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UniRef 90 -Q91402
UniRef90_M3XKU7 UniRef90-UPIO003BBED69 UniRef90_UPIO002A49583 UniRef90-G3PGI4 UniRef90_UPI000332F34D UniRef90-UPIO00443E43F UniRef90-W5UH86
UniRef90-UPIO003991DOB
UniRef90_H2UIX2
UniRef90-F7CM56
UniRef90-13K037
UniRef90 W5JZP1
UniRef90-UPIO003833183
UniRet90_E1C8A1 UniRef90-F7EDW8 UniRef90-G1KIBO UniRef90-M4AAJ3 UniRef90-F7G1K1 UniRef90_UPI0003C2842C UniRef90-UPI000441A5DD UniRef90-G3Q8D9 UniRef90_G3WZ36 UniRef90_M3XJC9 UniRef90 UPIOOO3AEDF26 UniRef90-F7EED3
UniRef90-A4IGA7 UniRef90 Q29485 UniRef90-W5NABO UniRef90_V9K997
UniRef90_LON3W3 UniRef90_UPIO0038EA26F UniRet90-UPIOOOOCCE23EF UniRef90-UPI0002C4780C UniRef90-E9QGF2 UniRef90-P06867 UniRef90-UPIO003338EC5 UniRet90_UP100042C6839 UniRef90_W5LAJ7
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UniRef90_W5UU51
Unirei90_-H3DBA6
UniRef90_UPIO0046B96A1 UniRef90-M4AQQ5 UniRef90-UPI0003F12E3D UniRef90-W5UM75 UniRef90-UPIOOO3FOB5A1 UniRet90-W5NFF8 UniRef90_-25XFY1 UniRef90_U3KBT4
UniRef90 M3ZTSO UniRef90-UPI00032B1D2D UniRef90-UPI00038C108D UniRef90-UPIO003318A41 UniRet90_UP10003318A41
UniRef90 Q50LG6
UniRef90-UPIOOO42BA553 UniRef90-UPIO003347727
UniRet90_A6PVI2
UniRef90-13KFB7
UniRef90-H2UX6
UniRef90 W5LF
UniRef90-Q5DVP8
UniRef90-G3NR28
UniRef90-G4WG37 UnR UniRef90_UP1000386F7A5 UniRef90-H3C6P0 UniRef90-Q4RF09 UniRef90-G1KBV2 UniRef90_O18783
UniRef90-R4GMH5 UniRef90-UPIOOO3942CDB UniRef90 UPIO00443EC5E UniRef90-UPIOOO443EC5E UniRef90-V9KGH2 UniRef90-G1U9Q9 UniRef90_G5DY19
Unire90_UPIO00441B20B

IHEFKKSAKTTLIKIDPALKIKTKKVNTADQCANRCT
 RSPLNDFQVLRGTELLLHTVEPRSWQEDVADAEECAGRC R N ALLQD Y QK T D S IQQLV HSDSSHLTKSRKL S LLSKCAKACS

 R S P L N D F QVLR GTELQ HLLDHGLGSWQK DVVDAEECAK LC
 R N A L H D Y R K T A D T S L I R I D K T L K K V K T K L L L N T A E Q C A K R C N




 RS PLNDFQLLRGTELLLNTVVPGPWQEDVANAEECARRCG R S PL NE F QVLRGTEELQHVE EPGPWQENVENVEECAKHCV
 QSLQRYEKSDNHVLVCADCPQSPLVWTSRSQEHCARKCK

 RSPL ND F QRLRATELLAAGPADPPDLPPPEQGSEELCARRCA
 RSPLNGFQRLKATQLVYLSHQ REELSMGVEECARQCA R Q S L Q K Y EKSSENHMMICTDCPQTPVVQNSRSQEHCARKC
R S P L N DF Q S L S A ME LHHASHRVEAW KTVVMNVE E R S P

RS SL NDF QSLTATELRH P SHQPD GQEKPMDVEDCACR RSALNDYARSKSVELLHLPDMEVSEEKMFLGAEECANHCT RSPLNDFQVLPGTELQHLLHAVGPWQEDVADAEECAGRC
KQTLQRYQKSENSRLLCTDF $P$ G
$P$ E



LFKEDP
NSLDDYENTHGASLV
 L E A Y I K T D GA WI VK LIP K

 CSSTRR RN | $V$ | $P$ |  |
| :--- | :--- | :--- |
| $I$ | $L$ | $K$ |
| $E$ | $K$ |  | $\begin{array}{lllllllllll}S & V & R & R & P & L & P & G & G & S & L \\ S & L & M & T & K & S & K & E & I & N & T \\ T & E\end{array}$ S




K
QMLQRYQKSEDSRLVCSDC
S P L N DYHRSRGVQLQT LHRSP S P
$S$ Q $P$ P E GH $\mathrm{H}_{\mathrm{A}}^{\mathrm{V}} \mathrm{S}$ S PL N DF QRSEGRELVP TSNS
 $A R V T L L S G L N L E$




| A D R |
| :--- |
| S |
| V | | S | V T |
| :--- | :--- | :--- |
| S | 1 |

RMSLDEYTKTEGAWIL


 LD S Y VK T D GA WI L G Q NKK FYRTLDK
 A S S T
T N N E TE E
TE E
EK E


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UniRef90 M MZTSO UniRef90_UPI00032B1D2D UniRef90_UP100038C108D UniRef90-UPIOOOO3318A41 UniRef90_UPI0003318A41 UniRef90 Q50LG6 UniRef90-UP100042BA553 UniRef90-UPIOOO3347727 UniRef90-A6PVI2 UniRef90-13KFB7 UniRef90-H2UIX6
UniRef90-W5LFO6 UniRef90-Q5DVP8 UniRet90_G3NR28 UniRef90-G4WG37 UniRef90-UPIO003940ED5 UniRef90 UPIO00386F7A5 UniRef90-H3C6P0 UniRef90_Q4RF09 UniRet90_G1KBV2 UniRef90-R4GMH5 UniRet90_UPIO003942CDB UniRef90 UPIO00443EC5E UniRef90-UPIOOO443EC5E UniRef90-V9KGH2
UniRef90-G1U9Q9
UniRef9-GEVYO
UniRef90- UPIOOO

50
60
70
80 RNKGLPFTCKAFVFDKARKQCLWFPFNSMSSGVKKEFGHE RNKGLSFTCKTFAYDRVMKRCHWLSFNSDTNGVRKKQDHA RNKGGLPFTCKAFAFDKAKKRCHWFPFNSMSNGVRKKHDHE
R N K R NKRLFTCRAFVYDHKNRKCQWLSFDRNSPGVQSQQNMN


R N K

A
R S K G
LL DCRAFHYNHQRHGCQQLL P RGKRLDFNCRAFLYDHRNRKCQWLL KNKGLPFSCKAFAFDKADKRCHWF
 RNKRKTFICMAFSFQKSEKHCKLLSFNSATEGIISDGKRG R LLDDRAFHYNMSSHGCQLLLPWTQDSPNTRLQRSGR R N R R L P F ACRAAFHFDHDNGKCQWLSFDRNAPGAQUYQNPN RNK II P FNCRAF LYYDHTNRKCQWLSFDTRSPGAQSQQDFN P F P E

T Q M S
CRAFHYNKSSHGCQLL
 AS LACRAFHYNRQSQLCQLLPWTQHSPRVQLQKNDH KVKK NFNCRAFNFQRHNRKCHLLPFDRFTHGAQRQPNVN RAR THCRAFHYNLVSETCCQLLSSQTQNSAHTLLDQRNI H VKK NFNCRAFNFQRHSKKCHLLPFDRFTNNVQKQANIN RNRKLDFTCRAFSFDQNGTKCHLLSYDNFTRGVRIDNDFN N R P $\qquad$ ACRAFHHDR Q S QLLCQLL
D L LDCRSFDYNWKS
$K K T L D C R A F H Y N W Q S H G C Q L L P L T Q H S P Q T Q L Q R N V H$ Q H
,

LLDCRAFNYNQQSHGCQML K NVK K NFT C A | A |
| :--- |
| A |
| A | NFQKAN

$H F T P R N$
$N Y N Q Q S$ E K S E CRAFHY 1 PR R HQ GC Q Q L L
E

K S K
 CRAFNFNWKN

## E S

 ES SFDCRS LDCRAFNYTRPSVTCKLLP R NKGLDPAETE A

WT

QUERY
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UniRef90 UPIOOO3
UniRef90-K7GFR6
UniRef90-UPI000441E361
UniRef90-M3ZQC7
UniRef90-F7FSI1
UniRef90- Q91402
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UniRef90-W5NABO
UniRef90-LON3W3
UniRef90_UPIO0038EA26F
UniRef90-UPIO001CE23EF
UniRef90-E9QGF2
UniRef90-P06867
UniRef90-UPI0003338EC5
UniRef90 UPIO0042C6839
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UniRef90-Q5DVP8
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UniRef90-UPIO00443EC5E UniRef90-V9KGH2
UniRef90_G1U9Q9
UniRef90_G5DYI9
UniRef90_UPI000441B20B

F DLYENKDY ${ }^{90}$
FDRYKKDY


 | $C$ | $D L$ | $F$ | $K$ | $K$ | $D$ | $Y$ | $R$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $Y$ | $R L$ | $Y$ | $E$ | $K$ | $K$ | $D$ | $Y$ | FDLYEKKDYVR

 CDDLEKKDYVR

 | F | V | L | Y | E | $K$ | $K$ | $D$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Y | D | L | V | R |  |  |  |



DLYERKEYKR
DLYQKK
YELYQKK D YVR
Y QLYQKKDYVR CDLEQKKDYVR

 FTLYEKKDYil R Y DLEQKKDYVR
F TLGYEKKKDYIR FDLYQKKDFVK Y DLYQKKDFLR Y DLYQKKDFLR Y DLY L QKK DY: R FTLCEKKEYIR YDLYQKKDYVR YDLYQKKDYKR YDLYQKKGYVR FTLYEKKDYI R YDLYQKKDYVR NDLYEKKDYV
FDLFQKKEWLR

CDLYFEKKMYL
$\begin{array}{llllllllll}S & D & Y & K & K & K & D & Y & L & R \\ F & D & L & Y & E & R & K & D & F & R\end{array}$

VLFEKKVYL
VL F EKKRMY

VLFEKR I


LFEKKDYL
CDLYEKKVYVR


VL F E K R R I Y L
$C D \operatorname{VEMKVYVR}$
VL Y E K R V Y
Y EKKKY
VLYEKE

| 1 | $L$ | $F$ | $E$ | $K$ | $R$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 1 | L | $F$ | L |  |  |  |

I L F E K K K V Y L
VLYEKNDYL

| $V$ | $L$ | $E$ | $K$ | $R$ | $M$ | $Y$ |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $L$ |  |  |  |  |  |  |
| $V$ | $F$ | $E$ | $K$ | $K$ | $I^{\prime}$ | $Y$ | $L$ |


F T L Y EKKK D Y I R
TLYEKREYL
Y EKKVVL
L Y EKKTYL
VLYEKNEYL

Y QL Y QK K

L Y ERNEYL

$Y D L Y Q K K D Y V R$



1 P ${ }^{20}$ STKK ${ }^{10} 40$


 ECADKC
GCADLDCL

 RNTLHEFKKSAKTTLIKEDPLLK DKTKKMNTADQCANRCI
 RQLLQKYEKTENYMLVCTDCHQQPVVRNGRSQEHCARKCK YTKTAGAWI L NDFYKRQNETI QLLD

VEKWMNTNLDDTARRCA SVATAEDCAERC
 RQLLQKYEKTENYMLVCTDCHQQPVVRNGRSQEHCARKCR
 RNPTNDNRVTBSTN


## $\square L T \square A S P$ PARVLLNFT


RNATECFKKVPNRELMGFDE
ET

RNATECFYKVIY GASSLMGHNEQL
 LIEKQKWENVTFATCALMCL
FERMRKTAL EGFVRKSMQVGSREQCDAAC F L R TEGFELFKHDEQEM

AV E DVA ECAKACI
EVLKTEASKS S V Q QCMKKCF
HVLKT ESKSSUQQCMKKCF
PLHFFEKQSNRQL
GADLTVSYSV
MDSRDVIRRT

| $K K N S$ |  |
| :--- | :--- |
| $S$ |  |
| $S$ | $L$ |

ELRTDAQ
$\square K \square P P S E Y K E M \square A A N R T D C C E D K C$
 FERVIGASLQGFDD MEQKSVQSRSDCQRLC




60
70
80

C
A
C
C AERETN N

 RNKGLPFTCK
QNAEPSLQCMSFQYHSKEQQCV!MAENSKTSS IRMRDV E ETS FVCTSFDYHKRSQLCYLYSA SVVSRQLKRSKR K VK G NFNCR
A ETTFTCRSF $\square$ Y $\square E K D Q E$
EAK SFTCLSFNHNEGQSECVLSDSNRGLSG QMDHSPG NKERSFVCRSFEYNEQSNQCLTSSSNSRDVDLTFLLSTQ EDKE FTCRYFH RRC TYPEDCNSDG
 EEKR FDCVSFDYHKDTKECDLKTTHSSRNAGLRLRPREAS
 ET T DFMCYSFDYDRANKRCWLSNNKNSQVISLKTNFR ENNGSRLNCKSFDFEPNTSTCYFTSE
QADG FVCQSFSHNKNDQTC LLNEKTKTDNTVLESDKD SAGGEN CRSFNYYRKTRECSLLSIDDQYSGSADLENEDP RNDE CKS CMFNMN DHSCQLLSV HMSDTGAQTDTG

## T

 $\stackrel{R}{R}$ $A G T Q S D F$ QSTATTF QSTRFIC DNEK K $\frac{1}{P N}$ $\qquad$
 LK EEDFVCRSVNYNYDSY LCELSTEDRRSPNHLRRSDSP E NK GVULLTCKSFDY LTTSSSTC AFTS

VEESSSFDCESFNFGSGSGDCVGLTNTSNSFHDELSVTLG

QSR N F
NNKEENFPCKAFAYSNSKQECHLTAESSYVGH
LINEFTFVCRSATYDSASKTCWLSRFTRRSHPELLEEDPS
EA DDFTCSSFAFRPRSNDCLLSNQNRES GQDLQVHQQ TMTDFNCLSFDYHRDTMECA LSSDMTKDMGSMLRGSSN
GEFSFVCRSATYDSALRTCSLSRFTRRTHPELLIEDDHN


[^1]| UniRef90_H0XRY6 |  |
| :---: | :---: |
| UniRef90-I3NFV2 | VLFEKKI Y L |
| UniRef90-UPI0003990702 | A V L Y K K I Y L |
| UniRef90-K7GGY8 | VLYEKKIYL |
| UniRef90_UPIO002745605 |  |
| UniRef90-C3ZHY1 | WD HYER |
| UniRef90-UPI0002C6711C | ILLFEKRTYL |
| UniRef90_UPI0003870BD4 | VLYEKRIY L |
| UniRef90-G3VAC2 | VLFEKKEY |
| UniRef90-I3KFD6 | VLYEKNEY |
| UniRef90_C3ZMW2 | A DL Y EVPD ${ }^{\text {V }}$ |
| UniRef90-UPI0003D0DEBB | VLFEKRMYL |
| UniRef90-UPI0003F0E065 | IDYYE |
| UniRef90_F7F243 | LFEKRMYL |
| UniRef90-UPI000383515D | AVLFEKK $\square \mathrm{Y}$ L |
| UniRef90_UPIO0042C496D |  |
| UniRef90_Q7TP84 | I L F E K R V V ${ }^{\text {L }}$ |
| UniRef90-Q9Y1V3 | WD HYER |
| UniRef90_H2MK06 |  |
| UniRef90-H2TA21 |  |
| UniRef90-E9GC79 | WT Y Y ERKVVY |
| UniRef90_W4ZEP3 | F N Y Y ERLD |
| UniRef90_F8WCD6 |  |
| UniRef90_C3Z7W3 | WD H Y ER |
| UniRef90_C3Y7E8 | SDFYE |
| UniRef90-F6RQT3 | WD H Y ELK |
| UniRef90_UPI0002A47ED2 |  |
| UniRef90_W4Y9R5 | M D Y Y ERLLM DVR |
| UniRef90-UPIO003F092FE | YDYYERK |
| UniRef90-K717Y9 |  |
| UniRef90-J9JMX3 | WD Y Y E |
| UniRef90_W4YQ09 | YDYYER |
| UniRef90-K1QRJ6 | WLYYEK |
| UniRef90-UPI0002B47383 | V LYYEKR】Y L |
| UniRef90_W4Y2F2 | WDHYQR |
| UniRef90-UPI00035964F8 | VD H Y |
| UniRef90-C3XW29 | Y ${ }^{\text {P Y H R R V }}$ |
| UniRef90-U1M4E7 | S D Y Y |
| UniRef90-V4A0V8 | WN Y Y QRN |
| UniRef90-K1QNB3 | Y D Y Y EL K |
| UniRef90-N6TYW1 | CDYYERK |
| UniRef90_R7TFT8 | LD Y Y ER |
| UniRef90-UPI000359641B | YD Y Y E |
| UniRef90_U1M7E2 | VD Y Y D N N |
| UniRef90-GOMCH5 |  |
| UniRef90-H3EA22 | T D L Y |
| UniRef90-H3EA22 | T DLY |
| UniRef90_UPI0002654FF1 | Y D Y Y E |
| UniRef90-A0A016VA51 | F T Y Y EKK |
| UniRef90_A0A016SU41 | F D Y E N N C |
| UniRef90_E5SY89 | S D Y Y ER |
| UniRef90_Q20167 |  |
| UniRef90-J9JPB7 | S D Y Le N |
| UniRef90-T1J2Z9 | F D Y Y K R |
| UniRef90-E9HGF3 | WD Y Le N |
| UniRef90_UPI00026533A8 | S DYYQR |
| UniRef90-H91XB3 | A D Y Lie N |
| UniRef90_T1K7E7 |  |
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| lupas_14 |  |
| lupas_28 |  |
| jnet |  |
| conf | 31110556589 |
| sol25 | B B B B B |
| sol5 | B B |
| sol0 |  |
| jhmm |  |
| jpssm |  |


[^0]:    $\qquad$

[^1]:    lupas 21
    lupas_14
    lupas_28
    jnet
    conf
    sol25
    sol5
    sol5
    jhmm
    jpssm

