEAGGLSVGLGII
$G P G V M E A A N R G A H E A G G R S V G C S$
$G S G G L M G L V S Q A V Y S G G R H V G G V$
$G P G C M E A A N K G A R E A G G V S V G G G$
GPGAMEAANKGAFEAGGTSVGLGI
 GPGMMEAANKGAQQAGGLSSVGLGG $G N V G L M G V V A D A V L H G G S P V I G I$
$G P G L M E A P N R G A A E D G G L S V G L G$
GNVGLMGIIADEVMRCGGETVGII
GPGIMEAANRGASEAGGMSVGLNI
GPGAMEAANRGANEAGGKSVGLGGI
GSVGLMGLVSRAVHNAGGHVTGVV
ACVGLMGAVADATLAAGGKAlGVLPDA
. GPGTMEAANRGAKREA
GPGTMEAGNRGAQEAGMAM GPGIMEAANKGA HAGKAPSVGLL GPGGMAANKGAFYGKGLSVGLN: GKAGLMGE GPGMEAANKGA $\qquad$ GPGVMEAANKGAlLHD GHVGLMGEDADAVLQAQGHAIGVI GPGAMEAANKGAADNDGDSVGLG
 SRTGLMGLLAESALEAGGKVIGVI GPGLMEAVSKGAHTHDGSTVGLGL SETGLMGTIANGVLSENGMVTGVL GPGAMEAANKGAVAAGGTSVGLG|E

GPG|MEAVNKGASKADGVSUGLGM
TSVGLMGAVADAVLA agQVGVL GPGAMEAANKGAVSAGGVSVGLGE GPGIIMEAANKGA FYGKSPSVGLNTQ GPGSMEAANRGAVEGKGLSIIGLGL GRVGLMGlIADAVLAAGGRAI GVI GNVGLMGEIATAAVEAGGEVIGVIPKLLVDKEVGHHGLTE ANVGMGAVADGALHAGGKVIGVLPNFLRSKEIABLGLTE AKI GVMGKVAGSVLSNKGKVIGVIPEFLKLKEVVHDGLSE GPGIMEAANKGA GPGLMEAANKGA GPG|MEAANKGA $G P G G E A A N K G A$
$G P G U A B N G A$



## QUERY <br> UniRef90_UPI00037D82E2 UniRef90_L8DF97 UniRef90_Q47SN3 UniRef90_UPI00037BB70A UniRef90_D2QBT1 UniRef90-F9YP77 <br> UniRef90 U1Z178 <br> UniRef90 D1CCE6 <br> UniRef90_UPI000255ABC7 <br> UniRef90_F1YEQ1 <br> UniRef90 E8R488 <br> UniRef90-UPI00038280FC <br> UniRef90_UPI000255EC56 <br> UniRef90 H6MWC0 <br> UniRef90 K0ZHS6 <br> UniRef90_G7GVA6 <br> UniRef90-I8QT82 <br> UniRef90_L0DBM5 <br> UniRef90_UPI00047E1B17 UniRef90_UPI00029AD97E UniRef90_U1AW74 UniRef90_UPI00035D113E UniRef90_UPI00039B2E90 UniRef90 UPI0004019A00 UniRef90-E4QIC5 UniRef90_UPI00037BCB60

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## A







 S I $\operatorname{N}$ F F D F F F F
 SI N F H Y F F V R K M M F V K Y S E A F V V FP G GF G T L D E L F E A L T L

 G I N F R Y F F V
 GMNFRRYF F V R K T M F V

 SIIDFRYFFVRKTMFVVYANGFVI FPGGFGTLDELFEALTL





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## П

GLN F R Y F F F V R K M M F V NLNFDYFFVRKTMFVKYAQGFVVLPG
 GVDFRYFFARKTMFVKYSSGFVVMPGGLGTFDELFEALCL SLRFRHFFTRKVTVKNSDAVVVMPGGFGTLDELSEVLTM
 SQNFKHFFMRKVMFVKYASAYVVMPGGFGTDDEVMEAVTL LLVVAYMHVRKVMFVRYS SMSFRYFFARKDMFIRYSSAFVVLP GIUFRYFFARKTMFLKYSQAFVCLP GLNFRYFFARKTMFDKYS GVEFRYFFVRKTMFVKYAQAFVALPG SLRFRYFFVRKVMFIRYAQAFVVFP GVNFRYFFARKTMFVKYACGFVVLP SLNFRHFFARKVMFVKYATAYVVLP GVEFRYFFVRKTMFVKYSQAFVVLP
SQTFRHFFARKYMFIKFATAYVVMP
GANFRYFFARKTMFVKYAQGFVVLP
LRVVNSMHERKALMAGLSDGFVA PR LVVTDSMHQRKMKMQEYSDGFVTLPG SLYFRHFFSRKVMFVKHASAYVVMP SLGFRHFFSRKVMFVKYAS
SLEFKYFVRKVMFVKYAS

## QUERY <br> UniRef90_UPI00037D82E2 UniRef90-L8DF97 UniRef90-UPIO0037BB70A UniRef90-D2QBT1 UniRef90-F9YP77 UniRef90 D1CCE6 UniRef90_UPI000255ABC7 UniRef90_F1YEQ1 UniRef90_E8R488 UniRef90_UPIO0038280FC UniRef90_UPIO00255EC56 UniRef90-H6MWC0 UniRef90-KOZHS6 UniRef90-G7GVA6 UniRef90-I8QT82 UniRef90 LODBM5

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UniRef90-K0C1A2 UniRef90-S9NYT8 UniRef90-D1A8R1 UniRef90-M7NCU8 UniRef90-A9WPE8 UniRef90-F2LE11
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140
150
160






 $V Q T R K V T Q F P I V L L G F W G P L L D W Q G F V S P A D V D L L Q V T D S$
 VQTRKVGSFPIVLTEYWSGLI A WEGTISSEDIDDVKIVVD VQTKKVGRFPIVLVGYWGGLI DWEGMI SDGDI DLL HLVDT VQTGKVTRFPVVLIGYWS GLVEWAGLI KESDLHILSITDD VQTRKI SRFPIVLFGYWNGLLDWHGAI SPEDMNLLIVTDS VQTEKVTSFPIVLTEFWGPLLDWEGMI SEKDVNLLHLTDS




 VQTRKVTSFPVVLFGYWQGLVDWYGCISEPDAQLMQVTDD
 $L Q T G K V T G F P V V L T G Y W A G L L D W A A R I K P G D L D L V T L T D D$ I QTRKIQNFPVVVVGYWQPLLEAQGMVAPTDLQLLTMYTDS LGUHKKPVGLLNVDGFYNSLLVDEGFI SQAARHIIISAHS VQTKKVTKFPVVLFGYWGGLMLAEGKINERDDRLLHVTDD I QTSKIKEFPVVLMGYWKPMLEFAGTISPSDRDLLLVTDT


 VQTRKVKEFPVVLVGFWSGLVDWEGVISADDPGLFHLADT $V Q T K K I T R F P V V L I G F W G G L L D K H G L I A D T D M E L L H V T D D$ LGYHNKP L GYHTKPDGLLNVEGFYDGLLSFEGFMQAAHAGLLRVSPD I QTNKDGRFPIVLVGFWSGLI DWFGLIMEEDGLNLYRIVDDN $V Q T R K V T K F P V I L Y G Y W S G L L D W E G K V A A A D L D L I Q V T S S$ LIMHRKPVGLLNVEGYYDSLLAFEGFIAPAARRIIVSAA T
 $V Q T Q K V T R F P I V L F G Y W G G L L V A Q G K A A E K D L M L F H V T D D$ I QTKKIAKFPIVLVGYWSGLLEWHHNASPDDLNNLIKLVDT $V Q T G K V T S F P I V L T D Y W T P L L G W Q G M D A P S D M D L V H L V D T$ MQTHKID LEPVVVLVGYWQGLLDWLGMANPDDDDLMRVVDT I Q GKGRKIPVVLVGFWSGLLDWQKMINADDGELDQVIDE VQTRR $\ P R F P L I L F G Y W T G L I$ KWMKFISEGDMELFRVTDD II GMHKKPDGLFNVNGFFDPLIVEKGFAKPENLELLITAGD
 MQTHK LGYHQKPDGLLNVAGYYDPLLAMEGFMRHDYIGLLQVESD
 VQTRKVTSFPVILMGFWSPLI DWTGKLTEEEAGLI SLTDD $V$ QTKKVTSFPIVLVGFWSGLLVAEGMIDQADLDLDFVTDD LGFHSKPCGLLNVDGYYDKLLVEEGFLKDMHREKLLVAET RQTSKI QQYPIVLVGFWDGLLVAEGMVSPDEVDIIQVVED LGLHKKPDGILNIDGFYDDLMVDKGFLKQVNRDMLQISNT I QTEKIRRFPVVLAGHWSGLLLEPEMVSNDDVQLLRLADD VQTKKVTSFPIVLTDYWGGLLDWHGTISPADLDLVTMTDD VQTGKTGHFPIVLTDYWSGLVDWNGYI SEPDMHLFKLTDD VQTGKTRKDPIILKEFWNGLI DWFGTLKKEDDDLFQLCET LLGLHHKPDGLLNVADFYGPLLAEEGFILEARAQPFVHDAS VQTGKVTRFPIVLVGFWGGLVQWSGKI RDTDLELI HLTDD
 VQTHKVTSFPIVLI GFWGPMLVADGLVSPKDLNII SVVDS LGYHRKPVALLNVEGFYDPLVVEEGFMAGSYVESLCIDAN LGMHKKPCGLLNVVGYYDSLMAEEFFVRPENVKMIMMEED

 VQTQKTQRIPIVLTPFWSGLLQWQGTISPQDMDLFVLLDE


| QUERY | पRRFLRS |
| :---: | :---: |
| UniRef90_UP100037D82E2 | ADEAMEHLNKF |
| UniRef90-L8DF97 | VDEAVR |
| UniRet90-Q47SN3 | PDDV |
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| UniRef90-U1Z1 | PAEAVEYV |
| UniRef90-D1C | AEDVVQ1INE |
| UniRef90-UP1000255ABC7 | ADEVVE! I DAF |
| UniRef90-FY | PAEAVEI |
| UniRet90-E8R4 | AAEARDAl |
| UniRef90-UPIO0038280FC | VSEAVE ${ }^{\text {P }}$ |
| UniRef90-UPIO00255EC56 | $\checkmark$ DEVVRWV |
| UniRef90-H6MWC0 | PDEAVEV |
| UniRef90 KOZHS6 | PAEAVR ${ }^{\text {P }}$ |
| $\begin{aligned} & \text { UniRef90_G7GVA6 } \\ & \text { UniRef90_8QT82 } \end{aligned}$ | AEEAVEREVK |
| UniRef90-LODBM5 | IDEARDV |
| UniRef90-UP100047E1B17 | AEEAVEL |
| UniRef90-UPI00029AD97E | VPEAVEY |
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UniRef90 G8QJ16 UniRef90_A9AJM0 UniRef90-F8A2P6 UniRef90-M5TUA0 UniRef90-F5LLH2 UniRef90_HOJJX2 UniRef90_UPI0002B42D26 UniRef90-A0LZ21 UniRef90_UPI000409C01F UniRef90-UPI0003F4F067 UniRef90_K6VWJ3 UniRef90_B3EHY3 UniRef90-A4G4H0 UniRef90-Q6SGM2 UniRef90_UPIO00376C4BE UniRef90-Q1PUX4 UniRef90_UPIO003B65D45 UniRef90_A6E930 UniRef90-G9ZCU3 UniRef90_UPI000471DA28 UniRef90- Q1IJ66 UniRef90-M3A8V0 UniRef90-D7THY2 UniRef90-M0SKS6 UniRef90-E4RZM9 UniRef90-B4RHA6 UniRef90_Q6AMK3
UniRef90_UPIO00475DA5B UniRef90-UPI0004201490 UniRef90-H8FSF7 UniRef90_G4SU11 UniRef90_I4EHNO SVVT $\quad$ V C G S S P G K N P S Y Q L A A D



NA/V



 AVSIFGSARLNPDDEYYRMAYDISNSLSRSGFNII TGG AI CVVFGSARTPEGTQEYEDGRKIGELLANKGYAVITGG R R
 K R TVVT YGG M K MKRICIY AVTVFGS SVSIFGS

MKSICVYC RI CVEC

 VRSLCVYCGSSSRVDERYKTAAARLGALIAARGLQLVYGG VRSICVFCGSRPGNHPEYTKAAEQLGTELGRRGUTLVYGG MQSVCVYCGSSYGTRSEYKAGAQALGQAMAERDIALIYGG MRRICVF LGSNAGNRPEYREAAVAFGTRLAREGIGLVYGG IKQVCVYSASSTQDPQVYFETAQELGRLLAERGINLINGA VTVFGSARFGEDHPYYHVAREFGRRIAAAGFTTMTGG MRRICVFCGSSMG\|SPRYAEQAAALGKLLAQRGTGLVYGG AVAVFGSARLLGEGTDEAALAVEIARGI ASRGVGVITGG MKNIVVFCGSAAGSQPVYAETARRTGELIARRGHGLVYGG RVAYCGSRTGNNPIYDEKADELGRVLAEHGDGVVYGG MNS SMFGSAR TEHSPYYQHTVTLAQMLAKNNFA I SGG
 MKRICVFCGSSFGNRPEYRQAAEGLGTLLAREGTELVYGG MKAVCVYCGSASGARPVYTEAARAFGRALVDAGLTLVYGG AVSVFGSARTPATEPEFALAVDVAARLVEAGYAVITGG RKVTVFGSARTAPDQPDYMSAVDLGRRMAAHGWMVITGA AVSIFGSARVKPDDPVYKSARTMGTMIAORNIAVITGG DKTVCVFCGAKPGASPVFAEAAAHLGRTLAERGLTLVYGG TKNLAVFCASSDGNDRETFDNAYTVGKKMAENDI RLVYGG MKSLAVFCGASTGNNPVYVTAARALGKLLAEQGITLVFGG
 DK S GVYCGSAPGDLPEYAAAATQFGRLLALRGGEELVFGG MKSLCVYCGSSFGAKPVYADAARTLAGEMVRQDIALVYGG AVVSIFGSARSKPDAWEYVAAHDLARMLASEGLTVVTGG MK S CVFAGSNLGAHEDYKHAAVQLGRYLAEHQYRLIYGG VKRICVFCGSNSGQRPAYKDAAKKLGKALTARGDGLVYGG MKRITVFCGSSFGTEKEYEQQAYLLGKTLAERSIGVVYGG SVSIFGSARDPPDHSVYQQTQEI AKRLSDAGFSVVSGG MQS:CVFAGSNDGRSADYREQAVGLGTTLAKQGDRLVYGG AVTVFGSARFHEGHKYYDLGCEVGRELAKAGFAVLTGG

## UniRef90 E2MUA8

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UniRef90-G2DQ26
UniRef90-F6FZD2 UniRef90-101BG8 UniRef90_UPIOOO3B55306 UniRef90-A5V019 UniRef90-R5LH90 UniRef90-D8RMA3 UniRef90-UP1000364BCC4 UniRet90_K9APW3
UniRef90- F5S488 UniRef90_UPI0003628B8A UniRef90-D6SMF6 UniRef90-UPI000373BAD8 UniRef90 UPIOOO4626EBD UniRef90-S8DOY1 UniRef90-M4D535 UniRef90-M1P8M8 UniRef90-R9CEH9 UniRef90-G7H447 UniRef90-D0L1E1 UniRef90 D5COV5 UniRef90 QOYUG1 UniRef90-H1YAV7
UniRef90 D8J1Y2 UniRef90-K3XL00 UniRef90-_1 GPC1 UniRef90 Ll7FHXO UniRef90-UPIO00407025F UniRef90_UPIO0040EB915 UniRef90-L7UE90 UniRef90 L1PLIO UniRef90_UPI0004676D3A UniRef90-D7AAI2 UniRet90_J9GPB4 UniRef90- V4SNU4 UniRef90-UP1000402B9CA UniRef90-G0G3A6 UniRef90-UPI0002F5AD22 UniRet90-UPIOOO2F5E115 UniRef90_UPIO00289410F UniRef90-A4CAN2 UniRef90-N8YMU1 UniRef90-U3GU80 UniRef90-G8QJ16 UniRef90_A9AJMO UniRef90_-F8A2P6 UniRef90-M5TUAO UniRef90-D1NRZ2 UniRef90-HOJJX2 UniRee90_UPI0002B42D26 UniRef90-A0LZ21 UniRet90-UPIO00409C01F UniRef90-UPIO003F4F067 UniRef90_K6VWJ3 UniRef90_B3EHY3 UniRef90-A4G4HO
UniRef90
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50
60 GSLGLMGKVAEAVHNGGGHVGGGI ETMLVHEQHLNDWVDL GNIGLMGTIATAVLEHGGEVVGVIPSFLKNLEGAHPGLTE

## G <br> <br> G

 <br> <br> G} A GVGTEMANKGAYEAGGKSVGLNI GGGIMEAANLGAADENGTSVGLNI E


## G

## G



ANVGLMGDVANAVLEAGGRVVGVMPDF

GPGVMEAANKGAHDHDGASVGLGIE
GSIGLMGLVSQAVHDGGRHVIVIPKTLMPREQALNQWVNL
 SRGGMGEDANEVLNNKGKVI GVMPKRLF SGEMVHNNLTE GPGSMESVNRGARQAGARSUGLGBE LPFEQGLNPFID

G
GSVGLMGGLIASEVMQLLGGEATGVI
GSGGLMGLVSKAVHDGGRHVLGVIPSALCPQEVSGETLGE GPGLMAAANKGAYTGNG ISVGLNDVLPREQUPNYQND GRVGLMGLVADAALGAGGRVVGIIPEHLQALEVEHTGLTE GPGIMEAANKGAWEAGGTSVGLGIE LPHEQGMNEWVNV GRVGLMGT TADA乌LAAGGRAI GVIPQLLVDKEVAHTGLTA ASVGLMGALADAALAAGGEVIGVIPRGLLEREVAHKGLGD GSVGLMGLISEEVHRGGRHVLGVIPKAMMEKELTGVTLGE ASVGTMGVVADAALAAGGEVIGVIPEALSVVEMAAGLTE GHVGLMGTVADAALNAGGTVIGVITDFLMAKEVGHGGVTE ANNGVMGAVADAALAAGGEVIGVTPAFEEWNEVTHLGLTE GRSGLMGVVADSADQAGGQVIGVIPNALVDRELAHTGLTA GNVGLMGAVADACMAAGGSVTGVIPQSLMDKEVGHPGLTR GPGMEAANKGAKQAGGVSVGLG EGMLEEGMNDFVDV GGGIMEAGHKGA GRDASMGLN ASVGLIMGAVADAVLEAGGEVVGVIP GKVGMMGVVADAALAAGGEVIGII A GSVGLMGLISKTVFSGGSHVLGVIPKALKTAELGHTGCTL SKGLMGQVAKGAMEHGGKATGVIPDFLKTKEVVHEGVGE GKVIMGAI ADAVLETGGKAVGVIPRALVA REVAHPNLTQ ANVGMGAVADGALQNGGEVIGVLPHFLQSKEIAHSGLTE GNVGMGAVADGALDAGGRVTGVIPRRLQE KEVAHKNLTE GNVGLMGVIANEVLRLGGTATGVDPQALLDKEVGHTQLTH ATVGLMGALADSVMQAGGRVIGVLPHFLKQREIEHTRLTE GPGVMEAGNSGAKGQPGASVGLNIEE LPHEQLANPYLDD SRIGLMGEAANAAMAAGGEVIGVMPSGLFAGEMVHRELTK GPGLMAAANQGCRDAGGRSVGLHIH LPDEQEANPYLSV ANVGMGA $\square$ ANGA $D E N N G A V G V P H E L Q N K E D H E G L T E$ GPGVMEAANKGAVYAGGKGLSVGVNDVLPHEQSSNAFQDI SSYGLMGAVADAVLEHGGQVTGIMPTGILRRGEVVHTGLTE GPGMMEAANRGAKEAGG ASLGLNLILPFEQAPNPYVDQ GNVGLMGVVADAALAAGGRVIGVIPESMLKWEVGHPNLTE ASDGLMGQVADAVVDHGGETVGVIPEFMLDYEIAHHRLTE GSAGLMGLVSKTVFDGGCHVLGVVPTALLPNEVSGET:GD GPGDMEAANRGAKDAGGPSVACNIEEADVHEQHANPYLDK GPGIMEAANKGAYEAGGLSAGLNVD LPHEQESNPYLNY GPGVMEAANKGCFEAGGHSDGLNIK KALPHEMDNVYQSE GNVGLMGVIADAVLAAGGRAIGVIPDAMVGREVSHQGLTE

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UniRef90_C7PR73 UniRef90_E3I6I0 UniRef90_F4C5I2 UniRef90_UPI000382796C UniRef90_B8FIZ4 UniRef90-I1JT41 UniRef90_K2GZ79 UniRef90_G2DQ26 UniRef90_F6FZD2 UniRef90-IOIBG8 UniRef90_UPI0003B55306 UniRef90_A5VOI9 UniRef90_R5LH90 UniRef90-D8RMA3 UniRef90_UPI000364BCC4 UniRef90_K9APW3 UniRef90_F5S488 UniRef90-UPI0003628B8A UniRef90_D6SMF6 UniRef90_UPI000373BAD8 UniRef90_UPIO004626EBD UniRef90_S8D0Y1 UniRef90-M4D535 UniRef90-M1P8M8 UniRef90_R9CEH9 UniRef90_G7H447 UniRef90_D0L1E1 UniRef90_D5C0V5 UniRef90_Q0YUG1 UniRef90-H1YAV7
UniRef90_D8J1Y2 UniRef90_K3XL00 UniRef90_I1GPC1 UniRef90_L7FHX0 UniRef90-UPI000407025F UniRef90_UPI00040EB915 UniRef90_L7UE90 UniRef90_L1PLI0 UniRef90_UPI0004676D3A UniRef90_D7AAI2 UniRef90_J9GPB4 UniRef90 ${ }^{-}$V4SNU4 UniRef90_UPIO00402B9CA UniRef90_G0G3A6 UniRef90_UPI0002F5AD22 UniRef90_UPI0002F5E115 UniRef90_UPI000289410F UniRef90-A4CAN2 UniRef90_N8YMU1 UniRef90_U3GU80 UniRef90_G8QJ16 UniRef90_A9AJM0 UniRef90_F8A2P6 UniRef90-M5TUA0 UniRef90_D1NRZ2 UniRef90_HOJJX2 UniRef90_UPI0002B42D26 UniRef90_A0LZ21 UniRef90_UPI000409C01F UniRef90_UPI0003F4F067 UniRef90_K6VWJ3 UniRef90_B3EHY3 UniRef90_A4G4H0
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UniRef90_I4EHN0

GMNFRYFFVVRKTMFLKYSQAF\||CDPGFGT|LELFES|LVM








 WVVYM K H F F L L R K K V L L V
 EI KFRYFFARKVMFVKYAKALI I FPGGFGTMDEMFETLTLL
 $G V N F R Y F F V R K T M F L K Y S R G F V V M P G G F G T L D E L E F E A F T M$ TLTFENFPSRKAMLVNHSFAFVVMI


HYFFTRKTMFMRYS



SLHFQHFFARKVMFVKYASAYVVMP
AV N F R H F F S R K V M F VVK Y A S A Y V V L P

LHIVKDMHERKAMMAELSDGFVAMPG

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

VG
LEVVADDHERKARMAES GDAFVVALPGGLGTAEEVELEAWAQ

 GI NFRYFFARKTMFMKYS LHVVPDMHVRKKKMADLAAEGFI AMP G



## 


 GVVVPDMHHRKKMMADLADAFVAMPGGAGTGEEEFFETWAAQ
 GL NFRYFFVRKTMFVKYS S GF I I CP
 LITTTAQDMHER K LLTMMNE LTS D


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R $\begin{array}{lllllllllll} & D & \text { G M H A R K A K M G E L }\end{array}$
 LVEVADMHERKATMNRUANAYVVMP
 LKIVSSMHERKSEMAKRADAF LIKVADMHERKSEMAKCADAFIVALP LVVVNSMHERKWRMAELSDGFLC AL HFKYFFVRKVMLVKYSRGF CMP SLYFKYFVSRKTTFFMNSAAYIMMP LHVVESMHARKAMMADLADGF: AMP
KIVGSMHERKALMADLADGFI ALP

## UniRef90 E2MUA8

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UniRef90 G7H447 UniRef90_G7H447
UniRef90_D0L1E1 UniRef90-D5C0V5 UniRef90_Q0YUG1 UniRef90-H1YAV7
UniRef90 D8J1Y2 UniRef90_K3XL00 UniRef90_I1GPC1 UniRef90_L7FHX0 UniRef90_UPI000407025F UniRef90_UPI00040EB915 UniRef90_L7UE90
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UniRef90_Q6AMK3
UniRef90_UPIO00475DA5B
UniRef90_UPI0004201490
UniRef90_H8FSF7
UniRef90_G4SU11
UniRef90_I4EHN0
 LGIHAKPVGLLNVDGYYDFLLAFDGFIIRPAQRHLFVSAPD LKLHPHPVGUNVAGFFDPGQQMAGFMPPANMDLELCQSAK GYYDKPIGLGNVGGYYDPGAEQGFLSPAQHGALEVGTD G GLHANPCGLLDVADYYAGLQREEGFVSADHRSAVEV EDD
 AQDHEKPCALLNVNGFYDGLVVAQGFLRPLHRDMLIVADE ILGLHTKPTGLLNSGGFYDSLLVDEQFLRQPHRDLVLADAD |LGDHDKPVGLLVVDGYYNSGLAWEGFVTPAARHIIVSADD VGTGKDASFPIVLFGYWSGLVDWEGCIGPADMKLI QVIDS $V Q T G K T P K R P I V L V G F W Q G L L E W N R L I S P E D M D L I R L I D D$
$V Q T G K S R S V P V V M F G F W K G L E W F G L I A E H D L D I M R I V D E ~$ IQQGKSRSPFPVVCVGFWDGLLDWFGLIAEHDLDLMRVVDE IQTHKIKNFPVVCFGYHEELLQKHRTISAADLDLEHVTDD VQTGKVRNFPIILSTYWNGLLNWMRKIAAADDDELEVSDS
 VQTGKVTSFPIVLGGYWRGLVDWKGLISPKDMDLFLVTDS Q QTRKQPCPVVLVGFWQGLLDWQNLI HADDFDLDYVLDD LGLHHKPCGLLNINRYYDPLMAKERFMQEKYRSAVLIDED VQTHKTPARTIVLYGYWGGLLDWEGKIKYEDLDNFIVTDD VQTRKDKKFPIVLVGYWNGLLDWAGYIAAEDPDMFRVANT LGMHRKPVGLLNVDGYYNSLLVDEGF:SPTARRDFVSAPT QTQRTEPFPILVGFWGGLDWNGTVSKTDRDLIYMMDD VGDHKKPDGVLNISGFFDPLIHDEGFMRESNLKLISISDS VQTGKSRRIPIILVGFWSGLLVDEAMINGSDGDLLTVVDT VQTGKSRRIPDLLSSFWAGLIDWEGMVDSHDLDLEKVLDE IQTGKSERFPVILMGYWDGMLQEKGYISEEDLGFIYLEES GFHYKPRCLYNVNGFYDNLIAFQRFVSSDQSGLMMHEAD LGHDKPVGLLNVDGYYDPLLATEGF:KQDCRDIVVSAPT LGUHNKPVGLLNVDGYYNSLLVEEGFI DAAERNLFVLADT AQTGKKPPRP DLVGFWQGLADWKGMIAPQDLDLFRICDD LKLHDKPVVFVDIDGYWRPFLVAQGFCRKEHRDLFQVVET VGTGKVHSFPIVLVGYWGGLMKESGMLSSNDALPLLHVVDS LGYHDKPMGLLNAGFYDPLVADEGF RPAYDDLLQSYHD GSHEKPCALFDIDGYYERLLAEEGFMRPAHRDMLLVADD GGUHNPVGLMNVEGYYDPGLNFEGFMYPSQRSSVVSASN LGGHGKPDGLVDVDGYYAPLMTFEGFLKDGYRQLLLADAD LGDHAKPIGVVNTEGYYDGLMVAQGFLKPKYRELVLVGDT LGQQDKAVCLYNVNHFYEPLMVEEGFMPTEHLELLHMLET VGDHQKPCAFLNIDGFYDGLVVNGFSQARFVEKLIVADN VQTGKDTHYPIVGTEFWGGLLVAEGMDSPDDTDLFIVTDS
 VQTHKVIQFPIVLVGYWQGLLDWRGLIGRADLLELLRVVDT LQTGKQTMIPLVLLDYWKDLLLNNGMISPEEDALYKITNS VQTHKVRYMPVALFGYWEGLTEWHGMISQDDPSLFIVTDD LGYHAKPMGLLEDDGFYAQLVVAGFVAAPHRAMLQVEES GMHDKPVGLLNVDGYYDSLLAEEGFIDNSARKIVVIANM GLHRKPIGLLNINGFYDDLINAKGLLKODNLDILLISDN LG|LNHPCAFLNTNGFYSYLIVEEGFVREERLSNLIVTAD LGLHKKPMAVLNDNGFYDALLVSKGFLKETNEEKLLSGNT GFHRKPCAFLNVAGFYSGLMVEQRFVKDEHYRSLIVDSD GGHEKPVGVLNVDGFYDGLMAFQGFVKANQAALMMHEKS LGLHQKPCGLLNVNHYYDPGMAREQFMQEKHHS 1 MLNATS

## 5

 QTRRIKPFPIVLMDHWGLL GHKKPDGILNLNGFYGGLLDWF GYMGEEDGGLFLLTDN IQTGKTRKIPVILSDFWRGLLAWMGLITAEDMALVELVNE G GHTKPIGLLNVNGYYDPLVVREGFAGETHQNLIRVAEQ LGIHSMPGVIVNVNGFYDGLAVREGFAGEGAQNLIVVAEQ QCGKDGPFPLILDGFWSGVRDFEGAI GMEDTGFARITDS GGHSKPDGFLDVAGYFERLMAGEGFVKARHREMAAVHHD LOHQKPMMLYNVNGFYNALI AQEGFLPPQHRAKLIICNH GIDHHKPVGLLNVDGYYDSLLAEQGF EDSARHIVASAES LQTEKDEQFPVVVFGYHDHMMVDQKTISGKDPDLFIVTDS VQTNRDAPFPIVLYGFWGGLVEWHGN:DAADLDAFVVLDD LQTGKAHRAPIVFVGFWRGLVDWNGYUSAPDLDLFIIEDE GFHRKPDGLLDVESYYEPLLSAEGFLKPESRRLLLAHTD

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APSLVRKLEE


TAEELLDRFAD

PGALLLADE
AEEAAGHIFKF
 AQDLMCKMEE


 | $L$ | $D$ | $E$ | $A$ | $V$ | $A$ | $Q$ | $Q$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 1 | $A$ | $E$ | $A$ | $T$ | $E$ | $Y$ | $R$ | VDEVRDL




 A D EVVVDLIKN A E E AVVRIV


 PAEVVAVLE $P Q T V V S_{T}$ F DF PQEVVDAI

 A A E LLEKKME

AEEVVAQL EDEIVAHV EVE E V V F G A I PS ELVVDRM
P E E AVVEIV PABALEAL
 PEEAL NLL

 AEESVLDALN PEDALRL
$\qquad$ 1 GDILKA
 P A A L L K R M
P A GLL
D R L

VDEAVDELLT F
PAKLLE Q
PEEAV
PTALLDAL
ADELI KRMEE
FEDLLEKMRSF EADLLHKMKN DDEVLQKMDS
IEQLLQQFDQ
GARLIDRI ASELL HRLQQT PEGILQQFAE
AEEAAA
PAELLQLMES
PDELLQML
TDEAVEHGRK
DE D LVLNKMES

PKEAVELV
PAT LLA LLET

A E ELLLRKMEE
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LEALLES
PVGLLAAMGGF
$P K Q L D A$
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UniRef90_Q2KXZ4 UniRef90_B8DNS3
UniRef90-UPIO003736850 UniRef90 ${ }^{-14 M C W 1}$ UniRef90-Q1D3H6 UniRef90-ETRTRO
UniRef90 B9GY77 UniRef90_UPIO003A0AA51 UniRef90_Q5WGN3 UniReffo-A2U3T9 UniRef90-U1M278 UniRef90-W0EPG4 UniRef90-GOHF07 UniRef90-E3HMP4 UniRef90-MOSIZO UniRef90-G2PH04 UniRef90-UPIOOO3649365 UniRef90-I1XG23 UniRef90-L7EMR2 UniRef90-L5NBA1 UniRef90-UPIO00429EBEA UniRef90 V9ZJ24 UniRef90_UPIOO036BF355 UniRef90-A1SFY0 UniRef90 UPI000462E81C UniRef90-D7LWM1 UniRef90-X5KTD9 UniRef90-ToSZG9 UniRef90-UPIO0036EC24E UniRef90-KOHXKO UniRef90 UPlooou66824A UniRef90-A5PAZ2 UniRef90-F3LVW6 UniRefofo-c1F8C6 UniRef90_G7H448
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UniRef90 O7D018 UniRef90_UPI0003B59033 UniRef90-E4RUJ9 UniRef90-U5COM6 UniRef90-B1HS56 UniRef90_UPIO003699A07 UniRef90_L7WT19 UniRef90-U1H5Q3 UniRet90-H1H7J9 UniRef90-R4YYQ7 UniRef90-D6Z6G9 UniRef90-UPIO00374180A UniRef90-UPIOOO2485418 UniRef90_V5E5Y4 UniRet90-G4HP62 UniRef90-A6C3L6 UniRef90 M4VDDD
UniRef90 A8LMG4 UniRef90-R6SOA6 UniRef90-M4VBW2 UniRef90-B3EM50 UniRef90-Q2N8C1 UniRef90-O2SK17
UniRef90-C8ZWZ7 UniRef90-S6AWW4 UniRef90-B9NPC2 UniRef90 X7EEK9 UniRef90-A2XBL8 UniRef90-D3B496 UniRef90-B6BNO3
UniRef90-D6YVS7 UniRef90-10KH36 UniRef90-UP1000407E8F6 UniRef90 UPIOOO2F727AE
UniRefgo B9YYK2
UniRef90_B9YYkz

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GP G|I $\mid$ MEAANKGAFEAGGTS|V|G|N|IS |L|PHEKHDNGFQT||
 $A S V V G L M G A V A D A A L A$
$G P G D M E A A N R G A A E A$
 GPGLMEAANKGA FA GASASVGLLNME
 P HEQGLNK WI NL GSIGLLMGLVSQQ V Y D G E C HV L GVVI

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$\begin{array}{ll}Y & Q D V \\ T \\ V & G \\ H & D\end{array}$
GV GPGIMEAANRGATNGKS IGLNI EL GPGlMEAANRGAALAGGTSVGLSI GNQGLM GT LAADSVLAH G GEVVMGVI PRFMIDDEGWCHPD L T Q $G P G L M E A A N R G C S E A G G L S V G L G I E N L P H E Q G L N E W V N L$


 S K I GM G EVVSNEVVLKN Q GKVI GVVMPR G LIF TVVETA S E N LTT K A K S G L M GVVMA D EVVLA N G GRVVTGVMMP T R L F T K E DA H P D V T E GSVGLMMGALATAVLDHGGMVTGIDPDFLTMRENALSRVQE
 A S V G DMGLLADTVLQLGGQAVGVIPEALVRREVAHKRLTE GP GVVEAANKGASEA GGDSVGLGUE GPGUMEAANKGAKDSVGLNII
GS I GL M GLVVSQAVHDGGRHVIGVIP

 $G K V G L M G V 1 A D E V L R L G G E A T G V I P R A L V E R E V G H A G L D R$
 GP G L M E A A NK GANEAGGESV GLHIH

 ARI G L M GELANAALEAGGSVIGVMPDHLVEREQAHF GLTE

 GRVGLLMGTIANAVLEA GGNVI GVIPEALVVAKEVAHLGLKD GPGIMMEAANKGAYLNNG YSIGCNDILPHEQKPNPYLHK
 GHVGLMG $\quad \mathrm{G}$ A A DAVLAAHGGKVVGVI PEHLRDRELAHPGLTE GPGIMEAANK GAAEVGGKSVGGGIE LDMEQGLNRWVNL
 A SII T M G A V A D G A L A G R G EVVI GVI P D H L V S V V I S I B P GL S E
 A A V GLLM GAVA DAVI EAGGRAI GII P ERLLMQKELABRGLTE AKVGCMGELANASLSHHGYVIGVIPQKLVDVEIAHEDITE GNVGLMGTVARSVLDHGGYVTGII PDFLKSREKLLDDVQE
 GGI G L M S ATA DAVLAA G GEV TGVDPHFMVEQGWQHK GL T E GTKIMMGAVAS GVLSNGGEVVGII PEF LVVDMTRHS LVGQLNE GR L GLLM GAVA DAA L D A G G EVVI GI I P E A L V G S E V A H R G C T E GKVGLMG』ISNAALENGGEVIGGVPQHLVDREVANPLCTD GP GIMDAANRGAKQVGGRSI GCNIN LA PFEQHPNLYLDK SKTGLLMGKVADAVLAAGGEVIGVMPTHLQKRELAHASLTE

 GSI GLDMGAVAK STLDHGGGSVTGIIPEFFLRARENALTSVVQE GPGIIMEAGNK GAHLGKGVSVGLNIELPFEQHFNPYIDSDK
 $G N I G L M G A V A R A T L A N G G H V T G I I P Q F L V D R E V M L G D V Q E$





 GP GLMNA ANA GHKSANSPTHS I GL N DRLPHEEMPSPY LD D GK LGLLMGAVANAAKEAGGEVIGVIPEALVNSEVANHNCDE
 GNAGLMGIIAETAI EENCEVTGII PEFLVARELAKENLTS $G A V G L M G T V A D A A L A A G G E V I G V I P Q S L V D A E V G H N G L T R$ G DVVGL M G A V A R A A Q A A G G D T F GVVI P V H L M Q R E V G K T D L T R GDVGLMGAVARSAQEAGADTFGVIPQHLVAWEVGKRDLTR GSII GLMGLVSQAVYHGGRHRVSGDTW
GS I GLMGLVVSQAVYDGGRHVIGVIDPKTLMTPEIIGETVGE $G N V G L M G T I S E T I H N G G G R V Q G I I P H G G L A P K E I S S G T S M G E$ GPGIMEGANKGAIKHHDVESIGLNIDLAFEQTANPFTTK GPGUMEAANKGA QSDGS MS V G I GIDDVPYEN DTNREDDPRY $G G F G L M G N V A D T V L L N G G E V T G V I P N F L A Q L E V A H Q T L T E$ $G K V G L M G T I A D A V L A A G G E A V G V I P Q S L V D R E V A H T G L T E$


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| UniRef90 B8DNS3 | RCDFRYFFVRKLMFITKYAMYVVMPGGV |
| UniRef90-14MCW1 | GMQFRYFFVRKTMFMKYSSGIIVLPGGFGTMDEMFEALT ${ }^{\text {G }}$ |
| UniRef90 Q1D3 | HSVGSMHERKALMAERSDAFIJALPGGFGTLDELFETWAQ |
| iRef90-E7RTR0 | SLHFRHFFPRKVAFAKYAAAFVAAPGGW |
| UniRef90-B9GY77 | VLIVSDMHERKAEMARRADAFIA |
| UniRef90-UPIO003A0AA51 | S |
| UniRef90-05WGN3 | VVDTMHERKALAEHADAFVALPGGAG |
| UniRef90-A2U3T9 | MIVCKNMSERKVIMSKLVDGYITLPGGFG |
| UniRet90-U1M278 | PLDFRYFFTRKVMFLKYSMGYICMPG |
| UniRef90-R6H7T5 | GI EFRYFFVRKTMFVKYSSGAl FFP |
| UniRef90-W0EPG4 | TI VTADMHERKERMAQEADAVIA |
| UniRef90-GOHFO7 | GLNFRYFFVRKTMFVKYAQAFICLPGGFG |
| UniRef90-E3HMP4 | QTMHERKAMMMEKADGFIALPGGAG |
| UniRef90-MOSIZO | VADMHDRKSEMAKHAD |
| UniRef90_G2PH04 | KLSRGFAVLPGGI |
| UniRef90_UP1000364 | V V $-~ M H E R K A K M S A L A D A F V A M P G G A ~$ |
|  |  |
|  | DTMHERKQTMSDLSD |
| UniRef90_L5NBA1 | MI EVDTMHERKAKMSELADGYIALPGGFGTWEELFEVWAQ |
| UniRef9-UP1000429EBEA | MVVTPDMHERKR |
|  | D |
| UP100036 | SMHERKMLMA |
| UniRef90 A1SFY0 000462E81C | GM NFRYFFVRKTMFVKYSQGYVALPGGLGT |
| UniRef90-D7LWM1 | ADMHQRKAEMAKHSDAFITLP |
| UniRef90-×5KTD9 | TMHERKAKMNELSDGV |
|  |  |
| UP100036 |  |
| UniRe990_KOHXK0 | VQTMHERKAMMAERSDAFLALPGGUGT EEELFEVWTQ |
| P10002 |  |
|  | EGFVTP ${ }^{\text {a }}$ |
| UniRef90-F3LVW6 | LHVVPTMHKRKQMMAERADAFVALPGGL |
| UniRef90-C1F8C6 |  |
| UniRef90_G7 | ANMHERKATMAANADAF AMPGGUGTEEET |
| UniRef90_UPIOO0034B4B4B |  |
| UniRef90-10DXF6 | VDTMHQRKSKMIELADGF |
| UniF | QSMHERKAVMVNLSD |
| UniRef90_UP100047EE1C2 |  |
| UniRef90-UP100029A7FD3 |  |
| E3E | D |
| UniRef90-W5YHC0 | A ${ }^{\text {a }}$ |
| UniRef90-K41M17 |  |
| UniRef90_UPIOO02E16DD1 | ESMHERKAKM |
|  | LQQVPDMHTRKARMAELSDGFM |
|  | LYIVKTMHERKAEFTRLSDGF |
| UniRef90_067726 |  |
| Q2Low |  |
| C2 | ADMHerkakma ela dial al pagag |
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| UniRef90-A3HVL8 UniRef90 A5C3Z | VETMRDRKWLMAEQGDGF:AMPGGQGTLEELEELCMTL |
| UniRef90- R6KF31 | VENMHQRKQKMADLSDAVIALPGGCGTLEELLETWKQ |
| UniRef90-Q7D018 | DMHERKHMMFERSDAFVTLPGGVGTLEEIVETWAQ |
| UniRef90-UPIIOOO3B59033 | LTVPGMHARKQAFTDLSDGFV |
| UniRef90_E4RUJ9 | LRVVLNMQERKVMMEEMADIIVTFPGGYGSMDELFESLTQ |
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|  | DNMHQRKEKMLELADGF:ALPGGPGTLEELFEAWGQ |
| UniRef90 UPIO003699A07 | ATMHERKHRMAEISDGFIALPGGAGTLDEDFETWTQ |
| UniRef90 LTWT19 | LI VVDSMHERKNKMT ELADAFVMAPGGAGSLEEFFESWAQ |
| UniRef90-U1H5Q3 | MLVFDYFFVRKVMFVKYSQGFVVMP |
| UniRet90-R4YYQ7 | NI NFRYFFSRKLTLTKESSGYVVFPGGF |
| UniRef90-D6Z6G9 | PLHFKYFFVRKVMFDKYSMAFIGM |
| UniRef90-UPIO0037418 | ADMHERKRLMFERSDAFVALPGGVGTLEELVETWAQ |
|  |  |
| UniRef90-G4ESY4 | LEVA |
| UniRef90-A6C3L6 | LVNLNYFFTRKLLFVKEVHAL |
| UniRef90-M4VDD7 | ETMHDRKRMMYDLSDAFLVL |
| UniRet90-A8LMG4 | TMHERKKVMFANSDA |
|  | MHERKQKMANLSDG |
|  | M |
| UniRef90-B3EM50 | RFSSRLDT ${ }^{\text {a }}$ MALSDAIIVAPGGI GTLLELFYAWQL |
| UniRef90-O2N8C1 | VSGMHERKQKFTDLSDGFVTIPGGVGTMDELWEAWAQ |
| UniRet90_Q2SK17 |  |
| UniRet90_C8ZWZ7 | SNM |
| UniRet90_S6AWW4 | GM |
|  | TMHERKKVM |
| UniRef90-X7EEK9 | FFVTETMHERKKVMVMNADAICVLPGGAGTLDEFFETWRQ |
| UniRef90-K4AK7 | VRPVSDMHQRKAEMAROSDAF ALPGGYGT |
| UniRef90-D3B496 | $\checkmark$ VYVEDMHSRKKDMYERSDAFIALPGGTGT |
| UniRef90-B6BN03 | DLSFDYFFSRKVML |
| UniRef90-D6 |  |
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| 90-UP1000407E8F6 | QHVVKTMHERKALMASKSDAFI AMPGGFGTLDEVNETWNQ |
| niRef90_UP10002F727AE | VESMHERKAKMAELADGFIALPGGPGTLEEFFETWA |
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| UniRef90_Q2KXZ4 |  |
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## UniRef90 Q5FSM5

 UniRef90-UPIOOO3738E36 UniRef90-W3RET4UniRef90 14 WLU8 UniRef90-B4SGA7 UniRef90-Q07Q34 UniRef90-UPI00036558DD UniRef90-Q6FFG1 UniRet90-E4TSP6 UniRef90-UPI00047A99F5 UniRef90-UPI00047C0198 UniRef90-U1WHT6 UniRefolo Wo 4K 6 UniRef90-D5U5Q4 UniRee90-FOSFV7
UniRef90_UPIOOO37971E9 UniRef90-UP10003FACE6C UniRef90-A0A024PWP8 UniRef90-UP100039BF71C UniRefefo-TOGFM2 UniRef90-A8EUS7 UniRef90-H6MWB9
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UniRef90 $003 D G 0$ UniRef90-F5XM24 UniRef90-G1UVLO UniRef90_K9T3A2
7
 KSVAIFCGSRTGASDVYMEDAKAVGQELAKRNITLIYGA




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UniRef90 Q5FSM5 UniRef90-UPIOOOX738E36 UniRef90-W3RET4 UniRef90- $14 \mathrm{WLU8}$ UniRef90-Q07Q34 UniRef90-UPIOOO36558DD UniRef90_UPI0004694C43 UniRef90_Q6FFG1 UniRef90-E4TSP6 UniRef90-UPI00047A99F5 UniRef90-UPIooo47C0198 UniRef90 U1WHT6 UniRef90-W0A4K6 UniRef90-D5U5Q4 UniRef90-FOSFV7 UniRef90-UP100037971E9 UniRef90-UPIO003FACE6C UniRef90-A0A024PWP8 UniRef90 UPIOOO39BF71C UniRef90-TOGFM2 UniRef90-A8EUS7 UniRef90-H6MWB9 UniRef90-W1 N9D8 UniRet90-UPIOOO35FB808 UniRef90-Q7NK74 UniRef90-_OJKH7
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UniRef90_K9T3AZ
 ASVGVMGAVADSVLENGGHVVGVMPEFLKRKEIVHPGLSE GSVGLMGAVAKSVHDHGGRITGVDPEFLTAREHAMTEAHE GKVGLMGVVADAVLAGGGKVDGVIPRQVEDEVAHPGLSE GAlGLMGAVAESVLDGGGAVTGIIPGFLSSREIVALRRVSE SRHGLMGAVADAVLGAGGEVIGVMPSGLDHGEKAHPGLTQ GNVGMGALADSVMDNGGKVYGVIPEKLQE KELAHEGITE ASIGLMGQVADTVLENAGEVVGVDPEFMLDYEVAHSKLTE AKIGMGAVADGALSEKGEVIGVIPDFGQTKEVAHTELSE GNVGLMGVVADAVLQAGGDVVGVIPEQLVNWEVAHKGVTR GNNGLMGTVAEAALESGGTVVGIIPHALVEKEWAKRNCTE SKDGMGR DANTVLALDGTAI GVMPTGLFR GEMVHTELTE GNVGLMGAVADAALAAGGEVVGVIPQALVDREVAHHGITQ GSVGLMGADADEMLRGGGEVIGVIPDFLATRELLHPGLTE SRLGMMAETANETLKQGGNV GIMPRGLFRGEVAHKGLTQ ARVGLMGAVADAALHEGGEVIGVIPHHLVEREMAHEGLTH GTKIMGAVAEGAYKAGGKVTGIIPTFLKEADGKQNEMLDE ATSGLMGTVADSVLEKGGKVIGVLPEFLSGKEDAHKKITE SKQGLMGDMSNESLKLKNTVTGVITYDLSSKELENENUSK GNVSMMGAVADATRAAGGTTVGIIPRTLMQREVADLDADE ASVGLMGALADATMAAGGEVIGVMPHHLDEREQAHHGLTQ GPGMMQAANEGAGAERSFGUGINP MEQHPNHUVDGTSR SSTGLMGRLADACLAAGGEAI GVIPKRLVEKEDAHQGLTE GAVGLMGVVADAAMAAGGEVIGIIPQSLKDSEIGHTGLTR GPGIMAAANRGA YEGKSLSVGLNDLPEEQAPNRWQNV GPGLMEAGNKGANLGGGTSVGLNDDLPFEQHDNPYDDSNK GDVGLMGEVARAAQAAGAETFGVIPGHLEKREVGKSDVST ASIVMGQIADSVLEKNGSVIGVMPKSLVNWEVEHKNLTK GKVGLMGGVADAFLESGGEAFGVITESLMNGELGHEKLTE GNVGLMGHTADAALKAGGTVKGIIPRFLEEREVAHSGLTE GGGIMEAGNEGAGAEKSFG LNI QLPFEQESNPYITGDAK TRVGLMGILADTALQQGGEVIGVLPRGLFSREVPHDGLND GGGIMEAANKGAAEAGGKSIGLNIEE LPMEQIPNEYQNLD GKMGMGAVADGTIAGNGHVTGIVPHFLND DEVGHPDVKD GKVGLMGZLADSLIAAGCETIGVMPTFLKEREVVHTGLSQ SQIGIMGTVANAVLEHGGNVIGVIPQFLKRKEIEHTGLTK ARVGMGAVANGALEKGGEVIGVIPEFLNSKEREHTGVTK ARVGLMGVVADAALJAGGEVHGVIPQSLVDLEVGHSGLTR SSLGMMWACAKEVKVNGGQITGVMPKKLHDMGVYTDECVE TQKGLMGVLADAVLSRGGRAHGVITERLQAKGHIHPNLTN GKVGMMGAVADAALAAGGAVIGVMPQHLVDGEIAHPSLTH ASVGLMGAVANGCLSKNGSVTGVLPNFLKNKEIEHSGLGK SAVGLMRVLADAVMEAGGEATGVIPKALFDKEIGHTGLTS GKLGLMGVVSDTVMAEGGEVTGIITHFLTERELANEDITK GRVGIMGVLANSILEQGGQVTGVMPKLLVEREDSHTGLTK GPGVMEAGNRGAADVGAPTDGLNVLPHEQAPNAYVTPDL GQVGLMGRLARAALAEGGHVTGIIPEFLNKREMRFDEVSL ANVGMMGVADGVLSQNGGAVGVIPEFLLVDGELABHGLTS GSVGLMGLTSQRVQEGGCHVLGVTPKALVPDETSGESVGD GDVGLMGRVARAAQAAGGQTFGVIPEHLVRREVAKTDLQT ASVGVMGTVADTVLIEEGKVIGVIPTLLEDREISHKHLTE GDVGLMGATARAAQAAGGDTFGVIPVHLMQLEVGKSDLTR
 GS GMGAVANGVLDHGGKVTGIDPDFLIAREHMLDRAQE GSLGLMGEVSEAVHKAGGHVIGVIPTVLMGKEVVGETVGE GPGIMEAGNKGAHQAGGKSVGLNI DLPFEQFHNKYVDRGS GNVGLMGIIANAALQAGGKVIGVIPQHLKLKEDAHTGLTE AHVGLMGYVANGALSEGGEVIGVIPEFLKSKELEHTNLTED GRVGMMGAVAAGVRAAGGRTLGIIPQSLVDLEVADLASDE GSLGLMGEVARATLGGGGKVTGII PDFLGAREMMLKDVDE GNVSMMGAVAQATRAAGGRTIGIIPKKLVHREVADTDADE SKLGLMGRVANTVLNGGGHVGLVMPTGLFRGENVHTSLSF GNVGLMGVIADALLAAGKEVYGVIPQKLVDDEVAHRELTE GNKGLMGAVADAVMDGKGEVTGIIPEVLLEWEHEHKGITD GSTGMMGAVANGVDDHDGMAIGVMPRFLGEREDAHENLTE SRTGMNQLAESVLEEGGEV:GVTVQTLKDKEEFHNGLER GRVGMGALADAALEAGGRVVGVIPRAL DDRELTHRGVTE GSIGMGLVSQAVHRGGGHVLGI IPRTLMCKPQITGETVGE GPGVMEAGNRGAADAGGKSLGLNVLPHEQAPNAFVTPELD AS GGLMGQVADTFVECGGETVGVIPEFMLDYEVAHHEDTE GPGIMEAANRGAYEKEGRSVGVNI E GKAGLMGIIIADVIAKNGEVIGVIPTFLKNRELPHPNLTK GRMGLMAASAEACMKAGGQAI GVI PQFMIIEQSWQHKGMSQ GQFGLMGDDAKTVIENGGHVDGI DEN AARGASYQADSN SQGMMRQVQGALDAGGEVIGVIPRSMVDREWGRADVTE
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UniRef90_UPI00037971E9 UniRef90_UPI0003FACE6C UniRef90_A0A024PWP8 UniRef90-UPI00039BF71C UniRef90-T0GFM2 UniRef90-A8EUS7 UniRef90_H6MWB9 UniRef90-W1N9D8 UniRef90_UPI00035FB808 UniRef90_Q7NK74 UniRef90_F0JKH7 UniRef90_W8R7X6 UniRef90_C3X5Y3 UniRef90_UPI0003780C47 UniRef90_B3EML8 UniRef90_V9VRF8 UniRef90-TORN48 UniRef90-A4QG99
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UniRef90-Q03DG0 UniRef90_F5XM24 UniRef90_G1UVL0
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 L HVV E TMHERKMKDAE WGDA YL VLP GGFGTLDE LVE T WK H






 TIVTEDMHTRKAKMAELADAFI AMPGGLGTFEEFFETWAQ D F R H F S PR K S V F F M Y S M A Y V VL P G G F G T LDD E LL F E A LT L

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| UniRef90- UPIO003738E36 | NRYYDPLM |
| UniRef90-W3RET4 | GQHKKPILIANIDG |
| UniRef90 ${ }^{-14 W}$ | G他HYPCAFLDVRGYYRDL |
| UniRef90 ${ }^{-14 S G A 7}$ | GHHNKP ILLLNLNGFWPL |
| UniRef90-Q07Q34 | KPIMIANIDGFWDPLLAE |
| UniRef90-UPI00036558DD | KPVGVLNVKG |
| UniRef90 UPI0004694C43 | GFHNKPCAFFNVNGFYDKLFEAEKFLKQEHYDML |
| UniRef90-Q6FFG1 | LNQHQKPMILYNVNGFYEALTAEEGFLPPQHRAKLIVCQS |
| UniRef90 E4TSP6 | GLHKKPVGLLNMENFYQPLLDAQDFLKDTNRK |
| UniRef90-UPIO0047A99F5 | LGIGDKPCAFLDVDGFYGP |
| UniRef90-UP100047C0198 | GYHDKPVGDLDGGYYQPLLQFAGFMNDWQMD |
| UniRef90 U1WHT6 | LGDHSKPUGL NVNGYYEPLVVEAGFDPATHEG |
| UniRet90 WOA4 | KPCALLNVGGYYDGLVAF |
| D5U5 | KVLPRMPLV K Y M S |
| UniRef90-FOSFV7 |  |
| UniRef90_UP1000379 | VGITKKRTALLNVDNFFSPVLDNEGFMNENTLSLMVVADN |
| UniRet90 ${ }^{-}$AOA | SGFYRPLLEFQG |
| UniRet90-UPIOOO3S | KKPMVFANINHFWEPMI AMEGF |
| UniRef90-TOGFM2 | L GVLSKPLGLLDVNGFFQPLLKQEGF |
| A8EUS 7 | KKPCAFYNDNGYYDKLEFGF |
| UniRet90_H6MWB9 | GMHTKPVVLLDPVGFYP PLLS WLGF |
| UniRet90_W1N9D8 | LIHDP GVLDTAGFYRPLLDFQGF |
| UniRef90_UP100035 |  |
| UniRef90 O7NK | LQTGKAAMLPLVMGDYWO |
| UniRef90--JKK |  |
| UniRef90 W8R7X6 | SKPLGL NQFYSKLLVEGF |
| UniRet90-C3×5Y3 | QTGKSRRIP |
| UniRef90 B3EML8 | KSSRFPVILMGYWEGMCKEKKYISNKELD |
| UniRef90- V9VRF8 | WD |
|  | KPIYLLNHEGFF |
|  | QKPVALYDVDGFWQPLLEQRGFIKRDFFECLIVESD |
| UniRef90-B3QP24 | GF WD |
| UniRet90_UP10004716205 |  |
| P100034D17A8 |  |
| UniRet90-E8R021 | LGIHHKPLALLİAGFFDPLISEAGFVSATQRSRLLVAST |
| UniRef90-X1UN97 | IQTLKQVSFPVILSEYWQGLI DWHNYISPEDLDVFTVVDK |
| UniRef90_D5B |  |
| UniRef90-UPI00037C5EB9 | GQNDKPCLLFNVNGYFDPLMVEEGFLSQEDRDK |
| UniRef90-D0D6K5 | LGLHDKPIVLLDSEGFW |
| UniRet90_A9DYQ3 |  |
| UniRef90_TomiQ4 | LGLHKKPVGLNTNGYYDHLLLFEGLLKEENKSMLLFGNT |
| UniRet90_W5WAY7 | LGLHGKPVALLDVAGFWQPLMVDTGFIRAGFREALLVVDE |
| UniRef90 C1FE27 | LGHHDKPIGCLNVAGYFDLFLVDEGFISSSAKKMLITART |
|  | LGYNNKPVVFLNTNGFYDKLIEFENFANECASKLYYIAQT |
|  | KPVGLLNDNCFFEPFMAFEAFLPPSHRQSMVLESD |
| UniRet90-M9VK13 | SKPVALYDST F WAP M T DEGFIRPEDRASLVIADT |
| UniRet90_R9A0JJ |  |
| UniRef90_S7UGJ1 | D |
| f90_UPIO003AB0 |  |
| UniRef90 D2TYA | CGLLNVNNYWTPLMADEKFLQEKYRHMAlIVDDN |
|  | VGFWQGLMVAEGCLSAAELNLFELVGD |
| UniRef90-A5VVT3 | LILFGFWTEFLAEQGTISPADIELLNFVET |
| UniRef90-J9DIH9 | NGFWDPFFQDAGFIYPGSRDLLQVCAT |
| UP10003B |  |
| ef90_L2F9A3 |  |
| iRet90_K4CL66 | S |
| UniRef90-B7QQL2 |  |
|  | KPCGILNISHYYDDHMQDEHFLQTQYREALLVDSD |
| UniRef90-A6FP42 | LGLHGKPIYLLNTEGYWDPLVDAEGFADASLRGFI EEVVAD |
| UniRef90_UPI00026CC48E | I GYHAKPVGLLNVAGYYDHLIAFYGFLRPQHAGILLIJSA |
| UniRet90_D6V5Q7 |  |
| UniRef90_K2EZW2 |  |
| iRef90_M7Y6H8 |  |
| UniRef90 M4S482 | T |
|  | WTGLLEKENNIHPEDMRFLTIVDT |
| UniRet90-A6W2T9 | LGLHGKPCAFYNINGFYDPLMQQEGFVKQSYDDMIIKANT |
| UniRef90-F8X059 | LALHKKPITAVLNTNGYYDPLMIKNGFLKNEYLDLLLVDGN |
| UniRef90_K9GJK8 | DVAGYYDDHMVAEGFLRDHHRAMLMVEHD |
| iRef90_A4XB82 |  |
| UniRef90-D8JQD2 |  |
| UniRef90 UPI000 |  |
| UniRet90-UPI000362075E |  |
| UniRet90-V6M3C1 | D |
| UniRet90_M7 ${ }^{\text {a }}$ (10 | PLALYNLHGYYDKLLDFEGFLHQAQMDLLIVDED |
| UniRef90 UPIOOO478925D | K VLMNVNGYYNHLAQQGFLYEDWKQRLLVASS |
| UniRef90-AOAO33UWQ4 | GLHHKPIUGANTKQFFNPLLISTEFISSDYKNLALINKN |
| UniRet90_C7LRA9 |  |
| UniRef90-FORYC1 | TKPVALLNAGFYDSLLAFEGFLKADHFAALIVESD |
| UniRef90-E2 |  |
| ef90 A0A058ZN68 | T |
| UniRef90- V2USW6 |  |
| UniRef90' UPI0003B74E38 | GFiteqdVDLVPVVDD |
| UniRef90-R2XSF5 | NGFYDPLMVKSGFLSTQDREKTLFSNS |
| UniRef90- G5GC34 | T |
|  |  |
| UniRef90' ${ }^{\text {F5XM24 }}$ |  |
| nR of90-G1UVL0 | T |
| UniRef90-К9тзА2 |  |


| Ref90_Q5FSM5 | VP ELM S |
| :---: | :---: |
| UniRef90-UPI0003738E36 | 1 D GL |
| UniRef90-W3RET4 | P A EI |
| UniRef90-14WLU8 | A SVLFDWMQS |
| UniRef90-B4SGA7 | 1 LEVLEL |
| UniRef90-Q07Q34 | $\checkmark$ AK\| L P |
| UniRef90-UPI00036558DD | P GELLHLMES |
| UniRef90-UPI0004694C43 | QEKLLEAL |
| UniRef90-Q6FFG1 | LEEI |
| UniRef90-E4TSP6 | I DNLLT KME |
| UniRef90-UPI00047A99F5 | 1 D A MFRWlir |
| UniRef90-UPI00047C0198 | PGALLCEAL |
| UniRef90-U1WHT6 | P\\|VLLNRLQ |
| UniRef90-W0A4K6 | VADLLDRL |
| UniRef90-D5U5Q4 | AEEVLD |
| UniRef90-FOSFV7 | AGELLQRL |
| UniRef90-UPI00037971E9 | P A RVVERV |
| UniRef90_UPI0003FACE6C | A D DL K L M |
| UniRef90-A0A024PWP8 | PD HLL DHL |
| UniRef90-UPI00039BF71C | VEEI I P Y 1 |
| UniRef90-TOGFM2 | PDVLLER |
| UniRef90-A8EUS7 | VDELI EKI |
| UniRef90_H6MWB9 | $\checkmark$ VGAL ${ }^{\text {V }}$ |
| UniRef90-W1N9D8 | PETLLLDQL |
| UniRef90-UPI00035FB808 | I E A A T HI R |
| UniRef90-Q7NK74 | ID DA CD H $\triangle$ CQF |
| UniRef90-FOJKH7 | PGELIDMFAE |
| UniRef90-W8R7X6 | P L T L L Q L |
| UniRef90-C3X5Y3 | T DKVLEAl FS F |
| UniRef90-UPI0003780C47 | EDEVVEILDKF |
| UniRef90-B3EML8 | PDRVI GII K S F |
| UniRef90-V9VRF8 | P VA Al A AL |
| UniRef90-T0RN48 | AEDFFED |
| UniRef90-A4QG99 | PKALLEAMQT |
| UniRef90-B3QP24 | A S DVLAL |
| UniRef90-UPI0004716205 | PDELLHML |
| UniRef90_UPI00034D17A8 | VED A CNAIIRRF |
| UniRef90-E8R021 |  |
| UniRef90-X1UN97 | PEDATK ${ }^{\text {DMVD }}$ F |
| UniRef90-D5BNR7 | LEELGNHLDKF |
| UniRef90_UPI00037C5EB9 | LDEIEAFIQN |
| UniRef90-D0D6K5 | AQGAVEI |
| UniRef90-A9DYQ3 | 1 Q KLLERMRNF |
| UniRef90_TOMIQ4 | 1 EELLEKMER |
| UniRef90-W5WAY7 | V T ELLPALDR |
| UniRef90-C1FE27 | PAELLDEMEK |
| UniRef90-R5HL51 | P EEAVDYL |
| UniRef90-M1FBQ9 | PQQLLNGLRNF |
| UniRef90-M9VK13 | $\square \mathrm{H}$ QL MA D |
| UniRef90_R9A0J7 | SQDLLQTI Q N |
| UniRef90-S7UGJ1 | A S RLLDRLA D |
| UniRef90-UPI0003AB062D | Y DEI ENFIR T |
| UniRef90-D2TYA6 | PANLLD |
| UniRef90-Q1YRH4 | ANEAAQVI |
| UniRef90_A5VVT3 | A DEAWGHIK C |
| UniRef90-J9DIH9 | LNDVMTALKD |
| UniRef90-UPI0003B429C2 | PQALLDALS S |
| UniRef90_L2F9A3 | VD AVID |
| UniRef90-K4CL66 | ARELLS KMEQ |
| UniRef90-B7QQL2 | VEDALAR! |
| UniRef90_R7Z7P5 | $\checkmark$ T LL L E |
| UniRef90-A6FP42 | V Q ELSSALDR |
| UniRef90_UPI00026CC48E | L D GLLA QM |
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| UniRef90-M7Y6H8 | ARDLVHK |
| UniRef90-M4S482 | DEELLD K |
| UniRef90-F2IKC6 | ADEAVKY ${ }^{\text {de }}$ |
| UniRef90-A6W2T9 | PETLVSACKT |
| UniRef90_F8X059 | IG SLLKKMED |
| UniRef90-K9GJK8 | AAPLLDRLL |
| UniRef90_A4XB82 | VPAAL DLLES |
| UniRef90_D8JQD2 | 1 E DVVPA |
| UniRef90-UPI000373C42C | V A D AVEY |
| UniRef90-UPI000362075E | TDETVD I I C D F |
| UniRef90-V6M3C1 | P AVLLDRMRD |
| UniRef90-M7X910 | PA SLLLDKMLAF |
| UniRef90_UPI00047B925D | AEEAIS F |
| UniRef90-A0A033UWQ4 | ID DLFSAMK |
| UniRef90-C7LRA9 | PAEL $\square$ DL |
| UniRef90-FORYC1 | 】GKLFEHLQ |

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UniRef90 A5BXB4
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UniRef90-R2XSF5
UniRef90-G5GC34 UniRef90_Q03DG0
UniRef90 F5XM24
UniRef90_G1UVL0
AKELLVQK]LE


 VEQUAE


## UniRef90 W7X9P8 UniRef90-D2BWG7 UniRef90-H8KM40

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UniRef90-B9KP66
UniRef9-D7WC08
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UniRef90_Q1LNX6
UniRef90-E6Q7L9
UniRef90 R9GMY7
UniRef90-B9WDA0
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UniRef90_UPI0003B5B185
UniRef90-A1UUB7
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UniRef90_UPIO00288A3DB
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UniRef90-I9M667
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UniRef90-L7L869
UniRef90_G1WJV6
UniRef90_A5ETX4N

D
$\mathrm{E} Y$
F E
$\mathrm{Y} Y$
Y
Y
V R ALLANS MKRワAVYCGASMGKNPDYETHARMLAEW ASHRY GVVYGG
 MK SVVVFCGSKNGQNPNYVK QT TELGKLI ALLDNLRMVYGG

 K K V $W V V$ F C G S R A G D D P A F T D A A V T M G Q G I A A Q G WR

 M K | $Q$ | $C$ | $V$ | $F$ |
| :--- | :--- | :--- | :--- | :--- |
| $A$ | $V$ | $V$ | $Y$ | S L CI Y C G S S S P G R P L E A Y L AlL A A A V S L A A E A L V $N V T V Y C G A S L G N D S A Y Q A A A K K L G K W I A D G Q H T L V Y G G$ $R$ TI YSASSGQVVPAVY LDAAARELGHLMAARGHVLVNGA

$R R V C V F C G S S S G K R R S Y R D A A V E L G K E L V A R K V D L V Y G G$
$M$
$L$

1 1| $K$ | $N$ | $I$ | $T$ | $V$ | $C$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $E$ | $S$ | $C$ |  |  |  |

M



 MDKMAVYCGASIGNDPVYQQAGQQLGQWLAENNIDLVYGG TVVVYCGS S S GLKASYAVAARDLGLELAKRQI SLVYGG
 L N T L C I F C G S S F GRDDP EYRE DAR E L GK Y LV S K D I K L V Y G G

$\qquad$ SAVTVVFAGAREGVDPAMTSLAHAFGTALTRHGMTLVYGGG SMCVYCGSRPGKADAFGEAA QAVGHWI GSHGGQLVYGG $N D C V F C A S S D L L A P V F Y E Q A R L L G E E I A R B S C E V V Y G G$
 MK RLA V V Y C G S A S P S D P R Y L A L A H SVVGAELARRRG $\square G V V Y G G$
 $M K K D C V Y C G S R T G S N P G F P E L A E Q A G R E I A N R D W G I V Y G G$ $M R R \beth C V F C G S S S G A D P G Y A A E A A A V G R L L A E R G D G V V Y G G$

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

$\square R$ $K V V V F G S A R S S R T S K E Y Q M A R D L A A K T V A K K H W M V I T M A A$ TVVI G GAR】PEPSQYYDEAREFARLCSRREFVIVTGG

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





M H

| $A$ | $I$ | $C$ | $V$ | $Y$ |
| :--- | :--- | :--- | :--- | :--- |
| $A$ | $C$ |  |  |  |
| $A$ | $V$ | $A$ | $V$ | $F$ |




## UniRef90 W7X9P8 UniRef90_D2BWG7 UniRef90_H8KM40 UniRef90_UPI00046FAB3D UniRef90_I3XUM1 UniRef90_UPI00047BD5DD

 UniRef90_A4A296 UniRef90_H0QS52 UniRef90_UPIO0047222B4 UniRef90_UPI0004287576 UniRef90_W5W7W7 UniRef90_G7UUE8 UniRef90_A3U8V5 UniRef90_UPI00034B4A61 UniRef90_W2UKV0 UniRef90_L1NRZ0 UniRef90_C0QG55 UniRef90_X0S7C9 UniRef90_UPI000255C6E9 UniRef90_A9TG50 UniRef90_G8TIC9 UniRef90_UPI00046AE546 UniRef90_UPI00029B3355 UniRef90_G8NNH6 UniRef90_R5DXU2 UniRef90-W7ASF2 UniRef90_W4LIG8 UniRef90_UPI00047ABBCF UniRef90_V5DEQ0 UniRef90_E1W5W6 UniRef90_D5AL47 UniRef90_J9D239 UniRef90_I1QR02UniRef90_S7U3B1 UniRef90_UPI00037B76E1 UniRef90_L2FIX4 UniRef90_UPI00036E92FC UniRef90_UPI00035EEB7A UniRef90_G0J3R3 UniRef90_I5C3G6 UniRef90_C7DDY7
UniRef90-A4BFX1
UniRef90_A4BFX1
UniRef90_V4YLX1
UniRef90_R2R3E2
UniRef90_N9CLV2
UniRef90_UPI00037DF424 UniRef90_B7K296 UniRef90_UPI00034A9ED2 UniRef90_UPIO002490B0B UniRef90_Q01EC6 UniRef90_A0A017HKE2 UniRef90_UPI00047C12B0 UniRef90_UPI00047BED41 UniRef90_A6WWC8
UniRef90_B9KP66
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UniRef90-A5EXR8
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UniRef90-E6Q7L9
UniRef90_R9GMY7
UniRef90_B9WDA0
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UniRef90_A5ETX4

GCNGLMGT $\nabla^{50}$
 GHVGGLM G CIA D A V M K K G G S VV R Gl I P R F L E E K E V A H Y G I S E GNVGMGRCANGALNAGGEVI GVI PDNLM QLEAGHRSVTE




 GPGAMEADVRGGCSEA G GMSVVGLGME GNVGLMMGVANAVLEA GGQVVGVIDQQLADWEVAHRGGLTR S K GLMM G QVAQ GALDA GGNVI GVIPPEFLDRTKEVVHNHLTE GGGIMQAGNEGAGRANSFGLNI KLP FEQGANKLIDGDDK
 GSVVGMMGVLAD SVVK NGGSVTGVI TEHLYKMEVAFTEDSD GPGIMEAANRGAHEAG $\quad$ IPSI GMNI VLPFEQAPNPY DTPED
 GKAGLMGVIADSVLANGGKVVMVI PKILTEWESQHTGLTE $G D V G L M G S V A R A A Q E A G G N T F G V I P A H L V A W E V G K T D L T R$
 S S L G L M WA CA K QVKL N GK QI I GVVMEKLYNMGVFT D S CVN



 GRTGLMMAVADACLEKGGEAVGVIPQFMIEQGWQHLGMSR GS L GL M G E V A E A V H N G G G H VI G V I P T T L M G K EVVTG E T V G E
 GTVGLMGEMAEALVKYERDGTYGTLDKDNMYVPDETVYGR GHNGLMMGVVADAALQA GGRVVGVIPXAAVVEREWAHHACTAE
 TK GIVMGAV AR GTMDA GGTVTGII PKF LI RRNEV DLAAELDE
 $G K T G L M G T V A R A C A Q A G G R V L G V M P R A L V A R E V A N T D C D E$

 GNVGMMAIAD RALAC GGKVVGVI PHALVE QEQAHN GL S E

 GSVGLMGIIAETVDSSGGCVTGVIPKSLAPEHDSGKTPGR GPGVMEAGNRGAQEAGGRSVGQNVVLPHEQAPNAYVTPDL GRVVGMGELADAALSARGDVLGIIPRRHMEFEVGHNNLTDLD


 GKSGLMGTVARATREAGGRVVGVIPKALVDRELANELCDE

 $G R L G L M G A D A S S A L A A G G E V I G V I P E A L V S G E V A N Y D C T E$
 GKVGMMGKDADAALNSGGDVIGVIPTRLKNREVAHLGLTD

 $G N S G L M G V L A Q A T K A A G G R V V G I I P Q A L V N K E L A N H D C D E$
 $G N V G L M G L I S T A D M A N G G T V T G V I P Q F L \quad F D Q V P H \square E L T Q$ GSTGMGAVASGCATNGGYVHGII PEALI SRERTTDEEYGK GGGLMQAANEGA AS GVMEAANAGA
 GNGLMGAAARGEHRFGGRIIGIAPEFFN VDGILYEHCTE GA GIIMEAANRGAYDVGAENIGLNDVLPMEQEPNPYDTPELD GPG I M E A A N R GA F E V G CRS I GL N I TL P F E Q H P N P Y I T P D L


 GTTGLMGEIARATMGPDVDGFVHGIIPNALVARERTEESE
 $G P G I M E A A N R G A Y E A G G K T V G L G N G L P E E Q R P N P Y D T P E L$
 A RAGLMMGALA DAALAA G GEVI GII P QALVRNEKA H D S L L T R


## UniRef90 W7X9P8 UniRef90－D2BWG7 UniRef90－H8KM40

 UniRef90＿UPI00046FAB3D UniRef90－I3XUM1 UniRef90＿UPI00047BD5DD UniRef90＿A4A296 UniRef90＿H0QS52 UniRef90＿UPIO0047222B4 UniRef90－UPI0004287576 UniRef90－W5W7W7 UniRef90－G7UUE8 UniRef90－A3U8V5 UniRef90＿UPI00034B4A61 UniRef90－W2UKV0 UniRef90－L1NRZ0 UniRef90＿C0QG55 UniRef90－X0S7C9 UniRef90＿UPIO00255C6E9 UniRef90＿A9TG50 UniRef90＿G8TIC9 UniRef90＿UPIO0046AE546 UniRef90－UPI00029B3355 UniRef90－G8NNH6 UniRef90－R5DXU2 UniRef90－W7ASF2UniRef90－W4LIG8 UniRef90－UPIO0047ABBCF UniRef90－V5DEQ0 UniRef90－E1W5W6 UniRef90－D5AL47
UniRef90 $99 D 239$ UniRef90＿I1QR02 UniRef90－S7U3B1 UniRef90＿UPI00037B76E1 UniRef90－L2FIX4 UniRef90－UPIO0036E92FC UniRef90＿UPI00035EEB7A UniRef90－G0J3R3 UniRef90－15C3G6 UniRef90＿C7DDY7 UniRef90－A4BFX1 UniRef90＿R2R3E2 UniRef90－N9CLV2 UniRef90＿UPI00037DF424 UniRef90－B7K296 UniRef90＿UPI00034A9ED2 UniRef90＿UPIO002490B0B UniRef90－Q01EC6 UniRef90－A0A017HKE2 UniRef90＿UP100047C12B0 UniRef90－UPI00047BED41 UniRef90－A6WWC8 UniRef90－B9KP66
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UniRef90－W8WXZ2 UniRef90＿UPI00036BDB27 UniRef90－UPIO00464E183 UniRef90－UPIO0042049B5 UniRef90－W1IZN5 UniRef90＿UPIO00466FB46 UniRef90＿Q1LNX6 UniRef90－E6Q7L9
UniRef90 R9GMY7 UniRef90＿B9WDA0 UniRef90＿UPI0003820CAB UniRef90＿UPI0003B5B185 UniRef90－A1UUB7 UniRef90－R5YDD3 UniRef90－Q3A6V7 UniRef90＿Q3AJE1 UniRef90＿UPIO00288A3DB UniRef90－J6EKC8 UniRef90＿19M667 UniRef90－C5E355 UniRef90－UPIO0046F9589 UniRef90＿Z9JSG3 UniRef90＿UPIO00380C020 UniRef90－R6M6T4
UniRef90 W3WTI9 UniRef90＿UPI000468C902 UniRef90 L7L869
UniRef90＿G1WJV6
UniRef90＿A5ETX4

L LHVVETMHERKRLMAEHADAFLALDGGIGTFEEFFEVWTQ LVITEDMHERKAKMAELADVFIAAPGGAGTLEEDIETWAQ LHVVQTMHERKMKLTDWADAFILLPGGFGT回ELMETWKH D QVPDMHTRKARMSALSDGFI ALPGGIGTFEELFETWTW DLTEDYFFVRKVMLIKYSLAYVIFPGGFGTLDELFEALTG LVMMKYFTRKLMFVKECDAVVCFAGGFGTLDEAFEVLTV GI EVNSMHERKQTMADLIADGF ALPGGGVGTVDELEESWSQ SFKFHYFADRKMHFMMRAKALVVFPG
GVNFRYFFARKTMFIDKAQAFI CLDP

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 AFRFHYFALRKMHFLLHAKGLVALP
## LIVENMHQRKKNMADUSDGFIVLP

## In <br> $\stackrel{L}{L}$

CF QFHYFA I R K M H F L M R A K A L V A F P


## UniRef90 W7X9P8 UniRef90_D2BWG7 UniRef90_H8KM40 UniRef90_A1BGF5 UniRef90_UPI00046FAB3D UniRef90_I3XUM1 UniRef90_UPI00047BD5DD UniRef90_A4A296

 UniRef90_H0QS52 UniRef90_UPI00047222B4 UniRef90_UPI0004287576 UniRef90_W5W7W7 UniRef90_G7UUE8 UniRef90_-A3U8V5 UniRef90_UPI00034B4A61 UniRef90_W2UKV0 UniRef90_L1NRZ0 UniRef90_C0QG55UniRef90-X0S7C9 UniRef90-UPIO00255C6E9 UniRef90_A9TG50 UniRef90-G8TIC9 UniRef90_UPI00046AE546 UniRef90-UPI00029B3355 UniRef90_G8NNH6 UniRef90_R5DXU2 UniRef90_W7ASF2 UniRef90_W4LIG8 UniRef90_UPI00047ABBCF UniRef90_V5DEQ0 UniRef90_E1W5W6
UniRef90 D5AL 47 UniRef90_D5AL47
UniRef90-J9D239 UniRef90_I1QR02 UniRef90_S7U3B1 UniRef90_UPI00037B76E1 UniRef90-L2FIX4 UniRef90_UPI00036E92FC UniRef90_UPI00035EEB7A UniRef90_G0J3R3 UniRef90_I5C3G6 UniRef90_C7DDY7 UniRef90_V4YLX1 UniRef90_R2R3E2
UniRef90_N9CLV2 UniRef90_UPI00037DF424 UniRef90_B7K296 UniRef90_UPI00034A9ED2 UniRef90_UPIO002490B0B UniRef90_Q01EC6 UniRef90_A0A017HKE2 UniRef90_UPI00047C12B0 UniRef90_A6WWC8 UniRef90_B9KP66 UniRef90_D7WC08 UniRef90_UPI000395B636 UniRef90_R5VBM1
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UniRef90 W8WXZ2 UniRef90_UPI00036BDB27 UniRef90_UPI000464E183 UniRef90-UPI00042049B5 UniRef90_W1IZN5 UniRef90_UPI000466FB46 UniRef90_Q1LNX6
UniRef90 E6Q7L9 UniRef90_R9GMY7 UniRef90_B9WDA0 UniRef90_UPI0003820CAB UniRef90_UPIO003B5B185 UniRef90_A1UUB7 UniRef90_R5YDD3
UniRef90-Q3A6V7 UniRef90_Q3A6V7
UniRef90-Q3AJJE1 UniRef90_UPIO00288A3DB UniRef90_J6EKC8 UniRef90_19M667 UniRef90_C5E355 UniRef90_UPI00046F9589 UniRef90_Z9JSG3 UniRef90_UPI000380C020 UniRef90_R6M6T4
UniRef90-W3WTI9 UniRef90_UPIO00468C902 UniRef90_L7L869 UniRef90_G1WJV6
UniRef90_A5ETX4

L GLIH HK A CIL FNVVNSYY D GFI D F D GFMK Q D Y L D ML I V S D S

LALHRRKPLAVLNANDFYTPLI EFHGFMSRTTMDSSLHVDDN
TGQTK K ITT K I S I F L L Y G Y W E K L L V


$V$ QTAQ K V A A F WG P M
 V Q T K K V T K F PVVLF GY WQ GL Y D W
$L G G G N K P C A F L D M D R F Y A P L M V Q E R F D H P D Q R A D L W Y G E D$
LGLHKK P I GIL NTNGYYDDLLVVMLDKTMTKENYELLLLVDS D

LGMHHKP GVLNI KGYYDPLI EKNGLLKQENRNMILFEDD


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





I GVHK N P CL L Y N V D G Y Y E P L MVT A D F LTTEA A R E Q F L F S D S

L GFHKKPCGLLDNDDYY DWLI RE E QFVVKHHHALLDVVET
G K N N N P CI L FN E K GY F D S L MVVK E G F F T Q G D F E K I Liv S N D


I GQNNNPCDLFNQNGYYEPLMVKKDFLTQSDREKILLFSEN

L GYHD K P V A V L NTA GYY D H L L V VA A GFMKPY QMDMM HI G T E


L GHHQ K P V A F Y N V Q G Y Y D P M M Q R S GF LDWE DHA DLLI QD D C
$L$ GYHNKPVGLLDN NGYYD GLLRAAE FMDDRQMALI EVGCE






L GYHNKPVGILLNI NNYF D S HMVVK K F L K K E E H K N I III H DE N
L GKHRKPMVFANI NNFWQPMLSTEGFLHTAHQVKPLVINK



L G DH Q K P VVI F NID GF Y D HLLAA E GF L S S K N GE IV QVA S T





I Q T G K M Q R I P VV V L V G F WH D L L L D E G Y V S S P S D L D L F T C V D K
L G Y H D K P P A L L D D A D N F F A P L L L G L L Q R M L D D D D L






 I Q T G K I R P F P VI LRK S Y WD GLL Q WM K K I K L S D L E RL Q V V D S
 LERHNKAIAIL NVNGYYNAMIDDKEKFLRAGCKLLYKVFDD

L GFHAKPIAVLDSDGFYTPLLVEAGFLNADTRTRLISERE



| UniRef90_W7X9P |  |
| :---: | :---: |
| UniRef90-D2BWG |  |
|  |  |
| IRet90_A1BGF5 |  |
| iRef90-UP100046FAB3D |  |
| iRef90-13X | MDEI VE |
| UniRef90-UPIO004 | DDLLDKMKAF |
| UniRef90_A4A2 |  |
| Ref90-H0 |  |
| UniRet90-UPIOOO4722284 |  |
| UniRef90-UP10004287576 |  |
| UniRef90- G7UUE8 | TDAMDGWMQ |
| UniRef90-A31 | L DQL |
| UniRef90-UPIIOOO34B4A61 | 1 DVACQ |
| Rrergo-W2 | L |
| UniRef90_LINRZ0 | E |
| UniRet90_COQG55 | P A |
| UniRef90 Xos | A |
| UniRet90_UPIO00255C6E9 | LᄂD A |
| UniRef90_A9T | A SEL |
| UniRef90_G8TIC | PVEIFNK |
| UniRet90-UP100046AE |  |
| UniRet90_UP100029 |  |
| UniRet90_G8NNH6 |  |
| UniRet90_R5DXU2 | P |
| UniRef90-W7ASF2 | LP |
| UniRef90-W4L |  |
| UniRe90 - Vpioout |  |
| UniRer9o-v5DEQ |  |
| UniRet90 E1W5W6 |  |
| UniRef90_D5AL47 |  |
| UniRef90_-9D239 | A |
| 隹 |  |
| UniRe90- ${ }^{\text {aliopos }}$ | L |
| UniRef90-L2FIX4 | PEGAl |
| UniRef90 - | V |
| UniRet90_UPI00035EEB7A |  |
| UniRef90_GOJ3R3 | P |
| UniRef90_15C3G6 | AQD |
| UniRef90 C7DDY7 | VGALG |
| UniRefor - 4 AYPX | PR |
| URe90-R2R312 | ${ }^{\text {A }}$ |
| UniRef90 N9CLV2 |  |
| UniRef90_UPIO0037DF4 | PV |
| R | C |
| UniRet90_UPIO0034A9ED2 | VEVACAA T S F |
| UniRef90-UPIIOO22490B0B | IDELMDFMSK |
| UniRef90-Q0 | A |
| UniRef90_A0A017HKE2 | A |
| UniRet90_UP100047C12B0 |  |
| UniRef90_UPI00047BED41 |  |
| UniRef90 A6WV | AEDIV |
| UniRef90 BgKP66 UniRef90 - 7 WC08 | A D EAL D A |
| UniRef90 UPIO00395B636 |  |
| UniRee90-UP10003958636 | HA A |
| 俍Ref90_R5VBM1 | V ${ }^{\text {P }}$ |
| UniRef90-A5EXR8 | L |
| UniRef90-G8JU96 UniRef90 G6E9P5 |  |
| UniRef90-G6E9P5 | LDLLLE RMSOF |
| UniRef90 W8WXZ2 |  |
| UniRef90-UPI00036BDB27 |  |
| UniRef90-UPI00046 | P EALL |
| IRet90_UPIO004 | P A |
| UniRef90_W1IZN5 | P |
| UniRef90 UPIO00466FB46 |  |
| UniRef90-Q1LNX6 | AEEIVSALERF |
| UniRet90_E6Q7L9 | D AL |
| UniRet90-R9GMY7 |  |
| UniRet90_BgWDA0 | $\checkmark$ Etv Qulin |
| UniRet90_UPIIO003820CAB | $\dot{v}$ |
| UniRet90_UP10003B5B185 | IDEAVEEI IRF |
| UniRef90 A1UUB7 | A EAFEEIRSF |
| UniF | DLLD |
| UniRet90_O3A6V7 | AEQACRHIFDF |
| UniRet90 Q3AJE1 |  |
| UniRet90_UPIO00288A3DB | P D |
| UniRef90_J6EKC8 | PQEV |
| UniRef90_19M667 | S AL |
| UniRef90_C5E355 | V I D |
| UniRet90-UPIO0046F9589 | A |
| UniRe90- UPIOCO380C020 | A A A A Q A R Ev |
| UniRef90- R6M6T4 |  |
| UniRef90 W3WTI9 |  |
| UniRet90 UPlo00468C902 |  |
| UniRef90-L7L869 | $v$ |
| G1WJV6 |  |
| UniRee90 ${ }^{-}$A5ETX4 |  |


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| :---: | :---: |
| UniRef90_A4BSRO |  |
| UniRet90_R5YTA1 | c |
| UniRef90-A3V4U5 | TVVLFGGAR PEPSAYYDEARTFARLVTERS |
| UniRef90-UPI00037EC8F0 | TVVMFGGARIPAPSRYY |
| UniRef90-V3UZV7 | NFGVFCGSSIGNNA |
| iRef90-G8B6S2 | TVCVFCGSSFGNKPEYAEEASRLGAELAKKSWG |
| UniRef90-E7C2 | INSIAIFCGSSFGNDPKFVHLAEDLGRHLAESNVRVVFGG |
| UniRef90-C2CS | MKSVAVYCGSATGNSEAYGEAARQLGEELADRGLNLVYGG |
| UniRef90-A6ED26 | MKSICVYCGASYPEDPSLQSAMTLLAETFSDHQIHLVYGG |
| UniRef90-M5J7J5 | MKK CVFCGSNSGDDQQYQEQVQRLAQYLKTSAASLVYGG |
| UniRef90_UPI00037409E4 | TVCVYCASRPVP ERYVRLAGEVGGELAARGWSLVSGG |
| Ref90-W4 | G |
| UniRef90-F2QMB6 | SSYGNSELYAKLA MELGVKLAEKRYGUVYGG |
| UniRef90-UPIOOO2C33112 |  |
|  | GASKGLDETYVKEAYALGQYFAEQGLEEVFGG |
| UniRef90 R5ZTC3 | SASSGQVPQTYIKAAHELGRLIALGGHTLVNGA RDVRNAQRYESARAFAHLLVAEHSTYY CTG |
| UniRef9 | VRKVTMFGSARLAPDTPEYQMALEFARAVSQLGFMVMTGG |
|  | SSVGI FCGSANGNDPVYSKAASQVGQRLAKQGVGI IYGG |
| UniRet90-Q6BY46 | KTVCVFCGSSFGSKPKFAEDAAKLGKVLADKNWGLVYGG |
| UniRet90-F7VBP4 | AVAVFCGSRFGNNPLYRQAAQKTGQVLAEQGDRLIYGG |
| UniRef90 A2SH | RGWQ VYGG |
|  |  |
|  |  |
| UniRee90- ${ }^{\text {U2 }}$ |  |
| UniRef90-O9K | GWEVIYGG |
| UniRef90-OLX225 | AVFCGSNTGYSEVYKQSAENMADVLSSNGUTLVYGG |
|  |  |
| UniRef90_UP1000363 |  |
| , 22 |  |
| UniRef90-UP1000345FEC2 | R V |
|  | ( ${ }^{\text {a }}$ |
| UniRef90-UP10003 |  |
| UniRef90-UPIo0042A7E |  |
|  |  |
| 4Z |  |
| niRef90 F9L3R | ASKGNKKEYENSADQLGEWI AKNNHTLVFGG |
| UniRef90 C4Gl | KVAIFGSARLPATAPEYAKAERVARRLSDAGFAVLSGG |
| RRef90-UPIO003B7 |  |
|  |  |
| UniRef90-UP100037D9B73 |  |
|  | G |
| UniRef90-UP10003B7078F | G |
| UniRef90-X5K | $V \mathrm{~V} V \mathrm{YCASGPTHPELLADASQVGVADAKRGWTLVSGG}$ |
| UniRef90-C5CUJ9 9 |  |
|  |  |
|  |  |
|  |  |
| UniRef90_UP100036A2ACB | VCVYCGSSNDADPAYIELLAQELGRAIAKRGWRLVYGG |
| UniRef90 |  |
| UniRef90-R2V7 |  |
| UniRef90-B0T275 |  |
|  |  |
|  |  |
|  |  |
| UniRet90_UP1000376 | NGWRLVYGA |
| UniRef90_UP10003638D18 | AI CVFCASSSTLDQKWLDLATSTGAEIAARGHSLVSGG |
| UniRef90-UP10002EB81F8 UniRef90- 88358 |  |
|  |  |
| Ref90 - V5SGW6 |  |
| UniRee90-- ${ }^{\text {USSGW6 }}$ |  |
|  | \R K |
| UniRet90-C9PXB9 | KI AVFCSANADDDPRFFKATEALGRWCAEKGHVVLFGG |
| UniRet90-Q128Q3 | TI VVFGSARFPPNAHYYDQARLFARLVASEQLFI CTGG |
| UniRef90 UPIC | $G_{A}$ |
| 何 90 |  |
| f90_A9BM19 | IAV |
| iRef90-A0AO23WU | RKVTVFGSARTPVEHPLYALARQLGT TLA HYNFMVITGA |
| UniRef90-B9E9R2 | C |
| UniRef90-UP100046D22F6 | AIGVYG |
| ef90 |  |
| UniRef90_A0A024IEQ |  |
|  |  |
| UniRef90 - H2 | $\square R \mathrm{~V}$ VILILGS |
| 90 | MKKTGTFCSASENTDKMYFESTRKLGQWLGETGKTLVYGG |
| iRef90-G4RGD4 |  |
| UniRef90_U5GYD4 |  |
|  |  |
|  |  |
| UniRef90-T1AN03 UniRef90 F7016 |  |
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## UniRef90 A4BSR0 UniRef90-R5YTA1

 UniRef90-G2IJC6UniRef90-A3V45 UniRef90 UPI00037EC8F0 UniRef90-V3UZV7 UniRef90-G8B6S2 UniRef90_E7C2S5 UniRef90_C2CSI4 UniRef90-A6ED26 UniRef90-M5J7J5 UniRef90_UPIO0037409E4 UniRef90-J7REM2 UniRef90 W4HLY7 UniRef90_F2QMB6 UniRef90-UPI0002C33112 UniRef90-E8SJX1 UniRef90-R5ZTC3 UniRef90-A0A014NHG8 UniRef90_B2J9T5 UniRef90-W0HM95 UniRet90-Q6BY46 UniRef90-F7VBP4
UniRef90-A2SHM UniRef90-A0A016PWZ5 UniRef90_UPIO002FB14D1 UniRet90_O21 W96 UniRef90-FOFOA8 UniR Ref90-Q9K9A3 UniRef90-O5X225
UniRef90_C8N6B1 UniRef90_UP1000363F403 UniRef90-G2Z8F6 UniRef90-UPIOO0345FEC2 UniRef90-W2EK57 UniRef90-DobJP6 UniRef90 UPIO0036A018D UniRef90-UPIOOO42A7E7D
UniRef90-R5DV1 UniRef90-R5DVH1 UniRef90-F9L3R2 UniRef90_R6WH46 UniRef90-C4G150 UniRef90-UPIo003B71BDA UniRef90_W6WRM1 UniRef90-UPI00037D9B73 UniRef90-Q1GVI2 UniRef90_UPIo003B7078F UniRef90-U2BUA7 UniRef90-X5KUB5 UniRef90-C5CUJ9 UniRef90-U7DE16

## UniRef90-K5BF40

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UniRef90-UPIOOO2EB81F8 UniRef90-C8S3F8 UniRef90-U2MP64 UniRef90-V5SGW6 UniRef90 Y8DMR8 UniRef90_D8FWQ6
UniRef9O_C9PKB9 UniRef90-Q128Q3 UniRef90-UP100036ED2FA UniRef90-UPIO0036CE454 UniRef90-A9BM19 UniRef90-A2C2M5 UniRef90-AOAO23WU40 UniRef90-B9E9R2 UniRef90-UPIo0046D22F6 UniRef90_L7V4Y9 UniRef90-A0A024IEQ7 UniRef90-UPIO00374A9F6 UniRef90-H2CIS4 UniRef90 UPIOOO402893A UniRef90-W4UN22 UniRef90-G4RGD4 UniRef90-U5GYD4 UniRef90-UPIOOO3A00F8A UniRef90-X5MC58 UniRef90-T1ANO3 UniRef90-F7QLL6
UniRef90_L8G9Q1

SSVGDMGAMADAA DAEGGKIVTGVIPDP ${ }^{60}$ DMDREPGHPSTTE GESGMGAVAKEVHAAGSEVIGVIPGNVEFDKSRPQPYVTK
 GPGVMEAGNRGAQDAGGRS:GLEXVLPHEQAPNDYVTPEL GKVGLMGGVADAT 1 KNNGI TGVMPKHLVDKEIAHTQLTK
$G S T G M G A V A R G A T N G G Y H G I I P E A L I S R E R P D G D Y G K$
 GNVGLMGDVADACLAHGGSVTGVDPEELVDLDLSHPGLTS GSIGVMGAIANEVLARGGTVTGVIPQFLLDREVGHFELTE GRVSMMGEVARRARAGGARTVGVIPRDLVEREVADTEVDE GTTGMGDNSDGHVHGIIPNALVAKERKDSQGGVVEKEEDE GPGVMEAGNRGAADAGGRSHGLNVLPHEQAPNEFVTPDLD
 SVGLMGALQDGVGDHGGHAIGVMPRLLDERELTSQKVSE GPG MEAANRGAYEAGAANVGLNI LLPHEQQGNRYDTPEL GGGIMQAGHEGA AKVGLMGAVADAADQYGGAVIGALPQSLVAREDAHTGLTH GSTGLMGAVAEGCATNGGYVHGVIPEALISRERTKETSEE GAHGLMGVVADAALTAGGAVTGVIPDFLETREKMHEGVAE GTVGLMGEVAEALVKYERDGTYGTVNEHNHVVPEESVYGH GNAGLMGGI ADSVLGSGGKVTGMMPDFLAKRELAKKDVTS GPGIMEAANRGAHEMGAPSVGLNDALLHEQHPNPYDTPTLD GNAGMGVLAQSVLDNGGRVTGIIPKKDAEN VPSDELSE SKSGLMGLIIANRMLKNGSNVIGVIPKSLVDTEKAHDGLTE GPGVMEAANQGAYAGEKGLSVGLNIQLDHEQSSNQFQDD GKIGMRVIADTVIRGEGEVIGVMPQFLMERELLAHANLTK GPGLMQAANEGSVDPQNLTQSVGVRTLEHEQQTNPFVEE AVSCMGEVARAVRRGGGRTVGVIPQALVDDDEMADTDSDE GPGTMEAVNKGASEAGGLSIGLGIE GPFEQGLNPWVDL CNMGLMECIAKACKQGGAMTIGVIPSKVETSGRVSDFVDV
 GNAGLMGTMANTVIHNNGKTDGVMPTFQQRELAHDKDDE CDMGLMECVAKAAYDAGGMTIGVVPSKIEENGHVSQYLSV GPSMMEAANKGA HAGKSAAVGLNALPHEQHPNPYQDL TTNGLMAVVADAALASGGKVHGVTTETLHDCGQSHPGLTR GKVGLMGVMADRMIAHGRETTGVMPIFLQEREDAHAGLSQ GNNGLMGVLSQEVHESGGKIIGVIPRKLHDMGFGYKNVDE ANLGLMECVAAAVKKNGGKVIGVVPSRLEEKGRVSTLLDE GNVSMGAVARAARSADGRTVGVIPKALV HRELDAVDAAE GPGIMQAANRGAHEGGGLSVGLAIALPMEEEANPYVTPAL GGGIMAAAHEGAGLEHSLGFNITLPFEQHANPTVNGTANL GNVSAMGAMAQAARDRGGYTVGVIPKALVHREVADVEADE GTVGLMFAAAEAAHKAGGEVLGIIPQFLQRDEGNYDDVP ANLGLMECVARAAKENGSMVMGVVPTKLEERGRVSDLLDV SKLGLMGVIADSVLSAGGSVDGII PEFLRVQERVHTGLTR
 GPSIMEAANRGAHDAGGQESVGLNVVLPFEQAPNPYVTPEL GDVGLMGRVARAAQEGGGATFGVIPTHLLSLEVGKRDDDT GSVGVMGALIADAVLNRGGEAlGVIPQFLMDKEVGHKGGTE
 CNVGLMECVARAAKEAGGRTVGIVPILVERHGRAFDDMDV GSIIMGAIQDGVLNHGGKAIGVMPKMLDEEHEDTSQRLTE GGGIIMQAGNEGAGAEHSFG LNDQLPFEQGSNPFDAGDRK TNQGLMECDAKAAHEAGGRVEGVVPKFVEEGGMESTYMDK GPGMMEAANRGAQEMGADTVGLNI VLPHEQSANPYDSPSV
 GPGUMEANRGAFDADCKS GLNLSPNEHPNAYTPGL GGGGMAAAHEGAGRDNSLGLNITLPGFEQHPNPTVGGTDN GNVGLMGEVANTVLEHDGRVVGVIPKFLADREDAHNGLTD GTVAMMGAVARAARTAGAHTTGVI PRILLQSELADLGADE GPGIMEAANRGASEAGGLSVGLGIE DPFEQGLNPWVDL
 GPGMMEAANRGAHDAGAPNVGLNVELPHENGNRFDTPDL GPGVMEAGNRGAADVGAPSIGYKI
GTKGLMGAVSTACLEAGGQVHGl। GSCGLMGAVARATLAQGGKVTGII
GPGIMEAANRGAKEAGNRSIGLNI PVAFEQAPNYVPQF

 GTVGLMGEIARVVFEQGPDSKAPSKNGGKHGVPDEATYGT


UniRef90-R5YTA1 UniRef90-G2lJC6 UniRef90-A3V4U5 UniRef90_UPI00037EC8F0 UniRef90_V3UZV7 UniRef90-G8B6S2 UniRef90_E7C2S5 UniRef90_C2CSI4 UniRef90-A6ED26 UniRef90-M5J7J5
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## UniRef90-K5BF40

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UniRef90_L8G9Q1



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

 LEVVETMAERKTRMENLADAYVCLPGGVGTLEELAEVLTQ LIITNNMHERKQKMADLSDGFIVVLPGGYGTMEEFFEVLTW LLVVSDMMRERKGLMLDAHADAFVLGPGGLGTMEEFFQVWNQ IQVDPMHSRKRMMAELSDAFVAMPGGYGTMEE METWSQ AF NFHYFA $\square$ RKMHF LMMARAVCAFPGGFGTMDELFETLTL S IVVKDMHTRKRDMSTEANAFIALPGGYGTLEELMETWSQ
 LILVDSMHERKQKMADLADAFV 1 AP GGAGSSLEEFFEVWAQ LEVTPNMHRRKEDMAEMSDACI ALPGGVGTLEEDLETWKQ CFKFHYFADRKMHFMMRAKALVAFPGGFGTMDELEEVLT LHVVANMHERKMKMAELADAFIALPGGAGTLEEDFETWAQ VNDVKDMHTRKRDMGKEADAFVALPGGYGTLEELMETWFQ LIVVDSMHARKQIMFARADAFWILPGGFGTFDEMMETWKQ $\begin{array}{ll}L \\ T & V V E T M H Q R K Q G M A E Q A D A F \\ T\end{array}$ LTTDTMPERKSKMDE LA DGFI A MA
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M
LVTADMRERKGVMVALS




 M Q F H Y F A LRKMHF L L R A R A V C V F P


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UniRef90_A0A016PWZ5
 I GVF QKPCVLFNRNSFYAPLMEQEGFWWKESMRHVLFSDD

 LIMNKPCILYNVNGYFTAFI DFDGFMKKDYLDMLILISED
 $L G H V T G P V G L V D T E G F W R P F V D M F G F V Q R R F V D A L V L A P T$
 L M H T K P V V L L D D P D G H Y S G L L i d W A G F A S P E S L D A L R V T S D






 L G Q H GKPI IL VNVEHWADHVI A A Q GFAEPVS RAMITHTVPD




 I QTGK S R KIPPVILLS DF WR GLL LA WQ GLI K A E DM QLMM T


 V G Q T N G DCLIV Y N M E G Y Y D H L M V T T V Q T K K V T K F P V V M F G Y WQ G L Y D W S G K $\operatorname{I}$ G D E E E L G L L
 VGQNNNPCDFFNTNNYYSDQMVSNENGLTQENRDKILFSNS








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| R5YTA1 |  |
| UniRef90－G2 | AEEAWRVVDEF |
| UniRef90－A3V |  |
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|  |  |
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| R |  |
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| UniRef90 ${ }^{\text {－} 55}$ |  |
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| Q68Y46 |  |
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| UniRef90 UPI0002FB14D1 | F |
| Q21 | A |
| UniRef90－FOF | ， |
| UniRef90＿Q9K9A3 |  |
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| iRet90－UP10003 |  |
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| iRef90－C4ZLC | － |
| R6 | 硡 |
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| iRef90－UP10003B71 |  |
|  | A A G |
| UniRef90 UPIOOO37L |  |
| UniRet90－Q19 | E |
| UniRefo－UR2UA7 | F |
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| niRef90－C5C |  |
| 7D | VE |
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| 1V |  |
| R7V1 |  |
| R2 |  |
| － |  |
| UniRef90 UPIOOO3452EB3 | A A D |
| M2 | AEEGWQIVADF |
| UniRef90－UPI000376E |  |
| UniRet90－UPIOO0363B | 1 GA |
| UPIOOO |  |
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|  |  |
| iRef90－V5SGW6 | AAEIVPRLS |
| 885 |  |
| Ret90－D8FWQ6 |  |
|  |  |
| UniRef90－Q128Q3 | A |
| UniRef90＿UP100036ED2FA | A EGVWA |
| Un |  |
| UniRef90－A2C2M |  |
| UniRef90－A0A023WU40 | A DEAA |
| UniRef90－B9E9R2 |  |
| UPI00046 | LDEAVEHMN |
| 7V4 |  |
|  | VA WEA $\\|$ VK |
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| UniRef90－G4RGD4 | ADEAWETRK |
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UniRef90-M7WPA8

$M K R L A V Y C G A N M G P D$
$T$
$N V C V Y C A S S E L I D P S Y V L L A A Q T G T E L A R R G H T L V S G G$
RKVTVFGSARTPIEHPLYALAREMGAVLAKSDMMVITGG
KNVTFFGSARFDDDNAYCKMAHDLAFRLGEDGFAVLTGG
NVVF
K V


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

KEVTI LGGARILHEGTTYYEAARAFGKLLGEGGYTTVTGG
AVCVVYCASGPVDASFMALAAEVGAEVGRRGMTVVSGG
K A V A
ARLARNAQYYDVARELAVKVGERCFTVCSGG
MANFCVFGGAAKGTSDQFVADAETIGRMLAARGHKLTYGG
$M Y S V C V Y C S A S V D D P R A L E L S A R V G S E V G R R G W Q L V S G G$

$\square \mathrm{H}$
S SV TFFGSARFDESSKYCKMAFSLAKELADGGFAVVVGG

N T
 MK S I GVF CGANTGNQAVYQEASERLGSLMAA QGDKLVFGG $M K G V L V F G G A R D V G R A G Y T A A A A Q L G E R L A R R G R A L V V G G$

 MMRVA $\square$ F T GSAPGHDARWDDAAVDLTRYLTRQGAGIVYGG
 $R K V T V F$ G S A R I P P D T E E Y K L A A K E F S K CL A Q Q G F M V M T G A MKNIAVYCGASSGNKA DYTEAAEKLGHWIVAHHYGLTYGG

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




 RSVVCVYCASSRMSHPA YR QAA Y QL G E VLAAK Q G I A I L Y G G PYYDAAEELAYRFTKNKLIVTS G G

 SRYYEDARTLACKI ARHRFVI TSGG S $\mid$ C V F C G S S P GTK G E YMA A A A S V G R A
 $N V A V F C S A N N D I A L D Y F R A A E E L G R W I G E N G H T L V Y G G$ $K I \quad T V Y C G S N L G I N E R Y E H L I D W Q L G E W I G Q N N H Q L V Y G G$



 GAGIMAAAHEGAGLSHSLGFNI TLDP FEQRANPTDNGTEN

 GPGVMEA GNRGAVDA GGAS I GLNNVLPHEQAPNEYVTPGL
 A S VTM WTMASAA IEA G GKVVTGVFPKNFKGKK ESRDRRRIE E GNAGLMGADANSVDQHGGKTVGVMPT F LQQREELAHNGLDE





 SARGLLAGRVADAALAAGGRATAVVPQSMRTRETLHPGLRD
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 ANIGLMEETA QHVKKHEGKIIGIITYKICTLGKK S SLDPDQ
 GPSIMMEAANRGARDVGADTVALNIVLPHEQAPNPYVTPSLD


 SNE GLMANDADAVLSHGGKVTGIVEAMFADRGVAHAGLTE GGG■MQAGNE GAGRDNSFGLNDKLP FEQESNPDIE GDSK S N Q GL M D A
GP G K K A A K E S G G S M



 A GG I M CAANKGAKKAGGKSVGLNISLPFEQEANKY DTPD

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UniRef90_UPI000441347C




 AKVGLDMGILADAADAAGGEVVGVMPRALIDDKEVAHEGLTR

 GRKGIM GVVS GAVLDA GSTVVGVLPAAMDACDLEKR RNE E

 GTKGIMGELAK T LVTLLS GPESVVHVIPAALLQEYERES Y GR GR L L L M G M L Y E DV SK RN G K V I GII I P E I L E D H A I D P V G Q T E $G K V G L M G A V A D A A L E A G G E V I G V L P E A L D R V E V G H R G L T E$ $G G G I M A A A H E G A G S E N S L G F N I$ TILP FEQQANHTVAGTNH
 SKAGMME LLAATVVKQHGGRVIGGVVPDVVRQRGMESPMCDV


 C N I GL M Q CI G K A V K D H G GM T I G GV V P T L V E R G GK K F A D L D V S S GLMMVVAD GVQSAGGRLIGISVEFLRD VARPNADE GTVGLMMGEAEALVKYERNNTYQTDNVNNQYVPTESTYGR


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FTVITKDMDERKQKMMALSNGC\||A|L|PGGPGT|L|EE\|ISQAWAR

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 CFNFHYFGIRKMHFLMRAKAI CVVP GGFGTLDEMFEASTVL


 SVAF FYFFTRKVMLTSPAHSFVYFP






 LIVVTKDMTERKRKMDE LGDAF AFPGGTGTGEEI SEVMSM

 Q IVVND LN ERK QK M I D LAA D I FII A L P
 FHEVVDSMHDDRKALLMADRAADA F F V V A L P
 V D I V D S $\quad$ D Q R K E L M L K N S $\square$ A S I AL P P


## CFNFHYFA DRKMHFL MRAEA A A V F FP


L SIGQFNYFFMRKGLWA Y LAA L K L V E D M R T R K HL M L T GARAVI ALDP

## R

 TTLVKDMHTRKRMMGEEA VKAVADMHQRKAEMARHS D $F$ D $V$ V V A EIPCEDLNDRKAIMMERADVVF VALP P





 LHVVS S M H ERK AMMAELA DAF I A L P

 | $T I$ | $Y$ | $S$ | $A$ | $L$ |
| :---: | :---: | :---: | :---: | :---: |
| $L$ | I A D |  |  |  |
| I |  |  |  |  | GFQFHY F A DR K K L F L L L K E S D A V A A FA LRVVKNMSE

 $M V V T A D L A E R K A M L L D R A D A V V V M V$



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 LAEDERII AN LDVACKAITKF
FEELTAMLE LD A ALAGLE I F Ell ERFI LDVACNA S S F AVEVCEAIEN A E DVWKTL
 PQDVPAALAS IDEAFNYL V PSTLNRLKEV
 AQEAWK I A D A RELMKKLEE PSEVVDL PDEAFA ILQ
PEAALARL
$\square \mathrm{A}$ E $\square \mathrm{ET} \mathrm{T}$ N
ADDAWK I SE PEKLLD
PAD LVLKLEE $A K E \subset V L K \backslash E E$
$\square A T A C E I I Q Q Q$ PE
$\stackrel{L}{P} E A A D E R D R D D$
PRKVVRKVVEF A E EVVVEKLKN

 | $V$ |  |
| :--- | :--- | :--- | :--- |
| $V$ | S A A L E E L |


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 LDDIAKKL GPQALELL AEDAI LAL P E A ALLRALD D

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## UniRef90 G1WCM6

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90
100
100 ALLP G G $\square$ G $T^{110}$
D E V V F TVVAAS
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 CLRFHYFADRKLHLLERAKAAVFFPGGYGTCDELFEVLTL LIVAPDMKERKHLLREHADAFIABPGGWGTLEEITETLKQ FVVTETMHERKKVMLYNADAVVVLPGGMGSLDELFEAWAQ SFHFHYFFMRKFWFAYLAKAIIVFPGGFGTLDELFELLTL ShNFHYFADRKMHFLMRAKAITIFPGGFGTLDELFESLTL LIVTKSMSERKNKMIELGDVFIVAFPGGTGTLEEISEMMSK FTPTQTDDERKVLLFEKGDAVLDFPGGLGTGEEFSQLLSW LIVVPDMKERKYGMRKAADAFIALPGGWGTLEETETLKQ LFIVKNLSQRKEYFLKHGDUFIVLPGGLGTLEELADTASY HRDVEDMHTRKQMMFDESDAF:VLPGGDGTLEEAVEVWAR LIVTKDMTERKTKMIELGDAFI AFPGGTGTLEEISEVMSS HDVVPDMRSRKARMAQLAEGFVAMPGGMGTLEELGEIWVQ NLQFRYFFVRKYWFLRMARALVIEPGGFGTLDEAFEMLTL LIEVPDMTVRKQRMIEMGDAFIVLPGGGGTLE F $V T E N M H E R K K V M F M N S D A D V V M P G$
 RGPVNTMHERKTEMAKLSDSFIALDP
CFNFHYFAIRKMHFLMRAKAIAVFP
SFNFHYFAIRKMHFLMRAKAIAI FP
MIITENMHRKQKMADLSDGFIILP

## L

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## T

 NFEFHYFFMRKFWFAYLAKALVVFPGL TRVVSNMHERKMMMFEESDAFVVMP

 GFEFHYFFMRKYWLGYLSKALI AFP SFNFHYFADRKMHFLMRAKAVVVFPG


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$M V V T K D L A E R K A Q L L A R A D A D V V M V$ VRTVVDMHERKAAMAKESDAFI ALP SFLFHYMAERKEKMLAMSDAFAVLPGGFGTFEELMLDWSK
 MLVTKDLAAERKELLGRSDALVVLVGG LHLAKTMDERKHKLIDFGDAFVILP L QTENLSKRKETMVSLSDAFITMPGGIGTLD FKHTKTMAERKTFMEDHADAFIIAP
 Y IVVETMHERKKVMFMNSDA IVVVPGGG MII AADLAERKAKLLGLADAVVIMVGGTGTIDEATEWQ TVVVDNMHERKMMMYERSDAFVVLPGGПGTLEETVESWRR TTLVKDMHTRKRDMAQESNAFVALPGGIGTVDELAETWCQ LTVVDSMAERKGCMLKLTDACIAALPGGPGTLEEISEVWTR FIFTDTLDERKQLLINKSDAYLVLPGGLGTLEELSQVLSA
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| UniRef90_G1WCM6 | LT D TA A L L Q D M |
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| UniRef90_R6EJW1 | SEKLLTYLE E |
| UniRef90_E1THR2 | AP QI WR L V T Q |
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| UniRef90_R7ZR25 |  |
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| UniRef90_C9RJA6 | V D E A Y D Fi T S |
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| UniRef90_K2PPV6 | T E Q A M L L G L L |
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| UniRef90_V9GHB0 | $P$ LTL L E V M S |
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| UniRef90_E8V8R1 | PEDAFRMLR |
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| UniRef90_D9QHF7 | $V$ E A AVEEMKR |
| UniRef90_V8BKP6 | L E El RQ L |
| UniRef90_V4PGM4 | $\checkmark \mathrm{V}$ E V L P A I |
| UniRef90_W7M149 | A E GVVRCL |
| UniRef90_D0D9A7 |  |
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| UniRef90_W0J1U7 | VD DVWQHLD |
| UniRef90-K1ZMM3 | F K Q A $\square$ R 1 L NRF |
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| UniRef90_W6WU00 | A EEA WKII S D F |
| UniRef90-X5JF07 | F A E G I A L L |
| UniRef90_K0USK5 | P T DLL N |
| UniRef90_S9U1P8 | A EEAV AF $\square \mathrm{K}$ Q F |
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| UniRef90_G7XDQ1 | V E EVI GVLK |
| UniRef90_UPI000362A239 | P R ALV E R L K E |
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| UniRef90_E4T530 | $\square$ N HCMELI K S |
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| UniRef90_M1V237 |  |
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| UniRef90_R0CZ69 | A E DVTP AL |

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YHS LDDK
NGLYEKT

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IK SACVFCASSMGTSPLYAEEAT S GG KRVCVFCGSNSGNRKIFSDAALDLATQLVERKTNLVYGG KRVCVFCGSSPGKNPSYQQAAVVELGKQLVERNVDVVYGG S四KKSSKYYTEARKFAQLSSEAEYVVVTGG EQSTYITTGG VAVFTGSHDGP PSHREAAAAFARDLAKAGVGIVYGG VTCYASSSANAPEHYQQAAFELGVALAKRGWSQRNGG VCVFCGSYPGNSTSHDEAARALAQDFHKHNVQLVYGG NLCVF LSA ADLDDRYTRPAREFAELLGKGGHTLVWGG NTTVYCGASGPVDDEYLRLAAEVGAAVAGADATLVSGG NGCVFLGAFAGNDPLLGDAVRELGTWLGESGNSLVYGG $\square T K L C V F M G A S P G K S P A H M E A A A A L A E V M H A N N D H L V Y G G$ RGVVYLGSSRMGPDHSHYLQALELGREIANLECTSWTGA KGVVYLGSSRMGPDHAHYKQAFELSREISELDCTTWSGV VCVFCGSVPGNSPVHMQAARALAEEFHKHNVQLVYGG VCVFCGATQGNNPVHLESARALAREFHENNVQLVYGG

MRLVYGG
QK $\square G V Y \square S S K D N D A S Y \nabla E A A R Q V G H \square G S T G R T L V Y G G$
$N \Pi T V Y \square G A C G G N D \square S \square K H A \nabla R A F G T W T G T S G N T L T Y G G$ SVCVFCGSVEGDNPAHMETARRLAQUFHENNDQLVYGG
 MLARNSWRLVYGA RRTTAFGSSRVSVDDPRFHDVEKLCKKLAEHGFDGLTGG RGVVY■GSSRMGPSHSHYVQAQELAKEIANLDCTSWSGA RLVVCWGGHS SRDE YQYSKRVGHELGLRGLDDCTGC NUAVYCGASVGEKDEYAKSAQKLGQWIVDSGHNLVYGG

## KS $\Pi$ CVFCGSSGAVEQSYDDLASETGEATGRSEFRLVYGG VTVFASSTPQTAPAYVEASAAFGRGUADAGCDAVFGG NITVYLSSKSDLSDNFTNAVSATGKGI GEMNARLIYGG

 VVCWGGHSINPVEYQYTREVGNELGLRELNICTGCMRQ $\square S V I G S S R$ ANEEEYEVAYGLGKEDAK $\square G L V V V C G G$ IVCWGGHS $\square$ NEVEYKYTKKVGYEMGDRGLDICTGC RVCVCGSSSSSTPKAYLDASKELGRLLLAERGHICVNGG VVCWGGHS $\square$ QHEEYEYTKRVGYEMGLRGLNICTGC

MQNTSTFCGAHEGKNPRYAEDAKSTAE LLASKG $\square \mathrm{N} \| \mathrm{VFGG}$ RVSVTGGSSTGPETA AVAAELGERLAERGHTVVCGG RGVVYLGSARVKESHSHYVHARSLAKE【AHDDCTTWSGG

VVCWGGHSDNQTEYQYCRAVGDELGHRELN\|VTGC $M K K V A V Y C G A S V G N S T Y Q R D A D K I G H W L V K N N Y D L V F G G$ VVCWGGHSTNETEYLYARKVGSQLGLRELNI CTGC VCVFCGSVSGNDPAHLEVARALAHEFHKHNI QLVYGG RVVCVFGGSSGGHDSSHIDAAKALAVTLHRHDMCLVYGG
 $K R \prod G\|G S G\| V N K E D Y E D A Y K V G K L A E K G A D Y Y G G$ RGVVYLGSSRMNSDHPYFLQAVELGREVALLDCTTWTGA IVCWGGHSDNEVEYKYTKQVGYEDGLRGLNICTGC RG VYLGSARDPPNHSHYGQAQELSREAALDDCTTWSGA VMVCWGGHSDNDTEYQYAREVGHELGLRHFDICTGC KSVAIFGSRQPAPGTPQYEMARKLAGMFASRGYQVASGG TVVCWGGHSTSEAEYKYSKHLGYELGLRNDDICTGC MKR VAVYCGASKGKNPSYVKEAYELGKYMAEQGYELVFGG $V$ VCWGGHSUSREE

VCWGGHSDSPEEY
$R$ VCVYCASSDAAPAGFRVAARRLGELLLAEGGCTVVYGG AVYGSSRIVPAAHPHYHQTAQLAAEIAKLDCTTWTGA


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80
$S V G \square M G A T A K A V L D N G G Q A L S V V \mid P E P L F K \quad H G S K Q L C E$
 GSIGLMGQVSKAVYDGGRHVLGVMPLTLMPREITGDPVGE $G P G V M E A G S R G A L D V G A P N I G L N I V L P H E Q A P N E Y V T P E F$
$G P G F M E A A N K G A S E V P G A L T I G M G I T L P F E D G L N P Y V S E E ~$

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

 A QVSCMGAVARAARAGGARTVGVIPENLVDGEDSDEENDE GTAGDMAQQRAAQSSGGKAPERILPSGDKGAMTEETPYG\| GTK MMGAVADGA LRAGGKVSG I PRF LI EATENALGRLDE ARKGLMEVLAQSVKASGGRVYGMVPE1IEQRGVSDAVDV SRTGLMGETAESTLQAGGKVIGVEPQFFVEREFQYDGLTQ GTKGLMGEIAGPESVHGUIPRALVSDEPGYKQNPSSEYGV $G V G L M G A S A R G A H E A G G R V V G I M P A F L R S R E R L F D E V E T V$

GPGAMEAPMKGAAVGHAKQRDKTGRFDGDTEEPPNPLVTE GDVGLMGRVAKAVQQAGGRTFGVIPTHLLADEVGKRDLDS HQGMMAAFSQGMRAGGG HVRGITLECFPTPPDNTFSE GPGLMDAVTQGAGKPVGGFKIGREAGEWTASNFHPYLPSE GPGVMKGPMKGAADAHAKQRUHHGRYLIDAAEAPNPIVNE GKVGMGDVSDTVLDAQGEVYGVMPQFLVDREDAHDKLTD
$G G V G L M G A T A K A A H K A G G D V L G \square I P E F L K S R E G L Y V D V P$ GNGCMGAFYEAVLAAGGRVRGITHRMFVKPGGSSLSEENE SNAGQMHVLAATAKQHGATVTGVIPEVFR QLSDPVVDE GPGAMEGPMKGAADGHARYKNARYIGLTEPSEPPNPIVNE AVHSRGRQVTGMDPTTLMPRE
RTGVMEAVCKGAKEE GPGAMKGPMKGATDGHAKQYIGITEPSVIAAESANPYVNQ GKTCMGA LDDGCIHAGGTTVGVIHEMFVVDGEEHTGLQMQ GPGAMKGPMKGATUAHAKQRINDGRYVGISEESPNPIVNE GNVGLMKIVSDTALDNGVQVKGISLESLHKLELANPRLKE LGGVMEAVCRGAREAGGETIGIVP TDDRGDANPHVTT GAGMMDAATRGADDANKPVGGUMRKGTKPSRTHPYLPAES

GPGVMEAPMKGAQRYKNNRF $\square G \square T E P S\|I A S E P P N P\| V N E$ GGVGLMGVLAKTVLTDGGKAYGYMPENLYRRGAASQKLTE GPGAMEAPMKGAAVGHAQQHDGMTEPSIDAAEPPNPLVNE GTS GLM GEYDNAQKAQEQEHKTMSHALLQESEYGVT TITA GTTGIMGAVAGVVPAALARYESGGAGDGRVNGEYASRFGR LGGVMEAAARGAKEAGGHPDGILPDGEDREMANEYDET GRRGMGVVSSSALEAGGRVHGILPRALMARASEHTPTPS R GPGAMEGPMKGAA!GHAKQYUGLTEPSIIAAEPPNQUVNE GPGLMDAA DQGADKPDGGLKDAKEAGEWTSSGFHPYLPSE GPGAMKGPMKGANDGHAKQRIKAGRYLGITEEAPNPMVNE GPGAMKGPMKGATIGHAKQRIPTGRYLIIAAEAPNPVVND GPGAMEAPMKGAQRYHEGRFIGMTEPSIIAAEPPNPLVNE GPGAMEGPMKGAT $\square G H A K Q R V C G A R Y M \| I A A E P P N P I V N E$
 $M E Q \square T G E T V G E$ GNVGLMGVIADAVLAAGGTGDGVIPQSLVDREVAHRGLQE GPGAMKGPMKGATIGHAKQRNTNNRYLIIAAEPPNPIVNE GPGLMDAVTEGAEKPVGGDKDEKEAGEWTASKFHPYLPPQ GPGAMEAPMRGAAVGHTQQGHEANRYDGDTEEPPNPLVNE GPGVVMKAPMKGAVVGHGKQYI GISEPGIIDAAEAPNAVVNE
 GPGAMEGPMKGAAVGHAKQRVNDGRYIIIAAEPPNPIVNE GSSGSMGALAAGALARGGEVIGVLPRFMADLEWGWPGKAH GPGLLMDAAIQGAGFK】GKEAGEWTTSNFHPYLPPETYLTC

GPGAMKGPMKGATVGHAKQRNVDGQY\GITEESPNP\|VNE GPGAMKGPMKGATI GHAKQRIPDGRYLIIAAEPPNPIVNE
 GPGAMKGPMKGATIGHAKQRIKNARYFIIAAEPPNPIVNE GPGAMKGPMKGAAI GHAKQRIKHGQYLGITEESPNPIVND
 RGGTMEAVCRGAKAEGGTTIGILP SERHEQANDYVDI Y Q G L MEAVSKGVKEVGGVVVGIGLEAFEPLRENNNPYLTK GPGAMEAPMKGAGHAQQRYKDSRF $\begin{aligned} & \text { G G L } \\ & \text { T E }\end{aligned}$

UniRef90 11C717 UniRef90－UPI0003D746D1 UniRef90＿UPI0002C34D0D UniRef90－EOMM79 UniRef90－W7U367 UniRef90＿UPI000479B29A UniRef90－M1UQR4 UniRef90－A2QQ24 UniRef90＿UPIO0036A9213 UniRef90－UPI00047C7601 UniRef90－R6UH93 UniRef90－C7Q6B0 UniRef90＿S3DTV9 UniRef90＿U4K7J9 UniRef90＿M5WGN8 UniRef90－UPI0002B4CCD5 UniRef90－B6HG91 UniRef90＿UPIOOO4789612 UniRef90－V5F6X5 UniRef90－UPI00031278F8 UniRef90＿－R5ZYW8 UniRef90＿S8BU36 UniRef90－R7FEK9 UniRef90＿Q5AYT2 UniRef90＿UPI00037B6D97 UniRef90－W5AGF5 UniRef90－R8AN77
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 LGHHDK
DQTGRMERVPVLLFGFWGRVLAEEGTTSPDDTDLFTVVDT $K Q T G K V Q P M P V V L F G F W K S I L A D Y G V I S Q K D V S G L F F A D T$ LGLHAKPTALLDVDGFWRPLLVDDGYLDGRRLDALGVVTD GGFHNKPVVLFDVDGYWEPVVEWMKM1NAHFLEHEVGCEST LGDHKAGVVLLNDNGYWNGLLQWEGLVSPENARIIAEATK KGVGDKPIVLLNHRGFYDPLLRAKGFVASGALAKLEVCDT KKHGHKPVVLGNTAGFYDGGMEAEGFLPVPLADGVYFADE LGDHNKGIVALNDEGYWDGLVVETGFVGEGNANIVVEAKT MQLERDPFLLMNYDSFYSKL LEDWGTLSKGEDSLWKVCDS QQLRRKLPVPFNYDSFYSKLLEFFGTGAKGEVDLWKVCDN GLHKVGVVLLNDNGYWDGLLAWEGYUSASNGELLAEAKD
 LGHHRKPVVFANVDGFWDPMLRAEGFVHTGHLVQPLVVNQ
 V Lid HHKPVVEFNNLNGFWNGFFDAEGMVPRSFGLDAWTVAET MLHNREQPMPLVLTGYFRTLDAFIGTLGSEAQARYIVVDN RAL LLK NRPL LYGMWPGLLQDSLIMSVDHFDMLTLCAT LQLERKFPVPFNYDSFYSKLLEFWGTVSKEVASLWKVCNS VGEHQNPCILF
LGYHAKPLGLLDVNGFYDKLIVEEGFVRPQHRDMLLLGQQ
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 NQLW
VQAHEVPGRPVAG
VQAHEVPGRPVAG $\quad$ M I QTRKMQRVPVVLVGFWRDLLDDEGYVSSSDLDLFTCVDD NPANQAQLLPLILTGYFATVDRFGGTLGEEAQSLYIIIDD
 LGUHRCGVSVFSVDGFYDGLLDWHGFVGNKDADVGVART TQTRVMPPVPVILVG
IGMHSLPVVVLNVKNFYTPLRAESGFПKKENLSLLRIVD
NQANSEIPFPLVLTGYFDEIDAFVGTLGEEAQSKYIIVDD
LMHNQDVPFPLVLTGYLQQLNDFVGTLGAAAQERYGIVDD LDERDPFLLLNYDSYYSKLLDFWGTVAPEVAALWKVCDG
 LLDHRKPVVFHNPEGFWDPLFADQGLTPPSLADYWRVAEK LMHNRKQTLPVIFTGYFAKLDEFRATLGPEAANHYUIIDDD LGYHNKPVGLLNLDGYYDEMLSFHGFMSEWQMSLYETSGD LGIH KMWKPVNGLKTWDLLAFDGFURPSQRHGFVSAPD TQLQRVPFVVINGDGFYSKLLEQWGTVSKGEVEGWKVCSN LLHNAKQSLPVILTGYFTELCQFEMTLGKEALDKFEVEIDD QLDERDGPVPFIVDAFYSKGLEFLGTVSKGEVSLWKVCNN LMMNQDQVLPVILTGYFETLDRFHESLGSEAQKYYUIDGD LLHAKGLPLPVILTGYFDSVIHFIDKLGGEAGDLLEVIDNR
LLHNAHTRपpLIFTGYFQQTDEFTRTGGEEARKLYRIIDD MLHNTRQPLPIVLTGYFKALDEF GTLGHQAQSBYDIGD LGLYFKP VVLDDDGLFAPLDDARFMNPEHAAMWQRVAT I QLERTPFLLMNYDSYYSKLLEFWGTVAPEVASLWKICNG LLHPDNQDIPFPLKDYFTQIDEFIGTLGKKAQSLYIVIDD
 LMHNKEQALPVILTGYFEAVLEFENALGEEARQKLTFVNN
 GRAVAG
LGFAGDYDRPVVGDEDHD KYSLLKETFRVCLIGGEKYLSF KNCDFIPKALEDVLETVAT MMDNTEQVLPLVLTGYFSVLDDFRHTLGDEASKHYIIIDN


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| UniRef90-R8AN77 | $P \mathrm{~V}$ K V A Q ${ }^{\text {I M K E }}$ |
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| UniRef90_UPI00035C8A39 | H D DVLS AL |
| UniRef90_I1KYF9 | N S E ALA Y L E E F |
| UniRef90_UPI00037BE692 | P A EVA R Q M |
| UniRef90_W7DD09 |  |
| UniRef90-F0E424 | P DELLLA A M R F |
| UniRef90_UPI0003670FA8 | P DEAVKLV |
| UniRef90 R1E1B8 | P Q E AVA |
| UniRef90-R7HQQ2 | A E EAIEK L Q Q |
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| UniRef90-W5AN47 | ASELLDKLQ |
| UniRef90-Q8GLK3 | L K E I L E EVGK K F |
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| UniRef90_L1K3Y6 | V VAAL ${ }^{\text {a }}$ F A E R M |
| UniRef90_UPI0002558106 | AHEVAERMR |
| UniRef90-I2GRS1 | VPP E A L E A $\square$ G K F |
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| UniRef90-14WYH7 | P E T V A R M ${ }^{\text {M }}$ |

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$M R K I V V V M G P G D K A T A T D \square N R A Y R \square G Q L I A D N G W V L L T G G$ $R V S V I G G G G A D T$ D D E QAARAAA V GREL GAR GHTVVVCGG VK NVGGVI GYS G N P Y E T P I K E DA E K L G E E L GRR Y HV F T G G MR KI A I V M GA GENATVIDCTSAYELGKA I A QQ G WVLLT G G $K M V A V M G G H A A Q R G S A D Y A Q A A L L L G R L L D A D G H V V A T G G$ $R V V G V M G G H A M G R G T E A Y A G A A R L G R S S L A R S$ GRLTVATGG
 $V$ C $V$ V $L$ S A E P $G$ $R \ V \operatorname{Sil|l}$
 $R E T A A A L T G R D V A Q A G H V V L T G G$ $R 】 S V V G G S T V T D D E \quad Y$ ARAERLGEVVGERGHELICGG

K K MA D H Q IE LVY G G $R V V G V M G G H A M E R G T D A Y A G A A R L G R A D T R A G L T V A T G G$ VGVIGG GDCYED VCE $\square$ AERVVGELLAERKCVII NGG
 $M K Q I G V I G A G T C$ E E S I I E K M A E E V G R Ei A K R G A I L I D G G $A K P G D A A Y F D A Y E T A K L L A R A G F T V A N G G$
 VGVIGGGGVCDNKTEM
MKR $\square$ A VF G GRF $\square$ T E E $\square$ Y N D T VE $\square$ GK R MAEKNWLVFC G G $R Q \square L V I G N N T K G C L P N H E K \square A Y E V G V E \square A K S G S V L I C G G G$
$R L V V C W G G H S D S R \quad V E Y D Y S K T V G Y S L G L R G F D D C T G C$ AVFFGGVVPASAEEESLAEEI GRALAQAGYSLLHGGG
 $M K N I G V L G G A S \quad P Q E K Y L K I A E R V G E L I A K S G H I L I N G G$


$\mathrm{M} \square \mathrm{Q}$

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



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70 D KGGASRY| $\frac{8}{1}$ GPGLMDAATRGAMFK $\square$ SREGGECTDSD DHPY DPAGNYVTC GPGMVMAATMAGAQRANGHTGGECVPGKDRAPYLAAGNYVVC
 GPGVMEAPMKGADHGHAMQNHIGGRFDIIAAEPPNPFVSE $G P G A M K G P M K G A T I A H A K Q R V T D A R Y L I$
$G \square G A M K G P M K G A A V G H A K Q Q I$
$G$

 GPGAMKGPMKGATIAHAKQRRRRMRYIGITEESPNPIVNH GPGAMKGPMKGATIGHAKQYIG\|TEPGIIGAEAPNPIVNE
 LGGVMEAACRGAQEQGG TTVGI DSGTGDGNPFLSI

 LGGVMEAASRGAFEAGGDTVGILPGNDR GPGAMKGPMKGAAVGHTKQRFREGRYLIIAAEPPNPMVSN RGGTMAAVCRGAKSEGGTT $\square$ G 1 LP GERRGTANDAVD D GPGAMEAANLGAYRYPGGTPSLG $\square P T W F Y G H E P P N Y F A T H$

 GPGAMKGPMKGAA DAHAKQYVGVSEPG\IAAESPNPDVNE RNVVMDAASRGAKMVGGLT DG TLPSNDTKEENWHHENIKK

 GPGAMEAANLGAYRYPGGTASLGDPTWFYGHEPPNYFATH GPGAMEAANLGAY LPHGGDSVGIPTWFYGHEPPNAFAGH GPGAMEAANLGAYAAPYDDEMVGDPTWFYGHEPPNPFASH GPGAMEAANLGAWDEPADLRSVGIPTWFYGHEPPNVFGQL LGGVMESACRGAKAAGGET GGI LP T T DRRADANEYVDT
 LGGVMEAVCKGAQNTGA HT G IIPGKDPKQANEYVET AF $\square$ NKGG VVEGVMPDFMKEDEFHHPDLNS GPGAMEAANLGAYHFTPSVTDWARAAFEVRERWPDGGASV GPGAMEAVPLGVRPAHPTARTIGIDTWFYGHEPPNPFCEL GEGAMKGSMKGATIGHGARYVGISEPQIIAAESPNPIVND GPGAMKGPMKGATIGHAKQHIGITEPGIIAAEAPNPIVNQ GPGAMEAANLGAYAAPFDDGMLDDPTWFYGHEPPNAFAAH GPGAMEAANLGARDFPGHGGVSIPTWFYGHEPPNVFATS
 GPGAMEAANLGAYAAPHRDEMWVRAADEVRDRWPGGDASV GPGAMKGPMKGATMAHAKQRRHDKRY1 IIAAESPNPDVNH GSDGIAKNL
RNGVMNASAQGAREAGGUVVG\|LPDN
HCRQ
GKYGMRAVADGVLENGG\VHGTITEELKD RGAAFDGLRA GPGAMEAANLGAYRRPGGGASIGVPTWFYGHEPPNAFAQD LF GVMEAVSRGAKRKGGFVVGVVPSGGKSKEEANKYCDI LA GLMMREVKGVFEKEGAVTGUYPSGSFAEDDP PDS STYT RSGVMEASARGAKMEAGTTLGIDP G GDCRQDANKHIDI Y G GTMLAAAKAVAEAGGKTIGVTCTAFGR GKANEY I SR GPGTMEAANLGAYLSGAPEPDFRRPTWFYGHEPPNFFATH LEGVMEACARGAKRQGGTTDGULPGN SREDANRYIDY


## GPGAMKGPMKGAADAHAKQLSSNTRYVI IAAESPNA!VNE

 YNGLMEAAARGASSEGATVTAVTLTGKHDEWGPFNPHATS LG GVMEAVSRGCREGGGHVIGLDPGNDAD GGGVMESTAQAFCQVSHRDRAAMRSHYKTPPGYPNDFVD I LGGVMEAVCRGASEVGGHTDGDLP TVRRADANEHVET\section*{

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## 



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YMNKKPVI II ETTGGWATKTKEVGY䐜ERRTVETAFCHS KTENRHEPLPLILTSYMESLNKFVGSVLGEHAQRLIIIGD LLHNNNVPFPFI FTGYFETVDRFRATLGDQAAELYIVVGD LHPENKYGDPLIFAGYFNTLDAFKQCLGEEDSDLYEIV LLHEKNNPFPLIFTG

SGDPVIGLNTWS
DGLADKLGRPVVALGPYGTL PGVRSAKT KQCKRKRHVPI ILFGFWTDMLAEYGLISKDDLASLEDTDS LGLHHKPCGLLNIGGFYDPLLVKEGFLQEESRNLLITHSV LTNEKNQGLPVTLTGYFDA：DEFVGTLGPTAQSQY：IVD LGHNRDLPFPVVFTGGYFEM1DQRNALGDEATARYIIIDD IGHALQSGDPVIGLNTWA LARNGKPD NSIIPARD HRLDMAYRVPGVVKSDWGALITADN KDDDKPRDCVFGVDT EKY VVGY KTHNTEGVEHVNS QKTVIGLECSWN K LHNRNQTTPLTLTGYFATTDRFSKVLGEEARKQY\｜IIDD LGYHAKPVGLLNIAGFYDQLDAFNGFI RPQHARILLHDGN 1GFAHVYERPIVGLG KTWKPVIGGLTWAGI AAEVSLDMEGVTYADT LLENRHTALPVVFTGYFQELDAFLRGTFGDDDAYRIVVGD NYYGKVTPMVLVGTQYWTPLLRQLA AGRAMEDRIFLVDT NYYGDVVPMLLVGVEYWSPLLQTLAANRPMAASVVRVDT I YGKPI LTGGWSSKMAGTR DDDRRSDTYYGAKT NHYNTLSPMLFLGREFWTPGLAQLAEGHEYARYLLLTDS NYYGEPTPMVLVDRAHWTEKLPAWPLLQSLARDRIALVDR LTNNDSLPFPLIFTGYFGQDDEFDGTLGKAAQKRYDIVDD DGFAGSWKKVVLL

NRKPVILLRGTGGWTDRMADVVLDDGKY乌DNRKLVES NYYAK KAPMVLVGLHHWEHQYPAWPMLRRSMQDRIFIVSS
 LHKRPLLPLVGHGGWSDAL LYYSELGALVLVGREHWTPLLQALG I GLSLVYDRPI AGLG

## ADRDMLHLVDS

 LINNNEQVLPLILTG```
LLHPDNMPLPVVFTGYFRQVDAF|RT\GEQAAQRY|I|DD
```

$\square G \square Y S G D V I L L N V F G F F E P L L E F E H F V D N V L N G 贝 K D N S$ NYYGRGEPTPMVLVDHWTEKLPAWPLLRALAAERIALVDS NHYGSVGPAPMIFLGFWTEDVPAAPLVRKLAAGR\｜LITDD LLHPENEDLDPLPL
LSHPDN $\square P \mathrm{FPLPI}$ TGY $\square Y D \square D R F \square G T \square G K D A Q Q R Y \square I I A D$ RGP
NYYGEPTPMVLVDKAHWTERTPAWPLLDRTMQSRTALVDR NYYGDQDPMLLVGVDYWSPGLESLSAARPMASS IRLVDT KK GKPVVLLKVFQEGVQFFETGACGSLDTVVADN NYYGEPTPMVLVDRTHWTERLPAWPLLKALAQER\｜ALVDS REENHGLPFPLILTG
LK SKKKK\｜VLFNLDNFFNPLLVSHELLKQKHDNYLLDEND KAGRCVILLDFEDRGI FERAEQEGRLRQAKT LGTHDKPDVMVDPWGHFDGLLLDTGYVSPTAMERLVVVDN IGDNAKPVAFYNYAGFYDYLMNQDDFLENTYLDTVYFGTD NYYESHRPMVLVDRDHWTPLLQALAE GRSMESRIALVDS GKRVVGDKTPVKLPG TTLGPLSGKPVGLTDGLKPLLEASSFAWAEGSETVFFGSD KMGKKVVTLGSKW
 NYYGTVMPMVLVGEEHWDPLLQS【A AGRRMESRMEVVDT KMGKQVVT】ACKWE EEGFDAPTARDGIQAND $\square R \square H D K P A M$

## TGQNDNPCTLYNL

AYMHKKPMVAINLNSSVDPYTD GYDDHRENTKTVGADT LGDHNCGIVLLNIDGYWDGLLQWSGFVSHANKGULVECRS KMHNAHIELLPLIFTGYFAQLDRFRDCLGEEVSEHYKIIVN YATTDRPVPVFLAG

## $K T G R V V V T L E G W Q D \square$

EYRKP IVLLNKDHTW EEFKRTEAR VVDS DGHALDFGKPVAGLGTHSVDGVASQTQRADGRDDIDHVET RKSRQLLQQPVYLFGAWRSLLVSERVVAREQLDF：HYASS YDYSKVLVVVTDTGYPSDLLASNGYFDHKKLVQVHFTKS
NYYGEPTPMVLVDEGHWTREDPAWPLLRRAMESRDALVDR LLHPDNMPFPLVMTGYFAQDDDF母GTLGVEAQQKYQVIND KENKPVILLNNDEESKVFFQKLSSQN $\quad$ YYVRS

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| :---: | :---: |
| UniRef90-S8BV84 | NKEAI A YFTEL |
| UniRef90-U1PBD2 | P A D AVTHLDES |
| UniRef90-E8LJG5 |  |
| UniRef90_C5D816 | AKEAVEL |
| UniRef90-UPI0002555EB4 | PKEVARKTKE |
| UniRef90-UPI00037B5D76 | P Y D V A V K M K |
| UniRef90-F5SZ54 |  |
| UniRef90_UPI00037AD7F0 |  |
| UniRef90-X1CAZ2 |  |
| UniRef90-G7Q5T1 | PEEAAAMVAAF |
| UniRef90-V7PE25 | $\square E E A Y E C V I N F$ |
| UniRef90-K1ZWZ5 | SKHLDQLMNQ |
| UniRef90_UPI00036B6208 | PVVVARVLS E |
| UniRef90_UP100047D77F6 | PAEVGK |
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| UniRef90_X1TU72 | P V D A V D K |
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| UniRef90-L8EXR7 | V E E A P D A |
| UniRef90_UPI00037BD085 | T A E AVEFL |
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| UniRef90-K8GFR9 | V D S A MAlV |
| UniRef90_D3D7C9 | PAEAV |
| UniRef90-N0CHJ9 | VT EVPEALDA R L |
| UniRef90-B217U7 |  |
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| UniRef90_Q8TMY5 |  |

1 10 20 30 40
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 $R I A V C G T S \quad Q P D A G T W A L A E E V G R R L A Q A G A I V Y C G G$

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


 $M R T V G V M G S A D S N Q D D D T K D Q V Y Q L G G V A l A E R G L V L I A T G A$ TEPVVDK L V E L A T E L G K Q I A S R



DGVMGSAADLSYSKEVEQAEETGFYDAQAGATLMFGA GVMGS G


 $M L H V T V I G Y S G S \square S A S P V K E L C E E V G R T L A R H G H V V M T G G$

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lupas_14
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jnet 
sol25
sol5
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jhmm
ssm
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 RNVVMDAANKGAKSANGLTVGILPGNDTRGDSEA LGGVMEAVCRGARAAQGLTVGVLPGAEAA MANPYVVV RNSGVMAAATAGAQRAGGLTVGILPAEAADNKEDAPGVDI RDGVMELVSKAVKEAGG RAGVMAASARGAFENGGLTVGILPGTTLH TMASPHITI YSGAMEAVSKGAEIDKNNSWNIGVPMEMFDREDNRSSKIN GPGAMEGPMKGAAVGHAKQRYSEYRYLIIAAEPPNPIVNE KEGDMECVSHGVHDSNG MVVGILPGENRMEGNKYLSL
 $G \square G V M E A \square S R G V K E G G G T C I G I L K G D N G D \quad E A N D H D A L$ LGGVMESACRGAKENGGTTVGIIPDMQEEFSYANQYCDI CPGLPYACAEGVREAGGTSVGUVPEHVHKYYSPADAYBDV

 GATGMMGAAARGVDSEDGY GGGAPRFFDKPGVLYENCSE MECVAAAVKENGGKVIGVVPSRGEEKGRVSTGLDE ERDCDTAACRGAKRAGGLTVGVTYGKGVNVVAYTD I GQGVMMEAASAGAQSQGGLTDGULPGT L GVGVMKAPFKGAQVAYGKQNTFERYGQRDFMUEAPNELVTR
 RDGVMELVSRAVSKEGGRVIGV



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