**Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/human/USA/CA-CDC-LC0569601/2022 ORF1ab polyprotein (ORF1ab), ORF1a polyprotein (ORF1ab), surface glycoprotein (S), ORF3a protein (ORF3a), envelope protein (E), membrane glycoprotein (M), ORF6 p...**

GenBank: ON232806.1

[FASTA](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?report=fasta) [Graphics](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?report=graph)

[Go to:](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1" \l "goto2223070807_0)

LOCUS ON232806 29476 bp RNA linear VRL 14-APR-2022

DEFINITION Severe acute respiratory syndrome coronavirus 2 isolate

SARS-CoV-2/human/USA/CA-CDC-LC0569601/2022 ORF1ab polyprotein

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

ORF3a protein (ORF3a), envelope protein (E), membrane glycoprotein

(M), ORF6 protein (ORF6), ORF7a protein (ORF7a), and ORF7b (ORF7b)

genes, complete cds; ORF8 gene, complete sequence; nucleocapsid

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

gene, partial cds.

ACCESSION ON232806

VERSION ON232806.1

DBLINK BioProject: [PRJNA716984](https://www.ncbi.nlm.nih.gov/bioproject/PRJNA716984)

BioSample: [SAMN27575331](https://www.ncbi.nlm.nih.gov/biosample/SAMN27575331)

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 29476)

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., Agarwal,M., Almasri,E.,

Boles,D., Burns,A., Charoensri,N., Cohen,O., Countryman,S.,

Cristobal,M.A., Croy,B., Dale,S., Deshmukh,H., Douglas,A.,

Drouillon,V., Eisenberg,M., Engler,H., Ghatti,R., Gupta,P.,

Hicks,S., Humphrey,J., Iyer,L., Pfefferle,L., Jain,M., Robinson,M.,

Kolli,M., Krueger,B., Kuphal,T., Letovsky,S., Levandoski,M.,

Lukasik,C., Meltzer,J., Norvell,B., Nye,M., Parker,S.,

Petropoulos,C., Pruitt,J., Ragan,S., Ryan,S., Sapeta,M.,

Schroth,J., Selvaraju,S.B., Stevovic,G., Suchanek,A., Throop,A.,

Tilson,L., Urban,T., Voshell,J., Wagner,K., Williams,J.,

Williamson,M., Zeng,Q., Zwiefelhofer,T., Paden,C.R. and

MacCannell,D.

TITLE CDC Sars CoV2 Sequencing Baseline Constellation

JOURNAL Unpublished

REFERENCE 2 (bases 1 to 29476)

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., Agarwal,M.,

Almasri,E., Boles,D., Burns,A., Charoensri,N., Cohen,O.,

Countryman,S., Cristobal,M.A., Croy,B., Dale,S., Deshmukh,H.,

Douglas,A., Drouillon,V., Eisenberg,M., Engler,H., Ghatti,R.,

Gupta,P., Hicks,S., Humphrey,J., Iyer,L., Pfefferle,L., Jain,M.,

Robinson,M., Kolli,M., Krueger,B., Kuphal,T., Letovsky,S.,

Levandoski,M., Lukasik,C., Meltzer,J., Norvell,B., Nye,M.,

Parker,S., Petropoulos,C., Pruitt,J., Ragan,S., Ryan,S., Sapeta,M.,

Schroth,J., Selvaraju,S.B., Stevovic,G., Suchanek,A., Throop,A.,

Tilson,L., Urban,T., Voshell,J., Wagner,K., Williams,J.,

Williamson,M., Zeng,Q., Zwiefelhofer,T., Paden,C.R. and

MacCannell,D.

TITLE Direct Submission

JOURNAL Submitted (14-APR-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 :: CLC Genomics

Sequencing Technology :: PacBio Sequel II

##Assembly-Data-END##

FEATURES Location/Qualifiers

source 1..29476

/organism="Severe acute respiratory syndrome coronavirus

2"

/mol\_type="genomic RNA"

/isolate="SARS-CoV-2/human/USA/CA-CDC-LC0569601/2022"

/isolation\_source="Nasal Swabs"

/host="Homo sapiens"

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

/country="USA: California"

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

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=131&to=21411) 131..21411

/gene="ORF1ab"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?location=131:13324,13324:21411) join(131..13324,13324..21411)

/gene="ORF1ab"

/ribosomal\_slippage

/codon\_start=1

/product="ORF1ab polyprotein"

/protein\_id="[UOW16385.1](https://www.ncbi.nlm.nih.gov/protein/2223070808)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHRYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTG

DFVKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESG

LKTILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNL

LEILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGN

FKVTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAA

ITILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKL

KPVLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLV

NKFLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEII

FLEGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEK

YCALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNIIFELDERIDKVLNEK

CSAYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEF

KLASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPE

EEQEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSG

YLKLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVAGALNKATNNAMQVESD

DYIATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLLKSAYENFNQHEVLLA

PLLSAGIFGADPIHSLRVCVDTVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIA

EIPKEEVKPFITESKPSVEQRKQDDKKIKACVEEVTTTLEETKFLTENLLLYIDINGN

LHPDSATLVSDIDITFLKKDAPYIVGDVVQEGVLTAVVIPTKKASGTTEMLAKALRKV

PTDNYITTYPGQGLNGYTVEEAKTVLKKCKSAFYILPSIISNEKQEILGTVSWNLREM

LAHAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGAKFYFYTSKTTVASLIN

TLNDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSS

KTPEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVIT

FDNLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPH

NSHEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIK

WADNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELG

DVRETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQ

IPCTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSK

ETLYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYY

KKDNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVT

FFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWST

KPVETSNSFDVLKSEDAQGMDNLAXXXXXXXXXXXXXXXXXQKDVLECNVKTTEVVGD

IILKPANNXXKITEEVXXXXXXAAYVDNSSLTIKKPNELSRVLGLKTLATHGLAAVNS

VPWDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYMPYFFTLLLQLCTFTRSTNSRI

KASMPTTIAKNTVKSVGKFCLEASFNYLKSPNFSKLINIIIWFLLLSVCLGSXXXXXX

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXPCSVCLSXLDSLDTYPSLET

IQITISSFKWDLTAXXXXXEWFLAYILFTRFFYVLGLAAIMQLFFSYFAVHFISNSWL

MWLIINLVQMAPISAMVRMYIFFASFYYVWKSYVHVVDGCNSSTCMMCYKRNRATRVE

CTTIVNGVRRSFYVYANGGKGFCKLHNWNCVNCDTFCAGSTFISDEVARDLSLQFKRP

INPTDQSSYIVDSVTVKNGSIHLYFDKAGQKTYERHSLSHFVNLDNLRANNTKGSLPI

NVIVFDGKSKCEESSAKSASVYYSQLMCQPILLLDQALVSDVGDSAEVAVKMFDAYVN

TFSSTFNVPMEKLKTLVATAEAELAKNVSLDNVLSTFISAARQGFVDSDVETKDVVEC

LKLSHQSDIEVTGDSCNNYMLTYNKVENMTPRDLGACIDCSARHINAQVAKSHNIALI

WNVKDFMSLSEQLRKQIRSAAKKNNLPFKLTCATTRQVVNVVTTKIALKGGKIVNNWL

KQLIKVTLVFLFVAAIFYLITPVHVMSKHTDFSSEIIGYKAIDGGVTRDIASTDTCFA

NKHADFDTWFSQRGGSYTNDKACPLIAAVITREVGFVVPGLPGTILRTTNGDFLHFLP

RVFSAVGNICYTPSKLIEYTDFATSACVLAAECTIFKDASGKPVPYCYDTNVLEGSVA

YESLRPDTRYVLMDGSIIQFPNTYLEGSVRVVTTFDSEYCRHGTCERSEAGVCVSTSG

RWVLNNDYYRSLPGVFCGVDAVNLFTNMFTPLIQPIGALDISASIVAGGIVAIVVTCL

AYYFMRFRRAFGEYSHVVAFNTLLFLMSFIVLCLTPVYSFLPGVYSVIYLYLTFYLTN

DVSFLAHIQWMVMFTPLVPFWITIAYIICISTKHFYWFFSNYLKRRVVFNGVSFSTFE

EAALCTFLLNKEMYLKLRSDVLLPFTQYNRYLALYNKYKYFSGAMDTTSYREAACCHL

AKALNDFSNSGSDVLYQPPQISITSAVLQSGFRKMAFPSGKVEGCMVQVTCGTTTLNG

LWLDDVVYCPRHVICTSEDMLNPNYEDLLIRKSNHNFLVQAGNVQLRVIGHSMQNCVL

KLKVDTANPKTPKYKFVRIQPGQTFSVLACYNGSPSGVYQCAMRHNFTIKGSFLNGSC

GSVGFNIDYDCVSFCYMHHMELPTGVHAGTDLEGNFYGPFVDRQTAQAAGTDTTITVN

VLAWLYAAVINGDRWFLNRFTTTLNDFNLVAMKYNYEPLTQDHVDILGPLSAQTGIAV

LDMCASLKELLQNGMNGRTILGSALLEDEFTPFDVVRQCSGVTFQSAVKRTIKGTHHW

LLLTILTSLLVLVQSTQWSLFFFLYENAFLPFAMGIIAMSAFAMMFVKHKHAFLCLFL

LPSLATVAYFNMVYMPASWVMRIMTWLDMVDTSLKLKDCVMYASAVVLLILMTARTVY

DDGARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGIV

FMCVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVST

QEFRYMNSQGLLPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSV

LQQLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEE

MLDNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEF

DRDAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNII

NNARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSK

IVQLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTD

DNALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGP

KVKYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYK

DYLASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNP

KGFCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKGYGCSCDQLREPMLQSADAQ

SFLNRVCGVSAARLTPCGTGTSTDVVYRAFDIYNDKVAGFAKFLKTNCCRFQEKDEDD

NLIDSYFVVKRHTFSNYQHEETIYNLLKDCPAVAKHDFFKFRIDGDMVPHISRQRLTK

YTMADLVYALRHFDEGNCDTLKEILVTYNCCDDDYFNKKDWYDFVENPDILRVYANLG

ERVRQALLKTVQFCDAMRNAGIVGVLTLDNQDLNGNWYDFGDFIQTTPGSGVPVVDSY

YSLLMPILTLTRALTAESHVDTDLTKPYIKWDLLKYDFTEERLKLFDRYFKYWDQTYH

PNCVNCLDDRCILHCANFNVLFSTVFPLTSFGPLVRKIFVDGVPFVVSTGYHFRELGV

VHNQDVNLHSSRLSFKELLVYAADPAMHAASGNLLLDKRTTCFSVAALTNNVAFQTVK

PGNFNKDFYDFAVSKGFFKEGSSVELKHFFFAQDGNAAISDYDYYRYNLPTMCDIRQL

LFVVEVVDKYFDCYDGGCINANQVIVNNLDKSAGFPFNKWGKARLYYDSMSYEDQDAL

FAYTKRNVIPTITQMNLKYAISAKNRARTVAGVSICSTMTNRQFHQKLLKSIAATRGA

TVVIGTSKFYGGWHNMLKTVYSDVENPHLMGWDYPKCDRAMPNMLRIMASLVLARKHT

TCCSLSHRFYRLANECAQVLSEMVMCGGSLYVKPGGTSSGDATTAYANSVFNICQAVT

ANVNALLSTDGNKIADKYVRNLQHRLYECLYRNRDVDTDFVNEFYAYLRKHFSMMILS

DDAVVCFNSTYASQGLVASIKNFKSVLYYQNNVFMSEAKCWTETDLTKGPHEFCSQHT

MLVKQGDDYVYLPYPDPSRILGAGCFVDDIVKTDGTLMIERFVSLAIDAYPLTKHPNQ

EYADVFHLYLQYIRKLHDELTGHMLDMYSVMLTNDNTSRYWEPEFYEAMYTPHTVLQA

VGACVLCNSQTSLRCGACIRRPFLCCKCCYDHVISTSHKLVLSVNPYVCNAPGCDVTD

VTQLYLGGMSYYCKSHKPPISFPLCANGQVFGLYKNTCVGSDNVTDFNAIATCDWTNA

GDYILANTCTERLKLFAAETLKATEETFKLSYGIATVREVLSDRELHLSWEVGKPRPP

LNRNYVFTGYRVTKNSKVQIGEYTFEKGDYGDAVVYRGTTTYKLNVGDYFVLTSHTVM

PLSAPTLVPQEHYVRITGLYPTLNISDEFSSNVANYQKVGMQKYSTLQGPPGTGKSHF

AIGLALYYPSARIVYTACSHAAVDALCEKALKYLPIDKCSRIIPARARVECFDKFKVN

STLEQYVFCTVNALPETTADIVVFDEISMATNYDLSVVNARLCAKHYVYIGDPAQLPA

PRTLLTKGTLEPEYFNSVCRLMKTIGPDMFLGTCRRCPAEIVDTVSALVYDNKLKAHK

DKSAQCFKMFYKGVITHDVSSAINRPQIGVVREFLTRNPAWRKAVFISPYNSQNAVAS

KILGLPTQTVDSSQGSEYDYVIFTQTTETAHSCNVNRFNVAITRAKVGILCIMSDRDL

YDKLQFTSLEIPRRNVATLQAENVTGLFKDCSKVITGLHPTQAPTHLSVDTKFKTEGL

CVDVPGIPKDMTYRRLISMMGFKMNYQVNGYPNMFITREEAIRHVRAWIGFDVEGCHA

TREAVGTNLPLQLGFSTGVNLVAVPTGYVDTPNNTDFSRVSAKPPPGDQFKHLIPLMY

KGLPWNVVRIKIVQMLSDTLKNLSDRVVFVLWAHGFELTSMKYFVKIGPERTCCLCDR

RATCFSTASDTYACWHHSIGFDYVYNPFMIDVQQWGFTGNLQSNHDLYCQVHGNAHVA

SCDAIMTRCLAVHECFVKRVDWTIEYPIIGDELKINAACRKVQHMVVKAALLADKFPV

LHDIGNPKAIKCVPQADVEWKFYDAQPCSDKAYKIEELFYSYATHSDKFTDGVCLFWN

CNVDRYPANSIVCRFDTRVLSNLNLPGCDGGSLYVNKHAFHTPAFDKSAFVNLKQLPF

FYYSDSPCESHGKQVVSDIDYVPLKSATCITRCNLGGAVCRHHANEYRLYLDAYNMMI

SAGFSLWVYKQFDTYNLWNTFTRLQSLENVAFNVVNKGHFDGQQGEVPVSIINNTVYT

KVDGVDVELFENKTTLPVNVAFELWAKRNIKPVPEVKILNNLGVDIAANTVIWDYKRD

APAHISTIGVCSMTDIAKKPIETICAPLTVFFDGRVDGQVDLFRNARNGVLITEGSVK

GLQPSVGPKQASLNGVTLIGEAVKTQFNYYKKVDGVVQQLPETYFTQSRNLQEFKPRS

QMEIDFLELAMDEFIERYKLEGYAFEHIVYGDFSHSQLGGLHLLIGLAKRFKESPFEL

EDFIPMDSTVKNYFITDAQTGSSKCVCSVIDLLLDDFVEIIKSQDLSVVSKVVKVTID

YTEISFMLWCKDGHVETFYPKLQSSQAWQPGVAMPNLYKMQRMLLEKCDLQNYGDSAT

LPKGIMMNVAKYTQLCQYLNTLTLAVPYNMRVIHFGAGSDKGVAPGTAVLRQWLPTGT

LLVDSDLNDFVSDADSTLIGDCATVHTANKWDLIISDMYDPKTKNVTKENDSKEGFFT

YICGFIQQKLALGGSVAIKITEHSWNADLYKLMGHFAWWTAFVTNVNASSSEAFLIGC

NYLGKPREQIDGYVMHANYIFWRNTNPIQLSSYSLFDMSKFPLKLRGTAVMSLKEGQI

NDMILSLLSKGRLIIRENNRVVISSDVLVNN"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16385.1?from=1&to=180) 131..670

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16385.1?from=181&to=818) 671..2584

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16385.1?from=819&to=2763) 2585..8419

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16385.1?from=2764&to=3263) 8420..9919

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16385.1?from=3264&to=3569) 9920..10837

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16385.1?from=3570&to=3856) 10838..11698

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16385.1?from=3857&to=3939) 11699..11947

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16385.1?from=3940&to=4137) 11948..12541

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16385.1?from=4138&to=4250) 12542..12880

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16385.1?from=4251&to=4389) 12881..13297

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16385.1?from=4390&to=5321) join(13298..13324,13324..16092)

/gene="ORF1ab"

/product="RNA-dependent RNA polymerase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16385.1?from=5322&to=5922) 16093..17895

/gene="ORF1ab"

/product="helicase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16385.1?from=5923&to=6449) 17896..19476

/gene="ORF1ab"

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

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16385.1?from=6450&to=6795) 19477..20514

/gene="ORF1ab"

/product="endoRNAse"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16385.1?from=6796&to=7093) 20515..21408

/gene="ORF1ab"

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

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=131&to=13339) 131..13339

/gene="ORF1ab"

/codon\_start=1

/product="ORF1a polyprotein"

/protein\_id="[UOW16386.1](https://www.ncbi.nlm.nih.gov/protein/2223070809)"

/translation="MESLVPGFNEKTHVQLSLPVLQVRDVLVRGFGDSVEEVLSEARQ

HLKDGTCGLVEVEKGVLPQLEQPYVFIKRSDARTAPHGHVMVELVAELEGIQYGRSGE

TLGVLVPHVGEIPVAYRKVLLRKNGNKGAGGHRYGADLKSFDLGDELGTDPYEDFQEN

WNTKHSSGVTRELMRELNGGAYTRYVDNNFCGPDGYPLECIKDLLARAGKASCTLSEQ

LDFIDTKRGVYCCREHEHEIAWYTERSEKSYELQTPFEIKLAKKFDTFNGECPNFVFP

LNSIIKTIQPRVEKKKLDGFMGRIRSVYPVASPNECNQMCLSTLMKCDHCGETSWQTG

DFVKATCEFCGTENLTKEGATTCGYLPQNAVVKIYCPACHNSEVGPEHSLAEYHNESG

LKTILRKGGRTIAFGGCVFSYVGCHNKCAYWVPRASANIGCNHTGVVGEGSEGLNDNL

LEILQKEKVNINIVGDFKLNEEIAIILASFSASTSAFVETVKGLDYKAFKQIVESCGN

FKVTKGKAKKGAWNIGEQKSILSPLYAFASEAARVVRSIFSRTLETAQNSVRVLQKAA

ITILDGISQYSLRLIDAMMFTSDLATNNLVVMAYITGGVVQLTSQWLTNIFGTVYEKL

KPVLDWLEEKFKEGVEFLRDGWEIVKFISTCACEIVGGQIVTCAKEIKESVQTFFKLV

NKFLALCADSIIIGGAKLKALNLGETFVTHSKGLYRKCVKSREETGLLMPLKAPKEII

FLEGETLPTEVLTEEVVLKTGDLQPLEQPTSEAVEAPLVGTPVCINGLMLLEIKDTEK

YCALAPNMMVTNNTFTLKGGAPTKVTFGDDTVIEVQGYKSVNIIFELDERIDKVLNEK

CSAYTVELGTEVNEFACVVADAVIKTLQPVSELLTPLGIDLDEWSMATYYLFDESGEF

KLASHMYCSFYPPDEDEEEGDCEEEEFEPSTQYEYGTEDDYQGKPLEFGATSAALQPE

EEQEEDWLDDDSQQTVGQQDGSEDNQTTTIQTIVEVQPQLEMELTPVVQTIEVNSFSG

YLKLTDNVYIKNADIVEEAKKVKPTVVVNAANVYLKHGGGVAGALNKATNNAMQVESD

DYIATNGPLKVGGSCVLSGHNLAKHCLHVVGPNVNKGEDIQLLKSAYENFNQHEVLLA

PLLSAGIFGADPIHSLRVCVDTVRTNVYLAVFDKNLYDKLVSSFLEMKSEKQVEQKIA

EIPKEEVKPFITESKPSVEQRKQDDKKIKACVEEVTTTLEETKFLTENLLLYIDINGN

LHPDSATLVSDIDITFLKKDAPYIVGDVVQEGVLTAVVIPTKKASGTTEMLAKALRKV

PTDNYITTYPGQGLNGYTVEEAKTVLKKCKSAFYILPSIISNEKQEILGTVSWNLREM

LAHAEETRKLMPVCVETKAIVSTIQRKYKGIKIQEGVVDYGAKFYFYTSKTTVASLIN

TLNDLNETLVTMPLGYVTHGLNLEEAARYMRSLKVPATVSVSSPDAVTAYNGYLTSSS

KTPEEHFIETISLAGSYKDWSYSGQSTQLGIEFLKRGDKSVYYTSNPTTFHLDGEVIT

FDNLKTLLSLREVRTIKVFTTVDNINLHTQVVDMSMTYGQQFGPTYLDGADVTKIKPH

NSHEGKTFYVLPNDDTLRVEAFEYYHTTDPSFLGRYMSALNHTKKWKYPQVNGLTSIK

WADNNCYLATALLTLQQIELKFNPPALQDAYYRARAGEAANFCALILAYCNKTVGELG

DVRETMSYLFQHANLDSCKRVLNVVCKTCGQQQTTLKGVEAVMYMGTLSYEQFKKGVQ

IPCTCGKQATKYLVQQESPFVMMSAPPAQYELKHGTFTCASEYTGNYQCGHYKHITSK

ETLYCIDGALLTKSSEYKGPITDVFYKENSYTTTIKPVTYKLDGVVCTEIDPKLDNYY

KKDNSYFTEQPIDLVPNQPYPNASFDNFKFVCDNIKFADDLNQLTGYKKPASRELKVT

FFPDLNGDVVAIDYKHYTPSFKKGAKLLHKPIVWHVNNATNKATYKPNTWCIRCLWST

KPVETSNSFDVLKSEDAQGMDNLAXXXXXXXXXXXXXXXXXQKDVLECNVKTTEVVGD

IILKPANNXXKITEEVXXXXXXAAYVDNSSLTIKKPNELSRVLGLKTLATHGLAAVNS

VPWDTIANYAKPFLNKVVSTTTNIVTRCLNRVCTNYMPYFFTLLLQLCTFTRSTNSRI

KASMPTTIAKNTVKSVGKFCLEASFNYLKSPNFSKLINIIIWFLLLSVCLGSXXXXXX

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXPCSVCLSXLDSLDTYPSLET

IQITISSFKWDLTAXXXXXEWFLAYILFTRFFYVLGLAAIMQLFFSYFAVHFISNSWL

MWLIINLVQMAPISAMVRMYIFFASFYYVWKSYVHVVDGCNSSTCMMCYKRNRATRVE

CTTIVNGVRRSFYVYANGGKGFCKLHNWNCVNCDTFCAGSTFISDEVARDLSLQFKRP

INPTDQSSYIVDSVTVKNGSIHLYFDKAGQKTYERHSLSHFVNLDNLRANNTKGSLPI

NVIVFDGKSKCEESSAKSASVYYSQLMCQPILLLDQALVSDVGDSAEVAVKMFDAYVN

TFSSTFNVPMEKLKTLVATAEAELAKNVSLDNVLSTFISAARQGFVDSDVETKDVVEC

LKLSHQSDIEVTGDSCNNYMLTYNKVENMTPRDLGACIDCSARHINAQVAKSHNIALI

WNVKDFMSLSEQLRKQIRSAAKKNNLPFKLTCATTRQVVNVVTTKIALKGGKIVNNWL

KQLIKVTLVFLFVAAIFYLITPVHVMSKHTDFSSEIIGYKAIDGGVTRDIASTDTCFA

NKHADFDTWFSQRGGSYTNDKACPLIAAVITREVGFVVPGLPGTILRTTNGDFLHFLP

RVFSAVGNICYTPSKLIEYTDFATSACVLAAECTIFKDASGKPVPYCYDTNVLEGSVA

YESLRPDTRYVLMDGSIIQFPNTYLEGSVRVVTTFDSEYCRHGTCERSEAGVCVSTSG

RWVLNNDYYRSLPGVFCGVDAVNLFTNMFTPLIQPIGALDISASIVAGGIVAIVVTCL

AYYFMRFRRAFGEYSHVVAFNTLLFLMSFIVLCLTPVYSFLPGVYSVIYLYLTFYLTN

DVSFLAHIQWMVMFTPLVPFWITIAYIICISTKHFYWFFSNYLKRRVVFNGVSFSTFE

EAALCTFLLNKEMYLKLRSDVLLPFTQYNRYLALYNKYKYFSGAMDTTSYREAACCHL

AKALNDFSNSGSDVLYQPPQISITSAVLQSGFRKMAFPSGKVEGCMVQVTCGTTTLNG

LWLDDVVYCPRHVICTSEDMLNPNYEDLLIRKSNHNFLVQAGNVQLRVIGHSMQNCVL

KLKVDTANPKTPKYKFVRIQPGQTFSVLACYNGSPSGVYQCAMRHNFTIKGSFLNGSC

GSVGFNIDYDCVSFCYMHHMELPTGVHAGTDLEGNFYGPFVDRQTAQAAGTDTTITVN

VLAWLYAAVINGDRWFLNRFTTTLNDFNLVAMKYNYEPLTQDHVDILGPLSAQTGIAV

LDMCASLKELLQNGMNGRTILGSALLEDEFTPFDVVRQCSGVTFQSAVKRTIKGTHHW

LLLTILTSLLVLVQSTQWSLFFFLYENAFLPFAMGIIAMSAFAMMFVKHKHAFLCLFL

LPSLATVAYFNMVYMPASWVMRIMTWLDMVDTSLKLKDCVMYASAVVLLILMTARTVY

DDGARRVWTLMNVLTLVYKVYYGNALDQAISMWALIISVTSNYSGVVTTVMFLARGIV

FMCVEYCPIFFITGNTLQCIMLVYCFLGYFCTCYFGLFCLLNRYFRLTLGVYDYLVST

QEFRYMNSQGLLPPKNSIDAFKLNIKLLGVGGKPCIKVATVQSKMSDVKCTSVVLLSV

LQQLRVESSSKLWAQCVQLHNDILLAKDTTEAFEKMVSLLSVLLSMQGAVDINKLCEE

MLDNRATLQAIASEFSSLPSYAAFATAQEAYEQAVANGDSEVVLKKLKKSLNVAKSEF

DRDAAMQRKLEKMADQAMTQMYKQARSEDKRAKVTSAMQTMLFTMLRKLDNDALNNII

NNARDGCVPLNIIPLTTAAKLMVVIPDYNTYKNTCDGTTFTYASALWEIQQVVDADSK

IVQLSEISMDNSPNLAWPLIVTALRANSAVKLQNNELSPVALRQMSCAAGTTQTACTD

DNALAYYNTTKGGRFVLALLSDLQDLKWARFPKSDGTGTIYTELEPPCRFVTDTPKGP

KVKYLYFIKGLNNLNRGMVLGSLAATVRLQAGNATEVPANSTVLSFCAFAVDAAKAYK

DYLASGGQPITNCVKMLCTHTGTGQAITVTPEANMDQESFGGASCCLYCRCHIDHPNP

KGFCDLKGKYVQIPTTCANDPVGFTLKNTVCTVCGMWKGYGCSCDQLREPMLQSADAQ

SFLNGFAV"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16386.1?from=1&to=180) 131..670

/gene="ORF1ab"

/product="leader protein"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16386.1?from=181&to=818) 671..2584

/gene="ORF1ab"

/product="nsp2"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16386.1?from=819&to=2763) 2585..8419

/gene="ORF1ab"

/product="nsp3"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16386.1?from=2764&to=3263) 8420..9919

/gene="ORF1ab"

/product="nsp4"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16386.1?from=3264&to=3569) 9920..10837

/gene="ORF1ab"

/product="3C-like proteinase"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16386.1?from=3570&to=3856) 10838..11698

/gene="ORF1ab"

/product="nsp6"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16386.1?from=3857&to=3939) 11699..11947

/gene="ORF1ab"

/product="nsp7"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16386.1?from=3940&to=4137) 11948..12541

/gene="ORF1ab"

/product="nsp8"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16386.1?from=4138&to=4250) 12542..12880

/gene="ORF1ab"

/product="nsp9"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16386.1?from=4251&to=4389) 12881..13297

/gene="ORF1ab"

/product="nsp10"

[mat\_peptide](https://www.ncbi.nlm.nih.gov/protein/UOW16386.1?from=4390&to=4402) 13298..13336

/gene="ORF1ab"

/product="nsp11"

gap 6856..6986

/estimated\_length=131

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=13332&to=13359) 13332..13359

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 1"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=13344&to=13398) 13344..13398

/gene="ORF1ab"

/note="Coronavirus frameshifting stimulation element

stem-loop 2"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=21419&to=25231) 21419..25231

/gene="S"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=21419&to=25231) 21419..25231

/gene="S"

/codon\_start=1

/product="surface glycoprotein"

/protein\_id="[UOW16387.1](https://www.ncbi.nlm.nih.gov/protein/2223070810)"

/translation="MFVFLVLLPLVSSQCVNLTTRTQSYTNSFTRGVYYPDKVFRSSV

LHSTQDLFLPFFSNVTWFHAIHVSGTNGTKRFDNPVLPFNDGVYFASTEKSNIIRGWI

FGTTLDSKTQSLLIVNNATNVVIKVCEFQFCNDPFLDVYYHKNNKSWMESEFRVYSSA

NNCTFEYVSQPFLMDLEGKQGNFKNLREFVFKNIDGYFKIYSKHTPINLGRDLPQGFS

ALEPLVDLPIGINITRFQTLLALHRSYLTPGDSSSGWTAGAAAYYVGYLQPRTFLLKY

NENGTITDAVDCALDPLSETKCTLKSFTVEKGIYQTSNFRVQPTESIVRFPNITNLCP

FDEVFNATRFASVYAWNRKRISNCVADYSVLYNFAPFFAFKCYGVSPTKLNDLCFTNV

YADSFVIRGNEVSQIAPGQTGNIADYNYKLPDDFTGCVIAWNSNKLDSKVGGNYNYLY

RLFRKSNLKPFERDISTEIYQAGNKPCNGVAGFNCYFPLRSYGFRPTYGVGHQPYRVV

VLSFELLHAPATVCGPKKSTNLVKNKCVNFNFNGLTGTGVLTESNKKFLPFQQFGRDI

ADTTDAVRDPQTLEILDITPCSFGGVSVITPGTNTSNQVAVLYQGVNCTEVPVAIHAD

QLTPTWRVYSTGSNVFQTRAGCLIGAEYVNNSYECDIPIGAGICASYQTQTKSHRRAR

SVASQSIIAYTMSLGAENSVAYSNNSIAIPTNFTISVTTEILPVSMTKTSVDCTMYIC

GDSTECSNLLLQYGSFCTQLKRALTGIAVEQDKNTQEVFAQVKQIYKTPPIKYFGGFN

FSQILPDPSKPSKRSFIEDLLFNKVTLADAGFIKQYGDCLGDIAARDLICAQKFNGLT

VLPPLLTDEMIAQYTSALLAGTITSGWTFGAGAALQIPFAMQMAYRFNGIGVTQNVLY

ENQKLIANQFNSAIGKIQDSLSSTASALGKLQDVVNHNAQALNTLVKQLSSKFGAISS

VLNDILSRLDKVEAEVQIDRLITGRLQSLQTYVTQQLIRAAEIRASANLAATKMSECV

LGQSKRVDFCGKGYHLMSFPQSAPHGVVFLHVTYVPAQEKNFTTAPAICHDGKAHFPR

EGVFVSNGTHWFVTQRNFYEPQIITTDNTFVSGNCDVVIGIVNNTVYDPLQPELDSFK

EELDKYFKNHTSPDVDLGDISGINASVVNIQKEIDRLNEVAKNLNESLIDLQELGKYE

QYIKWPWYIWLGFIAGLIAIVMVTIMLCCMTSCCSCLKGCCSCGSCCKFDEDDSEPVL

KGVKLHYT"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=25240&to=26067) 25240..26067

/gene="ORF3a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=25240&to=26067) 25240..26067

/gene="ORF3a"

/codon\_start=1

/product="ORF3a protein"

/protein\_id="[UOW16388.1](https://www.ncbi.nlm.nih.gov/protein/2223070811)"

/translation="MDLFMRIFTIGTVTLKQGEIKDATPSDFVRATATIPIQASLPFG

WLIVGVALLAVFQSASKIITLKKRWQLALSKGVHFVCNLLLLFVTVYSHLLLVAAGLE

APFLYLYALVYFLQSINFVRIIMRLWLCWKCRSKNPLLYDANYFLCWHTNCYDYCIPY

NSVTSSIVITSGDGTTSPISEHDYQIGGYTEKWESGVKDCVVLHSYFTSDYYQLYSTQ

LSTDIGVEHVTFFIYNKIVDEPEEHVQIHTIDGSSGVVNPVMEPIYDEPTTTTSVPL"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=26092&to=26319) 26092..26319

/gene="E"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=26092&to=26319) 26092..26319

/gene="E"

/codon\_start=1

/product="envelope protein"

/protein\_id="[UOW16389.1](https://www.ncbi.nlm.nih.gov/protein/2223070812)"

/translation="MYSFVSEEIGTLIVNSVLLFLAFVVFLLVTLAILTALRLCAYCC

NIVNVSLVKPSFYVYSRVKNLNSSRVPDLLV"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=26370&to=27038) 26370..27038

/gene="M"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=26370&to=27038) 26370..27038

/gene="M"

/codon\_start=1

/product="membrane glycoprotein"

/protein\_id="[UOW16390.1](https://www.ncbi.nlm.nih.gov/protein/2223070813)"

/translation="MADSNGTITVEELKKLLEEWNLVIGFLFLTWICLLQFAYANRNR

FLYIIKLIFLWLLWPVTLTCFVLAAVYRINWITGGIAIAMACLVGLMWLSYFIASFRL

FARTRSMWSFNPETNILLNVPLHGTILTRPLLESELVIGAVILRGHLRIAGHHLGRCD

IKDLPKEITVATSRTLSYYKLGASQRVAGDSGFAAYSRYRIGNYKLNTDHSSSSDNIA

LLVQ"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=27049&to=27234) 27049..27234

/gene="ORF6"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=27049&to=27234) 27049..27234

/gene="ORF6"

/codon\_start=1

/product="ORF6 protein"

/protein\_id="[UOW16391.1](https://www.ncbi.nlm.nih.gov/protein/2223070814)"

/translation="MFHLVDFQVTIAEILLIIMRTFKVSIWNLDYIINLIIKNLSKSL

TENKYSQLDEEQPMEIL"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=27241&to=27606) 27241..27606

/gene="ORF7a"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=27241&to=27606) 27241..27606

/gene="ORF7a"

/codon\_start=1

/product="ORF7a protein"

/protein\_id="[UOW16392.1](https://www.ncbi.nlm.nih.gov/protein/2223070815)"

/translation="MKIILFLALITLATCELYHYQECVRGTTVLLKEPCSSGTYEGNS

PFHPLADNKFALTCFSTQFAFACPDGVKHVYQLRARSVSPKLFIRQEEVQELYSPIFL

IVAAIVFITLCFTLKRKTE"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=27603&to=27734) 27603..27734

/gene="ORF7b"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=27603&to=27734) 27603..27734

/gene="ORF7b"

/codon\_start=1

/product="ORF7b"

/protein\_id="[UOW16393.1](https://www.ncbi.nlm.nih.gov/protein/2223070816)"

/translation="MIELSLIDFYLCFLAFLLFLVLIMLIIFWFSLELQDHNETCHA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=27741&to=28106) 27741..28106

/gene="ORF8"

[misc\_feature](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=27741&to=28106) 27741..28106

/gene="ORF8"

/note="similar to ORF8 protein"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=28121&to=29371) 28121..29371

/gene="N"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=28121&to=29371) 28121..29371

/gene="N"

/codon\_start=1

/product="nucleocapsid phosphoprotein"

/protein\_id="[UOW16394.1](https://www.ncbi.nlm.nih.gov/protein/2223070817)"

/translation="MSDNGPQNQRNALRITFGGPSDSTGSNQNGGARSKQRRPQGLPN

NTASWFTALTQHGKEDLKFPRGQGVPINTNSSPDDQIGYYRRATRRIXXXXXXMKDLS

PRWYFYYLGTGPEAGLPYGANKDGIIWVATEGALNTPKDHIGTRNPANNAAIVLQLPQ

GTTLPKGFYAEGSRGGSQASSRSSSRSRNSSRNSTPGSSKRTSPARMAGNGGDAALAL

LLLDRLNQLESKMSGKGQQQQGQTVTKKSAAEASKKPRQKRTATKAYNVTQAFGRRGP

EQTQGNFGDQELIRQGTDYKHWPQIAQFAPSASAFFGMSRIGMEVTPSGTWLTYTGAI

KLDDKDPNFKDQVILLNKHIDAYKTFPPTEPKKDKKKKADETQALPQRQKKQQTVTLL

PAADLDDFSKQLQQSMSRADSTQA"

[gene](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=29396&to=29476) 29396..>29476

/gene="ORF10"

[CDS](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=29396&to=29476) 29396..>29476

/gene="ORF10"

/codon\_start=1

/product="ORF10 protein"

/protein\_id="[UOW16395.1](https://www.ncbi.nlm.nih.gov/protein/2223070818)"

/translation="MGYINVFAFPFTIYSLLLCRMNSRNYI"

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=29447&to=29476) 29447..>29476

/gene="ORF10"

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

[stem\_loop](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?from=29467&to=29476) 29467..>29476

/gene="ORF10"

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

ORIGIN

1 ataactaatt actgtcgttg acaggacacg agtaactcgt ctatcttctg caggctgctt

61 acggtttcgt ccgtgttgca gccgatcatc agcacatcta ggttttgtcc gggtgtgacc

121 gaaaggtaag atggagagcc ttgtccctgg tttcaacgag aaaacacacg tccaactcag

181 tttgcctgtt ttacaggttc gcgacgtgct cgtacgtggc tttggagact ccgtggagga

241 ggtcttatca gaggcacgtc aacatcttaa agatggcact tgtggcttag tagaagttga

301 aaaaggcgtt ttgcctcaac ttgaacagcc ctatgtgttc atcaaacgtt cggatgctcg

361 aactgcacct catggtcatg ttatggttga gctggtagca gaactcgaag gcattcagta

421 cggtcgtagt ggtgagacac ttggtgtcct tgtccctcat gtgggcgaaa taccagtggc

481 ttaccgcaag gttcttcttc gtaagaacgg taataaagga gctggtggcc ataggtacgg

541 cgccgatcta aagtcatttg acttaggcga cgagcttggc actgatcctt atgaagattt

601 tcaagaaaac tggaacacta aacatagcag tggtgttacc cgtgaactca tgcgtgagct

661 taacggaggg gcatacactc gctatgtcga taacaacttc tgtggccctg atggctaccc

721 tcttgagtgc attaaagacc ttctagcacg tgctggtaaa gcttcatgca ctttgtccga

781 acaactggac tttattgaca ctaagagggg tgtatactgc tgccgtgaac atgagcatga

841 aattgcttgg tacacggaac gttctgaaaa gagctatgaa ttgcagacac cttttgaaat

901 taaattggca aagaaatttg acaccttcaa tggggaatgt ccaaattttg tatttccctt

961 aaattccata atcaagacta ttcaaccaag ggttgaaaag aaaaagcttg atggctttat

1021 gggtagaatt cgatctgtct atccagttgc gtcaccaaat gaatgcaacc aaatgtgcct

1081 ttcaactctc atgaagtgtg atcattgtgg tgaaacttca tggcagacgg gcgattttgt

1141 taaagccact tgcgaatttt gtggcactga gaatttgact aaagaaggtg ccactacttg

1201 tggttactta ccccaaaatg ctgttgttaa aatttattgt ccagcatgtc acaattcaga

1261 agtaggacct gagcatagtc ttgccgaata ccataatgaa tctggcttga aaaccattct

1321 tcgtaagggt ggtcgcacta ttgcctttgg aggctgtgtg ttctcttatg ttggttgcca

1381 taacaagtgt gcctattggg ttccacgtgc tagcgctaac ataggttgta accatacagg

1441 tgttgttgga gaaggttccg aaggtcttaa tgacaacctt cttgaaatac tccaaaaaga

1501 gaaagtcaac atcaatattg ttggtgactt taaacttaat gaagagatcg ccattatttt

1561 ggcatctttt tctgcttcca caagtgcttt tgtggaaact gtgaaaggtt tggattataa

1621 agcattcaaa caaattgttg aatcctgtgg taattttaaa gttacaaaag gaaaagctaa

1681 aaaaggtgcc tggaatattg gtgaacagaa atcaatactg agtcctcttt atgcatttgc

1741 atcagaggct gctcgtgttg tacgatcaat tttctcccgc actcttgaaa ctgctcaaaa

1801 ttctgtgcgt gttttacaga aggccgctat aacaatacta gatggaattt cacagtattc

1861 actgagactc attgatgcta tgatgttcac atctgatttg gctactaaca atctagttgt

1921 aatggcctac attacaggtg gtgttgttca gttgacttcg cagtggctaa ctaacatctt

1981 tggcactgtt tatgaaaaac tcaaacccgt ccttgattgg cttgaagaga agtttaagga

2041 aggtgtagag tttcttagag acggttggga aattgttaaa tttatctcaa cctgtgcttg

2101 tgaaattgtc ggtggacaaa ttgtcacctg tgcaaaggaa attaaggaga gtgttcagac

2161 attctttaag cttgtaaata aatttttggc tttgtgtgct gactctatca ttattggtgg

2221 agctaaactt aaagccttga atttaggtga aacatttgtc acgcactcaa agggattgta

2281 cagaaagtgt gttaaatcca gagaagaaac tggcctactc atgcctctaa aagccccaaa

2341 agaaattatc ttcttagagg gagaaacact tcccacagaa gtgttaacag aggaagttgt

2401 cttgaaaact ggtgatttac aaccattaga acaacctact agtgaagctg ttgaagctcc

2461 attggttggt acaccagttt gtattaacgg gcttatgttg ctcgaaatca aagacacaga

2521 aaagtactgt gcccttgcac ctaatatgat ggtaacaaac aataccttca cactcaaagg

2581 cggtgcacca acaaaggtta cttttggtga tgacactgtg atagaagtgc aaggttacaa

2641 gagtgtgaat atcatttttg aacttgatga aaggattgat aaagtactta atgagaagtg

2701 ctctgcctat acagttgaac tcggtacaga agtaaatgag ttcgcctgtg ttgtggcaga

2761 tgctgtcata aaaactttgc aaccagtatc tgaattactt acaccactgg gcattgattt

2821 agatgagtgg agtatggcta catactactt atttgatgag tctggtgagt ttaaattggc

2881 ttcacatatg tattgttctt tttaccctcc agatgaggat gaagaagaag gtgattgtga

2941 agaagaagag tttgagccat caactcaata tgagtatggt actgaagatg attaccaagg

3001 taaacctttg gaatttggtg ccacttctgc tgctcttcaa cctgaagaag agcaagaaga

3061 agattggtta gatgatgata gtcaacaaac tgttggtcaa caagacggca gtgaggacaa

3121 tcagacaact actattcaaa caattgttga ggttcaacct caattagaga tggaacttac

3181 accagttgtt cagactattg aagtgaatag ttttagtggt tatttaaaac ttactgacaa

3241 tgtatacatt aaaaatgcag acattgtgga agaagctaaa aaggtaaaac caacagtggt

3301 tgttaatgca gccaatgttt accttaaaca tggaggaggt gttgcaggag ccttaaataa

3361 ggctactaac aatgccatgc aagttgaatc tgatgattac atagctacta atggaccact

3421 taaagtgggt ggtagttgtg ttttaagcgg acacaatctt gctaaacact gtcttcatgt

3481 tgtcggccca aatgttaaca aaggtgaaga cattcaactt cttaagagtg cttatgaaaa

3541 ttttaatcag cacgaagttc tacttgcacc attattatca gctggtattt ttggtgctga

3601 ccctatacat tctttaagag tttgtgtaga tactgttcgc acaaatgtct acttagctgt

3661 ctttgataaa aatctctatg acaaacttgt ttcaagcttt ttggaaatga agagtgaaaa

3721 gcaagttgaa caaaagatcg ctgagattcc taaagaggaa gttaagccat ttataactga

3781 aagtaaacct tcagttgaac agagaaaaca agatgataag aaaatcaaag cttgtgttga

3841 agaagttaca acaactctgg aagaaactaa gttcctcaca gaaaacttgt tactttatat

3901 tgacattaat ggcaatcttc atccagattc tgccactctt gttagtgaca ttgacatcac

3961 tttcttaaag aaagatgctc catatatagt gggtgatgtt gttcaagagg gtgttttaac

4021 tgctgtggtt atacctacta aaaaggctag tggcactact gaaatgctag cgaaagcttt

4081 gagaaaagtg ccaacagaca attatataac cacttacccg ggtcagggtt taaatggtta

4141 cactgtagag gaggcaaaga cagtgcttaa aaagtgtaaa agtgcttttt acattctacc

4201 atctattatc tctaatgaga agcaagaaat tcttggaact gtttcttgga atttgcgaga

4261 aatgcttgca catgcagaag aaacacgcaa attaatgcct gtctgtgtgg aaactaaagc

4321 catagtttca actatacagc gtaaatataa gggtattaaa atacaagagg gtgtggttga

4381 ttatggtgct aaattttact tttacaccag taaaacaact gtagcgtcac ttatcaacac

4441 acttaacgat ctaaatgaaa ctcttgttac aatgccactt ggctatgtaa cacatggctt

4501 aaatttggaa gaagctgctc ggtatatgag atctctcaaa gtgccagcta cagtttctgt

4561 ttcttcacct gatgctgtta cagcgtataa tggttatctt acttcttctt ctaaaacacc

4621 tgaagaacat tttattgaaa ccatctcact tgctggttcc tataaagatt ggtcctattc

4681 tggacaatct acacaactag gtatagaatt tcttaagaga ggtgataaaa gtgtatatta

4741 cactagtaat cctaccacat tccacctaga tggtgaagtt atcacctttg acaatcttaa

4801 gacacttctt tctttgagag aagtgaggac tattaaggtg tttacaacag tagacaacat

4861 taacctccac acgcaagttg tggacatgtc aatgacatat ggacaacagt ttggtccaac

4921 ttatttggat ggagctgatg ttactaaaat aaaacctcat aattcacatg aaggtaaaac

4981 attttatgtt ttacctaatg atgacactct acgtgttgag gcttttgagt actaccacac

5041 aactgatcct agttttctgg gtaggtacat gtcagcatta aatcacacta aaaagtggaa

5101 atacccacaa gttaatggtt taacttctat taaatgggca gataacaact gttatcttgc

5161 cactgcattg ttaacactcc aacaaataga gttgaagttt aatccacctg ctctacaaga

5221 tgcttattac agagcaaggg ctggtgaagc tgctaacttt tgtgcactta tcttagccta

5281 ctgtaataag acagtaggtg agttaggtga tgttagagaa acaatgagtt acttgtttca

5341 acatgccaat ttagattctt gcaaaagagt cttgaacgtg gtgtgtaaaa cttgtggaca

5401 acagcagaca acccttaagg gtgtagaagc tgttatgtac atgggcacac tttcttatga

5461 acaatttaag aaaggtgttc agataccttg tacgtgtggt aaacaagcta caaaatatct

5521 agtacaacag gagtcacctt ttgttatgat gtcagcacca cctgctcagt atgaacttaa

5581 gcatggtaca tttacttgtg ctagtgagta cactggtaat taccagtgtg gtcactataa

5641 acatataact tctaaagaaa ctttgtattg catagacggt gctttactta caaagtcctc

5701 agaatacaaa ggtcctatta cggatgtttt ctacaaagaa aacagttaca caacaaccat

5761 aaaaccagtt acttataaat tggatggtgt tgtttgtaca gaaattgacc ctaagttgga

5821 caattattat aagaaagaca attcttattt cacagagcaa ccaattgatc ttgtaccaaa

5881 ccaaccatat ccaaacgcaa gcttcgataa ttttaagttt gtatgtgata atatcaaatt

5941 tgctgatgat ttaaaccagt taactggtta taagaaacct gcttcaagag agcttaaagt

6001 tacatttttc cctgacttaa atggtgatgt ggtggctatt gattataaac actacacacc

6061 ctcttttaag aaaggagcta aattgttaca taaacctatt gtttggcatg ttaacaatgc

6121 aactaataaa gccacgtata aaccaaatac ctggtgtata cgttgtcttt ggagcacaaa

6181 accagttgaa acatcaaatt cgtttgatgt actgaagtca gaggacgcgc agggaatgga

6241 taatcttgcc tnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnt

6301 acagaaagac gttcttgagt gtaatgtgaa aactaccgaa gttgtaggag acattatact

6361 taaaccagca aataatannn taaaaattac agaagaggtt nnnnnnnnnn nnnnnntggc

6421 tgcttatgta gacaattcta gtcttactat taagaaacct aatgaattat ctagagtatt

6481 aggtttgaaa acccttgcta ctcatggttt agctgctgtt aatagtgtcc cttgggatac

6541 tatagctaat tatgctaagc cttttcttaa caaagttgtt agtacaacta ctaacatagt

6601 tacacggtgt ttaaaccgtg tttgtactaa ttatatgcct tatttcttta ctttattgct

6661 acaattgtgt acttttacta gaagtacaaa ttctagaatt aaagcatcta tgccgactac

6721 tatagcaaag aatactgtta agagtgtcgg taaattttgt ctagaggctt catttaatta

6781 tttgaagtca cctaattttt ctaaactgat aaatattata atttggtttt tactattaag

6841 tgtttgccta ggttc

[gap 131 bp] [Expand Ns](https://www.ncbi.nlm.nih.gov/nuccore/ON232806.1?expand-gaps=on)

6987 tacc ttgtagtgtt tgtcttagtn gtttagattc

7021 tttagacacc tatccttctt tagaaactat acaaattacc atttcatctt ttaaatggga

7081 tttaactgct ttnnnnnnnn nnnnngagtg gtttttggca tatattcttt tcactaggtt

7141 tttctatgta cttggattgg ctgcaatcat gcaattgttt ttcagctatt ttgcagtaca

7201 ttttattagt aattcttggc ttatgtggtt aataattaat cttgtacaaa tggccccgat

7261 ttcagctatg gttagaatgt acatcttctt tgcatcattt tattatgtat ggaaaagtta

7321 tgtgcatgtt gtagacggtt gtaattcatc aacttgtatg atgtgttaca aacgtaatag

7381 agcaacaaga gtcgaatgta caactattgt taatggtgtt agaaggtcct tttatgtcta

7441 tgctaatgga ggtaaaggct tttgcaaact acacaattgg aattgtgtta attgtgatac

7501 attctgtgct ggtagtacat ttattagtga tgaagttgcg agagacttgt cactacagtt

7561 taaaagacca ataaatccta ctgaccagtc ttcttacatc gttgatagtg ttacagtgaa

7621 gaatggttcc atccatcttt actttgataa agctggtcaa aagacttatg aaagacattc

7681 tctctctcat tttgttaact tagacaacct gagagctaat aacactaaag gttcattgcc

7741 tattaatgtt atagtttttg atggtaaatc aaaatgtgaa gaatcatctg caaaatcagc

7801 gtctgtttac tacagtcagc ttatgtgtca acctatactg ttactagatc aggcattagt

7861 gtctgatgtt ggtgatagtg cggaagttgc agttaaaatg tttgatgctt acgttaatac

7921 gttttcatca acttttaacg taccaatgga aaaactcaaa acactagttg caactgcaga

7981 agctgaactt gcaaagaatg tgtccttaga caatgtctta tctactttta tttcagcagc

8041 tcggcaaggg tttgttgatt cagatgtaga aactaaagat gttgttgaat gtcttaaatt

8101 gtcacatcaa tctgacatag aagttactgg cgatagttgt aataactata tgctcaccta

8161 taacaaagtt gaaaacatga caccccgtga ccttggtgct tgtattgact gtagtgcgcg

8221 tcatattaat gcgcaggtag caaaaagtca caacattgct ttgatatgga acgttaaaga

8281 tttcatgtca ttgtctgaac aactacgaaa acaaatacgt agtgctgcta aaaagaataa

8341 cttacctttt aagttgacat gtgcaactac tagacaagtt gttaatgttg taacaacaaa

8401 gatagcactt aagggtggta aaattgttaa taattggttg aagcagttaa ttaaagttac

8461 acttgtgttc ctttttgttg ctgctatttt ctatttaata acacctgttc atgtcatgtc

8521 taaacatact gacttttcaa gtgaaatcat aggatacaag gctattgatg gtggtgtcac

8581 tcgtgacata gcatctacag atacttgttt tgctaacaaa catgctgatt ttgacacatg

8641 gtttagccag cgtggtggta gttatactaa tgacaaagct tgcccattga ttgctgcagt

8701 cataacaaga gaagtgggtt ttgtcgtgcc tggtttgcct ggcacgatat tacgcacaac

8761 taatggtgac tttttgcatt tcttacctag agtttttagt gcagttggta acatctgtta

8821 cacaccatca aaacttatag agtacactga ctttgcaaca tcagcttgtg ttttggctgc

8881 tgaatgtaca atttttaaag atgcttctgg taagccagta ccatattgtt atgataccaa

8941 tgtactagaa ggttctgttg cttatgaaag tttacgccct gacacacgtt atgtgctcat

9001 ggatggctct attattcaat ttcctaacac ctaccttgaa ggttctgtta gagtggtaac

9061 aacttttgat tctgagtact gtaggcacgg cacttgtgaa agatcagaag ctggtgtttg

9121 tgtatctact agtggtagat gggtacttaa caatgattat tacagatctt taccaggagt

9181 tttctgtggt gtagatgctg taaatttatt tactaatatg tttacaccac taattcaacc

9241 tattggtgct ttggacatat cagcatctat agtagctggt ggtattgtgg ctatcgtagt

9301 aacatgcctt gcctactatt ttatgaggtt tagaagagct tttggtgaat acagtcatgt

9361 agttgccttt aatactttac tattccttat gtcattcatt gtactctgtt taacaccagt

9421 ttactcattc ttacctggtg tttattctgt tatttacttg tacttgacat tttatcttac

9481 taatgatgtt tcttttttag cacatattca gtggatggtt atgttcacac ctttagtacc

9541 tttctggata acaattgctt atatcatttg tatttccaca aagcatttct attggttctt

9601 tagtaattac ctaaagagac gtgtagtctt taatggtgtt tcctttagta cttttgaaga

9661 agctgcgctg tgcacctttt tgttaaataa agaaatgtat ctaaagttgc gtagtgatgt

9721 gctattacct tttacgcaat ataatagata cttagctctt tataataagt acaagtattt

9781 tagtggagca atggatacaa ctagctacag agaagctgct tgttgtcatc tcgcaaaggc

9841 tctcaatgac ttcagtaact caggttctga tgttctttac caaccaccac aaatctctat

9901 cacctcagct gttttgcaga gtggttttag aaaaatggca ttcccatctg gtaaagttga

9961 gggttgtatg gtacaagtaa cttgtggtac aactacactt aacggtcttt ggcttgatga

10021 cgtagtttac tgtccaagac atgtgatctg cacctctgaa gatatgctta accctaatta

10081 tgaagattta ctcattcgta agtctaatca taatttcttg gtacaggctg gtaatgttca

10141 actcagggtt attggacatt ctatgcaaaa ttgtgtactt aagcttaagg ttgatacagc

10201 caatcctaag acacctaagt ataagtttgt tcgcattcaa ccaggacaga ctttttcagt

10261 gttagcttgt tacaatggtt caccatctgg tgtttaccaa tgtgctatga gacacaattt

10321 cactattaag ggttcattcc ttaatggttc atgtggtagt gttggtttta acatagatta

10381 tgactgtgtc tctttttgtt acatgcacca tatggaatta ccaactggag ttcatgctgg

10441 cacagactta gaaggtaact tttatggacc ttttgttgac aggcaaacag cacaagcagc

10501 tggtacggac acaactatta cagttaatgt tttagcttgg ttgtacgctg ctgttataaa

10561 tggagacagg tggtttctca atcgatttac cacaactctt aatgacttta accttgtggc

10621 tatgaagtac aattatgaac ctctaacaca agaccatgtt gacatactag gacctctttc

10681 tgctcaaact ggaattgccg ttttagatat gtgtgcttca ttaaaagaat tactgcaaaa

10741 tggtatgaat ggacgtacca tattgggtag tgctttatta gaagatgaat ttacaccttt

10801 tgatgttgtt agacaatgct caggtgttac tttccaaagt gcagtgaaaa gaacaatcaa

10861 gggtacacac cactggttgt tactcacaat tttgacttca cttttagttt tagtccagag

10921 tactcaatgg tctttgttct tttttttgta tgaaaatgcc tttttacctt ttgctatggg

10981 tattattgct atgtctgctt ttgcaatgat gtttgtcaaa cataagcatg catttctctg

11041 tttgtttttg ttaccttctc ttgccactgt agcttatttt aatatggtct atatgcctgc

11101 tagttgggtg atgcgtatta tgacatggtt ggatatggtt gatactagtt tgaagctaaa

11161 agactgtgtt atgtatgcat cagctgtagt gttactaatc cttatgacag caagaactgt

11221 gtatgatgat ggtgctagga gagtgtggac acttatgaat gtcttgacac tcgtttataa

11281 agtttattat ggtaatgctt tagatcaagc catttccatg tgggctctta taatctctgt

11341 tacttctaac tactcaggtg tagttacaac tgtcatgttt ttggccagag gtattgtttt

11401 tatgtgtgtt gagtattgcc ctattttctt cataactggt aatacacttc agtgtataat

11461 gctagtttat tgtttcttag gctatttttg tacttgttac tttggcctct tttgtttact

11521 caaccgctac tttagactga ctcttggtgt ttatgattac ttagtttcta cacaggagtt

11581 tagatatatg aattcacagg gactactccc acccaagaat agcatagatg ccttcaaact

11641 caacattaaa ttgttgggtg ttggtggcaa accttgtatc aaagtagcca ctgtacagtc

11701 taaaatgtca gatgtaaagt gcacatcagt agtcttactc tcagttttgc aacaactcag

11761 agtagaatca tcatctaaat tgtgggctca atgtgtccag ttacacaatg acattctctt

11821 agctaaagat actactgaag cctttgaaaa aatggtttca ctactttctg ttttgctttc

11881 catgcagggt gctgtagaca taaacaagct ttgtgaagaa atgctggaca acagggcaac

11941 cttacaagct atagcctcag agtttagttc ccttccatca tatgcagctt ttgctactgc

12001 tcaagaagct tatgagcagg ctgttgctaa tggtgattct gaagttgttc ttaaaaagtt

12061 gaagaagtct ttgaatgtgg ctaaatctga atttgaccgt gatgcagcca tgcaacgtaa

12121 gttggaaaag atggctgatc aagctatgac ccaaatgtat aaacaggcta gatctgagga

12181 caagagggca aaagttacta gtgctatgca gacaatgctt ttcactatgc ttagaaagtt

12241 ggataatgat gcactcaaca acattatcaa caatgcaaga gatggttgtg ttcccttgaa

12301 cataatacct cttacaacag cagccaaact aatggttgtc ataccagact ataacacata

12361 taaaaatacg tgtgatggta caacatttac ttatgcatca gcattgtggg aaatccaaca

12421 ggttgtagat gcagatagta aaattgttca acttagtgaa attagtatgg acaattcacc

12481 taatttagca tggcctctta ttgtaacagc tttaagggcc aattctgctg tcaaattaca

12541 gaataatgag cttagtcctg ttgcactacg acagatgtct tgtgctgccg gtactacaca

12601 aactgcttgc actgatgaca atgcgttagc ttactacaac acaacaaagg gaggtaggtt

12661 tgtacttgca ctgttatccg atttacagga tttgaaatgg gctagattcc ctaagagtga

12721 tggaactggt actatttata cagaactgga accaccttgt aggtttgtta cagacacacc

12781 taaaggtcct aaagtgaagt atttatactt tattaaagga ttaaacaacc taaatagagg

12841 tatggtactt ggtagtttag ctgccacagt acgtctacaa gctggtaatg caacagaagt

12901 gcctgccaat tcaactgtat tatctttctg tgcttttgct gtagatgctg ctaaagctta

12961 caaagattat ctagctagtg ggggacaacc aatcactaat tgtgttaaga tgttgtgtac

13021 acacactggt actggtcagg caataacagt tacaccggaa gccaatatgg atcaagaatc

13081 ctttggtggt gcatcgtgtt gtctgtactg ccgttgccac atagatcatc caaatcctaa

13141 aggattttgt gacttaaaag gtaagtatgt acaaatacct acaacttgtg ctaatgaccc

13201 tgtgggtttt acacttaaaa acacagtctg taccgtctgc ggtatgtgga aaggttatgg

13261 ctgtagttgt gatcaactcc gcgaacccat gcttcagtca gctgatgcac aatcgttttt

13321 aaacgggttt gcggtgtaag tgcagcccgt cttacaccgt gcggcacagg cactagtact

13381 gatgtcgtat acagggcttt tgacatctac aatgataaag tagctggttt tgctaaattc

13441 ctaaaaacta attgttgtcg cttccaagaa aaggacgaag atgacaattt aattgattct

13501 tactttgtag ttaagagaca cactttctct aactaccaac atgaagaaac aatttataat

13561 ttacttaagg attgtccagc tgttgctaaa catgacttct ttaagtttag aatagacggt

13621 gacatggtac cacatatatc acgtcaacgt cttactaaat acacaatggc agacctcgtc

13681 tatgctttaa ggcattttga tgaaggtaat tgtgacacat taaaagaaat acttgtcaca

13741 tacaattgtt gtgatgatga ttatttcaat aaaaaggact ggtatgattt tgtagaaaac

13801 ccagatatat tacgcgtata cgccaactta ggtgaacgtg tacgccaagc tttgttaaaa

13861 acagtacaat tctgtgatgc catgcgaaat gctggtattg ttggtgtact gacattagat

13921 aatcaagatc tcaatggtaa ctggtatgat ttcggtgatt tcatacaaac cacgccaggt

13981 agtggagttc ctgttgtaga ttcttattat tcattgttaa tgcctatatt aaccttgacc

14041 agggctttaa ctgcagagtc acatgttgac actgacttaa caaagcctta cattaagtgg

14101 gatttgttaa aatatgactt cacggaagag aggttaaaac tctttgaccg ttattttaaa

14161 tattgggatc agacatacca cccaaattgt gttaactgtt tggatgacag atgcattctg

14221 cattgtgcaa actttaatgt tttattctct acagtgttcc cacttacaag ttttggacca

14281 ctagtgagaa aaatatttgt tgatggtgtt ccatttgtag tttcaactgg ataccacttc

14341 agagagctag gtgttgtaca taatcaggat gtaaacttac atagctctag acttagtttt

14401 aaggaattac ttgtgtatgc tgctgaccct gctatgcacg ctgcttctgg taatctatta

14461 ctagataaac gcactacgtg cttttcagta gctgcactta ctaacaatgt tgcttttcaa

14521 actgtcaaac ccggtaattt taacaaagac ttctatgact ttgctgtgtc taagggtttc

14581 tttaaggaag gaagttctgt tgaattaaaa cacttcttct ttgctcagga tggtaatgct

14641 gctatcagcg attatgacta ctatcgttat aatctaccaa caatgtgtga tatcagacaa

14701 ctactatttg tagttgaagt tgttgataag tactttgatt gttacgatgg tggctgtatt

14761 aatgctaacc aagtcatcgt caacaaccta gacaaatcag ctggttttcc atttaataaa

14821 tggggtaagg ctagacttta ttatgattca atgagttatg aggatcaaga tgcacttttc

14881 gcatatacaa aacgtaatgt catccctact ataactcaaa tgaatcttaa gtatgccatt

14941 agtgcaaaga atagagctcg caccgtagct ggtgtctcta tctgtagtac tatgaccaat

15001 agacagtttc atcaaaaatt attgaaatca atagccgcca ctagaggagc tactgtagta

15061 attggaacaa gcaaattcta tggtggttgg cacaacatgt taaaaactgt ttatagtgat

15121 gtagaaaacc ctcaccttat gggttgggat tatcctaaat gtgatagagc catgcctaac

15181 atgcttagaa ttatggcctc acttgttctt gctcgcaaac atacaacgtg ttgtagcttg

15241 tcacaccgtt tctatagatt agctaatgag tgtgctcaag tattgagtga aatggtcatg

15301 tgtggcggtt cactatatgt taaaccaggt ggaacctcat caggagatgc cacaactgct

15361 tatgctaata gtgtttttaa catttgtcaa gctgtcacgg ccaatgttaa tgcactttta

15421 tctactgatg gtaacaaaat tgccgataag tatgtccgca atttacaaca cagactttat

15481 gagtgtctct atagaaatag agatgttgac acagactttg tgaatgagtt ttacgcatat

15541 ttgcgtaaac atttctcaat gatgatactt tctgacgatg ctgttgtgtg tttcaatagc

15601 acttatgcat ctcaaggtct agtggctagc ataaagaact ttaagtcagt tctttattat

15661 caaaacaatg tttttatgtc tgaagcaaaa tgttggactg agactgacct tactaaagga

15721 cctcatgaat tttgctctca acatacaatg ctagttaaac agggtgatga ttatgtgtac

15781 cttccttacc cagatccatc aagaatccta ggggccggct gttttgtaga tgatatcgta

15841 aaaacagatg gtacacttat gattgaacgg ttcgtgtctt tagctataga tgcttaccca

15901 cttactaaac atcctaatca ggagtatgct gatgtctttc atttgtactt acaatacata

15961 agaaagctac atgatgagtt aacaggacac atgttagaca tgtattctgt tatgcttact

16021 aatgataaca cttcaaggta ttgggaacct gagttttatg aggctatgta cacaccgcat

16081 acagtcttac aggctgttgg ggcttgtgtt ctttgcaatt cacagacttc attaagatgt

16141 ggtgcttgca tacgtagacc attcttatgt tgtaaatgct gttacgacca tgtcatatca

16201 acatcacata aattagtctt gtctgttaat ccgtatgttt gcaatgctcc aggttgtgat

16261 gtcacagatg tgactcaact ttacttagga ggtatgagct attattgtaa atcacataaa

16321 ccacccatta gttttccatt gtgtgctaat ggacaagttt ttggtttata taaaaataca

16381 tgtgttggta gcgataatgt tactgacttt aatgcaattg caacatgtga ctggacaaat

16441 gctggtgatt acattttagc taacacctgt actgaaagac tcaagctttt tgcagcagaa

16501 acgctcaaag ctactgagga gacatttaaa ctgtcttatg gtattgctac tgtacgtgaa

16561 gtgctgtctg acagagaatt acatctttca tgggaagttg gtaaacctag accaccactt

16621 aaccgaaatt atgtctttac tggttatcgt gtaactaaaa acagtaaagt acaaatagga

16681 gagtacacct ttgaaaaagg tgactatggt gatgctgttg tttaccgagg tacaacaact

16741 tacaaattaa atgttggtga ttattttgtg ctgacatcac atacagtaat gccattaagt

16801 gcacctacac tagtgccaca agagcactat gttagaatta ctggcttata cccaacactc

16861 aatatctcag atgagttttc tagcaatgtt gcaaattatc aaaaggttgg tatgcaaaag

16921 tattctacac tccagggacc acctggtact ggtaagagtc attttgctat tggcctagct

16981 ctctactacc cttctgctcg catagtgtat acagcttgct ctcatgccgc tgttgatgca

17041 ctatgtgaga aggcattaaa atatttgcct atagataaat gtagtagaat tatacctgca

17101 cgtgctcgtg tagagtgttt tgataaattc aaagtgaatt caacattaga acagtatgtc

17161 ttttgtactg taaatgcatt gcctgagacg acagcagata tagttgtctt tgatgaaatt

17221 tcaatggcca caaattatga tttgagtgtt gtcaatgcca gattatgtgc taagcactat

17281 gtgtacattg gcgaccctgc tcaattacct gcaccacgca cattgctaac taagggcaca

17341 ctagaaccag aatatttcaa ttcagtgtgt agacttatga aaactatagg tccagacatg

17401 ttcctcggaa cttgtcggcg ttgtcctgct gaaattgttg acactgtgag tgctttggtt

17461 tatgataata agcttaaagc acataaagac aaatcagctc aatgctttaa aatgttttat

17521 aagggtgtta tcacgcatga tgtttcatct gcaattaaca ggccacaaat aggcgtggta

17581 agagaattcc ttacacgtaa ccctgcttgg agaaaagctg tctttatttc accttataat

17641 tcacagaatg ctgtagcctc aaagattttg ggactaccaa ctcaaactgt tgattcatca

17701 cagggctcag aatatgacta tgtcatattc actcaaacca ctgaaacagc tcactcttgt

17761 aatgtaaaca gatttaatgt tgctattacc agagcaaaag taggcatact ttgcataatg

17821 tctgatagag acctttatga caagttgcaa tttacaagtc ttgaaattcc acgtaggaat

17881 gtggcaactt tacaagctga aaatgtaaca ggactcttta aagattgtag taaggtaatc

17941 actgggttac atcctacaca ggcacctaca cacctcagtg ttgacactaa attcaaaact

18001 gaaggtttat gtgttgacgt acctggcata cctaaggaca tgacctatag aagactcatc

18061 tctatgatgg gttttaaaat gaattatcaa gttaatggtt accctaacat gtttatcacc

18121 cgcgaagaag ctataagaca tgtacgtgca tggattggct tcgatgtcga ggggtgtcat

18181 gctactagag aagctgttgg taccaattta cctttacagc taggtttttc tacaggtgtt

18241 aacctagttg ctgtacctac aggttatgtt gatacaccta ataatacaga tttttccaga

18301 gttagtgcta aaccaccgcc tggagatcaa tttaaacacc tcataccact tatgtacaaa

18361 ggacttcctt ggaatgtagt gcgtataaag attgtacaaa tgttaagtga cacacttaaa

18421 aatctctctg acagagtcgt atttgtctta tgggcacatg gctttgagtt gacatctatg

18481 aagtattttg tgaaaatagg acctgagcgc acctgttgtc tatgtgatag acgtgccaca

18541 tgcttttcca ctgcttcaga cacttatgcc tgttggcatc attctattgg atttgattac

18601 gtctataatc cgtttatgat tgatgttcaa caatggggtt ttacaggtaa cctacaaagc

18661 aaccatgatc tgtattgtca agtccatggt aatgcacatg tagctagttg tgatgcaatc

18721 atgactaggt gtctagctgt ccacgagtgc tttgttaagc gtgttgactg gactattgaa

18781 tatcctataa ttggtgatga actgaagatt aatgcggctt gtagaaaggt tcaacacatg

18841 gttgttaaag ctgcattatt agcagacaaa ttcccagttc ttcacgacat tggtaaccct

18901 aaagctatta agtgtgtacc tcaagctgat gtagaatgga agttctatga tgcacagcct

18961 tgtagtgaca aagcttataa aatagaagaa ttattctatt cttatgccac acattctgac

19021 aaattcacag atggtgtatg cctattttgg aattgcaatg tcgatagata tcctgctaat

19081 tccattgttt gtagatttga cactagagtg ctatctaacc ttaacttgcc tggttgtgat

19141 ggtggcagtt tgtatgtaaa taaacatgca ttccacacac cagcttttga taaaagtgct

19201 tttgttaatt taaaacaatt accatttttc tattactctg acagtccatg tgagtctcat

19261 ggaaaacaag tagtgtcaga tatagattat gtaccactaa agtctgctac gtgtataaca

19321 cgttgcaatt taggtggtgc tgtctgtaga catcatgcta atgagtacag attgtatctc

19381 gatgcttata acatgatgat ctcagctggc tttagcttgt gggtttacaa acaatttgat

19441 acttataacc tctggaacac ttttacaaga cttcagagtt tagaaaatgt ggcttttaat

19501 gttgtaaata agggacactt tgatggacaa cagggtgaag taccagtttc tatcattaat

19561 aacactgttt acacaaaagt tgatggtgtt gatgtagaat tgtttgaaaa taaaacaaca

19621 ttacctgtta atgtagcatt tgagctttgg gctaagcgca acattaaacc agtaccagag

19681 gtgaaaatac tcaataattt gggtgtggac attgctgcta atactgtgat ctgggactac

19741 aaaagagatg ctccagcaca tatatctact attggtgttt gttctatgac tgacatagcc

19801 aagaaaccaa ttgaaacgat ttgtgcacca ctcactgtct tttttgatgg tagagttgat

19861 ggtcaagtag acttatttag aaatgcccgt aatggtgttc ttattacaga gggtagtgtt

19921 aaaggtttac aaccatctgt aggtcccaaa caagctagtc ttaatggagt cacattaatt

19981 ggagaagccg taaaaacaca gttcaattat tataagaaag ttgatggtgt tgtccaacaa

20041 ttacctgaaa cttactttac tcagagtaga aatttacaag aatttaaacc caggagtcaa

20101 atggaaattg atttcttaga attagctatg gatgaattca ttgaacggta taaattagaa

20161 ggctatgcct tcgaacatat cgtttatgga gattttagtc atagtcagtt aggtggttta

20221 catctactga ttggactagc taaacgtttt aaggaatcac cttttgaatt agaagatttt

20281 attcctatgg acagtacagt taaaaactat ttcataacag atgcgcaaac aggttcatct

20341 aagtgtgtgt gttctgttat tgatttatta cttgatgatt ttgttgaaat aataaaatcc

20401 caagatttat ctgtagtttc taaggttgtc aaagtgacta ttgactatac agaaatttca

20461 tttatgcttt ggtgtaaaga tggccatgta gaaacatttt acccaaaatt acaatctagt

20521 caagcgtggc aaccgggtgt tgctatgcct aatctttaca aaatgcaaag aatgctatta

20581 gaaaagtgtg accttcaaaa ttatggtgat agtgcaacat tacctaaagg cataatgatg

20641 aatgtcgcaa aatatactca actgtgtcaa tatttaaaca cattaacatt agctgtaccc

20701 tataatatga gagttataca ttttggtgct ggttctgata aaggagttgc accaggtaca

20761 gctgttttaa gacagtggtt gcctacgggt acgctgcttg tcgattcaga tcttaatgac

20821 tttgtctctg atgcagattc aactttgatt ggtgattgtg caactgtaca tacagctaat

20881 aaatgggatc tcattattag tgatatgtac gaccctaaga ctaaaaatgt tacaaaagaa

20941 aatgactcta aagagggttt tttcacttac atttgtgggt ttatacaaca aaagctagct

21001 cttggaggtt ccgtggctat aaagataaca gaacattctt ggaatgctga tctttataag

21061 ctcatgggac acttcgcatg gtggacagcc tttgttacta atgtgaatgc gtcatcatct

21121 gaagcatttt taattggatg taattatctt ggcaaaccac gcgaacaaat agatggttat

21181 gtcatgcatg caaattacat attttggagg aatacaaatc caattcagtt gtcttcctat

21241 tctttatttg acatgagtaa atttcccctt aaattaaggg gtactgctgt tatgtcttta

21301 aaagaaggtc aaatcaatga tatgatttta tctcttctta gtaaaggtag acttataatt

21361 agagaaaaca acagagttgt tatttctagt gatgttcttg ttaacaacta aacgaacaat

21421 gtttgttttt cttgttttat tgccactagt ctctagtcag tgtgttaatc ttacaaccag

21481 aactcaatca tacactaatt ctttcacacg tggtgtttat taccctgaca aagttttcag

21541 atcctcagtt ttacattcaa ctcaggactt gttcttacct ttcttttcca atgttacttg

21601 gttccatgct atacatgtct ctgggaccaa tggtactaag aggtttgata accctgtcct

21661 accatttaat gatggtgttt attttgcttc cactgagaag tctaacataa taagaggctg

21721 gatttttggt actactttag attcgaagac ccagtcccta cttattgtta ataacgctac

21781 taatgttgtt attaaagtct gtgaatttca attttgtaat gatccatttt tggatgttta

21841 ttaccacaaa aacaacaaaa gttggatgga aagtgagttc agagtttatt ctagtgcgaa

21901 taattgcact tttgaatatg tctctcagcc ttttcttatg gaccttgaag gaaaacaggg

21961 taatttcaaa aatcttaggg aatttgtgtt taagaatatt gatggttatt ttaaaatata

22021 ttctaagcac acgcctatta atttagggcg tgatctccct cagggttttt cggctttaga

22081 accattggta gatttgccaa taggtattaa catcactagg tttcaaactt tacttgcttt

22141 acatagaagt tatttgactc ctggtgattc ttcttcaggt tggacagctg gtgctgcagc

22201 ttattatgtg ggttatcttc aacctaggac ttttctatta aaatataatg aaaatggaac

22261 cattacagat gctgtagact gtgcacttga ccctctctca gaaacaaagt gtacgttgaa

22321 atccttcact gtagaaaaag gaatctatca aacttctaac tttagagtcc aaccaacaga

22381 atctattgtt agatttccta atattacaaa cttgtgccct tttgatgaag tttttaacgc

22441 caccagattt gcatctgttt atgcttggaa caggaagaga atcagcaact gtgttgctga

22501 ttattctgtc ctatataatt tcgcaccatt tttcgctttt aagtgttatg gagtgtctcc

22561 tactaaatta aatgatctct gctttactaa tgtctatgca gattcatttg taattagagg

22621 taatgaagtc agccaaatcg ctccagggca aactggaaat attgctgatt ataattataa

22681 attaccagat gattttacag gctgcgttat agcttggaat tctaacaagc ttgattctaa

22741 ggttggtggt aattataatt acctgtatag attgtttagg aagtctaatc tcaaaccttt

22801 tgagagagat atttcaactg aaatctatca ggccggtaac aaaccttgta atggtgttgc

22861 aggttttaat tgttactttc ctttacgatc atatggtttc cgacccactt atggtgttgg

22921 tcaccaacca tacagagtag tagtactttc ttttgaactt ctacatgcac cagcaactgt

22981 ttgtggacct aaaaagtcta ctaatttggt taaaaacaaa tgtgtcaatt tcaacttcaa

23041 tggtttaaca ggcacaggtg ttcttactga gtctaacaaa aagtttctgc ctttccaaca

23101 atttggcaga gacattgctg acactactga tgctgtccgt gatccacaga cacttgagat

23161 tcttgacatt acaccatgtt cttttggtgg tgtcagtgtt ataacaccag gaacaaatac

23221 ttctaaccag gttgctgttc tttatcaggg tgttaactgc acagaagtcc ctgttgctat

23281 tcatgcagat caacttactc ctacttggcg tgtttattct acaggttcta atgtttttca

23341 aacacgtgca ggctgtttaa taggggctga atatgtcaac aactcatatg agtgtgacat

23401 acccattggt gcaggtatat gcgctagtta tcagactcag actaagtctc atcggcgggc

23461 acgtagtgta gctagtcaat ccatcattgc ctacactatg tcacttggtg cagaaaattc

23521 agttgcttac tctaataact ctattgccat acccacaaat tttactatta gtgttaccac

23581 agaaattcta ccagtgtcta tgaccaagac atcagtagat tgtacaatgt acatttgtgg

23641 tgattcaact gaatgcagca atcttttgtt gcaatatggc agtttttgta cacaattaaa

23701 acgtgcttta actggaatag ctgttgaaca agacaaaaac acccaagaag tttttgcaca

23761 agtcaaacaa atttacaaaa caccaccaat taaatatttt ggtggtttta atttttcaca

23821 aatattacca gatccatcaa aaccaagcaa gaggtcattt attgaagatc tacttttcaa

23881 caaagtgaca cttgcagatg ctggcttcat caaacaatat ggtgattgcc ttggtgatat

23941 tgctgctaga gacctcattt gtgcacaaaa gtttaacggc cttactgttt tgccaccttt

24001 gctcacagat gaaatgattg ctcaatacac ttctgcactg ttagcgggta caatcacttc

24061 tggttggacc tttggtgcag gtgctgcatt acaaatacca tttgctatgc aaatggctta

24121 taggtttaat ggtattggag ttacacagaa tgttctctat gagaaccaaa aattgattgc

24181 caaccaattt aatagtgcta ttggcaaaat tcaagactca ctttcttcca cagcaagtgc

24241 acttggaaaa cttcaagatg tggtcaacca taatgcacaa gctttaaaca cgcttgttaa

24301 acaacttagc tccaaatttg gtgcaatttc aagtgtttta aatgatatcc tttcacgtct

24361 tgacaaagtt gaggctgaag tgcaaattga taggttgatc acaggcagac ttcaaagttt

24421 gcagacatat gtgactcaac aattaattag agctgcagaa atcagagctt ctgctaatct

24481 tgctgctact aaaatgtcag agtgtgtact tggacaatca aaaagagttg atttttgtgg

24541 aaagggctat catcttatgt ccttccctca gtcagcacct catggtgtag tcttcttgca

24601 tgtgacttat gtccctgcac aagaaaagaa cttcacaact gctcctgcca tttgtcatga

24661 tggaaaagca cactttcctc gtgaaggtgt ctttgtttca aatggcacac actggtttgt

24721 aacacaaagg aatttttatg aaccacaaat cattactaca gacaacacat ttgtgtctgg

24781 taactgtgat gttgtaatag gaattgtcaa caacacagtt tatgatcctt tgcaacctga

24841 attagattca ttcaaggagg agttagataa atattttaag aatcatacat caccagatgt

24901 tgatttaggt gacatctctg gcattaatgc ttcagttgta aacattcaaa aagaaattga

24961 ccgcctcaat gaggttgcca agaatttaaa tgaatctctc atcgatctcc aagaacttgg

25021 aaagtatgag cagtatataa aatggccatg gtacatttgg ctaggtttta tagctggctt

25081 gattgccata gtaatggtga caattatgct ttgctgtatg accagttgct gtagttgtct

25141 caagggctgt tgttcttgtg gatcctgctg caaatttgat gaagacgact ctgagccagt

25201 gctcaaagga gtcaaattac attacacata aacgaactta tggatttgtt tatgagaatc

25261 tttacaattg gaactgtaac tttgaagcaa ggtgaaatca aggatgctac tccttcagat

25321 tttgttcgcg ctactgcaac gataccgata caagcctcac tccctttcgg atggcttatt

25381 gttggcgttg cacttcttgc tgtttttcag agcgcttcca aaatcataac tctcaaaaag

25441 agatggcaac tagcactctc caagggtgtt cactttgttt gcaacttgct gttgttgttt

25501 gtaacagttt actcacacct tttgctcgtt gctgctggcc ttgaagcccc ttttctctat

25561 ctttatgctt tagtctactt cttgcagagt ataaactttg taagaataat aatgaggctt

25621 tggctttgct ggaaatgccg ttccaaaaac ccattacttt atgatgccaa ctattttctt

25681 tgctggcata ctaattgtta cgactattgt ataccttaca atagtgtaac ttcttcaatt

25741 gtcattactt caggtgatgg cacaacaagt cctatttctg aacatgacta ccagattggt

25801 ggttatactg aaaaatggga atctggagta aaagactgtg ttgtattaca cagttacttc

25861 acttcagact attaccagct gtactcaact caattgagta cagacattgg tgttgaacat

25921 gttaccttct tcatctacaa taaaattgtt gatgagcctg aagaacatgt ccaaattcac

25981 acaatcgacg gttcatccgg agttgttaat ccagtaatgg aaccaattta tgatgaaccg

26041 acgacgacta ctagcgtgcc tttgtaagca caagctgatg agtacgaact tatgtactca

26101 ttcgtttcgg aagagatagg tacgttaata gttaatagcg tacttctttt tcttgctttc

26161 gtggtattct tgctagttac actagccatc cttactgcgc ttcgattgtg tgcgtactgc

26221 tgcaatattg ttaacgtgag tcttgtaaaa ccttcttttt acgtttactc tcgtgttaaa

26281 aatctgaatt cttctagagt tcctgatctt ctggtctaaa cgaactaaat attatattag

26341 tttttctgtt tggaacttta attttagcca tggcagattc caacggtact attaccgttg

26401 aagagcttaa aaagctcctt gaagaatgga acctagtaat aggtttccta ttccttacat

26461 ggatttgtct tctacaattt gcctatgcca acaggaatag gtttttgtat ataattaagt

26521 taattttcct ctggctgtta tggccagtaa ctttaacttg ttttgtgctt gctgctgttt

26581 acagaataaa ttggatcacc ggtggaattg ctatcgcaat ggcttgtctt gtaggcttga

26641 tgtggctcag ctacttcatt gcttctttca gactgtttgc gcgtacgcgt tccatgtggt

26701 catttaatcc agaaactaac attcttctca acgtgccact ccatggcact attctgacca

26761 gaccgcttct agaaagtgaa ctcgtaatcg gagctgtgat ccttcgtgga catcttcgta

26821 ttgctggaca ccatctagga cgctgtgaca tcaaggacct gcctaaagaa atcactgttg

26881 ctacatcacg aacgctttct tattacaaat tgggagcttc gcagcgtgta gcaggtgact

26941 caggttttgc tgcatacagt cgctacagga ttggcaacta taaattaaac acagaccatt

27001 ccagtagcag tgacaatatt gctttgcttg tacagtaagt gacaacagat gtttcatctc

27061 gttgactttc aggttactat agcagagata ttactaatta ttatgcggac ttttaaagtt

27121 tccatttgga atcttgatta catcataaac ctcataatta aaaatttatc taagtcacta

27181 actgagaata aatattctca attagatgaa gagcaaccaa tggagattct ctaaacgaac

27241 atgaaaatta ttcttttctt ggcactgata acactcgcta cttgtgagct ttatcactac

27301 caagagtgtg ttagaggtac aacagtactt ttaaaagaac cttgctcttc tggaacatac

27361 gagggcaatt caccatttca tcctctagct gataacaaat ttgcactgac ttgctttagc

27421 actcaatttg cttttgcttg tcctgacggc gtaaaacacg tctatcagtt acgtgccaga

27481 tcagtttcac ctaaactgtt catcagacaa gaggaagttc aagaacttta ctctccaatt

27541 tttcttattg ttgcggcaat agtgtttata acactttgct tcacactcaa aagaaagaca

27601 gaatgattga actttcatta attgacttct atttgtgctt tttagccttt ctgttattcc

27661 ttgttttaat tatgcttatt atcttttggt tctcacttga actgcaagat cataatgaaa

27721 cttgtcacgc ctaaacgaac atgaaatttc ttgttttctt aggaatcatc acaactgtag

27781 ctgcatttca ccaagaatgt agtttacagt catgtactta acatcaacca tatgtagttg

27841 atgacccgtg tcctattcac ttctattcta aatggtatat tagagtagga gctagaaaat

27901 cagcaccttt aattgaattg tgcgtggatg aggctggttc taaatcaccc attcagtaca

27961 tcgatatcgg taattataca gtttcctgtt taccttttac aattaattgc caggaaccta

28021 aattgggtag tcttgtagtg cgttgttcgt tctatgaaga ctttttagag tatcatgacg

28081 ttcgtgttgt tttagatttc atctaaacga acaaacttaa atgtctgata atggacccca

28141 aaatcagcga aatgcactcc gcattacgtt tggtggaccc tcagattcaa ctggcagtaa

28201 ccagaatggt ggggcgcgat caaaacaacg tcggccccaa ggtttaccca ataatactgc

28261 gtcttggttc accgctctca ctcaacatgg caaggaagac cttaaattcc ctcgaggaca

28321 aggcgttcca attaacacca atagcagtcc agatgaccaa attggctact accgaagagc

28381 taccagacga attnnnnnnn nnnnnnnnna aatgaaagat ctcagtccaa gatggtattt

28441 ctactaccta ggaactgggc cagaagctgg acttccctat ggtgctaaca aagacggcat

28501 catatgggtt gcaactgagg gagccttgaa tacaccaaaa gatcacattg gcacccgcaa

28561 tcctgctaac aatgctgcaa tcgtgctaca acttcctcaa ggaacaacat tgccaaaagg

28621 cttctacgca gaagggagca gaggcggcag tcaagcctct tctcgttcct catcacgtag

28681 tcgcaacagt tcaagaaatt caactccagg cagcagtaaa cgaacttctc ctgctagaat

28741 ggctggcaat ggcggtgatg ctgctcttgc tttgctgctg cttgacagat tgaaccagct

28801 tgagagcaaa atgtctggta aaggccaaca acaacaaggc caaactgtca ctaagaaatc

28861 tgctgctgag gcttctaaga agcctcggca aaaacgtact gccactaaag catacaatgt

28921 aacacaagct ttcggcagac gtggtccaga acaaacccaa ggaaattttg gggaccagga

28981 actaatcaga caaggaactg attacaaaca ttggccgcaa attgcacaat ttgcccccag

29041 cgcttcagcg ttcttcggaa tgtcgcgcat tggcatggaa gtcacacctt cgggaacgtg

29101 gttgacctac acaggtgcca tcaaattgga tgacaaagat ccaaatttca aagatcaagt

29161 cattttgctg aataagcata ttgacgcata caaaacattc ccaccaacag agcctaaaaa

29221 ggacaaaaag aagaaggctg atgaaactca agccttaccg cagagacaga agaaacagca

29281 aactgtgact cttcttcctg ctgcagattt ggatgatttc tccaaacaat tgcaacaatc

29341 catgagccgt gctgactcaa ctcaggccta aactcatgca gaccacacaa ggcagatggg

29401 ctatataaac gttttcgctt ttccgtttac gatatatagt ctactcttgt gcagaatgaa

29461 ttctcgtaac tacata

//