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$\begin{array}{llll}F & S & S & Y \\ F & A & E & Y \\ L & S & D \\ A & S \\ S & R\end{array}$
T F
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T F

| F | A | $K$ | $Y$ | $L$ | $A$ |
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| $A$ | $A$ |  |  |  |  |

        F
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F A N Y L A GII D N P D HR S RTE E I L A WV A D K Y P N L E P Q M K WN
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10 P T $\square$ R $\mathrm{D}^{20}$
LF A N MQA
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FDDF A TIDDPEHRAKLDDIFVWVRETFPHLEERIA WNT F T E FSTEFHD F L E K I D N P E H K QRRME GI L T WWVK E E F P H L E P VI K WN
FADY EKI

T LTE F L Q GI DH GAHRERTEQLFSWI TEKYPKLETVTKWN
T LEE YVVDQi D P QHQERMMIVVLTWVKETFPNLKSRIM WN




A D
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T LT E Y L D T L E MP E QRARMVEI FD WI K E S F P DLVVPVIVKWN





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| $N$ | $S$ | $I$ | $D$ | $E$ | $Y$ | $I$ | $A$ | $Q$ | $F$ | $P$ |
| ---: | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  | $P$ | $A$ |  |  |  |  |  |  |  |  |
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A A AFEEYLAGPRVPDTR I EAYYLNAQP LDERQGHLRKVQQV


 A Tideyla olpa


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## 








 QPM F T DH DTVFI I GF S TA K D H L N DA LIE S H T L D S Y R N A I T A A


 Q P H F T H H D T F $\quad$ IDA F T H A K S H V S S I P P E Y K V I D D


 T P LY V K E G S F I I GVVK P A K H H F S I N P E P K G I E V F S D K I K A A
 QP M F T D H G T F I I A F S F A K N H F S I A P E K A A I R A A L E K N I Q E A MP A F K L K K K P L A Y Y A V N K N H $\quad$ I










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MGQF GRLTR V
GYPTGKRLNLPLTKPVPTALVQQVLQ
GYATGKRLNI QLLNPVPTELVKQVLQ
G $\square T S G K T V L K D K D K V P M \| Y L K T L I K K A L A D K$
GYDHSQUI RFPWHKPLDEQLI HDLIAYTI DQKKDATTFWQ
GNQTGRTIAFHQGDPVNEEALLDIFRAVIADNRA GGWR
YKQSKA ALLHEDAPLPKTLVRKLMTQRM
GPSERKTDKI RDGQTVDYELLTKKLLE
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$G \square A H S K S D T F R P D T P P P D W V L D E D I R R R D D E$

 GHKTARTVAFRRDEPA NAPALVAMFRQLIAANNRA GGWR GKKFGFMDK $\square K D V S E L P A \quad K K \square L V A Y I K E$

QTGKG T LQQEKDTA LP DE LIQQTDASWQLE
MS QTNSALHVA IGDLPPEAVVDRMDQLRLQE
ENGMGS LGK $\square T S$ S $\square K D$ DPAD KKMLGY
GQDMGKCLRFRKPERVDFGLLRDLLRATAA
DHADRKTIK $\square R N G K E F D F D V L A G L L K$
G QFGK MMQ ND DPSDTE UVALLTQA

G $\square D V G K C I \quad$ R R RPEA I D DGLI R
GNGERKAAS LTEGQGUDYPLLAD LL
GVDHGKCVRWRRPEAMDFDLI AEMLEH
SIGRS CI RYTHPEELPDDVLEE IVFE
QPDKTKFLRFRESENINTSLLKEYIADQDEETA
GHKGRSCVRFKRVADLPDDVI REVARYPVDE
GNGDRKAADITEGQDVDYDLLA
GLD LGKC I R I KK S IDNLNETGIVEFTKATIDQNTDC
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YNCSKTIQDTHNKQL KELVKTII LWNLKQ
KFGKGCVVKFKDEEALPFDFCREIV
ATAMGH $\square G K \square T H L K D \square P S D E K M \square A Y$
HLQMGKSI QVPYDYPADRTLAGKDILYNDK

$\begin{array}{ll}C K K G K R C I N I K Y G D E K S L C H V V E E S I \\ G K G M R Q L K Q R Q G Q A V D D D L I & A R L V V Q C L D A L K\end{array}$
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】 P VYTVGGKNVVGLGAFKSYAGLWFFQGALDKASNVLVNA APVYSYNGKNVIGLAAFKKHFCLWFFNGVFLKDNNLLVNA $M P F F T Y R D Q N L A N M A A F K G H A A F G F$ WR WHEVGRA RPFFSVSGVLVCQMSAFTKHCGFGFWSPEMTALLK VPAFEYKG PMCGMAAFKAHMGFWKGALVKSMPKDTVTRA MPFFDYKGT VCQMAAFKQHCAFGFWKASASSDPHQMMNK $M D N Y G K E D N Y I F A M N A Q K H Y V S F Y V G T Q D K I A N A E T G L D$ M IPAFKLDKDVVCGLAARKTGCSFYPS GSVLVALLRKDLVK
 FPHFVLGGA ILCSMAAFKAHVAFGFWQ MPFFTYRNQNLANMAAFKGHAAFGF RPFFMYRGVILGNLSAFKEHCSF QPFYELEGQRLGSIAAYQKHVSVSSNQPLPQALATAFTNG $M P T Y Q W Q Q G W$ VAVANQKAYVSLY TCSAEHLLQFQQKHP MPTYKLGERNYI SFGVAKNHFSLHSMDEYDTQMKEKLSKP $M \square A Y V V P R R F L I T D G S Q K N H V G I Y M F E S V R N W F L Q E Y P K H$ MPMWLVGKKMYVAVSAAKNHFSIHFS DEAFLNRLAER MLAYKENDKSVFHLNAQKHFVGFYVGD】HK DDKNGDLLE

 QPAYVTGDGTAWLLQAFAKHCSLRFTPDFFGPFQAEVAAA
$M P F F L I A N E K ~ G U G A M K A H V S F Q D S K D L T P A V L E T A K K ~$
 MPTFTAGNGW DSVANQKHYVSVYTCQLAHDAYKKRYPKQ MPTWY 1 PFEPFLSVAAQKKHI GI YGDPELLKWFENEYPKH MPCY LYRGKGLI SVMATQQGLSVDPFSGSVTQQLRAAHAD MLAYYHAGKALINI ASQKNHMGIVTNPDVLEWFKNEYPKH MLSFGSDSSUVFHLNAQKSYVSLYVGD\｜EKITGDEELLK
 MPFFTYRGQNLCNMAGFRRHVAFGF WHDKMARA
 KPHFLKNGHYAAVI SPSKDADAFMDMNTAEDEVPKEFE MPMWLA GEKMY IAVSAAKNHFSDHFSEEGYVTNIARMVPA
 KPHFLKNGKYAAAISNSKDAVSFTDFNTTAMDFAEGMFE】PHFDYRGEMMC】FAAYRSHCAFSFWKSA
FPHFEHNG LLCSMAAFKQHCAFTFWKANLLSDPHQLKDS M $\square$ TYVVHGLYFIS\ASQKNHMGDYMSPAVLAWFQEEYPKH MPTYCLNGKNVLGI GAFKNHFCLWFHNGVFLKDHNILINA MPVYTUNNDNVVGVASFKQHYGLWFYQGVYTDASK LRNA
 APCYTFKGKNLIGMVGFKNHCAVWFHKGALLKDDNDIINA M T YTYNRQPLMYLSAQKHHCSLYDTAAYSEENTKLIVEEG $M P N W V I N Q K N F I A L A B H M G L Y A D P A V L E W F Q N A Y K Q T$ MLGYVVHSKYFISI ASQKNHMGIYSDSKLMDWFDDEDKKS KPHFLKNGKYAAVITPSKDAVAFMLFNVSGDDVPPEFE KPTYTFNGKSVVGMASFKNHIADWFPQGVFLKDHNKLINA SPAWK GDKILIIISHSKTHVTFAFARGAEFDDGHGLLEG MPFF $\ Y R G Q M F G N L A A F K A H C S F G D F G A A \square$
■PFYYLQGKPFCYLNKSKNFVDLGFWKAAHLSVHEHMTAA MIS YVEDNLAF DTI S S QKNHIGI YMFD HVKE WFLT QYPLYY MIGYVVPKKMYLHIASQKNHMGUYSDPKLLQWFQTEYPKH FPHFIYKGKNLCAMASFKQHCTFGFEMKTMQEMAQDDEKN
APTYTLKDKNVAGLAAFKNHIALWFFGDLLKQNTDLLLNA AP Y K K N $M L S Y T Y N K K P L I G D A V Q K Q Y Y S L Y L M P A Y M D Q L M N A F E K A$ $M P V Y T I D G K N V V G L G G F K H H F G I W F F Q G A L L H D S E K L E N A$ MPTYRVEKRRL HVGVWQHGVSIYGWGTDRDGGFSSRHPT KPHFLKNGKYAAVISTSK DAVSFT DFNADTDELPEGQFD MPNFVVPKSPF IGVAAQKQHMGDYSKPELLDWFVTEYPKH IP HFDYRGDMMCIFAAYKRHCSFTFYK DA KHFLRNGKYAAVISVVKDTVSFTDFNAADLILPEGLFE
KPNFSYSGGILCSMASFKAHCSFGFWLAREV LGDDMSDEA
 MPGFHVDNSPLIGGUAQKRHMGMYREPEVLDWFTEEYPKH MPSYVVPKSPFIA IAAQKHHDGDYADSELLSWFQAEYPNY FPHFIVQGKNLCAMASFKQHCTFGF MPAYAKDGKNVCFFQAAEKFGSRYCT APVYTKDGKNLVGDSAFKNHFGLWFFQGA LQKNTELLVNA YPHFMYKGK LLCAFMAFKQHCGFGFWLEQEMKTDKELTK

 FPNFEYKGS LLCSMASFKQHCAFGF
$\square P \mathrm{~T} Y \mathrm{~T}$ INGKNVAG乌GAFKNHYGワWFFQGAFLKDEKGLRNA FPHFMYKG MMCGMSAFKAHCALGF
KPHFLKNGQFAAVISPSKDADAFMDMNTVGMAFPKDFE $\square P V Y T D N N K N V V G L S A F K D Y F G L W F Y Q G T F D K D P A Q V Q E G$

UniRef90 R2Q9P3 UniRef90 UPI0003052986 UniRef90-R7XWX1 UniRef90 A9DXK8 UniRef90 F6GEY2 UniRef90-J2W8V1 UniRef90-I3ZLR5 UniRef90-L7Y646 UniRef90-H1YBS8 UniRef90-UPIOOO3FFDEBE UniRef90-E9UV78 UniRef90 J9HM53 UniRef90-10XLJ8 UniRef90-J2V8A8 UniRef90 A5V4M1 UniRef90- $\mathrm{K9CUJ} 2$ UniRef90-G8NYV7 UniRef90-U4TU16 UniRef90 F7NYS9 UniRef90 ${ }^{-}$F2JPL8 UniRef90-F3L6UO UniRef90-F4XBF1 UniRef90- UPI000375AF94 UniRef90-WORHH4 UniRef90_UPI00040C8EF3 UniRef90 NoDZWO UniRef90-UPIO0024865E9
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QE GK T K A L R Q M $\square \mathrm{D}$ K P I VLA YI K E A I E
GASDDAMGQFPPDDE』AALISQAIA
GGGWG RFS■DDLPDLKLLTRMVK
GYNYGKC $\square R V K K T \square K \square E D T G L E Q F \square H T T \square D M \quad W R$ SEGGGSLYC TVERPLPDEAFAELVRILRAAQ $Y K$ Q TK S A L H F DA P L P K T L V R K L MTQR M
E SGKNYVS I K D K EKKFPSSYLK TLLLK
NRFMGK LTS I K NLPEDTELVV


GYEVGKRVNDAFHQD\PEELLHQWCQH $\square$ LENA
G $\mathrm{L}^{\mathrm{K}} \mathrm{C}$ GKCI NFKDKDPLPLQDLQQVI

 LPPTCKKCINDKYGDE
GLDMGKClRFKKSNK $\square$ AETR $\square$ GEF $\square E K T M E M V K$


KTSMGQLGQLKSLT DLPADVIQEAVKLNLQGVKGPAKF K LDMGKSVRFKKINNIPYDLIAEL
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K LDMGKS $\square$ RFKKPDEI PFELVAELVKRR
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QPGKTQMDRYTENETVDTQLLENYISETIE



QEGDTKAWRFTTNDKDEHNLVVLKY LIEEAT
VGKTTRHVK $\square K N L G A L D R D A L R D Y \| R Q A V A$
GRK $\square$ M R S $\square R$ Y T S $\square E D V D H T I L Q E V L K C R \square K D K K \quad F W K$ KPDMGKSI RFKNMKTI PYELI GKLCQ
 SFS L GK I TR
QEGKTKS $\square R F E K G D E \square N T E V L L R Y V L E A \square E N Q K$
GDKTTKMWQVAFDAPI NHKLLAEII QYNMTTKQTMTTFWR GKKMGKS DRFKKVEDLD L ELI G S I I A QEGKTKAMR
LI S GKAT T R LR SKDTVTDDELRALIRAALR

K LDMGKSVRFKKVNNLDPDLIAELCR GPPERKTLK LRQTHTADFD

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MTTKLNMLRFSNPKK\|PYELLAELAKFTVEE MTTKLNMIRFTNPKKTPYELIGELA

QEGKTQAMQ $\square \mathrm{K} \square \mathrm{DEK} \square \mathrm{D} \square \mathrm{K} \square \mathrm{LLK} \mathrm{K}$
MTTKLNM\|RFTNPKK\|PYELLAELAE
QGTGKGMRHFR $\square K K E \square Q H D V F D E \square K A A D E$
TPTKKSCLRFKKNANVPYALIGELVK
QEGKTKGMRFTKDDVLP LED $\square K S Y$ VLEA $\square$ QNQKD
GPAERKWDK LREDKP
KTKGMRQWRFSSEEDワDPALVTAYLEEATQNQKD
$G L D M G K C V R F K G L D G \mid V D D V V A R V A R W P V D D$


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 $M \Pi G Y V V P Q K N A \| V F \quad H H V G L Y C D A D L L N W F V G E Y P K H$ MปGYVVPKKPFIHIASQKNHMGIYSDDKLLKWFQTEYPKH QPYFTLNGNDTALDGAKDHDNIFDYDPIAPDPEGITNQQ VPTYTLSNKNVVGAAAFKSYVGLWFHNGALLKDKAKYV MDTYVEDDLAF SI ASQKHHIGUYLWDEDRDWFLEEYPKH KPHFLKNGQYAAVISPSKDAปAFMIMNAKEDDVPKEFE MDGFVVNGYPF乌SLASQKNHMGLYADENLLQWFKEAYPKA VPCVTYRDRPLVSLSRARDHLSLHLQSPPLARALAGTVTD MPYYELKGGFCALYTATT YVALS SMAPPAKLDDPEGKLE $M P S Y Q A Q S G N V C Y L Q P S K K H V N L G F Y F G A S L K D K E N L L E G$ MPAYAKDGKVVCFFQAADKFSSBYATLGFSD MIGYYVDPKQPLPFAGSQKHMCTYMNEPVMRWLGEEFARR MLCWADPKTPLLSDASQKNHMGLYADKAI NDWFVAEYPKH MPGYHKKDEPLPF FSGSQKHSGI YSKPELEEWFRNEWPKH
 MPTYRVGARRLDHVGAWRHGVSLY GWDADAGADLLSRHP QPCYSRNGKLFCYLQKSKSHVTLGFQQGARMPDAPGLLEG
$M D G Y V V D G Y P M S L A S Q K N H S G Y A D P E L N Q W F L D R Y R A L$ MPAYYRNGKM目FFQAAAKFKARY WKGS MPFFDLKGSVVCHASFKNHCAFGFWKGSLMKFKDRNNAM
$M P T V V V N T P L I S L G V Q K Q H M A M Y G D T A L D D F V S E Y A K V ~$ KPHFLKNGHYAAVISPSKDAIAFMIMNTAGMEFPKGFE TAVWSHQG LVCAVGAFKQTIKMNFFQGAFDEDPQKLFNA M GYVVHSAYPAGYHCNPKHSCMYADSELMRWFKEEFPKA MIGYVVHSAYPAGYDASQKHMGDYANPALMEWFVTEYPKA KPSYAKEG LVCYMQTAKGHVNFGFYRGAEDRDESNLLEG MPSYALDGKVVCFFQNADKFKARYATDGFNDT QPYFVLDG NVCALLATKDHDNLFAYDPTVPDPDGIINQG DPFYAHQG LLCYLNPTPGGDCLGFCRGALLSNAGGLLTG AP YYTLEGKNVVGUGAFKNHYALWFFNGALKENTSLLVNA GPVFTYQQKNVISFAGFKDHFALWFFNGSHLVDPAAVLTA
VIVYTYNGQPLICVAALKNDYSLYMMNVYSDALADEFKKR MIGYYVDGYPFMSFASQKNHSGI YANPELHDWFVKEYPKH MPA WVVDGYPFDS ASQKNHMG|YSDPKVLDWFTTAYPKH MLSYGNELIKVFYLNAQKSYVSLYVGTVEKVENSDDLLE MPVFTFEGKNVLGFAGMKNHFAVWFYNGVFLTDTEE IINA MPAYAKDGKVVCFFQNSQKFKSRYST
LPFYMLDGKMFCFLNFRKSFDDGFP
 $M P S Y V V P K S P F F A I A A Q K Q H L A V Y H M G \bigsqcup F G D E A L D Q W F Q A$ RPFFSYKGALLCNI SGFTKHCSIGF
MPGWTYNKQPLVGLAAQKNYNSLYDTPEADAAFRAEWAAT MPAYFVPKKNFIAF YHMGLYAKKELYYDWFVAEYAKY KPSYSRDG LVCYLQTAKSHINFGFYQGAQLDDREGLLEG MDGYVDKGHPFINGASQKNFVARYHMGQYADKNLLNWFTS APCYTLNGKNVLGLASFKSYVGLWFHNGVFLKDSDRLIOA
 MLGYVVNGYPFTNLASQKNHDAI YADHKLYSWFISEYPKH MLAFVVDGYPFINIASQKNHSGI YADKTIHNWFVNEYPKY
 MPGWTYNRQPLAYVSGAQKHMALYSDSAEEEGFRREWARG MLAYYVPKTPFINLASQKNHSGVYANKELHDWFVNEYPKY MI GYVVPHRPFMSUASQKNHMGLYASADLMKWF DNEYKKV MICYEDRKTPAPFMALASQHMGAYGEDSLAKWFKEKYEEQ NPCYFFYG PVCYFSSSRSGIHFGF
VVAFEEGK FYПAAMKNRVHVGFSDNGLNKEEDGDFEG MPTYVREDEPLISLAAQKKHLSLYGNRELLTWFQEEYQKT MPAYAKDGKVVCFFTPASKFNARYATDGFNDA
MPAYHVNPEPFINVASQKNHMGDYSDKDLLNWFTKEYPKH M $\Pi$ GYVVDGYPFVSFASQKNHMGMYADPELLNWFVNEYQKT M GGVVVGRFIAVY MPTFVRGDEPLISLGATKRHMGLMGNEAVRSWFQEAYQET $M L G Y V K Q P$ LiPFMALASQKNHMGI YANKDI YDWFVNEFPKH MI GWVVPGTPLINLASQKNHMGLYSKPELLDWFVAEYPKH MLGYVDPKTPLLSIASQKNHMGIYYLDEKLLNWFTSEYPNH


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


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DP T KLNMIRFTNPKNLPYALIGELV
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D RAKMK LLR DDPEKDLPKELISE L



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QGSSARLI RFT
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D Y K D GRRII
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 E
E
 IVQMPEPD RSSAERIHAVVTSNAPERAPK LWYG DLLAKDEEPADRALAERVHALVTATA TVEQYLAELEAPARY $A L A E R V$
SVI R
 QEELKYLRRVVLDC
 GLKPKLWYG
D GVETCNWG
EFGFVLQYG



 UAEMADSD

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 DPEH PLVERVRALCL ALP DALKALRAILQSC TFDEYVKNTDEKWKDSFLKKWHTIEAHDPGFIVDIGHG TSRY DSQAPEARLRLEHLRSLFLNLLGEVEESLKWG VEDYVRETPDWR QEVTEKLRTLLDDTDDEITEEFKWH ASVDEVFANYPD SVRDQMQYLRTLVKETAEELQETLKWG APVQAY!AA $\quad$ PDDWRRGLCARLDALVEANVPQVTKAVRWN APVQAY:AAMPGWKRAVGEKLDALIVQAVPGVHKAVKWN


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 QPFY GVEDRWFASFSAFSKHVKLAFIAESYLEPRP MPA Y HVVD SNEDLGF A QKNHVAI YSNADYMFENVKEW HPTYMHA GRNDA $\quad$ PF GAF R S DFRLSFMNAGLLDNDPENVLE P

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 M

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 V P L IP YVYYKKK K F V Y L A P N H K DVVGFAK GF QL T Q H L D K L V D E K HPCYTYHNKNIVLI HGFKEYCALLFHKGVLLGQDTDGIQTE MPF FCY K GKMFCYL W DHKKYKKPYFA DVEGKMFDE LLLQEA
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T GKTMRS $\square$ K $\square$ RK $\square E D \square Q S E E F T S \square I K A A \square T$

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GARMS TVKYAAAEE DDEALVRD

QGPNARTDRFA DVALVEEM
GRKQLRSLRYHSQEEDDVPKL E QMVLKA
K LDMGKCCRFKKMDDIDPYLLIAELVK
K R S L V V K S
$N \square Q E A R L I R F S D K T K \square E N L K D \square L K A Y \square L E$

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NTQSGRVI RFT
R LK SKRAIDFHEGDS $\square D V A A L K A L V R E A D A L N K$
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110


lupas 21
lupas_14
lupas_28
jnet
conf
sol25
sol5
sol0
jhmm
jpssm

