**Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/human/PRI/PR-UPRRP-582/2020 ORF1ab polyprotein (ORF1ab), ORF1a polyprotein (ORF1ab), surface glycoprotein (S), ORF3a protein (ORF3a), envelope protein (E), membrane glycoprotein (M), and ORF6 p...**

GenBank: ON928946.1

[FASTA](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?report=fasta) [Graphics](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?report=graph)

[Go to:](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?expand-gaps=on" \l "goto2264336285_0)

LOCUS ON928946 29585 bp RNA linear VRL 06-JUL-2022

DEFINITION Severe acute respiratory syndrome coronavirus 2 isolate

SARS-CoV-2/human/PRI/PR-UPRRP-582/2020 ORF1ab polyprotein (ORF1ab),

ORF1a polyprotein (ORF1ab), surface glycoprotein (S), ORF3a protein

(ORF3a), envelope protein (E), membrane glycoprotein (M), and ORF6

protein (ORF6) genes, complete cds; ORF7a protein (ORF7a), ORF7b

(ORF7b), and ORF8 protein (ORF8) genes, partial cds; nucleocapsid

phosphoprotein (N) gene, complete cds; and ORF10 protein (ORF10)

gene, partial cds.

ACCESSION ON928946

VERSION ON928946.1

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 29585)

AUTHORS Van Belleghem,S., Papa,R., Planas,S., Ortiz,Y., Zenon,C., Cora

Huertas,L., Candelaria Velez,I., Cruz,M., Rodriguez Orengo,J.,

Godoy,F., Carlos Velez,J. and Sariol,C.

TITLE Genomic surveillance of SARS-CoV-2 in Puerto Rico

JOURNAL Unpublished

REFERENCE 2 (bases 1 to 29585)

AUTHORS Van Belleghem,S., Papa,R., Planas,S., Ortiz,Y., Zenon,C., Cora

Huertas,L., Candelaria Velez,I., Cruz,M., Rodriguez Orengo,J.,

Godoy,F., Carlos Velez,J. and Sariol,C.

TITLE Direct Submission

JOURNAL Submitted (05-JUL-2022) Biology, University of Puerto RIco, Ave

Universidad, San Juan 00931, Puerto Rico

COMMENT ##Assembly-Data-START##

Assembly Method :: DRAGEN Genome Pipeline - Illumina v.

December-2022

Sequencing Technology :: Illumina

##Assembly-Data-END##

FEATURES Location/Qualifiers

source 1..29585

/organism="Severe acute respiratory syndrome coronavirus

2"

/mol\_type="genomic RNA"

/isolate="SARS-CoV-2/human/PRI/PR-UPRRP-582/2020"

/isolation\_source="oral swab"

/host="Homo sapiens"

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

/country="Puerto Rico"

/collection\_date="2020-12-15"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=212&to=21489) 212..21489

/gene="ORF1ab"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?location=212:13402,13402:21489) join(212..13402,13402..21489)

/gene="ORF1ab"

/ribosomal\_slippage

/codon\_start=1

/product="ORF1ab polyprotein"

/protein\_id="[UTB53416.1](https://www.ncbi.nlm.nih.gov/protein/2264336286)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHSYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTG

DFVKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESG

LKTILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNL

LEILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGN

FKVTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAA

ITILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKL

KPVLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLV

NKFLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEII

FLEGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEK

YCALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNITFELDERIDKVLNER

CSAYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEF

KLASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPE

EEQEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSG

YLKLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVAGALNKATNNAMQVESD

DYIATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLLKSAYENFNQHEVLLA

PLLSAGIFGADPIHSLRVCVDTVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIA

EIPKEEVKPFITESKPSVEQRKQDDKKIKACVEEVTTTLEETKFLTENLLLYIDINGN

LHPDSATLVSDIDITFLKKDAPYIVGDVVQEGVLTAVVIPTKKAGGTTEMLAKALRKV

PTDNYITTYPGQGLNGYTVEEAKTVLKKCKSAFYILPSIISNEKQEILGTVSWNLREM

LAHAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGARFYFYTSKTTVASLIN

TLNDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSS

KTPEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVIT

FDNLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPH

NSHEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIK

WADNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELG

DVRETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQ

IPCTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSK

ETLYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYY

KKDNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVT

FFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWST

KPVETSNSFDVLKSEDAQGMDNLACEDLKPVSEEVVENPTIQKDVLECNVKTTEVVGD

IILKPANNIKITEEVGHTDLMAAYVDNSSLTIKKPNELSRVLGLKTLATHGLAAVNSV

PWDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYMPYFFTLLLQLCTFTRSTNSRIK

ASMPTTIAKNTVKSVGKFCLEASFNYLKSPNFSKLINIIIWFLLLSVCLGSLIYSTAA

LGVLMSNLGMPSYCTGYREGYLNSTNVTIATYCTGSIPCSVCLSGLDSLDTYPSLETI

QITISSFKWDLTAFGLVAEWFLAYILFTRFFYVLGLAAIMQLFFSYFAVHFISNSWLM

WLIINLVQMAPISAMVRMYIFFASFYYVWKSYVHVVDGCNSSTCMMCYKRNRATRVEC

TTIVNGVRRSFYVYANGGKGFCKLHNWNCVNCDTFCAGSTFISDEVARDLSLQFKRPI

NPTDQSSYIVDSVTVKNGSIHLYFDKAGQKTYERHSLSHFVNLDNLRANNTKGSLPIN

VIVFDGKSKCEESSAKSASVYYSQLMCQPILLLDQALVSDVGDSAEVAVKMFDAYVNT

FSSTFNVPMEKLKTLVATAEAELAKNVSLDNVLSTFISAARQGFVDSDVETKDVVECL

KLSHQSDIEVTGDSCNNYMLTYNKVENMTPRDLGACIDCSARHINAQVAKSHNITLIW

NVKDFMSLSEQLRKQIRSAAKKNNLPFKLTCATTRQVVNVVTTKIALKGGKIVNNWLK

QLIKVTLVFLFVAAIFYLITPVHVMSKHTDFSSEIIGYKAIDGGVTRDIASTDTCFAN

KHADFDTWFSQRGGSYTNDKACPLIAAVITREVGFVVPGLPGTILRTTNGDFLHFLPR

VFSAVGNICYTPSKLIEYTDFATSACVLAAECTIFKDASGKPVPYCYDTNVLEGSVAY

ESLRPDTRYVLMDGSIIQFPNTYLEGSVRVVTTFDSEYCRHGTCERSEAGVCVSTSGR

WVLNNDYYRSLPGVFCGVDAVNLLTNMFTPLIQPIGALDISASIVAGGIVAIVVTCLA

YYFMRFRRAFGEYSHVVAFNTLLFLMSFTVLCLTPVYSFLPGVYSVIYLYLTFYLTND

VSFLAHIQWMVMFTPLVPFWITIAYIICISTKHFYWFFSNYLKRRVVFNGVSFSTFEE

AALCTFLLNKEMYLKLRSDVLLPLTQYNRYLALYNKYKYFSGAMDTTSYREAACCHLA

KALNDFSNSGSDVLYQPPQISITSAVLQSGFRKMAFPSGKVEGCMVQVTCGTTTLNGL

WLDDVVYCPRHVICTSEDMLNPNYEDLLIRKSNHNFLVQAGNVQLRVIGHSMQNCVLK

LKVDTANPKTPKYKFVRIQPGQTFSVLACYNGSPSGVYQCAMRHNFTIKGSFLNGSCG

SVGFNIDYDCVSFCYMHHMELPTGVHAGTDLEGNFYGPFVDRQTAQAAGTDTTITVNV

LAWLYAAVINGDRWFLNRFTTTLNDFNLVAMKYNYEPLTQDHVDILGPLSAQTGIAVL

DMCASLKELLQNGMNGRTILGSALLEDEFTPFDVVRQCSGVTFQSAVKRTIKGTHHWL

LLTILTSLLVLVQSTQWSLFFFLYENAFLPFAMGIIAMSAFAMMFVKHKHAFLCLFLL

PSLATVAYFNMVYMPASWVMRIMTWLDMVDTSFKLKDCVMYASAVVLLILMTARTVYD

DGARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGVVF

MCVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVSTQ

EFRYMNSQGLLPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSVL

QQLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEEM

LDNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEFD

RDAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNIIN

NARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSKI

VQLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTDD

NALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGPK

VKYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYKD

YLASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNPK

GFCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKGYGCSCDQLREPMLQSADAQS

FLNRVCGVSAARLTPCGTGTSTDVVYRAFDIYNDKVAGFAKFLKTNCCRFQEKDEDDN

LIDSYFVVKRHTFSNYQHEETIYNLLKDCPAVAKHDFFKFRIDGDMVPHISRQRLTKY

TMADLVYALRHFDEGNCDTLKEILVTYNCCDDDYFNKKDWYDFVENPDILRVYANLGE

RVRQALLKTVQFCDAMRNAGIVGVLTLDNQDLNGNWYDFGDFIQTTPGSGVPVVDSYY

SLLMPILTLTRALTAESHVDTDLTNPYIKWDLLKYDFTEERLKLFDRYFKYWDQTYHP

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

NVDRYPANSIVCRFDTRVLSNFNLPGCDGGXXXXXXXXXXXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

XXXSLWVYKQFDTYNLWNTFTRLQSLENVAFNVVNKGHFDGQQGEVPVSIINNTVYTK

VDGVDVELFENKTTLPVNVAFELWAKRNIKPVPEVKILNNLGVDIAANTVIWDYKRDA

PAHISTIGVCSMTDXAXXPXETICAPLTVFFDGRVDGQVDLFRNARNGVLITEGSVKG

LQPSVGPKQASLNGVTLIGEAVKTQFNYYKKVDGVVQQLPETYFTQSRNLQEFKPRSQ

MEIDFLELAMDEFIERYKLEGYAFEHIVYGDFSHSQLGGLHLLIGLAKRFKESPFELE

DFIPMDSTVKNYFITDAQTGSSKCVCSVIDLLLDDFVEIIKSQDLSVVSKVVKVTIDY

TEISFMLWCKDGHVETFYPKLQSSQAWQPGVAMPNLYKMQRMLLEKCDLQNYGDSATL

PKGIMMNVAKYTQLCQYLNTLTLAVPYNMRVIHFGAGSDKGVAPGTAVLRQWLPTGTL

LVDSDLNDFVSDADSTLIGDCATVHTANKWDLIISDMYDPKTKNVTKENDSKEGFFTY

ICGFIQQKLALGGSVAXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXXXXXXXXXIQLSSYSLFDMSKFPLKLRGTAVMSLKEGQIN

DMILSLLSKGRLIIRENNRVVISSDVLVNN"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53416.1?from=1&to=180) 212..751

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53416.1?from=181&to=818) 752..2665

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53416.1?from=819&to=2762) 2666..8497

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53416.1?from=2763&to=3262) 8498..9997

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53416.1?from=3263&to=3568) 9998..10915

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53416.1?from=3569&to=3855) 10916..11776

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53416.1?from=3856&to=3938) 11777..12025

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53416.1?from=3939&to=4136) 12026..12619

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53416.1?from=4137&to=4249) 12620..12958

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53416.1?from=4250&to=4388) 12959..13375

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53416.1?from=4389&to=5320) join(13376..13402,13402..16170)

/gene="ORF1ab"

/product="RNA-dependent RNA polymerase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53416.1?from=5321&to=5921) 16171..17973

/gene="ORF1ab"

/product="helicase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53416.1?from=5922&to=6448) 17974..19554

/gene="ORF1ab"

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

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53416.1?from=6449&to=6794) 19555..20592

/gene="ORF1ab"

/product="endoRNAse"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53416.1?from=6795&to=7092) 20593..21486

/gene="ORF1ab"

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

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=212&to=13417) 212..13417

/gene="ORF1ab"

/codon\_start=1

/product="ORF1a polyprotein"

/protein\_id="[UTB53417.1](https://www.ncbi.nlm.nih.gov/protein/2264336287)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHSYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTG

DFVKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESG

LKTILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNL

LEILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGN

FKVTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAA

ITILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKL

KPVLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLV

NKFLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEII

FLEGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEK

YCALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNITFELDERIDKVLNER

CSAYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEF

KLASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPE

EEQEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSG

YLKLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVAGALNKATNNAMQVESD

DYIATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLLKSAYENFNQHEVLLA

PLLSAGIFGADPIHSLRVCVDTVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIA

EIPKEEVKPFITESKPSVEQRKQDDKKIKACVEEVTTTLEETKFLTENLLLYIDINGN

LHPDSATLVSDIDITFLKKDAPYIVGDVVQEGVLTAVVIPTKKAGGTTEMLAKALRKV

PTDNYITTYPGQGLNGYTVEEAKTVLKKCKSAFYILPSIISNEKQEILGTVSWNLREM

LAHAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGARFYFYTSKTTVASLIN

TLNDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSS

KTPEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVIT

FDNLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPH

NSHEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIK

WADNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELG

DVRETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQ

IPCTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSK

ETLYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYY

KKDNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVT

FFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWST

KPVETSNSFDVLKSEDAQGMDNLACEDLKPVSEEVVENPTIQKDVLECNVKTTEVVGD

IILKPANNIKITEEVGHTDLMAAYVDNSSLTIKKPNELSRVLGLKTLATHGLAAVNSV

PWDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYMPYFFTLLLQLCTFTRSTNSRIK

ASMPTTIAKNTVKSVGKFCLEASFNYLKSPNFSKLINIIIWFLLLSVCLGSLIYSTAA

LGVLMSNLGMPSYCTGYREGYLNSTNVTIATYCTGSIPCSVCLSGLDSLDTYPSLETI

QITISSFKWDLTAFGLVAEWFLAYILFTRFFYVLGLAAIMQLFFSYFAVHFISNSWLM

WLIINLVQMAPISAMVRMYIFFASFYYVWKSYVHVVDGCNSSTCMMCYKRNRATRVEC

TTIVNGVRRSFYVYANGGKGFCKLHNWNCVNCDTFCAGSTFISDEVARDLSLQFKRPI

NPTDQSSYIVDSVTVKNGSIHLYFDKAGQKTYERHSLSHFVNLDNLRANNTKGSLPIN

VIVFDGKSKCEESSAKSASVYYSQLMCQPILLLDQALVSDVGDSAEVAVKMFDAYVNT

FSSTFNVPMEKLKTLVATAEAELAKNVSLDNVLSTFISAARQGFVDSDVETKDVVECL

KLSHQSDIEVTGDSCNNYMLTYNKVENMTPRDLGACIDCSARHINAQVAKSHNITLIW

NVKDFMSLSEQLRKQIRSAAKKNNLPFKLTCATTRQVVNVVTTKIALKGGKIVNNWLK

QLIKVTLVFLFVAAIFYLITPVHVMSKHTDFSSEIIGYKAIDGGVTRDIASTDTCFAN

KHADFDTWFSQRGGSYTNDKACPLIAAVITREVGFVVPGLPGTILRTTNGDFLHFLPR

VFSAVGNICYTPSKLIEYTDFATSACVLAAECTIFKDASGKPVPYCYDTNVLEGSVAY

ESLRPDTRYVLMDGSIIQFPNTYLEGSVRVVTTFDSEYCRHGTCERSEAGVCVSTSGR

WVLNNDYYRSLPGVFCGVDAVNLLTNMFTPLIQPIGALDISASIVAGGIVAIVVTCLA

YYFMRFRRAFGEYSHVVAFNTLLFLMSFTVLCLTPVYSFLPGVYSVIYLYLTFYLTND

VSFLAHIQWMVMFTPLVPFWITIAYIICISTKHFYWFFSNYLKRRVVFNGVSFSTFEE

AALCTFLLNKEMYLKLRSDVLLPLTQYNRYLALYNKYKYFSGAMDTTSYREAACCHLA

KALNDFSNSGSDVLYQPPQISITSAVLQSGFRKMAFPSGKVEGCMVQVTCGTTTLNGL

WLDDVVYCPRHVICTSEDMLNPNYEDLLIRKSNHNFLVQAGNVQLRVIGHSMQNCVLK

LKVDTANPKTPKYKFVRIQPGQTFSVLACYNGSPSGVYQCAMRHNFTIKGSFLNGSCG

SVGFNIDYDCVSFCYMHHMELPTGVHAGTDLEGNFYGPFVDRQTAQAAGTDTTITVNV

LAWLYAAVINGDRWFLNRFTTTLNDFNLVAMKYNYEPLTQDHVDILGPLSAQTGIAVL

DMCASLKELLQNGMNGRTILGSALLEDEFTPFDVVRQCSGVTFQSAVKRTIKGTHHWL

LLTILTSLLVLVQSTQWSLFFFLYENAFLPFAMGIIAMSAFAMMFVKHKHAFLCLFLL

PSLATVAYFNMVYMPASWVMRIMTWLDMVDTSFKLKDCVMYASAVVLLILMTARTVYD

DGARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGVVF

MCVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVSTQ

EFRYMNSQGLLPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSVL

QQLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEEM

LDNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEFD

RDAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNIIN

NARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSKI

VQLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTDD

NALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGPK

VKYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYKD

YLASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNPK

GFCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKGYGCSCDQLREPMLQSADAQS

FLNGFAV"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53417.1?from=1&to=180) 212..751

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53417.1?from=181&to=818) 752..2665

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53417.1?from=819&to=2762) 2666..8497

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53417.1?from=2763&to=3262) 8498..9997

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53417.1?from=3263&to=3568) 9998..10915

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53417.1?from=3569&to=3855) 10916..11776

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53417.1?from=3856&to=3938) 11777..12025

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53417.1?from=3939&to=4136) 12026..12619

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53417.1?from=4137&to=4249) 12620..12958

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53417.1?from=4250&to=4388) 12959..13375

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UTB53417.1?from=4389&to=4401) 13376..13414

/gene="ORF1ab"

/product="nsp11"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=13410&to=13437) 13410..13437

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 1"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=13422&to=13476) 13422..13476

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 2"

gap 19225..19490

/estimated\_length=266

gap 21097..21298

/estimated\_length=202

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=21497&to=25309) 21497..25309

/gene="S"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=21497&to=25309) 21497..25309

/gene="S"

/codon\_start=1

/product="surface glycoprotein"

/protein\_id="[UTB53418.1](https://www.ncbi.nlm.nih.gov/protein/2264336288)"

/translation="MFVFLVLLPLVSSQCVNLTTRTQLPPAYTNSFTRGVYYPDKVFR

SSVLHSTQDLFLPFFSNVTWFHVISGTNGTKRFDNPVLPFNDGVYFASIEKSNIIRGW

IFGTTLDSKTQSLLIVNNATNVVIKVCEFQFCNDPFLDHKNNKSWMESEFRVYSSANN

CTFEYVSQPFLMDLEGKQGNFKNLREFVFKNIDGYFKIYSKHTPIIVREPEDLPQGFS

ALEPLVDLPIGINITRFQTLLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLLKY

NENGTITDAVDCALDPLSETKCTLKSFTVEKGIYQTSNFRVQPTESIVRFPNITNLCP

FDEVFNATRFASVYAWNRKRISNCVADYSVLYNFAPFFAFKCYGVSPTKLNDLCFTNV

YADSFVIRGNEVSQIAPGQTGNIADYNYKLPDDFTGCVIAWNSNKLDSKVGGNYNYLY

RLFRKSNLKPFERDISTEIYQAGNKPCNGVAGFNCYFPLRSYGFRPTYGVGHQPYRVV

VLSFELLHAPATVCGPKKSTNLVKNKCVNFNFNGLKGTGVLTESNKKFLPFQQFGRDI

ADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQVAVLYQGVNCTEVPVAIHAD

QLTPTWRVYSTGSNVFQTRAGCLIGAEYVNNSYECDIPIGAGICASYQTQTKSHRRAR

SVASQSIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEILPVSMTKTSVDCTMYIC

GDSTECSNLLLQYGSFCTQLKRALTGIAVEQDKNTQEVFAQVKQIYKTPPIKYFGGFN

FSQILPDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICAQKFKGLT

VLPPLLTDEMIAQYTSALLAGTITSGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLY

ENQKLIANQFNSAIGKIQDSLSSTASALGKLQDVVNHNAQALNTLVKQLSSKFGAISS

VLNDIFSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASANLAATKMSECV

LGQSKRVDFCGKGYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHDGKAHFPR

EGVFVSNGTHWFVTQRNFYEPQIITTDNTFVSGNCDVVIGIVNNTVYDPLQPELDSFK

EELDKYFKNHTSPDVDLGDISGINASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYE

QYIKWPWYIWLGFIAGLIAIVMVTIMLCCMTSCCSCLKGCCSCGSCCKFDEDDSEPVL

KGVKLHYT"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=25318&to=26145) 25318..26145

/gene="ORF3a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=25318&to=26145) 25318..26145

/gene="ORF3a"

/codon\_start=1

/product="ORF3a protein"

/protein\_id="[UTB53419.1](https://www.ncbi.nlm.nih.gov/protein/2264336289)"

/translation="MDLFMRIFTIGTVTLKQGEIKDATPSDFVRATATIPIQASLPFG

WLIVGVALLAVFQSASKIITLKKRWQLALSKGVHFVCNLLLLFVTVYSHLLLVAAGLE

APFLYLYALVYFLQSINFVRIIMRLLLCWKCRSKNPLLYDANYFLCWHTNCYDYCIPY

NSVTSSIVITSGDGTTSPISEHDYQIGGYTEKWESGVKDCVVLHSYFTSDYYQLYSTQ

LSTDTGVEHVTFFIYNKIVDEPEEHVQIHTIDGSSGVVNPVMEPIYDEPTTTTSVPL"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=26170&to=26397) 26170..26397

/gene="E"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=26170&to=26397) 26170..26397

/gene="E"

/codon\_start=1

/product="envelope protein"

/protein\_id="[UTB53420.1](https://www.ncbi.nlm.nih.gov/protein/2264336290)"

/translation="MYSFVSEEIGTLIVNSVLLFLAFVVFLLVTLAILTALRLCAYCC

NIVNVSLVKPSFYVYSRVKNLNSSRVPDLLV"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=26448&to=27116) 26448..27116

/gene="M"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=26448&to=27116) 26448..27116

/gene="M"

/codon\_start=1

/product="membrane glycoprotein"

/protein\_id="[UTB53421.1](https://www.ncbi.nlm.nih.gov/protein/2264336291)"

/translation="MAGSNGTITVEELKKLLEEWNLVIGFLFLTWICLLQFAYANRNR

FLYIIKLIFLWLLWPVTLTCFVLAAVYRINWITGGIAIAMACLVGLMWLSYFIASFRL

FARTRSMWSFNPETNILLNVPLHGTILTRPLLESELVIGAVILRGHLRIAGHHLGRCD

IKDLPKEITVATSRTLSYYKLGASQRVAGDSGFAAYSRYRIGNYKLNTDHSSSSDNIA

LLVQ"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=27127&to=27312) 27127..27312

/gene="ORF6"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=27127&to=27312) 27127..27312

/gene="ORF6"

/codon\_start=1

/product="ORF6 protein"

/protein\_id="[UTB53422.1](https://www.ncbi.nlm.nih.gov/protein/2264336292)"

/translation="MFHLVDFQVTIAEILLIIMRTFKVSIWNLDYIINLIIKNLSKSL

TENKYSQLDEEQPMEID"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=27319&to=27642) 27319..>27642

/gene="ORF7a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=27319&to=27642) 27319..>27642

/gene="ORF7a"

/codon\_start=1

/product="ORF7a protein"

/protein\_id="[UTB53423.1](https://www.ncbi.nlm.nih.gov/protein/2264336293)"

/translation="MKIILFLALITLATCELYHYQECVRGTTVLLKEPCSSGTYEGNS

PFHPLADNXXXXTCFXTQXAXAXXXXXXXXXXXXXXXXXXXLFIRQEEVQXLYSPIFL

IVAAXX"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=27686&to=27750) <27686..>27750

/gene="ORF7b"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=27686&to=27750) <27686..>27750

/gene="ORF7b"

/codon\_start=2

/product="ORF7b"

/protein\_id="[UTB53424.1](https://www.ncbi.nlm.nih.gov/protein/2264336294)"

/translation="ELSLIDFYLCFLAFLLFLVLI"

gap 27751..28013

/estimated\_length=263

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=28014&to=28184) <28014..28184

/gene="ORF8"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=28014&to=28184) <28014..28184

/gene="ORF8"

/codon\_start=1

/product="ORF8 protein"

/protein\_id="[UTB53425.1](https://www.ncbi.nlm.nih.gov/protein/2264336295)"

/translation="GSKSPIQYIDIGNYTVSCLPFTINCQEPKLGSLVVRCSFYEDFL

EYHDVRVVLDFI"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=28199&to=29449) 28199..29449

/gene="N"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=28199&to=29449) 28199..29449

/gene="N"

/codon\_start=1

/product="nucleocapsid phosphoprotein"

/protein\_id="[UTB53426.1](https://www.ncbi.nlm.nih.gov/protein/2264336296)"

/translation="MSDNGPQNQRNALRITFGGPSDSTGSNQNGGARSKQRRPQGLPN

NTASWFTALTQHGKEDLKFPRGQGVPINTNSSPDDQIGYYRRATRRIRGGDGKMKDLS

PRWYFYYLGTGPEAGLPYGANKDGIIWVATEGALNTPKDHIGTRNPANNAAIVLQLPQ

GTTLPKGFYAEGSRGGSQASSRSSSRSRNSSRNSTPGSSKRTSPARMAGNGGDAALAL

LLLDRLNQLESKMSGKGQQQQGQTVTKKSAAEASKKPRQKRTATKAYNVTQAFGRRGP

EQTQGNFGDQELIRQGTDYKHWPQIAQFAPSASAFFGMSRIGMEVTPSGTWLTYTGAI

KLDDKDPNFKDQVILLNKHIDAYKTFPPTEPKKDKKKKADETQALPQRQKKQQXVTLL

PAADLDDFSKQLQQSMSSADSTQA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=29474&to=29585) 29474..>29585

/gene="ORF10"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=29474&to=29585) 29474..>29585

/gene="ORF10"

/codon\_start=1

/product="ORF10 protein"

/protein\_id="[UTB53427.1](https://www.ncbi.nlm.nih.gov/protein/2264336297)"

/translation="MGYINVFAFPFTIYSLLLCRMNSRNYIAQVDVVNFNL"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=29525&to=29560) 29525..29560

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON928946.1?from=29545&to=29573) 29545..29573

/gene="ORF10"

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

ORIGIN

1 agatctgttc tctaaacgaa ctttaaaatc tgtgtggctg tcactcggct gcatgcttag

61 tgcactcacg cagtataatt aataactaat tactgtcgtt gacaggacac gagtaactcg

121 tctatcttct gcaggctgct tacggtttcg tccgtgttgc agccgatcat cagcacatct

181 aggttttgtc cgggtgtgac cgaaaggtaa gatggagagc cttgtccctg gtttcaacga

241 gaaaacacac gtccaactca gtttgcctgt tttacaggtt cgcgacgtgc tcgtacgtgg

301 ctttggagac tccgtggagg aggtcttatc agaggcacgt caacatctta aagatggcac

361 ttgtggctta gtagaagttg aaaaaggcgt tttgcctcaa cttgaacagc cctatgtgtt

421 catcaaacgt tcggatgctc gaactgcacc tcatggtcat gttatggttg agctggtagc

481 agaactcgaa ggcattcagt acggtcgtag tggtgagaca cttggtgtcc ttgtccctca

541 tgtgggcgaa ataccagtgg cttaccgcaa ggttcttctt cgtaagaacg gtaataaagg

601 agctggtggc catagttacg gcgccgatct aaagtcattt gacttaggcg acgagcttgg

661 cactgatcct tatgaagatt ttcaagaaaa ctggaacact aaacatagca gtggtgttac

721 ccgtgaactc atgcgtgagc ttaacggagg ggcatacact cgctatgtcg ataacaactt

781 ctgtggccct gatggctacc ctcttgagtg cattaaagac cttctagcac gtgctggtaa

841 agcttcatgc actttgtccg aacaactgga ctttattgac actaagaggg gtgtatactg

901 ctgccgtgaa catgagcatg aaattgcttg gtacacggaa cgttctgaaa agagctatga

961 attgcagaca ccttttgaaa ttaaattggc aaagaaattt gacaccttca atggggaatg

1021 tccaaatttt gtatttccct taaattccat aatcaagact attcaaccaa gggttgaaaa

1081 gaaaaagctt gatggcttta tgggtagaat tcgatctgtc tatccagttg cgtcaccaaa

1141 tgaatgcaac caaatgtgcc tttcaactct catgaagtgt gatcattgtg gtgaaacttc

1201 atggcagacg ggcgattttg ttaaagccac ttgcgaattt tgtggcactg agaatttgac

1261 taaagaaggt gccactactt gtggttactt accccaaaat gctgttgtta aaatttattg

1321 tccagcatgt cacaattcag aagtaggacc tgagcatagt cttgccgaat accataatga

1381 atctggcttg aaaaccattc ttcgtaaggg tggtcgcact attgcctttg gaggctgtgt

1441 gttctcttat gttggttgcc ataacaagtg tgcctattgg gttccacgtg ctagcgctaa

1501 cataggttgt aaccatacag gtgttgttgg agaaggttcc gaaggtctta atgacaacct

1561 tcttgaaata ctccaaaaag agaaagtcaa catcaatatt gttggtgact ttaaacttaa

1621 tgaagagatc gccattattt tggcatcttt ttctgcttcc acaagtgctt ttgtggaaac

1681 tgtgaaaggt ttggattata aagcattcaa acaaattgtt gaatcctgtg gtaattttaa

1741 agttacaaaa ggaaaagcta aaaaaggtgc ctggaatatt ggtgaacaga aatcaatact

1801 gagtcctctt tatgcatttg catcagaggc tgctcgtgtt gtacgatcaa ttttctcccg

1861 cactcttgaa actgctcaaa attctgtgcg tgttttacag aaggccgcta taacaatact

1921 agatggaatt tcacagtatt cactgagact cattgatgct atgatgttca catctgattt

1981 ggctactaac aatctagttg taatggccta cattacaggt ggtgttgttc agttgacttc

2041 gcagtggcta actaacatct ttggcactgt ttatgaaaaa ctcaaacccg tccttgattg

2101 gcttgaagag aagtttaagg aaggtgtaga gtttcttaga gacggttggg aaattgttaa

2161 atttatctca acctgtgctt gtgaaattgt cggtggacaa attgtcacct gtgcaaagga

2221 aattaaggag agtgttcaga cattctttaa gcttgtaaat aaatttttgg ctttgtgtgc

2281 tgactctatc attattggtg gagctaaact taaagccttg aatttaggtg aaacatttgt

2341 cacgcactca aagggattgt acagaaagtg tgttaaatcc agagaagaaa ctggcctact

2401 catgcctcta aaagctccaa aagaaattat cttcttagag ggagaaacac ttcccacaga

2461 agtgttaaca gaggaagttg tcttgaaaac tggtgattta caaccattag aacaacctac

2521 tagtgaagct gttgaagctc cattggttgg tacaccagtt tgtattaacg ggcttatgtt

2581 gctcgaaatc aaagacacag aaaagtactg tgcccttgca cctaatatga tggtaacaaa

2641 caataccttc acactcaaag gcggtgcacc aacaaaggtt acttttggtg atgacactgt

2701 gatagaagtg caaggttaca agagtgtgaa tatcactttt gaacttgatg aaaggattga

2761 taaagtactt aatgagaggt gctctgccta tacagttgaa ctcggtacag aagtaaatga

2821 gttcgcctgt gttgtggcag atgctgtcat aaaaactttg caaccagtat ctgaattact

2881 tacaccactg ggcattgatt tagatgagtg gagtatggct acatactact tatttgatga

2941 gtctggtgag tttaaattgg cttcacatat gtattgttct ttttaccctc cagatgagga

3001 tgaagaagaa ggtgattgtg aagaagaaga gtttgagcca tcaactcaat atgagtatgg

3061 tactgaagat gattaccaag gtaaaccttt ggaatttggt gccacttctg ctgctcttca

3121 acctgaagaa gagcaagaag aagattggtt agatgatgat agtcaacaaa ctgttggtca

3181 acaagacggc agtgaggaca atcagacaac tactattcaa acaattgttg aggttcaacc

3241 tcaattagag atggaactta caccagttgt tcagactatt gaagtgaata gttttagtgg

3301 ttatttaaaa cttactgaca atgtatacat taaaaatgca gacattgtgg aagaagctaa

3361 aaaggtaaaa ccaacagtgg ttgttaatgc agccaatgtt taccttaaac atggaggagg

3421 tgttgcagga gccttaaata aggctactaa caatgccatg caagttgaat ctgatgatta

3481 catagctact aatggaccac ttaaagtggg tggtagttgt gttttaagcg gacacaatct

3541 tgctaaacac tgtcttcatg ttgtcggccc aaatgttaac aaaggtgaag acattcaact

3601 tcttaagagt gcttatgaaa attttaatca gcacgaagtt ctacttgcac cattattatc

3661 agctggtatt tttggtgctg accctataca ttctttaaga gtttgtgtag atactgttcg

3721 cacaaatgtc tacttagctg tctttgataa aaatctctat gacaaacttg tttcaagctt

3781 tttggaaatg aagagtgaaa agcaagttga acaaaagatc gctgagattc ctaaagagga

3841 agttaagcca tttataactg aaagtaaacc ttcagttgaa cagagaaaac aagatgataa

3901 gaaaatcaaa gcttgtgttg aagaagttac aacaactctg gaagaaacta agttcctcac

3961 agaaaacttg ttactttata ttgacattaa tggcaatctt catccagatt ctgccactct

4021 tgttagtgac attgacatca ctttcttaaa gaaagatgct ccatatatag tgggtgatgt

4081 tgttcaagag ggtgttttaa ctgctgtggt tatacctact aaaaaggctg gtggcactac

4141 tgaaatgcta gcgaaagctt tgagaaaagt gccaacagac aattatataa ccacttaccc

4201 gggtcagggt ttaaatggtt acactgtaga ggaggcaaag acagtgctta aaaagtgtaa

4261 aagtgccttt tacattctac catctattat ctctaatgag aagcaagaaa ttcttggaac

4321 tgtttcttgg aatttgcgag aaatgcttgc acatgcagaa gaaacacgca aattaatgcc

4381 tgtctgtgtg gaaactaaag ccatagtttc aactatacag cgtaaatata agggtattaa

4441 aatacaagag ggtgtggttg attatggtgc tagattttac ttttacacca gtaaaacaac

4501 tgtagcgtca cttatcaaca cacttaacga tctaaatgaa actcttgtta caatgccact

4561 tggctatgta acacatggct taaatttgga agaagctgct cggtatatga gatctctcaa

4621 agtgccagct acagtttctg tttcttcacc tgatgctgtt acagcgtata atggttatct

4681 tacttcttct tctaaaacac ctgaagaaca ttttattgaa accatctcac ttgctggttc

4741 ctataaagat tggtcctatt ctggacaatc tacacaacta ggtatagaat ttcttaagag

4801 aggtgataaa agtgtatatt acactagtaa tcctaccaca ttccacctag atggtgaagt

4861 tatcaccttt gacaatctta agacacttct ttctttgaga gaagtgagga ctattaaggt

4921 gtttacaaca gtagacaaca ttaacctcca cacgcaagtt gtggacatgt caatgacata

4981 tggacaacag tttggtccaa cttatttgga tggagctgat gttactaaaa taaaacctca

5041 taattcacat gaaggtaaaa cattttatgt tttacctaat gatgacactc tacgtgttga

5101 ggcttttgag tactaccaca caactgatcc tagttttctg ggtaggtaca tgtcagcatt

5161 aaatcacact aaaaagtgga aatacccaca agttaatggt ttaacttcta ttaaatgggc

5221 agataacaac tgttatcttg ccactgcatt gttaacactc caacaaatag agttgaagtt

5281 taatccacct gctctacaag atgcttatta cagagcaagg gctggtgaag cggctaactt

5341 ttgtgcactt atcttagcct actgtaataa gacagtaggt gagttaggtg atgttagaga

5401 aacaatgagt tacttgtttc aacatgccaa tttagattct tgcaaaagag tcttgaacgt

5461 ggtgtgtaaa acttgtggac aacagcagac aacccttaag ggtgtagaag ctgttatgta

5521 catgggcaca ctttcttatg aacaatttaa gaaaggtgtt cagatacctt gtacgtgtgg

5581 taaacaagct acaaaatatc tagtacaaca ggagtcacct tttgttatga tgtcagcacc

5641 acctgctcag tatgaactta agcatggtac atttacttgt gctagtgagt acactggtaa

5701 ttaccagtgt ggtcactata aacatataac ttctaaagaa actttgtatt gcatagacgg

5761 tgctttactt acaaagtcct cagaatacaa aggtcctatt acggatgttt tctacaaaga

5821 aaacagttac acaacaacca taaaaccagt tacttataaa ttggatggtg ttgtttgtac

5881 agaaattgac cctaagttgg acaattatta taagaaagac aattcttatt tcacagagca

5941 accaattgat cttgtaccaa accaaccata tccaaacgca agcttcgata attttaagtt

6001 tgtatgtgat aatatcaaat ttgctgatga tttaaaccag ttaactggtt ataagaaacc

6061 tgcttcaaga gagcttaaag ttacattttt ccctgactta aatggtgatg tggtggctat

6121 tgattataaa cactacacac cctcttttaa gaaaggagct aaattgttac ataaacctat

6181 tgtttggcat gttaacaatg caactaataa agccacgtat aaaccaaata cctggtgtat

6241 acgttgtctt tggagcacaa aaccagttga aacatcaaat tcgtttgatg tactgaagtc

6301 agaggacgcg cagggaatgg ataatcttgc ctgcgaagat ctaaaaccag tctctgaaga

6361 agtagtggaa aatcctacca tacagaaaga cgttcttgag tgtaatgtga aaactaccga

6421 agttgtagga gacattatac ttaaaccagc aaataatata aaaattacag aagaggttgg

6481 ccacacagat ctaatggctg cttatgtaga caattctagt cttactatta agaaacctaa

6541 tgaattatct agagtattag gtttgaaaac ccttgctact catggtttag ctgctgttaa

6601 tagtgtccct tgggatacta tagctaatta tgctaagcct tttcttaaca aagttgttag

6661 tacaactact aacatagtta cacggtgttt aaaccgtgtt tgtactaatt atatgcctta

6721 tttctttact ttattgctac aattgtgtac ttttactaga agtacaaatt ctagaattaa

6781 agcatctatg ccgactacta tagcaaagaa tactgttaag agtgtcggta aattttgtct

6841 agaggcttca tttaattatt tgaagtcacc taatttttct aaactgataa atattataat

6901 ttggttttta ctattaagtg tttgcctagg ttctttaatc tactcaaccg ctgctttagg

6961 tgttttaatg tctaatttag gcatgccttc ttactgtact ggttacagag aaggctattt

7021 gaactctact aatgtcacta ttgcaaccta ctgtactggt tctatacctt gtagtgtttg

7081 tcttagtggt ttagattctt tagacaccta tccttcttta gaaactatac aaattaccat

7141 ttcatctttt aaatgggatt taactgcttt tggcttagtt gcagagtggt ttttggcata

7201 tattcttttc actaggtttt tctatgtact tggattggct gcaatcatgc aattgttttt

7261 cagctatttt gcagtacatt ttattagtaa ttcttggctt atgtggttaa taattaatct

7321 tgtacaaatg gccccgattt cagctatggt tagaatgtac atcttctttg catcatttta

7381 ttatgtatgg aaaagttatg tgcatgttgt agacggttgt aattcatcaa cttgtatgat

7441 gtgttacaaa cgtaatagag caacaagagt cgaatgtaca actattgtta atggtgttag

7501 aaggtccttt tatgtctatg ctaatggagg taaaggcttt tgcaaactac acaattggaa

7561 ttgtgttaat tgtgatacat tctgtgctgg tagtacattt attagtgatg aagttgcgag

7621 agacttgtca ctacagttta aaagaccaat aaatcctact gaccagtctt cttacatcgt

7681 tgatagtgtt acagtgaaga atggttccat ccatctttac tttgataaag ctggtcaaaa

7741 gacttatgaa agacattctc tctctcattt tgttaactta gacaacctga gagctaataa

7801 cactaaaggt tcattgccta ttaatgttat agtttttgat ggtaaatcaa aatgtgaaga

7861 atcatctgca aaatcagcgt ctgtttacta cagtcagctt atgtgtcaac ctatactgtt

7921 actagatcag gcattagtgt ctgatgttgg tgatagtgcg gaagttgcag ttaaaatgtt

7981 tgatgcttac gttaatacgt tttcatcaac ttttaacgta ccaatggaaa aactcaaaac

8041 actagttgca actgcagaag ctgaacttgc aaagaatgtg tccttagaca atgtcttatc

8101 tacttttatt tcagcagctc ggcaagggtt tgttgattca gatgtagaaa ctaaagatgt

8161 tgttgaatgt cttaaattgt cacatcaatc tgacatagaa gttactggcg atagttgtaa

8221 taactatatg ctcacctata acaaagttga aaacatgaca ccccgtgacc ttggtgcttg

8281 tattgactgt agtgcgcgtc atattaatgc gcaggtagca aaaagtcaca acattacttt

8341 gatatggaac gttaaagatt tcatgtcatt gtctgaacaa ctacgaaaac aaatacgtag

8401 tgctgctaaa aagaataact taccttttaa gttgacatgt gcaactacta gacaagttgt

8461 taatgttgta acaacaaaga tagcacttaa gggtggtaaa attgttaata attggttgaa

8521 gcagttaatt aaagttacac ttgtgttcct ttttgttgct gctattttct atttaataac

8581 acctgttcat gtcatgtcta aacatactga cttttcaagt gaaatcatag gatacaaggc

8641 tattgatggt ggtgtcactc gtgacatagc atctacagat acttgttttg ctaacaaaca

8701 tgctgatttt gacacatggt ttagccagcg tggtggtagt tatactaatg acaaagcttg

8761 cccattgatt gctgcagtca taacaagaga agtgggtttt gtcgtgcctg gtttgcctgg

8821 cacgatatta cgcacaacta atggtgactt tttgcatttc ttacctagag tttttagtgc

8881 agttggtaac atctgttaca caccatcaaa acttatagag tacactgact ttgcaacatc

8941 agcttgtgtt ttggctgctg aatgtacaat ttttaaagat gcttctggta agccagtacc

9001 atattgttat gataccaatg tactagaagg ttctgttgct tatgaaagtt tacgccctga

9061 cacacgttat gtgctcatgg atggctctat tattcaattt cctaacacct accttgaagg

9121 ttctgttaga gtggtaacaa cttttgattc tgagtactgt aggcacggca cttgtgaaag

9181 atcagaagct ggtgtttgtg tatctactag tggtagatgg gtacttaaca atgattatta

9241 cagatcttta ccaggagttt tctgtggtgt agatgctgta aatttactta ctaatatgtt

9301 tacaccacta attcaaccta ttggtgcttt ggacatatca gcatctatag tagctggtgg

9361 tattgtagct atcgtagtaa catgccttgc ctactatttt atgaggttta gaagagcttt

9421 tggtgaatac agtcatgtag ttgcctttaa tactttacta ttccttatgt cattcactgt

9481 actctgttta acaccagttt actcattctt acctggtgtt tattctgtta tttacttgta

9541 cttgacattt tatcttacta atgatgtttc ttttttagca catattcagt ggatggttat

9601 gttcacacct ttagtacctt tctggataac aattgcttat atcatttgta tttccacaaa

9661 gcatttctat tggttcttta gtaattacct aaagagacgt gtagtcttta atggtgtttc

9721 ctttagtact tttgaagaag ctgcgctgtg cacctttttg ttaaataaag aaatgtatct

9781 aaagttgcgt agtgatgtgc tattacctct tacgcaatat aatagatact tagctcttta

9841 taataagtac aagtatttta gtggagcaat ggatacaact agctacagag aagctgcttg

9901 ttgtcatctc gcaaaggctc tcaatgactt cagtaactca ggttctgatg ttctttacca

9961 accaccacaa atctctatca cctcagctgt tttgcagagt ggttttagaa aaatggcatt

10021 cccatctggt aaagttgagg gttgtatggt acaagtaact tgtggtacaa ctacacttaa

10081 cggtctttgg cttgatgacg tagtttactg tccaagacat gtgatctgca cctctgaaga

10141 catgcttaac cctaattatg aagatttact cattcgtaag tctaatcata atttcttggt

10201 acaggctggt aatgttcaac tcagggttat tggacattct atgcaaaatt gtgtacttaa

10261 gcttaaggtt gatacagcca atcctaagac acctaagtat aagtttgttc gcattcaacc

10321 aggacagact ttttcagtgt tagcttgtta caatggttca ccatctggtg tttaccaatg

10381 tgctatgagg cacaatttca ctattaaggg ttcattcctt aatggttcat gtggtagtgt

10441 tggttttaac atagattatg actgtgtctc tttttgttac atgcaccata tggaattacc

10501 aactggagtt catgctggca cagacttaga aggtaacttt tatggacctt ttgttgacag

10561 gcaaacagca caagcagctg gtacggacac aactattaca gttaatgttt tagcttggtt

10621 gtacgctgct gttataaatg gagacaggtg gtttctcaat cgatttacca caactcttaa

10681 tgactttaac cttgtggcta tgaagtacaa ttatgaacct ctaacacaag accatgttga

10741 catactagga cctctttctg ctcaaactgg aattgccgtt ttagatatgt gtgcttcatt

10801 aaaagaatta ctgcaaaatg gtatgaatgg acgtaccata ttgggtagtg ctttattaga

10861 agatgaattt acaccttttg atgttgttag acaatgctca ggtgttactt tccaaagtgc

10921 agtgaaaaga acaatcaagg gtacacacca ctggttgtta ctcacaattt tgacttcact

10981 tttagtttta gtccagagta ctcaatggtc tttgttcttt tttttgtatg aaaatgcctt

11041 tttacctttt gctatgggta ttattgctat gtctgctttt gcaatgatgt ttgtcaaaca

11101 taagcatgca tttctctgtt tgtttttgtt accttctctt gccactgtag cttattttaa

11161 tatggtctat atgcctgcta gttgggtgat gcgtattatg acatggttgg atatggttga

11221 tactagtttt aagctaaaag actgtgttat gtatgcatca gctgtagtgt tactaatcct

11281 tatgacagca agaactgtgt atgatgatgg tgctaggaga gtgtggacac ttatgaatgt

11341 cttgacactc gtttataaag tttattatgg taatgcttta gatcaagcca tttccatgtg

11401 ggctcttata atctctgtta cttctaacta ctcaggtgta gttacaactg tcatgttttt

11461 ggccagaggt gttgttttta tgtgtgttga gtattgccct attttcttca taactggtaa

11521 tacacttcag tgtataatgc tagtttattg tttcttaggc tatttttgta cttgttactt

11581 tggcctcttt tgtttactca accgctactt tagactgact cttggtgttt atgattactt

11641 agtttctaca caggagttta gatatatgaa ttcacaggga ctactcccac ccaagaatag

11701 catagatgcc ttcaaactca acattaaatt gttgggtgtt ggtggcaaac cttgtatcaa

11761 agtagccact gtacagtcta aaatgtcaga tgtaaagtgc acatcagtag tcttactctc

11821 agttttgcaa caactcagag tagaatcatc atctaaattg tgggctcaat gtgtccagtt

11881 acacaatgac attctcttag ctaaagatac tactgaagcc tttgaaaaaa tggtttcact

11941 actttctgtt ttgctttcca tgcagggtgc tgtagacata aacaagcttt gtgaagaaat

12001 gctggacaac agggcaacct tacaagctat agcctcagag tttagttccc ttccatcata

12061 tgcagctttt gctactgctc aagaagctta tgagcaggct gttgctaatg gtgattctga

12121 agttgttctt aaaaagttga agaagtcttt gaatgtggct aaatctgaat ttgaccgtga

12181 tgcagccatg caacgtaagt tggaaaagat ggctgatcaa gctatgaccc aaatgtataa

12241 acaggctaga tctgaggaca agagggcaaa agttactagt gctatgcaga caatgctttt

12301 cactatgctt agaaagttgg ataatgatgc actcaacaac attatcaaca atgcaagaga

12361 tggttgtgtt cccttgaaca taatacctct tacaacagca gccaaactaa tggttgtcat

12421 accagactat aacacatata aaaatacgtg tgatggtaca acatttactt atgcatcagc

12481 attgtgggaa atccaacagg ttgtagatgc agatagtaaa attgttcaac ttagtgaaat

12541 tagtatggac aattcaccta atttagcatg gcctcttatt gtaacagctt taagggccaa

12601 ttctgctgtc aaattacaga ataatgagct tagtcctgtt gcactacgac agatgtcttg

12661 tgctgccggt actacacaaa ctgcttgcac tgatgacaat gcgttagctt actacaacac

12721 aacaaaggga ggtaggtttg tacttgcact gttatccgat ttacaggatt tgaaatgggc

12781 tagattccct aagagtgatg gaactggtac tatctataca gaactggaac caccttgtag

12841 gtttgttaca gacacaccta aaggtcctaa agtgaagtat ttatacttta ttaaaggatt

12901 aaacaaccta aatagaggta tggtacttgg tagtttagct gccacagtac gtctacaagc

12961 tggtaatgca acagaagtgc ctgccaattc aactgtatta tctttctgtg cttttgctgt

13021 agatgctgct aaagcttaca aagattatct agctagtggg ggacaaccaa tcactaattg

13081 tgttaagatg ttgtgtacac acactggtac tggtcaggca ataacagtca caccggaagc

13141 caatatggat caagaatcct ttggtggtgc atcgtgttgt ctgtactgcc gttgccacat

13201 agatcatcca aatcctaaag gattttgtga cttaaaaggt aagtatgtac aaatacctac

13261 aacttgtgct aatgaccctg tgggttttac acttaaaaac acagtctgta ccgtctgcgg

13321 tatgtggaaa ggttatggct gtagttgtga tcaactccgc gaacccatgc ttcagtcagc

13381 tgatgcacaa tcgtttttaa acgggtttgc ggtgtaagtg cagcccgtct tacaccgtgc

13441 ggcacaggca ctagtactga tgtcgtatac agggcttttg acatctacaa tgataaagta

13501 gctggttttg ctaaattcct aaaaactaat tgttgtcgct tccaagaaaa ggacgaagat

13561 gacaatttaa ttgattctta ctttgtagtt aagagacaca ctttctctaa ctaccaacat

13621 gaagaaacaa tttataattt acttaaggat tgtccagctg ttgctaaaca tgacttcttt

13681 aagtttagaa tagacggtga catggtacca catatatcac gtcaacgtct tactaaatac

13741 acaatggcag acctcgtcta tgctttaagg cattttgatg aaggtaattg tgacacatta

13801 aaagaaatac ttgtcacata caattgttgt gatgatgatt atttcaataa aaaggactgg

13861 tatgattttg tagaaaaccc agatatatta cgcgtatacg ccaacttagg tgaacgtgta

13921 cgccaagctt tgttaaaaac agtacaattc tgtgatgcca tgcgaaatgc tggtattgtt

13981 ggtgtactga cattagataa tcaagatctc aatggtaact ggtatgattt cggtgatttc

14041 atacaaacca cgccaggtag tggagttcct gttgtagatt cttattattc attgttaatg

14101 cctatattaa ccttgaccag ggctttaact gcagagtcac atgttgacac tgacttaaca

14161 aacccttaca ttaagtggga tttgttaaaa tatgacttca cggaagagag gttaaaactc

14221 tttgaccgtt attttaaata ttgggatcag acataccacc caaattgtgt taactgtttg

14281 gatgacagat gcattctgca ttgtgcaaac tttaatgttt tattctctac agtgttccca

14341 cttacaagtt ttggaccact agtgagaaaa atatttgttg atggtgttcc atttgtagtt

14401 tcaactggat accacttcag agagctaggt gttgtacata atcaggatgt aaacttacat

14461 agctctagac ttagttttaa ggaattactt gtgtatgctg ctgaccctgc tatgcacgct

14521 gcttctggta atctattact agataaacgc actacgtgct tttcagtagc tgcacttact

14581 aacaatgttg cttttcaaac tgtcaaaccc ggtaatttta acaaagactt ctatgacttt

14641 gctgtgtcta agggtttctt taaggaagga agttctgttg aattaaaaca cttcttcttt

14701 gctcaggatg gtaatgctgc tatcagcgat tatgactact atcgttataa tctaccaaca

14761 atgtgtgata tcagacaact actatttgta gttgaagttg ttgataagta ctttgattgt

14821 tacgatggtg gctgtattaa tgctaaccaa gtcatcgtca acaacctaga caaatcagct

14881 ggttttccat ttaataaatg gggtaaggct agactttatt atgattcaat gagttatgag

14941 gatcaagatg cacttttcgc atatacaaaa cgtaatgtca tccctactat aactcaaatg

15001 aatcttaagt atgccattag tgcaaagaat agagctcgca ccgtagctgg tgtctctatc

15061 tgtagtacta tgaccaatag acagtttcat caaaaattat tgaaatcaat agccgccact

15121 agaggagcta ctgtagtaat tggaacaagc aaattctatg gtggttggca caatatgtta

15181 aaaactgttt atagtgatgt agaaaaccct caccttatgg gttgggatta tcctaaatgt

15241 gatagagcca tgcctaacat gcttagaatt atggcctcac ttgttcttgc tcgcaaacat

15301 acaacgtgtt gtagcttgtc acaccgtttc tatagattag ctaatgagtg tgctcaagta

15361 ttgagtgaaa tggtcatgtg tggcggttca ctatatgtta aaccaggtgg aacctcatca

15421 ggagatgcca caactgctta tgctaatagt gtttttaaca tttgtcaagc tgtcacggcc

15481 aatgttaatg cacttttatc tactgatggt aacaaaattg ccgataagta tgtccgcaat

15541 ttacaacaca gactttatga gtgtctctat agaaatagag atgttgacac agactttgtg

15601 aatgagtttt acgcatattt gcgtaaacat ttctcaatga tgatactctc tgacgatgct

15661 gttgtgtgtt tcaatagcac ttatgcatct caaggtctag tggctagcat aaagaacttt

15721 aagtcagttc tttattatca aaacaatgtt tttatgtctg aagcaaaatg ttggactgag

15781 actgacctta ctaaaggacc tcatgaattt tgctctcaac atacaatgct agttaaacag

15841 ggtgatgatt atgtgtacct tccttaccca gatccatcaa gaatcctagg ggccggctgt

15901 tttgtagatg atatcgtaaa aacagatggt acacttatga ttgaacggtt cgtgtcttta

15961 gctatagatg cttacccact tactaaacat cctaatcagg agtatgctga tgtctttcat

16021 ttgtacttac aatacataag aaagctacat gatgagttaa caggacacat gttagacatg

16081 tattctgtta tgcttactaa tgataacact tcaaggtatt gggaacctga gttttatgag

16141 gctatgtaca caccgcatac agtcttacag gctgttgggg cttgtgttct ttgcaattca

16201 cagacttcat taagatgtgg tgcttgcata cgtagaccat tcttatgttg taaatgctgt

16261 tacgaccatg tcatatcaac atcacataaa ttagtcttgt ctgttaatcc gtatgtttgc

16321 aatgctccag gttgtgatgt cacagatgtg actcaacttt acttaggagg tatgagctat

16381 tattgtaaat cacataaacc acccattagt tttccattgt gtgctaatgg acaagttttt

16441 ggtttatata aaaatacatg tgttggtagc gataatgtta ctgactttaa tgcaattgca

16501 acatgtgact ggacaaatgc tggtgattac attttagcta acacctgtac tgaaagactc

16561 aagctttttg cagcagaaac gctcaaagct actgaggaga catttaaact gtcttatggt

16621 attgctactg tacgtgaagt gctgtctgac agagaattac atctttcatg ggaagttggt

16681 aaacctagac caccacttaa ccgaaattat gtctttactg gttatcgtgt aactaaaaac

16741 agtaaagtac aaataggaga gtacaccttt gaaaaaggtg actatggtga tgctgttgtt

16801 taccgaggta caacaactta caaattaaat gttggtgatt attttgtgct gacatcacat

16861 acagtaatgc cattaagtgc acctacacta gtgccacaag agcactatgt tagaattact

16921 ggcttatacc caacactcaa tatctcagat gagttttcta gcaatgttgc aaattatcaa

16981 aaggttggta tgcaaaagta ttctacactc cagggaccac ctggtactgg taagagtcat

17041 tttgctattg gcctagctct ctactaccct tctgctcgca tagtgtatac agcttgctct

17101 catgccgctg ttgatgcact atgtgagaag gcattaaaat atttgcctat agataaatgt

17161 agtagaatta tacctgcacg tgctcgtgta gagtgttttg ataaattcaa agtgaattca

17221 acattagaac agtatgtctt ttgtactgta aatgcattgc ctgagacgac agcagatata

17281 gttgtctttg atgaaatttc aatggccaca aattatgatt tgagtgttgt caatgccaga

17341 ttacgtgcta agcactatgt gtacattggc gaccctgctc aattacctgc accacgcaca

17401 ttgctaacta agggcacact agaaccagaa tatttcaatt cagtgtgtag acttatgaaa

17461 actataggtc cagacatgtt cctcggaact tgtcggcgtt gtcctgctga aattgttgac

17521 actgtgagtg ctttggttta tgataataag cttaaagcac ataaagacaa atcagctcaa

17581 tgctttaaaa tgttttataa gggtgttatc acgcatgatg tttcatctgc aattaacagg

17641 ccacaaatag gcgtggtaag agaattcctt acacgtaacc ctgcttggag aaaagctgtc

17701 tttatttcac cttataattc acagaatgct gtagcctcaa agattttggg actaccaact

17761 caaactgttg attcatcaca gggctcagaa tatgactatg tcatattcac tcaaaccact

17821 gaaacagctc actcttgtaa tgtaaacaga tttaatgttg ctattaccag agcaaaagta

17881 ggcatacttt gcataatgtc tgatagagac ctttatgaca agttgcaatt tacaagtctt

17941 gaaattccac gtaggaatgt ggcaacttta caagctgaaa atgtaacagg actctttaaa

18001 gattgtagta aggtaatcac tgggttacat cctacacagg cacctacaca cctcagtgtt

18061 gacactaaat tcaaaactga aggtttatgt gttgacgtac ctggcatacc taaggacatg

18121 acctatagaa gactcatctc tatgatgggt tttaaaatga attatcaagt taatggttac

18181 cctaacatgt ttatcacccg cgaagaagct ataagacatg tacgtgcatg gattggcttc

18241 gatgtcgagg ggtgtcatgc tactagagaa gctgttggta ccaatttacc tttacagcta

18301 ggtttttcta caggtgttaa cctagttgct gtacctacag gttatgttga tacacctaat

18361 aatacagatt tttccagagt tagtgctaaa ccaccgcctg gagatcaatt taaacacctc

18421 ataccactta tgtacaaagg acttccttgg aatgtagtgc gtataaagat tgtacaaatg

18481 ttaagtgaca cacttaaaaa tctctctgac agagtcgtat ttgtcttatg ggcacatggc

18541 tttgagttga catctatgaa gtattttgtg aaaataggac ctgagcgcac ctgttgtcta

18601 tgtgatagac gtgccacatg cttttccact gcttcagaca cttatgcctg ttggcatcat

18661 tctattggat ttgattacgt ctataatccg tttatgattg atgttcaaca atggggtttt

18721 acaggtaacc tacaaagcaa ccatgatctg tattgtcaag tccatggtaa tgcacatgta

18781 gctagttgtg atgcaatcat gactaggtgt ctagctgtcc acgagtgctt tgttaagcgt

18841 gttgactgga ctattgaata tcctataatt ggtgatgaac tgaagattaa tgcggcttgt

18901 agaaaggttc aacacatggt tgttaaagct gcattattag cagacaaatt cccagttctt

18961 cacgacattg gtaaccctaa agctattaag tgtgtacctc aagctgatgt agaatggaag

19021 ttctatgatg cacagccttg tagtgacaaa gcttataaaa tagaagaatt attctattct

19081 tatgccacac attctgacaa attcacagat ggtgtatgcc tattttggaa ttgcaatgtc

19141 gatagatatc ctgctaattc cattgtttgt agatttgaca ctagagtgct atctaacttt

19201 aacttgcctg gttgtgatgg tggcnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn

19261 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn

19321 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn

19381 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn

19441 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn tagcttgtgg

19501 gtttacaaac aatttgatac ttataacctc tggaacactt ttacaagact tcagagttta

19561 gaaaatgtgg cttttaatgt tgtaaataag ggacactttg atggacaaca gggtgaagta

19621 ccagtttcta tcattaataa cactgtttac acaaaagttg atggtgttga tgtagaattg

19681 tttgaaaata aaacaacatt acctgttaat gtagcatttg agctttgggc taagcgcaac

19741 attaaaccag taccagaggt gaaaatactc aataatttgg gtgtggacat tgctgctaat

19801 actgtgatct gggactacaa aagagatgct ccagcacata tatctactat tggtgtttgt

19861 tctatgactg acntagccan gnaaccanct gaaacgattt gtgcaccact cactgtcttt

19921 tttgatggta gagttgatgg tcaagtagac ttatttagaa atgcccgtaa tggtgttctt

19981 attacagaag gtagtgttaa aggtttacaa ccatctgtag gtcccaaaca agctagtctt

20041 aatggagtca cattaattgg agaagccgta aaaacacagt tcaattatta taagaaagtt

20101 gatggtgttg tccaacaatt acctgaaact tactttactc agagtagaaa tttacaagaa

20161 tttaaaccca ggagtcaaat ggaaattgat ttcttagaat tagctatgga tgaattcatt

20221 gaacggtata aattagaagg ctatgccttc gaacatatcg tttatggaga ttttagtcat

20281 agtcagttag gtggtttaca tctactgatt ggactagcta aacgttttaa ggaatcacct

20341 tttgaattag aagattttat tcctatggac agtacagtta aaaactattt cataacagat

20401 gcgcaaacag gttcatctaa gtgtgtgtgt tctgttattg atttattact tgatgatttt

20461 gttgaaataa taaaatccca agatttatct gtagtttcta aggttgtcaa agtgactatt

20521 gactatacag aaatttcatt tatgctttgg tgtaaagatg gccatgtaga aacattttac

20581 ccaaaattac aatctagtca agcgtggcaa ccgggtgttg ctatgcctaa tctttacaaa

20641 atgcaaagaa tgctattaga aaagtgtgac cttcaaaatt atggtgatag tgcaacatta

20701 cctaaaggca taatgatgaa tgtcgcaaaa tatactcaac tgtgtcaata tttaaacaca

20761 ttaacattag ctgtacccta taatatgaga gttatacatt ttggtgctgg ttctgataaa

20821 ggagttgcac caggtacagc tgttttaaga cagtggttgc ctacgggtac gctgcttgtc

20881 gattcagatc ttaatgactt tgtctctgat gcagattcaa ctttgattgg tgattgtgca

20941 actgtacata cagctaataa atgggatctc attattagtg atatgtacga ccctaagact

21001 aaaaatgtta caaaagaaaa tgactctaaa gagggttttt tcacttacat ttgtgggttt

21061 atacaacaaa agctagctct tggaggttcc gtggctnnnn nnnnnnnnnn nnnnnnnnnn

21121 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn

21181 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn

21241 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnca

21301 attcagttgt cttcctattc tttatttgac atgagtaaat ttccccttaa attaaggggt

21361 actgctgtta tgtctttaaa agaaggtcaa atcaatgata tgattttatc tcttcttagt

21421 aaaggtagac ttataattag agaaaacaac agagttgtta tttctagtga tgttcttgtt

21481 aacaactaaa cgaacaatgt ttgtttttct tgttttattg ccactagtct ctagtcagtg

21541 tgttaatctt acaaccagaa ctcaattacc ccctgcatac actaattctt tcacacgtgg

21601 tgtttattac cctgacaaag ttttcagatc ctcagtttta cattcaactc aggacttgtt

21661 cttacctttc ttttccaatg ttacttggtt ccatgttatc tctgggacca atggtactaa

21721 gaggtttgat aaccctgtcc taccatttaa tgatggtgtt tattttgctt ccattgagaa

21781 gtctaacata ataagaggct ggatttttgg tactacttta gattcgaaga cccagtccct

21841 acttattgtt aataacgcta ctaatgttgt tattaaagtc tgtgaatttc aattttgtaa

21901 tgatccattt ttggaccaca aaaacaacaa aagttggatg gaaagtgagt tcagagttta

21961 ttctagtgcg aataattgca cttttgaata tgtctctcag ccttttctta tggaccttga

22021 aggaaaacag ggtaatttca aaaatcttag ggaatttgtg tttaagaata ttgatggtta

22081 ttttaaaata tattctaagc acacgcctat tatagtgcgt gagccagaag atctccctca

22141 gggtttttcg gctttagaac cattggtaga tttgccaata ggtattaaca tcactaggtt

22201 tcaaacttta cttgctttac atagaagtta tttgactcct ggtgattctt cttcaggttg

22261 gacagctggt gctgcagctt attatgtggg ttatcttcaa cctaggactt ttctattaaa

22321 atataatgaa aatggaacca ttacagatgc tgtagactgt gcacttgacc ctctctcaga

22381 aacaaagtgt acgttgaaat ccttcactgt agaaaaagga atctatcaaa cttctaactt

22441 tagagtccaa ccaacagaat ctattgttag atttcctaat attacaaact tgtgcccttt

22501 tgatgaagtt tttaacgcca ccagatttgc atctgtttat gcttggaaca ggaagagaat

22561 cagcaactgt gttgctgatt attctgtcct atataatttc gcaccatttt tcgcttttaa

22621 gtgttatgga gtgtctccta ctaaattaaa tgatctctgc tttactaatg tctatgcaga

22681 ttcatttgta attagaggta atgaagtcag ccaaatcgct ccagggcaaa ctggaaatat

22741 tgctgattat aattataaat taccagatga ttttacaggc tgcgttatag cttggaattc

22801 taacaagctt gattctaagg ttggtggtaa ttataattac ctgtatagat tgtttaggaa

22861 gtctaatctc aaaccttttg agagagatat ttcaactgaa atctatcagg ccggtaacaa

22921 accttgtaat ggtgttgcag gttttaattg ttactttcct ttacgatcat atggtttccg

22981 acccacttat ggtgttggtc accaaccata cagagtagta gtactttctt ttgaacttct

23041 acatgcacca gcaactgttt gtggacctaa aaagtctact aatttggtta aaaacaaatg

23101 tgtcaatttc aacttcaatg gtttaaaagg cacaggtgtt cttactgagt ctaacaaaaa

23161 gtttctgcct ttccaacaat ttggcagaga cattgctgac actactgatg ctgtccgtga

23221 tccacagaca cttgagattc ttgacattac accatgttct tttggtggtg tcagtgttat

23281 aacaccagga acaaatactt ctaaccaggt tgctgttctt tatcagggtg ttaactgcac

23341 agaagtccct gttgctattc atgcagatca acttactcct acttggcgtg tttattctac

23401 aggttctaat gtttttcaaa cacgtgcagg ctgtttaata ggggctgaat atgtcaacaa

23461 ctcatatgag tgtgacatac ccattggtgc aggtatatgc gctagttatc agactcagac

23521 taagtctcat cggcgggcac gtagtgtagc tagtcaatcc atcattgcct acactatgtc

23581 acttggtgca gaaaattcag ttgcttactc taataactct attgccatac ccacaaattt

23641 tactattagt gttaccacag aaattctacc agtgtctatg accaagacat cagtagattg

23701 tacaatgtac atttgtggtg attcaactga atgcagcaat cttttgttgc aatatggcag

23761 tttttgtaca caattaaaac gtgctttaac tggaatagct gttgaacaag acaaaaacac

23821 ccaagaagtt tttgcacaag tcaaacaaat ttacaaaaca ccaccaatta aatattttgg

23881 tggttttaat ttttcacaaa tattaccaga tccatcaaaa ccaagcaaga ggtcatttat

23941 tgaagatcta cttttcaaca aagtgacact tgcagatgct ggcttcatca aacaatatgg

24001 tgattgcctt ggtgatattg ctgctagaga cctcatttgt gcacaaaagt ttaaaggcct

24061 tactgttttg ccacctttgc tcacagatga aatgattgct caatacactt ctgcactgtt

24121 agcgggtaca atcacttctg gttggacctt tggtgcaggt gctgcattac aaataccatt

24181 tgctatgcaa atggcttata ggtttaatgg tattggagtt acacagaatg ttctctatga

24241 gaaccaaaaa ttgattgcca accaatttaa tagtgctatt ggcaaaattc aagactcact

24301 ttcttccaca gcaagtgcac ttggaaaact tcaagatgtg gtcaaccata atgcacaagc

24361 tttaaacacg cttgttaaac aacttagctc caaatttggt gcaatttcaa gtgttttaaa

24421 tgatatcttt tcacgtcttg acaaagttga ggctgaagtg caaattgata ggttgatcac

24481 aggcagactt caaagtttgc agacatatgt gactcaacaa ttaattagag ctgcagaaat

24541 cagagcttct gctaatcttg ctgctactaa aatgtcagag tgtgtacttg gacaatcaaa

24601 aagagttgat ttttgtggaa agggctatca tcttatgtcc ttccctcagt cagcacctca

24661 tggtgtagtc ttcttgcatg tgacttatgt ccctgcacaa gaaaagaact tcacaactgc

24721 tcctgccatt tgtcatgatg gaaaagcaca ctttcctcgt gaaggtgtct ttgtttcaaa

24781 tggcacacac tggtttgtaa cacaaaggaa tttttatgaa ccacaaatca ttactacaga

24841 caacacattt gtgtctggta actgtgatgt tgtaatagga attgtcaaca acacagttta

24901 tgatcctttg caacctgaat tagattcatt caaggaggag ttagataaat attttaagaa

24961 tcatacatca ccagatgttg atttaggtga catctctggc attaatgctt cagttgtaaa

25021 cattcaaaaa gaaattgacc gcctcaatga ggttgccaag aatttaaatg aatctctcat

25081 cgatctccaa gaacttggaa agtatgagca gtatataaaa tggccatggt acatttggct

25141 aggttttata gctggcttga ttgccatagt aatggtgaca attatgcttt gctgtatgac

25201 cagttgctgt agttgtctca agggctgttg ttcttgtgga tcctgctgca aatttgatga

25261 agacgactct gagccagtgc tcaaaggagt caaattacat tacacataaa cgaacttatg

25321 gatttgttta tgagaatctt cacaattgga actgtaactt tgaagcaagg tgaaatcaag

25381 gatgctactc cttcagattt tgttcgcgct actgcaacga taccgataca agcctcactc

25441 cctttcggat ggcttattgt tggcgttgca cttcttgctg tttttcagag cgcttccaaa

25501 atcataactc tcaaaaagag atggcaacta gcactctcca agggtgttca ctttgtttgc

25561 aacttgctgt tgttgtttgt aacagtttac tcacaccttt tgctcgttgc tgctggcctt

25621 gaagcccctt ttctctatct ttatgcttta gtctacttct tgcagagtat aaactttgta

25681 agaataataa tgaggctttt gctttgctgg aaatgccgtt ccaaaaaccc attactttat

25741 gatgccaact attttctttg ctggcatact aattgttacg actattgtat accttacaat

25801 agtgtaactt cttcaattgt cattacttca ggtgatggca caacaagtcc tatttctgaa

25861 catgactacc agattggtgg ttatactgaa aaatgggaat ctggagtaaa agactgtgtt

25921 gtattacaca gttacttcac ttcagactat taccagctgt actcaactca attgagtaca

25981 gacactggtg ttgaacatgt taccttcttc atctacaata aaattgttga tgagcctgaa

26041 gaacatgtcc aaattcacac aatcgacggt tcatccggag ttgttaatcc agtaatggaa

26101 ccaatttatg atgaaccgac gacgactact agcgtgcctt tgtaagcaca agctgatgag

26161 tacgaactta tgtactcatt cgtttcggaa gagataggta cgttaatagt taatagcgta

26221 cttctttttc ttgctttcgt ggtattcttg ctagttacac tagccatcct tactgcgctt

26281 cgattgtgtg cgtactgctg caatattgtt aacgtgagtc ttgtaaaacc ttctttttac

26341 gtttactctc gtgttaaaaa tctgaattct tctagagttc ctgatcttct ggtctaaacg

26401 aactaaatat tatattagtt tttctgtttg gaactttaat tttagccatg gcaggttcca

26461 acggtactat taccgttgaa gagcttaaaa agctccttga agaatggaac ctagtaatag

26521 gtttcctatt ccttacatgg atttgtcttc tacaatttgc ctatgccaac aggaataggt

26581 ttttgtatat aattaagtta attttcctct ggctgttatg gccagtaact ttaacttgtt

26641 ttgtgcttgc tgctgtttac agaataaatt ggatcaccgg tggaattgct atcgcaatgg

26701 cttgtcttgt aggcttgatg tggctcagct acttcattgc ttctttcaga ctgtttgcgc

26761 gtacgcgttc catgtggtca ttcaatccag aaactaacat tcttctcaac gtgccactcc

26821 atggcactat tctgaccaga ccgcttctag aaagtgaact cgtaatcgga gctgtgatcc

26881 ttcgtggaca tcttcgtatt gctggacacc atctaggacg ctgtgacatc aaggacctgc

26941 ctaaagaaat cactgttgct acatcacgaa cgctttctta ttacaaattg ggagcttcgc

27001 agcgtgtagc aggtgactca ggttttgctg catacagtcg ctacaggatt ggcaactata

27061 aattaaacac agaccattcc agtagcagtg acaatattgc tttgcttgta cagtaagtga

27121 caacagatgt ttcatctcgt tgactttcag gttactatag cagagatatt actaattatt

27181 atgcggactt ttaaagtttc catttggaat cttgattaca tcataaacct cataattaaa

27241 aatttatcta agtcactaac tgagaataaa tattctcaat tagatgaaga gcaaccaatg

27301 gagattgatt aaacgaacat gaaaattatt cttttcttgg cactgataac actcgctact

27361 tgtgagcttt atcactacca agagtgtgtt agaggtacaa cagtactttt aaaagaacct

27421 tgctcttctg gaacatacga gggcaattca ccatttcatc ctctagctga taacaannnn

27481 gnnntgactt gctttngcac tcaanttgcn nttgcttnnn nnnnnnnnnn nnnnnnnnnn

27541 nnnnnnnnnn nnnnnnnnnn nnnnnnacnn aanctgttca tcagacaaga ggaagttcaa

27601 gnactttact ctccaatttt tcttattgtt gcggcaannn ngnnnnnnnn nnnnnnnnnn

27661 nnnnnnnnnn nnnnnnnnnn nnnnntgaac tttcattaat tgacttctat ttgtgctttt

27721 tagcctttct gttattcctt gtnttaatta nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn

27781 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn

27841 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn

27901 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn

27961 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnggttcta

28021 aatcacccat tcagtacatc gatatcggta attatacagt ttcctgttta ccttttacaa

28081 ttaattgcca ggaacctaaa ttgggtagtc ttgtagtgcg ttgttcgttc tatgaagact

28141 ttttagagta tcatgacgtt cgtgttgttt tagatttcat ctaaacgaac aaacttaaat

28201 gtctgataat ggaccccaaa atcagcgaaa tgcactccgc attacgtttg gtggaccctc

28261 agattcaact ggcagtaacc agaatggtgg ggcgcgatca aaacaacgtc ggccccaagg

28321 tttacccaat aatactgcgt cttggttcac cgctctcact caacatggca aggaagacct

28381 taaattccct cgaggacaag gcgttccaat taacaccaat agcagtccag atgaccaaat

28441 tggctactac cgaagagcta ccagacgaat tcgtggtggt gacggtaaaa tgaaagatct

28501 cagtccaaga tggtatttct actacctagg aactgggcca gaagctggac ttccctatgg

28561 tgctaacaaa gacggcatca tatgggttgc aactgaggga gccttgaata caccaaaaga

28621 tcacattggc acccgcaatc ctgctaacaa tgctgcaatc gtgctacaac ttcctcaagg

28681 aacaacattg ccaaaaggct tctacgcaga agggagcaga ggcggcagtc aagcctcttc

28741 tcgttcctca tcacgtagtc gcaacagttc aagaaattca actccaggca gcagtaaacg

28801 aacttctcct gctagaatgg ctggcaatgg cggtgatgct gctcttgctt tgctgctgct

28861 tgacagattg aaccagcttg agagcaaaat gtctggtaaa ggccaacaac aacaaggcca

28921 aactgtcact aagaaatctg ctgctgaggc ttctaagaag cctcggcaaa aacgtactgc

28981 cactaaagca tacaatgtaa cacaagcttt cggcagacgt ggtccagaac aaacccaagg

29041 aaattttggg gaccaggaac taatcagaca aggaactgat tacaaacatt ggccgcaaat

29101 tgcacaattt gcccccagcg cttcagcgtt cttcggaatg tcgcgcattg gcatggaagt

29161 cacaccttcg ggaacgtggt tgacctacac aggtgccatc aaattggatg acaaagatcc

29221 aaatttcaaa gatcaagtca ttttgctgaa taagcatatt gacgcataca aaacattccc

29281 accaacagag cctaaaaagg acaaaaagaa gaaggctgat gaaactcaag ccttaccgca

29341 gagacagaag aaacagcaan ctgtgactct tcttcctgct gcagatttgg atgatttctc

29401 caaacaattg caacaatcca tgagcagtgc tgactcaact caggcctaaa ctcatgcaga

29461 ccacacaagg cagatgggct atataaacgt tttcgctttt ccgtttacga tatatagtct

29521 actcttgtgc agaatgaatt ctcgtaacta catagcacaa gtagatgtag ttaactttaa

29581 tctca

//