

## QUERY

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UniRef90_R5BNF8 UniRef90_B9L111 UniRef90_A0A011QWC4 UniRef90 L5N2Y3 UniRef90 W7UXV7 UniRef90_UPI000248D288 UniRef90-C3P993 UniRef90_C3P993 UniRef90-D0BKJ1 UniRef90_TOVPT2 UniRef90-X1HCQ0
UniRef90-F8AAY1 UniRef90-W6S495 UniRef90_H1PUU3 UniRef90-S6ELE1 1 UniRef90-N2ABT3 UniRet90-B1C2E8 UniRef90-W4EPC7 UniRef90_U1X1M9 UniRef90-C0DB56 UniRef90-UPI00037F94E0 UniRef90_S7TWB1 UniRef90-R5K0Y8 UniRef90-H2J331 UniRef90-UPI000390338B UniRef90-C8NEJ1 UniRef90_UPI000255C731 UniRef90-K9EC97 UniRef90-H3NF69 UniRef90_R7QYV6 UniRef90_S0S5C8 UniRef90-UPI000360C0B1 UniRef90_R6XA21
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 DGAYLAEKLAGLRIFEDEDEKMNLSVAQVGGSILLVSQFT DADKLWGKLGGLRI NDDEDGKTNLSLEQVKGEVLVVSQFT
 D AVYL ADKVVNLRI F TAEWLA AKVAHLLRI F



 DMEYLVRKIVQMRIV

 EVNWMASKVKDLRIF

 IVDKMVEKLVNLRI F



 | $D$ | $R$ | $L$ | $A$ | $R$ | $K$ | $I$ | $A$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  | $M$ | $R$ |  |  |  |  |  |  |
| $D$ | $V$ | $D$ | $K$ | $L$ | $T$ | $G$ | $L$ | $R$ |



 DVNYLARKVLNIRI F DV HYLADKLABLRI F

 DL Q Y I K $\quad$ D K
 DVDYVRKI TMMRI F
D A A WL A E K V A G:LRI: DCERLAAKMIGLRIF EVDWMARKCLDLRLF
 QVNWLADK】AGLRVF
 D ALYL ADKAAGLR DVRYVANKVANLRLF
 D AEWLVEKIVNLRVF DAEWLAKKATSLRI F
 QAKFLANKI VDARI F
 RADKLLHKLLNYRVF
 Di K Y MAKKIINMRI F SCAKLLDKKLLNYRVF DVEYLIGKI AK LDRVF DLEYLTKKI AHMRI F
 DALYY LADKI SGLRI
 D $\square E Y$ Y I K K K


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CRKGRRPNFMGAAKPELAEPLYKTFNEMVTGEGUPV


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$\begin{array}{llllll}L & Y & G & D & C & R\end{array}$


L Y G N C DK G R R P GF T D A A R P D LA E P L Y E K F L E K CR S F GI K T
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 VMGDARKGRRPNFMFAADKEKAERLYNYFVERLKGHAKKV LFANTKKGNRPSFTEAASPQUARKLYQDFNKILSKU LDV
LYGDTRKGRRPNFMKAAKPDAANALYECFNKALREKG| HV YADCRKGNRPSFVHACEPVLANELYEEFVRLCRQRVSKV LYGDCRKGRRPNFMEAAKPPHAEEIYNYFNDELRKKGIRVV LYANCKKGNRPSFIEAGEPHMAEALYEYMI EEAKKSVPVV LYGDCRKGRRPNFMEAMGGEDAKALYDKFI EMLKESKLKV HASTKKGNRPSYDKAAKPEFADPLYNQFIQQVEKDAKKV LYANCKKGNRPSFTEAGEPHRAEELYEYMVAKAREQVPVV LYADTKKGNRPSFVKAARPEQADPLYEAFNEGLRQSGLHV GADTRSGTRPGFSKAAPPDEGKRLYHCFCDKMRADGLPV LYADTRKGHRPNFLMAKEPGEANRLYEYFCEVCRRDIPNV YYADRKGNRPSFDKAGAPELANRLYEYVVERCRTYVDKV YGDVKKGRRPAFTEAAKPDVANELYEAFNERLRAQGLTV LQASTKKGNRPSYDGAAPPNIADPLYEQFDQVLEDDGKAI LYGDVRKGRRPNFMKAAKPDVAENLYEQYNQKLRAEGMNV YADTAKGRRPGFSEAARPEQAEPGYKQFNEALRNRGLKV LYGDAKKGRRPNFMQAAKPEQAEQLYEAFNEKLKELGVPV LYGNCRKGRRPSFVEAAPPEVADALYNVFVTKAKERNIPV LHASTKKGNRPSYIKAAKHEHADPMYEALCHYTQEDGKSV
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 LYGDCRKGRRPNFMNAAKPDVAKKLYDDFNEKLKEKGLTV
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AADTNKGMRSFSGGAHPVEAERLYDYFVAQAAASGIPT L Y G D A R K G N R P S F S S Q S A K A D K A E K Y Y E I I L I N Q L K E E G F E V



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UniRet90_10WKJ4 UniRef90-UP1000248F8DB UniRef90-I1DT63 UniRef90 UPIIO0037A859B
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10
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30
MRILAQRIVRSASVTVVDGTVITGSI GQGLLIFLGVGPEDTEQ MRVVLQRCRSASVAVAGEVVGAIDKGYVLLVGVRQGDTEK MRVLLQRVKQASVEVDGNVNGEVGQGLLLLVGFTENDGDK $M R A V V Q K V K K S S V K V D G K V V G Q I G K G I N A L I G T T E G D T D E$ MRVVVQRSLHAKVTVNDEVVGQUDHGLVLLVGITHDDTEH MRAVVQRVSEASVTVEGNRVGAI EKGLLVYLGVAAGDTEK MKALIQRVSQASVSVDDECVGAI EHGLLALIGVEREDDEA $M R A V V Q R V S R A K V T V A G E V V G E$
 MKLVIQKVSSASVEVEGNCVGKI $M R A V I Q R V T Q A E V V I E Q Q S V G K I$
$M K I V L Q R S K Q A S V T V D G K V V G K I$

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MKLVIQRVNHANVKIDGEEVGK $M D A L I Q R V L S A S V V V E G N I V G E!$ $M K V V L Q R V S S A S V T I E G K L N G K I$ MRIVLQRVRQASVTVEGRITGQ1 MRALLQRVTGASVTVDGQVQGQI MKALVQRVSSANVVVDSETVGEV MRAVVQRALQGNVTVEDNVVGEI $\begin{array}{llll}M K G L & Q R V K H A S V V V E G K T V G E \\ M R V I & Q R V K S S Q V T V D G E T I G K\end{array}$ MRSVVQRVTQASVSVEGEVVGK MKALIQRVSSSHVEVDGKVVGE $M R A V I Q R V K H A S V S V D N Q I T G E I$
$M R V V I Q R A K N A K C T V G Q V T G Q 1$ MRVVVQRVKHASVTINGTVNGK MRALIQRVSEASVTVEGELLGEL MRVVI QRVSKASVTVEENVVGKV MRVIIQRVSRASVSVQEEVIGAI
 MKAVVQRVSRASVRVSGETVGEI MRVVIQRSENGRCEVEGETVGSI MRTVIQRVKHAKVNVNETTVGKI MRAVVQRVTNADVKIDGRVNGKI MRVVLQRSLFAKVEVEGEVTGQI MIALIGRVRSASVEVDGQLVGKI MRLI QRVAHASVTINGKEKSSI MKALLQRVTQARVTVAGETVGEI MISLLQRVRQASVSIAGKETGRI MLALIQRVSQAKVNVKGETTGKI MRAVVQRVKRSKVEVDGKLKGE: MRVVLQRCKEAKVDVKGQTVGKI MKIVLQRVAHAKVTVSEQQTGA MRAVLQRVSKASVTVDGKVVSSI MKLVVQRVSKASVTVEGEIVGKI MRAVVQRVSEARVVVDGQSVGQI
 MRVILQRVQSSSVTI DGETIGKI MRALIQRVTQARVEVEGAVI GE:
 MRIVIQRVSEASVAIDDSEVATI
 $M K I V V Q R V K N A Q V K V D E K T V G K I$ MKSVI QRVSKASVTVDSHLVGSI MRVI QRVKGSSVRVNGEGVGQ MKAVI QRTKEANVQVNNEVVGSI MRAVI QRSKEASVTVANNIVGEI MKFVVQRVTNANVSVDGNIVGSI MRALVQRVSEAAVRVDGETIIAA MRLLIQRVNYASVSVEGTLISKI MRALI QRVSEASVTVEGAVLGEV MKFVI QRVTEASCTVDGNVTGA MKLVVQRVKKAEVKVDGNITGKI MKVLLQRVREARVEVAGEEI GRI MRAVVQRVLEASVTVEGQRVSDI $M R A V I Q R V A E A S V T V D G M V I S T$
$M R V V V Q R V S E A S V A V N K E T V G E I ~$
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UniRef90_C5BPU7 $\stackrel{1}{1}$
$\square$ I EKMAEK ${ }^{50}$ K
 DI E Y L K NKILLNLRI FEDEEGKLNKSLKDVNGELLVI SQFT DVHFVAEKLINLRI FEDENEKLNLSVKDVGGQILSISQFT DADYLAEKVAGLRIFTDDEDKMNLSVQDIGGGILVVSQFT RAERLLHKLLHYRVFADETGRMNHNLQQAEGGLLLISQRT HADTLAAKI TKLRVVSDDAGKMNLNVHDAGGALLSVVSFT DASYLAEKIVSLRI FPDDDEKMNRSLDDVAGRMLVVSQFT



A AKFLADKVVNLRI F



KARRLCERVLGYRI F

DI RYLSEKIVNLRIF
QVDYLVRKISRLRVFPDASDKMNLSVREVGGGVLVISQFT

 TADKLLHKIANYRIFTDEAGKMNLSVQNDQGELLIVVQFT ELEWMARKCLDLRLFPEENSRWQKSVLEI GGELLVVSQFT

 DVDYLVKKVTNLRIF


 | $l$ | $A$ | $D$ | $K$ | $L$ | $K$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $V$ | $A$ | $D$ | $L$ | $L$ | $Q$ | $L$ | DAEYLASKI I NLRIF DAEWLS GKIVNAR R F DLLWMAEKLLHLRI F

 D M K Y DVRYVAEKIANLRLF K A D K L A E K V L N Y R V F K A D R L L
D A K K K K
CK K KADKLVNKLIAYRIF
 KADKLAEKVLNYRI F

 DID Y L VRKI GARLF DAAYLARKI AGLDRVF QADRLLERLLGYRVF D EDWMARK LNLRLE D A K Y 1 K K K K A NADKLLHKLLNYRVF





 D DEWLSGKLVRLRI F
 SAAKLAQRIANYRVF DADKMAKR ANVRVSDVEDKMNNSVIDDAQGEVLVVSQFT DADKMIKKLLGLRIFEDADGKTNLSLADVGGSLLLISQFT
 DVA WMVEKLATLRIE DI NWLTGK I VRMRI F
 DI AKLAHKVLHYRVFADANGKMNLNVQQAGGSLLVVSQFT



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| Ref90 Q97GU2 | GVFGAHMD |
| UniRef90-E67 | TGQFGAMMD |
| iRef90-F8F | ETGVFQASMRVQYTNEGPVTLLLD |
| UniRef90-E1VE | ATGRFGANMQVSLVNDGPVTFLLE |
| UniRe990-E8L | GADMQVSLVND |
| UniRef90-UF | FQTHMDVELVND |
|  | AAGEFQAEMLVALEND |
| UniRef | QTGRFGADMQVSL |
| UniRef90-R6RAX7 | QTGTFGAMMKVSL |
| UniRef90-R2SJO9 | FGADMKVSLVNDGP |
|  | FGAMMDVQLI NDGP |
| UniRee90 | ETGEFGAMMEVEL |
| UniRef90-K08267UniRet90-U5FAQ6 | QTGVFGADMKVNL |
|  | PTGVFGADMKVELNDG |
| UniRef90-U5FAQ6 UniRet90_J5GXN7 | F GADMK |
| UniRef90-EGLDR2 | ATGMFGAHMQVSLVN |
| UniRef90-W8GEF | A ADMKVSLVND |
| UniRef90-W8F027 | GADM |
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| UniRef90-UP100046 | ETGVFGADMQVALTNDGPV |
| UniRef90-O2BHY2UniRef90-IVWW08 |  |
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| UniRef90-UPIO0022 | R |
| UniRef90 U1JDQ8 <br> UniRef90 K9RAD | ANGQFGADMQVTLNDGP |
|  | QTGKFGAMMQVS ENDGPVTLVLE |
| UniRef90-KMABD | GV QA MK V |
| UniRet90-UPIO0036 | G GADMS S NDG |
| UniRef90-U7 |  |
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|  | QTGOFGADMOVELVNDGPVT VLD |
| UniRef90-Q03F48 UniRef90- 56 CDQ4 | GAMMDVALVN |
|  | GANMQVALVND |
| UniRef90-UP1000379 UniRef90-R7AY0 |  |
| UniRet90-F5T8P9 | AHGQFGADMKVSLVNDGPFTIMYD |
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| UniRef90-UPIOO |  |
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| UniRef9UniRef9 |  |
| UiR Ref9-R5K |  |
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| UniRef90-G2PKK2 |  |
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| UniRet90-UP100034691A9 ETGRFGAGMRVEIVN |  |
| UniRef90-X6KWFO $\quad$ A T GRFGADM |  |
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|  |  |
| niRef90-UPI000248F8DB |  |
| ei90 1 DT | ATGRFGADMQVSLINDGPVIFL |
|  | GADMKVSLDGPVIT |
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UniRef90_F9HJA8 UniRef90-R6W0W
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UniRef90-A6VDK2
UniRef90_UPIO0046AB648
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UniRef90_W2ULF0
UniRef90_A3W7F3

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










 $M K A L I Q R V K R A S V E V E E G I V G S I D H G L L A L V G V E K H D D A A$ $M K I V L Q R S Q H A S V V V D G K I V G Q I E R G L V A L I G I G H E D T E A$ MRVVI QRVTHASVVIVDKQTVASINKGLLVLVGIEDSDTNE $M K A L L Q R V A R A S V R V D G Q L V G Q V G Q G L L I L L G V G Q G D A P E$ MRALI QRVVSEASVVVVDGETIGBIGMGLLILI CAME GDSEA



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



 MRVVI QRVNFS QVKVNEEIVGKI GKGLNLLVAISTTDTEA $M R S V I Q R V K R A S V T V N G E R V G N I A E G L L V L L A V G Q D D C T D$


 $M K A V I Q R V K H S S V T V D G K L I S K I D N G F M I L L G V M D G D T K E$ $M R S L V Q R V S C A R V E V G G K V V G A I G A G L L V L L G V G S G D D A A$
 $M R V I V Q R V S K A N V T V D D N V T G S I G N G L M L L V G V T H D D T E A$ $M R \| L I Q R V R R A S V S I G G T L K S A I G P G L L V E V G I E A E D G E E$


 MKAVVQRTTEAKVTAEGKEPGRVDKGLVVLLGVVREDTEE


 $M R G V V Q R V K S A A V R V E N Q T V G Q I G V G L M V L I G I G G Q E D N R D$ $M \square A L I Q R V S E A R V V V D G E V V G A I D H G L L V L L G V E K G D D D K$ $M K V V L Q R A K S A S V S I N E T V V G Q I D A G Y V L L V G I A D S D T E A$ $M R A V V Q R V S G A S V A V S G E T V G K C G R G F L I L L G V A K G D T E A$



 $M \mathrm{~A} L \mathrm{~A}$ I Q R V T Q A K V V V $M K V V I Q R V S E A K V S V D N K V L G Q I$ | $M$ | $R$ | $A$ | $V$ | $V$ | $Q$ | $R$ | $V$ | $K$ | $R$ | $C$ | $T$ | $V$ | $T$ | $V$ | $E$ | $G$ | $Q$ | $T$ | $V$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $M$ | $E$ | $I$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $M$ | $I$ | $A$ | $L$ | $I$ | $Q$ | $R$ | $V$ | $K$ | $S$ | $A$ | $S$ | $V$ | $Q$ | $V$ | $D$ | $A$ | $E$ | $I$ | $V$ | $G$ |
| $M$ | $I$ | $I$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | MRALL R RVTGAEVRVEGELKGR GVSGLLVLGVEQQDNDE

 $M R V V L Q K V N H A Q V T I N H E V V G K I N Q G F M L L V G F A P E D T Q E$ $M$ M A L Q R V Q R A S V S I D N A V V G E I G Q G L LI L L G V E K G D D D K


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


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





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UniRef90_T2J352 UniRef90_T2KH09 UniRef90_R7HWJ2 UniRef90_UPI00035E51A6 UniRef90-W8S9D9 UniRef90_K2NW23 UniRef90_R7LW66 UniRef90-UPI000301771C UniRef90-X0WDX3 UniRef90_F3ZQR0 UniRef90-Q1ATQ8
UniRef90-D5FWK2 UniRef90-G4F2J3 UniRef90_Q7UFW2 UniRef90_C7M7H0 UniRef90_K9ZWN5 UniRef90-I7DS52 UniRef90_U2ECG6 UniRef90-A1T099 UniRef90_UPI000371811F UniRef90_R9GT18 UniRef90-C0QT00 UniRef90_UPI000377AB3F UniRef90_M7XJH9 UniRef90_W7Y1E4 UniRef90_UPI00040EE0D4 UniRef90_Q9RVY1 UniRef90_R6LWT7 UniRef90_UPI0004658C5F UniRef90_UPI0003608941 UniRef90_UPI00036A0D32 UniRef90_C4ZA12 UniRef90_R5BCJ1 UniRef90_Q119C3 UniRef90-J7IW89
UniRef90 R6IIG5 UniRef90- X0РTM5 UniRef90_B0TF85 UniRef90-F2JHL0 UniRef90_Q3JZ09
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UniRef90 D8P905 UniRef90_R6T1U6 UniRef90_UPI000424A16C UniRef90_F2NPA5
UniRef90_B5JM93 UniRef90_K2GAV5 UniRef90_UPI0003602519 UniRef90_R5ZHJO UniRef90-R6IUJ5 UniRef90_B9Y672 UniRef90_W0EH93 UniRef90_UPI0002F3C15A UniRef90_G0UIK3 UniRef90_R6TFI8 UniRef90-R5JE00 UniRef90_UPI000375B80A UniRef90_D7N3M2 UniRef90_D5T3V4
UniRef90_D3VF85 UniRef90_UPIO00468EABD UniRef90_E1R2Y6 UniRef90_Q12IK4
UniRef90 G5F646 UniRef90-H8KWQ0 UniRef90_UPI00024902A5 UniRef90_D4GEK5 UniRef90_UPI00035F019C UniRef90_R6VPQ0 UniRef90_R7FJ81 UniRef90-UPIO004696A23 UniRef90_UPI000374E916 UniRef90_D7N5T6 UniRef90_F9YVX3 UniRef90_R7EP12 UniRef90_K8E055 UniRef90_W8KTU5
UniRef90_U5Q654 UniRef90_D3IIW3 UniRef90_UPI0004727DD9 UniRef90_A6VDK2 UniRef90_UPI00046AB648 UniRef90_R5IXU7 UniRef90_W2ULF0
UniRef90_A3W7F3

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 NAEKLAQKIVVNLRI FEDENEKMNLSLVDVNGEMLVVSQFT



 D DE WL T N K V V N N L R I F D D E D G V M N K S I LDDV K G DI L L I S Q F T E A G WL A E K V A S L R I F G DE Q GKMNLSV RDVVGGEVL AVSQFT DVD WLVKKI A NL R V F F G DENDVMNRSILDDID GNCLVVVQFT

 QAD QMATKI S KLLRI FRDEAGKMNRSVVDI GGSALVVVSQFT
 DAEWLARKVLQLRIFSDDRGRMNLNVKDAGGSILVVSQFT D I K W L A A K I V


 TA R T L A A K L A K K L
 K A I R L L C E R V L G Y R I F

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UniRef90 K2A6T2 UniRef90_R6BUC7 UniRef90_UPI00047B38F9 UniRef90_X8IRE3 UniRef90_Q6MEB9 UniRef90_B1C9I0 UniRef90-R9NLE2 UniRef90_K9D978 UniRef90_A3XI51 UniRef90_R5SAK0 UniRef90_UPI0003B537F6 UniRef90_UPI0003757591 UniRef90_A0L7S8 UniRef90_U7DC63 UniRef90_UPI0003FCBA90 UniRef90_W8VZD4 UniRef90-UPIO0046C9265 UniRef90_A5FMN0 UniRef90_A2TSE5 UniRef90-C6HPC1 UniRef90-UPIO003603A44 UniRef90_UPIO004699133 UniRef90 A5F4Q7 UniRef90_UPIO004025500 UniRef90_UPI00036BA87F UniRef90_R6HLE3 UniRef90_K8E4C6 UniRef90_M5TSI2 UniRef90_C1DAD5 UniRef90_R6IXC6 UniRef90_D2ZWP8 UniRef90_UPI00041E620F UniRef90_F214P3 UniRef90_R6T166 UniRef90_UPI00036125E8 UniRef90_A3YAR8 UniRef90_UPI00037650C1 UniRef90-UPI00046A1A8E
UniRef90-W7BE61 UniRef90_UPI00036EDC40 UniRef90_UPI000288E7EE UniRef90_H5WH85 UniRef90_A0A011TFB2 UniRef90_UPI00034A28B9 UniRef90_R6CNP5

## UniRef90_A3TYP6

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UniRef90-R7R3R5 UniRef90-R7R3R5 UniRef90_D0J8E4 UniRef90-F4XE58 UniRef90-W6TCC7 UniRef90_T1CJ02 UniRef90_UPIO003B6BD83 UniRef90_G2IZV7 UniRef90_UPIO00262A1A9 UniRef90_UPI000476E86B
UniRef90_UPI0003703047 UniRef90_K2PPE7
UniRef90_D3LVQ9
UniRef90_I3YALO
UniRef90-W4BEH2
UniRef90_H1LJE5
UniRef90_UPI0003797B54
UniRef90-EOIDY8
UniRef90_D7E139
UniRef90_UPI0002F80C1F
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UniRef90_R5T638
UniRef90_G8UHT3 UniRef90_UPI0003B79B36 UniRef90_G8PD97 UniRef90_D3DYR9 UniRef90_UPIO00467B79F UniRef90-GOIYH1 UniRef90-A8LJ36 UniRef90_J7U0Q7 UniRef90_UPIO0046690B2 UniRef90-E8SII2
UniRef90_A3SJK0
UniRef90_K0D9M0

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10
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30
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 $M K A V V Q R V K S S K V T I V N R V V G N I N K G F N V L E G A E E K C D T K$

 $M R F I \quad Q R V S N S K V T I D N K I R G G Q I G K G F M V L I G V G E S D T K E$ MRALL QRVH HASVVVDGKKIGDIGPGLLILI CAMQGDTTA $M R V V V Q R S K E A Q V V I K Q K V V G Q I S H G F V L L V G F T E G D G E K$ $M R A L V Q R V S E A S V V V E G Q V V G A V E R G L L V L L A V E R G D G E K$


 $M R V I \quad Q R V V S Q A S V T V V E G Q K T A C D I$


 $M R A V L Q R V T Q A S V T V D G A V I \quad G Q I$



 $M R V L L Q R V G Q A S V E V D R Q V V G E I$ MRAVVVQRVTSSSKVSVDGKTVGEI MRAVI QKVVSCSRVDVDGETCAEI
 $M K A V$ I $Q R V T G A S V T V D G Q L C G A C$
 $M K L L I Q R A K Q A S V T V A G E V I G A I M D H G Q M V L V G G I E K G D T E A$

 $M R V V A Q R C Y E A S V T I D D E N V G E I A G G L E L L V G F T H G D T E D$ $M$ K A V I Q R V K S S S V M V E N E I T T G A $\left.\begin{array}{ll|llll|lllll|l|l|llllllll}M & R & A & I & V & Q & R & V & K & N & S & R & V & E & V & E & D & K & I & I & G\end{array}\right)$ $M R A L V Q R V G E A S V T V D G B D V G Q$
 $M R A V I Q R V T R A E V K V D G E S V G K I G G G L L V L M G A G A D D T A A$


 $M R A V V Q R V H R A S V R V D G A T V S S I$ MRALL QRVTSASVRVVEGQVGEI QHGLLVLFAVQPND TRE

 M R A V V Q R I K E G K V TVVE GE I TTGECNF GL L V Y L G V G R E D T V
 $M R A V V Q R V R E A R V E V A G A A V S E I D G G L L I L L G V E T C D T A G$ $M M S V I Q R V K Q A R V E V D G R I T G Q I D Q G L L A L V C A E R G D T E A$
 $M R I V V Q R V S H A Q V C V E G N E V G R I$
 $M L \begin{array}{llllll}M & L & Q & R & V & T \\ M & Q & A & S & V & R \\ S & V & D & G & E & V \\ M & G & A \\ M\end{array}$
 $M K V V I Q R V K Q S A V H I D D G E K A K I$

 $M R V L V Q R C K E A Q V T V G D E L T G K I$ MRVVLQKVKEASVSID GAVHGKI MRADVVQRVS E A HVVEV E G EVV GRI | $M$ | $R$ | $I$ | $V$ | $L$ | $Q$ | $R$ | $S$ | $K$ | $K$ | $A$ | $S$ | $V$ | $E$ | $V$ | $D$ | $G$ | $A$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $M$ | $V$ | $G$ | $T$ | $I$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $M$ | $V$ | $I$ | $V$ | $Q$ | $R$ | $V$ | $K$ | $S$ | $S$ | $Q$ | $V$ | $S$ | $V$ | $N$ | $G$ | $E$ | $I$ | $G$ | $M R V I I Q R V K S S Y V T V G E Q T I G K I$ $M R V V V Q R V S E A S V S N D N$ IHNS I $\begin{array}{lllllllllllllllll}M & K & A & L & Q & V & L & S & G & S & V & V & D & N & Q & V & S \\ M & R & S \\ V & Q & R & C & N & W & C & R & V & L & S & E & G & K & C & G & E\end{array}$





 MRVVVQRVRAASVAVDGDVGGMCDTDR




UniRef90_K2A6T2 UniRef90_R6BUC7 UniRef90_UPI00047B38F9 UniRef90_X8IRE3 UniRef90_Q6MEB9 UniRef90_B1C9I0
UniRef90_R9NLE2 UniRef90_R9NLE2
UniRef90_K9D978 UniRef90_A3XI51 UniRef90_R5SAK0 UniRef90_UPI0003B537F6 UniRef90_UPI0003757591 UniRef90_A0L7S8 UniRef90_U7DC63 UniRef90_UPI0003FCBA90 UniRef90_W8VZD4 UniRef90_UPI00046C9265 UniRef90_A5FMN0 UniRef90_A2TSE5 UniRef90_C6HPC1 UniRef90_UPI0003603A44 UniRef90_UPI0004699133 UniRef90_A5F4Q7 UniRef90_UPI0004025500 UniRef90_UPI00036BA87F UniRef90_R6HLE3 UniRef90-K8E4C6 UniRef90-M5TSI2 UniRef90-C1DAD5 UniRef90_R6IXC6 UniRef90_D2ZWP8 UniRef90_UPI00041E620F UniRef90_F214P3 UniRef90_R6T166 UniRef90_UPI00036125E8 UniRef90_A3YAR8 UniRef90_UPI00037650C1 UniRef90-UPI00046A1A8E
UniRef90-W7BE61 UniRef90_UPI00036EDC40 UniRef90_UPI000288E7EE UniRef90_H5WH85 UniRef90-A0A011TFB2 UniRef90_UPI00034A28B9 UniRef90_R6CNP5

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UniRef90 UPI00046646B6 UniRef90_A6TQP0 UniRef90_U2TWC6 UniRef90-R7R3R5 UniRef90_A4CPP2 UniRef90_D0J8E4 UniRef90-F4XE58
UniRef90-W6TCC7 UniRef90-T1CJ02 UniRef90_UPI0003B6BD83 UniRef90_G2IZV7 UniRef90_UPI000262A1A9 UniRef90-UPI000476E86B UniRef90_UPI0003703047 UniRef90_K2PPE7
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UniRef90-W4BEH2
UniRef90_H1LJE5 UniRef90_UPI0003797B54
UniRef90-E0IDY8 UniRef90_E0IDY8
UniRef90_D7E139
UniRef90_K9U0W8
UniRef90_UPI0002F80C1F UniRef90-W2RXV6
UniRef90_R5T638 UniRef90_G8UHT3 UniRef90_UPI0003B79B36 UniRef90_G8PD97 UniRef90_D3DYR9 UniRef90_UPI000467B79F UniRef90_GOIYH1 UniRef90_A8LJ36 UniRef90_Q47K67
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UniRef90_K0D9M0


 QI LDWSVDKLV HLLRI FNDENGKMNRNVKECEGEILVVS QFT D A D Y L A R K I S N L R V F E D E N G K M N L S I K D DG G QMLI I S Q F T K A HRLCERVLLGYRVVSDEHGKMNLVNVQANGSLLVVPQFT EADLLLTKKL GYRVVFSDEAGKMNRSVTDTGGGLLLVPQFT
 EAD QLA A KI A K L R I F QL E E M V R K V A R L R R I F









 DID WL VRK V VNLRVF
 DVFKYVNKDSNL RVF TVKYMAKKI AKMRI F
 DLQRLAD K LL K Y R MF $\begin{array}{cccc:c}D & L & A & A & V \\ \text { T } & \text { A } & \text { I } & \text { V } & \text { Q M R A A }\end{array}$ D V A Y I V Q K L V G L QMEWI CRK I AKL R I F

 Q S D WL A R K V V N L | $D$ | $L$ | $I$ | $Y$ | $A$ | $A$ | $R$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $I$ | $A$ | $N$ | $M$ | $R$ | $I$ | $F$ |  |
| $D$ | $C$ | $E$ | $K$ | $L$ | $A$ | $D$ | $K$ |
| $I$ | $V$ | $K$ | $L$ | $R$ | $I$ | $F$ |  |
| $N$ | $A$ |  |  |  |  |  |  | N A Q A L A A K V S K C C R I F D I Q WL S N KIVN L R I F



 | $I$ | $A$ | $E$ | $M$ | $V$ | $Q$ | $R$ | $V$ | $R$ | $Y$ | $R$ | $M$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | D I E WL S R K I TN N L R I F



 EA D KLLLAKMLLKLRIFSDEAGKMNKSLQDDGGGLLVVSQFT VCDKL A E K I C C N L R V F E DENGKMNNLNLEQVGGGLLVI S QFT

 D I D WL V R K I A Q L R I F N D E A GVVMNRSVVLDVVGGEVLLAVSQFT

 D I D WLCRK I VGLLRI F
 D A Q Y L A D K V S GLLR I F E $\square$ N Y L A H K I H K L R V F
 E V D WM V R K C L E L
 D CES M A S K V L K M K L W

 EVD Y L A R K L TK L R i F QLERMTQRLLGYRVFADDAGKMNRSLADTGGGLLLVVSQFT DI S WLCRKIVVNMRIVADDEGVVNKSVLLETKGEVLVVVQFT SV A A L A G K I A K L R R I F R D A E GRMNRSSLLDVGGGALVVVSQFT K S K R L S E K V M G Y R I F S D A D G K M N L N V V A S G G QLL VVVSQFT

 $D\|D Y \operatorname{L} V R K\| T Q|L| V \mid F$

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| :---: | :---: |
| UniRef90 K2A6T2 UniRet90 R6BUC |  |
| UniRef90-UP100047B38F9 | HANTRKGHRPSYNLAAKPEVADPL |
| UniRef90- ${ }^{\text {al }}$ | LYANCKKGNRPSFlEAGAPDKAEQL |
| UniRef90 06MEB9 | LYGNCLNGRRPDFIQAASPPTALSL |
| UniRef90-B1C910 | LAADTKKGNRPSFVNAMEPVEANELYEYFMKKIEEEGTSV |
| UniRet90-R9NL | LVADTQKGTRPGFSRGAEPAEAARL |
| UniRef90-K9D978 | LAADTKSGTRPSFSPAAAPEDGRRLFEHVVRQARERHGIV |
| UniRef90-A3X151 | LFASTKKGNRPSFTKAAKPDQA DPLYEKFTGMLSQKQR |
| UniRef90- 2 SSAK0 | ADCKRGNRPSFVKAGAPDM |
| UniR | DTSRGN |
| UniRef90-UP10003757591 | dTRKGNRPGFS |
| UniRef90 AOLT |  |
| UniRef90 U7DC63 | YGDCRKGRRPSFSAAP |
| UniRef90 WPIOOO3 |  |
| UniRef90-UPIO0046C9265 | LAAET KGNRPGFSTAAP |
| UniRef90-A5F | LHASTKKGNRPSYTKAA |
| UniRef90-A27 | LFASTKKGNRPSLQAARP |
|  | AQUKKGNRPDFHHAADATKAKEL |
| O-UP |  |
| UniRef90 UPI0004 | AAADTSRGTRPGFSYA |
| UniRef90 A5F4Q7 Uni | LPADTKKGTRAGFSRGAAPQEAERLYDYFSDLCAQ |
| UniRef90-UPIO0036BA | LHASTKKGNRPGFTEAARPE |
| UniRef90-R6HL | YADCRKGNRPSFTKGASPD |
| UniRef90-K8E4C6 | ADTKKGNRPSFDKAAGAEQATAL |
|  |  |
| UniRef90-C1DAD5 | FASCRKGNRPSWSRAAPPEL |
| UniRef90 D2ZWP8 | LYADARNGRRPSFSAAAPAEQAQTLYLHTAELLSGHGL |
| UniRef90'UPI00041E62 | GDAKKGNRPSFTEAA |
| UniRef90-F21-1 | YARTKKGNRPSFIDAAKADHGDAI YQQL |
| UniReeg-R6160 | a |
|  |  |
| UniRef90-A3YAR8 | Etk Glirp |
| $\begin{aligned} & \text { UniRef90_UPIO0037650C1 } \\ & \text { UniRef90_UP0006A1A8E } \end{aligned}$ |  |
| UniRef90-W7BE61 | LYADVKKGRRPSFTNSAPPDVASDLYDLFNKMLAAQGL |
| UniRef90_UP100036E | LYANSDKGTRPSFIEAARPEKAEPMYEEMIQWFK |
| UniRet90 UPI000288E | LYGDCRKGKRPDFMKAQGGEKAKEL |
|  | ADCSGGNRPSFTGAAPAEQGRALYETVLR |
|  |  |
| UniRef90-UP100034A28B9 | Y ANT |
|  | ADTSRGNRPGFSAAAAPEEG |
| UniRef90_UP10004176 | KGNRPSYITASKPETA |
| UniRet90-A8MGN0 | LLGDCRKGR |
| UniRef90-C4G8N0 |  |
| UniRet90_UPIO0047A4 | KKGN |
|  | GDIA GGRPSFSEASPELAPLYERVALLRSEHL |
| E1VLG5 |  |
| UniRef90 UPI0004772: |  |
|  | K |
|  | LFGDCRKGR |
| UniRe990-U2TWC6 | LYADCRRGRRPSFAGAAEP |
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|  |  |
| Ref90_DOJ8E4 | LAADTRGGNRPSFTAAAAPDEGRRLYEYFVDQARLA A A ${ }^{\text {a }}$ |
|  |  |
| UniRef90-W6 | HGNRPSFTDAGDP |
|  | MASTRKGNRPSYMRASRPEAA |
|  | FAQTRKG |
| UniRef90-UPIO00262 | LAADTGSGM |
| UniRef90-UPIO00476E8 | A ST |
| UniRef90-UP10003 |  |
|  | K G |
|  | , |
| UniRef90-I3YALO | A ADTRKGTRAS |
| UniRef90 ${ }^{-}$W4BEH2 | LYGDCRKGKRPSFAAAARPEAAELLYETFNQLLRDKG |
| UniRef90-H1LJE5 | LYADTKKGNRPSFTGAGEPAHAQKIYETFNDTLRDAG |
| UniRef90 UPI0003797B54 | LYADTRKGNRPSFLQAAPPDQGRRLYEAALEALLAQ |
|  | DCRKGRRPNFMAAARPEPAEA |
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| UniRef90-K9U0 | LYGDCRKGRRPSFDRSAAPEAAKNLYNLFVEKL |
| UniRef90_UP10002F80C1F | LYADVKKGNRPGFSNSKSPDEANELYESFNEAL |
| UniRef90 W2RXV6 | L Y ANTKKGNKPDFHGSARSEVAKELYDYFFSQV |
| UniRef90 R5T638 UniRef90 G8UHT: | YGDSRHGRRPSFTEAE |
| UniRef90- UPI0003B79B36 | LYADCRHGNRPGFTDAAGPELANDLYEYIISKCKEK |
| UniRef90-G8P | LYASTKKGNRPSFTEAGN |
| UniRef90 D3DYF | LYGRTKKNRPSFHKALAPNEATKLFDYFVEKC |
|  |  |
|  |  |
| UniRef90 O47K67 | SVKKGNRPSWSRAARGEVSQP |
| UniRef90- ${ }^{\text {J7U007 }}$ | KGMRPGFSNGAAPEKANA |
|  | ASFERNAD |
| Un | LYADVRKGNRPGFTQAMAPDQANELYEYFNDQLRAFQIPV |
| Ref90_A3SJK0 | AL |
| UnRef90_K0D9M0 |  |



UniRef90_R5WG17 UniRef90-V21212 UniRef90-G7E2E5
UniRef90 G4KRK4 UniRef90-B9NMP4 UniRef90-G3C5S2
UniRef90-R5GUZ7 UniRef90-D8K1Y9 UniRef90-D5XEK0 UniRef90-L8M3S8 UniRef90-UPIOOO464F005 UniRef90-M3AFQ6 UniRef90-F89N8
UniRet90
M4U4Y1 UniRef90-M4U4Y1 UniRef90-A1K1M2 UniRef90-UPIOOO40D3877 UniRef90-L1NSE7 UniRef90_B9DNG1 UniRef90-R7GDW4
UniRef90-R7M4L8 UniRef90-R5A7R4 UniRef90-UP10003F72CA8 UniRef90- D4ZE20
UniRef90 V8QML8 UniRe990-V8QML8 UniRef90-I4B2L6 UniRef90-B6BEE88 UniRef90-H5SMP7
UniRet90 R5XY93 UniRef90-B2UQS5 UniRef90-R6L141 UniRef90-E6UJ89 UniRef90-E6V6E3 UniRef90-UPIOOO310A260 UniRef90_UPIO004086D05 UniRef90-UPI0004088DD3 UniRef90-Q11RA1 UniRef90-UP10003B2E3C7 UniRef90-R5ENQ1 UniRef90-K9CL67 UniRef90-L8XYU2 UniRef90-UPIOOO3B5C36E UniRef90_C8PSA0 UniRef90_SOEUJ4
UniRef9O_R8AWB9 UniRef90-A0A059C8H7 UniRef90-W2BSR2 UniRef90-F4KN69 UniRef90-UP10003B3081E UniRet90-H6RFZ7 UniRef90-A6VL72
UniRef90-R5MSY0 UniRef90-R6ND39 UniRef90-UPIO004709063 UniRef90-UPIOOO36E2992 UniRef90_-V2XIG5 UniRef90-C7LSL3 UniRef90_U2KLH4 UniRef90-UPIO004740E5B UniRet90_V8G910 UniRef90-UP100047AF15C UniRef90-E4KM38 UniRef90-UPIIOOO36B7768 UniRef90 M7NXM5 UniRef90-C9LJC2
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UniRef90-E3RVC9
UniRef90-UPIO0029B4419
UniRef90-Q1QSS9 UniRef90 UPIO0041D21BD UniRef90-K6ZUD4 4
UniRef90-EOE2N4
UniRef90 $-\mathrm{B} 6 \mathrm{QEL3}$ UniRef90-UPI0LO3B42EB5 UniRef90-Q124Q1 UniRef90-A0A011PE16 UniRef90-G2DUE9 UniRef90-U4KRY2 UniRef90-U6HRW5 UniRef90-V2QA87
UniRef90 E6PFV6 UniRef90-UPIO002E236F5 UniRef90 B2RM63 UniRef90-AOAO23VSF9 UniRef90-V2T8P4 UniRet90-LOE2F2 UniRef90_UQXZ9
UniRef90_BOKON

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MR\|LI QRVRRASVIS|V|RNEFVISRIIGAGMLILVIG\|ADEDTVE MDALI QRVARASVTVDGRVTGEI GAGLLALVCAERGDTEG MRAV QRVKSASVSVDGQIVSSIGKGLLCLIGVARDDTAK MRAVVTRVAHASVSIDGAVKGRIGLGFLTLLGVTHGDTEA MRALLQRVSKASVTVDGTVIGQSGPGLLILVCAMQGDGEA MDGLLQRVTQARVEIEGKSVGAMGRGLLVLVGVERGDGVA MKFVIQCTTQASVTIDQKLYSEI GKGFLVLIGI CDEDTKE MKALIQRVSRAHVTVDDEIVGSIDAGLAVLVGVAAGDDTA MRAVVQRVTHGKVTVNSEVVGAI GQGLVVLLGVGNGDTDE MRVVLQRVQSSAVAIEGKVVSKI GRGLNLLVGIAPTDTDA MRVVLQRTSRAAVTVTDETTGEI GVGYMLLVGVGDADGER MKTVI QRVKSASVTVDGQRVSEI GRGILILAGI GKDDTPK MRAVI QRVTEATCRVDGQVTGAI RQGLVVLLGVAPSDTDE
 MMALLQRVTRARVTVDGATTGEI GTGLLALVCAEQGDTEA MK IVLQRVNHSQVLVAGQLVGQI QQGYTLLVGFTPSDTQA MRAVIQKVTRAEVIVHGETVGQUSDGLLVLLGVGQDDGED MR VVQRVKQASVTVNSI HEEI GKGLCLLVGVGQDSTEK MRIVIQRCYDASVSVNGQUVGKINKGIMLLVGFTKGDNEQ
 MRAVIQRVSRASVSVDGAVVGSIGQGLVVFLGVMKGDGDP MDALLQRVKQAKVDVDGETIGAA DKGLLVLLGVEREDDTA $M R I L I Q R V R Q A S V V V E E R E V A G I G A G L L L L V G I A P D D T E Q$ MRILVQRVSSARVTVDDETVGQI

MKLLVQRVLEASVEVNGKTVGKi
 $M R L V I Q R V S K A A V H I G G V C A G A V G P G L L I L A G U E E A D T E E ~$ MKTLI QRVNHARVEVDGKVVGEI MKAILQRVANARVDI AGQTVVGI
 MIAVVQRVSEAVVRVEGEIVGQI MIAVIQRVRKASVEIADKEHASI MKAVIQRVKEASVSVDGKDID MRAVVTRVSEAAVRUDGEVNGQUG MIUALIQRVNHASVKVDGKTIGAI MRAVIQRVRSGSVAI EGFETQTI




 $M R V V Q R T L K S S V K V D K V V G Q D D$ MDAVVVQRVAEAQVTIAGEKVGH1 MAVVQRAEAQVTIAGEKVGHIGKGLLILLGITHEDSEE MRVVVQRVKHASCTVDGKITGAIENGLCLFVGFKPEDDQA MRFVI QVVKNSDVKIDGEVRGAI DRGYMVLIGVGKDDTKE MRAVLQRVRSASVSVKGRTVGEI GPGIAVLLGFGGSDDPD MRAVVTRVKEASVQIDGDICGQIKAGYLILLGDAPTDTAE MKIVLQKVAQASVSVNREVVGEIKEGLLLLVGASPEDTQS MRAVI QRVSEASVTVDHKVCAVMREGLLILLGVEGEDTQE MRLVIQKCGPSSVSVDGQVIGAIKKGFVILVGVSDQDQAE $M 1$ GLLQRVTGASVRVEGETVGEI GPGVLALVGVRRGDTGA MIGLLQRVSQASVSVQGOIVAEDDQGLMVLIGVEHNDTGA MKTVI QRVKYASVTYDGKVTAH: MRVVVQKAKASSVSVNGEVVGKI MKALI QRVSQAAVTVDGDTVGGA
 MRAVI QRVRHAGVDVDARTTGAI MTSLI QRVSRARVEVAGETTGKI
 MKAVLQRVKSASVTVDNQLISSI $M \square G L I Q R V Q A S Q V E V D Q Q V V G K I$ MKAVLQRVAEARVVVAGETVGQ1 $M R V L V Q R V A A A R V E V E G E V A G S I$
$M R A V I Q K V T K A K V D I E N T M G I I ~$ MKVVVQRVTEANVTV MRVVI QRVLKASVTI MRVVI RVKSASVHVRGQLKS $M \square A V V Q R V Y E A S V K V D G E L$ GS MRAVLTRVSEASVRVGGESVGAI MRVVLQRVSSSTVISNEFFNEI MRVVIQRVTEASVSIRGALHSRI $M R A V V Q R V T R A S V T V D G E V V G A$
$M R A L I Q R V L E A K V V V D E T V G E A$
$M$ MRALIQRVVEAKVVV MRVVLQRALSASVSV
MRAVVGRVIRGEVSVI

## UniRef90_R5WG17 UniRef90_V21212 UniRef90-G7E2E5 UniRef90 G4KRK4 UniRef90-B9NMP4 UniRef90_G3C5S2 UniRef90_R5GUZ7 UniRef90_D8K1Y9 UniRef90_D5XEK0 UniRef90_L8M3S8 UniRef90_UPI000464F005 UniRef90_M3AFQ6

 UniRef90_F8I9N8UniRef90_M4U4Y1 UniRef90_D3IBX8 UniRef90_A1K1M2 UniRef90_UPI00040D3877 UniRef90_L1NSE7 UniRef90-B9DNG1 UniRef90_R7GDW4
UniRef90_R7M4L8 UniRef90_R5A7R4 UniRef90_UPI0003F72CA8 UniRef90_D4ZE20 UniRef90-V8QML8 UniRef90_W5TER1 UniRef90_14B2L6
UniRef90_B6HE88
UniRef90_H5SMP7 UniRef90_R5XY93 UniRef90-B2UQS5 UniRef90_R6L141
UniRef90_E6UJ89 UniRef90_E6V6E3 UniRef90_UPI000310A260 UniRef90_UPI0004086D05 UniRef90_UPI0004088DD3 UniRef90_Q11RA1
UniRef90_UPI0003B2E3C7 UniRef90_R5ENQ1 UniRef90_K9CL67 UniRef90_L8XYU2 UniRef90_UPIO003B5C36E UniRef90_C8PSA0 UniRef90_S0EUN4
UniRef90_R8AWB9 UniRef90_A0A059C8H7 UniRef90_W2BSR2 UniRef90_F4KN69 UniRef90_UPI0003B3081E UniRef90_H6RFZ7 UniRef90_UPI000377FE65 UniRef90_A6VL72
UniRef90_R5MSY0
UniRef90_R6ND39
UniRef90_UPI0004709063 UniRef90_UPI00036E2992 UniRef90_V2XIG5 UniRef90_C7LSL3 UniRef90_U2KLH4 UniRef90_UPI0004740E5B UniRef90_V8G910 UniRef90_UPI00047AF15C UniRef90_E4KM38
 E A E R L L A K L L G Y R V F S D A A G K M NL P V R D I D G QL L V V S Q F T
 EAVKLA DKI CGGLRI F E DENGKMNLLGDAVDGELLIVVS QFT Q T L QLAR KI A K L R I FK D S A GKMNRSI LDVVGGSALVI S QFT



 EAESMAAKI LLKVKLWDDDAGKWKKNVQEIVGGEVLGVVQFT V A D WM A D K L L C R L L R V F S D D D G K M R Y S VV Q D V G G S L L V I S Q F T
 E A D K L L A K L L K L R V F F A D E G G R M N R S L Q E V G G GLL L V V S Q F T
 DVEAVAKK IVNARI FEDENGKL NLLNVQQVGGAI L SII S Q F T

 $\square 1$ C D R L A A KMERLLATKVMS Y R V F S DENGKMNLN LQQQA G GSSLLVVVSQFT D A Q Y L L R KTLLA LRI FNDECGVVMNLSVLDA GA QIL AVVS QF T IA K T L A D K L F R L R L LD D E R R A A A D L N A P L L V V S Q F T LA S AL A K KTAALLR IVS DEAGKMNLSVADI QGEVLVVSQFT DAENLVVNKVLKAKFWPDENVVWKKNVKDIVEGEVLVCVSQFT
 QADYLANKLVNLLI FEDADGKMNLSVQDIRGGILVVSQFT DVRWLA NKAAAMRIFS DADGKMNLSSVREVSGGVLVVSQFT D I D WL C K K IV V NLRVF D DENGVMNKSILDDI NGDILVI S QF T D C E K L A D K V C K L

D E K GI T K
DI DWLVRK L L K YR I F
DVEWLSAAKIVGSLI FSDAAGKMNNALPDI DGEALII SQFT T V E WM A D K 1 DE WLVKKCANL RIFD DGNGVMNRSLDDMNGDVLIV S QFT EAMRLAEKIVVLRVVSDAAGKMNLAL ADVGGSVLIVSQFT
 $D \square D W L \square K K I V Q M R I$ FEDDAGKMNLALADVQGDILLVSQFT E ARVL AE K I A GLLRVMEDADGKMNLALAMDVGGSVLLI SNFT EVQ GL A K K V L N Y R I F P D D Q GRMNRSLKDTGGSLLVVPQFT DADY CRKVLNMRLFTNESRGWDQNVMQKNYGVLLVVQFT
 QV S A MA R K I A A L R I F T D A E GK M N L S V L D I A G A A L V V S Q F T DI GF LVRKITNNLRIFNDENGVMNHSLLETKGAVIVVPQFT DL Q Y L L K K TIINL R I F D D A Q GVVMNES I L Q H G GEEI L CVVS Q F T R ANKLAEKVLNYRVFGDENDKMNLNVRQAQGELLVVVQFT $E A A_{1} L$ DVQ WL GK K I V GMRIM S D S D GK M N L D L N S V A G K I L L V S Q F T

 D A A R L A E K IV V HL R V F S DEA GKMNHAA A EVVGGAVLVI S QFT QADALLAKLIA YRVFADDAGKMNRSVAQVQGGLLLVPQFT DID YI ARKVTQMRVFEDETGVMNLSVVDKKAEILDVS QFT DI D WL CRKI DNMRI F G D DE GKMNES L KTVVDGDAIVVVSQFT DLD Y CVVR K V SKM R I F E D E A GK T N L N L D A V G G A L L S I S Q F T

 $D$ VE F V A D K V A N L R I F E D E E GKMMNY S V Q D TTK G Q I L S I S Q F T D $V$ E A M A G K DIT WLAANKIVNNLRIFDNENGVMDQSVLENGGEILVVSQFT
 AVERMLDRLLGYRVFPDEEGRMNRSLGETGGGLLLVPQFT
 $D V D \triangle L A A R V L K A K L W P D E K T S W K R N V Q D I G G E V L D V S G F T$ H A D K L L H K V I N Y R I F Q D D A D K M N L S L L D I G C E L L VVVS Q F T
 DAKY I A E K I A N L R I F E DA E G K L N N L S I K D I N G S L L L V S Q F T

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| UniRef90_R5WG17 |  |
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| UniRef90-V21212 |  |
|  |  |
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| G3 |  |
|  | ADCKKGNRPSFVKAGSPQHA |
| UniRef90 D8K1Y9 LADCRKGRRPSFTEAAPPEQAEAMISRLGDAVAEAGV | ( ${ }^{\text {a }}$ ARKGRRPSFTEAAPPEQAEAMISRLGDAVAEAGVR |
|  |  |
| UniRef90-L8N | LYGDCRKGRRPSFSNSASPEDAEKIYDRFVEKLRQSGL |
| UniRef90 UP1000464F005 Y G NVRKGNRPSFVT A GAP E H A E R V WLIA N DAL R A G L |  |
| UniRet90-M3AFQ6 |  |
|  |  |
| UniRef90-M4U4Y1 | KGNRPGF |
| UniRef90-D31BX8 ${ }^{\text {a M A S K K G N }}$ |  |
| UniRef90-UPIO0040D3877 |  |
|  |  |  |
| UniRef90-B9DNG1 $\quad$ Y A D |  |
| UniRef90 R7M4L8 ${ }^{\text {a }}$ L Y GDASKGRRPS |  |
|  |  |  |
| UniRef90-R5A7R4 | GTDCKKGRRPSFDMAAPPQEADR |
| UniRef90 UP10003F72CA8 L Y G ERKGNRPSFDTAARPEHAEPLYDRFRDRLGAQG |  |
| UniRef90-V8QML 8 |  |
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| $90-14 \mathrm{B2L6}$ |  |
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| UniRef90-H5SMP7 ${ }^{\text {a }}$ - Y GNTQKG |  |
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| UniRef90-B2UQS5 $L$ HASTRKGNRPSFTRAARPERAMPLYELFKKELASLEGRV |  |
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| UniRef90 UP10004088DD3 L LA SKKGMRPSFVEAAPPAQA P L Y A A VRQFEAAGRPV |  |
|  |  |  |
| UniRet90-Q11RA1 | CASTKKGNRPSFIEAARPEQAMPLYEQFIAACEMQNQK |
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| UniRef90-K9CL67 Lit YADLKK RRPGFSRAAKPETAIPLYEKFTACMAAHDVPV |  |
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| UniRefol-R8AWB9 ${ }^{\text {L A A D T G S }}$ |  |
| UniRef90-W2 |  |
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| UniRef90 R5MSY0 |  |
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| UniRef90-UP OOOC4709063 |  |
| UniRef90_UPIO0036E2992 |  |
| UniRef90-V2XIG5UniRef90 C7LSL3 |  |
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| UniRef90-V8G910 LLASTKKGNRPSYSQAARPEDALPLFNQLVETFSV1QKPI |  |
| UniRef90-UP100047AF15C L HASTKKGNRPSFMNAAKPDIAEPLYQDFVKSFKEFGKSV |  |
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| $\begin{array}{ll}\text { UnRef90-C9LJC2 } & \text { LLASYKKGN } \\ \text { UniRef90-U4WJG2 } & \text { Y }\end{array}$ |  |
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| UniRef90-UP100041D21BD LAADTGKGMRPSFTTAAPPERGEALFHHLLQRAQRRHEPV |  |
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|  |  |  |
| UniRet90-E0E2N4 |  |
| UniRef9-UPI0003B42EB5 LPADTRKGLRPSFTPAADPQTGRELYDYFTEKAATSLTTV |  |
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|  |  |
| UniRef90-AOAO11PE16UniRefo-G20UE9 |  |
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| UniRef90-V2QA87 |  |
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| UniRef90-A0A02 VSF9 |  |
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| UniRef90 R5WG17 |  |
|  | TGEFGAMMQVSLVNDGP |
| UniRef90-G7E2E5 | ATGEFGADMKVDSLNDG |
| UniRef90 ${ }^{\text {B9 }}$ | ETGAFGADMAVELIND |
|  |  |
|  | GVFGAEN |
| UniRet90-D8K1 | AYGRFQAHMMVELVNDGPVTi |
| UniRef90-D5XEK0 | EQGRFRTHMVVDI QNDGPVT |
| UniRef90-L8M3S8 | ATGQFGTMMDVAI ANDGP |
| URet90-UP | KTGRFGAHMNVSLTND |
| UniRef90-M3AF | KDGVFQAMM |
| UniRef90 F819N8 | ATGVFGAHMDI |
| UniRet90-D3IBX8 | ATGVFGADMKVSLTNDGPVTICMD |
| UniRef90-A1K1M2 | ATGRFGAMMQVELVNDGPVT |
| UniRef90-UPI00040D3877 | QTGRFGSMMQVEISNDGPVT |
| UniRef90-L1NS | ETGRFRTHMQVSLCNDGPV |
| UniRef90-B9DNG1 | KTGEFGTDMLVDIANDGPV |
| UniRet90 R7GDW4 | EKGTFGADMKVTFTNDGP |
| UniRe990 R7M4L8 |  |
| UniRef90 R5A7R4 | G[lF GAHME |
| UniRef90- D4ZE20 | QSGEFAADMQVSLVNDGPVTF |
| UniRef90-V80 | PTGVFGADMKVSLVNDGPV |
| Uni | ATGRFGAHMQVSLVNDGPV |
| UniRef90-14322 | KTGRFAADMQVSLVNDGPV |
|  | KNGVFQAMMDVEKNDGV |
|  | GVFGARMKVSL |
| UniRef90-B2UQS5 | ESGEFGADMQVSLINDGPVT円FMD |
| UniRef90-R6L1 | GTGEFGADMKVELLNDGPV |
|  | D |
| UniRef90-E6V66 | ATGEFGADMQVHLVND |
| P1000 | F |
|  |  |
| 000 | GRFGADMKVSLCDGPV |
| UniRef90 Q11RA1 | KTGMFGADMQVALI NDGPV |
|  | ATGVFGADMQVELVND |
| UniRef90-K9 | ECGVFGANMQVSSVNDGP |
| Un | AQGEFGADMKVSLE |
| 003 | L |
|  | N |
| iRef90_S0EU | VN |
|  | 砍 |
| UniRef90-A0/ | MMKVNVNDGPV |
| UniRef90-F4KN | CMQVEIHND |
| UniRef90-UP10003B3081E | QTGKFGASMQVELLNDGPVT |
| UniR | QTGEFGADMKVELLNDGPV |
| UniRef90-UP10003 | QKGIF GADMKVTLLNDGPV |
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| c7LLL3 | A DMDVS |
| UniRef90 U2KLH4 | EHGEFGADMQVSSVNDGPVTLLFDV |
| V8 | STGVFGAHMQVSLTND |
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| M7NX |  |
| C9LJC | D |
| UniRef90-U4W | M |
| UniRef90-K4K | GVF A A M |
| UniRef90-UPIO002984419 | GEFGASMAVKLVNDGP |
|  | A DMQVSL |
| UniRef90-UPI00041D21BD | ATGRFGADMQVSLTNDGPV |
|  | QTGILFGANMQVSLVND |
| OE2 | HTGKFRSHMMVELVNDGPVTLLID |
| UniRef90-B6Q | KNGVF QAMMEVELKND |
| UniRef90-UP10003B42EB5 | QTGEFGADMQVSLINDGPVTFWLEV |
| UniRef90_Q124Q1 | QTGQFAADMQVHLVNDGPV |
| UniRef90-A0AO11PE16 |  |
| UniRet90_G2DUE9 |  |
| UniRef90_U4KR | A |
| UniRef90- ${ }^{\text {B6 }}$ | Q |
| UniRee90- V2QA87 | KDGGFGAMMMVS |
| UniRef90-E6 | ${ }^{\prime}$ |
| UniRef90-UPI0002E236F5 | KTGFFGEMMNVNINNDGP |
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| UniRet90_A0A021VSF9 | GAMMQVELVND |
|  | ETGDFGADMKVHLINDGPVTFNLED |
| UniRef90_LOE2F2 | ASGRFGADMQVALVNNGPVTFWLQ |
|  | ETGRFGAHMEVALVNDGPVT LLD |

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 $M K A V I Q R V K R A S V R \quad S G E L E A A I G P G L L V L A G L E A G D T E E$



 MRAVI QRVVKA KVTVLDELVSTI GPGLGVLVGIKSSDTDT $M \square G L I Q R V K S A N V R V V Q Q V G Q I E Q G L L V L L G V K Q C D D Q S$
 $M R A V L Q R V A S A S V V V N D E V S S I G R G L M V L V G I G T D D T A A$ $M M D A$ $M$ RAVV Q RVVDRANVTVVEKDTGEVQKGLLVLLGVAE GDTDK $M K V V I Q R V K E G K V V V N G E T A G E I G K G G V A L I G G E K G D D Y S$


 $M$ I


 $M \square A L L Q R V S Q A A V V V E G Q T L G T I G S G E M V L V C A E R H D T V T$
 MRAVVQRTLQSSVTSAGELVGTAAHGLTVLLGVAREDGPA
 $M R I L L Q K V S Q A S V V V V D E T S G K I G A G Y M L L V G V E D A D C T K$ $M K V V L Q K V S Q A K V T S E N T Q N E I V Q G F L L L V G V G Q E S T Y A$
 M K A V L Q R V I N A S V TVV D G K I I S S I G K G L L V L V G I D R Y D E P Q MRAVI QRVSQARVSVDGEVVGELGSGLVALVGATHDDTPD $M R V V L Q R V L W A R V F A E G V R T G E I G P G F C L L V G I T H G D G P K$
 $M R A V I Q R V R S A S V E V D G R L V S S I G P G L L L C L I G I R D T D T A A$

 $M R A I L Q R V K A B W V L V D G V E V G R I G$


 MRIVI QKVVSQAMVKVDNEIVSQIAKGYMLLVGISTEDTDA



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



 MKAIL QRVVTSASVTVVDKQIS SI


 $M R V V I Q R V N H A A V R I D C E V V G Q I$ $M$ M GL: Q R V S H A S V R V D K Q I C G E I | $M$ | $I$ | $C$ | $L$ | $L$ | $Q$ | $R$ | $V$ | $R$ | $E$ | $A$ | $Q$ | $V$ | $T$ | $V$ | $D$ | $D$ | $A$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $M$ | $V$ | $G$ | $K$ | $I$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $M$ | $T$ | $V$ | $V$ | $Q$ | $R$ | $V$ | $S$ | $D$ | $A$ | $S$ | $V$ | $T$ | $I$ | $H$ | $Q$ | $D$ | $I$ | $V$ |
| $A$ | $Q$ | $I$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $M R I L V Q R V T S A R V T V A G K T V G E I$ $M K V V L Q R V S Q A S V D V V N E L L Q Q I$

 $M K L V V M R S K K S S V T V E N E T I G K I$

 | $M$ | $K$ | $A$ | $V$ | $V$ | $Q$ | $R$ | $V$ | $V$ | $R$ | $A$ | $S$ | $V$ | $C$ | $V$ | $G$ | $D$ | $E$ | $Q$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $M$ | $S$ | $S$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $M$ | $\square$ | $L$ | $V$ | $Q$ | $R$ | $V$ | $S$ | $S$ | $A$ | $A$ | $V$ | $T$ | $V$ | $D$ | $A$ | $S$ | $T$ | $T$ | $G$ |
| $Q$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |



 | $M$ | $R$ | $A$ | $V$ | $V$ | $Q$ | $R$ | $V$ | $L$ | $S$ | $A$ | $A$ | $V$ | $S$ | $V$ | $D$ | $D$ | $E$ | $V$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $M$ | $Q$ | $I$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $M$ | $R$ | $V$ | $V$ | $V$ | $Q$ | $K$ | $V$ | $K$ | $S$ | $A$ | $S$ | $V$ | $T$ | $V$ | $E$ | $E$ | $K$ | $I$ | $V$ |
| $S$ | $S$ | $S$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

 | $M$ | $R$ | $A$ | $V$ | $V$ | $T$ | $R$ | $V$ | $L$ | $S$ | $A$ | $S$ | $V$ | $T$ | $I$ | $E$ | $G$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $M$ | $R$ | $A$ | $V$ | $I$ | $Q$ | $R$ | $V$ | $T$ | $R$ | $A$ | $Q$ | $V$ | $S$ | $V$ | $E$ | $G$ | $E$ |
| $V$ | $V$ | $G$ | $A$ | $I$ |  |  |  |  |  |  |  |  |  |  |  |  |  |






 | $M$ | $R$ | $A$ | $V$ | $Q$ | $R$ | $C$ | $A$ | $C$ | $C$ | $E$ | $V$ | $L$ | $S$ | $E$ | $G$ | $Q$ | $L$ | $V$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $V$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $M$ | $R$ | $A$ | $L$ | $Q$ | $R$ | $V$ | $T$ | $A$ | $A$ | $S$ | $V$ | $S$ | $V$ | $D$ | $G$ | $S$ | $I$ | $V$ | $G$ |

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L|F A A V V K K G N R P
100

A 1 | $E$ | $M$ | $R$ | $Q L$ |  |
| :--- | :--- | :--- | :--- | :--- |
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## L

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 LAADTRS GMRP
$L A N T T S K G N K P D F H R A M S S E S S R E M Y$
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 L A Q
L K G N K Q S Y H L A M A P E L S K Q

$\Gamma$

Y G D A RKGRRRP S
L A N T A K GRRP
Y A
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LFAQTKKGNRP
LA A D CKGNRPSFTDAAPPDMAKEMYLEFVKYLKEKYPKV
 L LA D T K K G N R P T F T GAA G D P D H A K K



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LYA D L S S R R P GF SKA AKPA DA EPLYESFMA HCRAGLGFRV
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L A A D T R K G M R P SF S K A A E P E K G D A L Y R Y F V E QA G S R GV K

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UniRef90
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1 MKAVVQTVSQARVTVDDAVVGAIDEGLLVLLGVTHTDSRA MRVVIQRVLGAQVLINQTEKREI QAGLMVLLGIEMTDDSS MRALLQRVLTAKVEVDGQVCGEI AKGLMVVFLGLGQED KD MKVVMQRVTSASVRVEGNVVGQI GNGLLCFVGIGHDDTED $M R L V L Q R V S T$ MRVVIQRANSAEATVEGQAVGALP MIALI QRVTQAAVAI DGETVARIGPGVLALVAAEPTDTAA MRAVI QRVVSA IVVVECDNI AEMES GLVVFLGIIDTDTSD MKALLQRVRQARVDVNAQCVGETQQGLLVFLGVERGDDAG $M K I T Q R V N F A K I F V N N E F K G K I Q K G I V A Y V G V A N G D C E K$ RAVVTRVKSASVVIDDKVNGAI DQGFLVLLGVGPEDTAE MIAALQRVSEASITADGEFRGSI GQGLMVLVCGEKNDKLE MRAVI QRAKSGSVTVDSKIVSQISHGLVVLIGVGHEDTAE
 MDALI QRVARASVQVDAQVIGAI GPGLLALVCAERGDCEA
 MKALI QRVSSSSVEVEGRII GQI
 MRAVIQAVSSASVRVNGGEPRP
 MKALLQRVSQASVSII GLEVVABAGGLLVLVGA STEDNDA MRALI QRVNGASVSVDGEIVGSVGSGLCVLLGVTHTDTQA
 AKVEVENNIVGQI GQGILLLLGIEKHDDSD MRAVIQKVTKASVTVGGDIVGSINRGLCVLVGINRDDGQE $M R A I Q R V T N A S V T V D N V L V G T I G R G L E V L V G G E R E D T P K$ MDTVIQRTGSARVRVGGEVVGEIERGLVALVCAVHGDGSA MRAVLARVTRAHVTVDGEQVGAI GAGLLALVAAHRDDGPQ
 MRLVI QECRNAKVEVENKTVGQI DFGEMVLVGFKPNDDKK
 MRVVI QRVKRASVTVDGQVVGEI GAGLCVLVGITHTDGRA $M R V V V Q R A L E G S V R V D G R V V G E L S P G L V I L A G L T H D D T P A$
 MLALLQRVKEARVDAGQTIGSI MIALI QRVREARVSVGGHPVAEI mRAVVTRVTEASVTIDGAESSRI MRAIIQRVLRGCVRVNGETMSSI MKAVVQRVVKASVSVNNEIISEI MKAIIQRVMKASVTVGDETVGSI MRALIQRVSGGKVEVEGSTVGKI

 MRAVLQRVTRAAVRVDGDVVGE mRAVLQRVTRAQVTVEGEVVGRI mraviqrVdgasvevegrtivgav
 Mra/VLQVVTEASVTVEGEVVGS MK\ILQKVSHALVA NNEMFNEI $M R A V I Q R V R H A C V R V D G Q V T G Q$
$M R A V V A R V T A S V V V D G E T V G A$ $M K M V I Q R V S S S N V K V N N D V A Q 1$ $M R A V V Q R V E R A S V T V D G N V V G K i$
$M R A V V Q R V T E A T V E V D G E V V A R I ~$ MRVVIQRVSDARVLVQGTAVGEI MDGLLQRVSGAKVE:DGRTMAR1 MRAVVSRVGTAAVTVEGAVVGEIGRGLVLIGIERDDAA MRTVIQRVRRAEVRVDGAVVGAVDSGLCVLVGVGHGDGRA MKALIQRVAKAQVTVAGEEVGAI GPGLLALVGIEPQDDRE
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 $G P G I L A L V A A T H$ T D GEA

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 D 1 S WL S N K L S S NL R

 YA DA A E KVVGYRVFS DADGKMNLSLVTVNGGILVAS QF
 $D V N F V A D K C C N L R I F E D G Q G K M N L S V W D I D C G E A L V I$ S Q F T T A D K L L L
 T A K R MI D KI LTTYRI FENENDK LDDLNVQQVGGGLLLVSQFT HADKMINKILLSYRVFS DTQGKMNLSVVDINGGVLLVS QFT
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## $\square$

EVVVK V A S K I A G L R R I M E G E


 DIE YI VRKILLNVRVFENNEKRWSLDSVVDRNLEILLCVSQFT QAQRLAERVLGYRVFPDAEGRMNGSALDLGCGVLAVPQFT

 ESQ WL A A K L L A L K V F E G E S WG WK K S V V E A D Y E I L C V S Q F T

 VV E K V A A K V WG L R I L A D E ESDKLLSSKVLKKLRIDSSDAAGKMNHSSLQDMDGGLLVVVSQFT


 EADRIVDRICGLLRVEDANGKMNVNPADAGAELLIVVSFT





 D A E S L A A K V V Q V A T I A A R K I A A L L R L L D D G E EAQWI A R KI A DLRI LIREET DVETMARKI A E L R R L L R D E QARAMARKI WNLRI L E GE
 R SVA T A G A V LVV $R S V T E A G A A V L V V S Q F T$
 DAVYLAAKI S GLLRVFEDEQNKMNLSVLDDRGGLLVVSQFT $\square A R R L A A K L W S L R V L D G E \quad K S C S D L S A P L L V I S S Q T$
 D A Q AL A T K TA G L R I F S D E S GKMCLGGAS DVGGGGFLVVVN FT T L K K A A D K I L A L R I FA D E Q G R M N R S V V D DQ G S I L AVV Q F T QVEKLARKI A QLKILLRNPEPKDRVSALVAGAGVLLVVSQFT VAATLAGKI WRMRI LDDE A WRKMLDKLENLRI FPDEDGKLNLSSLTDIRGDLLLVS QFT $R G S R L L E R L L S Y R V F E D D T G R M N K S L R D L G G G L L L V S Q F T$
 S I G RMLLHRLLN YRVVA DAE GRMNLLSLA QLGGGLLLVVSRFT
 CSEVLA K K I LDDVRLWDD DKGKWSKSVKDMGYEVLLVVSFT E A C QLAAKVAGLRVLDDEQ FHEGMARKLLDLRIVPGECDKFDRSARDHGADVLIVVART D I E T I A N K LLL NL K AF P D P K S G WK A S V K D R G G E I L S VV S Q F T ELLDWI A RKCLDL R LFPAADHEFERSIREDGGELLVI SQFT A A A NLARRVWRLRILDGE KSASDVDAPILVVSQFT E LLE WMTDKVICCLRLFPDEEQRMNRDDQEHGGALLVVVQFT D A D Y Y $\square R$ K C L N
 $D V E Y V A R K L L A \mid L I I W A S E D R T W D R S V T Q\|G G G\| L L V S Q F T$

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UniRef90＿B6ACC5 UniRef90＿D8RA14 UniRef90＿G0UWS7

LI A D T RKGRRPSWSAAAPGP｜V｜AEP｜LVAAVV｜ES｜L｜RGRG｜E｜V｜｜ LYAD ARKGRRPSWKEAAPSEVAEPDVNQVVEQLRTLGARVV
 L M A Q T Q K G L R P D F G P A MP P E A A K Q L Y Q Q L V D Y A R D Q F P Q L H GQFA GNKPDFHLSMAPKPAKVFYDAFCDRVRRDYVKV L Y A NTA KGRRPSWNAAAPGPVAEPLVIDFTEALEQQLAEVV LYANCRHGRRPSFTEAARPDSARELVDYFCTCIRRDGVKL


 LAAETSKGRRPGFSTAAAPADAEALY EQGLAWLRAR HENV



 LAA DTHSGGRPSFTPAAPPDE GRRLY DYFVARARQQBPIV L H A R V N K GAAKP D F H R S M K G P E A D E L Y E Q V V K T L G E S S D K I LA A ETNNGTRAGFSTAKPPMEAENIYNYMVGRAKDLDSNI LA A E T L K GN K P DF H L A M E G D R S K Q F Y E R F L L K Din A E H K E V
 L Y G DVVK K GF R P S F V A A E D P E P A R K M Y E R F C A E L A G A GV K V LAADTRSGLRPGFSTAAAPAQAEALFEQLVQMAKQRYANV L Y GDSRKGRRPSWVAAAPGEVAAPLVDAVVKELREHGLTVV
 L LA K TK K GTKPDFHMAQKGHIA KELYDDLELENLQKGKDKV L A D TKK GMRPS F S S A GT P Q Q A N S L Y L E FI E K A T
 LYTVVLKGNK LDEHQSMNAEQSESFYNQFI NELKLKYKPV LAADTRKGMRPSFGPAADPQTGQALFETFLEALRERTGPV L Y G D T RK G R R P S WS A A A S GP VA A ELL LD D LAA A L R A H G L S V
 L Y GNL K E GNRPSYCTSMPADEARNLFEYFKGKLLEKWPQA
 LYADVRKGRKPSWSHAASSEVAEPIGAALVQAVRGYGLDV L Y A GTRKGRRPTVNAAAPGPVSEPLDDHFAEHLRTGGAHV
 L Y G DCRKGRRR NFMNAK GGEEA K VL Y Y E F V V ML K E T GL K I L A A D T S S G N R P S F T N A A P Q D E GR R L Y D Y F V A Q A K V S H P M V

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 L Y G Q A R K GRRPS WT DAAPGEVVAEPDVVDTVV A A L R E R G V R T


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GDCRKGRRPSYSEAARPEDAVKLYCEFLE ELQSLGLAV


L S WN GKKGNRPSFDGSAKPDIANKMFNEFI EDLQST VPV

L YADCKRGRRPSFTDACHPYIA ESLEFRFAEDARALAPAF
LA A DTRSGTRASTTPAAAPDEARALYTGGVSEAQK』WPGT

LA A DTRSGGRPSTSSAAPPAQGQALFEALLALARERBPQV

LYGDVRRGRRPSWTRSAPAE GAEPLVYRFTAELAGQGDHVV

L F A K VVK NK P DF H K A M A A E S S K S M Y A T F L E RM G A LY D P I L LA DTRKSRRPSWSAAAPRAVAEPLVAAFGDALRELGATV

L Y G FLLKGNKPDFHLAMMPDQA KDFYS KFVEAVAHSYDKV


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| UniRef90-UPI000410A7A5 | T GVFGAMMDV |
| UniRef90-S3NQA2 |  |
| UniRef90-DOMV57 |  |
| UniRefefo-X5LM89 | QTGAFGAMMQVELVNDGPVTVLLEL |
| UniRef90 E1L1E | GVFGADMT HLTCCDGPV' M M |
| UniRef90 W3WN80 | GVFGAMMQVALVNDGP |
| UniRef90-U2E1A7 | QGVFGADMQVSLINDGPV |
| UniRef90-H6RG67 | GKFGANMKVALTNDGP |
| UniRei | GQF GADMQVR |
| UniRef90-U2 | ETGEFGQYMKVVSENDGPVN |
| UniRei90-R5EFI7 | VTGVFGAHMQISSVND |
| UniRef90-Q6C7S6 | KDGVFGAMMDVALVNDGP |
| UniRef90-16ZMM9 | KNGLFAAMMLVKIFNDGP |
| UniRet90-U2SW19 | KTGEFQQYMEI E |
| UniRe | QTGEFGAAMQVSLINDGPVTFWLRV |
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| UniRef90-UPIO0028 | ESGITFSADMKVILVND |
| UniRef90 LT7 | KDGEFGALMQVDI |
| UniRet9 - D4k | GTGEFGADMQ |
| UniRef90-D4K4W3 UniRef90 K2CBA5 | QHGEFGADMQVSLVNEGPC |
| UniRef90-Q75E22 | QDGEFGAMMSCSLTNEG |
| UniRet90-UPIO003E | QTGQFGADMQVQLVNDGPVTFMLEV |
| UniRef90-COVYY | ATGVFGANMQVSLTNDGPV |
| UniRef90 R6UCX3 | DMK ${ }^{\text {d }}$ D |
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| UniRet90-L8D1Y | MQVT |
| Un | FGAMMSV |
| UniRef90-K1JSB7 | FGAHMRVSL |
|  | LMSVN QNDG |
| UniRet90-K6W914 | GRFGAHMAVE |
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| UniRef90-G0: | KDGQFQAMMDVQLVNDGPV |
| UniRef90-R7FM29 | D |
| UniRef90 Wo. | GADMQVALVND |
| UniRef90 $\times 40 Z Z 5$ | HTGVFGAMMDVELVNDGPFTVVAEV |
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| 14LA | A |
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| UniRee90-Lop | ATGQFGAMMNIDF |
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| - $90-\mathrm{G34Y} 9$ | KTGllian M ${ }^{\text {a }}$ |
| $\begin{aligned} & \text { UniRef90-G3AY69 } \\ & \text { UniRef90 C1BVX1 } \end{aligned}$ | KDGKFGEMMEVNVNDGPVT |
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| UniRef90 W7 | RTGRFGAAMA |
| er90-10C | EKGOFGAMMA |
| UniRef90-D7B | HTGEFGAMMAVELVNDGPLTI L L |
| UniRef90-M2V | ATGHFGAHMRVASVNDGPVTVLME |
| OJJ6 | FGAEM |
| UniRef90-UPIIOOO3B60327 | ASGVFGAD |
| UniRet90-D2SBP3 | ATGVFGAMMD |
|  |  |
| UniRef90 UPIO00369371C | FGARMRVTLTNDG |
| UniRef90-D8MBS6 | QTGEFQAYMNVELQNDGP |
| UniRef90-UP | ERGVFGAMM |
|  | FGADM |
| UniRet90-G4T5 | QFGAMMSVGI VNEGP |
| UniRef90 K9SF | ETGIIFGAMMQVAI E |
| ee90-E4W |  |
| Ref90_C1AB58 |  |
| UniRef90_B6ACC5 | SFGSHMELQLVNDGP |
|  | KGKITF GALIMQVHLINDGPVTPQLD |
| UniRet90-H5UN51 |  |
| GOUW |  |





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| UniRef90 UP10003B72F |  |
| UniRef90- UPIO00465E503 | ATGRFGAMMSVHSVNDGPFTVLVEV |
| UniRet90- K2 | ETGSFGDYMQIETVMDGPVTIVVE |
| UniRef90-A8N | dGRFGAMMNVQIEN |
| UniRef90-G8ZLD9 | QDGEFGAMMSCSL |
| UniRef90 H2Z1D1 | KDGKFGNHMQVHI QNDGP |
| UniRef90-U4KNJO | KTGUFGADMKVSLLNDGP |
| UniRef90-UPI | ATGQFGADMQVASVN |
| UniRef90-R7K6 | KYGVFGADMLI EQAN |
| UniRet90-D1BK | GTGRFGADMQVELVNDGPM |
| UniRei90-W10108 | KDGVFGAMMKVHLVNDGPVT |
| UniRef | KDGVFGEKMIVNIVNDGPVT |
| UniRef90-UPIO | ATGVFGADMAVSLVNDGPV |
| UniR | S SGlf Gadmavrl ciwgr |
|  | F $R$ |
| UniRef90-AOLQ | ATGVFGADMLVELANDGPVTLVLDV |
|  | KKGVFAESMQV IVNDGVVFFLVV |
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|  | MMQSLTND |
| UniRef90 UP10002378C0A | ATGVFGAMMSVESANDGP |
|  | D |
|  | KEGRFGAMMK |
| E6J690 | elarfoamm |
| UniRet90_R5FWM2 | GNFGSDMQ |
|  | diek ammb |
|  | GVFF GADMAVQFTNDGPV |
| UniRef90 Q4JVA | ETGRFGAMMKVSSVNEGPF |
|  | QDGEFAMMS |
|  | VGGQFGADMAVDLVNDGPVTLI |
| UniRef90 - TokIS | KDGRFQAMMEVALINDGPI |
|  | ATGRFRADMRV |
|  | QEGVFGAYMEVSL |
| UniRef90_UP100029A | AEGUFGADMQVEL |
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| UniRef90-D4H868 | QTGQFAAEMNVGLENN |
| UniRet90-L1MGE2 | STGVFGAMMQVTSTNEGP |
|  | AGGVFGGDMDVTLLNWGP |
|  | ECGIFGADMKVEIQNDGPVTLVI |
| UniRef90 R7BUZ |  |
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| C2CP42 | EGKF |
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| UniRef90-UPIO003FC53D2 | ETGVFGAMMKVE |
| UniRef90 U7M0X9 | ESGQFGAMMRVSSVNEGPF |
| UniRee90-K1E | ATGRFGADMA D HADGPV |
| UniRef90 W5YJLO | AEGRFGADMKVRLVNDGPV |
| UniRee90-D6 | YAGFFGADMDVELCNWGPV |
| UniRef90-D81 | EEGQFGATMEVASVNQGPFTVTVD |
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| UniRef90 UP10003B71B8B | ETGRFGAMMKV |
| UniRee90 C8XG80 | GRFGATMRVASVNG |
|  | GQFGADMOVHLVNDGPVTVPLED |
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| UniRef90_UPIO003740737 |  |
| UniRef90-s91 | ATGKFQNYMN】EQVMDGPVTLVLD |
|  |  |
| UniRef90- М3TP90 |  |
| UniRef90-S9X07 | ATGHFQHYMNI EQVMDGPVTLVID |
| UniRef90-C4WXW5 | KDGAFGEMMEVETVNDGPV |
| UniRef90-W3VGR7 | KDGAFGEMMDVSLTNDGPV |
| UniR | KDGIFAEMMDVNNNQGP |
| UniRet90-A4X4Y3 UniRei90 UPIO003626E35 | ETGRFRAQMLVESVNVGPRTI |
| UniRef90-12FY04 | KDGAFGEMMDVSLTNDGPVTiLLD |
| UniRef90-F4NY12 | KDGVFGAMMKVDIVNEGPVT |
| UniRet90-UP1000366FB73 | ATGSFGAMMEVSSVN |
| 12G | KDGVFGAMMDVALVNDGPV |
| Uni | ATGHFGAHMSVQLTNDGPVT |
| UniRef90-G8JUM6 | FDGQFGGLLM |
| UniRef90-AOAO17TIX7 UniRet90-G7GYK3 |  |
| UniRef90-R7UIX7 | KDGVFGAMMQVNI QNDGPVT |
| UniRef90-B0) | KDGRFGAMMQVHIQND |
|  |  |
| UniRet90-U2 | ATGSFGAKMEVSSNQGPFTVLVE |
| 90-UPIO00373EFF7 | STGTFGAMMA RSVNDGPFTVVEV |
| N7 | ATGEFGGDMQVSLTNDGPVTLLFD |
| UniReffo-H3AJ5 |  |



UniRef90-A0A016V316 UniRef90 Q2CAY1 UniRef90-U1QP48 UniRef90-F8DXY1 UniRef90-F8MV08 UniRef90 UPI0003C11408 UniRef90-W7AVC9 UniRef90-X0UJB8 UniRef90 B3S8J0 UniRef90-A0A022QH76 UniRef90-X5FBP2 UniRef90-W7CV77 UniRef90 R7QR91 UniRef90-L7ILY4 UniRef90-W1VPB0 UniRef90_R7H070 UniRef90-J8V840 UniRef90-X1QTD6 UniRef90-W6EXX6 UniRef90 W9SXW9 UniRef90-X1LNX3 UniRef90_F9PSX0 UniRef90_A1A221 UniRef90 Q2GTK8 UniRef90-B8BGK6 UniRef90-R7P9N9 UniRef90-G0QUU2 UniRef90-C4FEN8 UniRef90_W6U8M4 UniRef90 R6EXM6 UniRef90_UPI0002B46B45 UniRef90_UPIO003C266FC UniRef90_C6JY97 UniRef90 ${ }^{-}$R7YMZ5 UniRef90-UPI0001CEODBB UniRef90-W4Z9V5 UniRef90-S4XGX5 UniRef90 X1MAY2 UniRef90_UPIO001CBB483 UniRef90-G3IJD6 UniRef90 UPI00021A667C UniRef90-UPI00045614D4 UniRef90_E1C762 UniRef90_E3LOS0 UniRef90 V4ABS9 UniRef90 Q 68 EL 2 UniRef90_UPI0004705B6F UniRef90_UPIO0046B4AA9 UniRef90 F6URY8
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 TVDGARIAEIGGPGLILACAMRGDADD
MKAVVSTVSEASVTVAGEKDAEVKPALVALVGAGREMCD
RlVI QR
RGILVLAAVAPGDTVK MKAVVPHVTQAS $\square T V G G E Q \square G A \square R W V I G M L L S I S \square E D A Q K$

G ${ }^{\text {S S Q D T D R }}$
S S TTVGNDLIS STGPGLVAFTGIGKDDSEK MRAVVQRVASASVEVEGRTVSAIGPGLLVLVGLHETDVES

MRLVVQKVSQAAVTGAAAETAEDGRGFCALVGFEKDDTDS MKVILQRVLSASVTVDKTIVSSIGKGILVLAAVAPGDTEK $M K I \quad V Q R V K Q A Q\|S I E G Q I H A Q\| K Q G L L L L V G V G P E D Q Q E$

QRVTEASVSVAGEVVGRDGQGLVVFVGVADGDTEK $M R V V V Q R V S A A S V D V D N E L P Q Q I G P G F M I L V G V T D E D G D Q$
$M K V S L Q R V S E A S A \square V L N E L M A Q \square G P G L V L T \square E V E P D D D E G$ MAPGDTER
$M R L I I Q R V L S A G V K V D G E F D S Q \square G P G \prod C \| L L G L H K G D S D K$ MRVLMQRVREAAVSVLNELNGYMGPGLVLTVEAEPGDDER $M R V V \square Q R V K S A S V H V D G Q L I S E D G R G L M V L V G \square S R D D G E K$
$K L V I Q Q C \square S A R \square Q V E A E Y V E \square G R G V V L Y V C F L K G A D Q D$ GAGRGALLVLVAAGREDAPD
$K \| I L Q Q C L S A R L Q V E G D T P G E \prod A R G L V V Y V C F M K S A T K D$ $R A L L Q Q C L H A H L Q V D G D A A A E I Q R G L V I Y V C F F K G A D K E$

RA $L \square Q Q C \square F A R \square Q V K P P E H G E \square Q R G L V I Y \square C F F K G A D E D$ RIILQQCLSARLQTQPKTVNSTGPGLIVYVCFDKGATED $R V V L Q Q C L H A R L Q V E A E W V E V N R G M V I Y I C F F K G A T E D$ $M R V V L Q R S K A A Q V T V N G E T V G R I D H G L V L L V G D A D G D T E E$ $R A L L Q Q V H Q A E V D P A D Q W V E V Q R G L V I Y V C F F K G A D K E$




RTVLQQCLQARDQVEAQFVQDERGMVIYYCFFKGATDD $R T V L Q Q C L R A R L Q V E A E F V Q R M D R G T V L Y I C F F K G A T D D$

VVLQKTNGVELQVDDEWV K $\quad$ GGKGVIIFVAFLKDTTAD




[^1]

UniRef90_M5GA28 UniRef90-A0A016V316 UniRef90-Q2CAY1 UniRef90-U1QP48 UniRef90-F8DXY1 UniRef90-F8MV08 UniRef90-UPI0003C11408 UniRef90-W7AVC9 UniRef90-XOUJB8 UniRef90_B3S8J0 UniRef90-A0A022QH76 UniRef90-X5FBP2 UniRef90-W7CV77 UniRef90-R7QR91 UniRef90-L7ILY4 UniRef90-W1VPBO UniRef90-R7H070 UniRef90_-J8V840 UniRef90-×1QTD6 UniRef90-W6EXX6 UniRef90-W9Sxw9 UniRef90-X1LNX3 UniRef90-F9PSX0 UniRef90_A1A221 UniRet90 Q2GTK8 UniRef90-B8BGK6 UniRef90-R7P9N9 UniRef90-GOQUU2 UniRet90 C4FEN8 UniRef90-W6U8M4 UniRef90-R6EXM6 UniRef90 UPIO002B46B45 UniRef90_UPI0003C266FC UniRef90-C6JY97 UniRef90-R7YMZ5 UniRe990-UPIO001CEODBB UniRef90-W4Z9V5 UniRef90-S4XGX5 UniRef90 X1MAY2 UniRef90-UPI0001CBB483 UniRef90-G31JD6 UniRef90-UPI00021A667C UniRef90 UPIOO045614D4 UniRef90-E1C762 UniRef90-E3LOSO UniRef90-V4ABS9 UniRef90 Q 68 EL 2 UniRef90_UPIo004705B6F UniRef90-UPIO0046B4AA9 UniRef90_F6URY8 UniRef90-I3JO32
UniRef90 B7QDN UniRef90-UPI0003955129 UniRef90-F3GWT2 UniRef90-UPI0001FFEDB1 UniRef90_C4JOC5 UniRef90 G4LVJ8 UniRef90-M1AQ85 UniRef90- $\mathrm{X} 1 \times \mathrm{XD20}$ UniRef90-F6Q949 UniRef90-UPI000333D8A9 UniRef90-G3P9R6 UniRef90_T2M807 UniRef90 V9L9E9 UniRef90-W1ANW8 UniRef90_UPIOO0203899D UniRef90-НЗВхІ2 UniRef90-UPIO0033393A4 UniRef90-UPIO003EC4140 UniRef90-H3C552 UniRef90-HoESL8 UniRef90-F2UJT4 UniRef90-E5S1A1 UniRef90_Q4TFC9



पGGRVKGRNMQYHSNSGKEEGDELYSQFVT DCEKEGVVV LGGR DKGKRMQYHONDRKNGSEYYQLVEACEKDGKQV GGKAKGRGMQYHNNISKEDGLRLYSAFVALCEKEEVTV LGKRK $K G R G M Q Y H N N I S K E D G L R L Y S A F V A L C E K E E V T V$
$K G N R V Q Y H G V S K D G Q E F R I V V E C W C G K T V$ LGGKPKKGRRMQYHANIEKEKGDELYSQFVADCEKEGVLV LAADTKSGLRAGFSKAAPPALGAELFDYLLSQARDAHPTVV HGETRKGRRPSWSAAARPEDAAPVVDAVVAALRGRGATVV
YG IVKGNKPDFHVAMSPAKAKPFYASLVEKFQRSYDSV LSGK LKGKCFQYHSAVSKVAAESLYCRLVKLCDTFLRSS


LGGKA KGRAMQYHTNISKEDGLRLHSAFVSL

[^2]| UniRef90_M5GA28 UniRef90 ${ }^{-}$A0A016V316 |  |
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| UniRef90-UPI0003C114 |  |
|  |  |
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| UniRef90-A0A022QH76 |  |
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|  |  |
| UniRef90-H3C552 |  |
| UniRef90-HOESL8 |  |
| UniRef90-F2UJT4 |  |
| UniRef90-E5S1A1 |  |
| UiRef9 | 4TFC9 |


#### Abstract

 


ETGRFRTHMQVSLCNDGPVT LLD ETGVFGASMDVRIVNHGPVTIILD K S GIIF G S YMQLHLVNDGPFTI CL K DGVVGAMMEVALVNDGPVTLEMNV
GTGEFGADMKVELLNDGPVTDCMD AS GQFGADMQVHLVNDGPVTFMLQM

ACGRFGAEMQVHLLNDGPVTFLLE KS GDFGAYMQVDMLNDGPVTII D $K T G K F Q A D M K V L L E N D G P V T i Q Q L D$
$R E G R F G A R M R V G S V A D G P F Q F T L Q$ $R E G R F G A R M R V G S V A D G P$
$K N G V Q A M M Q V A L N D G P$


GTGEFGAYMQVELLNDGPVTTCMD K D GVF GEYMQVNI QNDGPVTIQLD


KDGKF GAYMQVAHI VNDGPVTIELE RSGTYGNRQVLSLVNNGPFTHTME ETGCFGATMEVSSVNQGPYTVLVD ETGLFQEHMLVQUYNDGPVTISLE



 K FGTYGNRQVFNCVTNGPYSHVLE KHGTYGNRQVLKLDTNGPYTHLME

EHGTYGNRQVLKLDTNGPYTF ECGTYGNDQVLSIQTNGPYTH\|DDV KHGTYGNRQVLKIDTNGPYTHLME RSGTYGDRQVLSMETNGPFTHVLD KHGTYGNRQVLKLDTNGPYTHLI E
 $E T G E F G A D M A V E S V N D G P F T V L V$
$K D G V F G A M M K V S L V N D G P V T M Q I V D$ ATGTFG $\square R Q \| L S L E T N G P F T H V V E L$

KHGTYGNRQVLK LDTNGPYTHLIE GEGFSAHGNSNLEVD EQGVYGQRQEMVLSAAEPMTLLLE KNGTYGNLQVLSMETNGPYTHVI DM RHGTYGNRQVLKMDTNGPYTHLIE

RHGTYGNRQVLTVDTNGPFTHMDE RHGSYGNRQVLSLDTNGPFTHLME EHGTYGNKQVLKLDTDGPYTHLDE

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lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm

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244
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    lupas_14
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    sol5
    sol0
    jhmm
    jpssm

[^2]:    lupas_21
    lupas_14
    lupas_28
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    sol5
    sol0
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    jpssm

