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MLKNDDPALNADVLHALRAMGHGDTLVISDTNFPSDSVAR $M L K G I S S D I S P E L L K D L M E M G H G D T I V L A D G N F P S A S H A$
 MLKK GI P P L L S P ELL K VLLAEMGHGDEIVLAD GNFPAESMGK MLK K L D P L L NADI L YAL K S M G H GDRLVICDTNFPGDSVAR $M$ L K GI S K I L S P ELL K K L M EM GHTVDEIVI SD GNFPA GTY S Q ML Y G I S P L I S P DLLLKVLMEMGHGDEVVLGDGNFPAAS HA $M L K N L D P L L N A D V L H A L R A M G H G D E L V I C D A N F P G D S V A R$
 MLK QL DPLLNP DI LYAL SAMGHGDELVI CDANFPADSVAR $M L H G I D P A L N A D L L Y V L Q A M G H G D D L V I C D A N F P A D S I A R$ MLKNLDPLLHADILHTLRAMGHGDEI AIICDANFPAESVAE MLK GII P KI I SPELLK KL MEMGHGDEIVLADGNFPSAS H M L K N I S S P L L N A DVL Y ALL K A M G H G D Y L V L S D L N F P S D S I A R MLK K I

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VMGAPD QLE
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1 V G S P D EI P V VKGDPIVPTVE
$V \vee P G$
V V G E P D T I P VVKGDDVK $V \vee G G P D V K P A I W E E Y K K I I K N$ $\left.\begin{array}{ll|lllll|l}V & V & G & D & P & G & E & L \\ V & P \\ V & V & G & D & A & A & A & V\end{array}\right) P$ V V E G D P VKT PI WDEYK T I

| $I V$ | $G$ |
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## V

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 AVEGDVLIPAVEOOYLKAV ODSNPNDSSVKRI ERFAFY




 $V V G D P A A E Q P I F A D F R A I L A R H E G P A A K L G R V E R F D F Y A R$ L V H N DKKA T P I WE Q Y K S I L Q Q A E GK D IGFEMI ERFAFYER
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## QUERY

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 AKKA Y AVIA T GE Q A LYA N I ML QK GVV ARNAYAI I ATSSESALYANLIL K K GVVV AK Q A Y A I V T T GEKALYANVI L K K GVI A S K A Y AVVTTGESALYANI MLQKGVV T K S A Y A V I A T S E A A L Y A N I I I K K GVV V A S K A Y A IV A T GE S AL Y A N I ML Q K G V V AKKAYAIVATGESAIVYNLILKKGV AKKAYAIVATGETALLYANILIVKGVV ARGAYAVIATGESAQYANLILKKGVI AKKAYAVI ATGETADYANVLLKKGVV AK DAYLII ATGETAIYANILLQKGVV AKKAFAVVATGETALYGNLILDRKGVL AKK A Y A V V A TGGEGA Y A N ML LTMKGVV AKGAYAVI QSGERRFYGCF FRKGV AKEAFAVI QTGETRLYGNIILKKGVI
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 MLKTIS SPLL






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 $V V G A P D R L V D A H H V M Q R V A D E A A G G S V T M E A L A R F D F Y E A$
 IKQANPT QEQQLLEMDNKLAQTQGRQQEDEYVVHSEFKQR PVDQPGTDLSVHHDVLAACKKAENAEVGHYVI ERFDYYAA PVPGDSMDPDLLADCRAADARHAPTAAPIVFMERFAFYER $V V G D P G G Q V P I F S A I Q R V V D N A E G R P V K I D A D E R F A F Y A E$
 VKQDRDAVDPVHAEMDECCARHVPE DKVVPLLDAEFYER IKESNAELEDI LKN KFI EKEYV SHERFKQL MMPVHQALTQIWDTYKE VVEGEGRNVADTTVERFEFYSR PNADFGREPDVWDKYKDIIAKHQK VN YEYLERFAYYDR AVEGDSLDPQVELRYLQALAGADARQPPVQRIDRFAFYER AVEGDTLDPSVEDRYLTAINTNN【DATMIERI ERFAFYER
 $V V P N D K A V P A E I$ WDRYAAI DQESFPNYHLENLERQAFYEY I QHMNPQLHADVLSRDEQLQQHQGNT DT H Y MPHEQFKQQ FAEVSPTHHQALLABLDQESAATAKPIQQSYLSHEEFKQR
 VVDPG A AKEEQLWKAFDAVLDADSGEDARVVAAAI ERHAFYER FATVSPECHQALLEALKQEEQRCGKTFSI QYVSHEAFKQR
 VVGDPHKRMPVMEEFDA IIGRYEPGMKLKLVERFAFYEK AVSGDELDANVEMKYMATIAKSLTEQPQLERMERFDFYDR KEPRHAELEPVWGEFKDIVAKYDERGAECGMISRKEFYKK PVDASMGVPPAVAADQAEVDRAEGGSRPVPTVERFAFYDGD AAVEGDTQDPAVEARYLTALDFADAPAQPVTRGIDRFAFYQR TTPLYPHRPVVWEMYRSLFDEAGEKDKDFLFLDKSAFYER
 VVGAPGEVPPIQREVQAELERAVPGLTMQGLERFAFYDA $V V G G P D E V P E V Q R E V G K L I A D T A A T V M V G I E R F A F Y E R$ LMPQDQRKTPI WWEYKELVARHDERGADIGQI ERFAFYEE $V A G D S$ LDTAVEARYRQALFGEKGGQEISRADRFAFYDR
 $V$ E E G D Q G IDP EI WNRF QKVAETYQ Y GVKMLQI ERQEFYRQ

ASPDGRPEI YDDFDQVLETAAGAPVQVEEIDRFAFYDR C P S E T P A I F G E F E A I I E K K A E G A R K I A V VSGKPE GWQSALQRDGSLVQQAGHARADQCQATERFAFYDR I K N A N P LIE K QL LAI MAQLE CQQGNADQID Y LP H S QF K Q Q




 FAETSSPDLY QALMAEVEA EQARCNKTFRV QYVSHEQFKGR $V$ G K D R D A L D P V H A E VI A C C A V H E P K Q P PV V P L L GP D F Y P R




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




 $V$ GENPE ELHDI HQEMLDMTCNKYAPN KPDLTALVGNKFYDR
 MANGQGQRPTVVWDFARAVSHHVKKGESCGF$I \quad D R F A F Y E Q$ $A A V A G D E E D P A V E Q R Y D A A L A G H N P G V S V T R D D R E A F Y E R$ V V G E P Q TVVP P VI A E S M P T L D A L G HK P V




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| UniRef90_K6DNZ6 | T K E A K V V I R |
| :--- | :--- | :--- | :--- | :--- |

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UniRef90
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MKKT KMIINSELLSYIVISQMGHTDSLITIGGDCGLIPIIPSETK ${ }^{20}$ MKK HGMLNSSITKVLADLGHTDWLVI ADAGLPVPKGVP M K K HGMLNRELAGRFAKLGHTDQVVADCGGLPIPDDVP KLINSEVSYTHSKMGHTDSL VLRG
 AEMGHTDMLAIAADGLPIPVNVK MKKTGGLNAPLSLQTAQLGHTDFLTICDAGDPリP MLIG DPSLLGPELLAVLRAMGHGDEIAVDGNYPAEEQAK MKK DKILNSELSYAI AMLGGHTQTIVI GDCGLPDPENVK
 MKKTVTLLNPALSALVAHCGHFDELTICDAGLPIPANV MKKGl

MKKT MKK MKKGV MKK HGULNSAHSEKVLARLGHTDS ALARM
MKK HGVLNRDTAR mKk HGIVNSHTAKVLADLGHTDYLVVIADMNFPASSGCQ MKKHV LLNAPLSHVIATMGHTDQLVICDAGLPIPA MLI GIPSVLGPELLFTLRAMGHGDE A VDGNYPALEHGR MKKGV MKKT $\qquad$ MLKGDNPLNASLSHHIATLGHTESLVICDAGLPISNQV MKK MRLLNSEISYEVAKMGHTDHI CIGDAGLPMPAGVK MKKN GlLNSHISKLLA GDNKVL MKKN GILNAPLSRVIARGHTDYIVIADANFPASSICA
 MKK QGTLNSHISKVLADLGHTDTIVVADVGLPIPDGVK MLKGINPLMTPELLTALARMGHGDTI AVVDSNYPAYATGR KLLNRHLSKVASLGHMDEIVLADAGLPVPANVG MKK HGALNSELDKLLADLGHTDQLTM GDLGLPVPTGVK


MKKN
MKKG
H GLLNSHDAKVLADLGHTDTVVADCGLPDPEG

 MKKGDP LSAEL LFTLRSAGHGDVI AVVDCNEPAVECAS
MRKT MKKT PLLNSSSUCEVVVS

MKKG
MK K MKKT MLLK GID MKKN

M K K
MKKT MKKN

GILLNSQLNRVISEMGHGDELVLADANFPTSSDCQ QGMLNGPI SNVVLAQQGATDTVVIAADCGLPVPPPGV GVIHSELAAVISSLGHTDQVVVADCGLPIPEGVK




MLK MKRT
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$\square G \Pi M N S N T S A R V A D M G H M D W L A V G D A G T P V P E G V D$ MKK G G GLNSDIAKGLADLGHTDLEAVGDCGLP
LNRDIARLA G\|MNSEISTIISKLGHTDRIVI
 HGIVNSDISKVLSDLGHTDQ:TVGD HGTLNRELAGIVFAKLGHTDTIVIA GLLNAPLSHAMA STLLNSALSTLVAQAGHLDE ATVINSEVSYVIAKLGHFDAD MKKㄴTㄴ

$$
\begin{aligned}
& \text { GLLNAPLSHAVSRMGHTDGLVVCDSGLPFP }
\end{aligned}
$$

 R


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| :---: | :---: |
|  |  |
| UniRef90-UPI0003 | IKTKNAELSKTLTNTL |
| UniRef90-UPI00047D0 | IKENNKEIYKEİLERF KDПKIN |
| UniRef90-UPI000393DBB1 | LVDSDKQLAVPVWGTYEQLLRQAGSQVS |
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| UniRef90-S6EIL | DERQNPSUHQALLQKLEQLARQQNNEDTVDYVFHEEFKAL |
| UniRet90_UPIO004670913 |  |
|  | KENNTEUNDYVFSKL G |
| UniRef90-NOA |  |
| UniRef90-D3UY14 | MIDHNPQTHEQIIKRIAELETKQGNA |
| UniRet90_G6DX93 | R Q |
| UniRet90 W4FV26 | QVHSSDDAPIVH EFQMILNHASSKPAA |
| UniRef90-R1CHK7 | MKEVSPHMYDEVMKVLRRIEEKDNMQ |
| UniRef90-R7VOK8 | RVPEDEAKNP\\|WDKYQDVVNKAEGKK |
| UniRef90_K9GTW5 | ERNPAVFDGLTTLLEK】GRAQGAA】AVERV |
| UniRet90 UPI000289F5F7 | KVSNPENASFETLFSEEA |
| UP100047BB794 | ENNPR |
| UniRef90-UPI0003343D62 | LEPRDVELQTPLWGSYQS\LRRAGCESPLGRMDRFAFYQ |
| UniRef90-Q9K6K0 | VKEQNPAVHRALT GTNTPI |
| niRef90-UP100027F7 | G |
| UP10003 |  |
| c4 | ETSPA |
| UniRef90-UPIO00379B5F1 | ( ${ }^{\text {dPTLSDPVHGEIEAVC AHRVPGFAVVPLAGNTFYER }}$ |
| UniRef90_G8Ps |  |
| UniRef90_QOISS1 |  |
| Q21X77 |  |
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|  | LVDSDKQLAVPVWDTYAQLLSRAGSQSSLEKMERFNFYER |
| UniRef90_C1D8A6 | S |
|  |  |
| W2EDA9 |  |
| P100040F9 | GAAG EDMREVTRDVLDAAARTEGRAI HGAPLLDRFDFYER |
| AONM | EDLVTQEVRLLAHWAADAGKP |
| Uni | ENA |
| UniRef90 A1VQ10 | VSTEPPYLSALQREVLDLLKDSLLP |
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| UniRef90-10.Jc3 | - |
| UniRef90 G5KD41 | 1 KSQNP |
| UniRef90-UPI00035DD4E0 |  |
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| UniRef90-A5G214 | VVGDAAAVPPAVAEFRQUAAGAGVGAERM |
|  |  |
| UniRef90- B3T662 | GKPGELVGCHKDMRNTLDETSDRRWETGS |
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| UniRef90-UPIOOO30F0942 | ENETL Y YRVKNDFPTLEMV |
| UniRef90-B1YL34 | , |
| UniRef90_UPIO00412BC24 | KNADLYGTLKNVF |
| UniRef90-R61G73 | KNPA TWQKMQELFEGKE |
| UniRet90-A3Y6K3 | AQSPELLHGELMSLIANEEIJKLDKPVQVTVSHEAFKLR |
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| UniRef90-A0Q2 | VSPETF |
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| UniRef90-UP10004086C8B | N |
| UniRef90 C9Y6Z1 | VSGQPEGRSALOREVLETLEPGFLQGQTAEPIERYAFYER |
| UniRef90--10 HQ21 | SLDRAGGACPGW YSRHLALTPRT LAMEDFKRL |
| UniRef90-UPIO003066447 | MSTQNQDVMQYMQERFT NTD OQEVSHEEFKHL $^{\text {S }}$ |
| UniRef90-K0. | TKEQNPSIHESLQKD NYPAAYV |
| UniRet90 UP1000225B875 | KGHNSMLHAKLRKDYSE P |
| UniRef90-E4L4L4 | DSTEVEYVSHEELKGL |
| UniRef90-C6BY79 | K D |
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| UniRef90 W7ZUF4 | $2 \mathrm{~N}$ |
| UniRet90_O7NTN5 | N |
| UniRef90 U4WH19 | V S P ALLY |
| Ref90-Q3K3R1 |  |
| UniRef90 W4QGY6 |  |
| UniRef90 K8E678 | S NQKQLKQ |
| UniRef90 G8LVS6 | DNPGLFKKly |
| UniRet90-UPI00037FEF22 | AHNQSLDQHIQNL NLHTEYVSHEAFKQQ |
| iRef90 D3P2J7 | MATVNPSLRAALAERLDRMAAAQGRALALEEVAHEEFKRLL |
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| UniRef90 C61 62 | , |
| UniRef90-UPI00042BCE7C | LVPSDKG |
| UniRef90-D8MCV6 | NP DILEQINRRFDGD |
| UniF | P |
| UniRet90-R9NAS |  |
| UniRef90-U5MT14 | LENENLSLYEQ\\| KKE\|ENVKITVISHEELK |





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100
DERFHGL110
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EEFKRLL
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KASLDNV DNEFMPHSEFKEF ASDELSSLMQREVDFWASETGKEI TVSRDSHEAFKHR AMERNGGQLPAWCQLLRAD | $N L P E E P G V P E D W A Q Y R A L L N K Y D G G F T E F E F M D R D P F Y E T$ |
| :--- |
| $I K E K N P S$ | IK KNNGELHEQLMELLL

FETASPVVGVYMERLLEAVEKDNG
IT DKQPSALT TLEA
IKEFNPELLLENDKKVL
$\square K$ T Q NPEQLENDKKVL
AVERAGGALPGWAGAL
MQSKNEEC WQQMHKDFDSKE
MK DNNKKVYNK LLSMF
MIGQNEAAYA FMHRTF

I
MK TE D S Q N LLPA L FQEMQQL


$\square T$ E H N E Q
$K$ VSND $\quad$ YE N I N N S
 I K


## 1 <br> 

I KQQ P AEVARDCE

VQNPKMLTADKKRL
$A L D G D G D T K K L P G W Y P Q S L \quad G \square E P$
ALDGDGDTKKLPGWYPQSL
I KENNPE ILLKELENRFS
I VPQNPEMAYAMQQRFSEDM IVTVSPQMNEEDLRRF

1 KEKNPVMDEK\LKS LEE EVVAK

VPDNDESNPVWSDIKVVMEKY GYKVDAVGT $A E G G \quad E R L P V Q H E L V G A A A V A A D R V G E$
 LPDHS PQ La QQi EAL

KDTEQFVSHK LLKAR LVLD SPQLAQQ GALVDKRTLPHA


AVE QPGGTLPAWCEGQ
VREHNPEVTA
MKQQNADAHQF $\square A S T F \quad R \square D G$
IEEMNPKLHGY IGKEKL
$M K T Q N P K Q L T A V K E K L$
VPDADSESNPVWDDVRAVVEKHGYP
D D S PA L LEGIHK
$\mathrm{V} P \mathrm{~S} D R E Q T P V W P S Y$
$A$
$V$



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

1 RVKNPAVLKEI QTLL

$\begin{array}{llllll}L A A & A\end{array}$

1 K A Q N P N Q Lie A $\square$ KKII L
I HTEN AAMFAQIQSIVGO
SAEHN
A A MF A Q I A Q M A S
SAEHN A EMYNK $\mathrm{D}_{\mathrm{A}}^{\mathrm{A}} \mathrm{A}$ NVV R

TREVSPQTYHK VDLLK QYN
MKQHN
1 KTYN






|  | $D Q P D T V T D V A A A V S R \prod A T A A E G R E \\| V$ |
| :---: | :---: |
| UniRef90 ${ }^{-} \mathrm{H} 1 \mathrm{X} 6 \mathrm{H} 4$ | I K T A N P E QLA AI K KVVL |
| UniRef90-G0GEK3 | IK T R N Q K L HAKIVVERF P P TPPI A Y V P HEQLK L L |
| UniRef90_B2IKF4 |  |
| UniRef90-E7RG97 |  |
| UniRef90-V5XTJ3 | I KKENPD ILLEDQKEM P T T P T T F P P S EMKTE |
| UniRef90-UPI0003B4261C |  |
| UniRef90_UPI0003A0CC88 | ILLQKRPPALEHLEA L L L Q C L GQRRLLSHEDFKAL |
| UniRef90-R7RUF7 |  |
| UniRef90-W2DKE4 | I L L K Q P ALA DLNALDAPGDLGERRLLSHEEFKRL |
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| UniRef90-UPI00028859D1 | MSAENESLLYKEVHELI R T T P F EVVSHEQLKQL |
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| UniRef90_C9KQ30 | I R T H N EPQHAYLQQKLL K GVPAEYMPHDELK T F |
| UniRef90_D7C1Q2 | V R E H N P A T A L L L E L F P E S A LELVPHEDLK A R |
| UniRef90_M3DWH9 | $V$ R D A P A A S L L S GHFPDLAYVPHERLK Q |
| UniRef90_UPI0004696FAE | I K S Q P P E Q L N I Q A Al |
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| UniRef90-R9MTH7 | I VENNPELLSY\KEKLD G GAESEMI SHEQLKEE |
| UniRef90_UPI00037955DD |  |
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| UniRef90_U1LXJ7 | VFTENEPDAKALT D R F D TiVKTCSHEAFKRE |
| UniRef90-K8E8T2 | LVPNVQLMDNL A A Q |
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| UniRef90-D6GRT6 |  |
| UniRef90_Q5FJ20 | I K D S NPKQLENTKR L |
| UniRef90_UPI00042925F9 | I K VK N P DLHSAI LA WVET Q S EAKPIMVDYI THEALKA Q |
| UniRef90 UPI0002491FA1 | KTENPDMLKQI K ERLL PETPI EFI THEELKS D |
| UniRef90-UPI00036DDA80 | A Y D DPSR@LP ITFAEFSE\\|VDQYAP DTNVHA\|P |
| UniRef90-19M6N3 | MEAVSPKMYE GVKALL G AVPI HRCSHEEFKKK |
| niRef90-C2W453 | VTMHNAVVNQEVEERLL NGAAFEYVSHEEFKEH |
| UniRef90-N2JFT9 |  |
| UniRef90-T0D027 | $V \mathrm{KIIS}$ P H M H E E IL S L F P S DIQVTYMPHVEFKRK |
| UniRef90_S0KAE1 | $1 \mathrm{KTHNPEMLAKDKE}$, |
| UniRef90_GOI9R0 | I KEKNKEQWQAVLDLLE S NIII EYI SHEELKAM |
| UniRef90_D6AZT3 | $V \mathrm{RTVAPATAGLL}$ A E RLL |
| UniRef90-F6AIR2 | TLEVAPVGLEAI ES LTTAA G L L G ERQLVSHDELKA A |
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| UniRef90_UPI00046A60EA | IK T Q NPEQLKAILEQVIKK VPI KFI A HSEMKAV |
| UniRef90-17JZZ9 | MIT Q T T LYQ TLS A ENIEI K T T S HEQFKVQ |
| UniRef90-E4LAP8 | I K T K N PVQWNAL R K LIP P ENKYKW I I L N N HEEFKEL |
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| UniRef90_UPI0003159C4A |  |
| UniRef90-D6XZQ8 | I SEHNPGLEEELDALGKEMN |
| UniRef90-B5QLP4 | IK T Q NPKQLEQI QQL |
| UniRef90-S6IQX3 | ML R V Q P A L CVI E G L L D GELGEQRMMSHEALKEL |
| UniRef90_UPI00047A9A1D |  |
| UniRef90_UPI000303C59D | MIKQNSALL YVKLLAENI DMVTESHEKLKMY |
| UniRef90- D5DCG4 | MKERN QKAYELMEKQNI LVEEVSHEQLKML |
| UniRef90-D9TQI9 | M ID K N NELYYLEVT K L L Q D |
| UniRef90-K4R9V9 | VREA NPAASALL DKHFPKPTLVSHQQLKDM |
| UniRef90-K0T8W6 | GVEMPPAGKEVIDEASSTDRRDCGDVEDEPVDRFSFYEQ |
| UniRef90_B0TIM6 |  |
| UniRef90_G2FYL2 | MGSSS A HKRAELVAKLPSVQIKALSHEELKALL |
| UniRef90-UPI00046F376A | KTEN Q T Q Q M LEAEFPHLI EEYI SHEEFKKK |
| UniRef90-Q67RD6 | TAERNPAVV QEGLT R L L G GVPVTTVSHEELKE】 |
| UniRef90_T4C0L8 | VA EGDDCPGPAVWGLYY HCLD AV GCEDRFEMLDRDAFYEA |
| UniRef90-R5ERS4 | AKEANPAF YQKLHEWAKLINGVEVVEVPHEQFKKL |
| UniRef90-E3QVQ1 |  |
| UniRef90-E8N1H2 | TGEVSP QVLA ELLKRLLPD T P F DEVSHEELKRLL |
| UniRef90-B1VU78 |  |
| UniRef90_G1WPM7 | $V P \mathrm{DADSGVDDDTWDEADAA} \mathrm{AKRNGYENCAGPI} \mathrm{ERTKFYDK}$ |
| UniRef90_U2G2T4 |  |
| UniRef90_UPI0003B7B | A AEHGVRSAVQHELIAA A A T T A D RVEQLERFAFYDR |
| UniRef90_UPI00021975B5 | KVQ P EQLA AVV K KVVGD T P I EFI PHEEMKKD |
| UniRef90-C9Y9X7 | $V C N S P E G H T A A Q S S V V D L L G R D G L P A N R V E A V E R F A F Y E K$ |
| UniRef90-UPI0004786757 | AEEKSPHLVQRFEDLFREL P P Q R I PHEEFKAR |
| UniRef90-F4LMF0 |  |
| UniRef90-R6EA07 |  |
| UniRef90-A0A017RS31 | T K DVS P SVVF D Al |
| UniRef90_B7GMC2 | MQTHNPVMYQEI QKRFVSTT Q |
| UniRef90-G9WJ23 | MKTNNPEGLKSLIDIL G G Q VElVFIPHEQMKKD |
| UniRef90-W6T4C4 | $\square \mathrm{CTENPEQLAA}$ AIKALI D DVPI EYMPHTQMKA H |
| UniRef90-N9XTL4 |  |
| UniRef90-F1VVZ4 | $\square \mathrm{L}$ LHS P A M S A 1 A A L D LPGRLTMSHADFKQT |
| UniRef90-B8G635 | GQRSPHD R D GLGGQLLP NTPFEEVSHEQLKALL |
| UniRef90-Q38Z79 | K TANPEQLAADKALIGET P P |
| UniRef90_R7CST6 | TASKNPKQWEALKEVFPEDK VEWVMLDHEQLKAM |
| UniRef90_UPI0003B39 |  |
| UniRef90_F4BS57 | $\square K E Q N$ A T QLA D $\square$ K A T LVEDEQVTYVS HEAFKEQ |
| UniRef90- Q49XF7 | MKTENESLYYVLKKE EEDKFTTESHELLKKQH |
| UniRef90-E3C5M1 |  |
| UniRef90-C5CEY9 | VDKNPEMHNADLKLLFS DAAVDYVEHSEFKK\ |
| UniRef90_U2TIJ6 | RQANPELHRYI E G ALA GVELHDYLPHDELKRV |
| UniRef90_C5EN53 |  |
| UniRef90_UPI00047E762D | TKE I S P NVYEEMLKKRFP DA QVELL P HAEFKK L |
|  |  |





|  | 100 |
| :---: | :---: |
| UniRef90-D2BEN5 |  |
| UniRef90-B1R1N6 | IKEQNPK\\|LEEVYEVFKE VKITF |
| UniRef90-U5VJ | MLDVSP PALAEVARDP号R RE |
| UniRef90 H8L1D3 | TERLNPATWAHLL LAASGTQTTRSLCSHEELKHA |
| UniRef90- S0L7V8 | V |
| UniRef90_UPI0003FA0ABA |  |
| UniRef90_A8F3M5 | Q IEYIPHEKFKDR |
| UniRef90-G4CN96 | RSPDLWRF |
| UniRef90-UPIO0041 | K |
| UniRef90_Q1AX | VEGANPDCHALLASRL |
| UniRef90-UP100035C9CB8 | LMEAPDGMLPVQSELI EAARDDGEPYRMLERFAFYDL |
| UniRet90- WFB | MEGRNP |
| UniRef90-T5KR41 | VAEKSPEVLAALRERFA GMGFED |
| UniRef90_F6B8R0 |  |
| UniRet90_W7D104 |  |
| UniRef90-G8PE | IKTENPDQLVA■ K |
| UniRef90-UPIo0036313FE | QLGRVHN |
| UniRef90-S6HTS |  |
| UniRet90-S0FFF7 | DNSGEPAIFAEFGKILE QNGIEFKKLGRFEFYDE |
| UniRef90-R7PPL8 | QNPTQWKALHSVEPVTE VEWVVLEHEEFKKM |
| UniRet90 MoCl | MNPDFDSFLRDLY DGSGADLETVP |
| UniRef90 U1W | AHNPEAEQQVKSIL PDTVVSYVSHEEFKQL |
| UniRef90 E3D852 | ACNKKPEEWV KESLGTPLTYVPHEGF |
| UniRef90-UPI00037FF | FLSASPHLYQELLATL PGIPVRTLPHHEL |
| UniRef90_U71 | LKEKNPQ |
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| UniRet90_C5C4 | DAPERQPVQDE LVTAAGAPESSG DRFAFYDA |
| UniRef90-UP100038273EA |  |
| UniRef90-F3B3S7 |  |
| UniRef90-Q8R2K1-5 |  |
| UniRef90-G4L5H4 | 1 KSENP |
| UniRef90 D5RJK0 |  |
| UniRet90-UP10004169A7B | , |
| UniRef90-X1AIQ10 | VSYSP |
| UniRef90-UP100041B7BD9 | AQGQQAEHW VQEYFDVPLSYVPHDGP |
| UniRef90_S3ZFC2 |  |
| UniRef90 I3CV33 | MQSUSPALLAAQUATLU |
| UniRef90 UPIO003B775A7B | ASVDLSA |
|  | LLLAPCPADSGT D $\square$ HNSRGDLGGRN LLA |
| UniRef90-UP10003443EOD |  |
| UniRef90-M7MZK6 |  |
| UniRef90-M8DLY | A |
| UniRet90-H0J6V5 |  |
| UniRef90-F3N1A4 | DAANPAAAALLRHRLADLGPGPGLQLVPHAR |
| UniRef90-FORJP3 |  |
| UniRef90 UPIO0037B51F8 | SPELITAVVVKELLDDWEGK |
| UniRef90 A4QDL6 |  |
| UniRef90-ASINL8 |  |
| UniRet90_Q128C2 | APYCSGLQREVLALLAPNLLA |
| UniRef90-A4J712 | LQVNQSLVKSIADEV |
|  | D |
| UniRef90_UPIO003608 | VRAANPSTAELLDE |
| UniRef90 - |  |
| UniRe90-K0k |  |
| 即90-E6K2M3 | GTEPEEWVTV STM |
| UniRef90 J1HAH66 | EKNPAMVA |
| UniRef90-D2F UniRef90-C00 |  |
|  | SPEWYAGLREVLGEVLEEAPAE LPHEALKAA |
| UniRef90-UPIO00255E7BE |  |
| UniRef90 H9U9W7 | VSPETYSQSEETVIDEVQKKLPS |
| UniRef90-X4REE1 |  |
| UniRef90-AOA011 | DHNPEM VVNDRSMMKKKFPDAVEC |
| UniRef90-E1 | DGP VQQLCSANGLDPQF |
| UniRef90 A9E | MEVNNLKNYQKVIDIIFS |
| UniRef90-UP100045E7D2B UniRef90- $22 \mathrm{MT3}$ | A |
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| UniRef90-UPIO0040F349F | A ${ }^{\text {a }}$ |
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| UniRe990 UPIO0047CE928 | ASPH |
| UniRet90 Loil | SP |
| UniRer90-UP100046F867 |  |
| UniRef90-UP100038111COB | SSGAEQLKYVQDRLLA LTRASCAVPAQK |
| UniRef90 - V2DEC8 | QQNPQLHETLLTHLEQLQQHQGNTIKПSYT |
| UniRef90 UPI0002E651C4 | QSFSPE RVAELKALLPDV |
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| UniRef90-TOBMC0 |  |
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UniRef90 G8PEY8 UniRef90-UPIO0036313FE UniRef90-S6HTS7 UniRef90-S6HZ45 UniRef90-S0FFF7 UniRef90_R7PPL8 UniRef90-M0CI83 UniRef90-U1WWS1 UniRef90- S2YS02 UniRef90-E3D852 UniRef90_UPI00037FFAC0 UniRef90-U7UQC9 UniRef90-UPI00041F63A4 UniRef90_C5C446 UniRef90_UPIO0038273EA UniRef90-X1LE69 UniRef90- F3B3S UniRef90_Q8R2K1-5 UniRef90_G4L5H4 UniRef90 D5RJKO UniRef90_UPI0004169A7B UniRef90-X1AIQ1 UniRef90-L5MET0 UniRef90_UPI00041B7BD9 UniRef90-S3ZFC2 UniRef90-I3CV33 UniRef90 UPI00034F6D8C UniRef90_UPI0003B75A7B UniRef90-M5QZU6 UniRef90_UPI0003443E0D UniRef90_M7MZK6 UniRef90-M8DLY1 UniRef90_H0J6V5 UniRef90-FORJP3 UniRef90-UPI00037B51F8 UniRef90_A4QDL6 UniRef90 A5INL8 UniRef90-Q128C2 UniRef90_R7PFZ9 UniRef90 A4J712 UniRef90-F4LXK2 UniRef90-UPI0003608F31 UniRef90-UPI0003298063
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UniRef90_UPI00047AC19A

$\square$ D D CKAFVRTGEMTPFANVMLESKVV AERAFATVQTGERRDYGNLLLTKGVV AEKAKAVI RTGEATPYANClLHAGVI TQTTRAI I RTAEFTPYANIILVAG AKKAFAVVATG
VKNAKFVI RTGETTSYANVIFRCGV TAGARLVVRTGEASPYANALLTCGV TARAKAHI RTGECTPYANIILGAGVV AKKAFAVVATGETAPYGNI ILKKGTI SQAARAVI RTGECTPYANI CLWAGV CQQAKVIVRTGECRPYSNIALDAGVT

\section*{LP R A K V V VR T GETTPYANVILHCGV <br> AYKAKVIVRTGGAFDPWGNVILCSGGVVP <br> CRQARVQI RTGECQPYTNLILVAGVT SAGARLVVRTGEARPYANVLLRCGV





 SASAKLVVRTGEARPFANVLLRCGV AKKAYAVVATGETALYGNLI LKKGV $\quad$ P <br> \begin{tabular}{|c|c|}

\hline \& $$
N \mathrm{~V}
$$ <br>

\hline \& <br>
\hline $\mathrm{K} F \mathrm{~A} V$ \& RTGEFTPYSNLI L <br>
\hline Q AKFVI \& RTGETTPYSNVL <br>
\hline KQARG \& RTGEFTPYPSV <br>
\hline LP HALLAVV \& RTGETTPYANVIL <br>
\hline G R C A L \& RTGEATPYANVV <br>
\hline AKKC \& RT GDTTPYSNAI <br>
\hline \& NIILVS GV <br>
\hline E ACFV \& RTGETTPYSNVIVHCGV <br>
\hline K T CKA \& RTGEDT AFANII L V S A <br>
\hline K A K \& RTGEATPYANAILHCGV <br>
\hline \& RTGECTPFSNIILVSGV <br>
\hline A \& RTGEVRPYGNLLLHKG <br>
\hline Q \& RTGEFTPYPNVILQAA <br>
\hline D D CA \& RTGDTTAYANA <br>
\hline K DAKFV \& RTGETTPYANVL <br>
\hline S R D C Y A FV \& RTGECTPYANVILQA <br>
\hline R A F \& RS GEYTPYANVALI A <br>
\hline S L GVKKGII \& RTAEFTPYANVRLLS <br>
\hline \& RTGEFTPYSNIIL <br>
\hline AKKAFAVV \& L L <br>
\hline \& <br>
\hline
\end{tabular}

CQESRAVIRTGDTTPYANLM\VSG STGAVCVVRTGEAVPYTNIVLWSGV SKNVKGI I RTGADIPYSNVILVGGVI TESVSVIVRTGEWTPYANIVLYAGVV $\square$ NNCHAFI RTGEMTPYANIILVASGVV




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QVNADKKRT
VTATNREAADLLARL DAELLDHETFKQR RDRFDLPVSFVPHDGPHG FKAA AVGGAPEGWV RSRTDDVVT SHEELKKE APQAVHDLIPEDVED,
EADGPDGDPPVWEEYRKSF
VMDPGSEQPPUFGEFKED
KDAGSSVELQPLEKWSFYDH DDVEIEFIDHTEMKAY

## पRTNNPS

EELKEGNRELETQUHELLK
LQGAHPDLFAKIKGA KAAD
EADQAPDEDPAHDEY $\quad$ KAA DP
VPGSGEEPEDFGEFRST
KSDNVEQRALLDLLDT

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ATGSAVE
DQPSADG
VTPGEGEQPADYDDFKE LDMKELS
VRDCHPQLYQTLQELY TGSGAEFRTASHETLCRDDAYE
LKANHPRLLYTLQEYGEVQDRFTGSGAEFHGTTHEALIDE
SEGSAAADW GGOSADRMGERHEVTHEQFKKG



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MKKN G G I Y NAKLSEVVGKMGHGDMLTVCDSGGPDPR DV



 ALL S P EL LY ALARMGHGDEI AESRP FPGGSSP MK K T


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

 LK GVPALLSSPELLY A L A RMGHGDE I


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



$M L Y G$

## S GlL L N P DLAA A RIN RLGGHTDTEFVIA DCGLPVPATVP

PMTHPGLLAALGRSGHSGKILI TDGNYPVASGAP

G L H P QL LAA GLA A A GHGD RVVLAD GNFPL RAGTN
$G \square L N A Q L R S L L A R T G H R D H L A \square T D A G Y N \square P L G$
$M L R \quad Y P L I H P P L L G A L A R A G H G D E V V L A D A N F P A S S I C Q$

M $\square K$


SALIHPQLLGALAACGHKSQLLIADANYAVTTNAR $S L T H P E \ L G V L G R A G H L A R V L I T D G N Y P H S T N P A$
S TVTH P EVLAASLARTGHGSTVLVTD GHWAVNRVGR GI LHP QLASLLARRFRHVNAIAIVDGPFPTY I I H P DLLQAL A QC GHKANILI ADAN Y S F L S N $M \square K \quad S A L I D H P Q L I S S S L A L D C H H K T Q U L I A A D N Y A F K S N A P$
$\mathrm{M} \square \mathrm{K} \mathrm{N}$

MKK T T I L N A QLSHVIDATMGHTDGWTDCDSGLPDPTEQH $M L R H \square P S V L S P D L V K A L M E M G E G D E V V L G E A G L P A H S V H P$ $M \perp K$ SAITTHPPLLAALAQCGHKTQVLIADGNYACMTHAP

M IK
Y T VIN A E LGGYALATARHKDA IVICDANMP $\square P A G C N$


L L H P G L LEALA GAGHGARVLLADGHYPASTAT
$M \square K T$
$\mathrm{M} \| \mathrm{K} \mathrm{G}$ $\mathrm{M} \| \mathrm{NG}$ GLL N P Q L L L L A R D R H T N T L V I A D R G F P

 $\square 1 \mathrm{H} P \mathrm{QL}$ A A L A S C GHK S QI LIIA D S N FACR VN
 M GH T DE $\square T V C D A G L P \square P$

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UniRef90_R6WBJ3
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DTDLALKHGDPTFLDT\DTVLEELKVVEEVVI|ACE
 LGPNAELVVD

DSAAVVDLALVKGMPRFVDVA





 STLVHLNFRPGMLDALSVLEGILEVCP IGQAIVMEK
 PAAEIVHLNLTPGLLTVDQVLAPVLTAVPVEAAHAM


 $G L G \square P Q L L E A V L Q L L P L D T Y V Q S P V R L L R$ S NPKAEVI YLDMLNAIDVLKGVTELINVE A A E DSTRVI DLSLAENVPTAVDVLKELLKHFSVEGUIL A A AERI HLNLTPGLLTVTQVLEPLVRTVPIEAAEIMM DTAKKVFLNLDKMKVTDVLKEIVKAVNDESAAAPVMDTME QTTYGKLVDVSGCGVARAAEALLSLFPLHTFVVAPVAKMK

 K D A AVVY $\quad$ VNLAPGMDPAPLVLEKVLTCMNVEGVABAQE AS TVWANFRPGLLGGATALEEVVCDAVPVEAVAVMEPERME
 GTPSFQEVYEALMYHMVVEQAIVARE
 TSAQARII WLNFSPGLIGSVII LEKILQYI NVEKATLMNS KGV ELIYLN
 KD ATVVYLLNLAPGTLAAPPILEKLLACDNVESAALMAY DLVVCGGVPTFKQVMDAVLAETEVEAYTIANE VIDVSLVRGVPTLVQTMCAILNDLVAERYEVF KAELIWLNLAPGT!AAPVLLEKILAVI NVEKATMM
 GERARTVHLNLAPGLLDVTSVLDVLLTALPVESAHVM F WPMLETVDISLVDDIPTVLQVFDAIKSNYNIGQDYMASE
 SSKEATIVYLNLAPGMIASSVILDKVLKHINVEHASMMAW
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UniRef90 Tocsf7
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## UniRef90-UPI0003FFFC6B

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M EEVSKNLYKE\|ENRF KG\|KITKVPHEDFK TM TKQVSPEKYQEFKNILDLEKNKGNAMNEETI PHMEMKNL PADFNP LVPSDKE LKTP DWDAYQQ LLNEAEKTQGNRAVCQYHFEER


 FN SWNVEET KKQDAVRGEGLAPA VVSHEELKEL
 LVPSDRDHTP $\square W K D Y M T D Q C Q A G C T K P D E P T E W F S$ FEENN TEGKQQEFDTACRG MKEYNRE T TYDE LQK $\square F$ VKQDKKEVSME
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APEPGEGEEVGAELRAAARAPEGR PKEANAEIDTAYQALL DDGNPPEC

## R

 $\mathrm{D} \overline{\mathrm{V}}$ WKGYEELLGPDLPLRPVERFEFYRA VMLSDGEEPEILGEF $V$ MKPEGELDPAI FEEF PPDDPQGDPPVWAEYRQUV VPQKNPK LLQRVTE $\quad \mathrm{F}$
VMQTPPG
VAAPAQDDYERRTGG
AEAGTAPAVVGYTEIL
VVGNAEAlIPEAVTDFQR ALACPTTCPDGVWTSYQSILSRAGNPARVQSMLERFAFYER $M M T W P D D F E N$ T
$\square T$ A
SQATGD
 VVGDSEKQMPIF LT $\square$ QS V IDAAQGN
 KL ERRFEFY ER


PDDFDNT $\square H$ S
GTRNDKTPSDWNKYQEGYLKKSKENFNDEKDERFKFYER
 $\square K Q G N E Q A \square Q Q \|$

NEFSQKVDSATVAKYKKHY EHVPVTLIPHEEFK $\quad$ KK
 FRTESSA AARMEFFDAM RHTPDTFEPHAQFKQR TPAE\|RDLL PGEPREVSHEELKKM AADEAPEVIPAHDEY
 $T V{ }^{\mathrm{T}} \mathrm{V}$

REQEF $\square$ S DDYAR $\square$ DDYARLLGERAALSAVDRWAFYAQ $\square Q E K N P E M D T A D L A R L N K P E Q Q Q G N R Q A V V E Y V S H E E F K H A$ LVPSDKEQTPDWNHYESLLLKKA
ATGEEPD IY S RFRE MKSANPDGFALVSELVGDGNVHEVGYVP MVPEDDREPEIVGEFRREGPDLELEELA TVD
 APADYPHTPA DEYRRLLPDGCPVAYLEREQFYAE GAYAMTGDPPVWAHYRRVLAERAGFTGGFDALQKPAFNRM LVPSDXEQTPVWPSYHS $\square$ L S RAGCASP LAT I ERDEFYEW MVEENEALLPS EVQDQTAKVKNGFPTLEMVSHEKFKKQ

 VRGANPGATALLL
$I K N D N P Q D E Q Q L L M V I Q Q \square E V Q Q$

 $E L M P$ Q Y N D A M Y Q K I Q S LV P Q L P G G T I S Q E R L M E T
GWPEDVQNTMASEYRALLPAACPMEYLEREAFYAR
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 AEGEASDSVTECQRHLADHRHAGGSEDTWSSLDRWAFYAA PQDFTNTIAT EYQQLLPDGCP\|DYLNREAFYHA QVHSSDDAP IVQEFQSMLNHASSKPASIARVDRFGFYDR PAEFTNT $\square$ ASEYREFL PTNCPLEYVEREAFYAK TK Q IS PAAHQA LVDQLEVHAAAQGKPDTIEYCLHEE LVPSDKELQTP WKRYESLLLEADCKKTLMKGERFEFYER



VGQSLA! ITHGDAVPYSSVILKSG
AKKAFAVVATGETALYGNLILKKGVL SRNNDASI RTGEDTAYSNIVLESNV VATADHVIQTADTQRFANLLLSTGV TRKVKFVIRTGDFTANSNIILVS AKNTLLVI ATGETRRFANLIMLTVGAV ASHSYCIVASSEQADYANIILKKGVI VPHAlGLIRTGDSTPYANLILES VRDHVLTUQTADQQDWANVLLTDGC
VGQSLA! IHTGDAVPYSSVILKSG AKSSDLVVASGETRRFANILLTVG VRSPDLVI QTADQALWANLLLTVGV VPRATGLI RTADTTPYANMILE S VASASFVI RSGETTPYANAVFHSGV AKDVTVVIVSADQRLYANLLGTIGGV IRKAKFVIRTGDFTANSNLVLVS DPGAALVIRTGEATAWANVGLRCGV


ARSPAVAVATGEQRLYANLLLTGVV RDRVKAVIQTGDYAVHGNVILVAG CMELKLAVSTGEQRTFANILLTVGCV TKEVKFAI RTGDFTANSNIILVS VKQTLLVIASGEQRRFGNLLLT THESKAVVRSGECTPYANVIFQSGVV VKSERLII ATGEQRRFANLLLT SEDLLCLVIATGEQALFANILLTDGVV AQKAFAIVVTGECAKYGNLLLKRG
TRKAVAVVTGAAALYGSLILKKG TRHAKAIIRTDEATPYANIILKSGVI AGSDDLVVVTGDLRKFGNVLLHVGVLP VGQCLGII HTGDADPYSSVILKSG AKTSDLVIASGETRRFANILLT VRSTLMVIASGETRCFANLLLT SAGARLIVRTGEARPYANVLLRCGV

VKSDRLVIASGEQRRFANLLLT
SAQCKFAIRTGEFTPYPNILLRAGV MRNAKAVVRTGDFGSCCTMVLYS VKSTMLVVASGETRRFANVLLT AGDVAVLVATGDQADYANLLLTDGTRP TKKAKAIIRTGEATPYANVILHAGVI ARSALAIV TADПRTYANLLLTDGV VPNAIGLIRTGDTIQYANMLLESGTT
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ssm
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| UniRef90-R9KAF3 | MMEVSKALYDAYCKLFAEY D DVPDELVPHSEFCRL |
| UniRef90-Z9JX07 | LPESGRTDHDVHREVDAL $\quad$ LPGAATAHSWI PRGEFYAA |
| UniRef90-UPI000379FB45 |  |
| UniRef90-X1UHR5 |  |
| UniRef90-G6WW77 | GTPER\REMV D D D DEVVT HEEDKAQ |
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$R D R V K V F V Q T G D Y S V H G N V V L V A G$ APETGLVIATGDQRSHANLLLEIG CRDVCLLI ATGERRPYSNFLLTIGV

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LAGCAFVIRTGETTAYANVIFKSGV
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$V$
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