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Q GPCQKE LYRALEKLAKAQQRTRGEI YRFYLPNCHRNGF




 WK GPCKRELYKVLDRLAKEQQKADE LYKFYLPNCNKNGF

QSACQQELD SVL E

$Q S$
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## Q


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 QDPCQRELYDAL AK L A QERTR

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 K T K CQHEREDAL

CDHERQTALDE
GSHDPRGSRPDVGD F I P
P RA TRQNPREPI
Y R GN C K D V $V$ S R C V $V$ A E R K
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SKK L L P

 $C D Y F P Q C D E N G Y$ $G G N \| V \mid P Q C M S D G R$


| UniRef90＿W5M6Y0 UniRef90－G3Q1Q6 UniRef90－H3BA21 UniRef90－Q4SEE4 UniRef90＿Q4SEE |
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TQCERHRDSVLE DP C ERWRASLI E HY RGPCTRWRASLI EHY

A QA QRTHPVAQ LH H D EPRGPRTRYIPQCDEQG GGKPQPEQYVPQCEQDGQ RGPCTDSQTSCMAVLRYA LKQGGR LTRCQEDRAAALAKSRRQVHATYVPECSEDGA RGNCKDLGRCYSNRKVTRQKAHRVFEAHLP QS K CRVERNQALE QARRPQSSESMFIPECNEDGT LSRCEFQRAKCKDPQLEDAYRGNCKGGHKDGF RTRCQHQ LY A S QRGPS LPGGPHVP
PCKAELSSMNKK QA GKKLL GQYMP CQDDRQVALAEAETAPDA $\begin{array}{ll}K & P C C L A E L E R I \\ K P S C D Q E R Q T A L E E\end{array}$
QPRCPTECER
QPRCPTECER

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$\square P A D H P G V$
$Q R P R P G G$

## RTQTSSCDQEQLTAQEEARQHKNEVFIP

CEHERRDA DDEAQLHQHE
G P

## CREDEC【LSTLKKMN】L

CELQREKASVQQAD
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LQTKCQLARAQGLEARA RSPGSPAA GMFCPKCDENGN GARPSVGFYAPA KTACEDQRDRVNAEYSLY | $K T A C E D Q R D R V N A E Y S L Y$ |  |
| :--- | :--- |
| $K$ | $T$ |
| $K$ | $T$ | GARPSVGFYAPEDEDGK

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

PCQNEMNK $\square$
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P
P $P G$
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## L

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$C Q M E S A P G V S K D G S Y K Q C D E Q G R$


SGPYVP
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GDT
GDTY
GDT

MDSCSETLCHKMRREHQKNVE D C L A D QK $\square A \square E E Q R$
T K C Q K E A A S IV
K HLL GT R KP

> CERWRQS LLEHYGGSPRR

| Y | I | P |
| :--- | :--- | :--- |
| Y | I | P |

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PGA QL $G P C P E N L R C Q L E R A Y Q L K L A A E K N S S E V$ PCELQRERAFLERAD
PCELQRERAFLERAD

S
$S G P$
$S G P$

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$\qquad$

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ARRKA LEAHRQAPKGR $\square Y$
PGPY P
PGPYV
K P P C $\square$ A E $\square E R \square Q \nabla K$


E V KRKPGMF $K K F L G Q Y$
$R E T$
K GRRN
RETGGRN GGSTDGSAPWPAGPYVPQCDAGV LGGSTDGSAPWPAGPYVPQCDASGA LGGSTDGSAPWPAGPY

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PCELQREKAFLKQAD
$\square \mathrm{F}$
Y

| Y | V | P |
| :--- | :--- | :--- |
| Y | P |  |
| Y | P | P |
| Y | P | P |


| Y | P |  |
| :--- | :--- | :--- |
| Y | I | P |
| P | P | P |

$V \begin{aligned} & P \\ & P \\ & P\end{aligned}$

| $S$ | $P$ |  |
| :--- | :--- | :--- |
| $S$ | L | P |

$\mathrm{G} \underset{\mathrm{M}}{\mathrm{V}} \mathrm{F}$

$\qquad$ | Y | V |
| :--- | :--- |
| Y |  |
| Y |  |
| I |  |

S Y

| $Y$ |  |
| :--- | :--- |
| $Y$ | 1 |
| $Y$ |  |


| $\|l\| l$ |  |
| :--- | :--- |
| 1 | $P$ |
| 1 | $P$ |
| $V$ | $P$ |
| $V$ | $P$ |

P Q
Q

| $Y$ | 1 | $P$ |
| :--- | :--- | :--- |
| $Y$ | $P$ |  |

Y I PQCD GLGN
$Y \vee P$ Q C D G L $\operatorname{D} N$

Y $V$ V | P Q C S E E D G S |
| :--- |

| $Y$ | $V$ | $P$ | $Q$ | $C$ | $S$ | $E$ | $D$ | $G$ | $S$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $Y$ | $V$ | $P$ | $Q$ | $C$ | $S$ | $E$ | $D$ | $G$ | $S$ |
| $H$ | $V$ | $P$ | $Q$ | $C$ | $D$ | $E$ | $R$ | $G$ | $G$ |

K VM T K C Q Q Q A S L VP P VHPGQFRPKCDENGN GAYAPDCDVQGF
HCLSSCELHRQQVLRSGEAVFLPQCSDSRE
HCLSSCELHRQQVLRSGEAVFLPQCSDSRE


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UniRef90_UPI0003EAD2EF
UniRef90_UPI0003EAD2EF
K P P C $\square$ A $V_{V L E}^{10} \mathrm{E} \square$


30
F\|PS CDED G GGEFTPQCLDDGR $\begin{array}{llllll}G G E F & P & Q & C & D & D \\ G & G \\ G & R & T & P & Q & C \\ D & D & G R\end{array}$
SKDMAPKQAGGEFTPQCLDDGR NELKTKMKTNNT $R E \square G Y V P$ S C T P S G A $R E I G K G Y \perp P Q C E D$ REIGGKGY PQCED DGN


PCQHER
ARPCTALARAHPQPHGAYVP MYPREVPPLGDGHAPQCDEQGR SMLKSKVRSRE I GKGY IS QCEDNGN S MLKK S KVVRSRE I G K GY I S QCED NGN

$T P C \quad K T V Q R Q \square I E Q R R A K G G A S G$
$P C L S A L Q V V P T P Q V D N S E D S K Q F M L G A$
$Y \vee P Q C D V D G F$

| $H$ |  |  |  |  |  |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $H$ | $V$ | $P$ | $Q$ | $C$ | $T$ | $E$ | $D$ | $G$ |


 S S P A S P S S L Y
$Y$ V
V

| $Y$ | $V$ | $P$ | $Q$ | $C$ | $D$ | $G$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $Y$ | $N$ |  |  |  |  |  |  |
| $V$ | $P$ | $Q$ | $C$ | $D$ | $G L$ | $G$ | $N$ |

$E Q F G G V F T V S C D E N G N$
CERHDQSDSCEKRSSEIYIPACKEDGR
P C Q HL S PCEEARLLQAHSNSLR
L GDA GV
T P CQLQR QRLLLS GDAGV

KTKCQKE
E CVK GV

| S G P Y | $V$ |
| :---: | :---: |
| S G P Y | $V$ |
| V |  |

$H P G R$
$\square M G A$

RTACQA QYDEVEEY DRTHSNLQDGPEH RPRCPTECEKQRARRLSLAGSQPAG SSLPVPTMMD GT RPRCPTECEKQRARRLSLAGSQPAGSSSLPVPSCTRQGH RPRCPTECEKQRARRLSLAGSQPAGSSSLPVPSCTRQGH

P C L A R L K G V


C Q A RYDTVMAK L K
N N P PRNGFYVP
CTAAKRRLSPDMLGVFVP
$R P R C P T E C E K \quad Q R A Q M Q N L M G S Q P A G L S V P S C T S T B C H$
 Y Y P Y I P
PHRRSYQLFTP CEKDGS
PHRRSYQLFPQCDAAGN
$P$ HRRSYQLFTPQCDAAGN
CAADVKRKDTP E LLLGVYVPDDCDNQ GY
TACERHRESARAAAGFPSTFRPRPAVGHYVPQCDQRGA T T CQ $\square H R Q E S L A S N G E T E D R$
$C L I S K A A A L S S R G S G$
PCHKARHDV
R GPRPSESH $\left\lvert\, \begin{array}{ll}\text { R P } & \text { P } \\ \text { P } \\ \text { P }\end{array}\right.$
D PHLL
$C Q L Q K$ Q Q V LVS R Y I N S S T I

LK E P CRRELHRII
E E

## S PR

H L N
P N F Y Y L
$P \mathrm{P}$ GRFLP

Y I AQCDQRGA
R Q H V $R Q H V P$
> $D G S$
$D G R$ G S
G R $G \frac{R}{G}$

K T K C Q Q E
PCETERR\KLEERGEAE

E C GKGVHGRFCAKCDEKGD
$G V F \ P Q C T Q D G F$ TCFEWQDFS LD FP QYYKF KAK CKNN GA K P C L I E K S QRK K VY D E F VP K C D K D G F

K T P C E


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I P T CERDGR
CAAALRRVTPGLIGAYY PQCDEEGY
Y H P Y V P Q CD GF GN
PHLLGVFHPRCTLDGY
DLA A I F V $V$ P S C T Q S G A
A AKHQQDPHLLGTFHPRCTLEGY
RHRMMKCETKCRQAREAQASAMIGRYVPQCTEDGR PCELQREKAFSE
PCELQREKAFSE
PCEELQREKAFSE
GPCRREMEETLNHLKFLNMLSPR
K T R CEQHRDSLQS G $D G G V P A V G A Y, \begin{array}{llllll}P & A & C & D & E & D \\ P & G \\ P & Q & C & D & E & E \\ G & Q\end{array}$ S GP RMMVGRYVPQQCDK G S

R CHQARQS IF $\square$ A $\square$ E HA QSA P GPCRREMESVLNSLKLTD D

L $\mathrm{F} |$| F | P |
| :--- | :--- | :--- |
| P |  | $V L T Q C Q K E A A G E V K S$ LLPSFKP

QTGCQQRRALALHTAA
 PCHVVLL $\quad$ A A VQMADERMVGQFTPMCTSEGGK CHKKRHSVDPHAKDA F
DRNGRDPEGVF
QGSCQSELHRALERLAASQSRTHEDLYII PIPNCLSDGR
TMC K R R D A I GWT GVA APGSFVPNCDRNGN
T NCQTKRAAALQG
K GHCYYERMNCSNR $\square$
CEKRRR AS S QQLV
GSFCP

FVPECKPDGT
E Q LTP L L R S C S GQDVTK HATFLPRCTPSGA
 QGPCRRH LDSVLQQL QTE $\square Y R G S Q T$


DC\LQRHQDTSEKPKR VGHFTPACEKNGL
TPCQKQRFNAYGV SESTPADRYVPR
FAPVCSQDGS
FAPVCSQDGS

LS K C Q Q K R K E ALLESTR GLL I GA Y TP Q C D A K G D
 $T A C Q H L R R V E T R R A K A L F \quad P N E K A L D T R R D P R C S K N G D$ GPCRRQMEASLQE DKTSE
$P C Q E K L Q A V L$ CQQELLDQVLER $\square$ SKMPF ANGTLIGAY I

T P CQR
 CQKHRHRV
GPCRRHMEAS LQELKSSQ
G MTGQAPVGAYVPRCADDGS

CRLMHLEMLNKRRTGTILPGGRDDIEYDPECDGSGM



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