**Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/human/USA/NY-CDC-QDX36604947/2022, complete genome**

GenBank: ON549687.1

[FASTA](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?report=fasta) [Graphics](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?report=graph)

[Go to:](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1" \l "goto2240688849_0)

LOCUS ON549687 29724 bp RNA linear VRL 19-MAY-2022

DEFINITION Severe acute respiratory syndrome coronavirus 2 isolate

SARS-CoV-2/human/USA/NY-CDC-QDX36604947/2022, complete genome.

ACCESSION ON549687

VERSION ON549687.1

DBLINK BioProject: [PRJNA716985](https://www.ncbi.nlm.nih.gov/bioproject/PRJNA716985)

BioSample: [SAMN28545463](https://www.ncbi.nlm.nih.gov/biosample/SAMN28545463)

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 29724)

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.,

Rosenthal,S.H., Gerasimova,A., Kagan,R.M., Anderson,B., Hua,M.,

Liu,Y., Bernstein,L.E., Livingston,K.E., Perez,A., Shlyakhter,I.A.,

Rolando,R.V., Owen,R., Tanpaiboon,P., Lacbawan,F., Paden,C.R. and

MacCannell,D.

TITLE CDC Sars CoV2 Sequencing Baseline Constellation

JOURNAL Unpublished

REFERENCE 2 (bases 1 to 29724)

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.,

Rosenthal,S.H., Gerasimova,A., Kagan,R.M., Anderson,B., Hua,M.,

Liu,Y., Bernstein,L.E., Livingston,K.E., Perez,A., Shlyakhter,I.A.,

Rolando,R.V., Owen,R., Tanpaiboon,P., Lacbawan,F., Paden,C.R. and

MacCannell,D.

TITLE Direct Submission

JOURNAL Submitted (19-MAY-2022) 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 :: BWA v.7.12

Sequencing Technology :: Illumina Novaseq

##Assembly-Data-END##

FEATURES Location/Qualifiers

source 1..29724

/organism="Severe acute respiratory syndrome coronavirus

2"

/mol\_type="genomic RNA"

/isolate="SARS-CoV-2/human/USA/NY-CDC-QDX36604947/2022"

/isolation\_source="Nasal Swabs"

/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="2022-05-03"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=216&to=21496) 216..21496

/gene="ORF1ab"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?location=216:13409,13409:21496) join(216..13409,13409..21496)

/gene="ORF1ab"

/ribosomal\_slippage

/codon\_start=1

/product="ORF1ab polyprotein"

/protein\_id="[UQV39733.1](https://www.ncbi.nlm.nih.gov/protein/2240688850)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHRYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTG

DFVKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESG

LKTILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNL

LEILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGN

FKVTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAA

ITILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKL

KPVLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLV

NKFLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEII

FLEGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEK

YCALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNIIFELDERIDKVLNEK

CSAYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEF

KLASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPE

EEQEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSG

YLKLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVARALNKATNNAMQVESD

DYIATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLLKSAYENFNQHEVLLA

PLLSAGIFGADPIHSLRVCVDTVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIA

EIPKEEVKPFITESKPSVEQRKQDDKKIKACVEEVTTTLEETKFLTENLLLYIDINGN

LHPDSATLVSDIDITFLKKDAPYIVGDVVQEGVLTAVVIPTKKASGTTEMLAKALRKV

PTDNYITTYPGQGLNGYTVEEAKTVLKKCKSAFYILPSIISNEKQEILGTVSWNLREM

LAHAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGARFYFYTSKTTVASLIN

TLNDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSS

KTPEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVIT

FDNLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPH

NSHEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIK

WADNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELG

DVRETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQ

IPCTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSK

ETLYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYY

KKDNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVT

FFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWST

KPVETSNSFDVLKSEDAQGMDNLACEDLKPVSEEVVENPTIQKDVLECNVKTTEVVGD

IILKPANNSLKITEEVGHTDLMAAYVDNSSLTIKKPNELSRVLGLKTLATHGLAAVNS

VPWDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYMPYFFTLLLQLCTFTRSTNSRI

KASMPTTIAKNTVKSVGKFCLEASFNYLKSPNFSKLINIIIWFLLLSVCLGSLIYSTA

ALGVLMSNLGMPSYCTGYREGYLNSTNVTIATYCTGSIPCSVCLSGLDSLDTYPSLET

IQITISSFKWDLTAFGLVAEWFLAYILFTRFFYVLGLAAIMQLFFSYFAVHFISNSWL

MWLIINLVQMAPISAMVRMYIFFASFYYVWKSYVHVVDGCNSSTCMMCYKRNRATRVE

CTTIVNGVRRSFYVYANGGKGFCKLHNWNCVNCDTFCAGSTFISDEVARDLSLQFKRP

INPTDQSSYIVDSVTVKNGSIHLYFDKAGQKTYERHSLSHFVNLDNLRANNTKGSLPI

NVIVFDGKSKCEESSAKSASVYYSQLMCQPILLLDQALVSDVGDSAEVAVKMFDAYVN

TFSSTFNVPMEKLKTLVATAEAELAKNVSLDNVLSTFISAARQGFVDSDVETKDVVEC

LKLSHQSDIEVTGDSCNNYMLTYNKVENMTPRDLGACIDCSARHINAQVAKSHNIALI

WNVKDFMSLSEQLRKQIRSAAKKNNLPFKLTCATTRQVVNVVTTKIALKGGKIVNNWL

KQLIKVTLVFLFVAAIFYLITPVHVMSKHTDFSSEIIGYKAIDGGVTRDIASTDTCFA

NKHAGFDTWFSQRGGSYTNDKACPLIAAVITREVGFVVPGLPGTILRTTNGDFLHFLP

RVFSAVGNICYTPSKLIEYTDFATSACVLAAECTIFKDASGKPVPYCYDTNVLEGSVA

YESLRPDTRYVLMDGSIIQFPNTYLEGSVRVVTTFDSEYCRHGTCERSEAGVCVSTSG

RWVLNNDYYRSLPGVFCGVDAVNLFTNMFTPLIQPIGALDISASIVAGGIVAIVVTCL

AYYFMRFRRAFGEYSHVVAFNTLLFLMSFIVLCLTPVYSFLPGVYSVIYLYLTFYLTN

DVSFLAHIQWMVMFTPLVPFWITIAYIICISTKHFYWFFSNYLKRRVVFNGVSFSTFE

EAALCTFLLNKEMYLKLRSDVLLPFTQYNRYLALYNKYKYFSGAMDTTSYREAACCHL

AKALNDFSNSGSDVLYQPPQISITSAVLQSGFRKMAFPSGKVEGCMVQVTCGTTTLNG

LWLDDVVYCPRHVICTSEDMLNPNYEDLLIRKSNHNFLVQAGNVQLRVIGHSMQNCVL

KLKVDTANPKTPKYKFVRIQPGQTFSVLACYNGSPSGVYQCAMRHNFTIKGSFLNGSC

GSVGFNIDYDCVSFCYMHHMELPTGVHAGTDLEGNFYGPFVDRQTAQAAGTDTTITVN

VLAWLYAAVINGDRWFLNRFTTTLNDFNLVAMKYNYEPLTQDHVDILGPLSAQTGIAV

LDMCASLKELLQNGMNGRTILGSALLEDEFTPFDVVRQCSGVTFQSAVKRTIKGTHHW

LLLTILTSLLVLVQSTQWSLFFFLYENAFLPFAMGIIAMSAFAMMFVKHKHAFLCLFL

LPSLATVAYFNMVYMPASWVMRIMTWLDMVDTSLKLKDCVMYASAVVLLILMTARTVY

DDGARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGIV

FMCVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVST

QEFRYMNSQGLLPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSV

LQQLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEE

MLDNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEF

DRDAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNII

NNARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSK

IVQLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTD

DNALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGP

KVKYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYK

DYLASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNP

KGFCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKGYGCSCDQLREPMLQSADAQ

SFLNRVCGVSAARLTPCGTGTSTDVVYRAFDIYNDKVAGFAKFLKTNCCRFQEKDEDD

NLIDSYFVVKRHTFSNYQHEETIYNLLKDCPAVAKHDFFKFRIDGDMVPHISRQRLTK

YTMADLVYALRHFDEGNCDTLKEILVTYNCCDDDYFNKKDWYDFVENPDILRVYANLG

ERVRQALLKTVQFCDAMRNAGIVGVLTLDNQDLNGNWYDFGDFIQTTPGSGVPVVDSY

YSLLMPILTLTRALTAESHVDTDLTKPYIKWDLLKYDFTEERLKLFDRYFKYWDQTYH

PNCVNCLDDRCILHCANFNVLFSTVFPLTSFGPLVRKIFVDGVPFVVSTGYHFRELGV

VHNQDVNLHSSRLSFKELLVYAADPAMHAASGNLLLDKRTTCFSVAALTNNVAFQTVK

PGNFNKDFYDFAVSKGFFKEGSSVELKHFFFAQDGNAAISDYDYYRYNLPTMCDIRQL

LFVVEVVDKYFDCYDGGCINANQVIVNNLDKSAGFPFNKWGKARLYYDSMSYEDQDAL

FAYTKRNVIPTITQMNLKYAISAKNRARTVAGVSICSTMTNRQFHQKLLKSIAATRGA

TVVIGTSKFYGGWHNMLKTVYSDVENPHLMGWDYPKCDRAMPNMLRIMASLVLARKHT

TCCSLSHRFYRLANECAQVLSEMVMCGGSLYVKPGGTSSGDATTAYANSVFNICQAVT

ANVNALLSTDGNKIADKYVRNLQHRLYECLYRNRDVDTDFVNEFYAYLRKHFSMMILS

DDAVVCFNSTYASQGLVASIKNFKSVLYYQNNVFMSEAKCWTETDLTKGPHEFCSQHT

MLVKQGDDYVYLPYPDPSRILGAGCFVDDIVKTDGTLMIERFVSLAIDAYPLTKHPNQ

EYADVFHLYLQYIRKLHDELTGHMLDMYSVMLTNDNTSRYWEPEFYEAMYTPHTVLQA

VGACVLCNSQTSLRCGACIRRPFLCCKCCYDHVISTSHKLVLSVNPYVCNAPGCDVTD

VTQLYLGGMSYYCKSHKPPISFPLCANGQVFGLYKNTCVGSDNVTDFNAIATCDWTNA

GDYILANTCTERLKLFAAETLKATEETFKLSYGIATVREVLSDRELHLSWEVGKPRPP

LNRNYVFTGYRVTKNSKVQIGEYTFEKGDYGDAVVYRGTTTYKLNVGDYFVLTSHTVM

PLSAPTLVPQEHYVRITGLYPTLNISDEFSSNVANYQKVGMQKYSTLQGPPGTGKSHF

AIGLALYYPSARIVYTACSHAAVDALCEKALKYLPIDKCSRIIPARARVECFDKFKVN

STLEQYVFCTVNALPETTADIVVFDEISMATNYDLSVVNARLCAKHYVYIGDPAQLPA

PRTLLTKGTLEPEYFNSVCRLMKTIGPDMFLGTCRRCPAEIVDTVSALVYDNKLKAHK

DKSAQCFKMFYKGVITHDVSSAINRPQIGVVREFLTRNPAWRKAVFISPYNSQNAVAS

KILGLPTQTVDSSQGSEYDYVIFTQTTETAHSCNVNRFNVAITRAKVGILCIMSDRDL

YDKLQFTSLEIPRRNVATLQAENVTGLFKDCSKVITGLHPTQAPTHLSVDTKFKTEGL

CVDVPGIPKDMTYRRLISMMGFKMNYQVNGYPNMFITREEAIRHVRAWIGFDVEGCHA

TREAVGTNLPLQLGFSTGVNLVAVPTGYVDTPNNTDFSRVSAKPPPGDQFKHLIPLMY

KGLPWNVVRIKIVQMLSDTLKNLSDRVVFVLWAHGFELTSMKYFVKIGPERTCCLCDR

RATCFSTASDTYACWHHSIGFDYVYNPFMIDVQQWGFTGNLQSNHDLYCQVHGNAHVA

SCDAIMTRCLAVHECFVKRVDWTIEYPIIGDELKINAACRKVQHMVVKAALLADKFPV

LHDIGNPKAIKCVPQADVEWKFYDAQPCSDKAYKIEELFYSYATHSDKFTDGVCLFWN

CNVDRYPANSIVCRFDTRVLSNLNLPGCDGGSLYVNKHAFHTPAFDKSAFVNLKQLPF

FYYSDSPCESHGKQVVSDIDYVPLKSATCITRCNLGGAVCRHHANEYRLYLDAYNMMI

SAGFSLWVYKQFDTYNLWNTFTRLQSLENVAFNVVNKGHFDGQQGEVPVSIINNTVYT

KVDGVDVELFENKTTLPVNVAFELWAKRNIKPVPEVKILNNLGVDIAANTVIWDYKRD

APAHISTIGVCSMTDIAKKPIETICAPLTVFFDGRVDGQVDLFRNARNGVLITEGSVK

GLQPSVGPKQASLNGVTLIGEAVKTQFNYYKKVDGVVQQLPETYFTQSRNLQEFKPRS

QMEIDFLELAMDEFIERYKLEGYAFEHIVYGDFSHSQLGGLHLLIGLAKRFKESPFEL

EDFIPMDSTVKNYFITDAQTGSSKCVCSVIDLLLDDFVEIIKSQDLSVVSKVVKVTID

YTEISFMLWCKDGHVETFYPKLQSSQAWQPGVAMPNLYKMQRMLLEKCDLQNYGDSAT

LPKGIMMNVAKYTQLCQYLNTLTLAVPYNMRVIHFGAGSDKGVAPGTAVLRQWLPTGT

LLVDSDLNDFVSDADSTLIGDCATVHTANKWDLIISDMYDPKTKNVTKENDSKEGFFT

YICGFIQQKLALGGSVAIKITEHSWNADLYKLMGHFAWWTAFVTNVNASSSEAFLIGC

NYLGKPREQIDGYVMHANYIFWRNTNPIQLSSYSLFDMSKFPLKLRGTAVMSLKEGQI

NDMILSLLSKGRLIIRENNRVVISSDVLVNN"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39733.1?from=1&to=180) 216..755

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39733.1?from=181&to=818) 756..2669

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39733.1?from=819&to=2763) 2670..8504

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39733.1?from=2764&to=3263) 8505..10004

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39733.1?from=3264&to=3569) 10005..10922

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39733.1?from=3570&to=3856) 10923..11783

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39733.1?from=3857&to=3939) 11784..12032

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39733.1?from=3940&to=4137) 12033..12626

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39733.1?from=4138&to=4250) 12627..12965

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39733.1?from=4251&to=4389) 12966..13382

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39733.1?from=4390&to=5321) join(13383..13409,13409..16177)

/gene="ORF1ab"

/product="RNA-dependent RNA polymerase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39733.1?from=5322&to=5922) 16178..17980

/gene="ORF1ab"

/product="helicase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39733.1?from=5923&to=6449) 17981..19561

/gene="ORF1ab"

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

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39733.1?from=6450&to=6795) 19562..20599

/gene="ORF1ab"

/product="endoRNAse"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39733.1?from=6796&to=7093) 20600..21493

/gene="ORF1ab"

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

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=216&to=13424) 216..13424

/gene="ORF1ab"

/codon\_start=1

/product="ORF1a polyprotein"

/protein\_id="[UQV39734.1](https://www.ncbi.nlm.nih.gov/protein/2240688851)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHRYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTG

DFVKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESG

LKTILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNL

LEILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGN

FKVTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAA

ITILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKL

KPVLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLV

NKFLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEII

FLEGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEK

YCALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNIIFELDERIDKVLNEK

CSAYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEF

KLASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPE

EEQEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSG

YLKLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVARALNKATNNAMQVESD

DYIATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLLKSAYENFNQHEVLLA

PLLSAGIFGADPIHSLRVCVDTVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIA

EIPKEEVKPFITESKPSVEQRKQDDKKIKACVEEVTTTLEETKFLTENLLLYIDINGN

LHPDSATLVSDIDITFLKKDAPYIVGDVVQEGVLTAVVIPTKKASGTTEMLAKALRKV

PTDNYITTYPGQGLNGYTVEEAKTVLKKCKSAFYILPSIISNEKQEILGTVSWNLREM

LAHAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGARFYFYTSKTTVASLIN

TLNDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSS

KTPEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVIT

FDNLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPH

NSHEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIK

WADNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELG

DVRETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQ

IPCTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSK

ETLYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYY

KKDNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVT

FFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWST

KPVETSNSFDVLKSEDAQGMDNLACEDLKPVSEEVVENPTIQKDVLECNVKTTEVVGD

IILKPANNSLKITEEVGHTDLMAAYVDNSSLTIKKPNELSRVLGLKTLATHGLAAVNS

VPWDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYMPYFFTLLLQLCTFTRSTNSRI

KASMPTTIAKNTVKSVGKFCLEASFNYLKSPNFSKLINIIIWFLLLSVCLGSLIYSTA

ALGVLMSNLGMPSYCTGYREGYLNSTNVTIATYCTGSIPCSVCLSGLDSLDTYPSLET

IQITISSFKWDLTAFGLVAEWFLAYILFTRFFYVLGLAAIMQLFFSYFAVHFISNSWL

MWLIINLVQMAPISAMVRMYIFFASFYYVWKSYVHVVDGCNSSTCMMCYKRNRATRVE

CTTIVNGVRRSFYVYANGGKGFCKLHNWNCVNCDTFCAGSTFISDEVARDLSLQFKRP

INPTDQSSYIVDSVTVKNGSIHLYFDKAGQKTYERHSLSHFVNLDNLRANNTKGSLPI

NVIVFDGKSKCEESSAKSASVYYSQLMCQPILLLDQALVSDVGDSAEVAVKMFDAYVN

TFSSTFNVPMEKLKTLVATAEAELAKNVSLDNVLSTFISAARQGFVDSDVETKDVVEC

LKLSHQSDIEVTGDSCNNYMLTYNKVENMTPRDLGACIDCSARHINAQVAKSHNIALI

WNVKDFMSLSEQLRKQIRSAAKKNNLPFKLTCATTRQVVNVVTTKIALKGGKIVNNWL

KQLIKVTLVFLFVAAIFYLITPVHVMSKHTDFSSEIIGYKAIDGGVTRDIASTDTCFA

NKHAGFDTWFSQRGGSYTNDKACPLIAAVITREVGFVVPGLPGTILRTTNGDFLHFLP

RVFSAVGNICYTPSKLIEYTDFATSACVLAAECTIFKDASGKPVPYCYDTNVLEGSVA

YESLRPDTRYVLMDGSIIQFPNTYLEGSVRVVTTFDSEYCRHGTCERSEAGVCVSTSG

RWVLNNDYYRSLPGVFCGVDAVNLFTNMFTPLIQPIGALDISASIVAGGIVAIVVTCL

AYYFMRFRRAFGEYSHVVAFNTLLFLMSFIVLCLTPVYSFLPGVYSVIYLYLTFYLTN

DVSFLAHIQWMVMFTPLVPFWITIAYIICISTKHFYWFFSNYLKRRVVFNGVSFSTFE

EAALCTFLLNKEMYLKLRSDVLLPFTQYNRYLALYNKYKYFSGAMDTTSYREAACCHL

AKALNDFSNSGSDVLYQPPQISITSAVLQSGFRKMAFPSGKVEGCMVQVTCGTTTLNG

LWLDDVVYCPRHVICTSEDMLNPNYEDLLIRKSNHNFLVQAGNVQLRVIGHSMQNCVL

KLKVDTANPKTPKYKFVRIQPGQTFSVLACYNGSPSGVYQCAMRHNFTIKGSFLNGSC

GSVGFNIDYDCVSFCYMHHMELPTGVHAGTDLEGNFYGPFVDRQTAQAAGTDTTITVN

VLAWLYAAVINGDRWFLNRFTTTLNDFNLVAMKYNYEPLTQDHVDILGPLSAQTGIAV

LDMCASLKELLQNGMNGRTILGSALLEDEFTPFDVVRQCSGVTFQSAVKRTIKGTHHW

LLLTILTSLLVLVQSTQWSLFFFLYENAFLPFAMGIIAMSAFAMMFVKHKHAFLCLFL

LPSLATVAYFNMVYMPASWVMRIMTWLDMVDTSLKLKDCVMYASAVVLLILMTARTVY

DDGARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGIV

FMCVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVST

QEFRYMNSQGLLPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSV

LQQLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEE

MLDNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEF

DRDAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNII

NNARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSK

IVQLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTD

DNALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGP

KVKYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYK

DYLASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNP

KGFCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKGYGCSCDQLREPMLQSADAQ

SFLNGFAV"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39734.1?from=1&to=180) 216..755

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39734.1?from=181&to=818) 756..2669

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39734.1?from=819&to=2763) 2670..8504

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39734.1?from=2764&to=3263) 8505..10004

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39734.1?from=3264&to=3569) 10005..10922

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39734.1?from=3570&to=3856) 10923..11783

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39734.1?from=3857&to=3939) 11784..12032

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39734.1?from=3940&to=4137) 12033..12626

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39734.1?from=4138&to=4250) 12627..12965

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39734.1?from=4251&to=4389) 12966..13382

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UQV39734.1?from=4390&to=4402) 13383..13421

/gene="ORF1ab"

/product="nsp11"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=13417&to=13444) 13417..13444

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 1"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=13429&to=13483) 13429..13483

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 2"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=21504&to=25316) 21504..25316

/gene="S"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=21504&to=25316) 21504..25316

/gene="S"

/codon\_start=1

/product="surface glycoprotein"

/protein\_id="[UQV39735.1](https://www.ncbi.nlm.nih.gov/protein/2240688852)"

/translation="MFVFLVLLPLVSSQCVNLITRTQSYTNSFTRGVYYPDKVFRSSV

LHSTQDLFLPFFSNVTWFHAIHVSGTNGTKRFDNPVLPFNDGVYFASTEKSNIIRGWI

FGTTLDSKTQSLLIVNNATNVVIKVCEFQFCNDPFLDVYYHKNNKSWMESEFRVYSSA

NNCTFEYVSQPFLMDLEGKQGNFKNLREFVFKNIDGYFKIYSKHTPINLGRDLPQGFS

ALEPLVDLPIGINITRFQTLLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLLKY

NENGTITDAVDCALDPLSETKCTLKSFTVEKGIYQTSNFRVQPTESIVRFPNITNLCP

FDEVFNATRFASVYAWNRKRISNCVADYSVLYNFAPFFAFKCYGVSPTKLNDLCFTNV

YADSFVIRGNEVSQIAPGQTGNIADYNYKLPDDFTGCVIAWNSNKLDSKVGGNYNYLY

RLFRKSNLKPFERDISTEIYQAGNKPCNGVAGFNCYFPLRSYGFQPTYGVGHQPYRVV

VLSFELLHAPATVCGPKKSTNLVKNKCVNFNFNGLTGTGVLTESNKKFLPFQQFGRDI

ADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQVAVLYQGVNCTEVPVAIHAD

QLTPTWRVYSTGSNVFQTRAGCLIGAEYVNNSYECDIPIGAGICASYQTQTKSHRRAR

SVASQSIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEILPVSMTKTSVDCTMYIC

GDSTECSNLLLQYGSFCTQLKRALTGIAVEQDKNTQEVFAQVKQIYKTPPIKYFGGFN

FSQILPDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICAQKFNGLT

VLPPLLTDEMIAQYTSALLAGTITSGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLY

ENQKLIANQFNSAIGKIQDSLSSTASALGKLQDVVNHNAQALNTLVKQLSSKFGAISS

VLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASANLAATKMSECV

LGQSKRVDFCGKGYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHDGKAHFPR

EGVFVSNGTHWFVTQRNFYEPQIITTDNTFVSGNCDVVIGIVNNTVYDPLQPELDSFK

EELDKYFKNHTSPDVDLGDISGINASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYE

QYIKWPWYIWLGFIAGLIAIVMVTIMLCCMTSCCSCLKGCCSCGSCCKFDEDDSEPVL

KGVKLHYT"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=25325&to=26152) 25325..26152

/gene="ORF3a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=25325&to=26152) 25325..26152

/gene="ORF3a"

/codon\_start=1

/product="ORF3a protein"

/protein\_id="[UQV39736.1](https://www.ncbi.nlm.nih.gov/protein/2240688853)"

/translation="MDLFMRIFTIGTVTLKQGEIKDATPSDFVRATATIPIQASLPFG

WLIVGVALLAVFQSASKIITLKKRWQLALSKGVHFVCNLLLLFVTVYSHLLLVAAGLE

APFLYLYALVYFLQSINFVRIIMRLWLCWKCRSKNPLLYDANYFLCWHTNCYDYCIPY

NSVTSSIVITSGDGTTSPISEHDYQIGGYTEKWESGVKDCVVLHSYFTSDYYQLYSTQ

LSTDIGVEHVTFFIYNKIVDEPEEHVQIHTIDGSSGVVNPVMEPIYDEPTTTTSVPL"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=26177&to=26404) 26177..26404

/gene="E"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=26177&to=26404) 26177..26404

/gene="E"

/codon\_start=1

/product="envelope protein"

/protein\_id="[UQV39737.1](https://www.ncbi.nlm.nih.gov/protein/2240688854)"

/translation="MYSFVSEEIGTLIVNSVLLFLAFVVFLLVTLAILTALRLCAYCC

NIVNVSLVKPSFYVYSRVKNLNSSRVPDLLV"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=26455&to=27123) 26455..27123

/gene="M"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=26455&to=27123) 26455..27123

/gene="M"

/codon\_start=1

/product="membrane glycoprotein"

/protein\_id="[UQV39738.1](https://www.ncbi.nlm.nih.gov/protein/2240688855)"

/translation="MADSNGTITVEELKKLLEEWNLVIGFLFLTWICLLQFAYANRNR

FLYIIKLIFLWLLWPVTLTCFVLAAVYRINWITGGIAIAMACLVGLMWLSYFIASFRL

FARTRSMWSFNPETNILLNVPLHGTILTRPLLESELVIGAVILRGHLRIAGHHLGRCD

IKDLPKEITVATSRTLSYYKLGASQRVAGDSGFAAYSRYRIGNYKLNTDHSSSSDNIA

LLVQ"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=27134&to=27319) 27134..27319

/gene="ORF6"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=27134&to=27319) 27134..27319

/gene="ORF6"

/codon\_start=1

/product="ORF6 protein"

/protein\_id="[UQV39739.1](https://www.ncbi.nlm.nih.gov/protein/2240688856)"

/translation="MFHLVDFQVTIAEILLIIMRTFKVSIWNLDYIINLIIKNLSKSL

TENKYSQLDEEQPMEIL"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=27326&to=27691) 27326..27691

/gene="ORF7a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=27326&to=27691) 27326..27691

/gene="ORF7a"

/codon\_start=1

/product="ORF7a protein"

/protein\_id="[UQV39740.1](https://www.ncbi.nlm.nih.gov/protein/2240688857)"

/translation="MKIILFLALITLATCELYHYQECVRGTTVLLKEPCSSGTYEGNS

PFHPLADNKFALTCFSTQFAFACPDGVKHVYQLRARSVSPKLFIRQEEVQELYSPIFL

IVAAIVFITLCFTLKRKTE"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=27688&to=27819) 27688..27819

/gene="ORF7b"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=27688&to=27819) 27688..27819

/gene="ORF7b"

/codon\_start=1

/product="ORF7b"

/protein\_id="[UQV39741.1](https://www.ncbi.nlm.nih.gov/protein/2240688858)"

/translation="MIELSLIDFYLCFLAFLLFLVLIMLIIFWFSLELQDHNETCHA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=27826&to=28191) 27826..28191

/gene="ORF8"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=27826&to=28191) 27826..28191

/gene="ORF8"

/codon\_start=1

/product="ORF8 protein"

/protein\_id="[UQV39742.1](https://www.ncbi.nlm.nih.gov/protein/2240688859)"

/translation="MKFLVFLGIITTVAAFHQECSLQSCTQHQPYVVDDPCPIHFYSK

WYIRVGARKSAPLIELCVDEAGSKSPIQYIDIGNYTVSCLPFTINCQEPKLGSLVVRC

SFYEDFLEYHDVRVVLDFI"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=28206&to=29456) 28206..29456

/gene="N"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=28206&to=29456) 28206..29456

/gene="N"

/codon\_start=1

/product="nucleocapsid phosphoprotein"

/protein\_id="[UQV39743.1](https://www.ncbi.nlm.nih.gov/protein/2240688860)"

/translation="MSDNGPQNQRNALRITFGGPSDSTGSNQNGGARSKQRRPQGLPN

NTASWFTALTQHGKEDLKFPRGQGVPINTNSSPDDQIGYYRRATRRIRGGDGKMKDLS

PRWYFYYLGTGPEAGLPYGANKDGIIWVATEGALNTPKDHIGTRNPANNAAIVLQLPQ

GTTLPKGFYAEGSRGGSQASSRSSSRSRNSSRNSTPGSSKRTSPARMAGNGGDAALAL

LLLDRLNQLESKMSGKGQQQQGQTVTKKSAAEASKKPRQKRTATKAYNVTQAFGRRGP

EQTQGNFGDQELIRQGTDYKHWPQIAQFAPSASAFFGMSRIGMEVTPSGTWLTYTGAI

KLDDKDPNFKDQVILLNKHIDAYKTFPPTEPKKDKKKKADETQALPQRQKKQQTVTLL

PAADLDDFSKQLQQSMSRADSTQA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=29481&to=29597) 29481..29597

/gene="ORF10"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=29481&to=29597) 29481..29597

/gene="ORF10"

/codon\_start=1

/product="ORF10 protein"

/protein\_id="[UQV39744.1](https://www.ncbi.nlm.nih.gov/protein/2240688861)"

/translation="MGYINVFAFPFTIYSLLLCRMNSRNYIAQVDVVNFNLT"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=29532&to=29567) 29532..29567

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=29552&to=29580) 29552..29580

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON549687.1?from=29651&to=29665) 29651..29665

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

ORIGIN

1 ttgtagatct gttctctaaa cgaactttaa aatctgtgtg gctgtcactc ggctgcatgc

61 ttagtgcact cacgcagtat aattaataac taattactgt cgttgacagg acacgagtaa

121 ctcgtctatc ttctgcaggc tgcttacggt ttcgtccgtg ttgcagccga tcatcagcac

181 atctaggttt tgtccgggtg tgaccgaaag gtaagatgga gagccttgtc cctggtttca

241 acgagaaaac acacgtccaa ctcagtttgc ctgttttaca ggttcgcgac gtgctcgtac

301 gtggctttgg agactccgtg gaggaggtct tatcagaggc acgtcaacat cttaaagatg

361 gcacttgtgg cttagtagaa gttgaaaaag gcgttttgcc tcaacttgaa cagccctatg

421 tgttcatcaa acgttcggat gctcgaactg cacctcatgg tcatgttatg gttgagctgg

481 tagcagaact cgaaggcatt cagtacggtc gtagtggtga gacacttggt gtccttgtcc

541 ctcatgtggg cgaaatacca gtggcttacc gcaaggttct tcttcgtaag aacggtaata

601 aaggagctgg tggccatagg tacggcgccg atctaaagtc atttgactta ggcgacgagc

661 ttggcactga tccttatgaa gattttcaag aaaactggaa cactaaacat agcagtggtg

721 ttacccgtga actcatgcgt gagcttaacg gaggggcata cactcgctat gtcgataaca

781 acttctgtgg ccctgatggc taccctcttg agtgcattaa agaccttcta gcacgtgctg

841 gtaaagcttc atgcactttg tccgaacaac tggactttat tgacactaag aggggtgtat

901 actgctgccg tgaacatgag catgaaattg cttggtacac ggaacgttct gaaaagagct

961 atgaattgca gacacctttt gaaattaaat tggcaaagaa atttgacacc ttcaatgggg

1021 aatgtccaaa ttttgtattt cccttaaatt ccataatcaa gactattcaa ccaagggttg

1081 aaaagaaaaa gcttgatggc tttatgggta gaattcgatc tgtctatcca gttgcgtcac

1141 caaatgaatg caaccaaatg tgcctttcaa ctctcatgaa gtgtgatcat tgtggtgaaa

1201 cttcatggca gacgggcgat tttgttaaag ccacttgcga attttgtggc actgagaatt

1261 tgactaaaga aggtgccact acttgtggtt acttacccca aaatgctgtt gttaaaattt

1321 attgtccagc atgtcacaat tcagaagtag gacctgagca tagtcttgcc gaataccata

1381 atgaatctgg cttgaaaacc attcttcgta agggtggtcg cactattgcc tttggaggct

1441 gtgtgttctc ttatgttggt tgccataaca agtgtgccta ttgggttcca cgtgctagcg

1501 ctaacatagg ttgtaaccat acaggtgttg ttggagaagg ttccgaaggt cttaatgaca

1561 accttcttga aatactccaa aaagagaaag tcaacatcaa tattgttggt gactttaaac

1621 ttaatgaaga gatcgccatt attttggcat ctttttctgc ttccacaagt gcttttgtgg

1681 aaactgtgaa aggtttggat tataaagcat tcaaacaaat tgttgaatcc tgtggtaatt

1741 ttaaagttac aaaaggaaaa gctaaaaaag gtgcctggaa tattggtgaa cagaaatcaa

1801 tactgagtcc tctttatgca tttgcatcag aggctgctcg tgttgtacga tcaattttct

1861 cccgcactct tgaaactgct caaaattctg tgcgtgtttt acagaaggcc gctataacaa

1921 tactagatgg aatttcacag tattcactga gactcattga tgctatgatg ttcacatctg

1981 atttggctac taacaatcta gttgtaatgg cctacattac aggtggtgtt gttcagttga

2041 cttcgcagtg gctaactaac atctttggca ctgtttatga aaaactcaaa cccgtccttg

2101 attggcttga agagaagttt aaggaaggtg tagagtttct tagagacggt tgggaaattg

2161 ttaaatttat ctcaacctgt gcttgtgaaa ttgtcggtgg acaaattgtc acctgtgcaa

2221 aggaaattaa ggagagtgtt cagacattct ttaagcttgt aaataaattt ttggctttgt

2281 gtgctgactc tatcattatt ggtggagcta aacttaaagc cttgaattta ggtgaaacat

2341 ttgtcacgca ctcaaaggga ttgtacagaa agtgtgttaa atccagagaa gaaactggcc

2401 tactcatgcc tctaaaagcc ccaaaagaaa ttatcttctt agagggagaa acacttccca

2461 cagaagtgtt aacagaggaa gttgtcttga aaactggtga tttacaacca ttagaacaac

2521 ctactagtga agctgttgaa gctccattgg ttggtacacc agtttgtatt aacgggctta

2581 tgttgctcga aatcaaagac acagaaaagt actgtgccct tgcacctaat atgatggtaa

2641 caaacaatac cttcacactc aaaggcggtg caccaacaaa ggttactttt ggtgatgaca

2701 ctgtgataga agtgcaaggt tacaagagtg tgaatatcat ttttgaactt gatgaaagga

2761 ttgataaagt acttaatgag aagtgctctg cctatacagt tgaactcggt acagaagtaa

2821 atgagttcgc ctgtgttgtg gcagatgctg tcataaaaac tttgcaacca gtatctgaat

2881 tacttacacc actgggcatt gatttagatg agtggagtat ggctacatac tacttatttg

2941 atgagtctgg tgagtttaaa ttggcttcac atatgtattg ttctttttac cctccagatg

3001 aggatgaaga agaaggtgat tgtgaagaag aagagtttga gccatcaact caatatgagt

3061 atggtactga agatgattac caaggtaaac ctttggaatt tggtgccact tctgctgctc

3121 ttcaacctga agaagagcaa gaagaagatt ggttagatga tgatagtcaa caaactgttg

3181 gtcaacaaga cggcagtgag gacaatcaga caactactat tcaaacaatt gttgaggttc

3241 aacctcaatt agagatggaa cttacaccag ttgttcagac tattgaagtg aatagtttta

3301 gtggttattt aaaacttact gacaatgtat acattaaaaa tgcagacatt gtggaagaag

3361 ctaaaaaggt aaaaccaaca gtggttgtta atgcagccaa tgtttacctt aaacatggag

3421 gaggtgttgc aagagcctta aataaggcta ctaacaatgc catgcaagtt gaatctgatg

3481 attacatagc tactaatgga ccacttaaag tgggtggtag ttgtgtttta agcggacaca

3541 atcttgctaa acactgtctt catgttgtcg gcccaaatgt taacaaaggt gaagacattc

3601 aacttcttaa gagtgcttat gaaaatttta atcagcacga agttctactt gcaccattat

3661 tatcagctgg tatttttggt gctgacccta tacattcttt aagagtttgt gtagatactg

3721 ttcgcacaaa tgtctactta gctgtctttg ataaaaatct ctatgacaaa cttgtttcaa

3781 gctttttgga aatgaagagt gaaaagcaag ttgaacaaaa gatcgctgag attcctaaag

3841 aggaagttaa gccatttata actgaaagta aaccttcagt tgaacagaga aaacaagatg

3901 ataagaaaat caaagcttgt gttgaagaag ttacaacaac tctggaagaa actaagttcc

3961 tcacagaaaa cttgttactt tatattgaca ttaatggcaa tcttcatcca gattctgcca

4021 ctcttgttag tgacattgac atcactttct taaagaaaga tgctccatat atagtgggtg

4081 atgttgttca agagggtgtt ttaactgctg tggttatacc tactaaaaag gctagtggca

4141 ctactgaaat gctagcgaaa gctttgagaa aagtgccaac agacaattat ataaccactt

4201 acccgggtca gggtttaaat ggttacactg tagaggaggc aaagacagtg cttaaaaagt

4261 gtaaaagtgc tttttacatt ctaccatcta ttatctctaa tgagaagcaa gaaattcttg

4321 gaactgtttc ttggaatttg cgagaaatgc ttgcacatgc agaagaaaca cgcaaattaa

4381 tgcctgtctg tgtggaaact aaagccatag tttcaactat acagcgtaaa tataagggta

4441 ttaaaataca agagggtgtg gttgattatg gtgctagatt ttacttttac accagtaaaa

4501 caactgtagc gtcacttatc aacacactta acgatctaaa tgaaactctt gttacaatgc

4561 cacttggcta tgtaacacat ggcttaaatt tggaagaagc tgctcggtat atgagatctc

4621 tcaaagtgcc agctacagtt tctgtttctt cacctgatgc tgttacagcg tataatggtt

4681 atcttacttc ttcttctaaa acacctgaag aacattttat tgaaaccatc tcacttgctg

4741 gttcctataa agattggtcc tattctggac aatctacaca actaggtata gaatttctta

4801 agagaggtga taaaagtgta tattacacta gtaatcctac cacattccac ctagatggtg

4861 aagttatcac ctttgacaat cttaagacac ttctttcttt gagagaagtg aggactatta

4921 aggtgtttac aacagtagac aacattaacc tccacacgca agttgtggac atgtcaatga

4981 catatggaca acagtttggt ccaacttatt tggatggagc tgatgttact aaaataaaac

5041 ctcataattc acatgaaggt aaaacatttt atgttttacc taatgatgac actctacgtg

5101 ttgaggcttt tgagtactac cacacaactg atcctagttt tctgggtagg tacatgtcag

5161 cattaaatca cactaaaaag tggaaatacc cacaagttaa tggtttaact tctattaaat

5221 gggcagataa caactgttat cttgccactg cattgttaac actccaacaa atagagttga

5281 agtttaatcc acctgctcta caagatgctt attacagagc aagggctggt gaagctgcta

5341 acttttgtgc acttatctta gcctactgta ataagacagt aggtgagtta ggtgatgtta

5401 gagaaacaat gagttacttg tttcaacatg ccaatttaga ttcttgcaaa agagtcttga

5461 acgtggtgtg taaaacttgt ggacaacagc agacaaccct taagggtgta gaagctgtta

5521 tgtacatggg cacactttct tatgaacaat ttaagaaagg tgttcagata ccttgtacgt

5581 gtggtaaaca agctacaaaa tatctagtac aacaggagtc accttttgtt atgatgtcag

5641 caccacctgc tcagtatgaa cttaagcatg gtacatttac ttgtgctagt gagtacactg

5701 gtaattacca gtgtggtcac tataaacata taacttctaa agaaactttg tattgcatag

5761 acggtgcttt acttacaaag tcctcagaat acaaaggtcc tattacggat gttttctaca

5821 aagaaaacag ttacacaaca accataaaac cagttactta taaattggat ggtgttgttt

5881 gtacagaaat tgaccctaag ttggacaatt attataagaa agacaattct tatttcacag

5941 agcaaccaat tgatcttgta ccaaaccaac catatccaaa cgcaagcttc gataatttta

6001 agtttgtatg tgataatatc aaatttgctg atgatttaaa ccagttaact ggttataaga

6061 aacctgcttc aagagagctt aaagttacat ttttccctga cttaaatggt gatgtggtgg

6121 ctattgatta taaacactac acaccctctt ttaagaaagg agctaaattg ttacataaac

6181 ctattgtttg gcatgttaac aatgcaacta ataaagccac gtataaacca aatacctggt

6241 gtatacgttg tctttggagc acaaaaccag ttgaaacatc aaattcgttt gatgtactga

6301 agtcagagga cgcgcaggga atggataatc ttgcctgcga agatctaaaa ccagtctctg

6361 aagaagtagt ggaaaatcct accatacaga aagacgttct tgagtgtaat gtgaaaacta

6421 ccgaagttgt aggagacatt atacttaaac cagcaaataa tagtttaaaa attacagaag

6481 aggttggcca cacagatcta atggctgctt atgtagacaa ttctagtctt actattaaga

6541 aacctaatga attatctaga gtattaggtt tgaaaaccct tgctactcat ggtttagctg

6601 ctgttaatag tgtcccttgg gatactatag ctaattatgc taagcctttt cttaacaaag

6661 ttgttagtac aactactaac atagttacac ggtgtttaaa ccgtgtttgt actaattata

6721 tgccttattt ctttacttta ttgctacaat tgtgtacttt tactagaagt acaaattcta

6781 gaattaaagc atctatgccg actactatag caaagaatac tgttaagagt gtcggtaaat

6841 tttgtctaga ggcttcattt aattatttga agtcacctaa tttttctaaa ctgataaata

6901 ttataatttg gtttttacta ttaagtgttt gcctaggttc tttaatctac tcaaccgctg

6961 ctttaggtgt tttaatgtct aatttaggca tgccttctta ctgtactggt tacagagaag

7021 gctatttgaa ctctactaat gtcactattg caacctactg tactggttct ataccttgta

7081 gtgtttgtct tagtggttta gattctttag acacctatcc ttctttagaa actatacaaa

7141 ttaccatttc atcttttaaa tgggatttaa ctgcttttgg cttagttgca gagtggtttt

7201 tggcatatat tcttttcact aggtttttct atgtacttgg attggctgca atcatgcaat

7261 tgtttttcag ctattttgca gtacatttta ttagtaattc ttggcttatg tggttaataa

7321 ttaatcttgt acaaatggcc ccgatttcag ctatggttag aatgtacatc ttctttgcat

7381 cattttatta tgtatggaaa agttatgtgc atgttgtaga cggttgtaat tcatcaactt

7441 gtatgatgtg ttacaaacgt aatagagcaa caagagtcga atgtacaact attgttaatg

7501 gtgttagaag gtccttttat gtctatgcta atggaggtaa aggcttttgc aaactacaca

7561 attggaattg tgttaattgt gatacattct gtgctggtag tacatttatt agtgatgaag

7621 ttgcgagaga cttgtcacta cagtttaaaa gaccaataaa tcctactgac cagtcttctt

7681 acatcgttga tagtgttaca gtgaagaatg gttccatcca tctttacttt gataaagctg

7741 gtcaaaagac ttatgaaaga cattctctct ctcattttgt taacttagac aacctgagag

7801 ctaataacac taaaggttca ttgcctatta atgttatagt ttttgatggt aaatcaaaat

7861 gtgaagaatc atctgcaaaa tcagcgtctg tttactacag tcagcttatg tgtcaaccta

7921 tactgttact agatcaggca ttagtgtctg atgttggtga tagtgcggaa gttgcagtta

7981 aaatgtttga tgcttacgtt aatacgtttt catcaacttt taacgtacca atggaaaaac

8041 tcaaaacact agttgcaact gcagaagctg aacttgcaaa gaatgtgtcc ttagacaatg

8101 tcttatctac ttttatttca gcagctcggc aagggtttgt tgattcagat gtagaaacta

8161 aagatgttgt tgaatgtctt aaattgtcac atcaatctga catagaagtt actggcgata

8221 gttgtaataa ctatatgctc acctataaca aagttgaaaa catgacaccc cgtgaccttg

8281 gtgcttgtat tgactgtagt gcgcgtcata ttaatgcgca ggtagcaaaa agtcacaaca

8341 ttgctttgat atggaacgtt aaagatttca tgtcattgtc tgaacaacta cgaaaacaaa

8401 tacgtagtgc tgctaaaaag aataacttac cttttaagtt gacatgtgca actactagac

8461 aagttgttaa tgttgtaaca acaaagatag cacttaaggg tggtaaaatt gttaataatt

8521 ggttgaagca gttaattaaa gttacacttg tgttcctttt tgttgctgct attttctatt

8581 taataacacc tgttcatgtc atgtctaaac atactgactt ttcaagtgaa atcataggat

8641 acaaggctat tgatggtggt gtcactcgtg acatagcatc tacagatact tgttttgcta

8701 acaaacatgc tggttttgac acatggttta gccagcgtgg tggtagttat actaatgaca

8761 aagcttgccc attgattgct gcagtcataa caagagaagt gggttttgtc gtgcctggtt

8821 tgcctggcac gatattacgc acaactaatg gtgacttttt gcatttctta cctagagttt

8881 ttagtgcagt tggtaacatc tgttacacac catcaaaact tatagagtac actgactttg

8941 caacatcagc ttgtgttttg gctgctgaat gtacaatttt taaagatgct tctggtaagc

9001 cagtaccata ttgttatgat accaatgtac tagaaggttc tgttgcttat gaaagtttac

9061 gccctgacac acgttatgtg ctcatggatg gctctattat tcaatttcct aacacctacc

9121 ttgaaggttc tgttagagtg gtaacaactt ttgattctga gtactgtagg cacggcactt

9181 gtgaaagatc agaagctggt gtttgtgtat ctactagtgg tagatgggta cttaacaatg

9241 attattacag atctttacca ggagttttct gtggtgtaga tgctgtaaat ttatttacta

9301 atatgtttac accactaatt caacctattg gtgctttgga catatcagca tctatagtag

9361 ctggtggtat tgtggctatc gtagtaacat gccttgccta ctattttatg aggtttagaa

9421 gagcttttgg tgaatacagt catgtagttg cctttaatac tttactattc cttatgtcat

9481 tcattgtact ctgtttaaca ccagtttact cattcttacc tggtgtttat tctgttattt

9541 acttgtactt gacattttat cttactaatg atgtttcttt tttagcacat attcagtgga

9601 tggttatgtt cacaccttta gtacctttct ggataacaat tgcttatatc atttgtattt

9661 ccacaaagca tttctattgg ttctttagta attacctaaa gagacgtgta gtctttaatg

9721 gtgtttcctt tagtactttt gaagaagctg cgctgtgcac ctttttgtta aataaagaaa

9781 tgtatctaaa gttgcgtagt gatgtgctat taccttttac gcaatataat agatacttag

9841 ctctttataa taagtacaag tattttagtg gagcaatgga tacaactagc tacagagaag

9901 ctgcttgttg tcatctcgca aaggctctca atgacttcag taactcaggt tctgatgttc

9961 tttaccaacc accacaaatc tctatcacct cagctgtttt gcagagtggt tttagaaaaa

10021 tggcattccc atctggtaaa gttgagggtt gtatggtaca agtaacttgt ggtacaacta

10081 cacttaacgg tctttggctt gatgacgtag tttactgtcc aagacatgtg atctgcacct

10141 ctgaagatat gcttaaccct aattatgaag atttactcat tcgtaagtct aatcataatt

10201 tcttggtaca ggctggtaat gttcaactca gggttattgg acattctatg caaaattgtg

10261 tacttaagct taaggttgat acagccaatc ctaagacacc taagtataag tttgttcgca

10321 ttcaaccagg acagactttt tcagtgttag cttgttacaa tggttcacca tctggtgttt

10381 accaatgtgc tatgagacac aatttcacta ttaagggttc attccttaat ggttcatgtg

10441 gtagtgttgg ttttaacata gattatgact gtgtctcttt ttgttacatg caccatatgg

10501 aattaccaac tggagttcat gctggcacag acttagaagg taacttttat ggaccttttg

10561 ttgacaggca aacagcacaa gcagctggta cggacacaac tattacagtt aatgttttag

10621 cttggttgta cgctgctgtt ataaatggag acaggtggtt tctcaatcga tttaccacaa

10681 ctcttaatga ctttaacctt gtggctatga agtacaatta tgaacctcta acacaagacc

10741 atgttgacat actaggacct ctttctgctc aaactggaat tgccgtttta gatatgtgtg

10801 cttcattaaa agaattactg caaaatggta tgaatggacg taccatattg ggtagtgctt

10861 tattagaaga tgaatttaca ccttttgatg ttgttagaca atgctcaggt gttactttcc

10921 aaagtgcagt gaaaagaaca atcaagggta cacaccactg gttgttactc acaattttga

10981 cttcactttt agttttagtc cagagtactc aatggtcttt gttctttttt ttgtatgaaa

11041 atgccttttt accttttgct atgggtatta ttgctatgtc tgcttttgca atgatgtttg

11101 tcaaacataa gcatgcattt ctctgtttgt ttttgttacc ttctcttgcc actgtagctt

11161 attttaatat ggtctatatg cctgctagtt gggtgatgcg tattatgaca tggttggata

11221 tggttgatac tagtttgaag ctaaaagact gtgttatgta tgcatcagct gtagtgttac

11281 taatccttat gacagcaaga actgtgtatg atgatggtgc taggagagtg tggacactta

11341 tgaatgtctt gacactcgtt tataaagttt attatggtaa tgctttagat caagccattt

11401 ccatgtgggc tcttataatc tctgttactt ctaactactc aggtgtagtt acaactgtca

11461 tgtttttggc cagaggtatt gtttttatgt gtgttgagta ttgccctatt ttcttcataa

11521 ctggtaatac acttcagtgt ataatgctag tttattgttt cttaggctat ttttgtactt

11581 gttactttgg cctcttttgt ttactcaacc gctactttag actgactctt ggtgtttatg

11641 attacttagt ttctacacag gagtttagat atatgaattc acagggacta ctcccaccca

11701 agaatagcat agatgccttc aaactcaaca ttaaattgtt gggtgttggt ggcaaacctt

11761 gtatcaaagt agccactgta cagtctaaaa tgtcagatgt aaagtgcaca tcagtagtct

11821 tactctcagt tttgcaacaa ctcagagtag aatcatcatc taaattgtgg gctcaatgtg

11881 tccagttaca caatgacatt ctcttagcta aagatactac tgaagccttt gaaaaaatgg

11941 tttcactact ttctgttttg ctttccatgc agggtgctgt agacataaac aagctttgtg

12001 aagaaatgct ggacaacagg gcaaccttac aagctatagc ctcagagttt agttcccttc

12061 catcatatgc agcttttgct actgctcaag aagcttatga acaggctgtt gctaatggtg

12121 attctgaagt tgttcttaaa aagttgaaga agtctttgaa tgtggctaaa tctgaatttg

12181 accgtgatgc agccatgcaa cgtaagttgg aaaagatggc tgatcaagct atgacccaaa

12241 tgtataaaca ggctagatct gaggacaaga gggcaaaagt tactagtgct atgcagacaa

12301 tgcttttcac tatgcttaga aagttggata atgatgcact caacaacatt atcaacaatg

12361 caagagatgg ttgtgttccc ttgaacataa tacctcttac aacagcagcc aaactaatgg

12421 ttgtcatacc agactataac acatataaaa atacgtgtga tggtacaaca tttacttatg

12481 catcagcatt gtgggaaatc caacaggttg tagatgcaga tagtaaaatt gttcaactta

12541 gtgaaattag tatggacaat tcacctaatt tagcatggcc tcttattgta acagctttaa

12601 gggccaattc tgctgtcaaa ttacagaata atgagcttag tcctgttgca ctacgacaga

12661 tgtcttgtgc tgccggtact acacaaactg cttgcactga tgacaatgcg ttagcttact

12721 acaacacaac aaagggaggt aggtttgtac ttgcactgtt atccgattta caggatttga

12781 aatgggctag attccctaag agtgatggaa ctggtactat ttatacagaa ctggaaccac

12841 cttgtaggtt tgttacagac acacctaaag gtcctaaagt gaagtattta tactttatta

12901 aaggattaaa caacctaaat agaggtatgg tacttggtag tttagctgcc acagtacgtc

12961 tacaagctgg taatgcaaca gaagtgcctg ccaattcaac tgtattatct ttctgtgctt

13021 ttgctgtaga tgctgctaaa gcttacaaag attatctagc tagtggggga caaccaatca

13081 ctaattgtgt taagatgttg tgtacacaca ctggtactgg tcaggcaata acagttacac

13141 cggaagccaa tatggatcaa gaatcctttg gtggtgcatc gtgttgtctg tactgccgtt

13201 gccacataga tcatccaaat cctaaaggat tttgtgactt aaaaggtaag tatgtacaaa

13261 tacctacaac ttgtgctaat gaccctgtgg gttttacact taaaaacaca gtctgtaccg

13321 tctgcggtat gtggaaaggt tatggctgta gttgtgatca actccgcgaa cccatgcttc

13381 agtcagctga tgcacaatcg tttttaaacg ggtttgcggt gtaagtgcag cccgtcttac

13441 accgtgcggc acaggcacta gtactgatgt cgtatacagg gcttttgaca tctacaatga

13501 taaagtagct ggttttgcta aattcctaaa aactaattgt tgtcgcttcc aagaaaagga

13561 cgaagatgac aatttaattg attcttactt tgtagttaag agacacactt tctctaacta

13621 ccaacatgaa gaaacaattt ataatttact taaggattgt ccagctgttg ctaaacatga

13681 cttctttaag tttagaatag acggtgacat ggtaccacat atatcacgtc aacgtcttac

13741 taaatacaca atggcagacc tcgtctatgc tttaaggcat tttgatgaag gtaattgtga

13801 cacattaaaa gaaatacttg tcacatacaa ttgttgtgat gatgattatt tcaataaaaa

13861 ggactggtat gattttgtag aaaacccaga tatattacgc gtatacgcca acttaggtga

13921 acgtgtacgc caagctttgt taaaaacagt acaattctgt gatgccatgc gaaatgctgg

13981 tattgttggt gtactgacat tagataatca agatctcaat ggtaactggt atgatttcgg

14041 tgatttcata caaaccacgc caggtagtgg agttcctgtt gtagattctt attattcatt

14101 gttaatgcct atattaacct tgaccagggc tttaactgca gagtcacatg ttgacactga

14161 cttaacaaag ccttacatta agtgggattt gttaaaatat gacttcacgg aagagaggtt

14221 aaaactcttt gaccgttatt ttaaatattg ggatcagaca taccacccaa attgtgttaa

14281 ctgtttggat gacagatgca ttctgcattg tgcaaacttt aatgttttat tctctacagt

14341 gttcccactt acaagttttg gaccactagt gagaaaaata tttgttgatg gtgttccatt

14401 tgtagtttca actggatacc acttcagaga gctaggtgtt gtacataatc aggatgtaaa

14461 cttacatagc tctagactta gttttaagga attacttgtg tatgctgctg accctgctat

14521 gcacgctgct tctggtaatc tattactaga taaacgcact acgtgctttt cagtagctgc

14581 acttactaac aatgttgctt ttcaaactgt caaacccggt aattttaaca aagacttcta

14641 tgactttgct gtgtctaagg gtttctttaa ggaaggaagt tctgttgaat taaaacactt

14701 cttctttgct caggatggta atgctgctat cagcgattat gactactatc gttataatct

14761 accaacaatg tgtgatatca gacaactact atttgtagtt gaagttgttg ataagtactt

14821 tgattgttac gatggtggct gtattaatgc taaccaagtc atcgtcaaca acctagacaa

14881 atcagctggt tttccattta ataaatgggg taaggctaga ctttattatg attcaatgag

14941 ttatgaggat caagatgcac ttttcgcata tacaaaacgt aatgtcatcc ctactataac

15001 tcaaatgaat cttaagtatg ccattagtgc aaagaataga gctcgcaccg tagctggtgt

15061 ctctatctgt agtactatga ccaatagaca gtttcatcaa aaattattga aatcaatagc

15121 cgccactaga ggagctactg tagtaattgg aacaagcaaa ttctatggtg gttggcacaa

15181 catgttaaaa actgtttata gtgatgtaga aaaccctcac cttatgggtt gggattatcc

15241 taaatgtgat agagccatgc ctaacatgct tagaattatg gcctcacttg ttcttgctcg

15301 caaacataca acgtgttgta gcttgtcaca ccgtttctat agattagcta atgagtgtgc

15361 tcaagtattg agtgaaatgg tcatgtgtgg cggttcacta tatgttaaac caggtggaac

15421 ctcatcagga gatgccacaa ctgcttatgc taatagtgtt tttaacattt gtcaagctgt

15481 cacggccaat gttaatgcac ttttatctac tgatggtaac aaaattgccg ataagtatgt

15541 ccgcaattta caacacagac tttatgagtg tctctataga aatagagatg ttgacacaga

15601 ctttgtgaat gagttttacg catatttgcg taaacatttc tcaatgatga tactttctga

15661 cgatgctgtt gtgtgtttca atagcactta tgcatctcaa ggtctagtgg ctagcataaa

15721 gaactttaag tcagttcttt attatcaaaa caatgttttt atgtctgaag caaaatgttg

15781 gactgagact gaccttacta aaggacctca tgaattttgc tctcaacata caatgctagt

15841 taaacagggt gatgattatg tgtaccttcc ttacccagat ccatcaagaa tcctaggggc

15901 cggctgtttt gtagatgata tcgtaaaaac agatggtaca cttatgattg aacggttcgt

15961 gtctttagct atagatgctt acccacttac taaacatcct aatcaggagt atgctgatgt

16021 ctttcatttg tacttacaat acataagaaa gctacatgat gagttaacag gacacatgtt

16081 agacatgtat tctgttatgc ttactaatga taacacttca aggtattggg aacctgagtt

16141 ttatgaggct atgtacacac cgcatacagt cttacaggct gttggggctt gtgttctttg

16201 caattcacag acttcattaa gatgtggtgc ttgcatacgt agaccattct tatgttgtaa

16261 atgctgttac gaccatgtca tatcaacatc acataaatta gtcttgtctg ttaatccgta

16321 tgtttgcaat gctccaggtt gtgatgtcac agatgtgact caactttact taggaggtat

16381 gagctattat tgtaaatcac ataaaccacc cattagtttt ccattgtgtg ctaatggaca

16441 agtttttggt ttatataaaa atacatgtgt tggtagcgat aatgttactg actttaatgc

16501 aattgcaaca tgtgactgga caaatgctgg tgattacatt ttagctaaca cctgtactga

16561 aagactcaag ctttttgcag cagaaacgct caaagctact gaggagacat ttaaactgtc

16621 ttatggtatt gctactgtac gtgaagtgct gtctgacaga gaattacatc tttcatggga

16681 agttggtaaa cctagaccac cacttaaccg aaattatgtc tttactggtt atcgtgtaac

16741 taaaaacagt aaagtacaaa taggagagta cacctttgaa aaaggtgact atggtgatgc

16801 tgttgtttac cgaggtacaa caacttacaa attaaatgtt ggtgattatt ttgtgctgac

16861 atcacataca gtaatgccat taagtgcacc tacactagtg ccacaagagc actatgttag

16921 aattactggc ttatacccaa cactcaatat ctcagatgag ttttctagca atgttgcaaa

16981 ttatcaaaag gttggtatgc aaaagtattc tacactccag ggaccacctg gtactggtaa

17041 gagtcatttt gctattggcc tagctctcta ctacccttct gctcgcatag tgtatacagc

17101 ttgctctcat gccgctgttg atgcactatg tgagaaggca ttaaaatatt tgcctataga

17161 taaatgtagt agaattatac ctgcacgtgc tcgtgtagag tgttttgata aattcaaagt

17221 gaattcaaca ttagaacagt atgtcttttg tactgtaaat gcattgcctg agacgacagc

17281 agatatagtt gtctttgatg aaatttcaat ggccacaaat tatgatttga gtgttgtcaa

17341 tgccagatta tgtgctaagc actatgtgta cattggcgac cctgctcaat tacctgcacc

17401 acgcacattg ctaactaagg gcacactaga accagaatat ttcaattcag tgtgtagact

17461 tatgaaaact ataggtccag acatgttcct cggaacttgt cggcgttgtc ctgctgaaat

17521 tgttgacact gtgagtgctt tggtttatga taataagctt aaagcacata aagacaaatc

17581 agctcaatgc tttaaaatgt tttataaggg tgttatcacg catgatgttt catctgcaat

17641 taacaggcca caaataggcg tggtaagaga attccttaca cgtaaccctg cttggagaaa

17701 agctgtcttt atttcacctt ataattcaca gaatgctgta gcctcaaaga ttttgggact

17761 accaactcaa actgttgatt catcacaggg ctcagaatat gactatgtca tattcactca

17821 aaccactgaa acagctcact cttgtaatgt aaacagattt aatgttgcta ttaccagagc

17881 aaaagtaggc atactttgca taatgtctga tagagacctt tatgacaagt tgcaatttac

17941 aagtcttgaa attccacgta ggaatgtggc aactttacaa gctgaaaatg taacaggact

18001 ctttaaagat tgtagtaagg taatcactgg gttacatcct acacaggcac ctacacacct

18061 cagtgttgac actaaattca aaactgaagg tttatgtgtt gacgtacctg gcatacctaa

18121 ggacatgacc tatagaagac tcatctctat gatgggtttt aaaatgaatt atcaagttaa

18181 tggttaccct aacatgttta tcacccgcga agaagctata agacatgtac gtgcatggat

18241 tggcttcgat gtcgaggggt gtcatgctac tagagaagct gttggtacca atttaccttt

18301 acagctaggt ttttctacag gtgttaacct agttgctgta cctacaggtt atgttgatac

18361 acctaataat acagattttt ccagagttag tgctaaacca ccgcctggag atcaatttaa

18421 acacctcata ccacttatgt acaaaggact tccttggaat gtagtgcgta taaagattgt

18481 acaaatgtta agtgacacac ttaaaaatct ctctgacaga gtcgtatttg tcttatgggc

18541 acatggcttt gagttgacat ctatgaagta ttttgtgaaa ataggacctg agcgcacctg

18601 ttgtctatgt gatagacgtg ccacatgctt ttccactgct tcagacactt atgcctgttg

18661 gcatcattct attggatttg attacgtcta taatccgttt atgattgatg ttcaacaatg

18721 gggttttaca ggtaacctac aaagcaacca tgatctgtat tgtcaagtcc atggtaatgc

18781 acatgtagct agttgtgatg caatcatgac taggtgtcta gctgtccacg agtgctttgt

18841 taagcgtgtt gactggacta ttgaatatcc tataattggt gatgaactga agattaatgc

18901 ggcttgtaga aaggttcaac acatggttgt taaagctgca ttattagcag acaaattccc

18961 agttcttcac gacattggta accctaaagc tattaagtgt gtacctcaag ctgatgtaga

19021 atggaagttc tatgatgcac agccttgtag tgacaaagct tataaaatag aagaattatt

19081 ctattcttat gccacacatt ctgacaaatt cacagatggt gtatgcctat tttggaattg

19141 caatgtcgat agatatcctg ctaattccat tgtttgtaga tttgacacta gagtgctatc

19201 taaccttaac ttgcctggtt gtgatggtgg cagtttgtat gtaaataaac atgcattcca

19261 cacaccagct tttgataaaa gtgcttttgt taatttaaaa caattaccat ttttctatta

19321 ctctgacagt ccatgtgagt ctcatggaaa acaagtagtg tcagatatag attatgtacc

19381 actaaagtct gctacgtgta taacacgttg caatttaggt ggtgctgtct gtagacatca

19441 tgctaatgag tacagattgt atctcgatgc ttataacatg atgatctcag ctggctttag

19501 cttgtgggtt tacaaacaat ttgatactta taacctctgg aacactttta caagacttca

19561 gagtttagaa aatgtggctt ttaatgttgt aaataaggga cactttgatg gacaacaggg

19621 tgaagtacca gtttctatca ttaataacac tgtttacaca aaagttgatg gtgttgatgt

19681 agaattgttt gaaaataaaa caacattacc tgttaatgta gcatttgagc tttgggctaa

19741 gcgcaacatt aaaccagtac cagaggtgaa aatactcaat aatttgggtg tggacattgc

19801 tgctaatact gtgatctggg actacaaaag agatgctcca gcacatatat ctactattgg

19861 tgtttgttct atgactgaca tagccaagaa accaattgaa acgatttgtg caccactcac

19921 tgtctttttt gatggtagag ttgatggtca agtagactta tttagaaatg cccgtaatgg

19981 tgttcttatt acagagggta gtgttaaagg tttacaacca tctgtaggtc ccaaacaagc

20041 tagtcttaat ggagtcacat taattggaga agccgtaaaa acacagttca attattataa

20101 gaaagttgat ggtgttgtcc aacaattacc tgaaacttac tttactcaga gtagaaattt

20161 acaagaattt aaacccagga gtcaaatgga aattgatttc ttagaattag ctatggatga

20221 attcattgaa cggtataaat tagaaggcta tgccttcgaa catatcgttt atggagattt

20281 tagtcatagt cagttaggtg gtttacatct actgattgga ctagctaaac gttttaagga

20341 atcacctttt gaattagaag attttattcc tatggacagt acagttaaaa actatttcat

20401 aacagatgcg caaacaggtt catctaagtg tgtgtgttct gttattgatt tattacttga

20461 tgattttgtt gaaataataa aatcccaaga tttatctgta gtttctaagg ttgtcaaagt

20521 gactattgac tatacagaaa tttcatttat gctttggtgt aaagatggcc atgtagaaac

20581 attttaccca aaattacaat ctagtcaagc gtggcaaccg ggtgttgcta tgcctaatct

20641 ttacaaaatg caaagaatgc tattagaaaa gtgtgacctt caaaattatg gtgatagtgc

20701 aacattacct aaaggcataa tgatgaatgt cgcaaaatat actcaactgt gtcaatattt

20761 aaacacatta acattagctg taccctataa tatgagagtt atacattttg gtgctggttc

20821 tgataaagga gttgcaccag gtacagctgt tttaagacag tggttgccta cgggtacgct

20881 gcttgtcgat tcagatctta atgactttgt ctctgatgca gattcaactt tgattggtga

20941 ttgtgcaact gtacatacag ctaataaatg ggatctcatt attagtgata tgtacgaccc

21001 taagactaaa aatgttacaa aagaaaatga ctctaaagag ggttttttca cttacatttg

21061 tgggtttata caacaaaagc tagctcttgg aggttccgtg gctataaaga taacagaaca

21121 ttcttggaat gctgatcttt ataagctcat gggacacttc gcatggtgga cagcctttgt

21181 tactaatgtg aatgcgtcat catctgaagc atttttaatt ggatgtaatt atcttggcaa

21241 accacgcgaa caaatagatg gttatgtcat gcatgcaaat tacatatttt ggaggaatac

21301 aaatccaatt cagttgtctt cctattcttt atttgacatg agtaaatttc cccttaaatt

21361 aaggggtact gctgttatgt ctttaaaaga aggtcaaatc aatgatatga ttttatctct

21421 tcttagtaaa ggtagactta taattagaga aaacaacaga gttgttattt ctagtgatgt

21481 tcttgttaac aactaaacga acaatgtttg tttttcttgt tttattgcca ctagtctcta

21541 gtcagtgtgt taatcttata accagaactc aatcatacac taattctttc acacgtggtg

21601 tttattaccc tgacaaagtt ttcagatcct cagttttaca ttcaactcag gacttgttct

21661 tacctttctt ttccaatgtt acttggttcc atgctataca tgtctctggg accaatggta

21721 ctaagaggtt tgataaccct gtcctaccat ttaatgatgg tgtttatttt gcttccactg

21781 agaagtctaa cataataaga ggctggattt ttggtactac tttagattcg aagacccagt

21841 ccctacttat tgttaataac gctactaatg ttgttattaa agtctgtgaa tttcaatttt

21901 gtaatgatcc atttttggat gtttattacc acaaaaacaa caaaagttgg atggaaagtg

21961 agttcagagt ttattctagt gcgaataatt gcacttttga atatgtctct cagccttttc

22021 ttatggacct tgaaggaaaa cagggtaatt tcaaaaatct tagggaattt gtgtttaaga

22081 atattgatgg ttattttaaa atatattcta agcacacgcc tattaattta gggcgtgatc

22141 tccctcaggg tttttcggct ttagaaccat tggtagattt gccaataggt attaacatca

22201 ctaggtttca aactttactt gctttacata gaagttattt gactcctggt gattcttctt

22261 caggttggac agctggtgct gcagcttatt atgtgggtta tcttcaacct aggacttttc

22321 tattaaaata taatgaaaat ggaaccatta cagatgctgt agactgtgca cttgaccctc

22381 tctcagaaac aaagtgtacg ttgaaatcct tcactgtaga aaaaggaatc tatcaaactt

22441 ctaactttag agtccaacca acagaatcta ttgttagatt tcctaatatt acaaacttgt

22501 gcccttttga tgaagttttt aacgccacca gatttgcatc tgtttatgct tggaacagga

22561 agagaatcag caactgtgtt gctgattatt ctgtcctata taatttcgca ccatttttcg

22621 cttttaagtg ttatggagtg tctcctacta aattaaatga tctctgcttt actaatgtct

22681 atgcagattc atttgtaatt agaggtaatg aagtcagcca aatcgctcca gggcaaactg

22741 gaaatattgc tgattataat tataaattac cagatgattt tacaggctgc gttatagctt

22801 ggaattctaa caagcttgat tctaaggttg gtggtaatta taattacctg tatagattgt

22861 ttaggaagtc taatctcaaa ccttttgaga gagatatttc aactgaaatc tatcaggccg

22921 gtaacaaacc ttgtaatggt gttgcaggtt ttaattgtta ctttccttta cgatcatatg

22981 gtttccaacc cacttatggt gttggtcacc aaccatacag agtagtagta ctttcttttg

23041 aacttctaca tgcaccagca actgtttgtg gacctaaaaa gtctactaat ttggttaaaa

23101 acaaatgtgt caatttcaac ttcaatggtt taacaggcac aggtgttctt actgagtcta

23161 acaaaaagtt tctgcctttc caacaatttg gcagagacat tgctgacact actgatgctg

23221 tccgtgatcc acagacactt gagattcttg acattacacc atgttctttt ggtggtgtca

23281 gtgttataac accaggaaca aatacttcta accaggttgc tgttctttat cagggtgtta

23341 actgcacaga agtccctgtt gctattcatg cagatcaact tactcctact tggcgtgttt

23401 attctacagg ttctaatgtt tttcaaacac gtgcaggctg tttaataggg gctgaatatg

23461 tcaacaactc atatgagtgt gacataccca ttggtgcagg tatatgcgct agttatcaga

23521 ctcagactaa gtctcatcgg cgggcacgta gtgtagctag tcaatccatc attgcctaca

23581 ctatgtcact tggtgcagaa aattcagttg cttactctaa taactctatt gccataccca

23641 caaattttac tattagtgtt accacagaaa ttctaccagt gtctatgacc aagacatcag

23701 tagattgtac aatgtacatt tgtggtgatt caactgaatg cagcaatctt ttgttgcaat

23761 atggcagttt ttgtacacaa ttaaaacgtg ctttaactgg aatagctgtt gaacaagaca

23821 aaaacaccca agaagttttt gcacaagtca aacaaattta caaaacacca ccaattaaat

23881 attttggtgg ttttaatttt tcacaaatat taccagatcc atcaaaacca agcaagaggt

23941 catttattga agatctactt ttcaacaaag tgacacttgc agatgctggc ttcatcaaac

24001 aatatggtga ttgccttggt gatattgctg ctagagacct catttgtgca caaaagttta

24061 acggccttac tgttttgcca cctttgctca cagatgaaat gattgctcaa tacacttctg

24121 cactgttagc gggtacaatc acttctggtt ggacctttgg tgcaggtgct gcattacaaa

24181 taccatttgc tatgcaaatg gcttataggt ttaatggtat tggagttaca cagaatgttc

24241 tctatgagaa ccaaaaattg attgccaacc aatttaatag tgctattggc aaaattcaag

24301 actcactttc ttccacagca agtgcacttg gaaaacttca agatgtggtc aaccataatg

24361 cacaagcttt aaacacgctt gttaaacaac ttagctccaa atttggtgca atttcaagtg

24421 ttttaaatga tatcctttca cgtcttgaca aagttgaggc tgaagtgcaa attgataggt

24481 tgatcacagg cagacttcaa agtttgcaga catatgtgac tcaacaatta attagagctg

24541 cagaaatcag agcttctgct aatcttgctg ctactaaaat gtcagagtgt gtacttggac

24601 aatcaaaaag agttgatttt tgtggaaagg gctatcatct tatgtccttc cctcagtcag

24661 cacctcatgg tgtagtcttc ttgcatgtga cttatgtccc tgcacaagaa aagaacttca

24721 caactgctcc tgccatttgt catgatggaa aagcacactt tcctcgtgaa ggtgtctttg

24781 tttcaaatgg cacacactgg tttgtaacac aaaggaattt ttatgaacca caaatcatta

24841 ctacagacaa cacatttgtg tctggtaact gtgatgttgt aataggaatt gtcaacaaca

24901 cagtttatga tcctttgcaa cctgaattag attcattcaa ggaggagtta gataaatatt

24961 ttaagaatca tacatcacca gatgttgatt taggtgacat ctctggcatt aatgcttcag

25021 ttgtaaacat tcaaaaagaa attgaccgcc tcaatgaggt tgccaagaat ttaaatgaat

25081 ctctcatcga tctccaagaa cttggaaagt atgagcagta tataaaatgg ccatggtaca

25141 tttggctagg ttttatagct ggcttgattg ccatagtaat ggtgacaatt atgctttgct

25201 gtatgaccag ttgctgtagt tgtctcaagg gctgttgttc ttgtggatcc tgctgcaaat

25261 ttgatgaaga cgactctgag ccagtgctca aaggagtcaa attacattac acataaacga

25321 acttatggat ttgtttatga gaatctttac aattggaact gtaactttga agcaaggtga

25381 aatcaaggat gctactcctt cagattttgt tcgcgctact gcaacgatac cgatacaagc

25441 ctcactccct ttcggatggc ttattgttgg cgttgcactt cttgctgttt ttcagagcgc

25501 ttccaaaatc ataactctca aaaagagatg gcaactagca ctctctaagg gtgttcactt

25561 tgtttgcaac ttgctgttgt tgtttgtaac agtttactca caccttttgc tcgttgctgc

25621 tggccttgaa gccccttttc tctatcttta tgctttagtc tacttcttgc agagtataaa

25681 ctttgtaaga ataataatga ggctttggct ttgctggaaa tgccgttcca aaaacccatt

25741 actttatgat gccaactatt ttctttgctg gcatactaat tgttacgact attgtatacc

25801 ttacaatagt gtaacttctt caattgtcat tacttcaggt gatggcacaa caagtcctat

25861 ttctgaacat gactaccaga ttggtggtta tactgaaaaa tgggaatctg gagtaaaaga

25921 ctgtgttgta ttacacagtt acttcacttc agactattac cagctgtact caactcaatt

25981 gagtacagac attggtgttg aacatgttac cttcttcatc tacaataaaa ttgttgatga

26041 gcctgaagaa catgtccaaa ttcacacaat cgacggttca tccggagttg ttaatccagt

26101 aatggaacca atttatgatg aaccgacgac gactactagc gtgcctttgt aagcacaagc

26161 tgatgagtac gaacttatgt actcattcgt ttcggaagag ataggtacgt taatagttaa

26221 tagcgtactt ctttttcttg ctttcgtggt attcttgcta gttacactag ccatccttac

26281 tgcgcttcga ttgtgtgcgt actgctgcaa tattgttaac gtgagtcttg taaaaccttc

26341 tttttacgtt tactctcgtg ttaaaaatct gaattcttct agagttcctg atcttctggt

26401 ctaaacgaac taaatattat attagttttt ctgtttggaa ctttaatttt agccatggca

26461 gattccaacg gtactattac cgttgaagag cttaaaaagc tccttgaaga atggaaccta

26521 gtaataggtt tcctattcct tacatggatt tgtcttctac aatttgccta tgccaacagg

26581 aataggtttt tgtatataat taagttaatt ttcctctggc tgttatggcc agtaacttta

26641 acttgttttg tgcttgctgc tgtttacaga ataaattgga tcaccggtgg aattgctatc

26701 gcaatggctt gtcttgtagg cttgatgtgg ctcagctact tcattgcttc tttcagactg

26761 tttgcgcgta cgcgttccat gtggtcattt aatccagaaa ctaacattct tctcaacgtg

26821 ccactccatg gcactattct gaccagaccg cttctagaaa gtgaactcgt aatcggagct

26881 gtgatccttc gtggacatct tcgtattgct ggacaccatc taggacgctg tgacatcaag

26941 gacctgccta aagaaatcac tgttgctaca tcacgaacgc tttcttatta caaattggga

27001 gcttcgcagc gtgtagcagg tgactcaggt tttgctgcat acagtcgcta caggattggc

27061 aactataaat taaacacaga ccattccagt agcagtgaca atattgcttt gcttgtacag

27121 taagtgacaa cagatgtttc atctcgttga ctttcaggtt actatagcag agatattact

27181 aattattatg cggactttta aagtttccat ttggaatctt gattacatca taaacctcat

27241 aattaaaaat ttatctaagt cactaactga gaataaatat tctcaattag atgaagagca

27301 accaatggag attctctaaa cgaacatgaa aattattctt ttcttggcac tgataacact

27361 cgctacttgt gagctttatc actaccaaga gtgtgttaga ggtacaacag tacttttaaa

27421 agaaccttgc tcttctggaa catacgaggg caattcacca tttcatcctc tagctgataa

27481 caaatttgca ctgacttgct ttagcactca atttgctttt gcttgtcctg acggcgtaaa

27541 acacgtctat cagttacgtg ccagatcagt ttcacctaaa ctgttcatca gacaagagga

27601 agttcaagaa ctttactctc caatttttct tattgttgcg gcaatagtgt ttataacact

27661 ttgcttcaca ctcaaaagaa agacagaatg attgaacttt cattaattga cttctatttg

27721 tgctttttag cctttctgtt attccttgtt ttaattatgc ttattatctt ttggttctca

27781 cttgaactgc aagatcataa tgaaacttgt cacgcctaaa cgaacatgaa atttcttgtt

27841 ttcttaggaa tcatcacaac tgtagctgca tttcaccaag aatgtagttt acagtcatgt

27901 actcaacatc aaccatatgt agttgatgac ccgtgtccta ttcacttcta ttctaaatgg

27961 tatattagag taggagctag aaaatcagca cctttaattg aattgtgcgt ggatgaggct

28021 ggttctaaat cacccattca gtacatcgat atcggtaatt atacagtttc ctgtttacct

28081 tttacaatta attgccagga acctaaattg ggtagtcttg tagtgcgttg ttcgttctat

28141 gaagactttt tagagtatca tgacgttcgt gttgttttag atttcatcta aacgaacaaa

28201 cttaaatgtc tgataatgga ccccaaaatc agcgaaatgc actccgcatt acgtttggtg

28261 gaccctcaga ttcaactggc agtaaccaga atggtggggc gcgatcaaaa caacgtcggc

28321 cccaaggttt acccaataat actgcgtctt ggttcaccgc tctcactcaa catggcaagg

28381 aagaccttaa attccctcga ggacaaggcg ttccaattaa caccaatagc agtccagatg

28441 accaaattgg ctactaccga agagctacca gacgaattcg tggtggtgac ggtaaaatga

28501 aagatctcag tccaagatgg tatttctact acctaggaac tgggccagaa gctggacttc

28561 cctatggtgc taacaaagac ggcatcatat gggttgcaac tgagggagcc ttgaatacac

28621 caaaagatca cattggcacc cgcaatcctg ctaacaatgc tgcaatcgtg ctacaacttc

28681 ctcaaggaac aacattgcca aaaggcttct acgcagaagg gagcagaggc ggcagtcaag

28741 cctcttctcg ttcctcatca cgtagtcgca atagttcaag aaattcaact ccaggcagca

28801 gtaaacgaac ttctcctgct agaatggctg gcaatggcgg tgatgctgct cttgctttgc

28861 tgctgcttga cagattgaac cagcttgaga gcaaaatgtc tggtaaaggc caacaacaac

28921 aaggccaaac tgtcactaag aaatctgctg ctgaggcttc taagaagcct cggcaaaaac

28981 gtactgccac taaagcatac aatgtaacac aagctttcgg cagacgtggt ccagaacaaa

29041 cccaaggaaa ttttggggac caggaactaa tcagacaagg aactgattac aaacattggc

29101 cgcaaattgc acaatttgcc cccagcgctt cagcgttctt cggaatgtcg cgcattggca

29161 tggaagtcac accttcggga acgtggttga cctacacagg tgccattaaa ttggatgaca

29221 aagatccaaa tttcaaagat caagtcattt tgctgaataa gcatattgac gcatacaaaa

29281 cattcccacc aacagagcct aaaaaggaca aaaagaagaa ggctgatgaa actcaagcct

29341 taccgcagag acagaagaaa cagcaaactg tgactcttct tcctgctgca gatttggatg

29401 atttctccaa acaattgcaa caatccatga gccgtgctga ctcaactcag gcctaaactc

29461 atgcagacca cacaaggcag atgggctata taaacgtttt cgcttttccg tttacgatat

29521 atagtctact cttgtgcaga atgaattctc gtaactacat agcacaagta gatgtagtta

29581 actttaatct cacatagcaa tctttaatca gtgtgtaaca ttagggagga cttgaaagag

29641 ccaccacatt ttcacctaca gtgaacaatg ctagggagag ctgcctatat ggaagagccc

29701 taatgtgtaa aattaatttt agta

//