## QUERY

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 ERPSQADRADFVARYGG
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RPSEMDRASFVARFGG

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ERASQME
RPSRMDKGRFVEVF

## LS

 GYEHSPWIAAAA DAQRPFOSL SDLNDCSKGDVAALANIFEHSPWIAEQAASFRPFAGV

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| :--- |
| M |
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PNQMDKATFVEKFGSVF

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## QUERY

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 AHLKHAMVQVLAQASAQSQLELI RAHPELAGKAMVAQALTT GQLSSKLEEVVEQSALDEQLALLCAHPDLAGKL KAKM KG
 EALHAGFMKVVAHSGPEAQLALLRAHPKLADKAQVKAGLT THLHDEDCKFIDTLPDTGKAGILR


 AGLSNALARVFRSASEDERLSVLKA DGLHAAMSVQFRLASEDERLGVLNA
 PGLWNALARAFRRASPERLGVLAHPDLAGKAARAGELT DGLHNALCRAFRSAPKEQQLSVLKA AGLHNALCRAFRSATEDERLGVLRA
 DALHAAMVAAVDGAARGEQLALIRAHPEAGKAAAGET AGLHNALARMFHSAGEEERLGVLKAHPDLAGKLAAAKRLT EALFSAMRDAVQGAPEGRRLALLTGHPELAGRAARSGAIA TALKLALQAVVSAASLDEQLGLI RAHPELAGKAAVSGQLT
 EHLHKEMVSIIKKSTNEQKLTLLKEHPNLGDRV EMS ETI HARMCAAVRAAGHDRQLALLRAHPDLAGKLAVAGGLT AG! HNALARMFRSATHAERMGVLTAHPDLAGKLAAAKRLT AALKHALVQTVRDAGHENQLGLMRAHPELAGKAAVAGTLT PALANALJRVLRTASEDERRGVLLAHPDLAGKLAAAKRLT DGLHNAMARAFRRADHKDRLAVLRAHPDLAGKLAAAKRLT VGLHNALARVERSASHEERLGVLTAHPDLAGKLAAAKRLT a GLWGAMVAVFRTAGEDAKLAVLAAHPDLAGRLALAKNLT
 DGLAARMAQVFRAASDEERLGVLLAHPDLAGKLAAAKRLT EALHRAMSKAVEAAGEAKQLALVNAHPELAGKAAVRGELT DALYDAMVSVVAHAGSTRQLALINAHPELAGKAAVRGELT AALHTALMGVVRARGEAEQAAFVSIHPDLAGRAARAGAIA AALHAAMSGVVEAAGGERQLALVNAHPELAGKAAVRGELT E L Y K T M V A I V K N S N S Q Q Q

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

 GTRLAVS GY A A L K H TMT LV L E EA GVDA KLLELI RSHPELAGKAMQTNTLT


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 AVRDNTKDSI RAAFEARLQNDRETELRTACTQVERIAWLR

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 AVRGHTRASI

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 AVKDHDKASIL AVRGLSRAQI LATLQRRVDHPADFEFAESLRQIHRIAELR AVRDHDKAGILAAFERRVDNETEVEFPEACRQVERI ARLR AVRDHSKQGILHAFERRIGNATEIEFEEACKQVERIAELR
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 CVVRLSDKDFILSEMERRVVHTPEQEVRTADVEIGKIARLR AVKNHTKTSILAAFEQRLNHSIEAEKITALEEIYKIAQFR AVKDHTKPAILAAFRRRIANDRATEFAEACHQVERI AWHR AVKGQNKDTI RAAMRERLQDSPEKELEEA LQQUYK I ARFR
 A $V$ V $K$ AVRGKDKSDILAAMEARI GNSFEEEADEADWQIARITKFR AVRGKSKSDI LAAMQERI SRSAAEERERALSEI GRI A GFR


| QUERY |  |
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$\square \mathrm{K}$ KELNEMTOE KPS QMAREAFTKT E RPSEMHRKAFVAAF GG LD
 ID DLN QMDRQTTVTAT $\mathrm{D} \square$ DRPSQMARAAFVVARFG
 SQPS QMDRGS F V E A F G GVV EHS P WI A E GA H A L E L H D S A MTELHRLSREAFVAQIGHVFEHSPWVADSAYEQGPFGSV QKVNQMNKEEFVNTFGWI FEHSPWVAEKAWERLPVQSC DMEKVNCMDFDEFVGVFGNVIERCPLIAAAVWSQRPFLDL ISELNGINQSKFIGVLKDVFEHAPWVAEKVWTYRPFASB
 D S P S R LTA DEFVAARGGVFEHSDWIARRAFALGPANDT LE Q IN A A D R A EATRLLD GLYEHSPWI AEAALAQRPFRS L A DL NQMPKETFMEAVGWVVEHSPWVMERVYEKRPFHNV ERPSEMDAERFVAAFGGVFEHSAWVAERAHAAEMGHAH IQ ELNQQLDADAFTKALHGI YEHSPWIAARAAAARPFATL LD DVNTLPPDAFVVEFGGLYEHSPWVAEGAAQQRPFASR
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$I$ E ELNQFDEEHFVDTLD DVYEES PWVAK QVASERPF DS R

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P R K N F $\operatorname{F}$ V A R $\operatorname{F}$ G G GVV






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 ENMYECMLEKVYEADKRLQLALLRAHPDLGTRLEDSET A GLAGRMAQVFRAADDAERLGVLRAHPDLAGKLAQARRDT


$A A F K H$ GMVVQVVAA A G R E P QLLA L L R A H P E L A G K A MVID N S L T

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 D V M L A T F S D V V R N A G E E A Q L A L V R A H P E L G H R A G I D P D L T
 A SLLH QAMVTLVVE QMPEDE QLLTLI RAHPDLGSRVGBMA $A D F Q R S$ L G D FI D S LPR S GQE G L



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 T A LEK AI H DFI D H LIP Q S GKEGGL R CHPDLA GRDLQR G T L T




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UniRef90＿UPI000368E75E UniRef90＿F4GMR5 UniRef90＿H2SNG7 UniRef90＿X7F949 UniRef90＿UPIO0036CEC4F UniRef90＿Q1J3A0 UniRef90＿C3XUZ7
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DESQTEQAQAGLLTADTPKERETLUNLLNSQYKAKFGFPFVIA
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QESQKEQQ A G T A S A
AHSTREQAGSGLLSGPSP
DASKSEQAGAGLDQCTD
AASTSEQAGAGGUCSA

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$P$ E SVDE QA S S GLL N R CT P E
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 AV K G K D K N D D L Q A L E A R R L P N D R E S E F E T A L S Q AV R DHSKS GILAA AFETRMENDRDAEFATACRQVERIA FDR AVRGK TK D QILALLLQQRSANSLEDERQTALQEVCRIARRLR

 A $V$ V A V R D N T K A S I $A \vee R G L T R Q Q$ AVKDNDKASI $A V K$ L
 $A V R D H D K P G I L A A F E R R L S Q D T V T E F G E A C R Q V E R I A R L R$ A ARLSDKATVMRELERRLHNQPTQELRAALEEVRKI CHLR A V R D N T K A S I L E A F K N R L Q N D R A T E FA TAACA QV E R I A Q L R
 AV R GKNKD DI I E S I S E RVNLDP P E E E WN R ALLFEI GKII T K FR A V K G K T K E D I I C S I E S R I E N S R E E E F E T A L N E V G K I A A
 A V K G Q T K T V I Y E S M M H R R S N H H E A E E F E T A A lla

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 C ARMNNKAT

$A V R G L T R S E$ | $A$ | $R$ | $G$ | $L$ | $R$ | $R$ | $E$ |
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| $A$ | $V$ | $R$ | $G$ | $P$ | $R$ | $K$ |$A$

IAVKGHTAQS
AVKGKS P DEI QT A MENRINNSESDEFRTALGQVHEIARRLR
AV R GHNKAS I LAA A MKARYGNTP QEEKETALREVARIARRLR

CARMNNK GKI L E E L N T RI Q N N S Q Q EL H N GI E E V K K I C H L R
AV K G L S K G D I L A A F E K R I D N S R E Q E L D T A C L Q V E K I A R L R
A V R D H T K E S I I A Q A K A R L G N T R E Q E L




AVRDNSRDS


| $A$ | $R$ | $R$ | $K$ | $N$ | $K$ | $Y$ |
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| $A$ | $E$ |  |  |  |  |  |
| $R$ | $G$ | $K$ | $T$ | $K$ | $G$ | $E$ |


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| UniRef90-A3V706 | L Q |
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| UniRef90-UPI0004104DF7 | L E T |
| UniRef90-B9NQ93 | L R DV |
| UniRef90-A0A017HUT8 | L K AV |
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| UniRef90_UPI000289ED85 | L EDI |
| UniRef90-W8WT61 | L D A |
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| UniRef90_G4R6T4 | 1 E AL |
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| UniRef90-D6XY44 | L N D |
| UniRef90-UPI00047CEE00 | L N D |
| UniRef90-UPI00033386C1 | L A D |
| UniRef90-UPI00047D41EA | L EEL |
| UniRef90-K1PA03 | L LD L V |
| UniRef90-UPI00036C80D3 | LTH |
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| UniRef90-E0IBE4 | L A D R V |
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| UniRef90-D3PRS1 | LT D |
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| UniRef90-UPI0003B41C2B | L K D ML |
| UniRef90-UPI0004684E36 | L N EV |
| UniRef90-UPI00047C14D6 |  |
| UniRef90-D7BFV5 | LSEAV |
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| UniRef90-K7SBY1 | L K D L V |
| UniRef90-A6VYU2 | L A D |
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| UniRef90-G6A1F3 | V D DV |
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| UniRef90-UPI00037F8B11 | L D D |
| UniRef90-UPI000368E75E | L A E |
| UniRef90-F4GMR5 | L D A |
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## UniRef90 H5T884

 UniRef90-Nobos UniRef90_UPI00030F44B9 UniRef90-UPIO00479CB54 UniRef90 G1Yow1 UniRef90-AOAO16XJY2 UniRef90-F6CWR8 UniRef90-M9R3G5 UniRef90 G7ZBC7 UniRef90-UPI0004702B54 UniRef90-W8IJM8 UniRef90-L9XCX5 UniRef90-F9SAW1 UniRef90-ugVXV9 UniRef90-A3V1B0 UniRef90-W5YSF9 UniRef90-K2M0C1 UniRef90-UP1000362C9C2 UniRef90-Q0FXZ3 UniRef90_14YW57 UniReffo_CTDBN9 UniRef90-13E1R0 UniRef90_A5PJDO UniRef90-S2KFGOUniRef90 LOKOS7 UniRef90-K9TV73 UniRef90-W8YSN9 UniRef90-K2NX71 UniRef90_UPI00036AE04D UniRef90-A3YBR2 UniRef90-UPIO002E2D60E UniRef90-V4PSF5 UniRef90-UPIO00374AAC0 UniRef90-D8G7S5 UniRef90-A3ЈСРо UniRef90-H5WS57 UniRef90_K7JOV7 UniRef90-Mов2Y6 UniRef90_UPIo00375421E UniRef90-C6ATR4 UniRef90- J7J4R4 UniRef90-UPI0003ABAE80 UniRet90_W6VYL1 UniRet90_-F9TET8 UniRef90-_8M6C0 UniRef90_UPIO0036204F8 UniRef90 Q1YG09 UniRef90_G3NFE9
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UniRef90
G8PGZ8 UniRef90_UPIOOO2FE88F1 UniRef90-Q6LPX8 UniRef90-UPI00046FB7B5 UniRef90-UPIO00410461F UniRef90_UPI000380F7C8 UniRef90_GOLH77 UniRef90-W5UEC0 UniRef90-UPIO0035D40F3 UniRef90_UPI00046FFCD9 UniRef90-C1DFB0 UniRef90-K9YQM2 UniRef90-UP100047BCF6B UniRef90_17B5Q1 UniRef90-B8IML7 UniR Ref90-S9QT66 UniRef90_UPIo004738BF6 UniRef90-MOMR27 UniRef90-W4XAC4 UniRef90-Q222X9 UniRef90-W4ROG2 UniReffo UniRef90-A7IKH6 UniRef90-V6IVF UniRef90-UPI00035DE429 UniRef90-UPIo0036FF9F2 UniRef90-T1AAF6
UniRef90_S6H152

1

10
Q A E F|I E T L A E |l ${ }^{20}$
Y E H S S WII P E K
30 K V $\square$ P NQMSESAFLDMFGGI YEHSPWVAQRAFNKGLLHND

 ARPSQMSHGDFVTAFGGI FEHSAWIA DRAYALGLGPTH LD DLNRMDRAAFVAALGAVFEESPWVAEAAWDQRPFADA


EDLD Q Q $\square \mathrm{A}$



$\square D A$
$R$
$K$
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D $\square \mathrm{EKVN}$


$$
\begin{aligned}
& \hline \begin{array}{l}
1 \\
\mathrm{~L}
\end{array} \mathrm{~S} \\
& \hline \mathrm{M} \\
& \hline
\end{aligned}
$$

SEVN R ELNQMSQDEFVKTLGAVF


| $N$ |  |  |  |
| :---: | :---: | :---: | :---: |
| $D$ | L | A | A |

D L E K V N
$R G D F$
A
V 1 LA ELLN ALDPA DA F I GA L Q G I F E H S P WV A A GAA D R R P Y P S R QPS RLEREDFL RMF G GVF EHSPY LAERVLDDRGAHDTA RPSRLSKTAFVDVFGSVFEHSPFIAERTLTRGDGATT D MA T
$\square$ A E
$\square E$ E VN
LD T F I S R F G G V V D M EVN QMDLKTFSRTGGDI FEDSSWIAVVAYRQKPFAS M DMKKVNSLDFTEFVSVFRNVVERCPWVAAAVWSHRPFS GL$N \square S$ R PS QL N ED D $\mathrm{N} \square \mathrm{S}$ $R \mathrm{P}$ Q
F

LE QLNRATPEQA

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\begin{aligned}
& \mathrm{L} \\
& \mathrm{~L} \\
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& \mathrm{~F} \\
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\end{aligned}
$$ APS Q S S LL T T F V A H F G NVA E H S P WV A VVA HREAPY GS R APS QS SLETFVAHYGDVYEHSPWVAKAAWQHGLHDAP

 E ELL G L S R ERFASLLGRI F



L S
LA EVNTMPQAAF


| $L$ | $K$ | $T$ | $N$ |
| :--- | :--- | :--- | :--- |
| $L$ | $D$ | L |  |


 E RPSAMTRERFVVERFGGIVEHSPWVA ERAWE LGBAAHDS IA A LIN QLDD D E A F I T A LLG G I F E H S P WVVA A A V L E Q R P F A S R
 LD QL NAAS DD A RAMVA GLYEHGPGWA GAVWSHRPFRS
 $R$ P D R L L S R A
 $N$ N D E V N E L D F D ID R I N R M G S E E F V S A L G L I F E N S P WV A R S A W D S R P F V N A R P S T L S R R D E F V A H Y G DVV Y E H S P P W V A E D D A F E T G A Q DV P


## UniRef90 H5T884 UniRef90-Nobos4 UniRef90-UPBOOO30F44B9 UniRef90-G1Yow1 UniRef90-AOAO16XJY2 UniRef90-F6CWR8 UniRef90-M9R3G5 UniRef90-G7ZBC7 UniRef90_UPIO004702B54 UniRef90-W81JM8 UniRef90-L9XCX5

 UniRef90-F9SAW1 UniRet90-ugVXV9 UniRef90-A3V1B0 UniRef90_W5YSF9 UniRef90-UP1000362C9C2 UniRef90_00FXZ3 UniRef90-14YW57 UniRefefo-CTDBN9 UniRef90-13E1R0 UniRef90_A5PJDO UniRef90_S2KFGOUniRef90 LOKOS7 UniRef90-K9TV73 UniRef90-W8YSN9 UniRef90-K2NX71 UniRef90-UPI00036AE04D UniRef90-A3YBR2 UniRet90-UPIO002E2D60E UniRef90_V4PSF5




| UniRef90 H5T884 |  |
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| UniRef90-N0B0S4 | LR D |
| UniRef90-UPI00030F44B9 | L Q D |
| UniRef90-UPI000479CB54 | L E D |
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| UniRef90-A0A016XJY2 | L Q D |
| UniRef90-F6CWR8 | L A |
| UniRef90-M9R3G5 | L M D |
| UniRef90-G7ZBC7 | L D D V |
| UniRef90-UPI0004702B54 | L A DV |
| UniRef90-W8IJM8 | L Q S ML |
| UniRef90-L9XCX5 | L E ELL |
| UniRef90-F9SAW1 | L WD M |
| UniRef90-U9VXV9 | L NDLL |
| UniRef90-A3V1B0 | L R G M L |
| UniRef90-W5YSF9 | L Q A M |
| UniRef90-K2M0C1 | EA |
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| UniRef90-Q0FXZ3 | A |
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| UniRef90-C7DBN9 | L K D L |
| UniRef90-I3E1R0 | L Q D |
| UniRef90-A5PJD0 | A NL |
| UniRef90_S2KFG0 | L E D |
| UniRef90-LOK0S7 | L E E |
| UniRef90-K9TV73 | L D A V |
| UniRef90-W8YSN9 | L A D L V |
| UniRef90-K2NX71 | L K D |
| UniRef90-UPI00036AE04D | R E R V |
| UniRef90-A3YBR2 | L A E |
| UniRef90-UPI0002E2D60E | E D |
| UniRef90-V4PSF5 | V E D V |
| UniRef90-UPI000374AAC0 | L E A |
| UniRef90-D8G7S5 | L F DL |
| UniRef90-A3JCP0 | L K A |
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| UniRef90-UPI0003ABAE80 | L A D |
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| UniRef90-L8M6C0 | L N S |
| UniRef90-G7UNK3 | L A D |
| UniRef90-UPI00036204F8 | T A |
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| UniRef90-G3NFE9 | L Q A L V |
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| UniRef90-A1WR35 |  |
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| UniRef90_UPI00035D40F3 | L |
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| UniRef90_C1DFB0 | L Q A |
| UniRef90-K9YQM2 | L LDV V |
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| UniRef90-W4XAC4 | L LD MI $^{\text {d }}$ |
| UniRef90-Q222X9 | L ND |
| UniRef90-W4R0G2 | L WEL |
| UniRef90-K8NUH6 | V Q $\mathrm{R}^{\text {L }}$ |
| UniRef90-A71KH6 | LDQML |
| UniRef90-V6IVF1 | L D D L |
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| UniRef90-UPI00036FF9F2 | L R |
| UniRef90-T1AAF6 | L HERV |
| UniRef90_S6H152 | L Q A M |

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UniRef90 U1NIV0 UniRef90-19WPG4 UniRef90-UPIOOO3B2ED30 UniRef90-S6AXG8 UniRef90-A6FD43 UniRef90-UPIO0036792DC UniRet90_J8TWF5 UniRef90-A0A031JDD5 UniRef90-B0WCJ1 UniRef90- Q1R1H7 UniRef90-A0A015KM48 UniRef90-G6XK55 UniRef90-FOYBD1 UniRef90-D5BTM8 UniRef90_UPI0003C12324 UniRef90-C5BOV5 UniRef90_W9GH90 UniRef90-S6GGG44 UniRef90 UPIOOO4039F87 UniRef90-BOT8R8 UniRef90_A7UV21
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UniRef90-A81Q18
UniRef90-B7GAW6
UniRef90-UP10002C4667E
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UniRef90-M0M7Z4
UniRef90-W4DAL4
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UniRef90-B1M8G4
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UniRef90-A6DVK8
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UniRef90
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UniRef90_L5N9J9

LD Q $\square$ NEMAEADYVVAALGF|L|FEHSPWVVERSAAHRPFAT T R P S LMD K A T FVAATYG DVF E H S P WV A E A A WE L G LTT E R H
 $A L S N$ A K F V V K K F G F L F E H S P WV V K R A A A R R P FA D
 $N$ AMDAPDFAGAFGDIAEHSPWVAELAGKERPFAS R
 T P S S L S R E A F I A A F A D I Y Y E H S P P WV A A E K A Y D L $\square Q Q \square N Q M D R \square A F T L D G T V F E D P E I V N Q T W D K \square P V L T V$ $\left.\begin{array}{ll|lllll}P & E & V & N & Q & W & D \\ A & W \\ P & A & E & Q & Y & S & E \\ P & W & A & E & A & A & W\end{array}\right)$

|  |
| :---: |
|  |  |
|  |  | MEAREAF

I E E V K QM S

## LE

| $Q$ |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
| $R$ | $L$ | $A$ | $L$ | $P$ | K E D F I E K $\quad$ G G I


 A L H EMS RPSTMSAA QF L T R F G D
$\square \mathrm{D}$



 G GK | $T$ | $P$ | $S$ | $Q$ |
| :--- | :--- | :--- | :--- |
| $K$ | $P$ | $S$ | $R$ |
| $L$ | $R$ | $A$ | $A$ |
| $D$ | $R$ | $T$ | $A$ | L $L_{D} L L L$ $\begin{array}{lllllllllll}N & M & N & T & A & F & V & E & A & F & A \\ l & D & S & L & G & W \\ K & Q & A & D & H & D & T & F & C & R & L \\ L & A & G\end{array}$ $\square$ MSKADFTE LGGEI WEETPAI AQQSWHDRPFTD



$\qquad$


## EMAVVLSAR

 SP S

NMEKVNSVD | $L$ | $A$ | $W$ | $L$ | $N$ | $D$ | $A$ | $P$ | $A$ | $E$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $A$ | $A$ | $A$ |  |  |  |  |  |  |  |
| $I$ | $D$ | $N$ | $I$ | $N$ | $D$ | $L$ | $N$ | $K$ | $S$ |

LT QLNGATKQE F
LVGVGVGEHSPWVA ERAWARRPRRSV


 L E E A N Q M D D E S T A F D ${ }^{L}$ K | S MV K |
| :---: | :---: |
| T L P | K D FV

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


$R$ GE
DR NA R A F
 D L D E L N T M T Q A A F A A A L G G V V F E Y A P WV A EAAAA Q Q R P F A S

 A T Q A E F
MPREEFMALLLG G
$N L D E L N D A A E D A F V H Q L G G$


I TV NA GTRWAAALTQARPFPSE

E A V N ALDD E E A F V S RF S DV A E D S P WV A K A A FAAARP F A D R

## UniRef90_EOTCW8 UniRef90-W1N826 UniRef90-UPIOOO22603F5 UniRef90-UPIO002E4CB96 UniRet90-UPIO00466AB3C UniRef90-A0AO13VRU6

 UniRef90-W4Q2D4 UniRef90-UPIO004779987 UniRef90-UPIO00376D65D UniRef90_UPIO00478AA83 UniRef90-WOH6A7 UniRef90-B9JZT9 UniRef90-K9SWL3 Uniinefol_UNIVO UniRef90_19WPG4 UniRef90-UPIO003B2ED30 UniRef90-S6AXG8 UniRef90-A6FD43 UniRef90-UP100036792DC UniRef90-J8TWF5UniRef90 A0A031J UniRef90-A0AO3JJDD5 UniRef90_BOWCJ1 UniRef90- Q1R1H7 UniRef90-A0A015KM48 UniRef90_G6XK55 UniRef90-FOYBD1 UniRef90-D5BTM8 UniRef90-UPIO003C12324 UniRef90-C5BOV5 UniRef90-W9GH90 UniRef90-S6GGG4
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DGVHKALCTVFRAASDEERGVLRKHPDLAGKLAVSGEMT
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 ESLHQSMLKVVQQMSAAEQLALIKAHPDLGSK TKMA EALDAAFEAAMRAAPKDTQLALI RAHPDLAGKAADAGDLA EAVAAAFAAAVQQDSPAAQLSLIRAHPDLAGKAALAGDLT AAMAEQMRSVVNAASDKLKLDLLRAHPDLAGRLSLA ELT YDURRAFQDVLFASPPERQLELIRTYPDLGRSATMWGMLS AELQAALVAVLRAASPDRQLAVINAHPDLAGRLAAAKLLT EQLAAAMKALVNKSSKDQKLELLCAHPDLCEKVGKDEMLT
 DALHGAMLDVVRQAPQEHRLAFLRGHPELAGREARAGTMT DELRSAMKRAVEDASREKQLQLLRAHPDLGERMYNKEMT SQLENLFFHFIDQLDTKEKKILLKKHPELTGEMYNKKLLIT RELHVQMKQVNDASKLEKLNLIRAHPELGNKLQKDKKLT AELRDAMKQAVDDASRETKLELLRSHPDLGDQTGD TELCAAFDNYLEELSTAEKNKVEKFHPDLAGKLSQMGELT VALREAMRSAVDEASRETKLELLARSHDLGDQTGDAKS DALVAAFEQTLRAAGRAAKLALYRAHPDLATK QELHAAMMEIARQAEPDQVLALLRAHPDLATRLAVS EAMHNAMETV RTARAEEKMALLLAHPDLGAKLKQLASLT AALHDAMMAADRRRDEAAQTAFLCRHPPLSARADRAGALT
 QHVLHTARVAASDFSDEELRAALAKHPRLGER AGAGHDV
 TALKLALQATVSDATEAEQLGLIRAHPELAGKAV AALHGAMMAAVRAAPPEVRLAFLNGHPELAGPEARARAMT DALHQAMLATVHGSPREQALRFLCGHPELSVSAVRSGTLT AALHEAMMDVVRNLDDKGQRDFLNLHPLLSGANIRAGTMT DAVIATFDDYLQQLNVETKTRVLRSFPDLAGKLLDSHQLT AHMLRVMDHEMRRATDMEQMSLIRAHPELARRAGMDPTLT EALFVAMREAVVAAPEARRLALLOGHPELAGRSARAGTIAA QSLHAALKQAVNGAEQPLQLSLIHAHPELA PDRAMQLT DGLFQAMAVIVASAGAERQEALI RAHPRLG TAKIMT EALHALMAAQLMQAPHEAQLALINAHPDLAGKAAVRGELT DALIAALREAVAQAARERQLALRAHPELAGKEAASGTLT DSLHDALCRVFRDATEVERLTVLRAHPDLAGKLAQARRLT SDLEAQDSEFDDSLPESGKEGMLRCHPDLSLPAVQRGLT



## UniRef90_E0TCW8

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UniRef90_R4WLP8

## UniRef90_F7STK0

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UniRef90 C5CZY4 UniRef90_Q02C46 UniRef90_D4GPU8 UniRef90-A0A022T4A0 UniRef90_UPIO0036EB52F UniRef90_D5WQV1 UniRef90_L9XRP8 UniRef90_UPI00034FF5A3 UniRef90_UPI0004746DE4 UniRef90_M1XTE7 UniRef90-UPI00047C0A88 UniRef90_S9QDC8 UniRef90_M0M7Z4 UniRef90_W4DAL4
UniRef90_B5JCN9 UniRef90_A0A022GLD5 UniRef90_S6HJN2 UniRef90_C8XK08
UniRef90 C8XK08 UniRef90_UPI000475C4F6 UniRef90_T1EB70
UniRef90_F1VUR7 UniRef90-A9DDE8 UniRef90_B1M8G4 UniRef90_B7WT32 UniRef90_B0WCJ2 UniRef90_D5QD53 UniRef90_B1ZHP6
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C|V|RNHDRAA|L|AAMETRSQSHRDEEVSTA|LDEVVA|IVRHR AVKGGNRHTILAAFEER LHHDADQERREAVAQI NRIARFR CVVRLS EK D HILLNEMERRTRNTA DE ERRAAALAEEI DKIAA A DR AVAGHTKASVLENFTVRLRNSTVEEDATALLEI ETIIARSR AVSGLNKDDILAAFKRRIDNSAEEELATACHQVEKIAGFR

 $A \vee R G H T T S S S I D Q M R E R V E G T R Q E E D R T A T Q Q V A R I A S D R$

 AV R N H T K T S I L E A F K T R L Q N S L DLLE L N R A I A E I K E I A R FR
 A V K G A N R H L I L A A F E E R L N N S R E DE F K T A L E Q V H R I A E F R
 AVKGKTK DEI L N NFRKRI S S N P E DE F DEAI KQVK QI A S F R A V K E H T K E S I K E Q M Q K R V E H S Y D K E K E K A L K EVVCK A G Y R
 AV K GY H R H E ILL D A FE LDRLA H GPDEERRRSAI A QI HR I A R L R
 C V V R R P P K T V I M D E M E R R L A $V$ R $G L \operatorname{L} R A$
 AI K GS S REAI LAA F EARL R NDPEQEFQEALRQQERIA WL R SVRDRDSAQVLRQGWARLENSPAQERAAALVEAARIAGYR



 A $V$ V K G S N R H Q L L A A F E K R
 A $V$ V $K$ A V K GA D K H M L L A A F ERRII G N A GAAAEF E TAALA Q I A R I F R FR CVVRKAPK A II L E E M S R R L N S T A E N E L T E A L A Q I D A I A S L R


 AVRGRSKAEILDAFERRLAHDVAAEHAEALAQIERIICLLR

 AVKGKDKNEILLNNFRQRQQSDVESEFLAEAKQVKKIATBR
 AVKDENPDAI AAAMERRVDHSESTEFRTALDEVHTIA ELR CVVREHT DA S I I S G I E R R L E N S L E V E L D DA I G E V K K I S K L R AVK GLS K N Y I DE N M K E R V K N S Q E E E F K T A I S E I H K I A $\left.\begin{array}{l|lllllllllllllllllllll|ll|lll}\text { A } & V & R & D & R & T & P & R & E & I & Q & K & A & L & E & Q & R & L & A & A & T & Q & E & E & E & E & Q \\ R & A & L & A & E & V & L & L \\ A & V & R & D & E & S & P & E & T & I & R & E & A & M & E & R & R & I & E & H & S & E & A & D & E & F & R\end{array}\right]$

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








 CVVR H Y T R R E G


 AVRGHGPDSI I A AMKARLSRTKREERQEALDQI NRIA WFR AV R GK S K A A V A A L K E R L M H A R A D E F N R A L A E I DK I A R A R
 AVRHHTKSGILAELRGRAAGDDAAEFATCLDQVHEVARLR AVRDHDKAGI RDAFARRDDQDSATEQAEACRQVERIAFWR




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| UniRef90-UPIo |  |
| UniRef90-UPIO00478AA83 | ERTL |
| UniRef90-WOH6A7 |  |
| UniRef90-B9JZT9 | L EAML |
| UniRef90-K9SWL3 | L Y D V |
| UniRef90-U1NIV0 | L Q |
| UniRef90-19WPG |  |
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| UniRef90-S6AXG8 | LRQRL |
| UniRef90_A6FD43 | L N |
| UniRef90-UPI00036792DC |  |
| UniRef90-J8TWF5 | L |
| UniRef90-A0A031JDD5 |  |
| UniRef90-B0V |  |
| iRef90_Q1 |  |
| UniRef90-A0A015KM48 | LD DLI |
| UniRef90-G6XK55 | L |
| UniRef90-FOYBD1 |  |
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| UniRef90-C5BC |  |
| W9 | DLV |
| UniRet90-S6Gc |  |
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| UniRef90 B0T8F\% | Q ${ }^{\text {Q }}$ |
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| Ret90-F7STK |  |
| H0 |  |
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| RRef90-F21ZV5 |  |
| iRef90-F7VEF5 |  |
| iRef90-UPIO0036079 |  |
| UniRef90-UPI000262CD12 |  |
| UniR |  |
| UniRef90_UPI0003746F36 |  |
| UniRet90-A81018 |  |
| UniRet90_B7GAWE |  |
| iRef90_UPIO002C46 | A DLL |
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| UniR |  |
| UniRef90-C5CZY4 | D A |
| UniRef90-C02C46 |  |
| UniRet90-D4GPU8 |  |
| UniRef90-A0A022T4 | R |
| - P100036EE |  |
| UniRet90_D5W0 |  |
| UniRef90-L9XRP8 |  |
| UniRef90-UP100034FF5A3 | Y |
| UniRef90-UP100004746DE4 | L Q |
| UniRef90-M1XTE7 | L |
| UniRef90-UPIO0047 |  |
| UniRef90_S90 |  |
|  | - |
| UniRef90-W4DAL4 | LED |
| UniRet90_B5JC | N |
| UniRef90-A0A022GLD5 | L Q |
| UniRef90 S6HJN2 |  |
| niRe990 C8XK08 | TVL |
| UniRef90 C8XK |  |
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| UniRet90_F1VUR7 | L NAL |
| UniRet90_A9DDE8 |  |
| UniRef90_B1M8G4 |  |
| UniRet90_B7WT32 | SQRV |
| UniRef90_Q4771 |  |
| UniRet90-B0 |  |
| UniRef90-D5QD5 | A |
| UniRef90-B1ZHP6 |  |
| UniRer90_B4WLX7 |  |
| UniRef90_OOBSR2 | $N$ |
| UniRet90_UPI000255C0D8 |  |
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| iRef90 I1F0D7 | EDRV |
| nRef90_L5N9.9 |  |

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$N)^{A}$

ALSADE
NGGRNQLPATEAEPLLRNCCA


पTELNQLP LEQVNGMS LEQVNGMSRE
LDEINAMS
EELQADREDVTARRPLFNQETWPL
EELNQADCARFTSMLGHLFEHSPWIPKEAWARRPFAD LDQFNSMTEREARDTLSFCCTSSQWI ERVADQRPYDSV
 VKKLNQMSP
DDELNQLSGEAVAKEFETCC
DELNQLSGEAVAKEFETCC VSRRWI NGMVNARPFHSID LQDFNSAPADRLRPALAACCDV PRWVDSVLAGRPYAD LDALLSLPDGDFVAAIGGDYEATPWVVEEFYASNDSPSAD LAQFNDGSKEVALAQLGTCCTSKSWAYKLADARPFADVV LEEVNAFNAEDFHRLFDSTFEHSPWVTEGAWQLWPLRSA EVAQUSTPSSEFDAALGGCYEKSPWVAERAHAAAPFASLD LNEVAMDKQRFTEAFGGVVQNVPWAVERAFEQRPFADV LDEI NALDRDEFVATLRPLFNKETWPLEQAWESRPFTDV N N DHLNHCSPDEFCAALADIWEHAPWVAAQTVALRPFASA LDEVNKMTEAEARQLLAGDCNACETWFERVVGSARPFKDV NLHDFNSAPFPAATAALSPCVDVPRWSEE $\square A A A R P F A S T$ LEAVNQMNRQTFVDTFASGFNSKTWPLETAWESRPFANV -A

FNQLN
FNALS

## UniRef90_U5EXQ5 UniRef90-Q2SNOO UniRef90-UP100041EFB6A UniRef90-UPIO003A4BD54 UniRef90-U2SM83

 UniRef90_UPIOOO3826855 UniRef90-UPIOOO36013FF UniRef90-E2S624 UniRef90-E3HUL6 UniRef90-N6W3Z3 UniRef90-A1TFU6 UniRef90_L8DM91 UniRef90-A0A023X336 UniRef90-H0R458 UniRee90-UPI000476FB9E UniRef90-UPI00045E5C87 UniRef90-U7G319 UniRef90-UPI00037D09BB UniRef90-E3FDG1 UniRef90-UPIO003FB5511 UniRef90-S4Y359 UniRef90-UPIO003715133 UniRef90-UP100035DDCE8 UniRef90-A0QRZ5 UniRef90-UPIOOO4199434 UniRef90-UPIIOOO3C84FDE UniRef90-UPIOOO3F83488UniRef90-UPIOOO34F3F9F UniRef90_UPIOOOO3707966 UniRef90-K8Z5N0 UniRef90_UPIO00478A58B UniRef90_UPIO00287F173 UniRef90-UPIO0036ABOC9 UniRef90-F4CMMO
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UniRef90-Q1N1R3
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UniRet90-R4YR88 UniRef90-R4YR88
UniRef90
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UniRef90_C7MGK0 UniRef90-W8G3V5 UniRef90-UPIO004696E8B UniRef90-UPIOOO363F6F2 UniRef90_G8NRV8
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 ADLGQRLRQAMSAGDAETRTALLRAHPELA ATPGAPEGG EDLHEKADRLWPGMTTDDWLEAFEAHPKIGDSSLKAKFAN HGLREAFQEALLAGSTEEQDELINSYPDLGSEDATGILNA QDMRHSFQMAVYDAPEERQVELLRSYTPLSRAATAEGGLS HDLRSAFQEAMLTGSDAEQLELITAFPDLGAEDEDGDMTA EAMVAAFADAVQAAGVEAQRALLDAHPDLAGRAADANELA TALWQALDDAMLAASRDEQLALIRAHPELGTR GPLT
 TAVYTEAGWLWSQTGPEDWKEAISHHPRIGDVSLRERFKA EQLFLNAEVI WNNLSEKDWLEAFQYHPKI GDLNAIKEKFA EALHATASQVFARLGPEDWLEAFRAHPRIGEAEAVEASAT HALRRSFQEALFSGSPEKQRELIESYPQLGSQLVADGLSG
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 SELRAA DQVGVLTASGERREALIHDYPDTSD ILLATDAEA CDLHREMVMVVEEATYEDQLSLIQAHPRLGSANEKVG SKLQEVALSVWQSCQEQDLLEAFEGHPKLGDSSLREKYRN DALAARMAAAVEAAGAERQLLELLRLHPELVGKLKTGEQ


$$
4
$$ AALTEVADQATRDLSGDEVGQALAAHPR GDRVGGNSTEA AA LNCADRLWQQASENDIREAFEGHPRIGDVNLKAKFAN EDMLAATSQUIRDADHDRQKALVKAHPELARKFGVDPDLGG EHLYAEAADAWARTGPEDWKEAFTHHPRIGDSKLREKFAS VHLWSLFSVALYGASKEDQMRLIRAHPSLGDVAR1A AALASALIREAVDGATAAERLALLRSHPDAGKAALAGELT EAMMEQCHRLWPILTEDDWLQAFEAHPQUGDVDLRKKYAS HELREADQVAVLTAPSEQREALIHDYPDTSAEDLDATDAES DALHSAMLAVVAGLGEPARIRFYAGHPELGGALARQGAMN TQLKSHASLSWQNLSESDYLQAFEAHPMVGDVDLRKKYAS EDLVSFAATAAPGWTEAELDRALQHHPRIGERAAGTSTEA $T E L R E A D Q D A V L T A P A Q D R E E L I R D Y P D M A Q L L L A S E E E A$

$K A L L S A S D A W Q Q A D E A N L L E A F D G H P Q D G N V D L K E K Y R N$ VELLAYADEKWQQCTEKDWLEAFTHHPKIGDVALKEKFAS ESLLLTADELARTWDGEALSQALSAHPRIGEKPPGAGKEA DELLRTANQAADPFSPQEVESALAHHPRIGERPKAQTTEA
 QELDNEAESIIGSGGDEDKDVVINAHPRDGLNPAEDKKTS VELRAA Q TAVLTSAEELREDLI HDYPDMAQLILASPEEA AELHRALEEEVLSASAQEQEELIGAGDPVVDLLLGEGGDAA DELLSUADKSWSDCEEKDVLQAFEGHPKIGDVSLKAKYAK AEDYQAADDAAREDTREEDDSALAAHPRHGARVQGSDTSS DSLLTAAARNWQSCTESDWKEAFAHHPKIGDHSLQHKFAA HDLRASFQEALLTGSDDQQ\|ELIRSFPDLDAEDEVGDMDA EQCHEMADSVWAGLGEQDFLQAFEGHPKIGDVSLREKYAH DDVINTACKIWSCLSNSDFLEAFKAHPMI GDINLEAKFAN EALIAHSDTVWSQQQESDLLEAGDGHPQIGNVALKEKYRN CQVKQVAQELWLGSSNQDLLTAFEAHPMIGDSSLRKKYAA RALRAAFGEALLAGDTAQQLALLNAYADLGSEA M DAG DALHTTMMNVVRAMSREEKLKLIRAHPELAGREADAGQMT PALRAAIEDAVLTAERAEQDDLVRAYPDMATLVTADEEQA EQLLKKAEDVWWNLHEGDFMEAFSAHPKIGDSSLRAKYAD

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UniRef90_R4YR88 UniRef90-K7ADH5 UniRef90-K6XSS0 UniRef90_UPIO0046EC329 UniRef90-Q2JER8 UniRef90-K6Y0X2 UniRef90-UPIO003722C03 UniRef90-A4YLLO
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 THDLLASGE V D HVA ${ }^{\text {H }}$

## 

PESRNEQASAGLQHLDD
PASGGEQASAGRMAEYA

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\stackrel{Q}{\mathrm{Q}}
$$


PESKAGHE
TSGTASNSGALLMNLSA
AESPREPSGAGLTSLGAEERLRLAELSAKYGARF
TKSLSKNEQSGVNDASENTLINLAESNQLYEDKF
AASAAEQAQAGLDRLTAEEVARFQA


| $\mathrm{Q} E$ |
| :--- |
| $\mathrm{P} S$ |
| A |

Q AFRGSLGFDDLD
ASSAAEQQD
A D SQR
SSS
TKALLASGEQATVKQAD
TRKWASGEQSGVAGAS
TAKGAGHEOSGMS
AWSRKEQSGVG

TA QWS
DESRSEQ
SESTA E Q
VD
RADSADRGHVAL
A AT DERSLGELDDVETQQVLELSK
AASTDEQASLGLGQLQAAEAQRWDGLNRAYRERFGFPFIL TKAMASGEQSGAAAADEQTLGELATLNKSYLQKF AVDHK DMSRREEQSGV DTSADTAEQLLAGNRDYEAKF
ALIDQDRGSLGLVELDDVDREQLLTVTAQYRERFGMVFYVA TQDSAA HE QS GAN DA E D A V L E A L A Q GN Q D Y L D K F G F I F I G M D A P R R R E Q A A L L $D L S R R E Q S S$ V S DTEDSALNQALVR GNLA YE QRFGQQVF

 AI IAR DRGS LGLERLDDTKKAKLESVVQEYQQRFHMPFVA Q A ELL DT A S L A L G E F D D A E R A E L Q GLA DA Y QE R F GR P L V M
 SWSRSEQA GVVDAGDAALQEALREGNEEYERRFGHVYL

S D H T A
TWSRGEQSAVTAA GADAEVA FKAANADYEARFGHVYLV


 $T K D D A S N E Q Q G A T Q A S E Q T L Q S D A D A N H K Y L A K H G F I F I I$ N A Y L L D H D A A GLLGTLGEDAHHEVRE LAQAYRRHFGFPLVV
 THALAANEQQGAHQADDSVLEALAAGNKAYEDKF $R A S Q S E Q Q G A G L D Q Q D D N M R K R F D T A N A A Y Q A R H$
$S M S R S E Q A G V D P A D T D A A E A$
$L$



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UniRef90 R4YR88 UniRef90-R4YR88
UniRef90 K7ADH5 UniRef90-K6XSS0 UniRef90_UPI00046EC329 UniRef90-Q2JER8 UniRef90-K6Y0X2 UniRef90_UPIO003722C03 UniRef90-A4YLLO
UniRef90_C7MGKO UniRef90-W8G3V5 UniRef90_UPI0004696E8B UniRef90_UPIO00363F6F2 UniRef90_G8NRV8
UniRef90_UPI00036E34A5
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 CATGKSAAEMLELLRERMDNAPDEELRDAAGEQAK I TRI R

 AVRGLTRQLVIDEFARRLDNPPDLEFEEAQQQLHRI
O
CARETERDRVLRNGW
 CAREAE RYEVVLDRN G WS R R L R H S R E Q E I L I I S IV V E V V V K I A N Y R AVKGATK Q QVLDAFA A RVGNDPEVEFATALARVERIDRFR AVAGLGRDEILARLEQRLGATPEQEFAQCLAEIGRIAALR



 A ARLLSDREAVPRELE
CASGKS A QEMLDLLI RSRTGNERSVELNDAGAEQAKワTNTR

 CVRLT DKAGILAAMQARLANAREAE $\square$ AT TALDEDGKIVRLR
 AVKEKNKSEILLLSFKDRQKNTVSQERLNALSEINKIIAWLR
 CVV R Q A R K K D V I L


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





 AVRNANKATI FAAFERR
CATGKSADEMLA LLEARRLPNGREMELKNAAREQAKI A WMR

 C I R Q H S L A S AL LVF E Q R L GH T R QME L QL A L N E I A A I S R L R







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UniRef90-W1TSA8
UniRef90-F4P8Q5

UniRef90_D7GH79
$\qquad$

 LE QLN QLLP DA QA E T L M R DVCCAA G S W G S ALLLA R R P Y D S V


 L A L N A MS APPD F A A A L G P VVF EN A P WV AR N A A A A R P F A T L



\section*{$\square A$} | S D | A S Y S S E K Y L K T F K |
| ---: | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

E QCCASKTWI YMMVNARPYSDT


 I DEVNTMMGRERFVEAFSP LFNTQTWPLERAWESRPFADA
 $\square Q N \square N D M K R E$ Q F V S T F G S VV F D H A S WA A E E A Y E C R P F A D D $\square K S L N A A S T E E A T Q M L R P C V D \square P R W I N E V D V A R P F G \square E$ MEALQALPRHELRQELLRCC HSNAWADAVLGRMPFKSE
 LTE L N QM D R DE F V A A L R PL F F N N EVFF P L E TA WEARP F N DV


 MACYRDLLE

GSTM FAK EMAS
LEE F N A L S A E QVRAV L
 IA EFDHLDDTE K RTLLYSCCGSNTWVNN MLTALDPA E DL




 $D L D Q F N Q L K A E Q A M E A L K P C V B D P S W I Q S V V M Q R P F V S A$
 LT RFNASDESAALAELHEVCASSAW LGQIN RMDKGEFVETFRSLFNNQTWPLEVAWESRPP DNV I A R L N Q L S D T D F L S SVVNMLLDEVAP P L A S G L L A A R P Y S S Y L D R I N D V E D DVV T K T L L A C C DVVA A WA E A V R E G R P Y T D L







 L DA LN S CTPPAEAAAAKLTPCVD DPRWVDAAVAARPFSSSE
 MDRLNALSADAAEAELLTCC ASRRWAVEVAAGRPYAGR
 $D L D Q V N A M D R E T A V E A F K S M Y D G D V W P V E R A W E Q R P F T D A$ LEEVVGAMGREQFVTTGSRLVEGAAWPAERVWDSRPFAST E EFNALDP HEAAADTVR $P$ CA D V D S

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UniRef90_UPI00035F5FA2 UniRef90-S3BHY4 UniRef90_UPI0003A26940 UniRef90-Q54SV3 UniRef90-W0RH88 UniRef90-I3IFV8 UniRef90-F5ZCT0 UniRef90_UPI00045E59B6 UniRef90-W9UZ31 UniRef90-UPI0003A5BB22 UniRef90-UPIO00477115A UniRef90-E8XPC3 UniRef90_UPI000475E4AB UniRef90_UPIO004785C19 UniRef90-F2G8F6 UniRef90_UPI0002376FF5 UniRef90-X5DU02 UniRef90_U1RH07 UniRef90_UPI0003B7446B UniRef90_UPIO0034A1379 UniRef90-D0WMW2 UniRef90-D5UU58 UniRef90_UPIO0037D2635 UniRef90-G6DRG0 UniRef90_-F7VCX1
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UniRef90-IORRL5 UniRef90-UPIO0034B4415 UniRef90-W7QRE9 UniRef90-W7IKR8 UniRef90-F3HW01 UniRef90_UPIO00288D9AF UniRef90-DOL8R4 UniRef90_D7BL28 UniRef90-H3LL60 UniRef90_UPI00046F707F UniRef90_UPIO0036E0AC9 UniRef90_A0A022RSFO UniRef90-F4ANU5 UniRef90-Q0S839 UniRef90_UPIO0047B17A5 UniRef90-K0EWE1 UniRef90-S5EDB1 UniRef90-UPIO0047ED106 UniRef90_N1V0L2
UniRef90-D2SGN8 UniRef90_KOYN68 UniRef90_UPI0003F7B1DA UniRef90-U5GR87 UniRef90-A1SFS5 UniRef90-W1TSA8 UniRef90_-F4P8Q5
UniRef90_D7GH79

50
60
EAFAHHPKII 70
$D \nabla A \mid L / R E K F A 8$
SALHAALDAQVDGADEAARLALDRAHPSLNAGAFRAAPLS SALLHAALAAQVDGADEAARLAALRAHPSLNAGAFRAAPLD DELYEVADRAATELTEDEVHSALAAHPRIGQRSTGKDASA ENLYNYAKQQTDTWTWQQUSEALGNHPRIGEKKA DQSLNE NALLHADWRCVAEANDDEQRALIGAHPELGVLAGGNPTLT


 EALHGTARALWPSLMES DWLAAAFEAHPKI GDKS LGKARYAS Q QLID QA Y S DQ S L N E S D K 1 Q V I N A H P R I GVV A S QVIK N S S D ELL A A A DE V WW ALL E P D D WREAFA H HPRRI GERAAAVVPQ D A E DLL DA A QQVWARANESEDLEAFSGHARI GDDELLRSRYA NDVVK Y AK T A WS K C GK D D FLLEAFTA H P MI G DVVDLRKK F A N

 QAL REAVQVAVLMAEPEERIVRIDDYPDMATLVLSTTXDSA
 EKKFHA IL S E I MLL S S D N N M Q D DL I T A H P LLLA GKK A Q N N E L T NALTE QAKNAWAQCSNSDYLEAFTAHPMDGDVDLRKKFAN A QLRHALVQAVRGA GADA QLLALIRANPWRMDQALA QR Q DLRDAVQEAVLTAERSDQKALI RDYPSMAELLLDPEASK
 D T L L A R A D T H A R A DT G E E V E E F R N A L L E K A
 P DLCAAFNKYLDDLNLEG GDGELLKSHPDLA GRLAARNELT
 E EAREAMDDCWAKLTPADYLDEAVAAHPAI GDKQALRDKFA
 N E L RAA A DVVAVVLTAAPA E K R E A L V V H D Y P S MA E L L L V D D S E S DALLSTARTAAKPFGAEEDERALSHHPRDGERAEGDHAEA A S L L E Y A E QLLS QMWS WQE LLAA A LA T HPKI GERQA K K QL N A PALRTASDAAFTELTWGDVAQALSAHPRI GERADGPEREA K AL F DAARTLAQTWDETALTTQALNAHPRI GEKPTGAQAEA D A L F D EMMKRYVK D G GK EM QLDDLL R S HPDLLCLKLDPP GDAT

 DEAVVTAARED WF NQ DVVHA WDQAAFSA H P Q I G H S S S S S A T S A SQLREAIDVTVVLTAPSDQRRALIHDYPAMDELLLLADS DTA Q E L L A A A E A H A S P L T T
 KALLDFARDAADPFTPDEVESAMAHHPRI GERPAASTTEA DALLDASSDAAMA GLT GADLAAEAMAGHPP GRPTPG
G D RHA D L M RVVVHA AT Q DEQLLA LI R A HPELA GKAA DD GTLT DELYYQTAA LHAQTWQWSEDSASSLA QHPRI GEKKAAMTGSE



 D S L F R A A D QLLF DLS E ES V D T IL Q A Y P DVGRRP GSEKSAA


 E A L L E Y A D LI L A E L T DA DLLDEA LAA GHPRI GERP D DVLLAASRKVWYD CPVA E WE L A A FKAHPRLGGDSKLKEK FAS

 E GL H G A MMAVVLEAAP EA D K L S L I R A H P E L A GKAA A I A K T L T E EALD A A R D IWWFHKDVNGWLEAFAAHPQUGESPSQSPTSA PNVLQQQAKTHWQDMEQD DFLQAAFDAHPMI GDMSLREKYAS D A LYTAA D N VLG D LT E S E I D A A L A GHPRI G DR AELIAFAENAAHPWTEAEID GALAHHPRI GERAQGSTAEA
 DA ALAVA WQAAQRWRHEEVVSQALAQHPRI GERAA GQGKEA DELMGASAKALEGLGWADVLEALGGHPRI GERATGDEREA N E L I E FA GRAA N P WTA E E I DGAALA HHPRRI GERAA GNSAEA
 T A L R Q A F E DEVVLA A A P E E QEAL V R GY T DVVVDLL L S S D A G D
 A G LI A LLAD A QARTWT GA EVVEHALAD HPRI GERPS A D G A S A


TSTWAEGEQGA|V|RLASEDT|L|QA|L|AAGNAAYEQRFGY|I||V| ADSGREQAGAGLDDSLDDHQAEVLARLNQAYEDKFDMPFVM TSSSRARREQAAMESASAEVRAAMAEGNETYEERFGY IGLI SWSRREQA
REQQFSKNEQSNVADTNAV A A SAYEQQVA GLNALPDALREALQHDNRAYRARFGA PA

 A AS A A EQAS A GLDDRLTPAEFEEFQT LDASYRARFGFPFVI
 TEAMAS GE QAGASVACETVLQRDKDGNDAYFDKFGFIVGV S $\square S Y$ Y E Q S C D K D S S DD Q S L L E N L T QL N Q Q Y E S K F G F K F V V RAA WS A GE QARVGDAAS DVVA E L A E AN RAY ERRRFGH IV I V GRATQEQGQ TKTIAS GEQSGTASASEATLLTLKEANQAYLDKHGFIFI
 DERHRARGSVGLGGEAD
QLSR GEQA T L N I S Q
RELDNENTGSLGI D DLD D


| $S A$ | $P$ |
| :--- | :--- | :--- |
| $S$ | P |

$R \square S A G S V A L E N$ LD
RAE L DTAS MA
S L S R R E Q A
NWSRGEQSAF
Q K V S R D $\square$
A D

R G L GLEDMDDVDA ERVVTVIA A
RESANE QRSAGLT DLT FE QK STIVEVNNERYKSKFGGFP FVA
SMSRRREQS GVVATS ALDSRA
$P S R W E L L A G N R$
QAWEDK EQASAA GASETVLDELSELNEKYRRKNGRVVGV QAE L DTAS LAALGSFNDAEEAEEL RGL S QA YQEKFSRPDVMM
 S S DS A D R G S L GLLT DLDD S V QTA K L K DI S TA Y H DK F N MP F V A GLSRAEQS AVDPTDTVVQQRLREGNLA $K E Q D F S N Q E Q A G D S L D E Q T Q Q A L L Q Q G N L$
$A W S R G E S$
A WS GEQS GMDDAAEQTRRALHDGNRAYEERFGHVVYL
$V$ LSR QEQGAVDNRDRQLDAQALQEGNARYEARFGRVFLI

QWSK GEQQS TAALATAPGSSSLQELSEWNARYREKFGFVVFM
A DSRAEQAS DGLAQQTT

TA QWTE GEQASVVKEASEQTLLQQLAAGNQAYEQRFGYIFIV
AT DS A D R G S L A L D D LDD DVQT Q QL I DV S R A Y R E R F D MP F V A
RWSRGEQAAVTAGGDTTEQA FKAANAAYEERFGHDYVV
EQSSS DLLSTLLSVGDATNEEAEELRADLSTAYRDKFNRPLVI

SMSRSEQA GVDPADQEDATALAEGNRA

QR $\square S K D \square G S L A L D S A T P R Q L E R L D R L S A D Y R E K F$
SAQWSK GE QTAMA TAT GSSSLQELAAEWNDQYQQKFGFVGBI


AWSRQEQSTVSRDEQTQREE




## ,

$E$ GMSRD DGS LA LGGSA S EA QL A E L K DVCD Q


## R

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,
TKAMASHEQDGASQADEA
DNPSSAREQSAVVASDDD
F

## EASWSRGEQ

QFSKREQS
RWSRGEQA
GMSRKEQS GVVR
AA G D A

EASRREQSAVG
E Q A HAD TAALALGEF

A MSRREQGGVAl


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130
140
150
160
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 RALGRSTEEI LAELNRRLNNTPE QEQLEVKDQLSQIA LLR









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## Y

## \section*{}



##  <br> A

$\mathrm{R} A$
$\mathrm{C} A$
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## C

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## $$
\begin{aligned} & Y \\ & F \end{aligned}
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 $A V K G S D R$


 A VR
FAS GRSTPE ILAEMKKRYHNRPIVEFELAAQEQMKDTELR
 R A A GRRSA E D








| $\mathrm{W} \varepsilon$ |  |
| :---: | :---: |
| U3 | L |
| UniRef90-E3IYC5 | L |
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| UniRef90-C8PUH3 | L K |
| UniRef90-UPI000465A72A | L H |
| UniRef90-K4AXY6 | L |
| UniRef90-UPI00023 | L A |
| UniRef90-G6EEP7 | L E D |
| UniRef90-UPI00035F5 | L N R V |
| UniRef90-S3BHY4 | L |
| UniRef90-UPI0003A26940 | L D |
| UniRef90-Q54SV3 | L L K L L |
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| UniRef90-F5ZCT0 | 1 D K |
| UniRef90-UPI00045E59B | L |
| UniRef90-W9UZ31 | L |
| UniRef90-UPI0003A5BB2 | R |
| UniRef90-UPI000477115 | F |
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| UniRef90-HOTCW7 |  |
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| UniRef90-D3B996 | $\square \mathrm{C}$ K L |
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| UniRef90-UPI000374533L | LE G |
| UniRef90-D6JWH0 | L S |
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| UniRef90-G8LIJ4 | L E G |
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| UniRef90-UPI00041/ | , |
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| UniRef90-C3PIM9 | F |
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| UniRef90-IORRL5 | L |
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| UniRef90-W7IKR8 | $\square G \mathrm{~K}$ L |
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| UniRef90_UPI000288 | L V |
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| UniRef90_UPI00047B17A5 | L K GV |
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| UniRef90-U5GR87 | L A |
| UniRef90-A1SFS5 | L E |
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TA A L N A LLP EASFRSTDHPCC I E S F N ELLS DN QADH WLY Y C CC A A A


 LARFNALEDHAARAALHEDCAABAWATVIRAGRPYSDV DLLARFNAGLEDHAARAALMEVCAAAEWQGRRLLAARPYATP LARFNVLEEHAALAGLHEAC ASTVWARRLLAGRPYATL LA GFNALSERQRMHLLLFEVC SSTIWARRVVAGSPFRDA

## LDEEE

LDQDNAMDREQFVDTLSPDFNSRTWPLDEDAWESRPFANV LARFNTLPDAAARAA LLEACASTAWAERLLAARPHASA LTRFNAADDGAARAALSEVCASTAWVEELLRGRPYPDV DIATLNAMAREDFVAALGDI YEHAAWVAEAAAPLRPFGDR
 $M N T F N A L P A E R L T A D L L A V C A V$ PGWAATVAAGRPYPSR LSRDNTADDEAARSALDHEAC ASRAWGDRVLAGRPYATT
 LARFNVLEEPAARAVLLEACASTAWARRLLAARPYDTA LARFNALEEPAAHAVLHEACASTAWVKRLLAARPYATA

 LDHFNHLPRSDAQQLVEPCV ADPAWAEAVVDQRPYADH
 $N L N E F N Q U I$
$N$ P DEEDAEEALLC

STAWARRLLAARPYAGP $S$ STAFVDAVARERPFTDE S R $\square W A V R V A A G R P F R D E$ ST R WVDTVLEGRPYADF STQFAK QMALASPFPSL ASTAWAKAIVAGRPYPGL
 PAWA TVVAGRPYSDV SKRWAAE MVKMFPVRDF
 SRNWANDIVSTRPFTS L D LSEFNQ SSTDDARASGRPCDDVDSKFAKEMAKVGPFKNL
 SDFNDAPSDDANAVLSACV HDPSWDNTGCQQRPYPSR LERRFNQAERVAAAAMI APCVADSTVWHEALVTTRPWASV
 LETFNQLASSQARLVLQACABHPTWVSELIQKRPYSSK
 ELTTFNQLPADEALAAIRHCVAGPHWQQSLVAARPFATT LDEDN ALPENAA RDLELLLQC HARFWAHHMAAARP FSS Q
$\qquad$



LSEFNQLSETQAQEFLKHCVHTSSWV RTLSEQRPYPSK LEQFNLLSVSEAVTLITPCVAL PGWAKQVTAGRPYGNR LQQFNALLPAEAAALLRPCVAIDSWDADAVLAARPFADR NLSGFNQASAADAQRAVAHCVAL PGWAASLVAARPYPS L L E EFNAATGERLMAALLACCDA PRWAETVSAGRPYPDA $L A R W N S L D P D A A A R E A L P C C G G S Q A W A T A L A S R R P V A D E$
$D E E S F V A R F G D L Y E N S S W I V R A A W A G R P Y A D A$ LN HFNQQPGBEAAALLQPCCVADPGWTAALVAARPFAS$L$



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| UniRef90 A0A059CFR8 |  |  |
|  | AREAMADWGEND |  |
| UniR | RAWWS |  |
| UniRef90-UPIO00329D9E0 | R |  |
| UniRef90-COZW | EAL FDKADAVLA |  |
| UniRef90-D5C | EVLFNAAQALTHSWDEHVLTRALSAHPR |  |
| UniRef90-L1P | S |  |
| UniRef90-UPIOOO3 | EDVLADCDRAFAGTSDSA | A |
| UniRef90-A8L79 | ATLLPAAEO |  |
| UniRef90-J7GB11 |  |  |
| UniRet90-V3UZN1 | A A |  |
| UniRet90_D7AYY0 | AALLASADGHARA |  |
|  | DELIRAADRLLELGEESIDLILQAYP |  |
| 27 | D Sor |  |
|  |  |  |
| UniRet90_UP1000472E575 |  |  |
| Uni |  |  |
| UniF | D |  |
| UniRef90_LTKUB4 | HDLLDRADO |  |
| UniRet90-A0A017T |  |  |
| UniRef90_A6G7W2 |  |  |
| UniRef90 |  |  |
| UniRef90-UPIO |  |  |
| UniRe | LFRASASAWNGLPRSAWLEAFAAHPR | K |
| UniRef90 B1MCN8 | EALYHRADLILAELTEADVDEALDGHPR | N |
| UniRef90-DVVF | ALSKAADSA TPLRRNEIRDAI | RPTSKGSDA |
| UniRef90-UP100042B | AVSA A D D WF NKDVNGWLEA |  |
| UniRef90-UP1000382882 | LYACSDRAVAALTADDLREADDGHV |  |
| UniRef90-A0A010YIZ2 | V1 AASDPVVKGLS WA DVEEAL |  |
| UniRef90-M9W |  |  |
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| UniRef90-UPI000377 | I R AL | G S |
| UniRef90_UP100036D |  |  |
| UniRef90-G7U | EALLAEAQRL |  |
| S5VB |  |  |
| A1TF | d |  |
| W20 | D |  |
| UniRef90 V4VZ | 仡 | GQ SRSS |
|  |  |  |
|  |  |  |
|  | A |  |
| UniRe | DALAAAMARIVRDADPALQTAL |  |
| 8L |  |  |
|  |  |  |
|  |  |  |
| UniRef90-D5UJM8 | A A L |  |
| B0UMZ7 |  |  |
| UniRef90 UPI0003 | dil |  |
| C9ZG | D |  |
|  |  |  |
|  |  |  |
| UniRef90-A9T9V4 | DLAVEAARDIWWNKDVQGWLEAFAAHPR |  |
| DA | GELREFADTAYDR |  |
|  | más |  |
| OAO |  |  |
| 9D |  |  |
| UniRef90_UPIO002628 |  |  |
| Unip | AEA EMSRQIWWNQDVPGWLEAFGAHPR | T |
|  | EAAL EAR |  |
|  |  |  |
|  |  |  |
| UniRef90 Q6F6Y5 UiRet9 | Q |  |
| UniRef90-Z5XGF6 |  |  |
|  |  |  |
| UniRef90-N9QG |  |  |
| UniRee90-UP10003788C1B | DHLFRRADDLLFALGDSSVDALLQAYPQ | GRRPGSA |
| UniRef90 H8DJ55 |  |  |
| effoc |  |  |
| f90 |  |  |
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|  | AALHAALLAAASDASPEERRDLVRGFPD |  |
| UniRef90 UPIO0047E1741 | D |  |
| UniRef90-UP10003FOFEC2 |  |  |
| UniRef90_UP1000 |  |  |
|  | D DMK |  |
| UniRef90_V2UPB8 |  | A |
| UniRef90 UPIOOO3183242 UniRet90-D4DWP5 | GA |  |
| D4 |  |  |
| ef90-H5 | DALVAAADKAAASLEAHE\DRALAAHPR | S |
| 10003 |  |  |
| UniRef90 A0A023D4U |  |  |
| UniRef90-J1QQ12 |  |  |
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|  |  |  |
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| Ref90_B8KGG5 | AALRHNADRVWSTLSADDYLQAFEGHP | D |
| Ref90_Q9LVM5-3 |  |  |

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UniRef90_Q9LVM5-3

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TANWS
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FAऑws sime
AASRREOS
DWSRSEQS GVTGADTEVLDRLRQRNAEYEKRFGYVYLV QWSKGEQS TALDNADEDGLQELAAANAEYEARFGHVFLV DDPQSAREQSGVHQAGDAVLADLRAGNDAYRNRFGRVFLI EKRWSQGEQAGVADADQEVLAALADGNAAYEARFGHVYLV ALSRQEQA AMVNDRDASLIQALTEGNARYEARFGRVF
AWSRQEQSGV

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            V
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\section*{R पS \\ RS}

RGM DNPSSAREQARMAGAAAELRAEMLEENDLYGQERFGHVF

\section*{QWSKAEQ} A

\section*{\(P E\)}
\(P\) E AVSA
AESQREQSQAGL
QWSKGEQ
PTSHREQS
TAALLSAREQA
PESAAEHAGA
PASAREQS
GMASADDALKAEMLELNLAYOERFGHVFL
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A WSRAEQA GTAEAGRELLDRLREGNAAYERRFGHVFLV
SERYARQEA ALLSSANEHTLQELADWNRKYEGKFGHVFLI
SWS H

QLSGGEQA GVNAQDQQLKEALRAGNSAYEQRFGRVF
EFSNREQSATKH SSEVEDALLKGNLSYEKKFGFLFL
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DWCAEEQA TALSSANDRALKDLAEWNRLYESKFGFVFLV
AHSSREQA
A WSRESA
KWSEEQSATA
REEKGEQS IALDATA
TLSRAEQS QCSVWDS
T LS R S E QA GLGVHG
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AA R E
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AELAEDA
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QEQAFSQQE
QLSAREQS
RLSRQEQA
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UniRef90-W2Q2Q2
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UniRef90_C8NQN0 UniRef90-A0A022MKJ8 UniRef90_M3B441 UniRef90 A5FXN0 UniRef90_UPIO004543C49 UniRef90_R4LMH5 UniRef90_B9SKJ6 UniRef90-J2K6L2 UniRef90_D5UJM8 UniRef90_B0UMZ7 UniRef90_UPI00036E5A4A UniRef90_C9ZGL1 UniRef90_S2IXP3 UniRef90_D6Y9D4 UniRef90_UPI00046D81DA UniRef90_UPI00047252C8 UniRef90-A0A014MGD5 UniRef90_N9DFL7 UniRef90_UPI00026286B0 UniRef90-D8QPX2 UniRef90_UPI000050FD36 UniRef90_UPI0003B382F7 UniRef90_W1PNL1 UniRef90_Q6F6Y5 UniRef90_UPI000365116C UniRef90_Z5XGF6 UniRef90_UPI000360EF17 UniRef90_N9QG77
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UniRef90 -L1JS44
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UniRef90_D4DWP5
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UniRef90_B8KGG5
UniRef90_Q9LVM5-3
MKJ8
140
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160
RAA GRSAEEMLALLEERLENDPATEDAVITRAQLAEIALLR CASGRTSPEILAAELKKRFSNRPDEEFQIAAEEQMKVTELR RAKGRSGEEMLQALTRRDQHTADEEVAEALAQQREITMLR CATGKTADEMLADLQDRMRNEPAYELDMAAGEQNKITALR RAKGRSGEEMLAALRRRLENDDAQEEQEADGQLREITMLR CASGKSGTELLDILRGRLRNDPATERSVLRTELAAANRIR RAKGRSGEEVLQVLNARLENSDAQEVQAALDQLREVTLLR



 CASGKSQEEVLLAAARARMGNDEATEERAVVTGEQGK

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\end{tabular}
\begin{tabular}{|c|c|}
\hline Uni & RRG|LV \\
\hline -A0A059CFR8 & A \({ }^{\text {a }}\) L \\
\hline O-W7 & LEGALL \\
\hline UniRei90-UPIO00329D9E0 & \\
\hline UniRee90 \({ }^{\circ} \mathrm{CO}\) & \\
\hline UniRef90-D5CE75 & \\
\hline UniRef90-L1P & \\
\hline UniRef90-UPI00037B98E5 & Leg GL \\
\hline UniRef90-A8L795 & \\
\hline UniRef90-J7GB11 & L \\
\hline UniRef90-V3UZN1 & L \\
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\hline UniRef90-L7K1 & \\
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\hline UniRef90-A6 & \\
\hline UniRef90-N6X1W7 & \\
\hline UniRef90 Q0ZD39 & \\
\hline UniRef90-UPI00036D4A92 & L \({ }^{\text {N }}\) \\
\hline UniRef90-R708F6 & L \\
\hline UniRef90-B1MCN8 & L A \\
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\hline niRef90-UP1000377152B & T \\
\hline UniRef90-UPI00036DF287 & LT \\
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\hline UniRet90-M3 & \\
\hline UniRef90_A5F & L \\
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\hline UniRet90-UPIOOO4 & \\
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\hline UniRef90-UPIO0046567DF & LK \\
\hline UniRef90-LTJs & \\
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\hline UniRef90-UPIO0031B3242 & L ESMT \\
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\hline UniRef90 D4HXC5 & \\
\hline UniR & \\
\hline UniRef90-UP1000375C5B6 & L HRWL \\
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\hline UniRei90-UPIO000413335E & LKGAV \\
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\hline UniRef90 B8KGG5 & \\
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UniRef90-N8WSFO
UniRef90 S8EER2
UniRef90_UPI00036188CB UniRef90 UPIOOо3B39966 UniRef90-UPIO0036EE816 UniRef90-K6X9W6
UniRef90-l3ZD75
UniRet90_E1W109
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UniRef90- V5XIR7
UniRef90-UPIO00374E37D
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UniRef90-N8ZZ08 UniRet90-B1MGT1 UniRef90_COZNR1
UniRef90-D2A355
UniRef90-11H4V5 UniRef90-A0A059MJBO UniRef90-D4C014 UniRef90-C7M9Y7 UniRef90 R9PHSO UniRef90-UPIo00364C160 UniRef90-E5XRP3 UniRef90-MOSYCO UniRef90_N9F952 UniRef90-HOR459 UniRef90-W5WAQ6 UniRef90-UPI0001FFDB38 UniRef90-X5L9T2 UniRef90 -L8ENL 7 UniRef90-D8MNI9 UniRet90-LOMH49 UniRef90-X7E5E3 UniRef90-G4YIG3 UniRef90-E4N1R3 UniRef90-K4AD03 UniRef90-E6TIH8 UniRef90 G2NRB8 UniRef90-UPIOOO36AEA28 UniRef90-W8H4Y4 UniRef90-G4HX80 UniRef90-F3ZDG7 UniRef90_F8JXN9 UniRef90-A0A059MTJ3 UniRef90-C6WEX1 UniRef90_TOPX35 UniRef90_AOR598
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1 10 LVEFNQASEADVKTFपKHCVQDESW ANELLSQRPYAS \({ }^{20}\)


DFHSLSREELCRLFSQCCSSTEFASRTADQTMQKSM LSEFNETDRQTAVETVRPALDDQRWIGEEIVDGRPYENT LTEFNQASDSDDELLLKQCV HEDRWAEELKQQRPFTSS TSELNELSYEEFTNKGNGLFETALPLANALYSSRPFASY
 AEFDADPEPEAVALLTTCCAGATWAARVAAGRPYGDR N NDENKMSVNDYEKTESNCFEDTTWPAVESASKRPFTGF LKLLNNLPHSQFTSEMASVC SSKTWQTMATLRPFQSV LARLNSASGQAVAALLHEVCAAGPWVAEAVAAGRPYADP
NLEQFNLLKDEQATEVLKSCVCGSKRFAKEMVSASPFTDL IV SVNELRESQAIVWFYETC SSRIWAVRVAQGRPFRDA DLNSAPEMDLAERLTTCLAVPRWVREVLAGRPYADE LDRLNTAPPDELAAVLRTCDNTPAWAGRLLAGRPFAGV LARFNAASDRAARAALHEACCASEAWGNHLLAHRPYATT LERFNQAPAADAKQQUACCVAMADWSEALVAARPFASLC DLSVLNDAAAAAFRQKLLHCC RAPHDAEKVSKHRPFADS
GSKKWTEEMAKKFPVRDF LADLSAADPAALREVLLEVC SSPAWADAVAASRPWPDR
LDAFNAMPMRRAVHAVFECCYSVP DAADLCRARPFADH LARFNTQAAPEAAAALHEVC ASGHWGSVILSRRPYATP DLQTFNAALPEEAEEVLRPCADTASWLS AVVAARPFATD LQRFNEASQSEATELARGCLDDPRWADELVSARPYTDR LSRFNADPAPEARSALGEVCSSGAWVTAVLAGRPYENT LARFNSADGDEAGRVLREVC TSAAWAAALIAGRPYAST LGAFNALSRRGATHALYECCASLTWAQSVAAGRPYASY

TQEVNNTESDRFTKПFGNTVEHCTAAGTGTLKNRPFQST LGEGNALESKSAVSALEECC HCVVLAERLAKARPYASR DLTDFNRDDAAAAAAAVRPALDVPRWDDDVVSHRPYATV LARFNGASEAQATALLSPCVALAHWTA ALVQGRPYASC LEVFNDVDRQTADDTLRPCVDDGRWCAESDADGRPYASV CCGSTKFAKEMAAASPFPSYY LIMRFNSEPVEQVEDVLQADCAAPRFATEVAVGRPYPDV


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\hline UniRef90 DoSQ & \\
\hline Ref90-K9A & HSSREQAGLGALDGSVEER LRAGNAAYEERFDRVFLI \\
\hline UniRef90-UPIOOO3480169 & WSRGEQS AV \\
\hline UniR & TLSFREQGCHQIN \\
\hline UniRe & GHSSSEQA HVA \\
\hline UniR & GFTLEQSRFA DT DDESTFEEFATLNQRYEDKFGYLFLV \\
\hline & GFSRNEQAASNSSLSGDVQAELTEWNQRYLEKFGFLF \\
\hline & EDSRKEQAGA \\
\hline & EQSA \\
\hline & E Q \\
\hline & KEEGFSEREQATISQDE \\
\hline UniRef90-UPIOOO3AD4, & GWSRGEQSGMGNGAAPDVRAALVEG \\
\hline UniRef90-N8WSF & VEKNFSN \\
\hline UniRef90-S8 & SKGEQS \\
\hline UniRet90-UP & RMSRTE \\
\hline UniRef90-UF & \\
\hline & \\
\hline UniRef90-K6X9W6 & TLSRSEQSGLSUIDSDEELTAALVAGNAEYEARFDRVFII \\
\hline UniRef90-E1W109 & QASLK DGDASERRLEANRAYEQRFNRVFLI \\
\hline UniRet90-J4 & T \\
\hline & \\
\hline UniRef90-U2Q8R0 &  \\
\hline UP & \\
\hline UniRef90-N9M654 & SAREQAAVQLNS \\
\hline UniRef90 N8ZZ08 &  \\
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\hline & \\
\hline & ALSTATDSAAQEL \\
\hline UniRef90-AOAO59 &  \\
\hline &  \\
\hline UniRef90- R9PHSO & AKHLSEAEQAQVNHAQQATLSALLELNQRY \\
\hline UniRet90-UPIOOO3E & RGMAGAPEALRAEVREL \\
\hline & A \\
\hline UniRef90 Mos &  \\
\hline UniRee90-N9 & 㑑 \\
\hline UniRet90-W & AWSRSEQSGV \\
\hline UniRef90-UP10001 & AFSRREQSG \\
\hline UniRe990_x5L9T2 & \\
\hline 8 & \\
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\hline UniRef90-LOMH & H \\
\hline \[
\begin{aligned}
& \text { UniRe90_TE5E3O_G4Y3 } \\
& \text { UniRef90_GYIG3 }
\end{aligned}
\] & Ma AKNADEAVLDR \\
\hline UniRef90-E4N1R3 & DAVSEREQAGVRGVDPSVLDELRAANAAYEAKFGHLFLI \\
\hline & \\
\hline G2 & GDPTSAREQCAGVADARPEMMADLAAASAAYLDDEGGFGF VM \\
\hline UniRef90-UPIO0036AEA28 & GLSRGEQPAM \\
\hline UniRef90-W8H4 & A \(Q\) \\
\hline UniRet90-G4HX80 & \\
\hline & \\
\hline & \\
\hline  & RLEQ C SLWDEDEALMTALTAAAAAYERFGYRYLW \\
\hline & ISTWEAQEQSGAAQAAAATLDEL \\
\hline & AVWDAD \\
\hline UniF & EDAASRREQSA \\
\hline UniRe & ADSK SARFVAG \\
\hline & TKALATMEQSGAQGASEVTLKTLQKINLEYQQKHGFI \\
\hline UniRef90-D6Z940 & \\
\hline  & R \\
\hline UniRef90-D62 & Q \\
\hline UniRef90-GO & ALSRQEQAEVNAD D \\
\hline UniRef90-UPIO003 & PVSAREQGGVR DFQREELLALNLAYQER \\
\hline & ALSRSEQS AMSDADSALKQAMAAGNQAYEARFGRVFLI \\
\hline & \\
\hline UniRet90-UPI & R \\
\hline UniRef90-V4L & Q S \\
\hline UniRef90-AOPLE2 & DNASSAREQALVAGAGEAVRAEL \\
\hline iRef90-UPIO003B6C1B4 & QMSRREQSGVA Tid \({ }^{\text {T }}\) \\
\hline & G \\
\hline UniRef90 N6USZ4 & LNITHQKIIETKPRNLRFEEKKRLKQLSKSYKEKHGFPFII \\
\hline UniRef90-V2TN81 & E \\
\hline UniRef90-B2GGK7 & Q S \\
\hline UniRef90-UP100041EFB2E & QA AVNAQD \\
\hline et90-F7Z & \\
\hline & QAGL DPDDAIRAALSDGNLA MEQRFG \\
\hline UniRef90 G7ZVV1 & Q \({ }^{\text {d }}\) \\
\hline  &  \\
\hline UPIO002EOFDA3 & \\
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\hline UniRef90-K9AJ93 & L S \\
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\hline UniRef90-F4PIW9 & L K \\
\hline UniRef90-F6EK91 & 1 R QL V \\
\hline UniRef90-E5XV84 & L Q \\
\hline UniRef90-A8JC88 & L S \\
\hline UniRef90-K0VLL1 & L T \\
\hline UniRef90-K8FHS4 & L K \\
\hline UniRef90-UPI0002D5D58 & 1 E G \\
\hline UniRef90-N8Z9W8 & L A \\
\hline UniRef90-UPI0003AD4A9D & L A \\
\hline UniRef90-U9U7T & R \\
\hline UniRef90-N8WSF0 & L \\
\hline UniRef90-S8EER2 & L S \\
\hline UniRef90-UPI00036188CB & L E \\
\hline UniRef90_UPI0003B39966 & L K \\
\hline UniRef90-UPI00036EE816 & L E \\
\hline UniRef90-K6X9W6 & L Q G \\
\hline UniRef90-I3ZD75 & L R K \\
\hline UniRef90-E1W109 & L K \\
\hline UniRef90-J4YX92 & \\
\hline UniRef90-UPI00047DAB90 & L E GLI \\
\hline UniRef90-U2QBR0 & , \\
\hline UniRef90-V5XIR7 & LE \\
\hline UniRef90_UPI000374E37D & L D \\
\hline UniRef90-N9M654 & L S \\
\hline UniRef90-N8ZZ08 & L E Q \\
\hline UniRef90-B1MGT1 & L E R \\
\hline UniRef90-C0ZNR1 & E \\
\hline UniRef90-D2A355 & C \\
\hline UniRef90-I1H4V5 & L A \\
\hline UniRef90-A0A059MJB & E \\
\hline UniRef90-D4C014 & L LD TV \\
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\hline UniRef90-M0SYC0 & \\
\hline UniRef90-N9F952 & L \\
\hline UniRef90_H0R459 & L \\
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\hline UniRef90-G4YIG3 & L E \\
\hline UniRef90-E4N1R3 & 1 N \\
\hline UniRef90-K4AD03 & L A K \\
\hline UniRef90-E6TIH8 & L A R \\
\hline UniRef90-G2NRB8 & L T RLLV \\
\hline UniRef90_UPI00036AEA28 & L A ERV \\
\hline UniRef90-W8H4Y4 & L A G \\
\hline UniRef90-G4HX80 & Q R \\
\hline UniRef90-F3ZDG7 & D R \\
\hline UniRef90-F8JXN9 & L T \\
\hline UniRef90-A0A059MT. & E \\
\hline UniRef90-C6WEX1 & L \\
\hline UniRef90_T0PX35 & L T \\
\hline UniRef90-A0R598 & L E \\
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\hline UniRef90-A0A024YVG0 & L T RLLV \\
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\hline UniRef90-D6Z9U0 & FD D \\
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LEEF GADPPEVITERLLRACCAAPDWVA A MLLTA WPYA T P LP EPAADELLKCC SSPAWARAVAARRPYATVV



D Q WNKAEESSADES LLHCCAATRKWAAQLASARPFSSSL MEAFNS LEADEARAALTADVAAPAWDDAVATGRPYADA LDRFNELPRRRAVHALFECC CCLSWSTRDADGREYRTY LQQFNQLPAHEAARLLRPCVDITSWD DAVAAAGPPAPD LEEVNAMDREQFVAALSPMHAGATWPAERVWERDPFEST


 \(L \mathcal{L}\) D L A L L R T D A T A A F L A C C DL NDFNQASVAQAQAAVABCV GTRWWAQQMAASRPFRS L LTEFNAAS P E E LLK ELLL DA C V
\(\begin{array}{llllllll}A & P & A & W Q & Q & A & L & V \\ P & A & A & R & P & F & A & S \\ L & L \\ P & A & W R & A & A & L & L & A \\ R & R & P & Y & A & H & V\end{array}\)
 \(\square K\) MAAGRPBVDQQ \(\square K ~ S ~ L M E M D \square M R F V S\) LIGNVVENNNQDAGVVYSRGTTIS E \(L T W L N T T E E G A V R T V L A E V C A S D A W V G G L L A G R P Y A D S\)



 L H E F H A L D D A D A T A T A A RVVWA DI P G WV D A I V A A R P Y A S V
 LA R WNE MDEVS A EAEVLDPCNGSTAWAQGLAHGRPYA DE A A L N A WS A E Q A T Q E L SA C C A S R R WT A A V A D G R P Y G G W
L W W LE WLGS LSSLE EA EA QLLDTC NASRSWARKMVANRPYA DE
 VN GSRRFAVALAAAASPBCGSL \(L T\) A F NAASSADATDVVR VWAD@PGWVDAVVAGRPYTDV \(L E A Y N A L P T R R A V H A V Y E C C\) Y SVVLAT D L A AGGRPYADH
 LDAFNALPA QAARDA LLACCASAAFAAEVAGRRPYADA


 V N G S R R FA A A LLA A T S P F D S T CCGSRAWVSKLLQRFPFADF
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PS QLDKASFVETFGHCFRNGTLLAERVFDGE\APVN ANFA H \(\square Y G A S \quad W V A B R A L A N R A F R S K\)

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\footnotetext{

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UniRef90_D2B6G5

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TAF \(\square E A A R S V L L T F L K E E \ A E!\square S A H P R \square G \quad P S K D K \square S\)
MT
\(D A L F R Q A D A L L F G L C E D S T D G \| L Q A Y\)
DLLVAHALEAASPLTEAEIDEALAHHPRTGETVTVDGAEA DALI A A VGEQLSALYDSWLDADLVAHPRLGDKKVDSEQ
TSLI DSAT LILSLPDADQAHFVAGHPRIGEV SNS EALLAAADAALIAELTPDDLAEALAGHAPIGAPRPG
GALLAAADEASYDLGPGDLTEALADEYPTGPHPDAAP
PALIAAlRSQLTALSTSQLDAlLGAHPRLGAKKVDSAQ
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DALLAAAEEAMAGLTDADLAEAMAAHPPIGGRPKPGD
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\(\stackrel{\rightharpoonup}{T}\)
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DALLAACDEAAYDLSPADVHEALAL
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& \text { UniRef90_-F2DEI7 }
\end{aligned}
\] & ALSAAEQASPDAD DAELNAQLAEGNREYEQRFGRVFL \\
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\hline UniRef90-R4X & ( AALJADHGARFGFPFVL \\
\hline UniRef90 A0A011 SIN5 & EASRREQASMSSAAAA \\
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 FVNGKSREVVME NMKERI RGDLEEEKREAIRAMRDIAKDR \(F V N G R G R P E I M E D M R T R I A R D L A D E E R A A V K A M C D I A R D R\) CATGLSSDEULDALRARLDNDPAREADVVADELRRAAVLR FVNGRSRPVIMEDMQKR DRDDQLEKQEADQAMVDIAKDR CLDGLRPDQVLAADRTRLTHEPDEERSLTAEEMRRLARGR CLDGASAAQRLTAIHARLDHDEEAELALATEELR
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CMDGQHVDQVLAAIRARLANDSDEERSLTAEEMRRLARGR FVNGRSRDVVMQDMKQRIASD DDLEKRLAFDAMCDIALDR FVNGRARPEVMHNMRERIDRDVRAERADAlQAMCDI ARDR FVNGRGRPEI MENMKARI SRGVSKEVAEALQAMCDI AKDR FVNGRSYDRISKDMEQRI NNTWFEECRIAANEMTDIADDR CLDDLPPEEALDHLRSRLTNDPEEERVVAWEELRRLAKGR RAAGRSSAEI RAELERRLTVDPAEEWQFSDGQLDAINQLR FVNGRSRDVI MENMRARAI DRDMNAEEQDAI NAMCD I A H DR FVNGRSRPVI FENMRRRISRDDDDERKEAI QAMCDIAADR FVNGRSREVVMENMVERIMNRDVKKERQEAFNAMCDIAKDR C L D GYR DEEVLS G I RTRLGGEPDEERAVAADE
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 CLDGVPPAETLDRLRSRLTNDPEEERAVTADE FVNGRGRPEIMENMRARI RGDLALLEEHAADQASRTD FVNGRSRDVI MQDMRRRI ERDVEKEKEDII QAMCDIADDR FVNGRSRPEI FENMKERIARDIKAERAEAI KAMCQIASDR FVNGRSRAVI AEEMEDVLGLSPDQEDYRAVEDVGKI ARSR
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 DAGFNAAPDAFDSA E SSLSPLDPDDQLLSTLDLLFEPSPSLHSLALRSSQFSSY LEEFKSQSPDVQKQTLDQLFEPCDSLSWFIHHHGEFTYY ISSQSLSREDQFR LVATLFEPSPQLHDPVLAHQSFSSY
SRNEFVSFGGVFESPFLAERAYDDGFVGTV RNALISALSTLFEPSPLLLTKSTSSRPVTNY \(D \prod A S L S S D P E E L D S V D L E F E P S H T A D P T M R S D T F T S Y\) \(L Q S L L D S E S A Q L K D V L A L L F E V S P V L A E E R Q E K S P N S Y\) ESVPNDA
 \(\square T M \square N A A D A D A H A D L R S C\)

SLPQEQQFRVLDTLFESS
पDAFNLAPADEARALLERCL RSARWAHRLAEHRPYPD

NQLSTVPRPQLIEALNHLFEPCPLLISKVFSGGLYPD
1 S TVPS L PQ A
\(\prod A T A A S P D E D A A A\)
ISGGPALSTDERAAVLDALFEPSPALRSTASSGGLNSYD AKALALLFEASPGVAAHIQTAPPVL
D \(\square\) TA \(\square\) PR T TKEQTEVLDLLFE
\(\square S A \square P T \square P T A A Q T A A \square D L L F E P S P A L A D L P E D A R P E S Y Y\) EAEAKESRKALSLLEEVSESIDRCLIPLSPCHTY TLDDES VNLLHKLLEAPPSSLKLLLATEPGESP

D \(\square\) NALPTLDDAALFNTLDLLFEKSPALAGPVARSGKFTSY TLPSAPIDTLTRVLDTLFEPSVPLHTLI LRSTPFQSY DEKFNTAPVDEVRRLLLTCLASLSWSQRITTAHRPYPDLD LSQFNSLSTHEAVGLLAPCVADPAWGETLVSLRPFASR LALDFNAPAADAEASLLACCGGRRHWARGGAABRPYPTV LRRFNDAPAPEAEAALLECF GSHRWAQRLAAHRPYPDV ASDELLANALAVLFEPSPLVAYYPSSPQPDRTY
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A ALLAAADEA AYDLGQSDLAEALAG
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E ALLAAADEAGYDLSPSDHTQALAA

A D L I A L V GE QF NT S D QK WLDDVILLGAHPRLGEKKVDSA L SR
PSLLAASDEA GYDLAPRD DA
QSLMA A GDEAGYDLTPAEQSEADTREPAAPLPPVRPGPGT


RELL L R A A S IVVESWDVQ DQA E F L A A HPRTGE




ASLLLAAAD EATYDLDAEEDAEALAASEP
D QFI E TAAR K S LLLD F L L L A ELLEA I A A H P R L G A P K P S Q P G E K


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SRQEQAQLIN
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KLSAAEQATKA
TSPAVLARLAHDNACYEHVYGLRYTT GRAELIYEWRFGHRFVI
SEAAPVLPSGTCPAARTALCAAHDAYLARFGHPFVV EVIS PALGPDAPHAARLALDAAHAEYERTFGHVFVI RLSANEQAAAA TPPDVLARLAHLNACYERRYGLRYIT QEQAAMKAAESAAGRDEGVAEKLADLNRAYEATFGLRYVT LA A
RYSQAEQQNLQQSHDPPHDKERLAQLNAEYERLYQLKFVV PAHMAMEAAHAAYEA TFSAAEQTKR QTPPEVLAKLSSLNQLYEARYGLAYVT HLSAKEQAAKA TPPEVLARLAHLNAYYERRYGLLY T LSSFSGSSSGLDPTAPAAAHTALRAAHAAYEASFGHAFVD ESAQSVHEQRNLTASSAAERDRLKVLNEAYEARFGLLYYVV
 \(E L S K K E Q A Q \quad L N E G A E E Q A E K L R A L N A E Y E E K F G L R F V T\) A ES R A AVGMLS MG


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 LS EHSAA EQKSLLADA A A E QL G Y WN EKYE ET F G L R R V V
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\(F V N G R P R A V I R D E L E A F L R A Q W S A E L R R A V A D V G K D A D S R\) FVNGRSRKEVMQEMQEVLGGDEETECRRAVEDVAKLAKSR FVNGRPRDVI MQNMRQRIDRDLRAEEREAI
FVNGRSRAEIVKEMEDLLDDKEWQAEELKRGI GDVFKDAQSR FVNGRSRAEIVVE EMEDLI T K DWQAELKRGI R DVVQUIANSR FVNARSRPVI MDDMRARIA GDMKSERLAAI RAMCEI A A DR
 SGATTRPDELLDRDRSRLSNDPEEERVVVAEELRRLARER

 FVNGRSRP EI Y KNDN T RI D R N Y GLDE CE EA FN A M C D I A DD R FVNGRSRPEI DRVME GRI GNA WLEEAGLACNEMCDIANDR F V CGRRRDVI MEDMRHRID
FVNGRSRPEI MQNMRDRI TR D \(\square\) A A ERQEADQAMCD IALDR CAS GMSAGAVLSALRRRLGHDRATERAVVRAELARI F VNGRNRDAI ME EMRERI DRDADREVEEII QAMCDI AKDR FVVGRSRRATIA E EME DVLGRSPPDEEELRRAVVEDVGKIAAQSR S PGDTPPEEVLDEG I R S RLTNDPDDERRVVAE ELLRGLARHR
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 FVNGRGRDVVMANMRERI DRDARAEEREAI EAMVSIAKDR



F V V GRT R A E VLE EME A A L G NE WVS E M QRAVVDVGRDAKSR CGRGLTRDAAL GADRHRSGHDRGTERAVVVGELARGVAVR CLDAEEPDELVVSDI RSRLGNEPEEERGI ATEE
CLD GYHPD QMLA GI R A RLGHDEERERAVTADEMRRULARGR \(F V N G R T R A A V M A E M E G A L G L E P S R E D D R A V V D V G R I A K S R\)
 CLDP CPPD QVLAA A R V VR THEMDDERALT ADELLRRLSRSR CLD GYRDDELLHAIRTRLAHEPDEERSVAADQ
FVN GRTRRPEII KVME SRRIKRPWFEECRQADHELCNDAQDR CLDGLPS DEVVLAAGIRSRLTNDPEEERVVVAAE ELRRRLARGR FVNGRSRAEI AEELE QFLGLSWHAEVQRALQAVWQIA YSR FVNGRSRAEI AREMEDKLGHS LAA EVVTRAVGBVGKIAKSR CLD GE H P D QVLA G \(\quad\) R S R L A N D P D E E R
\(F V N G R P R A A I V P E I E E K L D K A W R D E L D R G L K A M W D \square A Q S R\) FVVGRSRAVVMDDMARRIERSVALERREALAAMVDUALDR
 \(F V N G R S R D V I M V E M R Q R I D R N T E K E D E E T D Q D\)
 \(F\) V N G R S R K E I M E E M E E A L G \(\square\) D R E E E L FVNGRGRPEIMDDMRMRI ERDYSMEVDAALQQ FVVNGRSRAVI A E EMEDMLGLSPDEEELDRAVVDVGRVAKSR F V N GRT R A A K L E M E GV L GL S P D E E L E R A V E DL G K I A E S R

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