**Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/human/USA/VT-Broad-CRSP\_P2UDBM4W4UPUSW7I/2022, complete genome**

GenBank: ON066609.1

[FASTA](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?report=fasta) [Graphics](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?report=graph)

[Go to:](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1" \l "goto2211598546_0)

LOCUS ON066609 29852 bp RNA linear VRL 25-MAR-2022

DEFINITION Severe acute respiratory syndrome coronavirus 2 isolate

SARS-CoV-2/human/USA/VT-Broad-CRSP\_P2UDBM4W4UPUSW7I/2022, complete

genome.

ACCESSION ON066609

VERSION ON066609.1

DBLINK BioProject: [PRJNA622837](https://www.ncbi.nlm.nih.gov/bioproject/PRJNA622837)

BioSample: [SAMN26935699](https://www.ncbi.nlm.nih.gov/biosample/SAMN26935699)

KEYWORDS .

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 29852)

AUTHORS Lemieux,J.E., Siddle,K.J., Shaw,B., Adams,G., Pierce,V.,

Turbett,S., Anahtar,M., Branda,J., Slater,D., Harris,J., Lin,A.E.,

Gladden-Young,A., Lagerborg,K., Rudy,M., DeRuff,K., Carter,A.,

Normandin,E., Bauer,M., Reilly,S., Tomkins-Tinch,C., Loreth,C.,

Chaluvadi,S., Neumann,A., Cusick,C., Chapman,S.B., Gnirke,A.,

Flowers,K., Cerrato,F., Birren,B.W., Gallagher,G., Smole,S.,

Park,D.J., MacInnis,B.L., Ryan,E., LaRocque,R., Rosenberg,E. and

Sabeti,P.C.

TITLE SARS-CoV-2 patient sequencing at the Broad Institute

JOURNAL Unpublished

REFERENCE 2 (bases 1 to 29852)

AUTHORS Lemieux,J.E., Siddle,K.J., Shaw,B., Adams,G., Pierce,V.,

Turbett,S., Anahtar,M., Branda,J., Slater,D., Harris,J., Lin,A.E.,

Gladden-Young,A., Lagerborg,K., Rudy,M., DeRuff,K., Carter,A.,

Normandin,E., Bauer,M., Reilly,S., Tomkins-Tinch,C., Loreth,C.,

Chaluvadi,S., Neumann,A., Cusick,C., Chapman,S.B., Gnirke,A.,

Flowers,K., Cerrato,F., Birren,B.W., Gallagher,G., Smole,S.,

Park,D.J., MacInnis,B.L., Ryan,E., LaRocque,R., Rosenberg,E. and

Sabeti,P.C.

TITLE Direct Submission

JOURNAL Submitted (25-MAR-2022) Infectious Disease Program, Broad Institute

of Harvard and MIT, 75 Ames St, Cambridge, MA 02142, USA

COMMENT ##Assembly-Data-START##

Assembly Method :: Broad viral-ngs v. v2.1.33

Coverage :: 4760x

Sequencing Technology :: Illumina NovaSeq 6000

##Assembly-Data-END##

FEATURES Location/Qualifiers

source 1..29852

/organism="Severe acute respiratory syndrome coronavirus

2"

/mol\_type="genomic RNA"

/isolate="SARS-CoV-2/human/USA/VT-Broad-

CRSP\_P2UDBM4W4UPUSW7I/2022"

/isolation\_source="clinical"

/host="Homo sapiens"

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

/country="USA: Vermont"

/collection\_date="2022-03-04"

/collected\_by="Broad Institute Clinical Research

Sequencing Platform"

/note="Baseline surveillance (random sampling)"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=245&to=21522) 245..21522

/gene="ORF1ab"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?location=245:13435,13435:21522) join(245..13435,13435..21522)

/gene="ORF1ab"

/ribosomal\_slippage

/codon\_start=1

/product="ORF1ab polyprotein"

/protein\_id="[UNR41998.1](https://www.ncbi.nlm.nih.gov/protein/2211598547)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHSYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTG

DFVKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESG

LKTILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNL

LEILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGN

FKVTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAA

ITILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKL

KPVLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLV

NKFLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEII

FLEGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEK

YCALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNITFELDERIDKVLNER

CSAYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEF

KLASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPE

EEQEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSG

YLKLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVAGALNKATNNAMQVESD

DYIATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLLKSAYENFNQHEVLLA

PLLSAGIFGADPIHSLRVCVDTVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIA

EIPKEEVKPFITESKPSVEQRKQDDKKIKACVEEVTTTLEETKFLTENLLLYIDINGN

LHPDSATLVSDIDITFLKKDAPYIVGDVVQEGVLTAVVIPTKKAGGTTEMLAKALRKV

PTDNYITTYPGQGLNGYTVEEAKTVLKKCKSAFYILPSIISNEKQEILGTVSWNLREM

LAHAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGARFYFYTSKTTVASLIN

TLNDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSS

KTPEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVIT

FDNLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPH

NSHEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIK

WADNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELG

DVRETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQ

IPCTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSK

ETLYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYY

KKDNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVT

FFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWST

KPVETSNSFDVLKSEDAQGMDNLACEDLKPVSEEVVENPTIQKDVLECNVKTTEVVGD

IILKPANNIKITEEVGHTDLMAAYVDNSSLTIKKPNELSRVLGLKTLATHGLAAVNSV

PWDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYMPYFFTLLLQLCTFTRSTNSRIK

ASMPTTIAKNTVKSVGKFCLEASFNYLKSPNFSKLINIIIWFLLLSVCLGSLIYSTAA

LGVLMSNLGMPSYCTGYREGYLNSTNVTIATYCTGSIPCSVCLSGLDSLDTYPSLETI

QITISSFKWDLTAFGLVAEWFLAYILFTRFFYVLGLAAIMQLFFSYFAVHFISNSWLM

WLIINLVQMAPISAMVRMYIFFASFYYVWKSYVHVVDGCNSSTCMMCYKRNRATRVEC

TTIVNGVRRSFYVYANGGKGFCKLHNWNCVNCDTFCAGSTFISDEVARDLSLQFKRPI

NPTDQSSYIVDSVTVKNGSIHLYFDKAGQKTYERHSLSHFVNLDNLRANNTKGSLPIN

VIVFDGKSKCEESSAKSASVYYSQLMCQPILLLDQALVSDVGDSAEVAVKMFDAYVNT

FSSTFNVPMEKLKTLVATAEAELAKNVSLDNVLSTFISAARQGFVDSDVETKDVVECL

KLSHQSDIEVTGDSCNNYMLTYNKVENMTPRDLGACIDCSARHINAQVAKSHNITLIW

NVKDFMSLSEQLRKQIRSAAKKNNLPFKLTCATTRQVVNVVTTKIALKGGKIVNNWLK

QLIKVTLVFLFVAAIFYLITPVHVMSKHTDFSSEIIGYKAIDGGVTRDIASTDTCFAN

KHADFDTWFSQRGGSYTNDKACPLIAAVITREVGFVVPGLPGTILRTTNGDFLHFLPR

VFSAVGNICYTPSKLIEYTDFATSACVLAAECTIFKDASGKPVPYCYDTNVLEGSVAY

ESLRPDTRYVLMDGSIIQFPNTYLEGSVRVVTTFDSEYCRHGTCERSEAGVCVSTSGR

WVLNNDYYRSLPGVFCGVDAVNLLTNMFTPLIQPIGALDISASIVAGGIVAIVVTCLA

YYFMRFRRAFGEYSHVVAFNTLLFLMSFTVLCLTPVYSFLPGVYSVIYLYLTFYLTND

VSFLAHIQWMVMFTPLVPFWITIAYIICISTKHFYWFFSNYLKRRVVFNGVSFSTFEE

AALCTFLLNKEMYLKLRSDVLLPLTQYNRYLALYNKYKYFSGAMDTTSYREAACCHLA

KALNDFSNSGSDVLYQPPQISITSAVLQSGFRKMAFPSGKVEGCMVQVTCGTTTLNGL

WLDDVVYCPRHVICTSEDMLNPNYEDLLIRKSNHNFLVQAGNVQLRVIGHSMQNCVLK

LKVDTANPKTPKYKFVRIQPGQTFSVLACYNGSPSGVYQCAMRHNFTIKGSFLNGSCG

SVGFNIDYDCVSFCYMHHMELPTGVHAGTDLEGNFYGPFVDRQTAQAAGTDTTITVNV

LAWLYAAVINGDRWFLNRFTTTLNDFNLVAMKYNYEPLTQDHVDILGPLSAQTGIAVL

DMCASLKELLQNGMNGRTILGSALLEDEFTPFDVVRQCSGVTFQSAVKRTIKGTHHWL

LLTILTSLLVLVQSTQWSLFFFLYENAFLPFAMGIIAMSAFAMMFVKHKHAFLCLFLL

PSLATVAYFNMVYMPASWVMRIMTWLDMVDTSFKLKDCVMYASAVVLLILMTARTVYD

DGARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGVVF

MCVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVSTQ

EFRYMNSQGLLPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSVL

QQLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEEM

LDNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEFD

RDAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNIIN

NARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSKI

VQLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTDD

NALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGPK

VKYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYKD

YLASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNPK

GFCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKCYGCSCDQLREPMLQSADAQS

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/UNR41998.1?from=1&to=180) 245..784

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41998.1?from=181&to=818) 785..2698

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41998.1?from=819&to=2762) 2699..8530

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41998.1?from=2763&to=3262) 8531..10030

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41998.1?from=3263&to=3568) 10031..10948

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41998.1?from=3569&to=3855) 10949..11809

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41998.1?from=3856&to=3938) 11810..12058

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41998.1?from=3939&to=4136) 12059..12652

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41998.1?from=4137&to=4249) 12653..12991

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41998.1?from=4250&to=4388) 12992..13408

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41998.1?from=4389&to=5320) join(13409..13435,13435..16203)

/gene="ORF1ab"

/product="RNA-dependent RNA polymerase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41998.1?from=5321&to=5921) 16204..18006

/gene="ORF1ab"

/product="helicase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41998.1?from=5922&to=6448) 18007..19587

/gene="ORF1ab"

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

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41998.1?from=6449&to=6794) 19588..20625

/gene="ORF1ab"

/product="endoRNAse"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41998.1?from=6795&to=7092) 20626..21519

/gene="ORF1ab"

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

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=245&to=13450) 245..13450

/gene="ORF1ab"

/codon\_start=1

/product="ORF1a polyprotein"

/protein\_id="[UNR41999.1](https://www.ncbi.nlm.nih.gov/protein/2211598548)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHSYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTG

DFVKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESG

LKTILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNL

LEILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGN

FKVTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAA

ITILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKL

KPVLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLV

NKFLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEII

FLEGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEK

YCALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNITFELDERIDKVLNER

CSAYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEF

KLASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPE

EEQEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSG

YLKLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVAGALNKATNNAMQVESD

DYIATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLLKSAYENFNQHEVLLA

PLLSAGIFGADPIHSLRVCVDTVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIA

EIPKEEVKPFITESKPSVEQRKQDDKKIKACVEEVTTTLEETKFLTENLLLYIDINGN

LHPDSATLVSDIDITFLKKDAPYIVGDVVQEGVLTAVVIPTKKAGGTTEMLAKALRKV

PTDNYITTYPGQGLNGYTVEEAKTVLKKCKSAFYILPSIISNEKQEILGTVSWNLREM

LAHAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGARFYFYTSKTTVASLIN

TLNDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSS

KTPEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVIT

FDNLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPH

NSHEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIK

WADNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELG

DVRETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQ

IPCTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSK

ETLYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYY

KKDNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVT

FFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWST

KPVETSNSFDVLKSEDAQGMDNLACEDLKPVSEEVVENPTIQKDVLECNVKTTEVVGD

IILKPANNIKITEEVGHTDLMAAYVDNSSLTIKKPNELSRVLGLKTLATHGLAAVNSV

PWDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYMPYFFTLLLQLCTFTRSTNSRIK

ASMPTTIAKNTVKSVGKFCLEASFNYLKSPNFSKLINIIIWFLLLSVCLGSLIYSTAA

LGVLMSNLGMPSYCTGYREGYLNSTNVTIATYCTGSIPCSVCLSGLDSLDTYPSLETI

QITISSFKWDLTAFGLVAEWFLAYILFTRFFYVLGLAAIMQLFFSYFAVHFISNSWLM

WLIINLVQMAPISAMVRMYIFFASFYYVWKSYVHVVDGCNSSTCMMCYKRNRATRVEC

TTIVNGVRRSFYVYANGGKGFCKLHNWNCVNCDTFCAGSTFISDEVARDLSLQFKRPI

NPTDQSSYIVDSVTVKNGSIHLYFDKAGQKTYERHSLSHFVNLDNLRANNTKGSLPIN

VIVFDGKSKCEESSAKSASVYYSQLMCQPILLLDQALVSDVGDSAEVAVKMFDAYVNT

FSSTFNVPMEKLKTLVATAEAELAKNVSLDNVLSTFISAARQGFVDSDVETKDVVECL

KLSHQSDIEVTGDSCNNYMLTYNKVENMTPRDLGACIDCSARHINAQVAKSHNITLIW

NVKDFMSLSEQLRKQIRSAAKKNNLPFKLTCATTRQVVNVVTTKIALKGGKIVNNWLK

QLIKVTLVFLFVAAIFYLITPVHVMSKHTDFSSEIIGYKAIDGGVTRDIASTDTCFAN

KHADFDTWFSQRGGSYTNDKACPLIAAVITREVGFVVPGLPGTILRTTNGDFLHFLPR

VFSAVGNICYTPSKLIEYTDFATSACVLAAECTIFKDASGKPVPYCYDTNVLEGSVAY

ESLRPDTRYVLMDGSIIQFPNTYLEGSVRVVTTFDSEYCRHGTCERSEAGVCVSTSGR

WVLNNDYYRSLPGVFCGVDAVNLLTNMFTPLIQPIGALDISASIVAGGIVAIVVTCLA

YYFMRFRRAFGEYSHVVAFNTLLFLMSFTVLCLTPVYSFLPGVYSVIYLYLTFYLTND

VSFLAHIQWMVMFTPLVPFWITIAYIICISTKHFYWFFSNYLKRRVVFNGVSFSTFEE

AALCTFLLNKEMYLKLRSDVLLPLTQYNRYLALYNKYKYFSGAMDTTSYREAACCHLA

KALNDFSNSGSDVLYQPPQISITSAVLQSGFRKMAFPSGKVEGCMVQVTCGTTTLNGL

WLDDVVYCPRHVICTSEDMLNPNYEDLLIRKSNHNFLVQAGNVQLRVIGHSMQNCVLK

LKVDTANPKTPKYKFVRIQPGQTFSVLACYNGSPSGVYQCAMRHNFTIKGSFLNGSCG

SVGFNIDYDCVSFCYMHHMELPTGVHAGTDLEGNFYGPFVDRQTAQAAGTDTTITVNV

LAWLYAAVINGDRWFLNRFTTTLNDFNLVAMKYNYEPLTQDHVDILGPLSAQTGIAVL

DMCASLKELLQNGMNGRTILGSALLEDEFTPFDVVRQCSGVTFQSAVKRTIKGTHHWL

LLTILTSLLVLVQSTQWSLFFFLYENAFLPFAMGIIAMSAFAMMFVKHKHAFLCLFLL

PSLATVAYFNMVYMPASWVMRIMTWLDMVDTSFKLKDCVMYASAVVLLILMTARTVYD

DGARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGVVF

MCVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVSTQ

EFRYMNSQGLLPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSVL

QQLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEEM

LDNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEFD

RDAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNIIN

NARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSKI

VQLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTDD

NALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGPK

VKYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYKD

YLASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNPK

GFCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKCYGCSCDQLREPMLQSADAQS

FLNGFAV"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41999.1?from=1&to=180) 245..784

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41999.1?from=181&to=818) 785..2698

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41999.1?from=819&to=2762) 2699..8530

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41999.1?from=2763&to=3262) 8531..10030

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41999.1?from=3263&to=3568) 10031..10948

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41999.1?from=3569&to=3855) 10949..11809

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41999.1?from=3856&to=3938) 11810..12058

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41999.1?from=3939&to=4136) 12059..12652

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41999.1?from=4137&to=4249) 12653..12991

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41999.1?from=4250&to=4388) 12992..13408

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UNR41999.1?from=4389&to=4401) 13409..13447

/gene="ORF1ab"

/product="nsp11"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=13443&to=13470) 13443..13470

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 1"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=13455&to=13509) 13455..13509

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 2"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=21530&to=25342) 21530..25342

/gene="S"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=21530&to=25342) 21530..25342

/gene="S"

/codon\_start=1

/product="surface glycoprotein"

/protein\_id="[UNR42000.1](https://www.ncbi.nlm.nih.gov/protein/2211598549)"

/translation="MFVFLVLLPLVSSQCVNLTTRTQLPPAYTNSFTRGVYYPDKVFR

SSVLHSTQDLFLPFFSNVTWFHVISGTNGTKRFDNPVLPFNDGVYFASIEKSNIIRGW

IFGTTLDSKTQSLLIVNNATNVVIKVCEFQFCNDPFLDHKNNKSWMESEFRVYSSANN

CTFEYVSQPFLMDLEGKQGNFKNLREFVFKNIDGYFKIYSKHTPIIVREPEDLPQGFS

ALEPLVDLPIGINITRFQTLLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLLKY

NENGTITDAVDCALDPLSETKCTLKSFTVEKGIYQTSNFRVQPTESIVRFPNITNLCP

FDEVFNATRFASVYAWNRKRISNCVADYSVLYNLAPFFTFKCYGVSPTKLNDLCFTNV

YADSFVIRGDEVRQIAPGQTGNIADYNYKLPDDFTGCVIAWNSNKLDSKVSGNYNYLY

RLFRKSNLKPFERDISTEIYQAGNKPCNGVAGFNCYFPLRSYSFQPTYGVGHQPYRVV

VLSFELLHAPATVCGPKKSTNLVKNKCVNFNFNGLKGTGVLTESNKKFLPFQQFGRDI

ADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQVAVLYQGVNCTEVPVAIHAD

QLTPTWRVYSTGSNVFQTRAGCLIGAEYVNNSYECDIPIGAGICASYQTQTKSHRRAR

SVASQSIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEILPVSMTKTSVDCTMYIC

GDSTECSNLLLQYGSFCTQLKRALTGIAVEQDKNTQEVFAQVKQIYKTPPIKYFGGFN

FSQILPDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICAQKFKGLT

VLPPLLTDEMIAQYTSALLAGTITSGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLY

ENQKLIANQFNSAIGKIQDSLSSTASALGKLQDVVNHNAQALNTLVKQLSSKFGAISS

VLNDIFSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASANLAATKMSECV

LGQSKRVDFCGKGYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHDGKAHFPR

EGVFVSNGTHWFVTQRNFYEPQIITTDNTFVSGNCDVVIGIVNNTVYDPLQPELDSFK

EELDKYFKNHTSPDVDLGDISGINASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYE

QYIKWPWYIWLGFIAGLIAIVMVTIMLCCMTSCCSCLKGCCSCGSCCKFDEDDSEPVL

KGVKLHYT"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=25351&to=26178) 25351..26178

/gene="ORF3a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=25351&to=26178) 25351..26178

/gene="ORF3a"

/codon\_start=1

/product="ORF3a protein"

/protein\_id="[UNR42001.1](https://www.ncbi.nlm.nih.gov/protein/2211598550)"

/translation="MDLFMRIFTIGTVTLKQGEIKDATPSDFVRATATIPIQASLPFG

WLIVGVALLAVFQSASKIITLKKRWQLALSKGVHFVCNLLLLFVTVYSHLLLVAAGLE

APFFYLYALVYFLQSINFVRIIMRLWLCWKCRSKNPLLYDANYFLCWHTNCYDYCIPY

NSVTSSIVITSGDGTTSPISEHDYQIGGYTEKWESGVKDCVVLHSYFTSDYYQLYSTQ

LSTDTGVEHVTFFIYNKIVDEPEEHVQIHTIDGSSGVVNPVMEPIYDEPTTTTSVPL"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=26203&to=26430) 26203..26430

/gene="E"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=26203&to=26430) 26203..26430

/gene="E"

/codon\_start=1

/product="envelope protein"

/protein\_id="[UNR42002.1](https://www.ncbi.nlm.nih.gov/protein/2211598551)"

/translation="MYSFVSEEIGTLIVNSVLLFLAFVVFLLVTLAILTALRLCAYCC

NIVNVSLVKPSFYVYSRVKNLNSSRVPDLLV"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=26481&to=27149) 26481..27149

/gene="M"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=26481&to=27149) 26481..27149

/gene="M"

/codon\_start=1

/product="membrane glycoprotein"

/protein\_id="[UNR42003.1](https://www.ncbi.nlm.nih.gov/protein/2211598552)"

/translation="MAGSNGTITVEELKKLLEEWNLVIGFLFLTWICLLQFAYANRNR

FLYIIKLIFLWLLWPVTLTCFVLAAVYRINWITGGIAIAMACLVGLMWLSYFIASFRL

FARTRSMWSFNPETNILLNVPLHGTILTRPLLESELVIGAVILRGHLRIAGHHLGRCD

IKDLPKEITVATSRTLSYYKLGASQRVAGDSGFAAYSRYRIGNYKLNTDHSSSSDNIA

LLVQ"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=27160&to=27345) 27160..27345

/gene="ORF6"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=27160&to=27345) 27160..27345

/gene="ORF6"

/codon\_start=1

/product="ORF6 protein"

/protein\_id="[UNR42004.1](https://www.ncbi.nlm.nih.gov/protein/2211598553)"

/translation="MFHLVDFQVTIAEILLIIMRTFKVSIWNLDYIINLIIKNLSKSL

TENKYSQLDEEQPMEID"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=27352&to=27717) 27352..27717

/gene="ORF7a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=27352&to=27717) 27352..27717

/gene="ORF7a"

/codon\_start=1

/product="ORF7a protein"

/protein\_id="[UNR42005.1](https://www.ncbi.nlm.nih.gov/protein/2211598554)"

/translation="MKIILFLALITLATCELYHYQECVRGTTVLLKEPCSSGTYEGNS

PFHPLADNKFALTCFSTQFAFACPDGVKHVYQLRARSVSPKLFIRQEEVQELYSPIFL

IVAAIVFITLCFTLKRKTE"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=27714&to=27845) 27714..27845

/gene="ORF7b"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=27714&to=27845) 27714..27845

/gene="ORF7b"

/codon\_start=1

/product="ORF7b"

/protein\_id="[UNR42006.1](https://www.ncbi.nlm.nih.gov/protein/2211598555)"

/translation="MIELSLIDFYLCFLAFLLFLVLIMLIIFWFSLELQDHNETCHA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=27852&to=28217) 27852..28217

/gene="ORF8"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=27852&to=28217) 27852..28217

/gene="ORF8"

/codon\_start=1

/product="ORF8 protein"

/protein\_id="[UNR42007.1](https://www.ncbi.nlm.nih.gov/protein/2211598556)"

/translation="MKFLVFLGIITTVAAFHQECSLQSCTQHQPYVVDDPCPIHFYSK

WYIRVGARKSAPLIELCVDEAGSKSPIQYIDIGNYTVSCLPFTINCQEPKLGSLVVRC

SFYEDFLEYHDVRVVLDFI"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=28232&to=29482) 28232..29482

/gene="N"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=28232&to=29482) 28232..29482

/gene="N"

/codon\_start=1

/product="nucleocapsid phosphoprotein"

/protein\_id="[UNR42008.1](https://www.ncbi.nlm.nih.gov/protein/2211598557)"

/translation="MSDNGPQNQRNALRITFGGPSDSTGSNQNGGARSKQRRPQGLPN

NTASWFTALTQHGKEDLKFPRGQGVPINTNSSPDDQIGYYRRATRRIRGGDGKMKDLS

PRWYFYYLGTGPEAGLPYGANKDGIIWVATEGALNTPKDHIGTRNPANNAAIVLQLPQ

GTTLPKGFYAEGSRGGSQASSRSSSRSRNSSRNSTPGSSKRTSPARMAGNGGDAALAL

LLLDRLNQLESKMSGKGQQQQGQTVTKKSAAEASKKPRQKRTATKAYNVTQAFGRRGP

EQTQGNFGDQELIRQGTDYKHWPQIAQFAPSASAFFGMSRIGMEVTPSGTWLTYTGAI

KLDDKGPNFKDQVILLNKHIDAYKTFPPTEPKKDKKKKADETQALPQRQKKQQTVTLL

PAADLDDFSKQLQQSMSSADSTQA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=29507&to=29623) 29507..29623

/gene="ORF10"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=29507&to=29623) 29507..29623

/gene="ORF10"

/codon\_start=1

/product="ORF10 protein"

/protein\_id="[UNR42009.1](https://www.ncbi.nlm.nih.gov/protein/2211598558)"

/translation="MGYINVFAFPFTIYSLLLCRMNSRNYIAQVDVVNFNLT"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=29558&to=29593) 29558..29593

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=29578&to=29606) 29578..29606

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON066609.1?from=29677&to=29717) 29677..29717

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

ORIGIN

1 aggtaacaaa ccaaccaact ttcgatctct tgtagatctg ttctctaaac gaactttaaa

61 atctgtgtgg ctgtcactcg gctgcatgct tagtgcactc acgcagtata attaataact

121 aattactgtc gttgacagga cacgagtaac tcgtctatct tctgcaggct gcttacggtt

181 tcgtccgtgt tgcagccaat catcagcaca tctaggtttt gtccgggtgt gaccgaaagg

241 taagatggag agccttgtcc ctggtttcaa cgagaaaaca cacgtccaac tcagtttgcc

301 tgttttacag gttcgcgacg tgctcgtacg tggctttgga gactccgtgg aggaggtctt

361 atcagaggca cgtcaacatc ttaaagatgg cacttgtggc ttagtagaag ttgaaaaagg

421 cgttttgcct caacttgaac agccctatgt gttcatcaaa cgttcggatg ctcgaactgc

481 acctcatggt catgttatgg ttgagctggt agcagaactc gaaggcattc agtacggtcg

541 tagtggtgag acacttggtg tccttgtccc tcatgtgggc gaaataccag tggcttaccg

601 caaggttctt cttcgtaaga acggtaataa aggagctggt ggccatagtt acggcgccga

661 tctaaagtca tttgacttag gcgacgagct tggcactgat ccttatgaag attttcaaga

721 aaactggaac actaaacata gcagtggtgt tacccgtgaa ctcatgcgtg agcttaacgg

781 aggggcatac actcgctatg tcgataacaa cttctgtggc cctgatggct accctcttga

841 gtgcattaaa gaccttctag cacgtgctgg taaagcttca tgcactttgt ccgaacaact

901 ggactttatt gacactaaga ggggtgtata ctgctgccgt gaacatgagc atgaaattgc

961 ttggtacacg gaacgttctg aaaagagcta tgaattgcag acaccttttg aaattaaatt

1021 ggcaaagaaa tttgacacct tcaatgggga atgtccaaat tttgtatttc ccttaaattc

1081 cataatcaag actattcaac caagggttga aaagaaaaag cttgatggct ttatgggtag

1141 aattcgatct gtctatccag ttgcgtcacc aaatgaatgc aaccaaatgt gcctttcaac

1201 tctcatgaag tgtgatcatt gtggtgaaac ttcatggcag acgggcgatt ttgttaaagc

1261 cacttgcgaa ttttgtggca ctgagaattt gactaaagaa ggtgccacta cttgtggtta

1321 cttaccccaa aatgctgttg ttaaaattta ttgtccagca tgtcacaatt cagaagtagg

1381 acctgagcat agtcttgccg aataccataa tgaatctggc ttgaaaacca ttcttcgtaa

1441 gggtggtcgc actattgcct ttggaggctg tgtgttctct tatgttggtt gccataacaa

1501 gtgtgcctat tgggttccac gtgctagcgc taacataggt tgtaaccata caggtgttgt

1561 tggagaaggt tccgaaggtc ttaatgacaa ccttcttgaa atactccaaa aagagaaagt

1621 caacatcaat attgttggtg actttaaact taatgaagag atcgccatta ttttggcatc

1681 tttttctgct tccacaagtg cttttgtgga aactgtgaaa ggtttggatt ataaagcatt

1741 caaacaaatt gttgaatcct gtggtaattt taaagttaca aaaggaaaag ctaaaaaagg

1801 tgcctggaat attggtgaac agaaatcaat actgagtcct ctttatgcat ttgcatcaga

1861 ggctgctcgt gttgtacgat caattttctc ccgcactctt gaaactgctc aaaattctgt

1921 gcgtgtttta cagaaggccg ctataacaat actagatgga atttcacagt attcactgag

1981 actcattgat gctatgatgt tcacatctga tttggctact aacaatctag ttgtaatggc

2041 ctacattaca ggtggtgttg ttcagttgac ttcgcagtgg ctaactaaca tctttggcac

2101 tgtttatgaa aaactcaaac ccgtccttga ttggcttgaa gagaagttta aggaaggtgt

2161 agagtttctt agagacggtt gggaaattgt taaatttatc tcaacctgtg cttgtgaaat

2221 tgtcggtgga caaattgtca cctgtgcaaa ggaaattaag gagagtgttc agacattctt

2281 taagcttgta aataaatttt tggctttgtg tgctgactct atcattattg gtggagctaa

2341 acttaaagcc ttgaatttag gtgaaacatt tgtcacgcac tcaaagggat tgtacagaaa

2401 gtgtgttaaa tccagagaag aaactggcct actcatgcct ctaaaagccc caaaagaaat

2461 tatcttctta gagggagaaa cacttcccac agaagtgtta acagaggaag ttgtcttgaa

2521 aactggtgat ttacaaccat tagaacaacc tactagtgaa gctgttgaag ctccattggt

2581 tggtacacca gtttgtatta acgggcttat gttgctcgaa atcaaagaca cagaaaagta

2641 ctgtgccctt gcacctaata tgatggtaac aaacaatacc ttcacactca aaggcggtgc

2701 accaacaaag gttacttttg gtgatgacac tgtgatagaa gtgcaaggtt acaagagtgt

2761 gaatatcact tttgaacttg atgaaaggat tgataaagta cttaatgaga ggtgctctgc

2821 ctatacagtt gaactcggta cagaagtaaa tgagttcgcc tgtgttgtgg cagatgctgt

2881 cataaaaact ttgcaaccag tatctgaatt acttacacca ctgggcattg atttagatga

2941 gtggagtatg gctacatact acttatttga tgagtctggt gagtttaaat tggcttcaca

3001 tatgtattgt tctttttacc ctccagatga ggatgaagaa gaaggtgatt gtgaagaaga

3061 agagtttgag ccatcaactc aatatgagta tggtactgaa gatgattacc aaggtaaacc

3121 tttggaattt ggtgccactt ctgctgctct tcaacctgaa gaagagcaag aagaagattg

3181 gttagatgat gatagtcaac aaactgttgg tcaacaagac ggcagtgagg acaatcagac

3241 aactactatt caaacaattg ttgaggttca acctcaatta gagatggaac ttacaccagt

3301 tgttcagact attgaagtga atagttttag tggttattta aaacttactg acaatgtata

3361 cattaaaaat gcagacattg tggaagaagc taaaaaggta aaaccaacag tggttgttaa

3421 tgcagccaat gtttacctta aacatggagg aggtgttgca ggagccttaa ataaggctac

3481 taacaatgcc atgcaagttg aatctgatga ttacatagct actaatggac cacttaaagt

3541 gggtggtagt tgtgttttaa gcggacacaa tcttgctaaa cactgtcttc atgttgtcgg

3601 cccaaatgtt aacaaaggtg aagacattca acttcttaag agtgcttatg aaaattttaa

3661 tcagcacgaa gttctacttg caccattatt atcagctggt atttttggtg ctgaccctat

3721 acattcttta agagtttgtg tagatactgt tcgcacaaat gtctacttag ctgtctttga

3781 taaaaatctc tatgacaaac ttgtttcaag ctttttggaa atgaagagtg aaaagcaagt

3841 tgaacaaaag atcgctgaga ttcctaaaga ggaagttaag ccatttataa ctgaaagtaa

3901 accttcagtt gaacagagaa aacaagatga taagaaaatc aaagcttgtg ttgaagaagt

3961 tacaacaact ctggaagaaa ctaagttcct cacagaaaac ttgttacttt atattgacat

4021 taatggcaat cttcatccag attctgccac tcttgttagt gacattgaca tcactttctt

4081 aaagaaagat gctccatata tagtgggtga tgttgttcaa gagggtgttt taactgctgt

4141 ggttatacct actaaaaagg ctggtggcac tactgaaatg ctagcgaaag ctttgagaaa

4201 agtgccaaca gacaattata taaccactta cccgggtcag ggtttaaatg gttacactgt

4261 agaggaggca aagacagtgc ttaaaaagtg taaaagtgcc ttttacattc taccatctat

4321 tatctctaat gagaagcaag aaattcttgg aactgtttct tggaatttgc gagaaatgct

4381 tgcacatgca gaagaaacac gcaaattaat gcctgtctgt gtggaaacta aagccatagt

4441 ttcaactata cagcgtaaat ataagggtat taaaatacaa gagggtgtgg ttgattatgg

4501 tgctagattt tacttttaca ccagtaaaac aactgtagcg tcacttatca acacacttaa

4561 cgatctaaat gaaactcttg ttacaatgcc acttggctat gtaacacatg gcttaaattt

4621 ggaagaagct gctcggtata tgagatctct caaagtgcca gctacagttt ctgtttcttc

4681 acctgatgct gttacagcgt ataatggtta tcttacttct tcttctaaaa cacctgaaga

4741 acattttatt gaaaccatct cacttgctgg ttcctataaa gattggtcct attctggaca

4801 atctacacaa ctaggtatag aatttcttaa gagaggtgat aaaagtgtat attacactag

4861 taatcctacc acattccacc tagatggtga agttatcacc tttgacaatc ttaagacact

4921 tctttctttg agagaagtga ggactattaa ggtgtttaca acagtagaca acattaacct

4981 ccacacgcaa gttgtggaca tgtcaatgac atatggacaa cagtttggtc caacttattt

5041 ggatggagct gatgttacta aaataaaacc tcataattca catgaaggta aaacatttta

5101 tgttttacct aatgatgaca ctctacgtgt tgaggctttt gagtactacc acacaactga

5161 tcctagtttt ctgggtaggt acatgtcagc attaaatcac actaaaaagt ggaaataccc

5221 acaagttaat ggtttaactt ctattaaatg ggcagataac aactgttatc ttgccactgc

5281 attgttaaca ctccaacaaa tagagttgaa gtttaatcca cctgctctac aagatgctta

5341 ttacagagca agggctggtg aagcggctaa cttttgtgca cttatcttag cctactgtaa

5401 taagacagta ggtgagttag gtgatgttag agaaacaatg agttacttgt ttcaacatgc

5461 caatttagat tcttgcaaaa gagtcttgaa cgtggtgtgt aaaacttgtg gacaacagca

5521 gacaaccctt aagggtgtag aagctgttat gtacatgggc acactttctt atgaacaatt

5581 taagaaaggt gttcagatac cttgtacgtg tggtaaacaa gctacaaaat atctagtaca

5641 acaggagtca ccttttgtta tgatgtcagc accacctgct cagtatgaac ttaagcatgg

5701 tacatttact tgtgctagtg agtacactgg taattaccag tgtggtcact ataaacatat

5761 aacttctaaa gaaactttgt attgcataga cggtgcttta cttacaaagt cctcagaata

5821 caaaggtcct attacggatg ttttctacaa agaaaacagt tacacaacaa ccataaaacc

5881 agttacttat aaattggatg gtgttgtttg tacagaaatt gaccctaagt tggacaatta

5941 ttataagaaa gacaattctt atttcacaga gcaaccaatt gatcttgtac caaaccaacc

6001 atatccaaac gcaagcttcg ataattttaa gtttgtatgt gataatatca aatttgctga

6061 tgatttaaac cagttaactg gttataagaa acctgcttca agagagctta aagttacatt

6121 tttccctgac ttaaatggtg atgtggtggc tattgattat aaacactaca caccctcttt

6181 taagaaagga gctaaattgt tacataaacc tattgtttgg catgttaaca atgcaactaa

6241 taaagccacg tataaaccaa atacctggtg tatacgttgt ctttggagca caaaaccagt

6301 tgaaacatca aattcgtttg atgtactgaa gtcagaggac gcgcagggaa tggataatct

6361 tgcctgcgaa gatctaaaac cagtctctga agaagtagtg gaaaatccta ccatacagaa

6421 agacgttctt gagtgtaatg tgaaaactac cgaagttgta ggagacatta tacttaaacc

6481 agcaaataat ataaaaatta cagaagaggt tggccacaca gatctaatgg ctgcttatgt

6541 agacaattct agtcttacta ttaagaaacc taatgaatta tctagagtat taggtttgaa

6601 aacccttgct actcatggtt tagctgctgt taatagtgtc ccttgggata ctatagctaa

6661 ttatgctaag ccttttctta acaaagttgt tagtacaact actaacatag ttacacggtg

6721 tttaaaccgt gtttgtacta attatatgcc ttatttcttt actttattgc tacaattgtg

6781 tacttttact agaagtacaa attctagaat taaagcatct atgccgacta ctatagcaaa

6841 gaatactgtt aagagtgtcg gtaaattttg tctagaggct tcatttaatt atttgaagtc

6901 acctaatttt tctaaactga taaatattat aatttggttt ttactattaa gtgtttgcct

6961 aggttcttta atctactcaa ccgctgcttt aggtgtttta atgtctaatt taggcatgcc

7021 ttcttactgt actggttaca gagaaggcta tttgaactct actaatgtca ctattgcaac

7081 ctactgtact ggttctatac cttgtagtgt ttgtcttagt ggtttagatt ctttagacac

7141 ctatccttct ttagaaacta tacaaattac catttcatct tttaaatggg atttaactgc

7201 ttttggctta gttgcagagt ggtttttggc atatattctt ttcactaggt ttttctatgt

7261 acttggattg gctgcaatca tgcaattgtt tttcagctat tttgcagtac attttattag

7321 taattcttgg cttatgtggt taataattaa tcttgtacaa atggccccga tttcagctat

7381 ggttagaatg tacatcttct ttgcatcatt ttattatgta tggaaaagtt atgtgcatgt

7441 tgtagacggt tgtaattcat caacttgtat gatgtgttac aaacgtaata gagcaacaag

7501 agtcgaatgt acaactattg ttaatggtgt tagaaggtcc ttttatgtct atgctaatgg

7561 aggtaaaggc ttttgcaaac tacacaattg gaattgtgtt aattgtgata cattctgtgc

7621 tggtagtaca tttattagtg atgaagttgc gagagacttg tcactacagt ttaaaagacc

7681 aataaatcct actgaccagt cttcttacat cgttgatagt gttacagtga agaatggttc

7741 catccatctt tactttgata aagctggtca aaagacttat gaaagacatt ctctctctca

7801 ttttgttaac ttagacaacc tgagagctaa taacactaaa ggttcattgc ctattaatgt

7861 tatagttttt gatggtaaat caaaatgtga agaatcatct gcaaaatcag cgtctgttta

7921 ctacagtcag cttatgtgtc aacctatact gttactagat caggcattag tgtctgatgt

7981 tggtgatagt gcggaagttg cagttaaaat gtttgatgct tacgttaata cgttttcatc

8041 aacttttaac gtaccaatgg aaaaactcaa aacactagtt gcaactgcag aagctgaact

8101 tgcaaagaat gtgtccttag acaatgtctt atctactttt atttcagcag ctcggcaagg

8161 gtttgttgat tcagatgtag aaactaaaga tgttgttgaa tgtcttaaat tgtcacatca

8221 atctgacata gaagttactg gcgatagttg taataactat atgctcacct ataacaaagt

8281 tgaaaacatg acaccccgtg accttggtgc ttgtattgac tgtagtgcgc gtcatattaa

8341 tgcgcaggta gcaaaaagtc acaacattac tttgatatgg aacgttaaag atttcatgtc

8401 attgtctgaa caactacgaa aacaaatacg tagtgctgct aaaaagaata acttaccttt

8461 taagttgaca tgtgcaacta ctagacaagt tgttaatgtt gtaacaacaa agatagcact

8521 taagggtggt aaaattgtta ataattggtt gaagcagtta attaaagtta cacttgtgtt

8581 cctttttgtt gctgctattt tctatttaat aacacctgtt catgtcatgt ctaaacatac

8641 tgacttttca agtgaaatca taggatacaa ggctattgat ggtggtgtca ctcgtgacat

8701 agcatctaca gatacttgtt ttgctaacaa acatgctgat tttgacacat ggtttagcca

8761 gcgtggtggt agttatacta atgacaaagc ttgcccattg attgctgcag tcataacaag

8821 agaagtgggt tttgtcgtgc ctggtttgcc tggcacgata ttacgcacaa ctaatggtga

8881 ctttttgcat ttcttaccta gagtttttag tgcagttggt aacatctgtt acacaccatc

8941 aaaacttata gagtacactg actttgcaac atcagcttgt gttttggctg ctgaatgtac

9001 aatttttaaa gatgcttctg gtaagccagt accatattgt tatgatacca atgtactaga

9061 aggttctgtt gcttatgaaa gtttacgccc tgacacacgt tatgtgctca tggatggctc

9121 tattattcaa tttcctaaca cctaccttga aggttctgtt agagtggtaa caacttttga

9181 ttctgagtac tgtaggcacg gcacttgtga aagatcagaa gctggtgttt gtgtatctac

9241 tagtggtaga tgggtactta acaatgatta ttacagatct ttaccaggag ttttctgtgg

9301 tgtagatgct gtaaatttac ttactaatat gtttacacca ctaattcaac ctattggtgc

9361 tttggacata tcagcatcta tagtagctgg tggtattgta gctatcgtag taacatgcct

9421 tgcctactat tttatgaggt ttagaagagc ttttggtgaa tacagtcatg tagttgcctt

9481 taatacttta ctattcctta tgtcattcac tgtactctgt ttaacaccag tttactcatt

9541 cttacctggt gtttattctg ttatttactt gtacttgaca ttttatctta ctaatgatgt

9601 ttctttttta gcacatattc agtggatggt tatgttcaca cctttagtac ctttctggat

9661 aacaattgct tatatcattt gtatttccac aaagcatttc tattggttct ttagtaatta

9721 cctaaagaga cgtgtagtct ttaatggtgt ttcctttagt acttttgaag aagctgcgct

9781 gtgcaccttt ttgttaaata aagaaatgta tctaaagttg cgtagtgatg tgctattacc

9841 tcttacgcaa tataatagat acttagctct ttataataag tacaagtatt ttagtggagc

9901 aatggataca actagctaca gagaagctgc ttgttgtcat ctcgcaaagg ctctcaatga

9961 cttcagtaac tcaggttctg atgttcttta ccaaccacca caaatctcta tcacctcagc

10021 tgttttgcag agtggtttta gaaaaatggc attcccatct ggtaaagttg agggttgtat

10081 ggtacaagta acttgtggta caactacact caacggtctt tggcttgatg acgtagttta

10141 ctgtccaaga catgtgatct gcacctctga agacatgctt aaccctaatt atgaagattt

10201 actcattcgt aagtctaatc ataatttctt ggtacaggct ggtaatgttc aactcagggt

10261 tattggacat tctatgcaaa attgtgtact taagcttaag gttgatacag ccaatcctaa

10321 gacacctaag tataagtttg ttcgcattca accaggacag actttttcag tgttagcttg

10381 ttacaatggt tcaccatctg gtgtttacca atgtgctatg aggcacaatt tcactattaa

10441 gggttcattc cttaatggtt catgtggtag tgttggtttt aacatagatt atgactgtgt

10501 ctctttttgt tacatgcacc atatggaatt accaactgga gttcatgctg gcacagactt

10561 agaaggtaac ttttatggac cttttgttga caggcaaaca gcacaagcag ctggtacgga

10621 cacaactatt acagttaatg ttttagcttg gttgtacgct gctgttataa atggagacag

10681 gtggtttctc aatcgattta ccacaactct taatgacttt aaccttgtgg ctatgaagta

10741 caattatgaa cctctaacac aagaccatgt tgacatacta ggacctcttt ctgctcaaac

10801 tggaattgcc gttttagata tgtgtgcttc attaaaagaa ttactgcaaa atggtatgaa

10861 tggacgtacc atattgggta gtgctttatt agaagatgaa tttacacctt ttgatgttgt

10921 tagacaatgc tcaggtgtta ctttccaaag tgcagtgaaa agaacaatca agggtacaca

10981 ccactggttg ttactcacaa ttttgacttc acttttagtt ttagtccaga gtactcaatg

11041 gtctttgttc ttttttttgt atgaaaatgc ctttttacct tttgctatgg gtattattgc

11101 tatgtctgct tttgcaatga tgtttgtcaa acataagcat gcatttctct gtttgttttt

11161 gttaccttct cttgccactg tagcttattt taatatggtc tatatgcctg ctagttgggt

11221 gatgcgtatt atgacatggt tggatatggt tgatactagt tttaagctaa aagactgtgt

11281 tatgtatgca tcagctgtag tgttactaat ccttatgaca gcaagaactg tgtatgatga

11341 tggtgctagg agagtgtgga cacttatgaa tgtcttgaca ctcgtttata aagtttatta

11401 tggtaatgct ttagatcaag ccatttccat gtgggctctt ataatctctg ttacttctaa

11461 ctactcaggt gtagttacaa ctgtcatgtt tttggccaga ggtgttgttt ttatgtgtgt

11521 tgagtattgc cctattttct tcataactgg taatacactt cagtgtataa tgctagttta

11581 ttgtttctta ggctattttt gtacttgtta ctttggcctc ttttgtttac tcaaccgcta

11641 ctttagactg actcttggtg tttatgatta cttagtttct acacaggagt ttagatatat

11701 gaattcacag ggactactcc cacccaagaa tagcatagat gccttcaaac tcaacattaa

11761 attgttgggt gttggtggca aaccttgtat caaagtagcc actgtacagt ctaaaatgtc

11821 agatgtaaag tgcacatcag tagtcttact ctcagttttg caacaactca gagtagaatc

11881 atcatctaaa ttgtgggctc aatgtgtcca gttacacaat gacattctct tagctaaaga

11941 tactactgaa gcctttgaaa aaatggtttc actactttct gttttgcttt ccatgcaggg

12001 tgctgtagac ataaacaagc tttgtgaaga aatgctggac aacagggcaa ccttacaagc

12061 tatagcctca gagtttagtt cccttccatc atatgcagct tttgctactg ctcaagaagc

12121 ttatgagcag gctgttgcta atggtgattc tgaagttgtt cttaaaaagt tgaagaagtc

12181 tttgaatgtg gctaaatctg aatttgaccg tgatgcagcc atgcaacgta agttggaaaa

12241 gatggctgat caagctatga cccaaatgta taaacaggct agatctgagg acaagagggc

12301 aaaagttact agtgctatgc agacaatgct tttcactatg cttagaaagt tggataatga

12361 tgcactcaac aacattatca acaatgcaag agatggttgt gttcccttga acataatacc

12421 tcttacaaca gcagccaaac taatggttgt cataccagac tataacacat ataaaaatac

12481 gtgtgatggt acaacattta cttatgcatc agcattgtgg gaaatccaac aggttgtaga

12541 tgcagatagt aaaattgttc aacttagtga aattagtatg gacaattcac ctaatttagc

12601 atggcctctt attgtaacag ctttaagggc caattctgct gtcaaattac agaataatga

12661 gcttagtcct gttgcactac gacagatgtc ttgtgctgcc ggtactacac aaactgcttg

12721 cactgatgac aatgcgttag cttactacaa cacaacaaag ggaggtaggt ttgtacttgc

12781 actgttatcc gatttacagg atttgaaatg ggctagattc cctaagagtg atggaactgg

12841 tactatctat acagaactgg aaccaccttg taggtttgtt acagacacac ctaaaggtcc

12901 taaagtgaag tatttatact ttattaaagg attaaacaac ctaaatagag gtatggtact

12961 tggtagttta gctgccacag tacgtctaca agctggtaat gcaacagaag tgcctgccaa

13021 ttcaactgta ttatctttct gtgcttttgc tgtagatgct gctaaagctt acaaagatta

13081 tctagctagt gggggacaac caatcactaa ttgtgttaag atgttgtgta cacacactgg

13141 tactggtcag gcaataacag tcacaccgga agccaatatg gatcaagaat cctttggtgg

13201 tgcatcgtgt tgtctgtact gccgttgcca catagatcat ccaaatccta aaggattttg

13261 tgacttaaaa ggtaagtatg tacaaatacc tacaacttgt gctaatgacc ctgtgggttt

13321 tacacttaaa aacacagtct gtaccgtctg cggtatgtgg aaatgttatg gctgtagttg

13381 tgatcaactc cgcgaaccca tgcttcagtc agctgatgca caatcgtttt taaacgggtt

13441 tgcggtgtaa gtgcagcccg tcttacaccg tgcggcacag gcactagtac tgatgtcgta

13501 tacagggctt ttgacatcta caatgataaa gtagctggtt ttgctaaatt cctaaaaact

13561 aattgttgtc gcttccaaga aaaggacgaa gatgacaatt taattgattc ttactttgta

13621 gttaagagac acactttctc taactaccaa catgaagaaa caatttataa tttacttaag

13681 gattgtccag ctgttgctaa acatgacttc tttaagttta gaatagacgg tgacatggta

13741 ccacatatat cacgtcaacg tcttactaaa tacacaatgg cagacctcgt ctatgcttta

13801 aggcattttg atgaaggtaa ttgtgacaca ttaaaagaaa tacttgtcac atacaattgt

13861 tgtgatgatg attatttcaa taaaaaggac tggtatgatt ttgtagaaaa cccagatata

13921 ttacgcgtat acgccaactt aggtgaacgt gtacgccaag ctttgttaaa aacagtacaa

13981 ttctgtgatg ccatgcgaaa tgctggtatt gttggtgtac tgacattaga taatcaagat

14041 ctcaatggta actggtatga tttcggtgat ttcatacaaa ccacgccagg tagtggagtt

14101 cctgttgtag attcttatta ttcattgtta atgcctatat taaccttgac cagggcttta

14161 actgcagagt cacatgttga cactgactta acaaagcctt acattaagtg ggatttgtta

14221 aaatatgact tcacggaaga gaggttaaaa ctctttgacc gttattttaa atattgggat

14281 cagacatacc acccaaattg tgttaactgt ttggatgaca gatgcattct gcattgtgca

14341 aactttaatg ttttattctc tacagtgttc ccacttacaa gttttggacc actagtgaga

14401 aaaatatttg ttgatggtgt tccatttgta gtttcaactg gataccactt cagagagcta

14461 ggtgttgtac ataatcagga tgtaaactta catagctcta gacttagttt taaggaatta

14521 cttgtgtatg ctgctgaccc tgctatgcac gctgcttctg gtaatctatt actagataaa

14581 cgcactacgt gcttttcagt agctgcactt actaacaatg ttgcttttca aactgtcaaa

14641 cccggtaatt ttaacaaaga cttctatgac tttgctgtgt ctaagggttt ctttaaggaa

14701 ggaagttctg ttgaattaaa acacttcttc tttgctcagg atggtaatgc tgctatcagc

14761 gattatgact actatcgtta taatctacca acaatgtgtg atatcagaca actactattt

14821 gtagttgaag ttgttgataa gtactttgat tgttacgatg gtggctgtat taatgctaac

14881 caagtcatcg tcaacaacct agacaaatca gctggttttc catttaataa atggggtaag

14941 gctagacttt attatgattc aatgagttat gaggatcaag atgcactttt cgcatataca

15001 aaacgtaatg tcatccctac tataactcaa atgaatctta agtatgccat tagtgcaaag

15061 aatagagctc gcaccgtagc tggtgtctct atctgtagta ctatgaccaa tagacagttt

15121 catcaaaaat tattgaaatc aatagccgcc actagaggag ctactgtagt aattggaaca

15181 agcaaattct atggtggttg gcacaatatg ttaaaaactg tttatagtga tgtagaaaac

15241 cctcacctta tgggttggga ttatcctaaa tgtgatagag ccatgcctaa catgcttaga

15301 attatggcct cacttgttct tgctcgcaaa catacaacgt gttgtagctt gtcacaccgt

15361 ttctatagat tagctaatga gtgtgctcaa gtattgagtg aaatggtcat gtgtggcggt

15421 tcactatatg ttaaaccagg tggaacctca tcaggagatg ccacaactgc ttatgctaat

15481 agtgttttta acatttgtca agctgtcacg gccaatgtta atgcactttt atctactgat

15541 ggtaacaaaa ttgccgataa gtatgtccgc aatttacaac acagacttta tgagtgtctc

15601 tatagaaata gagatgttga cacagacttt gtgaatgagt tttacgcata tttgcgtaaa

15661 catttctcaa tgatgatact ctctgacgat gctgttgtgt gtttcaatag cacttatgca

15721 tctcaaggtc tagtggctag cataaagaac tttaagtcag ttctttatta tcaaaacaat

15781 gtttttatgt ctgaagcaaa atgttggact gagactgacc ttactaaagg acctcatgaa

15841 ttttgctctc aacatacaat gctagttaaa cagggtgatg attatgtgta ccttccttac

15901 ccagatccat caagaatcct aggggccggc tgttttgtag atgatatcgt aaaaacagat

15961 ggtacactta tgattgaacg gttcgtgtct ttagctatag atgcttaccc acttactaaa

16021 catcctaatc aggagtatgc tgatgtcttt catttgtact tacaatacat aagaaagcta

16081 catgatgagt taacaggaca catgttagac atgtattctg ttatgcttac taatgataac

16141 acttcaaggt attgggaacc tgagttttat gaggctatgt acacaccgca tacagtctta

16201 caggctgttg gggcttgtgt tctttgcaat tcacagactt cattaagatg tggtgcttgc

16261 atacgtagac cattcttatg ttgtaaatgc tgttacgacc atgtcatatc aacatcacat

16321 aaattagtct tgtctgttaa tccgtatgtt tgcaatgctc caggttgtga tgtcacagat

16381 gtgactcaac tttacttagg aggtatgagc tattattgta aatcacataa accacccatt

16441 agttttccat tgtgtgctaa tggacaagtt tttggtttat ataaaaatac atgtgttggt

16501 agcgataatg ttactgactt taatgcaatt gcaacatgtg actggacaaa tgctggtgat

16561 tacattttag ctaacacctg tactgaaaga ctcaagcttt ttgcagcaga aacgctcaaa

16621 gctactgagg agacatttaa actgtcttat ggtattgcta ctgtacgtga agtgctgtct

16681 gacagagaat tacatctttc atgggaagtt ggtaaaccta gaccaccact taaccgaaat

16741 tatgtcttta ctggttatcg tgtaactaaa aacagtaaag tacaaatagg agagtacacc

16801 tttgaaaaag gtgactatgg tgatgctgtt gtttaccgag gtacaacaac ttacaaatta

16861 aatgttggtg attattttgt gctgacatca catacagtaa tgccattaag tgcacctaca

16921 ctagtgccac aagagcacta tgttagaatt actggcttat acccaacact caatatctca

16981 gatgagtttt ctagcaatgt tgcaaattat caaaaggttg gtatgcaaaa gtattctaca

17041 ctccagggac cacctggtac tggtaagagt cattttgcta ttggcctagc tctctactac

17101 ccttctgctc gcatagtgta tacagcttgc tctcatgccg ctgttgatgc actatgtgag

17161 aaggcattaa aatatttgcc tatagataaa tgtagtagaa ttatacctgc acgtgctcgt

17221 gtagagtgtt ttgataaatt caaagtgaat tcaacattag aacagtatgt cttttgtact

17281 gtaaatgcat tgcctgagac gacagcagat atagttgtct ttgatgaaat ttcaatggcc

17341 acaaattatg atttgagtgt tgtcaatgcc agattacgtg ctaagcacta tgtgtacatt

17401 ggcgaccctg ctcaattacc tgcaccacgc acattgctaa ctaagggcac actagaacca

17461 gaatatttca attcagtgtg tagacttatg aaaactatag gtccagacat gttcctcgga

17521 acttgtcggc gttgtcctgc tgaaattgtt gacactgtga gtgctttggt ttatgataat

17581 aagcttaaag cacataaaga caaatcagct caatgcttta aaatgtttta taagggtgtt

17641 atcacgcatg atgtttcatc tgcaattaac aggccacaaa taggcgtggt aagagaattc

17701 cttacacgta accctgcttg gagaaaagct gtctttattt caccttataa ttcacagaat

17761 gctgtagcct caaagatttt gggactacca actcaaactg ttgattcatc acagggctca

17821 gaatatgact atgtcatatt cactcaaacc actgaaacag ctcactcttg taatgtaaac

17881 agatttaatg ttgctattac cagagcaaaa gtaggcatac tttgcataat gtctgataga

17941 gacctttatg acaagttgca atttacaagt cttgaaattc cacgtaggaa tgtggcaact

18001 ttacaagctg aaaatgtaac aggactcttt aaagattgta gtaaggtaat cactgggtta

18061 catcctacac aggcacctac acacctcagt gttgacacta aattcaaaac tgaaggttta

18121 tgtgttgacg tacctggcat acctaaggac atgacctata gaagactcat ctctatgatg

18181 ggttttaaaa tgaattatca agttaatggt taccctaaca tgtttatcac ccgcgaagaa

18241 gctataagac atgtacgtgc atggattggc ttcgatgtcg aggggtgtca tgctactaga

18301 gaagctgttg gtaccaattt acctttacag ctaggttttt ctacaggtgt taacctagtt

18361 gctgtaccta caggttatgt tgatacacct aataatacag atttttccag agttagtgct

18421 aaaccaccgc ctggagatca atttaaacac cttataccac ttatgtacaa aggacttcct

18481 tggaatgtag tgcgtataaa gattgtacaa atgttaagtg acacacttaa aaatctctct

18541 gacagagtcg tatttgtctt atgggcacat ggctttgagt tgacatctat gaagtatttt

18601 gtgaaaatag gacctgagcg cacctgttgt ctatgtgata gacgtgccac atgcttttcc

18661 actgcttcag acacttatgc ctgttggcat cattctattg gatttgatta cgtctataat

18721 ccgtttatga ttgatgttca acaatggggt tttacaggta acctacaaag caaccatgat

18781 ctgtattgtc aagtccatgg taatgcacat gtagctagtt gtgatgcaat catgactagg

18841 tgtctagctg tccacgagtg ctttgttaag cgtgttgact ggactattga atatcctata

18901 attggtgatg aactgaagat taatgcggct tgtagaaagg ttcaacacat ggttgttaaa

18961 gctgcattat tagcagacaa attcccagtt cttcacgaca ttggtaaccc taaagctatt

19021 aagtgtgtac ctcaagctga tgtagaatgg aagttctatg atgcacagcc ttgtagtgac

19081 aaagcttata aaatagaaga attattctat tcttatgcca cacattctga caaattcaca

19141 gatggtgtat gcctattttg gaattgcaat gtcgatagat atcctgctaa ttccattgtt

19201 tgtagatttg acactagagt gctatctaac cttaacttgc ctggttgtga tggtggcagt

19261 ttgtatgtaa ataaacatgc attccacaca ccagcttttg ataaaagtgc ttttgttaat

19321 ttaaaacaat taccattttt ctattactct gacagtccat gtgagtctca tggaaaacaa

19381 gtagtgtcag atatagatta tgtaccacta aagtctgcta cgtgtataac acgttgcaat

19441 ttaggtggtg ctgtctgtag acatcatgct aatgagtaca gattgtatct cgatgcttat

19501 aacatgatga tctcagctgg ctttagcttg tgggtttaca aacaatttga tacttataac

19561 ctctggaaca cttttacaag acttcagagt ttagaaaatg tggcttttaa tgttgtaaat

19621 aagggacact ttgatggaca acagggtgaa gtaccagttt ctatcattaa taacactgtt

19681 tacacaaaag ttgatggtgt tgatgtagaa ttgtttgaaa ataaaacaac attacctgtt

19741 aatgtagcat ttgagctttg ggctaagcgc aacattaaac cagtaccaga ggtgaaaata

19801 ctcaataatt tgggtgtgga cattgctgct aatactgtga tctgggacta caaaagagat

19861 gctccagcac atatatctac tattggtgtt tgttctatga ctgacatagc caagaaacca

19921 actgaaacga tttgtgcacc actcactgtc ttttttgatg gtagagttga tggtcaagta

19981 gacttattta gaaatgcccg taatggtgtt cttattacag aaggtagtgt taaaggttta

20041 caaccatctg taggtcccaa acaagctagt cttaatggag tcacattaat tggagaagcc

20101 gtaaaaacac agttcaatta ttataagaaa gttgatggtg ttgtccaaca attacctgaa

20161 acttacttta ctcagagtag aaatttacaa gaatttaaac ccaggagtca aatggaaatt

20221 gatttcttag aattagctat ggatgaattc attgaacggt ataaattaga aggctatgcc

20281 ttcgaacata tcgtttatgg agattttagt catagtcagt taggtggttt acatctactg

20341 attggactag ctaaacgttt taaggaatca ccttttgaat tagaagattt tattcctatg

20401 gacagtacag ttaaaaacta tttcataaca gatgcgcaaa caggttcatc taagtgtgtg

20461 tgttctgtta ttgatttatt acttgatgat tttgttgaaa taataaaatc ccaagattta

20521 tctgtagttt ctaaggttgt caaagtgact attgactata cagaaatttc atttatgctt

20581 tggtgtaaag atggccatgt agaaacattt tacccaaaat tacaatctag tcaagcgtgg

20641 caaccgggtg ttgctatgcc taatctttac aaaatgcaaa gaatgctatt agaaaagtgt

20701 gaccttcaaa attatggtga tagtgcaaca ttacctaaag gcataatgat gaatgtcgca

20761 aaatatactc aactgtgtca atatttaaac acattaacat tagctgtacc ctataatatg

20821 agagttatac attttggtgc tggttctgat aaaggagttg caccaggtac agctgtttta

20881 agacagtggt tgcctacggg tacgctgctt gtcgattcag atcttaatga ctttgtctct

20941 gatgcagatt caactttgat tggtgattgt gcaactgtac atacagctaa taaatgggat

21001 ctcattatta gtgatatgta cgaccctaag actaaaaatg ttacaaaaga aaatgactct

21061 aaagagggtt ttttcactta catttgtggg tttatacaac aaaagctagc tcttggaggt

21121 tccgtggcta taaagataac agaacattct tggaatgctg atctttataa gctcatggga

21181 cacttcgcat ggtggacagc ctttgttact aatgtgaatg cgtcatcatc tgaagcattt

21241 ttaattggat gtaattatct tggcaaacca cgcgaacaaa tagatggtta tgtcatgcat

21301 gcaaattaca tattttggag gaatacaaat ccaattcagt tgtcttccta ttctttattt

21361 gacatgagta aatttcccct taaattaagg ggtactgctg ttatgtcttt aaaagaaggt

21421 caaatcaatg atatgatttt atctcttctt agtaaaggta gacttataat tagagaaaac

21481 aacagagttg ttatttctag tgatgttctt gttaacaact aaacgaacaa tgtttgtttt

21541 tcttgtttta ttgccactag tctctagtca gtgtgttaat cttacaacca gaactcaatt

21601 accccctgca tacactaatt ctttcacacg tggtgtttat taccctgaca aagttttcag

21661 atcctcagtt ttacattcaa ctcaggactt gttcttacct ttcttttcca atgttacttg

21721 gttccatgtt atctctggga ccaatggtac taagaggttt gataaccctg tcctaccatt

21781 taatgatggt gtttattttg cttccattga gaagtctaac ataataagag gctggatttt

21841 tggtactact ttagattcga agacccagtc cctacttatt gttaataacg ctactaatgt

21901 tgttattaaa gtctgtgaat ttcaattttg taatgatcca tttttggacc acaaaaacaa

21961 caaaagttgg atggaaagtg agttcagagt ttattctagt gcgaataatt gcacttttga

22021 atatgtctct cagccttttc ttatggacct tgaaggaaaa cagggtaatt tcaaaaatct

22081 tagggaattt gtgtttaaga atattgatgg ttattttaaa atatattcta agcacacgcc

22141 tattatagtg cgtgagccag aagatctccc tcagggtttt tcggctttag aaccattggt

22201 agatttgcca ataggtatta acatcactag gtttcaaact ttacttgctt tacatagaag

22261 ttatttgact cctggtgatt cttcttcagg ttggacagct ggtgctgcag cttattatgt

22321 gggttatctt caacctagga cttttctatt aaaatataat gaaaatggaa ccattacaga

22381 tgctgtagac tgtgcacttg accctctctc agaaacaaag tgtacgttga aatccttcac

22441 tgtagaaaaa ggaatctatc aaacttctaa ctttagagtc caaccaacag aatctattgt

22501 tagatttcct aatattacaa acttgtgccc ttttgatgaa gtttttaacg ccaccagatt

22561 tgcatctgtt tatgcttgga acaggaagag aatcagcaac tgtgttgctg attattctgt

22621 cctatataat ctcgcaccat ttttcacttt taagtgttat ggagtgtctc ctactaaatt

22681 aaatgatctc tgctttacta atgtctatgc agattcattt gtaattagag gtgatgaagt

22741 cagacaaatc gctccagggc aaactggaaa tattgctgat tataattata aattaccaga

22801 tgattttaca ggctgcgtta tagcttggaa ttctaacaag cttgattcta aggttagtgg

22861 taattataat tacctgtata gattgtttag gaagtctaat ctcaaacctt ttgagagaga

22921 tatttcaact gaaatctatc aggccggtaa caaaccttgt aatggtgttg caggttttaa

22981 ttgttacttt cctttacgat catatagttt ccaacccact tatggtgttg gtcaccaacc

23041 atacagagta gtagtacttt cttttgaact tctacatgca ccagcaactg tttgtggacc

23101 taaaaagtct actaatttgg ttaaaaacaa atgtgtcaat ttcaacttca atggtttaaa

23161 aggcacaggt gttcttactg agtctaacaa aaagtttctg cctttccaac aatttggcag

23221 agacattgct gacactactg atgctgtccg tgatccacag acacttgaga ttcttgacat

23281 tacaccatgt tcttttggtg gtgtcagtgt tataacacca ggaacaaata cttctaacca

23341 ggttgctgtt ctttatcagg gtgttaactg cacagaagtc cctgttgcta ttcatgcaga

23401 tcaacttact cctacttggc gtgtttattc tacaggttct aatgtttttc aaacacgtgc

23461 aggctgttta ataggggctg aatatgtcaa caactcatat gagtgtgaca tacccattgg

23521 tgcaggtata tgcgctagtt atcagactca gactaagtct catcggcggg cacgtagtgt

23581 agctagtcaa tccatcattg cctacactat gtcacttggt gcagaaaatt cagttgctta

23641 ctctaataac tctattgcca tacccacaaa ttttactatt agtgttacca cagaaattct

23701 accagtgtct atgaccaaga catcagtaga ttgtacaatg tacatttgtg gtgattcaac

23761 tgaatgcagc aatcttttgt tgcaatatgg cagtttttgt acacaattaa aacgtgcttt

23821 aactggaata gctgttgaac aagacaaaaa cacccaagaa gtttttgcac aagtcaaaca

23881 aatttacaaa acaccaccaa ttaaatattt tggtggtttt aatttttcac aaatattacc

23941 agatccatca aaaccaagca agaggtcatt tattgaagat ctacttttca acaaagtgac

24001 acttgcagat gctggcttca tcaaacaata tggtgattgc cttggtgata ttgctgctag

24061 agacctcatt tgtgcacaaa agtttaaagg ccttactgtt ttgccacctt tgctcacaga

24121 tgaaatgatt gctcaataca cttctgcact gttagcgggt acaatcactt ctggttggac

24181 ctttggtgca ggtgctgcat tacaaatacc atttgctatg caaatggctt ataggtttaa

24241 tggtattgga gttacacaga atgttctcta tgagaaccaa aaattgattg ccaaccaatt

24301 taatagtgct attggcaaaa ttcaagactc actttcttcc acagcaagtg cacttggaaa

24361 acttcaagat gtggtcaacc ataatgcaca agctttaaac acgcttgtta aacaacttag

24421 ctccaaattt ggtgcaattt caagtgtttt aaatgatatc ttttcacgtc ttgacaaagt

24481 tgaggctgaa gtgcaaattg ataggttgat cacaggcaga cttcaaagtt tgcagacata

24541 tgtgactcaa caattaatta gagctgcaga aatcagagct tctgctaatc ttgctgctac

24601 taaaatgtca gagtgtgtac ttggacaatc aaaaagagtt gatttttgtg gaaagggcta

24661 tcatcttatg tccttccctc agtcagcacc tcatggtgta gtcttcttgc atgtgactta

24721 tgtccctgca caagaaaaga acttcacaac tgctcctgcc atttgtcatg atggaaaagc

24781 acactttcct cgtgaaggtg tctttgtttc aaatggcaca cactggtttg taacacaaag

24841 gaatttttat gaaccacaaa tcattactac agacaacaca tttgtgtctg gtaactgtga

24901 tgttgtaata ggaattgtca acaacacagt ttatgatcct ttgcaacctg aattagattc

24961 attcaaggag gagttagata aatattttaa gaatcataca tcaccagatg ttgatttagg

25021 tgacatctct ggcattaatg cttcagttgt aaacattcaa aaagaaattg accgcctcaa

25081 tgaggttgcc aagaatttaa atgaatctct catcgatctc caagaacttg gaaagtatga

25141 gcagtatata aaatggccat ggtacatttg gctaggtttt atagctggct tgattgccat

25201 agtaatggtg acaattatgc tttgctgtat gaccagttgc tgtagttgtc tcaagggctg

25261 ttgttcttgt ggatcctgct gcaaatttga tgaagacgac tctgagccag tgctcaaagg

25321 agtcaaatta cattacacat aaacgaactt atggatttgt ttatgagaat attcacaatt

25381 ggaactgtaa ctttgaagca aggtgaaatc aaggatgcta ctccttcaga ttttgttcgc

25441 gctactgcaa cgataccgat acaagcctca ctccctttcg gatggcttat tgttggcgtt

25501 gcacttcttg ctgtttttca gagcgcttcc aaaatcataa ctctcaaaaa gagatggcaa

25561 ctagcactct ccaagggtgt tcactttgtt tgcaacttgc tgttgttgtt tgtaacagtt

25621 tactcacacc ttttgctcgt tgctgctggc cttgaagccc cttttttcta tctttatgct

25681 ttagtctact tcttgcagag tataaacttt gtaagaataa taatgaggct ttggctttgc

25741 tggaaatgcc gttccaaaaa cccattactt tatgatgcca actattttct ttgctggcat

25801 actaattgtt acgactattg tataccttac aatagtgtaa cttcttcaat tgtcattact

25861 tcaggtgatg gcacaacaag tcctatttct gaacatgact accagattgg tggttatact

25921 gaaaaatggg aatctggagt aaaagactgt gttgtattac acagttactt cacttcagac

25981 tattaccagc tgtactcaac tcaattgagt acagacactg gtgttgaaca tgttaccttc

26041 ttcatctaca ataaaattgt tgatgagcct gaagaacatg tccaaattca cacaatcgac

26101 ggttcatccg gagttgttaa tccagtaatg gaaccaattt atgatgaacc gacgacgact

26161 actagcgtgc ctttgtaagc acaagctgat gagtacgaac ttatgtactc attcgtttcg

26221 gaagagatag gtacgttaat agttaatagc gtacttcttt ttcttgcttt cgtggtattc

26281 ttgctagtta cactagccat ccttactgcg cttcgattgt gtgcgtactg ctgcaatatt

26341 gttaacgtga gtcttgtaaa accttctttt tacgtttact ctcgtgttaa aaatctgaat

26401 tcttctagag ttcctgatct tctggtctaa acgaactaaa tattatatta gtttttctgt

26461 ttggaacttt aattttagcc atggcaggtt ccaacggtac tattaccgtt gaagagctta

26521 aaaagctcct tgaagaatgg aacctagtaa taggtttcct attccttaca tggatttgtc

26581 ttctacaatt tgcctatgcc aacaggaata ggtttttgta tataattaag ttaattttcc

26641 tctggctgtt atggccagta actttaactt gttttgtgct tgctgctgtt tacagaataa

26701 attggatcac cggtggaatt gctatcgcaa tggcttgtct tgtaggcttg atgtggctca

26761 gctacttcat tgcttctttc agactgtttg cgcgtacgcg ttccatgtgg tcattcaatc

26821 cagaaactaa cattcttctc aacgtgccac tccatggcac tattctgacc agaccgcttc

26881 tagaaagtga actcgtaatc ggagctgtga tccttcgtgg acatcttcgt attgctggac

26941 accatctagg acgctgtgac atcaaggacc tgcctaaaga aatcactgtt gctacatcac

27001 gaacgctttc ttattacaaa ttgggagctt cgcagcgtgt agcaggtgac tcaggttttg

27061 ctgcatacag tcgctacagg attggcaact ataaattaaa cacagaccat tccagtagca

27121 gtgacaatat tgctttgctt gtacagtaag tgacaacaga tgtttcatct cgttgacttt

27181 caggttacta tagcagagat attactaatt attatgcgga cttttaaagt ttccatttgg

27241 aatcttgatt acatcataaa cctcataatt aaaaatttat ctaagtcact aactgagaat

27301 aaatattctc aattagatga agagcaacca atggagattg attaaacgaa catgaaaatt

27361 attcttttct tggcactgat aacactcgct acttgtgagc tttatcacta ccaagagtgt

27421 gttagaggta caacagtact tttaaaagaa ccttgctctt ctggaacata cgagggcaat

27481 tcaccatttc atcctctagc tgataacaaa tttgcactga cttgctttag cactcaattt

27541 gcttttgctt gtcctgacgg cgtaaaacac gtctatcagt tacgtgccag atcagtttca

27601 cctaaactgt tcatcagaca agaggaagtt caagaacttt actctccaat ttttcttatt

27661 gttgcggcaa tagtgtttat aacactttgc ttcacactca aaagaaagac agaatgattg

27721 aactttcatt aattgacttc tatttgtgct ttttagcctt tctgttattc cttgttttaa

27781 ttatgcttat tatcttttgg ttctcacttg aactgcaaga tcataatgaa acttgtcacg

27841 cctaaacgaa catgaaattt cttgttttct taggaatcat cacaactgta gctgcatttc

27901 accaagaatg tagtttacag tcatgtactc aacatcaacc atatgtagtt gatgacccgt

27961 gtcctattca cttctattct aaatggtata ttagagtagg agctagaaaa tcagcacctt

28021 taattgaatt gtgcgtggat gaggctggtt ctaaatcacc cattcagtac atcgatatcg

28081 gtaattatac agtttcctgt ttacctttta caattaattg ccaggaacct aaattgggta

28141 gtcttgtagt gcgttgttcg ttctatgaag actttttaga gtatcatgac gttcgtgttg

28201 ttttagattt catctaaacg aacaaactta aatgtctgat aatggacccc aaaatcagcg

28261 aaatgcactc cgcattacgt ttggtggacc ctcagattca actggcagta accagaatgg

28321 tggggcgcga tcaaaacaac gtcggcccca aggtttaccc aataatactg cgtcttggtt

28381 caccgctctc actcaacatg gcaaggaaga ccttaaattc cctcgaggac aaggcgttcc

28441 aattaacacc aatagcagtc cagatgacca aattggctac taccgaagag ctaccagacg

28501 aattcgtggt ggtgacggta aaatgaaaga tctcagtcca agatggtatt tctactacct

28561 aggaactggg ccagaagctg gacttcccta tggtgctaac aaagacggca tcatatgggt

28621 tgcaactgag ggagccttga atacaccaaa agatcacatt ggcacccgca atcctgctaa

28681 caatgctgca atcgtgctac aacttcctca aggaacaaca ttgccaaaag gcttctacgc

28741 agaagggagc agaggcggca gtcaagcctc ttctcgttcc tcatcacgta gtcgcaacag

28801 ttcaagaaat tcaactccag gcagcagtaa acgaacttct cctgctagaa tggctggcaa

28861 tggcggtgat gctgctcttg ctttgctgct gcttgacaga ttgaaccagc ttgagagcaa

28921 aatgtctggt aaaggccaac aacaacaagg ccaaactgtc actaagaaat ctgctgctga

28981 ggcttctaag aagcctcggc aaaaacgtac tgccactaaa gcatacaatg taacacaagc

29041 tttcggcaga cgtggtccag aacaaaccca aggaaatttt ggggaccagg aactaatcag

29101 acaaggaact gattacaaac attggccgca aattgcacaa tttgccccca gcgcttcagc

29161 gttcttcgga atgtcgcgca ttggcatgga agtcacacct tcgggaacgt ggttgaccta

29221 cacaggtgcc atcaaattgg atgacaaagg tccaaatttc aaagatcaag tcattttgct

29281 gaataagcat attgacgcat acaaaacatt cccaccaaca gagcctaaaa aggacaaaaa

29341 gaagaaggct gatgaaactc aagccttacc gcagagacag aagaaacagc aaactgtgac

29401 tcttcttcct gctgcagatt tggatgattt ctccaaacaa ttgcaacaat ccatgagcag

29461 tgctgactca actcaggcct aaactcatgc agaccacaca aggcagatgg gctatataaa

29521 cgttttcgct tttccgttta cgatatatag tctactcttg tgcagaatga attctcgtaa

29581 ctacatagca caagtagatg tagttaactt taatctcaca tagcaatctt taatcagtgt

29641 gtaacattag ggaggacttg aaagagccac cacattttca ccgaggccac gcggagtacg

29701 atcgagtgta cagtgaacaa tgctagggag agctgcctat atggaagagc cctaatgtgt

29761 aaaattaatt ttagtagtgc tnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnna

29821 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aa

//