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UniRef90-H1Q4Q7
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UniRef90-W2C3H6 UniRef90 B9JBJ6 UniRef90- X5MGL6 UniRef90-D3IBFO UniRef90-S3JXP0
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MAALPDKEKLLRNFTRCANWEEKYLYIIELGQRLAELNP Q MT I E DKQQEI I QEF GE I D DWMDRYACII DLGGQLPPMPES
 $M T I Q E K Q N K V I Q D F S A L A Q W E D R Y K K I \quad D \quad M G K A L P E M P E S$ $\mathrm{MT} \square \mathrm{NE} \square \mathrm{Q}$ AD DIV
 QDEELI E D F
$M \mathrm{~S} \quad \mathrm{~N}$ MTINTIVEILDTF

 LD DI L E N F E F L V D QQEI ADEFSEV | T | A | E | D | l | V | D | T |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| T | I | D | E | L | I | E | N |
| T | I | V | E | I | L | D | T | MT $\square$ K E

 | $A$ | $D$ | $V$ |
| :---: | :---: | :---: |
| $Q$ | $D$ | I |
| V I |  |  | D D

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 MAPDEDIDDFAYDDDWEDRYRYVIELGKALPDLPEE MAGLPEKEKLLRNFNRCANWEEKYLYY MELGSRLEPLSDD MAGLPEKEKLLRNFNRCANWEEKYLYLIELGQRLAPLDDA
QUERY
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UniRef90_R9GV82
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UniRe90_UPIO

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 LKTE QNVVKGCQSQVWLSASLNDQGQVHLQGDSDALIVVKG

Y YKTEDYTVKGCQSKVWLHPDMEEDGKLWFDADSDAFIVKG LLKDDDHDVRGCQSQVWLDG VATDGKLWF QVDSDAFIVKG EHSPENKVPGCVSQVWLVNELRKDPVLHFRGDSDAHIVRG AHSAENKVQGCVSQVWLETNREDRPLLTHRGDSDALIVVG LKTPDRLIEGCQSRVWLDGNLDADGKVEFTADSDADIVKG LRTEQYLVRGCQSQVWLVDEWRAGKLEFRADSDAF:VKG EMTEEYKVRGCQSQVWLVPEVADDGRIVGRGDSDAHIVKG YKTADNVIKGCQSKVWLHADYL DGKLFFTADSDAVITKG DRCDTNKVQGCVSQVWLATVVSPGPVLSFRGDSDAQVVRG ARTEENKVRGCVSQVWLVSNEADGPHLSFQGDSDAH:VRG
WRRPENLIAGCQSQVWIVMQPDDQGRVTGHGDSDAAVVKG WRRPENLIAGCQSQVWIVMQPDDQGRVTLHGDSDAAIVKG YKTEKN:IDGCQSRVWLQCDIDVDGQLVFTADSDALI TKG KRSEANLVKGCQSQVWIVEHTQVDNRFWFEVDSDAFIVKG
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5 UniRef90-UPIO0037F88F9 UniRef90_UPIO003 UniRef90-H1Q4Q7 UniRef90-E8XWA1 UniRet90-C5BLW6 UniRef90-D7A4V3 UniRef90_M3KIF UniRef90_W9UY61

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UniRef90 R6VL38 UniRef90_R6J8A8 UniRef90-AOM626 UniRef90-E2N330 UniRef90_UP100047AE6FD UniRet90-A7MF58 UniRef90-UPIOOO469D191 UniRef90-UPIO00379F3D9 UniRef90_FoL879 UniRef90-K0CD17 UniRef90-F9RWA8 UniRef90-R4VND7 UniRef90-K8NDQ2
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UniRef90-K1M066 UniRef90_UPI000406440D UniRef90_I3TI18

[^0] $M T A$ TIQEI RDDFSFDDEWEDRYRYVI ELGEALPAFPD S





$M$
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$M$
$M$
$M$


$\begin{array}{cccc}\text { A A } & A & E \\ S & T & D & E \\ S & T & D & E \\ N & I & D & E\end{array}$

## M

 E A MEDKT IQQE


MSNDP
M S N
$M$ MANLD MTT

| $M$ | $T$ |  |
| :--- | :--- | :--- | :--- |
| $M$ | $N$ | $E$ |
| $N$ |  |  | T

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E
E
T $\begin{array}{cccc}T & \text { Cl } & \text { A } \\ \text { E } & K & E & K \\ T & L & S & D \\ T & T & D & D\end{array}$

M S $\square$ MSTPRTQD MT D $\square \mathrm{P}$ T

## 

 TSD D
 MT $\square K E \square Q E E L I \frac{D}{D}$ MS S F P QA E D M
 T




| Ref90＿UP100046937F7 | Q1. K |
| :---: | :---: |
| UniRef90－UPI0003183255 | MVKRVK |
| UniRef90－J7QRG4 | NGFKSMVGRIHA |
| UniRef90－A0A024KBAO | NGLVAMVNRIRS |
| UniRef90－UPI000468BF3B | NGFRSMVAR |
| iRef90－UPIoo03A | NGVKAMTRRDQKEAGAAA |
| UniRe990＿K41E | NGLVSMVKQMKMYADAYN |
| UniRee90 N6VFV6 | NGFKSMI |
| UniRet90－UPIO00046F9DF0 | NGLLAMVKQMKLY ALIAY |
| UniRef90 Q0AR98 | NGLASMISRRILGEAAALN |
| UniRef90－A8U1F4 | NGLGA |
| UniRef90－F2J | NGLR |
| UniRef90－EOTD | NGLASMI |
| UniRef90 UPIOOO35F2971 | NGLRSMVKRIK |
| J5W | V |
| F6C | NGL RAMLN HI |
| UniRef90＿UPI000471FF40 |  |
| UniF | NGLKAl VAK |
| UniRef90 R5R9V1 | NGL1AMTEK |
| UniRef90－UPIIO00345AA2D | NGL NAMLQR |
| UP1000 |  |
| UniRee90－UPI00036AD92A |  |
| UniRet90＿UPI000： |  |
| niRef90＿R5QK75 |  |
| UniRet90＿Q7MI | L |
| UniRef90 UPIO004662BCB | NGLRSMV |
| UniRef90－E1SB744 | QGL EAML RS RHTA |
| UniRef90－A4BH3 | NGLRAMVQTi R |
| UniRei90－UPI0003F81A0F | NGLASMLK |
| UniF |  |
| Uni | NGLRSMVERUR RARS |
| UniRef90－UPI0004792FE0 | NGLSAMLARUR |
| UniRef90＿B8KC |  |
| UniRet90＿A3ZQR3 |  |
| UniRet90＿UPIO0037657 | R S |
| UniRef90 F9SB87 | ${ }_{\text {N }} \mathrm{NGV} \mathrm{V}$ K |
| UniRef90－UPIO0036B29EC | NGLR |
| UniRef90＿2070 |  |
| UniRet90－UP10003037DBA | NGLRSMVER RKEAAA |
| UniRet90－UP100047 | NGLVSMIKQIRFYAMAY |
| UniRet90－M5DWJ4 | 寺 |
| UniRet90 G8UMP <br> UniRet90 | NGLVAMLKQMKM |
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| UniRef90－UPI00040DB992 | NGLVSMIKQ |
| UniRef90 |  |
| UniRet90－G8R906 | GLV Ml |
| R6 |  |
| Q6LNOO |  |
| UniRef90＿A6EL | NGLVSMVKQMKLYADAY |
| UniRef90 UPIIOOO40750CC | N |
| 促 |  |
| Ret90－A9D316 |  |
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| Q0GOD7 | NGLRAM |
| 312W4 |  |
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| UniRef90－G2Z66 | K |
| UniRef90－C6Y | K |
| et90－K8PH74 |  |
| ef90＿upiooo36728FA |  |
| 俍et90＿UP1000377 |  |
| UniRet90＿UP100047D8BBF | N |
| UniRet90＿B3 | NGLR SMIER1 K A DaR |
| UniRef90－F8J | NGFHSMVERLLRDARASA |
| UniRef90－M1P362 | NGLKSM NR |
| UniRer90－W7Y7H1 | NGLVAMVK |
| UniRef90－D2TW15 |  |
| UniRef90－D2TW15 |  |
| UniRef90 Q1YJ | NGLRSMVARI |
| UniRee90－UPIO003626970 | NGLRAMVKKIQD |
| UniRef90－B0SYN5 | NGLKAMVARIQR |
| UniRe990＿UPIOOO367E6CD | N |
| Ret90－C0BHE2 | N G |
| UniRef90 I5BZA6 | NGLR |
| niRef90＿UPI00036002C7 | NGLRSM |
| UniRef90 UPI000362CC22 | NGFKS |
|  | － |
| UniRef90－UPI000478C00C | NGLVAMI K QMRMYALAY |
| Ref90 UPI0003608078 | NGL |
|  | N G |
| Ret90＿A8T6Y2 | N G |
| niRe990－K1M066 |  |
| 406440D |  |
| UniRef90－13T118 |  |
| SiRef90 U5T6Q7 | DGFVAMVIKVIRNRAQA |





| UniRef90_D3RTD1 | R/V/RQDA GT DA |
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| UniRef90-F8JHG8 | NGLASMVKRIRADAAEM |
| UniRef90-05LRG3 | NGLRAMIERIRMVAAEAA |
| UniRef90-UPIO00411DECF | NGLRADVAK |
| UniRef90-H1ZE63 | NGLVSMI |
| UniRef90-G8TM | NGLLAMVKQ |
| UniRef90-81 | NGL |
| UniRef90_UP100046773C5 | NGLRAMI |
| UniRef90_G2EH78 |  |
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| UniRef90-F5ZAX9 | NGLRA |
| UniRef90_O11K00 | NGLRAMV |
| UniRef90_C3J9C4 4 | NGLVAMI |
| riRef90-U1H7X1 | NGLRSM |
| UniRef90_K2PZB4 | $N$ |
| UniRef90_U4KJ51 | AMVASIQKTAETYS |
| UniRef90-F7YMB7 |  |
| UniRef90 W9A3V2 | NGLKAlVEQi KQLAQQ |
| UniRef90-UPIO0036CEDF2 | NGVRSMV |
| UniRe990-708V0 |  |
| UniRet90_19LAI7 |  |
| UniRet90_12B8B9 | S |
| UniP | NGARAMMER1 RSDAARLA |
| UniRef90 UPIOOO476D145 |  |
|  | OGA |
| UniRef90- ${ }^{\text {U3TJW6 }}$ | GLA ML |
| UniRef90 $14 \mathrm{WVL3}$ | NGLASTLAKLKEYAAAVA |
| UniRef90-G4QGH7 |  |
| 2AEC | NGVRAMVERIRKVAAE |
| UniRef90-UP | NGLRSMI R R |
| UniRef90-JJTSH4 | QGL NamVRTI Don |
| UniRef90-U7 |  |
| UniRet90-_88KKM8 |  |
| UniRet90-FoLW01 | $N G L R A M E Q$ Q M |
| UniRet90_R5XQQ0 | SGMLSMVDKI KYYAAQ |
| UniRef90_UPIOOO377L | NGFYAM |
| UniRef90-EOWTV0 | QGLEAMVRTI RA |
| UniRef90-C7BHQ7 | QGLHAVVCAI R NMASKM |
| UniRef90-UPIOOO3701644 | NGLHAMLERIKTSAQR |
| UniRef90_AOYCG2 |  |
| UP100025 | N |
| UniRet90-UP | A ALLAFIRNEAERRA |
| UniRef90- 1 KOLL | NGLKSmilarirsean |
| UniRef9-UP100047B998C | NGL RAMIERMKS |
| UniRef90- F3FZY4 | NGLL AMMIERMRESAA A |
| UniRef90-E1VLL6 |  |
| UniRef90_Q7MT3 | L VSMLK QMR |
| UniRef90-R51109 | N |
| UniRef90 S6HUW1 |  |
| UniRef90 S6HUW |  |
| UniRef90-R5×285 |  |
| UniRet90_UP10004755 |  |
| niRet90-EON |  |
| UniRef90_UP100047D3393 | G ${ }^{\text {a }}$ |
| UniRef90-Q11W | NGLASMVK ${ }^{\text {a MK }}$ |
| UniRef90-A0AO58ZL | G |
| UniRef90-C9P406 |  |
| UniRef90-B6YQU9 | NGLVAMLK ${ }^{\text {M M }}$ |
| UniRet90-UPIO0022 | NGLRSMVD |
| Uni | NGLSSMIKQISMY |
| UniRet90-UP10003B67319 | NGLQAMVRQMKARAARLS |
| UniRef90 R5YOG3 |  |
| UniRef90 U2XRQ0 |  |
| UniRet90-LOH0 | NGLA A MVQ |
| UniRef90-E3BMZO | NGLRA V |
| UniRef90-F21996 | NGLA SMVK |
| UniRef90 UPIO003655E27 | N |
| UniRef90 ${ }^{\text {R6 }}$ | N |
| UniRer90-A3TXNS | NG R |
| UniRef90-K9GW35 | NGLVSMVETI RNYAKRL |
| UniRef90_V5HNL6 | NGLKA |
| UniRet90_11AX48 |  |
| UniRet90_W8 | Q G |
| UniRef90-UP100036E932B | NGGS SALVTK H |
|  | NG K A |
| UniRef90 UPIOOO370E969 | N GL |
| niRef90-M4V850 | NGLYSMIKQIK Y Y A TA |
| niRef90_UP1000464F278 |  |
| Uni | NGLTAMIERI |
| Ref90 UPI0003494D68 | NGLAATLAK K Y Y A A A |
| SRef90-F2P5Q1 | NGLKAlVEQIK KLANSAA |

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20
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$M T I D E R Q E E L L I S Q F E L V D D W M D R Y Q M M I D L G Q Q L E P D D D T$
 MAQLP DPQKLLRRNS RCSNWEEKYLLYI E L L GA G LAAPLSDA MTIELIDQEI I DEFSMFDDWMQKYEYMI DLGKS L P LI I S E N
 MS DLDPN M S $\square$ $\qquad$
T $\square \mathrm{D}_{\mathrm{D}} \mathrm{Q}$ LVK N
A L P P K L ELYEEFE DLDPDWEERYCDY
$T L P P A L$ D D:AEVVFAF L P D WPMRH QY V I
$M D \frac{L}{F} P$ M T
$T \square$

## M L



 MKTTAAFDEIAANLSFLDDWEDRYRYI I AGGKEMEPLDPA
 S $\square$ D E T LA E L A E EF D L L G D WE P R $\square E Y V I$ E L GK GLAAPLPD H M T

T A T A A Q A A I VE
TMEDVFEA
A L P P A LDDKMVQRFKKASD SKRRYAF NAQDVVDAMAQLKGWFDRYRQVIWLAKKLPEFPDS A ALPDEAKLLRNFSRCQDWEQRYLYMMELGERLPPLTEE KQQELVEEDSFFEDWEDKYDYVISLAKQLPEFPEE S $\square$ AT REEELLADFEVFDDWADRYRYLI ELGEGLDALAPE


MSMERRLNDLLEEEFEL FD DWEERYRYI I DMGRALAPDADA MSMEEIQQEI I EEFSI YEDWMDKYAYLI ELGNDLEALDAK
 MT ALP N L S D A A E Y E F LD S E D R Y R L L I E L G R K L E P M P D A LP P R L T DL LDE F EL F D D WED R Y R Y I I DL G K DL T P L A P E
 QLTEQFARARQWEEKYRLLQQLGKKLPPLAEQ
 LE ELIENFD F DD DWEDRYRVI I EL GQNLPVMPDA MLIT ERAQAI ED DLSFFDAWEDKYRYI I DLGKTLPEFDSS
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 M A
 ELGRTLKPMADA R WYEQLL WYARLPEFPES



 T IDD D T L A A
 NI ITADEI RDTFAFLDDWEARYEHII DLGKSLPAMSAD M A A AF E D L V LPEALARIVERFQRRKDPKQRYQQLLWYAKKLQAMPET T L E E A Q K E I I A E F S E A A D WE E R Y Q M L I E DG D E L P I I L S P E

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EHTSENT」 50 QKTFDKVI GGM






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 ARVEANKVPGCAAQVWLHV I R DGGRLYYFLADSDSHLSKG ARDADHKVPGCVSQVWLLTKQGADPVMEFLGDSDAHIVRG
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 E R N E V T R V R G C A S Q V WL M M D E T G D G I L R F R G D S D A H $V$ V










 $Y$ K VAA E N K V P G C V S Q V Y V Tr A T L S P E G S V V F S G D S D A L I $\quad$ S K G
 H K V



 L K T E D R R L V P G C Q S R V W V V VP




 D K DA D N K V Q G C V S K V Y I



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| UniRef90-M5S1N0 | $N G L T Y S M V Q R V R E$ |
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| UniRef90_UPI0003B4208D | $N G L R A M V E R \\| R L L S S A A A S$ |
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| UniRef90-M6D4F7 | N G L Y S MVN K $\square$ R S |
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| UniRef90_UPI000410A9A7 |  |
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| UniRef90-A4EKU9 | NGLR A MVER I R E TAA A A T |
| UniRef90-H8L314 | $N G L A A M L V K L K A Y A A S L A$ |
| UniRef90-L8LYC7 | $N G F Y N$ I F QLMK QKA A L L |
| UniRef90-R7PCU2 | $N G L L A M V K Q 1 R M Y A L A$ |
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| UniRef90-A8LSJ7 | NGVVRAMVERVRKLAAE |
| UniRef90_P74523 | $N G F Y N \square F K M M Q T K A \square A F$ |
| UniRef90 A5F5W4 |  |

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TAEDVVDT EDI AADF MSLPEKAREALETFTALDDWEDRYRHVIELGKAMPELEDA MSLPEKAREALETFTAAGGWEQRARLLMQWGERLEALTDA
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T LDDGLFQDFQKSKSWEDKYRQLIQQLSRKLPALPDE MS WPSEAQNALESFQAAAGWEQRARLLMQWGERLPPLAEA STADT $\square Q D F K D A F L D F L E W T D R Y G Y L I D L G K K L P D F P N E$
 GQEI LKRLTTMGSWNDRYREIMLLGKKLPTFTAA
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 A DLARFDACRAWEDRYRQLILLAKALPTLPEA MTT ARADDLRADFTPLTQWEDKYRQLI LLGKQLPALPEA TAAEAQLAAI RDEFAFFGDWAERYQYLI DLGRKMPPMDEA

 MSSLDPNHAH L LATMRSLQQWEARYRQLI LWGKQLLDVMDES MT IKEDQEEIIEEFNLFDDWMERYEYLIE IGGKSLPIIEPQ MSLPPLAQTALDSFSRPQGWEQRARLLMQWGDQLAPLSDE AAFEDl AETFEFDEDWEERYRHVIAALGKEMPALAEAA T P P LTT LQ E L DDE F E F LGGDREA Q DD Y L I D L G L E L L P P L E E E
 M S I $\operatorname{E}$ E E E K A M T LP P K L L K D N TVV Q D F F N S S V D N N W D D R Y H H Y L I
 EKVI R NF N R CVVDWE E RY L Y L L I E L G E R L D E YP A E
LITT TEDLAQQFNACRSWEERYRQI LLAKQLPVLPEA
TAKEEAQAI IEEFSFFDDWEDRYQLLI DQGRKLADFPPQ



 MTMKTFKEIAFS IE NAPAWQQKYREIMLLGKQLPPMPGV MT DHPDDQDMVD D FT F L G D WE ERYM HVI EMGKA LA P LMEG


 E $\square$ K AV I E D F DLLG D WD QR Y QY L VEI GERLPAMPAA LITTEASLTEKFAHFHQWEDRYRQLI QLSRQLPALPEA Ll P S N L D D R TIDETKADLVVKFTHFANPKDRYKYLIDMGKQLQMLDED MSLPEDASTAL QVF QEAAGWEQRARLLMQWGERLPALDDS
 $\begin{array}{rl}M N L P P A A S E A L A A F T G A G S W E Q R A R L L & M Q W G E R \\ T & E\end{array}$ UniRef90_K5XW53

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 Y R D D SRDDNTLI A GCES LAWIKAEHSAQGLYSFTADSDAKIIRG




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NGLLAALLLQFII N D TARRAA
$N G F L N M L K L M Q K K A K D L$
NGRRA $\operatorname{l}$ V
NGLLAMIKQDNFYA $\square A$ Y
$N$ GV A SMVVA

 NGLRALVEQI KQVSR
$N G V R S M V E K U Q T V V A$

NGFLNMFRLMQRKTLEL
NGLTAMDE RVRETA Q

| $T G G L Y H M$ |
| :---: |
| $N G L L$ |

NGVVRAMVKRMQDEA
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D GVNALI A RDT S L T Q T NGLNAVLQRMRELTQQ NGLHSLVKHVMAAANRHA NGLRAMVARI REKAAA NGLKADIETI NKA I R S N GLIFHMMERI RLMAQ NGLLKAl $\square \mathrm{NA} \|$ KE 1 A R $N G F Y N$ FKTMQQKAQAL NGGRAMMIERDRDVAAKSA NGLLRAMEKI RADAAS SGFYNMFRLMQKKA LEM NGLVAMVERDRQDAAGL NGLNAVLVRMRELA
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 Q G|l|lllllll NGLSALLARI RETAQA NGLKAMI ETVQERARE
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$N G V$ S A MVKRLRQDAEA
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$N G L A A M I K Q M K M Y A L A Y T$

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VGVYA V EKMRRQARPFA
SGLQALAEAVQRAARA

| $N G F L N$ | F RMMQAQARDLDA |
| :--- | :--- |
| $N G F Y N$ | $F$ |
| $N$ |  |


$N G L N A V L Q R M G E L A$

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MTLLTAQA

MSSPTAQA
MSSPEADDRVQRFHRS
PPALDRUVGRFKRAS MNLPPALDRIVQRLARSTDPKRKYELLITLARRLKPFPEA MNLPADAVTALDTFGKAASWEQRARLLMQWGERLPALSDA MDDLPKLQEIRLLEQGVQDPKAKYEQLLFYGRNLSPLDPK MTDDPQAAEALDAFTQASGWEQRARLLMQWGERLEPLSES MSLSAEAVAALQAFQDLPGWEQRARLLMQWGERLPALSEV MSTQAQTEDILETFELLGDWDQRYEYLVELGERLPPMAAA NLPANLKKIVSAFQMVPDAMQRYKQLLFFAAKLKGFDEA $\square N Q \nabla Q E E \square \square E E F S$ Lig RESTVFYI MELGDKLPQFPDE保 MTTFPTAANITETMEKCRNWEDKYRLII QLGKQLPNLDEQ S $\square A E V Q K E I T S E F S E T D W Q E R Y Q L L I E M G D Q L G S I S D S$ MAS AEFEDLVDTFDDLPDWPMRYQQIVDGGHGLPPMPPA NEAALADDFELLDDWPTRHEYI DLGGGRLPHLPAS MNADIGEIVENFELLGDWESRYHYLVELGERLAP MPEA AALDQLTDRLSGTPDPRKRYEYVLWLAKKLPAMPGE ADLKETFSHCRQWEDRYRQLILLGRQLPALPDA MKDDKDQFQUDKEFAALEEWFEKYEKLIELGKNMPMMEEH MTEPATLEDVREEYGFLEG DDRYRLLVELGRALEPMPEA MNSP FHTVQAFQAVDPM MTINQDQDEITEEFALFDNKNDQYGYIIELGKKLENLPKE MSSLPEKKKLLKNFLCCDDLEQKYLYLIDLGKKLVPLSKK MSKLSSQDEI I GEFEILDDKESTITFYIMELGGQLPPMPES MTN TFKNVVKPDQQAQSWQQKYREIMLLGKTLPALADV $M S Q D P D A V A A L Q A F Q A V G S W E Q R A R M L M K W G E R L P V L A E E$ T四KEQEEI GEFE\|LDDKESTПYYI MELGDQLPEFPEK MT DKELQQELI EEFEFLEDWEQKYEYLDDLGKGLEPMDAA

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PTLPAE TINAKQDEIUGQFSMDDDMEMMDGYLIELGEKLPEMPES MTSNPTEDDLRQRFCACRSWEDRYRQI LLLAKQLPSLPEE TAAELLPREEQASNWQERYRQIMLLGKALPKLDEA ADHQDKTGLVQELLKQKGWNARYRQUMLYGKDHSGLDDS MT■ODKEERGKQSKQAWEKYRLLIQLAKLPTLTDE MTLQDKEERUKKEFSFLKNWEEKYEYLI DLLGRKLPKKSDK MC $\square K E$ TAAALTEKFGALKQWE
 MSS STQDEVVSEFELEDRESTMFY1MELGEKLPQFPAD MSDIKQQDELI DEFTULEDRESTIYYIMELGNRLDPFPEE

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$Y R Q Q Q I E L P G C N R V W L G Y R Q A D G S L H F Y G D S D G R V V R G$ HKTDANRVVECMSLVHVGPHPEHAGRLAYWGDCDTALIKG LKTPDSELSGCENRVWLGSQREEGSLHFYGDSEGRIVRG
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NGFLNI FKMMQAQASALS
VGVYAI VNKMKGQARA
NGVKSLI NAVQEDARSY NGVKSLI HTVQNITKHY NGLKAVIAAIQA NGFYNVFKKMQQQA $\square$ A $\square$ NGFYNIFKTLQKQASA NGFFAMVEKIMALAR NGFYNTLAKMKQKSQGL NGLNAVLQRMNELA
NGFLDMLK LDMQTKAAQL NGLNALAKA IK DAA Q NGMTAVLRRMRELT NGLNAVLQRMRELAA VGVYAIVGKMKAQAA NGFMNMLRLMQKKTLE NGVAAMAERDQRFAAS NGLASMDK Q MK L Y Y A L A Y NGVEAMAQA IQKRA NGFLN L RTMQSQAKHLA NGVRA IVEQLQRI NGLYSMVNILRN NGLEADI QRLRRDASVAA NGLRAMI E $N G L E A M V Q R L R Q V A A R$ GGLAALAGRIHDIA
 SGLKALADAVQQHAQR QGLDALANAVVQAAR NGLA LI VNYI KDCATKY QGLPNMIALI RETAARYA NGFLNMFKLMQKKAL NG\|KA VIDKIQTMAQE NGLASMVK QMK $\square Y$ A L $\backslash A Y$ SGLHAII QNI NGLAAMI K QMKRYALAY NGI KAMVEA IQSMA NGLNAVLQRMRGLAR NGFFNVFKTMQQKADQL
 NGLLALVQA K A VGVYAIVNKMKQQAAAL QGLNALNNA! IEAAQQ NGLNAVLQRMAQLA NGLAAML NGLASMLARDRRDAAALA NGFYNIFKTMQQKALSLA NGFFNIFKKMQQQALT NGFLNMLK L M Q KKALLML NGLHALAKAM NGLNAVLQRMRELDKA N GVE
N GFA A M T K L LMKS YA LAA Y
 $N A L N L M A T Q M K Q R A L E L S$ NGFLNILRAMQSQAHAL NGFL NLLLNMKAQAQQLA
GGLAS MI ARMKEFAQR NGLNAVLQRMRELAGQTA Q GLASMI GRIDALAK Q NGLSSMI KRIKTY QGV PNMIALI RETAARLS NGLRAIVQAIISER NGFYNIFHTMQNKARQY
$N G F L S M I K Q I K M Y A L D A Y$ A GLAA LAAARIQEDA NGLFALAKAI KA D GLAA GAWMTHDA NGLRAVIERIYQI ANQ NGI QALI AAI KNIASEMT NGI LLFL K K I K F Y A $\square$ AF N NGLVSMLR QMRDFAAAFA S GLEALAAAVKD DAAHYA NGI EAMFRAIKKYA S GL D A LAA GVIT LARRAA
 NGFYNI FRMMQNKAL A L NG GAAL!TTDRNFASEMT NGI QALI DAARA $\square$ AQRFS S G L NGLAAMDKQMKLYALAF
 N GVE
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 TEETL RQTFGALSAWEEKYRQLI MLGKQLPAATDE LT P E L A R L VK S F A A AP D P K L R VQQQL L Y L A Q T L E P L P F Q SSSAPLA QLVN QVQQAPNWQEKYRALMLGGKALAPESPE
 K K

 T I LQ K EK E L I E N F S L L LE E WE N KY E Y I L D Y S K K M P L I S E


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

DADDRYRLLIDLGRELEPMPDA

$\qquad$
M


 LS DI REEYEFL DPDDRYRLLIELGGDLEPMPDA

 SPKSLASVVSSFQAVPDPMQRYRQLLFMAKT LTPVQAE
 ANHWDERYRA L LMQL A E QVVER DPA S TAESLKQQFSAFTQWEERYRQLILLGKQLPALPDE
 QQELTKLFLQQHNWQDRYRQLIILAKQLPTMPPE

 WT E R Y E Y I I S L G K K L P R LD E A QE ILPSFTQAANWQERYRAL MLLGKRLPPLDDA GKLLQ NFERCADWEERYMYLI EL GDRL EP FPDT MS $\square E K K \square E E F K D D L E L F D D E L E K Y$ Q F I I D D G K K L S P L D E K


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## F

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## F <br> H




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 ERKDENIIKGCQSKVWLTAGMKEDGVYQFDADDSNTDIVKGG EKTAEHLVHGCESQVWLIA HQLDDGQWQFRASSDARMIRG DK IETNRVEGCESLAWLIIDEKEEDGYTFNMDSETRVVKG LKTDATLVRGCSASVWVYPTRLDDGRDHFDADSNAAITKG LKTPA IEGLSGCENRVWLGYERLENGGIVHFYGDSEGRIVKG

## 1


 ARTEENLVRGCASRVWLATELK DGKVY Q Q GDADAQLVKG






## -

 $\begin{array}{lllllll}L & A & E & L \\ W & A & V & D & l \\ W & K & P & K & Y & L & l\end{array}$

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正

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## 

 LRRESAQVRGCESNAWLYHK EDDGRHYYLADSDARIVKG EMNKTLIAGCQSNVWLDLSUSQQNKMSIGATSDSSLVKG -


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MRTQEYLISGCQ

| DK N A H Y H | NGC |
| :---: | :---: | :---: |
| DK A Q A H |  |

LREEAMEV

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 L L A L I L MM Y N G K T P Q Q A A A L D A E Q E F E D L G L M R H L S P S R G
 L I S L L I RVVLS GRTPQEII NAEDS FIIDKI GMGNII GS QR S










L


 $L L A V L L A A C E G K S A A E D L A N D P D A L F D E L G L R G Q L S A S R S$






 | $L$ | $I$ | $A$ | $L$ | $L$ | $R$ | $Y$ | $Y$ | $N$ | $Y$ | $R$ | $N$ | $P$ | $R$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | F C A CL V WL L D G A A P D E V L A L K T E D L L N A V G L N GK G S A S R V I I A L V L K TVV Q D G A P A D DV A D A D D $L L A V L L T V A V E G Q P A A T L R D A D P L A L F D E L G L R S Q L S A S R N$




















 L L A I I L A C Y N N Q L P E E A K K $\square$ D G Y E L F S T L G L DK H L S P S R G

 I I S S L L L K K V V N N R S P R D I V D DLD L Y F F I E E I G L K S N L S P A R A



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MS $\square K$ S RQQA LI
KLQSLV


A | R |
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ELNKLVSKLQSSS
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AQETLQQAFTACP

 QDEI D E F S LI
 M S L P P AL 1 VA KLKSSS $M S L P E A V R Q A L E A F A$ GQA T I E Q T A E A MLD M S A

D R A


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MT \E E
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 | $L$ | $T$ |
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| $L$ | F E A S G G P K E R A |
| $L$ | $Q$ | K Y E Y I I D L G K K K L E E F N E A

 $L$ L A A L A E L V V D



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 Q L F Y I AKNKSAKNL D P H R L Q R L V K E F K S Lit Vap I D R Li K WV L H Y A S LI P P MA E T KLLS NL A A E F T S L S Q P I D R V K K L L H Y A S L L P P F L D A T T S T K $\square$ D S K L R H L A K E F R S L P E P V E R V K R L M H Y A G I T P P M D K S DENS L L L E R FA A CR S WE E R Y R Q I I L L A K T L P T L A D E S A L K K L H QL V E DVV SADEGRARVQRVLGYAKKIPRLPA D APNWQARY T QL MLS G G K K SMMHVD Q S IQ DAQT Q IIHNFRAFNDWVDRYAYLVDMGKKIIRDGNH S I R E D DE D T Y I E D L A I E D K D K II A D D L G K I E D DD DR F T WL I K Y G R QA G D L A E D NE I KDTFNQCQSKEESFRALVKDSK TLIDRLDTD
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 Y M T D Q N V A GCMMSKLWMVIE WD Q D P DM F Y A V S D S Q I V C G DKNAKNEVLGGASPAWLKVELEHN HYHLTMHSETRIVGKG LKTAGTRVVPGCAS QVWVRLELSADKK LIRLSADSDSEI TKG
 MK QQELLV K GCESSRAWLHYHDKKRDKHFFVLDSDARIVVG WRHPDHEVGGCESRVWL LLCRDDAGKYHFAVDSESRIVVA




 FKID A Y R V E G CLLAKLWLVSEFKE GKCYF HT DSESAAIMKG DRVPENRVTGCSTDVWVVAHDDKGRRMRFQADSDSEI SKG








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 QKCENNRVVHGCESSLVVWLVAE QHE GQWQFKASSSDARRLLRG


 LE E A A M E V $V$ P E C Q S P L

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## rrrarrorror





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 D DVE M E QV H E C Q S P L F L A A E L E R D P RLLF F KA P R E A P T TAR G
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| UniRef90_K6YSA6 | N GLNAVIQR I K Q H A K Q Y |
| UniRef90_UPI0003462EA3 | S GLQAL AD AV S R A VA |
| UniRef90 G1XXE2 | N GV HLI V K R I R E A A A A |
| UniRef90_A0A023X2Y0 | R GIA GIL WRLKKRVRA |
| UniRef90_H0JD29 | NGLNAVLTRMRELAA |
| UniRef90_S8CWW9 | NTWHNVLFSMQRRTRALA |
| UniRef90_UPI0003B36AF6 | R G M G G M L G R I K R Q VRE |
| UniRef90_R5TI39 | H GMQTVI R K I Q D Y S T S LT |
| UniRef90_UPI00037CFD16 | R G M V A M L A RI K R Q $\square$ R D M S |
| UniRef90_A6W3R7 | NGVLA L D K I N K |
| UniRef90_A6Q175 | Q GMEA FLKRI Y G F A |
| UniRef90-E6WYY7 | K S LQ A F L EKVYTYAKR |
| UniRef90-X5J9E1 |  |
| UniRef90-D5UV76 | R GMS A MLT R I K R R L A A |
| UniRef90_UPI0003706280 |  |
| UniRef90_H0KHQ9 | N G L K |
| UniRef90-F2K1Q3 | N G V L G I |
| UniRef90-D6YUZ0 | NGLLYHI HLLRMK Q $\square$ A LEE |
| UniRef90_UPI00035C6E15 | N GFYALLRR |
| UniRef90_Q5R072 | $N \mathrm{GLLY} Q \mathrm{~V}$ AK T L K L R V V Q |
| UniRef90_UPI000409179A | $R G M T A M L G R I K R T V R A$ |
| UniRef90-W0ZBH9 | A GMTGML $\square$ R AKRQVRA |
| UniRef90 ${ }^{-} \mathrm{CON1T7}$ | T GLQLMMLEQMQE\\|AMR |
| UniRef90_C5CBI6 | $R G M S A M L G R \\| K R N V R E Q A$ |
| UniRef90-UPI00040C86BE | R GMS A MLGRI K R KV TEAT |
| UniRef90_UPI00035DA9DD | R GMTAMLGRIKR QVREL |
| UniRef90_F7NXP8 | N G L L A V L T K K N |
| UniRef90-M6T133 |  |
| UniRef90-W1RVP7 | $N \mathrm{G} V \mathrm{~L}$ A $\square \mathrm{CSSQLQ}$ |
| UniRef90_B8HH56 | R GMTA ML G RI K R K VAAA S |
| UniRef90-C9RKL3 | N GF A S LLKK Q 1 Y LY A R VF |
| UniRef90 K3YTE5 | S G |
| UniRef90-K2ERS5 |  |
| UniRef90_A0A022LKF7 | $R G M V G M L G R V Q R Q V Q A$ |
| UniRef90-UPI00040B8214 | R G M V G M L G R V K R Q V K E |
| UniRef90-A0A059B0F3 | NTWQNVLTSMQRRTEAL |
| UniRef90_R4UVW8 |  |
| UniRef90_UPI0002C30BA2 | NTWHNVLLAMQRKTRDL |
| UniRef90-E8Q666 |  |
| UniRef90-W8R925 | N GMNAVLARMRTLAST |
| UniRef90-C9PQJ5 | NGLLENLLHRLK |
| UniRef90_UPI00047EF620 | R GMA A ML GRI K R K $\ R E$ |
| UniRef90_UPI0002DAAEC7 | NGMS GMLARIQRQVRE |
| UniRef90- Q65T29 | N G L K Q |
| UniRef90-D5QH05 | NGVVEAMARA $\quad$ M K A A A T |
| UniRef90-UPI000364B552 | R GMS A M L T RI K A |
| UniRef90_UPI00035DE700 | R DFLSVVQRIKSL |
| UniRef90-D7G7R0 | NGFINMLRTMK G K A L A L |
| UniRef90-F3LGZ4 | NGFLALLLKKAKELL |
| UniRef90-I31893 | NGLNALI A R I Y D |
| UniRef90-K5BGC3 | $R \mathrm{GMSA}$ MLARI K R R L R S |
| UniRef90-Q9RXU0 | R GMGA I L M R L K R D V A |
| UniRef90-F6CVR4 | $N G V L G I L K R I Q A$ |
| UniRef90-R5WE54 | QGLSALSEAVLAAARE |
| UniRef90_UPI00037E4F6D | $R \mathrm{GMSAMLA} R 1 / \mathrm{K} R \mathrm{R}$ VREL |
| UniRef90-A0A010PDQ2 | $R \mathrm{GMTAMLGRIJKRNI} R \mathrm{~A}$ |
| UniRef90_U2A7A2 | GGMNGMLTRAKRQVRE |
| UniRef90_UPI0003B5928D |  |
| UniRef90-E1R4T6 | H G L Q S VFS T I Q P F A |
| UniRef90_G7GYT1 | $R G L A L L M L G R I K A A I D A R$ |
| UniRef90-F5Z244 | $R G M S A M L T R I K R R L R A$ |
| UniRef90-K2L662 | NGVF QVTRQLQQR |
| UniRef90-UPI0003B64FAE | NGLNAVLI R M R E L |
| UniRef90_R7WN40 | R GIISAMLTTRVKRRIRE |
| UniRef90-F2NPE4 | $R \mathrm{GLE}$ A VL R R I K R Q V Le |
| UniRef90 UPI0003739253 <br> UniRef90 ${ }^{-}$Z9JQH9 |  |

UniRef90_A6WCK5 UniRef90-W9GPC4 UniRef90_UPI0003642B46 UniRef90_UPI0003B2F0B4 UniRef90_UPIO003B4C0C8 UniRef90-B9CXK0 UniRef90_UPI000255E312 UniRef90-N1UY28 UniRef90_UPIOOO46954BB UniRef90-A5UR81 UniRef90_UPI0003B5E599 UniRef90-W7U8J5 UniRef90-M1CX56 UniRef90_UPI0002EA1F0D UniRef90_UPI0003B5CC66 UniRef90_UPI0001FFE73F UniRef90_UPI00036D93C7 UniRef90_G4HVB2 UniRef90_UPIO004742D99 UniRef90_LODKR5
UniRef90-M7MSQ4
UniRef9-10GWV0 UniRef90-I0GWV0 UniRef90_Q01397
UniRef90_UPI0003B32C5D UniRef90-F9QBK1 UniRef90-V5WKJ7 UniRef90-R9PHB0 UniRef90-E8N171 UniRet90-WA2H8 UniRef90_UPIOOO2B4C052 UniRef90-K0ROF3 UniRef90_UPIO00369A550 UniRef90_UPI00036EB52B UniRef90-E6SFK4 UniRef90-O96155 UniRef90-R7E427 UniRef90-l2NPC9 UniRef90-C1N8D2 UniRef90_B2GJ49
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UniRef90_C7PQE7 UniRef90-T1ACN3 UniRef90-UPI000026A008 UniRef90_UPIO000E116DC UniRef90_R9S698

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LPPRLRA VEEFQAADRAE KLELLLEYSDRLPPLPDH LT PRLLEVVRAFQLMDERTRRVQNLLALDASSMKPMKDF MT
 TLPEQLREI REEFDAL DQNERLQLLLEFANELPELPER
 MPAP $\square \mathrm{AEVVSDFGDVQG}$ K K MPATLDA IVSELSEA DRQER IELLIDFARNLPPDCE M MPPALAEIVEDFQA $\square$ TE EQRLEMLLDFSEELPELPAR MTMPPKLAEIVDEFASAPR DVVLEMLLEFADAVPPLPAE MI EQ QKQAKNWEERYRLII LAGKNLRQPTKQ LFDDFAAERHFEGRTRFLLGLARSLPALAD MS L P E E L K E VIE EFTEVPEA
 MMDP $M M$ QRRLA VKMFRSARGRE R L L L L 1 QA



DCFE
N E K LA A B S Y E K FA F C M


AAED $\$ VADFQF MEMTSALAELVDDFQSLGD TLPA SLAAS RDDFDAL NIPESVQELIEDFHAVPDA MTLLERQEHYVKNLGELDSF MTLQEKQEHYVKLGELDSF DQYTYLMGLARMERPDLPER MTLQEKQEGYLQELGSLEDEFDQYTWLMQLACQRPELCGV TEETLRADFASAEGWQQQYKLI:DW $\square \mathrm{L}$ T T E Q


A MDDDNDRYQY L $\quad$ E LGKK $\quad$ PP DFPKE AMPPKLQNTVSMFKAMPKAM RLQALLDYAKKLPEPPQQ MPTKLAEIVDEFAAAPR DVVLEMLLEFADVIPPLPEG TAETLRDTFAPLTQWEDKYRQLI MLGKQLPALPDE LIPPNLQE V VK LFQAVEQPKAKYEQLLEYGKNLKPLDTQ TFDEI NAQFA L CKSWEERYRLLI QLSRQLPKPTEQ TFNEI EQQFSLCKSWEERYRLLI QLLSRSLPKYTES

 $N$ NANDRDGFSVLD G QDKLVYLIDLGKK LDHDANE S
$L A S Q F N G L Q G Y E N D F R Q I M L S S K A L P V L D A S$
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UniRef90-M7MSQ4 UniRef90-10GWVO UniRef90-Q01397 UniRef90-UPIooo3B32C5D UniRef90-F9QBK1 UniRef90-V5WKJ7 UniRef90-R9PHBO UniRef90-E8N171 UniRef90-LOA2H8 UniRef90-UPI0002B4C052 UniRef90-KOROF3 UniRef90-UPIIOOO369A550 UniRef90-UPIOOO36EB52B UniRef90-E6SFK4 UniRef90-O96155 UniRef90-R7E427
UniRef90 I 2 NPC9 UniRef90-C1N8D2 UniRef90_-B2GJ49 UniRef90-I2K9A0 UniRef90-UP1000255DE1B UniRef90-UPIO004786112 UniRef90-UP10003B3CE1F UniRef90-D8QQE7 UniRef90-IOROK6 UniRef90-L7L9K7 UniRef90-UPIO003B3E350 UniRef90-M2XBR4 UniRef90-R5AAW2 UniRef90-R6Y4R3 UniRef90-J4KBS5 UniRef90_B3PBW9 UniRef90-L5W6D5 UniRef90-A4ALPo UniRef90-K6WUI4 UniRef90-D5LAX9 UniRef90-UP100036ECBB6 UniRef90-K986M0 UniRef90-Q4YSN6 UniRef90-Q6AFD0 UniRef90-D7BIII UniRef90-KOG9C1 UniRef90-R7QEW1 UniRef90-UPIOOO255A20F UniRef90-F2G9D5 UniRef90-M4XMD9 UniRef90-H9UIL2 UniRef90-UPI000469F4F2 UniRef90-D8U8Q3 UniRef90-A0A010РB20 UniRef90-S55YJ1 UniRef90-UPIO00471FB44 UniRef90-FOVRT5 UniRef90_B1ZPD5 UniRef90-A4RSX6
UniRef90 $\cup 6 B 509$ UniRef90-FORIU4 UniRef90-D9T446 UniRef90-UPIO002BA7F15 UniRef90-K4DD17 UniRef90-B8F821 UniRer90_M4RL90
UniRet90_M4U5U2 UniRef90-A9WHR9 UniRef90-100WU44 UniRef90-C7PQE7
UniRef9- T1ACN3 UniRef90-T1ACN3 UniRef90-UPIO00026A008 UniRef99_UPIOOOOE 116 DC
UniRef90_R9S698
 YLDKLERVDECQSPLFLTVEVDDGERLFFDAPPEAPTTRG YQDEMEQVEECQTPLFLTVEYDDASRLVLAAPAEAPTTRG YADHPERVEECQSPVFIFVEVDEGRHLYATAPAESPTTRG ELAQLPEVHGCESRLWFSFQ1GERKVIVAYSDARLMQG YLDKMERVDECQSPLFRAVEVGDDPSLFFDAPAEAPTTRG

 YRDHPERVAECQSPVYLFVEVDEADVVHDTAPREAPTTRG YADAAEQVHECQSPLFLTVEVDDGGHLFFSAPKEAPTTRG ECTEENYVYGCDSNVYVVDEY DQGR1FYRGNSDAHVVRGG ILVEENKVKGCVSEVFVKATMKS GKLFWEGYSDALITKG HKDAAHRVEECQSPVFLFDELEQDRVUHADAPIDAPTVRG FAEHLEQVVECQTPLFLTVEVEPAGELFFSAPPQAPTTRG QLAEMEDIQGCEVKVWFKCLLKTDRTFECHAYSEARTMNG RQPEDQVSGCEAKTWLRVAVVDD KLDLHGDSEARIVKG LADHPEQVVECQSPLFLVVEVAEDANLFFSAPPEAPTTRG EKTDENFVQGCVANVYVAESVEDDGHDEFRGSSDAMVVRGG पKEHLNEVPECMTPVSVMAEWQENGTFHLFAVPAESPTVRG YQNHPELVPECTSPFFLVTEVEGGQVLFFDVPPEAPTVRG EKNDQNLVAGCRKKVWVTAKIGDNGRIYFKADSDNDITRG IRLPENBVKGCAAQVWLDVNVDEFGRMRFKADSDSEI AKG IRIPENKVPGCLISTVHVDCEKDGDTLVNYVGDSDGLLTKG YADALERVQECQSPVYAFAEVDDAGVVAFHAPEEAPTTRG YEGHAERVVECQSPVYYVVDVDREGIMHATAPAEAPTTRG HKDRQNQVLGCQSVVYIYPKVEENKVIVWLGHSDGLLTKG WKTEACLLRGCQYRVWLRLELLAGGVRIDADSDSLLSRG ELDNVPELHGCESRLWFSFQKSPRKVI AYSDARLMQG DRAPSNRVMGCTSQAWMDVSLDADGKVLLRGHSDAQITTG HPEELEQVTECQSPGFLAVELDGTGSLFFSAPAEAPTTRG YEDEMEQVIECQSPLFLAVELQDAGRLFISAPPEAPTSRG RHEQMEQVHECMTPVFVHAEQRDGRQFYFDDPPESPTVRG YEEEMEQVVECQTPLFLADEYTDEQTVIVSAPPEAPTTRG ERVAENRVMGCTAQVWLTASLDDDAAVHFGADSDAELTRG LEAAAMEVPECQSPIFLQVDASDPARLYFSAPREAPTTRG YPEQLEQVVECQSPLFLTVEWDDQARLFFSAPQEAPTTRG PREESHRFLGCQSNLWVSLE EEEGLLRMKADSDTLIVKG AHQEERRFLGCQSNLWVELG CQEGRLSLSVDSDTLIVKG ELANLAEDEGCESRLWFSWTDTPRTVLVABYSDARLMQG CKAQAKEIVGCENRVWLGFTQSDNGTMHFFGDSEGRIVRG YADHPELVPECQSPIFLVVEVEGQGSLFFSAPREAPTTRG ARTASNRVMGCTAQVWLAAETDAAGRMAFQGWSDSEVSRG YDHPEFLVPECASPFFLVTKEEGSGVMFFKVPEEAPTVRG FADHPELVPECQSPGFVVEVDDPERLHFSAPPEAPTTRG YRGHLERVEECQSPVFIFVEVDADGIVQLHAPPEAPTTRG MQGKLEQVHECTTPFYVHVELEDGRVVYFDAPKEAPTVRA ELKKLPELHGCESRLWFEFQATPRKV QAYSDARLMQG ELHPSTRVSGCTSISHVEVVMSDDRTVKMRGFSDSMVARG DRTTEHLVQGCESSAWLVHRREA GVHRFADDSDSRIVKG ERNDNTAVEGCESPVWLAFSHDEGCLMAF AYSSKVIRGG LMTEENRVHGCQSTVFISAQPEGE HVSF LAFSDAQVLRG AAHPEMRVAECQSPVYI YAVVHDDVVMHATAPEEAPTTRG QRKGENRVMGCTAQVWLTARLDGTGRLHFRGWSDSEDSRG YLVDKYLINNCQSKIWLKLNQKNNKLIIKAYTEALIPRG YTDHPELVPECQSPIFLVTEVADEVRLHFSAPPEAPTTRG
 QVPGCVSQVWIVPSFRG GLVYYEAESDSQLTKG KQDESNMEKECASALWRSIEFEDYHIIKLYLFSDSHITRG YLDHMKPVPECTSPFFLITERGEGGHMHFKVPPEAPTVRG NREELEQVPECQTAFFLRAEVNADKTVVFDCPPEAPTTRA LKAQAKEVAGCENRVWLGYTVAENGKMHFFGDSEGRVVRG QLEQWQEI HGCESRLWFNFQLEPRQV QGYSDARLMQG ELANLPEVYGCESRLWFKFQAEPRKVLGAYSDARLMQG DADHMDQVHECMSPVFVIARLDGERVVHIDVPPEAPTIRG QKQQTQEVKGCENRVWI GARLNDDQTFHFYGDSEGRVVKG YKHEHYQVQGWIDSDWVRAVYIKEKVWFTAASSDKA TNG Lor


## UniRef90＿A6WCK5 UniRef90－W9GPC4 UniRef90＿UPIo003642B46 UniRef90＿UPI0003B2F0B4 UniRet90＿UPIOOO3B4C0C8 UniRef90－B9CXK0 UniRef90＿UPIOOO255E312 UniRef90＿N1UY28 UniRef90－UPIOOO46954BB UniRef90－A5UR81 UniRef90＿UPIO003B5E599 UniRef90－W7U8J5

 UniRef90－M1CX56 UniRef90－UPI0002EA1FOD UniRef90－UP10003B5CC66 UniRef90－UPI0001FFE73F UniRef90－UPIO0036D93C7 UniRef90－G4HVB2 UniRef90－UPI0004742D99 UniRet90＿LODKR5UniRef90－M7MSQ4
UniRef90＿10GWVO
UniRef9－Q01397
UniRef90－UPIOOO3B32C5D UniRet90－F9QBK1 UniRef90＿V5WKJ7

UniRef90＿R9PHBO UniRef90－E8N171 UniRef90－LOA2H8 | UniRef90－WOFON2 |
| :--- |
| UniRef90 $\mathrm{YPIOOO2B}$ | UniRef90－KOROF3 UniRef90－UPIOOO369A550 UniRef90－UPIOOO36EB52B UniRef90－E6SFK4 UniRef90－096155 UniRef90－R7E427

UniRef90 $12 N P C 9$
UniRef90－C1N8D2 UniRef90－B2GJ44 UniRef90－I2K9A0 UniRef90－UP1000255DE1B UniRet90 UPIOOO4786112 UniRef90－UP10003B
UniRef90－D8QQE7 UniRef90－IOROK6 UniRef90－L7L9K7 UniRef90－UPIO003B3E350 UniRef90－M2XBR4 UniRef90－R5AAW2 UniRet90＿R6Y4R3 UniRef90－J4KBS5 UniRef90＿B3PBW9 UniRef90－L5W6D5
UniRef9O－A4ALPO UniRef90－K6WUI4 UniRef90－D5LAX9 UniRef90－UPI00036ECBB6 UniRef90－K9В6M0 UniRef90－Q4YSN6 UniRef90－Q6AFD0 UniRef90－D7BIII UniRef90－KOG9C1 UniRef90－R7QEW1 UniRef90－UPIIOOO255A20F UniRef90－F2G9D5 UniRef90－M4XMD9 UniRef90－H9UlL2 UniRef90－UPIO00469F4F2 UniRef90－D8U8Q3 UniRef90－A0A010PB20 UniRef90－s55SYJ1 UniRef90－UPIO00471FB44 UniRef90－FoVRT5 UniRef90－B1ZPD5 UniRef90－A4RSX6 UniRefoto UbB509 UniRef90－FORIU4 UniRef90＿D9T446
UniRef90＿UP10002BA7F15 UniRef90－K4DD17 UniRef90 B8F821 UniRef90＿M4RL90
UniRet90－M4U5U2 UniRef90－A9WHR9 UniRef90－100WU4 UniRef90－C7PQE7
UniRef90 T1ACN3 UniRef90－T1ACN3
UniRef90 UPIO00026A008 UniRef90－UPIO000E116DC UniRef90＿R9S698
 FAGILHEGLDGLSAAQILDVPDDAPMRFGLAEAVSPLRT FAGGVEEGLDGLSAAQ FASILAQGLDGLTAQVLDVPADYPQSLGLGEAVSPLRV ILVIIDTALSEMPNESLPQFDLTALFNKLKITAQHLTSTRL FAGLHEGLDGLPAQQVLAVPDDAPYRFGLAEAVSPLRM
 YAALLRRGLEGATPEEVLAMDPGDFFYAMGLHQVLSPQRL

| 阶くでカ |
| :---: | FVATLVEGLNGATDEEILQVR DSLIEQDGLPEILGMLRV

 LLWMLLQEMNGKQATQLAEFDLIQYFDELGUAQRLTDTRL
 LLAVLLTAVEGKTP
FASLVQGLSGLSTREVLELS DDFPQSLGLSRAVSPRRL FAGLLHEGLNGATAEQLLDTPNDVPGRLALTELVSPLRLD

L LALLFSSG
LLVVLIAFVTEKSAEALQSFETQPLFDDLQTTRY品TSTRL LLALVITFVNELPKQELAKLDLQAVFNQLNLAKNLTSTRLD LIAAMLLLLLQGMTLREVRNFDUAQALLPFDLKAQUTPTRD LFAIILLAVEQK
LLAMFSRVLSGNHPKDTADADTYFMNEDSGLFQFLTपQ
LIALLRVYSGRCAREIMDTEPE FIDRAGLAKALSSTRA LLR LQUGFNNSEKKSITNFDPSSLFEWLNLGPADSSQRQ


| UniRef90＿A6WCK5 | R G M T GM｜L｜AR｜V｜KRQ｜V｜R |
| :---: | :---: |
| UniRef90－W9GPC4 | RGMVAMLARIKRQVR |
| UniRef90－UPI0003642B46 | NGMVGMLGRVQRQVREAT |
| UniRef90－UPI0003B2F0B4 | $R \mathrm{G} \\| \mathrm{R}$ A MLARI KRNVR |
| UniRef90－UPI0003B4C0C8 | R GMT GMLARIKRQLR |
| UniRef90－B9CXK0 | NGLQQ |
| UniRef90－UPI000255E312 | $R G M V G M L G R \ K R Q V R$ |
| UniRef90＿N1UY28 | RGMTAMLARI KRQARAAA |
| UniRef90－UPI00046954BB | NGVLS MI R D I |
| UniRef90－A5UR81 | NGIISYLLA Y L K RLA ARELA |
| UniRef90＿UPI0003B5E599 | RGMSALLARTKRQLRERS |
| UniRef90－W7U8J5 | NGFLLNMLA MLKKRKA |
| UniRef90－M1CX56 | NGFLNMLK L M Q K K ALQL |
| UniRef90－UPI0002EA1F0D | R GMSAMLGR\KRQVR |
| UniRef90－UPI0003B5CC66 | RGMAALI GRTKHQ |
| UniRef90－UPI0001FFE73F | RG】 $\$ S A MLA R I K N QVRAA T  \hline UniRef90－UPI00036D93C7 & NAFGNIYK L MVEKA  \hline UniRef90－G4HVB2 & R GMSAMLAR L K R R L R A T A  \hline UniRef90－UPI0004742D99 & NGFLNTLDKMQS Q  \hline UniRef90－LODKR5 & RGLLS GVLRRLK T EVTRAA  \hline UniRef90－M7MSQ4 & R GMTAML GRIKR  \hline UniRef90－10GWV0 & RGGTATLARLKRQVAASS  \hline UniRef90－Q01397 & NGLKKQI EQKI K Q A TR  \hline UniRef90－K2J3F4 & N GL Y A MLA K I  \hline UniRef90－UPI0003B32C5D & R G M T A MLGRIKRQVSE  \hline UniRef90－F9QBK1 & N G L K Q  \hline UniRef90－V5WKJ7 & NAFGNI YA LM REKAKS  \hline UniRef90－R9PHB0 & N G $\square$ T AI LQ TI |
| UniRef90＿E8N171 | NGMAAIVAHVK |
| UniRef90＿L0A2H8 | RGMGAIL HRLKNQVRE |
| UniRef90－W0FON2 | K DLLSI VQRLKS L |
| UniRef90－UPI0002B4C052 | NTWQNVLMSMQMRTNTL |
| UniRef90－K0R0F3 | NGFD $\quad$ N ML A VMK K |
| UniRef90－UPI000369A550 | NGMAGMLTRAKRQVRE |
| UniRef90＿UPI00036EB52B | S GMTGML $\quad$ RAQRQVRA |
| UniRef90＿E6SFK4 | R GMAAMLARIKRQVRE |
| UniRef90－O96155 | NGYLNDMNKI K |
| UniRef90－R7E427 | NALGNMASRI |
| UniRef90－I2NPC9 | NGLQQQQQLI K |
| UniRef90－C1N8D2 | NGFRNMLESVKKQTRLL |
| UniRef90＿B2GJ49 | RGMSAMLGRIKRQ】T A |
| UniRef90－12K9A0 | QSLEEAFLNMVYGYA Q |
| UniRef90＿UPI000255DE1B | RGMSAMLGRIKRIA D QLA |
| UniRef90－UPI0004786112 | NG】Y A I L A HMKRLAAR |
| UniRef90－UPI0003B3CE1F | R G M S ALLGRI |
| UniRef90－D8QQE7 | NTWYNVL $\downarrow$ AL Q K R VR H L |
| UniRef90－IOROK6 | RGMRGMLARIKRK |
| UniRef90－L7L9K7 |  |
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| UniRef90－J4KBS5 | NGIAELQRLI Q Q T A K Q |
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| UniRef90－U6B509 | NGIIYSVI GKINTAAKQ |
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 LIPAALAELVEDFASMPDEKTRHKQLLYMASK$L$ $L E K Q L E Q \square L Q A N N W E S R Y R F L M K L G D N L P$ FDEA
 A $\square P G S Q N L L N Q D K A A K S W Q N K Y R F L M L L G R N K D Q F S P E$

 IVEK I REEFGYFGDWSERYQYLI DLGRRLPPLPAE $\square V E K L S H I R D G F S F L D G$ QDRLVYLIDLGKKIDLIDAK
 PP SEVVI GNLLNASSWQQRFSYLMSLATGLERPSPR ACLEKQEKAVALL FPEKDTFYKQLLQDGRTAKPFPKE DLDA I EQRFSDCRAWEERYRQLLLLAKGLGKADPA


 MPPRLAE V VDEFTTAPR D IVLELLLEYADAIGPLSS G


$\qquad$ | $A$ | $L$ | $E$ | $l$ | $I$ | $E$ | $L$ | $R$ | $A$ | $D$ | $R$ | $E$ | $E$ |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $K$ | $Q$ | $D$ | $K$ | $I$ | $I$ | $Q$ | $L$ | $F$ | $P$ | $K$ | $K$ | $F$ | $N$ |

M T S
A LDE K $\backslash R D D F \square A \square P$ E GE
 D R LQ Y L I D $\square A N D A A E L D N Q$
$T \square P P S L A R T L K Q F R M \square E R \quad E D K M Q A L L S W S K K L E P L P E A$ E I QQLFVQAQTWEQRYRQLI LLAK QLEKPDDE K LDA L L ELLFQEA EPAERLQLLLDFAERLPPLPPE

MPMPEKLKSILEDLSFFTDRNDR\QALIELGEEFRNPSPE MT LPPSELHDIVRDFAQTPEEQRLELL LEEFSEDPEDPQR
 $S \square P \square A \square A E \square D D P Q A D E E K E R Q Q L L L E F S R T D P P D P D R$ END L LA D LHELDDPVLQYGYLAGCAGEAAAFPEH
$C \square K K Q H A L \square Q K F S N S C S K E F \square Y Q K \square M E K P \square H Q G \square F D E K$ $\square R A L L Q S G R R L P D V R A R M E R E L L S G G N S Q K Q L S P N$
$M L Y N T L L E F G S Q P K N F D K S$

PFDEQ $M N L I \quad L K K E K L I N K I K S F S S L E E R Y F F L I N H G K K L L L M N K K$



MNFNERKEKFLSEYNALPSDMERFDY I I NKGMRSA CDY $S$ LK P K Q QE I A F KVK QA Q GWDN QYR QL L LA SKA LK VLP VE


LPKKLED LCQDLYQSPDKSSK $\square W K W V E W G N G \square E T D P V E$ LP P GL E NFRRLLLSSLPD DESKAQYLI SLGGQQYAAATAR



 S L P P RLQ E E I I NLF QNLPE E EKRELLIA YSDRCRECAP K AEKKY $\square$ DS L L R LQDPGAQCEY LLMLGMEKPPMLD S K LLE WLVDFSNELPDISS T T LIN D WA $\square E \square A D L D D R D R M E T \square V E L A E T L P P G S A D$ AEDLLRARLCTVADGKLRVISLITYTDQLRPLAPE
 QF TALQDAGSQCDYLIT LGQKSPAGP E L S L A MSMPAALAEVVSDFADVQG QDKLK LLLEFADDLPELLPA D

## UniRef90 A3N1T1

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TOMG81 UniRef90-TOMG81
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UniRef90
Z5 UniRef90-Z5X910 UniRef90-LOAL86
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ERNPTTRVPGCESEVYVDSEPFSRGRYRFAVDNPQGISMA YADNPDLVPECQSPIFFIAEVDGTGELFFSAPAEAPTTRG RVLKENLVVGCQSDLYL YEVYQDGLLFFFTYTKALMSSG KISRENLVLGCQSDLYL YEVYQEGRLFFFTHTEALTSSG , LANHDEQVVECQSPLFLTMEKADDGQLFFSAPAEAPTTRGG MWIVMRQNAQG\|IELQGDSDAAIVKG QDKKENLVLGCQSDLYL YEVYEEGRLFFFTYTEALISSG LRTRENLVLGCQSVVHVHSDARRDDRMYYCGHAEALTTKG KMARENLVLGCQSDLYLLYEVYQEGRLFFFMHTDALTSSG GCDTQVWLLGSCDRSGRMRFAADSDSELSRG DKQDHNLVAGCESSVWLTVKP PHLI AN RATSDSKIVRG NLIDKNLIEDCQSKLWIKINNK KKLILKMFTTALFPKG LALEP DLEDVRKDEECTDTVGVYGKVDEDNKVHFAGPLVQTLTKA APSEEDRTEGCDSGLWLCASADERNFVEADSDSVLKG MRTNENAVFGCESDLWIAYYDQQ GF LCAYSQSKIIRG MRTDENAVLGCESELWI AYTNHK ERTSKHKVAGCASVVYLKVTVRNEGKVFLRGAADSKVAKG STASRRRVPGCVSVVHMTVRFSSDGAVHVDGTSDARLSYG ELTDVRKDEECTDMVGVYLDSDEEGKVYFRGPHVQTLTKA LLEEAMEVPECQSPLFMHVDASDPQRLHFSAPAEAPTTRG ARNAVTRVMGCASASWIEASVDGAGKVRARCASESDVTRG KLVRENLVVGCQSDLYL YEVCQEGRLFFFTHTESLISSG KI SKKNLVLGCQSDLYLYETYQK GRLFFFTHTEALISSG DLEDTRKDEECTDTVGVFLNVEQPARAHFRGPHVQTLTRAA LKTDANRITRGCVSQVWVQASPEAEGCVSFEADSDAQFTKG LRADRYRUGGCRTAIVWLRAE DRDGMVHFYSDSDSULVRGG KQAENCRVQECQTPVYDFAEVR MRFAADSDSDLSRG KQAENCRVQECQTPVYLFAEVR DGLLTLLEADVPSP|VRG KRTSSTRVNGCTSVTFVEPHFGETCVRYREGYSDSRLASG Y EMQRVPGCDATV LVRATLSRNIVTISGKSDALLSGG MEQVDECMTPVFLSAQLH DGKVYYHGDSDAPTMRG DLEDVRKDEECTDTVGVFLRLDAEKRAHFRGPQVQTDTKA DKTDSNRMSGCRTADWUNVKGTENGLHFTSESDSLLVCG LEEAAMEVPECQSPLFLHVDASDHVRLFFSAP

## UniRef90 A3N1T1 UniRef90-B8LBL4 UniRef90 D1BGL9 UniRef90_UPIooo3078C6A UniRef90 H8GS26 UniRef90_A6VPS7 UniRef90_A5CRK9 UniRef90- F5Z954 UniRef90-UPIIOOO3B7B833 UniRef90-UPIO00363C55B UniRef90-C5BXL3 <br> UniRet90-FJ183 UniRef90-A0A0100AW8 UniRef90 D9PFA5 UniRef90-UPI0003A17179

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UniRef90 UP10003 <br>
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TLFLITRTYSNSYDNDTINYNNNFFKKTGFKNFLSPLRS FASLLHQGLDGDTYEQLLAT PDDVAARLGLARAITPLRL TTKFV DDILNNQPAEESSKLKEDGKPLGIMELLTAQRQ


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| UniR |  |
| UniRef90-DOMHC0 | RGLTAIYQKLR |
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| UniRet90-V6Q1N8 | QGLNALSEAl ${ }^{\text {deatKQ }}$ |
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| UniRer90-KosA79 | RGFA AML R RMQRN |
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| UniRef90-A4S9B2 | NGFKNMLETAKKQLRTL |
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| UniRef90-LOAU866 UniRef90-A7ANM |  |
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lupas_21 lupas_14 lupas_28 jnet conf sol25 sol5 sol0 jhmm jpssm
$\begin{array}{llllllllllllllllll}9 & 9 & 9 & 9 & 9 & 9 & 9 & 9 & 9 & 9 & 9 & 8 & 8 & 5 & 1 & 8\end{array}$ $\begin{array}{llll}\text { B B } & B B & B & B B \\ B & B & B & B \\ & B & B \\ & & & \\ & B & & \end{array}$


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