1
1020
20 M A $V$ V 30
$\square$ HWRDFK $\square \mathrm{K} \square \mathrm{F} \square \mathrm{EG}\|\mathrm{IVG}\| \mathrm{LS}$ GSVVVAFRFV
SRA $\square$ ASQF $\square R$ PKR $\square \quad A \square F E A C \square G \square V C G \square A G V L K K G$
TNSTKSRRKSTV LIFFCFLTG\|VTGGVVASYRLL RNGTYNTLFHWHGFRFKLVDEGALVGFFAGFIIVLYRLG HRESDTEVFLGLSDTKNKLVFKGAIVGFLSGLVVISYRLG RRGHFIRTLINRDKTPLIILVMAGVVGVITGLLGVGFDRG

LA S WF NFKF RLLA G GVTVGLLS GAAVVLYRYS $R \square E S A M T M M T D P R H F K \square R L F D E G N I I G V A T G M V I A L F R Y \frac{L}{L}$

## LT Y LLK GVVIGALS GVVVGSFRWL KSLLIG【LTGLVISGYRLL


$R \square K S K D I L K S D A V G \backslash F S S M M V I L Y R \square M$
LS YFDKTRLA
 $L F E T Y \boxtimes A L D N W H T F R L R L F D E G U F V G L F G G L C L S L F R F L$

## $R R \square Q \square D L V V E G V I V G L L A G L T D T \square Y R \square T$ <br> $M A V L A V G L G L L A G L C N Y A F R S C$

KQLKNEELRWVQDNFNSTFLFFLTGDCTGLVDTFYKMG RRGPLCRKLLALLAFAWKWVFLALLGGIIMALISYAMDRG
 Q IS DTKKEFNFMSSSTIS QVSRGILVGIVAGVVVGAFRFLD

$$
\text { P T } \square R Q \square N T W P R F R \square R \square F A E G A L V G V F A G \square T A G F F R F A
$$ $E L Q F \square D R T R L V F V G K G \| L V G G \square T G \square V V S \square F R L L$

EASM■G VIA A $\square$ S A VLLK Q G

## $R \square R Q W L L P R R R \square I A E A C L I G \| V S G L S A V L L K Q G$

RRR $\square$ A VKAAAVGA $\square$ S G L I A V VAFRMG KSTFRK $\square E F H R K E S F Y$ LLVRGLEVGDASGLIAVLYRFL $\square K L Y \vee L S L F V G\|L T G F V T\| P Y R Y L$ F Y $\square A-L G G S$ T A VCS $\square A M D F A$

FK $\square K \mathrm{VI} \mathrm{DESALIGG} \mathrm{\square GGLLVSMYR} \mathrm{\square C}$

HRKETMAQFAERQYRNVVHFF $\square$ SAM $\square G \square I T A \square L S \square S T D V A$ RS $\square Y$ F Y C L L T GVVS GLGAYAFSRA

REKTLQGMLHVPNDK LK LAFEG LVGDTTGLCDTVLRLC

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UniRef90 UPI0002897E1C

$\square E K A E T W R T K L L P F L K T Q G S F A \square L L W F G V L D S L A F \| L N F M$ VG W LGS WRVS A S L A $\square$ P P WLLLP TVG $\square M G G L L T G L L$
LDKDAYFRHDFFKDMS LGRVIIGMS IF ILIGDAVQFMLSK VEKIWGYTRKHFVLNTHTVGSVSMWFAIFIIISLIVGQUVI


LE TADSAAHSVYSFERTHVWLIPDWFIVLILGGWVTGL
 V GWVIHLRQDKLAEVLTNPYLLAIGTLLVSSLLAMSGYYL IN WI GA FRVELI E QYSSPGLPLWLVAIDISSSVMVGLAFY I
 $\square E N L L K \square M Q G V Y P K L L T E P K F W P \square V I L F L I F V L G V N A H F L$

## $R Y$ LGYVF YS VLF GYMAAKL

LT KADS DREYALHMYNSNHDY DF LILFLDVVINSI IEELLGYVK LTYALLRINPQWI FLWVFASVVLAIGDGL SS YA GS ISIDDIYKFMLDHISYIILGILVEATI GYIVGYSV. VESFSQWVI K FYHYS

LDKAEEFVMWLHNYM HEMPDVIILWLVIAVCDGCVVCF IDFFRWLI DDNLTGYSPDTWDASRLWALAFPVIGATIMLP
$\prod$ DKFAK LVTGF DKNYGSSPMGK IIF $\square$ SAFF $\square M A S \square I Y F F T$ I SMCNNARIWLYHDLTTHPALQYLA WVSLPMCLILFSAGF L ELSEANLPRLYQLLQENPAYIPGWFIVL MAIGCILHW I GQLLTVFQGAYVAARKNDIIFLABLILLAAGGFAVASFL
$\square E K G T L L R E Y \square Y T \square L I Q S D \square W V N L L W F A A D A A A G Y \square L W R$ $\square E H \square S D F \| V T F Y \quad E S N Q H Q P V R \square A \square W M M \square S \square G M A \square F V G W$ G S GCLGT WRVHSTQFVPAWLILPLIGMSFGF LAGWD

A G WLGTWRVH
A S N Q $\square P$ A S LVLPA $\square G \square S \square G L L C G L I$

WGEDNGCDAWHRWTGLGPANYFFYIVFATDFACTSATL LQQAEA LDRSVIDHYATHTVFAPAF $\square$ FAVVLCFVVFLV
LS FAEKY LMK IIDDFVKGNPGKVAVWFVILALIGFLVSMLV LEKSD DF RAYFFVE HHSWWFHLLTVVIMWIIALFIYI
$\square E Q L Q Q W H \square L T$ Y N WAHNHHAYTF VVSGYAVILVTSSA $\square F$

 W $\square E$ WS S S YF $\square R Y$ MMYTF $\square C V I C A T S A S V L$
 A W S Y F VHYFFY IVWSMFFASLCVML
$\square E Y \square L H Y R \square H \quad L Y R W A N E Y H V Y S F A T W T L F A T \square L V T C A S L V$ $\square A W G E F F L L H T V A G \square A D T H P \square G R W S L L F L P \square L G G \square A T G L L$



UniRef90 UPI000360F332 UniRef90_UPI0004670EBE UniRef90 E3G923 UniRef90 G7UMS3 UniRef90-UPI00032A1E08 UniRef90_W0EE94 UniRef90 J3J6C3 UniRef90_D8G178 UniRef90-N9VA15 UniRef90-F4A4Z7 UniRef90_H9UCP4 UniRef90_C4UI65 UniRef90_UPI0004748CB3 UniRef90_X4ZVT1 UniRef90_C9KMS0 UniRef90_B4F1C5 UniRef90_M4UJF4 UniRef90_R5F3G8
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UniRef90-H1D329 UniRef90-H1D329
UniRef90-C6DC31 UniRef90_D8DZL9 UniRef90_R9AC16 UniRef90-F1T525 UniRef90_M5G282 UniRef90_U7UDA5 UniRef90_E2C3F6 UniRef90_UPI0004790256 UniRef90_UPI0004684737 UniRef90_N0CCU3 UniRef90_UPI0000D86151 UniRef90_R6HTC4 UniRef90_E2ZBB1 UniRef90_UPI00034AB972 UniRef90_E6LGK5 UniRef90_Q6CBC6
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UniRef90_G2KU00 UniRef90_R6QCD9 UniRef90_R5IM26 UniRef90_UPI000399233A UniRef90_U6NZ99 UniRef90_R7LH28 UniRef90_W5KEQ2 UniRef90_A0A024JLA2 UniRef90_H2S685 UniRef90-T4VN67 UniRef90_UPI0002657BA1 UniRef90_Q6C6J6 UniRef90_U5F5B1 UniRef90-UPI0003F48CE2 UniRef90-T1IZ96 UniRef90-A0A016S2M5 UniRef90_L1PGR8 UniRef90-TOFED6 UniRef90_Q0UN75
UniRef90_-D2RLN6

G P
 $P D V Y T G A A L G S N D G R L F R L$ DQEHR





## L

 ASVFS GLLSLGRE GPSVVQLGGGMAAKGVARFTKADKTDTERLR A GI GMGLSLGREGPSVQMGGFDARDI GKWSKANVSEQRYLL

 $L A V$ S S GLLSLGKE GPLV HVACCCGNVLCHLFTKYRKNAAKR


 L C A F G G L S L G R E G P S I Q L G A M G G K G M S R I F H R V K M E E K L L A






## 170

180
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200
$L L A T G A A A G L A A A F N A P L A G I L F \| I E E M R P Q F R Y T L I S T K$ LAAGAASGLAS AFNAPLAGII FVMEEDRSQFRYTVASVQ LLAA GAA T G L A A A A F N A P L A G G L L F V



 I TA GASAGLAA A F N A P LAAGVVA LEE LHK S
L LA T GAAA GLLSAAFNA P LA GILLFVIE EMRTQFRYSVLVSI K LLAT GAAAGLAAAFNAPLAGILLILEEMRPQFRYNLISI K

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UniRef90-Q0UN75
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 AVFIGGVIMSCVVFRIFNGESAVIVVGKLTNAPVNTLWLYL

 CVLVASGAANYVSRTILKTG $\quad$ TVQH NF


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UniRef90_D2RLN6

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280 $\overline{I L G \| I F G D F G P \prod F N K W V L G M Q D L L H R V H G G N D T K W V L M G G}$ $L F G M V M G G A G V V F N R S V G L V Q D L Y L K I N G D R L K R H I G T G L$
 $L L G D L F G G C G V A F N R L I F T L Q D L F Q T L H K G Q T S R W V L G G A$






 $V L$ GMLF GVV GVI FSKLLVYVQT QFQHFYQDKTSRFVLAAGG







 $V L G V F G G L Y G A Y F T K L N M A W A K R V R A K T W M A R H P \square L E V V$











## ILLGGFVGVLGLGFNRMLT DSLDSYAKSPLKAWQKPL

 $L L G I V L G L M M G R G Y Q K V L L A M P S W Y A K T R D P R Y G Q G L V P D I$ $L$ M G L F L G L A G F V Y E K A V L N D H L V Y E A L G K F F R L P K N Y Y Pl I L G V F G G L Y GA FVVM K WNL R AQAFRKKHLLSRHPI CYPN MF M $L$ L GI A C G L V S LVYFTRAMNSVVENDFRRYNNPY IMLADGGAM




 F L G V V G G L A G A L F I K K A S R F WA T T F R R DP V I K R HP F WN R Y T



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N F S M GMLVF
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Al G GLC GLLGFVAPATSGGGFNLIPDATAGNFSMGML



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 LAGL L GLVM | A |
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| I | $F L G G V F G A L S V V L S P$ H $A$ ELP QVE G GEF F A G GLLV



 $L V T A L T T A F C F L N P Y T R M G G T E L V Y N L F A E C R T I R A I I V A$




QUERY
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UniRef90_Q39PZ5 UniRef90_M5G282


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UniRef90_U7PSJ0 UniRef90_D7DVW5 UniRef90_W0ERN8 UniRef90_R8BY28 UniRef90-B1WVL0 UniRef90_W9YDZ7
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AP ML G TVLGTAF GMVAIV
$F L G R F L G V L L C F C S G D P G G I F A P S L S L G T L S G A D A G A V L L$







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## F



LVGKYI FS LI SFAPGT

CFTKVFATSATNGSGA



LA GKFFF TMLCFGSGVPGGワF LPMMLVLGALGGA\FAKLA

 $V L F K V F A S S A T N G G G G G C G G U F A P S L F L G C D T G F D F A H F C N$


 $T L T K L L A L T I I T Y G C K V P S G I$


 IVIRFVVTTMLSYSTGVPGGIVAPMLALGTLLGGLAVFHLFQ





 TIQ G F F L T A Y T F G T N I P A G L I M P S M V N G A F M G R A I G T L I Q
 LA A K Y I F S L I S F A P N TP G G L L F P I L A L G S LVGGII FA K T S $\square$


 LVGR L L Y T S Y T $\square$ G $\square$ G G S G G VF A P T L F M GA M T GM MF G QL

## oUERY

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UniRef90- Ј3J6СЗ
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UniRef90-H9UCP4
UniRef90-C4Ul65
UniRet90_UPIO004748CB3
UniRef90-X4ZVT1
UniRef90 C9KMSO
UniRef90-M4UJF4 UniRef90- $\mathrm{B5F3G8}$
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UniRef90 F9G2X2
UniRef90-K8W5V8
UniRet90-U2RAD7
UniRef90-M2RGR3 UniRef90-UPIOOO249347F UniRef90-F9MRT9 UniRef90-UPIO004560ADE UniRef90-UPI0002193F9E UniRef90-A0A017SG66 UniRef90-H6QQT7 UniRef90-G0L882 UniRef90-F2HKZ9 UniRef90-A7HL32 UniRef90-ToCQM1 UniRef90-F3Y8U5 UniRet90-H1D329 UniRef90-C6DC31 UniRef90-D8DZL9 UniRef90-R9AC16 UniRef90-F1T525
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ELIFPQYHDEAGTFATAGMGALLAASTRAPLTGTILVLEMT
 LLFPEDS A AMFPAYHLEAATFAVAGMGALFAASVRAPLTGIILVLEMT VWFPAYHLQAGTFAHAGMGALFAASVRAPLTGVLVEEMT YLYHFNPQYLQNFTIFAMAAYFTAIVKAPVTGSILITEMT PLSGSPVGVFAVVGMGAAF AGAARAPMTAVLIIVEMT QENFLDLGIATTYALTGMGAFFCAVTRAPDTAVVIVFEDT AAFPELGIEPGAFALAGMGALFAATVRAPDTGVLVTEMT
 TALSSLPGYKANFIVLGMVGYFTSVVRAPITGIVLITEMV HFFPEYNTEAGTFAIAGMGALFAASVRAPLTGIVLVLEMT QLLPGYHLQPATFAI AGMGALFAASVRAPLTGIVLVLEMT QLAGYPALETGRFLILAMAGYLTASVKAPTTGLILITEMT Y LFPDPYQQDGTFAIAGMGALFAATVRAPLTGIVLVMEMT EVFPELVGMPGTFAI AGMGGLFAATVRAPITGILLVIEMT LVSPSLSGLVGNFIILGMAGYFSAIVRAPITGIVLISEMT QWFGLQQQYDNNFVLLAMAGFFTADVRAPLTGIVLLFEMS
 WMQYSHCVIPGLYAMVGAAATLSGVTRTTVSLAVIMFELT QLHLLPAKYLVDMLVEAMAGYFAGIGKAPFTALLLVTEMV YVQWTACIIVPGVYAMVGAAAALSGVTRTTVSLAVIMFELT QMGLLSDAFLVNCMVYAMAGYFAGIGKAPFTALLLVTEMV CEPDVPCDTPGTYAFLGAAAALSGIMHLTVSVTVIMFELT

## Y

 VLLTFPSHLFANLVILAMAGTFTATVRAPMTG|LLLVEMT SQFGRDPKFGKSFIVIAMAGYFTAIVGAPLTALVLIVEMV NHLAL NPEFLRNFI FSMAGYFAAISKAPLTADLLITEMV SLELINEVYTPNDIVGMVSLFAASVRSPVTGTLLILEMT TEQFGVYIPEKNFTLMGMAGVMTAVMHAPLTGI FLI AELTT $Y W S K V M P D L A V F N Q C I G A A S A L S G V T R M T I S G V V I V C E L T$$T$
 GAG\|ITPDLILTFS\|LGMCGQFSSIVRAPLTGIVLILEMT
AA QLMDAQWAVTCVFGMAAYFSAVVKSPVTGAlLIMEMT NMGLLPDGFESDLIIESMAGYFACI GKAPFTADILVTEMV EAGFITQEQFPDFILGMSGYFGAISKAPLTAMILVTEMV CEPDVPCDTPGTYAFLGAGAALSGIMHLTTSVTVIMFELT ELHEGPYiPEKNFALLGMAGLMSGVMHAPLTGLFLIAELT
 AVFGLDPVYURNFAIVGMAGYFAAIGKAPLTAVILITEMV CEPDVMC TPGTYAMLGAGAFMAGVTRMNVTLAVILEELT
H S G $\|$ F FPMLSDKNFALAMGMAGFFSAVSKVP
DWFEFPFLEPDAFAVAGMGALVAATVRAPLTAIVLTIEMT YDNMEACVTPGVYALVAAGAVMCGVTRGSVTLAVILFELT KLGMLDSHF VDCTIYAMAGYFACIGKAPFTAILLITEMV EFFGLDPVYINNFVLLGMTGFFTAIVRAPDTGULLLFEMS WLGA DESQFSLFVIAGMCAYFGAVSKAPLTAVVLVCEMV WLSMDFSDHPGMFAVVGMGAFFAATVRSPITGVVLVVEMT

 QLGLLNAVYLNNFVVEGMAGYFTAVSKEPFTS:IVIVEEVV QIGLLNAAHTGFFMVIGMSALFSVVVRSPVTGIVLILEMT QLAYHHHDWIITFAMVGAAACLGGVTRMTVSLVVIMFELT TYFCNVTVPETNYALLGMAGVMSGVFHAPLTGVELIAELT
 FLVGMDANLINNIIMLSMAGMFASVVRAPITGLILVFEMS QLVGHNPHWWNFYAMVGAAACLGGVTRMTVSGVVIMFEMS QYFQIPEMYGANF\|IMAMAAFFAAIVRAPITGIILIAEMS


## VSPWAVSQSADFGVIGMGAAFAGAARAPMTAVLIIVEMT

## पpSSSSASPGПFAMVGSAAFDAGПSRMSTS पAVTMFEDT






RRF GRSSVD T RYA MLLEACLI G LISAVAALVLKQ G

$\square$ T C A E N $\square$ R S S $\square$ K Y G S WF $\square$ F W $\square$ F M T VG F S L I I WW $\square$ T K
$\square E K \square F E K V S Y Y Y Q A Q D Q P \square Y \square L P D G \square C S V I I V V F \square G L$ CERARLWLYKDQVNRPALQYLAWVSFPTVLI LVS SGF ASKDA QVFMSIYSKGRENLAFIPI DFILLTAAGYFVSRQV $\square E K G F H L I Q G V Y Q D$

Y $\square$ F Y VLIS LLIFAYSAAKL

S GS $\square G A L R V Q S S H V L P A W V A L P L V G V S F G F \square A G W \square$
LGKGESFAFS LYDFDS GNDLWDLLLIPDFGDVAYLIGK
1 EHDFHFVQGVYKEMSGQPLYLLAMLLGYGGVIVLDAGR
$\square S Q \square N H L L Q S L L V Q S S Q \quad H F F Q G L L F L G L L L I L G V F A G Y$
$\prod G W \square G G Y R V A A V N E H G W F V L P D A G F D F G \quad G D T G V C$ E Y GTDFA RWMYA Q ILQQNMLIVPCVVFADAAGLFIGW

P VN Y L LY $\square \square$ F AT $\square$ F AFTSATL

FRRWSTLLVPALGGLISGFL

YE WK T WP QVF Q $\square$ S SAP AS FSHY LAY IS SVTFAGVVAF L VDK S GYLLVNTYKT $\square G L K H W L I P V W \square I F L I T \square G Y \square I G L I A$ $\square H L V H Q F E T G W Q V L G \square D Y G F P L L L L L P L L P M T G A A L L I P L$ MQ F Y ERNFFYYVMELFFYCGWSVLMT GVTVAL CEAGMRYFLDALAGYGESHRMFRWMLLLLPAAGGIFSGWL
A Y T VLF A ACAAFL

RE W $\square$ T WNSA $\square$ QARSVAAEFWTNY $\square$ FY $\square I F S T \square F A T T A A Y L$
 W $\square Y$ GELLK GNVPSQYLAWVFYPMULVMFASFF

LEEAGY LLS Y V GWLGGWRLSLTRTFGALWLLPLGGLILGLLAGWVIELIS VHFIQAA $\square T G N F N Y D L A N Y$

VLK L DD A HR W $\square F R A V G S S A V L Q Y \square C W T \square Y P \square A D T T F S T S F$



|  |  |
| :---: | :---: |
|  |  |
| UniRef90-F4COU7 | CCGVASGIDATFNAPMGGAIF |
| UniRef90-S8EMR2 | REILSAACAAGVAVAFGAPI |
| UniRef90-UPIo002656EB4 | MLAAACAVGVACTFAAPLGGVLFSIEVTSVFF AVRNYW |
| UniRef90-R6NI | ITCGASAGLAAAFHAPLA |
| UniRef90-H9GCB3 | VLTJVGCAVGVGCCFGTPLGGVLFSIEVTSTYF AVRNYW |
| UniRef90 UPIOOO2C318FF | REVLSAASAAGVSVAFGAP GGVLFSLEEVSYYFPLKTLW |
| UniRef90-L8YBI7 | EVLSAAAAAGVSVAFGAPLGGVLFSLEEVSYYFPLKTLW |
| UniRet90 UPIOOO42C8307 | SACAVGVGCCFAAPVGGVLFSIEVTSTYF AVRNYW |
| UniRef90-A8F4B4 | VVAGSS AGLAAAFNAPFAAVIFSIEE |
| UniRef90-UPIO003B46962 |  |
| UniRet90_R6F018 | LTCGAGAGLAAAFGAPLAGVV |
| UniRef90 R2RG09 | S SGAAAGLGAAFNAP AGLL |
| UniRef90-UP10004133EDD | ACGAAAGLAAGFNAPIAGVLFVVEELLHDVSGITMGGPAI |
| UniRef90-- ${ }^{\text {U100037F9927 }}$ |  |
| UniRef90-UPIO0047D98A0 | 1 TSGASAGLAAAFSAPLSGVMF |
|  | AAAGLAAAFNAPlatLL |
| UniRef90-C3JA) | GAAGA\AGMFKAPITGLVFVIEVLL MDL |
| UniRet90-C5NXG2 |  |
| UniRef90-K1WWZ8 | L ${ }^{\text {a }}$ |
| UniRef90-F8XOH7 | GCGAAGALAGIFKAP |
| UniRef90 - B9WE28 |  |
| UniRef90-M7NXB2 | A SAGVA |
| UniRef90-H3B1N9 | AVGVGCCFGTPLGGVLFSIEVVTTYF AV |
| UniRef90-K9QUR0 | A |
| UniRef90-GOHN13 | GLAAGIAGTFNTPLAGAMFALEVVYMGAFSI |
| UniRet90-UPIO003B6E804 | ( SAGLAAAFNAPLAGVMFALEEIFKYFTPV |
| UniRef90-F8DGV7 | IASGAAAGLAAAFNAPIAGLLFVVEEVYHHFSRFF |
| UniRef90-G8BA19 | TATAAAGVAVAFGSPMGGVLFSIEEISSVFQLSTLW |
|  | SAAAAVGVSVAFGAPIGGVLFSLEEVSYYFPLKTLW |
| (1MEP8 | LIAGAAGAGMAAAFNAPLSGLFFVIEELLHQSNRRLFVYT |
| UniRef90-UPIOOO298DB71 | MLSAACAVGVGCCFAAPIGGVLFSIEVTSTFF AVRNYW |
| UniRet90_G2X7D8 |  |
| ef90-B99S06 |  |
| UniRet90_B6YTM1 |  |
| UniRef90_V5G |  |
| UniRef90_M7BB | GGKWVLFSIEVTSTYFAVRNYW |
| UniRef90 KgYCG4 |  |
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| 俍et90_R8BE33 |  |
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|  | CGAAAGVSATFNAPLAAAVFAMEVILVQFSAE |
| UniRef90-25J134 | CGLAAGIAGTFNTPLAGAMFALEVVVYMGAFSVNLV |
| UniRef90-D4H5P9 | TAAGMGAGVGAAFRSPLAGAIFAAEVLYASSDMEYEALL |
| UniRef90-UPIO0039A199F | LVGCGASAAIAGIFKAP |
| UniRef90 K9S300 | AGAGAGLAASFAP |
| UniRe990_LoR142 | GAAAGISATF |
|  | AA SGVSVAFA |
| UniRef90 U5RPA6 | A TSAFGAPMGA MFSLEVS |
| UniRet90-J9IFP1 | AAGMSAFAPMGAMMFEVS |
| UniRef90_UP100046C927E | - |
| - ${ }^{\text {a }}$-A8P8Z5 |  |
| niRef90 B8FFG6 | MLAAGMGAG |
| UniRet90_K7GXJ4 | REILSASAAAGVSVAFGAPIGGVLFSLEEASYYFPLKTMW |
| UniRef90-UP1000333EF3F | REVLSAAAAAGVSVAFGAPIGGVLFSLEEVSYYFPLKTLW |
| UniRef90 U1HWK3 | VLSAAAASGDSVAFGSPIGGVLFSLEQLSYYFPTMWQSFV |
| UniRef90-S2ZM11 | CGAAAGMSAAFHAPLTGTLFAVEEIQKEFHAPL |
| UniRef90-G9N397 | REVLSAAAAAGVAVAFGAP保GVLFGLEEVS |
| UniRef90-W6MJA8 | RQYLTAASAAGVAVAFASPMGGVLFSIEEISSVFQLSSMW |
| UniRet90_H1Q1D0 |  |
| UniRef90 U9U902 |  |
| UniRef90-UPIO003332068 | CAVGVGCCFGTPLGGVLFSIEVTSTYFA |
| UniRet90-H2Y: | VS Y Y F MKTLW |
| K9swu | IAAGAAAGLATAFNAPAGVITF EELLQ DVSSLT S |
| UniRet90_UP10003 | LGCGAAGAVAGHFKAP TGL FVVEVLMDLTLTSVL |
| UniRet90-H3NF47 | MLSAGAGAGLAAITNTPVSGIMFMIEEVHHKLITSLL |
| UniRet90-Q4SNC7 | A |
|  | CAAGLSVAFGAPIGGVLFAYEEISTYFPRKV LW |
|  |  |
| UniRef90-UP10002C3F7C7 | CGCGVSSNFGTTUGGLLFSVEVTAT YYPVRNYW |
| UniRef90_K9F772 | R |
| UniRet90_UPI0003A | VGCGAAGAIAGIFKAPITGL LLFIVELMMDFTLTSVM |
| iRe990_C8NG64 |  |
| UniRef90_A6LXJ9 | G LAAAFNAPLAGAMFALEEVHKNFSPLILLSA |
|  | I AAGAASGLAAGFGTPIAGVLFVIEELMRDVSGLTLLE |
| UniRet90_UPIo00345B2A4 | LIGCGAAGAISSITESPIAGVIFSIEVILAEVTIAAFIPL |
| UniRet90_W6M5C0 | G |
|  |  |
|  |  |
| Ret90-F10XU8 |  |
| UniRef90-UP10003B625 |  |
|  |  |
| UniRef90-R7J2Q3 | M |
| iRet90_W5MMQ1 | GAVAMASCFGCPISGVLFSVEVMSS HYSIVRNYC |
| UniRef90_C5AG03 | LV\|ACGAAAG\|TSAYNAP\|AGAFF|V|GE\| VLGA |

UniRef90 D3T1A1 UniRef90-E5A123 UniRef90-F4COU7 UniRef90_S8EMR2 UniRef90_UPIOOO2656EB4 UniRef90-R6NIB8 UniRef90-H9GCB3 UniRef90-UPI0002C318FF UniRef90 L8YBI7 UniRef90_UPI00037D075B UniRef90- UPI00042C8307 UniRef90 A8F4B4 UniRef90-UPI0003B46962 UniRef90-R6F018 UniRef90-R2RG09 UniRef90_UPIO004133EDD UniRef90-UPI00037F9927 UniRef90-T1ISG2
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UniRef90-K9SWU9 UniRef90_UPI000379AF70 UniRef90-H3NF47 UniRef90-Q4SNC7 UniRef90-N1QKP4 UniRef90_G5H582 UniRef90_UP10002C3F7C7 UniRef90-K9F772 UniRef90-UPI0003A9A60F UniRef90_C8NG64 UniRef90-A6LXJ9 UniRef90_UPIO00345B2A4 UniRef90-W6M5C0 UniRef90_UPI00046461F5 UniRef90_C7YYP2 UniRef90 F1QXU8 UniRef90_UPI0003B62569 UniRef90-C9P6X1 UniRef90-R7J2Q3 UniRef90-W5MMQ1
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UniRef90_C3JAX0
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UniRef90_K9QUR0
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UniRef90_J9IFP1 UniRef90_UPI00046C927E UniRef90_A8P8Z5 UniRef90_B8FFG6 UniRef90_K7GXJ4 UniRef90_UPI000333EF3F UniRef90_U6I021 UniRef90_U1HWK3 UniRef90_S2ZMI1 UniRef90_W6MJA8 UniRef90_H1Q1D0 UniRef90_U9U902 UniRef90_UPI0003332068 UniRef90-H2YSM6 UniRef90-K9SWU9 UniRef90_UPI000379AF70 UniRef90_H3NF47 UniRef90_Q4SNC7 UniRef90_N1QKP4 UniRef90_G5H582 UniRef90_UPI0002C3F7C7 UniRef90_K9F772 UniRef90_UPI0003A9A60F UniRef90_C8NG64 UniRef90_A6LXJ9 UniRef90_UPI000345B2A4 UniRef90_W6M5C0 UniRef90_UPI00046461F5 UniRef90_C7YYP2 UniRef90 F1QXU8 UniRef90_UPI0003B62569 UniRef90_C9P6X1 UniRef90_R7J2Q3 UniRef90_W5MMQ1
UniRef90_C5AG03

G|LIGVVICAAVALAFANSLYAVEHGFER|L|PVPTDLKPA|L|GG|L|

 AMGAACGVLGATF
 V I Gl C S GFM GA F F V Y F H R QVV L CDVR R HL K T DM R GVVLK E Y FI L L GVFGGLDWGAFF DRAN』AWCRRRKSTKFGKYPVVEVI
 $A \cap G \square C C G F L G A V F H R Q V M L G V R K H K A L S Q F L A K H R L L Y P G$ GLGVVI GIF GAFFTKSI LWF SEQM GKLKVFS LM IL G V L TA L A S L L F DK T L Y A FE D GF E A L R V VP D WT KPA L G GA IL G I V M GVVF GV I Y NK T TF F VQ D V F FA R F N
 $P L F B L G I L A G V L G A I F S R S I D S G S K N R R V L R W G L R M A$





 $L L G A A F G G G Y G L V V C R F N K R V A G F R K R Y Y A R Y P M R E A V$






## V













 FI L L GIF G GLLWGALLF IRTNDAWCRKRKTTQLGKYPVVEVL


 $L L G V M M G G L Y G A L F D R M N L K D A A F R Q D S W L R F F S V H E V V F M$
 FALIGA LGGLLYGAAF HANLA WCKFRKNSK L GNY P I L L E V V



## 1

 VLGTLCGFMSYYFTRINTADGGAFARLRTLGRKWLVGGVV




## $L L G F L A G G L G A L F N A G I L F C M R V Q K Q L R L S D P W R D G L V C M$



 GHYPVLEVLVVTAVTAVLAFPNSYTRMSTSELISSELFNDC

 $A L G L L C G A A A P Q F L R L L A A S K A R F R Q \quad L P A P L P V R L A$

UniRef90-R6NIB8 UniRef90-H9GCB3 UniRef90-UPI0002C318FF UniRef90 L8YBI7 UniRef90_UPI00037D075B UniRef90-UPI00042C8307 UniRef90 A8F4B4 UniRef90-UPI0003B46962 UniRef90-R6F018 UniRef90-R2RG09 UniRef90_UPIO004133EDL UniRef90-UPI00037F9927 UniRef90-T1ISG2
UniRef90-UPI00047D98A0 UniRef90-M4HRN8 UniRef90-C3JAX0 UniRef90_C5NXG2 UniRef90_K1WWZ8 UniRef90-F8XOH7
UniRef90-B9WE28 UniRef90-C4YBC3 UniRef90_M7NXB2 UniRef90-H3B1N9 UniRef90-K9QUR0
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UniRef90 D4H5P9 UniRef90-UPI00039A199F UniRef90-K9S3Q0 UniRef90_LORI42 UniRef90-J3PXJ6
UniRef90_U5RPA6 UniRef90-J9IFP1 UniRef90_UPIO0046C927E UniRef90_A8P8Z5 UniRef90_B8FFG6 UniRef90-K7GXJ4 UniRef90_UPI000333EF3F UniRef90_U6IO21 UniRef90_U1HWK3 UniRef90-S2ZMI1 UniRef90-W6MJA8 UniRef90-H1Q1D0 UniRef90_U9U902 UniRef90_UPIO003332068 UniRef90_H2YSM6
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CLGVV

 LTPKAFGQFMAGEDMPREA

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

 $V$ VGLLSGLIVSLLPLSFRNNTGI RQLI LSGELSWETSALV FAVLLTLPVAYFYPQLLGGGNSVINSLSDSTPTLATVVIVY H DSGHEQVTQLFSNFSWSSGDHDI NWATPNSNDYITLTLY MAGILGLVSPILLGGG HELIMSLKESNFTMIMLMIF LAFIL I I PVVGIVLPQULGGGNQLVLSLTEQNFSFQVLLAY LSVLIVLQLLSNDVSSIMQGSGFAGLGDSYWWIVLFLVTLV
 LFTASFSYFNQFLRLDDMTETMQILFHECDKNFHHPICCLFA

 GVGVLGMLFPAYGDFGDGY, EGMKMAFYGELAMGLLIVLD FAFVLILPDGYLLGQQLGGGNQLVLDLARVPYPVLTVLGY
 LVTLLVSTLTFPNRTWCRQGVAEEFDYDSHHQAWRHLELFF $\square A L V V I D P D G Y D F P H L L G G G N G L I I G G L S E H P T L M L V I L Y$
 LELLVAACAVGVGCGQFMAGELMPREADSSLFDNYTWAKH I SGSIVAALPPFFRDNAG
 RIGMTE
 IF L GF GLWM

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


 $V G A A L T G V I G D A L P Q V L G D G Y E H \square E Q A L A G Q D G G W L L L S L$ MM DLLCDYQNKTFSS DKV D DNYHTGELGAGVHNAF DDL L L A






 TC GLI V G L L P E T F R D S T A L Q E F L LA S G G S N WQ A TA A A F F L A R

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|  | $R$ | $F$ | $I$ | 1 |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $L$ | $L$ | $F$ | $K$ | $V$ | $F$ |
| $M$ | $A$ |  |  |  |  |
| $M$ | $L$ | $T$ | $L$ | $Y$ |  |














 AGLK I L F S TY T VA I G GA G


## 





 A F L I K G F LTVIMA F G I K V VP A Gll Y P S M V V G G L M G R I V G H L A Q
 SIL LK F F F TA F T F G L K V P A G V W L P S M A I GA C F G R A V G L T V H



















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

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$\square E N P H$ GF S VS LVF D G L F VG $\square$ FAGC $\square$ SVIYRLL RRRLHKK LR QTNR $\square$ SRKS $\square$ FAC LLIGAFVS $\square S A D G F A K L$
 K A

RQVP $\square$ LREMA LRNESVLRLVVQAAFVGGCTGGVIGVFRWL $L V E K N R N F D F S R L H F \square G K G V A V G V L A G \| I V A A F R K A$




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

$$
Y \square F Y \square A F A \square L F S S S S A Y L
$$

AELGLHWNSVWTAKYPLAAWF VLP LGMALLTWF
VAKLLNAHQWLYGCLKGHHDLQFLCWTLYPACLCALSTSF $L Q Q L F N S R K L F F \quad D G H Y P W Y F H V L F F F T L W G I L L C V N W$
$\square \mathrm{F}$ VY S VA CAVVATGCCLL

VS WVQNMR】GALVQVADHAFLLWPLAF\|LSALLAMVGYFL WGEDNGCENWHRWTGFQPLNY VLY LLFATCFAF $\square$ SASL

Y DHGNAWZVTLRHGADDLATALIVFGTLILLALIVGQMV WHRWSNFWPVNYLLY $\square \square F S T T F A F D A G R L$


LTV VWL

Y VAFSALLAFTSAAL
L


$$
R W L T L F L T P A V A A L S V W L
$$

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120 KMFAPYACGSGI PEVKTILSGFRGYL GKWTL LI K SI TAP




RFAP
 E P
 YACGSGI PMAAGSG1
 SAAGSGVAEVRVILSGFHGFLGLKTLLIKSLGLI AHSVCPYSAGSGVPEARALLLGVDDYLSLSNLFAKMFGLI $\square \mathrm{KF} \square \mathrm{P}$ V EAMSGGUTD
$P Q S Q G S G 1$
$P Q A V G S G I$

\section*{} | K |
| :---: |
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$\begin{array}{rl}P Q A V G S S G l & P E M K T \\ \text { K }\end{array}$
P QAVGS
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EPSASGSGIPQTEGTLLWGDPLRWGRILIVRYAGGL SAAGSGVAEVRVILSGFHGFLGFKTLVIKSVGLV



 RY IVKDNISHGITRILYAISSNRSRLKSHNCWSSVI ASA

TRRFFKGAQGSGIP


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RFAREARGHGVPEVMFAVDRNGGRI RGSVAVVKALASA

V E L Q




$8 Z 2$

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$A T D G F G G S A G D E G A S T Y G G G V V S S D V D R T W D R D P Y E E Q R V$ LAVASGMWLGKEGPLVHVACCCANIATKPFKNIRENRKRE LGNLMGFSLGREGPSI QMGGAAAKSIGKILKRPPDELKYM




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190
200
VISAGAGAGLJAAAFNTPLLSGIVFJVDEEMNRKFRFSVSAT REVLSAAAAAGVSVAFGAPVGGVLFSLEEVSYYFPMKTLW REVLSASAASGVGVAFGAPGGGVLF LASGAGAGT AASFNAPDAGALFAME EVVSY
 LLAGTAGGLGADFHAPLGGALTSVEMIYRE DVESDSL LLASGAAAGLAAAFNAPLAGWMFVVEEMRPQFRYSUISUR DS SGAGAGLAAAFNAPGAGLMFVLEEVHETFSPLVA MMTCGAGAGLAAAFNAPLAGVMFSLEELQKNFNS SMLV LLVSACAVGVGCCFAAPLGGKYSVIMLSSLYSQMQYYTPE REVLSAAAAAGVAVAFGAPGGGVLFGLEEVAYFFPAKTLF MLVVASAVGVASCFGAPISGVLFSIEVMGTHYSVYCPCFF
 REILSASAGVYEETAAPNDHGGVLFSVEVTSTYFAVRNYW LLLLSASAAAGVSVAFGAPUGGVLFSLEEASYYFPLKTLW REMLSVACAAGLSVAFGAPGGGVLFSYEEDSTYFPRKVLW MLMCGMSAAFSALLFGTPMAAAVFSMEVVSVGVMYYAALV
 LILAGGASGVSAAFNTPLAGLVFAIEELSHSFEQ RTSG PRFLIAGSVAGLDAAFGAPFAGMLFAFEEVKTVVTVPLLL R
R RILTGVAGGLNAAFLNIDTEWLSDUKEEDANHFPLKTMW
 LATGSGVPEVELDQLQGKLQQAWLPEEVFH R
 LIAGGSAAGLSAAFNAPDAGTLFVDEEVYHNFSPLV WM RVACGAAAGUTSAYNAPIAGAFFDMTELVLGSMAMERFG REVLSAAAAAGVSVAFGAPVGGVLFSDEGVSYYFPLKTGW
 $\begin{array}{ll}L V A A G S S A G L A V A F D A P L S G L I F A L E E V Y R K F S T Q V & I \\ M T V V G C G A A G A G A G D F K A P G A G L V F T L E V L M D D M T M S A L L\end{array}$ DASGAAAG LSAAFNAPDAGVMFVLEEVYHSVSPFV A ILAGGAA GVSAAFNTPLAGIVFADEELSHSFEQPARTSG


UniRef90_Botwis UniRef90_F6TV75
UniRef90_U1HQ62 UniRef90-C4JEC8 UniRef90 S9PAL7 UniRef90_UPI00034B2E2F UniRef90-R6PUA6 UniRef90-A3ZWK0 UniRef90_V6HR89 UniRef90-R9G9J5
UniRef90 F9RTH4 UniRef90-UPI0001A62E29 UniRef90-D0BLG2 UniRef90_R4X802 UniRef90-A7A345 UniRef90-R5YW42 UniRef90-W5MP94 UniRef90-I2ND67 UniRef90-B2AXG5 UniRef90_F1QAS1 UniRef90-R6JIL1 UniRef90-E1JWQ6 UniRef90_F0VC52 UniRef90-G3HL31 UniRef90-E5SD00 UniRef90_UPI00036A91F3 UniRef90_N1Q0F0 UniRef90-X3ELX1 UniRef90-M1W241 UniRef90-E5VRN8 UniRef90-G211N7 UniRef90-E5Y3AO UniRef90-H8MSE8
UniRef90 K2RVR3 UniRef90_UPI00046CFE5A UniRef90-UPIO00346440F UniRef90-H3CGQ9 UniRef90-R1D2H1 UniRef90-R71J65 UniRef90-D5W8L9 UniRef90-J0X071
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UniRef90-K6ZTZ5
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UniRef90_D3L3U6
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UniRef90_U4UCS78 Z2

## 







 RSFFCAMVSANVLRILNPYGSMFYVDYQAQWHVMELIPFA
 GATAASLTADFVSKYCFGLRPVLDFGT

R







T




 $\bar{V} \quad \mathrm{~V} A A V V A N D T M R E F A G Y K P P Y E M P E F P T V T G P E V L P F V$
 TALSAA LAANAVSMSLIFGLTPVLHMQHQYADPDRYYPY


##  <br> A

| Q |
| :--- |
| L I |






 FI AGFAAFTTAQF LGGDEYTYYDLHFFQDVSLDFWLI MKVV $P V A D A A A V G T G V R Y V L E G N E P M F A M P A D T A P T D A A L A D V Y M$










 RS YFCTAVLAAMNPFRTGQLVMFNVKYDRSWHFFGHCSTAA


## UniRef90 Botwis

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UniRef90 G211N7 UniRef90-E5YЗАО UniRet90-H8MSE8 UniRef90-K2RVR3 UniRef90-UPIO0046CFE5A UniRet90_UPI000346440F UniRef90-H3CGQ9 UniRef90-R1D2H1 UniRef90_R71J65 UniRef90-D5W8L9
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UniRet90 E4K
E41 UniRef90-A2BJY0 UniRef90 E6W1X7 UniRef90-Q0ABKO UniRef90-UPIO0026C7FCA UniRef90-S7V9W6 UniRef90-C6AKk9 UniRef90-UPIo003F0F73C UniRef90-H8MX32 UniRef90-F2KPQ2 UniRef90-K8R460 UniRef90-EOUSS UniRef90-A0A023NS89 UniRef90-G2DTC2 UniRef90_T2J570 UniRef90-M5E937 UniRef90-C8X5N8 UniRef90-UPI0004408A58 UniRef90-A0A015ZFV6 UniRef90_UP10004237269 UniRef90-F9FLU5 UniRef90-K6ZTZ5 UniRef90-U2RB63
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UniRef90 - $12 \mathrm{~V} \times 85$ UniRef90-T2G9U5 UniRef90-D3L3U6
Unirergo_-U3L3U
UniRef9O_U4UCS7
 LI GALGGLYGAAFDHANLAWCKFRKTSKLGNYPDIEVMVV 1 GUAGGLFGG\|FCKANFLWSKTFRKYNIIKNNPVFEVFL LLGALGGAAGALF KASKVWAQSFRADPALKRWPMVILVA FLGIIAGII GAVFNRSVLFSLQWNQKLKDPGYVRIGVAGL MILLLGVILGVMGAFYNWFTLTVQGLYKKTKGLNEITKVM GLGVLCFVCGDVFiRDFRKVQNFSFRDRDSPIVKPADGGV VLGGLFGGLGYVYQKTLLWLPQFY
ald LLGIVLGLFGWVYHHYTLYDLLAKYGKLGPFIPNYYYCM LIGGVFGGLYGEFVMKWNMRVAAMRKHLGSFAIREAV LLGGLLGLCGAFYNFIMLKGQDLFGAMKKDPAKY AMA R PLGLLSLAFSFNAFLVYLKTVSICPLFHSFSPSQLMPREC LCGVICGULGGLFARLLAKVAGVSPAKDRGWVRRHPTYMA LVGVLGGAAGALFDKASRRWAKTFRRDPKSYPLLEVVLVA LLFCSIVSCIYGLCHRWALRFVKTNKPLSTFLATEKSLYSA FLAVVISSVFGKLYSMFTLWCKDFFTRLKHPPYMKMLYY FLGAICGCLGGLFVWAASKDFQLARRHVYPSAGRKIIFVC VIGACCGFLGAVFVYLHRQVMLGVRKHKQFMAGELMPREA VAALLCGLAGAAFNLALLRWEVWMPAPMRQWRAHKPVLYA

 ATCFAFDSASLVRSKWNLRAQAFRKQYLTKYAVLEATLLA LLGALGAAGALYNCVMLKGQDIYKKLSFLKPEYRTVIPF LFGVGTGLFSALYNTALLRVTEFH
 VLAFSVGLFSVFYUKVFYGIRDGFKRURLIPBGKPADGG ALFVYANRLIVECMRKQKTTVKFLLRKRLVYPALVTLEVAS



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UniRef90_U1HQ62 UniRef90_C4JEC8 UniRef90-S9PAL7 UniRef90_UPIO0034B2E2F UniRef90-R6PUA6 UniRef90-A3ZWK0 UniRef90_V6HR89 UniRef90_R9G9J5
UniRef90 F9RTH4 UniRef90-F9RTH4
UniRef90_UPI0001A62E29 UniRef90-DOBLG2 UniRef90_R4X802 UniRef90-A7A345 UniRef90-R5YW42 UniRef90-W5MP94 UniRef90-I2ND67 UniRef90-B2AXG5 UniRef90_F1QAS1 UniRef90-R6JIL1 UniRef90-E1JWQ6 UniRef90-FOVC52 UniRef90-G3HL31
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UniRef90 W4NS44 UniRef90-W4NS44 UniRef90_UPIO00456011F UniRef90_R5BBM8
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UniRef90_U4UCS7


$\square G G L V V G D V \square R A P E V W G N G Y E V V N S L D H Q P W T W T A L L I I$ VITIVTSLI SYPNEFTRISMSRLI SELFQNCGPDDTSHLC $V G G L L L G C V A W R F P E V I D G G Y V W I Q T A L D G K M L W Q T M A A L L$
$I V G A$
$I$ IVVG DTVLCCFFPDGAYGGGDTLKKVLDNQMKTWEI AVVC TLSLLIFLLNGQNADDWNRILDNNSMFSGQGSLLLVY I ALV $V P F T L V I P I G I L W P N L L G G G N N L I L S L K E T P M T M K M I I V I$ $I V T G M M S W N V H T P C H D G S G R E D Y G L C P T A M D D D P P L F T A$ ASCGLVLALIGLASHGATYGTGYGQARAIIDGTEHYPASF


 IGAALLGAI GVAFPQVFGDGYKWMNEALMGHIPLYGMLSAB




 LGGLLVGVISDWWPEVWGNGYEVVNSLLHEPWTWTALLTV

 LMGMASGLII ALLPPFFRDNTGLRIDLVQGELEWSRILGAA
 TITAMIGYFNRFLRCDTAGDIDHLCQTSAQWRMVNSLFLA LSVLI FLF LIN GVSNADWDTVLNNSLLFYGYGN LLLVYLVLI
 IAAGLITGAVGYILDDALGAHFHSAHVLIDANENAQLLIGGV



 VVTGVI CYPNMF LRRDDMGKGY DRLCD QNHKWHNGLDP LA I G G


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UniRef90-UPIO00475C50F UniR Ref90-T2MF96 UniRef90-E1K2A9 UniRef90-S9S4U2
UniRef90_A2EDH3 UniRet90-D5EW71 UniRef90_B1MYU5 UniRef90-H1W3X8
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UniRet90 E4KX51 UniRef90-A2BJYo UniRef90_E6W1X7 UniRef90_Q0ABKO UniRef90 UPIO0026C7FCA UniRef90-S7V9W6 UniRef90-C6AKK9 UniRet90_UPI0003FOF73C UniRef90-H8MX32
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UniRef90 - 2 - VX85 UniRef90-T2G9U5 UniRef90_D3L3U6
UniRef9O_U4UCS7


FADRFAGVIFSYGTGVTGG\|IIFAPMIIALLGTVFGLAYGLLSTA SFFKGVLTVFTFGLKVPTGLFDPSMGVGALMGRLIGWNTS CVAF YiLT AAGSGAPGGDFAPALDMGSADGYAGAFENA


FAGR\|VTTM\|CFG




 $F F G K V L A T S L T M G S G L S G G M F A P A L F L G G A A G G I V G Q A G H$ VLIKFAATILSVACPVPAGIFTPIFVCGAALGRLYGML



FFMKMLFTALTLGAGFKGGEIVPSFFTGAAFGCLFGNLSG REILSACAAAGVACKVPAGI FVVPSMAI GASFGRAVGIMVQ FILKFIA TII SYCS G IPPGGLFA VRIS $\begin{array}{ll}P L A K L A V T S L C A G A G V P G G L & F T P S L F F G A L L G G A F G M L V \\ A F G S P I G G V L F S G C K V P A G I V V P S M A V G A S F G R M V G V L V Q\end{array}$
 FLVKAFFSCFSFASGUAGGWLMPDLTAGAULGCLLSS\|GQ

 DYVYMTNVTQNVNSEYYPHR
VFLKIVATSFTIASGGSGGVFGPSVFПGAMDGGAFGEDGH LICKVVATAASAGSGAVGGVFTPTLFCGAALGLLYGTGMH LFVRFASULFCFGSKDSGGUFDPMLSVGGLWGGLDAKLMD LLVRFVFSMISYGSGGPGGTFLPILTLGALSGSLMAHLFV FLIKGFLTVITFGIKVPAGUYVPSMVVGGLMGRLVGHVVQ FLYKFAATIVSYGSGIPGGLFA
PEARVVTTLLCFSSGAPNFSVGLLLFDFDTRVVTTLLCFS FFLKAI AVIVTFSAGGDGGSFFPLLCLGAATGSVVA
 LLVKLFYTSFCYGS GVQGGVVLPVLVI GGSCGALVFAFLD VLLKIVATAVTLGSGFSGGVFGPSLFI GLMLGGSFASIA AV HKLLAGELGWLLVCGLLI GTDAAAFDQSLMFFSNSLTQ $P L F D F F V L L A F D K I I A T S L T V G S G A S G G V F A P G L F D G G F Q$
 GIMKLFATVGSYWTGIAGGIFTPSLTVGALGVQVASFSD
 $L \underset{L}{ } 1$ LVEKII ATAATAGSGAVGGIFTPTLFVGAVLGCLYGIGVH FLLKTVF TS LDSLAAGGSGGVITPIFYI GATSGHFFGSI CLLK LV SWSVSLGSGTSGGTLAPMFTI GGAMGGVMGAACV AVAKWVATILSYWAGDPGGDFTPSLTI GAMLGEHIAAVAN
 VALGKILVTSFTGSSGGSGGVFGPSVVIGGAGGGGVGQTV

 IIGGVLFSLEEMSNCKVPAGIVVPSMAIGASFGRTIGULVQQ
 $P$ LLKMASMI GSYLPGIPGGIFAPSLSIGAGFGNVL
TVLRIAAVIISYGCKVPAGIFVPSMAUGATFGRMIGILVK DSPWSVPVFFVLILLLKVFSMTLTNAGGGVGGTFGPTLVVV $A V L A V L T G L L G A S L S T P T G D F I P T F I A G A T F G R F F G E V L V H$ GAAKTVALWFALGGGTSGGLLAPMLMVGAADGSDYGHIVTV FIVLFI TTGLATASGAPGGLFYPMLILGGSMGCVCGHWIE IVVKKTIATSVATMGSGMSGGMFAPALVFGGMMSGGLVGHKFGH SGLSVGKEGPSVHCKVPAGDFVPSMAIGAAFGRMVGDCVQ $\frac{1}{V} L / K I T A T S F T L G S G M S G G M F A P A D F V G G M S G G V V G F T A H$ $F F I K S L A M A I T L S C G G S G G V L T P T F F V G A T A G A T F A R L$
$W K T D Y T A S I I C S T I P V P A G A F D P V K I G A A D G R V V G E L M$

## UniRef90_botwis UniRef90-F6TV75 UniRef90_U1HQ62 UniRef90-C4JEC8 UniRef90_UPIOOO34B2E2F UniRef90-R6PUA6 UniRef90-A3ZWK0

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UniRef90 $12 N D 67$ UniRef90-B2AXG5 UniRet90-F1QAS1 UniRef90-R6JIL1 UniRef90-E1JWQ6 UniRef90-FOVC52 UniRef90_G3HL31
UniRef90 E5SD00 UniRef90-UPIO0036A91F3 UniRef90-N1QOFO UniRef90 - X3ELX1 UniRef90-R5HLT9 UniRef90-M1W241 UniRef90-E5VRN8
UniRef90 G211N7 UniRef90-E5YЗА0 UniRef90-H8MSE8 UniRef90-K2RVR3 UniRef90-UPI00046CFE5A UniRef90_UPIO00346440F UniRef90-H3CGQ9
UniRef90
R1D2H1 UniRef90-R71J65 UniRef90-D5W8L9
UniRef90 Jox071 UniRef90-M7T8B7 UniRef90-V710E3 UniRef90-UPIO00475C50F UniRef90-T2MF96 UniRef90-E1K2A9 UniRef90-S9S4U2
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UniRet90 E4K
E41 UniRef90-A2BJY0 UniRef90-E6W1X7 UniRef90-Q0ABKO
UniRef90 M1RJD UniRef90-UPIOOO26C7FCA UniRef90_S7V9W6 UniRef90-C6AKK9

QLLFPEYNTDAGVFAVVAGMSALLFTATVGAPILTGIIVEVMEMT CHAGHSCVTPGLYAMVGAAATLGGVTRMTVSLVVIMFELT

 TSAVSTFALVGMGALFTGGGAVAVVRGP TAAMVEELN TSSVSTFALVGMGALETG QMDPGVEDDPVTFALAGMAAGVGASTGAMITAAVMLQEMT


G $\square$ WP HTTSEPFAYA $\square$ VGMGAF $\square$ AAATNAP $\square$ MA $\square$ LM $\square E M T$
ALFPNLVVNPGSFVLVGMGGFFSGVAKVPDASVMMASEMC ALLPGAAPVPISYAVVGMGALLAATTHAPLMSVLMDFEMT KAGYDSTRFSYMA YLHLMSANYALNFIVIGMAGYFACIGKAPFTAIILI FEMV YMVLLYCDQPGVYGLIAAGSTMCGVTRADSVTAAVILFEMT
ALQTGFPSWNVFSSCTPDAPCDTP
AMYIA GPIEDPGAFAVCKGMAGFFTAVSNTVSTIIFVSEMT
AMYLAYPESGMFAVCKPDVICTTPGTYALLGAAAMMFEMT
LLAFPLADLNPATFMFLGMASVFACVMNAPVTALFLVAEIT
AA E ANPTSVFFSACKPDEPCTAPGTYNLRVQSFRKKELT
FLLDDDVSNLNGSFSLLGMAGLMTAVIHAPLAALSAVMELS



UniRef90_M5E937
UniRef90 C8X5N8
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UniRef90_B2VX85 UniRef90-T2G9U5 UniRef90_D3L3U6


$\square R E K \square K H W \square E H G M \square F L K W V A C A L L M G L V L G A A G T \square F H Y C$

LID F F Y N LF

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

RPE WQRKCFDF $\square$ S S $\square$ WKHTFF LI LLGVISS LI SFSMDYG

K G
$\square A \square L I G L L T G L V I G \square Y D R T$
F L K WT F C L F $\square \mathrm{G} \| \mathrm{L}$ A GAVGFFNN L A L

RSRALLQS LRRDPGERRYALLEACA $\square G \square V S A D A A \square A L K E G$


$\square K$ KRQENKWLLVFESLLTGLLTGLVITGFRLS
$R S R K K Q Q \square F Q Y \square V L K W S L V L \quad L I G L C T G L V G F F N N \square A$

CQQWHSWSQSGYAAGY
$F L Y \square S F S L L F G L S C A L L$
$\square P$ LG G L L I VF

FHG $\square L$ S FE GKDATAA $\square$ SRWGKY VI LVPAFG $\square A L A$
NF $\square$

WD NYLY L VYPG G MLLS $\overline{L L I}$
E WLLFSRTDLVAAAAS $\square$ TGWRRALTPALGGLAAAGLLLWA

 LEMAETLGREGLY QY LDS TAHAAFTVGWFFLLLVIGRLLGL

VD K L Q D L K F D S $\square E K$ Y $\square$ S S K S $\square$ S F F $\square$ Y L S F N L A Y A L I S C G L





$$
\square \text { F F P A } \square \mathrm{GL} \mathrm{~L} \text { I VS ML }
$$


Y VT F S T T A A VVASFL
$L Q Y L F G M Q Q G S S L H E F P H Y Y$ VI L M P A L G G G L L V G L I S H F L I


$$
\text { A H K WLYRE } \square \text { G D G H L L R Y L S WT VY P VA L L S F S S G F }
$$

$P \square M G L I \quad 1 \quad V Y$
$\bar{V} H G \square K N L L T N W F D A S W D N Y \quad L Y L V Y P G \square G M L C S L L I$
$\boxed{V} D L L S T Y R \square Q A A V R F G W \square A \square P L A G A M L G F L A G V$ I V
$L L W L E G S H$ Q G L VANAA H L S P G $\square R$ V L VPACGG L I A G L I L Q Y E S WHPWSTVVTPARYLI YVLFATFFSFTAABLL

YAA LIVTP $\quad$ VLGGCAWA
 LF VA S A L F A G GF S A L L
 $R W P Y$ Y P LA L S P L M F G L S A WA


UniRef90 Q604NO UniRef90-UPIOOO2B4A9D2 UniRef90-A9V2G7 UniRef90-S7TGS5 UniRet90 R6MZG5 UniRef90-W9V747
UniRef90 - $1 Z \mathrm{ZYY}$ UniRef90- TOHZ97 UniRef90-101MN3 UniRef90-D5GM19 UniRef90-G8QXG2 UniRef90-X8J183 UniRet90-A5E5H2 UniRef90-B1YUM4 UniRef90_A0A024UIO9 UniRef90 F4C417 UniRef90-UPIo003B75321 UniRef90-R5XKTO UniRef90-R6ETN5 UniRef90_O8ZEB3
UniRef90_K7STO3 UniRef90 W4DCK1 UniRef90-A6VLI3 UniRef90-F7NJ45 UniRef90-B6G134 UniRef90-WOT433 UniRef90-C4GMS3 UniRefefo-F4PSAB UniRef90-E6XOUE
UniRef90- $991 F T 5$ UniRef90-G9Y1N2 UniRef90-R5HY26 UniRef90-W5YEH4 UniRef90-L7MH18 UniRef90-UPI00037390CA UniRef90-UPI0003F958EB UniRef90 C8WVL6 UniRef90_R7C5P9
UniRef90 F5PLO6 UniRef90-H7CT29 UniRef90-E4T6Y8 UniRef90-SSUIK5
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UniRef90
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UniRef90 K0NP72 UniRef90-B3ECA1 UniRef90_UPIOOO47949E1 UniRef90_B9XEX0


GSGTSETKTWVSGFKEFDNDKTLIVKSTADP
RFAPYTVGSG| PQVIASIRTKKRALGFRETLLKVPLTF VIFFGPDTSSSGLPEVKGYLNGDRKAFNLKTVIGKLASLI GEYFSRDSEGSSLPEMKAILAGVSNFLSVKALIGKFVGVT FQKYQHQ RPSAPTDYMEAFDAGDGRLDVSASLVKSLASLE VRRFAPDASGSGIPHVEAVLSGVAVPARSVLMPVKFISGGL AHTVAPQADGSGIPEMKTILRGVKEYLTFRALVAKIIGLT
 VRRFAPEAKGHGVPEVMAAI AERGGVIRPRVVVVKAVASA

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KKRY
TAFVSTAAGG
H GVEGLIETVTDRGARTKDRDSGEVFASI HGVTKVLASLSQRKSRIKPHNTFSSLDAST H G

S Q
A P A AGS
YEKFGKDDG
KK■APAARGSGI
LRFFVKDN GHG
RKVVRDDVSH
APETAGQ
ENDAPQATGGG
QVKAILAQFPLPMGLGEAVVKAI GTI K【ARERGHGIPEAIEALLIGGSRMQPKVAVLKPLSSA
K $\square$ AREAAGHGUPEVI YSVSRYGGLLRFRSSYSRLISSF
 VRSLAKYAAGSGISEIKCILAGFKGFLGFATFFIKSITGP KAURGHGMPEAMEQ LTNQSKIKPTVTYLKPISSA TSRGDQATRGSG|PQVIASLDLPDDRRSDRVS AKLVLTT KSYAPYAAGSGISEKKCAGFKGFLGFWTLLIKAMCLP FLKAVAAC
AAGSGTVEVRVR\SGFHGLLGFKTLAVKTLALI
VRWLAPEAAGSGIPHLKALLQGQGSFRYWRVLPVKF: STM TQCVCPQAAGSGLPFMKVADSGDNMYDSFRCVATKDVGLM IITKWPNITGSGVPQVEAVMLNENKMNWWSILWRKFVGGL TVRWFPNTSLKGMTLVLEAAQGKREDMPLALVPLVMICTW TVRWFPNSQGSGIPQAIAARHSRRKLLAPRTMIGKILLTL

KNKGTDQVFLTVHAEKKDVAFRMAPLIFISTV
RNHFRGTQGSG\|PQADAAADSNDPLLSDRLAFAKVALTLL
YWKHGKNA GKGNNLI DEQ RRQGET PPFRMAPLVLLGTL CAYDAPAAAGSGDPEVKAYLNGDDAYLAPSTLFVKIFGSI KAAKGHGIPAILETIESNKYGLSSRDLLVEGLASA TRKWFGGSEGSGIPQVIAALQAPQDRFGLRVIVGKDVVSL E A E GHG TD A AI D A Y H H K G G LI R G R I PI I K T I I A S T K E RP GH GLLA S Vi


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$\qquad$ J4 04755969 MOS362 Ref90_G6AE35 UniRef90-D3BCQ0 UniRef90_FOMVM6 UniRef90_UPI0003D6F2D7 UniRef90_B9FAQ9
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UniRef90 H0PTD5 UniRef90-HOPTD5 UniRef90_A2ZXO3
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UniRef90_B9XEX0


LAISS GLSVGKEGPSVHYATCCGYVITNWGKEMSFSEQSE LGMLCGASI GREGPSVQVGAAVMASWGRWCKKHNDAFTGL FSFSSCLVLGPEGPMFHI GSAIGSSDSQFKWFFQNDHDKR ITLVTGGSAGKEGPGAQIGAGTASAI SDLLHFSRQDRKKL | 1


 G|V|A T 150 ACSSSPDERRAL AGLGSGMPVGKEGPFVHDASMCAVVLSKFMSYEQPYYYTD
 LTHLLGGSAGREGAALQLGGSMAAQVGRWFRFDEKDERII


 LVVSSGLWL GKEGPLVMVACCI FNIVMRQPPR TAQASGLSVGKEGPFVVTACIICHQLMKHCQFFNESLHRH
 AT I GFGGSVGAEAPSVYTGAAIGGSNFARYMGMSYRNKTIE $L V V S S G S A I$ GREGAMVLLAALFASVFAQ RYAKPKEWKLL LGL C GASIGREGPSVQVGASVMHGFSRLLGQSNDAAKRS ILAMLDGASVGREGPSVQVGAAVMLAWGNLCRRYGMAFTGL LA I GA GLSSVGSEAPSVQMGAVVGQGCSQMLNKAKMEEKYL
$\square A \square S S G \square S V G K E G P S V H Y A T C C G Y V \square T$ NWGKEMSFSEQSE

 $\square T \square G F G G S V G A E A P Q V L T G A A I G S N L G N F F K M D Q K T D M L$ FSTGSGLVVGKEGPFVHIGACVGGVVSKLFPGFQSEVKRR
 1 T GS GGAL GKEAPGVLAGAGTGAGVGRILKSPERQLQTL



 GSVGGGLALGKEGPLVHTGACIASLLAWVRIVESDRDRRD






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## UniRef90 Q604No

## UniRef90_UPIooo2B4A9D2 UniRef90-A9V2G7

 UniRef90-S7TGS5 UniRet90_RGMZG5 UniRef90-W9V747UniRef90 - $1 Z \mathrm{ZYY}$ UniRef90- TOHZ97 UniRef90-101MN3 UniRef90-D5GMI9 UniRef90-G8QXG2 UniRef90-A5E5H2 UniRef90-B1YUM4 UniRef90-A0A024UIO9 UniRef90 F4C417 UniRef90-UPI0003B75321 UniRef90-R5XKT0 UniRef90-R6ETN5 UniRet90_Q8ZEB3 UniRef90-K7ST03 UniRef90 W4DCK1 UniRef90-A6VLI3 UniRef90-F7NJ45
UniRef90
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UniRef90
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UniRef90 W109P8 UniRef90-D6V136 UniRef90-UPI0003B5DAFA UniRef90-Q9H181 UniRef90-T1B506 UniRef90-V2YGN1 UniRef90 - E8RK24 UniRee90-UPIO00368438D UniRef90-UPIO0047B4EE2 UniRef90_V9D6C9 UniRef90-A4SES4 UniRef90-D3YP04 UniRef90-N1JIN7 UniRef90-F9ZVH1 UniRef90-M5SAD2 UniRef90_M4BDD4 UniRef90_O045T11 UniRei90-S3KDB5
UniRef90_R6LUW7 UniRef90-W9H9N2 UniRef90-R7WW3 UniRef90-T1KZ22 UniRef90-HOPTD5 UniRef90_C6D348 UniRef90-K3Y593 UniRef90-B8СХА3 UniRef90-E6QSJ4 UniRef90-V8P496
UniRef90 K0NP72 UniRet90-B3ECA1 UniRef90-UPIOOO47949E1
UniRefgo
UniRef90_B9XEX0

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 RRILSAAASAGVAVAFGSPLGGVLFGLEELDLFARAHVMW LLSAATATGMSVAFNSPMGGVLFVLESMPSYFYPTKIIWM LVLAGAAAGLSAAFNTPLAGVVFADEELTRSFSARASGVL LSAGAV GAGMTAGFGTPIAADFLAIELLLIFE VACGAAGG AGAAFNAPDGGAMFAAEVLLGEF VACGAAGG LIAATFNAPDGGAMFAAEVLLGEF WGCGAAGA VAGIFKAPLAGVLFTLEILLGFNTSMTSMM WVACGAAAGMASAYHAPLAGSLF LAELEGTGMLASLGPV MILAGGAAGMAAAFNTPLAGDVFALEELSHSFEQQRTSG NMAAGAGGGLAAAFNAPLSGVIFALEELGR GILLRWER
 Y DTAATAGGVAVAFGAPDGGVLFSLEEMSSSSHFKLSTLW QDNLAAGAAGGLAAAFNAPLAGVIFADEELGRDVMLRWER VI CGISAGFATVFGTPIAGALFGI EVLVVGAVMYEVLL UYSAADAAGTCCSAGCPMGGIIFALELTATYYMLGNLMKG LCCGAAGAVAGDFKAPMAGGLFCLELLGFNISMSS LI L MLAAACAVGVACTFAAPLGGVLFSVEVTSVFFAAVRNYW LLLAGGAAGIAAAFNTPLAGIIFADEELSRQFEQVKSSG
 MVACGAGAGIAATFNAPIGGVMFAAEVILGSFTALENFT
 LVGCGSAGAIGGIFKAPIAGLMFTLEV LLMLDMTLTAAIA ELITAGAGAGMAVAFGAPVGGVIFALEEVSGTYNFKALMA VAAGSAAGISSGFNAAVAGCFFAVESVLWPFLSLSNSTS LLLVGCGAGCGAAGGDAAAFNAPLAGVVFVVEVIYGELET MVLVGCGAAGAIAGIFKAPVTGLVFVVEVLLLDLTMSS L LVGCGATAAVSGDFKAPIAGLVFTLEVLMVGTLTMASLL NDLMAAGAAGGLAAAFNAPLAGVIFADEELGRGDMLRWER MELLAAGAAVGVATVFAAPISGVLFSIEVMSSHFSVWDYW VMCGMSAAFSALFGTPMAAAVFALEVVSVGVMYYTA DM

 FLLAGTAAGLGAIFKAPLAGALTSVEMLYREDFESNAFAT IVASGAAGGLAAGNTP AAGVFFVVEELMRDVSGLTMETLW LVAGAA AVAVGDGSGMGTMFKTPDGGTMLGAEVLYKRDLETQAMYG REDITAASAAGVAVAFGSPGGGVLFSIEEMSSNFNIKTLW DAAGCAGG SFEHSS FLLAGGAAGIANATLGLFVIVVPALGGLLVGLEF
REILTASAGAGVAVAFGSPGGGVLFSLEEMSSHFPGKSG LLGCGAAAGLAAVFNAPIGGVMFALEVVLGDFSVKTFS


 MLACACAAGVSATFGSPFGGVLFGVEVTSHTFYLVRTLP TAGAAAGLSATFNAPFAADIFALEDTHHHLSPLLLA | $L L I A G M A A G F G G L F Q T P F A A V F F A M E V V V T G K M L Y Q A F L P$ |
| :--- |
| $A G S A A G$ | VM CGMSAAFSALFGTPMAATIFAMEVESVGDMYYAALLP LIVAGGAAGVAAAFNTPLGGIMFAIEEMCRHHAF RANS VAAGSAAGIASGFNAAVAGCFFAVESVLWPTSVDSSSLSN LM CGISSGFGSVFGTPLAGTVFGLEVIADGFVRMQALL

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UniRef90 C1DC80 UniRef90-C1DC80 UniRef90-Q8TK16 UniRef90-UPIOO04755969 UniRef90-MOS362 UniRet90-G6AE35 UniRef90-D3BCQ0 UniRef90 UP10003D6F2D7 UniRet90-B9FAQ9 UniRef90-R7CCQ6 UniRef90-R6SQ14 UniRef90-R6Y776 UniRef90-C9RmGo UniRef90-13YP18 UniRef90-U5DL19
UniRef90 W109P8 UniRef90-D6V136 UniRef90-UPI0003B5DAFA UniRef90-Q9H181 UniRef90-T1B5Q6 UniRef90-V2YGN1 UniRef90-E8RK24 UniRef90-UP1000368438D UniRef90-UPIO0047B4EE2 UniRef90_V9D6C9 UniRef90-A4SES4 UniRef90-D3YP04 UniRef90-N1JIN7 UniRef90-F9ZVH1 UniRef90-M5SAD2 UniRef90_M4BDD4 UniRef90_O045T11 UniRef90-S3KDB5
UniRef90-R6LUW7 UniRef90-W9H9N2 UniRef90-R71WW3 UniRef90-T1KZ22

UniRef90-HOPTD5 UniRef90-HOPTD5 | UniRef90-A2ZXO3 |
| :--- |
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UniRef90_B9Xexo
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 PLLTSSVTATSLSYFFSGSNFMFQFSKYEPFA A 1 ER ALVASSVTATSLSSYFFSGSNFMFQFSKYEPFAIERMPYLI LTAVILAGLITMAAFGNYDYFGTTAIHFRALGGSQLAAVL
 PLLI S SVTSASLVYVMNDARATFSFSLTDPFMMDLVPYVV
RAFFATAVVAVTLRALTVGCGRGNGLYWW P LLSSVTATCFSYFETGGSAMYDFKMDY WWSGERVPPTV
 PCMDASLVASGFAAGMGVTPETFHVVDQPKLTDETGLKMG
辟

## |e| <br> L

PSYYCALVATAMNPFRTGQUVLFEVKYDSDWKYFEIPLEFV PIAIAAVAGAEASHAIIPEQVLFNHYPFEMGGVDIPACV
 RLFFCAAMATFTLSAMNGKVVLFQVTYDRDWHFFEVIFFV PVALAC TGAAGHHFLEEEGPVFQMKNLIEMPSDAGGTGG TLLTAVLVGGVVSLGLLGSYTYFGHVSTSLPDGQGWLAVV RSYFCALVATAVLSAMNGQLVMFSVKYDRDWHFFEIVFYI

 AAATACLAADMLCRLMLGQHPEFHVVVSGAPPLNLLLAFV RSFFAALVGALIVGFGAANSRYGLFGNRSDLVCADLCLFA SALAAAMSSDLMTLCFFGTQPCLYLPDDKSLPLTSYWFVA CVMAGSFAGDFAGSIFLGSGPDFRFFTTVEFPLSQFAWLI SLVAAVTASTVSNTLGLEKFEVPFKQSFNLSESKTMFYMV MVAVILAGISSLAVTGNYEY FGHTLVTLDEPGAWLGVL CALSA ACASRAF VNMGINPES FTLIQEVPEFTVQNSLKVV TTLTAVIFSGLMSLALLGNYTYFGRTPATLAWPTVIWAVA
 RAFFTTAVVAVVLRGL
LIVISAISADAIVRNI SGYNPTFDLPPFQLNHPAVEVLYT RSFFAALVAAFTLRAINPFGNSRLVLFYVEYHTPWYMAEL P A GlS S V VA Y C I F C IVFG WG S LF DSP GFKF QNP LE L GP Y L


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UniRef90-K3Y593 UniRef90-B8CXA3 UniRef90_E6QSJ4 UniRef90-V8P496 UniRef90_K0NP72 UniRef90_B3ECA1 UniRef90_UPIO0047949E1
UniRef90_B9XEX0



LGGVVFGGVAWLI IATLKRTEDADEKDPMNPYFKAFGAGV I F FVLLGYI SAH

$F C A L G A G S L G G L F S R W L D E S S T G V Q G C D H T F R R S H P V W F A$ LLGVFS GLVAVYYSRVSRKDE Y F FH HQLK WS P Y N K A I L G G $L L G L V S G L W G T L Y V K V L Y R V E D W F D A \quad R R W P F W V K A V$






$L L G \square A C G F L S L Y F M R L M S W C E N G Y G K D S K Y P Y L K L L T G G V$
 SGLVCGAA GGLFGRLLYRGAAAFAPR KDRGF\|RNRPLELAA


 $L L G F F C G G C S L Y F L R T T L W L E D K L G K M K S P Y R K$

 $L L G V L A G V A G T L F S R G I L Q$





 $P F G A E G$
$L C G V V C G$ LC GVVVC GLA G G GF S RLLLLAAAVDGRPRADGALDAARHPV LLAA $V$ L GIVF G G L Y G A F V I K G H L K V Q A F R K K Y I L GV L A GL S A V L FI K T Y Y A I E E WF L R I E K R Y NI P VWML PA





 ILA I L C A YLS AFF CVML HTANRYLRAYFRNPYVR VVAAV


$N L E D K R \square S L I V I S A K G L Y M D T N L F N N L K D N Y H L K P \square I G G L$ VA AVLS GLL GAAFNWTLLNWT IWMPK L L WTWRMNSPL R YA



| UniRef90_Q6 |  |
| :---: | :---: |
| UniRef90-UPI0002B | STLFDNYTWIKHSGDTQILGKSAAWI HPKVSVFVTILLLFF |
| UniRef90-A9V2G7 | SITALLAFPNEFTFTECNKEDTSSLCSDREIGVISLLLLA |
| UniRef90-S7TGS5 | VGGLLLGVSALAFPQ\\|LGDGYDTVNAADTASLGLGAAVAL |
| UniRef90-R6MZG5 | LVIGLTYLFQ TRDYNGAGMEVIRRAI DGGEARPEAFA |
| UniRef90-W9V747 | GLLMLA L Q T Q Y G HYYVQ GV |
| UniRef90-B1ZYY3 | GTI GLAA ${ }^{\text {L }}$ |
| UniRef90-TOHZ97 | VVGLGGLVDAHVL ${ }^{\text {L }}$ GAGYANI EGLLNATLPFKVVAAL |
| UniRef90-IOIMN3 | LGMTGFIA QKHFGEPLGPGYTFIQHLLSNHETFFN |
| UniRef90-D5GMI9 | GI TAVICYSNMFHECEGGHDYNGLCESGRRWHMV |
| UniRef90-G8QXG2 |  |
| UniRef90-X8J183 | P IAFMMAQNDFAECDPTKPDYHGLCNALSMWQNIFNL |
| UniRef90-A5E5H2 | NSY LKLLFKECPKTAVDQPNATNFLCLASNGMTLIKLLY |
| UniRef90-B1YUM4 | $A V C G F V I A V V G \\| V S G G T T F G S G Y A E A R G L L D G H E Q L S V F$ |
| UniRef90-A0A024UI09 | CI ICHQLMKHCQFFQRHCAPTPLGPHWQWQQSVFGPLAVS |
| UniRef90-F4C417 | 1 GGI AVGLI GYFFPRTLGVGYENITDLLS GKMPLYFVLTL |
| UniRef90-UPI0003B75321 |  |
| UniRef90-R5XKT0 | SGAVGLLMPQILC GGHRMSELLI NEHPADGAMAI |
| UniRef90-R6ETN5 | LGLLI FLEPPLLYGEGYDALSPLLNGQEDS Y D GESMLA FM |
| UniRef90-Q8ZEB3 | Gl 1 VGLLSLIFPEVWGNGYSVVQSLLTTPPGVLLIGGU |
| UniRef90-K7ST03 | CGLVLAI IGLISKGTTYGTGYAQARAIFAGTEHYPASF |
| UniRef90-W4DCK1 | ALVFLVGSRDY $\square$ G $\square$ G |
| UniRef90-A6VLI3 <br> UniRef90-F7NJ45 | $L \operatorname{LFLGI} \operatorname{I} \mathrm{LAALGTYTHGQTYGTGYHVVANADAGEVIQPESL}$ |

$V T G \square I G M \square S P D L T G G G \quad H E L I M E D Q S T D F M D M T L V V F$


$\square G G L I V G A L S \square L F P E V W G N G Y S V V Q S L L T A P P G V L L I A A \square$
$\boxed{L I G G L A G L V V W \square D P H \square A G G G D W \square T Q A A \square N N T \square S W R \square I P A D}$
GMCGFGDA L $\square G \square A S D G A A H G S G Y A Y T R E D L E G S R Q M P D Y$
 FVFVISGULGLTDPQVLAGGHSMIALLEHGKPELSMUCIL RLAVCVDCWGLWHQQ
IVILLVYLVGSRKY $\quad \square G L S D P L L S E A F D G H V S P F D$ LSI LI FIFPP LY GEGYDTNQSFFLGLGNSPWVIVIYLSLI
 LGGLTVGGLALSYPELLYWGFENVD\LLESRPFVNGLPAN


VLS S L IF $\square$ F P S $\square Y$ GEGY D S L G L F $\square E G K T L T$ D WMQVM S GS M ALSAVKTMFTAHDQVNAEDLKUWTESLPFSNSDIFACF DY ALMGLLLALLGTFYQGKTYGTGYHEAAQALHGIYEAPFGL YSALAAVVLAS $\square T$ YPPGVGHFMASRFWMLILATT TDPDPA


LS SLI F L FP PLYGEGYWNTVMNNSFFYGNGSLLIIVLILI


$F V G L T G F F \| P R V L \quad G T G \square P V I S K A F T K S Y L F N T L I I L$ LVIGLMDATLGTLTSNATWGSGYDQARQLLDGTHALSQTY AVTAI TAAIIAYPNPYTRRSTSELDSELFNDCGALESSQLC






$V L \square K F V A T W \square S Y W S G \square P G G \square F A P S L A \square G A G F G N D V S \square L F H$ FLTKVLATSFTLASGGSGGNFAPSLFTGAFMGFFFASLFN LVLKLLATSITIGAGGSGGVFSPGLYQGAMLGGLVGVMLS $L \vee V K F L F S A V S F G C G A P G G I F F P L L I L G A Y I G A I V G N L S I$
$F \square G K L \square F T S \square T \square G A G Y Q G G E V T P \square F V I G S T D G N T L S G \Pi$ VIFKI FASASTTSAGGVGGVFAPSLFVGCLTGFVVSHVLS




\begin{abstract}
FAGQTKYLVLYVGLVMMTKVFATSATNG

$1 L L K V F A S S A T N G G G G C G G \square F A P S F L G C D S G F V F S Y V C N$

$T V L R V V L V V V S Y G C K V P C G D F V P S M A A G A T F G R A D G L L V E$ LIVKSVIWI I ALAS GTSGGVLAPLLI F G GCLA WLE GLF $V F A K I F A T A M T L G W G G S G G I F A P C L V D G S L T G T M F H Q D F F$ VFAKVRADYYA GGSGGSGGLFADFYVRFFYFMVSMFKRMRH
 VFL K S LA A A V
 TFMR IGGVILSYGCKVPA GDFVPSMAVGASFGRMDGIIVQ $Y L L K P V V A G L S V G S G G S G G M F A P A M K M G A M L G G M F G K V V N$









 PLTKWASLVISYMAGDPGGLFSPSLSIGAGLAQWVHALFI

 WWWKIVFT IVTISSGFKGGEVTPLFF\|GATLGNALSGLL

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GS $\square A H L L P \square A T V S V V A Q L T A D V L K G E P \square Y E S L L D R L L A R E$ GAFTYILPTMVVVAFTRFVFSSFG
GSQQLLVWMLMGGLVATAVSRQFSPKPFYHAAAARFRQRV
G MDVAHYAAVS VVISFLVS GHRSVFPSQK $\square$ QMSKS
GEYTLLPGLLLACVLATTLSRWLRAGSVY
GSSDLVLPLLSGSFAAMVVAGALGDTPDYEALRLR
DGHGMVLSLMATALLASLISRLVSPGGYGTLSRDQLEAA GGYELMI PLMLVATSAYVIAKVFEPHSM
GDYS MILPLMI TSVLSATVAGLISPQNDYTMKDFRR
GNMHRMLD IAVVSS IA Y II A NLLGS KPIYTSLLENGLNKQ
G VGGAPYLFMACADSYワFS GHTGПYTSQ
GGYNLFMTLMIVSVVSYLTIILFEPHSLYAMRLAKKGE


RDYSLILPLMFACVLSNVMSNADYSESDFTEGLRRRGFK $\square$ $G G Y N L F L P L M L V S L S S Y A T \square R V F M P H S U Y S G R L A$
$N D \square T Y M V P V L I G V V L A C G \prod G N L L N H S D Y D C F D R N K$
$G G Q S L L F W M L I A C I F A S Q V S R Q F S P R P F Y H A S G M R F R Q R$
GQLVHALPVLMAVLAANAISQSFQP SFYD

DRHSALFQLLLGGLMA QGAAS L $\square \mathrm{DP}$ VSFYEH $\square K E G F \square K E$
G GYDLFDPLMDVSVSAMT IVFEPHSDYSMRLAKKGE
GSYSLLPGLLI ASVMHDAFSR NWTI YKSQVLNKFAS


GHFGLLEPLLVCTGAAYALTVLLLKRSILTEKIARRGQ GGYETILPLILVSSVSSTVSHYIEPASFYKELIER


G N
SQSNALLP LLASCTASYF $\square S F F \square M K N T \square M T E K \square A R R G V K$ DNRDMLLPGLGTVLDARAASSLVCHVPVYKALAHRLVAS

GQYE VLPDMFAAVTSTLVARVAYRHSMETYVLEK

ANYALILPLLIACFSALFDADWLGSPPIYDALSRMNLANN
GDFGLLVPTMLVTTMSFVMCSRWR
HTDGLNLPVSVATLAAYFTAKRFTENVYDVLI


GYS GNCFYL VTAAI A YLLS GYYGLYS

QDYRIVLPLLGAVGVSSWIA
GS EGALYMFMACM\|SYLFS GHTGDYTSQ
GNYS LILPLLLGAVLASNTSKHDCPESTYSPKD
NGSNMVIPMMASALVASRISALFTP PLYHALAHKNYASK
GGGEYIVPLMAAAVTSKWVADAFGKEGUYEAHDH
NSYHLLLPSLMVCS $\square C Y L L C R R$
D GQ G VE Y F F VA C IVS Y LF S GHH G L WP VQ T M

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H A

NEG

M $\square$ IG $\square$ AS GFAAVVIKNL KRLIF $\quad$ LRHEKVALLLAGVLVGCCSGVAAAGLSFA
 RKYYRRQLKAVSFLVLLGVIGGPLNYGDRSV
$R R Q L K A V S F L V L L G V I G G P L N Y G \square R S D$
$\square \mathrm{F}$ R WT LLADCTGVLCGG】GTLFHDA


KEK $\square$ RESFK VYDE $\square V L K \quad C F C G \square F \square G A \square V A \square C E V V F G K G$ WAMLLVGCLLGLATGLCVAGFNRG
$R W L L M G \quad L \square G T A V G M L G F L D T H T$ 1 TGCLGALATHGFRLL

F G
$R L Y F V S M F V G L L T G W V A D P Y H Y \underline{L}$

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 L
 पAGLFIVF VHF $\square$ QS LLTSGFDREEFNY $\square$ YF $\square$ FPTVG LITVIVVKFIL

FHSFSDKWHW APLLMTPGGFAA $\ V Y F$
पE H पWELCAHAKHYWWVF LTTVVTDLREAHTWLLYLLPVVSGALVAA

AA WLRLQRLADTWHR LLIPVTGGVVVGMMHGLL
$Y \| L Y V L \square S L L F A Y S A A K L$


■KLVTTDRFK YSY乌YF पP DAMVA VNF F $\square \mathrm{MY}$ YLF S TVAAVTATFL CQELLD $\square$ RDTMVNQTTSE $\square A R Y F \square W T G H T V V F S F V G L L$

CQELLD $\square$ R DMVGQTTSEPARYCDWTGHTVVFSLV GLL
$\square H A A H T W \square Y R E \square G D \square G V L K Y 乌 S W T L F P T A D A A F S T G F$ VE WVTEQRTEHVWLLWLLPAAGDA乌TALYKATGCV

$\square E W \square L$ NFREHMGCVMLVGL PFAGLA【VF
VHVIHEWAWAGTPYDGAAWLRLQRLADTWHR LLIPVLGG
VD S LTk LK WD VE S Y Lan F HLVWVCVLGS GLAMVLVS S S $L D W L F G E A G G P V Q V A G G L P P E L R V L T P V I G G I V A G \quad W L$

WA

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UniRet90 - Y NPP UniRef90-R7EFC2 UniRet90-Q178C6 UniRef90-F9Z9TO UniRef90 D8NON8 UniRef9_B3RSX2
UniRef9o_LOFXG4

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APEAKGHGVPEVMEA:ALRDGVIRKRVAVVKIAASA QTWLKKHIGHGI SSTLHAI SKLNGIIPRYNI YASLI TAP
RSLAK $\qquad$ GIPRQV:A SL
DSAGHGVSDVIK
AIGSEGLRKRMLSRFFGSF AAGSGLPQVMRFLSRQSLPMNLQVAVVKLLAGD

Y H Y Y GRSAEG HGLVE
KFAPAAAGS
पYRLCKDYE
RQRV
YWFPGSERS
FSPAAAGGG|
FFPNTGSG
PK TKGHGTPEAMEAVVTSHSKVEAQVA LKPLSAA पNKIVREGAGHGVPEUIYAVSRRGGLLRFRSSFSRLVSSC YQRYGGNASR GNNLVIDQGNGGEEKIPLRLIPLTLFGTI PDGRLRSVADV EGAALNDGRVEKKAGMASAVCSW

GVTHVLDRLNAHQGHMSSRNMWAQFVGGL
RYDPESVDSGTDAMIKAFHVQGGDLKPRAWMIKGLTSV VKFYAPSAAGSGDSEVKCIVSGFDGFLGWPTWFIKSLGLP $\mathrm{E} \square \mathrm{F}$ GS GV
$E \xrightarrow[R]{\square}$
GS GV
EGS G
SSGPIAATQLPEKVVDLRMALLKVVLTI
EARGHGVPEVMHALYYHGGEMRPITVVAKADASS
KFFQGSEGSGDPQVI AT RLSKTLLSLRIMIGKIVSF CYKKWSPDSEKGNNLIIDEVVHPKRDIPLVMLPLILFSTLE CQTYSPYAAGGG\|AEVKTVVSGHHRYLGGWTFITKTISMC DTTDAPVAAGSGVSQMKAVLTGDDGYFDFTTLVTKLLGLI YTRFGKNASR YKKYGGSAlR

EAEGH
HGUP
GTD
GNNLILETHHPAQVIPLRMAPLVFISTV GTNLVLSAISAGESVPPRMAPLIFATTL VRTMAKYAAGSGDSE\|KC\|LAGFQGFLGLTTFFIKSLTLP $\square T R \square A P V A A G S V R E W M K A \| L T G U D G Y F D A T L V V K V L G L I$

SQSTTPHSGGSGTPELKT LMGVEDYLADQNFGAKVVGDT TRRYVPLARGSGUPQVMAARDDPGNLIAVKTVAGKVLLTM GKGTNDVLRAVQDGSSVTPWLVPAIFLGTV
SSKGNNLIIDKINTSKDHIPLRMAPLVFLGTF CAFDAPAAAGSGMPEVKYLNGVHSLAPSTLFVKDFGS\|

TRGH GILHVFEREQYHQGRMPWVNMVMQFFGAG KYVAPSATGSGDSE\|KVWVSGFQKFLNUVTLFVKS\|ALP
$\square F D H W G R \square S R K G M G L V F E V D Q G K S D W T P \square R M A P F M V V S T W$ RLSQQASGSGDSE KCIDAGVDGYL HWPVAPAVKACTDP VIVGM PDPGNQHSTEEDIQSYHEHQGAVDDRSFPAKLVAAI KFVAPEVSGSGMP VLFFCPAGSPSGLPELIGGYLNGDQHLFSDKTFLGTFVSCM LQRLPPARQHS ADYMESAGGNGHLSWRATLLRAASSA

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PNAKGSG|PQVEAELKGMMQLQWWTVLWRKFLGGS
A $\square$ G S GTAEMKTMDRGVKDYLT DRTLIAK KGGDT
HGIPSTLFAISKRKGLMKRYQMVGSI LTAP T DRFAPNAAGSGDPQVIGALSLPPGPVSLAQVLWK IPLAF YQRYQHQRPDAPTDYMEA DEAG DGRLAVNASLIKCLASL LVGKMPLIGGGGDPQTRGVINGRDTYRPFDEMVSKFVGGI HAIGSGFAERRCILRGLHGYLDFRTLAAKVAGLVJ EDIVHGVTKVLYA: SRRNSMIKPHNNYSSMIAST



## UniRef90_A5UNZ8 UniRef90-B1C8T2

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UniRef90_S9QRD4 UniRef90_D1ANU5 UniRef90_M7Z3T0 UniRef90_K4KYQ3 UniRef90_UPI0003B56BA6 UniRef90_Q5ANM1 UniRef90_C2CHS3 UniRef90_Q4SC92 UniRef90_B9G1M3
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UniRef90_S9UMZ8 UniRef90_W5YEN2 UniRef90_V9EJ15 UniRef90_F4B8H9
UniRef90 F2MT04 UniRef90-R3WDT7 UniRef90_FOIDA9 UniRef90_UPI0003747706 UniRef90_G6RLA0 UniRef90_M9VX68 UniRef90_R7R6X3 UniRef90_UPI000455CFF9 UniRef90_F4G0D5 UniRef90_H3H2K7
UniRef90_F2K318 UniRef90_UPI0003EA9DA0 UniRef90_HOYUX1 UniRef90_A0A031HX27 UniRef90-E2ZFN5 UniRef90_U5MTF6 UniRef90_A0A022R482 UniRef90_I3BUA7 UniRef90_E3IVD6 UniRef90-G8BPZ5 UniRef90_C9SV11 UniRef90_B7CDF1 UniRef90_R9AAY1 UniRef90_E6QLP1
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130
140
150
160
$L T A L G G L S L G P E G P S V V Q G G M A G K G \prod S R \| F K E S R T D E L R \mid L$ $L S V V G G L S L G R E G P S I Q L G A M A G K K L A Q V Q K K G K T K E K T$ L V GF GGSVGLEAPMVVTGSADGSNVGFLVHLNPKKRSLL






 $L A$ I GS GF PL GP E GP A V Q M G S S V G WQMARWFKAPP S L L R V I



 L S LLA GASA GLGGPAIQI GASIMTSLGRLARFPPBYLERG









 ATHLFGGSAGREGTAVQMGGSLSEWFGK


 LG LIDG A S I GRE GPSVVQI GASI MHAFSRAMGQHNDVVTRHG CSVGA GLVVGTE GCNVMIMS IVTHHVLRLPFYCGFNGRDQ




 I SHALF GASVGREGTAVQMGASIADQFTALLRLDNNNGRRI LVIAS GLSVGKEGPSVHVACCI GSLVAGI FGRFSRSQSKM
 $\square G L V G G L S I G K E G P A A H I G A T F G S Q L G Q K F R L S H A N V E V L$

CTLGSTVFLGKVGPYVHLSAMAAAYDGKMRTTVTREYQHE GA LCGGSVGREGPTVQLAAAVMGVSHRLMRVTLKS LTHLCGGSAGREGAALQMGGSI GWNIGRVLHFNNHDCR T





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UniRef90_F7VJ71
UniRef90-S7RR57
UniRef90_V8QVK3 UniRef90-UPIO002E8A620 UniRef90_UPI000369BC72 UniRef90_C7M702 UniRef90_UPIO0020017E4 UniRef90_R7RUI5 UniRef90-B4CXV8 UniRef90-B9GHY7 UniRef90_V4RGT8
UniRef90_UPI00040307B4 UniRef90-X1U9M4

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UniRef90-M1COR4 UniRef90-X5JHY3 UniRef90-H2AWH7 UniRef90_UPIO003507160 UniRef90_UPIO0045EAF85 UniRef90-Q0BQZ9 UniRef90_UPIO0037A5D39 UniRef90-H1X6V2 UniRef90_UPI000454AF59 UniRef90-H3EB87 UniRef90-K2Q743 UniRef90-R4XXN2 UniRef90-R7EFC2 UniRef90-Q178C6 UniRef90-F9Z9T0 UniRef90-D8NON8
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ILAA G TVGTT ${ }^{170}$
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190
 1 GCGAA
AAGGAAAGLATAFNAPlAGGVFVLEELVKR
VACGAAAGIATAYNAPIAAALFI AEIVLNS VGCGAAAG【AATFNAP\AGILFALEILLGDFGMASA

$L A A G A G A G L A T A F N A P G A G A I F V L E E L V G K F E A R T A C$ $R E D L A A S A A G V A V A F G S P D G G V L F S I E E M S H T F S D K T M W$ NTREWDAAGAAGGLAAAFNAPLSGVIFADIGKGDDLRWQR LVGCGTASG\|SAMYNAPDGG
 $V A A G G G A G \square A A V F H A P L G G F F Y A B E E L L R K S G P G L L L L V L$ $V M \mathrm{C}$ C G S S GF GSVFGTPGAGTDFAVEVIADGYM HYEALI VLFGTLVATHLLGGGSAGREGTAVQMEVVLMIGRDEYEALL



MTIAGMAAGF
IAAGAAAGLAA GLFGS






$M L V A A Q A D G V A T V F G A P \square S G V L F S D E V M S P H F \quad A D R D Y W$ TVVVIA G GA A GVAAA A F NTP LA GVLFA I E E LAAA YE QRMTDL ATVVCGMAAFFSALFGTPDTATVFAMMVVDVGLMLTVAFVPB LM C C G I S S G F G S I F G T P L A G T I F G L

 VAGMAA GFAGLFGTPDTADFFALEVLVAGTLKYRAMS REI LVAAASAA GVACAF GSP】GGVMFSDE EMTHTHTTKM MW MLI CGAA A GMAAVFRAPDTGVVFALEMPYK D D L A H E Q GA



 1 ASGAAA GLAAAFNAPDAGLLVVVEEVVH$\quad Q F S R Q V W V$
 SRRDLAAAGAVGVASTFAAPVGGVLYSIEVTTMYFTVRNYW
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UniRef90-S9UMZ8 UniRef90-W5YEN2 UniRef90_V9EJ15 UniRef90-F4B8H9
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UniRef90 F9Z9T0 UniRef90-D8N0N8 UniRef90_B3RSX2
UniRef90_LOFXG4

$\overline{L L G M G \square G V L S A V F N F L L I Q \square T R D S M R Y A L W Q R F V L A}$ I PGLTTGGLLAIIAATRLVYAAEDAFACLPVHWMWWPAIGGS L LGI F G GLYGKYVSK WN LH YVQFRRKYLSS WPTQEVLI L

 WTRVRRLQRFHLDARDRRRLRSAVVNCRAPHWIKEAVGGGM

$A L G V V A G L V M P G F Q R L L Q L S K S L F G R L P C P L W L K L G D G G A$ AVLGGLLGGSFSALLI RAAKGFPGALGRLVKQYPVLFAAL VLGLFLGLAGFFYEIVILHDQYFYDFLSKI DPLPSQYHSL M AMGAAAG LSAYQRATLWAPNMFRWLKWLPRHMLVWLGA TLLISTLTFPPGFGQFMAGQLSQKETLVTLFDNRTWVR FLGVVCGLLGVFY 1 HTF LDRTNHYAK IFQKHWY DYPLLVAS LLGVVAAGVS YFTKVYGS $\square Q N L F D R \square N G P D K R L L I G G V A$ 1 CAALNGALGGIFARLLGKGPAAMAPASWRAWDRAHPIWT $\mid L L M A L V G I M A G V C G P L D L W A M A A S G R A F R S L N L D P P L Q L A A$ ILAVIVSVCGKFYSSTMNAFRHVYAKVNSPAYVKMFYLVL




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UniRef90-F7VJ71
UniRef90-S7RR57
UniRef90_V8QVK3
UniRef90-UPI0002E8A620 UniRef90_UPI000369BC72 UniRef90-C7M702 UniRef90_UPIO0020017E4 UniRef90_R7RU15 UniRef90-B4CXV8 UniRef90-B9GHY7 UniRef90-V4RGT8 UniRef90-UPIO0040307B4 UniRef90-×1U9M4 UniRef90-B2TN69 UniRef90_UPI0003B71F9E UniRef90_Q72T97 UniRef90-14FGK5
UniRef90-F8JFX6 UniRef90-A0A022QSC8 UniRef90-S0EZW0 UniRef90-B8FBB1 UniRef90-V5XQY3 UniRef90_S9QRD4
UniRef90_D1ANU5 UniRef90_D1ANU5
UniRef90_MZZ3T0 UniRef90-K4KYQ3 UniRef90_UPI0003B56BA6 UniRef90-Q5ANM1 UniRef90-C2CHS3 UniRef90_Q4SC92 UniRef90-B9G1M3
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UniRef90_S9UMZ8 UniRef90-W5YEN2 UniRef90_V9EJ15 UniRef90-F4B8H9
UniRef90 F2MT04 UniRef9O-F2MT04
UniRef90 R3WDT7 UniRef90-FOIDA9 UniRef90_UPIO003747706 UniRef90_G6RLA0 UniRef90-M9VX68 UniRef90-R7R6X3 UniRef90_UP1000455CFF9 UniRef90_F4G0D5 UniRef90-H3H2K7 UniRef90-F2K318 UniRef90-UPI0003EA9DA0 UniRef90_HOYUX1 UniRef90_A0A031HX27 UniRef90-E2ZFN5 UniRef90-U5MTF6 UniRef90-A0A022R482 UniRef90_I3BUA7 UniRef90-E3IVD6 UniRef90-G8BPZ5 UniRef90_C9SV11 UniRef90-B7CDF1 UniRef90-R9AAY1 UniRef90_E6QLP1
UniRef90-M1C0R4 UniRef90- X5JHY3 UniRef90-H2AWH7 UniRef90_UPIO003507160 UniRef90_UPIO0045EAF85 UniRef90-Q0BQZ9 UniRef90_UPI00037A5D39 UniRef90-H1X6V2 UniRef90_UPI000454AF59 UniRef90-H3EB87 UniRef90-K2Q743 UniRef90-R4XXN2 UniRef90-U2NP27 UniRef90-R7EFC2 UniRef90-Q178C6 UniRef90-F9Z9T0 UniRef90-D8NON8 UniRef90_B3RSX2
UniRef90_LOFXG4
 $\mathrm{C} V 1$
$A\|V A L T F\| V G C R D \quad Y N G A G M D \| I V N A \square N G Q A K P E A F \square L K$


 $C V G \backslash V G L A F B P G V L G E G Y$ IVVVVVAM,LQTQRY

 $A A G C I T G V A A M F V P Q Q M G D G Y D T V N Q V M N T Q L G M Q L L V V I$







 \| $V \vee L F \vee L V L N N Q R Y$ $\vee \vee \vee G A V Y$ L $L$ TQRY


 VS ${ }^{\text {L }}$ F Q $V$ L L A Y
H A A WD
$A \subset G L V V A G L G V A T G L T W G T G Y G A A R G M D G G V D A P L W F G P A$

GLLMGAD G WQVP ASMGDGYDTVNQTLNGQVVMATLTVILL
 V F TAF I S Y F NEFLK LD MTESMGIL F HEC
K L L L N L A S P CN D K D T D R D D L G L C P S E DS E $\square P P D L M S L L V A$



 V M T ALI S YFNEF L RLDD MTESM GIL F HEC
$\square V G G \quad \square S L L T P H V W G N G Y S T \square D H M L H S A W P V G L L L G V$ CGLIVADTGLLSHGETYGTGYEQARDMVTGGDPGDTEGLIKF
 QGLAEDLEMPNTAQAWNPPRANVFDTLVVF






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UniRef90_S7RR57
UniRef90_V8QVK3
UniRef90_UPI0002E8A620
UniRef90_UPI000369BC72 UniRef90_C7M702 UniRef90_UPIO0020017E4 UniRef90_R7RUI5 UniRef90-B4CXV8 UniRef90_B9GHY7
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UniRef90 R7R6X3 UniRef90_UPI000455CFF9 UniRef90_F4G0D5 UniRef90_H3H2K7 UniRef90_F2K318 UniRef90_UPI0003EA9DA0 UniRef90_H0YUX1 UniRef90-A0A031HX27 UniRef90-E2ZFN5 UniRef90_U5MTF6 UniRef90_A0A022R482 UniRef90_I3BUA7 UniRef90_E3IVD6 UniRef90-G8BPZ5 UniRef90_C9SV11 UniRef90_B7CDF1 UniRef90_R9AAY1 UniRef90_E6QLP1
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UniRef90 F979T0 UniRef90_D8N0N8 UniRef90_B3RSX2
UniRef90_LOFXG4


## 


$L A L A F G L G V P G G S L V P L L V I G S L V G N D F A T S D V C L G L L$ $L \mathrm{~L} M \mathrm{~K} \square \mathrm{~W}$ MLVLACTLPLPAGYFMPVF IYGAALGRLLGEGVT
A F EKMLAT LVSYFAADP GGDFAPS LAVGAGLGQDLFHLGL APAKFLSTLATSVSG\|PGG\|FAPSLATGAGFGNLL
$F L G K D L F T S L L T L G A G F Q G G E V T P D F T D D G A T W G N A L A D D W D S$





 $F \operatorname{V}$ G K L F F TVVLSS $L$







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

 $\square L T I L T L S A G G Q Q G E V T$






 V FAMFFST II C Q TLPVPS GVFGPTFVI GAAVGRLQGE LMLL

 $M L L D F V V$ V A QEASVVVHHWAST LDPVPSGMFIPIFKT GAAFGRIAGGETAN


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UniRef90 F8.JFX6 UniRef90-F8JFX6 UniRef90_SOEZW0 UniRef90-B8FBB1 UniRef90-V5XQY3 UniRef90-S9QRD4 UniRef90-D1ANU5
UniRef90 M7Z3T0 UniRef90-M7Z3TO UniRef90_UPI0003B56BA6 UniRef90-Q5ANM1 UniRef90-C2CHS3 UniRef90_Q4SC92 UniRef90-B9G1M3 UniRef90_UPI00037C3FEA UniRef90-K9D194 UniRef90-V9G5P3 UniRef90_UPIO00381C136 UniRef90-SOS0B2 UniRef90_V5UAH1 UniRef90-TODJH7 UniRef90-S9UMZ8 UniRef90-W5YEN2 UniRef90-V9EJ15
UniRef90_F4B8H9 UniRef90-F2MT04 UniRef90 R3WDT7 UniRef90-FOIDA9 UniRef90_UPIO003747706 UniRef90_G6RLA0 UniRef90-M9VX68 UniRef90-R7R6X3 UniRef90_UPI000455CFF9 UniRef90_F4G0D5 UniRef90-H3H2K7
UniRef90- F2K318 UniRef90_UPIOOO3EA9DAO UniRef90-HOYUX1 UniRef90_A0A031HX27 UniRef90-E2ZFN5 UniRef90_U5MTF6
UniRef90_A0A022R482
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UniRef90_E3IVD6
UniRef90-G8BPZ5
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UniRef90-H3EB87
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| 37 |  |  |
| :---: | :---: | :---: |
| IFGLES YLI Y K | SMAGFFAATVRSPIT | T G VVLLS EM |
| S SLGVNDIFMDKFII | A MAGFFAATVRAPI T | T GI ILI A EM |
|  | A MCGLMAGVQHSPLS | S Al FLI |
| HFVPHAPPSPAALAL | GMASFFTASVHAPVT | T G L |
| GLV P - P VAVV | GMGAF LAACTHA | S I L ML |

$N \square G F G F H V S E T N F T L I G M T G L M A G V L H A P L T A D F L I A E \square T$ VLAPTLAGRTTPFVVVGMAAMFAGAVRAPLTGIILVTEMT


 LPASFLAALGLISVFCGA

GAPTDLFAACLGFVADFAGANTPISSFILVIEMF

FDPA $\quad \square C A A \square G M G A L F C G V T N C P \square S S L F \square C F E L F$
WLP LT DPLVMILLTMTAYFSGILQSPMTAFVLVMETT FGFFPSENESFLMI CLMAA VNSSVTKTPISTTILLSELT ETKDMGFGSEPSYALAGMGAFFTGVVRVPVTAVVIVGEGBH TTATGSDV

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

 HYYPQ $\square A R E P G G Y V L V G M A A F F A G V A N A P I G P L I M V T E L T$

DPSY ILIFS LLGMCGHFSA VRTPTTA ILVLEMT S GQK WS TS LNPGGYALVGAAAFSGAVTHSLSPALLAIELT

AMYRAYPQSGMFAVCDPD DP C $\square$ T P GTY
YVFPD VVPNDAAFVIDGMMSFFAAAGKVPDSVIVMVTEMT


 VSPSFLAALGLIGVFAG

WTVMRFCDQPGAYGLIAAGSTMCGVTRLSVTLAVILFELT IIAPVFGLNPLIVVASLGYCSVFGAATNTFLAPIAIGMEVF MVHARYAHMPFFAECHASAS
$N Q T V V H S T S L A D Y A A V G M A S F T A A A Y K T P L A A V V F V A E A T$
 $\square R I S L S A S A P L T Y A L A G M G T F F T A V T R V P I T G U V I V F E M T$

ALTGQPAGPLWVVAGMGALLAGATQAPL MT I DMLDEMT $G L A A G S V V L L G M V A Y F S G V V Q A P D^{\prime} \quad T A A V M V M E M A$ DFGWlA QEQMSDFIVLGMAGFFAAISKAPDTAMILVTEMVI FLLLIPVGNVMNMMVVGMAGYFASVSKAPFTAMVLIAEMI


 RYGVI GQENVSYUMLVSMSAFLVAVVRTPLTAVVLI TEITT MWFHRKFKVAPNGYAVVGAAAFSGAVTHTVSTCVVVVEIT NMTGVITVPVSYFVLAGMAGVMSGVMNSPLTAMFLIAEITT



UniRef90 A5UNZ8
UniRef90 B1C8T2 UniRef90_UPI00047BA658 UniRef90_UPI000369E9E3 UniRef90 UPI000347F14A UniRef90-UPIO0037B134B UniRef90-T2KHK3 UniRef90-F7VJ71 UniRef90_S7RR57 UniRef90_V8QVK3 UniRef90_UPI0002E8A620 UniRef90-UPI000369BC72 UniRef90-C7M702 UniRef90_UPI00020017E4 UniRef90 R7RUI5 UniRef90-B4CXV8 UniRef90-B9GHY7 UniRef90-V4RGT8 UniRef90-UPI00040307B4 UniRef90-X1U9M4 UniRef90_B2TN69 UniRef90_UPI0003B71F9E UniRef90 Q72T97 UniRef90-14FGK5 UniRef90-F8JFX6 UniRef90 A0A022QSC8 UniRef90-S0EZW0 UniRef90-B8FBB1 UniRef90-S9QRD4 UniRef90-D1ANU5 UniRef90-M7Z3T0 UniRef90-K4KYQ3 UniRef90-UPI0003B56BA6 UniRef90_Q5ANM1 UniRef90_C2CHS3 UniRef90_Q4SC92 UniRef90-B9G1M3 UniRef90_UPI00037C3FEA UniRef90_K9D194 UniRef90_V9G5P3 UniRef90_UPI000381C136 UniRef90_SOS0B2 UniRef90 V5UAH1 UniRef90-TODJH7 UniRef90-S9UMZ8 UniRef90_W5YEN2 UniRef90-V9EJ15 UniRef90-F4B8H9 UniRef90-F2MT04 UniRef90-FOIDA9 UniRef90_FOIDA9
UniRef90_UPI0003747706 UniRef90 G6RLA0 UniRef90-M9VX68 UniRef90-R7R6X3 UniRef90_UPI000455CFF9 UniRef90-F4G0D5 UniRef90-H3H2K7 UniRef90-F2K318 UniRef90-UPI0003EA9DA0 UniRef90 HOYUX1 UniRef90-A0A031HX27 UniRef90-E2ZFN5 UniRef90 U5MTF6 UniRef90-A0A022R482 UniRef90-I3BUA7 UniRef90_E3IVD6 UniRef90 G8BPZ5 UniRef90_C9SV11 UniRef90-B7CDF1 UniRef90-R9AAY1 UniRef90-E6QLP1 UniRef90 M1C0R4 UniRef90-H2AWH7 UniRef90-UPI0003507160 UniRef90_UPI00045EAF85 UniRef90-Q0BQZ9 UniRef90 UPI00037A5D39 UniRef90-H1 X6V2 UniRef90-UPI000454AF59 UniRef90 H3EB87 UniRef90-K2Q743 UniRef90-R4XXN2 UniRef90-R7EFC2 UniRef90-Q178C6 UniRef90-F9Z9T0 UniRef90_D8N0N8 UniRef90_B3RSX2

 NTPSLLLPLLSGSFAAMLVADGMGEAPIYEALRTR GA LT YI LPTMIVLLVTKSVGDFLDVRG】ADEMDR GSQAML FWMLL ASLVATVVSKQUCPQAFYHFSAGRFRQ ESYAUIVPLMIVTAVAYTVKNYFEK
 K DLLIL KPLFVCAVVSFVVARDTHEHSIVQRQLA GSHGVVF MFIACIVSYLFS GHYGIYTSQ

K D
G FKGMPYY LLADVADS YTFSGYS

## SLY S S Q

$D T H N L L L P M M A T A F D A A G T S R L L N P A P L Y Q T \square T E G Y V L Q P$ GLYR FTPVLIASLSGYFDS
 QDYR\|VLPLLGAVGLSSWV
R N Y

 GD K ASHTII FPGMLMMVTACFASRQ
QGYGLLAPLMLASALC $1 V L G H K F$

## S LYENQVDNKFDS

GGFNY LLGTS VVSLVAYSLAEDMKSKPFYEHLYELLVK
GQLSHAVPVLL/ATLLANGVARSSQRPSFYDAI



$\begin{array}{cc:c}G E M S L & L P D F C A V L S A M A T S N L S K E R S V Y D T M L \\ H T S E V I D P A M F V I V L D S C L I T T K L I D F R Q\end{array}$

ASRGDMDPMFAAAFDADGAS QAVCREKDYHGD SGAGFEL MALACGLSYMFSGY HSLYSSQGFRTSK GSTGMEFMFM TCAIISYLFS

G H S Glly T S Q

## GNAD I LPAMLA VSANLTSKDFQHDS TFS S LLQ HAWNDAPSLLVASISAYTLSALLLKRSVLTEKIARR


G GHAF $\square 1$ PA L $\square$ G S AVAYA $\square S G$
K D
T DFNQLT L I A F VA QF VLTMLVYATPES $\quad$ Y T RLLA

RAPLMAVPLMLAVATAHLTVRMLGCRSDYAHAL
DNQSMLI PLMATSMMAFAVSRLVCRRALYGALARRF


$G Q L W L I \mid P T M A G T I V A R A V A S A N E$
GGYELFLP LM TATI S Y A I TTRYFVPYSVYTMEDAKKGE
GSQPMLFWLLVGSLLASGVSRQFCPQPFYHLAAGRFRRQ
GEYTLLPGULLA CVVAATVARGLRPQSVYH
GHFEVFYPSVVVGGLTYYFTELLQMKPSNVSLYEDMDHAP
GQLRYVLP IVVAAMISNVVARRLGHASVYDMLTSVKGLABH
SGYS L V PLMI T SVTAHLTGRGMEPYS Y A RRLA


| UniRef90_A5UNZ8 | N H D |
| :---: | :---: |
| UniRef90_B1C8T2 |  |
| UniRef90-UPI00047BA658 | P E |
| UniRef90-UPI000369E9E3 |  |
| UniRef90-UPI000347F14A |  |
| UniRef90-UPI00037B134B |  |
| UniRef90-T2KHK3 |  |
| UniRef90-F7VJ71 |  |
| UniRef90_S7RR57 |  |
| UniRef90-V8QVK3 |  |
| UniRef90-UPI0002E8A620 |  |
| UniRef90-UPI000369BC72 |  |
| UniRef90-C7M702 | N K D Q |
| UniRef90-UPI00020017E4 |  |
| UniRef90-R7RUI5 |  |
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| UniRef90-B9GHY7 |  |
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| UniRef90-X1U9M4 |  |
| UniRef90-B2TN69 |  |
| UniRef90-UPI0003B71F9E | P P R |
| UniRef90_Q72T97 |  |
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| UniRef90-F8JFX6 | A A |
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| UniRef90_S0EZW0 |  |
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| UniRef90-V5XQY3 |  |
| UniRef90-S9QRD4 |  |
| UniRef90-D1ANU5 |  |
| UniRef90-M7Z3T0 |  |
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| UniRef90-Q5ANM1 |  |
| UniRef90-C2CHS3 |  |
| UniRef90-Q4SC92 |  |
| UniRef90-B9G1M3 |  |
| UniRef90-UPI00037C3FEA | D T |
| UniRef90_K9D194 | K A E |
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| UniRef90-V5UAH1 |  |
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| UniRef90-W5YEN2 | E R K |
| UniRef90-V9EJ15 |  |
| UniRef90-F4B8H9 |  |
| UniRef90-F2MT04 |  |
| UniRef90-R3WDT7 |  |
| UniRef90-FOIDA9 | D K D |
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| UniRef90-Q0BQZ9 |  |
| UniRef90_UPI00037A5D39 |  |
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| UniRef90-H3EB87 |  |
| UniRef90-K2Q743 |  |
| UniRef90-R4XXN2 |  |
| UniRef90-U2NP27 |  |
| UniRef90-R7EFC2 | D F K |
| UniRef90-Q178C6 | P P D |

T GC LGA $\square$ A THGFRLL

K T A L I R K N Y K L IK F Q K L S $\|$ VS A L IG F LCAFMS VS LK R L




F K V LT A S L C C A V VM G V I S F VF L K M FRRLLIATVVG\|LAAFAVAGFRHA

G $\|$ LT G A V I F GFRVM

N E G

T T WRRRSLFLVGGVCVGLAAVLMAKA


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UniRef90-C7PH71
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UniRef90-G218E6
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UniRef90-G0L573 UniRef90-R7B3F5
$\square T L L S N L L F G H V D S P V R T A S E L S T A S R \square L I P T L G G M L A G Y$
 TEHYEE LLFHKAS LD WVFFLIFPLVGLS VIYFL


W $\square Y R E \square G D S H \square L R Y \square S W T V Y P V A \square L S F S S G F$ WRRAASVFGGASVAA $\square$ A WWA


$\square E$ WA TETSMTHAWLLWLLP LGGALVSWLYMQYG

WLLF LLP $\square \mathrm{AG} \square \mathrm{LI} \mathrm{HF}$

$\square G \square S$ S VFREFF P YC $\square$ WF $\square P \square S G \quad$ M $\square$ T A F V
$M L L L E W L F \square G S L V N A A T N L P W R R L T P A L G G L A A G L L L M G$
MS V VWL



AAWLRLQRL ADTWHR\LLIPVTGGVVVGMMHGLL

A D A A Q E $\square \mathrm{FRHG}$ RHASPA
A LLLCPAGFALAAWL

$T G V Y$ V

|  | $90-{ }^{100}$ ( ${ }^{120}$ |
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| UniRef90-M31 | TATGSGVPEVKTILSGFRRFLGTYTLIAKTVALV |
| UniRef90-UP100037434C1 |  |
| UniRef90-E6Q1C3 | ARGSSIPQTKAALFARGGY |
| UniR | MEAIETGDGR |
| UniRef90-UPI000369 | LY S |
| UniRef90-A4F |  |
| UniRet90 Uplooo36 |  |
| 990 UPI00022 | P Q V A A |
| UniRef90- N6V1U9 <br> UniRef90 UPI0003B63575 |  |
| UniRet90-Ga | S DYMESIALGDGRLSLRATLLRAASSA |
|  | T |
| UniRef90-UPI0003B310EA | ARGSGPQVMAAAEAPDHPLSMRTALAKVAGTL |
| UniRef90-U1GM | LRGKVAVIK\\|IAS |
|  |  |
| iRe |  |
| UniRef90_UPIO | G\| PQVMAATRDPD |
| UniRef90-UP10001DD10A8 |  |
| UniRet90-UP10003330448 |  |
| UniRef90-D3R5R9 | SKAVPSV |
|  | HGVADLI DA |
| UP100046 | S ${ }^{\text {a }}$ |
| UniRet90_C7PH71 | , ${ }^{\text {a S }}$ |
| UniRef90 ${ }^{\text {a }}$ | $V$ LTSISGKDELPFKMAPLIFLS TV |
| ef90-G218E6 |  |
|  |  |
| UniRef90-H1Y4K4 | KGNNLIIDEIHEPGAGVPKRMGPLIL |
| UniRef90-UPI000402F |  |
|  | GTNQVLSTIRSQDDVPFRSAPLIFVSTI |
| UniRef90-A6TUH7 | LI EHVHHGQGKIPLRMGPIVFVCTF |
| UniRef90_C6CYT7 | R |
|  | GAAAL |
| UniRef90-E9J844 | RGAEG GNNLIVEQiHEPGGGVPLRMAPLILVGTV |
| UniRef90-C7PDX9 | GGTSEAGNNLI MDEIHEPGGG |
| 4YA12 | PQUKCFLNGFP |
|  | NNTIEKTNESSGR |
| UniRef90-UP10004 | SVDGKGNNLLI DEEI HDPKRV |
| UniRef90-UP10003B6794F | EKGNNLI DEIHTPGGGV |
| UniR | GHGIPT TLHAVSKKNGIID |
| UniRef90-Q47178 | GS GI |
| UniRef90-UP10004760934 | GI |
| UniRef90_B7UF | APTDYMEA LQTDGQFDYA |
| UniRef90 UPI0002E7D800 | SGIPQVMAAAEHLHSPLSLG |
| UniRet90-V4YV3 |  |
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| UniRef90-UP100047D1239 | VLD G DEKGTSQLMYAVAKKRGDMPRKQMFAQI I T S |
| UniRef90-B81A711 | - |
| UniRef90_UPIO003630 UniRef90 A9D3G4 |  |
| 9 | GVADVEARALAGR |
| UniRet90-G8PTZ5 | GVADVIEARAHGGTGL |
| VVGS2 |  |
| UniRef90-UP10004727C5A | MDELHEPGGGVPV |
| UniRee90 G7KFH2 |  |
|  | ElL |
| A0LZA3 | RFNKGKLDPRNNPSM |
| UniRef90-UPIO004 | VIRQKVSHGTPSTLFA AKRKGLMPRYQMFGS |
| UniRef90-X5KEA6 |  |
| UniRet90-GOJ | S ${ }^{\text {G }}$ |
| 10x | KMPDYLDVIDKRLPGTPVVSTLLRSLSSL |
| ef90-15CFT4 | GSGMPQVIATLHGGRHML |
| UP | GNNLMDE:HKPGGGIPVRMA |
| UP | G |
|  | QLVKS G |
|  |  |
| UniRef90-UPIO0035FAC8C | GM |
|  |  |
| UniRef90 EOMJ76 | GVADVEAKAHGRN EIGIGLWSAALSA |
| UniRef90_B9JT | $\begin{aligned} & A S Q G S G \\ & N A Q G S G l \end{aligned}$ |
| UniRef90-12F073 |  |
|  | HAVSSILFSLSKKKGII |
| Ref90_R7B3F5 |  |


|  |  |
| :---: | :---: |
| UniRef90_E6F |  |
| UniRef90-M3 |  |
| UniRef90-F4EVV, | LG\| GAGLDLL GRGGPSVEI |
| UniRef90-UPIOOO37434C1 | CSI ASGSAI GREASMIQL |
|  | GSLACGTPLGPEGPSAQ |
| UniRe | V |
| UniR | L |
| UniRef | I TLGTGCSLGPEGPSVEIGAAVADRVGAAFPSVAPNRLGL |
| UniRef90-UPIOO | ITHLFGGSAGREGTAVQMGGSIASLFSKWYRLKHREKRIL |
| UniRef90_UPI00028A40FB UniRef90 N6V14c | VMLLGGASVGREGPTVQVSAAI |
| UniRef90-UP10003B63575 | L |
| UniR | MSTVSGSSDGREGSMIQLAALAGSLPAALARL GTAHRRL |
| UniRe | A |
| UniRef90 UPI0003B310EA | AMLLGGASVGREGPTVQLSAAIM |
| UniRef90-U1GM | LMUGSGGSGGREGPTAQDSATADS SLCKK■KЏATPDARЏA |
|  |  |
|  |  |
|  | AALLGGASVGREGPTVQLGAAI MVOV |
| Ref90-A606 | GKEGP |
| UniRef90_UP10003330448 | CTLGSTIFLGKVGPFTHMSVMMAAYLGRVRTKTSENKTKE |
|  | FIVGTGLSVGREVAPRELGAMLAQRCARMLRLNPTDMRT1 |
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| UniRef90_UP100046A | G |
|  | GPT OLSAA |
| R6RTF | GaALQL |
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| UniRef90-H1 Y4K4 | M |
| UniRef90 UPl000402FC8C | A |
|  | G |
| UniRef90 ${ }^{\circ} \mathrm{C} 6 \mathrm{CY}$ | AGREGTAlvQMGGS |
| UniRef9-UPOOO2 | LS SAGGSAGPEAPLVQVTGSFGTWVADRLRLEGEDVRSM |
|  |  |
| 91844 | LTHLVGGSAGREGTAVQLGGSLASAFARFFRLSHAEVRIL |
| UniRef90_C7PDX9 | D |
| OWKA1 | LGSASGLVVGRAGPYAHVVACIGFMMSKMSLFQRQYFGPE |
| K0B3T2 |  |
|  | A |
|  | 1 THLFGGSAGREGTAVQMGGS |
| $\begin{aligned} & \text { UniF } \\ & \text { UniF } \end{aligned}$ | A |
|  | LALLGGFSSGREGPSVQ |
| UniRef90-UP100004760934 |  |
|  | D |
| iRet90 UPI0002E7D800 | A |
|  |  |
|  |  |
| UniRef90 UPIO0047D1239 | FTVGMGGSAGLESPPLTVTGAAFGSNYAQNYRLSYKDRTLLL |
| 990- UP10003630 | GVGLGASAGLESPTVVTGAAFGSNYAOQFNLSYODRTLL |
| UniRetgo-A9D3G | TLASAMGQRL |
| UniRef90-R6ZYU9 | S GNQLGRWF |
| UniRet90-G8PTZ5 |  |
|  | MV Q |
| UniRet90-UP10004727C5A | A Q GGSFADLYGK |
| GPIOOO4 |  |
| UniRef90-UPI000414C5D5 | GLESPITITGAAFGSNFAQ |
| UniRef90-A0LZA3 | APLVQVTGSTGT WMGK |
| UniRef90-UPIO00478F36C | $\square T V G F G G S V G L E G P T V A T G A A L G S N D S R L F H M N Q S T R N L$ |
|  | A |
|  | CNDGPSV |
| UniRef90-10QX27 | GREGAM |
| UniRef90 15CFT4 | IGREGPTIHVGAAILYNFRSF |
| UniRef90_UPI00029A2557 | GREGT |
| UniRef90-UPI0003B55EB8 | ITHLGGSTGRESAALQMGGS GYNLGKLFRLKEGNVK |
| Uni | GPE GP S |
|  | VTHGFGGA |
| UniRef90-UPIO0035FAC8C | GVAVQ |
| UniRef90-U2BSL0 | GAILQI GGSLSSKTGRW |
| iRef90-EOMJ76 | GPLVHLGGA |
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|  | LGLLCGASIGREGPTVQVGAALMAAFGTLSP |
|  |  |
| Re90 - R7B3F5 |  |

UniRef90_E6PVK9
UniRef90-M3K2A1
UniRef90-F4EVJ9 UniRef90-F4EVJ9
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UniRef90 OO1AH3
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UniRef90-UPIO003B3C1FF UniRet90_R6RTF7 UniRef90-G218E6
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$\stackrel{V}{\mathrm{~V}}$ ILLCGISSGFGSVFGTP SLAAMAAGFTALLGAPLGGALFALELHHHQHIVEYYEALM LMAGTSAG FASVFGT LMTGIAAGFGAVFGT FVAAGAAAGVSAAFGAPVGGVAFAAL NYSAAVACGTTASFGSPLGGVLYSIEVTARYYEIKNLWEG LMAGMSSGFASVFGTPLAGTVFGLEEVALGLMSYEALI LGAGIA A GGGAAVGRGGGTGAVFATEVLAGGRVQYNALL LIGCATAGAMSSMFKAPVAAVVFAVEVFSLDLAFASLVPL LILAGGAAG IAAAFNTPLAGIVFADEELGRRGEVRTSGVL $L G A G A A A G L A A G F N A P D A G V F F A V E V V L G T T F V T S A V S$ WIACGAAAGMAAAYRAPLAGSLFIIAEVLFGTMMLASLGPV

 SLAAMAAGFTALFGAPLGGAMFALEILHHQHIIEYYEALM PGLLACGVAAGVGAAFNAPMAGVLAGEVVLAEISUTAFID $\square G C G V A$ VMCGMSASAAFADFGTPIAAVVFAMEVVVVGVMYYAALV LLAAGVASAVSASFNAPIAGVLFAHEVIL GHYAMSAFV LSDAGMASGFTVLFGAPLGGTFFALEILHHQNVVYFEADL LMTGDAAGFGAVFGTPVAGTDFALEVLYDGRDQHN ALL
 IGCGVA LVSCAAAGAMSSIFKAPIAAIIFAIEVFSLDLTIASMLPL FLAAGAHSPWWALLLTPGLAGALLAWEELSGRFEHRGSGIP VMTGCAGAGFAAATMSPGTAVFIALEELHKKFSPMLLMFS VVAMAAAGGLAAVYHAPFAGALFVAEIAGTGVTAVQRLI
 TM CGMSAAFAALFGTPMTAAF LAMEDENVGVMYYS SSDAADSAG
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| UniRef90_E6PVK9 | AVLVAAVI GELTTQSLIATGPLYLAHMVPP |
| F4E |  |
| UniRef90-UPI00037434C1 | P |
| UniRef90-E6Q1C3 | SVVLASATSWIVLRLVLGNNPLFHVPRYSLIHSSEFADYA |
| UniRef90-S3IYT3 | VI AAVSALL |
| UniRef90_UPIO0036 | PLLISAVV |
| UniRef90-A4R | MVILASVLATVASKAVLGALPSVDV |
| UniRef90 UPI000362F52A | P |
| UniRef90 UPI00028A40FB | M\| A |
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| UniRef90-UPIOOO4E |  |
| UniRef90-UP10002D7CF4C | LVMTAVLIA GMTSLGLS GDYVYFGVMRQT |
| UniRef90-UP10001DD10A8 | DYVYFGQLGGS |
|  |  |
|  | FA |
| UniRef90-D3 | A |
|  |  |
| UP100 | A SVAGTV N |
| niR |  |
| UniRef90-R6RTI |  |
| UniRef90-G218E6 |  |
| UniRef90-V6S7J2 |  |
| , |  |
|  | S |
| UniRef90 R7DCK4 | CVIASIIASKFAAGFGINPES F |
| UniRef90-A6 |  |
| iRef90-C6CY | P IFLASYAGHYTTLAWGVRHLHYSMGTIPPPSVMLLIKVA |
| UniRef90-UPCO0034862EA | PAIVSSCASYLVFAAITGVAPTWHFPQYHVDSIDDFAIAI |
|  | A |
| g9j844 |  |
| UniRef90_C7PDX9 UniRef90 E4YAl2 |  |
| UniRei90 ${ }^{\text {FOWKA1 }}$ | VISASFCIILVFKIVTFLKHDVLFERTTFNGFD |
|  | PALTASIVGDFMVSFLGVHHTHYEVVGVPDLTLPT\\|IKII |
| niRef90 UPI000465E41B | GLVADO |
| Ref90-UP10003B6794F |  |
|  | E |
|  | S S |
|  |  |
| 00 |  |
|  | T |
| iRef90 UPI0002E7D |  |
| UniRef90-V4YV32 | A |
| UniRef90-Q3MBC4 |  |
| - | PI MIISAATGALVSTVMLINEDILFSFKKVQQFPYHNLPYYI |
| UniRef90-B81A711 | LIVAA VAA |
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| UniRet90-G8PTZ5 |  |
| UniRet90-K9VGS2 | D |
| UP | PCFMAAVFADITCAAWGIHHTHYFNDPFDHFNFVLLLKVI |
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| UniRef90-UPIC | PAFWA AFVADWVCEVAWGVGHTAYFIPEEDPA |
|  |  |
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| UniRef90-X5KEA6 |  |
| niRef90-GOJVZ1 | A |
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| UniRef90-15CF |  |
|  | PAFFASVMSHIVCA |
|  | MV LSSVAL |
| UniRef90 D8RTP5 UniRef90 K3YO42 | MVMLSSVEATVVSQAGLGSDPAFKVPSY |
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| ee90-EOM |  |
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| UniRef90_A9VYV3 |  |
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| iRef90-R7B3F5 | VFSAFTAAALARFWGLMPEQFA $\square G A V P A W S I E T A \square V A V)$ |

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$L A G A V T G \square V A \square R \square P Q V M G N G R A T A Q L A F S G T P T M S D P L L L$ $V I G \square V A I Q F P Q I V G V G Y \quad S A M N D A L Y G A Y D W S F L M Q L$ IV A GAAL GI I A L WF P H I I GVG Y E T T S L A L T GE LAALHEATVF

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 $M L L L L V$ KI I P D Y L S L G V E P E Y P GAVT I VSAFTHNGA YF F S





 S I SSL T T A L I T Y P N E V F R D Q S L S L S Q WT Q F S D F P T V T L L A Y




TVVSV CTS S CLDG GLP
 A G G GL A I A I I GL V S H GAT F GA GNEEVKAMLA GESDVS QLY








## UniRef90-M3K2A1 UniRef90-F4EVJ9

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 $K M L F T A V T M G A G Y K G G E I D P A L Y I G A T F G C L Y S Q U F G$ | $\square T C K L L A T A A A T G S G A V G G D F T P T L F V G A V L G A V C G H A D$ |
| :--- | :--- |
| $F A W K T V$ | GPAKFVTSLATALSGAPGGIFAPSLSVGA FLKPI I TVITASGDGGVFAPSMFIGAFLGLLTALVL

 $I$ FF $\ R F I Y S M L S Y G A S V P G G T F M P I L V L G A L L G V I F A N V L$



LSFAAKALITLFT $\square R A G A S G G V L T P G \square A L G A S M G C \square L G \square L$ LFIKAAMVAI CIGMGFAGGIFSPALFLGAMLGGAFGITAT

 $F V F R L V F G A V S Y A A A T P G G L F A P M L A L G A L S G L A C S F V A Q$
$G V L L L K P G I T S V T L A S G G D G G V F A P S M F I G A F L G L L M A S L L$ LTVATLGAGYKGGEIVPS


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 FI GKFVYTVGSLGSGFKGGEVTPLFYI GATLGNVLAFNEP



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 YSNNSWVLLVFVGLSMMLKAFASGITLGS IVMKTLATAI TLAARFGGGDFSPSLYLGAMTGGAFGLIAA
 VIAKVFA DSTTVNGGW RGGII DPLFF DGACLGKA WLWKI IFTAVTLGMGFKGGEVTPGFFI GAALGNTFAIITG IAVKIVTTSLCRASGLVGGYYAPSLFIGGATGMAYGKLIA


## FALKMLFTIVTLSAGFKGGEVTPDFFDGATDGNALSYFDP

 FGLMKLLANLASTYFGHVSARLPLGQGWLALLLHN $\prod F C L K F F L V P V A N V S G A T G G L F I P T L A L G A L I G A L L A E L F$ SFK $M D F T A L T D G A G Y K G G E I V P A L Y I G A T S G C L Y S Q L L G F$ VAAKVVATSLCRGSRLVGGFYAPSLFDGASLGSAYGKLAG

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WMQMTGTNS $\square G V Y A L L G A C A L L S A S Q N A P L M A M C L V M E L T$ AVFPDLSSGYGAYTLI GMGAVAAAMLGAPISTTLMMFELTT
 NFGFQD VPFANLVLVGMA GVMASGVMYAPLTADFLI AESS $R L G Q V P L E D R N L L I L V S M V G F L T G V V R S P F T A A C L V L E M T$

 A





 MSPSFLAALGLDGVFAGA MRPWDF $\square G K F V Y T V G S G G S G F K \quad$ NAP GASFVLSLEMF AP VSLLFAADGF DAVFAGA PTLFMGNVSESNFTLI GMTGLMAGVLHAPLTADFLIAEI T


$A \square F P G V P S G A \backslash I L L G \square A G Y F \quad T G V T R A P L T A V I I V M E M S$ GADQQLLMPALI AMGMAGFLA AVTQAPLTSFIIVMEML





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E D K R

K A H

H P

E Q D










sol0


[^0]:    06
    T29

[^1]:    LPPGLLAGMGFVAVFAGA TNTPDACMDMADELF LAVLMPGVDPRAFVLLGMCAYDTGVTQAPLTSAVISLELT IA WGVNPDYYKIIVVLS DSGFMSAASRVPLSAMMLALEAM
    
    
    
     $L H P S F G A G L G M V C V F C G V T N C P M T S L L L S L E L F$
    SSTALGATLGMAGYFAGVVQAPMTAFVI
    $\square$ MEMT DVPVGALVLIGMTAYLTGVLQAP TTSFVIVT EMT $C$ PV D
    
    

