QUERY
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UniRef90_B2UZU4
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UniRef90_UPI000476C6A2
 UniRef90_D4W7M2 UniRef90-UPI000468A904 UniRef90_R3TKM6 UniRef90_A8MJA9 UniRef90_A7GQB6 UniRef90_D2RMK6
UniRef90_C3P0R7 UniRef90_UPI0002D5B77F UniRef90 UPI0004236AD1 UniRef90_R5IUS2 UniRef90-V2ZCE2
UniRef90-R2PDY8 UniRef90-H1HV79 UniRef90_F5WRQ8 UniRef90_UPI000467ECB4 UniRef90 E3H783 UniRef90_UPI00041EFF4E UniRef90_A0A037Z6T4 UniRef90_U7V6E8 UniRef90_H0DJG6 UniRef90_E7NSB7
UniRef90 M5PA29 UniRef90_UPIO0046F0EFA UniRef90_C5QNT9 UniRef90_D4GMJ9 UniRef90_R7JSC2 UniRef90_E8XN67 UniRef90_J3D6Z7 UniRef90_UPI00041F4228 UniRef90_M1ZBQ4
UniRef90_Q8XKH1 UniRef90_UPI0002ED9BA6 UniRef90_V6Q626 UniRef90_F0RSF6
UniRef90_C4UXD1 UniRef90_UPI000464207B UniRef90_N9XNA3 UniRef90_UPIO003FCC250 UniRef90-C9RSR5 UniRef90_Y5PBV2 UniRef90_N2A964 UniRef90_G8QU89 UniRef90_E6WC14 UniRef90_UPI000469B947 UniRef90_Q7MAZ1 UniRef90_K9EVD4 UniRef90_UPIO003462884 UniRef90_R9LKQ3 UniRef90_C0ZCX0 UniRef90_S0KZJ8 UniRef90_UPI000471A62E UniRef90_F3BD84 UniRef90_F4GIH8 UniRef90_E0NNQ6

1 MH TVTGFAPFDNQNDNPSWEAVTQLED I MKILVTGFDPFGGESINPALEVIKSLPK QI AGABDDKLKL
 MK I L V T MKVLIT GFDPFGGE $M K \mathrm{~L}, \mathrm{~L} \mathrm{~T}$ GF DP F M G C E MKVLVTGFE M K V L MVITGF MKILVITGF DP F G S D K

##  <br> M <br> M

## N

 $M$$M$

## M

 MK V



 MKI L V T G F D P F G G E L V N P A L E A V
 MK L L L T G F D P F G G E P I N P A WE A V K R V S D Q V G D V E V V K L MV


 K V L V T G G F D P F G G E P V N N P A L M S V M Q L P D E I L G V Q I I I K K E I






 M K L L L T A F S P F G G E K I $\operatorname{N}$ N P S L L E A V
 M K V L I T G F D P F G G E K M N P A Y E A V




 MK I L V T G F D $K \vee L L T G F D$ MRVLITGFD $M K V L V T A F D$
$M K V L M T A F$
$M$ $M K V V V T G F$ MKVLLTGFD
KVLVTGFE MKVLMTAFE KVLLTGFD
 MKILVTGFDPFGGESINPALEAVKMI PENIEGAQVIKLEII MK LVTGFDPFEGNEMNPSWEAVKQLSSQIGKHDITKK E I $M K L L L T A F D P F G G E A V N P A L E A V K M V R P V V S A D E V V K L E V$ RVLITGFEPFGGERVNPSWEVVKQLNDLMLGDEVVARQL MKVLVTGFD MKILVTGF KILLTGFEPFGGEKVNPAYEAVKLLPDTIUGAEIVKLEI $K V L V T G F D P F G G E T V N P S L E A A K Q A A G W K N D Y I V E V R E I$ MNILVTAFD MKILITGFE MKI MITGFD MKLLLTAFD MKVLMTAFE MKILVTGF MKVLITAF MKILVTAF MKVLITAFD MKLLITGFE MRILVTGF
$K V L V T G F D P F G D D H V N P A L E A V K Q L N K T V E D V M V V A Q E V$ MKVLVTGFDPFGGETVNPAYESVKLI HDTVKNAEII KVEI MKLLLTAFDPFGGEKVNPAGEAVKLVADQLDGDSVIKVEV


|  |  | $70$ |
| :---: | :---: | :---: |
|  |  | G GRNATT P ERVV |
| UniRef90_UPI0003FEA121 | P TVVFYQA A SVLE EAMAKYAPDIVLCI G | GQA G GRTELTTPERVV |
| UniRef90_D4YIW8 | P TVVFNKSAEVEKRAlE E H Q P D Y I L NI G | GQA G G R F A L T P ERVV |
| UniRef90-H3N | P TV DG K S Vikl R K K I E EVNPDVVLSI G | G Q A G G R P D 1 T VERV |
| UniRef90-C3WEE8 | P TVVFKKSAKKLIENI DTVKPDVVICVVG | GQA G GRYEFCVERV |
| UniRef90-P65678 | P TVVFYKSSEVLEAEI L R Y Q P D AVLCI G | G Q A G GR T G L T P P RV |
| UniRef90-M2PNA2 |  | G |
| UniRef90_UPI0002DD0611 | PVVFGGKSIKKLDELI EKEKPQVVI CVVG | GQA G GRFEL S IERV |
| UniRef90_UPI00047C710B | P TVVFRKS I D R L E NLI EEHRPNIVI CVVG | GQA G GRFQVTPER |
| UniRef90_D5H0U8 | P TVVFNKSAQVVHQAIVKEQPDYVLNV | GQA G GR S A L T P ER |
| UniRef90-A8SIY5 | P TVVARKS L K K L E EVI E I E K P DVVI NV G | GQA G G R T D 1 T VE R V |
| UniRef90-I7LAH1 |  | GQAGGRAELT P E K V |
| UniRef90-E4KPQ6 | P TVVFHKSADVVAEKMREVQPDVVLNI G | GQA G GR T G L T P ERV |
| UniRef90_B9YBR3 | P TVVVHQ S L A V I REAlR K E D P D M I L S I G | GQA G GRPDITVER |
| UniRef90-G4L5L1 | P TVVYGKSADV CKKAI QKHQPD IVLNI G | GQA GGRFTITPER |
| UniRef90-W1Q3X1 | P TVVFGDSAKRLFEAVNEHQPD AVVCV G | GQA G GRFGIT P ER |
| UniRef90_UPI00040DB416 | P TVVFYQSASVLEEQLSKHLP D AVLCL G | GQA G GRMELT FER |
| UniRef90-T0U863 | P TVVF GKSAEVVQTKI E E $\dagger$ QP DVVLNI G | GQA GGRFAI SPER |
| UniRef90_G5KCA3 | P TVVFYKSADVLEKNI T D FEPDAVLCI G | GQA G GRF GLT P ER |
| UniRef90_UPI000289F015 | P TVVFRKSVMHI D E A I K M N N P DIV I A V G | GQA G GRFGI N |
| UniRef90-H3NCX8 | P TVVFHKSAAVLEEAMLAHQPDVVLCV G | GQA G GRTGIT |
| UniRef90-F4BS75 | P TVVF GK S A EVVKVVAl K E F Q P DVVL NI G | GQAGGRFA |
| UniRef90_L5MN70 | P TVVF G K S I EL L Q Q A I R E TEP DLVFFCI G | GQAGGRPDI T VER |
| UniRef90_C2W9D5 | P TVVFHK SLQVLESSYIEEVQPDLVICI G | GQA G G R P DI T V ER |
| UniRef90_R6ULE1 | P TVVVHKSLLQVIREAI Q K H D P D M I L S I G | GQA G GR S DL TV ER V |
| UniRef90-K1J830 | P TVVFGKSATLLAELMRQHQPDVVINV | GQA G GRFAlT PER |
| UniRef90_E3PR53 | P TVVFNK S I E KV K E A M E LE K P D I V L C I G | GQAGGRYDMTVER |
| UniRef90_U5F9Y8 | P TIA H T SLAVI K Q A I E D H E P D MV L S I G | GQA G G R S D ${ }^{\text {P }}$ V V R |
| UniRef90_D0GIE4 | P TVVR】K S L E K I E K A V E E H N P DVI L S I G | GQA G GRFDI TVER |
| UniRef90-K2PJZ1 | P TVVRYK SLEKI E K A I E E H H P DVVVVNI G | GQA G GRFAl T P ERV |
| UniRef90_R7GJJ3 | P TVVFYK S I D TVA A A I E K E K P D AV L C I G | GQA G G R F D L T P ERVV |
| UniRef90_S4DNP5 | P TVVFGKS GAVLKEAI QQHQPEGVI CV G | GQAGGRAAV S M ER |
| UniRef90-B2UZU | P TVVFKK S LEKI EANI LAAHKPDIVI SI G | GQA G GRFGI T P ER |
| UniRef90-I2J2F9 | P TVVFYKSAKILEEEI RLLYQPDIVLCV G | GQA G GRK G |
| UniRef90_UPI000476C6A2 | P TVVFHKS IEVLKRAI REVQPNIVI CV G | GQA GGRS D |
| UniRef90_D4W7M2 | P TVVFD K S I EV L Y Q T L K E EQP D M V I C V G | GQA G GRPNI TVER |
| UniRef90_UPI000468A904 | P TVVFNKCAEIVVEKKI A E E K P D Y V L Ni G | GQA G GRAA I T P ERV |
| UniRef90-R3TKM6 | P TVVFNKSAEVTKQAI LEEHQPDVVLNI G | G Q A G G R F TV T P E R V |
| UniRef90_A8MJA9 | P TVVFRKS I DVLFR A I K K E S P D MV I CI G | GQA G G R Y D I T V E R V |
| UniRef90_A7GQB6 | P TVVFHKSI E QLESYI DEFNPELI I CI G | GQA G G R A DI TVVERV |
| UniRef90-D2RMK6 | P TVVRGKAI A RVK C A I A A F N P DIVI CI G | GQA G GRTDLTV ER |
| UniRef90-C3P0R7 | P TVVFHKSI SVLK E Y I E ELAPPEFI I CI G | GQA G GRPDI T E R |
| UniRef90_UPI0002D5B77F | P TVVQ TK SVQAI E T AI EKHNPDIVI SV G | GQA G GRFDIT PER |
| UniRef90_UPI0004236AD1 | P TVVYEK SLKA I E EAI DE H K P DVVI S I G | GQA G GRFDIT P ERV |
| UniRef90-R5IUS2 | P TVVF G K SI D K V A K A I E A ER P D AV L C I G | GQAGGRFDL ${ }^{\text {T }}$ |
| UniRef90_V2ZCE2 | P TVVF G K S I K I V A D Al EKEKP D Y V L C I G | GQA G GRYGIT |
| UniRef90-R2PDY8 | P TVVFKKDGEVLAKAI E EQNPDIVI CVVG | GQA G GRS DI S |
| UniRef90-H1HV79 | P TVVF GESVRLVAEAIE REQPDFVLSVG | GQA G GRA AV T |
| UniRef90_F5WRQ8 | P TVVFNKSVEVLDEAMAKHQPDVVICVVG | GQA GNRF GV T PERV |
| UniRef90_UPI000467ECB4 | P CVVF GES L RVLDA A I D E L N P SLVLA I G | GQA G G R S D I T VER V |
| UniRef90_E3H783 | P TVVFKK SI DVLM S Gl EK H K P D AV I CVVG | GQAGGRYEI S MER |
| UniRef90_UPI00041EFF4E | P TVVFVKK S D V L Y K Sil E E T N P D I V I C V G | GQA G GRPDLTVER |
| UniRef90-A0A037Z6T | P TVVFRKS I E EV E K L I T $\square$ H K P D I V I C V G | GQA G GRF DITVVERV |
| UniRef90_U7V6E8 | P TVVFKKSAEKLIFA GI E EHKPDAVI CIIG | GQA G GRYDMSVERV |
| UniRef90_H0DJG6 | P TVVFHKSKQVI EQELEQHNYDAVLVI G | GQAGGRFELLT PER |
| UniRef90-E7NSB7 | P TV IGGK S LD KI K E AVKK K S P DVVL Sil | G Q A G G R S D T VE RV |
| UniRef90-M5PA29 | P TVVFHTSADVLKEAVQKHRPDIII CTG | GQA G GRPHIT PERV |
| UniRef90_UPI00046F0EFA | P TVVFYREGEILEEGI RRHRPDAVI Cl | GQA G GRS GI S VE KV |
| UniRef90-C5QNT9 | PTVVFESSKEVISKALAENDFDVVLAI G | GQA G GRFEI T |
| UniRef90-D4GMJ9 |  | GQA G GR S D |
| UniRef90-Q838N8 | PTVVF GTS GEKVAEAI ETHQPDMVI CVVG | GQA G GRET |
| UniRef90-R7JSC2 | PTEFTRSIS CVVEA A I K EHNPDVVI DVG | GQA G GRACVTV |
| UniRef90_E8XN67 |  | GQA GGRNDFSIER |
| UniRef90_J3D6Z7 | PVVFATC GEVLTRALEEI Q P D R V L CV G | GQA G GRSDITVERVV |
| UniRef90_UPI00041F4228 | P TVVFHQSADVLEKAI AKHAPDAVI CVVG | GQA G GRLLI T P P R V |
| UniRef90-M1ZBQ4 | P TVVFNK S I EVLLENLLIENEKPDIVI CVVG | GQA G GRYDI S L R R |
| UniRef90-Q8XKH1 | P TVVFRKSLEKI E E K I E E $\square$ N P DVVI S I G | GQA G GRF GV T P ERV |
| UniRef90_UPI0002ED9BA6 |  | GQA G GRA EIT P ER |
| UniRef90-V6Q626 | P TVVFGKSAEVVRQAMTEHDVDVVLNI G | GQA GGRFDMTPER |
| UniRef90_F0RSF6 | P TVVFGKA I E KV REAlIE E I Q P DVVLCI G | GQA GGRFD I S VER |
| UniRef90_C4UXD1 | P CVVF G D ALVAL N A A I D D I Q PVLVLA I G | GQA G GRA DIT I ER |
| UniRef90_UPI000464207B | P TVVFTRSAEVLE EAI Q K Y R P DVVVLDV G | GQA G GRS C M |
| UniRef90-N9XNA3 | P TVVFSKCGPSVEEGI R Q H Q P DVVLNV G | GQA GGRASV |
| UniRef90_UPI0003FCC250 | P TVVFKK S I K VLEELI ERYQPELVI AV G | GQA G GR\LHI T P ERV |
| UniRef90-C9RSR5 | P TVVF GQ SLEI L H D A M K Q Vi P Di V I CV G | GQA G GRADI S VER |
| UniRef90-Y5PBV2 | P TVVFHKSKDVIQHELEHHHYDVVLSI G | GQA GGRFNI T PERV |
| UniRef90-W1J6H2 | SCIFD T S LE QLY A AI DKYQPEVVI SVG | GLLA G G R T N I S IE RV |
| UniRef90-N2A964 | P TVVF GKA GEALKA GVEE E H Q P D AV I CVV | GQA G GRS GMS V E K V |
| UniRef90-G8QU89 | P TVVF GKS $\square$ Q TVA D A M A R EKP D AVLCI G | GQA G GRF D $\mathrm{l}^{\text {T }}$ V E R V |
| UniRef90_E6WC14 | PVAYSRC GAVLT QALEALQPPDRILCI G | GQA G GRS DITVER |
| UniRef90_UPI000469B947 | PTIF NKCAEVVMGAI LD NKPDYVLIDI G | GQA G GRYALT P P R V |
| UniRef90_Q7MAZ1 | PCVFNTS LTTCLYAAI DEDQPELVI AV G | GQA GGRPDITVER |
| UniRef90_K9EVD4 | P TVVFHKSADKVK Q A I D D HDPDVILA I G | GQA G GRYGVTPERV |
| UniRef90_UPI0003462884 | P TVVF GEALDT TLY A A MDALLQPELVI A V G | GQA GGRADIS DER |
| UniRef90_R9LKQ3 |  | GQA G GRSA |
| UniRef90_C0ZCX0 | P TVFEK S $\square$ EHLY A AI E E T K P DIV L C I G | GQA G GRGDI A V |
| UniRef90_S0KZJ8 | P TVVFHKSAAVVKEALLKEEYDYVLSVG | GQA G GRF DLS F |
| UniRef90_UPI000471A62E |  | GQA GGRTQI T PER |
| UniRef90-F3BD84 | P TVVF GEA GKKVEKAI E EHHPDVVLCI G | GQAGRRADI Q VER |
| UniRef90-F4GIH8 |  | GQA G GRF DVT PER |
| UniRef90-E0NNQ6 | PTSISSRCDEILKK NI D R H R P DVVVSVG | GQA G GR |
|  |  |  |




QS 11 NQG QP
130



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










 K EMRANGIPASVSQTAGTFVCNHLYGLMHTLAQQNAAIR
 2
 K MQ E S GIIPSSVVSNSAGTFVCNHVMYGVLYMINKKYPNIM

 $K A V R D A G L P A E I S N T A G T Y V C N H I F Y Q V Q Y M R V K K F P N I K$
 QA MQ A A N I P A S I S N TA GTAFV C N H L M Y A A L H Y A S Q Y Q P D M K $K K L R E E G I P A S V S Q T A G T F V C N H L F Y G L M H R L A D K N K S T R$ A ALQARGIIPAKVSNTAGTFVCNHVFYGLMDLLAHDSRQRR



 | $E$ | $E$ | $\operatorname{l}$ | $K$ | $E$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $L$ | $P$ |  |  |  |
| $K$ | $K$ | $A$ | $G$ | $P$ |  |
| $P$ |  |  |  |  |  | $\begin{array}{lllll}E & A & R & E & A \\ G & G & P \\ E & M & M & Q & S \\ I & P\end{array}$

 K E MK S T G I P A S V $V$ V


 E K A A GVVP | $E$ | $K$ | $L$ | $R$ | $T$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $G$ | $L$ | $P$ |  |  |
| $R$ | $N$ | $S$ | $G$ |  |  |

\[
\frac{\mathrm{E}}{\mathrm{E}}

\] E A I QN A GlV P A K R L A GVVRKAGI PA SVVS T A | $K$ | $N$ | $C$ | $H$ | $D$ | $H$ | $Q$ | $L$ | $P$ | $A$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $Q$ | $I$ | $S$ |  |  |  |  |  |  |  |  |
| V | $R$ | $E$ | $H$ | $G$ | $L$ | $P$ | $C$ | $H$ |  |  | | $N$ | $G$ | $R$ | $E$ | $S$ | $G$ | $I$ | $P$ | $A$ | $S$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $V$ | $S$ |  |  |  |  |  |  |  |
| $R$ | $E$ | $V$ | $G$ | $V$ | $P$ | $A$ | $S$ | $V$ | $S$ | K K L | $K$ | $E$ | $M$ |
| :--- | :--- | :--- |
| $E$ | $D$ | $N$ |
| $I$ | $K$ | $N$ |
| $N$ | $G$ |  | T A MKEAGI P

 E NMRAHGII P Q NVREHGGL

EAMKEHNI | E A M K E H | N |  |
| :--- | :--- | :--- | :--- | :--- |
| H E L |  |  |
| R R | $H$ | $G$ | E A L K R G P A S V NELKTABAS S T A G AKMRESGI E E $\square$ R K N G I P A A TRE A GV A SI S ,

## 

HQ H R R E H DE E MR K A G $\operatorname{E}$ V P S S V $\operatorname{C}$


| QUERY | $D E D \backslash H L A / \square G T^{210} \mathrm{~T} E$ |
| :---: | :---: |
| UniRef90 UPI0003FEA121 | KEDVKNVGGAT |
| UniRef90-D4YIW8 | KEDMKIVGGKT |
| UniRef90-H3NJE6 | DS D $\quad$ KVT G G K T |
| UniRef90-C3WEE8 | ET DIKVSG |
| UniRef90-P65678 | DKDLQLVGGET |
| UniRef90-M2PNA2 | K D DIKVTGGAT |
| UniRef90_UPI0002DD0611 | KEDIKV |
| UniRef90-UPI00047C710B | REDIKTIGGE |
| UniRef90-D5H0U8 | QS DI K AVE |
| UniRef90-A8SIY5 | K EDI KVEGGAT |
| UniRef90-17LAH1 | K D DLETIEEGS |
| UniRef90-E4KPQ6 | K D DLKVTGGAT |
| UniRef90-B9YBR3 | QEDVKI |
| UniRef90-G4L5L1 | K D DLKAVGGET |
| UniRef90-W1Q3X1 | K T DAQVVGGET |
| UniRef90_UPI00040DB416 | KEDMKIVGGAT |
| UniRef90-T0U863 | KED\KAI GGA |
| UniRef90-G5KCA3 | QDDLNTVGGAT |
| UniRef90-UPI000289F015 | S EDLKI |
| UniRef90-H3NCX8 | K D L QVTGGA T |
| UniRef90-F4BS75 | K EDLKE $\mathrm{K}^{\text {G G A }}$ |
| UniRef90_L5MN70 | EQDIVEGG |
| UniRef90-C2W9D5 | ENDIVECGGT T |
| UniRef90-R6ULE1 | ETDVVTTGGT |
| UniRef90_K1J830 | QQDIKVVGGE |
| UniRef90-E3PR53 | NEDIKKSGGA |
| UniRef90_U5F9Y8 | QADVKESEGT |
| UniRef90-D0GIE4 | DEDIKKTGGT |
| UniRef90-K2PJZ1 | SEDLRVIGGGE |
| UniRef90-R7GJJ3 | QEDIKTAEGQT |
| UniRef90-S4DNP5 | EEDIKGNAGTT |
| UniRef90-B2UZU4 | NTDIKTAQGE |
| UniRef90-I2J2F9 | EKDLQLVG |
| UniRef90-UPI000476C6A2 | S EDIK SVGGGQT |
| UniRef90-D4W7M2 | DQDVKVTGGA |
| UniRef90_UPI000468A904 | RDDI I AVVEGKT |
| UniRef90-R3TKM6 | K EDIK TIE G T |
| UniRef90-A8MJA9 | KRDIKVQGGA |
| UniRef90-A7GQB6 | EKD\\|VECGGT T |
| UniRef90_D2RMK6 | QEDAKVTGGT |
| UniRef90-C3P0R7 | EVDVVEVGGT T |
| UniRef90_UPI0002D5B77F | DKDIVAVGGE |
| UniRef90_UPI0004236AD1 | DKDIKAIGGE |
| UniRef90-R5IUS2 | ESDIVAAEGAT |
| UniRef90-V2ZCE2 | KEDVKRAEGS |
| UniRef90-R2PDY8 | DEDQNVATGT |
| UniRef90-H1HV79 | ETDVKTAYG |
| UniRef90-F5WRQ8 | KEDHKIQGGA |
| UniRef90-UPI000467ECB4 | QT D LKLVGGAT |
| UniRef90-E3H783 | EKDLEIS |
| UniRef90_UPI00041EFF4E | ERDIVEIGGQT |
| UniRef90-A0A037Z6T4 | KEDLNITLG |
| UniRef90_U7V6E8 | KVDVKVSGG |
| UniRef90-H0DJG6 | QQDEKI A L G E T |
| UniRef90-E7NSB7 | D T D 1 KVS G G |
| UniRef90-M5PA29 | ETDIREPGGSLD |
| UniRef90_UPI00046F0EFA | REDVKT ${ }^{\text {L M G E T }}$ |
| UniRef90-C5QNT9 | LE DKKVALLGET |
| UniRef90-D4GMJ9 | A NDLKEAGGAT |
| UniRef90-Q838N8 | QEDIQLQGGT T |
| UniRef90-R7JSC2 | KEEVKEAMGTT |
| UniRef90-E8XN67 | EQDLK ${ }^{\text {A A G A }}$ T |
| UniRef90-J3D6Z7 | TEDIRVVGGAT |
| UniRef90_UPI00041F4228 | K T DIRETGGS |
| UniRef90-M1ZBQ4 |  |
| UniRef90-Q8XKH1 | D N D 1 K TVGGA |
| UniRef90_UPI0002ED9BA6 | S P DLK I ALGET |
| UniRef90_V6Q626 | K DDLKVVGGKT |
| UniRef90-F0RSF6 | T D DVKL A |
| UniRef90-C4UXD1 | EHDLQUS G G A |
| UniRef90_UPIO00464207B | T D DVQKAMGET |
| UniRef90-N9XNA3 | EKDRVSAGET |
| UniRef90_UPI0003FCC250 | E Q D $\$ RVIGG $\square$ T |
| UniRef90-C9RSR5 | EEDI QAVGG |
| UniRef90_Y5PBV2 | HPDVKVALGET |
| UniRef90-W1J6H2 | K S DIVVVTGGT T |
| UniRef90_N2A964 | QT DI SQAMGT T |
| UniRef90-G8QU89 | SEDVKVT G |
| UniRef90-E6WC14 | DQDLQVAGGAT |
| UniRef90-UPI000469B947 | K G DIEV ${ }^{\text {a }}$ GGS |
| UniRef90_Q7MAZ1 | S GDIAISGGMT |
| UniRef90-K9EVD4 | QDDIKKVGGA |
| UniRef90-UPI0003462884 | EQDLRLVGGAT |
| UniRef90-R9LKQ3 | EEDIQI HLGET |
| UniRef90-C0ZCX0 | DRDIVMEGG |
| UniRef90-SOKZJ8 | KADEKQIGGT T |
| UniRef90_UPI000471A62E | K E D R El G GA |
| UniRef90-F3BD84 |  |
| UniRef90-F4GIH8 | LT D TEV T G |
| UniRef90-E0NNQ6 | REDLKI T G GK |
| UniRef90_G5JJY6 | D E H ${ }_{\text {H H\|L A L G T T E }}$ |


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UniRef90 TOBAL1 UniRef90_G0AE78
UniRef90_W1IXW8 UniRef90_U5CLK9 UniRef90_D4JDQ9 UniRef90_R9N9Y5
UniRef90_G9QIM0 UniRef90_UPI0002E206A0 UniRef90_UPI000470D57B UniRef90_B7IEE2 UniRef90_UPI000371359E UniRef90 F7YZJ3 UniRef90_D4CSH0 UniRef90_E3DNJ7 UniRef90_W4F3J3 UniRef90 D4KJK UniRef90_UPI00035F8E66 UniRef90_B7LKQ5 UniRef90_W2VBI4 UniRef90_UPI0003A7C5B4 UniRef90_UPI0002FEC1E1 UniRef90_A1HQX8 UniRef90_A4W870 UniRef90_C7HUZ6
UniRef90 S2XD18 UniRef90-S2XD18
UniRef90 UPI0002 UniRef90_R2T2E2 UniRef90_U1K528 UniRef90_F7NGN8 UniRef90_F8GWQ7
UniRef90-E3DTQ2
UniRef90_C7RDJ6 UniRef90_S3XZT6 UniRef90_C5CZ14
UniRef90 D7GPX9 UniRef90-A0A011RLG4 UniRef90_B9DND6 UniRef90_Q6D7H1 UniRef90_N2JPS6 UniRef90_L8DC63
UniRef90_B7CCX8 UniRef90_U4WS68 UniRef90_UPI0003B6ECED UniRef90-P28618
UniRef90_U1KPS1 UniRef90_F8AID9 UniRef90_F3A1X1
UniRef90 UPI00036AB341 UniRef90-J4YQV9

PCVF GKAL QVLE QLMEELKPALVI CVGQAGGRSQMSLERI

 $P$ TVFKKGPQATIDAIEKYHPDYVFCIGQAGGRSQUTPEFV P TVVFS K C GP A V EA GI Q K Y E P DVVVINVGQA G GR S C V T DE QV



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



P TVVFGRDEEVVRAAVEKYHPDAVLCVGQAGGRSGI T



P $P$
$P$
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P TV





$A K V$ R

S CVV F D L S L D Q L $Y$ Y R A I A E W W P E V V





R
P
HRSLALYYQAIEQHHPVLVLCVGQAGGRCEI
$P$ T E F G A A LLR VL D E LL LER HR P T L V V A V G G A A G G R A E L
$P C V V E S A P R A L A E A I E A T D P A L V L C L G L A S G R P D V S V V A R$
P C E F D T S $\quad$ D S V L Q G A I N K Y S P P H V V L C I G Q A G GR A D I S

P TVFDQSAQVLHQAI LDHRPDVVLAI GQAGGRAGL



P


$P$ TA F Y Q A I G R V E A VI Q A E Q P Dil VV A I G QA G GR Y G I



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

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

$P$ C V F G A A N D V V M A D L L



P TVVFHQAGF IVE QAI KNYQPDDVLN GQAGGRFA

 | V |
| :--- |
| P |
| T |
| T |
| P | $\stackrel{V}{V}$





UniRef90 TOBAL1 UniRef90_G0AE78 UniRef90-W1IXW8
UniRef90-U5CI K9 UniRef90_D4JDQ9 UniRef90_R9N9Y5
UniRef90_G9QIM0 UniRef90_UPI0002E206A0 UniRef90_UPI000470D57B UniRef90_B7IEE2 UniRef90_UPI000371359E UniRef90_F7YZJ3 UniRef90_D4CSH0 UniRef90_E3DNJ7 UniRef90_W4F3J3 UniRef90_D4KJKS UniRef90_UPI00035F8E66 UniRef90_B7LKQ5 UniRef90_W2VBI4 UniRef90_UPI0003A7C5B4 UniRef90_UPI0002FEC1E1 UniRef90_A1HQX8 UniRef90_A4W870 UniRef90_C7HUZ6 UniRef90_S2XD18 UniRef90_UPI0002FD8F46 UniRef90_R2T2E2 UniRef90_U1K528 UniRef90-F7NGN8
UniRef90-Q8XXE9 UniRef90_F8GWQ7
UniRef90-E3DTQ2
UniRef90_C7RDJ6 UniRef90_S3XZT6 UniRef90_C5CZ14
UniRef90 D7GPX9 UniRef90_A0A011RLG4 UniRef90-B9DND6 UniRef90_Q6D7H1 UniRef90_N2JPS6 UniRef90_L8DC63
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UniRef90_F8AID9 UniRef90_F3A1X1 UniRef90_J4YQV9 UniRef90_UPI0003015A9C UniRef90_D4E9K0 UniRef90_H0JA63 UniRef90_F2LJQ2 UniRef90_U1JN82
UniRef90_B5XZE0 UniRef90-D6S4N4 UniRef90_UPI000463A594 UniRef90_R7EV15 UniRef90-Q03P20
UniRef90_Q3IGB9
UniRef90_K1LI04
UniRef90-B7R4C7
UniRef90-A9KIH3
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UniRef90_D5DBH8
UniRef90_H3NPS6
UniRef90_C2KVK8
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UniRef90_K1LU67
UniRef90_L9PMY0
UniRef90_E8MJF1 UniRef90_UPI00047E9075 UniRef90_S6KSP1 UniRef90_UPIO00248DDC2 UniRef90_A6LL24 UniRef90_H0UNY7 UniRef90_C8NEM1 UniRef90_D0Z4M1
UniRef90-UPI00047C9030 UniRef90_S9T0L8 UniRef90_A1S1H4 UniRef90_A0A022GSA7 UniRef90_Q7MZ76 UniRef90_UPIO00345D43D UniRef90_Q1LSC3 UniRef90_G4Q6G5 UniRef90_UPI0003199CAF UniRef90_UPI00029A064C UniRef90_SOKTD9 UniRef90_U0Z6D6 UniRef90_J1E7T7
UniRef90_F3AJ48


|  | 210 |
| :---: | :---: |
| UniRef90_T0BAL1 | D 1 HVS A G |
| UniRef90-G0AE78 | QQDVAEGGG |
| UniRef90-W1IXW8 | E K D M V T G G T R |
| UniRef90_U5CLK9 |  |
| UniRef90-D4JDQ9 | P T D $\square$ M AQGGT T |
| UniRef90-R9N9Y5 |  |
| UniRef90_G9QIM0 | PEDIKESGGA |
| UniRef90_UPI0002E206A0 |  |
| UniRef90-UPI000470D57B | QS DLKVI GGA T |
| UniRef90-B7IEE2 |  |
| UniRef90-UPI000371359E |  |
| UniRef90-F7YZJ3 | EKDLVETGGA |
| UniRef90-D4CSH0 | ENDIIKKS G G T |
| UniRef90-E3DNJ7 | DEDITKSGG |
| UniRef90-W4F3J3 | D S DII H IVGG T T |
| UniRef90-D4KJK9 | ETDVKTI S GET |
| UniRef90_UPI00035F8E66 | KEDEAHIGGT |
| UniRef90-B7LKQ5 | DADILVAGGAT |
| UniRef90-W2VBI4 | DADI NVNGG |
| UniRef90-UPI0003A7C5B4 | E $\square$ DI K A I G GE |
| UniRef90-UPI0002FEC1E1 | KPDIEESVEGT |
| UniRef90-A1HQX8 | QTDARYTAG |
| UniRef90-A4W870 | S S D $\square$ NAVGGA T |
| UniRef90-C7HUZ6 | GEDLKISGG |
| UniRef90-S2XD18 | DS DI Q TV H G T |
| UniRef90-UPI0002FD8F46 | EKDIQARAGET |
| UniRef90-R2T2E2 | EVDSEVNAGTT |
| UniRef90-U1K528 | K Q D ${ }^{\text {K L V }} \mathrm{A}$ G T T |
| UniRef90-F7NGN8 | GEDIKMGAG |
| UniRef90-Q8XXE9 | QEDIREAGG |
| UniRef90-F8GWQ7 | REDVRVSAGA |
| UniRef90-E3DTQ2 | D T DI R S S G S |
| UniRef90-C7RDJ6 | KEDLE ITGGAT |
| UniRef90-S3XZT6 | A S DVA TVEGT T |
| UniRef90-C5CZ14 | EKDVAETGG |
| UniRef90-D7GPX9 | EQDIKVIGGET |
| UniRef90-A0A011RLG4 | RHDLKEI GGS |
| UniRef90-B9DND6 | DQDIIKEAL G E I Q |
| UniRef90-Q6D7H1 | QQDVA $\square$ T G G A |
| UniRef90-N2JPS6 | P NDLKETGG |
| UniRef90-L8DC63 | K D DI K V VA G T T |
| UniRef90-B7CCX8 | D T DI KVVSGET |
| UniRef90-U4WS68 | EQDIKAIIE G |
| UniRef90-UPI0003B6ECED | DEDDQNAMGT |
| UniRef90-P28618 | DEDVKSPGGT |
| UniRef90-U1KPS1 | D T DLQ $\square$ A A G T T |
| UniRef90-F8AID9 |  |
| UniRef90-F3A1X1 | K E D TKITG |
| UniRef90-UPI00036AB341 | HED ${ }^{\text {P }}$ RVVGGT L D |
| UniRef90-J4YQV9 | TQDI KVGGGA |
| UniRef90-UPIO003015A9C | KQDIKVAAGT T |
| UniRef90-D4E9K0 | EHDLKIGGGAT |
| UniRef90-H0JA63 | T Q DLREGGGQLD |
| UniRef90-F2LJQ2 | REDIRLGAGA |
| UniRef90-U1JN82 | KTDLKVTAGTT |
| UniRef90-B5XZE0 | SVDSKLGGGAT |
| UniRef90-D6S4N4 | RDD $\square$ NT $\square \mathrm{EGS}$ |
| UniRef90-UPI000463A594 |  |
| UniRef90-R7EV15 |  |
| UniRef90-Q03P20 |  |
| UniRef90-Q3IGB9 | E R D VKTIA A G T T |
| UniRef90-K1LI04 | QVDLKVS G G |
| UniRef90-B7R4C7 |  |
| UniRef90_A9KIH3 | KVDLRMT G G T |
| UniRef90-D5DBH8 | EDDILVSGGAT |
| UniRef90-H3NPS6 | DED $\$ DVNMGQTQ  \hline UniRef90-C2KVK8 &  \hline UniRef90-G8WFM1 & $D G D V K V G G G A T$ |
| UniRef90-K1LU67 | QTDLNLVGGGT |
| UniRef90-L9PMY0 | DVDMREAGGVT |
| UniRef90-E8MJF1 | ETDATDILGAT |
| UniRef90-UPI00047E9075 | A T DVPLTAG |
| UniRef90-S6KSP1 | QADIAESGG |
| UniRef90-UPI000248DDC2 | QED I VVSTG |
| UniRef90-A6LL24 | E K |
| UniRef90 H0UNY7 | $R \mathrm{~T}$ D LR V S G G |
| UniRef90-C8NEM1 | DEDIKVQEGA |
| UniRef90-D0Z4M1 | EQDISVGAGT |
| UniRef90-UPI00047C9030 | QEDIKVTGGS |
| UniRef90-S9T0L8 | A ENANESAGT |
| UniRef90-A1S1H4 | A T D 1 HES A GVT |
| UniRef90-A0A022GSA7 | QDDIREQGGQT |
| UniRef90-Q7MZ76 | S EDIA N N G T |
| UniRef90-UPI000345D43D | RTDARLTAGA |
| UniRef90-Q1LSC3 | DAD $\square$ REGGG |
| UniRef90-G4Q6G5 | GVDERMTD G |
| UniRef90-UPI0003199CAF | R H D VR L GA G T L D |
| UniRef90-UPI00029A064C |  |
| UniRef90- S0KTD9 | QAD\KTFGGT |
| UniRef90_U0Z6D6 | ERDLA LS G G S |
| UniRef90-J1E7T7 | AHD K A G G G |
| UniRef90_F3AJ48 | E D |

Unipolpow





UniRef90_U7PCW4
UniRef90_UPIO0035E18E7
UniRef90-H2J2R4

UniRef90_H2J2R4
UniRef90_Q9UYQ9
UniRef90_E5V2S1
UniRef90_C0QXM0
UniRef90_-V4HYZ0
UniRef90_S4ZSS0
UniRef90 F6ATP3
UniRef90-UPIO0030BEBAB
UniRef90_T0T9F1
UniRef90 R6UXX6
UniRef90_Q0KFE0
UniRef90_UPI00037D49FA
UniRef90_UPI00031EAC7D
UniRef90-G9WU08
UniRef90-WOHQL9
UniRef90_C2BI99
UniRef90_C6IXB9
UniRef90_F3A5U2
UniRef90_UPIO0035CCAFC
UniRef90_C4FEJ7
UniRef90_Z9J6F0
UniRef90_W9A2W9
UniRef90_UPI000372AD7D
UniRef90 D4M7L3
UniRef90-L7ZNU1
UniRef90 E1QX13
UniRef90-UPI000363360D
UniRef90_R6C930
UniRef90_D1BGA7
UniRef90_UPIO00365A905
UniRef90 UPI00037AE25
UniRef90-Q8XT56
UniRef90_C5T550
UniRef90 E0QIY8
UniRef90-W5WDE9
UniRef90_UPI0002DA3AF1
UniRef90_S4YKS3
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UniRef90_A8YX24
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UniRef90 UPI000349584D
UniRef90_A0A017RRF7
UniRef90-DOIYS6
UniRef90 V6KBG0
UniRef90_Q1GA10
UniRef90_Q87IL9
UniRef90_E5AMS2
UniRef90 C6WGI9
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UniRef90-UPI000303ED26
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UniRef90_UPIO0035F2141
UniRef90_H6LWY1
UniRef90_U1EN71
UniRef90_R5IWY7
UniRef90_R4T5G5
UniRef90_L8EGP2
UniRef90 D3P659
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UniRef90_A0A021 VW40
UniRef90_UPI00047B99F7
UniRef90_C2CGJ2
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UniRef90_U4JPG3
UniRef90-UPI00034B3AA4
UniRef90_L1MX28
UniRef90_A0A024IGB1
UniRef90 A0A022ME32
UniRef90_UPI0003B68D81
UniRef90_U4KC95
UniRef90 ${ }^{-}$F9N5T3
UniRef90-UPI00037D8866
UniRef90_IOHW63
UniRef90 C6A375
UniRef90 J2U5C1
UniRef90_D0FU95
UniRef90_X0MZE0
UniRef90_Q5E531
UniRef90-Q8CQ98
UniRef90_C8W913
UniRef90_D1B8S3
UniRef90 M5NIP8
UniRef90_J1IAQ9
UniRef90_K0JTY7

NRDETIALGET
TED IVDVGGA
$R N D \square K \square T G G$
D Q D $\square$ A $\square$ A A G T T
T Q DLK ENAG K H D 1 A VGAG G E

RA DVVREQG RPDLQTDEG VEDTNCSAGT NEDLKKAFGS A S D R V G A G A K E DLK RAEG

K N DRR $\square T \mathrm{GG}$ $T E D L K E T G G S$
N D A A MGT

REDLRETGG
EEDVRFGDGA

| E | $R$ | $D$ | $D$ | $R$ |
| :--- | :--- | :--- | :--- | :--- |
| $S$ | $V$ | $G$ | $D$ | $G$ |

T K D $V V \operatorname{S}$ R K G G A T
EQDI A A A GGAT

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

ERD IA ETGGAT
$R \vee D R T L G A G A$ Q G D R R L G G T
REDDLHETGG
$\begin{array}{llllllll}K & K & D & I & K & S & G & G\end{array}$
T E D L

| $K$ | $T$ | $D$ | $A$ | $A$ | $V$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $D$ | $E$ | $D$ | $L$ | $T$ | T | A |
| A | $S$ | $G$ | $A$ |  |  |  |

E G DLL R L VGG G
$R$ VDVRESAG
TEDLQ QAAGTLD
EGDIA GA G G

TVDIRTAEGAT
D G D
ES DVVVS G G
H M DL P ET G G A
T D DLLA $\square$ S T G T
E E ERGSSAGT
$H D V D V V D G A T$ E Q DVLETGG EHDVQESGG

E

K Q
D D DAS LVLGQTE
N
TEDLSTPAGT
NT D $1 \mathrm{~K} V \mathrm{~V}$ G GAT
AEDRHEAAGALE $K D D L H Y A A G A T$ $R T D R R D A A G A$ KVDAALSAGS
$K Q D \square K I S G G A$
S
DSDI 1 VS D GT
Q T D V K I S A G A $\square R$
PMDVVEAGG
RQDEALAAGAT
$T Q D L R V T E G A T$
$P \mathrm{~V} D \mathrm{C}$ C A G G
E EDIVETEGA
$V D D L R L S G G S$
$T Q D L R V A G G A$
PRDIIARGAGA
E Q DI RLE G G A T
RTDLKVAEGAT
DS DIIQQGAGT
VE D NK K I A L G E $\square \mathrm{Q}$
K $\square \mathrm{DV}$ V ES T G T
GEDKP T G G T

| $H E$ | $D M L$ | $S G G$ |
| :--- | :--- | :--- |
| $L V$ | $D$ | $T$ |


Unipoppoos
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UniRef90 UPI0003954D3F UniRef90_U2RTL3 UniRef90-S3B2L1 UniRef90_A0A037VYX7 UniRef90 Q7NHX6 UniRef90-A0JV10
UniRef90_UPI00036E8D7F UniRef90_Z4WVS8 UniRef90_G3Z027 UniRef90_GOID34
UniRef90_U1ZT17 UniRef90 JOKUZ UniRef90_A8T020 UniRef90_UPI0003653DF9 UniRef90_I3XT49 UniRef90 L5NEA2 UniRef90_UPI000377BAC0 UniRef90_D8MPR6 UniRef90 A5CM68 UniRef90_R7D540 UniRef90_R5BBH7 UniRef90_D8HJZ1 UniRef90_UPI0003794D96 UniRef90_D9WJK0 UniRef90_C0W1X1 UniRef90_UPI00046EB4A7 UniRef90_UPI0003712726 UniRef90_E1L2N6 UniRef90_UPI0002E671B2 UniRef90_V5WFZ4 UniRef90_G2SPJ6 UniRef90_W4QWX7 UniRef90_R7G9M UniRef90_K2KFJ9 UniRef90_UPI00047D5569 UniRef90_D1Y5A1 UniRef90_I3RE86 UniRef90-I2BXF9 UniRef90-U7UI21 UniRef90_J9HX28 UniRef90-D1AW52
UniRef90 C8WQ40 UniRef90-C8WQ4 UniRef90_UPI0002D6371B UniRef90_UPI0004785B14 UniRef90_UPI00047ED547 UniRef90_F5Y095 UniRef90_B5Y5X6 UniRef90_UPI000237665C UniRef90_A6CYH4 UniRef90 U7L3E5 UniRef90_UPI0003156D41 UniRef90_A5G0U9 UniRef90_UPI0002E55AE6 UniRef90_UPI0003632921 UniRef90_UPI00047E5B8D UniRef90_Q6C041 UniRef90_F5L6X0 UniRef90_E8NAB4 UniRef90_UPI000467BCF5 UniRef90_A0A034TND9 UniRef90_UPI0003634551 UniRef90_O07883 UniRef90_UPI000318B671 UniRef90_G4T1C4 UniRef90_UPI0004696B2C UniRef90_14M500 UniRef90_UPI000366E4B2 UniRef90_UPI0003956026 UniRef90_UPI0002FA535F UniRef90_R6ZSP0 UniRef90_R9BZF9 UniRef90 I0A1K8 UniRef90_V6VER2 UniRef90_G9ZFC2 UniRef90_H9UCl2 UniRef90_UPI00037FC2E1 UniRef90_E8N509 UniRef90_W8Z1X8 UniRef90_UPI00035C642F UniRef90_G4HGW6 UniRef90_M3F9H6 UniRef90_UPI000470343E UniRef90_A1S0K1

## UniRef90_U2TG48



 $P C V F G Q S I T V L I E D A L Q R Y R P E L V V C A G Q A G G R P R I S$

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


 PVDFNRSGKEI KK HI DRVRPDAVIDLGLAGGRDKVTPERV


P P V EVVTF GDGAA R D A V C R Y V

$P V V F$ GT S $\square A A I$ RA A L R E HR P D A V L

PCAFATAAETLLQLINELQPAMVIATGGGGRSDISIER
P

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pVVR ECADLLAEMES
PV HY D D C A E K L A E T E R DR P D
PVSVKRATGELKRYLEEVKPEVVI
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PCAF
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PVVRFEALKAVQAALEELQPDAVIT GQAGGRPDi
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$P V H F D E C A D R L I E E M D K K P D A V I C G L A K G R T A$ PVVHRTSDATVISADDDNEPDAVIMVGLAPGRDG
 SVNFTVSGAELLNYIEKEDPDAVLSLGAAGRYKI
 PTEFQKAPALI RQTI QELLPDAVVS PCVFGQSAGVLSSALNEERP PTSFTRGTAEVVRQ| E P CA F A TA G E H L S RLI S E L N P A MVI H N P $P V E F G V A R D A L R R A M R E V R P R L V L C T G L A A T R R A L S L E R V$

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 AI NVDDARIPDNQGNRPIDQDIVRGGPAAYFTTLPIKAAL G| NVDDARIPDNRGAQPIDGAIVPGGPAAYFASLP:KAML
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 AL NIDDARI PDNAGHQPIDTEVVPGGPAAYFTALPIKAMV AI NVNDARIPDEAGQQPLDGPVVEGGPAAYFSTLPIKACV AI NLANARI SDNDGNSPKEKTILTKAPTAYFATLPTAQTV AINIDDFRIADNEGQQVIDQSVVENGPAAYFSSLPTKAGV
 AI NVQDARIPDNAGRQP $\Pi D V P V I Q G G P A A Y F S T L P \Pi K S L V$

 AI NVNDFSIPDNAGIQLCNTPIVEGAPAAYFSTLPI YRMV AI NLIDARIPDNAGHQDDVPVNPGPAAYFSTLPVKRLL AI NCKDGGPDNRGVFVRDEPIVPDGPAAYFSTLPIRRMV ALNLNDARTPDNDKNQPVDEPI FADGPAAYFATLPVKDMV AVNI LDARIPDNDGYQPIDEPIVEGAPLAYMATLPVRADV AI NVNDARI PDNLGAQPIDTAVVEGGPAAYFSTLPIKGMV GVNVRVARIPDNEGNEPMYEKIHEDGEDGYDSNLPVPKIV GINVDDYRIKDNAGNQPIDEKIFCDGENAHFSTLPIKKIY
 AI NVNDARIPDNDGEQPVDTPVVIDGPVAYFSTLPIKAMV AINLLDDRIPDNAGRQLVDQPIVADGPAAYFCTLPVRRLA AVVVNDAR1PDNTGAQP1DTPVVNGGPAAYFTRLP:MAML AINVKDYRIPDNEGNQ\|RYAPVVEGGPDAYFATIPVEK\|A GI NI NDARIPDNVGAQPIDAPVVPGGPAAYFASLPLKAMLD AI NVDDFRIADNNGNQPIDVPIVRDGPDAYFSTLPIKADT
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$P D N G G H V Q D E R ~$ GANDRRDPDNKGQPDDEPIVTGGPVAYWATLPIKKMV AI NCDDARTPDNAGNOPVDTPLENGPDGYMTRINVREIA AINLMDFRIPDNAGEQVTDQPIVAPGGPAAYFSRLPVKAAL AVNVKDRSHGDNRGARPTDEPIAEEGPDGLFSTLPIRAMA AI NMDDFRLVDNEGNQ\|IDQPVVDGGPAAYFSTLPVKAMV A ALNVKD GEPDNEGHQPIDETI ELEGEPAYFSTLPIVRKMV ALNIMDFSTSDVDGAQPVDEPVDPEGPPAYFSSIPTRRVV GVNLDDARDPDNSGNQPKDQCIVPQGPDALFSNLPTRQMV AI NLADARIPDNDGAQPVDEPLVQDGAPAYFAKLPVKAMVV A $A$ NCADARVPDNDGAQPVDEPLVQDGAPAYFAKLPVKAMV A 1 N NDAR PDNDGHQPDDTPVVADGPAAYFSTLPDKAMV
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UniRef90 R6ZSP0 UniRef90-R6ZSP0 UniRef90-10A1K8 UniRef90-V6VER2 UniRef90-G9ZFC2 UniRef90_H9UC12 UniRef90-UPIIO0037FC2E1 UniRef90-E8N509 UniRef90-W8Z1X8 UniRef90-UP100035C642F UniRef90-G4HGW6 UniRef90-M3F9H6 UniRef90_UPIO00470343E UniRef90-A1S0K1 UniRef90_UPIO00478C553 UniRef90-K1TK82 UniRef90-D3FZG2 UniRef90-14L7B4 -

A A MRAA GlV|P A
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 E NI K K A GLLPA Y V S F T A G T F V C C N Q V F F Y R L Q H A L




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

 A ALLTREGI PAAV S

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| $R$ | $A$ | $V$ | $R$ | $E$ | $A$ | $G$ | $I$ | $A$ | $A$ | $S$ |
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| $K$ | $A$ | $V$ | $E$ | $S$ |  |  |  |  |  |  |
| $C$ | $R$ | $G$ | $A$ | $A$ | $C$ | $C$ | $V$ | $S$ |  |  |



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T A D $\square \mathrm{K} \square \mathrm{P}$ A G A E $\underset{\mathrm{E}}{\mathrm{Q} K \mathrm{D} \square \mathrm{F} \mathrm{V} \text { S G G E }}$

EK
Y Q D
GGD $\square$ AMAAGAT

QADVRETGG
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$P \vee D V P L A A G A V D$

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UniRef90 G8AGD5 UniRef90 ${ }^{-}$O8ENE4 UniRef90-UPIOOO3716A0A UniRef90-D3SSC8 UniRef90-UPIOOO34902B6 UniRef90 B6IUR9 UniRef90-UPIOOO3777648 UniRef90-E6TY21 UniRef90-F6FUA8 UniRef90-R6CFD7 UniRef90-V6IZR4
UniRef90 W1HPY3 UniRef90_UPIO0028983CF UniRef90_UPIOO0477FC4F
UniRet90-UPIOOO289F8FB UniRef90-UPIO0047BAED4 UniRef90_UPIO004039FEE UniRef90_UPIOOO36B9FBD
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## UniRef90- Q9RX25

UniRef90-UPIOOO47A213F
UniRef90 R6HNK UniRef90-R6HNK4 UniRet90-G8PM33 UniRef90-D6XT69
UniRef90-A0A022LBQ4
UniRef90_UPI0004421BB7

P|V|DFHASGNQ|LDEF DEETGPDA|VI|S LG|L|AAGRYKMTPER|I
 $P$ V D T G R A P Q V L R A A L E E R H QP D A V V L T G L A A G R P Q L T L E R R V PTVFGESSRVVTAAMDAFRPDVVLDVGQAAGRSAV PVDFKESPVKI LEAYHEHQPDAVI SLGLAGGRNSI $P V E F G G A F A R L R E E L E A C D A E L V L C V G Q A G G R S K V M P E F V$
 $P$ V F K E T A T KLLD E WL D K E Q P D DVVMLL G L A A G R N R I T P E R PTSFARAPRVL RAAL RELDPAAVI CVGQAGGRAQI S



 $P$ VTF D GA IARLAVLLDEHRPDIVVATGLAGGRTAV T
 $P V E F A G A S A R L R A L I R E H S P D V V L A V G L A G G R T G L T P E R V$

 PVDFRKA GENLL E QI D KVKPDALI S L GLLAA GRYK L



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



## 



$P$ VSFRESGDLLLDHFQQTVQPTAVFMLGGAAGRGKI TPERV

| $P$ | $T$ | $V$ | $F$ | $A$ | $E$ | $A$ | $K$ | $D$ | $Q$ | $L$ | $E$ | $A$ | $D$ | $l$ | $H$ | $E$ | $I$ | $Q$ | $P$ | $D$ | $L$ | $V$ | $L$ | $C$ | $L$ | $G$ | $L$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $G$ | $G$ | $R$ | $S$ | $K$ | $I$ | $T$ | $L$ | $E$ | $K$ | $V$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $S$ | $V$ | $D$ | $F$ | $Q$ | $Q$ | $S$ | $A$ | $E$ | $Q$ | $L$ | $K$ | $Q$ | $Q$ | $I$ | $E$ | $E$ | $V$ | $K$ | $P$ | $Q$ | $I$ | $I$ | $I$ | $S$ | $L$ | $G$ | $L$ | $A$ |
| $G$ | $G$ | $R$ | $F$ | $K$ | $V$ | $T$ | $P$ | $E$ | $R$ | $L$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |




## P




PVVF GEALTVLRAALE TYQPRLTIAVGQAGGRVDITVERVV PVDFAESAKQCIEHINEVKPDVVISLGLAAGRNKVITPERII
 $P C V F G G A A R R L L A E D N N H R P G L I I D C V G Q A A G R A K I G L E R V$ $P V V F G D A A A L L A K R I D E L R P D A V I M L G V A G T R T K I T P E V I$
 $P$ VI F D K C A D QL K Q AI Q K E K P E A V I S T G L A WGRN G I H V E R V P V V S F H L Q V
 $P V A F H D A R V A L S T I I D A V Q P D L I V S L G V A V G R Y Q V T P$ P V V S F A K A P R L V A A A A M A M Q T Y D V V L M L G Q A G G R K N I C L $P$ V A F D T S A R H L R E LIAA Q H S P D A V V A T GL A G G S A Q I A I A R


 PVVDYS R S S K V L I S K F E E L N P D A V L ML GLA K G R S Y I T P E R I PV
 $P \vee E F$ G T A G Q QL A A A V R E H R P RLLV V A T G L A A G R T G V




 $P$ V


## UniRef90 W3A8T5

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UniRef90_J1F3J0
UniRef90-Q9K6U4 UniRef90-G9WFG2 UniRef90_D7WNTO UniRef90 UPIO003608F1B UniRef90-S5ZMQ6 UniRef90-UPIO003B6D912 UniRef90_J8TN88 UniRef90_A6CFK7
UniRef90 G8AGD5 UniRef90 ${ }^{-}$O8ENE4 UniRef90-UPIOOO3716A0A UniRef90-D3SSC8 UniRef90_UPI00034902B6 UniRef90 B6IUR9 UniRef90_UPIOOO3777648 UniRef90-E6TY21 UniRef90-F6FUA8 UniRef90-R6CFD7 UniRef90_-V6IZR4
UniRef90 W1HPY3 UniRef90_UPIO0028983CF UniRef90_UPIOO0477FC4F
UniRet90-UPIOOO289F8FB UniRef90-UPI00047BAED4 UniRef90_UPIO004039FEE UniRef90_UPIOOO36B9FBD
UniRef90 UPIOOO47BE2BE UniRef90-UPIOOO364FDC0 UniRef90_UPIO0046445AB UniRef90_C2MDG4 UniRef90-A8F6NO UniRef90_G2MLH5 UniRef90-UP10002889A4E UniRef90-A0A024F516 UniRef90_F2F1T2 UniRef90-UPIO002D374AA UniRef90-E6PG62 UniRet90-UPIOOO255C045 UniRet90_L9VUN5 UniRef90_C1CWM6 UniRef90-UPIO00287F32C UniRef90_R6GZG7 UniRef90-U5WUU9 UniRef90-UPIO0045E69AC UniRef90-A0A022KZ99 UniRef90-A0A024Q8Z5 UniRef90-UPIOOO3FB3445 UniRef90-R7FRZ7 UniRef90-Q9RX25 UniRef90-UPIO0047A213F UniRef90-R6HNK4 UniRet90-G8PM33 UniRef90-D6XT69 UniRef90-A0A022LBQ4 UniRef90_UPI0004421BB7

AlNFKDGPVV ${ }^{90}$ NGHOPV100
110
120
 AINCQD GEPDNSGFSPEDKRIEENGPDGYFSTLPIRRMV AVNVLDFRDPDNAGVQKHDERYEPARDAYLSSLPLGDVL AI NCRD GEPDNSGARLEDSP GI NWRDARIPDNAGRQPLGERILEGAPDALFSTLPVAGMA A N NDDADADNAGALLVDAPINPAGPTAYFATLPVKSMV AI NINDAEADNRGYRPDGERIEEDGPDGYFSTLPIRDMV AI NVCTARTPDNDGAQPREQPVTAGGPDAHFSRLPLQACL A AI NCNDGPV DNNGHKPNGERIFEDGPDAYFSKLPIYEIT AVNVKD GAADNEGNTPVDEVIQQDGPAGYDSTLPLRSMV AINLEDARTPDNDGEEPHDQPVDQGDQTAYFSTLPDKNTV AVNLADARIPDNSGHRPQDAAVVEGGPAAYFATLPVKA! S GLNVVDARVADNGEQPMDMPVVEAPLAMLATLPTREMV AI NLADARIPDNTGDQPLDRPSVADAPAAYFATLPVKAMT GLNLVDARIPDNEGRQPIDEPVDPDGPPARFTSLPVKAAL AVNVKD GAADNEGHSPVDEPIEEEAADAYFSTLPVRGMA AI NIMDARDKDNEGNKPCDEPVVEGGPTAYFSTLPVRE\|T AIIVND GESDNSGNVLEDEVI QAEGQDAYMSTLPIRDMV AVNLTDARTADNAGERPQDALVRAGAPAAYFSTLPIKAMR AI NLCDFRIPDNAGAQRVDEPIVEDGPAAYFSTAPVRDVV
 AI NTRDAAI PDNEGNAFQGQPVVPGGGDGYFATAPVRQMV A A| NLLDARIPDNAGDQPVDVPSSPGGPAARFATLPVKAVT AVNV DDARDPDADGSAPVDVPVVAGAPAAFFSTLPVKACA AVNIKSVSYADNRNARPQDVPIHEGGKDGLFATLPIRRIT GI NEGEGKFGDNTGKKPKNEPLDEGEPDGLFSPLPISTMT A NCKDGGAPDNNGVVLQDAPI NPDGPDGYFSTLPI RAMV A AINMDDARIPDNEGQQPVQPVVVGGPALFSQLPKKIV A ANDSGPEDRDGDAPVDEPVRQGGPAAYFSTLPVRRLI
 A 1 NCIDGRPDNNGFHPNGEKIDATGPDGLFSTLPLKAYE ALNMMDFSDPDVDGEKPQDLPIDPEGPTAYLASIPTRRVV AVNCNDGPADNTGRVPAGEKI DPTGPDGIFSRLPDGGMV A $\square$ NVN HGLADNNGHSPMDEVIQAEGPDGLFSTLPISLMV A QNLNDYGLTDNAGQSPQEDLTAAEGPVAYYATLPLRAMV A WNRDESEQADNAGMVRTDDALEPDGPTAYGSTLPVPTLV AQNFNDYNLKDNRGVEMQGAPTVANGPVAYRSNLPLRAMV G ALNLDDTTHPDNLGQIRRGRPIAGDGPVGYWSTLPLDTLL AI NLMDARTPDNGGAQPVDAPVVDGGPAARFTTLPAKAAV G|NVQDTELGDNLGEQPKDKLIVQNGPDGLFSTLPARKMT ALNMMDAKLADNDGYDPNEEPI DEGGDSALFCNLPIKALR
 AI NCRD GAADNNGVKLQDAP ALNVMDFQAPDNAGQTYRDQPAEEDGPVGYFSTLPIRAFV ALNVQQSRRPDNHGHVATGQVIDSTGPASLFSTLPLNDLV AVNIDDAP TADNAGARP $\square D L P I V D G G P A A Y F S T L P L K A C L$ AI NIDDARIPDNQGNSPRFEKI DSDGADGDFSTLPVADMV A 1 NWNDARIPDNAGEQPYDTPVDADAPAAYFTTLPIKAMV AI NDDARIPDNAGAPDDQPVRTDGPAAYFSTLPIKAGM G| NIDDTGDSDNTGRVVTNQAIVENGPDGLFSTLPIHEMV
 GVNLMDSKNPDNDGYTANEEPIMPDGALLAYRKDNLKKLS G| NVDDVTVPDNAENAPHATP VADGADAHLISTIPVVESV A: NVASSTKPDNTGHTPQDEPVIAGGAESYMSRLPIVQQIT ALNVKD GEKDNAGNAFEDAP】KEDGDVAYLSTLPLRKIV GVNLTDARTPDNDGARPVDAPSEPGGPAARFSTLPAKLLV AVNVLDFEIPDNVGVLRKNEPDARGGPDARLSNLPFEKIV AVNRIHSERPDNDGVIDKEQRISENGPQNYESALPLNEIV GI NLRDTGTPDNEARTVVDEPAVDDGPDAYFATLPLRAMK
 GLNYAYARTPDNDGMQPRDTDPLDSGPAACFSTLPVWDLVA AQNTNDCGRADNAGTVLVGEQTDPAGPVAYHATVPIRAMV AVNLIDAP|PDNDGSAPVVVPVIAGGPTAFDTTLPVRACLV AI NCNDGPI DNRGYKPAGEKIVENGPDGYFSTLPIQHMV
 AIVNCGADKDEAGGYRPTELPAREGAPAAYFSTYDARKIL AI NMDDFNIPDNGHQLKGKPIDDGAPVGYFSSLPINEIV AVNLRDALLEDNKGAAPWGEPVVPGAPAAYFATIPTHALV AQNLDDARYDVAGVTLQGELTVPDGPVGYYATVPGRAMT $G 1 / G E G R M G D N R G N T P V D R K D R G D G P D G Y F S T L P N R K D I$
$G V N L D A R P P D D G A Q P V D V S E V G P A A R F S T L P V K R L V$

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UniRef90
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UniRef90 G8AGD5 UniRef90 ${ }^{-}$O8ENE4 UniRef90-UPIO003716A0A UniRef90-D3SSC8 UniRef90_UPIOOO34902B6 UniRef90 B6IUR9 UniRef90_UPIOOO3777648 UniRef90-E6TY21
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UniRef90-A0AO22LBQ4
UniRef90_UPI0004421BB7
 4

DR1 Des gllp ${ }^{130}$
140
150
160
DRLTESGLLPAESNTAGAYCNNVMYEGDHYASKHKPDLP
NSLKE GLLPAESNTAGAYLCNNVMYEGLHYASKHKPDLP
 NRLKENGLPAELSNTAGTYLCNNVMYTLLHERKKSGREVP RAAADGGVPAAVSYTAGTYVCNELLFCLLDCLRGGRPGVR QAIRAHNIPAELLSTAGTFVCNFLMYSVLDYLAASDDLDIL SALRAAADPAEISNSAGTYVCNQVMYVLLHAL RARRAMH AA A Q A A G PA A V S
 KKLIE LGGYPAS|S A A LiAA AGUPSTV
 $\left.\begin{array}{ll|l}A & A & A\end{array}\right)$ EKLEKNG|PAAA



## AA A

A A MDAGMPATV
KNLKEMNIPAAV


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1
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- 

$$
\begin{array}{llllll|l|lllll}
\text { R } & A & M & R & E & A & G & V & P & T & D & S \\
\text { A } & A & M & Q & D & A & G & V & P & T & T & L \\
\text { D } & T & L & Q & K & E & G & L & P & A & D & I \\
D & R & L & T & E & A & G & F & P & A & R & T \\
\Delta & \Delta & V & F & \Delta & G & D & \Delta & G &
\end{array}
$$

R

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 DAAVEKGYPASU1 EALLANGYPASG

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K R|V|SALG|LVTVIS
 - CDFTYYTSLG

UniRef90 W3A8T5 UniRef90-UPIO0047D1C65 UniRef90-K9ZW84 UniRef90-R6GHX9 UniRef90_U5LIN0 UniRef90-G5F2U3
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S GF|I H|I|PASHELATIQHGR\PSWSHQD|L|AAG||R|I|C|I|EVL|GE A G F V V H C G F L H L P A NP EVVA L G A P E LDP Y LDP Q Q ELLNR GVVQVVVE TVA






## A

A GFVV H $\mathrm{H}_{\mathrm{V}} \mathrm{P}_{\mathrm{P}} \mathrm{Y}$
A GFVHVPWAAR G
A GFIHIPYTPDQVVNRH

| G G F |  |  |
| :--- | :--- | :--- |
| A GF | $V$ | H |
| H | F | H |
| H | V |  |

A GF $V \mathrm{H}^{\mathrm{A}} \mathrm{C}$


## A A S S C S S


 AGF
 TGFVV
AGFIHDPASHQLAAQLDNTPSWSQTDLTAAIIKLTIETM

G

## 

A GF L HI $G A$
$A G$
$A G$

## $A G$ $C$ $G$

## T

A
AGEVMVP
A GFVVHVPP

A G F $\quad$|  | $H$ | $V$ | $P$ | $R$ | $T$ | $T$ | $E$ | $E$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

A GFV HLP
A IFVVHLPFYE GQSSAKS R A DVLPARDAARALAVVVRTAVE
G G F $\underset{H}{ }$


| UniRef90 W3A8T5 | Q 210 |
| :---: | :---: |
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| UniRef90_R6GHX9 |  |
| UniRef90-U5LIN0 |  |
| UniRef90 G5F2U3 |  |
| UniRef90-W5XTX5 | D E |
| UniRef90-UPI000422880B |  |
| UniRef90_T0XSF1 |  |
| UniRef90_UPI0003813274 | S E DVVAVS A G T LD |
| UniRef90_UPI0003475A4E | GPDLVE Q G G A |
| UniRef90-UPI00040C2EB5 |  |
| UniRef90_UPI0002EB8926 | S E |
| UniRef90-W5IJ51 |  |
| UniRef90-UPI000476274D | D A D L S $\square$ A G G |
| UniRef90-B5IAU8 |  |
| UniRef90_V9G5T1 | E |
| UniRef90_UPI0003490289 | RED TP LP G G T |
| UniRef90-C5BV56 | E H D L A VPGG T |
| UniRef90_M7NGS5 |  |
| UniRef90-C5CG89 | K |
| UniRef90_UPI00030F6995 | T |
| UniRef90_UPI00040C85E3 | T G DEALLASAEPD |
| UniRef90-A7NKW9 |  |
| UniRef90-W9AK47 |  |
| UniRef90-U2E9Q1 |  |
| UniRef90_R6YE51 |  |
| UniRef90_E2S4P3 |  |
| UniRef90-U2YQX8 | DVD A S Y A A G |
| UniRef90-W4RHU8 |  |
| UniRef90-F4GYZ0 | $R Q D \nabla R$ VP A G A |
| UniRef90_UPI00037555BC | Q |
| UniRef90_UPI00047AC7C1 | E |
| UniRef90_UPI0001E89E85 |  |
| UniRef90_UPI00037588E5 |  |
| UniRef90_A0A034UVR0 | E E D $\square$ R L E G G A T |
| UniRef90_J1F3J0 |  |
| UniRef90_Q9K6U4 |  |
| UniRef90_G9WFG2 | E K |
| UniRef90_D7WNT0 |  |
| UniRef90_UPI0003608F1B |  |
| UniRef90 S5ZMQ6 |  |
| UniRef90_UPI0003B6D912 | P ES A A H P A |
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 PVVE Y R A A T R RII R E LI H D HA P D A I V S L G L A E P R S T L S V E R V $P V S A G A D R A L L E E E V R R L R P D V L I V T G V T R G R A A M A A B A V$







 $P V S F K R S A Q E L D H L L A E H R P D A L I D V G E A G G R D A D T P E A R$ $P V D Y Q K V L D L I P S L W K R H N P Q L F I H V G V S G M S T T V T L E K C$ PVDYRAAQRLVPELWERHSPQLVVHVGVSGLASSVTLESC PVVFATGPDALRAAIAEHEPDAVIAVGEAGGRTDITPEKI PCAFGAAGPALTAALDRVRPEVAIAVGLAGGTAAVRVERV
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## 

A

## C

## A

 A ALLVMVPPD


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## A

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| UniRef90-HOTRU5 |  |
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| UniRef90-Q2NRV2 |  |
| UniRef90-UPI0003C26EDD | Q |
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| UniRef90-I2F1N8 | E |
| UniRef90-W1X484 |  |
| UniRef90-H2ZE90 | Q $\square$ S L K |
| UniRef90-D6L4A8 |  |
| UniRef90_UPI000333447C | E |

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1
 TLLLLTFFGPFPGVPVNPTVALARLLTRMRPDLNVITREL
 VKIL V T GF K P F L S E K $\square$ N P S E LL A T D L G K K F P NVV V T S F I L

 $L R \| L V T G F G P F P G A P F N P T M P L V D R L T E L R R G A T L T G H T F$ RILI T GF GAFPGAPYNPTPALVDRLLQLRRPAERIGHVF TII I TGFGPF GEHSVNASWVAVQNLKRRNPHLDVHIQEI

$\square$ NVVMS GFEP YE G $\square$ D VN P C L LE VLS A LER R DA QVT THTVLL I L L T GF EP F G GA DFNPS QA I A E RAA D DLDRGHQVIDTA E L
 $T V V V T G F G P F G E H K V N A S S V A V Q E L K K L N L G D D V V T E E M$ I LVTGNGAFGDYDVNPSALVAQRLDRVVEGRRVVGRAM


 $L R I L I T G G G P F P G A P Y N P T P A D V A R L V R L R R P A E L I A G V G$





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

 T I L V $\operatorname{T}$ G G G A F P G A P R R N P T T R M V A T $\square \mathrm{R}$ l
 L
V
I



MTVLISGFVPFGEWKSNPTERLVEELE S D N I N T I L L


 | $H$ | $G$ | $V$ | $G$ | $A$ | $W$ | $I$ | $A$ | $V$ | $K$ | $E$ | $L$ | $E$ | $K$ | $L$ | $G$ | $L$ | $G$ | $D$ | $S$ | $V$ | $H$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | $\square R$ VLVTGGF GP F R Q Y P I M N S S WEI A S R L



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


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UniRef90_O2IU72 UniRef90-Q21U72
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PTVREKSLKATEDADQDHK PVSFAKAWPTLKETIEATRPDIVI ATGLKHSARGVMLERC PVSYSSTQRTIAELWQTLKPKFAVHLGGARGSSLVILEQT PVSYVKAQQLIAEIWRSLRPKFVLHLGVATGSTGII LEQT PVSFRNGWAKLHDTLEQVQPNIVIATGLKRAARGILLERC PTCWEAVDRELPALLKREQPDAVLLLGGATRANTVRIERV PVHFEKAKTKLFEDL STGFDYTI HLGQAPGTSRVQLEAV PVTYAAVDRQLPEVLAEVKPDALLMFGLAARTPYLRI ETR PVEYKAVKQTVPTIWKKYKPKLMVHVGVSGLARNITLEQV PVSFAKAWPVLCESIERFHPDIVVATGLKRRARAVELERC PVTFAGAMAASGDAVERLRPDVVVHVGLRSGAGAVMLET PISFANAWPKLLETIEREQANIVI ATGAKHTARGVQLERC PVEPHAAAQALRGLLEQHDPDAVLLTGLAAGRPQLTAKRV PVSYLKTQKI GEL WHTLNPKFAVHLGLARGSSVVLLEQT PVUYDVKKI PGLWEKHKPVLMVHVGVSGIDADEITLEQQ PVAFANAWPMLLA AILEQANPDIVI ATGMKRGARGVLLERC PVSYKRAKEELVKAVLNTKPDFVLCLGQAGKESKIRLEML PGDTNRLGQVI GQ\|LADVKPDICIGI GQARGYNRLTLERM
 PVVFASAGOVLAEAVERFHPDAVI AIGEAGGSSA TLEQS PVKLHESFSILKKHIDEVNPDПIILCGQAASRSKISTETK PVTWSGAGPALLRAVETHQPDAII AVGEAGGRAVVTPERW PVNFNESVEVVTQAITDYNPLLVISIGGSPRTHKI NVEKC PVTYDSVATTVPALWKEYNPVLMVHVGVSSVASELTLEQQ PVVFGELESALSRAVAESRPDLIIGVGEAGRRDELTPERY NVSYRAVDRDLPALLAQHRPDALLMFGLASTRHVRMETR PVSYTQAPCTVETLDRQHPFDYVLMLGVAANSSFWRVERK PVTYENVDEFVPALWETHTPKLMLHVGVSSDANELTLEVQ $P V V Y Q K A K E D V C K A W A T L N P Q A I Y H L D L S A S K R T I L L E Q C$ PTSYAGVDNWLERSLDALDADLILMLGGSVSTDRLKLERF PLSFQNAWPKLQETLEKVHPDIVIATGLKTHAQSVMLERC PVEYDYVKNE:PGMWQLYKPKLVVHVGVSGMAQELTLETQ PVSFSKAWPILEAALEEHRPQIVVATGLKRASRGILLERC PVEYQAVQRLVEALWEKHSPQLVVHVGVSGVATAG TLEK PISFGGAWPTLLKTIEAVNPDVVIATGLKRASHGLLLERC SVAYETVDKKI HLMWKEYNPALVI HVGVSADADKITLETC SVAFAGAAARVRELIASGRPDVVVHVGLDASAKAIKLETT PVSFANAWPTLLETLDATRPDIVIATGLKHAAHSVAMERC PLSFQNAWPVLLKTLDAAHPDIVIATGLKTHAQSVILECC PVSFSKAWPLLSRTIEETKPDIVVATGLKRAARGILLERC

 PVSYAGSWAMLERELERVQPDVVVATGLKRAARGULLERG DVAYATVDRELPQLLAAHRPHALLMFGLAARTPWLQI ETR PVEYKTVQRLIPALWEKHSPQLVVHVGVSGMATAVTLEKC PVGYKAVRELVPTLDDDNTPDYVLHIGMASGRPFYSCERR PTEWERAPGRLKTLYERERPKLVLHFGVSSKATCFVIEKC PVIVYAVRQYTVNMWNTHKPQLVVHVGVSGIDAQEITLEKQ PVETETAFRPVESHLRSVRPRAYLAFGLAGGDTAMR】ERL



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RDFAGEGMAATLSSDAGTFVCNSLIMYQLDWWARFRGRVL GRLGAAGLPVARSDDAGLYVCNATLYAALRTASRGSSPDR DAWREAEDPGGVSNAGLYVCNFVGYHTLDFDARAGRHVP

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 EEDRSAGLPASVSDDAGGFLCNHMAYLLYERAK ASLIESAGHPASLSEDAGTYLCNALYYRAGRLAASSGRLVM
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R

NDFA H D A I I A S T L


## 

 D GWRRA GI P GY I S S N T
ETYQSRFLP LIEI SNTAGTYYLCNQTFY LAR R L L
 K N SEK S GCDACIS H N A GRYLCEYI YY Q S LT I R A A L A T G D D A RAS R D A GS Y L C N Y L C WR AI EATH HRTGT R L




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UniRef90_K1WQA6
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AGF V HIPPLTHKQVI AKFNYPSMDENDLIDADKLIIE
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 AAFVHVPGVPRPAASHATRGRITAEQLVDAGEAILLALLT SAFIVVPPL AGFVNLPLINEQPHPQHG LPLRSQVTAVQDMVR



SAFIHVPPLNQPYTAK
A AFIHVPKVPRDA HSGKPAVSFEQLVDAGEVMLATLL
AAFVHVPPLGKPYTAK








 GLFI HVPPLPGSVHGAP RPATTFDELGRGIAAAAIAELAR $T \mathrm{~V} F I H F P G Y K N Q V D N R \quad G A G \square D \square D \| L \square K G L E K \square I E S L$


 AGFVHLPFLADAV
AGFLHIPADESTFRDHSPAPDFPFEQHVLALETVLHTLA
 A LIV V HI P W
$A G F V S L P G V D Q \quad A H G Y M P G M S L D R M D E A T R E V V L A A V D$ TAFV HV P TVFI HLPPVEGPY SKEEMAETLRLLI NSMLLK




AGFVSFPP $\quad$ G G GSR $\square Q N G L D \square R Q Q V R A G R D V V R$
A GFVSLP LVGKE HGYTPGMSLDQMITAAQDVVK
AGFVSLPVVNEEPHPKRG LPMDQLVQA
SAFVHVPPL GKPYTA EEQLVRALQAIIEVLEH VGMV HLPVVPSRAVGAPPPPSMSDEALEHAVSLAVSIVVR


 VGFFHI PQEIQPALLKSRA



| UniRef90 D3QZU7 | E G D |
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| UniRef90-LOA7W6 |  |
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| UniRef90-Q5WDD7 | T |
| UniRef90-Z2ESU4 |  |
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| UniRef90-Q07QJ1 | $\mathrm{E}_{\mathrm{Q}}^{\top}$ |
| UniRef90-K1RI78 |  |
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| UniRef90_R7IG93 | DQELKLVGGET |
| UniRef90-J1TPV8 |  |
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| UniRef90-R7UQZ6 | Q |
| UniRef90_D6V5B7 |  |
| UniRef90_UPI0001CB9C1F |  |
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| UniRef90-E3H4Y6 |  |
| UniRef90-TON1C5 |  |
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| UniRef90-F6QWK9 |  |
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| UniRef90-UPI00046911EB |  |
| UniRef90_V4RHJ5 | $\begin{aligned} & \text { EAKRRARGG } \\ & \text { QQA } \square R\left(\begin{array}{l} \text { R } \end{array}\right. \end{aligned}$ |
| UniRef90_F7QL77 |  |
| UniRef90_Q2IU72 |  |
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| UniRef90-G6V5D5 |  |
| UniRef90-U7KLY0 | QED $\square \mathrm{K}$ F T T G |
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| UniRef90-T0DZK5 |  |
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| UniRef90-W5NAV5 |  |
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| UniRef90-UPI00034FA711 |  |
| UniRef90_UPI00046291CF |  |
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| UniRef90-W5IIA9 | $\mathrm{Q}_{\mathrm{Q}}^{\mathrm{Q}} \mathrm{~N} \square$ |
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| UniRef90_D6WQP3 | S |
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| UniRef90-UPI000350C081 | $\begin{aligned} & \text { SEE } \\ & \text { HED } \mathrm{D} \\ & \mathrm{~L} \\ & \hline \end{aligned}$ |
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| UniRef90_K1WQA6 | E |


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$\qquad$ TGFEPFLN
TVLVTGFGPFGNYKVNPSWEAVKQ MRILLTAFSPFNGATENTSLAVVTNLAELL $M K L L L T A F E A F N G R P T N D A Q L A V S Y V T L N N S$

LVT A F DPFGGENDNPSYEVLKNLKDNDEG DRVLVTGFAPFRQYPINPSWEIVSRLPSYVPSDRIDNYQV MRVLVTYFEPFGGAEENVSALVARALEKSFSAERVHLHQL TVLVTGTEPFESDPTNPSWDAKELKKLGLGVDLHVHEV RILLTGFSVFPGAPVNPTEALVGNLRETPPDADLKTAVL MK LVVGFEPFGDDSSNCTQMIVDKFKSESD

TNVVISGFNPYEDLKVNPSYEVPSALADQDVHVNVTAVTL IKVLVTGFGPFRDVTTNPSWEIARNLPTELTSPNIVSGPI TILVTGFGPFSUHTVNASWEAVKELQELWKDVKLITEKI RVLITGFEKFAGAQSNPTEEMLIGFSYS DAIVKTRVL DTVLVTGFGPFRQYPLNPSWEVAKGRPSHTPPVRIVVHPE

VLLTGYEPFGEFETNPARRLATRDDGTDGASVAGVEL TVLVTGFQPFREYPVNPSWEIAKSLPEYTPPVRILVHPE TLLLTAFGPFGGDGYNPTQHALDPVAEAVAGHRVVTEVL VRLLVTGFGRFPGAPRNPTATLMHRLTRHHAGDDVTCAIL LTVLVTGFGPFGSHKVNSSWEAVKLLPSMGLTARVETRELE TILVTGFGPFSTHVVNASWEAVKELQELWADVKLVAEEI VVVTGGGPFGEHTVNASWLAVQELEKLGAGDSV
IVTGFGPFGPHKVNDSWECVKRLKDLNLEVELVIDEII
TVLVTGFGPFKQYPQNPSWETAHQLPDYLPPVRIIVHPA LITGFGPFPRVPVNPTAVLAERVGGSRRGI RAEHHVF

KTHVTGFTRFHGVAENPTETIVGRLKDYANVAI RILQL MSLITAFGAFDG GWNCSERLLDALEDEREGGPVAFVRL VVVTGFGPFRQHLVNSSWEAVKRAWGVDTDDELRTLQL VVVTGFGPFGEHTVNASWlaV
पRVLVTGFGPFKEDKTNPSWLAVKPDDNQTDEAHMSADEV
VLI
$\square T V$ VL GFGPFQLFDSNPSEKVAQRTKD DQPNAR IVEVM KLVTGFGAFPGAPHNPTAVLMRNLAAHERGGKLEREVL KVLVTGFGPYGVTPVNPAQLTAEELDRT DAGATVISRIV MRIVLVTAFEPFGGDPENASLEAVRRLEQAWPGMELVTGTL VLLTGFDAFGGEHINPSSKSVRTLHGRMQGHRLIARQL TIVLTGFGPFGLFNNNPSEKVVRRUDDIQPNAKIIVKVM

TGPGPGHRRPDRATCFVLQVLSk LGLGGE HMQ VLVTGFLPFQQFPVNPSWEIAKGLPSRLQPLRVHPEPL RILITGFGPFSGVPENPSWVVASHLNNQTRDVHITALETV RAL LTGFEPFGAYRFNPTQDLALEYDKKIGDIEVTGMVL TVLVTGFGPFKQYPVNPSWEVAHSLPSYLPPVRIVVHP1V MKIVVTGFGQRGKIVYNPTTTLAKKLKGNANATEVFVLEVV KLITGFKPYSVFKRNPSGE AELLNSYFKGMEVVGLSL
KVLVTAFAPFNMRNENESEEVLKQLDSKFNEGIVIKKFL

RALITGFEPFGPNPVNPTQALVELLQANYSGSGLEAQLL MRVILTGFGKFYTVLENPTTYLVRTLAD DPHVTEAHAL $\square R V L V T G F G P F R Q Y P \square N P S W E 1$ ASRLPRYVPTDRIDTYEA

VT $\square H \square$ TGFKKFHGVPENPTET $\square$ VS $\square$ REYMGSCS LETAG MKILVTGFEPFGQDTENSSGMVVERLRKLDWGPGFGTVELA I NVTGFKKFQGVPENPTETIVNNLKAFVESKGLLPVVL

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UniRef90-M1 WFT1 1
UniRef90 ${ }^{\circ} \mathrm{LX} 7 \mathrm{FF} \mathbf{1}^{2}$
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| niRefgo |

UniRef90-A6NFU8

PVVEYQTVQR ${ }^{50}$
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 PVNYKVVRELVPTLWEETKDDVVI HIGMAGPRDMYQI ESR PAAYHTLLSVVPPLLDEHKPDIVLHI GLLAVERDYFA: EKG PVDUTGMSVQLKKDLQDDY DUA HLGQAPGATLIKL EAI DDLLQDVDVALSDTIEKAQPDUI ATGLKRSRGLLERC
 AVAYESVSSKVKELWQKHRPSIV VVGVSYVANCLTVEC PVAFANSHKVAISTAKQFRPDILLSGEDATRNSINVETQ
 PTVFYLSVEKAIEKIKEVKPDAVLSI GQAGGRYDITVERI PVHYKAVRELVPVLLDENEPDYILHVGMASGRPFYSCERR PVEYQQVQSLVPSLWKQYHPLLVVCLGGVDGSRPHISVEAV $P C V F G L A N E R L V D A T E A T S P A L V F A L G L A T G R T E I V S V E R V$ SVEYDTIAA QLAALCVDFEPDIAALHGGARECQGFRLERV
 PVAYDDVQYMVCELWKKYRPDLVVHLGVHSVSHVIRI RTR PTEWTRAPSTLAELYERHDPVLALHFGVATNMRGFRVETE PVEYKTVQRLIPALWEKHSPQLVVHVGVSGMATTVTLEKC PVSWATAHEAAKSAVATFAPDAVLHFGVSRRATAFEIESR
 PVVYHKVFAQSPELIEKHNPHLVVHTGLDAGTDYIAVEQS PVSYDYVSDHTPQLWKKHNPSIVLHVGVSREAKSLTIEQH PVTYASAFSELQAEDKEFSPEFILLCGLLAEHREQDSI EKD


PVVFDRASSRLEEAVGEHDPEVVCAGLAGGRSTLSLERV PVSYKTVRELVPSFWEETKDDLVTHI GMAGPRPMYQIESR PVEYAAACDRIRELIRAHHPDVVVSLGLAAGRTADTPERV PVVYADLPEQLDSLLNHSHPDGVLHFGLAPRRTVFSVETR RVVYEDVRDRVPALWDEDNPDLCLHVGVSP YKSTKYEKC PVSYDYVANHVPRLWKKYNPALVLHVGVSHQADSLTUEHH PVEYKTVQRLIPALWEKHSPQEVKGIARSGGREG LEGW EVSADGVRAALEPMWQADEPTVFLHMGVNAGGKQ DDLEQF PVLYSASDKEVPFLWEKHKPALVIHVGVHNTEN IVIERV PTEWERAPQRLEALYERERPKLVLHFGVSADASSYVLEGL PVNYQVVRSLVPALWDPSKDDYVVHRGMAGPRLFYALERQ PVSYSYVSTQIPQLWKKHNPTIVLHVGVAGTAESLIIECH PVEYKTVQRLI PALWEKHSPQLVVHVGVSGMATTVTLEKC PVEFHASAELVLEQDADAAPDLVI AVGLAAGDDAVRLERV PVITYKKTKEQVSKI WETLQPQFIVHVGVASSSKVIILEQC PSSFHGALSTLHALLDSDLPSNWLHLGVNSGASKFAVECR PVDTEAVADHLRVALAAHRPTHLLLMGQAAGRAGLSLERIC PVYSAVNTRGVGVGVSGMTTVTLEKC PVTYSAVLNTRPPLHASKQYDI I I HAGVRRNMPGLVVERL KLWEKYKPTLVLHVGVSSKAKC|
PVVYEDVQY\VSELWEKYHPDLVVHDGVHSVSHVIKI ETR PVVYSEIAPRLTALIDETAPDAILHFGLARGRRAISI ETR AVDYNFVNNNVPQLWNEVNPDLVIHVGISSYEKGVHLETC PNTFFES $\square A A A Q Q A I A E \square E P A L V I M L G E Y P G R S M I T V E R L$ PVAFAAAGPALAALVERHAPDAVLAVGEAGGRSADTPERW PVAYATVRSEMPSIIEEFRPHLVIHIGMASTRQYYSVETV PTSFARAPVVLRDALRELQPRVVICVGQAGGRAQDSLERV
 PVAYRKAKELVCKI WGTLQPLLTVHIGLSSSAKAIILEQC PVDYREAAQRVTRI WEDLQPHLAVVVGVDSCAKAIVLE
 PTAYSAVLNTVAALHASKEYDAMVHEGLGGPDRFRVERD PCTYYGAFGALSVEDEHLSPDVVLSVGLASRVPRIRYEAV PVEYNTVMKVVPQLWQEFKPDLVVHCGMNASAQNLVVENQ SADGEALAPYWAEAEASDEPFIFLHMGVSHKGTAINLEQV DVKHSVIEEGFKKELEKGYDD:ISTGLSPGRNVIG: EK I
 ATCVEALGDMYARAEERGRPCIFLHEGVSADSRSLKLEQV PVTFTGARGRTQALDEAKRPQVLACGLYAAARQLHVER ETSVDALKTTLEPLWARANPTLFFHLGVDDSAEAVHFEEC PVGYEAVRELIPKLDDEYEPDYILHVGMASGRSFYSCERR VDYREKQRVRIWERTRPEAAVAVGGLAGAKAAVRVERC QGAVASLYKTLQSALEENDSVIWVHFGVNSGATKFAI EHQ PVDYREVRKRVTGUWEDLQPQLAVHVGMDASAKVIILEQC $I L P V T W A G S V P T E A D E T H Q P H A V V A L G E A G G R A V V T P E R R$
$E T A G H A D P V Y Y T M E S N E V V W L H L G V N G A T K F A T E R Q$

## UniRef90 S4R2Y9

 UniRef90-M5TD61 UniRef90-Q7UTG4 UniRef90_UPIO0045EA5A7 UniRet90_G9NDC4 UniRef90-S3DGY2UniRef90 M5RA09 UniRef90-D208B9 UniRef90_UPIOOO471D768 UniRef90-U4ZHX6 UniRef90-K7IZ60 UniRet90-COE2MO | UniRef90-R6TBD4 |
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 A DN DDDAR PDNDGQQPIDTPIDPEGAPAYFATIPDKEIV GHRTGYFAMRDVDGKLLNDEWIWHDCPEELLTSLPFDRMF GRNHGYKGLDNSSFCPDSQCCVVGGPDCINS ITDMESVC
 ARNTNAKARPDNLGNLPAAAAICAGBETVAATLPLDEME ALLNVLDPDADNDGNLDAHKKLIENASDGIFTGLPLEELQ SCGGUGYQ DDVKSKTPESHKCLLEEEHITLCTGLDCIKLV GHNKGYKGDDNCRFCPGSQCCVEDGPESIDSVIDMDAVC AVNRSGSRPDAHGHTLPPMPLVRAGAPLLTPTLAPMAHLC ATNVIDANKPDVDNHRPQKMPIIENEPAAYWTRLPLRTDL ALKEGYHEDPDYDRKRSDNKTAFAKHPSSLKSSLDLESAV G $\square N Y$ IJNSQTADNAGEQP LDVKISDGGADGHFSTFETSTLV AHRRGYRSLDDGPEGRPDDEDWIWHGPDEDLTDTDVDDVY AHSNGY LR PD $\square$ FNKCPDENDKTEVLETEUNVTQICN IIN NHERNPAPRCAVEEGPAAYWSTMPMKAIV GTNDRDTRVADNEDREVVDERVAADGPDAYFATLPCREMK ATNDAEARIPDETGARPLGDPLVDGARAAHFSTLPVAAMV ALNRRSPLRFDAGGARPARAFIAAGGAFSLHSRFPAQAIT ANNHGYF LQDVDSQFDESSTLHPGSPDVLKTSLDLDGLS GHRDGYKRPDEEEERKPGSDWPWRGLPEEIETELDVEDVW AYNNGYNRDDTFNKCPVQTNAE CSULETGUDUKELC LSRTTGFKKCDTAKGTNVPVVYVEDGPECLDSIIDMDAVC ARKMGYNKPDVSGLYPETSCCPDGTEECISTGLDLTSIV ARNTC KPAEDAAGALPPADVVIQGGSDTLDAKLPADDIV GHRDGYNDRDDKRREEEGKDWVWYGTPPTIETDLDTDDIM AVNKANRTAPDASGKTRRGAALAKGAPLVRRSPAPLARLK ARSNGYERL DUDRKRPDETNEYN GHNKGYKGL DNCRFCPGSQCCVEDGPESLDSVIDMDAVC GRNRGYRDADUCGFLDPEGGVCLSDGPDMDESTINMKTVIC ALNEATFRCPDEKGWQPQRTPIVPEDGHADETTLPTKEVV ARNDRDLLTPDACGRCGADGPVDPAGPERRDATWPDAGVV
$G K N R G Y R D S D V R G Q P E D G V C L P G G P E V R D S V V N K E V C$
 ARSCGYLR PDVYDKCPDESN KSKFETKUNVNNICDT: N A AVNHFGTS PDAAGKCAPGSSIGRGTAAVKRAGVPVPALN AHSSGYDREDDNGCCPKDAGNIVCSKNVCLETTIDVDCIV AQNVNDCGRADCAGRVLVGEPTDPAGPVAYHATVPVRAMV $A V N E D D A R D P D N A G D Q P R G T A D D P S G P E R R S S G L D T D A L V$
$A C R D G Y K Y T D D E G Q D P D S T S P P G G A T E N D T V K P S P L D T$ A $\square N V C D A R I V D N D G A Q P H D M P V D A R G P A A Y F S R L P D D A C L$ ARNADTQLWPDAAHTAVLSRTIDPAAFATRSFGAHTARLL SCGDGYNQGDDEDYRCPLAMCSSDEEENDIYTGLNCTELV GKNTGY RQADIRGFRPEGGVCLPGGPEVI LSEVSVRAVC AHRRGYRNVDVDCKLPEEGWIWYDQPDEVVSDLDVDDVH AHSNGYDR KDDFNKCPDESNTESE E DFETKINAKQIC GRNIDMGSKYADADGKKPDNELVEKGGRPSYAANADSIGLA ANNGCYSAV DNCGKDPEQGCGVSPQNEKLRTCFNLAALT GYNVADFRIPDMRGWEPAAEPDAPNGPESYSTNLPVEDLA AYNEDKTDTPDNNGKVL NQKIFEDGEDKYYANFSPMKI K SFGRGYCRY DVDGCVPVNNVCTTCTEPVLRTSHDCERIA GYNMADFRIPDERGYTAKNEVIUEGEADEVTTKVPGEEML A TNVMDARTPDNAGAQPVVEPIDPVGAPAAFSGLPDKRIV AVNEQEGQ A YNGADFC
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GPHTNVSTDPGRY CNYVYYKSLAVTHAKASNGH
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RDVRAAGVPAAVSNTAGTFTCNQVFYELMSFADRDG FR GKLKNAGFDAAISSHAGTYVCNTTLYSAIQATKTYG AK AEV GHGCQTSTDPGHYVCNYTYYSSLYHTLPHRHNQF $R Q W K E A E V D T R D S E D A G N Y L C D F D Y Y T S L A H R Y K Q Q Q P N K$
$R R V A V E G V E V A F S R D A G R Y C D Y T Y Y G S L H H$ EAVRAAGVPAEPSGSAGAFVCNHVMYALL DHAPGTARA KALSKKGFDVMVSDDAGRFVCNYVYYHSLRFAEANG G
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A G H VHMPLSPAQVARESDSPSMSTPMVSAALAILIQQLSE
 V $V$ I FFHVVPADSSEAVIDKQGQ




VLFD $\quad \mathrm{H}$ V

$E T K \square Y P \square E K T A Q G L E \| L V Q L I A$


A MF DHVP LiASDDES $\square R K G \quad$ VE $\square T \square E L I R A M V E C D L K$

SKED $\square G R A \square Q A V Q Q E M E$
TGF $\square$ HVPPDDTDASAPG ATLLLADLRRGAD IILSAAVD




 AGFVSFPPVSSHDARHHG LLLQQQ\DAGRDIVR

TLIFVHVPDFNK
VTFVHFPK LSRHAS $\square K T Y Q Q V L S \square D Y \| V Q$
$V \mathrm{VFLHVP}$ SDASGAFVTQGRELAVLIRALVE

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 VGFFHIPRVIPAAQAKPG $V V F L H V P A D A S D G A V R T G K \quad E D V V Q L I R S Q V E$
$V V F I H V P M P S A W A S S Q T P R P K R T L A A M A R A L E T A A V V L A R$ TLIVVVVDFNK
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 S L F F V H V V P P L L E T K


VVFLDVPGWTDKASVE
MGADVLVGLVRAMVESWDT
A AF $\square H M P \square \square A R$
S Laf Hl P SFNK
AAFI HVPPDSKWVTA
SCTLELLTTK\KKQ\!R
AVLI HVPPLS
$A B C P R D A G L L G K A L Q A L V Q E L L E$

TLFVHVPDFNQ $\quad$ V

 ALFVHVP
A GF HFPVDSESSVDGKY PTMA $\square$ DFM $\square K S V E \square A \square Q$

T L E MVT A A VQRT $\square$ CT $\square$ LS
ALVVHVP
GDGPS LGGDE\|VTALDAVVRALDP
A GFVHVPATPD【A A GFLHVP
 A VLV $\mathrm{H} V \mathrm{P} \stackrel{\mathrm{P}}{\mathrm{P}} \mathrm{L} \mathrm{R}$ AGVV WLPASLLGKALQQVIVQEMLIE AGFV P WDLAH RPRPDAPALPAEDLARAVEVALVALEG SLFVHVP
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 GFGKFGD! DDNPSAKUAQDILA
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 VTTHVTGFKKFHGVSENPTETIVTNRREYMGNCNVLETAG VTVHITGFEPFDGAASNASWDAVRFLPEITGSAIVTRELL UVVTGYGPFGTHSVNPSAEAVKTLPRKZGDYDVVTYQL
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VTVLTGFG RLLITGGF TПYVTGFGPFAGHEENAS

TKLATQLK ND
 T $\square \mathrm{Y}$ VTGFG GF VLINPTTKLATQLKD
IVVGFGPFGHEDVNASWEAVRLLPDTCRGHHLQTLQ

VT HVTGFGPFAGHEENASWEAVKLLPDVFDAYQLRKYQV
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 PVEYEK IVEDLI VTK K TREMKP I LTTLGI GVAPGRAKI TPEK $\square$
 EVVSYVTAAEVAAT I WDDEIKPDLVI HAGLHYNAEKVYIETQQ $P V D Y R E V K$ QKV T RI WE D L K P Q F V V H I GMMDTSAAKA I I L E Q C
 $P V$ S Y Q K T K E S V W W I WT T L Q P L L TIV H TGGLA S S S K A I I I L E Q ETA G D G A L P M L Y K I ME S N E Q VVVWL H L
 Q G A L G S L Y K V LiE S A I A E N G P DI LV H F GVV N S G A T R FA L E N Q
 PY A FK R SLLVV LE QLI T Q H K P A V L L L L A Q D A A Q T Q I S L E K V
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 $E T R Y G A D L T Q L A P A L A R$ R PRAVLMMGGAARRSRVCVVTR $R$ VNYRVVRGLVPSFHDPQKFDIVI HIGMAGPRPFPSIIERR

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 $P \bigvee D Y L A A R N Q L L H L L K S H E P T T C L C T G L A K G E N T F R L E R L D$ ETAGDGARPALVKTMDSNEQVVWLHLGVNSGALKFAI ERQ





 $P V T F A G A A A A G C R V I D E A C P D I V V H V G L G T R A R E V R L E T T$ PVAYKEVTECIEEI YKDTPP HYAI HVGVALPGTII SLER Q $H V D Y R A A G Q R V A R I$ WE DLQP QLDTVVVVGMDTS GKAIVL E QC $R T A Y A A B L E S L K P A L A E S P A A V L M I G D V G R A K R V R V E A R$
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AFNEATF $90100 \quad 110$ 110

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 GHRDGY | $R D V D V R G F R P E G G V C L S G G P R V I M S E V S M K A V C$ |
| :--- |
| $A$ | AVNAA RAFPDAAGLHPPGRRLSRRGDDAIASTAPALAGV ARNTGYD VADVNGDVVCNNCCVEQAPEFLKTCFDLEETA AVNEATFRCPDELGWKPQNLPVVPDGPVVRKTNLPVEEVT A INYKYSREGDNAGKKYKGEKIDPDGQDGUFTNIPVEDLV AVNDKGEQEYQDAAREDNRQPDDPQGPAAYWTRLPLRALL AKNRSYQ DAD DRGFRPACGECDPDGPEVIASEVSMKAVR AVNERTGT DNDGLSCDHELIDPSGPDGLFASIDWRALL CGKNKGYKEKDVCGYCPQDGCCLLDGPERLDSTIDMKTL W AVNEASFRCPDELGWQPQQLPDVEDGGQTRQTSCSVEAVM AYNLADFRIPDERGQLIKQSLILS AVNEATFRCPDELGWKPQRVQIVP ALNIINHCLSPDQDNQIAKDSLTAQHGKSRYETKIPIDAIA ARNHRHLAVPDEGGFAGADGPVREGGPAERVATWPLDGLA AFNGPYN MPDVDDTCKFDGWCYPSGFQRLCCKLDLFHSY GKNRGYRRDADIRGFRPADGVCTPGSPEVIASGVSLRAVG


 AVNEATFRCPDEMGWKPQKVP VPSDTRDRKTTLPVEEI T GHREGYTKNKDDDGQMPDGKTTFGDCPSTMTTSLDYERIL AVNEATFRCPDEMGWKPQRVPIVPGDSRLRESCLPVEHIT A HNVATFRVPDVRGAQLSGRELLPGQPEKLQTSVSVEAIV A IN EATFRCPDEFGWQPQQLPIIAEDGRARETSCSTEAI H AVNEATFRCPDELGWKPQRIPIVAEDGGIIRTSLPVNDIV GHRDDYSKHKDLDGADPPNERCFGDCPPMLETSLNFERVV AANEATFRCSDELGWQPQQVPIVEDGGRTRETSLPVDAIL A AANEATFRCPDELGWQPQQLPDVEDGGQTRKTSMHVDA: AVNEATFRCPDEMGWKPQKLPDIPGISRVRETTLPVQEVT AHNSGY ILPD DNEEQLPPNGVAVAGGKEVLQTGLDLSTIK GKNRGY RDADVRGFRPEDGVCLPGGPEVITSVVSMKTVC ALNRASRLFPDASGRTPTTLRLDRQGPAQRETAIAARALV GHRDGYRLEDDERRREEGDDWVWHGMPPEDETGLDLDEVL
 AVN ATKDAPDALRRHPVARRLRSDAPGVLPAPVRPRHLQ AHREGYKHTDVDGQ|PFDPSLPERLQPGVPTPADSASFL AVNEATFRCPDEMGWKPQKVAVVPSDGQVRETSEPVNETV GKNRGY RDSDVRGFQPEDGVCLPGGPEVMLSVINMKEVC AVNEATFRCPDQLGWKPQKMPVVPADGRDRESSDPVEE: T AVVEANFRCPDEMGWKPQKVPVVPGDSRTRETSGPVVEVT ACNEGYQK GDIDDSVPNCNKCVIJTENULVTKFDTQKMV AVNEATFRCPDEMGWQPQRQIAPEDGPATRETTLPAAEIV AVNEATFRCPDELGWKP
AVNEATFPCPDELGWKP
AVNEAHFRCPDELGWQPQRLP
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$A V N K A V R V R P D A L G R A P A$
AFNR\|SLLRPDAAGQVPS
SFGRGYC IVDVEYQVPC
AHKSNY TMGDVDNNLLS
GYNTANFRMPDEQGWVAQNKTLHGQCPALTTNLDIERUS
SRSRGYGNIADDVRQRFDDEFPASKFPSMLSTGFDTTDVL
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GKNHGYQ DGDLRGFRPEGGVCLPGGPEVIMSRINMKKVC AYNFGYSKPDFAQGYLPRSDKATLVNCSHTLHCGLDVEKMV AVNEATFLCPDQLGWQPQQUPVVEDGGRSRQTSLSTEACL AHARAETGLADALGAKLKRKLGLYAHRAARHTEVDVDRLR AYNCADFRVPDEAGWQPVMEEIEAGRGMWVGSRLPLAGVC AVNEATFRCPDELGWKPQRVPVVPSDGSVRETTLPVKELT ANGRGYGRTPDVDRQRFDDSTAEQHFPSSLSTSFDTADVL AFSRGYGSLADVDRQRFDDESAEKHFPNTLSTSFDTADVL A DNEATFRCPDELGWKPQRAP VPYFCMDKQTTVPVNEVN


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 ERWKDHGSDLR RSEDAGHYLCDF DYFSSLAHLWKAQKHRR A A LQRA G IAASASRDAGRYLCNAAYFHTLAAARGQRPETP GNCKTE V PVY DSRDAGLYLCEY DYY LAL NRCQK KALEKNGFEVITSDDAGRFVCNYVYYHSLRFAEQN KTR RHAAVEGVEVMFSRDAGRYVCDYTYYLSLHLDEGGNGR DLLNENGIPAELSLSAGSYLCNNAMYIIIREARKYNS HDFGTCGDPATVSSDAGTYVCNAGFYNLLAWAAGHKKDVL

 KTVAVEGDDVLFSRDAGR
 EDLQ GFDFTLSTDPGRFI CNLVYFHSLHWLEQNEPDAH K SLRKGGYDVIPSDDAGRFVCNYVYYHSLRFAEQH SOMK STLQQQQTPAQLSYHAGTGVANHAYYGLMHYIKHQNTNQQ AALSADGVAARVSEDAGAHLCNQTLYGALEAAEAASPRFV

 PLWQGHEADLRDSEDAGHFMCDFDYYSSLSEDWK DQRPRK KSLANKGYDVMTSDDAGRFVCNYVYYHSLRFAEQNG TK DEWQVHQADIRPSEDAGHYLCDYZYFNSLACFGRKNSSRP ESLLKMGYQVMRSEDAGRFVCNYVYYHSLRFAEQNG GACQERGCRVEVSDDAGRYLCNYUFFHSLA N NMER QSFQAKNLPAYFSEDAGQYVCESTYWTLLDFRDHNEFPKN KALARKGYDAVPSDDAGRFVCNYVYYHSLRFAEEH E $\square_{K}$
 KLKMKM

## , <br> K

$\qquad$ B7F3E

## 

 K ALAAKK GYEVVMTS $R R V A V E D V E V A F S$ SA GSARRKTDD R L S E DA GR Y L C E F D Y Y T S L A HA Y K D GR S GN


 K E L REKDWEVSCS | $R$ | $C$ | A S K G F E | $V$ | $T$ | $L$ | $S$ |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $A$ | $L$ | $E$ | $K$ | $K$ | $G$ | $F$ | $E$ | $V$ |
|  | $T$ | $T$ | $S$ |  |  |  |  |  |  |

 KALAK T GY LAARTS LDA G SFVVCNYVYY HSLLWFAEQHGFD
 DAALAA GAPAQLS

## S C

A A L N N S D C C L L I I E P P S H D P G R Y
R RLKEAGFEHLLSEDAGLYLCEYTFYTSLAHRRRADCPTP
 A ALKAD GLLQVELSTDPGRYICNYTYFLLSVKAQQRAKNQY
 ERWQGHDMDLRD


 K F L K K K GFDVVIS D DAGRFVCNYVYYMSLRFAEQKG H K
 T A L S R A N L R NVAS D DP GAY L CNAAY LT A L DWSRTRAPRPP







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|  |  |

## S A V <br> A

 LF/V/H|VAVLI HVP P $\square$

 SLEI HI PALSDVF

PLDKVVEAVVRII-


 AGFVSLPLVNDSGGQERG LDLLNQQUEAVREVV

A ALI HVPRLS
AGFLHIPAETDTV
LWFPARLLGKALQVIIDQMLE


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

SLE: HVPSFEGECTKEAVT DVIREADKVILRHVL
AVLI HVPPLS P P

AVFVHIPMPPRTRRPKAGGGRRPLDRWTEALIEAARVLA
ALILHVP
SLELHVP
VLVFHVPAESDGFTDERGQA VVGQADRADASSSS
$V V F L H V P S D A S E E A V A T G T \quad E L T V Q L I R S I A E$
SLFVHVPSDASEAVATGT

S

WS A GK $\square$ AT GMATMDE




AAFIHVPPLSK SVTADSLGKALQTIILEMDK
SLFV $\mathrm{H} V \mathrm{P}$


$V L F L H I P P V A R A W R R S A S P A R P L A L L P R A V A E V V R L L L D$ VTFLHVPSDASEASVARGT


S
S
L
F
F
L
H



SVVEVVP
SLEVHVPPFSR


C F V HVPLLFS R

| S | F | H | H | P |
| :---: | :--- | :--- | :--- | :--- |
| S | F | V | H | P |

SLEVHVPPFE

A GF L HLP P
SITVVVPALPKGPRDTRPAYPVIEEAAVR\|LR
VGFIHVPPLASRRVDEADRPGLTLDEAVRAAVLAILAL



AL F V HVP P F S
VI F L HVVPDDT S
AVFLHIPLPPRQAGGGRRRP ELDRWAEAFAEAARVLA



TLFVHVPE VNEPYTSEQTMTTIYNVIGKCLEQLAA


AV F HVPBGLRPGAREH
SLFVHVP
Vi F L HVPDLTS
SI FI HAPDTE
S F HAPVTE
$\checkmark V V \operatorname{HVDPDLTS} \quad$ SEEKMKEGWEALIKALVE
SLEVHFP
AV F V H VP

ELDATGL
VR a LVE
ASFVHIPY $\operatorname{LPEQMAVRKGLPTRGVETLVKGFTAMIEALD}$

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UniRef90 UPI000265915E UniRef90-Q9FXC0
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UniRef90 ${ }^{25 B 687}$ UniRef90-G1LGHO UniRef90-UPIOO044130E1 UniRef90-B8ID65 UniReffo-G3JNO3 UniRef90-GOSDR5 UniRef90-A2QVM7 UniRef90-K9FC64 UniRef90-F9XCN9 UniRef90_W6QJM1
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## TVVVTGFGPFRQFDTNTSWEAAKFA

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 TLLATGFSGFPGMPVNPTERLMKRLPABDHGVRFCYAVL RILVTGFGRFPGMPANPSSGLASALARSRRSGQVEARIL L
 TVLVTGFAPFRDEPANPSWEABSRLPAYFPPVRIVVYPE VHILITGFGPFNSVPVNPSSELIRFLPDTLAGTMI QLTRV VVISGFGPFLGHTVNASWEAVQLLPHNGVEYELVKKLV VVVTGFGKFGDMEENPTTLLAEKLGGHPKVTETHVALEV VVVTGFGPFGPHKVNDSW
$M N L L V G F E S M A A S N S W$
$\square N V L V T G F G P F R S F D V N A S F$

WKCVSACE
RLAREARLALPHVRFAVAVL VTVLVTGFGPFLSYPQNSSWTIASTLPALIPPIH胃THHT 1 IVTGFGPFGHEDVNASWEAVRLLPDHGHHYKLEKQET
 $\square \mathrm{R}$

VYTtGFGKFDTIIENPTTHTVNATAADANVELVQLED
RILVTGFHKFPPYEVNCTEELVKLISKNRDNIEIATEIL VVVSGFGPFGHEANASWEAVKLLPDQNHNELAKQLV K IILSGFGTFCGVSDNPSSQLMNEIKTYINGDIIDDNVI VHFHLTGFGRFHRVSQNPTEFLVKQFVSFCEERRVTTVVA

$\square S V L V T G F G P F K T N L V N A S Y L T A S S T P S S F D S T H V H P T P \square$ KVLVTGFGQFSGlEKNPSWEIVSRLPTLPNDIEIVIHPE IVVSGFGPFLGHAVNASWEAVKLLPHDGIEYDLEKRLV $\square S V L V T G F G P F K S N V N A S Y L I A S A L P P S T R R A M H V B S$ LRVVTGFGPFRQHLVNSSWEAVKELSKLGLNVELRVLQL

TIVVSGFGAFGNHKTNPSAAVAKALSTYPEDCIVYSHEM VTVLVTGFGPFKQEPVNPSWEI TRSLPEWLPPVRITVHPE ISVLVTGFGPFKSNVVNSYLIASSLPPSFTSINVHPSP



TSVLVTGFGPFKSNLVNASYLTASSLPPSFTS $\square H V H P T P \square$ I KVLVTGFGPFKSFLVNPSWLI ASALPHELYPTTVHSSAM


## UniRef90 F2U7H0 UniRef90-B6QA14 UniRef90 E5A376 UniRef90_N1JEH6

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UniRef90-EOVFV4 UniRef90-EOVEV4
UniRef90_D0WN45 UniRef90-E2CNFO UniRef90-D7A4T4 UniRef90-B8PK18
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UniRef90 $\mathrm{T11064}$ UniRef90-B5JKD7 UniRef90-B8LZH7 UniRef90-D8JT47 UniRef90-B2VXFO UniRef90-J9FJY7 UniRef90-F4RVW9 UniRef90-M3AZ20 UniRef90_D8Q879
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UniRef90_M7T2D0 UniRef90_A8KXQ8 UniRef90-Q0CKE1 UniRef90-M7SJH8 UniRef90-Q8SZB7 UniRef90_Q5B687
UniRef90 G1LGH0 UniRef90-UPIO0044130E1 UniRef90-B8ID65 UniRef90-G3JN03 UniRef90-H3EHQ1 UniRef90-A2QVM7 UniRef90_K9FC64 UniRef90-F9XCN9 Uniref90_W6QJM1
UniRef90_S7N5B1 UniRef90-Q2M1A3 UniRef90_L8WLP7
UniRef90_K9WWG3 UniRef90-Q9P9B1 UniRef90-R7Z479 UniRef90_UPIO0045D6AF1 UniRef90-W9YJ72 UniRef90-UPIO003461EA1 UniRef90-K5W600 UniRef90-UPI00021A66F4 UniRef90_UPI0003C37B35 UniRef90-U7PLB2 UniRef90_UPIO004411D3F UniRef90-UPIO003447695 UniRef90-A1CTC3 UniRef90-H6BQZO UniRef90-A0A024UBN9 UniRef90_J3P9E9
 PVVSYATVRA QLPDILDPNRPDLIVVMGIASTRPYYSVETQ PVAYQHVLDLVPKLLPPKNPDLVLHDGLAAGRNHYAAEEG PVAAYKNVRDIVPRLWEDENDDFVIMUGVAEERDYYSTERR ETAGEGALPLLYKVLEENEQVVWLHLGVNSGADGFADERR

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

 $P V E Y A A V D E A V T E V W Q R$ QPELVVHVGVSGVAKCVYVEKL TVLDTA GDGALAPLLHPQKRIVWVHFGVNSVSNNFAVERR NVTYAEVEKTVKRI WKDHNPKLVVHDGVHPCNRHDKLERR

 V HL GLAAGSSVVILEQT




 PVSFTRARAQ』QLLAAKFHPRVVLCTGLFAKARSLLVE | $P P E W R A R E E R T Q H$ |  |
| :--- | :--- |
| $P T R W S E A E G F$ | $P A V$ | $P T R W S E A E G F$ PAVLDAAPDIVLMLGVAGRRRHVTIE RVNYTVVRDLPHR RPPK DDLAI HVGMAGPRAYYSI ERR PVVTYE AVDAVVPRVWE E S PALVVVCGVHGNDSTDNLEQC

 PVSYEGLKKDVERLYAERGWDAVI HCGAASRRPQDCVELL
 SAAG $\square$ SVTCLLSERGRPCVFLHEGVSATACTLLLEQV


 PVSYNTVLDLI PTLDPPGNPDILLHDGLAAGRSYYAI EST



 PVTYENVDEFVPALWDTHEPKLMIHVGVSGDADSITLECQ V S AE GSLLEMLAPLRKK
 S V E E Y G A V $V$ D K A M

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


 PVAYSAVRTTIIPYIMEEYHPDIVIHMGIAATRSYYSIETK PVDYREVKQRVTRIWEGLQPQLAVHIGLDASAKADVLEQC

 RVIY SEVKEVVPKLWMEYNPDLVI HLGVHPEHNLIDRVEST


 PVAYATVRETLPLILEEFRPDLIIHI GIAAPRQYYSVEIL SVEYEAVDEACAETWSR QPEMVI HVGVSGIAQCVYVEKL PVTYSAVLGTVPPIHQSKQYDFILHVGV GLSGGVAI ERL $P V D V Q L A S S Q V I A K I N E L Q P D Y V I C C G M A A S R R Q L S V V V V$ TVDVAGSTWT KDELESREWDAILHLGLCGECTEARI ELLR KVAYNPVLEQDPQIIA QVNPDLILHI GLAAGRSYFTLERG PVEYKTVVRGIPALWEKHSPQLVVHVGVSGMATTVTLEKC

 PVSYEDVTKYVPKFWQEYKP IVVLHLGVVSQARCLTI ECR PVVEYEAVDKAVEETW S WRPTVVI HCGVNGHSSCVHVEKM
 PVAYSTVQAT $\square$ PS S IDEFRPDVVYHMGMDTSAKAGYSIEQK $R V S Y S S V S E M M P S L I S Q H D P D F I V H D G V A G G R D C Y S L E T R$
$E A V R E T M T P L W Q D A N E N E S E A T V E H L G D S D D A K H I V L E Q C$

|  |  |
| :---: | :---: |
| UniRef90 F2U7H0 |  |
| UniRef90＿B6QA14 |  |
| UniRef90－N1JEH6 | AY RDGHTMPDVDGMLCADKWTWHDMPDEILSDVHTDDVC |
|  | AVNEATFRCPDELGWQPDQHPIVPEDGCTRETCCSINEIL |
| UniRei90－UPI00034F324D | AHKKGYQRL DYFDKCPANHVCTADGAVRDHTKLNVERIC |
| UniRef90－M3A917 | GHRDGYDKNKDLDGRMPEGKTTFADCPPTMTTSLDYENVL |
| UniRef90－C4WVQ | ANGHGYCGM DUHGNGPDDKCLI |
| UniRef90－A3ZL11 |  |
| UniRef90－D3B2C0 | GWNDASFRVPDECGYCPNNEKIDLLNPECTPTSL |
| UniRef90－88L1288 | AYNHQFRRPDNAGKFLENNTCQHGKANVLRCGLDVDMI |
| UniRefofo－B8P786 | GHKYGYDQDDADGKFCPVFGNGYEDSPEELDTPIDCPAL |
| UniRef90 B4LGU4 | AYNHQFRRPDNAGQYLSKSTCCLPYNGKALRCGLNVDKI |
| UniRef90－W2TRU6 | SFGRGYTSY DNDGCVPDDNVCPECSDFILNTSIDC |
| UniRet90－E3MT84 | AFADGYCSNDVNGCTPEDNRTTCASQDQULKSCINC |
| UniRet90＿U5H1B6 |  |
| UniRet90－S2V | ENFARDPDAGAQPNGEPVI |
|  | GKNTGY RDRDVCGYCPETRCCVEG |
| UniRef90－F0YD49 | AYNDATFRCDDERGWRPAGEKISADSPFGAPSPTPLDVEA |
| B4IZG4 |  |
| AOAO17T | RLGREDNAGALPVPERAVAS |
| UniRef90＿S3CNY2 |  |
| UniRet90－EOVEV4 | AHKMGYVKKDIYEKLPEDNSAKGRLDIHRTLLNVELVA |
| UniRef90－D0 | NE QAGAD |
| UniRef90－E2CN | RNWASTTRADAAGDVAPHRLLAKAGTPNRRATLPVRSLQ |
| UniRef90－D7A4T4 | AHN ATGLLPDAARARP ARRLERNGPERRRGGAAPMPL |
| UniRef90－B8PK1818 | GRKHGYNSPDADDELCPVFGKGYEEFPDEMYTPVDC |
| UniRet90－G2R4R1 | GHRDGYVMPPDVDGRFLREAWVWEGVPAELETALDLGGDVL |
| UniRe99－Bow 8 T9 | GRRDGY RTIADVDDCLPNRQWAWYGVPPSLESHLDLCDVEL |
| UniRef90－K3W | YNLADFRTPDERGWVAQNVVINADEDDAL |
| M5G7 | RRFAYQ LPDTDGNFASAQEVYPDTKERYDTLFDG |
| UniRef90－B3M732 | AYNHKFKRPDNSGQYLSNGSCQL |
|  | NNMTFRVADERGRQPTDEP |
| UniRef90 M4B1S3 | GYNVADFR｜PDERGHVAKNEVIHEGEPANMTYKVCLDEML |
| UniRef90－T11 | ARKKGYSQPDVSGLCPKKA |
|  | A D VT |
| UniRef90－B8LZH7 | RDNYRDPDVDGRSGYHDPI LVPGPAEYPTNDHFLQVW |
| UniRef90－D8JT47 | ARNFCRMS PDAAGGLDASNCICEGGASALSTSIPATAVA |
| UniRef90 B2VXFO UniRef90 ${ }^{-}$W8C466 | ARGRGYGQUADVDGKRFTDGKADERFPPTLETGFGVGDVEL |
| UniRef90－J9FJY7 | GKNDKDFRTPDENGNTPLNECISLDTKHCIQTTUNVDSI |
| UniRef90－F4R | HRDGYEKV DVDGDRGCDEKSVEE |
| UniRef90－M3AZ | AHRDGYVKNRDLDGKMPEGRTIFGDCPPKMTTSLDYDDIL |
| UniRef90－J4G1P2 | GRKYGYDKEDAFGQYAPTEGDKPVRGPEELYTHVNCTKLV |
| UniRef90－G6D596 | AHRKGYQRL DYFDKCPANHACPATGALDIKTRLDVEKIC |
| UniRef90－K3W7U6 | GYNLADFRIPDERGWVAQNVVINADEDDALKTMLPLDEML |
| UniRef90－A7BM63 | FSGIDVDGKCPP TLKN／NGVNEYWT T FP DSVL |
| UniRet90＿B4N521 | A ${ }^{\text {NHQ FKRPDNTGEYLKNGTCVLGKANVLRCGLNVDKIV }}$ |
| UniRef90＿Q55GV5 | GWNMADFRCDDEDMWKPQNEP：DSDSSDKYET T |
| UniRef90－G4V928 | SYNSGYDKPDMDGAYCENNGCANDHGEPVLYCNMNLSKAY |
| UniRef90－A9TZM2 | AVNEATFGCSDELGWQPQRVPIVPDGPFLRETS ${ }_{\text {A }}$ |
| UniRef90 A8KXO8 | NSTRALED |
|  | A HRDSYH MSD⿴囗 |
|  | NQNYGYQNSPDVDNKVAEQTAAWADQSITIETDLDLPQVV |
| UniRef90－Q8SZB7 | AYNHKFRRADNCDKKLANGTCELPNNGHALKTELDVDKIV |
| UniRet90 Q5B687 | AKNRGYRDADITRGFRPARGECLPDG |
| UniRef90－UPIO0044130E1 | GHKNGYRMKDADGEYAPDFGKGYETFPDELQTDVDVPKLI |
| UniRef90－B81D65 | ALNRASRLIPPDASGRDAARLALDPEGPALRRAGAVAVKAG |
| UniRef90－G3JN03 | RTGY RTPDVAGE |
| UniRef90－H3EHQ1 | AYANGYCR PD\NGCVPLDNKCVPNMDQSLKTSUDVDGLV |
| UniRef90＿GOSDR5 | GHRDGYHLQDDERRAREGKDWVWDGVPAELLTAFDPEDVL |
| UniRef90－K9FC64 | AHRDDYNITDVNGRPGYVDGEKRWKGPSSASPYQPDDQFL |
| UniRef90－F9XCN9 |  |
| UniRef90 ${ }^{\text {W }}$ WQUJM1 1 | AHRDDYNTTDDGRPGYVDGEKQWKDDPSSASPY的PDDQFL |
| UniRef90－S7N5 | GRNRGY RETDVRGFRPENGVCVPDGPEVIESRVNMKAVS |
|  | AYNHK FRRPDNSGQYLISNSCVLGKANVLRCGLDVDKIV |
| UniRef90－L8WLP | AHKTGYNQ PDAEGRLCDLIRSKPKGDDALRSRLDVDAIV |
| UniRef90 K9WWG3 | ARNTN |
| UniRef90＿Q9P9B1 |  |
| UniRei90 UPI00045D6AF1 | GHNKGYKGL DNCHFCPGSQCCVEDGPESIDSIITMMDAC |
| UniRef90 ${ }^{\text {W9 Y J }}$ | AHRDGYRIKDDDADGFPRSESHWEGVPDLLSVGWDESEVM |
| Uni |  |
|  | KL |
| 0021A6 |  |
| 35 | V |
| ef90 U7PLB2 | D |
| UniRee90 ${ }^{\circ}$ UPI0004411D3F | G |
| UniRef90－UPI0003447695 |  |
|  |  |
|  | DGY RIK DVDDKRGESMWKKEGVPDVLFVGWDEADVL |
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## UniRef90 F2U7H0

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UniRef90
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RRWKMHCPKHRVSEDAGHYLCDFTYFSSLAHLYKTGRRRN LDAWKTFCPPRISTDAGRYLCEFIDYTSLALAYQAGEDRN ETWRAPESDRR SQDAGHYLCDFIFYTSMSLAQLQGQDRN ETWRAPDSDLRDSNDAGHYLCDFITYTSMSGAQLQGQDRN
 EAVNATCEACRASKNVGDFLCGYVYLKSLDVDSK AGTTE GWOQUSYDCGKFVCEGLYYSVLDYARQSQLSVS WNLDSWK QPSLSTDAGHFLCNETYYRTLEALHASDVDVP KKVTTLGLDVSVSQDAGR
RRW
 LHLKEQGDQKAYSSDAGHYLCDFLFYASLAEAKRNAAKTP NHIN QVITDDCGCTPVSKEVGNYWCGYMSYEVYKKSDYDCSR ARWRGHGADLRISVDAGRYLCDFIYFSSDAHLYRRYARRR AHLQEGDKNVRLSTDPGRYLCDFUYYCSLAESRRSPKRSK
 KRWEA
$A L H Q V H G D P C R \square S T D P G R Y D C N Y T Y F H S L S R T R L H A \quad N Q H$



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| UniRef90_B6QA14 | G E |
| UniRef90-E5A376 | S |
| UniRef90 N1JEH6 | N |
| UniRef90-B9SH89 |  |
| UniRef90-UPI00034F324D |  |
| UniRef90 M3A917 |  |
| UniRef90- C4WVQ7 | Q |
| UniRef90_A3ZL11 |  |
| UniRef90 D3B2C0 |  |
| UniRef90_B4L128 |  |
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| UniRef90- W2TRU6 | T L D |
| UniRef90-E3MT84 |  |
| UniRef90_U6HIB6 |  |
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| UniRef90-UPI0003AFF749 | H S K T R |
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| UniRef90 B4IZG4 | S Q |
| UniRef90_A0A017THW8 |  |
| UniRef90-S3CNY2 |  |
| UniRef90 V5HVE4 |  |
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| UniRef90 B8PK18 | Q |
| UniRef90_G2R4R1 |  |
| UniRef90 B0W8T9 | E |
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| UniRef90 B3M732 |  |
| UniRef90 R1F042 |  |
| UniRef90_M4B1S3 |  |
| UniRef90-B8N4J3 | E Q |
| UniRef90-T1I064 |  |
| UniRef90_B5JKD7 |  |
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| UniRef90 D8JT47 |  |
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| UniRef90_J4G1P2 | Q |
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| UniRef90-G4V928 |  |
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| UniRef90_A8KXQ8 | A S DV H A |
| UniRef90-Q0CKE1 |  |
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| UniRef90-G3JN03 |  |
| UniRef90_H3EHQ1 |  |
| UniRef90_G0SDR5 |  |
| UniRef90-A2QVM7 | Q Q |
| UniRef90 K9FC64 | K K |
| UniRef90-F9XCN9 | Q E |
| UniRef90-W6QJM1 |  |
| UniRef90_S7N5B1 | E |
| UniRef90-Q2M1A3 | S E |
| UniRef90_L8WLP7 |  |
| UniRef90-K9WWG3 |  |
| UniRef90-Q9P9B1 | $R P S \square Q V A A G$ |
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| UniRef90_UPI0004411D3F | N |
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UniRef90
－ 9 R509 UniRef90－S8CYA6 UniRef90－W5XFD8 UniRef90－M9MBC8 UniRef90 L L8FX63 UniRef90－S8G479 UniRef90－UPI000380D3AB UniRef90－B7JUL4 UniRef90－X6PF70
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UniRef9－C5KH6 UniRef90－141J09 UniRef90－D8FW64 UniRef90－Q31JO5
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$\square$
■HVLVTGYGPFSTYEQNPSWLAVKPLHHLTRPIRRTALEV
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RVVLTGFGPFKDVVVNPSFQUVQALPDTSKPQT円QLLRH $\square N \| L V T G F D P F F L D Q S N P S G L A A L A L D G Y R K K A Q U E T V M L$

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R\LLTGFDPFD\AQSNPSG|VA\ADDGERRK|QVETAM\square
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 E V S M K G V Q Q Y H N R L L N M D E S C i F L H F G V R R D DQ K D



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 K A
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 AHRDAYHLSDDGEMHWPGSKPQQAVQRHAIPHPPDDHDIW S YNNANFRMRDRQNEQPKDTKDSEDQEQCNYT IIDCKYLL AANEATFRCPDELGWQPQQVPIVEDGGRTRETSLSVDALL G
GQN $\square A N F G V P D A D G N V L H N Q K \square D K N \square K \square G E K \square Q N P V D$
A
GHKDGYNDASDDAKRRPAEGKGYENFPEEVYTDIDVEKLV AHRDSYPSISDDAEKTHDPGVTPPSQAVSWNPHPPNDKLL AHRDNY RIKDVDDACGEQRWRRENVPEVLYVGWEEGDVL PGRNRSAEAPDNRNVFPKLENDTLNGPEFVEFSLPVAAMV ARKFSYDKPDVDQTYAPLDHETGYRGDEVLHSSIDVDKVL PGRNRSAAAPDNAPDAPLVNGGTLNGPEFVEFSLPIAAMV GVR

GDRVLHTSLDLLRLS AKNRGY RDAD DRGFRPARGECLPDGPEVIASEE SMKAVS GHRDGYRGLDEERHAREGDKWIWHGLPHEIETDLLLDDVL AVNEATFRCPDEMGWKPQRVPVVYSDGSVRETALPVKEIV $A H R D D Y V I T D V D G E Q G E K R W R E M G D P P I L V M P Y P P D E H F$
$A V N K A D Q V R F D S A G K G P G N P E L D P K G E R A R T A T G P A G H L A$ AVNEATCCCPDEDKWQ
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 AF
A F
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D N N R
ARSTP AFTNCSMSMLDPEDYQESTLGHTSVNLEELV GHRDGYRGRDEERHRDQREGWDWHGLPHDIETDLDLDDVV AH R R D Y S L L D D D GKNRSY RDTD IVGFQPEGGVCLSGGPEVMHSVVSMKEVC PGRNRSATAPDNRNVLPS LNGGPLNGPEFVEFSLPVSAMQ
 AKND L A ES NSSLP ILPNV ARSS $\qquad$
A $\square \mathrm{SEG}$
PGKRRSVTAPDNANLLPS LNNQPLPGNEFVQFSLPVANMV PGRNRSAAAPDNLNVLPKFNGGSLNGPEFVEFSLPI TAMV ${ }_{P}^{A C G K R R S V T A P D N A N \| V Y G G T Q T A P P D S D U L K T A V N L E P L V}$ PGKRRSVTAPDNANIVYGGTQTAPPGAEFVEFSLPVAQMQ A R AVNTNNK
ATWNGS
GAKL
DSVTGNPLEKFS
LETPVNLPSLI
$\square \mathrm{L}$
 T QVDLD QL V PGRNRSATAPDNNPDAPMFNGKTLNGPEFVEFSLPVKAMW
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 AHRDGYN $\begin{gathered}\text { ASRDVDEQV GESFDQTTTDVKQLV }\end{gathered}$

 AKNE RHKNDDHGTPGEGAVVVGGPATRNTPEDMTHVQ GHKYGYDMPDVDSKFAPDEAKRAGGDEELKTDVDVDKLV


 A S STSSTLPDVESTNSADILLPQESRNSPENDFQTSVVDLDEKLL
 GYNELEGSPDDESMDVRLESMLVHDGCDESKTAELIEELN $P G R N R S A A A P D N A P V A P K L N G K D F D G P Q F V E F S L P V A A M Q$
$G Y N E L T A S L D P D V D G R V L H D P I F E A D G P D E T F A A S P L P H D V$ AFSHGYCRE DINGYVPEGNK $\square$ EDEDE E E EQKKVDFDY LVV A VNEAHFRCPDELGWQPQRDP $\square V E D G G \square A K E T S C S T E S \Pi F$ Y AKQAD
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ADTHLT ENLAATE K $\square F A P P G A D \square R$ 3 20
 QKLIPNEVDFGYSRDAGQYI CNYIYFLALQNINKKTKG $K$ KTSQSEVSYDAGQYVCNHLYYQVLVTUDEFQLATA
 R RWEE
NGRWKTNDNHTVSTSGGGY LSNE $\square S Y R A \square L L Q N Q \square G S R \square P$ RASRGEGEFLRISKDAGLFLCEFTFCASLAWAKEKRQETP EGPWKVNDNHMVSTSGGGYLSNEDSYRAILLQKQFNSS IP QGLAHT AALSDDAGRFVCNDLYFSVLDWLQRDGLATQ ERVAVEGVEVTFSRDAGRYI P DRWKGWDADVR】SEDAGRYLCDF $\square Y Y$ S S $\square A H \square H R K G D H R R$

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| UniRef90－Z5XYQ4 | TGHIHTPRL A Q F EPETEAK V A Q |
| UniRef90－F8E153 | A GFI HVP SREENDP H T T Q A A Q A A D Y DREL |
| UniRef90＿UPI0004408B23 |  |
| UniRef90－S7QBR7 | V L F L H C P P D Q P L G E E VT D M I K R T I V |
| UniRef90＿Q12JX7 | $V$ GHIHTPRVSGHDAQNE AKILEQVRAMDEAAAS |
| UniRef90＿UPI0003486546 | ClIFVHVPVLHQE |
| UniRef90＿K2JKP8 |  |
| UniRef90－K7VXW1 | C1FVVHVPILN |
| UniRef90＿U4LL22 |  |
| UniRef90－K4DJ60 | AVFV HVP SLEEQTA QVLS LA S |
| UniRef90＿A9L1V6 |  |
| UniRef90＿C6K3K4 | GVFI HVVD P P K |
| UniRef90＿E3MFJ4 | TLY L （ N VPPFEGECTKE |
| UniRef90－K9Q248 | V T F V H I P S LT |
| UniRef90－Q9LQD2 | SLFVVVP |
| UniRef90＿UPI0003485412 |  |
| UniRef90＿V6JRG3 |  |

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$\sqrt{I V S G F D W Y R G Y P ~ N P S G \| V A S L L D G E V V G G C G V R G V V}$ KVLITGFDPFGPSTFNPSGYVALKLHNGFDNCYIQTCIL RFLLTSFQTWLPHKSNSSDLLAEVTRLNSDPYELTLRQL LLLTSFQDWLPHKSNSSDDLLELIQQLYLDSLFFLRKL

$\square H V L V T G F G P F K T N P N P S F L T S A D P S T P R T R D H A H P A$ MLLTSFTTWLDHKFNSSDDLDAKI HELYDTNNTVLRRD KVYVTGFGSFEGDTENASFHVAAHLPSTLDKVETTGHPT VVITGFDPFEEYDENPSAVVLELLKEPDKNVKIHPFKV 1 VSGFD WYRGYP NPS GVVAS L L D DVVVGDCSVRGVVL
 LRVVVTGFDPFGGDRDNPSGAAALALDGTTGPVA BEAAVF NVLVTGFGPFRSYAHNPSWLGVFPLHHPTPSHT HF DCF $R G L L T S F Q T W L P H Q V N S S D D L L G L V A A H N L P S V S L T$ R』VMTGFDPFD DRUSNPSGATALALDGTWGPARIVTAVF


 PVHYGSVLDLVPRLHGQTPPDVVIHVGVGRGGS I RCETQ
 PV RFADFDQMI ESLLTP PYYRENDMII TMSMGRDDFDGERF PVDFDDAPKLVIAAIAELQPRAVICTGMAETRTVLSVEDR TVAYEDVSKRVPDLWKEHNPDLVIHLGAHNVSKTIKFEQQ TVLDAA GDGALPVLHKETNKVVWLHLGVNSGSTRFAlEWQ PV RWADAEGTVERALRPYDPKVDLFTTVSQGRGRFDVERT $P V D V A D A S A Q V \square A K I A E L Q P D A D I C C G M A E K R T V L T V E S R$ SAYFGGLEAAIAKNMEDNPDGCVVHLGLHSREGKMRLEVC $P V D V Q L A S F R V I E K I$ HELQPDSII CCGMTQRRTLLSVVEVG $P M E Y G A A D A T V P P I H A E D G Y D F V L H V G V A G G R P L R M E K V$ PVRWDDFDELVEQALAPRYGRAEAVLTLSRGRSGRFDLEV HVAYKTVRELVPKLWARNKYDFA IHIGMAGPQPRWA ERL
 PVD IA QASQRADAKINELQPDIIICCGMAESRRQDSVESN PVRWADFDDLVEQALAEQHERAEAVLTLSRGRSGRFDLEV PVRYEDFDQGIDELLAPYYNNVDMVVTVSMGRTEFDLEHF SKYFNRLDESSVTAHLEATHPENLVNVGMHSREKELVRLEVR


 PVKYEDFDKKVVENI $\square K N K V D L I M T T S L N G G N P K F D I E K Y$

 $P V R W G D F D G L V E E A L A D Q Y G V A D A V I T L S R G R G R F D L E V W$
 MI GVAARRSRVCVETR $P \vee S Y S A V R V A V P T I L D A F K P D L I V H V G M A S T R H Y Y S V E T R$ PVDTQQASNYVISKITEDQPSAII CCGMAESRTQDTVESN PVAYATVEELVPKLYEELDVDLFVHIGVAPGFDYYQVETR PATYEAVVEKLPE LRENCPDDVIHLASHNDKNTDYFQQK HVSFEKVENDIAQLITERGAAKVCHLGVHRDTTGIRVEVQ DVDYS SIVRLNRVLEELRPVGVVGLGLHPDASVPLLEAS $P P D V Q V A S A Q V L K K I A K L Q P D G I I C C G M A E K R T Q L S V E S N$
 LHFGVNMKSNRWMLETN $P V D T E L A S Q Q A D A Q D Q A D Q P D F V V C C G M A E R R S Q L T L E S N$ $P V E Y K T V Q R L I P A L W E K H S P$ PVRYGEIESALAPFYALDNDDLIATDQ PVRFADFDEGI DESLRENSVDMI ITVSM GRSDFDLEHF RVSYDTVRDLVPRLWDEVEYDLALHIGMAGPPVRYSíRR
 $P V R W Q D F D G T V E R T L E A R L P E A D L F T T V S Q G R G R I D I E R G$ $P$ VHYGSVLDMVPRMLDEEGWDVVVHFGVSTHSDRWQLEAC PVRWADAQGTVERALRPYLPRVDLFTTVSQGRGRFDVERT
 PVDUVRASERAIDTAIVKLSPDLII CCGMAESRYQLTLESN
 $P V R W S D F D G L V E E A L A D Q Y G V A D A V I T G S R G R P D R F D L E V$
$P V$
$P$




$P \vee R W Q D A D G M V E R A L R E R L P$

 QGAYQTSSSAITTAASSSSNRVIWLHFGVNSGATKFAI ERQ $P V R W Q D F E G T V E R T L R P$ H LDP EVVDLVT TVVSQGRGRFDVVERT




 P V $V$ D V R
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 AHQYSYGKPDAHTAFAPRDQDGHPRGFPSSYTPVPVSSLI AHKT GYGKPDAKQEFAPFGGSAYDHFNDTERTSIDVVQLV AHRDNY K $\square K D V D E R D G W K D W K K A G L P S A D H V G W D E A D V C$ PGRNRSAAATDNLDVLPMFNGKT LDNGPEFVEFSLPVAAMQ $A \square H R Q Q V R$
AFAD GYCSNDVNGCTPE GNRTTCASDEQCLGTAMVNVEVQLV AVNEATF RYADELGWQPQKLP IVEDGEMDRKTSSSA LVIL $N G A W R G G Y P D N D K V S R T E T V P V A D Q P Q W T S T T D P Y K D I V$ A V W
GYNELEGSP $\square$ DES M ASWSQEQ

PMDMCLVNEGCNDSK
I Y T SVVNL E QLL A
 WNGARRGGGADNLGVRRSGPVPVSEGPEWTRTSLPTGEMV AHRDGY ALRDVDDNQLRDDWVWKGCPTELRTDLDLDVIL PGRNRSAEAPDNLDVLPMLNGNSDLNGEFVEFS L PVVTAMQ NGAWRG

ANGARRRGR L L
 PGKRRSVTAPDNANIVYGGTQTSPVIPKLNGRPLPGNEFV A N

 $N G A W R G G F P D N E N L A R T G T V P V T D Q P Q W T S T T M L P Y R C L T T$ ASFE
A
 AVNVRFENREDERNAS KLYSDSPLCISVQI ELFDLL
 A V SNANYQ A V
NGAWRGGGT DNLGVSRTGRAPVPCKEKCDFTNVNLDALV
 A HKS GYTKRDANNELAPLLSSHPYEQFDQTLSTRLISVSQQV $A V N R V S R L F P D A S G A V G R F L A F E P D G P A Q R R S G A$ A A QVVR

ARRRPYDGRKDVVDGKWPVDNSKVPDEVSEIVTGLDVAGIC A Y F D GYCRE DMN GYVP E GEF LEEEDE DPFVVDFDYLV D EVVT


 A WGRDRQLYTDLNLSLLLNSLKN
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P GRRRSVTT PDNLNVLP LLT GQVLA GPEFVQFSLPYTAMQ PGRNRSAAAPDNKPMAPLFNRKTLNGPEFVEFSLPVAAMA
 AKQE GYNELFANVPDVDGKVLNHEPDPEDGPNEMTSVEPNRKDM NGAWRG GFPDNDNVSRRETVPVSD QPQWTLTSSLPYEATT
 AHK LG Y AKPDAHAD LAP K H L P K H L D T H GA L R T P I P V S E L V
 ATNSNSQ
AFFDGYCRE DK TGYAPKDFKDECEDEED E WNGVWRGGGADNLDVSRTGRAPDPGAPEWTERGKIDFEYLV ARNLRRHGSA TRKIAADKARFYRSSKLPVQRIV WNGVWRGGGTDNEGRAATGRAPVPQAPEWTRSSLPFERQL
 NGAWRG GFG DNEN L S R T G L L V




 NGAWRG GFADNDNDGRTETVPVTDQPQWTTTTLDPYRA V AHKTGYNQPDADGR
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ARRDGYN
$W N G \square W R G G G P D N L G D S R T G R A P L P G A P E W T R T S L P D E R T L$ A YWEHY KSPDVDGLFPDPSLS DETRPASLSSSVMLDQLV A H R D D Y GY T D $V$ V G QV
A VNLLDDVA Q GDDQYASA
SCGESVLH T K VNLE QLV
ELLDADGPTARLLATLPWRDIV NGAWRG GFADNDTVGVTGTIPVADQPQWTTTTLPYKAIV




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A AKWKVNDNHSVTTSGGGYLSNEDSYRTVLLQQKFNSK DP A GLTHT RRLSQDAGNFVCNFLYYSVLAYLDRQDRKTP RDVTQRGLKVEKSEDPGRYLCGYSYFLSLH EDCSK EKLKAKSFNVILSTDAGTFVSD
A AVVRADGPTSGSTGGGNYLSNEDAYRATLLRDRDGLHLP A ATGVE


 KKWRGAPPEFQQSSSHGT

 NTHVVEGHPQVVRGSGGDYLSNEIAYRNTLLRDRSGRGLP KAMQNAKGPYKVDDNGGGYLSNE SYRS R RLRDADNSSUP SGTVATD I SKDCGKFVCEGLYYAVLDYLHQYQLTNR


EGATAA
KDYNDNETSATTS
KYLLWSKGYDVAPSNTAGRYYGCEYVYYTSLSVNNKMNS R KTVRYDETKSPDKGSGGSYLSNEIMYRSTKLRDEDNLLNKP AGSQT
SQLSNT


EH L $\square$ AE $\square S V T$ Y $\square$ SHDAGKF VCEG $L Y F A V L N Y \square T T Q K \square N S H$ ETLINADEAPRVSDDAGLYLCEFI LYNSMAEAARPPSTSR EKCRFGGDKVEKSNDPGRFVGGYLYYDSI
 VGTAA VEDSHDCGKFVCEGLYYSVLDYLRQFQLKVP AAETGRFPSTAVSGSGGNYLSNEIAYRNTLLRDATGRGUP A
E Y L K S C GLD H T

AA GTGPYPVVDHTAGDY $\square S N E \square A Y R A T L L R D A V R P A D P$

DAATGDGGDEPVTRSEGDYLSNETAYRNTLLRDRAGARVA ERVQDQP $\square \mathrm{N}$ LKVSENAGDFLCEY $L$ YYSS L
$\square G T A A D E \square S H D C G K F D C E G L Y Y S V L D Y \square Q Q C Q L K V P$ HQLSGEGYAVRASLSAEAEFQNAALYAALEYTHDHE DADTPAGETQPVVRPGGDYLSNEIAYRATLLRDRDGLHLP ARWKANAPDVRLSPDAGNFGCGF YYNS LHYFSDSKEDRP TS SLNTSLRENPLSEDAGRYLCNYCLYRSMMDQDQYESQVC REVNEKGLLVEKSEDPGRFVESYMYFDSL


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UniRef90 A8Y1R1 UniRef90-E5GBI5 UniRef90 UPI000374F745 UniRef90-UPI00035DCC05 UniRef90_K2N211 UniRef90 K9T656 UniRef90_UPI00035CC774 UniRef90-S7Q2R9 UniRef90-UPI00034B1D65 UniRef90-F7VV43 UniRef90-A1S330 UniRef90_UPI000361CFFB UniRef90 K9WKV1 UniRef90-UPI00034C2ACA UniRef90-W1YYP0 UniRef90-K9QAX8 UniRef90-D6XFK3 UniRef90_UPIO0036C96C6 UniRef90-N0CRP2 UniRef90 A0ZBF4 UniRef90-Q8YX48 UniRef90-S4PFF9 UniRef90-D7DAQ6 UniRef90 UPI0004704D3B UniRef90-UPI000348791E UniRef90-K9XXM1 UniRef90 UPI00036F056B UniRef90- UPI0003479623 UniRef90-B1KHQ9 UniRef90 Q4PCA0 UniRef90 Q8RP99 UniRef90_C4JG00 UniRef90-K9XKZ2 UniRef90 W7HS56 UniRef90_A8XVQ0 UniRef90-A4HAR3 UniRef90-A3DMC8 UniRef90 UPI00047E2833 UniRef90-UPI0003607E90 UniRef90-M5GDJ3 UniRef90-U6KJ94 UniRef90- UPI0003765636 UniRef90_UPI000333E55A UniRef90_A4CFE9
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STVTVHTPHFE ${ }^{170}$

## VLFVHVPPAEDVGVER <br> 

VGHDHTPRV
GL F HVPRLHS
SLGI HVPPREGECTK

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EA $\square$ A EVIRETVKS L L
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A G H V H L P

ALF HVPPV
VGHFHI
CIFIHVPILTEE
C I F
CIIFV HI PILTPNNDD
AGHVHLPNTRR PAEHTDTVAR TRALVAVVA
VGHIHTPRVS GYDAETEAEILAQVKAMVIAAA

CLFVHVP $\square \mathrm{L} T \mathrm{DEN} \mathrm{\square QQ}$
AVFIHIPSDTEE KS LIEKSVESVKR DIGA DAV
TLFI HVPPFEGECTKE
A 1 HVVDPSCGKTEMEGGP』VAYS $\square M V Q A V Q V M$
ALEI HI PPV
ClfVHVPILTEE
AGHVHTPVPADEEVVTDEVFERDRADVVDQVRAVVEAVA
$V Q F M H D P P$ P
$A L F V H V P P F S E \square S G Q Q Q L S A A L Q L L S I L A Q R R T P A E A V S N$

TGHI HTPRIIE FDEKTNQAVMN QQIIEMLKLSLSQU

V L F L HVP A S G T A ESVQT G
$\mathrm{G} L \underset{\mathrm{~L}}{\mathrm{~F}} \mathrm{~V} \underset{\mathrm{H}}{\mathrm{H}} \mathrm{V} \mathrm{P} P \mathrm{P} \underset{\mathrm{D}}{\mathrm{L} T}$
 A A


GGHVETMVL
GGHVHTPVLTDPATGAVTDPAF $\square$ IDQVRE $\|$ VTVA $\square$ SA
CLFVMVPVIN
 ALLFLHVPASPQQFRKGAADDVKAVCDLIFSVKRILSGAGN A GHVHLP RTTAPAEHTEVLAR LREIVAAVVD

GGHVHTPVLTDPATGTVTDPQQNRQD VVAQFRA $\square$ LTA $\square E T$

GGHVHTPVL
C

GGHVHTPVLNTTEVTDPEFVRNR【D DIAQVRT\|LRVAAE

A G HV $\mathrm{H} \square \mathrm{P} \square \mathrm{L}$ S R
$C \square F \square H V P D L T E E$
GGMIRFPSVGED EEFEQQRALEDAL
GGHVHTPVLEFGAGNTDPATGTVTDDIIAQVRAIISVAA
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 V Y V T G F G K F G D I L E N P T T F L A K K L E E H P K V T E S S H V L E


 V $R \vee \vee L T G$
$R$ VLVTGFDPFD $\square R \square S N P S G A T A L A L D G T D G P A R V E T A D F$ $V$ FI T GYGPFATVKVNPSSDDAEGLKRHPDVAEVRYTEL

 K | I | L | L | $T$ |
| :--- | :--- | :--- | :--- | H

${ }^{1} \mathrm{~L}$ Lit V $\mathrm{V} \mathrm{T} \vee \mathrm{H} \mathrm{V}$ $R \cap F \mathbb{M}$
$R \vee L L S G F D$



 $V T I V V T G F K K F H G V A Q N P T E T A V S N L K Y Y V E P A G V T M G S C$ $L R V V V T G F D P F D A R R S N P S G A A A L A L D G T T R Q A R V E T A V F$ I LLT S F Y T WLD QQSNS S D D L L L E L A K MVCDDLI F S R R L
 $R V I V T G F D P F G L D D D N P S A L D G A I L E T G E G V A V V E A V L V$
 $K \ L I S G F D P F D T E R \square N \square S G T V A L Y F D G K T \square G A E L A A V I F$ $V$ V I TA F D GFEDLD YNPS S VVIVELLKE EIENVRFTVHKF VLAS GFDPFN $\square$ R QSNPS GATARVVQTA KGPVEDQTVVF
 RVLVSSGFDPF QGVRDNPAGASARVLDTPQGKAVVQAVSF


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

$\square$ 1 TVHVT GFKRFHGVAENPTER VVHNLLSFMEKRGLPKTVL $R V V V T G F D P F R L D N D N P S G A A A L A L D G T T G T V V I E T A M F$
 VKVAVT GNAP FLLE YDFNTSRTVRDAGPDS GRTVQQLLKY HR
 R V L I S G F D P F Q L D A D N P S G A I A L A L D G V T G P A R V E A A M F


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


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

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DVUSEKVEREUAD【IAEHGAGKVICHTG｜VHNDTGUITREVQ PVTYKDVDKTVEDTWKQKPYLVVHGGADRAKVPR ESQ EVSAAAAHETLAEMKTQNRTVCFLHLGVDASADGFLVERS PVRWADFDDLVEEALAEQHESADAVITLSRGRPRFDLEEW PVRWEDADGTV RTLRGSLDRLDLFATVSQGRGRFDVERT PVSYQAVMDVVP LLHQHPPDFILHVGVA GRGALRVERV PVRWRDAAGTVERALRPYLRRADLFTTVSQGRGRFDVERT PVRWRDVERAVTPFLAPGSSRVVGFTTVSQGRPKFDLEAD PVRWQDADGTVERTLRPVLPRADVFTTVSQGRGRFDUERF
$P V T Y Q A V P P V L P P S S D P G H P D F I F H G G A \quad G R G P D R M E R L$ PVRWADFDGLVEEALAEQHRRADAVVTLSRGRPGRFDLEV PVRWSDFEEMVEEALAPPHGVADAVITLSRGRPRFDLEVF PVRWGTVERTLLPAFRSGPRRVDAFMTVSQGRGRFDVERT PVRWRDVEQALLPHFRPGRRQVDAFATTSQGREGDFDLEQ
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PVRWADAAGTVERTLARRLPEADLFTTVSQGRGRFDVERT DTTYDDVRYVSRDUWEHVNVDF LHGGMALGWNQFRFETI PVRWQDFEGTVERTLKPYDPKVDLFTTVSQGRGRFDVERT DVSFEKVERDTADTIAEHGAGQVCHLGVHNDTTGDCVEVQ PVSYEKVENLIPTLYEDLDVDLFVHMGVSP WEHYQI ETI PVRWRDSEGMAEKTLMPHHPADAVVTVSRGRADRFDLEVY
 QVSVEECGRVSAEELSKATNVLLLHMGVDAQCDHLKLERT PVRYEDFDQEIESLLAPGYLGGQVDLGVSMGREHFDLERF PVRWDDFTHMVEEALTPRHRVADAVITLSRGRPRFDLEVH $P$ PDVFPASDLDADAK ERLRPDVVICCGMQTSRQKMAPERT
 PVRWGTVEHVLRPRFRPGPRRVDLFATVSQGRDRFDLERF PVRYADFDQEVESLLAPFYALNSVDLTLSMGRSDFDLEHF PVRWRDFEGMAEETLMPHYGATDAVITVSRGRGRFDLEAY
EAAGQGALGPLYELLERQERVILLHFGANSGSHRFALENQ PVEFD AIIAPFI ARHRSGAVISVGEAASAKRARVETA PVRWADADGTVERALRPVLPKVDLFTTVSQGRPRFDIERT PVRYTDFDNMVENALKPHYQHADMVMTVSQGRVG円DLEAF
PVSYKTVRALTPK TWAPTKYDFATHIGMAGPQPRWA ERK TVLETAGEGGLPALLKNNGQVIWLHLGVNSGATKFA：ERL PVRWGTVERTLLPYFRRGPRQVDLFTTUSQGRPRFDLERT $P I D V D L P G S R V I V K D N E T K P D Y V I C C G M V A S W D N D S V Q V S$ PVSYEKVIKKLIPTLYEDLPVDLEVVHIGGVMPGNYYRIEER
 PVRWGTVERTLLPVFRHGPRRVDAFMTVSQGRGRFDVERT PVSREGAEWAARRLASSNR TAAVIHLGFESRAKGLKLERA
PVNYKNFAGMIEKFYTPYQVDA II TFSQ GGEKE円DIERF PVSYETVAEKVPE LREKYPDEVLHLAAHSVKNRVLFEEK PVLWGTVERAFLPHLVPGKRDVDTAVTDSQGRAGRFDLEV PVVWGYFDQGIVEAARAHRPDLIMTLGQ GKSGGVCIETV PTLLKTLESSISQTNTNNEQVIWIHLGVNSGSSKFALERQ PVRWRDADGMVESALLPHRPADAVFTVSQGREGRFDLEAH PVRWGTVERTLLPHFRPGPRRVDLFTTISQGRPRFDVERT PVRWADAEGTVERTDRPYLSRADLFMTVSQGRGRFDVERT PVDYREVMQRVTRIWEDLQPEVVVHNELDASAKAMVLEQR PQHGPGARALLSEVAANTSPDIVVVCGFVGRGEP $\| A V E R V$ PVRWRDVESALVPHYTGDRPADAVFTVSQGREGRFDLEAH PVHYGHVLDTLPRLHEEGKPDVILHVGVGARGGDECESL PVRYADFDQEDESLLAPFYALNSVDLTLSMGRSDFDLEHF
 EAAGQGALRPLYELFESQGQVILLHFGANSGSHRFALENQ PVRWRDVEHALLPHYTGQRPADAVITVSQGREGRFDLEAY PVRWRDVEKALLPHLKADRNQVDLWITTSQGRDRTDLERH QISYEEV TEKIPEFWKQQFWNFALHLAPHSVKNRDYUEQR PATYTSULKIVPKMHLRNGYDLMFHIGLAGGRGP价LERC PVLWRPFEQGVVEHLRPGPGQVDRFATVSQGRPRFDVER PVNYTDFDQGVVEATGEDRTDMIMTTSQ TGRGKMDIEQW EPSYQEVSKKI PELWRMQYNQFALHLASHSVKNRDYLEQK PVLWGAFDEGUVAFAEQRPAAVVTISQGRPGRFDVERW MHVGVGQKESTAVE MHVGVSGLKESMAMEEQ $P V S Y Q S V L A V T P G L H A R N G Y D F M F H V G V A G G R P L R M E K L$
$P V R W D D V E T A L L P A L R Q G A R Q T D A L V T V S Q G S P R F D V E R Y$ PMEYEAVMR\｜VPGLHEGKGYDFDFHLGVAGQGAGRMEQV PVVWGYFDQGIVEAATARRPDMIMTI SQ GRPDQFDIERW PVRWRDDDGMVERVLLPHYTADDAVITVSQGRGRFDLEAH EVSAEGCKERLSAMHKTCFRDHWLHLGVAASKEEFQLEQV DASYEEVMKKIPELFTEHQ DFVLHLASYSEKTTIFI EQK PVDRVLASQKADATIKRDNPQGVICCGMAESRQNLTHESC
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 G $\square \mathrm{NLNRFREADNSGRILSNGKIVVNGPDLIPCSVDSEYVL}$ A PENNFPGLDVNNHHLEDGKAVLTNECKLCTKLDTTDIV AVNEALFRFPDERGWQPTTPDPELDGEALASLCERTESLL NGLWRGGGR DNDDVSRTGRAPVPDAPEWTRSSLPHERIL NGAWRGGFADNDNIGRTGTVPVTDQPQWTTTTLPYADIV AHKFGYNVEPDDPGDVPAGVLHIENFQEEVYSDVNVNNLI NGAWRGGAV DNEGACYRGPAPVAGAPQWTRSTLPMDAGV NGAWRGGFPDNENVARTETVPVADQPQWTATTLPYARUT AHKПGYRMKDTAGQHAPDEGVMDVHGPDDMFTAIDVEKLV WNGVWRGGGEDNDRVSRTGRAPVPGPPEWTDSSLPHERIL NGAWRGGGTDNLGQTRTEPVPVSEGGPEWTRTSLPVEEIV AWRGGYNDNEDVCYRIPKKTPTVRPQPQWVPTTLPTGKMT AVNEATFRCPDQLGWKPQDSHCVE
NGAWRG GFPDNENVSRTETVPVAGQPQWTSTTLPYQAVV AHRDGYNLPGDDGKLVDSDQLRRLGLPEMLSTSLDVKTAW AHNNGYQRI DDHAKYPDETDMECKIETGIDTNELCNNDN NGAWRGGFGDNENDGRTETVPVTDQPQWTSTTLPYKAIV
GCNELFSSVPDVDGKLINE GRRGSYNGRKDVDGKWPAGHGKVPADVQEIHTSDDVKADC NAAWRGGRPDNEDRLPADPGLPEPPPQWCSSTLPRRALI
AVNEATFRCPDEMGWKPQKVQIVPDGPDTRDRQNGMKSLE AHNVATFRVPDVRGAQLSGRELLPGQPEKLQT
PGKRRSVTAPDNLNVLSGGTKEAPSGDEFVEFSLPVAAMQ NGAWRGGGD DNLGASRTGPDPLPEGPQWTRTSLPVEHIV PRNDAAVCISGDIGFQASGEDSVSGEMPQCRAAWTTAALA ATPRYLVAQVYWFGYYLLDQPILSGKGLSYCTAVDGEKLV AGRARSDPYPDNARARPVTAPGLGPGPEFDRTTLPAEAVT
$N G A W R G G G P D N A G L S P V P V A V P G D Q P Q W T A S T L P Y D R T T$ PGLRRSATAPDNNPLIPSLLAAPGKGDEFVLIFSLPYQAMM NGAWRSGRADNEDRPLPGGMGLPDPPPQWCRSTLPRRADV
AVNEATFRCPDELGWKPQRTPIDSSGSVLHARQVLDKGL GRLWRTFNRPDHLNDDPPNHTEQTLDAPELSTSSDIRECA NGAWRG GFGDNDNVSRLETVPVSDQPQWTSSTLPAAAVA NGRRRSVSIGDNNNNAPVVSPSMPAGPEWLTASLPMARMS AKNGPYDKLDVLRKLRPE KKFVDGPNEIKTTLDFGKCI AHRDGYALRDDKENQLKDDDWVWKGCPAELRTDLDLDVIL AVNEATFRCADELGWQPQVRCF
NGAWRG GYPDNAREVPKGVPTVRPQPQWTTTTDPYAQLT AS ARKGSYNGRADVDGKYPENNEKVPKDVTE DSGLDVEGAC AHREHYKSPDVDGLLPDPSLSDETRPGSLSSSVMLDQLV NGAWRG GFPDNETAEADETIPVPDGPQWSD
NGAWRGGYPDNANVSPVGVPTPRPQPQWTTTTLPYASVV
GYNDATFRIPDERGYQPTGECI $\square A G N G K C F T A S L D L Q T I C$ YANYRSGSEG NNHQTEKGKPIMSGQPQFYETNLPVDKMI WNGAHRGTFPDNDRVSPEDVPRTDPQPQWTRTTLPVEAMK AGDWRG GYPDNNRVVPAATGWPQPADQFIETTLPYQQML AVNEATFGCPDQLGWQPQQ PVVLEDGGDSRSRQAV
NGAWRG GADDNERVVPEDVPTVTPQPQWSDSTLDRPAIV NGAWRGGST DNERLQPAGIPTVRPQPQWTRTSLPYAALLT NGAWRGGFPDNDDVASTGTVPVADQPQWTSTTLPYAAVT
 NGAWRGGSAAGEDPYASADVVDPDPTARLIASLPWRSIV AHKTGYH DPDAGDCLPPLVDGVAGFDEVQKTPVDVDGLV AGAWRGGFPDNRGPVPPADGWPQPDVQFIETTLPHEKML PGLRRSSTAPDNNPLVPSLLKAPLMGDEFVLFSLPYQAMM
 AVNEATFRCPDELGWKPQVALVPLFPFFI NGAWRGGGTDNVSGQTPIPEGVPTVEPQSQWSSSTLDRQA NGDWRGGFPDNEDACYRGQAP PAGPQWTRSTRPGARMD AFSTGYSNPDDTDEAPSLPEMKCPKDCEELSRELNEKCGL ARRAGYALPGDDGQLVDAAELERLGLPAELHTALNVEAGC
WNGRWHQGTDNNTEVRGEPITVAPGPEFVPTTQPYAAZV NGAWRG GFGDNENVGVTGTIPVAD
AANARGGSPDNNRNQQPSHWPQPYDSPEWTETTDPYEAMD AFSDGYSTPDHKGFVPENNKTTCDTEEVLEYKMSCEELS AARWRGGSPDNNDGPVPDARGWPQPALEFVETSMPVRKMV AHNFGYCEKDLANYS
AHKNGFRMKDADGQ
NGAWRGGSMPDVRVSRAETVPVAPGPQWTVTSLPYRA!V AHKLGYQMKDATGKLAPVVTRHPGDFPAA
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AFMSGYTK PDKNEFDPEGNRKSESKEQELVTKVNVDDLV ANK

DTKCLST TVNLVDLM A WKEGTVKSVDERMSEPDEYYMPPDGPCWAVSGIDVDRA A NGAWRG GADDNESTRPEGFPTVTPQPQWSDSTLDRPAIV


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UniRef90－J7LKA9 UniRef90 ${ }^{-J 7 L K A 9}$
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KALSEDNGLTAVSGGGGGYLSNETSYRSTRDQNQDGTKVP RTVIPAGEGEPVTRPQGDYLSNEIAYRNTLLRDRTGSGAL GRLRAAGLPVTYTAGAEQYAEMATNYAALDAVSAEGSRPV EGGLTETEGTAPVBDAGKFVCEGLYYQLLRYFQDYSPTTGG AAVQTAGGTAPVDRTGGGYLSNEVAYRSNRLRAGLAPHDP KAKDNRGVTALESGTAGGYUSNEDAYRATALRNKLGGTAP EG AAGRFPIVDNTGGGYLSNE DAYRNTLMRDTAGRDIP RTSKHPTWKTSISYYAATYCPTY
RLARVAGLD VSDDAGTY ICNTTT ALGYTHLR R AAPTGRGGPTPGSTGGGNYLSNEAYRATLLRDRLGLDLP QLSSSS RLNTSDDAGLYLCEYUYYCSLGLKSEGKKAT EKWRGYAPPGLV
AASTPAGGSSPVERPGGDYLSNETGYRATLLRDALKLKVP AE TAGVD IVYDCGGFVCEGLYYSVLDYLYQSQLPIP KDLEKAKKGPRVSTDAGLYLCEFIYYNSLA
ERVQDQPDNLKVSENAGRFLCEYVYYSLLRFADRARPRP AA NTGPFPVYDNTGGDYLSNETAYRNTLLRDATGRDVP EAWSRDGTYEAWSRDAGTFFCNEQYFRTLLARRSLRPPPR KKLQNDNDDENTSTNPGRFVCNYTYCLSLNQSQTNTTKTA QTLKSPHKDVNVKNTGGSFFSNELPYRVAHLIKTKQKDIK EDVTEKGLTVGKSQEPGRSVGGYLYYLSL KIKREIN A AVDPTPGSTAVAGGGGDYLSNESAYRTTADRDABEADTK SAHPGTGTAQCRSDSGGDYLSNESMYRSNRDRVGLGTEVP

EA TTGEPFPVVDNAGGY【SNETAYRNTLLRDATGLDTP AAATGAGSDTPVVRPDGDYLSNEIAYRATLLRDATRLTVP AADPAGGTAPVVRPDGPTYLSNEIAYRATLLRDRDGLHLP KLVTVGGAQVVYSRNAGRYVCDYTCYLSLHH RQLAGEGYAVEPAFTVAADFQNAAALAALEYVHDHEGGD EATSGAGGTEPVVRPGGSYLSNEMYRNTLLRDATGRDDP


IVDATTGPFPVIDNTGGDYLSNETAYRNTLLRDATGRDTP AAPVTTTCPAPPSTGGGNYLSNEIAYRATLLRDALGADLP DGEKYGGLLVEKSDDPGR QDTRQLGZDTCVSEDAGLYFCEFRLYSSLAHEAWAAKRGK GADTGAGQTAPVTRPGGSYLSNEVAYRTTLLRDALRAD $\square$ P
AAWPAGTWPEPTSGPGGSYLSNESMYRSNRLIGMQAWDVP KEDNEKGLLVKKSEDPGKFIEGYTYFDSDH G ESPWN DAGTAPYPVHFNRSAGTYLSNESMYRANRRDGLGATGVL A AH T
NS S A A CNLKFHVSRDPGRYGCGYTYFKSLIHNTQ

DA DTGRFPVRDNTAGNY乌SNEDYRATLLRDAVGAR】A
ATPTGSGTGQQVCRTGGDYLSNESYRSNRRDGLGATAVR ARVRRPNGPPPASGAGGDYVSNEDAYRNVLRDATGRSIP KELTEKGLTVEKSEDPGRFIEGYTYFLSL
GNLAGTV SDSHDAGKFVCESLYFDVLSYDQSAKPDDP QQTEQAKDEVRPHPDAGNYYCGFISYESFAQAFVNRYSAK EAVSGAGEDEPVVRPGGDYLSNEVAYRNTLLRDATGLDLP

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GVF\|HVVDP ${ }^{170}$ RGKTESEGGP ${ }^{180}$

TFFLHCP
$A G H V H L P R \quad V D D L G E N A V V L T Q V R K I V A A V A A A C R Q$
 GGHVHTPVLQFGAGNDPATGAVTDAEFVRNRRDIVTQM
GGHLHTPVLDGLPAERSADESANDAATVTQARAVVSVVAH GGHVHTPVLTDPATGTVTDPEFVQNDIVAQVRSIVAVAAA $A \backslash F V H V P$
$V$ FMHCPPAGQPV STQEVIDAVKK DIFWVCK AGHVHLPKVAS


GGHVHTPVL
VVFQHLPQSHD
TLFVVPDFNKYTSAQ
GGHVHTPVL
 $A G H V H T P M L E D R T D D P A V T G P R A D S T E Q L R A D V M A A V$ CVFVGVP ILTPD

TGHDHTPKTFDDATNKA $\quad \mathrm{V} N Q ⿴ E \mathrm{EAMLK}$
SGHVHLPKTSRP HEHTPVLER TRAVAA
VGLVHVP DQEIVMSSTVAEVLRAF IVELAD ClFV HVPVL
GGHLHTPVLTGLPTDPRLLT GPEFERNETADTAEVRAVLE GGHVHTPVLHEPATGAVTDPAFVAQRLEAVTAQIRAL


FAFVHVPAAQQPTDETMS
GGHVHTPVLAFGAGNTTELTDQNRLD IIAQVKE\|IRVAAE AGHLHVPVLRFDVSN
CVFVHFQKLSSHLDTSPNVSS
GGHLHTPVL


AGHVHTPFLPGDA $\square$ T DPNRAA $\square \square G Q \square E D \square I A A A V R A$
GGHLHTPVLPE G

F GHVHLPYDPNLVDQTDKEVQKLLERLKDAL

A A
GGHLHTP VLGEPSSPTAVTDPAFEARRKA $\square$ A
AGHDHTP\LHSEAVTDPSFEEM RDS DSEQVEA VVEA $G G H L H T P V L A D N G S P D G R V T D P E F E R A R Q Q 1$ TA QVRALLG GGHLHTPVL
$T A L V R V P P L S$
GGMI RFPSVGE GEFEEQLRADEDAL
AGHIHTPVLHSDAVTDPSFEEM RDSUTEQTTLIVEA VMFL HVPPVGER
GGHLHTP VLGTPADPSADTDADFEARRAAD
TGHIHTPR $\square$ S G FDAKTNQA $\square M G Q A M L V Q A \square A E \square$

AGHVHTP ILHFGADNDGNVFERNRAE VVDQVRR\VAEAV GGHLHTPVLGGLSDTDRDELSNPTEANRKMINDQIRALL $T L V V$ VPPFE
ATFVHLPQAHDE
 GGHVHTP LLLFDPANSTE $\square$ TDPVLEGNRRDITAQFRAVLA

GGHLHTPVLGQPA
T $\square$ F V H VP P F S S F V V D
ETVANALRS I I
GGHLHTPVLE
GGHLHTPVLGEPA GSTALTDAVEARRTADA AGHV HTPVLSSGGSTDPGLLTDPAAE\|VEQLRTVVGAAV

C 1 FV V VPVFNSENTD
A I F CHVP
A GHVH TP ILLH LIGGGSEVTDPAFERDRIVAQVEATVAAAL GGHLHVPVLGFPDGNAPSDQKFELDDISQALQLVVEAV

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$T$ VA L VT A A G A

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

## VIT GFDPFRSEPSNPSGA $\square A L A L D D G E N G P V E D Q A A L F$

 $R 1 A L T G F D P F G D T R S N P S G A A A L Q L D G R Q G R V L V E V A V L$ $\square H V L V T G F G P F K S N L V N P S F L I A S T P T S T P R R \| L I H T H P V E T I G A Y E$$R \nabla M V S G F D P F D G A G \square N P A G A S A R V L D T P S G P A V V Q A V S F$ $\square R V V V T G F D P F G L D D D N P S G V A A L A L H G H G R T A V V R A A L F$ RLLVSGFDPFGGNRSNPAGAAALHLDGTHGKVAVQAVSF $\square N V L I T G M G P Y P G G R \square N P T T V L P K T L E P N T P R\|H\| T T L P E$ $\overline{M N I L E T A F K G G K N S S A I L}$ LI DKlTGD RILVSGFDPFDGNPNNPSGATILSLDGVTRQAVIRTFVL RVLVSGFDPYNGERSNPSGASALQLDGLFGDVLVQAVVL

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AF LSGY SN ${ }^{90}$ R RNGKVPKNFKAKMDSEDE 100 AFLSGY SNPDRNGKVPKNFKAKMDSEIEWKTRVDCEEV AGAWRG GFPDNNDAVPPAAGWPQPAVQFIETTLPYARML AHKHGFFAMKDAGGQAPDEGHGTHDGPEDI HTDVDVAKLT AGAWRG GFPDNNNVVPPAAGWPQPDVQFIETTLPYSRMC AKKHNT ACKFRG GYFDNMCN $\square$ P $\square E T K Q \square P N G K E$ A ILEGKKGVTDYYY NGAWRGGALK NG GAADNESVGTEEMVPVPDGPQWSDSSLDHPAIV A GRARSDPYPDNDRALPVDAPGLGAGPEFDATTLPAPSMI AGNWRGGSLDNNDTTLPYQAMDDAGTGPWPVFLNTRVRVW AHNPG

VNGPEEVKARAP LRRAM GRKHGYNSPDADDELCPVFGKGYEEFPDEMYTPVDCAKLI AFQSGYHQKDEKGYLPEGNKVSCESVDNTDET IIDCMDVV SYTTGYCK PDFANRCDPCDKDTDHGKEASSSCEQCPALTT NGAWRG GFVDNE LVCPAGVT TVSSPQPQWTESTDPREAMV A ARWRG WS PDNNNAQPSTEFIETTLPHERMTTTPTGDYP AH RDDYGFTDVDGQV GHNKGYNK PDVTSKFPKDFNCDIGGPDCDLSHDNMADK L AHRDGY LMSDLKGRSGYEDWRELDGPGVLKSPRPPDDAW AGAWRG GFPDNNNAVPPAAELRLDRGHADPAADATAADV

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KSFCPPETDARVSTDAGRY LCEF $\square L Y T S G A D A Y Q A D K D R N$ ERAREDSQSHHPDDDA RD A AGGFPVHDDGGDHDANEDAYRNTLLREAAGRDDP DTAKKGEPDCHESGDPGDYLSNESMYRANRLLGLGRTALR EHVQGMDNGKTVSTTGGPYLCGF $\square$ NYESLANRYVLNLKPN RYFEKRNDKCTVSNTSTKYLCNAAYYDML

A A WP TALNPRLCEWPAGTYLSNESMYRSNRLLALGATDVP

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180
190
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IGHI HI SDSME
I A F HI H
AGHVHTPVLDFGPGDGVTDPEFNRAA IVGQVED IVAAAV GGHLHTPVL GGHLH!

V S L LHSPSPQ LVDPE LQAQS $\square$ A $\square$ MA Q
VLFI HI PPVEQP
LSTEYCTEALRRSDSWDCS SII FI HVPPFGGECTK EAVVNVVKEII DA
 GGHVHTPVLE
GGHLLHPVLSQ
VTFFHVPASC配EDETGKAVALIKALVTSWSE

A GHVRTPALE
 VL $\mathrm{F} \square \mathrm{H} \square \mathrm{P}$ T L
GGH【HDSAL


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jnet
conf
sol25
sol5
sol0
jhmm
jpssm


[^0]:    lupas_21
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    jnet
    conf
    sol25
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    jpssm

[^1]:    lupas_21
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    conf sol25
    sol5
    sol0
    jhmm

