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$R K V P L R K C V G C G E M K P K K E L I M V V R C E D G N F V L D A T G K K N ~$ KKVPLRKSVVSGDIDDKRNLLRIVKTKDGEIAIDPTGKRN KKIPQRQCVGCREMKDKKALLRVVKAPDGTVSLDFGGKKP KKIPGRRCNGCGESKPKKELVRVVRAGDGTVSLDGTGKKP KKIPMRKDIVTGQMVAKKDLIRVVRTPAGQVELDPTGRAN KKTPTRQCI GCGEKKDKKELIRVIKTPEGEITVDFTGKKN KK円PMRQCIGCGEMKSKKEMIRVLRTDEQGI ILDATGRKN RKIPTRKCIGCGELKEKNQLVRIVRSKEGEISLDMTGKKN KKVPVRMCTGCREHKPKKELIRVVRSPEGEISIDFTGKKS
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 GRGAYI SDNLA TAKQAKTERTFDKAFNDKVEDDFYDQLDA GRGAYLCFSRECFDKAVKNKGLERSFKQAI PNEVYEQLEK GRGAYVCATHECLSKALKSKALNRAFKMDVEDDVYKHLLD GRGAYLCKNMACLDAAKKARKLERSFSCRIAPAVYEELEH GRGAY CNNAECLAKARKSKGLERSFKQS:NAEVYDALEK GRGAYICPNKACLTQAEKNKGLERSFKMAVDKSVYENLQK GRGAY। S NVEARKTKAEHTFEKVFSTTLDDNFYDDLDA GRGAYIAIEPKLVEKARKHSVFEQHLKVKVPQEFYDELYA GRGAYICKNVSCFEKAKKGRKFERAFETSIGEEDYELLRK GRGAYVSLDPEALKVAQTKKILEATFSDDVSEAFYTELEE



| QUERY | $Y \text { VDHKVKRREMGLE }$ |
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R K
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K K I P M R Q CI GCGEMKNKNELMRVIVTPDGEIVLDRGGRQN




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## G

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## E

RFDR
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 $R K D P M R K D I V S G Q M F P K K D L I D R I V K T P S$ GELELDPTGRAN




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 K K I P D L R K C V $R K T P M R V C A G C Q E Q K S K K E M I R V V R T P E G T V E I D D K T G K K S$
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 K S QPMRTCVVGCGEPKS KRELMRVALSSPEGTISIDDRTGKAP


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 KK P M R M CVGGCK E L K P K K E L L R I V A LP T G II E L D R T G K K S
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 G R G A Y L S K K K E S C V V K K A K D K N L L S R H L G V A V P E E E V F D Q M I T


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G G






 $G R G \square W V S A D R A A I D K A V K K G L F S R A A R M Q V R A$ GR GM WV S A D R A A L E L LAAV K K N L F F S R A A K Q Q V
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 G R G C Y $\quad$ C K D D N C L E K A F K N R R L E K A L GR G A Y L C K K L E C L K VA R K R K S L E R A M K TAA I P D E V F D E L E



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LL G RE
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IIE T G L A R R VT D
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 GKGAYLKKSIDVINKAKKTKILEKALGVSI SDEVYDNLER GRGAYLCANQQCYETAMKKKLLSRMLETE: SPETGERLQA GRGAYLKKDDEVIKKAKSNKLLNRVLEVEI PDKDYEELEE GKGAYUTKSKEVLEKAKKTKALDKALEDTIDDSLYDEIES GRGVWVTATADSVRDAVKRKAFARGFKGAANAADYDLDA GRGTYISKSEKAVEQAKKRKSLDSQLGVKVPEEIYDEVLR GRGAYI CRNEECFRRAEKEHGFERAFKSKMEVAI YETLRK GRGTYVSKTEDAVEKARKHHSTEHQLGAKVPEQVYDDLGH GRGAYVCNNKDCIEKDKKSKALDRTFKCKVDVKIYDDILS GRGAYICRSAECLKKARKAKRLERNLEVTISDEVYEELER GRGAYFCKDTKCLDKALKEDRLSKALDHEVSSETIEKLKE GRGDWVSADRAALEKAVSKNLFARAARQQV RVPDGLID GRGCWVTAERQYVEQAAKKNIFARALKMKVTS
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I KLRKCVVCTLOKDKDDLIRIVRDKEGKLSIDNSGKLN KKVPLRTCVACHTTRPKKELMRVVRQPDGQLLIDTKGKVS KKVPMRTCVVTKEKYPKKELIRVVRDNTGKVTVDKSGKQN RKVPDRKCVATNEQHPKMEMFRIVRTPENEVVIDLTGKVR Per CVATGEQPRAGLTRFVVGPGDLVVDILGKLP KKDPMRSCVVTKEKDPKQELLRVVRTPEGTIIVDDTLKAN PERLCVGCREKHPKAELLRIVRSPAGEI SVDATGKSP KRQPQRTCVGCKQVEGKRTLRVVRRPDGIVEVDPTGRKA Kivill KKDPDRKCLATQEDCPKKDLIRTVKNNDGEVEVDVTGKAN ERTCIVTRQGGSPDGLIRFVAGPDMGVVPDLKRNLP RTCIVSRETMDADRLVRFVLSPDGNVVPDLKRRLP KPVRERRCVATGEVKGEEDLLRVALSPEGRVPDVAARLP KKIPMRKCIDTGEEKPKKELVRVVRDPENTVFVDRSGKKN KKVPQRTCVVSHEKCDKKDLIRIVKTPGNEIVIDDTGKVN KRSPDRKCVGCGARRDKDELLRVVNNKGEILVDPGGRIP REEPERRCLVTGETGPKSGLVRFVVGPDNSVVPDVVGKLP KKVPLRKCVVTNEQYPKMEMFRTVRTPENEVVIDLGGKVK KHLPVRTCVACRARDLKRTFVRLVRTPEGTLADDPTGKRS

## UniRef90_b9Y7V5 UniRef90 ${ }^{-}$KOJ394

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UniRef90 HOHUW4 UniRef90-H7F6T6 UniRef90_C2KV08 UniRef90-R7IFU8 UniRef90-G6A170 UniRef90-W7CMS3 UniRef90-D6TJS4 UniRef90-D9TM52 UniRef90-A4XL71 UniRef90-B3WER7 UniRef90-K2BFV2 UniRef90-K4LE93 UniRef90-B8EIA8 UniRef90-M8DL06 UniRef90-C7C8G2 UniRef90-R5NB00 UniRef90-R5QTM2 UniRef90-D1PLN6 UniRef90-1015S9 UniRef90-UPIO00364B5C8 UniRef90-B5E156 UniRef90-A3V2A9 UniRef90 R5M3S3 UniRef90-UP100046A51C9 UniRef90-K1TJ61 UniRef90-15BSC1 UniRef90-B6AT69 UniRef90-CoGIV6 UniRef9-IITRUJ UniRef90-R7CC37 UniRef90-A3VD36 UniRef90-D4KD00 UniRef90-UPIO0047CE2E9 UniRef90-EONYH5 UniRet90-G5H4L3 UniRef90-Q1YFG0 UniRef90-K4KXN2
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 GRGFY I K N DVAVAK SAKQKNALFRGDK DDEQESFY DELDS GRGAY L CK NLLSCLEKAEKKKAFFRSFKEADPKEDLDR LLRE GRGAYVCRQESCLMRAIRQKQLERQLEVQLTDDV GRGAWVRADRNCLTQALSGNKFGRHLKQKVNDGFLDHLER GRGF Y I I I D S K V A E K A K K K N S I F Q Q M K M P EQ D G F Y D QL DD
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 G K G C Y L K K D V S V I D T A Q K K K I L D N N V F E K S V P D E I Y GRGAY I C D S I E CLLE KVI K N K RL E K V L E K N I S E E I Y N E L R G GRGA Y L C R NPLLCWA QAL R R N A L E R A L K I A
GRGAYLKK DLEVFEKAKKTKALNKALVVVVPDTLFEELKN GRGA WVTATARATDDAAVKRRAFNRAFKSS EAKVAPDDAD





 G R G A Y $\operatorname{L}$ K K K D L E E V V D M A R K T K A
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 PFRMCLATREKDPASRMIRFVLSPDGEVVLDDAGKDP $P \vee R Q C A V T R A S Y T Q D C L I R F V R S P D G V A V P D V A G K L P$ H Q S L R K E IV VT S E M L P K K D L I R V V K N K Q N E V F I D P T Q K A N $K K V P L R K C V A T G E M R P K K E L V R I V R S K E G E V V V D P T G K K S$ R R CPERRCIVVGETGTTATLVRFADGPDDQVVPD DEGKLP
 $K H V P Q R T C V G C R Q V L A K R E L V R V V R T A Q G V R L D P T G K A A$ $R M C I V T R E K G E A D D L I R F V A G P D G S V V P D L K R Q L P$ KTRRQRTCIVVCRESNTKSNLLRVVRTPEGAVVFDSTGRMN




 $K K D P M R M C L G C Q E M K P K K E L L R G V K V Q D D V L E F D E T S K K N$ RDVLTRQCIASRTVKPVGEMLRFVVAPDGQVVPDDHARLP RRGSERRCIVTREQKPPEGMIRFVVSPDNRVVPDLAGKLP



 ERRCI AT GELRRDPALMMIRFVVGPEGQAVPDVRNKLPB
 K HVP ERKCILS GAHGARAELI RLALDAPDGSVLPDLRAKAP MKNKKEMIRVIRTSEQEFVLDATGKKN K H DP L R T C $\quad$ G C G E K K P K R E L L R IV V G E N N S I F Y D P T G K A S K HIPPQRMCVVACRRKMYP Q N E L I R L L V R D K T G E I I K F D C D K K L F KKQPLRTCVVTKEVKDKKELI RVAATKEGKVSVDKTGKAQ K H

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$P$ VRVCA GCQE QK LIKKDMI R IVRTAEGEVMVDSTGRKA

RHVPQRMCVACRRTESKRQLVRLVRLADQSVVVDPSGKQA
LR K DVA S N T M L P K E E L I R IVVK N K D G KI FIDD P T F K A E
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E R T C C V T R K NV G A N TLL R F VI G P N N Q I V P D L K S N L P

 K K I P L R K C I V C Q EMM P K K E L L L R V V R T P D E R I V I D L T G R A A

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ERRCVVT GEVREEADLVRMALGPDSELVPDLAAKLP

$\mathrm{KK} \square$


 HVPERTCI GCRAKGPRAQLLRLVIDD DGRLRVDPRAVAP ERMCAVSRQS LDPSHLIRFVLSPDGAVVPDLERRLP K K $\square P M R K C D L S N E M K P K N D M I R V V I K N K E G E I V T A D A T G K A P$
 $R R L P Q R T C I G C R K Q E D Q P G L L R L A L A P D G A V V V D L H R R M P$


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GRGAYLCPQPSCLQTAQKRRSLERMLKTSIPDQVYQALAE GHGAYI KKDDEVLAKAKKSNALGRALEVEIKD GRGLLWVTGSRAMVEQAVRRKVFAKGFRRDVK $V A P T R A A$ GRGA $C$ C CRECVEKAATRKQFARAFKGEVRGATS DDLVN GRGMYVAAEREALDMAVKKRLFSKGAKRQV V VVPDDLVA GRGAYVSKDVALVEKAQQKGI LEKFFNADAEEPVYKEIIR



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| UniRef90_K2KX23 | R I E ELLTRKCIDL |
| UniRef90-R6X2N2 | M F D |
| UniRef90-S9S7Y8 | LVE Q MLA R R VLe L |
| UniRef90_Q1K0G0 |  |
| UniRef90-E6MF51 | ALRKEI Q |
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| UniRef90_FOSU92 | Q C D |
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| UniRef90-E6VGA3 | AVERLLVRSA Q |
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| UniRef90 C0W7C8 |  |
| UniRef90- $\mathrm{NOBAF3}$ | R\VD A L M V K R L A G |
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| UniRef90-X2GIT7 |  |
| UniRef90_W6A6N0 | E $\square \mathrm{K} N$ |


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 GRG G $\square W V$ S A E R A A L E T A V K K N L F S R A A R A P V V A S


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 GR GA WL T A D R V TVV
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 GR GA WL H P S E P CLLALAAVKRRAAGGRALRGATRGEAWNA GSR





 GRGAWLTPS $\square D A L D L A E Q R R A F G R A L R V S T T V D T$
 GRGAWV H P D E K CLLNRA LTTAAAFARSFTRTK T A S
GRGAYTCMNDFCLRGAADKKQFSRAFKGEVREADATGLVS




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Y L E G E
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Y V E Q
LVETLLARAA L S L
QV EALLVKR
LL KALEAE
Q 1 MEQ
LVSNE Q
VIEAGLRRQALS L
VI N
RI E A QLARDRLGLE
ELE E
$\stackrel{\rightharpoonup}{\mathrm{V}}{ }^{-1}$
S EMLKEQ EAGLVRDRLGLE
$R \square E Q A L \square R A R \square G \square E$
QTHKLLFRRCLDL
R L
ETEAVLARRLVEL
YVEQTVAEQA
LVDTLLARSALSL
$L V D R L I$ YK D AL
LFNEQ
AV E GLLCASLLGM
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$\stackrel{Q}{\mathrm{~L}} \mathrm{~L}$
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EVDRLLEADCL

YINE
LVDALI LIKRVTG
RVK
ETDALLLR
S LE Q

E I E K
Y V E R
Y V K K L
F V ER
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QVRSSQAPRRL
RLHHL
MVD
MVDA LLETRADD
QVEAALTRRITDL
IV DKLL LKATLG
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RLNAKI Q
VEVALAARE
A $\square \mathrm{DKALLEKCLNL}$
$\mathrm{G} \square \mathrm{E} T \mathrm{R} \square \mathrm{K} \mathrm{D}$ R
RVDHLLQQSCLRL
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ETDALLVRSAI
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E M
$R T V A L L R R R C \square A L$
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RVEA L MTKAAL
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| UniRef90-W5YKB0 | RRCAVTRVRLPKEEMIRFVISPDGVVIPDLSARLP |
| UniRef90 ${ }^{\text {UP }}$ | RKCLGCMQSKPKRELLIRTVKNKTGEI QLDTTGKVS |
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| UniRef90-Q6MTP8 | NLRKDIASNQMDEKHQLITVKNKNNEI FIDTTYKAN |
| UniRef90-COXSE4 | PLRTCIATRDARPRTELLRVVADPNGRILADPSAT促 |
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| UniRet90-A0AO31H |  |
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| UniRet90-F8CRH7 | P |
|  | P |
| UniRef90-K2E | RKCI GCGELKERSDLIKITKTYDTEVVVAPSSKYF |
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| UniRet90_UPI00038 |  |
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| UniRef90-B8HUA8 | RIVRVYPSAEVCLDEG S |
| UniRef90_K7WMT6 | M |
| UniRef90 S6BZA0 | GCGATLGKGALLRIVVRNGGHMSFDPTGRLA |
| UniRef90-UP10003 | (1)FVLGPNNQ\VPD\KSHLP |
|  | dotsallp |
| irRef9-D90 | $\underset{P}{P}$ |
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| UniRef90 UPIOOO3613528 | PIRMCLSCRERKEKKSLI RVVRTLIGGLEVDPTGKKA |
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| UniRef90 K9RPJ4 | KKPRRCLSCRCLGHKSEFWRVVRLAQSQTVVLDQG Q |
|  | R |
|  | VRTCIGCKCKKPKKEMIRIIRTPDEKIEDDRTGKKS |
| UniRef90-UPIO0036EEA04 | P |
| Uni |  |
| UniRet90_D2NNU6 |  |
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|  | - |
| UniRee90-V41 | DGMLTPDIAHKLP |
| UniRef90_UP100047CD135 | LI RIVKNKEGKIFIDLTHTAE |
| UniRef90 UPI000363F1F8 | - |
| UniRef90 G8N831 | M |
| UniRef90_R5Q086 | RC VSGKSY |
| UniRef90_K1SYF7 | RTCLGCNEAKPKNELI RIVKQSDGKIFVDKTGKAE |
|  | A QLL RFVVGPDGQVVPDLAGKLP |
| UniRef90-U4V8N8 | IVTGEVQPKHGLIRFVVSPDKQIVPDLAEKLP |
| UniRef90-B9QZZ8 |  |
| UniRef90-K9UMG4 |  |
|  | P |
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UniRef90 R7K6U0 UniRef90_D0MG51
UniRef90-B7AA90 UniRef90 UPIO0035DAB61 UniRef90 R6GNR4 UniRef90- X8K455 UniRef90-A5GVG3 UniRef90 A1SLK8 UniRef90-A4X4N6 UniRef90_K9TT42
UniRef90-A3WI27 UniRef90 W5YKB0 UniRef90_UPIO0037D00B2
UniRef90 UPI00047EFCEB UniRef90-UPIO0047
UniRef90 Q8DHL3
UniRef90 UPI0003B6DAC9
UniRef90_Q6MTP8

## UniRef90_C0XSE4

UniRef90_UPI0002FA3F2F
UniRef90_U1ZXV7
UniRef90-D8G056
UniRef90 UPIO00362B6F7
UniRef90-D6XAR8
UniRef90-B9M1F9
UniRef90-W3RNZ6
UniRef90_UPI0003F6B9AD
UniRef90-Q1QS65
UniRef90-UPI000381D06C
UniRef90 K9XBT7
UniRef90_UPI00035FF84A
UniRef90_COZYA4
UniRef90-R5PTF2
UniRef90-K9F0M0
UniRef90_C7MQV0
UniRef90 A4AHC6
UniRef90_BOT166
UniRef90_A0A031HTV4
UniRef90_F2NP19
UniRef90 F8CRH7
UniRef90-B6JCS5
UniRef90_K2E445
UniRef90-D8FCA1
UniRef90 Q2RMS1
UniRef90_V5SEA9
UniRef90_UPI0003815861
UniRef90 E6W7D2
UniRef90-M2U428
UniRef90-D5BU77
UniRef90-B8HUA8
UniRef90 K7WMT6
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UniRef90-T2JVY9
UniRef90 A3YVS3
UniRef90-B9MR47
UniRef90_R7KF68
$\mathrm{K} \mid \mathrm{I}$

D LD A VLVRSAGG
$S L$
E $\mathrm{L} D G K \square Q$
$R \mathrm{~L} \mathrm{E}$

R
RI ESALIKDRDGLE
LVEDGLLRRMMD
RVEHLLEKRVL
EYDK
RLD
MVYDAHER
FINAK
R L
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LID T LLVKGAL
YVEQ
RMEERTA
DTERLMVR
ETGQSLARSA TD
DLEMLLARDCL
R L
A $V$
EI EN
LI K Q K L E

QVERLLAKRVLD
A LER A A L D RLGGE
E VR
A WE Q
QTEA LLLQSALD
$\square 1 \mathrm{NK}$
RVDRLLEERCDDL
RVDGLIEKRVL
RLEAGTKK
El DEAELERRTLAL
HI MS MLRSRVLSL
R L
RLNH

EL
I D
 $\qquad$
R V K N
HVESLSA
Y L
$M \nabla P N L I R K R V L D$
A L C R RE
$R$ L
RVEK L M E D S A $\square$
Q T R A V I A
$R \| E Q A L R R D R \square G \square E$
$\square L E A G L V R R M L$
VI N
RIE ALLEERAL
$R$ VDG $\square$ F VRRCCD L
Q IERALERAADD



WlETQLRQDRLGLE
RLSKFVPEQEL
RLSESLA
$F L K N W Q$


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| :---: | :---: |
| UniRef90_U1X327 |  |
| 90-R6IVG2 | Q |
| 90-J9SH66 | GAWLHVRAECISTATRRRAFATALRTPGLTVDPDDLTE |
| UPI000 | GRGAWI GVGRSALDEAKLKGALARAFKT GELDVPGDLGE |
|  |  |
| UniRet90 | GRGMYTCFELDC:RNADERKQFQRGLKVDHQPVTVDEVVA |
| UniRef90-UPIIO0041FC761 | GRSAYICPNMSCISVAQKKNRLGRSLHASVPETLYKTLWQ |
| UniRef90-IORF47 | GRGAWLHPTPRCLEAAVRRRAFGRALRTTGSPDV |
| UniRet90-W7T0G3 | GRGAWLHPDPACLRAAERRRAFPR |
| UniRet90-A0ZFU1 | Y CQQMSCLQASQKKNRLGRSLRASVPETVYQTLWQ |
| UniRef90-UPIO004 |  |
|  |  |
| UniRef90- HoT | GRGLWVSATRQAVAEAVRRHHFSRGFKRDV |
| UniRet90 UPIO00476145 | GVYHCMEEQCLGRMNDKRALKAHFSUVLPDDVLIMRLTS |
| UniRef90 K9RA30 | WLHPVSACLNAAERRRAFGRALRVSGNLDIS ALEQ |
| UniRet90-K2JVZ1 | YVSAERDVLEEALKKRLFSKAARMDLT I PDGFVD |
| UniRef90 K9UVH7 | AY CQNQSCLTAAQKKNRLGRSLHATVPEALYQELWQ |
| UniRef90-E2Q958 |  |
| UniRef90-W0ZBD4 | WVHKTPACVDTALRRRAFVRALRVSGPLDA QtLEN |
| UniRef90-S6LDQ3UniRef90-AOYK84 |  |
|  |  |
|  |  |
|  | GRGA WITPTLDALELALKRHAFQRALKVSTPVDA GHVRK |
| UniRe | GAWLHPDQRCLELAVRRRAFGRAL |
| UniRet90 |  |
|  |  |
| $\begin{aligned} & \text { UniRef90_UPIOOOOO } \\ & \text { UniRe90 D3PGB } \end{aligned}$ | KTDENIFVKLVK |
| UniRef90 |  |
| UniRef90- 3 BB |  |
|  |  |
| UniRet90-R6VFF7 |  |
| UniRef90_B2HKS1 |  |
| UniRef90-14BHS3 UniRef9-K9VZ65 | Q |
| UniRef90-L7KMZ3 | W |
| UniRef90-UPIO004768B9F | Q |
| UniRef90-J9FMV0 | D |
| UniRef90 C7MNL9 |  |
| UniRef90-D6E610 |  |
| UniRef90-Q73VV3 |  |
| UniRef90-C1B312 <br> UniRef90- 48 R 56 |  |
| UniRef9- TOHK48 | D |
| UniRef90-Q7NH86 | S |
| UniRef90-W5TSS2 UniRef90 14F299 | H |
|  | Gras |
|  |  |
|  |  |
| UiRef90-L8DLF6 UniRef90 K9CST6 | $\mathrm{D}$ |
| UniReef90-U5W8V6 | E |
|  | E |
| UniRef90-UPIO0046662DE | WL |
| UniRef90-F3X1T6UniRef90- W5XSA2 |  |
|  | GRGAWVHPKPECVSRATKSSQFARAFRRPVAS VDAVEE |
|  |  |
| UniRet90 UPIO0001850 |  |
| UniRef90-UP10002194F25 |  |
|  |  |
|  | E |
| UniRef90-WP100040 | E |
| UniRef90-X5EBH0UniRef90- Qo9BU0 | GRGAWI TATVSAYETAVQRRAFARALKVPVEADT |
|  | GRGSYLC GAGCLAALKRKAFGRAFRGK |
| UniRef90-UPI00034DB963 |  |
| UniRef90-E5XSU6 | WVCPKPTCVSAAGRKNAFARALRHPGPVDVLDEVTA |
| UniRef90 U5DKE3 |  |
|  |  |
|  |  |
| niRef90-Q4JV50 |  |
| UniRet9_D628M9 | R |
| UniRef90-L8LTZ4 | QEDCLRTAQQKNRLGKALKTYVSEEIYQKLWT |
|  | E |
| niRef90 K9T773 | T |
|  |  |
|  | GRGAWLHPNPVICSQRAVQRGAFARSFRTAVD |
| niRef90-M7NBK3 niRef90-D4TVI8 |  |
| niRef90-UPI0001B88ABA |  |
| niRef90-H6MYU7 | SRLVVNPDDLVE |
|  |  |

UniRef90 U1X3Z7
UniRef90_C8XJB7
UniRef90-R6IVG2
UniRef90 J9SH66
UniRef90_UPI0003F71596 UniRef90_UPI0003472885 UniRef90_UPI000475DB11 UniRef90_UPI00041FC761 UniRef90_UPI00026CC4BF UniRef90-IORF47
UniRef90-W7T0G3 UniRef90 A0ZFU1 UniRef90_UPI000470BB8E UniRef90-G8RLY0
UniRef90 ${ }^{-}$HOTKG0
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UniRef90-K0EW41
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UniRef90-W0ZBD4
UniRef90-S6D4Q3
UniRef90-A0YK84
UniRef90_L1PHZ5
UniRef90-W5Y1C0
UniRef90-D5UD70
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UniRef90-D3PEG3
UniRef90_UPI000374E773 UniRef90-UPI0004759534
UniRef90-E3B9A7
UniRef90_R6VFF7
UniRef90_B2HKS1
UniRef90-14BHS3
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UniRef90_UPI0004768B9F
UniRef90-J9FMV0
UniRef90_UPI0003B3A29C
UniRef90-C7MNL9
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UniRef90_C1B312
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UniRef90_Q7NH86
UniRef90 W5TSS2
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UniRef90-C7QDX9
UniRef90_L7U6D0
UniRef90 L8DLF6
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UniRef90_U5W8V6
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UniRef90-H6MYU7
UniRef90_UPI00036B6004

EFMRHVRK
$T V E N \square L R K K \quad G L E$
R Q
$S \| L E T L R Q R \square E N L$
${ }_{M}^{R} L A T A L E R D R \square G E$

R
$Q \vee E A G \square A R R$

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RVEAGLLRRMSEL
R L
Y L E A 1 T A PR
AV TRLAAQQ
LI D RLL L A R R C L D
$R \prod A T Q L Q R D R \square G L E$
QVRDTYKR
LI E A GLLRRVLGL
HVA A E IAR
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$R \quad$ D
$R \square T A T L Q Q R R \square G L E$
D MLREHERRA
EVSSALR
HIESLHA
RVEKGLARRAGDL LI E QGL RKDRGGLE ELAKGVKPK
Y V ENR
HLA Q Q V
$\overline{\mathrm{LV}} \mathrm{EHEQ} \mathrm{L}$ RTE $L \vee E A G L R Q D R \square G L E$
QVRTRLEQRLTG
$R M T H S \| L Q Q$
ALERN ALDR R LGLE
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Y VD H Q Q A R REL
$R$ LH T Q
Y I A S Q
MVE
$R$ LK N
LAE Q
LFNE
RLVARAAER
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$\stackrel{A}{L}$ I Y E R
R L
R L
KV V L LTRKA LDM
El Ler TRR
K L EK
R L G Q E
F VER
VFDAEV

UniRef90 A0A031JEP3 UniRef90-M1UZE6 UniRefoto-ABLGE3 UniRef90-K9SKG6 UniRef90-B1 $\times 108$ UniRef90-R5SKC3 UniRef90-Z9JSN5 UniRef90-D1BJ67 UniRef90 W7J1A2
UniRef90 W7DU92 UniRef90 UPIOO03B2FOB2 UniRef90-UP10001D311E2 UniRef90-E1VUD2 UniRef90-E3J038 UniRef90-Q6AG50 UniRef90-A9BCl4 UniRef90_D3LWM0 UniRef90-UPIO00476890F UniRef90-A0A024KEQ1 UniRef90_UPIOO038053FF UniRef90- R5DP25 UniRef90 ${ }^{-}$W1 XRR2 UniRef90-L1QGK1 UniRef90-M2WU25
UniRef90-B7KIU3 UniRef90-E6YTKO UniRef90-DoLZ91 UniRee90-UPIo003C7E284 UniRef90-W5UTLO UniRef90-B1VGC1 UniRef90-UPIO00403DC43 UniRef90_F9QD66 UniRef90-F5XR97 UniRef90-R6S288 UniRef90-Q2JSB8 UniRef90-U2XC32 UniRef90-R5H7X4 UniRef90-UPI0003B44A42 UniRef90_R7LTB3 UniRef90-R5VUP6 UniRef90_UPIo0036295FE UniRef90-L8LWU7 UniRef90-F9PZG9 UniRef90-KgYPU1 UniRef90-Q6KID9 UniRef90-UPIOOO2003758 UniRef90-H8G620 UniRef90-C5BWS4 UniRef90-M5BA45 UniRet90-A6GK82 UniRef90-XOPEM3 UniRef90-Q2NC11 UniRef90-UPIOOO373733E UniRef90 K1WC76 UniRef90-D5E4K6 UniRef90-K9SVV3 UniRef90-E2MU39 UniRef90-K7SL23 UniRef90-K6W551 UniRef90-E4QTP1 UniRef90-UPI0003B73F6E UniRef90-Q7VA21 UniRef90-UPIO002485A05 UniRef90-UPIO0034D61D3 UniRef90-UPI0003B4B543 UniRef90-UPI000262F341 UniRef90-K9Z418 UniRef90-C8WC09 UniRef90-D2Q1L5 UniRef90-A0A021VLM6 UniRef90-UPIO0021929C1 UniRef90-UPI000288ADD9 UniRef90-UP10002ECB485 UniRef90-A7HZ92 UniRef90 DIYFW8 UniRef90-D3EPL9 UniRef90-B3PNC3 UniRef90-O98RR06 UniRef90_R9F9E5 UniRef90-UP100036567D4 UniRef90_UP10003B4DB0A UniRef90-M1E6M5 UniRef90-N1MM48 UniRef90-K9U5Y9 UniRef90 UPIOOO36F781B UniRef90-A0A014L5Y9 UniRef90-Q31LL8 UniRef90_UPIOOO47BC5E8 UniRef90_V4PY63

ERTCl| 10 20 $\square R \| R T C I A T R E H Q P D T A L L R V V R D N P G V I L P D P N R R M Q$ PI RTCVGCRTRAARSSLLRLVVIGGGELPDDRRRMP ERRCIVTGEVQPKAGLVRFVLGPDNTVVPDLDERLP RRCI SCRRLDHRDHFWRVVRSRDGQISVQLDQGM RRRCVACRKLAPKQSLWRVVRVPSQQVQLD RGM RTGPERTCVGCRKAAPRAQLLKLVKGKAGNIVIVPDSKTF PVRTCVGCRQRDAQSQMI RFVMSRGDEVVADPRRVRS
PVRTCVGCRVRAADTELLRVVLAAGEAIPDPRRRMP QRCCLVTREKGRPEELIRFVVSPDEMVVPDLTERDP
PVRTCVGCRRRDAQDALLRVVRDPDWRLAPDERRRAP MRTCVGCRVRTSATELLRVVAEAGSAAVPDPRRRDP QRTClGCRTVTSKNELIRWVLAPGRAVSLDQQGSAS KSAVRTCVGCRSRAARSDLLRVVVVDGELLPDVRRRLD KTVLRRCVACRKLDDRQQLWRVTRDHQGGVVLD MRTCVGCRKRELAVELFRVVAVTDGNGQCAVTASLP VRQCALTREEKPIADLIRFVVGPDEVLVPDTDAKAE
ERKCVGCGKL LFDRENMVKITANDHGEVVLKPNNKIF AKRELI RVALSPDGNITIDRSGKAP $P V R T C V G C R Q Q V L A A D L L R V V A E P T G F V V P D P G R R M F$ RRCVSCGQVALLKDSFRIVR VYPSRKLQ
ERTCIVTKKSASAETLIRFVIGPNNQUIPDLKANLP
RSTPT

 RKCUVCQQVLHVTKLLRFVYKNKQVSIDDLSQKIS | H. |  |
| :--- | :--- |
| K | I | S

 PVRTCVGCRQQADKRNLLREVWRPAGPVVVDAGQVEP KKDPVRTCLGCQEKQSKRELVRIVRTPESEIKLDPTGKAN PLRRCVGCRQLFPRSQLWRLVRQYDTHQVLDDQGM PVRTCVGCRARASRSSLRVVARDGVLI ADRAASRP ERKCAGCGKDKNRNELIKITKNAHHDLVIDGDAKIF VRTCVGCRSCVPRSSLLRIVARNS QLVVDEYARMP RDPERMCVSCWKIKNRNDLIKIGRNTDGKVIVNPDSVTF KINYRRCDGCKERAAKNELLR VADGDACVPDPRGTLP RK!PLRKSVVSNEVINKRDLLRIVKNKEGEVFIDPTGKAN KKNYRRCVSCGLIAPKNHFCRVVRNFPDHKITLDQGM
 HGPVRTCVGCRVRDLRSALVRVVVTSTAGIVVDERRTAP PVRTCVGCRRRAPRSALLRIVADPPTRLVVDERAVMA PERTCI GCRVTRDPGGLLRFRRSVDGYIVPATSARTS
 ERKCi ATGOVIGK KPNGRKCVVTNKIFPDDELLRRFDYNKENKVTLDLEKNKK PTRTCIATKQRRNCSELLLRIVATSDGAVVADPHRRM PVRTCVGCRGTGDPATMVRFVLDGDGVVLDPDSRAP VRTCVGCRQRAEATSLVRVVATQQWVAVPDPRRSLP
 KKQYERKSIVDNKKYLISDLLRFSKQKDNQIYFDPEFKLK LRRCVACKKLVDRKQLWRVVRDYQDGIVLD QGM
 VRTCIASRARHPDTELLRIVRDEDGRVVVDPHRRDP RRCMSCQKIDHKSNFFRVVKNNAQQIITVDQGM RRCI LTGGKDSRDYLIRLALAPDGSVHPDVRARAP K $\square R E R T C I G C R K R D S P S D L L R M T V S G G R V L P D P A H R A P$ PVRTCVGCRRRDQQTVLLRVVHVEADEGVVDVRRSBP
 ERRCIVSGESGPKGGLIRFVLDPEGRVVPDDAEKLP KVNYRRCTSCRCDNHKDKFWRTVKVY■SQTVQLDKGM KLYLRKSITDGQYYPQDRLVRFAKSKDGIVEFDPNKNKK


PQRTCIGCRVVQDKTDLLRVTWQDGVGIVLDREQRLG
 ERKCi LTGDRADPETLIRLATGPEGQVLPDVRAKAP MRRCISCGRVALKSEFWRIVRDRDGELQLD RGMM MRTCVGCKERVPAVDLLRVVVGRTGVIVPDVHRRLP



UniRef90_A0A031JEP3 UniRef90-M1UZE6 UniRef90-A8L6F3
UniRef90 E3FOC5 UniRef90-K9SKG6 UniRef90-B1 1008 UniRef90-R5SKC3 UniRef90_Z9JSN5 UniRef90_D1BJ67 UniRef90 W7J1A2 UniRef90 UPIO003B2FOB2 UniRef90-UP10001D311E2 UniRef90-E1VUD2
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UniRef90 R5VUP6 UniRef90-R5VUP6

UniRef90 UPIooo36295FE UniRef90-L8LWU7 UniRef90-F9PZG9 UniReffo-KgYPU1 UniRef90-Q6KID9 UniRef90_UPIO002003758 | UniRef90-H8G620 |
| :--- |
| UniRef90 | UniRef90-M5BA45 UniRet90-A6GK82 UniRef90-XOPEM3 UniRet90_Q2NC11 UniRef90-UPIO00373733E UniRef90-K1WC76 UniRet90-D5E4K6 UniRef90-K9SVV3 UniRef90-E2MU39 UniRef90-K7SL23 UniRef90-K6W551 UniRef90-E4QTP1 UniRef90-UPIo003B73F6E UniRef90-Q7VA21 UniRef90-UPIIO002485A05 UniRef90-UPI00034D61D3 UniRef90-UP10003B4B543 UniRef90-UPIO00262F341 UniRet90-K9Z418 UniRef90-C8WC09 UniRef90-D2Q1L5 UniRef90-A0A021VLM6 UniRef90-UPIO0021929C1 UniRef90-UP1000288ADD9 UniRef90-UPIO002ECB485 UniRef90-A7HZ92 UniRef90 D1YFW8 UniRef90-D3EPL9 UniRef90-B3PNC3 UniRef90-O98RR06 UniRef90-R9F9E5

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$\stackrel{E}{M} \| V \mathrm{~V}$ GKKDGLGL

Y Y E NRLKNQ
RLN
A L
FVEQSSAR
LAR TRLEQRLLG QFEALLKTRALDL
E
D LQE

L V
$\stackrel{\llcorner }{\mathrm{R}} \mathrm{L}$
SLS MLLA
E
EVEKNGQKR
VLGREGSR
EVVEWIK SK
ELMEVLWKK

E
E WDQFQK

ELRN
VIEEQ
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E VR
HVERHTESKA
$R \quad \mathrm{~L} A \mathrm{~A} Q$

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ALEKALLER LLGLE
QVENLI ANRII KL
RL
ELEEVLWRK
RLSN
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ML
EVEULWKK
E V N K WVK M K
RLNH

Y VE Q
K L K E
$R \square E N A L Q Q Q V L N$

Y VEQAlVVDE
HVER
LVERLLARRAAD

RLENE
EVNDWQK
QVEA $\square W Q K K E \square$

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A LRRQDLLSR \(\quad \square G L E\)
RL
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30
40 R $V$ I RMCVACRRRRPKGELLRILVTEEG FVIDPS GKRP
 RRCL SCRKVGGRRRQFWR VRVPSRTVVQLDDGBGA
$P$ L R R C I VTRTMGAPETMLRFVIMSPDGVLVPDLAAR LP

 R R CVVSCKKLAPKEEFWRVVRSKK S DTJK LDDQ G E H T P E R T C CVVVCREKKKNK S E L L F R I AAK I S E S N Y S F D E K Q K L Q K A N Y R R C I S C R K I G L K Q E F WRVIVRVM S R QV Q L D
$P V R M C V G C R G R D A R S T G L R R V V R E G S P S D V I D D R A R C D P$
$P$ VRTCVVGCRER DLLRSALL R LVVLDRS GASTD EPRRSLD R R CLSCRK $\quad$ CAPKNSFL R VVRIYPSHQDK LEE GM

 K K T P L R T C I V C R E K K E K R K L I R IVVRDK EN QV F F DK T G K A N
 $R Y \operatorname{V} P E R T C V A C R R K R P Q G E F V R L T R T A D G W R V L P G B R T$

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K HVP
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 \(M M C\) GCR QRA G I A E L V R V V A P T G A IVVVDIA K TMP \(P \prod R S C I G C R Q R R P S H E L V R V T R D D D G N S I I T V D G A S N\)
 H T RLRTCIATRRRFPDTQLLRVVVDSADRVVADPLRRLP MGCRERAA K I E L L R TVV A V E G E CVVP D P R G T L P
 \(R H R P E R T C I G C R A T V V V D G L I D R A L L D D G V V V D Q R R T L P\) LR R CVVACKKVLDRKYFLKVTRDFQNGVVVSGRRTMM



\(P Q R T C V G C R R L A D P A N M R R Y V L V A G V V V A D P T G H A Q\) MCI ACRRREPQS QLLRVLVRADDRIVVDTDRRLP RTCVACRKK DAPSRMVRLAYTN GYVVVDREGKL P



 \(P\) VRTC \(\square G\) S R R R A P R S S L L R VVAALS D G R V V A D P K A V M P MACRALMDRSQLWRVVRLATGGLQLD

R GM \(P L R R C V V T R V Q G E R A R M L R F V I G P D G S V V P D L T A T P P\)
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\(P E R T C V G C R E R A A K S D L L R I V V I\)
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 \(T R D R A P P Q H V L V R R L V G P D N L V V P D V R A K A P\) \(H V P E R T C V A C R R K R P Q G E L L R L D T P Q G Q G W V V Q Q R N R T\)


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 GRGAY I C GS DKCI E
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GRGAWI T P QLDSALETA EKRRA FPRA LRR
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\(R T R C L L V E G Q G E H S S S S K E K C F G T S S K S E\)
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GRGAYL HRDRRCFDLA ERRRAWSRAYRR
GRGAWI TADSDLLDIKALKRKAFARSFKQATP
\(G R G D W V T A A A E A V A T A E K K R V F G R G F K S E V R V E \quad P G L E K\)
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 GRGA WLAA TMEAYE IAEKRQA FGRA LRR I
GR GA W GVTR GE LEQA YAK GA LAARAFKVQLSDTLPQQ \(\square\) AT \(G R G L Y V C A D P A C W Q E \quad K P L R R A F R A Q\)


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MLHVGLERRA \(\square\)
VLD A QLERM
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RLESL
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A TE A Q TEEH
CLKTK
AVERQLAARLVEM
WVQEQ \(L R K K \quad G L E\)
K \(\square\) RKEK

EWQEL
\(Y L L S L\)

Y
\(R\) L N Q
VVVE H \(\square\) E F \(\square\) S E L D

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Y L R

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E LIE
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NLKR
\(R \square K K L M\)

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E LK E
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RKCCVVQTSRPVEQLLRFSRQEENDFLLMENEKDA
\(R E L I E\)
 \(R R C V S C Q C I A L R D N F W R V V R V P D Q H F Q D Q L D Q G M\)

 LR R CV A C R QL LD R S MLL R VI R D H QE GVLLLD QGM
 V R F C V A C R QL I N R C R L L R V T R D Y E Y G I V DE R H VP Q R S C I DC K E K K D K H K \(M R T C V G C R K R E D A V E L A R V V A N G E Y A V V T V D P A R K L D\)


 K K Y T R K S M G C D G K T D S S WS A L L
 E R M C A V S R D V R P I E E L I R F VVVAP T G E V I P D L K R K L HTPERTCVVACRRKRPQA DLTRLDTRLDGGNTDQRGARA
\(P\) VRTCI GCRQREDAVGL SRMVAVVDGNVVVDRTGNLP


LRTC I V S R Q K K P K K E LI R VA I S N Q GVI S LDLLE Q KL P



ERTCLICREKKEKKD LR LVKPGEDRYYFDEKQK A \(H \square P E R T C I A C R R K R A Q G E L L R L T R T P R G W Q L D A G B R T\)
 \(H \square P E R T C I I C R A K N G K S K L F R L A K V K E A F Y E F D K E Q K K Q\)
 P VRTCI GCRKRELAAADLLRTVVARAGNVISVDTSASMM

NAHFPRALLVRYV
R H T
\(P E R\)
\(P \square R\)
\(R A \operatorname{L} L V / R Y\) V L A
 MRTCI GCRGKAPSDALVRRVALPGTRVVLDPVRRLD

QRSCA GCKKK GEKSEEI RLCMK GD K L I DDEKHSED
V R S CFVVCREKGEK S SMLRRLVVD D S GVVIWPDLLAAKAP
\(P \vee R T C D G C R R R A P A T V E L R R L V A S A D G T V V V D A R H R D P\) \(R H\) VP QRSCLID K K K T A K H K L L R L ALLDERGRVV L D VKAKRP \(G E L L R V V A V \quad D G R L V V D E R R R L P\)





 HRPVRMCVGCRQRAE IT E LVVRVV A QKCDGLVVDPAKTMP ELLRVVAESTGNVNVDPSRRLP \(R \square C \square V S K K K Q H T N N M I R V N A T K D G K V A I D D L D Q K L Q\) \(R \square P P R R C V A M K A D Y P R D D L V R F V L A R E W W V V P D V Y E K M K\)

P \(\square R S C I V C R K K K N K N E L F R D V G S K N G K A I Y D K S G K D N\)

\(\qquad\) V D
GKAP
MR LAADAPD G L VLPD A A A K A P
 K HIP \(\quad\) R T CVI CRRRFAK S DLL RYV CPPGGDPVADEA QTQP HQPERMCVI CRRRFAKHQLHRLVASADDRLLDDPKQTRP K H \(\square\) P ER S C L I C R A K K N K \(\square\) N L F R L A K L A K K S S YV Y D K D Y K DQ
 PVRMCVICRRRFAKAALTRHVRDAHGNLIDDAPQTSP

 \(K K L R Q R S C \square A C R K L A T R E D L I M T V L I G G E V V V D L N B M S\) RHQP IRMCVICRRRFAKHELLRYVCPAEGAAVADERQVLP K H DP L R T C V I C R R R F A K R E L L R Y V P P T D A A G V P D E R Q V L P MGCRERAAKSELL RIVAV


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HLGQLGKQVVG
RI EA GLRQRLRDL
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RLTE
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\(R\)
\(R L R G Q\)
RLNA
RLER
\(\mathrm{Y} L \mathrm{~K} N \mathrm{~L}\)
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EVNKWLSKK
DTDALLVR
K IESQLMDKVLGL

VVYEQKEQQ TVV
\(G \prod E A R L V Q G L G L\)
QLNK


ELREAQ
ELEEK L WAK
MTRRQLRAHVREL

WADRTTAREELDME
Y I E S L
MVESSLKRLCL
Y L
KISEE
HIS S Q \(\square \mathrm{T}\) R
1 L
\(R \square E A G L Q R R A L G L\)
\(L \square E Q G \square K R D R \square G \square E\)
\(\square\) VES L L K R R C L D

LVR
V V RKG \(\quad\) K K R HA \(\square\)
MVD D L K K
HTDELLEQAA \(\square \mathrm{G}\)
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HTES LS A
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L I T T Q

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\(P V R T C V G C R K R G L A V E L L R V V A V S T G N V I V D T A T S L P\) \begin{tabular}{rllllllll|l|l|llll|l|llllll|l}
\(K L\) & \(R\) & \(R\) & \(R\) & \(D\) & \(T\) & \(A\) & \(S\) & \(G\) & \(E\) & \(V\) & \(R\) & \(P\) & \(E\) & \(T\) & \(D\) & \(L\) & \(V\) & \(R\) & \(L\) & \(A\) & \(I\) & \(S\) \\
\(P\) & \(E\) & \(G\) & \(R\) & \(L\) & \(V\) & \(P\) & \(D\) & \(L\) & \(A\) & \(A\) & \(K\) & \(L\) & \(P\) \\
\(P\) & \(E\) & \(R\) & \(T\) & \(C\) & \(V\) & \(A\) & \(C\) & \(K\) & \(K\) & \(R\) & \(A\) & \(P\) & \(Q\) & \(E\) & \(E\) & \(L\) & \(L\) & \(R\) & \(L\) & \(A\) & \(L\) & \(R\) \\
\(G\) & \(A\) & \(E\) & \(V\) & \(E\) & \(P\) & \(D\) & \(P\) & \(K\) & \(R\) & \(A\) & \(L\) & \(P\)
\end{tabular}
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 P E R T C I I S C R K K G E K K D F L R I I S E E N G K Y V F D K E M K V Q
P TRMCVICRGRFPKSALRRMVATGDATRVMPDPRAVMP
\(P\) VRMCVMCRRRFAKA QLTRHVVLTPQGDLTIDAEKTMP
\(M L D R Q Q L W R V I \quad R D H Q D G V L L D R E R G M\)
PQRQCVGCRKRFEQGVLYRFVRAGAGWGSAPGERRGP
\(H \square P V R R C I G C G R R R P A R E M M R D T A D D D S V V S R T T K G K T P\)



ERTCIICRKKEEKKTFFRLC QREDKYYWDK T GKAQ RGPDGPVVEVDHRKLP \(M R T C V G C K V K D E T D K F D R Y V E F E G K P L P D D A R K L P\)
 \(M C I G C R Q R A E A T E L V R V V R D G T P V L V A D P A K T M P\)

 \(M R F V H R\)



 PVRMCVICRKRAPK GDLAR YVGPRDDSLVPDPGRNMP

MRIVLI \(M V R \| V R S P D G L I R V D P A A A M P\) H GVVSFDPEAQRP V V R D GA GALAVDAARRMP \(M C V I C R Q R F S K D E L Y R F T C P V H G E E L T M T A T G K T P\) GPEGSLVPDVSRRLP \(P \mathrm{~V}\) RTCVGCRARDARSDLMRTVAVGGGELRPDVRRCMP

 PTELLRVVIDNDRAVADPRRRLP
D DTVVVID HRRTMS

\(A R S S L L R \quad G V V V G \quad G E L L P D D V R R R M Q\)
TPVRMCVICRRRFPKRELKRHVACGAGALVHBPKQTMQ VRDSEGSVEVDTGGRKA \(H\) VP QRTCRGCGRKGPRAGLLRRVVI G GRLVEDQQGGMP
 VRRCVSCACLKDRTRMLRLVRLAS
 ESAVVVD S R GTMQ RGAAADLVR IVADAGLVIVIDDRKSMP

 H \(\square P\) VRTCVICKEKGSKYSMHRFVIQKD TDFFDEKNVLD
 V VA P D D R I VP D P K R S M P D P H G R L V A D P H R R L L
RRCQPTHRNLPKDVLLRFALAEDGE

 \(M V R C V L D G S \quad L V M V D V Q S A T T P\)




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SRA \(\square Y F C N N E N C!N K F \emptyset K\)
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 \(G R G A W I T P A Q E A V E I A D A R R Q F A R A F K V S A P V D A G R L C S\)
\(G R G A W I S P T L S A L E L E R K R A F K R A L R T S A P V D T G Q V R Q\)
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