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G S R K R R ASRRRR AA
 GSRRTRIANGSGTTVQEINQLIQRFEQAAKMMQQMS ASRRRRIARGSGMEVSDVNQLLRQFKEMRKMMKSMS ASRKKRIAAAGSGVTVQEVNKLLKQYDQMAEMMKRMK G S R K R R A A A G S GT QI Q DV NRLLK QFTQMMQKMMKKMS A SRKRR ASRRRR GSRRRRAAGSGTTVTEVNKLLKQFEMMQKMFKKM

 ASRRRRRIARGSGTSVQEINRLIMTTEETKAMMKTLQ GSRKKRIAAGSGTQVQEINQLLKQFTQMQKMMKQMS $G S R R L R$ GSRRRRI $\begin{array}{ll}A & S \\ A & R\end{array}$ R R R R A SRKRR G K R K R R I $\begin{array}{lll}G & S & R \\ G & K & R \\ R & R & R\end{array}$ ASRKRRI P SRRKRI $\begin{array}{lllll}A & S & R & R & R \\ A & S & R & R & L \\ R\end{array}$ G S RKRR MSRKK GSRRAR ASRRRR GSRKKRI ASRKRR G S R R A R G S R R K R ASRKRR
G S R K R R GSRKRRI A S RKRRR1 G S RKRR
A SRRQR
ASRRKRI
GSRRRRI
AERRKR PSRKKRI
$\begin{array}{lll}G & S & R \\ A & S & R \\ R & R & R\end{array}$
G SRRNR
G S R R L R
S S R K R R

GSRRRRI A L G S GTQVQDVNNLLRQFNEMQRMMKKMR
GSRKKRIAMMGSGTQVQDINRLLKGFTQMQKMMKKVS
A S R K K R I A T G S GT T I Q E V N R L L K Q F E E M K K M M K Q M

GSRRARIARGSGTTPTDINQLVERF

GSRRSRIARGSGTTVTEINNLLDRFDQAKTMMRSM
 ASRKKRI A A GS GTRVVEDVNRLLMKR DDMTTMMKRVQ

ASRKRRI
ASRKKRIAAGSGTTVQEVNRLLKQF


$\begin{array}{lll}\text { S S R K K R } \\ \text { V } & \text { S R K } \\ \text { K }\end{array}$
GSRRAR
N S R K R R
PSRKKRIAAGSGMQIQDVNRLLKQHKQMQKMMKKFS
A A GS GQTIEDVNRLLSQFKQMQKMFKQF
 G S R K R R I A A G S G C Q I Q DVVNRLLK Q H T QMSKAMKK F S GSRRRRI ASRKRRI PSRRRRIAAGSGTKLVDVNRLMKQF G S R RKR I T S R R M R I GSRRMRIAKGSGTSVVTEVNQLVNRF

GSRRKRIARGS GNTIQQDVNRLI KQFNEMQKMDKMD GSRRARIARGSGVHVSEINQLLERF


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UniRef90_UPI0003B66125 UniRef90 F2JS77 UniRef90-UPI00036391C0 UniRef90 C2U181
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UniRef90_Q39RN4
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UniRef90 H0JE14 UniRef90_K6BYV9
UniRef90_D9S350
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UniRef90_UPI000420DD32 UniRef90_UPI00037DF5A6 UniRef90-F0J1K3 UniRef90_E01416 UniRef90_D7CX91 UniRef90_F2IIE6 UniRef90_UPI00035D74B7 UniRef90_W8T6L8 UniRef90_F5SCQ1 UniRef90_E6TSZ3 UniRef90_UPI0003652B08 UniRef90_R5P4R0 UniRef90_R6PK62 UniRef90_U5NAH4 UniRef90_R6T669 UniRef90_R6QAB6 UniRef90 R7RRN2 UniRef90_T2L3X6 UniRef90_E3PS46 UniRef90_W8AAU5 UniRef90-G9ZEF4 UniRef90_UPI00037B91C6 UniRef90 FOSUE4 UniRef90_UPI000403CBD7 UniRef90_A6TRT0
UniRef90_G4E716 UniRef90 R5UVR8 UniRef90_UPI00037FB2FB UniRef90_UPI00029A1899 UniRef90_D4W359 UniRef90_C4K8Z5 UniRef90_A7C2X5 UniRef90-F4D14 UniRef90_F4LTL4 UniRef90_C3X556 UniRef90 R6LQX1 UniRef90_S0FPI1
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FTLEDF LDQLGQDEKQAAVEAC:


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K FSFDDFMDEMGQUSDKDLKRRIEAAI


MRDQLDQDEREVGRTEAII


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LKDVQQDDKEFARVAAM

| FDLDDYVSQI KQIKKMFKRHEA <br> FTFEDFLEQLQQDEKELVHПQA <br> FDLNDLREQLLQMQKELGRMLA |  |
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## G F

FNFNDFLGQUQQDKKMFKSVEA I
 YDFNDFLKQMKQDPKQMARVEATI


FDLNDF QA QLE QMKKQVGRMAGI I NSMTLEERSNPSII N
FTLADFYDQLT QDEKAMARTEAI I QSMTPYERAKNPSSVI K
$F T M E D$ LL E Q M Q Q D E K K M A R TE A I I K S M T K K E R N D P S

FTFDDFLQQMNLDEREFDRVEAMVRSMTPFERTHPKQIN $M K D L K V D E K Q L G R V E A D V K S M T L T E R A N P D L L N$ FTFEDFLE QMAQDEKQINRVEAIVRSMTTEEKRKPELLN F DLLEDFKA QLQQDDKSINRI EGI I NSMTPGERRNPALL K

 M N

UniRef90 UPI00037BCAB4 UniRef90-U1R6T2
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GSRKKR
A M G S G T Q GSRRARIAAKGCGRSVVSEVNRLLEQFREMQKMMKKMS S S R R K RI A L G S GRSVQEVVNRLIKQFDEMKKMMKQMS ASRKKRIAAGAGVPVQEVNRLLKQFEQTQDMMKRMK PSRKRRIAAAGSGTRVEDVNRLLKQFETMSKLMKQFS G S R R A R V A R G S G T L L P A D V V N R L L K Q Y M Q M E K M M S K L S ○RKKR

GSRKRRIAVGGSGLQI QDVNRLLKQHKQMSKMMKKFS MSRKKRIA QGSGRDLQEVNRLIKQFEQMQGMMKQFS ASRKRRIAAGSGLQVQDVNRLLKQHMQMSKAMKQFS ASRKKRIAKGSGTTVQEINRLIKQFDDMKKMMKTM
 PNRRKR G NRKRR GSRRKRR A K G S GTTVQEVNQLLKRFTEAQKVMKQLQ A GRRKRIA ARGSGTQQADVNRLIKQFDQAKSLMKQF PSRKKRIARGAGVDI SEVNRLVKQFDQMKKMMKQM
 GSRKKRIALGSGTQVQDVGRLIKQHKQMQKMMKKV ANRKRRI GSRRRRI A SRRKRI S SRKKRI
A SRRKRI
GSRRRR A S R K K R I
P S R R R R
 P S R K R R I A NRKRRI G S R K K R P SRKQR G S R R K K K R GSRRAR I

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 <br> <br> } $G S R R B R$ GSRRARIAGGSGVTVSEVNQLLTRFKDAQKMMRQM Y S R R R R I ASRRKRI GSRRSRI ASRKKRI A GRRRRIAA

 ASRKRR
V S R K N R I
$\begin{array}{lllllll}\text { G } & S & R & K & K & R & I \\ A & H & R & K & R & R & i\end{array}$
P K R K R R I A A G S G T Q $\mathrm{A} V \mathrm{~V}$
ARKRRAAGSGTQVSDVNQLLKQFEQMQKMMKQMK
 ASRKKRIAKGSGTSIQEVNKLLNGFEQARKMMKQF GSRKRRIAS GAGLQVPDLNRLLKQHKQMQKMMKK
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ASRKKRVAAGSGTKVEEINKLLKMHRQMADMMKMM DSRKKRIARGSGTSVQDVGKLIKQYEQTKKMMKQMS AS R K K R I A A G S GT T V Q DVVNKL L K Q F D DMSTMMK R



 GS R K R R I A A G S G T K i A D V N R L L K Q F Y E M Q GMMMK MK


 HSRKRRIAAGSGVKVEDINRLLKQFDMMNQMMKQFS GSRRKRIAA GS GTTI QEVNQLVKQFEEMKKLMKMM
 ASRRKRI H N R R K R I $\begin{array}{llllll}A & S & R & K & R & R \\ P & S & R & K & K & R \\ i\end{array}$

UniRef90＿B1ZX65 UniRef90＿UPI0003791FED UniRef90－UPIO00370DAC3 UniRef90＿F7YY61 UniRef90 G8LTC2 UniRef90－UPI00037BB471 UniRef90－FOP088 UniRef90＿UPI0003B3D1D6 UniRef90－X81UX1 UniRef90－R5A154 UniRef90－UPIO0042A76BE UniRef90 R6QE81 UniRef90－R5XTG3 UniRef90－ІІТ2C0 UniRef90－A4J670 UniRef90 B0U2A5 UniRef90－EORSLO UniRef90－UPI00047D59AB UniRef90－BOT561 UniRef90－E4NHIO UniReffo－H6NQ86 UniRef90 V6F5K0 UniRef90＿UPI00047B8B96 UniRef90－DOR3G1 UniRef90－UPIO0037992E3 UniRef90 W9EKK4 UniRef90－UPIOO047CE935 UniRef90＿Q89X41 UniRef90－E4KZ48 UniRer90＿J5GGG8
UniRet90＿UPIOOO47B62E4 UniRef90－। 2 F262
UniRef90－H6L033 UniRef90－R5MHC6 UniRef90－B112P8 UniRef90－UPIO0036CA9EB UniRef90 R9K6P8 UniRef90－C6WYB1 UniRef90＿UPIo00411329D UniRef90－G8NRI3 UniRef90－EOE4A4 UniRef90－S2ZOA3 UniRef90－K2BE52
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UniRef90
U4D1X7 UniRef90－R7HEIO UniRef90＿UPIO0037FF11A UniRef90－G5IGW0 UniRef90－R5TGMO UniRef90－G4D5V3 UniRef90－UPIo003677C43 UniRef90－UPI00047AB620 UniRef90－D3FT65 UniRef90－R6S030 UniRef90－S8GNT6 UniRef90－K6WL92 UniRef90＿B5JS12 UniRef90－C4ZOE1
UniRefo－ 64317 UniRef90－UPIo0041DA22F UniRef90 ${ }^{-}$W8YR15 UniRef90＿UPIO0028845EE UniRef90＿A0A059E9F8 UniRet90＿C6WEW3 UniRef90－R6RZ14 UniRefo－B8EIS7 UniRef90－R5GN63 UniRef90＿UPIO0037799F0 UniRef90－S3L3F8 UniRef90－UPIO0035FDEA7 UniRef90－KoDBN2 UniRef90＿UPIo003734FD2 UniRef90－R5NE22 UniRef90＿D3HLF9
UniRef90＿Q0AKL8 UniRef90－UPI00036BFE38 UniRef90－V2ZCF1 UniRef90－Q38XR1 UniRef90－R5MUT2 2 UniRef90 U1WKR1 UniRef90－A0L4Y5 UniRef90－R7AJP8 UniRef90－R5HSUO UniRef90＿OOBRP4 UniRef90＿C7JBV211329

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$M K Q M E$
F T L L D D F L D Q ME Q D GKEFSSRVE A I I K S
FTFDDF L

DQD DK QL VRVVE
F DF N D FM S Q Q IMQ Q D D N A F K N M E A M I Y S S M T P A E R R D P D L L N
GMNQMRE QLLASDEREF DRVVEAMV

F D F N D FLLE YM G Q A E K N M R R T E S
F T L D D F R
F T F E D

F DLLEDMAEQFRQDDNVLKRQEADILL
$M K D Q L A M D E K H L D R V Q A$
F D F N D Y L E S F K Q D E K Q i d R I E A li
DQLA A ANLDDR!I KRQRAVI S
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 $\begin{array}{lllllllllllllll}F & D & F & N & D & M & L & A & Q & F & E & Q & D & E & K \\ A & M & D & R & V & K & S & & 1 \\ F & D & F & N & D & F & L & \\ D & Q & M & D & Q & D & P & K & D & M & T & H & M & K & A \\ I & V & Q\end{array}$

 GF TLLEDFLTQMQQD DK QQK R L E A

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F D LDD D F K A QM S Q M E K K M M R R I
FTLKDFRDQLDQMNDKKVE EAMNSMPKERRFPGLIKFD DMF LDDQMKQDGKEVRRLEAII YSMTPQERQNPRII N$\begin{array}{llll}\text { F T } & \mathrm{L} & \mathrm{E} & \mathrm{D} \\ \mathrm{F} & \mathrm{D} & \mathrm{Y} & \mathrm{N} \\ \mathrm{L} & \mathrm{L}\end{array}$AOFKDYMGMKMRQDESAMDRVEA
K K A RI E All
F T F N D Y L K Q I R Q D E S I L L G K Q E Alv
QLD Q DK QLVRVEALVRSMTKAEKQDPSLMN
GMNQMREQLASDEREFDRVEAMVRSMTPFERNHPKQI N
LLEDLRAQLQQDSKPTQQMVAIINSMTPQERRHPDII K

FTFEDFLEQMEQDDKQVGRVEALVKSMTTEEKRKPELLN
F DLED D L
FDFNDYLESFKQDEKQI DRIEAII LISMTPAERSNPKILLAN
FDLND LYA QFEQDEKKMPRTKAII SSMTPKEREKPSII I D


$F$ D L N D Y L A QL L Q D D K E FT R I EAMI C S MTN E ERRENP KV L N

$\begin{array}{lllllllll:l}\text { S M T } & K & Q & E & R & A & K & P & E & L \\ S & M & K & K & E & E & R & R & N & P \\ K & K & I & N\end{array}$
Y S MTKAERANPNLLN
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QS M T K Q D E R R K H P P E
R S MT TK E K Q Q P E I I N
S MT LKERANPKLMN
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SMTNAERSRPDILN
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UniRef90 B1ZX65 UniRef90＿UPI0003791FED UniRef90＿UPI000370DAC3 UniRef90＿F7YY61 UniRef90 G8LTC2 UniRef90＿UPI00037BB471 UniRef90＿F0P088 UniRef90＿UPI0003B3D1D6 UniRef90 X8IUX1 UniRef90＿R5AI54 UniRef90＿UPI00042A76BE UniRef90 R6QE81 UniRef90＿R5XTG3 UniRef90＿18T2C0 UniRef90 A4J670 UniRef90－B0U2A5 UniRef90＿E0RSLO UniRef90＿UPI00047D59AB UniRef90 B0T561 UniRef90 E4NHIO UniRef90＿H6NQ86 UniRef90＿V6F5K0 UniRef90 UPI00047B8B96 UniRef90－D0R3G1 UniRef90＿UPI00037992E3 UniRef90 W9EKK4 UniRef90＿UPI00047CE935 UniRef90＿Q89X4
UniRef90＿E4KZ48
UniRef90 J5GGG8 UniRef90＿UPI00047B62E4 UniRef90＿I2F262
UniRef90 H6L033 UniRef90＿R5MHC6 UniRef90＿B1I2P8 UniRef90＿UPI00036CA9EB UniRef90 R9K6P8 UniRef90 ${ }^{-}$C6WYB1 UniRef90＿UPI000411329D UniRef90 G8NRI3 UniRef90 E0E4A4 UniRef90－S2Z0A3 UniRef90 K2BE52 UniRef90 D2RIG7 UniRef90＿UPI0003B39FA0 UniRef90＿Q0AWV3 UniRef90 R7I6F3 UniRef90－R7BK29 UniRef90＿IOJYK2 UniRef90＿B4D1X7 UniRef90 R7HEIC UniRef90－UPI00037FF11A UniRef90＿G5IGW0 UniRef90＿R5TGM0 UniRef90 G4D5V3 UniRef90＿UPI0003677C43 UniRef90＿UPI00047AB620 UniRef90 D3FT65 UniRef90－R6S030 UniRef90＿S8GNT6 UniRef90 K6WL92
UniRef90 B5JS12
UniRef90＿C4Z0E1
UniRef90＿E6U3I7
UniRef90＿UPI00041DA22F UniRef90 ${ }^{-}$W8YR15 UniRef90＿UPI00028845EE UniRef90＿A0A059E9F8 UniRef90 C6WEW UniRef90－R6RZ14 UniRef90＿B8EIS7 UniRef90＿V7HWI UniRef90＿R5GN63 UniRef90＿UPI00037799F0 UniRef90＿S3L3F8 UniRef90 UPI00035FDEA7 UniRef90＿KODBN2 UniRef90＿UPI0003734FD2 UniRef90＿R5NE2 UniRef90＿D3HLF9 UniRef90＿Q0AKL8 UniRef90＿UPIO0036BFE38 UniRef90 V2ZCF1 UniRef90－Q38XR1 UniRef90＿R5MUT2 UniRef90＿U1WKR1 UniRef90＿U2UQA9 UniRef90－A0L4Y5 UniRef90＿R7AJP8 UniRef90＿R5HSU0 UniRef90＿Q0BRP4
UniRef90＿C7JBV2

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ASRKKRIAAGAGVEVHEVNKLLKSYEQMSTMMKRM
A S R K R R I A A G S G V
GSRKKRI
G S R R V R
SRKKRI A
G S R R K R I


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HSRRKRIAAAGSGSTLTDVNRLI KQFDDMRRMMKQFS
PSRRRRI ARGSAQPI QTVNRLI KQFNEMKKMMNQVS
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Y S R K Q RVA R G S GTTI Q DVVNKLLKSYDQMRSMMKQF
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A SRRKR
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ARRRQRI
PSRKNRI
 G S R R A R I
PSRKRR1
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G S R K K R I A S G S GT D I AL V V N K L L K Q HK M M T GMMMKRMS ASRRRRRIAKGSGTTIQDVNRLLKQFEDMKKMMKQM ASRRRRI
PSRKHRI

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P S R K R RI A S G S GTKVE DV NRLLRNFE QTRKMMKQM
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GS R K R R A A R G S G L Q V Q DV N R L L K Q H K Q M Q K M M R Q
 GSRRKRRIAN GSGTNVVPEINRMLKQRAQMQKMMKRMK
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$P S R K N R I A R G A G V D I S E V N R V V K Q F E Q M K K M M K Q M$


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\begin{aligned}
& A R G S G \\
& A K G A G
\end{aligned}
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G S R R M R I
G S R R K K R

ASRRRRVALLGSGLTVREVNQVLNQFEQVQQLMKRF

AKRKRRIAAGSGTRVEDVNQLLRQFEQMQKMMKQL GSRRKRIAAGSGTRVQDVNKLLKQFVEARKMMKRFK P S RRRRLAAGAGRPIVEVNRMIKQFEQMRKMMNQ GSRKKRIA Q GSGTQUQDVNKLLKQFEQMQKMMKKF PSRKHRIAKGSGVDVAEVNKLVKQMEQMKKVMKQ
，
 A K G A G V D I S E V V N R L V K Q $\operatorname{C}$
 D Q M K K M M K Q $L$
$E$ QARKMMK QM s AKGSGTTI QDVNRLLKQFEDMKKMMKQM AK GA G VD I S E V N RMMIK Q F NEAKKMMKT F


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UniRef90_G2KNI6
UniRef90 - E8U6Z UniRef90_-UPIOOO36E57E4 UniRef90-UPIO0029B1D3C UniRet90_O1NLQ4 UniRef90-D4M959
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UniRef90 Q2G8H5 UniRef90-R6NNQ7 UniRef90-H3NNG5 UniRef90—R7BTN1G $\stackrel{F}{F}$$F G \square Q D F$

L $\mathrm{L}^{2}$ QQ
$G L Q D F L A Q M Q Q D E K E V D R I E A$



Q FDNDFLSQDKQMRKMLVNMES FDLNDFLSMMESDDREI DRVEA

NLQKQLTSAKDDEKQLKRQEAMI GFDLTDFLDQLKQMDKVLVRMEA I VDERALGRTEAI
FDFEDFLKQFKMAEKEMKKVEALI
G
GFTMDDMLSQMQQDDDQUVRIEAMI
FTLQDFYDQMVQDEKAMAHTEAA
 FNFNDFLDQMEQMKKEMKRDKAMI

$F$ NGEDFSSQLKQDRRQMRTEATI FDFNDLYDQFEQ | $D E K I F K R Q R A$ |
| :--- | :--- |
| $Q D D Q U D W V Q A I$ |





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FDFNDF GNLGMDDKELIRQAA VAD
FDLEDLLTQFQQMEEKVKEMEALY


MMENADFDEK KIDHQUAAI

FDMNDLRTQLR

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UniRef90
A7HKR7
UniRef90-A7HKR7
UniRef90-D5EDQ5 UniRef90-Q4JUZ8 UniRef90-A8ZV24 UniRef90-Q3SGC4 UniRef90-G8R3A6 UniRef90-F3YU11
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UniRef90-HOUK29
UniRef90-D4YGK6
UniRef90-F7V5MO
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UniRef90-R6PBB5
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 MREQ ENDEREVDRVEAIVRSMTPQEREDVSILN
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 FTLQDYYDQLVQNEKALSRTEALI FDLEDFRDQLQQDTKQFDRMEAMI FSLNDFLEQLQUNDQAMIKMEAII KSMTNQEREHPEI K FTLEDMRKQFQQTDKRIKHLEAII INSMTAERANHNLLD
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UniRef90-E4KNV6 UniRef90-Q1YSV6 UniRef90-UP100036D54E5 UniRef90-UP10003FAA7C2 UniRef90-R7HY79 UniRef90-QOG5T66 UniRef90-C7N562 UniRef90-A3DDH6 UniRef90-14C7R2 UniRef90_UPIo0037954BF UniRef90_W2BVP7 UniRef90-G1WGP1 UniRef90-G5JUB3 UniRef90-D5HG16 UniRef90-V4JTK3 Uni Ref90-F1ZCl7 UniRef90_OO7853
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UniRef90_H8Z6T8
 FDLDDGAEQGRVDEGAFDRUETVI FSMTKHEREHPEVLN FDLEDLRDQLQQDNKMFTRMEALINSMTPAERRNPDLLN
$\qquad$ $D ~ Q L Q Q Q E A A Q K R R S E A M I$
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A
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GG

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F D F N N
F D F
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 FDMNDMLSQLLRQDDKMLKHQEAAIVLSMTAKERANPALLMK
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$\qquad$
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36D31B2

Ref90 R5JUQ UniRef90-UP100036D31B2
UniRef90-B2A2N6 6
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| UniRef90- ${ }^{\text {O7VOH2 }}$ |
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 FNFEDFLAQMQQTKKMLAKMEAMI DSMTPDERRKPEVIS FTLTDFLSQDQQLKKMMKKIEAII NSMTIQEREDHRVLN
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 GMDLP TEALDVTASKMGKYRVIMDSMTATELDDPTVLN KQVQEDDKMEKWLAAANSMYEELDNPEVID KQVQEDDKILRQQVALIQSMTKKERANPQILQ FTYNDFLSQ FGLDDFLGLMRQDEREDRUEAII CAMTPAERADVSILN
 FTLKDMYKQLKMMDK KGYK MS MTKKEMENPKL K KEGQAKLKRYMT MDSMTA AELLDNPKLMT GLDFNDLLQQLNVDDKQFKRDEAITYSMTPEERKKAHIIN MDFEDLKDQFQQMRNMMKHMEALI DSMTPKERRNPDLIK FDGNDLKEQLLQMDKDLARQTAVINSMTPQERKFPDLIK LKNAQVDEKNLVRVEAI FNLIDFDEY

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## UniRef90 K7ULA6

 UniRef90-F6VBU5 UniRef90-ToXV888 UniRef90-D8QZ73 UniRef90-A9BEZ7 UniRet90-A5K3Q7 UniRef90 ${ }^{-}$W5AE27 UniRef90-A71911 UniRef90-D5E6E5 UniRef90_Fox $\times 33$ UniRet90_Q4N7G8 UniRef90-L7EPV5UniRef90
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UniRet90 K8EYG0 UniRef90-K8EYGO
UniRef90 O8MZJ6 UniRef90- 0 OL213 UniRef90-G8LQP8 UniRet90_H8GGG8 UniRef90_11ZCN9 UniRef90-D8SVD6 UniRef90-R5RU72 UniRef90_U1PTV5 UniRef90-C5GHV5 UniRef90_WODCA3 UniRef90 X1GQT6 UniRef90-GOSD15
UniRef90 E8ZGJ2

UniRef90_F4G079

MT NDFMEQMQLVEKEMKRTEAIITFSMTNQERDHPELID GFELSDKEYQMTKD RLDKYRVVMDSMTAAELDDPKII T Q TREAERSLS ${ }^{\text {Q AEAMINAMTPEEREDPELLA }}$ FDLKDFLEQURQGEQELKKFEAVINSMTPKERKNPGULT QEKQSKEKMKRYMTIIMDSMTAAELDNPKLMT
 पSNGVDRIKRFMI MDSMTDEELDCEKPLN

DKVEEDEKEFFKVEAMI QLRAENMEMEVI SA FTLRDMYEQFQNMLNMLRRFMVIMDS GFGGSDPKEAAQLTENKLKKYKIIMDSMTVKERRNPALVN位 FDLVDMLEQMKQAEKEMRTVEVIIQSMTPEERAHPEILK FD QDFAEQLGQDNQQFARMEAIIFSMTSQERRYPAVIK FTFNDMLAQFGQMKKMVKQSEAIIDQSMTPYERDHPDCLK GGGLMDQLDAMDVTQERLQDFEVVMDSMTEEELENPRTVG FDFDF NQEQAGVMR1KRFLCMMD GFG PDFMTKGNEQENRMKRLMTMDS
 QVTEEKLSKYKILMDS FDFEDFRKQMIDDRAINRLEGIIINSMTPEERRKPELIK FDFEDFRKQMRQPDKELVKVEAMINSMTVQERRQPKLLD KVTEDKMKGYRVLMDSMTEEELLNPRLLG GGGMMDQLDAMDVTQERMRDFEVIMDS KOKKGYTYL EGEKKNPKLLN KITEDKDKKYCVIMDS
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KOLSEAKMKRYMTMMDSMTNEELDNPKMFN EQLEKAEEKMYYFQLLMSSMTKKERQNPKLLR FTLNDFSVQFKQDEKKFKKLICI LDSGSKSELNSDGLIE GLSNMMGSMDDEEGKDKRMIYICDSMTVKELDKCFVEQ LDDNTNTDDRQПDWTQAIILSMTPEERSNPSLLN GMSNMMQGMDDDEAKLKRMDY CDSMTDKELDSDGKMQ FTFEDFLEQMEQDDKQLTHDEAIIQSMTKTERVDPSVIN FTLDDLMEQLTQIKKKMYNYELLISSMTPQERKNPKLLN FDFNDFLK QLKEAEVKLKVADS IK SMTKQERGNPELLS DQLKDGEEKMRKWDAIIMNSMTYQELDDPSLMD GGGMMDQLDAMDVTQDRMRKFEVLMDSMTDEELERPSVIG VDDTTLKKNLAMIGSMTKRERACLDSI N FDFNDDFEQTQQIKKSITRTEAMIRSMSPYERNHPQILD

DAVRVGEEKLKRYKVIMDSMTEEEDENPELIN
EQFQNIMKMFGQUMSIGSQYDPESREGAKLFM $F T D R D M Y E Q F Q N I D K M F G Q D M S I F S Q Y D P E S R E G A K L F M$
$G G M M D Q L D A M D V T Q E R L R S F E V M D S M T D G E L E N P R V V G$ GGGMMDQLDAMDEGSMKLKRMMYIMDSMTTKELDSDGKVQ

MNQ REVEARLKKSKSMISSMTKKERANPELLA FDYEDFVEQLDQDPDVARKRAMVLSMTPAERHDEAELS GFS SDFMTKGNEQESMLKKLMTMMDSMKDEEREGAKLEM FTVNDFMKQMDMMEDEMKRMRVIINSMTNSERDDYKLIK FNFEDYLMAMEQMKKALDKTKAIIQSMTLKERRNPSLI S

DAMDVTQERMREFNVVMESMTDQEREEPRS! S
品TQGLDDEDKLRRMUYI FDSMTAKELDKTFVEQ FDFEDLLEQIQQVKKSLNQHESILDSMPYERNHPKVFD
 GFS PDFMSKGNERESMLKRLMTMMDSMNDGELDHPKLFQ EEGSAKLKRMIYTCDSMTDKELDSDGKLQ FDFEDLLEHTQQVKKSFKELESIILSMTPYERNHPKILD FDLEDFRQQLKVNDKELARQIAVIVSMTPQERRFPDLIK FTLRDMYEQLTNIMKMLKRMMTLMDSMSDNEREGAKLFN KESQAKปKKFMTMMDSMTSAELDNPKLFE GGGLMDQLDAMDVTQDRMRDFEVVMDSMTDQEMTDPNRIG FTMRDMYEQFQNDQKRLKRFMVIMRSMTDEELDSDNLMQ KLRRMYYDSMTAAELDKVFIDQ FDLEDLLKQLEFMEKMLDKLLGMIQSMTKEERRNPLITN DMLNLSKDNMKRFKVIMSSMTDNELDGKVKLS FTDRDLRDQLQNIMKMLKRMLYLCDSMTDKELDSDGKIQQ
 GFSSE LTPQGHENESKLKHYMTMMDSMTNEDSSNPKLIN

UniRef90 K7ULA6 UniRef90_F6VBU5 UniRef90-ToXV88 UniRef90-F4BUU3 UniRef90-A8QZEZ UniRef90-A5K3Q7 UniRef90-W5AE27 UniRef90-A71911 UniRef90-D5E6E5 UniRef90-F0XX33 UniRet90-Q4N7G8 UniRef90-L7EPV5 UniRef90-F8LOTO UniRef90-K01156 UniRef90-O82532 UniRef90 B6AFJO UniRef90 UP1000377D54D UniRef90-R7DP77 Uniinefollicap UniRef90-B8GEV0 UniRef90-R5Z700
UniRef90_M0CY84 UniRef90-FOVNC4 UniRef90-O8DHI6 UniRef90-GOADT7 UniRef90-H7CXA9 UniRef90 H3F585 UniRef9-E4L7C4 UniRef90 ${ }^{-F O T 7 W} 1$ UniRef90-UPIO00475DC11 UniRef90-T2GEW9 UniRef90-Q12ZG8 UniRef90-C7NN37 UniRef90_N9TRG9 UniRef90-U4T4H0 UniRef90-E3GW35 UniRef90 - 10A296 UniRef90_V4MTU2 UniRef90-11A417 UniRef90-TOMOA9 UniRef90_C4VAGO UniRef90-M2MBE3 UniRef90-U4KPA8 UniRef90-R6MRQ3 UniRef90 T5AFX1 UniRef90-UP1000405DC2F UniRef90-UPIO002E983DE UniRef90 ${ }^{-}$A0A022QYA6 UniRef90-C4XEJ3 UniRef90-R7QHF1 UniRef90-A0A031LNW9 UniRef90-F8AMU7 UniRef90-V4IWC5 UniRef90-C6V531 UniRef90_U305W2 UniRef90-25JJC8 UniRef90-W4YWW9 UniRef90-V4Y1P6 UniRef90_G112219 UniRef90-B7FXT4 UniRef90-ToVUW7 UniRef90-UPIO0036A62BC UniRef90-UPI00026534AE UniRef90-TOR6D8 UniRef90-A6LSM7 UniRef90-U1NVT8 UniRef90-D5TZLL UniRef90-S7ZV06 UniRef90_B1VB37 UniRef90-G7SPN8 UniRef90-L5KIB2 UniRef90-K8EYGO UniRef90-Q8MZJ6 UniRef90-COL23 UniRef90-H8GGG8 UniRef90-11ZCN9 UniRef90_D8SVD6 UniRef90-R5RU72 UniRef90-U1PTV5 UniRef90-F2UOQ6
UniRef90 C5GHV5 UniRef90-WODCA3 UniRef90-X1GQT6 UniRef90-GOSD15
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ASR D $\quad$ K RI S Q GS GAS PD LVVRELLKSHQAMQKALKKMR KSRRKRVATES GRTEAQVGQLISQLYQMRAQMKNL Y S R K QRI A K G S GTTMLQD
D S R C L R I C K G S G T R L Q D I R E L L E Q F K F L K N MV S K M
 S S R M Q RI A R G A G G T P E EVVRE L L K Y Y K MM H K T L K GL R A S R K N R I M T G S GR S A Q E Y N KL I S E F E L M S K K M N E M S $K S R Q K R I A A G S G R S V D Q A K Q F L S E F Q Q M R T M M A K M$ GS R $\square$ M R I A K G S G S S P HE $\$ S F LI D Q H K T L Q K MVGG S M
 ESRRKRI ARGCGDTEGDIKEMIK QYNTSKD\|IK

NSRKKRI A NGSGVSIJT DVNKLLK Q Y D
AS R DQR I A R G A GVVK QE EI K E L L K Y Y A T T K N A F S NLLK $N S R K V R I A R G C G L T N A D D N R M L K K F D$
GSRKRRIAA GSGTRVQD
SSRMHRI A T GA GAS PDEVRELLRYHKTMQRALKGMR
ASRKNRIAKGAGVKVMDVNKLI KQLE
K S R I E R I A R G S G K P E E R I R E L L E Q Y N A M R Q M L D Q F Q
D S R $\ddagger$
$P S R R E R V A K G S G Y Q V A D V T K L V S D F Q R M R S L M Q Q M$
ASRKRRIAVGAGVQVQEVNRMLSQFDQMQ
GSRKRRIAAKGSGTTVQEVNKVLKGYE
PTRD $\quad$ A R V A R G S GT S QH DVVRELLSSQYKKFSDMVKKM
GSRRKRIA Q GAGVQQQD
PSRRDRRIAAQGSACSFS DDA DLMDQFKNMSAMMKKFS
Q SRVK R I ARGS GMKNEDVKELLKYYNVTKKAMKGF
ASRKRRI A DGAGVQVMHVNQLLNQFEQTQKMMKMF
PSRQRRVARGSGRTEQEVAALLTNF
S S R D $\quad$ K R I I S L G S G S S P D A V R E L L L K Y Y K M M Q N A M K G L R
RSRTERI ARGSGKPKDRIRELLEEQHKMMERMMKQMM
ASRKERI DKGSGRSAREYNLLLNDFERMSKQMKEM
MSRMK R I A S G C G LTTMGDVNQFRKHMAK SKKFFK NMS

E S R MI R I A R G S G R I V R E VVME L L E D Y K K L L V N TLL S N V K
ASRRKERILLKGSGRTAQEFNKLLAADYDAMVKRMKKMK

NSR』LRIAAKGSASTPQEVYDLLVQFRNMSNMMKRF
PSRMTRVARGSGTSVREVEELLTQHRMMAGMAKKMK
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$P S R K R R I A A G S G R S V E E$
$P T R M T R I A R G S G T S V R E V E D L L T Q Q R M M A G M A K K M$
S S R R Q RI A K G A GVVSVS DVNNLRQALEAQK K MVK TMM
ASRKKRI AK GSGTSV A Q
ES R L M R I A R G C GRPL R DVME L L E E Y K R L A K DWGKMK
ANRKARIDKGGSGRSAQEYNRLLNDFDQLVKNMGEM
R S RVVERIANGGSRSSAQAKNMMISNTRQKMRTMMQRMS
K S RMMRRIADGGA GVEVVEEVKENMVEHFNMMQKTDKMDR


 Y S R 1 K RI A RGS GAT TA E
P G RVQRRVAR GS GVVVREVQEVLQQYQKFAQMVKKM










ESRRNRIVVKGAGKTEEDLAEELVVMFGGMRVKMQQMS



P N R VVRVAR GA GVFRREVQQELLSQYTKFAQMVKKM
A S RVVMRVARGGSRSVRDV TEMLVEYKRLAK LVSKMK
GSRRKRIADGSGTSIQEVNRLLMQFEGTRKLMK



SSR R DQRVA Q GS GRTTAEVKEVINQHKTVTSLVKRMK





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| :---: | :---: |
| UniRet90－R7YM66 | EVEELLTQHKMMAGVAKKMK |
| UniRef90－R5TAR1 | GSRRKR1 |
| Ree90－UP1000467E349 | RRQR｜A ${ }^{\text {a }}$（ ${ }^{\text {a }}$ |
| Ref90＿Q2NK61 | RRQRIAKGSGNQLSDVNKLITLLEQQKKLAKQMQ |
| UniRef90 W2SC13 UniRef90 W7TM57 |  |
| UniRef90－E9C4A | PNRCMRVARGAGAHPREVADLLAQYKKFAAMVKQ |
| UniRef90－W6N4T2 | S SRK |
| UniRef90－N1QK10 | PSRVTRVARGSGSSVREVEELLAQQKMMAGVAKKVK |
| UniRef90－D8ROL6 | ESRILRLAKGSGTSVDNVQQMVNHVKTMSKQMKGLK |
| UniRef90－UPI0004749D22 | GSRKRRIALGSGTQVQDI GRLIKQHKQMQKMMKKFS |
| UniRef90－U1G9 | MTRIA AGSGTSVREVKDLLTQAKMMA |
| UniRef90＿J9 | GVT EREVRELISQYTK |
| UniRef90－K9SN | RKQRVAKGAGYKTQDVTKLVSDFQRMRGLMQQM |
| UniRef90－X1AK | RHR1AQGSGTKPQD |
| A0A0220MF1 | RVAKGSGHSDEAVK |
| Ref90＿B8BUG8 |  |
| UniRef90－R6BPA9 |  |
| UniRef90－U61401 | PGRIQRVARGAGVSQNEVKQLLVQHTKFAQVVKKM |
| UniRef90－R7QA53 UniRef90 R4k433 | QSRKERVARGCGRHPQEVEELLMEYKRFSKVVGKV |
| UniRef90－A9FZ48 | AVSELVQKFLFMRQMMSGL＇ |
| UniRef90－TOSCX1 | RQLRVAKGSGCKPAEVDFLLKMHKQFAGVVQRM |
| UniRet90－UPI00047 |  |
| UniRet90＿B6K4 |  |
| 1 CJM9 | R |
| UniRet90－11ZCN2 | （ ${ }^{\text {a }}$ RUVRVARGAGVYQREVQDLLLQYTKFAQMVKK |
| UniRef90－D4H321 | ANRKKR ARGS |
| UniRef90－M2Y539 | QSRMIRIGGRGSGDVKDVEDLLAEYKRLSKLVSRV |
| UniRef90－J9G525 | DFRTLRIAKGSGCRPEEVAFLLEEHKKFAKMVEQF |
| UniRef90－V9F | GHSPEDINNM |
| UniRet90＿A5D | G |
| UniRef90－G8C214 | KPE |
| UniRet90－A7ARV6 | GSGST |
| 俍e990－O42816 |  |
| UniRefo－T1BHN4 |  |
| UniRef90－LOPEFO | PSR\｜DRiAMGSGTSVSEVKGLLSQHHDMAG\｜AKKV |
| UniRef90－UP10003 | R KR AFGSGTVEVR1VKOQ |
| UniRef90－UP1000462FD2C | KGKKMTKMMK |
| UniRet90－H3G929 | R |
| UniRef90－XVA66 |  |
| UniRef90－Q99150 |  |
| UniRef90－Q01442 |  |
|  |  |
| UniRef90KMRTX2 | 矿 |
| UniRef90 A0A015IY23 | RiQRVARGSGTSVREVEELLTQHKAFQGMVKKF |
| UniRet90－U6LT |  |
| UniRef90－－P47294 | PNRKQRI DKGSGRKMDELNKLMKEWNKM |
| UniRef90＿W6K |  |
| UniRet90－C1N | ASRRGRVVEGSGRSDKDLANLIVMFGSMRVKMQSLS |
| UniRef90－V4J4B3 | ASRRQR ${ }^{\text {a }}$ S ${ }^{\text {a }}$ |
| UniRef90－7CED8 | S |
| UniRef90＿G8B8T6 | PSRMVR ARGSGCSVVEVM |
|  | ShMVRVAGSGTVDVEL |
| UniRef90－S9WTF4 | 俍 |
| UniRef90 L7FMRO UniRef90 M8BL08 | Q |
| UniRef90－A0A059LKDO | A SRVKRWA |
| UniRef90－G0QLK3 | EKRIVK\AYGSGNSIEEVHSLLEEYKRLSKVFGKL |
| UniRef90 D3FGG11 | PSRKSRIDKGSGRKVEELNKLLKDWQNASGK |
| 退90－C5kB28 |  |
| UniRef90 U1NN12 | ASR |
| UniRet90＿S5ME18 | ANRKQR LKGSGRSEKEYNELLNQFDKGKKMVKALK |
| UniRef90－J9DL UniRef90 Ag Und | PSRVLIRVARGSGTSYKMVYDLLAQFRQUI |
|  | PNRIVARVARGSGSHQQEVRDLLAQYKKF |
| UniRet90－B3R096 | RRMRIAKGSGVKQKDVLNLIS |
| UniRef90－K3X821 | GKVKRQI AEKSGHSPEEINTMLRQYEQLISAL |
| UniRef90 W1 QG．99 | R |
| UniRef90－B8BT81 | AKRINRIAAGSGTHPTEVKMLLQAHKQFEGMVSKM |
| UniRet90＿F4PNF5 | － |
| UniRet90－S6G3U6 | ASRKNRIDKGSGRSEKEFNELINSFEKGKKMTKMLK |
| UniRef90－G0 |  |
| UniRet90＿0977V2 |  |
| UniRef90＿Kgubs3 |  |
| UniRet90＿A0AO24HX | RNRKVRITKGSGRKPDELNKLLKEWDQASKKMAD |
| UniRef90＿E6N9Z7 | D V |
| UniRef90－C41 | MARMALQSK |
|  | A |
| UniRet90＿Gow583 | PSRMVRVARGSGTSVLEVEMILMQQRM |
| Ref90＿U4KN42 | SRRRQRISKGSGMQVSDLNRLI QALDQQKKLAKQMS |
| Ref90－F9PUM7 | 俍 |
|  |  |
| UniRet90＿UPI000455FOE2 | GKRVTRVARGSGTSVREVEELCOYRMMANMAKQ |
| Uni | L |
|  |  |


|  | R M |
| :---: | :---: |
| UniRef90_UPIO004416D96 | E E G T N R M K R M I F\|l|l |
| UniRef90_S7QFT9 | E E G A MRMKRMI Y I T D S M T A SELDSPFLEL |
| UniRef90-L8X710 | EEGSRRMKRMLFI TDSMTAEELDSDGM |
| UniRef90-M0U3H5 | KESRAK ${ }^{\text {K K L }}$ L MTI MDSMTNAELDNPKLMN |
| UniRef90-UPI0004546AAB | $\square \mathrm{R}$ M $\mathrm{CEQFQN} \mathrm{\square MKMFSQILNIIWS[LCAESTDGAKVF}$ |
| UniRef90-A6FXA0 | DDRELVKLEAMI QSMTKKERQDPELF |
| UniRef90-D3BBV3 | DA GNLKLKAY ${ }^{\text {K }}$ NILDSMSDGELDGKHQ |
| UniRef90-D2V799 | FRDKLDNM DLSFI DNHEHI I SCMSEQEKLQPLL |
| UniRef90-W6KLQ3 | NEMMLRKF】HI MDSMNDAELDEPKVM |
| UniRef90-UPI00045614A1 | SKMKRMMYI IDAMTREELDSDGSL |
| UniRef90-D8LNI7 |  |
| UniRef90-J5NCH9 | KVDDKMFSKMEAMI NSMTLKERANPEI |
| UniRef90-U5NF63 |  |
| UniRef90-R1F9H2 | D Q M L E TRAKFERHASIVDVMDPEEKS DPAL |
| UniRef90-G2YDM2 | KLKRMDY I CDSMTAKELDSDGKMQ |
| UniRef90_A5DJH1 | S Q $\square$ GEEESKI K N MI FI M D SMT T K ELD S D GRIQ |
| UniRef90-Q75K18 | GNEGGLKLKAYI NILDSLSEKELDGKKPI T |
| UniRef90-J3QEA5 | DEMSQKMKRMI FI FDAMSPQELDSDGS |
| UniRef90-A2FQ92 | K E QVRRILITIIDAMSTSELENPSL |
| UniRef90-A8HS79 |  |
| UniRef90-UPI000441579B | DGARRLKRLIFI TDSMTATELDSDGSMK |
| UniRef90-C1ECP8 | QEKASQAKIKRMMCLMDSMTDEELDT TSLQD |
| UniRef90-W7T5U6 | RYRKILGAFTEEELAHPEKIK |
| UniRef90-W0GRG9 | DLLQDLLNQMRQAERKLKVTEVLLSSMTVKERREPRLLK |
| UniRef90_UPI00029A0154 | F DFNDFLDQMEQDEKQITHIKAIVLSMTPQE |
| UniRef90-X6MMI4 | QQRLQNFLVIMDSMTAEELDGD |
| UniRef90-X1BVV8 | ETPKII |
| UniRef90_T0QEW5 | M P Q $\square$ Q Q M K N L T T M E A F E P NVR N D P K L |

[^4]

UniRef90_UPI0004416D96 UniRef90_S7QFT9
UniRef90 L8X710 UniRef90 ${ }^{-}$MOU3H5
UniRef90_UPIO004546AAB UniRef90_A6FXA0 UniRef90 D3BBV3 UniRef90-D2V799 UniRef90-W6KLQ3 UniRef90-UPI00045614A1 UniRef90_D8LNI7 UniRef90-J5NCH9 UniRef90-U5NF63 UniRef90 R1F9H2 UniRef90-G2YDM2 UniRef90-A5DJH1 UniRef90-Q75K18 UniRef90-J3QEA5 UniRef90-A2FQ92
UniRef90_A8HS79
UniRef90 UPIO00441579B
UniRef90-C1ECP8
UniRef90-W7T5U6 UniRef90-W0GRG9 UniRef90 UPI00029A0154 UniRef90- X6MMI4 UniRef90-X1BVV8 UniRef90-T0QEW5

W RVTRIV|AR ${ }^{50}$
60
70


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

 TARARRVARGSGTSVREVEEFLMQYRMVARMVK QM HGHRQRI A DRAGVTTEDVNKALAAYRELKAM GSRRRRIAMG
SSRRVRVDKGSGRKPEELNQLLAKW
GPRIQRLATASGQPETEVALFLMQFEAMR
PTRMTRIACGSGTSVREI EDLLTQHKMMAGMAKTM PERリIRVARGAGCYADEVEMVLQQQRMMSAMASSAK QKRIITI AQGSGRHPNEVVELLEQHKTFEKLI
RKKRRRIARGSGTSVDEVEGMLAQHAMFATMVK
DSRKMRVASGSGMPPTFVQYVI DEQKRWEKMFKRM ESRVNRLARGSGSTPAQVLALLESYKHYSK P TRVTRVAKGSGTSVREVEEVLCQYRMMAHMAKQ PKRMERI GRGAGRGPGDVVELVEEYKR SREKQRVATQSGES IQEINLLLS台YENSQALHK HSRKTRI DKGSGRSEKE

PARQRRDCRGAGVHDNFDRELVMVYKPFAGFAKNMK KSRKRRIA AGSGTSYTTI NKMLDQYNQMK GKVKRIVSEKCGQPVEEINNMMRSYEQ



[^0]:    

[^1]:    y

[^2]:[^3]:    $\qquad$

[^4]:    lupas_21
    lupas_14
    lupas_28
    jnet
    conf sol25
    sol5
    sol0
    jhmm
    jpssm

