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MVSLTKRCTAFFTGTFTLVFFGAGSAAVTLMDASGGTSPN NI WK SCLAEFI GTLVLVLVGCGSCVSWN
T WRQL FAEFLGTFFLVLLGCGSTIS


DFWRAVIA E CLAALT I F I PDA PGSSVGWS GSNTPTNTL DF WRAVSGEYLATFI FVLLSLGSTISWKAGEEKA
VAFTRAVFVEFFATLLEVMFGIGS
TFWKAVSGEFLAMLI FAFLSLGSTISW KEAFSEFIGTFILDMFGDGVVAQVVLSG
SFWRA $\square F A E F F A T \square F Y V F F G L G S$
Le LIWRAVIGECLATFFYVFLVCGAHVSWPGYAE LAETI GTSILLFVGCMGCV
VEFLVMLLAETLGTFLLVLIGCASCITWT $L Q E P F S E F L G T F G L L L F G D G V V A Q V V L S G G K N$ AALAEFAGTFMFLFFAFGGTSVANNSNQANRSDS SFLRPLFAEFLGTLFFVLFGLGS

F WRAVVAELI GTTMFVFYGVCAAVGNGNSSYPDHE
VGLFKAVLAEFLGTGLFLFTGLAS AANHSSGTGSEPNG LREPFSEFVGVFMIVLFGDGSVAQVILSNRKN
HFWKSVRSEFLATLVIVLLGCGACVHWTPLDNKNNGAN RECLAEFLGTFIMIVFGMGVNNQVVNSEDKN
VRTVMREPFLEFFGTFVMVLFGNGSVAQVLDSTGQTSAPG
$\square E L W R C V I V E C L A T F L Y V L L G C A A T L R W D P S D Y A V H V T S$
SLGKALLAEFLGTM』LVFVGCGSC』
FWKAVSAEFLAMLTFVLLSLGSTIRWNGKDQPM
VEFLVMLGAEALGTFLLVLIGCASCVTWE
SFWRAG
$K L L R Q G L A E C L G T L I L V M F G C G S L A Q L K \square S$
A ALGEWVGTTMFLFFAFAGTQVANAKSTTPSEAT MLVFVGCMGCV
$\square R H Y \square R E P F A E F L G T M V L I L F G D G V V A Q V V L S E N$ EFWRAVSGEFLATFI FVLLSLGST\SWKAGEAS $\square A F S R A V L A E F L A T L L F V F F G L G S A$
 VRESLAEFIGTF ILIVTFGDGSVAQSVLSR
\RNYSQDFFSEFLGTMILILFGDGVVAQVVLSDDK SLLTKCVAEFIGDLTFVYVGTMQAHLFVNADG FTRAFVAEFLGTLVFVFFGLDCSAMQ $R D \square I K A \square F A E F I G T L I L V L V G C G S C V S W A P E D L V Q \square A \square A$
 $\square H \square S R L A L S E F L G T A V L L G L G C M G C A N T T G K G L V$

QLCREFLAEFLGTFILIVFGDGSVAQFVLSK LAELI GTAMLVFLGCMGCIA
S LWK MLAAEF GTLILVTVGCGSCLGNPT\|VQDADAFG TLTKCIVAEFVGTLLLVLI GCMSVAFV
RNIWRILIAEFLGTFLLVSIG $\square$ GS

WK A F L A EFLLGTMFLVFIGCGSCIGS
$K L L R Q A L A E C L G T L I L V M F G C G S V A Q V V L S$ RQFWRAVLAEVLGSLIVFVSAVLGS SV

A ALGEFVGTTMFLFFAFVGTGVANDPAGSGADNS
REALAELLSTFDMMLFGLGSCAQVVLGKH
RECFAEFLGTFVMIVFGMGVNNQVTNSQDAN
KFWRAVMAEFVGTLLFVFLGCASTDTNPVNPVRVALAF
S $\quad$ FTRMI A EFLGDFTFVFVVTT $\square G K Q A K I K K N P K N S T M$
RDI WRMLMAEFVGPLFLVLIGCASCVE
VREYCQDAFSEFFGTFILLLFGDGVVAQVVLSR
E LVVREALA A A LGTFLLMLLGDGSVAQVNLGGGK
$E M V R E C L A E F M S T Y V M M V F G L G S V A H M V L G Q Q K$
$A D W K A L L A$
$A$
NFWRAVIAECLACTFFFMIIVCAACTHDSGKPPSLVLIA
VNFWRAVI A E CLCTMFFMIIVCAA
RNDWRMLVAEFLGTFFLVSIGIGSTMGW
SFYRAAI AEFI ATHLFLFFSVSTVVNYK

VRAVLAELVCTFDFVFAGVGAAMATGTLNGGSNSIV
SYWKAVKCEFLLTMFYVLIGCASTIPTDIHNKQSV $V F A E M I A T A M L M F L G C M G C V Q N A V I I N S N$
QLARECMAECLGVYVLILFGCGSVAQVTTTEDK
FMAELLGTAI MI FLGCMGCVSTDFFPN
$\square R S Y$ LA E FI STA 1 AFLGELIGTGULVF LGCMGCDNSP■FAN
$K L L R Q G L A E C L G T L I L V M F G C G S V A Q V L S G G S$
SFWRAVSGEFLATLIVFVLCLGSTDNWSAKEKQD





QUERY
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ARSFGPAVISGDW

 ARDLGPRVFAADAGWGDGHYWSWVPDVAPCVGGLVAAGDY
 ARDFGPRLFTFCAGWGSKVYYFWI P LVADSLGGVCGAGLY
 ARSLGPNIVGQDF LDSHFWS
ARSLGPAVI S
ARDFGPRLVSYDGYGSEVWSYFW $\square P$ MVAPFMGCAFGGLLY $S R D D P P R I F T A I A G W G$
$S R D L P P R I F T F V A G W G R$
A
ARTLGPFLV $L$ ST
WT D H WVY WA GP $\square L G G \square A A A L L Y$ ARSFGPAVVMGNW
ARSLATNLLHRSTA
ARSLGPSFVLLCAGWG
ARDFGPRFFSLCAGWG
ARSLGTSVVF
ARSLGPADVC
ARSFAPAV
ARDFGPRLFTY $\square$ A
$\square$ A G WG
ASSFGSALVGGTF
ARSFGPA L
ARTFGPAMIRLDFA
EAMDD $\square W$ WF WVGPF GALAAAVYH
NKWDNHWVYWFGPLVGGIASGLLF
NHWENHWIYWIGPMMGGILASFVY
WS NHW Y WV GP LVGGALA GLVY
NEWSDHWVYWI GPVLGA LLGGIVY
WN GA WENHWIY WVGPMAGALVSSLVY
WN NNFTRHWVYWIGPLPAAVITSFGY KNQAVYWVGPLDGGALA GLLDY
WNAHFEHHWIYWVAPGSSAAITAYAY $N H W V Y W V G P M C G G V A A A L D Y$

| QUERY | Q Y L |
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| UniRef90-T1DFX3 | Q |
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| UniRef90-Q32ZE7 | D F L L |
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UniRef90_G7DSW4
$F L G E L I G T G L L V F L G C M G C V K N N A Y E N$

A MLGELI GT TMFLFFAFAGVEVANDGLPSSAPFN VQPCLVELLGSTLFVFIGCLSVIVHRPDTG
$T L W K S M V A E Y$ GTAMVVLIGC GSCIN W
L R E CFAE FL GTFVVMILVGMGVNNQVTNSEEKN

L K A A LA E F F GTLIVFVFAGEGS GMAFS KLT D D GSTTP | $R A$ | $L$ | $F$ | $A$ | $E$ | $F$ | $A$ | $T$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $F$ | $I$ | $P$ | $Y$ | $V$ | $F$ | $F$ | $G$ |

F I A E VL G T A I L L F
$S \quad I V K E A L A E F L G T F V L I L E G C G S V A Q T V L S R$




F LR K V VA E V I A T Y L L VF VT C GSAA LS A S DE QRV M G T GLLVFIGCS GVM
MRH $\square A R E P$ LSEFFGVFVLVLFGDGAVAQVVLSR REFLAEFIGTFLLVFMGNSAVAQTTLDTDGG S F Y R A G I A E F VA T F L F L Y $\square$ TVLDTVMG VNK S S N K C S S VG

RQFWHAMLA E L L G T LVLVSAVLGASVPGPGDAPGGPLYP $\square R N Y C Q D F F S E F L G T M T L I L F G D G V V A Q V V L S G$

R QF WR S MLA E LLAS LVFV SAVLG S
$L V R A A F A E F I G T F I L V A \square G N G S V A Q S Q L T$
$Q F L G E F \square G T G M L V F L G C T G C V Y N E S L V N$
$F P R K V L A E V I G T Y M L V V V G S G S A A M N A D D E N K V$


A LVRECMAEF L GTFVLLLFGCKA A A QVKTSRES
$F \ A E \square V G T G \| L I E I G G M G S D G T$
S L A RETVSEFLGTFIVIVLGCGCVAQTVLSRGS
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$L R K A F A E G L G T M M L V L I G D G V V A Q T V I S Q Q M E L R N A$ $V R T Q Y R E F L A E L L A V F V Q L T I G F C A D T Q T T L N D A$
$Q L L R Q C L$
$R E X C L$
SFTRAVVFAEFLATVVFVFFGLGSAA
D I I K E F LAA E F L G I F V LI LF G CG S V A Q TV V S K G A Q


WRAMVAEF IGGTLMLVFIGCGACDGGAWSDLDDPTVL
 KFFGELFGTAILVYVGCLGCTHSPS\|SNSA


 E M I R E F L A A E FM S T F V MMV F G L G S VA H MVL GEN K

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

 $R E F A A E F L G T C D L I L F G N G V N N Q V T L N S S R A V S G T$


Y LTMFASELLGTALLMFLGCMGC $\square K N$
$L K A A L A E F I S T L I V V F A G E G S G M A F N K L T D N G S T T P$ AFFGELVGTAMFVLIACWGCVQTPDFNN
A AVSEFFCGTF LF L FFSFVVI ATQAANS QNNNVDQG
 Q L L R E C L A E F L G T F V L L C F G D G V V A QVV L S Q Q N S
$H L L L K K M V S E V V S T F L L V V F V T C G A S A \square N G N D P S R \square S Q L G$
$M L G E F V G T F M F L F F S F A G T Q V S N T P M P P P G S P P$ QLLRECLAEVLATFVMMT DTLASAAQ
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$R A Y M A E F V G T F I L V L I G D G S V A Q F V L S K R A A$
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 $P G L T S S P P S H L Q I C I V F G L A V A M L V Q V F G H I S G S H$
$\nabla \mathrm{Q}$ G $\square$ A WAF G G M $\square$
FALVYY CTAGUS
A VAVGVVI
VALGHCFGE $\square$ SGAQ
$S \square P G S E G T K G D Y Q S \square S W G W G \square A V M L G V Y V G G K \quad S G G H$
GPSLGPIYPALLAAGMATVGLGHCFGEIISGAQ Q GEK GNYFT I NWGWCDGCCLLGULVSAKAS G GH
 S K L G A S M A G GFiV TVMI Y A $\square G H I$ S GA H
$\square G Y \square G \square A W S F G A$ TI FVLVV Y T G G V S G G H PPNVLQTSLAFGLAI ATLVQTLGHISGAH

V K V AL L S G GLA I A TLAQSLCHVSGAH
 S Q NRGEYQS $\square$ SWGWGIG

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A AGFTV
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A T \VQ VT FH पS
GAYGQYVSINLGFGLGVAMG\|HVGGKVSGAB $K G N Y T T L C L G W G I G I L F G I H V S G G V S G A H$ GVFGD Y L L S I N L G F G L GV A M GVVMA G G K V GGGNPNTISWGWGLATMMGIYICGGVSGAH GGFGTFFSINDGFGLAVAMGVHIGGTVSGAH PPDLVLI SLCF GLLSIATVVQCFGHI SVAH
 K G DF LDS INLAA ALGVTFAVHVSGGVSRA H
T K GE Y L S I NL G F ALL GTT F GI Y I A K G V S G A H $\square K W S D A P$ L D TVVA V S L S F GLLADA T L V V K SVVS H I S G G H
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VSLAAFGLA $\square$ A T LA Q S L G H I S G A H

A K G A Y S T TM G WA A STA V GVVWVS G G S G GH

PDKSGFEPNVFQSS $\square G G G L A I D S A D Q M S \square N V S G A H$
 S WA WGFAT MMA $\square \mathrm{Y} \quad \square \mathrm{S}$
$M A F G L G \square G T L V$
K GDF $Q A L$ G GIS GA H
 A G L I A A S $\square$ A H A F

THFQS G LT F G L
VMLV QLGHIS GAH $G L F V G V S V S A N I$ S G G H
 LIALAFGLAVFA IVSAIGHVSGG

GEK GDYQS $\square$ SWGWGL GV ML GVYS S G I S GA H NTSNLLYSALSFGFALTVNVWAFFRVTGGL
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1
$\square R Q M L A E A L S T F \square L M D F G L S C V A Q V V L G K G S V$

$K M L R E F D G E D M S T Y D M M V E G L G S V A Q M V L G E K K$
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$\square R W W Q A L I G E F D G N L I L N F F A C G A C T Q P E D G T F K$
$T L I S R C Y A E F L G T F I F I F S G T M Q A N V Y D Q S Q P V G$
$A F W R A D F A E F F A T M F Y V F F G L G A$
VPFMQKVIA EA LGGTYFLI FAGCGAVVVNLNTDKTVSSPG
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IK K GVA E MV GTAMVVF LACLGCV
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VSFWRA I SAEFLASLVYVFFGLGA

$L A R Q C L A E F L G V F V E L L I T Q G A V A Q T V T S$
RECFAEFLGTFVMIVFGMGVNNQVTNSQDAN
$R E A L A E S L A V F V Q L T V G F C A D L S V T V A K A G N P N T T$
KF $\square$ QSTFAEFI GTMVYTFI ACMAV
 $D L V K E M \perp A E L I G T F V M V V L G C G S I A Q A V L S R$
$K \square W R Q \square M A E D G G T F F L V V I G V G S C$
$Y R A Y F A E F L G T L I L V A F G D G V V$
YRAYFAEFLGTLILVAFGDGVVAQKKLSG
$A Y \square R E C D A E F D G T A V L I A F G D G V V A Q V V L G K$
REFLAEMFATFMLVTVGNGAVAQVILGATASTFD A E LCGTS LLVLLSCLPAAA
VRDFRGVLGELVLTFMVGVGVGAAMGVDKTNAG



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

VREYFRDAFSEFFGTTILILFGDGVVAQVLLSHGQ
LELWRSVMAECLATFLYVAVVCGAA
V HFLQKLDAELVGTYYLI FAGCAAADAVNAQYHNAVTLVG
RN NWRMLLSAEFLGTFFFLVLVGCSSVANVELKGTKGEHSG

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

VSLTRKVGAEFDGTFTLIFAGTATATVNQKTQGSETLIG RDFFSEYFGTMILLLFGDGVVAQVVLSD

MVREFLGEFLGTFVLMFLGEGATANY
FREYFAEFVGVAVLIIFGVGADCQVVLSANTGVASS
$\square A R Q M L S E F L G T F L Y L S L I L L T G T S L N Q G P T G S$
AAIGEFVGTCLFLIFVFGGVANMAVSDVNSTANS
LLKQLFAEFLGTFGYLSIVTLLAGLTSNNSVSFHSL

$F P R K V V A E V I A T Y$ L L V F VTCGAAADSSADDK R
Y $\square$ QP C V A ELL G S A L FIV V G C S S V I E NVEGT GR

$\square W R M L L G E L V G T F F L V F I G V G S T A$
$L R E P A E F L G T L I L V I F G V G G N L Q A T V T N G S G$
FGELTATAFLI YLGCMGCVQTTVIVN




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60
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 F
G
G $M \square$ V H
LR WT T GPHNVL HVA CWAF GLAA $N(\square A F$
$A F C$
$A$
$A$


FGSYLSVNLGFGFGVTMGVHLAGGD GKDWEANTPTIVQISLTFGLAVATVVRCIGHV PMGPALAHGFSLGIMVAVLGKIGGH $\square T H A L A F G L G V F M A I T I V G H L$
S LK WA A GPAN V L N $\square$ A
FGK
$\square A \square V W G L V A M G M I \square Y$
VGH SGAH
VGHIS G GH GSMGNDPSPVQVCLSFGFAVVTATSSTAHTS $\square$ DVLQTSFAFGL AVMIAI QCVGH SGAH $00454462 F$ UPIO00350179F Ref90-C0HB60 UniRef90_F7DT15 UniRef90-E9GCl3 UniRef90-Q9LWR0 UniRef90-UPI00033471A3 UniRef90-W9YWG2 UniRef90-H3GPY7 UniRef90_G9N937 UniRef90-W4Y8N5 UniRef90-D8RKL8 UniRef90_K7E1H5 UniRef90_F7GDL5 UniRef90_Q25074 UniRef90-M4H333 UniRef90-C0STV4 UniRef90 ${ }^{-}$K3W8E4 UniRef90_A4Q8S7 UniRef90-G6D2J3 UniRef90 C9SJT2 UniRef90-H2AZY1 UniRef90-V4AZ69 UniRef90-G8JXV9 UniRef90 V5FP78 UniRef90_UPI00045D8458 UniRef90_V3Z755 UniRef90 R9PB19 UniRef90_W6QF48 UniRef90-J9KAPO UniRef90 $\mathrm{V} 7 \mathrm{HXU1}$ UniRef90-B5UA25 UniRef90_I3M904 UniRef90 UPI0004417E1E UniRef90 T1DQ17 UniRef90-V9EPP6 UniRef90-U5ESK6 UniRef90_Q21473 UniRef90_M0Y1H7 UniRef90-I6XT81
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F A V A VA H A L V
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AIVWGLVVMVLVA
FFVAMAHALVV
$S G G A T G F N I A V Y$
PQG $\square$ A WAF G GM $\square$

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| $I T P A$ |

Q
$\square A D V W G V$
$W M T I A V G Y$
LGSYLGVNLGFGFGVTMGVHVAGGISAH
LG GYy GVN GF GF GVTMGV

$\square A S G F A V A A D T \square S F A$






$L L G \square A$ WAF G GMM

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SYLQ Y LVTP DVAGSGVSVSLCWAAGVVLGFYASGGISGGGH



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I N P A V $\operatorname{T}$ F G L L F L A R K
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| UniRef90-T1FMH2 | 1 FASCDANRHDSGSTPLSIGFAVAFCHMFAIMYTGSSN |
| UniRef90-B4KR22 | VFACDANKPDSRYTAPLCIGMAVATGGLVGTITYSGACLN |
| UniRef90-EЗMQT0 | I LMMVVDTKEPREATPLII GMMVIVNIFATASITGTAMN |
| UniRef90-A4IGW1 | DERRNGRMSVSLALGFSVALGHLFGDYYTGASMN |
| UniRef90-E7BLL1 | SGVATDNRA鸟GEAGLAVGSTVLLNVMFAGPTSGASM |
| UniRet90-K7M7N1 | URGVATDHRGSKDLTGVAIGISVLINVIIAGPITGASMN |
| UniRefofo-K7JA24 | ACAIGDSRNARNDTAIKFGLAIAVLCFGFVPYTGCSMN |
| UniRef90-E91DU5 | ACGSWDSRNAKNTDSALKFGLCVTVLCLAFIPQTGCSLN |
| UniRef90-UP1000454 | A TDKDNSP |
| UniRef90-UP1000350 | A T D N P A LQGTQALVI GV |
| UniRef90_CO |  |
| Uni | DERRDGRGSVA |
| UniRef90_E9GCl | NTTMDDHRP |
| UniRet90_O9LWRO |  |
| UniRet90-UPiooo334 |  |
| UniRet90-W9YWG2 | LGLJFFVI GLGACFGWET |
| UniRef90 G9N937 | SFANQTGAAL |
|  | KGRQSTGPLAYGFAVLVSIMCAYHSS |
| iRef90-D8RK |  |
| UniRef90-K7E1 H5 | A $\square F D \mathrm{DKNWRVPKGEPFA} \mathrm{\backslash FMLILVLTCALGMNGAAMN}$ |
| UniRef90-F7GDL5 | ASCDRNRTDVTSVALAlGFSVAIGHLFAINYTGSSMN |
| UniRef90-Q25074 | GRTD |
| iRef90-M4H333 | SCNVESAKHWFPI GLFFLIYGIGACFGYQTGY |
|  | ALWTGKGPDPAGPIKFGLVVAGLVYVGGEMTGA |
| , | GDQKNKPCYT |
| UniRet90-A4Q8S7 | IFGITDTNNNKQGMKPVLVGLLITAI GHSYGLNCGYA |
| UniRet90-G6D2J3 | DVRNQYDDSWPLRIGFTVSSLSLVAGDLTGA |
| UniRet90-K3XLC3 |  |
| UniRet90_C9SJT2 | VYALIDKDSMAAGPLFPLAMFFVIFGIGACFGWQTGYINL |
| UniRef90_- 2 AZY1 | LFALTDPYTSLASEVFPIMLFILIFILNAAMSYQTGCINM |
| UniRef90 V4AZ | N |
|  | DPYTCLSPDLFPVMLFL |
|  | GDDSNAPPGMHSLII GLV |
| UniRef90-UPI00045D8458 | AITDQENNPALPGTQALVIGILVVIIGVSLGMNTGY |
| UniRef90 V3Z | VFAVIDKKNFMPLDKPISF |
| UniRet90-R9PB19 | $V \square A V G D E T N A P P G L S A L V L G F V V V M I G M S F G W P T S Y$ |
| UniRet90_W6QF48 | D GNLGAGPLIPLALIFFVIFGIGACFGWETGYINL |
| UniRef90 J9K |  |
| UniRef90 V4MA |  |
| UniRef90-V7HXU1 | ALAITHSDFFVHGNQHISVGLLVMVLVTSFGGPTGPALNP |
| UniRef90-B5UA25 | VEAVCDERRTDVKGSPLAIGLSI ATCHLAATIMYTGASMNP |
| 13M904 |  |
| UniRef90-UP10004 | SDKTNGPPPPGLNALVLF |
| IRef90-T1DQ17 | GVWDPRNAKHHDVALVFGFTV GALAVAAGPYTGASMNP |
|  | A T D QRNRSPVGTPFAFALLMMALGMSFGMNTGYAMNP |
| UniRef90-U5ESK6 | CCGVWDPRNKTNEDIPLRFGFTVGSLAUGFGTLTGCSMNP |
| UniRef90-O2143 | V AVAD |
| UniRet90-16XT81 | VTAVATDTRAVGELAGI AVGATVMLNILIAGPTTGASMNP |
|  |  |
| Ref90-UP10002C371F1 | AASMDHHAQAVGPLSGFVLGUAIGLAVLITGPVSGGSLNP |
| UniRef90_J3LV16 |  |
|  | DVKGSPLAIGLSITACHAACIPFTGSSMNP |
|  | NVCGHFVVGLTLLCIGLSFGGNTGFALINP |
| UniRef90-l1z8E8 | P |
| UniRef90_H9JFD9 |  |
| iRef90_M7Y000 | SALLSSNKHSGTFLAPLPIGLALECSELVSVYYTGGSLNP |
| UniRef90_G6DDS8 | SVSDTNKPGLLGSGALAIGI SIVACQSSA LIFYSASLNP |
| UniRet90_-R7SLQ6 | AINDSRPPPPGLVPLVLFILI LIGAALGMQTGYAINP |
| UniRet90-K9VE51 | ILGSGLDRRAHIUGFAG\|AAGLTVGLEAAFMGPITGASMNP |
| UniRet90-15C3D8 | ( ${ }^{\text {a }}$ |
| UniRet90_B9T848 | p |
| UniRet90 D5MCV8 | P |
| UniRef90-D2NQE9 | ALGIVELSLINLNDVLKPLAFGFMVTVLVI GLGGQTGYALNP |
| UniRef90_B4J8Z7 | AVS DAGRMDIK GSAPLAVGLSIAAGHLCAIULITGASMNP |
| UniRef90 C5DC68 | ALLDDSNSPPGMTALIVGFLVAAIGMALGYQTSFTINP |
|  | 㑑 WDPRNKFQDVPIRFGLAIACLSLIAGQFTGASMNP |
| UniRef90-UPIO0042B0021 | KGSIDGLGPMLTGFVVGANILAGGAFSGASMNP |
| UniRef90_L5M978 | KRNALPGTQAVVIGILIVVIGVSLGMNTGYALNP |
| UniRef90_UPIO003F114F4 | M |
| RRef90-A0A | M |
| UniRef90-D3C | GFLDGLGPLLVGLVVGANIMAGGPFSGASMN |
| UniRef90 |  |
|  | NPNSFSHALLIGYVVAMVGGGFGFLEGFAINP |
| UniRef90-A0A059A5X6 | T DAKRMVRDSHPLPI GFAVFVVHLATMPI TGTGINP |
| iRef90_Q7XLR1 | ATDPKRNARDSHIVPVLAPLPIGFAVFMVHLATTGINP |
| UniRef90 A0A023GQJ5 |  |



VRTLGPA\|AANNY
ARDLGPRMFAWW $\square G Y G P H$
ARSFGSAVVA
ARSFGPSVVSG
ARAFGPALVTNHW
ARSFAPAVLVRNFV NHWVYWVG
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ARD LGGPRLAMYGFDRKVIWDNHH
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ARTFGPAVVGGTWEHH
ARAFGPALIS
ARTVGTAFATGN
VRALSPNVVAE VVLSSKFWTYHY $\square Y$ WA GPF $\square G S T \square A V \square G Y$
ARSFAPAVLTRNFVNH
ARSLGPALVSS HYKNLWTYLVAPTLGAVCGALVY
ARSLGPAVVGGY NN NI WVYIISPILGAVSASTLY
ARSFGPALL
ARSFGPAVVWG
SRDDPPRFFTFDAGWG
SRDAPPRFFTFAAGWG
ARALGPAlVANYW
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$M R S \square G P A F V M \quad N K W D A H W V Y W L G P D V G G C D A A L Y$

ARDFGPRLMSYMGYGPHVWTYFWVPMVAPFFGCTFGGWDY
SRDFGPR LAALLA LGYTSFTNPYWFYWAGTLLGSFMGAFLY ARSFGPAVISG YWAEHYDYWAGPALGGLLAGLFY
ARSFGAAV
ARDDGPRLFTALAGWG
ARSFGPAVIMGNWENH
ARSFGPAVV
ARDFAPRVATSVGYGREMWT
ARSFGPALVT
ARDFGPRLFSACAGWGSRCSRFVI
ARDFGPRFFTA $\square A G W G W$

WTHHWVYWVGPLLAGGPLAAVVVY
ARDFGPRLVSY IGYGHEVWSYFWI PMVAPFFGCAFGGFLY

ARD IGGPRLAMWGFDRSLLWSKH

SRDLGPRLF TAI A GWG
SRDLGPRLIFYMVGYGKEDWDYWWDYGAGCFAGALFGALLY ARDFGPRLTSYMIGYGH
ACAFGPALVM NHWDNHWVYWFGPGAGG』IAGVVY
ARS LGPALVWGCY
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ARDFSPRLDTFFAGYG
ARSFAPAVWNNNY
ARDLGPRLFSFF $\square Y$ GS GVFS Y H
 $V R T L G P A I A A N N Y \quad K A L W V Y F T A P I L G A L C G A G T Y$
ARDFGPRLVSYIGYGTEVWS
ARSLGPAVVSNF KD DW $\square Y V C A P T \square G A V S G A L L F$ $A R S L G P A V V Y N G S K A W K E Q W M F W V G P F A G A G A A \square L Y H$
ARSFGPALVMG
SRDLGARLLSLAAYGSDAFTYFF DPLIAPDVGSVIFCQDY
ARDLGPRMLTAMVGYGRNQYWDWCPVLAPFLGAQVGTVYY


ARDLGPRLLTAMVGYGGA
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ARDFGPRLMSY GYGHEVWSYFWVPMVAPF DGCTLGGFLY
ARTLGPAI ASAYY
ARALGPAVVSGYW
ARDFGPRLMHA LLPGSSRWFYAWVP $\square$ CGP $\square$ AGGFMGGAFF ARSFGPAVVQGIWTDH
ARDLGPRIFASMDGYGPHAFH
ARSFAPAVVWNNA WENHWVYWVSPLAAALVTSLVY
ARSFGPALVSWD
WT D H WVY Y WVG P Lill G GLla GFIly
SRD DPPRFFTF DAGWG
ARSFAPA TLTRNF TNHWVYWVGP I IGG
ARSLGPAIVSKQY
ARSFGPALVSGN WTDHWVYWVGPLIGGGLAGLIY
ARS SGPCVVTGTFD SEHWIVWVGPFLGTLIAVVFY
ARDFGPRVAAYALGWGKAHNYWWGPDCGPLIGGPLGAFDY
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| :---: | :---: |
| UniRef90-Q9P7T9 |  |
| UniRef90-Q6DJ01 |  |
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| UniRef90-M4ASL0 |  |
| UniRef90-J7IKK2 |  |
| UniRef90-E7BKU4 | Q F V L |
| UniRef90-UPI0003941F40 |  |
| UniRef90-A0A034W3G2 |  |
| UniRef90-12H495 |  |
| UniRef90-14DIW8 |  |
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| UniRef90-UPI0003F123BC |  |
| UniRef90-T1FMH2 |  |
| UniRef90-UPI0003C299E9 | $R \square V L$ |
| UniRef90-B4KR22 |  |
| UniRef90-E3MQT0 | K L L L S |
| UniRef90_A4IGW1 |  |
| UniRef90-E7BLL1 | $\mathrm{N} V$ IR |
| UniRef90-K7M7N1 | K F |
| UniRef90_K7JA24 | K M T |
| UniRef90_E9IDU5 | R C L F S |
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| UniRef90_F7DT15 |  |
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| UniRef90_Q9LWR0 | ELLF |
| UniRef90-UPI00033471A3 |  |
| UniRef90-W9YWG2 | D M F L |
| UniRef90_H3GPY7 |  |
| UniRef90_G9N937 | D F M |
| UniRef90-W4Y8N5 | $R L$ L L |
| UniRef90-D8RKL8 | Q Y V L |
| UniRef90-K7E1H5 |  |
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| UniRef90-Q25074 |  |
| UniRef90-M4H333 |  |
| UniRef90-COSTV4 | R Y V L |
| UniRef90-K3W8E4 |  |
| UniRef90-A4Q8S7 |  |
| UniRef90-G6D2J3 |  |
| UniRef90_K3XLC3 | E C |
| UniRef90_C9SJT2 | DV |
| UniRef90-H2AZY1 |  |
| UniRef90_V4AZ69 | D K $\square$ F S |
| UniRef90_G8JXV9 |  |
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| UniRef90-V3Z755 |  |
| UniRef90-R9PB19 | D L |
| UniRef90-W6QF48 |  |
| UniRef90-J9KAP0 | D $\quad \square \mathrm{l}$ |
| UniRef90-V4MAB9 |  |
| UniRef90-V7HXU1 | R A V F |
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| UniRef90-B4J8Z7 |  |
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| UniRef90-A0A059CCT7 |  |
| UniRef90-D3GDK8 | EN |
| UniRef90-S3DER7 | K F $\square \mathrm{K}$ |
| UniRef90-M2VS40 | EAF |
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UniRef90-B4LQ46
 SHIRECLAEFLGTFVMVCFGMGVNNQVSLS
$C L G E V L G S A M L M Y F G C M S L V S G F S Q A P L P G M Q G$
LRELLFAE WMGTMFFVY $\square G T G S V L A T V P W D G L L D P P T$
$E V V R V G L A E T L C T Y \sqcap M M A F G L G S V A Q V V T G Q$ $\square R$ F WRAVAAEMLGTFLFLF LLLSSTDSWN

RALFAEFLATGLYVFFGVGAAM
SYVREF VGEFLGTFVLMFLGEGATANF
FAAE VVGGDLIFDGCMGCDGT


AF WK AVSAEFLAMLIF VLLS $\square \mathrm{LGSTVH}$ W


$\square 1$ A NLIAEFYATA LRFDGTGVIAQLVLSRGTANAP FLAELIGTGLLVMLGCMGCVS
RECWREALTEALGTFILVFAGTGAVMVNEMTFGADSHLG
A LIDRQCMAEFLGTFVLLLFGLSAAAQVKTSR TPDTVAG
$K \square I R N A L A E C V G T F\|L L F \square G T S\| I A Q L H L S H$
AFMGEFVGTFMFLFFAFAGTQVANIGAGDSSNQS
RALVAEFLGTMLLVVVGCGACVGSDVAQPTTLS $\square A$
VRKLLRDPFSEFFGVMILVLFGDGSVAQVVLG
VSLARKVGAEFDGTFILMFAGTATAIVNQKTQGAET
REFLAEMTGTF LLVASGLSAHVVYKARKQQMDTFA
 SLI KEALSEFLGTFVLIALGCGSVAQTVLSHGAMGESD

$A \square V K A L F A F P A T G L Y V F F G M G S V$
$L V K E M \square A E F L G T F M L I V L G C G S V A Q A V L S R G V A G G \square V$
FRAA LA ELLGTFLLVTMGNGSVAQVVLSREDKGTFL
 $\square N L W R A V F A E F L A T M L F V F L G C A A T L T G T G T A K E$
$\square R F Y V A C D G E V L G T F F L V L V G C G S C$
AMCGEMVGMTLFMIFSLGGTTVANMGATSGQTHP EPLAEFLCTTIS IFLGMCATLQVNLAG
$\square A F Y R A V F T E F L V T A D Y V F F G L G S A L D W$ SFLLRSLFAEFLGT LFFVVLLGLSSTLSWPKALPAALQDS



MQAHFVAATGFFVGTFMFDFFAYAATQAANARSSTQHNGD ATQLMVLDQTSSVAPPA HLLLKKVVSEVVATFLLVFMTCGAAGUSGSDLSRLSQLG


 VQPCVAELLGSALVIF GGCLVVEDSGGTGR
VS $\square$ TRK $\square$ GAEFVGTF $\square L I F G A T A G P \square V N Q Y \square G A E T L I G$
$\square K A A L A E F \square S T \square I V F A G Q G S G \square A F S K \square S G G G$
RGALAEFLAMTLFVFFGCGAAAGNAHFEDNDWDPA
KEF $\square$ AEM $\square G T F F \square V V L G D A A T A A Y K \square R T Q Q G D R F$
SY $\square$ KEFLAEFMGTMVMIIYGSAVVCQVLAAGKYQQKQF $V 1$ HCWQQMLAEGIGTFI LVVAGTGAVMVNNLS GFAVTHVG VVRECLAELLGTFVMICFGMGVNNQVSLSGEANGTWLD
VS F

$H Y \Pi Q P C L A E V V G S F D F M F V G C V S V M G N V G \square S G S T Q V S N$
YVQPCVABVGGTLGMGGCLSVEDATDTGR I RATLAEFVSTLIFVFAGEGSVLADDKDYRETGPPA
VPFLQKLIAEFLGTYFLVFTGCASVVVNMQNDNVVTLPG
TFWRDVIA EFLATFLLMTVQSAVVMDWGKDDPAKSURV
LIRACIAEFCGTAVLIIFGCGVLAQVFDGDHGKKSHG
AFAGEFGGTFMFLFLAFSGTS $\square$ ANAAVPTTDGPN

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UniRef90 UPIO0046BBE40 UniRef90－A7S514 UniRef90－UPIO00388E262 UniRef90 H2T183 UniRef90 Q651D5 UniRef90－U1MJE8 UniRef90－Q7PMQ5 UniRef90－L8LK87 UniRef90－M3zY85 UniRef90－W9WLOO UniRef90 ${ }^{-}$A0A044VJ31 UniRef90 ${ }^{-K 1 X W 12}$ UniRef90－W6CR86 UniRef90－W9MBF5 niRet90＿－A9YTW7 UniRef90－T1K1U5
UniRef90－F2UHC9 UniRef90 UPIOOO42BOCB5 UniRef90 UPIOOO3C28D85 UniRef90－J3JTJ1 UniRef90－A0A016Q501 UniRef90 W2TGT9 UniRef90－UPI0002C46E58 UniRef90－G3WD79 UniRet90＿K7GAV5 UniRef90 C3Y280 UniRef90＿UPIO0046E0307 UniRef90－141Y31 UniRef90 V4A513 UniRef90－G1X696 UniRef90－R7TVQ7 UniRef90－M7WZ55 UniRef90 R1GDI9 UniRef90－S8C0V5 UniRef90－A0A034V1PO UniRef90－UPIO004421FF0 UniRef90 F6V0M7 UniRef90－Q6FV88 UniRef90－C5DZW3 UniRef90－T1G957 UniRef90－K7V3Y8 Uniinefollli2ZS5 UniRef90－Q6Z2T3 UniRef90－MORZN8 UniRef90－W9RW67 UniRef90－UPIO0046DEE4D UniRef90－U3KCM1 UniRef90＿UPIO0034C4167 UniRef90＿U1NXK8 UniRef90－M0X1K4 UniRef90－WINLQ9 UniRef90 UPIOOO441D42F UniRef90－Q677C2 UniRef90－R1CA21 UniRef90 H3BIC5 UniRef90－T1L126 Uniinefol WEFT43 UniRef90 UPI0002F866AA UniRef90－DONBP1 UniRef90－Q9C6T0 UniRef90 K7N2M UniRet90＿A1D9U6 UniRef90－A7MCF8 UniRef90 UPI0003872565 UniRef90 B9S144 UniRef90－Q8VZW1 UniRef90－R7UHU3 UniRef90－G7YQU0 UniRef90－R7YWG5

QSVVG
50
60
70
80 EEANGTWLS $\square$ NMAWGUAVLMGVYCSEGIVSGAH

GLMF GF VV
$\square V A V S M G F G F G L$
GAF GQYVSTNLGFGLGVAMGTHVVGGQVSGAH RWPDQTPTILQI SFAAGLA ATAVQCFGHISGGH
 H T T G L S G D WY K L C L G W G L A V F F GI L V S A K L S G A H
 TVNFAFGFAATL
A $\mathrm{V} A \square \mathrm{~A} \square \mathrm{~L}$ H GMT $\square$

$N G Q L N G F A V L V A, Q C F G C V S G A H$

GGAEQPRMPTVVLQDAFTFGLGDGTMVQAVGHISGAM
 G Q Y L S $\square$ N L G F S L G VT F G VF $V$ V VQVNLGWGFAlSLSVYSAGRVSGGH GLGHTPSHFELCLNFGLIVMVIVQIFGGCVSGSH $\square$ SFVFGAVV A ALI Y SLGHISEAH
 TTGGT』NSWVQINVGWGFA T T G S A T G F
LA F G F $\square 1$ A

NATLY LALS F GF
$S V V Q M 1$
$E G N K G D$
WQN $\square N W$ W WA L G VMMGVYC
AAFCFGVGALDA $\square$ S A S S LVLVVA $\square A N T F A L S S S V Y D A A N V S G G H$ $\mathrm{T} \square \mathrm{Y} \mathrm{V}$ G F A VA VT $\square$
 Y GT Y E T S C WA WGFA WM F G V Y $L N S W V Q I N F G W G[A D T F T V Y C C A R T S G G H$

 $G V$|  | $V$ | $M$ | $A$ | $V$ | $Y$ | $V$ | $S$ | $G$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $T$ | $M$ | $G$ | $S$ |  |  |  |  |  |  |
| $H$ | $A$ | $A$ | $G$ | $S$ | $I$ | $S$ |  |  |  | $S \square \mathrm{NW}$ G Y G $\square \mathrm{GV}$

A SLVVVA I A NAF LA S A S GF A V

VI GVYASWGVSGAH
A LA S A V Y $\square S$ A N A S G G H
VK $\square$ A F T F G L A $\square$ M A M $\square$ Q M $\square$ G H $V$ V G G H
 GQDGSTATMPNTSNLLYIAFSFGISLTVIAWCFYRVSGGL GEYGNYETSCWAWGIAFMLG』YVGGGVSGAH

R A S GA H

LT F G L A 1 A T MV Q TMGH $\square$ SKA H L A Y V DKALLNLVSSTS GGTF DEVVALGWAAAT TMMYFAAAGGDSGGH P V

WG WGLS VA
ATS L S Q N A PPDTNALLFSS LGFGFS LAVNAWT F HV S G G H MET
$Q S 1 A G G L I V$

WVVAAPAAAQAM
S CLVAVAVTSAF
FA I AV T H ALV


ALSSAVFMAAANI S G GH
$V A \bigvee M I S A$ GHI S G GH
$\square N T W \square Q \square N \square G W G F A \square A A L I Y A L S H \| S G A H$

N
$L Q P A L A H G \square A L A V T \| A V L G B \square S$
A A CA GLLAVMIVILSTGHワS GH
G■K GNYVS S S LA S G I A VMVAVHVSGGVSGGH PATPA GLIS A ALSSHAFALGVAVSVGANVSGGH $S \square M \square S \quad L Q F G L A D$ $L L Q P A L A A G L S A V S L V H C F G D I S G A Q$ D YMAVNFCFATGVLIGVSAT $\square \mathrm{S}$ SVSGA H


 PATPGGLVASLSHAYGLFVAVAVGANVGGH TPKPVAGAPPNTSNLLYSALSFGFSLTVNIWAFYRVTGGL
$S G L V M V A L A H G L A L$

| $S G$ | $L$ |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| $\square$ | $A$ | $M$ | $A$ | $A$ |

GLAL GF I VATMAW
G F L S V S GWGMA
T A NLL Y I S LS FAFSL

S AVVA S SI N I $\begin{array}{llll}\text { S G G H }\end{array}$

$\nabla T F G V F A L G D F G G G H$



UniRef90-H3GSY3 UniRef90-A0A024NQI3 UniRef90_V5V0Q1 UniRef90-A7BIX4 UniRef90-H3BIC8 UniRef90-H3CZA7 UniRef90-B5THM7 UniRef90_UPI00032B02A5 UniRef90_Q8II36 UniRef90-H0Z148 UniRef90-A0A026W353 UniRef90_H2SK19 UniRef90-B4LMA9 UniRef90 V4AIJ5 UniRef90_UPIO003317DC0 UniRef90_H1VVR7 UniRef90_Q8JIR3
UniRef90_UPI0004 UniRef90_A7S514 UniRef90-UPI000388E262 UniRef90 H2TI83 UniRef90_Q651D5 UniRef90-U1MJE8 UniRef90-Q7PMQ5 UniRef90_L8LK87 UniRef90-M3ZY85 UniRef90_W9WL00 UniRef90-A0A044VJ31 UniRef90-K1XWI2 UniRef90-W6CR86 UniRef90-W9MBF5 UniRef90-A9YTW7 UniRef90-T1K1U5
UniRef90-F2UHC9 UniRef90_UPI00042B0CB5 UniRef90-UPI0003C28D85 UniRef90-J3JTJ1
UniRef90-A0A016Q501
UniRef90_W2TGT9 UniRef90_UPIO002C46E58 UniRef90-G3WD79 UniRef90-K7GAV5 UniRef90-C3Y280 UniRef90_UPI00046E0307 UniRef90_141Y31 UniRef90-V4A513 UniRef90-G1X696 UniRef90-R7TVQ7
UniRef90-M7WZ55 UniRef90-R1GDI9 UniRef90_S8COV5 UniRef90-A0A034V1PO UniRef90_UPI0004421FF0 UniRef90_F6VOM7 UniRef90-Q6FV88
UniRef90 C5DZW3 UniRef90-T1G957 UniRef90-K7V3Y8 UniRef90-I2FZS5 UniRef90-M7SUH6 UniRef90_Q6Z2T3 UniRef90-MORZN8
UniRef90- W9RW67 UniRef90-UPI00046DEE4D UniRef90-U3KCM1 UniRef90_UPIO0034C4167 UniRef90-U1NXK8 UniRef90_UPIO00395CB3C UniRef90-MOX1K4
UniRef90-W1NLQ9 UniRef90-M3BZ84 UniRef90_UPI000441D42F UniRef90_Q677C2 UniRef90-R1CA21 UniRef90-H3BIC5 UniRef90-T1L126 UniRef90-W5E743 UniRef90_GOWAJ9 UniRef90_UPI0002F866AA UniRef90-DONBP1 UniRef90-Q9C6T0 UniRef90_K7N2M1 UniRet90-A1D9C6
UniRef90_A7MCF8 UniRef90_UPIO003872565 UniRef90_B9SI44 UniRef90-Q8VZW1 UniRef90-R7UHU3 UniRef90_G7YQU0 UniRet90_R7YWG5
UniRef90-B4LQ46


MNPAVTLISFAFFRHFPWDQ|V|PFYWAAQFTGAMCAAFVLRA LNCAVTLAHAVYGRDPWWKLPGYWLSQVVGAFDGAYQKDH $V$
$V$
N P A
N
 IN PAVTFAFLIGSQMSLFRAL FYDAAQMLGAVAGAAVL
 L L

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UniRef90 Q67WJ8 UniRef90＿H3GSY3 UniRef90－A0A024NQI3 UniRef90＿V5V0Q1 UniRef90＿A7BIX4 UniRef90－H3BIC8
UniRef90 H3CZA7 UniRef90－H3CZA7
UniRef90－B5THM UniRef90＿UPIO0032B02A5 UniRef90＿Q81I36 UniRef90－H0Z148 UniRef90－A0A026W353 UniRef90－H2SKI9 UniRef90－B4LMA9 UniRef90＿V4AIJ5 UniRef90＿UPIO003317DC0 UniRef90－H1VVR7 UniRef90－Q8JIR3 UniRef90＿UPIO0046BBE40 UniRef90＿A7S514 UniRef90－UPIO00388E262 UniRef90－H2TI83 UniRef90＿Q651D5 UniRef90－U1MJE8
UniRef90－Q7PMQ5
UniRef90－Q7PMQ5 UniRef90＿M3ZY85 UniRef90＿W9WL00 UniRef90－A0A044VJ31 UniRef90－K1XWI2 UniRef90－W6CR86 UniRef90－W9MBF5 UniRef90－A9YTW7 UniRef90－T1K1U5
UniRef90－F2UHC9 UniRef90＿UPI00042B0CB5 UniRef90＿UPI0003C28D85 UniRef90－J3JTJ1 UniRef90－A0A016Q501 UniRef90＿W2TGT9 UniRef90＿UPIO002C46E58 UniRef90－G3WD79 UniRef90－K7GAV5 UniRef90－C3Y280 UniRef90＿UPIO0046E0307 UniRef90－14IY31 UniRef90－V4A513 UniRef90＿G1X696 UniRef90－R7TVQ7
UniRef9－M7WZ55 UniRef90－R1GDI9 UniRef90＿S8C0V5 UniRef90－A0A034V1PO UniRef90＿UPI0004421FF0 UniRef90＿F6VOM7 UniRef90－Q6FV88
UniRef90 C5DZW3 UniRef90－T1G957 UniRef90－K7V3Y8 UniRef90－I2FZS5 UniRef90－M7SUH6 UniRef90＿Q6Z2T3 UniRef90＿MORZN8
UniRef90－W9RW67 UniRef90－UPIO0046DEE4D UniRef90－U3KCM1 UniRef90＿UPIO0034C4167 UniRef90＿U1NXK8
UniRef90_UPI000395CB3C
UniRef90-M0X1K4
UniRef90-W1NLQ9
UniRef90-M3BZ84
UniRef90-UPIO00441D42F
UniRef90_Q677C2
UniRef90-R1CA21
UniRef90-H3BIC5
UniRef90-T1L126
UniRef90-W5E743
UniRef90_UPI0002F866AA
UniRef90_DONBP1
UniRef90_Q9C6T0
UniRef90_K7N2M1
UniRef90-A1D9U6
UniRef90-A7MCF8
UniRef90_UPI0003872565
UniRef90-B9SI44
UniRef90-Q8VZW1
UniRef90-R7UHU3
UniRef90_G7YQU0
UniRef90_R7YWG5
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| :---: | :---: |
| $\begin{aligned} & \text { UniRef90_O67WJ8 } \\ & \text { Unife90 H3GSY } \end{aligned}$ | CAVATDSRAVGELAGLAVGSAVCIITSIDF |
| UniRef90－A0A024NQ13 | VFSATDPKRHVPVLAPLPDGFAVFMVHL |
| UniRef90－V5V0Q1 | CCGVWDPRNARH |
| UniRef90－${ }^{\text {A7BIX4 }}$ | VFATPGEEKQMGKFAPLST |
| iRef90－Н3ВIC8 | VFATYDERRNGRMGSAIAI |
| UniRef90－H3CZA7 | IMALSDQKNKPAPSEPITVGLLVLLIGISLGSNSGYA |
| UniRefofo－B5THM7 |  |
| UniRef90＿UPIO0032B02A5 |  |
| UniRef90－08136 |  |
| UniRef90 ${ }^{-H 0 Z 148}$ | ERRED |
| UniRef90－A0A026W353 | DPRCHT |
| UniRef90－H2 | ILATPYNNP\PQGLEAFTVGFVVLVIGLSMGFNSGYAVNP |
| UniRef90－B4LMA9 | CCGVWDPRNAKHHDVATRFGLAI AGLACAAGPFTGASMNP |
| UniRef90－V4AIJ5 | VAVDPRTKTELAPLAGMAVTVDIEAGDFVTGASM |
| UniRef90－UPI0003317DC0 | MGA\NAKTQSPAPFSIGFSVTVDLLAGGAVSGACM |
| UniRef90－H1VVR7 |  |
| UniRef90 O8JIR3 | IFATTDSRRTDNIGSPISIGLSVVLGHLLGIYYTGCSMNP |
| UniRef90－UPIO0046BBE40 | CDSKR |
| UniRef90＿A7S514 | DKR |
| UniRef90 UPI000388E262 |  |
|  | 俋 |
| UniRer90＿O65115 | TDPKRARD |
| UniRet90＿U1MJE8 |  |
| UniRef90＿Q7PMQ5 | H |
| UniRef90＿L8L |  |
| UniRef90－M3ZY85 | KRNAPPDLDAPIVAGIVLGIIMSMSANCGAAL |
| UniRef90＿W9WL00 | MLAAEKHKGTFLAPVGIGLSLIEAELAGVYYTGGSL |
| UniRef90 A0A044VJ31 | VLM IDPRN\PSVA P L L |
| UniRef90－K1XW12 | AGEKHRA |
| UniRet90＿W6CR86 | PNRSD |
| UniRef90 W9MBF5 | ALDDGN |
|  | ATDTRAVGEMAGI AVGATVMLNILITAGPETGASMNP |
| UniRef90－T1K1U5 | 俍 |
| 2UHC9 |  |
| 俍 | P |
| P1000 | P |
| UniRet90＿J3JTJ1 | NMNP |
| UniRef90＿A0A016Q501 | VFALGDDQNNPPGMHALVLGFLVTTLKFTLGYNIGSALNP |
|  | VII I K R NRPEVA P WLFGFVLVMIGTCYGMNLGYPINP |
| UniRef90－UPIO002C46E58 | VFASTDNRQTSG SPAIINGISVALGHLLVGYFTGCSMNP |
| UniRef90－G3WD79 | VFA FDEKNWPKGLEPVVIGLLILVLSCSLGMNTGCAMNP |
| UniRet90＿K7GAV5 | A |
| UniRe990＿C3Y280 | ALTDSRNNKVTMEPLLVGLLVLA GTSFGFNCGYAINP |
| UniRet90＿UPIO0046E03 | VYAASDPRNAVGGILGPLAI GLMAGANVLATGPFSGGSMNP |
| Uni | GTDKRAV |
|  | GDRPAFGSQALLIGLTVTLGHVSSIISFTGASMNP |
| UniRef90 G1X696 |  |
| UniRef90－R7TVQ7 | P |
| UniRet90－M7WZ55 | StLLAAEKHRGNFIA ALPIGLALLSSELVAVYWTGGSLNP |
|  | GDDQNNPPGAHAFIMGLLVTAQKMTLGYNTGVALNP |
| Ret90＿88C0V5 |  |
| AOA | DPTRDDLHLSGPLVVGLSUTAGHLVGYLCSSASMNP |
| UniRef90＿UP10004 | YFASTDP QRSTGSPAVIIGISDALGHLVGHYYTSCSMNP |
| UniRet90－F6VOM7 | IFATTDSHRMDNIGSPISIGLSVTLGHFLGIYFTGCSMNP |
| UniRef90 Q6FV88 | ALTDPYTSSADIFPLLLFLMALVVNSSMSFQTGSAM |
| UniRef90－T1G957 | VMAISDKRNTPQGLKPLVVGALVVFVNYSFVYNCMGADNP |
| UniRef90 ${ }^{-177 V 3 Y 8}$ | AVLAEDPRSQVRTIGPLLTGLIVGANSLAGGNFTGASMNP |
|  | P |
|  | KSKDTFIAPVGI GLALFVAELPGVYFTGGSLNP |
| UniRef90 | TLAVATDTRAVGELAGLAVGSAVCITSIFAGADSGGSMNP |
| UniRet90＿M0RZN8 | ALIMDPKKGA】AGSAPLLIGLTVGANSLAGGAFSGASMNP |
|  | P |
| P1000 | ATIVDPKKGALIGLGPTLTGFVVGANILAGGAFSGASMNP |
| Ref90＿U3K |  |
| UniRet90－UP10003 | P |
|  |  |
| UniRef90－UPIO00395CB3C | VCMGADNGRSRTPLAPLCI GLTVTADILAGGGVSGACMNP |
| niRet90＿M0X1K | TDPKRHVPVLAPLPI GFAVFMVHLATIPITGTGINP |
| UniRef90＿W1NLQ9 | A |
| iRef90＿M3BZ84 | D D H |
| UniRef90－UP10004 | ARNKRIPQGLEPFGVGLLVSTLSLAMGANSGCAINP |
| Uni | KGSLGTIAP\AI GFlVGANILAGGAFDGASMNP |
|  |  |
|  | SGSLNP |
| UniRef90－T1L126 | P |
| UniRet90＿W5E743 | Premer |
| UniRef90－GowAJs | M |
| UniRef90－UPI0002F866AA | MNP |
| UniRef90 DONBP1 | SPGTVGTPFAFALMI MALGMSFGMNTGYAMNP |
| UniRef90 Q9C6T0 |  |
| UniRef90－K7N2M1 | RCNSRNVGVIAPIAI GSIVGANLLGGGAFDGASMDP |
| UniReigo－A ${ }^{\text {didgu }}$ |  |
| Ref90＿A7MCF8 | MNP |
| UniRef90＿UPIO00387 | MN P |
| UniRef90－B9SI44 | GSLGII APLAIGFIVGANILVGGPFDGASMNP |
| UniRef90 ${ }^{\text {Q8VZW1 }}$ | NRAIGELAGLAI GSTVLLNVLIAAPVSSASMNP |
|  |  |
| UniRef90－G7YQU0 | KGWPGYLHPLYLGLLVYTLVGCFAMNAGCALNP |
| iRef90－R7YWG5 | AAEKHKATFLAPI GVGLALFAAELAGVYFTGGSLNP |
| UniRef90 B4LQ46 | VKAVSDPRQDITKGSAPLAVGLSIAAGHLCAlKLSGASMN |



| UniRef90 Q67WJ8 |  |
| :---: | :---: |
| UniRef90-H3GSY3 |  |
| UniRef90-A0A024NQI3 | Q Y 1 |
| UniRef90_V5V0Q1 | K Y |
| UniRef90-A7BIX4 |  |
| UniRef90-H3BIC8 | D F $\quad$ L |
| UniRef90-H3CZA7 |  |
| UniRef90-B5THM7 |  |
| UniRef90-UPI00032B02A5 |  |
| UniRef90-Q8II36 | D K V |
| UniRef90-H0Z148 |  |
| UniRef90-A0A026W353 |  |
| UniRef90-H2SK19 |  |
| UniRef90-B4LMA9 |  |
| UniRef90-V4AIJ5 | K L |
| UniRef90-UP10003317DC0 |  |
| UniRef90-H1VVR7 | K F $\square \mathrm{K}$ T |
| UniRef90_Q8JIR3 |  |
| UniRef90_UPI00046BBE40 |  |
| UniRef90_A7S514 |  |
| UniRef90-UPIO00388E262 | D F V L |
| UniRef90-H2T183 |  |
| UniRef90_Q651D5 | K L V L |
| UniRef90_U1MJE8 |  |
| UniRef90_Q7PMQ5 |  |
| UniRef90-L8LK87 | R Q $\square$ |
| UniRef90_M3ZY85 |  |
| UniRef90_W9WL00 |  |
| UniRef90-A0A044VJ31 |  |
| UniRef90-K1XWI2 |  |
| UniRef90-W6CR86 | $\mathrm{R} \\| \mathrm{l}$ |
| UniRef90_W9MBF5 |  |
| UniRef90-A9YTW7 |  |
| UniRef90-T1K1U5 |  |
| UniRef90-F2UHC9 | R LV ${ }^{\text {F }}$ |
| UniRef90-UPI00042B0CB5 | DNV |
| UniRef90_UPI0003C28D85 |  |
| UniRef90-J3JTJ1 |  |
| UniRef90-A0A016Q501 | D F V F |
| UniRef90_W2TGT9 |  |
| UniRef90_UPI0002C46E58 |  |
| UniRef90-G3WD79 |  |
| UniRef90-K7GAV5 |  |
| UniRef90-C3Y280 |  |
| UniRef90_UPI00046E0307 | D NV |
| UniRef90-141Y31 |  |
| UniRef90-V4A513 |  |
| UniRef90-G1X696 | R L L K |
| UniRef90-R7TVQ7 |  |
| UniRef90-M7WZ55 | R F 1 |
| UniRef90_R1GDI9 | DSL |
| UniRef90-S8C0V5 | QV |
| UniRef90-A0A034V1P0 | H F |
| UniRef90-UPI0004421FF0 |  |
| UniRef90-F6V0M7 |  |
| UniRef90-Q6FV88 |  |
| UniRef90-C5DZW3 |  |
| UniRef90-T1G957 |  |
| UniRef90-K7V3Y8 | E SLF |
| UniRef90-I2FZS5 | Q G L K |
| UniRef90-M7SUH6 | R F V K |
| UniRef90-Q6Z2T3 | T F I R |
| UniRef90_M0RZN8 | H H |
| UniRef90-W9RW67 |  |
| UniRef90-UPI00046DEE4D | ENFF |
| UniRef90-U3KCM1 |  |
| UniRef90_UPI00034C4167 | R H L S |
| UniRef90-U1NXK8 |  |
| UniRef90_UPI000395CB3C |  |
| UniRef90-M0X1K4 | Q Y 1 L |
| UniRef90-W1NLQ9 |  |
| UniRef90_M3BZ84 | DVLL |
| UniRef90_UPI000441D42F |  |
| UniRef90-Q677C2 |  |
| UniRef90-R1CA21 |  |
| UniRef90-H3BIC5 |  |
| UniRef90-T1L126 |  |
| UniRef90_W5E743 | Q Y V L |
| UniRef90-G0WAJ9 |  |
| UniRef90-UPI0002F866AA | R QLS N |
| UniRef90-DONBP1 |  |
| UniRef90-Q9C6T0 |  |
| UniRef90-K7N2M1 | DNDF |
| UniRef90-A1D9U6 | T F L R |
| UniRef90_A7MCF8 |  |
| UniRef90-UPIO003872565 |  |
| UniRef90-B9SI44 | E Y M |
| UniRef90-Q8VZW1 |  |
| UniRef90-R7UHU3 | S Y M L |
| UniRef90_G7YQU0 |  |
| UniRef90_R7YWG5 | K L M K |
|  |  |

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

 R SFWRD LAA E FVAT F LLVVSVQCA

E L Y R A V L A E F FC T A FLL L F A GCCCVNAQY I IS K T R
AET $\square$ G TAMLVFFGCMGC $\square$ GE

RECLAEFLGTLVFLCFGTGVNNQVNLSEDANGTWL KGALAEFIGTFLFVFAGVGSAMAFAKLEGP\|LTPA RH $\square L K E P L A E W L A T C F A I F \square G L T G T D A V S T$ GGTKA GEFI GTFMFLGMAYMAVQAVVNAYTAEQSDS
REALAEALAVYDQLTDAFCADLGVTDANNGNPNTT LIREAFAEGLGTFVLVLFGCGSVAQMVFQGPGVP A S LA E F L GVMFLVMY GVGA G
$Q L V Q P C M A E L V G T A F F V L M G C L C V I E S A Q$
L R S Y LA EFISTAFFVFAVVGS SMASRKLMPAADPSN
LQ DGFS E FFGTMVLILLFGDGVVAQVVLSNS
$L R L W Q A L I G E F L G N L I L N F F A C G A C T Q V E D S T F K A L A F G$
$N$ L L K K C F VE F F G T GL I IF F GVGGSLAA S K LT NVN F
 $L A F V R A V F S E F L A T L I V V F L G L G S A L N W P S A L P T V L Q I S$

LKAALAEFTSMLTFVFAGQGSGMAFSKDTDDGSA $L A R Q C L A B E L G V F V L M L L T Q G A Q A Q A V T S$ G
VRTHHREA LIAEGLGVFVSLTMGFA DDVSVTVAGQGNPNTT $\square R E P A A E F L G V F I M G C F G D S V A Q V N L S K Q T Y G E Y Q$
$\square R H A F R E P F A E F D G T M Q M F G D G V V A Q K V L S K$
$\square R A T L S E F L S T F I F V F A G E G S V L A L D K L Y P D R A D G A$
WRKMVAEFDGTFAVVFVGCGADISQGVLEGDKVTAG VRQFLSELFGSFLLAVIGIAAGSHQGIYGETSS

VA F T R A

 THLRECLAEFLATVLA】TFGLGG■AQNALWNGG
$\square R D A A A E L L A T A V F V F A A E G A T \square S F G R D K S G G L V A V$ $V G E F C G T F M F L L L S F M G A Q V A L$
$S L S K E T L S E F L G T F \square M \backslash V L G C G S V A Q A V L S R G H F G G \square S$
$Y$ WRA $\|$ L $A E L G T A T F V F L G T S S A V F A N K N E$
$T Y L K E F F A E L G G T M V M L F F G$ G S VVVTQVHLGQQQMQDDR

RKVLA E FMGTFMLIFTAAGSS I DNEKTGGHLGSFG $\square A K Q C L A E C L G T L I H T M L S C G A M A Q Y T L S R G E Q R E F L$

AFWRAVLAEF
LG S L L Y A L L

AATGEFVGTY LTLFMSFCVVQDASGRTQYARQAN


KEFF GEF LGTMIMMMFGTAVVCQSKLSEQDK $\square N Q F$

$M L L F V F \square G \square G S T T G W P N A P T S$
$V V T V A Q K L I A E V I G T Y F I I F A G C G S V A V N K D Y D G S \square T F P G$ DMVREFLAEFMSTYVMMVFGLGSVAHMVLG
$\square P$ F Y R A V F T E V V L V T A SFWRAVFAEFFGTVFYVFFGLGA SLL WAA GPLXVLHVA
YAQPCVAELLGSALFDFDGCASVIENVDGTGR
LKAALAEFISTLIFVFAGQGSGMAFNKGTDGVATPA
L R E Y V A E F FG T F F LVVTF GTGVIDATTVVFHA GNAAS Y Q
MI REYAAEMLGTMVLVLFGNGVNCQVVLGSNTNVSAT
 $V T L F R K L G A E F V G T F$ LVFSATAGPQVNQKYHNAET

FR S Y L A EFII STFFYVLAVVGSAMSSRK
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## A

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VCALTDRNNGPPPAGLVPLADF $\backslash T \mid L G \square G A S G G Y Q T G Y N P$ 1 FALVDQGNIGAGPFLPLALFFLIGGGACFGWETGYINL I LMSGVDTVNKQNPPPLAVGLAVVVGITCGGPFSGGSMNP VLILAGERYGKYLAPFGUGMSLFUSALCAGPYTGASLNP LHGCTYTRKVNVLMFSVPIGMAVGTGVLSGFASTGASMNP CCGVWDPRNAKHHDVPARFGLAVAMLALVGGPYTGGSMNP ILAI YDKKNNGEGTQPVITGLLVLVIGMTMGПNTGYADNP
 IFA ATDERNRGAGPVGTPFAFALLFMGLGMALGMNTGYNP A VDGKRVVGTAPAIGFULANLAAGPFSGGSMNP TFAMGDDGNAPPGMHSFI:GLVIYVLCLCLGYSTGGCLNP VGMWAVEKHRATFMAPLVIGCALGIGHLVGISFTGASMNP ILAALDKKNTAPGVTPVVVGVVAVIGMAMGHNCGYAINP TFSLDSGRSDMAGSVPFIVGLLVVINVESTWNLSGGCMNP VYAADPRRSLLGATGPLVIGLMAGANVLAGANVSGACLNP IFALADPANGAAGPFMPLALFFLIFGIGACWGWETGYDNL IVFACDPHKPDSRYTAPLALGMAVTLGHLGTMRYTGSSMNP VVAARDPRKGPHGIAPTAVGFVYGANFMLTGPFTGGFMNP (IFASTDGRRTDNVGSPLSUGLSVTLGHLLGDYFTGCSMNP CCGVWDPRNSKHDSVPLKFGFTIGCLAVAAGPYTGASMNP LFAVDMNKPASPYSQPGAVALVVAIGMAFGMNTGYADNP VYAVDPKKGDIGGIAPLAVGLLVANLLAGGAFDGASMNP VFSATDPKRHVPVLAPLPIGFAVFVVNLATDPVTGAGLNP LLAGGDDQAPPGMNSLIVGLVITSLLMCFAYQTGAAFNP SGGHLDPRTVUPGYGPMLTGLIVGANTIAGGNFSGASMNP MFAMTDPYNNPGQSFPFGLFLLVYGDGSSFGYQTGYADNG YMASMTDKNNEKGTQALLTGLLVLGIGMGMGMNTGYAINP IEANNDDKNKPNAMSQLSTGLCATGVGLMEGNHGGGAMNP $V C G V C D P K P D S K A A P L A D G T V T L G H L L A V D Y T G S A M N P$ $\|$ FASTDERREDNVGSPLSIGLSVAVGHLLGLRYTGCSMNP IFASTDERRGENPGTPLSIGFSVALGHLLG
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T A H W $\square \mathrm{Y}$ W $\square$ A P MS A S $L I T$ S VMF

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| UniRet90-A0A059CIQ8 |  |
| UniRef90-WiPNR6 |  |
| UniRef90-Q9Y167 UniRef90 ${ }^{\text {O1HOS4 }}$ - |  |
| UniRet90_Q1HQS |  |
| UniRef90-DONBH: |  |
| UniRef90-Q9XF75 |  |
| UniRef90-Q96PS |  |
| UniRef90_UPIO002B422 |  |
| UniRef90 W6QMM0 |  |
| UniRef90-R4XFF4 UniRef90 D2KZ42 |  |
| UniRef90-D2KZ42 | EMVF |
| UniRet90-K0KS588 |  |
| UniRet90-K4C855 |  |
| UniRef90 UPIO003C28 |  |
| UniRef90-G1MSE4 |  |
| UniRet90-UPlooo3665F |  |
| UniRef90 - E4YDV9 ${ }^{\text {U }}$ |  |
| UniRef90_W8DSL7 |  |
| UniRef90-26T6 |  |
| UniRef90-H2Q5W1 |  |
| UniRef90-H6QPP4 | D F F |
| UniRet90_W2GG92 |  |
| UniRet90_MOS395 |  |
| UniRef90 K KAE 14 |  |
| UniRef90_G9NS |  |
| UniRef90-UPI00045E127D |  |
| UniRef90 O75GA5 | E SLEF |
| UniRef90-D2W2N2 | EFLLT |
| UniRef90_J7RLG2 |  |
| UniRet90_K4BIK0 | D NV |
| UniRef90 G1PXM4 |  |
| UniRef90-141Y33 |  |
| UniRef90_V9KQ42 |  |
| UniRef90-Q9XIS7 | QY $\\|$ |
| UniRef90-H3EOAO |  |
| UniRef90-UP10004773555 | R H $\square$ S |
| UniRef90-UPIO0039577A8 |  |
| UniRet90_B0X7W0 |  |
| UniRet90-S4PR44 | QY |
| UniRef90 S8COC9 | KLLJ |
| UniRef90-K7IMV7 |  |
| UniRef90-C7ZFC3 |  |
| UniReef90-Q6QHK5 | DF |
| UniRef90-UP100047A0C0A |  |
| UniRef90-MORN90 UniRef90 COMP57 | QYVL |
| UniRef90_COMP57 |  |
| UniRef90-A9VCA9 |  |
| UniRef90-S8CVD9 UniRef90-S5RRC8 | ENFF |
| UniRef90-S5RRC8 |  |
| UniRef90-G2PEIO |  |
| UniRet90-C3XU35 |  |
| UniRef90-UPIO003D247F UniRef90 E2R132 |  |
| UniRef90-E2F |  |
| UniRef90-G1t |  |
| UniRef90_UP10003D0A582 |  |
| UniRef90-UP10002B4ACC2 | QFIL |
| UniRef90_UPIo0042B9B0A |  |
| UniRet90_M1AA12 |  |
| UniRet90_A416: |  |
| UniRef90_UP1000 |  |
| UniRet90-UP1000388EA7F |  |
| UniRef90_UP100046DE034 |  |
| UniRet90 AOAO58ZZ06 |  |
| UniRet90_V4U2W5 |  |
| UniRef90_F6YVW8 |  |
| UniRef90_A0A022T671 | R F $/ \mathrm{V}$ L |

UniRef90_Q7XU31 UniRef90-L1JMY4 UniRef90-P08995 UniRef90 Q9ATL3 UniRef90_UPI000328CD76 UniRef90-W4XM79 UniRef90 W5BAR8 UniRef90 ${ }^{\text {Q9JJJ3 }}$ UniRef90_UPIOO0394162E UniRef90 A0A023C058 UniRef90 UPI00032ACAC8 UniRef90-W6EAU6 UniRef90-A7VMS1 UniRef90 Q1MVS1 UniRef90-G9WHW4 UniRef90-J5QU87 UniRef90-D8UC19 UniRef90 A0A059CH00 UniRef90_C5XL79 UniRef90-A0A059ADS4 UniRef90_P55064 UniRef90 F1MWG8 UniRef90-I1CR68 UniRef90-C7TQM1 UniRef90 F6Y3J4 UniRef90-UPI00041E41C4 UniRef90-H9GHU1 UniRef90_G0RSY1 UniRef90 K1RGW0 UniRef90-A0A044R590 UniRef90-W9QM96 UniRef90_Q7YW71 UniRef90-D0ABE9 UniRef90_UPIO003C494A5 UniRef90-UPIOOO2628142 UniRef90 UPI0003F17A75 UniRef90-UPI0003F08E95 UniRef90-W5MI84 UniRef90 F4RTT2 UniRef90-UPIO00440FOB3 UniRef90_BOY7N6 UniRef90-UPI000443FF26 UniRef90 D0VY80 UniRef90-Q50E60 UniRef90-E4XNS5 UniRef90-T1HXD7 UniRef90-W4YZV4 UniRef90_R7TR81 UniRef90-A7S565 UniRef90 UPI0002C34689 UniRef90-L8F145 UniRef90-D8STK1 UniRef90-F9XQ00 UniRef90 R7TSF6 UniRef90-K9SFQ8 UniRef90-W2S416 UniRef90 B5DYY4 UniRef90-W3XH17 UniRef90-H3E050 UniRef90-D7LH02 UniRef90-E9FUM6 UniRef90_Q6C6W7 UniRef90 R2VG43 UniRef90-R1EVI2 UniRef90-W9SDG4 UniRef90_L7LYY9 UniRef90-UPIO001560B14 UniRef90-E3MQW9 UniRef90 H3FLZ5 UniRef90_C0KWU6 UniRef90-B8NX09 UniRef90-A0A059AKF8 UniRef90 E9FVV8 UniRef90_D9U527 UniRef90-K4BJ51 UniRef90-B5E021 UniRef90-ROKUN4 UniRef90-H3EW16 UniRef90-A0A016Q7U2 UniRef90 K9RND5 UniRef90-K3YLU1 UniRef90-M9LZJ1 UniRef90-H9KKA9 UniRef90 A0A059CT59 UniRef90-W9ZHB3 UniRef90-T1FMQ0 UniRef90 UPI00032A9FF0 UniRef90-D6WL12 UniRef90_I3SLV4

#  

 $\square R \mathrm{~T} \square \mathrm{WQDAFSEF} \mathrm{F}$ GTMDLVLFGLGATAQSALSK
$S \square A K E T \square S E F L G T F \square M D V L G C G S V A Q A D L S R G H F G G \square I$

RAVLSEFIGTAVFVFAAEGSVYGLWKMYKDTGTLG $\square A K E T L S E F L G T F I M I V L G C G S I A Q A V L S R E K A G G I I$
$R K Y D S E S D G T F S M D F C G T G A M T \square N E V T G G D V T H V G$ IR A TLA E LI S T C $\square F V$ FA GE G S A LALDT K $\square Y K D A G S S$
$\square P$ F I Q K VI A EVVLGTY FLIFTGGAAVVVDAASNNAVSHAG MT LG C G CVVGQA VLS R

RKYVSEF $\square G T F L L V F \square G T S S V V I A R G S V L T \square A \square A F$
EFARCLMAEFFGTLLFQMFGGSAPAKDTTAPA
S F Y R A GIIA E F VA T FL F L Y DTVLTVMMVSQSKTKCTTVG VQFMQKVIA EVLGTYFMIFAGCGSVVVNLSTNGTVTMPG

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



REPFSEFFGVLILVLFGDGS $\square$ AQVVLG

ELARNLLAEFFGTALLKFIGTGVMAQFVLSRGTANSA』

SF $\square$ KEA $\square S E F \square G T F V L \square A L G C G C V A Q D V L S R G A \square G G A V$
VA $\square G K A \backslash F A E F \square A T G L Y V F F G V G S A$
K F WR A V VGEF IG T L F IVVF F G I G S S $\square$ S WN FWRAVVAE REFWAEFFGTAVLVLFGTAVNHQVTLGGSTSVAP
 $V R T Y C R D A F S E F F G T M M L I L F G D G V V A Q V T D S K G E K G D Y Q$ $F V Q P C L V E L L G S A L F I F \square G C L S V I E N Q P G A G$



ELLASHVFVFLVCASCVSWPHFQA VPFMQKVIAEVLGTYFLIFAGCGAVIVNFNTDKTVSSPA $L \vee G E L C A E F A G T L I L I L F G V G$
$\square L K G M L A E F L G T F V L V V F G D G S V A Q V V L S K G A A G T F L$ LSAPAUAEGUGTFVMVFAGTGAVMVNELADGADTHLG $R T T \square S R A \square G E F A A T A L L M \| V G C M G V A M T$
$A A S G E F V G T F F F L F F G Y A G H L M V I \quad D Q V A V D$ S LF N K CF I E F L G D L I F V FA G T M Q GY I N N S M D A

I R A A I S E F L A T A I F V F A A E G S I L S S L G K L Y Q DMS T P G VHFL Q K L M A E LVGTYYLI FA GCA A I AVNA QHNHVVTVVG

 $M \backslash G E F V G T F M F L F F A F S A V E A A N V A A G G V V V G A$
$\square A R Q C \square A E F L G V F V L M L L T G G A S A Q T V T T G E T K G N F F$ ELYR A A LCEFFCTAMLVCVGCCASAVYDTSRGQLIDYF

LK P Y A A E F LG TAAL L VLGD GVVA QC L L S D Y Q VS LAARKVGAEFIGTLI LVEAGTATPIVN QKTNGSETLLG MVRTAFAEFVGTYVLVVIGNGSVAQAQLTHGQK GDYF
 $N \square W R M L L G E L L G T F F L I A B G V G B T$
$A F V G E F V G T T M F L F F A F \quad S G T Q V A N \square R S A A A P Q S$
A GVGEFTGTTMFLFFAFAGTEVANDQADTTNRTT FRRETLAE GIGGTS LVFAGTGAVMVNDITVGVVTHLG

 V S C E F V V S T F LMM VV I

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

| UniRef90_Q7XU31 |
| :---: |
| UniRef90 L1JMM ${ }^{\text {L }}$ |
| UniRet90_P08 |
| UniRef90-E9DUB3 |
| UniRef90 Q9ATL3 |
| UniRef90-UPI000328CD76 |
| UniRef90_W4XM79 |
| UniRef90'W5BAR8 |
| UniRef90 Q9JJJ3 |
| UniRef90'UPI000394162E |
|  |
| UniRef90 UPI00032ACAC |
| UniRef90-W6EAU6 |
| UniRet90 A7VMS1 |
| UniRef90-Q1MVS1 |
| UniRef90-G9WHW4 |
| UniRef90-J5QU87 |
| UniRef90-_D8UC19 |
| UniRef90 A0A059С ${ }^{\text {- }}$ |
| UniRef90_C5XL79 |
| UniRef90-A0A059ADS4 |
| UniRef90-P55064 |
| UniRef90-F1MWG8 |
| UniRef90-I1CR68 |
| UniRef90 ${ }^{\text {C7TQM1 }}$ |
| UniRef90 F6Y |
| UniRee90 UPI00041E41C4 |
| UniRef90-H9GHU1 |
| UniRef90 Gors |
| UniRef90 ${ }^{-K} 1$ RGW0 |
| UniRef90 A0A044R590 |
|  |
| UniRee90-AOAO44R590 |

 ${ }^{80}$

GLADAFGG
IISGGH
$\nabla \mathrm{QGTA}$ WAFGGMD
A NGFALVAVIYAFANWS GAH ICAVWGLVVMV

SRLGASVAGGLVVTVMVYAVGHZSGAH
$\square A F G \square A \square G T L A Q A \underset{T}{S} G P G A G$
VOTTWKASGAH
IEESKSWLTSSFGSGLSVLIGCVSGHVSGAH
PLLPADSDGFVV DVFATFCWG【VMGQTGAGVSGGH
HDSDSWAWGLAVTLGVYVSARISGGH AGAKGGYFSAAFSGGISVMVAlHISGGVSGGH QGAKGDWQNDNWGWALGLMLGVYCAG ASGAH GLTMVFLIIAFG ALSVYVAWMSGGY QЏNDGWGLAD A SVYVETSGGH PSYLAAS TVYVGFAMAV DHDSTAWAWGTGDTAVYVSGGVSGGH

DHWPSDHDSI AWAWGIVVTDGVYVASRUSGAH
LHWPSALPSVLQVATTFNLATATAVQVTWKTSGAH PPHTPSVVQI SLLCSGLTVATMI QCFVHVSGAH GLGAADRWTSGPYNVLHAAFCFGLAAATLIQSIGHISGGH PTMAMAVHERGSWTTVSYAR CGCПWRYQWRTHQPGCH SISWGWGlla
$P \square Q P A \square A H G L A L G L A G V A Y A S G N I S G A H$
 PS QVQDA $\square A F G \square G \square A T F \square H V T A H \square S G G H$ PSVQHTALTAGLTTSTLVMVMSHVTGGQ VAlVWGLVVMVLNYSVG HISGAH $V V A Q V V T G D G S L G D H D S T S W G W G L G V I L G V Y T A A R I S G A H$ TFFGVAAANGLVVMMMLHATGHISGAH

| 1 S Al F G AVV |  |
| :---: | :---: |
|  |  |

AMGVWVSGGVSGGH
AAMIYAVGHISKA
FPEETGFLVGSLQYGDTVG\VVHVFGCVSGAH AGTAAPVATPG\|IQTMFVGYAYGFSLLVTVLAFYRISGGL
GLVAVSLAHALAL $\square A \vee V W G \ V V$
aVAVAVAVNVIGGH MVLVYCLGHISAH FMAGRFGDGFGVMAGVWVAGGVSGAH WILDGFGYGGEK $P T T A N Y G Y G S G G F G F$
 GHDGVIHAAFAHGVA $\square \mathrm{F}$ GMT $\square$ S WMGA $\square$

GFTFGLGTGTMVVQAVGRSSGSH
$\square A A S S G L A V M I V G T W L V S I N M S$ A $\square$ N WG WALGCVL
$\square Q G \square A W A F G G M \square$
$T$ S
 TGESTGS LNVSKLLYI S IIFGF VSFVFGAVVAAMIVSL
 S G G H S
$\square A \square C F G F S \square A V N A W V F F R D S G H$ HAAFAHGVA $\square$ FVLAATFGGVSGAH AAYGSYFQGRDAGAG $A V A T A \square Q G \nabla G$
A Y L S WG L GVM VG $\square$ YFA G
LILTTNDTHAYQPSTTHFGDFAGFF $\square Y S$ SLETWGP 1 AVTWGFTVMVLIY
YRF SAGB SGAH


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| :---: | :---: |
| UniRef90_Q7XU31 |  |
| UniRef90-LiJMY4 | LNPAV |
| UniRef90-P08995 | FNPAV |
| UniRef90-E9DUB3 | 1 NPAVT |
| UniRef90- Q9ATL3 | 1 NPAVT |
| UniRef90-UPI0003 | 1 NPAVSFAMCLFGRMKWFKLPFYMGAQFLGAFAG |
| UniRef90-W | 1 NPAVTLSMCSLGRLRWLALPVYWFAQFIGAFLGAA |
| UniRet90-W5BA | VNPAVTFGVLVGRRISFARAVLYWAAQLLGAVLAAALLRI |
| UniRef90_Q9JJJ3 | NPAVSFAMCTFGRMEWFKFPFYVGAQLLGAFVMAFADGK |
| UniRef90 UPI000394162E | MNPAFSLAMCLIEQFPWWFITAAGAVYVVYYDAI WHHSN |
| UniRef90-A0A023C058 | FNPAVTIAFAYAQKFEWKEVPKY\\|IAQC |
| UniRef90-UPIO0032AC | VNPAVTFGALDGGRDSVIRALYYWIAQL |
| UniRef90-W6EA | NPA |
| UniRef90 A7VM | 1 NPAVSLAMCVAGRLKWAFVGAAAVFGIIYHDAFMEYSNGT |
| UniRet90_O1MVS1 | VNPAVTISMLCAHRINLFKAIGYVAAQCLGAMLGGGLLRA |
| UniRef90-G9WHW4 |  |
| UniRef90_J5QU87 | 1 NPAITLMLASYRGFPWKKJVPGYWAAQVVGAFAAAAMVQG |
| UniRet90_D8UC19 | 1 NPAVTFALICTGHMKWWLLYMIIAQILGAIFGALIYAGLI |
| niRef90_A0A059CH |  |
|  | NPAVTVAFATCGRFPWK QV |
| UniRef90-A0A05 | MNPAVTFAFAAVRHFPWNQVPLYAAAQLTGAVSAAFSLRV |
| UniRef90-P55064 |  |
| 1MWG8 |  |
| UniRef90-C1CR68 |  |
| UniRef90 F6Y3J4 |  |
| UniRef90-UPIO0041E4 | NPAVTVALAVEKGFPWRK |
| UniRef90-H9GH | NPAFSLAMCLLAQC |
| UniRet90_GORSY1 | LNPAVTLANCVYRKFPWKKLPVYVLAQL |
|  |  |
| UniRet90-A0A044R5 |  |
| UniRet90_W9QN | A |
| 27Y |  |
| DOAB | NPAVTFGVLVGRRISFRGTLALPFPTRTRPLLRRPTPLLV |
| UniRef90_UPIO003C494A5 | 1 NPAVSLAMCATGRLKWAFVGAAAVFGVYYDAFMNYSGGE |
| UniRef90 UPIO0026281 | LNPALT |
| UniRef90-UP10003F17A75 | FNPAITCTFLVTRQIISVLRAF LLYLVSQLIGAIA |
| UniRef90-W5M184 |  |
| UniRef90-F4RTT2 |  |
| UniRef90 UPI000440F | LNPAVTLALVVGLRVIS WQAVLYVGAQLLGAIITACGLLFG |
| UniRef90_BOY7N6 | INPAVTFANCVFRKFPWRKFPVYAIAQLLGAMCGAAIVYG |
| UniRe990 UPIO00443FF26 |  |
| UniRef90_DOVY80 | INPAVTLGLLVGSQLSVLKCVFY Lichle |
| 250E60 |  |
| UniRet90_E4XNS5 | P ${ }^{\text {A }}$ |
| 1 - | PAITLCFYIFGIISLPSSLVYLIAQCLGGIAGAFTIKD |
|  | $P A V S L A F L L L H R I T P L R C V A Y S L A Q V I G A I A A A G M V K V V^{\prime}$ |
| UniF | MNPAVTLGFFLNGHLSIARAILYTIAQCAGGAGGSALVYA |
| UniRef90_A7S565 | G |
| UniRet90 UPI0002C3 | NPAVTAFAATKRFPWKQV |
| UniRef90 D8STK1 | MNPAVTVAFATVRHFPWAQVPLYIGSQIAASVSACFVLRQ |
| UniRef90-F9X000 | FNPAVTLGMALIGAVTWRRHRNELRTPFLGFLPNKTRNHF |
|  | NPAVTLTLCLMGREKWRRLIPYWLAQYIGAFVASACVYG |
| UniRef90-K9SFQ8 | FNPAVTLGFWQSGFFKTQMVLPYVVAQVMGADAASFLDMLI |
| UniRef90-B5DYY4 | $N P S V S T S C C I L G H \Pi A F D M M L V Y V A C Q L A G G L A G Y Y F L M A ~$ |
| UniRef90 ${ }^{-}$W3XH17 | FNPAVTLGLCAAGGLPWIRAVFLIPTQLIASMCAGGV |
| ef90-H3E050 | FNPAVSLGGALGGHLPLLHLPLYVGSQLLGGILCGSLLTYA |
| Q9FW | $7$ |
| UniRef90 D7LH0 | FNPAVTLALASSQRFPLNQVPAYUTVQVIGSTLASATLRL |
|  | A |
| UniRef90-06C6W7 | LNPAVTLASCVYRGFPWRKFPGYMLAQTLGCMVGAAIIYG |
| UniRef90_R2VG43 | INPAMT ALAVSGSFPWKDVLPYVLAQVLGALLGQLLVVF |
| UniRef90 R1EVI2 | NPAVTGCLTKAVPWTRGGLTV S |
| WgDig | LNPAVTLACASVRKFPIAKVPLYFAAQYLGGFVGAALVFV |
| UniRef90-v9D8 | FNPAVSLGMMIVGAVSYRRGCLTTVSOTLGG\\|ASSAVVSC |
| UniRef90-UPIOOOO1560B14 | LNPAFSLAMCLLGRLP WAKLPI YSLVQLLSAFCASGVTYA |
| UniRef90 E3MMQW9 | NPAVTFGIALVGRUNPMHAVCYVSQLL |
| UniRef90 H3FLZ5 | NPAVSFQLVGGNMSPVRFL |
|  | N |
| UniRei90- A0A0599 | NPA |
| UniRee99-AOAO59AK | NPAVTLSLALTRREEWKK |
|  | INPAVTFGLFLGRKVSLIRAFLYTVAQCAGAICGTGLAKA |
| UniRef90-K4BJ51 | I NPAVTFGLFLARKLSLTRAVFYMVMQCLGAICGAALVKA |
| UniRef90-B5E021 | INPAVTLGFL |
| UniRef90 RoKUN4 | F NPAVTFAMLLCRALSPLRAFLLVSAQ GGS FSSFLVKV |
| UniRef90_H3EW16 | FNPAISLAGALTGHLPLFHLPCYVVCQLLGGLCGSLLTYA |
| UniRef90-A0A016Q7U2 | A V |
|  | PAVTLAF WTSGFFSKRLVIDY LIA |
|  | MNPAVSAAMAAFGHDPRPHLAPYVAAQLLGSTAASFAAKA |
| UniRef90-M9LZJ1 | CNPSVTVALALERGFPRRKVTPFVVAQTLGATAASLLVYA |
| UniRef90_H9KKA9 | VNPAVTFGLMVIGKVPVIRGLLYVILQCl GAlla |
| UniRef90-AOAO59CT59 | P A V |
|  |  |
| UniRet90-TIFMQ0 | A |
|  | FNPA |
|  |  |


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| :---: | :---: |
| UniRef90-L1JMY4 |  |
|  | V |
| UniRet90-E9DUB3 | NYRVADDEFEGGVGVRTVTGDTRTNMFFDEFLASSDLQFL |
| UniRef90-Q9ATL3 | LAVADS GVPVHALGAGV |
| UniRef90-UP1000 | 1 YYDGLMSFAGGTYPAPY兄S |
| UniRef90-W4x | 1 Y LDGINSFEGGPSNYPESFLSVPGG |
| UniRef90-W5 | S SGVRPMGFMLGH |
| UniRef90_Q9JJJ3 | Li Geng afl Fat PPKPFVSVPGAFVDQVV |
| UniRef90-UP1000394162E | LTVTGPQETASIFATYPADFVSIGNGF |
| UniRef90-A0 | ESEFILGGTL |
| UniRef90 W6E | SDMQSFVLEFVITFYLM |
|  |  |
| UniRef90-Q1M | FTTSFGVTKLHTDLGAGRGVL |
|  | FAKG |
| UniRef90 D8UCI9 | PADHLGAGAGSPGCFGPAAGVRNGDV |
| UniRef90-A0AO: | LQGDTRYELLGGGANSVNHGYTKGDGLGAEDIGTFVLVYT |
|  |  |
|  |  |
|  | N |
| UniRef90-F1MWG | R |
|  | KSTAGI FGTYPPLY |
| UniRet90_C7TQM1 | CINGSVLFGEFGLGAGVTVGQGV |
| niR | SQAV |
|  | LIAVTGPRETASIFATYPAPYLSLWNGFFDQVLGTAVLVVS |
| UniRef90 GorsY1 | AG FCTYPAPFL |
|  | SEFGGSWLYGSLWKDVLLEAMLAEA |
| UniRef90 W9QM96 | AFTLRGLLDPIHIIGTTTPSGSHVKALVMEIVVTFNMMFIT |
|  |  |
|  | ASGGMRPIPIUGFTLGHR I HERHALLLEVVMTFGLVYT |
| UniRef90_UP10003C4 | R |
|  |  |
| UniRef90-UPIO003F08E95 | VTPAGVRGGLGTTALG |
| UniRef90-W5M184 | YGVTPTNVRGNLALNTLHPGVSLGMATTVEDFLTVQLVVC |
| niRet90-F4RTT2 |  |
| UniRef90-UPIo00440F0B3 | MAPVSA KDKLG |
| UniRef90-BOY7N6 | VPGYSPTATAGMGCTYPAF |
| UniRef90-DoVY80 | v |
| ef90-Q50E60 |  |
| UniRef90-E4XNS5 | LAGFKLIPETNLARLIVVAPSGAYLFFDQIIGGTWLI TVI |
|  | - |
| UniRef90 W4YZV4 | TPADUND TU |
| UniRef90 A7S565 |  |
| UniRef90-UPI0002C34689 |  |
| UniRef90-L8F145 | V |
| RRef90 D8STK1 |  |
|  |  |
|  |  |
| 2S | CFGRIDANGATLPLNDQWLIQAFILEVVLT GVLMFV |
| UniRef90- B5DYY4 |  |
| UniRei90-W3XH |  |
| UniRef90-H3E050 | AGATLLETDTNTWYQG1 |
| UniRef90-Q9FWV6 | ALIAS GVGDWHAV |
|  |  |
| UniRef90-E9FUM | $\begin{array}{ll} \text { Y S A } \end{array}$ |
| 66C |  |
|  | G |
| UniRef90 W9SDG4 | S |
| UniRef90-L7LYY9 | TYKMGEKSTAGIFATYPKPHVSTLTCFIDQVIATGTMMVC |
|  | LLPGPLNVGTSLG GGTSVVQGLFIEMFLTAQLVFT |
| 560 | LYVTGPKETASILATYPAPYLSLNNGFLDQVLGTGULIVG |
| UniRef90-E3MQ | SLQYKVYYADGAGATLCGKGVGWQEGLTAELVTTYILVQT |
|  |  |
| UniRet90- B8NX | GHESAGIFSTYPASTLLGSNWEAAFNEVLGSAVL |
| UniRei90-A0A059AKF8 | GGGVTVPSAGVSDGQAFALEFI IS F NLM |
|  | S |
|  | FQKAYYDRYGGGA NFVHDGYNKGTALGAEII GTFVLVXT |
| UniRef90-K4BJ51 | VN |
|  |  |
| UniRef90-H3EW16 | LSKEEFTAILGGATLLSSDTNTWYQGLISESVVTFMLAHT |
| iRef90-A0A016Q7U2 | VRTTLG GGASLVQGVFIEAL |
|  | SLGKEANLGATLPLNGDWLQSFILELLLT |
| UniRee90 K3YLU1 |  |
|  |  |
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| UniRef90 W9ZHB3 | QYGPAFWTSPRDGL |
| UniRef90-T1FMQ0 | EKR |
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| :---: | :---: |
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| UniRef90-P08995 | CGVATDNRAVGEFAGIAIGSTLLLNVFAGGPVTGASM |
| UniRef90-E9DUB3 | IFALEFNNFGAGPL |
| riRef90-09ATL3 | VYAVVDPRRATGRITLFRSALYVAAQLLGSGPFSGASMNP |
| UniRef90-UPI000328CD76 | AIFFDSRNLGVPRGLEPIVV |
| UniRef90-W4XM79 | DKHNPPAGLEPI AV |
| UniRef90 W5BAR8 | VYATTVDRNRGGNVGAIAPIAI GFVLGANILAGDGAAMN |
| UniRef90--99JJJ3 | VFATFDSRNVPRGLEPIVIGLLIIVISCSLGLNSGCAMN |
| UniRef90-UPIO0039416: | VMGIMDPRNKPV |
|  | NVSTGSKETGTMAGI A |
|  | YAIDPKRGTVGTMAPL |
| UniRef90-W6EAU6 | SGVATDNRA\GELAGLAVGSTILLNV ${ }^{\text {MFAGP }}$ SSGASM |
| UniRet90-A7VMS1 |  |
| UniRef90-Q1MVS1 | STDEKRTDLLCSPALPI GLTVAVGHLFAlPYTGSSM |
| UniRet90-G9WHW4 | VNVSKEHGNSDFAGLIIGLALALMIVFSLNLTGGSLN |
| UniRef90-J5QU87 | NA HWT |
| UniRef90 D8UC | VAKPGHG |
| UniRef90-A0A059CH00 | VFATDAKRNA |
| UniRef90-C5XL | VSGVATDNRALGELAGLAV |
| UniReef90-A0A059ADS4 | TSAVATDTKA GELAGIAVGSA |
| UniRet90-P55064 |  |
| UniRet90- 11CR68 | IMVTGHPNNLPYKSQGAMI ALGIMVGISLCIGYTSGFSL |
| UniRef90-C7TC | IMVILDDRNTTKGMHAFLI |
|  | LAVLLAAVELSS |
| UniRef90-UPI00041E4 | ALTDLRNPLANMTPFIIGLVVVAI GMA WGTNAG |
| UniRet90-H9GHU1 | 1 LAL DDPRNRPGLEPLGVALLVVSLCLALGANCS |
| UniRef90 GORSY1 | YALQDDNUGAGNLLPLGLFFVFYGIGACF |
| UniRet90_K1RGW0 |  |
| UniRef90 AOAO44R5 | Noldr mpll |
|  | GELAGLAVGSAVCI TS VAGPVSGG |
| UniRef90 O7YW71 |  |
| UniRego - | A ${ }^{\text {a }}$ |
| UniRef90 - |  |
| UniRei90 UPIO003F17A75 | $V \mathrm{VASTDSR}$ |
| UniRef90-UP10003F08E95 | DPKRTD GSPAMMGUSVALGNUPQCFTGCSMN |
| UniRef90- W5M184 | dorrngrgsaa La |
|  | DAGNM |
| UniRef90-UPIO00440FOB3 | HPKSP |
| UniRet90_BO | VALKDDGNDGAGPLTPLALFFVIFGMACFGWETGYINLL |
| UniRef90-DoVY80 | $V F G T T D S R R T D N T G F P \square S \square G L S V A L G H L L G \square Y F T G C S M N P$ |
| UniRet90_Q50E60 |  |
| UniRet90-E4XN | AVS GLA Y GANGGG |
| UniRet90-T1HXD7 | G |
| UniRef90-W4YZV4 | IFAVDKSR |
| 90-R7R81 | ALF |
| ATS565 |  |
| UP10002C3 | VSGVATDNRATGEL |
| UniRet90_L8F |  |
| UniRef90 D8STK1 | $\checkmark$ |
| UniRef90 F9x |  |
| UniRef90-R7TSF6 | VLAITDKNNMPKSLVPLAVGSVVAVIGMSFGYNC |
| UniRef90-K9S | 这R |
| W2sty | GNDGAGPLDTPALFFVIFGUGACFGWETGYUNL |
| UniRef90 B5DYY4 |  |
| RRet90-W3XH17 | ILMLAVEKSRVTFVAP GIGLALFVAEJPGVYYTGGSLNP |
| UniRef90-H3E05 |  |
|  | DPKRGHVGT AP |
| UniRet90-D7LH02 | VCAVTTTKKTTEELEGLII GAAVTLNVIFAGEVSGASMN |
| UniRef90_E9FUM6 | ACA |
| UniRef90_06C6W7 | IFAINDTKNIPAGPLAPLVLFFLIFAIGACLGWETGYINF |
| UniRet90_R2VG43 | $\mathrm{P}_{\mathrm{FT}}$ |
| iRef90-R1EVI2 | F T |
| UniRet90_W9SDG4 | DPNRGAVDGLGPTLTGFLVGANTIAGGAFTGA |
|  | Al GDTRNFPPHIHPI CLGLMI M |
| UniRef90-V9D8W5 | IFMLAAEKHRATFIAPIGIGLSLFIAELMGVNYTGGSLNP |
| UniRet90_UPIO001560B14 | LLAILDKRNVPAGLEPIAVGLLVLVITLTMGANCGSPL |
| UniRef90 E3MQW9 | VL L Cobld |
| IRe990_33FLZ5 |  |
| UniRet90_C0KWU6 | IGATDNQRSDNIGSPAISIGLSVVLGHLLGIIYYTGCSMNP |
| UniRe990 B8N |  |
| A0A059AKF8 | D ${ }^{\text {a }}$ |
|  | G |
| UniRef90-D9U527 | DPKRNARDSHVPVLAPLPIGFAVFMVHLATTX |
| UniRef90-K4BJ51 | VFSATDAKRHVPILAPLPIGFAVFLVHLATIPVTGTG |
| UniRef90-B5E021 | SDPGRQDIKGSAPLAVGLSIAAGHLCAVKL |
| UniRet90_ROKUN4 |  |
| UniRef90-H3EW16 | MGSTDKALAPLAVGFTLTVDIIATGRDTGA |
| UniRef90-A0A016Q7U2 | EKHRATFlAPVG |
| UniRef90 K9RT | SMNP |
| UniRefao-k3 |  |
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| UniReego-AOAO59CT59 | VLG |
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| Ref90 D6WL12 | CAVWDARNKTKTDSTP RFGLTVVGAAAAGPYTGGHINP |
| UniRef90-13SLV44 |  |



| UniRef90_Q7XU31 | A $L^{\text {L }}$ |
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| UniRef90-P08995 |  |
| UniRef90-E9DUB3 |  |
| UniRef90-Q9ATL3 | D G L F |
| UniRef90-UPI000328CD76 |  |
| UniRef90-W4XM79 |  |
| UniRef90-W5BAR8 | E F V |
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| UniRef90-A0A023C058 | K L V K |
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| UniRef90-A7VMS1 |  |
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| UniRef90_G9WHW4 | K F L L |
| UniRef90_J5QU87 | D |
| UniRef90_D8UC19 |  |
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| UniRef90_C5XL79 | $N$ L VR |
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| UniRef90-K1RGW0 | R |
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| UniRef90_Q7YW71 |  |
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| UniRef90_UPI0003F17A75 |  |
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| UniRef90-UPI000440F0B3 |  |
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| UniRef90-T1HXD7 | H11 |
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| UniRef90-A7S565 |  |
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| UniRef90-L8F145 |  |
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| UniRef90_R7TSF6 |  |
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| UniRef90-W2S416 | D VF L |
| UniRef90-B5DYY4 | R YAL |
| UniRef90-W3XH17 | R F V K |
| UniRef90-H3E050 |  |
| UniRef90-Q9FWV6 | E Y L |
| UniRef90-D7LH02 |  |
| UniRef90-E9FUM6 |  |
| UniRef90-Q6C6W7 |  |
| UniRef90-R2VG43 | K L I V N |
| UniRef90-R1EVI2 |  |
| UniRef90-W9SDG4 | Q |
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| UniRef90-E3MQW9 |  |
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| UniRef90-B8NX09 |  |
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| UniRef90-K9RND5 | R H L |
| UniRef90-K3YLU1 | H A L K |
| UniRef90-M9LZJ1 |  |
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| UniRef90-W9ZHB3 |  |
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UniRef90 W5UBX9 UniRef90'UPI0003318B42 UniRef90-K5WVI8 UniRef90_K5WVI8
UniRef90 W9YEN6


# AALGEFVGTFMFLFFAFAGTQVANIGSQDNEQNS 

 VpLARRLLAESLGTALLTLGGVGAGALVLREFLSEFMGTFVVMMIGNSAMAHMLLKGQHDGFAV

K LVRELLAETIGTFFLLLIGTAANVQAAASDGGNMTSC
VQFAQKVIAEFLATFMYLLIGGCVNLSVATSQQGTGSFE $\square V H L L Q K L I A E V I G T Y F L I F A G C G S V V V N K D Y G S D T F P G V$
$\square R E P M A E F \square G T M \| V V C \square G \square G S T C Q T K D S D Y M G A Y S$ RAAVAEFVATAMFVFAAEGSVYGLWKLYKDTATPG K $\square W R M L F A E F L G T A \square L L F D G C G S \square M W L N G S T N S S D \square L A$

## $\square$ QPCAAEAVGAAFFDCDGCASVVENAEGTGS ELI RAFMAELFCTGFLVFGGECVNAQYVLSQGKNNEWD

$\square R H Y \square R E P M A E W L G T T M A M \square I G L C A T L S N L T S S G Q A$

AFFGELVGTATFDFVACMGCVTTPLF
FFRPCVVEFMASLLFVCLGCMSVQN
AASGEFVGTFFFLYFGYAGNMMAVLQSPYPAVNG

QEF $\square$ SEF $\square$ GTF $\square L L S \square G T G S \nabla A M T T \square F P S N P T \square A G$
FQPCLA ELLGTTFFVFVGCVSVIENEGATGR
QFRREALAEABGTFTLVFAGTGAVMVNNDSQGADTHLG MDAFKKYVAEFLGTFTLVF $\square A A G A V C T D Y Y L R K S S G Q G L$
$\square K A A L A E F \square S T L I F V F A G Q G S G V A Y S K \square S G G \square T$ T PS AEFLATFVYLFIGDCVNLSVATSENSTGSFE


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


$\square S \square T R K F A T E L I G T F V L I F A A T A T P \square V N E K T K G S V T L L G$ RQMIREAAAEFTGVMLLVDFGSGVNCQVGDSSNPGVAAS $V Q F V Q K V L A E \| L G T Y L L I V A G C A A V A V N K R T A G T V T F P G$
$\square R E P F A E W \square G M L V L I L I G \square G A T C Q T K \prod S$
ATIGEFMGTTMFLFFAFAGTQVANI GAGSRTDQS RECLAEF LGTLMLCVVFGLGVNNQVALSSEANGTWL $\square$ L S YFAEF $\square$ S TFLLVVAAVGSADSARMVTADDGGTA

MVRPLLAELFGTFALVFAGTGAIVVNDTHGGADTHVG VREVI REPLAEFLATCDAA LIGLCANTQTMDYTRSITAAY AASGEFVGTFMFLYFAYAGHLMVVNQAAETALSN VPF $\square$ QK KDMAEVLGTYFLIFAGCAAVVVNVNNEKVVSLPG FSNLLFFLVALCACSIVFPLSPHQLLTQG LNYARMAMAEMMVGTAFFLLFGLGGIQASTAEDTASGQPP SFWRAGDAEFVATFLFLYI TVLTVMGVSKSPSKCSTVG $\square$ TVWK S AF $\square$ EFVGTTCLCYLSAFIS VS IRNSDTTQVAAY



UniRef90＿V7ANY2 UniRef90＿R7GKR4 UniRef90＿M2N4S8 UniRef90＿H3DRV0 UniRef90－W5PI64
UniRef90－K2SN26 UniRef90－K2SN26 UniRef90＿UPI000265986F UniRef90＿W5LA61 UniRef90＿UPI0003A84257 UniRef90＿UPI00047614BC UniRef90＿Q9ATN4

## UniRef90＿W2T2J7

UniRef90－M2SNU0 UniRef90＿Q0DK16 UniRef90＿UPI0002C2E344 UniRef90－F8NZT4 UniRef90＿X1YFX2 UniRef90＿M7WXM6 UniRef90＿C5YCI9 UniRef90＿UPI0002062459 UniRef90 G3P368 UniRef90＿A0A016TYQ3 UniRef90＿UPI0004625185 UniRef90＿G0NRR1 UniRef90＿A7TRZ0 UniRef90＿Q946W6 UniRef90－K9G4A0 UniRef90＿T1FMW6 UniRef90＿EOVPZ5 UniRef90－B9MXC2
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UniRef90＿Q70AQ2 UniRef90＿Q9ATL4 UniRef90＿L1QP01 UniRef90＿Q9SM37 UniRef90＿E4ZLG3
UniRef90＿Q9W1M4 UniRef90－H9B3S0 UniRef90＿U5D2Q2 UniRef90＿Q6CQ15 UniRef90＿Q5B6B5 UniRef90＿A0A024UF06 UniRef90＿C4LFY0 UniRef90＿G3XP65
UniRef90＿Q045J44 UniRef90＿H6QSB3 UniRef90＿S4RSU6 UniRef90＿F7V387 UniRef90＿N4UWL8 UniRef90－Q940D9 UniRef90＿A0A034WI15 UniRef90＿UPIO003EDD926 UniRef90＿UPI0001CBB251 UniRef90＿A9TLI3
UniRef90＿V2XJK0 UniRef90＿D2KZ48 UniRef90＿M7ALY6 UniRef90－M0TXY5 UniRef90＿A0A034VRV4 UniRef90＿S7RMT6 UniRef90－N1PSQ2 UniRef90－H3G742 UniRef90－H2W3E5 UniRef90＿K3YC45 UniRef90＿J9N3C1 UniRef90＿J4W715 UniRef90＿UPI0002EB2143 UniRef90＿I4YIG9 UniRef90＿R7YRV7 UniRef90＿D8FSL3 UniRef90＿UPI0003D09AF3 UniRef90＿B0DMR6
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UniRef90＿W9YEN6


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 M N P A I S FA F Y L C C G K I S A F K F I M Y S I I A Q L S GA F M G SLLT T F F F N P A V T L A F WT S G F F S K G R V I P Y I N P A I T I A H WVT R R $\quad$ N P D T A I K Y I L S Q L L G A S L A G F AL K I $V$ N P A V T F G L F L A R K L S L T R A L F Y MV M Q CL G A $\square C G A G V V G B$ $V$ N P A V T L S L A V G G HVVT L F R S S L Y I A A Q M L A S S A A C F L L R W



 L N P A V T F A M C V L R K F P WR K WP V Y A D S Q L L G G M S A A A I V Y G MN P A V












 ANPAVTFAFA IGGHDGVPSADFYWASQMLGSTFACLAVP $F N P A V T F G L C L A G Q L P W M R A L Y D F P A Q L I A S M C A G G L V E A$
 L NPAVSVGLWLS GRFPGRGVLPYAVVQMAGALLAS GLLRG


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 M N S AV T FT QCAL GRMS WKK FPIVVI Y G L F WTA A A E Y S GP H





UniRef90_UPI0003F0932C
UniRef90-V7ANY2
UniRef90-R7GKR4
F N $\square \mathrm{F}$
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UniRef90 H3DRV0
UniRef90-W5PI64
UniRef90-K2SN26
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UniRef90-A0A034VRV4
UniRef90 S7RMT6
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UniRef90-H3G742
UniRef90-H2W3E5
UniRef90 K3YC45
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UniRef90-I4YIG9
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UniRef90 UPI0003D09AF3
UniRef90-BODMR6
UniRef90-V7BFQ3
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UniRef90-K5WVI8
$\stackrel{Q}{R} \underset{L}{L} \stackrel{L}{V}{ }_{K}$

UniRef90_W9YEN6
$R F$ VK
NM V R
$R F \square R$
H L
$\underset{F}{D} \underset{V}{V} \underset{\sim}{L}$


UniRef90 S2IV59 UniRef90_N4V309 UniRef90_M2RS42 UniRef90-G8PEW3 UniRef90_UPI0003B312BC UniRef90_UPI00021978C2 UniRef90 T1PC20 UniRef90 ${ }^{-}$G1X1E0 UniRef90_UPI0003C260CD UniRef90_D8Q114 UniRef90 A0A010QB81 UniRef90_U3JPY1 UniRef90_L8YAG6 UniRef90 U6HE20 UniRef90- K4BMJ6 UniRef90_Q7Y1E6 UniRef90_Q06EX9 UniRef90 A9TSE1 UniRef90_D3B667 UniRef90-T1HH59 UniRef90_V4SD44 UniRef90 W6QJ94 UniRef90_Q6J1S8 UniRef90_W6CIU7 UniRef90_C3ZG01 UniRef90_E9S7P7 UniRef90-Q9ATM0 UniRef90-A0A022RKV2 UniRef90_E4ZLY7 UniRef90_G5CTG5 UniRef90_G7IUM9 UniRef90_Q70AQ0 UniRef90_TOKCM5 UniRef90_UPI00029DA8CD UniRef90 Q8C4A0 UniRef90_G0RIY5 UniRef90_D2R7U4 UniRef90_B8NHT1 UniRef90_D7CRU0 UniRef90_Q7Q872 UniRef90_V7B3W9 UniRef90_K4BEQ5 UniRef90_E4RT86 UniRef90_Q9XF76 UniRef90_Q6FWS6 UniRef90_Q307T0 UniRef90_E3IIP7 UniRef90_W6TRI2 UniRef90 E3JWK1 UniRef90_R2SMJ1 UniRef90_UPI0003872A85 UniRef90_B9HRB8 UniRef90_D9U2R4 UniRef90_H1VNJO
UniRef90-D0NBX3 UniRef90-F6KSK1 UniRef90_Q9ATN0 UniRef90_A4TS95 UniRef90_UPI000455D540 UniRef90_UPI0002B4703D UniRef90_F2CV79 UniRef90_H1LI29 UniRef90_G0RWJ0 UniRef90_W7D533 UniRef90_M0S396 UniRef90_A0A026W3S3 UniRef90 UPI0004573634 UniRef90_V4SHS4 UniRef90_F2QY68 UniRef90 H3H8L5 UniRef90_K4C2S4 UniRef90_R2S734 UniRef90_V9DKK8 UniRef90_D2B1E8 UniRef90_G1KHU5 UniRef90_S8DQW0 UniRef90_E6ZWW2 UniRef90_D9U526 UniRef90_L7P6S9 UniRef90_UPI0004676F4F UniRef90 M0RLK2 UniRef90_UPI0003597867 UniRef90_A6C836 UniRef90 K 1 V 1 M 7 UniRef90-UPI0003C26879 UniRef90_M7BDD9 UniRef90_Q17571 UniRef90_R4RMY9 UniRef90_UPI0004693733 UniRef90_DON9N5
$L K A S L G E F F G M A \amalg F\lfloor F L A L S G V Q G A L E A P T$
$R E V I R E P A A E F D G V M D L I D F G A G V D C Q V V L S T N P G B Y D S$ $L K A G F A E L V S T F L F V F I G E G C A D A F I V V S N G T V L T P$ RKYISE』I GTFVLVFVGTATVTIAKGDVLA\|GLAF KKYLA ECI GTAVLVVLGCGTAMLVGCDAAN GS
 LWK A A A VE GVGTMLLVYATDWSTLSPAAYPPPPDPAS
RALLHEYAAEFFGVMVLVIFGCGVNCQAVLSSNTNASAS A A S GEFVGTFFFLVFAYAGNDMVIVKQGVSSAGDG
S F WRA $\square$ FAEFFAT $\square$ F YVFFG $\square G$ AS $\square R$ WAPGP $\square H V L Q D A$



 $L R E P L A E W L G T T M A M T \square G L C A T L S N F T S S G Q A$

LA EMF GVALF LAATGCGNLVSTDSNSEPSH $\square N T$

 $M R N H L V A P P G E F V G T$
 A MVAEFAGTFMFLFFAFGSVANTAATFSDAATAG
 LGEFC GTFLF LIF F S F A GT QVA NVVAAASASED

MQK HLIAAAGEFVGTFFFDWFGYAGSMQYTKLATLSPSSP



LE L WR SVT SECLAS F F YVFVVCGAAAGAGVGASVSSLLL
 $P$ L G E FL GT F LI F L GESSVVANNLLLKGTKGQNAG

$\square K$ A A A A EFFSTLIFVFA GQGSG LAAFSKLTDGGATTP

 $M E L F R K \rrbracket F G E F I G T F M L V F \| G T G M V V F S T N$
$\square N D W R A S L A E V F$ GTAVLVFAMDTVVISSYETQTKTPNLV ACVGEFVGTFMFLLFALGGTNVVNTAPPEGANAT

$$
\square K \text { A ALAEF } \square \text { STL!F DFAGEGSGMAYSK LTHGGPSSP }
$$


 $\square R S Y V A E F \square S T$ F F YVVFSVVGASMASQKYMPGDTTAD
$F \square G E F F G T M D L I M L G A G T G A G F N L N K A Y A K G A$ $V F G E F C G T F M F L F I G T Q A A D E N N S P G N P D A P L F$ $D L T T R L I S E L I G G T A L I I I G N G A V A N V E L K G T K G N N A G$
 YR D YLA E FIGT LVLVGFGDGVVAQKVTS G
 $S L V Q R L A A E F I G T A L L I M L G N G A V A N V D L K G T K G Y G S D$

VRAAVAEFFSMLIFVFAGKGSSMAFAKDTHGPPDSP $\square R H L Y R E E L A E F F G T F L$ I L L F GA GVECQVNMHYHASATRD

N LWKSADAEFFGS LLLNDAGAACAQ $F \| G E F F G T M \backslash M V L G A G T G A S F N L K K T Y A T G S N$
$\square R \square W K G \| V A E F V G T L L L T L I G C G S C D N D R G E D N V T S P V V$

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


UniRef90 S2IV59 UniRef90 N4V309 UniRef90-M2RS42 UniRef90_M9YX97
UniRef90_G8PEW3
UniRef90_UPIO003B312BC UniRef90_UPI00021978C2 UniRef90-T1PC20 UniRef90 ${ }^{-}$G1X1E0 UniRef90_UPI0003C260CD UniRef90-D8Q114 UniRef90 A0A010QB81 UniRef90_U3JPY1 UniRef90_L8YAG6 UniRef90-U6HE20 UniRef90-K4BMJ6 UniRef90-Q7Y1E6 UniRef90_Q06EX9 UniRef90 A9TSE1 UniRef90-D3B667 UniRef90-T1HH59 UniRef90_V4SD44 UniRef90 ${ }^{-}$W6QJ94 UniRef90-Q6J1S8 UniRef90-W6CIU7 UniRef90 C3ZG01 UniRef90-E9S7P7 UniRef90_Q9ATM0 UniRef90-A0A022RKV2 UniRef90_E4ZLY7 UniRef90-G5CTG5 UniRef90 G7IUM9 UniRef90-Q70AQ0 UniRef90-TOKCM5 UniRef90-UPI00029DA8CD UniRef90 Q8C4A0 UniRef90-G0RIY5 UniRef90-D2R7U4 UniRef90 ${ }^{-}$B8NHT1 UniRef90_D7CRU0 UniRef90-Q7Q872 UniRef90_V7B3W9 UniRef90 K4BEQ5 UniRef90_E4RT86 UniRef90_Q9XF76 UniRef90 Q6FWS6 UniRef90_Q307T0 UniRef90-E3IIP7 UniRef90_W6TRI2 UniRet90 E3JWK1 UniRef90-R2SMJ1 UniRef90-UPIOO03872A85 UniRef90 B9HRB8 UniRef90 D9U2R4 UniRef90-H1VNJO UniRef90_DONBX3 UniRef90_F6KSK1 UniRef90-Q9ATN0 UniRef90_A4TS95 UniRef90-UPI000455D540 UniRef90 UPI0002B4703 UniRef90-F2CV79 UniRef90-H1LI29 UniRef90_G0RWJ0 UniRef90-W7D533 UniRef90-M0S396 UniRef90-A0A026W3S3 UniRef90 UPI0004573634 UniRef90_V4SHS4 UniRef90-F2QY68 UniRef90 H3H8L5 UniRef90_K4C2S4 UniRef90-R2S734 UniRef90-D2B1E8 UniRef90-G1KHU5 UniRef90-S8DQW0 UniRef90 E6ZWW2 UniRef90_D9U526 UniRef90-L7P6S9 UniRef90_UPI0004676F4F UniRef90 MORLK2 UniRef90_UPIOO03597867 UniRef90_A6C836 UniRef90_K1V1M7 UniRef90-UPI0003C26879 UniRef90-M7BDD9 UniRef90_Q17571 UniRef90 R4RMY9 UniRef90-UPIO004693733 UniRef90_DON9N5

$\square A F G W A V G T A \square G V W V S S G V S G$
 GLAVVIDMAYSVGA
W $\|$ L I GF GYG $\square \mathrm{G} V$ GYLLTALAFGLT VGMAYCVGISGGH MVPAMMVGNISGCH

F $\square \mathrm{AMYI} \mathrm{F}$ CFGAVTGGH TVVQTLGHVSGAH
PKGDFGSVTISWG T L S S E GVVF IA L S Y GL

VALAF G GWISGGGH LVNVWT FYRIS G GL QALGHVS GASVYDADWCTGTISGAA FlVAVSISANDSGGH $\square A F G L A D A T L V Q$

A GLVADADCHGFAL
LGUAWAFGGLIDV V
A GPLGWGLA
Q G $\square$ A WA F GGM】F T S S LVVAALANVF ALSSTVYI A ANIS GGH ATSTGLGAMVAI YTT GGMSGGH

 YGSYLGVNDGFGFGVTMGLHMAGRLSGAH FNLATATAVQDSWKTSGAH $G G M D D T T V F F D A F$
$\square A D T F G L I V M A M I Y A F G D \square S$ VYSFSLLVNVWAFYR $\square S$ $\square A D T F G L I V M A M \square Y A F G$
$T L Y W A W G L A D T V G \square Y \square A$
$G G \square S G G$
ATSLASGLIVIVLT
QCF $\square \mathrm{HVSGAH}$
ASVAGGLIVTVM
 SGLVAVAVCHAF SGLVSAALAHAF—GLFVAVSVGANDSGGH WIVITMMGWGLAV $\quad$ GLF AVAAYAVGSFSGAH IAIITFGGUVLAV ATQTASETSKGASA】NTVAVSMGLSLLFSAWIFYRATGAA P DPLTIGLAFGLLSIT $\square A D Y A V G H G S D G H$
MAT LIA $\square$ T $\square \quad A$ A LLLATFPTSGGH
 $A G L I D A A \square A Y G L \quad G L F V A V S \square S A N I S G G H$ IQ GI AWAFGGMI FALVYCTAGVSGGH
I S I I WGLGV
i N FGIAl GV
LS SLLVAALANAF
A MA Y Y T A A S S A H $A V G V W$ A GGUSGGH PFSDMYDAASFTFVCLSWGMAVTMGVYVAGSGSMGH AVAVVNVVFYRTTGGM W I I A LGYGFAV
 QCVGH S GGA $L V W G L V L I A M \square Y T V G$ QVAVAGGFSVVSLVQCFGEH $\operatorname{SVGAA}$ $G T A G N Y T T \| V L S W G \square A V T F G F M A S G G V S G G H$


F Q Q A A $\square$ G WG F A A TlLA T F $\square$ A S P G S G A H

UniRef90_S2IV59 UniRef90_N4V309 UniRef90-M2RS42
UniRef90 M9Y 97 UniRef90-G8PEW3 UniRef90-UPI0003B312BC UniRef90-UPIOOO21978C2 UniRef90-T1PC20 UniRef90-G1X1E0 UniRef90-UP10003C260CD UniRef90-D8Q114 UniRef90-A0A010QB81 UniRef90-U3JPY1 UniRef90-L8YAG6 UniRef90-U6HE20 UniRef90-K4BMJ6 UniRef90-Q7Y1E6 UniRef90-Q06EX9 UniRef90_A9TSE1 UniRef90 - $33 B 667$ UniRef90-T1HH59 UniRef90-V4SD44 UniRef90-W6Q.J94 UniRef90-Q6J1S8
UniRef90 W6CIU7 UniRef90-C3ZG01 UniRef90-E9S7P7 UniRef90-Q9ATM0 UniRef90_M2Y2G4 UniRef90-A0A022RKV2 UniRef90-E4ZLY7 UniRef90-G5CTG5 UniRef90-G7IUM9 UniRef90-O70AQ0 UniRef90-UPIO0029DA8CD
UniRef90_Q8C4A0 UniRef90-GORIY5 UniRet90-D2R7U4 UniRet90-B8NHT1 UniRef90-D7CRU0
UniRef90-Q7Q872 UniRef90-V7B3W9 UniRef90-K4BEQ5 UniRef90-E4RT86
UniRet90
O9XF76 UniRef90_Q6FWS6 UniRef90-Q307TO UniRef90-E3IIP7 UniReffo-WGTRI2 UniRef90-R2SMJ1 UniRee90-UPI0003872A85 UniRef90-B9HRB8 UniRef90 D9U2R4 UniRef90-H1VNJO
UniRef90
ONBX UniRef90-F6KSK1 UniRef90_O9ATNO UniRef90-A4TS95 UniRef90-UPIO00455D540 UniRef90-UPI0002B4703D UniRef90-F2CV79 UniRef90-H1LL29 UniRef90-GORWJO UniRef90-W7D533 UniRef90-MOS396 UniRef90-A0A026W3S3 UniRef90-UPIOOO4573634 UniRef90-V4SHS4 UniRef90-F2QY68 UniRef90-H3H8L5 UniRef90-K4C2S4 UniRef90-R2S734 UniRef90-V9DKK8 UniRef90_D2B1E8
UniRef90-G1KHU5 UniRef90-S8DOW0 UniRef90-E6ZWW2 UniRef90_D9U526 UniRef90-UPIO004676F4F UniRef90-MORLK2 UniRef90-UP10003597867 UniRef90-A6C836 UniRef90-K1V1M7 UniRef90-UPIOOO3C26879
UniRef90-M7PDO UniRef90-M7BDD9
UniRef90
O17571 UniRef90-Q17571 UniRergo-U4RMY9
UniRef90_UPIOOO4693733

90
100
110
120 ПNPAVLLS पM FNPAIT GLAAASQLAWDR PSVDDPGHHQGHLTSDQ VNPAVTLAFATFRDFPWRKVPKY AAQVGGGVVGGAIIYA VNPAVTVGLLVGGY TVEKAVYYVMQLIGAVLASLLLKY $\square N P A V S L G V F M R G N D F D G Y V D S Q V L G S I D G S G L A I I F G$ I NPAMTLALAFNGEFPWAEVGPYQ1AQFLGADGGQMLIVA LNPAVT GMLFAGRLS ALPRAILYVSFQCIGASLAGLLIRA NPAVTVACLVGSHISFLRAVFYVVAQLGGGVAGAALLHE FNPAVTLGLSLGGQLPWMRSAFLVPAQMADAMCAGGLVEA VNPAVTGGFLEATATAFADACLLARGESSGALKGCLNI HK VNPAVTFAFLVGSQMSLLRAFCYMAAQLLGAVAGAAVLYS VNPAVTCGLTFGGHITFITGSFYMLAQLTGAAVACFLLKF MNPAVTFAMVLARRVSLPRAALYTMAQCVGABCGAGLARA LNPAVTVAMATVGKLAWCKVLAYVAAQYVGAFLASCLVYV LNPAVCLAQVCSYRLGLLNALGLLVVELCGAMVGAALLKW MNPALNAAAVISGHMSLIKCLYFTVFQLLGGVLGVLTVKLV LNPAISTSLSVFRGFPARRCVIYIAAQLLGAITAGGISYA LNPAVTISFAALKHFPWKHVPMYUGAQLEASUCAAFSLKA FNPAVT:GMV:GQKDTVLRFLYLCAQVVGGMAGAADMYG
 SNPAVTPGLVVTGQLPRIRGVIFFPVQLLGGVCAAAVASA FNPAVT T FAI FRQFPYKQVPLY IVAQLLGGSILASGTLYL FNPAVSLGLYLIGAMGVRASLCFIAQMLAGUCAAAVVQA VNPAVTFGLAI GGQIT LTGI F YWIAQLLGSVAC $V N P A V T F G L F L A R K V S L V R A I M Y M V A Q C L G A I C G V G L V K A$
$F N P V V T L A L V C G G$
$F$ MNTAVSFANCALGHVPWRKFPVYVLGQFLGSFLAAATIYS ANPAVTLAYLVGSHISLPRAMAYIAAQLAGATAGAALLYG FNPALTFGMCLAGTLDWARAAFLVPAQLIASMCAGGLASA
 FNPAVTLA FWAMRRTRLAEVPLYWSAQLLAGGVVAVSALS
 MNPAVTFAFAAVRHFPWTQVPVYAAAQVTGALSAAFTERV LNPALTLAFAWKNGEWSHVPSYGLAQFAGAFLGAVSTYLV VNPAVTFGLAVGGQDTVTGVLYWIAQLAGSVAGCFLLKA VNPAVTFGAFLGGNLTLIRGILYVIAQLLGSTVACLLESF LNPALTLALAFNGDFPWADVPKYVVAQMLGAMIGAVVVYU FNPNVSFALVLVGVISPTRFFFYVISQFAGAITACGLLET FNPAVT TAMVLNKRAT TKEAVF FI I AQFVGAIAASACVG LNPAFSFAMCLLEQFPWWKLPMFVAVQTAGAALQHYSNGT
1
LNTAVTFTHAMFGRIPWWKVPGYAFAQTFGAFVGAGLI YI VNPAVT DGAFLGGNITLFRGLLYTTFQLLGSTVACLLLEF LPAMVTALWLFACFERRKVLPYIVGQVAGAFCAAALVYG I NPAVTVALATLRRFPWKKVPIYCVAQLAGAFCGAGIVYA VNPAVTFGMAVGGHVSVPTALFYWFAQMLASVMACIIILRA I NPAVTFGLLLARKVSLPRAFLYMVAQCVGALCGAALVRA LNPAVTMGFACFGFFPWSQVLPYLAGQFLGAFVGAALHFK FNPAVTLGLVLVGAVSPLRGLLIFPTQLVAAIAAAAVTDA 1 NPAVTLGLFVARKVS LLRAVLYMVAQCLGA CGVRIVKA I NPSITVAAVILGNKLPLAGLYDAQCLGSLTGYGVLKA VNPAVTVAFLCTRKLDVLWSVSYMLAQCLGALLGSGMVYM $F N P A V T L A F A A T R K L P W K Q V P M Y M L A Q V L G A T L A S L T L R E I$
$G N P A V T L A A D F R G F P W R K V G Y M F S Q M L G G F M G A F V V Y G$


## UniRef90 S2IV59

 UniRef90_N4V309 UniRef90-M2RS42UniRef90 M9Yイ97 UniRef90-G8PEW3 UniRef90-UPIO003B312BC UniRef90-UPIOOO21978C2 UniRef90-T1PC20 UniRef90-G1X1E0 UniRef90-UP10003C260CD UniRef90-D8Q114 UniRef90-A0A010QB8 UniRef90_U3JPY1 UniRef90-L8YAG6 UniRef90-U6HE20 UniRef90-K4BMJ6 UniRef90-Q7Y1E6 6 UniRef90-C06EX9 9 UniRef90-D3B667 UniRefe90-T1HH59 UniRef90-V4SD44 UniRef90 W6Q.J94 UniRef90-Q6J1S8
UniRef90 W6CIU7 UniRef90-C3ZG01 UniRef90-E9S7P7 UniRef90-Q9ATM0 UniRef90-M2YG44
UniRef90-A0A022RKV2 UniRef90-E4ZLY7 UniRef90-G5CTG5 UniRef90-G7lUM9 UniRef90-O70AQO
UniRef90-TOKCM5 UniRef90-UPIO0029DA8CD UniRef90_Q8C4A0 UniRef90-GORIY5 UniRet90-D2R7U4 UniRet90-B8NHT1 UniRef90-D7CRU0
UniRef90-Q7Q872 UniRef90-V7B3W9 UniRef90-K4BEQ5 UniRef90-E4RT86
UniRef90 $09 \times F 76$ UniRef90_Q6FWS6 UniRef90-Q307T0 UniRef90-E3IIP7 UniRef90-W6TRI2 UniRet90-E3JWK1 UniRet90-R2SMJ1 UniRef90-UPIOO03872A85 UniRet90-B9HRB8 UniRef90-D9U2R4
UniRef90 H1VNJO UniRef90-DONBX3 UniRef90-F6KSK1 UniRef90-Q9ATNO

## UniRef90_A4TS95

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UniRef90
O17571 UniRef90-Q17571

$\qquad$


VTAHEDQGVNN ${ }^{130}$ -
140
N ${ }^{140}$ ~ ${ }^{150}$
160 KHLCMFPWDAGETNTVLAANVSIAKGVFIDMFMTSVLCLT DY 1 RA $\square D V V E G G F S T Y A A D Y M T N V N C F F D E F L G T A V L L I V$
TM
LLSSMNAPTNNL VGGVTDKTGGFGANGLAGVNGNPLAGLCVEIVLTFVFVET AYKPYYNKTENGTFSTIDAENSRLNGFINEFIGTFILVFG
LIDESYY ST D GRGVRTALATAGLA MFPGQVSQANSL
 ISPFKDQEPGTYGMTLPGNGVSALVATLTEAV MHGGGQYARHGGGANELAAGYSAGAGVVAEMVGTFVLVYT
$V Y V Y G G N A T A P V F S C F P A P G V S T G T C V D Q V V S T A V L V G G$ FQPDFYQSVGGGA NTVAHGYTKGDGLGAEIVGTFVLVYT A VTPNPYEK TLGATTLSPGTNVGHGLLLELMGTFFLVVT VT P
 V
v
V
 LSPSHTVARQSLRNYDTNADVTSAQALGVEMMFTFGLVGT ATG GAA GAFS SAGV VLDGDGADYFGTLPD $G V$ SVMQ $\square L P G P L N V S T T L G A$ GVSAARA
YQMFGPNGTAHI WSTYPQPFLSPHTAFADQVFCTADLLIV FLLKYATGGDTIPDHSVASGVGAGEGVVTEIIITFGLVYT FQSSHYKRYGGGANTLDDNYSTGVGLGAELGGTFVLVYT LMVTGPVATAGIFATYLPDHMTDWRGFLNEEWLTGMLQLC VTPGG DRETLGVNVVHNSTSTGQAVAVELVLTLQLVLC
 GYRDSUFHSGSGFYTEPGAYVRNVTAFFNEFVAAAGMCV VTVPGYQGNLQAAVSHSAQQAPWERFGVEFVLTFVVVLA LFQPSNEIGGT SPA
 ATGGLTTPIHSVASGV
YYHFNSETVVSMFCVVPKPYLSSARQFVSEFLCGAMLVAC ATG HWQETDDPSAKLGVFVTSPAVPNYFANLGSEMLGTFVLVL LLPGPLAVTPALG $\quad$ GADTNSAQGVFIECEITCALILS
 VVNSTVEQTFSLGGCPVADGLETGQAGWLEVIGTFVELFS
FEGNRVYESLGGGANVVASGYTKGDGLGAEIVGTFVFVYT MMPNVLAVKTELLG TTGGLEASPLTL $N E K I S N L T A F Y S E A L A T$
$S S G V S V W N A L V L E T V M T$ FYGSALYESAGGGANAVSPGYTKGDGLGAEVVGTFVLVYT NYRDAINAFGSLFATYAADYMSNVGCFFSEFLPSALLLMG TVVGQHVPSYALADEMTGFGASVVEG VG VLTFALVYT VHGGHHYALYGGGANELAPGYSRMAGLIAEDAGTFVLVYT ALPGELLVANKLTAANSGGSVSRGLFIDMFLTAQLVIT MMKQQFNAFGGGVNVVAPGHSKGTALGTEVVGTFVLVYT SLPQTSSPAQLV SVISEDGNAGQALGMEVLATFQLVFT LFHEQDNDQPTVTQYKDTMYSDLEAVAWEFVVTFGLMFT MQYQNENTTQGGWSTYPQDQQSNYTAVYSELVASAFLQFG DYKSKFEDYGGGV NSVSPGYTRGVAWSAEMIGTFVLVYT
 YGVTPTNARGNGAVNGLSNNTTAGQAVVVEMILLTFQLVMC ATGGLETMM PMYSLAPRVSCGNALIVEVVMTFGLVYT NNVTNDERFQHAAAGGAGSRTVKGAGSTAGFFFTLVFVDF FEGKTRYALYNGGANFVNKGYTKGDGLGAXVVGTFVLVYT QFYPHFNGNSVGIF

UniRef90_s2IV59 UniRef90_N4V309 UniRef90-M2RS42
UniRef90 M9Y 97 UniRef90-G8PEW3 UniRef90-UPI0003B312BC UniRef90-UPIOOO21978C2 UniRef90-T1PC20 UniRef90-G1X1E0 UniRef90-UPIOOO3C260CD UniRef90-D8Q114 UniRef90-A0A010QB81 UniRef90-U3JPY1 UniRef90-LBYAG6 UniRef90-U6HE20 UniRef90-K4BMJ6 UniRef90-Q7Y1E6 UniRef90-A9TSE1 UniRef90-D3B667 UniRef90-T1HH59 UniRef90-V4SD444
UniRef90_W6OJ94 UniRef90-Q6JIS8 UniRef90-W6CIU7 UniRef90-C3ZG01 UniRef90-E9S7P7 UniRef90_O9ATMO UniRef90-A0Ао22RKV2 UniRef90-E4ZLY7 UniRef90-G5CTG5 UniRef90-G7IUM9 UniRef90-O70AQ0 UniRef90-UP100029DA8CD UniRef90_O8C4A0 UniRef90-G0RIY5 UniRef90-D2R7U4 UniRef90-B8NHT1
UniRef90-D7CRUO UniRef90-O7Q872 UniRef90-V7B3W9
UniRef90 K4BEQ5 UniRef90-E4RT86 UniRef90-Q9XF76 UniRef90-Q6FWS6
UniRef90-Q307T0 UniRef90-E3IIP7 UniRef90-W6TRI2 UniRet90-E3JWK1 UniRef90-R2SMJ1 UniRef90-UPIOOO3872A85 UniRef90-B9HRB8 UniRef90-D9U2R4 UniRef90-H1VNJO
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UniRef90-S8DQW0 UniRef90-E6ZWW2 UniRef90-D9U526
UniRef90 L7P6S9 UniRef90-UPIOO04676F4F UniRef90-MORLK2 UniRef90-UPIOOO3597867 UniRef90-A6C836 UniRef90-K1V1M7 UniRef90 UP10003C26879 UniRef90-M7BDD9 UniRef90-Q17571 UniRef90_R4RMY9 UniRef90-UPIO004693733 niref90_DoN9N5

170
ADFAPF VN
180
190
VLFIIIVDKHLLADFAPFVVGSAVFTCHMTGAPTDGTSIINP VLMLAAEKQKAYALPLLANIWAFYRISGGLFNPTGASLNP VCAFTDQRNPPPGLVPLALFIVVGLGDALGYQTGYALNP II YAVDPRAKETASTAPLTVGMLVTALTLCGAPFSGCSMNP LGVTSDKAGHGSFGGLIGGFTLVLVHILGIGLTGTSVNP AVALTSDHDDPRADFGGGLGFLVMCLVVSFGGPTGPALNP AFGVGADDRQRQVFGPLAVGTSAFSMAFTRPGYGGAAMNP VLSVLDPRNRVPSFLIPFALFFFLAGLTAALGWETSFVNP VFASTDERREDNLGSPLSIGLSVAVGHLDGIVRTGCSMNP I FATYDERRNGRGSVALAVGFSLTLGHLFGVEMQ 1 LASLDERPEKGAPFPLAVMLALMINVVLTLPVSGASMNP ATAADPKKGSLGT\|APIAIGLIVGANILAAGPFSGGSMNP VFSATDPKRKARDSHPLPVGLAVLVVHLATGPGTGTGMNP VFSATDAKRNARDSHVPLLAPLPITGAVFLVHLATTSIUN V LATAVHNEGDPDIPWAGGCAVFAGVATENPFTGGSMNP
 ILALDTNAPPGAGMQAFIIG\|IIS\|VILALGYNTGGCFNG VTAVATDTRAVGELAGIAVGATVMLNILIAGPDTGASMNP LCHVLDKRASQQHGLVFKFAVLVVALALPLGKYEGGSANP VGVTDSKAGHGSFGGLI, GLTLVLVBVAGGGLSGGTSVNP VYAVDPKKGDGGVIAPIAIGFIVGANILAGGAFDGASMNP I SGVATDNRSDGELAGIAGGMTILVDVLVAGPVSGGSMNP RIMLAAEKHKATFLAPVGIGLALFVAELVGVFFTGGSLNP VLAMCDSKNWKPHNLAFAVLGKLSWKNCIFYMISNAGMNP VFSATDPKRHVPVLAPLP: GFAVFMVHLATVPGTGTGMNP LLALQENNAALPGTQALVI GULVVIVGVSHGUNTGYAUNP VLMLAVERSRYTFTAPVGI GLALFVVMLAGTSYTGASMNP VLCVSTGAKEKGVMAGAAI GAVVALEAMFAGPGCGASMNP
 SMAVATDTNATGQLSGVAVGCSVSDSSVVAGPDSGGSMNP AGSI YSTDGSGLKPFLVGMLVFVIGNALGGTTGYADNP ATAVDPKRGSVGTVAPABGFVVGANILAAGPFSGGSMNP VYAIDPKKGELGII APIAIGLIVGNILAGGAFTGASMNP GVLAIGANQFADGLNPFIVGFLIVADGLSGGTTGYADNP IVTVGRKRKREGSLAGIVI GGVVGLEALFAGPDCGASMNP VLFLAVEKHRATFLAPLGI GITLFAGHLFAVVYTGAATNT ILMVTSKKYGSKQMASIAIGLTLGFLVAIALNLTGGSLNP
 VFSATDAKRHVPILARLVIGGAVFLVVGLLVIPGAGVMNP VFSATDAKRHVPILAPLPUGFAVGVALAPLPMTGTGMNP 1 YAGTDQRNRGTVGTPFAFSLLFMGLEMAFGMNTGYALNP VFSATDAKRTARDSHPLPI GFAVFLVHLATGPITGTGMNP I LALTDDGNPRGPLAPLLIGMLIAVI GASMGPLTGFALNP VFAASNPRRGPCAIGAVMI GLIAGANVLAAGPFSGGSVNP VESATDPKRDARDPHPLLIGFSVLMAHLATIPVVTGTG11 NP VVFLAVEKHRATYLAPLG| GLAVFI AHTCGTNFTGTSINP AIGITRAPFFADNTAHLALGFLVCALVLCVGGSTGPALNP VFSATDPKRSARDSHPLSUGFAVFMVHLATMPDTGTG|MP
TFAVNERRRKGAEPGGLAGGLSLTAGVLABGPDTGASMNP 1GFSLTDTSNVSSSPFWFPFGLFLEVVGUGSFGYQTGYNA VLSATDSKRNARDSHPLPMGFAVFLVHLATDPDTGTGI NP AIGITKAPFFQDNTAHFALGFLVWTLVASLGGPTGPGLNP QACADTEKHAGNNPSQUVLTSLAFGFSLLVTVWAFYR1 NP QIIGTNNTAPAANLAPFI GLIVVAIGMAWGTNAGYAINP VFASTDSRRNDHVGSPLS GLSVTLGHLVGDYFTGCSMNP VFAVDPKKGHDGVIAP I AIGFIVGANILAGGAFEGASMNP VFSATANLKPPKGSQPFAMFIVLLGIGASLGYNTGYAING
 LLNL MPK G FTQGLKPFIVGTLITVVGMGLGTTTGFALNP VYATMPKKGIIIAGLGPLLVGLVVGANILAGGPFSGASMNP VFASCDGKRRDKGSAPLTI GLSVVMCHLFAVRC
VLCVSTGAKETGILAGVAIGAVIALEAMFAGPIDGASMNP II ATSPPNAHWT TWSKALIMLWFFVGVSGCMGLHPGYALNP L LADTQNKGDPKGLEPVAVAMLVLALSLSVGSNCSCALNP I FATDDQRSDNVGSPALSIGGSVAVGHLLGIGYTGCSMNP



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UniRef90-M2RS42
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UniRef90 G8PEW3
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UniRef90_UPI00021978C2
UniRef90 T1PC20
UniRef90 ${ }^{-}$G1X1E0
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UniRef90 A0A010QB8
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UniRef90 V4SD44
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UniRef90_E9S7P7
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UniRef90-R2S734
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UniRef90 D2B1E8
UniRef90-G1KHU5
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UniRef90-UPI0004693733
UniRef9O_DON9N5
$R \| V K$
K F L G S
Y M V
R F V K
$E L V$

RAFF

RAFF
K F L
H F V K

| K |
| :--- |
| $\mathrm{Q} L \frac{\mathrm{~V}}{\mathrm{~F}}$ |

$A \vee L R$
K F V K

Q Y L

SNDF

K A VF
K F L L
$K 11$

D N V

R V $M$

R F VK

UniRef90 K4B8G7 UniRef90 $\mathrm{S3CHT9}$ UniRef90-17K0M5 UniRef90-U6IJP6 UniRet90 F4ZWB9 UniRef90-C1LP58 UniRef90-E91AB3 UniRef90-K7LMN6 UniRef90 W8V7E5 UniRef90-J1F5B0 UniRef90_W4ZGE5 UniRef90 H2Z381 UniRef90-UPIO002627E59 UniRef90-A0A034WQR8 UniRef90_S2YYQ1 UniRef90-B6TTD0 UniRef90-D7T6R9 UniRef90-UPI0003B73D52 UniRef90 A5AF50 UniRef90-D9DBX2 UniRef90-B8АKP9 UniRef90 ${ }^{-}$W5CSY4 UniRef90-F4R6P6 UniRef90-K7KZB2 UniRef90-UPIO002B40FAD UniRef90 G9Y979 UniRef90-B4J7D2 UniReffo-W5V1A7 UniRef90 10Z8M1 UniRef90- UPIOOO26588B8 UniRef90-F7CFD3 UniRef90-U66FO0 UniRef90 R7Z706 UniRef90 A41858 UniRef90-Q7EYH7 UniRef90_U31922 UniRet90_KoIVT1 UniRef90-G3U7R9 UniRef90-UPIO00328A61A UniRef90 M2W285 UniRef90_S7PKF6 UniRef90-G2SZET UniRef90-LODFD7 UniRef90 14 YB69 UniRef90-W6LBZ7 UniRef90-D8RS08 UniRef90- Q6FWH4 UniRef90_UPI0003D7818C UniRef90-A0A016TR37
UniRef90 K7KAK5 UniRef90-G9N6L5 UniRef90_UPIOOO34847C2 UniRef90_Q6DW15 UniRef90-UPI0003EBD562 UniRef90-F4RH44 UniRef90_UPI0004623A32 UniRef90-A0A034UZQ9 UniRef90-UPIo003AD5F0E UniRef90-V6KD91 UniRef90-IOZAA7 UniRef90-UPIOOO35CEBFE UniRef90-QoUTV4 UniRef90-Q9LKJ UniRef90-Q0TZS2 UniRef90 14F4L4 UniRef90-ROIPZ4 UniRef90_L2GKI2 UniRef90_J3N425 UniRef90-M2S6A5
UniRef90 E2A168 UniRef90- ${ }^{-} 6$ NN93 UniRef90 F9FHA3 UniRef90-K4BWY2 UniRef90_UPI0003F5EA5D UniRef90 UPIO002B4AAA6 UniRef90-UPI000344B62F UniRef90-R9P3F8 UniRef90-V7AGX1 UniRef90-M1A5P5 UniRef90-F4XUW7 UniRef90_S3UJ15 UniRef90 K9Sz74 UniRef90-C7ZFW8 UniRef90-A6W6Q6 UniRef90 F214J8 UniRet90-W2C1L9 UniRef90-A9NLE6
UniRef90 H2B1Y7 UniRef90-R1C7U1 UniRef90-S9WYF6
UniRef90 Q8k3W1
 LWKAALEGMGSFLLNFLGCGTIYVNLSPDILPTAP

पPLLRACLAEFCGTA乌LVILGCGVIAQTFLGDHGRQAHG

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


LLAEFFGTF LIADGDACVAMAV AGDPGSG FRRQLLCEFFGTFVLMLV

VS LTTRKVGAEF $\square$ GTF ILIFAGTATA VVNQTQGSETLIG
VRAVLAEAVLTF RFVFSGVGSVMAAGRDAGGADTDM RSHTREFWAEFFGTAVLVLLGTAVNHQVTLGGSTNVAPS

## QC TAEF $\square G T A L L I F F G C G C V A A D K \square A G A S F G Q W E$

$Q L L$ S E F CATALFMLI S C C G G GTVTV
E LIAREVLSEFTGTFLLCLINVAAPLNLLLS

YFAELVGTF
GWVLT LDA L VSVRN
VPLVKKVGAEFFGTFTLIFTVLSTDDMDEQHKGVESLLG


LAARQCLAEFLGVFVLMLITQGAVAQAVTSEETKGNFF
PYIAEFVGTMILILLGDGVVANVNLNKSGMKGAG LI GEFFGTLLLILLGNGVVASVQLLDMQGNWDV


KK KGAEF 1 GTFMLDFAGTATA IVNEKTSGS $\square T T V G$ S $\square W K A L L A E F V G N D I L N Y F G C A S C M M$
MRNHVIAFFGELVGTFMFLW CAYVIANDANHDVLLDVY

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

LKAGLAEFTSTLIFVYAGQGSGMAFAKLTAGAANTP $H L V R P C L V E L G S A L F I F I G C L S V I G N$
 LDFVRALFAEFLGTFFFVLLGULCT

T L A KAVVAEYAVTTMFLFFTDGTVSSNNASRSGADKSL PFLGEFIGTALLILLGCGVNANTTLKATYGQNSG LT AF GEFIGTFMFLALAFCGTQDADNSTAVAPT DD
 AEFLATFVYLFLG $\square \mathrm{CV} \mathrm{V}$ LSVATSESATGSFE
 NST $\square \mathrm{T} N \mathrm{D} \operatorname{T}$ A V E

GYAlly
$A F \square G E F \square G T F M F D S L A F T G T Q \square A D N A A G S K E \square S G$ $R G L L A E F L G T L F L N F F G C G A V V T D N V V A D G L A F G L$
$\checkmark H \square W K T A L T E G T G S L L L V Y T T T W A \quad S G S S A E V P A K P$ VVIITQKVIAEAIGTYFLIFVGCGAVAVDKTYGSVTFPGD

 LR E P F A E F F L G C C M L VHFVQKLIA E FVGTYMLI FAGCAA I I L N DNKNNVVTLPG
 $\square$ WK A A L I E G M G T L M Q A Y $\square$ $\mathrm{T} \square \mathrm{W} \square \mathrm{G} \square \mathrm{S}$ P P R $\square \mathrm{P}$ T P P
MATEVIGEFLGTLILVLLGDGVCANVNDARTKGHNAG KKYLA EMI GTMVLVLMGCGVAVSLNCSSDCADTAN

 R A L F R GA A A E A L A MVLFVFFGC GAAS SNARK F DGGE WDP


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UniRef90_E91AB3 UniRef90-K7LMN6 UniRef90-W8V7E5 UniRef90-J1F5B0 UniRef90_W4ZGE5 UniRef90 H2Z38 UniRef90-UPI0002627E59 UniRef90-A0A034WQR8 UniRef90_S2YYQ1 UniRef90_B6TTD0 UniRef90-D7T6R9 UniRef90_UPI0003B73D52 UniRet90 A5AF50 UniRef90-D9DBX2 UniRef90-B8AKP9
UniRef9- W5CSY4 UniRef90 F4R6P6 UniRef90-K7KZB2 UniRef90-UPI0002B40FAD UniRef90 G9Y979 UniRef90-B4J7D2 UniRef90_W5V1A7 UniRef90 IOZ8M1 UniRef90 UPI00026588B8 UniRef90-F7CFD3 UniRef90-U6IF00 UniRef90_R7Z706 UniRef90-A41858 UniRef90_Q7EYH7 UniRef90_U31922 UniRef90_KOIVT1 UniRef90-G3U7R9 UniRef90_UPI000328A61A UniRef90 M2W285 UniRef90_S7PKF6 UniRef90-G2SZE7 UniRef90_LODFD7
UniRef90 14YB69
UniRef90-W6LBZ7
UniRef90-D8RS08
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UniRef90 K7KAK5
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UniRef90-Q6DW15
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UniRef90-F9FHA3
UniRef90 K4BWY2
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UniRef90 K9SZ74
UniRef90-C7ZFW8
UniRef90-A6W6Q6
UniRef90 F214J8
UniRef90-W2C1L9
UniRef90-A9NLE6
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UniRef90 R1C7U1
UniRef90_S9WYF6
UniRef90_Q8K3W1


RTAGATTDFQGTGDWLLIVWGWAFAVAFAVYVAGGVSGAH RKTVSTVEDTQWAVTK: SFA LGGTVVAALTK L F GRII S GCH $D H D S \| A W A W G F G V T L G V Y V A A R L S G A H$
$Y A V T G G L T V V V L$ HSGPPEGPPPSGFVACPDQVVLVFGLSVAMAALSVGGAVH
$\square A A S T G \square A V M \square V I L \quad S T G H \square S G A H$
$G \square T A \nabla A \square A H A M A X V A V M V S A G L$
ERGSWTTVSVLVLS
$M \square G V V V S G G I S G G H$
$\square S \square I W G \square G V A M A \square Y \square T A A \square S G A H L A V T \square A L W L F A C F D K R K$ SDQNGANGNLDMSVHY GLAVVVIMHIFGFDSGAH
 $G \square N D P F L S N A C S A F G V A L G M V S A M S N S A A A$

PEYGAYETLCWTHR\ATMAE DY LA GGDVSGS H

 $S$ GL I A A A L A H A F

$T M F W A G A L L A V M V$
$A \vee Q 1$ T L A W GL A V
$\stackrel{\mathrm{T}}{\mathrm{I}} \mathrm{T}$ G W G L A V T L $\mathrm{G} V \mathrm{~V} \mathrm{~V}$
AFPWGMSFTFCDYA I G GVVS G A H
$P L T W A F$ GIVA GAVW $\quad$ S GR LLS G G H
A A S S E VLVMF GWGLAD LAA A S GLLAV

IAP NVAKPNLVLIDALS GL

## $P D G S H P G Q L I M D A L G F G F$


$\mathrm{C} V \mathrm{~T} W \mathrm{~W} \mathrm{~L} I V$
$L \vee P S L L G G L T A \square$
$A M G L F V C M G V S G G H$
$A G L V A A A \square S H G F \quad A D L V A D V A D A N \square S G A H$ ATPEAGLLQPALAHGLALGLL
 EALA S GA QHSTVE Q GMYI SLCFGFS LLDSSVWLFYRVVGGL
 DHDSIS WA W GLGVTLGVYVSARIS G GH
DSAGF GTCF LGGTSNVLND $\square$ A $\square$ AF GF S $\square$ F VLVVYAA S F S G G H W V V A F G WS M AV
$F \vee A \vee F V A A D A S G A H$ SDSPSAPNVNKLLY $\square A F A F G L$ A GLISAS DAHAF T Q A WGWGFA $\square \mathrm{M} \square \mathrm{G} \square \mathrm{Y} \square \mathrm{L}$

| $S$ | $L$ | $A$ | $I$ | $N$ | $V$ | $A$ | $I$ | $F$ | $A$ | $D$ | $V$ | $S$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $G$ | $G$ | $K$ |  |  |  |  |  |  |  |  |  |
| $L$ | $F$ | $V$ | $A$ | $V$ | $S$ | $I$ | $S$ | $A$ | $N$ | $I$ | $S$ | $G$ |

$\square Q Y E G G K T S A D P D K V L V I A V S C G A S \square T V N A S T F F R \square S G G L$ STSLDVK GPEVTSS DVFVPLAVGFS GIVVIYTFLDHT DCH STGHIS GAH
$S G D P D P D V S K L L Y \square A F A F G$
$A S \square A \square N \square A \square$ $G L V L M N M V Y S \square G H V S G G H$
 $N V Q L G S F N N A A F V P P L I G G \square T S F I F L S L F I V S F G A V T G A H$


G V SLLAF GLLTV
$M V V P A F D F G A A S$ G A H $M \square F A L V Y C T A G \square S G G H$ $K G S Y L S I S F G W G V G V$ DGVVAAALSHAF
DA SVWG LVVMVLIVSVGHVS G $\bigvee S F V F G A V V$
WMVITSSAWAFAVMLGGF VAKAFGSA


A A L IY A T GH $\square$ S DA H D A H $K R S G A H$
 GGDDS S $\quad \mathrm{H}$ WA WGLGVTMGUY VAGRTA GA H

## $W \square T \square T \square G W G L A V$

 A GTVLGTALAFG $A G L \vee G V A V C H G F$ QA AMA EVAEA GGVDDATMKMFDA $\square$ A SVIT I AL Q F GLL S I

## UniRef90 K4B8G7 UniRef90_S3CHTO UniRef90-17KOM5 UniRef90-F4ZWB9 UniRef90_C1LP58 UniRef90-E9IAB3 UniRef90_K7LMN6 UniRef90_W8V7E5 UniRef90_J1F5B0 UniRef90-W4ZGE5

 UniRef90-H2Z381 UniRef90-UPI0002627E59 UniRef90-A0A034WQR8 UniRef90-S2YYQ1 UniRef90-B6TTD0 UniRef90-D7T6R9 UniRef90_UPI0003B73D52 UniRef90-A5AF50 UniRef90-D9DBX2 UniRef90-B8AKP9 UniRef90-W5CSY4 UniRef90-F4R6P6 UniRef90-K7KZB2 UniRef90-UPI0002B40FADUniRef90_G9Y979
UniRef90_B4J7D2
UniRef90-W5V1A7
UniRef90 ${ }^{-}$IOZ8M1
UniRef90-UPIO0026588B8
UniRef90-F7CFD3
UniRef90-U6IFO0
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UniRef90-A41858
UniRef90_Q7EYH7
UniRef90_U31922
UniRef90_KOIVT1
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UniRef90-UPI0004623A32
UniRef90-A0A034UZQ9
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UniRef90-V6KD91
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UniRef90-Q0TZS?
UniRef90-I4F4L4
UniRef90_ROIPZ4
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UniRef90-K4BWY2
UniRef90_UPI0003F5EA5D
UniRef90_UPI0002B4AAA6
UniRef90 UPI000344B62F
UniRef90_UPI000344B62F
UniRef90-R9P3F8
UniRef90-V7AGX1
UniRef90-M1A5P5
UniRef90_F4XUW7
UniRef90_S3UJ15
UniRef90-K9SZ74
UniRef90-C7ZFW8
UniRef90-A6W6Q6
UniRef90_F214J8
UniRef90-W2C1L9
UniRef90
UniRef90-A9NLE6
UniRef90 H2B1Y7
UniRef90-H2B1Y7
UniRef90_R1C7U1
UniRef90_S9WYF6

UniRef90_Q8K3W1

FNPA|V|T|IAFASNKRFPWKQVPAY|V|AAQVIGSTLASGT|L|L LNPTITIATFFARLCSLPRMVLYVFSQTAGSALAGLMVRA
 L NPLI TLAFCLTRRDPFRYLFIYWTGQFAGAGLSMGIAHF


 F NPAVSLATVVSG

LNPAVTLAMAVRRRFPWRKVPGYCGAQLAGAFTGAALVYA I NPAVSIAFFVVGEMSTLRLFFYDIMQLLGADSAVFTYTG $L$ NPAVTVALACFAGFSWKKVLPYSLA QTAGAFVAALLVRW



VFKCPSA
LNPAVTDAFAADKHFPRKHVPVY GAQVMASLCAAFGDKG $I N P A V S V A M A A F G R L P P A H L L P Y V A A B Q V L G A V A A A$
 I N P AVTLT QALLRGFSWKKVPLYWLAQFTGAFFGAG

PAVTISFAALKHDPWKNVPLY GAQVLASVSAAFALKL DNPAVTFGMFLTRKUSLVRALLY IDAQCIGALCGACAVKKT
 LNPAVSIMAADSNKDAK ILAYIPMQILGAMAGQDILNF $V N P A V T L A N C L T G H M S W G R G G L Y M D A Q L L G G D F G A L I E S G$ LNPAYS LSMCI LGGRFPWWKLPGYALAQLVGSAI RDYTKGN

 LNPAVSDAMTVVGHDPPABLLPY:AAQULGSITASFAVKG VNPAVTFGAFLGGNDTFLRSILYWIA QLLGSVVACLLLKF

 L NF SVTVVAKAAFRGFEWWKTLPYFFAQVLGGTCGTGNMWL \begin{tabular}{c}
$L$ <br>
$F$ <br>
$F$ <br>
\hline

 

$F N P A$ <br>
$1 \quad N P A V$ <br>
\hline
\end{tabular} LNPVVTISLADFRGFPWRKVPSYTISQVLGCFAGACVAYA

 Y N P A V T I A MLY Q N I S P L K A I L Y Y VIV Q CI G A I VG S GLLMA LNPAVSLSLALSRTITPMRCIVMWVAQMLGGMAAGGAASG

 VNPAVTFGAF DGGNDT LLN GI VYWIA ALLGGSTVACLLLEK















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








| UniRef90 K4B8G7 |  |
| :---: | :---: |
| UniRet90 S3CHT9 | MGSRDKTGGCFLFTDIDA TVGSAWAL |
| UniRef90_17K0M5 | YPQFTAEDGNNVGTFATGPADPNGFFNFMSEVI |
| UniRef90-U61JP6 | VSPLS KVIDTMGMTLPQHGDSD |
| UniRef90-F4ZWB9 | FEGRHQYALLGGGANSVNPGYTKGDGLGAEIVGTFV |
| UniRef90-C1LP58 | VYYEKDHEYATTHTFVTNPGASHLTCFFDQVLGTALLAAG |
| UniRef90-E91AB3 | KTQA SHGLGVTALHPDVTAGQGLGMEII ITFLLLVLV |
| UniRef90 K7LMN6 | FEGNARYELFKGGANFVSHGYTKGDGLGAELVGTFLLVYT |
| UniRef90-W8V7E5 | VFGHSL |
| UniRef90-J1F5B0 |  |
| UniRef90-W4 |  |
| UniRef90-H2Z381 | RGETITPF |
| UniRef90 UPIO002627E59 | VHPA |
| UniRee90-AOAO34 | ANSAATQET |
| UniRef90-S2YYQ1 | NYAGPANKLGPGVATVPSVGASHVALALTKKVA ALV |
| UniRet90 B6TTDO | LYAGPANLIT ${ }^{\text {L }}$ |
| UniRef90-UPI0003B73D52 | ALLLGLMGDVAPAVNQVSSGVLLHQAVTVETLIT LQLVLV |
| UniRef90-A5A | FQREDFEMLGGG INAVASGHPKLAGLGAEIVGT XILVYP |
| UniRet90-D9DBX2 | VFHPM |
| UniRet90-B8AKP9 | AAVDGDFHPASRGWMVSVPKVGTVEAFFVEFVTTFVLDFV |
| UniRef90-W5CSY4 | A V |
| UniRef90-F4R6P6 |  |
| UniRef90-K7k |  |
| UniRet90_UP10002340 |  |
| UniRef90_G9 | RGSVASLDQAGVFSTYPNPHISVGQA |
| UniRef90-B4J7D2 | TQGMIDGCKQGICAAEPMKSLSYVQILS |
| UniRergo-WVIM | ( ${ }^{\text {a }}$ |
| UniRef90-0Z88M1 |  |
| UniRef90_UP1000265 | GVNGTGGGFAAVPAEGISISTCLMDTVLCSALLMFA |
| UniRef90-F7CFD3 | VTVFGPRETASIFSSSYPAPYLS |
|  | ( ${ }^{\text {P }}$ |
| UniRef90-A41858 | IQGNKDIFVPSVSTSYVSSGIV FSELTFTFAMCLV |
| UniRet90-Q7EYH7 | MY |
| UniRef90- 31922 | GLI A Y P Sh NVVNGF |
| UniRef90_Kolvi |  |
| UniRef90_G3U7R9 |  |
| UniRet90_UPIOOO32 | APLNARGNL |
| UniRef90 M2W285 | TYDQSPEMAAAFFNNANQEYYTTIGSFALQLYYTAFLVFM |
| UniRef90-S7PKF6 | 㑑 |
| UniRet90 LoDFD7 | I DGKLPAAGGAGVFATYPAFDGLAGNFFSEFLGTALLLFG |
| UniRef90-14YB69 | NYHHGPTATGGLFFTMPQPYDPALNCFFDEFLGTALLVGL |
| UniRet90_W6LBZ7 | - |
| UniRef90 D8RS08 |  |
|  | DTKMGVTELSVPAGNGIIVEIMLGFI LVFTV |
| UniRef90 Q6FWH4 | MTPGPVLYANTLGN GCSRT |
| 迷 |  |
| UniRef90-A0A0161R37 |  |
|  |  |
| UniRei90- UP100034847C2 | SLGNVANLGATLGCYFDPLNGNWWQSFILETVLTFALMFV |
|  |  |
| Ref90-UPI0003EBD562 | SPGDRFWNASGAAFVTVQEGQVAGAVLAEVVL |
| UniR | GLLAALLPGPLAVTPALGAGTNPGQG |
| UniRef90 UPIOOO4623A32 | A $1 \mathrm{~L} A$ ALTPGPLA |
|  |  |
| UniRef90_UPI0003AD5F0E | YTEVLHKFDPGLTIKSQFVI HTWGA |
|  | YHDAIHAYDHAAPGPKVNGHTNWGPLVDQUVGTAFLLML |
|  | DDDGW RAAGGGANALSPGFGEAAG |
| UniRef90_UPIOOO35CEBFE | QYRPHYAAEPDQGALLGTFSTGPPSN |
|  | Fli GPLGVAT |
| UniRet90 Q0TZS2 | HDAIVAVDPGLAFPKGPSVSTASGFFNDFVYMAV |
| UniRef90-14F4L4 | PDHTIDTQG\\|FSTLPGNGVGTWGAFRDQ\|IGTALILLFL |
| UniRef90 RoIPZ4 |  |
|  |  |
|  | TI STAQAFFTEFIITFNLLEV |
|  | GPLTIATTLLPSISITRGLFLEAFVTSQLILT |
| UniRef90-E2A168 | ADSMEHALGVVKLSDGITPVQGLGVEFLLALILVLVIC |
| X6NN93 |  |
| UniRef90-F9FHA3 |  |
| UniRef90 K4BWY2 | F GT TPV |
| PI0003 | ( ${ }^{\text {a }}$ (EDPNTKRGVFCSPSDNMLSEIVATFVLVFA |
| UniRet90_UP | FQPKPYDTLGGGA NMVAKGYTKGDGLGAELVGT |
| UniRef90-UPI0003 | TASGHPGFDANGYGDRSPGHFSMAAAFVCEGVMTAFFDFV |
| UniRee90 R9 | VIN |
| UniRet90-V7AGX1 | GGSETSAFSLTSPGVGSANALVFEIVMTFGLVYT |
| UniRef90 M1A5P5 |  |
| UniRee90' S3UJ1 | HYLPHWKETGDRGKILSVFSTHGTSNFISEFLGTFLLILG |
|  | GEFGAFLAELLISFGLMIM |
|  |  |
| UniRef90-A6W6Q6 | VYPDTTSATQGПFSTLPGEGVSIGVLPYSVAQFLGALVAA |
| UniRef90_F214J8 | VTEDPDMILGSFATAPEIYAPANNLISEAIGTFILTFG |
| UniRef90_W2C1L9 | V ${ }^{\text {T }}$ |
| UniRef90-A9NLE6 |  |
|  | PDYRSSESVASFYFVYPKPYLTRSRQFVSELICTGLLQDG |
| UniRef90-R1C7U1 | ATYGEAHDFGLGSNGRQNPAVSLGRAFAFEFMGTFLLMYT |
| iRet90_S9WYF6 | GHIFATYPAPYLSLANAFAEQVASTMFLIIV |
| UniRef90-08K3W1 |  |



LLGATDARG A GPFAPDADGLCDTLIHLVSDPVTNTSVNP NEFFASNTPPPDGLAPLVLLWLVWGLGACLGWQTAYAVNP VYAVDPKKGQLGIIAPMAIGFIVGANILAGGAFDGASMNP I AGVATDDRAMKHLSGVAI GATVSLDULFSGPLTGASMNP
 $V L Q V N Q S Q L$ SQLT GVFSGI LVAVYITFFEAP DSGMSINP GLGLDPRQAQUVGPTMAPFLVGLASGTLAFSTGFTRYGYG I MSFAQNDLAPGLSTA LVGGLIVSIGASLGGPTGYA 1 NP $V L A T A R T N G A T S G F A G L A D G L S L V L V H L V C D R Y T G T S V N P$ VYATDPKKGSLGTDAPIAIGFIVGANILAAGPFSGGSMNP



UniRef90 K4B8G7 UniRef90-S3CHT9 UniRef90_17K0M5 UniRef90_U6IJP6 UniRef90_F4ZWB9 UniRef90_C1LP58 UniRef90-E9IAB3 UniRef90_K7LMN6 UniRef90-W8V7E5 UniRef90-J1F5B0 UniRef90-W4ZGE5 UniRef90 H2Z381 UniRef90_UPI0002627E59 UniRef90-A0A034WQR8 UniRef90 S2YYQ1 UniRef90-B6TTDO UniRef90-D7T6R9 UniRef90_UPI0003B73D52 UniRef90 A5AF50 UniRef90-D9DBX2 UniRef90-B8AKP9 UniRef90 F4R6P6 UniRef90-K7KZB2 UniRef90_UPI0002B40FAD UniRef90 G9Y979 UniRef90-B4J7D2 UniRef90_W5V1A7 UniRef90-10Z8M1 UniRef90-UPI00026588B8 UniRef90-F7CFD3 UniRef90-U6IF00 UniRef90 R7Z706 UniRef90 ${ }^{-}$A41858 UniRef90_Q7EYH7 UniRef90_U31922 UniRef90 KOIVT1 UniRef90-G3U7R9 UniRef90_UPIO00328A61A UniRef90 M2W285 UniRef90-S7PKF6 UniRef90_G2SZE7 UniRef90-LODFD7 UniRef90 14YB69 UniRef90-W6LBZ7 UniRef90-D8RS08 UniRef90_Q95V87 UniRef90- Q6FWH4 UniRef90_UPI0003D7818C UniRef90-A0A016TR37 UniRef90 K7KAK5 UniRef90- G9N6L5 UniRef90-UPIO0034847C2 UniRef90_Q6DW15 UniRef90 UPI0003EBD562 UniRef90-F4RH44 UniRef90_UPI0004623A32 UniRef90 A0A034UZQ9 UniRef90_UPI0003AD5F0E UniRef90-V6KD91 UniRef90 IOZAA7 UniRef90 UPI00035CEBFE UniRef90_Q0UTV4 UniRef90-Q9LKJ6 UniRef90 Q0TZS2 UniRef90-14F4L4 UniRef90_ROIPZ4 UniRef90_L2GKI2 UniRef90_J3N425 UniRef90-M2S6A5 UniRef90-E2A168 UniRef90-X6NN93 UniRef90 F9FHA3 UniRef90-K4BWY2 UniRef90_UPIO003F5EA5D UniRef90 UPIO002B4AAA6 UniRef90-UPI000344B62F UniRef90-R9P3F8 UniRef90-V7AGX1 UniRef90 ${ }^{-}$M1A5P5 UniRef90-F4XUW7 UniRef90 S3UJ15 UniRef90 K9SZ74 UniRef90-C7ZFW8 UniRef90-A6W6Q6 UniRef90 F214J8 UniRef90-W2C1L9 UniRef90-A9NLE6 UniRef90-H2B1Y7 UniRef90 R1C7U1 UniRef90_S9WYF6 UniRef90 Q8K3W1

GASMNPARCFGAFVGSRFVGWHWDHWVAD ISAGMVHGLFY
ARDWAPRFAYTVLPVPNNWSYAWVPFCGPMVGAFAAAGLY
F RSIVPS I L HGKLN HVWPYVIGPVLGSFLAS IFY
ARSLGAAV $\quad$ FNKDKGWDDH
ARDLGPRIMILLCGWG
ARSLGPAVV
ARSLGAAU $\quad \square$ YNRDHAWDDH
ARSFGPALAMG YWDNQWLYWAAPLSGGLAAVACC
ARDLGPRILHQLLPLKYKGTSNW
AVSFGSAVVSQVWDAHY
ARWMGPALL VGGAAWNYHWVLWLGDCLGGLVFVVFY ARDFGPRLFAFFAGWG
$\square M H F G P N D F A G N F T \quad P A \square G S T \square G G \square F G A \square T Y$



ARTLGPA V VAGNY
ARSFGPALASAN
ARD IGPRLVTWAAGGSEVW

 ARDFGPKVFAYLAGWGEV
GKLLIPTLFKGN
A RDLGPR G I Y F
$A R D L G P R F F T L L V G Y G T F E F H H G L F W V V P H F G G L L G T H L Y$ TRDLGPRLFTAVAGWG
TRSLAAAADQNNY DR $\square W \square Y$ FAGPF $\square G S \square V A C F F Y$
MRDFATRLVALIAG
A A ASGLQVAMCLAG
ARTLGPAI ATGRY
ARDFGPCLETA $\square$ DGWG
AVSFGPAVVSWT
T Q $\square \mathrm{WVYY} \mathrm{Y} \mathrm{L}$ A T P $\square \mathrm{GA} \mathrm{A}$ A G E GF Y
ARDIPPRFFTFDAGWG
ARSFGPAVVM
SRDLGARI AGAMIGFGHL
ARDLGPRIFTYVAGWGP
ARDLGPRLAHAVLP
ARDLGPRLASAVFGWGPA
ARDFGPRLMAWMGYGNEVWSFF
ARDLGPRIAASS LIIFGS
VRTLGPA AANNY
ARTFGASVINNDWEDH
ARSFGAALAA
$A R C \square G P A D V R \quad G G H \square W D R H W V F W A G P A \square A C V A F A \square Y T$ ARDFGPRLFTLCAGYGW
ARS $\square$ GPAL $\square \mathrm{KHVY}$
ARCFGAMV GSHFAPYHWDYWVAPDSASADHGMVY
$A R S F G P A L V G G \square \quad W Q H H W V Y W V A P G L G S Q F A V K V Y$
AVSFGPALVSWN
ARAFGPAVVA
ARAFGPAVITGFG
ARSFGPAVVTGFPYDSH

ARDLGPRLAQY LTGYGGAWRDQY
ARDFGPRLFTYAAGWN
ARSFGAAAVSGSWDN
ARDLGPRIAHA I L P
ARSFGPCVVVGFPTYH
AVSFGPAVVSWSWSNH
ARDLGPRLVGLWAGYDSAF
ARDLGPRLLSFVTGYGGAWRDQ
GLIFAPNLLGNTWN SDAWEYYVGEFTGGLLGALIQ
VRTLGPAVAAGNY
ARSFGPAVVVGFTGYH
ARSLGSAVVMGAF
A $V W V G T V C S A S A A A N N K H Q Y H F Y D F W \square A E Y A G G A F A G L L F$
GPSFNPARCMGVFVGSRFPSWHWIHWAADGDAC【IHGUCY ARS $\quad$ GPAAVMHHY
ARDWGPRUAHALLP

ARSTAPALFAG
ARD LGGPR MLS SVGYSNA WY W $\square$ WT P V $\square$ ATCSGA $\square M G C \square 1 Y$
AVSFGPAVVSG
ARSLGPA』VTGHY
ARSLG
ARDLGPR LAAHF I LP $\square P N K G P S G W$
A R SLG G A MVA Q
$G A G L N P A R C M G A F V G T R F P T W H W I H W V G D G U A C I I H G L V Y$
ARDFGPRVASWLTGYSTA
ARDLGPR\|AHA!LP $\square$ RHKGD
ARS
ARSFGPAVVSGDF
ARDMGPRLALYAYGFHH $\square W Q T H$
TRSFGPAVVS DTWDDH
$A R D L G P R L F T A L A G W G F$

## UniRef90 K4B8G7

UniRef90 Q8K3W1

UniRef90_D2Q4E4 UniRef90_17AF61 UniRef90_F4Q0P2 UniRef90_B5V3R6 UniRef90_N1QBQ6 UniRef90_F9G6J3 UniRef90_A5DRM1 UniRef90_UPI000373E947 UniRef90 ${ }^{-}$D8GTH2 UniRef90_UPI0002897C38 UniRef90_A0A010R5P6 UniRef90 D6TTL4 UniRef90_Q2VCK9 UniRef90_B8DSJ9 UniRef90_M3CZ95 UniRef90-M7Z3M8 UniRef90-D0NBX6 UniRef90_L5KC84 UniRef90 Q4YH73 UniRef90_K4E2P4 UniRef90_G5CTF9 UniRef90_W9XKQ4 UniRef90_L8HCR2 UniRef90-X0Q2M5 UniRef90_K3UY17 UniRef90-Q866X8 UniRef90_B4LJK9 UniRef90_K3ZW37 UniRef90-UPI00046B296D UniRef90_U5MPW7 UniRef90_Q9XG82 UniRef90_G7KPP6 UniRef90 F2AEA1 UniRef90-A0A059C5S8 UniRef90_D9WDS4 UniRef90_A1RF31 UniRef90 UPI000419F44E UniRef90_W2SL84 UniRef90_A9SLH5 UniRef90 B3MFH8 UniRef90_Q9ZV07 UniRef90_V6IYR8 UniRef90_F8NVN4 UniRef90_UPI0003B4C0F7 UniRef90_UPI0002891C81 UniRef90 UPI0002B45BFD UniRef90 UPI000360B59D UniRef90-T1FZA3 UniRef90_Q40265 UniRef90 UPI000219692E UniRef90_UPI00035F7C1C UniRef90_G3SPT4 UniRef90-UPI00040371B9 UniRef90 A0A016TA58 UniRef90_V5RDM0 UniRef90_L7WS31 UniRef90_Q5FP71 UniRef90_L1JUP7 UniRef90_G8WE25 UniRef90-Q9FPZ UniRef90_Q9U8P7 UniRef90_A4HCIO UniRef90_LOML59 UniRef90_D0NA91 UniRef90_D1M6Z5 UniRef90 ${ }^{-}$W6Y888 UniRef90_UPI0003C19E41 UniRef90_UPI0001586639 UniRef90 UPI0002B4C912 UniRef90_G6CKG3 UniRef90_E3FIN8 UniRef90_G9NBR1 UniRef90 P0CD89 UniRef90-W4KBM8 UniRef90-W9VZ02 UniRef90_W9SMA4 UniRef90_Q5FJ63 UniRef90_E6K248 UniRef90_A0A017HDY9 UniRef90 A3AVM4 UniRef90_Q41610 UniRef90_D8QIP9 UniRef90_B7FRM9 UniRef90_UPI00031EA0D1 UniRef90_J4KLA3 UniRef90_V6AQY7 UniRef90 I3T6P9 UniRef90_Q70AP8
UniRef90_Q7Z137

VTWTVKYDTEFLGTAILIILGNGAVANVELKGTKGHASG S L IVVKLI CEMLLGTAILVLVGNGAVANVELK GTKGY HNG SLLSGQCIAA F L G T A L L I FF G T GCVVA A L K V A GA S F G L WE

S F Y R A G DA E F M A T F LLS LY DT ILTTVM G L K R S D S LDC S S VG
 $L$ Q R P L A E WL G S TVVFIVFIGVS SVIT SNYQT GTMQSMY MAEFLGTFILMF IQVSSI IMDEQHHGVVGLMG

 $K$ FIC E GI G S FVV FVMTVSLAEMNCGIT SINGKDRT
 LDWSEFLGTFL MVVVGCG■GVRGATKEVNSMAFA
$\square D \square W K$ A A M $\square E G \square G T L L S V F \quad V T \square W$ G S S S P D V I P A Q P E L I I K L LCEF LAS F F VQF $\square$ G C T LT E E T VLGG $\square \mathrm{S} \square \mathrm{P}$ T T G S

FMSEF LGGSMLLI LLGCGVCANVALKKSNGNGGG
1 R A A LA E F FS TLI FVVFAGEGSVMA YAK LT G GDS TTP
 $K K Y V C E F F G T F T L V V G G C G T V L Y M R Q E V G L L G V A L$ $F \square Q K L I A E V F G T Y F L I F A G C G S V A V N L D N E K V V T L P G$
$T L K Q E C L A E F L G T G L F L F L G \square S C D A A M K L A A A S F G L W E$
 F S T Q LI A EVISSTF I LVFMGC GA A MVNVISNGKDTPVG $R \bigvee L S E F C A T T L L M L L G C M G D A V N K A N G G S F W N$


$T \square M T K C L F E F D G T L V L V L L G D G V V A S T V L K R S K G Y G G G$ VMDNFREFLAE LGGGTFVLLVMFG $\square G G I A Q T V L G K G K F G G G L$

RFAAEFFGTLILVLFGNGAVANSFLKDTTGNGEN $F$ VQPC V VELLGSALFDF IGCLSVIQNQSDTGS $F L A E M \perp G T M Q L I Y L G D G V V A N V V L K K T K G N N G G$

A Y L A E F LG TA L L I L F G G G VCANVN LKR SAGNNA D
FA A EF IG S F LFQF LG G SAA SNAVDA GLTT A A L S LK A Q C T A E F $\underset{D}{ } L$ R DLLLRGTLSEFVAMTLFVFFGCGAAASNAHFSDGDWDPA




$$
\text { A F } \square \text { GE F } \square \text { G T F M F } \square \mathrm{S} ~ L A \text { F T G T Q } \square \mathrm{A} \square \mathrm{~L} \text { A A G S K E } \square \mathrm{S} \text { G }
$$

## $V G L L R R L V A E A L G C G L L V V A L E G A H H A A E H L G A S A T E G R$   EFAGTTVFLLIGGGG\|QASTSETDASANTS 

$L I R D S L V E F L A T T V F V Y A G T L S A L S T G R T L V G Q G G S E$
FLGELLGTEILIVLGAGVCCGVNLNKTYGKNNS



UniRef90 D2Q4E4 UniRef90-I7AF61 UniRef90-F4Q0P2 UniRef90-N1QBQ6 UniRef90-F9G6J3 UniRef90-A5DRM1 UniRef90_UPI000373E947 UniRef90-D8GTH2 UniRef90_UPI0002897C38 UniRef90-A0A010R5P6
UniRef90 D6TTL4 UniRef90-Q2VCK9 UniRef90-B8DSJ9 UniRef90- M7Z3M8 UniRef90-DONBX6 UniRef90_L5KC84 UniRef90 Q4YH73 UniRef90-K4E2P4 UniRef90_G5CTF9 UniRef90 ${ }^{-}$L8HCR2 UniRef90-X0Q2M5 UniRef90-K3UY17 UniRef90 Q866X8 UniRef90-B4LJK9 UniRef90-K3ZW37 UniRef90_UPI00046B296D UniRef90_U5MPW7 UniRef90_Q9XG82 UniRef90_G7KPP6 UniRef90-A0A059C5S8 UniRef90_AOAO59C.
UniRef90_D9WDS4 UniRef90 A1RF31 UniRef90 UPI000419F44E UniRef90-W2SL84 UniRef90-A9SLL5 UniRef90 B3MFH8 UniRef90_Q9ZV07 UniRef90_V6IYR8 UniRef90_F8NVN4 UniRef90-C3LW11 UniRef90_UPI0002891C81 UniRef90 UPI0002B45BFD UniRef90-UPI000360B59D UniRef90-T1FZA3 UniRef90_Q40265 UniRef90 UPI000219692E UniRef90-UPI00035F7C1C UniRef90-G3SPT4 UniRef90_UPI00040371B9 UniRef90 A0A016TA58 UniRef90-V5RDM0 UniRef90-L7WS31 UniRet90_Q5FP71 UniRef90-L1JUP7 UniRef90-G8WE25 UniRef90_R1FET8 UniRef90_Q9FPZ6 UniRef90_Q9U8P7 UniRef90-A4HCIO UniRet90_LOML59 UniRef90_D0NA91 UniRef90_D1M6Z5 UniRef90 W6 Y888 UniRef90-UPI0003C19E41 UniRef90_UPI0001586639 UniRef90 UPI0002B4C912 UniRef90-G6CKG3 UniRef90-E3FIN8 UniRef90-P0CD89 UniRef90-W4KBM8 UniRef90-W9VZ02 UniRef90-W9SMA4 UniRef90 Q5FJ63 UniRef90-E6K248 UniRef90_A0A017HDY9 UniRef90 A3AVM4 UniRef90 Q41610 UniRef90-D8QIP9 UniRef90 B7FRM9 UniRef90 UPI00031EA0D1 UniRef90-J4KLA3 UniRef90-V6AQY7 UniRef90-13T6P9 UniRef90_Q70AP8 UniRef90-Q7Z137
$\square S T G F A A V A L!Y S F A D \| S G A H F N P A V T F A T C V T R K T S I T K$ $A \backslash T G G L V V \frac{A L L}{L} Y$ A WA WGF S TMIG $\|$ Y $\square$ S

WLTIATGYGMGV
WLI I AVGGYGDGV
ISII WGMGV
ENAGDF $\square Q C R \square A W A A G V$
M I P ALMFGNNVSGGN
VGNH MIPALMF GPI S GSH $S M A Y Y V T A G V S G A H$

ПQGVAWAFGGMI FALVYCTAGПSGGH WLNI AMGYGF GVV MF WC WGFAVMLS $\square Y \square A G G G S G A F L N P A L T L M L S V F R G F$ $\square$ IVSVGLAV MVLVFSII HISGCH
$\square A F G \square A T G$
$\square$ NMA WG $\square G V L M G V Y C S E G V S G A H$
TLAQALGPVSGGH
पAEGFMLCVLVLSALS LCIGWGLGVFFG R N L A P AAFGSGLAVTMA LVI ITIVEAFVP

## 

TRQLGNFDNAAF $\square G P L V G G \| I N V I L I T L F T T C F G A V S G A H$ GHFGG\|ITINTGFSMAVGMAIXVSAGVSGGH FPY AMSWGGSVLAATQAFRDVSGAH $P \|$ LGAH
WIVITTGWALAV A DPALDFGNYSGAH
 AF GTTVVAMAYT $\square S M V W G L A V M V L V Y \quad S V G H I S G A H$

TClVWGLSV $I G L T W G F A V$
$\square S \square S F G L V V$

ALGVYLTAGISGGH $\square N T W \square Q V N \nabla G W G M A \square A F S V Y A C S K T S G G H$ $S \square H Y G \square A V M I M M H V F G F V S G A H$
WM 1 IAVGYGFGD

M $\square$ PVMMF GPDSGH
 HVLY SVWGF GVS A Y CTA GVS GA H WVVITMAWGFGLV
$\begin{array}{rl}M C G V L I A & G P W S G A H \\ G L Y W S A G I S \\ G & G H\end{array}$ SINFGWGDGDMM SGGH
GQANGGW $\square$ F $\square$ A $V$
GYGDGVMDPAMMFGS $\square \mathrm{S}$ GNH
WMVIT T GWAFAV


W VIATGWGLAVAMGAFAVGKF
T A G $\square \mathrm{S}$ G G H
S G A H

GNGAA $\square$ A
$\square \mathrm{ClI} \mathrm{WG} \mathrm{L}$ G 1
SVTV DALGFGLA
$L L G G L I Q G M A$
$F M S \boxed{L} V$ F F GY $\square S G G$
ISVI WGFGV

$S G D P \square P D V A K L L Y \square A F A F G A S \square A \square N V A \square F A D \square S G G K$
I 1 N
H T S GA H
A $\square \mathrm{GFG} \mathrm{G}$ VVLFNDASFGHISGAH

$W L Y V T D A W G M A V T F G V Y V A A N F G$ WLNVSLGFGVAI LGNTLPTGAI L
 VVLITCLGPISGAH AG VAAA DAHAFLG $\square$ S G A WAFGGMIFVVYGGVSGGH DVARリLP $\square$ AMSFG $\square \quad Y \square$ SAAFG $\square \mathrm{S}$ TWLLI NLGWGMGVTMGVYVAGH VVPSLIGSAIVLFLL
EAFAPFVAV
$\square A \| V W G L T V M V L I Y$ $S$ LAVY LTS GUS G G H TVAVYATAHTSGGH FILVYCTAGISGGH $\square A A L I W A V S G V S G C N$

AMA $\triangle Y \square T A G \square S G A H$ AI TVGGGVSGAH $F \operatorname{VAVAVGANLSGGH}$ G G H N SAH

H
$P L F I F T L G P V S G G G H$
 SVGHIS GAH

VY SMAG $\square$ G GAH
$\mathrm{H} \square \mathrm{A} W \mathrm{~W} \square \mathrm{GF}$ MFAVY

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UniRef90_A9SLH5 UniRef90_B3MFH8 UniRef90_Q9ZV07 UniRef90_V6IYR8
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UniRef90-V6AQY7 UniRef90_V6AQY7 UniRef90_13T6P9
UniRef90_Q70AP8
UniRef90-Q7Z137

 $G L M Y$ G GAQLV GAVLAAALILLLATFPGDDFNGANDANVANA F
 L N P A I T L M L W W Y R G FP K R K V P E Y V L A Q L L A A F L A A L V A Y G



 I N P A V T F G L F L A R K L S L T R R A V F Y I V M Q C L G A I C G A GVV K G
 $\square N P A V S D A M G V F G H L P P A H L V P Y D A A Q V L G S T A A S F A G N A$
 $L N L A V T V G L S T I K K F N Y K Q D P L Y F A G Q L L G A L S A T A S V Y G$ F N P A V T F S A M L I R A MRELE EAVA Y WDA QVVI G GVVLGA LIF GI V
 F NPVVSLVMFLSGVTCLSLLVLVTLVQCFAATVASYL MLL





$-\lrcorner$
L









 LNPAISLAQCVLGNHPMWKVFMYSIAQLLGAYLGTAVSYF
 LNPAVSTAMIGEDDMSDPKWGDYVSMQLFGADMGAVFLRY LNPAVTVALWLFACFPGRKVFPYLVSQVAGAFGGAVLAYVV I NPAVTFGLFLARKVSLIRAVLYMVAQCLGA CGVGFVKA L NPAVThANLLSGRVGLIDSLYYVAAQVLGCIAGAGILYG NPMVTISVWLATSTGQGHATFSMRRLIMYVVAQMVGGM|V LNPAVTTTLALGKLLPWKKVPFYLLNQVVAAYVAALFVYGI VNPAVTFGAFVGGNITEFRGLLYMMGLYUGAQLLGSTAA



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UniRef90-V6AQY7 UniRef90_V6AQY7 UniRef90_Q70AP8
UniRef90_Q7Z137

 SP $\quad$ GYKK T L N I R PA P S S F G G D N L N V F F T E F F L T A I F V H I
 LYFA G $\square Q N Y N G F V T S R R F T F D D T A T A F F N E F L G I A F L G C T$










 LLP ETEKMNCTTVQEAWHNPMGDWKAI CMEADMT GVLI YVV
 VYY D GENATAH $\square F$ ATYPAPYLSLVNAFAEQVAATMFLLIV
 $L I T T S S S S E N S D G R N D L A H G V N S G Q G L G D E I I G T L Q L V L C$

 $N K V G G Y D D T M E G F A$ Q T G W WV V Y G WR A A F L















 ATHGDARSGS LGSNGLQNASVNHHNAVAFEFVGTLVPHAT


$\frac{R}{L}$
$\frac{L}{C}$
$\frac{L}{L}$

## L <br> L L L V

$\qquad$ FHPTMMSGGVT
$V S P \square N L I E E C \quad \square C M T T P H P N H A D Y Q A$
MCHEP L L LTAREPAAS DA Q

LT P GP L S V N T T L A Q
L Y G S N M S I A GPAFWTAPRP
GCS R S R G

VF D P F M S G G VTV

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

 $V$ I GTE GNDGANAPNYSFPDPMIFGDEVLA MFNGKD DHFVG
$T$ L P A G S D L Q A F L $\frac{A}{1} E$
S T GGLETSAFA $\square$
GHHDDLWK T A GlL F T T F P P D H M S V W G S L L D Q I I G T A M|L S GL

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UniRef90-G5CTF9 UniRef90-W9XKQ4 UniRef90_L8HCR2 UniRef90-X0Q2M5
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UniRef90_A9SLH5 UniRef90_B3MFH8 UniRef90_Q9ZV07 UniRef90-V6IYR8
UniRef90 F8NVN4 UniRef90_C3LW11 UniRef90_UPI0003B4C0F7 UniRef90_UPI0002891C81 UniRef90_UPI000360B59D UniRef90_T1FZA3 UniRef90_Q40265 UniRef90_UPI000219692E UniRef90_UPI00035F7C1C UniRef90_G3SPT4 UniRef90_UPI00040371B9 UniRef90_A0A016TA58 UniRef90-V5RDM0 UniRef90_L7WS31 UniRef90_Q5FP71 UniRef90_L1JUP7 UniRef90_G8WE25 UniRef90_R1FET8 UniRef90_Q9FPZ6
UniRef90_Q9U8P7 UniRef90_A4HCIO UniRef90_LOML59 UniRef90_D0NA91 UniRef90-D1M6Z5 UniRef90_W6Y888 UniRef90_UPI0003C19E41 UniRef90_UPI0001586639 UniRef90_G6CKG3 UniRef90_E3FIN8 UniRef90_G9NBR1 UniRef90_P0CD89 UniRef90_W4KBM8
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UniRef90 Q7Z137


VF S
$A L C C L E L Q W G R Q N Y A S D V V G F D V W G V V C M G G P T G P G L N P$ $\square$ MALGDSSHNSPPGMHAFIIGLLTTAVTMSLGYSTGGCFNP DPHAVIVS ILLLVVAVSS QTVI YLRRLKTDSRPSTGASMNP MYA DT DQRNRSPV GTP FAFALMLMALGMSF GMNTGYAMNP VFSSTDSRRTSPVGSP
I LSVVTDENDC GKFHVSS IVGLDA I I C $\square G \square S F G G N T G F A L N P$ $V$ L HVA Y S R QRNSHYY GLAI GMCLLTARYSVGSVSGGAFNP





















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| UniRef90_D2Q4E4 |  |
| :---: | :---: |
| UniRef90-17AF61 UniRef90-F4Q0P2 | $\begin{aligned} & \mathrm{V} F \underset{\mathrm{~K}}{\mathrm{~K}} \mathrm{~F} \end{aligned}$ |
| UniRef90- ${ }^{\text {B5V3R6 }}$ |  |
| UniRef90- 1 1QBQ6 |  |
| UniRef90-F9G6J3 | Y F ${ }^{\text {l }}$ |
| UniRef90-A5DRM1 |  |
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conf
sol25
sol5
sol0
jhmm
jpssm
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lupas_21 lupas_14
lupas_28 jnet conf
sol25 sol5 sol0
jhmm



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lupas 21
lupas_14
lupas_28
jnet
conf
col25
s
sol
jpssm
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lupas_21
lupas_14
lupas_28
jnet
conf
sol 25
sol5
sol0
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jpssm


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lupas_14 lupas_28
jnet conf sol25
sol5 solo
solo
jhmm
jpssm

