**Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/human/USA/NY-CDC-FG-189188/2021, complete genome**

GenBank: OL896964.1

[FASTA](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?report=fasta) [Graphics](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?report=graph)

[Go to:](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1" \l "goto2166949837_0)

LOCUS OL896964 29786 bp RNA linear VRL 17-DEC-2021

DEFINITION Severe acute respiratory syndrome coronavirus 2 isolate

SARS-CoV-2/human/USA/NY-CDC-FG-189188/2021, complete genome.

ACCESSION OL896964

VERSION OL896964.1

DBLINK BioProject: [PRJNA731152](https://www.ncbi.nlm.nih.gov/bioproject/PRJNA731152)

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 29786)

AUTHORS Howard,D., Batra,D., Cook,P.W., Caravas,J., Rambo-Martin,B.,

Sammons,S., Unoarumhi,Y., Schmerer,M., Lacek,K.A., Kendall,T.,

Caban Figueroa,V., Morrison,S., Gulvick,C., Sula,E., Gao,H., Li,M.,

Gao,J., Fierro,J., Sapra,B., Tsai,B., Meng,Y., Ng,D., Xie,J.,

Paden,C.R. and MacCannell,D.

TITLE CDC Sars CoV2 Sequencing Baseline Constellation

JOURNAL Unpublished

REFERENCE 2 (bases 1 to 29786)

AUTHORS Howard,D., Batra,D., Cook,P.W., Caravas,J., Rambo-Martin,B.,

Sammons,S., Unoarumhi,Y., Schmerer,M., Lacek,K.A., Kendall,T.,

Caban Figueroa,V., Morrison,S., Gulvick,C., Sula,E., Gao,H., Li,M.,

Gao,J., Fierro,J., Sapra,B., Tsai,B., Meng,Y., Ng,D., Xie,J.,

Paden,C.R. and MacCannell,D.

TITLE Direct Submission

JOURNAL Submitted (17-DEC-2021) Respiratory Viruses Branch, Division of

Viral Diseases, Centers for Disease Control and Prevention, 1600

Clifton Rd, Atlanta, GA 30329, USA

FEATURES Location/Qualifiers

source 1..29786

/organism="Severe acute respiratory syndrome coronavirus

2"

/mol\_type="genomic RNA"

/isolate="SARS-CoV-2/human/USA/NY-CDC-FG-189188/2021"

/isolation\_source="nasal swab"

/host="Homo sapiens"

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

/country="USA: New York"

/collection\_date="2021-12-08"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=229&to=21506) 229..21506

/gene="ORF1ab"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?location=229:13419,13419:21506) join(229..13419,13419..21506)

/gene="ORF1ab"

/ribosomal\_slippage

/codon\_start=1

/product="ORF1ab polyprotein"

/protein\_id="[UHB27515.1](https://www.ncbi.nlm.nih.gov/protein/2166949838)"

/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

PSLATVAYFNMVYMPASWVMRIMTWLDMVDTSFKLKDCVMYASAVVLLILMTARTXYD

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

LQPSVGPKQASLNGVTLIGEAVKTQFNYYKKVDGVVQQLPETYFTQSRNLQEFKPRSQ

MEIDFLELAMDEFIERYKLEGYAFEHIVYGDFSHSQLGGLHLLIGLAKRFKESPFELE

DFIPMDSTVKNYFITDAQTGSSKCVCSVIDLLLDDFVEIIKSQDLSVVSKVVKVTIDY

TEISFMLWCKDGHVETFYPKLQSSQAWQPGVAMPNLYKMQRMLLEKCDLQNYGDSATL

PKGIMMNVAKYTQLCQYLNTLTLAVPYNMRVIHFGAGSDKGVAPGTAVLRQWLPTGTL

LVDSDLNDFVSDADSTLIGDCATVHTANKWDLIISDMYDPKTKNVTKENDSKEGFFTY

ICGFIQQKLALGGSVAIKITEHSWNADLYKLMGHFAWWTAFVTNVNASSSEAFLIGCN

YLGKPREQIDGYVMHANYIFWRNTNPIQLSSYSLFDMSKFPLKLRGTAVMSLKEGQIN

DMILSLLSKGRLIIRENNRVVISSDVLVNN"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27515.1?from=1&to=180) 229..768

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27515.1?from=181&to=818) 769..2682

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27515.1?from=819&to=2762) 2683..8514

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27515.1?from=2763&to=3262) 8515..10014

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27515.1?from=3263&to=3568) 10015..10932

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27515.1?from=3569&to=3855) 10933..11793

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27515.1?from=3856&to=3938) 11794..12042

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27515.1?from=3939&to=4136) 12043..12636

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27515.1?from=4137&to=4249) 12637..12975

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27515.1?from=4250&to=4388) 12976..13392

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27515.1?from=4389&to=5320) join(13393..13419,13419..16187)

/gene="ORF1ab"

/product="RNA-dependent RNA polymerase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27515.1?from=5321&to=5921) 16188..17990

/gene="ORF1ab"

/product="helicase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27515.1?from=5922&to=6448) 17991..19571

/gene="ORF1ab"

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

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27515.1?from=6449&to=6794) 19572..20609

/gene="ORF1ab"

/product="endoRNAse"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27515.1?from=6795&to=7092) 20610..21503

/gene="ORF1ab"

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

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=229&to=13434) 229..13434

/gene="ORF1ab"

/codon\_start=1

/product="ORF1a polyprotein"

/protein\_id="[UHB27516.1](https://www.ncbi.nlm.nih.gov/protein/2166949839)"

/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

PSLATVAYFNMVYMPASWVMRIMTWLDMVDTSFKLKDCVMYASAVVLLILMTARTXYD

DGARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGVVF

MCVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVSTQ

EFRYMNSQGLLPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSVL

QQLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEEM

LDNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEFD

RDAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNIIN

NARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSKI

VQLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTDD

NALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGPK

VKYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYKD

YLASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNPK

GFCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKGYGCSCDQLREPMLQSADAQS

FLNGFAV"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27516.1?from=1&to=180) 229..768

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27516.1?from=181&to=818) 769..2682

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27516.1?from=819&to=2762) 2683..8514

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27516.1?from=2763&to=3262) 8515..10014

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27516.1?from=3263&to=3568) 10015..10932

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27516.1?from=3569&to=3855) 10933..11793

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27516.1?from=3856&to=3938) 11794..12042

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27516.1?from=3939&to=4136) 12043..12636

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27516.1?from=4137&to=4249) 12637..12975

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27516.1?from=4250&to=4388) 12976..13392

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHB27516.1?from=4389&to=4401) 13393..13431

/gene="ORF1ab"

/product="nsp11"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=13427&to=13454) 13427..13454

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 1"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=13439&to=13493) 13439..13493

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 2"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=21514&to=25317) 21514..25317

/gene="S"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=21514&to=25317) 21514..25317

/gene="S"

/codon\_start=1

/product="surface glycoprotein"

/protein\_id="[UHB27517.1](https://www.ncbi.nlm.nih.gov/protein/2166949840)"

/translation="MFVFLVLLPLVSSQCVNLTTRTQLPPAYTNSFTRGVYYPDKVFR

SSVLHSTQDLFLPFFSNVTWFHVISGTNGTKRFDNPVLPFNDGVYFASIEKSNIIRGW

IFGTTLDSKTQSLLIVNNATNVVIKVCEFQFCNDPFLDHKNNKSWMESEFRVYSSANN

CTFEYVSQPFLMDLEGKQGNFKNLREFVFKNIDGYFKIYSKHTPIIVRDLPQGFSALE

PLVDLPIGINITRFQTLLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLLKYNEN

GTITDAVDCALDPLSETKCTLKSFTVEKGIYQTSNFRVQPTESIVRFPNITNLCPFDE

VFNATRFASVYAWNRKRISNCVADYSVLYNLAPFFTFKCYGVSPTKLNDLCFTNVYAD

SFVIRGDEVRQIAPGQTGNIADYNYKLPDDFTGCVIAWNSNKLDSKVSGNYNYLYRLF

RKSNLKPFERDISTEIYQAGNKPCNGVAGFNCYFPLRSYSFRPTYGVGHQPYRVVVLS

FELLHAPATVCGPKKSTNLVKNKCVNFNFNGLKGTGVLTESNKKFLPFQQFGRDIADT

TDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQVAVLYQGVNCTEVPVAIHADQLT

PTWRVYSTGSNVFQTRAGCLIGAEYVNNSYECDIPIGAGICASYQTQTKSHRRARSVA

SQSIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEILPVSMTKTSVDCTMYICGDS

TECSNLLLQYGSFCTQLKRALTGIAVEQDKNTQEVFAQVKQIYKTPPIKYFGGFNFSQ

ILPDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICAQKFKGLTVLP

PLLTDEMIAQYTSALLAGTITSGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLYENQ

KLIANQFNSAIGKIQDSLSSTASALGKLQDVVNHNAQALNTLVKQLSSKFGAISSVLN

DIFSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASANLAATKMSECVLGQ

SKRVDFCGKGYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHDGKAHFPREGV

FVSNGTHWFVTQRNFYEPQIITTDNTFVSGNCDVVIGIVNNTVYDPLQPELDSFKEEL

DKYFKNHTSPDVDLGDISGINASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYEQYI

KWPWYIWLGFIAGLIAIVMVTIMLCCMTSCCSCLKGCCSCGSCCKFDEDDSEPVLKGV

KLHYT"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=25326&to=26153) 25326..26153

/gene="ORF3a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=25326&to=26153) 25326..26153

/gene="ORF3a"

/codon\_start=1

/product="ORF3a protein"

/protein\_id="[UHB27518.1](https://www.ncbi.nlm.nih.gov/protein/2166949841)"

/translation="MDLFMRIFTIGTVTLKQGEIKDATPSDFVRATATIPIQASLPFG

WLIVGVALLAVFQSASKIITLKKRWQLALSKGVHFVCNLLLLFVTVYSHLLLVAAGLE

APFLYLYALVYFLQSINFVRIIMRLWLCWKCRSKNPLLYDANYFLCWHTNCYDYCIPY

NSVTSSIVITSGDGTTSPISEHDYQIGGYTEKWESGVKDCVVLHSYFTSDYYQLYSTQ

LSTDTGVEHVTFFIYNKIVDEPEEHVQIHTIDGSSGVVNPVMEPIYDEPTTTTSVPL"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=26178&to=26405) 26178..26405

/gene="E"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=26178&to=26405) 26178..26405

/gene="E"

/codon\_start=1

/product="envelope protein"

/protein\_id="[UHB27519.1](https://www.ncbi.nlm.nih.gov/protein/2166949842)"

/translation="MYSFVSEEIGTLIVNSVLLFLAFVVFLLVTLAILTALRLCAYCC

NIVNVSLVKPSFYVYSRVKNLNSSRVPDLLV"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=26456&to=27124) 26456..27124

/gene="M"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=26456&to=27124) 26456..27124

/gene="M"

/codon\_start=1

/product="membrane glycoprotein"

/protein\_id="[UHB27520.1](https://www.ncbi.nlm.nih.gov/protein/2166949843)"

/translation="MAGSNGTITVEELKKLLEEWNLVIGFLFLTWICLLQFAYANRNR

FLYIIKLIFLWLLWPVTLTCFVLAAVYRINWITGGIAIAMACLVGLMWLSYFIASFRL

FARTRSMWSFNPETNILLNVPLHGTILTRPLLESELVIGAVILRGHLRIAGHHLGRCD

IKDLPKEITVATSRTLSYYKLGASQRVAGDSGFAAYSRYRIGNYKLNTDHSSSSDNIA

LLVQ"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=27135&to=27320) 27135..27320

/gene="ORF6"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=27135&to=27320) 27135..27320

/gene="ORF6"

/codon\_start=1

/product="ORF6 protein"

/protein\_id="[UHB27521.1](https://www.ncbi.nlm.nih.gov/protein/2166949844)"

/translation="MFHLVDFQVTIAEILLIIMRTFKVSIWNLDYIINLIIKNLSKSL

TENKYSQLDEEQPMEID"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=27327&to=27692) 27327..27692

/gene="ORF7a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=27327&to=27692) 27327..27692

/gene="ORF7a"

/codon\_start=1

/product="ORF7a protein"

/protein\_id="[UHB27522.1](https://www.ncbi.nlm.nih.gov/protein/2166949845)"

/translation="MKIILFLALITLATCELYHYQECVRGTTVLLKEPCSSGTYEGNS

PFHPLADNKFALTCFSTQFAFACPDGVKHVYQLRARSVSPKLFIRQEEVQELYSPIFL

IVAAIVFITLCFTLKRKTE"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=27689&to=27820) 27689..27820

/gene="ORF7b"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=27689&to=27820) 27689..27820

/gene="ORF7b"

/codon\_start=1

/product="ORF7b"

/protein\_id="[UHB27523.1](https://www.ncbi.nlm.nih.gov/protein/2166949846)"

/translation="MIELSLIDFYLCFLAFLLFLVLIMLIIFWFSLELQDHNETCHA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=27827&to=28192) 27827..28192

/gene="ORF8"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=27827&to=28192) 27827..28192

/gene="ORF8"

/codon\_start=1

/product="ORF8 protein"

/protein\_id="[UHB27524.1](https://www.ncbi.nlm.nih.gov/protein/2166949847)"

/translation="MKFLVFLGIITTVAAFHQECSLQSCTQHQPYVVDDPCPIHFYSK

WYIRVGARKSAPLIELCVDEAGSKSPIQYIDIGNYTVSCLPFTINCQEPKLGSLVVRC

SFYEDFLEYHDVRVVLDFI"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=28207&to=29457) 28207..29457

/gene="N"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=28207&to=29457) 28207..29457

/gene="N"

/codon\_start=1

/product="nucleocapsid phosphoprotein"

/protein\_id="[UHB27525.1](https://www.ncbi.nlm.nih.gov/protein/2166949848)"

/translation="MSDNGPQNQRNALRITFGGPSDSTGSNQNGGARSKQRRPQGLPN

NTASWFTALTQHGKEDLKFPRGQGVPINTNSSPDDQIGYYRRATRRIRGGDGKMKDLS

PRWYFYYLGTGPEAGLPYGANKDGIIWVATEGALNTPKDHIGTRNPANNAAIVLQLPQ

GTTLPKGFYAEGSRGGSQASSRSSSRSRNSSRNSTPGSSKRTSPARMAGNGGDAALAL

LLLDRLNQLESKMSGKGQQQQGQTVTKKSAAEASKKPRQKRTATKAYNVTQAFGRRGP

EQTQGNFGDQELIRQGTDYKHWPQIAQFAPSASAFFGMSRIGMEVTPSGTWLTYTGAI

KLDDKDPNFKDQVILLNKHIDAYKTFPPTEPKKDKKKKADETQALPQRQKKQQTVTLL

PAADLDDFSKQLQQSMSSADSTQA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=29482&to=29598) 29482..29598

/gene="ORF10"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=29482&to=29598) 29482..29598

/gene="ORF10"

/codon\_start=1

/product="ORF10 protein"

/protein\_id="[UHB27526.1](https://www.ncbi.nlm.nih.gov/protein/2166949849)"

/translation="MGYINVFAFPFTIYSLLLCRMNSRNYIAQVDVVNFNLT"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=29533&to=29568) 29533..29568

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=29553&to=29581) 29553..29581

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OL896964.1?from=29652&to=29692) 29652..29692

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

ORIGIN

1 aactttcgat ctcttgtaga tctgttctct aaacgaactt taaaatctgt gtggctgtca

61 ctcggctgca tgcttagtgc actcacgcag tataattaat aactaattac tgtcgttgac

121 aggacacgag taactcgtct atcttctgca ggctgcttac ggtttcgtcc gtgttgcagc

181 cgatcatcag cacatctagg ttttgtccgg gtgtgaccga aaggtaagat ggagagcctt

241 gtccctggtt tcaacgagaa aacacacgtc caactcagtt tgcctgtttt acaggttcgc

301 gacgtgctcg tacgtggctt tggagactcc gtggaggagg tcttatcaga ggcacgtcaa

361 catcttaaag atggcacttg tggcttagta gaagttgaaa aaggcgtttt gcctcaactt

421 gaacagccct atgtgttcat caaacgttcg gatgctcgaa ctgcacctca tggtcatgtt

481 atggttgagc tggtagcaga actcgaaggc attcagtacg gtcgtagtgg tgagacactt

541 ggtgtccttg tccctcatgt gggcgaaata ccagtggctt accgcaaggt tcttcttcgt

601 aagaacggta ataaaggagc tggtggccat agttacggcg ccgatctaaa gtcatttgac

661 ttaggcgacg agcttggcac tgatccttat gaagattttc aagaaaactg gaacactaaa

721 catagcagtg gtgttacccg tgaactcatg cgtgagctta acggaggggc atacactcgc

781 tatgtcgata acaacttctg tggccctgat ggctaccctc ttgagtgcat taaagacctt

841 ctagcacgtg ctggtaaagc ttcatgcact ttgtccgaac aactggactt tattgacact

901 aagaggggtg tatactgctg ccgtgaacat gagcatgaaa ttgcttggta cacggaacgt

961 tctgaaaaga gctatgaatt gcagacacct tttgaaatta aattggcaaa gaaatttgac

1021 accttcaatg gggaatgtcc aaattttgta tttcccttaa attccataat caagactatt

1081 caaccaaggg ttgaaaagaa aaagcttgat ggctttatgg gtagaattcg atctgtctat

1141 ccagttgcgt caccaaatga atgcaaccaa atgtgccttt caactctcat gaagtgtgat

1201 cattgtggtg aaacttcatg gcagacgggc gattttgtta aagccacttg cgaattttgt

1261 ggcactgaga atttgactaa agaaggtgcc actacttgtg gttacttacc ccaaaatgct

1321 gttgttaaaa tttattgtcc agcatgtcac aattcagaag taggacctga gcatagtctt

1381 gccgaatacc ataatgaatc tggcttgaaa accattcttc gtaagggtgg tcgcactatt

1441 gcctttggag gctgtgtgtt ctcttatgtt ggttgccata acaagtgtgc ctattgggtt

1501 ccacgtgcta gcgctaacat aggttgtaac catacaggtg ttgttggaga aggttccgaa

1561 ggtcttaatg acaaccttct tgaaatactc caaaaagaga aagtcaacat caatattgtt

1621 ggtgacttta aacttaatga agagatcgcc attattttgg catctttttc tgcttccaca

1681 agtgcttttg tggaaactgt gaaaggtttg gattataaag cattcaaaca aattgttgaa

1741 tcctgtggta attttaaagt tacaaaagga aaagctaaaa aaggtgcctg gaatattggt

1801 gaacagaaat caatactgag tcctctttat gcatttgcat cagaggctgc tcgtgttgta

1861 cgatcaattt tctcccgcac tcttgaaact gctcaaaatt ctgtgcgtgt tttacagaag

1921 gccgctataa caatactaga tggaatttca cagtattcac tgagactcat tgatgctatg

1981 atgttcacat ctgatttggc tactaacaat ctagttgtaa tggcctacat tacaggtggt

2041 gttgttcagt tgacttcgca gtggctaact aacatctttg gcactgttta tgaaaaactc

2101 aaacccgtcc ttgattggct tgaagagaag tttaaggaag gtgtagagtt tcttagagac

2161 ggttgggaaa ttgttaaatt tatctcaacc tgtgcttgtg aaattgtcgg tggacaaatt

2221 gtcacctgtg caaaggaaat taaggagagt gttcagacat tctttaagct tgtaaataaa

2281 tttttggctt tgtgtgctga ctctatcatt attggtggag ctaaacttaa agccttgaat

2341 ttaggtgaaa catttgtcac gcactcaaag ggattgtaca gaaagtgtgt taaatccaga

2401 gaagaaactg gcctactcat gcctctaaaa gccccaaaag aaattatctt cttagaggga

2461 gaaacacttc ccacagaagt gttaacagag gaagttgtct tgaaaactgg tgatttacaa

2521 ccattagaac aacctactag tgaagctgtt gaagctccat tggttggtac accagtttgt

2581 attaacgggc ttatgttgct cgaaatcaaa gacacagaaa agtactgtgc ccttgcacct

2641 aatatgatgg taacaaacaa taccttcaca ctcaaaggcg gtgcaccaac aaaggttact

2701 tttggtgatg acactgtgat agaagtgcaa ggttacaaga gtgtgaatat cacttttgaa

2761 cttgatgaaa ggattgataa agtacttaat gagaggtgct ctgcctatac agttgaactc

2821 ggtacagaag taaatgagtt cgcctgtgtt gtggcagatg ctgtcataaa aactttgcaa

2881 ccagtatctg aattacttac accactgggc attgatttag atgagtggag tatggctaca

2941 tactacttat ttgatgagtc tggtgagttt aaattggctt cacatatgta ttgttctttt

3001 taccctccag atgaggatga agaagaaggt gattgtgaag aagaagagtt tgagccatca

3061 actcaatatg agtatggtac tgaagatgat taccaaggta aacctttgga atttggtgcc

3121 acttctgctg ctcttcaacc tgaagaagag caagaagaag attggttaga tgatgatagt

3181 caacaaactg ttggtcaaca agacggcagt gaggacaatc agacaactac tattcaaaca

3241 attgttgagg ttcaacctca attagagatg gaacttacac cagttgttca gactattgaa

3301 gtgaatagtt ttagtggtta tttaaaactt actgacaatg tatacattaa aaatgcagac

3361 attgtggaag aagctaaaaa ggtaaaacca acagtggttg ttaatgcagc caatgtttac

3421 cttaaacatg gaggaggtgt tgcaggagcc ttaaataagg ctactaacaa tgccatgcaa

3481 gttgaatctg atgattacat agctactaat ggaccactta aagtgggtgg tagttgtgtt

3541 ttaagcggac acaatcttgc taaacactgt cttcatgttg tcggcccaaa tgttaacaaa

3601 ggtgaagaca ttcaacttct taagagtgct tatgaaaatt ttaatcagca cgaagttcta

3661 cttgcaccat tattatcagc tggtattttt ggtgctgacc ctatacattc tttaagagtt

3721 tgtgtagata ctgttcgcac aaatgtctac ttagctgtct ttgataaaaa tctctatgac

3781 aaacttgttt caagcttttt ggaaatgaag agtgaaaagc aagttgaaca aaagatcgct

3841 gagattccta aagaggaagt taagccattt ataactgaaa gtaaaccttc agttgaacag

3901 agaaaacaag atgataagaa aatcaaagct tgtgttgaag aagttacaac aactctggaa

3961 gaaactaagt tcctcacaga aaacttgtta ctttatattg acattaatgg caatcttcat

4021 ccagattctg ccactcttgt tagtgacatt gacatcactt tcttaaagaa agatgctcca

4081 tatatagtgg gtgatgttgt tcaagagggt gttttaactg ctgtggttat acctactaaa

4141 aaggctggtg gcactactga aatgctagcg aaagctttga gaaaagtgcc aacagacaat

4201 tatataacca cttacccggg tcagggttta aatggttaca ctgtagagga ggcaaagaca

4261 gtgcttaaaa agtgtaaaag tgccttttac attctaccat ctattatctc taatgagaag

4321 caagaaattc ttggaactgt ttcttggaat ttgcgagaaa tgcttgcaca tgcagaagaa

4381 acacgcaaat taatgcctgt ctgtgtggaa actaaagcca tagtttcaac tatacagcgt

4441 aaatataagg gtattaaaat acaagagggt gtggttgatt atggtgctag attttacttt

4501 tacaccagta aaacaactgt agcgtcactt atcaacacac ttaacgatct aaatgaaact

4561 cttgttacaa tgccacttgg ctatgtaaca catggcttaa atttggaaga agctgctcgg

4621 tatatgagat ctctcaaagt gccagctaca gtttctgttt cttcacctga tgctgttaca

4681 gcgtataatg gttatcttac ttcttcttct aaaacacctg aagaacattt tattgaaacc

4741 atctcacttg ctggttccta taaagattgg tcctattctg gacaatctac acaactaggt

4801 atagaatttc ttaagagagg tgataaaagt gtatattaca ctagtaatcc taccacattc

4861 cacctagatg gtgaagttat cacctttgac aatcttaaga cacttctttc tttgagagaa

4921 gtgaggacta ttaaggtgtt tacaacagta gacaacatta acctccacac gcaagttgtg

4981 gacatgtcaa tgacatatgg acaacagttt ggtccaactt atttggatgg agctgatgtt

5041 actaaaataa aacctcataa ttcacatgaa ggtaaaacat tttatgtttt acctaatgat

5101 gacactctac gtgttgaggc ttttgagtac taccacacaa ctgatcctag ttttctgggt

5161 aggtacatgt cagcattaaa tcacactaaa aagtggaaat acccacaagt taatggttta

5221 acttctatta aatgggcaga taacaactgt tatcttgcca ctgcattgtt aacactccaa

5281 caaatagagt tgaagtttaa tccacctgct ctacaagatg cttattacag agcaagggct

5341 ggtgaagcgg ctaacttttg tgcacttatc ttagcctact gtaataagac agtaggtgag

5401 ttaggtgatg ttagagaaac aatgagttac ttgtttcaac atgccaattt agattcttgc

5461 aaaagagtct tgaacgttgt gtgtaaaact tgtggacaac agcagacaac ccttaagggt

5521 gtagaagctg ttatgtacat gggcacactt tcttatgaac aatttaagaa aggtgttcag

5581 ataccttgta cgtgtggtaa acaagctaca aaatatctag tacaacagga gtcacctttt

5641 gttatgatgt cagcaccacc tgctcagtat gaacttaagc atggtacatt tacttgtgct

5701 agtgagtaca ctggtaatta ccagtgtggt cactataaac atataacttc taaagaaact

5761 ttgtattgca tagacggtgc tttacttaca aagtcctcag aatacaaagg tcctattacg

5821 gatgttttct acaaagaaaa cagttacaca acaaccataa aaccagttac ttataaattg

5881 gatggtgttg tttgtacaga aattgaccct aagttggaca attattataa gaaagacaat

5941 tcttatttca cagagcaacc aattgatctt gtaccaaacc aaccatatcc aaacgcaagc

6001 ttcgataatt ttaagtttgt atgtgataat atcaaatttg ctgatgattt aaaccagtta

6061 actggttata agaaacctgc ttcaagagag cttaaagtta catttttccc tgacttaaat

6121 ggtgatgtgg tggctattga ttataaacac tacacaccct cttttaagaa aggagctaaa

6181 ttgttacata aacctattgt ttggcatgtt aacaatgcaa ctaataaagc cacgtataaa

6241 ccaaatacct ggtgtatacg ttgtctttgg agcacaaaac cagttgaaac atcaaattcg

6301 tttgatgtac tgaagtcaga ggacgcgcag ggaatggata atcttgcctg cgaagatcta

6361 aaaccagtct ctgaagaagt agtggaaaat cctaccatac agaaagacgt tcttgagtgt

6421 aatgtgaaaa ctaccgaagt tgtaggagac attatactta aaccagcaaa taatataaaa

6481 attacagaag aggttggcca cacagatcta atggctgctt atgtagacaa ttctagtctt

6541 actattaaga aacctaatga attatctaga gtattaggtt tgaaaaccct tgctactcat

6601 ggtttagctg ctgttaatag tgtcccttgg gatactatag ctaattatgc taagcctttt

6661 cttaacaaag ttgttagtac aactactaac atagttacac ggtgtttaaa ccgtgtttgt

6721 actaattata tgccttattt ctttacttta ttgctacaat tgtgtacttt tactagaagt

6781 acaaattcta gaattaaagc atctatgccg actactatag caaagaatac tgttaagagt

6841 gtcggtaaat tttgtctaga ggcttcattt aattatttga agtcacctaa tttttctaaa

6901 ctgataaata ttataatttg gtttttacta ttaagtgttt gcctaggttc tttaatctac

6961 tcaaccgctg ctttaggtgt tttaatgtct aatttaggca tgccttctta ctgtactggt

7021 tacagagaag gctatttgaa ctctactaat gtcactattg caacctactg tactggttct

7081 ataccttgta gtgtttgtct tagtggttta gattctttag acacctatcc ttctttagaa

7141 actatacaaa ttaccatttc atcttttaaa tgggatttaa ctgcttttgg cttagttgca

7201 gagtggtttt tggcatatat tcttttcact aggtttttct atgtacttgg attggctgca

7261 atcatgcaat tgtttttcag ctattttgca gtacatttta ttagtaattc ttggcttatg

7321 tggttaataa ttaatcttgt acaaatggcc ccgatttcag ctatggttag aatgtacatc

7381 ttctttgcat cattttatta tgtatggaaa agttatgtgc atgttgtaga cggttgtaat

7441 tcatcaactt gtatgatgtg ttacaaacgt aatagagcaa caagagtcga atgtacaact

7501 attgttaatg gtgttagaag gtccttttat gtctatgcta atggaggtaa aggcttttgc

7561 aaactacaca attggaattg tgttaattgt gatacattct gtgctggtag tacatttatt

7621 agtgatgaag ttgcgagaga cttgtcacta cagtttaaaa gaccaataaa tcctactgac

7681 cagtcttctt acatcgttga tagtgttaca gtgaagaatg gttccatcca tctttacttt

7741 gataaagctg gtcaaaagac ttatgaaaga cattctctct ctcattttgt taacttagac

7801 aacctgagag ctaataacac taaaggttca ttgcctatta atgttatagt ttttgatggt

7861 aaatcaaaat gtgaagaatc atctgcaaaa tcagcgtctg tttactacag tcagcttatg

7921 tgtcaaccta tactgttact agatcaggca ttagtgtctg atgttggtga tagtgcggaa

7981 gttgcagtta aaatgtttga tgcttacgtt aatacgtttt catcaacttt taacgtacca

8041 atggaaaaac tcaaaacact agttgcaact gcagaagctg aacttgcaaa gaatgtgtcc

8101 ttagacaatg tcttatctac ttttatttca gcagctcggc aagggtttgt tgattcagat

8161 gtagaaacta aagatgttgt tgaatgtctt aaattgtcac atcaatctga catagaagtt

8221 actggcgata gttgtaataa ctatatgctc acctataaca aagttgaaaa catgacaccc

8281 cgtgaccttg gtgcttgtat tgactgtagt gcgcgtcata ttaatgcgca ggtagcaaaa

8341 agtcacaaca ttactttgat atggaacgtt aaagatttca tgtcattgtc tgaacaacta

8401 cgaaaacaaa tacgtagtgc tgctaaaaag aataacttac cttttaagtt gacatgtgca

8461 actactagac aagttgttaa tgttgtaaca acaaagatag cacttaaggg tggtaaaatt

8521 gttaataatt ggttgaagca gttaattaaa gttacacttg tgttcctttt tgttgctgct

8581 attttctatt taataacacc tgttcatgtc atgtctaaac atactgactt ttcaagtgaa

8641 atcataggat acaaggctat tgatggtggt gtcactcgtg acatagcatc tacagatact

8701 tgttttgcta acaaacatgc tgattttgac acatggttta gccagcgtgg tggtagttat

8761 actaatgaca aagcttgccc attgattgct gcagtcataa caagagaagt gggttttgtc

8821 gtgcctggtt tgcctggcac gatattacgc acaactaatg gtgacttttt gcatttctta

8881 cctagagttt ttagtgcagt tggtaacatc tgttacacac catcaaaact tatagagtac

8941 actgactttg caacatcagc ttgtgttttg gctgctgaat gtacaatttt taaagatgct

9001 tctggtaagc cagtaccata ttgttatgat accaatgtac tagaaggttc tgttgcttat

9061 gaaagtttac gccctgacac acgttatgtg ctcatggatg gctctattat tcaatttcct

9121 aacacctacc ttgaaggttc tgttagagtg gtaacaactt ttgattctga gtactgtagg

9181 cacggcactt gtgaaagatc agaagctggt gtttgtgtat ctactagtgg tagatgggta

9241 cttaacaatg attattacag atctttacca ggagttttct gtggtgtaga tgctgtaaat

9301 ttacttacta atatgtttac accactaatt caacctattg gtgctttgga catatcagca

9361 tctatagtag ctggtggtat tgtagctatc gtagtaacat gccttgccta ctattttatg

9421 aggtttagaa gagcttttgg tgaatacagt catgtagttg cctttaatac tttactattc

9481 cttatgtcat tcactgtact ctgtttaaca ccagtttact cattcttacc tggtgtttat

9541 tctgttattt acttgtactt gacattttat cttactaatg atgtttcttt tttagcacat

9601 attcagtgga tggttatgtt cacaccttta gtacctttct ggataacaat tgcttatatc

9661 atttgtattt ccacaaagca tttctattgg ttctttagta attacctaaa gagacgtgta

9721 gtctttaatg gtgtttcctt tagtactttt gaagaagctg cgctgtgcac ctttttgtta

9781 aataaagaaa tgtatctaaa gttgcgtagt gatgtgctat tacctcttac gcaatataat

9841 agatacttag ctctttataa taagtacaag tattttagtg gagcaatgga tacaactagc

9901 tacagagaag ctgcttgttg tcatctcgca aaggctctca atgacttcag taactcaggt

9961 tctgatgttc tttaccaacc accacaaatc tctatcacct cagctgtttt gcagagtggt

10021 tttagaaaaa tggcattccc atctggtaaa gttgagggtt gtatggtaca agtaacttgt

10081 ggtacaacta cacttaacgg tctttggctt gatgacgtag tttactgtcc aagacatgtg

10141 atctgcacct ctgaagacat gcttaaccct aattatgaag atttactcat tcgtaagtct

10201 aatcataatt tcttggtaca ggctggtaat gttcaactca gggttattgg acattctatg

10261 caaaattgtg tacttaagct taaggttgat acagccaatc ctaagacacc taagtataag

10321 tttgttcgca ttcaaccagg acagactttt tcagtgttag cttgttacaa tggttcacca

10381 tctggtgttt accaatgtgc tatgaggcac aatttcacta ttaagggttc attccttaat

10441 ggttcatgtg gtagtgttgg ttttaacata gattatgact gtgtctcttt ttgttacatg

10501 caccatatgg aattaccaac tggagttcat gctggcacag acttagaagg taacttttat

10561 ggaccttttg ttgacaggca aacagcacaa gcagctggta cggacacaac tattacagtt

10621 aatgttttag cttggttgta cgctgctgtt ataaatggag acaggtggtt tctcaatcga

10681 tttaccacaa ctcttaatga ctttaacctt gtggctatga agtacaatta tgaacctcta

10741 acacaagacc atgttgacat actaggacct ctttctgctc aaactggaat tgccgtttta

10801 gatatgtgtg cttcattaaa agaattactg caaaatggta tgaatggacg taccatattg

10861 ggtagtgctt tattagaaga tgaatttaca ccttttgatg ttgttagaca atgctcaggt

10921 gttactttcc aaagtgcagt gaaaagaaca atcaagggta cacaccactg gttgttactc

10981 acaattttga cttcactttt agttttagtc cagagtactc aatggtcttt gttctttttt

11041 ttgtatgaaa atgccttttt accttttgct atgggtatta ttgctatgtc tgcttttgca

11101 atgatgtttg tcaaacataa gcatgcattt ctctgtttgt ttttgttacc ttctcttgcc

11161 actgtagctt attttaatat ggtctatatg cctgctagtt gggtgatgcg tattatgaca

11221 tggttggata tggttgatac tagttttaag ctaaaagact gtgttatgta tgcatcagct

11281 gtagtgttac taatccttat gacagcaaga actntntatg atgatggtgc taggagagtg

11341 tggacactta tgaatgtctt gacactcgtt tataaagttt attatggtaa tgctttagat

11401 caagccattt ccatgtgggc tcttataatc tctgttactt ctaactactc aggtgtagtt

11461 acaactgtca tgtttttggc cagaggtgtt gtttttatgt gtgttgagta ttgccctatt

11521 ttcttcataa ctggtaatac acttcagtgt ataatgctag tttattgttt cttaggctat

11581 ttttgtactt gttactttgg cctcttttgt ttactcaacc gctactttag actgactctt

11641 ggtgtttatg attacttagt ttctacacag gagtttagat atatgaattc acagggacta

11701 ctcccaccca agaatagcat agatgccttc aaactcaaca ttaaattgtt gggtgttggt

11761 ggcaaacctt gtatcaaagt agccactgta cagtctaaaa tgtcagatgt aaagtgcaca

11821 tcagtagtct tactctcagt tttgcaacaa ctcagagtag aatcatcatc taaattgtgg

11881 gctcaatgtg tccagttaca caatgacatt ctcttagcta aagatactac tgaagccttt

11941 gaaaaaatgg tttcactact ttctgttttg ctttccatgc agggtgctgt agacataaac

12001 aagctttgtg aagaaatgct ggacaacagg gcaaccttac aagctatagc ctcagagttt

12061 agttcccttc catcatatgc agcttttgct actgctcaag aagcttatga gcaggctgtt

12121 gctaatggtg attctgaagt tgttcttaaa aagttgaaga agtctttgaa tgtggctaaa

12181 tctgaatttg accgtgatgc agccatgcaa cgtaagttgg aaaagatggc tgatcaagct

12241 atgacccaaa tgtataaaca ggctagatct gaggacaaga gggcaaaagt tactagtgct

12301 atgcagacaa tgcttttcac tatgcttaga aagttggata atgatgcact caacaacatt

12361 atcaacaatg caagagatgg ttgtgttccc ttgaacataa tacctcttac aacagcagcc

12421 aaactaatgg ttgtcatacc agactataac acatataaaa atacgtgtga tggtacaaca

12481 tttacttatg catcagcatt gtgggaaatc caacaggttg tagatgcaga tagtaaaatt

12541 gttcaactta gtgaaattag tatggacaat tcacctaatt tagcatggcc tcttattgta

12601 acagctttaa gggccaattc tgctgtcaaa ttacagaata atgagcttag tcctgttgca

12661 ctacgacaga tgtcttgtgc tgccggtact acacaaactg cttgcactga tgacaatgcg

12721 ttagcttact acaacacaac aaagggaggt aggtttgtac ttgcactgtt atccgattta

12781 caggatttga aatgggctag attccctaag agtgatggaa ctggtactat ctatacagaa

12841 ctggaaccac cttgtaggtt tgttacagac acacctaaag gtcctaaagt gaagtattta

12901 tactttatta aaggattaaa caacctaaat agaggtatgg tacttggtag tttagctgcc

12961 acagtacgtc tacaagctgg taatgcaaca gaagtgcctg ccaattcaac tgtattatct

13021 ttctgtgctt ttgctgtaga tgctgctaaa gcttacaaag attatctagc tagtggggga

13081 caaccaatca ctaattgtgt taagatgttg tgtacacaca ctggtactgg tcaggcaata

13141 acagtcacac cggaagccaa tatggatcaa gaatcctttg gtggtgcatc gtgttgtctg

13201 tactgccgtt gccacataga tcatccaaat cctaaaggat tttgtgactt aaaaggtaag

13261 tatgtacaaa tacctacaac ttgtgctaat gaccctgtgg gttttacact taaaaacaca

13321 gtctgtaccg tctgcggtat gtggaaaggt tatggctgta gttgtgatca actccgcgaa

13381 cccatgcttc agtcagctga tgcacaatcg tttttaaacg ggtttgcggt gtaagtgcag

13441 cccgtcttac accgtgcggc acaggcacta gtactgatgt cgtatacagg gcttttgaca

13501 tctacaatga taaagtagct ggttttgcta aattcctaaa aactaattgt tgtcgcttcc

13561 aagaaaagga cgaagatgac aatttaattg attcttactt tgtagttaag agacacactt

13621 tctctaacta ccaacatgaa gaaacaattt ataatttact taaggattgt ccagctgttg

13681 ctaaacatga cttctttaag tttagaatag acggtgacat ggtaccacat atatcacgtc

13741 aacgtcttac taaatacaca atggcagacc tcgtctatgc tttaaggcat tttgatgaag

13801 gtaattgtga cacattaaaa gaaatacttg tcacatacaa ttgttgtgat gatgattatt

13861 tcaataaaaa ggactggtat gattttgtag aaaacccaga tatattacgc gtatacgcca

13921 acttaggtga acgtgtacgc caagctttgt taaaaacagt acaattctgt gatgccatgc

13981 gaaatgctgg tattgttggt gtactgacat tagataatca agatctcaat ggtaactggt

14041 atgatttcgg tgatttcata caaaccacgc caggtagtgg agttcctgtt gtagattctt

14101 attattcatt gttaatgcct atattaacct tgaccagggc tttaactgca gagtcacatg

14161 ttgacactga cttaacaaag ccttacatta agtgggattt gttaaaatat gacttcacgg

14221 aagagaggtt aaaactcttt gaccgttatt ttaaatattg ggatcagaca taccacccaa

14281 attgtgttaa ctgtttggat gacagatgca ttctgcattg tgcaaacttt aatgttttat

14341 tctctacagt gttcccactt acaagttttg gaccactagt gagaaaaata tttgttgatg

14401 gtgttccatt tgtagtttca actggatacc acttcagaga gctaggtgtt gtacataatc

14461 aggatgtaaa cttacatagc tctagactta gttttaagga attacttgtg tatgctgctg

14521 accctgctat gcacgctgct tctggtaatc tattactaga taaacgcact acgtgctttt

14581 cagtagctgc acttactaac aatgttgctt ttcaaactgt caaacccggt aattttaaca

14641 aagacttcta tgactttgct gtgtctaagg gtttctttaa ggaaggaagt tctgttgaat

14701 taaaacactt cttctttgct caggatggta atgctgctat cagcgattat gactactatc

14761 gttataatct accaacaatg tgtgatatca gacaactact atttgtagtt gaagttgttg

14821 ataagtactt tgattgttac gatggtggct gtattaatgc taaccaagtc atcgtcaaca

14881 acctagacaa atcagctggt tttccattta ataaatgggg taaggctaga ctttattatg

14941 attcaatgag ttatgaggat caagatgcac ttttcgcata tacaaaacgt aatgtcatcc

15001 ctactataac tcaaatgaat cttaagtatg ccattagtgc aaagaataga gctcgcaccg

15061 tagctggtgt ctctatctgt agtactatga ccaatagaca gtttcatcaa aaattattga

15121 aatcaatagc cgccactaga ggagctactg tagtaattgg aacaagcaaa ttctatggtg

15181 gttggcacaa tatgttaaaa actgtttata gtgatgtaga aaaccctcac cttatgggtt

15241 gggattatcc taaatgtgat agagccatgc ctaacatgct tagaattatg gcctcacttg

15301 ttcttgctcg caaacataca acgtgttgta gcttgtcaca ccgtttctat agattagcta

15361 atgagtgtgc tcaagtattg agtgaaatgg tcatgtgtgg cggttcacta tatgttaaac

15421 caggtggaac ctcatcagga gatgccacaa ctgcttatgc taatagtgtt tttaacattt

15481 gtcaagctgt cacggccaat gttaatgcac ttttatctac tgatggtaac aaaattgccg

15541 ataagtatgt ccgcaattta caacacagac tttatgagtg tctctataga aatagagatg

15601 ttgacacaga ctttgtgaat gagttttacg catatttgcg taaacatttc tcaatgatga

15661 tactctctga cgatgctgtt gtgtgtttca atagcactta tgcatctcaa ggtctagtgg

15721 ctagcataaa gaactttaag tcagttcttt attatcaaaa caatgttttt atgtctgaag

15781 caaaatgttg gactgagact gaccttacta aaggacctca tgaattttgc tctcaacata

15841 caatgctagt taaacagggt gatgattatg tgtaccttcc ttacccagat ccatcaagaa

15901 tcctaggggc cggctgtttt gtagatgata tcgtaaaaac agatggtaca cttatgattg

15961 aacggttcgt gtctttagct atagatgctt acccacttac taaacatcct aatcaggagt

16021 atgctgatgt ctttcatttg tacttacaat acataagaaa gctacatgat gagttaacag

16081 gacacatgtt agacatgtat tctgttatgc ttactaatga taacacttca aggtattggg

16141 aacctgagtt ttatgaggct atgtacacac cgcatacagt cttacaggct gttggggctt

16201 gtgttctttg caattcacag acttcattaa gatgtggtgc ttgcatacgt agaccattct

16261 tatgttgtaa atgctgttac gaccatgtca tatcaacatc acataaatta gtcttgtctg

16321 ttaatccgta tgtttgcaat gctccaggtt gtgatgtcac agatgtgact caactttact

16381 taggaggtat gagctattat tgtaaatcac ataaaccacc cattagtttt ccattgtgtg

16441 ctaatggaca agtttttggt ttatataaaa atacatgtgt tggtagcgat aatgttactg

16501 actttaatgc aattgcaaca tgtgactgga caaatgctgg tgattacatt ttagctaaca

16561 cctgtactga aagactcaag ctttttgcag cagaaacgct caaagctact gaggagacat

16621 ttaaactgtc ttatggtatt gctactgtac gtgaagtgct gtctgacaga gaattacatc

16681 tttcatggga agttggtaaa cctagaccac cacttaaccg aaattatgtc tttactggtt

16741 atcgtgtaac taaaaacagt aaagtacaaa taggagagta cacctttgaa aaaggtgact

16801 atggtgatgc tgttgtttac cgaggtacaa caacttacaa attaaatgtt ggtgattatt

16861 ttgtgctgac atcacataca gtaatgccat taagtgcacc tacactagtg ccacaagagc

16921 actatgttag aattactggc ttatacccaa cactcaatat ctcagatgag ttttctagca

16981 atgttgcaaa ttatcaaaag gttggtatgc aaaagtattc tacactccag ggaccacctg

17041 gtactggtaa gagtcatttt gctattggcc tagctctcta ctacccttct gctcgcatag

17101 tgtatacagc ttgctctcat gccgctgttg atgcactatg tgagaaggca ttaaaatatt

17161 tgcctataga taaatgtagt agaattatac ctgcacgtgc tcgtgtagag tgttttgata

17221 aattcaaagt gaattcaaca ttagaacagt atgtcttttg tactgtaaat gcattgcctg

17281 agacgacagc agatatagtt gtctttgatg aaatttcaat ggccacaaat tatgatttga

17341 gtgttgtcaa tgccagatta cgtgctaagc actatgtgta cattggcgac cctgctcaat

17401 tacctgcacc acgcacattg ctaactaagg gcacactaga accagaatat ttcaattcag

17461 tgtgtagact tatgaaaact ataggtccag acatgttcct cggaacttgt cggcgttgtc

17521 ctgctgaaat tgttgacact gtgagtgctt tggtttatga taataagctt aaagcacata

17581 aagacaaatc agctcaatgc tttaaaatgt tttataaggg tgttatcacg catgatgttt

17641 catctgcaat taacaggcca caaataggcg tggtaagaga attccttaca cgtaaccctg

17701 cttggagaaa agctgtcttt atttcacctt ataattcaca gaatgctgta gcctcaaaga

17761 ttttgggact accaactcaa actgttgatt catcacaggg ctcagaatat gactatgtca

17821 tattcactca aaccactgaa acagctcact cttgtaatgt aaacagattt aatgttgcta

17881 ttaccagagc aaaagtaggc atactttgca taatgtctga tagagacctt tatgacaagt

17941 tgcaatttac aagtcttgaa attccacgta ggaatgtggc aactttacaa gctgaaaatg

18001 taacaggact ctttaaagat tgtagtaagg taatcactgg gttacatcct acacaggcac

18061 ctacacacct cagtgttgac actaaattca aaactgaagg tttatgtgtt gacgtacctg

18121 gcatacctaa ggacatgacc tatagaagac tcatctctat gatgggtttt aaaatgaatt

18181 atcaagttaa tggttaccct aacatgttta tcacccgcga agaagctata agacatgtac

18241 gtgcatggat tggcttcgat gtcgaggggt gtcatgctac tagagaagct gttggtacca

18301 atttaccttt acagctaggt ttttctacag gtgttaacct agttgctgta cctacaggtt

18361 atgttgatac acctaataat acagattttt ccagagttag tgctaaacca ccgcctggag

18421 atcaatttaa acacctcata ccacttatgt acaaaggact tccttggaat gtagtgcgta

18481 taaagattgt acaaatgtta agtgacacac ttaaaaatct ctctgacaga gtcgtatttg

18541 tcttatgggc acatggcttt gagttgacat ctatgaagta ttttgtgaaa ataggacctg

18601 agcgcacctg ttgtctatgt gatagacgtg ccacatgctt ttccactgct tcagacactt

18661 atgcctgttg gcatcattct attggatttg attacgtcta taatccgttt atgattgatg

18721 ttcaacaatg gggttttaca ggtaacctac aaagcaacca tgatctgtat tgtcaagtcc

18781 atggtaatgc acatgtagct agttgtgatg caatcatgac taggtgtcta gctgtccacg

18841 agtgctttgt taagcgtgtt gactggacta ttgaatatcc tataattggt gatgaactga

18901 agattaatgc ggcttgtaga aaggttcaac acatggttgt taaagctgca ttattagcag

18961 acaaattccc agttcttcac gacattggta accctaaagc tattaagtgt gtacctcaag

19021 ctgatgtaga atggaagttc tatgatgcac agccttgtag tgacaaagct tataaaatag

19081 aagaattatt ctattcttat gccacacatt ctgacaaatt cacagatggt gtatgcctat

19141 tttggaattg caatgtcgat agatatcctg ctaattccat tgtttgtaga tttgacacta

19201 gagtgctatc taaccttaac ttgcctggtt gtgatggtgg cagtttgtat gtaaataaac

19261 atgcattcca cacaccagct tttgataaaa gtgcttttgt taatttaaaa caattaccat

19321 ttttctatta ctctgacagt ccatgtgagt ctcatggaaa acaagtagtg tcagatatag

19381 attatgtacc actaaagtct gctacgtgta taacacgttg caatttaggt ggtgctgtct

19441 gtagacatca tgctaatgag tacagattgt atctcgatgc ttataacatg atgatctcag

19501 ctggctttag cttgtgggtt tacaaacaat ttgatactta taacctctgg aacactttta

19561 caagacttca gagtttagaa aatgtggctt ttaatgttgt aaataaggga cactttgatg

19621 gacaacaggg tgaagtacca gtttctatca ttaataacac tgtttacaca aaagttgatg

19681 gtgttgatgt agaattgttt gaaaataaaa caacattacc tgttaatgta gcatttgagc

19741 tttgggctaa gcgcaacatt aaaccagtac cagaggtgaa aatactcaat aatttgggtg

19801 tggacattgc tgctaatact gtgatctggg actacaaaag agatgctcca gcacatatat

19861 ctactattgg tgtttgttct atgactgaca tagccaagaa accaactgaa acgatttgtg

19921 caccactcac tgtctttttt gatggtagag ttgatggtca agtagactta tttagaaatg

19981 cccgtaatgg tgttcttatt acagaaggta gtgttaaagg tttacaacca tctgtaggtc

20041 ccaaacaagc tagtcttaat ggagtcacat taattggaga agccgtaaaa acacagttca

20101 attattataa gaaagttgat ggtgttgtcc aacaattacc tgaaacttac tttactcaga

20161 gtagaaattt acaagaattt aaacccagga gtcaaatgga aattgatttc ttagaattag

20221 ctatggatga attcattgaa cggtataaat tagaaggcta tgccttcgaa catatcgttt

20281 atggagattt tagtcatagt cagttaggtg gtttacatct actgattgga ctagctaaac

20341 gttttaagga atcacctttt gaattagaag attttattcc tatggacagt acagttaaaa

20401 actatttcat aacagatgcg caaacaggtt catctaagtg tgtgtgttct gttattgatt

20461 tattacttga tgattttgtt gaaataataa aatcccaaga tttatctgta gtttctaagg

20521 ttgtcaaagt gactattgac tatacagaaa tttcatttat gctttggtgt aaagatggcc

20581 atgtagaaac attttaccca aaattacaat ctagtcaagc gtggcaaccg ggtgttgcta

20641 tgcctaatct ttacaaaatg caaagaatgc tattagaaaa gtgtgacctt caaaattatg

20701 gtgatagtgc aacattacct aaaggcataa tgatgaatgt cgcaaaatat actcaactgt

20761 gtcaatattt aaacacatta acattagctg taccctataa tatgagagtt atacattttg

20821 gtgctggttc tgataaagga gttgcaccag gtacagctgt tttaagacag tggttgccta

20881 cgggtacgct gcttgtcgat tcagatctta atgactttgt ctctgatgca gattcaactt

20941 tgattggtga ttgtgcaact gtacatacag ctaataaatg ggatctcatt attagtgata

21001 tgtacgaccc taagactaaa aatgttacaa aagaaaatga ctctaaagag ggttttttca

21061 cttacatttg tgggtttata caacaaaagc tagctcttgg aggttccgtg gctataaaga

21121 taacagaaca ttcttggaat gctgatcttt ataagctcat gggacacttc gcatggtgga

21181 cagcctttgt tactaatgtg aatgcgtcat catctgaagc atttttaatt ggatgtaatt

21241 atcttggcaa accacgcgaa caaatagatg gttatgtcat gcatgcaaat tacatatttt

21301 ggaggaatac aaatccaatt cagttgtctt cctattcttt atttgacatg agtaaatttc

21361 cccttaaatt aaggggtact gctgttatgt ctttaaaaga aggtcaaatc aatgatatga

21421 ttttatctct tcttagtaaa ggtagactta taattagaga aaacaacaga gttgttattt

21481 ctagtgatgt tcttgttaac aactaaacga acaatgtttg tttttcttgt tttattgcca

21541 ctagtctcta gtcagtgtgt taatcttaca accagaactc aattaccccc tgcatacact

21601 aattctttca cacgtggtgt ttattaccct gacaaagttt tcagatcctc agttttacat

21661 tcaactcagg acttgttctt acctttcttt tccaatgtta cttggttcca tgttatctct

21721 gggaccaatg gtactaagag gtttgataac cctgtcctac catttaatga tggtgtttat

21781 tttgcttcca ttgagaagtc taacataata agaggctgga tttttggtac tactttagat

21841 tcgaagaccc agtccctact tattgttaat aacgctacta atgttgttat taaagtctgt

21901 gaatttcaat tttgtaatga tccatttttg gaccacaaaa acaacaaaag ttggatggaa

21961 agtgagttca gagtttattc tagtgcgaat aattgcactt ttgaatatgt ctctcagcct

22021 tttcttatgg accttgaagg aaaacagggt aatttcaaaa atcttaggga atttgtgttt

22081 aagaatattg atggttattt taaaatatat tctaagcaca cgcctattat agtgcgtgat

22141 ctccctcagg gtttttcggc tttagaacca ttggtagatt tgccaatagg tattaacatc

22201 actaggtttc aaactttact tgctttacat agaagttatt tgactcctgg tgattcttct

22261 tcaggttgga cagctggtgc tgcagcttat tatgtgggtt atcttcaacc taggactttt

22321 ctattaaaat ataatgaaaa tggaaccatt acagatgctg tagactgtgc acttgaccct

22381 ctctcagaaa caaagtgtac gttgaaatcc ttcactgtag aaaaaggaat ctatcaaact

22441 tctaacttta gagtccaacc aacagaatct attgttagat ttcctaatat tacaaacttg

22501 tgcccttttg atgaagtttt taacgccacc agatttgcat ctgtttatgc ttggaacagg

22561 aagagaatca gcaactgtgt tgctgattat tctgtcctat ataatctcgc accatttttc

22621 acttttaagt gttatggagt gtctcctact aaattaaatg atctctgctt tactaatgtc

22681 tatgcagatt catttgtaat tagaggtgat gaagtcagac aaatcgctcc agggcaaact

22741 ggaaatattg ctgattataa ttataaatta ccagatgatt ttacaggctg cgttatagct

22801 tggaattcta acaagcttga ttctaaggtt agtggtaatt ataattacct gtatagattg

22861 tttaggaagt ctaatctcaa accttttgag agagatattt caactgaaat ctatcaggcc

22921 ggtaacaaac cttgtaatgg tgttgcaggt tttaattgtt actttccttt acgatcatat

22981 agtttccgac ccacttatgg tgttggtcac caaccataca gagtagtagt actttctttt

23041 gaacttctac atgcaccagc aactgtttgt ggacctaaaa agtctactaa tttggttaaa

23101 aacaaatgtg tcaatttcaa cttcaatggt ttaaaaggca caggtgttct tactgagtct

23161 aacaaaaagt ttctgccttt ccaacaattt ggcagagaca ttgctgacac tactgatgct

23221 gtccgtgatc cacagacact tgagattctt gacattacac catgttcttt tggtggtgtc

23281 agtgttataa caccaggaac aaatacttct aaccaggttg ctgttcttta tcagggtgtt

23341 aactgcacag aagtccctgt tgctattcat gcagatcaac ttactcctac ttggcgtgtt

23401 tattctacag gttctaatgt ttttcaaaca cgtgcaggct gtttaatagg ggctgaatat

23461 gtcaacaact catatgagtg tgacataccc attggtgcag gtatatgcgc tagttatcag

23521 actcagacta agtctcatcg gcgggcacgt agtgtagcta gtcaatccat cattgcctac

23581 actatgtcac ttggtgcaga aaattcagtt gcttactcta ataactctat tgccataccc

23641 acaaatttta ctattagtgt taccacagaa attctaccag tgtctatgac caagacatca

23701 gtagattgta caatgtacat ttgtggtgat tcaactgaat gcagcaatct tttgttgcaa

23761 tatggcagtt tttgtacaca attaaaacgt gctttaactg gaatagctgt tgaacaagac

23821 aaaaacaccc aagaagtttt tgcacaagtc aaacaaattt acaaaacacc accaattaaa

23881 tattttggtg gttttaattt ttcacaaata ttaccagatc catcaaaacc aagcaagagg

23941 tcatttattg aagatctact tttcaacaaa gtgacacttg cagatgctgg cttcatcaaa

24001 caatatggtg attgccttgg tgatattgct gctagagacc tcatttgtgc acaaaagttt

24061 aaaggcctta ctgttttgcc acctttgctc acagatgaaa tgattgctca atacacttct

24121 gcactgttag cgggtacaat cacttctggt tggacctttg gtgcaggtgc tgcattacaa

24181 ataccatttg ctatgcaaat ggcttatagg tttaatggta ttggagttac acagaatgtt

24241 ctctatgaga accaaaaatt gattgccaac caatttaata gtgctattgg caaaattcaa

24301 gactcacttt cttccacagc aagtgcactt ggaaaacttc aagatgtggt caaccataat

24361 gcacaagctt taaacacgct tgttaaacaa cttagctcca aatttggtgc aatttcaagt

24421 gttttaaatg atatcttttc acgtcttgac aaagttgagg ctgaagtgca aattgatagg

24481 ttgatcacag gcagacttca aagtttgcag acatatgtga ctcaacaatt aattagagct

24541 gcagaaatca gagcttctgc taatcttgct gctactaaaa tgtcagagtg tgtacttgga

24601 caatcaaaaa gagttgattt ttgtggaaag ggctatcatc ttatgtcctt ccctcagtca

24661 gcacctcatg gtgtagtctt cttgcatgtg acttatgtcc ctgcacaaga aaagaacttc

24721 acaactgctc ctgccatttg tcatgatgga aaagcacact ttcctcgtga aggtgtcttt

24781 gtttcaaatg gcacacactg gtttgtaaca caaaggaatt tttatgaacc acaaatcatt

24841 actacagaca acacatttgt gtctggtaac tgtgatgttg taataggaat tgtcaacaac

24901 acagtttatg atcctttgca acctgaatta gattcattca aggaggagtt agataaatat

24961 tttaagaatc atacatcacc agatgttgat ttaggtgaca tctctggcat taatgcttca

25021 gttgtaaaca ttcaaaaaga aattgaccgc ctcaatgagg ttgccaagaa tttaaatgaa

25081 tctctcatcg atctccaaga acttggaaag tatgagcagt atataaaatg gccatggtac

25141 atttggctag gttttatagc tggcttgatt gccatagtaa tggtgacaat tatgctttgc

25201 tgtatgacca gttgctgtag ttgtctcaag ggctgttgtt cttgtggatc ctgctgcaaa

25261 tttgatgaag acgactctga gccagtgctc aaaggagtca aattacatta cacataaacg

25321 aacttatgga tttgtttatg agaatcttca caattggaac tgtaactttg aagcaaggtg

25381 aaatcaagga tgctactcct tcagattttg ttcgcgctac tgcaacgata ccgatacaag

25441 cctcactccc tttcggatgg cttattgttg gcgttgcact tcttgctgtt tttcagagcg

25501 cttccaaaat cataactctc aaaaagagat ggcaactagc actctccaag ggtgttcact

25561 ttgtttgcaa cttgctgttg ttgtttgtaa cagtttactc acaccttttg ctcgttgctg

25621 ctggccttga agcccctttt ctctatcttt atgctttagt ctacttcttg cagagtataa

25681 actttgtaag aataataatg aggctttggc tttgctggaa atgccgttcc aaaaacccat

25741 tactttatga tgccaactat tttctttgct ggcatactaa ttgttacgac tattgtatac

25801 cttacaatag tgtaacttct tcaattgtca ttacttcagg tgatggcaca acaagtccta

25861 tttctgaaca tgactaccag attggtggtt atactgaaaa atgggaatct ggagtaaaag

25921 actgtgttgt attacacagt tacttcactt cagactatta ccagctgtac tcaactcaat

25981 tgagtacaga cactggtgtt gaacatgtta ccttcttcat ctacaataaa attgttgatg

26041 agcctgaaga acatgtccaa attcacacaa tcgacggttc atccggagtt gttaatccag

26101 taatggaacc aatttatgat gaaccgacga cgactactag cgtgcctttg taagcacaag

26161 ctgatgagta cgaacttatg tactcattcg tttcggaaga gataggtacg ttaatagtta

26221 atagcgtact tctttttctt gctttcgtgg tattcttgct agttacacta gccatcctta

26281 ctgcgcttcg attgtgtgcg tactgctgca atattgttaa cgtgagtctt gtaaaacctt

26341 ctttttacgt ttactctcgt gttaaaaatc tgaattcttc tagagttcct gatcttctgg

26401 tctaaacgaa ctaaatatta tattagtttt tctgtttgga actttaattt tagccatggc

26461 aggttccaac ggtactatta ccgttgaaga gcttaaaaag ctccttgaag aatggaacct

26521 agtaataggt ttcctattcc ttacatggat ttgtcttcta caatttgcct atgccaacag

26581 gaataggttt ttgtatataa ttaagttaat tttcctctgg ctgttatggc cagtaacttt

26641 aacttgtttt gtgcttgctg ctgtttacag aataaattgg atcaccggtg gaattgctat

26701 cgcaatggct tgtcttgtag gcttgatgtg gctcagctac ttcattgctt ctttcagact

26761 gtttgcgcgt acgcgttcca tgtggtcatt caatccagaa actaacattc ttctcaacgt

26821 gccactccat ggcactattc tgaccagacc gcttctagaa agtgaactcg taatcggagc

26881 tgtgatcctt cgtggacatc ttcgtattgc tggacaccat ctaggacgct gtgacatcaa

26941 ggacctgcct aaagaaatca ctgttgctac atcacgaacg ctttcttatt acaaattggg

27001 agcttcgcag cgtgtagcag gtgactcagg ttttgctgca tacagtcgct acaggattgg

27061 caactataaa ttaaacacag accattccag tagcagtgac aatattgctt tgcttgtaca

27121 gtaagtgaca acagatgttt catctcgttg actttcaggt tactatagca gagatattac

27181 taattattat gcggactttt aaagtttcca tttggaatct tgattacatc ataaacctca

27241 taattaaaaa tttatctaag tcactaactg agaataaata ttctcaatta gatgaagagc

27301 aaccaatgga gattgattaa acgaacatga aaattattct tttcttggca ctgataacac

27361 tcgctacttg tgagctttat cactaccaag agtgtgttag aggtacaaca gtacttttaa

27421 aagaaccttg ctcttctgga acatacgagg gcaattcacc atttcatcct ctagctgata

27481 acaaatttgc actgacttgc tttagcactc aatttgcttt tgcttgtcct gacggcgtaa

27541 aacacgtcta tcagttacgt gccagatcag tttcacctaa actgttcatc agacaagagg

27601 aagttcaaga actttactct ccaatttttc ttattgttgc ggcaatagtg tttataacac

27661 tttgcttcac actcaaaaga aagacagaat gattgaactt tcattaattg acttctattt

27721 gtgcttttta gcctttctgt tattccttgt tttaattatg cttattatct tttggttctc

27781 acttgaactg caagatcata atgaaacttg tcacgcctaa acgaacatga aatttcttgt

27841 tttcttagga atcatcacaa ctgtagctgc atttcaccaa gaatgtagtt tacagtcatg

27901 tactcaacat caaccatatg tagttgatga cccgtgtcct attcacttct attctaaatg

27961 gtatattaga gtaggagcta gaaaatcagc acctttaatt gaattgtgcg tggatgaggc

28021 tggttctaaa tcacccattc agtacatcga tatcggtaat tatacagttt cctgtttacc

28081 ttttacaatt aattgccagg aacctaaatt gggtagtctt gtagtgcgtt gttcgttcta

28141 tgaagacttt ttagagtatc atgacgttcg tgttgtttta gatttcatct aaacgaacaa

28201 acttaaatgt ctgataatgg accccaaaat cagcgaaatg cactccgcat tacgtttggt

28261 ggaccctcag attcaactgg cagtaaccag aatggtgggg cgcgatcaaa acaacgtcgg

28321 ccccaaggtt tacccaataa tactgcgtct tggttcaccg ctctcactca acatggcaag

28381 gaagacctta aattccctcg aggacaaggc gttccaatta acaccaatag cagtccagat

28441 gaccaaattg gctactaccg aagagctacc agacgaattc gtggtggtga cggtaaaatg

28501 aaagatctca gtccaagatg gtatttctac tacctaggaa ctgggccaga agctggactt

28561 ccctatggtg ctaacaaaga cggcatcata tgggttgcaa ctgagggagc cttgaataca

28621 ccaaaagatc acattggcac ccgcaatcct gctaacaatg ctgcaatcgt gctacaactt

28681 cctcaaggaa caacattgcc aaaaggcttc tacgcagaag ggagcagagg cggcagtcaa

28741 gcctcttctc gttcctcatc acgtagtcgc aacagttcaa gaaattcaac tccaggcagc

28801 agtaaacgaa cttctcctgc tagaatggct ggcaatggcg gtgatgctgc tcttgctttg

28861 ctgctgcttg acagattgaa ccagcttgag agcaaaatgt ctggtaaagg ccaacaacaa

28921 caaggccaaa ctgtcactaa gaaatctgct gctgaggctt ctaagaagcc tcggcaaaaa

28981 cgtactgcca ctaaagcata caatgtaaca caagctttcg gcagacgtgg tccagaacaa

29041 acccaaggaa attttgggga ccaggaacta atcagacaag gaactgatta caaacattgg

29101 ccgcaaattg cacaatttgc ccccagcgct tcagcgttct tcggaatgtc gcgcattggc

29161 atggaagtca caccttcggg aacgtggttg acctacacag gtgccatcaa attggatgac

29221 aaagatccaa atttcaaaga tcaagtcatt ttgctgaata agcatattga cgcatacaaa

29281 acattcccac caacagagcc taaaaaggac aaaaagaaga aggctgatga aactcaagcc

29341 ttaccgcaga gacagaagaa acagcaaact gtgactcttc ttcctgctgc agatttggat

29401 gatttctcca aacaattgca acaatccatg agcagtgctg actcaactca ggcctaaact

29461 catgcagacc acacaaggca gatgggctat ataaacgttt tcgcttttcc gtttacgata

29521 tatagtctac tcttgtgcag aatgaattct cgtaactaca tagcacaagt agatgtagtt

29581 aactttaatc tcacatagca atctttaatc agtgtgtaac attagggagg acttgaaaga

29641 gccaccacat tttcaccgag gccacgcgga gtacgatcga gtgtacagtg aacaatgcta

29701 gggagagctg cctatatgga agagccctaa tgtgtaaaat taattttagt agtgctatcc

29761 ccatgtgatt ttaatagctt cttagg

//