**Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/human/USA/VA-CDC-MMB14309497/2022, complete genome**

GenBank: OM931491.1

[FASTA](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?report=fasta) [Graphics](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?report=graph)

[Go to:](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1" \l "goto2205322586_0)

LOCUS OM931491 29770 bp RNA linear VRL 07-MAR-2022

DEFINITION Severe acute respiratory syndrome coronavirus 2 isolate

SARS-CoV-2/human/USA/VA-CDC-MMB14309497/2022, complete genome.

ACCESSION OM931491

VERSION OM931491.1

DBLINK BioProject: [PRJNA738870](https://www.ncbi.nlm.nih.gov/bioproject/PRJNA738870)

BioSample: [SAMN26502634](https://www.ncbi.nlm.nih.gov/biosample/SAMN26502634)

KEYWORDS purposeofsampling:baselinesurveillance.

SOURCE Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)

ORGANISM [Severe acute respiratory syndrome coronavirus 2](https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=2697049)

Viruses; Riboviria; Orthornavirae; Pisuviricota; Pisoniviricetes;

Nidovirales; Cornidovirineae; Coronaviridae; Orthocoronavirinae;

Betacoronavirus; Sarbecovirus.

REFERENCE 1 (bases 1 to 29770)

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

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

Caban Figueroa,V., Morrison,S., Gulvick,C., Sula,E., Tugwell,M.,

Moon,L., Paden,C.R. and MacCannell,D.

TITLE CDC Sars CoV2 Sequencing Baseline Constellation

JOURNAL Unpublished

REFERENCE 2 (bases 1 to 29770)

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

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

Caban Figueroa,V., Morrison,S., Gulvick,C., Sula,E., Tugwell,M.,

Moon,L., Paden,C.R. and MacCannell,D.

TITLE Direct Submission

JOURNAL Submitted (07-MAR-2022) Respiratory Viruses Branch, Division of

Viral Diseases, Centers for Disease Control and Prevention, 1600

Clifton Rd, Atlanta, GA 30329, USA

COMMENT ##Assembly-Data-START##

Assembly Method :: ion\_ampliseq\_sars-cov2

Sequencing Technology :: Ion GeneStudio S5 Prime

##Assembly-Data-END##

FEATURES Location/Qualifiers

source 1..29770

/organism="Severe acute respiratory syndrome coronavirus

2"

/mol\_type="genomic RNA"

/isolate="SARS-CoV-2/human/USA/VA-CDC-MMB14309497/2022"

/isolation\_source="nasal swab"

/host="Homo sapiens"

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

/country="USA: Virginia"

/collection\_date="2022-02-11"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=224&to=21501) 224..21501

/gene="ORF1ab"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?location=224:13414,13414:21501) join(224..13414,13414..21501)

/gene="ORF1ab"

/ribosomal\_slippage

/codon\_start=1

/product="ORF1ab polyprotein"

/protein\_id="[UMW45519.1](https://www.ncbi.nlm.nih.gov/protein/2205322587)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHSYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTG

DFVKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESG

LKTILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNL

LEILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGN

FKVTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAA

ITILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKL

KPVLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLV

NKFLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEII

FLEGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEK

YCALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNITFELDERIDKVLNER

CSAYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEF

KLASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPE

EEQEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSG

YLKLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVAGALNKATNNAMQVESD

DYIATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLFKSAYENFNQHEVLLA

PLLSAGIFGADPIHSLRVCVDTVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIA

EIPKEEVKPFITESKPSVEQRKQDDKKIKACVEEVTTTLEETKFLTENLLLYIDINGN

LHPDSATLVSDIDITFLKKDAPYIVGDVVQEGVLTAVVIPTKKAGGTTEMLAKALRKV

PTDNYITTYPGQGLNGYTVEEAKTVLKKCKSAFYILPSIISNEKQEILGTVSWNLREM

LAHAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGARFYFYTSKTTVASLIN

TLNDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSS

KTPEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVIT

FDNLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPH

NSHEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIK

WADNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELG

DVRETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQ

IPCTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSK

ETLYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYY

KKDNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVT

FFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWST

KPVETSNSFXXXXXXXXXXXXXLACEDLKPVSEEVVENPTIQKDVLECNVKTTEVVGD

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

LLTILTSLLVLVQSTQWSLFFFFYENAFLPFAMGIIAMSAFAMMFVKHKHAFLCLFLL

PSLATVAYFNMVYMPASWVMRIMTWLDMVDTSFKLKDCVMYASAVVLLILMTARTVYD

DGARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGVVF

MCVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVSTQ

EFRYMNSQGLLPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSVL

QQLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEEM

LDNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEFD

RDAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNIIN

NARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSKI

VQLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTDD

NALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGPK

VKYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYKD

YLASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNPK

GFCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKGYGCSCDQLREPMLQSADAQS

FLNRVCGVSAARLTPCGTGTSTDVVYRAFDIYNDKVAGFAKFLKTNCCRFQEKDEDDN

LIDSYFVVKRHTFSNYQHEETIYNLLKDCPAVAKHDFFKFRIDGDMVPHISRQRLTKY

TMADLVYALRHFDEGNCDTLKEILVTYNCCDDDYFNKKDWYDFVENPDILRVYANLGE

RVRQALLKTVQFCDAMRNAGIVGVLTLDNQDLNGNWYDFGDFIQTTPGSGVPVVDSYY

SLLMPILTLTRALTAESHVDTDLTKPYIKWDLLKYDFTEERLKLFDRYFKYWDQTYHP

NCVNCLDDRCILHCANFNVLFSTVFPLTSFGPLVRKIFVDGVPFVVSTGYHFRELGVV

HNQDVNLHSSRLSFKELLVYAADPAMHAASGNLLLDKRTTCFSVAALTNNVAFQTVKP

GNFNKDFYDFAVSKGFFKEGSSVELKHFFFAQDGNAAISDYDYYRYNLPTMCDIRQLL

FVVEVVDKYFDCYDGGCINANQVIVNNLDKSAGFPFNKWGKARLYYDSMSYEDQDALF

AYTKRNVIPTITQMNLKYAISAKNRARTVAGVSICSTMTNRQFHQKLLKSIAATRGAT

VVIGTSKFYGGWHNMLKTVYSDVENPHLMGWDYPKCDRAMPNMLRIMASLVLARKHTT

CCSLSHRFYRLANECAQVLSEMVMCGGSLYVKPGGTSSGDATTAYANSVFNICQAVTA

NVNALLSTDGNKIADKYVRNLQHRLYECLYRNRDVDTDFVNEFYAYLRKHFSMMILSD

DAVVCFNSTYASQGLVASIKNFKSVLYYQNNVFMSEAKCWTETDLTKGPHEFCSQHTM

LVKQGDDYVYLPYPDPSRILGAGCFVDDIVKTDGTLMIERFVSLAIDAYPLTKHPNQE

YADVFHLYLQYIRKLHDELTGHMLDMYSVMLTNDNTSRYWEPEFYEAMYTPHTVLQAV

GACVLCNSQTSLRCGACIRRPFLCCKCCYDHVISTSHKLVLSVNPYVCNAPGCDVTDV

TQLYLGGMSYYCKSHKPPISFPLCANGQVFGLYKNTCVGSDNVTDFNAIATCDWTNAG

DYILANTCTERLKLFAAETLKATEETFKLSYGIATVREVLSDRELHLSWEVGKPRPPL

NRNYVFTGYRVTKNSKVQIGEYTFEKGDYGDAVVYRGTTTYKLNVGDYFVLTSHTVMP

LSAPTLVPQEHYVRITGLYPTLNISDEFSSNVANYQKVGMQKYSTLQGPPGTGKSHFA

IGLALYYPSARIVYTACSHAAVDALCEKALKYLPIDKCSRIIPARARVECFDKFKVNS

TLEQYVFCTVNALPETTADIVVFDEISMATNYDLSVVNARLRAKHYVYIGDPAQLPAP

RTLLTKGTLEPEYFNSVCRLMKTIGPDMFLGTCRRCPAEIVDTVSALVYDNKLKAHKD

KSAQCFKMFYKGVITHDVSSAINRPQIGVVREFLTRNPAWRKAVFISPYNSQNAVASK

ILGLPTQTVDSSQGSEYDYVIFTQTTETAHSCNVNRFNVAITRAKVGILCIMSDRDLY

DKLQFTSLEIPRRNVATLQAENVTGLFKDCSKVITGLHPTQAPTHLSVDTKFKTEGLC

VDVPGIPKDMTYRRLISMMGFKMNYQVNGYPNMFITREEAIRHVRAWIGFDVEGCHAT

REAVGTNLPLQLGFSTGVNLVAVPTGYVDTPNNTDFSRVSAKPPPGDQFKHLIPLMYK

GLPWNVVRIKIVQMLSDTLKNLSDRVVFVLWAHGFELTSMKYFVKIGPERTCCLCDRR

ATCFSTASDTYACWHHSIGFDYVYNPFMIDVQQWGFTGNLQSNHDLYCQVHGNAHVAS

CDAIMTRCLAVHECFVKRVDWTIEYPIIGDELKINAACRKVQHMVVKAALLADKFPVL

HDIGNPKAIKCVPQADVEWKFYDAQPCSDKAYKIEELFYSYATHSDKFTDGVCLFWNC

NVDRYPANSIVCRFDTRVLSNLNLPGCDGGSLYVNKHAFHTPAFDKSAFVNLKQLPFF

YYSDSPCESHGKQVVSDIDYVPLKSATCITRCNLGGAVCRHHANEYRLYLDAYNMMIS

AGFSLWVYKQFDTYNLWNTFTRLQSLENVAFNVVNKGHFDGQQGEVPVSIINNTVYTK

VDGVDVELFENKTTLPVNVAFELWAKRNIKPVPEVKILNNLGVDIAANTVIWDYKRDA

PAHISTIGVCSMTDIAKKPTETICAPLTVFFDGRVDGQVDLFRNARNGVLITEGSVKG

LQPSVGPKQASLNGVTLIGEAVKTQFNYYKKVDGVVQQLPETYFTQSRNLQEFKPRSQ

MEIDFLELAMDEFIERYKLEGYAFEHIVYGDFSHSQLGGLHLLIGLAKRFKESPFELE

DFIPMDSTVKNYFITDAQTGSSKCVCSVIDLLLDDFVEIIKSQDLSVVSKVVKVTIDY

TEISFMLWCKDGHVETFYPKLQSSQAWQPGVAMPNLYKMQRMLLEKCDLQNYGDSATL

PKGIMMNVAKYTQLCQYLNTLTLAVPYNMRVIHFGAGSDKGVAPGTAVLRQWLPTGTL

LVDSDLNDFVSDADSTLIGDCATVHTANKWDLIISDMYDPKTKNVTKENDSKEGFFTY

ICGFIQQKLALGGSVAIKITEHSWNADLYKLMGHFAWWTAFVTNVNASSSEAFLIGCN

YLGKPREQIDGYVMHANYIFWRNTNPIQLSSYSLFDMSKFPLKLRGTAVMSLKEGQIN

DMILSLLSKGRLIIRENNRVVISSDVLVNN"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45519.1?from=1&to=180) 224..763

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45519.1?from=181&to=818) 764..2677

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45519.1?from=819&to=2762) 2678..8509

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45519.1?from=2763&to=3262) 8510..10009

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45519.1?from=3263&to=3568) 10010..10927

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45519.1?from=3569&to=3855) 10928..11788

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45519.1?from=3856&to=3938) 11789..12037

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45519.1?from=3939&to=4136) 12038..12631

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45519.1?from=4137&to=4249) 12632..12970

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45519.1?from=4250&to=4388) 12971..13387

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45519.1?from=4389&to=5320) join(13388..13414,13414..16182)

/gene="ORF1ab"

/product="RNA-dependent RNA polymerase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45519.1?from=5321&to=5921) 16183..17985

/gene="ORF1ab"

/product="helicase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45519.1?from=5922&to=6448) 17986..19566

/gene="ORF1ab"

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

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45519.1?from=6449&to=6794) 19567..20604

/gene="ORF1ab"

/product="endoRNAse"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45519.1?from=6795&to=7092) 20605..21498

/gene="ORF1ab"

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

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=224&to=13429) 224..13429

/gene="ORF1ab"

/codon\_start=1

/product="ORF1a polyprotein"

/protein\_id="[UMW45520.1](https://www.ncbi.nlm.nih.gov/protein/2205322588)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHSYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTG

DFVKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESG

LKTILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNL

LEILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGN

FKVTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAA

ITILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKL

KPVLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLV

NKFLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEII

FLEGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEK

YCALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNITFELDERIDKVLNER

CSAYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEF

KLASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPE

EEQEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSG

YLKLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVAGALNKATNNAMQVESD

DYIATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLFKSAYENFNQHEVLLA

PLLSAGIFGADPIHSLRVCVDTVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIA

EIPKEEVKPFITESKPSVEQRKQDDKKIKACVEEVTTTLEETKFLTENLLLYIDINGN

LHPDSATLVSDIDITFLKKDAPYIVGDVVQEGVLTAVVIPTKKAGGTTEMLAKALRKV

PTDNYITTYPGQGLNGYTVEEAKTVLKKCKSAFYILPSIISNEKQEILGTVSWNLREM

LAHAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGARFYFYTSKTTVASLIN

TLNDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSS

KTPEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVIT

FDNLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPH

NSHEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIK

WADNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELG

DVRETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQ

IPCTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSK

ETLYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYY

KKDNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVT

FFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWST

KPVETSNSFXXXXXXXXXXXXXLACEDLKPVSEEVVENPTIQKDVLECNVKTTEVVGD

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

LLTILTSLLVLVQSTQWSLFFFFYENAFLPFAMGIIAMSAFAMMFVKHKHAFLCLFLL

PSLATVAYFNMVYMPASWVMRIMTWLDMVDTSFKLKDCVMYASAVVLLILMTARTVYD

DGARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGVVF

MCVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVSTQ

EFRYMNSQGLLPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSVL

QQLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEEM

LDNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEFD

RDAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNIIN

NARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSKI

VQLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTDD

NALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGPK

VKYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYKD

YLASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNPK

GFCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKGYGCSCDQLREPMLQSADAQS

FLNGFAV"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45520.1?from=1&to=180) 224..763

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45520.1?from=181&to=818) 764..2677

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45520.1?from=819&to=2762) 2678..8509

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45520.1?from=2763&to=3262) 8510..10009

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45520.1?from=3263&to=3568) 10010..10927

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45520.1?from=3569&to=3855) 10928..11788

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45520.1?from=3856&to=3938) 11789..12037

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45520.1?from=3939&to=4136) 12038..12631

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45520.1?from=4137&to=4249) 12632..12970

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45520.1?from=4250&to=4388) 12971..13387

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UMW45520.1?from=4389&to=4401) 13388..13426

/gene="ORF1ab"

/product="nsp11"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=13422&to=13449) 13422..13449

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 1"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=13434&to=13488) 13434..13488

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 2"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=21509&to=25321) 21509..25321

/gene="S"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=21509&to=25321) 21509..25321

/gene="S"

/codon\_start=1

/product="surface glycoprotein"

/protein\_id="[UMW45521.1](https://www.ncbi.nlm.nih.gov/protein/2205322589)"

/translation="MFVFLVLLPLVSSQCVNLTTRTQLPPAYTNSFTRGVYYPDKVFR

SSVLHSTQDLFLPFFSNVTWFHVISGTNGTKRFDNPVLPFNDGVYFASIEKSNIIRGW

IFGTTLDSKTQSLLIVNNATNVVIKVCEFQFCNDPFLDHKNNKSWMESEFRVYSSANN

CTFEYVSQPFLMDLEGKQGNFKNLREFVFKNIDGYFKIYSKHTPIIVREPEDLPQGFS

ALEPLVDLPIGINITRFQTLLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLLKY

NENGTITDAVDCALDPLSETKCTLKSFTVEKGIYQTSNFRVQPTESIVRFPNITNLCP

FDEVFNATRFASVYAWNRKRISNCVADYSVLYNLAPFFTFKCYGVSPTKLNDLCFTNV

YADSFVIRGDEVRQIAPGQTGNIADYNYKLPDDFTGCVIAWNSNKLDSKVSGNYNYLY

RLFRKSNLKPFERDISTEIYQAGNKPCNGVAGFNCYFPLRSYSFRPTYGVGHQPYRVV

VLSFELLHAPATVCGPKKSTNLVKNKCVNFNFNGLKGTGVLTESNKKFLPFQQFGRDI

ADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQVAVLYQGVNCTEVPVAIHAD

QLTPTWRVYSTGSNVFQTRAGCLIGAEYVNNSYECDIPIGAGICASYQTQTKSHRRAR

SVASQSIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEILPVSMTKTSVDCTMYIC

GDSTECSNLLLQYGSFCTQLKRALTGIAVEQDKNTQEVFAQVKQIYKTPPIKYFGGFN

FSQILPDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICAQKFKGLT

VLPPLLTDEMIAQYTSALLAGTITSGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLY

ENQKLIANQFNSAIGKIQDSLSSTASALGKLQDVVNHNAQALNTLVKQLSSNFGAISS

VLNDIFSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASANLAATKMSECV

LGQSKRVDFCGKGYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHDGKAHFPR

EGVFVSNGTHWFVTQRNFYEPQIITTDNTFVSGNCDVVIGIVNNTVYDPLQPELDSFK

EELDKYFKNHTSPDVDLGDISGINASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYE

QYIKWPWYIWLGFIAGLIAIVMVTIMLCCMTSCCSCLKGCCSCGSCCKFDEDDSEPVL

KGVKLHYT"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=25330&to=26157) 25330..26157

/gene="ORF3a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=25330&to=26157) 25330..26157

/gene="ORF3a"

/codon\_start=1

/product="ORF3a protein"

/protein\_id="[UMW45522.1](https://www.ncbi.nlm.nih.gov/protein/2205322590)"

/translation="MDLFMRIFKIGTVTLKQGEIKDATPSDFVRATATIPIQASLPFG

WLIVGVALLAVFQSASKIITLKKRWQLALSKGVHFVCNLLLLFVIVYSHLLLVAAGLE

APFFYLYALVYFLQSINFVRIIMRLWLCWKCRSKNPLLYDANYFLCWHTNCYDYCIPY

NSVTSSIVITSGDGTTSPISEHDYQIGGYTEKWESGVKDCVVLHSYFTSDYYQLYSTQ

LSTDTGVEHVTFFIYNKIVDEPEEHVQIHTIDGSSGVVNPVMEPIYDEPTTTTSVPL"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=26182&to=26409) 26182..26409

/gene="E"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=26182&to=26409) 26182..26409

/gene="E"

/codon\_start=1

/product="envelope protein"

/protein\_id="[UMW45523.1](https://www.ncbi.nlm.nih.gov/protein/2205322591)"

/translation="MYSFVSEEIGTLIVNSVLLFLAFVVFLLVTLAILTALRLCAYCC

NIVNVSLVKPSFYVYSRVKNLNSSRVPDLLV"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=26460&to=27128) 26460..27128

/gene="M"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=26460&to=27128) 26460..27128

/gene="M"

/codon\_start=1

/product="membrane glycoprotein"

/protein\_id="[UMW45524.1](https://www.ncbi.nlm.nih.gov/protein/2205322592)"

/translation="MAGSNGTITVEELKKLLEEWNLVIGFLFLTWICLLQFAYANRNR

FLYIIKLIFLWLLWPVTLTCFVLAAVYRINWITGGIAIAMACLVGLMWLSYFIASFRL

FARTRSMWSFNPETNILLNVPLHGTILTRPLLESELVIGAVILRGHLRIAGHHLGRCD

IKDLPKEITVATSRTLSYYKLGASQRVAGDSGFAAYSRYRIGNYKLNTDHSSSSDNIA

LLVQ"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=27139&to=27324) 27139..27324

/gene="ORF6"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=27139&to=27324) 27139..27324

/gene="ORF6"

/codon\_start=1

/product="ORF6 protein"

/protein\_id="[UMW45525.1](https://www.ncbi.nlm.nih.gov/protein/2205322593)"

/translation="MFHLVDFQVTIAEILLIIMRTFKVSIWNLDYIINLIIKNLSKSL

TENKYSQLDEEQPMEID"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=27331&to=27696) 27331..27696

/gene="ORF7a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=27331&to=27696) 27331..27696

/gene="ORF7a"

/codon\_start=1

/product="ORF7a protein"

/protein\_id="[UMW45526.1](https://www.ncbi.nlm.nih.gov/protein/2205322594)"

/translation="MKIILFLALITLATCELYHYQECVRGTTVLLKEPCSSGTYEGNS

PFHPLADNKFALTCFSTQFAFACPDGVKHVYQLRARSVSPKLFIRQEEVQELYSPIFL

IVAAIVFITLCFTLKRKTE"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=27693&to=27824) 27693..27824

/gene="ORF7b"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=27693&to=27824) 27693..27824

/gene="ORF7b"

/codon\_start=1

/product="ORF7b"

/protein\_id="[UMW45527.1](https://www.ncbi.nlm.nih.gov/protein/2205322595)"

/translation="MIELSLIDFYLCFLAFLLFLVLIMLIIFWFSLELQDHNETCHA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=27831&to=28196) 27831..28196

/gene="ORF8"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=27831&to=28196) 27831..28196

/gene="ORF8"

/codon\_start=1

/product="ORF8 protein"

/protein\_id="[UMW45528.1](https://www.ncbi.nlm.nih.gov/protein/2205322596)"

/translation="MKFLVFLGIITTVAAFHQECSLQSCTQHQPYVVDDPCPIHFYSK

WYIRVGARKSAPLIELCVDEAGSKSPIQYIDIGNYTVSCLPFTINCQEPKLGSLVVRC

SFYEDFLEYHDVRVVLDFI"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=28211&to=29461) 28211..29461

/gene="N"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=28211&to=29461) 28211..29461

/gene="N"

/codon\_start=1

/product="nucleocapsid phosphoprotein"

/protein\_id="[UMW45529.1](https://www.ncbi.nlm.nih.gov/protein/2205322597)"

/translation="MSDNGPQNQRNALRITFGGPSDSTGSNQNGGARSKQRRPQGLPN

NTASWFTALTQHGKEDLKFPRGQGVPINTNSSPDDQIGYYRRATRRIRGGDGKMKDLS

PRWYFYYLGTGPEAGLPYGANKDGIIWVATEGALNTPKDHIGTRNPANNAAIVLQLPQ

GTTLPKGFYAEGSRGGSQASSRSSSRSRNSSRNSTPGSSKRTSPARMAGNGGDAALAL

LLLDRLNQLESKMSGKGQQQQGQTVTKKSAAEASKKPRQKRTATKAYNVTQAFGRRGP

EQTQGNFGDQELIRQGTDYKHWPQIAQFAPSASAFFGMSRIGMEVTPSGTWLTYTGAI

KLDDKGPNFKDQVILLNKHIDAYKTFPPTEPKKDKKKKADETQALPQRQKKQQTVTLL

PAADLDDFSKQLQQSMSSADSTQA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=29486&to=29602) 29486..29602

/gene="ORF10"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=29486&to=29602) 29486..29602

/gene="ORF10"

/codon\_start=1

/product="ORF10 protein"

/protein\_id="[UMW45530.1](https://www.ncbi.nlm.nih.gov/protein/2205322598)"

/translation="MGYINVFAFPFTIYSLLLCRMNSRNYIAQVDVVNFNLT"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=29537&to=29572) 29537..29572

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=29557&to=29585) 29557..29585

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/OM931491.1?from=29656&to=29696) 29656..29696

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

ORIGIN

1 tcgatctctt gtagatctgt tctctaaacg aactttaaaa tctgtgtggc tgtcactcgg

61 ctgcatgctt agtgcactca cgcagtataa ttaataacta attactgtcg ttgacaggac

121 acgagtaact cgtctatctt ctgcaggctg cttacggttt cgtccgtgtt gcagccgatc

181 atcagcacat ctaggttttg tccgggtgtg accgaaaggt aagatggaga gccttgtccc

241 tggtttcaac gagaaaacac acgtccaact cagtttgcct gttttacagg ttcgcgacgt

301 gctcgtacgt ggctttggag actccgtgga ggaggtctta tcagaggcac gtcaacatct

361 taaagatggc acttgtggct tagtagaagt tgaaaaaggc gttttgcctc aacttgaaca

421 gccctatgtg ttcatcaaac gttcggatgc tcgaactgca cctcatggtc atgttatggt

481 tgagctggta gcagaactcg aaggcattca gtacggtcgt agtggtgaga cacttggtgt

541 ccttgtccct catgtgggcg aaataccagt ggcttaccgc aaggttcttc ttcgtaagaa

601 cggtaataaa ggagctggtg gccatagtta cggcgccgat ctaaagtcat ttgacttagg

661 cgacgagctt ggcactgatc cttatgaaga ttttcaagaa aactggaaca ctaaacatag

721 cagtggtgtt acccgtgaac tcatgcgtga gcttaacgga ggggcataca ctcgctatgt

781 cgataacaac ttctgtggcc ctgatggcta ccctcttgag tgcattaaag accttctagc

841 acgtgctggt aaagcttcat gcactttgtc cgaacaactg gactttattg acactaagag

901 gggtgtatac tgctgccgtg aacatgagca tgaaattgct tggtacacgg aacgttctga

961 aaagagctat gaattgcaga caccttttga aattaaattg gcaaagaaat ttgacacctt

1021 caatggggaa tgtccaaatt ttgtatttcc cttaaattcc ataatcaaga ctattcaacc

1081 aagggttgaa aagaaaaagc ttgatggctt tatgggtaga attcgatctg tctatccagt

1141 tgcgtcacca aatgaatgca accaaatgtg cctttcaact ctcatgaagt gtgatcattg

1201 tggtgaaact tcatggcaga cgggcgattt tgttaaagcc acttgcgaat tttgtggcac

1261 tgagaatttg actaaagaag gtgccactac ttgtggttac ttaccccaaa atgctgttgt

1321 taaaatttat tgtccagcat gtcacaattc agaagtagga cctgagcata gtcttgccga

1381 ataccataat gaatctggct tgaaaaccat tcttcgtaag ggtggtcgca ctattgcctt

1441 tggaggctgt gtgttctctt atgttggttg ccataacaag tgtgcctatt gggttccacg

1501 tgctagcgct aacataggtt gtaaccatac aggtgttgtt ggagaaggtt ccgaaggtct

1561 taatgacaac cttcttgaaa tactccaaaa agagaaagtc aacatcaata ttgttggtga

1621 ctttaaactt aatgaagaga tcgccattat tttggcatct ttttctgctt ccacaagtgc

1681 ttttgtggaa actgtgaaag gtttggatta taaagcattc aaacaaattg ttgaatcctg

1741 tggtaatttt aaagttacaa aaggaaaagc taaaaaaggt gcctggaata ttggtgaaca

1801 gaaatcaata ctgagtcctc tttatgcatt tgcatcagag gctgctcgtg ttgtacgatc

1861 aattttctcc cgcactcttg aaactgctca aaattctgtg cgtgttttac agaaggccgc

1921 tataacaata ctagatggaa tttcacagta ttcactgaga ctcattgatg ctatgatgtt

1981 cacatctgat ttggctacta acaatctagt tgtaatggcc tacattacag gtggtgttgt

2041 tcagttgact tcgcagtggc taactaacat ctttggcact gtttatgaaa aactcaaacc

2101 cgtccttgat tggcttgaag agaagtttaa ggaaggtgta gagtttctta gagacggttg

2161 ggaaattgtt aaatttatct caacctgtgc ttgtgaaatt gtcggtggac aaattgtcac

2221 ctgtgcaaag gaaattaagg agagtgttca gacattcttt aagcttgtaa ataaattttt

2281 ggctttgtgt gctgactcta tcattattgg tggagctaaa cttaaagcct tgaatttagg

2341 tgaaacattt gtcacgcact caaagggatt gtacagaaag tgtgttaaat ccagagaaga

2401 aactggccta ctcatgcctc taaaagcccc aaaagaaatt atcttcttag agggagaaac

2461 acttcccaca gaagtgttaa cagaggaagt tgtcttgaaa actggtgatt tacaaccatt

2521 agaacaacct actagtgaag ctgttgaagc tccattggtt ggtacaccag tttgtattaa

2581 cgggcttatg ttgctcgaaa tcaaagacac agaaaagtac tgtgcccttg cacctaatat

2641 gatggtaaca aacaatacct tcacactcaa aggcggtgca ccaacaaagg ttacttttgg

2701 tgatgacact gtgatagaag tgcaaggtta caagagtgtg aatatcactt ttgaacttga

2761 tgaaaggatt gataaagtac ttaatgagag gtgctctgcc tatacagttg aactcggtac

2821 agaagtaaat gagttcgcct gtgttgtggc agatgctgtc ataaaaactt tgcaaccagt

2881 atctgaatta cttacaccac tgggcattga tttagatgag tggagtatgg ctacatacta

2941 cttatttgat gagtctggtg agtttaaatt ggcttcacat atgtattgtt ctttttaccc

3001 tccagatgag gatgaagaag aaggtgattg tgaagaagaa gagtttgagc catcaactca

3061 atatgagtat ggtactgaag atgattacca aggtaaacct ttggaatttg gtgccacttc

3121 tgctgctctt caacctgaag aagagcaaga agaagattgg ttagatgatg atagtcaaca

3181 aactgttggt caacaagacg gcagtgagga caatcagaca actactattc aaacaattgt

3241 tgaggttcaa cctcaattag agatggaact tacaccagtt gttcagacta ttgaagtgaa

3301 tagttttagt ggttatttaa aacttactga caatgtatac attaaaaatg cagacattgt

3361 ggaagaagct aaaaaggtaa aaccaacagt ggttgttaat gcagccaatg tttaccttaa

3421 acatggagga ggtgttgcag gagccttaaa taaggctact aacaatgcca tgcaagttga

3481 atctgatgat tacatagcta ctaatggacc acttaaagtg ggtggtagtt gtgttttaag

3541 cggacacaat cttgctaaac actgtcttca tgttgtcggc ccaaatgtta acaaaggtga

3601 agacattcaa ctttttaaga gtgcttatga aaattttaat cagcacgaag ttctacttgc

3661 accattatta tcagctggta tttttggtgc tgaccctata cattctttaa gagtttgtgt

3721 agatactgtt cgcacaaatg tctacttagc tgtctttgat aaaaatctct atgacaaact

3781 tgtttcaagc tttttggaaa tgaagagtga aaagcaagtt gaacaaaaga tcgctgagat

3841 tcctaaagag gaagttaagc catttataac tgaaagtaaa ccttcagttg aacagagaaa

3901 acaagatgat aagaaaatca aagcttgtgt tgaagaagtt acaacaactc tggaagaaac

3961 taagttcctc acagaaaact tgttacttta tattgacatt aatggcaatc ttcatccaga

4021 ttctgccact cttgttagtg acattgacat cactttctta aagaaagatg ctccatatat

4081 agtgggtgat gttgttcaag agggtgtttt aactgctgtg gttataccta ctaaaaaggc

4141 tggtggcact actgaaatgc tagcgaaagc tttgagaaaa gtgccaacag acaattatat

4201 aaccacttac ccgggtcagg gtttaaatgg ttacactgta gaggaggcaa agacagtgct

4261 taaaaagtgt aaaagtgcct tttacattct accatctatt atctctaatg agaagcaaga

4321 aattcttgga actgtttctt ggaatttgcg agaaatgctt gcacatgcag aagaaacacg

4381 caaattaatg cctgtctgtg tggaaactaa agccatagtt tcaactatac agcgtaaata

4441 taagggtatt aaaatacaag agggtgtggt tgattatggt gctagatttt acttttacac

4501 cagtaaaaca actgtagcgt cacttatcaa cacacttaac gatctaaatg aaactcttgt

4561 tacaatgcca cttggctatg taacacatgg cttaaatttg gaagaagctg ctcggtatat

4621 gagatctctc aaagtgccag ctacagtttc tgtttcttca cctgatgctg ttacagcgta

4681 taatggttat cttacttctt cttctaaaac acctgaagaa cattttattg aaaccatctc

4741 acttgctggt tcctataaag attggtccta ttctggacaa tctacacaac taggtataga

4801 atttcttaag agaggtgata aaagtgtata ttacactagt aatcctacca cattccacct

4861 agatggtgaa gttatcacct ttgacaatct taagacactt ctttctttga gagaagtgag

4921 gactattaag gtgtttacaa cagtagacaa cattaacctc cacacgcaag ttgtggacat

4981 gtcaatgaca tatggacaac agtttggtcc aacttatttg gatggagctg atgttactaa

5041 aataaaacct cataattcac atgaaggtaa aacattttat gttttaccta atgatgacac

5101 tctacgtgtt gaggcttttg agtactacca cacaactgat cctagttttc tgggtaggta

5161 catgtcagca ttaaatcaca ctaaaaagtg gaaataccca caagttaatg gtttaacttc

5221 tattaaatgg gcagataaca actgttatct tgccactgca ttgttaacac tccaacaaat

5281 agagttgaag tttaatccac ctgctctaca agatgcttat tacagagcaa gggctggtga

5341 agcggctaac ttttgtgcac ttatcttagc ctactgtaat aagacagtag gtgagttagg

5401 tgatgttaga gaaacaatga gttacttgtt tcaacatgcc aatttagatt cttgcaaaag

5461 agtcttgaac gtggtgtgta aaacttgtgg acaacagcag acaaccctta agggtgtaga

5521 agctgttatg tacatgggca cactttctta tgaacaattt aagaaaggtg ttcagatacc

5581 ttgtacgtgt ggtaaacaag ctacaaaata tctagtacaa caggagtcac cttttgttat

5641 gatgtcagca ccacctgctc agtatgaact taagcatggt acatttactt gtgctagtga

5701 gtacactggt aattaccagt gtggtcacta taaacatata acttctaaag aaactttgta

5761 ttgcatagac ggtgctttac ttacaaagtc ctcagaatac aaaggtccta ttacggatgt

5821 tttctacaaa gaaaacagtt acacaacaac cataaaacca gttacttata aattggatgg

5881 tgttgtttgt acagaaattg accctaagtt ggacaattat tataagaaag acaattctta

5941 tttcacagag caaccaattg atcttgtacc aaaccaacca tatccaaacg caagcttcga

6001 taattttaag tttgtatgtg ataatatcaa atttgctgat gatttaaacc agttaactgg

6061 ttataagaaa cctgcttcaa gagagcttaa agttacattt ttccctgact taaatggtga

6121 tgtggtggct attgattata aacactacac accctctttt aagaaaggag ctaaattgtt

6181 acataaacct attgtttggc atgttaacaa tgcaactaat aaagccacgt ataaaccaaa

6241 tacctggtgt atacgttgtc tttggagcac aaaaccagtt gaaacatcaa attcgtttgn

6301 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnctt gcctgcgaag atctaaaacc

6361 agtctctgaa gaagtagtgg aaaatcctac catacagaaa gacgttcttg agtgtaatgt

6421 gaaaactacc gaagttgtag gagacattat acttaaacca gcaaataata taaaaattac

6481 agaagaggtt ggccacacag atctaatggc tgcttatgta gacaattcta gtcttactat

6541 taagaaacct aatgaattat ctagagtatt aggtttgaaa acccttgcta ctcatggttt

6601 agctgctgtt aatagtgtcc cttgggatac tatagctaat tatgctaagc cttttcttaa

6661 caaagttgtt agtacaacta ctaacatagt tacacggtgt ttaaaccgtg tttgtactaa

6721 ttatatgcct tatttcttta ctttattgct acaattgtgt acttttacta gaagtacaaa

6781 ttctagaatt aaagcatcta tgccgactac tatagcaaag aatactgtta agagtgtcgg

6841 taaattttgt ctagaggctt catttaatta tttgaagtca cctaattttt ctaaactgat

6901 aaatattata atttggtttt tactattaag tgtttgccta ggttctttaa tctactcaac

6961 cgctgcttta ggtgttttaa tgtctaattt aggcatgcct tcttactgta ctggttacag

7021 agaaggctat ttgaactcta ctaatgtcac tattgcaacc tactgtactg gttctatacc

7081 ttgtagtgtt tgtcttagtg gtttagattc tttagacacc tatccttctt tagaaactat

7141 acaaattacc atttcatctt ttaaatggga tttaactgct tttggcttag ttgcagagtg

7201 gtttttggca tatattcttt tcactaggtt tttctatgta cttggattgg ctgcaatcat

7261 gcaattgttt ttcagctatt ttgcagtaca ttttattagt aattcttggc ttatgtggtt

7321 aataattaat cttgtacaaa tggccccgat ttcagctatg gttagaatgt acatcttctt

7381 tgcatcattt tattatgtat ggaaaagtta tgtgcatgtt gtagacggtt gtaattcatc

7441 aacttgtatg atgtgttaca aacgtaatag agcaacaaga gtcgaatgta caactattgt

7501 taatggtgtt agaaggtcct tttatgtcta tgctaatgga ggtaaaggct tttgcaaact

7561 acacaattgg aattgtgtta attgtgatac attctgtgct ggtagtacat ttattagtga

7621 tgaagttgcg agagacttgt cactacagtt taaaagacca ataaatccta ctgaccagtc

7681 ttcttacatc gttgatagtg ttacagtgaa gaatggttcc atccatcttt actttgataa

7741 agctggtcaa aagacttatg aaagacattc tctctctcat tttgttaact tagacaacct

7801 gagagctaat aacactaaag gttcattgcc tattaatgtt atagtttttg atggtaaatc

7861 aaaatgtgaa gaatcatctg caaaatcagc gtctgtttac tacagtcagc ttatgtgtca

7921 acctatactg ttactagatc aggcattagt gtctgatgtt ggtgatagtg cggaagttgc

7981 agttaaaatg tttgatgctt acgttaatac gttttcatca acttttaacg taccaatgga

8041 aaaactcaaa acactagttg caactgcaga agctgaactt gcaaagaatg tgtccttaga

8101 caatgtctta tctactttta tttcagcagc tcggcaaggg tttgttgatt cagatgtaga

8161 aactaaagat gttgttgaat gtcttaaatt gtcacatcaa tctgacatag aagttactgg

8221 cgatagttgt aataactata tgctcaccta taacaaagtt gaaaacatga caccccgtga

8281 ccttggtgct tgtattgact gtagtgcgcg tcatattaat gcgcaggtag caaaaagtca

8341 caacattact ttgatatgga acgttaaaga tttcatgtca ttgtctgaac aactacgaaa

8401 acaaatacgt agtgctgcta aaaagaataa cttacctttt aagttgacat gtgcaactac

8461 tagacaagtt gttaatgttg taacaacaaa gatagcactt aagggtggta aaattgttaa

8521 taattggttg aagcagttaa ttaaagttac acttgtgttc ctttttgttg ctgctatttt

8581 ctatttaata acacctgttc atgtcatgtc taaacatact gacttttcaa gtgaaatcat

8641 aggatacaag gctattgatg gtggtgtcac tcgtgacata gcatctacag atacttgttt

8701 tgctaacaaa catgctgatt ttgacacatg gtttagccag cgtggtggta gttatactaa

8761 tgacaaagct tgcccattga ttgctgcagt cataacaaga gaagtgggtt ttgtcgtgcc

8821 tggtttgcct ggcacgatat tacgcacaac taatggtgac tttttgcatt tcttacctag

8881 agtttttagt gcagttggta acatctgtta cacaccatca aaacttatag agtacactga

8941 ctttgcaaca tcagcttgtg ttttggctgc tgaatgtaca atttttaaag atgcttctgg

9001 taagccagta ccatattgtt atgataccaa tgtactagaa ggttctgttg cttatgaaag

9061 tttacgccct gacacacgtt atgtgctcat ggatggctct attattcaat ttcctaacac

9121 ctaccttgaa ggttctgtta gagtggtaac aacttttgat tctgagtact gtaggcacgg

9181 cacttgtgaa agatcagaag ctggtgtttg tgtatctact agtggtagat gggtacttaa

9241 caatgattat tacagatctt taccaggagt tttctgtggt gtagatgctg taaatttact

9301 tactaatatg tttacaccac taattcaacc tattggtgct ttggacatat cagcatctat

9361 agtagctggt ggtattgtag ctatcgtagt aacatgcctt gcctactatt ttatgaggtt

9421 tagaagagct tttggtgaat acagtcatgt agttgccttt aatactttac tattccttat

9481 gtcattcact gtactctgtt taacaccagt ttactcattc ttacctggtg tttattctgt

9541 tatttacttg tacttgacat tttatcttac taatgatgtt tcttttttag cacatattca

9601 gtggatggtt atgttcacac ctttagtacc tttctggata acaattgctt atatcatttg

9661 tatttccaca aagcatttct attggttctt tagtaattac ctaaagagac gtgtagtctt

9721 taatggtgtt tcctttagta cttttgaaga agctgcgctg tgcacctttt tgttaaataa

9781 agaaatgtat ctaaagttgc gtagtgatgt gctattacct cttacgcaat ataatagata

9841 cttagctctt tataataagt acaagtattt tagtggagca atggatacaa ctagctacag

9901 agaagctgct tgttgtcatc tcgcaaaggc tctcaatgac ttcagtaact caggttctga

9961 tgttctttac caaccaccac aaatctctat cacctcagct gttttgcaga gtggttttag

10021 aaaaatggca ttcccatctg gtaaagttga gggttgtatg gtacaagtaa cttgtggtac

10081 aactacactc aacggtcttt ggcttgatga cgtagtttac tgtccaagac atgtgatctg

10141 cacctctgaa gacatgctta accctaatta tgaagattta ctcattcgta agtctaatca

10201 taatttcttg gtacaggctg gtaatgttca actcagggtt attggacatt ctatgcaaaa

10261 ttgtgtactt aagcttaagg ttgatacagc caatcctaag acacctaagt ataagtttgt

10321 tcgcattcaa ccaggacaga ctttttcagt gttagcttgt tacaatggtt caccatctgg

10381 tgtttaccaa tgtgctatga ggcacaattt cactattaag ggttcattcc ttaatggttc

10441 atgtggtagt gttggtttta acatagatta tgactgtgtc tctttttgtt acatgcacca

10501 tatggaatta ccaactggag ttcatgctgg cacagactta gaaggtaact tttatggacc

10561 ttttgttgac aggcaaacag cacaagcagc tggtacggac acaactatta cagttaatgt

10621 tttagcttgg ttgtacgctg ctgttataaa tggagacagg tggtttctca atcgatttac

10681 cacaactctt aatgacttta accttgtggc tatgaagtac aattatgaac ctctaacaca

10741 agaccatgtt gacatactag gacctctttc tgctcaaact ggaattgccg ttttagatat

10801 gtgtgcttca ttaaaagaat tactgcaaaa tggtatgaat ggacgtacca tattgggtag

10861 tgctttatta gaagatgaat ttacaccttt tgatgttgtt agacaatgct caggtgttac

10921 tttccaaagt gcagtgaaaa gaacaatcaa gggtacacac cactggttgt tactcacaat

10981 tttgacttca cttttagttt tagtccagag tactcaatgg tctttgttct ttttttttta

11041 tgaaaatgcc tttttacctt ttgctatggg tattattgct atgtctgctt ttgcaatgat

11101 gtttgtcaaa cataagcatg catttctctg tttgtttttg ttaccttctc ttgccactgt

11161 agcttatttt aatatggtct atatgcctgc tagttgggtg atgcgtatta tgacatggtt

11221 ggatatggtt gatactagtt ttaagctaaa agactgtgtt atgtatgcat cagctgtagt

11281 gttactaatc cttatgacag caagaactgt gtatgatgat ggtgctagga gagtgtggac

11341 acttatgaat gtcttgacac tcgtttataa agtttattat ggtaatgctt tagatcaagc

11401 catttccatg tgggctctta taatctctgt tacttctaac tactcaggtg tagttacaac

11461 tgtcatgttt ttggccagag gtgttgtttt tatgtgtgtt gagtattgcc ctattttctt

11521 cataactggt aatacacttc agtgtataat gctagtttat tgtttcttag gctatttttg

11581 tacttgttac tttggcctct tttgtttact caaccgctac tttagactga ctcttggtgt

11641 ttatgattac ttagtttcta cacaggagtt tagatatatg aattcacagg gactactccc

11701 acccaagaat agcatagatg ccttcaaact caacattaaa ttgttgggtg ttggtggcaa

11761 accttgtatc aaagtagcca ctgtacagtc taaaatgtca gatgtaaagt gcacatcagt

11821 agtcttactc tcagttttgc aacaactcag agtagaatca tcatctaaat tgtgggctca

11881 atgtgtccag ttacacaatg acattctctt agctaaagat actactgaag cctttgaaaa

11941 aatggtttca ctactttctg ttttgctttc catgcagggt gctgtagaca taaacaagct

12001 ttgtgaagaa atgctggaca acagggcaac cttacaagct atagcctcag agtttagttc

12061 ccttccatca tatgcagctt ttgctactgc tcaagaagct tatgagcagg ctgttgctaa

12121 tggtgattct gaagttgttc ttaaaaagtt gaagaagtct ttgaatgtgg ctaaatctga

12181 atttgaccgt gatgcagcca tgcaacgtaa gttggaaaag atggctgatc aagctatgac

12241 ccaaatgtat aaacaggcta gatctgagga caagagggca aaagttacta gtgctatgca

12301 gacaatgctt ttcactatgc ttagaaagtt ggataatgat gcactcaaca acattatcaa

12361 caatgcaaga gatggttgtg ttcccttgaa cataatacct cttacaacag cagccaaact

12421 aatggttgtc ataccagact ataacacata taaaaatacg tgtgatggta caacatttac

12481 ttatgcatca gcattgtggg aaatccaaca ggttgtagat gcagatagta aaattgttca

12541 acttagtgaa attagtatgg acaattcacc taatttagca tggcctctta ttgtaacagc

12601 tttaagggcc aattctgctg tcaaattaca gaataatgag cttagtcctg ttgcactacg

12661 acagatgtct tgtgctgccg gtactacaca aactgcttgc actgatgaca atgcgttagc

12721 ttactacaac acaacaaagg gaggtaggtt tgtacttgca ctgttatccg atttacagga

12781 tttgaaatgg gctagattcc ctaagagtga tggaactggt actatctata cagaactgga

12841 accaccttgt aggtttgtta cagacacacc taaaggtcct aaagtgaagt atttatactt

12901 tattaaagga ttaaacaacc taaatagagg tatggtactt ggtagtttag ctgccacagt

12961 acgtctacaa gctggtaatg caacagaagt gcctgccaat tcaactgtat tatctttctg

13021 tgcttttgct gtagatgctg ctaaagctta caaagattat ctagctagtg ggggacaacc

13081 aatcactaat tgtgttaaga tgttgtgtac acacactggt actggtcagg caataacagt

13141 cacaccggaa gccaatatgg atcaagaatc ctttggtggt gcatcgtgtt gtctgtactg

13201 ccgttgccac atagatcatc caaatcctaa aggattttgt gacttaaaag gtaagtatgt

13261 acaaatacct acaacttgtg ctaatgaccc tgtgggtttt acacttaaaa acacagtctg

13321 taccgtctgc ggtatgtgga aaggttatgg ctgtagttgt gatcaactcc gcgaacccat

13381 gcttcagtca gctgatgcac aatcgttttt aaacgggttt gcggtgtaag tgcagcccgt

13441 cttacaccgt gcggcacagg cactagtact gatgtcgtat acagggcttt tgacatctac

13501 aatgataaag tagctggttt tgctaaattc ctaaaaacta attgttgtcg cttccaagaa

13561 aaggacgaag atgacaattt aattgattct tactttgtag ttaagagaca cactttctct

13621 aactaccaac atgaagaaac aatttataat ttacttaagg attgtccagc tgttgctaaa

13681 catgacttct ttaagtttag aatagacggt gacatggtac cacatatatc acgtcaacgt

13741 cttactaaat acacaatggc agacctcgtc tatgctttaa ggcattttga tgaaggtaat

13801 tgtgacacat taaaagaaat acttgtcaca tacaattgtt gtgatgatga ttatttcaat

13861 aaaaaggact ggtatgattt tgtagaaaac ccagatatat tacgcgtata cgccaactta

13921 ggtgaacgtg tacgccaagc tttgttaaaa acagtacaat tctgtgatgc catgcgaaat

13981 gctggtattg ttggtgtact gacattagat aatcaagatc tcaatggtaa ctggtatgat

14041 ttcggtgatt tcatacaaac cacgccaggt agtggagttc ctgttgtaga ttcttattat

14101 tcattgttaa tgcctatatt aaccttgacc agggctttaa ctgcagagtc acatgttgac

14161 actgacttaa caaagcctta cattaagtgg gatttgttaa aatatgactt cacggaagag

14221 aggttaaaac tctttgaccg ttattttaaa tattgggatc agacatacca cccaaattgt

14281 gttaactgtt tggatgacag atgcattctg cattgtgcaa actttaatgt tttattctct

14341 acagtgttcc cacttacaag ttttggacca ctagtgagaa aaatatttgt tgatggtgtt

14401 ccatttgtag tttcaactgg ataccacttc agagagctag gtgttgtaca taatcaggat

14461 gtaaacttac atagctctag acttagtttt aaggaattac ttgtgtatgc tgctgaccct

14521 gctatgcacg ctgcttctgg taatctatta ctagataaac gcactacgtg cttttcagta

14581 gctgcactta ctaacaatgt tgcttttcaa actgtcaaac ccggtaattt taacaaagac

14641 ttctatgact ttgctgtgtc taagggtttc tttaaggaag gaagttctgt tgaattaaaa

14701 cacttcttct ttgctcagga tggtaatgct gctatcagcg attatgacta ctatcgttat

14761 aatctaccaa caatgtgtga tatcagacaa ctactatttg tagttgaagt tgttgataag

14821 tactttgatt gttacgatgg tggctgtatt aatgctaacc aagtcatcgt caacaaccta

14881 gacaaatcag ctggttttcc atttaataaa tggggtaagg ctagacttta ttatgattca

14941 atgagttatg aggatcaaga tgcacttttc gcatatacaa aacgtaatgt catccctact

15001 ataactcaaa tgaatcttaa gtatgccatt agtgcaaaga atagagctcg caccgtagct

15061 ggtgtctcta tctgtagtac tatgaccaat agacagtttc atcaaaaatt attgaaatca

15121 atagccgcca ctagaggagc tactgtagta attggaacaa gcaaattcta tggtggttgg

15181 cacaatatgt taaaaactgt ttatagtgat gtagaaaacc ctcaccttat gggttgggat

15241 tatcctaaat gtgatagagc catgcctaac atgcttagaa ttatggcctc acttgttctt

15301 gctcgcaaac atacaacgtg ttgtagcttg tcacaccgtt tctatagatt agctaatgag

15361 tgtgctcaag tattgagtga aatggtcatg tgtggcggtt cactatatgt taaaccaggt

15421 ggaacctcat caggagatgc cacaactgct tatgctaata gtgtttttaa catttgtcaa

15481 gctgtcacgg ccaatgttaa tgcactttta tctactgatg gtaacaaaat tgccgataag

15541 tatgtccgca atttacaaca cagactttat gagtgtctct atagaaatag agatgttgac

15601 acagactttg tgaatgagtt ttacgcatat ttgcgtaaac atttctcaat gatgatactc

15661 tctgacgatg ctgttgtgtg tttcaatagc acttatgcat ctcaaggtct agtggctagc

15721 ataaagaact ttaagtcagt tctttattat caaaacaatg tttttatgtc tgaagcaaaa

15781 tgttggactg agactgacct tactaaagga cctcatgaat tttgctctca acatacaatg

15841 ctagttaaac agggtgatga ttatgtgtac cttccttacc cagatccatc aagaatccta

15901 ggggccggct gttttgtaga tgatatcgta aaaacagatg gtacacttat gattgaacgg

15961 ttcgtgtctt tagctataga tgcttaccca cttactaaac atcctaatca ggagtatgct

16021 gatgtctttc atttgtactt acaatacata agaaagctac atgatgagtt aacaggacac

16081 atgttagaca tgtattctgt tatgcttact aatgataaca cttcaaggta ttgggaacct

16141 gagttttatg aggctatgta cacaccgcat acagtcttac aggctgttgg ggcttgtgtt

16201 ctttgcaatt cacagacttc attaagatgt ggtgcttgca tacgtagacc attcttatgt

16261 tgtaaatgct gttacgacca tgtcatatca acatcacata aattagtctt gtctgttaat

16321 ccgtatgttt gcaatgctcc aggttgtgat gtcacagatg tgactcaact ttacttagga

16381 ggtatgagct attattgtaa atcacataaa ccacccatta gttttccatt gtgtgctaat

16441 ggacaagttt ttggtttata taaaaataca tgtgttggta gcgataatgt tactgacttt

16501 aatgcaattg caacatgtga ctggacaaat gctggtgatt acattttagc taacacctgt

16561 actgaaagac tcaagctttt tgcagcagaa acgctcaaag ctactgagga gacatttaaa

16621 ctgtcttatg gtattgctac tgtacgtgaa gtgctgtctg acagagaatt acatctttca

16681 tgggaagttg gtaaacctag accaccactt aaccgaaatt atgtctttac tggttatcgt

16741 gtaactaaaa acagtaaagt acaaatagga gagtacacct ttgaaaaagg tgactatggt

16801 gatgctgttg tttaccgagg tacaacaact tacaaattaa atgttggtga ttattttgtg

16861 ctgacatcac atacagtaat gccattaagt gcacctacac tagtgccaca agagcactat

16921 gttagaatta ctggcttata cccaacactc aatatctcag atgagttttc tagcaatgtt

16981 gcaaattatc aaaaggttgg tatgcaaaag tattctacac tccagggacc acctggtact

17041 ggtaagagtc attttgctat tggcctagct ctctactacc cttctgctcg catagtgtat

17101 acagcttgct ctcatgccgc tgttgatgca ctatgtgaga aggcattaaa atatttgcct

17161 atagataaat gtagtagaat tatacctgca cgtgctcgtg tagagtgttt tgataaattc

17221 aaagtgaatt caacattaga acagtatgtc ttttgtactg taaatgcatt gcctgagacg

17281 acagcagata tagttgtctt tgatgaaatt tcaatggcca caaattatga tttgagtgtt

17341 gtcaatgcca gattacgtgc taagcactat gtgtacattg gcgaccctgc tcaattacct

17401 gcaccacgca cattgctaac taagggcaca ctagaaccag aatatttcaa ttcagtgtgt

17461 agacttatga aaactatagg tccagacatg ttcctcggaa cttgtcggcg ttgtcctgct

17521 gaaattgttg acactgtgag tgctttggtt tatgataata agcttaaagc acataaagac

17581 aaatcagctc aatgctttaa aatgttttat aagggtgtta tcacgcatga tgtttcatct

17641 gcaattaaca ggccacaaat aggcgtggta agagaattcc ttacacgtaa ccctgcttgg

17701 agaaaagctg tctttatttc accttataat tcacagaatg ctgtagcctc aaagattttg

17761 ggactaccaa ctcaaactgt tgattcatca cagggctcag aatatgacta tgtcatattc

17821 actcaaacca ctgaaacagc tcactcttgt aatgtaaaca gatttaatgt tgctattacc

17881 agagcaaaag taggcatact ttgcataatg tctgatagag acctttatga caagttgcaa

17941 tttacaagtc ttgaaattcc acgtaggaat gtggcaactt tacaagctga aaatgtaaca

18001 ggactcttta aagattgtag taaggtaatc actgggttac atcctacaca ggcacctaca

18061 cacctcagtg ttgacactaa attcaaaact gaaggtttat gtgttgacgt acctggcata

18121 cctaaggaca tgacctatag aagactcatc tctatgatgg gttttaaaat gaattatcaa

18181 gttaatggtt accctaacat gtttatcacc cgcgaagaag ctataagaca tgtacgtgca

18241 tggattggct tcgatgtcga ggggtgtcat gctactagag aagctgttgg taccaattta

18301 cctttacagc taggtttttc tacaggtgtt aacctagttg ctgtacctac aggttatgtt

18361 gatacaccta ataatacaga tttttccaga gttagtgcta aaccaccgcc tggagatcaa

18421 tttaaacacc tcataccact tatgtacaaa ggacttcctt ggaatgtagt gcgtataaag

18481 attgtacaaa tgttaagtga cacacttaaa aatctctctg acagagtcgt atttgtctta

18541 tgggcacatg gctttgagtt gacatctatg aagtattttg tgaaaatagg acctgagcgc

18601 acctgttgtc tatgtgatag acgtgccaca tgcttttcca ctgcttcaga cacttatgcc

18661 tgttggcatc attctattgg atttgattac gtctataatc cgtttatgat tgatgttcaa

18721 caatggggtt ttacaggtaa cctacaaagc aaccatgatc tgtattgtca agtccatggt

18781 aatgcacatg tagctagttg tgatgcaatc atgactaggt gtctagctgt ccacgagtgc

18841 tttgttaagc gtgttgactg gactattgaa tatcctataa ttggtgatga actgaagatt

18901 aatgcggctt gtagaaaggt tcaacacatg gttgttaaag ctgcattatt agcagacaaa

18961 ttcccagttc ttcacgacat tggtaaccct aaagctatta agtgtgtacc tcaagctgat

19021 gtagaatgga agttctatga tgcacagcct tgtagtgaca aagcttataa aatagaagaa

19081 ttattctatt cttatgccac acattctgac aaattcacag atggtgtatg cctattttgg

19141 aattgcaatg tcgatagata tcctgctaat tccattgttt gtagatttga cactagagtg

19201 ctatctaacc ttaacttgcc tggttgtgat ggtggcagtt tgtatgtaaa taaacatgca

19261 ttccacacac cagcttttga taaaagtgct tttgttaatt taaaacaatt accatttttc

19321 tattactctg acagtccatg tgagtctcat ggaaaacaag tagtgtcaga tatagattat

19381 gtaccactaa agtctgctac gtgtataaca cgttgcaatt taggtggtgc tgtctgtaga

19441 catcatgcta atgagtacag attgtatctc gatgcttata acatgatgat ctcagctggc

19501 tttagcttgt gggtttacaa acaatttgat acttataacc tctggaacac ttttacaaga

19561 cttcagagtt tagaaaatgt ggcttttaat gttgtaaata agggacactt tgatggacaa

19621 cagggtgaag taccagtttc tatcattaat aacactgttt acacaaaagt tgatggtgtt

19681 gatgtagaat tgtttgaaaa taaaacaaca ttacctgtta atgtagcatt tgagctttgg

19741 gctaagcgca acattaaacc agtaccagag gtgaaaatac tcaataattt gggtgtggac

19801 attgctgcta atactgtgat ctgggactac aaaagagatg ctccagcaca tatatctact

19861 attggtgttt gttctatgac tgacatagcc aagaaaccaa ctgaaacgat ttgtgcacca

19921 ctcactgtct tttttgatgg tagagttgat ggtcaagtag acttatttag aaatgcccgt

19981 aatggtgttc ttattacaga aggtagtgtt aaaggtttac aaccatctgt aggtcccaaa

20041 caagctagtc ttaatggagt cacattaatt ggagaagccg taaaaacaca gttcaattat

20101 tataagaaag ttgatggtgt tgtccaacaa ttacctgaaa cttactttac tcagagtaga

20161 aatttacaag aatttaaacc caggagtcaa atggaaattg atttcttaga attagctatg

20221 gatgaattca ttgaacggta taaattagaa ggctatgcct tcgaacatat cgtttatgga

20281 gattttagtc atagtcagtt aggtggttta catctactga ttggactagc taaacgtttt

20341 aaggaatcac cttttgaatt agaagatttt attcctatgg acagtacagt taaaaactat

20401 ttcataacag atgcgcaaac aggttcatct aagtgtgtgt gttctgttat tgatttatta

20461 cttgatgatt ttgttgaaat aataaaatcc caagatttat ctgtagtttc taaggttgtc

20521 aaagtgacta ttgactatac agaaatttca tttatgcttt ggtgtaaaga tggccatgta

20581 gaaacatttt acccaaaatt acaatctagt caagcgtggc aaccgggtgt tgctatgcct

20641 aatctttaca aaatgcaaag aatgctatta gaaaagtgtg accttcaaaa ttatggtgat

20701 agtgcaacat tacctaaagg cataatgatg aatgtcgcaa aatatactca actgtgtcaa

20761 tatttaaaca cattaacatt agctgtaccc tataatatga gagttataca ttttggtgct

20821 ggttctgata aaggagttgc accaggtaca gctgttttaa gacagtggtt gcctacgggt

20881 acgctgcttg tcgattcaga tcttaatgac tttgtctctg atgcagattc aactttgatt

20941 ggtgattgtg caactgtaca tacagctaat aaatgggatc tcattattag tgatatgtac

21001 gaccctaaga ctaaaaatgt tacaaaagaa aatgactcta aagagggttt tttcacttac

21061 atttgtgggt ttatacaaca aaagctagct cttggaggtt ccgtggctat aaagataaca

21121 gaacattctt ggaatgctga tctttataag ctcatgggac acttcgcatg gtggacagcc

21181 tttgttacta atgtgaatgc gtcatcatct gaagcatttt taattggatg taattatctt

21241 ggcaaaccac gcgaacaaat agatggttat gtcatgcatg caaattacat attttggagg

21301 aatacaaatc caattcagtt gtcttcctat tctttatttg acatgagtaa atttcccctt

21361 aaattaaggg gtactgctgt tatgtcttta aaagaaggtc aaatcaatga tatgatttta

21421 tctcttctta gtaaaggtag acttataatt agagaaaaca acagagttgt tatttctagt

21481 gatgttcttg ttaacaacta aacgaacaat gtttgttttt cttgttttat tgccactagt

21541 ctctagtcag tgtgttaatc ttacaaccag aactcaatta ccccctgcat acactaattc

21601 tttcacacgt ggtgtttatt accctgacaa agttttcaga tcctcagttt tacattcaac

21661 tcaggacttg ttcttacctt tcttttccaa tgttacttgg ttccatgtta tctctgggac

21721 caatggtact aagaggtttg ataaccctgt cctaccattt aatgatggtg tttattttgc

21781 ttccattgag aagtctaaca taataagagg ctggattttt ggtactactt tagattcgaa

21841 gacccagtcc ctacttattg ttaataacgc tactaatgtt gttattaaag tctgtgaatt

21901 tcaattttgt aatgatccat ttttggacca caaaaacaac aaaagttgga tggaaagtga

21961 gttcagagtt tattctagtg cgaataattg cacttttgaa tatgtctctc agccttttct

22021 tatggacctt gaaggaaaac agggtaattt caaaaatctt agggaatttg tgtttaagaa

22081 tattgatggt tattttaaaa tatattctaa gcacacgcct attatagtgc gtgagccaga

22141 agatctccct cagggttttt cggctttaga accattggta gatttgccaa taggtattaa

22201 catcactagg tttcaaactt tacttgcttt acatagaagt tatttgactc ctggtgattc

22261 ttcttcaggt tggacagctg gtgctgcagc ttattatgtg ggttatcttc aacctaggac

22321 ttttctatta aaatataatg aaaatggaac cattacagat gctgtagact gtgcacttga

22381 ccctctctca gaaacaaagt gtacgttgaa atccttcact gtagaaaaag gaatctatca

22441 aacttctaac tttagagtcc aaccaacaga atctattgtt agatttccta atattacaaa

22501 cttgtgccct tttgatgaag tttttaacgc caccagattt gcatctgttt atgcttggaa

22561 caggaagaga atcagcaact gtgttgctga ttattctgtc ctatataatc tcgcaccatt

22621 tttcactttt aagtgttatg gagtgtctcc tactaaatta aatgatctct gctttactaa

22681 tgtctatgca gattcatttg taattagagg tgatgaagtc agacaaatcg ctccagggca

22741 aactggaaat attgctgatt ataattataa attaccagat gattttacag gctgcgttat

22801 agcttggaat tctaacaagc ttgattctaa ggttagtggt aattataatt acctgtatag

22861 attgtttagg aagtctaatc tcaaaccttt tgagagagat atttcaactg aaatctatca

22921 ggccggtaac aaaccttgta atggtgttgc aggttttaat tgttactttc ctttacgatc

22981 atatagtttc cgacccactt atggtgttgg tcaccaacca tacagagtag tagtactttc

23041 ttttgaactt ctacatgcac cagcaactgt ttgtggacct aaaaagtcta ctaatttggt

23101 taaaaacaaa tgtgtcaatt tcaacttcaa tggtttaaaa ggcacaggtg ttcttactga

23161 gtctaacaaa aagtttctgc ctttccaaca atttggcaga gacattgctg acactactga

23221 tgctgtccgt gatccacaga cacttgagat tcttgacatt acaccatgtt cttttggtgg

23281 tgtcagtgtt ataacaccag gaacaaatac ttctaaccag gttgctgttc tttatcaggg

23341 tgttaactgc acagaagtcc ctgttgctat tcatgcagat caacttactc ctacttggcg

23401 tgtttattct acaggttcta atgtttttca aacacgtgca ggctgtttaa taggggctga

23461 atatgtcaac aactcatatg agtgtgacat acccattggt gcaggtatat gcgctagtta

23521 tcagactcag actaagtctc atcggcgggc acgtagtgta gctagtcaat ccatcattgc

23581 ctacactatg tcacttggtg cagaaaattc agttgcttac tctaataact ctattgccat

23641 acccacaaat tttactatta gtgttaccac agaaattcta ccagtgtcta tgaccaagac

23701 atcagtagat tgtacaatgt acatttgtgg tgattcaact gaatgcagca atcttttgtt

23761 gcaatatggc agtttttgta cacaattaaa acgtgcttta actggaatag ctgttgaaca

23821 agacaaaaac acccaagaag tttttgcaca agtcaaacaa atttacaaaa caccaccaat

23881 taaatatttt ggtggtttta atttttcaca aatattacca gatccatcaa aaccaagcaa

23941 gaggtcattt attgaagatc tacttttcaa caaagtgaca cttgcagatg ctggcttcat

24001 caaacaatat ggtgattgcc ttggtgatat tgctgctaga gacctcattt gtgcacaaaa

24061 gtttaaaggc cttactgttt tgccaccttt gctcacagat gaaatgattg ctcaatacac

24121 ttctgcactg ttagcgggta caatcacttc tggttggacc tttggtgcag gtgctgcatt

24181 acaaatacca tttgctatgc aaatggctta taggtttaat ggtattggag ttacacagaa

24241 tgttctctat gagaaccaaa aattgattgc caaccaattt aatagtgcta ttggcaaaat

24301 tcaagactca ctttcttcca cagcaagtgc acttggaaaa cttcaagatg tggtcaacca

24361 taatgcacaa gctttaaaca cgcttgttaa acaacttagc tccaattttg gtgcaatttc

24421 aagtgtttta aatgatatct tttcacgtct tgacaaagtt gaggctgaag tgcaaattga

24481 taggttgatc acaggcagac ttcaaagttt gcagacatat gtgactcaac aattaattag

24541 agctgcagaa atcagagctt ctgctaatct tgctgctact aaaatgtcag agtgtgtact

24601 tggacaatca aaaagagttg atttttgtgg aaagggctat catcttatgt ccttccctca

24661 gtcagcacct catggtgtag tcttcttgca tgtgacttat gtccctgcac aagaaaagaa

24721 cttcacaact gctcctgcca tttgtcatga tggaaaagca cactttcctc gtgaaggtgt

24781 ctttgtttca aatggcacac actggtttgt aacacaaagg aatttttatg aaccacaaat

24841 cattactaca gacaacacat ttgtgtctgg taactgtgat gttgtaatag gaattgtcaa

24901 caacacagtt tatgatcctt tgcaacctga attagattca ttcaaggagg agttagataa

24961 atattttaag aatcatacat caccagatgt tgatttaggt gacatctctg gcattaatgc

25021 ttcagttgta aacattcaaa aagaaattga ccgcctcaat gaggttgcca agaatttaaa

25081 tgaatctctc atcgatctcc aagaacttgg aaagtatgag cagtatataa aatggccatg

25141 gtacatttgg ctaggtttta tagctggctt gattgccata gtaatggtga caattatgct

25201 ttgctgtatg accagttgct gtagttgtct caagggctgt tgttcttgtg gatcctgctg

25261 caaatttgat gaagacgact ctgagccagt gctcaaagga gtcaaattac attacacata

25321 aacgaactta tggatttgtt tatgagaatc ttcaaaattg gaactgtaac tttgaagcaa

25381 ggtgaaatca aggatgctac tccttcagat tttgttcgcg ctactgcaac gataccgata

25441 caagcctcac tccctttcgg atggcttatt gttggcgttg cacttcttgc tgtttttcag

25501 agcgcttcca aaatcataac tctcaaaaag agatggcaac tagcactctc caagggtgtt

25561 cactttgttt gcaacttgct gttgttgttt gtaatagttt actcacacct tttgctcgtt

25621 gctgctggcc ttgaagcccc ttttttctat ctttatgctt tagtctactt cttgcagagt

25681 ataaactttg taagaataat aatgaggctt tggctttgct ggaaatgccg ttccaaaaac

25741 ccattacttt atgatgccaa ctattttctt tgctggcata ctaattgtta cgactattgt

25801 ataccttaca atagtgtaac ttcttcaatt gtcattactt caggtgatgg cacaacaagt

25861 cctatttctg aacatgacta ccagattggt ggttatactg aaaaatggga atctggagta

25921 aaagactgtg ttgtattaca cagttacttc acttcagact attaccaact gtactcaact

25981 caattgagta cagacactgg tgttgaacat gttaccttct tcatctacaa taaaattgtt

26041 gatgagcctg aagaacatgt ccaaattcac acaatcgacg gttcatccgg agttgttaat

26101 ccagtaatgg aaccaattta tgatgaaccg acgacgacta ctagcgtgcc tttgtaagca

26161 caagctgatg agtacgaact tatgtactca ttcgtttcgg aagagatagg tacgttaata

26221 gttaatagcg tacttctttt tcttgctttc gtggtattct tgctagttac actagccatc

26281 cttactgcgc ttcgattgtg tgcgtactgc tgcaatattg ttaacgtgag tcttgtaaaa

26341 ccttcttttt acgtttactc tcgtgttaaa aatctgaatt cttctagagt tcctgatctt

26401 ctggtctaaa cgaactaaat attatattag tttttctgtt tggaacttta attttagcca

26461 tggcaggttc caacggtact attaccgttg aagagcttaa aaagctcctt gaagaatgga

26521 acctagtaat aggtttccta ttccttacat ggatttgtct tctacaattt gcctatgcca

26581 acaggaatag gtttttgtat ataattaagt taattttcct ctggctgtta tggccagtaa

26641 ctttaacttg ttttgtgctt gctgctgttt acagaataaa ttggatcacc ggtggaattg

26701 ctatcgcaat ggcttgtctt gtaggcttga tgtggctcag ctacttcatt gcttctttca

26761 gactgtttgc gcgtacgcgt tccatgtggt cattcaatcc agaaactaac attcttctca

26821 acgtgccact ccatggcact attctgacca gaccgcttct agaaagtgaa ctcgtaatcg

26881 gagctgtgat ccttcgtgga catcttcgta ttgctggaca ccatctagga cgctgtgaca

26941 tcaaggacct gcctaaagaa atcactgttg ctacatcacg aacgctttct tattacaaat

27001 tgggagcttc gcagcgtgta gcaggtgact caggttttgc tgcatacagt cgctacagga

27061 ttggcaacta taaattaaac acagaccatt ccagtagcag tgacaatatt gctttgcttg

27121 tacagtaagt gacaacagat gtttcatctc gttgactttc aggttactat agcagagata

27181 ttactaatta ttatgcggac ttttaaagtt tccatttgga atcttgatta catcataaac

27241 ctcataatta aaaatttatc taagtcacta actgagaata aatattctca attagatgaa

27301 gagcaaccaa tggagattga ttaaacgaac atgaaaatta ttcttttctt ggcactgata

27361 acactcgcta cttgtgagct ttatcactac caagagtgtg ttagaggtac aacagtactt

27421 ttaaaagaac cttgctcttc tggaacatac gagggcaatt caccatttca ccctctagct

27481 gataacaaat ttgcactgac ttgctttagc actcaatttg cttttgcttg tcctgacggc

27541 gtaaaacacg tctatcagtt acgtgccaga tcagtttcac ctaaactgtt catcagacaa

27601 gaggaagttc aagaacttta ctctccaatt tttcttattg ttgcggcaat agtgtttata

27661 acactttgct tcacactcaa aagaaagaca gaatgattga actttcatta attgacttct

27721 atttgtgctt tttagccttt ctgttattcc ttgttttaat tatgcttatt atcttttggt

27781 tctcacttga actgcaagat cataatgaaa cttgtcacgc ctaaacgaac atgaaatttc

27841 ttgttttctt aggaatcatc acaactgtag ctgcatttca ccaagaatgt agtttacagt

27901 catgtactca acatcaacca tatgtagttg atgacccgtg tcctattcac ttctattcta

27961 aatggtatat tagagtagga gctagaaaat cagcaccttt aattgaattg tgcgtggatg

28021 aggctggttc taaatcaccc attcagtaca tcgatatcgg taattataca gtttcctgtt

28081 taccttttac aattaattgc caggaaccta aattgggtag tcttgtagtg cgttgttcgt

28141 tctatgaaga ctttttagag tatcatgacg ttcgtgttgt tttagatttc atctaaacga

28201 acaaacttaa atgtctgata atggacccca aaatcagcga aatgcactcc gcattacgtt

28261 tggtggaccc tcagattcaa ctggcagtaa ccagaatggt ggggcgcgat caaaacaacg

28321 tcggccccaa ggtttaccca ataatactgc gtcttggttc accgctctca ctcaacatgg

28381 caaggaagac cttaaattcc ctcgaggaca aggcgttcca attaacacca atagcagtcc

28441 agatgaccaa attggctact accgaagagc taccagacga attcgtggtg gtgacggtaa

28501 aatgaaagat ctcagtccaa gatggtattt ctactaccta ggaactgggc cagaagctgg

28561 acttccctat ggtgctaaca aagacggcat catatgggtt gcaactgagg gagccttgaa

28621 tacaccaaaa gatcacattg gcacccgcaa tcctgctaac aatgctgcaa tcgtgctaca

28681 acttcctcaa ggaacaacat tgccaaaagg cttctacgca gaagggagca gaggcggcag

28741 tcaagcctct tctcgttcct catcacgtag tcgcaacagt tcaagaaatt caactccagg

28801 cagcagtaaa cgaacttctc ctgctagaat ggctggcaat ggcggtgatg ctgctcttgc

28861 tttgctgctg cttgacagat tgaaccagct tgagagcaaa atgtctggta aaggccaaca

28921 acaacaaggc caaactgtca ctaagaaatc tgctgctgag gcttctaaga agcctcggca

28981 aaaacgtact gccactaaag catacaatgt aacacaagct ttcggcagac gtggtccaga

29041 acaaacccaa ggaaattttg gggaccagga actaatcaga caaggaactg attacaaaca

29101 ttggccgcaa attgcacaat ttgcccccag cgcttcagcg ttcttcggaa tgtcgcgcat

29161 tggcatggaa gtcacacctt cgggaacgtg gttgacctac acaggtgcca tcaaattgga

29221 tgacaaaggt ccaaatttca aagatcaagt cattttgctg aataagcata ttgacgcata

29281 caaaacattc ccaccaacag agcctaaaaa ggacaaaaag aagaaggctg atgaaactca

29341 agccttaccg cagagacaga agaaacagca aactgtgact cttcttcctg ctgcagattt

29401 ggatgatttc tccaaacaat tgcaacaatc catgagcagt gctgactcaa ctcaggccta

29461 aactcatgca gaccacacaa ggcagatggg ctatataaac gttttcgctt ttccgtttac

29521 gatatatagt ctactcttgt gcagaatgaa ttctcgtaac tacatagcac aagtagatgt

29581 agttaacttt aatctcacat agcaatcttt aatcagtgtg taacattagg gaggacttga

29641 aagagccacc acattttcac cgaggccacg cggagtacga tcgagtgtac agtgaacaat

29701 gctagggaga gctgcctata tggaagagcc ctaatgtgta aaattaattt tagtagtgct

29761 atccccatgt

//