**Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/human/USA/IA-CDC-2-5464428/2022, complete genome**

GenBank: OM484260.1

[FASTA](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?report=fasta) [Graphics](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?report=graph)

[Go to:](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1" \l "goto2187207052_0)

LOCUS OM484260 29819 bp RNA linear VRL 02-FEB-2022

DEFINITION Severe acute respiratory syndrome coronavirus 2 isolate

SARS-CoV-2/human/USA/IA-CDC-2-5464428/2022, complete genome.

ACCESSION OM484260

VERSION OM484260.1

DBLINK BioProject: [PRJNA689853](https://www.ncbi.nlm.nih.gov/bioproject/PRJNA689853)

BioSample: [SAMN25555578](https://www.ncbi.nlm.nih.gov/biosample/SAMN25555578)

KEYWORDS purposeofsampling:baselinesurveillance.

SOURCE Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)

ORGANISM [Severe acute respiratory syndrome coronavirus 2](https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=2697049)

Viruses; Riboviria; Orthornavirae; Pisuviricota; Pisoniviricetes;

Nidovirales; Cornidovirineae; Coronaviridae; Orthocoronavirinae;

Betacoronavirus; Sarbecovirus.

REFERENCE 1 (bases 1 to 29819)

AUTHORS Sheth,M., Nobles,S., Madden,J., Padilla,J., Burgin,A., Bentz,M.,

Burroughs,M., Cook,P., Paden,C.R., Batra,D., Knipe,K., Howard,D.,

Unoarumhi,Y., Schmerer,M., Rambo-Martin,B.L., Lacek,K., Shepard,S.,

Wentworth,D., Dugan,V. and Lee,J.

TITLE National SARS-CoV-2 Surveillance

JOURNAL Unpublished

REFERENCE 2 (bases 1 to 29819)

AUTHORS Sheth,M., Nobles,S., Madden,J., Padilla,J., Burgin,A., Bentz,M.,

Burroughs,M., Cook,P., Paden,C.R., Batra,D., Knipe,K., Howard,D.,

Unoarumhi,Y., Schmerer,M., Rambo-Martin,B.L., Lacek,K., Shepard,S.,

Wentworth,D., Dugan,V. and Lee,J.

TITLE Direct Submission

JOURNAL Submitted (02-FEB-2022) Biotechnology Core Facility Branch, Centers

for Disease Control and Prevention, 1600 Clifton Rd, Atlanta, GA

30329, USA

COMMENT ##Assembly-Data-START##

Assembly Method :: IRMA v1.0.2

Sequencing Technology :: Illumina

##Assembly-Data-END##

FEATURES Location/Qualifiers

source 1..29819

/organism="Severe acute respiratory syndrome coronavirus

2"

/mol\_type="genomic RNA"

/isolate="SARS-CoV-2/human/USA/IA-CDC-2-5464428/2022"

/host="Homo sapiens"

/db\_xref="taxon:[2697049](https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=2697049)"

/country="USA: IA"

/collection\_date="2022-01-13"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=263&to=21540) 263..21540

/gene="ORF1ab"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?location=263:13453,13453:21540) join(263..13453,13453..21540)

/gene="ORF1ab"

/ribosomal\_slippage

/codon\_start=1

/product="ORF1ab polyprotein"

/protein\_id="[UKC29538.1](https://www.ncbi.nlm.nih.gov/protein/2187207053)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHSYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTG

DFVKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESG

LKTILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNL

LEILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGN

FKVTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAA

ITILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKL

KPVLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLV

NKFLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEII

FLEGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEK

YCALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNITFELDERIDKVLNER

CSAYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEF

KLASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPE

EEQEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSG

YLKLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVAGALNKATNNAMQVESD

DYIATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLLKSAYENFNQHEVLLA

PLLSAGIFGADPIHSLRVCVDTVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIA

EIPKEEVKPFITESKPSVEQRKQDDKKIKACVEEVTTTLEETKFLTENLLLYIDINGN

LHPDSATLVSDIDITFLKKDAPYIVGDVVQEGVLTAVVIPTKKAGGTTEMLAKALRKV

PTDNYITTYPGQGLNGYTVEEAKTVLKKCKSAFYILPSIISNEKQEILGTVSWNLREM

LAHAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGARFYFYTSKTTVASLIN

TLNDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSS

KTPEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVIT

FDNLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPH

NSHEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIK

WADNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELG

DVRETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQ

IPCTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSK

ETLYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYY

KKDNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVT

FFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWST

KPVETSNSFDVLKSEDAQGMDNLACEDLKPVSEEVVENPTIQKDVLECNVKTTEVVGD

IILKPANNIKITEEVGHTDLMAAYVDNSSLTIKKPNELSRVLGLKTLATHGLAAVNSV

PWDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYMPYFFTLLLQLCTFTRSTNSRIK

ASMPTTIAKNTVKSVGKFCLEASFNYLKSPNFSKLINIIIWFLLLSVCLGSLIYSTAA

LGVLMSNLGMPSYCTGYREGYLNSTNVTIATYCTGSIPCSVCLSGLDSLDTYPSLETI

QITISSFKWDLTAFGLVAEWFLAYILFTRFFYVLGLAAIMQLFFSYFAVHFISNSWLM

WLIINLVQMAPISAMVRMYIFFASFYYVWKSYVHVVDGCNSSTCMMCYKRNRATRVEC

TTIVNGVRRSFYVYANGGKGFCKLHNWNCVNCDTFCAGSTFISDEVARDLSLQFKRPI

NPTDQSSYIVDSVTVKNGSIHLYFDKAGQKTYERHSLSHFVNLDNLRANNTKGSLPIN

VIVFDGKSKCEESSAKSASVYYSQLMCQPILLLDQALVSDVGDSAEVAVKMFDAYVNT

FSSTFNVPMEKLKTLVATAEAELAKNVSLDNVLSTFISAARQGFVDSDVETKDVVECL

KLSHQSDIEVTGDSCNNYMLTYNKVENMTPRDLGACIDCSARHINAQVAKSHNITLIW

NVKDFMSLSEQLRKQIRSAAKKNNLPFKLTCATTRQVVNVVTTKIALKGGKIVNNWLK

QLIKVTLVFLFVAAIFYLITPVHVMSKHTDFSSEIIGYKAIDGGVTRDIASTDTCFAN

KHADFDTWFSQRGGSYTNDKACPLIAAVITREVGFVVPGLPGTILRTTNGDFLHFLPR

VFSAVGNICYTPSKLIEYTDFATSACVLAAECTIFKDASGKPVPYCYDTNVLEGSVAY

ESLRPDTRYVLMDGSIIQFPNTYLEGSVRVVTTFDSEYCRHGTCERSEAGVCVSTSGR

WVLNNDYYRSLPGVFCGVDAVNLLTNMFTPLIQPIGALDISASIVAGGIVAIVVTCLA

YYFMRFRRAFGEYSHVVAFNTLLFLMSFTVLCLTPVYSFLPGVYSVIYLYLTFYLTND

VSFLAHIQWMVMFTPLVPFWITIAYIICISTKHFYWFFSNYLKRRVVFNGVSFSTFEE

AALCTFLLNKEMYLKLRSDVLLPLTQYNRYLALYNKYKYFSGAMDTTSYREAACCHLA

KALNDFSNSGSDVLYQPPQISITSAVLQSGFRKMAFPSGKVEGCMVQVTCGTTTLNGL

WLDDVVYCPRHVICTSEDMLNPNYEDLLIRKSNHNFLVQAGNVQLRVIGHSMQNCVLK

LKVDTANPKTPKYKFVRIQPGQTFSVLACYNGSPSGVYQCAMRHNFTIKGSFLNGSCG

SVGFNIDYDCVSFCYMHHMELPTGVHAGTDLEGNFYGPFVDRQTAQAAGTDTTITVNV

LAWLYAAVINGDRWFLNRFTTTLNDFNLVAMKYNYEPLTQDHVDILGPLSAQTGIAVL

DMCASLKELLQNGMNGRTILGSALLEDEFTPFDVVRQCSGVTFQSAVKRTIKGTHHWL

LLTILTSLLVLVQSTQWSLFFFLYENAFLPFAMGIIAMSAFAMMFVKHKHAFLCLFLL

PSLATVAYFNMVYMPASWVMRIMTWLDMVDTSFKLKDCVMYASAVVLLILMTARTVYD

DGARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGVVF

MCVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVSTQ

EFRYMNSQGLLPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSVL

QQLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEEM

LDNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEFD

RDAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNIIN

NARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSKI

VQLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTDD

NALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGPK

VKYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYKD

YLASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNPK

GFCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKGYGCSCDQLREPMLQSADAQS

FLNRVCGVSAARLTPCGTGTSTDVVYRAFDIYNDKVAGFAKFLKTNCCRFQEKDEDDN

LIDSYFVVKRHTFSNYQHEETIYNLLKDCPAVAKHDFFKFRIDGDMVPHISRQRLTKY

TMADLVYALRHFDEGNCDTLKEILVTYNCCDDDYFNKKDWYDFVENPDILRVYANLGE

RVRQALLKTVQFCDAMRNAGIVGVLTLDNQDLNGNWYDFGDFIQTTPGSGVPVVDSYY

SLLMPILTLTRALTAESHVDTDLTKPYIKWDLLKYDFTEERLKLFDRYFKYWDQTYHP

NCVNCLDDRCILHCANFNVLFSTVFPLTSFGPLVRKIFVDGVPFVVSTGYHFRELGVV

HNQDVNLHSSRLSFKELLVYAADPAMHAASGNLLLDKRTTCFSVAALTNNVAFQTVKP

GNFNKDFYDFAVSKGFFKEGSSVELKHFFFAQDGNAAISDYDYYRYNLPTMCDIRQLL

FVVEVVDKYFDCYDGGCINANQVIVNNLDKSAGFPFNKWGKARLYYDSMSYEDQDALF

AYTKRNVIPTITQMNLKYAISAKNRARTVAGVSICSTMTNRQFHQKLLKSIAATRGAT

VVIGTSKFYGGWHNMLKTVYSDVENPHLMGWDYPKCDRAMPNMLRIMASLVLARKHTT

CCSLSHRFYRLANECAQVLSEMVMCGGSLYVKPGGTSSGDATTAYANSVFNICQAVTA

NVNALLSTDGNKIADKYVRNLQHRLYECLYRNRDVDTDFVNEFYAYLRKHFSMMILSD

DAVVCFNSTYASQGLVASIKNFKSVLYYQNNVFMSEAKCWTETDLTKGPHEFCSQHTM

LVKQGDDYVYLPYPDPSRILGAGCFVDDIVKTDGTLMIERFVSLAIDAYPLTKHPNQE

YADVFHLYLQYIRKLHDELTGHMLDMYSVMLTNDNTSRYWEPEFYEAMYTPHTVLQAV

GACVLCNSQTSLRCGACIRRPFLCCKCCYDHVISTSHKLVLSVNPYVCNAPGCDVTDV

TQLYLGGMSYYCKSHKPPISFPLCANGQVFGLYKNTCVGSDNVTDFNAIATCDWTNAG

DYILANTCTERLKLFAAETLKATEETFKLSYGIATVREVLSDRELHLSWEVGKPRPPL

NRNYVFTGYRVTKNSKVQIGEYTFEKGDYGDAVVYRGTTTYKLNVGDYFVLTSHTVMP

LSAPTLVPQEHYVRITGLYPTLNISDEFSSNVANYQKVGMQKYSTLQGPPGTGKSHFA

IGLALYYPSARIVYTACSHAAVDALCEKALKYLPIDKCSRIIPARARVECFDKFKVNS

TLEQYVFCTVNALPETTADIVVFDEISMATNYDLSVVNARLRAKHYVYIGDPAQLPAP

RTLLTKGTLEPEYFNSVCRLMKTIGPDMFLGTCRRCPAEIVDTVSALVYDNKLKAHKD

KSAQCFKMFYKGVITHDVSSAINRPQIGVVREFLTRNPAWRKAVFISPYNSQNAVASK

ILGLPTQTVDSSQGSEYDYVIFTQTTETAHSCNVNRFNVAITRAKVGILCIMSDRDLY

DKLQFTSLEIPRRNVATLQAENVTGLFKDCSKVITGLHPTQAPTHLSVDTKFKTEGLC

VDVPGIPKDMTYRRLISMMGFKMNYQVNGYPNMFITREEAIRHVRAWIGFDVEGCHAT

REAVGTNLPLQLGFSTGVNLVAVPTGYVDTPNNTDFSRVSAKPPPGDQFKHLIPLMYK

GLPWNVVRIKIVQMLSDTLKNLSDRVVFVLWAHGFELTSMKYFVKIGPERTCCLCDRR

ATCFSTASDTYACWHHSIGFDYVYNPFMIDVQQWGFTGNLQSNHDLYCQVHGNAHVAS

CDAIMTRCLAVHECFVKRVDWTIEYPIIGDELKINAACRKVQHMVVKAALLADKFPVL

HDIGNPKAIKCVPQADVEWKFYDAQPCSDKAYKIEELFYSYATHSDKFTDGVCLFWNC

NVDRYPANSIVCRFDTRVLSNLNLPGCDGGSLYVNKHAFHTPAFDKSAFVNLKQLPFF

YYSDSPCESHGKQVVSDIDYVPLKSATCITRCNLGGAVCRHHANEYRLYLDAYNMMIS

AGFSLWVYKQFDTYNLWNTFTRLQSLENVAFNVVNKGHFDGQQGEVPVSIINNTVYTK

VDGVDVELFENKTTLPVNVAFELWAKRNIKPVPEVKILNNLGVDIAANTVIWDYKRDA

PAHISTIGVCSMTDIAKKPTETICAPLTVFFDGRVDGQVDLFRNARNGVLITEGSVKG

LQPSVGPKQASLNGVTLIGEAVKTQFNYYKKVDGVVQQLPETYFTQSRNLQEFKSRSQ

MEIDFLELAMDEFIERYKLEGYAFEHIVYGDFSHSQLGGLHLLIGLAKRFKESPFELE

DFIPMDSTVKNYFITDAQTGSSKCVCSVIDLLLDDFVEIIKSQDLSVVSKVVKVTIDY

TEISFMLWCKDGHVETFYPKLQSSQAWQPGVAMPNLYKMQRMLLEKCDLQNYGDSATL

PKGIMMNVAKYTQLCQYLNTLTLAVPYNMRVIHFGAGSDKGVAPGTAVLRQWLPTGTL

LVDSDLNDFVSDADSTLIGDCATVHTANKWDLIISDMYDPKTKNVTKENDSKEGFFTY

ICGFIQQKLALGGSVAIKITEHSWNADLYKLMGHFAWWTAFVTNVNASSSEAFLIGCN

YLGKPREQIDGYVMHANYIFWRNTNPIQLSSYSLFDMSKFPLKLRGTAVMSLKEGQIN

DMILSLLSKGRLIIRENNRVVISSDVLVNN"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29538.1?from=1&to=180) 263..802

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29538.1?from=181&to=818) 803..2716

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29538.1?from=819&to=2762) 2717..8548

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29538.1?from=2763&to=3262) 8549..10048

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29538.1?from=3263&to=3568) 10049..10966

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29538.1?from=3569&to=3855) 10967..11827

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29538.1?from=3856&to=3938) 11828..12076

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29538.1?from=3939&to=4136) 12077..12670

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29538.1?from=4137&to=4249) 12671..13009

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29538.1?from=4250&to=4388) 13010..13426

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29538.1?from=4389&to=5320) join(13427..13453,13453..16221)

/gene="ORF1ab"

/product="RNA-dependent RNA polymerase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29538.1?from=5321&to=5921) 16222..18024

/gene="ORF1ab"

/product="helicase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29538.1?from=5922&to=6448) 18025..19605

/gene="ORF1ab"

/product="3'-to-5' exonuclease"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29538.1?from=6449&to=6794) 19606..20643

/gene="ORF1ab"

/product="endoRNAse"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29538.1?from=6795&to=7092) 20644..21537

/gene="ORF1ab"

/product="2'-O-ribose methyltransferase"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=263&to=13468) 263..13468

/gene="ORF1ab"

/codon\_start=1

/product="ORF1a polyprotein"

/protein\_id="[UKC29539.1](https://www.ncbi.nlm.nih.gov/protein/2187207054)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHSYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTG

DFVKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESG

LKTILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNL

LEILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGN

FKVTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAA

ITILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKL

KPVLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLV

NKFLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEII

FLEGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEK

YCALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNITFELDERIDKVLNER

CSAYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEF

KLASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPE

EEQEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSG

YLKLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVAGALNKATNNAMQVESD

DYIATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLLKSAYENFNQHEVLLA

PLLSAGIFGADPIHSLRVCVDTVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIA

EIPKEEVKPFITESKPSVEQRKQDDKKIKACVEEVTTTLEETKFLTENLLLYIDINGN

LHPDSATLVSDIDITFLKKDAPYIVGDVVQEGVLTAVVIPTKKAGGTTEMLAKALRKV

PTDNYITTYPGQGLNGYTVEEAKTVLKKCKSAFYILPSIISNEKQEILGTVSWNLREM

LAHAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGARFYFYTSKTTVASLIN

TLNDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSS

KTPEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVIT

FDNLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPH

NSHEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIK

WADNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELG

DVRETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQ

IPCTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSK

ETLYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYY

KKDNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVT

FFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWST

KPVETSNSFDVLKSEDAQGMDNLACEDLKPVSEEVVENPTIQKDVLECNVKTTEVVGD

IILKPANNIKITEEVGHTDLMAAYVDNSSLTIKKPNELSRVLGLKTLATHGLAAVNSV

PWDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYMPYFFTLLLQLCTFTRSTNSRIK

ASMPTTIAKNTVKSVGKFCLEASFNYLKSPNFSKLINIIIWFLLLSVCLGSLIYSTAA

LGVLMSNLGMPSYCTGYREGYLNSTNVTIATYCTGSIPCSVCLSGLDSLDTYPSLETI

QITISSFKWDLTAFGLVAEWFLAYILFTRFFYVLGLAAIMQLFFSYFAVHFISNSWLM

WLIINLVQMAPISAMVRMYIFFASFYYVWKSYVHVVDGCNSSTCMMCYKRNRATRVEC

TTIVNGVRRSFYVYANGGKGFCKLHNWNCVNCDTFCAGSTFISDEVARDLSLQFKRPI

NPTDQSSYIVDSVTVKNGSIHLYFDKAGQKTYERHSLSHFVNLDNLRANNTKGSLPIN

VIVFDGKSKCEESSAKSASVYYSQLMCQPILLLDQALVSDVGDSAEVAVKMFDAYVNT

FSSTFNVPMEKLKTLVATAEAELAKNVSLDNVLSTFISAARQGFVDSDVETKDVVECL

KLSHQSDIEVTGDSCNNYMLTYNKVENMTPRDLGACIDCSARHINAQVAKSHNITLIW

NVKDFMSLSEQLRKQIRSAAKKNNLPFKLTCATTRQVVNVVTTKIALKGGKIVNNWLK

QLIKVTLVFLFVAAIFYLITPVHVMSKHTDFSSEIIGYKAIDGGVTRDIASTDTCFAN

KHADFDTWFSQRGGSYTNDKACPLIAAVITREVGFVVPGLPGTILRTTNGDFLHFLPR

VFSAVGNICYTPSKLIEYTDFATSACVLAAECTIFKDASGKPVPYCYDTNVLEGSVAY

ESLRPDTRYVLMDGSIIQFPNTYLEGSVRVVTTFDSEYCRHGTCERSEAGVCVSTSGR

WVLNNDYYRSLPGVFCGVDAVNLLTNMFTPLIQPIGALDISASIVAGGIVAIVVTCLA

YYFMRFRRAFGEYSHVVAFNTLLFLMSFTVLCLTPVYSFLPGVYSVIYLYLTFYLTND

VSFLAHIQWMVMFTPLVPFWITIAYIICISTKHFYWFFSNYLKRRVVFNGVSFSTFEE

AALCTFLLNKEMYLKLRSDVLLPLTQYNRYLALYNKYKYFSGAMDTTSYREAACCHLA

KALNDFSNSGSDVLYQPPQISITSAVLQSGFRKMAFPSGKVEGCMVQVTCGTTTLNGL

WLDDVVYCPRHVICTSEDMLNPNYEDLLIRKSNHNFLVQAGNVQLRVIGHSMQNCVLK

LKVDTANPKTPKYKFVRIQPGQTFSVLACYNGSPSGVYQCAMRHNFTIKGSFLNGSCG

SVGFNIDYDCVSFCYMHHMELPTGVHAGTDLEGNFYGPFVDRQTAQAAGTDTTITVNV

LAWLYAAVINGDRWFLNRFTTTLNDFNLVAMKYNYEPLTQDHVDILGPLSAQTGIAVL

DMCASLKELLQNGMNGRTILGSALLEDEFTPFDVVRQCSGVTFQSAVKRTIKGTHHWL

LLTILTSLLVLVQSTQWSLFFFLYENAFLPFAMGIIAMSAFAMMFVKHKHAFLCLFLL

PSLATVAYFNMVYMPASWVMRIMTWLDMVDTSFKLKDCVMYASAVVLLILMTARTVYD

DGARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGVVF

MCVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVSTQ

EFRYMNSQGLLPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSVL

QQLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEEM

LDNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEFD

RDAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNIIN

NARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSKI

VQLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTDD

NALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGPK

VKYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYKD

YLASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNPK

GFCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKGYGCSCDQLREPMLQSADAQS

FLNGFAV"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29539.1?from=1&to=180) 263..802

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29539.1?from=181&to=818) 803..2716

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29539.1?from=819&to=2762) 2717..8548

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29539.1?from=2763&to=3262) 8549..10048

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29539.1?from=3263&to=3568) 10049..10966

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29539.1?from=3569&to=3855) 10967..11827

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29539.1?from=3856&to=3938) 11828..12076

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29539.1?from=3939&to=4136) 12077..12670

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29539.1?from=4137&to=4249) 12671..13009

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29539.1?from=4250&to=4388) 13010..13426

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UKC29539.1?from=4389&to=4401) 13427..13465

/gene="ORF1ab"

/product="nsp11"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=13461&to=13488) 13461..13488

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 1"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=13473&to=13527) 13473..13527

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 2"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=21548&to=25360) 21548..25360

/gene="S"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=21548&to=25360) 21548..25360

/gene="S"

/codon\_start=1

/product="surface glycoprotein"

/protein\_id="[UKC29540.1](https://www.ncbi.nlm.nih.gov/protein/2187207055)"

/translation="MFVFLVLLPLVSSQCVNLTTRTQLPPAYTNSFTRGVYYPDKVFR

SSVLHSTQDLFLPFFSNVTWFHVISGTNGTKRFDNPVLPFNDGVYFASIEKSNIIRGW

IFGTTLDSKTQSLLIVNNATNVVIKVCEFQFCNDPFLDHKNNKSWMESEFRVYSSANN

CTFEYVSQPFLMDLEGKQGNFKNLREFVFKNIDGYFKIYSKHTPIIVREPEDLPQGFS

ALEPLVDLPIGINITRFQTLLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLLKY

NENGTITDAVDCALDPLSETKCTLKSFTVEKGIYQTSNFRVQPTESIVRFPNITNLCP

FDEVFNATRFASVYAWNRKRISNCVADYSVLYNLAPFFTFKCYGVSPTKLNDLCFTNV

YADSFVIRGDEVRQIAPGQTGNIADYNYKLPDDFTGCVIAWNSNKLDSKVSGNYNYLY

RLFRKSNLKPFERDISTEIYQAGNKPCNGVAGFNCYFPLRSYSFRPTYGVGHQPYRVV

VLSFELLHAPATVCGPKKSTNLVKNKCVNFNFNGLKGTGVLTESNKKFLPFQQFGRDI

ADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQVAVLYQGVNCTEVPVAIHAD

QLTPTWRVYSTGSNVFQTRAGCLIGAEYVNNSYECDIPIGAGICASYQTQTNSHRRAR

SVASQSIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEILPVSMTKTSVDCTMYIC

GDSTECSNLLLQYGSFCTQLKRALTGIAVEQDKNTQEVFAQVKQIYKTPPIKYFGGFN

FSQILPDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICAQKFKGLT

VLPPLLTDEMIAQYTSALLAGTITSGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLY

ENQKLIANQFNSAIGKIQDSLSSTASALGKLQDVVNHNAQALNTLVKQLSSKFGAISS

VLNDIFSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASANLAATKMSECV

LGQSKRVDFCGKGYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHDGKAHFPR

EGVFVSNGTHWFVTQRNFYEPQIITTDNTFVSGNCDVVIGIVNNTVYDPLQPELDSFK

EELDKYFKNHTSPDVDLGDISGINASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYE

QYIKWPWYIWLGFIAGLIAIVMVTIMLCCMTSCCSCLKGCCSCGSCCKFDEDDSEPVL

KGVKLHYT"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=25369&to=26196) 25369..26196

/gene="ORF3a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=25369&to=26196) 25369..26196

/gene="ORF3a"

/codon\_start=1

/product="ORF3a protein"

/protein\_id="[UKC29541.1](https://www.ncbi.nlm.nih.gov/protein/2187207056)"

/translation="MDLFMRIFTIGTVTLKQGEIKDATPSDFVRATATIPIQASLPFG

WLIVGVALLAVFQSASKIITLKKRWQLALSKGVHFVCNLLLLFVTVYSHLLLVAAGLE

APFFYLYALVYFLQSINFVRIIMRLWLCWKCRSKNPLLYDANYFLCWHTNCYDYCIPY

NSVTSSIVITSGDGTTSPISEHDYQIGGYTEKWESGVKDCVVLHSYFTSDYYQLYSTQ

LSTDTGVEHVTFFIYNKIVDEPEEHVQIHTIDGSSGVVNPVMEPIYDEPTTTTSVPL"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=26221&to=26448) 26221..26448

/gene="E"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=26221&to=26448) 26221..26448

/gene="E"

/codon\_start=1

/product="envelope protein"

/protein\_id="[UKC29542.1](https://www.ncbi.nlm.nih.gov/protein/2187207057)"

/translation="MYSFVSEEIGTLIVNSVLLFLAFVVFLLVTLAILTALRLCAYCC

NIVNVSLVKPSFYVYSRVKNLNSSRVPDLLV"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=26499&to=27167) 26499..27167

/gene="M"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=26499&to=27167) 26499..27167

/gene="M"

/codon\_start=1

/product="membrane glycoprotein"

/protein\_id="[UKC29543.1](https://www.ncbi.nlm.nih.gov/protein/2187207058)"

/translation="MAGSNGTITVEELKKLLEEWNLVIGFLFLTWICLLQFAYANRNR

FLYIIKLIFLWLLWPVTLTCFVLAAVYRINWITGGIAIAMACLVGLMWLSYFIASFRL

FARTRSMWSFNPETNILLNVPLHGTILTRPLLESELVIGAVILRGHLRIAGHHLGRCD

IKDLPKEITVATSRTLSYYKLGASQRVAGDSGFAAYSRYRIGNYKLNTDHSSSSDNIA

LLVQ"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=27178&to=27363) 27178..27363

/gene="ORF6"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=27178&to=27363) 27178..27363

/gene="ORF6"

/codon\_start=1

/product="ORF6 protein"

/protein\_id="[UKC29544.1](https://www.ncbi.nlm.nih.gov/protein/2187207059)"

/translation="MFHLVDFQVTIAEILLIIMRTFKVSIWNLDYIINLIIKNLSKSL

TENKYSQLDEEQPMEID"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=27370&to=27735) 27370..27735

/gene="ORF7a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=27370&to=27735) 27370..27735

/gene="ORF7a"

/codon\_start=1

/product="ORF7a protein"

/protein\_id="[UKC29545.1](https://www.ncbi.nlm.nih.gov/protein/2187207060)"

/translation="MKIILFLALITLATCELYHYQECVRGTTVLLKEPCSSGTYEGNS

PFHPLADNKFALTCFSTQFAFACPDGVKHVYQLRARSVSPKLFIRQEEVQELYSPIFL

IVAAIVFITLCFTLKRKTE"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=27732&to=27863) 27732..27863

/gene="ORF7b"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=27732&to=27863) 27732..27863

/gene="ORF7b"

/codon\_start=1

/product="ORF7b"

/protein\_id="[UKC29546.1](https://www.ncbi.nlm.nih.gov/protein/2187207061)"

/translation="MIELSLIDFYLCFLAFLLFLVLIMLIIFWFSLELQDHNETCHA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=27870&to=28235) 27870..28235

/gene="ORF8"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=27870&to=28235) 27870..28235

/gene="ORF8"

/codon\_start=1

/product="ORF8 protein"

/protein\_id="[UKC29547.1](https://www.ncbi.nlm.nih.gov/protein/2187207062)"

/translation="MKFLVFLGIITTVAAFHQECSLQSCTQHQPYVVDDPCPIHFYSK

WYIRVGARKSAPLIELCVDEAGSKSPIQYIDIGNYTVSCLPFTINCQEPKLGSLVVRC

SFYEDFLEYHDVRVVLDFI"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=28250&to=29500) 28250..29500

/gene="N"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=28250&to=29500) 28250..29500

/gene="N"

/codon\_start=1

/product="nucleocapsid phosphoprotein"

/protein\_id="[UKC29548.1](https://www.ncbi.nlm.nih.gov/protein/2187207063)"

/translation="MSDNGPQNQRNALRITFGGPSDSTGSNQNGGARSKQRRPQGLPN

NTASWFTALTQHGKEDLKFPRGQGVPINTNSSPDDQIGYYRRATRRIRGGDGKMKDLS

PRWYFYYLGTGPEAGLPYGANKDGIIWVATEGALNTPKDHIGTRNPANNAAIVLQLPQ

GTTLPKGFYAEGSRGGSQASSRSSSRSRNSSRNSTPGSSKRTSPARMAGNGGDAALAL

LLLDRLNQLESKMSGKGQQQQGQTVTKKSAAEASKKPRQKRTATKAYNVTQAFGRRGP

EQTQGNFGDQELIRQGTDYKHWPQIAQFAPSASAFFGMSRIGMEVTPSGTWLTYTGAI

KLDDKGPNFKDQVILLNKHIDAYKTFPPTEPKKDKKKKADETQALPQRQKKQQTVTLL

PAADLDDFSKQLQQSMSSADSTQA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=29525&to=29641) 29525..29641

/gene="ORF10"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=29525&to=29641) 29525..29641

/gene="ORF10"

/codon\_start=1

/product="ORF10 protein"

/protein\_id="[UKC29549.1](https://www.ncbi.nlm.nih.gov/protein/2187207064)"

/translation="MGYINVFAFPFTIYSLLLCRMNSRNYIAQVDVVNFNLT"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=29576&to=29611) 29576..29611

/gene="ORF10"

/note="Coronavirus 3' UTR pseudoknot stem-loop 1"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=29596&to=29624) 29596..29624

/gene="ORF10"

/note="Coronavirus 3' UTR pseudoknot stem-loop 2"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM484260.1?from=29695&to=29735) 29695..29735

/note="Coronavirus 3' stem-loop II-like motif (s2m)"

ORIGIN

1 aaaggtttat accttcctag gtaacaaacc aaccaacttt cgatctcttg tagatctgtt

61 ctctaaacga actttaaaat ctgtgtggct gtcactcggc tgcatgctta gtgcactcac

121 gcagtataat taataactaa ttactgtcgt tgacaggaca cgagtaactc gtctatcttc

181 tgcaggctgc ttacggtttc gtccgtgttg cagccgatca tcagcacatc taggttttgt

241 ccgggtgtga ccgaaaggta agatggagag ccttgtccct ggtttcaacg agaaaacaca

301 cgtccaactc agtttgcctg ttttacaggt tcgcgacgtg ctcgtacgtg gctttggaga

361 ctccgtggag gaggtcttat cagaggcacg tcaacatctt aaagatggca cttgtggctt

421 agtagaagtt gaaaaaggcg ttttgcctca acttgaacag ccctatgtgt tcatcaaacg

481 ttcggatgct cgaactgcac ctcatggtca tgttatggtt gagctggtag cagaactcga

541 aggcattcag tacggtcgta gtggtgagac acttggtgtc cttgtccctc atgtgggcga

601 aataccagtg gcttaccgca aggttcttct tcgtaagaac ggtaataaag gagctggtgg

661 ccatagttac ggcgccgatc taaagtcatt tgacttaggc gacgagcttg gcactgatcc

721 ttatgaagat tttcaagaaa actggaacac taaacatagc agtggtgtta cccgtgaact

781 catgcgtgag cttaacggag gggcatacac tcgctatgtc gataacaact tctgtggccc

841 tgatggctac cctcttgagt gcattaaaga ccttctagca cgtgctggta aagcttcatg

901 cactttgtcc gaacaactgg actttattga cactaagagg ggtgtatact gctgccgtga

961 acatgagcat gaaattgctt ggtacacgga acgttctgaa aagagctatg aattgcagac

1021 accttttgaa attaaattgg caaagaaatt tgacaccttc aatggggaat gtccaaattt

1081 tgtatttccc ttaaattcca taatcaagac tattcaacca agggttgaaa agaaaaagct

1141 tgatggcttt atgggtagaa ttcgatctgt ctatccagtt gcgtcaccaa atgaatgcaa

1201 ccaaatgtgc ctttcaactc tcatgaagtg tgatcattgt ggtgaaactt catggcagac

1261 gggcgatttt gttaaagcca cttgcgaatt ttgtggcact gagaatttga ctaaagaagg

1321 tgccactact tgtggttact taccccaaaa tgctgttgtt aaaatttatt gtccagcatg

1381 tcacaattca gaagtaggac ctgagcatag tcttgccgaa taccataatg aatctggctt

1441 gaaaaccatt cttcgtaagg gtggtcgcac tattgccttt ggaggctgtg tgttctctta

1501 tgttggttgc cataacaagt gtgcctattg ggttccacgt gctagcgcta acataggttg

1561 taaccataca ggtgttgttg gagaaggttc cgaaggtctt aatgacaacc ttcttgaaat

1621 actccaaaaa gagaaagtca acatcaatat tgttggtgac tttaaactta atgaagagat

1681 cgccattatt ttggcatctt tttctgcttc cacaagtgct tttgtggaaa ctgtgaaagg

1741 tttggattat aaagcattca aacaaattgt tgaatcctgt ggtaatttta aagttacaaa

1801 aggaaaagct aaaaaaggtg cctggaatat tggtgaacag aaatcaatac tgagtcctct

1861 ttatgcattt gcatcagagg ctgctcgtgt tgtacgatca attttctccc gcactcttga

1921 aactgctcaa aattctgtgc gtgttttaca gaaggccgct ataacaatac tagatggaat

1981 ttcacagtat tcactgagac tcattgatgc tatgatgttc acatctgatt tggctactaa

2041 caatctagtt gtaatggcct acattacagg tggtgttgtt cagttgactt cgcagtggct

2101 aactaacatc tttggcactg tttatgaaaa actcaaaccc gtccttgatt ggcttgaaga

2161 gaagtttaag gaaggtgtag agtttcttag agacggttgg gaaattgtta aatttatctc

2221 aacctgtgct tgtgaaattg tcggtggaca aattgtcacc tgtgcaaagg aaattaagga

2281 gagtgttcag acattcttta agcttgtaaa taaatttttg gctttgtgtg ctgactctat

2341 cattattggt ggagctaaac ttaaagcctt gaatttaggt gaaacatttg tcacgcactc

2401 aaagggattg tacagaaagt gtgttaaatc cagagaagaa actggcctac tcatgcctct

2461 aaaagcccca aaagaaatta tcttcttaga gggagaaaca cttcccacag aagtgttaac

2521 agaggaagtt gtcttgaaaa ctggtgattt acaaccatta gaacaaccta ctagtgaagc

2581 tgttgaagct ccattggttg gtacaccagt ttgtattaac gggcttatgt tgctcgaaat

2641 caaagacaca gaaaagtact gtgcccttgc acctaatatg atggtaacaa acaatacctt

2701 cacactcaaa ggcggtgcac caacaaaggt tacttttggt gatgacactg tgatagaagt

2761 gcaaggttac aagagtgtga atatcacttt tgaacttgat gaaaggattg ataaagtact

2821 taatgagagg tgctctgcct atacagttga actcggtaca gaagtaaatg agttcgcctg

2881 tgttgtggca gatgctgtca taaaaacttt gcaaccagta tctgaattac ttacaccact

2941 gggcattgat ttagatgagt ggagtatggc tacatactac ttatttgatg agtctggtga

3001 gtttaaattg gcttcacata tgtattgttc tttttaccct ccagatgagg atgaagaaga

3061 aggtgattgt gaagaagaag agtttgagcc atcaactcaa tatgagtatg gtactgaaga

3121 tgattaccaa ggtaaacctt tggaatttgg tgccacttct gctgctcttc aacctgaaga

3181 agagcaagaa gaagattggt tagatgatga tagtcaacaa actgttggtc aacaagacgg

3241 cagtgaggac aatcagacaa ctactattca aacaattgtt gaggttcaac ctcaattaga

3301 gatggaactt acaccagttg ttcagactat tgaagtgaat agttttagtg gttatttaaa

3361 acttactgac aatgtataca ttaaaaatgc agacattgtg gaagaagcta aaaaggtaaa

3421 accaacagtg gttgttaatg cagccaatgt ttaccttaaa catggaggag gtgttgcagg

3481 agccttaaat aaggctacta acaatgccat gcaagttgaa tctgatgatt acatagctac

3541 taatggacca cttaaagtgg gtggtagttg tgttttaagc ggacacaatc ttgctaaaca

3601 ctgtcttcat gttgtcggcc caaatgttaa caaaggtgaa gacattcaac ttcttaagag

3661 tgcttatgaa aattttaatc agcacgaagt tctacttgca ccattattat cagctggtat

3721 ttttggtgct gaccctatac attctttaag agtttgtgta gatactgttc gcacaaatgt

3781 ctacttagct gtctttgata aaaatctcta tgacaaactt gtttcaagct ttttggaaat

3841 gaagagtgaa aagcaagttg aacaaaagat cgctgagatt cctaaagagg aagttaagcc

3901 atttataact gaaagtaaac cttcagttga acagagaaaa caagatgata agaaaatcaa

3961 agcttgtgtt gaagaagtta caacaactct ggaagaaact aagttcctca cagaaaactt

4021 gttactttat attgacatta atggcaatct tcatccagat tctgccactc ttgttagtga

4081 cattgacatc actttcttaa agaaagatgc tccatatata gtgggtgatg ttgttcaaga

4141 gggtgtttta actgctgtgg ttatacctac taaaaaggct ggtggcacta ctgaaatgct

4201 agcgaaagct ttgagaaaag tgccaacaga caattatata accacttacc cgggtcaggg

4261 tttaaatggt tacactgtag aggaggcaaa gacagtgctt aaaaagtgta aaagtgcctt

4321 ttacattcta ccatctatta tctctaatga gaagcaagaa attcttggaa ctgtttcttg

4381 gaatttgcga gaaatgcttg cacatgcaga agaaacacgc aaattaatgc ctgtctgtgt

4441 ggaaactaaa gccatagttt caactataca gcgtaaatat aagggtatta aaatacaaga

4501 gggtgtggtt gattatggtg ctagatttta cttttacacc agtaaaacaa ctgtagcgtc

4561 acttatcaac acacttaacg atctaaatga aactcttgtt acaatgccac ttggctatgt

4621 aacacatggc ttaaatttgg aagaagctgc tcggtatatg agatctctca aagtgccagc

4681 tacagtttct gtttcttcac ctgatgctgt tacagcgtat aatggttatc ttacttcttc

4741 ttctaaaaca cctgaagaac attttattga aaccatctca cttgctggtt cctataaaga

4801 ttggtcctat tctggacaat ctacacaact aggtatagaa tttcttaaga gaggtgataa

4861 aagtgtatat tacactagta atcctaccac attccaccta gatggtgaag ttatcacctt

4921 tgacaatctt aagacacttc tttctttgag agaagtgagg actattaagg tgtttacaac

4981 agtagacaac attaacctcc acacgcaagt tgtggacatg tcaatgacat atggacaaca

5041 gtttggtcca acttatttgg atggagctga tgttactaaa ataaaacctc ataattcaca

5101 tgaaggtaaa acattttatg ttttacctaa tgatgacact ctacgtgttg aggcttttga

5161 gtactaccac acaactgatc ctagttttct gggtaggtac atgtcagcat taaatcacac

5221 taaaaagtgg aaatacccac aagttaatgg tttaacttct attaaatggg cagataacaa

5281 ctgttatctt gccactgcat tgttaacact ccaacaaata gagttgaagt ttaatccacc

5341 tgctctacaa gatgcttatt acagagcaag ggctggtgaa gcggctaact tttgtgcact

5401 tatcttagcc tactgtaata agacagtagg tgagttaggt gatgttagag aaacaatgag

5461 ttacttgttt caacatgcca atttagattc ttgcaaaaga gtcttgaacg tggtgtgtaa

5521 aacttgtgga caacagcaga caacccttaa gggtgtagaa gctgttatgt acatgggcac

5581 actttcttat gaacaattta agaaaggtgt tcagatacct tgtacgtgtg gtaaacaagc

5641 tacaaaatat ctagtacaac aggagtcacc ttttgttatg atgtcagcac cacctgctca

5701 gtatgaactt aagcatggta catttacttg tgctagtgag tacactggta attaccagtg

5761 tggtcactat aaacatataa cttctaaaga aactttgtat tgcatagacg gtgctttact

5821 tacaaagtcc tcagaataca aaggtcctat tacggatgtt ttctacaaag aaaacagtta

5881 cacaacaacc ataaaaccag ttacttataa attggatggt gttgtttgta cagaaattga

5941 ccctaagttg gacaattatt ataagaaaga caattcttat ttcacagagc aaccaattga

6001 tcttgtacca aaccaaccat atccaaacgc aagcttcgat aattttaagt ttgtatgtga

6061 taatatcaaa tttgctgatg atttaaacca gttaactggt tataagaaac ctgcttcaag

6121 agagcttaaa gttacatttt tccctgactt aaatggtgat gtggtggcta ttgattataa

6181 acactacaca ccctctttta agaaaggagc taaattgtta cataaaccta ttgtttggca

6241 tgttaacaat gcaactaata aagccacgta taaaccaaat acctggtgta tacgttgtct

6301 ttggagcaca aaaccagttg aaacatcaaa ttcgtttgat gtactgaagt cagaggacgc

6361 gcagggaatg gataatcttg cctgcgaaga tctaaaacca gtctctgaag aagtagtgga

6421 aaatcctacc atacagaaag acgttcttga gtgtaatgtg aaaactaccg aagttgtagg

6481 agacattata cttaaaccag caaataatat aaaaattaca gaagaggttg gccacacaga

6541 tctaatggct gcttatgtag acaattctag tcttactatt aagaaaccta atgaattatc

6601 tagagtatta ggtttgaaaa cccttgctac tcatggttta gctgctgtta atagtgtccc

6661 ttgggatact atagctaatt atgctaagcc ttttcttaac aaagttgtta gtacaactac

6721 taacatagtt acacggtgtt taaaccgtgt ttgtactaat tatatgcctt atttctttac

6781 tttattgcta caattgtgta cttttactag aagtacaaat tctagaatta aagcatctat

6841 gccgactact atagcaaaga atactgttaa gagtgtcggt aaattttgtc tagaggcttc

6901 atttaattat ttgaagtcac ctaatttttc taaactgata aatattataa tttggttttt

6961 actattaagt gtttgcctag gttctttaat ctactcaacc gctgctttag gtgttttaat

7021 gtctaattta ggcatgcctt cttactgtac tggttacaga gaaggctatt tgaactctac

7081 taatgtcact attgcaacct actgtactgg ttctatacct tgtagtgttt gtcttagtgg

7141 tttagattct ttagacacct atccttcttt agaaactata caaattacca tttcatcttt

7201 taaatgggat ttaactgctt ttggcttagt tgcagagtgg tttttggcat atattctttt

7261 cactaggttt ttctatgtac ttggattggc tgcaatcatg caattgtttt tcagctattt

7321 tgcagtacat tttattagta attcttggct tatgtggtta ataattaatc ttgtacaaat

7381 ggccccgatt tcagctatgg ttagaatgta catcttcttt gcatcatttt attatgtatg

7441 gaaaagttat gtgcatgttg tagacggttg taattcatca acttgtatga tgtgttacaa

7501 acgtaataga gcaacaagag tcgaatgtac aactattgtt aatggtgtta gaaggtcctt

7561 ttatgtctat gctaatggag gtaaaggctt ttgcaaacta cacaattgga attgtgttaa

7621 ttgtgataca ttctgtgctg gtagtacatt tattagtgat gaagttgcga gagacttgtc

7681 actacagttt aaaagaccaa taaatcctac tgaccagtct tcttacatcg ttgatagtgt

7741 tacagtgaag aatggttcca tccatcttta ctttgataaa gctggtcaaa agacttatga

7801 aagacattct ctctctcatt ttgttaactt agacaacctg agagctaata acactaaagg

7861 ttcattgcct attaatgtta tagtttttga tggtaaatca aaatgtgaag aatcatctgc

7921 aaaatcagcg tctgtttact acagtcagct tatgtgtcaa cctatactgt tactagatca

7981 ggcattagtg tctgatgttg gtgatagtgc ggaagttgca gttaaaatgt ttgatgctta

8041 cgttaatacg ttttcatcaa cttttaacgt accaatggaa aaactcaaaa cactagttgc

8101 aactgcagaa gctgaacttg caaagaatgt gtccttagac aatgtcttat ctacttttat

8161 ttcagcagct cggcaagggt ttgttgattc agatgtagaa actaaagatg ttgttgaatg

8221 tcttaaattg tcacatcaat ctgacataga agttactggc gatagttgta ataactatat

8281 gctcacctat aacaaagttg aaaacatgac accccgtgac cttggtgctt gtattgactg

8341 tagtgcgcgt catattaatg cgcaggtagc aaaaagtcac aacattactt tgatatggaa

8401 cgttaaagat ttcatgtcat tgtctgaaca actacgaaaa caaatacgta gtgctgctaa

8461 aaagaataac ttacctttta agttgacatg tgcaactact agacaagttg ttaatgttgt

8521 aacaacaaag atagcactta agggtggtaa aattgttaat aattggttga agcagttaat

8581 taaagttaca cttgtgttcc tttttgttgc tgctattttc tatttaataa cacctgttca

8641 tgtcatgtct aaacatactg acttttcaag tgaaatcata ggatacaagg ctattgatgg

8701 tggtgtcact cgtgacatag catctacaga tacttgtttt gctaacaaac atgctgattt

8761 tgacacatgg tttagccagc gtggtggtag ttatactaat gacaaagctt gcccattgat

8821 tgctgcagtc ataacaagag aagtgggttt tgtcgtgcct ggtttgcctg gcacgatatt

8881 acgcacaact aatggtgact ttttgcattt cttacctaga gtttttagtg cagttggtaa

8941 catctgttac acaccatcaa aacttataga gtacactgac tttgcaacat cagcttgtgt

9001 tttggctgct gaatgtacaa tttttaaaga tgcttctggt aagccagtac catattgtta

9061 tgataccaat gtactagaag gttctgttgc ttatgaaagt ttacgccctg acacacgtta

9121 tgtgctcatg gatggctcta ttattcaatt tcctaacacc taccttgaag gttctgttag

9181 agtggtaaca acttttgatt ctgagtactg taggcacggc acttgtgaaa gatcagaagc

9241 tggtgtttgt gtatctacta gtggtagatg ggtacttaac aatgattatt acagatcttt

9301 accaggagtt ttctgtggtg tagatgctgt aaatttactt actaatatgt ttacaccact

9361 aattcaacct attggtgctt tggacatatc agcatctata gtagctggtg gtattgtagc

9421 tatcgtagta acatgccttg cctactattt tatgaggttt agaagagctt ttggtgaata

9481 cagtcatgta gttgccttta atactttact attccttatg tcattcactg tactctgttt

9541 aacaccagtt tactcattct tacctggtgt ttattctgtt atttacttgt acttgacatt

9601 ttatcttact aatgatgttt cttttttagc acatattcag tggatggtta tgttcacacc

9661 tttagtacct ttctggataa caattgctta tatcatttgt atttccacaa agcatttcta

9721 ttggttcttt agtaattacc taaagagacg tgtagtcttt aatggtgttt cctttagtac

9781 ttttgaagaa gctgcgctgt gcaccttttt gttaaataaa gaaatgtatc taaagttgcg

9841 tagtgatgtg ctattacctc ttacgcaata taatagatac ttagctcttt ataataagta

9901 caagtatttt agtggagcaa tggatacaac tagctacaga gaagctgctt gttgtcatct

9961 cgcaaaggct ctcaatgact tcagtaactc aggttctgat gttctttacc aaccaccaca

10021 aatctctatc acctcagctg ttttgcagag tggttttaga aaaatggcat tcccatctgg

10081 taaagttgag ggttgtatgg tacaagtaac ttgtggtaca actacactca acggtctttg

10141 gcttgatgac gtagtttact gtccaagaca tgtgatctgc acctctgaag acatgcttaa

10201 ccctaattat gaagatttac tcattcgtaa gtctaatcat aatttcttgg tacaggctgg

10261 taatgttcaa ctcagggtta ttggacattc tatgcaaaat tgtgtactta agcttaaggt

10321 tgatacagcc aatcctaaga cacctaagta taagtttgtt cgcattcaac caggacagac

10381 tttttcagtg ttagcttgtt acaatggttc accatctggt gtttaccaat gtgctatgag

10441 gcacaatttc actattaagg gttcattcct taatggttca tgtggtagtg ttggttttaa

10501 catagattat gactgtgtct ctttttgtta catgcaccat atggaattac caactggagt

10561 tcatgctggc acagacttag aaggtaactt ttatggacct tttgttgaca ggcaaacagc

10621 acaagcagct ggtacggaca caactattac agttaatgtt ttagcttggt tgtacgctgc

10681 tgttataaat ggagacaggt ggtttctcaa tcgatttacc acaactctta atgactttaa

10741 ccttgtggct atgaagtaca attatgaacc tctaacacaa gaccatgttg acatactagg

10801 acctctttct gctcaaactg gaattgccgt tttagatatg tgtgcttcat taaaagaatt

10861 actgcaaaat ggtatgaatg gacgtaccat attgggtagt gctttattag aagatgaatt

10921 tacacctttt gatgttgtta gacaatgctc aggtgttact ttccaaagtg cagtgaaaag

10981 aacaatcaag ggtacacacc actggttgtt actcacaatt ttgacttcac ttttagtttt

11041 agtccagagt actcaatggt ctttgttctt ttttttgtat gaaaatgcct ttttaccttt

11101 tgctatgggt attattgcta tgtctgcttt tgcaatgatg tttgtcaaac ataagcatgc

11161 atttctctgt ttgtttttgt taccttctct tgccactgta gcttatttta atatggtcta

11221 tatgcctgct agttgggtga tgcgtattat gacatggttg gatatggttg atactagttt

11281 taagctaaaa gactgtgtta tgtatgcatc agctgtagtg ttactaatcc ttatgacagc

11341 aagaactgtg tatgatgatg gtgctaggag agtgtggaca cttatgaatg tcttgacact

11401 cgtttataaa gtttattatg gtaatgcttt agatcaagcc atttccatgt gggctcttat

11461 aatctctgtt acttctaact actcaggtgt agttacaact gtcatgtttt tggccagagg

11521 tgttgttttt atgtgtgttg agtattgccc tattttcttc ataactggta atacacttca

11581 gtgtataatg ctagtttatt gtttcttagg ctatttttgt acttgttact ttggcctctt

11641 ttgtttactc aaccgctact ttagactgac tcttggtgtt tatgattact tagtttctac

11701 acaggagttt agatatatga attcacaggg actactccca cccaagaata gcatagatgc

11761 cttcaaactc aacattaaat tgttgggtgt tggtggcaaa ccttgtatca aagtagccac

11821 tgtacagtct aaaatgtcag atgtaaagtg cacatcagta gtcttactct cagttttgca

11881 acaactcaga gtagaatcat catctaaatt gtgggctcaa tgtgtccagt tacacaatga

11941 cattctctta gctaaagata ctactgaagc ctttgaaaaa atggtttcac tactttctgt

12001 tttgctttcc atgcagggtg ctgtagacat aaacaagctt tgtgaagaaa tgctggacaa

12061 cagggcaacc ttacaagcta tagcctcaga gtttagttcc cttccatcat atgcagcttt

12121 tgctactgct caagaagctt atgagcaggc tgttgctaat ggtgattctg aagttgttct

12181 taaaaagttg aagaagtctt tgaatgtggc taaatctgaa tttgaccgtg atgcagccat

12241 gcaacgtaag ttggaaaaga tggctgatca agctatgacc caaatgtata aacaggctag

12301 atctgaggac aagagggcaa aagttactag tgctatgcag acaatgcttt tcactatgct

12361 tagaaagttg gataatgatg cactcaacaa cattatcaac aatgcaagag atggttgtgt

12421 tcccttgaac ataatacctc ttacaacagc agccaaacta atggttgtca taccagacta

12481 taacacatat aaaaatacgt gtgatggtac aacatttact tatgcatcag cattgtggga

12541 aatccaacag gttgtagatg cagatagtaa aattgttcaa cttagtgaaa ttagtatgga

12601 caattcacct aatttagcat ggcctcttat tgtaacagct ttaagggcca attctgctgt

12661 caaattacag aataatgagc ttagtcctgt tgcactacga cagatgtctt gtgctgccgg

12721 tactacacaa actgcttgca ctgatgacaa tgcgttagct tactacaaca caacaaaggg

12781 aggtaggttt gtacttgcac tgttatccga tttacaggat ttgaaatggg ctagattccc

12841 taagagtgat ggaactggta ctatctatac agaactggaa ccaccttgta ggtttgttac

12901 agacacacct aaaggtccta aagtgaagta tttatacttt attaaaggat taaacaacct

12961 aaatagaggt atggtacttg gtagtttagc tgccacagta cgtctacaag ctggtaatgc

13021 aacagaagtg cctgccaatt caactgtatt atctttctgt gcttttgctg tagatgctgc

13081 taaagcttac aaagattatc tagctagtgg gggacaacca atcactaatt gtgttaagat

13141 gttgtgtaca cacactggta ctggtcaggc aataacagtc acaccggaag ccaatatgga

13201 tcaagaatcc tttggtggtg catcgtgttg tctgtactgc cgttgccaca tagatcatcc

13261 aaatcctaaa ggattttgtg acttaaaagg taagtatgta caaataccta caacttgtgc

13321 taatgaccct gtgggtttta cacttaaaaa cacagtctgt accgtctgcg gtatgtggaa

13381 aggttatggc tgtagttgtg atcaactccg cgaacccatg cttcagtcag ctgatgcaca

13441 atcgttttta aacgggtttg cggtgtaagt gcagcccgtc ttacaccgtg cggcacaggc

13501 actagtactg atgtcgtata cagggctttt gacatctaca atgataaagt agctggtttt

13561 gctaaattcc taaaaactaa ttgttgtcgc ttccaagaaa aggacgaaga tgacaattta

13621 attgattctt actttgtagt taagagacac actttctcta actaccaaca tgaagaaaca

13681 atttataatt tacttaagga ttgtccagct gttgctaaac atgacttctt taagtttaga

13741 atagacggtg acatggtacc acatatatca cgtcaacgtc ttactaaata cacaatggca

13801 gacctcgtct atgctttaag gcattttgat gaaggtaatt gtgacacatt aaaagaaata

13861 cttgtcacat acaattgttg tgatgatgat tatttcaata aaaaggactg gtatgatttt

13921 gtagaaaacc cagatatatt acgcgtatac gccaacttag gtgaacgtgt acgccaagct

13981 ttgttaaaaa cagtacaatt ctgtgatgcc atgcgaaatg ctggtattgt tggtgtactg

14041 acattagata atcaagatct caatggtaac tggtatgatt tcggtgattt catacaaacc

14101 acgccaggta gtggagttcc tgttgtagat tcttattatt cattgttaat gcctatatta

14161 accttgacca gggctttaac tgcagagtca catgttgaca ctgacttaac aaagccttac

14221 attaagtggg atttgttaaa atatgacttc acggaagaga ggttaaaact ctttgaccgt

14281 tattttaaat attgggatca gacataccac ccaaattgtg ttaactgttt ggatgacaga

14341 tgcattctgc attgtgcaaa ctttaatgtt ttattctcta cagtgttccc acttacaagt

14401 tttggaccac tagtgagaaa aatatttgtt gatggtgttc catttgtagt ttcaactgga

14461 taccacttca gagagctagg tgttgtacat aatcaggatg taaacttaca tagctctaga

14521 cttagtttta aggaattact tgtgtatgct gctgaccctg ctatgcacgc tgcttctggt

14581 aatctattac tagataaacg cactacgtgc ttttcagtag ctgcacttac taacaatgtt

14641 gcttttcaaa ctgtcaaacc cggtaatttt aacaaagact tctatgactt tgctgtgtct

14701 aagggtttct ttaaggaagg aagttctgtt gaattaaaac acttcttctt tgctcaggat

14761 ggtaatgctg ctatcagcga ttatgactac tatcgttata atctaccaac aatgtgtgat

14821 atcagacaac tactatttgt agttgaagtt gttgataagt actttgattg ttacgatggt

14881 ggctgtatta atgctaacca agtcatcgtc aacaacctag acaaatcagc tggttttcca

14941 tttaataaat ggggtaaggc tagactttat tatgattcaa tgagttatga ggatcaagat

15001 gcacttttcg catatacaaa acgtaatgtc atccctacta taactcaaat gaatcttaag

15061 tatgccatta gtgcaaagaa tagagctcgc accgtagctg gtgtctctat ctgtagtact

15121 atgaccaata gacagtttca tcaaaaatta ttgaaatcaa tagccgccac tagaggagct

15181 actgtagtaa ttggaacaag caaattctat ggtggttggc acaatatgtt aaaaactgtt

15241 tatagtgatg tagaaaaccc tcaccttatg ggttgggatt atcctaaatg tgatagagcc

15301 atgcctaaca tgcttagaat tatggcctca cttgttcttg ctcgcaaaca tacaacgtgt

15361 tgtagcttgt cacaccgttt ctatagatta gctaatgagt gtgctcaagt attgagtgaa

15421 atggtcatgt gtggcggttc actatatgtt aaaccaggtg gaacctcatc aggagatgcc

15481 acaactgctt atgctaatag tgtttttaac atttgtcaag ctgtcacggc caatgttaat

15541 gcacttttat ctactgatgg taacaaaatt gccgataagt atgtccgcaa tttacaacac

15601 agactttatg agtgtctcta tagaaataga gatgttgaca cagactttgt gaatgagttt

15661 tacgcatatt tgcgtaaaca tttctcaatg atgatactct ctgacgatgc tgttgtgtgt

15721 ttcaatagca cttatgcatc tcaaggtcta gtggctagca taaagaactt taagtcagtt

15781 ctttattatc aaaacaatgt ttttatgtct gaagcaaaat gttggactga gactgacctt

15841 actaaaggac ctcatgaatt ttgctctcaa catacaatgc tagttaaaca gggtgatgat

15901 tatgtgtacc ttccttaccc agatccatca agaatcctag gggccggctg ttttgtagat

15961 gatatcgtaa aaacagatgg tacacttatg attgaacggt tcgtgtcttt agctatagat

16021 gcttacccac ttactaaaca tcctaatcag gagtatgctg atgtctttca tttgtactta

16081 caatacataa gaaagctaca tgatgagtta acaggacaca tgttagacat gtattctgtt

16141 atgcttacta atgataacac ttcaaggtat tgggaacctg agttttatga ggctatgtac

16201 acaccgcata cagtcttaca ggctgttggg gcttgtgttc tttgcaattc acagacttca

16261 ttaagatgtg gtgcttgcat acgtagacca ttcttatgtt gtaaatgctg ttacgaccat

16321 gtcatatcaa catcacataa attagtcttg tctgttaatc cgtatgtttg caatgctcca

16381 ggttgtgatg tcacagatgt gactcaactt tacttaggag gtatgagcta ttattgtaaa

16441 tcacataaac cacccattag ttttccattg tgtgctaatg gacaagtttt tggtttatat

16501 aaaaatacat gtgttggtag cgataatgtt actgacttta atgcaattgc aacatgtgac

16561 tggacaaatg ctggtgatta cattttagct aacacctgta ctgaaagact caagcttttt

16621 gcagcagaaa cgctcaaagc tactgaggag acatttaaac tgtcttatgg tattgctact

16681 gtacgtgaag tgctgtctga cagagaatta catctttcat gggaagttgg taaacctaga

16741 ccaccactta accgaaatta tgtctttact ggttatcgtg taactaaaaa cagtaaagta

16801 caaataggag agtacacctt tgaaaaaggt gactatggtg atgctgttgt ttaccgaggt

16861 acaacaactt acaaattaaa tgttggtgat tattttgtgc tgacatcaca tacagtaatg

16921 ccattaagtg cacctacact agtgccacaa gagcactatg ttagaattac tggcttatac

16981 ccaacactca atatctcaga tgagttttct agcaatgttg caaattatca aaaggttggt

17041 atgcaaaagt attctacact ccagggacca cctggtactg gtaagagtca ttttgctatt

17101 ggcctagctc tctactaccc ttctgctcgc atagtgtata cagcttgctc tcatgccgct

17161 gttgatgcac tatgtgagaa ggcattaaaa tatttgccta tagataaatg tagtagaatt

17221 atacctgcac gtgctcgtgt agagtgtttt gataaattca aagtgaattc aacattagaa

17281 cagtatgtct tttgtactgt aaatgcattg cctgagacga cagcagatat agttgtcttt

17341 gatgaaattt caatggccac aaattatgat ttgagtgttg tcaatgccag attacgtgct

17401 aagcactatg tgtacattgg cgaccctgct caattacctg caccacgcac attgctaact

17461 aagggcacac tagaaccaga atatttcaat tcagtgtgta gacttatgaa aactataggt

17521 ccagacatgt tcctcggaac ttgtcggcgt tgtcctgctg aaattgttga cactgtgagt

17581 gctttggttt atgataataa gcttaaagca cataaagaca aatcagctca atgctttaaa

17641 atgttttata agggtgttat cacgcatgat gtttcatctg caattaacag gccacaaata

17701 ggcgtggtaa gagaattcct tacacgtaac cctgcttgga gaaaagctgt ctttatttca

17761 ccttataatt cacagaatgc tgtagcctca aagattttgg gactaccaac tcaaactgtt

17821 gattcatcac agggctcaga atatgactat gtcatattca ctcaaaccac tgaaacagct

17881 cactcttgta atgtaaacag atttaatgtt gctattacca gagcaaaagt aggcatactt

17941 tgcataatgt ctgatagaga cctttatgac aagttgcaat ttacaagtct tgaaattcca

18001 cgtaggaatg tggcaacttt acaagctgaa aatgtaacag gactctttaa agattgtagt

18061 aaggtaatca ctgggttaca tcctacacag gcacctacac acctcagtgt tgacactaaa

18121 ttcaaaactg aaggtttatg tgttgacgta cctggcatac ctaaggacat gacctataga

18181 agactcatct ctatgatggg ttttaaaatg aattatcaag ttaatggtta ccctaacatg

18241 tttatcaccc gcgaagaagc tataagacat gtacgtgcat ggattggctt cgatgtcgag

18301 gggtgtcatg ctactagaga agctgttggt accaatttac ctttacagct aggtttttct

18361 acaggtgtta acctagttgc tgtacctaca ggttatgttg atacacctaa taatacagat

18421 ttttccagag ttagtgctaa accaccgcct ggagatcaat ttaaacacct cataccactt

18481 atgtacaaag gacttccttg gaatgtagtg cgtataaaga ttgtacaaat gttaagtgac

18541 acacttaaaa atctctctga cagagtcgta tttgtcttat gggcacatgg ctttgagttg

18601 acatctatga agtattttgt gaaaatagga cctgagcgca cctgttgtct atgtgataga

18661 cgtgccacat gcttttccac tgcttcagac acttatgcct gttggcatca ttctattgga

18721 tttgattacg tctataatcc gtttatgatt gatgttcaac aatggggttt tacaggtaac

18781 ctacaaagca accatgatct gtattgtcaa gtccatggta atgcacatgt agctagttgt

18841 gatgcaatca tgactaggtg tctagctgtc cacgagtgct ttgttaagcg tgttgactgg

18901 actattgaat atcctataat tggtgatgaa ctgaagatta atgcggcttg tagaaaggtt

18961 caacacatgg ttgttaaagc tgcattatta gcagacaaat tcccagttct tcacgacatt

19021 ggtaacccta aagctattaa gtgtgtacct caagctgatg tagaatggaa gttctatgat

19081 gcacagcctt gtagtgacaa agcttataaa atagaagaat tattctattc ttatgccaca

19141 cattctgaca aattcacaga tggtgtatgc ctattttgga attgcaatgt cgatagatat

19201 cctgctaatt ccattgtttg tagatttgac actagagtgc tatctaacct taacttgcct

19261 ggttgtgatg gtggcagttt gtatgtaaat aaacatgcat tccacacacc agcttttgat

19321 aaaagtgctt ttgttaattt aaaacaatta ccatttttct attactctga cagtccatgt

19381 gagtctcatg gaaaacaagt agtgtcagat atagattatg taccactaaa gtctgctacg

19441 tgtataacac gttgcaattt aggtggtgct gtctgtagac atcatgctaa tgagtacaga

19501 ttgtatctcg atgcttataa catgatgatc tcagctggct ttagcttgtg ggtttacaaa

19561 caatttgata cttataacct ctggaacact tttacaagac ttcagagttt agaaaatgtg

19621 gcttttaatg ttgtaaataa gggacacttt gatggacaac agggtgaagt accagtttct

19681 atcattaata acactgttta cacaaaagtt gatggtgttg atgtagaatt gtttgaaaat

19741 aaaacaacat tacctgttaa tgtagcattt gagctttggg ctaagcgcaa cattaaacca

19801 gtaccagagg tgaaaatact caataatttg ggtgtggaca ttgctgctaa tactgtgatc

19861 tgggactaca aaagagatgc tccagcacat atatctacta ttggtgtttg ttctatgact

19921 gacatagcca agaaaccaac tgaaacgatt tgtgcaccac tcactgtctt ttttgatggt

19981 agagttgatg gtcaagtaga cttatttaga aatgcccgta atggtgttct tattacagaa

20041 ggtagtgtta aaggtttaca accatctgta ggtcccaaac aagctagtct taatggagtc

20101 acattaattg gagaagccgt aaaaacacag ttcaattatt ataagaaagt tgatggtgtt

20161 gtccaacaat tacctgaaac ttactttact cagagtagaa atttacaaga atttaaatcc

20221 aggagtcaaa tggaaattga tttcttagaa ttagctatgg atgaattcat tgaacggtat

20281 aaattagaag gctatgcctt cgaacatatc gtttatggag attttagtca tagtcagtta

20341 ggtggtttac atctactgat tggactagct aaacgtttta aggaatcacc ttttgaatta

20401 gaagatttta ttcctatgga cagtacagtt aaaaactatt tcataacaga tgcgcaaaca

20461 ggttcatcta agtgtgtgtg ttctgttatt gatttattac ttgatgattt tgttgaaata

20521 ataaaatccc aagatttatc tgtagtttct aaggttgtca aagtgactat tgactataca

20581 gaaatttcat ttatgctttg gtgtaaagat ggccatgtag aaacatttta cccaaaatta

20641 caatctagtc aagcgtggca accgggtgtt gctatgccta atctttacaa aatgcaaaga

20701 atgctattag aaaagtgtga ccttcaaaat tatggtgata gtgcaacatt acctaaaggc

20761 ataatgatga atgtcgcaaa atatactcaa ctgtgtcaat atttaaacac attaacatta

20821 gctgtaccct ataatatgag agttatacat tttggtgctg gttctgataa aggagttgca

20881 ccaggtacag ctgttttaag acagtggttg cctacgggta cgctgcttgt cgattcagat

20941 cttaatgact ttgtctctga tgcagattca actttgattg gtgattgtgc aactgtacat

21001 acagctaata aatgggatct cattattagt gatatgtacg accctaagac taaaaatgtt

21061 acaaaagaaa atgactctaa agagggtttt ttcacttaca tttgtgggtt tatacaacaa

21121 aagctagctc ttggaggttc cgtggctata aagataacag aacattcttg gaatgctgat

21181 ctttataagc tcatgggaca cttcgcatgg tggacagcct ttgttactaa tgtgaatgcg

21241 tcatcatctg aagcattttt aattggatgt aattatcttg gcaaaccacg cgaacaaata

21301 gatggttatg tcatgcatgc aaattacata ttttggagga atacaaatcc aattcagttg

21361 tcttcctatt ctttatttga catgagtaaa tttcccctta aattaagggg tactgctgtt

21421 atgtctttaa aagaaggtca aatcaatgat atgattttat ctcttcttag taaaggtaga

21481 cttataatta gagaaaacaa cagagttgtt atttctagtg atgttcttgt taacaactaa

21541 acgaacaatg tttgtttttc ttgttttatt gccactagtc tctagtcagt gtgttaatct

21601 tacaaccaga actcaattac cccctgcata cactaattct ttcacacgtg gtgtttatta

21661 ccctgacaaa gttttcagat cctcagtttt acattcaact caggacttgt tcttaccttt

21721 cttttccaat gttacttggt tccatgttat ctctgggacc aatggtacta agaggtttga

21781 taaccctgtc ctaccattta atgatggtgt ttattttgct tccattgaga agtctaacat

21841 aataagaggc tggatttttg gtactacttt agattcgaag acccagtccc tacttattgt

21901 taataacgct actaatgttg ttattaaagt ctgtgaattt caattttgta atgatccatt

21961 tttggaccac aaaaacaaca aaagttggat ggaaagtgag ttcagagttt attctagtgc

22021 gaataattgc acttttgaat atgtctctca gccttttctt atggaccttg aaggaaaaca

22081 gggtaatttc aaaaatctta gggaatttgt gtttaagaat attgatggtt attttaaaat

22141 atattctaag cacacgccta ttatagtgcg tgagccagaa gatctccctc agggtttttc

22201 ggctttagaa ccattggtag atttgccaat aggtattaac atcactaggt ttcaaacttt

22261 acttgcttta catagaagtt atttgactcc tggtgattct tcttcaggtt ggacagctgg

22321 tgctgcagct tattatgtgg gttatcttca acctaggact tttctattaa aatataatga

22381 aaatggaacc attacagatg ctgtagactg tgcacttgac cctctctcag aaacaaagtg

22441 tacgttgaaa tccttcactg tagaaaaagg aatctatcaa acttctaact ttagagtcca

22501 accaacagaa tctattgtta gatttcctaa tattacaaac ttgtgccctt ttgatgaagt

22561 ttttaacgcc accagatttg catctgttta tgcttggaac aggaagagaa tcagcaactg

22621 tgttgctgat tattctgtcc tatataatct cgcaccattt ttcactttta agtgttatgg

22681 agtgtctcct actaaattaa atgatctctg ctttactaat gtctatgcag attcatttgt

22741 aattagaggt gatgaagtca gacaaatcgc tccagggcaa actggaaata ttgctgatta

22801 taattataaa ttaccagatg attttacagg ctgcgttata gcttggaatt ctaacaagct

22861 tgattctaag gttagtggta attataatta cctgtataga ttgtttagga agtctaatct

22921 caaacctttt gagagagata tttcaactga aatctatcag gccggtaaca aaccttgtaa

22981 tggtgttgca ggttttaatt gttactttcc tttacgatca tatagtttcc gacccactta

23041 tggtgttggt caccaaccat acagagtagt agtactttct tttgaacttc tacatgcacc

23101 agcaactgtt tgtggaccta aaaagtctac taatttggtt aaaaacaaat gtgtcaattt

23161 caacttcaat ggtttaaaag gcacaggtgt tcttactgag tctaacaaaa agtttctgcc

23221 tttccaacaa tttggcagag acattgctga cactactgat gctgtccgtg atccacagac

23281 acttgagatt cttgacatta caccatgttc ttttggtggt gtcagtgtta taacaccagg

23341 aacaaatact tctaaccagg ttgctgttct ttatcagggt gttaactgca cagaagtccc

23401 tgttgctatt catgcagatc aacttactcc tacttggcgt gtttattcta caggttctaa

23461 tgtttttcaa acacgtgcag gctgtttaat aggggctgaa tatgtcaaca actcatatga

23521 gtgtgacata cccattggtg caggtatatg cgctagttat cagactcaga ctaattctca

23581 tcggagggca cgtagtgtag ctagtcaatc catcattgcc tacactatgt cacttggtgc

23641 agaaaattca gttgcttact ctaataactc tattgccata cccacaaatt ttactattag

23701 tgttaccaca gaaattctac cagtgtctat gaccaagaca tcagtagatt gtacaatgta

23761 catttgtggt gattcaactg aatgcagcaa tcttttgttg caatatggca gtttttgtac

23821 acaattaaaa cgtgctttaa ctggaatagc tgttgaacaa gacaaaaaca cccaagaagt

23881 ttttgcacaa gtcaaacaaa tttacaaaac accaccaatt aaatattttg gtggttttaa

23941 tttttcacaa atattaccag atccatcaaa accaagcaag aggtcattta ttgaagatct

24001 acttttcaac aaagtgacac ttgcagatgc tggcttcatc aaacaatatg gtgattgcct

24061 tggtgatatt gctgctagag acctcatttg tgcacaaaag tttaaaggcc ttactgtttt

24121 gccacctttg ctcacagatg aaatgattgc tcaatacact tctgcactgt tagcgggtac

24181 aatcacttct ggttggacct ttggtgcagg tgctgcatta caaataccat ttgctatgca

24241 aatggcttat aggtttaatg gtattggagt tacacagaat gttctctatg agaaccaaaa

24301 attgattgcc aaccaattta atagtgctat tggcaaaatt caagactcac tttcttccac

24361 agcaagtgca cttggaaaac ttcaagatgt ggtcaaccat aatgcacaag ctttaaacac

24421 gcttgttaaa caacttagct ccaaatttgg tgcaatttca agtgttttaa atgatatctt

24481 ttcacgtctt gacaaagttg aggctgaagt gcaaattgat aggttgatca caggcagact

24541 tcaaagtttg cagacatatg tgactcaaca attaattaga gctgcagaaa tcagagcttc

24601 tgctaatctt gctgctacta aaatgtcaga gtgtgtactt ggacaatcaa aaagagttga

24661 tttttgtgga aagggctatc atcttatgtc cttccctcag tcagcacctc atggtgtagt

24721 cttcttgcat gtgacttatg tccctgcaca agaaaagaac ttcacaactg ctcctgccat

24781 ttgtcatgat ggaaaagcac actttcctcg tgaaggtgtc tttgtttcaa atggcacaca

24841 ctggtttgta acacaaagga atttttatga accacaaatc attactacag acaacacatt

24901 tgtgtctggt aactgtgatg ttgtaatagg aattgtcaac aacacagttt atgatccttt

24961 gcaacctgaa ttagattcat tcaaggagga gttagataaa tattttaaga atcatacatc

25021 accagatgtt gatttaggtg acatctctgg cattaatgct tcagttgtaa acattcaaaa

25081 agaaattgac cgcctcaatg aggttgccaa gaatttaaat gaatctctca tcgatctcca

25141 agaacttgga aagtatgagc agtatataaa atggccatgg tacatttggc taggttttat

25201 agctggcttg attgccatag taatggtgac aattatgctt tgctgtatga ccagttgctg

25261 tagttgtctc aagggctgtt gttcttgtgg atcctgctgc aaatttgatg aagacgactc

25321 tgagccagtg ctcaaaggag tcaaattaca ttacacataa acgaacttat ggatttgttt

25381 atgagaatct tcacaattgg aactgtaact ttgaagcaag gtgaaatcaa ggatgctact

25441 ccttcagatt ttgttcgcgc tactgcaacg ataccgatac aagcctcact ccctttcgga

25501 tggcttattg ttggcgttgc acttcttgct gtttttcaga gcgcttccaa aatcataact

25561 ctcaaaaaga gatggcaact agcactctcc aagggtgttc actttgtttg caacttgctg

25621 ttgttgtttg taacagttta ctcacacctt ttgctcgttg ctgctggcct tgaagcccct

25681 tttttctatc tttatgcttt agtctacttc ttgcagagta taaactttgt aagaataata

25741 atgaggcttt ggctttgctg gaaatgccgt tccaaaaacc cattacttta tgatgccaac

25801 tattttcttt gctggcatac taattgttac gactattgta taccttacaa tagtgtaact

25861 tcttcaattg tcattacttc aggtgatggc acaacaagtc ctatttctga acatgactac

25921 cagattggtg gttatactga aaaatgggaa tctggagtaa aagactgtgt tgtattacac

25981 agttacttca cttcagacta ttaccagctg tactcaactc aattgagtac agacactggt

26041 gttgaacatg ttaccttctt catctacaat aaaattgttg atgagcctga agaacatgtc

26101 caaattcaca caatcgacgg ttcatccgga gttgttaatc cagtaatgga accaatttat

26161 gatgaaccga cgacgactac tagcgtgcct ttgtaagcac aagctgatga gtacgaactt

26221 atgtactcat tcgtttcgga agagataggt acgttaatag ttaatagcgt acttcttttt

26281 cttgctttcg tggtattctt gctagttaca ctagccatcc ttactgcgct tcgattgtgt

26341 gcgtactgct gcaatattgt taacgtgagt cttgtaaaac cttcttttta cgtttactct

26401 cgtgttaaaa atctgaattc ttctagagtt cctgatcttc tggtctaaac gaactaaata

26461 ttatattagt ttttctgttt ggaactttaa ttttagccat ggcaggttcc aacggtacta

26521 ttaccgttga agagcttaaa aagctccttg aagaatggaa cctagtaata ggtttcctat

26581 tccttacatg gatttgtctt ctacaatttg cctatgccaa caggaatagg tttttgtata

26641 taattaagtt aattttcctc tggctgttat ggccagtaac tttaacttgt tttgtgcttg

26701 ctgctgttta cagaataaat tggatcaccg gtggaattgc tatcgcaatg gcttgtcttg

26761 taggcttgat gtggctcagc tacttcattg cttctttcag actgtttgcg cgtacgcgtt

26821 ccatgtggtc attcaatcca gaaactaaca ttcttctcaa cgtgccactc catggcacta

26881 ttctgaccag accgcttcta gaaagtgaac tcgtaatcgg agctgtgatc cttcgtggac

26941 atcttcgtat tgctggacac catctaggac gctgtgacat caaggacctg cctaaagaaa

27001 tcactgttgc tacatcacga acgctttctt attacaaatt gggagcttcg cagcgtgtag

27061 caggtgactc aggttttgct gcatacagtc gctacaggat tggcaactat aaattaaaca

27121 cagaccattc cagtagcagt gacaatattg ctttgcttgt acagtaagtg acaacagatg

27181 tttcatctcg ttgactttca ggttactata gcagagatat tactaattat tatgcggact

27241 tttaaagttt ccatttggaa tcttgattac atcataaacc tcataattaa aaatttatct

27301 aagtcactaa ctgagaataa atattctcaa ttagatgaag agcaaccaat ggagattgat

27361 taaacgaaca tgaaaattat tcttttcttg gcactgataa cactcgctac ttgtgagctt

27421 tatcactacc aagagtgtgt tagaggtaca acagtacttt taaaagaacc ttgctcttct

27481 ggaacatacg agggcaattc accatttcat cctctagctg ataacaaatt tgcactgact

27541 tgctttagca ctcaatttgc ttttgcttgt cctgacggcg taaaacacgt ctatcagtta

27601 cgtgccagat cagtttcacc taaactgttc atcagacaag aggaagttca agaactttac

27661 tctccaattt ttcttattgt tgcggcaata gtgtttataa cactttgctt cacactcaaa

27721 agaaagacag aatgattgaa ctttcattaa ttgacttcta tttgtgcttt ttagcctttc

27781 tgttattcct tgttttaatt atgcttatta tcttttggtt ctcacttgaa ctgcaagatc

27841 ataatgaaac ttgtcacgcc taaacgaaca tgaaatttct tgttttctta ggaatcatca

27901 caactgtagc tgcatttcac caagaatgta gtttacagtc atgtactcaa catcaaccat

27961 atgtagttga tgacccgtgt cctattcact tctattctaa atggtatatt agagtaggag

28021 ctagaaaatc agcaccttta attgaattgt gcgtggatga ggctggttct aaatcaccca

28081 ttcagtacat cgatatcggt aattatacag tttcctgttt accttttaca attaattgcc

28141 aggaacctaa attgggtagt cttgtagtgc gttgttcgtt ctatgaagac tttttagagt

28201 atcatgacgt tcgtgttgtt ttagatttca tctaaacgaa caaacttaaa tgtctgataa

28261 tggaccccaa aatcagcgaa atgcactccg cattacgttt ggtggaccct cagattcaac

28321 tggcagtaac cagaatggtg gggcgcgatc aaaacaacgt cggccccaag gtttacccaa

28381 taatactgcg tcttggttca ccgctctcac tcaacatggc aaggaagacc ttaaattccc

28441 tcgaggacaa ggcgttccaa ttaacaccaa tagcagtcca gatgaccaaa ttggctacta

28501 ccgaagagct accagacgaa ttcgtggtgg tgacggtaaa atgaaagatc tcagtccaag

28561 atggtatttc tactacctag gaactgggcc agaagctgga cttccctatg gtgctaacaa

28621 agacggcatc atatgggttg caactgaggg agccttgaat acaccaaaag atcacattgg

28681 cacccgcaat cctgctaaca atgctgcaat cgtgctacaa cttcctcaag gaacaacatt

28741 gccaaaaggc ttctacgcag aagggagcag aggcggcagt caagcctctt ctcgttcctc

28801 atcacgtagt cgcaacagtt caagaaattc aactccaggc agcagtaaac gaacttctcc

28861 tgctagaatg gctggcaatg gcggtgatgc tgctcttgct ttgctgctgc ttgacagatt

28921 gaaccagctt gagagcaaaa tgtctggtaa aggccaacaa caacaaggcc aaactgtcac

28981 taagaaatct gctgctgagg cttctaagaa gcctcggcaa aaacgtactg ccactaaagc

29041 atacaatgta acacaagctt tcggcagacg tggtccagaa caaacccaag gaaattttgg

29101 ggaccaggaa ctaatcagac aaggaactga ttacaaacat tggccgcaaa ttgcacaatt

29161 tgcccccagc gcttcagcgt tcttcggaat gtcgcgcatt ggcatggaag tcacaccttc

29221 gggaacgtgg ttgacctaca caggtgccat caaattggat gacaaaggtc caaatttcaa

29281 agatcaagtc attttgctga ataagcatat tgacgcatac aaaacattcc caccaacaga

29341 gcctaaaaag gacaaaaaga agaaggctga tgaaactcaa gccttaccgc agagacagaa

29401 gaaacagcaa actgtgactc ttcttcctgc tgcagatttg gatgatttct ccaaacaatt

29461 gcaacaatcc atgagcagtg ctgactcaac tcaggcctaa actcatgcag accacacaag

29521 gcagatgggc tatataaacg ttttcgcttt tccgtttacg atatatagtc tactcttgtg

29581 cagaatgaat tctcgtaact acatagcaca agtagatgta gttaacttta atctcacata

29641 gcaatcttta atcagtgtgt aacattaggg aggacttgaa agagccacca cattttcacc

29701 gaggccacgc ggagtacgat cgagtgtaca gtgaacaatg ctagggagag ctgcctatat

29761 ggaagagccc taatgtgtaa aattaatttt agtagtgcta tccccatgtg attttaata

//