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-----
-----AANGGG GTLGGGDDDP VVDLREAEVH
-----VPEDAD DETLAGAEDP VLDLREAEVL
-----DVENAD ELQQNGGATP DPGLGIGEVV
-----NFFSSA PSKRMLTREK AMLASFSPVH
-----PPSPSP PPKRQARDD-----PPH
-----ETNSEP MWKLYWTIRN AVHEKDRNVT
-----EQADEP MWKVYWTIRN AMD---KDVP
-----
-----MSDTEK
-----EDVKIQ KEEEPENNTV IEGVKEESQP
QIKLTAAGTI PKKRGRKAKR KTLNSNNSNS NSNSENTTAQ DSNGGTEQSN

LYGKRRSQKE EDEQEDLTKD MEDPTPVPNI EEVVLV-----
PYTKSKRGHR EEEQEDLTKD MDEPSPVPNV EEVTLP-----
VHKKSRN--- DDDDEDLTRD LDDPPAEPNV QEVHKAN---
-----
-----
-----MATPS MPAPAAEAAA AATTAT-----
PTAIERVSFAF PPAFRRVVNR LHPSVLAVMA AERAAA-----
PSAEP-VSAF PVATR RVVNR PHPSVLAVIA AERSAC-----
EDSGSRISDF PAVVKRVVIR PHASVMVVA AERAGL-----
NGPLTRARQA PSIMPSAADG VKSEVLNVAV GADGK-----
TGPLTRHSPL NPAPEDAPP-----QLHA GERDPP-----
LADNFLELPS KESYPDYDE IKNPVSIFMI NKRLKNGKYD LKSLVADLMQ
LADNFLELPC KESYPDYDE IKQPVSLFMI NKRLKNGQYD FKTLIADLMT
DKDVPMVDSH EATEEPPTS TNTPSFPHLA QEQAKE-----
DENTKEMDEV EEDEDDDDQP MISPDNSIFG DTKSESKQLG-----
GGDQMNVD SG SEVNDSNKRPLADPTSTPSK KQKHDDTYQQ QLPPQPIQPL

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-----
-----KVNVLKKD SENTPVKGGT
-----KTVNTKKD SESAPVKGGT
-----AALQSTAS PAPGGKSRGD NDMMPIKGGT
-----
-----
-----MAM KAPDPGGSGE
-----ANSMPL APPQPPSSGA
-----AAGAGAGG GGAAPPALEN
-----AGEG--SA AVAAAPVLEN
-----IGET--R GQGS LPALEN
-----PKEE-----
-----PRAW-----
MYSNAFDYNL ESSEVYISAE KLKALTI STC KQLVPSFDVS QYEPAPAQLT
MYSNAFEYNL ESSDVCIAAQ KLRNLT IATC KELVPSFDVS QFEPAPSAP
-----
-----
-----NTSSVANTPS EIPDAHKA EQ
QETTTTTTIPT DAENQQQIIQ QISQQQQLLQ NQLNQPSIQ QLPPPF AKPV

VADLDEQDE--ETVTAGGK EDEDP---AK GDQRSVDLG-----
MTDLDEQED--ESMETTGK DEDENSTGNK GEQTKNPDLH-----
MTDLDDDEMTG GSAAQAMSTG DGENSQTGKT SDNSNTQEF S SAK E-----
-----
-----MEAT-----
-----MSPPV AGAASSGDGP-----
-----ILPSTP SLSETTSGGA AAASKSAQLP-----
PFSQPSTAG TVKTEAPPPP STSASSAASA AAPAPAAAAA-----
ISHGQLQVLS SVLPDHPSLS NDPDKPSSYV CTPPLLMECR-----
ISYGQQQVLS GVLDPHASLA TDTDKPSTYV CTPPNLMEGH-----
ISFGQLQALS TVPADSLDLE RSDGSSSAYV ISPPPIMDGE-----
-----E ERNKAIREWE ALEAKIEADF-----
-----I EPAKLP-----PVSEEV-----
PVKPKATPHR ARIKIEMPDT DSEDSRTPPP THKRKSPKPP RENGS-----
NTPQKPKARA RQVKIEMPDT DSDDSRTPPP SHKRKSPKKN RENG-----
-----ESATLGA EVAHKKINYE QEAQKLEEKA-----
EDIIEKTESV DKKVDSGEER NEQEREIMND HSKSANPKKT TITRV-----
PNIAPPQTTT TTTSTTTTTN PTSPTKQTSPTGAAPITNR PRSSSKSSNP
-----
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-----SPSKT PEVYKEYRDF MINTYLQN-- -----PYQYL TLTAIRRNLV
G-----
G-----
G-----
G-----
G-----
S-----
G-----
ST-----
NT-----
G-----
G-----
G-----
NARDFNEPRS MIHMDAIQLE KAVLRAYEGM RN-TSLGSSI PSTPHSSSSN
NARQFNEPGS NIHQDAIQLE KAVLRAYDGM RSQQQYPMMV PYGQPTPPY
M-----
G-----
G-----

-----DCAVM
-----DCAIS
-----DCAIM
-----DVNLLQ
-----DVTLLR
-----DVVSIR
-----DVGSVR
-----PELYDLS
-----AELYDLS
-----VDIEDFA
-----DSEAKQ
-----EMDAQL
LMKAMKLTTP KSEVRGRGKK NFSGSDD--E ESARINIQQH QRSMEDAIMQ
MMPAG--KTP KTETRGR--KK KYGGPEDNEE ELARQQMIQQ QRQIDQAILQ
-----DVASIV
-----DAAALF
-----DVCSIL

RVHAGGEQWG LVNYQVDPES -----RPMAMGPPP
RVHAFLEQWG LINYQVDAES -----RPTPMGPPP
RVHAFLEQWG LINYQIDADV -----RPTPMGPPP
KVFLFLEKWG LINFSSSLKK -----NDHLLSVDN
KLFAFLDSSG LINFASPSR -----PEAQQQQRQ
RVFDFLDSWG LINYNSSASA -----KPLKWEKE
RVFDFLEEWG LINYGASPSG -----AKQGRDKKE
RIVRFLDAWG IINYLAAGSV -----QRGLRMAAT
RIVRFLDTWG IINYLASGSV -----HRGLRMATS
RVFRFLDHWG IINYCATAQS -----HPGPLRDVS
EVMEFLDYWG LINFHFPFPT -----DTGS----T
KVLEFLSHWG LINFHFPFPPA -----VQGVSELVE
LPIEEQKMWR LFKSMKDVR-----EEGTNRPLA
LPIEEQKMWR LFKSMKDVR-----DDDSSRPLA
KIHFLEKWG LINYQIDPRT -----KPSLIGPSF
RLHKFLTKWG LINYQVDSKL -----LPKNIEPPL
RVHSFLEHWG LINYFVNPDG GAYIPLLSSN NNNNNNNNNN NNNNNNNNNN

TPHFNVLADT P--LACAS-- -----
TSHFVVLADT PSGLVPLQ-- -----
TSHFHLSDT PSGLQSIN-- -----
AKIEQGTPAG IRVTATPNSL RPITAPPLVE ERVETGIKVP P-----
TEAEAVVEAP VGLQVTPRPP PSYFAEEKGG GGNENGFRLP P-----
AGKSAGDAAS EPATTVKE-- -----
EAALSQSSLP IGAT-----
LIREEPTGEL HLMSAPLKSI DGLILFDRPK CSVRAEDIAS GAS-----L
LLREEPTGEL QLLTAPLKSI DGLILFDRPK CNLQAEDISS LAS-----N
DVREDTNGEV NVPSAALTSI DSLIKFDKPN CRHKGGEVYS -----
ASDHDDLGDK ESLLNSLYRF QVDEACP-PL VHKPRFTAQA T-----
SITNADTEEK ISVVDKLFQF ETLQSYLIPA PNQAEVTAPI H-----

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VNFMRLPSKE	EFPAYYDVIK	KPMDMMRIKH	KLENRQYVTL	LDV-----V
VNFMRLPTKE	EFPGYDVIK	KPMDFMRIKA	KLENRQYVTL	LDV-----V
TGHFQVVLDT	PQGLKPFLE	NVIKQVEVEG	DGAEPQVKKE	FPVNLTIKKN
TSQYSTRHDA	PRGLFPFESY	KPSVQLPDMA	KLKMMNTSD	SES-----
NSNNSNNNTI	ERETTTTSTT	TTTTTTTKEK	ITSPKQSTSS	SSSSSSSSSS
-----	-----	DLRSPQVPAA	QQMLNFPEK-	-NKE-----
-----	-----	PKTPQQTSAS	QQMLNFPDK-	-GKE-----
-----	-----	PQKTQQPSAA	KTLLDLDKKP	LGKDGLELG
-----LTS	YSDVFSDLKK	PDHVLVCAHC	GERCDSPFYQ	HNKGIVN---
-----LTS	YSDVFGWEA-	PGMAPICGLC	GMECRDGNAQ	ILKDGFK---
-----	-----	-TAKRNCNGC	KAICSIACFA	CDKYDLT---
-----	-----	-MPSKLCTGC	RTVCGLAYFS	CEKADIS---
SSSPGMENDG	AGFDEKTLE	RLSESFCSFC	AQPLPSLHYE	SQKEADIA--
SEVVDFDAGL	AELDGK-IRE	RLSESSCSYC	LQPLTSLHYQ	SLKEADIA--
-SLPSLDGDS	PDLDIR-IRE	HLCDSHCNHC	SRPLPTVYFQ	SQKKGDIL--
-PSGLFPDPM	AADELLKQEG	PAVEYHCNSC	SADCSRKRYH	CPKQADFD--
-TPSLLSEPT	LTEDSITQAE	SSVEYHCNSC	SVDCSRKRYH	CRTQADFD--
SDFMLMLSNA	CKFNETDSDI	YKEAVSLQKA	LLEMKRELDT	GDDAPRVQVE
SDFMLMLSNA	CKFNETDSVI	YKEAVSLQKY	LLEMKRSLDS	GEDAPRVQVE
VYDSAQDFNA	LQDESRNSRQ	IHKVYICHTC	GNESINVRyh	NLRARDTN--
-----TL	YKYLKESKRK	YDEITHPPST	TDDENGDKND	NGGKMNN---
TNNISKPFST	SLDLRQNLFS	QPFRHICSKC	SQDCTFLRYS	FTPAPPPQDQ
-----	-----KP	VDLQN-----	-----FGL	RTDIYSKK-T
-----	-----KP	TDMQN-----	-----FGL	RTDMYTKKNA
DKSG-----	-----LTGIKT	EALENGAAGG	LSSGVSQFGL	KLDQYAKKPA
-----	-----ICE	KCFKNG-----	-----	NYGEN--NTA
-----	-----VCS	KCYANND---	-----	NKGEANIHPG
-----	-----LCA	RCYVRS-----	-----	NYRVGINSSE
-----	-----LCA	RCYVRA-----	-----	NYRPLTSAD
-----	-----LCS	DCFHDAR---	-----FVT	GHSSLDFQRV
-----	-----LCS	DCFHDAR---	-----YIT	GHSSLDFQRI
-----	-----LCC	DCFHHGR---	-----FVV	GHSCLDVFRV
-----	-----LCT	ECFNNGG---	-----FSS	DMSSSDFILM
-----	-----LCC	DCYDKGN---	-----LDA	GMSQTDFIIM
LRTI-----	-----FTSIFA	SLFSKKD---	-----EEG	KCYSDHLTEF
LRTI-----	-----FTSIFA	ALYSKKD---	-----EDG	KCWADYFIEF
-----	-----LCS	RCFQEGHFG-	-----	--ANFQSSDF
-----	-----EVST	STSMGTGDAN-	-----	LLEEGETSRP
AVSGEQVIQP	QPPQTILLCN	NCFTNDQT--	-----FID	HSHLIKQDFK
LAKSKG-ASA	GRGWTEQETL	LLL-----	EALEMYKDDW	NKVSEHVG-S
PSKSKAAASA	TREWTEQETL	LLL-----	EALEMYKDDW	NKVSEHVG-S
AMRNRTAASM	AREWTDQETL	LLL-----	EGLEMHKDDW	NKVCEHVG-S
DDFKLIGNSA	AAVWTEEEIL	LLL-----	ESVLKHGDDW	ELISQSVS-T
DKKERIDNHS	SSAWTDAETL	LLL-----	EGVLKHGDDW	DLIAQHVR-T
FKRVEISEES	KPEWSDKEIL	LLL-----	EAVMHYGDDW	KKVASHVI-G
FKRIEITEDA	KSDWTDKETL	HLL-----	EAVLHYGEDW	KKVSHHVG-S
DGKKDGLDND	GDSWTDQETF	LLL-----	EGIDKYKENW	NAVAEHVG-T
DGDNDRSEND	GDSWTDQETL	LLL-----	EGIEKYNDNW	NNIAEHVG-T
DPMKFYGDQD	GDNWTDQETL	LLL-----	EAVELYNENW	VQIADHVG-S
EPAEAPG-VG	SGKWTDQETL	LLL-----	EALEIFKENW	NEIAEHVA-T
ESAEIPG-FG	GTSWTDQETL	LLL-----	EALEIFQAKW	GDIAEHVA-T
TEVLKANGVP	SSEWPFTLDQ	IKMNIDKCRY	RRLDKLQKDF	FDLFERAR-E
PDLMKAAGVP	PAEWPFTMDQ	IKINIDKCRY	RRLDKLQKDF	FDLFETAR-E
IRLENNGNSV	KKNWSDQEML	LLL-----	EGIEMYEDQW	EKIADHVGGH
LKKVKILEQI	DENWSKEDLQ	KLL-----	KGIQEFGADW	YKVAKNVG-N
KIELPEPSPL	EDQWTDQETL	LLL-----	EALDIYSDSW	NDVADHVK-T
RTQDECILHF	LRLPIEDPYL	ENSDASLGPL	AYQPVPFSQS	GNP-----
RTQDECILHF	LRLPIEDPYL	EDSEASLGPL	AYQPIPFQS	GNP-----
RTQDECILHF	LRLPIEDPYL	EDDGGFLGPL	ACQPIPFSS	GNP-----
KSRLDCISKL	IELPFGEFLM	GSASGRL---	N---PSILTE	DEN-----
KNKSECIARL	IQLPFGEHML	GTVNGKL---	DNRLHKIQT	DGK-----
RTEKDCVSQF	VKLPFGEQFV	KESD-----	-----SE	DGL-----
RSEKDCIARF	TRLPFGEQFM	GP-----	-----KE	DKI-----
KSKIQCLHFF	LRLPVEDGLL	ENIKVPEASF	SSKFWMQNA	S-----


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-----N VATAAAAALA SAATKAKHLA
-----N LSTAAAAALA AAAVKAKHLA
-----G TGTGTGPLAV PKEGTFSENN MQTAAAAALA SAAVKAKHLA
----- --ASVATALG AAAAQAKILA
----- --AAVATSIG VAAARAKMLA
----- --ETTRNESE RAWADAKSLI
----- --LSANDLLK EASANAQVQL
-----N VRHAARCGLS AAATKCKLFA
-----K VKHAAMCGLS AAATKAKLFA
-----K VMAAFRAGLS AAATKAKLFA
-----S VSEEKQPGSR TENSTTKLDA
-----N TTSTSSKNTR KLSNAKESKD
DVFVCETMVN GSADTPDDCS LFGFQSIVDE FSDAQTMNLD YGKAMRKMKA
DVFVCETMVN GTADAPDDCS LIGYDPANE FTDVQTMNLD YAKSMKMKMT
-----DDKLG KVSDKSREIS
-----GSEIAIS SLGYRSHIFA
----- IQAAAATLA ATSIKAKALS

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AVEERKIKSL VALLVETQMK KLEIK----- --LRHFEGE ETIMDREKEA
AVEERKIKSL VALLVETQMK KLEIK----- --LRHFEEEL ETIMDREREA
ALEERKIKSL VALLVETQMK KLEIK----- --LRHFEEEL EATMEREREG
DQEEREMEQE AATVIEQQLK KLQSK----- --LKFLDDL ESIMDEEEKV
DQEEREMELL MASIIETQLK KIQYK----- --IKHFEEL ELIMDQEYAT
EKEEHEVEGA IKETVEVEMK KIRDR----- --IVHFEKL DLEMERSRQK
EKERKAIQES LSDIVGVQMK EIQDK----- --IRRFEQK ELLMEKERQK
DQEEREIQRL SATIINHQLK RLELK----- --LKQFADI ETYLLRDSEQ
DQEEREIQRL TATVINHQLK RLELK----- --LKQFAEV ETLLEKECEQ
DHEEREIQRL SANIVNHQLK RMELK----- --LKQFAEI ETLLMKECEQ
VQEKRSSKPV TTDNSEKPDV IICPSQDKCS GKELQEPLKD GNKLSENKND
ESPQVEPKPS SANDCDNPIS QVAKR-----A SDNIRGHSST VLPVSLNNTN
HKLHVSIPNE EVLFYKQPIK MDKELSPLLK GEGVMPLDHL DEMMDDDTDG
YKLHVSIPNE EILFYKQPIK MEKELSPRVN GDGVMPLDHL DEMMDDDTDG
EKYIEESQAI IQELVKLTME KLESK----- --FTKLCDL ETQLEMEKLLK
TNEERQMNFL TNELIRLQME KLDK----- --LNHLKKL EKFMELERKT
KSEEREIQSL ILKIINVQTK KLELK----- --LKCYSER ENALEKEKNQ

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LEQQRQQLLT ER-----
LEYQRQQLLA DR-----
LEYQRQQLIT ER-----
IEGVKETIIQ ER-----
LQMKSSSLVD EWQKQSQQFG VWRIGAILNR LGFDRTAGME SHRRAPPFFP
LEEVRNLLFV DQ-----
LHCLKELLFS DQ-----
SERMRQGLQA QRIR-----
VERIRQRIAS DRVR-----
VEKTRQRFSA ERAR-----
ASQSTVSQSA ADAS-----
EPCSISSQEA SAGN-----
SESVSSSIHP KILKEGSPPA TVQSQTSSVS TPPQHPSISA EMPIMTPKAV
SESVTSSSHP PPATSSSPPE TPSESGDVA ATVAAVANQT ASTPVTPKAV
YVKESEKMLN DR-----
LERQENLLI QR-----
LEKERQALFS ER-----

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NAERRRRQPK TPPSSPPGLS VSPNLRHLS SPRPPPPDAQ FTGALMAKKG

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```

KSKSGYILFS AEVRKRIMHE NPDAGFGEVS KIVGIEWKKL SEEQKKHYEM
KSKSGYILFS AEVRKRIMHE NPDSGFGDVS RIVGVEWKKL SEEQKKHYEL

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AMNAPSTSAA PNVMFDPDM PGPSNQG--- -----
SGNNSSVG-- -----
TGSGSGSGLG LN-----
PGFPVPGSFV AATMTGSSD PSPGSDNVSS V-----
PGSRLPVGYG VNQHLLRS-- -----
GNARAPSHWI RRIENGRPVA REEDVTKALW KLRDELLKST CSLVMDRPTQ
PNARPPTNWI RRTEAGRPVA REEDVTKALW RLRDELLKST CGMVLERPT-
-----
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