ouery
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UniRef90－G3NQ39
UniRef90 A7XA10
UniRef90＿UPI0003EBE8B5 UniRef90＿UPIO0038329E7
UniRef90 U3JKR4
UniRef90＿M3ZMW4
UniRef90－K7GJ64
UniRef90 K1PDL5
UniRef90＿K1PDL5
UniRef90－F6R017
UniRef90＿UPI000224799E
UniRef90＿W5MHJ0
UniRef90－V8NQG5
UniRef90＿W5UJA9
UniRef90＿H3DHT7
UniRef90＿F6QIQ6
UniRef90＿W5MRQ0
UniRef90＿UPIO00392DC8B UniRef90＿G3NVI6 UniRef90＿UPI0003F0AAF6 UniRef90 W5KNA1
UniRef90＿H2LI01
UniRef90－V4BYJ7
UniRef90＿E7FB56 UniRef90＿V9KE86
UniRef90＿H2MRG6 UniRef90＿UPIO00443E282 UniRef90＿A1YET2 UniRef90＿H3CDZ3
UniRef90－R7V3M6 UniRef90－T1I5Q1 UniRef90＿A0A023PGP0 UniRef90－E9GNG2 UniRef90－X1WCB1 UniRef90＿UPI0004574C47 UniRef90＿F1Q763 UniRef90－M7AZQ8 UniRef90＿W5L6N3 UniRef90＿H3DNW6 UniRef90－W5KBP4 UniRef90－H2NVP3 UniRef90＿H3EVC1
UniRef90＿F7BYY6 UniRef90＿H3C6C2 UniRef90＿UPI0004433A1C UniRef90＿Q6TEP7 UniRef90－U6P3B3 UniRef90＿H2ZXW2 UniRef90－Q9N5D0
UniRef90 S4RLI8 UniRef90＿UPI0004549F72 UniRef90＿H2YYI8 UniRef90＿F1L1Z5
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UniRef90＿Q4SFX4 UniRef90＿B4E3Y1 UniRef90－U6HNZ8 UniRef90＿H3EKD9 UniRef90＿G4VT11 UniRef90－E9HHR2 UniRef90＿－I1G4S3 UniRef90＿G7YBX4 UniRef90＿B3S8P9

1
10
GRQSKDE QLAS DNELP VSA A俍
 A HL SR D E K R R A R A L Q A R A S R D EKRARAL N L P L A A E E

ARF R D E K A R A L N L P L S N A E I V D L P DID E F N E R L A K Y E L T
 SRDEHRARAMQII $R \mathrm{R}$ S R D Q R R A F N L K I P

G
G
A $G P Q$ RESRDQRRATEMKV RDEKARELI

GAL QDERHAKTLRL K

## E K

SRDEKRAKALKL
SRDEKRARSRKI
GQDERRAQTLKI
A K L
TRDEQRA
L
A PLS PDERRARALRI
GPRDERRAMSLKI
GPHC RDKKRLEDLKV

H $\square$ T
RDERRA

EYQAKA | L | K |
| :--- | :--- | :--- |
| K |  |

GE DSCDERRARALR
ARLSRDEQRAKALKIP GRDDQRARSMKI SSDECRARAL
L
 RDEKRAKGLKI P SRDGRRLQALGL G P
 RGC TR SRDE

QR

A HLTRDELRAKALHI
REEFREAHVKL
AEYTRDRKK $\mathrm{A}_{\mathrm{KA}} \mathrm{MKKL}$
H LTRDE
$\begin{array}{llllllll}R & R & A & R & L & L & N & 1 \\ E & R & V & R & E & M & A & L\end{array}$
E R V R E M A
E R V R E M A
E R V R E M A
E R V R E M A
E R V R E M A
E R V R E M A
GHRSRDEE
GRQSKDEQLAAANGL
GR Q S K D E QL A A A N G
E S Y T R E R
SRDEKRARLMNLPSAEEASMPAEAFQGVLAGGRLS GRQSKDEQLAAANRLD
GR Q S K D E QL A A A N G
E S Y T R E R

## RK】SDVV口

GRRSRDEELAARQYAL t






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



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


$V$ N L P V $V$ E F N S L L S N Y QLLS

$V \underset{V}{N} L$



| $V$ | $E$ | $S$ | $P$ | $V$ | $E$ | $E$ | $F$ | $N$ | $E$ | $L$ | $L$ | $T$ | $H$ | $H$ | $K$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $N$ | $L$ | $P$ | $V$ | $E$ | $D$ | $F$ | $N$ | $E$ | $L$ | $L$ | $S$ | $R$ | $Y$ | $T$ | $L$ |
| $I$ | $T$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $I$ | $N$ | $L$ | $P$ | $M$ | $D$ | $E$ | $F$ | $N$ | $E$ | $R$ | $L$ | $S$ | $K$ | $Y$ | $D$ | $L$ |
| $S$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


|  |  |
| :--- | :--- |
| $V$ | $N$ |
| $V$ | $N$ |



| $V$ | $N$ | $M$ | $P$ | $V$ | $E$ | $D$ | $F$ | $L$ | $E$ | $L$ | $L$ | $E$ | $E$ | $R$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $L$ | $L$ | $S$ |  |  |  |  |  |  |  |  |  |  |  |
| $N$ | $L$ | $P$ | $V$ | $D$ | $D$ | $F$ | $K$ | $E$ | $L$ | $L$ | $S$ | $K$ | $H$ | $H$ |



K I I
$\checkmark N M P V E E$




DS A A E



| $V$ | $C$ | $L$ | $S$ | $R$ | $N$ | $D$ | $F$ | $Q$ | $Q$ | $M$ | $L$ | $K$ | $Q$ | $Q$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $I$ | $L$ | $L$ | $S$ |  |  |  |  |  |  |  |  |  |  |  |
| $I$ | $L$ | $P$ | $M$ | $G$ | $E$ | $F$ | $N$ | $E$ | $R$ | $L$ | $S$ | $K$ | $S$ | $D$ |
| $L$ | $T$ |  |  |  |  |  |  |  |  |  |  |  |  |  | | M T | D | D | D | 1 |
| :--- | :--- | :--- | :--- | :--- |
| S | 1 |  |  |  |

 |  | $S$ | $V$ | $D$ | $Q$ |
| :--- | :--- | :--- | :--- | :--- |
|  |  |  |  |  |



 $\square$ S A A E I A

 P F NAQQKI I

D M S L P D $\qquad$

MNP QK I I L S R N D F Q S F L K M M H K L

A D S LD $\square$ GVSEEK VVEMSVAEFTTFLEK

VQLP FPVHWVVDLSRNEFQQLLKQQVFT
$R D \square N \square L K R G A V P F S Y E E V A Y S S N E R F R E D K S K P G L T$ ESRDDQLAATYALPVSAKEI ETLTEASMAELMRSGELS
 $R Y \square R D \square D V L E V A G V P F S Y E D V V Y S T N E E F R H L R A T A R G L T$

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UniRef90_W5MJ78 UniRef90-V9KGWo UniRef90- T1JTU6 UniRef90-LTLZE6
UniRef90-T1K9E1 UniRef90- M3XA95 UniRef90 Q640J4 UniRef90-UPIooo22B699B UniRef90-UPIO0045740A7
UniRef90 C3XTB7 UniRef90-O07G59 UniRef90-UPIO0032B1DC5 UniRef90- H2YIE 5 UniRef90- S4RI79
UniRef90-UPI000273C010
UniRef90-UPIO002657BC8 UniRef90-UPI0003EAD815
UniRef90-B3FNR3
UniRef90-G3NQ39
UniRef90 A7XA10
UniRef90-UPI0003EBE8B5 UniRef90-UPIO0038329E7
UniRef90 U3JKR4
UniRef90-M3ZMW4
UniRef90-K7GJ64
UniRef90-G3P4C6
UniRef90-K1PDL5
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UniRet90_W5UJA9
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UniRef90 W5KNA1
UniRef90-H2L101
UniRef90-V4BYJ7
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UniRef90-H2MRG6
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UniRef90_A1YET2
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UniRef90_G3PDC9
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EYQRQLIRKIRRRGKNKVAARTCRQRRTDRHDKM
EA QLALI RDI RRRGKNKVAAQNCRKRKMEN
E A Q L
EAQLTLIRDI
RRRGKNKVAAQNCRKRKLLEN


| $E$ | $A$ | $Q$ | $L$ | $A$ | $L$ | $I$ | $R$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $E$ | $D$ | $I$ |  |  |  |  |  |

S QLL
E A $\quad$ Q L $A$
E P QLL A L I

A
A $L$ N L I R DI
D S QLLA L $V$ R
D
EDQHALIRD
DA QVALIRD
$D A Q A L I R D I R R R G K N K V A A Q N C R R R K L D D$

GE Q L $\mathrm{E}_{\mathrm{T}} \mathrm{L}$ V R D
G

## D




D

## 


D NQ AL VR DI RRRGKNKVAAQNCRKRKLLEN
EA Q I S L R DI RHRGKNKVAA QNCRKRKLD
TSAVTGLRDVRRRGKNKLAAQNCRKRKMHADLGL
D A QMALVQDI RRRGKNKVAAQNC
E S QLLCLI R DI RRRGKNKMAA QNC
R E QL D FVVM
DTQVLLLRDIIRRRGKNKVAVQNCRKRKLNAULSL
T D QV T L L R DI RRRGKNKLAA Q NC
EA QLT L I R DI RRRGKNKI A A Q H CRKRKLE

A A QL QLI R D IRRRGKNKVAA QNCRKRKMD
HAQHTLI RDI RRRGKNKMAAQSCRKRKMD
DAQMALI RDI RRRGKNKVAAQNC
E E QLLT L K NI RRRGKNKI A A Q NCRRRKHD
QE QLL E FV H D I R R R S K N R L A A Q R CRKR K LDD C $\square Y N L$

E N Q L


## P



P D QLLEFVHHVRRRSKNRAAA QRCRKRKLD

E GQLL S MR D I

## D

## E

A E QRQLI R K I R R R GKNKVAAARTCRQRR

A P QVA L L R D I R R R GKNKVA A Q N C R R R K L D L L L G L
EAQSHANQNFAVEAKTSMAAQNCRRRKLDVLVVELD
EHQKQLIRKIRRRGKNKVAARTCRERRGERQRS
$P E Q L D Y$ H DI R R R S K N R I A A QRC

E S QL A LV R D
$R R R S K N R$
$R$
$R$
A Q Q I A A HEI RRRGKNRI A A QRCRKRKMD
QVQQHIVRKI RRRGKNKLAARSCRQRKNDK
P E E LD CI H DI R R R S K N R I A A Q R C
ET QLS LI R DI RRRGKNKVAA QNCRKRKLDQULSLL

 REQLEFVHDVRRRSKNRLAAR

$F D Q Q T A M L D A R R R A T N R Q A A E R C R R V K$
EMQRS I I R Q I R K R A R S K $\square$ S S REYRKRKEARRLLE L E Y QK QL I R K I R R R
E EQLLTAMSDARRRATNRQAAERCRRSK
E P Q L S L I R D L L R R R K N K
E DEVVA MKEWRRRGKNKMAAQ

# 20 

ELIMNDATRD ${ }^{30}$
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UniRef90-E9CGD4 UniRef90-H2MFT9 UniRef90-H2RQD9 UniRef90 E4XCF5 UniRef90-B5X1M5 UniRef90-S7N1J1 UniRef90-W5KU58 UniRef90-F7EUR9 UniRef90-T1KWU5 UniRef90_H2YMW2 UniRef90_C3ZVC4 UniRef90-K1R483
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UniRef90_H2MFT9
UniRef90_H2RQD9
UniRef90_E4XCF5
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UniRef90_F7AE74
UniRef90_A7SHW5

AQEDS DLKMQRRRVKNREAAQVCRKKK
LD Y R DL K DLRRRKMKNRNAAARCRQRK K D E V M R L K Q K R R T L K N R G Y A Q S CR K R VQ Q K H SEQLEF I NSQRAA WE VRRKSKNR $\square A A A R C R K R K D E$ K D DVMRLK QKRRTLKNRGYA QSCRKRVQLK H


 R E D I Q Q R L K Q K K R R T L K K R G Y A Q N C R T K R L

 K E QM $\square \mathrm{N}$ I K QRRRTELKNGYAANCRKRQTQTHQ D KDEVQR LKQKRRTLKNRGYAQSCRKRVQQRH E V Q R $K D D V I R L K Q K R R T L K N R G Y A Q S C R F K R V Q Q$ K D QV KIL K QRRRTLKNRGYAQNCRTRRL R D QV V R L K QKRRTM K NRGYA QNCRKREQQRHD CEQARLVKHLRRTLKNRGYAAVCRTRRVAQ



 R D Q I I K MK QRRR T L K N R GYAA S CRRDK R I E QK DE L
 REEIV R LIKQKRRTLKNRGYAQNCRSKRMQQ K Q E I I R M K QRRRTLKNRGYAASCRNKRLLE RAEEMKMK QRRRTGLKNRGYAAS CRTTKRR1 KDEKTKLKQRRRDLKNRGYAQTCRSRRIEQKDEL R D E A L R L K QRRR TL K NR GYA Q A CR S KR L L Q K E EVARLK QRRRTLKNRGYAASCRKR K E EVVVRLK QRRRTLKNRGYAASCRKR R D D V T T R L K Q K R R T L K NRGYA Q NCRSKRLQQ E D DLA A LK G L R R R I K N R V S FEQI SAMLD
RDEVTKLKQRRRTLKNRGYAANC
$R D Q V V K L K Q R R R T L K N R G Y A A N C R E K R \square S Q$ KE EVVNQLK QKRRTLKNRGYA QSCRKRVYQR
 R D E A L R L K Q R R R T L K N R G Y A Q A CR S K R L A R L
 EDQI ADLRMARRRHKNR
K E EVLRRLK QKRRTLKNRGYA Q S
E E Q R I Q I K Q LRRRRRQNSFYARRNRRRQL
R D E I A K L K QRRRRTLKNR GYAA S CREKRLLT Q K E EV A R L K QRRRTLKNRGYAASCRKR $E R K V D F L R \quad F L R Q M K Q K D$
REDIV VKMK QRRRTLKNRGYAASCR IKRDEQKDELL $R Q V V T M L K Q K R R T L K N R G Y A L N C R V R R D Q N Q L Q L$ REEVVRLKQKRRTLKNRGYAQNCRKRMQQRHE REE QK L K QRRRTLKNRGYAASCRKR K E EVVVRLK QRRRTTLKNRGYAA S CRKR
TEEQSRIKYRRRTLKNRGYAHNCR $\quad$ K K R $\square S Q$
lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm


