

## QUERY UniRef90＿H6MCY1 UniRefe90－G7LMX6 UniRef90－K8QW08 UniRef90－A512R5

 UniRef90－UPI0004227DD2 UniRef90－UPI000479A68F UniRef90－R7HNW9 UniRefofo－H2HKX9 UniRef90－DOBKQ9 UniRef90－W6N5G8 UniRef90－UPIO0046AC48A UniRef90－L8D6E2 UniRef90－Q3A4E8 UniRef90－UPIO003610DEB UniRef90－D5NV90 UniRef90－E6TP32 UniRef90－COW3E4 UniRef90－UPIooo2E55898 UniRef90＿10XMF9 UniRef90＿T8D9F7 UniRef90－E4SYL7 UniRef90－UPI0003612C31 UniRef90－W8UHX5 UniRef90－C4ULV9 UniRef90－X1S0E3 UniRef90－Ј9Н9Но UniRef90＿E6KPI6 UniRef90－F7KB53UniRef90 $\times 1$ 1B9K0 UniRef90－G6CEV9 UniRef90－H8N106 UniRef90－UPI0004724F8B UniRef90－UP10003B4C1E4 UniRef90－UPI0003B3333E UniRef90－D5T4E9 UniRef90＿W9B5K4 UniRef90－UPIO003B553D6 UniRef90＿D3P966
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UniRef90－V6MMJ2 UniRef90－FOK6N7 UniRef90－J5VTG4 4 UniRef90－W4LRN6
UniRef90 $\begin{aligned} & \text { F21H93 }\end{aligned}$ UniRef90－14×4S1 UniRef90－C6LGQ0 UniRef90－V5XM74
UniRef90 G8NOM5 UniRef90－R9SJR5 UniRef90 A5FQB66 UniRef90－XoVCH8 UniRef90－F3KZG9 UniRef90－UP10003635D62B UniRef90－R7MGK2
UniRet90 G4O667 UniRef90－M5U9X4 UniRef90－UP1000362E8DF UniRef9O－UPIO00047A89D6 UniRef90－R6LP52

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CEMKWSD VDGYLYVEQSKTGVKTATPTALHTDALGTSMK
 TQMRFSH｜VDGCLLVEQGKTGNKLALPMDLGLKADGPTLG SLFRFSDI RDGRLFVTQEKTGHKLALPLDLRLDSADLVLQ
 SKMKYEDLHDDKLWI DQQKTGSKI AIPLTVEIIGIKL VGLQMSDIVDEGYVTVDGKGSKQRLVPIASSAVDAIRAYLP VGLVVDDVENEGIVRDTGKGNKQRIVPVGDQCLSALERYV
 CG｜DLSK：KDDTLTVVGKGNKERTIYLNKACLKSLNNYLT VTLRMEQVNLRQVVLVKGKGGKERLVPMGEEAQDWI LQFL VGLTHQDLDVGYLTAFGKRAKQRVVPGGDAAREAVLEYGS LDLRIVDLDEKUVRLFGKGRKERYVPISQTALNKCKNYID VGLDI DDVDTSARSVLRGKGGKQRLIPGGPAVTALETYR VGLVIDDLDRESGCI RFGKGRKERIVPVGQYAWDALDAYL
 CNLRLTDMDGMTLTVEGKGGRQRLVPFGEKSLDLNRYKK CNLKFSDVWDDMLHITQEKTGSKLAIPRNLKCDALNDTLR I NLKLADLHLGLLKTI GKGQKERIVPIGDTAAYWIDEYLE VAMKFSDVWDEHLHVVQGKTGARLAMPLSLRCNALNVTLK RYGKRSDDHNGMLKGLGKGSKERUADSLSLRALEMMNTSVG CHLKLSDLDEQFIKVEGKGSKQRLVPISPRADREIRLYLP VALSADDLDDGQVPVVRGKGRKERIVPVGSFADEALDAYR ISLKSDLDRLGYIICRDGMKERAVPFGNKAKEALLYLK VSLNGQVDTREITVWGKGSKERMVLMGEPAVRALTIYLS I HLKMADLHLGLIQTLGKGNKERIIPIGDVAVDWINQYLD


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## QUERY UniRef90 H6MCY1 UniRefe90-G7LMX6 UniRef90-K8QW08 UniRef90-A512R5

 UniRef90_UPIO004227DD2 UniRef90-UPI000479A68F UniRef90-R7HNW9 UniRef90-H2HKX9 UniRef90-ROF2Q7 UniRef90-W6N5G8 UniRef90-UPI00046AC48A UniRef90-L8D6E2 UniRef90-Q3A4E8 UniRef90-UPIO003610DEB UniRef90-D5NV90 UniRef90-E6TP32 UniRef90-COW3E4 UniRef90-UPIooo2E55898 UniRef90-10XMF9 UniRef90-T8D9F7 UniRef90-E4SYL7 UniRef90-UPI0003612C31 UniRef90-W8UHX5 UniRef90-C4ULV9 UniRef90-X1S0E3 UniRef90-Ј9Н9НО UniRef90-E6KPIG UniRef90-F7KB53 UniReffo-X1B90 UniRef90-H8N106 UniRef90-UPI0004724F8B UniRef90-UP10003B4C1E4 UniRef90-UPI0003B3333E UniRef90-D5T4E9 UniRef90_W9B5K4 UniRef90-UPIo003B553D6 UniRef90_D3P966 UniRef90-C4LIF6UniRef90-UPI00037DCDC3 UniRef90_Q65HT8 UniRef90-X718Z1 UniRef90-UPIOOO405116B UniRet90-K4KVC2 UniRef90_Q5L6G3 UniRef90_UPIOOO4048704 UniRef90_JoRR18 UniRef90-HODKW2 UniRef90-A6LH41 UniRef90-M6KD34 UniRef90-UPIO00287D245 UniRef90 E4WHU7 UniRef90-D4H5Y7 UniRef90-M4×205 UniRef90-K1L5GG UniRef90_HOUKL5 UniRef90-R5FS14 UniRet90-R6B8Z8 UniRef90-V6MMJ2
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(IGGETI I A STRREPLSSGTVSRYFMRARKAS DTLQK CREASSSETII ASTYHEPLSPATVSRYLTKARNAS

 V R K E M GEK IV D K D A L F L S K N Y T R I N K R S V E MLV K K Y V K K A

 LRSNLTPKHGSED L L FLNRRGGQLTRTMIFYIVKKLCGEC $V R S R P A M S K G K S H A L F L N K R G G Q L S R Q S A W Q I L K N S A Q R A$ EVVAK CRDAVVSKYLVHFRRGDRVSANSDTTTFKKARNRT TYARVVLEQESNPYLVLNHRGNGFTRQGFWKNLKK\|VQEA VRKYEYDK DK DK D A L FI S K N Y T R DN K R S V E LIL K K HL K A A E EVRDDKK GS NS E F L F F L N N R GT P L T R Q A V WQ I I K R Y CK M A HGRGELAGEVGSGFLFLNRSGNGLTRQGFWKMMKRRAMEA
 VRARPQQLSRGKSHALEF NTLGKP L SRQSAWAVIQQAVQRA GRPDLARRGRGTPAIVLNARGGRLSRQS AWQVLQDAA VQAR PVLKGRGVPEVVLNTWGRPLSRQSAWGVLRQASARA
 QSRPY ILLKNRNCDYLEVSKKGSFINRKSVWRLLNHYIKRT EVIS QCRDAVVSKYLVHYRRGDQVSANTLTTAFKKAREKC $P \vee R D Q L K R G K S S D Y L V L N S R G G Q L T R Q A V W Q K I K K Y C Q Q A$ HGRVVKLLKEKRSDFLFLNFHGNQLTRRGIWKNLKDQVQKA EVIS QCRDGIVSPYVLHHHRGGQIKDKTVTSTESSARDAS EVIE QCLNNNKSEYLI CSSSSRKALNADSLTKAFVKALKAT KVRPKLVKNPDENALVLNNRGEKLSRQGVFY LVKLHAHKA
 VRARPVLRGSGSTALFLNSRGSALSRQSAWTAIRRAAQAA
 Q GRPELLGKKGGSALILNRYGGRDPERRVQRILEKYAA RSRNQLTKGRANPYLFVNFHGNGLTRQGIWKNLKAHVKTA VDADKGHRHLRGPYVFCQPDGQPLTASMTEHRLTRAVGRA I N G R E E L L K S K N D L L F L N S S G K P L S R VG F FK V L K K L A K D S H GRPD ML K T C S S E Y L F V A R A GK P MT R Q G F WKII I K K Y A A K A GRPKLLAKRLDEAH FLNRRGRPLTRQRFWQIMAYAAKS


 V R G R P S M V K R S D K A L F L N N A R G N R L G R Q S VR GRPALSR GK S H A L F L N S R GT TLLS R Q S A WT I L K K RV S A A K A R G K L L K K NTE D A L F L N H H G R QMS R Q GFWK NL K K I A L L E A
 KEARPDLLKGQSEVVFPSNRGEQMTRQTFWYRVKHWAKVA THPARTSIEKDAQAIF LNRFGKRLTTRSDDRKFQKYLRQS QDGRNSKAKQSSDAVVLNNRGNPITTRGI REVLNKMVERA NAVRSNLNDKKGDTLIFLNRRGNQLTRAMVFTIIMDLAQKM TVRPQLLKKTVTDNLELNLHGKPLSRQAIWKMIKQNGVKA

 VRGRPALSVRGGPALFLNVRGGRLSRQSAWQVLHTAAEKA
 EA R A DL L G GRPS DVL F PS L R GE QMTRQQ FWHRI K L H A K V A A Q CP PSEKG $W \vee F$
KTRKDNSPYLFVEKR F GRPKLASPKIND YLF LRNHRKDKLSPKTVWMLVKKY GKKV
 E V V R R CRDRVVSHYLI HGQRGGPVTANTMTTNFTKARNKT

 S GRPQLLKQRQTVDLVGNRSGRAMSRQSVWKIVKKYVQWA


 ERGRPQPRRRATEALELNHYGQRLTRQGFWKDLKRLAKEA

 VRGRPVLAGRGNPTVV LNARGTPLSRQSAWAILRRAADRA
 VRP H F V K E N R P C D DL F L T I R G T GMT R Q R FWQL I K N Y GL NARP MLIKNGQSDSYFLSSGRSRHLS
 EDIRRPKMIAVPTEEQSVVNVSGERMSRQGFWKIDKYYQEKA

 RN Q I E I K K E Y E D F V F VVSSH R R G K G L S R DM I F H L I K E L A A E K A

 $V$ R GRPA GNGEGSPALYLNMRGGRLSRQSAWALLKAAAE KA


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UniRef90 G4Q667
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UniRef90_UPI0004051D4B
 GI SFD GDPPTFHELRSLSARLYRNQIGYKFAQRLLGHKSD
 GVNFSNNPPTFHEI RSLAGRLVKNEHGEVFAQKLLGHTSAB ELKFGPNPPPFHEI RSLASRLYERERGEDFAQRLLGHKNL


 GL S WPDRKPTFHEQRS $\mathrm{G} V \mathrm{H}$ K $G \quad D \frac{L}{K}$ D TK K DVSPHTLRHFATHHILEAGADD

VS P

GI N K N |  |
| :--- | :--- | :--- |

GI K
GLD K

| S | H | V |
| ---: | :--- | :--- |
| K | S |  |
| S |  |  |

PHKLRHA

GRAGVTAT G

GI K WE Q T
GI A K
GIT K N

GVWKEGTP ITPHTLRH D L V Y $\quad 1$ | D | L | Y |
| :--- | :--- | :--- |
| G | $\mathrm{E} K$ |  |

 GLKKN $\square$ S P HT F R
NLA
GI EA
HRVS P R T L R H
$N$ I A G $\square$ G R R V
Gl G K K R D

$\mathrm{G} \square \mathrm{S}$
L N P K EI S P HVL R H
$G \cap D K$

GI K K S | $D$ | $S$ | $P$ | $H$ | $T$ | $L$ | $R$ | $H$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $I$ | $T$ | $P$ | $H$ | $T$ | $L$ | $R$ | $H$ |
| $R$ | $H$ | $P$ | $H$ | $M$ | $L$ | $R$ | $H$ |

$G L P \square M$
$M L R V$
$G L P L N Y$
$E R C G L D G D S V$
$G$
$G$
GIAAN
G 1 NKE LTPHTLRH

GI S K
G S G P L S P H T L R H F
A
GLLK K S
V H V H P H K K R R
EI F K T
GI HKNVSPH
GV E K K G
GLDKDKY $\quad$ TPHMFR



## GTPGA

S P H $\qquad$

K TKN $\square \mathrm{N}$
NDWGEGMPASFHEEQRS N
 GID K
Gl K K N $\square \mathrm{S}$ P HS
P HT H T
R R
H G I

G:

$\begin{array}{lll}G & L & D \\ C & R & V \\ G & G\end{array}$ | V | T |
| :--- | :--- |
| L | T |
| V | T |
| V | T | V T P H T L R

 G I S G E V K HI A K S
GI RKEA
TKV K P H T L R H

## NQVGDD $G L E K K A$

HI D K

## NLNK

GI L K G
$\begin{array}{lllllll}\mathrm{K} & \mathrm{S} & \mathrm{P} & \mathrm{H} & \mathrm{T} & \mathrm{L} & \mathrm{R} \\ \mathrm{I} & \mathrm{S} & \mathrm{P} & \mathrm{H} & \mathrm{T} & \mathrm{L} & \mathrm{R}\end{array}$

| G | I | T | K |
| :--- | :--- | :--- | :--- |
| N | I | T | K |

$S Y T L Q$
S P H

STMMLSNGVV
GFT
G GFT $\quad$ DKKYTP HK L R H


| QUERY | $\text { DRGREWDK } \square^{170}$ |
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| UniRef90-G7LMX6 | K M T E |
| UniRef90-S5V5E4 | NTTE |
| UniRef90-K8QW08 | TMTKK |
| UniRef90-A5I2R5 | S T T Q $\square \mathrm{Y}$ T HVD |
| UniRef90-UPI0004227DD2 | KMTDK |
| UniRef90_UPI000479A68F | K MTAK |
| UniRef90-R7HNW9 |  |
| UniRef90-H2HKX9 | T T TQl Y ThV |
| UniRef90-R0F2Q7 | QQTAK |
| UniRef90-D0BKQ9 | S T T Q |
| UniRef90-W6N5G8 | STTQI Y THVD |
| UniRef90_UPI00046AC48A | STTQI Y T NL |
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| UniRef90-UPI0002E55898 | K M T NV |
| UniRef90-10XMF9 | STTQIY THMA |
| UniRef90-T8D9F7 | K M T D R |
| UniRef90-E4SYL7 | S T T Qli T NL |
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| UniRef90-W8UHX5 | TMTDKYN |
| UniRef90-C4ULV9 | K MTNVY |
| UniRef90-X1S0E3 | STTQI Y THV |
| UniRef90-J9H9H0 | GTTEI Y THI |
| UniRef90-E6KPI6 | ATT QIY T RV |
| UniRef90-F7KB53 | S S T QVY A |
| UniRef90-X1B9K0 | S STQIYTHV |
| UniRef90-G6CEV9 | S T T QuY |
| UniRef90-H8N106 | DMTMRYA HL |
| UniRef90-UPI0004724F8B | STTQIYTH |
| UniRef90_UPI0003B4C1E4 | STTQI Y T H |
| UniRef90-UPI0003B3333E | S T TQI Y T HVQ |
| UniRef90-D5T4E9 | STTQI Y T H |
| UniRef90-W9B5K4 | STTQI Y THV |
| UniRef90_UPI0003B553D6 | S T T Q ${ }_{\text {l }}$ |
| UniRef90-D3P966 | ATT QKYTHLNL |
| UniRef90-C4LIF6 | T T T Ql Y T AV |
| UniRef90-UPI00037DCDC3 | T T TQI Y THV |
| UniRef90-Q65HT8 | S T T Ql Y T HV |
| UniRef90-X718Z1 | R Q T D RY |
| UniRef90-UPIO00405116B | T T T QVYTLVTV |
| UniRef90-K4KVC2 | STTQI Y TH |
| UniRef90-Q5L6G3 | ETTTIYTHVSM |
| UniRef90_UPI0004048704 | S T TQI Y T HV |
| UniRef90-JORRI8 | T T TEI Y V H D |
| UniRef90_H0DKW2 | STTTQLYTHV |
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| UniRef90-M6KD34 | GTTQI Y THVA |
| UniRef90-UPI000287D245 | ATTQIYTHVD |
| UniRef90-E4WHU7 | T T T Q ${ }^{\text {Y }}$ TLVTV |
| UniRef90-D4H5Y7 | T T T QKY THL NL |
| UniRef90-M4X205 | STTQIYY Hi A |
| UniRef90_K1L5G0 | TTTE】YTHLD |
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| UniRef90-R5FS14 | STTEIYT |
| UniRef90-R6B8Z8 | VTTELYTHLA |
| UniRef90-V6MMJ2 | AQTDRYNDV |
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| UniRef90-J5VTG4 | T T T El Y |
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| UniRef90-R9SJR5 | S T T Q ITY T SVDM |
| UniRef90-A5FQB6 | STTQUYTHL |
| UniRef90-X0VCH8 | KTTERYT |
| UniRef90-F3KZG9 | T T TQly ThVA |
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| UniRef90-R7MGK2 | NTTEVYTHV |
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| UniRef90-M5U9X4 | ETTTIYVHIA |
| UniRef90_UPI000362E8DF | S STQLYTH |
| UniRef90-UPI00047A89D6 | K T T TVYTHL |
| UniRef90-R6LP52 | S STQVYAQLV |
| UniRef90-UPI000479765B | T T TEVYVHLD |
| UniRef90-Q74C56 | STTQI Y THV |
| UniRef90-J9D8Q7 | STTEIYTHID |
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| UniRef90-B1BR84 | ATTELYTHVD |
| UniRef90-UPI00047DFCB1 | T T T QVYTLLV |
| UniRef90-K6ZXV1 | ETTALYA QVA |
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UniRef90_UPI000471FFDA UniRef90_UPI00037A1E6A UniRef90-14C6M6
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UniRef90-Q2W5Y0
UniRef90-FOIEU5
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## VLS R

E E MQ $\mathrm{R} V \mathrm{~V} L \mathrm{~L} T \mathrm{~N}$ S

## R D E V K R MI

RE RLLTLELWKA Y Y A E A K G E


## K R K

 $R T L S E A Q V E A L L A A A P D D G$ K ALLSV

E E V V T
P 1 L
L

R

${ }^{k_{k}^{k}}$


## ${ }^{k}{ }^{V}$

VDEMER
ST
T K E E
T EDEVER
 RDMALFELL P WLK RAMELAVL

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 TSIEMKDVDFC\|LRVMGKGRKERYVPFGHFASEALQQYLA
 IVGLDLDDI DGTNRTVLEGKGGRQRLVPIGRPALAALDAYR V VGLKVFAVNDGVLRIMGKGSKERLVVMGELAADWLRRYLL VTLKVSDUEFEEGFVRVGKGNKERYVPIHKDAESYISNGK VGGKMSDLDEKFVRMLGKGDKERLVPDSESALGELVFWF VGLTVTNID LGSQYVGNKERIVPI GHTCCQAVRQYLQVTR VTLDIEHVDMGYIRCFGKGSKER IPLGAVAAHYVREYLR CQRLRDDIVDVGIVRDRGKGSKERLVPIGQVALDWIERVR I HLAVGDIDKKMIHKKSAKGQKDRITILPEKIMGEI RMLGM LNLRLEELIVKQGYLRDGKGNKERLVPLGQMACEWLEKYLL INLKVKDIDLDELTIH VGLTLDT:DLGNMFVLHGKGNKDRLVPCREAVEKYLNGAR CNLKVSD:DSDRDHVEQGKGRKDRKVMLSPGLLNLLREYW IMLDVGDVQTGLGFARCSGAGGKERVVPI GAAASECVEAY ANMKFSDIKDGYLHMEQSKTGSRTALPLNLCCEADGLTLE CGGDGGDUNNNTLRVVGKGNKQRUVPFGTPAAKALQNWLA VGVKFEDI DDDSVVKLTGKGAKQRLVPI GGCADRAIRKY VGLDVDDLEDGRVVRLFGKGSKERIVPLGRYARNALDAWR I GLK KD D RMQI RIEQSKGKKDRYTLLSPKALDML I NLKVLDFDQAGI DRVWGKGARERLVPLHFSCMQWLDFYL $V G L D L D R V D E G T L R V L G K G S K E R L V F$ GGLADERVQDYLQ IGLTLAQVSLQGVVRVTGKGNKERLVPLGEDAMDWIDTYLL CGLRTDNYESGGLRVKGKGSKERSVPFGEQVASMSRQYVK ISLNDEDLHMGFVRCFGKGGKERDIPGGQSALTACENYLK
 VLLKSDEVNEGVLRVTGKGSKTRLVPFGEEAGSWLMRYMA
 I DLKISNLESGFVKI EGKGSKERLVPISTKALKKENLYGS VNLQLQH|LDFDFTIVVKGKGKKERIVLFGHFASDALWKYIL TNLDVGDLDLDRMQARVTGKGNKQRVVPFGKQARLALNAW

 TSLKLSHLDEGYUKVLGGKNKERLVPINDYTQKYINRYK I TVNLSDEFFEEGFIVVTKGNKQRFVPAAEHTQKLISLYK


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UniRef90 B6XIJ5

## UniRef90_UPIOOO42975AE UniRef90-COQJ33

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 REARPEGWLFPGKPKIVNLGPVSSRQLHRAFSSAKLILA SYARYTQYKPKTYLFEGQYGGQYSPRTLQEVFKKALTKA TRDKLLREGKNEPALFLNSLGGRLTRQGFWKMIKKYAKET DVIRRCRDRFDSPFLVHGKRNKPVNLILMSKEFATARDAA TGRSQLQDPASPKAVFLGDRGGRUNDR QVRRAVMRA EKSKYYKEYKPTTYLFEGQYGDQYSQSSMRAVLKDAAKRA GRPEMARAGRGTPAVFVNARGGRLSRQSAWTAIRAAAERA
 DARGLLLGDKLGDVEFPSRRGDPMTRQTFWHRIKLHARQA DSRPYCSKAHPSPALFLNARGGRLSRQS VHRVKVVEKA RHGRPALTKATVDTLFLSRRGQQMTRQTFWHRIKHYAVRA NARNTMIKDENEKALFVNVNGQRLTRQGFWKIIKYYKEQA NDRPQLCKKNNPPELIVSNNGRPLTRSVWQFLKEAADKA EGRPKLUKPNKTDAI FVNQRGKALTRQGVWKLMKEHARKA NTRNHQDUDPESEDIVFNRRGKKLTRVMDFLITKNLAEQA RGRLKLRKNNWERALFLNRHGSRLSRQGFWK LKGYARRA DRCHLRIKPGEEDYVFLSRRGSHLTRDMVFYIIRQAALAA EARAQALQGQVDDALFVTARGGPMTRQMFWTLIKKYALQA NVRPLLIRSEDEKTLFINTNGQKMTRQGYWKSLKQYKDQA HQARTMENASSHSYLEVNRRGEPLTDRGVRYLLKNKLTRKA LLNGRDEDAGDTPALFVGVRGNRIDPR VRYQVRRIVERA PLRSQSKAKDFTEALFLNSHGGRLSARSVARFVKQCALVA
 EGRGELLKGRSSDALFPGNRATAMTRQTEWHRIRHYA DRV NQ RNEQQ GRPGLAARGRGNSALFLNHRGGRLSRQSAWQVLQSAAERA NGRSVFTGKRAVPWLFVNRRGNRFSRKGDWKRFQELEALS
 QKQKAGPSYNDNDFVFTTELGNNIDVRNLDRAYKRVLKKA VRIRPMLAAKNSKTNFLNSRGARLTRQSAWNMVIRAAKDA GPRFDULGGRASDFLFPTRRSDCMTRQAFWQLLKRYAKLA DVRGTLLEKNPTEQAFVGARGKRIDPRTVRTLLTQLTKAA
 RSRP LLVRGQDEQALFVNHRGQRLTRQGFWLILKAYASEA ERQALLAKKKPEQPPFLNTRGGAVTVRGVRK LHRYAGGAA SDRAKRGRPVERMALFLNGRGSRLTTRSVERLVKSYGERA EGGRMEKNHQDHQFVFVNSRGGNLSSRGIISYULDQUIEKT
 ESRPQLLQGQVTDDLFPTRRGHSMTRQAFWY:IKRYAKLA DKAVSRYLI HFPAETYQHKRGAKVGEGSLEVAFREARTKA D $\square R D Y Y K Q W K P E K Y D F E G D Y G K Q Y S A Q S V G Q U V K N A A D K A$ KARPLFVKDSSEKAIFLSKNGKRLSPSSVQQRLKRH YYUKYKPTQWLFEGQVAEGKITGQYSVRSLQMILKRAVSKT




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UniRef90_E3GWL1


## 47BE3CD



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QV
D V
D T
$\mathrm{N} I$L T Q Q E E V K K Q L L

$V L D$

R DRA
RLTKENNRRLRALVDSCSRGDREI
 FALDNGCRRGE $E \vee L$ EEDVER LVDAPDELGLRDKAML
 $R F{ }_{L}^{L} \stackrel{N}{\mathrm{~N}} \mathrm{~V}$

QVLSK
 E QV G QLL L A I E S
K F L

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

$\qquad$
V L S

| $V$ | $L$ | $S$ | $K$ | $E$ | $E$ | $V$ | $K$ | $L$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $Y$ | $L$ | $L$ | $E$ |  |  |  |  |  |
| $Y$ | $L$ | $T$ | $E$ | $E$ | $V$ | $D$ | $Q$ | $L$ |
|  | $E$ | $N$ |  |  |  |  |  |  |

VLSKES

P Q
H G I
$S D S$
ED W
HE
$S D \square R$

$\begin{array}{llll}V & K & G & H \\ A & E & H \\ P & G & \end{array}$ $\qquad$ $L Q L$ $\begin{array}{llll}T & P & D K A M \\ T & P & R & N\end{array}$ | $M$ | $L$ | $A$ |
| :--- | :--- | :--- |
| I | $L$ | $E$ | EKEMDALLE GAVKGERPRNEA


$\begin{array}{lll}\mathrm{A} & \mathrm{H} \\ \mathrm{A} & 1 \\ \mathrm{~V} & \mathrm{~T}\end{array}$

QTMSDEDVQK L L L


DEDVKLLLSCDTDGURD R NVLL $\begin{gathered}\text { S } \\ K \\ K\end{gathered}$ E

s
K YLLSPE
MELSDNPDS

R
R



KTIPPEDVNKLLNSLDKSYYRMFTALIHVFLDTGGRIDDEV
DSLSEADVDILLNEDDDQDPRDRAMLELLYATGLRVTEL
KLVEDLEALLEAAGAAGTRDRALLELLYGTGARISEA


VDEVNQLLNDNLDDPLRDRTMLEVMYGAGLRLSEL

WSAEQMDRLLNTPDTSGLRDHAMLELLYATGMRVAELY LiN A DDVLSKSSAEQDRRLNTPDTS
EEEMKVLEDTAYDQPIRDRA
促
DEALEALSSAGELDDEPWLAARDVALF

| $R$ |  |
| :---: | :---: | :---: |
| $R$ | $R$ |



GLRDRA
HR K RAICELL
R
$R$

$R$ K E | RNR |
| :--- |
| R B | DRA

YAL
SKA
KA
DQ
K $A$
MA
$\square$ $\mathrm{N}_{\mathrm{N}}$ LRD SAM ML E L L $\begin{array}{lll}E & L & L \\ E & V & L\end{array}$ SVI M
1
1 $Y$ Y
Y A

Y S \begin{tabular}{lll}
$N$ \& 1 <br>
\hline

 SI CMYAT 

A \& L <br>
a <br>
L

 

$L$ \& $L$ \& $L$ <br>
$L$ \& $T$ <br>
$L$ \& $E$ \& $L$ <br>
\hline \& $L$ \& $F$ <br>
\hline
\end{tabular} $Y$ S

$Y S S$
$Y$ S A
S T
A S $\begin{array}{ll}A & G \\ T & G \\ S & G\end{array}$ $\begin{array}{ll}A \\ G & A \\ G & 1 \\ G & C\end{array}$ $R$
$R$
$R$ RRLLLP GEEKALLEACES EEEMKVLFDTAYNQHTKLAA

W V P K RHRK G L A A R DVALF T GLL R L GEAR R L
$\qquad$
E E T T T L L

K E V
KALVAD QQLD
KDALSVADTO
RTVE TE

$V D E V$ N

Q Y LTT T GE TQRF LQVARESRY Y V
$\square R D R A M M E L M Y G$
$R R D Q A L V E M L Y A$

|  |  |
| :---: | :---: |
|  |  |
| C2CFL3 | VSVNLKDISNDHFNI GKGNKERT |
| UniRef90-UP100037B4935 | INLTIDDVNFEEKQLSIVSRNNSRVILLDKSSNQLIQKYL |
| Ref90-G88 | ALKISDLEEGFTKITGKGNKQRFVP1 NELTQKY Till |
| UniRef90-S7X | T O LKK ${ }^{\text {a }}$ |
| UniRet90_N1UF | QKLKLFDVDNRTIFIREGKRRQDRMIPVSSRLLDWMRKYVE |
| UniRef90-UP100047BE3CD | VGLDLQDLTEQRTLRVLGKGRKERLVPYHAQAAALLDGLR |
| UniRef90_E3ENU8 | VGMNLDDVENDDA |
| UniRef90-A8MFH3 | EDVNLNLGFICHNGSKERFIPTGSTALESLTKYIE |
|  |  |
| UniRef90_E8LN | R |
| UniRef90-14EMHO | Q |
| UniRef90 D4DRB5 | A |
| UniRef90 UPI0003731F9A | INLKMADVYFHQGVI RVGKGSKERIVPFGSRAAQAIKQY成 |
| UniRef90-X1VNR0 | DVDNGYVRCLGKGNKERVIPDAPQAALSVAEYVK |
| UniRef90-A1AI | HVDHGFI R ADSKNGESRDIP |
| UniRef | TGMDLGDVDEGYLRTLGKGRKERLTPISGAALRALVEYRD |
| UniRei90-UPIOOO471D1 | VGLQTTEVSDGVLRVTGKGSKTRLVPLGEVALDWLGRYLQ |
| UniRef90-UP100034554B9 | VGLSVDNLRQGVVRVRGKGDKDRLVPLGDEAAWWLARYUD |
|  | R |
| UniRef90-UPIOOO37As UniRef90 S4NNZ1 | LDVNDVSGVVRVMGKGGKERMVPLTSKAGERVRRWL |
| Ref90-M5J | IGLTLAA DFNHSMLLHGKGNKERYVPFGSYCAEALLKYF |
| UniRef90-UPIO00380E |  |
| UniRef90-M4XN10 | QGLDLGDMDLSAREVRQGKGSKERUVPUGSQALKALN |
| UniRef90-10K7RO | VSLITWQDID |
| UniRef90-K1X939 |  |
|  |  |
| UniRef90_COD |  |
| UniRef90-K2FPK3 | AGLDVDRIDFSLSTIVTGKGRKERYVPFGEYAKNALERYL |
| UniRef90-U5S956 | SGITLKDI DFDSVLLIHGKGNKERYVPFGHYAAVAIREYM |
|  |  |
| P1 |  |
| UniRef90-UP10003FA8D3F | ДALKPADIDSKR NIVLLKNSKGKKDRIVP LSPKILDMLR |
| UniRef90 G2EAQ8 | LNLKICDIDRSQIHIIQAKGRKDRMVVMSEVIKPLL |
| UniRef90-H2G509 | CGLNTGDVDKRQTARVTGKGNKQRVVPFGDQATAALSHWL |
| UniRef90-B9CKF8 | SHLDREDVDMSQGVVRFGKGSKERDVPLYKTARDWLEAYM |
|  |  |
|  |  |
| A6O7 | GWLKIRFAKGEKERVVPLAPDADEAVEAYL |
| UniRef90-X15 | AGLDLDDLNFERLVRVRGKGKKERLIPFGKKARDSLAYIR |
| iRef90-B9EBFO | LNIKITD DFDKIYFPNTKNNDGR |
|  |  |
|  | LNLNWD K K M |
| RRef90-UP1 | VGIDVDDLDEGTLLLRGKGGKHRIVPVGTYAAAAVQRYLD |
| UniRef90-131F |  |
| iRef90 N1UVG6 | VGLDVDDVEGTAVVRLFGKGSNERVVPLGSYGAEAVYLVR |
| UniRef90-U2HDU8 | VALKVSNLDTDFIGIIEGKGSKERLVPIGSQALLKYLKRIYLQ |
| UniRef90-D3VHZ9 | $\underline{V}$ GLNWRDVDLDSGDVWRGKGSKERKVPFGRMAQEWLQRWL |
|  | TGLNLADLKDGTVKVMGKGSKQR\\|LPLGRHAQKALNAWLK |
|  | AGLSLPDVSSDYVTGKGRKDRLVFFGEDARKAMRAYIEDR |
| UniRef90-D8PIZ4 | A |
|  |  |
| UniRef90- UPI0003 | VNLNVDELDDSSIKFYGKGNKERYVPLHQEVISAIKNYMP |
| UniRef90-UPIOOO319AEAA |  |
|  |  |
|  |  |
|  | A GMT WD DLK K |
| UniRef90-A0A011 QA | $\checkmark$ VEL |
| UniRef90-UP10002F319CE | IGLNLRDVRKGD |
| UniRef90-UP100020D978F | VNLRLPQLDFKKLVLLRGKGDK |
| 00 | FKLTWENVDRQSMVLKDPKGKL |
|  | VNLKMFQN\| |
| UniRet90-R6NBQ3 |  |
| UniRef9c | VALDLEDLDERN |
| UniRef90 K6BJF |  |
| UniRef90-H6LJPO |  |
|  | CSLKCSNINDGTILYGKGDKERYLQLASDDVIHILTEYR |
|  | VGMDVDDLDPQLGLRLLGKGSKERVVPGSFARSAVDAWL |
| UniRef90-G4CPU9 | VNGK ${ }^{\text {VGD }}$ |
| UniRef90-M5DKZ7 | MGLT WDDLPKGR |
| niRef90_UPI00036 |  |
|  | ISLTMEN RQGVVRVVGKGGKERLVPMGENALEWIETFIA |
| UniRef90_W9AZC8 |  |
| Ref90- F6C | LGLKWEDVDRGVITVRRQLVRAKGGPVFHEPKTDVLRELK |
|  |  |


|  |  |
| :---: | :---: |
| UniRef90_Q1LR21 <br> UniRef90-E4RZ11 | ELEVTVRGEGMTRQTF |
| UniRef90-C2CFL3 | VRGKYVKNIDIDALEISTRKKRISNRAVQSTI |
| UniRef90-UPIO0037B4935 | KSKYLVVNKSGNQLTPRYVQLMI KKYGNES |
| UniRef90-G8X | dthflnrrgkoltramif Tliknlakk |
| UniRet90_S7XCM3 | RNHIDVQPHSKDIVFLNYKGGKLTRAMI |
| UniRef90_N1 | VRPGLVSM |
| UniRef90 UPIO0047BE3CD | AFLIAQKELPPSPALFLNQRGGRILTPTSV |
| UniRet90-E3ENU8 | AEGRRAKGTPDRRAVFLNKRGR |
| UniRet90-U2Q4V3 | VYRPKDKNANSK |
|  | ASFLKDP |
| iRef90-A4U5T6 | AFGRQQGVMH |
| UniRef90-E8LNPO |  |
| UniRef90_14EMHO |  |
| 俍ef90_D2DRB5 | LKNARCDELFVGQKRNG SRQLAWMIIVDKY |
| $\begin{aligned} & \text { UniRef90-H7CYV4 } \\ & \text { UniRef90_UPIO003731F9A } \end{aligned}$ |  |
| UniRet90-X1VN | EVHPRLAHNKDEQALFLNMRGDRLTRQGFWQLLKEYAKAA |
| UniRef90-A1AN | DMFKGVVRRDDSPYVFTNPD |
| UniRef90-F7V043 | HARGELMKPYPTSAVFLNARGGRLTRQSVHA VAR |
|  | EAGRPMKQDEPSKLFNQRGAPVTAGEY |
| UniRef90 UPlooos4554B9 | SARPALMDDVTRPALFPGRSDKAMTRQTFWHRIKAHALRA |
| UniRef90-B8DJJ4 | RDWRPA FRPVEDALFLNRSGKGL |
| UniRef90-UPIOOO37A5857 | EQRQSFKPVSGERALF GKRGSRLNRREANR L NR |
|  | STYRMQKYHKEHDYVFNHYGDPITAAGVEYVMDELVERS |
| UniRef90-UPI000380ECBE | NLRAYYKQYRPKVWLFEGQTGGQYTVESIRGVFRASMEKA |
| UniRef90-M4XN10 | WLEMRLQFKPQDNAVFLNKRGGRLSHRSIQLAMKKWGERQ |
| UniRet90-XoswV6 |  |
| UniRet90_Lok7R0 | PVREKIDSKRSEDENFLSQKRTRFNPASI WRLVKKYAKKS |
| UniRef90 K1X9 | K T PLFVNR |
|  | RHEIVFVNHL |
|  | ERGEQKHDYLIVSLGRQRHRGQPMTYAMLRGA |
| UniRet90-R7AKC8 | HARNDLLRGKGSDYFFVNCTGGAMSRQGFWKIIKYYGEKA |
| $\begin{aligned} & \text { UniRef90_K2FPK } \\ & \text { UniRef90-U5S95 } \end{aligned}$ |  |
| UniRef90-F2lGs |  |
| UniRet90-UPI | DARGDLVGGGSERALFVNARGTKLSRQG |
| UniRef90_UPI0003FA8D3F |  |
| UniRef90-R6PJR3 | NKMNIKPGEEDYVFLNRRGAHLTRTMILI MI |
| G2EAQ8 | NGVNSISTYKPSVFVEGRNGGV |
| UniRef90-B9CKF8 | KSLRNPREEKALFVSIRGHRMSAD |
| UniRef90_A6TN37 |  |
| UniRef90 M6C | EVRILGHVKG |
|  | S S Y |
| UniRef90-NoAQS9 | QQGRQEDKKDDHDFLFVNFRGGPLTPRGVRTILNSVIDRS |
| UniRef90 X1S891 | R |
| UniRef90_B9EBFO | ( ${ }^{\text {a }}$ |
| UniRet90-C3K×95 | Y Y L D YLFLILKGTQMTRQGFWK\\| |
| UniRef90-C7X | G S |
| UniRef90 UPI0003C7EBBC | GPRTTLTSTVASPALFLNARGGRLSRQS |
| UniRef90-131P. | NSAYLFLSKAGKQLRRENDWVIVKNCAYRA |
| UniRef90 N1UVG6 | RGGRL |
| UniRe990-Q1QPX2 | 俍 |
| ef90-U2HDU8 |  |
| ef90 D3VHZ9 |  |
| UniRef90-F2G2Y9 | FVSKRKTRISNRQVANRLLDKMA |
| UniRef90-H7ENR2 | GIMSLUSVNAFFVNQRGERLSVRGIRYU |
|  | QAA GLSRGP K |
| UniRef90-C4L615 | RKGVGLPTETALFLSQKGNRMTTDQI RYVMKRL |
| UniRef90-UPIO |  |
| UniRef90-UPIO00319 | EVDQLFINFRGTPLTDEGVRYIL |
|  |  |
|  | A |
| UniRef90-TO) | DGNVWGVESVS\| THAFVRVIARARKV |
| UniRef90 UP100035C4D20 | LDHGREELAGDTEAL FVGVRG |
|  | VSARLKKADRETVA |
|  |  |
| UniRef90_UPI |  |
| UniRef90 CoC | KDYKTQWIFYGKDGKQRTDFKGP |
| UniRef90-Q2GHC2 UniRef90 ${ }^{\text {O2VZC1 }}$ |  |
| UniRef90-02VCC1 | KR ${ }^{\text {a }}$ |
| UniRef90-E8R2F | WLTHRRPDHGGEHALFLNRYGRRLTARSVDRLFETHARGL |
| ef90-K6BJF1 |  |
| UniRef90 UPI00020D9D67 |  |
| UniRef90-H6LJP0 | NRKNCRLSEQSVRFMIAHYAKKA |
|  | VNQSGTPLSDQAVRRMINKYCSHA |
| UniRef90-S3WTL | VRGRPAMLANAKHSCFI NSRGMRLSRQSVWAVLRDRARSA |
| Ref90_AOAO23NPS3 | A |
|  |  |
| iRef90 M5DKZ7 |  |
| UniRef90 UPI00036FEF78 | Q |
| UniRef90-C9P1H2 |  |
|  |  |
| UniRef90-C0W7A6 | A |
| iRef90-F6C | SGLVFCQANGRRLEPRNFTRHFDNLLKKA |
| UnRef90 E3GWL1 |  |



| UniRef90 Q1LR21 | $\text { STTQ\|IYTH\|V\|A }{ }^{170}$ |
| :---: | :---: |
| UniRef90-E4RZ11 | LTTEIYTHL |
| UniRef90-C2CFL3 | STTQIYTHL |
| UniRef90-UPI00037B4935 | STTQI |
| UniRef90-G8X8F7 | TTTEIYM |
| UniRef90-S7XCM3 |  |
| UniRef90-N1UFY7 | NSTQ1YYHVA口 |
| UniRef90-UPIO0047BE3CD | STTQRYT |
| UniRef90-E3ENU8 | T T T Q Y |
| UniRef90-U2Q4V3 | TTTEVYTH |
| UniRef90-A8MFH3 | STTQl Ya |
| UniRef90-A4U5T6 | ENTALYY |
| UniRef90-E8LNP0 | AMTQRYAHLCV |
| UniRef90-14EMHO | STTQTYQ |
| UniRef90-D4DRB5 | STTQ1 Y T |
| UniRe990-H7CYV4 | STTLI Y |
| UniRef90-UPIoo03731F9A |  |
| UniRef90-X1VNR0 | STTQlYTHL |
| UniRef90-A1AN30 | TMTLRYSH |
| UniRet90-F7V0 | S T TQIYT |
| UniRef90-GOUHD9 | STTQUYT |
| UniRef90-UPIO004711818E | STTQIYTY |
| UniRef90-UPI00034554B9 | STTQ1 YTHV |
| UniRef90-B8DJJ4 |  |
| UniRef90-UPIO0037A5857 | STTQRYTHLDL |
| UniRef90-S4NNZ1 | STTQTYTHV |
| UniRef90-M5J5R4 | STTQIYTH |
| UniRef90-UPIO00380ECBE | RTTEIYTHV |
| UniRef90-M4XN10 | STTQ Y ${ }^{\text {S }}$ LL |
| UniRef90-X0SWV6 |  |
| UniRef90-LOK7RO | STTQI Y T HV |
| UniRef90-K1X939 | STTQIYTH |
| UniRef90-TOVAM4 | STTQIYAHV |
| UniRef90-C0DS64 | NMTKRY |
| UniRef90-R7AKC8 | ATTQMYA |
| UniRef90-K2FPK3 | SSTQTYTHV |
| UniRef90_U5S956 | S STQl YA ${ }^{\text {a }}$ |
| UniRef90-F21G9 | TTTEUYT |
| UniRef90-UPI00047C2FFA | ATT QMYT |
| UniRef90-UPI0003FA8D3F | KTTETYTH |
| UniRef90-R6PJR3 | GTTEVYT |
| UniRef90-G2EAQ8 | ETTMIYTHVA |
| UniRef90-H2G509 | NTTQ Y HV |
| UniRef90 B9CKF8 | STTQ1 Y THLS |
| UniRet90-A6TN37 | KTTEIYTHV |
| UniRet90-M6CKS0 | NSTQI YTHVAD |
| UniRet90-A6Q7C2 | ETTQIYTH |
| UniRet90-NoAQS9 | SSTQVYTHV |
| UniRef90-X15891 | ATTQKYTHLNL |
| UniRef90-B9EBFO | ATTEMYA |
| UniRet90-D4ZGA1 | STTQI YTHV |
| UniRef90-C3KX95 | A ATQI Y S |
| UniRef90-C7X948 | STTQIYAK |
| UniRef90-UPI0003C7EBBC | TTTQl Y TLVTV |
| UniRef90-131PJ4 | STTQl Y |
| UniRef90-N1UVG6 | T T TQvY |
| UniRef90 Q1QPX2 | D T T A Y Y RVA |
| UniRef90 U2HDU8 | T T TEIYTHID |
| UniRef90-D3VHZ9 | STTQIYTHLD |
| UniRet90-F2G2Y9 | STTQVYTH |
| UniRef90-H7ENR2 | STTQRYTH |
| UniRef90-D8PIZ4 | MT QRYA |
| UniRef90-UPI000377F7B1 | STTEDYTEVSV |
| UniRet90_C4L615 | STTGRYTH |
| UniRef90-UP10003782045 | STTQI YTH |
| UniRef90-UP1000319AEAA | S STQUYTH |
| UniRef90-R6FFZ1 | KTTERYVH |
| UniRef90-S600432 | SEVERYT |
| UniRef90-TOXY | QMLKRYTHL |
| UniRef90-UPIO0035C4D20 | QTTQMYTH |
| UniRef90 A0A011QA5 | STTQIYTH |
| UniRef90-UP10002F319CE | STTQVYTHL |
| UniRef90-UPI00020D978F | STTQVYTHV |
| UniRet90-C0QB39 | AMTQRYA |
| UniRef90-Q2GHC2 |  |
| UniRef90-O2VZC1 | STTQRYTEV |
| UniRef90-R6NBQ3 | A STQVYANL |
| UniRet90-E8R2R9 | TTTQUYTQV |
| UniRef90_K6BJF1 | QMLIKRYT |
| UniRef90-UPIOOO20D9D67 | STTQMY |
| UniRef90-H6LJPO | TTTQTYT |
| UniRet90-R7BEY6 | NVTQI Y THVAV |
| UniRef90-S3WTL7 | TTTQLY |
| UniRef90-AOAO23NPS3 |  |
| UniRef90-G4CPU9 | STTQI |
| UniRef90_M5DKZ7 | QMVRRYAHFSV |
| UniRef90-UP100036FEF78 | S T T Q Y T H |
| UniRef90-C9P144 | STTQ1 Y T H |
| UniRef90-W9AZC8 | T T TQly |
| UniRef90-C0W7A6 | ATTQRYTH |
| UniRef90-F6CPQ5 |  |
| UniRef90_E3GWL1 | STTE |





100
110
ARQNRTKAEHPTDRLLIFVNRRGGP\| SVAG|VIRWITAKYAERS TGRPALTNARSGPALLLGARGGRLDPRAARRIVNEVSEAT

 KARSQFVKQKATDTVVVNHHGNPLSRQGFWKIIKDIAATA DVARPKLFRPGSPALFLGARGARIDQRT EHGRSALLEKHAETSQALFDGAR AKRDDQRDVRSUVHEA
 R R DDGKLWGDKPDWMTHGFRDADFRARKAYEKECKEKGTS VRARPGLVKRGTPALFLNARGGRLSRQTAWQVLKTAARRA WIRTRQEFNLQDDALEVNKYGKRLSDYS DENLFYKYREDA RDVPMKYRSNQYDFVFCKANGDHLNLATPAHWLQRDYKNN SGRPVLLKGHDHEYI FVNSRGEALTPSGVTYILNDLVKKS ESCPYQLE PFRETFQKQRPE DYIFVGVGGKKLNPDVFRANLRGLKKSL EHHFLS

PKTDDA VF $\square$ S GRVFTYSSGFKSAWRTA RN $\square$ NGKVFSMRADS TTHAFERCCKCA DS LP LN S GMVS LYVIHQQSGSRYTRDAFNSQWMKAKKVA WWKVGRQQGVMHRDGWLFPGQHAMKPDSTRQLYRVVVEAA DARPALLGGKECPHFFVSTRGNKMTTDALRKMFKKSLLLA AEGRQQKSNLDSSAVFLNAKGTPDTDRGURFILNKIVKDA VVRDKADKGKPPARHLFPSRGVMGHDTRHRFYLLIKEFAV
 TMVQEYQK INPSREYVFELKGEKLSENSLRYT IDKAFAKV
 NLVRKNWQKKTLSNFFINQYGRVLTRQYVHNLIKKKCEEC RCARPQHFLFPGPDPA RPITVRSLQRACRLAAETA DEKEAQKKTEGHPPSRFLFASRGVSGHLTRHRFYLLIKEL NDRHKDNDYNLDVLF N NLRGVQMSRQGFWKVVKYYAKEA GPRAELLAAKQSADVFVTVRGKSGTAMSRDMFWGLVKRYA ETSGPREWDFNGKD RGQQDSRQGIRYAFRAADRKA ENDRDAK VRPKKHDKKYSEKALFLSERRERISSNRTVQY I NKELSKA
 RQRDADVTDRHSPFL
 DIDPALLFIRFSNKKTSENNETKALSPQSVVRII RKYLRKL N\| IRPQWM SSLQLKK PGMSSVFIIHQPNGSGYTRDGFNSRWSAARDEA LAALLANRHLKGPRVLYRDNGQPATRAAVSRWMAKAQKRA QVRNTLLK GEQN ALEFDSQHGNRLSNRQVANRLQRWTSE WLADRPSFAPHDEALFVSQRGTRDSTRNVQKRMAEWGIK ATYRPKLKNSSESFKLFPNTRR

EKFWKD LLKT $\square A$
A VLQEQKAKTVSEYVFPSPSGGPDSPDSVRNMLRRVLKRA DGRPALAGETPPKALELGVRGKRLDPRAARRVVHEAVAAV WMPEQGNKTGNDFVFHL PAHDNVCLKPWAVKA LPADLIFKNLTNPAW! SRPAPSLIKRDSKNSFLSEQKKR $\square$ SNRTVQLIITKELEAA
 PRGKSPYVFPGRYDDKPRGNIVRMLKRVMSEKA TTYKPTDWLFEGQYA GEPYSARSLQSLIFHRAKEAA PALAARSVGPASTALFLGDRGARLGVRSAYRVVARLLSDALD RHGRPARDTAGGDALFLGVKGGRLQPMTVVRRVDAA AESRPLLKNK ICCDEVVVSQKRSGIVRRLAWMIVKNYAEAA
 RVYWKAYRPKEWDFYSRVNTGTHITSKAVQNIFHKYIEKA LKARPHLAEQTTDRVFLNDRGDPVTPRGVEYILDQVIKKT TQWLCAHYHEEHTLFFVNHRAKGLTTAGUDYILTQLLKKS QARRLLGKRSEPKDRVFTNLRR YSAYMNLQLLRWCMAA S GRQQL LKKQRHA YLFVNHYGKDQDKGFG K K L

 AEAEAVAAGKPASKFLFPARGRDGHLTRQSFFVLIKDLAA SMCPYA LLAPDKPIFLGARGGPLSPRIIQLAMARLRGAL SRRAEDCAPDAAAALFLGMRGRRIDPRAVRDVVHRLCAAA DEEDRQKDNEDALAVVTKFPYNRISRRSIEDAISKGGDRA

 MAVRPGLATESEQALFVSQRGGRLSNRSIQSR历SRWG VRGRPALATHGQPALFLNQRGARLSRQSAWAVIRRAAQRA HMQAYNRDNDF
 VRGRMAGAARSTPALEVNACGGRLSRQSAWAVLKRAAERA TGRPALVTDSGEQALELGARGGRVSQRUVRGRLESACARA GRPRLLRGRKRCDAVFVSRLGRRMSRQSVWNLVKKRCLEA $K M F A G K D P G A P E E Y V F K D R R H G K W D S K A F G E S V K T W K L N E$
$K D G Q V F K D$
Uneplovgh

| UniRef90_F5YGL4 | S T T QRY T H\|V|DM |
| :---: | :---: |
| UniRef90-E6J5A7 | ATTQMYTHV |
| UniRef90-K0 | STTTIYT |
| UniRee90-UPIO0035F06D7 | STTQIYTHVA |
| UniRef90_D1AX16 | T T EVY |
| UniRef90-W4VEW0 | STTQ |
| UniRef90-UPIO00381E5DE | ATTQUYT |
| UniRef90-S4H4T3 | NTTQRYTHVS |
| UniRef90-E1R041 | STTQTYTHLSV |
| UniRef90-R7F1R6 | SATGIYT |
| UniRef90-C6131 | QMLIKRYTHLK |
| UniRefao-Kok8d9 | VTTQIYTEVSL |
| UniRef90-D1YIE1 | DMTLI Y |
| UniRef90 ${ }^{\text {c9mYB7 }}$ | TTTEVYTHVE |
| UniRef90-F214X4 | S STQLY |
| UniRef90-F7XWP5 | STTQRYTKVDV |
| UniRef90-Q25517 | ASTEDYTHVA |
| UniRet90_G7LSH9 | NMLK R Y |
| UniRef90-11Y146 | MmLKRY |
| UniRef90-B7KE90 | SDTSRY |
| UniRef90-Y1CW68 | SQTARYN |
| UniRef90-Q989 | NSTAFYT |
| UniRef90 KOYVC7 | STTQ YTHV |
| UniRef90-A9E9Q5 | ATTEIYTHV |
| UniRet90-W4C | STTMIYGHV |
| UniRef90-DoZ997 | STTQIYTHL |
| UniRef90_E4TY18 | A |
| UniRet90 W9V8S5 | A MVKR |
| UniRef90 R6WG44 | STTQ ${ }^{\text {ct }}$ |
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| UniRef90-4LTA4 |  |
| UniRergo Noart |  |
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| UniRet90-C6BT31 | SVTE YTHVSL |
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| UniRef90-5W |  |
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| UniRef90-F5YG | A T T QI Y ThVDM |
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| UniRei90-U2Z1N7 | STTEIYTHV |
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| UniRef90_UPIO00478BE72 | T |
| UniRef90-V20 |  |
| UniRet90_M11 | T |
| UniRet90-C5C | TTTQVYTLVTV |
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| UniRef90-F8AAD9 UniRef90-F8NBF2 | AMTERYAHLLA |

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$\square$ L


R D

RTGLA Q S H $\quad$ LQ R R L L
RYTLEEMPRFLAAVEEDN
TLSPDEAAKLLEFPASDDL


 $R P L S E P D A A Q M L E Q L G E Q D P$ RDQAVV
VLSENEVIRLLTCLTNGK QAVLYYTY K Y Y D D $\square$ Q C K Q L LE A LE NEE $\square K$ KFQT
RDKA
ThSVEQARH LDDDA
R DKA
GAR

RDRYTDTE Y H A LLY S A V R R A
EVLSREEMKNDFAQ $\square$ T NRKH REYLSREEMKN FA QUTNRKH RCMI SULIMS R I V


 $T L S V H E L E L E D H S T A M G M R N R A M L E T L Y S S G L R V S E L D$ $R \vee L Y P H E A E A L \bar{V} T A P K G T$

R R D $R A M V |$| $E$ | $Y$ |
| :--- | :--- |
| $E$ | $L$ |
| $L$ | $L$ |

 D P L A L R D R LI VE ML Y A T


 $R$ VLAE KMVQDLLETMDE


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

















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 EADKALQQGNNSEMVFPARCGAKV KSYDWLFKKAVKSA RGRPLLAGARSGDALLLGARGGRLNPTTARQLVGGYAETA NRGRPSEDRQDSEAVFVGSRGGRUNQRQVRQVVHRLAAEA REYRPQKWLFEGE $\| V P$ LSENVLEELLFNYKKKKVSP历FPDSYHSLWRRITN AAEDAARGPKPPTRFLFPSRGGHLTRQRLAQLLKDVALAA PALSTKRRGRVFSNWGTKFAGEKAWANCRKNALSTYLEEAA VALTSKGDLTNEKRDFTNYKGGPLTTRGLRTVLDQLIKKS VAVDRAQELRVSPTRTPYLLGGRGGNLRLHSNVWRTFKDA IRERKKAYAVHSTMLIVSEHGRSVSVAGMSRRWQKACQAA RDELMTRFKKTHDSLLINHYGDPLTTRGDRYCLTK\ISKA TRHDSFSPRYSGKRMIPDDFEGESLRDTVRSVQRLVKKYA AKHAGAANA VFPSTRRPDUAYNFDPAWDRALKAA YMALCPWPMEAGLPLFRGDRGGPLPAQTDRKAMAQVRAQM FRNDLLRGRTDPGYFFLSTRGLPMNTDAIRKMFKTTLIDA TQFQPEEWLFPGQ RSERHVTERTVQKVFENARRRA K TWYEAEKEKCGNLWTFVTWNGSPMHPDTVTDDFRSFIEKN RKARFPQAEKGCSRIFLSQKGTALSAHGIWYWVSRY K T GRRQEWVCPTSGRALFLGTRGGR DQRVVRRIVHTHDRA KEFNGAK DKNGPLFVNAQGERVNPGVMQRQLRRITDELL K EFN
 ALRE LFGPQDDAVFDSNQGRRITSMRNVGKRFAEWGDKQ KEYRPQKWLFEGEQV
S $\qquad$
BKA TNAFFCNARGERFS
EFIQKY亩K TNPKKEYLFEKDGKKYS
EEVRDYK EEVRDHFPIKKENCVFLNKRGSKMSRVMVFLIIKELASKA EEWRPLVHGRPGPAVFLSQRGSR1TRRAVHALVVEYGRMV EGRPELVRKSGRDAVFLGSRGGRENPRMTRKGVRUVEVA VRNE DASADEAALFVSKLGTRISVRSVQKRMAEWGQKQ EGRPALATADSGPALLLGARGKRLDPRQARTVVHQTVSAV KRWLRVRSNPSSDFLFVSERGTPITRHAAWRIFKEAGEKA EVLKPLKKVVRSDYYVLTNDAEPTEPRTYRNYYKRLLDKL NDNDLLNEFKMSKPLFFNKKGEKLTRAGLAYILNKYVETA YEARPLKVAPAEEALFLSNRGRRMSADVLRKMFEAHVLEA ALPRKVRTLTLFCARAGRPVTYETVKLAFAKARKAA पEMRGLFEPDDNAIFISTRSGKRUSARNVQKRFEQWGMKQ GERGNPDDFVFVGFTYGSWTYTGSLELQQWSLTA SRKVKHTDRSMYLIVDETGQKMSYTTVRSHFDKARELA RD AMLAGIERRGHNDLVFLSANGGRIISETFNRVVAALGFNN NKLKELNDKPVDEH| FFDPKLKPYSRQKLYEALKKYADRA DKTRPGLLKQKEELHLFLSRGRKDSRQTFWKAVKAYAKKS
 ADVRPHLCCGHEDGCFLSHLGEPFTPNRLTQLVRAYVDKA KDGELVFAGLPD GRPQLI EETDGSAPDFVGARGKRVSTRTVYEVIAHLLAEV YRKLF PDDNACENNVYLFPSKAKQGYMTRQNFADLLKAL QHSRPKLLARSHPWLFLSNRGKRLTRQQAGNLRKKLGEAA ARPELAGAGRGGPALFLNARGGRLSRQGAWMVLRAAADRA VRARPATAGAGNPALFLNARGGRLSRQS AWAVLRTAA VYPGNYPRTESEYVFPGRDGKQLTANDYRPVDRIKKRA QESVKQLPKRENEKDSDKQFKGLI TLGRTNETLPRWAEQA
 RVPGCPWLFPGGPGKP ALSTRAAQALAAIATDRNGPVF QARELVGERKGQDEQVFSGLK CPWPVALENHRKDPLFRGAKGGPLS ATNNT ILLKNW KLKA OAYTMLGEPQELSQQIFAGLTKKGARGMVQKAVARARVSL ELRPGY ACSSEKALFVSRRGKRIACRTVQLRLEKWQVKL RARPVLASRRASPAVFLSRRGTRLSRQSAWTVLRTAAVAA ARPVFAARGASTPALFLGARGARLSRQSAWLVIQAAAERA


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| :---: | :---: |
| UniRef90_K8E4F6 | A T T M D A HVV |
| UniRef90- S3K0N9 | S T T Q R Y H ${ }^{\text {L }}$ |
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| UniRef90-U2SAR9 | EMTMRYA HL |
| UniRef90-V9R9H9 | S T T Q $\square \mathrm{Y}$ T H L D |
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| UniRef90_UPI00046AECBF | TMTE HYVR |
| UniRef90-IOJIM0 | K T T D $\square \mathrm{Y}$ A HV |
| UniRef90-K2EFL5 | S MTERYA HL |
| UniRef90-IOKYD2 | A S T Q $\square \mathrm{Y}$ T HVVS V |
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| UniRef90_A8UZC8 | LT T A RYAKV |
| UniRef90-UPI0003711DD8 | AT TE $\square$ Y T HVA |
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| UniRef90_UPI00047187C | K S T Q ${ }^{\text {P T HV }}$ |
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| UniRef90-H0FA08 | RTT R I Y L R |
| UniRef90_UPI0003062248 | VMTE HYVR |
| UniRef90-Q92C75 |  |
| UniRef90_K2EBZ5 | S T T Q I Y T HV |
| UniRef90-A2SD71 | S V T K R Y S HL A |
| UniRef90-UPI0002557DFB | S TTQAY T AV D |
| UniRef90_C7MNC6 | S T T Q $\square \mathrm{Y}$ T HV S $\square$ |
| UniRef90-UPI00047632C3 | R T T QRY T HV |
| UniRef90_U7UBP8 | T T T Q I Y T HV |
| UniRef90_UPI00031DD323 | S T TQ ${ }^{\text {a }}$ Y TKVD |
| UniRef90-R6Z669 | T T T L N Y V H |
| UniRef90-F2NVQ0 | STTQRYTHVTL |
| UniRef90-M9VCG7 | A T T Q $\square \mathrm{Y}$ T HV |
| UniRef90-R5QN16 | STTQQRYTGLD |
| UniRef90-UPI000372C47C | R S T Q I Y T HV |
| UniRef90-I8QTY2 | A T T Q ${ }_{\text {d }}$ T HV |
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| UniRef90_C6DHB5 | S T T Q 1 Y T H LD |
| UniRef90-19H2V8 | K T T S I Y L HV |
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| UniRef90_A8MK22 |  |
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| UniRef90-W9V9C0 | GTTQ I Y T HL D |
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| UniRef90-A6DBC8 | S T T Q I Y T K L |
| UniRef90-B3ETL0 | T T TEI Y THL D |
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| UniRef90-G5F5K1 | S T T QLY T HVD |
| UniRef90_UPI000372D216 | Q T TQi Y T HV |
| UniRef90-R4KSP8 | R ATTI Y T H |
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| UniRef90-B6B0J8 | S T T Q A Y T AV D |
| UniRef90-UPI00034C0B17 | A T T Q L Y T QV S |
| UniRef90-R5JTW9 | K T T Q I Y A KV |
| UniRef90_A4AH05 | GT T Q L Y T HV |
| UniRef90_UPI00037DB013 | S S T Q I Y T HV |
| UniRef90_Q83N36 | NTT SVVYTKVTI |
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| UniRef90_N9NZX5 | TTTQ |
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| UniRef90_F8AZ80 | S T T Q I Y T L V T V |
| UniRef90_UPI00035EC68C | A T T Q I Y T HV |
| UniRef90-UPI000347A93A | A T TQQ Y T MV |
| UniRef90_V9RD22 | $\mathrm{RM} \square \mathrm{OR} \mathrm{R}$ T H |

## UniRef90 K2EAIO

UniRef90-R7WPQ9 UniRef90_UPIO00255584B UniRef90_UPI000316DFA3 UniRef90_Q1GGQ5 UniRef90-X0RBB5
UniRef90-X7FF31
UniRef90-U2YJ37
UniRef90-UPIOO0368BF7E
UniRef90-B9JTR9
UniRef90_K7SL44
UniRef90-S5MAF5
UniRef90_DOZ2IO
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UniRef90_UPI00047D5969 UniRef90-F2JQR3 UniRef90-UPIO00475758E UniRef90-S9TWT3 UniRef90_UPI0003B6B9CF UniRef90-F7NYK4 UniRef90-E6WS25 UniRef90_R6U9F9
UniRef90 A6G3J3 UniRef90-A6G3J3
UniRef90 C6CCH8 UniRef90-Q2CFW8 UniRef90-131KC5 UniRef90_F0EZC1 UniRef90-R4KLV5 UniRef90-V2RC77 UniRef90-W6JXJ9 UniRef90-Q8PGR5 UniRef90-R7DTN3
UniRef90 IOQTV0 UniRef90-E5YPS0 UniRef90_UPI0002556DBD UniRef90_LORAD9 UniRef90_Q2S460 UniRef90-W1JAD0 UniRef90_UPIO0030BC43B UniRef90-K6QBG1 UniRef90_UPI00036D7FAD UniRef90_UPI0002EB6BE3 UniRef90-A6FXR9 UniRef90_UPIO003656570 UniRef90_R9K514 UniRef90-S4YE00 UniRef90-D9YEK6 UniRef90_UPI00046F3C75 UniRef90-D5AJ05 UniRef90_I3TE16 UniRef90_UPI0003F6A6EF UniRef90-H6P269 UniRef90-G8UPP4 UniRef90-K2E8IO UniRef90-M5TYG9 UniRef90-G6EXW5 UniRef90_UPIO00345F9EE UniRef90_UPI000472B01C UniRef90-D4DPT4 UniRet90_D5R126 UniRef90_X7FPP6
UniRef90_UPI00047CA461 UniRef90_P55429 UniRef90-V6MBV9 UniRef90_UPI00037CCF47 UniRef90-R8VMI8 UniRef90-B7RVJ7 UniRef90_UPIO004290A05 UniRef90-TOVM02 UniRef90-W8A9L1 UniRef90-N1WFK8 UniRef90-Z5XSK6 UniRef90_S3Y958 UniRef90_Q11DU1
UniRef90_H6R4Z1 UniRef90-A1B154 UniRef90_W7Q817 UniRef90-B8KQ38 UniRef90_UPI000376B770 UniRef90_A0A022PM57 UniRef90_W6WL47 UniRef90-A8FLS2
UniRef90 W6K6X7 UniRef90-A1UR18 UniRef90-U1LNA7
 R IIFALS

30保 REFLSDAEVQKLFKTPGKDGEDVKRAFLFSCYCGLRVSDLL VLTDDELKHLLNAPNQTGFRDYVLMVYLLDSMSRISEA KTLDEAEVDRLLAAAEADRLRNTCLMELLYATGMRVSEL KTLSTAEVDRLLEAAESTADRLRNALQQLYATGMRVSEL RILTHAEVDSLFVQAETEADRMLALLELLYGSGLRATEL VLTLTQLEELLELPGQAPAWMRALLEFYSTGLRLAEL RTLGGEDARAARDATPKGSRDAAVGALYGCGLRISEA RYLS Y SEELDKGSADGQNQTNKDKAMFWLMYESGLLRRAELV
R EV L T I E Q V H E LI G S A T T Q $\quad$ R M F V Y F WTVVY S L G L R L N E A E A L S V D Q L K T L L K Q P N Q R T Y R D Y V L M M L L A D T G M R I S E A

DKAMVEMLYGTGVRVGEL M
YLEDEQEKFREAASTRDN

VLSREEVHRLFDAMSTGPN QTWTEEEVKTFL GHSQNSRYHLIAAHLLYGS


DVDQMTRLLDTQDDDR RDAAVEALGCGLRVAEL AD LDRDMELMSSGLRISEL R\|LTPTEYRALRDAARNDNRMSAVIELLLRQTGLRIGEEL $D A M P D H D R P A I L L G A F A G L R V S E A$俭

EA

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


R
$K A L R R$
 $R$ T Y LS P DEVQHFLGCVADVKHH

ET EEA II QAI KHPVIDHHFAMMMA

## E T

 $R Y$$R$ R E R

LS L V EVK Q $\begin{array}{llll}V & L & K \\ L & L & N \\ I & M \\ M & M\end{array}$ \begin{tabular}{l}
$P D K$ <br>
\hline$L S$

 $\begin{array}{llll}\mathrm{Y} & \mathrm{V} & \mathrm{D} & \mathrm{D} \\ \mathrm{I} & \mathrm{T} & \mathrm{M} & \mathrm{D}\end{array}$ 

Q <br>
\hline L <br>
\hline
\end{tabular} $\qquad$ E

RERLT LEEARHLLA K S S E V S E I R D R A M I E VL Y S

## $K T L S E S E M N A L L E A$

$R H F L Q V E Q V E A$ L P K A

$R D R$
$R D V$ MSS
E F M S E E E


## UniRef90 K2EAIO UniRef90_R7WPQ9 UniRef90_UPI000255584B UniRef90_UPI000316DFA3 UniRef90_Q1GGQ5 UniRef90_X0RBB5 UniRef90_X7FF31 UniRef90_U2YJ37 UniRef90_UPI000368BF7E UniRef90-B9JTR9 UniRef90_K7SL44 UniRef90_D0Z210 UniRef90_R7JY38 UniRef90_Q7UVL0 UniRef90_A0RB99 UniRef90_F2JQR3 UniRef90_S9TWT3 UniRef90_UPI0003B6B9CF UniRef90_F7NYK4

 UniRef90_E6WS25 UniRef90_R6U9F9UniRef90_A6G3J3 UniRef90_C6CCH8 UniRef90_Q2CFW8 UniRef90-I3IKC5 UniRef90_F0EZC1 UniRef90_R4KLV5 UniRef90_V2RC77 UniRef90_W6JXJ9 UniRef90_Q8PGR5 UniRef90_R7DTN3
UniRef90_I0QTV0 UniRef90_E5YPS0 UniRef90 UPI0002556DBD UniRef90_L0RAD9 UniRef90-Q2S460 UniRef90_C2UVD8 UniRef90_W1JAD0 UniRef90_UPI00030BC43B UniRef90_K6QBG1 UniRef90_UPI00036D7FAD UniRef90_UPI0002EB6BE3 UniRef90_A6FXR9 UniRef90_UPI0003656570 UniRef90_R9K5I4 UniRef90_S4YE00 UniRef90_W6K4I9
UniRef90_UPI00046F3C75
UniRef90_D5AJ05
UniRef90_I3TE16 UniRef90_UPI0003F6A6EF UniRef90_H6P269
UniRef90 G8UPP4 UniRef90-K2E8I0 UniRef90_M5TYG9 UniRef90-G6EXW5 UniRef90_X1G5A3 UniRef90_UPI000345F9EE UniRef90_UPI000472B01C UniRef90_D4DPT4
UniRef90_D5RI26
UniRef90_UPI00047CA461 UniRef90_P55429
UniRef90_V6MBV9 UniRef90_UPI00037CCF47 UniRef90-R8VMI8 UniRef90_R6QYX1 UniRef90_B7RVJ7 UniRef90_UPI0004290A05 UniRef90_-T0VM02 UniRef90 W8A9L1 UniRef90_N1WFK8 UniRef90-Z5XSK6 UniRef90_S3Y958 UniRef90_Q11DU1
UniRef90_H6R4Z1 UniRef90-A1BI54 UniRef90_W7Q8I7 UniRef90_B8KQ38 UniRef90_UPI000376B770 UniRef90_A0A022PM57 UniRef90_W6WL47 UniRef90_A8FLS2 UniRef90_W6K6X7 UniRef90_A1UR18 UniRef90_U1LNA7
UniRef90_C5ABE0
 C G L D L E S V D H E R L RV I G K G D R E R V VP Y GAP A A D A L G R WL E K S L S W G D DE R T QS GA Q V VK R Q DK TKK R V I DP L H NSA WA L

 $V$ T L P L S A AR DPRMLLI RGKGGKERMVPL SPPARAALADWL V S L P L SAVRDAPFLTVTGKGGQARMVPVSQRAVQAL AS L DV DDI D S $\square$ N E S V RIGGK G S K E R L V P I GS HAMKAMQK Y R


 L N L Q Q E D I D F K T NVI E L K GTNTTKNRKTTRYVP I S QKT S K LL
 N R L D L N D F H E K Gl I T VVF G K G R K WN E DP L P K V L V D L L K K DA
 VSANLQDIDWS EALI RVARGKGNKQRVLPDGRMAVAAAIKDV



 V $V$ K L S L L $V \operatorname{K} L \operatorname{L}$ $V$ V $\operatorname{D}$ L D VV D D L






 $V$ GANLQDI NRSSAEILVRGKGNKERLDPVGGKALESLNKW
 A N L R L S D I N K D N L H L L P F E K H E E R T V S S L N K R A E E A L N K Y L
 A A L R V S DV
$L N L R G N D I N Q G I M R V R D G K A G E R T$



1







 L R A R W D Q F K F S E GE H GPE GT W T K L S S H H T K Q K K L H H T P L S A C G L Q WS D I D E R T ITTVD R I M L Q D K H G I Q L G T P K T Q A K S Q S E






 LTLNRNQLPK GEVLRVTGKGNKQRLVPDLPVVVEAVRDYV



UniRef90_K2EAIO UniRef90-R7WPQ9 UniRef90-UPIOOO255584B UniRei90_UPIO00316DFA3 UniRef90-Q1GGQ5 UniRef90- XORBB5
UniRef90 $\times 7 F F 31$ UniRef90-X7FF31
UniRef90-U2YJ37 UniRef90_UPIO00368BF7E UniRef90-B9JTR9 UniRef90-K7SL44 UniRet90-S5MAF5 UniRef90-DOZ210

UniRef90_R7JY38 UniRef90-Q7UVLO UniRef90-A0RB99 UniRef90-UPIO0047D5969 UniRef90-F2JQR3 UniRef90_UPIO00475758E UniRet90_S9TWT3 UniRef90-UPIo003B6B9CF UniRet90-F7NYK4 UniRef90-E6WS25 UniRef90-R6U9F9 | UniRef90-A6G3J3 |
| :--- |
| UniRef90 C 6 CCH | UniRef90-Q2CFW8 UniRef90-131KC5 UniRef90-FOEZC1 UniRef90-R4KLV5 UniRef90-V2RC77 UniRef90-W6JXJ9 UniRef90-Q8PGR5 UniRef90_R7DTN3 UniRef90-E5YPS0 UniRef90-UPIO002556DBD UniRef90-LORAD9 UniRefefo-O2S460 UniRef90-C2UVD8 UniRef90_WIJADO UniRef90-UP100030BC43B UniRef90-K6QBG1 UniRef90-UPI00036D7FAD UniRef90-UPIOOO2EB6BE3 UniRef90-A6FXR9 UniRef90_UPIO003656570 UniRef90-R9K514 UniRef90-S4YE00 UniRef90-WGK419 UniRef90-D9YEK6 UniRef90-UPI00046F3C75 UniRef90-D5AJ05 UniRef90-13TE16 UniRef90-UPIO003F6A6EF UniRef90-H6P269

UniRef90 G8UP4 UniRef90 - K2E810 UniRef90-M5TYG9 UniRef90-G6EXW5 UniRef90-X1G5A3 UniRef90-UPIO00345F9EE UniRef90-UP1000472B01C UniRef90-D4DPT4
UniRef90-D5RI26 UniRef90-X7FPP6 UniRef90-UPI00047CA461 UniRef90-P55429 UniRef90-V6MBV9 UniRef90-UPIOOO37CCF47 UniRef90-R8VM18 UniRef90-R6QYX1 UniRef90_B7RVJ7 UniRef90-UPI0004290A05 UniRef90-ToVMO2 UniRef90-W8A9L1 UniRef90-N1WFK8
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UniRef90-H6R4Z1 UniRef90-A1B154 UniRef90 W70817 UniRef90_B8KQ38
UniRef90_UPIOOO376B770 UniRef90-A0A022PM57 UniRef90-W6WL47 UniRet90-A8FLS22 UniRef90_W6K6X7 UniRef90-A1UR18 UniRef90_C5ABEO

90
100
110
120
TEKKFTINKKQTQLFFLINKAGKQLSERSLQDAFTRALTRA VGRPALATETSGSALWLGARGGRLDPRQVRRVVHEVTRAV $K E N$
 D ${ }^{2}$ KTDFDS PHRNLWVEQMDSALFITSEKLGTRLSTRAVQQRLKVAATRA
 NRWLALRPDDGKYLFPSRGKHHSRDRLFQMLKELALRA SLCPY HLPATEPLFRGARGGKLQQGIIQREMQRLRSAL GRRGEWMSEASGDAVFLGARGGRIDPRVVRRVVHQHLRTD HCRDKWENNDRFFVFYNSTTGKPFFPESPYRWFQRFIKRH WFDVRYKNDFNSLFCVVNKHQQVVEKSLTTQSLNDLCKQD MKMFSLKDVDPQEFVFLCRKGEPTKNSAYDTSLFKLAQKA ASHRHPSFLFPADGRKHSEATYPMSETAVQGAMKQUTKNLL
 EE RIDEYKKKENAFFVSQKGQRLSVRQUQEVNQALKA EATGDKWKAEESEYVFHAGYGTPFYYTHPTAWWKMFTKRH REREKVLLNLGHEFVFINSKGDKLTDRGVRYWLKTLGKSY LIKVRGAYVGTEPDALFLSKQKSRIVHRQVQQRVKLWSERQ KV RPNDGVKDKEALEISKQYKRMSPKTVQAMVNKYLKKA VRHQARYRHLRSPWVFCQLDGDHAGEMLTKGMCKWPLRRA ERPHHENGYIFS AEAAAQARGKAASRFLFPSHGKDGHDTRHRFFTLIMETAV LYLD KRGSDNQALFLNKCGGRLTDRSVARALEKY DKKA TARPELLKGQACAYVFVSQKKVGISRQLAAWQVVAKYAQQV LN DRPKSNSPKLFLRYDAPYKPLEGHSSCYAIKKVFGLA KVGADEADSALFNRMQRNGKSQPLTTTGLTGLAELQQTA REARPLLAANKPVPLFI DVSRQPLSRQQFWALVKRYAAVA SLLRSIKKVVNNEYFILSNDSTPLEPRAYRNYYKNLLNKI QLTAETERNFDTTYVFTTNYGEQLSEKTIQKSFDKYAEKA RCRALPRPVRGLNLICNKKGRQVDYASVKVAWSVARKAA YANDYAEHLAVNDAFFLNRDHRPDSDQSVRRIISKHCADS WQYVFPPTTLSEDPRSGAARRHHRSDSAVQRAVKKAADAT GEVRWLLGRHDSEYLFVTQRGQPLCLGMTTQIAGQALRE EGRPGFDEGRRHRPCFTNRWGRTSPRGIAAWNARKSI K DCPWTFTASSPGFVGAKGGPLNPRIVQAAVARMR LKGRPQFAHPDEVALFVSSKKCRISARHVRGRMQEWGDKQ EVLG AKARARDALVFPNADGERGSLRSVGHFVSRDAKAA S E ERRDELTDPRDPRALFLSRRGARVGVRRVQALVQRYGAL KELKKNLIPADNSAFLFTGSKGQRLSSNVTSNAFARFMEDT
 QFLNFPQRVKPTDLVFPAETGNAHSFDYLNYNLRCLLKK LAVRGQWADVDEPADFVTRRGQRTSNRSVQRRVAEAGRRG VALSGNVFHYSS
 KRCPNGREKVYSTRLI VDDDGLALGRAALRYRFDKAREAA KHDYHLQSTFLFPGRDPS GNLTRQGFDKLL YQVAL EV RPNSKYLFCSRNGKKLLPDYDQKMVKRYAKKI
 FGAQDDAVFLSQQGNRUSARNVQKRFAGWGVKQ AYLPQRIAQSGETALFTGHTGKRL DPKKPSKWLFPS RGAAGHLTRQSLLLLVKQAALAA A $\square P$ PKPGMSS $\square Y V \square H Q P G A K Y T R D G F N S R W M K A K Q E A$ MKSDELWWEEKHQWVFCNDDGTHFYPDTPTTWWRRFTKRV RMWRPEAWLFPGD EYLLAKYRPATDSLFFFALKKTGTVSEQYVNRLLKEAYQEA DHHKTAVFTFRTRAGRVKGKRYPITAEGLHTIWHRYDRAA ELITENKVDFDSEYGFLTNYGEPUDKDHFNKRLKSFAKRA TEGKHDRLLFV R PALLLLDGLRSAAEAKATKEKVEVSPWQPRDSDKRAWEE NKLRYGKFYYDSTFVCTKDNGEPVTPNSDKWHSSRVKKELV
$R F G R S A L A T P E S E R A L L L G R R G R R D D Q R Q A R T V$
$V$ EYRN GFFPDVEETFLNQKGKKLTTRGVRYILNERRKKM TK RKLELSKTSDFVFPSKSSKSGYMMGGDKLWKEVITAA KERARHPSFANSPWLFPAVSSGYLSRQVFARELKGLAGRA FGRPDFATAESGRALLLGRRGRRLDPRQARTAVHEVISA D ALHAEYAPSGSDKVFILPSRER
 TVIDMCPPRSGQDNHIFLFRGKPLGKSURASLKKACEAT EVRRLALAKTGDSPWLFPSTGKEGYLPRQVFARDLKGLAA
LKNVSINYMSKDALLIVNKKGTPLTQSYVSRIVEQLLFRA LKNVSINYMSKDALLFVNKKGTPLTQSYVSRQVEQLLFRA KCCPY PLDGDNQPMFRGARGGRLRAALIQRAVQNLRASL SGRPRLVSAARSPALFLGARGGRLGQRRVHELVTSLLEAT


|  | R |
| :---: | :---: |
| UniRef90-K2EAl0 | ATTQKYK ${ }^{\text {R }}$ |
| UniRef90-UPIo00255584B | STTAL |
| UniRef90-UPI000316DFA3 | R MVQR |
| UniRef90_Q1GGQ5 | ATTEIY |
| UniRef90-X0RBB5 | STTQIYT |
| UniRef90-X7FF31 | ATTEIYT |
| UniRef90-U2YJ37 | ATTQ1 Y |
| UniRef90-UPIO00368BF7E | STTQI Y |
| UniRef90-B9JTR9 | STTQIYTG |
| UniRef90-K7SL44 | ATTQ ${ }^{\text {Y }}$ |
| UniRef90-S5MAF5 | S DTM M ${ }^{\text {d }}$ |
| UniRef90-DOZ210 | TITQRYD |
| UniRef90-R7JY38 | GDTMNYV |
| UniRef90-Q7UVL0 | QTTMVYL |
| UniRef90-A0R |  |
| UniRef90-UPIO0047D5969 | AT TQLYTHVSV |
| UniRef90_- F2JQR3 | QTTL YV |
| UniRef90-UPIO00475758E | ETTMI Y ThV |
| UniRef90-S9TWT3 | TTTDUY |
| UniRef90 UPIOOO3E |  |
| UniRef90-F7N |  |
| UniRef90-E6WS25 | A MTSVY |
| UniRef90 R6U9F9 UniRef90 A6G3J | GTMTMRYA ELA |
| UniRer90-A6G3J3 | NMGKRYA Hi |
| UniRef90 O2CFW | GTtery |
| UniRef90-131KC5 | STTQIY |
| UniRef90-FoEZC1 | TTTEY |
| UniRef90-R4KLV5 |  |
| UniRef90-V2RC77 |  |
| UniRe90-WbJJu9 |  |
| UniRef90-Q8PGR5 | STTMNY年 |
| UniRet90 100TV0 | SQTARYDRTAD |
| UniRef90-E5YP | ATTRKYVQ |
| UniRef90 UP10002556DBD | RMTERY |
| UniRet90-LORAD9 | RTTMQYVHVSL |
| UniRef90-C2UVD8 | SMTSVYSHV |
| UniRet90-W1JADO | DTTQIYTQVA口 |
| UniRef90-UPI00030BC43B |  |
| UniRef90-K6QBG1 | A A QV |
| UniRef90_UP100036D7FAD | STTQly |
| Uniref99-UP10002EB6BE3 | EMTM ${ }^{\text {a }}$ |
| UniRef90-UPIO003656570 | StTERY |
| UniRef90-R9K514 | NDTEDYTHVTV |
| UniRef90-S4YE00 | ATTQRYTHVS |
| UniRef90-W6K419 |  |
| UniRef90-D9YEK6 | SMTERYAKL |
| UniRe990-UP100046F3C75 |  |
| UniRef90_DSAJO5 |  |
| UniRe990_13TE16 |  |
| UniRet90_UPI0003F6A6EF | STT |
| UniRef90-H6P269 | NMLİRYT HL |
| UniRef90-G8UPP | ASTTSIYTHV |
| UniRef90-M5TYG9 | TTTELY Y VR |
| UniRef90-G6EXW | STTQ1 Y ${ }^{\text {THEV}}$ |
| UniRef90 X1G5A3 | NTTQ1 Y |
| UniRef90-UP1000345F9EE | STTQly ${ }^{\text {chad }}$ |
| UniRef90-UPI000472B01C | STTQIYTHL |
| UniRef90-D4DPT4 | SATQIYTKLD |
| UniRef90_D5RI26 | ATORAK R |
| UniRef90- UPIO0047CA461 | RDTMNYG |
| UniRef90-P55429 | ATTAHYLR1 |
| UniRef90-V6MBV9 | RTTSRYLHV |
| UniRef90-UPI00037CCF47 | TTTARYAH |
| UniRef90-R8VMI8 | RMVMRYT |
| UniRef90 R6QYX1 | NTTS |
| UniRef90-B7RVJ7 | KVTMA |
| UniRef90-- ${ }^{\text {Plou004290A05 }}$ - UniRef90 | ATTNRYA |
| UniRef90 W8A9L | AT MQKYT |
| UniRef90 ${ }^{-}$N1WFK8 | STTQIYLSV |
| UniRef90-Z5X | KVT QI YARINL |
| UniRef90-S3Y958 | QTTQI YTH |
| UniRet90-Q11DU1 | STTQIYTHV |
| UniRef90-H6R4Z1 | ATTQLYTHVSV |
| UniRef90-A1B154 | KTTQI YG |
| UniRef90_W70817 | STTQUYT |
| UniRe990_B8KQ38 |  |
| UniRef90_UP10003768770 | EMFDRYNT |
| UniRef90-A0A02227M57 | T T T AL |
| UniRef90-W6WL47 | STTQ |
| UniRet90-W6K6X | STTQRYTEV |
| UniRef90-A1UR18 | STTQVYT |
| UniRef90 U1LNA7 |  |
| Ref90 C5ABE0 | R NLIK R Y T NL |



|  |  |
| :---: | :---: |
| UniRefoto-AbLE90 |  |
| $14 \mathrm{YYJ5}$ | VVRLVKDVDFNQITVRDGKGGKDRHVPLPRRLVWLPHALA |
| Ref90-UPI00021944BB | ALT WDDVNFADNTISTNKTLSKNHDPKTKTSKRLLDMDV |
|  | ALQWSDIDNGKPHIKSTKTNYSRHVPMPSWYMELLKEHK |
|  | LGLEWNDFDFDKDYTDVTKTEKSQRFIKTPKELSKLLKLY |
| Ref90-UPIO0030AC16F | vQıQ\SDMD |
| UniRef90-UPIO0036FB5D6 | H |
| UniRef90-U6FOV8 |  |
| UniRef90-W6LWK9 | NGLRWEDVKNGSVWIHRTKSGK |
|  | VDL ${ }^{\text {dVRDVDRGEVIKARGKGKK }}$ |
| UniRef90-UPI UniRefio- ${ }^{\text {O6C }}$ | CGLSSSGLDRRQRMVRVGKGKERVV |
| UniRet90-R6X703 | TGLTWDDI DDRKIFEKETKSVNSDRI |
| UniRef90-UPIO0036F5088 | - |
| UniRet90-C3MH |  |
| UniRef90-Q989Z0 | IDLRVRDVRLEPPHQVRGKGNK |
| UniRef90-W8AAV5 | SLLHLEQVHWQSGTVRFGKGRR |
| K2 | VALTIRDINLNTQEFVRWK |
| UniRef90-R6PM96 |  |
| UniRef90 V7PZ13 |  |
| UniRef90-G7Z7U7 | AGMRAEDVDLTGRVI TVVGG |
| UniRef90-80U712 | VNMDERHIVNGALEICQAK |
| 990-W1N9H1 |  |
|  | LELREEDI DURNKTIF |
| UniRef90 B7JC | V |
| Ref90-V7ZBVO |  |
|  |  |
| UniRet90-UP10004 | LGLEVADIDGRRVHLRDAKGGKDRYVPIPDLTLQSLRRFW |
| UniRef90- UPI00047D9C7C | E |
|  | $\underline{L} \mathrm{~L} L$ TVADRPTAETMRVLGKGRKERLVPVLPAVRQAVDAYL |
| UniRef90-V5PY60 | K DKDVDLAEGVVKVGKRNKERL |
|  |  |
| UniRefy9- UPIO0003635BAF | EKMVWSELEFYFIHFRQEKSE |
| UniRef90-G51AX7 | C |
| W1SNL8 |  |
|  |  |
| A0A031 | LDRSTVRVLGKGGKERVVPFGAPAAKAVDAWIV |
| UniRef90-UPIO0040 |  |
| UniRef90 UPIOOO47 | P Vor ${ }^{\text {a }}$ |
| UniRef90 A0A015S, | YRLAPM |
| iRef90-UPIO002E3813B |  |
|  | L |
| UniRef90-E2ZGG88 |  |
| Ret90-才UTA2 |  |
|  |  |
|  |  |
| $\begin{aligned} & \text { UniRef90_D4J4 } \\ & \text { UniRef90_UPIO } \end{aligned}$ |  |
| UniRef90_UP | LGLRWKDTDNGTLQVRQTLSHDGK |
| UniRet90-C9M98 | - |
| UniRet90-G2HUJ3 | ONMTK |
| UniRef90-C7RME0 | CALQVGD |
| UniRef90-G1UP96 | L |
|  |  |
|  |  |
| UniRef90 N6X | LRLRUKDV |
| UniRef90_081H76 | LGLRWKDVDKGHLTISQTLSHDGKTFLVGGKTKSSLRKLK |
| UniRef90-UP10003733B94 |  |
|  | D |
| 11 |  |
| H2BW |  |
| UniRef90 B9L015 | T A |
| UniRet90_UPIO003B2F7C5 | GGLKLSNVDLSSLSCMRITKNAKERLVPYGRKAKDALYLLK |
| UniRef90-U5UC10 | $1 \mathrm{~N}^{\text {a k Lk }}$ |
| UniRef90-S4CHE0 |  |
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$S L L E A Y Q P K K G N F F P G R C P G P M T R F M A D K L L K K A C E R I C$ KARPALVKDADCTKDFTNDSGRKMSRQGFWKLVKQYAKSA MNARPISLGSPLYFKSARRMLEPASTDNDRSVIRQLYSKV RWNGC LTEKTDAEYQDYDLVVCTKTGTPGNPRNLLRDFYKGMKKA

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 VA L K WK Q $\quad$ Q Q T S $\quad$ K $\quad$ K G T W Q A V V V Q Q K T K K L D C K P V T A VGLDVDDVDRVGLVRFRGKGERERLVPLGSHARRALGGYL G GLDAHVDFDNKQVKVTGKGNKQRIIPFADELFVVLQGY VQLPVAAARNDRFFAVTGKGGKDRLVPLSPVAREAVKAWA CGLNVDDADVNFVKCTDNKHYERGIPUGRSACKEALTEAWASLGLTWVQYDGRFDRLRQGKTGVHVTDPVGEPLRAMMDPIRR TGLNKTDVRQNQVIVNGKGNKQRIIPLGKTVVSILKDFLQ QDLKYSNVDYSNKILSFEQNKTKGHSANSGVVIPLLNDDLL
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-
$\stackrel{1}{\mathrm{~L}}$ LGRLQWKDVFDDNGQYRLAVAMQKTKEPDYLPLSS NEALKK VG|DRDDFDFSSLRIRGKGDKERDVPMLEFVREKILHYIG ASLKLTDVDWHGSAVKVSGKTGERIVPMDRTTQRLLRRYV IS VGVDLDDGDLDSLVRLYGKGGKERMVPVGSHAAWVSRVRP LGLHWEDVDLDGLTVLNTKTLASERRIALPTKIHQEQQQE VGADRAHLDRQHVLTATGKGNKQRRVPYGQRAGEALALWE TQMKISH:DEKTHMPMGKGRKFRVVPDQQTCVNALKEYL
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90
100

120 LAEGNR LGRMAENCYVLSGSAEPFDPRAYQRLYKRLLEKA TLRGGAGAGAAS PALFMGRHGTRRTPQSVWQRLRRRSLQAA

 WLE Y R K E N G IDEC E Y L F VT K Y T G E WK Q V S K N T L Q T V WT K K







 RKEGNVLLTSSEGKPWSPDGFRTVWRRACRAA $K R Q S W D K N L M G N L Y D N Q W Q I D G Q Q G E N Y E S K H F R K Y K S L L$ RRTELYYGERTDKDAKFDAAGGQRDYDRAVRYMVEKYLKQT QLIDGEPH T EQYEQEETVFRRLP


 $V$ R R P T L A N $\quad$ GG E R A L F V G A R G A R I S P R V V Q L RMM Q WGI K Q $\begin{array}{ll}\| \\ M & \text { N M R N Q Q M S K K S E A F F V R E N GE R L Y R R L }\end{array}$
 KGERVASKFQDSEYLLVSQRAPKMHRDAVRDWLAK $\ S N E L$ WMPERGDKTADDHVFDL $P$ PS GUNQLI KP WAKAA

 THGR R GNHPNVFLFSGRPIKAMTLTHLLSRMSDRA K D W | E S | $R \\|$ |
| :--- | :--- | :--- |
| D E | L | $K K Q S S G D V V F P G R D G K K T L D N V N K S W K A V L D A A$ GID A WQ LDE K VLTGGDGRCFPYHSKSVGTAFRRARK A S MA AK A RSSAPA GALF LNAR GTRRLSRVVAWQQVKAAGEAAA SPGPRVGPLLQQSES GKRIAVRTVQHMLKGHDDRLD ERQAAGTNWADNGLVFTTPKGKPLDPTNLTRRFRRLLHSS HRRPALAGPRAADALFLGARGARDDPRVARGVVARALDTV E E $\qquad$


 MAQDDDTVFAG ERIIDNVSRDLVEELVRSGFFEKKPSVVSIQRAVKRYARKA LQ K D K L E I I Q N T DVLI L S K K G K I L S E T F V Y R MI N S Y F S T I

 $R L \stackrel{C}{L}$ K SRENWRE E

 $R Q R G L L V P K G N P W L F P G D T P G Q P V \quad K E I R R F W V A D$ Y V S A CPHDLTP EQ P L F R GS R G GP L S A GLVVQRAVAEARAEI
 MS E E R G F F R A N P D H Y I L S G G T S P F D P R C F Q K L Y K K I L K E A KF GR P D $\quad$ D S S P HVF L E H M A P Y Q R




 $K E Q A E S Q T G Y V I E Y M G R K L T M G R K A F K N A C K R A$
 AT S Q S GY I DE Y N GRPVAR $\quad 1$ VK S FRNACQRA RWRGFHPSPSRNEP LFPGVRGGRLNATVAQKAMRQWRK
 EVLID Y K R K Q K S K EL F H T N K G T Y L R DS K P D Q WL K S I Y A K D
 MKEHAKVR QLDAS YVFPAKNFKK S IDDLRTPWENA DKEWQESTRAHGGLVFKAKNGNF LFPSNERIAFQGLQKDL D R R E Q LG $\square$ N A R A RL L F CT L K G QPVVSAPYVR QA LARLAKRA AAH PSSPSPDAPLFCGTRGGRLNPGVAQRAMREWRK
$\square G D R Q P D E A V E D R E H N P L T R F G I H D \| V V R \square A A R S$ $\square$ MARKAAYKVRATQLIVSADGSAMTHSMLRNRFDDARTAA
 R WMRYKDRYMNND LLEPTNNRGTLES DCN YEKVLNR GGK K L
 $R G R P H L V T E C S G T A V F V S R R G N R L S R Q S A W S A L R A A A N A A$


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| :---: | :---: |
| UniRef90-UP1000370F8 |  |
| UniRef90-UPIO0036D54CE | S |
| UniRef90-K8PKT6 | KMDR ${ }^{\text {M }}$ T |
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| UniRe990_U3A498 | G |
| UniRef90_D9SD86 | STTQVYTHLD |
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| UniRet90-D1JMK6 | KMTQVYAK\\|V |
| UniRef90_LOEIW4 | ET |
| UniRef90_D4IMW0 | Q |
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| UniRet90_A9D6X2 | K |
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| UniRef90 ASINK7 | STTSIY ${ }_{\text {SSKULI }}$ |
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| UniRef90-E314Z6 | STTQ |
| UniRef90 A3V1 $^{\text {d }}$ | S |
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| UniRef90_C2M1×2 |  |
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| UniRet90_UPIO0041FFF39 |  |
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10
20
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Y LERDEVERLFDKDPRSGQRDKALLMFLYNTGARATEV YLSQDEI EQLLDACKGDRD LDWVVMLCLSTGARWSEI RALLATSEISTLWDNCDNSNLGGRDAALLALMVGLIRRSEV



K TFNDKEVRRYYGSVRY LDDIR DKL
LD DK QLK K F LT Y L D NLE QT D K NI F K L L L D T GL R I G E A $E V L P R E C Q S K \square M K H V R E H$ RKSGY


 $V L S$
$V$
$\square M E E E D V K M L D S A G C T G M R D K A I L E I I Y G T$
$T \square D Q Q Q K L T E Y$ L L T E LDD DY K L GI L L CLLF


LEPHEAQR LIDEC P P D A V L T L L Y GCGL R ISEA

 RPVLTVAEV
 $\begin{array}{ll}R \\ R & Y \\ Q & R \\ R\end{array}$ RDAA MVIFS CFS
 RRLLAREERLILRYCHGHOTQELYSIVILALETALRLSDM


## UniRef90 C7PZV6

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| :--- |
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 LGLKWDAIDFNQGTIIIKETRVKYGRNVVTKGPKSESSFR LKLRWCDVDNGFASLYDTKNGEDRRVPLTRRCDEVLQTVP LGLRWADIVDQRGVVQDTRQLTRQGTFSEPKTRHRSLQLQ V K L N I E DII N F N E R C I V T G K G N K E R M V Y F D A K T K I H L K N Y L IL A L Q WR D I D L E A GELVTVGRA WVK R KVVPLPRGLLLRRLKARR


 1 SVVNVEDVNLDLNFVRCTDNRHFERLDPDGRSACKALE EY


 T K I R D G D I R T E H T I V L H G K G A K D R I V P L S S S K T A D L I A S Y L





 $V$ S L PRRAL R D QPFLI LIKGKGGRERLVPI SDRARAABA CNIHRSHIYNGILHITQQKTGKKVRFETGGRLKEAI D VGLRCGDVVLGTGAHIRCVGKGRKERATPLRRETAKLLAK
 VGLD WVDLEA GEAHVFGKGSKRRSVVVGAAAMAALRA WLA


 A R L L S L L





 CQ LQWK HYDET THVLTVDKRKDPTDNKNKDTKITLNAAT I


$$
\begin{aligned}
& \text { A A L D L D Q } \\
& \text { V G P R V R V } \\
& \mathrm{V} A \mathrm{M} \\
& \mathrm{~V}
\end{aligned}
$$

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UniRef90
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 QWKRQLARAEDSDFLFPNGASGKLSRSSVTQRLALAVKHA
 A ERLSAGDRWQDQGLVFANTLGGPMDARNLRLRAWHRGLQQA DVRARLLAATGETALFLNRRGQRLTRQGFWLALKGYTKKA MSRKDTNKALFVSLKFPYNR
EELLARLTPEEVDGLELVGGVKPVDPDAFNHYLRRLAERA FHKKELFSHNGQSPLGVSNNGSKAYPMLINRITKKYLDQV LADRPTVSAGEEDALFINQRGQRDSVRSIQ\RVKKL NLRHDTSPY LF HDRALKAREHETVQPLTSRSIERLVQKYA ALSPYPNEADGPD FRGARGGALNPRQDQGAMAQARAQA ELRKYKLANAEFDKDFHTYKDTYVSLSKPARWLRQVYDK YSHKVHSYGSSEDYFFPSPYGGHYKEGTVYKFFRDLLWKA LS DRYK DA QCGVANGFVNGNGNKDTRQGUWRDVKEYSRKA RMMQGYKENEPFWLKKLQSKNGRYYNSTLNQKLTKFCKEA ПKPGGPDSQGFALLFVKKDGRKLSPK QRVLYRKQGLSTEVVFASSVGGYRARTNUAKELNAHYKNA
RMLKKCCKVVNPEYYVLTNEPKATEPRTYREYYHALLE LQTGLNSVENKDKLLFTNRTGKQLTRAGVAY LIKKYVEAA TAQGKPFTPAGFTNWFRDMTKEA पMDENKEVFGNHEAVFLNWFGERLASDTFRRNLARYGKKA YRVKERDKIADAHFVFCHMDGTPFHHERPYDWFRGFVKKN ACKLLKHYHDLSDKLFHTAKNDFLRPSKPDQWIKAVYAKA
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ISNQKLNAYLKEIDA

## RKGSYVFCDKKGKK

QY LDRDRKHRRSSYVFPARRTKQPHR RSRVWLWRKTRAFL QNGRPKTGHREVFASHKTPRERPDSRSVVSDADRQVKHLA IFEEYLQERDHKGDCFLQGQKGNLTPSGIEFIIEKTAEKS
 TERAKWRDADSDWLFLSQKGGPLSRQQFY LLLKRYGEDS DRQRQERKWQDSGYVFTRPNGAPIEGATLTRRFTALLHRA DF RQDKDPA FVTERHPHKMS DGQMRY ITKRISSRA NDC GSPLWVFEGK PEQPLKDIKKAWSTV VAFKTCFGASSYVHPGRYETASP■SAATLNRVI DSTVKLI KPDDNVFDWDH SPHVTNSTLREWCMGA LT SKSKWVLSTDRSKSVHDENPYRGWYKПCKKA AlIDKMPKGRPTDPIF KEHGDKTGWVFDTKTGKLKDRSNLWREMKNLQKKA
FETNDTDE SNFLFKSQKSKPUSRQTLDYLMKKYCSDA HYLREDPHDTGPLFYGQTKGKKMTSAGVQKLVKRDGERA QYWFHAGGPRGFLFPNQNDSRRPMASYTVNQFISAKEAELL RKYPQASTDWRWQYVFASARRDPRSGQVRRHHIKADHKAA ITWYEQQKSWUNSDRLEVQSDGKPMHPSTISKWFVNFVKE SRRA ELSSPASGPALLLGSRG
GYIKNYRQSDQRSLITSDQG
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HGRREGLFFREFP
SNSMYAFRSADERA俗 MKEEVGDDWVEHNRLIFTQWNGMPMHPNTPNNMLKKFQKKY DGHKGP FAMLKQAQYRTI WNEAKAE STRSRDDNYPWVFANPKTAKPYVSFFSSWDSARTKV पS VRSK TPWSNSPY FSGKKGF QVYKKKYQUGPEEYLFKSKKGGAFQYATLRYQMLKYCEKN EYTSQKGDYNSDEIIFKSQKNNPLSRKTDDYLMKKYCKLA EKLRLGPAYQDHGLVCAQANGKPYDPAEFSKAFTSLAKRA QALKMVRKQSQSPYVVGTSTQSK EPRSYRDYFGRLDKRL TVRGQLAASGETALFVGDRGQRMTPGHRADQLRLAHLA MKLMDKWQGGDRNFVFHSGYGKPYYHTTPTQRWKDWCEKN ERIDDKYKDKRCEG GRLLPDFSNQKTNQYLKEDA

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G|V|EK
130
140
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160
K $\square$ S P H S|L|RHACTT|LLDAGVP|L|RD| QVYMGHANS
 GIKLIPAGQST HVLRHTASHFMMNGGNILVLQRILGHTDI GWE WR RICHSLRHFGTHLYEDGTDLLTVKALLGHKSL
 GLPATA TPHAMRHFA

## ALADLPMDL

 QQHPRQAILKNNMPHI | L K K N N |
| :---: | :---: |
| E $L$ P K Y | G ${ }_{i}$ GL PRMP

GIEAE NI K K GL G TT 1 SKR ATHLLGAGGGDL $R A I$
$R$
$R$ V GAARLGQPLHPHTLRHSAAHLLQSSGDLRAVQEYLGHAGG KSVGIMKKITPHTLRHYATDLLRNGADIRSVQSMLGHSSI GLPASA NKS L R H $\square$ TTHAGFRH G\SHS GKGPRDHDL DVPRDS DHGLRHTHASLLSAGVSIQSVAKRLGHGNT GSVTNVQKKSPHILRHTATHMLNNGAGLETLKELLGHANL KVRK T $\square R C S P H T C R H Y F A Q A L K N G C D L Y T L S R L L G H S N I$ GIDLT PRGFHAFRHTHASLLNAGADYKEI QHRLGHAKI $G M$ HPELIPDKFSPHCMR G GL GI NKKY GLRY PDLKQ DK L
 $\begin{array}{lll}G \\ G & L D P D & \text { P } \\ \text { G }\end{array}$ GLL PK PDSATP P HALRH
GI GNTH
PSVLRSFAVHMLSNGADLIIV
$G L \quad G G L P$ PDTATPHALR R GL $G \quad P$ E S A T P H A L L R H

$\qquad$ FHS LiR R

 MRAYPDGKVQMRDMRAKAATDIGTATDEOAQKQ GHTSK
 GVTAE
$\qquad$ QQAGLTTPV HFHDL QQA GLTA
GI EK MIR RGIQDLTYMSRHTFGTMMMTGADLYTTCKLMGHADV GT $G L$
$G L Q Y T$ G Q GI TKRTY P NI PRTDSGPR DHDLRH


RLHRIRFHMLRSCGRMADLGTDTRLI
G $\square$ NKEI HP
HQLRHYA
LEEAKIKDFRFHDLRHFASKLVMAGVDLNTTRELLGHGSIL HDEGDFDPFTVHDLRRTASTLLEAGFNTDWIEKCLAHEQR
 GID DLHFHDLRA
 HNLRH NISSDKTKHHEFHALKH GWE FNVHPHRFR
HRFSCHTFR QKTD\PKRVNS GLPVIN
A ARPDVAARGP GIKTGMPELHAHALRHSATHLLDGGADLRSVQELLGHESV

 GFP R】TPHGLLR GGLSQDDQVVPHVLRHTASRLVQGNI DFKTVISRAGHSDG GLA DVRDHDLRHFASFLVNAGRSLYEVQKILGHTQV

 K DDDVSKHH FHTI KHTAVHDADSEMDI KE QWWLGHKSV G D DP HLRVFHGLR R KERGLAEHLHPHRLRHFASHLLESSQDLRAVQELLGHANL
 QECGDTKNLTFHLARHTFATMLTKGMSIEAVSKVLGHTNI G VA

NVHPHRFRRTAATLARHGMPI

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A T T ERYD
STTEQVYA D I E

| D T T | N R Y A E E |
| :--- | :--- | :--- | :--- |
| I |  |
| I |  |
| S |  |

KMTMRYA HFA
N S T T $\square \mathrm{Y}$ VH L A
STTSKY DR
STTQAYYAAVD

 STTERYLSLA
RQLFRYTHLL A VT QVVY A HLV STTQVVYTHL D T T L K Y A M V K T $\quad$ IT L V Y R HL A ATQVYTH
GTTAl YTHMD T T T Q I Y T HV




GMTVDY SHLLA
STTTLD Y VH
K T T EVVYAKAD
DEVT RYT
STTRKYV
TTTMIYGH
$D L T L V Y T H$
AMVLRYTHV
STTQDYTGVD

| $S$ | $C$ | $L$ | $Q$ | $P$ | $V$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| $N$ | $I$ | $T$ | $L$ | $R$ | $Y$ |

$S T T G Q V Y T G V D$

A S T Q I Y T E I D
EMVRRYA HLA

$R M T Q H Y$ IR
ETTQQY I H A D M
RAALI YQH
$\begin{array}{llllllll}E & T & T & Q & I & Y & A & R \\ T & T & T & Q & V & Y & T & R \\ L\end{array}$
S T T QQA Y T S S V $V^{D}$
RTTQQ $\quad$ Y A K I V
A MLKRYTHLK
TTTQRYTHV
DSTERYAHLD
NATR $\square$ Y A K L D
E S T QRYTHL
SATEHY LRRL
MTTANYDR
RHTVLYT
$\mathrm{G} V \mathrm{~T}, \mathrm{~A} V \mathrm{Y} A \mathrm{H}^{2} \mathrm{~V} R \mathrm{~L}$
ETTRI Y A QL
D MTLRYSHLA
$G V R A V Y N K A E$
GTTQUYA
K STSSUYTKVSL
EMLT HY LR
$\mathrm{N} V \mathrm{~V} R \mathrm{~T} \mathrm{Y}$ T
SNTEUY
E T T MAYSMID
N S T T LTY V H L A
STTMMYTHV
TTT
STTMQYTHVS V
ETTTI YEHL
GTT QI Y T HV
KMTMRYAHFA
STTEDTYARV

$\square M T N R Y A B$
QM T M R Y A H L A
KTTQRYAHLL
STTQQ $\square Y \mathrm{~T} Q \mathrm{~V}$
EMTRQYV
E QTMVYAHFA
N NTE I Y
AFT
A T T L N Y V H
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QTTQ Q $\quad$ Y ARV
ETTMKYSMI

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1
 HRDRALFALLYGAGLRLSEA E पLSDEEDELLYKCDNDNTERNKCMISLMLDSGLRREEV EVLD LDT TKSLIESAES STQ TDYTGLRD KALSVEHAVALVAHRQDDTARDQAVFELFYSSGLRGSELC RQRLTRPEIEALLAAPNRTGRRDHAFLLTAVQTGLRLSEM RFLNTAELKRLHRLAECADDYMVAAIRLLIGTGARSSEV
SQDEVKRLVSCESENKSLGTVVRLCLATGARWGEA


VLERSEVARLLQGIEGTQH LISAGLCLYGTGCRWGEA LTRPEVDALLAAPDRSGRRDHVFLLVAVQTGLRLSET RYLNPEQAVLYRLLKENSYRDQTLVTLGHRT


VMSPEEVGQVFEGLEG


RTLSPDEASRLLETGDESPLADRDMFELF RKYLTQSEVEGLLETARGNPERDYCLILMSFI RGFLTDEEIQRIMQKDFEIPEMVRDVFIFSCFHGFRVSEA


GDEEAQRLLDAPKGNGLRD DYLEYNEDEKLLNACQS

TKEQARELLAVPDRSGKRD
SMDEVRKFLDNVPADGY
TREQKEAMKEHCPGPKTRNELATEELMW
信 KYFDEEELNKLLKYMYKRSPHYGRFCEFLYQTGLRFGEA



LTAEEVERLIRSLDQQGRSMRALVRCALDLGLRSGE
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Unirle UniRef90-Q03VJo UniRef90-B9EBN4 UniRef90-16G2H3 UniRef90-A0AO11 NXT8 UniRef90_WOBUE6 UniRef90-C9LOS7 UniR Refo-EEUYYIG UniRef90-UPIOOO362A631 UniRef90-19BZZ3 UniRef90-M7X810 UniRef90-UP100037B6EAD UniRef90-UPIO0047BA95B UniRef90-A91851
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UniRef9O_B3XMH5 UniRef90-A8L3C2 UniRef90_W7D7Y9 UniRef90_B1BTG3 UniRef90-A0A015TWG2 UniRef90-ㄴ120F1
$\qquad$
ITLDLDCLHFTGNILKVGGKGEKERIPPLGVYTKKLDFKY


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ANLT WGEEISDSRAELRDSKTGPK S

LGLE WSRIDKRTAHLVDTKNGESRTVALSSAAVATLQSGP
RQMRTAQIAGGCVALSQQKTHAPDRIPLLDPELQAALA


## V V V <br>  <br> <br> 

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TGLRREDVTTGPHVRCRGKGRKQRSTPLTAGAVTHW
LIN I SWSNVDARIVHLPLTKNGSSRDVPLSSKASKVLE


 AALDLSCLEDLLAGEVRGKRSK DRDVPVGRKAREAVAAW



 AALNLSDLEKNLLYVRKGKGYRERYVPMSKQVKADLQHLLL
$A N M N V S D L K L A P A T A R G K G A K V R V P L L A P T T A L L V S Y L$ A G L T Q D N I R D G N LDWMMTK R QKTNTDV















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E $90 \quad 100$
100
110
120




 V R GELLA D GNEPALFLSKHRR

 REQG $R$ GDSKTLDPSSTR GGPLLS

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$R$ <br>
$R$ <br>
$W$ <br>
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 V DEYANQ 

$K$ \& K <br>
\hline$P R$ \& $F$ <br>
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\end{tabular}





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 HYRYTEHSALFTAQQP L S KEVVRLSYYTAYRDWSNLIAK S K K WQMANGLAACP VVANQF GEFLRKSNFGERTWKQCRLA Q E MKNALSEKYPHA DLDFNWHRRQHDSE TALQRAVKRAAKDA
 GEWMS RRPLSNE GWLFPNAKGNHLTRQYMYKQLRHYGLLA D D WLLARRPEGLLRSDLLRTDHGRPVNASRDEAAVRNAADRA A NLLPLKK GMSS DFVLFQQSGS RYTR DGFNSRWLKAKKAA
 LF CER HFK KL NDYVFVNRDGTPMSYDATKSVFKRGQEVM
 MPPKGDDDFVFHLP E Q Y AK QLTRPFPVTDNAFRLAWDRLRSRA K Q $\square E N K E D Y N D N N F V C T H E N G D P L D P Q Y D S K R F Q K A Y N K E$ QMAHRNHKQPGCPYVFP GK S G GERRVECTAA DR LRKGAA RTVDVPGWLTDY L LTLLSKDNNERLFDRQQSSVNRELLRRUL
 A A DE K A K QL PTS A Y VI SN QY GNRYMYKGFNEMWVEARNRA
 $M K$ VR S R M Q GAE S D WL F L S R R G GP L T R QR I Y NL I Q A L G E K A GK TK D N RLL L V


> FSERGDENERVV VGLR
$E L M Q Q K E K G G L N E L V$
$A$
$A$
$R$ A ARDAFVRPADA HALV LGARGTRDSHRTDQQRLKA HALRA



 EAGHGDDPAAP LFRPVVNPAGSPDS GDGIVVAVKKYAAEA SWRHTKDK R L FF PFEYNDVWHWLKK LGGKRA LS RY $\square K E R G L K S G S V F V T K S$ GRPMDRSNI LDEMKALCDAA
 D Y RQS YN WA EK S NHL F V S E R S GRELNP HQL NQVIVVK S A K N A IWGD Y M TVRVVNNS DKLVTGGQRGGISRFTALNMVKKYGGKA



 DLLDRAVAPELGEQLIDENKFGRPHNPTQFSRQWRRVNKAAA


 K T C D GS NVVFRMY CN KVVTN KVVLK K $\square$ $N V Q E Q V K N Y K D E D F V F A D N S G M P E P A R N F N Y R M A T Y I K K A$ D E Y G D
 WF WVWPSDRLST D PVV G V VRRH HLYE QRLQRAVRRAVQVS DENKQ QFNKVIPFVVFLLNNGEPLTYHQAYSQIKVYGERA S N Y L L E K K K Y S S T D Y VI S C N G G L T E P R T I N YR F K K I T N K L
 $M R$ QA A MRQWTETEVVFTTRTGRPVEPRNLYRSFTRVAGSA



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UniRef90_A9IB51
UniRef90_K5ZYV1
UniRef90_E6UUL1
UniRef90_-IOIJI2
UniRef90-X1S9L6
UniRef90_R6GZ26
UniRef90-I3ZJC4
UniRef90_W2E7L3
UniRef90-M1XR99
UniRef90_F4AAZ8
UniRef90_B3XMH5
UniRef90_A8L3C2
UniRef90_W7D7Y9
UniRef90_B1BTG3
UniRef90_A0A015TWG2
UniRef90 I2IQF
UniRef90 UPI00036AA60A
UniRef90_V7HW95
UniRef90_D3MU34
UniRef90-A0A022L3D0
UniRef90-X5KJP1
UniRef90_B4ALS6
UniRef90 R7FY66
UniRef90_L8DF04
UniRef90_UPIO0034639F8
UniRef90_H0Q036
UniRef90-UPI0002D3D214
UniRef90_UPI00047077A9
UniRef90-A2SRK2
UniRef90 UPI000362DFB7
UniRef90_R4KC34
UniRef90-H9C178

G T T
ATTQQYTHVD
SSTGLY LHAAD
QIT EVV GHI
TIT L RYSHL
$\begin{array}{lllllllllll}K & T & T & L & \mathrm{~L} & \mathrm{~T} & \mathrm{H} & \mathrm{l} & \mathrm{S} & \mathrm{V} \\ \mathrm{S} & \square \mathrm{T} & \mathrm{K} & \mathrm{R} & \mathrm{Y} & \mathrm{L} & \mathrm{Q}\end{array}$

KTTQGYTEID
EMTRMYSHLA
S TT QVVY THLL
$\mathrm{N} \square \mathrm{T} K \mathrm{~K}$
A AT Q $\square \mathrm{Y}$ T H H S $\square$
A T T Q I Y T S LD


LMTMRYAHFA
SVTKRYSKV
S MLLKRYTHIE
REIE R Y T K
A ATQVYTH
HSTQYY
S A T Q $\square Y \mathrm{~T} H$
A MTMRYAHLA
A T TMDYTHVV
E T T Q I Y L E AT L
STTVQVY THMD
$\begin{array}{llllll}Q & T & R & Y & Q & K \\ G & L & L \\ L & Y & S & H & L\end{array}$
ETTEA Y $\quad$ TE L
KTTQQ $\quad$ Y TH $V$
STTERYLQ
$N$ S L K R Y
R H TVVHYT
$S M T R V V Y A R \square A$
SQTARYDR
K T T E $\square \mathrm{Y}$ T H V
SMTEKY
ASTSQYMHADL
K S T A I Y A DV
R MLFRYTHIK
S ITLDD Y S HV
A MTKRY
$S \square T$ Q K Y L L


R H TVRYT
$\mathrm{K} T \mathrm{~T} Q \mathrm{Q}$ Y A R $\square$
$R \square T$ L $\mathrm{L} T \mathrm{R}$
KTT S I Y A K V
QVT ERYSHLA
STTEQVYTAL D
A ATQQVYTH
A T T L RYAHLA
ETTGQKYTHLAA

ETTQQYAR\}
ATTQQI YTRLD
ETTRLYDH
DTTRRYQA $\quad$ K
NTTR $\square \mathrm{Y}$ T
QTTERY

D T T K Q Y L R L
$\begin{array}{llllll}\mathrm{L} & \mathrm{T} & \mathrm{T} & \mathrm{N} & \mathrm{I} & Y \\ \mathrm{~T} & \mathrm{~T} & \mathrm{~T} & \mathrm{~K} \\ \mathrm{I} & \mathrm{Y} & \mathrm{L} & \mathrm{H} & \mathrm{V}\end{array}$
E VTMUYAHASM
EVTKRYVQI
TTTLNYTHI

Q T T
QTTMIVTHTI
TTTLNYSHLL
GVRAI Y NRAE
AIT DVY A HV
$R T T Q V Y A K 』 V$
K T T
Q MVE H Y V H F A
TTTDTYAHLE $\square$
SFTADYTNV
STTMDYTHV
QMCRKYVQ
$\mathrm{K} L \mathrm{~T}$
QTTEDY $\square \mathrm{H}$ T D $\square$
AVTMVYTHVV
$D$
$R T$
RTTDNY

UniRef90_E4PPI6 UniRef90 UPI00036E09AS UniRef90 V9GFM7 UniRef90_G2FPZ5 UniRef90-E4LLD9 UniRef90-UPI000365EBAC

11020
 RFLTNGEARQLMEGLRLRSDQVWRMAMVSLHTGFRASE\|





```
lupas 21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm
```

UniRef90_E4PPI6 UniRef90-UPI00036E09As UniRef90-V9GFM7 UniRef90-G2FPZ5
UniRef90-E4LLD9 UniRef90_UPI000365EBAO

lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
solo
j̣hmm

| 72 |
| :--- |
| $B$ | $\rightarrow \begin{array}{llll} & B & B & B \\ B & & B\end{array}$



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lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
```



UniRef90_E4PPI6 UniRef90_UPI00036E09A9 UniRef90-V9GFM7
UniRef90_G2FPZ5
UniRef90-E4LLD9 UniRef90_UPI000365EBAC

lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm

```
UniRef90_E4PPI6 UniRef90 UPI00036E09A9
SMTLRYSH \(L^{170}\)
SQTQRYAHL
STTQDYTHV NTTSUY \(\mathrm{C} K \mathrm{I}\) DI DTTMEYAMVD RTTQDYTHV UniRef90_G2FPZ5 UniRef90_E4LLD9 UniRef90_UPI000365EBAC
```

```
lupas_21
```

lupas_21
lupas_14
lupas_14
lupas_28
lupas_28
jnet
jnet
conf
conf
sol25
sol25
sol5
sol5
sol0
sol0
jhmm
jhmm
2 11:0

```
2 11:0
```

