**Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/human/USA/IL-CDC-ASC210534081/2021, complete genome**

GenBank: OM015958.1

[FASTA](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?report=fasta) [Graphics](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?report=graph)

[Go to:](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1" \l "goto2170178482_0)

LOCUS OM015958 29800 bp RNA linear VRL 25-DEC-2021

DEFINITION Severe acute respiratory syndrome coronavirus 2 isolate

SARS-CoV-2/human/USA/IL-CDC-ASC210534081/2021, complete genome.

ACCESSION OM015958

VERSION OM015958.1

DBLINK BioProject: [PRJNA731148](https://www.ncbi.nlm.nih.gov/bioproject/PRJNA731148)

BioSample: [SAMN24377025](https://www.ncbi.nlm.nih.gov/biosample/SAMN24377025)

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 29800)

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., Clark,C.,

Campbell,P., Case,R., Ghorpade,V., Houdeshell,H., Kvalvaag,O.,

Nall,D., Sanders,E., Vest,A., Westlund,S., Hardison,M., Paden,C.R.

and MacCannell,D.

TITLE CDC Sars CoV2 Sequencing Baseline Constellation

JOURNAL Unpublished

REFERENCE 2 (bases 1 to 29800)

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., Clark,C.,

Campbell,P., Case,R., Ghorpade,V., Houdeshell,H., Kvalvaag,O.,

Nall,D., Sanders,E., Vest,A., Westlund,S., Hardison,M., Paden,C.R.

and MacCannell,D.

TITLE Direct Submission

JOURNAL Submitted (24-DEC-2021) Respiratory Viruses Branch, Division of

Viral Diseases, Centers for Disease Control and Prevention, 1600

Clifton Rd, Atlanta, GA 30329, USA

COMMENT ##Assembly-Data-START##

Assembly Method :: Dragen COVID Lineage v3.5.4

Sequencing Technology :: Illumina NovaSeq 6000

##Assembly-Data-END##

FEATURES Location/Qualifiers

source 1..29800

/organism="Severe acute respiratory syndrome coronavirus

2"

/mol\_type="genomic RNA"

/isolate="SARS-CoV-2/human/USA/IL-CDC-ASC210534081/2021"

/isolation\_source="Nasal - Anterior Nares"

/host="Homo sapiens"

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

/country="USA: Illinois"

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

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=241&to=21518) 241..21518

/gene="ORF1ab"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?location=241:13431,13431:21518) join(241..13431,13431..21518)

/gene="ORF1ab"

/ribosomal\_slippage

/codon\_start=1

/product="ORF1ab polyprotein"

/protein\_id="[UHP87087.1](https://www.ncbi.nlm.nih.gov/protein/2170178483)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHSYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTG

DFVKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESG

LKTILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNL

LEILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGN

FKVTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAA

ITILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKL

KPVLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLV

NKFLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEII

FLEGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEK

YCALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNITFELDERIDKVLNER

CSAYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEF

KLASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPE

EEQEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSG

YLKLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVAGALNKATNNAMQVESD

DYIATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLLKSAYENFNRHEVLLA

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

LQPSVGPKQASLNGVTLIGEAVKTQFNYYKKVDGVVQQLPETYFTQSRNLQEFKPRSQ

MEIDFLELAMDEFIERYKLEGYAFEHIVYGDFSHSQLGGLHLLIGLAKRFKESPFELE

DFIPMDSTVKNYFITDAQTGSSKCVCSVIDLLLDDFVEIIKSQDLSVVSKVVKVTIDY

TEISFMLWCKDGHVETFYPKLQSSQAWQPGVAMPNLYKMQRMLLEKCDLQNYGDSATL

PKGIMMNVAKYTQLCQYLNTLTLAVPYNMRVIHFGAGSDKGVAPGTAVLRQWLPTGTL

LVDSDLNDFVSDADSTLIGDCATVHTANKWDLIISDMYDPKTKNVTKENDSKEGFFTY

ICGFIQQKLALGGSVAIKITEHSWNADLYKLMGHFAWWTAFVTNVNASSSEAFLIGCN

YLGKPREQIDGYVMHANYIFWRNTNPIQLSSYSLFDMSKFPLKLRGTAVMSLKEGQIN

DMILSLLSKGRLIIRENNRVVISSDVLVNN"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87087.1?from=1&to=180) 241..780

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87087.1?from=181&to=818) 781..2694

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87087.1?from=819&to=2762) 2695..8526

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87087.1?from=2763&to=3262) 8527..10026

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87087.1?from=3263&to=3568) 10027..10944

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87087.1?from=3569&to=3855) 10945..11805

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87087.1?from=3856&to=3938) 11806..12054

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87087.1?from=3939&to=4136) 12055..12648

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87087.1?from=4137&to=4249) 12649..12987

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87087.1?from=4250&to=4388) 12988..13404

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87087.1?from=4389&to=5320) join(13405..13431,13431..16199)

/gene="ORF1ab"

/product="RNA-dependent RNA polymerase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87087.1?from=5321&to=5921) 16200..18002

/gene="ORF1ab"

/product="helicase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87087.1?from=5922&to=6448) 18003..19583

/gene="ORF1ab"

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

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87087.1?from=6449&to=6794) 19584..20621

/gene="ORF1ab"

/product="endoRNAse"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87087.1?from=6795&to=7092) 20622..21515

/gene="ORF1ab"

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

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=241&to=13446) 241..13446

/gene="ORF1ab"

/codon\_start=1

/product="ORF1a polyprotein"

/protein\_id="[UHP87088.1](https://www.ncbi.nlm.nih.gov/protein/2170178484)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHSYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTG

DFVKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESG

LKTILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNL

LEILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGN

FKVTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAA

ITILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKL

KPVLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLV

NKFLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEII

FLEGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEK

YCALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNITFELDERIDKVLNER

CSAYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEF

KLASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPE

EEQEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSG

YLKLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVAGALNKATNNAMQVESD

DYIATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLLKSAYENFNRHEVLLA

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/UHP87088.1?from=1&to=180) 241..780

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87088.1?from=181&to=818) 781..2694

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87088.1?from=819&to=2762) 2695..8526

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87088.1?from=2763&to=3262) 8527..10026

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87088.1?from=3263&to=3568) 10027..10944

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87088.1?from=3569&to=3855) 10945..11805

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87088.1?from=3856&to=3938) 11806..12054

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87088.1?from=3939&to=4136) 12055..12648

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87088.1?from=4137&to=4249) 12649..12987

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87088.1?from=4250&to=4388) 12988..13404

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UHP87088.1?from=4389&to=4401) 13405..13443

/gene="ORF1ab"

/product="nsp11"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=13439&to=13466) 13439..13466

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 1"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=13451&to=13505) 13451..13505

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 2"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=21526&to=25338) 21526..25338

/gene="S"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=21526&to=25338) 21526..25338

/gene="S"

/codon\_start=1

/product="surface glycoprotein"

/protein\_id="[UHP87089.1](https://www.ncbi.nlm.nih.gov/protein/2170178485)"

/translation="MFVFLVLLPLVSSQCVNLTTRTQLPPAYTNSFTRGVYYPDKVFR

SSVLHSTQDLFLPFFSNVTWFHVISGTNGTKRFDNPVLPFNDGVYFASIEKSNIIRGW

IFGTTLDSKTQSLLIVNNATNVVIKVCEFQFCNDPFLDHKNNKSWMESEFRVYSSANN

CTFEYVSQPFLMDLEGKQGNFKNLREFVFKNIDGYFKIYSKHTPIIVREPEDLPQGFS

ALEPLVDLPIGINITRFQTLLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLLKY

NENGTITDAVDCALDPLSETKCTLKSFTVEKGIYQTSNFRVQPTESIVRFPNITNLCP

FDEVFNATRFASVYAWNRKRISNCVADYSVLYNLAPFFTFKCYGVSPTKLNDLCFTNV

YADSFVIRGDEVRQIAPGQTGKIADYNYKLPDDFTGCVIAWNSNKLDSKVSGNYNYLY

RLFRKSNLKPFERDISTEIYQAGNKPCNGVAGFNCYFPLRSYSFRPTYGVGHQPYRVV

VLSFELLHAPATVCGPKKSTNLVKNKCVNFNFNGLKGTGVLTESNKKFLPFQQFGRDI

ADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQVAVLYQGVNCTEVPVAIHAD

QLTPTWRVYSTGSNVFQTRAGCLIGAEYVNNSYECDIPIGAGICASYQTQTKSHRRAR

SVASQSIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEILPVSMTKTSVDCTMYIC

GDSTECSNLLLQYGSFCTQLKRALTGIAVEQDKNTQEVFAQVKQIYKTPPIKYFGGFN

FSQILPDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICAQKFKGLT

VLPPLLTDEMIAQYTSALLAGTITSGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLY

ENQKLIANQFNSAIGKIQDSLSSTASALGKLQDVVNHNAQALNTLVKQLSSKFGAISS

VLNDIFSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASANLAATKMSECV

LGQSKRVDFCGKGYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHDGKAHFPR

EGVFVSNGTHWFVTQRNFYEPQIITTDNTFVSGNCDVVIGIVNNTVYDPLQPELDSFK

EELDKYFKNHTSPDVDLGDISGINASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYE

QYIKWPWYIWLGFIAGLIAIVMVTIMLCCMTSCCSCLKGCCSCGSCCKFDEDDSEPVL

KGVKLHYT"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=25347&to=26174) 25347..26174

/gene="ORF3a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=25347&to=26174) 25347..26174

/gene="ORF3a"

/codon\_start=1

/product="ORF3a protein"

/protein\_id="[UHP87090.1](https://www.ncbi.nlm.nih.gov/protein/2170178486)"

/translation="MDLFMRIFTIGTVTLKQGEIKDATPSDFVRATATIPIQASLPFG

WLIVGVALLAVFQSASKIITLKKRWQLALSKGVHFVCNLLLLFVTVYSHLLLVAAGLE

APFLYLYALVYFLQSINFVRIIMRLWLCWKCRSKNPLLYDANYFLCWHTNCYDYCIPY

NSVTSSIVITSGDGTTSPISEHDYQIGGYTEKWESGVKDCVVLHSYFTSDYYQLYSTQ

LSTDTGVEHVTFFIYNKIVDEPEEHVQIHTIDGSSGVVNPVMEPIYDEPTTTTSVPL"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=26199&to=26426) 26199..26426

/gene="E"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=26199&to=26426) 26199..26426

/gene="E"

/codon\_start=1

/product="envelope protein"

/protein\_id="[UHP87091.1](https://www.ncbi.nlm.nih.gov/protein/2170178487)"

/translation="MYSFVSEEIGTLIVNSVLLFLAFVVFLLVTLAILTALRLCAYCC

NIVNVSLVKPSFYVYSRVKNLNSSRVPDLLV"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=26477&to=27145) 26477..27145

/gene="M"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=26477&to=27145) 26477..27145

/gene="M"

/codon\_start=1

/product="membrane glycoprotein"

/protein\_id="[UHP87092.1](https://www.ncbi.nlm.nih.gov/protein/2170178488)"

/translation="MAGSNGTITVEELKKLLEEWNLVIGFLFLTWICLLQFAYANRNR

FLYIIKLIFLWLLWPVTLTCFVLAAVYRINWITGGIAIAMACLVGLMWLSYFIASFRL

FARTRSMWSFNPETNILLNVPLHGTILTRPLLESELVIGAVILRGHLRXXXXXXXXXX

XXXXXXXXXXXXXRTLSYYKLGASQRVAGDSGFAAYSRYRIGNYKLNTDHSSSSDNIA

LLVQ"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=27156&to=27341) 27156..27341

/gene="ORF6"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=27156&to=27341) 27156..27341

/gene="ORF6"

/codon\_start=1

/product="ORF6 protein"

/protein\_id="[UHP87093.1](https://www.ncbi.nlm.nih.gov/protein/2170178489)"

/translation="MFHLVDFQVTIAEILLIIMRTFKVSIWNLDYIINLIIKNLSKSL

TENKYSQLDEEQPMEID"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=27348&to=27713) 27348..27713

/gene="ORF7a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=27348&to=27713) 27348..27713

/gene="ORF7a"

/codon\_start=1

/product="ORF7a protein"

/protein\_id="[UHP87094.1](https://www.ncbi.nlm.nih.gov/protein/2170178490)"

/translation="MKIILFLALITLATCELYHYQECVRGTTVLLKEPCSSGTYEGNS

PFHPLADNKFALTCFSTQFAFACPDGVKHVYQLRARSVSPKLFIRQEEVQELYSPIFL

IVAAIVFITLCFTLKRKTE"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=27710&to=27841) 27710..27841

/gene="ORF7b"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=27710&to=27841) 27710..27841

/gene="ORF7b"

/codon\_start=1

/product="ORF7b"

/protein\_id="[UHP87095.1](https://www.ncbi.nlm.nih.gov/protein/2170178491)"

/translation="MIELSLIDFYLCFLAFLLFLVLIMLIIFWFSLELQDHNETCHA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=27848&to=28213) 27848..28213

/gene="ORF8"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=27848&to=28213) 27848..28213

/gene="ORF8"

/codon\_start=1

/product="ORF8 protein"

/protein\_id="[UHP87096.1](https://www.ncbi.nlm.nih.gov/protein/2170178492)"

/translation="MKFLVFLGIITTVAAFHQECSLQSCTQHQPYVVDDPCPIHFYSK

WYIRVGARKSAPLIELCVDEAGSKSPIQYIDIGNYTVSCLPFTINCQEPKLGSLVVRC

SFYEDFLEYHDVRVVLDFI"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=28228&to=29487) 28228..29487

/gene="N"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=28228&to=29487) 28228..29487

/gene="N"

/codon\_start=1

/product="nucleocapsid phosphoprotein"

/protein\_id="[UHP87097.1](https://www.ncbi.nlm.nih.gov/protein/2170178493)"

/translation="MSDNGPQNQRNALRITFGGPSDSTGSNQNGERSGARSKQRRPQG

LPNNTASWFTALTQHGKEDLKFSRGQGVPINTNSSPDDQIGYYRRATRRIRGGDGKMK

DLSPRWYFYYLGTGPEAGLPYGANKDGIIWVATEGALNTPKDHIGTRNPANNAAIVLQ

LPQGTTLPKGFYAEGSRGGSQASSRSSSRSRNSSRNSTPGSSKRTSPARMAGNGGDAA

LALLLLDRLNQLESKMSGKGQQQQGQTVTKKSAAEASKKPRQKRTATKAYNVTQAFGR

RGPEQTQGNFGDQELIRQGTDYKHWPQIAQFAPSASAFFGMSRIGMEVTPSGTWLTYT

GAIKLDDKDPNFKDQVILLNKHIDAYKTFPPTEPKKDKKKKADETQALPQRQKKQQTV

TLLPAADLDDFSKQLQQSMSSADSTQA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=29512&to=29628) 29512..29628

/gene="ORF10"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=29512&to=29628) 29512..29628

/gene="ORF10"

/codon\_start=1

/product="ORF10 protein"

/protein\_id="[UHP87098.1](https://www.ncbi.nlm.nih.gov/protein/2170178494)"

/translation="MGYINVFAFPFTIYSLLLCRMNSRNYIAQVDVVNFNLT"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=29563&to=29598) 29563..29598

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=29583&to=29611) 29583..29611

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM015958.1?from=29682&to=29722) 29682..29722

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

ORIGIN

1 aacaaaccaa ccaactttcg atctcttgta gatctgttct ctaaacgaac tttaaaatct

61 gtgtggctgt cactcggctg catgcttagt gcactcacgc agtataatta ataactaatt

121 actgtcgttg acaggacacg agtaactcgt ctatcttctg caggctgctt acggtttcgt

181 ccgtgttgca gccgatcatc agcacatcta ggttttgtcc gggtgtgacc gaaaggtaag

241 atggagagcc ttgtccctgg tttcaacgag aaaacacacg tccaactcag tttgcctgtt

301 ttacaggttc gcgacgtgct cgtacgtggc tttggagact ccgtggagga ggtcttatca

361 gaggcacgtc aacatcttaa agatggcact tgtggcttag tagaagttga aaaaggcgtt

421 ttgcctcaac ttgaacagcc ctatgtgttc atcaaacgtt cggatgctcg aactgcacct

481 catggtcatg ttatggttga gctggtagca gaactcgaag gcattcagta cggtcgtagt

541 ggtgagacac ttggtgtcct tgtccctcat gtgggcgaaa taccagtggc ttaccgcaag

601 gttcttcttc gtaagaacgg taataaagga gctggtggcc atagttacgg cgccgatcta

661 aagtcatttg acttaggcga cgagcttggc actgatcctt atgaagattt tcaagaaaac

721 tggaacacta aacatagcag tggtgttacc cgtgaactca tgcgtgagct taacggaggg

781 gcatacactc gctatgtcga taacaacttc tgtggccctg atggctaccc tcttgagtgc

841 attaaagacc ttctagcacg tgctggtaaa gcttcatgca ctttgtccga acaactggac

901 tttattgaca ctaagagggg tgtatactgc tgccgtgaac atgagcatga aattgcttgg

961 tacacggaac gttctgaaaa gagctatgaa ttgcagacac cttttgaaat taaattggca

1021 aagaaatttg acaccttcaa tggggaatgt ccaaattttg tatttccctt aaattccata

1081 atcaagacta ttcaaccaag ggttgaaaag aaaaagcttg atggctttat gggtagaatt

1141 cgatctgtct atccagttgc gtcaccaaat gaatgcaacc aaatgtgcct ttcaactctc

1201 atgaagtgtg atcattgtgg tgaaacttca tggcagacgg gcgattttgt taaagccact

1261 tgcgaatttt gtggcactga gaatttgact aaagaaggtg ccactacttg tggttactta

1321 ccccaaaatg ctgttgttaa aatttattgt ccagcatgtc acaattcaga agtaggacct

1381 gagcatagtc ttgccgaata ccataatgaa tctggcttga aaaccattct tcgtaagggt

1441 ggtcgcacta ttgcctttgg aggctgtgtg ttctcttatg ttggttgcca taacaagtgt

1501 gcctattggg ttccacgtgc tagcgctaac ataggttgta accatacagg tgttgttgga

1561 gaaggttccg aaggtcttaa tgacaacctt cttgaaatac tccaaaaaga gaaagtcaac

1621 atcaatattg ttggtgactt taaacttaat gaagagatcg ccattatttt ggcatctttt

1681 tctgcttcca caagtgcttt tgtggaaact gtgaaaggtt tggattataa agcattcaaa

1741 caaattgttg aatcctgtgg taattttaaa gttacaaaag gaaaagctaa aaaaggtgcc

1801 tggaatattg gtgaacagaa atcaatactg agtcctcttt atgcatttgc atcagaggct

1861 gctcgtgttg tacgatcaat tttctcccgc actcttgaaa ctgctcaaaa ttctgtgcgt

1921 gttttacaga aggccgctat aacaatacta gatggaattt cacagtattc actgagactc

1981 attgatgcta tgatgttcac atctgatttg gctactaaca atctagttgt aatggcctac

2041 attacaggtg gtgttgttca gttgacttcg cagtggctaa ctaacatctt tggcactgtt

2101 tatgaaaaac tcaaacccgt ccttgattgg cttgaagaga agtttaagga aggtgtagag

2161 tttcttagag acggttggga aattgttaaa tttatctcaa cctgtgcttg tgaaattgtc

2221 ggtggacaaa ttgtcacctg tgcaaaggaa attaaggaga gtgttcagac attctttaag

2281 cttgtaaata aatttttggc tttgtgtgct gactctatca ttattggtgg agctaaactt

2341 aaagccttga atttaggtga aacatttgtc acgcactcaa agggattgta cagaaagtgt

2401 gttaaatcca gagaagaaac tggcctactc atgcctctaa aagccccaaa agaaattatc

2461 ttcttagagg gagaaacact tcccacagaa gtgttaacag aggaagttgt cttgaaaact

2521 ggtgatttac aaccattaga acaacctact agtgaagctg ttgaagctcc attggttggt

2581 acaccagttt gtattaacgg gcttatgttg ctcgaaatca aagacacaga aaagtactgt

2641 gcccttgcac ctaatatgat ggtaacaaac aataccttca cactcaaagg cggtgcacca

2701 acaaaggtta cttttggtga tgacactgtg atagaagtgc aaggttacaa gagtgtgaat

2761 atcacttttg aacttgatga aaggattgat aaagtactta atgagaggtg ctctgcctat

2821 acagttgaac tcggtacaga agtaaatgag ttcgcctgtg ttgtggcaga tgctgtcata

2881 aaaactttgc aaccagtatc tgaattactt acaccactgg gcattgattt agatgagtgg

2941 agtatggcta catactactt atttgatgag tctggtgagt ttaaattggc ttcacatatg

3001 tattgttctt tttaccctcc agatgaggat gaagaagaag gtgattgtga agaagaagag

3061 tttgagccat caactcaata tgagtatggt actgaagatg attaccaagg taaacctttg

3121 gaatttggtg ccacttctgc tgctcttcaa cctgaagaag agcaagaaga agattggtta

3181 gatgatgata gtcaacaaac tgttggtcaa caagacggca gtgaggacaa tcagacaact

3241 actattcaaa caattgttga ggttcaacct caattagaga tggaacttac accagttgtt

3301 cagactattg aagtgaatag ttttagtggt tatttaaaac ttactgacaa tgtatacatt

3361 aaaaatgcag acattgtgga agaagctaaa aaggtaaaac caacagtggt tgttaatgca

3421 gccaatgttt accttaaaca tggaggaggt gttgcaggag ccttaaataa ggctactaac

3481 aatgccatgc aagttgaatc tgatgattac atagctacta atggaccact taaagtgggt

3541 ggtagttgtg ttttaagcgg acacaatctt gctaaacact gtcttcatgt tgtcggccca

3601 aatgttaaca aaggtgaaga cattcaactt cttaagagtg cttatgaaaa ttttaatcgg

3661 cacgaagttc tacttgcacc attattatca gctggtattt ttggtgctga ccctatacat

3721 tctttaagag tttgtgtaga tactgttcgc acaaatgtct acttagctgt ctttgataaa

3781 aatctctatg acaaacttgt ttcaagcttt ttggaaatga agagtgaaaa gcaagttgaa

3841 caaaagatcg ctgagattcc taaagaggaa gttaagccat ttataactga aagtaaacct

3901 tcagttgaac agagaaaaca agatgataag aaaatcaaag cttgtgttga agaagttaca

3961 acaactctgg aagaaactaa gttcctcaca gaaaacttgt tactttatat tgacattaat

4021 ggcaatcttc atccagattc tgccactctt gttagtgaca ttgacatcac tttcttaaag

4081 aaagatgctc catatatagt gggtgatgtt gttcaagagg gtgttttaac tgctgtggtt

4141 atacctacta aaaaggctgg tggcactact gaaatgctag cgaaagcttt gagaaaagtg

4201 ccaacagaca attatataac cacttacccg ggtcagggtt taaatggtta cactgtagag

4261 gaggcaaaga cagtgcttaa aaagtgtaaa agtgcctttt acattctacc atctattatc

4321 tctaatgaga agcaagaaat tcttggaact gtttcttgga atttgcgaga aatgcttgca

4381 catgcagaag aaacacgcaa attaatgcct gtctgtgtgg aaactaaagc catagtttca

4441 actatacagc gtaaatataa gggtattaaa atacaagagg gtgtggttga ttatggtgct

4501 agattttact tttacaccag taaaacaact gtagcgtcac ttatcaacac acttaacgat

4561 ctaaatgaaa ctcttgttac aatgccactt ggctatgtaa cacatggctt aaatttggaa

4621 gaagctgctc ggtatatgag atctctcaaa gtgccagcta cagtttctgt ttcttcacct

4681 gatgctgtta cagcgtataa tggttatctt acttcttctt ctaaaacacc tgaagaacat

4741 tttattgaaa ccatctcact tgctggttcc tataaagatt ggtcctattc tggacaatct

4801 acacaactag gtatagaatt tcttaagaga ggtgataaaa gtgtatatta cactagtaat

4861 cctaccacat tccacctaga tggtgaagtt atcacctttg acaatcttaa gacacttctt

4921 tctttgagag aagtgaggac tattaaggtg tttacaacag tagacaacat taacctccac

4981 acgcaagttg tggacatgtc aatgacatat ggacaacagt ttggtccaac ttatttggat

5041 ggagctgatg ttactaaaat aaaacctcat aattcacatg aaggtaaaac attttatgtt

5101 ttacctaatg atgacactct acgtgttgag gcttttgagt actaccacac aactgatcct

5161 agttttctgg gtaggtacat gtcagcatta aatcacacta aaaagtggaa atacccacaa

5221 gttaatggtt taacttctat taaatgggca gataacaact gttatcttgc cactgcattg

5281 ttaacactcc aacaaataga gttgaagttt aatccacctg ctctacaaga tgcttattac

5341 agagcaaggg ctggtgaagc ggctaacttt tgtgcactta tcttagccta ctgtaataag

5401 acagtaggtg agttaggtga tgttagagaa acaatgagtt acttgtttca acatgccaat

5461 ttagattctt gcaaaagagt cttgaacgtg gtgtgtaaaa cttgtggaca acagcagaca

5521 acccttaagg gtgtagaagc tgttatgtac atgggcacac tttcttatga acaatttaag

5581 aaaggtgttc agataccttg tacgtgtggt aaacaagcta caaaatatct agtacaacag

5641 gagtcacctt ttgttatgat gtcagcacca cctgctcagt atgaacttaa gcatggtaca

5701 tttacttgtg ctagtgagta cactggtaat taccagtgtg gtcactataa acatataact

5761 tctaaagaaa ctttgtattg catagacggt gctttactta caaagtcctc agaatacaaa

5821 ggtcctatta cggatgtttt ctacaaagaa aacagttaca caacaaccat aaaaccagtt

5881 acttataaat tggatggtgt tgtttgtaca gaaattgacc ctaagttgga caattattat

5941 aagaaagaca attcttattt cacagagcaa ccaattgatc ttgtaccaaa ccaaccatat

6001 ccaaacgcaa gcttcgataa ttttaagttt gtatgtgata atatcaaatt tgctgatgat

6061 ttaaaccagt taactggtta taagaaacct gcttcaagag agcttaaagt tacatttttc

6121 cctgacttaa atggtgatgt ggtggctatt gattataaac actacacacc ctcttttaag

6181 aaaggagcta aattgttaca taaacctatt gtttggcatg ttaacaatgc aactaataaa

6241 gccacgtata aaccaaatac ctggtgtata cgttgtcttt ggagcacaaa accagttgaa

6301 acatcaaatt cgtttgatgt actgaagtca gaggacgcgc agggaatgga taatcttgcc

6361 tgcgaagatc taaaaccagt ctctgaagaa gtagtggaaa atcctaccat acagaaagac

6421 gttcttgagt gtaatgtgaa aactaccgaa gttgtaggag acattatact taaaccagca

6481 aataatataa aaattacaga agaggttggc cacacagatc taatggctgc ttatgtagac

6541 aattctagtc ttactattaa gaaacctaat gaattatcta gagtattagg tttgaaaacc

6601 cttgctactc atggtttagc tgctgttaat agtgtccctt gggatactat agctaattat

6661 gctaagcctt ttcttaacaa agttgttagt acaactacta acatagttac acggtgttta

6721 aaccgtgttt gtactaatta tatgccttat ttctttactt tattgctaca attgtgtact

6781 tttactagaa gtacaaattc tagaattaaa gcatctatgc cgactactat agcaaagaat

6841 actgttaaga gtgtcggtaa attttgtcta gaggcttcat ttaattattt gaagtcacct

6901 aatttttcta aactgataaa tattataatt tggtttttac tattaagtgt ttgcctaggt

6961 tctttaatct actcaaccgc tgctttaggt gttttaatgt ctaatttagg catgccttct

7021 tactgtactg gttacagaga aggctatttg aactctacta atgtcactat tgcaacctac

7081 tgtactggtt ctataccttg tagtgtttgt cttagtggtt tagattcttt agacacctat

7141 ccttctttag aaactataca aattaccatt tcatctttta aatgggattt aactgctttt

7201 ggcttagttg cagagtggtt tttggcatat attcttttca ctaggttttt ctatgtactt

7261 ggattggctg caatcatgca attgtttttc agctattttg cagtacattt tattagtaat

7321 tcttggctta tgtggttaat aattaatctt gtacaaatgg ccccgatttc agctatggtt

7381 agaatgtaca tcttctttgc atcattttat tatgtatgga aaagttatgt gcatgttgta

7441 gacggttgta attcatcaac ttgtatgatg tgttacaaac gtaatagagc aacaagagtc

7501 gaatgtacaa ctattgttaa tggtgttaga aggtcctttt atgtctatgc taatggaggt

7561 aaaggctttt gcaaactaca caattggaat tgtgttaatt gtgatacatt ctgtgctggt

7621 agtacattta ttagtgatga agttgcgaga gacttgtcac tacagtttaa aagaccaata

7681 aatcctactg accagtcttc ttacatcgtt gatagtgtta cagtgaagaa tggttccatc

7741 catctttact ttgataaagc tggtcaaaag acttatgaaa gacattctct ctctcatttt

7801 gttaacttag acaacctgag agctaataac actaaaggtt cattgcctat taatgttata

7861 gtttttgatg gtaaatcaaa atgtgaagaa tcatctgcaa aatcagcgtc tgtttactac

7921 agtcagctta tgtgtcaacc tatactgtta ctagatcagg cattagtgtc tgatgttggt

7981 gatagtgcgg aagttgcagt taaaatgttt gatgcttacg ttaatacgtt ttcatcaact

8041 tttaacgtac caatggaaaa actcaaaaca ctagttgcaa ctgcagaagc tgaacttgca

8101 aagaatgtgt ccttagacaa tgtcttatct acttttattt cagcagctcg gcaagggttt

8161 gttgattcag atgtagaaac taaagatgtt gttgaatgtc ttaaattgtc acatcaatct

8221 gacatagaag ttactggcga tagttgtaat aactatatgc tcacctataa caaagttgaa

8281 aacatgacac cccgtgacct tggtgcttgt attgactgta gtgcgcgtca tattaatgcg

8341 caggtagcaa aaagtcacaa cattactttg atatggaacg ttaaagattt catgtcattg

8401 tctgaacaac tacgaaaaca aatacgtagt gctgctaaaa agaataactt accttttaag

8461 ttgacatgtg caactactag acaagttgtt aatgttgtaa caacaaagat agcacttaag

8521 ggtggtaaaa ttgttaataa ttggttgaag cagttaatta aagttacact tgtgttcctt

8581 tttgttgctg ctattttcta tttaataaca cctgttcatg tcatgtctaa acatactgac

8641 ttttcaagtg aaatcatagg atacaaggct attgatggtg gtgtcactcg tgacatagca

8701 tctacagata cttgttttgc taacaaacat gctgattttg acacatggtt tagccagcgt

8761 ggtggtagtt atactaatga caaagcttgc ccattgattg ctgcagtcat aacaagagaa

8821 gtgggttttg tcgtgcctgg tttgcctggc acgatattac gcacaactaa tggtgacttt

8881 ttgcatttct tacctagagt ttttagtgca gttggtaaca tctgttacac accatcaaaa

8941 cttatagagt acactgactt tgcaacatca gcttgtgttt tggctgctga atgtacaatt

9001 tttaaagatg cttctggtaa gccagtacca tattgttatg ataccaatgt actagaaggt

9061 tctgttgctt atgaaagttt acgccctgac acacgttatg tgctcatgga tggctctatt

9121 attcaatttc ctaacaccta ccttgaaggt tctgttagag tggtaacaac ttttgattct

9181 gagtactgta ggcacggcac ttgtgaaaga tcagaagctg gtgtttgtgt atctactagt

9241 ggtagatggg tacttaacaa tgattattac agatctttac caggagtttt ctgtggtgta

9301 gatgctgtaa atttacttac taatatgttt acaccactaa ttcaacctat tggtgctttg

9361 gacatatcag catctatagt agctggtggt attgtagcta tcgtagtaac atgccttgcc

9421 tactatttta tgaggtttag aagagctttt ggtgaataca gtcatgtagt tgcctttaat

9481 actttactat tccttatgtc attcactgta ctctgtttaa caccagttta ctcattctta

9541 cctggtgttt attctgttat ttacttgtac ttgacatttt atcttactaa tgatgtttct

9601 tttttagcac atattcagtg gatggttatg ttcacacctt tagtaccttt ctggataaca

9661 attgcttata tcatttgtat ttccacaaag catttctatt ggttctttag taattaccta

9721 aagagacgtg tagtctttaa tggtgtttcc tttagtactt ttgaagaagc tgcgctgtgc

9781 acctttttgt taaataaaga aatgtatcta aagttgcgta gtgatgtgct attacctctt

9841 acgcaatata atagatactt agctctttat aataagtaca agtattttag tggagcaatg

9901 gatacaacta gctacagaga agctgcttgt tgtcatctcg caaaggctct caatgacttc

9961 agtaactcag gttctgatgt tctttaccaa ccaccacaaa tctctatcac ctcagctgtt

10021 ttgcagagtg gttttagaaa aatggcattc ccatctggta aagttgaggg ttgtatggta

10081 caagtaactt gtggtacaac tacacttaac ggtctttggc ttgatgacgt agtttactgt

10141 ccaagacatg tgatctgcac ctctgaagac atgcttaacc ctaattatga agatttactc

10201 attcgtaagt ctaatcataa tttcttggta caggctggta atgttcaact cagggttatt

10261 ggacattcta tgcaaaattg tgtacttaag cttaaggttg atacagccaa tcctaagaca

10321 cctaagtata agtttgttcg cattcaacca ggacagactt tttcagtgtt agcttgttac

10381 aatggttcac catctggtgt ttaccaatgt gctatgaggc acaatttcac tattaagggt

10441 tcattcctta atggttcatg tggtagtgtt ggttttaaca tagattatga ctgtgtctct

10501 ttttgttaca tgcaccatat ggaattacca actggagttc atgctggcac agacttagaa

10561 ggtaactttt atggaccttt tgttgacagg caaacagcac aagcagctgg tacggacaca

10621 actattacag ttaatgtttt agcttggttg tacgctgctg ttataaatgg agacaggtgg

10681 tttctcaatc gatttaccac aactcttaat gactttaacc ttgtggctat gaagtacaat

10741 tatgaacctc taacacaaga ccatgttgac atactaggac ctctttctgc tcaaactgga

10801 attgccgttt tagatatgtg tgcttcatta aaagaattac tgcaaaatgg tatgaatgga

10861 cgtaccatat tgggtagtgc tttattagaa gatgaattta caccttttga tgttgttaga

10921 caatgctcag gtgttacttt ccaaagtgca gtgaaaagaa caatcaaggg tacacaccac

10981 tggttgttac tcacaatttt gacttcactt ttagttttag tccagagtac tcaatggtct

11041 ttgttctttt ttttgtatga aaatgccttt ttaccttttg ctatgggtat tattgctatg

11101 tctgcttttg caatgatgtt tgtcaaacat aagcatgcat ttctctgttt gtttttgtta

11161 ccttctcttg ccactgtagc ttattttaat atggtctata tgcctgctag ttgggtgatg

11221 cgtattatga catggttgga tatggttgat actagtttta agctaaaaga ctgtgttatg

11281 tatgcatcag ctgtagtgtt actaatcctt atgacagcaa gaactgtgta tgatgatggt

11341 gctaggagag tgtggacact tatgaatgtc ttgacactcg tttataaagt ttattatggt

11401 aatgctttag atcaagccat ttccatgtgg gctcttataa tctctgttac ttctaactac

11461 tcaggtgtag ttacaactgt catgtttttg gccagaggtg ttgtttttat gtgtgttgag

11521 tattgcccta ttttcttcat aactggtaat acacttcagt gtataatgct agtttattgt

11581 ttcttaggct atttttgtac ttgttacttt ggcctctttt gtttactcaa ccgctacttt

11641 agactgactc ttggtgttta tgattactta gtttctacac aggagtttag atatatgaat

11701 tcacagggac tactcccacc caagaatagc atagatgcct tcaaactcaa cattaaattg

11761 ttgggtgttg gtggcaaacc ttgtatcaaa gtagccactg tacagtctaa aatgtcagat

11821 gtaaagtgca catcagtagt cttactctca gttttgcaac aactcagagt agaatcatca

11881 tctaaattgt gggctcaatg tgtccagtta cataatgaca ttctcttagc taaagatact

11941 actgaagcct ttgaaaaaat ggtttcacta ctttctgttt tgctttccat gcagggtgct

12001 gtagacataa acaagctttg tgaagaaatg ctggacaaca gggcaacctt acaagctata

12061 gcctcagagt ttagttccct tccatcatat gcagcttttg ctactgctca agaagcttat

12121 gagcaggctg ttgctaatgg tgattctgaa gttgttctta aaaagttgaa gaagtctttg

12181 aatgtggcta aatctgaatt tgaccgtgat gcagccatgc aacgtaagtt ggaaaagatg

12241 gctgatcaag ctatgaccca aatgtataaa caggctagat ctgaggacaa gagggcaaaa

12301 gttactagtg ctatgcagac aatgcttttc actatgctta gaaagttgga taatgatgca

12361 ctcaacaaca ttatcaacaa tgcaagagat ggttgtgttc ccttgaacat aatacctctt

12421 acaacagcag ccaaactaat ggttgtcata ccagactata acacatataa aaatacgtgt

12481 gatggtacaa catttactta tgcatcagca ttgtgggaaa tccaacaggt tgtagatgca

12541 gatagtaaaa ttgttcaact tagtgaaatt agtatggaca attcacctaa tttagcatgg

12601 cctcttattg taacagcttt aagggccaat tctgctgtca aattacagaa taatgagctt

12661 agtcctgttg cactacgaca gatgtcttgt gctgccggta ctacacaaac tgcttgcact

12721 gatgacaatg cgttagctta ctacaacaca acaaagggag gtaggtttgt acttgcactg

12781 ttatccgatt tacaggattt gaaatgggct agattcccta agagtgatgg aactggtact

12841 atctatacag aactggaacc accttgtagg tttgttacag acacacctaa aggtcctaaa

12901 gtgaagtatt tatactttat taaaggatta aacaacctaa atagaggtat ggtacttggt

12961 agtttagctg ccacagtacg tctacaagct ggtaatgcaa cagaagtgcc tgccaattca

13021 actgtattat ctttctgtgc ttttgctgta gatgctgcta aagcttacaa agattatcta

13081 gctagtgggg gacaaccaat cactaattgt gttaagatgt tgtgtacaca cactggtact

13141 ggtcaggcaa taacagtcac accggaagcc aatatggatc aagaatcctt tggtggtgca

13201 tcgtgttgtc tgtactgccg ttgccacata gatcatccaa atcctaaagg attttgtgac

13261 ttaaaaggta agtatgtaca aatacctaca acttgtgcta atgaccctgt gggttttaca

13321 cttaaaaaca cagtctgtac cgtctgcggt atgtggaaag gttatggctg tagttgtgat

13381 caactccgcg aacccatgct tcagtcagct gatgcacaat cgtttttaaa cgggtttgcg

13441 gtgtaagtgc agcccgtctt acaccgtgcg gcacaggcac tagtactgat gtcgtataca

13501 gggcttttga catctacaat gataaagtag ctggttttgc taaattccta aaaactaatt

13561 gttgtcgctt ccaagaaaag gacgaagatg acaatttaat tgattcttac tttgtagtta

13621 agagacacac tttctctaac taccaacatg aagaaacaat ttataattta cttaaggatt

13681 gtccagctgt tgctaaacat gacttcttta agtttagaat agacggtgac atggtaccac

13741 atatatcacg tcaacgtctt actaaataca caatggcaga cctcgtctat gctttaaggc

13801 attttgatga aggtaattgt gacacattaa aagaaatact tgtcacatac aattgttgtg

13861 atgatgatta tttcaataaa aaggactggt atgattttgt agaaaaccca gatatattac

13921 gcgtatacgc caacttaggt gaacgtgtac gccaagcttt gttaaaaaca gtacaattct

13981 gtgatgccat gcgaaatgct ggtattgttg gtgtactgac attagataat caagatctca

14041 atggtaactg gtatgatttc ggtgatttca tacaaaccac gccaggtagt ggagttcctg

14101 ttgtagattc ttattattca ttgttaatgc ctatattaac cttgaccagg gctttaactg

14161 cagagtcaca tgttgacact gacttaacaa agccttacat taagtgggat ttgttaaaat

14221 atgacttcac ggaagagagg ttaaaactct ttgaccgtta ttttaaatat tgggatcaga

14281 cataccaccc aaattgtgtt aactgtttgg atgacagatg cattctgcat tgtgcaaact

14341 ttaatgtttt attctctaca gtgttcccac ttacaagttt tggaccacta gtgagaaaaa

14401 tatttgttga tggtgttcca tttgtagttt caactggata ccacttcaga gagctaggtg

14461 ttgtacataa tcaggatgta aacttacata gctctagact tagttttaag gaattacttg

14521 tgtatgctgc tgaccctgct atgcacgctg cttctggtaa tctattacta gataaacgca

14581 ctacgtgctt ttcagtagct gcacttacta acaatgttgc ttttcaaact gtcaaacccg

14641 gtaattttaa caaagacttc tatgactttg ctgtgtctaa gggtttcttt aaggaaggaa

14701 gttctgttga attaaaacac ttcttctttg ctcaggatgg taatgctgct atcagcgatt

14761 atgactacta tcgttataat ctaccaacaa tgtgtgatat cagacaacta ctatttgtag

14821 ttgaagttgt tgataagtac tttgattgtt acgatggtgg ctgtattaat gctaaccaag

14881 tcatcgtcaa caacctagac aaatcagctg gttttccatt taataaatgg ggtaaggcta

14941 gactttatta tgattcaatg agttatgagg atcaagatgc acttttcgca tatacaaaac

15001 gtaatgtcat ccctactata actcaaatga atcttaagta tgccattagt gcaaagaata

15061 gagctcgcac cgtagctggt gtctctatct gtagtactat gaccaataga cagtttcatc

15121 aaaaattatt gaaatcaata gccgccacta gaggagctac tgtagtaatt ggaacaagca

15181 aattctatgg tggttggcac aatatgttaa aaactgttta tagtgatgta gaaaaccctc

15241 accttatggg ttgggattat cctaaatgtg atagagccat gcctaacatg cttagaatta

15301 tggcctcact tgttcttgct cgcaaacata caacgtgttg tagcttgtca caccgtttct

15361 atagattagc taatgagtgt gctcaagtat tgagtgaaat ggtcatgtgt ggcggttcac

15421 tatatgttaa accaggtgga acctcatcag gagatgccac aactgcttat gctaatagtg

15481 tttttaacat ttgtcaagct gtcacggcca atgttaatgc acttttatct actgatggta

15541 acaaaattgc cgataagtat gtccgcaatt tacaacacag actttatgag tgtctctata

15601 gaaatagaga tgttgacaca gactttgtga atgagtttta cgcatatttg cgtaaacatt

15661 tctcaatgat gatactctct gacgatgctg ttgtgtgttt caatagcact tatgcatctc

15721 aaggtctagt ggctagcata aagaacttta agtcagttct ttattatcaa aacaatgttt

15781 ttatgtctga agcaaaatgt tggactgaga ctgaccttac taaaggacct catgaatttt

15841 gctctcaaca tacaatgcta gttaaacagg gtgatgatta tgtgtacctt ccttacccag

15901 atccatcaag aatcctaggg gccggctgtt ttgtagatga tatcgtaaaa acagatggta

15961 cacttatgat tgaacggttc gtgtctttag ctatagatgc ttacccactt actaaacatc

16021 ctaatcagga gtatgctgat gtctttcatt tgtacttaca atacataaga aagctacatg

16081 atgagttaac aggacacatg ttagacatgt attctgttat gcttactaat gataacactt

16141 caaggtattg ggaacctgag ttttatgagg ctatgtacac accgcataca gtcttacagg

16201 ctgttggggc ttgtgttctt tgcaattcac agacttcatt aagatgtggt gcttgcatac

16261 gtagaccatt cttatgttgt aaatgctgtt acgaccatgt catatcaaca tcacataaat

16321 tagtcttgtc tgttaatccg tatgtttgca atgctccagg ttgtgatgtc acagatgtga

16381 ctcaacttta cttaggaggt atgagctatt attgtaaatc acataaacca cccattagtt

16441 ttccattgtg tgctaatgga caagtttttg gtttatataa aaatacatgt gttggtagcg

16501 ataatgttac tgactttaat gcaattgcaa catgtgactg gacaaatgct ggtgattaca

16561 ttttagctaa cacctgtact gaaagactca agctttttgc agcagaaacg ctcaaagcta

16621 ctgaggagac atttaaactg tcttatggta ttgctactgt acgtgaagtg ctgtctgaca

16681 gagaattaca tctttcatgg gaagttggta aacctagacc accacttaac cgaaattatg

16741 tctttactgg ttatcgtgta actaaaaaca gtaaagtaca aataggagag tacacctttg

16801 aaaaaggtga ctatggtgat gctgttgttt accgaggtac aacaacttac aaattaaatg

16861 ttggtgatta ttttgtgctg acatcacata cagtaatgcc attaagtgca cctacactag

16921 tgccacaaga gcactatgtt agaattactg gcttataccc aacactcaat atctcagatg

16981 agttttctag caatgttgca aattatcaaa aggttggtat gcaaaagtat tctacactcc

17041 agggaccacc tggtactggt aagagtcatt ttgctattgg cctagctctc tactaccctt

17101 ctgctcgcat agtgtataca gcttgctctc atgccgctgt tgatgcacta tgtgagaagg

17161 cattaaaata tttgcctata gataaatgta gtagaattat acctgcacgt gctcgtgtag

17221 agtgttttga taaattcaaa gtgaattcaa cattagaaca gtatgtcttt tgtactgtaa

17281 atgcattgcc tgagacgaca gcagatatag ttgtctttga tgaaatttca atggccacaa

17341 attatgattt gagtgttgtc aatgccagat tacgtgctaa gcactatgtg tacattggcg

17401 accctgctca attacctgca ccacgcacat tgctaactaa gggcacacta gaaccagaat

17461 atttcaattc agtgtgtaga cttatgaaaa ctataggtcc agacatgttc ctcggaactt

17521 gtcggcgttg tcctgctgaa attgttgaca ctgtgagtgc tttggtttat gataataagc

17581 ttaaagcaca taaagacaaa tcagctcaat gctttaaaat gttttataag ggtgttatca

17641 cgcatgatgt ttcatctgca attaacaggc cacaaatagg cgtggtaaga gaattcctta

17701 cacgtaaccc tgcttggaga aaagctgtct ttatttcacc ttataattca cagaatgctg

17761 tagcctcaaa gattttggga ctaccaactc aaactgttga ttcatcacag ggctcagaat

17821 atgactatgt catattcact caaaccactg aaacagctca ctcttgtaat gtaaacagat

17881 ttaatgttgc tattaccaga gcaaaagtag gcatactttg cataatgtct gatagagacc

17941 tttatgacaa gttgcaattt acaagtcttg aaattccacg taggaatgtg gcaactttac

18001 aagctgaaaa tgtaacagga ctctttaaag attgtagtaa ggtaatcact gggttacatc

18061 ctacacaggc acctacacac ctcagtgttg acactaaatt caaaactgaa ggtttatgtg

18121 ttgacgtacc tggcatacct aaggacatga cctatagaag actcatctct atgatgggtt

18181 ttaaaatgaa ttatcaagtt aatggttacc ctaacatgtt tatcacccgc gaagaagcta

18241 taagacatgt acgtgcatgg attggcttcg atgtcgaggg gtgtcatgct actagagaag

18301 ctgttggtac caatttacct ttacagctag gtttttctac aggtgttaac ctagttgctg

18361 tacctacagg ttatgttgat acacctaata atacagattt ttccagagtt agtgctaaac

18421 caccgcctgg agatcaattt aaacacctca taccacttat gtacaaagga cttccttgga

18481 atgtagtgcg tataaagatt gtacaaatgt taagtgacac acttaaaaat ctctctgaca

18541 gagtcgtatt tgtcttatgg gcacatggct ttgagttgac atctatgaag tattttgtga

18601 aaataggacc tgagcgcacc tgttgtctat gtgatagacg tgccacatgc ttttccactg

18661 cttcagacac ttatgcctgt tggcatcatt ctattggatt tgattacgtc tataatccgt

18721 ttatgattga tgttcaacaa tggggtttta caggtaacct acaaagcaac catgatctgt

18781 attgtcaagt ccatggtaat gcacatgtag ctagttgtga tgcaatcatg actaggtgtc

18841 tagctgtcca cgagtgcttt gttaagcgtg ttgactggac tattgaatat cctataattg

18901 gtgatgaact gaagattaat gcggcttgta gaaaggttca acacatggtt gttaaagctg

18961 cattattagc agacaaattc ccagttcttc acgacattgg taaccctaaa gctattaagt

19021 gtgtacctca agctgatgta gaatggaagt tctatgatgc acagccttgt agtgacaaag

19081 cttataaaat agaagaatta ttctattctt atgccacaca ttctgacaaa ttcacagatg

19141 gtgtatgcct attttggaat tgcaatgtcg atagatatcc tgctaattcc attgtttgta

19201 gatttgacac tagagtgcta tctaacctta acttgcctgg ttgtgatggt ggcagtttgt

19261 atgtaaataa acatgcattc cacacaccag cttttgataa aagtgctttt gttaatttaa

19321 aacaattacc atttttctat tactctgaca gtccatgtga gtctcatgga aaacaagtag

19381 tgtcagatat agattatgta ccactaaagt ctgctacgtg tataacacgt tgcaatttag

19441 gtggtgctgt ctgtagacat catgctaatg agtacagatt gtatctcgat gcttataaca

19501 tgatgatctc agctggcttt agcttgtggg tttacaaaca atttgatact tataacctct

19561 ggaacacttt tacaagactt cagagtttag aaaatgtggc ttttaatgtt gtaaataagg

19621 gacactttga tggacaacag ggtgaagtac cagtttctat cattaataac actgtttaca

19681 caaaagttga tggtgttgat gtagaattgt ttgaaaataa aacaacatta cctgttaatg

19741 tagcatttga gctttgggct aagcgcaaca ttaaaccagt accagaggtg aaaatactca

19801 ataatttggg tgtggacatt gctgctaata ctgtgatctg ggactacaaa agagatgctc

19861 cagcacatat atctactatt ggtgtttgtt ctatgactga catagccaag aaaccaactg

19921 aaacgatttg tgcaccactc actgtctttt ttgatggtag agttgatggt caagtagact

19981 tatttagaaa tgcccgtaat ggtgttctta ttacagaagg tagtgttaaa ggtttacaac

20041 catctgtagg tcccaaacaa gctagtctta atggagtcac attaattgga gaagccgtaa

20101 aaacacagtt caattattat aagaaagttg atggtgttgt ccaacaatta cctgaaactt

20161 actttactca gagtagaaat ttacaagaat ttaaacccag gagtcaaatg gaaattgatt

20221 tcttagaatt agctatggat gaattcattg aacggtataa attagaaggc tatgccttcg

20281 aacatatcgt ttatggagat tttagtcata gtcagttagg tggtttacat ctactgattg

20341 gactagctaa acgttttaag gaatcacctt ttgaattaga agattttatt cctatggaca

20401 gtacagttaa aaactatttc ataacagatg cgcaaacagg ttcatctaag tgtgtgtgtt

20461 ctgttattga tttattactt gatgattttg ttgaaataat aaaatcccaa gatttatctg

20521 tagtttctaa ggttgtcaaa gtgactattg actatacaga aatttcattt atgctttggt

20581 gtaaagatgg ccatgtagaa acattttacc caaaattaca atctagtcaa gcgtggcaac

20641 cgggtgttgc tatgcctaat ctttacaaaa tgcaaagaat gctattagaa aagtgtgacc

20701 ttcaaaatta tggtgatagt gcaacattac ctaaaggcat aatgatgaat gtcgcaaaat

20761 atactcaact gtgtcaatat ttaaacacat taacattagc tgtaccctat aatatgagag

20821 ttatacattt tggtgctggt tctgataaag gagttgcacc aggtacagct gttttaagac

20881 agtggttgcc tacgggtacg ctgcttgtcg attcagatct taatgacttt gtctctgatg

20941 cagattcaac tttgattggt gattgtgcaa ctgtacatac agctaataaa tgggatctca

21001 ttattagtga tatgtacgac cctaagacta aaaatgttac aaaagaaaat gactctaaag

21061 agggtttttt cacttacatt tgtgggttta tacaacaaaa gctagctctt ggaggttccg

21121 tggctataaa gataacagaa cattcttgga atgctgatct ttataagctc atgggacact

21181 tcgcatggtg gacagccttt gttactaatg tgaatgcgtc atcatctgaa gcatttttaa

21241 ttggatgtaa ttatcttggc aaaccacgcg aacaaataga tggttatgtc atgcatgcaa

21301 attacatatt ttggaggaat acaaatccaa ttcagttgtc ttcctattct ttatttgaca

21361 tgagtaaatt tccccttaaa ttaaggggta ctgctgttat gtctttaaaa gaaggtcaaa

21421 tcaatgatat gattttatct cttcttagta aaggtagact tataattaga gaaaacaaca

21481 gagttgttat ttctagtgat gttcttgtta acaactaaac gaacaatgtt tgtttttctt

21541 gttttattgc cactagtctc tagtcagtgt gttaatctta caaccagaac tcaattaccc

21601 cctgcataca ctaattcttt cacacgtggt gtttattacc ctgacaaagt tttcagatcc

21661 tcagttttac attcaactca ggacttgttc ttacctttct tttccaatgt tacttggttc

21721 catgttatct ctgggaccaa tggtactaag aggtttgata accctgtcct accatttaat

21781 gatggtgttt attttgcttc cattgagaag tctaacataa taagaggctg gatttttggt

21841 actactttag attcgaagac ccagtcccta cttattgtta ataacgctac taatgttgtt

21901 attaaagtct gtgaatttca attttgtaat gatccatttt tggaccacaa aaacaacaaa

21961 agttggatgg aaagtgagtt cagagtttat tctagtgcga ataattgcac ttttgaatat

22021 gtctctcagc cttttcttat ggaccttgaa ggaaaacagg gtaatttcaa aaatcttagg

22081 gaatttgtgt ttaagaatat tgatggttat tttaaaatat attctaagca cacgcctatt

22141 atagtgcgtg agccagaaga tctccctcag ggtttttcgg ctttagaacc attggtagat

22201 ttgccaatag gtattaacat cactaggttt caaactttac ttgctttaca tagaagttat

22261 ttgactcctg gtgattcttc ttcaggttgg acagctggtg ctgcagctta ttatgtgggt

22321 tatcttcaac ctaggacttt tctattaaaa tataatgaaa atggaaccat tacagatgct

22381 gtagactgtg cacttgaccc tctctcagaa acaaagtgta cgttgaaatc cttcactgta

22441 gaaaaaggaa tctatcaaac ttctaacttt agagtccaac caacagaatc tattgttaga

22501 tttcctaata ttacaaactt gtgccctttt gatgaagttt ttaacgccac cagatttgca

22561 tctgtttatg cttggaacag gaagagaatc agcaactgtg ttgctgatta ttctgtccta

22621 tataatctcg caccattttt cacttttaag tgttatggag tgtctcctac taaattaaat

22681 gatctctgct ttactaatgt ctatgcagat tcatttgtaa ttagaggtga tgaagtcaga

22741 caaatcgctc cagggcaaac tggaaagatt gctgattata attataaatt accagatgat

22801 tttacaggct gcgttatagc ttggaattct aacaagcttg attctaaggt tagtggtaat

22861 tataattacc tgtatagatt gtttaggaag tctaatctca aaccttttga gagagatatt

22921 tcaactgaaa tctatcaggc cggtaacaaa ccttgtaatg gtgttgcagg ttttaattgt

22981 tactttcctt tacgatcata tagtttccga cccacttatg gtgttggtca ccaaccatac

23041 agagtagtag tactttcttt tgaacttcta catgcaccag caactgtttg tggacctaaa

23101 aagtctacta atttggttaa aaacaaatgt gtcaatttca acttcaatgg tttaaaaggc

23161 acaggtgttc ttactgagtc taacaaaaag tttctgcctt tccaacaatt tggcagagac

23221 attgctgaca ctactgatgc tgtccgtgat ccacagacac ttgagattct tgacattaca

23281 ccatgttctt ttggtggtgt cagtgttata acaccaggaa caaatacttc taaccaggtt

23341 gctgttcttt atcagggtgt taactgcaca gaagtccctg ttgctattca tgcagatcaa

23401 cttactccta cttggcgtgt ttattctaca ggttctaatg tttttcaaac acgtgcaggc

23461 tgtttaatag gggctgaata tgtcaacaac tcatatgagt gtgacatacc cattggtgca

23521 ggtatatgcg ctagttatca gactcagact aagtctcatc ggcgggcacg tagtgtagct

23581 agtcaatcca tcattgccta cactatgtca cttggtgcag aaaattcagt tgcttactct

23641 aataactcta ttgccatacc cacaaatttt actattagtg ttaccacaga aattctacca

23701 gtgtctatga ccaagacatc agtagattgt acaatgtaca tttgtggtga ttcaactgaa

23761 tgcagcaatc ttttgttgca atatggcagt ttttgtacac aattaaaacg tgctttaact

23821 ggaatagctg ttgaacaaga caaaaacacc caagaagttt ttgcacaagt caaacaaatt

23881 tacaaaacac caccaattaa atattttggt ggttttaatt tttcacaaat attaccagat

23941 ccatcaaaac caagcaagag gtcatttatt gaagatctac ttttcaacaa agtgacactt

24001 gcagatgctg gcttcatcaa acaatatggt gattgccttg gtgatattgc tgctagagac

24061 ctcatttgtg cacaaaagtt taaaggcctt actgttttgc cacctttgct cacagatgaa

24121 atgattgctc aatacacttc tgcactgtta gcgggtacaa tcacttctgg ttggaccttt

24181 ggtgcaggtg ctgcattaca aataccattt gctatgcaaa tggcttatag gtttaatggt

24241 attggagtta cacagaatgt tctctatgag aaccaaaaat tgattgccaa ccaatttaat

24301 agtgctattg gcaaaattca agactcactt tcttccacag caagtgcact tggaaaactt

24361 caagatgtgg tcaaccataa tgcacaagct ttaaacacgc ttgttaaaca acttagctcc

24421 aaatttggtg caatttcaag tgttttaaat gatatctttt cacgtcttga caaagttgag

24481 gctgaagtgc aaattgatag gttgatcaca ggcagacttc aaagtttgca gacatatgtg

24541 actcaacaat taattagagc tgcagaaatc agagcttctg ctaatcttgc tgctactaaa

24601 atgtcagagt gtgtacttgg acaatcaaaa agagttgatt tttgtggaaa gggctatcat

24661 cttatgtcct tccctcagtc agcacctcat ggtgtagtct tcttgcatgt gacttatgtc

24721 cctgcacaag aaaagaactt cacaactgct cctgccattt gtcatgatgg aaaagcacac

24781 tttcctcgtg aaggtgtctt tgtttcaaat ggcacacact ggtttgtaac acaaaggaat

24841 ttttatgaac cacaaatcat tactacagac aacacatttg tgtctggtaa ctgtgatgtt

24901 gtaataggaa ttgtcaacaa cacagtttat gatcctttgc aacctgaatt agattcattc

24961 aaggaggagt tagataaata ttttaagaat catacatcac cagatgttga tttaggtgac

25021 atctctggca ttaatgcttc agttgtaaac attcaaaaag aaattgaccg cctcaatgag

25081 gttgccaaga atttaaatga atctctcatc gatctccaag aacttggaaa gtatgagcag

25141 tatataaaat ggccatggta catttggcta ggttttatag ctggcttgat tgccatagta

25201 atggtgacaa ttatgctttg ctgtatgacc agttgctgta gttgtctcaa gggctgttgt

25261 tcttgtggat cctgctgcaa atttgatgaa gacgactctg agccagtgct caaaggagtc

25321 aaattacatt acacataaac gaacttatgg atttgtttat gagaatcttc acaattggaa

25381 ctgtaacttt gaagcaaggt gaaatcaagg atgctactcc ttcagatttt gttcgcgcta

25441 ctgcaacgat accgatacaa gcctcactcc ctttcggatg gcttattgtt ggcgttgcac

25501 ttcttgctgt ttttcagagc gcttccaaaa tcataactct caaaaagaga tggcaactag

25561 cactctccaa gggtgttcac tttgtttgca acttgctgtt gttgtttgta acagtttact

25621 cacacctttt gctcgttgct gctggccttg aagccccttt tctctatctt tatgctttag

25681 tctacttctt gcagagtata aactttgtaa gaataataat gaggctttgg ctttgctgga

25741 aatgccgttc caaaaaccca ttactttatg atgccaacta ttttctttgc tggcatacta

25801 attgttacga ctattgtata ccttacaata gtgtaacttc ttcaattgtc attacttcag

25861 gtgatggcac aacaagtcct atttctgaac atgactacca gattggtggt tatactgaaa

25921 aatgggaatc tggagtaaaa gactgtgttg tattacacag ttacttcact tcagactatt

25981 accagctgta ctcaactcaa ttgagtacag acactggtgt tgaacatgtt accttcttca

26041 tctacaataa aattgttgat gagcctgaag aacatgtcca aattcacaca atcgacggtt

26101 catccggagt tgttaatcca gtaatggaac caatttatga tgaaccgacg acgactacta

26161 gcgtgccttt gtaagcacaa gctgatgagt acgaacttat gtactcattc gtttcggaag

26221 agataggtac gttaatagtt aatagcgtac ttctttttct tgctttcgtg gtattcttgc

26281 tagttacact agccatcctt actgcgcttc gattgtgtgc gtactgctgc aatattgtta

26341 acgtgagtct tgtaaaacct tctttttacg tttactctcg tgttaaaaat ctgaattctt

26401 ctagagttcc tgatcttctg gtctaaacga actaaatatt atattagttt ttctgtttgg

26461 aactttaatt ttagccatgg caggttccaa cggtactatt accgttgaag agcttaaaaa

26521 gctccttgaa gaatggaacc tagtaatagg tttcctattc cttacatgga tttgtcttct

26581 acaatttgcc tatgccaaca ggaataggtt tttgtatata attaagttaa ttttcctctg

26641 gctgttatgg ccagtaactt taacttgttt tgtgcttgct gctgtttaca gaataaattg

26701 gatcaccggt ggaattgcta tcgcaatggc ttgtcttgta ggcttgatgt ggctcagcta

26761 cttcattgct tctttcagac tgtttgcgcg tacgcgttcc atgtggtcat tcaatccaga

26821 aactaacatt cttctcaacg tgccactcca tggcactatt ctgaccagac cgcttctaga

26881 aagtgaactc gtaatcggag ctgtgatcct tcgtggacat cttcgtatnn nnnnnnnnnn

26941 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnacgaac

27001 gctttcttat tacaaattgg gagcttcgca gcgtgtagca ggtgactcag gttttgctgc

27061 atacagtcgc tacaggattg gcaactataa attaaacaca gaccattcca gtagcagtga

27121 caatattgct ttgcttgtac agtaagtgac aacagatgtt tcatctcgtt gactttcagg

27181 ttactatagc agagatatta ctaattatta tgcggacttt taaagtttcc atttggaatc

27241 ttgattacat cataaacctc ataattaaaa atttatctaa gtcactaact gagaataaat

27301 attctcaatt agatgaagag caaccaatgg agattgatta aacgaacatg aaaattattc

27361 ttttcttggc actgataaca ctcgctactt gtgagcttta tcactaccaa gagtgtgtta

27421 gaggtacaac agtactttta aaagaacctt gctcttctgg aacatacgag ggcaattcac

27481 catttcatcc tctagctgat aacaaatttg cactgacttg ctttagcact caatttgctt

27541 ttgcttgtcc tgacggcgta aaacacgtct atcagttacg tgccagatca gtttcaccta

27601 aactgttcat cagacaagag gaagttcaag aactttactc tccaattttt cttattgttg

27661 cggcaatagt gtttataaca ctttgcttca cactcaaaag aaagacagaa tgattgaact

27721 ttcattaatt gacttctatt tgtgcttttt agcctttctg ttattccttg ttttaattat

27781 gcttattatc ttttggttct cacttgaact gcaagatcat aatgaaactt gtcacgccta

27841 aacgaacatg aaatttcttg ttttcttagg aatcatcaca actgtagctg catttcacca

27901 agaatgtagt ttacagtcat gtactcaaca tcaaccatat gtagttgatg acccgtgtcc

27961 tattcacttc tattctaaat ggtatattag agtaggagct agaaaatcag cacctttaat

28021 tgaattgtgc gtggatgagg ctggttctaa atcacccatt cagtacatcg atatcggtaa

28081 ttatacagtt tcctgtttac cttttacaat taattgccag gaacctaaat tgggtagtct

28141 tgtagtgcgt tgttcgttct atgaagactt tttagagtat catgacgttc gtgttgtttt

28201 agatttcatc taaacgaaca aacttaaatg tctgataatg gaccccaaaa tcagcgaaat

28261 gcactccgca ttacgtttgg tggaccctca gattcaactg gcagtaacca gaatggagaa

28321 cgcagtgggg cgcgatcaaa acaacgtcgg ccccaaggtt tacccaataa tactgcgtct

28381 tggttcaccg ctctcactca acatggcaag gaagacctta aattctctcg aggacaaggc

28441 gttccaatta acaccaatag cagtccagat gaccaaattg gctactaccg aagagctacc

28501 agacgaattc gtggtggtga cggtaaaatg aaagatctca gtccaagatg gtatttctac

28561 tacctaggaa ctgggccaga agctggactt ccctatggtg ctaacaaaga cggcatcata

28621 tgggttgcaa ctgagggagc cttgaataca ccaaaagatc acattggcac ccgcaatcct

28681 gctaacaatg ctgcaatcgt gctacaactt cctcaaggaa caacattgcc aaaaggcttc

28741 tacgcagaag ggagcagagg cggcagtcaa gcctcttctc gttcctcatc acgtagtcgc

28801 aacagttcaa gaaattcaac tccaggcagc agtaaacgaa cttctcctgc tagaatggct

28861 ggcaatggcg gtgatgctgc tcttgctttg ctgctgcttg acagattgaa ccagcttgag

28921 agcaaaatgt ctggtaaagg ccaacaacaa caaggccaaa ctgtcactaa gaaatctgct

28981 gctgaggctt ctaagaagcc tcggcaaaaa cgtactgcca ctaaagcata caatgtaaca

29041 caagctttcg gcagacgtgg tccagaacaa acccaaggaa attttgggga ccaggaacta

29101 atcagacaag gaactgatta caaacattgg ccgcaaattg cacaatttgc ccccagcgct

29161 tcagcgttct tcggaatgtc gcgcattggc atggaagtca caccttcggg aacgtggttg

29221 acctacacag gtgccatcaa attggatgac aaagatccaa atttcaaaga tcaagtcatt

29281 ttgctgaata agcatattga cgcatacaaa acattcccac caacagagcc taaaaaggac

29341 aaaaagaaga aggctgatga aactcaagcc ttaccgcaga gacagaagaa acagcaaact

29401 gtgactcttc ttcctgctgc agatttggat gatttctcca aacaattgca acaatccatg

29461 agcagtgctg actcaactca ggcctaaact catgcagacc acacaaggca gatgggctat

29521 ataaacgttt tcgcttttcc gtttacgata tatagtctac tcttgtgcag aatgaattct

29581 cgtaactaca tagcacaagt agatgtagtt aactttaatc tcacatagca atctttaatc

29641 agtgtgtaac attagggagg acttgaaaga gccaccacat tttcaccgag gccacgcgga

29701 gtacgatcga gtgtacagtg aacaatgcta gggagagctg cctatatgga agagccctaa

29761 tgtgtaaaat taattttagt agtgctatcc ccatgtgatt

//