## QUERY <br> UniRef90_W5N5Q1 UniRef90 U5NFK4 <br> UniRef90-O13157 UniRef90_H2LJW6 UniRef90_W5NCJ7 UniRef90_V9KRA2 UniRef90- H3A7K2 UniRef90_B0S6A6 UniRef90_F6UWM6 UniRef90_UPI000298BB99 UniRef90_G3P8U8 UniRef90_W5MTL4 UniRef90_UPI0002A4A3D1 UniRef90 S9Y3X8 UniRef90_UPI0003C104DD <br> 1 E E E E D E E E E D E E E E E

 UniRef90-UPI000443B062 UniRef90-UPI0003940DF7 UniRef90_UPI0003D077EF UniRef90_W5LY95 UniRef90_UPIO003B35582 UniRef90-UPIO004574722 UniRef90 UPIO004440060 UniRef90_UPI0003EC5E84 UniRef90_E7F4G1UniRef90 ${ }^{-F 1 Q 631}$
UniRef90_UPI0003289A9E UniRef90_UPI00042BBB40 UniRef90_UPI0003835059 UniRef90_E7F0C7
UniRef90-L5L6H5
UniRef90-UPIOOO443450F UniRef90-UPI0003C8D686 UniRef90-G3NAW8 UniRef90-A8WGX8 UniRef90-H3BD81 UniRef90-UPIo0035015FA UniRef90-M4ANS4 UniRef90-13JCC7 UniRef90-UPI0003331171 UniRef90-U3KE19 UniRef90-G1U2S3 UniRef90-M4AJM8 UniRef90-UPI0001DE7877 UniRef90-UPIo003318D75 UniRef90-M1 UZC9 UniRef90-UPIO00442071D UniRef90_UPIO004422FB2 UniRef90_UPI000441D80D UniRef90-F6UHU6 UniRef90-UPIOOO20E4793 UniRef90-UPIOOO3F17433 UniRef90-UPIO003DOCA32 UniRef90-H3CXE7 UniRef90-H3DE74 UniRef90-G3PZV7 UniRef90-G1KFX7 UniRef90-UP10003C82C77 UniRef90-UP10003EDCC2B UniRef90-G5BA41 UniRef90-S4RQV9 UniRef90-UPIO003EC66A1 UniRef90-UPIO00332F82F UniRef90-UPIO0042C6D37 UniRef90-F7CXX6 UniRef90-UPIO003338EA8 UniRef90_UPIOOO3C03219 UniRef90-F7CQF9 UniRef90 G3P8U3 UniRef90_UPIOOO328E4E6 UniRef90-H2SOJ5 UniRef90_UPI000273C3B1 UniRef90-UPIO0046BCE71 UniRef90-G1TIR0 UniRef90-HOV852 UniRef90-F7E9R3 UniRef90-L9JOW2
UniRef90 ETFDZ3 UniRef90 UPIOOO42BC926 UniRef90_UPI0003F182D9 UniRef90_UPIO002990BB6 UniRef90-UPIO0046B2BB7 UniRef90-UPI0003C8548E UniRef90_L8YEK4
UniRef90-G1T3U4 UniRef90-UPIOOO3337B1C UniRef90- F7E9S5 UniRef90_UPIOOO3D77608 UniRef90_Q9GZZ7 UniRef90-UPI00032B21D4 UniRef90_UPIO003444C33 E

KPNCLSLWHACVQDNTCKSRLADFQHNCQPADVSPDGCP EKPNCLTQLRSCKADYVCRSRWAQFQYDCQPSPQSTKGCK EKPNCLELRRVCRADALCRSRLADYDANCWTAPNTVGTCP EKQNCLSLQEACNKDVVCRSRLADFQTSCQPSKKSVSFCF
 $K R P S V L H M R H G \Pi R V H F T G R S R L A D F F V N C Q P E P R S L S G C L$
$Q P N C L H L E S Y C L K D N L C R S R L A D F Q Q N C Q P S S L S P G C L$ RPPVSGLELGCR PAARSRLADFHANCRASYQTLTSCP KPNCLLLLDSCTKDHOCKSRLADFQQNCQPAGDSPDGCS DKPSCLSQMRTCKADYVCRSRLAQFQYDCQPDEQSATGCT EKPNCLDLRSVCRTDHLCRSRLADFHANCRASYQTLTSCP
 EKPNCLD $\quad$ RGVCRTDHLCRATETE $\square H A D C R C G G G C C G T C K$ MVINCWVSPHTVSTCP RHNCLQQQS $\square C R Q D D G C S R L A D F L N N C H P S P L K A S G C L$ RSRLAEFQAACRPSLLTSSGCV RNRCVDAAEACTADARCQPRLLAFQASCAPAPSAPDGCP ERPCLDLHALSCTDHLCQSRLANFHANCRASSRTLTCCP EKPNCLNLQESCKTNYLCRRELADFUHCHPRDSDGFCA

CFNLNVSCQSEEACRGNEQSGFANGLASYQTLTSCP RNRCLDAAEACTADARCQRLRTEYVAQCHCGDPGAGGAL ASCAPVPSTPDGCP RNRCLDAAEACTADARCQRLRTEYVAQCLGRAAGVGTAD MSTKGAAQVKAAARSRLADFQTHCHPDD ILGTCA EPPSCLVP पDTCEQSRVCRSTTAHALPRVQAPPPGDPGLL EKPNCLNLQESCKTNYICRTSDTDПMLGKKSETRAVTCCT PPSCLEPGNFCERSRVCRCARAAAPPACAPAPPPGRSRCP PPSCLAPLDACEHSR】CRSRRGTAAPPPQRPRRLPAGX

## QUERY

## UniRef90_W5N5Q1

 UniRef90-USNFK4 UniRef90- H2LJW6 UniRef90-W5NCJ7 UniRef90-V9KRA2 UniRef90-H3A7K2 UniRef90-BOS6A6 UniRef90-F6UWM6 UniRef90-UPI000298BB99 UniRef90-G3P8U8 UniRef90-W5MTL4 UniRef90-UPI0002A4A3D1 UniRef90_S9Y3X8 UniRef90-UPIOO03C104DD UniRef90-UPIOOO443B062 UniRef90-UPI0003D077EF UniRef90-W5LY95 UniRef90-UPI0003B35582 UniRef90-UPIOOO4574722 UniRef90_UPIOOO4440060 UniRef9O-UPIOOO3EC5E84 UniRef90-E7F4G1UniRef90-F1Q631 UniRef90-UPIO003289A9E UniRef90 UPIOOOO2BBB40 UniRef90-UPI0003835059 UniRef90-E7FOC7 UniRef90-L5L6H5 UniRef90-UPIOOO443450F UniRef90_UPI0003C8D686 UniRef90_G3NAW8 UniRef90-A8WGX8 UniRef90-H3BD81 UniRef90 UPIoo035015FA UniRef90 M4ANS4 UniRef90-13JCC7 UniRef90_UPIO003331171 UniRef90-U3KE19 UniRef90-G1U2S3 UniRef90-M4AJM8 UniRef90-UPI0001DE7877 UniRef90 OPIOOO3318D75
UniRef90 M1UZC9 UniRef90_UPIO00442071D UniRef90-UPIOOO4422FB2 UniRef9O-UPIO00441D80D UniRef90-F6UHU6 UniRef90_UPIOOO20E4793 UniRef90_UP10003F17433
UniRef90_UPIO003DOCA32 UniRef90-H3CXE7 UniRef90-H3DE74 UniRef90-G3PZV7 UniRef90-G1KFX7 UniRef90_UP10003C82C77 UniRef90-UP10003EDCC2B UniRef90-G5BA41

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UniRef90 E7FDZ3 UniRef90-UPI00042BC926 UniRef90_UP10003F182D9 UniRef90_UPIOOO2990BB6
UniRef90 UPIOOO46B2BB7 UniRef90-UPI0003C8548E UniRef90_L8YEK4 UniRef90-G1T3U4 UniRef90_UPIOOO3337B1C UniRef90-F7E9S5 UniRef90-UPI0003D77608 UniRef90-Q9GZZ7 UniRef90-UPIOOO32B21D4 4 UniRef90_OPIOOO3444C33
UniRef90_UPIOOO2745523 ,

K ENY A DCLLA Y S GLI K ENY A D C L L S Y S GLI R Q N Y A A CLL LA Y S GL I GDNYQACLGSYTGLI TENYADCLLAYSRLI NDNCQACLASYAGLI KENYAECLLSYTGMI KEDYAACLHSYTGMI NDDYQACLASYTRLI


K E N Y A D C L L A Y S G L N D N Y Q A C L S S Y S G L $\begin{array}{llllllll}K & D & S & G & L & C \\ G & D & N & \text { F } & A & C & A & Y \\ L & A & Y & A & G & L & l\end{array}$ | $Q$ | $T$ | $H$ | $A$ | $C$ |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $Q$ | $Q$ | $A$ | $Y$ | $L$ | $G$ | $M$ |
| $Q$ | $Y$ | $G$ | $C$ | $L$ | $L$ | $Y$ |
|  | $G$ | $L$ |  |  |  |  | Q D N H Q A C L N S LAA R L

 $Y D N Y$ I G C L M S Y V G L $\begin{array}{lllllllllll}K & E & N & Y & A & D & C & L & L & A & Y \\ S & G & L & I \\ R & D & S & G & A & V & C & L & K & A & Y \\ A & G & L\end{array}$ $\begin{array}{lllllllll}R & D & G & A & V & C & K & A & Y \\ A & G & L & I \\ Q & E & N & G A & C & I & A & Y & T \\ G & L & \end{array}$

 Q GNYAA C L $\quad$ A A Y T G M I
$\begin{array}{llllll}A & D & N & Y & Q & A \\ C & C & S & Y & A & G \\ R & M & D & S & P & C \\ R & A & Y & T & G & I\end{array}$
$\begin{array}{llllll}H & N & N & Y & H & G \\ R & C & M & S & Y & V \\ R & L & L & I \\ G & A & A & C \\ G & A & Y & S & G L & 1\end{array}$
EENRAACLMSYTGLI
$R D R G P R C L R A Y A G L L M$
$E G N Y G A C L L A Y Y G L I$
 K D RDSYAACLLAYTGLI
GDSYAQACGGSYYGMI
K ENYADCLLAYSGLI

KEN Y A DCLLS Y S GLL
KENYAACLLAYTGI
$R D N Y Q A C L G G Y T G L$
$P Q S Y A A C L Q A Y M K M$
KENYADCLLAYSGLI
PEQATSCRRAYASLV

QGNYGACLLLAYTGL
RHNHAACLEAYMGM
R

## T

T

ERHSGRCLKA Y M M GL
$\begin{array}{lllll}T & E & Q & S & R \\ R & C & L & R & A \\ R & Y & T & G & L \\ R & S & C \\ R & A & Y & A & G \\ L & V\end{array}$

$K$ D S V A L C L R A Y A G L
HEDSP GCLLWA Y T GIVVGTPPITTP NYA P WC S C
$\begin{array}{llllllllllll}Q & D & Q & S & R & C \\ G & D & Y & Q & A & C & \text { R } & Y & A & G & L & V \\ G & S & Y & T & G & M & V \\ T & E & F & R & C & R & S & Y & L & G & L & l\end{array}$
TK S Y A LC F I LE Y S F P
$\begin{array}{lllllllllll}\text { A } & D & N & Y & Q & A & C & L & G & S & Y \\ A & G & M \\ K & A & T & V & K & T & C & L & F & S & S \\ S & L & L & I\end{array}$
K A TVVK T
P G MPA P
$R D Q A P R C L R A Y A$ G $\quad$ A VGG A V T P
$T P N Y V D N A S A$
R D Q GRSCLRAAYASLVGTAVTPNYAPWCDC GA S

Q D Q R P R C L HA FA GLVVGTA VTP N YA P WCNCGA S G N R Q E E C E

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





EKPNCLDLR ${ }^{10}$ G CRADHLCRSRLADYHTNCQATFQSLLTSC ${ }^{20}$
EKPNCLDLRGACRADHLCRSRLADYHTNCQATFQSLTTSCP
$N R C D D A A E A C T A D A Q C Q Q L R S E Y \nabla A R C R P A P G D R S T A \frac{V}{M}$
PPSC $\square G P \square D A C E H S R \square C R P R \square L A F Q V S C A T T A S N D D G C A$
RPNGYAA GTAG
PPSCHAVAEMCRQDDDCRSRDEVFEQSCAVDSVTKKCAG
QPTCLSLAKNCRENKECRSRDEYYEQSCADDSVTKKCAG
PTCLDVIHSCQDDELCRRRYRTFQAKCWQHAMCDGTLS
PPTCLNVIRSCRNDELCRRRYRTFQSKCWQDETCI STGG
PPTCLNVIHSCRNDELCRRRYRTFQSKCWPRDLTCSGSD
NRCVDAAEACTADARCQRLRSEYVAQCLGRA AQGGCP
EMPTCHSLAESCKENRSCRLSLEHYEQSCAVDSVTKK CA
QPTCLHLAEVCKENSACRTKLENYEQACAVDSVTRKCA
PPSCLNVIHSCRNDELCRRHYRAFQSTCWHDETCDSTLDN
PPACHMVADLCKEDRECRSKLEFFEQACSVDSVTKKCAG
EM

$$
\begin{aligned}
& \text { PTCHSLAHSCCMDDPLCRGGGLENYVQACAVDAVTKQCAG}
\end{aligned}
$$

PPTCLHVI HSCRRHDELCRRRYQTF LDSKCWQ
PPTCLSVI HTCRNDELLCRTHYRTFQTECW
PPTCLSVI HTCRNDELCRAHYRTFQSECWPRPHITGKCH
$\begin{aligned} & \text { SK } \\ & \text { S K } \\ & \text { S K }\end{aligned}$
R
lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm

UniRef90_UPI000359371C
UniRef90_S7N9Q3
UniRef90_UPI00042AB91D
UniRef90_G3GUW9
UniRef90_UPI00027FC49B
UniRef90_UPI00029D7314
UniRef90_UPI00034F790D
UniRef90_Q17Q48
UniRef90_H3CEC3
UniRef90_UPI0003D09BC2
UniRef90_E9NS15
UniRef90_Q9GZZ7-3
UniRef90_UPI00042AF6EC
UniRef90_D2HAB6
UniRef90_UPI0004575D24
UniRef90_UPI00033369D9
UniRef90_UPI0003F0ABA8
UniRef90_UPI00034F7606
UniRef90_H0VVU1
UniRef90_M3ZK18
UniRef90_UPI00046C02A7
UniRef90_UPI00029D7DB9
UniRef90_L5M8Q7
UniRef90_I3M8M7
UniRef90_UPI00029DA6F7
UniRef90_A0A026VUN3
UniRef90_N6TL33
UniRef90_G1TXH4
UniRef90_S9Y6L2
UniRef90_UPI00038EA82D
UniRef90_UPI0001E87679
UniRef90_H0X879
UniRef90_UPI00032B0A20
UniRef90_T1H4C5
UniRef90_K7IY23
UniRef90_E0VAU6
UniRef90_UPI0003F096B3
UniRef90_T1IF39
UniRef90_UPI0004445F01
UniRef90_UPI00033464D2
UniRef90_UPI0003315BC1
UniRef90_J9LIM6
UniRef90_Q6UXV0
UniRef90_Q6SJE0
UniRef90_UPI00042AA9E32
UniRef90_UPI0004544E58
UniRef90_UPI000443195C
UniRef90_R7U5X8
UniRef90_UPI0004575839
UniRef90_UPI000333023C
UniRef90_UPI0002B44D1A
UniRef90_UPI0003C108BE
UniRef90_UPI000395G555
UniRef90_UPI000334024B
UniRef90_E9HA28
 Q D Q A P S CL R A Y A GLVGTA $\square$ T P N TPNYLD NSSA R VEP WCDCRAS GNRREECE K T S A CRQAMLG $\quad$ LGT P L R T N
 TPNYVDNSFS

NWT $\square$ S P WCTCEGSGNQEEACY E E GGPRCLRAYAGLVDGA $\square$ Q A KENYADCLLA LD Q GARCL RAYAGLVGSPQAP
TEQ SRCLLRAYMGL I A E A IAA A K M
RARPQRPRRLPAGPPGTAVTPNYAPWCDCGASGNRREECE
 R C CTCGAAANEESLCE

 $S P S$ CRSPSAIPPAGTIMTPNYSLW
S P S
E CR S A M L G L L T NLRAT $\begin{array}{lll}K & Q & D \\ K & L & D \\ L\end{array}$

$\stackrel{R}{\mathrm{G}}$

DCKAAYLGTLGTVLQAQ $R \quad A R C R R$ GPN A ECRKAMLGILGTE GSVSECRRK S IL A LLLGT D L R T S
 EDGSS




P PQV
 $S N L G K D C$
$E D G S D D C$
 $K Q D L T$
$E D G S E$ K Q DLT RNE RNE
K E D $\qquad$ CRAA
CKA A
C $\begin{array}{lll}G T H & G \\ K & F & F \\ G\end{array}$ PAS A R C R S A W L
$\square$

■ CACKGTETQLY

VE
 00000 HDKDCLSEDSWRGLTCSARGTLLQME

ACREAHDGLLGTVLQVQQ




RMTPL

AFRELFTGNRCLDGA DQAF
AFRQLFTRNPCLDGAMQAF KF LQRDTENPCLLRAMDQAFG QLEGFFSHNPCLTEALAA

AFRGLFTKNQCLDGA $\square Q A F G$ GWQRLLWLNPC
NF L R F F T D N TC L N NAFRPF

AFRGLTTRNRCL
$\square F Q Q L L H R Q S C F N Y P \square L S$
DF QQULHRKSCFNYP L S
$1 F Q Q L L H R K S C F N Y P I L S$
RLQRLFTHNSCL
GWQRLLWVNPC
IF Q HML HRKSCFNY
MFQHMLHRRSCFRGDQRA $\square \mathrm{G}$
DFEHMLHRKSCFNYPMLS
AFRGLFTRNRCLDGA DQAFA
GWQRLLWVNPC
GWQRILWVNPCVVEA
IIFQHMLHRKSCFN
1 FQHMLHRKSCFTSA
I FQQLLHRKSCFNYPULS
I FQHMLHGKSCFNYPTLS

IF QHML HRKSCFNYP
GWRKL
GWQRLL WVNPCVVEA
GWQRLL WFNPC
I F Q HML HRTSCFNYPTLS L
GWQRVLWFNPC
VFQHILHRRSCFDYPTLS
I FQ Q HLL HRRSCCD
IFQHMLHRRSCFSN
GWQRVFWFNSCVVEAQRDF
IFQHMLHRKSCFNYPTLS
1 FQHMLHSKSCFNYP
ALQ HMLHIIKSCFNYP
A F H H L L H SRSC F
IF SHMLQSTSCF
VY Q H MLN RELCFN
TSQHILHRKSCFNYS
LF H H ML HSNP
LFYHILYNQTC
L F H H ML HSKSCFR
IFQHMLHGRSCFNYP
R $\square Y$ S FIYNN TCVGKS IL


