**Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/human/USA/CA-CDPH-8000000113/2022, complete genome**

GenBank: ON618009.1

[FASTA](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?report=fasta) [Graphics](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?report=graph)

[Go to:](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1" \l "goto2245759445_0)

LOCUS ON618009 29758 bp RNA linear VRL 26-MAY-2022

DEFINITION Severe acute respiratory syndrome coronavirus 2 isolate

SARS-CoV-2/human/USA/CA-CDPH-8000000113/2022, complete genome.

ACCESSION ON618009

VERSION ON618009.1

DBLINK BioProject: [PRJNA750736](https://www.ncbi.nlm.nih.gov/bioproject/PRJNA750736)

BioSample: [SAMN28165493](https://www.ncbi.nlm.nih.gov/biosample/SAMN28165493)

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 29758)

AUTHORS Smith,E.

TITLE Direct Submission

JOURNAL Submitted (26-MAY-2022) IDLB VRDL/COVIDNet, California Department

of Public Health, 850 Marina Bay Blvd, Richmond, CA 94804, USA

COMMENT ##Assembly-Data-START##

Assembly Method :: iVar v. 1.3.1

Sequencing Technology :: Illumina

##Assembly-Data-END##

FEATURES Location/Qualifiers

source 1..29758

/organism="Severe acute respiratory syndrome coronavirus

2"

/mol\_type="genomic RNA"

/isolate="SARS-CoV-2/human/USA/CA-CDPH-8000000113/2022"

/isolation\_source="clinical"

/host="Homo sapiens"

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

/country="USA"

/collection\_date="2022-03-28"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=246&to=21523) 246..21523

/gene="ORF1ab"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?location=246:13436,13436:21523) join(246..13436,13436..21523)

/gene="ORF1ab"

/ribosomal\_slippage

/codon\_start=1

/product="ORF1ab polyprotein"

/protein\_id="[URG68638.1](https://www.ncbi.nlm.nih.gov/protein/2245759446)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHSYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNGCNQMCLSTLMKCDHCGETSWQTG

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

SLLMPILTLTRALTAESHVDTDLTKPYIKWDLLKYDFTEERLKLFDRYFKYWDQTYHP

NCVNCLDDRCILHCANFNVLFSTVFPLTSFGPLVRKIFVDGVPFVVSTGYHFRELGVV

HNQDVNLHSSRLSFKELLVYAADPAMHAASGNLLLDKRTTCFSVAALTNNVAFQTVKP

GNFNKDFYDFAVSKGFFKEGSSVELKHFFFAQDGNAAISDYDYYRYNLPTMCDIRQLL

FVVEVVDKYFDCYDGGCINANQVIVNNLDKSAGFPFNKWGKARLYYDSMSYEDQDALF

AYTKRNVIPTITQMNLKYAISAKNRARTVAGVSICSTMTNRQFHQKLLKSIAATRGAT

VVIGTSKFYGGWHNMLKTVYSDVENPHLMGWDYPKCDRAMPNMLRIMASLVLARKHTT

CCSLSHRFYRLANECAQVLSEMVMCGGSLYVKPGGTSSGDATTAYANSVFNICQAVTA

NVNALLSTDGNKIADKYVRNLQHRLYECLYRNRDVDTDFVNEFYAYLRKHFSMMILSD

DAVVCFNSTYASQGLVASIKNFKSVLYYQNNVFMSEAKCWTETDLTKGPHEFCSQHTM

LVKQGDDYVYLPYPDPSRILGAGCFVDDIVKTDGTLMIERFVSLAIDAYPLTKHPNQE

YADVFHLYLQYIRKLHDELTGHMLDMYSVMLTNDNTSRYWEPEFYEAMYTPHTVLQAV

GACVLCNSQTSLRCGACIRRPFLCCKCCYDHVISTSHKLVLSVNPYVCNAPGCDVTDV

TQLYLGGMSYYCKSHKPPISFPLCANGQVFGLYKNTCVGSDNVTDFNAIATCDWTNAG

DYILANTCTERLKLFAAETLKATEETFKLSYGIATVREVLSDRELHLSWEVGKPRPPL

NRNYVFTGYRVTKNSKVQIGEYTFEKGDYGDAVVYRGTTTYKLNVGDYFVLTSHTVMP

LSAPTLVPQEHYVRITGLYPTLNISDEFSSNVANYQKVGMQKYSTLQGPPGTGKSHFA

IGLALYYPSARIVYTACSHAAVDALCEKALKYLPIDKCSRIIPARARVECFDKFKVNS

TLEQYVFCTVNALPETTADIVVFDEISMATNYDLSVVNARLRAKHYVYIGDPAQLPAP

RTLLTKGTLEPEYFNSVCRLMKTIGPDMFLGTCRRCPAEIVDTVSALVYDNKLKAHKD

KSAQCFKMFYKGVITHDVSSAINRPQIGVVREFLTRNPAWRKAVFISPYNSQNAVASK

ILGLPTQTVDSSQGSEYDYVIFTQTTETAHSCNVNRFNVAITRAKVGILCIMSDRDLY

DKLQFTSLEIPRRNVATLQAENVTGLFKDCSKVITGLHPTQAPTHLSVDTKFKTEGLC

VDVLGIPKDMTYRRLISMMGFKMNYQVNGYPNMFITREEAIRHVRAWIGFDVEGCHAT

REAVGTNLPLQLGFSTGVNLVAVPTGYVDTPNNTDFSRVSAKPPPGDQFKHLIPLMYK

GLPWNVVRIKIVQMLSDTLKNLSDRVVFVLWAHGFELTSMKYFVKIGPERTCCLCDRR

ATCFSTASDTYACWHHSIGFDYVYNPFMIDVQQWGFTGNLQSNHDLYCQVHGNAHVAS

CDAIMTRCLAVHECFVKRVDWTIEYPIIGDELKINAACRKVQHMVVKAALLADKFPVL

HDIGNPKAIKCVPQADVEWKFYDAQPCSDKAYKIEELFYSYATHSDKFTDGVCLFWNC

NVDRYPANSIVCRFDTRVLSNLNLPGCDGGSLYVNKHAFHTPAFDKSAFVNLKQLPFF

YYSDSPCESHGKQVVSDIDYVPLKSATCITRCNLGGAVCRHHANEYRLYLDAYNMMIS

AGFSLWVYKQFDTYNLWNTFTRLQSLENVAFNVVNKGHFDGQQGEVPVSIINNTVYTK

VDGVDVELFENKTTLPVNVAFELWAKRNIKPVPEVKILNNLGVDIAANTVIWDYKRDA

PAHISTIGVCSMTDIAKKPTETICAPLTVFFDGRVDGQVDLFRNARNGVLITEGSVKG

LQPSVGPKQASLNGVTLIGEAVKTQFNYYKKVDGVVQQLPETYFTQSRNLQEFKPRSQ

MEIDFLELAMDEFIERYKLEGYAFEHIVYGDFSHSQLGGLXXXXXXAKRFKESPFELE

DFIPMDSTVKNYFITDAQTGSSKCVCSVIDLLLDDFVEIIKSQDLSVVSKVVKVTIDY

TEISFMLWCKDGHVETFYPKLQSSQAWQPGVAMPNLYKMQRMLLEKCDLQNYGDSATL

PKGIMMNVAKYTQLCQYLNTLTLAVPYNMRVIHFGAGSDKGVAPGTAVLRQWLPTGTL

LVDSDLNDFVSDADSTLIGDCATVHTANKWDLIISDMYDPKTKNVTKENDSKEGFFTY

ICGFIQQKLALGGSVAIKITEHSWNADLYKLMGHFAWWTAFVTNVNASSSEAFLIGCN

YLGKPREQIDGYVMHANYIFWRNTNPIQLSSYSLFDMSKFPLKLRGTAVMSLKEGQIN

DMILSLLSKGRLIIRENNRVVISSDVLVNN"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68638.1?from=1&to=180) 246..785

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68638.1?from=181&to=818) 786..2699

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68638.1?from=819&to=2762) 2700..8531

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68638.1?from=2763&to=3262) 8532..10031

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68638.1?from=3263&to=3568) 10032..10949

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68638.1?from=3569&to=3855) 10950..11810

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68638.1?from=3856&to=3938) 11811..12059

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68638.1?from=3939&to=4136) 12060..12653

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68638.1?from=4137&to=4249) 12654..12992

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68638.1?from=4250&to=4388) 12993..13409

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68638.1?from=4389&to=5320) join(13410..13436,13436..16204)

/gene="ORF1ab"

/product="RNA-dependent RNA polymerase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68638.1?from=5321&to=5921) 16205..18007

/gene="ORF1ab"

/product="helicase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68638.1?from=5922&to=6448) 18008..19588

/gene="ORF1ab"

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

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68638.1?from=6449&to=6794) 19589..20626

/gene="ORF1ab"

/product="endoRNAse"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68638.1?from=6795&to=7092) 20627..21520

/gene="ORF1ab"

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

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=246&to=13451) 246..13451

/gene="ORF1ab"

/codon\_start=1

/product="ORF1a polyprotein"

/protein\_id="[URG68639.1](https://www.ncbi.nlm.nih.gov/protein/2245759447)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHSYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNGCNQMCLSTLMKCDHCGETSWQTG

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/URG68639.1?from=1&to=180) 246..785

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68639.1?from=181&to=818) 786..2699

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68639.1?from=819&to=2762) 2700..8531

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68639.1?from=2763&to=3262) 8532..10031

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68639.1?from=3263&to=3568) 10032..10949

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68639.1?from=3569&to=3855) 10950..11810

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68639.1?from=3856&to=3938) 11811..12059

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68639.1?from=3939&to=4136) 12060..12653

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68639.1?from=4137&to=4249) 12654..12992

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68639.1?from=4250&to=4388) 12993..13409

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/URG68639.1?from=4389&to=4401) 13410..13448

/gene="ORF1ab"

/product="nsp11"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=13444&to=13471) 13444..13471

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 1"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=13456&to=13510) 13456..13510

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 2"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=21531&to=25343) 21531..25343

/gene="S"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=21531&to=25343) 21531..25343

/gene="S"

/codon\_start=1

/product="surface glycoprotein"

/protein\_id="[URG68640.1](https://www.ncbi.nlm.nih.gov/protein/2245759448)"

/translation="MFVFLVLLPLVSSQCVNLTTRTQLPPAYTNSFTRGVYYPDKVFR

SSVLHSTQDLFLPFFSNVTWFHVISGTNGTKRFDNPVLPFNDGVYFASIEKSNIIRGW

IFGTTLDSKTQSLLIVNNATNVVIKVCEFQFCNDPFLDHKNNKSWMESEFRVYSSANN

CTFEYVSQPFLMDLEGKQGNFKNLREFVFKNIDGYFKIYSKHTPIIVREPEDLPQGFS

ALEPLVDLPIGINITRFQTLLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLLKY

NENGTITDAVDCALDPLSETKCTLKSFTVEKGIYQTSNFRVQPTESIVRFPNITNLCP

FDEVFNATRFASVYAWNRKRISNCVADYSVLYNLAPFFTFKCYGVSPTKLNDLCFTNV

YADSFVIRGDEVRQIAPGQTGNIADYNYKLPDDFTGCVIAWNSNKLDSKVSGNYNYLY

RLFRKSNLKPFERDISTEIYQAGSKPCNGVAGFNCYFPLRSYSFRPTYGVGHQPYRVV

VLSFELLHAPATVCGPKKSTNLVKNKCVNFNFNGLKGTGVLTESNKKFLPFQQFGRDI

ADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQVAVLYQGVNCTEVPVAIHAD

QLTPTWRVYSTGSNVFQTRAGCLIGAEYVNNSYECDIPIGAGICASYQTQTKSHRRAR

SVASQSIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEILPVSMTKTSVDCTMYIC

GDSTECSNLLLQYGSFCTQLKRALTGIAVEQDKNTQEVFAQVKQIYKTPPIKYFGGFN

FSQILPDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICAQKFKGLT

VLPPLLTDEMIAQYTSALLAGTITSGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLY

ENQKLIANQFNSAIGKIQDSLSSTASALGKLQDVVNHNAQALNTLVKQLSSKFGAISS

VLNDIFSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASANLAATKMSECV

LGQSKRVDFCGKGYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHDGKAHFPR

EGVFVSNGTHWFVTQRNFYEPQIITTDNTFVSGNCDVVIGIVNNTVYDPLQPELDSFK

EELDKYFKNHTSPDVDLGDISGINASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYE

QYIKWPWYIWLGFIAGLIAIVMVTIMLCCMTSCCSCLKGCCSCGSCCKFDEDDSEPVL

KGVKLHYT"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=25352&to=26182) 25352..26182

/gene="ORF3a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=25352&to=26182) 25352..26182

/gene="ORF3a"

/codon\_start=1

/product="ORF3a protein"

/protein\_id="[URG68641.1](https://www.ncbi.nlm.nih.gov/protein/2245759449)"

/translation="MDLFMRIFTIGTVTLKQGEIKDATPSDFVRATATIPIQASLPFG

WLIVGVALLAVFQSASKIITLKKRWQLALSKGVHFVCNLLLLFVTVYSHLLLVAAGLE

PPPFFYLYALVYFLQSINFVRIIMRLWLCWKCRSKNPLLYDANYFLCWHTNCYDYCIP

YNSVTSSIVITSGDGTTSPISEHDYQIGGYTEKWESGVKDCVVLHSYFTSDYYQLYST

QLSTDTGVEHVTFFIYNKIVDEPEEHVQIHTIDGSSGVVNPVMEPIYDEPTTTTSVPL

"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=26207&to=26434) 26207..26434

/gene="E"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=26207&to=26434) 26207..26434

/gene="E"

/codon\_start=1

/product="envelope protein"

/protein\_id="[URG68642.1](https://www.ncbi.nlm.nih.gov/protein/2245759450)"

/translation="MYSFVSEEIGTLIVNSVLLFLAFVVFLLVTLAILTALRLCAYCC

NIVNVSLVKPSFYVYSRVKNLNSSRVPDLLV"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=26485&to=27153) 26485..27153

/gene="M"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=26485&to=27153) 26485..27153

/gene="M"

/codon\_start=1

/product="membrane glycoprotein"

/protein\_id="[URG68643.1](https://www.ncbi.nlm.nih.gov/protein/2245759451)"

/translation="MAGSNGTITVEELKKLLEEWNLVIGFLFLTWICLLQFAYANRNR

FLYIIKLIFLWLLWPVTLTCFVLAAVYRINWITGGIAIAMACLVGLMWLSYFIASFRL

FARTRSMWSFNPETNILLNVPLHGTILTRPLLESELVIGAVILRGHLRIAGHHLGRCD

IKDLPKEITVATSRTLSYYKLGASQRVAGDSGFAAYSRYRIGNYKLNTDHSSSSDNIA

LLVQ"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=27164&to=27349) 27164..27349

/gene="ORF6"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=27164&to=27349) 27164..27349

/gene="ORF6"

/codon\_start=1

/product="ORF6 protein"

/protein\_id="[URG68644.1](https://www.ncbi.nlm.nih.gov/protein/2245759452)"

/translation="MFHLVDFQVTIAEILLIIMRTFKVSIWNLDYIINLIIKNLSKSL

TENKYSQLDEEQPMEID"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=27356&to=27721) 27356..27721

/gene="ORF7a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=27356&to=27721) 27356..27721

/gene="ORF7a"

/codon\_start=1

/product="ORF7a protein"

/protein\_id="[URG68645.1](https://www.ncbi.nlm.nih.gov/protein/2245759453)"

/translation="MKIILFLALITLATCELYHYQECVRGTTVLLKEPCSSGTYEGNS

PFHPLADNKFALTCFSTQFAFACPDGVKHVYQLRARSVSPKLFIRQEEVQELYSPIFL

IVAAIVFITLCFTLKRKTE"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=27718&to=27849) 27718..27849

/gene="ORF7b"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=27718&to=27849) 27718..27849

/gene="ORF7b"

/codon\_start=1

/product="ORF7b"

/protein\_id="[URG68646.1](https://www.ncbi.nlm.nih.gov/protein/2245759454)"

/translation="MIELSLIDFYLCFLAFLLFLVLIMLIIFWFSLELQDHNETCHA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=27856&to=28221) 27856..28221

/gene="ORF8"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=27856&to=28221) 27856..28221

/gene="ORF8"

/codon\_start=1

/product="ORF8 protein"

/protein\_id="[URG68647.1](https://www.ncbi.nlm.nih.gov/protein/2245759455)"

/translation="MKFLVFLGIITTVAAFHQECSLQSCTQHQPYVVDDPCPIHFYSK

WYIRVGARKSAPLIELCVDEAGSKSPIQYIDIGNYTVSCLPFTINCQEPKLGSLVVRC

SFYEDFLEYHDVRVVLDFI"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=28236&to=29486) 28236..29486

/gene="N"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=28236&to=29486) 28236..29486

/gene="N"

/codon\_start=1

/product="nucleocapsid phosphoprotein"

/protein\_id="[URG68648.1](https://www.ncbi.nlm.nih.gov/protein/2245759456)"

/translation="MSDNGPQNQRNALRITFGGPSDSTGSNQNGGARSKQRRPQGLPN

NTASWFTALTQHGKEDLKFPRGQGVPINTNSSPDDQIGYYRRATRRIRGGDGKMKDLS

PRWYFYYLGTGPEAGLPYGANKDGIIWVATEGALNTPKDHIGTRNPANNAAIVLQLPQ

GTTLPKGFYAEGSRGGSQASSRSSSRSRNSSRNSTPGSSKRTSPARMAGNGGDAALAL

LLLDRLNQLESKMSGKGQQQQGQTVTKKSAAEASKKPRQKRTATKAYNVTQAFGRRGP

EQTQGNFGDQELIRQGTDYKHWPQIAQFAPSASAFFGMSRIGMEVTPSGTWLTYTGAI

KLDDKGPNFKDQVILLNKHIDAYKTFPPTEPKKDKKKKADETQALPQRQKKQQTVTLL

PAADLDDFSKQLQQSMSSADSTQA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=29511&to=29627) 29511..29627

/gene="ORF10"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=29511&to=29627) 29511..29627

/gene="ORF10"

/codon\_start=1

/product="ORF10 protein"

/protein\_id="[URG68649.1](https://www.ncbi.nlm.nih.gov/protein/2245759457)"

/translation="MGYINVFAFPFTIYSLLLCRMNSRNYIAQVDVVNFNLT"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=29562&to=29597) 29562..29597

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=29582&to=29610) 29582..29610

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON618009.1?from=29681&to=29721) 29681..29721

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

ORIGIN

1 caggtaacaa accaaccaac tttcgatctc ttgtagatct gttctctaaa cgaactttaa

61 aatctgtgtg gctgtcactc ggctgcatgc ttagtgcact cacgcagtat aattaataac

121 taattactgt cgttgacagg acacgagtaa ctcgtctatc ttctgcaggc tgcttacggt

181 ttcgtccgtg ttgcagccga tcatcagcac atctaggttt tgtccgggtg tgaccgaaag

241 gtaagatgga gagccttgtc cctggtttca acgagaaaac acacgtccaa ctcagtttgc

301 ctgttttaca ggttcgcgac gtgctcgtac gtggctttgg agactccgtg gaggaggtct

361 tatcagaggc acgtcaacat cttaaagatg gcacttgtgg cttagtagaa gttgaaaaag

421 gcgttttgcc tcaacttgaa cagccctatg tgttcatcaa acgttcggat gctcgaactg

481 cacctcatgg tcatgttatg gttgagctgg tagcagaact cgaaggcatt cagtacggtc

541 gtagtggtga gacacttggt gtccttgtcc ctcatgtggg cgaaatacca gtggcttacc

601 gcaaggttct tcttcgtaag aacggtaata aaggagctgg tggccatagt tacggcgccg

661 atctaaagtc atttgactta ggcgacgagc ttggcactga tccttatgaa gattttcaag

721 aaaactggaa cactaaacat agcagtggtg ttacccgtga actcatgcgt gagcttaacg

781 gaggggcata cactcgctat gtcgataaca acttctgtgg ccctgatggc taccctcttg

841 agtgcattaa agaccttcta gcacgtgctg gtaaagcttc atgcactttg tccgaacaac

901 tggactttat tgacactaag aggggtgtat actgctgccg tgaacatgag catgaaattg

961 cttggtacac ggaacgttct gaaaagagct atgaattgca gacacctttt gaaattaaat

1021 tggcaaagaa atttgacacc ttcaatgggg aatgtccaaa ttttgtattt cccttaaatt

1081 ccataatcaa gactattcaa ccaagggttg aaaagaaaaa gcttgatggc tttatgggta

1141 gaattcgatc tgtctatcca gttgcgtcac caaatggatg caaccaaatg tgcctttcaa

1201 ctctcatgaa gtgtgatcat tgtggtgaaa cttcatggca gacgggcgat tttgttaaag

1261 ccacttgcga attttgtggc actgagaatt tgactaaaga aggtgccact acttgtggtt

1321 acttacccca aaatgctgtt gttaaaattt attgtccagc atgtcacaat tcagaagtag

1381 gacctgagca tagtcttgcc gaataccata atgaatctgg cttgaaaacc attcttcgta

1441 agggtggtcg cactattgcc tttggaggct gtgtgttctc ttatgttggt tgccataaca

1501 agtgtgccta ttgggttcca cgtgctagcg ctaacatagg ttgtaaccat acaggtgttg

1561 ttggagaagg ttccgaaggt cttaatgaca accttcttga aatactccaa aaagagaaag

1621 tcaacatcaa tattgttggt gactttaaac ttaatgaaga gatcgccatt attttggcat

1681 ctttttctgc ttccacaagt gcttttgtgg aaactgtgaa aggtttggat tataaagcat

1741 tcaaacaaat tgttgaatcc tgtggtaatt ttaaagttac aaaaggaaaa gctaaaaaag

1801 gtgcctggaa tattggtgaa cagaaatcaa tactgagtcc tctttatgca tttgcatcag

1861 aggctgctcg tgttgtacga tcaattttct cccgcactct tgaaactgct caaaattctg

1921 tgcgtgtttt acagaaggcc gctataacaa tactagatgg aatttcacag tattcactga

1981 gactcattga tgctatgatg ttcacatctg atttggctac taacaatcta gttgtaatgg

2041 cctacattac aggtggtgtt gttcagttga cttcgcagtg gctaactaac atctttggca

2101 ctgtttatga aaaactcaaa cccgtccttg attggcttga agagaagttt aaggaaggtg

2161 tagagtttct tagagacggt tgggaaattg ttaaatttat ctcaacctgt gcttgtgaaa

2221 ttgtcggtgg acaaattgtc acctgtgcaa aggaaattaa ggagagtgtt cagacattct

2281 ttaagcttgt aaataaattt ttggctttgt gtgctgactc tatcattatt ggtggagcta

2341 aacttaaagc cttgaattta ggtgaaacat ttgtcacgca ctcaaaggga ttgtacagaa

2401 agtgtgttaa atccagagaa gaaactggcc tactcatgcc tctaaaagcc ccaaaagaaa

2461 ttatcttctt agagggagaa acacttccca cagaagtgtt aacagaggaa gttgtcttga

2521 aaactggtga tttacaacca ttagaacaac ctactagtga agctgttgaa gctccattgg

2581 ttggtacacc agtttgtatt aacgggctta tgttgctcga aatcaaagac acagaaaagt

2641 actgtgccct tgcacctaat atgatggtaa caaacaatac cttcacactc aaaggcggtg

2701 caccaacaaa ggttactttt ggtgatgaca ctgtgataga agtgcaaggt tacaagagtg

2761 tgaatatcac ttttgaactt gatgaaagga ttgataaagt acttaatgag aggtgctctg

2821 cctatacagt tgaactcggt acagaagtaa atgagttcgc ctgtgttgtg gcagatgctg

2881 tcataaaaac tttgcaacca gtatctgaat tacttacacc actgggcatt gatttagatg

2941 agtggagtat ggctacatac tacttatttg atgagtctgg tgagtttaaa ttggcttcac

3001 atatgtattg ttctttttac cctccagatg aggatgaaga agaaggtgat tgtgaagaag

3061 aagagtttga gccatcaact caatatgagt atggtactga agatgattac caaggtaaac

3121 ctttggaatt tggtgccact tctgctgctc ttcaacctga agaagagcaa gaagaagatt

3181 ggttagatga tgatagtcaa caaactgttg gtcaacaaga cggcagtgag gacaatcaga

3241 caactactat tcaaacaatt gttgaggttc aacctcaatt agagatggaa cttacaccag

3301 ttgttcagac tattgaagtg aatagtttta gtggttattt aaaacttact gacaatgtat

3361 acattaaaaa tgcagacatt gtggaagaag ctaaaaaggt aaaaccaaca gtggttgtta

3421 atgcagccaa tgtttacctt aaacatggag gaggtgttgc aggagcctta aataaggcta

3481 ctaacaatgc catgcaagtt gaatctgatg attacatagc tactaatgga ccacttaaag

3541 tgggtggtag ttgtgtttta agcggacaca atcttgctaa acactgtctt catgttgtcg

3601 gcccaaatgt taacaaaggt gaagacattc aacttcttaa gagtgcttat gaaaatttta

3661 atcagcacga agttctactt gcaccattat tatcagctgg tatttttggt gctgacccta

3721 tacattcttt aagagtttgt gtagatactg ttcgcacaaa tgtctactta gctgtctttg

3781 ataaaaatct ctatgacaaa cttgtttcaa gctttttgga aatgaagagt gaaaagcaag

3841 ttgaacaaaa gatcgctgag attcctaaag aggaagttaa gccatttata actgaaagta

3901 aaccttcagt tgaacagaga aaacaagatg ataagaaaat caaagcttgt gttgaagaag

3961 ttacaacaac tctggaagaa actaagttcc tcacagaaaa cttgttactt tatattgaca

4021 ttaatggcaa tcttcatcca gattctgcca ctcttgttag tgacattgac atcactttct

4081 taaagaaaga tgctccatat atagtgggtg atgttgttca agagggtgtt ttaactgctg

4141 tggttatacc tactaaaaag gctggtggca ctactgaaat gctagcgaaa gctttgagaa

4201 aagtgccaac agacaattat ataaccactt acccgggtca gggtttaaat ggttacactg

4261 tagaggaggc aaagacagtg cttaaaaagt gtaaaagtgc cttttacatt ctaccatcta

4321 ttatctctaa tgagaagcaa gaaattcttg gaactgtttc ttggaatttg cgagaaatgc

4381 ttgcacatgc agaagaaaca cgcaaattaa tgcctgtctg tgtggaaact aaagccatag

4441 tttcaactat acagcgtaaa tataagggta ttaaaataca agagggtgtg gttgattatg

4501 gtgctagatt ttacttttac accagtaaaa caactgtagc gtcacttatc aacacactta

4561 acgatctaaa tgaaactctt gttacaatgc cacttggcta tgtaacacat ggcttaaatt

4621 tggaagaagc tgctcggtat atgagatctc tcaaagtgcc agctacagtt tctgtttctt

4681 cacctgatgc tgttacagcg tataatggtt atcttacttc ttcttctaaa acacctgaag

4741 aacattttat tgaaaccatc tcacttgctg gttcctataa agattggtcc tattctggac

4801 aatctacaca actaggtata gaatttctta agagaggtga taaaagtgta tattacacta

4861 gtaatcctac cacattccac ctagatggtg aagttatcac ctttgacaat cttaagacac

4921 ttctttcttt gagagaagtg aggactatta aggtgtttac aacagtagac aacattaacc

4981 tccacacgca agttgtggac atgtcaatga catatggaca acagtttggt ccaacttatt

5041 tggatggagc tgatgttact aaaataaaac ctcataattc acatgaaggt aaaacatttt

5101 atgttttacc taatgatgac actctacgtg ttgaggcttt tgagtactac cacacaactg

5161 atcctagttt tctgggtagg tacatgtcag cattaaatca cactaaaaag tggaaatacc

5221 cacaagttaa tggtttaact tctattaaat gggcagataa caactgttat cttgccactg

5281 cattgttaac actccaacaa atagagttga agtttaatcc acctgctcta caagatgctt

5341 attacagagc aagggctggt gaagcggcta acttttgtgc acttatctta gcctactgta

5401 ataagacagt aggtgagtta ggtgatgtta gagaaacaat gagttacttg tttcaacatg

5461 ccaatttaga ttcttgcaaa agagtcttga acgtggtgtg taaaacttgt ggacaacagc

5521 agacaaccct taagggtgta gaagctgtta tgtacatggg cacactttct tatgaacaat

5581 ttaagaaagg tgttcagata ccttgtacgt gtggtaaaca agctacaaaa tatctagtac

5641 aacaggagtc accttttgtt atgatgtcag caccacctgc tcagtatgaa cttaagcatg

5701 gtacatttac ttgtgctagt gagtacactg gtaattacca gtgtggtcac tataaacata

5761 taacttctaa agaaactttg tattgcatag acggtgcttt acttacaaag tcctcagaat

5821 acaaaggtcc tattacggat gttttctaca aagaaaacag ttacacaaca accataaaac

5881 cagttactta taaattggat ggtgttgttt gtacagaaat tgaccctaag ttggacaatt

5941 attataagaa agacaattct tatttcacag agcaaccaat tgatcttgta ccaaaccaac

6001 catatccaaa cgcaagcttc gataatttta agtttgtatg tgataatatc aaatttgctg

6061 atgatttaaa ccagttaact ggttataaga aacctgcttc aagagagctt aaagttacat

6121 ttttccctga cttaaatggt gatgtggtgg ctattgatta taaacactac acaccctctt

6181 ttaagaaagg agctaaattg ttacataaac ctattgtttg gcatgttaac aatgcaacta

6241 ataaagccac gtataaacca aatacctggt gtatacgttg tctttggagc acaaaaccag

6301 ttgaaacatc aaattcgttt gatgtactga agtcagagga cgcgcaggga atggataatc

6361 ttgcctgcga agatctaaaa ccagtctctg aagaagtagt ggaaaatcct accatacaga

6421 aagacgttct tgagtgtaat gtgaaaacta ccgaagttgt aggagacatt atacttaaac

6481 cagcaaataa tataaaaatt acagaagagg ttggccacac agatctaatg gctgcttatg

6541 tagacaattc tagtcttact attaagaaac ctaatgaatt atctagagta ttaggtttga

6601 aaacccttgc tactcatggt ttagctgctg ttaatagtgt cccttgggat actatagcta

6661 attatgctaa gccttttctt aacaaagttg ttagtacaac tactaacata gttacacggt

6721 gtttaaaccg tgtttgtact aattatatgc cttatttctt tactttattg ctacaattgt

6781 gtacttttac tagaagtaca aattctagaa ttaaagcatc tatgccgact actatagcaa

6841 agaatactgt taagagtgtc ggtaaatttt gtctagaggc ttcatttaat tatttgaagt

6901 cacctaattt ttctaaactg ataaatatta taatttggtt tttactatta agtgtttgcc

6961 taggttcttt aatctactca accgctgctt taggtgtttt aatgtctaat ttaggcatgc

7021 cttcttactg tactggttac agagaaggct atttgaactc tactaatgtc actattgcaa

7081 cctactgtac tggttctata ccttgtagtg tttgtcttag tggtttagat tctttagaca

7141 cctatccttc tttagaaact atacaaatta ccatttcatc ttttaaatgg gatttaactg

7201 cttttggctt agttgcagag tggtttttgg catatattct tttcactagg tttttctatg

7261 tacttggatt ggctgcaatc atgcaattgt ttttcagcta ttttgcagta cattttatta

7321 gtaattcttg gcttatgtgg ttaataatta atcttgtaca aatggccccg atttcagcta

7381 tggttagaat gtacatcttc tttgcatcat tttattatgt atggaaaagt tatgtgcatg

7441 ttgtagacgg ttgtaattca tcaacttgta tgatgtgtta caaacgtaat agagcaacaa

7501 gagtcgaatg tacaactatt gttaatggtg ttagaaggtc cttttatgtc tatgctaatg

7561 gaggtaaagg cttttgcaaa ctacacaatt ggaattgtgt taattgtgat acattctgtg

7621 ctggtagtac atttattagt gatgaagttg cgagagactt gtcactacag tttaaaagac

7681 caataaatcc tactgaccag tcttcttaca tcgttgatag tgttacagtg aagaatggtt

7741 ccatccatct ttactttgat aaagctggtc aaaagactta tgaaagacat tctctctctc

7801 attttgttaa cttagacaac ctgagagcta ataacactaa aggttcattg cctattaatg

7861 ttatagtttt tgatggtaaa tcaaaatgtg aagaatcatc tgcaaaatca gcgtctgttt

7921 actacagtca gcttatgtgt caacctatac tgttactaga tcaggcatta gtgtctgatg

7981 ttggtgatag tgcggaagtt gcagttaaaa tgtttgatgc ttacgttaat acgttttcat

8041 caacttttaa cgtaccaatg gaaaaactca aaacactagt tgcaactgca gaagctgaac

8101 ttgcaaagaa tgtgtcctta gacaatgtct tatctacttt tatttcagca gctcggcaag

8161 ggtttgttga ttcagatgta gaaactaaag atgttgttga atgtcttaaa ttgtcacatc

8221 aatctgacat agaagttact ggcgatagtt gtaataacta tatgctcacc tataacaaag

8281 ttgaaaacat gacaccccgt gaccttggtg cttgtattga ctgtagtgcg cgtcatatta

8341 atgcgcaggt agcaaaaagt cacaacatta ctttgatatg gaacgttaaa gatttcatgt

8401 cattgtctga acaactacga aaacaaatac gtagtgctgc taaaaagaat aacttacctt

8461 ttaagttgac atgtgcaact actagacaag ttgttaatgt tgtaacaaca aagatagcac

8521 ttaagggtgg taaaattgtt aataattggt tgaagcagtt aattaaagtt acacttgtgt

8581 tcctttttgt tgctgctatt ttctatttaa taacacctgt tcatgtcatg tctaaacata

8641 ctgacttttc aagtgaaatc ataggataca aggctattga tggtggtgtc actcgtgaca

8701 tagcatctac agatacttgt tttgctaaca aacatgctga ttttgacaca tggtttagcc

8761 agcgtggtgg tagttatact aatgacaaag cttgcccatt gattgctgca gtcataacaa

8821 gagaagtggg ttttgtcgtg cctggtttgc ctggcacgat attacgcaca actaatggtg

8881 actttttgca tttcttacct agagttttta gtgcagttgg taacatctgt tacacaccat

8941 caaaacttat agagtacact gactttgcaa catcagcttg tgttttggct gctgaatgta

9001 caatttttaa agatgcttct ggtaagccag taccatattg ttatgatacc aatgtactag

9061 aaggttctgt tgcttatgaa agtttacgcc ctgacacacg ttatgtgctc atggatggct

9121 ctattattca atttcctaac acctaccttg aaggttctgt tagagtggta acaacttttg

9181 attctgagta ctgtaggcac ggcacttgtg aaagatcaga agctggtgtt tgtgtatcta

9241 ctagtggtag atgggtactt aacaatgatt attacagatc tttaccagga gttttctgtg

9301 gtgtagatgc tgtaaattta cttactaata tgtttacacc actaattcaa cctattggtg

9361 ctttggacat atcagcatct atagtagctg gtggtattgt agctatcgta gtaacatgcc

9421 ttgcctacta ttttatgagg tttagaagag cttttggtga atacagtcat gtagttgcct

9481 ttaatacttt actattcctt atgtcattca ctgtactctg tttaacacca gtttactcat

9541 tcttacctgg tgtttattct gttatttact tgtacttgac attttatctt actaatgatg

9601 tttctttttt agcacatatt cagtggatgg ttatgttcac acctttagta cctttctgga

9661 taacaattgc ttatatcatt tgtatttcca caaagcattt ctattggttc tttagtaatt

9721 acctaaagag acgtgtagtc tttaatggtg tttcctttag tacttttgaa gaagctgcgc

9781 tgtgcacctt tttgttaaat aaagaaatgt atctaaagtt gcgtagtgat gtgctattac

9841 ctcttacgca atataataga tacttagctc tttataataa gtacaagtat tttagtggag

9901 caatggatac aactagctac agagaagctg cttgttgtca tctcgcaaag gctctcaatg

9961 acttcagtaa ctcaggttct gatgttcttt accaaccacc acaaatctct atcacctcag

10021 ctgttttgca gagtggtttt agaaaaatgg cattcccatc tggtaaagtt gagggttgta

10081 tggtacaagt aacttgtggt acaactacac tcaacggtct ttggcttgat gacgtagttt

10141 actgtccaag acatgtgatc tgcacctctg aagacatgct taaccctaat tatgaagatt

10201 tactcattcg taagtctaat cataatttct tggtacaggc tggtaatgtt caactcaggg

10261 ttattggaca ttctatgcaa aattgtgtac ttaagcttaa ggttgataca gccaatccta

10321 agacacctaa gtataagttt gttcgcattc aaccaggaca gactttttca gtgttagctt

10381 gttacaatgg ttcaccatct ggtgtttacc aatgtgctat gaggcacaat ttcactatta

10441 agggttcatt ccttaatggt tcatgtggta gtgttggttt taacatagat tatgactgtg

10501 tctctttttg ttacatgcac catatggaat taccaactgg agttcatgct ggcacagact

10561 tagaaggtaa cttttatgga ccttttgttg acaggcaaac agcacaagca gctggtacgg

10621 acacaactat tacagttaat gttttagctt ggttgtacgc tgctgttata aatggagaca

10681 ggtggtttct caatcgattt accacaactc ttaatgactt taaccttgtg gctatgaagt

10741 acaattatga acctctaaca caagaccatg ttgacatact aggacctctt tctgctcaaa

10801 ctggaattgc cgttttagat atgtgtgctt cattaaaaga attactgcaa aatggtatga

10861 atggacgtac catattgggt agtgctttat tagaagatga atttacacct tttgatgttg

10921 ttagacaatg ctcaggtgtt actttccaaa gtgcagtgaa aagaacaatc aagggtacac

10981 accactggtt gttactcaca attttgactt cacttttagt tttagtccag agtactcaat

11041 ggtctttgtt cttttttttg tatgaaaatg cctttttacc ttttgctatg ggtattattg

11101 ctatgtctgc ttttgcaatg atgtttgtca aacataagca tgcatttctc tgtttgtttt

11161 tgttaccttc tcttgccact gtagcttatt ttaatatggt ctatatgcct gctagttggg

11221 tgatgcgtat tatgacatgg ttggatatgg ttgatactag ttttaagcta aaagactgtg

11281 ttatgtatgc atcagctgta gtgttactaa tccttatgac agcaagaact gtgtatgatg

11341 atggtgctag gagagtgtgg acacttatga atgtcttgac actcgtttat aaagtttatt

11401 atggtaatgc tttagatcaa gccatttcca tgtgggctct tataatctct gttacttcta

11461 actactcagg tgtagttaca actgtcatgt ttttggccag aggtgttgtt tttatgtgtg

11521 ttgagtattg ccctattttc ttcataactg gtaatacact tcagtgtata atgctagttt

11581 attgtttctt aggctatttt tgtacttgtt actttggcct cttttgttta ctcaaccgct

11641 actttagact gactcttggt gtttatgatt acttagtttc tacacaggag tttagatata

11701 tgaattcaca gggactactc ccacccaaga atagcataga tgccttcaaa ctcaacatta

11761 aattgttggg tgttggtggc aaaccttgta tcaaagtagc cactgtacag tctaaaatgt

11821 cagatgtaaa gtgcacatca gtagtcttac tctcagtttt gcaacaactc agagtagaat

11881 catcatctaa attgtgggct caatgtgtcc agttacacaa tgacattctc ttagctaaag

11941 atactactga agcctttgaa aaaatggttt cactactttc tgttttgctt tccatgcagg

12001 gtgctgtaga cataaacaag ctttgtgaag aaatgctgga caacagggca accttacaag

12061 ctatagcctc agagtttagt tcccttccat catatgcagc ttttgctact gctcaagaag

12121 cttatgagca ggctgttgct aatggtgatt ctgaagttgt tcttaaaaag ttgaagaagt

12181 ctttgaatgt ggctaaatct gaatttgacc gtgatgcagc catgcaacgt aagttggaaa

12241 agatggctga tcaagctatg acccaaatgt ataaacaggc tagatctgag gacaagaggg

12301 caaaagttac tagtgctatg cagacaatgc ttttcactat gcttagaaag ttggataatg

12361 atgcactcaa caacattatc aacaatgcaa gagatggttg tgttcccttg aacataatac

12421 ctcttacaac agcagccaaa ctaatggttg tcataccaga ctataacaca tataaaaata

12481 cgtgtgatgg tacaacattt acttatgcat cagcattgtg ggaaatccaa caggttgtag

12541 atgcagatag taaaattgtt caacttagtg aaattagtat ggacaattca cctaatttag

12601 catggcctct tattgtaaca gctttaaggg ccaattctgc tgtcaaatta cagaataatg

12661 agcttagtcc tgttgcacta cgacagatgt cttgtgctgc cggtactaca caaactgctt

12721 gcactgatga caatgcgtta gcttactaca acacaacaaa gggaggtagg tttgtacttg

12781 cactgttatc cgatttacag gatttgaaat gggctagatt ccctaagagt gatggaactg

12841 gtactatcta tacagaactg gaaccacctt gtaggtttgt tacagacaca cctaaaggtc

12901 ctaaagtgaa gtatttatac tttattaaag gattaaacaa cctaaataga ggtatggtac

12961 ttggtagttt agctgccaca gtacgtctac aagctggtaa tgcaacagaa gtgcctgcca

13021 attcaactgt attatctttc tgtgcttttg ctgtagatgc tgctaaagct tacaaagatt

13081 atctagctag tgggggacaa ccaatcacta attgtgttaa gatgttgtgt acacacactg

13141 gtactggtca ggcaataaca gtcacaccgg aagccaatat ggatcaagaa tcctttggtg

13201 gtgcatcgtg ttgtctgtac tgccgttgcc acatagatca tccaaatcct aaaggatttt

13261 gtgacttaaa aggtaagtat gtacaaatac ctacaacttg tgctaatgac cctgtgggtt

13321 ttacacttaa aaacacagtc tgtaccgtct gcggtatgtg gaaaggttat ggctgtagtt

13381 gtgatcaact ccgcgaaccc atgcttcagt cagctgatgc acaatcgttt ttaaacgggt

13441 ttgcggtgta agtgcagccc gtcttacacc gtgcggcaca ggcactagta ctgatgtcgt

13501 atacagggct tttgacatct acaatgataa agtagctggt tttgctaaat tcctaaaaac

13561 taattgttgt cgcttccaag aaaaggacga agatgacaat ttaattgatt cttactttgt

13621 agttaagaga cacactttct ctaactacca acatgaagaa acaatttata atttacttaa

13681 ggattgtcca gctgttgcta aacatgactt ctttaagttt agaatagacg gtgacatggt

13741 accacatata tcacgtcaac gtcttactaa atacacaatg gcagacctcg tctatgcttt

13801 aaggcatttt gatgaaggta attgtgacac attaaaagaa atacttgtca catacaattg

13861 ttgtgatgat gattatttca ataaaaagga ctggtatgat tttgtagaaa acccagatat

13921 attacgcgta tacgccaact taggtgaacg tgtacgccaa gctttgttaa aaacagtaca

13981 attctgtgat gccatgcgaa atgctggtat tgttggtgta ctgacattag ataatcaaga

14041 tctcaatggt aactggtatg atttcggtga tttcatacaa accacgccag gtagtggagt

14101 tcctgttgta gattcttatt attcattgtt aatgcctata ttaaccttga ccagggcttt

14161 aactgcagag tcacatgttg acactgactt aacaaagcct tacattaagt gggatttgtt

14221 aaaatatgac ttcacggaag agaggttaaa actctttgac cgttatttta aatattggga

14281 tcagacatac cacccaaatt gtgttaactg tttggatgac agatgcattc tgcattgtgc

14341 aaactttaat gttttattct ctacagtgtt cccacttaca agttttggac cactagtgag

14401 aaaaatattt gttgatggtg ttccatttgt agtttcaact ggataccact tcagagagct

14461 aggtgttgta cataatcagg atgtaaactt acatagctct agacttagtt ttaaggaatt

14521 acttgtgtat gctgctgacc ctgctatgca cgctgcttct ggtaatctat tactagataa

14581 acgcactacg tgcttttcag tagctgcact tactaacaat gttgcttttc aaactgtcaa

14641 acccggtaat tttaacaaag acttctatga ctttgctgtg tctaagggtt tctttaagga

14701 aggaagttct gttgaattaa aacacttctt ctttgctcag gatggtaatg ctgctatcag

14761 cgattatgac tactatcgtt ataatctacc aacaatgtgt gatatcagac aactactatt

14821 tgtagttgaa gttgttgata agtactttga ttgttacgat ggtggctgta ttaatgctaa

14881 ccaagtcatc gtcaacaacc tagacaaatc agctggtttt ccatttaata aatggggtaa

14941 ggctagactt tattatgatt caatgagtta tgaggatcaa gatgcacttt tcgcatatac

15001 aaaacgtaat gtcatcccta ctataactca aatgaatctt aagtatgcca ttagtgcaaa

15061 gaatagagct cgcaccgtag ctggtgtctc tatctgtagt actatgacca atagacagtt

15121 tcatcaaaaa ttattgaaat caatagccgc cactagagga gctactgtag taattggaac

15181 aagcaaattc tatggtggtt ggcacaatat gttaaaaact gtttatagtg atgtagaaaa

15241 ccctcacctt atgggttggg attatcctaa atgtgataga gccatgccta acatgcttag

15301 aattatggcc tcacttgttc ttgctcgcaa acatacaacg tgttgtagct tgtcacaccg

15361 tttctataga ttagctaatg agtgtgctca agtattgagt gaaatggtca tgtgtggcgg

15421 ttcactatat gttaaaccag gtggaacctc atcaggagat gccacaactg cttatgctaa

15481 tagtgttttt aacatttgtc aagctgtcac ggccaatgtt aatgcacttt tatctactga

15541 tggtaacaaa attgccgata agtatgtccg caatttacaa cacagacttt atgagtgtct

15601 ctatagaaat agagatgttg acacagactt tgtgaatgag ttttacgcat atttgcgtaa

15661 acatttctca atgatgatac tctctgacga tgctgttgtg tgtttcaata gcacttatgc

15721 atctcaaggt ctagtggcta gcataaagaa ctttaagtca gttctttatt atcaaaacaa

15781 tgtttttatg tctgaagcaa aatgttggac tgagactgac cttactaaag gacctcatga

15841 attttgctct caacatacaa tgctagttaa acagggtgat gattatgtgt accttcctta

15901 cccagatcca tcaagaatcc taggggccgg ctgttttgta gatgatatcg taaaaacaga

15961 tggtacactt atgattgaac ggttcgtgtc tttagctata gatgcttacc cacttactaa

16021 acatcctaat caggagtatg ctgatgtctt tcatttgtac ttacaataca taagaaagct

16081 acatgatgag ttaacaggac acatgttaga catgtattct gttatgctta ctaatgataa

16141 cacttcaagg tattgggaac ctgagtttta tgaggctatg tacacaccgc atacagtctt

16201 acaggctgtt ggggcttgtg ttctttgcaa ttcacagact tcattaagat gtggtgcttg

16261 catacgtaga ccattcttat gttgtaaatg ctgttacgac catgtcatat caacatcaca

16321 taaattagtc ttgtctgtta atccgtatgt ttgcaatgct ccaggttgtg atgtcacaga

16381 tgtgactcaa ctttacttag gaggtatgag ctattattgt aaatcacata aaccacccat

16441 tagttttcca ttgtgtgcta atggacaagt ttttggttta tataaaaata catgtgttgg

16501 tagcgataat gttactgact ttaatgcaat tgcaacatgt gactggacaa atgctggtga

16561 ttacatttta gctaacacct gtactgaaag actcaagctt tttgcagcag aaacgctcaa

16621 agctactgag gagacattta aactgtctta tggtattgct actgtacgtg aagtgctgtc

16681 tgacagagaa ttacatcttt catgggaagt tggtaaacct agaccaccac ttaaccgaaa

16741 ttatgtcttt actggttatc gtgtaactaa aaacagtaaa gtacaaatag gagagtacac

16801 ctttgaaaaa ggtgactatg gtgatgctgt tgtttaccga ggtacaacaa cttacaaatt

16861 aaatgttggt gattattttg tgctgacatc acatacagta atgccattaa gtgcacctac

16921 actagtgcca caagagcact atgttagaat tactggctta tacccaacac tcaatatctc

16981 agatgagttt tctagcaatg ttgcaaatta tcaaaaggtt ggtatgcaaa agtattctac

17041 actccaggga ccacctggta ctggtaagag tcattttgct attggcctag ctctctacta

17101 cccttctgct cgcatagtgt atacagcttg ctctcatgcc gctgttgatg cactatgtga

17161 gaaggcatta aaatatttgc ctatagataa atgtagtaga attatacctg cacgtgctcg

17221 tgtagagtgt tttgataaat tcaaagtgaa ttcaacatta gaacagtatg tcttttgtac

17281 tgtaaatgca ttgcctgaga cgacagcaga tatagttgtc tttgatgaaa tttcaatggc

17341 cacaaattat gatttgagtg ttgtcaatgc cagattacgt gctaagcact atgtgtacat

17401 tggcgaccct gctcaattac ctgcaccacg cacattgcta actaagggca cactagaacc

17461 agaatatttc aattcagtgt gtagacttat gaaaactata ggtccagaca tgttcctcgg

17521 aacttgtcgg cgttgtcctg ctgaaattgt tgacactgtg agtgctttgg tttatgataa

17581 taagcttaaa gcacataaag acaaatcagc tcaatgcttt aaaatgtttt ataagggtgt

17641 tatcacgcat gatgtttcat ctgcaattaa caggccacaa ataggcgtgg taagagaatt

17701 ccttacacgt aaccctgctt ggagaaaagc tgtctttatt tcaccttata attcacagaa

17761 tgctgtagcc tcaaagattt tgggactacc aactcaaact gttgattcat cacagggctc

17821 agaatatgac tatgtcatat tcactcaaac cactgaaaca gctcactctt gtaatgtaaa

17881 cagatttaat gttgctatta ccagagcaaa agtaggcata ctttgcataa tgtctgatag

17941 agacctttat gacaagttgc aatttacaag tcttgaaatt ccacgtagga atgtggcaac

18001 tttacaagct gaaaatgtaa caggactctt taaagattgt agtaaggtaa tcactgggtt

18061 acatcctaca caggcaccta cacacctcag tgttgacact aaattcaaaa ctgaaggttt

18121 atgtgttgac gtacttggca tacctaagga catgacttat agaagactca tctctatgat

18181 gggttttaaa atgaattatc aagttaatgg ttaccctaac atgtttatca cccgcgaaga

18241 agctataaga catgtacgtg catggattgg cttcgatgtc gaggggtgtc atgctactag

18301 agaagctgtt ggtaccaatt tacctttaca gctaggtttt tctacaggtg ttaacctagt

18361 tgctgtacct acaggttatg ttgatacacc taataataca gatttttcca gagttagtgc

18421 taaaccaccg cctggagatc aatttaaaca cctcatacca cttatgtaca aaggacttcc

18481 ttggaatgta gtgcgtataa agattgtaca aatgttaagt gacacactta aaaatctctc

18541 tgacagagtc gtatttgtct tatgggcaca tggctttgag ttgacatcta tgaagtattt

18601 tgtgaaaata ggacctgagc gcacctgttg tctatgtgat agacgtgcca catgcttttc

18661 cactgcttca gacacttatg cctgttggca tcattctatt ggatttgatt acgtctataa

18721 tccgtttatg attgatgttc aacaatgggg ttttacaggt aacctacaaa gcaaccatga

18781 tctgtattgt caagtccatg gtaatgcaca tgtagctagt tgtgatgcaa tcatgactag

18841 gtgtctagct gtccacgagt gctttgttaa gcgtgttgac tggactattg aatatcctat

18901 aattggtgat gaactgaaga ttaatgcggc ttgtagaaag gttcaacaca tggttgttaa

18961 agctgcatta ttagcagaca aattcccagt tcttcacgac attggtaacc ctaaagctat

19021 taagtgtgta cctcaagctg atgtagaatg gaagttctat gatgcacagc cttgtagtga

19081 caaagcttat aaaatagaag aattattcta ttcttatgcc acacattctg acaaattcac

19141 agatggtgta tgcctatttt ggaattgcaa tgtcgataga tatcctgcta attccattgt

19201 ttgtagattt gacactagag tgctatctaa ccttaacttg cctggttgtg atggtggcag

19261 tttgtatgta aataaacatg cattccacac accagctttt gataaaagtg cttttgttaa

19321 tttaaaacaa ttaccatttt tctattactc tgacagtcca tgtgagtctc atggaaaaca

19381 agtagtgtca gatatagatt atgtaccact aaagtctgct acgtgtataa cacgttgcaa

19441 tttaggtggt gctgtctgta gacatcatgc taatgagtac agattgtatc tcgatgctta

19501 taacatgatg atctcagctg gctttagctt gtgggtttac aaacaatttg atacttataa

19561 cctctggaac acttttacaa gacttcagag tttagaaaat gtggctttta atgttgtaaa

19621 taagggacac tttgatggac aacagggtga agtaccagtt tctatcatta ataacactgt

19681 ttacacaaaa gttgatggtg ttgatgtaga attgtttgaa aataaaacaa cattacctgt

19741 taatgtagca tttgagcttt gggctaagcg caacattaaa ccagtaccag aggtgaaaat

19801 actcaataat ttgggtgtgg acattgctgc taatactgtg atctgggact acaaaagaga

19861 tgctccagca catatatcta ctattggtgt ttgttctatg actgacatag ccaagaaacc

19921 aactgaaacg atttgtgcac cactcactgt cttttttgat ggtagagttg atggtcaagt

19981 agacttattt agaaatgccc gtaatggtgt tcttattaca gaaggtagtg ttaaaggttt

20041 acaaccatct gtaggtccca aacaagctag tcttaatgga gtcacattaa ttggagaagc

20101 cgtaaaaaca cagttcaatt attataagaa agttgatggt gttgtccaac aattacctga

20161 aacttacttt actcagagta gaaatttaca agaatttaaa cccaggagtc aaatggaaat

20221 tgatttctta gaattagcta tggatgaatt cattgaacgg tataaattag aaggctatgc

20281 cttcgaacat atcgtttatg gagattttag tcatagtcag ttaggtggtt tacannnnnn

20341 nnnnnnnnna gctaaacgtt ttaaggaatc accttttgaa ttagaagatt ttattcctat

20401 ggacagtaca gttaaaaact atttcataac agatgcgcaa acaggttcat ctaagtgtgt

20461 gtgttctgtt attgatttat tacttgatga ttttgttgaa ataataaaat cccaagattt

20521 atctgtagtt tctaaggttg tcaaagtgac tattgactat acagaaattt catttatgct

20581 ttggtgtaaa gatggccatg tagaaacatt ttacccaaaa ttacaatcta gtcaagcgtg

20641 gcaaccgggt gttgctatgc ctaatcttta caaaatgcaa agaatgctat tagaaaagtg

20701 tgaccttcaa aattatggtg atagtgcaac attacctaaa ggcataatga tgaatgtcgc

20761 aaaatatact caactgtgtc aatatttaaa cacattaaca ttagctgtac cctataatat

20821 gagagttata cattttggtg ctggttctga taaaggagtt gcaccaggta cagctgtttt

20881 aagacagtgg ttgcctacgg gtacgctgct tgtcgattca gatcttaatg actttgtctc

20941 tgatgcagat tcaactttga ttggtgattg tgcaactgta catacagcta ataaatggga

21001 tctcattatt agtgatatgt acgaccctaa gactaaaaat gttacaaaag aaaatgactc

21061 taaagagggt tttttcactt acatttgtgg gtttatacaa caaaagctag ctcttggagg

21121 ttccgtggct ataaagataa cagaacattc ttggaatgct gatctttata agctcatggg

21181 acacttcgca tggtggacag cctttgttac taatgtgaat gcgtcatcat ctgaagcatt

21241 tttaattgga tgtaattatc ttggcaaacc acgcgaacaa atagatggtt atgtcatgca

21301 tgcaaattac atattttgga ggaatacaaa tccaattcag ttgtcttcct attctttatt

21361 tgacatgagt aaatttcccc ttaaattaag gggtactgct gttatgtctt taaaagaagg

21421 tcaaatcaat gatatgattt tatctcttct tagtaaaggt agacttataa ttagagaaaa

21481 caacagagtt gttatttcta gtgatgttct tgttaacaac taaacgaaca atgtttgttt

21541 ttcttgtttt attgccacta gtctctagtc agtgtgttaa tcttacaacc agaactcaat

21601 taccccctgc atacactaat tctttcacac gtggtgttta ttaccctgac aaagttttca

21661 gatcctcagt tttacattca actcaggact tgttcttacc tttcttttcc aatgttactt

21721 ggttccatgt tatctctggg accaatggta ctaagaggtt tgataaccct gtcctaccat

21781 ttaatgatgg tgtttatttt gcttccattg agaagtctaa cataataaga ggctggattt

21841 ttggtactac tttagattcg aagacccagt ccctacttat tgttaataac gctactaatg

21901 ttgttattaa agtctgtgaa tttcaatttt gtaatgatcc atttttggac cacaaaaaca

21961 acaaaagttg gatggaaagt gagttcagag tttattctag tgcgaataat tgcacttttg

22021 aatatgtctc tcagcctttt cttatggacc ttgaaggaaa acagggtaat ttcaaaaatc

22081 ttagggaatt tgtgtttaag aatattgatg gttattttaa aatatattct aagcacacgc

22141 ctattatagt gcgtgagcca gaagatctcc ctcagggttt ttcggcttta gaaccattgg

22201 tagatttgcc aataggtatt aacatcacta ggtttcaaac tttacttgct ttacatagaa

22261 gttatttgac tcctggtgat tcttcttcag gttggacagc tggtgctgca gcttattatg

22321 tgggttatct tcaacctagg acttttctat taaaatataa tgaaaatgga accattacag

22381 atgctgtaga ctgtgcactt gaccctctct cagaaacaaa gtgtacgttg aaatccttca

22441 ctgtagaaaa aggaatctat caaacttcta actttagagt ccaaccaaca gaatctattg

22501 ttagatttcc taatattaca aacttgtgcc cttttgatga agtttttaac gccaccagat

22561 ttgcatctgt ttatgcttgg aacaggaaga gaatcagcaa ctgtgttgct gattattctg

22621 tcctatataa tctcgcacca tttttcactt ttaagtgtta tggagtgtct cctactaaat

22681 taaatgatct ctgctttact aatgtctatg cagattcatt tgtaattaga ggtgatgaag

22741 tcagacaaat cgctccaggg caaactggaa atattgctga ttataattat aaattaccag

22801 atgattttac aggctgcgtt atagcttgga attctaacaa gcttgattct aaggttagtg

22861 gtaattataa ttacctgtat agattgttta ggaagtctaa tctcaaacct tttgagagag

22921 atatttcaac tgaaatctat caggccggta gcaaaccttg taatggtgtt gcaggtttta

22981 attgttactt tcctttacga tcatatagtt tccgacccac ttatggtgtt ggtcaccaac

23041 catacagagt agtagtactt tcttttgaac ttctacatgc accagcaact gtttgtggac

23101 ctaaaaagtc tactaatttg gttaaaaaca aatgtgtcaa tttcaacttc aatggtttaa

23161 aaggcacagg tgttcttact gagtctaaca aaaagtttct gcctttccaa caatttggca

23221 gagacattgc tgacactact gatgctgtcc gtgatccaca gacacttgag attcttgaca

23281 ttacaccatg ttcttttggt ggtgtcagtg ttataacacc aggaacaaat acttctaacc

23341 aggttgctgt tctttatcag ggtgttaact gcacagaagt ccctgttgct attcatgcag

23401 atcaacttac tcctacttgg cgtgtttatt ctacaggttc taatgttttt caaacacgtg

23461 caggctgttt aataggggct gaatatgtca acaactcata tgagtgtgac atacccattg

23521 gtgcaggtat atgcgctagt tatcagactc agactaagtc tcatcggcgg gcacgtagtg

23581 tagctagtca atctatcatt gcctacacta tgtcacttgg tgcagaaaat tcagttgctt

23641 actctaataa ctctattgcc atacccacaa attttactat tagtgttacc acagaaattc

23701 taccagtgtc tatgaccaag acatcagtag attgtacaat gtacatttgt ggtgattcaa

23761 ctgaatgcag caatcttttg ttgcaatatg gcagtttttg tacacaatta aaacgtgctt

23821 taactggaat agctgttgaa caagacaaaa acacccaaga agtttttgca caagtcaaac

23881 aaatttacaa aacaccacca attaaatatt ttggtggttt taatttttca caaatattac

23941 cagatccatc aaaaccaagc aagaggtcat ttattgaaga tctacttttc aacaaagtga

24001 cacttgcaga tgctggcttc atcaaacaat atggtgattg ccttggtgat attgctgcta

24061 gagacctcat ttgtgcacaa aagtttaaag gccttactgt tttgccacct ttgctcacag

24121 atgaaatgat tgctcaatac acttctgcac tgttagcggg tacaatcact tctggttgga

24181 cctttggtgc aggtgctgca ttacaaatac catttgctat gcaaatggct tataggttta

24241 atggtattgg agttacacag aatgttctct atgagaacca aaaattgatt gccaaccaat

24301 ttaatagtgc tattggcaaa attcaagact cactttcttc cacagcaagt gcacttggaa

24361 aacttcaaga tgtggtcaac cataatgcac aagctttaaa cacgcttgtt aaacaactta

24421 gctccaaatt tggtgcaatt tcaagtgttt taaatgatat cttttcacgt cttgacaaag

24481 ttgaggctga agtgcaaatt gataggttga tcacaggcag acttcaaagt ttgcagacat

24541 atgtgactca acaattaatt agagctgcag aaatcagagc ttctgctaat cttgctgcta

24601 ctaaaatgtc agagtgtgta cttggacaat caaaaagagt tgatttttgt ggaaagggct

24661 atcatcttat gtccttccct cagtcagcac ctcatggtgt agtcttcttg catgtgactt

24721 atgtccctgc acaagaaaag aacttcacaa ctgctcctgc catttgtcat gatggaaaag

24781 cacactttcc tcgtgaaggt gtctttgttt caaatggcac acactggttt gtaacacaaa

24841 ggaattttta tgaaccacaa atcattacta cagacaacac atttgtgtct ggtaactgtg

24901 atgttgtaat aggaattgtc aacaacacag tttatgatcc tttgcaacct gaattagatt

24961 cattcaagga ggagttagat aaatatttta agaatcatac atcaccagat gttgatttag

25021 gtgacatctc tggcattaat gcttcagttg taaacattca aaaagaaatt gaccgcctca

25081 atgaggttgc caagaattta aatgaatctc tcatcgatct ccaagaactt ggaaagtatg

25141 agcagtatat aaaatggcca tggtacattt ggctaggttt tatagctggc ttgattgcca

25201 tagtaatggt gacaattatg ctttgctgta tgaccagttg ctgtagttgt ctcaagggct

25261 gttgttcttg tggatcctgc tgcaaatttg atgaagacga ctctgagcca gtgctcaaag

25321 gagtcaaatt acattacaca taaacgaact tatggatttg tttatgagaa tcttcacaat

25381 tggaactgta actttgaagc aaggtgaaat caaggatgct actccttcag attttgttcg

25441 cgctactgca acgataccga tacaagcctc actccctttc ggatggctta ttgttggcgt

25501 tgcacttctt gctgtttttc agagcgcttc caaaatcata actctcaaaa agagatggca

25561 actagcactc tccaagggtg ttcactttgt ttgcaacttg ctgttgttgt ttgtaacagt

25621 ttactcacac cttttgctcg ttgctgctgg ccttgaaccc cccccttttt tctatcttta

25681 tgctttagtc tacttcttgc agagtataaa ctttgtaaga ataataatga ggctttggct

25741 ttgctggaaa tgccgttcca aaaacccatt actttatgat gccaactatt ttctttgctg

25801 gcatactaat tgttacgact attgtatacc ttacaatagt gtaacttctt caattgtcat

25861 tacttcaggt gatggcacaa caagtcctat ttctgaacat gactaccaga ttggtggtta

25921 tactgaaaaa tgggaatctg gagtaaaaga ctgtgttgta ttacacagtt acttcacttc

25981 agactattac cagctgtact caactcaatt gagtacagac actggtgttg aacatgttac

26041 cttcttcatc tacaataaaa ttgttgatga gcctgaagaa catgtccaaa ttcacacaat

26101 cgacggttca tccggagttg ttaatccagt aatggaacca atttatgatg aaccgacgac

26161 gactactagc gtgcctttgt aagcacaagc tgatgagtac gaacttatgt actcattcgt

26221 ttcggaagag ataggtacgt taatagttaa tagcgtactt ctttttcttg ctttcgtggt

26281 attcttgcta gttacactag ccatccttac tgcgcttcga ttgtgtgcgt actgctgcaa

26341 tattgttaac gtgagtcttg taaaaccttc tttttacgtt tactctcgtg ttaaaaatct

26401 gaattcttct agagttcctg atcttctggt ctaaacgaac taaatattat attagttttt

26461 ctgtttggaa ctttaatttt agccatggca ggttccaacg gtactattac cgttgaagag

26521 cttaaaaagc tccttgaaga atggaaccta gtaataggtt tcctattcct tacatggatt

26581 tgtcttctac aatttgccta tgccaacagg aataggtttt tgtatataat taagttaatt

26641 ttcctctggc tgttatggcc agtaacttta acttgttttg tgcttgctgc tgtttacaga

26701 ataaattgga tcaccggtgg aattgctatc gcaatggctt gtcttgtagg cttgatgtgg

26761 ctcagctact tcattgcttc tttcagactg tttgcgcgta cgcgttccat gtggtcattc

26821 aatccagaaa ctaacattct tctcaacgtg ccactccatg gcactattct gaccagaccg

26881 cttctagaaa gtgaactcgt aatcggagct gtgatccttc gtggacatct tcgtattgct

26941 ggacaccatc taggacgctg tgacatcaag gacctgccta aagaaatcac tgttgctaca

27001 tcacgaacgc tttcttatta caaattggga gcttcgcagc gtgtagcagg tgactcaggt

27061 tttgctgcat acagtcgcta caggattggc aactataaat taaacacaga ccattccagt

27121 agcagtgaca atattgcttt gcttgtacag taagtgacaa cagatgtttc atctcgttga

27181 ctttcaggtt actatagcag agatattact aattattatg cggactttta aagtttccat

27241 ttggaatctt gattacatca taaacctcat aattaaaaat ttatctaagt cactaactga

27301 gaataaatat tctcaattag atgaagagca accaatggag attgattaaa cgaacatgaa

27361 aattattctt ttcttggcac tgataacact cgctacttgt gagctttatc actaccaaga

27421 gtgtgttaga ggtacaacag tacttttaaa agaaccttgc tcttctggaa catacgaggg

27481 caattcacca tttcatcctc tagctgataa caaatttgca ctgacttgct ttagcactca

27541 atttgctttt gcttgtcctg acggcgtaaa acacgtctat cagttacgtg ccagatcagt

27601 ttcacctaaa ctgttcatca gacaagagga agttcaagaa ctttactctc caatttttct

27661 tattgttgcg gcaatagtgt ttataacact ttgcttcaca ctcaaaagaa agacagaatg

27721 attgaacttt cattaattga cttctatttg tgctttttag cctttctgtt attccttgtt

27781 ttaattatgc ttattatctt ttggttctca cttgaactgc aagatcataa tgaaacttgt

27841 cacgcctaaa cgaacatgaa atttcttgtt ttcttaggaa tcatcacaac tgtagctgca

27901 tttcaccaag aatgtagttt acagtcatgt actcaacatc aaccatatgt agttgatgac

27961 ccgtgtccta ttcacttcta ttctaaatgg tatattagag taggagctag aaaatcagca

28021 cctttaattg aattgtgcgt ggatgaggct ggttctaaat cacccattca gtacatcgat

28081 atcggtaatt atacagtttc ctgtttacct tttacaatta attgccagga acctaaattg

28141 ggtagtcttg tagtgcgttg ttcgttctat gaagactttt tagagtatca tgacgttcgt

28201 gttgttttag atttcatcta aacgaacaaa cttaaatgtc tgataatgga ccccaaaatc

28261 agcgaaatgc actccgcatt acgtttggtg gaccctcaga ttcaactggc agtaaccaga

28321 atggtggggc gcgatcaaaa caacgtcggc cccaaggttt acccaataat actgcgtctt

28381 ggttcaccgc tctcactcaa catggcaagg aagaccttaa attccctcga ggacaaggcg

28441 ttccaattaa caccaatagc agtccagatg accaaattgg ctactaccga agagctacca

28501 gacgaattcg tggtggtgac ggtaaaatga aagatctcag tccaagatgg tatttctact

28561 acctaggaac tgggccagaa gctggacttc cctatggtgc taacaaagac ggcatcatat

28621 gggttgcaac tgagggagcc ttgaatacac caaaagatca cattggcacc cgcaatcctg

28681 ctaacaatgc tgcaatcgtg ctacaacttc ctcaaggaac aacattgcca aaaggcttct

28741 acgcagaagg gagcagaggc ggcagtcaag cctcttctcg ttcctcatca cgtagtcgca

28801 acagttcaag aaattcaact ccaggcagca gtaaacgaac ttctcctgct agaatggctg

28861 gcaatggcgg tgatgctgct cttgctttgc tgctgcttga cagattgaac cagcttgaga

28921 gcaaaatgtc tggtaaaggc caacaacaac aaggccaaac tgtcactaag aaatctgctg

28981 ctgaggcttc taagaagcct cggcaaaaac gtactgccac taaagcatac aatgtaacac

29041 aagctttcgg cagacgtggt ccagaacaaa cccaaggaaa ttttggggac caggaactaa

29101 tcagacaagg aactgattac aaacattggc cgcaaattgc acaatttgcc cccagcgctt

29161 cagcgttctt cggaatgtcg cgcattggca tggaagtcac accttcggga acgtggttga

29221 cctacacagg tgccatcaaa ttggatgaca aaggtccaaa tttcaaagat caagtcattt

29281 tgctgaataa gcatattgac gcatacaaaa cattcccacc aacagagcct aaaaaggaca

29341 aaaagaagaa ggctgatgaa actcaagcct taccgcagag acagaagaaa cagcaaactg

29401 tgactcttct tcctgctgca gatttggatg atttctccaa acaattgcaa caatccatga

29461 gcagtgctga ctcaactcag gcctaaactc atgcagacca cacaaggcag atgggctata

29521 taaacgtttt cgcttttccg tttacgatat atagtctact cttgtgcaga atgaattctc

29581 gtaactacat agcacaagta gatgtagtta actttaatct cacatagcaa tctttaatca

29641 gtgtgtaaca ttagggagga cttgaaagag ccaccacatt ttcaccgagg ccacgcggag

29701 tacgatcgag tgtacagtga acaatgctag ggagagctgc ctatatggaa gagcccta

//