


## UniRef90_UPIooo33148AF UniRef90 G3WLV4

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UniRef90 F7GC54 UniRef90-L5JS81 UniRef90-D2GU74 UniRef90-HOW6T6 UniRef90_P55774 UniRef90_U3KH03 UniRef90-K91G09 UniRef90-UPIO0038EC230 UniRef90_UPIO0046B1D3E UniRef90_UPIO0027418CE UniRef90-UPIOOO38BEDFC
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APHVADTPRVCCFSYTSRPI ${ }^{20}$ RRKLVVSYFETSSRCSKPG ${ }^{40}$ SPFGSGIPTICCLQFHNKRISPKLVVTYHDTSSQCTQKGV SPGEPYRPSECCFAFVTHPUPRVR\|SHYYETSSQCAMPGV SRGPYHPTDCCYSYLTRPDRKHWI SRYYETSGLCSKPG
 PVGSDDPTSCCCTYTSRKVPLRMVKGYDRTSDQCPTPGV PDAVNSPVTCCYTLTSRKDPMKRLMSYRRTSSKCPKEAV PDALNDPVTCCYTVTNKKIPGKRLKSYSVASSKCSKKAV
 SSRGPYHPAKCCFNFDTHAVPWSRITDYYKTSSQCSKAGI PDAVNAPVTCCYSFSSGKIVFKRLVSYRRTSSKCPSEAV


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| UniRet90_UP10003F14E3E |  |
| UniRef90-UPI00038C5620 V F |  |
| UniRef90-UP10003AF253B IFITKNGRFVCANPRDDWV |  |
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| UniRef90-UP10001954372 F K K G |  |
|  |  |
| UniRef90-P80075 I FKTKRGKEVCADPKERWVRDSMKHLD |  |
| UniRef90_UPI0002C59070 |  |
| UniRef90-UP10003C29D70 |  |
| UniRef90-UPI000332F610 IF FTVLD K EIC A D |  |
|  |  |
| R |  |
|  | I FKTKLAKQVCADP |
| UniRef90-UPIO0032 |  |
| UniRef90_UP100034FDOD4 |  |
| UniRef90 UPI0002C6758F FTTKKGQKFCGDPKQRWV Q M M M HL |  |
| UniRef90_UP100038BDC4C | FMTKR |
| UniRet90_Q68Y88 |  |
| UniRef90 L8اPF6 | NPSDAWV |
| UniRef90-UP1000333321E VFIT K K GHPI CANPRDEWVRDYIKDLE |  |
| UniRet90_M3WNV7 | VFITKKGHSICAN |
| UniRef90-UPIOOO39 |  |
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| UniRer90 ${ }^{\text {UniRet90 }}$ | VFKTKMGKEICADPKDKW |
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GFHQP
PDAFNS P SPHASNT

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GF
AARATNVGRE
GQDTAHTQPI
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 TMC
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PRGMNKCEDTCNKM GFHRPADCCFSYTPRK AP L $P G T S Q P Q A T C C F S H S A R P$

QGFHRPSDCCTRYTPRK AARGT

A V S V
A A RAT T
ANAPKK
GFHRPSD
PDAVNSPSTCCYA
PDAINSQVACCYTFNSKK
PDAVNAP
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ATRSSDTA
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| UniRef90-UPIO | $V F \Pi T R K R Q V C A N P E K K W V Q E Y \Pi N A L E L ~$ |
| UniRef90_UPI000441A0AF | VFITRKNRQVCANPEKKWVQEYMNALEL |
| UniR | A |
| niRet90_UP1000388BE01 | NPSDSP |
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| UniRef90-UP1000273BCB1 GF LT K K GQEKCXN |  |
|  | 1 IFKTLGREVCADPMEKWVQDSMKCLD |
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| UniRet90_UP10003 |  |
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| UniRef90-UPI0003315F20 | NPSDRWV |
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| UniRef90-UPIo0038ED3EF I FKTRANRQTCADPNQMWVQKAVNYLN |  |
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| UniRef90-UP10001D60EE4 IF L T K K GRRFCASPSDK |  |
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| UniRef90-F7F990 VFKT |  |
| UniRet90 UPIO0034FECB |  |
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| UniRet9- SPP XN3 |  |
| UniRef90-S7PXN3UniRet90-L9K192 |  |
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| UniReef90- |  |
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UniRef90－G1TQNO UniRef90－UPIo002C42FCB UniRef90－G3VG71
UniRef90＿ROLQJ6
UniRef90 - J3QLQ9
UniRef90 G1SPZ3
UniRef90－G1Q1G7
UniRef90－G3GTT4
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UniRef90－U5NIT9
UniRet90－U3EUX1
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UniRef90
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UniRef90＿F7EBE9 AAGATKTPTACCYQSSGRKI 20 30 GVAKCSUICNNMTPK

\section*{G P Y GAN <br> | l | P |
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| V | D |
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SLCCFNY而NKPVPRKKSYHSNTKCSM
PKRCCFQYAERQVPFKQVMEYSMTSQQCPKEAV QGFHRPTDCCFSYTKRNI QCFLMQDYDETSSQCSMPAV SQNPDKCCFSFST $\mathrm{IK}_{\mathrm{K}} \mathrm{P} \mathrm{P} \mathrm{VK}$ QVQSYHTTHFQCQKNGII
GPYGANVDSVCC
APFEADT四VCFSYTAWQL
AARATNVGRECCQEFFKGA PVRLITAYKETERQCQKPGV
GLHHAPDCCVSYFKGNVPLRKLVSWYRTSAECPKEAV
SPAAVNFSGPCCVKYSSKSFSSRHVTMYQNTSSHCPQPGV
VPSTCCFTFSSKK ITSLQRLKSYVITTSS
保

SPAGSVVPSSCCMTFVSKQVPEGDVATYOLSSGSCPKAGV
GPYGTNMDSTCCRDYIRQPLPRRVVKGFYWTSALCRKPGV
SARAPNLIGHDCCITYTKAAIPFSKLVAWFKTPTDCRKEAl
PAASGASDCCFEFHKRPIVAADVVSYEETRSDCTLPGV
ATARDNTPSTCFETRRRKVSVQKLKSYRTTSTCPREAV
ATARPDTPK
$A \vee \vee I P$
AHPAVVPA AARATNVGWE
PES S


PEGTNVGKTCCYRFHNRRMD GPYGANVDS CCCRDY DYR

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QGFQDSSDCCFSYASQ

Kix

AARATNVGQECCLEHFRG
AARATNVGRECCLEYFKGA
ASQTSFGPSECCFRFRNAMLP
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\begin{array}{ll}
\text { QC S V M E D F F E T N S Q C S M P A V } \\
P \text { V K K L T A WY R T S R D C P R D S }
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P & \square & K & L & V & D & W & Y & K & T & S & P & E & C & P & K & K \\
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\begin{aligned}
& \text { GPYGANMDSVCCRDYVRYRLPLRVVKHFYWTSDSCPRPGV } \\
& \text { DCCDNYTTKPVPFKLIKGYYEQSSLCR } \\
& \text { PKKCCQSFNEKPVHKGRVVSYQKTSQRCPVPA} \\
& \text { ASGPVQCCFDFQTMK } \\
& \text { GPYGANVDSICCRSHDRYPV } \\
& \text { AARATNVGRECCR } \\
& \text { FTAKR1 } \\
& \text { AARATNVGRECCDEYFR } \\
& \text { SSCCVNFMSKK1 } \\
& \begin{array}{l}
\text { GPFGANVDSVCCRDYDRRP } \\
A A R A G S V G R E C D Q F K G S
\end{array} \\
& \text { AARAGSVGRECCLQFYKGS } \\
& \text { PMGFAEPLDCCFSYISR } \\
& \text { G }{ }^{P} \\
& \text { PLAAAECSDRCCNEMTS }
\end{aligned}
$$SPA A VNFS

S
PQ A V ..... AV

        GNFSPTSCCFNYAKKRMPIGGFNDYYNTSSSCSSPGV
    PESVNPPPTCCLKHMEKPLPKKLVVGYRQALACCSLPSIVSPAGSVVPSSCCMTFVSKQVPEGVVATYTLSSGSCPKAGVGPYGTNMDSIDCRDYIRQPLPLRVVKGFYWTSAFCRKPGV SYRTWKLPFHWLKSYRKTSTQCAMAAV PRKFVADYFETSSQRSKPGV arfatnorectas PLRKLVSWYRTSAECPKEAAV SSRHVTMYQNTS SHCPQPGV





UniRef90_UP10001A2DDEB UniRef90_UPIOOO27F9900
UniRef9O_UPIO003870B82 UniRef90-UPI0004432488 UniRef90 ${ }^{-}$O9Z121 UniRef90_UPIO003C2846D UniRef90-UPIO00440A646 UniRef90-X5KCF6 UniRef90-H7BYL4 UniRef90-Q201K5 UniRef90_UPIOOO32972E7 UniRef90-UPI0003F18ADF UniRef90-UPIO00331802C UniRef90-F7A287 UniRef90_UPIO00443FOEF UniRef90-UPIOO045E30D8 UniRef90-D5J734 UniRef90_UPIO004441EFB UniRef90-UPIO003C2670C UniRef90-UP1000454BCCA UniRef90-O77V81
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UniRef90_UPIO003289FE9
UniRef90_HOZD53
 GVKKCNITCSKMTS A A $\square S S Y D C C L G Y T A$
$\begin{array}{lllll}P & P & G & V & V \\ P & W & S & V & K\end{array}$

| $P$ | K | G | R |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| P | L | K | I | L | H |
| H |  |  |  |  |  |


$\begin{array}{lllllll}\mathrm{P} & \mathrm{V} & A & R & \mathrm{~L} & \mathrm{~V} & \mathrm{H}\end{array}$

APHGMESPTSCCFQFATMERVP LGGLLKSYKKTDPSCPKSVI

 F G V N K C S I K C S GMTNKM\|PLQLLVHY QL P E GVVDSK S S C C F S F V E R E I P L R A IVRCYRNTSSS DCSN E GL Q G I P D S P D C C F F Y

SEMPMMPCCSYYFSHY VI P WH WL Y S Y Q ITTDS S C P N E GlV

PRAHVLCT I ICTNF SKR DP QA LL K S Y K K N E P S C P KA A V


$S$ V $\square \square P$ | $D$ | $C$ | $C$ | $L$ | $S$ | $Y$ | $I$ | $Q$ | $T$ | $P$ | $L$ | $P$ | $S$ | $R$ | $A$ | $V$ | $G$ |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $S$ | $S$ | $C$ | $C$ | $M$ | $S$ | $F$ | $I$ | $S$ | $K$ | $T$ | $V$ | $S$ | $E$ | $K$ | $R$ | $V$ | $A$ |
| $S$ | $S$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $S$ | $D$ | $C$ | $C$ | $V$ | $K$ | $L$ | $D$ | $A$ | $G$ | $R$ | $I$ | $Q$ | $A$ | $W$ | $L$ | $Q$ | $S$ |

S

$H G \boxed{V}$

$\qquad$ DCCLKYS STRQL | $Q$ | $N$ | $R$ | $L$ | $L$ | $K$ | $S$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $P$ | $Y$ | $S$ | $I$ | $V$ | $R$ | $G$ |

 S D A A A

ADCCLTISSPHKDPKHLLIRD
S D A A
CHCLISPHKIPKHLIVSYIEQNNGCHKAAT
Q G S D G G T Q C C L S Y D Q K


S V
A Q GSENQA
A L Y T P

APARTDFRITCCAKTTNVKI PLKNIVTYWWTSNNCPIKA



 S S R S EASSSFDCCCLR Y T Q HVVIM P K F

APSSPSDC

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UniRef90_UPI00045DCDAE UniRef90_UPI0003990978
UniRef90 E1BSY1
UniRef90_UPI0003F083EA UniRef90_UPI00032AEC7B UniRef90_U3JX45 UniRef90_Q65YX9 UniRef90_UPI0001CF0F55 UniRef90_UPI00035A2174 UniRef90_Q5IEZ5
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 I FKLK R GKEACALKTDKWAQKYGEKL I F DTM L K S M E V C A D P K A D WV K M IV A R L D I F FT R R G H QI CAN PE E Q WV Q N MV S S L V F Q T K Q G M S L CVD P T Q K WV S E Y ME I L D

 I FLTTKKGRQVCAK PSGPGVQDCMKKLK $L F R T R K G K D V C A K P T B A W V K E E L I K V L D \square$ II F VT K K A R S I C M D P S L S WV D S I MK TL D
 I F I N R K S K EVVCVN P R S Q WV Q D L L K D V F S P R K R S QL C A D P K E A WV Q Q L M Q R L D L F K P WK R S QL CADP KEAWVQRLMKRLD L F K $\quad$ M K R R A S S S V I L IT K R G F S V CA D P R K T WVVK K A V R M L S L
VFET $\square$ A GRKVCADPSKNWVKKAVKNLE
I F S P K K R K DI C A D P S M P WV R E L L R K L D
L L T R R G K K L C A N P G D D A V K K K L L Q A V
$V$ FT T L R D H QLCAPP D QP WV NRLI QR Q Q
I F H M R S G H S V C A D P K S T WV K RAVR IL R
$V$ F Q T K K N R QL C S P P Q E K WV K K L M R K L D M
I L R T K Q H RVVFCADPAEK WV QEVMEQL D
I LKTMKEKLFCADPREEWVQKAMEHLD

| $F$ | $I$ | $T$ | $K$ | $N$ | $K$ | $R$ | $A$ | $V$ | $C$ | $A$ | $D$ | $P$ | $K$ | $K$ | $A$ | $W$ | $V$ | $K$ | $E$ | $A$ | $V$ | $R$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $F$ | $L$ | $R$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $F$ | $V$ | $T$ | $K$ | $K$ | $S$ | $R$ | $E$ | $I$ | $C$ | $A$ | $N$ | $P$ | $E$ | $D$ | $S$ | $W$ | $V$ | $K$ | $E$ | $R$ | $V$ | $R$ | $E$ |

VTTVRDRVI CYE LTEPWVQKAMHQLK

I $\mathrm{F} V \mathrm{~V}$ P K K N X E V C A N P T D E WVV Q N L I

I $\begin{aligned} & \text { F K L } \\ & \text { K R R }\end{aligned}$
I F I S K R R K R F CAN AP F D Q RVVQE C I R R L K
$V$ F TLKR GK $\quad$ Y CALLE H K WV H N Y V K E M N
I FTT K T G K QY C V Q P G D K WV Q R Y I S L L N
L F LIM K G G K E V CLV D A T Q Q WV V K I I K
F L T K R N R Q I C A D S K E T WV Q E Y I T D L E L
I F V T Q K S R E V C A D P E E S WV Q E A V R R L D

$F$ T T R K GQKFCGDPK QHWVQKIT K L V D
FISKRGNKLCAPHDAPWVPQLMKKLD
$V$ F I S K R GN K L C A P H D A P WV P QL M K K L D
F F T V K G Y M V C A D P Q S K WVV K G T L R R C L
I FHTKNGMKACANPEDRWVKK HLL W W L


MMKI
MMK I
VF TTVK GR QLCAPPK QPWVERIIRRLQ
VVIT K K N K K L C S P P K E R WV A N L I K Q L D
I LI T Q K GRHM CVDP D L S WV G N I M S S V D
I L I TR K K RLLLCANPK DK WV K E L I
L FSPRKRS QLLCADPKEA WV QRLMQR LD
I LETKRHRRFFCA DPREK WV Q EA MVVH I D
$\mid V V K T V E G R G D C Y$ Q S S V L W WV Q K A F N R V K
I FH T K R K L S S V CAD P K K D WV K R A L R H L
I FHSVQERNI CVDPTEGWVMANIRKLR




V F E T L N K K Q HCVDP TA VWVNHHMNAVDL
V F E T L




I L H T K K Gll A V C A D P K K K WVVK HVV HVL
I F T M R K GRELCTDPRERWVNDLVKKID
I F A TVAGKMVCGKPSDKWVQDIVNH


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

V FVVG N GTMVVCAHPE T D WVVIKK A V
$V$ F V T K N G T K V C S K P N A P WV K K A V K Y L Q
II L KL L K N G R K A C V L K T A N WV
I L KTKK NKTACCADP EA Q WVVQE V MK H F D
VFETKKEDKVCANPEDKWVKRAVTEL

I F VTKRRNRVCANPS DWRVQECI QRLL



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Q D ${ }^{10}$
10
20
30
40
 PMGSMSPEVCCLGYYDNKLPPSGAVALVYYYTSSQCTLDACV FASNGPSTCCLTTSNTKLRPQRIKNYSDQNGTCPVNAV GRDVASFCCLQFASKTLPWKQVQGYELTRSSFTR


HAQGVSEDCCLAYHSRVQPLRHARGYRRQSGSCNDPAV
ASESGNNPVDCCFNFFKNQMNKSLFSSYYKTDRRCSLSG

| ASEASDF DCCLRYTERHYGSR LIKGYTEQFSNCD: DA |  |  |
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|  |  |  |





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RAQASSF

## STDQA

E

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AP酸ADT
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SSSD
SARS $\square$ N
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HGVKNC


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 1 FHTKRRLAVCADPKKVWVKQAVWIL IFMMRRGRKFCTDPNEKWVKELVLKLD VFIMKKGKTACANPSEVWVQNLMDTVD IFHTRKRFADCADPKKMWVKOTVQLL FLKTVGGNTLCARSSVDWVKDLIRHLD I FRDKAGRESCVSKAQTWVMSYLSQVK IV IGTAAGKHTCVSQSVT WAQEAFK VLVTATGDTVCANPNKTWVKTADENLQ VLTMKKGRRFCVHPNAKWVKELMENVQ M
TFYTRRFVVCANPKEGWVKQNDRVLR I LHTKKNLLSVCADPKKEWVKRVVHIL I FRLLKGGNETCADHMLLGWVQGYLKKMK IFYTVRRAEVCATRKDEWVRIILDQLI
$V F T T K G K K L C A N P S N W T K T S M A Y L D$ FVTKKGLRICANPKEDWVQRYVKAL TFKVRNGKEICTQASRPWVKRYQQSFQV IV
 I FVTKRGLRICADPQAKWVKTAIKTVD VFTTKAGKSFCVDPGNTFVKRQVAELD I LTTDKNRTFCADSEEKWVQEAVGYLN VFTLKQGRMFCTDPREKWVHELMQRVD I FVTRRNRTLCAPSDKPWVHELMKHVD
 I FFTRRGLRICADPEANWVKAAVKSVD IVFVTKKGKRLCAPTKNNWVKKLINKLN VFTTRRGLKLCAPADPTWVTDLMNLMD VFTTLRGHQI CAPLDRPWALRI 1 RRLE VFYTRKKLAVCADPKKKWVKQVVHML IFYTKRKLAVCADPKKPWVKTAVRRL
 I FFFRRNRKVCGNPQDRWVQNGMKLLD -
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 VFTMKKRRTLCANPTETWVQQQMSTVD VFTFRK KSLCADPKKAWVQELMKRLK IVVLRRGKEVCADPSKEWFKTY VVVLRRGKEVCVDPSEEWFKTY VFVTПAKKHLCMNPDNEWVQKVIN


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 PQGVKSPSNCCFSFVKRKVSPEKI QCYRNSSSTCSYRSV AGA SSSNCCYSLISSKP PVSVK DQAMDCCLSVSHQVISP
HGGNNVLDCCLRTRETPMPAR\|VQDYRLQQDGCNTPAA EDCCLSYHPKKLSRKI HHVQGTGGGCNLPA
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P $\square$ T C CDQFSNMRVPRKMI VD DTRTHSSCLKRGY
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 PESHQSPNCCYRFLKKNITHLVRGYKLTASSCPEMAV PESIN KSCCLMATRKPVPGKIIQNVERSHSSCPVPAI AVHAQGSFEDCCLAYHSRPSLLRRAHSYQRQSGSCNLPAV AVHAQDFFEDCCDAYHAKESLKKFVLEYHRQSGSCNLPAV STAPGTCCFNFKMNAlPVKLVSFDTHTHSSCPKKAY AARGTNVGRECCLNFFSGAIPVKKVVTW

CC NYVNDVKKKRNVGYQEPNTVCNTSAV
AVHATHAPVSCCLGRSDTKVHPKNILDYYYQDEGCKI TAI DCCMKYAKKMRPKKHVINYRWQDGGCNLLAVV


GVGKCKNDCQKMTSR pKNLLLRYQESCGS

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HAQGVFEDCRRYLPGKLPLSERGFQENKELCNLRAD
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nireto
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I F F F R R Q R M $V$ V C G N P R A R WV|QNVMM IL F K M K G GK K S C A L K T D K WV T A N L R K I K


 FVVL_GHRKVCGDPGALWVQNGMK L L E I 1 Y TRKQ GVVC GDPNTRWIK K LLLKNLKV | $I$ | $F$ | $H$ | $V$ | $N$ | $G$ | $R$ | $F$ | $V$ | $C$ | $A$ | $D$ | $P$ | $T$ | $K$ | $A$ | $W$ | $T$ | $K$ | $R$ | $A$ | $V$ | $T$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $C$ | $C$ | $D$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $I$ | $F$ | $H$ | $L$ | $P$ | $G$ | $K$ | $F$ | $V$ | $C$ | $A$ | $D$ | $P$ | $S$ | $A$ | $K$ | $W$ | $T$ | $Q$ | $R$ | $G$ | $M$ | $K$ |
| $C$ | $C$ | $I$ | $N$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | VF KLKRGKTFCGDP QKPWVIKDLMKK RVEVVERRNVCVDPEETWFQNFLQ

VXXXXXXXXXXXXXXXKWVREYI NS LEM
I F Y T L K N K K VCATVK DE WVRKAL A R
I F Y T EDKLLAVCANPK QPWVKRAVRFI
L F Q TVA GKTLCS DPESSWTKSAMWKV D
I F R I K R L K K T $V$ V C G N P Q A K WVVQ D G M K H L

I F IDT R R G L K V C A N P E A E WV K S A VK S V D


I FH TKRK L S V CANPRRQWVVKAVRII
I LYT TKNMKI CVTRKDEWVRKVLVQL
I L V T R R K K T L C C V P H D E Q WV $\operatorname{C}$
I FHTKTGRNVCANPAQTWVMQSIQMLR
KLKMKKGREI CALENAT QAWGYLDVLK
$V \vee T$ TAKRRKI CVGHYVNWAQEA FKK

F V T R R G F K I C A D P E V N WA K T V I R S V D
I L K L I G GRQTCVLQ T K P WVRA YFKRIIK


$V L T L K K S R Q V C D D P E E K W L Q M F L K K$

V F T T K K E K K i C S S L T S P A VQ K Li lir S L E
MFVTVK GKRI CS DTSNPWAQK TMQYL


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V
V F E VA $\square K$ S RLC A D P K Q K WVE S C DE E L K
V L V TR R DKKLCAPAEGQWVEKVKNHV
I LVTTKK GREI
1 FHTRKGK ACMNPAHNWVMDYVNRLR
QFRLLKNTKVVCGNPQDQWVKDMMRK L
IFHTKKGK ACTNPALKWVMDAVDRLR
I FHTKK GK A CTNPALL K WVVM D A V
$V$ VMTAR R TEE F C CVK P D E D WI K S F M E K

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$M F I T K$ T G N K I C V K P D L K W WV K D A M K Y L D
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V DK TPRG DFCVRQSENWALKA
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I F F F QK DRMVCGRPGARWVQ\|GMK ILD


IVHTVRGKKI CYT QSFQWAQD

L F Q M K K K K P V C A N P D D D WV Q R E M K R L D


$V \operatorname{F}$
L VT K R GFKFCADPEASWVKAAVEKVN
I LETK QHRNFCADTKE QWVQEAMTY L D
IL $\operatorname{L}$ VT R R Q K Q L C A P A S E R WVV


I FFFRRHKMIC GNPRAKWVV DGMKRLD


V V STVTGREFCFRDNFKW
I FVTTRRGFK $\square$ CAD P EAS WVKAAVKNV

I L K L N R G R E A C V S Q T K S WV R D Y L K K R I N
I V ETAKRRLICFRQSTTWVEEAYNRM

FITRKN R

| $\begin{aligned} & \text { I } \\ & \text { I } \\ & \text { F Y P K R R H R K }\end{aligned}$

I FFFQKDKMVCGKPGAKWVQFGMKILD

UniRef90 U3JT47
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Vs E
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SAQUAVDCCLSVSEKRLDPRNLVSYQRAGMGCDISAT
 SGMGLVPPDLCCFKFFDKR| RKVM| KS VRKTHSKCLTEAF

VSTNCCTKVSRKP DPF LI THYRDQPELSPVEAI
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AARG $\square \mathrm{N} \nabla \mathrm{GR}$
NCCVEYFKGADPVRRVVR
PSDCCVSYT
GNGRPANCCSGKDTMPAENGFVKTDSQCSKPAV PDADNAPVTCCYNFTNRKISVQRLASYRUTSSKCPKEAV PQGPNKPGKCCFNFLNKLPLQKS RCYRRTSPTCSHSAV
s s EDCCDAYHRH


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VLVGRRGRTLCVPADAPWVKEVLDHVN
V
I TTLKDGREVCLDPNAPWVKM■ DK
LLKTKAGRQLCVRP
IVVNKHGKKLCAHPKDPWAQK TMNLVD I FI TVQNRRFCADPDNACVKQLMKNI K

MXVPAQQWKGCNLKNQXWERKY K Y LD IF QTRSGRS 1 CADPSQAWVQKY $\square K Y$ K V
 IFITRKGFKICANPEANWVKNVINSVD VFKFPKKTLCADPKKAWVQKLMKRLK 1 LRTKKNR $\square$ FCADPEAEWVRRA $\square$ THLD
 I FYFHRQKMVCGNPRAKWVRDGMKFLN■ 1 LT TCKGKQFCADSKAKWVKE 1 SS SLD

QLRTVLGKTICTDPNADWTIKAMEWVD VFLMKKKRTVCANPNDSWVQELI RTMDV
I LTRKNGSKICDDPNQKWFKDLLNKMQ
I FHLPGRFVCANPKADWTQRGVACLD
VFITTKEDRKTCADPRDENVQLCMVSL

$V$ FIMKRGRMICANPNETWAVTLKENLD
VRETVK
VF L M K K QRTVCANPQDGWVQH $\square$ T S TMDM
$\square \mathrm{F} \mathrm{K} \mathrm{T} \mathrm{K} \mathrm{L} \mathrm{A} \mathrm{K}$
FFHTRKGKR CVDPESKWVKDYVSRIE IFHTKKGKACANPADKWVIDAVDHIRL I FHFPQGRVVCGNPRDKVVRKAMRVLR VF LIRKKRSVICANPQDGWVQDULKNLN VFVNRKNMKLCVVPAEPGVQKLI DFLG I VTTPKHPSLCV
I LMTRRKDKLCVPADEPWVLDVVKHVE MFTTQKNITICANPEQPWVKQAVQCLK VINTPRGDYCVRQSDDWAME
I FYTVEKGPLCADPTARWVAKRDKADK IFQFQEGRVVCGDPQNKWVRKAVELL $M F D T A N G Q R I C V H P E Q K W V Q S A M K R$ C D
 |IVIPVKGKPICMKDDVEWVKELFN I ATLKDGREVCLDPTAPWVQLIVKAL VFETKNGTNVCSETKNNRAIRAMQKVD

 V
VFTMKKRRTLCGNPTESWVQEQLR IV RF LT L K G $\square T \mathrm{~T}$ CSDPTSPWAIKAMKHLN $\square \mathrm{Y}$ LTKSGQEVCVHPS G $\square$ QVWRCM
RFYTRKNKVICSDPNSHWAKKMDEK $\square$ S L M
$1 F V \operatorname{VLPR} R V V C G D P K D N G V K D A M R L L E V$ VFRMKKGQESCALSS RVRDYLKKIK
 I LKMKGGRESCALKTDRWIKSSLQKIK I FHFRQKGKVCMNPEDKDVKKAME ILK V
$L L N T V A G R Q L C V$
I HTKKGK ACTNPALLKWVMDCDDRDR |IVTTHEFLTMCD
1 I TRKDGKQVCMNPRMPWVKRIVQED MFITKKEGDKI CVQPDDKWVKDAI RHLD VFITNSGRTLCVHPSQKWVRNLINIVN I AVLKNGRQVCLEPTAGWVKAI I KH LVILKSNQUVCVDPDAQWMKELLRYMD I ATLKDGREVCLEPTAPWVTRLVE I ATLNNDKEI CLLEPTAPWVKLI I K I FI ANEKYKY
I ATLKDGREVCDEPTAAWVRLTVKAL
V F QMKKKRTVCTNPEHDWVQELI AA V D I FHPQPGRIVCGNPRDAVVRKA R VL

UniRef90 UPIO003C10B16 UniRef90 - V9LJU5 UniRef90_UPIOOO462E2D2 UniRef90-Q45FX6 UniRet90_G3UJZ2 UniRef90-F2VQR6 UniRef90-UPIO004549C96 UniRef90-Q4RPP7 UniRef90 Q32PX4 UniRef90_UPIOOO38COA92 UniRef90-UPIO00440C4F9 UniRef90 - V9NDIO UniRef90-Q77MQ6 UniRef90-UPIOOO38321A8 UniRef90_W5LIA6 UniRef90- F7EQX0 UniRef90_UPIO00194E02F UniRef90 UPIOOO3956575 UniRef90 A1L3G5 UniRef90-UP100038C4BBC UniRef90-UPIO002A48758 UniRef90 UPI00045D7E45 UniRef90-L8Y4W2 UniRef90-UP1000332EDFB UniRet90-UP100033301FF UniRef90-UPI000393E2E7 UniRef90_UP1000388AC25 UniRef90-UPIO00395D061 UniRef90_UPIOOO4573405
UniRet90-UPIOOOOC26AOF UniRef90-G3T4V5 UniRef90-UPIO002BCEE76 UniRef90-UPI0003AF4748 UniRef90-ROLOH4 UniRef90-V8P8A9 UniRef90-UPIO003EBE070 UniRef90 X5KCG0 UniRef90-UPIO001DE7F2B UniRef90-UPIO0032AD4A7 UniRef90-UPI0002B48D39 UniRef90_UPIO001580ABE UniRef90-O802H0
UniRef90-Q201J8
UniRef90_UPIOOO457412C
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UniRef90-V9L9W2
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UniRef90-UPI00038ECDDC UniRef90 H0UYW1
UniRef90-13JXT8
UniRef90_UPIO00440AFO5 UniRef90-UPI0001D551EF UniRef90 UPI0003BBE550 UniRef90-P67813
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UniRef90-UPIO0005BCB7E UniRef90-H2MKE9 UniRef90-S7PWY0
UniRef90-R7VX85
UniRef90-G3WUBO
UniRef90-UP10001DE86FC
UniRef90-UP10003C888CE
UniRef90-UP10003945D01
UniRef90-UP100038BCC1B
UniRef90-L5LH34
UniRef90-R7VU26
UniRef90_UP10001CE1D62 UniRef90-UPIO004628415 UniRef90-G1RVH8 UniRef90_UPI000333D784 UniRef90_Q201K1
UniRef90-UPIO003343A5D UniRef90-UP10003C85BB2 UniRef90 A7VL19
UniRef90-UPIOOO3344534 UniRef90-UPIO00388F65A UniRef90-UP1000454ACA3 UniRef90-UP10003C48DD9 UniRef90-G5B4M7 UniRef90-V9LAU7 UniRef90-UPIO0046B31FC UniRef90-UPIO002A48268


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PDSVSTPDTCCLIGQT
VPRPC


RPSRVT
TNCCKRVSARKIPYN THYRIQNADAPVEAV
Al GPSGANMEEVGC Cl KTTT


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| :---: | :---: |
| UniRef90_UPI0003C10B16 |  |
| UniRef90_V9LJU5 | I F Y TK E K G Al CA H P K A Y WVR K K I R E I N |
| UniRef90_UPI000462E2D2 |  |
| UniRef90_Q45FX6 | $\checkmark T \mathrm{~K} R \mathrm{GL} \mathrm{L}$ K V C A D |
| UniRef90_G3UJZ2 |  |
| UniRef90-F2VQR6 | VFE T K R G K R I C S |
| UniRef90_UPI0004549C96 | I A EMKQGNE\\|CLDPNANWVK I I I |
| UniRef90_Q4RPP7 | \\| LT R R N GSK DCID P NQQWFK DVL R K I |
| UniRef90_Q32PX4 | I FYFRQKVVVC GNPEDKDVKRAVK I L |
| UniRef90_UPI00038C0A92 | $V F$ Y F R Q G K M V C G N P R D $\square$ RVRKA M R |
| UniRef90_UPI000440C4F9 |  |
| UniRef90_V9NDI0 | V F TFKKPRTVCGNPKDPWVSDVKS $\mathrm{V}^{\text {L }}$ L |
| UniRef90-Q77MQ6 | IFALKKNRKVCVDPEAPWVQQF】K K L E |
| UniRef90_UPI00038321A8 | RVVEL R S GKRFCLLD |
| UniRef90-W5LIA6 | I L Y TKK A V K CADPRDRKVKRLLRKL |
| UniRef90-F7EQX0 | I VTLLQDNKEVCLDT T K D WVQELI E |
| UniRef90-UPI000194E02F | VLITTK K N K K I CVV P T D D TV L K L M Q L |
| UniRef90_UPI0003956575 |  |
| UniRef90-A1L3G5 | I $\square$ T $\square$ K S G E R V CVV P S Q R WVEERI I N S I |
| UniRef90_UPI00038C4BBC | I FYFRQK GPVCANPEDKDVKRIL |
| UniRef90_UPI0002A48758 | $\\| \mathrm{V}$ S TVA GKKI CFRDNS K WAVD TFNKFN |
| UniRef90_UPI00045D7E45 |  |
| UniRef90-L8Y4W2 | MFFFPQRRKLCGDPRNRLVRKAMKCMD |
| UniRef90_UPI000332EDFB | I IWWTKNKSAICCLSPQAKWVQKVIRRLR |
| UniRef90_UPI00033301FF |  |
| UniRef90_UPI000393E2E7 | I FNTGNGKQLCADPNAQWVKDLTAKM |
| UniRef90_UPI000388AC25 | IA TLQ D GREVCLD P T A Q WV K |
| UniRef90-UPI000395D061 | $\overline{M F I T A G G \square K I C V I S A K Q K W V Q T A M K K \ D ~}$ |
| UniRef90-UPI0004573405 | I ITLLIK G N K I CLI D P NEKWVQMVINII Q |
| UniRef90_UPI0003C26A0F | I ATLKK GRKLCLNPAAPWVQLI I NK |
| UniRef90_-G3T4V5 | I VWMKNNRVVCSNPYTKWFQKLLKVLQ |
| UniRef90_UPI0002BCEE76 | M |
| UniRef90_UPI0003AF4748 | F NTKEG QLCADPNA Q WVK DLIA K M |
| UniRef90-ROLO | V S V T |
| UniRef90 ${ }^{-}$V8P8A9 |  |
| UniRef90_UPI0003EBE070 | VTVVRNGNKTCVDPEAKWFPGLLNTLQ |
| UniRef90-X5KCG0 | I FY TVVEK G AI C SHPAARWVTMKI R E L Q |
| UniRef90_UPI0001DE7F2B | 1 F Y LKK R I I C A N P M E Q WVGLAA |
| UniRef90_UPI00032AD4A7 | RFCLK Q RVVCADPREKAVQRTVQYLR |
| UniRef90_UPI0002B48D39 | I AVVLR D G R EVCVEP T A P WI Q LTVVK A L |
| UniRef90_UPI0001580ABE | I VILTTSNKEVCLLDPKEKWVQRAQKFLK |
| UniRef90-Q802H0 | 1 F Y TVVEK G A I C S N PVA R WVPR K $\quad$ R E I N |
| UniRef90_Q201J8 | \|IVT T P K F P NLCVNP Q K K |
| UniRef90_U3K094 |  |
| UniRef90_UPI000457412C | I FYTIT N R TI C SNPANKRIKMLMKRFRL |
| UniRef90_G3WTP6 |  |
| UniRef90_V9L9W2 | I V TLLKSTNRVCLIDP Q A P WVKKRII N R V |
| UniRef90_UPI000440E8AB | I A GLT T S GERI CL N P K T A WV R K L V Q File |
| UniRef90_UPI000462BC5C | I LTTLK N K WKVCVI P S A P WV Q EL L K |
| UniRef90-X2J6N3 | I VKLLT D GRELCLIDPKEKWVQKVVQ |
| UniRef90_UPI0003EE368C | I A TLK K GQEVCLN P E A P MVKK K I I N K M |
| UniRef90-U5NIB6 | I F L T R P GRKVCAWP D A R TRRLMARV |
| UniRef90_UPI00038ECDDC | I VKLLRDNR QLCLDP K K K WVQ EVVAK |
| UniRef90-H0UYW1 | M |
| UniRef90_13JXT8 | V I K T PRG D F CV |
| UniRef90-UPI000440AF05 |  |
| UniRef90_UPI0001D551EF | QLLTTSRDKEICADPRDVPWVKMILNKL |
| UniRef90_UPI0003BBE550 | I ATMKK G N K V C L D P E A HVVKK K I I Q K L |
| UniRef90-P67813 | I VKLLS GRELCLLDPKEPWVQRVVEK |
| UniRef90-UPI0004442D20 | I FFLPPR RVI CGDPRDPQVQ |
| UniRef90-W5VNZ7 | I VKLA N GREVCLNPKEKWVQKVVE |
| UniRef90-UPI0002740BF3 | I ATLK K GKELCLDPEAPLI QKFI Q |
| UniRef90 UPI000394678E | I LTLLKKNRQVCVTP EAPWI QLLI HKL |
| UniRef90_UPI00005BCB7E | IV TLLK D GQLI CLLDPEA E WVM |
| UniRef90-H2MKE9 |  |
| UniRef90-S7PWY0 | I ATLKKNGQKVCLNPASPLVKKFVNKL |
| UniRef90_R7VX85 | I DKL R P S G K V CVVNP D A P WVVK K L L K R I |
| UniRef90_P06765 | I A T L K N G S K I CLD R QVP L L Y K K I I K K L |
| UniRef90-G3WUB0 | I A TLKK K T ELCLLNPEAPWVKKV I Q R |
| UniRef90_UPI0001DE | LFTTNEGKFi C SRPKAPWVSKKMKEDE |
| UniRef90_UPI0003C8D8CE | I VTLK T GELI CVDPEAEWVK I I Q R L |
| UniRef90_UPI0003945D01 | VLI TKRNRKI CASPT D D TVLLKLI Q Q L D |
| UniRef90_UPI00038BCC1B | I I RLK N K T TVCVNPQT S WI K K L I E H L |
| UniRef90-L5LH34 | I A TLK K G K E I CLIDPNAPMIK K I V Q K |
| UniRef90-R7VU26 | $L \mathrm{~L}$ DKLK S L E R V CVV P D T P WV R K L L Q D L |
| UniRef90_UPI0001CE1D62 | RFCLK HR IVCGNP QDKKVQRAVKLL N |
| UniRef90_UPI0004628415 | LITTR R GVKICVP H NLP WVK E T I |
| UniRef90_G1RVH8 |  |
| UniRef90_UPI000333D784 |  |
| UniRef90_Q20IK1 | I I K THKGRKLCYDLKAEWVDKNV |
| UniRef90_UPI0003343A5D | I VWRKNKVPVCLD P H VKWIVKKLLKVLQ |
| UniRef90_UPI0003C85BB2 | I ATLLKKGRKI CLDPQAPLYKR1 I K K L |
| UniRef90-A7VL19 | I I T K R N G Y K L CVA P E E K WI K DL L G Y L Q |
| UniRef90_UPI0003344534 | IVKLH N G Q GACLDPKEKWVQTLVQAL |
| UniRef90_UPI000388F65A | I ATLKKDGREVCLDPTARWVQMI TTM |
| UniRef90_UPI000454ACA3 |  |
| UniRef90_UPI0003C48DD9 | I A TMKHGKKV CLLDPAAP WVKKLI I T |
| UniRef90-G5B4M7 | I F Y FPQGRTVCGNPQDRVVRKAMK!L |
| UniRef90-V9LAU7 | KFHTVRNKTFCGDPHNKQIKRLVEQLRV |
| UniRef90_UPI00046B31FC | IA TLKNGQDACLINP T A P MVK K I I Q R M |
| UniRef90_UPI0002A48268 | I FTTVK G K I L C S P P S S WTKE |
| UniRef90_UPI00027F9961 |  |



|  | UniRef90_G7P168 |
| :---: | :---: |
|  | UniRef90_G31474 |
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|  | UniRef90-F7DVC4 |
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|  | UniRef90_UPI0002A4BC91 |
|  | UniRef90 Q20IK9 |
|  | UniRef90_G1TR38 |
|  | UniRef90-Q8AXP4 |
|  | UniRef90_UPI00022352CE |
|  | UniRef90_UPI0002C66F58 |
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|  | UniRef90_K4FTE7 |
|  | UniRef90 Q4SKA9 |
|  | UniRef90-V9LI85 |
|  | UniRef90-F5HCJ2 |
|  | UniRef90-H3AKD2 |
|  | UniRef90_X5L147 |

M WVS F M G
$\square A T L K N G Q E V C L D P E A P L V R K \prod I Q K \prod$
I ATMKKGNKICLDPEAHVVKKI IQKL I I WKKNKSVVCLNPRAEWIQKIMKNLK RSVLT L E C LITRKNNVRVCAVPQAKWVQDLLRTLN $\bar{M} V T T$ T R QR L CV
IVWLKTK $\square$ AVCVKPHAKWLQKLIQQLQ
I ATLK S S EKVCLNPDAAWVRKII NRI
I VKIVEGKEVCLDPTAKWVQKVVQ
$V \vee K L V N G Q E V C L D P T L Q W V Q I I V Q$
I FNTKDRKQLCADPDAQWVKDLTAKMK IV M
I ATMKTGKKПCLEPTAPWVK ULIK $\frac{1}{M} \mathrm{~V}$ PKNGSMICLDPDAPWVK
$\square V T L K S N R K V C V N P D A K W V K V V I A R$
| V V TLR RELCYRQSFPWALKVYK
L FYLRDGTEVCADPNEKWTQLL $\square \mathrm{K}$ R L K
I FVTHSGRKVCGSPAKRRTRLLMEK


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    lupas_14
    lupas_28
    jnet conf conf
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    sol5
    sol0
    jhmm
    jpssm

