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1 AI L DI L H FPDPRLRSKARPVTGVDDKVRRLVDDMFETMYA ALL $L$ D I L $\square$ A L L P A L L L

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 A L L $A L L N I L Q Q Y P D P R L R L Q A K P V T V F D D A L A Q T V Q D M Y E T M Y E$ ALDI L E Y P D P RL R TI A K PVVEAVT DE DRKLIDDMFETMYD A L L P I L E F P D P R L R TKA A QV D PAS P E F Q GL V D DMFE TMYA
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 A V Y Q V L K Y P D E R L R K N A Q P V A E V T D E V K E I C C N N M L E T M Y Q


 A L L N I L H Y P D E RLLHTVAR P V DVVVD DALRRLIDDDMAETMYA A I $\operatorname{R}$ R $P$ I $L$
 ALLPI LT HPNERLDUVAQPVVQVDDRIRTLVQDMAETMYA AI RKI LEFPDPRLRTKAAPVETVDRRIQTLVEDMFETMYD


L L N V L R F P AI L E I L E Y P D K R L R T I A K P V T E VT D K I R K II D D MF D TM Y E

 A L L S I L N Y P D P R L H TVVA K P V T V F F N A D L K R L V Q D M R D T M Y D
 A L L P I L




 A I L P I I E T P D P RLLRTKSTPVVETFDD DLQRLI DDMFETMYD

 ALLN I L QYPDERLH IVAKPVTDFDAALQKLVDDMAETMYE
 A R P V I H G N PVVLH R P A A P V T E F N D E L K E L V A D M Y E T M D A



 ALLNI L CYPDPRL HTVAQPVAEVDARIRQLI RDMAETMYA

 TARP I T I V G D P V L H R P C A P V E E F D D R L A G L V A D M F A S M Y A


 S IL L Q L H F P D D R L R K I A S P V K K M D D Qi R Qi A D D M L E T M Y Q
 $T V R E V R L V G D P V L T T R A E E I T E F G P S S L E R L Q Q D M L E T M E D$
 ALLPI L KYPDPRLAT KAAVVTEFDDKLKQLAADMAETMYK S V L P I R R

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A LPI LCYP ALI KKYPDEVVKKKAETIVEIDNGLQKLIDNMIETMYN
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UniRef90_Q8NQ46


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 ANGVGLAATQVDVHKRLFVADCSEDQNEPLVFINPEITAR

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 EARGLABC QHEMDHLKGKLFVDYSPLKRQR1KTKLEK KVAGLLAVCVQHEIDHLDGKLMVDYLSPLKRNRIKTKLVK EADGLLAICVQHELDHLMGTVFVERLSQLKQGRIKTKLKK EADDLLATCLQHEIDHLNGVLFIDHISKLKRDMVDRKFKK EAEGLLSVCVQHEMDHLKGKVFVEYLSPLKRNRIKNKMVK EAEDLAARAFQHEDDHLNGVLFIDRLSPTKRETVQKHOKK EAEGLLAVCVQHELDHLDGKVFVEYLSLLKQNRIKSKLAK EADGLLATVLL DADDLLAILVQHELDHLDGLFVDYL EADGLLATCLQHEIDHLNGVLFIDHISRLKRDMVVKKFTK EADGLLAVCIGHEMDHLDGKVFVEYLSPLKRNRIKTKMDK T DEGLLAVCLQHEMDHLEGVLFIDHLSRLKRDMVLKKLAK DADGLLAAC:QHEDDHLNGLLEVDYLSPLKRQR1KEKLIK DTGGLLAICIQHEIDHLDGKVFVEKLSRLKLNRIVQKLKK EGSELLARAIQHETDHLDG\|LFIDRLDEAARKAMKELRE ECEGLLAVCVQHEFDHLNGKLFVDYLSQLKRDRDGK
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 ECDGLLAVCVQHEMDHLEGTVFVDHLSMLKKQRIRHKIRK EGTEILARCI QHETDHLDGVLFLSRLEPEDRKRAMKA』RS

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| QUER | LDRLK |
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 AVHPI CVVGDPVLHNPTRPVERFDDELRALVDDMFETMAA ALLEVVLQFPD QRLRTVAKAVA QVTP E I DDD STNMLDETMYE A 1





 A I L Q L L Q Y P D E R L H T DA K K V V QV N D V T R K L V Q DMA E TM Y A

 $T V Q P$ i R L F G D P V L R T R A E E V VD F D K E L R N L V Q D L WD TM E D AI LIKLYTYPDKVLS QKCEAVAEVTEEI RRFLDDMLETMYA
 A I L D I L H Y P D P QL R DRA Q PVVEKVTDEVRRLVDDLFTEMYD A V L




 AI LP I RLI GDPVLRTSAAEVTEFGPELGKLIDENMIETMDA



 ALL LP L R F F G D P V L T T R A E E VV T S F D E A Lig QL I A DMTE TMM A A I R II VM D P D P V L R E K A K P V T K F N S S L H K L L D D MA D T M Y E





 A I Y N I V E V G D PV L R Q K A N P V K N I N S S i H K L L K NMAD TM Y D SLL LI LIVVPDARLRRTAEPVANVDGRVARLMDDMLETMYK SLLQVLRYPDERLRKVAAFVPNVNDTVRSIVDNMFGAMYA
 L L L L L R K I R L M G D PV L V S E A Q P V E EVVT A S T K A L I E D MLDETMD S


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 | $E$ | $G$ | $G$ | $G$ | $L$ | $A$ | $A$ | $N$ | $Q$ | $V$ | $G$ | $V$ | $L$ | $R$ | $R$ | $V$ | $F$ | $V$ | $Y$ | $D$ | $V$ | $D$ | $G$ | $V$ | $A$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $N$ | $E$ | $H$ | $V$ | $V$ | $N$ | $P$ | $V$ | $W$ | $Q$ | $R$ | $V$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |






## A

A




 A P G I G L A A T Q V





 A P GII G L A A T Q I DV H E Q V V V M D L S E S G D E P L V LI NP E V V E R





 A P G $\|$ G A A I Q V G V P K R V L V I D C G H D H G D P R I F I

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 $P G R A G L A A T A L G V G L R V F S Y N V D D R I G Y$ | $A$ | $H$ |
| :---: | :---: |
| $G$ | $I$ |
| $G$ | $G$ |
| $G$ | $A$ |
| $A$ | $A$ |


A
A D GVVGLA A

A NGVGLAA A






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S D GVVGLA AP QI GLDDDRVLVINFPEYKDYRKAMI NAMUI E T S A P GIVGLA A P QI GVV SR LIVLDCGEDARPDVMFNPRVI AS S



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## 90

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| UniRef90_R6LTQ3 |  |
| UniRef90-G0HDY4 | F N |
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| UniRef90-TOKLW3 | M Q E K |
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| UniRef90-UPI00036F1822 | 1 S K G K |
| UniRef90-S9R4H0 | L Q |
| UniRef90-K4INC6 |  |
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| UniRef90-U1KPL0 | TI |
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| UniRef90-S4GQC7 |  |
| UniRef90-W5WY90 | S EWF N |
| UniRef90-H2GF69 |  |
| UniRef90-R4K104 |  |
| UniRef90-U7KZR2 | N G W |
| UniRef90-R7DD46 | 1 L K G K |
| UniRef90_A3JYF3 | L K K E |
| UniRef90-G2EF61 | I S K G K |
| UniRef90-W2UQ22 | IA K G K |
| UniRef90-UPI0002E3128A | AERMN |
| UniRef90-G6F0N5 | E |
| UniRef90-M1PF19 |  |
| UniRef90-K2Q7U5 | A |
| UniRef90-UPI0003B737C2 | S |
| UniRef90-14A115 | S K G |
| UniRef90_UPI0003FDC2A | N G W G |

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| :---: | :---: |
| UniRef90-Q5GTG9 |  |
| UniRef90-W1TPD1 | DGRAGLAANQI GVGLRAFSWNIDGEVDYIL NPRLVEVSK |
| UniRef90-J61AJ7 | SNGVGLAAPQVGQA |
| UniRef90-A6EPB8 | ASGVGLAAPQIGL |
| UniRef90-UPIOOOz | DDGl GLa ANQVGL |
| UniRef90 UPIOOO46E5337 | ADGVGLAAPQVGI LRRVVVIDVGEGLI |
| UniRef90-F3XN | AYGVGLAAPQI GLPDRLFVVDTAPFADDDDLTEEERTEET |
| UniRef90 U4WWVg |  |
| UniRef90-UPIO004101 | APGVGLAGPQVGV |
| UniRef90-DoRR35 | APG:GLAAPQVGl |
| UniRef90-Q17XD4 | SEGLGLAADQVGL PLRMLLIN |
| UniRef90-R5KCTO | ANGVGLAAPQVGL LKRVVI Dil |
| UniRef90 W6TKA3 |  |
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| UniRef90 DgUTV | A EGVGLAANQVGV |
| UniRef90_UPIO | ANGVGLAAPQVG |
|  | A SGVGLAAPQIGLPVRLFLVD |
| UniRef90-E6LB14 | SGGVGLAADQVDVPLRVFIVNN |
| UniRef90-UPIO00375: | AFGVGLAAPQVGLALRLFVIDTRPFSG |
| $\begin{aligned} & \text { UniRef90-E1KSS2 } \\ & \text { UniRef90-U2JY25 } \end{aligned}$ |  |
| UniRef90-U4P X29 | APGVGITAAHIGVKQRVFVLELTPG |
| UniRef90-UPIO0047A | EDG |
|  | A |
| UniRef90-G8Q | ADGVGLAAPQI G |
| UniRet90-W2C118 | ELL L |
|  | S |
| UniRef90-A8SLK8 | ADGV |
| UniRef90-UP10004 |  |
|  |  |
|  | A |
| UniRef90 UPIOOO46 | ADGVGLAAPQVG |
|  |  |
| UniRet90 UPlooo3 |  |
| UniRef90-B3QS | ADGGLAAPQVG |
|  | ADGVGLAAPQVG |
| UniRef90-UP100037981 | ANGAGLAAPQ\| G |
| UniRe | SEGVGLAAPQVG |
| UniRef90-A0A011U1X0 |  |
| UniRef90-A0A023D0Н7 | G |
|  |  |
|  |  |
|  | AQGVGLAGPQUGVSKRVFVYDCSSRKGHLINPVLT VDD |
|  |  |
| UniRet90-R5E1 | ASGIGLAAPQVGRS隹LLVLDVSCEHEK |
| UniRef90-W0 | ANGVGLAAPQVGTDQRVMIFYPEAEPVPV |
| UniRef90-W7U6W2 | M ${ }^{\text {a }}$ (VGLAAPQVGVNQRLMVFNPQG |
| UniRef90-UPIO004688 |  |
|  | A GGGGA ANQVGVGSRMF |
|  | ANGAGLAAPQVGILRQVCVVDVG DGP DELVN |
| UniRef90-R5GY61 | ANGVGLAAPQVGI |
| UniRef90-D3SES1 | G |
| UniRet90-K9XJM1 | ADGIGLAAPQVAVQKQVIVIDCEPDNPANPPLVLVNPVIK |
| 73 | SKGIGLSAPQVNISKRIIVWYEKRDEKNERVFINPSIIQS |
|  | $\left\lvert\, \begin{gathered} G \\ G \\ G \end{gathered}\right.$ |
|  |  |
| UniRef90-A6SZO6 | GVNLRLVI |
| UniRet90-H1ZAQ8 | A SGVGLAAPQVGLPIRLFVVDCE |
| UniP | ADGVGLAAPQVGILQRIFVIDTYDDYG |
| UniRef90-UP100037D51DA | ANGVGLAAPQVG |
|  |  |
| UP10002F36FEF | G ${ }_{\text {G }}$ |
| UniRef90-F6DM92 | A AGGVGLAAPQi Givskr |
| UniRef90-A8FUU2 | EDGIGLAATQVGSLHAILVIDLSPERDQ |
| UniRef90-R9CB45 | F |
| UniRef90-13X7Y9 |  |
| UniRef90-UPIO003B3DCC7 | A |
| UniRef90 WoER | A D G G |
| UniRef90_R6LT | ANGVGLA GPQ G L |
| UniRet90- BoPFT9 | GGVGI AAPQVGVLRRAVVI DVGEGK |
| UniRef90-C0Z4W7 | ADGRGLAAPQIGILRRVVVMDCG DGL |
|  | A |
|  | A ${ }^{\text {a }}$ |
| UniRef90-C9L | A NG |
| UniRef90-C2GE | ANG |
| ef90-H0AOL4 |  |
| UniRef90_UZULU5 | A EGVGLAAPQVNESLQLVVLDDGNGLIEE |
|  |  |
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| UniRef90 R5GPA0 UniRef90 Q5GTG9 | F K R |
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| UniRef90－W1TPD1 |  |
| UniRef90－J6IAJ7 | 1 SNGGK |
| UniRef90－A6EPB8 | I S K G K |
| UniRef90＿UPI0003654D73 | L |
| UniRef90－UPI00046E5337 |  |
| UniRef90＿F3XNW4 | $\square$ S K G K |
| UniRef90＿U4WWV9 |  |
| UniRef90－B8FS81 |  |
| UniRef90＿UPI0004101C8F | K G W |
| UniRef90－D0RR35 |  |
| UniRef90－Q17XD4 | L N K |
| UniRef90＿R5KCT0 |  |
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| UniRef90＿UPI000411FB12 | 1 T K G N |
| UniRef90－D6TQS3 |  |
| UniRef90－D9UTV6 |  |
| UniRef90＿UPI000466B14E |  |
| UniRef90－A4AVE2 | IS K G K |
| UniRef90－E6LB14 | Q |
| UniRef90＿UPI00037531CD | 1 ME GK |
| UniRef90－E1KSS2 | LS Q G R |
| UniRef90＿U2JY25 | ， |
| UniRef90－U4PX29 |  |
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| UniRef90－G8QU21 | K T R S K |
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| UniRef90＿13YXM6 | 】S K G N |
| UniRef90＿A8SLK8 |  |
| UniRef90－UPI000478B3A6 | 】S K G K |
| UniRef90＿I3YE18 |  |
| UniRef90－K4IQ81 | 】S K G K |
| UniRef90＿UPIO0046F1687 |  |
| UniRef90＿G1W9R1 | MLIK G K |
| UniRef90＿UPIO0035C4DF4 |  |
| UniRef90－Q8YSK6 |  |
| UniRef90＿B3QS23 | $\square \mathrm{K} \mathrm{N} \mathrm{G} \mathrm{E}$ |
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| UniRef90－UPI0003798D36 |  |
| UniRef90－W5W998 | S D WF |
| UniRef90＿R7EXN5 | L V K G R |
| UniRef90－A0A011U1X0 |  |
| UniRef90－A0A023D0H7 | E QKA |
| UniRef90－K4R4C9 |  |
| UniRef90－UPI0003B4403E | $\square S \mathrm{KG}$ |
| UniRef90－D2BCH9 |  |
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| UniRef90－W7U6W2 |  |
| UniRef90－UPI000468EBC4 | S S WF |
| UniRef90－J9SA03 | NQWG |
| UniRef90－UPI0003B6E755 | $\square \mathrm{S} \mathrm{K} \mathrm{G}$ |
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| UniRef90－R5GY61 |  |
| UniRef90－D3SES1 |  |
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| UniRef90＿Q72S74 |  |
| UniRef90－A5FVK2 | D L R E |
| UniRef90－A0A023X342 |  |
| UniRef90－A6SZQ6 |  |
| UniRef90－H1ZAQ8 | $\square \mathrm{ME} \mathrm{G} \mathrm{K}$ |
| UniRef90－V9HGN2 |  |
| UniRef90＿UPI00037D51DA |  |
| UniRef90－B11504 |  |
| UniRef90＿UPI0002F36FEF | $\square \mathrm{SKG}$ |
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| UniRef90－A8FUU2 | Y K |
| UniRef90－R9CB45 |  |
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| UniRef90＿UPI0003B3DCC7 |  |
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| UniRef90－R6LN41 | A E |
| UniRef90－E4TZG0 | A Q K E |
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| UniRef90－C0Z4W7 |  |
| UniRef90－A3DCX4 |  |
| UniRef90－W2BVQ0 |  |
| UniRef90－C9LUK6 |  |
| UniRef90－C2GE78 | N G W |
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| UniRef90－UPI0003B5D25D |  |
| UniRef90－DOWQR3 | L |
| UniRef90－G2DC82 |  |
| UniRef90 G8RX06 | H G WG |






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| UniRef90-10xBU7 |  |
| UniRef90-D5RTM0 |  |
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| UniRet90-02 |  |
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| UniRef90-C704T3 | VADG |
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| UniRef90_R6HL |  |
| UniRef90 R9KK: |  |
| UniRef90 UPI000416756D |  |
| UniRet90_UP1000467F9DB | Q |
| UniRef90-F7NDI3 |  |
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| UniRef90-R5BUN5 |  |
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| UniRet90-UPIO0041BD4BD | LK |
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| UniRef90-K1MY10 | LLK G N |
| UniRef90_UP10004674306 |  |
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| UniRef90_UPIO002895BEA |  |
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| UniRef90-E5XM00 | E G |
| UniRee90-UP1000363796D |  |
| UniRef90-Q7NIF5 |  |
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| UniRet90_U2CHZ6 |  |
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| UniRef90_R6MG |  |
| UniRef90-UPI0002E22A96 | LA G G |
| UniRef90_V6JLG3 | A SWHR |
| UniRef90 ${ }^{\text {A4XLL82 }}$ | RSKGQ |
| UniRet90-_8CJNS |  |
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| UniRef90_R7FL84 |  |
| UniRee90 A5 |  |
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| UniRe990_M2) |  |
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| UniRet90 N6XLA2 |  |
| UniRet90_A3PMR9 |  |
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| UniRer90-W3AC25 |  |
| $\begin{aligned} & \text { UniRef90UPIOOO37E101C } \\ & \text { UniRe90OQ3ZA9 } \end{aligned}$ | ■KKGE |
| UniRef90-D3RQE0 |  |
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| UniRef90-B8ZSF6 |  |
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| UniRef90-K4JRM9 | MLIK A |
| UniRefs |  |
| UniRef90-UPI00038179DE |  |
| UniRef90_R7K8M5 |  |
| UniRef90-A4CMQ5 | $\square \mathrm{S} \mathrm{K} \mathrm{G} \mathrm{K}$ |
| UniRef90 D6GQM8 |  |
| UniRet90_G7UW91 |  |
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| UniRef90 UPI000347F023 |  |
| UniRef90-B0K292 | MSRG |
| UniRef90-B9KH52 | A S K |
| UniRef90_R71X06 |  |
| UniRef90_Q7V3K7 |  |
| UniRet90_UPI0002883AFD |  |
| UniRef90_V2Y9U7 |  |
| UniRef90-A9DWT9 | VSKGK |
| UniRet90-UPIOOO41C6900 | VSKGK |
| UniRet90-T08k04 |  |
| UniRei90- UPIO0047E994C |  |
| UniRet90-UPIOOO47E994C UniRet90 W2C2E5 |  |
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| UniRef90-F9EGCO | Q |

## UniRef90 АомзР3

 UniRef90-F5SES4UniRet90 EORQR7 UniRef90-K2H954 UniRef90-M2BJ45 UniReffo-UPIOOO349698C UniRet90-R7CA27 UniRef90-D5QCV1 UniRef90-K9XNM6 UniRef90-K7TB98 UniRef90-H9UBDO UniRef90-F4A9Q1 Uniinefoo-G2NNC5 UniRef90-A9TMS8 UniRef90 A9HKQ2
UniRef90 U2YYP3 UniRef90_W8T4S9 UniRef90-R6CN40 UniRef90-F1W2Z8
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UniRef9O-U2TM13 UniRef90-R5FEQ0 UniRef90-E8TSL2 UniRef90-S5XW15 UniRef90_A6C970 UniRef90-A3TW67 UniRef90 UPIO0035EE6F3 UniRef90-UP100035D9B3D AERNILLFGDPILRKRARPVDQ TTPKIEKLLDDLADTLYA MELRYLGDELRKRAVLVPEIDGRVARVVEGMADLMHE MKVLYWPDRRLRIPAAPVDA:DDA: RAVWSDMIDTMEA LIEMHYLGDKVLRQPAKRVAKVDDSIRQLAKEMLQTMYS A DRNRMIGDDUTTKCKVVKEMTEKNKELDADMFDTMYD TPMPILVAPQAILRQKTRLVRPEDAQLREAIPRMFAAMYK IREVVQLGHPLLRTKAQDVENDDQRIQTLVDDLIATVGQ ALLKI ARMGHPVLHQTAEPVSDPTPE:RRLIGDMLETMAD SLLDVHYLGDKDLRKSAKRVSKDDDSVRELARDMLOTMYS A पrnirvNEDTILRKTCKRVDEDNERILTLIEDMKETMYE

 AVRIIKTQEDSVLRKKSRNVEKIDERIGQLLDEMAETMVK AI RNIVKDTDDTLHKKCRPVTEFNQKLWDLLDDMAETMYQ TVRELKKMGDPRLLRVAEPVTEFDPAMRLLIADMFETMHA AI RNVVLEGDELLRKKCREVTEVTDRIRMTMEDMDETMRS A $\downarrow$ REURKKGDPCLEKVCHPVTEFNERLHLLLDDMRETLEE
 TVRR1LPWPHACLRTPAAQVAEDNDEIRALWDDMIDTMDA VRPLALLGDPVLAAPCEEVTDFGPALERLVEDLFATMYA
 LTI RHHPDPVLRERCRPVDAAGEEARAVARRMDELMHA T RELVKHPAKILTQPCKEVTVIDEERITLGDDMYETMVE

 SVRKILKDGDPLLRKTSETVHPDTKEFKKLIRDMFDTMRH SVLPVVUCGDPVLHHPTEPVAEATEQFGTLIADMYETGDL A $\overline{Y R V I R T D D D P V L R K E S R E V V K F D D R L K T L I G E D M Y E T M D K ~}$ MKI VRYPHPALRAKAKPVIA DDADVQKAAAQMVELMYR MK FKGGEDVLRQKALPVEHINDDIGSGAAQMLTAMQE MKIVKNPSPVLRKKTVKIDPLAKDVQELISSMLETMYA
 LRDLTYYGNPVLRKKCQQLEEDTDERRRLGQDLMETVLA AVYQUVELGAEVLREKAKEVKEI NSSITKLLDNMVETMRQ ALDDIVLSPDPRLKQECAPIEHIDDNIKKLAKRMLRDMYA AVRQURIMGDETLTKKCKPVKAMNDRTMELDEDMFETMYQ SVLP LTWPDARLSWRCDPVEGIVPDD GI RDMFDTMYA LRELLDHPHPVLRQUAAPVGAMEPADRQLVADMGATMYH AVRPILRWPDRRLRAAAADVVDVTDAVRATWADMIDTMEA $\square F P \|$ VAFGDPVLKTLAKPADEPAAELEKLSADMLETMYA TVREILKMGDPRLLRVAQPATEFDDQLHLLVRDMVETMAA A $\backslash R E L$ LVGOKTLKRVSKKVECTDDEITGII KDLKDTDYA MEVRVYPDGDLRKAKDVEKIDDR1VDLLNQMRETMYK AI REILKMGDPRLLRQAEPVQQFTPEMDTLIADMFETMRA AI LEVLQYPHKKLRTRSSEVRVFDAQLHAFLEDMHETMDA LLKI ARMGNPVLHQVAQAVDPKAPEIQSLIADMDETMAD TVLKI DEHPSVILETKCRPVTQFDSKLKRLVHDMEETMDE T YPVVVYGHPVLRKEAEDFLPEEKELQQLI DDMFETMYK TVHRILKMGDPRLDR ARPVTGFDTELHGLVRDMDDTMHD ALRORTOGDDLAKECBKVEKMTPKLRELDDEDTMY LDLRFDGDPVLRAVAEPVTAFDEDLALLVAEMLATMYA LKLVYHPNEVLEQECEVVKNFDNKLAKLLNGMYDLMLE ALRNVIKYGDELLRKKSRKI DVINDRI LTLLDDMEETLYK IREILKMGDERLLRVAPPVPASSAELRALIDDMFETMHH TVRTLKMGDPRLLRVAQPVTAFDPALHQLVNDMRETMQA TPLKIVEYPDPILRAKNKRIDDFDENLKNLVDAMFDVMYK TVRPILIAGDPRLTTPATPVTVFDDELRAFI DDLFETNTA
 TRDI LKMGDERLLRDAAPVPPESPELWQLI DDMFQTMEH A RQ RGKDEETLKKCKEVKEDTPRILEMLDDMVDTLNA AI LP C CIVGEPVLHQPTSPIPDDSEEIIQLLDDMYETMDA AVRKILKIGNPILRQTSEDVSEQTKDFKKLI RDMFETMRH ALRQIRFSDDSILRKKSKEVEVVDDKTRQI LDDMVDTMYN AVRELRYFGDPVLKTVCDPVLKFDKGTESLVNDLLDTVDK AVREVLKYPNDIKKDAADVIELTDEVKQIIQDLKDTMLD ATRNIRYDNDPGLRKRCKEVKTVDDKIRLLLDDMAETLHH APVLKMGDPRLWQQARVVERFTDELAALIVDMQDTMRA

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## UniRef90_D4TNZ9

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A Y G VG|L|A A P
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 D P




 | $M$ | $P$ | $G$ | $V$ | $G$ | $L$ | $A$ | $A$ | $P$ | $Q$ | $G$ | $V$ | $M$ | $L$ | $R$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $E$ | $L$ | $A$ | $A$ | $V$ | $V$ | $D$ | $A$ | $S$ |  |  |  |  |  |  |
| $G$ | $A$ | $A$ | $P$ | $Q$ | $V$ | $G$ | $E$ | $N$ | $I$ | $R$ | $L$ | $F$ | $I$ | $V$ |
| $F$ | $I$ | $D$ |  |  |  |  |  |  |  |  |  |  |  |  | GQAAMMANP E









 T D GVVGLAAP QVGVNVRLMVYNPSGERGSGKEYVPR』VKYG

 A E GlV G L A G P Q V
 $V N G A G L A A P Q I G V D L Q L V I F G T B A P N P P E Y D L L I N P V L T P D$


 A R G V GLA A P Q G G S L QVAVVDAS QARDKRDRLANPVVID S A P G L G L A G P Q TNGGALAANQIGILRRLVVIDLG
$T$ D G I GL S A P QV G V NVQL MV FN P A $G V K$
AP GVVGLAAP QVGLPWRLVVANWS GDE











 A NGAGLAAPQIGVDLQVVVFYPDAPVVPRTVLIDPVVTPD AKGRGLAAPQVGVMQRFFVMDVGWKEGPPSPMAMINPVIM





 ARGAGLAA A D GlGL A ${ }^{\prime}$ A
$A N G A G G$
$G T G \square G A$
$A$
A Y GVVGLAA P

$E C G V G L A A P Q \vee G V L B R A V V I D D$
VGGVGLAAPQVGVDLQLVIFGFERSERYPDAPAVPPM LL
 A H GVVGLAANQIVGVGLVRVFVYDCGRTERRRGVVVNPVLETS


 A H GVVGLAANQVGKGLRMFVYDCPEGDRSGRRRINPVLETS A D GVGGLAAPQI GVLKK LVVVEDDNERYPGTPEVPNQIILS
 S N G $\square$ G L A A P Q I G L D

 ENGAALAANQVGI LKRLVVIDVY | $C$ |
| :--- |
| $C$ |

APGVGLAAPQVGVSLRVAVIDEPENTKRLYEIINPEIIKK

## UniRef90 АомзРЗ

 UniRef90－F5SES4 UniRef90－EORQR7 UniRef90－K2H954UniRef90－${ }^{-}$M2BJ45 UniRef90－UPIOOO349698C UniRef90－R7CA27 UniRef90－D5QCV1 UniRef90－K9XNM6 UniRef90－K7TB988 UniRef90－D3EPI8
UniRef90 H9UBDO UniRef90－F4A9Q1 UniRef90－G2NNC5 UniRef90－R5L865 UniRef90－A9TMS8 UniRef90－A9HKQ2 UniRef90－U2YYP3
UniRef90 W8T4S9 UniRef90－R6CN40 UniRefto FIW2Z8 UniRef90－F5XYF7 UniRef90 R6ENM7
UniRef90 R5RY41 UniRef90－D4TNZ9 UniRef90－UPIOOO45E9039 UniRef90－A0A037XEB6 UniRef90－V417G4 UniRef90＿DoU5Y7 UniRef90－UPIOO03F57EF2 UniRef90 B8acB8 UniRef90－101H40 UniRef90－UP1000474AC6D UniRef90－F3SCX2 UniRef90－UP10002629B82 UniRef90－C7JBU3 UniRef90－－10XRT6 UniRef90－X5ECS8
UniRef90 R6K5E5 UniRef90－D7N5N2 UniRef90－UPIO0016C38FB UniRef90－S3K5K3 UniRef90－K2FTA9 UniRef90－UPI00034C635A UniRef90－R7FQW3 UniRef90－F8LING UniRef90－O8YVH1 niref90－GWG46
UniRef9O－U2TM13 UniRef90－R5FEQ0 UniRef90－E8TSL2 UniRef90－Q5LNI6
UniRef90－S5XW15 UniRef90－A6C970 UniRef90＿A3TW67 UniRef90－UPIO0035EE6F3 UniRef90－UP100035D9B3D UniRef90－UP1000478BCD2 UniRef90－A7GGLO UniRef90－F2LVOO UniRef90－TOJE33 UniRef90－E2USAB UniRef90－Q5FUMM UniRef90－UPI00037E0032 UniRef90－UPI00029A4A8A UniRef90－A1WNX2 UniRef90＿TOP9E4 UniRet90－R6NQTO UniRef90－A3V199
UniRef90 D5DJP8 UniRef90－A5N7Y0 UniRef90－M4XEG3 UniRef90－A1W882 UniRef90－Q9FUZ2 UniRef90＿J9WHG4 UniRef90－H6R738 Uineion uia UniRef90－M4K274 UniRef90－R6PQE8 UniRef90－M3USD9 UniRef90－BOSHH1 UniRef90－UP100047CDFC7 UniRef90－UP100037C2556 UniRef90－K1LWC9 UniRef90－V2QKJ4 UniRef90－R7CE32 UniRef90－C5EJ47 UniRef90－A0A01 1 NQK8 UniRef90－UP100037B95E7
UniRef90＿1011G9
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GEQVGPEACLSYPGYTGIVKRAKYVKVKTLNRHGETWF応
 TQPRTHEEASPCLPGVSAAVDRPRAVTVRYQDDSGAVRER

 YYSQEMEEGCLS：CGVYFDVDRPEMVQVSFKNENGRPCQD $N E K E V G E E G C L S L P G V F A D V E R Y K W H R V K Y Q T E N G D W K E E$
$E G S Q T D Y E G L S L P G K G K V T P Y K V V A K A D N E K G E E V E 1 O$
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 SVQREHEEASDSLPNQYAEVVRPDRVRVRYRTLDGTEEELV

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| $S$ | $G$ | $Q$ | $E$ | $C$ |
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| E WE |  |  |  |  |

$\begin{array}{lll}\text { E G F E E I } & \text { G R E G } \\ \text { R Q E G }\end{array}$


| UniRef90 A0M3P3 UniRef90-F5SES4 | \S K G K |
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| UniRef90-EORQR7 | R T R |
| UniRef90-K2H954 | M Q |
| UniRef90-M2BJ45 |  |
| UniRef90_UPIO00349698C |  |
| UniRef90-R7CA27 |  |
| UniRef90-D5QCV1 | EQRL |
| UniRef90-K9XNM6 |  |
| UniRef90-K7TB98 |  |
| UniRef90-D3EPI8 |  |
| UniRef90-H9UBD0 | T K E G K |
| UniRef90-F4A9Q1 |  |
| UniRef90-G2NNC5UniRef90-R5L865 |  |
| UniRef90-R5L865 | LR N |
| UniRef90-A9TMS8 | L E K |
| UniRef90_A9HKQ2 | EQRQ |
| UniRef90_U2YYP3 | LS |
| UniRef90-W8T4S9 |  |
| UniRef90-R6CN40 |  |
| UniRef90-F1W2Z8 |  |
| UniRef90-F5XYF7 |  |
| UniRef90_R6ENM7 |  |
| UniRef90-R5RY41 |  |
| UniRef90-D4TNZ9 |  |
| UniRef90-UPI00045E9039 | A Q R |
| UniRef90-A0A037XEB6 Y |  |
| UniRef90_V417G4 |  |
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| UniRef90-UPI0003F57EF2 |  |
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| UniRef90-UPI000474AC6D |  |
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| UniRef90-F3SCX2 |  |
| UniRef90_UPIO002629B82 |  |
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| UniRef90-R6K5E5 | L K G K |
| UniRef90-D7N5N2 |  |
| UniRef90-UPIO0016C38FB |  |
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| UniRef90-R7FQW3 |  |
| UniRef90-F8L7N6 | 1 |
| UniRef90-Q8YVH1 |  |
| UniRef90-G7WG46 |  |
| UniRef90_U2TMI3 | A |
| UniRef90-R5FEQ0 |  |
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| UniRef90-Q5LNI6 |  |
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| UniRef90_A6C970 |  |
| UniRef90-A3TW67 | A |
| UniRef90-UPI00035EE6F3 | FKR |
| UniRef90-UPI00035D9B3D | $\square \mathrm{S} \mathrm{K} \mathrm{G}$ |
| UniRef90_UPI000478BCD2 |  |
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| UniRef90-TOJE33 |  |
| UniRef90-J2USW8 |  |
| UniRef90-E7AA39 |  |
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| UniRef90_UPI00037E0032 |  |
| UniRef90-UPI00029A4A8A | 】S K G K |
| UniRef90-A1WNX2 |  |
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| UniRef90-R6NQT0 |  |
| UniRef90_A3V199 |  |
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| UniRef90-Q9FUZ2 |  |
| UniRef90-J9WHG4 H N W G |  |
| UniRef90-H6R738 N K |  |
| UniRef90-UPI00034D5C7D |  |
| UniRef90-G212N4 | EQRQK |
| UniRef90-M4K274 |  |
| UniRef90-R6PQE8 |  |
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| UniRef90-B0SHH1 |  |
| UniRef90_UPI00047CDFC7 |  |
| UniRef90-UPI00037C2556 K D W F |  |
| UniRef90-K1LWC9 |  |
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| UniRef90-A0A011NQK8 |  |
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UniRef90 R7FERO UniRef90-M5WZD1 UniRef90-B9M7N5 UniReffo-UPIOOO3184024 UniRef90-A3JRL3 UniRef90-E4L8X6 UniRef90-UPIO0040E4970 UniRef90-X1AKE7 UniRef90_UPI00035EB68A UniRef90-UPIO0037084B5 UniRef90 UPIOOO3B52209 UniRef90-V5AE11 UniRef90-UPI0004734F6D UniRef90-UPI00037CBCAC UniRef90-D1PM70 UniRef90-O2S316 UniRef90_H6SKJS UniRef90-ASFVG7 UniRef90_UPI0003B3C356 UniRet90-Q7VED2 UniRef90-K9W6T8 UniRef90-L8DE47 UniRef90-B3ETT4 UniRef90_A3VFL6 UniRefofo_AOYLK 8 UniRef90 V4SNI1 UniRef90-L1QP68 UniRef90-UPlo004634F98 UniRef90-A7C3Y4 UniRef90_U50PC9 UniRef $90-$ S5ZXH2 UniRef90-UPIO0047A64ED UniRef90_K2DRX0 UniRef90_S9R083
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UniRef90 KgYLA7 UniRef90' B8HWZ8 UniRef90-11HPS4 UniRef90_UPIO0035EE99F UniRef90-UPIO004101DC0 UniRef90 A7HUU9 UniRef90-K2GOR7 UniRef90-A0A022Q330 UniRef90-UPIOOO37CA0C1 UniRef90-K9ZoW5 UniRef90-UPIOOO2897387 UniRef90-S9QBG4 UniRet90_F4XUM8 UniRef90 R6U4L2 UniRet90-UPIOOO2E419F1 UniRe90 UniRef90-H8GS84 UniRef90-14CB39 UniRef90-UPI000255DAB2 UniRef90-UP10003B61ED0 UniRef90-A1R6S4
UniRef90-Q9FV53 UniRef90_B3E344 UniRef90 K1YVP6 UniRef90-A4ES52 UniRef90-Q6FDC9 UniRef90-X1LYA9 UniRet90_UPIO0042B579A UniRef90-UPIIOOO364CBB4 UniRef90-GOLAF5 UniRef90-SOKIY5 UniRef90 G5F531 UniRef90-UPIO0047C3EDC UniRef90-UPIO00370DD55 UniRef90_UPIOOO29A610F UniRef90-I3D6T5
UniRef90 H5WN57 UniRef90-G2PEG0 UniRef90-UPIOOO37D5ABC UniRef90_G2TE88

| $\square \mathrm{R}$ |
| :---: |
| A $\square_{1}^{\mathrm{R}} \mathrm{R}$ |
| A L |

 AVRPLRTYGDPVLHAPGRAVDDARRALPALVEDLYASMYA IRPTIPWPDQCLRSKANTVGDDSDEIRAI WDDMIDTMEA MSEVVKVGKAVLREVAKPVTEEEKKMKHLIDADKKTMYA TVLPVITLTGTPVLHAPAREVAVVDDNVRTLIVDMFDTMRA AVREVVLYPDPGLRKKEPVLAVNRRVRKLIHDLKDTLNA A LPIRAYGDPILRKKGQEITPDYPGLSELIDNMFETMEA A URP LKMGDPRLLRQAQPVTQFNFALDELIQDMFETMHA
 A RRTAVQDGDPGLKKVCRPVTKFDDRLRILLDDMKETLLJA ALLKI ARMGSPVLVNVARLVDPMAPEIAHLMADMAETLAD
 DYP R RLYGDPVLRRKAKPLQATDQTVRQVANTMLETMFE

 A $\downarrow$ QSILRMGDPRLLEDAKPVDPKSQQIQTLIDDLLETMYA ATRRIVQAGDPVLHEPAREVDPGSERIQNLIDDMVKVMRS AVRPLLIAGDPLLTTPAVPVTEFGAELAALVETMLETMYD ALLDLLIYPDVRLK QVSASVRVFDEKLHAFLTDLEETMRA

s MGEQSLREVSV
A
 AVRPCLPWPDRLRKMETMYD $M V E$ LISPDPRLRQECAEVEEINGELLELVERMKDQMFA $V L D I T Q G N P V L R Q T A Q F V P E V G P Q I Q T L I D D L L V T V K Q$ MLTIURTVPDPVLRAPNKRVNTMNNLRTLADEMFDVMYK RLLAYPDPRLRAVAEPVTVFDDGLAGLFADLAAAMYA A TRKIARMGHPVLRGIARPVPDPTPEVKALVRDMIETMDD TVRLCLPYPHRCLKAPAAKVSEDTDEIRAVWADMVDTMDA DIVKAGDPVLHEPAQEVRPDSDR1QKM Q ${ }^{\mathrm{L}} \mathrm{L}$ R Q MLSVGYYGDPVLRKVGENVTSEYPNLKELVENMFETMYS
 LLS:IVETGDPLLRQKADPLETIDRAWQGWMDRLIATGLA RLYGDPVLRRKARPLTATDQTVREVADTMMETMFE A VRTDMVVPHTALTRKAELVTNDDERVDCLAQDMAETMYK MKDI VCAPDDRLMTECAPI ERVDGSVKALAKRMLKKMYA TYPIVVYGHRVLKKEAVDLPEEKDELKQLTDDMFETMYN A A RDL LQUGHPVLAARAADVELATPEVQGWI DDLIDTMRD ALPSIVQAGHPVERQLAAPYDGDDAELAAFLERMKEVMHD
$\qquad$
$\qquad$ QP



## UniRef90 U1L895

 UniRef90-M5T658 UniRef90-UPIOOO3635F78 UniRef90-UPIo0036A0AB8 UniRef90_Q28V77 UniRef90-R7L3H1 UniRet90-R5MDV8 UniRef90-F4A542 UniRef90-B2S1Q0UniRef90 R7FERO UniRef90-M5WZD1 UniRef90-B9M7N5 UniRef90-UPIOOO3184024 UniRef90-A3JRL3 UniRef90-E4L8X6 UniRef90-UPIO0040E4970 UniRef90-X1AKE7 UniRef90-UPI00035EB68A UniRef90-UPIOOO37084B5 UniRef90-UP10003B52209 UniRef90-V5AE11 UniRef90-UPI0004734F6D UniRef90-UPI00037CBCAC UniRef90-D1PM70

## UniRef90-Q2S316

UniRet90_H6SKJ5 UniRef90-ASFVG7
UniRef90 K9TTX4 UniRef90-UPIO003B3C356 UniRet90 Q7VED2 UniRef90_K9W6T8
UniRef90 L8DE47
UniRef90_B3ETT4 UniRef90-A3VFL6 UniRefofo_AOYLK 8 UniRef90 V4SNI1 UniRef90-L1QP68 UniRef90_UPI0004634F98 UniRef90_A7C3Y4 UniRef90_U50PC9 UniRef $90-$ S5ZXH2 UniRef90-UPIO0047A64ED UniRef90_K2DRX0 UniRef90_S9R083
UniRef90 C7D646 UniRef90-C2KVD7 UniRet90-U4UZA5 UniRef90-B6GC44 UniRef90-KgYLA7
UniRef90 B8HWZ8 UniRef90-11 HPS4 UniRef90-UPIo0035EE99F UniRef90-UPIO004101DC0 UniRef90 A7HUU9 UniRef90-K2GOR7 UniRef90-A0A022Q330 UniRef90-UPI00037CA0C1 UniRef90-K9ZoW5 UniRef90-UP10002897387
UniRef90- S90BG4 UniRef90-F4XUM8 UniRef90-R6U4L2 UniRef90-UPIO002E419F1 niRe90 K 88 FE 80 UniRef90-H8GS84 UniRef90-14CB39 UniRef90-UP1000255DAB2 UniRef90-UPIO003B61EDO UniReffo-A1R6S4 4 UniRef90-Q9FV53 UniRef90_B3E344 UniRef90 K1YVP6
UniRef90 K2GQu9 UniRef90-A4ES52 UniRef90-Q6FDC9 UniRef90-X1LYA9 UniRef90-UPIO0042B579A UniRef90 UPIOOO364CBB4 UniRef90-GOLAF5 UniRef90-SOKIY5 UniRet90 G5F531 UniRef90-UPI00047C3EDC UniRet90-UPIIOOO370DD55 UniRe990_UPIO0029A610F
UniRef90-13D6T5 UniRef90-H5WN57 UniRef90-G2PEG0 UniRef90-UPIOOO37D5ABC
UniRef90_G2TE88

PGRAGIVAANQ|IGIVIAKAAFAYLVDDE LGYVVTNPRTDEVV NEGVGLAANQVDLPTRMFVANASRGEGQEWVVINPVIDRP AEGVGLAGNQVGEDLRLEVYDCPDDDGVRHNPVPAEREAG SNGI GLAAPQI GKDIRVVVIDLDVLSDDYPEYKILEFDED MPGVGLAAPQI GVMLRLAVVDASDDRGQA TRMADPEIISA EKGLGLAAPQIGVSKKVFAIDMRQRVNTDVPCVPEVEEIG ADGCGLAAVQVGMLKR JVVVDVGDGLIELINPEIVES ADGVGLAAPQIGVLKRAFII DLRDGNGPLI LLNPKILKK NKGVGLAAPQVGLDLSDFVVRENVMSKPLVFINPLITETS AEGVGLAAPQVGCCRRFFIMHDG DMRIEADNPEIIKK APGVGLAAPQUGPRRDVLEDTKEYDSYAPKEETAQKKS GPGVGVAAPQ GVTLRVCVVDVSNSRNGKDNNINPVITER ARGVGLAACQIGVPLRVFVYDCPDDEDRRHHVVNPRLVRA
$M P G V G A A P Q G V S L R L C V V D A S D E R G Q T I R M A D P D F V G A$
 ANGVGIAAPQVAESYQLMLYYPTAPSMEPTPYINPRILSH SGHVGI AAPQI GELYRIIALDPCKEHHGQRDMINPVILKW ANGAGLAAPQ| GVDLQVVMFYPNEEPDPATTLINPVIKPL ANGLGLAGPQVGMMRRLFICLDERDMPEFIEFINPEILELL AAGLGLAAPQVGRTERLEVVDLTPMADEPMVFINPEVVEE AGGVGLAAPQVHVPLRLF YRVHDGPRGLSAVINPELVLH SNGVGIAAPQI GESYRVFIRYPQAPTMEAIAIIDPQIIAY ARGVGLAAPQVGLNARLFVAVEYEDREYVMLNPVLKVIDK
 ANGVGLAANQVGVGKRLFVYDCPDQGEDGKMIVNPVLETS AKGLGLAAPQI GKSDQLFVVDVSPFVGDGMINPVLEI YQP MPGVGLAAVQLGПMQRLAVVDASEERGKAVRMANPEVLHE $T N G V G L A A P Q V S R S D R L L I V A S R P N R R Y P Q A M D N P K L V N H$
$V N G A G A A P Q U G V N Q V V E G F D Q N P R P D A E Q V P E T I L S$ APGVGLAAPQI GVPDRIIVДEDTKEYDSYQSMILNPKLKK APGIGLAAPQI GELTRVVVMDLGDERRNPRYFVNPETLWS ANGAGLAANQLGDPRAVFVYDLDAGVRHRGYVVNPVLVTS ASGVGLSGPQVFRSIRVVAAECNANPRYPDRETVPLQIWA
 ADCAALAATQIDHPPSIVVINLPDSNGDVLCLINPQIVSK APGRGLAAPQVGVLARVFVMDAGWKDGDMAPLINPRILVS MPGVGLAAVQLGVPLRLAVVDASDARGQATRMANPELLFA $A N G V G L A A P Q V G L L K Q L F V V D I G D G V R Y V C D N P K I E A V G E$
$M P G V G M G A N Q I G E M V R L A V V D A S E K R G Q V V R M A N P V I L H S ~$ NGGCGLAAPQVGQTIQLAIIDTEYDYDPYVLINPVIVEQS RNGVGLAAPQIGYSSRVTVVASHPNMKPMEMINPLIVSHS ANGVGLAAPQVIVASRPNPRYPHAPEMEPTAMINPRLLAH TDGIGLSAPQVGVNVQLMVFNPAGVEGEGEE\|IPVVYKFS APGRGLAAPQVGVASRLFVTDVAWKEGAPDPRVFANPEDS APA $\square G L A A P H I G V L R R L I A V R P A T G G A \square R P Y V N P V V E W A S$ ANGAGLAAPQVYEPWRIVVFQAPDHTAPLTVLINPEVEIL MPGYGLAAVQI GVPLRLAVVDCSDDRGQAILMANPELLHA APGVGLAAPQIGIPLRIIVLEDTKEYDSYASKQETEAQDR AQGVGLAAPQVGVDLRVFVYDLTDASGDRHHVVNPVLEME ENGIGLAAPQIGVHKQMIVVDCQPDNPASQPMVLINPETT A HGVGLAAPQVGLPDRLFVVDAAPFSDMEDDEEEEAKFLS AQGRGLAAPQVGRSERVFVMDCTWKEGERTPMINPE\|LSR ANGVG|AAPQVSQSYRLFIRYPHAPLMEPTAMI NPSMISH AEGAGLAA VQVGVLRRVVLVETEPGKDYEMI NPETIYR AKGVGIAAPQVSESCRLFVRYPYAPEMEPTVMI NPCILSY TVGCGLAAPQVGVNYRLMVYNEAGAPGEGKEVVLVNPKFS QRGVGLAAPQLGLGVRLEVAVEYEDRDFVMINPVIAVLNK
A SDGCGLAAPQVGALVQLVVIDVDHADGEGSKNPYVVVVAD ADGIGLAGPQIGLSKRIFVI DFPELTNFKKVFПNARIIER ANGAGI AANQVGI PYRLFVIEVGDNPRYPYKPKIPRTVVI
 GPGVGVAAPQGGVGLRVCVVDVSNNHGLLCMVNPEIISR
 APGRGLAAPQVGVMHRLFVMDATWKEGPGSPVVMDNPEIM RNGVGI AAPQIYVSKRIMIVASRPNPRYPDAPEMQPVVMI APGVGLAAPQUGVSLRVAVIELPGEYELDTLINPEIIRR
 HDGIGIAAPQVG KNIQVAIVELDDEAERFEMINPTITAK ADGCGLAAPQVGELVQMVVIDVDYGKNPYVLINPKTVVAD AEGRGLAAPQ|GVSARIFVVDTTWKAGKPSPTVFVNPEIS ANGVGIAAPQVYVSKRLTIRYPDAPEMQPEMMINPEVLQL RDGVGGAAPQVGISLRMFVCDIGSPEESNVKKNINPLITP ANGAGLAAPQUGVDLQVVEGFENNNQRYPDAVNPTVEPG ${ }^{A} A P G V G L A A P Q V G V G L R I A V V E D P A P V P E R V P Q P F R V L V N P$

## UniRef90 U1L895

 UniRef90－M5T6S8 UniRef90＿UPIOOO3635F78 UniRef90－UPI00036A0AB8 UniRef90＿Q28V77 UniRef90－R7L3H1 UniRet90－R5MDV8 UniRef90－F4A542 UniRef90－B2S1Q0 UniRef90－R7FERO UniRef90＿M5WZD1UniRef90
B9M7N5 UniRef90＿UPIooo3184024 UniRef90－A3JRL3 UniRef90 E4L8X6 UniRef90－UPIO0040E4970 UniRef90－X1AKE7 UniRef90－UPIO0035EB68A UniRef90－UPIOOO37084B5 UniRef90－UP10003B52209 UniRef90－V5AE11 UniRef90－UPIO004734F6D UniRef90－UPI00037CBCAC UniRef90－D1PM70

## UniRef90－Q2S316

 UniRet90＿H6SKJJ UniRef90－ASFVG7UniRef90 K9TTX4 UniRef90－UPIO003B3C356 UniRet90＿O7VED2 UniRef90＿K9W6T8 UniRef90－L8DE47
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 TMKDIVLEDHPVLRKVAEEVTPASEEDKEEAQKLLEYVDN
 $\square L Q\|S E\| G S P \| L R D R S T A \square A N L D P Q L D E L I D N L M A T M Y A$ $V V P$ VQLGHPVLRQQATEYTLEKPVLDQLLDEMMATAHS

 EI RELGHPQLRKPANPVLDIVPDTQRLL DNLLTFVVQ TVRPI LPLSDPSLRRQALPVNDV QAVQYLVDDLLDTLYA
 TVLPI AQRGEAILKLQAAPVAQNSEWLLQLAAAMQTTMLE TMNDIVRDGHPTLRQVAEEVQPASEEDKQTLQSLLQYVIN

 TMKDVVREGDPVLRKDAEEVQPASDEDRQTLQAMDDFVIN
 $S V R R V L L W P D P L L S V V C D A V V A V D P E L Q R L I D D L E D T M Y A$

 I EKLAHNMVQTMYA $M L E V V I A P D N R L R V K T K P V K K \prod T P Q L L Q E!K E M T K T F V D$ TILLPVAQKGEVILELVASPVSELSSWLTHLVEAMNFTMQQ MEHI DREGHPTLRTRAEEVTPLSAEDRKLADDMLQYLDN

TMED I TRDGHPTLRK\AAEVPPASDEDKRILQELLDEVKN AVREVLQLGNPLLREVSEPVEPTSPEVARIVEDLRDTLAH MNEIVTFGHPSLKSKSVNI TEFDEALKKLSERMIIKMYE VTQVGDPVLRGKSDPVHPQDKEFQDL $\mathrm{T}^{2} \mathrm{CKMVGVMRK}$
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TMDDIVREGDPILRVVTEPVSPPTEEDREGDDMFETMYK
TMNDIVLEGHPTLREVAKEVPPASEEDKQTMAAMLQFKKN TMKDVVREGHPVLRKVAEPVTPLSHEDKETLLSMLEFBLKN M R LL LK DMA T TMYA NK I L R G K A DPVK K $\square$ D A S VK K L I K E MVK VM L E
 A 1 L PLIRFPHPCLEQVAAPVDATAAATGQLAHDLLETMHA $M A L D D D L K D T L Y A$
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 LS IVLYADPKLRARNDR SSGDDKVKKL $V C Q V G D P V L R S K A A A V E P S G A E V Q Q V \square K T L V K V M R R$
TMDD\IREGNPTLRAVAKEVTPLSDED\|LLGEKMMQFLKH LNIVTDEQP LIKAKSGCVSPLDAENRALDFAMKDKLQQ TMKDIVEEGHPALKGKAEPVTPMDEEDKEVAKEMDQFLDN DLVT $\square G D P R L K A P T A E I E A$ TEARDVLDALTTLLRS KI L DEKNKVLRKVSKDVTPDDETDRKNIEDMLKYLKM
 VKD $V$ Q MKDI TRDGNPILRQQSETVPPLSAEDRKLGQKMMQYLE K D N D DEKNKLLRTVSKEVVPLTDEDRKTINDIIEYLTN DLLDMGDPVLFQQHQQVSVDDDDNQRNANDMMEYLKN A $\square$ KKLVPASHP LLTKTAQEVTKFDNSLKSLLNDLEDTMYA TMNDIVREGAAILRKKTQEVDPVSSEDKDALLCMLQYLKN

T TMM

 QV G D P V L R S K A V D V P E D S K E I $\operatorname{D}$ D L I I D Q M I K V L R K


 T M K D I I L E G H P T L R M K A E R V
 TMADI I REGNPTLRQKAQEVAPLSDEDII LGEKMMQFLKH
 V K N N V K G G R I I F S K K A Q P A T E A D $\quad$ K K Q V I T D L L D T L K A


 A I K E I L L L G N P K L Y EVVS ETVV Q E S E L N D L A L I K D L H D T M I D
 $\square R N V \mathrm{~V}$ H D P T Q L S T K A Q P A T K L D A A V



A D KVG S IDD R E A LVLA S D LT DTMYA $K \square R Q N G D P V L R K V A R E V P L E T Q D F K D L D T K M L L I M R S$
 T $\quad$ K $\quad$ K V V V $V \mathrm{~V}$ EII I R D PLLLQQKSEPATEAD M N H I I R E GHPSSL T T P S K P V V Q K D DD L G K S L D A M V K K H R L
 $\square L P \square V Q M G E P V L R Q P S G Q Y A G Q H R T L A K L L D T M H E T M L E$ L R S K S A Y VK P D S T DLNTGI K R LYY T V R D L R QKA QPATKED K K I V Q DLLD T L K A $K$ K $\quad$ L L L G D E ILL Y R $\square$ S E K DQ K S N D K A K Q V I N D L H N T I V
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$Y D G V G I A A P Q U G V S L R I V V I M E R E G L K D K K K E V Y E K I N ~$ YRGRAVAAPQIGVAKRLLYMYT GLDKYVFVNPVLTFP
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$Y G G R G A A P Q L G M K R M F Y L N L D$
R


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$S P C D G L A A P$
NK G Q Gl A A P Q V G V D L Q V I V E K R Q M R T F P L H D
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V $\square P$
 LT

EA GGQKQTLHKLIE SMRTTMLE

SMRTTMLE
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DPLLAQKSAPATKADLQVGK
■GVVQRGAGLLAEPAREAERIIDELFAAMEDLQDTLKA NVLLLGDPRLREKAARVSPDTQRCRENLQKALEAFRA IREIVSD QFRLSQKSLPAAKEDLPV VQDLLDTIIA LIULRVGSPGLREVAAEVTRDDEANALGEAIRAFRAE NEVLYQRCKPVNDISSEDQNU1AEMYEKMQ TLGPMAMWPDPVLRHVAAPVDDFGP VEQFSQMLVDGMES LSQKS T $\square$ ANKGDLK $\square$ AEDLRDTLLA LSQVSQPASQDDDYПAR ELQDTLLA LLDUILLNN【ILRKKVKKLLFGNKKILFIIKKMLNTMYN LRQQADELTPGTELFQVLKQRMLATVAD Le $\square$ FK KGSKTLRTNAKRISKVDVATRDLAKDMLQSMYA【RMPSVPATPEDTATGRDLADTLAA HS LRTVVK DPLLSEKAQLATKEDLWIGKDLQDTLATYNR KLVEDPEKILRKKSKEVKPGSKEDEELAKKMIYHTDE NIVKDSDPIVREKSVTVPPMHEEDKELLMDMLQYVRD
ПKP】】KD QQLLAKKATPTTKADDP LANDLS MAKILTYPDHTLQMKSLPATKEDKGMNEADDLDDTLKA
 LHALAADVPHGEDVTGLVDAMTAAMTA LKKKSV KADTKDMQIITDLQDTLKA A LRRVACYPHRSMTRPVMPVPALSPVFMSSLMDLNQLATD KLVQLPKKILREKSKDIIPPLISEDIIELI EKMIFHVND $\square K D \| V R D E A V L S U K S E P A T R A D Q T M Q T V R D L D D T V E A$ P $\backslash V Q$ DPARTLWCKQYTLNPAQDEFSDLIAKVKATRHY
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UniRet90-D5FFW2 UniRef90-D8R4Y2 UniRef90-R7IZ83 UniRef90 $\mathbf{O O 4 O H} 8$ niref90_A6BL19

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D R C V G M A A N M I G V T K R


 A P GVGGLA AT QIGLGLA LAVVEDHVRDDEDDPREDAEFPFH










 N C L G M A A N M I $\quad$ G I $\operatorname{N}$ K R



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 T A I A A T Q Y HVVNA QI I A R GASSPDLPGPLVLV NPRVLAR


 WY GRGI A A P Q I G V P H R I V H L H L D T P WT L V N P R I VGR S E
 A K GII GLA A P QVGI S K E L L VI D DN F E D S A A E P LI LIDN P E IT









 NRCVVGMAA A N M I G Y S K R I I I T A G DM D

 S G R V

 G I GI A A P QIJA VEK R I I A L H L L D D D R E R L I S H V N P K I V S H $\left.\begin{array}{ll|l|lllllllllllllllllllllll|l}S & Q & G & V & V & A & A & V & Q & Y & G & L & K & N & M & F & Y & I & N & F & S & D & E & N & S & N & K \\ N & D & V & F & I & N & P & K & I & A & K \\ N & C & V & L & A & G & N & M & I & G & K & K & R & I & & L & V & F & A & V & G & N & L & I & V & P & M\end{array}\right]$ Y Q Y P S L S A P Q I G W N V Q V N P V D L D A E D T G T T A G K D T R T TA K
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$M Y P \|$ I Q $\square P$ A RS $L R Q Y A \square D A R R V A Q E Y A G L \square S Q V K E A R H Y$ $T V L P V L N H G D E A L Y Q Y C D R V N S Q S L K T K L I T Q S L K M T A A Q$
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UniRef90-A0DKG8
UniRef90-J3TWE9

## lupas_21 <br> lupas 14 lupas 28 <br> lupas_2 <br> jnet conf sol25 <br> sol5 <br> sol0 <br> jhmm <br> jpssm

UniRef90_A7VIF9
UniRef90_XOW216
UniRef90_C9KKL9
UniRef90_U2TX51
UniRef90_C4FAF1
UniRef90_X0YUD8
UniRef90_C8P9A0
UniRef90_R7EL16
UniRef90_E9AK65
UniRef90_J9FPR6
UniRef90_B3SFD8
UniRef90_UPIO00465A3BE
UniRef90_S6G8G6
UniRef90_UPG00047C1051
UniRef90_R7LZT5
UniRef90_A0DKG8
UniRef90_J3TWE9
$\square$ - KEVYNVSEGCCLSLDGERPTVTRYKWIVEVEYRDLKFKKQKQ L G A Q RVEEGCLTRDGTSKVTRYAKVKVTFDDVVDGKRRTY
 YQTQ




 K G PYETEEGGCLIS LTGTR K



UniRef90_A7VIF9 UniRef90-X0W216 UniRef90-C9KKL9 UniRef90-U2TX51
UniRef90_C4FAF1 UniRef90- XOYUD8 UniRef90 C8P9A0 UniRef90-R7EL16 UniRef90-E9AK65 UniRef90 J9FPR6
UniRef90 B3SFD8
UniRef90_UPIO00465A3BE
UniRef90-S6G8G6
UniRef90 UPI00047C1051
UniRef90_R7LZT5
UniRef90-A0DKG8
UniRef90-J3TWE9


150
160
VVDDIIACVIQHEVDHLDGILICD $V F R D F P A E I V Q H E M D H C E G I L$
$D F E G W T A Q M V Q H M V D H C Q G K L$
DFEGGTAQMVQHMVDHCQGKL

SLDAFPAEIVQHEIDHCNGILI
TYTGWTA QQ I QHEAEHCNGVLI
TLDKMRARMSLHELDHLQGVLFTRRV
QI MDHKARVFLHELDHINGMTMTHRLSEGKDD!IDSDKEN
KI D GWFSRCAQHENDHLDGVLFVDRLEKEK
KLRSYVA VVFQHEDEHNDGKLYYDRIDKDKPNHDEDDW
TLRGYHAIVFQHEMEHNGGKLYYDRI NKQNPMFSKEDW
TLRSYRSIVFQHE IDEHNQGKLYYDLINKEEPHYTNEKW
TFKDSPAEI IQQHEVDHLEGVLI



Y K N $\square$ Q
UniRef90_B3SFD8
UniRef90_UPI000465A3BE
UniRef90 S6G8G6
UniRef90 UPI00047C1051
UniRef90_R7LZT5
UniRef90-A0DKG8
UniRef90_J3TWE9
lupas_21
lupas_14
lupas_28
jnet conf
sol25
sol5
sol0
jhmm
jpssm
${ }_{8}^{8} 5$

