



## QUERY

 UniRef90_I4BZ31 UniRef90-B9KB86 UniRef90 UPIO003B3B618 UniRef90-K4MLB3 UniRef90-UPI00028891C8 UniRef90-H2BQT8 UniRef90 I3IJA4 UniRef90_UPI00035E2CB1 UniRef90-UPI00029AC0F9 UniRef90-U2D817 UniRef90_UPI00047D0061 UniRef90_K8GF47 UniRef90_UPI00034CA97A UniRef90_Q8YPT1 UniRef90-A6ENW5 UniRef90_HOPYA5 UniRef90-Q2YBYo UniRef90-T2G6R1 UniRef90-SOFGM7 UniRef90-A0LLZ4 UniRef90-W0SJ44 UniRef90-B8HWB2UniRef90-B4SC29 UniRef90-K9RES7 UniRef90-K7W7P0 UniRef90-A3XNX1 UniRef90-R4YUS2 UniRef90_K9UXX7
UniRef90_G3IUT7 UniRef90-G3IUT7
UniRef90-F8GJ75 UniRef90-S7TQ00 UniRef90-G0GB72 UniRef90_Q3Z8X5 UniRef90-K9TF25 UniRef90_UPI00037FF4A0 UniRef90-YOKII4 UniRef90-Q467R4 UniRef90_UPIO002ED89F3 UniRef90_UPI00036E1A89 UniRef90-L8JLLH1 UniRef90-D8G7J1 UniRef90-V5V5H8
UniRef90 K9S647 UniRef90-H5S916 UniRef90_UPI00037ED921 UniRef90-Q2S4E1 UniRef90_S7VVP6 UniRef90-D6Z5D2 2 UniRef90_K9Q8Z3
UniRef90_18SB17 UniRef90_UPI00047DBDE2 UniRef90_UPIO002554D6A UniRef90-W2UNK6 UniRef90-K2C834 UniRef90_A0A017T4R1 UniRef90-B4VNG4 UniRef90-K9WLF4 UniRef90- F9YV84 UniRef90_UPI000374732D UniRef90-K9UIH7 UniRef90-K9P8P8 UniRef90-G8QMV5 UniRef90-D7DJLO UniRef90-F9ZGA7 UniRef90-UPI00045E9ED4 UniRef90-K9PV65 UniRef90-Q39WE8 UniRef90_10W730 UniRef90-W8U7J3 UniRef90-D5C2B9 UniRef90_A4CLB6 UniRef90_UPIO0036D5BE6 UniRef90_M7YD43 UniRef90_AOYUB1 UniRef90-F7NDC6 UniRef90_G8R8S1 UniRef90-M1WMS7 UniRef90-D5SZ98 UniRef90_UPI0004670429 UniRef90_D8K6M6 UniRef90-X5D8Q2 UniRef90-A0A011UWI8 UniRef90_UPI00047D44D1 UniRef90-X6FSA8

130
140
150
MF QEK\GDVFDPVRER T
FVFTFRERKLDIFDPIRERIENDKGALKKRADYLLYST

FLI TFQENE IDVFDFI RDRLRKSKGRIRKMGVDYLMYALV
FVLSFQEVEGDTFDHVRERIRNSKGRIRSAGASYLAYALM

FLISFQEKEGDI FNPVRERIRGNKSRIKKMGADYLAYSLL
YLLS F QEADGDVFDAVRDRLRNSKGRVRSNGADYLLYALM
YVLTF QEADGDVFNGVRERLTNPKGRLRNNGPDYLVFSIL

| $Y$ | $V$ | $F$ | $S$ | $F$ | $Q$ | $E$ | $F$ | $K$ | $G$ | $D$ | $V$ | $F$ | $D$ | $G$ | $V$ | $R$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $Y$ | $E$ | $R$ | $I$ |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $Y$ | $V$ | $V$ | $T$ | $F$ | $Q$ | $E$ | $S$ | $E$ | $G$ | $D$ | $V$ | $F$ | $G$ | $D$ | $L$ | $R$ |

## \section*{} <br> \section*{}

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## -

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## Y F Y

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## 

- 


YLVTVQEEPYDSFGPVRD


| $Y$ | $L$ | $L$ | $T$ | $V$ | $Q$ | $E$ | $E$ | $P$ | $L$ | $D$ | $T$ | $F$ | $H$ | $P$ | $V$ | $R$ | $E$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $F$ | $V$ | $L$ | $S$ | $F$ | $Q$ | $E$ | $R$ | $E$ | $G$ | $D$ | $V$ | $F$ | $E$ | $P$ | $V$ | $R$ | $E$ |



| E Q GK GR | L M A |
| :---: | :---: |
| R T DKGA | R K S G A D Y L A Y A L |
| Y NKG | $R Q Q G T D Y L A Y A L$ |
| G K G | $R R Q G A D Y$ A |


N N EKA RLDAMGPD F L L H A L L

| $R A$ | $K$ |
| :--- | :--- |
| $R$ | $G Q S A R$ |
| $R$ | $G$ |
| $G$ | $R$ |

Q Q G M S R F R








$R T N K G A I R K Q G A D Y L A Y T L L$


RQNKNRARKKG S DY $\operatorname{R}$ R Y Y R


Y V L S F Q E S E G DVV D TV R E R I R R R G N G R
F L L T F Q E S P T P I F A GVVRHRINSGKGK I R TM GPD Y L A Y A L L





F V L T $\quad$ V Q E
Y L L $L$ T F $\mathcal{F}$ Q E E P P R D C F F




$F V \operatorname{L} T \mathrm{~F}$ Q E R P S G T F G A L R E R L R A N R N Q V R R R L GA D Y L A A S S L L

YVIT F K EK S D TTF D P VVY H Y L


GVVAT F V T G D Q D P F $\quad$ D P I
YIVSFCNGNRDPFGPVRKRLQKNGKRFQSRPDDYL FYTLI




CLI T F Q Q E E P G G D T F D A VV R K R L R R N P K S N N I R K L G P D Y L A Y A L M






## UniRef90 I6zSX1

 UniRef90_FOSJIO UniRef90-E6XEQ0 UniRef90-UPI00047131E1 UniRef90-K2Q519 UniRef90-UPIO0035CAB2E UniRef90-XOMW48 UniRef90-H1 Y0M6 UniRef90_C7M8U4 UniRef90-F4B020 UniRef90-H1PT06UniRef90 A0A021WA77
UniRef90_UPI000369CB31
UniRef90-B4S9G5
UniRef90-I3BRT8
UniRef90-K0B214
UniRef90-K9VXH4
UniRef90-Q7NLU6
UniRef90-S3B6G1
UniRef90-K7YFJ9
UniRef90-W6M9M0
UniRef90-Q8KAG0
UniRef90_G2E279
UniRef90-Q82IM6
UniRef90-M2V1R3
UniRef90_UPIO0037EF930
UniRef90-l2N5Q0
UniRef90-W6RHJ1
UniRef90-V2IBY6
UniRef90-F5YB51
UniRef90_F8K529
UniRef90-UPI0004055BA2
UniRef90-W4LL51
UniRef90-15AZN6
UniRef90_U3P6V8
UniRef90-F4CP45
UniRef90-UPI000464EDAB
UniRef90-UPI00036EB42F
UniRef90-Q5N5P3
UniRef90_W9H9E9
UniRef90_UPI0003790F5A
UniRef90-D9W6E0
UniRef90-V5WKG3
UniRef90-W6X0W4
UniRef90-UPI00047EF96E
UniRef90-W7IK18
UniRef90-D2PPT9
UniRef90 E8NAK7
UniRef90-B5JM38
UniRef90-V5XFL4
UniRef90-G7URR9
UniRef90-B4VD20
UniRef90-I2F313
UniRef90-A0A031GDP2
UniRef90_UPI000360E2ED
UniRef90-B4VEU6
UniRef90_UPI0003F84039
UniRef90_UPI0003645E4D
UniRef90_UPI00035FEODE
UniRef90_UPIO00378DCAB
UniRef90-S9ZID0
UniRef90_UPI00023791E3
UniRef90-A9C0H8
UniRef90-D2UEI5
UniRef90_UPIO00380A26A
UniRef90-IOHWM9
UniRef90_COBNXO
UniRef90_LZBJG8
UniRef90_l2N2H1
UniRef90-G3IQP3
UniRef9O-F7UKW5
UniRef90-I31754
UniRef90_N6Y8P3
UniRef90_E4N605
UniRef90_W0EZU1
UniRef90_JOU2B6
UniRef90-A9WP94
UniRef90-I2DML1
UniRef90-E8XMB9
UniRef90-D9WF47
UniRef90_UPI0001FFE5BF
UniRef90_Q1LSF4
UniRef90_M3FSU9
UniRef90_UPI0003FDEA80
UniRef90_UPI00046935BD
UniRef90-D2Q0S3
UniRef90_UPIO00422C35E
UniRef90_UPI000479F6B2
UniRef90_UPI00035D7E60
UniRef90_UPI0003B71ECE
$P$ GTLA AADDAPTP QUH MRFQPDRLWEAAVLQTDALKF APGTVTYTGQREGGQSLSVINYDENTFNDQEEIGLNEGDF APGTIKYMGNREGDAQI SVTDYKENY $\begin{aligned} & \text { KNVQEFTS }\end{aligned}$ PPGTLLYFGEKEKADDIDVVSYKDSFFHSGKVNSVTEALS
 PA GS LVYYGNKEKPLNVEVFAYNEHSCEVKKVSSAEEALK

APGHGAHSPEHPAGVRLEAWRYHNEQLE
PAGSLIDLGEKKQDTRIV SIDFNEAHVE PPGTLARHGEGDTTRVC
P


$P G T L V A D P K A G Q V S T V Y L V S Y D T S$
TPTRILCTDYSPER
PSAVVDCA $V Y R D G A R V$
CTDYSPE
$R \square E T$ ATDQE
PGTLAYVGDVPDSTVVKDTEFNEESCQDKEVKPHEAMRQ

 PGTSADHHHTRPRQRVVVASYDYKDGRRTSSFDDESGWS V NCVA Y GGKRLGEVPLEDUSEIL
 DSVVDCAVYTGGRRCAERALTPREALER
 $S M V D S A V Y A D G V R V A S P Q T L^{\prime} A E T Y R A D D$

VVDCAVYVDGGRRWAHDAADEEVR PGTLIDPAAHRSELRLTMMSPDKVETDANASVDDLTV PPGAVIFVGERKERPRLRVIRFDPQTVQEEEPESVEDVQA APGTLRQPLEAS PTQLRQIEYSANQUVSRPDSDPLDLVS

CVVDCAVYRDGGRLDDGYANDSAADE SVVDAAVYRDGRRVGTPDGDAATYRRLR
$P G T I E H L G G S S R P C R V W L I S W T G D S D H E Q E V D D L H G L S S$
 APGTDSYMGDKRGDSLI YSTTYNADGFETKEFKDLEVFIK VVDCAVYVDGERLDPGRTHVAAVAE
HDGAVIVDCGVYAEGERRD DP KDPETVAQ
VDTPPEDNSIPI QCIVYVGKGGFEKKSFANDQDFEY
AMVDCGVYSDGARL PGKYTHAAALNKVREI E SVVTCASYDAGKRHDLTLDEVSDDVAA
P G T L S
$\square$ DEESPFP

HRSVIDSAVYRDGRGV
PGYL YVPAGAFKPRLF IVFDEHFFEEKPAT LAAETFRR
TGASRAPVVVNCVTYRDGRRGKDGRDVVEAVRA AVVNCVSYDGARLQQGNCPAAEALLRQ
 II NCVAYNGAK LADIPVADISNY!E PGTAVYVGENPQPTRVNVHIYDAKNYKVLTEELNFKAIVE APGTVKY $\square$ GDKKEGSHVALIEFDQDHCNSIEVTSLAVGAF MVVNCVAYKAQRLGEVTIDDISEV SVINAVVYEDGRRRPCDGTAADALRQ
 VREPDADERSVVNCTAY DGRGHKLADLPVERIGBD TVVPKREEAQQVVITACCYTKDADEEHKNISLEQALD

 $\square V V D C A V Y V D G E R L P G R W T H D E A I I A E$
 APGTLYADDEEADKPLIVLHTYNDKSYKKTELENINNDDK D Q T P S P VVNCVAYRDGSKRVIP LDEEVS DVLAA DAKPAMVVNCVAYNTRDGKRIGDVTLDAISD PDASSVMVPVARAGTVDCGVYSMGARLPGKYT

UniRef90_I6ZSX1
UniRef90_FOSJI0
UniRef90_E6XEQ0
UniRef90_UPI00047131E1
UniRef90_K2Q5I9

VNQRPKFDDYDNY|L|F|VVLRM|LSFNKNE\|VNEQLISLIV|TKE VPQRPKAEAYE EHLLIVVKMVDIGEPHLQMEQVSIVLGRN
 T E H K P K L



 A H QRR P K I


## V




| UniRe990 I6ZSX1 |  |
| :---: | :---: |
| UniRef90-FOSJ10 | WPQREAAGRLCRDEHPLIS |
| UniRef90-E6XEQ0 | RRQIAPVKELVGRLLDSESSLI |
| UniRef90-UPI00047131E1 UniRef90 K2Q519 |  |
| UniRef90- UPIOOO35CAB2E | QKSIVP |
| UniRef90- ${ }^{\text {O }}$ | KRAVSPLLRPMQLLSER |
| UniRef90 ${ }^{-H 1}$ | RRAI WPERDKVNEM |
| UniRef90-C7M8U4 | QKSITPSREVVNK |
| UniRef90-F4B020 | RRSIFPLREVVNKL |
| UniRet | KRSISP:RELIAKLQ |
| UniRef90-A0A021 WA77 | RMAVAPLQDiLGQLARSRGGLID |
| UniRef90-UPIO00369CB31 | RRQLWPTRDVITRLMRDDQD |
| UniRef90-B4S9G5 | RKSTWP俍EIVNSITKNEFSVID |
| UniRef90-13BF | Rralw ${ }^{\text {R }}$ RREVIS |
| UniRef90-K082 | KTSI WPLIENII Y SMI KEESSIKD |
| UniRef90 K9VXH4 | RRAI WPQRDAI NTLIRDGSHLIS |
| UniRef90-O7NLU6 | RRALWPQRDVINAL |
| UniRef90_S3B6G1 | AVSPLMRPMQT |
| UniRef90-K7YFJ9 | AAI AQRDMVKS |
| UniRef90-W6M9M0 |  |
| UniRef90_Q8KAGO | WP |
| UniRet90-G2 | RRSAWPMRELVAQLQRDHHECLS |
| UniRefo-Q881M6 | KRAVSPLLRPMQL |
| UniRe990 | S LP LRDM |
| UniRef90-M2VR |  |
| UniRef90_UP100037E | KHAVTPLMEAARKLCGGRAP |
| UniRef90 I2N5Q0 | KRAVTPLLRPMQLLSERPMRLID |
| UniRef90-V21E | RNAVYPTEEMCGQL |
| UniRef90-F5YB51 | RRUVWPLRDSLSMI LHLLESKFIE |
| UniRet90-F8K529 |  |
| UP1000405 |  |
| 44LL51 | V1 WP |
| UniRet90_15AZN6 | QL R P |
| UniRef90 D1BUR9 |  |
| UniRef90-U3P6 | QRATHPLSAVMVAL |
| UniRef90-F4CP | RRAVTPLVAPMRKLTEG |
| UniRe990 UPIO00464EDAE | KGAL WPLRDALATLIRSDAYVK |
| UniRef90-UP100036 | VV WPMREMV |
| UniRef90_O5N5P3 |  |
| W9H9E9 | RSVQPLIDMT |
| UniRet90 UP100037 | KRAVAPLARPLHSL |
| UniRef90-D9W6E0 |  |
| UniRee90-V5WKG3 |  |
| W6 | E |
| UniRe990 UPYO0047EF: | WWIFPVK ELISRLID T |
| UniRef90-D2PPT9 | RRAIGPLAEPMEAFAHGAVPLIS |
| UniRef90-E81 |  |
| UniRef90-85JM38 | RRSFWPVRELTSKLCFDEASPVD |
| UniRef90-V5XFL4 | RRAVSPLTTALQRLGSDHNDLIS |
| G7URR9 |  |
| B4VD20 |  |
| 2F | V WP T |
| UniRef90 A0AO31GDP2 | RHVVAPLMEAVG |
|  | QRATRPVGMLH |
| UniRei90-UPIood | QRAMPL |
| UniRef90 UPIO003645E4D | KRAVVPLSRPVLELA |
| UniRef90 UPIOOO35FE |  |
| UniRet90-UPIO003 | RRAVAP DRPLQR |
| UniRef90 S9ZID0 UniRef90 UPIOO223791E3 | KRAVLPLTKPMQRLAEGYTPMV |
|  |  |
| UniRef90-D2UE15 | RLGVAPLQDVLAHLKRNPGP |
| UniRef90 UPIOOO380A26A |  |
| UniRe990-10HV | HAVLP |
| UniRef90_COBNXO | QHIYPTKDLVQKLLNSSHPLIK |
| niRef90-L7ZJG88 | N |
| UniRef90_12N2H11 |  |
| UniF | ESAl NPVIDICNELMRFHGGVIS |
| UniRef90_F7UKW5 | RRLI WPLRHVMNVLLRD |
| 131754 | A |
| UniRe90-NVY8 |  |
| UniRet90-E4N605 |  |
| UniRef90 WoEZU1 |  |
| UniRef90- Jou2B6 | KHALAPLLEGAAKLHGGRVPQ】 |
| UniRef90-A9WPS UniRef90-12DML | QRALNP |
|  | RNAAVPMEDILCQL |
| UniRef90-D9WF47 | RRATGPLAEPMTRLA |
| UniRef90_UP10001FI | RRSVMPLVGPMRKLSEGYSALV |
| UniRef90_Q1LSF4 | N |
| UniRef90 M3FSU9 |  |
| UniRef90-UP1000 | K |
| UniRet90 |  |
|  |  |
| UniRet90 UPIOOO479F6B2 | RLAVAPLQDI 1 Sol |
| 90 | RHSVNPLTMALQRLLSDHNDLIS |
|  |  |



UniRef90-A0A031FYK2 UniRef90-B5H808 UniRef90_B2GJM3 UniRef90 UPI0002EB6E04 UniRef90-M4WXM1 UniRef90-UPI000366040E UniRef90 UPI0003FB0AD5 UniRef90 C6X9S5 UniRef90-D2PM39 UniRef90 R7PAB0 UniRef90 H2JU42 UniRef90-F8E6P4 UniRef90_UPI000368DE78 UniRef90-UPI000380DAC3 UniRef90- G8RVI3 UniRef90_U2R386 UniRef90-AOLQW9
UniRef90 D8IPZ6 UniRef90-X5KU71 UniRef90-J3DB48 UniRef90 UPI000377640D UniRef90 A0A023X1Q5 UniRef90_UPIO0035E2353 UniRef90-W7Y6G7 UniRef90 C5AG23 UniRef90-A0A059IJQ7 UniRef90_UPI00036EA9B0 UniRef90-UPI0003B2E6E8 UniRef90-A0JYW4 UniRef90_L9PMV3 UniRef90_Z9JLV9 UniRef90_UPI000367026E UniRef90-LOMD29 UniRef90_UPI000361D7ED UniRef90-R7DI59
UniRef90_D0IY75
UniRef90-T0J6A5
UniRef90-N1UVK0
UniRef90 E1SGl3
UniRef90 UPIO00368257A UniRef90_H5TKS7 UniRef90_J4SF54 UniRef90 UPI0002DBB647 UniRef90-UPI00037533B9 UniRef90-W8H9Z8 UniRef90-G8B6R7 UniRef90-A3ZNF3 UniRef90_C6B9E0 UniRef90_F9ZHK4 UniRef90 A8MI42 UniRef90-A0A013WM55 UniRef90_UPI00047B83E9 UniRef90-UPI0003752689 UniRef90 U5WM34 UniRef90-A0A059MTW1 UniRef90_UPI0002F19723 UniRef90 I9A521 UniRef90_Q828M6 UniRef90-FOLINO UniRef90-UPI0004723A61 UniRef90_K2B8M5 UniRef90-D9T2W7 UniRef90-F9ZYL2 UniRef90-UPI0001FFF0AD UniRef90-V6HQJ9 UniRef90-Q7UQV5 UniRef90_UPI0003B3D28B UniRef90_W8EYG5 UniRef90-R6W344 UniRef90_Q47H44 UniRef90 ${ }^{-}$F8A016 UniRef90-N9WEK7 UniRef90_A1UK86 UniRef90_I2GWS8 UniRef90-D8MSR1 UniRef90_UPI0003A7CAC6 UniRef90_C5DJT6 UniRef90 R4M4S7 UniRef90_UPI000467C76F UniRef90_U5WFN1 UniRef90_J2DPN1 UniRef90-G2MTF4 UniRef90-M2XCU7 UniRef90_Q6BL48 UniRef90-UPI00037B6172 UniRef90-E6WJV1 UniRef90-J1S9X3 UniRef90_V9XPM9 UniRef90_C4R357 UniRef90_K4IN00


S $\square V E N A \square Y R N G R K V E T P R S D E T V R Q S G A C P D E A M Q$ I NCAAY QDGRKLADVPVQR DGE


\section*{| A P P |
| :--- |
| $\mathrm{P} \quad \mathrm{L}$ |}

EPAP $G V R T A$ G E P

A P GTLEYT GDYKEPT
$\square$ S S H
P D S A S $\square H \square V$ VARA S T L E $M V D C A V F A C M$

V N C T A Y S GKK L R D ITTIE E I S DVL E $V N C \square A Y G K D G R K D V A L D D I S N V L Q Q$ $T I V D S A V Y V D G N R A E E P H S L A K T H E T$ $P$ VI F D C A I Y R D GRRRTKA FK D PA E A L K E

$P G T L F V S A E A H A P R Y F L M S F N E T T F K E Q E L A T Y A Q L L Q$ $\square \mathrm{N}$ SVAY D N Q GKR LDDKVP LE S A C D
 $C V V T C A Y Y$ DAR H H R HI H LDR I S E E $M V V N S V A Y K A G R L N D V T \square D D D S E V$
A P G A $\square$ AP VGGVE P A A A V V S S L V

D GRRAASPAS LDETFE
E E VDVE D D S E V I
$T \square P R \square P V P V A R A V V D C A V Y V D G \square R Q P G R \square T Y S D A F T K$ APESPK QTLVDCAVYADGHRLPGKLGYAAALDK $P G S F L \quad I K E T A L P S K I V V F S Y K E E L L D E L E T N N D A E A V A$
 ES IQQEL APGTLVIP A DAPTP RVRQQLYS DDGLK S DRTDTDDDQLE
 GD I I Y T G Q F T D Q $\square$ SI E LI TYNKKEVS FHK T NSIIE GPF
PATPVVTGRSR TVI A A Y L Y R N G A R V R P VT I D E K $\square$ D C
 P A Q A LVDCGVYVDGRRMPGKYAYTDAVREVRERELE
$S \square V D N A \square Y R N G Q R \square E T P S N L Q E T Y R L L R Q L D E E C G T$
$P A T P D G R V M A C G V Y S H G R C V T M E V G H A D A D L A$
VIVDCA VYRDGRRTEGPEDLSDAA DE
ENP QIT LF A Y S K N K F T E K RLLE SLE EVV N
$\square H$ K Y I Y N S Q T C K VT Q P LTVDD A A LP
$V D C G L Y$ VD GERRPGHPRYAEALAA
EELHRCRSDHTGDGDG
RIF TEFFPEGSQEKSVASPGFVDD
PSHIRVIQYDGRTHTNEVVESDDN ED AVI DNAIYVGGRRAASPVALADTFDA

 AMVDCGVYCDGDRL

$Y N D G K L V R \quad E L L P N E A D P D$

$\square N S M V Y R P G \quad R Q D E V V D M E D \square S E$ $T R T R V Y R D G V L Q K E D F P L A D V S D F L A$ VG N Y LA P D R F S F F S D S E ETVHA A D I A S L E T F RE
$K R$ VA D $\square P \square E E A G E$
EFHSTAVVDCGVYVNGKREPGEFTPDEADRE

 $\square P$ VP T A R A V V D CAV Y VD G K R L P G R L LPAA A LA E K MVIN CVVYRHGQREEVD【SD DSEVV $A \bigvee V N C A V Y V D G V R Q D G D H P A C D V A I R R$







| UniRef90_L0FZ94 | $\text { R S S } \square \text { WP } \mid \text { L R E } L_{L}^{210} \frac{1}{1} S \square W \text { K K S E H P }{ }^{220} \text { L I K }$ |
| :---: | :---: |
| UniRef90-A0A031FYK2 | HKSTLPLDD M L Q RLLQ G |
| UniRef90-B5H808 | R R AVAPLD R P L Q A L A T R S L P P VD |
| UniRef90-B2GJM3 | HRGVAPLSDVMQR |
| UniRef90_UPI0002EB6E04 | $K H A V A P L M E N V T R L Y G G$ |
| UniRef90_M4WXM1 | KHYAAPMVE I CQELQR LD FPF |
| UniRef90-UPI0003660 | QRAVRPEQALCGSLAK G |
| UniRef90_UPI0003FB0AD5 | K R S I T P LREAL Y N |
| UniRef90_C6X9S5 | R R S I WP L R E A V N Q L VRNDDKF |
| UniRef90_D2PM39 | K R AVAPLA GPMRALATLRHPL |
| UniRef90_R7PAB0 | K R S I F P L K E Q I S K L L H D D N P L L |
| UniRef90-H2JU42 | K R AVVPL GRPVEELA |
| UniRef90-F8E6P4 | R R A $\ddagger$ WP I R D 1 VA Y L D S G A SKLVS |
| UniRef90-UPI000368DE78 | RRATGPLA A PMARLAGGSVPFV H |
| UniRef90_UPI000380DAC3 | KHSTWPI RE ILLS LWRKSEHPLI K |
| UniRef90-G8RVI3 | R R AVAPLTVGLLQRIGTEHNDLI S |
| UniRef90-U2R386 | QRAVNPLRDVLQSL |
| UniRef90_A0LQW9 | RRIVLPMREVVNELLRHDSPLV |
| UniRef90_D8IPZ6 | RSAASP LLDV CTQLLRFHEGLI |
| UniRef90-X5KU71 | RRAVGPLLTLALLQRLLSDHND |
| UniRef90-J3DB48 | RSAAVPLLDVVCTQLLR F |
| UniRef90_UPI000377640D | $R$ L AVSPMQDI L N QL SRFHGKQld |
| UniRef90-A0A023X1Q5 | QRAVKP LGGGILKALTGG |
| UniRef90-UPI00035E2353 | R R A TVP LTVPLT R L |
| UniRef90-W7Y6G7 | HK T $\dagger$ FPCKEMVFNLKKLESEYIQ |
| UniRef90_C5AG23 | Y Q H TAP L I E P L S KLVGGRTPQ |
| UniRef90-A0A059IJQ7 | RHTLWPQREAVSALMRHDVPYV |
| UniRef90_UPI00036EA9B0 | RRIVWPERDKMNDLLRLEADII |
| UniRef90_UPI0003B2E6E8 |  |
| UniRef90-A0JYW4 | QRA I H PLP GMMQLL K |
| UniRef90_L9PMV3 | $R H V V S P L M E A V G R L H G G R V$ |
| UniRef90_Z9JLV9 | RLVVAPLQDVLA HLT R P P E L L |
| UniRef90_UPI000367026E | RRATGPLA MPLARLA |
| UniRef90_LOMD29 | R NA A QPMDE I CS QL 1 R L HEEVI |
| UniRef90_UPI000361D7ED | QRATRP L L Q V VRALMNG |
| UniRef90-R7DI59 |  |
| UniRef90-D0IY75 | K H AV APLLE A V S K H G G R VP Q V |
| UniRef90-T0J6A5 | QRVLAPMAEVSSKLVHLDVPYLD |
| UniRef90-N1UVK0 | QRATQPLD GMLALLERG |
| UniRef90_E1SGI3 | R NAALPVEE I CNQL |
| UniRef90-UPI000368257A | K R A VGPLA GPLR NL |
| UniRef90-H5TKS7 | R R AV T P L A GPMSRLAS |
| UniRef90_J4SF54 | RRCVNPLS GAFHRI QMENKDLIS |
| UniRef90_UPI0002DBB64 |  |
| UniRef90_UPI00037533B9 | R R QVWPAR DVLARL MRD |
| UniRef90-W8H9Z8 | R K S V N P L S N PL L R L T R S |
| UniRef90-G8B6R7 | R R K V M T L M R L L S |
| UniRef90-A3ZNF3 | RRAL WP QREALHS MVWETNALVS |
| UniRef90_C6B9E0 | QRVLGPMSEVVGKLTHLDLPCVD |
| UniRef90_F9ZHK4 | K H AVAPLMEVAGKLS G SRGPAV |
| UniRef90-A8M142 | $\square \mathrm{D}$ AV S P I K D S $\quad$ S K L T K H N Y H F M |
| UniRef90_A0A013WM55 | QRILTPMHEVANKLVKLDLPC】D |
| UniRef90_UPI00047B83E9 | QR A A Q P LT GI LA A |
| UniRef90-UPI0003752689 | QRATAPLAGIL Q S L M G S |
| UniRef90_U5WM34 | RRCVNPLSAAFQRMQTENKDLIS |
| UniRef90-A0A059MTW1 | R R AVLPLA T P L R Q LT R G |
| UniRef90_UPI0002F19723 | H R GV S P L N V V M Q |
| UniRef90_19A521 | K H AVQPLAS PLRTLTTDSPRLVD |
| UniRef90_Q828M6 | R R A TVPPLTPPLT RLA GLGPNL |
| UniRef90_FOLIN0 | R R A I F PLLEVVRELQ |
| UniRef90-UPI0004723A61 | $R \mathrm{R}$ VI APERDVLNVMLIR D D P VFD |
| UniRef90-K2B8M5 | $R \mathrm{~K}$ SVWP L R ELI G NLERGFSPVIK |
| UniRef90-D9T2W7 | K R AV AP L Q R PLM T L |
| UniRef90_F9ZYL2 | Q G I DPV D D CNVLM H S H |
| UniRef90_UPI0001FFF0AD | QRAVE P L Q E I F L EL |
| UniRef90_V6HQJ9 | RRVLSPQRE\\|VNSLIRRDSNFLS |
| UniRef90-Q7UQV5 | RKTVQ Q HRDAL R L L L R |
| UniRef90_UPI0003B3D28B | Q R GVK P LR E M I A TI $\mathrm{L}^{\text {R D E L H }}$ |
| UniRef90-W8EYG5 | R RLVVYPEREKI A ELLRR |
| UniRef90_R6W344 | KRTVMP LREQFQRLLRSDSGLV |
| UniRef90-Q47H44 | K H AVAPMMEATGKL S G GRGPAV |
| UniRef90-A4T8V2 | RRAVSPLVTDLERI DREHDDLV |
| UniRef90-F8A016 | QRAI GPLPEMLDALLRG |
| UniRef90-N9WEK7 | QRLVGGLMKDVASRLTSDDLPCDD |
| UniRef90-A1UK86 | RRSVS P LT P ALQRIS D Y D L L S |
| UniRef90_I2GWS8 | R R K I M T L M R L L S G |
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| UniRef90-C5DJT6 | R R K TM T L M L L S G |
| UniRef90_R4M4S7 | RRCVNPLSTAFQRMQTESKDLIS |
| UniRef90_UPI000467C76F | R NAALPLVEVCRRLTS S E L P Q i H |
| UniRef90_U5WFN1 | $R R A V V P L Q R P L A T I T S S P S R L V$ |
| UniRef90-J2DPN1 | $R I L$ GP MQEVATK FVK $\quad$ D L P P C I |
| UniRef90-G2MTF4 | RKIIT T A Q E V L N T LL R HDFVI I K |
| UniRef90-M2XCU7 | R K SV A P LA A PLQ RL |
| UniRef90-Q6BL48 | R R K V M T L M R L L S G |
| UniRef90-UPI00037B6172 | R R A V A P L TVPLQLLSSN |
| UniRef90-E6WJV1 |  |
| UniRef90_J1S9X3 | $R$ RAVAPLDGPMQALATRPMREVD |
| UniRef90-V9XPM9 | R R AVVPL A E P L Q Q $\quad$ DR |
| UniRef90-C4R357 |  |
| UniRef90-K4IN00 |  |

110
10

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EAEDFPVADVSDHL

KNGK $\square$ YKDFPVEK VDCAVY DDGRRQPGRDTYTEGLAR VA AYLYRNGTRVRAVS DDER $\quad$ D
GRVVAAAVYSKG KKVSNITLEEGAA
APGSLIYAGEARDTPFI ECCSYSRDELTEVRLAPDQDI
PGTGVDHDDKKGQLT L SVFDFDASDCVEKKNVTAEQCAS
LVDTA $\square Y R D G R R V A T P S S L A E T Y R H L P G A D$
AA GRR】AETTVVEAGAW
VNSMVYRRD KKPEVDNDEDWSE LIYTGESQTPTHLHDCTYNANEMQEVSGADFHEISS MECATFNSNREETIHAADUASUVK MVYSDDGFGRY
$\square N C V A Y \quad Q E G R R \square G T \square D \square E D V S E$ VDCAVYVEGDRDAGKFTHAAALQR K DGVRVATPASLDEAYA $\square$ ICVAY EKGVALPPFPLDDVSE GRPREPGVVAAGVY AGGRRVVDDA EXDAGA W RSAALVDCAVYRDGRRQAGSPSWQEALDD PVTAY $\square C E Y S Q T T F R E L Y T E D L A G F F N$ VDCALYYRQGRRAERPQDSAALREA I NCAAYDGRKDADDEDDDワSVYVA


VVDCSVYEHGRRRAGTVADSQLGSA VDCAIY ANGRRTQGPADFSDALD
THGTVYTDGRRQEDYRTLEETLSR ID ALVYDGTGVE SVEDI AA
$\square A C A A Y$ QDGRKDGD $\square T \square E E I S D$ VDCAHYLKGARQSDAPLPLEDAAR PPGTLDYAGEHGFSPTLDHFAYDENGLEE TCLDPQGEKP $L P R \square P V P V A G T V V D C A V Y$ VDGVRAAGTMTYTDABLTQ ENTK $\square$ T FCSFNEHHFDKHQTTDDDDIE
 APGTLS TGQQPDGAPMPILLFSEGQAQAADETQLADWTT $\square K$ TYMYDHNTDKMRHDVSLDNLHP

$\square N Y T G A S H T P T H \square H F C T Y N T E D L E Y H Q G A S \square K E F S P$ TARHFPTTQMSCVAYAAGVRLPAGGSAMETAQQ TRTR LYRSGNLVLEDFPTADISEYVN DKTYFYNHSEQKMFHDVDLSTKDQ GVIVDCAVYEDGRRREGDLPLGMACEA LIYTGDSLTPTHLHLCTYNAGEMQESANDTFQAIVAG PGHLVVAHEPHVNRWAFFSSELDDTPGETFRDLFE

H LTYNGDNGTHTHVHLLRYSAEHFDESTCTTFED\VA ENVRVSMIIDYVDGRRVHAPSTLEDTWEE
 PERGSPGPVRAVLYR DGRREREADTVAEARA L N N V E A $\square$ K P
TKTYLYNHNDKSMQSNI DLS SVGYA VI AAAVY ANGRKVSDURLDEGAEW PTQVEYTGDYKDETELQLFVYNDESGIEFQKISTDEFFK


I SALVY DDGGVTTY SADELAA
 VS SGSSVPGLQIRVI YRDGGGQDHFDWPIDQ PPNTPVHTGEEAAR AMSGGSASRTKA L

IDCILLF
$\square D C L L F H D G K V Q S I A F F E D I S D B M H$ GTVSYVGSAKTVPYVNVIQYGDGSFTETRYEHGETVDP I RTYLYNKNETKVISELDDQKVKW 1 DSAVYRGGHRQEHDSASLEAVDA


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AHQRPKLEVYDETGFLVLRTVQYVEHEVETGEIMMFAGPD ANQLPKVDLYGDQLFVVARTAHVEEGSVCGETAIVVGHS VHSRPKLETFGDALFIVTYAPVRENGRLQFMETHIEAGKG LGQRPKDDUQEDQRFILTLPVTSEKGVSLQQLSMFLKNN AHQRPKIERYGETLFVVLRAARYEPEEVSFSELHLFIGPN AHQRPKAEQYDTGLFVVARTAQLVEGRIAFGETHVFLGRG
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P
A
A
 AHQRPKLEDYADSLFLVLKPVDYDDSTLSTGELMVFVGDS GHQRPKI EEYGDSLEAVMHTIETDDDEVVIGEVDVEVGAN AHQRPKVEHYDDVLFVVLHPGDGHVDRVEFGEVHAWVGPD

 A HQRPK L NNVRAKAEEFSAHTFALVKTARGFEEEIIDDEPVGLFIGDD
 FHLDRPKIEDFENVKLVILRTARYDDEEVEFGEI SVVVGPN TTQRPHMELPEDGIFLVLRDFDPEE $\square K L Q S Q Q L C L F L T G N$ AHQRPKLEVYDDIQFLVLRTVKYVEHEVETGEVMIFTGPD
E TGRRTKMEELHDTGFFNDKSILPDENS:RVEQDSFILKEN


 A HQRPKLERYDDVAFLVLRTVKYVEHVVESGEIMVMVGRE AEHDTKI EEHDTYNVVILKQLSVDENTYTPQQLCIVQGSN A HQRPKLERYGETLHPPRKQHPIKAGQLTSGEVMVETGPD QEPREKVELFPQYYFVCFRSFNMDKHFLDPDHVYI IVCQD EHQRPKLDRYRTHLSAYVVSTDESSGRLTASELSVFITPT
 AHQRPKLERYGETLLAVVKTVHYVDDEIEVGELLIVVNPE AHQRPKMERYGDTLFVVLKTLTY DDSDIEVGEI MVFLGAD ADHPTK RNQRPKFEDYEDHAFIVLHNFSSPSKQLLARETHAFFNHN
 GGERAKLDRYGEDSFMVLHPARY DDRTVEFGELGVFTGEH AQQRPKIDEYGGLTFIVIKTVFYDESRITTGELMCFVDPH GYHVTKVIEHENTFILMSGSY DNEAHELGDYQNAFDLGDN A H QRPKAEVYRGVLFLVLRPARYDTVRVEVDEDHLFAGRD


## R

 DSPRAKMDDYEDYKFFVLHALRYNDNEITTLELDVFVGPN QHTRPKLETFGDALFMVVYSPIRRDGELVFIETQLFAGKG PDARPKTEEYDDYTFVLVRDDQPFEEEVLTRPVGLCFGDD ENQRAKTETYGNELFVVVRTAYLANNHI HYGTTSMFMGSN QHSRPKLETFGDALFIVIYSPIRHEGKLDFVETHDFAGNG DTHVAKVDDWGEYLYIVFHTIDFDPDCVRLHELDI FLGRN
 QETREKVEDFRSYYFMCFRSFYAVDDYLLEPINIVYAVVFRE THQRPKLEEYGEHLFIAVRTVQLWQTRIVIGETHVFAGAN RRHDPKIEPYGEHLFAVARTVHLDNTAITYGNTAVFMGRQ TTQRPKYEEFGDSMFMVLKLI DMDRDQDSPTQVSIAMDGA HTDRSKVDKYDNYTFFVFNAI NYNDEEDTTQELNI FLGEN


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 FVIV I H S GT T DP F E PVRRQRMRGSNRNFNRLGAS YLAYAL M









 YVVTVRHGDVDPLGALLRRRLLEADPDLMA WLVTMSTGTDIDVVDQSAPQWARNERRVA
$Y V V T V R H G E H G G L A G V R K R L E A S P D S L$


F
 FVI TVVRHGD $F \vee V \vee I$ VLTVRHGR
 F V V T $V$ V R H G G P G A E E L
 Y V L S F Q E R Q S K T F E P V R Q RLLRA E H T S L R K G G V D M LA Y S L I





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


## V

## Y

 FLVTCSTEESMSPVEKVWERVHKDFRLSNFGTDFLCHAIL YVISARYGASAPYSQVRQRCEARRPLLLEHGEDFVLYALLM YVISARYGDSPSYAAVRQRCEAQPQML VHGEDYVLHSLL FVVTVRRGEGNPGRDVRQRLELEPDRLGQGGPLAVLHAVM WLVTFTRRELAPIDRVWDADEREEQRMLRFGPDFVASRVV Y I T TRTGASNSYAPVRAYCHRRPEKMSMGPVFVLHAVL
$Y$ I CRNGHSASYRAVRQRCEARP KLLDHGEDFVLYALL YLVTYHNEPLKLLDQLRRNERDPTNRLKHGAGHLLYHIL GTLSFHFRGTPHPQNVRRRLKQLIKDYVNVTSDWLSYALI GLLTFSFCQNPHAAHVRKRUGKDRDYVNLSADWLCYALI FIVTVRHGSLRDHSPVRQQLEATPQLLAR GVDFVLHALL AVFTFQENAHNVWDNYLDRLRKGR HLGKSDPHYLMLALL FIVTVHPKRDKAIGRUVSRVQYSTDVMEKGPDYLLYCLL



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RKTVSPQREVLNDLLLRHELYII K R R A V T P L A A PL Q SL TA S GNPLV
 RNQLLPMREI FKALLGVDAEI R R Q IW W HREMLNTLLRDDSDLIK QRATGPLLGILRSLE
RNAVVP LVVEVCRKLEHAETLADD $R R V L S P Q R D V V G L L V R R G I P N V S$ R R AVLP LR D PI R R F A T A E
R NA AL P V D E DCNQ L I R L H E E D I V K K S II L P L K E Q Y DK L L R GES T L M H R R K V M T L M R L L Q G
R N AVQPLLPVTNALVAGDT
$R K V A W P A R E A I S S S L S R G D \square P$
R R A I S P L A T D L L S


RDAT QPL I DI CNELRRFHEDII

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R R A T T P L T D P DT R L TGARVP F VH QH H DEP L LE GI S RLT G GRIP A I
RAVILPVQDVCN
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 $R R A V A P L I S P L Q R L$ A A G A V P Q V R R A A L P L I E P I R KL A T A DV A FV $K K A V T P L V T P I T R L V E D$
QRAT GP L M N V L D GLLSNTFAE L


R H HV G P L LEGVGK L T G GRVP
YRAAHPLDAVLTAVQRG
$R N L T L P T R D L L D K L G D P D E E L L S$
R R A V S P LA M PLTAL
RKVAGPMREVLVEGVRHGSHLVD
RKTLWP LRTVINEMSKFRDNLVS
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K R A V V P L R D A L F S L
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R R A I T P Q R R
$R K R V M Q L L R L L G G$
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R R SVTPMSTMLARLVQEPS

A R A V V P L E QP L Q A L S A Q S F P A V
RKRVLNMMRLLGG
$R R V V L P M R E V V N S L L R R D L H \square V$
$R R V I M P Q K R I$ FA N
RKTILPMRDLLYR\|IDNE


$R K K V M S M M R L G G$


Q H A R A L P S I VE QLQE E



$R R \vee I \quad 1 P Q R R V \frac{1}{F}$
$R R Y L A P L G E \| C Q E L Q R L D F P F D D$
K R S V IP L L R D A L Y T I I K D D DE L
K R A SWP L A D A L
RKIVASERDVLNVLIRRREAP
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RAVMLPVQDICN
HR YVVA MVVEI SE E LQR R LT F P F $\square$ D
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$R K K V M G L L R L M G N$
HRSLWPLREVLLR
$R K T V M S L R L L / G G$
R D AV D PVGDI T Q DLI R L HPEFV
QRVLGPMQ DVASRCL H L E L P Q Q I D
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Leyt Gkhk

$H G H R E R E A D S$
$L$
$L$
VD T A LY VA G K R VD GP VD IS E Q V D I ESTIHAPEFGDLVLPGEDVRSSLFTFPR
$V R A F \square Y$ D K GS GLLK E T EN T DEMDE V
MDCG $\square$ YRD GHRREGPEDFSDALDQ
APGHGAHATEHPDDAT VSAWHYHHEQLVELDPQTMERGGQQ
$\square K T Y F Y D D E T F H D V D L T K R D E L L A$
$D G V R Y E C G D P S D E L E A$
LY R N D N DK QE M $\square$ S N $\square \mathrm{N}$ L S DV N K
APPRTRAWRGGKVEAEGFPVAEVSDHLA
$\square$ H $\square$ MAMTKEN E $\square K L$ F T T $\square E E L R P$

## E $\square$ D D VIE E A VA


D NAPRSAI HQTLYSTATFA QHDY LA GKKLP D
TLD LLE Y DENSTSVKRNLDVNVCRS
V VD C G V Y A D G Vir
$L D L I A Y N A G Q A K E L R \square A E L E G S L P$
SLS MPGYNGRSDRDSAVADSREVSP
I Q S F VF S D GKLIGRDLELQALRLV
I K T Y L Y S H GENRMYHDVVELEKKNE
I K T Y F Y D A T R K L L V H DV DLLT QK DL

VDCAVYREGRRVAGP PD FSDALAG
VIVDCA $\quad$ VY QD GRRTE GPED FSDALDEA
P WMLT Y VG D H Q H DVVIE S R SY D R A S L S LK T Y S S LD E Y T S
$R$ V ID F D D $\square \mathrm{S} D$
FTP P
IG T $\square$ S LLEE S N V LA
V H K GA F T L V E DI HE
HDGRRLPC GDISETLDD
RCTVYRNGHAMPGRFNHKEALEE $P$ T D DQE TE V A D
$R\|C A V N H N A D L L T D\| G L D R D D$
R GPSRLSVIS E GPD SHRELSSPAPSNTPFP
$I V V T A Y S N K D G L Q K N L T \quad L E Q L S T$
D P H $\square$ QL $\square S$ Y NQQN QK Y TPALA A S LVA S
MS L R VVS Y T E K E L R E $\square$ T L E E A VT C
MRSLS D T P D GA F D D P EA
Q NCRSCVWRD GAEVARDFPGDELDHWLA
FT LIE DVK E
GAALPVDAPPGECRDGLYR EGETVRSASTLAEARA
$\square V P T S D P H R P D P \square P R T V Y R A R G G G E V I D C H P R E V S Q$ A VTTDHE L

VR $\$ MAM T TS QE WL DQ P P $\square E T$ T K E
PGALVERHDDATARALT $\square Y A \square S M G G A K E Q T A T T I D N A D A$
TLEE

F P
MGRAGGHAVITAMSATAAGVTER$\quad D G \square E D$
QPEFRYVFYSTALTSTGHTKDFADDLD
$K$ T GK $\square 1 \mathrm{I} \square \mathrm{S}$ S LD E A $\underset{\mathrm{F}}{\mathrm{L}} \mathrm{E}$
RPAETPKPQEDKP


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 QETREKVELFRSYYFVSFRSFIQQDEDFLEPTNVYLVVFRG
 GNQRPKVDDYETSTFVVLKTLRYDERDVETGELMMFVGDR

 HMQRPKLDHYDGYRFYVIHA S L NKETKETEEVDDFQGEK DLQRPKLDYFNHYTFFVTHTVREENGRLIDKEELDFFVGES
 NKQRSKLEAYTGTLVLTMSTAEYY D HIVVPTGEVMVVLGGDD $\begin{array}{ll}R K Q R P K & E D Y G N Y L F I A A Q V Y H Y T A G K L N S D Q V Y L I I ~ G K D ~\end{array}$ GRQRPKLERYGAFWFMVVKTLEYVPHIVSSGEIEVAIGEN
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 QSPRAKVDAYDKYYFFMLHALRYKEDSDEEIMMLNVFLSSN AHQRPKLDRYGDTRFAVLRAAGPGGDEVRFSEVHVFTGPR KLQRPKLDYYEDYSFFVTHS LNQDNEEKQEINFFIGPN

 AHQRPKLEVYDDSLAMVLKPDTYDDGSGASASELMMIGLGDS


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F A LTTDVSERDA RDEDRA KHNE \(\square\) RTNLP I E E \(\backslash\) LE
F P A ER】S E HLA
P D T \(\square \mathrm{T} D \square \mathrm{D} D \square \mathrm{R} \square \mathrm{H} R \square \mathrm{RE}\)
D A L K
LPPPIKAPKE
PTLLEYTGNHKEKPEMQLFVYDTES LSEYQDDHi GQPDEK II Y Y ND T TKKVKSAELDEUQG RKSAD \(\square\) S
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\(\square \mathrm{DCA} \square \mathrm{Y}\) R D GRRQQEAALT LD TAAA
S LITYSKESYHLLKGEEDNQ S \(\square\) PVVASYVYRDGHRERAAPLTPEGL GDGTVQRDLPPKALAAA
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D R \(\square\) A P \(\square\) A S PS \(\quad\) DD T F R RGERSHDVPIED IK S
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$D G V L V G S D L P L E E L A S$
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$P$ L H T L LD
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HFDVEDNSDPAVVAE DVEALRHAHE
FPDEDVSELLG MTFRALTWRDGRPDDEAPADLHDLSA $\square N C V A Y$ QNGKK LIADLP IEQUHD

LD DRFS

KKGQKVDGFS $\square \mathrm{DG} \square \mathrm{S} D$ D D GLG

EKDLESHTCFDDDNLS Y VGE QVLKTS $\square \mathrm{NLIS}$ YNK QTVKK QV IS PRQS FQK THCRTR $\square W V D G V L K T E D F P \square H D V S T H D A$ AAGSLIYVGDTPQQTSПHTHMYRSGSYR MENGYT

RRKETKARSTEAADA DAREHVRGQVWEH GEPVDGFELT T I S E H LD VTVPVADEAQRLT RYVT DGDPVAAPADASVADGLR TEEHAADDSKREVVAS $\square$ AY $\quad V$ NGRQR R REAVVAPENDSG
$\square R C T R F R D G R P E D \square P S G E A \square D A D R$

VD DFEFSK\S DCLA
DFEFDRIS DYL S
$\square T \square Y S Y N D G \| L E K P T V G K D P E L L E$
RRHQQQDVQVPSHI E


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UniRef90_K2BR58
 F L V S F H F T E L K E I N D A WQ K L Q A E P D N WK R G S S F GA Y L V M G I L S F H F A A A K H S A N V R K R I R M L Lin D Y V N L R S A D W I C Y A L ALI T VR K S D S D DE P V T K R WD DDP G LA KH GVA F L L Y GL L




 YLVTIRRRGPINEVQATMERWRTTNAPI GQNVP YLLHALL
 F L V S Y H H Q D K P E ME EAWQMVVKAE $\square H K G W S G G P M A A A Y T V M$ ALI TVRKA DFD DDVVEARWDAAADLAGNGVGF LVHGWL YVV S FHK QPS DEDQSAWNQVEEDKE LWAK GHNYYI Y LI L




F
F V T Y K T E K ID A VD S I K C A FK S E A T HI L G K PVLLEHSSI T


 FVI TVRQGVASELHTARTNLEARPDLLAE GSPABLLWAIL FVITI P N RPLRTIE YLF S RHE E ERERHFSRGSGYLLYRIV








## 

## $\stackrel{A}{A}$

## 


 GI I TVRSSDDF DMQQVLDRWNDDPQLLELGVGALVGGLL



170
180
190
200
D
GLTANYFPI LIDKI DNKLK TIE ERIFQRETFKLRQEIN QM
 D DI TADVF GP LI IQ A I E DEEVMDDDDERMMKMHSPEMMLRRVVGES


 D R V V D Q Y T E I DVVEVAR DV D E I E E A V F S E T I Y R L K R E V L E F

D KLVDRYFPSLYTLEDELADLES QELVSQVFNVRGRLLKL

$\qquad$
D
N
D
D
D
D
D
D
279AC40
9DH43
4084CBD
932
UniRef90-K1ZAV7
UniRef90_C1GDB8
UniRef90_H8XU32
UniRef90 K2D9A
UniRef90-I3D1F4
UniRef90_H6BYG0 UniRef90_W9DH43 UniRef90_B9IWU8 UniRef90_E6S9A\& UniRef90-F0RE17 UniRef90_H1QEV5 UniRef90_W0RLP7 UniRef90_C4TUU1
UniRef90 B6A1S2 UniRef90_UPI0004788770 UniRef90 A0A022LR0 UniRef90_UPI00047B425E UniRef90_U3GZ15 UniRef90 G9QM78 UniRef90_UPI00041D4D3E UniRef90_UPI00037F4E3A UniRef90_M2WZV7 UniRef90 A7HC86 UniRef90_UPI00029B0D4E UniRef90_I4BEH5
UniRef90 K6TZA1 UniRef90_U5WA10 UniRef90_Q4W9B6 UniRef90_M2X0G1 UniRef90 UPI0003817C55 UniRef90_R7YV70 UniRef90_D5UM92 UniRef90_V9XNZ0 UniRef90_G0HEZ4
UniRef90-W3AFR9 UniRef90_UPI0004797DF2 UniRef90_F9EG16 UniRef90 G2IUX UniRef90_UPI00036F3E99 UniRef90_UPI0003B5E4C1 UniRef90 J7IQT2 UniRef90_S2JKZ9 UniRef90_H6N0B8 UniRef90_B1YH66 UniRef90 I3RKJ6 UniRef90_W9Z0K0 UniRef90_H5XU95 UniRef90 R7JEM8 UniRef90_A0A015M664 UniRef90_G4I9D8 UniRef90_F0RX41 UniRef90_C0XT50 UniRef90-I1BKI1 UniRef90_UPI00047EEB3B UniRef90 V6J5K6 UniRef90_E3BE10 UniRef90_MOQGL4 UniRef90_U2T0B3 UniRef90_UPI00046CA1E8 UniRef90_E3HG11 UniRef90_K2GBV4 UniRef90 UPI0002378FFB UniRef90_E1STZ0 UniRef90_A6H0H3 UniRef90_UPI000376135A UniRef90_UPI000467ADC7 UniRef90_U5WTC2 UniRef90_C8VI75 UniRef90_UPI0003B75596 UniRef90_V6ARK2
UniRef90_K2BR58

UniRef90 B5Y658 UniRef90_S3BMX9
UniRef90_U4LVP8 UniRef90-R4LS95 UniRet90_A1CSM4 UniRef90_AGLBE1
UniRef90-G2LFO8 UniRef90 K1YV5 UniRef90-M7SYQ2 UniReffo-WGGDK5 UniRef90-A3TL72 UniRef90_R9C6Z2 UniRef90-W4D133 UniRef90-F4CSU8 UniRef90-UPI0001E2FB2D UniRef90-S4XKN8 UniRef90_UPI0004084CBD UniRef90_L7F932 UniRef90-K1ZAV7 UniReffoc C1GDB8 UniRef90_H8XU32 UniRef90-K2D9A2 UniRef90-13D1F4
UniRef90 H 6 BYG UniRef90 UPIOO0479AC40 UniRef90-W9DH43 UniRef90-B9IWU8 UniRef90-H0EA42 UniRef90-FORE17 UniRef90-H1QEV5 UniRef90 C4TUU1 UniRef90-B6A1S2 UniRef90-UP10004788770 UniRef90 A0A022LR06 UniRef90_UP1000478425E UniRef90_U3GZ15 UniRef90- G9QM78 UniRef90-UPIO0041D4D3E UniRef90-UPI00037F4E3A UniRet90_M2WZV7 UniRef90 A7HC86 UniRef90-UPI00029B0D4E UniRef90-I4BEH5 UniRef90 K6TZA1 UniRef90 U5WA10 UniRef90-Q4W9B6 UniRef90_M2X0G1 UniRet90 UPI0003817C55 UniRef90-R7YV70 UniRef90-D5UM92 UniRef90-GOHEZ4 UniRef90-W3AFR9 UniRef90_UPI0004797DF2 UniRef90 F9EG16 UniRef90 ${ }^{-}$G2IUX3 UniRef90-UPIO0036F3E99 UniRef90-UPI0003B5E4C1
UniRef90- J7IQT2 UniRef90-S2JKZ9 UniRef90-H6NOB8 UniRet90 B1YH66 UniRef90-13RKJ6 UniRef90-W9ZOK0 UniRef90_H5XU95 UniRe990-RTJEM8
UniRef90-A0AO15M664 UniRef90-G419D8 UniRef90_FORX41 UniRef90 CoxT50 UniRet90-11BKl1 UniRef90_UPIO0047EEB3B UniRef90 V6J5K6 UniRef90-E3BE10 UniRef90-MOQGL4 UniRef90 UPIO0046CA1E8
UniRef90-E3HG11 UniRef90_K2GBV4 UniRef90 UPI0002378FFB UniRef90 E1STZO
UniRef90-АСНОНЗ UniRet90 UP1000376135A UniRef90 UPI000467ADC7 UniRef90-U5WTC2 UniRef90_C8VI75 UniRef90 UPI0003B75596 UniRef90_V6ARK2 UniRef90-K2BR58

RKSVISNNLDVLSLMMRHDS
RRSIIPMRDLLYRVVNSD
RKKTMSGMRLLGG
RRSVAPMPDVVAMLLRPDGDLV
RKKVMGMYRLLSN
RKNSLPLKDQFSK LRTENGQ!
RRLMGLQREMLLRLSREDLDCl

RKKVMRDYRLLGN
RRAV LPMREVVNAVLRHRTE
RRAITPLITPLRMLHTS
RRVVAPERDVLNVLLRQEM
RHTVVPMKDIVHQMINSE
RRTIVPMRDLMYRTVNSQH
RRVTVPMREVLARVLRDD
RRIVNSMRDLLYRIINSDH
RHSIDPDTVALKLLVNDR
RRVAMDGRNVLGQLAHDAFPY
RDAVQPLVPVAQDFAGPHSGW
RKTIKPLLGFSEKLLGDDHSFFS
RKKVMSLYRLLGN
RRSIVPLRDSLYST
RRPLVTQKEIFYNLARGYYELI
RRUANPLKKFVLEUAK
RKKVMSLYRLLG
RRYLQPSREVLNVLTNRPTTLL
RRVVLPMREVIAGI QRRRDE
RRTIIPMRDLLYRI LNS
YRAVHPLLTVLTTIER

KRMT US $\begin{gathered}\text { KDA } \\ \text { KNQLENDD }\end{gathered}$
RRHZAPQREVLNQLTNRPSALL RRYMAPQRDVFSRLASERLPWMD RNAVVPLVDVCRRYEHDDLPGMD RKIVRPQRAALRDLER
QRAARPLVYIIENLHRG
HKVIAPLAEICRRLASMDMAVID RHAI DPLA ALRLL!QNNKDVVD
RRSI LPMRDLLYRLLNSEN
KRSI IPDKDSLYNL
KRVLGPQREVINTLNKKDDRLID
GRVVLPMNEVFSALLRQGSHVV
RRRLAPQREVFAGLARPGQPLV
RKAVVPDKEAI
RRVVLPMREVVSATQHRRDD
RSVIKPDRPVI 1 NLEK
RRPVAPMADLIADVMRADTRLVD
RQLLNDKTDVIRCFARH
RRSTWPGREVLKKFL
RR\|VVPMRDLLYR\|VNS
RRIVSPMREVSSALLR
RRVVLPMREVVNAVLRTR
RHAIIDPDTVALKLLVSDHDN【ID
$R Q 1 V V P T R D L V Y R I L E S$
RRVVLPMRDVVNAVLRHRGDL
RRVVLPMREVVNVVWRHH
SHAVVPDNEAVARLHGGRVP
RRVLVNTRDACNSMLRDPTDLI
ERIIGPMEEVCQRLAESHVALID
RRTVSSMRDLLYRILNSE
ARLLGSKLDVIKSLMK
RRVVVPMREVIAAIQRHRYE
ARTLLPMRDLLYRVVESRRLADH
RRIVIPLRRTVVELSKD
RKNITGLMRLLGG
RRIIYSMRDLLYRILNSE
RKNAQPLKEQFIVKLSNPALIS


RHA DDPGPALRA
SRLLVSKLDVIKSLMK
RRVVLPMREVVNTLQRH
RRVITPGMDIFNRMIGS
RRVVLPMREVVNALMRHR
RRIILPMRDVIAAIQRRRDE
QHATAPLGEVLGAL1
HTSIAPVIEI CTRM
HTVVSPL/AE CRRLARVEMSAVD
RQTI HSMRDMVYRMLYTH
RDAVEPLVPVAQHLI
RRYLSPQREALSRLASERQPWD
KRS IPGRDSLYSIMKDDN
HHTIVPMRDLLYRIINSQH
RRVVLPMREVVTAI QHRRMD
RRVALPMREVVNSIQHHRLHALQ
RQLLNDKTDVIRCFARH
SRVMIPGEEVMENLGETENKLIQ
$R R \| V N P L R K I V$
$R R I I Q P H R Q A L I D Q K$


GPAHSSKRVRY $\square$ DNGTVE $\quad$ AAP $\operatorname{CSVTAAEAMEF}$

PVERKDE
$\square R C \square L I D N D$
T I LTTDDVSR
MTFRALAWRDGHPTDEAPTSPRGLSE
FTFES $\square$ S DCFAA

$\square T G A \square Y P S S D R P Q L G A T E E E T L R A$
DEKGGARPDENSKQLHQ KEKPLTRMENAKE
VVVY AFDGTSVTVRRYDVLTEDEP
ESHP $\square$ HAFH $\square$ DGEG SASP $\square$ PVEKAAEA
HSHGFKTVEDKRD DNAD
RRARDVPVNELGN
TVFVAFGQQFSRARDVPVNELGMN SDGNGTP LE WQD $\square$ SKN $\square P$


NMDEVCA
SVVNCVVYEDGVRRPCTGDAHDALRE
A A D D
RVAS A E EADLS
$V$ V DGPFHDIAN
VY S YVLNGKLKYSQLTLEQUND $\square A A R R Y S H G T A H D E A!L I D G N P A P$ $R$ PTPTPHLTRYVSDGRAENAPVDVADGLR
 F VLNLDGHGGCRTMNMAEACS $\square$ AVHNDHDADS

ERH $\square$ RCD $\square$ TVVDFS QDDMRMYH $\quad$ VN N ET LRP S L E EALA
 Y SYQLDDASNGASPLSLDQINN $R \square W R G G Q A H D E E F T F E S \square S D C L A$

RKGGLVSPDS DDT TGTH $\quad$ T T HVLNGPRKGRAITEEEMRH KDEPGTQVEQUSD

$M R \square L D S \square D D E L I G Q$
$E \underset{E}{E} \underset{S}{L} \backslash \frac{L}{V} P_{D}$

S L KK QAMD
ESG $\square K H \square E M P N A K E A M K$
A P P E A $\frac{\mathrm{S}}{\stackrel{L}{\mathrm{~L}} \mathrm{~A} A}$
PPPT $\square V H Q G E Q S R E S T \square H A A E F G D L V L P E E N \square R S \square F D D^{\square} P$
S K V A S
PLTEVSRIED
NVT D $\square$ P Q
$R D F P V D R \| S D L I A^{\text {L }}$

## UniRef90_G2YNT7 UniRef90_B6H7K6 UniRef90-V3V208 UniRef90_K2FVB6 UniRef90_C5NX62 UniRef90_J2L8Z3 UniRef90_G7GUB8 UniRef90_-U7JKF9 UniRef90_UPIO0047854CB UniRef90_F9CU28 UniRef90_U6BAU2 UniRef90_C6JON0 UniRef90_UPI0004213729

 UniRef90_U9SPK6 UniRef90-K7RM36UniRef90- X5K XZ5 UniRef90_B8FFX5 UniRef90-D2NPY9 UniRef90_E6RHP2 UniRef90_B9DLP4 UniRef90_A6W2V4 UniRef90_E1K2B5
UniRef90 E1IDJ8
UniRef90-E1IDJ8
UniRef90_-U7PFK4 UniRef90_UPI00046347B4 UniRef90_Q2KX59 UniRef90_UPI0002C3E0FF UniRef90_K2LYI6 UniRef90_LOMES6 UniRef90_UPI000314493F UniRef90_A4SS39 UniRef90 LOLND3 UniRef90_D5PCW7 UniRef90_E2PVE6
UniRef90_UPI00018 UniRef90-V5CWV8 UniRef90_K9P4D3 UniRef90_V5G583 UniRef90-DOYVR6 UniRef90_Q2GA37 UniRef90_UPIO004694D2B UniRef90-E6W4C0 UniRef90_D4F5F3 UniRef90_B2AY35
UniRef90 UPI0004 UniRef90_E1VWM2 UniRef90_K9B1W5 UniRef90_W6VY90
UniRef90_L8D6L9 UniRef90-W1IQQ3 UniRef90_E3G8X2 UniRef90-C1GV54
UniRef90 W0AKJ6 UniRef90_M2SFH8 UniRef90_K9PDQ3
UniRef90_A0A016QNN1 UniRef90-Q2C1F9 UniRef90_V5X7J3 UniRef90_K1XYS8
UniRef90-N1PVF9 UniRef90_U1TRW2 UniRef90_UPI00035C9FA7 UniRef90_UPIO0036DC913 UniRef90_A3VFN1 UniRef90_Y5PER2 UniRef90_K9ZIF0
UniRef90_X5MA00 UniRef90_N9U281 UniRef90_Q49ZS4 UniRef90_A4Q9Z8 UniRef90-X2GZS9 UniRef90_UPI0003762E33 UniRef90_H5WVV8
UniRef90 R9S634 UniRef90-L0A1I1 UniRef90_UPI0004634BC8 UniRef90_D4YLC8 UniRef90_X6MJR5 UniRef90_UPIO00420126A UniRef90_UPI000465C554 UniRef90_H1UXJ8 UniRef90_B8KGH9 UniRef90_L7WXI7 UniRef90-B1BDM8 UniRef90_F5SWC1 UniRef90_U7FMJ3 UniRef90_UPI0003480B4E
 GLWWWLHVSTPSNED ID AL S RVLDI H PLLTVEDI KT LSSTKKPCWL HLLDS T QPD S I R WL N ETTTLL P D S I R R S A L A G $H L N L S Q V N W L N I H G L N D V G K I Q A I I G Q Y F N I D S F M V G D I L N$ KEQDNNVHWIDFENP TDSSSTRYLQENFNDHPLAIE EFV T
 CRTGENRI ALLSLYPTPDDADDQELADAWNLHPVLVEDLLLH

 $T$ VEGKRF L W W D L Q N P D R S D DE K L A E TY R L N A L N I E D C M T T QES GK R Y F V A LA E P T LVWADLVSPTH ERDS

DKDALLWAD I Y D P
WT P GQGlL WL H V D F


 A L E P G K V H W V A Q D K S R L T WL H N VLH

 MKDRATPMWLDICPPTD DSAKVLEQVFNLHPLTDDD WLE
 S $\square T S$ Q QPGWLHLD YAHPAS Q Q WLSETPLLPDSSVRAALAG HKHEDRVVTFTVVRPT PAQLSELEDVWDLHPLLVEDLEA A A E R G GFAWVDLVDP DEPELLAAVTAELDELHRLVIVEDVLQ DIPGKS P GWL H L D Y G G P E A A R WL L L Q T P L L N D A A K E S L L G WK P A E G V I W L H L E R R D H P A T A D WI A A H K S G L D P P V R Q G R G FVV WI GLL H E P T H A E A F A V K WM WV DF Y Q A T K K E A R RVLT N Y FRRFHP LA I E D CME $E \square T$ A Q T P C WV H L N Y T N QE S A Q WL E T T P VL P N SVVRNA LA G
 WD D E D GLL L W L H L N Y N S P D A Q E WI K N ELPPHSFDWIGLLPDAEEMELVRRQYGLHPLAVEDALN



 STPE LLLAELA T T WDLLHPLLVVEDLVH WK RGDG VVWLHFERDH PATAEWI NTKGGFDPLVAEALLA Q A S V E K PVV WV H LDD F S D K S A VA WL S E Q E L F S D I E L E A FVVA AE QPFWQHFDYKNQAS YQWL MNTTTLLPP SVVEGLLS DRERPCWLHLNY THAQSAQWLATTTLLPNNVRDALAG



 S E D H L V W A D $\quad$ Y N P D H D A L A A A L A A E $\quad$ L H L






 F A E GA S N R M V
 Q D P GF VWL HF N LT DA GALK WMQTHLEELVP EY YE A L H E


 WTP DD GF L WI HLLER DDPVA QE WVRTRAGLD PLVAMALLA
 HEE P D RMA L C L FP S P S P A D V EGESD GVWWL NMNSPS GSEV WTI CKAFGI HPLTDEDIDH WT A D E GCCLWL H F D F E D E A A Q N WL R D E S GLLNDI A F G S L T N
 WQAEDGLLWLHFDY THPDAERWLL





RQLLHDKTDVIRSFARH
$R R Y M T P Q R D I F S R L S S E H \square P W \square Q$
KRSIIPDRDSLYSI
RRALKPQRSWLESLVQMDTH
RRGLLPMRELI HRFL
RRYLAPQRDALNRIEHDDAPWLK
QHSTASLLEVVRSL
RRVVLPMREVLATIQRRRDD
QRAI NPMI PIVGSL
RRIIKPNIPVLILLTAREWPFL
RRIANPLK
SRTVMPMRDLLYRVVES
RRTIVPMRDLMYRILNSQH
RHVILPMREVVNVLWRHRDD
$R K L V M T L L K M L G$
QQAAGPLREVLSDLHGGFSKY
RRVVLPMREVVSTI QHRRLD
RRYIAPQRDVLLRLQNEKSPIL
QRACRPLEPMMGRIIEG
KRYLKPQKEALSSMVNNHYPWL
NRVI MPMKDVIDTLQ NESQLVQ
RRFLVPQKEAI NKLSQEA $\square$ S WMS
HRSLGPGREMLSR

NRII MPMKELIDTLQ
RRYMAPQRDVYARLASERFPWMD HTADAPMAEICRRMARVDMSADD QFLVSPKKSFLRF LLKSKSHMVS RRHLSPQRDALAQYVEHKTA WLD RRYMAPQRDVFARLASDRLAWMS QQASSSMMGVVRRLL
ERAAEPVSGIVERFA
RRYLLSPQRDLVARLANEK DSWLD RRYLAPQRDALNRIEHDDAPWL RRVALPMREVVNSI QHHR
RRAVGPDERPI RALASSPLP
RRSLVPMRDLIGRLVNRE
RRYMAPQRDVFARLASERDPWMS RKSLFHEREILSKICRGDFPLVS RHLLGGKVDVI RSFAR
RRYVAPQRDALAK LMTTETPLLS $E R V I G P M E E M C E R L L V V A D L P C I D$
$Q H A T S A L A E V L D A L T R G$
 $\begin{array}{lllllllllllll}K & R & Q \\ R & R & K & K & L & R & R & R & Q & R & D\end{array}$
$R R Y M A P Q R D A \square S Q L V I A D L S W V D$
QHATASLLEVVQSL
L HATTHLLNRTQAL
RRY LSPQRDALNRIE HDDAPWLK KRYI RPQRDAINQL SQAKLSWLQ RRYMAPQRDVFTRLTNERLPWMS RRYMAPQRDVYARLSSERLAWM RNAMQPDTGVVNAL RDH
RRFVSPQRDALERLSALHADWL KRYVSPQRNALGRLLSEPPSWLQ RRIFQS $\square K$ S LLA MDYEDFSWL RRLLTDHRDVYATLSRPDFK
RRYVSPQRDA!AKLLT DDTPLLS
RRAV DPMREVVGAI QHRRDD
RRII DPQRYVI ANLSHMRKAFM
RS GLT LLDAE SLS GLVRSLSD
RRYMAPQRDVYARLASEKLPWMS L R T L R PQNTVLESLDRSES KRYGUTPQK DALLEKKLYRSQSPFI RRFLGPQRDVI RAIAESDNPVID $K R V L F P M Q E L V N T I K T E G N L I V D$
$R R N F Q S D K S L K V I M N Y E D F Q W L S$



 RKAVVPMRDVFAR
$R R V L V R \square A R L L A R L L R A P P P W \square$
RRSFVYQTEVIEEIMNADH
RRLVRGARESVAAFARH


RNRLWPKSALTSNL
RRYLA PQRDALYRLRSDDATWL

R RYMAPQREAMNRLVAENLSWLD KRVLFPMQELVDTI KSEGKLII D RKFLNPMRYIGDTLISNDNLVID HRYGAAPERDALAARLTLDEKISWLS




A D G G H A S MP T L S VP C D $\square$ T VVD F S H D R L A T Y R H N N $E T \square_{A}^{A} S$ EQ $\square \mathrm{D}$ L<br>P $\square$ QAMDDT $\square R$

PGDPLLDGS GQPAPHAEAHVFRDGKVRHLPLDLNLARGL $\rightarrow C V F D V A A D G$ T GRRVAEKD $\begin{gathered}D \| K A \\ V K V \\ D V\end{gathered}$

K G G A R Q $\square$ A HAD $\square \mathrm{PS}$ S E
Y L IE N G T M T P VE D $\square E \quad \square$ T $\square$

RMLDWQEAQA

ECVIKLYVNTFKGFEE DDEEKLKEYK LD E Y Q Q

S A Y P $\square E$ GVE K
A YCYQLNSDHPKQALT LDK $\square$ NN GSDVPVARDGS DEYSPDRDRSYPDEGVEKFLK TASGLPEAGDKTDVNATLTDAEGAS TAGSARELAA VN E GVFTPDDDIQK

## UniRef90_W6RDM8 <br> \section*{UniRef90-Q2CAI4}

 UniRef90_UPI0002EC5118 UniRef90_Q5LL11 UniRef90_S7QMK0 UniRef90_Q4L8K5UniRef90-F9L4Q3 UniRef90-14BBG9 UniRef90-S3A822
UniRef90 A0LAN7 UniRef90_AOLAN7
UniRef90_H8GSR1 UniRef90 UPI00045EA64F UniRef90-KOTSF5 UniRef90-K7A2P0 UniRef90_UPI0003CFEB89 UniRef90-UPI0003492F99 UniRef90-J9WND9 UniRef90-_17DTN4
UniRef90-W6QBX0
UniRef90_H5U5J5
UniRef90-H8KXY6
UniRef90 ${ }^{-}$T0DI05
UniRef90-B5ILU4
UniRef90-W4KNB3
UniRef90-Q4L961
UniRef90-D3QHX7
UniRef90_UPI00046F7B19
UniRef90_UPI0003A4B7E5
UniRef90_L7K6P6
UniRef90_FOS497
UniRef90-S8G0D0
UniRef90_UPI0001DD0512
UniRef90_R1EGV8
UniRef90_U1KBP0
UniRef90_D5XER5
UniRef90-X6NCIO
UniRef90_B9E1V5
UniRef90-UPIO0036F42E8
UniRef90-Q1J231
UniRef90_G5JFT9
UniRef90_U2E712
UniRef90_D3PMM9
UniRef90_A2RWW6 UniRef90_UPIO0028988E5 UniRef90_EOTG37
UniRef90-K8W7Q8 UniRef90-A3UFB6 UniRef90-A0A031JN25 UniRef90-17ADU6 UniRef90_UPI00037AAA1A UniRef90-U4WSQ1 UniRef90-C0E3E6 UniRef90_UPI000367C38B UniRef90_E6EC59 UniRef90-A0A059FPY6 UniRef90-FOXXS9 UniRef90_UPI000362F685 UniRef90_G4UP35 UniRef90-D8PQM0 UniRef90-M5DU00 UniRef90-14AQ15 UniRef90-UPI000306E4EF UniRef90_UPIO0036C1677 UniRef90-Q1LQZ1
 $\begin{array}{ll}A \\ A & A\end{array}$ PASGAGFRWLHLD LSDPASADWL HAHIPPVAASALAQ PQRAWWLDVASPT WEDMKAI GQLLHIHPLTLEDILQ

 ARRRGGMLWVGLSAPS ADEVSALADVLQLERLGVATALR


 D GMTWMHFHHPSK EEDKEIVETYDVHELI EEDIAD $R \square N G S Q N \square W L R C D H F R D R T G I A K I I K H F G L N A S R V N M I F N$







NAPGFDWDHLDA NDPRACDWLAKKSGAPDFAVTALTA ADQDGT LI WADLECPTH ETLSRVAAELDLDPFAVEDTVA NEEKKSPKWDHLRGDDEQVENFLLKNFKVNELSLEDCRS ARQDDQVLWMHLCRNT PGVYEWLQERIGGPEDTAELLTS VIHKE PLWLHFDYSFD ETTEWLKQQTFLDDWEREATA KFHENNFLWLDLVEPT KFHEK K K P V WAD C C C D

WAGQTQGVWVDVQAVT
PNDAKMVWYDFNOPTSEDLERLRVAFSLNRLALEDALE YWLILQ
PDEFLWL $A D P G D$
 GNAERWMRAHLLDLPETFHEFLRE
 EGE VDW
 RPPANGFYWI QARLFD
 WLHATDVLWLHMDR TVPGVSEWLHAADPASDATMDVLIS EAALKLLGVKFGLHPLALEDALT TESKDGP $\square W W H F N V A G P N A K A E V K A A A P Y$ D $F \square S \square P Q P E W V K C R W \square S S W D V I Q L L G R H K N L H R L A L E D L L N$ WRTQGGM $\square W V D L Q S E A K A D E T S G L E S L G C H P L A D Q D A D R$

ES GYQWIDIISPSDKD LRELIRQYKMPSAAVKDCMS
 TTNQFSFVWVHAKRDDEPDARSWLEAQDDMDVFVKAALLA ARHDQPFLWLHFN LSHSACERWMKGQLGLPEDFFEALRQ

 QKNAPGFLWLHIN LNHAASEKWLRKQFADEDFFFEEIRQ
VRWDNMVGNDAST U DRVSNAYKLHPLQTEDMLN FMYSRRPNWASVRWDTDPLMMRRLAVRYRLHPLAVEDTLD GSQSCWLHFTAAAKPDLEQLLSSLS I HPLAQQRLMN
 QLPERGFFWLDLANASE DEYAAVAAALHLDDSLSSWLPR TLTPPGFYWLD ADMEDLVELQPLFSI HDLAVEDCME


S SH WWVDLQGQ
R D D E E E TVERLLAKFECHPLA DQDAHK (
 RTD WKPEDGFLWI HLER DDETAATWLRRESGVDPLVALALLA $V L Q S D T L G W V H L R A Q H P D A A S W U V Q T L S Y L D P N A V E A L L A A$

GNGACWLHFTKAS
 HADT $\square P$ FS WVHADG WQEDAREVASRCDHMPEAALSAR

## UniRef90_W6RDM8

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UniRef90-UPI00045EA64F UniRef90_K0TSF5 UniRef90_K7A2P0 UniRef90_UPI0003CFEB89 UniRef90_UPI0003492F99 UniRef90_J9WND9 UniRef90_I7DTN4
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UniRef90_H8KXY6
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UniRef90_D3QHX7 UniRef90_UPI00046F7B19 UniRef90_UPI0003A4B7E5 UniRef90_L7K6P6 UniRef90_F0S497 UniRef90_S8G0D0 UniRef90_UPI0001DD0512 UniRef90-R1EGV8 UniRef90_U1KBP0 UniRef90_D5XER5 UniRef90-X6NCIO UniRef90_UPI00036F42E8 UniRef90-Q1J231 UniRef90_G5JFT9 UniRef90_U2E712 UniRef90_D3PMM9 UniRef90_A2RWW6
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UniRef90 E9C4Q0 UniRef90-H3GDL7 UniRef90_C9RSD2 UniRef90_W9A7P1 UniRef90_DONSI3 UniRef90_A0A011NLY9 UniRef90-H3SHE4 UniRef90_WOV425 UniRef90_F0P2B7 UniRef90_X6NI42 UniRef90-F1A441 UniRef90_UPI00035FAE72 UniRef90_UPI000462EB4C UniRef90_TOMI21
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UniRef90_K9F879





 RGHWSRAEQYPEHAFITVRSFTRPADPDEFTRMSLIVVFPH D Q CR P R CVMF A D GALLSLRG I NLQRNALELITVVHLWVDAR

 Y S P I G I D Q D I E D C L F
 SETRRPRCERRLDD GLILNLLRGVNNLNPESDDPEDMVSMMWTMEH





 A NQRAK VE R Y G DVLFVVVLK S AVY DDE EVEFNEFHLLMK D D


 D DTRPRAFREGNTMVATLRGINENPGAEPEDMISMQVWSD QEAREKVELFHNYYFVNYRTFEQDENYDEPVNIYFVVFRE


 $\underset{D}{I}$ HL L QGHWSRAEAYPEHAFDT DR SFA HPEEA DEFTRRLS I F L Y S D TVSRRPKVA DNHTNMQKYLVLHS DNSERDSAEPMS I TVVQE H LD Q F P KL L FY S GYM Y V V F Ni LD Y S N M EVVS K E L N I F L S R D I GH WS RFE EYPK HLLFLI FRTLLTPHNAHSRTERVSYFYFPE GSHSTRDE QQDGVLRAVVNDVMFSLDLEEDATMWA YVDRR TESRPR CDALGB GL NLRGRSDEEDTASSDPLASVRDWAVAG

 DANRPRAFREGQTLVATLRGINFNPGAAPEDMLSLQLWSD



 V S V WV F A H
NETRPRVFREGDGLINDLRGVNFNPGDVPEDMIAMQVWKN QS QRPKAERYA E H L HVVAPVFRVGTPAMADDHNVSDIVGGD T D T R P R V E E F E N E Y L V I L R G $\square$ N L N P E E D P E D M V S L R I M S D PRNRTKAE
E EAREK IVELFRNYYLVCFRQDPYSPTHLEPLNMY I VFRE
 KNYRPAYFNNGDYQLLI CHVIDQ ETLEAHAVNI CVMQD

 NETRPRAAFREKD ALVVTVLRGI NFNPGAEPEDMMAMQQWCD



TK E R P K VE $\square$ N S D G T M H I Y D S K D W L Q L VT D QLD I C L L HA D S ADERPKYEHYDEHSSLVLQTVHMGRLMAPPEQLSSYIMDN
 S DE R P KYEHYD E H S S L I L Q T DH M GR DMAPPEQQLSLY DMEN F GRSAH LIESSPRY LIR SAWADA GAQGUVEGHDI Y S S A

 K D C R E K L E DF D Q Y L F I C I R A P T H DRERTQRRIAIIVGKT



 DESRPRVEDVDDNLLVVLRGVNVDEGHPELVPI HIWGEAN
 GT D $\square P M V D E Y G Q H L B L A L$ F VI R P E L L T T A K I H L L A T E R TETRPKAMQLGDGMLVYLRGDNRNPDAAPEDMVSLWVSDN



## UniRef90 W6RDM8

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UniRef90-E9C4Q0
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A GLT DRVETHDDTIEK LT DHYET DLLEPRDLPETRRS I IRIL



 DLAA A DR F L Q V ID Q IA D RI Q T L E R QVF GR E I Y RMK T H L H E L D HLLA S H K M K V I D T L D E QL T E L E D QV M T D S I A V L R R E T V K L D V CVV D E L S P I A H T H G A K V A M L S R L L R H D R L A Q C S K E I K G L


 EAIVVGRAAD SAL E F E A E L S D L E D E L L E E N G N DVVLMRKI T T Y


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DAVIDDLA|IPVTMAYQDAIGGD

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R R Y|L|APQRDALLNR|IEHDDAPWLL

R R Y L H P QREALDALLRNEAGLFD
$K R V L F P M Q E L V N T D K T E G N L I V D$ KRVMFPMQEVVDTI
KKLILTHKEIVFEMHQHDLKHFS
RHATAPDPAMMDR\EH

RRLASEAREATALLGRHAN
RRHIAPQREALNHFALEDDPWM
$K R L V Y P M Q T L I D D L K E D Q V L F T D$
$R R Y L A P Q R D A L D T L Y R S$
KHLI LPQADILQEI QK
RRNFQS $\square K T L L A M I N D E D F Q W F S$
RRVALPMREVVNSI QHHR
RRFI NPQREAI SMLATLENW】I
$\square R C L S G K V D V L N G F V K$
RRVVLPMREVVGTIQRHR
KRTVVFLTKDIVERISEN
RRVFSDERSVVESLMH
RGQVWP L R H Q $\|$ M VL $\square R Q T Q R L L$
 L H NSTH $\mathrm{L} N \mathrm{~N}$ LTQAL
$\frac{L}{R}$ RY $\square A P Q R E A L R A L A A T E A G W \square$
RRTLK Q $\square R$ D T Y K S L $\square$ S S VSRF $\square$
KRHMGPQHVAFELISREAPPWFE
 RRVLRQLYDVILKI
RSRLWPKSTLTHNLNNLD
RKYLSPLIYI GDSLVINDNLVID
$R R V V L P M R E V L S G V M R D$
RRLSSDAREAVALLARH
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R RYLNPLRY I GDSLI SNENFIIE
RRLVSQAREALDHLER
RRTLTRDQRMLA
RRFVQPQRAALEKLAADPCDWLH RRY I APQREALFRLDADNVDFLD RRYMAPQRDMFSRLTTEKLLWLD RRYLLAPQRDVLARL
KRHMSPQHEALTAI ANGAPGWFE
$R R F \operatorname{LL} P Q R E D Y G Q L T R N R D P W$
$R H A$
$K$

RHAlNPDEPALS
KKILLDYTEAALS
RRIVVDPMRE IVVTITSR
KRYLSPQYDAL $L Q L Q R D P P D W M S$
SRLAKPLHRLLTKLDDDKDALL
RRYFNPLRAAVGVL
LSF $\quad$ N P PV
RKKVMGLLRLMGN
RSRLVKLRRLEN
K RMLYLTKELIQTYMR
KRVI IPMEELAEKFEEQD
RRFI APQRDALTTMA TED $\square S W D E$
$R R G L V R D Q R L L A$
KRYMSPQHEAVLT $\square$ QKSSPPWLS
RRY LEPQRTALAK LAAADDPDL
DELNDT LRRESINEKIRLKSPLI
QRLLAPEPAALFRLMNRPPRWL
RRA WPQRDAINAMIRDPSALLS
VFWLH S L S S S V N R LLE E E

K LLCKPLREMUTQLIES
HRLLVPLRD
$K K G L A P Q K E V L L V L Y R K D \square R \square I E$
RRVLVRLQRLLA
KKILSSLMDDVI KEL
RHSGVEGKSEVL SVLELRDE
RSRLVKMRRVFN
L R K GRKEEL L A S L Q D S $\square H T L$
RQFIRPKIILLEKLKNHH
$R R V L V R L Q R L L A R L D H R P P H W \square Q$
FRARHGLVETIASLSRE
RRYLGPQRDALYRI QHDDSSWLS
$R R H L A P Q R D V L R V L Q G G P V P W L$
$R Q V A E A Q E E M M K T I Q H T T L P Y ~$
RQVAEAQEEMMKTIQHTTLPYI
RRYLT P QRDALDAI YR
$R R F I A P Q R Q A L E R L S D A D A P W D E$
$R N S M Q P M V A V L N A D$
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UniRef90-UP1000377D9AC UniRef90 A7II75 UniRef90_W8F1W2 UniRef90-A0A010TG78 UniRef90-UP10003B6AAC1 UniRef90_C6PVQ3 UniRef90- W2UD57
UniRef90 O89N96 UniRef90-O89N96
UniRef90-H2CLR8 UniRef90-UPLOOO411C9C2 UniRef90-G5H5C4 UniRef90-Q1ARK5 UniRef90-W5IPS7 UniRef90-l2CPD3 UniRef90-C6VRX9 UniRef90-G4T7Z8 UniRef90-UPIO00471CA40 UniRef90-R7Z5M3 UniRef90-A9CK05 UniRef90-R9PLK2
UniRef90-D4KH50 UniRef90-F9VIK8 UniRef90-J7IRU6 UniRef90 W7DNK2 UniRef90-E8M489
UniRef90 - UPIOOO4 UniRef90 UPIO004758984 UniRef90-C5BKM6
UniRef90-A3
 PGEVLWMHLRR DRPGVAEWLEQTLGLPEPTAELLTS ADFV WVHLTS NEAEAQAWLRDAAKLDDYVVDALTA AKDASEFLWLHFNLAHSASERWMRTQLDLPETFFDALRE NATQQSPFWLHYDY KNKETASWMQQTDLFNDQVKSSLTG

 DQLLWDQLDL K DAQKFLRDTKVIPEFASHVLCA PKDRVVWLDVENPTEEETKWLSSTTGFQMPPREVFGD ILNSQSLMWLQFRGLGNTDQLRQYLSLLSLEPSVIEILLT GGFRWLH N LLADHGTRWMEGAAMLPEAVRELLLS VGGGEGFLWLHFN DSHSACERWMKARLELPDDFFESLRQ DVQ TPTDHPFTWLDLNDPAPPEELNQVAQKYDLYYTVIKDCLE
 $\square E R V N K \square L W \square H F D Y$ TSKEAQDW■TNKSGDDS $\square A V D A L L A_{A}^{R}$ WQSDASLLWMHDDFRQD NTNELLSTLAEMDPAVIDALLE TRQEADFAWLDI TGPTAAE LQAVAEQYDLPDSLVLDCLE LEERDEFVWLHLNGAHAACKRWMMTHLDLDDYFFEDLSE WPEGETVLWVDMQGESGQRERSLLERLECHPMAIVDAQK DAEQQLLWVDLSGQHSQAFFKQYPLFGLDHLDFEEAQR WDKENSFYWLILHAEELYNAELLLLDEEC LQERESSLWLHWDR GHAMARQWLREASGLSEFACDLLCE PSHDGRLWLHFN पTDVRTRAWLANQMHLSQLARDLLLS GEGLVWVDM PSCDAAGARVLSEVFGFHPLAVRDCVE KQNPSDSLWVDFDS HDQTEERVLLKSLGCHSLALSDAQR WQHEQGP WI H DYSSDEARNWLLTESHDNELAGEALLN TEHNDEFVWLHLN LLAHAGCERWMHAHLQL PEDYFEALHE SV GDDLLMWLHFN LIADARALQWLSLTDPISPPARTLLLS

REREPQCRWTNVNGLS WDA TRILGNEKGLHRDAVEDLDN VVPPKGFMLISGNSKSPEFKMWLKSE LGPFNADALTV TPAPDSFLWLHEN LSHTQAVRWMERHAGLPDAFFEALKD RASGEFYWLHFN LSNTASEKWMSEHAHVAAAFNEALHED

 CEDTPDGVWDDLYNPTREEERYVEGVVGLNPTREDMQE

KEYALCWTDCYAPSD EEDRKDSDKTNTKVELMLGDD ARQAGEVIWV RATDRADFAELAPQLGLPVDVVRDAGT FMDQPQPVWSK RWANNVTETYRASEY PPKAWFLDVASPTWRD LQA GKKLHLHPLTLEDILQ
PDNAVWI DLVNPTMPEDKAVERLAGI AVPTREDMQE
REHDLIWIDCYDPSDVELIE LSKTMGIEIDELSLGLD VTPAPAVVWYDVVSPTSEEE RMVGERLGITVPTMDEMED


GEPDDVVWTDVNPDRAEE QRVEKLLGVELPTREDGKD LeQEAGTIWI DI DLSSSHAKAEQLLKRFTCHPLADIDTFR AWUNUVAPTPYE LKVVGNLTQVEPDFLRSALD WVNMTNPSE EETALTTKALKLNEFSI RDALD LEHPERNCWLNUVAPSS E ELINQUAEQYTIPCEFLEDPLD WYHCQR SEAGLREWLAVNQVPSADIDSLLA PSD【VWDDMLRPDKAEDF LVESFLGGEVPTREDMKD


| UniRef90_X8JPR5 <br> UniRef90_G6EB44 <br> UniRef90_A0A031HNP8 <br> UniRef90-D5WFA1 <br> UniRef90-B6XIC4 <br> UniRef90_C6BJK9 <br> UniRef90-B0KNB8 <br> UniRef90_G8USB5 <br> UniRef90-H1S313 <br> UniRef90_C1GF30 <br> UniRef90 UPI00036B637F <br> UniRef90-A0A022U1Z1 <br> UniRef90_D3SNI2 <br> UniRef90_A5GL40 <br> UniRef90_UPIO00262C21A <br> UniRef90_C6XV80 <br> UniRef90_Q475D8 <br> UniRef90_K7SH56 <br> UniRef90_UPI0003825D7F <br> UniRef90_UPI000379B532 <br> UniRef90-H817M3 <br> UniRef90_A0A059G9P7 <br> UniRef90_W9WCW8 <br> UniRef90_UPI00047B8898 <br> UniRef90-S8CA43 <br> UniRef90_UPI00046EB1CE <br> UniRef90_UPI0003B4E68E <br> UniRef90-N2INW7 <br> UniRef90-H0J4L0 <br> UniRef90_UPI00031209DC <br> UniRef90_Q086L9 <br> UniRef90_U2B5Y0 <br> UniRef90-U2N2JO <br> UniRef90_U3H799 <br> UniRef90-A4VL61 <br> UniRef90_UPI00035E0451 <br> UniRef90-19A9Y3 <br> UniRef90_UPI00047033B0 <br> UniRef90_Q0F0H6 <br> UniRef90-I4N5J8 <br> UniRef90-B5JVT7 <br> UniRef90- Q07106 |  |  |  |  |  |
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 EDTRPRAFSEDGALVATLRGDNFNPGAEPEDMVSMQVWCD
 K M N R M RMVR I G D G V L L T L Q T L N NTTGQRPEQLVAFRIFMN EAHSTRVEQQDGALVAVFNDVIFDFERTPTQTQWVYAHRR
 GSRSTR DERLDTALLLAVVNDV DYNFSNTD DSTLWACADRR

 $\square E D S$ S K Y R E E GE S I Y M S L S F VVVQQK D D I KV E PVVLFF I K G R
 PDHLP KYE RMDNYSFIII FRDH T DNNVQLLTHKIAADYGEK


 TM QRYHAGPNQDRI EYMERHAVLAHF GDSME QVSDFLCDN







 NDNFQQQIHVVDNCVYGVFSDRDVEAATRETGFLRFAMTER RNRVPKVRAYA DHVFVVLHAPERGGGHVHYVELDQFDGPR



 Q V S l F L H A D
ATNRTKVDWYSDHAY VVLK LQKLIK LKKDDDSDSEDEEDEN LSTRRSRCTVLDDKAVVVL RVARPKTVDLGRQLLGDWLEKG


 P D H L P P K Y E DV G T Y V F I I F R I H E A D T V A E L T D K L A I F MT P D QRFRGGPNEDRIAFMERHAVLASKGLTVMQVSIFLHAD




 QDPREKFELYYSKA QRQDRRKKAPYFAHLLDEETYDGSIIGGES




 $\begin{array}{llll}N & F & L & V \\ S & L & C & G A\end{array}$
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170
180
190
200
D S M|V|D A F|V|P|L
EHMI A RMNRSIVDMNEVI DQLEDTDMLDKDSTDRRNCLAL TADTTDDLDPHVADLGDELDDCEERLDANRVFDLRVTAAGY

 RDQGDVMTGQVVRETTTSVDRLIEDQLLSQQRLSDNRAELGSM








 $D H L V D Q T G T L L A Q M N Q S L A Q Y E E S V T T R T L A Q L R R P M D M L$
 Y T S A G F Y DD SL L K F E S E L S D L E D E L L A N G N DV L M R K L T T Y
 RYLTDRVDDLIABELGELLDGEEDRLDADERYQVRRRAASL







LR A S D R TEP LIE HLGD S ID T IEEEELMLE HLAHLRRTLIGGF RT QA G GLVDIV R GVVTQRI DRI E DELL LAS RLL
RHQVDVLGDLARQMTNRVDEVEDRLLSGRLEHKRARLGAM R D Q A DVLVRIVRDAVARVDQVEDNLLAGRLNKLRR\|LVRLL








N QI TIDS Y S R LL V N L E D QL DVL E D R I MTEEEILQLRKMLVYF
 D A V I D R C A D I L E R C G A E I D QV S H D I F

 R Y AL D S Y V Q P A L T L T K EL D D Y E A E I F








D A I V D D E L F P P I L

D S V D A F F P V
EIIVNRLADVLENAGRTLDAISRTVF
D A I I D L A A F P V V $\operatorname{D} A$ Y
ETIVDRTAEILENSVTGI DNLAADILGS QARSKRKN I A A Y



## 







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RRVLVRLQRLLARLLNRPPEWLK KRYTIA I RELLMRLTSRNILVIS QRLLAPEPGALFRLLNRPPAWLQ RKKVMS LMRLLGG
RRYLLPQREAILRTQTDKLTW RNAI QPIDGVI NSL RDHKP DELNDTLRESINEKLRVLSHFVK $R R Q L W P L R N E L I L L L R Q G Q$
$H R L L A G A R G V F Q R L E R D E$
KRKI A GARGLLLKRMLILDSEI IDD


KRILTLTEDTLHCLQRSE
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RNAI APVVQLI GAL
KRYLTPQKEALVKLYNEKLLWDD
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NRFI RPQYDCLSRL
K QLLLLTRDILDMLRR
RRTLVRIQRLLNSLMR
RSRLVKLRRI FS
RKKTYWLYKV R A LLKEH KRSFSYHEEI LQQQLLGDDTHL
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RKDLAPDRY G DAGIDANENG\|ID
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RRTCVRDHRQLAGL
RHGLLAVRTMLSVLARTAPP
RSRLTKLKRTFN
RRY A P QREAMDK $\square$ AS AT A A WL
$R R V L V R D Q R L L A$
ARSLRYQHTALGATAKAH
$R R T C V R L H R Q L S G L Q Q V F H R L$
$R N A M Q P I I G V V N T L R D H T S G L$
RK L L WP QRDVLNT LE $\square E D \square S$ F F S
QRLLLPEPAALFRLLQHPPPWM QRLLAPEPAALERLLQKPPGWV ERYLAPQRSALERLAELDLPLV RRRVEVTRRIL
RNSMQPIVTVINALRDHRSEPVS
KKLLQUFQNVI HQLEVSES
QSDTAR RD SLVSFGR
ESLTANMRDSLTSLQR
HTA A AP LDAEICRRLARVEMSQDD
HKALVSNKDVLSVLKRKY $\square P \square$
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RKTLAPVIT V N
HKALISNKDVISVLKR
GEF UTVVRESLVSVSR
RESVVDKQRVISAMDRS GRKVSYARESLASLQR
KRF पAPQRD $\square \mathrm{FGQ}$ GTR R K $\square \mathrm{P}$ W
RKYLNPLRYDGDSLVSNDN
KTWLLKLKRL
RRTCVRLHRQLTGL
KRMWWLHREVLEKKLHKDDPHL

 QHE L S $Q D K Q R V L S G \| L R S$
$R T T L Q P I T G L I N A L \quad R D H$
HRLISKLRVSLASLAR
KTDI $\square R L N R I$ FS
QKALASLRSVLEK LDMRDRS
RKY LYPLRYIGGDSLILNENG\|IDD
QKSLL
LTALKSNKLVLDKMMRQH
RRYIKPQRYVFEDLINAQLPML
HRLVAKTRDSLASLSR
RHSLDPDPAALHALLTRHQDLLS RRYFAPQREAMNRLVFDRMPWLD
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$\square N \square F V V Q K G \square A Q E Q E E R S E L D Q$

$$
\begin{array}{r}
\text { TASDHRA } \\
\text { SPEQLDDA } \\
\text { KHDENNVLAEMS } \\
\text { DFTEDGVLPVVQRC E }
\end{array}
$$

$$
\text { K G G A R S } \square \mathrm{ARTE} \text { R D D } \square \mathrm{Q}
$$

PPGTKKKKGKRRAVSSFARVA SGSSKDKPQASSLMP DVA W QQASMSVSDFSSTKLQSFRQENLMEKAT EKTERGDRKSSLDEGAT LT A P E IDE A IIF S
$\square S V F A P S A G S \square K K \square E T V D L A A L$ LSCCAYNAAERRDTACLSLEDDLS

$\square T V F R P N G E \quad A R T \square P V A T D S E V A E$
D A A E
FT $\square \mathrm{DNNSM} \mathrm{\square RETPLQTGQL}$

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 HK PPS P

LPPQGTFLWLHFN LSHAQAVRWMERHADLPEAFFDALKD WDPKDGLLWLHLRYRHKKARHWVINS GLNKVETDALLA LE QLDKGSWI NCAAPSQ E ELSHLNE LDTGUPVYSLQTALDD AEPAGRFRWLHLADADHGTRSF $\square A R A E Q L P A D V R E L L L S$

DKEKTVWLHFDADSNETREFVDQNLSHLDPHDKRAVLA LQ SPQESLWLHWDR SHPQTRTWLRNSSGLSDFSCNLLLE PAEAVWI DMIRPTADEEALVERTGGIDVPTHDDMK EATPQRPFWLHYDYRNKA F L DVAS PT W AHRPDN VRWI
 PAG VWI DLDAPTDSLENL
 PEDAVWLDLK LT T T QNKNKVYWV APLP APLPD DVVWI D D L K P P T P P E E DTHGA A $\square \mathrm{A}$ G A

 $\stackrel{L}{N}$KDSNPP CRWI NMTSPNEK F Y V A E N S Y L I L S A P P K N Q E L D I Q L R T L

 FALDPDGAVWLDMSSP TEEEK RLVGAALGIEDPSRAEMEE

## WLDVQKPTKED LSFLHQTYGVNKFHDEDADD




 LK K E ES L WVV HWDR GVPEAQS WL R DS S GL N E F T C DLLLLE QHLDSVFWUDLLTP EPAE DKFVERLCGLEMPTYDEMRE

S A HCEWVDVESST, AEDLRFLHERYE I NNLLLLEDTDD $K H$ S
 I E K P E N GA WL C L S E P T D V E L A T V S QE T G I D L A D L R A P LDD
 WDPNNGLL WV H L R Y R HKKARHWVLNS GL NKVET DA LLA
 $E R A V W L D L I D P D D$ DELAA I GALLSRQALPDPEDVEE

[^1]

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| :---: | :---: |
| UniRef90-H3GC13 | PLHRSMSVITDDTENEDEDPLKLW DEHVFIFVVDNDT |
| UniRef90-C6BDU5 | LEASARYFEGEDHIHDRTDFLLDEEATSRNVRVAFVL |
| UniRef90-UPI0003A2S | LETSERLYEEPGAIVMTAVLPLAARMPDPRTSVTFVL |
| UniRef90-M5GA45 | HVSVELKHIFVFL T R |
| UniRef90-UPI0002376291 |  |
| UniRef90-A1RNQ7 | QDTRPRAVLA GEGVLLAL RGVNLNPNSAPEDMVAI R |
| UniRef90-R7CLM2 | REERSHVELEDDYI FVVVNTPVLETDAYDADPL G |
| UniRef90-W0A8X2 | P D THQRALVDGDTVGCVLHDFERDFDVADTARVR |
| UniRef90_E6R |  |
| UniRef9-181J41 | W E K |
| UniRef90-J9Z0E0 | EQTRPRYVPFENGFLLI I RGVNLNKDQSHEDMDSLWIEKN |
| UniRef90-UPIO00287E | ENTRPRLLPLPDSLFLRGVNLNPGAEPEDMVSVRLFAAAQ |
| UniRef90-V4RHR2 | AS S RLYLEDGAAFMTAQVAFFGGAQLQS GPVTFVLVGG |
| UniRef90-A8U0T1 | EASSRLYQEDSHLLFMTATVSKTETEHPVARPITFVLTPT |
| UniRef90-D2TZ96 | GNNRLRIIRTGEGTLINDQT |
| UniRef90-A8N143 |  |
| UniRef90_G4ZL91 |  |
| UniRef90-V4R2K4 | ElS SRLYEEDGAVFMTAALI D S T N RPRTCDISFlL LVRN |
| UniRef90_B3Q8Z9 | IEIS S RLYENGARYMTASLMCGADT T S PRLSPVTFILAGR |
| UniRef90-W6IY92 | RNESSHLDTEDDALWDFAHEVSEEPDPAYMGVLHLVMTPT |
| UniRef90-B9JAL0 | HETHATITVDEQMLFGTDFQRDFDQETSDDGWLHFVFTDR |
| UniRef90_D6V9A1 | \S S RLYENGARYMTATLMCGTDGANPRTAPVSFILTAH |
| UniRef90-G9YHW3 |  |
| UniRef90-UPI00026C76A1 | ENNDTNLIDNDNALTLQIKCLANEDKEDTLDNLILHLTAN |
| UniRef90_UPI00037847AD | EPS SRLYSEGGARYMTASVLCAVDKATPRSAVTFILSER |
| UniRef90-Q13BN1 | I E $\square$ S S RLYENGARYMTATLMCGADT T SPRLTPVTFILSGR |
| UniRef90-UPI00022606B4 | I E S S S RLHTDDDAVYMSLPLVQRTEADLSSSPI GFVLTPN |
| UniRef90_A0A021XDX3 | IE P S SRLY T D G S A A M T A SLMVKAESNLP H T DVAFI LMPD |
| UniRef90-B9E9T5 | KKSRPKYKKFPTYEYLVFQKI E K S T FEAETINULMKDN |
| UniRef90-UPI000306AFB9 |  |
| UniRef90_UPI00037D9 | ELS D RLYQEDGAEFMTMTATELDGDNPVKVPVT FIL K GA |
| UniRef90_UPI00036E00D3 | RCFIDQAGMHVHADFMYQEDGRHNTASVAFILQNE |
| UniRef90-Q007A2 | GS R S T R DEHVDSALLAVVNDVVFNLX S MVS S DVS TL WVCV |
| UniRef90_W0EW49 | RYEEEDNVKLIVIKTPTENNSFNESDAYYIILTHN |
| UniRef90-B2IHY2 | SDLHMRIEPAGLGLVVCDLHHEFVKKSDQLDILRLYMLDSH |
| UniRef90-B6IVC1 | EASSRLYLEGEAAFLT TPVISRGDSHPDLGLLTFVLTRG |
| UniRef90_UPI00031C5134 | HS R R A RVDRTP DGLTAPTLSFVEETRDVHTGTLTCVVTDH |
| UniRef90-I0GRV7 | DEERSHTDIEDDSVMVLTNVVNRGNDSYDADPLADII SED |
| UniRef90-UPI0003B6D50F | DETS S RLYVDNGAIVMTATATGLITETPETVPVSFVLGKS |
| UniRef90-N0AN36 | DEERSRIEEREDNNVFPY\T HDDTG\PDYETIPI GMII T D D |
| UniRef90_UPI0002EEB256 |  |
| UniRef90-A0A031WE88 |  |
| UniRef90-U2J6C8 |  |
| UniRef90-D5VQH2 |  |
| UniRef90-UPI0003B7BC16 | DEATSRFYENDDGLHISSYFLNYADQTSANISAAFVFNGD |
| UniRef90_S5SF25 | HDTHAA TVTEEQMLYGTLVDCQRDFAQDTNNWLHFAMSDR |
| UniRef90-S7U4M3 | S S RLY QEDGASFMTASISRVEQHHDDASAITFILAGK |
| UniRef90-W4KFM0 |  |
| UniRef90-UPI0003803FE3 | DIK F F LTREYNLNGVNDISTKLAILIVNN |
| UniRef90-F8PCZ2 | RKESASRRRREKAQKSLEKLKKGERVNVKVQPMFIFLLRN |
| UniRef90-W6I2P6 | \ENSSRLRDHEETLYLSMPLVSRSSEEPVVGPLGMVVNRE |
| UniRef90-A6DDV0 | EEQS $\square$ T Y EETEKFKLI ILKYIT F DEEEYDDYNVVIII TEN |
| UniRef90-A0A031K441 | SDSHQRALVESGAVCClL L D FERDFDTARVGAL RVAI LGG |
| UniRef90-N2J918 | EESSRLYESERALHMTTTVVSFSEHQPTASVLNFVLTPE |
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| UniRef90-UPIO00465 | QDGHQRLDADEQALWI ADYGRDLEREEDVLRPLRVVVTER |
| UniRef90-A8H3A8 | DEASARFYQNKDGLHINSLFPQRAGQDVKGVNVSFNLRKN |
| UniRef90-K1XXY5 | NQ EKTDIYYEDYMFI VVNFPKYNADNKKYNEFSILLGKN |
| UniRef90-W5J132 | EATRPRLLDLGERLLLFLRGVNLNPGAVPEDMVSLRVFKQ |
| UniRef90-B2URE4 | IEATSRLYTEDGARFMTTTVLSRVDTESPSSEITFV |
| UniRef90-A0A024GP |  |
| UniRef90-W4T679 | $G \vee F L L G N$ |
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| UniRef90-LOLFR1 | EPSSRLYIEDGSVFLTASLLCKADTSLPMTDVAFILAGH |
| UniRef90-M4RIK8 | EERSRVDAEDDYTMIIVDIPTVEERSGRDWYLS IVVTQN |
| UniRef90-UPI000349B44F | SRLYENGARYMTASLMCHSDSESPRLSPVTFILAGR |
| UniRef90-F7RIU7 | D TRPRAVIA GEGVLLALRGVNLNPNSAPEDMVADRI Y A D |
| UniRef90-D3NRY7 | EESSRLRI A GGVLTMTVTAVWADTDEPRDATVSFVLAGR |
| UniRef90-X6GHS0 | I E I S S RLYV E D GYFMTAI LPAQTEADDPLMSPVTFVLA GN |
| niRef90_H5SME8 | IE ASSRFYEDEAGLH DHSLFLHEVEGKPRNTSVAFTLT D |

lupas_21
lupas_14
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 VI TVVKDGGDSDIWNELNRRLAVPYSKDRHNDAKFLVYTVL VLFSIHDEDLPAFRLVRMRARLRPGSVRNAK DVLMDLY RLVTVRYGEPQSDQTCARRVQQD GTIPRNGPGVVFVL GTLITFHQDADHFRPIKARLQHKDSLLRAQGASLLMQSVI


## $\frac{L}{G}$

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 HLVTIRYTEPKSFEIFAGRCQR $N Q 1$ S SRHRKVK S LEPVIDDLTHHVG G $\|$ C CVG V DD QPPPVYEIVC\|PPPDCVNSSN YSCTHQGDSH
$H L V T V R Y E T P Q P \square A V E D Q R A P K V G P A C R \quad Y A D F V L A A L I$ RLVTVRYDEPRPFAVVESRLARAPG SGSSGESVLFELL MLI TARRHPLRAPSVI GYGQASLDTTAAQWD $P \square D L F E L L V$ RLVTVRYDEPKPFMRVAAKLGRACP F SGGDTGD
 YCFTASTTSLPVLFEFFNSCAKS IHYAKTSC RFLGQIL ALVTVRYDEPKPFEWFAARTCKGPSATBSITPEGLLIGLG RLVTVRYDEDRPFALVENRLARTPSFGASGES
 RLLTVRYAEPRSFS LFKSAMHRIPGG CSSPTVMITRLL

 HIV TVVNS E NPAI K K F L N T F


FI SWS S
V V I TTVHRN QID FLERLK TI ER T H K



 LIVTARRHPLGAADIVMQRV $\qquad$
WLVTVRYAELSAFRAFRTKLSQHPGL
CIVTARRYAVESTAVI RQAALEGQ

R V I S L R L R P L K A V A D L R Q D LAA A R G P




$R L V T V R Y E E P R P F M L V E A K L A R T P S$
RI I SACDRELQSAKDVAELI DEGTGPT


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jpssm


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RRSLTPLLHVCYVI
I $\backslash$ RALSGKVDVLN GFVK

$K R F L A P Q R D \square F G Q L T R D K \square G W$
QND VK $\square R D S L V S L T$
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G R A
YRRVEPTVELYGE $\square A E \square A P E W \square$
$R R T \cup V R L H R H L R T V L$
QKSL
KRYMMA $\square R E V L M R \square T$ TRN $\square$ S VVS
QRTD $\quad \square R R V F S S \square 1 R D$
HRLVAKTRDSLMSLSR
K GIIVPMSELIDEEANDDT
HRRLTGLRALGQRLSHE
QSLI
A R
QR LLALEPGS LLRLLNRPPPW $L Q$
QKSLLV
RRHMVPQQHALLGLLSRLPHWVE
$R R A L G P V T S V L P D L!S D$
NAAI RSNGAVLDKLRMRN
RRSNLALQALLTRLL
TTS SKSNK IVLEKLDR LSH
RRILGSERDVAYQLAR
VKNTRPLLYI GDRIVKEN!RY $\quad$ KK
 HKALLANRDVLVLLKRKYLPII $R \square S M \vee D L Q R M L Y L L L R S$
R RTVVRLHRHLR
$K R T M G P \square K T L L Y G \square R R Y D V D$
KRKAGLSTRVLQ
KRTME PIKTVIVGLRRYDVD RMLQASLRRI
SKVT DQEKDV $\quad$ NKAYNKFPPT $\square$ K
HRMLDGAQRVFRRLEQDD
S D SLL G $\square$ N RLL L Y L R R A A S E W $\square$
RESLIDKQRVLSSLLKK
$R R Q T I R \square R R E L A$
KHTFAPHKEILDKLQDTLPKF RRYLAPQRDIYSQLTRDKLSW GRVLTRQRDCLVNLLR
PK QLK K A R QVL KYL I ES E SRVLVISTDAI DKF
KRF RPQQYA I R DLVESESELV HRTLSK ${ }^{\text {S R D }}$ SKTLV
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[^3]:     $\begin{array}{llll}B & B & B & B \\ B\end{array}$

