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| :--- | :--- | :--- | :--- | :--- | :--- |
| $M$ | $M$ | $P$ |  |  |  |
| $M$ | $K$ | $K$ | $R$ | $I$ | $M$ |
| $M$ |  |  |  |  |  |

 $M L K R R V M P$ | $M$ | $L$ | $K$ | $K$ | $R$ | $V$ | $L$ | $P$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $L$ | $K$ | $R$ | $R$ | $V$ | $Y$ | $P$ | K L K R R V F P

 MLKKRI QP K L K R R V K P \begin{tabular}{l|lll|lll}
$A$ \& $L$ \& $K$ \& $S$ \& $R$ \& $V$ \& $R$ <br>
$M$ \& $L$ <br>
$K$ \& $R$ \& $R$ \& $V$ \& $L$ \& $P$

 

$M$ \& $L$ \& $K$ \& $R$ \& $R$ \& $V$ \& $L$ \& $P$ <br>
$K$ \& $L$ \& $T$ \& $R$ \& $V$ \& $T$ \& $P$

 

$K$ \& $L$ \& $K$ \& $K$ \& $R$ \& $V$ \& $S$ \& $A$ <br>
$R$ \& $I$ \& $K$ \& $K$ \& $R$ \& $V$ \& $A$ \& $P$

 S L K L R V $\mathrm{K}_{\mathrm{R}} \mathrm{P}$ K L K N R I Q P 

$K$ \& $V$ \& $K$ \& $K$ \& $R$ \& $V$ \& $P$ <br>
$M$ \& $P$ \& $E$ <br>
$M$ \& $K$ \& $R$ \& $R$ \& $V$ \& $M$ \& $P$

 MLLKKRIQP S L K H R V R P 

$Q$ \& $L$ \& $K$ \& $K$ \& $R$ \& $I$ \& $G$ <br>
$K$ \& $P$ <br>
$K$ \& $K$ \& $R$ \& $R$ \& $V$ \& $M$ \& $P$

 K L K K R V R A $M L K R R T M P$ $\begin{array}{llllllll}K & L & K & K & R & V & Y & P \\ K & K & K & R & V & M & P\end{array}$ K V K K R V M P $\begin{array}{llll}S \\ K & K & K & R \\ K & V & Y & P \\ M\end{array}$ RLKRRIQP K L K R R V Q P 

$K$ \& $L$ \& $K$ \& $R$ \& $R$ \& $I$ \& $Y$ <br>
$K$ \& $P$ <br>
$K$ \& $L$ \& $K$ \& $K$ \& $C$ \& $I$ \& $R$ <br>
\hline

 K L K R R V Y P MVKARVQP MLKK K R I E P R V K K R I Y P TVK T R V M P TIIKERVPP K L K K R I M P RVK S RVVP KLKLRIKP 

$M$ \& $L$ \& $K$ \& $K$ \& $R$ <br>
$K$ \& $L$ \& $L$ \& $P$ <br>
$K$ \& $L$ \& $R$ \& $V$ \& $E$ <br>
\hline

 $R L K K R V Y P$ R L K R R V F P 

$K$ \& $L$ \& $K$ \& $R$ \& $R$ \& $V$ \& $Y$ \& $P$ <br>
$C$ \& $L$ \& $K$ \& $T$ \& $R$ \& $V$ \& $Y$ \& $P$

 K L K K R V Q P $M L K K R V L P$ $\begin{array}{llll}R & L & K & S \\ R & V & V & P \\ K & R & R & P\end{array}$ CLK K F R VR P 

$M$ \& $I$ \& $K$ \& $R$ \& $R$ \& $Q$ \& $Q$ <br>
$M$ \& $L$ \& $A$ <br>
$K$ \& $L$ \& $R$ \& $I$ \& $M$ \& $P$

 S L K L R V Q P TLLKRRVYP $\begin{array}{lllllll}M & L & K & T & R & V & R \\ R & P \\ K & K & R & \text { I } & Y & A\end{array}$ RLK L R V H P 

$S$ \& $L$ \& $K$ \& $K$ \& $R$ \& $V$ \& $Y$ \& $P$ <br>
$K$ \& $V$ \& $K$ \& $K$ \& $R$ \& $V$ \& $M$ \& $P$
\end{tabular} K V K K K R V $\operatorname{M}$ P R V K K R V A P K L K K R I MP K L K K R I Y P CI K K R V LP K V K K R V M P RLK L R V E P ALKHRVRP CVKKRVRP K



$K$ WT T L VHNGVIFPPPYKP HGVK LLYKGKPVT LTPE

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,

AEEVV|ASFYSKM|LDHDYTTKEVVFNNNFFKDWRKVVSESERK
Q E E I A T M F A V M L E T D Y A K K E R F DK N F WD D WK P Y L G K N H
A E E I A H A F G A M L

A E E V A S H F G T M L L N S T HVVENPVVFQKNFFNNDFQADIIKK T G GA

A



## S

T TEEAATFYAKMLNHECCRNRIFYRNFFRDFRLTMT VEEVATFWVAMMSSHHMENPVFRKNFFEDFQEYCKKYDAD AEEVATFFAQKLLATEYVKKPQFRKNFWEDFQQHLSND

AEEMAGFFGAMDSSNEYVKNPTFQKNFFEDFREVIKEHDKD
A
$\stackrel{+}{a}$



QEEVATMYAVMKDTDYATQAKFNSNFWQDWKKILGSNH




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 DK $\square$ K Q EY GFAI I D GRRAPVGNFKI EPPGLFQGRGEHPKMG A A AEAPYMYCMWDGRK QKVGNFRRVEPPAALFRGRGEHPKTG
 DEDQK E Y G F C L M D G H K E KI G N F K I E P P Gl F R GR G D H P K Q G EAKEKPYKTCLLNGRKEQVGNFRVEPPGLFRGRGAHPKTG A K DE E P F K V C L L N GR K E Q V G N F R I E P P G L FR GRRGA H P K T G KKKNELYRTCLLNGKKEKVGAFRVEPPGLFRGRGEHPKTG AKNEE I Y GFCTID GHKEKI GNFRI EPPGLFRGRGEHPKMG
 D A TIE E Y G WA IMD GHKEKI GNFKTEPP GGLFRGRGDHPKQ G AKLEAPFTHCMWDGRKQKVGNFRVEPPSLFRGRGEHPKTG

 D KI ETPFMYCKWDGRKEKVGNFRVEPPGLFRGRGAHPKTG D KLEAPY L Y A NVD GRKEKVGNFRAEPPGLFKGRGEHPKK G D AREEPFKYCLWDGRKEKMGNFRVEPPSLGRGRGDHPKTG E E K D A L Y K Y C L F L D G R K E K V G N F R I I F P P G L F R G R G D H P K T G GKREEKY L WA IVVDGVKEKVGNFRVEPPGLFRGRGEHPKMG E E K A Q E Y G IA A I D GHK EKI A N F R I E P P GVVFR GRGGHPKM G



 A A A E EKYCWATID G RRERVVGYKVVPPGLFRGRGEHPKMG E Q N E E L Y G F C T I D G H K E K I G N F R I E P P G L F R G R G E H P K M G

 L K K K Q K Y M WA DEVVEAPYTHCLWD GRKE QVGNFRVVEPRGLFRGRGAHPKT G KENEELYGFCI DDGHRQRVGNFKI EPPGLFRGRGDHPKQG

 DKDAEPFKFCLLWDGRREQVANFRVVEPPGLERGRGTHPKMG


 A A REAP Y K VA Y Y D GRP E A V G N F R V E P P G L F R GR GE H P R M G EAKEEKYTTC LMD GRSEKVGNFRIVPPGLFRGRGKHPKK G E E K L Q L Y G Y C Y L D G R K Q K V G N F R I E P P S L FR GR GK H P K T G

 P K Q GEKYMWAVV DGVVKEKVGNFSVEPPGLFRGRGEHPK GG A EKDKA YTWA TI D GRREKVVGNFRIDEPPGLGRGRGERPKMG QEMDSKYGWAVVDGVLEKVGNYKVEPPGLFRGRGEHPKMG EKTEAPYVTVVLDSHLEKNGNFRVEPAGLFRGRGEHPKMG



 E E K LLK QYMWAVVD GVKENVGNFRVEPPGLFRGRES DPKMG DAEAAPFAFALVDWLREKVGNCRVEPPGLFRGRGEHPKQG E ERQD HYGYA V D GR】EKVGNFNMEPPGLFRGRGMHPDMG ERLLKEKFGNCILDDG QEETGNFKTEPPVLYHGCGAAPKMG DKAEEKYMWATMNGKREQVGNFRVEPPGLFRGRGEHPKMG A Q NEELYYGFCLMDGRKERIMANFRVEPPRGLFRGRGDHPKMG K E K DAA CVVFALLDDSRKEKVVGNFRVVEPPGLFRGRGEHPKMG EEKLLKQYTWAlVD GVKRRVGNFRVEPPGLFRGRGEHPKMG KKNEALFGFCDWDGHREKI GNFRLEPPGLFRGRGNHPKMG E K N E E 1 Y G F C C I I D G H K E K 1 G N F R E D K E K I H G DA T DCGHK Q K I G N Y T I E P P G L F L G R G E H P K T G D DT E E P Y K T C L L D GR K E K V G N F R I E P P A L F R GR GE HP K T G

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 R A I D N E Y K L C L V D GllE QKA G NVTVV P P GL F L G R GA H P KA G DKIQEEEYGYCILDGHREKIGNFKTEPPGLFRGRGDHPKMG ERRDVEYGWCLL NGQREPVGNFRDEAPGLFKGRGNHPRTG E DK QE EY GVA Y I D GHK QKI GNFRRIEP PDL FRGRGGHPKM G KANEKLYGYCVV DGHKQKIGNFRVEPPGLVVGRGDHPKQG

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F6UGZ7 UniRef90-K8F1T3 UniRef90- $=9 C 5 \times 5$
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 MI KRRVQACDII NCGRDSKIPMPPRGQMWKEVRHDNTVT KIKRRVQPEDVTI NGKKAPVPPAPEGHKWKSVQHDNKVT $K V K N R V T P E Q I T I N I G K G A K I P D P P K G H Q W K A V Q H D Q K A T$ $K V K K R I M P E D I T I N I G E D A P V P E C P A G H R W G Q I I H N N K V T$ $K V K R R V M P E Q I T I N I G K E A T V P T P P E G H K W K G V Q H D N K A T$ K V K K R V L P TVKNRLRP R I K K Q V F P \begin{tabular}{l|lll|lll}
$K$ \& $L$ \& $K$ \& $T$ \& $R$ \& $V$ \& $V$ <br>
$R$ \& $P$ <br>
$K$ \& $R$ \& $R$ \& $I$ \& $R$ \& $P$ <br>
\hline

 F I K K R I VP 

$K$ \& $L$ \& $K$ \& $R$ \& $R$ \& $I$ \& $R$ \& $P$ \& $S$ <br>
$R$ \& $V$ \& $K$ \& $R$ \& $R$ \& $F$ \& $P$ \& <br>
\hline

 

$R$ \& $V$ \& $K$ \& $R$ \& $R$ \& $I$ \& $F$ <br>
$M$ \& $P$ <br>
\hline

 

$K$ \& $L$ \& $K$ \& $K$ \& $R$ \& $L$ <br>
$K$ \& $L$ \& L <br>
$K$ \& $K$ \& $R$ \& $I$ \& $H$ \& $P$ <br>
\hline

 K L K K R I H P R V K K R I M P 

$T$ \& $V$ \& $K$ \& $R$ \& $R$ \& $V$ \& $V$ <br>
$H$ \& $V$ <br>
$K$ \& $T$ \& $R$ \& $V$ \& $S$ \& $A$

 KVK S R I YP K L K K R I R P KLLK K R i K V K R R V Y P N 

K \& I \& K \& $R$ \& $R$ \& I <br>
T \& E \& A <br>
K \& K \& R \& L \& V \& P

 M L K Q R I Y P P S HLKKRIMP 

E \& L \& $K$ \& D \& $R$ \& $V$ <br>
L \& Y \& P <br>
K \& R \& R \& $\mathrm{V} \mathrm{L} P \mathrm{P}$

 MLKKRIMP 

$M$ \& $Y$ \& $K$ \& $K$ \& $R$ <br>
$K$ \& $A$ \& $P$ <br>
$K$ \& $L$ \& $R$ \& $R$ \& $I$ <br>
\hline
\end{tabular}

 K HKYRLRPE S L K L R V Q P \begin{tabular}{l|llll|lll}
$T$ \& $L$ \& $K$ \& $K$ \& $A$ \& $V$ \& $M$ \& $P$ <br>
$T$ \& $L$ \& $E$ \& <br>
$K$ \& $E$ \& $R$ \& $V$ \& $T$ \& $P$ \& $E$

 $K L K R R V Q P$ K L K K R R I Y P 

$K$ \& $K$ \& $R$ \& $R$ <br>
$V$ \& $M$ \& $P$ <br>
$L I$ \& $K$ \& $K$ \& $R$ <br>
$L$ \& $Q$ \& $P$

 QV K G VI Q P 

H \& V \& K \& K \& R \& I <br>
M \& Y \& P <br>
K \& K \& R \& M \& P

 $\mathrm{K} V \mathrm{~K}$ K R R TMM 

$K$ \& $V$ \& $K$ \& $R$ \& $R$ \& $I$ \& $F$ <br>
$M$ \& $P$ <br>
$M$ \& $K$ \& $R$ \& $R$ \& $V$ \& $M$ \& $P$

 

M \& V \& K \& $R$ \& $R$ \& $V$ <br>
K \& L \& P \& K <br>
K \& R \& I \& S \& P
\end{tabular}

 MLKKRIMP \begin{tabular}{l|llllll}
$R$ \& $K$ \& $R$ \& $R$ \& $I$ \& $Q$ <br>
$M$ \& $L$ \& $K$ \& $R$ \& $R$ \& $V$ \& $V$ <br>
\hline

 

K \& L \& K \& A \& $R$ \& I \& WP <br>
R \& L \& K \& K \& $R$ \& I \& H P

 K L K K R I DP K L K K R V M P 

$M L$ \& $K$ \& $T$ \& $R$ \& $I$ \& $Y$ \& $P$ <br>
$L$ \& $L$ \& $K$ \& $T$ \& $R$ \& $V$ \& $R$ <br>
$P$
\end{tabular}

 | $K$ | $L$ | $K$ | $Q$ | $Y$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $L$ | $P$ |  |  |  |
| $K$ | $K$ | $R$ | $V$ | $Y$ | $P$ | TLK A RVMP R L K R R I V V P MLK R RI R P MLLKRRVMLD K FKRRI YP

 R V K T R I Q P E QI T I N H S A D H P P P K P P K G H S W W E EVV E R K D V T

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


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| UniRef90_C1FD86 | WL C G WND TI NKDWKYVQFGA |
| UniRef90-U5EZ94 | WLS CWTENVQGSVKYIMLN |
| UniRef90-T5AAS4 | WLAMWQENI NGAYKYVMLGA |
| UniRef90-R7Q8D5 | WL C F WK T I T G G S Y VVWL A A |
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| UniRef90-G0UKU4 | WL A M WKENV S N L N K Y V M L A |
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$\square K W K S L E H H G V T F F A A Y K P$

$H Y \vee K V L H K G Q P M S L T P E$
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## $M V F Q P \square Y \quad A P H G V P \square Y Y D G K P V A \square T P E$

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LHHDGDLILPRYEGRGDSDKV NGSEMRLTAE D GVK WRQLEHKGPYFAPPYEPLPDGVRFFYEGRPVRLSVA NSVK WR QLEHKGPYFTPAYEPLPDGVHFFYDGKPVKLSVA

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T VK WA T LDEHNGVC
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K DEVRWD
PEHTRAE

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GKK WS T L E H NGV V F P P L Y N P
 H G $\square \mathrm{K} \square \mathrm{K} \square \mathrm{K}$ GE $\mathrm{N} \underset{\mathrm{V}}{\mathrm{V}} \mathrm{D}_{\mathrm{D}}^{\mathrm{N}} \mathrm{L}_{\mathrm{L}}^{\mathrm{N}}$

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## WK K L LG K

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## E

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$Y$
$Y$

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 MMKGRI QPEAVVINI SKDAPVPKCSPGHGWSEI VHKQDVT MLKRRI FPEDVTTVNAAEDAPVPKVPKGHAWKDIFHDNTVT KIKKRIYPRDITINIGEGVPI PGHPFGQQWKEVKHDKSVTV MLKRRI TPEDVVI NCSRDSKI PEPPAGHQWKEVRSDNTVT KVKARINAEDVI NDGKKAPIPQPPPGHKWKEVRHDNTVS
 LLKGRTFPHSVVLNLSKDAPVPKVSMGHGWSDIFHDSSVT SLKVIGSPSLIVALGLFMFSVPCVP.

KVPPTPRGH
M $\square K K R I L P E D V I I N C S K D S K I P E P P P G H K W K E V R H D N T V T$ RWK WRITAKDVTLNLGKEAKVPE GNWGKIVVDNNSM KLKSRILPENVQI NI GPEEPIPDCNPGHSWKRVLSNPEAT KI KRRVVPEDITINI GKDAKVPEPPAGHSWKAVIHNDTAT KLKRRIFPEDIVLNI GKEAPVPECPPGHKWKEVRHDNTVT

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 RWKPRVYEEDI TLNLGEDAPVPP L GNWGQIVHDHDSM MLKRRI RPEDVVINCSKDSKI PEPPAGHQWKEVRSDKTVT KWKPKITHKDVTLNGGEDAKVPP GNWKKIVHEHDSM TVKTRVMPEQITI NIGKDAPVPAPPEGHRWKEVRHDQEGT

 RWKPRVRPQDVTLNLGENAPVPE GNWKEIVHDHSST MVKPRI QPEDVNI N SQENGAPGAPDGHTWKSVIHDRRVD RYKPRVTSKDVTLNDGKEAKVPE GKWGKIVHDRDSM LLKRRVLPDEVCLNLSETAPVPRDPEGHAWKDVFHDPHVT KLKQRVEPEQVMINVSEDAPVPMCSPGHAWGEVRHDPTVQQ

 MLKKRIMPDVIINCSKD KLPEPDPGDKWKEVCFDKTFT RWKPRVTPNDVTLNLGENASVPEGP GLWKAIVHDHYST KWKRRIVYPEDVILNLDKNAPI PK P Y P NRKWNKIVVHQTEAD KLKKRIDPENITINCSKNSKIPKPPAGHKWKEVRHDNAVT K L K K
MVKDRVFPEDVT TN $\square$ GEESPVPDCPEGHNWGRVDHEPKEA MLKKRIMPEDVIINCSKDSKI PEPPAGHKWKEVRFDNTVT KLKRRVNPEDIVLNLSKDAPVPPAPEGHKWGEIRHDNTVQ $R L K R R V L P E D V V I N C S R D S A V P E P D A G P Q W K E A G C D R T V M$ SVKMRVIPEQVLLNVDLNMAVPACDPGHNYESVVCKKDTV
 K K

K $\square$ K R R VEAEDVI IDCSKESTDPVAPPGHKWKEVRHDDKVT
$R P P K R V L P E D M V I N C S R D S T V P E P P A G P Q W K E V G C V R T V M$ RWKEGPQAED IVLNLSPEAPRLQ GNWKEIIWNPNAM
 KEKTRALSEQVTLNI GKDADVDPP
K WK PRVTTKKDVTLNLGKEAKVPE GNWGKIIHDKDSM S $\square$ KKRLYPDDIT INGGKDAKIPVTNAGHDWAK I HDRSVE
K $\square$ K R R VQPEDVT $\square \mathrm{N} \square \mathrm{G}$ KK K P V PPAPEGHKWKSVQHDNK
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lupas_21
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conf
sol25

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| UniRef90_Q94705 | WL A M WKENI N N GFKYVVL H A |
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| UniRef90_P93119 | WL A F WNDPI NKEFKYVFLA A |
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| UniRef90_D8RB80 | WLA F WNDPI NKEFKYVV L M |
| UniRef90_L8HB99 | WL A R WRD HVTGLDK F I F M |
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| UniRef90_UPI00029D466A | R L A A WTE NV Q NLI K Y V T L N |
| UniRef90_F6ZNV5 | WL V S WTK K V H N Sl K Y I M L N S |
| UniRef90_D4N6Y6 | WL A S W $\square$ E $\square$ L T G K R K Y V WL H |
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| UniRef90-F6RCY1 | WL VS WTENVQN Q K Y Y IML |
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| UniRef90_R7QQ71 | WVA F WM D S VY G D E E Y |
| UniRef90_UPI000350F626 | WLA S WTENI Q N S LK Y $\square \mathrm{ML}$ L |
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| UniRef90_A0A016SUL9 | WL A S WT G NVLG Q K Y Y I L |
| UniRef90_G6DQV2 | WLA S WTENVQQQAK YVMLN |
| UniRef90_Q7YXA0 |  |
| UniRef90_U6KPS7 | WLA F Y R D S $\quad$ N D Q VK Y M Y LA A |
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| UniRef90-H2MM27 |  |
| UniRef90_N6T336 | WLA S WT E N VQ N Q VK Y $\square \mathrm{ML}$ L |
| UniRef90-UPI0002A4B016 |  |
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| UniRef90-X1DCZ5 | WIA R W |
| UniRef90_E5RGR2 |  |
| UniRef90_G3I5I0 |  |
| UniRef90_G7J5C3 | WLLAK WRDP $\square$ N N K S K H V S L |
| UniRef90_A0A017SF00 |  |
| UniRef90-I3D3T0 | WLA S WMDF LTTQKRKY VWLA |
| UniRef90-H2Y8H3 W |  |
|  |  |
| UniRef90-I1E8L1 |  |
| UniRef90-M0VFN6 |  |
| UniRef90_L8IY17 | W $\square$ A A WME N VQ N F $\square \mathrm{K}$ Y V V T L N |
| UniRef90_S2ENB1 |  |
| UniRef90_W8RW46 | W $\square$ A R WQ D K L S G K M K Y VWF S |

conf
sol25
sol5

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8998631888468)
B B B B B B B B B B B B B
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| sol0 |  |
| jhmm |  |
| jpssm |  |

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sol0
jpssm
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sol0


